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 */
/**
 * An `AliasingHost` which exports directives from any file containing an NgModule in which they're
 * declared/exported, under a private symbol name.
 *
 * These exports support cases where an NgModule is imported deeply from an absolute module path
 * (that is, it's not part of an Angular Package Format endpoint), and the compiler needs to
 * import any matched directives/pipes from the same path (to the NgModule file). See README.md for
 * more details.
 */
```

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```
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* /opt/cola/permits/1358260446_1657134890.45859/0/compiler-cli-11-0-2-tgz/package/src/ngtsc/metadata/index.d.ts
* /opt/cola/permits/1358260446_1657134890.45859/0/compiler-cli-11-0-2-tgz/package/src/ngtsc/transform/src/compilation.js
* /opt/cola/permits/1358260446_1657134890.45859/0/compiler-cli-11-0-2-tgz/package/src/metadata/schema.js
* /opt/cola/permits/1358260446_1657134890.45859/0/compiler-cli-11-0-2-tgz/package/src/transformers/program.d.ts
* /opt/cola/permits/1358260446_1657134890.45859/0/compiler-cli-11-0-2-tgz/package/src/ngtsc/typecheck/src/expression.js
* /opt/cola/permits/1358260446_1657134890.45859/0/compiler-cli-11-0-2-tgz/package/src/ngtsc/metadata/src/api.d.ts
* /opt/cola/permits/1358260446_1657134890.45859/0/compiler-cli-11-0-2-tgz/package/src/ngtsc/typecheck/src/type_check_block.d.ts
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* /opt/cola/permits/1358260446_1657134890.45859/0/compiler-cli-11-0-2-tgz/package/src/ngtsc/typecheck/src/template_symbol_builder.d.ts
* /opt/cola/permits/1358260446_1657134890.45859/0/compiler-cli-11-0-2-tgz/package/src/ngtsc/annotations/src/factory.js
* /opt/cola/permits/1358260446_1657134890.45859/0/compiler-cli-11-0-2-tgz/package/src/ngtsc/core/api/src/public_options.js
* /opt/cola/permits/1358260446_1657134890.45859/0/compiler-cli-11-0-2-tgz/package/src/ngtsc/file_system/src/invalid_file_system.d.ts
* /opt/cola/permits/1358260446_1657134890.45859/0/compiler-cli-11-0-2-tgz/package/src/ngtsc/typecheck/src/host.js
* /opt/cola/permits/1358260446_1657134890.45859/0/compiler-cli-11-0-2-tgz/package/src/ngtsc/sourcemaps/src/raw_source_map.d.ts
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* /opt/cola/permits/1358260446_1657134890.45859/0/compiler-cli-11-0-2-tgz/package/src/ngtsc/reflection/index.js
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* /opt/cola/permits/1358260446_1657134890.45859/0/compiler-cli-11-0-2-tgz/package/src/ngtsc/perf/src/clock.d.ts

* /opt/cola/permits/1358260446_1657134890.45859/0/compiler-cli-11-0-2-tgz/package/ngcc/src/locking/sync_locker.d.ts

* /opt/cola/permits/1358260446_1657134890.45859/0/compiler-cli-11-0-2-tgz/package/src/transformers/r3_metadata_transform.d.ts

* /opt/cola/permits/1358260446_1657134890.45859/0/compiler-cli-11-0-2-tgz/package/ngcc/src/analysis/ngcc_trait_compiler.d.ts

* /opt/cola/permits/1358260446_1657134890.45859/0/compiler-cli-11-0-2-tgz/package/src/ngtsc/logging/testing/index.d.ts

* /opt/cola/permits/1358260446_1657134890.45859/0/compiler-cli-11-0-2-tgz/package/ngcc/src/locking/async_locker.d.ts

* /opt/cola/permits/1358260446_1657134890.45859/0/compiler-cli-11-0-2-tgz/package/src/ngtsc/annotations/src/pipe.d.ts

* /opt/cola/permits/1358260446_1657134890.45859/0/compiler-cli-11-0-2-tgz/package/ngcc/src/entry_point_finder/program_based_entry_point_finder.d.ts

* /opt/cola/permits/1358260446_1657134890.45859/0/compiler-cli-11-0-2-tgz/package/src/ngtsc/partial_evaluator/index.d.ts

* /opt/cola/permits/1358260446_1657134890.45859/0/compiler-cli-11-0-2-tgz/package/ngcc/src/execution/tasks/utils.d.ts

* /opt/cola/permits/1358260446_1657134890.45859/0/compiler-cli-11-0-2-tgz/package/src/ngtsc/modulewithproviders/index.d.ts

* /opt/cola/permits/1358260446_1657134890.45859/0/compiler-cli-11-0-2-tgz/package/src/ngtsc/util/src/typescript.d.ts

* /opt/cola/permits/1358260446_1657134890.45859/0/compiler-cli-11-0-2-tgz/package/src/ngtsc/typecheck/src/shim.js

* /opt/cola/permits/1358260446_1657134890.45859/0/compiler-cli-11-0-2-tgz/package/src/ngtsc/core/api/src/public_options.d.ts

* /opt/cola/permits/1358260446_1657134890.45859/0/compiler-cli-11-0-2-tgz/package/src/ngtsc/reflection/src/host.d.ts

* /opt/cola/permits/1358260446_1657134890.45859/0/compiler-cli-11-0-2-tgz/package/src/ngtsc/annotations/src/directive.d.ts

* /opt/cola/permits/1358260446_1657134890.45859/0/compiler-cli-11-0-2-tgz/package/ngcc/src/analysis/util.d.ts

* /opt/cola/permits/1358260446_1657134890.45859/0/compiler-cli-11-0-2-tgz/package/src/ngtsc/metadata/src/api.js

* /opt/cola/permits/1358260446_1657134890.45859/0/compiler-cli-11-0-2-tgz/package/src/ngtsc/partial_evaluator/src/result.js

* /opt/cola/permits/1358260446_1657134890.45859/0/compiler-cli-11-0-2-tgz/package/src/ngtsc/annotations/index.d.ts

* /opt/cola/permits/1358260446_1657134890.45859/0/compiler-cli-11-0-2-tgz/package/ngcc/src/analysis/ngcc_references_registry.d.ts

* /opt/cola/permits/1358260446_1657134890.45859/0/compiler-cli-11-0-2-tgz/package/src/metadata/index.js

* /opt/cola/permits/1358260446_1657134890.45859/0/compiler-cli-11-0-2-tgz/package/src/ngtsc/incremental/src/strategy.js

* /opt/cola/permits/1358260446_1657134890.45859/0/compiler-cli-11-0-2-tgz/package/src/metadata/evaluator.d.ts

* /opt/cola/permits/1358260446_1657134890.45859/0/compiler-cli-11-0-2-tgz/package/src/transformers/patch_alias_reference_resolution.js

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* /opt/cola/permits/1358260446_1657134890.45859/0/compiler-cli-11-0-2-tgz/package/src/ngtsc/reflection/src/host.js
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* /opt/cola/permits/1358260446_1657134890.45859/0/compiler-cli-11-0-2-tgz/package/src/ngtsc/metadata/src/inheritance.d.ts
* /opt/cola/permits/1358260446_1657134890.45859/0/compiler-cli-11-0-2-tgz/package/src/ngtsc/perf/src/clock.js
* /opt/cola/permits/1358260446_1657134890.45859/0/compiler-cli-11-0-2-tgz/package/src/ngtsc/resource/src/loader.d.ts
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* /opt/cola/permits/1358260446_1657134890.45859/0/compiler-cli-11-0-2-tgz/package/src/ngtsc/resource/index.js
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* /opt/cola/permits/1358260446_1657134890.45859/0/compiler-cli-11-0-2-tgz/package/src/ngtsc/transform/src/compilation.d.ts
* /opt/cola/permits/1358260446_1657134890.45859/0/compiler-cli-11-0-2-tgz/package/src/transformers/downlevel_decorators_transform.js
* /opt/cola/permits/1358260446_1657134890.45859/0/compiler-cli-11-0-2-tgz/package/ngcc/src/execution/tasks/completion.d.ts
* /opt/cola/permits/1358260446_1657134890.45859/0/compiler-cli-11-0-2-tgz/package/src/ngtsc/typecheck/src/oob.d.ts
* /opt/cola/permits/1358260446_1657134890.45859/0/compiler-cli-11-0-2-tgz/package/ngcc/src/migrations/migration.d.ts
* /opt/cola/permits/1358260446_1657134890.45859/0/compiler-cli-11-0-2-tgz/package/src/ngtsc/cycles/src/imports.js


```
* /opt/cola/permits/1358260446_1657134890.45859/0/compiler-cli-11-0-2-
tgz/package/ngcc/src/locking/lock_file.d.ts
* /opt/cola/permits/1358260446_1657134890.45859/0/compiler-cli-11-0-2-
tgz/package/src/ngtsc/core/api/src/options.js
* /opt/cola/permits/1358260446_1657134890.45859/0/compiler-cli-11-0-2-tgz/package/src/version.js
* /opt/cola/permits/1358260446_1657134890.45859/0/compiler-cli-11-0-2-
tgz/package/src/transformers/r3_transform.js
* /opt/cola/permits/1358260446_1657134890.45859/0/compiler-cli-11-0-2-
tgz/package/src/ngtsc/typecheck/diagnostics/src/id.d.ts
* /opt/cola/permits/1358260446_1657134890.45859/0/compiler-cli-11-0-2-
tgz/package/src/ngtsc/typecheck/src/type_constructor.d.ts
* /opt/cola/permits/1358260446_1657134890.45859/0/compiler-cli-11-0-2-
tgz/package/src/ngtsc/incremental/src/dependency_tracking.js
* /opt/cola/permits/1358260446_1657134890.45859/0/compiler-cli-11-0-2-
tgz/package/ngcc/src/dependencies/esm_dependency_host.d.ts
* /opt/cola/permits/1358260446_1657134890.45859/0/compiler-cli-11-0-2-
tgz/package/ngcc/src/packages/ngcc_compiler_host.d.ts
* /opt/cola/permits/1358260446_1657134890.45859/0/compiler-cli-11-0-2-
tgz/package/src/ngtsc/file_system/index.d.ts
* /opt/cola/permits/1358260446_1657134890.45859/0/compiler-cli-11-0-2-
tgz/package/src/ngtsc/metadata/src/registry.js
* /opt/cola/permits/1358260446_1657134890.45859/0/compiler-cli-11-0-2-
tgz/package/src/ngtsc/translator/src/typescript_translator.js
* /opt/cola/permits/1358260446_1657134890.45859/0/compiler-cli-11-0-2-
tgz/package/src/transformers/metadata_reader.js
* /opt/cola/permits/1358260446_1657134890.45859/0/compiler-cli-11-0-2-
tgz/package/src/ngtsc/scope/src/local.d.ts
* /opt/cola/permits/1358260446_1657134890.45859/0/compiler-cli-11-0-2-
tgz/package/src/ngtsc/partial_evaluator/src/dynamic.js
* /opt/cola/permits/1358260446_1657134890.45859/0/compiler-cli-11-0-2-tgz/package/ngcc/src/rendering/utls.d.ts
No license file was found, but licenses were detected in source scan.
```

```
/**
 * @license
 * Copyright Google LLC All Rights Reserved.
 *
 * Use of this source code is governed by an MIT-style license that can be
 * found in the LICENSE file at https://angular.io/license
 */
/**
 * A host backed by a build system which has a unified view of the module namespace.
 *
 * Such a build system supports the `fileNameToModuleName` method provided by certain build system
 * integrations (such as the integration with Bazel). See the docs on `fileNameToModuleName` for
 * more details.
 */
```

Found in path(s):

```
* /opt/cola/permits/1358260446_1657134890.45859/0/compiler-cli-11-0-2-  
tgz/package/src/ngtsc/core/api/src/interfaces.d.ts
```

No license file was found, but licenses were detected in source scan.

```
/**
```

```
* @license
```

```
* Copyright Google LLC All Rights Reserved.
```

```
*
```

```
* Use of this source code is governed by an MIT-style license that can be
```

```
* found in the LICENSE file at https://angular.io/license
```

```
*/
```

```
/**
```

```
* An `AliasingHost` which exports directives from any file containing an NgModule in which they're
```

```
* declared/exported, under a private symbol name.
```

```
*
```

```
* These exports support cases where an NgModule is imported deeply from an absolute module path
```

```
* (that is, it's not part of an Angular Package Format endpoint), and the compiler needs to
```

```
* import any matched directives/pipes from the same path (to the NgModule file). See README.md for
```

```
* more details.
```

```
*/
```

Found in path(s):

```
* /opt/cola/permits/1358260446_1657134890.45859/0/compiler-cli-11-0-2-tgz/package/src/ngtsc/imports/src/alias.js
```

No license file was found, but licenses were detected in source scan.

```
/**
```

```
* @license
```

```
* Copyright Google LLC All Rights Reserved.
```

```
*
```

```
* Use of this source code is governed by an MIT-style license that can be
```

```
* found in the LICENSE file at https://angular.io/license
```

```
*/
```

```
/**
```

```
* This message should be short and relatively descriptive and should be fixed once it is created.
```

```
* If the reader doesn't recognize the message, it will display the message unmodified. If the
```

```
* reader recognizes the error message is it free to use substitute message the is more
```

```
* descriptive and/or localized.
```

```
*/
```

Found in path(s):

```
* /opt/cola/permits/1358260446_1657134890.45859/0/compiler-cli-11-0-2-tgz/package/src/metadata/schema.d.ts
```

No license file was found, but licenses were detected in source scan.

```
/**
```

```
* @license
```

```
* Copyright Google LLC All Rights Reserved.
```

```
*
```

```
* Use of this source code is governed by an MIT-style license that can be
```

* found in the LICENSE file at <https://angular.io/license>

*/

Found in path(s):

- * /opt/cola/permits/1358260446_1657134890.45859/0/compiler-cli-11-0-2-tgz/package/src/ngtsc/util/src/ts_source_map_bug_29300.js
- * /opt/cola/permits/1358260446_1657134890.45859/0/compiler-cli-11-0-2-tgz/package/src/ngtsc/transform/src/utils.js
- * /opt/cola/permits/1358260446_1657134890.45859/0/compiler-cli-11-0-2-tgz/package/ngcc/src/packages/bundle_program.js
- * /opt/cola/permits/1358260446_1657134890.45859/0/compiler-cli-11-0-2-tgz/package/src/ngtsc/file_system/testing/src/mock_file_system_posix.js
- * /opt/cola/permits/1358260446_1657134890.45859/0/compiler-cli-11-0-2-tgz/package/ngcc/src/rendering/commonjs_rendering_formatter.js
- * /opt/cola/permits/1358260446_1657134890.45859/0/compiler-cli-11-0-2-tgz/package/src/ngtsc/file_system/index.js
- * /opt/cola/permits/1358260446_1657134890.45859/0/compiler-cli-11-0-2-tgz/package/ngcc/src/ngcc_options.js
- * /opt/cola/permits/1358260446_1657134890.45859/0/compiler-cli-11-0-2-tgz/package/ngcc/src/packages/entry_point.js
- * /opt/cola/permits/1358260446_1657134890.45859/0/compiler-cli-11-0-2-tgz/package/src/typescript_support.js
- * /opt/cola/permits/1358260446_1657134890.45859/0/compiler-cli-11-0-2-tgz/package/src/ngtsc/typecheck/src/type_parameter_emitter.js
- * /opt/cola/permits/1358260446_1657134890.45859/0/compiler-cli-11-0-2-tgz/package/src/ngtsc/translator/src/typescript_ast_factory.js
- * /opt/cola/permits/1358260446_1657134890.45859/0/compiler-cli-11-0-2-tgz/package/src/ngtsc/logging/index.js
- * /opt/cola/permits/1358260446_1657134890.45859/0/compiler-cli-11-0-2-tgz/package/src/ngtsc/shims/src/factory_generator.js
- * /opt/cola/permits/1358260446_1657134890.45859/0/compiler-cli-11-0-2-tgz/package/ngcc/src/packages/patch_ts_expando_initializer.js
- * /opt/cola/permits/1358260446_1657134890.45859/0/compiler-cli-11-0-2-tgz/package/src/ngtsc/sourcemaps/src/source_file_loader.js
- * /opt/cola/permits/1358260446_1657134890.45859/0/compiler-cli-11-0-2-tgz/package/index.js
- * /opt/cola/permits/1358260446_1657134890.45859/0/compiler-cli-11-0-2-tgz/package/src/metadata/bundler.js
- * /opt/cola/permits/1358260446_1657134890.45859/0/compiler-cli-11-0-2-tgz/package/ngcc/src/packages/source_file_cache.js
- * /opt/cola/permits/1358260446_1657134890.45859/0/compiler-cli-11-0-2-tgz/package/ngcc/src/host/ngcc_host.js
- * /opt/cola/permits/1358260446_1657134890.45859/0/compiler-cli-11-0-2-tgz/package/ngcc/src/packages/ngcc_compiler_host.js
- * /opt/cola/permits/1358260446_1657134890.45859/0/compiler-cli-11-0-2-tgz/package/src/ngtsc/sourcemaps/src/source_file.js
- * /opt/cola/permits/1358260446_1657134890.45859/0/compiler-cli-11-0-2-tgz/package/ngcc/src/writing/new_entry_point_file_writer.js
- * /opt/cola/permits/1358260446_1657134890.45859/0/compiler-cli-11-0-2-tgz/package/ngcc/src/dependencies/esm_dependency_host.js
- * /opt/cola/permits/1358260446_1657134890.45859/0/compiler-cli-11-0-2-tgz/package/ngcc/src/utils.js
- * /opt/cola/permits/1358260446_1657134890.45859/0/compiler-cli-11-0-2-tgz/package/ngcc/src/execution/tasks/completion.js
- * /opt/cola/permits/1358260446_1657134890.45859/0/compiler-cli-11-0-2-tgz/package/ngcc/src/analysis/util.js

* /opt/cola/permits/1358260446_1657134890.45859/0/compiler-cli-11-0-2-tgz/package/src/ngtsc/translator/src/translator.js
* /opt/cola/permits/1358260446_1657134890.45859/0/compiler-cli-11-0-2-tgz/package/src/ngtsc/typecheck/src/type_check_file.js
* /opt/cola/permits/1358260446_1657134890.45859/0/compiler-cli-11-0-2-tgz/package/ngcc/src/analysis/module_with_providers_analyzer.js
* /opt/cola/permits/1358260446_1657134890.45859/0/compiler-cli-11-0-2-tgz/package/ngcc/src/dependencies/module_resolver.js
* /opt/cola/permits/1358260446_1657134890.45859/0/compiler-cli-11-0-2-tgz/package/ngcc/src/writing/in_place_file_writer.js
* /opt/cola/permits/1358260446_1657134890.45859/0/compiler-cli-11-0-2-tgz/package/src/ngtsc/perf/src/tracking.js
* /opt/cola/permits/1358260446_1657134890.45859/0/compiler-cli-11-0-2-tgz/package/ngcc/src/packages/entry_point_manifest.js
* /opt/cola/permits/1358260446_1657134890.45859/0/compiler-cli-11-0-2-tgz/package/ngcc/src/writing/cleaning/cleaning_strategies.js
* /opt/cola/permits/1358260446_1657134890.45859/0/compiler-cli-11-0-2-tgz/package/ngcc/src/analysis/decoration_analyzer.js
* /opt/cola/permits/1358260446_1657134890.45859/0/compiler-cli-11-0-2-tgz/package/src/ngtsc/imports/src/emitter.js
* /opt/cola/permits/1358260446_1657134890.45859/0/compiler-cli-11-0-2-tgz/package/ngcc/src/rendering/umd_rendering_formatter.js
* /opt/cola/permits/1358260446_1657134890.45859/0/compiler-cli-11-0-2-tgz/package/src/ngtsc/file_system/src/node_js_file_system.js
* /opt/cola/permits/1358260446_1657134890.45859/0/compiler-cli-11-0-2-tgz/package/ngcc/src/rendering/dts_renderer.js
* /opt/cola/permits/1358260446_1657134890.45859/0/compiler-cli-11-0-2-tgz/package/ngcc/main-ngcc.js
* /opt/cola/permits/1358260446_1657134890.45859/0/compiler-cli-11-0-2-tgz/package/src/ngtsc/file_system/testing/src/test_helper.js
* /opt/cola/permits/1358260446_1657134890.45859/0/compiler-cli-11-0-2-tgz/package/src/ngtsc/indexer/src/template.js
* /opt/cola/permits/1358260446_1657134890.45859/0/compiler-cli-11-0-2-tgz/package/src/ngtsc/typecheck/src/type_emitter.js
* /opt/cola/permits/1358260446_1657134890.45859/0/compiler-cli-11-0-2-tgz/package/ngcc/src/locking/lock_file_with_child_process/unlocker.js
* /opt/cola/permits/1358260446_1657134890.45859/0/compiler-cli-11-0-2-tgz/package/ngcc/src/dependencies/commonjs_dependency_host.js
* /opt/cola/permits/1358260446_1657134890.45859/0/compiler-cli-11-0-2-tgz/package/ngcc/src/rendering/renderer.js
* /opt/cola/permits/1358260446_1657134890.45859/0/compiler-cli-11-0-2-tgz/package/ngcc/src/entry_point_finder/utils.js
* /opt/cola/permits/1358260446_1657134890.45859/0/compiler-cli-11-0-2-tgz/package/src/ngtsc/file_system/testing/src/mock_file_system_native.js
* /opt/cola/permits/1358260446_1657134890.45859/0/compiler-cli-11-0-2-tgz/package/ngcc/src/migrations/utils.js
* /opt/cola/permits/1358260446_1657134890.45859/0/compiler-cli-11-0-2-tgz/package/ngcc/src/dependencies/umd_dependency_host.js
* /opt/cola/permits/1358260446_1657134890.45859/0/compiler-cli-11-0-2-tgz/package/ngcc/src/host/utils.js
* /opt/cola/permits/1358260446_1657134890.45859/0/compiler-cli-11-0-2-tgz/package/ngcc/src/locking/lock_file_with_child_process/index.js

* /opt/cola/permits/1358260446_1657134890.45859/0/compiler-cli-11-0-2-tgz/package/ngcc/src/path_mappings.js
* /opt/cola/permits/1358260446_1657134890.45859/0/compiler-cli-11-0-2-tgz/package/ngcc/src/analysis/migration_host.js
* /opt/cola/permits/1358260446_1657134890.45859/0/compiler-cli-11-0-2-tgz/package/ngcc/src/packages/configuration.js
* /opt/cola/permits/1358260446_1657134890.45859/0/compiler-cli-11-0-2-tgz/package/ngcc/src/rendering/source_maps.js
* /opt/cola/permits/1358260446_1657134890.45859/0/compiler-cli-11-0-2-tgz/package/src/ngtsc/file_system/testing/src/mock_file_system_windows.js
* /opt/cola/permits/1358260446_1657134890.45859/0/compiler-cli-11-0-2-tgz/package/ngcc/src/entry_point_finder/targeted_entry_point_finder.js
* /opt/cola/permits/1358260446_1657134890.45859/0/compiler-cli-11-0-2-tgz/package/src/ngtsc/logging/testing/index.js
* /opt/cola/permits/1358260446_1657134890.45859/0/compiler-cli-11-0-2-tgz/package/ngcc/src/command_line_options.js
* /opt/cola/permits/1358260446_1657134890.45859/0/compiler-cli-11-0-2-tgz/package/src/ngtsc/translator/src/import_manager.js
* /opt/cola/permits/1358260446_1657134890.45859/0/compiler-cli-11-0-2-tgz/package/src/ngtsc/typecheck/src/diagnostics.js
* /opt/cola/permits/1358260446_1657134890.45859/0/compiler-cli-11-0-2-tgz/package/ngcc/index.js
* /opt/cola/permits/1358260446_1657134890.45859/0/compiler-cli-11-0-2-tgz/package/ngcc/src/packages/transformer.js
* /opt/cola/permits/1358260446_1657134890.45859/0/compiler-cli-11-0-2-tgz/package/src/ngtsc/util/src/path.js
* /opt/cola/permits/1358260446_1657134890.45859/0/compiler-cli-11-0-2-tgz/package/src/ngtsc/logging/src/console_logger.js
* /opt/cola/permits/1358260446_1657134890.45859/0/compiler-cli-11-0-2-tgz/package/ngcc/src/execution/create_compile_function.js

1.2 zstd 1.3.3+dfsg 2ubuntu1.2

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1.4 nmap 7.80

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On all platforms, Nmap is normally linked with:

o libpcap: Network packet capture library. Distributed with Nmap in the

libpcap subdirectory.

<http://www.tcpdump.org/>

- o libdnet: Networking library, used for low-level tasks such as sending ethernet frames. A modified version is distributed with Nmap in the libdnet-stripped subdirectory. A summary of Nmap-local modifications is in the file NMAP_MODIFICATIONS.

<http://code.google.com/p/libdnet/>

- o PCRE: Perl-compatible regular expressions. PCRE is part of Nmap's version detection and is also made available as an NSE library.

Distributed with Nmap in the libpcre subdirectory.

<http://www.pcre.org/>

- o liblua: Lua programming language. Lua is the implementation language of NSE, the Nmap Scripting Engine. Nmap links with liblua to allow running Lua programs inside Nmap. Distributed with Nmap in the liblua subdirectory. liblua can be omitted by configuring with the --without-liblua configuration directive.

<http://www.lua.org/>

- o OpenSSL: Cryptographic library. OpenSSL is used by service detection and by NSE to connect to SSL services. NSE also provides access to OpenSSL functions such as encryption and digest calculation. OpenSSL can be disabled by configuring with the --without-openssl configuration directive.

<http://www.openssl.org/>

- o LIBLINEAR. Used for IPv6 OS classification.

<http://www.csie.ntu.edu.tw/~cjlin/liblinear/>

- o libsvn. The Subversion library, used by the updater program

nmap-update. <http://subversion.apache.org/>

- o APR (Apache Portable Runtime). Used by libsvn. <http://apr.apache.org/>

On Windows only, Nmap uses:

- o WinPcap: libpcap for Windows. The libpcap license applies to WinPcap, and it also has its own license. A binary copy of the library is distributed with Nmap in the subdirectory mswin32/winpcap.

<http://www.winpcap.org/>

Certain Nmap Scripting Engine scripts use the simplified BSD license in licenses/BSD-simplified.

Zenmap and Ndiff require:

- o Python. The binary distributions of Nmap include a Python interpreter and various libraries, built using either py2exe or py2app.

<http://www.python.org/>

The Windows and Mac OS X binary packages include bundled versions of:

- o GLib, GTK+, ATK, Pango: These libraries are licensed under the GNU LGPL 2, a copy of which is in the file licenses/LGPL-2.

<http://www.gtk.org/>

- o Cairo: graphics library. Dual-licensed under the GNU LGPL 2.1 and the

- MPL 1.1. See the files licenses/LGPL-2.1 and licenses/MPL-1.1.
<http://www.cairographics.org/>
- o libgailutil: Accessibility support for GTK+.
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- o PyGTK, PyGObject: bindings for Python. Licensed under the GNU LGPL 2.1.
<http://www.pygtk.org/>
- o PyCairo: bindings for Python. Dual-licensed under the GNU LGPL 2.1 and the MPL 1.1.

The Mac OS binary packages also include:

- o Various X.org libraries. These were built using MacPorts.
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The basic library functions are written in C and are freestanding. Also included in the distribution is a set of C++ wrapper functions.

THE BASIC LIBRARY FUNCTIONS

Written by: Philip Hazel
Email local part: ph10
Email domain: cam.ac.uk

University of Cambridge Computing Service,
Cambridge, England.

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- * *
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1.13 jaxb-core 2.3.6

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1.14 apt 1.6.14

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1.15 python 3.6.9 1~18.04ubuntu1.7

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Python was created in the early 1990s by Guido van Rossum at Stichting Mathematisch Centrum (CWI, see <http://www.cwi.nl>) in the Netherlands as a successor of a language called ABC. Guido remains Python's principal author, although it includes many contributions from others.

In 1995, Guido continued his work on Python at the Corporation for National Research Initiatives (CNRI, see <http://www.cnri.reston.va.us>) in Reston, Virginia where he released several versions of the software.

In May 2000, Guido and the Python core development team moved to BeOpen.com to form the BeOpen PythonLabs team. In October of the same year, the PythonLabs team moved to Digital Creations (now Zope Corporation, see <http://www.zope.com>). In 2001, the Python Software Foundation (PSF, see <http://www.python.org/psf/>) was formed, a non-profit organization created specifically to own Python-related Intellectual Property. Zope Corporation is a sponsoring member of the PSF.

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2.1.2	2.1.1	2002	PSF	yes
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Mersenne Twister

The ``_random'` module includes code based on a download from ``http://www.math.keio.ac.jp/~matumoto/MT2002/emt19937ar.html'`. The following are the verbatim comments from the original code:

A C-program for MT19937, with initialization improved 2002/1/26.
Coded by Takuji Nishimura and Makoto Matsumoto.

Before using, initialize the state by using `init_genrand(seed)`
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Any feedback is very welcome.
<http://www.math.keio.ac.jp/matsumoto/emt.html>
email: matsumoto@math.keio.ac.jp

Sockets

The ``socket'` module uses the functions, ``getaddrinfo'`, and
``getnameinfo'`, which are coded in separate source files from the WIDE
Project, [`http://www.wide.ad.jp/about/index.html'](http://www.wide.ad.jp/about/index.html).

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Modified by Jack Jansen, CWI, July 1995:

- Use binascii module to do the actual line-by-line conversion between ascii and binary. This results in a 1000-fold speedup. The C version is still 5 times faster, though.
- Arguments more compliant with python standard

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/* Modified by Guido van Rossum */

/* Beep added by Mark Hammond */

/* Win9X Beep and platform identification added by Uncle Timmy */

Files: Tools/pybench/*

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Python was created in the early 1990s by Guido van Rossum at Stichting Mathematisch Centrum (CWI, see <http://www.cwi.nl>) in the Netherlands as a successor of a language called ABC. Guido remains Python's principal author, although it includes many contributions from others.

In 1995, Guido continued his work on Python at the Corporation for National Research Initiatives (CNRI, see <http://www.cnri.reston.va.us>) in Reston, Virginia where he released several versions of the software.

In May 2000, Guido and the Python core development team moved to BeOpen.com to form the BeOpen PythonLabs team. In October of the same year, the PythonLabs team moved to Digital Creations, which became Zope Corporation. In 2001, the Python Software Foundation (PSF, see <https://www.python.org/psf/>) was formed, a non-profit organization created specifically to own Python-related Intellectual Property. Zope Corporation was a sponsoring member of the PSF.

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2.0	1.6	2000	BeOpen.com	no
1.6.1	1.6	2001	CNRI	yes (2)
2.1	2.0+1.6.1	2001	PSF	no
2.0.1	2.0+1.6.1	2001	PSF	yes
2.1.1	2.1+2.0.1	2001	PSF	yes
2.1.2	2.1.1	2002	PSF	yes
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Mersenne Twister

The `_random` module includes code based on a download from
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following are the verbatim comments from the original code:

A C-program for MT19937, with initialization improved 2002/1/26.
Coded by Takuji Nishimura and Makoto Matsumoto.

Before using, initialize the state by using `init_genrand(seed)`
or `init_by_array(init_key, key_length)`.

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Any feedback is very welcome.

<http://www.math.keio.ac.jp/matumoto/emt.html>

email: matumoto@math.keio.ac.jp

Sockets

The ``socket'` module uses the functions, ``getaddrinfo'`, and ``getnameinfo'`, which are coded in separate source files from the WIDE Project, [`http://www.wide.ad.jp/about/index.html'](http://www.wide.ad.jp/about/index.html).

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Modified by Jack Jansen, CWI, July 1995:

- Use binascii module to do the actual line-by-line conversion between ascii and binary. This results in a 1000-fold speedup. The C version is still 5 times faster, though.
- Arguments more compliant with python standard

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Files: Modules/_decimal/libmpdec/*

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/* Beep added by Mark Hammond */

/* Win9X Beep and platform identification added by Uncle Timmy */

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1.19 commons-logging 1.2

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* /opt/cola/permits/1135840457_1613613080.13/0/commons-logging-1-1-sources-9-jar/org/apache/commons/logging/impl/Log4JLogger.java

* /opt/cola/permits/1135840457_1613613080.13/0/commons-logging-1-1-sources-9-jar/org/apache/commons/logging/impl/LogFactoryImpl.java

* /opt/cola/permits/1135840457_1613613080.13/0/commons-logging-1-1-sources-9-jar/org/apache/commons/logging/impl/Jdk13LumberjackLogger.java

* /opt/cola/permits/1135840457_1613613080.13/0/commons-logging-1-1-sources-9-jar/org/apache/commons/logging/impl/SimpleLog.java

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* /opt/cola/permits/1135840457_1613613080.13/0/commons-logging-1-1-sources-9-jar/org/apache/commons/logging/LogSource.java

* /opt/cola/permits/1135840457_1613613080.13/0/commons-logging-1-1-sources-9-jar/org/apache/commons/logging/impl/NoOpLog.java


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* /opt/cola/permits/1135840457_1613613080.13/0/commons-logging-1-1-sources-9-
jar/org/apache/commons/logging/impl/LogKitLogger.java
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1.20 kmod 24 1ubuntu3.5

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```

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```
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under certain conditions; type `show c' for details.
```

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```
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```

```
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```

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1.21 Isb 9.20170808ubuntu1

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Upstream-Name: LSB implementation package

Files: *

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Files: init-functions.d/50-ubuntu-logging

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1.22 shared-mime-info 1.9 2

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1.23 flink-hadoop-fs 1.11.0

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set yrange [0:]

set terminal pngcairo font 'Sans, 8' lw 1 size 1400,1024

set xtics rotate by -45

set style histogram errorbars gap 2 lw 1

set style fill solid border -1

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1.25 jakarta-validation-api 2.0.2

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```

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jar/javax/validation/Validator.java
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* /opt/cola/permits/1135880235_1613624044.2/0/jakarta-validation-api-2-0-2-sources-3-jar/javax/validation/spi/ConfigurationState.java
* /opt/cola/permits/1135880235_1613624044.2/0/jakarta-validation-api-2-0-2-sources-3-jar/javax/validation/Payload.java
* /opt/cola/permits/1135880235_1613624044.2/0/jakarta-validation-api-2-0-2-sources-3-jar/javax/validation/constraints/DecimalMin.java
* /opt/cola/permits/1135880235_1613624044.2/0/jakarta-validation-api-2-0-2-sources-3-jar/javax/validation/constraints/Past.java

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1.26 snake-yaml 1.29

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The implementations of GSSAPI mechglue in GSSAPI-SPNEGO in "src/lib/gssapi", including the following files:

lib/gssapi/generic/gssapi_err_generic.et
lib/gssapi/mechglue/g_accept_sec_context.c
lib/gssapi/mechglue/g_acquire_cred.c
lib/gssapi/mechglue/g_canon_name.c
lib/gssapi/mechglue/g_compare_name.c
lib/gssapi/mechglue/g_context_time.c
lib/gssapi/mechglue/g_delete_sec_context.c
lib/gssapi/mechglue/g_dsp_name.c
lib/gssapi/mechglue/g_dsp_status.c
lib/gssapi/mechglue/g_dup_name.c
lib/gssapi/mechglue/g_exp_sec_context.c
lib/gssapi/mechglue/g_export_name.c
lib/gssapi/mechglue/g_glue.c
lib/gssapi/mechglue/g_imp_name.c
lib/gssapi/mechglue/g_imp_sec_context.c

lib/gssapi/mechglue/g_init_sec_context.c
lib/gssapi/mechglue/g_initialize.c
lib/gssapi/mechglue/g_inquire_context.c
lib/gssapi/mechglue/g_inquire_cred.c
lib/gssapi/mechglue/g_inquire_names.c
lib/gssapi/mechglue/g_process_context.c
lib/gssapi/mechglue/g_rel_buffer.c
lib/gssapi/mechglue/g_rel_cred.c
lib/gssapi/mechglue/g_rel_name.c
lib/gssapi/mechglue/g_rel_oid_set.c
lib/gssapi/mechglue/g_seal.c
lib/gssapi/mechglue/g_sign.c
lib/gssapi/mechglue/g_store_cred.c
lib/gssapi/mechglue/g_unseal.c
lib/gssapi/mechglue/g_userok.c
lib/gssapi/mechglue/g_utils.c
lib/gssapi/mechglue/g_verify.c
lib/gssapi/mechglue/gssd_pname_to_uid.c
lib/gssapi/mechglue/mglueP.h
lib/gssapi/mechglue/oid_ops.c
lib/gssapi/spnego/gssapiP_spnego.h
lib/gssapi/spnego/spnego_mech.c

and the initial implementation of incremental propagation, including the following new or changed files:

include/iprop_hdr.h
kadmin/server/ipropd_svc.c
lib/kdb/iprop.x
lib/kdb/kdb_convert.c
lib/kdb/kdb_log.c
lib/kdb/kdb_log.h
lib/krb5/error_tables/kdb5_err.et
slave/kpropd_rpc.c
slave/kproplog.c

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lib/gss_mechs/mech_krb5/et/kdb5_err.c
lib/gss_mechs/mech_spnego/mech/gssapiP_spnego.h
lib/gss_mechs/mech_spnego/mech/spnego_mech.c
lib/krb5/kadm5/kadm_host_srv_names.c
lib/krb5/kdb/kdb_convert.c
lib/krb5/kdb/kdb_hdr.h
lib/krb5/kdb/kdb_log.c
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lib/libgss/g_utils.c
lib/libgss/g_verify.c
lib/libgss/gssd_pname_to_uid.c
uts/common/gssapi/include/gssapi_err_generic.h

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Julian Seward, jseward@bzip.org
bzip2/libbzip2 version 1.0.6 of 6 September 2010

abstract: 'Build and install Perl modules'

author:

- 'Ken Williams <kwilliams@cpan.org>'

- "Development questions, bug reports, and patches should be sent to the\nModule-Build mailing list at <module-

build@perl.org>."
build_requires:
File::Temp: 0.15
Test::Harness: 3.16
Test::More: 0.49
generated_by: 'Module::Build version 0.3608'
license: gpl
meta-spec:
url: <http://module-build.sourceforge.net/META-spec-v1.4.html>
version: 1.4
name: Module-Build
resources:
MailingList: <mailto:module-build@perl.org>
license: <http://dev.perl.org/licenses/>
repository: <http://github.com/dagolden/module-build/>
version: 3

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```

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the Free Software Foundation; either version 1, or (at your option)  
any later version.
```

```
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```

```
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```

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```
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This is free software, and you are welcome to redistribute it  
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```

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<signature of Ty Coon>, 1 April 1989

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<one line to give the program's name and a brief idea of what it does.>

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```
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under certain conditions; type `show c' for details.
```

The hypothetical commands `show w' and `show c' should show the appropriate parts of the General Public License. Of course, the commands you use may be called something other than `show w' and `show c'; they could even be mouse-clicks or menu items--whatever suits your program.

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```
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program `Gnomovision' (a program to direct compilers to make passes
at assemblers) written by James Hacker.
```

```
<signature of Ty Coon>, 1 April 1989
Ty Coon, President of Vice
```

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The End

```
#!/perl
```

```
=head1 NAME
```

```
copyright.t
```

```
=head1 DESCRIPTION
```

Tests that the latest copyright years in the top-level README file and the C<perl -v> output match each other.

If the test fails, update at least one of README and perl.c so that they match reality.

Optionally you can pass the C<--now> option to check they are at the current year. This isn't checked by default, so that it doesn't fail for people working on older releases. It should be run before making a new release.

```
=cut
```

```
use strict;
```

```
use Config;
```

```
BEGIN { require './test.pl' }
```

```
if ( $Config{usecrosscompile} ) {
```

```
    skip_all( "Not all files are available during cross-compilation" );
```

```
}
```

```
my ($opt) = @ARGV;
```

```
my $readme_year = readme_year();
```

```
my $v_year = v_year();
```

```
# Check that both copyright dates are up-to-date, but only if requested, so
```

```
# that tests still pass for people intentionally working on older versions:
```

```
if ($opt eq '--now')
```

```
{
```

```
    my $current_year = (gmtime)[5] + 1900;
```

```
    is $v_year, $current_year, 'perl -v copyright includes current year';
```

```
    is $readme_year, $current_year, 'README copyright includes current year';
```

```

}

# Otherwise simply check that the two copyright dates match each other:
else
{
is $readme_year, $v_year, 'README and perl -v copyright dates match';
}

done_testing;

sub readme_year
# returns the latest copyright year from the top-level README file
{

open my $readme, '<', './README' or die "Opening README failed: $!";

# The copyright message is the first paragraph:
local $/ = "";
my $copyright_msg = <$readme>;

my ($year) = $copyright_msg =~ /\b(\d{4,})/s
    or die "Year not found in README copyright message '$copyright_msg'";

$year;
}

sub v_year
# returns the latest copyright year shown in perl -v
{

my $output = runperl switches => ['-v'];
my ($year) = $output =~ /copyright 1987.*\b(\d{4,})/i
    or die "Copyright statement not found in perl -v output '$output'";

$year;
}

```

1.29 pygobject 3.26.1

1.29.1 Available under license :

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Version 2.1, February 1999

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1.30 protractor-html-reporter 1.3.2

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1.31 flink-queryable-state-client-java 1.11.0

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1.32 libxml2 2.9.4+dfsg1-6.1ubuntu1.6

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1.33 zone 0.10.3

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1.34 libmemcached11 1.0.18-

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1.35 keyutils 1.5.9-9.2ubuntu2.1

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1.36 xdg-user-dirs 0.17 1ubuntu1

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* Added generation of field number constants.

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* Fixed initialization ordering problem in logging code.

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* Small patch improving performance of in Python serialization.

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* Emacs mode for Protocol Buffers (editors/protobuf-mode.el).

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* Added Swap(), SwapElements(), and RemoveLast() to Reflection interface.

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* HPUX support.

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* Detect whether zlib is new enough in configure script.

* Fixes for Solaris 10 32/64-bit confusion.

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* Optimize Java serialization code when writing a small message to a stream.

* Optimize Java serialization of strings so that UTF-8 encoding happens only once per string per serialization call.

* Clean up some Java warnings.

* Fix bug with permanent callbacks that delete themselves when run.

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* Added CodedInputStream.getTotalBytesRead().

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* Fixed m4/acx_pthread.m4 problem for some Linux distributions.

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* Fixed detection of sched_yield on Solaris.

* Added atomicops for Solaris

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MySQL 5.7.28 (and later)

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Janson

Janson 2.6

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jemalloc

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lib_sql.cc

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Version 3.1, 31 March 2009

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libssh v0.7.3

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LZ4

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md5 (Message-Digest Algorithm 5)

md5 (Message-Digest Algorithm 5)

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The code has been modified by Mikael Ronstroem to handle
calculating a hash value of a key that is always a multiple
of 4 bytes long. Word 0 of the calculated 4-word hash value
is returned as the hash value.

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MeCab

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nt_servc (Windows NT Service class library)

Windows NT Service class library

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SHA-1 in C

SHA-1 in C

SHA-1 in C

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zlib

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5. A program that contains no derivative of any portion of the Library, but is designed to work with the Library by being compiled or linked with it, is called a "work that uses the Library". Such a work, in isolation, is not a derivative work of the Library, and therefore falls outside the scope of this License.

However, linking a "work that uses the Library" with the Library creates an executable that is a derivative of the Library (because it contains portions of the Library), rather than a "work that uses the library". The executable is therefore covered by this License. Section 6 states terms for distribution of such executables.

When a "work that uses the Library" uses material from a header file that is part of the Library, the object code for the work may be a derivative work of the Library even though the source code is not. Whether this is true is especially significant if the work can be linked without the Library, or if the work is itself a library. The threshold for this to be true is not precisely defined by law.

If such an object file uses only numerical parameters, data structure layouts and accessors, and small macros and small inline functions (ten lines or less in length), then the use of the object file is unrestricted, regardless of whether it is legally a derivative work. (Executables containing this object code plus portions of the Library will still fall under Section 6.)

Otherwise, if the work is a derivative of the Library, you may distribute the object code for the work under the terms of Section 6. Any executables containing that work also fall under Section 6, whether or not they are linked directly with the Library itself.

6. As an exception to the Sections above, you may also combine or link a "work that uses the Library" with the Library to produce a work containing portions of the Library, and distribute that work under terms of your choice, provided that the terms permit modification of the work for the customer's own use and reverse engineering for debugging such modifications.

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b) Use a suitable shared library mechanism for linking with the Library. A suitable mechanism is one that (1) uses at run time a copy of the library already present on the user's computer system, rather than copying library functions into the executable, and (2) will operate properly with a modified version of the library, if the user installs one, as long as the modified version is interface-compatible with the version that the work was made with.

c) Accompany the work with a written offer, valid for at least three years, to give the same user the materials specified in Subsection 6a, above, for a charge no more than the cost of performing this distribution.

d) If distribution of the work is made by offering access to copy from a designated place, offer equivalent access to copy the above specified materials from the same place.

e) Verify that the user has already received a copy of these materials or that you have already sent this user a copy.

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```

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```
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`Gnomovision' (which makes passes at compilers) written by James Hacker.
```

```
<signature of Ty Coon>, 1 April 1989
Ty Coon, President of Vice
```

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On Debian GNU/Linux systems, the complete text of the GNU General Public License can be found in `~/usr/share/common-licenses/GPL-2'`.

Send patches to sysvinit-devel@nongnu.org

The of the start-stop-daemon

- * A rewrite of the original Debian's start-stop-daemon Perl script
- * in C (faster - it is executed many times during system startup).
- *
- * Written by Marek Michalkiewicz <marekm@i17linuxb.ists.pwr.wroc.pl>,
- * public domain.

1.43 angular-compiler 11.0.2

1.43.1 Available under license :

No license file was found, but licenses were detected in source scan.

Angular
=====

The sources for this package are in the main [Angular](<https://github.com/angular/angular>) repo. Please file issues and pull requests against that repo.

Usage information and reference details can be found in [Angular documentation](<https://angular.io/docs>).

License: MIT

Found in path(s):

* `/opt/cola/permits/1358260597_1657134837.1052659/0/compiler-11-0-2-tgz/package/README.md`

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/**

* @license Angular v11.0.2

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*/

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***** */

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Found in path(s):

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B,eAAiB,MAEIV,GAai+3C,EAAoB,CAEPB,IAAIgC,EAA0BzqF,KAAKk4E,oBAC/BwS,EAAMbtB,GAAYB,cA
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AI/5D,IACtCg6D,EAawB5qF,KAAK0pF,sBAAqB,EAAM3B,EAAG5ID,EAAYmmD,EAaiC,GAai1wE,EAaQu
L,WAAy,GAaiwnE,GACzIE,EAauB7qF,KAAK4pF,2BAA2B7B,EAAQO,EAaiCqC,GACpG3qF,KAAKqF,gD
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AAU0zC, iBAAmB, SAAUM, EAAI3zB, GACjEA, EAAQjf, KAAKIC, KAAK4pG, uBAAuB90D, EAAGpgC, KAAMo
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F, EAAMyO, GACzE, OAAO, IAAIwF, GAAiB62B, GAA0B9qC, GAAyB, GAAQyO, IEpFwmF, EArcmC, IA6F9C, S
AASP, GAAuBp1C, GAC5B, OAAO, IAAIvrC, GAAa, GAAI, IAAI0nC, GAAGB6D, EAAUA, IAI9D, IAI161C, GAA8B
, IAAIj5E, IAAI, CAAC, WAEvCk5E, GAA0B, IAAIhwF, IAAI, CAAC, CAAC, SAAU+qB, GAAC2H, eAAgB, CAAC,
WAAy3H, GAAC4H, iBAaKB, CAAC, OAAQ5H, GAAC6H, eACHj9D, GAAuB, CAAC, IAAK, KAAM, KAAM, MA
E7C, SAASC, GAASBxID, EAAOp5B, GACIC, OAAO+G, GAAOT, GAnrYC, MAmrYsBpM, WAAWgN, GAAQkyB,
GAAQ, MAAM, GAAQp5B, GAEIF, SAAS6+E, GAA+BC, EAAUC, EAAaC, QACvC, IAAhBD, IAA0BA, EAAC, WA
C9B, IAAVC, IAAoBA, EAAQ, MACHc, IAAInF, EAAOgnF, EAAShNF, KAAMxO, EAAOw1F, EAASx1F, KAAMq7
B, EAASm6D, EAASn6D, OAAQ3K, EAAQ8kE, EAAS9kE, MAAO0K, EAAUo6D, EAASp6D, QACrH, GAAIC, IAA
W+5D, GAAwBjnE, IAAIkN, GACvC, MAAM, IAAIptC, MAAM, 6BAA+BotC, EAAS, kBAAoBr7B, EAAO, uDAAy
DIU, MAAMinD, KAAKqiD, GAAwBv4E, QAAU, KAE7L, IACI+nC, EAA2B, IAAI1oC, IAC/By5E, EAAKc, OAAVD
, GAAyC, IAAvBA, EAAME, aACHd54E, GAjsYW, OAKsYX04E, EAAMG, 4BAA4B, GACICC, EAACzx, GAAqBqx
C, EAAOC, EAASBv6D, EAAS, KAAK, WAAc, OAAO3tC, GAAM, 8BAAgC+nG, EAAS16D, YAAaspB, EAA0BuwC,
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E, EAAWlpB, KAAKwd, MAAM0L, EAAyhpB, EAASgoG, EAAMM, 0BAErDt/E, EAAWlpB, KAAKwd, MAAM0L,
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T, GAAe3sE, GAAMb2sE, GAC3CU, EAAS, GACTvx, EAAYbZ2B, IAfL, WAgBpBgoE, EAAO3oG, KAAK, IAAIgp
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N1B, CAaec, kBAAmB, GAAIC, iBAaKB, KAO9C1rG, KAAKkhD, aAAeA, EACpBlhD, KAAKuwD, MAAQA, EAC
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AWI8D,EA AQ,IAAoBI/B,OA EtC,GA A8B,MAA1Bk/B,EA AQ,GA AwB,CACrC,GA AQb,iBA AVI/B,EA EP,MAA
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A,EA AWtV,WAAYA,EAAY0e,kBA AmBA,GA UtG,SAAS2D,GA AmB5+B,EA AU9D,GACIC,IAAIi8F,EA AUx
D,GA AkBr7B,GAG5BqG,EA AgBmzB,KAGpB,OFAnzB,EA ActH,6BAA6B8/B,EA ASj8F,GACpDyJE,EA AchI,
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35E,EA AW25E,UACtBm0B,aAAc9tG,EA AW8tG,aACzBthH,WAAyWt,EA AWxT,WACvBhC,QAASwV,EA AWxV,QACpBzf,MAAOg4D,GAA+B,CACICC,4BAA6B,SAAUC,GAA Y,OAAOpmD,EAAMwzH,6BAA6BrwG,EA AWxT,WAA Yy2C,IACpHC,0BAA2B,SAAUtoC,GAAQ,OAAO/d,EAAM2zH,2BAA2BxwG,EA AWxT,WAA Y oO,IAC5GuoC,oBAAqB,SAAUplD,EAAMklD,GAA Y,OAAOpmD,EAAM6zH,qBAAqB1wG,EAAYjiB,EAAMkl D,KACtGjjC,EA AWj1B,SAGtB0+H,EAAYt/H,UAAU6iI,uBAAyB,WAC3C,IAAI9jI,EAAOG,KACP8nI,EA AqB, EACrB9D,EAAsB,GACtBJ,EA AWB,GACxBC,EA Ae7jI,KAAK+xC,MAAMt2B,KAAI,SAAUjc,EAAS8wG,GACj D,IAAIz7F,EA AKrV,IAAWgkI,EA AU3uH,EAAG2uH,QAASD,EAAY1uH,EAAG0uH,UAAWmD,EA AmB7xH, EAAG6xH,iBA AkB9B,EA AiB/vH,EAAG+vH,eAAgBzhH,EA AatO,EAAGsO,WaehK,OAdIyhH,GACAZ,EA Ao B9hI,KAAKwd,MAAMskH,EA AqB5hI,EAAS2II,EA AuBz3B,EA AWntF,EAAYyhH,GAAgB,KAE3H8B,GACA9 C,EAAsB1hI,KAAKwd,MAAMkkH,EA AuBxhI,EAAS2II,EA AuBz3B,EA AWntF,EAAYujH,GAA+B,OAAZnD,G AA2D,KAU1LpyG,GAH0B,EA AZoyG,EACjB,IAAIj3G,GAAU,CAACs2G,GAAUj/G,OAAO,IAAIA,OAAO,IAA K6/G,IACHDA,EACuDrG,MAE/D,MAAO,CAAE6gH,oBAAqBA,EA AqBJ,sBA AuBA,EA AuBC,aAAcA,GAC/G ,SAASke,EA AuBz3B,EA AWntF,EAAY6F,EA Ag/G,GACHe,IAAI5D,EA Ac,GACdh0G,EA AqPH,EAAYvN,KA AI,SAAU5G,GACIC,IAAIsO,EA AatO,EAAGsO,WAA YhC,EA AUtM,EAAGsM,QACzCg4C,EAAY,GA AK2uE,I AEjBhzH,EA AKsmD,GADUj6C,IAAY4hH,GAAWljI,EA AO,KACHshB,EA HgBtM,EA AGnT,MAGHy3D,EA W8B,GAA YmmE,SAA4BjmE,EA AcrmD,EA AGqmD,YAEII,OADAipE,EAAYliI,KAAKwd,MAAM0kH,EA Aahi I,EADmE0S,EA AGyb,MACvD9U,KAAI,SAAUsS,GAAQ,OAAOiD,GAAmCjD,EAAM5K,QACIHgO,GAAoCgq C,EA Aah4C,MAK5D,OAH16F,EAAYxnB,QAAUwmI,IACtB5D,EAAYliI,KAAK8uB,GAAmCk2G,GAAc52B,E AA WlgF,GAAO9J,SAAUnD,IAE3FihH,IAGfhE,EAAYt/H,UAAUkkl,4BAA8B,SAAU10B,EA AW23B,GACrE,I AgBIC,EAhBA10H,EA AQxT,KACRmOI,EA AmB,GACnBC,EA A0B,EAe9B,GAdAH,EAASzzH,SAAQ,SAAUK, GACvB,IAAIsM,EA AUtM,EAAGsM,QAAS+oF,EA AWr1F,EAAGq1F,SAAU03B,EAAS/sH,EAAG+sH,OAC1D zoE,EAAY,GA AKivE,IAEjBtzH,EA AKikD,GADU53C,IAAY4hH,GAAWvvH,EA AQ,KACN2N,EAAS+oF,EA Sp6D,QAASqpB,GAA8BN,EA Ae/jD,EAAG+jD,aACnHwvE,EADuFvzH,EA AGyb,MAE1FsoC,GACAwvE,EA UnmI,KAAK+gI,GA AkB3nH,IAAIu9C,EA Aav0D,IAAI2+H,KAAoB38G,UAE9E,IAAI/S,EA AKwyH,GAA0B77 B,EA AU03B,GACzC0G,EA AgBtC,GADgDzyH,EA AGw8B,OAAoBx8B,EA AGmB,MAE9FyzH,EA AiBjmI,KAA K8uB,GAAmC,IAAI5B,GAAOkD,GAAQg2G,GAAe7jH,UAAUu+G,IAAiBqF,GAA Yn+B,EAAS/mF,gBAG3Igl H,EA AiB3mI,OAAS,EAAG,CAC7B,IAAI8iI,EA AW,CAACrB,GA AkB3nH,IAAIgX,IAAQ,IAAOHL,WAAWpF, MAC3DliB,KAAK6IE,UAAUnlC,QAAUjQ,GAAiB03G,GA AkBtIG,IAAIkgG,GAASruH,OAC1E4vH,EAASpiI,K AAK6gl,GAASznH,IAAIunH,GAASr0H,KAAK,cAAc8Y,WAAWtnB,KAAKg+B,WAE3EkqG,EA AgB//G,GAA G,CACf,IAAI+C,GAAQ23G,GAASnuH,KAAMsN,IAC3B,IAAIkI,GAAQ83G,GAAetuH,KAAMsN,IACjC,IAAIk J,GAAQstC,GAAiBtoB,MAAMx7B,KAAMsN,KAC1C5f,EAASkiI,EA AU6D,EA AkB,CAAC,IAAI/5G,GAAgB60 G,MAAsBjhH,SAGnFkmH,EA AgBz7G,GAEpB,OAAOy7G,GAEX9H,EAAYt/H,UAAUq3E,eAAiB,SAAUpoD,E AAK5O,KACtDi/G,EAAYt/H,UAAUg3E,uBAAyB,SAAU/nD,EA AK5O,KAC9Di/G,EAAYt/H,UAAUuwC,eAAi B,SAAUthB,EA AK5O,KACtDi/G,EAAYt/H,UAAUqwC,cAAgB,SAAUphB,EA AK5O,KACrDi/G,EAAYt/H,UA AUk2E,WAAa,SAAUjnD,EA AK5O,KACIdi/G,EAAYt/H,UAAU+1E,qBAAuB,SAAU9mD,EA AK5O,KAC5Di/G ,EAAYt/H,UAAU21E,UAA Y,SAAU1mD,EA AK5O,KAC1Ci/G,EA3pBuB,GAquBIC,SAAS8G,GAAc52B,EA AW lGf,GAC9B,OACW0yG,GAAUn/G,OAdjByM,EAAM5uB,OAAS,GACS,CAACqhI,GAAUvwG,GAAQg+E,GAA Yh+E,GAAQ,GA AkBL,GA AW7B,IAGpEhuB,EAAS,CAACygI,GAAUvwG,GAAQg+E,GAA Yh+E,GAAQ,IA Ak BIC,IAGIG,SAASu3G,GAAgBr3B,EA AWi4B,EAAYvhH,GAC5C,OAAO2K,GAAW2H,GAA YmD,aAAa9Y,OA AO,CAC9Ck/G,GAAUvwG,GAAQg+E,GAA Yh+E,GAAQi2G,GAAavhH,IAG3D,SAAS++G,GAA0B77B,EA AU 03B,GACzC,OAAI13B,EAAS5xC,YACF,CACH5jD,KAAM,IAAMw1F,EAASx1F,KAAO,IAAMw1F,EAAS9kE, MAC3C2K,OAAQ6xF,GAAUA,EA AO5pD,UAAU4C,YAAc,YAAc,MAI5DwqE,EAGf,SAASo5B,GAA4BriF,G AUjC,OATY,GAGRA,EAAM9jC,OAAS8jC,EAAM05D,OACZ,UAGA,WAIjB,SAASqrB,GAAqBj2F,EA QR7B, GACIC,OAAOq7B,EAASA,EAAS,IAAMr7B,EA AOA,EAM1C,IAAI8zH,GAA+B,WAC/B,SAASA,EA AcziD,EA AaohC,EA AeC,EA AgBkF,QAC/C,IAAZA,IAAsBA,EA AU,MACpCtsH,KAAK+IF,YAAcA,EACnB/IF,KAAKmn H,cAAgBA,EACrBnnH,KAAKonH,eAAiBA,EACtBpnH,KAAKssH,QAAUA,EACftsH,KAAKynH,UAA Y,GAGD rB,OA9CA+gB,EA Ac1nI,UAAU2nI,mBAAqB,SAAUnZ,EAAMprF,EA AK6kC,GAC9D,IAAI0D,EACA6zH,EA AmB1oI,KAAK+IF,YAA Y/tE,MAAMs3G,EAAMprF,EA AK,CAAE2kC,wBAAwB,EAAME,oBAAqBA,IAC9G,

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OAAO+mD,eAAe3nD,EAAS,aAAc,CAAEiC,OAAO","sourcesContent":["/**\n * @license Angular v11.0.2\n *
(c) 2010-2020 Google LLC. https://angular.io\n * License: MIT\n */\n\n(function (global, factory) {\n  typeof
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define.amd ? define('@angular/compiler', ['exports'], factory) :\n  (global = global || self, factory((global.ng =
global.ng || {}, global.ng.compiler = {})));\n})(this, (function (exports) { 'use strict';\n\n /*!
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DAMAGES WHATSOEVER RESULTING FROM\n LOSS OF USE, DATA OR PROFITS, WHETHER IN AN
ACTION OF CONTRACT, NEGLIGENCE OR\n OTHER TORTIOUS ACTION, ARISING OUT OF OR IN
CONNECTION WITH THE USE OR\n PERFORMANCE OF THIS SOFTWARE.\n
*****\n /* global
Reflect, Promise *\n\n var extendStatics = function (d, b) {\n  extendStatics = Object.setPrototypeOf ||\n
({ __proto__: [] } instanceof Array && function (d, b) { d.__proto__ = b; }) ||\n  function (d, b) { for (var p in
b)\n    if (b.hasOwnProperty(p))\n      d[p] = b[p]; }; return extendStatics(d, b);\n};\n\n function __extends(d, b) {\n  extendStatics(d, b);\n  function __() { this.constructor = d; }\n  d.prototype
= b === null ? Object.create(b) : (__proto__ = b.prototype, new __());\n}\n\n var __assign = function () {\n
__assign = Object.assign || function __assign(t) {\n  for (var s, i = 1, n = arguments.length; i < n; i++) {\n
s = arguments[i];\n  for (var p in s)\n    if (Object.prototype.hasOwnProperty.call(s, p))\n      t[p] = s[p];\n  }\n  return t;\n};\n\n return __assign.apply(this, arguments);\n};\n\n function __rest(s, e) {\n  var t = {};\n  for (var p in s)\n    if (Object.prototype.hasOwnProperty.call(s, p)
&& e.indexOf(p) < 0)\n      t[p] = s[p];\n  if (s != null && typeof Object.getPrototypeOf ===
"function")\n    for (var i = 0, p = Object.getPrototypeOf(s); i < p.length; i++)\n      if
(e.indexOf(p[i]) < 0 && Object.prototype.propertyIsEnumerable.call(s, p[i]))\n        t[p[i]] = s[p[i]];\n  }\n  return t;\n}\n\n function __decorate(decorators, target, key, desc) {\n  var c = arguments.length, r = c
< 3 ? target : desc === null ? desc = Object.getOwnPropertyDescriptor(target, key) : desc, d;\n  if (typeof Reflect
=== "object" && typeof Reflect.decorate === "function")\n    r = Reflect.decorate(decorators, target, key,
desc);\n  else\n    for (var i = decorators.length - 1; i >= 0; i--)\n      if (d = decorators[i])\n        r = (c < 3 ? d(r) : c > 3 ? d(target, key, r) : d(target, key)) || r;\n  return c > 3 && r &&
Object.defineProperty(target, key, r, r);\n}\n\n function __param(paramIndex, decorator) {\n  return function
(target, key) { decorator(target, key, paramIndex); }\n}\n\n function __metadata(metadataKey, metadataValue)
{\n  if (typeof Reflect === "object" && typeof Reflect.metadata === "function")\n    return
Reflect.metadata(metadataKey, metadataValue);\n}\n\n function __awaiter(thisArg, _arguments, P, generator) {\n
function adopt(value) { return value instanceof P ? value : new P(function (resolve) { resolve(value); }); }\n
return new (P || (P = Promise))(function (resolve, reject) {\n  function fulfilled(value) { try {\n
step(generator.next(value));\n  }\n  catch (e) {\n    reject(e);\n  }\n  function
rejected(value) { try {\n    step(generator["throw"](value));\n  }\n  catch (e) {\n
reject(e);\n  }\n  function step(result) { result.done ? resolve(result.value) :
adopt(result.value).then(fulfilled, rejected); }\n  step((generator = generator.apply(thisArg, _arguments ||

```

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    []).next());\n    });\n  }\n  function __generator(thisArg, body) {\n    var _ = { label: 0, sent: function () { if\n    (t[0] & 1)\n      throw t[1]; return t[1]; }, trys: [], ops: [] }, f, y, t, g;\n    return g = { next: verb(0), \"throw\":\n    verb(1), \"return\": verb(2) }, typeof Symbol === \"function\" && (g[Symbol.iterator] = function () { return this; }),\n    g;\n    function verb(n) { return function (v) { return step([n, v]); }; }\n    function step(op) {\n      if (f)\n        throw new TypeError(\"Generator is already executing.\");\n      while (!_)\n        try {\n          if\n            (f = 1, y && (t = op[0] & 2 ? y[\"return\"] : op[0] ? y[\"throw\"] || ((t = y[\"return\"] && t.call(y, 0) : y.next) &&\n            !(t = t.call(y, op[1])).done)\n              return t;\n          if (y = 0, t)\n            op = [op[0] & 2,\n            t.value];\n          switch (op[0]) {\n            case 0:\n              t = op;\n              break;\n            case 4:\n              _label++;\n              return { value: op[1],\n              done: false };;\n            case 5:\n              _label++;\n              y = op[1];\n              op = [0];\n              continue;\n            case 7:\n              op = _ops.pop();\n              _trys.pop();\n              continue;\n            default:\n              if (!(t = _trys, t = t.length > 0\n              && t[t.length - 1]) && (op[0] === 6 || op[0] === 2)) {\n                _ = 0;\n                continue;\n              }\n              if (op[0] === 3 && (!t || (op[1] > t[0] && op[1] < t[3]))) {\n                _label = op[1];\n                break;\n              }\n              if (op[0] === 6 && _label <\n              t[1]) {\n                _label = t[1];\n                t = op;\n                break;\n              }\n              if (t && _label < t[2]) {\n                _label = t[2];\n                _ops.push(op);\n                break;\n              }\n              if (t[2])\n                _ops.pop();\n              _trys.pop();\n              continue;\n            }\n            op =\n            body.call(thisArg, _);\n          }\n          catch (e) {\n            op = [6, e];\n            y = 0;\n          }\n          finally {\n            f = t = 0;\n          }\n          if (op[0] & 5)\n            throw op[1];\n          return { value: op[0] ? op[1] : void 0, done: true }; }\n        }\n        var __createBinding = Object.create ? (function\n        (o, m, k, k2) {\n          if (k2 === undefined)\n            k2 = k;\n          Object.defineProperty(o, k2, { enumerable: true,\n          get: function () { return m[k]; } });\n        }) : (function (o, m, k, k2) {\n          if (k2 === undefined)\n            k2 = k;\n          o[k2] = m[k];\n        });\n        function __exportStar(m, exports) {\n          for (var p in m)\n            if (p !== \"default\" && !exports.hasOwnProperty(p))\n              __createBinding(exports, m, p);\n        }\n        function __values(o) {\n          var s = typeof Symbol === \"function\" && Symbol.iterator, m = s && o[s], i = 0;\n          if (m)\n            return\n            m.call(o);\n          if (o && typeof o.length === \"number\")\n            return {\n              next: function () {\n                if (o && i >= o.length)\n                  o = void 0;\n                return { value: o && o[i++], done: !o }; }\n            };\n          throw new TypeError(s ? \"Object is not iterable.\" : \"Symbol.iterator is not defined.\");\n        }\n        function __read(o, n) {\n          var m = typeof Symbol === \"function\" && o[Symbol.iterator];\n          if (!m)\n            return o;\n          var i = m.call(o), r, ar = [], e;\n          try {\n            while ((n === void 0 || n-- > 0) && !(r =\n            i.next()).done)\n              ar.push(r.value);\n          }\n          catch (error) {\n            e = { error: error }; }\n          finally {\n            try {\n              if (r && !r.done && (m = i[\"return\"])\n              )\n                m.call(i);\n            }\n            finally {\n              if (e)\n                throw e.error;\n            }\n          }\n          return ar;\n        }\n        function\n        __spread() {\n          for (var ar = [], i = 0; i < arguments.length; i++)\n            ar = ar.concat(__read(arguments[i]));\n          return ar;\n        }\n        function __spreadArrays() {\n          for (var s = 0, i = 0, il = arguments.length; i < il; i++)\n            s += arguments[i].length;\n          for (var r = Array(s), k = 0, i = 0; i < il; i++)\n            for (var a = arguments[i], j = 0, jl = a.length; j < jl; j++, k++)\n              r[k] = a[j];\n          return r;\n        }\n        function __await(v) {\n          return this instanceof __await ? (this.v = v, this) : new __await(v);\n        }\n        function __asyncGenerator(thisArg,\n        _arguments, generator) {\n          if (!Symbol.asyncIterator)\n            throw new TypeError(\"Symbol.asyncIterator is\n            not defined.\");\n          var g = generator.apply(thisArg, _arguments || []), i, q = [];\n          return i = { }, verb(\"next\"),\n          verb(\"throw\"), verb(\"return\"), i[Symbol.asyncIterator] = function () { return this; }, i;\n          function verb(n) { if\n            (g[n])\n              i[n] = function (v) { return new Promise(function (a, b) { q.push([n, v, a, b]) > 1 || resume(n, v); }); }\n            };\n          function resume(n, v) { try {\n            step(g[n](v));\n          }\n          catch (e) {\n            settle(q[0][3], e);\n          }\n          }\n          function step(r) { r.value instanceof __await ? Promise.resolve(r.value.v).then(fulfill, reject) :\n          settle(q[0][2], r); }\n          function fulfill(value) { resume(\"next\", value); }\n          function reject(value) {\n            resume(\"throw\", value); }\n          function settle(f, v) { if (f(v), q.shift(), q.length)\n            resume(q[0][0], q[0][1]);\n        }

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}\n }\n function __asyncDelegator(o) {\n     var i, p;\n     return i = {}, verb("next"), verb("throw",
function (e) { throw e; }, verb("return"), i[Symbol.iterator] = function () { return this; }, i);\n     function verb(n,
f) { i[n] = o[n] ? function (v) { return (p = !p) ? { value: __await(o[n](v)), done: n === "return" } : f ? f(v) : v; } : f;
}\n }\n function __asyncValues(o) {\n     if (!Symbol.asyncIterator)\n         throw new
TypeError("Symbol.asyncIterator is not defined.");\n     var m = o[Symbol.asyncIterator], i;\n     return m ?
m.call(o) : (o = typeof __values === "function" ? __values(o) : o[Symbol.iterator](), i = {}, verb("next"),
verb("throw"), verb("return"), i[Symbol.asyncIterator] = function () { return this; }, i);\n     function verb(n) {
i[n] = o[n] && function (v) { return new Promise(function (resolve, reject) { v = o[n](v), settle(resolve, reject,
v.done, v.value); }); }; }\n     function settle(resolve, reject, d, v) { Promise.resolve(v).then(function (v) {
resolve({ value: v, done: d }); }, reject); }\n }\n function __makeTemplateObject(cooked, raw) {\n     if
(Object.defineProperty) {\n         Object.defineProperty(cooked, "raw", { value: raw });\n     }\n     else {\n
        cooked.raw = raw;\n     }\n     return cooked;\n }\n ;\n var __setModuleDefault = Object.create ?
(function (o, v) {\n     Object.defineProperty(o, "default", { enumerable: true, value: v });\n }) : function (o, v)
{\n     o["default"] = v;\n };;\n function __importStar(mod) {\n     if (mod && mod.__esModule)\n         return mod;\n     var result = {};\n     if (mod != null)\n         for (var k in mod)\n             if
(Object.hasOwnProperty.call(mod, k))\n                 __createBinding(result, mod, k);\n     __setModuleDefault(result, mod);\n     return result;\n }\n function __importDefault(mod) {\n     return (mod
&& mod.__esModule) ? mod : { default: mod }; }\n }\n function __classPrivateFieldGet(receiver, privateMap)
{\n     if (!privateMap.has(receiver)) {\n         throw new TypeError("attempted to get private field on non-
instance");\n     }\n     return privateMap.get(receiver);\n }\n function __classPrivateFieldSet(receiver,
privateMap, value) {\n     if (!privateMap.has(receiver)) {\n         throw new TypeError("attempted to set private
field on non-instance");\n     }\n     privateMap.set(receiver, value);\n     return value;\n }\n\n /**\n *
@license\n * Copyright Google LLC All Rights Reserved.\n * Use of this source code is governed by an
MIT-style license that can be\n * found in the LICENSE file at https://angular.io/license\n */\n (function
(TagContentType) {\n     TagContentType[TagContentType["RAW_TEXT"] = 0] = "RAW_TEXT";\n     TagContentType[TagContentType["ESCAPABLE_RAW_TEXT"] = 1] = "ESCAPABLE_RAW_TEXT";\n     TagContentType[TagContentType["PARSABLE_DATA"] = 2] = "PARSABLE_DATA";\n
})(exports.TagContentType || (exports.TagContentType = {}));\n function splitNsName(elementName) {\n     if
(elementName[0] != ':') {\n         return [null, elementName];\n     }\n     var colonIndex =
elementName.indexOf(':', 1);\n     if (colonIndex == -1) {\n         throw new Error("Unsupported format '" +
elementName + "' expecting '":namespace:name"");\n     }\n     return [elementName.slice(1,
colonIndex), elementName.slice(colonIndex + 1)];\n }\n // `<ng-container>` tags work the same regardless the
namespace\n function isNgContainer(tagName) {\n     return splitNsName(tagName)[1] === 'ng-container';\n
}\n // `<ng-content>` tags work the same regardless the namespace\n function isNgContent(tagName) {\n
return splitNsName(tagName)[1] === 'ng-content';\n }\n // `<ng-template>` tags work the same regardless the
namespace\n function isNgTemplate(tagName) {\n     return splitNsName(tagName)[1] === 'ng-template';\n
}\n function getNsPrefix(fullName) {\n     return fullName === null ? null : splitNsName(fullName)[0];\n }\n
function mergeNsAndName(prefix, localName) {\n     return prefix ? ":" + prefix + ":" + localName :
localName;\n }\n // see http://www.w3.org/TR/html51/syntax.html#named-character-references\n // see
https://html.spec.whatwg.org/multipage/entities.json\n // This list is not exhaustive to keep the compiler footprint
low.\n // The `&#123;` / `&#x1ab;` syntax should be used when the named character reference does not\n //
exist.\n var NAMED_ENTITIES = {\n     'Aacute': "\u00C1",\n     'aacute': "\u00E1",\n     'Acirc': "\u00C2",\n
     'acirc': "\u00E2",\n     'acute': "\u00B4",\n     'AElig': "\u00C6",\n     'aelig': "\u00E6",\n     'Agrave':
'\u00C0',\n     'agrave': "\u00E0",\n     'alefsym': "\u2135",\n     'Alpha': "\u0391",\n     'alpha': "\u03B1",\n
     'amp': '&',\n     'and': "\u2227",\n     'ang': "\u2220",\n     'apos': "\u0027",\n     'Aring': "\u00C5",\n     'aring':
'\u00E5',\n     'asympt': "\u2248",\n     'Atilde': "\u00C3",\n     'atilde': "\u00E3",\n     'Auml': "\u00C4",\n
     'auml': "\u00E4",\n     'bdquo': "\u201E",\n     'Beta': "\u0392",\n     'beta': "\u03B2",\n     'brvbar': "\u00A6",\n
     'bull': "\u2022",\n     'cap': "\u2229",\n     'Ccedil': "\u00C7",\n     'ccedil': "\u00E7",\n     'cedil': "\u00B8",\n

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'cent': '\u00A2',\n 'Chi': '\u03A7',\n 'chi': '\u03C7',\n 'circ': '\u02C6',\n 'clubs': '\u2663',\n
 'cong': '\u22A5',\n 'copy': '\u00A9',\n 'crarr': '\u21B5',\n 'cup': '\u222A',\n 'curren': '\u00A4',\n
 'dagger': '\u2020',\n 'Dagger': '\u2021',\n 'darr': '\u2193',\n 'dArr': '\u21D3',\n 'deg': '\u00B0',\n
 'Delta': '\u0394',\n 'delta': '\u03B4',\n 'diams': '\u2666',\n 'divide': '\u00F7',\n 'Eacute':
 '\u00C9',\n 'eacute': '\u00E9',\n 'Ecirc': '\u00CA',\n 'ecirc': '\u00EA',\n 'Egrave': '\u00C8',\n
 'egrave': '\u00E8',\n 'empty': '\u2205',\n 'emsp': '\u2003',\n 'ensp': '\u2002',\n 'Epsilon':
 '\u0395',\n 'epsilon': '\u03B5',\n 'equiv': '\u2261',\n 'Eta': '\u0397',\n 'eta': '\u03B7',\n 'ETH':
 '\u00D0',\n 'eth': '\u00F0',\n 'Euml': '\u00CB',\n 'euml': '\u00EB',\n 'euro': '\u20AC',\n 'exist':
 '\u2203',\n 'fnof': '\u0192',\n 'forall': '\u2200',\n 'frac12': '\u00BD',\n 'frac14': '\u00BC',\n
 'frac34': '\u00BE',\n 'frac1': '\u2044',\n 'Gamma': '\u0393',\n 'gamma': '\u03B3',\n 'ge': '\u2265',\n
 'gt': '>',\n 'harr': '\u2194',\n 'hArr': '\u21D4',\n 'hearts': '\u2665',\n 'hellip': '\u2026',\n
 'Iacute': '\u00CD',\n 'iacute': '\u00ED',\n 'Icirc': '\u00CE',\n 'icirc': '\u00EE',\n 'iexcl': '\u00A1',\n
 'Igrave': '\u00CC',\n 'igrave': '\u00EC',\n 'image': '\u2111',\n 'infin': '\u221E',\n 'int':
 '\u222B',\n 'Iota': '\u0399',\n 'iota': '\u03B9',\n 'iquest': '\u00BF',\n 'isin': '\u2208',\n 'Iuml':
 '\u00CF',\n 'iuml': '\u00EF',\n 'Kappa': '\u039A',\n 'kappa': '\u03BA',\n 'Lambda': '\u039B',\n
 'lambda': '\u03BB',\n 'lang': '\u27E8',\n 'laquo': '\u00AB',\n 'larr': '\u2190',\n 'lArr': '\u21D0',\n
 'lceil': '\u2308',\n 'ldquo': '\u201C',\n 'le': '\u2264',\n 'lfloor': '\u230A',\n 'lowast': '\u2217',\n
 'loz': '\u25CA',\n 'lrm': '\u200E',\n 'lsaquo': '\u2039',\n 'lsquo': '\u2018',\n 'lt': '<',\n 'macr':
 '\u00AF',\n 'mdash': '\u2014',\n 'micro': '\u00B5',\n 'middot': '\u00B7',\n 'minus': '\u2212',\n
 'Mu': '\u039C',\n 'mu': '\u03BC',\n 'nabla': '\u2207',\n 'nbsp': '\u00A0',\n 'ndash': '\u2013',\n
 'ne': '\u2260',\n 'ni': '\u220B',\n 'not': '\u00AC',\n 'notin': '\u2209',\n 'nsup': '\u2284',\n
 'Ntilde': '\u00D1',\n 'ntilde': '\u00F1',\n 'Nu': '\u039D',\n 'nu': '\u03BD',\n 'Oacute': '\u00D3',\n
 'oacute': '\u00F3',\n 'Ocirc': '\u00D4',\n 'ocirc': '\u00F4',\n 'OElig': '\u0152',\n 'oelig': '\u0153',\n
 'Ograve': '\u00D2',\n 'ograve': '\u00F2',\n 'oline': '\u203E',\n 'Omega': '\u0399',\n 'omega':
 '\u03C9',\n 'Omicron': '\u039F',\n 'omicron': '\u03BF',\n 'oplus': '\u2295',\n 'or': '\u2228',\n
 'ordf': '\u00AA',\n 'ordm': '\u00BA',\n 'Oslash': '\u00D8',\n 'oslash': '\u00F8',\n 'Otilde':
 '\u00D5',\n 'otilde': '\u00F5',\n 'otimes': '\u2297',\n 'Ouml': '\u00D6',\n 'ouml': '\u00F6',\n
 'para': '\u00B6',\n 'permil': '\u2030',\n 'perp': '\u22A5',\n 'Phi': '\u03A6',\n 'phi': '\u03C6',\n
 'Pi': '\u03A0',\n 'pi': '\u03C0',\n 'piv': '\u03D6',\n 'plusmn': '\u00B1',\n 'pound': '\u00A3',\n
 'prime': '\u2032',\n 'Prime': '\u2033',\n 'prod': '\u220F',\n 'prop': '\u221D',\n 'Psi': '\u03A8',\n
 'psi': '\u03C8',\n 'quot': '\u0022',\n 'radic': '\u221A',\n 'rang': '\u27E9',\n 'raquo': '\u00BB',\n
 'rarr': '\u2192',\n 'rArr': '\u21D2',\n 'rceil': '\u2309',\n 'rdquo': '\u201D',\n 'real': '\u211C',\n
 'reg': '\u00AE',\n 'rfloor': '\u230B',\n 'Rho': '\u03A1',\n 'rho': '\u03C1',\n 'rlm': '\u200F',\n
 'rsaquo': '\u203A',\n 'rsquo': '\u2019',\n 'sbquo': '\u201A',\n 'Scaron': '\u0160',\n 'scaron':
 '\u0161',\n 'sdot': '\u22C5',\n 'sect': '\u00A7',\n 'shy': '\u00AD',\n 'Sigma': '\u03A3',\n
 'sigma': '\u03C3',\n 'sigmaf': '\u03C2',\n 'sim': '\u223C',\n 'spades': '\u2660',\n 'sub': '\u2282',\n
 'sube': '\u2286',\n 'sum': '\u2211',\n 'sup': '\u2283',\n 'sup1': '\u00B9',\n 'sup2': '\u00B2',\n
 'sup3': '\u00B3',\n 'supe': '\u2287',\n 'szlig': '\u00DF',\n 'Tau': '\u03A4',\n 'tau': '\u03C4',\n
 'there4': '\u2234',\n 'Theta': '\u0398',\n 'theta': '\u03B8',\n 'thetasym': '\u03D1',\n 'thinsp':
 '\u2009',\n 'THORN': '\u00DE',\n 'thorn': '\u00FE',\n 'tilde': '\u02DC',\n 'times': '\u00D7',\n
 'trade': '\u2122',\n 'Uacute': '\u00DA',\n 'uacute': '\u00FA',\n 'uarr': '\u2191',\n 'uArr': '\u21D1',\n
 'Ucirc': '\u00DB',\n 'ucirc': '\u00FB',\n 'Ugrave': '\u00D9',\n 'ugrave': '\u00F9',\n 'uml':
 '\u00A8',\n 'upsih': '\u03D2',\n 'Upsilon': '\u03A5',\n 'upsilon': '\u03C5',\n 'Uuml': '\u00DC',\n
 'uuml': '\u00FC',\n 'weierp': '\u2118',\n 'Xi': '\u039E',\n 'xi': '\u03BE',\n 'Yacute': '\u00DD',\n
 'yacute': '\u00FD',\n 'yen': '\u00A5',\n 'yuml': '\u00FF',\n 'Yuml': '\u0178',\n 'Zeta': '\u0396',\n
 'zeta': '\u03B6',\n 'zwj': '\u200D',\n 'zwnj': '\u200C',\n };\n // The pseudo-entity is denoting a
 space. see:\n // https://github.com/dart-

```

\n var NGSP_UNICODE = '\uE500';\n NAMED_ENTITIES['ngsp'] = NGSP_UNICODE;\n\n /**\n *
@license\n * Copyright Google LLC All Rights Reserved.\n * Use of this source code is governed by an
MIT-style license that can be\n * found in the LICENSE file at https://angular.io/license\n */\n var
HtmlTagDefinition = /** @class */ (function () {\n function HtmlTagDefinition(_c) {\n var _this =
this;\n var _d = _c === void 0 ? {} : _c, closedByChildren = _d.closedByChildren, implicitNamespacePrefix
= _d.implicitNamespacePrefix, _e = _d.contentType, contentType = _e === void 0 ?
exports.TagContentType.PARSABLE_DATA : _e, _f = _d.closedByParent, closedByParent = _f === void 0 ? false
: _f, _g = _d.isVoid, isVoid = _g === void 0 ? false : _g, _h = _d.ignoreFirstLf, ignoreFirstLf = _h === void 0 ?
false : _h, _j = _d.preventNamespaceInheritance, preventNamespaceInheritance = _j === void 0 ? false : _j;\n
this.closedByChildren = {};\n this.closedByParent = false;\n this.canSelfClose = false;\n if
(closedByChildren && closedByChildren.length > 0) {\n closedByChildren.forEach(function (tagName) {\n
return _this.closedByChildren[tagName] = true; });\n }\n this.isVoid = isVoid;\n
this.closedByParent = closedByParent || isVoid;\n this.implicitNamespacePrefix = implicitNamespacePrefix ||
null;\n this.contentType = contentType;\n this.ignoreFirstLf = ignoreFirstLf;\n
this.preventNamespaceInheritance = preventNamespaceInheritance;\n }\n
HtmlTagDefinition.prototype.isClosedByChild = function (name) {\n return this.isVoid ||
name.toLowerCase() in this.closedByChildren;\n });\n return HtmlTagDefinition;\n }());\n var
_DEFAULT_TAG_DEFINITION;\n // see http://www.w3.org/TR/html51/syntax.html#optional-tags\n // This
implementation does not fully conform to the HTML5 spec.\n var TAG_DEFINITIONS;\n function
getHtmlTagDefinition(tagName) {\n var _a, _b;\n if (!TAG_DEFINITIONS) {\n
_DEFAULT_TAG_DEFINITION = new HtmlTagDefinition();\n TAG_DEFINITIONS = {\n 'base':
new HtmlTagDefinition({ isVoid: true } ),\n 'meta': new HtmlTagDefinition({ isVoid: true } ),\n
'area': new HtmlTagDefinition({ isVoid: true } ),\n 'embed': new HtmlTagDefinition({ isVoid: true } ),\n
'link': new HtmlTagDefinition({ isVoid: true } ),\n 'img': new HtmlTagDefinition({ isVoid: true } ),\n
'input': new HtmlTagDefinition({ isVoid: true } ),\n 'param': new HtmlTagDefinition({ isVoid: true
}),\n 'hr': new HtmlTagDefinition({ isVoid: true } ),\n 'br': new HtmlTagDefinition({ isVoid: true
}),\n 'source': new HtmlTagDefinition({ isVoid: true } ),\n 'track': new HtmlTagDefinition({
isVoid: true } ),\n 'wbr': new HtmlTagDefinition({ isVoid: true } ),\n 'p': new
HtmlTagDefinition({\n closedByChildren: [\n 'address', 'article', 'aside', 'blockquote', 'div',
'dl', 'fieldset',\n 'footer', 'form', 'h1', 'h2', 'h3', 'h4', 'h5',\n 'h6', 'header', 'hgroup', 'hr',
'main', 'nav', 'ol',\n 'p', 'pre', 'section', 'table', 'ul'\n ],\n closedByParent: true\n
}),\n 'thead': new HtmlTagDefinition({ closedByChildren: ['tbody', 'tfoot'] } ),\n 'tbody':
new HtmlTagDefinition({ closedByChildren: ['tbody', 'tfoot'], closedByParent: true } ),\n 'tfoot': new
HtmlTagDefinition({ closedByChildren: ['tbody'], closedByParent: true } ),\n 'tr': new HtmlTagDefinition({
closedByChildren: ['tr'], closedByParent: true } ),\n 'td': new HtmlTagDefinition({ closedByChildren: ['td',
'th'], closedByParent: true } ),\n 'th': new HtmlTagDefinition({ closedByChildren: ['td', 'th'],
closedByParent: true } ),\n 'col': new HtmlTagDefinition({ isVoid: true } ),\n 'svg': new
HtmlTagDefinition({ implicitNamespacePrefix: 'svg' } ),\n 'foreignObject': new HtmlTagDefinition({\n
// Usually the implicit namespace here would be redundant since it will be inherited from\n // the
parent `svg`, but we have to do it for `foreignObject`, because the way the parser\n // works is that the
parent node of an end tag is its own start tag which means that\n // the `preventNamespaceInheritance`
on `foreignObject` would have it default to the\n // implicit namespace which is `html`, unless specified
otherwise.\n implicitNamespacePrefix: 'svg',\n // We want to prevent children of
foreignObject from inheriting its namespace, because\n // the point of the element is to allow nodes from
other namespaces to be inserted.\n preventNamespaceInheritance: true,\n } ),\n 'math':
new HtmlTagDefinition({ implicitNamespacePrefix: 'math' } ),\n 'li': new HtmlTagDefinition({
closedByChildren: ['li'], closedByParent: true } ),\n 'dt': new HtmlTagDefinition({ closedByChildren: ['dt',
'dd'] } ),\n 'dd': new HtmlTagDefinition({ closedByChildren: ['dt', 'dd'], closedByParent: true } ),\n

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return !!this.element;\n    });\n    CssSelector.prototype.setElement = function (element) {\n        if (element\n        === void 0) { element = null; }\n        this.element = element;\n    });\n    /** Gets a template string for an\n    element that matches the selector. */\n    CssSelector.prototype.getMatchingElementTemplate = function () {\n        var tagName = this.element || 'div';\n        var classAttr = this.classNames.length > 0 ? \" class=\\\"\\\" +\n        this.classNames.join(' ') + \"\\\"\\\" : \";\n        var attrs = \";\n        for (var i = 0; i < this.attrs.length; i += 2) {\n            var attrName = this.attrs[i];\n            var attrValue = this.attrs[i + 1] !== \" ? \"=\\\"\\\" + this.attrs[i + 1] +\n            \"\\\"\\\" : \";\n            attrs += \" \" + attrName + attrValue;\n        }\n        return\n        getHtmlTagDefinition(tagName).isVoid ? \"<\" + tagName + classAttr + attrs + \"/>\" : \"<\" + tagName\n        + classAttr + attrs + \"></\" + tagName + \">\";\n    });\n    CssSelector.prototype.getAttrs = function () {\n        var result = [];\n        if (this.classNames.length > 0) {\n            result.push('class', this.classNames.join(' '));\n        }\n        return result.concat(this.attrs);\n    });\n    CssSelector.prototype.addAttribute = function (name,\n    value) {\n        if (value === void 0) { value = \"; }\n        this.attrs.push(name, value && value.toLowerCase() ||\n        \");\n    });\n    CssSelector.prototype.addClassName = function (name) {\n        this.classNames.push(name.toLowerCase());\n    });\n    CssSelector.prototype.toString = function () {\n        var res = this.element || \";\n        if (this.classNames) {\n            this.classNames.forEach(function (klass) {\n                return res += \".\" + klass; });\n        }\n        if (this.attrs) {\n            for (var i = 0; i < this.attrs.length; i += 2)\n            {\n                var name = this.attrs[i];\n                var value = this.attrs[i + 1];\n                res += \"[\" + name +\n                (value ? '= ' + value : \") + \"]\";\n            }\n            this.notSelectors.forEach(function (notSelector) {\n                return res += \":not(\" + notSelector + \")\"; });\n            return res;\n        }\n        return CssSelector;\n    });\n    /**\n    * Reads a list of CssSelectors and allows to calculate which ones\n    * are contained in a given\n    CssSelector.\n    */\n    var SelectorMatcher = /** @class */ (function () {\n        function SelectorMatcher() {\n            this._elementMap = new Map();\n            this._elementPartialMap = new Map();\n            this._classMap = new\n            Map();\n            this._classPartialMap = new Map();\n            this._attrValueMap = new Map();\n            this._attrValuePartialMap = new Map();\n            this._listContexts = [];\n        }\n        SelectorMatcher.createNotMatcher = function (notSelectors) {\n            var notMatcher = new SelectorMatcher();\n            notMatcher.addSelectable(notSelectors, null);\n            return notMatcher;\n        };\n        SelectorMatcher.prototype.addSelectable = function (cssSelectors, callbackCtx) {\n            var listContext = null;\n            if (cssSelectors.length > 1) {\n                listContext = new SelectorListContext(cssSelectors);\n            }\n            this._listContexts.push(listContext);\n            for (var i = 0; i < cssSelectors.length; i++) {\n                this._addSelectable(cssSelectors[i], callbackCtx, listContext);\n            }\n            /**\n            * Add an object\n            that can be found later on by calling `match`.\n            * @param cssSelector A css selector\n            * @param\n            callbackCtx An opaque object that will be given to the callback of the `match` function\n            */\n            SelectorMatcher.prototype._addSelectable = function (cssSelector, callbackCtx, listContext) {\n                var matcher\n                = this;\n                var element = cssSelector.element;\n                var classNames = cssSelector.classNames;\n                var\n                attrs = cssSelector.attrs;\n                var selectable = new SelectorContext(cssSelector, callbackCtx, listContext);\n                if (element) {\n                    var isTerminal = attrs.length === 0 && classNames.length === 0;\n                    if\n                    (isTerminal) {\n                        this._addTerminal(matcher._elementMap, element, selectable);\n                    }\n                }\n                else {\n                    matcher = this._addPartial(matcher._elementPartialMap, element);\n                }\n                if (classNames) {\n                    for (var i = 0; i < classNames.length; i++) {\n                        var isTerminal =\n                        attrs.length === 0 && i === classNames.length - 1;\n                        var className = classNames[i];\n                        if\n                        (isTerminal) {\n                            this._addTerminal(matcher._classMap, className, selectable);\n                        }\n                        else {\n                            matcher = this._addPartial(matcher._classPartialMap, className);\n                        }\n                    }\n                }\n                if (attrs) {\n                    for (var i = 0; i < attrs.length; i += 2) {\n                        var isTerminal\n                        = i === attrs.length - 2;\n                        var name = attrs[i];\n                        var value = attrs[i + 1];\n                        if\n                        (isTerminal) {\n                            var terminalMap = matcher._attrValueMap;\n                            var terminalValuesMap\n                            = terminalMap.get(name);\n                            if (!terminalValuesMap) {\n                                terminalValuesMap = new\n                                Map();\n                                terminalMap.set(name, terminalValuesMap);\n                            }\n                            this._addTerminal(terminalValuesMap, value, selectable);\n                        }\n                    }\n                }\n                else {\n                    var\n                }

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partialMap = matcher._attrValuePartialMap;\n                var partialValuesMap = partialMap.get(name);\n    if (!partialValuesMap) {\n        partialValuesMap = new Map();\n    }\n    partialMap.set(name, partialValuesMap);\n    this._addPartial(partialValuesMap, value);\n    SelectorMatcher.prototype._addTerminal = function (map, name, selectable) {\n        var terminalList =\n        map.get(name);\n        if (!terminalList) {\n            terminalList = [];\n            map.set(name, terminalList);\n        }\n        terminalList.push(selectable);\n    };\n    SelectorMatcher.prototype._addPartial = function\n    (map, name) {\n        var matcher = map.get(name);\n        if (!matcher) {\n            matcher = new\n            SelectorMatcher();\n            map.set(name, matcher);\n        }\n        return matcher;\n    }; \n    /**\n    * Find the objects that have been added via `addSelectable`\n    * whose css selector is contained in the given css\n    selector.\n    * @param cssSelector A css selector\n    * @param matchedCallback This callback will be called\n    with the object handed into `addSelectable`\n    * @return boolean true if a match was found\n    */\n    SelectorMatcher.prototype.match = function (cssSelector, matchedCallback) {\n        var result = false;\n        var element = cssSelector.element;\n        var classNames = cssSelector.classNames;\n        var attrs =\n        cssSelector.attrs;\n        for (var i = 0; i < this._listContexts.length; i++) {\n            this._listContexts[i].alreadyMatched = false;\n            result = this._matchTerminal(this._elementMap,\n            element, cssSelector, matchedCallback) || result;\n            result = this._matchPartial(this._elementPartialMap,\n            element, cssSelector, matchedCallback) ||\n            result;\n            if (classNames) {\n                for (var i = 0; i <\n                classNames.length; i++) {\n                    var className = classNames[i];\n                    result =\n                    this._matchTerminal(this._classMap, className, cssSelector, matchedCallback) || result;\n                    result =\n                    this._matchPartial(this._classPartialMap, className, cssSelector, matchedCallback) ||\n                    result;\n                }\n            }\n            if (attrs) {\n                for (var i = 0; i < attrs.length; i += 2) {\n                    var name = attrs[i];\n                    var value = attrs[i + 1];\n                    var terminalValuesMap =\n                    this._attrValueMap.get(name);\n                    if (value) {\n                        result =\n                        this._matchTerminal(terminalValuesMap, value, cssSelector, matchedCallback) || result;\n                        result =\n                        this._matchTerminal(terminalValuesMap, value, cssSelector, matchedCallback) || result;\n                        var partialValuesMap = this._attrValuePartialMap.get(name);\n                        if (value) {\n                            result = this._matchPartial(partialValuesMap, value, cssSelector, matchedCallback) || result;\n                        }\n                        result =\n                        this._matchPartial(partialValuesMap, value, cssSelector, matchedCallback) || result;\n                    }\n                }\n            }\n            return result;\n        };\n    };\n    /** @internal */\n    SelectorMatcher.prototype._matchTerminal = function (map, name, cssSelector, matchedCallback) {\n        if\n        (!map || typeof name !== 'string') {\n            return false;\n        }\n        var selectables = map.get(name) ||\n        [];\n        var starSelectables = map.get('*');\n        if (starSelectables) {\n            selectables =\n            selectables.concat(starSelectables);\n        }\n        if (selectables.length === 0) {\n            return false;\n        }\n        var selectable;\n        var result = false;\n        for (var i = 0; i < selectables.length; i++) {\n            selectable = selectables[i];\n            result = selectable.finalize(cssSelector, matchedCallback) || result;\n        }\n        return result;\n    };\n    /** @internal */\n    SelectorMatcher.prototype._matchPartial = function\n    (map, name, cssSelector, matchedCallback) {\n        if (!map || typeof name !== 'string') {\n            return\n            false;\n        }\n        var nestedSelector = map.get(name);\n        if (!nestedSelector) {\n            return\n            false;\n        }\n        // TODO(perf): get rid of recursion and measure again\n        // TODO(perf): don't pass\n        the whole selector into the recursion,\n        // but only the not processed parts\n        return\n        nestedSelector.match(cssSelector, matchedCallback);\n    };\n    return SelectorMatcher;\n}();\n\nvar\nSelectorListContext = /** @class */ (function () {\n    function SelectorListContext(selectors) {\n        this.selectors = selectors;\n        this.alreadyMatched = false;\n    }\n    return SelectorListContext;\n}());\n\n// Store context to pass back selector and context when a selector is matched\nvar SelectorContext = /** @class\n*/ (function () {\n    function SelectorContext(selector, cbContext, listContext) {\n        this.selector =\n        selector;\n        this.cbContext = cbContext;\n        this.listContext = listContext;\n        this.notSelectors =\n        selector.notSelectors;\n    }\n    SelectorContext.prototype.finalize = function (cssSelector, callback) {\n

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var result = true;\n      if (this.notSelectors.length > 0 && (!this.listContext || !this.listContext.alreadyMatched))
{\n      var notMatcher = SelectorMatcher.createNotMatcher(this.notSelectors);\n      result =
!notMatcher.match(cssSelector, null);\n      }\n      if (result && callback && (!this.listContext ||
!this.listContext.alreadyMatched)) {\n      if (this.listContext) {\n      this.listContext.alreadyMatched
= true;\n      }\n      callback(this.selector, this.cbContext);\n      }\n      return result;\n      };\n
return SelectorContext;\n  }());\n  var createInject = makeMetadataFactory('Inject', function (token) { return ({
token: token }); });\n  var createInjectionToken = makeMetadataFactory('InjectionToken', function (desc) { return
({ _desc: desc, prov: undefined }); });\n  var createAttribute = makeMetadataFactory('Attribute', function
(attributeName) { return ({ attributeName: attributeName }); });\n  var createContentChildren =
makeMetadataFactory('ContentChildren', function (selector, data) {\n  if (data === void 0) { data = {}; }\n  return (Object.assign({ selector: selector, first: false, isViewQuery: false, descendants: false }, data));\n  });\n  var
createContentChild = makeMetadataFactory('ContentChild', function (selector, data) {\n  if (data === void 0) {\n
data = {}; }\n  return (Object.assign({ selector: selector, first: true, isViewQuery: false, descendants: true },
data));\n  });\n  var createViewChildren = makeMetadataFactory('ViewChildren', function (selector, data) {\n
if (data === void 0) { data = {}; }\n  return (Object.assign({ selector: selector, first: false, isViewQuery: true,
descendants: true }, data));\n  });\n  var createViewChild = makeMetadataFactory('ViewChild', function (selector,
data) { return (Object.assign({ selector: selector, first: true, isViewQuery: true, descendants: true }, data)); });\n
var createDirective = makeMetadataFactory('Directive', function (dir) {\n  if (dir === void 0) { dir = {}; }\n
return dir;\n  });\n  var ViewEncapsulation;\n  (function (ViewEncapsulation) {\n
ViewEncapsulation[ViewEncapsulation["Emulated"] = 0] = "Emulated";\n  // Historically the 1 value was for
`Native` encapsulation which has been removed as of v11.\n  ViewEncapsulation[ViewEncapsulation["None"]
= 2] = "None";\n  ViewEncapsulation[ViewEncapsulation["ShadowDom"] = 3] = "ShadowDom";\n
})(ViewEncapsulation || (ViewEncapsulation = {}));\n  var ChangeDetectionStrategy;\n  (function
(ChangeDetectionStrategy) {\n  ChangeDetectionStrategy[ChangeDetectionStrategy["OnPush"] = 0] =
"OnPush";\n  ChangeDetectionStrategy[ChangeDetectionStrategy["Default"] = 1] = "Default";\n
})(ChangeDetectionStrategy || (ChangeDetectionStrategy = {}));\n  var createComponent =
makeMetadataFactory('Component', function (c) {\n  if (c === void 0) { c = {}; }\n  return (Object.assign({
changeDetection: ChangeDetectionStrategy.Default }, c));\n  });\n  var createPipe = makeMetadataFactory('Pipe',
function (p) { return (Object.assign({ pure: true }, p)); });\n  var createInput = makeMetadataFactory('Input',
function (bindingPropertyName) { return ({ bindingPropertyName: bindingPropertyName }); });\n  var
createOutput = makeMetadataFactory('Output', function (bindingPropertyName) { return ({ bindingPropertyName:
bindingPropertyName }); });\n  var createHostBinding = makeMetadataFactory('HostBinding', function
(hostPropertyName) { return ({ hostPropertyName: hostPropertyName }); });\n  var createHostListener =
makeMetadataFactory('HostListener', function (eventName, args) { return ({ eventName: eventName, args: args });
});\n  var createNgModule = makeMetadataFactory('NgModule', function (ngModule) { return ngModule; });\n
var createInjectable = makeMetadataFactory('Injectable', function (injectable) {\n  if (injectable === void 0) {\n
injectable = {}; }\n  return injectable;\n  });\n  var CUSTOM_ELEMENTS_SCHEMA = {\n  name:
'custom-elements'\n  };\n  var NO_ERRORS_SCHEMA = {\n  name: 'no-errors-schema'\n  };\n  var
createOptional = makeMetadataFactory('Optional');\n  var createSelf = makeMetadataFactory('Self');\n  var
createSkipSelf = makeMetadataFactory('SkipSelf');\n  var createHost = makeMetadataFactory('Host');\n  var Type
= Function;\n  var SecurityContext;\n  (function (SecurityContext) {\n
SecurityContext[SecurityContext["NONE"] = 0] = "NONE";\n  SecurityContext[SecurityContext["HTML"]
= 1] = "HTML";\n  SecurityContext[SecurityContext["STYLE"] = 2] = "STYLE";\n
SecurityContext[SecurityContext["SCRIPT"] = 3] = "SCRIPT";\n
SecurityContext[SecurityContext["URL"] = 4] = "URL";\n
SecurityContext[SecurityContext["RESOURCE_URL"] = 5] = "RESOURCE_URL";\n  })(SecurityContext ||
(SecurityContext = {}));\n  var MissingTranslationStrategy;\n  (function (MissingTranslationStrategy) {\n
MissingTranslationStrategy[MissingTranslationStrategy["Error"] = 0] = "Error";\n

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MissingTranslationStrategy[MissingTranslationStrategy[\"Warning\"] = 1] = \"Warning\";\n
MissingTranslationStrategy[MissingTranslationStrategy[\"Ignore\"] = 2] = \"Ignore\";\n
})(MissingTranslationStrategy || (MissingTranslationStrategy = {}));\n  function makeMetadataFactory(name,\n  props) {\n    // This must be declared as a function, not a fat arrow, so that ES2015 devmode produces code\n    // that works with the static_reflector.ts in the ViewEngine compiler.\n    // In particular,\n    `registerDecoratorOrConstructor` assumes that the value returned here can be\n    // new'ed.\n    function\n    factory() {\n      var args = [];\n      for (var _i = 0; _i < arguments.length; _i++) {\n        args[_i] =\n        arguments[_i];\n      }\n      var values = props ? props.apply(void 0, __spread(args)) : {};\n      return\n      Object.assign({ ngMetadataName: name }, values);\n    }\n    factory.isTypeOf = function (obj) { return obj\n    && obj.ngMetadataName === name; };\n    factory.ngMetadataName = name;\n    return factory;\n  }\n  function parserSelectorToSimpleSelector(selector) {\n    var classes = selector.classNames &&\n    selector.classNames.length ? __spread([8 /* CLASS */], selector.classNames) :\n    [];\n    var elementName\n    = selector.element && selector.element !== '*' ? selector.element : \"\";\n    return __spread([elementName],\n    selector.attrs, classes);\n  }\n  function parserSelectorToNegativeSelector(selector) {\n    var classes =\n    selector.classNames && selector.classNames.length ? __spread([8 /* CLASS */], selector.classNames) :\n    [];\n    if (selector.element) {\n      return __spread([\n        1 /* NOT */ | 4 /* ELEMENT */,\n        selector.element\n      ], selector.attrs, classes);\n    } else if (selector.attrs.length) {\n      return\n      __spread([1 /* NOT */ | 2 /* ATTRIBUTE */], selector.attrs, classes);\n    } else {\n      return\n      selector.classNames && selector.classNames.length ? __spread([1 /* NOT */ | 8 /* CLASS */],\n      selector.classNames) :\n      [];\n    }\n  }\n  function parserSelectorToR3Selector(selector) {\n    var\n    positive = parserSelectorToSimpleSelector(selector);\n    var negative = selector.notSelectors &&\n    selector.notSelectors.length ?\n    selector.notSelectors.map(function (notSelector) { return\n    parserSelectorToNegativeSelector(notSelector); }) :\n    [];\n    return positive.concat.apply(positive,\n    __spread(negative));\n  }\n  function parseSelectorToR3Selector(selector) {\n    return selector ?\n    CssSelector.parse(selector).map(parserSelectorToR3Selector) : [];\n  }\n  var core =\n  /*#__PURE__*/Object.freeze({\n    __proto__: null,\n    createInject: createInject,\n    createInjectionToken:\n    createInjectionToken,\n    createAttribute: createAttribute,\n    createContentChildren: createContentChildren,\n    createContentChild: createContentChild,\n    createViewChildren: createViewChildren,\n    createViewChild: createViewChild,\n    createDirective: createDirective,\n    get ViewEncapsulation () { return\n    ViewEncapsulation; },\n    get ChangeDetectionStrategy () { return ChangeDetectionStrategy; },\n    createComponent: createComponent,\n    createPipe: createPipe,\n    createInput: createInput,\n    createOutput: createOutput,\n    createHostBinding: createHostBinding,\n    createHostListener:\n    createHostListener,\n    createNgModule: createNgModule,\n    createInjectable: createInjectable,\n    CUSTOM_ELEMENTS_SCHEMA: CUSTOM_ELEMENTS_SCHEMA,\n    NO_ERRORS_SCHEMA:\n    NO_ERRORS_SCHEMA,\n    createOptional: createOptional,\n    createSelf: createSelf,\n    createSkipSelf:\n    createSkipSelf,\n    createHost: createHost,\n    Type: Type,\n    get SecurityContext () { return\n    SecurityContext; },\n    get MissingTranslationStrategy () { return MissingTranslationStrategy; },\n    parserSelectorToR3Selector: parserSelectorToR3Selector\n  });\n  /**\n   * @license\n   * Copyright Google\n   * LLC All Rights Reserved.\n   * Use of this source code is governed by an MIT-style license that can be\n   * found in the LICENSE file at https://angular.io/license\n   */\n  /// Types\n  var TypeModifier;\n  (function\n  (TypeModifier) {\n    TypeModifier[TypeModifier[\"Const\"] = 0] = \"Const\";\n  })(TypeModifier ||\n  (TypeModifier = {}));\n  var Type$1 = /** @class */ (function () {\n    function Type(modifiers) {\n      if\n      (modifiers === void 0) { modifiers = []; }\n      this.modifiers = modifiers;\n    }\n    Type.prototype.hasModifier = function (modifier) {\n      return this.modifiers.indexOf(modifier) !== -1;\n    };\n    return Type;\n  }());\n  (function (BuiltinTypeName) {\n    BuiltinTypeName[BuiltinTypeName[\"Dynamic\"] = 0] = \"Dynamic\";\n    BuiltinTypeName[BuiltinTypeName[\"Bool\"] = 1] = \"Bool\";\n    BuiltinTypeName[BuiltinTypeName[\"String\"] = 2] = \"String\";\n  });

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BuiltinTypeName[BuiltinTypeName["Int"] = 3] = "Int";\n    BuiltinTypeName[BuiltinTypeName["Number"]
= 4] = "Number";\n    BuiltinTypeName[BuiltinTypeName["Function"] = 5] = "Function";\n
BuiltinTypeName[BuiltinTypeName["Inferred"] = 6] = "Inferred";\n
BuiltinTypeName[BuiltinTypeName["None"] = 7] = "None";\n  })(exports.BuiltinTypeName ||
(exports.BuiltinTypeName = {}));\n  var BuiltinType = /** @class */ (function (_super) {\n
__extends(BuiltinType, _super);\n    function BuiltinType(name, modifiers) {\n        var _this = _super.call(this,
modifiers) || this;\n        _this.name = name;\n        return _this;\n    }\n    BuiltinType.prototype.visitType
= function (visitor, context) {\n        return visitor.visitBuiltinType(this, context);\n    };\n    return
BuiltinType;\n  })(Type$1));\n  var ExpressionType = /** @class */ (function (_super) {\n
__extends(ExpressionType, _super);\n    function ExpressionType(value, modifiers, typeParams) {\n        if
(typeParams === void 0) { typeParams = null; }\n        var _this = _super.call(this, modifiers) || this;\n
_this.value = value;\n        _this.typeParams = typeParams;\n        return _this;\n    }\n
ExpressionType.prototype.visitType = function (visitor, context) {\n        return visitor.visitExpressionType(this,
context);\n    };\n    return ExpressionType;\n  })(Type$1));\n  var ArrayType = /** @class */ (function
(_super) {\n    __extends(ArrayType, _super);\n    function ArrayType(of, modifiers) {\n        var _this =
_super.call(this, modifiers) || this;\n        _this.of = of;\n        return _this;\n    }\n
ArrayType.prototype.visitType = function (visitor, context) {\n        return visitor.visitArrayType(this, context);\n
    };\n    return ArrayType;\n  })(Type$1));\n  var MapType = /** @class */ (function (_super) {\n
__extends(MapType, _super);\n    function MapType(valueType, modifiers) {\n        var _this =
_super.call(this, modifiers) || this;\n        _this.valueType = valueType || null;\n        return _this;\n    }\n
MapType.prototype.visitType = function (visitor, context) {\n        return visitor.visitMapType(this, context);\n
    };\n    return MapType;\n  })(Type$1));\n  var DYNAMIC_TYPE = new
BuiltinType(exports.BuiltinTypeName.Dynamic);\n  var INFERRED_TYPE = new
BuiltinType(exports.BuiltinTypeName.Inferred);\n  var BOOL_TYPE = new
BuiltinType(exports.BuiltinTypeName.Bool);\n  var INT_TYPE = new
BuiltinType(exports.BuiltinTypeName.Int);\n  var NUMBER_TYPE = new
BuiltinType(exports.BuiltinTypeName.Number);\n  var STRING_TYPE = new
BuiltinType(exports.BuiltinTypeName.String);\n  var FUNCTION_TYPE = new
BuiltinType(exports.BuiltinTypeName.Function);\n  var NONE_TYPE = new
BuiltinType(exports.BuiltinTypeName.None);\n  (function (UnaryOperator) {\n
UnaryOperator[UnaryOperator["Minus"] = 0] = "Minus";\n    UnaryOperator[UnaryOperator["Plus"] = 1] =
"Plus";\n  })(exports.UnaryOperator || (exports.UnaryOperator = {}));\n  (function (BinaryOperator) {\n
BinaryOperator[BinaryOperator["Equals"] = 0] = "Equals";\n
BinaryOperator[BinaryOperator["NotEquals"] = 1] = "NotEquals";\n
BinaryOperator[BinaryOperator["Identical"] = 2] = "Identical";\n
BinaryOperator[BinaryOperator["NotIdentical"] = 3] = "NotIdentical";\n
BinaryOperator[BinaryOperator["Minus"] = 4] = "Minus";\n    BinaryOperator[BinaryOperator["Plus"] = 5] =
"Plus";\n    BinaryOperator[BinaryOperator["Divide"] = 6] = "Divide";\n
BinaryOperator[BinaryOperator["Multiply"] = 7] = "Multiply";\n
BinaryOperator[BinaryOperator["Modulo"] = 8] = "Modulo";\n    BinaryOperator[BinaryOperator["And"] =
9] = "And";\n    BinaryOperator[BinaryOperator["Or"] = 10] = "Or";\n
BinaryOperator[BinaryOperator["BitwiseAnd"] = 11] = "BitwiseAnd";\n
BinaryOperator[BinaryOperator["Lower"] = 12] = "Lower";\n
BinaryOperator[BinaryOperator["LowerEquals"] = 13] = "LowerEquals";\n
BinaryOperator[BinaryOperator["Bigger"] = 14] = "Bigger";\n
BinaryOperator[BinaryOperator["BiggerEquals"] = 15] = "BiggerEquals";\n  })(exports.BinaryOperator ||
(exports.BinaryOperator = {}));\n  function nullSafeIsEquivalent(base, other) {\n    if (base == null || other ==
null) {\n        return base == other;\n    }\n    return base.isEquivalent(other);\n  }\n  function

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areAllEquivalent(base, other) {\n    var len = base.length;\n    if (len !== other.length) {\n        return false;\n    }\n    for (var i = 0; i < len; i++) {\n        if (!base[i].isEquivalent(other[i])) {\n            return false;\n        }\n    }\n    return true;\n }\n var Expression = /** @class */ (function () {\n    function Expression(type, sourceSpan) {\n        this.type = type || null;\n        this.sourceSpan = sourceSpan || null;\n    }\n    Expression.prototype.prop = function (name, sourceSpan) {\n        return new ReadPropExpr(this, name, null, sourceSpan);\n    };\n    Expression.prototype.key = function (index, type, sourceSpan) {\n        return new ReadKeyExpr(this, index, type, sourceSpan);\n    };\n    Expression.prototype.callMethod = function (name, params, sourceSpan) {\n        return new InvokeMethodExpr(this, name, params, null, sourceSpan);\n    };\n    Expression.prototype.callFn = function (params, sourceSpan, pure) {\n        return new InvokeFunctionExpr(this, params, null, sourceSpan, pure);\n    };\n    Expression.prototype.instantiate = function (params, type, sourceSpan) {\n        return new InstantiateExpr(this, params, type, sourceSpan);\n    };\n    Expression.prototype.conditional = function (trueCase, falseCase, sourceSpan) {\n        if (falseCase === void 0) {\n            falseCase = null;\n        }\n        return new ConditionalExpr(this, trueCase, falseCase, null, sourceSpan);\n    };\n    Expression.prototype.equals = function (rhs, sourceSpan) {\n        return new BinaryOperatorExpr(exports.BinaryOperator.Equals, this, rhs, null, sourceSpan);\n    };\n    Expression.prototype.notEquals = function (rhs, sourceSpan) {\n        return new BinaryOperatorExpr(exports.BinaryOperator.NotEquals, this, rhs, null, sourceSpan);\n    };\n    Expression.prototype.identical = function (rhs, sourceSpan) {\n        return new BinaryOperatorExpr(exports.BinaryOperator.Identical, this, rhs, null, sourceSpan);\n    };\n    Expression.prototype.notIdentical = function (rhs, sourceSpan) {\n        return new BinaryOperatorExpr(exports.BinaryOperator.NotIdentical, this, rhs, null, sourceSpan);\n    };\n    Expression.prototype.minus = function (rhs, sourceSpan) {\n        return new BinaryOperatorExpr(exports.BinaryOperator.Minus, this, rhs, null, sourceSpan);\n    };\n    Expression.prototype.plus = function (rhs, sourceSpan) {\n        return new BinaryOperatorExpr(exports.BinaryOperator.Plus, this, rhs, null, sourceSpan);\n    };\n    Expression.prototype.divide = function (rhs, sourceSpan) {\n        return new BinaryOperatorExpr(exports.BinaryOperator.Divide, this, rhs, null, sourceSpan);\n    };\n    Expression.prototype.multiply = function (rhs, sourceSpan) {\n        return new BinaryOperatorExpr(exports.BinaryOperator.Multiply, this, rhs, null, sourceSpan);\n    };\n    Expression.prototype.modulo = function (rhs, sourceSpan) {\n        return new BinaryOperatorExpr(exports.BinaryOperator.Modulo, this, rhs, null, sourceSpan);\n    };\n    Expression.prototype.and = function (rhs, sourceSpan) {\n        return new BinaryOperatorExpr(exports.BinaryOperator.And, this, rhs, null, sourceSpan);\n    };\n    Expression.prototype.bitwiseAnd = function (rhs, sourceSpan, parens) {\n        if (parens === void 0) {\n            parens = true;\n        }\n        return new BinaryOperatorExpr(exports.BinaryOperator.BitwiseAnd, this, rhs, null, sourceSpan, parens);\n    };\n    Expression.prototype.or = function (rhs, sourceSpan) {\n        return new BinaryOperatorExpr(exports.BinaryOperator.Or, this, rhs, null, sourceSpan);\n    };\n    Expression.prototype.lower = function (rhs, sourceSpan) {\n        return new BinaryOperatorExpr(exports.BinaryOperator.Lower, this, rhs, null, sourceSpan);\n    };\n    Expression.prototype.lowerEquals = function (rhs, sourceSpan) {\n        return new BinaryOperatorExpr(exports.BinaryOperator.LowerEquals, this, rhs, null, sourceSpan);\n    };\n    Expression.prototype.bigger = function (rhs, sourceSpan) {\n        return new BinaryOperatorExpr(exports.BinaryOperator.Bigger, this, rhs, null, sourceSpan);\n    };\n    Expression.prototype.biggerEquals = function (rhs, sourceSpan) {\n        return new BinaryOperatorExpr(exports.BinaryOperator.BiggerEquals, this, rhs, null, sourceSpan);\n    };\n    Expression.prototype.isBlank = function (sourceSpan) {\n        // Note: We use equals by purpose here to compare to null and undefined in JS.\n        // We use the typed null to allow strictNullChecks to narrow types.\n        return this.equals(TYPED_NULL_EXPR, sourceSpan);\n    };\n    Expression.prototype.cast = function (type,

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sourceSpan) {\n        return new CastExpr(this, type, sourceSpan);\n    };\n    Expression.prototype.toStmt =
function () {\n        return new ExpressionStatement(this, null);\n    };\n    return Expression;\n }());\n
(function (BuiltinVar) {\n    BuiltinVar[BuiltinVar["This"] = 0] = "This";\n
BuiltinVar[BuiltinVar["Super"] = 1] = "Super";\n    BuiltinVar[BuiltinVar["CatchError"] = 2] =
"CatchError";\n    BuiltinVar[BuiltinVar["CatchStack"] = 3] = "CatchStack";\n    })(exports.BuiltinVar ||
(exports.BuiltinVar = {}));\n    var ReadVarExpr = /** @class */ (function (_super) {\n
__extends(ReadVarExpr, _super);\n    function ReadVarExpr(name, type, sourceSpan) {\n        var _this =
_super.call(this, type, sourceSpan) || this;\n        if (typeof name === 'string') {\n            _this.name = name;\n
            _this.builtin = null;\n        } else {\n            _this.name = null;\n            _this.builtin = name;\n
        }\n        return _this;\n    }\n    ReadVarExpr.prototype.isEquivalent = function (e) {\n        return e
instanceof ReadVarExpr && this.name === e.name && this.builtin === e.builtin;\n    };\n
ReadVarExpr.prototype.isConstant = function () {\n        return false;\n    };\n
ReadVarExpr.prototype.visitExpression = function (visitor, context) {\n        return visitor.visitReadVarExpr(this,
context);\n    };\n    ReadVarExpr.prototype.set = function (value) {\n        if (!this.name) {\n            throw
new Error("Built in variable " + this.builtin + " can not be assigned to.");\n        }\n        return new
WriteVarExpr(this.name, value, null, this.sourceSpan);\n    };\n    return ReadVarExpr;\n }(Expression));\n
var TypeofExpr = /** @class */ (function (_super) {\n    __extends(TypeofExpr, _super);\n    function
TypeofExpr(expr, type, sourceSpan) {\n        var _this = _super.call(this, type, sourceSpan) || this;\n
        _this.expr = expr;\n        return _this;\n    }\n    TypeofExpr.prototype.visitExpression = function (visitor,
context) {\n        return visitor.visitTypeofExpr(this, context);\n    };\n    TypeofExpr.prototype.isEquivalent
= function (e) {\n        return e instanceof TypeofExpr && e.expr.isEquivalent(this.expr);\n    };\n
TypeofExpr.prototype.isConstant = function () {\n        return this.expr.isConstant();\n    };\n    return
TypeofExpr;\n }(Expression));\n    var WrappedNodeExpr = /** @class */ (function (_super) {\n
__extends(WrappedNodeExpr, _super);\n    function WrappedNodeExpr(node, type, sourceSpan) {\n        var
_this = _super.call(this, type, sourceSpan) || this;\n        _this.node = node;\n        return _this;\n    }\n
WrappedNodeExpr.prototype.isEquivalent = function (e) {\n        return e instanceof WrappedNodeExpr &&
this.node === e.node;\n    };\n    WrappedNodeExpr.prototype.isConstant = function () {\n        return false;\n
    };\n    WrappedNodeExpr.prototype.visitExpression = function (visitor, context) {\n        return
visitor.visitWrappedNodeExpr(this, context);\n    };\n    return WrappedNodeExpr;\n }(Expression));\n    var
WriteVarExpr = /** @class */ (function (_super) {\n    __extends(WriteVarExpr, _super);\n    function
WriteVarExpr(name, value, type, sourceSpan) {\n        var _this = _super.call(this, type || value.type, sourceSpan)
|| this;\n        _this.name = name;\n        _this.value = value;\n        return _this;\n    }\n
WriteVarExpr.prototype.isEquivalent = function (e) {\n        return e instanceof WriteVarExpr && this.name ===
e.name && this.value.isEquivalent(e.value);\n    };\n    WriteVarExpr.prototype.isConstant = function () {\n
        return false;\n    };\n    WriteVarExpr.prototype.visitExpression = function (visitor, context) {\n        return
visitor.visitWriteVarExpr(this, context);\n    };\n    WriteVarExpr.prototype.toDeclStmt = function (type,
modifiers) {\n        return new DeclareVarStmt(this.name, this.value, type, modifiers, this.sourceSpan);\n    };\n
    WriteVarExpr.prototype.toConstDecl = function () {\n        return this.toDeclStmt(INFERRED_TYPE,
[exports.StmtModifier.Final]);\n    };\n    return WriteVarExpr;\n }(Expression));\n    var WriteKeyExpr = /**
@class */ (function (_super) {\n    __extends(WriteKeyExpr, _super);\n    function WriteKeyExpr(receiver,
index, value, type, sourceSpan) {\n        var _this = _super.call(this, type || value.type, sourceSpan) || this;\n
        _this.receiver = receiver;\n        _this.index = index;\n        _this.value = value;\n        return _this;\n    }\n
WriteKeyExpr.prototype.isEquivalent = function (e) {\n        return e instanceof WriteKeyExpr &&
this.receiver.isEquivalent(e.receiver) &&\n            this.index.isEquivalent(e.index) &&\n
            this.value.isEquivalent(e.value);\n    };\n    WriteKeyExpr.prototype.isConstant = function () {\n        return
false;\n    };\n    WriteKeyExpr.prototype.visitExpression = function (visitor, context) {\n        return
visitor.visitWriteKeyExpr(this, context);\n    };\n    return WriteKeyExpr;\n }(Expression));\n    var
WritePropExpr = /** @class */ (function (_super) {\n    __extends(WritePropExpr, _super);\n    function

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WritePropExpr(receiver, name, value, type, sourceSpan) {\n      var _this = _super.call(this, type || value.type,
sourceSpan) || this;\n      _this.receiver = receiver;\n      _this.name = name;\n      _this.value = value;\n      return _this;\n    }\n    WritePropExpr.prototype.isEquivalent = function (e) {\n      return e instanceof
WritePropExpr && this.receiver.isEquivalent(e.receiver) &&\n      this.name === e.name &&
this.value.isEquivalent(e.value);\n    };
WritePropExpr.prototype.isConstant = function () {\n      return
false;\n    };
WritePropExpr.prototype.visitExpression = function (visitor, context) {\n      return
visitor.visitWritePropExpr(this, context);\n    };
return WritePropExpr;\n  }(Expression));
(function (
BuiltinMethod) {\n    BuiltinMethod[BuiltinMethod["ConcatArray"] = 0] = "ConcatArray";
BuiltinMethod[BuiltinMethod["SubscribeObservable"] = 1] = "SubscribeObservable";
BuiltinMethod[BuiltinMethod["Bind"] = 2] = "Bind";
})(exports.BuiltinMethod || (exports.BuiltinMethod =
{}));
var InvokeMethodExpr = /** @class */ (function (_super) {\n    __extends(InvokeMethodExpr,
_super);\n    function InvokeMethodExpr(receiver, method, args, type, sourceSpan) {\n      var _this =
_super.call(this, type, sourceSpan) || this;\n      _this.receiver = receiver;\n      _this.args = args;\n      if
(typeof method === 'string') {\n        _this.name = method;\n        _this.builtin = null;\n      }\n      else {\n        _this.name = null;\n        _this.builtin = method;\n      }\n      return _this;\n    }\n    InvokeMethodExpr.prototype.isEquivalent = function (e) {\n      return e instanceof InvokeMethodExpr &&
this.receiver.isEquivalent(e.receiver) &&\n      this.name === e.name && this.builtin === e.builtin &&
areAllEquivalent(this.args, e.args);\n    };
InvokeMethodExpr.prototype.isConstant = function () {\n      return
false;\n    };
InvokeMethodExpr.prototype.visitExpression = function (visitor, context) {\n      return
visitor.visitInvokeMethodExpr(this, context);\n    };
return InvokeMethodExpr;\n  }(Expression));
var InvokeFunctionExpr = /** @class */ (function (_super) {\n    __extends(InvokeFunctionExpr, _super);\n    function InvokeFunctionExpr(fn, args, type, sourceSpan, pure) {\n      if (pure === void 0) { pure = false; }\n      var _this = _super.call(this, type, sourceSpan) || this;\n      _this.fn = fn;\n      _this.args = args;\n      _this.pure = pure;\n      return _this;\n    }\n    InvokeFunctionExpr.prototype.isEquivalent = function (e) {\n      return e instanceof InvokeFunctionExpr && this.fn.isEquivalent(e.fn) &&\n      areAllEquivalent(this.args, e.args) && this.pure === e.pure;\n    };
InvokeFunctionExpr.prototype.isConstant = function () {\n      return
false;\n    };
InvokeFunctionExpr.prototype.visitExpression = function (visitor, context) {\n      return
visitor.visitInvokeFunctionExpr(this, context);\n    };
return InvokeFunctionExpr;\n  }(Expression));
var InstantiateExpr = /** @class */ (function (_super) {\n    __extends(InstantiateExpr, _super);\n    function
InstantiateExpr(classExpr, args, type, sourceSpan) {\n      var _this = _super.call(this, type, sourceSpan) || this;\n      _this.classExpr = classExpr;\n      _this.args = args;\n      return _this;\n    }\n    InstantiateExpr.prototype.isEquivalent = function (e) {\n      return e instanceof InstantiateExpr &&
this.classExpr.isEquivalent(e.classExpr) &&\n      areAllEquivalent(this.args, e.args);\n    };
InstantiateExpr.prototype.isConstant = function () {\n      return
false;\n    };
InstantiateExpr.prototype.visitExpression = function (visitor, context) {\n      return
visitor.visitInstantiateExpr(this, context);\n    };
return InstantiateExpr;\n  }(Expression));
var LiteralExpr = /** @class */ (function (_super) {\n    __extends(LiteralExpr, _super);\n    function
LiteralExpr(value, type, sourceSpan) {\n      var _this = _super.call(this, type, sourceSpan) || this;\n      _this.value = value;\n      return _this;\n    }\n    LiteralExpr.prototype.isEquivalent = function (e) {\n      return e instanceof LiteralExpr && this.value === e.value;\n    };
LiteralExpr.prototype.isConstant =
function () {\n      return true;\n    };
LiteralExpr.prototype.visitExpression = function (visitor, context) {\n      return
visitor.visitLiteralExpr(this, context);\n    };
return LiteralExpr;\n  }(Expression));
var MessagePiece = /** @class */ (function () {\n    function MessagePiece(text, sourceSpan) {\n      this.text =
text;\n      this.sourceSpan = sourceSpan;\n    }\n    return MessagePiece;\n  })();
var LiteralPiece = /**
@class */ (function (_super) {\n    __extends(LiteralPiece, _super);\n    function LiteralPiece() {\n      return
_super !== null && _super.apply(this, arguments) || this;\n    }\n    return LiteralPiece;\n  }(MessagePiece));
var PlaceholderPiece = /** @class */ (function (_super) {\n    __extends(PlaceholderPiece, _super);\n

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function PlaceholderPiece() {\n      return _super !== null && _super.apply(this, arguments) || this;\n    }\n    return PlaceholderPiece;\n  })(MessagePiece);\n  var LocalizedString = /** @class */ (function (_super) {\n    __extends(LocalizedString, _super);\n    function LocalizedString(metaBlock, messageParts, placeHolderNames, expressions, sourceSpan) {\n      var _this = _super.call(this, STRING_TYPE, sourceSpan) || this;\n      _this.metaBlock = metaBlock;\n      _this.messageParts = messageParts;\n      _this.placeHolderNames = placeHolderNames;\n      _this.expressions = expressions;\n      return _this;\n    }\n    LocalizedString.prototype.isEquivalent = function (e) {\n      // return e instanceof LocalizedString &&\n      this.message === e.message;\n      return false;\n    }; \n    LocalizedString.prototype.isConstant = function () {\n      return false;\n    }; \n    LocalizedString.prototype.visitExpression = function (visitor, context) {\n      return visitor.visitLocalizedString(this, context);\n    }; \n    /**\n     * Serialize the given `meta` and `messagePart` into `cooked` and `raw` strings that can be used\n     * in a `$localize` tagged string. The format of the metadata is the same as that parsed by\n     * `parseI18nMeta`.\n     * @param meta The metadata to serialize\n     * @param messagePart The first part of the tagged string\n     */\n    LocalizedString.prototype.serializeI18nHead = function () {\n      var MEANING_SEPARATOR = "|";\n      var ID_SEPARATOR = '@';\n      var LEGACY_ID_INDICATOR = ":";\n      var metaBlock = this.metaBlock.description || "";\n      if (this.metaBlock.meaning) {\n        metaBlock = "\"" + this.metaBlock.meaning + MEANING_SEPARATOR + metaBlock;\n      } \n      if (this.metaBlock.customId) {\n        metaBlock = "\"" + metaBlock + ID_SEPARATOR + this.metaBlock.customId;\n      } \n      if (this.metaBlock.legacyIds) {\n        this.metaBlock.legacyIds.forEach(function (legacyId) {\n          metaBlock = "\"" + metaBlock + LEGACY_ID_INDICATOR + legacyId;\n        });\n      } \n      return createCookedRawString(metaBlock, this.messageParts[0].text, this.getMessagePartSourceSpan(0));\n    }; \n    LocalizedString.prototype.getMessagePartSourceSpan = function (i) {\n      var _a, _b;\n      return (_b = (_a = this.messageParts[i]) === null || _a === void 0 ? void 0 : _a.sourceSpan) !== null && _b !== void 0 ? _b : this.sourceSpan;\n    }; \n    LocalizedString.prototype.getPlaceholderSourceSpan = function (i) {\n      var _a, _b, _c, _d;\n      return (_d = (_b = (_a = this.placeHolderNames[i]) === null || _a === void 0 ? void 0 : _a.sourceSpan) !== null && _b !== void 0 ? _b : (_c = this.expressions[i]) === null || _c === void 0 ? void 0 : _c.sourceSpan) !== null && _d !== void 0 ? _d : this.sourceSpan;\n    }; \n    /**\n     * Serialize the given `placeholderName` and `messagePart` into `cooked` and `raw` strings that\n     * can be used in a `$localize` tagged string.\n     * @param placeholderName The placeholder name to serialize\n     * @param messagePart The following message string after this placeholder\n     */\n    LocalizedString.prototype.serializeI18nTemplatePart = function (partIndex) {\n      var placeholderName = this.placeHolderNames[partIndex - 1].text;\n      var messagePart = this.messageParts[partIndex];\n      return createCookedRawString(placeholderName, messagePart.text, this.getMessagePartSourceSpan(partIndex));\n    }; \n    return LocalizedString;\n  })(Expression);\n  var escapeSlashes = function (str) { return str.replace(/\\/g, '\\\\\\\\'); }; \n  var escapeStartingColon = function (str) { return str.replace(/^:/, '\\\\\\\\:'); }; \n  var escapeColons = function (str) { return str.replace(/:/g, '\\\\\\\\:'); }; \n  var escapeForMessagePart = function (str) { return str.replace(/'/g, '\\\\\\\\').replace(/\$/g, '\\\\\\\\$'); }; \n  /**\n   * Creates a `{cooked, raw}` object from the `metaBlock` and `messagePart`.\n   * The `raw` text must have various character sequences escaped:\n   * `\\` would otherwise indicate that the next character is a control character.\n   * `\"` and `\"$` are template string control sequences that would otherwise prematurely indicate\n   * the end of a message part.\n   * `\":` inside a metablock would prematurely indicate the end of the metablock.\n   * `\":` at the start of a messagePart with no metablock would erroneously indicate the start of a\n   * metablock.\n   * @param metaBlock Any metadata that should be prepended to the string\n   * @param messagePart The message part of the string\n   */\n  function createCookedRawString(metaBlock, messagePart, range) {\n    if (metaBlock === "") {\n      return {\n        cooked: messagePart,\n        raw:\n          escapeForMessagePart(escapeStartingColon(escapeSlashes(messagePart))),\n        range: range,\n      }; \n    } \n    else {\n      return {\n        cooked: "\"" + metaBlock + "\"" + messagePart,\n        raw:

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escapeForMessagePart("\" + escapeColons(escapeSlashes(metaBlock)) + \":\" + escapeSlashes(messagePart)),\n
    range: range,\n    });\n    }\n    }\n    var ExternalExpr = /** @class */ (function (_super) {\n
__extends(ExternalExpr, _super);\n    function ExternalExpr(value, type, typeParams, sourceSpan) {\n        if\n
(typeParams === void 0) { typeParams = null; }\n        var _this = _super.call(this, type, sourceSpan) || this;\n
        _this.value = value;\n        _this.typeParams = typeParams;\n        return _this;\n    }\n
ExternalExpr.prototype.isEquivalent = function (e) {\n        return e instanceof ExternalExpr && this.value.name\n
=== e.value.name &&\n        this.value.moduleName === e.value.moduleName && this.value.runtime ===\n
e.value.runtime;\n    };\n    ExternalExpr.prototype.isConstant = function () {\n        return false;\n    };\n
ExternalExpr.prototype.visitExpression = function (visitor, context) {\n        return visitor.visitExternalExpr(this,\n
context);\n    };\n    return ExternalExpr;\n})(Expression));\n    var ExternalReference = /** @class */\n
(function () {\n        function ExternalReference(moduleName, name, runtime) {\n            this.moduleName =\n
moduleName;\n            this.name = name;\n            this.runtime = runtime;\n        }\n        return\n
ExternalReference;\n    }());\n    var ConditionalExpr = /** @class */ (function (_super) {\n
__extends(ConditionalExpr, _super);\n    function ConditionalExpr(condition, trueCase, falseCase, type,\n
sourceSpan) {\n        if (falseCase === void 0) { falseCase = null; }\n        var _this = _super.call(this, type ||\n
trueCase.type, sourceSpan) || this;\n        _this.condition = condition;\n        _this.falseCase = falseCase;\n
        _this.trueCase = trueCase;\n        return _this;\n    }\n    ConditionalExpr.prototype.isEquivalent = function\n
(e) {\n        return e instanceof ConditionalExpr && this.condition.isEquivalent(e.condition) &&\n
this.trueCase.isEquivalent(e.trueCase) && nullSafeIsEquivalent(this.falseCase, e.falseCase);\n    };\n
ConditionalExpr.prototype.isConstant = function () {\n        return false;\n    };\n
ConditionalExpr.prototype.visitExpression = function (visitor, context) {\n        return\n
visitor.visitConditionalExpr(this, context);\n    };\n    return ConditionalExpr;\n})(Expression));\n    var\n
NotExpr = /** @class */ (function (_super) {\n        __extends(NotExpr, _super);\n        function NotExpr(condition,\n
sourceSpan) {\n            var _this = _super.call(this, BOOL_TYPE, sourceSpan) || this;\n            _this.condition =\n
condition;\n            return _this;\n        }\n        NotExpr.prototype.isEquivalent = function (e) {\n            return e\n
instanceof NotExpr && this.condition.isEquivalent(e.condition);\n        };\n        NotExpr.prototype.isConstant =\n
function () {\n            return false;\n        };\n        NotExpr.prototype.visitExpression = function (visitor, context) {\n
            return visitor.visitNotExpr(this, context);\n        };\n        return NotExpr;\n    })(Expression));\n    var\n
AssertNotNull = /** @class */ (function (_super) {\n        __extends(AssertNotNull, _super);\n        function\n
AssertNotNull(condition, sourceSpan) {\n            var _this = _super.call(this, condition.type, sourceSpan) || this;\n
            _this.condition = condition;\n            return _this;\n        }\n        AssertNotNull.prototype.isEquivalent =\n
function (e) {\n            return e instanceof AssertNotNull && this.condition.isEquivalent(e.condition);\n        };\n
AssertNotNull.prototype.isConstant = function () {\n            return false;\n        };\n
AssertNotNull.prototype.visitExpression = function (visitor, context) {\n            return\n
visitor.visitAssertNotNullExpr(this, context);\n        };\n        return AssertNotNull;\n    })(Expression));\n    var\n
CastExpr = /** @class */ (function (_super) {\n        __extends(CastExpr, _super);\n        function CastExpr(value,\n
type, sourceSpan) {\n            var _this = _super.call(this, type, sourceSpan) || this;\n            _this.value = value;\n
            return _this;\n        }\n        CastExpr.prototype.isEquivalent = function (e) {\n            return e instanceof CastExpr\n
&& this.value.isEquivalent(e.value);\n        };\n        CastExpr.prototype.isConstant = function () {\n            return\n
false;\n        };\n        CastExpr.prototype.visitExpression = function (visitor, context) {\n            return\n
visitor.visitCastExpr(this, context);\n        };\n        return CastExpr;\n    })(Expression));\n    var FnParam = /**\n
@class */ (function () {\n        function FnParam(name, type) {\n            if (type === void 0) { type = null; }\n
            this.name = name;\n            this.type = type;\n        }\n        FnParam.prototype.isEquivalent = function (param) {\n
            return this.name === param.name;\n        };\n        return FnParam;\n    }());\n    var FunctionExpr = /** @class\n
*/ (function (_super) {\n        __extends(FunctionExpr, _super);\n        function FunctionExpr(params, statements,\n
type, sourceSpan, name) {\n            var _this = _super.call(this, type, sourceSpan) || this;\n            _this.params =\n
params;\n            _this.statements = statements;\n            _this.name = name;\n            return _this;\n        }\n
FunctionExpr.prototype.isEquivalent = function (e) {\n            return e instanceof FunctionExpr &&

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areAllEquivalent(this.params, e.params) &&\n        areAllEquivalent(this.statements, e.statements);\n    };\n    FunctionExpr.prototype.isConstant = function () {\n        return false;\n    };\n    FunctionExpr.prototype.visitExpression = function (visitor, context) {\n        return visitor.visitFunctionExpr(this,\n        context);\n    };\n    FunctionExpr.prototype.toDeclStmt = function (name, modifiers) {\n        return new\n        DeclareFunctionStmt(name, this.params, this.statements, this.type, modifiers, this.sourceSpan);\n    };\n    return FunctionExpr;\n }(Expression));\n var UnaryOperatorExpr = /** @class */ (function (_super) {\n    __extends(UnaryOperatorExpr, _super);\n    function UnaryOperatorExpr(operator, expr, type, sourceSpan,\n    parens) {\n        if (parens === void 0) { parens = true; }\n        var _this = _super.call(this, type ||\n        NUMBER_TYPE, sourceSpan) || this;\n        _this.operator = operator;\n        _this.expr = expr;\n        _this.parens = parens;\n        return _this;\n    }\n    UnaryOperatorExpr.prototype.isEquivalent = function (e)\n    {\n        return e instanceof UnaryOperatorExpr && this.operator === e.operator &&\n        this.expr.isEquivalent(e.expr);\n    };\n    UnaryOperatorExpr.prototype.isConstant = function () {\n        return false;\n    };\n    UnaryOperatorExpr.prototype.visitExpression = function (visitor, context) {\n        return visitor.visitUnaryOperatorExpr(this, context);\n    };\n    return UnaryOperatorExpr;\n }(Expression));\n var BinaryOperatorExpr = /** @class */ (function (_super) {\n    __extends(BinaryOperatorExpr, _super);\n    function BinaryOperatorExpr(operator, lhs, rhs, type, sourceSpan,\n    parens) {\n        if (parens === void 0) { parens = true; }\n        var _this = _super.call(this, type || lhs.type,\n        sourceSpan) || this;\n        _this.operator = operator;\n        _this.lhs = lhs;\n        _this.rhs = rhs;\n        _this.parens = parens;\n        return _this;\n    }\n    BinaryOperatorExpr.prototype.isEquivalent = function (e) {\n        return e instanceof BinaryOperatorExpr && this.operator === e.operator &&\n        this.lhs.isEquivalent(e.lhs) && this.rhs.isEquivalent(e.rhs);\n    };\n    BinaryOperatorExpr.prototype.isConstant = function () {\n        return false;\n    };\n    BinaryOperatorExpr.prototype.visitExpression = function (visitor, context) {\n        return\n        visitor.visitBinaryOperatorExpr(this, context);\n    };\n    return BinaryOperatorExpr;\n }(Expression));\n var ReadPropExpr = /** @class */ (function (_super) {\n    __extends(ReadPropExpr, _super);\n    function\n    ReadPropExpr(receiver, name, type, sourceSpan) {\n        var _this = _super.call(this, type, sourceSpan) || this;\n        _this.receiver = receiver;\n        _this.name = name;\n        return _this;\n    }\n    ReadPropExpr.prototype.isEquivalent = function (e) {\n        return e instanceof ReadPropExpr &&\n        this.receiver.isEquivalent(e.receiver) &&\n        this.name === e.name;\n    };\n    ReadPropExpr.prototype.isConstant = function () {\n        return false;\n    };\n    ReadPropExpr.prototype.visitExpression = function (visitor, context) {\n        return\n        visitor.visitReadPropExpr(this, context);\n    };\n    ReadPropExpr.prototype.set = function (value) {\n        return new WritePropExpr(this.receiver, this.name, value, null, this.sourceSpan);\n    };\n    return\n    ReadPropExpr;\n }(Expression));\n var ReadKeyExpr = /** @class */ (function (_super) {\n    __extends(ReadKeyExpr, _super);\n    function ReadKeyExpr(receiver, index, type, sourceSpan) {\n        var\n        _this = _super.call(this, type, sourceSpan) || this;\n        _this.receiver = receiver;\n        _this.index = index;\n        return _this;\n    }\n    ReadKeyExpr.prototype.isEquivalent = function (e) {\n        return e instanceof\n        ReadKeyExpr && this.receiver.isEquivalent(e.receiver) &&\n        this.index.isEquivalent(e.index);\n    };\n    ReadKeyExpr.prototype.isConstant = function () {\n        return false;\n    };\n    ReadKeyExpr.prototype.visitExpression = function (visitor, context) {\n        return\n        visitor.visitReadKeyExpr(this, context);\n    };\n    ReadKeyExpr.prototype.set = function (value) {\n        return new WriteKeyExpr(this.receiver, this.index, value, null, this.sourceSpan);\n    };\n    return\n    ReadKeyExpr;\n }(Expression));\n var LiteralArrayExpr = /** @class */ (function (_super) {\n    __extends(LiteralArrayExpr, _super);\n    function LiteralArrayExpr(entries, type, sourceSpan) {\n        var\n        _this = _super.call(this, type, sourceSpan) || this;\n        _this.entries = entries;\n        return _this;\n    }\n    LiteralArrayExpr.prototype.isConstant = function () {\n        return this.entries.every(function (e) { return\n        e.isConstant(); });\n    };\n    LiteralArrayExpr.prototype.isEquivalent = function (e) {\n        return e\n        instanceof LiteralArrayExpr && areAllEquivalent(this.entries, e.entries);\n    };\n}

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LiteralArrayExpr.prototype.visitExpression = function (visitor, context) {\n      return
visitor.visitLiteralArrayExpr(this, context);\n    };\n    return LiteralArrayExpr;\n  }(Expression));\n  var
LiteralMapEntry = /** @class */ (function () {\n    function LiteralMapEntry(key, value, quoted) {\n
this.key = key;\n      this.value = value;\n      this.quoted = quoted;\n    }\n
LiteralMapEntry.prototype.isEquivalent = function (e) {\n      return this.key === e.key &&
this.value.isEquivalent(e.value);\n    };\n    return LiteralMapEntry;\n  }());\n  var LiteralMapExpr = /**
@class */ (function (_super) {\n    __extends(LiteralMapExpr, _super);\n    function LiteralMapExpr(entries,
type, sourceSpan) {\n      var _this = _super.call(this, type, sourceSpan) || this;\n      _this.entries = entries;\n
_this.valueType = null;\n      if (type) {\n        _this.valueType = type.valueType;\n      }\n
return _this;\n    }\n    LiteralMapExpr.prototype.isEquivalent = function (e) {\n      return e instanceof
LiteralMapExpr && areAllEquivalent(this.entries, e.entries);\n    };\n    LiteralMapExpr.prototype.isConstant =
function () {\n      return this.entries.every(function (e) { return e.value.isConstant(); });\n    };\n
LiteralMapExpr.prototype.visitExpression = function (visitor, context) {\n      return
visitor.visitLiteralMapExpr(this, context);\n    };\n    return LiteralMapExpr;\n  }(Expression));\n  var
CommaExpr = /** @class */ (function (_super) {\n    __extends(CommaExpr, _super);\n    function
CommaExpr(parts, sourceSpan) {\n      var _this = _super.call(this, parts[parts.length - 1].type, sourceSpan) ||
this;\n      _this.parts = parts;\n      return _this;\n    }\n    CommaExpr.prototype.isEquivalent = function
(e) {\n      return e instanceof CommaExpr && areAllEquivalent(this.parts, e.parts);\n    };\n
CommaExpr.prototype.isConstant = function () {\n      return false;\n    };\n
CommaExpr.prototype.visitExpression = function (visitor, context) {\n      return visitor.visitCommaExpr(this,
context);\n    };\n    return CommaExpr;\n  }(Expression));\n  var THIS_EXPR = new
ReadVarExpr(exports.BuiltinVar.This, null, null);\n  var SUPER_EXPR = new
ReadVarExpr(exports.BuiltinVar.Super, null, null);\n  var CATCH_ERROR_VAR = new
ReadVarExpr(exports.BuiltinVar.CatchError, null, null);\n  var CATCH_STACK_VAR = new
ReadVarExpr(exports.BuiltinVar.CatchStack, null, null);\n  var NULL_EXPR = new LiteralExpr(null, null,
null);\n  var TYPED_NULL_EXPR = new LiteralExpr(null, INFERRED_TYPE, null);\n  (function
(StmtModifier) {\n    StmtModifier[StmtModifier["Final"] = 0] = "Final";\n
StmtModifier[StmtModifier["Private"] = 1] = "Private";\n    StmtModifier[StmtModifier["Exported"] = 2] =
"Exported";\n    StmtModifier[StmtModifier["Static"] = 3] = "Static";\n  })(exports.StmtModifier ||
(exports.StmtModifier = {}));\n  var LeadingComment = /** @class */ (function () {\n    function
LeadingComment(text, multiline, trailingNewline) {\n      this.text = text;\n      this.multiline = multiline;\n
this.trailingNewline = trailingNewline;\n    }\n    LeadingComment.prototype.toString = function () {\n
return this.multiline ? "\"\" + this.text + "\"\" : this.text;\n    };\n    return LeadingComment;\n  }());\n  var
JSDocComment = /** @class */ (function (_super) {\n    __extends(JSDocComment, _super);\n    function
JSDocComment(tags) {\n      var _this = _super.call(this, "/* multiline */ true, /* trailingNewline */ true) ||
this;\n      _this.tags = tags;\n      return _this;\n    }\n    JSDocComment.prototype.toString = function ()
{\n      return serializeTags(this.tags);\n    };\n    return JSDocComment;\n  }(LeadingComment));\n  var
Statement = /** @class */ (function () {\n    function Statement(modifiers, sourceSpan, leadingComments) {\n
if (modifiers === void 0) { modifiers = []; }\n      if (sourceSpan === void 0) { sourceSpan = null; }\n
this.modifiers = modifiers;\n      this.sourceSpan = sourceSpan;\n      this.leadingComments =
leadingComments;\n    }\n    Statement.prototype.hasModifier = function (modifier) {\n      return
this.modifiers.indexOf(modifier) !== -1;\n    };\n    Statement.prototype.addLeadingComment = function
(leadingComment) {\n      var _a;\n      this.leadingComments = (_a = this.leadingComments) !== null && _a
!== void 0 ? _a : [];\n      this.leadingComments.push(leadingComment);\n    };\n    return Statement;\n  }());\n  var DeclareVarStmt = /** @class */ (function (_super) {\n    __extends(DeclareVarStmt, _super);\n
function DeclareVarStmt(name, value, type, modifiers, sourceSpan, leadingComments) {\n      var _this =
_super.call(this, modifiers, sourceSpan, leadingComments) || this;\n      _this.name = name;\n      _this.value
= value;\n      _this.type = type || (value && value.type) || null;\n      return _this;\n    }\n

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DeclareVarStmt.prototype.isEquivalent = function (stmt) {\n      return stmt instanceof DeclareVarStmt &&
this.name === stmt.name &&\n      (this.value ? !stmt.value && this.value.isEquivalent(stmt.value) :
!stmt.value);\n    };\n    DeclareVarStmt.prototype.visitStatement = function (visitor, context) {\n      return
visitor.visitDeclareVarStmt(this, context);\n    };\n    return DeclareVarStmt;\n  }(Statement));\n  var
DeclareFunctionStmt = /** @class */ (function (_super) {\n    __extends(DeclareFunctionStmt, _super);\n    function DeclareFunctionStmt(name, params, statements, type, modifiers, sourceSpan, leadingComments) {\n
var _this = _super.call(this, modifiers, sourceSpan, leadingComments) || this;\n      _this.name = name;\n
_this.params = params;\n      _this.statements = statements;\n      _this.type = type || null;\n      return
_this;\n    }\n    DeclareFunctionStmt.prototype.isEquivalent = function (stmt) {\n      return stmt instanceof
DeclareFunctionStmt && areAllEquivalent(this.params, stmt.params) &&\n
areAllEquivalent(this.statements, stmt.statements);\n    };\n    DeclareFunctionStmt.prototype.visitStatement =
function (visitor, context) {\n      return visitor.visitDeclareFunctionStmt(this, context);\n    };\n    return
DeclareFunctionStmt;\n  }(Statement));\n  var ExpressionStatement = /** @class */ (function (_super) {\n
__extends(ExpressionStatement, _super);\n    function ExpressionStatement(expr, sourceSpan, leadingComments)
{\n      var _this = _super.call(this, [], sourceSpan, leadingComments) || this;\n      _this.expr = expr;\n
return _this;\n    }\n    ExpressionStatement.prototype.isEquivalent = function (stmt) {\n      return stmt
instanceof ExpressionStatement && this.expr.isEquivalent(stmt.expr);\n    };\n
ExpressionStatement.prototype.visitStatement = function (visitor, context) {\n      return
visitor.visitExpressionStmt(this, context);\n    };\n    return ExpressionStatement;\n  }(Statement));\n  var
ReturnStatement = /** @class */ (function (_super) {\n    __extends(ReturnStatement, _super);\n    function
ReturnStatement(value, sourceSpan, leadingComments) {\n      if (sourceSpan === void 0) { sourceSpan = null;\n
}\n      var _this = _super.call(this, [], sourceSpan, leadingComments) || this;\n      _this.value = value;\n
return _this;\n    }\n    ReturnStatement.prototype.isEquivalent = function (stmt) {\n      return stmt
instanceof ReturnStatement && this.value.isEquivalent(stmt.value);\n    };\n
ReturnStatement.prototype.visitStatement = function (visitor, context) {\n      return visitor.visitReturnStmt(this,
context);\n    };\n    return ReturnStatement;\n  }(Statement));\n  var AbstractClassPart = /** @class */
(function () {\n    function AbstractClassPart(type, modifiers) {\n      if (type === void 0) { type = null; }\n
if (modifiers === void 0) { modifiers = []; }\n      this.type = type;\n      this.modifiers = modifiers;\n
}\n    AbstractClassPart.prototype.hasModifier = function (modifier) {\n      return
this.modifiers.indexOf(modifier) !== -1;\n    };\n    return AbstractClassPart;\n  }());\n  var ClassField = /**
@class */ (function (_super) {\n    __extends(ClassField, _super);\n    function ClassField(name, type,
modifiers, initializer) {\n      var _this = _super.call(this, type, modifiers) || this;\n      _this.name = name;\n
_this.initializer = initializer;\n      return _this;\n    }\n    ClassField.prototype.isEquivalent = function (f)
{\n      return this.name === f.name;\n    };\n    return ClassField;\n  }(AbstractClassPart));\n  var
ClassMethod = /** @class */ (function (_super) {\n    __extends(ClassMethod, _super);\n    function
ClassMethod(name, params, body, type, modifiers) {\n      var _this = _super.call(this, type, modifiers) || this;\n
_this.name = name;\n      _this.params = params;\n      _this.body = body;\n      return _this;\n    }\n
ClassMethod.prototype.isEquivalent = function (m) {\n      return this.name === m.name &&
areAllEquivalent(this.body, m.body);\n    };\n    return ClassMethod;\n  }(AbstractClassPart));\n  var
ClassGetter = /** @class */ (function (_super) {\n    __extends(ClassGetter, _super);\n    function
ClassGetter(name, body, type, modifiers) {\n      var _this = _super.call(this, type, modifiers) || this;\n
_this.name = name;\n      _this.body = body;\n      return _this;\n    }\n
ClassGetter.prototype.isEquivalent = function (m) {\n      return this.name === m.name &&
areAllEquivalent(this.body, m.body);\n    };\n    return ClassGetter;\n  }(AbstractClassPart));\n  var
ClassStmt = /** @class */ (function (_super) {\n    __extends(ClassStmt, _super);\n    function
ClassStmt(name, parent, fields, getters, constructorMethod, methods, modifiers, sourceSpan, leadingComments) {\n
var _this = _super.call(this, modifiers, sourceSpan, leadingComments) || this;\n      _this.name = name;\n
_this.parent = parent;\n      _this.fields = fields;\n      _this.getters = getters;\n

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_this.constructorMethod = constructorMethod;\n    _this.methods = methods;\n    return _this;\n  }\n  ClassStmt.prototype.isEquivalent = function (stmt) {\n    return stmt instanceof ClassStmt && this.name ===\n    stmt.name &&\n    nullSafeIsEquivalent(this.parent, stmt.parent) &&\n    areAllEquivalent(this.fields, stmt.fields) &&\n    areAllEquivalent(this.getters, stmt.getters) &&\n    this.constructorMethod.isEquivalent(stmt.constructorMethod) &&\n    areAllEquivalent(this.methods,\n    stmt.methods);\n  };\n  ClassStmt.prototype.visitStatement = function (visitor, context) {\n    return\n    visitor.visitDeclareClassStmt(this, context);\n  }; \n  return ClassStmt;\n})(Statement));\nvar IfStmt = /**\n@class */ (function (_super) {\n  __extends(IfStmt, _super);\n  function IfStmt(condition, trueCase,\n    falseCase, sourceSpan, leadingComments) {\n    if (falseCase === void 0) { falseCase = []; }\n    var _this\n    = _super.call(this, [], sourceSpan, leadingComments) || this;\n    _this.condition = condition;\n    _this.trueCase = trueCase;\n    _this.falseCase = falseCase;\n    return _this;\n  }\n  IfStmt.prototype.isEquivalent = function (stmt) {\n    return stmt instanceof IfStmt &&\n    this.condition.isEquivalent(stmt.condition) &&\n    areAllEquivalent(this.trueCase, stmt.trueCase) &&\n    areAllEquivalent(this.falseCase, stmt.falseCase);\n  }; \n  IfStmt.prototype.visitStatement = function\n  (visitor, context) {\n    return visitor.visitIfStmt(this, context);\n  }; \n  return IfStmt;\n})(Statement));\nvar TryCatchStmt = /** @class */ (function (_super) {\n  __extends(TryCatchStmt,\n  _super);\n  function TryCatchStmt(bodyStmts, catchStmts, sourceSpan, leadingComments) {\n    if\n    (sourceSpan === void 0) { sourceSpan = null; }\n    var _this = _super.call(this, [], sourceSpan,\n    leadingComments) || this;\n    _this.bodyStmts = bodyStmts;\n    _this.catchStmts = catchStmts;\n    return _this;\n  }\n  TryCatchStmt.prototype.isEquivalent = function (stmt) {\n    return stmt instanceof\n    TryCatchStmt && areAllEquivalent(this.bodyStmts, stmt.bodyStmts) &&\n    areAllEquivalent(this.catchStmts, stmt.catchStmts);\n  }; \n  TryCatchStmt.prototype.visitStatement =\n  function (visitor, context) {\n    return visitor.visitTryCatchStmt(this, context);\n  }; \n  return\n  TryCatchStmt;\n})(Statement));\nvar ThrowStmt = /** @class */ (function (_super) {\n  __extends(ThrowStmt, _super);\n  function ThrowStmt(error, sourceSpan, leadingComments) {\n    if\n    (sourceSpan === void 0) { sourceSpan = null; }\n    var _this = _super.call(this, [], sourceSpan,\n    leadingComments) || this;\n    _this.error = error;\n    return _this;\n  }\n  ThrowStmt.prototype.isEquivalent = function (stmt) {\n    return stmt instanceof TryCatchStmt &&\n    this.error.isEquivalent(stmt.error);\n  }; \n  ThrowStmt.prototype.visitStatement = function (visitor, context)\n  {\n    return visitor.visitThrowStmt(this, context);\n  }; \n  return ThrowStmt;\n})(Statement));\nvar\nAstTransformer = /** @class */ (function () {\n  function AstTransformer() {\n  }\n  AstTransformer.prototype.transformExpr = function (expr, context) {\n    return expr;\n  }; \n  AstTransformer.prototype.transformStmt = function (stmt, context) {\n    return stmt;\n  }; \n  AstTransformer.prototype.visitReadVarExpr = function (ast, context) {\n    return this.transformExpr(ast,\n    context);\n  }; \n  AstTransformer.prototype.visitWrappedNodeExpr = function (ast, context) {\n    return this.transformExpr(ast, context);\n  }; \n  AstTransformer.prototype.visitTypeofExpr = function (expr,\n    context) {\n    return this.transformExpr(new TypeofExpr(expr.expr.visitExpression(this, context), expr.type,\n    expr.sourceSpan), context);\n  }; \n  AstTransformer.prototype.visitWriteVarExpr = function (expr, context)\n  {\n    return this.transformExpr(new WriteVarExpr(expr.name, expr.value.visitExpression(this, context),\n    expr.type, expr.sourceSpan), context);\n  }; \n  AstTransformer.prototype.visitWriteKeyExpr = function\n  (expr, context) {\n    return this.transformExpr(new WriteKeyExpr(expr.receiver.visitExpression(this, context),\n    expr.index.visitExpression(this, context), expr.value.visitExpression(this, context), expr.type, expr.sourceSpan),\n    context);\n  }; \n  AstTransformer.prototype.visitWritePropExpr = function (expr, context) {\n    return\n    this.transformExpr(new WritePropExpr(expr.receiver.visitExpression(this, context), expr.name,\n    expr.value.visitExpression(this, context), expr.type, expr.sourceSpan), context);\n  }; \n  AstTransformer.prototype.visitInvokeMethodExpr = function (ast, context) {\n    var method = ast.builtin ||\n    ast.name;\n    return this.transformExpr(new InvokeMethodExpr(ast.receiver.visitExpression(this, context),\n    method, this.visitAllExpressions(ast.args, context), ast.type, ast.sourceSpan), context);\n  }; \n}

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AstTransformer.prototype.visitInvokeFunctionExpr = function (ast, context) {\n      return
this.transformExpr(new InvokeFunctionExpr(ast.fn.visitExpression(this, context), this.visitAllExpressions(ast.args,
context), ast.type, ast.sourceSpan), context);\n    };\n    AstTransformer.prototype.visitInstantiateExpr =
function (ast, context) {\n      return this.transformExpr(new InstantiateExpr(ast.classExpr.visitExpression(this,
context), this.visitAllExpressions(ast.args, context), ast.type, ast.sourceSpan), context);\n    };\n    AstTransformer.prototype.visitLiteralExpr = function (ast, context) {\n      return this.transformExpr(ast,
context);\n    };\n    AstTransformer.prototype.visitLocalizedString = function (ast, context) {\n      return
this.transformExpr(new LocalizedString(ast.metaBlock, ast.messageParts, ast.placeholderNames,
this.visitAllExpressions(ast.expressions, context), ast.sourceSpan), context);\n    };\n    AstTransformer.prototype.visitExternalExpr = function (ast, context) {\n      return this.transformExpr(ast,
context);\n    };\n    AstTransformer.prototype.visitConditionalExpr = function (ast, context) {\n      return
this.transformExpr(new ConditionalExpr(ast.condition.visitExpression(this, context),
ast.trueCase.visitExpression(this, context), ast.falseCase.visitExpression(this, context), ast.type, ast.sourceSpan),
context);\n    };\n    AstTransformer.prototype.visitNotExpr = function (ast, context) {\n      return
this.transformExpr(new NotExpr(ast.condition.visitExpression(this, context), ast.sourceSpan), context);\n    };\n    AstTransformer.prototype.visitAssertNotNullExpr = function (ast, context) {\n      return
this.transformExpr(new AssertNotNull(ast.condition.visitExpression(this, context), ast.sourceSpan), context);\n    };\n    AstTransformer.prototype.visitCastExpr = function (ast, context) {\n      return this.transformExpr(new
CastExpr(ast.value.visitExpression(this, context), ast.type, ast.sourceSpan), context);\n    };\n    AstTransformer.prototype.visitFunctionExpr = function (ast, context) {\n      return this.transformExpr(new
FunctionExpr(ast.params, this.visitAllStatements(ast.statements, context), ast.type, ast.sourceSpan), context);\n    };\n    AstTransformer.prototype.visitUnaryOperatorExpr = function (ast, context) {\n      return
this.transformExpr(new UnaryOperatorExpr(ast.operator, ast.expr.visitExpression(this, context), ast.type,
ast.sourceSpan), context);\n    };\n    AstTransformer.prototype.visitBinaryOperatorExpr = function (ast,
context) {\n      return this.transformExpr(new BinaryOperatorExpr(ast.operator, ast.lhs.visitExpression(this,
context), ast.rhs.visitExpression(this, context), ast.type, ast.sourceSpan), context);\n    };\n    AstTransformer.prototype.visitReadPropExpr = function (ast, context) {\n      return this.transformExpr(new
ReadPropExpr(ast.receiver.visitExpression(this, context), ast.name, ast.type, ast.sourceSpan), context);\n    };\n    AstTransformer.prototype.visitReadKeyExpr = function (ast, context) {\n      return this.transformExpr(new
ReadKeyExpr(ast.receiver.visitExpression(this, context), ast.index.visitExpression(this, context), ast.type,
ast.sourceSpan), context);\n    };\n    AstTransformer.prototype.visitLiteralArrayExpr = function (ast, context)
{\n      return this.transformExpr(new LiteralArrayExpr(this.visitAllExpressions(ast.entries, context), ast.type,
ast.sourceSpan), context);\n    };\n    AstTransformer.prototype.visitLiteralMapExpr = function (ast, context)
{\n      var _this = this;\n      var entries = ast.entries.map(function (entry) { return new
LiteralMapEntry(entry.key, entry.value.visitExpression(_this, context), entry.quoted); });\n      var mapType =
new MapType(ast.valueType);\n      return this.transformExpr(new LiteralMapExpr(entries, mapType,
ast.sourceSpan), context);\n    };\n    AstTransformer.prototype.visitCommaExpr = function (ast, context) {\n
return this.transformExpr(new CommaExpr(this.visitAllExpressions(ast.parts, context), ast.sourceSpan),
context);\n    };\n    AstTransformer.prototype.visitAllExpressions = function (exprs, context) {\n      var
_this = this;\n      return exprs.map(function (expr) { return expr.visitExpression(_this, context); });\n    };\n    AstTransformer.prototype.visitDeclareVarStmt = function (stmt, context) {\n      var value = stmt.value &&
stmt.value.visitExpression(this, context);\n      return this.transformStmt(new DeclareVarStmt(stmt.name, value,
stmt.type, stmt.modifiers, stmt.sourceSpan, stmt.leadingComments), context);\n    };\n    AstTransformer.prototype.visitDeclareFunctionStmt = function (stmt, context) {\n      return
this.transformStmt(new DeclareFunctionStmt(stmt.name, stmt.params, this.visitAllStatements(stmt.statements,
context), stmt.type, stmt.modifiers, stmt.sourceSpan, stmt.leadingComments), context);\n    };\n    AstTransformer.prototype.visitExpressionStmt = function (stmt, context) {\n      return this.transformStmt(new
ExpressionStatement(stmt.expr.visitExpression(this, context), stmt.sourceSpan, stmt.leadingComments), context);\n    }

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};\n    AstTransformer.prototype.visitReturnStmt = function (stmt, context) {\n        return
this.transformStmt(new ReturnStatement(stmt.value.visitExpression(this, context), stmt.sourceSpan,
stmt.leadingComments), context);\n    };\n    AstTransformer.prototype.visitDeclareClassStmt = function (stmt,
context) {\n        var _this = this;\n        var parent = stmt.parent.visitExpression(this, context);\n        var
getters = stmt.getters.map(function (getter) { return new ClassGetter(getter.name,
_this.visitAllStatements(getter.body, context), getter.type, getter.modifiers); });\n        var ctorMethod =
stmt.constructorMethod &&\n            new ClassMethod(stmt.constructorMethod.name,
stmt.constructorMethod.params, this.visitAllStatements(stmt.constructorMethod.body, context),
stmt.constructorMethod.type, stmt.constructorMethod.modifiers);\n        var methods =
stmt.methods.map(function (method) { return new ClassMethod(method.name, method.params,
_this.visitAllStatements(method.body, context), method.type, method.modifiers); });\n        return
this.transformStmt(new ClassStmt(stmt.name, parent, stmt.fields, getters, ctorMethod, methods, stmt.modifiers,
stmt.sourceSpan), context);\n    };\n    AstTransformer.prototype.visitIfStmt = function (stmt, context) {\n
return this.transformStmt(new IfStmt(stmt.condition.visitExpression(this, context),
this.visitAllStatements(stmt.trueCase, context), this.visitAllStatements(stmt.falseCase, context), stmt.sourceSpan,
stmt.leadingComments), context);\n    };\n    AstTransformer.prototype.visitTryCatchStmt = function (stmt,
context) {\n        return this.transformStmt(new TryCatchStmt(this.visitAllStatements(stmt.bodyStmts, context),
this.visitAllStatements(stmt.catchStmts, context), stmt.sourceSpan, stmt.leadingComments), context);\n    };\n
AstTransformer.prototype.visitThrowStmt = function (stmt, context) {\n        return this.transformStmt(new
ThrowStmt(stmt.error.visitExpression(this, context), stmt.sourceSpan, stmt.leadingComments), context);\n    };\n
    AstTransformer.prototype.visitAllStatements = function (stmts, context) {\n        var _this = this;\n
return stmts.map(function (stmt) { return stmt.visitStatement(_this, context); });\n    };\n    return
AstTransformer;\n }());\n var RecursiveAstVisitor = /** @class */ (function () {\n    function
RecursiveAstVisitor() {\n    }\n    RecursiveAstVisitor.prototype.visitType = function (ast, context) {\n
return ast;\n    };\n    RecursiveAstVisitor.prototype.visitExpression = function (ast, context) {\n        if
(ast.type) {\n            ast.type.visitType(this, context);\n        }\n        return ast;\n    };\n
RecursiveAstVisitor.prototype.visitBuiltinType = function (type, context) {\n        return this.visitType(type,
context);\n    };\n    RecursiveAstVisitor.prototype.visitExpressionType = function (type, context) {\n
var _this = this;\n        type.value.visitExpression(this, context);\n        if (type.typeParams !== null) {\n
            type.typeParams.forEach(function (param) { return _this.visitType(param, context); });\n        }\n        return
this.visitType(type, context);\n    };\n    RecursiveAstVisitor.prototype.visitArrayType = function (type,
context) {\n        return this.visitType(type, context);\n    };\n    RecursiveAstVisitor.prototype.visitMapType
= function (type, context) {\n        return this.visitType(type, context);\n    };\n
RecursiveAstVisitor.prototype.visitWrappedNodeExpr = function (ast, context) {\n        return ast;\n    };\n
RecursiveAstVisitor.prototype.visitTypeofExpr = function (ast, context) {\n        return this.visitExpression(ast,
context);\n    };\n    RecursiveAstVisitor.prototype.visitReadVarExpr = function (ast, context) {\n        return
this.visitExpression(ast, context);\n    };\n    RecursiveAstVisitor.prototype.visitWriteVarExpr = function (ast,
context) {\n        ast.value.visitExpression(this, context);\n        return this.visitExpression(ast, context);\n
    };\n    RecursiveAstVisitor.prototype.visitWriteKeyExpr = function (ast, context) {\n
ast.receiver.visitExpression(this, context);\n        ast.index.visitExpression(this, context);\n
ast.value.visitExpression(this, context);\n        return this.visitExpression(ast, context);\n    };\n
RecursiveAstVisitor.prototype.visitWritePropExpr = function (ast, context) {\n
ast.receiver.visitExpression(this, context);\n        ast.value.visitExpression(this, context);\n        return
this.visitExpression(ast, context);\n    };\n    RecursiveAstVisitor.prototype.visitInvokeMethodExpr = function
(ast, context) {\n        ast.receiver.visitExpression(this, context);\n        this.visitAllExpressions(ast.args,
context);\n        return this.visitExpression(ast, context);\n    };\n
RecursiveAstVisitor.prototype.visitInvokeFunctionExpr = function (ast, context) {\n
ast.fn.visitExpression(this, context);\n        this.visitAllExpressions(ast.args, context);\n        return

```



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return stmt;\n    });\n    RecursiveAstVisitor.prototype.visitIfStmt = function (stmt, context) {\n
stmt.condition.visitExpression(this, context);\n    this.visitAllStatements(stmt.trueCase, context);\n
this.visitAllStatements(stmt.falseCase, context);\n    return stmt;\n    });\n
RecursiveAstVisitor.prototype.visitTryCatchStmt = function (stmt, context) {\n
this.visitAllStatements(stmt.bodyStmts, context);\n    this.visitAllStatements(stmt.catchStmts, context);\n
return stmt;\n    });\n
RecursiveAstVisitor.prototype.visitThrowStmt = function (stmt, context) {\n
stmt.error.visitExpression(this, context);\n    return stmt;\n    });\n
RecursiveAstVisitor.prototype.visitAllStatements = function (stmts, context) {\n    var _this = this;\n
stmts.forEach(function (stmt) { return stmt.visitStatement(_this, context); });\n    return\n
RecursiveAstVisitor;\n    });\n
function findReadVarNames(stmts) {\n    var visitor = new\n
_ReadVarVisitor();\n    visitor.visitAllStatements(stmts, null);\n    return visitor.varNames;\n    }\n
var\n
_ReadVarVisitor = /** @class */ (function (_super) {\n    __extends(_ReadVarVisitor, _super);\n
function\n
_ReadVarVisitor() {\n        var _this = _super.apply(this, __spread(arguments)) || this;\n        _this.varNames =\n
new Set();\n        return _this;\n    }\n
_ReadVarVisitor.prototype.visitDeclareFunctionStmt = function\n
(stmt, context) {\n        // Don't descend into nested functions\n        return stmt;\n    });\n
_ReadVarVisitor.prototype.visitDeclareClassStmt = function (stmt, context) {\n        // Don't descend into nested\n
classes\n        return stmt;\n    });\n
_ReadVarVisitor.prototype.visitReadVarExpr = function (ast, context)\n
{\n    if (ast.name) {\n        this.varNames.add(ast.name);\n    }\n    return null;\n    });\n
return _ReadVarVisitor;\n    })(RecursiveAstVisitor);\n
function collectExternalReferences(stmts) {\n    var\n
visitor = new _FindExternalReferencesVisitor();\n    visitor.visitAllStatements(stmts, null);\n    return\n
visitor.externalReferences;\n    }\n
var _FindExternalReferencesVisitor = /** @class */ (function (_super) {\n
__extends(_FindExternalReferencesVisitor, _super);\n
function _FindExternalReferencesVisitor() {\n
var _this = _super.apply(this, __spread(arguments)) || this;\n        _this.externalReferences = [];\n        return\n
_this;\n    }\n
_FindExternalReferencesVisitor.prototype.visitExternalExpr = function (e, context) {\n
this.externalReferences.push(e.value);\n        return _super.prototype.visitExternalExpr.call(this, e, context);\n
});\n    return _FindExternalReferencesVisitor;\n    })(RecursiveAstVisitor);\n
function\n
applySourceSpanToStatementIfNeeded(stmt, sourceSpan) {\n    if (!sourceSpan) {\n        return stmt;\n    }\n
var transformer = new _ApplySourceSpanTransformer(sourceSpan);\n    return\n
stmt.visitStatement(transformer, null);\n    }\n
function applySourceSpanToExpressionIfNeeded(expr,\n
sourceSpan) {\n    if (!sourceSpan) {\n        return expr;\n    }\n
var transformer = new\n
_ApplySourceSpanTransformer(sourceSpan);\n    return expr.visitExpression(transformer, null);\n    }\n
var\n
_ApplySourceSpanTransformer = /** @class */ (function (_super) {\n
__extends(_ApplySourceSpanTransformer, _super);\n
function _ApplySourceSpanTransformer(sourceSpan)\n
{\n        var _this = _super.call(this) || this;\n        _this.sourceSpan = sourceSpan;\n        return _this;\n
    }\n
_ApplySourceSpanTransformer.prototype._clone = function (obj) {\n        var e_1, _e;\n        var clone\n
= Object.create(obj.constructor.prototype);\n        try {\n            for (var _f = __values(Object.keys(obj)), _g =\n
_f.next(); !_g.done; _g = _f.next()) {\n                var prop = _g.value;\n                clone[prop] = obj[prop];\n
            }\n        }\n        catch (e_1_1) { e_1 = { error: e_1_1 }; }\n        finally {\n            try {\n                if\n
(_g && !_g.done && (_e = _f.return)) _e.call(_f);\n            }\n            finally { if (e_1) throw e_1.error; }\n
        }\n        return clone;\n    });\n
_ApplySourceSpanTransformer.prototype.transformExpr = function (expr,\n
context) {\n        if (!expr.sourceSpan) {\n            expr = this._clone(expr);\n            expr.sourceSpan =\n
this.sourceSpan;\n        }\n        return expr;\n    });\n
_ApplySourceSpanTransformer.prototype.transformStmt = function (stmt, context) {\n        if (!stmt.sourceSpan)\n
{\n            stmt = this._clone(stmt);\n            stmt.sourceSpan = this.sourceSpan;\n        }\n        return\n
stmt;\n    });\n    return _ApplySourceSpanTransformer;\n    })(AstTransformer);\n
function\n
leadingComment(text, multiline, trailingNewline) {\n    if (multiline === void 0) { multiline = false; }\n    if\n
(trailingNewline === void 0) { trailingNewline = true; }\n    return new LeadingComment(text, multiline,\n
trailingNewline);\n    }\n
function jsDocComment(tags) {\n    if (tags === void 0) { tags = []; }\n    return

```



```

new JSDocComment(tags);\n  }\n  function variable(name, type, sourceSpan) {\n    return new
ReadVarExpr(name, type, sourceSpan);\n  }\n  function importExpr(id, typeParams, sourceSpan) {\n    if
(typeParams === void 0) { typeParams = null; }\n    return new ExternalExpr(id, null, typeParams,
sourceSpan);\n  }\n  function importType(id, typeParams, typeModifiers) {\n    return id != null ?
expressionType(importExpr(id, typeParams, null), typeModifiers) : null;\n  }\n  function expressionType(expr,
typeModifiers, typeParams) {\n    return new ExpressionType(expr, typeModifiers, typeParams);\n  }\n  function
typeofExpr(expr) {\n    return new TypeofExpr(expr);\n  }\n  function literalArr(values, type,
sourceSpan) {\n    return new LiteralArrayExpr(values, type, sourceSpan);\n  }\n  function literalMap(values,
type) {\n    if (type === void 0) { type = null; }\n    return new LiteralMapExpr(values.map(function (e) {
return new LiteralMapEntry(e.key, e.value, e.quoted); }), type, null);\n  }\n  function unary(operator, expr, type,
sourceSpan) {\n    return new UnaryOperatorExpr(operator, expr, type, sourceSpan);\n  }\n  function not(expr,
sourceSpan) {\n    return new NotExpr(expr, sourceSpan);\n  }\n  function assertNotNull(expr, sourceSpan) {\n
return new AssertNotNull(expr, sourceSpan);\n  }\n  function fn(params, body, type, sourceSpan, name) {\n
return new FunctionExpr(params, body, type, sourceSpan, name);\n  }\n  function ifStmt(condition, thenClause,
elseClause, sourceSpan, leadingComments) {\n    return new IfStmt(condition, thenClause, elseClause,
sourceSpan, leadingComments);\n  }\n  function literal(value, type, sourceSpan) {\n    return new
LiteralExpr(value, type, sourceSpan);\n  }\n  function localizedString(metaBlock, messageParts,
placeholderNames, expressions, sourceSpan) {\n    return new LocalizedString(metaBlock, messageParts,
placeholderNames, expressions, sourceSpan);\n  }\n  function isNull(exp) {\n    return exp instanceof
LiteralExpr && exp.value === null;\n  }\n  /*\n   * Serializes a `Tag` into a string.\n   * Returns a string like `
@foo {bar} baz` (note the leading whitespace before `@foo`).\n   *\n   function tagToString(tag) {\n    var out
= ";\n    if (tag.tagName) {\n      out += " @" + tag.tagName;\n    }\n    if
(tag.text.match(/\\|\\*|\\/\\/)) {\n      throw new Error('JSDoc text cannot contain `|` and `*`');\n    }\n
    out += ' ' + tag.text.replace(/@/g, '\\@');\n  }\n  return out;\n  }\n  function serializeTags(tags)
{\n    var e_2, _e;\n    if (tags.length === 0)\n      return ";\n    if (tags.length === 1 && tags[0].tagName
&& !tags[0].text) {\n      // The JSDOC comment is a single simple tag: e.g `/** @tagname */`.\n      return
`*` + tagToString(tags[0]) + ` `;\n    }\n    var out = `*\n`; \n    try {\n      for (var tags_1 =
__values(tags), tags_1_1 = tags_1.next(); !tags_1_1.done; tags_1_1 = tags_1.next()) {\n        var tag =
tags_1_1.value;\n        out += `*`;\n        // If the tagToString is multi-line, insert `* ` prefixes on lines.\n
out += tagToString(tag).replace(/\\n/g, '\\n * `);\n        out += '\\n';\n      }\n    } catch
(e_2_1) { e_2 = { error: e_2_1 }; }\n    finally {\n      try {\n        if (tags_1_1 && !tags_1_1.done &&
(_e = tags_1.return)) _e.call(tags_1);\n      }\n    } finally { if (e_2) throw e_2.error; }\n    out += `
`;\n    return out;\n  }\n  /**\n   * @license\n   * Copyright Google LLC All Rights Reserved.\n   *\n   *
Use of this source code is governed by an MIT-style license that can be\n   * found in the LICENSE file at
https://angular.io/license\n   *\n   var DASH_CASE_REGEXP = /-+([a-z0-9])/g;\n   function
dashCaseToCamelCase(input) {\n    return input.replace(DASH_CASE_REGEXP, function () {\n      var m =
[];\n      for (var _i = 0; _i < arguments.length; _i++) {\n        m[_i] = arguments[_i];\n      }\n      return
m[1].toUpperCase();\n    });\n  }\n  function splitAtColon(input, defaultValues) {\n    return
_splitAt(input, ':', defaultValues);\n  }\n  function splitAtPeriod(input, defaultValues) {\n    return
_splitAt(input, '.', defaultValues);\n  }\n  function _splitAt(input, character, defaultValues) {\n    var
characterIndex = input.indexOf(character);\n    if (characterIndex === -1)\n      return defaultValues;\n    return [input.slice(0, characterIndex).trim(), input.slice(characterIndex + 1).trim()];\n  }\n  function
visitValue(value, visitor, context) {\n    if (Array.isArray(value)) {\n      return visitor.visitArray(value,
context);\n    }\n    if (isStrictStringMap(value)) {\n      return visitor.visitStringMap(value, context);\n    }\n
    if (value === null || typeof value === 'string' || typeof value === 'number' ||\n      typeof value === 'boolean')
{\n      return visitor.visitPrimitive(value, context);\n    }\n    return visitor.visitOther(value, context);\n  }\n
  function isDefined(val) {\n    return val !== null && val !== undefined;\n  }\n  function noUndefined(val) {\n
return val === undefined ? null : val;\n  }\n  var ValueTransformer = /** @class */ (function () {\n

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```

function ValueTransformer() {}
ValueTransformer.prototype.visitArray = function (arr, context) {
  var _this = this;
  return arr.map(function (value) { return visitValue(value, _this, context); });
};
ValueTransformer.prototype.visitStringMap = function (map, context) {
  var _this = this;
  var result = {};
  Object.keys(map).forEach(function (key) {
    result[key] = visitValue(map[key], _this, context);
  });
  return result;
};
ValueTransformer.prototype.visitPrimitive = function (value, context) {
  return value;
};
ValueTransformer.prototype.visitOther = function (value, context) {
  return value;
};
return ValueTransformer;
})();
var SyncAsync = {
  assertSync: function (value) {
    if (isPromise(value)) {
      throw new Error("Illegal state: value cannot be a promise");
    }
    return value;
  },
  then: function (value, cb) {
    return isPromise(value) ? value.then(cb) : cb(value);
  },
  all: function (syncAsyncValues) {
    return syncAsyncValues.some(isPromise) ? Promise.all(syncAsyncValues) : syncAsyncValues;
  }
};
function error(msg) {
  throw new Error("Internal Error: " + msg);
}
function syntaxError(msg, parseErrors) {
  var error = Error(msg);
  error[ERROR_SYNTAX_ERROR] = true;
  if (parseErrors) {
    error[ERROR_PARSE_ERRORS] = parseErrors;
  }
  return error;
}
var ERROR_SYNTAX_ERROR = 'ngSyntaxError';
var ERROR_PARSE_ERRORS = 'ngParseErrors';
function isSyntaxError(error) {
  return error[ERROR_SYNTAX_ERROR];
}
function getParseErrors(error) {
  return error[ERROR_PARSE_ERRORS] || [];
}
// Escape characters that have a special meaning in Regular Expressions
function escapeRegExp(s) {
  return s.replace(/([.*+?^=!:${}()|\[\]\/\\])/g, "\\$1");
}
var STRING_MAP_PROTO = Object.getPrototypeOf({});
function isStrictStringMap(obj) {
  return typeof obj === 'object' && obj !== null && Object.getPrototypeOf(obj) === STRING_MAP_PROTO;
}
function utf8Encode(str) {
  var encoded = [];
  for (var index = 0; index < str.length; index++) {
    var codePoint = str.charCodeAt(index);
    // decode surrogate
    // see https://mathiasbynens.be/notes/javascript-encoding#surrogate-formulae
    if (codePoint >= 0xd800 && codePoint <= 0xdbff && str.length > (index + 1)) {
      var low = str.charCodeAt(index + 1);
      if (low >= 0xdc00 && low <= 0xdfff) {
        index++;
        codePoint = ((codePoint - 0xd800) << 10) + low - 0xdc00 + 0x10000;
      }
      if (codePoint <= 0x7f) {
        encoded.push(codePoint);
      }
      else if (codePoint <= 0x7ff) {
        encoded.push(((codePoint >> 6) & 0x1f) | 0xc0, (codePoint & 0x3f) | 0x80);
      }
      else if (codePoint <= 0xffff) {
        encoded.push((codePoint >> 12) | 0xe0, ((codePoint >> 6) & 0x3f) | 0x80, (codePoint & 0x3f) | 0x80);
      }
      else if (codePoint <= 0x1ffff) {
        encoded.push(((codePoint >> 18) & 0x07) | 0xf0, ((codePoint >> 12) & 0x3f) | 0x80, ((codePoint >> 6) & 0x3f) | 0x80, (codePoint & 0x3f) | 0x80);
      }
    }
  }
  return encoded;
}
function stringify(token) {
  if (typeof token === 'string') {
    return token;
  }
  if (Array.isArray(token)) {
    return '[' + token.map(stringify).join(', ') + ']';
  }
  if (token === null) {
    return " + token;
  }
  if (token.overriddenName) {
    return "\" + token.overriddenName;
  }
  if (token.name) {
    return "\" + token.name;
  }
  if (!token.toString) {
    return 'object';
  }
  // WARNING: do not try to `JSON.stringify(token)` here
  // see https://github.com/angular/angular/issues/23440
  var res = token.toString();
  if (res === null) {
    return " + res;
  }
  var newLineIndex = res.indexOf("\n");
  return newLineIndex === -1 ? res : res.substring(0, newLineIndex);
}
/**
 * Lazily retrieves the reference value from a forwardRef.
 */
function resolveForwardRef(type) {
  if (typeof type === 'function' && type.hasOwnProperty('__forward_ref__')) {
    return type();
  }
  else {
    return type;
  }
}
/**
 * Determine if the argument is shaped like a Promise
 */
function isPromise(obj) {
  // allow any Promise/A+ compliant thenable.
  // It's up to the caller to ensure that obj.then conforms to the spec
  return !!obj && typeof obj.then === 'function';
}
var Version = /** @class */ (function () {
  function Version(full) {
    this.full = full;
    var splits = full.split('.');
    this.major = splits[0];
    this.minor = splits[1];
    this.patch = splits.slice(2).join('.');
  }
  return Version;
})();
var __window = typeof window !== 'undefined' && window;
var __self = typeof self !== 'undefined' && typeof WorkerGlobalScope !== 'undefined' && self;
var __global =

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typeof global !== 'undefined' && global;\n // Check __global first, because in Node tests both __global and
__window may be defined and __global\n // should be __global in that case.\n var __global = __global || __window
|| __self;\n function newArray(size, value) {\n var list = [];\n for (var i = 0; i < size; i++) {\n
list.push(value);\n }\n return list;\n }\n /**\n * Partitions a given array into 2 arrays, based on a
boolean value returned by the condition\n * function.\n * @param arr Input array that should be
partitioned\n * @param conditionFn Condition function that is called for each item in a given array and returns
a\n * boolean value.\n */\n function partitionArray(arr, conditionFn) {\n var e_1, _a;\n var truthy =
[];\n var falsy = [];\n try {\n for (var arr_1 = __values(arr), arr_1_1 = arr_1.next(); !arr_1_1.done;
arr_1_1 = arr_1.next()) {\n var item = arr_1_1.value;\n (conditionFn(item) ? truthy :
falsy).push(item);\n }\n } catch (e_1_1) { e_1 = { error: e_1_1 }; }\n finally {\n try {\n
if (arr_1_1 && !arr_1_1.done && (_a = arr_1.return)) _a.call(arr_1);\n } finally { if (e_1)
throw e_1.error; }\n }\n return [truthy, falsy];\n }\n\n var CONSTANT_PREFIX = '_c';\n /**\n *
`ConstantPool` tries to reuse literal factories when two or more literals are identical.\n * We determine whether
literals are identical by creating a key out of their AST using the\n * `KeyVisitor`. This constant is used to replace
dynamic expressions which can't be safely\n * converted into a key. E.g. given an expression `{foo: bar()}`, since
we don't know what\n * the result of `bar` will be, we create a key that looks like `{foo: <unknown>}`. Note\n
* that we use a variable, rather than something like `null` in order to avoid collisions.\n */\n var
UNKNOWN_VALUE_KEY = variable('<unknown>');\n /**\n * Context to use when producing a key.\n *\n * This ensures we see the constant not the reference variable when producing\n * a key.\n */\n var
KEY_CONTEXT = {};\n /**\n * Generally all primitive values are excluded from the `ConstantPool`, but there
is an exclusion\n * for strings that reach a certain length threshold. This constant defines the length threshold for\n
* strings.\n */\n var POOL_INCLUSION_LENGTH_THRESHOLD_FOR_STRINGS = 50;\n /**\n * A
node that is a place-holder that allows the node to be replaced when the actual\n * node is known.\n *\n * This allows the constant pool to change an expression from a direct reference to\n * a constant to a shared
constant. It returns a fix-up node that is later allowed to\n * change the referenced expression.\n */\n var
FixupExpression = /** @class */ (function (_super) {\n __extends(FixupExpression, _super);\n function
FixupExpression(resolved) {\n var _this = _super.call(this, resolved.type) || this;\n _this.resolved =
resolved;\n _this.original = resolved;\n return _this;\n }\n
FixupExpression.prototype.visitExpression = function (visitor, context) {\n if (context ===
KEY_CONTEXT) {\n // When producing a key we want to traverse the constant not the\n //
variable used to refer to it.\n return this.original.visitExpression(visitor, context);\n } else
{\n return this.resolved.visitExpression(visitor, context);\n }\n };\n
FixupExpression.prototype.isEquivalent = function (e) {\n return e instanceof FixupExpression &&
this.resolved.isEquivalent(e.resolved);\n };\n
FixupExpression.prototype.isConstant = function () {\n
return true;\n };\n
FixupExpression.prototype.fixup = function (expression) {\n this.resolved =
expression;\n this.shared = true;\n };\n return FixupExpression;\n })(Expression));\n /**\n * A
constant pool allows a code emitter to share constant in an output context.\n *\n * The constant pool also
supports sharing access to ivy definitions references.\n */\n var ConstantPool = /** @class */ (function () {\n
function ConstantPool(isClosureCompilerEnabled) {\n if (isClosureCompilerEnabled === void 0) {\n
isClosureCompilerEnabled = false; }\n this.isClosureCompilerEnabled = isClosureCompilerEnabled;\n
this.statements = [];\n this.literals = new Map();\n this.literalFactories = new Map();\n
this.injectorDefinitions = new Map();\n this.directiveDefinitions = new Map();\n
this.componentDefinitions = new Map();\n this.pipeDefinitions = new Map();\n this.nextNameIndex =
0;\n }\n
ConstantPool.prototype.getConstLiteral = function (literal, forceShared) {\n if ((literal
instanceof LiteralExpr && !isLongStringLiteral(literal)) ||\n literal instanceof FixupExpression) {\n
// Do not put simple literals into the constant pool or try to produce a constant for a\n // reference to a
constant.\n return literal;\n }\n var key = this.keyOf(literal);\n var fixup =
this.literals.get(key);\n var newValue = false;\n if (!fixup) {\n fixup = new

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FixupExpression(literal);\n          this.literals.set(key, fixup);\n          newValue = true;\n          }\n          if
((!newValue && !fixup.shared) || (newValue && forceShared)) {\n          // Replace the expression with a
variable\n          var name = this.freshName();\n          var definition = void 0;\n          var usage = void
0;\n          if (this.isClosureCompilerEnabled && isLongStringLiteral(literal)) {\n          // For string
literals, Closure will always inline the string at\n          // all usages, duplicating it each time. For
large strings, this\n          // unnecessarily bloats bundle size. To work around this restriction, we\n
// wrap the string in a function, and call that function for each usage.\n          // This tricks Closure into using
inline logic for functions instead of\n          // string literals. Function calls are only inlined if the body is
small\n          // enough to be worth it. By doing this, very large strings will be\n          // shared across
multiple usages, rather than duplicating the string at\n          // each usage site.\n          //\n          //
const myStr = function() { return "very very very long string"; }; \n          // const usage1 = myStr();\n
// const usage2 = myStr();\n          definition = variable(name).set(new FunctionExpr([], // Params.\n
[\n          // Statements.\n          new ReturnStatement(literal),\n          ]));\n
usage = variable(name).callFn([]);\n          }\n          else {\n          // Just declare and use the variable
directly, without a function call\n          // indirection. This saves a few bytes and avoids an unnecessary call.\n
definition = variable(name).set(literal);\n          usage = variable(name);\n          }\n
this.statements.push(definition.toDeclStmt(INFERRED_TYPE, [exports.StmtModifier.Final]));\n
fixup.fixup(usage);\n          }\n          return fixup;\n          };\n          ConstantPool.prototype.getDefinition = function
(type, kind, ctx, forceShared) {\n          if (forceShared === void 0) { forceShared = false; }\n          var definitions
= this.definitionsOf(kind);\n          var fixup = definitions.get(type);\n          var newValue = false;\n          if
(!fixup) {\n          var property = this.propertyNameOf(kind);\n          fixup = new
FixupExpression(ctx.importExpr(type).prop(property));\n          definitions.set(type, fixup);\n
newValue = true;\n          }\n          if ((!newValue && !fixup.shared) || (newValue && forceShared)) {\n
var name = this.freshName();\n
this.statements.push(variable(name).set(fixup.resolved).toDeclStmt(INFERRED_TYPE,
[exports.StmtModifier.Final]));\n          fixup.fixup(variable(name));\n          }\n          return fixup;\n          };\n
ConstantPool.prototype.getLiteralFactory = function (literal) {\n          // Create a pure function that builds an
array of a mix of constant and variable expressions\n          if (literal instanceof LiteralArrayExpr) {\n          var
argumentsForKey = literal.entries.map(function (e) { return e.isConstant() ? e : UNKNOWN_VALUE_KEY; });\n
var key = this.keyOf(literalArr(argumentsForKey));\n          return this._getLiteralFactory(key,
literal.entries, function (entries) { return literalArr(entries); });\n          }\n          else {\n          var
expressionForKey = literalMap(literal.entries.map(function (e) { return ({\n          key: e.key,\n
value: e.value.isConstant() ? e.value : UNKNOWN_VALUE_KEY,\n          quoted: e.quoted\n          }));\n
var key = this.keyOf(expressionForKey);\n          return this._getLiteralFactory(key,
literal.entries.map(function (e) { return e.value; }), function (entries) { return literalMap(entries.map(function
(value, index) { return ({\n          key: literal.entries[index].key,\n          value: value,\n
quoted: literal.entries[index].quoted\n          })); }));\n          }\n          });\n
ConstantPool.prototype._getLiteralFactory = function (key, values, resultMap) {\n          var _this = this;\n
var literalFactory = this.literalFactories.get(key);\n          var literalFactoryArguments = values.filter((function (e) {
return !e.isConstant(); }));\n          if (!literalFactory) {\n          var resultExpressions = values.map(function (e,
index) { return e.isConstant() ? _this.getConstLiteral(e, true) : variable("\"a\" + index); });\n          var parameters
= resultExpressions.filter(isVariable).map(function (e) { return new FnParam(e.name, DYNAMIC_TYPE); });\n
var pureFunctionDeclaration = fn(parameters, [new ReturnStatement(resultMap(resultExpressions))],
INFERRED_TYPE);\n          var name = this.freshName();\n
this.statements.push(variable(name).set(pureFunctionDeclaration).toDeclStmt(INFERRED_TYPE, [\n
exports.StmtModifier.Final\n          ]));\n          literalFactory = variable(name);\n
this.literalFactories.set(key, literalFactory);\n          }\n          return { literalFactory: literalFactory,\n
literalFactoryArguments: literalFactoryArguments };\n          };\n          /**\n          * Produce a unique name.\n          */

```

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    * The name might be unique among different prefixes if any of the prefixes end in \n      * a digit so the prefix
    should be a constant string (not based on user input) and \n      * must not end in a digit. \n      */
    ConstantPool.prototype.uniqueName = function (prefix) {\n      return \"\" + prefix + this.nextNameIndex++; \n
    }; \n    ConstantPool.prototype.definitionsOf = function (kind) {\n      switch (kind) {\n      case 2 /*
    Component */: \n      return this.componentDefinitions; \n      case 1 /* Directive */: \n
    return this.directiveDefinitions; \n      case 0 /* Injector */: \n      return this.injectorDefinitions; \n
    case 3 /* Pipe */: \n      return this.pipeDefinitions; \n      } \n      error(\"Unknown definition kind \"
    + kind); \n      return this.componentDefinitions; \n    }; \n    ConstantPool.prototype.propertyNameOf =
    function (kind) {\n      switch (kind) {\n      case 2 /* Component */: \n      return 'cmp'; \n
    case 1 /* Directive */: \n      return 'dir'; \n      case 0 /* Injector */: \n      return 'inj'; \n
    case 3 /* Pipe */: \n      return 'pipe'; \n      } \n      error(\"Unknown definition kind \" + kind); \n
    return '<unknown>'; \n    }; \n    ConstantPool.prototype.freshName = function () {\n      return
    this.uniqueName(CONSTANT_PREFIX); \n    }; \n    ConstantPool.prototype.keyOf = function (expression) {\n
    return expression.visitExpression(new KeyVisitor(), KEY_CONTEXT); \n    }; \n    return
    ConstantPool; \n  }); \n  /** \n   * Visitor used to determine if 2 expressions are equivalent and can be shared in
    the \n   * `ConstantPool`. \n   * \n   * When the id (string) generated by the visitor is equal, expressions are
    considered equivalent. \n   * \n   * @class */ (function () {\n    function KeyVisitor() {\n
    this.visitWrappedNodeExpr = invalid; \n      this.visitWriteVarExpr = invalid; \n      this.visitWriteKeyExpr =
    invalid; \n      this.visitWritePropExpr = invalid; \n      this.visitInvokeMethodExpr = invalid; \n
    this.visitInvokeFunctionExpr = invalid; \n      this.visitInstantiateExpr = invalid; \n
    this.visitConditionalExpr = invalid; \n      this.visitNotExpr = invalid; \n      this.visitAssertNotNullExpr =
    invalid; \n      this.visitCastExpr = invalid; \n      this.visitFunctionExpr = invalid; \n
    this.visitUnaryOperatorExpr = invalid; \n      this.visitBinaryOperatorExpr = invalid; \n
    this.visitReadPropExpr = invalid; \n      this.visitReadKeyExpr = invalid; \n      this.visitCommaExpr =
    invalid; \n      this.visitLocalizedString = invalid; \n    } \n    KeyVisitor.prototype.visitLiteralExpr = function
    (ast) {\n      return \"\" + (typeof ast.value === 'string' ? \"\" + ast.value + \"\" : ast.value); \n    }; \n
    KeyVisitor.prototype.visitLiteralArrayExpr = function (ast, context) {\n      var _this = this; \n      return \"[\"
    + ast.entries.map(function (entry) { return entry.visitExpression(_this, context); }).join(',') + \"]\"; \n    }; \n
    KeyVisitor.prototype.visitLiteralMapExpr = function (ast, context) {\n      var _this = this; \n      var mapKey
    = function (entry) {\n      var quote = entry.quoted ? \"\" : \"\"; \n      return \"\" + quote + entry.key +
    quote; \n    }; \n      var mapEntry = function (entry) { return mapKey(entry) + \":\" +
    entry.value.visitExpression(_this, context); }; \n      return \"{\" + ast.entries.map(mapEntry).join(',') +
    \"}\"; \n    }; \n    KeyVisitor.prototype.visitExternalExpr = function (ast) {\n      return ast.value.moduleName ?
    \"EX:\" + ast.value.moduleName + \":\" + ast.value.name : \"EX:\" + ast.value.runtime.name; \n    }; \n
    KeyVisitor.prototype.visitReadVarExpr = function (node) {\n      return \"VAR:\" + node.name; \n    }; \n
    KeyVisitor.prototype.visitTypeofExpr = function (node, context) {\n      return \"typeof:\" +
    node.expr.visitExpression(this, context); \n    }; \n    return KeyVisitor; \n  }); \n  function invalid(arg) {\n
    throw new Error(\"Invalid state: Visitor \" + this.constructor.name + \" doesn't handle \" + arg.constructor.name); \n
  } \n  function isVariable(e) {\n      return e instanceof ReadVarExpr; \n    } \n  function isLongStringLiteral(expr)
    {\n      return expr instanceof LiteralExpr && typeof expr.value === 'string' && \n      expr.value.length >=
    POOL_INCLUSION_LENGTH_THRESHOLD_FOR_STRINGS; \n    } \n  /** \n   * @license \n   * Copyright
    Google LLC All Rights Reserved. \n   * \n   * Use of this source code is governed by an MIT-style license that can
    be \n   * found in the LICENSE file at https://angular.io/license \n   * \n   * @angular/core; \n   * \n
    Identifiers = /** @class */ (function () {\n    function Identifiers() {\n    } \n    return Identifiers; \n  }); \n
  Identifiers.ANALYZE_FOR_ENTRY_COMPONENTS = {\n    name:
    'ANALYZE_FOR_ENTRY_COMPONENTS', \n    moduleName: CORE, \n  }; \n  Identifiers.ElementRef = {\n
    name: 'ElementRef', \n    moduleName: CORE, \n  }; \n  Identifiers.NgModuleRef = {\n    name: 'NgModuleRef', \n
    moduleName: CORE, \n  }; \n  Identifiers.ViewContainerRef = {\n    name: 'ViewContainerRef', \n    moduleName:
    CORE, \n  }; \n

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Identifiers.ChangeDetectorRef = {\n    name: 'ChangeDetectorRef',\n    moduleName: CORE,\n };;\n
Identifiers.QueryList = { name: 'QueryList', moduleName: CORE };;\n
Identifiers.TemplateRef = { name: 'TemplateRef', moduleName: CORE };;\n
Identifiers.Renderer2 = { name: 'Renderer2', moduleName: CORE };;\n
Identifiers.CodegenComponentFactoryResolver = {\n    name: 'CodegenComponentFactoryResolver',\n    moduleName: CORE,\n };;\n
Identifiers.ComponentFactoryResolver = {\n    name: 'ComponentFactoryResolver',\n    moduleName: CORE,\n };;\n
Identifiers.ComponentFactory = { name: 'ComponentFactory', moduleName: CORE };;\n
Identifiers.ComponentRef = { name: 'ComponentRef', moduleName: CORE };;\n
Identifiers.NgModuleFactory = { name: 'NgModuleFactory', moduleName: CORE };;\n
Identifiers.createModuleFactory = {\n    name: 'cmf',\n    moduleName: CORE,\n };;\n
Identifiers.moduleDef = {\n    name: 'mod',\n    moduleName: CORE,\n };;\n
Identifiers.moduleProviderDef = {\n    name: 'mpd',\n    moduleName: CORE,\n };;\n
Identifiers.RegisterModuleFactoryFn = {\n    name: 'registerModuleFactory',\n    moduleName: CORE,\n };;\n
Identifiers.inject = { name: 'inject', moduleName: CORE };;\n
Identifiers.directiveInject = { name: 'directiveInject', moduleName: CORE };;\n
Identifiers.INJECTOR = { name: 'INJECTOR', moduleName: CORE };;\n
Identifiers.Injector = { name: 'Injector', moduleName: CORE };;\n
Identifiers.defineInjectable = { name: 'defineInjectable', moduleName: CORE };;\n
Identifiers.InjectableDef = { name: 'InjectableDef', moduleName: CORE };;\n
Identifiers.ViewEncapsulation = {\n    name: 'ViewEncapsulation',\n    moduleName: CORE,\n };;\n
Identifiers.ChangeDetectionStrategy = {\n    name: 'ChangeDetectionStrategy',\n    moduleName: CORE,\n };;\n
Identifiers.SecurityContext = {\n    name: 'SecurityContext',\n    moduleName: CORE,\n };;\n
Identifiers.LOCALE_ID = { name: 'LOCALE_ID', moduleName: CORE };;\n
Identifiers.TRANSLATIONS_FORMAT = {\n    name: 'TRANSLATIONS_FORMAT',\n    moduleName: CORE,\n };;\n
Identifiers.inlineInterpolate = {\n    name: 'inlineInterpolate',\n    moduleName: CORE,\n };;\n
Identifiers.interpolate = { name: 'interpolate', moduleName: CORE };;\n
Identifiers.EMPTY_ARRAY = { name: 'EMPTY_ARRAY', moduleName: CORE };;\n
Identifiers.EMPTY_MAP = { name: 'EMPTY_MAP', moduleName: CORE };;\n
Identifiers.Renderer = { name: 'Renderer', moduleName: CORE };;\n
Identifiers.viewDef = { name: 'vid', moduleName: CORE };;\n
Identifiers.elementDef = { name: 'eld', moduleName: CORE };;\n
Identifiers.anchorDef = { name: 'and', moduleName: CORE };;\n
Identifiers.textDef = { name: 'ted', moduleName: CORE };;\n
Identifiers.directiveDef = { name: 'did', moduleName: CORE };;\n
Identifiers.providerDef = { name: 'prd', moduleName: CORE };;\n
Identifiers.queryDef = { name: 'qud', moduleName: CORE };;\n
Identifiers.pureArrayDef = { name: 'pad', moduleName: CORE };;\n
Identifiers.pureObjectDef = { name: 'pod', moduleName: CORE };;\n
Identifiers.purePipeDef = { name: 'ppd', moduleName: CORE };;\n
Identifiers.pipeDef = { name: 'pid', moduleName: CORE };;\n
Identifiers.nodeValue = { name: 'nov', moduleName: CORE };;\n
Identifiers.ngContentDef = { name: 'ncd', moduleName: CORE };;\n
Identifiers.unwrapValue = { name: 'unv', moduleName: CORE };;\n
Identifiers.createRendererType2 = { name: 'crt', moduleName: CORE };;\n // type only\n
Identifiers.RendererType2 = {\n    name: 'RendererType2',\n    moduleName: CORE,\n };;\n // type only\n
Identifiers.ViewDefinition = {\n    name: 'ViewDefinition',\n    moduleName: CORE,\n };;\n
Identifiers.createComponentFactory = { name: 'ccf', moduleName: CORE };;\n
Identifiers.setClassMetadata = { name: 'setClassMetadata', moduleName: CORE };;\n
function createTokenForReference(reference) {\n    return { identifier: { reference: reference } };;\n }\n
function createTokenForExternalReference(reflector, reference) {\n    return createTokenForReference(reflector.resolveExternalReference(reference));;\n }\n\n /**\n  *\n  * @license\n  * Copyright Google LLC All Rights Reserved.\n  * Use of this source code is governed by an MIT-style license that can be\n  * found in the LICENSE file at https://angular.io/license\n  */\n\n  * A token representing the a reference to a static type.\n  * This token is unique for a filePath and name and can be used as a hash table key.\n  */\n  var StaticSymbol = /** @class */ (function () {\n    function StaticSymbol(filePath, name, members) {\n        this.filePath = filePath;\n        this.name = name;\n        this.members = members;\n    }\n\n    StaticSymbol.prototype.assertNoMembers = function () {\n        if (this.members.length) {\n            throw new Error("Illegal state: symbol without members expected, but got '" + JSON.stringify(this) + "'");\n        }\n    };;\n\n    return StaticSymbol;\n  }());\n\n /**\n  * A cache of static

```

```

symbol used by the StaticReflector to return the same symbol for the\n
 * same symbol values.\n
 */\n
var
StaticSymbolCache = /** @class */ (function () {\n
function StaticSymbolCache() {\n
this.cache = new
Map();\n
}\n
StaticSymbolCache.prototype.get = function (declarationFile, name, members) {\n
members = members || [];\n
var memberSuffix = members.length ? "." + members.join('.') : "";\n
var
key = "\\\\" + declarationFile + "\\\\" + name + memberSuffix;\n
var result = this.cache.get(key);\n
if (!result) {\n
result = new StaticSymbol(declarationFile, name, members);\n
this.cache.set(key,
result);\n
}\n
return result;\n
};\n
return StaticSymbolCache;\n
})();\n
/**\n
 *
@license\n
 * Copyright Google LLC All Rights Reserved.\n
 * Use of this source code is governed by an
MIT-style license that can be\n
 * found in the LICENSE file at https://angular.io/license\n
 */\n
// group 0:
"[prop] or (event) or @trigger"\n
// group 1: "prop" from "[prop]"
// group 2: "event" from "(event)"
// group 3: "@trigger" from "@trigger"
var HOST_REG_EXP = /^(?:(?!\[|\]|@|\)|\s|\/|:|\.|\?|\*|\+|\$|\/\w+\$)/;
function sanitizeIdentifier(name) {\n
return name.replace(/[\W/g, '_');\n
}\n
var
_anonymousTypeIndex = 0;\n
function identifierName(compileIdentifier) {\n
if (!compileIdentifier ||
!compileIdentifier.reference) {\n
return null;\n
}\n
var ref = compileIdentifier.reference;\n
if (ref
instanceof StaticSymbol) {\n
return ref.name;\n
}\n
if (ref['__anonymousType']) {\n
return
ref['__anonymousType'];\n
}\n
var identifier = stringify(ref);\n
if (identifier.indexOf('(') >= 0) {\n
// case: anonymous functions!\n
identifier = "anonymous_" + _anonymousTypeIndex++;\n
ref['__anonymousType'] = identifier;\n
}\n
else {\n
identifier = sanitizeIdentifier(identifier);\n
}\n
return identifier;\n
}\n
function identifierModuleUrl(compileIdentifier) {\n
var ref =
compileIdentifier.reference;\n
if (ref instanceof StaticSymbol) {\n
return ref.filePath;\n
}\n
//
Runtime type\n
return "." + stringify(ref);\n
}\n
function viewClassName(compType,
embeddedTemplateIndex) {\n
return "View_" + identifierName({ reference: compType }) + "_" +
embeddedTemplateIndex;\n
}\n
function rendererTypeName(compType) {\n
return "RenderType_" +
identifierName({ reference: compType });\n
}\n
function hostViewClassName(compType) {\n
return
"HostView_" + identifierName({ reference: compType });\n
}\n
function componentFactoryName(compType)
{\n
return identifierName({ reference: compType }) + "NgFactory";\n
}\n
(function
(CompileSummaryKind) {\n
CompileSummaryKind[CompileSummaryKind["Pipe"] = 0] = "Pipe";\n
CompileSummaryKind[CompileSummaryKind["Directive"] = 1] = "Directive";\n
CompileSummaryKind[CompileSummaryKind["NgModule"] = 2] = "NgModule";\n
CompileSummaryKind[CompileSummaryKind["Injectable"] = 3] = "Injectable";\n
})(exports.CompileSummaryKind || (exports.CompileSummaryKind = {}));\n
function tokenName(token) {\n
return token.value != null ? sanitizeIdentifier(token.value) : identifierName(token.identifier);\n
}\n
function
tokenReference(token) {\n
if (token.identifier != null) {\n
return token.identifier.reference;\n
}\n
else {\n
return token.value;\n
}\n
}\n
/**\n
 * Metadata about a stylesheet\n
 */\n
var
CompileStylesheetMetadata = /** @class */ (function () {\n
function CompileStylesheetMetadata(_a) {\n
var _b = _a === void 0 ? {} : _a, moduleUrl = _b.moduleUrl, styles = _b.styles, styleUrls = _b.styleUrls;\n
this.moduleUrl = moduleUrl || null;\n
this.styles = _normalizeArray(styles);\n
this.styleUrls =
_normalizeArray(styleUrls);\n
}\n
return CompileStylesheetMetadata;\n
})();\n
/**\n
 * Metadata
regarding compilation of a template.\n
 */\n
var CompileTemplateMetadata = /** @class */ (function () {\n
function CompileTemplateMetadata(_a) {\n
var encapsulation = _a.encapsulation, template = _a.template,
templateUrl = _a.templateUrl, htmlAst = _a.htmlAst, styles = _a.styles, styleUrls = _a.styleUrls, externalStylesheets
= _a.externalStylesheets, animations = _a.animations, ngContentSelectors = _a.ngContentSelectors, interpolation =
_a.interpolation, isInline = _a.isInline, preserveWhitespaces = _a.preserveWhitespaces;\n
this.encapsulation =
encapsulation;\n
this.template = template;\n
this.templateUrl = templateUrl;\n
this.htmlAst =
htmlAst;\n
this.styles = _normalizeArray(styles);\n
this.styleUrls = _normalizeArray(styleUrls);\n
this.externalStylesheets = _normalizeArray(externalStylesheets);\n
this.animations = animations ?
flatten(animations) : [];\n
this.ngContentSelectors = ngContentSelectors || [];\n
if (interpolation &&
interpolation.length != 2) {\n
throw new Error("'"interpolation' should have a start and an end symbol.");\n
}\n
}

```

```

    }\n    this.interpolation = interpolation;\n    this.isInline = isInline;\n    this.preserveWhitespaces
= preserveWhitespaces;\n    }\n    CompileTemplateMetadata.prototype.toSummary = function () {\n
return {\n        ngContentSelectors: this.ngContentSelectors,\n        encapsulation: this.encapsulation,\n
        styles: this.styles,\n        animations: this.animations\n    };\n    };\n    return
CompileTemplateMetadata;\n    }());\n    /**\n     * Metadata regarding compilation of a directive.\n     */\n    var
CompileDirectiveMetadata = /** @class */ (function () {\n        function CompileDirectiveMetadata(_a) {\n
var isHost = _a.isHost, type = _a.type, isComponent = _a.isComponent, selector = _a.selector, exportAs =
_a.exportAs, changeDetection = _a.changeDetection, inputs = _a.inputs, outputs = _a.outputs, hostListeners =
_a.hostListeners, hostProperties = _a.hostProperties, hostAttributes = _a.hostAttributes, providers = _a.providers,
viewProviders = _a.viewProviders, queries = _a.queries, guards = _a.guards, viewQueries = _a.viewQueries,
entryComponents = _a.entryComponents, template = _a.template, componentViewType = _a.componentViewType,
rendererType = _a.rendererType, componentFactory = _a.componentFactory;\n            this.isHost = !!isHost;\n
            this.type = type;\n            this.isComponent = isComponent;\n            this.selector = selector;\n            this.exportAs
= exportAs;\n            this.changeDetection = changeDetection;\n            this.inputs = inputs;\n            this.outputs =
outputs;\n            this.hostListeners = hostListeners;\n            this.hostProperties = hostProperties;\n
            this.hostAttributes = hostAttributes;\n            this.providers = _normalizeArray(providers);\n
            this.viewProviders = _normalizeArray(viewProviders);\n            this.queries = _normalizeArray(queries);\n
            this.guards = guards;\n            this.viewQueries = _normalizeArray(viewQueries);\n            this.entryComponents =
_normalizeArray(entryComponents);\n            this.template = template;\n            this.componentViewType =
componentViewType;\n            this.rendererType = rendererType;\n            this.componentFactory =
componentFactory;\n        }\n        CompileDirectiveMetadata.create = function (_a) {\n            var isHost =
_a.isHost, type = _a.type, isComponent = _a.isComponent, selector = _a.selector, exportAs = _a.exportAs,
changeDetection = _a.changeDetection, inputs = _a.inputs, outputs = _a.outputs, host = _a.host, providers =
_a.providers, viewProviders = _a.viewProviders, queries = _a.queries, guards = _a.guards, viewQueries =
_a.viewQueries, entryComponents = _a.entryComponents, template = _a.template, componentViewType =
_a.componentViewType, rendererType = _a.rendererType, componentFactory = _a.componentFactory;\n            var
hostListeners = {};\n            var hostProperties = {};\n            var hostAttributes = {};\n            if (host != null) {\n
                Object.keys(host).forEach(function (key) {\n                    var value = host[key];\n                    var matches =
key.match(HOST_REG_EXP);\n                    if (matches === null) {\n                        hostAttributes[key] = value;\n
                    }\n                    else if (matches[1] != null) {\n                        hostProperties[matches[1]] = value;\n
                    }\n                    else if (matches[2] != null) {\n                        hostListeners[matches[2]] = value;\n
                    }\n                });\n            }\n            var inputsMap = {};\n            if (inputs != null) {\n
                inputs.forEach(function (bindConfig) {\n                    // canonical syntax: `dirProp: elProp`\n                    // if there is
no `:` , use dirProp = elProp\n                    var parts = splitAtColon(bindConfig, [bindConfig, bindConfig]);\n
                    inputsMap[parts[0]] = parts[1];\n                });\n            }\n            var outputsMap = {};\n            if (outputs !=
null) {\n                outputs.forEach(function (bindConfig) {\n                    // canonical syntax: `dirProp: elProp`\n
                    // if there is no `:` , use dirProp = elProp\n                    var parts = splitAtColon(bindConfig, [bindConfig,
bindConfig]);\n                    outputsMap[parts[0]] = parts[1];\n                });\n            }\n            return new
CompileDirectiveMetadata({\n                isHost: isHost,\n                type: type,\n                isComponent:
!!isComponent,\n                selector: selector,\n                exportAs: exportAs,\n                changeDetection:
changeDetection,\n                inputs: inputsMap,\n                outputs: outputsMap,\n                hostListeners:
hostListeners,\n                hostProperties: hostProperties,\n                hostAttributes: hostAttributes,\n
                providers: providers,\n                viewProviders: viewProviders,\n                queries: queries,\n                guards:
guards,\n                viewQueries: viewQueries,\n                entryComponents: entryComponents,\n
                template: template,\n                componentViewType: componentViewType,\n                rendererType:
rendererType,\n                componentFactory: componentFactory,\n            });\n        };\n    };\n    CompileDirectiveMetadata.prototype.toSummary = function () {\n
return {\n        summaryKind:
exports.CompileSummaryKind.Directive,\n        type: this.type,\n        isComponent: this.isComponent,\n

```



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        selector: this.selector,\n            exportAs: this.exportAs,\n            inputs: this.inputs,\n            outputs: this.outputs,\n            hostListeners: this.hostListeners,\n            hostProperties: this.hostProperties,\n            hostAttributes: this.hostAttributes,\n            providers: this.providers,\n            viewProviders: this.viewProviders,\n            queries: this.queries,\n            guards: this.guards,\n            viewQueries: this.viewQueries,\n            entryComponents: this.entryComponents,\n            changeDetection: this.changeDetection,\n            template: this.template && this.template.toSummary(),\n            componentViewType: this.componentViewType,\n            rendererType: this.rendererType,\n            componentFactory: this.componentFactory\n        });\n        return CompileDirectiveMetadata;\n    });\n\n    var CompilePipeMetadata = /** @class */ (function () {\n        function CompilePipeMetadata(_a) {\n            var type = _a.type, name = _a.name, pure = _a.pure;\n            this.type = type;\n            this.name = name;\n            this.pure = !!pure;\n        }\n        CompilePipeMetadata.prototype.toSummary = function () {\n            return {\n                summaryKind: exports.CompileSummaryKind.Pipe,\n                type: this.type,\n                name: this.name,\n                pure: this.pure\n            };\n        };\n        return CompilePipeMetadata;\n    });\n\n    var CompileShallowModuleMetadata = /** @class */ (function () {\n        function CompileShallowModuleMetadata()\n        {\n            return CompileShallowModuleMetadata;\n        }\n        /**\n         * Metadata regarding compilation of a module.\n         */\n        var CompileNgModuleMetadata = /** @class */ (function () {\n            function CompileNgModuleMetadata(_a) {\n                var type = _a.type, providers = _a.providers, declaredDirectives = _a.declaredDirectives, exportedDirectives = _a.exportedDirectives, declaredPipes = _a.declaredPipes, exportedPipes = _a.exportedPipes, entryComponents = _a.entryComponents, bootstrapComponents = _a.bootstrapComponents, importedModules = _a.importedModules, exportedModules = _a.exportedModules, schemas = _a.schemas, transitiveModule = _a.transitiveModule, id = _a.id;\n                this.type = type || null;\n                this.declaredDirectives = _normalizeArray(declaredDirectives);\n                this.exportedDirectives = _normalizeArray(exportedDirectives);\n                this.declaredPipes = _normalizeArray(declaredPipes);\n                this.exportedPipes = _normalizeArray(exportedPipes);\n                this.providers = _normalizeArray(providers);\n                this.entryComponents = _normalizeArray(entryComponents);\n                this.bootstrapComponents = _normalizeArray(bootstrapComponents);\n                this.importedModules = _normalizeArray(importedModules);\n                this.exportedModules = _normalizeArray(exportedModules);\n                this.schemas = _normalizeArray(schemas);\n                this.id = id || null;\n                this.transitiveModule = transitiveModule || null;\n            }\n            CompileNgModuleMetadata.prototype.toSummary = function () {\n                var module = this.transitiveModule;\n                return {\n                    summaryKind: exports.CompileSummaryKind.NgModule,\n                    type: this.type,\n                    entryComponents: module.entryComponents,\n                    providers: module.providers,\n                    modules: module.modules,\n                    exportedDirectives: module.exportedDirectives,\n                    exportedPipes: module.exportedPipes\n                };\n            };\n            return CompileNgModuleMetadata;\n        })();\n\n        var TransitiveCompileNgModuleMetadata = /** @class */ (function () {\n            function TransitiveCompileNgModuleMetadata()\n            {\n                this.directivesSet = new Set();\n                this.directives = [];\n                this.exportedDirectivesSet = new Set();\n                this.exportedDirectives = [];\n                this.pipesSet = new Set();\n                this.pipes = [];\n                this.exportedPipesSet = new Set();\n                this.exportedPipes = [];\n                this.modulesSet = new Set();\n                this.modules = [];\n                this.entryComponentsSet = new Set();\n                this.entryComponents = [];\n                this.providers = [];\n            }\n            TransitiveCompileNgModuleMetadata.prototype.addProvider = function (provider, module) {\n                this.providers.push({ provider: provider, module: module });\n            };\n            TransitiveCompileNgModuleMetadata.prototype.addDirective = function (id) {\n                if (!this.directivesSet.has(id.reference)) {\n                    this.directivesSet.add(id.reference);\n                    this.directives.push(id);\n                }\n            };\n            TransitiveCompileNgModuleMetadata.prototype.addExportedDirective = function (id) {\n                if (!this.exportedDirectivesSet.has(id.reference)) {\n                    this.exportedDirectivesSet.add(id.reference);\n                    this.exportedDirectives.push(id);\n                }\n            };\n            TransitiveCompileNgModuleMetadata.prototype.addPipe = function (id) {\n                if

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(!this.pipesSet.has(id.reference)) {\n          this.pipesSet.add(id.reference);\n          this.pipes.push(id);\n        }\n      };\n      TransitiveCompileNgModuleMetadata.prototype.addExportedPipe = function (id) {\n        if\n        (!this.exportedPipesSet.has(id.reference)) {\n          this.exportedPipesSet.add(id.reference);\n          this.exportedPipes.push(id);\n        }\n      };\n      TransitiveCompileNgModuleMetadata.prototype.addModule\n      = function (id) {\n        if (!this.modulesSet.has(id.reference)) {\n          this.modulesSet.add(id.reference);\n          this.modules.push(id);\n        }\n      };\n      TransitiveCompileNgModuleMetadata.prototype.addEntryComponent = function (ec) {\n        if\n        (!this.entryComponentsSet.has(ec.componentType)) {\n          this.entryComponentsSet.add(ec.componentType);\n          this.entryComponents.push(ec);\n        }\n      };\n      return TransitiveCompileNgModuleMetadata;\n    }());\n    function _normalizeArray(obj) {\n      return obj ||\n      [];\n    }\n    var ProviderMeta = /** @class */ (function () {\n      function ProviderMeta(token, _a) {\n        var\n        useClass = _a.useClass, useValue = _a.useValue, useExisting = _a.useExisting, useFactory = _a.useFactory, deps =\n        _a.deps, multi = _a.multi;\n        this.token = token;\n        this.useClass = useClass || null;\n        this.useValue = useValue;\n        this.useExisting = useExisting;\n        this.useFactory = useFactory || null;\n        this.dependencies = deps || null;\n        this.multi = !!multi;\n      }\n      return ProviderMeta;\n    }());\n    function flatten(list) {\n      return list.reduce(function (flat, item) {\n        var flatItem = Array.isArray(item) ?\n        flatten(item) : item;\n        return flat.concat(flatItem);\n      }, []);\n    }\n    function jitSourceUrl(url) {\n      //\n      Note: We need 3 "\\^" so that ng shows up as a separate domain\n      // in the chrome dev tools.\n      return\n      url.replace(/(\\w+:\\\\|\\[\\w:-]+)?(\\|+)?/, 'ng:///');\n    }\n    function templateUrl(ngModuleType, compMeta,\n    templateMeta) {\n      var url;\n      if (templateMeta.isInline) {\n        if (compMeta.type.reference instanceof\n        StaticSymbol) {\n          // Note: a .ts file might contain multiple components with inline templates,\n          //\n          so we need to give them unique urls, as these will be used for sourcemaps.\n          url =\n          compMeta.type.reference.filePath + "\\." + compMeta.type.reference.name + ".html";\n        }\n        else {\n          url = identifierName(ngModuleType) + "\\^" + identifierName(compMeta.type) + ".html";\n        }\n      }\n      else {\n        url = templateMeta.templateUrl;\n      }\n      return compMeta.type.reference instanceof\n      StaticSymbol ? url : jitSourceUrl(url);\n    }\n    function sharedStylesheetJitUrl(meta, id) {\n      var pathParts =\n      meta.moduleUrl.split(/\\|\\\\|\\\\g);\n      var baseName = pathParts[pathParts.length - 1];\n      return\n      jitSourceUrl("\\css^" + id + baseName + ".ngstyle.js");\n    }\n    function ngModuleJitUrl(moduleMeta) {\n      return jitSourceUrl(identifierName(moduleMeta.type) + "/module.ngfactory.js");\n    }\n    function\n    templateUrl(ngModuleType, compMeta) {\n      return jitSourceUrl(identifierName(ngModuleType) + "\\^" +\n      identifierName(compMeta.type) + ".ngfactory.js");\n    }\n\n    /**\n     * @license\n     * Copyright Google LLC\n     * All Rights Reserved.\n     * Use of this source code is governed by an MIT-style license that can be\n     * found in the LICENSE file at https://angular.io/license\n     */\n    var CORE$1 = '@angular/core';\n    var\n    Identifiers$1 = /** @class */ (function () {\n      function Identifiers() {\n      }\n      return Identifiers;\n    }());\n\n    /* Methods */\n    Identifiers$1.NEW_METHOD = 'factory';\n    Identifiers$1.TRANSFORM_METHOD =\n    'transform';\n    Identifiers$1.PATCH_DEPS = 'patchedDeps';\n\n    /* Instructions */\n    Identifiers$1.namespaceHTML = { name: 'namespaceHTML', moduleName: CORE$1 };\n    Identifiers$1.namespaceMathML = { name: 'namespaceMathML', moduleName: CORE$1 };\n    Identifiers$1.namespaceSVG = { name: 'namespaceSVG', moduleName: CORE$1 };\n    Identifiers$1.element = {\n    name: 'element', moduleName: CORE$1 };\n    Identifiers$1.elementStart = { name: 'elementStart', moduleName:\n    CORE$1 };\n    Identifiers$1.elementEnd = { name: 'elementEnd', moduleName: CORE$1 };\n    Identifiers$1.advance = { name: 'advance', moduleName: CORE$1 };\n    Identifiers$1.syntheticHostProperty = {\n    name: 'syntheticHostProperty', moduleName: CORE$1 };\n    Identifiers$1.syntheticHostListener = { name:\n    'syntheticHostListener', moduleName: CORE$1 };\n    Identifiers$1.attribute = { name: 'attribute', moduleName:\n    CORE$1 };\n    Identifiers$1.attributeInterpolate1 = { name: 'attributeInterpolate1', moduleName: CORE$1 };\n    Identifiers$1.attributeInterpolate2 = { name: 'attributeInterpolate2', moduleName: CORE$1 };\n    Identifiers$1.attributeInterpolate3 = { name: 'attributeInterpolate3', moduleName: CORE$1 };\n    Identifiers$1.attributeInterpolate4 = { name: 'attributeInterpolate4', moduleName: CORE$1 };\n
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Identifiers$1.attributeInterpolate5 = { name: 'attributeInterpolate5', moduleName: CORE$1 };
Identifiers$1.attributeInterpolate6 = { name: 'attributeInterpolate6', moduleName: CORE$1 };
Identifiers$1.attributeInterpolate7 = { name: 'attributeInterpolate7', moduleName: CORE$1 };
Identifiers$1.attributeInterpolate8 = { name: 'attributeInterpolate8', moduleName: CORE$1 };
Identifiers$1.attributeInterpolateV = { name: 'attributeInterpolateV', moduleName: CORE$1 };
Identifiers$1.classProp = { name: 'classProp', moduleName: CORE$1 };
Identifiers$1.elementContainerStart = { name: 'elementContainerStart', moduleName: CORE$1 };
Identifiers$1.elementContainerEnd = { name: 'elementContainerEnd', moduleName: CORE$1 };
Identifiers$1.elementContainer = { name: 'elementContainer', moduleName: CORE$1 };
Identifiers$1.styleMap = { name: 'styleMap', moduleName: CORE$1 };
Identifiers$1.styleMapInterpolate1 = { name: 'styleMapInterpolate1', moduleName: CORE$1 };
Identifiers$1.styleMapInterpolate2 = { name: 'styleMapInterpolate2', moduleName: CORE$1 };
Identifiers$1.styleMapInterpolate3 = { name: 'styleMapInterpolate3', moduleName: CORE$1 };
Identifiers$1.styleMapInterpolate4 = { name: 'styleMapInterpolate4', moduleName: CORE$1 };
Identifiers$1.styleMapInterpolate5 = { name: 'styleMapInterpolate5', moduleName: CORE$1 };
Identifiers$1.styleMapInterpolate6 = { name: 'styleMapInterpolate6', moduleName: CORE$1 };
Identifiers$1.styleMapInterpolate7 = { name: 'styleMapInterpolate7', moduleName: CORE$1 };
Identifiers$1.styleMapInterpolate8 = { name: 'styleMapInterpolate8', moduleName: CORE$1 };
Identifiers$1.styleMapInterpolateV = { name: 'styleMapInterpolateV', moduleName: CORE$1 };
Identifiers$1.classMap = { name: 'classMap', moduleName: CORE$1 };
Identifiers$1.classMapInterpolate1 = { name: 'classMapInterpolate1', moduleName: CORE$1 };
Identifiers$1.classMapInterpolate2 = { name: 'classMapInterpolate2', moduleName: CORE$1 };
Identifiers$1.classMapInterpolate3 = { name: 'classMapInterpolate3', moduleName: CORE$1 };
Identifiers$1.classMapInterpolate4 = { name: 'classMapInterpolate4', moduleName: CORE$1 };
Identifiers$1.classMapInterpolate5 = { name: 'classMapInterpolate5', moduleName: CORE$1 };
Identifiers$1.classMapInterpolate6 = { name: 'classMapInterpolate6', moduleName: CORE$1 };
Identifiers$1.classMapInterpolate7 = { name: 'classMapInterpolate7', moduleName: CORE$1 };
Identifiers$1.classMapInterpolate8 = { name: 'classMapInterpolate8', moduleName: CORE$1 };
Identifiers$1.classMapInterpolateV = { name: 'classMapInterpolateV', moduleName: CORE$1 };
Identifiers$1.styleProp = { name: 'styleProp', moduleName: CORE$1 };
Identifiers$1.stylePropInterpolate1 = { name: 'stylePropInterpolate1', moduleName: CORE$1 };
Identifiers$1.stylePropInterpolate2 = { name: 'stylePropInterpolate2', moduleName: CORE$1 };
Identifiers$1.stylePropInterpolate3 = { name: 'stylePropInterpolate3', moduleName: CORE$1 };
Identifiers$1.stylePropInterpolate4 = { name: 'stylePropInterpolate4', moduleName: CORE$1 };
Identifiers$1.stylePropInterpolate5 = { name: 'stylePropInterpolate5', moduleName: CORE$1 };
Identifiers$1.stylePropInterpolate6 = { name: 'stylePropInterpolate6', moduleName: CORE$1 };
Identifiers$1.stylePropInterpolate7 = { name: 'stylePropInterpolate7', moduleName: CORE$1 };
Identifiers$1.stylePropInterpolate8 = { name: 'stylePropInterpolate8', moduleName: CORE$1 };
Identifiers$1.stylePropInterpolateV = { name: 'stylePropInterpolateV', moduleName: CORE$1 };
Identifiers$1.nextContext = { name: 'nextContext', moduleName: CORE$1 };
Identifiers$1.templateCreate = { name: 'template', moduleName: CORE$1 };
Identifiers$1.text = { name: 'text', moduleName: CORE$1 };
Identifiers$1.enableBindings = { name: 'enableBindings', moduleName: CORE$1 };
Identifiers$1.disableBindings = { name: 'disableBindings', moduleName: CORE$1 };
Identifiers$1.getCurrentView = { name: 'getCurrentView', moduleName: CORE$1 };
Identifiers$1.textInterpolate = { name: 'textInterpolate', moduleName: CORE$1 };
Identifiers$1.textInterpolate1 = { name: 'textInterpolate1', moduleName: CORE$1 };
Identifiers$1.textInterpolate2 = { name: 'textInterpolate2', moduleName: CORE$1 };
Identifiers$1.textInterpolate3 = { name: 'textInterpolate3', moduleName: CORE$1 };
Identifiers$1.textInterpolate4 = { name: 'textInterpolate4', moduleName: CORE$1 };
Identifiers$1.textInterpolate5 = { name: 'textInterpolate5', moduleName: CORE$1 };
Identifiers$1.textInterpolate6 = { name: 'textInterpolate6', moduleName: CORE$1 };

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Identifiers$1.textInterpolate7 = { name: 'textInterpolate7', moduleName: CORE$1 };
Identifiers$1.textInterpolate8 = { name: 'textInterpolate8', moduleName: CORE$1 };
Identifiers$1.textInterpolateV = { name: 'textInterpolateV', moduleName: CORE$1 };
Identifiers$1.restoreView = { name: 'restoreView', moduleName: CORE$1 };
Identifiers$1.pureFunction0 = { name: 'pureFunction0', moduleName: CORE$1 };
Identifiers$1.pureFunction1 = { name: 'pureFunction1', moduleName: CORE$1 };
Identifiers$1.pureFunction2 = { name: 'pureFunction2', moduleName: CORE$1 };
Identifiers$1.pureFunction3 = { name: 'pureFunction3', moduleName: CORE$1 };
Identifiers$1.pureFunction4 = { name: 'pureFunction4', moduleName: CORE$1 };
Identifiers$1.pureFunction5 = { name: 'pureFunction5', moduleName: CORE$1 };
Identifiers$1.pureFunction6 = { name: 'pureFunction6', moduleName: CORE$1 };
Identifiers$1.pureFunction7 = { name: 'pureFunction7', moduleName: CORE$1 };
Identifiers$1.pureFunction8 = { name: 'pureFunction8', moduleName: CORE$1 };
Identifiers$1.pureFunctionV = { name: 'pureFunctionV', moduleName: CORE$1 };
Identifiers$1.pipeBind1 = { name: 'pipeBind1', moduleName: CORE$1 };
Identifiers$1.pipeBind2 = { name: 'pipeBind2', moduleName: CORE$1 };
Identifiers$1.pipeBind3 = { name: 'pipeBind3', moduleName: CORE$1 };
Identifiers$1.pipeBind4 = { name: 'pipeBind4', moduleName: CORE$1 };
Identifiers$1.pipeBindV = { name: 'pipeBindV', moduleName: CORE$1 };
Identifiers$1.hostProperty = { name: 'hostProperty', moduleName: CORE$1 };
Identifiers$1.property = { name: 'property', moduleName: CORE$1 };
Identifiers$1.propertyInterpolate = { name: 'propertyInterpolate', moduleName: CORE$1 };
Identifiers$1.propertyInterpolate1 = { name: 'propertyInterpolate1', moduleName: CORE$1 };
Identifiers$1.propertyInterpolate2 = { name: 'propertyInterpolate2', moduleName: CORE$1 };
Identifiers$1.propertyInterpolate3 = { name: 'propertyInterpolate3', moduleName: CORE$1 };
Identifiers$1.propertyInterpolate4 = { name: 'propertyInterpolate4', moduleName: CORE$1 };
Identifiers$1.propertyInterpolate5 = { name: 'propertyInterpolate5', moduleName: CORE$1 };
Identifiers$1.propertyInterpolate6 = { name: 'propertyInterpolate6', moduleName: CORE$1 };
Identifiers$1.propertyInterpolate7 = { name: 'propertyInterpolate7', moduleName: CORE$1 };
Identifiers$1.propertyInterpolate8 = { name: 'propertyInterpolate8', moduleName: CORE$1 };
Identifiers$1.propertyInterpolateV = { name: 'propertyInterpolateV', moduleName: CORE$1 };
Identifiers$1.i18n = { name: 'i18n', moduleName: CORE$1 };
Identifiers$1.i18nAttributes = { name: 'i18nAttributes', moduleName: CORE$1 };
Identifiers$1.i18nExp = { name: 'i18nExp', moduleName: CORE$1 };
Identifiers$1.i18nStart = { name: 'i18nStart', moduleName: CORE$1 };
Identifiers$1.i18nEnd = { name: 'i18nEnd', moduleName: CORE$1 };
Identifiers$1.i18nApply = { name: 'i18nApply', moduleName: CORE$1 };
Identifiers$1.i18nPostprocess = { name: 'i18nPostprocess', moduleName: CORE$1 };
Identifiers$1.pipe = { name: 'pipe', moduleName: CORE$1 };
Identifiers$1.projection = { name: 'projection', moduleName: CORE$1 };
Identifiers$1.projectionDef = { name: 'projectionDef', moduleName: CORE$1 };
Identifiers$1.reference = { name: 'reference', moduleName: CORE$1 };
Identifiers$1.inject = { name: 'inject', moduleName: CORE$1 };
Identifiers$1.injectAttribute = { name: 'injectAttribute', moduleName: CORE$1 };
Identifiers$1.injectPipeChangeDetectorRef = { name: 'injectPipeChangeDetectorRef', moduleName: CORE$1 };
Identifiers$1.directiveInject = { name: 'directiveInject', moduleName: CORE$1 };
Identifiers$1.invalidFactory = { name: 'invalidFactory', moduleName: CORE$1 };
Identifiers$1.invalidFactoryDep = { name: 'invalidFactoryDep', moduleName: CORE$1 };
Identifiers$1.templateRefExtractor = { name: 'templateRefExtractor', moduleName: CORE$1 };
Identifiers$1.resolveWindow = { name: 'resolveWindow', moduleName: CORE$1 };
Identifiers$1.resolveDocument = { name: 'resolveDocument', moduleName: CORE$1 };
Identifiers$1.resolveBody = { name: 'resolveBody', moduleName: CORE$1 };
Identifiers$1.defineComponent = { name: 'defineComponent', moduleName: CORE$1 };
Identifiers$1.setComponentScope = { name: 'setComponentScope', moduleName: CORE$1 };
Identifiers$1.ComponentDefWithMeta = {
  name: 'ComponentDefWithMeta',
  moduleName: CORE$1,
};
Identifiers$1.FactoryDef = {
  name: 'FactoryDef',
  moduleName: CORE$1,
};
Identifiers$1.defineDirective = {
  name: 'defineDirective',
  moduleName: CORE$1,
};
Identifiers$1.DirectiveDefWithMeta = {
  name: 'DirectiveDefWithMeta',
  moduleName: CORE$1,
};

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};\n Identifiers$1.InjectorDef = {\n   name: 'InjectorDef',\n   moduleName: CORE$1,\n };;\n Identifiers$1.defineInjector = {\n   name: 'defineInjector',\n   moduleName: CORE$1,\n };;\n Identifiers$1.NgModuleDefWithMeta = {\n   name: 'NgModuleDefWithMeta',\n   moduleName: CORE$1,\n };;\n Identifiers$1.ModuleWithProviders = {\n   name: 'ModuleWithProviders',\n   moduleName: CORE$1,\n };;\n Identifiers$1.defineNgModule = { name: 'defineNgModule', moduleName: CORE$1 };;\n Identifiers$1.setNgModuleScope = { name: 'setNgModuleScope', moduleName: CORE$1 };;\n Identifiers$1.PipeDefWithMeta = { name: 'PipeDefWithMeta', moduleName: CORE$1 };;\n Identifiers$1.definePipe = { name: 'definePipe', moduleName: CORE$1 };;\n Identifiers$1.queryRefresh = { name: 'queryRefresh', moduleName: CORE$1 };;\n Identifiers$1.viewQuery = { name: 'viewQuery', moduleName: CORE$1 };;\n Identifiers$1.staticViewQuery = { name: 'staticViewQuery', moduleName: CORE$1 };;\n Identifiers$1.staticContentQuery = { name: 'staticContentQuery', moduleName: CORE$1 };;\n Identifiers$1.loadQuery = { name: 'loadQuery', moduleName: CORE$1 };;\n Identifiers$1.contentQuery = { name: 'contentQuery', moduleName: CORE$1 };;\n Identifiers$1.NgOnChangesFeature = { name: 'NgOnChangesFeature', moduleName: CORE$1 };;\n Identifiers$1.InheritDefinitionFeature = { name: 'InheritDefinitionFeature', moduleName: CORE$1 };;\n Identifiers$1.CopyDefinitionFeature = { name: 'CopyDefinitionFeature', moduleName: CORE$1 };;\n Identifiers$1.ProvidersFeature = { name: 'ProvidersFeature', moduleName: CORE$1 };;\n Identifiers$1.listener = { name: 'listener', moduleName: CORE$1 };;\n Identifiers$1.getFactoryOf = {\n   name: 'getFactoryOf',\n   moduleName: CORE$1,\n };;\n Identifiers$1.getInheritedFactory = {\n   name: 'getInheritedFactory',\n   moduleName: CORE$1,\n };;\n // sanitization-related functions\n Identifiers$1.sanitizeHtml = { name: 'sanitizeHtml', moduleName: CORE$1 };;\n Identifiers$1.sanitizeStyle = { name: 'sanitizeStyle', moduleName: CORE$1 };;\n Identifiers$1.sanitizeResourceUrl = { name: 'sanitizeResourceUrl', moduleName: CORE$1 };;\n Identifiers$1.sanitizeScript = { name: 'sanitizeScript', moduleName: CORE$1 };;\n Identifiers$1.sanitizeUrl = { name: 'sanitizeUrl', moduleName: CORE$1 };;\n Identifiers$1.sanitizeUrlOrResourceUrl = { name: 'sanitizeUrlOrResourceUrl', moduleName: CORE$1 };;\n Identifiers$1.trustConstantHtml = { name: 'trustConstantHtml', moduleName: CORE$1 };;\n Identifiers$1.trustConstantScript = { name: 'trustConstantScript', moduleName: CORE$1 };;\n Identifiers$1.trustConstantResourceUrl = { name: 'trustConstantResourceUrl', moduleName: CORE$1 };;\n\n /**\n  * @license\n  * Copyright Google LLC All Rights Reserved.\n  *\n  * Use of this source code is governed by an MIT-style license that can be\n  * found in the LICENSE file at https://angular.io/license\n  */\n\n /**\n  * Convert an object map with `Expression` values into a `LiteralMapExpr`.\n  */\n function\n mapToMapExpression(map) {\n   var result = Object.keys(map).map(function (key) { return ({\n     key: key,\n     // The assertion here is because really TypeScript doesn't allow us to express that if the\n     // key is present, it will have a value, but this is true in reality.\n     value: map[key],\n     quoted: false,\n   }));\n   return literalMap(result);\n };\n\n /**\n  * Convert metadata into an `Expression` in the given `OutputContext`.\n  */\n function\n convertMetaToOutput(meta, ctx) {\n   if (Array.isArray(meta)) {\n     return literalArr(meta.map(function (entry) { return convertMetaToOutput(entry, ctx); }));\n   } else if (meta instanceof StaticSymbol) {\n     return ctx.importExpr(meta);\n   } else if (meta == null) {\n     return literal(meta);\n   } else {\n     throw new Error("Internal error: Unsupported or unknown metadata: '" + meta);\n   }\n }\n\n function\n typeWithParameters(type, numParams) {\n   if (numParams === 0) {\n     return expressionType(type);\n   } else {\n     var params = [];\n     for (var i = 0; i < numParams; i++) {\n       params.push(DYNAMIC_TYPE);\n     }\n     return expressionType(type, undefined, params);\n   }\n }\n\n var\n ANIMATE_SYMBOL_PREFIX = '@';\n function\n prepareSyntheticPropertyName(name) {\n   return "\"" + ANIMATE_SYMBOL_PREFIX + name;\n }\n function\n prepareSyntheticListenerName(name, phase) {\n   return "\"" + ANIMATE_SYMBOL_PREFIX + name + "." + phase;\n }\n function\n isSyntheticPropertyOrListener(name) {\n   return name.charAt(0) == ANIMATE_SYMBOL_PREFIX;\n }\n function\n getSyntheticPropertyName(name) {\n   // this will strip out listener phase values...\n   // @foo.start\n   => @foo\n   var i = name.indexOf('.');\n   name = i > 0 ? name.substring(0, i) : name;\n   if

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(name.charAt(0) !== ANIMATE_SYMBOL_PREFIX) {\n      name = ANIMATE_SYMBOL_PREFIX +
name;\n    }\n    return name;\n  }\n  function prepareSyntheticListenerFunctionName(name, phase) {\n
return "animation_" + name + "_" + phase;\n  }\n  function jitOnlyGuardedExpression(expr) {\n    var
ngJitMode = new ExternalExpr({ name: 'ngJitMode', moduleName: null });\n    var jitFlagNotDefined = new
BinaryOperatorExpr(exports.BinaryOperator.Identical, new TypeofExpr(ngJitMode), literal('undefined'));\n    var
jitFlagUndefinedOrTrue = new BinaryOperatorExpr(exports.BinaryOperator.Or, jitFlagNotDefined, ngJitMode, /*
type */ undefined, \n    /* sourceSpan */ undefined, true);\n    return new
BinaryOperatorExpr(exports.BinaryOperator.And, jitFlagUndefinedOrTrue, expr);\n  }\n  function
wrapReference(value) {\n    var wrapped = new WrappedNodeExpr(value);\n    return { value: wrapped, type:
wrapped };\n  }\n  /**\n   * @license\n   * Copyright Google LLC All Rights Reserved.\n   * Use of
this source code is governed by an MIT-style license that can be\n   * found in the LICENSE file at
https://angular.io/license\n   *\n   var Text = /** @class */ (function () {\n    function Text(value, sourceSpan)
{\n      this.value = value;\n      this.sourceSpan = sourceSpan;\n    }\n    Text.prototype.visit = function
(visitor) {\n      return visitor.visitText(this);\n    }; \n    return Text;\n  }());\n  var BoundText = /**
@class */ (function () {\n    function BoundText(value, sourceSpan, i18n) {\n      this.value = value;\n
this.sourceSpan = sourceSpan;\n      this.i18n = i18n;\n    }\n    BoundText.prototype.visit = function
(visitor) {\n      return visitor.visitBoundText(this);\n    }; \n    return BoundText;\n  }());\n  var
TextAttribute = /** @class */ (function () {\n    function TextAttribute(name, value, sourceSpan, valueSpan,
i18n) {\n      this.name = name;\n      this.value = value;\n      this.sourceSpan = sourceSpan;\n
this.valueSpan = valueSpan;\n      this.i18n = i18n;\n    }\n    TextAttribute.prototype.visit = function
(visitor) {\n      return visitor.visitTextAttribute(this);\n    }; \n    return TextAttribute;\n  }());\n  var
BoundAttribute = /** @class */ (function () {\n    function BoundAttribute(name, type, securityContext, value,
unit, sourceSpan, keySpan, valueSpan, i18n) {\n      this.name = name;\n      this.type = type;\n
this.securityContext = securityContext;\n      this.value = value;\n      this.unit = unit;\n
this.sourceSpan = sourceSpan;\n      this.keySpan = keySpan;\n      this.valueSpan = valueSpan;\n
this.i18n = i18n;\n    }\n    BoundAttribute.fromBoundElementProperty = function (prop, i18n) {\n      if
(prop.keySpan === undefined) {\n        throw new Error("Unexpected state: keySpan must be defined for
bound attributes but was not for '" + prop.name + "': '" + prop.sourceSpan);\n      }\n      return new
BoundAttribute(prop.name, prop.type, prop.securityContext, prop.value, prop.unit, prop.sourceSpan, prop.keySpan,
prop.valueSpan, i18n);\n    }; \n    BoundAttribute.prototype.visit = function (visitor) {\n      return
visitor.visitBoundAttribute(this);\n    }; \n    return BoundAttribute;\n  }());\n  var BoundEvent = /** @class
*/ (function () {\n    function BoundEvent(name, type, handler, target, phase, sourceSpan, handlerSpan) {\n
this.name = name;\n      this.type = type;\n      this.handler = handler;\n      this.target = target;\n
this.phase = phase;\n      this.sourceSpan = sourceSpan;\n      this.handlerSpan = handlerSpan;\n    }\n
BoundEvent.fromParsedEvent = function (event) {\n      var target = event.type === 0 /* Regular */ ?
event.targetOrPhase : null;\n      var phase = event.type === 1 /* Animation */ ? event.targetOrPhase : null;\n
      return new BoundEvent(event.name, event.type, event.handler, target, phase, event.sourceSpan,
event.handlerSpan);\n    }; \n    BoundEvent.prototype.visit = function (visitor) {\n      return
visitor.visitBoundEvent(this);\n    }; \n    return BoundEvent;\n  }());\n  var Element = /** @class */ (function
() {\n    function Element(name, attributes, inputs, outputs, children, references, sourceSpan, startSourceSpan,
endSourceSpan, i18n) {\n      this.name = name;\n      this.attributes = attributes;\n      this.inputs =
inputs;\n      this.outputs = outputs;\n      this.children = children;\n      this.references = references;\n
this.sourceSpan = sourceSpan;\n      this.startSourceSpan = startSourceSpan;\n      this.endSourceSpan =
endSourceSpan;\n      this.i18n = i18n;\n    }\n    Element.prototype.visit = function (visitor) {\n
return visitor.visitElement(this);\n    }; \n    return Element;\n  }());\n  var Template = /** @class */ (function
() {\n    function Template(tagName, attributes, inputs, outputs, templateAttrs, children, references, variables,
sourceSpan, startSourceSpan, endSourceSpan, i18n) {\n      this.tagName = tagName;\n      this.attributes =
attributes;\n      this.inputs = inputs;\n      this.outputs = outputs;\n      this.templateAttrs =

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templateAttrs;\n      this.children = children;\n      this.references = references;\n      this.variables =
variables;\n      this.sourceSpan = sourceSpan;\n      this.startSourceSpan = startSourceSpan;\n
this.endSourceSpan = endSourceSpan;\n      this.i18n = i18n;\n      }\n      Template.prototype.visit = function
(visitor) {\n      return visitor.visitTemplate(this);\n      };\n      return Template;\n      }());\n      var Content = /**
@class */ (function () {\n      function Content(selector, attributes, sourceSpan, i18n) {\n      this.selector =
selector;\n      this.attributes = attributes;\n      this.sourceSpan = sourceSpan;\n      this.i18n = i18n;\n
      this.name = 'ng-content';\n      }\n      Content.prototype.visit = function (visitor) {\n      return
visitor.visitContent(this);\n      };\n      return Content;\n      }());\n      var Variable = /** @class */ (function () {\n
      function Variable(name, value, sourceSpan, keySpan, valueSpan) {\n      this.name = name;\n      this.value
= value;\n      this.sourceSpan = sourceSpan;\n      this.keySpan = keySpan;\n      this.valueSpan =
valueSpan;\n      }\n      Variable.prototype.visit = function (visitor) {\n      return visitor.visitVariable(this);\n
      };\n      return Variable;\n      }());\n      var Reference = /** @class */ (function () {\n      function
Reference(name, value, sourceSpan, valueSpan) {\n      this.name = name;\n      this.value = value;\n
      this.sourceSpan = sourceSpan;\n      this.valueSpan = valueSpan;\n      }\n      Reference.prototype.visit =
function (visitor) {\n      return visitor.visitReference(this);\n      };\n      return Reference;\n      }());\n      var Icu
= /** @class */ (function () {\n      function Icu(vars, placeholders, sourceSpan, i18n) {\n      this.vars = vars;\n
      this.placeholders = placeholders;\n      this.sourceSpan = sourceSpan;\n      this.i18n = i18n;\n      }\n
      Icu.prototype.visit = function (visitor) {\n      return visitor.visitIcu(this);\n      };\n      return Icu;\n      }());\n
      var NullVisitor = /** @class */ (function () {\n      function NullVisitor() {\n      }\n      NullVisitor.prototype.visitElement = function (element) { };
      NullVisitor.prototype.visitTemplate = function
(template) { };
      NullVisitor.prototype.visitContent = function (content) { };
      NullVisitor.prototype.visitVariable = function (variable) { };
      NullVisitor.prototype.visitReference = function
(reference) { };
      NullVisitor.prototype.visitTextAttribute = function (attribute) { };
      NullVisitor.prototype.visitBoundAttribute = function (attribute) { };
      NullVisitor.prototype.visitBoundEvent = function (attribute) { };
      NullVisitor.prototype.visitText = function (text) { };
      NullVisitor.prototype.visitBoundText = function (text) { };
      NullVisitor.prototype.visitIcu = function (icu) {
};
      return NullVisitor;\n      }());\n      var RecursiveVisitor = /** @class */ (function () {\n      function
RecursiveVisitor() {\n      }\n      RecursiveVisitor.prototype.visitElement = function (element) {\n
      visitAll(this, element.attributes);\n      visitAll(this, element.children);\n      visitAll(this,
element.references);\n      };\n      RecursiveVisitor.prototype.visitTemplate = function (template) {\n
      visitAll(this, template.attributes);\n      visitAll(this, template.children);\n      visitAll(this,
template.references);\n      visitAll(this, template.variables);\n      };\n      RecursiveVisitor.prototype.visitContent = function (content) { };
      RecursiveVisitor.prototype.visitVariable = function (variable) { };
      RecursiveVisitor.prototype.visitReference = function (reference) { };
      RecursiveVisitor.prototype.visitTextAttribute = function (attribute) { };
      RecursiveVisitor.prototype.visitBoundAttribute = function (attribute) { };
      RecursiveVisitor.prototype.visitBoundEvent = function (attribute) { };
      RecursiveVisitor.prototype.visitText = function (text) { };
      RecursiveVisitor.prototype.visitBoundText = function (text) { };
      RecursiveVisitor.prototype.visitIcu = function (icu) { };
      return RecursiveVisitor;\n      }());\n      var TransformVisitor = /** @class */ (function () {\n      function
TransformVisitor() {\n      }\n      TransformVisitor.prototype.visitElement = function (element) {\n      var newAttributes = transformAll(this,
element.attributes);\n      var newInputs = transformAll(this, element.inputs);\n      var newOutputs =
transformAll(this, element.outputs);\n      var newChildren = transformAll(this, element.children);\n      var
newReferences = transformAll(this, element.references);\n      if (newAttributes != element.attributes ||
newInputs != element.inputs ||\n      newOutputs != element.outputs || newChildren != element.children ||\n
      newReferences != element.references) {\n      return new Element(element.name, newAttributes,
newInputs, newOutputs, newChildren, newReferences, element.sourceSpan, element.startSourceSpan,
element.endSourceSpan);\n      }\n      return element;\n      };\n

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TransformVisitor.prototype.visitTemplate = function (template) {\n
    var newAttributes = transformAll(this, template.attributes);\n
    var newInputs = transformAll(this, template.inputs);\n
    var newOutputs = transformAll(this, template.outputs);\n
    var newTemplateAttrs = transformAll(this, template.templateAttrs);\n
    var newChildren = transformAll(this, template.children);\n
    var newReferences = transformAll(this, template.references);\n
    var newVariables = transformAll(this, template.variables);\n
    if (newAttributes !== template.attributes || newInputs !== template.inputs ||\n
        newOutputs !== template.outputs || newTemplateAttrs !==\n
        template.templateAttrs || newChildren !== template.children ||\n
        newReferences !== template.references || newVariables !==\n
        template.variables) {\n
        return new Template(template.tagName, newAttributes, newInputs,\n
            newOutputs, newTemplateAttrs, newChildren, newReferences,\n
            newVariables, template.sourceSpan, template.startSourceSpan,\n
            template.endSourceSpan);\n
    }\n
    return template;\n
};\n
TransformVisitor.prototype.visitContent = function (content) {\n
    return content;\n
};\n
TransformVisitor.prototype.visitVariable = function (variable) {\n
    return variable;\n
};\n
TransformVisitor.prototype.visitReference = function (reference) {\n
    return reference;\n
};\n
TransformVisitor.prototype.visitTextAttribute = function (attribute) {\n
    return attribute;\n
};\n
TransformVisitor.prototype.visitBoundAttribute = function (attribute) {\n
    return attribute;\n
};\n
TransformVisitor.prototype.visitBoundEvent = function (attribute) {\n
    return attribute;\n
};\n
TransformVisitor.prototype.visitText = function (text) {\n
    return text;\n
};\n
TransformVisitor.prototype.visitBoundText = function (text) {\n
    return text;\n
};\n
TransformVisitor.prototype.visitIcu = function (icu) {\n
    return icu;\n
};\n
return TransformVisitor;\n
})();\n
function visitAll(visitor, nodes) {\n
    var e_1, _a, e_2, _b;\n
    var result = [];\n
    if (visitor.visit)\n
    {\n
        try {\n
            for (var nodes_1 = __values(nodes), nodes_1_1 = nodes_1.next();\n
                !nodes_1_1.done; nodes_1_1 = nodes_1.next()) {\n
                var node = nodes_1_1.value;\n
                var newNode = visitor.visit(node) || node.visit(visitor);\n
                }\n
                }\n
                catch (e_1_1) { e_1 = { error: e_1_1 }; }\n
                finally {\n
                    try {\n
                        if (nodes_1_1 && !nodes_1_1.done && (_a = nodes_1.return))\n
                            _a.call(nodes_1);\n
                    }\n
                    finally { if (e_1) throw e_1.error; }\n
                }\n
                }\n
                else {\n
                    try {\n
                        for (var nodes_2 = __values(nodes), nodes_2_1 = nodes_2.next();\n
                            !nodes_2_1.done; nodes_2_1 = nodes_2.next()) {\n
                            var node = nodes_2_1.value;\n
                            var newNode = node.visit(visitor);\n
                            if (newNode) {\n
                                result.push(newNode);\n
                            }\n
                            }\n
                            }\n
                            catch (e_2_1) { e_2 = { error: e_2_1 }; }\n
                            finally {\n
                                try {\n
                                    if (nodes_2_1 && !nodes_2_1.done && (_b = nodes_2.return))\n
                                        _b.call(nodes_2);\n
                                }\n
                                finally { if (e_2) throw e_2.error; }\n
                            }\n
                            }\n
                            return result;\n
                    }\n
                    }\n
                    function transformAll(visitor, nodes) {\n
                        var e_3, _a;\n
                        var result = [];\n
                        var changed = false;\n
                        try {\n
                            for (var nodes_3 = __values(nodes), nodes_3_1 = nodes_3.next();\n
                                !nodes_3_1.done; nodes_3_1 = nodes_3.next()) {\n
                                    var node = nodes_3_1.value;\n
                                    var newNode = node.visit(visitor);\n
                                    if (newNode) {\n
                                        result.push(newNode);\n
                                        changed = changed || newNode !== node;\n
                                    }\n
                                    }\n
                                    }\n
                                    catch (e_3_1) { e_3 = { error: e_3_1 }; }\n
                                    finally {\n
                                        try {\n
                                            if (nodes_3_1 && !nodes_3_1.done && (_a = nodes_3.return))\n
                                                _a.call(nodes_3);\n
                                        }\n
                                        finally { if (e_3) throw e_3.error; }\n
                                    }\n
                                    }\n
                                    return changed ? result : nodes;\n
                                }\n
                                }\n
                                /**\n
                                * @license\n
                                * Copyright Google LLC All Rights Reserved.\n
                                *\n
                                * Use of this source code is governed by an MIT-style license that can be\n
                                * found in the LICENSE file at https://angular.io/license\n
                                */\n
                                var Message = /** @class */ (function () {\n
                                    /**\n
                                    * @param nodes message AST\n
                                    * @param placeholders maps placeholder names to static content and their\n
                                    * source spans\n
                                    * @param placeholderToMessage maps placeholder names to messages (used for nested ICU\n
                                    * messages)\n
                                    * @param meaning\n
                                    * @param description\n
                                    * @param customId\n
                                    */\n
                                    function Message(nodes, placeholders, placeholderToMessage, meaning, description, customId) {\n
                                        this.nodes = nodes;\n
                                        this.placeholders = placeholders;\n
                                        this.placeholderToMessage = placeholderToMessage;\n
                                        this.meaning = meaning;\n
                                        this.description = description;\n
                                        this.customId = customId;\n
                                        this.id = this.customId;\n
                                        /** The ids to use if there are no custom id and\n
                                        if `i18nLegacyMessageIdFormat` is not empty */\n
                                        this.legacyIds = [];\n
                                        if (nodes.length) {\n

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this.sources = [{\n
    filePath: nodes[0].sourceSpan.start.file.url,\n
    startLine:\n
nodes[0].sourceSpan.start.line + 1,\n
    startCol: nodes[0].sourceSpan.start.col + 1,\n
endLine: nodes[nodes.length - 1].sourceSpan.end.line + 1,\n
    endCol: nodes[0].sourceSpan.start.col +\n
1\n
}];\n
} else {\n
    this.sources = [];\n
}\n
return Message;\n
}());\n
var Text$1 = /** @class */ (function () {\n
    function Text(value, sourceSpan) {\n
        this.value =\n
value;\n
        this.sourceSpan = sourceSpan;\n
    }\n
    Text.prototype.visit = function (visitor, context) {\n
        return visitor.visitText(this, context);\n
    };\n
    return Text;\n
}());\n
// TODO(vicb): do we really need\n
this node (vs an array) ?\n
var Container = /** @class */ (function () {\n
    function Container(children,\n
sourceSpan) {\n
        this.children = children;\n
        this.sourceSpan = sourceSpan;\n
    }\n
    Container.prototype.visit = function (visitor, context) {\n
        return visitor.visitContainer(this, context);\n
    };\n
    return Container;\n
}());\n
var Icu$1 = /** @class */ (function () {\n
    function Icu(expression, type,\n
cases, sourceSpan) {\n
        this.expression = expression;\n
        this.type = type;\n
        this.cases = cases;\n
        this.sourceSpan = sourceSpan;\n
    }\n
    Icu.prototype.visit = function (visitor, context) {\n
        return\n
visitor.visitIcu(this, context);\n
    };\n
    return Icu;\n
}());\n
var TagPlaceholder = /** @class */ (function ()\n
{\n
    function TagPlaceholder(tag, attrs, startName, closeName, children, isVoid, \n
// TODO sourceSpan\n
should cover all (we need a startSourceSpan and endSourceSpan)\n
sourceSpan, startSourceSpan,\n
endSourceSpan) {\n
        this.tag = tag;\n
        this.attrs = attrs;\n
        this.startName = startName;\n
this.closeName = closeName;\n
        this.children = children;\n
        this.isVoid = isVoid;\n
this.sourceSpan = sourceSpan;\n
        this.startSourceSpan = startSourceSpan;\n
        this.endSourceSpan =\n
endSourceSpan;\n
    }\n
    TagPlaceholder.prototype.visit = function (visitor, context) {\n
        return\n
visitor.visitTagPlaceholder(this, context);\n
    };\n
    return TagPlaceholder;\n
}());\n
var Placeholder = /**\n
@class */ (function () {\n
    function Placeholder(value, name, sourceSpan) {\n
        this.value = value;\n
this.name = name;\n
        this.sourceSpan = sourceSpan;\n
    }\n
    Placeholder.prototype.visit = function\n
(visitor, context) {\n
        return visitor.visitPlaceholder(this, context);\n
    };\n
    return Placeholder;\n
}());\n
var IcuPlaceholder = /** @class */ (function () {\n
    function IcuPlaceholder(value, name, sourceSpan)\n
{\n
        this.value = value;\n
        this.name = name;\n
        this.sourceSpan = sourceSpan;\n
    }\n
    IcuPlaceholder.prototype.visit = function (visitor, context) {\n
        return visitor.visitIcuPlaceholder(this,\n
context);\n
    };\n
    return IcuPlaceholder;\n
}());\n
// Clone the AST\n
var CloneVisitor = /** @class */\n
(function () {\n
    function CloneVisitor() {\n
    }\n
    CloneVisitor.prototype.visitText = function (text,\n
context) {\n
        return new Text$1(text.value, text.sourceSpan);\n
    };\n
    CloneVisitor.prototype.visitContainer = function (container, context) {\n
        var _this = this;\n
        var\n
children = container.children.map(function (n) { return n.visit(_this, context); });\n
        return new\n
Container(children, container.sourceSpan);\n
    };\n
    CloneVisitor.prototype.visitIcu = function (icu, context)\n
{\n
        var _this = this;\n
        var cases = {};\n
        Object.keys(icu.cases).forEach(function (key) { return\n
cases[key] = icu.cases[key].visit(_this, context); });\n
        var msg = new Icu$1(icu.expression, icu.type, cases,\n
icu.sourceSpan);\n
        msg.expressionPlaceholder = icu.expressionPlaceholder;\n
        return msg;\n
    };\n
    CloneVisitor.prototype.visitTagPlaceholder = function (ph, context) {\n
        var _this = this;\n
        var\n
children = ph.children.map(function (n) { return n.visit(_this, context); });\n
        return new\n
TagPlaceholder(ph.tag, ph.attrs, ph.startName, ph.closeName, children, ph.isVoid, ph.sourceSpan,\n
ph.startSourceSpan, ph.endSourceSpan);\n
    };\n
    CloneVisitor.prototype.visitPlaceholder = function (ph,\n
context) {\n
        return new Placeholder(ph.value, ph.name, ph.sourceSpan);\n
    };\n
    CloneVisitor.prototype.visitIcuPlaceholder = function (ph, context) {\n
        return new IcuPlaceholder(ph.value,\n
ph.name, ph.sourceSpan);\n
    };\n
    return CloneVisitor;\n
}());\n
// Visit all the nodes recursively\n
var\n
RecurseVisitor = /** @class */ (function () {\n
    function RecurseVisitor() {\n
    }\n
    RecurseVisitor.prototype.visitText = function (text, context) {\n
    };\n
    RecurseVisitor.prototype.visitContainer =\n
function (container, context) {\n
        var _this = this;\n
        container.children.forEach(function (child) { return\n
child.visit(_this); });\n
    };\n
    RecurseVisitor.prototype.visitIcu = function (icu, context) {\n
        var _this =\n
this;\n
        Object.keys(icu.cases).forEach(function (k) {\n
            icu.cases[k].visit(_this);\n
        });\n
    };\n
}());\n

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};\n    RecurseVisitor.prototype.visitTagPlaceholder = function (ph, context) {\n        var _this = this;\n        ph.children.forEach(function (child) { return child.visit(_this); });\n    };\n    RecurseVisitor.prototype.visitPlaceholder = function (ph, context) {\n    };\n    RecurseVisitor.prototype.visitIcuPlaceholder = function (ph, context) {\n        return RecurseVisitor.prototype.visitTagPlaceholder.call(this, ph, context);\n    };\n\n    /**\n     * @license\n     * Copyright Google LLC All Rights Reserved.\n     * Use of this source code is governed by an MIT-style license that can be found in the LICENSE file at https://angular.io/license\n     */\n\n    /**\n     * Represents a big integer using a buffer of its individual digits, with the least significant digit stored at the beginning of the array (little endian).\n     * For performance reasons, each instance is mutable. The addition operation can be done in-place to reduce memory pressure of allocation for the digits array.\n     */\n    var BigInteger = /** @class */ (function () {\n        /**\n         * Creates a big integer using its individual digits in little endian storage.\n         */\n        function BigInteger(digits) {\n            this.digits = digits;\n        }\n\n        BigInteger.zero = function () {\n            return new BigInteger([0]);\n        };\n        BigInteger.one = function () {\n            return new BigInteger([1]);\n        };\n\n        /**\n         * Creates a clone of this instance.\n         */\n        BigInteger.prototype.clone = function () {\n            return new BigInteger(this.digits.slice());\n        };\n\n        /**\n         * Returns a new big integer with the sum of `this` and `other` as its value. This does not mutate `this` but instead returns a new instance, unlike `addToSelf`.\n         */\n        BigInteger.prototype.add = function (other) {\n            var result = this.clone();\n            result.addToSelf(other);\n            return result;\n        };\n\n        /**\n         * Adds `other` to the instance itself, thereby mutating its value.\n         */\n        BigInteger.prototype.addToSelf = function (other) {\n            var maxNrOfDigits = Math.max(this.digits.length, other.digits.length);\n            var carry = 0;\n            for (var i = 0; i < maxNrOfDigits; i++) {\n                var digitSum = carry;\n                if (i < this.digits.length) {\n                    digitSum += this.digits[i];\n                }\n                if (i < other.digits.length) {\n                    digitSum += other.digits[i];\n                }\n                if (digitSum >= 10) {\n                    this.digits[i] = digitSum - 10;\n                    carry = 1;\n                } else {\n                    this.digits[i] = digitSum;\n                    carry = 0;\n                }\n            }\n            // Apply a remaining carry if needed.\n            if (carry > 0) {\n                this.digits[maxNrOfDigits] = 1;\n            }\n        };\n\n        /**\n         * Builds the decimal string representation of the big integer. As this is stored in little endian, the digits are concatenated in reverse order.\n         */\n        BigInteger.prototype.toString = function () {\n            var res = "";\n            for (var i = this.digits.length - 1; i >= 0; i--) {\n                res += this.digits[i];\n            }\n            return res;\n        };\n\n        return BigInteger;\n    }());\n\n    /**\n     * Represents a big integer which is optimized for multiplication operations, as its power-of-twos are memoized. See `multiplyBy()` for details on the multiplication algorithm.\n     */\n    var BigIntForMultiplication = /** @class */ (function () {\n        function BigIntForMultiplication(value) {\n            this.powerOfTwos = [value];\n        }\n\n        /**\n         * Returns the big integer itself.\n         */\n        BigIntForMultiplication.prototype.getValue = function () {\n            return this.powerOfTwos[0];\n        };\n\n        /**\n         * Computes the value for `num * b`, where `num` is a JS number and `b` is a big integer. The value for `b` is represented by a storage model that is optimized for this computation.\n         * This operation is implemented in  $N(\log_2(\text{num}))$  by continuous halving of the number, where the least-significant bit (LSB) is tested in each iteration. If the bit is set, the bit's index is used as exponent into the power-of-two multiplication of `b`.\n         * As an example, consider the multiplication  $\text{num}=42, b=1337$ . In binary 42 is 0b00101010 and the algorithm unrolls into the following iterations:\n         * Iteration | num | LSB | b * 2^iter | Add? | product\n         * -----|-----|-----|-----|-----|-----\n         * 0 | 0b00101010 | 0 | 1337 | No | 0\n         * 1 | 0b00010101 | 1 | 2674 | Yes | 2674\n         * 2 | 0b00001010 | 0 | 5348 | No | 2674\n         * 3 | 0b00000101 | 1 | 10696 | Yes | 13370\n         * 4 | 0b00000010 | 0 | 21392 | No | 13370\n         * 5 | 0b00000001 | 1 | 42784 | Yes | 56154\n         * 6 | 0b00000000 | 0 | 85568 | No | 56154\n         * The computed product of 56154 is indeed the correct result.\n         * The `BigIntForMultiplication` representation for a big integer provides memoized access to the power-of-two values to reduce the workload in computing those values.\n         */\n\n        BigIntForMultiplication.prototype.multiplyBy = function (num) {\n            var product = BigInteger.zero();\n            this.multiplyByAndAddTo(num, product);\n            return product;\n        };\n\n        /**\n         * See `multiplyBy()`

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for details. This function allows for the computed product to be added
    * directly to the provided result big
integer.
    */
    BigIntForMultiplication.prototype.multiplyByAndAddTo = function (num, result) {
    for (var exponent = 0; num !== 0; num = num >>> 1, exponent++) {
        if (num & 1) {
            var
            value = this.getMultipliedByPowerOfTwo(exponent);
            result.addToSelf(value);
        }
    }
    };
    /**
    * Computes and memoizes the big integer value for `this.number * 2^exponent`.
    */
    BigIntForMultiplication.prototype.getMultipliedByPowerOfTwo = function (exponent) {
    //
    Compute the powers up until the requested exponent, where each value is computed from its
    // predecessor. This is simple as `this.number * 2^(exponent - 1)` only has to be doubled (i.e.
    // added to itself) to reach
    `this.number * 2^exponent`.
    for (var i = this.powerOfTwos.length; i <= exponent; i++) {
        var
        previousPower = this.powerOfTwos[i - 1];
        this.powerOfTwos[i] = previousPower.add(previousPower);
    }
    return this.powerOfTwos[exponent];
    };
    return BigIntForMultiplication;
    }());
    /**
    * Represents an exponentiation operation for the provided base, of which exponents are computed and
    * memoized. The results are represented by a `BigIntForMultiplication` which is tailored for
    * multiplication
    operations by memoizing the power-of-twos. This effectively results in a matrix
    * representation that is lazily
    computed upon request.
    */
    var BigIntExponentiation = /** @class */ (function () {
    function
    BigIntExponentiation(base) {
        this.base = base;
        this.exponents = [new
        BigIntForMultiplication(BigInteger.one());
    ]
    }
    /**
    * Compute the value for `this.base^exponent`,
    resulting in a big integer that is optimized for
    * further multiplication operations.
    */
    BigIntExponentiation.prototype.toThePowerOf = function (exponent) {
    // Compute the results up until the
    requested exponent, where every value is computed from its
    // predecessor. This is because
    `this.base^(exponent - 1)` only has to be multiplied by `base`
    // to reach `this.base^exponent`.
    for
    (var i = this.exponents.length; i <= exponent; i++) {
        var value = this.exponents[i -
        1].multiplyBy(this.base);
        this.exponents[i] = new BigIntForMultiplication(value);
    }
    return this.exponents[exponent];
    };
    return BigIntExponentiation;
    }());
    /**
    * Return the
    message id or compute it using the XLIFF1 digest.
    */
    function digest(message) {
    return message.id ||
    computeDigest(message);
    }
    /**
    * Compute the message id using the XLIFF1 digest.
    */
    function
    computeDigest(message) {
    return sha1(serializeNodes(message.nodes).join("") + ("[" + message.meaning +
    "]"));
    }
    /**
    * Return the message id or compute it using the XLIFF2/XMB/$localize digest.
    */
    function
    decimalDigest(message) {
    return message.id || computeDecimalDigest(message);
    }
    /**
    *
    Compute the message id using the XLIFF2/XMB/$localize digest.
    */
    function
    computeDecimalDigest(message) {
    var visitor = new _SerializerIgnoreIcuExpVisitor();
    var parts =
    message.nodes.map(function (a) { return a.visit(visitor, null); });
    return computeMsgId(parts.join(""),
    message.meaning);
    }
    /**
    * Serialize the i18n ast to something xml-like in order to generate an UID.
    */
    *
    The visitor is also used in the i18n parser tests
    */
    *
    @internal
    */
    var _SerializerVisitor = /**
    @class */ (function () {
    function _SerializerVisitor() {
    }
    _SerializerVisitor.prototype.visitText =
    function (text, context) {
    return text.value;
    };
    _SerializerVisitor.prototype.visitContainer =
    function (container, context) {
    var _this = this;
    return "[" + container.children.map(function
    (child) { return child.visit(_this); }).join(', ') + "]";
    };
    _SerializerVisitor.prototype.visitIcu = function
    (icu, context) {
    var _this = this;
    var strCases = Object.keys(icu.cases).map(function (k) { return k +
    "\" {\" + icu.cases[k].visit(_this) + \"}\""; });
    return "\"{" + icu.expression + "\", \" +
    icu.type + "\", \" +
    strCases.join(', ') + \"}\"";
    };
    _SerializerVisitor.prototype.visitTagPlaceholder = function (ph, context)
    {
    var _this = this;
    return ph.isVoid ?
    "<ph tag name=\\\"\" + ph.startName + \"\\\"/>"
    :
    "<ph tag name=\\\"\" + ph.startName + \"\\\">" + ph.children.map(function (child) { return
    child.visit(_this); }).join(', ') + "</ph name=\\\"\" + ph.closeName + \"\\\">";
    };
    _SerializerVisitor.prototype.visitPlaceholder = function (ph, context) {
    return ph.value ? "<ph name=\\\"\"
    + ph.name + \"\\\">" + ph.value + "</ph>" : "<ph name=\\\"\" + ph.name + \"\\\"/>";
    };
    _SerializerVisitor.prototype.visitIcuPlaceholder = function (ph, context) {
    return "<ph icu name=\\\"\" +
    ph.name + \"\\\">" + ph.value.visit(this) + "</ph>";
    };
    return _SerializerVisitor;
    }());
    var

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serializerVisitor = new _SerializerVisitor();\n  function serializeNodes(nodes) {\n    return nodes.map(function
(a) { return a.visit(serializerVisitor, null); });\n  }\n  /**\n   * Serialize the i18n ast to something xml-like in
order to generate an UID.\n   * Ignore the ICU expressions so that message IDs stays identical if only the
expression changes.\n   * @internal\n   */\n  var _SerializerIgnoreIcuExpVisitor = /** @class */(function
(_super) {\n    __extends(_SerializerIgnoreIcuExpVisitor, _super);\n    function
_SerializerIgnoreIcuExpVisitor() {\n      return _super !== null && _super.apply(this, arguments) || this;\n    }\n    _SerializerIgnoreIcuExpVisitor.prototype.visitIcu = function (icu, context) {\n      var _this = this;\n      var strCases = Object.keys(icu.cases).map(function (k) { return k + \"\n\" + icu.cases[k].visit(_this) + \"\n\"; });\n      // Do not take the expression into account\n      return \"\n\" + icu.type + \"\n\", \"\n\" + strCases.join(', ') + \"\n\";\n    });\n    return _SerializerIgnoreIcuExpVisitor;\n  })(_SerializerVisitor);\n  /**\n   * Compute the SHA1 of the
given string\n   * see http://csrc.nist.gov/publications/fips/fips180-4/fips-180-4.pdf\n   * WARNING:
this function has not been designed not tested with security in mind.\n   * DO NOT USE IT IN A SECURITY
SENSITIVE CONTEXT.\n   */\n  function sha1(str) {\n    var utf8 = utf8Encode(str);\n    var words32 =
bytesToWords32(utf8, Endian.Big);\n    var len = utf8.length * 8;\n    var w = newArray(80);\n    var a =
0x67452301, b = 0xefcdab89, c = 0x98badcfe, d = 0x10325476, e = 0xc3d2e1f0;\n    words32[len >> 5] |= 0x80
<<< (24 - len % 32);\n    words32[((len + 64 >> 9) <<< 4) + 15] = len;\n    for (var i = 0; i < words32.length; i +=
16) {\n      var h0 = a, h1 = b, h2 = c, h3 = d, h4 = e;\n      for (var j = 0; j < 80; j++) {\n        if (j < 16)
{\n          w[j] = words32[i + j];\n        } else {\n          w[j] = rol32(w[j - 3] ^ w[j - 8] ^
w[j - 14] ^ w[j - 16], 1);\n        }\n        var fkVal = fk(j, b, c, d);\n        var f = fkVal[0];\n        var k = fkVal[1];\n        var temp = [rol32(a, 5), f, e, k, w[j]].reduce(add32);\n        e = d;\n        d =
c;\n        c = rol32(b, 30);\n        b = a;\n        a = temp;\n      }\n      a = add32(a, h0);\n      b = add32(b, h1);\n      c = add32(c, h2);\n      d = add32(d, h3);\n      e = add32(e, h4);\n    }\n    return bytesToHexString(words32ToByteString([a, b, c, d, e]));\n  }\n  function fk(index, b, c, d) {\n    if (index
< 20) {\n      return [(b & c) | (~b & d), 0x5a827999];\n    } if (index < 40) {\n      return [b ^ c ^ d,
0x6ed9eba1];\n    } if (index < 60) {\n      return [(b & c) | (b & d) | (c & d), 0x8f1bbcdc];\n    }\n    return [b ^ c ^ d, 0xca62c1d6];\n  }\n  /**\n   * Compute the fingerprint of the given string\n   * The
output is 64 bit number encoded as a decimal string\n   * based on:\n   * https://github.com/google/closure-
compiler/blob/master/src/com/google/javascript/jscomp/GoogleJsMessageIdGenerator.java\n   */\n  function
fingerprint(str) {\n    var utf8 = utf8Encode(str);\n    var hi = hash32(utf8, 0);\n    var lo = hash32(utf8,
102072);\n    if (hi == 0 && (lo == 0 || lo == 1)) {\n      hi = hi ^ 0x130f9bef;\n      lo = lo ^ -
0x6b5f56d8;\n    }\n    return [hi, lo];\n  }\n  function computeMsgId(msg, meaning) {\n    if (meaning
=== void 0) { meaning = \"\"; }\n    var msgFingerprint = fingerprint(msg);\n    if (meaning) {\n      var
meaningFingerprint = fingerprint(meaning);\n      msgFingerprint = add64(rol64(msgFingerprint, 1),
meaningFingerprint);\n    }\n    var hi = msgFingerprint[0];\n    var lo = msgFingerprint[1];\n    return
wordsToDecimalString(hi & 0x7fffffff, lo);\n  }\n  function hash32(bytes, c) {\n    var a = 0x9e3779b9, b =
0x9e3779b9;\n    var i;\n    var len = bytes.length;\n    for (i = 0; i + 12 <= len; i += 12) {\n      a =
add32(a, wordAt(bytes, i, Endian.Little));\n      b = add32(b, wordAt(bytes, i + 4, Endian.Little));\n      c =
add32(c, wordAt(bytes, i + 8, Endian.Little));\n      var res = mix(a, b, c);\n      a = res[0], b = res[1], c =
res[2];\n    }\n    a = add32(a, wordAt(bytes, i, Endian.Little));\n    b = add32(b, wordAt(bytes, i + 4,
Endian.Little));\n    // the first byte of c is reserved for the length\n    c = add32(c, len);\n    c = add32(c,
wordAt(bytes, i + 8, Endian.Little) <<< 8);\n    return mix(a, b, c)[2];\n  }\n  // clang-format off\n  function
mix(a, b, c) {\n    a = sub32(a, b);\n    a = sub32(a, c);\n    a ^= c >>> 13;\n    b = sub32(b, c);\n    b =
sub32(b, a);\n    b ^= a <<< 8;\n    c = sub32(c, a);\n    c = sub32(c, b);\n    c ^= b >>> 13;\n    a =
sub32(a, b);\n    a = sub32(a, c);\n    a ^= c >>> 12;\n    b = sub32(b, c);\n    b = sub32(b, a);\n    b ^= a
<<< 16;\n    c = sub32(c, a);\n    c = sub32(c, b);\n    c ^= b >>> 5;\n    a = sub32(a, b);\n    a = sub32(a,
c);\n    a ^= c >>> 3;\n    b = sub32(b, c);\n    b = sub32(b, a);\n    b ^= a <<< 10;\n    c = sub32(c, a);\n    c = sub32(c, b);\n    c ^= b >>> 15;\n    return [a, b, c];\n  }\n  // clang-format on\n  // Utils\n  var
Endian;\n  (function (Endian) {\n    Endian[Endian[\"Little\"] = 0] = \"Little\";\n    Endian[Endian[\"Big\"] =

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1] = \"Big\";\n  })(Endian || (Endian = {}));\n  function add32(a, b) {\n    return add32to64(a, b)[1];\n  }\n  function add32to64(a, b) {\n    var low = (a & 0xffff) + (b & 0xffff);\n    var high = (a >>> 16) + (b >>> 16) +\n    (low >>> 16);\n    return [high >>> 16, (high << 16) | (low & 0xffff)];\n  }\n  function add64(a, b) {\n    var\n    ah = a[0], al = a[1];\n    var bh = b[0], bl = b[1];\n    var result = add32to64(al, bl);\n    var carry = result[0];\n    var l = result[1];\n    var h = add32(add32(ah, bh), carry);\n    return [h, l];\n  }\n  function sub32(a, b) {\n    var low = (a & 0xffff) - (b & 0xffff);\n    var high = (a >> 16) - (b >> 16) + (low >> 16);\n    return (high <<\n    16) | (low & 0xffff);\n  }\n  // Rotate a 32b number left `count` position\n  function rol32(a, count) {\n    return\n    (a << count) | (a >>> (32 - count));\n  }\n  // Rotate a 64b number left `count` position\n  function rol64(num,\n  count) {\n    var hi = num[0], lo = num[1];\n    var h = (hi << count) | (lo >>> (32 - count));\n    var l = (lo <<\n    count) | (hi >>> (32 - count));\n    return [h, l];\n  }\n  function bytesToWords32(bytes, endian) {\n    var size\n    = (bytes.length + 3) >>> 2;\n    var words32 = [];\n    for (var i = 0; i < size; i++) {\n      words32[i] =\n      wordAt(bytes, i * 4, endian);\n    }\n    return words32;\n  }\n  function byteAt(bytes, index) {\n    return\n    index >= bytes.length ? 0 : bytes[index];\n  }\n  function wordAt(bytes, index, endian) {\n    var word = 0;\n    if (endian === Endian.Big) {\n      for (var i = 0; i < 4; i++) {\n        word += byteAt(bytes, index + i) <<\n        (24 - 8 * i);\n      }\n    } else {\n      for (var i = 0; i < 4; i++) {\n        word += byteAt(bytes,\n        index + i) << 8 * i;\n      }\n    }\n    return word;\n  }\n  function words32ToByteString(words32) {\n    return words32.reduce(function (bytes, word) { return bytes.concat(word32ToByteString(word)); }, []);\n  }\n  function word32ToByteString(word) {\n    var bytes = [];\n    for (var i = 0; i < 4; i++) {\n      bytes.push((word >>> 8 * (3 - i)) & 0xff);\n    }\n    return bytes;\n  }\n  function bytesToHexString(bytes)\n  {\n    var hex = \"\";\n    for (var i = 0; i < bytes.length; i++) {\n      var b = byteAt(bytes, i);\n      hex += (b\n      >>> 4).toString(16) + (b & 0x0f).toString(16);\n    }\n    return hex.toLowerCase();\n  }\n  /**\n   * Create a\n   * shared exponentiation pool for base-256 computations. This shared pool provides memoized\n   * power-of-256\n   * results with memoized power-of-two computations for efficient multiplication.\n   * For our purposes, this\n   * can be safely stored as a global without memory concerns. The reason is\n   * that we encode two words, so only\n   * need the 0th (for the low word) and 4th (for the high word)\n   * exponent.\n   */\n  var base256 = new\n  BigIntExponentiation(256);\n  /**\n   * Represents two 32-bit words as a single decimal number. This requires a\n   * big integer storage\n   * model as JS numbers are not accurate enough to represent the 64-bit number.\n   */\n  * Based on http://www.danvk.org/hex2dec.html\n  */\n  function wordsToDecimalString(hi, lo) {\n    // Encode\n    the four bytes in lo in the lower digits of the decimal number.\n    // Note: the multiplication results in lo itself but\n    represented by a big integer using its\n    // decimal digits.\n    var decimal =\n    base256.toThePowerOf(0).multiplyBy(lo);\n    // Encode the four bytes in hi above the four lo bytes. lo is a\n    maximum of (2^8)^4, which is why\n    // this multiplication factor is applied.\n    base256.toThePowerOf(4).multiplyByAndAddTo(hi, decimal);\n    return decimal.toString();\n  }\n  var\n  Serializer = /** @class */ (function () {\n    function Serializer() {\n    }\n    // Creates a name mapper, see\n    `PlaceholderMapper`\n    // Returning `null` means that no name mapping is used.\n    Serializer.prototype.createNameMapper = function (message) {\n      return null;\n    };\n    return\n    Serializer;\n  })();\n  /**\n   * A simple mapper that take a function to transform an internal name to a public\n   * name\n   */\n  var SimplePlaceholderMapper = /** @class */ (function (_super) {\n    __extends(SimplePlaceholderMapper, _super);\n    // create a mapping from the message\n    function\n    SimplePlaceholderMapper(message, mapName) {\n      var _this = _super.call(this) || this;\n      _this.mapName = mapName;\n      _this.internalToPublic = {};\n      _this.publicToNextId = {};\n      _this.publicToInternal = {};\n      message.nodes.forEach(function (node) { return node.visit(_this); });\n      return _this;\n    }\n    SimplePlaceholderMapper.prototype.toPublicName = function (internalName) {\n      return this.internalToPublic.hasOwnProperty(internalName) ?\n      this.internalToPublic[internalName] :\n      null;\n    };\n    SimplePlaceholderMapper.prototype.toInternalName = function (publicName) {\n      return this.publicToInternal.hasOwnProperty(publicName) ?\n      this.publicToInternal[publicName] :\n      null;\n    };\n    SimplePlaceholderMapper.prototype.visitText = function (text, context) {\n      return null;\n    };\n    SimplePlaceholderMapper.prototype.visitTagPlaceholder = function (ph, context) {\n

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_EXAMPLE_TAG = 'ex';\n  var _SOURCE_TAG = 'source';\n  var _DOCTYPE = '<!ELEMENT
messagebundle (msg)*>\n<!ATTLIST messagebundle class CDATA #IMPLIED>\n<!ELEMENT msg
(#PCDATA|ph|source)*>\n<!ATTLIST msg id CDATA #IMPLIED>\n<!ATTLIST msg seq CDATA
#IMPLIED>\n<!ATTLIST msg name CDATA #IMPLIED>\n<!ATTLIST msg desc CDATA
#IMPLIED>\n<!ATTLIST msg meaning CDATA #IMPLIED>\n<!ATTLIST msg obsolete (obsolete)
#IMPLIED>\n<!ATTLIST msg xml:space (default|preserve) \\"default\>\n<!ATTLIST msg is_hidden CDATA
#IMPLIED>\n<!ELEMENT source (#PCDATA)>\n<!ELEMENT ph (#PCDATA|ex)*>\n<!ATTLIST ph
name CDATA #REQUIRED>\n<!ELEMENT ex (#PCDATA)>';\n  var Xmb = /** @class */ (function
(_super) {\n    __extends(Xmb, _super);\n    function Xmb() {\n      return _super !== null &&
_super.apply(this, arguments) || this;\n    }\n    Xmb.prototype.write = function (messages, locale) {\n      var
exampleVisitor = new ExampleVisitor();\n      var visitor = new _Visitor$1();\n      var rootNode = new
Tag(_MESSAGES_TAG);\n      messages.forEach(function (message) {\n        var attrs = { id: message.id
};\n        if (message.description) {\n          attrs['desc'] = message.description;\n        }\n        if
(message.meaning) {\n          attrs['meaning'] = message.meaning;\n        }\n        var sourceTags =
[];\n        message.sources.forEach(function (source) {\n          sourceTags.push(new
Tag(_SOURCE_TAG, {}, [new Text$2(source.filePath + '\\:' + source.startLine + (source.endLine !==
source.startLine ? ',' + source.endLine : ''))]);\n        });\n        rootNode.children.push(new CR(2), new
Tag(_MESSAGE_TAG, attrs, __spread(sourceTags, visitor.serialize(message.nodes)));\n      });\n      rootNode.children.push(new CR());\n      return serialize([\n        new Declaration({ version: '1.0', encoding:
'UTF-8' }),\n        new CR(),\n        new Doctype(_MESSAGES_TAG, _DOCTYPE),\n        new
CR(),\n        exampleVisitor.addDefaultExamples(rootNode),\n        new CR(),\n      ]);\n    };\n    Xmb.prototype.load = function (content, url) {\n      throw new Error('Unsupported');\n    };\n    Xmb.prototype.digest = function (message) {\n      return digest$1(message);\n    };\n    Xmb.prototype.createNameMapper = function (message) {\n      return new SimplePlaceholderMapper(message,
toPublicName);\n    };\n    return Xmb;\n  })(Serializer);\n  var _Visitor$1 = /** @class */ (function () {\n
function _Visitor() {\n    }\n    _Visitor.prototype.visitText = function (text, context) {\n      return [new
Text$2(text.value)];\n    };\n    _Visitor.prototype.visitContainer = function (container, context) {\n      var
_this = this;\n      var nodes = [];\n      container.children.forEach(function (node) { return
nodes.push.apply(nodes, __spread(node.visit(_this))); });\n      return nodes;\n    };\n    _Visitor.prototype.visitIcu = function (icu, context) {\n      var _this = this;\n      var nodes = [new
Text$2("\\{" + icu.expressionPlaceholder + "\\, '\\{" + icu.type + "\\, '\\}");\n      Object.keys(icu.cases).forEach(function (c) {\n        nodes.push.apply(nodes, __spread([new Text$2(c + '\\
{\\}'), icu.cases[c].visit(_this, [new Text$2("\\{\\}"))]);\n      });\n      nodes.push(new Text$2("\\}"));
return nodes;\n    };\n    _Visitor.prototype.visitTagPlaceholder = function (ph, context) {\n      var
startTagAsText = new Text$2("<" + ph.tag + ">");\n      var startEx = new Tag(_EXAMPLE_TAG, {},
[startTagAsText]);\n      // TC requires PH to have a non empty EX, and uses the text node to show the
\\\"original\\\" value.\n      var startTagPh = new Tag(_PLACEHOLDER_TAG, { name: ph.startName }, [startEx,
startTagAsText]);\n      if (ph.isVoid) {\n        // void tags have no children nor closing tags\n
return [startTagPh];\n      }\n      var closeTagAsText = new Text$2("</" + ph.tag + ">");\n      var
closeEx = new Tag(_EXAMPLE_TAG, {}, [closeTagAsText]);\n      // TC requires PH to have a non empty EX,
and uses the text node to show the \\\"original\\\" value.\n      var closeTagPh = new Tag(_PLACEHOLDER_TAG,
{ name: ph.closeName }, [closeEx, closeTagAsText]);\n      return __spread([startTagPh,
this.serialize(ph.children), [closeTagPh]);\n    };\n    _Visitor.prototype.visitPlaceholder = function (ph, context)
{\n      var interpolationAsText = new Text$2("\\{" + ph.value + "\\}");\n      // Example tag needs to be
not-empty for TC.\n      var exTag = new Tag(_EXAMPLE_TAG, {}, [interpolationAsText]);\n      return [\n
// TC requires PH to have a non empty EX, and uses the text node to show the \\\"original\\\" value.\n
new Tag(_PLACEHOLDER_TAG, { name: ph.name }, [exTag, interpolationAsText])\n      ];\n    };\n    _Visitor.prototype.visitIcuPlaceholder = function (ph, context) {\n      var icuExpression =

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ph.value.expression;\n      var icuType = ph.value.type;\n      var icuCases =
Object.keys(ph.value.cases).map(function (value) { return value + ' ...'; }).join(' '); \n      var icuAsText = new
Text$2("\{" + icuExpression + "\", \{" + icuType + "\", \{" + icuCases + "\}"); \n      var exTag = new
Tag(_EXAMPLE_TAG, {}, [icuAsText]); \n      return [\n          // TC requires PH to have a non empty EX,
and uses the text node to show the \"original\" value. \n          new Tag(_PLACEHOLDER_TAG, { name:
ph.name }, [exTag, icuAsText]) \n      ]; \n      }; \n      _Visitor.prototype.serialize = function (nodes) {\n
var _this = this; \n      return [].concat.apply([], __spread(nodes.map(function (node) { return node.visit(_this);
}))); \n      }; \n      return _Visitor; \n      }()); \n      function digest$1(message) {\n      return
decimalDigest(message); \n      } \n      // TC requires at least one non-empty example on placeholders \n      var
ExampleVisitor = /** @class */ (function () {\n      function ExampleVisitor() {\n      } \n      ExampleVisitor.prototype.addDefaultExamples = function (node) {\n      node.visit(this); \n      return node; \n      }; \n      ExampleVisitor.prototype.visitTag = function (tag) {\n      var _this = this; \n      if (tag.name ===
_PLACEHOLDER_TAG) {\n          if (!tag.children || tag.children.length === 0) {\n          var exText = new
Text$2(tag.attrs['name'] || '...'); \n          tag.children = [new Tag(_EXAMPLE_TAG, {}, [exText]); \n      } \n      } \n      else if (tag.children) {\n          tag.children.forEach(function (node) { return
node.visit(_this); }); \n      } \n      }; \n      ExampleVisitor.prototype.visitText = function (text) { }; \n      ExampleVisitor.prototype.visitDeclaration = function (decl) { }; \n      ExampleVisitor.prototype.visitDoctype =
function (doctype) { }; \n      return ExampleVisitor; \n      }()); \n      // XMB/XTB placeholders can only contain A-Z,
0-9 and _ \n      function toPublicName(internalName) {\n      return internalName.toUpperCase().replace(/[^A-Z0-9_]/g, '_'); \n      } \n      /* Closure variables holding messages must be named `MSG_[A-Z0-9]+` */ \n      var
CLOSURE_TRANSLATION_VAR_PREFIX = 'MSG_'; \n      /** \n      * Prefix for non-`goog.getMsg` i18n-related
vars. \n      * Note: the prefix uses lowercase characters intentionally due to a Closure behavior that \n      * considers
variables like `I18N_0` as constants and throws an error when their value changes. \n      */ \n      var
TRANSLATION_VAR_PREFIX = 'i18n-'; \n      /** Name of the i18n attributes */ \n      var I18N_ATTR = 'i18n'; \n      var
I18N_ATTR_PREFIX = 'i18n-'; \n      /** Prefix of var expressions used in ICUs */ \n      var
I18N_ICU_VAR_PREFIX = 'VAR_'; \n      /** Prefix of ICU expressions for post processing */ \n      var
I18N_ICU_MAPPING_PREFIX = 'I18N_EXP_'; \n      /** Placeholder wrapper for i18n expressions */ \n      var
I18N_PLACEHOLDER_SYMBOL = " "; \n      function isI18nAttribute(name) {\n      return name === I18N_ATTR ||
name.startsWith(I18N_ATTR_PREFIX); \n      } \n      function isI18nRootNode(meta) {\n      return meta instanceof
Message; \n      } \n      function isSingleI18nIcu(meta) {\n      return isI18nRootNode(meta) && meta.nodes.length
=== 1 && meta.nodes[0] instanceof Icu$1; \n      } \n      function hasI18nMeta(node) {\n      return !!node.i18n; \n      } \n      function hasI18nAttrs(element) {\n      return element.attrs.some(function (attr) { return
isI18nAttribute(attr.name); }); \n      } \n      function icuFromI18nMessage(message) {\n      return
message.nodes[0]; \n      } \n      function wrapI18nPlaceholder(content, contextId) {\n      if (contextId === void 0) {
contextId = 0; } \n      var blockId = contextId > 0 ? "\{:\" + contextId : "; \n      return "\" +
I18N_PLACEHOLDER_SYMBOL + content + blockId + I18N_PLACEHOLDER_SYMBOL; \n      } \n      function
assembleI18nBoundString(strings, bindingStartIndex, contextId) {\n      if (bindingStartIndex === void 0) {
bindingStartIndex = 0; } \n      if (contextId === void 0) { contextId = 0; } \n      if (!strings.length) \n      return
"; \n      var acc = " "; \n      var lastIdx = strings.length - 1; \n      for (var i = 0; i < lastIdx; i++) {\n      acc += "\" +
strings[i] + wrapI18nPlaceholder(bindingStartIndex + i, contextId); \n      } \n      acc += strings[lastIdx]; \n      return acc; \n      } \n      function getSeqNumberGenerator(startsAt) {\n      if (startsAt === void 0) { startsAt = 0; } \n      var
current = startsAt; \n      return function () { return current++; }; \n      } \n      function
placeholdersToParams(placeholders) {\n      var params = {}; \n      placeholders.forEach(function (values, key)
{\n      params[key] = literal(values.length > 1 ? \"[\" + values.join(',') + \"]\" : values[0]); \n      }); \n      return
params; \n      } \n      function updatePlaceholderMap(map, name) {\n      var values = []; \n      for (var _i = 2; _i <
arguments.length; _i++) {\n      values[_i - 2] = arguments[_i]; \n      } \n      var current = map.get(name) || []; \n      current.push.apply(current, __spread(values)); \n      map.set(name, current); \n      } \n      function
assembleBoundTextPlaceholders(meta, bindingStartIndex, contextId) {\n      if (bindingStartIndex === void 0) {

```



```

bindingStartIndex = 0; }
    if (contextId === void 0) { contextId = 0; }
    var startIdx = bindingStartIndex;
    var placeholders = new Map();
    var node = meta instanceof Message ? meta.nodes.find(function (node) {
return node instanceof Container; }) : meta;
    if (node) {
        node.children
        .filter(function (child) { return child instanceof Placeholder; })
        .forEach(function (child, idx) {
var content = wrapI18nPlaceholder(startIdx + idx, contextId);
            updatePlaceholderMap(placeholders,
            child.name, content);
        });
    }
    return placeholders;
}
/**
 * Format the placeholder
names in a map of placeholders to expressions.
 * The placeholder names are converted from "internal"
format (e.g. `START_TAG_DIV_1`) to "external"
 * format (e.g. `startTagDiv_1`).
 * @param
params A map of placeholder names to expressions.
 * @param useCamelCase whether to camelCase the
placeholder name when formatting.
 * @returns A new map of formatted placeholder names to expressions.
*/
function i18nFormatPlaceholderNames(params, useCamelCase) {
    if (params === void 0) { params =
    {};}
    var _params = {};
    if (params && Object.keys(params).length) {
Object.keys(params).forEach(function (key) {
return _params[formatI18nPlaceholderName(key, useCamelCase)] =
params[key];
});
    }
    return _params;
}
/**
 * Converts internal placeholder names to public-
facing format
 * (for example to use in goog.getMsg call).
 * Example: `START_TAG_DIV_1` is converted
to `startTagDiv_1`.
 * @param name The placeholder name that should be formatted
 * @returns
Formatted placeholder name
*/
function formatI18nPlaceholderName(name, useCamelCase) {
    if
(useCamelCase === void 0) { useCamelCase = true; }
    var publicName = toPublicName(name);
    if
(!useCamelCase) {
return publicName;
    }
    var chunks = publicName.split('_');
    if
(chunks.length === 1) {
return
name.toLowerCase();
    }
    var postfix;
    // eject last element if it's a number
    if
(/^\d+$/ .test(chunks[chunks.length - 1])) {
postfix = chunks.pop();
    }
    var raw =
chunks.shift().toLowerCase();
    if (chunks.length) {
raw += chunks.map(function (c) {
return
c.charAt(0).toUpperCase() + c.slice(1).toLowerCase();
}).join("");
    }
    return postfix ? raw + "_" +
postfix : raw;
}
/**
 * Generates a prefix for translation const name.
 * @param extra
Additional local prefix that should be injected into translation
var name
 * @returns Complete translation const
prefix
*/
function getTranslationConstPrefix(extra) {
return (" +
CLOSURE_TRANSLATION_VAR_PREFIX + extra).toUpperCase();
}
/**
 * Generate AST to declare
a variable. E.g. `var I18N_1;`.
 * @param variable the name of the variable to declare.
*/
function
declareI18nVariable(variable) {
return new DeclareVarStmt(variable.name, undefined, INFERRED_TYPE,
undefined, variable.sourceSpan);
}
/**
 * Checks whether an object key contains potentially unsafe
chars, thus the key should be wrapped in
 * quotes. Note: we do not wrap all keys into quotes, as it may have
impact on minification and may
 * bot work in some cases when object keys are mangled by minifier.
 *
 * TODO(FW-1136): this is a temporary solution, we need to come up with a better way of working with
 * inputs that contain potentially unsafe chars.
*/
var UNSAFE_OBJECT_KEY_NAME_REGEXP = /[-.]/;
/**
 * Name of the temporary to use during data binding
*/
var TEMPORARY_NAME = '_t';
/**
 * Name of the
context parameter passed into a template function
*/
var CONTEXT_NAME = 'ctx';
/**
 * Name of the
RenderFlag passed into a template function
*/
var RENDER_FLAGS = 'rf';
/**
 * The prefix reference
variables
*/
var REFERENCE_PREFIX = '_r';
/**
 * The name of the implicit context reference
*/
var
IMPLICIT_REFERENCE = '$implicit';
/**
 * Non bindable attribute name
*/
var NON_BINDABLE_ATTR
= 'ngNonBindable';
/**
 * Creates an allocator for a temporary variable.
 *
 * A variable declaration
is added to the statements the first time the allocator is invoked.
*/
function temporaryAllocator(statements,
name) {
    var temp = null;
    return function () {
        if (!temp) {
statements.push(new
DeclareVarStmt(TEMPORARY_NAME, undefined, DYNAMIC_TYPE));
temp = variable(name);
        }
return temp;
    };
}
function unsupported(feature) {
    if (this) {
throw new
Error("Builder " + this.constructor.name + " doesn't support " + feature + " yet");
    }
    throw new
Error("Feature " + feature + " is not supported yet");
}
function invalid$(arg) {
    throw new
Error("Invalid state: Visitor " + this.constructor.name + " doesn't handle " + arg.constructor.name);
}
}

```

```

function asLiteral(value) {\n    if (Array.isArray(value)) {\n        return literalArr(value.map(asLiteral));\n    }\n    return literal(value, INFERRED_TYPE);\n }\n function conditionallyCreateMapObjectLiteral(keys,\n keepDeclared) {\n    if (Object.getOwnPropertyNames(keys).length > 0) {\n        return\n        mapToExpression(keys, keepDeclared);\n    }\n    return null;\n }\n function mapToExpression(map,\n keepDeclared) {\n    return literalMap(Object.getOwnPropertyNames(map).map(function (key) {\n        var _a,\n        _b;\n        // canonical syntax: `dirProp: publicProp`\n        // if there is no ``, use dirProp = elProp\n        var\n        value = map[key];\n        var declaredName;\n        var publicName;\n        var minifiedName;\n        if\n        (Array.isArray(value)) {\n            _a = __read(value, 2), publicName = _a[0], declaredName = _a[1];\n        }\n        else {\n            _b = __read(splitAtColon(key, [key, value]), 2), declaredName = _b[0], publicName =\n            _b[1];\n        }\n        minifiedName = declaredName;\n        return {\n            key: minifiedName,\n            // put quotes around keys that contain potentially unsafe characters\n            quoted:\n            UNSAFE_OBJECT_KEY_NAME_REGEXP.test(minifiedName),\n            value: (keepDeclared &&\n            publicName !== declaredName) ?\n            literalArr([asLiteral(publicName), asLiteral(declaredName)]) :\n            asLiteral(publicName)\n        };\n    });\n }\n /**\n  * Remove trailing null nodes as they are\n  implied.\n  */\n function trimTrailingNulls(parameters) {\n    while (isNull(parameters[parameters.length -\n    1])) {\n        parameters.pop();\n    }\n    return parameters;\n }\n function getQueryPredicate(query,\n constantPool) {\n    if (Array.isArray(query.predicate)) {\n        var predicate_1 = [];\n        query.predicate.forEach(function (selector) {\n            // Each item in predicates array may contain strings with\n            comma-separated refs\n            // (for ex. 'ref, ref1, ..., refN'), thus we extract individual refs and store them\n            // as separate array entities\n            var selectors = selector.split(',').map(function (token) { return\n            literal(token.trim()); });\n            predicate_1.push.apply(predicate_1, __spread(selectors));\n        });\n        return constantPool.getConstLiteral(literalArr(predicate_1), true);\n    }\n    else {\n        return\n        query.predicate;\n    }\n }\n function noop() {\n }\n var DefinitionMap = /** @class */ (function () {\n function DefinitionMap() {\n     this.values = [];\n }\n     DefinitionMap.prototype.set = function (key,\n     value) {\n         if (value) {\n             this.values.push({ key: key, value: value, quoted: false });\n         }\n     };\n     DefinitionMap.prototype.toLiteralMap = function () {\n         return literalMap(this.values);\n     };\n     return DefinitionMap;\n }());\n /**\n  * Extract a map of properties to values for a given element or template\n  node, which can be used\n  * by the directive matching machinery.\n  *\n  * @param elOrTpl the element or\n  template in question\n  * @return an object set up for directive matching. For attributes on the element/template,\n  this\n  * object maps a property name to its (static) value. For any bindings, this map simply maps the\n  *\n  property name to an empty string.\n  */\n function getAttrsForDirectiveMatching(elOrTpl) {\n    var\n    attributesMap = {};\n    if (elOrTpl instanceof Template && elOrTpl.tagName !== 'ng-template') {\n        elOrTpl.templateAttrs.forEach(function (a) { return attributesMap[a.name] = "; });\n    }\n    else {\n        elOrTpl.attributes.forEach(function (a) {\n            if (!isI18nAttribute(a.name)) {\n                attributesMap[a.name] = a.value;\n            }\n        });\n        elOrTpl.inputs.forEach(function (i) {\n            attributesMap[i.name] = ";\n        });\n        elOrTpl.outputs.forEach(function (o) {\n            attributesMap[o.name] = ";\n        });\n    }\n    return attributesMap;\n }\n /** Returns a call expression\n  to a chained instruction, e.g. `property(params[0])(params[1])`. */\n function chainedInstruction(reference, calls,\n span) {\n    var expression = importExpr(reference, null, span);\n    if (calls.length > 0) {\n        for (var i = 0;\n        i < calls.length; i++) {\n            expression = expression.callFn(calls[i], span);\n        }\n    }\n    else {\n        // Add a blank invocation, in case the `calls` array is empty.\n        expression = expression.callFn([], span);\n    }\n    return expression;\n }\n /**\n  * Gets the number of arguments expected to be passed to a generated\n  instruction in the case of\n  * interpolation instructions.\n  * @param interpolation An interpolation as\n  */\n function getInterpolationArgsLength(interpolation) {\n    var expressions = interpolation.expressions, strings =\n    interpolation.strings;\n    if (expressions.length === 1 && strings.length === 2 && strings[0] === " &&\n    strings[1] === ") {\n        // If the interpolation has one interpolated value, but the prefix and suffix are both\n        empty\n        // strings, we only pass one argument, to a special instruction like `propertyInterpolate` or\n        //\n        `textInterpolate`.\n        return 1;\n    }\n    else {\n        return expressions.length + strings.length;\n    }\n }\n }

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}\n }\n\n var R3FactoryDelegateType;\n (function (R3FactoryDelegateType) {\n
R3FactoryDelegateType[R3FactoryDelegateType["Class"] = 0] = "Class";\n
R3FactoryDelegateType[R3FactoryDelegateType["Function"] = 1] = "Function";\n
R3FactoryDelegateType[R3FactoryDelegateType["Factory"] = 2] = "Factory";\n })\n(R3FactoryDelegateType ||\n
(R3FactoryDelegateType = {}));\n (function (R3FactoryTarget) {\n
R3FactoryTarget[R3FactoryTarget["Directive"] = 0] = "Directive";\n
R3FactoryTarget[R3FactoryTarget["Component"] = 1] = "Component";\n
R3FactoryTarget[R3FactoryTarget["Injectable"] = 2] = "Injectable";\n
R3FactoryTarget[R3FactoryTarget["Pipe"] = 3] = "Pipe";\n
R3FactoryTarget[R3FactoryTarget["NgModule"] = 4] = "NgModule";\n })\n(exports.R3FactoryTarget ||\n
(exports.R3FactoryTarget = {}));\n (function (R3ResolvedDependencyType) {\n /**\n * A normal token\n
dependency.\n * R3ResolvedDependencyType[R3ResolvedDependencyType["Token"] = 0] =\n
"Token";\n /**\n * The dependency is for an attribute.\n * The token expression is a string\n
representing the attribute name.\n * R3ResolvedDependencyType[R3ResolvedDependencyType["Attribute"] = 1] = "Attribute";\n /**\n *\n
Injecting the `ChangeDetectorRef` token. Needs special handling when injected into a pipe.\n * R3ResolvedDependencyType[R3ResolvedDependencyType["ChangeDetectorRef"] = 2] =\n
"ChangeDetectorRef";\n /**\n * An invalid dependency (no token could be determined). An error should\n
be thrown at runtime.\n * R3ResolvedDependencyType[R3ResolvedDependencyType["Invalid"] = 3]\n
= "Invalid";\n })\n(exports.R3ResolvedDependencyType || (exports.R3ResolvedDependencyType = {}));\n /**\n * Construct a factory function expression for the given `R3FactoryMetadata`.\n * function\n
compileFactoryFunction(meta) {\n var t = variable('t');\n var statements = [];\n var ctorDepsType =\n
NONE_TYPE;\n // The type to instantiate via constructor invocation. If there is no delegated factory, meaning\n
// this type is always created by constructor invocation, then this is the type-to-create\n // parameter provided\n
by the user (t) if specified, or the current type if not. If there is a\n // delegated factory (which is used to create\n
the current type) then this is only the type-to-\n // create parameter (t).\n var typeForCtor =\n
!isDelegatedMetadata(meta) ?\n new BinaryOperatorExpr(exports.BinaryOperator.Or, t, meta.internalType)\n
:\n t;\n var ctorExpr = null;\n if (meta.deps !== null) {\n // There is a constructor (either\n
explicitly or implicitly defined).\n if (meta.deps !== 'invalid') {\n ctorExpr = new\n
InstantiateExpr(typeForCtor, injectDependencies(meta.deps, meta.injectFn, meta.target ===\n
exports.R3FactoryTarget.Pipe));\n ctorDepsType = createCtorDepsType(meta.deps);\n }\n }\n
else {\n var baseFactory = variable("\u0275" + meta.name + "_BaseFactory");\n var\n
getInheritedFactory = importExpr(Identifiers$1.getInheritedFactory);\n var baseFactoryStmt = baseFactory\n
.set(getInheritedFactory.callFn([meta.internalType], /* sourceSpan */ undefined, /* pure */ true))\n
.toDeclStmt(INFERRED_TYPE, [exports.StmtModifier.Exported, exports.StmtModifier.Final]);\n
statements.push(baseFactoryStmt);\n // There is no constructor, use the base class' factory to construct\n
typeForCtor.\n ctorExpr = baseFactory.callFn([typeForCtor]);\n }\n var ctorExprFinal = ctorExpr;\n
var body = [];\n var retExpr = null;\n function makeConditionalFactory(nonCtorExpr) {\n var r =\n
variable('r');\n body.push(r.set(NULL_EXPR).toDeclStmt());\n var ctorStmt = null;\n if\n
(ctorExprFinal !== null) {\n ctorStmt = r.set(ctorExprFinal).toStmt();\n }\n else {\n\n
ctorStmt = importExpr(Identifiers$1.invalidFactory).callFn([]).toStmt();\n }\n body.push(ifStmt(t,\n
[ctorStmt], [r.set(nonCtorExpr).toStmt()]));\n return r;\n }\n if (isDelegatedMetadata(meta) &&\n
meta.delegateType === R3FactoryDelegateType.Factory) {\n var delegateFactory = variable("\u0275" +\n
meta.name + "_BaseFactory");\n var getFactoryOf = importExpr(Identifiers$1.getFactoryOf);\n if\n
(meta.delegate.isEquivalent(meta.internalType)) {\n throw new Error("Illegal state: compiling factory that\n
delegates to itself");\n }\n var delegateFactoryStmt =\n
delegateFactory.set(getFactoryOf.callFn([meta.delegate])).toDeclStmt(INFERRED_TYPE, [\n
exports.StmtModifier.Exported, exports.StmtModifier.Final\n
]);\n

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statements.push(delegateFactoryStmt);\n      retExpr = makeConditionalFactory(delegateFactory.callFn([]));\n    }\n    else if (isDelegatedMetadata(meta)) {\n      // This type is created with a delegated factory. If a type\n      parameter is not specified, call\n      // the factory instead.\n      var delegateArgs =\n      injectDependencies(meta.delegateDeps, meta.injectFn, meta.target === exports.R3FactoryTarget.Pipe);\n      //\n      Either call `new delegate(...)` or `delegate(...)` depending on meta.delegateType.\n      var factoryExpr = new\n      (meta.delegateType === R3FactoryDelegateType.Class ?\n      InstantiateExpr :\n      InvokeFunctionExpr)(meta.delegate, delegateArgs);\n      retExpr = makeConditionalFactory(factoryExpr);\n    }\n    else if (isExpressionFactoryMetadata(meta)) {\n      // TODO(alxhub): decide whether to lower the value\n      here or in the caller\n      retExpr = makeConditionalFactory(meta.expression);\n    }\n    else {\n      retExpr = ctorExpr;\n    }\n    if (retExpr !== null) {\n      body.push(new ReturnStatement(retExpr));\n    }\n    else {\n      body.push(importExpr(Identifiers$1.invalidFactory).callFn([]).toStmt());\n    }\n    return {\n      factory: fn([new FnParam('t', DYNAMIC_TYPE)], body, INFERRED_TYPE, undefined,\n      meta.name + `_${Factory}`),\n      statements: statements,\n      type:\n      expressionType(importExpr(Identifiers$1.FactoryDef, [typeWithParameters(meta.type.type,\n      meta.typeArgumentCount), ctorDepsType])));\n    };\n  }\n  function injectDependencies(deps, injectFn, isPipe)\n  {\n    return deps.map(function (dep, index) { return compileInjectDependency(dep, injectFn, isPipe, index); });\n  }\n  function compileInjectDependency(dep, injectFn, isPipe, index) {\n    // Interpret the dependency according\n    to its resolved type.\n    switch (dep.resolved) {\n      case exports.R3ResolvedDependencyType.Token:\n      case exports.R3ResolvedDependencyType.ChangeDetectorRef:\n      // Build up the injection flags according\n      to the metadata.\n      var flags = 0 /* Default */ | (dep.self ? 2 /* Self */ : 0) | (dep.skipSelf ? 4 /*\n      SkipSelf */ : 0) | (dep.host ? 1 /* Host */ : 0) | (dep.optional ? 8 /* Optional */ : 0);\n      // If this\n      dependency is optional or otherwise has non-default flags, then additional\n      // parameters describing how\n      to inject the dependency must be passed to the inject function\n      // that's being used.\n      var\n      flagsParam = (flags !== 0 /* Default */ || dep.optional) ? literal(flags) : null;\n      // We have a separate\n      instruction for injecting ChangeDetectorRef into a pipe.\n      if (isPipe && dep.resolved ===\n      exports.R3ResolvedDependencyType.ChangeDetectorRef) {\n      return\n      importExpr(Identifiers$1.injectPipeChangeDetectorRef).callFn(flagsParam ? [flagsParam] : []);\n      }\n      // Build up the arguments to the injectFn call.\n      var injectArgs = [dep.token];\n      if (flagsParam)\n      {\n      injectArgs.push(flagsParam);\n      }\n      return\n      importExpr(injectFn).callFn(injectArgs);\n      case exports.R3ResolvedDependencyType.Attribute:\n      //\n      In the case of attributes, the attribute name in question is given as the token.\n      return\n      importExpr(Identifiers$1.injectAttribute).callFn([dep.token]);\n      case\n      exports.R3ResolvedDependencyType.Invalid:\n      return\n      importExpr(Identifiers$1.invalidFactoryDep).callFn([literal(index)]);\n      default:\n      return\n      unsupported(`Unknown R3ResolvedDependencyType: ` + exports.R3ResolvedDependencyType[dep.resolved]);\n    }\n  }\n  function createCtorDepsType(deps) {\n    var hasTypes = false;\n    var attributeTypes =\n    deps.map(function (dep) {\n      var type = createCtorDepType(dep);\n      if (type !== null) {\n      hasTypes = true;\n      return type;\n      }\n      else {\n      return literal(null);\n      }\n    });\n    if (hasTypes) {\n      return expressionType(literalArr(attributeTypes));\n    }\n    else {\n      return NONE_TYPE;\n    }\n  }\n  function createCtorDepType(dep) {\n    var entries = [];\n    if\n    (dep.resolved === exports.R3ResolvedDependencyType.Attribute) {\n      if (dep.attribute !== null) {\n      entries.push({ key: 'attribute', value: dep.attribute, quoted: false });\n      }\n      if (dep.optional) {\n      entries.push({ key: 'optional', value: literal(true), quoted: false });\n      }\n      if (dep.host) {\n      entries.push({ key: 'host', value: literal(true), quoted: false });\n      }\n      if (dep.self) {\n      entries.push({\n      key: 'self', value: literal(true), quoted: false });\n      }\n      if (dep.skipSelf) {\n      entries.push({ key:\n      'skipSelf', value: literal(true), quoted: false });\n      }\n      return entries.length > 0 ? literalMap(entries) : null;\n    }\n  }\n  /**\n   * A helper function useful for extracting `R3DependencyMetadata` from a Render2\n   * `CompileTypeMetadata` instance.\n   */\n  function dependenciesFromGlobalMetadata(type, outputCtx, reflector)

```

```

{\n    var e_1, _a;\n    // Use the `CompileReflector` to look up references to some well-known Angular types.
These will\n    // be compared with the token to statically determine whether the token has significance to\n    // Angular, and set the correct `R3ResolvedDependencyType` as a result.\n    var injectorRef =
reflector.resolveExternalReference(Identifiers.Injector);\n    // Iterate through the type's DI dependencies and
produce `R3DependencyMetadata` for each of them.\n    var deps = [];\n    try {\n        for (var _b =
__values(type.diDeps), _c = _b.next(); !_c.done; _c = _b.next()) {\n            var dependency = _c.value;\n            if (dependency.token) {\n                var tokenRef = tokenReference(dependency.token);\n                var resolved
= dependency.isAttribute ?\n                    exports.R3ResolvedDependencyType.Attribute : \n                exports.R3ResolvedDependencyType.Token;\n                // In the case of most dependencies, the token will be a
reference to a type. Sometimes,\n                // however, it can be a string, in the case of older Angular code or
@Attribute injection.\n                var token = tokenRef instanceof StaticSymbol ?
outputCtx.importExpr(tokenRef) : literal(tokenRef);\n                // Construct the dependency.\n                deps.push({\n                    token: token,\n                    attribute: null,\n                    resolved: resolved,\n                    host: !!dependency.isHost,\n                    optional: !!dependency.isOptional,\n                    self:
!!dependency.isSelf,\n                    skipSelf: !!dependency.isSkipSelf,\n                });\n            }\n        }
else {\n            unsupported('dependency without a token');\n        }\n    } catch (e_1_1)
{ e_1 = { error: e_1_1 }; }\n    finally {\n        try {\n            if (_c && !_c.done && (_a = _b.return))
_a.call(_b);\n        }\n        finally { if (e_1) throw e_1.error; }\n    }\n    return deps;\n } function
isDelegatedMetadata(meta) {\n    return meta.delegateType !== undefined;\n } function
isExpressionFactoryMetadata(meta) {\n    return meta.expression !== undefined;\n }\n\n /**\n * @license\n * Copyright Google LLC All Rights Reserved.\n * Use of this source code is governed by an MIT-style
license that can be\n * found in the LICENSE file at https://angular.io/license\n */\n function
compileInjectable(meta) {\n    var result = null;\n    var factoryMeta = {\n        name: meta.name,\n        type: meta.type,\n        internalType: meta.internalType,\n        typeArgumentCount:
meta.typeArgumentCount,\n        deps: [],\n        injectFn: Identifiers.inject,\n        target:
exports.R3FactoryTarget.Injectable,\n    };
if (meta.useClass !== undefined) {\n        // meta.useClass has
two modes of operation. Either deps are specified, in which case `new` is\n        // used to instantiate the class with
dependencies injected, or deps are not specified and\n        // the factory of the class is used to instantiate it.\n        //\n        // A special case exists for useClass: Type where Type is the injectable type itself and no\n        // deps
are specified, in which case 'useClass' is effectively ignored.\n        var useClassOnSelf =
meta.useClass.isEquivalent(meta.internalType);\n        var deps = undefined;\n        if (meta.userDeps !==
undefined) {\n            deps = meta.userDeps;\n        }\n        if (deps !== undefined) {\n            // factory: ()
=> new meta.useClass(...deps)\n            result = compileFactoryFunction(Object.assign(Object.assign({
factoryMeta), { delegate: meta.useClass, delegateDeps: deps, delegateType: R3FactoryDelegateType.Class }));\n        }
else if (useClassOnSelf) {\n            result = compileFactoryFunction(factoryMeta);\n        }
else {\n            result = delegateToFactory(meta.type.value, meta.useClass);\n        }\n    } else if
(meta.useFactory !== undefined) {\n        if (meta.userDeps !== undefined) {\n            result =
compileFactoryFunction(Object.assign(Object.assign({}, factoryMeta), { delegate: meta.useFactory, delegateDeps:
meta.userDeps || [], delegateType: R3FactoryDelegateType.Function }));\n        }\n        else {\n            result
= {\n                statements: [],\n                factory: fn([], [new ReturnStatement(meta.useFactory.callFn([]))])\n            };\n        }\n    } else if (meta.useValue !== undefined) {\n        // Note: it's safe to use
`meta.useValue` instead of the `USE_VALUE in meta` check used for\n        // client code because meta.useValue
is an Expression which will be defined even if the actual\n        // value is undefined.\n        result =
compileFactoryFunction(Object.assign(Object.assign({}, factoryMeta), { expression: meta.useValue }));\n    }
else if (meta.useExisting !== undefined) {\n        // useExisting is an `inject` call on the existing token.\n        result = compileFactoryFunction(Object.assign(Object.assign({}, factoryMeta), { expression:
importExpr(Identifiers.inject).callFn([meta.useExisting] )});\n    } else {\n        result =
delegateToFactory(meta.type.value, meta.internalType);\n    }\n    var token = meta.internalType;\n    var

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injectableProps = { token: token, factory: result.factory };
if (meta.providedIn.value !== null) {
  injectableProps.providedIn = meta.providedIn;
}
var expression =
importExpr(Identifiers.defineInjectable).callFn([mapToMapExpression(injectableProps)];
var type = new
ExpressionType(importExpr(Identifiers.InjectableDef, [typeWithParameters(meta.type.type,
meta.typeArgumentCount)]));
return {
  expression: expression,
  type: type,
  statements: result.statements,
};
}
function delegateToFactory(type, internalType) {
  return {
    statements: [],
    // If types are the same, we can generate `factory: type.fac`
    // If types are
different, we have to generate a wrapper function to ensure
    // the internal type has been resolved ( ` factory:
function(t) { return type.fac(t); } `)
    factory: type.node === internalType.node ?
internalType.prop('fac') :
    fn([new FnParam('t', DYNAMIC_TYPE)], [new
ReturnStatement(internalType.callMethod('fac', [variable('t')])]);
];
}
}
/**
 * @license
 * Copyright Google LLC All Rights Reserved.
 * Use of this source code is governed by an MIT-style
license that can be
 * found in the LICENSE file at https://angular.io/license
 */
function
assertArrayOfStrings(identifier, value) {
  if (value == null) {
    return;
  }
  if
(!Array.isArray(value)) {
    throw new Error("Expected \"" + identifier + "\" to be an array of strings.");
  }
  for (var i = 0; i < value.length; i += 1) {
    if (typeof value[i] !== 'string') {
      throw new
Error("Expected \"" + identifier + "\" to be an array of strings.");
    }
  }
}
var
UNUSABLE_INTERPOLATION_REGEXPS = [
  /\\s*$/,
  /<>/,
  /^{}/$,
  /&#[a-z]/i,
  /^\\|\\/;
];
function assertInterpolationSymbols(identifier, value) {
  if (value != null &&
!(Array.isArray(value) && value.length == 2)) {
    throw new Error("Expected \"" + identifier + "\" to be an
array, [start, end].");
  }
  else if (value != null) {
    var start_1 = value[0];
    var end_1 =
value[1];
    // Check for unusable interpolation symbols
UNUSABLE_INTERPOLATION_REGEXPS.forEach(function (regex) {
      if (regex.test(start_1) ||
regex.test(end_1)) {
        throw new Error("\"[" + start_1 + "\", \"" + end_1 + "\"] contains unusable
interpolation symbol.");
      }
    });
  }
}
/**
 * @license
 * Copyright Google
LLC All Rights Reserved.
 * Use of this source code is governed by an MIT-style license that can be
 * found in the LICENSE file at https://angular.io/license
 */
var InterpolationConfig = /** @class */
(function () {
  function InterpolationConfig(start, end) {
    this.start = start;
    this.end = end;
  }
  InterpolationConfig.fromArray = function (markers) {
    if (!markers) {
      return
DEFAULT_INTERPOLATION_CONFIG;
    }
    assertInterpolationSymbols('interpolation',
markers);
    return new InterpolationConfig(markers[0], markers[1]);
  }
  return
InterpolationConfig;
})();
var DEFAULT_INTERPOLATION_CONFIG = new InterpolationConfig('{{',
'}}');
/**
 * @license
 * Copyright Google LLC All Rights Reserved.
 * Use of this source
code is governed by an MIT-style license that can be
 * found in the LICENSE file at https://angular.io/license
 */
// https://docs.google.com/document/d/1U1RGAehQwRypUTovF1KRlpiOFze0b-_2gc6fAH0KY0k/edit
var VERSION = 3;
var JS_B64_PREFIX = '# sourceMappingURL=data:application/json;base64,';
var
SourceMapGenerator = /** @class */
(function () {
  function SourceMapGenerator(file) {
    if (file ===
void 0) {
      file = null;
    }
    this.file = file;
    this.sourcesContent = new Map();
    this.lines = [];
    this.lastCol0 = 0;
    this.hasMappings = false;
  }
  // The content is `null` when the content is
expected to be loaded using the URL
  SourceMapGenerator.prototype.addSource = function (url, content) {
    if (content === void 0) {
      content = null;
    }
    if (!this.sourcesContent.has(url)) {
      this.sourcesContent.set(url, content);
    }
    return this;
  }
  SourceMapGenerator.prototype.addLine = function () {
    this.lines.push([]);
    this.lastCol0 = 0;
    return this;
  }
  SourceMapGenerator.prototype.addMapping = function (col0, sourceUrl, sourceLine0,
sourceCol0) {
    if (!this.currentLine) {
      throw new Error("A line must be added before mappings
can be added.");
    }
    if (sourceUrl != null && !this.sourcesContent.has(sourceUrl)) {
      throw new Error("Unknown source file \"" + sourceUrl + "\"");
    }
    if (col0 == null) {

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this._classes = [];\n      this._preambleLineCount = 0;\n      this._lines = [new _EmittedLine(_indent)];\n}\n  EmitterVisitorContext.createRoot = function () {\n      return new EmitterVisitorContext(0);\n  };\n  Object.defineProperty(EmitterVisitorContext.prototype, \"_currentLine\", {\n      /**\n      * @internal\n      strip this from published d.ts files due to\n      * https://github.com/microsoft/TypeScript/issues/36216\n      */\n      get: function () {\n          return this._lines[this._lines.length - 1];\n      },\n      enumerable:\n      false,\n      configurable: true\n  });\n  EmitterVisitorContext.prototype.println = function (from, lastPart)\n  {\n      if (lastPart === void 0) { lastPart = \"\"; }\n      this.print(from || null, lastPart, true);\n  };\n  EmitterVisitorContext.prototype.lineIsEmpty = function () {\n      return this._currentLine.parts.length === 0;\n  };\n  EmitterVisitorContext.prototype.lineLength = function () {\n      return this._currentLine.indent * _INDENT_WITH.length + this._currentLine.partsLength;\n  };\n  EmitterVisitorContext.prototype.print = function (from, part, newLine) {\n      if (newLine === void 0) { newLine = false; }\n      if (part.length > 0)\n      {\n          this._currentLine.parts.push(part);\n          this._currentLine.partsLength += part.length;\n          this._currentLine.srcSpans.push(from && from.sourceSpan || null);\n      }\n      if (newLine) {\n          this._lines.push(new _EmittedLine(this._indent));\n      }\n  };\n  EmitterVisitorContext.prototype.removeEmptyLastLine = function () {\n      if (this.lineIsEmpty()) {\n          this._lines.pop();\n      }\n  };\n  EmitterVisitorContext.prototype.incIndent = function () {\n      this._indent++;\n      if (this.lineIsEmpty()) {\n          this._currentLine.indent = this._indent;\n      }\n  };\n  EmitterVisitorContext.prototype.decIndent = function () {\n      this._indent--;\n      if (this.lineIsEmpty()) {\n          this._currentLine.indent = this._indent;\n      }\n  };\n  EmitterVisitorContext.prototype.pushClass = function (clazz) {\n      this._classes.push(clazz);\n  };\n  EmitterVisitorContext.prototype.popClass = function () {\n      return this._classes.pop();\n  };\n  Object.defineProperty(EmitterVisitorContext.prototype, \"currentClass\", {\n      get: function () {\n          return this._classes.length > 0 ? this._classes[this._classes.length - 1] : null;\n      },\n      enumerable: false,\n      configurable: true\n  });\n  EmitterVisitorContext.prototype.toSource = function () {\n      return this.sourceLines\n          .map(function (l) { return l.parts.length > 0 ? _createIndent(l.indent) + l.parts.join(\" \") : \"\");\n      })\n          .join(\"\\n\");\n  };\n  EmitterVisitorContext.prototype.toSourceMapGenerator = function (genFilePath, startsAtLine) {\n      if (startsAtLine === void 0) { startsAtLine = 0; }\n      var map = new SourceMapGenerator(genFilePath);\n      var firstOffsetMapped = false;\n      var mapFirstOffsetIfNeeded = function () {\n          if (!firstOffsetMapped) {\n              // Add a single space so that tools won't try to load the file from disk.\n              // Note: We are using virtual urls like `ng://`, so we have to\n              // provide a content here.\n              map.addSource(genFilePath, ' ').addMapping(0, genFilePath, 0, 0);\n              firstOffsetMapped = true;\n          }\n      };\n      for (var i = 0; i < startsAtLine; i++) {\n          map.addLine();\n          mapFirstOffsetIfNeeded();\n      }\n      this.sourceLines.forEach(function (line, lineIdx) {\n          map.addLine();\n          var spans = line.srcSpans;\n          var parts = line.parts;\n          var col0 = line.indent * _INDENT_WITH.length;\n          var spanIdx = 0;\n          // skip leading parts without source spans\n          while (spanIdx < spans.length && !spans[spanIdx]) {\n              col0 += parts[spanIdx].length;\n              spanIdx++;\n          }\n          if (spanIdx < spans.length && lineIdx === 0 && col0 === 0) {\n              firstOffsetMapped = true;\n          }\n          else {\n              mapFirstOffsetIfNeeded();\n          }\n          while (spanIdx < spans.length) {\n              var span = spans[spanIdx];\n              var source = span.start.file;\n              var sourceLine = span.start.line;\n              var sourceCol = span.start.col;\n              map.addSource(source.url, source.content)\n              .addMapping(col0, source.url, sourceLine, sourceCol);\n              col0 += parts[spanIdx].length;\n              spanIdx++;\n              // assign parts without span or the same span to the previous segment\n              while (spanIdx < spans.length && (span === spans[spanIdx] || !spans[spanIdx])) {\n                  col0 += parts[spanIdx].length;\n                  spanIdx++;\n              }\n          }\n      });\n      return map;\n  };\n  EmitterVisitorContext.prototype.setPreambleLineCount = function (count) {\n      return this._preambleLineCount = count;\n  };\n  EmitterVisitorContext.prototype.spanOf = function (line, column) {\n      var emittedLine = this._lines[line - this._preambleLineCount];\n      if (emittedLine) {\n          var

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columnsLeft = column - _createIndent(emittedLine.indent).length;\n          for (var partIndex = 0; partIndex <
emittedLine.parts.length; partIndex++) {\n          var part = emittedLine.parts[partIndex];\n          if
(part.length > columnsLeft) {\n          return emittedLine.srcSpans[partIndex];\n          }\n          columnsLeft -= part.length;\n          }\n          return null;\n        };\n
Object.defineProperty(EmitterVisitorContext.prototype, "sourceLines", {\n          /**\n          * @internal strip
this from published d.ts files due to\n          * https://github.com/microsoft/TypeScript/issues/36216\n          */\n
get: function () {\n          if (this._lines.length && this._lines[this._lines.length - 1].parts.length === 0) {\n
return this._lines.slice(0, -1);\n          }\n          return this._lines;\n        },\n        enumerable:
false,\n        configurable: true\n    });\n    return EmitterVisitorContext;\n  }());\n  var
AbstractEmitterVisitor = /** @class */ (function () {\n    function AbstractEmitterVisitor(_escapeDollarInStrings)
{\n      this._escapeDollarInStrings = _escapeDollarInStrings;\n    }\n
AbstractEmitterVisitor.prototype.printLeadingComments = function (stmt, ctx) {\n      var e_1, _a;\n      if
(stmt.leadingComments === undefined) {\n        return;\n      }\n      try {\n        for (var _b =
__values(stmt.leadingComments), _c = _b.next(); !_c.done; _c = _b.next()) {\n          var comment =
_c.value;\n          if (comment instanceof JSDocComment) {\n            ctx.print(stmt, "/*" +
comment.toString() + "*/", comment.trailingNewline);\n          }\n          else {\n            if
(comment.multiline) {\n              ctx.print(stmt, "/* " + comment.text + " */",
comment.trailingNewline);\n            }\n            else {\n              if
comment.text.split("\n").forEach(function (line) {\n                ctx.println(stmt, "// " + line);\n
              });\n            }\n          }\n          catch (e_1_1) { e_1 = { error: e_1_1 }; }\n
          finally {\n            try {\n              if (_c && !_c.done && (_a = _b.return)) _a.call(_b);\n
            }\n            finally { if (e_1) throw e_1.error; }\n          }\n        }\n      }\n
AbstractEmitterVisitor.prototype.visitExpressionStmt = function (stmt, ctx) {\n
this.printLeadingComments(stmt, ctx);\n      stmt.expr.visitExpression(this, ctx);\n      ctx.println(stmt, ';');\n
return null;\n    };\n
AbstractEmitterVisitor.prototype.visitReturnStmt = function (stmt, ctx) {\n
this.printLeadingComments(stmt, ctx);\n      ctx.print(stmt, "return ");\n      stmt.value.visitExpression(this,
ctx);\n      ctx.println(stmt, ';');\n      return null;\n    };\n
AbstractEmitterVisitor.prototype.visitIfStmt =
function (stmt, ctx) {\n      this.printLeadingComments(stmt, ctx);\n      ctx.print(stmt, "if (");\n
stmt.condition.visitExpression(this, ctx);\n      ctx.print(stmt, ") {\n");\n      var hasElseCase = stmt.falseCase
!= null && stmt.falseCase.length > 0;\n      if (stmt.trueCase.length <= 1 && !hasElseCase) {\n
ctx.print(stmt, " ");\n      this.visitAllStatements(stmt.trueCase, ctx);\n
ctx.removeEmptyLastLine();\n      ctx.print(stmt, " ");\n      }\n      else {\n        ctx.println();\n
ctx.incIndent();\n        this.visitAllStatements(stmt.trueCase, ctx);\n        ctx.decIndent();\n
if (hasElseCase) {\n          ctx.println(stmt, "} else {\n");\n          ctx.incIndent();\n
this.visitAllStatements(stmt.falseCase, ctx);\n          ctx.decIndent();\n          }\n          }\n
ctx.println(stmt, "});\n      return null;\n    };\n
AbstractEmitterVisitor.prototype.visitThrowStmt =
function (stmt, ctx) {\n      this.printLeadingComments(stmt, ctx);\n      ctx.print(stmt, "throw ");\n
stmt.error.visitExpression(this, ctx);\n      ctx.println(stmt, ");\n      return null;\n    };\n
AbstractEmitterVisitor.prototype.visitWriteVarExpr = function (expr, ctx) {\n      var lineWasEmpty =
ctx.lineIsEmpty();\n      if (!lineWasEmpty) {\n        ctx.print(expr, '(');\n      }\n      ctx.print(expr,
expr.name + " = ");\n      expr.value.visitExpression(this, ctx);\n      if (!lineWasEmpty) {\n
ctx.print(expr, ')');\n      }\n      return null;\n    };\n
AbstractEmitterVisitor.prototype.visitWriteKeyExpr = function (expr, ctx) {\n      var lineWasEmpty =
ctx.lineIsEmpty();\n      if (!lineWasEmpty) {\n        ctx.print(expr, '(');\n      }\n
expr.receiver.visitExpression(this, ctx);\n      ctx.print(expr, "[");\n      expr.index.visitExpression(this,
ctx);\n      ctx.print(expr, "] = ");\n      expr.value.visitExpression(this, ctx);\n      if (!lineWasEmpty) {\n
ctx.print(expr, ')');\n      }\n      return null;\n    };\n
AbstractEmitterVisitor.prototype.visitWritePropExpr = function (expr, ctx) {\n      var lineWasEmpty =

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ctx.lineIsEmpty();\n      if (!lineWasEmpty) {\n          ctx.print(expr, '(');\n      }\n      expr.receiver.visitExpression(this, ctx);\n      ctx.print(expr, '.' + expr.name + '=');\n      expr.value.visitExpression(this, ctx);\n      if (!lineWasEmpty) {\n          ctx.print(expr, ')');\n      }\n      return null;\n  });\n  AbstractEmitterVisitor.prototype.visitInvokeMethodExpr = function (expr, ctx) {\n      expr.receiver.visitExpression(this, ctx);\n      var name = expr.name;\n      if (expr.builtin != null) {\n          name = this.getBuiltinMethodName(expr.builtin);\n          if (name == null) {\n              // some builtins just\n              mean to skip the call.\n              return null;\n          }\n          ctx.print(expr, '.' + name +\n          '(');\n          this.visitAllExpressions(expr.args, ctx, ',');\n          ctx.print(expr, ')');\n          return null;\n      }\n      AbstractEmitterVisitor.prototype.visitInvokeFunctionExpr = function (expr, ctx) {\n          expr.fn.visitExpression(this, ctx);\n          ctx.print(expr, '(');\n          this.visitAllExpressions(expr.args, ctx,\n          ',');\n          ctx.print(expr, ')');\n          return null;\n      });\n      AbstractEmitterVisitor.prototype.visitWrappedNodeExpr = function (ast, ctx) {\n          throw new Error('Abstract\n          emitter cannot visit WrappedNodeExpr.);\n      });\n      AbstractEmitterVisitor.prototype.visitTypeofExpr =\n      function (expr, ctx) {\n          ctx.print(expr, 'typeof');\n          expr.expr.visitExpression(this, ctx);\n      });\n      AbstractEmitterVisitor.prototype.visitReadVarExpr = function (ast, ctx) {\n          var varName = ast.name;\n          if (ast.builtin != null) {\n              switch (ast.builtin) {\n                  case exports.BuiltinVar.Super:\n                      varName = 'super';\n                      break;\n                  case exports.BuiltinVar.This:\n                      varName = 'this';\n                      break;\n                  case exports.BuiltinVar.CatchError:\n                      varName =\n                      CATCH_ERROR_VAR$.name;\n                      break;\n                  case exports.BuiltinVar.CatchStack:\n                      varName = CATCH_STACK_VAR$.name;\n                      break;\n                  default:\n                      throw new Error('Unknown builtin variable ' + ast.builtin);\n              }\n          }\n          ctx.print(ast,\n          varName);\n          return null;\n      });\n      AbstractEmitterVisitor.prototype.visitInstantiateExpr = function (ast,\n      ctx) {\n          ctx.print(ast, 'new');\n          ast.classExpr.visitExpression(this, ctx);\n          ctx.print(ast,\n          '(');\n          this.visitAllExpressions(ast.args, ctx, ',');\n          ctx.print(ast, ')');\n          return null;\n      });\n      AbstractEmitterVisitor.prototype.visitLiteralExpr = function (ast, ctx) {\n          var value = ast.value;\n          if\n          (typeof value === 'string') {\n              ctx.print(ast, escapeIdentifier(value, this._escapeDollarInStrings));\n          }\n          else {\n              ctx.print(ast, '\"' + value);\n          }\n          return null;\n      });\n      AbstractEmitterVisitor.prototype.visitLocalizedString = function (ast, ctx) {\n          var head =\n          ast.serializeI18nHead();\n          ctx.print(ast, '$localize `'+ head.raw);\n          for (var i = 1; i <\n          ast.messageParts.length; i++) {\n              ctx.print(ast, '$');\n              ast.expressions[i - 1].visitExpression(this,\n              ctx);\n              ctx.print(ast, '`'+ ast.serializeI18nTemplatePart(i).raw);\n          }\n          ctx.print(ast, '`');\n          return null;\n      });\n      AbstractEmitterVisitor.prototype.visitConditionalExpr = function (ast, ctx) {\n          ctx.print(ast, '(');\n          ast.condition.visitExpression(this, ctx);\n          ctx.print(ast, '?');\n          ast.trueCase.visitExpression(this, ctx);\n          ctx.print(ast, ':');\n          ast.falseCase.visitExpression(this, ctx);\n          ctx.print(ast, ')');\n          return null;\n      });\n      AbstractEmitterVisitor.prototype.visitNotExpr =\n      function (ast, ctx) {\n          ctx.print(ast, '!');\n          ast.condition.visitExpression(this, ctx);\n          return null;\n      });\n      AbstractEmitterVisitor.prototype.visitAssertNotNullExpr = function (ast, ctx) {\n          ast.condition.visitExpression(this, ctx);\n          return null;\n      });\n      AbstractEmitterVisitor.prototype.visitUnaryOperatorExpr = function (ast, ctx) {\n          var opStr;\n          switch\n          (ast.operator) {\n              case exports.UnaryOperator.Plus:\n                  opStr = '+';\n                  break;\n              case exports.UnaryOperator.Minus:\n                  opStr = '-';\n                  break;\n              default:\n                  throw new Error('Unknown operator ' + ast.operator);\n          }\n          if (ast.parens)\n              ctx.print(ast,\n              '(');\n          ctx.print(ast, opStr);\n          ast.expr.visitExpression(this, ctx);\n          if (ast.parens)\n              ctx.print(ast, ')');\n          return null;\n      });\n      AbstractEmitterVisitor.prototype.visitBinaryOperatorExpr =\n      function (ast, ctx) {\n          var opStr;\n          switch (ast.operator) {\n              case\n              exports.BinaryOperator.Equals:\n                  opStr = '==';\n                  break;\n              case\n              exports.BinaryOperator.Identical:\n                  opStr = '===';\n                  break;\n              case\n              exports.BinaryOperator.NotEquals:\n                  opStr = '!=';\n                  break;\n          }

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exports.BinaryOperator.NotIdentical:\n                opStr = '!==';\n                break;\n                case
exports.BinaryOperator.And:\n                opStr = '&&';\n                break;\n                case
exports.BinaryOperator.BitwiseAnd:\n                opStr = '&';\n                break;\n                case
exports.BinaryOperator.Or:\n                opStr = '||';\n                break;\n                case
exports.BinaryOperator.Plus:\n                opStr = '+';\n                break;\n                case
exports.BinaryOperator.Minus:\n                opStr = '-';\n                break;\n                case
exports.BinaryOperator.Divide:\n                opStr = '/';\n                break;\n                case
exports.BinaryOperator.Multiply:\n                opStr = '*';\n                break;\n                case
exports.BinaryOperator.Modulo:\n                opStr = '%';\n                break;\n                case
exports.BinaryOperator.Lower:\n                opStr = '<';\n                break;\n                case
exports.BinaryOperator.LowerEquals:\n                opStr = '<=';\n                break;\n                case
exports.BinaryOperator.Bigger:\n                opStr = '>';\n                break;\n                case
exports.BinaryOperator.BiggerEquals:\n                opStr = '>=';\n                break;\n                default:\n                throw new Error("Unknown operator \"" + ast.operator);\n                }\n                if (ast.parens)\n                ctx.print(ast, "(");\n                ast.lhs.visitExpression(this, ctx);\n                ctx.print(ast, " " + opStr + " ");\n                ast.rhs.visitExpression(this, ctx);\n                if (ast.parens)\n                ctx.print(ast, ");\n                return null;\n                };\n                AbstractEmitterVisitor.prototype.visitReadPropExpr = function (ast, ctx) {\n                ast.receiver.visitExpression(this, ctx);\n                ctx.print(ast, ".");\n                ctx.print(ast, ast.name);\n                return\n                null;\n                };\n                AbstractEmitterVisitor.prototype.visitReadKeyExpr = function (ast, ctx) {\n                ast.receiver.visitExpression(this, ctx);\n                ctx.print(ast, "[");\n                ast.index.visitExpression(this, ctx);\n                ctx.print(ast, "];\n                return null;\n                };\n                AbstractEmitterVisitor.prototype.visitLiteralArrayExpr =\n                function (ast, ctx) {\n                ctx.print(ast, "[");\n                this.visitAllExpressions(ast.entries, ctx, ',');\n                ctx.print(ast, "];\n                return null;\n                };\n                AbstractEmitterVisitor.prototype.visitLiteralMapExpr =\n                function (ast, ctx) {\n                var _this = this;\n                ctx.print(ast, "{");\n                this.visitAllObjects(function\n                (entry) {\n                ctx.print(ast, escapeIdentifier(entry.key, _this._escapeDollarInStrings, entry.quoted) + ":");\n                entry.value.visitExpression(_this, ctx);\n                }, ast.entries, ctx, ',');\n                ctx.print(ast, "};\n                return null;\n                };\n                AbstractEmitterVisitor.prototype.visitCommaExpr = function (ast, ctx) {\n                ctx.print(ast, ',');\n                this.visitAllExpressions(ast.parts, ctx, ',');\n                ctx.print(ast, ');\n                return null;\n                };\n                AbstractEmitterVisitor.prototype.visitAllExpressions = function (expressions, ctx, separator) {\n                var _this = this;\n                this.visitAllObjects(function (expr) { return expr.visitExpression(_this, ctx); }, expressions,\n                ctx, separator);\n                };\n                AbstractEmitterVisitor.prototype.visitAllObjects = function (handler, expressions,\n                ctx, separator) {\n                var incrementedIndent = false;\n                for (var i = 0; i < expressions.length; i++) {\n                if (i > 0) {\n                if (ctx.lineLength() > 80) {\n                ctx.print(null, separator, true);\n                if (!incrementedIndent) {\n                // continuation are marked with double indent.\n                ctx.incIndent();\n                ctx.incIndent();\n                incrementedIndent = true;\n                }\n                }\n                else {\n                ctx.print(null, separator, false);\n                }\n                }\n                handler(expressions[i]);\n                }\n                if (incrementedIndent) {\n                // continuation are marked with\n                double indent.\n                ctx.decIndent();\n                ctx.decIndent();\n                }\n                };\n                AbstractEmitterVisitor.prototype.visitAllStatements = function (statements, ctx) {\n                var _this = this;\n                statements.forEach(function (stmt) { return stmt.visitStatement(_this, ctx); });\n                return\n                AbstractEmitterVisitor;\n                };\n                function escapeIdentifier(input, escapeDollar, alwaysQuote) {\n                if\n                (alwaysQuote === void 0) { alwaysQuote = true; }\n                if (input == null) {\n                return null;\n                }\n                var\n                body = input.replace(_SINGLE_QUOTE_ESCAPE_STRING_RE, function () {\n                var match = [];\n                for (var _i = 0; _i < arguments.length; _i++) {\n                match[_i] = arguments[_i];\n                }\n                if\n                (match[0] == '$') {\n                return escapeDollar ? '\\\\$' : '$';\n                }\n                else if (match[0] == '\\n') {\n                return '\\\\n';\n                }\n                else if (match[0] == '\\r') {\n                return '\\\\r';\n                }\n                else {\n                return '\\\\' + match[0];\n                }\n                });\n                var requiresQuotes = alwaysQuote ||\n                !_LEGAL_IDENTIFIER_RE.test(body);\n                return requiresQuotes ? "\"" + body + "\"" : body;\n                }\n                function

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_createIndent(count) {\n    var res = ";\n    for (var i = 0; i < count; i++) {\n        res += _INDENT_WITH;\n    }\n    return res;\n }\n\n var AbstractJsEmitterVisitor = /** @class */ (function (_super) {\n    __extends(AbstractJsEmitterVisitor, _super);\n    function AbstractJsEmitterVisitor() {\n        return\n        _super.call(this, false) || this;\n    }\n    AbstractJsEmitterVisitor.prototype.visitDeclareClassStmt = function\n    (stmt, ctx) {\n        var _this = this;\n        ctx.pushClass(stmt);\n        this._visitClassConstructor(stmt, ctx);\n        if (stmt.parent != null) {\n            ctx.print(stmt, stmt.name + ".prototype = Object.create(");\n            stmt.parent.visitExpression(this, ctx);\n            ctx.println(stmt, ".prototype);");\n        }\n        stmt.getters.forEach(function (getter) { return _this._visitClassGetter(stmt, getter, ctx); });\n        stmt.methods.forEach(function (method) { return _this._visitClassMethod(stmt, method, ctx); });\n        ctx.popClass();\n        return null;\n    });\n    AbstractJsEmitterVisitor.prototype._visitClassConstructor =\n    function (stmt, ctx) {\n        ctx.print(stmt, "function " + stmt.name + "(");\n        if (stmt.constructorMethod\n        != null) {\n            this._visitParams(stmt.constructorMethod.params, ctx);\n        }\n        ctx.println(stmt, ")\n        {");\n        ctx.incIndent();\n        if (stmt.constructorMethod != null) {\n            if\n            (stmt.constructorMethod.body.length > 0) {\n                ctx.println(stmt, "var self = this;");\n                this.visitAllStatements(stmt.constructorMethod.body, ctx);\n            }\n        }\n        ctx.decIndent();\n        ctx.println(stmt, "});");\n    });\n    AbstractJsEmitterVisitor.prototype._visitClassGetter = function (stmt, getter,\n    ctx) {\n        ctx.println(stmt, "Object.defineProperty(" + stmt.name + ".prototype, " + getter.name + ", { get:\n        function() {\n            ctx.incIndent();\n            if (getter.body.length > 0) {\n                ctx.println(stmt, "var self\n        = this;");\n                this.visitAllStatements(getter.body, ctx);\n            }\n            ctx.decIndent();\n        }\n        });");\n    });\n    AbstractJsEmitterVisitor.prototype._visitClassMethod = function (stmt,\n    method, ctx) {\n        ctx.print(stmt, stmt.name + ".prototype." + method.name + " = function(");\n        this._visitParams(method.params, ctx);\n        ctx.println(stmt, ") {\n        {");\n        ctx.incIndent();\n        if\n        (method.body.length > 0) {\n            ctx.println(stmt, "var self = this;");\n            this.visitAllStatements(method.body, ctx);\n        }\n        ctx.decIndent();\n        ctx.println(stmt, "};");\n    });\n    AbstractJsEmitterVisitor.prototype.visitWrappedNodeExpr = function (ast, ctx) {\n        throw new\n        Error('Cannot emit a WrappedNodeExpr in Javascript.);\n    });\n    AbstractJsEmitterVisitor.prototype.visitReadVarExpr = function (ast, ctx) {\n        if (ast.builtin ===\n        exports.BuiltinVar.This) {\n            ctx.print(ast, 'self');\n        }\n        else if (ast.builtin ===\n        exports.BuiltinVar.Super) {\n            throw new Error("'super' needs to be handled at a parent ast node, not at the\n            variable level!");\n        }\n        else {\n            _super.prototype.visitReadVarExpr.call(this, ast, ctx);\n        }\n        return null;\n    });\n    AbstractJsEmitterVisitor.prototype.visitDeclareVarStmt = function (stmt, ctx)\n    {\n        ctx.print(stmt, "var " + stmt.name);\n        if (stmt.value) {\n            ctx.print(stmt, ' = '); \n            stmt.value.visitExpression(this, ctx);\n        }\n        ctx.println(stmt, ";");\n        return null;\n    });\n    AbstractJsEmitterVisitor.prototype.visitCastExpr = function (ast, ctx) {\n        ast.value.visitExpression(this,\n        ctx);\n        return null;\n    });\n    AbstractJsEmitterVisitor.prototype.visitInvokeFunctionExpr = function\n    (expr, ctx) {\n        var fnExpr = expr.fn;\n        if (fnExpr instanceof ReadVarExpr && fnExpr.builtin ===\n        exports.BuiltinVar.Super) {\n            ctx.currentClass.parent.visitExpression(this, ctx);\n            ctx.print(expr,\n            ".call(this");\n            if (expr.args.length > 0) {\n                ctx.print(expr, ", ");\n                this.visitAllExpressions(expr.args, ctx, ',');\n            }\n            ctx.print(expr, ")");\n        }\n        else {\n            _super.prototype.visitInvokeFunctionExpr.call(this, expr, ctx);\n        }\n        return null;\n    });\n    AbstractJsEmitterVisitor.prototype.visitFunctionExpr = function (ast, ctx) {\n        ctx.print(ast, "function" +\n        (ast.name ? ' ' + ast.name : " ") + "(");\n        this._visitParams(ast.params, ctx);\n        ctx.println(ast, ") {\n        {\n            ctx.incIndent();\n            this.visitAllStatements(ast.statements, ctx);\n            ctx.decIndent();\n        }\n        }\n        ctx.println(ast, "});");\n        return null;\n    });\n    AbstractJsEmitterVisitor.prototype.visitDeclareFunctionStmt = function (stmt, ctx) {\n        ctx.print(stmt,\n        "function " + stmt.name + "(");\n        this._visitParams(stmt.params, ctx);\n        ctx.println(stmt, ") {\n        {\n            ctx.incIndent();\n            this.visitAllStatements(stmt.statements, ctx);\n            ctx.decIndent();\n        }\n        }\n        ctx.println(stmt, "});");\n        return null;\n    });\n    AbstractJsEmitterVisitor.prototype.visitTryCatchStmt =

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function (stmt, ctx) {\n      ctx.println(stmt, \"try {\");\n      ctx.incIndent();\n      this.visitAllStatements(stmt.bodyStmts, ctx);\n      ctx.decIndent();\n      ctx.println(stmt, \"} catch (\" +\n      CATCH_ERROR_VAR$1.name + \") {\");\n      ctx.incIndent();\n      var catchStmts =\n      [CATCH_STACK_VAR$1.set(CATCH_ERROR_VAR$1.prop('stack')).toDeclStmt(null, [\n      exports.StmtModifier.Final\n      ])].concat(stmt.catchStmts);\n      this.visitAllStatements(catchStmts,\n      ctx);\n      ctx.decIndent();\n      ctx.println(stmt, \"}\");\n      return null;\n    };\n\n  AbstractJsEmitterVisitor.prototype.visitLocalizedString = function (ast, ctx) {\n    var _this = this;\n    //\n    The following convoluted piece of code is effectively the downlevelled equivalent of\n    //```\n    //\n    $localize `...`\n    //```\n    // which is effectively like:\n    //```\n    //\n    $localize(__makeTemplateObject(cooked, raw), expression1, expression2, ...);\n    //```\n    //\n    The `$localize` function expects a `template object`, which is an array of `cooked` strings\n    // plus a `raw`\n    property that contains an array of `raw` strings.\n    //\n    // In some environments a helper function\n    called `__makeTemplateObject(cooked, raw)` might be\n    // available, in which case we use that. Otherwise\n    we must create our own helper function\n    // inline.\n    //\n    // In the inline function, if\n    `Object.defineProperty` is available we use that to attach the\n    // `raw` array.\n    ctx.print(ast,\n    '$localize((this&&this.__makeTemplateObject||function(e,t){return\n    Object.defineProperty?Object.defineProperty(e,\"raw\",{value:t}):e.raw=t,e})())');\n    var parts =\n    [ast.serializeI18nHead()];\n    for (var i = 1; i < ast.messageParts.length; i++) {\n    parts.push(ast.serializeI18nTemplatePart(i));\n    }\n    ctx.print(ast, \"[\" + parts.map(function (part) {\n    return escapeIdentifier(part.cooked, false); }).join(', ') + \"]\", \"\");\n    ctx.print(ast, \"[\" + parts.map(function\n    (part) {\n    return escapeIdentifier(part.raw, false); }).join(', ') + \"])\");\n    ast.expressions.forEach(function\n    (expression) {\n    ctx.print(ast, ', ');\n    expression.visitExpression(_this, ctx);\n    });\n    ctx.print(ast, ')');\n    return null;\n  };\n\n  AbstractJsEmitterVisitor.prototype._visitParams = function\n  (params, ctx) {\n    this.visitAllObjects(function (param) {\n    return ctx.print(null, param.name); }, params, ctx,\n    ',');\n  };\n\n  AbstractJsEmitterVisitor.prototype.getBuiltinMethodName = function (method) {\n    var\n    name;\n    switch (method) {\n    case exports.BuiltinMethod.ConcatArray:\n    name =\n    'concat';\n    break;\n    case exports.BuiltinMethod.SubscribeObservable:\n    name =\n    'subscribe';\n    break;\n    case exports.BuiltinMethod.Bind:\n    name = 'bind';\n    break;\n    default:\n    throw new Error(\"Unknown builtin method: \" + method);\n    }\n    return name;\n  };\n\n  return AbstractJsEmitterVisitor;\n})(AbstractEmitterVisitor);\n\n/**\n * A\n    helper class to manage the evaluation of JIT generated code.\n    *\n    var JitEvaluator = /** @class */ (function ()\n    {\n    function JitEvaluator() {\n    }\n\n    /**\n     *\n     * @param sourceUrl The URL of the generated\n    code.\n     *\n     * @param statements An array of Angular statement AST nodes to be evaluated.\n     *\n     * @param\n    reflector A helper used when converting the statements to executable code.\n     *\n     * @param createSourceMaps If\n    true then create a source-map for the generated code and include it\n     *\n     * inline as a source-map comment.\n     *\n     * @returns A map of all the variables in the generated code.\n     *\n    }\n\n    JitEvaluator.prototype.evaluateStatements = function (sourceUrl, statements, reflector, createSourceMaps) {\n    var converter = new JitEmitterVisitor(reflector);\n    var ctx = EmitterVisitorContext.createRoot();\n    //\n    Ensure generated code is in strict mode\n    if (statements.length > 0 && !isUseStrictStatement(statements[0]))\n    {\n    statements = __spread([\n    literal('use strict').toStmt()\n    ], statements);\n    }\n\n    converter.visitAllStatements(statements, ctx);\n    converter.createReturnStmt(ctx);\n    return\n    this.evaluateCode(sourceUrl, ctx, converter.getArgs(), createSourceMaps);\n  };\n\n  /**\n * Evaluate a\n    piece of JIT generated code.\n     *\n     * @param sourceUrl The URL of this generated code.\n     *\n     * @param ctx A\n    context object that contains an AST of the code to be evaluated.\n     *\n     * @param vars A map containing the names\n    and values of variables that the evaluated code might\n     *\n     * reference.\n     *\n     * @param createSourceMap If true\n    then create a source-map for the generated code and include it\n     *\n     * inline as a source-map comment.\n     *\n     *\n    @returns The result of evaluating the code.\n     *\n    }\n\n    JitEvaluator.prototype.evaluateCode = function\n    (sourceUrl, ctx, vars, createSourceMap) {\n    var fnBody = \"\"\"\"use strict\"\"\";\" + ctx.toSource() + \"\\n\";\"/\n  };\n}

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sourceURL="\ + sourceUrl;\n      var fnArgNames = [];\n      var fnArgValues = [];\n      for (var
argName in vars) {\n      fnArgValues.push(vars[argName]);\n      fnArgNames.push(argName);\n
}\n      if (createSourceMap) {\n      // using `new Function(...)` generates a header, 1 line of no arguments,
2 lines otherwise\n      // E.g. ``\n      // function anonymous(a,b,c\n      // /**/) { ... }``\n
// We don't want to hard code this fact, so we auto detect it via an empty function first.\n      var emptyFn =
new (Function.bind.apply(Function, __spread([void 0], fnArgNames.concat('return null;')))).toString();\n
var headerLines = emptyFn.slice(0, emptyFn.indexOf('return null;')).split('\n').length - 1;\n      fnBody +=
'\n\n' + ctx.toSourceMapGenerator(sourceUrl, headerLines).toJsComment();\n      }\n      var fn = new
(Function.bind.apply(Function, __spread([void 0], fnArgNames.concat(fnBody))));\n      return
this.executeFunction(fn, fnArgValues);\n      };\n      /**\n      * Execute a JIT generated function by calling it.\n
*\n      * This method can be overridden in tests to capture the functions that are generated\n      * by this
`JitEvaluator` class.\n      *\n      * @param fn A function to execute.\n      * @param args The arguments to
pass to the function being executed.\n      * @returns The return value of the executed function.\n      */\n
JitEvaluator.prototype.executeFunction = function (fn, args) {\n      return fn.apply(void 0, __spread(args));\n
};\n      return JitEvaluator;\n      }());\n      /**\n      * An Angular AST visitor that converts AST nodes into executable
JavaScript code.\n      */\n      var JitEmitterVisitor = /** @class */ (function (_super) {\n
__extends(JitEmitterVisitor, _super);\n      function JitEmitterVisitor(reflector) {\n      var _this =
_super.call(this) || this;\n      _this.reflector = reflector;\n      _this._evalArgNames = [];\n
_this._evalArgValues = [];\n      _this._evalExportedVars = [];\n      return _this;\n      }\n
JitEmitterVisitor.prototype.createReturnStmt = function (ctx) {\n      var stmt = new ReturnStatement(new
LiteralMapExpr(this._evalExportedVars.map(function (resultVar) { return new LiteralMapEntry(resultVar,
variable(resultVar), false); })));;\n      stmt.visitStatement(this, ctx);\n      };\n
JitEmitterVisitor.prototype.getArgs = function () {\n      var result = {};\n      for (var i = 0; i <
this._evalArgNames.length; i++) {\n      result[this._evalArgNames[i]] = this._evalArgValues[i];\n      }\n
return result;\n      };\n      JitEmitterVisitor.prototype.visitExternalExpr = function (ast, ctx) {\n
this._emitReferenceToExternal(ast, this.reflector.resolveExternalReference(ast.value), ctx);\n      return null;\n
};\n      JitEmitterVisitor.prototype.visitWrappedNodeExpr = function (ast, ctx) {\n
this._emitReferenceToExternal(ast, ast.node, ctx);\n      return null;\n      };\n
JitEmitterVisitor.prototype.visitDeclareVarStmt = function (stmt, ctx) {\n      if
(stmt.hasModifier(exports.StmtModifier.Exported)) {\n      this._evalExportedVars.push(stmt.name);\n
}\n      return _super.prototype.visitDeclareVarStmt.call(this, stmt, ctx);\n      };\n
JitEmitterVisitor.prototype.visitDeclareFunctionStmt = function (stmt, ctx) {\n      if
(stmt.hasModifier(exports.StmtModifier.Exported)) {\n      this._evalExportedVars.push(stmt.name);\n
}\n      return _super.prototype.visitDeclareFunctionStmt.call(this, stmt, ctx);\n      };\n
JitEmitterVisitor.prototype.visitDeclareClassStmt = function (stmt, ctx) {\n      if
(stmt.hasModifier(exports.StmtModifier.Exported)) {\n      this._evalExportedVars.push(stmt.name);\n
}\n      return _super.prototype.visitDeclareClassStmt.call(this, stmt, ctx);\n      };\n
JitEmitterVisitor.prototype._emitReferenceToExternal = function (ast, value, ctx) {\n      var id =
this._evalArgValues.indexOf(value);\n      if (id === -1) {\n      id = this._evalArgValues.length;\n
this._evalArgValues.push(value);\n      var name = identifierName({ reference: value }) || 'val';\n
this._evalArgNames.push("\jit_" + name + "_" + id);\n      }\n      ctx.print(ast, this._evalArgNames[id]);\n
};\n      return JitEmitterVisitor;\n      })(AbstractJsEmitterVisitor);\n      function isUseStrictStatement(statement)
{\n      return statement.isEquivalent(literal('use strict').toStmt());\n      }\n      /**\n      * @license\n      * Copyright
Google LLC All Rights Reserved.\n      *\n      * Use of this source code is governed by an MIT-style license that can
be\n      * found in the LICENSE file at https://angular.io/license\n      */\n      var $EOF = 0;\n      var $BSPACE = 8;\n
var $TAB = 9;\n      var $LF = 10;\n      var $VTAB = 11;\n      var $FF = 12;\n      var $CR = 13;\n      var $SPACE =
32;\n      var $BANG = 33;\n      var $DQ = 34;\n      var $HASH = 35;\n      var $$ = 36;\n      var $PERCENT = 37;\n
var $AMPERSAND = 38;\n      var $SQ = 39;\n      var $LPAREN = 40;\n      var $RPAREN = 41;\n      var $STAR =

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42;\n var $PLUS = 43;\n var $COMMA = 44;\n var $MINUS = 45;\n var $PERIOD = 46;\n var $$SLASH
= 47;\n var $COLON = 58;\n var $$SEMICOLON = 59;\n var $LT = 60;\n var $EQ = 61;\n var $GT = 62;\n
var $QUESTION = 63;\n var $0 = 48;\n var $7 = 55;\n var $9 = 57;\n var $A = 65;\n var $E = 69;\n var
$F = 70;\n var $X = 88;\n var $Z = 90;\n var $LBRACKET = 91;\n var $BACKSLASH = 92;\n var
$RBRACKET = 93;\n var $CARET = 94;\n var $_ = 95;\n var $a = 97;\n var $b = 98;\n var $e = 101;\n
var $f = 102;\n var $n = 110;\n var $r = 114;\n var $t = 116;\n var $u = 117;\n var $v = 118;\n var $x =
120;\n var $z = 122;\n var $LBRACE = 123;\n var $BAR = 124;\n var $RBRACE = 125;\n var $NBSP =
160;\n var $PIPE = 124;\n var $TILDA = 126;\n var $AT = 64;\n var $BT = 96;\n function
isWhitespace(code) {\n return (code >= $TAB && code <= $SPACE) || (code === $NBSP);\n }\n function
isDigit(code) {\n return $0 <= code && code <= $9;\n }\n function isAsciiLetter(code) {\n return code
>= $a && code <= $z || code >= $A && code <= $Z;\n }\n function isAsciiHexDigit(code) {\n return code
>= $a && code <= $f || code >= $A && code <= $F || isDigit(code);\n }\n function isNewLine(code) {\n
return code === $LF || code === $CR;\n }\n function isOctalDigit(code) {\n return $0 <= code && code <=
$7;\n }\n\n /**\n * @license\n * Copyright Google LLC All Rights Reserved.\n *\n * Use of this
source code is governed by an MIT-style license that can be\n * found in the LICENSE file at
https://angular.io/license\n */\n var ParseLocation = /** @class */ (function () {\n function
ParseLocation(file, offset, line, col) {\n this.file = file;\n this.offset = offset;\n this.line = line;\n
this.col = col;\n }\n ParseLocation.prototype.toString = function () {\n return this.offset != null
? this.file.url + @"\@" + this.line + \"::" + this.col : this.file.url;\n };}\n ParseLocation.prototype.moveBy =
function (delta) {\n var source = this.file.content;\n var len = source.length;\n var offset =
this.offset;\n var line = this.line;\n var col = this.col;\n while (offset > 0 && delta < 0) {\n
offset--;\n delta++;\n var ch = source.charCodeAt(offset);\n if (ch === $LF) {\n
line--;\n var priorLine = source.substr(0, offset - 1).lastIndexOf(String.fromCharCode($LF));\n
col = priorLine > 0 ? offset - priorLine : offset;\n }\n else {\n col--;\n }\n }\n while (offset < len && delta > 0) {\n
var ch = source.charCodeAt(offset);\n offset++;\n delta--;\n if (ch === $LF) {\n line++;\n col = 0;\n }\n
else {\n col++;\n }\n }\n return new ParseLocation(this.file, offset, line,
col);\n };}\n // Return the source around the location\n // Up to `maxChars` or `maxLines` on each side
of the location\n ParseLocation.prototype.getContext = function (maxChars, maxLines) {\n var content =
this.file.content;\n var startOffset = this.offset;\n if (startOffset != null) {\n if (startOffset >
content.length - 1) {\n startOffset = content.length - 1;\n }\n var endOffset =
startOffset;\n var ctxChars = 0;\n var ctxLines = 0;\n while (ctxChars < maxChars &&
startOffset > 0) {\n startOffset--;\n ctxChars++;\n if (content[startOffset] === "\\n")
{\n if (++ctxLines === maxLines) {\n break;\n }\n }\n }\n ctxChars = 0;\n ctxLines = 0;\n while (ctxChars < maxChars && endOffset <
content.length - 1) {\n endOffset++;\n ctxChars++;\n if (content[endOffset] ===
"\\n") {\n if (++ctxLines === maxLines) {\n break;\n }\n }\n }\n return {\n before: content.substring(startOffset, this.offset),\n after:
content.substring(this.offset, endOffset + 1),\n };}\n return null;\n };}\n return
ParseLocation;\n }());\n var ParseSourceFile = /** @class */ (function () {\n function
ParseSourceFile(content, url) {\n this.content = content;\n this.url = url;\n }\n return
ParseSourceFile;\n }());\n var ParseSourceSpan = /** @class */ (function () {\n /**\n * Create an
object that holds information about spans of tokens/nodes captured during\n * lexing/parsing of text.\n *\n * @param start\n * The location of the start of the span (having skipped leading trivia).\n * Skipping
leading trivia makes source-spans more "user friendly", since things like HTML\n * elements will appear to
begin at the start of the opening tag, rather than at the start of any\n * leading trivia, which could include
newlines.\n *\n * @param end\n * The location of the end of the span.\n *\n * @param
fullStart\n * The start of the token without skipping the leading trivia.\n * This is used by tooling that

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splits tokens further, such as extracting Angular interpolations
    * from text tokens. Such tooling creates new
source-spans relative to the original token's
    * source-span. If leading trivia characters have been skipped then
the new source-spans may be
    * incorrectly offset.
    *
    * @param details
    * Additional
information (such as identifier names) that should be associated with the span.
    * ^
    * function
ParseSourceSpan(start, end, fullStart, details) {
    if (fullStart === void 0) { fullStart = start; }
    if
(details === void 0) { details = null; }
    this.start = start;
    this.end = end;
    this.fullStart =
fullStart;
    this.details = details;
}
ParseSourceSpan.prototype.toString = function () {
return this.start.file.content.substring(this.start.offset, this.end.offset);
};
return ParseSourceSpan;
})();
(function (ParseErrorLevel) {
ParseErrorLevel[ParseErrorLevel["WARNING"] = 0] =
"WARNING";
ParseErrorLevel[ParseErrorLevel["ERROR"] = 1] = "ERROR";
})(exports.ParseErrorLevel || (exports.ParseErrorLevel = {}));
var ParseError = /** @class */ (function () {
function ParseError(span, msg, level) {
if (level === void 0) { level = exports.ParseErrorLevel.ERROR; }
this.span = span;
this.msg = msg;
this.level = level;
}
ParseError.prototype.contextualMessage = function () {
var ctx = this.span.start.getContext(100, 3);
return ctx ? this.msg + " (" + ctx.before + "[" + exports.ParseErrorLevel[this.level] + " ->]" + ctx.after +
" )" :
this.msg;
};
ParseError.prototype.toString = function () {
var details =
this.span.details ? ", " + this.span.details : "";
return this.contextualMessage() + ": " + this.span.start +
details;
};
return ParseError;
})();
function typeSourceSpan(kind, type) {
var moduleId =
identifierModuleUrl(type);
var sourceFileName = moduleId != null ? "in " + kind + " " +
identifierName(type) + " in " + moduleId :
"in " + kind + " " + identifierName(type);
var
sourceFile = new ParseSourceFile("", sourceFileName);
return new ParseSourceSpan(new
ParseLocation(sourceFile, -1, -1, -1), new ParseLocation(sourceFile, -1, -1, -1));
}
/**
 * Generates
Source Span object for a given R3 Type for JIT mode.
    *
    * @param kind Component or Directive.
    *
    * @param typeName name of the Component or Directive.
    *
    * @param sourceUrl reference to Component or
Directive source.
    *
    * @returns instance of ParseSourceSpan that represent a given Component or Directive.
    *
    * ^
    * function r3JitTypeSourceSpan(kind, typeName, sourceUrl) {
var sourceFileName = "in " + kind + "
" + typeName + " in " + sourceUrl;
var sourceFile = new ParseSourceFile("", sourceFileName);
return
new ParseSourceSpan(new ParseLocation(sourceFile, -1, -1, -1), new ParseLocation(sourceFile, -1, -1, -1));
}
}
/**
 * @license
 * Copyright Google LLC All Rights Reserved.
    *
    * Use of this source code
is governed by an MIT-style license that can be
    * found in the LICENSE file at https://angular.io/license
    *
    * ^
    * Implementation of `CompileReflector` which resolves references to @angular/core
    * symbols
at runtime, according to a consumer-provided mapping.
    *
    * Only supports `resolveExternalReference`, all
other methods throw.
    *
    * var R3JitReflector = /** @class */ (function () {
function
R3JitReflector(context) {
this.context = context;
}
R3JitReflector.prototype.resolveExternalReference = function (ref) {
// This reflector only handles
@angular/core imports.
if (ref.moduleName !== '@angular/core') {
throw new Error("Cannot
resolve external reference to " + ref.moduleName + ", only references to @angular/core are supported.");
}
if (!this.context.hasOwnProperty(ref.name)) {
throw new Error("No value provided for
@angular/core symbol " + ref.name + ".");
}
return this.context[ref.name];
};
R3JitReflector.prototype.parameters = function (typeOrFunc) {
throw new Error("Not implemented.");
};
R3JitReflector.prototype.annotations = function (typeOrFunc) {
throw new Error("Not
implemented.");
};
R3JitReflector.prototype.shallowAnnotations = function (typeOrFunc) {
throw new Error("Not implemented.");
};
R3JitReflector.prototype.tryAnnotations = function
(typeOrFunc) {
throw new Error("Not implemented.");
};
R3JitReflector.prototype.propMetadata = function (typeOrFunc) {
throw new Error("Not implemented.");
};
R3JitReflector.prototype.hasLifecycleHook = function (type, lcProperty) {
throw new
Error("Not implemented.");
};
R3JitReflector.prototype.guards = function (typeOrFunc) {
throw
new Error("Not implemented.");
};
R3JitReflector.prototype.componentModuleUrl = function (type,

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cmpMetadata) {\n      throw new Error('Not implemented.);\n    });\n    return R3JitReflector;\n  }());\n\n/**\n * @license\n * Copyright Google LLC All Rights Reserved.\n * Use of this source code is
governed by an MIT-style license that can be\n * found in the LICENSE file at https://angular.io/license\n */\n
function mapEntry(key, value) {\n  return { key: key, value: value, quoted: false };}\n function
mapLiteral(obj, quoted) {\n  if (quoted === void 0) { quoted = false; }\n  return
literalMap(Object.keys(obj).map(function (key) { return ({\n    key: key,\n    quoted: quoted,\n
value: obj[key],\n  }));\n }));\n }\n\n /**\n * Construct an `R3NgModuleDef` for the given
`R3NgModuleMetadata`.\n */\n function compileNgModule(meta) {\n  var internalType =
meta.internalType, moduleType = meta.type, bootstrap = meta.bootstrap, declarations = meta.declarations, imports
= meta.imports, exports = meta.exports, schemas = meta.schemas, containsForwardDecls =
meta.containsForwardDecls, emitInline = meta.emitInline, id = meta.id;\n  var additionalStatements = [];\n
var definitionMap = { type: internalType };}\n  // Only generate the keys in the metadata if the arrays have
values.\n  if (bootstrap.length) {\n    definitionMap.bootstrap = refsToArray(bootstrap,
containsForwardDecls);\n  }\n  // If requested to emit scope information inline, pass the declarations, imports
and exports to\n  // the `defineNgModule` call. The JIT compilation uses this.\n  if (emitInline) {\n    if
(declarations.length) {\n      definitionMap.declarations = refsToArray(declarations, containsForwardDecls);\n
    }\n    if (imports.length) {\n      definitionMap.imports = refsToArray(imports,
containsForwardDecls);\n    }\n    if (exports.length) {\n      definitionMap.exports =
refsToArray(exports, containsForwardDecls);\n    }\n  }\n  // If not emitting inline, the scope
information is not passed into `defineNgModule` as it would\n  // prevent tree-shaking of the declarations,
imports and exports references.\n  else {\n    var setNgModuleScopeCall =
generateSetNgModuleScopeCall(meta);\n    if (setNgModuleScopeCall !== null) {\n
additionalStatements.push(setNgModuleScopeCall);\n    }\n  }\n  if (schemas && schemas.length) {\n
definitionMap.schemas = literalArr(schemas.map(function (ref) { return ref.value; }));\n  }\n  if (id) {\n
definitionMap.id = id;\n  }\n  var expression =
importExpr(Identifiers$.defineNgModule).callFn([mapToMapExpression(definitionMap)];\n  var type = new
ExpressionType(importExpr(Identifiers$.NgModuleDefWithMeta, [\n    new
ExpressionType(moduleType.type), tupleTypeOf(declarations), tupleTypeOf(imports),\n
tupleTypeOf(exports)\n  ]));\n  return { expression: expression, type: type, additionalStatements:
additionalStatements };}\n }\n\n /**\n * Generates a function call to `setNgModuleScope` with all necessary
information so that the\n * transitive module scope can be computed during runtime in JIT mode. This call is
marked pure\n * such that the references to declarations, imports and exports may be elided causing these\n *
symbols to become tree-shakeable.\n */\n function generateSetNgModuleScopeCall(meta) {\n  var
moduleType = meta.adjacentType, declarations = meta.declarations, imports = meta.imports, exports =
meta.exports, containsForwardDecls = meta.containsForwardDecls;\n  var scopeMap = {};\n  if
(declarations.length) {\n    scopeMap.declarations = refsToArray(declarations, containsForwardDecls);\n
  }\n  if (imports.length) {\n    scopeMap.imports = refsToArray(imports, containsForwardDecls);\n  }\n
  if (exports.length) {\n    scopeMap.exports = refsToArray(exports, containsForwardDecls);\n  }\n  if
(Object.keys(scopeMap).length === 0) {\n    return null;\n  }\n  // setNgModuleScope(...)\n  var
fnCall = new InvokeFunctionExpr(\n    /* fn */ importExpr(Identifiers$.setNgModuleScope),\n    /* args */
[moduleType, mapToMapExpression(scopeMap)];\n    // (ngJitMode guard) && setNgModuleScope(...)\n
var guardedCall = jitOnlyGuardedExpression(fnCall);\n    // function() { (ngJitMode guard) &&
setNgModuleScope(...); }\n  var iife = new FunctionExpr(\n    /* params */ [],\n    /* statements */
[guardedCall.toStmt()]);\n    // (function() { (ngJitMode guard) && setNgModuleScope(...); })()\n
var iifeCall = new InvokeFunctionExpr(\n    /* fn */ iife,\n    /* args */ []);\n    return iifeCall.toStmt();\n  }\n
function
compileInjector(meta) {\n  var result = compileFactoryFunction({\n    name: meta.name,\n    type:
meta.type,\n    internalType: meta.internalType,\n    typeArgumentCount: 0,\n    deps: meta.deps,\n
injectFn: Identifiers$.inject,\n    target: exports.R3FactoryTarget.NgModule,\n  });\n  var

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definitionMap = {\n      factory: result.factory,\n    };\n    if (meta.providers !== null) {\n      definitionMap.providers = meta.providers;\n    }\n    if (meta.imports.length > 0) {\n      definitionMap.imports = literalArr(meta.imports);\n    }\n    var expression =\n    importExpr(Identifiers$1.defineInjector).callFn([mapToMapExpression(definitionMap)];\n    var type = new\n    ExpressionType(importExpr(Identifiers$1.InjectorDef, [new ExpressionType(meta.type.type)]);\n    return {\n    expression: expression, type: type, statements: result.statements };\n  }\n  // TODO(alxhub): integrate this with\n  `compileNgModule`. Currently the two are separate operations.\n  function compileNgModuleFromRender2(ctx,\n  ngModule, injectableCompiler) {\n    var className = identifierName(ngModule.type);\n    var rawImports =\n    ngModule.rawImports ? [ngModule.rawImports] : [];\n    var rawExports = ngModule.rawExports ?\n    [ngModule.rawExports] : [];\n    var injectorDefArg = mapLiteral({\n      'factory':\n    injectableCompiler.factoryFor({ type: ngModule.type, symbol: ngModule.type.reference }, ctx),\n    'providers':\n    convertMetaToOutput(ngModule.rawProviders, ctx),\n    'imports':\n    convertMetaToOutput(__spread(rawImports, rawExports), ctx)\n  });\n    var injectorDef =\n    importExpr(Identifiers$1.defineInjector).callFn([injectorDefArg]);\n    ctx.statements.push(new ClassStmt(\n    /* name */ className, \n    /* parent */ null, \n    /* fields */ [new ClassField(\n    /* name */ 'inj', \n    /* type */ INFERRED_TYPE, \n    /* modifiers */ [exports.StmtModifier.Static], \n    /* initializer */\n    injectorDef)], \n    /* getters */ [], \n    /* constructorMethod */ new ClassMethod(null, [], []), \n    /* methods\n    */ []));\n  }\n  function accessExportScope(module) {\n    var selectorScope = new ReadPropExpr(module,\n    'mod');\n    return new ReadPropExpr(selectorScope, 'exported');\n  }\n  function tupleTypeOf(exp) {\n    var\n    types = exp.map(function (ref) { return typeofExpr(ref.type); });\n    return exp.length > 0 ?\n    expressionType(literalArr(types)) : NONE_TYPE;\n  }\n  function refsToArray(refs, shouldForwardDeclare) {\n    var values = literalArr(refs.map(function (ref) { return ref.value; }));\n    return shouldForwardDeclare ? fn([],\n    [new ReturnStatement(values)]) : values;\n  }\n  /**\n   * @license\n   * Copyright Google LLC All Rights\n   Reserved.\n   *\n   * Use of this source code is governed by an MIT-style license that can be\n   * found in the\n   LICENSE file at https://angular.io/license\n   *\n   function compilePipeFromMetadata(metadata) {\n    var\n    definitionMapValues = [];\n    // e.g. `name: 'myPipe`\n    definitionMapValues.push({ key: 'name', value:\n    literal(metadata.pipeName), quoted: false });\n    // e.g. `type: MyPipe`\n    definitionMapValues.push({ key:\n    'type', value: metadata.type.value, quoted: false });\n    // e.g. `pure: true`\n    definitionMapValues.push({ key:\n    'pure', value: literal(metadata.pure), quoted: false });\n    var expression =\n    importExpr(Identifiers$1.definePipe).callFn([literalMap(definitionMapValues)];\n    var type = new\n    ExpressionType(importExpr(Identifiers$1.PipeDefWithMeta, [\n    typeWithParameters(metadata.type.type,\n    metadata.typeArgumentCount),\n    new ExpressionType(new LiteralExpr(metadata.pipeName)),\n  ]));\n    return { expression: expression, type: type };\n  }\n  /**\n   * Write a pipe definition to the output context.\n   *\n   function compilePipeFromRender2(outputCtx, pipe, reflector) {\n    var name =\n    identifierName(pipe.type);\n    if (!name) {\n      return error(`Cannot resolve the name of ` + pipe.type);\n    }\n    var type = outputCtx.importExpr(pipe.type.reference);\n    var metadata = {\n      name: name,\n      type: wrapReference(type),\n      internalType: type,\n      pipeName: pipe.name,\n      typeArgumentCount: 0,\n      deps: dependenciesFromGlobalMetadata(pipe.type, outputCtx, reflector),\n      pure: pipe.pure,\n    };\n    var res = compilePipeFromMetadata(metadata);\n    var factoryRes =\n    compileFactoryFunction(Object.assign(Object.assign({}, metadata), { injectFn: Identifiers$1.directiveInject, target:\n    exports.R3FactoryTarget.Pipe }));\n    var definitionField = outputCtx.constantPool.propertyNameOf(3 /* Pipe\n    */);\n    var ngFactoryDefStatement = new ClassStmt(\n    /* name */ name, \n    /* parent */ null, \n    /*\n    fields */\n    [new ClassField(\n    /* name */ 'fac', \n    /* type */ INFERRED_TYPE, \n    /*\n    modifiers */ [exports.StmtModifier.Static], \n    /* initializer */ factoryRes.factory)], \n    /* getters */ [], \n    /*\n    constructorMethod */\n    new ClassMethod(null, [], []), \n    /* methods */ []);\n    var pipeDefStatement = new\n    ClassStmt(\n    /* name */ name, \n    /* parent */ null, \n    /* fields */ [new ClassField(\n    /* name */\n    definitionField, \n    /* type */ INFERRED_TYPE, \n    /* modifiers */ [exports.StmtModifier.Static], \n    /*\n    initializer */ res.expression)], \n    /* getters */ [], \n    /* constructorMethod */\n    new ClassMethod(null, [],

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[]), \n      /* methods */ []);\n      outputCtx.statements.push(ngFactoryDefStatement, pipeDefStatement);\n    }\n\n    /**\n     * @license\n     * Copyright Google LLC All Rights Reserved.\n     * Use of this source code is governed by an MIT-style license that can be found in the LICENSE file at https://angular.io/license\n     */\n    var ParserError = /** @class */ (function () {\n      function ParserError(message, input, errLocation, ctxLocation) {\n        this.input = input;\n        this.errLocation = errLocation;\n        this.ctxLocation = ctxLocation;\n        this.message = \"Parser Error: \" + message + \" \" + errLocation + \" [\" + input + \"] in \" + ctxLocation;\n      }\n      return ParserError;\n    }());\n    var ParseSpan = /** @class */ (function () {\n      function ParseSpan(start, end) {\n        this.start = start;\n        this.end = end;\n      }\n      ParseSpan.prototype.toAbsolute = function (absoluteOffset) {\n        return new AbsoluteSourceSpan(absoluteOffset + this.start, absoluteOffset + this.end);\n      };\n      return ParseSpan;\n    }());\n    var AST = /** @class */ (function () {\n      function AST(span, \n      /**\n       * Absolute location of the expression AST in a source code file.\n       */\n      sourceSpan) {\n        this.span = span;\n        this.sourceSpan = sourceSpan;\n      }\n      AST.prototype.visit = function (visitor, context) {\n        if (context === void 0) { context = null; }\n        return null;\n      };\n      AST.prototype.toString = function () {\n        return 'AST';\n      }; \n      return AST;\n    }());\n    var ASTWithName = /** @class */ (function (_super) {\n      __extends(ASTWithName, _super);\n      function ASTWithName(span, sourceSpan, nameSpan) {\n        var _this = _super.call(this, span, sourceSpan) || this;\n        _this.nameSpan = nameSpan;\n        return _this;\n      }\n      return ASTWithName;\n    })(AST);\n    /**\n     * Represents a quoted expression of the form:\n     *\n     * quote = prefix ` ` uninterpretedExpression\n     * prefix = identifier\n     * uninterpretedExpression = arbitrary string\n     *\n     * A quoted expression is meant to be pre-processed by an AST transformer that converts it into another AST that no longer contains quoted expressions.\n     * It is meant to allow third-party developers to extend Angular template expression language. The `uninterpretedExpression` part of the quote is therefore not interpreted by the Angular's own expression parser.\n     */\n    var Quote = /** @class */ (function (_super) {\n      __extends(Quote, _super);\n      function Quote(span, sourceSpan, prefix, uninterpretedExpression, location) {\n        var _this = _super.call(this, span, sourceSpan) || this;\n        _this.prefix = prefix;\n        _this.uninterpretedExpression = uninterpretedExpression;\n        _this.location = location;\n        return _this;\n      }\n      Quote.prototype.visit = function (visitor, context) {\n        if (context === void 0) { context = null; }\n        return visitor.visitQuote(this, context);\n      };\n      Quote.prototype.toString = function () {\n        return 'Quote';\n      }; \n      return Quote;\n    })(AST);\n    var EmptyExpr = /** @class */ (function (_super) {\n      __extends(EmptyExpr, _super);\n      function EmptyExpr() {\n        return _super !== null && _super.apply(this, arguments) || this;\n      }\n      EmptyExpr.prototype.visit = function (visitor, context) {\n        if (context === void 0) { context = null; }\n        // do nothing\n      }; \n      return EmptyExpr;\n    })(AST);\n    var ImplicitReceiver = /** @class */ (function (_super) {\n      __extends(ImplicitReceiver, _super);\n      function ImplicitReceiver() {\n        return _super !== null && _super.apply(this, arguments) || this;\n      }\n      ImplicitReceiver.prototype.visit = function (visitor, context) {\n        if (context === void 0) { context = null; }\n        return visitor.visitImplicitReceiver(this, context);\n      }; \n      return ImplicitReceiver;\n    })(AST);\n    /**\n     * Receiver when something is accessed through `this` (e.g. `this.foo`). Note that this class inherits from `ImplicitReceiver`, because accessing something through `this` is treated the same as accessing it implicitly inside of an Angular template (e.g. `[attr.title]="this.title"` is the same as `[attr.title]="title"`). Inheriting allows for the `this` accesses to be treated the same as implicit ones, except for a couple of exceptions like `$event` and `$any`.\n     * TODO: we should find a way for this class not to extend from `ImplicitReceiver` in the future.\n     */\n    var ThisReceiver = /** @class */ (function (_super) {\n      __extends(ThisReceiver, _super);\n      function ThisReceiver() {\n        return _super !== null && _super.apply(this, arguments) || this;\n      }\n      ThisReceiver.prototype.visit = function (visitor, context) {\n        if (context === void 0) { context = null; }\n        var _a;\n        return (_a = visitor.visitThisReceiver) === null || _a === void 0 ? void 0 : _a.call(visitor, this, context);\n      }; \n      return ThisReceiver;\n    })(ImplicitReceiver);\n    /**\n     * Multiple expressions separated by a semicolon.\n     */\n    var Chain = /** @class */ (function (_super) {\n      __extends(Chain, _super);\n      function Chain(span, sourceSpan,

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expressions) {\n        var _this = _super.call(this, span, sourceSpan) || this;\n        _this.expressions =
expressions;\n        return _this;\n    }\n    Chain.prototype.visit = function (visitor, context) {\n        if
(context === void 0) { context = null; }\n        return visitor.visitChain(this, context);\n    };\n    return
Chain;\n }(AST));\n var Conditional = /** @class */ (function (_super) {\n    __extends(Conditional,
_super);\n    function Conditional(span, sourceSpan, condition, trueExp, falseExp) {\n        var _this =
_super.call(this, span, sourceSpan) || this;\n        _this.condition = condition;\n        _this.trueExp = trueExp;\n
        _this.falseExp = falseExp;\n        return _this;\n    }\n    Conditional.prototype.visit = function (visitor,
context) {\n        if (context === void 0) { context = null; }\n        return visitor.visitConditional(this,
context);\n    };\n    return Conditional;\n }(AST));\n var PropertyRead = /** @class */ (function (_super)
{\n    __extends(PropertyRead, _super);\n    function PropertyRead(span, sourceSpan, nameSpan, receiver,
name) {\n        var _this = _super.call(this, span, sourceSpan, nameSpan) || this;\n        _this.receiver =
receiver;\n        _this.name = name;\n        return _this;\n    }\n    PropertyRead.prototype.visit = function
(visitor, context) {\n        if (context === void 0) { context = null; }\n        return visitor.visitPropertyRead(this,
context);\n    };\n    return PropertyRead;\n }(ASTWithName));\n var PropertyWrite = /** @class */
(function (_super) {\n    __extends(PropertyWrite, _super);\n    function PropertyWrite(span, sourceSpan,
nameSpan, receiver, name, value) {\n        var _this = _super.call(this, span, sourceSpan, nameSpan) || this;\n
        _this.receiver = receiver;\n        _this.name = name;\n        _this.value = value;\n        return _this;\n    }\n
    PropertyWrite.prototype.visit = function (visitor, context) {\n        if (context === void 0) { context = null; }\n
        return visitor.visitPropertyWrite(this, context);\n    };\n    return PropertyWrite;\n }(ASTWithName));\n
var SafePropertyRead = /** @class */ (function (_super) {\n    __extends(SafePropertyRead, _super);\n    function
SafePropertyRead(span, sourceSpan, nameSpan, receiver, name) {\n        var _this = _super.call(this,
span, sourceSpan, nameSpan) || this;\n        _this.receiver = receiver;\n        _this.name = name;\n        return
_this;\n    }\n    SafePropertyRead.prototype.visit = function (visitor, context) {\n        if (context === void 0)
{ context = null; }\n        return visitor.visitSafePropertyRead(this, context);\n    };\n    return
SafePropertyRead;\n }(ASTWithName));\n var KeyedRead = /** @class */ (function (_super) {\n    __extends(KeyedRead,
_super);\n    function KeyedRead(span, sourceSpan, obj, key) {\n        var _this =
_super.call(this, span, sourceSpan) || this;\n        _this.obj = obj;\n        _this.key = key;\n        return _this;\n
    }\n    KeyedRead.prototype.visit = function (visitor, context) {\n        if (context === void 0) { context = null; }\n
        return visitor.visitKeyedRead(this, context);\n    };\n    return KeyedRead;\n }(AST));\n var
KeyedWrite = /** @class */ (function (_super) {\n    __extends(KeyedWrite, _super);\n    function
KeyedWrite(span, sourceSpan, obj, key, value) {\n        var _this = _super.call(this, span, sourceSpan) || this;\n
        _this.obj = obj;\n        _this.key = key;\n        _this.value = value;\n        return _this;\n    }\n
    KeyedWrite.prototype.visit = function (visitor, context) {\n        if (context === void 0) { context = null; }\n
        return visitor.visitKeyedWrite(this, context);\n    };\n    return KeyedWrite;\n }(AST));\n var BindingPipe =
/** @class */ (function (_super) {\n    __extends(BindingPipe, _super);\n    function BindingPipe(span,
sourceSpan, exp, name, args, nameSpan) {\n        var _this = _super.call(this, span, sourceSpan, nameSpan) ||
this;\n        _this.exp = exp;\n        _this.name = name;\n        _this.args = args;\n        return _this;\n
    }\n    BindingPipe.prototype.visit = function (visitor, context) {\n        if (context === void 0) { context = null; }\n
        return visitor.visitPipe(this, context);\n    };\n    return BindingPipe;\n }(ASTWithName));\n var
LiteralPrimitive = /** @class */ (function (_super) {\n    __extends(LiteralPrimitive, _super);\n    function
LiteralPrimitive(span, sourceSpan, value) {\n        var _this = _super.call(this, span, sourceSpan) || this;\n
        _this.value = value;\n        return _this;\n    }\n    LiteralPrimitive.prototype.visit = function (visitor,
context) {\n        if (context === void 0) { context = null; }\n        return visitor.visitLiteralPrimitive(this,
context);\n    };\n    return LiteralPrimitive;\n }(AST));\n var LiteralArray = /** @class */ (function (_super) {\n
    __extends(LiteralArray, _super);\n    function LiteralArray(span, sourceSpan, expressions) {\n        var _this =
_super.call(this, span, sourceSpan) || this;\n        _this.expressions = expressions;\n        return _this;\n    }\n
    LiteralArray.prototype.visit = function (visitor, context) {\n        if (context === void 0) { context = null; }\n
        return visitor.visitLiteralArray(this, context);\n    };\n    return LiteralArray;\n }(AST));\n var LiteralMap

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= /** @class */ (function (_super) {\n    __extends(LiteralMap, _super);\n    function LiteralMap(span,\n    sourceSpan, keys, values) {\n        var _this = _super.call(this, span, sourceSpan) || this;\n        _this.keys =\n    keys;\n        _this.values = values;\n        return _this;\n    }\n    LiteralMap.prototype.visit = function\n    (visitor, context) {\n        if (context === void 0) { context = null; }\n        return visitor.visitLiteralMap(this,\n    context);\n    };\n    return LiteralMap;\n})(AST));\n    var Interpolation = /** @class */ (function (_super) {\n        __extends(Interpolation, _super);\n        function Interpolation(span, sourceSpan, strings, expressions) {\n            var _this = _super.call(this, span, sourceSpan) || this;\n            _this.strings = strings;\n            _this.expressions =\n        expressions;\n            return _this;\n        }\n        Interpolation.prototype.visit = function (visitor, context) {\n            if (context === void 0) { context = null; }\n            return visitor.visitInterpolation(this, context);\n        };\n        return Interpolation;\n    })(AST));\n    var Binary = /** @class */ (function (_super) {\n        __extends(Binary,\n        _super);\n        function Binary(span, sourceSpan, operation, left, right) {\n            var _this = _super.call(this, span,\n            sourceSpan) || this;\n            _this.operation = operation;\n            _this.left = left;\n            _this.right = right;\n            return _this;\n        }\n        Binary.prototype.visit = function (visitor, context) {\n            if (context === void 0) {\n            context = null; }\n            return visitor.visitBinary(this, context);\n        };\n        return Binary;\n    })(AST));\n    /**\n     * For backwards compatibility reasons, `Unary` inherits from `Binary` and mimics the binary AST\n     * node that was originally used. This inheritance relation can be deleted in some future major,\n     * after consumers\n    have been given a chance to fully support Unary.\n     */\n    var Unary = /** @class */ (function (_super) {\n        __extends(Unary, _super);\n        /**\n         * During the deprecation period this constructor is private, to avoid\n        consumers from creating\n         * a `Unary` with the fallback properties for `Binary`.\n         */\n        function\n        Unary(span, sourceSpan, operator, expr, binaryOp, binaryLeft, binaryRight) {\n            var _this = _super.call(this,\n            span, sourceSpan, binaryOp, binaryLeft, binaryRight) || this;\n            _this.operator = operator;\n            _this.expr =\n        expr;\n            return _this;\n        }\n        /**\n         * Creates a unary minus expression "-x", represented as\n        `Binary` using "0 - x".\n         */\n        Unary.createMinus = function (span, sourceSpan, expr) {\n            return\n            new Unary(span, sourceSpan, '-', expr, '-', new LiteralPrimitive(span, sourceSpan, 0), expr);\n        };\n        /**\n         * Creates a unary plus expression "+x", represented as `Binary` using "x - 0".\n         */\n        Unary.createPlus =\n        function (span, sourceSpan, expr) {\n            return new Unary(span, sourceSpan, '+', expr, '-',\n            new\n            LiteralPrimitive(span, sourceSpan, 0));\n        };\n        Unary.prototype.visit = function (visitor, context) {\n            if (context === void 0) { context = null; }\n            if (visitor.visitUnary !== undefined) {\n            return\n            visitor.visitUnary(this, context);\n            }\n            return visitor.visitBinary(this, context);\n        };\n        return\n        Unary;\n    })(Binary));\n    var PrefixNot = /** @class */ (function (_super) {\n        __extends(PrefixNot, _super);\n        function PrefixNot(span, sourceSpan, expression) {\n            var _this = _super.call(this, span, sourceSpan) ||\n            this;\n            _this.expression = expression;\n            return _this;\n        }\n        PrefixNot.prototype.visit = function\n        (visitor, context) {\n            if (context === void 0) { context = null; }\n            return visitor.visitPrefixNot(this,\n            context);\n        };\n        return PrefixNot;\n    })(AST));\n    var NonNullAssert = /** @class */ (function (_super)\n    {\n        __extends(NonNullAssert, _super);\n        function NonNullAssert(span, sourceSpan, expression) {\n            var _this = _super.call(this, span, sourceSpan) ||\n            this;\n            _this.expression = expression;\n            return _this;\n        }\n        NonNullAssert.prototype.visit = function (visitor, context) {\n            if (context === void 0) { context =\n            null; }\n            return visitor.visitNonNullAssert(this, context);\n        };\n        return NonNullAssert;\n    })(AST));\n    var MethodCall = /** @class */ (function (_super) {\n        __extends(MethodCall, _super);\n        function MethodCall(span, sourceSpan, nameSpan, receiver, name, args) {\n            var _this = _super.call(this,\n            span, sourceSpan, nameSpan) || this;\n            _this.receiver = receiver;\n            _this.name = name;\n            _this.args = args;\n            return _this;\n        }\n        MethodCall.prototype.visit = function (visitor, context) {\n            if (context === void 0) { context = null; }\n            return visitor.visitMethodCall(this, context);\n        };\n        return MethodCall;\n    })(ASTWithName));\n    var SafeMethodCall = /** @class */ (function (_super) {\n        __extends(SafeMethodCall, _super);\n        function SafeMethodCall(span, sourceSpan, nameSpan, receiver, name,\n        args) {\n            var _this = _super.call(this, span, sourceSpan, nameSpan) ||\n            this;\n            _this.receiver = receiver;\n            _this.name = name;\n            _this.args = args;\n            return _this;\n        }\n        SafeMethodCall.prototype.visit = function (visitor, context) {\n            if (context === void 0) { context = null; }\n        }

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return visitor.visitSafeMethodCall(this, context);\n    };\n    return SafeMethodCall;\n}(ASTWithName));\n    var FunctionCall = /** @class */ (function (_super) {\n    __extends(FunctionCall,\n    _super);\n    function FunctionCall(span, sourceSpan, target, args) {\n        var _this = _super.call(this, span,\n    sourceSpan) || this;\n        _this.target = target;\n        _this.args = args;\n        return _this;\n    }\n    FunctionCall.prototype.visit = function (visitor, context) {\n        if (context === void 0) { context = null; }\n        return visitor.visitFunctionCall(this, context);\n    };\n    return FunctionCall;\n})(AST));\n    /**\n    * Records the absolute position of a text span in a source file, where `start` and `end` are the\n    * starting and ending byte offsets, respectively, of the text span in a source file.\n    */\n    var AbsoluteSourceSpan = /** @class */\n    (function () {\n        function AbsoluteSourceSpan(start, end) {\n            this.start = start;\n            this.end = end;\n        }\n        return AbsoluteSourceSpan;\n    }());\n    var ASTWithSource = /** @class */ (function (_super) {\n    __extends(ASTWithSource, _super);\n    function ASTWithSource(ast, source, location, absoluteOffset, errors)\n    {\n        var _this = _super.call(this, new ParseSpan(0, source === null ? 0 : source.length), new\n    AbsoluteSourceSpan(absoluteOffset, source === null ? absoluteOffset : absoluteOffset + source.length)) || this;\n        _this.ast = ast;\n        _this.source = source;\n        _this.location = location;\n        _this.errors = errors;\n        return _this;\n    }\n    ASTWithSource.prototype.visit = function (visitor, context) {\n        if (context\n    === void 0) { context = null; }\n        if (visitor.visitASTWithSource) {\n            return\n    visitor.visitASTWithSource(this, context);\n        }\n        return this.ast.visit(visitor, context);\n    };\n    ASTWithSource.prototype.toString = function () {\n        return this.source + ` in ` + this.location;\n    };\n    return ASTWithSource;\n})(AST));\n    var VariableBinding = /** @class */ (function () {\n        /**\n        * @param sourceSpan entire span of the binding.\n        * @param key name of the LHS along with its span.\n        * @param value optional value for the RHS along with its span.\n        */\n        function\n    VariableBinding(sourceSpan, key, value) {\n            this.sourceSpan = sourceSpan;\n            this.key = key;\n            this.value = value;\n        }\n        return VariableBinding;\n    }());\n    var ExpressionBinding = /** @class */\n    (function () {\n        /**\n        * @param sourceSpan entire span of the binding.\n        * @param key binding\n    name, like ngForOf, ngForTrackBy, ngIf, along with its\n        * span. Note that the length of the span may not be\n    the same as\n        * `key.source.length`. For example,\n        * 1. key.source = ngFor, key.span is for `ngFor`\n        * 2. key.source = ngForOf, key.span is for `of`\n        * 3. key.source = ngForTrackBy, key.span is for\n    `trackBy`\n        * @param value optional expression for the RHS.\n        */\n        function\n    ExpressionBinding(sourceSpan, key, value) {\n            this.sourceSpan = sourceSpan;\n            this.key = key;\n            this.value = value;\n        }\n        return ExpressionBinding;\n    }());\n    var RecursiveAstVisitor$1 = /** @class\n    */ (function () {\n        function RecursiveAstVisitor() {\n        }\n        RecursiveAstVisitor.prototype.visit =\n    function (ast, context) {\n        // The default implementation just visits every node.\n        // Classes that extend\n    RecursiveAstVisitor should override this function\n        // to selectively visit the specified node.\n        ast.visit(this, context);\n    };\n        RecursiveAstVisitor.prototype.visitUnary = function (ast, context) {\n        this.visit(ast.expr, context);\n    };\n        RecursiveAstVisitor.prototype.visitBinary = function (ast, context) {\n        this.visit(ast.left, context);\n        this.visit(ast.right, context);\n    };\n        RecursiveAstVisitor.prototype.visitChain = function (ast, context) {\n        this.visitAll(ast.expressions,\n    context);\n    };\n        RecursiveAstVisitor.prototype.visitConditional = function (ast, context) {\n        this.visit(ast.condition, context);\n        this.visit(ast.trueExp, context);\n        this.visit(ast.falseExp, context);\n    };\n        RecursiveAstVisitor.prototype.visitPipe = function (ast, context) {\n        this.visit(ast.exp, context);\n        this.visitAll(ast.args, context);\n    };\n        RecursiveAstVisitor.prototype.visitFunctionCall = function (ast,\n    context) {\n        if (ast.target) {\n            this.visit(ast.target, context);\n        }\n        this.visitAll(ast.args,\n    context);\n    };\n        RecursiveAstVisitor.prototype.visitImplicitReceiver = function (ast, context) {\n    };\n        RecursiveAstVisitor.prototype.visitThisReceiver = function (ast, context) {\n    };\n        RecursiveAstVisitor.prototype.visitInterpolation = function (ast, context) {\n        this.visitAll(ast.expressions,\n    context);\n    };\n        RecursiveAstVisitor.prototype.visitKeyedRead = function (ast, context) {\n        this.visit(ast.obj, context);\n        this.visit(ast.key, context);\n    };\n        RecursiveAstVisitor.prototype.visitKeyedWrite = function (ast, context) {\n        this.visit(ast.obj, context);\n    };\n    }());

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    this.visit(ast.key, context);\n        this.visit(ast.value, context);\n    };\n
RecursiveAstVisitor.prototype.visitLiteralArray = function (ast, context) {\n        this.visitAll(ast.expressions,\n
context);\n    };\n
RecursiveAstVisitor.prototype.visitLiteralMap = function (ast, context) {\n
this.visitAll(ast.values, context);\n    };\n
RecursiveAstVisitor.prototype.visitLiteralPrimitive = function (ast,\n
context) { };\n
RecursiveAstVisitor.prototype.visitMethodCall = function (ast, context) {\n
this.visit(ast.receiver, context);\n        this.visitAll(ast.args, context);\n    };\n
RecursiveAstVisitor.prototype.visitPrefixNot = function (ast, context) {\n        this.visit(ast.expression, context);\n
    };\n
RecursiveAstVisitor.prototype.visitNonNullAssert = function (ast, context) {\n
this.visit(ast.expression, context);\n    };\n
RecursiveAstVisitor.prototype.visitPropertyRead = function (ast,\n
context) {\n        this.visit(ast.receiver, context);\n    };\n
RecursiveAstVisitor.prototype.visitPropertyWrite\n
= function (ast, context) {\n        this.visit(ast.receiver, context);\n        this.visit(ast.value, context);\n    };\n
RecursiveAstVisitor.prototype.visitSafePropertyRead = function (ast, context) {\n        this.visit(ast.receiver,\n
context);\n    };\n
RecursiveAstVisitor.prototype.visitSafeMethodCall = function (ast, context) {\n
this.visit(ast.receiver, context);\n        this.visitAll(ast.args, context);\n    };\n
RecursiveAstVisitor.prototype.visitQuote = function (ast, context) { };\n
// This is not part of the AstVisitor\n
interface, just a helper method\n
RecursiveAstVisitor.prototype.visitAll = function (asts, context) {\n        var\n
e_1, _b;\n        try {\n            for (var asts_1 = __values(asts), asts_1_1 = asts_1.next(); !asts_1_1.done;\n
asts_1_1 = asts_1.next()) {\n                var ast = asts_1_1.value;\n                this.visit(ast, context);\n
            }\n        } catch (e_1_1) { e_1 = { error: e_1_1 }; }\n        finally {\n            try {\n                if\n
(asts_1_1 && !asts_1_1.done && (_b = asts_1.return)) _b.call(asts_1);\n            } finally { if (e_1)\n
throw e_1.error; }\n        }\n    }; \n    return RecursiveAstVisitor;\n }());\n
var AstTransformer$1 = /**\n
@class */ (function () {\n        function AstTransformer() {\n        }\n
AstTransformer.prototype.visitImplicitReceiver = function (ast, context) {\n        return ast;\n    };\n
AstTransformer.prototype.visitThisReceiver = function (ast, context) {\n        return ast;\n    };\n
AstTransformer.prototype.visitInterpolation = function (ast, context) {\n        return new Interpolation(ast.span,\n
ast.sourceSpan, ast.strings, this.visitAll(ast.expressions));\n    };\n
AstTransformer.prototype.visitLiteralPrimitive = function (ast, context) {\n        return new\n
LiteralPrimitive(ast.span, ast.sourceSpan, ast.value);\n    };\n
AstTransformer.prototype.visitPropertyRead =\n
function (ast, context) {\n        return new PropertyRead(ast.span, ast.sourceSpan, ast.nameSpan,\n
ast.receiver.visit(this), ast.name);\n    };\n
AstTransformer.prototype.visitPropertyWrite = function (ast,\n
context) {\n        return new PropertyWrite(ast.span, ast.sourceSpan, ast.nameSpan, ast.receiver.visit(this),\n
ast.name, ast.value.visit(this));\n    };\n
AstTransformer.prototype.visitSafePropertyRead = function (ast,\n
context) {\n        return new SafePropertyRead(ast.span, ast.sourceSpan, ast.nameSpan, ast.receiver.visit(this),\n
ast.name);\n    };\n
AstTransformer.prototype.visitMethodCall = function (ast, context) {\n        return new\n
MethodCall(ast.span, ast.sourceSpan, ast.nameSpan, ast.receiver.visit(this), ast.name, this.visitAll(ast.args));\n
    };\n
AstTransformer.prototype.visitSafeMethodCall = function (ast, context) {\n        return new\n
SafeMethodCall(ast.span, ast.sourceSpan, ast.nameSpan, ast.receiver.visit(this), ast.name, this.visitAll(ast.args));\n
    };\n
AstTransformer.prototype.visitFunctionCall = function (ast, context) {\n        return new\n
FunctionCall(ast.span, ast.sourceSpan, ast.target.visit(this), this.visitAll(ast.args));\n    };\n
AstTransformer.prototype.visitLiteralArray = function (ast, context) {\n        return new LiteralArray(ast.span,\n
ast.sourceSpan, this.visitAll(ast.expressions));\n    };\n
AstTransformer.prototype.visitLiteralMap = function\n
(ast, context) {\n        return new LiteralMap(ast.span, ast.sourceSpan, ast.keys, this.visitAll(ast.values));\n
    };\n
AstTransformer.prototype.visitUnary = function (ast, context) {\n        switch (ast.operator) {\n
case '+':\n            return Unary.createPlus(ast.span, ast.sourceSpan, ast.expr.visit(this));\n        case '-':\n
return Unary.createMinus(ast.span, ast.sourceSpan, ast.expr.visit(this));\n        default:\n
throw new Error(\"Unknown unary operator \" + ast.operator);\n        }\n    };\n
AstTransformer.prototype.visitBinary = function (ast, context) {\n        return new Binary(ast.span,\n
ast.sourceSpan, ast.operation, ast.left.visit(this), ast.right.visit(this));\n    };\n

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AstTransformer.prototype.visitPrefixNot = function (ast, context) {\n      return new PrefixNot(ast.span,
ast.sourceSpan, ast.expression.visit(this));\n    };\n    AstTransformer.prototype.visitNonNullAssert = function
(ast, context) {\n      return new NonNullAssert(ast.span, ast.sourceSpan, ast.expression.visit(this));\n    };\n    AstTransformer.prototype.visitConditional = function (ast, context) {\n      return new Conditional(ast.span,
ast.sourceSpan, ast.condition.visit(this), ast.trueExp.visit(this), ast.falseExp.visit(this));\n    };\n    AstTransformer.prototype.visitPipe = function (ast, context) {\n      return new BindingPipe(ast.span,
ast.sourceSpan, ast.exp.visit(this), ast.name, this.visitAll(ast.args), ast.nameSpan);\n    };\n    AstTransformer.prototype.visitKeyedRead = function (ast, context) {\n      return new KeyedRead(ast.span,
ast.sourceSpan, ast.obj.visit(this), ast.key.visit(this));\n    };\n    AstTransformer.prototype.visitKeyedWrite =
function (ast, context) {\n      return new KeyedWrite(ast.span, ast.sourceSpan, ast.obj.visit(this),
ast.key.visit(this), ast.value.visit(this));\n    };\n    AstTransformer.prototype.visitAll = function (asts) {\n
var res = [];\n      for (var i = 0; i < asts.length; ++i) {\n          res[i] = asts[i].visit(this);\n        }\n    return res;\n    };\n    AstTransformer.prototype.visitChain = function (ast, context) {\n      return new
Chain(ast.span, ast.sourceSpan, this.visitAll(ast.expressions));\n    };\n    AstTransformer.prototype.visitQuote
= function (ast, context) {\n      return new Quote(ast.span, ast.sourceSpan, ast.prefix,
ast.uninterpretedExpression, ast.location);\n    };\n    return AstTransformer;\n  }());\n  // A transformer that
only creates new nodes if the transformer makes a change or\n  // a change is made a child node.\n  var
AstMemoryEfficientTransformer = /** @class */ (function () {\n    function AstMemoryEfficientTransformer()
{\n    }\n    AstMemoryEfficientTransformer.prototype.visitImplicitReceiver = function (ast, context) {\n
return ast;\n    };\n    AstMemoryEfficientTransformer.prototype.visitThisReceiver = function (ast, context) {\n
return ast;\n    };\n    AstMemoryEfficientTransformer.prototype.visitInterpolation = function (ast,
context) {\n      var expressions = this.visitAll(ast.expressions);\n      if (expressions !== ast.expressions)\n        return new Interpolation(ast.span, ast.sourceSpan, ast.strings, expressions);\n      return ast;\n    };\n
AstMemoryEfficientTransformer.prototype.visitLiteralPrimitive = function (ast, context) {\n      return ast;\n
    };\n    AstMemoryEfficientTransformer.prototype.visitPropertyRead = function (ast, context) {\n      var
receiver = ast.receiver.visit(this);\n      if (receiver !== ast.receiver) {\n        return new
PropertyRead(ast.span, ast.sourceSpan, ast.nameSpan, receiver, ast.name);\n      }\n      return ast;\n    };\n
    AstMemoryEfficientTransformer.prototype.visitPropertyWrite = function (ast, context) {\n      var receiver =
ast.receiver.visit(this);\n      var value = ast.value.visit(this);\n      if (receiver !== ast.receiver || value !==
ast.value) {\n        return new PropertyWrite(ast.span, ast.sourceSpan, ast.nameSpan, receiver, ast.name,
value);\n      }\n      return ast;\n    };\n
AstMemoryEfficientTransformer.prototype.visitSafePropertyRead = function (ast, context) {\n      var receiver =
ast.receiver.visit(this);\n      if (receiver !== ast.receiver) {\n        return new SafePropertyRead(ast.span,
ast.sourceSpan, ast.nameSpan, receiver, ast.name);\n      }\n      return ast;\n    };\n
AstMemoryEfficientTransformer.prototype.visitMethodCall = function (ast, context) {\n      var receiver =
ast.receiver.visit(this);\n      var args = this.visitAll(ast.args);\n      if (receiver !== ast.receiver || args !==
ast.args) {\n        return new MethodCall(ast.span, ast.sourceSpan, ast.nameSpan, receiver, ast.name, args);\n
      }\n      return ast;\n    };\n    AstMemoryEfficientTransformer.prototype.visitSafeMethodCall = function
(ast, context) {\n      var receiver = ast.receiver.visit(this);\n      var args = this.visitAll(ast.args);\n      if
(receiver !== ast.receiver || args !== ast.args) {\n        return new SafeMethodCall(ast.span, ast.sourceSpan,
ast.nameSpan, receiver, ast.name, args);\n      }\n      return ast;\n    };\n
AstMemoryEfficientTransformer.prototype.visitFunctionCall = function (ast, context) {\n      var target =
ast.target && ast.target.visit(this);\n      var args = this.visitAll(ast.args);\n      if (target !== ast.target || args
!== ast.args) {\n        return new FunctionCall(ast.span, ast.sourceSpan, target, args);\n      }\n      return
ast;\n    };\n    AstMemoryEfficientTransformer.prototype.visitLiteralArray = function (ast, context) {\n
var expressions = this.visitAll(ast.expressions);\n      if (expressions !== ast.expressions) {\n        return new
LiteralArray(ast.span, ast.sourceSpan, expressions);\n      }\n      return ast;\n    };\n
AstMemoryEfficientTransformer.prototype.visitLiteralMap = function (ast, context) {\n      var values =

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this.visitAll(ast.values);\n        if (values !== ast.values) {\n            return new LiteralMap(ast.span,
ast.sourceSpan, ast.keys, values);\n        }\n        return ast;\n    };\n
AstMemoryEfficientTransformer.prototype.visitUnary = function (ast, context) {\n        var expr =
ast.expr.visit(this);\n        if (expr !== ast.expr) {\n            switch (ast.operator) {\n                case '+':\n                    return Unary.createPlus(ast.span, ast.sourceSpan, expr);\n                case '-':\n                    return
Unary.createMinus(ast.span, ast.sourceSpan, expr);\n                default:\n                    throw new
Error("\Unknown unary operator " + ast.operator);\n            }\n        }\n        return ast;\n    };\n
AstMemoryEfficientTransformer.prototype.visitBinary = function (ast, context) {\n        var left =
ast.left.visit(this);\n        var right = ast.right.visit(this);\n        if (left !== ast.left || right !== ast.right) {\n            return new Binary(ast.span, ast.sourceSpan, ast.operation, left, right);\n        }\n        return ast;\n    };\n
AstMemoryEfficientTransformer.prototype.visitPrefixNot = function (ast, context) {\n        var expression =
ast.expression.visit(this);\n        if (expression !== ast.expression) {\n            return new PrefixNot(ast.span,
ast.sourceSpan, expression);\n        }\n        return ast;\n    };\n
AstMemoryEfficientTransformer.prototype.visitNonNullAssert = function (ast, context) {\n        var expression =
ast.expression.visit(this);\n        if (expression !== ast.expression) {\n            return new
NonNullAssert(ast.span, ast.sourceSpan, expression);\n        }\n        return ast;\n    };\n
AstMemoryEfficientTransformer.prototype.visitConditional = function (ast, context) {\n        var condition =
ast.condition.visit(this);\n        var trueExp = ast.trueExp.visit(this);\n        var falseExp =
ast.falseExp.visit(this);\n        if (condition !== ast.condition || trueExp !== ast.trueExp || falseExp !==
ast.falseExp) {\n            return new Conditional(ast.span, ast.sourceSpan, condition, trueExp, falseExp);\n        }\n        return ast;\n    };\n
AstMemoryEfficientTransformer.prototype.visitPipe = function (ast, context)
{\n        var exp = ast.exp.visit(this);\n        var args = this.visitAll(ast.args);\n        if (exp !== ast.exp || args
!== ast.args) {\n            return new BindingPipe(ast.span, ast.sourceSpan, exp, ast.name, args, ast.nameSpan);\n        }\n        return ast;\n    };\n
AstMemoryEfficientTransformer.prototype.visitKeyedRead = function (ast,
context) {\n        var obj = ast.obj.visit(this);\n        var key = ast.key.visit(this);\n        if (obj !== ast.obj ||
key !== ast.key) {\n            return new KeyedRead(ast.span, ast.sourceSpan, obj, key);\n        }\n        return
ast;\n    };\n
AstMemoryEfficientTransformer.prototype.visitKeyedWrite = function (ast, context) {\n        if
(obj !== ast.obj || key !== ast.key || value !== ast.value) {\n            return new KeyedWrite(ast.span,
ast.sourceSpan, obj, key, value);\n        }\n        return ast;\n    };\n
AstMemoryEfficientTransformer.prototype.visitAll = function (asts) {\n        var res = [];\n        var modified =
false;\n        for (var i = 0; i < asts.length; ++i) {\n            var original = asts[i];\n            var value =
original.visit(this);\n            res[i] = value;\n            modified = modified || value !== original;\n        }\n        return modified ? res : asts;\n    };\n
AstMemoryEfficientTransformer.prototype.visitChain = function (ast,
context) {\n        var expressions = this.visitAll(ast.expressions);\n        if (expressions !== ast.expressions) {\n            return new Chain(ast.span, ast.sourceSpan, expressions);\n        }\n        return ast;\n    };\n
AstMemoryEfficientTransformer.prototype.visitQuote = function (ast, context) {\n        return ast;\n    };\n
return AstMemoryEfficientTransformer;\n }());\n // Bindings\n var ParsedProperty = /** @class */ (function ()
{\n    function ParsedProperty(name, expression, type, \n        // TODO(atscott): `keySpan` should really be
required but allows `undefined` so VE does\n        // not need to be updated. Make `keySpan` required when VE is
removed.\n        sourceSpan, keySpan, valueSpan) {\n        this.name = name;\n        this.expression =
expression;\n        this.type = type;\n        this.sourceSpan = sourceSpan;\n        this.keySpan = keySpan;\n        this.valueSpan = valueSpan;\n        this.isLiteral = this.type ===
exports.ParsedPropertyType.LITERAL_ATTR;\n        this.isAnimation = this.type ===
exports.ParsedPropertyType.ANIMATION;\n    }\n    return ParsedProperty;\n }());\n (function
(ParsedPropertyType) {\n    ParsedPropertyType[ParsedPropertyType["DEFAULT"] = 0] = "DEFAULT";\n    ParsedPropertyType[ParsedPropertyType["LITERAL_ATTR"] = 1] = "LITERAL_ATTR";\n    ParsedPropertyType[ParsedPropertyType["ANIMATION"] = 2] = "ANIMATION";\n}

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})(exports.ParsedPropertyType || (exports.ParsedPropertyType = {}));\n  var ParsedEvent = /** @class */ (function
() {\n    // Regular events have a target\n    // Animation events have a phase\n    function ParsedEvent(name,
targetOrPhase, type, handler, sourceSpan, handlerSpan) {\n      this.name = name;\n      this.targetOrPhase =
targetOrPhase;\n      this.type = type;\n      this.handler = handler;\n      this.sourceSpan = sourceSpan;\n
      this.handlerSpan = handlerSpan;\n    }\n    return ParsedEvent;\n  });\n  /**\n   * ParsedVariable
represents a variable declaration in a microsyntax expression.\n   */\n  var ParsedVariable = /** @class */
(function () {\n    function ParsedVariable(name, value, sourceSpan, keySpan, valueSpan) {\n      this.name =
name;\n      this.value = value;\n      this.sourceSpan = sourceSpan;\n      this.keySpan = keySpan;\n
      this.valueSpan = valueSpan;\n    }\n    return ParsedVariable;\n  });\n  var BoundElementProperty = /**
@class */ (function () {\n    function BoundElementProperty(name, type, securityContext, value, unit,
sourceSpan, keySpan, valueSpan) {\n      this.name = name;\n      this.type = type;\n
      this.securityContext = securityContext;\n      this.value = value;\n      this.unit = unit;\n
      this.sourceSpan = sourceSpan;\n      this.keySpan = keySpan;\n      this.valueSpan = valueSpan;\n    }\n
    return BoundElementProperty;\n  });\n  var EventHandlerVars = /** @class */ (function () {\n    function
EventHandlerVars() {\n    }\n    return EventHandlerVars;\n  });\n  EventHandlerVars.event =
variable('$event');\n  var ConvertActionBindingResult = /** @class */ (function () {\n    function
ConvertActionBindingResult(\n    /**\n     * Render2 compatible statements,\n     */\n    stmts, \n    /**\n
     * Variable name used with render2 compatible statements.\n     */\n    allowDefault) {\n      this.stmts =
stmts;\n      this.allowDefault = allowDefault;\n    }\n    /**\n     * This is bit of a hack. It converts statements
which render2 expects to statements which are\n     * expected by render3.\n     */\n    * Example:\n
`<div click=\`doSomething($event)\`>` will generate:\n     */\n    * Render3:\n     * ```\n     *
const pd_b:any = ((<any>ctx.doSomething($event)) !== false);\n     * return pd_b;\n     * ```\n     *
* but render2 expects:\n     * ```\n     * return ctx.doSomething($event);\n     * ```\n     */\n
    // TODO(misko): remove this hack once we no longer support ViewEngine.\n    this.render3Stmts =
stmts.map(function (statement) {\n      if (statement instanceof DeclareVarStmt && statement.name ===
allowDefault.name &&\n      statement.value instanceof BinaryOperatorExpr) {\n        var lhs =
statement.value.lhs;\n        return new ReturnStatement(lhs.value);\n      }\n      return
statement;\n    });\n  }\n  return ConvertActionBindingResult;\n  });\n  /**\n   * Converts the given
expression AST into an executable output AST, assuming the expression is\n   * used in an action binding (e.g. an
event handler).\n   */\n  function convertActionBinding(localResolver, implicitReceiver, action, bindingId,
interpolationFunction, baseSourceSpan, implicitReceiverAccesses, globals) {\n    if (!localResolver) {\n
      localResolver = new DefaultLocalResolver(globals);\n    }\n    var actionWithoutBuiltins =
convertPropertyBindingBuiltins({\n      createLiteralArrayConverter: function (argCount) {\n        // Note:
no caching for literal arrays in actions.\n        return function (args) { return literalArr(args); }; \n      },\n
      createLiteralMapConverter: function (keys) {\n        // Note: no caching for literal maps in actions.\n
return function (values) {\n          var entries = keys.map(function (k, i) { return ({\n              key:
k.key,\n              value: values[i],\n              quoted: k.quoted,\n            }); });\n          return
literalMap(entries);\n        });\n      },\n      createPipeConverter: function (name) {\n        throw new
Error(`Illegal State: Actions are not allowed to contain pipes. Pipe: ` + name);\n      },\n    }, action);\n
    var visitor = new _AstToIrVisitor(localResolver, implicitReceiver, bindingId, interpolationFunction,
baseSourceSpan, implicitReceiverAccesses);\n    var actionStmts = [];\n    flattenStatements(actionWithoutBuiltins.visit(visitor, _Mode.Statement), actionStmts);\n
    prependTemporaryDecls(visitor temporaryCount, bindingId, actionStmts);\n    if (visitor.usesImplicitReceiver)
{\n      localResolver.notifyImplicitReceiverUse();\n    }\n    var lastIndex = actionStmts.length - 1;\n
    var preventDefaultVar = null;\n    if (lastIndex >= 0) {\n      var lastStatement = actionStmts[lastIndex];\n
      var returnExpr = convertStmtIntoExpression(lastStatement);\n      if (returnExpr) {\n        // Note: We need
to cast the result of the method call to dynamic,\n        // as it might be a void method!\n        preventDefaultVar = createPreventDefaultVar(bindingId);\n        actionStmts[lastIndex] =\n

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preventDefaultVar.set(returnExpr.cast(DYNAMIC_TYPE).notIdentical(literal(false)))\n
.toDeclStmt(null, [exports.StmtModifier.Final]);\n    }\n    }\n    return new\n
ConvertActionBindingResult(actionStmts, preventDefaultVar);\n    }\n    function\n
convertPropertyBindingBuiltins(converterFactory, ast) {\n    return convertBuiltins(converterFactory, ast);\n    }\n\n
var ConvertPropertyBindingResult = /** @class */ (function () {\n    function\n
ConvertPropertyBindingResult(stmts, currValExpr) {\n        this.stmts = stmts;\n        this.currValExpr =\n
currValExpr;\n    }\n    return ConvertPropertyBindingResult;\n    }());\n    var BindingForm;\n    (function\n
(BindingForm) {\n        // The general form of binding expression, supports all expressions.\n
BindingForm[BindingForm["General"] = 0] = "General";\n        // Try to generate a simple binding (no\n
temporaries or statements)\n        // otherwise generate a general binding\n
BindingForm[BindingForm["TrySimple"] = 1] = "TrySimple";\n        // Inlines assignment of temporaries into the\n
generated expression. The result may still\n        // have statements attached for declarations of temporary\n
variables.\n        // This is the only relevant form for Ivy, the other forms are only used in ViewEngine.\n
BindingForm[BindingForm["Expression"] = 2] = "Expression";\n    })(BindingForm || (BindingForm = {}));\n\n
/**\n     * Converts the given expression AST into an executable output AST, assuming the expression\n     * is used\n
in property binding. The expression has to be preprocessed via\n     * `convertPropertyBindingBuiltins`.\n     */\n
function convertPropertyBinding(localResolver, implicitReceiver, expressionWithoutBuiltins, bindingId, form,\n
interpolationFunction) {\n    if (!localResolver) {\n        localResolver = new DefaultLocalResolver();\n    }\n\n
    var visitor = new _AstToIrVisitor(localResolver, implicitReceiver, bindingId, interpolationFunction);\n    var\n
outputExpr = expressionWithoutBuiltins.visit(visitor, _Mode.Expression);\n    var stmts =\n
getStatementsFromVisitor(visitor, bindingId);\n    if (visitor.usesImplicitReceiver) {\n\n
localResolver.notifyImplicitReceiverUse();\n    }\n    if (visitor.temporaryCount === 0 && form ===\n
BindingForm.TrySimple) {\n        return new ConvertPropertyBindingResult([], outputExpr);\n    }\n    else\n
if (form === BindingForm.Expression) {\n        return new ConvertPropertyBindingResult(stmts, outputExpr);\n    }\n\n
    var currValExpr = createCurrValueExpr(bindingId);\n
stmts.push(currValExpr.set(outputExpr).toDeclStmt(DYNAMIC_TYPE, [exports.StmtModifier.Final]));\n
return new ConvertPropertyBindingResult(stmts, currValExpr);\n    }\n\n
/**\n     * Given some expression, such as\n     * a binding or interpolation expression, and a context expression to\n     * look values up on, visit each facet of the\n
given expression resolving values from the context\n     * expression such that a list of arguments can be derived\n
from the found values that can be used as\n     * arguments to an external update instruction.\n     *\n     * @param\n
localResolver The resolver to use to look up expressions by name appropriately\n     * @param\n
contextVariableExpression The expression representing the context variable used to create\n     * the final argument\n
expressions\n     * @param expressionWithArgumentsToExtract The expression to visit to figure out what values\n
need to\n     * be resolved and what arguments list to build.\n     * @param bindingId A name prefix used to create\n
temporary variable names if they're needed for the\n     * arguments generated\n     * @returns An array of\n
expressions that can be passed as arguments to instruction expressions like\n     *\n
`o.importExpr(R3.propertyInterpolate).callFn(result)`\n     */\n
function convertUpdateArguments(localResolver,\n
contextVariableExpression, expressionWithArgumentsToExtract, bindingId) {\n    var visitor = new\n
_AstToIrVisitor(localResolver, contextVariableExpression, bindingId, undefined);\n    var outputExpr =\n
expressionWithArgumentsToExtract.visit(visitor, _Mode.Expression);\n    if (visitor.usesImplicitReceiver) {\n\n
localResolver.notifyImplicitReceiverUse();\n    }\n    var stmts = getStatementsFromVisitor(visitor,\n
bindingId);\n    // Removing the first argument, because it was a length for ViewEngine, not Ivy.\n    var args =\n
outputExpr.args.slice(1);\n    if (expressionWithArgumentsToExtract instanceof Interpolation) {\n        // If\n
we're dealing with an interpolation of 1 value with an empty prefix and suffix, reduce the\n        // args returned to\n
just the value, because we're going to pass it to a special instruction.\n        var strings =\n
expressionWithArgumentsToExtract.strings;\n        if (args.length === 3 && strings[0] === " && strings[1] ===\n
") {\n            // Single argument interpolate instructions.\n            args = [args[1]];\n        }\n        else if\n
(args.length >= 19) {\n            // 19 or more arguments must be passed to the `interpolateV`-style instructions,\n

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which accept\n          // an array of arguments\n          args = [literalArr(args)];\n          }\n          }\n          return
{ stmts: stmts, args: args };\n          }\n          function getStatementsFromVisitor(visitor, bindingId) {\n          var stmts = [];\n          for (var i = 0; i < visitor.temporaryCount; i++) {\n          stmts.push(temporaryDeclaration(bindingId, i));\n          }\n          return stmts;\n          }\n          function convertBuiltins(converterFactory, ast) {\n          var visitor = new
_BuiltinAstConverter(converterFactory);\n          return ast.visit(visitor);\n          }\n          function
temporaryName(bindingId, temporaryNumber) {\n          return \"tmp_\" + bindingId + \"_\" + temporaryNumber;\n          }\n          function temporaryDeclaration(bindingId, temporaryNumber) {\n          return new
DeclareVarStmt(temporaryName(bindingId, temporaryNumber), NULL_EXPR);\n          }\n          function
prependTemporaryDecls(temporaryCount, bindingId, statements) {\n          for (var i = temporaryCount - 1; i >= 0; i--
) {\n          statements.unshift(temporaryDeclaration(bindingId, i));\n          }\n          }\n          var _Mode;\n          (function
(_Mode) {\n          _Mode[_Mode[\"Statement\"] = 0] = \"Statement\";\n          _Mode[_Mode[\"Expression\"] = 1] =
\"Expression\";\n          })(_Mode || (_Mode = {}));\n          function ensureStatementMode(mode, ast) {\n          if (mode !==
_Mode.Statement) {\n          throw new Error(\"Expected a statement, but saw \" + ast);\n          }\n          }\n          function
ensureExpressionMode(mode, ast) {\n          if (mode !== _Mode.Expression) {\n          throw new Error(\"Expected
an expression, but saw \" + ast);\n          }\n          }\n          function convertToStatementIfNeeded(mode, expr) {\n          if
(mode === _Mode.Statement) {\n          return expr.toStmt();\n          }\n          else {\n          return expr;\n          }\n          }\n          var _BuiltinAstConverter = /** @class */ (function (_super) {\n          __extends(_BuiltinAstConverter,
_super);\n          function _BuiltinAstConverter(_converterFactory) {\n          var _this = _super.call(this) || this;\n          _this._converterFactory = _converterFactory;\n          return _this;\n          }\n          _BuiltinAstConverter.prototype.visitPipe = function (ast, context) {\n          var _this = this;\n          var args =
__spread([ast.exp], ast.args).map(function (ast) { return ast.visit(_this, context); });\n          return new
BuiltinFunctionCall(ast.span, ast.sourceSpan, args, this._converterFactory.createPipeConverter(ast.name,
args.length));\n          };\n          _BuiltinAstConverter.prototype.visitLiteralArray = function (ast, context) {\n          var
_this = this;\n          var args = ast.expressions.map(function (ast) { return ast.visit(_this, context); });\n          return new
BuiltinFunctionCall(ast.span, ast.sourceSpan, args,
this._converterFactory.createLiteralArrayConverter(ast.expressions.length));\n          };\n          _BuiltinAstConverter.prototype.visitLiteralMap = function (ast, context) {\n          var _this = this;\n          var
args = ast.values.map(function (ast) { return ast.visit(_this, context); });\n          return new
BuiltinFunctionCall(ast.span, ast.sourceSpan, args, this._converterFactory.createLiteralMapConverter(ast.keys));\n          };\n          return _BuiltinAstConverter;\n          })(AstTransformer$I);\n          var _AstToIrVisitor = /** @class */
(function () {\n          function _AstToIrVisitor(_localResolver, _implicitReceiver, bindingId, interpolationFunction,
baseSourceSpan, implicitReceiverAccesses) {\n          this._localResolver = _localResolver;\n          this._implicitReceiver = _implicitReceiver;\n          this.bindingId = bindingId;\n          this.interpolationFunction
= interpolationFunction;\n          this.baseSourceSpan = baseSourceSpan;\n          this.implicitReceiverAccesses =
implicitReceiverAccesses;\n          this._nodeMap = new Map();\n          this._resultMap = new Map();\n          this._currentTemporary = 0;\n          this.temporaryCount = 0;\n          this.usesImplicitReceiver = false;\n          }\n          _AstToIrVisitor.prototype.visitUnary = function (ast, mode) {\n          var op;\n          switch (ast.operator) {\n          case '+':\n          op = exports.UnaryOperator.Plus;\n          break;\n          case '-':\n          op = exports.UnaryOperator.Minus;\n          break;\n          default:\n          throw new
Error(\"Unsupported operator \" + ast.operator);\n          }\n          return convertToStatementIfNeeded(mode, new
UnaryOperatorExpr(op, this._visit(ast.expr, _Mode.Expression), undefined, this.convertSourceSpan(ast.span));\n          };\n          _AstToIrVisitor.prototype.visitBinary = function (ast, mode) {\n          var op;\n          switch
(ast.operation) {\n          case '+':\n          op = exports.BinaryOperator.Plus;\n          break;\n          case '-':\n          op = exports.BinaryOperator.Minus;\n          break;\n          case '*':\n          op
= exports.BinaryOperator.Multiply;\n          break;\n          case '/':\n          op =
exports.BinaryOperator.Divide;\n          break;\n          case '%':\n          op =
exports.BinaryOperator.Modulo;\n          break;\n          case '&&':\n          op =
exports.BinaryOperator.And;\n          break;\n          case '||':\n          op =

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exports.BinaryOperator.Or;\n                break;\n                case '==':\n                op =
exports.BinaryOperator.Equals;\n                break;\n                case '!=':\n                op =
exports.BinaryOperator.NotEquals;\n                break;\n                case '===':\n                op =
exports.BinaryOperator.Identical;\n                break;\n                case '!==':\n                op =
exports.BinaryOperator.NotIdentical;\n                break;\n                case '<':\n                op =
exports.BinaryOperator.Lower;\n                break;\n                case '>':\n                op =
exports.BinaryOperator.Bigger;\n                break;\n                case '<=':\n                op =
exports.BinaryOperator.LowerEquals;\n                break;\n                case '>=':\n                op =
exports.BinaryOperator.BiggerEquals;\n                break;\n                default:\n                throw new
Error("\Unsupported operation \"+ ast.operation);\n                }\n                return convertToStatementIfNeeded(mode,
new BinaryOperatorExpr(op, this._visit(ast.left, _Mode.Expression), this._visit(ast.right, _Mode.Expression),
undefined, this.convertSourceSpan(ast.span));\n                });\n                _AstToIrVisitor.prototype.visitChain = function (ast,
mode) {\n                ensureStatementMode(mode, ast);\n                return this.visitAll(ast.expressions, mode);\n                };\n                _AstToIrVisitor.prototype.visitConditional = function (ast, mode) {\n                var value = this._visit(ast.condition,
_Mode.Expression);\n                return convertToStatementIfNeeded(mode, value.conditional(this._visit(ast.trueExp,
_Mode.Expression), this._visit(ast.falseExp, _Mode.Expression), this.convertSourceSpan(ast.span));\n                };\n                _AstToIrVisitor.prototype.visitPipe = function (ast, mode) {\n                throw new Error("\Illegal state: Pipes should
have been converted into functions. Pipe: \"+ ast.name);\n                };\n                _AstToIrVisitor.prototype.visitFunctionCall
= function (ast, mode) {\n                var convertedArgs = this.visitAll(ast.args, _Mode.Expression);\n                var
fnResult;\n                if (ast instanceof BuiltinFunctionCall) {\n                fnResult = ast.converter(convertedArgs);\n                }\n                else {\n                fnResult = this._visit(ast.target, _Mode.Expression)\n                .callFn(convertedArgs, this.convertSourceSpan(ast.span));\n                }\n                return
convertToStatementIfNeeded(mode, fnResult);\n                };\n                _AstToIrVisitor.prototype.visitImplicitReceiver =
function (ast, mode) {\n                ensureExpressionMode(mode, ast);\n                this.usesImplicitReceiver = true;\n                return this._implicitReceiver;\n                };\n                _AstToIrVisitor.prototype.visitThisReceiver = function (ast, mode)
{\n                return this.visitImplicitReceiver(ast, mode);\n                };\n                _AstToIrVisitor.prototype.visitInterpolation =
function (ast, mode) {\n                ensureExpressionMode(mode, ast);\n                var args =
[literal(ast.expressions.length)];\n                for (var i = 0; i < ast.strings.length - 1; i++) {\n
args.push(literal(ast.strings[i]));\n                args.push(this._visit(ast.expressions[i], _Mode.Expression));\n
}\n                args.push(literal(ast.strings[ast.strings.length - 1]));\n                if (this.interpolationFunction) {\n
return this.interpolationFunction(args);\n                }\n                return ast.expressions.length <= 9 ?\n                importExpr(Identifiers.inlineInterpolate).callFn(args) :\n                importExpr(Identifiers.interpolate).callFn([\n
args[0], literalArr(args.slice(1), undefined, this.convertSourceSpan(ast.span))\n                ]);\n                };\n                _AstToIrVisitor.prototype.visitKeyedRead = function (ast, mode) {\n                var leftMostSafe =
this.leftMostSafeNode(ast);\n                if (leftMostSafe) {\n                return this.convertSafeAccess(ast, leftMostSafe,
mode);\n                }\n                else {\n                return convertToStatementIfNeeded(mode, this._visit(ast.obj,
_Mode.Expression).key(this._visit(ast.key, _Mode.Expression));\n                }\n                };\n                _AstToIrVisitor.prototype.visitKeyedWrite = function (ast, mode) {\n                var obj = this._visit(ast.obj,
_Mode.Expression);\n                var key = this._visit(ast.key, _Mode.Expression);\n                var value =
this._visit(ast.value, _Mode.Expression);\n                return convertToStatementIfNeeded(mode,
obj.key(key).set(value));\n                };\n                _AstToIrVisitor.prototype.visitLiteralArray = function (ast, mode) {\n
throw new Error("\Illegal State: literal arrays should have been converted into functions");\n                };\n                _AstToIrVisitor.prototype.visitLiteralMap = function (ast, mode) {\n
throw new Error("\Illegal State: literal
maps should have been converted into functions");\n                };\n                _AstToIrVisitor.prototype.visitLiteralPrimitive =
function (ast, mode) {\n                // For literal values of null, undefined, true, or false allow type interference\n
// to infer the type.\n                var type = ast.value === null || ast.value === undefined || ast.value === true || ast.value
=== false ?\n                INFERRED_TYPE :\n                undefined;\n                return
convertToStatementIfNeeded(mode, literal(ast.value, type, this.convertSourceSpan(ast.span));\n                };\n

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_AstToIrVisitor.prototype._getLocal = function (name, receiver) {\n      var _a;\n      if (((_a =\nthis._localResolver.globals) === null || _a === void 0 ? void 0 : _a.has(name)) && receiver instanceof\nThisReceiver) {\n      return null;\n      }\n      return this._localResolver.getLocal(name);\n      };\n_AstToIrVisitor.prototype.visitMethodCall = function (ast, mode) {\n      if (ast.receiver instanceof\nImplicitReceiver &&\n      !(ast.receiver instanceof ThisReceiver) && ast.name === '$any') {\n      var\nargs = this.visitAll(ast.args, _Mode.Expression);\n      if (args.length !== 1) {\n      throw new\nError(`Invalid call to $any, expected 1 argument but received ` + (args.length || 'none'));\n      }\n      return args[0].cast(DYNAMIC_TYPE, this.convertSourceSpan(ast.span));\n      }\n      var leftMostSafe =\nthis.leftMostSafeNode(ast);\n      if (leftMostSafe) {\n      return this.convertSafeAccess(ast, leftMostSafe,\nmode);\n      }\n      else {\n      var args = this.visitAll(ast.args, _Mode.Expression);\n      var\nprevUsesImplicitReceiver = this.usesImplicitReceiver;\n      var result = null;\n      var receiver =\nthis._visit(ast.receiver, _Mode.Expression);\n      if (receiver === this._implicitReceiver) {\n      var\nvarExpr = this._getLocal(ast.name, ast.receiver);\n      if (varExpr) {\n      // Restore the previous\n`usesImplicitReceiver` state since the implicit\n      // receiver has been replaced with a resolved local\nexpression.\n      this.usesImplicitReceiver = prevUsesImplicitReceiver;\n      result =\nvarExpr.callFn(args);\n      this.addImplicitReceiverAccess(ast.name);\n      }\n      }\n      if (result === null) {\n      result = receiver.callMethod(ast.name, args,\nthis.convertSourceSpan(ast.span));\n      }\n      return convertToStatementIfNeeded(mode, result);\n      }\n      };\n_AstToIrVisitor.prototype.visitPrefixNot = function (ast, mode) {\n      return\nconvertToStatementIfNeeded(mode, not(this._visit(ast.expression, _Mode.Expression)));\n      };\n_AstToIrVisitor.prototype.visitNonNullAssert = function (ast, mode) {\n      return\nconvertToStatementIfNeeded(mode, assertNotNull(this._visit(ast.expression, _Mode.Expression)));\n      };\n_AstToIrVisitor.prototype.visitPropertyRead = function (ast, mode) {\n      var leftMostSafe =\nthis.leftMostSafeNode(ast);\n      if (leftMostSafe) {\n      return this.convertSafeAccess(ast, leftMostSafe,\nmode);\n      }\n      else {\n      var result = null;\n      var prevUsesImplicitReceiver =\nthis.usesImplicitReceiver;\n      var receiver = this._visit(ast.receiver, _Mode.Expression);\n      if\n(receiver === this._implicitReceiver) {\n      result = this._getLocal(ast.name, ast.receiver);\n      if\n(result) {\n      // Restore the previous `usesImplicitReceiver` state since the implicit\n      // receiver has been replaced with a resolved local expression.\n      this.usesImplicitReceiver =\nprevUsesImplicitReceiver;\n      this.addImplicitReceiverAccess(ast.name);\n      }\n      }\n      if (result === null) {\n      result = receiver.prop(ast.name);\n      }\n      return\nconvertToStatementIfNeeded(mode, result);\n      }\n      };\n_AstToIrVisitor.prototype.visitPropertyWrite\n= function (ast, mode) {\n      var receiver = this._visit(ast.receiver, _Mode.Expression);\n      var\nprevUsesImplicitReceiver = this.usesImplicitReceiver;\n      var varExpr = null;\n      if (receiver ===\nthis._implicitReceiver) {\n      var localExpr = this._getLocal(ast.name, ast.receiver);\n      if (localExpr)\n{\n      if (localExpr instanceof ReadPropExpr) {\n      // If the local variable is a property read\nexpression, it's a reference\n      // to a 'context.property' value and will be used as the target of the\n      // write expression.\n      varExpr = localExpr;\n      // Restore the previous\n`usesImplicitReceiver` state since the implicit\n      // receiver has been replaced with a resolved local\nexpression.\n      this.usesImplicitReceiver = prevUsesImplicitReceiver;\n      this.addImplicitReceiverAccess(ast.name);\n      }\n      }\n      else {\n      // Otherwise it's an\nerror.\n      var receiver_1 = ast.name;\n      var value = (ast.value instanceof PropertyRead) ?\nast.value.name : undefined;\n      throw new Error(`Cannot assign value ` + value + ` to template\nvariable ` + receiver_1 + ``. Template variables are read-only.`);\n      }\n      }\n      // If no local expression could be produced, use the original receiver's\n      // property as the target.\n      if\n(varExpr === null) {\n      varExpr = receiver.prop(ast.name);\n      }\n      return\nconvertToStatementIfNeeded(mode, varExpr.set(this._visit(ast.value, _Mode.Expression)));\n      };\n_AstToIrVisitor.prototype.visitSafePropertyRead = function (ast, mode) {\n      return

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this.convertSafeAccess(ast, this.leftMostSafeNode(ast), mode);\n    };\n
_AstToIrVisitor.prototype.visitSafeMethodCall = function (ast, mode) {\n    return this.convertSafeAccess(ast,\nthis.leftMostSafeNode(ast), mode);\n    };\n
_AstToIrVisitor.prototype.visitAll = function (asts, mode) {\n
    var _this = this;\n    return asts.map(function (ast) { return _this._visit(ast, mode); });\n    };\n
_AstToIrVisitor.prototype.visitQuote = function (ast, mode) {\n    throw new Error("Quotes are not supported\nfor evaluation!"\n    Statement: \" + ast.uninterpretedExpression + \" located at \" + ast.location);\n    };\n
_AstToIrVisitor.prototype._visit = function (ast, mode) {\n    var result = this._resultMap.get(ast);\n    if\n(result)\n    return result;\n    return (this._nodeMap.get(ast) || ast).visit(this, mode);\n    };\n
_AstToIrVisitor.prototype.convertSafeAccess = function (ast, leftMostSafe, mode) {\n    // If the expression\ncontains a safe access node on the left it needs to be converted to\n    // an expression that guards the access to\nthe member by checking the receiver for blank. As\n    // execution proceeds from left to right, the left most\npart of the expression must be guarded\n    // first but, because member access is left associative, the right side\nof the expression is at\n    // the top of the AST. The desired result requires lifting a copy of the left part of the\n// expression up to test it for blank before generating the unguarded version.\n    // Consider, for example\nthe following expression: a?.b.c?.d.e\n    // This results in the ast:\n    // .\n    // /\n    // ?.\n    // e\n    // /\n    // .\n    // d\n    // /\n    // ?.\n    // c\n    // /\n    // a\n    // b\n// The following tree should be generated:\n    // ^\n    // /---- ? ----\n    // / | \n    // a /--- ? ---\n    // null\n    // / | \n    // . .\n    // null\n    // /\n    // /\n    // . c .\ne\n    // /\n    // /\n    // a b . d\n    // /\n    // . c\n    // /\n    // a\n    // b\n    // Notice that the first guard condition is the left hand of the left most safe access node\n// which comes in as leftMostSafe to this routine.\n    var guardedExpression =\nthis._visit(leftMostSafe.receiver, _Mode.Expression);\n    var temporary = undefined;\n    if\n(this.needsTemporary(leftMostSafe.receiver)) {\n    // If the expression has method calls or pipes then we\nneed to save the result into a\n    // temporary variable to avoid calling stateful or impure code more than\nonce.\n    temporary = this.allocateTemporary();\n    // Preserve the result in the temporary variable\n    guardedExpression = temporary.set(guardedExpression);\n    // Ensure all further references to the\nguarded expression refer to the temporary instead.\n    this._resultMap.set(leftMostSafe.receiver,\ntemporary);\n    } \n    var condition = guardedExpression.isBlank();\n    // Convert the ast to an\nunguarded access to the receiver's member. The map will substitute\n    // leftMostNode with its unguarded\nversion in the call to `this.visit()`.\n    if (leftMostSafe instanceof SafeMethodCall) {\nthis._nodeMap.set(leftMostSafe, new MethodCall(leftMostSafe.span, leftMostSafe.sourceSpan,\nleftMostSafe.nameSpan, leftMostSafe.receiver, leftMostSafe.name, leftMostSafe.args));\n    } \n    else {\n    this._nodeMap.set(leftMostSafe, new PropertyRead(leftMostSafe.span, leftMostSafe.sourceSpan,\nleftMostSafe.nameSpan, leftMostSafe.receiver, leftMostSafe.name));\n    } \n    // Recursively convert the\nnode now without the guarded member access.\n    var access = this._visit(ast, _Mode.Expression);\n    //\nRemove the mapping. This is not strictly required as the converter only traverses each node\n    // once but is\nsafer if the conversion is changed to traverse the nodes more than once.\nthis._nodeMap.delete(leftMostSafe);\n    // If we allocated a temporary, release it.\n    if (temporary) {\n    this.releaseTemporary(temporary);\n    } \n    // Produce the conditional\n    return\nconvertToStatementIfNeeded(mode, condition.conditional(literal(null), access));\n    };\n    // Given an\nexpression of the form a?.b.c?.d.e then the left most safe node is\n    // the (a?.b). The . and ?. are left associative\nthus can be rewritten as:\n    // (((a?.c).b).c)?.d).e. This returns the most deeply nested safe read or\n    // safe\nmethod call as this needs to be transformed initially to:\n    // a == null ? null : a.c.b.c?.d.e\n    // then to:\n// a == null ? null : a.b.c == null ? null : a.b.c.d.e\n    _AstToIrVisitor.prototype.leftMostSafeNode = function\n(ast) {\n    var _this = this;\n    var visit = function (visitor, ast) {\n    return\n(_this._nodeMap.get(ast) || ast).visit(visitor);\n    };\n    return ast.visit({\n    visitUnary: function\n(ast) {\n    return null;\n    },\n    visitBinary: function (ast) {\n    return null;\n    },\n    },\n    visitChain: function (ast) {\n    return null;\n    },\n    visitConditional:

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function (ast) {\n
    return null;\n
},\n
    visitFunctionCall: function (ast) {\n
return null;\n
    },\n
    visitImplicitReceiver: function (ast) {\n
return null;\n
    },\n
    visitThisReceiver: function (ast) {\n
return null;\n
    },\n
    visitInterpolation:
function (ast) {\n
return null;\n
    },\n
    visitKeyedRead: function (ast) {\n
return visit(this, ast.obj);\n
    },\n
    visitKeyedWrite: function (ast) {\n
return null;\n
    },\n
    visitLiteralArray: function (ast) {\n
return null;\n
    },\n
    visitLiteralMap: function (ast) {\n
return null;\n
    },\n
    visitLiteralPrimitive: function
(ast) {\n
return null;\n
    },\n
    visitMethodCall: function (ast) {\n
return
visit(this, ast.receiver);\n
    },\n
    visitPipe: function (ast) {\n
return null;\n
    },\n
    visitPrefixNot: function (ast) {\n
return null;\n
    },\n
    visitNonNullAssert:
function (ast) {\n
return null;\n
    },\n
    visitPropertyRead: function (ast) {\n
return visit(this, ast.receiver);\n
    },\n
    visitPropertyWrite: function (ast) {\n
return
null;\n
    },\n
    visitQuote: function (ast) {\n
return null;\n
    },\n
    visitSafeMethodCall: function (ast) {\n
return visit(this, ast.receiver) || ast;\n
    },\n
    visitSafePropertyRead: function (ast) {\n
return visit(this, ast.receiver) || ast;\n
    });\n
};\n
// Returns true if the AST includes a method or a pipe indicating that, if the\n
// expression is used as
the target of a safe property or method access then\n
// the expression should be stored into a temporary
variable.\n
_AstToIrVisitor.prototype.needsTemporary = function (ast) {\n
var _this = this;\n
var
visit = function (visitor, ast) {\n
return ast && (_this._nodeMap.get(ast) || ast).visit(visitor);\n
};\n
var visitSome = function (visitor, ast) {\n
return ast.some(function (ast) { return visit(visitor, ast); });\n
};\n
return ast.visit({\n
visitUnary: function (ast) {\n
return visit(this, ast.expr);\n
},\n
visitBinary: function (ast) {\n
return visit(this, ast.left) || visit(this, ast.right);\n
},\n
visitChain: function (ast) {\n
return false;\n
},\n
visitConditional:
function (ast) {\n
return visit(this, ast.condition) || visit(this, ast.trueExp) || visit(this, ast.falseExp);\n
},\n
visitFunctionCall: function (ast) {\n
return true;\n
},\n
visitImplicitReceiver: function (ast) {\n
return false;\n
},\n
visitThisReceiver:
function (ast) {\n
return false;\n
},\n
visitInterpolation: function (ast) {\n
return visitSome(this, ast.expressions);\n
},\n
visitKeyedRead: function (ast) {\n
return false;\n
},\n
visitKeyedWrite: function (ast) {\n
return false;\n
},\n
visitLiteralArray: function (ast) {\n
return true;\n
},\n
visitLiteralMap: function
(ast) {\n
return true;\n
},\n
visitLiteralPrimitive: function (ast) {\n
return
false;\n
},\n
visitMethodCall: function (ast) {\n
return true;\n
},\n
visitPipe: function (ast) {\n
return true;\n
},\n
visitPrefixNot: function (ast) {\n
return visit(this, ast.expression);\n
},\n
visitNonNullAssert: function (ast) {\n
return
visit(this, ast.expression);\n
},\n
visitPropertyRead: function (ast) {\n
return
false;\n
},\n
visitPropertyWrite: function (ast) {\n
return false;\n
},\n
visitQuote: function (ast) {\n
return false;\n
},\n
visitSafeMethodCall: function (ast)
{\n
return true;\n
},\n
visitSafePropertyRead: function (ast) {\n
return
false;\n
});\n
});\n
_AstToIrVisitor.prototype.allocateTemporary = function () {\n
var tempNumber = this._currentTemporary++;\n
this.temporaryCount = Math.max(this._currentTemporary,
this.temporaryCount);\n
return new ReadVarExpr(temporaryName(this.bindingId, tempNumber));\n
};\n
_AstToIrVisitor.prototype.releaseTemporary = function (temporary) {\n
this._currentTemporary--;\n
if (temporary.name !== temporaryName(this.bindingId, this._currentTemporary)) {\n
throw new
Error("\nTemporary " + temporary.name + "\nreleased out of order");\n
};\n
};\n
/**\n
 * Creates
an absolute `ParseSourceSpan` from the relative `ParseSpan`.\n
 * `ParseSpan` objects are relative to
the start of the expression.\n
 * This method converts these to full `ParseSourceSpan` objects that\n
 * show
where the span is within the overall source file.\n
 * @param span the relative span to convert.\n
 * @returns a `ParseSourceSpan` for the given span or null if no\n
 * `baseSourceSpan` was provided to this

```



```

class.\n      *\n      _AstToIrVisitor.prototype.convertSourceSpan = function (span) {\n          if
(this.baseSourceSpan) {\n              var start = this.baseSourceSpan.start.moveBy(span.start);\n              var end =
this.baseSourceSpan.start.moveBy(span.end);\n              var fullStart =
this.baseSourceSpan.fullStart.moveBy(span.start);\n              return new ParseSourceSpan(start, end, fullStart);\n          }\n          else {\n              return null;\n          }\n      }; \n      /** Adds the name of an AST to the list of
implicit receiver accesses. *\n      _AstToIrVisitor.prototype.addImplicitReceiverAccess = function (name) {\n          if (this.implicitReceiverAccesses) {\n              this.implicitReceiverAccesses.add(name);\n          }\n      }; \n      return _AstToIrVisitor;\n      }());\n      function flattenStatements(arg, output) {\n          if (Array.isArray(arg)) {\n              arg.forEach(function (entry) { return flattenStatements(entry, output); });\n          }\n          else {\n              output.push(arg);\n          }\n      }\n      var DefaultLocalResolver = /** @class */ (function () {\n          function
DefaultLocalResolver(globals) {\n              this.globals = globals;\n          }\n          DefaultLocalResolver.prototype.notifyImplicitReceiverUse = function () { }; \n          DefaultLocalResolver.prototype.getLocal = function (name) {\n              if (name ===
EventHandlerVars.event.name) {\n                  return EventHandlerVars.event;\n              }\n              return null;\n          }; \n          return DefaultLocalResolver;\n      }());\n      function createCurrValueExpr(bindingId) {\n          return
variable("\`currVal_" + bindingId); // fix syntax highlighting: \`\n      }\n      function
createPreventDefaultVar(bindingId) {\n          return variable("\`pd_" + bindingId);\n      }\n      function
convertStmtIntoExpression(stmt) {\n          if (stmt instanceof ExpressionStatement) {\n              return stmt.expr;\n          }\n          else if (stmt instanceof ReturnStatement) {\n              return stmt.value;\n          }\n          return null;\n      }\n      var BuiltinFunctionCall = /** @class */ (function (_super) {\n          __extends(BuiltinFunctionCall, _super);\n          function BuiltinFunctionCall(span, sourceSpan, args, converter) {\n              var _this = _super.call(this, span,
sourceSpan, null, args) || this;\n              _this.args = args;\n              _this.converter = converter;\n              return _this;\n          }\n          return BuiltinFunctionCall;\n      })(FunctionCall);\n      /**\n      * @license\n      * Copyright Google
LLC All Rights Reserved.\n      *\n      * Use of this source code is governed by an MIT-style license that can be\n
* found in the LICENSE file at https://angular.io/license\n      *\n      /**\n      * This file is a port of shadowCSS from
webcomponents.js to TypeScript.\n      *\n      * Please make sure to keep to edits in sync with the source file.\n      *\n
* Source:\n      *\n
https://github.com/webcomponents/webcomponentsjs/blob/4efecd7e0e/src/ShadowCSS/ShadowCSS.js\n      *\n      *
The original file level comment is reproduced below\n      *\n      /**\n      This is a limited shim for ShadowDOM css
styling.\n      https://dvcs.w3.org/hg/webcomponents/raw-file/tip/spec/shadow/index.html#styles\n      The
intention here is to support only the styling features which can be\n      relatively simply implemented. The goal is to
allow users to avoid the\n      most obvious pitfalls and do so without compromising performance significantly.\n
For ShadowDOM styling that's not covered here, a set of best practices\n      can be provided that should allow users
to accomplish more complex styling.\n      The following is a list of specific ShadowDOM styling features and a
brief\n      discussion of the approach used to shim.\n      Shimmed features:\n      *:host, :host-context:\n
ShadowDOM allows styling of the shadowRoot's host\n      element using the :host rule. To shim this feature, the
:host styles are\n      reformatted and prefixed with a given scope name and promoted to a\n      document level
stylesheet.\n      For example, given a scope name of .foo, a rule like this:\n      :host {\n          background:
red;\n      }\n      becomes:\n      .foo {\n          background: red;\n      }\n      * encapsulation:\n
Styles defined within ShadowDOM, apply only to\n      dom inside the ShadowDOM. Polymer uses one of two
techniques to implement\n      this feature.\n      By default, rules are prefixed with the host element tag name\n
as a descendant selector. This ensures styling does not leak out of the 'top'\n      of the element's ShadowDOM. For
example,\n      div {\n          font-weight: bold;\n      }\n      becomes:\n      x-foo div {\n          font-weight:
bold;\n      }\n      becomes:\n      Alternatively, if WebComponents.ShadowCSS.strictStyling is set to true
then\n      selectors are scoped by adding an attribute selector suffix to each\n      simple selector that contains the
host element tag name. Each element\n      in the element's ShadowDOM template is also given the scope attribute.\n
      Thus, these rules match only elements that have the scope attribute.\n      For example, given a scope name of x-
foo, a rule like this:\n      div {\n          font-weight: bold;\n      }\n      becomes:\n      div[x-foo] {\n

```

font-weight: bold; } Note that elements that are dynamically added to a scope must have the scope selector added to them manually.

* upper/lower bound encapsulation: Styles which are defined outside a shadowRoot should not cross the ShadowDOM boundary and should not apply inside a shadowRoot. This styling behavior is not emulated. Some possible ways to do this that were rejected due to complexity and/or performance concerns include: (1) reset every possible property for every possible selector for a given scope name; (2) re-implement css in javascript.

As an alternative, users should make sure to use selectors specific to the scope in which they are working.

* ::distributed: This behavior is not emulated. It's often not necessary to style the contents of a specific insertion point and instead, descendants of the host element can be styled selectively. Users can also create an extra node around an insertion point and style that node's contents via descendent selectors. For example, with a shadowRoot like this:

```
<style>
::content(div) {
  background: red;
}
</style>
<content></content>
could become:
<style>
/*@polyfill .content-container div * ^::content(div) {
  background: red;
}
</style>
<div class="content-container">
  <content></content>
</div>
```

Note the use of @polyfill in the comment above a ShadowDOM specific style declaration. This is a directive to the styling shim to use the selector in comments in lieu of the next selector when running under polyfill.

```
*^
var ShadowCss = /** @class */ (function () {
  function ShadowCss() {
    this.strictStyling = true;
  }
  /*
   * Shim some cssText with the given selector. Returns cssText that can be included in the document via WebComponents.ShadowCSS.addCssToDocument(css).
   * When strictStyling is true:
   * - selector is the attribute added to all elements inside the host,
   * - hostSelector is the attribute added to the host itself.
   */
  ShadowCss.prototype.shimCssText = function (cssText, selector, hostSelector) {
    if (hostSelector === void 0) { hostSelector = ""; }
    var commentsWithHash = extractCommentsWithHash(cssText);
    cssText = stripComments(cssText);
    cssText = this._insertDirectives(cssText);
    var scopedCssText = this._scopeCssText(cssText, selector, hostSelector);
    return __spread([scopedCssText], commentsWithHash).join("\n");
  };
  ShadowCss.prototype._insertDirectives = function (cssText) {
    cssText = this._insertPolyfillDirectivesInCssText(cssText);
    return this._insertPolyfillRulesInCssText(cssText);
  };
  /*
   * Process styles to convert native ShadowDOM rules that will trip up the css parser; we rely on decorating the stylesheet with inert rules.
   * For example, we convert this rule:
   * polyfill-next-selector { content: ':host menu-item'; }
   * ::content menu-item {
   *   scopeName menu-item {
   */
  ShadowCss.prototype._insertPolyfillDirectivesInCssText = function (cssText) {
    // Difference with webcomponents.js: does not handle comments
    return cssText.replace(_cssContentNextSelectorRe, function () {
      var m = [];
      for (var _i = 0; _i < arguments.length; _i++) {
        m[_i] = arguments[_i];
      }
      return m[2] + '{';
    });
    /*
     * Process styles to add rules which will only apply under the polyfill
     * For example, we convert this rule:
     * polyfill-rule {
     *   content: ':host menu-item';
     *   ...
     * }
     * to this:
     * scopeName menu-item {
     */
    ShadowCss.prototype._insertPolyfillRulesInCssText = function (cssText) {
      // Difference with webcomponents.js: does not handle comments
      return cssText.replace(_cssContentRuleRe, function () {
        var m = [];
        for (var _i = 0; _i < arguments.length; _i++) {
          m[_i] = arguments[_i];
        }
        var rule = m[0].replace(m[1], "").replace(m[2], "");
        return m[4] + rule;
      });
      /* Ensure styles are scoped. Pseudo-scoping takes a rule like:
       * .foo { ... }
       * and converts this to
       * scopeName .foo { ... }
       */
      ShadowCss.prototype._scopeCssText = function (cssText, scopeSelector, hostSelector) {
        var unscopedRules = this._extractUnscopedRulesFromCssText(cssText);
        // replace :host and :host-context -shadowcsshost and -shadowcsshost respectively
        cssText = this._insertPolyfillHostInCssText(cssText);
        cssText = this._convertColonHost(cssText);
        cssText = this._convertColonHostContext(cssText);
        cssText = this._convertShadowDOMSelectors(cssText);
        if (scopeSelector) {
          cssText = this._scopeSelectors(cssText, scopeSelector, hostSelector);
        }
      };
    };
  };
}());
```

```

    cssText = cssText + '\n' + unscopedRules;\n        return cssText.trim();\n    });\n    /*\n     * Process
styles to add rules which will only apply under the polyfill\n     * and do not process via CSSOM. (CSSOM is
destructive to rules on rare\n     * occasions, e.g. -webkit-calc on Safari.)\n     * For example, we convert this
rule:\n     *\n     * @polyfill-unscoped-rule {\n     *   content: 'menu-item';\n     * ... }\n     *\n     * to
this:\n     *\n     * menu-item {...}\n     *\n     */\n
ShadowCss.prototype._extractUnscopedRulesFromCssText = function (cssText) {\n    // Difference with
webcomponents.js: does not handle comments\n    var r = '';\n    var m;\n
    _cssContentUnscopedRuleRe.lastIndex = 0;\n    while ((m = _cssContentUnscopedRuleRe.exec(cssText)) !==
null) {\n    var rule = m[0].replace(m[2], '').replace(m[1], m[4]);\n    r += rule + '\n\n';\n    }\n
    return r;\n    });\n    /*\n     * convert a rule like :host(.foo) > .bar { }\n     *\n     * to\n     *\n     *
.foo<scopeName> > .bar\n     *\n     */\n    ShadowCss.prototype._convertColonHost = function (cssText) {\n
return this._convertColonRule(cssText, _cssColonHostRe, this._colonHostPartReplacer);\n    });\n    /*\n     *
convert a rule like :host-context(.foo) > .bar { }\n     *\n     * to\n     *\n     * .foo<scopeName> > .bar, .foo
scopeName > .bar { }\n     *\n     * and\n     *\n     * :host-context(.foo:host) .bar { ... }\n     *\n     *
to\n     *\n     * .foo<scopeName> .bar { ... }\n     *\n     */\n    ShadowCss.prototype._convertColonHostContext
= function (cssText) {\n    return this._convertColonRule(cssText, _cssColonHostContextRe,
this._colonHostContextPartReplacer);\n    });\n    ShadowCss.prototype._convertColonRule = function (cssText,
RegExp, partReplacer) {\n    // m[1] = :host(-context), m[2] = contents of (), m[3] rest of rule\n    return
cssText.replace(RegExp, function () {\n    var m = [];\n    for (var _i = 0; _i < arguments.length; _i++)\n    {\n    m[_i] = arguments[_i];\n    }\n    if (m[2]) {\n    var parts = m[2].split(',');\n
    var r = [];\n    for (var i = 0; i < parts.length; i++) {\n    var p = parts[i].trim();\n
    if (!p)\n    break;\n    r.push(partReplacer(_polyfillHostNoCombinator, p,
m[3]));\n    }\n    return r.join(',');\n    }\n    else {\n    return
_polyfillHostNoCombinator + m[3];\n    }\n    });\n    });\n
ShadowCss.prototype._colonHostContextPartReplacer = function (host, part, suffix) {\n    if
(part.indexOf(_polyfillHost) > -1) {\n    return this._colonHostPartReplacer(host, part, suffix);\n    }\n
    else {\n    return host + part + suffix + ', ' + part + ' ' + host + suffix;\n    }\n    });\n
ShadowCss.prototype._colonHostPartReplacer = function (host, part, suffix) {\n    return host +
part.replace(_polyfillHost, '') + suffix;\n    });\n    /*\n     * Convert combinators like ::shadow and pseudo-
elements like ::content\n     * by replacing with space.\n     */\n
ShadowCss.prototype._convertShadowDOMSelectors = function (cssText) {\n    return
_shadowDOMSelectorsRe.reduce(function (result, pattern) { return result.replace(pattern, ' '); }, cssText);\n    });\n
    // change a selector like 'div' to 'name div'\n    ShadowCss.prototype._scopeSelectors = function (cssText,
scopeSelector, hostSelector) {\n    var _this = this;\n    return processRules(cssText, function (rule) {\n
    var selector = rule.selector;\n    var content = rule.content;\n    if (rule.selector[0] !== '@') {\n
    selector =\n    _this._scopeSelector(rule.selector, scopeSelector, hostSelector,
_this.strictStyling);\n    }\n    else if (rule.selector.startsWith('@media') ||
rule.selector.startsWith('@supports') ||\n    rule.selector.startsWith('@page') ||
rule.selector.startsWith('@document')) {\n    content = _this._scopeSelectors(rule.content, scopeSelector,
hostSelector);\n    }\n    return new CssRule(selector, content);\n    });\n    });\n
ShadowCss.prototype._scopeSelector = function (selector, scopeSelector, hostSelector, strict) {\n    var _this =
this;\n    return selector.split(',')\n    .map(function (part) { return
part.trim().split(_shadowDeepSelectors); })\n    .map(function (deepParts) {\n    var _a =
__read(deepParts), shallowPart = _a[0], otherParts = _a.slice(1);\n    var applyScope = function (shallowPart)\n    {\n    if (_this._selectorNeedsScoping(shallowPart, scopeSelector)) {\n    return strict ?\n
    _this._applyStrictSelectorScope(shallowPart, scopeSelector, hostSelector) :\n
    _this._applySelectorScope(shallowPart, scopeSelector, hostSelector);\n    }\n    else {\n
    return shallowPart;\n    }\n    });\n    return __spread([applyScope(shallowPart)],

```

```

otherParts).join(' ');
    })
    .join(' ');
    ShadowCss.prototype._selectorNeedsScoping =
function (selector, scopeSelector) {
    var re = this._makeScopeMatcher(scopeSelector);
    return
!re.test(selector);
};
ShadowCss.prototype._makeScopeMatcher = function (scopeSelector) {
var lre = /\[/g;
    var rre = /\]/g;
    scopeSelector = scopeSelector.replace(lre, '\\[').replace(rre,
'\\]');
    return new RegExp('^(' + scopeSelector + ') + _selectorReSuffix, 'm');
};
ShadowCss.prototype._applySelectorScope = function (selector, scopeSelector, hostSelector) {
//
Difference from webcomponents.js: scopeSelector could not be an array
return
this._applySimpleSelectorScope(selector, scopeSelector, hostSelector);
};
// scope via name and
[is=name]
ShadowCss.prototype._applySimpleSelectorScope = function (selector, scopeSelector,
hostSelector) {
// In Android browser, the lastIndex is not reset when the regex is used in String.replace()
    _polyfillHostRe.lastIndex = 0;
    if (_polyfillHostRe.test(selector)) {
        var replaceBy_1 =
this.strictStyling ? "[" + hostSelector + "]" : scopeSelector;
        return selector
.replace(_polyfillHostNoCombinatorRe, function (hnc, selector) {
            return
selector.replace(/([^\:]*)(\*\.*)/, function (_, before, colon, after) {
                return before + replaceBy_1 +
colon + after;
            });
        });
        .replace(_polyfillHostRe, replaceBy_1 + ' ');
    }
    return scopeSelector + ' ' + selector;
};
// return a selector with [name] suffix on each simple
selector
// e.g. .foo.bar > .zot becomes .foo[name].bar[name] > .zot[name] /** @internal */
ShadowCss.prototype._applyStrictSelectorScope = function (selector, scopeSelector, hostSelector) {
    var
_this = this;
    var isRe = /\[[^\]]*\]/g;
    scopeSelector = scopeSelector.replace(isRe, function
(_) {
        var parts = [];
        for (var _i = 1; _i < arguments.length; _i++) {
            parts[_i - 1] =
arguments[_i];
        }
        return parts[0];
    });
    var attrName = '[' + scopeSelector +
']';
    var _scopeSelectorPart = function (p) {
        var scopedP = p.trim();
        if (!scopedP) {
            return "";
        }
        if (p.indexOf(_polyfillHostNoCombinator) > -1) {
            scopedP =
_this._applySimpleSelectorScope(p, scopeSelector, hostSelector);
        }
        else {
            //
remove :host since it should be unnecessary
            var t = p.replace(_polyfillHostRe, "");
            if
(t.length > 0) {
                var matches = t.match(/([^\:]*)(\*\.*)/);
                if (matches) {
                    scopedP = matches[1] + attrName + matches[2] + matches[3];
                }
            }
        }
        return scopedP;
    };
    var safeContent = new SafeSelector(selector);
    selector =
safeContent.content();
    var scopedSelector = "";
    var startIndex = 0;
    var res;
    var sep
= /( |>|+|~|~?(?!=))\s*/g;
    // If a selector appears before :host it should not be shimmed as it
    //
matches on ancestor elements and not on elements in the host's shadow
    // `:host-context(div)` is
transformed to
    // `-shadowcsshost-no-combinatordiv, div -shadowcsshost-no-combinator`
    // the
`div` is not part of the component in the 2nd selectors and should not be scoped.
    // Historically `component-
tag:host` was matching the component so we also want to preserve
    // this behavior to avoid breaking legacy
apps (it should not match).
    // The behavior should be:
    // - `tag:host` -> `tag[h]` (this is to avoid
breaking legacy apps, should not match anything)
    // - `tag :host` -> `tag [h]` (`tag` is not scoped because it's
considered part of a
    // `:host-context(tag)`
    var hasHost =
selector.indexOf(_polyfillHostNoCombinator) > -1;
    // Only scope parts after the first `-shadowcsshost-no-
combinator` when it is present
    var shouldScope = !hasHost;
    while ((res = sep.exec(selector)) !==
null) {
        var separator = res[1];
        var part_1 = selector.slice(startIndex, res.index).trim();
        shouldScope = shouldScope || part_1.indexOf(_polyfillHostNoCombinator) > -1;
        var scopedPart =
shouldScope ? _scopeSelectorPart(part_1) : part_1;
        scopedSelector += scopedPart + "\" + separator + "\";
        startIndex = sep.lastIndex;
    }
    var part = selector.substring(startIndex);
    shouldScope = shouldScope || part.indexOf(_polyfillHostNoCombinator) > -1;
    scopedSelector +=
shouldScope ? _scopeSelectorPart(part) : part;
    // replace the placeholders with their original values
    return safeContent.restore(scopedSelector);
};
ShadowCss.prototype._insertPolyfillHostInCssText =
function (selector) {
    return selector.replace(_colonHostContextRe, _polyfillHostContext)
.replace(_colonHostRe, _polyfillHost);
};
    return ShadowCss;
}());
var SafeSelector = /**

```

```

@class */ (function () {\n    function SafeSelector(selector) {\n        var _this = this;\n        this.placeholders =
[];\n        this.index = 0;\n        // Replaces attribute selectors with placeholders.\n        // The WS in [attr=\"va
lue\"] would otherwise be interpreted as a selector separator.\n        selector = selector.replace(/(\\[[^\\]]*\\])/g,
function (_, keep) {\n            var replaceBy = \"__ph-\" + _this.index + \"_\";\n            _this.placeholders.push(keep);\n            _this.index++;\n            return replaceBy;\n        });\n        //
Replaces the expression in `nth-child(2n + 1)` with a placeholder.\n        // WS and `+` would otherwise be
interpreted as selector separators.\n        this._content = selector.replace(/(:nth-[\\w]+)(\\([\\^]+\\))/g, function (_,
pseudo, exp) {\n            var replaceBy = \"__ph-\" + _this.index + \"_\";\n            _this.placeholders.push(exp);\n            _this.index++;\n            return pseudo + replaceBy;\n        });\n    }\n    SafeSelector.prototype.restore = function (content) {\n        var _this = this;\n        return
content.replace(/__ph-(\\d+)__g, function (ph, index) { return _this.placeholders[+index]; });\n    };\n    SafeSelector.prototype.content = function () {\n        return this._content;\n    };
return SafeSelector;\n})();\n    var _cssContentNextSelectorRe = /polyfill-next-selector[\\^]*content:[\\s]*?(\\[\"\\])(\\.\\*?)\\1[\\s]*?(\\[\\^\\]*?)\\/gim;\n    var _cssContentRuleRe = /(polyfill-rule)[\\^]*content:[\\s]*?(\\[\"\\])(\\.\\*?)\\3[\\s]*?[\\^]*\\/gim;\n    var _cssContentUnscopedRuleRe = /(polyfill-unscoped-rule)[\\^]*content:[\\s]*?(\\[\"\\])(\\.\\*?)\\3[\\s]*?[\\^]*\\/gim;\n    var _polyfillHost = '-shadowcsshost';\n    // note: :host-context pre-processed to -shadowcsshostcontext.\n    var _polyfillHostContext = '-shadowcsscontext';\n    var _parenSuffix = ')(?:\\\\\\\\(\\'+n    '(?:\\\\\\\\([\\^](\\*\\\\\\\\)\\1[\\^](\\*+)?'+n    ')\\\\\\\\)?([\\^,\\*])';\n    var _cssColonHostRe = new RegExp('(\\'+_polyfillHost + _parenSuffix, 'gim');\n    var _cssColonHostContextRe = new RegExp('(\\'+_polyfillHostContext + _parenSuffix, 'gim');\n    var _polyfillHostNoCombinator = _polyfillHost + '-no-combinator';\n    var _polyfillHostNoCombinatorRe = /-shadowcsshost-no-combinator([\\^\\s]*)/;\n    var _shadowDOMSelectorsRe = [\\n    /::shadow/g,\\n    /::content/g,\\n    // Deprecated selectors\\n    /\\\\/shadow-deep\\\\/g,\\n    /\\\\/shadow\\\\/g,\\n    ];\n    // The deep combinator is deprecated in the CSS spec\\n    // Support for `>>>`, `deep`, `:ng-deep` is then also deprecated and will be removed in the future.\\n    // see https://github.com/angular/angular/pull/17677\\n    var _shadowDeepSelectors = /(?:>>>)|(?:\\\\/deep\\\\/)|(?:::ng-deep)/g;\n    var _selectorReSuffix = '(\\[>\\\\\\\\s~+\\\\\\\\[.,{:}\\\\\\\\\\\\s\\\\\\\\S\\*])?\\$';\n    var _polyfillHostRe = /-shadowcsshost/gim;\n    var _colonHostRe = /:host/gim;\n    var _colonHostContextRe = /:host-context/gim;\n    var _commentRe = /\\\\\\\\\\*\\\\\\\\s*[\\s\\\\S]*?\\\\\\\\\\*\\\\\\\\/g;\n    function stripComments(input) {\n        return input.replace(_commentRe, '');\n    }\n    var _commentWithHashRe = /\\\\\\\\\\*\\\\\\\\s*#\\\\\\\\s*source(\\Mapping)?URL=[\\s\\\\S]+?\\\\\\\\\\*\\\\\\\\/g;\n    function extractCommentsWithHash(input) {\n        return input.match(_commentWithHashRe) || [];\n    }\n    var BLOCK_PLACEHOLDER = '%BLOCK%';\n    var QUOTE_PLACEHOLDER = '%QUOTED%';\n    var _ruleRe = /(\\s*)(\\[\\^\\\\\\\\\\{\\}\\]+)?(\\s*)(?:%BLOCK%}?\\s*?)(?:\\s*?)/g;\n    var _quotedRe = %QUOTED%/g;\n    var CONTENT_PAIRS = new Map([['{', '}']);\n    var QUOTE_PAIRS = new Map([['\"', '\"'], ['\\'\\', '\\'\\']]);\n    var CssRule = /** @class */ (function () {\n        function CssRule(selector, content) {\n            this.selector = selector;\n            this.content = content;\n        }\n        return CssRule;\n    }());\n    function processRules(input, ruleCallback) {\n        var inputWithEscapedQuotes = escapeBlocks(input, QUOTE_PAIRS, QUOTE_PLACEHOLDER);\n        var inputWithEscapedBlocks = escapeBlocks(inputWithEscapedQuotes.escapedString, CONTENT_PAIRS, BLOCK_PLACEHOLDER);\n        var nextBlockIndex = 0;\n        var nextQuoteIndex = 0;\n        return inputWithEscapedBlocks.escapedString\n        .replace(_ruleRe, function () {\n            var m = [];\n            for (var _i = 0; _i < arguments.length; _i++) {\n                m[_i] = arguments[_i];\n            }\n            var selector = m[2];\n            var content = \"\";\n            var suffix = m[4];\n            var contentPrefix = \"\";\n            if (suffix && suffix.startsWith('{'+BLOCK_PLACEHOLDER)) {\n                content = inputWithEscapedBlocks.blocks[nextBlockIndex++];\n                suffix = suffix.substring(BLOCK_PLACEHOLDER.length + 1);\n                contentPrefix = '{';\n            }\n            var rule = ruleCallback(new CssRule(selector, content));\n            return '\\'+m[1] + rule.selector + m[3] + contentPrefix + rule.content + suffix;\n        })\n        .replace(_quotedRe, function () { return inputWithEscapedQuotes.blocks[nextQuoteIndex++]; });\n    }\n    var StringWithEscapedBlocks = /** @class */

```

```

(function () {\n    function StringWithEscapedBlocks(escapedString, blocks) {\n        this.escapedString =
escapedString;\n        this.blocks = blocks;\n    }\n    return StringWithEscapedBlocks;\n }());\n function
escapeBlocks(input, charPairs, placeholder) {\n    var resultParts = [];\n    var escapedBlocks = [];\n    var
openCharCount = 0;\n    var nonBlockStartIndex = 0;\n    var blockStartIndex = -1;\n    var openChar;\n
var closeChar;\n    for (var i = 0; i < input.length; i++) {\n        var char = input[i];\n        if (char === '\\\\')
{\n            i++;;\n        }\n        else if (char === closeChar) {\n            openCharCount--;\n            if
(openCharCount === 0) {\n                escapedBlocks.push(input.substring(blockStartIndex, i));\n            }\n
resultParts.push(placeholder);\n            nonBlockStartIndex = i;\n            blockStartIndex = -1;\n
openChar = closeChar = undefined;\n        }\n        else if (char === openChar) {\n            openCharCount++;\n
        }\n        else if (openCharCount === 0 && charPairs.has(char)) {\n            openChar = char;\n
closeChar = charPairs.get(char);\n            openCharCount = 1;\n            blockStartIndex = i + 1;\n
resultParts.push(input.substring(nonBlockStartIndex, blockStartIndex));\n        }\n    }\n    if (blockStartIndex !== -1) {\n        escapedBlocks.push(input.substring(blockStartIndex));\n
resultParts.push(placeholder);\n    }\n    else {\n        resultParts.push(input.substring(nonBlockStartIndex));\n    }\n    return new
StringWithEscapedBlocks(resultParts.join(""), escapedBlocks);\n }\n\n /**\n  * @license\n  * Copyright
Google LLC All Rights Reserved.\n  * Use of this source code is governed by an MIT-style license that can
be\n  * found in the LICENSE file at https://angular.io/license\n  */\n  var COMPONENT_VARIABLE =
'%COMP%';\n  var HOST_ATTR = \"_ngghost-\" + COMPONENT_VARIABLE;\n  var CONTENT_ATTR =
\"_ngcontent-\" + COMPONENT_VARIABLE;\n  var StylesCompileDependency = /** @class */ (function () {\n
    function StylesCompileDependency(name, moduleUrl, setValue) {\n        this.name = name;\n
this.moduleUrl = moduleUrl;\n        this.setValue = setValue;\n    }\n    return StylesCompileDependency;\n
})();\n  var CompiledStylesheet = /** @class */ (function () {\n    function CompiledStylesheet(outputCtx,
stylesVar, dependencies, isShimmed, meta) {\n        this.outputCtx = outputCtx;\n        this.stylesVar =
stylesVar;\n        this.dependencies = dependencies;\n        this.isShimmed = isShimmed;\n        this.meta =
meta;\n    }\n    return CompiledStylesheet;\n }());\n  var StyleCompiler = /** @class */ (function () {\n
    function StyleCompiler(_urlResolver) {\n        this._urlResolver = _urlResolver;\n        this._shadowCss = new
ShadowCss();\n    }\n    StyleCompiler.prototype.compileComponent = function (outputCtx, comp) {\n
var template = comp.template;\n        return this._compileStyles(outputCtx, comp, new
CompileStylesheetMetadata({\n            styles: template.styles,\n            styleUrls: template.styleUrls,\n
moduleUrl: identifierModuleUrl(comp.type)\n        }), this.needsStyleShim(comp), true);\n    };\n
    StyleCompiler.prototype.compileStyles = function (outputCtx, comp, stylesheet, shim) {\n        if (shim === void
0) { shim = this.needsStyleShim(comp); }\n        return this._compileStyles(outputCtx, comp, stylesheet, shim,
false);\n    };\n    StyleCompiler.prototype.needsStyleShim = function (comp) {\n        return
comp.template.encapsulation === ViewEncapsulation.Emulated;\n    };\n
    StyleCompiler.prototype._compileStyles = function (outputCtx, comp, stylesheet, shim, isComponentStylesheet) {\n
        var _this = this;\n        var styleExpressions = stylesheet.styles.map(function (plainStyle) { return
literal(_this._shimIfNeeded(plainStyle, shim)); });\n        var dependencies = [];\n
stylesheet.styleUrls.forEach(function (styleUrl) {\n            var exprIndex = styleExpressions.length;\n            //
Note: This placeholder will be filled later.\n            styleExpressions.push(null);\n
dependencies.push(new StylesCompileDependency(getStylesVarName(null), styleUrl, function (value) { return
styleExpressions[exprIndex] = outputCtx.importExpr(value); }));\n        });\n        // styles variable contains
plain strings and arrays of other styles arrays (recursive),\n        // so we set its type to dynamic.\n        var
stylesVar = getStylesVarName(isComponentStylesheet ? comp : null);\n        var stmt = variable(stylesVar)\n
        .set(literalArr(styleExpressions, new ArrayType(DYNAMIC_TYPE, [TypeModifier.Const])))\n
        .toDeclStmt(null, isComponentStylesheet ? [exports.StmtModifier.Final] : [\n            exports.StmtModifier.Final,\n
exports.StmtModifier.Exported\n        ]);\n        outputCtx.statements.push(stmt);\n        return new
CompiledStylesheet(outputCtx, stylesVar, dependencies, shim, stylesheet);\n    };\n

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StyleCompiler.prototype._shimIfNeeded = function (style, shim) {\n      return shim ?
this._shadowCss.shimCssText(style, CONTENT_ATTR, HOST_ATTR) : style;\n    };\n    return
StyleCompiler;\n  }());\n  function getStylesVarName(component) {\n    var result = \"styles\";\n    if
(component) {\n      result += \"_\" + identifierName(component.type);\n    }\n    return result;\n  }\n\n/**\n * @license\n * Copyright Google LLC All Rights Reserved.\n * Use of this source code is
governed by an MIT-style license that can be\n * found in the LICENSE file at https://angular.io/license\n */\n\n/**\n * A path is an ordered set of elements. Typically a path is to a\n * particular offset in a source file. The
head of the list is the top\n * most node. The tail is the node that contains the offset directly.\n * For
example, the expression `a + b + c` might have an ast that looks\n * like:\n * +\n * /\n * a +\n *
/\n * b c\n *\n * The path to the node at offset 9 would be `[ '+' at 1-10, '+' at 7-10,\n * 'c' at 9-10 ]`
and the path the node at offset 1 would be\n * `[ '+' at 1-10, 'a' at 1-2 ]`.\n */\n  var AstPath = /** @class */
(function () {\n    function AstPath(path, position) {\n      if (position === void 0) { position = -1; }\n      this.path = path;\n      this.position = position;\n    }\n    Object.defineProperty(AstPath.prototype,
'empty', {\n      get: function () {\n        return !this.path || !this.path.length;\n      },\n      enumerable: false,\n      configurable: true\n    });\n    Object.defineProperty(AstPath.prototype, 'head', {\n      get: function () {\n        return this.path[0];\n      },\n      enumerable: false,\n      configurable: true\n    });\n    Object.defineProperty(AstPath.prototype, 'tail', {\n      get: function () {\n        return this.path[this.path.length - 1];\n      },\n      enumerable: false,\n      configurable: true\n    });\n    AstPath.prototype.parentOf = function (node) {\n      return node && this.path[this.path.indexOf(node)
- 1];\n    };\n    AstPath.prototype.childOf = function (node) {\n      return this.path[this.path.indexOf(node)
+ 1];\n    };\n    AstPath.prototype.first = function (ctor) {\n      for (var i = this.path.length - 1; i >= 0; i--)\n        var item = this.path[i];\n      if (item instanceof ctor)\n        return item;\n    }\n    AstPath.prototype.push = function (node) {\n      this.path.push(node);\n    };\n    AstPath.prototype.pop = function () {\n      return this.path.pop();\n    };\n    return AstPath;\n  }());\n  var NodeWithI18n = /** @class */ (function () {\n    function NodeWithI18n(sourceSpan, i18n) {\n      this.sourceSpan = sourceSpan;\n      this.i18n = i18n;\n    }\n    return NodeWithI18n;\n  }());\n  var Text$3 = /** @class */ (function (_super) {\n    __extends(Text, _super);\n    function Text(value, sourceSpan,
i18n) {\n      var _this = _super.call(this, sourceSpan, i18n) || this;\n      _this.value = value;\n      return
_this;\n    }\n    Text.prototype.visit = function (visitor, context) {\n      return visitor.visitText(this,
context);\n    };\n    return Text;\n  })(NodeWithI18n);\n  var Expansion = /** @class */ (function (_super) {\n    __extends(Expansion, _super);\n    function Expansion(switchValue, type, cases, sourceSpan,
switchValueSourceSpan, i18n) {\n      var _this = _super.call(this, sourceSpan, i18n) || this;\n      _this.switchValue = switchValue;\n      _this.type = type;\n      _this.cases = cases;\n      _this.switchValueSourceSpan = switchValueSourceSpan;\n      return _this;\n    }\n    Expansion.prototype.visit = function (visitor, context) {\n      return visitor.visitExpansion(this, context);\n    };\n    return Expansion;\n  })(NodeWithI18n);\n  var ExpansionCase = /** @class */ (function () {\n    function ExpansionCase(value, expression, sourceSpan, valueSourceSpan, expSourceSpan) {\n      this.value =
value;\n      this.expression = expression;\n      this.sourceSpan = sourceSpan;\n      this.valueSourceSpan
= valueSourceSpan;\n      this.expSourceSpan = expSourceSpan;\n    }\n    ExpansionCase.prototype.visit =
function (visitor, context) {\n      return visitor.visitExpansionCase(this, context);\n    };\n    return
ExpansionCase;\n  }());\n  var Attribute = /** @class */ (function (_super) {\n    __extends(Attribute,
_super);\n    function Attribute(name, value, sourceSpan, valueSpan, i18n) {\n      var _this = _super.call(this,
sourceSpan, i18n) || this;\n      _this.name = name;\n      _this.value = value;\n      _this.valueSpan =
valueSpan;\n      return _this;\n    }\n    Attribute.prototype.visit = function (visitor, context) {\n      return visitor.visitAttribute(this, context);\n    };\n    return Attribute;\n  })(NodeWithI18n);\n  var Element$1
= /** @class */ (function (_super) {\n    __extends(Element, _super);\n    function Element(name, attrs,
children, sourceSpan, startSourceSpan, endSourceSpan, i18n) {\n      if (endSourceSpan === void 0) {\n        endSourceSpan = null;\n      }\n      var _this = _super.call(this, sourceSpan, i18n) || this;\n      _this.name =

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name;\n      _this.attrs = attrs;\n      _this.children = children;\n      _this.startSourceSpan =
startSourceSpan;\n      _this.endSourceSpan = endSourceSpan;\n      return _this;\n    }\n    Element.prototype.visit = function (visitor, context) {\n      return visitor.visitElement(this, context);\n    };\n    return Element;\n  }(NodeWithI18n));\n  var Comment = /** @class */ (function () {\n    function
Comment(value, sourceSpan) {\n      this.value = value;\n      this.sourceSpan = sourceSpan;\n    }\n    Comment.prototype.visit = function (visitor, context) {\n      return visitor.visitComment(this, context);\n    };\n    return Comment;\n  }());\n  function visitAll$1(visitor, nodes, context) {\n    if (context === void 0) {\n    context = null; }\n    var result = [];\n    var visit = visitor.visit ?\n    function (ast) { return visitor.visit(ast,
context) || ast.visit(visitor, context); } :\n    function (ast) { return ast.visit(visitor, context); };\n    nodes.forEach(function (ast) {\n      var astResult = visit(ast);\n      if (astResult) {\n    result.push(astResult);\n      }\n    });\n    return result;\n  }\n  var RecursiveVisitor$1 = /** @class */
(function () {\n    function RecursiveVisitor() {\n    }\n    RecursiveVisitor.prototype.visitElement = function
(ast, context) {\n      this.visitChildren(context, function (visit) {\n      visit(ast.attrs);\n    visit(ast.children);\n      });\n    }; \n    RecursiveVisitor.prototype.visitAttribute = function (ast, context) {\n    };\n    RecursiveVisitor.prototype.visitText = function (ast, context) {\n    };\n    RecursiveVisitor.prototype.visitComment = function (ast, context) {\n    };\n    RecursiveVisitor.prototype.visitExpansion = function (ast, context) {\n      return this.visitChildren(context,
function (visit) {\n      visit(ast.cases);\n      });\n    };\n    RecursiveVisitor.prototype.visitExpansionCase = function (ast, context) {\n    };\n    RecursiveVisitor.prototype.visitChildren = function (context, cb) {\n      var results = [];\n      var t = this;\n      function visit(children) {\n      if (children)\n      results.push(visitAll$1(t, children, context));\n      }\n      cb(visit);\n      return Array.prototype.concat.apply([], results);\n    };\n    return
RecursiveVisitor;\n  }());\n  function spanOf(ast) {\n    var start = ast.sourceSpan.start.offset;\n    var end =
ast.sourceSpan.end.offset;\n    if (ast instanceof Element$1) {\n      if (ast.endSourceSpan) {\n      end =
ast.endSourceSpan.end.offset;\n      }\n      else if (ast.children && ast.children.length) {\n      end =
spanOf(ast.children[ast.children.length - 1]).end;\n      }\n    }\n    return { start: start, end: end };\n  }\n  function findNode(nodes, position) {\n    var path = [];\n    var visitor = new /** @class */ (function (_super)
{\n      __extends(class_1, _super);\n      function class_1() {\n      return _super !== null &&
_super.apply(this, arguments) || this;\n      }\n      class_1.prototype.visit = function (ast, context) {\n    var span = spanOf(ast);\n      if (span.start <= position && position < span.end) {\n    path.push(ast);\n      }\n      else {\n      // Returning a value here will result in the children being
skipped.\n      return true;\n      }\n    };\n    return class_1;\n  })(RecursiveVisitor$1));\n  visitAll$1(visitor, nodes);\n  return new AstPath(path, position);\n }\n\n var TokenType;\n (function
(TokenType) {\n  TokenType[TokenType["TAG_OPEN_START"] = 0] = "TAG_OPEN_START";\n  TokenType[TokenType["TAG_OPEN_END"] = 1] = "TAG_OPEN_END";\n  TokenType[TokenType["TAG_OPEN_END_VOID"] = 2] = "TAG_OPEN_END_VOID";\n  TokenType[TokenType["TAG_CLOSE"] = 3] = "TAG_CLOSE";\n  TokenType[TokenType["INCOMPLETE_TAG_OPEN"] = 4] = "INCOMPLETE_TAG_OPEN";\n  TokenType[TokenType["TEXT"] = 5] = "TEXT";\n  TokenType[TokenType["ESCAPABLE_RAW_TEXT"] = 6] = "ESCAPABLE_RAW_TEXT";\n  TokenType[TokenType["RAW_TEXT"] = 7] = "RAW_TEXT";\n  TokenType[TokenType["COMMENT_START"] = 8] = "COMMENT_START";\n  TokenType[TokenType["COMMENT_END"] = 9] = "COMMENT_END";\n  TokenType[TokenType["CDATA_START"] = 10] = "CDATA_START";\n  TokenType[TokenType["CDATA_END"] = 11] = "CDATA_END";\n  TokenType[TokenType["ATTR_NAME"] = 12] = "ATTR_NAME";\n  TokenType[TokenType["ATTR_QUOTE"] = 13] = "ATTR_QUOTE";\n  TokenType[TokenType["ATTR_VALUE"] = 14] = "ATTR_VALUE";\n

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TokenType[TokenType["DOC_TYPE"] = 15] = "DOC_TYPE";\n
TokenType[TokenType["EXPANSION_FORM_START"] = 16] = "EXPANSION_FORM_START";\n
TokenType[TokenType["EXPANSION_CASE_VALUE"] = 17] = "EXPANSION_CASE_VALUE";\n
TokenType[TokenType["EXPANSION_CASE_EXP_START"] = 18] =
"EXPANSION_CASE_EXP_START";\n
TokenType[TokenType["EXPANSION_CASE_EXP_END"] =
19] = "EXPANSION_CASE_EXP_END";\n
TokenType[TokenType["EXPANSION_FORM_END"] = 20]
= "EXPANSION_FORM_END";\n
TokenType[TokenType["EOF"] = 21] = "EOF";\n
})(TokenType ||
(TokenType = {}));\n
var Token = /** @class */ (function () {\n
function Token(type, parts, sourceSpan) {\n
this.type = type;\n
this.parts = parts;\n
this.sourceSpan = sourceSpan;\n
}\n
return
Token;\n
})();\n
var TokenError = /** @class */ (function (_super) {\n
__extends(TokenError, _super);\n
function TokenError(errorMsg, tokenType, span) {\n
var _this = _super.call(this, span, errorMsg) || this;\n
_this.tokenType = tokenType;\n
return _this;\n
}\n
return TokenError;\n
})(ParseError);\n
var
TokenizeResult = /** @class */ (function () {\n
function TokenizeResult(tokens, errors,
nonNormalizedIcuExpressions) {\n
this.tokens = tokens;\n
this.errors = errors;\n
this.nonNormalizedIcuExpressions = nonNormalizedIcuExpressions;\n
}\n
return TokenizeResult;\n
})();\n
function tokenize(source, url, getTagDefinition, options) {\n
if (options === void 0) { options = {}; }\n
var tokenizer = new _Tokenizer(new ParseSourceFile(source, url), getTagDefinition, options);\n
tokenizer.tokenize();\n
return new TokenizeResult(mergeTextTokens(tokenizer.tokens), tokenizer.errors,
tokenizer.nonNormalizedIcuExpressions);\n
}\n
var _CR_OR_CRLF_REGEXP = /\r\n?/g;\n
function
_unexpectedCharacterErrorMsg(charCode) {\n
var char = charCode === $EOF ? 'EOF' :
String.fromCharCode(charCode);\n
return "Unexpected character '" + char + "'";\n
}\n
function
_unknownEntityErrorMsg(entitySrc) {\n
return "Unknown entity '" + entitySrc + "' - use the
'&#x<decimal>' or '&#x<hex>' syntax";\n
}\n
function _unparsableEntityErrorMsg(type, entityStr)
{\n
return "Unable to parse entity '" + entityStr + "' - " + type + " character reference entities must end
with '";\n
}\n
var CharacterReferenceType;\n
(function (CharacterReferenceType) {\n
CharacterReferenceType["HEX"] = "hexadecimal";\n
CharacterReferenceType["DEC"] = "decimal";\n
})(CharacterReferenceType || (CharacterReferenceType = {}));\n
var _ControlFlowError = /** @class */ (function
() {\n
function _ControlFlowError(error) {\n
this.error = error;\n
}\n
return
_ControlFlowError;\n
})();\n
// See http://www.w3.org/TR/html51/syntax.html#writing\n
var _Tokenizer = /**
@class */ (function () {\n
/**\n
* @param _file The html source file being tokenized.\n
* @param
_getTagDefinition A function that will retrieve a tag definition for a given tag name.\n
* @param options
Configuration of the tokenization.\n
*/\n
function _Tokenizer(_file, _getTagDefinition, options) {\n
this._getTagDefinition = _getTagDefinition;\n
this._currentTokenStart = null;\n
this._currentTokenType = null;\n
this._expansionCaseStack = [];\n
this._inInterpolation = false;\n
this.tokens = [];\n
this.errors = [];\n
this.nonNormalizedIcuExpressions = [];\n
this._tokenizeIcu = options.tokenizeExpansionForms || false;\n
this._interpolationConfig =
options.interpolationConfig || DEFAULT_INTERPOLATION_CONFIG;\n
this._leadingTriviaCodePoints
=\n
options.leadingTriviaChars && options.leadingTriviaChars.map(function (c) { return c.codePointAt(0) });\n
var range = options.range || { endPos: _file.content.length, startPos: 0, startLine: 0, startCol: 0 };\n
this._cursor = options.escapedString ? new EscapedCharacterCursor(_file, range) : new
PlainCharacterCursor(_file, range);\n
this._preserveLineEndings = options.preserveLineEndings || false;\n
this._escapedString = options.escapedString || false;\n
this._i18nNormalizeLineEndingsInICUs =
options.i18nNormalizeLineEndingsInICUs || false;\n
try {\n
this._cursor.init();\n
}\n
catch (e) {\n
this.handleError(e);\n
}\n
}\n
_Tokenizer.prototype._processCarriageReturns
= function (content) {\n
if (this._preserveLineEndings) {\n
return content;\n
}\n
//
http://www.w3.org/TR/html5/syntax.html#preprocessing-the-input-stream\n
// In order to keep the original
position in the source, we can not\n
// pre-process it.\n
// Instead CRs are processed right before
instantiating the tokens.\n
return content.replace(_CR_OR_CRLF_REGEXP, '\n');\n
};\n

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{\n      if (!this._attemptCharCodeCaseInsensitive(chars.charCodeAt(i))) {\n          return false;\n      }\n      return true;\n    };\n    _Tokenizer.prototype._requireStr = function (chars) {\n      var\n      location = this._cursor.clone();\n      if (!this._attemptStr(chars)) {\n        throw\n        this._createError(_unexpectedCharacterErrorMsg(this._cursor.peek()), this._cursor.getSpan(location));\n      }\n    };\n    _Tokenizer.prototype._attemptCharCodeUntilFn = function (predicate) {\n      while\n      (!predicate(this._cursor.peek())) {\n        this._cursor.advance();\n      }\n    };\n    _Tokenizer.prototype._requireCharCodeUntilFn = function (predicate, len) {\n      var start =\n      this._cursor.clone();\n      this._attemptCharCodeUntilFn(predicate);\n      if (this._cursor.diff(start) < len) {\n        throw this._createError(_unexpectedCharacterErrorMsg(this._cursor.peek()), this._cursor.getSpan(start));\n      }\n    };\n    _Tokenizer.prototype._attemptUntilChar = function (char) {\n      while\n      (this._cursor.peek() !== char) {\n        this._cursor.advance();\n      }\n    };\n    _Tokenizer.prototype._readChar = function (decodeEntities) {\n      if (decodeEntities && this._cursor.peek()\n      === $AMPERSAND) {\n        return this._decodeEntity();\n      } else {\n        // Don't rely\n        upon reading directly from `_input` as the actual char value\n        // may have been generated from an escape\n        sequence.\n        var char = String.fromCharCode(this._cursor.peek());\n        this._cursor.advance();\n        return char;\n      }\n    };\n    _Tokenizer.prototype._decodeEntity = function () {\n      var start =\n      this._cursor.clone();\n      this._cursor.advance();\n      if (this._attemptCharCode($HASH)) {\n        var\n        isHex = this._attemptCharCode($x) || this._attemptCharCode($X);\n        var codeStart = this._cursor.clone();\n        this._attemptCharCodeUntilFn(isDigitEntityEnd);\n        if (this._cursor.peek() !== $SEMICOLON) {\n          // Advance cursor to include the peeked character in the string provided to the error\n          //\n          message.\n          this._cursor.advance();\n          var entityType = isHex ?\n          CharacterReferenceType.HEX : CharacterReferenceType.DEC;\n          throw\n          this._createError(_unparsableEntityErrorMsg(entityType, this._cursor.getChars(start)), this._cursor.getSpan());\n        }\n        var strNum = this._cursor.getChars(codeStart);\n        this._cursor.advance();\n        try\n        {\n          var charCode = parseInt(strNum, isHex ? 16 : 10);\n          return\n          String.fromCharCode(charCode);\n        } catch (_a) {\n          throw\n          this._createError(_unknownEntityErrorMsg(this._cursor.getChars(start)), this._cursor.getSpan());\n        }\n      } else {\n        var nameStart = this._cursor.clone();\n        this._attemptCharCodeUntilFn(isNamedEntityEnd);\n        if (this._cursor.peek() !== $SEMICOLON) {\n          this._cursor = nameStart;\n          return '&';\n        }\n        var name =\n        this._cursor.getChars(nameStart);\n        this._cursor.advance();\n        var char =\n        NAMED_ENTITIES[name];\n        if (!char) {\n          throw\n          this._createError(_unknownEntityErrorMsg(name), this._cursor.getSpan(start));\n        }\n        return\n        char;\n      }\n    };\n    _Tokenizer.prototype._consumeRawText = function (decodeEntities,\n    endMarkerPredicate) {\n      this._beginToken(decodeEntities ? TokenType.ESCAPABLE_RAW_TEXT :\n      TokenType.RAW_TEXT);\n      var parts = [];\n      while (true) {\n        var tagCloseStart =\n        this._cursor.clone();\n        var foundEndMarker = endMarkerPredicate();\n        this._cursor =\n        tagCloseStart;\n        if (foundEndMarker) {\n          break;\n        }\n        parts.push(this._readChar(decodeEntities));\n      }\n      return\n      this._endToken([this._processCarriageReturns(parts.join(""))]);\n    };\n    _Tokenizer.prototype._consumeComment = function (start) {\n      var _this = this;\n      this._beginToken(TokenType.COMMENT_START, start);\n      this._requireCharCode($MINUS);\n      this._endToken([]);\n      this._consumeRawText(false, function () { return _this._attemptStr('-->'); });\n      this._beginToken(TokenType.COMMENT_END);\n      this._requireStr('-->');\n      this._endToken([]);\n    };\n    _Tokenizer.prototype._consumeCdata = function (start) {\n      var _this = this;\n      this._beginToken(TokenType.CDATA_START, start);\n      this._requireStr('CDATA[');\n      this._endToken([]);\n      this._consumeRawText(false, function () { return _this._attemptStr(']>'); });\n      this._beginToken(TokenType.CDATA_END);\n      this._requireStr(']>');\n      this._endToken([]);\n    };\n  };\n}

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};\n    _Tokenizer.prototype._consumeDocType = function (start) {\n
this._beginToken(TokenType.DOC_TYPE, start);\n        var contentStart = this._cursor.clone();\n
this._attemptUntilChar($GT);\n        var content = this._cursor.getChars(contentStart);\n
this._cursor.advance();\n        this._endToken([content]);\n    };\n
_Tokenizer.prototype._consumePrefixAndName = function () {\n        var nameOrPrefixStart =\n
this._cursor.clone();\n        var prefix = ";\n        while (this._cursor.peek() !== $COLON &&\n
!isPrefixEnd(this._cursor.peek())) {\n            this._cursor.advance();\n        }\n        var nameStart;\n        if\n
(this._cursor.peek() === $COLON) {\n            prefix = this._cursor.getChars(nameOrPrefixStart);\n
this._cursor.advance();\n            nameStart = this._cursor.clone();\n        }\n        else {\n            nameStart\n
= nameOrPrefixStart;\n        }\n        this._requireCharCodeUntilFn(isNameEnd, prefix === " ? 0 : 1);\n
var name = this._cursor.getChars(nameStart);\n        return [prefix, name];\n    };\n
_Tokenizer.prototype._consumeTagOpen = function (start) {\n        var tagName;\n        var prefix;\n        var\n
openTagToken;\n        try {\n            if (!isAsciiLetter(this._cursor.peek())) {\n                throw\n
this._createError(_unexpectedCharacterErrorMsg(this._cursor.peek()), this._cursor.getSpan(start));\n            }\n
            openTagToken = this._consumeTagOpenStart(start);\n            prefix = openTagToken.parts[0];\n
tagName = openTagToken.parts[1];\n            this._attemptCharCodeUntilFn(isNotWhitespace);\n            while\n
(this._cursor.peek() !== $SLASH && this._cursor.peek() !== $GT &&\n
this._cursor.peek() !== $LT)\n            {\n                this._consumeAttributeName();\n                this._attemptCharCodeUntilFn(isNotWhitespace);\n
                if (this._attemptCharCode($EQ)) {\n                    this._attemptCharCodeUntilFn(isNotWhitespace);\n
                    this._consumeAttributeValue();\n                }\n
            }\n
            this._attemptCharCodeUntilFn(isNotWhitespace);\n        }\n        this._consumeTagOpenEnd();\n
    }\n    catch (e) {\n        if (e instanceof _ControlFlowError) {\n            if (openTagToken) {\n
                // We errored before we could close the opening tag, so it is incomplete.\n                openTagToken.type =\n
TokenType.INCOMPLETE_TAG_OPEN;\n            }\n            else {\n                // When the start tag\n
is invalid, assume we want a "<" as text.\n                // Back to back text tokens are merged at the end.\n
                this._beginToken(TokenType.TEXT, start);\n                this._endToken(['<']);\n            }\n
            return;\n        }\n        throw e;\n    }\n    }\n    var contentTokenType =\n
this._getTagDefinition(tagName).contentType;\n    if (contentTokenType ===\n
exports.TagContentType.RAW_TEXT) {\n        this._consumeRawTextWithTagClose(prefix, tagName,\n
false);\n    }\n    else if (contentTokenType === exports.TagContentType.ESCAPABLE_RAW_TEXT)\n
{\n        this._consumeRawTextWithTagClose(prefix, tagName, true);\n    }\n    };\n
_Tokenizer.prototype._consumeRawTextWithTagClose = function (prefix, tagName, decodeEntities) {\n        var\n
_this = this;\n        var textToken = this._consumeRawText(decodeEntities, function () {\n            if\n
(!_this._attemptCharCode($LT))\n            return false;\n            if (!_this._attemptCharCode($SLASH))\n
return false;\n            _this._attemptCharCodeUntilFn(isNotWhitespace);\n            if\n
(!_this._attemptStrCaseInsensitive(tagName))\n            return false;\n            _this._attemptCharCodeUntilFn(isNotWhitespace);\n            return _this._attemptCharCode($GT);\n        });\n        this._beginToken(TokenType.TAG_CLOSE);\n        this._requireCharCodeUntilFn(function (code) { return\n
code === $GT; }, 3);\n        this._cursor.advance(); // Consume the `>`\n        this._endToken([prefix,\n
tagName]);\n    };\n
_Tokenizer.prototype._consumeTagOpenStart = function (start) {\n
this._beginToken(TokenType.TAG_OPEN_START, start);\n        var parts = this._consumePrefixAndName();\n
return this._endToken(parts);\n    };\n
_Tokenizer.prototype._consumeAttributeName = function () {\n
var attrNameStart = this._cursor.peek();\n        if (attrNameStart === $SQ || attrNameStart === $DQ) {\n
            throw this._createError(_unexpectedCharacterErrorMsg(attrNameStart), this._cursor.getSpan());\n        }\n
this._beginToken(TokenType.ATTR_NAME);\n        var prefixAndName = this._consumePrefixAndName();\n
this._endToken(prefixAndName);\n    };\n
_Tokenizer.prototype._consumeAttributeValue = function ()\n
{\n        var value;\n        if (this._cursor.peek() === $SQ || this._cursor.peek() === $DQ) {\n
            this._beginToken(TokenType.ATTR_QUOTE);\n            var quoteChar = this._cursor.peek();\n

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this._cursor.advance();\n          this._endToken([String.fromCharCode(quoteChar)]);\nthis._beginToken(Token.Type.ATTR_VALUE);\n          var parts = [];\n          while (this._cursor.peek() !==\nquoteChar) {\n          parts.push(this._readChar(true));\n          }\n          value = parts.join("");\nthis._endToken([this._processCarriageReturns(value)]);\nthis._beginToken(Token.Type.ATTR_QUOTE);\n          this._cursor.advance();\nthis._endToken([String.fromCharCode(quoteChar)]);\n          }\n          else {\nthis._beginToken(Token.Type.ATTR_VALUE);\n          var valueStart = this._cursor.clone();\nthis._requireCharCodeUntilFn(isNameEnd, 1);\n          value = this._cursor.getChars(valueStart);\nthis._endToken([this._processCarriageReturns(value)]);\n          }\n          };\n\n_tokenizer.prototype._consumeTagOpenEnd = function () {\n          var tokenType =\nthis._attemptCharCode($SLASH) ? Token.Type.TAG_OPEN_END_VOID : Token.Type.TAG_OPEN_END;\n          this._beginToken(tokenType);\n          this._requireCharCode($GT);\n          this._endToken([]);\n          };\n\n_tokenizer.prototype._consumeTagClose = function (start) {\n          this._beginToken(Token.Type.TAG_CLOSE,\nstart);\n          this._attemptCharCodeUntilFn(isNotWhitespace);\n          var prefixAndName =\nthis._consumePrefixAndName();\n          this._attemptCharCodeUntilFn(isNotWhitespace);\nthis._requireCharCode($GT);\n          this._endToken(prefixAndName);\n          };\n\n_tokenizer.prototype._consumeExpansionFormStart = function () {\nthis._beginToken(Token.Type.EXPANSION_FORM_START);\n          this._requireCharCode($LBRACE);\nthis._endToken([]);\n          this._expansionCaseStack.push(Token.Type.EXPANSION_FORM_START);\nthis._beginToken(Token.Type.RAW_TEXT);\n          var condition = this._readUntil($COMMA);\n          var\nnormalizedCondition = this._processCarriageReturns(condition);\n          if\n(this._i18nNormalizeLineEndingsInICUs) {\n          // We explicitly want to normalize line endings for this\n          text.\n          this._endToken([normalizedCondition]);\n          }\n          else {\n          // We are not\n          normalizing line endings.\n          var conditionToken = this._endToken([condition]);\n          if\n(normalizedCondition !== condition) {\n          this.nonNormalizedIcuExpressions.push(conditionToken);\n          }\n          }\n          this._requireCharCode($COMMA);\nthis._attemptCharCodeUntilFn(isNotWhitespace);\n          this._beginToken(Token.Type.RAW_TEXT);\nvar type = this._readUntil($COMMA);\n          this._endToken([type]);\nthis._requireCharCode($COMMA);\n          this._attemptCharCodeUntilFn(isNotWhitespace);\n          };\n\n_tokenizer.prototype._consumeExpansionCaseStart = function () {\nthis._beginToken(Token.Type.EXPANSION_CASE_VALUE);\n          var value =\nthis._readUntil($LBRACE).trim();\n          this._endToken([value]);\nthis._attemptCharCodeUntilFn(isNotWhitespace);\nthis._beginToken(Token.Type.EXPANSION_CASE_EXP_START);\n          this._requireCharCode($LBRACE);\n          this._endToken([]);\n          this._attemptCharCodeUntilFn(isNotWhitespace);\nthis._expansionCaseStack.push(Token.Type.EXPANSION_CASE_EXP_START);\n          };\n\n_tokenizer.prototype._consumeExpansionCaseEnd = function () {\nthis._beginToken(Token.Type.EXPANSION_CASE_EXP_END);\n          this._requireCharCode($RBRACE);\n          this._endToken([]);\n          this._attemptCharCodeUntilFn(isNotWhitespace);\nthis._expansionCaseStack.pop();\n          };\n\n_tokenizer.prototype._consumeExpansionFormEnd = function ()\n{\n          this._beginToken(Token.Type.EXPANSION_FORM_END);\nthis._requireCharCode($RBRACE);\n          this._endToken([]);\n          this._expansionCaseStack.pop();\n};\n\n_tokenizer.prototype._consumeText = function () {\n          var start = this._cursor.clone();\nthis._beginToken(Token.Type.TEXT, start);\n          var parts = [];\n          do {\n          if\n(this._interpolationConfig && this._attemptStr(this._interpolationConfig.start)) {\n          parts.push(this._interpolationConfig.start);\n          this._inInterpolation = true;\n          }\n          else if\n(this._interpolationConfig && this._inInterpolation &&\nthis._attemptStr(this._interpolationConfig.end)) {\n          parts.push(this._interpolationConfig.end);\n
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this._inInterpolation = false;\n          }\n          else {\n          parts.push(this._readChar(true));\n          }\n          } while (!this._isTextEnd());\n          this._endToken([this._processCarriageReturns(parts.join(""))]);\n          };\n          _Tokenizer.prototype._isTextEnd = function () {\n          if (this._cursor.peek() === $LT ||\nthis._cursor.peek() === $EOF) {\n          return true;\n          }\n          if (this._tokenizeIcu &&\n!this._inInterpolation) {\n          if (this.isExpansionFormStart()) {\n          // start of an expansion form\n          return true;\n          }\n          if (this._cursor.peek() === $RBRACE && this._isInExpansionCase())\n{\n          // end of and expansion case\n          return true;\n          }\n          }\n          return false;\n          };\n          _Tokenizer.prototype._readUntil = function (char) {\n          var start = this._cursor.clone();\nthis._attemptUntilChar(char);\n          return this._cursor.getChars(start);\n          };\n          _Tokenizer.prototype._isInExpansionCase = function () {\n          return this._expansionCaseStack.length > 0\n&&\n          this._expansionCaseStack[this._expansionCaseStack.length - 1] ===\nTokenType.EXPANSION_CASE_EXP_START;\n          };\n          _Tokenizer.prototype._isInExpansionForm =\nfunction () {\n          return this._expansionCaseStack.length > 0 &&\nthis._expansionCaseStack[this._expansionCaseStack.length - 1] ===\nTokenType.EXPANSION_FORM_START;\n          };\n          _Tokenizer.prototype.isExpansionFormStart = function\n()\n          {\n          if (this._cursor.peek() !== $LBRACE) {\n          return false;\n          }\n          if\n(this._interpolationConfig) {\n          var start = this._cursor.clone();\n          var isInterpolation =\nthis._attemptStr(this._interpolationConfig.start);\n          this._cursor = start;\n          return !isInterpolation;\n          }\n          return true;\n          };\n          return _Tokenizer;\n          }());\n          function isNotWhitespace(code) {\n          return !isWhitespace(code) || code === $EOF;\n          }\n          function isNameEnd(code) {\n          return\nisWhitespace(code) || code === $GT || code === $LT ||\n          code === $SLASH || code === $SQ || code ===\n          $DQ || code === $EQ;\n          }\n          function isPrefixEnd(code) {\n          return (code < $a || $z < code) && (code < $A ||\n          $Z < code) &&\n          (code < $0 || code > $9);\n          }\n          function isDigitEntityEnd(code) {\n          return code ===\n          $SEMICOLON || code === $EOF || !isAsciiHexDigit(code);\n          }\n          function isNamedEntityEnd(code) {\n          return\n          code === $SEMICOLON || code === $EOF || !isAsciiLetter(code);\n          }\n          function\nisExpansionCaseStart(peek) {\n          return peek !== $RBRACE;\n          }\n          function\ncompareCharCodeCaseInsensitive(code1, code2) {\n          return toUpperCaseCharCode(code1) ===\ntoUpperCaseCharCode(code2);\n          }\n          function toUpperCaseCharCode(code) {\n          return code >= $a && code\n<= $z ? code - $a + $A : code;\n          }\n          function mergeTextTokens(srcTokens) {\n          var dstTokens = [];\n          var lastDstToken = undefined;\n          for (var i = 0; i < srcTokens.length; i++) {\n          var token = srcTokens[i];\n          if (lastDstToken && lastDstToken.type === TokenType.TEXT && token.type === TokenType.TEXT) {\n          lastDstToken.parts[0] += token.parts[0];\n          lastDstToken.sourceSpan.end = token.sourceSpan.end;\n          }\n          else {\n          lastDstToken = token;\n          dstTokens.push(lastDstToken);\n          }\n          }\n          return dstTokens;\n          }\n          var PlainCharacterCursor = /** @class */ (function () {\n          function\nPlainCharacterCursor(fileOrCursor, range) {\n          if (fileOrCursor instanceof PlainCharacterCursor) {\n          this.file = fileOrCursor.file;\n          this.input = fileOrCursor.input;\n          this.end = fileOrCursor.end;\n          var state = fileOrCursor.state;\n          // Note: avoid using `...fileOrCursor.state` here as that has a severe\n          performance penalty.\n          // In ES5 bundles the object spread operator is translated into the `__assign` helper,\n          which\n          // is not optimized by VMs as efficiently as a raw object literal. Since this constructor is\n          // called in tight loops, this difference matters.\n          this.state = {\n          peek: state.peek,\n          offset: state.offset,\n          line: state.line,\n          column: state.column,\n          };\n          }\n          else {\n          if (!range) {\n          throw new Error('Programming error: the range argument must be\n          provided with a file argument.);\n          }\n          this.file = fileOrCursor;\n          this.input =\n          fileOrCursor.content;\n          this.end = range.endPos;\n          this.state = {\n          peek: -1,\n          offset: range.startPos,\n          line: range.startLine,\n          column: range.startCol,\n          };\n          }\n          }\n          PlainCharacterCursor.prototype.clone = function () {\n          return new\n          PlainCharacterCursor(this);\n          };\n          PlainCharacterCursor.prototype.peek = function () {\n          return\n          this.state.peek;\n          };\n          PlainCharacterCursor.prototype.charsLeft = function () {\n          return this.end -

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this.state.offset;\n    };\n    PlainCharacterCursor.prototype.diff = function (other) {\n        return
this.state.offset - other.state.offset;\n    };\n    PlainCharacterCursor.prototype.advance = function () {\n
this.advanceState(this.state);\n    };\n    PlainCharacterCursor.prototype.init = function () {\n
this.updatePeek(this.state);\n    };\n    PlainCharacterCursor.prototype.getSpan = function (start,
leadingTriviaCodePoints) {\n        start = start || this;\n        var fullStart = start;\n        if
(leadingTriviaCodePoints) {\n            while (this.diff(start) > 0 &&
leadingTriviaCodePoints.indexOf(start.peek()) !== -1) {\n                if (fullStart === start) {\n                    start
= start.clone();\n                }\n                start.advance();\n            }\n        }\n        var startLocation =
this.locationFromCursor(start);\n        var endLocation = this.locationFromCursor(this);\n        var
fullStartLocation = fullStart !== start ? this.locationFromCursor(fullStart) : startLocation;\n        return new
ParseSourceSpan(startLocation, endLocation, fullStartLocation);\n    };\n
PlainCharacterCursor.prototype.getChars = function (start) {\n        return this.input.substring(start.state.offset,
this.state.offset);\n    };\n    PlainCharacterCursor.prototype.charAt = function (pos) {\n        return
this.input.charCodeAt(pos);\n    };\n    PlainCharacterCursor.prototype.advanceState = function (state) {\n
if (state.offset >= this.end) {\n        this.state = state;\n        throw new CursorError('Unexpected character
\'EOF\'', this);\n    }\n    var currentChar = this.charAt(state.offset);\n    if (currentChar === $LF) {\n
state.line++;\n        state.column = 0;\n    }\n    else if (!isNewLine(currentChar)) {\n
state.column++;\n    }\n    state.offset++;\n    this.updatePeek(state);\n    };\n
PlainCharacterCursor.prototype.updatePeek = function (state) {\n        state.peek = state.offset >= this.end ? $EOF
: this.charAt(state.offset);\n    };\n    PlainCharacterCursor.prototype.locationFromCursor = function (cursor)
{\n        return new ParseLocation(cursor.file, cursor.state.offset, cursor.state.line, cursor.state.column);\n    };\n
return PlainCharacterCursor;\n    }());\n    var EscapedCharacterCursor = /** @class */ (function (_super) {\n
__extends(EscapedCharacterCursor, _super);\n    function EscapedCharacterCursor(fileOrCursor, range) {\n
var _this = this;\n        if (fileOrCursor instanceof EscapedCharacterCursor) {\n            _this = _super.call(this,
fileOrCursor) || this;\n            _this.internalState = Object.assign({}, fileOrCursor.internalState);\n        }\n
else {\n            _this = _super.call(this, fileOrCursor, range) || this;\n            _this.internalState = _this.state;\n
        }\n        return _this;\n    }\n    EscapedCharacterCursor.prototype.advance = function () {\n
this.state = this.internalState;\n        _super.prototype.advance.call(this);\n        this.processEscapeSequence();\n
    };\n    EscapedCharacterCursor.prototype.init = function () {\n        _super.prototype.init.call(this);\n
this.processEscapeSequence();\n    };\n    EscapedCharacterCursor.prototype.clone = function () {\n
return new EscapedCharacterCursor(this);\n    };\n    EscapedCharacterCursor.prototype.getChars = function
(start) {\n        var cursor = start.clone();\n        var chars = '';\n        while (cursor.internalState.offset <
this.internalState.offset) {\n            chars += String.fromCodePoint(cursor.peek());\n            cursor.advance();\n
        }\n        return chars;\n    };\n    /**\n     * Process the escape sequence that starts at the current
position in the text.\n     *\n     * This method is called to ensure that `peek` has the unescaped value of escape
sequences.\n     */\n    EscapedCharacterCursor.prototype.processEscapeSequence = function () {\n        var
_this = this;\n        var peek = function () { return _this.internalState.peek; };\n        if (peek() ===
$BACKSLASH) {\n            // We have hit an escape sequence so we need the internal state to become
independent\n            // of the external state.\n            this.internalState = Object.assign({}, this.state);\n
// Move past the backslash\n            this.advanceState(this.internalState);\n            // First check for standard
control char sequences\n            if (peek() === $n) {\n                this.state.peek = $LF;\n            }\n
else if (peek() === $r) {\n                this.state.peek = $CR;\n            }\n            else if (peek() === $v) {\n
                this.state.peek = $VTAB;\n            }\n            else if (peek() === $t) {\n                this.state.peek =
$TAB;\n            }\n            else if (peek() === $b) {\n                this.state.peek = $BSPACE;\n            }\n
else if (peek() === $f) {\n                this.state.peek = $FF;\n            }\n            // Now consider more
complex sequences\n            else if (peek() === $u) {\n                // Unicode code-point sequence\n
this.advanceState(this.internalState); // advance past the `u` char\n                if (peek() === $LBRACE) {\n
                    // Variable length Unicode, e.g. `\\x{123}`\n                    this.advanceState(this.internalState); // advance

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past the `` char\n          // Advance past the variable number of hex digits until we hit a `` char\n
    var digitStart = this.clone();\n          var length = 0;\n          while (peek() !== $RBRACE) {\n
        this.advanceState(this.internalState);\n          length++;\n          }\n
this.state.peek = this.decodeHexDigits(digitStart, length);\n          }\n          else {\n          //
Fixed length Unicode, e.g. ``u1234``\n          var digitStart = this.clone();\n
this.advanceState(this.internalState);\n          this.advanceState(this.internalState);\n
this.advanceState(this.internalState);\n          this.state.peek = this.decodeHexDigits(digitStart, 4);\n
    }\n    }\n    else if (peek() === $x) {\n          // Hex char code, e.g. ``x2F``\n
this.advanceState(this.internalState); // advance past the `x` char\n          var digitStart = this.clone();\n
    this.advanceState(this.internalState);\n          this.state.peek = this.decodeHexDigits(digitStart, 2);\n
    }\n    else if (isOctalDigit(peek())) {\n          // Octal char code, e.g. ``012``\n          var octal =
";\n          var length = 0;\n          var previous = this.clone();\n          while (isOctalDigit(peek()
&& length < 3) {\n          previous = this.clone();\n          octal += String.fromCodePoint(peek());\n
        this.advanceState(this.internalState);\n          length++;\n          }\n
this.state.peek = parseInt(octal, 8);\n          // Backup one char\n          this.internalState =
previous.internalState;\n          }\n          else if (isNewLine(this.internalState.peek)) {\n          // Line
continuation `` followed by a new line\n          this.advanceState(this.internalState); // advance over the
newline\n          this.state = this.internalState;\n          }\n          else {\n          // If none of the `if
blocks were executed then we just have an escaped normal character.\n          // In that case we just,
effectively, skip the backslash from the character.\n          this.state.peek = this.internalState.peek;\n
    }\n    }\n    };\n    EscapedCharacterCursor.prototype.decodeHexDigits = function (start, length) {\n
var hex = this.input.substr(start.internalState.offset, length);\n          var charCode = parseInt(hex, 16);\n          if
(!isNaN(charCode)) {\n          return charCode;\n          }\n          else {\n          start.state =
start.internalState;\n          throw new CursorError('Invalid hexadecimal escape sequence', start);\n          }\n
    };\n    return EscapedCharacterCursor;\n    }(PlainCharacterCursor));\n    var CursorError = /** @class */
(function () {\n    function CursorError(msg, cursor) {\n    this.msg = msg;\n    this.cursor = cursor;\n
    }\n    return CursorError;\n    }());\n    var TreeError = /** @class */ (function (_super) {\n
__extends(TreeError, _super);\n    function TreeError(elementName, span, msg) {\n    var _this =
_super.call(this, span, msg) || this;\n    _this.elementName = elementName;\n    return _this;\n    }\n
TreeError.create = function (elementName, span, msg) {\n    return new TreeError(elementName, span, msg);\n
    };\n    return TreeError;\n    }(ParseError));\n    var ParseTreeResult = /** @class */ (function () {\n
function ParseTreeResult(rootNodes, errors) {\n    this.rootNodes = rootNodes;\n    this.errors = errors;\n
    }\n    return ParseTreeResult;\n    }());\n    var Parser = /** @class */ (function () {\n    function
Parser(getTagDefinition) {\n    this.getTagDefinition = getTagDefinition;\n    }\n    Parser.prototype.parse
= function (source, url, options) {\n    var tokenizeResult = tokenize(source, url, this.getTagDefinition,
options);\n    var parser = new _TreeBuilder(tokenizeResult.tokens, this.getTagDefinition);\n
parser.build();\n    return new ParseTreeResult(parser.rootNodes, tokenizeResult.errors.concat(parser.errors));\n
    };\n    return Parser;\n    }());\n    var _TreeBuilder = /** @class */ (function () {\n    function
_TreeBuilder(tokens, getTagDefinition) {\n    this.tokens = tokens;\n    this.getTagDefinition =
getTagDefinition;\n    this._index = -1;\n    this._elementStack = [];\n    this.rootNodes = [];\n
this.errors = [];\n    this._advance();\n    }\n    _TreeBuilder.prototype.build = function () {\n    while
(this._peek.type !== TokenType.EOF) {\n    if (this._peek.type === TokenType.TAG_OPEN_START ||\n
this._peek.type === TokenType.INCOMPLETE_TAG_OPEN) {\n
this._consumeStartTag(this._advance());\n    }\n    else if (this._peek.type ===
TokenType.TAG_CLOSE) {\n    this._consumeEndTag(this._advance());\n    }\n    else if
(this._peek.type === TokenType.CDATA_START) {\n    this._closeVoidElement();\n
this._consumeCdata(this._advance());\n    }\n    else if (this._peek.type ===
TokenType.COMMENT_START) {\n    this._closeVoidElement();\n

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this._consumeComment(this._advance());\n        }\n        else if (this._peek.type === TokenType.TEXT ||
this._peek.type === TokenType.RAW_TEXT ||\n        this._peek.type ===
TokenType.ESCAPABLE_RAW_TEXT) {\n        this._closeVoidElement();\nthis._consumeText(this._advance());\n        }\n        else if (this._peek.type ===
TokenType.EXPANSION_FORM_START) {\n        this._consumeExpansion(this._advance());\n}\n        else {\n        // Skip all other tokens...\n        this._advance();\n        }\n    };\n    _TreeBuilder.prototype._advance = function () {\n        var prev = this._peek;\n        if (this._index <
this.tokens.length - 1) {\n        // Note: there is always an EOF token at the end\n        this._index++;\n        }\n        this._peek = this.tokens[this._index];\n        return prev;\n    };\n    _TreeBuilder.prototype._advanceIf = function (type) {\n        if (this._peek.type === type) {\n        return
this._advance();\n        }\n        return null;\n    };\n    _TreeBuilder.prototype._consumeCdata = function
(_startToken) {\n        this._consumeText(this._advance());\nthis._advanceIf(TokenType.CDATA_END);\n    };\n    _TreeBuilder.prototype._consumeComment = function
(token) {\n        var text = this._advanceIf(TokenType.RAW_TEXT);\nthis._advanceIf(TokenType.COMMENT_END);\n        var value = text != null ? text.parts[0].trim() : null;\n        this._addToParent(new Comment(value, token.sourceSpan));\n    };\n    _TreeBuilder.prototype._consumeExpansion = function (token) {\n        var switchValue = this._advance();\n        var type = this._advance();\n        var cases = [];\n        // read =\n        while (this._peek.type ===
TokenType.EXPANSION_CASE_VALUE) {\n        var expCase = this._parseExpansionCase();\n        if
(!expCase)\n        return; // error\n        cases.push(expCase);\n        }\n        // read the final }\n        if (this._peek.type !== TokenType.EXPANSION_FORM_END) {\nthis.errors.push(TreeError.create(null, this._peek.sourceSpan, "Invalid ICU message. Missing '{'.'"));
return;\n        }\n        var sourceSpan = new ParseSourceSpan(token.sourceSpan.start,
this._peek.sourceSpan.end, token.sourceSpan.fullStart);\n        this._addToParent(new
Expansion(switchValue.parts[0], type.parts[0], cases, sourceSpan, switchValue.sourceSpan));\nthis._advance();\n    };\n    _TreeBuilder.prototype._parseExpansionCase = function () {\n        var value =
this._advance();\n        // read {\n        if (this._peek.type !== TokenType.EXPANSION_CASE_EXP_START)
{\n        this.errors.push(TreeError.create(null, this._peek.sourceSpan, "Invalid ICU message. Missing '{'.'"));
return null;\n        }\n        // read until }\n        var start = this._advance();\n        var exp =
this._collectExpansionExpTokens(start);\n        if (!exp)\n        return null;\n        var end =
this._advance();\n        exp.push(new Token(TokenType.EOF, [], end.sourceSpan));\n        // parse everything
in between { and }\n        var expansionCaseParser = new _TreeBuilder(exp, this.getTagDefinition);\n        expansionCaseParser.build();\n        if (expansionCaseParser.errors.length > 0) {\n        this.errors =
this.errors.concat(expansionCaseParser.errors);\n        return null;\n        }\n        var sourceSpan = new
ParseSourceSpan(value.sourceSpan.start, end.sourceSpan.end, value.sourceSpan.fullStart);\n        var
expSourceSpan = new ParseSourceSpan(start.sourceSpan.start, end.sourceSpan.end, start.sourceSpan.fullStart);\n        return new ExpansionCase(value.parts[0], expansionCaseParser.rootNodes, sourceSpan, value.sourceSpan,
expSourceSpan);\n    };\n    _TreeBuilder.prototype._collectExpansionExpTokens = function (start) {\n
var exp = [];\n        var expansionFormStack = [TokenType.EXPANSION_CASE_EXP_START];\n        while
(true) {\n        if (this._peek.type === TokenType.EXPANSION_FORM_START ||\nthis._peek.type === TokenType.EXPANSION_CASE_EXP_START) {\n        expansionFormStack.push(this._peek.type);\n        }\n        if (this._peek.type ===
TokenType.EXPANSION_CASE_EXP_END) {\n        if (lastOnStack(expansionFormStack,
TokenType.EXPANSION_CASE_EXP_START)) {\n        expansionFormStack.pop();\n        if
(expansionFormStack.length === 0)\n        return exp;\n        }\n        else {\nthis.errors.push(TreeError.create(null, start.sourceSpan, "Invalid ICU message. Missing '{'.'"));
return null;\n        }\n        }\n        if (this._peek.type ===
TokenType.EXPANSION_FORM_END) {\n        if (lastOnStack(expansionFormStack,

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TokenType.EXPANSION_FORM_START)) {\n                expansionFormStack.pop();\n                }\n        else {\n                this.errors.push(TreeError.create(null, start.sourceSpan, \"Invalid ICU message. Missing\n}')');\n                return null;\n                }\n                }\n                if (this._peek.type === TokenType.EOF)\n{\n                this.errors.push(TreeError.create(null, start.sourceSpan, \"Invalid ICU message. Missing '}'.\");\n                return null;\n                }\n                exp.push(this._advance());\n                }\n                };\n        _TreeBuilder.prototype._consumeText = function (token) {\n                var text = token.parts[0];\n                if (text.length\n> 0 && text[0] == '\\n') {\n                var parent = this._getParentElement();\n                if (parent != null &&\nparent.children.length == 0 &&\n                this.getTagDefinition(parent.name).ignoreFirstLf) {\n                text\n= text.substring(1);\n                }\n                }\n                if (text.length > 0) {\n                this._addToParent(new\nText$3(text, token.sourceSpan));\n                }\n                };\n        _TreeBuilder.prototype._closeVoidElement = function ()\n{\n                var el = this._getParentElement();\n                if (el && this.getTagDefinition(el.name).isVoid) {\n                this._elementStack.pop();\n                }\n                };\n        _TreeBuilder.prototype._consumeStartTag = function\n(startTagToken) {\n                var _a = __read(startTagToken.parts, 2), prefix = _a[0], name = _a[1];\n                var attrs\n= [];\n                while (this._peek.type === TokenType.ATTR_NAME) {\n                attrs.push(this._consumeAttr(this._advance()));\n                }\n                var fullName =\nthis._getElementFullName(prefix, name, this._getParentElement());\n                var selfClosing = false;\n                //\nNote: There could have been a tokenizer error\n                // so that we don't get a token for the end tag..\n                if\n(this._peek.type === TokenType.TAG_OPEN_END_VOID) {\n                this._advance();\n                selfClosing =\ntrue;\n                var tagDef = this.getTagDefinition(fullName);\n                if (!(tagDef.canSelfClose ||\ngetNsPrefix(fullName) !== null || tagDef.isVoid)) {\n                this.errors.push(TreeError.create(fullName,\nstartTagToken.sourceSpan, \"Only void and foreign elements can be self closed \\\"\\\" + startTagToken.parts[1] +\n\\\"\\\"\\\"));\n                }\n                }\n                else if (this._peek.type === TokenType.TAG_OPEN_END) {\n                this._advance();\n                selfClosing = false;\n                }\n                var end = this._peek.sourceSpan.start;\n                var span = new ParseSourceSpan(startTagToken.sourceSpan.start, end, startTagToken.sourceSpan.fullStart);\n                // Create a separate `startSpan` because `span` will be modified when there is an `end` span.\n                var startSpan\n= new ParseSourceSpan(startTagToken.sourceSpan.start, end, startTagToken.sourceSpan.fullStart);\n                var el =\nnew Element$1(fullName, attrs, [], span, startSpan, undefined);\n                this._pushElement(el);\n                if\n(selfClosing) {\n                // Elements that are self-closed have their `endSourceSpan` set to the full span, as the\n                // element start tag also represents the end tag.\n                this._popElement(fullName, span);\n                }\n                else if (startTagToken.type === TokenType.INCOMPLETE_TAG_OPEN) {\n                // We already know the\nopening tag is not complete, so it is unlikely it has a corresponding\n                // close tag. Let's optimistically parse\nit as a full element and emit an error.\n                this._popElement(fullName, null);\n                this.errors.push(TreeError.create(fullName, span, \"Opening tag \\\"\\\" + fullName + \\\"\\\" not terminated.\");\n                }\n                }\n        _TreeBuilder.prototype._pushElement = function (el) {\n                var parentEl =\nthis._getParentElement();\n                if (parentEl &&\nthis.getTagDefinition(parentEl.name).isClosedByChild(el.name)) {\n                this._elementStack.pop();\n                }\n                this._addToParent(el);\n                this._elementStack.push(el);\n                };\n        _TreeBuilder.prototype._consumeEndTag = function (endTagToken) {\n                var fullName =\nthis._getElementFullName(endTagToken.parts[0], endTagToken.parts[1], this._getParentElement());\n                if\n(this.getTagDefinition(fullName).isVoid) {\n                this.errors.push(TreeError.create(fullName,\nendTagToken.sourceSpan, \"Void elements do not have end tags \\\"\\\" + endTagToken.parts[1] + \\\"\\\"\\\"));\n                }\n                }\n                else if (!this._popElement(fullName, endTagToken.sourceSpan)) {\n                var errMsg = \"Unexpected\nclosing tag \\\"\\\" + fullName + \\\"\\\". It may happen when the tag has already been closed by another tag. For more\ninfo see https://www.w3.org/TR/html5/syntax.html#closing-elements-that-have-implied-end-tags\";\n                this.errors.push(TreeError.create(fullName, endTagToken.sourceSpan, errMsg));\n                }\n                };\n                /**\n                * Closes the nearest element with the tag name `fullName` in the parse tree.\n                * `endSourceSpan` is the span of\nthe closing tag, or null if the element does\n                * not have a closing tag (for example, this happens when an\nincomplete\n                * opening tag is recovered).\n                */\n        _TreeBuilder.prototype._popElement = function

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(fullName, endSourceSpan) {\n      for (var stackIndex = this._elementStack.length - 1; stackIndex >= 0;
stackIndex--) {\n          var el = this._elementStack[stackIndex];\n          if (el.name == fullName) {\n
    // Record the parse span with the element that is being closed. Any elements that are\n          // removed
from the element stack at this point are closed implicitly, so they won't get\n          // an end source span (as
there is no explicit closing element).\n          el.endSourceSpan = endSourceSpan;\n
el.sourceSpan.end = endSourceSpan !== null ? endSourceSpan.end : el.sourceSpan.end;\n
this._elementStack.splice(stackIndex, this._elementStack.length - stackIndex);\n          return true;\n
}\n      if (!this.getTagDefinition(el.name).closedByParent) {\n          return false;\n      }\n
}\n      return false;\n    };\n    _TreeBuilder.prototype._consumeAttr = function (attrName) {\n      var
fullName = mergeNsAndName(attrName.parts[0], attrName.parts[1]);\n      var end =
attrName.sourceSpan.end;\n      var value = ";\n      var valueSpan = undefined;\n      if (this._peek.type
=== TokenType.ATTR_QUOTE) {\n          this._advance();\n      }\n      if (this._peek.type ===
TokenType.ATTR_VALUE) {\n          var valueToken = this._advance();\n          value =
valueToken.parts[0];\n          end = valueToken.sourceSpan.end;\n          valueSpan =
valueToken.sourceSpan;\n      }\n      if (this._peek.type === TokenType.ATTR_QUOTE) {\n          var
quoteToken = this._advance();\n          end = quoteToken.sourceSpan.end;\n      }\n      return new
Attribute(fullName, value, new ParseSourceSpan(attrName.sourceSpan.start, end, attrName.sourceSpan.fullStart),
valueSpan);\n    };\n    _TreeBuilder.prototype._getParentElement = function () {\n      return
this._elementStack.length > 0 ? this._elementStack[this._elementStack.length - 1] : null;\n    };\n
_TreeBuilder.prototype._addToParent = function (node) {\n      var parent = this._getParentElement();\n      if
(parent != null) {\n          parent.children.push(node);\n      }\n      else {\n          this.rootNodes.push(node);\n      }\n    };\n    _TreeBuilder.prototype._getElementFullName = function
(prefix, localName, parentElement) {\n      if (prefix === "") {\n          prefix =
this.getTagDefinition(localName).implicitNamespacePrefix || ";\n      }\n      if (prefix === "&& parentElement !=
null) {\n          var parentTagName = splitNsName(parentElement.name)[1];\n          var
parentTagDefinition = this.getTagDefinition(parentTagName);\n          if
(!parentTagDefinition.preventNamespaceInheritance) {\n              prefix =
getNsPrefix(parentElement.name);\n          }\n      }\n      return
mergeNsAndName(prefix, localName);\n    };\n    return _TreeBuilder;\n  }());\n  function
lastOnStack(stack, element) {\n      return stack.length > 0 && stack[stack.length - 1] === element;\n    }\n\n  var
HtmlParser = /** @class */ (function (_super) {\n      __extends(HtmlParser, _super);\n      function HtmlParser()\n      {\n          return _super.call(this, getHtmlTagDefinition) || this;\n      }\n      HtmlParser.prototype.parse =
function (source, url, options) {\n          return _super.prototype.parse.call(this, source, url, options);\n      };\n
return HtmlParser;\n  })(Parser);\n\n  /**\n   * @license\n   * Copyright Google LLC All Rights Reserved.\n
*\n   * Use of this source code is governed by an MIT-style license that can be\n   * found in the LICENSE file at
https://angular.io/license\n   *\n   var PRESERVE_WS_ATTR_NAME = 'ngPreserveWhitespaces';\n   var
SKIP_WS_TRIM_TAGS = new Set(['pre', 'template', 'textarea', 'script', 'style']);\n   // Equivalent to \\s with \\u00a0
(non-breaking space) excluded.\n   // Based on https://developer.mozilla.org/en-US/docs/Web/JavaScript/Reference/Global\_Objects/RegExp\n   var WS_CHARS =
'\\f\\n\\r\\t\\v\\u1680\\u180e\\u2000-\\u200a\\u2028\\u2029\\u202f\\u205f\\u3000\\ufe0f';\n   var NO_WS_REGEXP
= new RegExp("[^" + WS_CHARS + "]*");\n   var WS_REPLACE_REGEXP = new RegExp("[^" +
WS_CHARS + "]{2,}" , 'g');\n   function hasPreserveWhitespacesAttr(attrs) {\n      return attrs.some(function
(attr) { return attr.name === PRESERVE_WS_ATTR_NAME; });\n    }\n\n   /**\n   * Angular Dart introduced
&ngsp; as a placeholder for non-removable space, see:\n   * https://github.com/dart-lang/angular/blob/0bb611387d29d65b5af7f9d2515ab571fd3fbee4/\_tests/test/compiler/preserve\_whitespace\_test.dart\n   * In Angular Dart &ngsp; is converted to the 0xE500 PUA (Private Use Areas) unicode character\n
* and later on replaced by a space. We are re-implementing the same idea here.\n   */\n   function
replaceNgsp(value) {\n      // lexer is replacing the &ngsp; pseudo-entity with NGSP_UNICODE\n      return

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value.replace(new RegExp(NGSP_UNICODE, 'g'), ' ');
}

/**
 * This visitor can walk HTML parse tree
and remove / trim text nodes using the following rules:
 * - consider spaces, tabs and new lines as whitespace
characters;
 * - drop text nodes consisting of whitespace characters only;
 * - for all other text nodes replace
consecutive whitespace characters with one space;
 * - convert &nbsp; pseudo-entity to a single space;
 *
 * Removal and trimming of whitespaces have positive performance impact (less code to generate
 * while
compiling templates, faster view creation). At the same time it can be "destructive"
 * in some cases
(whitespaces can influence layout). Because of the potential of breaking layout
 * this visitor is not activated by
default in Angular 5 and people need to explicitly opt-in for
 * whitespace removal. The default option for
whitespace removal will be revisited in Angular 6
 * and might be changed to "on" by default.
 *
var
WhitespacesVisitor = /** @class */ (function () {
function WhitespacesVisitor() {
}

WhitespacesVisitor.prototype.visitElement = function (element, context) {
if
(SKIP_WS_TRIM_TAGS.has(element.name) || hasPreserveWhitespacesAttr(element.attrs)) {
// don't
descent into elements where we need to preserve whitespaces
// but still visit all attributes to eliminate
one used as a market to preserve WS
return new Element$(element.name, visitAll$(this,
element.attrs), element.children, element.sourceSpan, element.startSourceSpan, element.endSourceSpan,
element.i18n);
}
return new Element$(element.name, element.attrs, visitAllWithSiblings(this,
element.children), element.sourceSpan, element.startSourceSpan, element.endSourceSpan, element.i18n);
};

WhitespacesVisitor.prototype.visitAttribute = function (attribute, context) {
return attribute.name !==
PRESERVE_WS_ATTR_NAME ? attribute : null;
};

WhitespacesVisitor.prototype.visitText = function
(text, context) {
var isNotBlank = text.value.match(NO_WS_REGEXP);
var hasExpansionSibling
= context &&
(context.prev instanceof Expansion || context.next instanceof Expansion);
if
(isNotBlank || hasExpansionSibling) {
return new
Text$(replaceNgsp(text.value).replace(WS_REPLACE_REGEXP, ' '), text.sourceSpan, text.i18n);
}
return null;
};

WhitespacesVisitor.prototype.visitComment = function (comment, context) {
return comment;
};

WhitespacesVisitor.prototype.visitExpansion = function (expansion, context) {
return expansion;
};

WhitespacesVisitor.prototype.visitExpansionCase = function (expansionCase,
context) {
return expansionCase;
};

return WhitespacesVisitor;
})();

function
removeWhitespaces(htmlAstWithErrors) {
return new ParseTreeResult(visitAll$(new WhitespacesVisitor(),
htmlAstWithErrors.rootNodes), htmlAstWithErrors.errors);
}

function visitAllWithSiblings(visitor, nodes)
{
var result = [];
nodes.forEach(function (ast, i) {
var context = { prev: nodes[i - 1], next:
nodes[i + 1] };
var astResult = ast.visit(visitor, context);
if (astResult) {
result.push(astResult);
}
});
return result;
}

// http://cldr.unicode.org/index/cldr-
spec/plural-rules
var PLURAL_CASES = ['zero', 'one', 'two', 'few', 'many', 'other'];
/**
 * Expands
special forms into elements.
 *
 * For example,
 *
 * ``
 * { messages.length, plural,
 * =0
 {zero}
 * =1 {one}
 * other {more than one}
 * }
 * ``
 * will be expanded into
 *
 * ``
 * <ng-container [ngPlural]="messages.length">
 * <ng-template ngPluralCase="=0">zero</ng-
template>
 * <ng-template ngPluralCase="=1">one</ng-template>
 * <ng-template
ngPluralCase="other">more than one</ng-template>
 * </ng-container>
 * ``
 *
function
expandNodes(nodes) {
var expander = new _Expander();
return new
ExpansionResult(visitAll$(expander, nodes), expander.isExpanded, expander.errors);
}

var
ExpansionResult = /** @class */ (function () {
function ExpansionResult(nodes, expanded, errors) {
this.nodes = nodes;
this.expanded = expanded;
this.errors = errors;
}

return
ExpansionResult;
})();

var ExpansionError = /** @class */ (function (_super) {
__extends(ExpansionError, _super);
function ExpansionError(span, errorMsg) {
return
_super.call(this, span, errorMsg) || this;
}

return ExpansionError;
})(ParseError);

/**
 *
Expand expansion forms (plural, select) to directives
 *
 * @internal
 *
var _Expander = /** @class
 */ (function () {
function _Expander() {
this.isExpanded = false;
this.errors = [];
}

_Expander.prototype.visitElement = function (element, context) {
return new Element$(element.name,

```

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element.attrs, visitAll$(this, element.children), element.sourceSpan, element.startSourceSpan,
element.endSourceSpan);
};
_Expander.prototype.visitAttribute = function (attribute, context) {
return attribute;
};
_Expander.prototype.visitText = function (text, context) {
return text;
};
_Expander.prototype.visitComment = function (comment, context) {
return comment;
};
_Expander.prototype.visitExpansion = function (icu, context) {
this.isExpanded = true;
return
icu.type == 'plural' ? _expandPluralForm(icu, this.errors) :
_expandDefaultForm(icu, this.errors);
};
_Expander.prototype.visitExpansionCase = function (icuCase, context) {
throw new Error('Should
not be reached');
};
return _Expander;
})();
// Plural forms are expanded to `NgPlural` and
`NgPluralCase`s
function _expandPluralForm(ast, errors) {
var children = ast.cases.map(function (c) {
if (PLURAL_CASES.indexOf(c.value) == -1 && !c.value.match(/^=\d+$/)) {
errors.push(new
ExpansionError(c.valueSourceSpan, "Plural cases should be \"\"=<number>\"\" or one of \"\" +
PLURAL_CASES.join(', ')\"");
}
var expansionResult = expandNodes(c.expression);
errors.push.apply(errors, __spread(expansionResult.errors));
return new Element$1("ng-template", [new
Attribute('ngPluralCase', "\"" + c.value, c.valueSourceSpan)], expansionResult.nodes, c.sourceSpan, c.sourceSpan,
c.sourceSpan);
});
var switchAttr = new Attribute('[ngPlural]', ast.switchValue,
ast.switchValueSourceSpan);
return new Element$1('ng-container', [switchAttr], children, ast.sourceSpan,
ast.sourceSpan, ast.sourceSpan);
}
// ICU messages (excluding plural form) are expanded to `NgSwitch` and
`NgSwitchCase`s
function _expandDefaultForm(ast, errors) {
var children = ast.cases.map(function (c) {
var expansionResult = expandNodes(c.expression);
errors.push.apply(errors,
__spread(expansionResult.errors));
if (c.value === 'other') {
// other is the default case when no
values match
return new Element$1("ng-template", [new Attribute('ngSwitchDefault', "",
c.valueSourceSpan)], expansionResult.nodes, c.sourceSpan, c.sourceSpan, c.sourceSpan);
}
return
new Element$1("ng-template", [new Attribute('ngSwitchCase', "\"" + c.value, c.valueSourceSpan)],
expansionResult.nodes, c.sourceSpan, c.sourceSpan, c.sourceSpan);
});
var switchAttr = new
Attribute('[ngSwitch]', ast.switchValue, ast.switchValueSourceSpan);
return new Element$1('ng-container',
[switchAttr], children, ast.sourceSpan, ast.sourceSpan, ast.sourceSpan);
}
var _a;
/**
 * Copyright Google LLC All Rights Reserved.
 * Use of this source code is governed by an MIT-style
license that can be
 * found in the LICENSE file at https://angular.io/license
 */
/**
 * A segment of
text within the template.
 */
var TextAst = /** @class */ (function () {
function TextAst(value,
ngContentIndex, sourceSpan) {
this.value = value;
this.ngContentIndex = ngContentIndex;
this.sourceSpan = sourceSpan;
}
TextAst.prototype.visit = function (visitor, context) {
return
visitor.visitText(this, context);
};
return TextAst;
})();
/**
 * A bound expression within the
text of a template.
 */
var BoundTextAst = /** @class */ (function () {
function BoundTextAst(value,
ngContentIndex, sourceSpan) {
this.value = value;
this.ngContentIndex = ngContentIndex;
this.sourceSpan = sourceSpan;
}
BoundTextAst.prototype.visit = function (visitor, context) {
return
visitor.visitBoundText(this, context);
};
return BoundTextAst;
})();
/**
 * A plain
attribute on an element.
 */
var AttrAst = /** @class */ (function () {
function AttrAst(name, value,
sourceSpan) {
this.name = name;
this.value = value;
this.sourceSpan = sourceSpan;
}
AttrAst.prototype.visit = function (visitor, context) {
return
visitor.visitAttr(this, context);
};
return AttrAst;
})();
var BoundPropertyMapping = (_a = {},
_a[4 /* Animation */] = 4 /*
Animation */,
_a[1 /* Attribute */] = 1 /*
Attribute */,
_a[2 /* Class */] = 2 /*
Class */,
_a[0 /*
Property */] = 0 /*
Property */,
_a[3 /* Style */] = 3 /*
Style */,
_a);
/**
 * A binding for an
element property (e.g. `[property]="expression"`) or an animation trigger (e.g.
`[@trigger]="stateExp"`)
 */
var BoundElementPropertyAst = /** @class */ (function () {
function
BoundElementPropertyAst(name, type, securityContext, value, unit, sourceSpan) {
this.name = name;
this.type = type;
this.securityContext = securityContext;
this.value = value;
this.unit =
unit;
this.sourceSpan = sourceSpan;
this.isAnimation = this.type === 4 /*
Animation */;
}
BoundElementPropertyAst.fromBoundProperty = function (prop) {
var type =

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BoundPropertyMapping[prop.type];\n        return new BoundElementPropertyAst(prop.name, type,
prop.securityContext, prop.value, prop.unit, prop.sourceSpan);\n    };\n
BoundElementPropertyAst.prototype.visit = function (visitor, context) {\n        return
visitor.visitElementProperty(this, context);\n    };\n    return BoundElementPropertyAst;\n }());\n /**\n *
A binding for an element event (e.g. `(event)="handler()"`) or an animation trigger event (e.g.\n *
`(@trigger.phase)="callback($event)"`).\n */\n var BoundEventAst = /** @class */ (function () {\n
function BoundEventAst(name, target, phase, handler, sourceSpan, handlerSpan) {\n        this.name = name;\n
this.target = target;\n        this.phase = phase;\n        this.handler = handler;\n        this.sourceSpan =
sourceSpan;\n        this.handlerSpan = handlerSpan;\n        this.fullName =
BoundEventAst.calcFullName(this.name, this.target, this.phase);\n        this.isAnimation = !!this.phase;\n    }\n
BoundEventAst.calcFullName = function (name, target, phase) {\n        if (target) {\n            return target +
":" + name;\n        }\n        if (phase) {\n            return "@" + name + "." + phase;\n        }\n
return name;\n    };\n    BoundEventAst.fromParsedEvent = function (event) {\n        var target = event.type
=== 0 /* Regular */ ? event.targetOrPhase : null;\n        var phase = event.type === 1 /* Animation */ ?
event.targetOrPhase : null;\n        return new BoundEventAst(event.name, target, phase, event.handler,
event.sourceSpan, event.handlerSpan);\n    };\n    BoundEventAst.prototype.visit = function (visitor, context)
{\n        return visitor.visitEvent(this, context);\n    };\n    return BoundEventAst;\n }());\n /**\n * A
reference declaration on an element (e.g. `let someName="expression"`).\n */\n var ReferenceAst = /** @class
*/ (function () {\n    function ReferenceAst(name, value, originalValue, sourceSpan) {\n        this.name =
name;\n        this.value = value;\n        this.originalValue = originalValue;\n        this.sourceSpan =
sourceSpan;\n    }\n    ReferenceAst.prototype.visit = function (visitor, context) {\n        return
visitor.visitReference(this, context);\n    };\n    return ReferenceAst;\n }());\n /**\n * A variable
declaration on a <ng-template> (e.g. `var-someName="someLocalName"`).\n */\n var VariableAst = /**
@class */ (function () {\n    function VariableAst(name, value, sourceSpan, valueSpan) {\n        this.name =
name;\n        this.value = value;\n        this.sourceSpan = sourceSpan;\n        this.valueSpan = valueSpan;\n
    }\n    VariableAst.fromParsedVariable = function (v) {\n        return new VariableAst(v.name, v.value,
v.sourceSpan, v.valueSpan);\n    };\n    VariableAst.prototype.visit = function (visitor, context) {\n        return
visitor.visitVariable(this, context);\n    };\n    return VariableAst;\n }());\n /**\n * An element declaration
in a template.\n */\n var ElementAst = /** @class */ (function () {\n    function ElementAst(name, attrs,
inputs, outputs, references, directives, providers, hasViewContainer, queryMatches, children, ngContentIndex,
sourceSpan, endSourceSpan) {\n        this.name = name;\n        this.attrs = attrs;\n        this.inputs = inputs;\n
this.outputs = outputs;\n        this.references = references;\n        this.directives = directives;\n
this.providers = providers;\n        this.hasViewContainer = hasViewContainer;\n        this.queryMatches =
queryMatches;\n        this.children = children;\n        this.ngContentIndex = ngContentIndex;\n
this.sourceSpan = sourceSpan;\n        this.endSourceSpan = endSourceSpan;\n    }\n    ElementAst.prototype.visit = function (visitor, context) {\n        return visitor.visitElement(this, context);\n
    };\n    return ElementAst;\n }());\n /**\n * A <ng-template> element included in an Angular template.\n
*/\n var EmbeddedTemplateAst = /** @class */ (function () {\n    function EmbeddedTemplateAst(attrs,
outputs, references, variables, directives, providers, hasViewContainer, queryMatches, children, ngContentIndex,
sourceSpan) {\n        this.attrs = attrs;\n        this.outputs = outputs;\n        this.references = references;\n
this.variables = variables;\n        this.directives = directives;\n        this.providers = providers;\n
this.hasViewContainer = hasViewContainer;\n        this.queryMatches = queryMatches;\n        this.children =
children;\n        this.ngContentIndex = ngContentIndex;\n        this.sourceSpan = sourceSpan;\n    }\n
EmbeddedTemplateAst.prototype.visit = function (visitor, context) {\n        return
visitor.visitEmbeddedTemplate(this, context);\n    };\n    return EmbeddedTemplateAst;\n }());\n /**\n *
A directive property with a bound value (e.g. `*ngIf="condition"`).\n */\n var BoundDirectivePropertyAst = /**
@class */ (function () {\n    function BoundDirectivePropertyAst(directiveName, templateName, value,
sourceSpan) {\n        this.directiveName = directiveName;\n        this.templateName = templateName;\n
    }\n

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this.value = value;\n      this.sourceSpan = sourceSpan;\n    }\n    BoundDirectivePropertyAst.prototype.visit
= function (visitor, context) {\n      return visitor.visitDirectiveProperty(this, context);\n    };\n    return
BoundDirectivePropertyAst;\n  }());\n  /**\n   * A directive declared on an element.\n   */\n  var DirectiveAst
= /** @class */ (function () {\n    function DirectiveAst(directive, inputs, hostProperties, hostEvents,
contentQueryStartId, sourceSpan) {\n      this.directive = directive;\n      this.inputs = inputs;\n      this.hostProperties = hostProperties;\n      this.hostEvents = hostEvents;\n      this.contentQueryStartId =
contentQueryStartId;\n      this.sourceSpan = sourceSpan;\n    }\n    DirectiveAst.prototype.visit = function
(visitor, context) {\n      return visitor.visitDirective(this, context);\n    };\n    return DirectiveAst;\n  }());\n  /**\n   * A provider declared on an element.\n   */\n  var ProviderAst = /** @class */ (function () {\n
function ProviderAst(token, multiProvider, eager, providers, providerType, lifecycleHooks, sourceSpan, isModule)
{\n      this.token = token;\n      this.multiProvider = multiProvider;\n      this.eager = eager;\n      this.providers = providers;\n      this.providerType = providerType;\n      this.lifecycleHooks =
lifecycleHooks;\n      this.sourceSpan = sourceSpan;\n      this.isModule = isModule;\n    }\n    ProviderAst.prototype.visit = function (visitor, context) {\n      // No visit method in the visitor for now...\n      return null;\n    };\n    return ProviderAst;\n  }());\n  (function (ProviderAstType) {\n
ProviderAstType[ProviderAstType["PublicService"] = 0] = "PublicService";
ProviderAstType[ProviderAstType["PrivateService"] = 1] = "PrivateService";
ProviderAstType[ProviderAstType["Component"] = 2] = "Component";
ProviderAstType[ProviderAstType["Directive"] = 3] = "Directive";
ProviderAstType[ProviderAstType["Builtin"] = 4] = "Builtin";\n  })(exports.ProviderAstType ||
(exports.ProviderAstType = {}));\n  /**\n   * Position where content is to be projected (instance of `<ng-content>`
in a template).\n   */\n  var NgContentAst = /** @class */ (function () {\n    function NgContentAst(index,
ngContentIndex, sourceSpan) {\n      this.index = index;\n      this.ngContentIndex = ngContentIndex;\n      this.sourceSpan = sourceSpan;\n    }\n    NgContentAst.prototype.visit = function (visitor, context) {\n
return visitor.visitNgContent(this, context);\n    };\n    return NgContentAst;\n  }());\n  /**\n   * A visitor
that accepts each node but doesn't do anything. It is intended to be used\n   * as the base class for a visitor that is
only interested in a subset of the node types.\n   */\n  var NullTemplateVisitor = /** @class */ (function () {\n
function NullTemplateVisitor() {\n    }\n    NullTemplateVisitor.prototype.visitNgContent = function (ast,
context) { }\n    NullTemplateVisitor.prototype.visitEmbeddedTemplate = function (ast, context) { }\n    NullTemplateVisitor.prototype.visitElement = function (ast, context) { }\n    NullTemplateVisitor.prototype.visitReference = function (ast, context) { }\n    NullTemplateVisitor.prototype.visitVariable = function (ast, context) { }\n    NullTemplateVisitor.prototype.visitEvent = function (ast, context) { }\n    NullTemplateVisitor.prototype.visitElementProperty = function (ast, context) { }\n    NullTemplateVisitor.prototype.visitAttr = function (ast, context) { }\n    NullTemplateVisitor.prototype.visitBoundText = function (ast, context) { }\n    NullTemplateVisitor.prototype.visitText = function (ast, context) { }\n    NullTemplateVisitor.prototype.visitDirective = function (ast, context) { }\n    NullTemplateVisitor.prototype.visitDirectiveProperty = function (ast, context) { }\n    return
NullTemplateVisitor;\n  }());\n  /**\n   * Base class that can be used to build a visitor that visits each node\n   *
in an template ast recursively.\n   */\n  var RecursiveTemplateAstVisitor = /** @class */ (function (_super) {\n
__extends(RecursiveTemplateAstVisitor, _super);\n    function RecursiveTemplateAstVisitor() {\n      return
_super.call(this) || this;\n    }\n    // Nodes with children\n    RecursiveTemplateAstVisitor.prototype.visitEmbeddedTemplate = function (ast, context) {\n      return
this.visitChildren(context, function (visit) {\n        visit(ast.attrs);\n        visit(ast.references);\n        visit(ast.variables);\n        visit(ast.directives);\n        visit(ast.providers);\n        visit(ast.children);\n      });\n    };\n    RecursiveTemplateAstVisitor.prototype.visitElement = function (ast, context) {\n
return this.visitChildren(context, function (visit) {\n        visit(ast.attrs);\n        visit(ast.inputs);\n

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visit(ast.outputs);\n        visit(ast.references);\n        visit(ast.directives);\n        visit(ast.providers);\n        visit(ast.children);\n    });\n    RecursiveTemplateAstVisitor.prototype.visitDirective =
function (ast, context) {\n        return this.visitChildren(context, function (visit) {\n            visit(ast.inputs);\n            visit(ast.hostProperties);\n            visit(ast.hostEvents);\n        });\n    };
RecursiveTemplateAstVisitor.prototype.visitChildren = function (context, cb) {\n        var results = [];\n        var t = this;\n        function visit(children) {\n            if (children && children.length)\n                results.push(templateVisitAll(t, children, context));\n            cb(visit);\n            return
Array.prototype.concat.apply([], results);\n        };\n        return RecursiveTemplateAstVisitor;\n    }(NullTemplateVisitor);\n    /**\n     * Visit every node in a list of {@link TemplateAst}s with the given {@link
TemplateAstVisitor}.\n     */\n    function templateVisitAll(visitor, asts, context) {\n        if (context === void 0) {\n            context = null;\n        }\n        var result = [];\n        var visit = visitor.visit ?\n            function (ast) { return visitor.visit(ast,\n                context) || ast.visit(visitor, context); }\n            :\n            function (ast) { return ast.visit(visitor, context); };\n        asts.forEach(function (ast) {\n            var astResult = visit(ast);\n            if (astResult) {\n                result.push(astResult);\n            }\n        });\n        return result;\n    }\n    var ProviderError = /** @class */\n    (function (_super) {\n        __extends(ProviderError, _super);\n        function ProviderError(message, span) {\n            return _super.call(this, span, message) || this;\n        }\n        return ProviderError;\n    })(ParseError);\n    var\n    ProviderViewContext = /** @class */ (function () {\n        function ProviderViewContext(reflector, component) {\n            var _this = this;\n            this.reflector = reflector;\n            this.component = component;\n            this.errors =\n            [];\n            this.viewQueries = _getViewQueries(component);\n            this.viewProviders = new Map();\n            component.viewProviders.forEach(function (provider) {\n                if\n                (_this.viewProviders.get(tokenReference(provider.token)) == null) {\n                    _this.viewProviders.set(tokenReference(provider.token), true);\n                }\n            });\n            return\n            ProviderViewContext;\n        }();\n        var ProviderElementContext = /** @class */ (function () {\n            function\n            ProviderElementContext(viewContext, _parent, _isViewRoot, _directiveAsts, attrs, refs, isTemplate,\n                contentQueryStartId, _sourceSpan) {\n                var _this = this;\n                this.viewContext = viewContext;\n                this._parent = _parent;\n                this._isViewRoot = _isViewRoot;\n                this._directiveAsts = _directiveAsts;\n                this._sourceSpan = _sourceSpan;\n                this._transformedProviders = new Map();\n                this._seenProviders\n                = new Map();\n                this._queriedTokens = new Map();\n                this.transformedHasViewContainer = false;\n                this._attrs = {};\n                attrs.forEach(function (attrAst) { return _this._attrs[attrAst.name] = attrAst.value; });\n                var directivesMeta = _directiveAsts.map(function (directiveAst) { return directiveAst.directive; });\n                this._allProviders =\n                _resolveProvidersFromDirectives(directivesMeta, _sourceSpan,\n                viewContext.errors);\n                this._contentQueries = _getContentQueries(contentQueryStartId, directivesMeta);\n                Array.from(this._allProviders.values()).forEach(function (provider) {\n                    _this._addQueryReadsTo(provider.token, provider.token, _this._queriedTokens);\n                });\n                if\n                (isTemplate) {\n                    var templateRefId = createTokenForExternalReference(this.viewContext.reflector,\n                    Identifiers.TemplateRef);\n                    this._addQueryReadsTo(templateRefId, templateRefId,\n                    this._queriedTokens);\n                }\n                refs.forEach(function (refAst) {\n                    var defaultQueryValue =\n                    refAst.value ||\n                    createTokenForExternalReference(_this.viewContext.reflector,\n                    Identifiers.ElementRef);\n                    _this._addQueryReadsTo({ value: refAst.name }, defaultQueryValue,\n                    _this._queriedTokens);\n                });\n                if\n                (this._queriedTokens.get(this.viewContext.reflector.resolveExternalReference(Identifiers.ViewContainerRef))) {\n                    this.transformedHasViewContainer = true;\n                }\n                // create the providers that we know are eager\n                first\n                Array.from(this._allProviders.values()).forEach(function (provider) {\n                    var eager =\n                    provider.eager || _this._queriedTokens.get(tokenReference(provider.token));\n                    if (eager) {\n                        _this._getOrCreateLocalProvider(provider.providerType, provider.token, true);\n                    }\n                });\n                ProviderElementContext.prototype.afterElement = function () {\n                    var _this = this;\n                    // collect lazy\n                    providers\n                    Array.from(this._allProviders.values()).forEach(function (provider) {\n                        _this._getOrCreateLocalProvider(provider.providerType, provider.token, false);\n                    });\n                };\n            }

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Object.defineProperty(ProviderElementContext.prototype, "transformProviders", {\n      get: function () {\n
  // Note: Maps keep their insertion order.\n      var lazyProviders = [];\n      var eagerProviders =\n
  [];\n      this._transformedProviders.forEach(function (provider) {\n      if (provider.eager) {\n
    eagerProviders.push(provider);\n      }\n      else {\n
    lazyProviders.push(provider);\n      }\n      });\n      return\n
    lazyProviders.concat(eagerProviders);\n      },\n      enumerable: false,\n      configurable: true\n    });\n
Object.defineProperty(ProviderElementContext.prototype, "transformedDirectiveAsts", {\n      get: function\n
  () {\n      var sortedProviderTypes = this.transformProviders.map(function (provider) { return\n
    provider.token.identifier; });\n      var sortedDirectives = this._directiveAsts.slice();\n
    sortedDirectives.sort(function (dir1, dir2) { return sortedProviderTypes.indexOf(dir1.directive.type) -\n
    sortedProviderTypes.indexOf(dir2.directive.type); });\n      return sortedDirectives;\n      },\n
    enumerable: false,\n      configurable: true\n    });\n
Object.defineProperty(ProviderElementContext.prototype, "queryMatches", {\n      get: function () {\n
    var allMatches = [];\n      this._queriedTokens.forEach(function (matches) {\n
    allMatches.push.apply(allMatches, __spread(matches));\n      });\n      return allMatches;\n      },\n
    enumerable: false,\n      configurable: true\n    });\n
ProviderElementContext.prototype._addQueryReadsTo = function (token, defaultValue, queryReadTokens) {\n
  this._getQueriesFor(token).forEach(function (query) {\n      var queryValue = query.meta.read |\n
  defaultValue;\n      var tokenRef = tokenReference(queryValue);\n      var queryMatches =\n
  queryReadTokens.get(tokenRef);\n      if (!queryMatches) {\n      queryMatches = [];\n
  queryReadTokens.set(tokenRef, queryMatches);\n      }\n      queryMatches.push({ queryId:\n
  query.queryId, value: queryValue });\n      });\n      });\n
ProviderElementContext.prototype._getQueriesFor\n
= function (token) {\n      var result = [];\n      var currentEl = this;\n      var distance = 0;\n      var\n
  queries;\n      while (currentEl !== null) {\n      queries =\n
  currentEl._contentQueries.get(tokenReference(token));\n      if (queries) {\n
  result.push.apply(result, __spread(queries.filter(function (query) { return query.meta.descendants || distance <= 1;\n
  })));;\n      }\n      if (currentEl._directiveAsts.length > 0) {\n      distance++;\n      }\n
  currentEl = currentEl._parent;\n      }\n      queries =\n
  this.viewContext.viewQueries.get(tokenReference(token));\n      if (queries) {\n
  result.push.apply(result, __spread(queries));\n      }\n      return result;\n      });\n
ProviderElementContext.prototype._getOrCreateLocalProvider = function (requestingProviderType, token, eager)\n
{\n      var _this = this;\n      var resolvedProvider = this._allProviders.get(tokenReference(token));\n      if\n
  (!resolvedProvider ||\n      ((requestingProviderType === exports.ProviderAstType.Directive ||\n
  requestingProviderType === exports.ProviderAstType.PublicService) &&\n
  resolvedProvider.providerType === exports.ProviderAstType.PrivateService) ||\n
  ((requestingProviderType === exports.ProviderAstType.PrivateService ||\n      requestingProviderType ===\n
  exports.ProviderAstType.PublicService) &&\n      resolvedProvider.providerType ===\n
  exports.ProviderAstType.Builtin)) {\n      return null;\n      }\n      var transformedProviderAst =\n
  this._transformedProviders.get(tokenReference(token));\n      if (transformedProviderAst) {\n      return\n
  transformedProviderAst;\n      }\n      if (this._seenProviders.get(tokenReference(token)) != null) {\n
  this.viewContext.errors.push(new ProviderError("Cannot instantiate cyclic dependency! " + tokenName(token),\n
  this._sourceSpan));\n      return null;\n      }\n      this._seenProviders.set(tokenReference(token),\n
  true);\n      var transformedProviders = resolvedProvider.providers.map(function (provider) {\n      var\n
  transformedUseValue = provider.useValue;\n      var transformedUseExisting = provider.useExisting;\n
  var transformedDeps = undefined;\n      if (provider.useExisting != null) {\n      var existingDiDep =\n
  _this._getDependency(resolvedProvider.providerType, { token: provider.useExisting }, eager);\n      if\n
  (existingDiDep.token != null) {\n      transformedUseExisting = existingDiDep.token;\n      }\n
  else {\n      transformedUseExisting = null;\n      transformedUseValue =

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existingDiDep.value;\n                }\n                }\n                else if (provider.useFactory) {\n                var deps
= provider.deps || provider.useFactory.diDeps;\n                transformedDeps =\n                deps.map(function
(dep) { return _this._getDependency(resolvedProvider.providerType, dep, eager); });\n                }\n                else if
(provider.useClass) {\n                var deps = provider.deps || provider.useClass.diDeps;\n                transformedDeps =\n                deps.map(function (dep) { return
_this._getDependency(resolvedProvider.providerType, dep, eager); });\n                }\n                return
_transformProvider(provider, {\n                useExisting: transformedUseExisting,\n                useValue:
transformedUseValue,\n                deps: transformedDeps\n                });\n                });\n                transformedProviderAst =\n                _transformProviderAst(resolvedProvider, { eager: eager, providers:
transformedProviders });\n                this._transformedProviders.set(tokenReference(token),
transformedProviderAst);\n                return transformedProviderAst;\n                });\n                ProviderElementContext.prototype._getLocalDependency = function (requestingProviderType, dep, eager) {\n                if (eager === void 0) { eager = false; }\n                if (dep.isAttribute) {\n                var attrValue =
this._attrs[dep.token.value];\n                return { isValue: true, value: attrValue == null ? null : attrValue };\n                }\n                if (dep.token !== null) {\n                // access builtins\n                if ((requestingProviderType ===
exports.ProviderAstType.Directive ||\n                requestingProviderType ===
exports.ProviderAstType.Component)) {\n                if (tokenReference(dep.token) ===\n                this.viewContext.reflector.resolveExternalReference(Identifiers.Renderer) ||\n                tokenReference(dep.token) ===\n                this.viewContext.reflector.resolveExternalReference(Identifiers.ElementRef) ||\n                tokenReference(dep.token) ===\n                this.viewContext.reflector.resolveExternalReference(Identifiers.ChangeDetectorRef) ||\n                tokenReference(dep.token) ===\n                this.viewContext.reflector.resolveExternalReference(Identifiers.TemplateRef)) {\n                return dep;\n                }\n                if (tokenReference(dep.token) ===\n                this.viewContext.reflector.resolveExternalReference(Identifiers.ViewContainerRef)) {\n                this.transformedHasViewContainer = true;\n                }\n                }\n                // access the injector\n                if (tokenReference(dep.token) ===\n                this.viewContext.reflector.resolveExternalReference(Identifiers.Injector)) {\n                return dep;\n                }\n                // access providers\n                if (this._getOrCreateLocalProvider(requestingProviderType, dep.token,
eager) !== null) {\n                return dep;\n                }\n                }\n                return null;\n                });\n                ProviderElementContext.prototype._getDependency = function (requestingProviderType, dep, eager) {\n                if
(eager === void 0) { eager = false; }\n                var currElement = this;\n                var currEager = eager;\n                var
result = null;\n                if (!dep.isSkipSelf) {\n                result = this._getLocalDependency(requestingProviderType,
dep, eager);\n                }\n                if (dep.isSelf) {\n                if (!result && dep.isOptional) {\n                result = {
isValue: true, value: null };\n                }\n                }\n                else {\n                // check parent elements\n                while (!result && currElement._parent) {\n                var prevElement = currElement;\n                currElement
= currElement._parent;\n                if (prevElement._isViewRoot) {\n                currEager = false;\n                }\n                result = currElement._getLocalDependency(exports.ProviderAstType.PublicService, dep,
currEager);\n                }\n                // check @Host restriction\n                if (!result) {\n                if (!dep.isHost
|| this.viewContext.component.isHost ||\n                this.viewContext.component.type.reference ===
tokenReference(dep.token) ||\n                this.viewContext.viewProviders.get(tokenReference(dep.token)) !==
null) {\n                result = dep;\n                }\n                else {\n                result = dep.isOptional ? {
isValue: true, value: null } : null;\n                }\n                }\n                }\n                if (!result) {\n                this.viewContext.errors.push(new ProviderError(`No provider for ` + tokenName(dep.token),
this._sourceSpan));\n                }\n                return result;\n                });\n                return ProviderElementContext;\n                });\n                var
NgModuleProviderAnalyzer = /** @class */ (function () {\n                function NgModuleProviderAnalyzer(reflector,
ngModule, extraProviders, sourceSpan) {\n                var _this = this;\n                this.reflector = reflector;\n

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this._transformedProviders = new Map();\n      this._seenProviders = new Map();\n      this._errors = [];\n      this._allProviders = new Map();\n      ngModule.transitiveModule.modules.forEach(function (ngModuleType)\n      {\n          var ngModuleProvider = { token: { identifier: ngModuleType }, useClass: ngModuleType };\n          _resolveProviders([ngModuleProvider], exports.ProviderAstType.PublicService, true, sourceSpan, _this._errors,\n          _this._allProviders, /* isModule */ true);\n      });\n      _resolveProviders(ngModule.transitiveModule.providers.map(function (entry) { return entry.provider;\n      })).concat(extraProviders), exports.ProviderAstType.PublicService, false, sourceSpan, this._errors,\n      this._allProviders, \n          /* isModule */ false);\n      }\n      NgModuleProviderAnalyzer.prototype.parse =\n      function () {\n          var _this = this;\n          Array.from(this._allProviders.values()).forEach(function (provider)\n          {\n              _this._getOrCreateLocalProvider(provider.token, provider.eager);\n          });\n          if\n          (this._errors.length > 0) {\n              var errorString = this._errors.join("\\n");\n              throw new Error("Provider\n          parse errors:\\n" + errorString);\n          }\n          // Note: Maps keep their insertion order.\n          var\n          lazyProviders = [];\n          var eagerProviders = [];\n          this._transformedProviders.forEach(function\n          (provider) {\n              if (provider.eager) {\n                  eagerProviders.push(provider);\n              }\n              else {\n                  lazyProviders.push(provider);\n              }\n          });\n          return\n          lazyProviders.concat(eagerProviders);\n      };\n      NgModuleProviderAnalyzer.prototype._getOrCreateLocalProvider = function (token, eager) {\n          var _this =\n          this;\n          var resolvedProvider = this._allProviders.get(tokenReference(token));\n          if (!resolvedProvider)\n          {\n              return null;\n          }\n          var transformedProviderAst =\n          this._transformedProviders.get(tokenReference(token));\n          if (transformedProviderAst) {\n              return\n          transformedProviderAst;\n          }\n          if (this._seenProviders.get(tokenReference(token)) != null) {\n              this._errors.push(new ProviderError("Cannot instantiate cyclic dependency! " + tokenName(token),\n              resolvedProvider.sourceSpan));\n              return null;\n          }\n          this._seenProviders.set(tokenReference(token), true);\n          var transformedProviders =\n          resolvedProvider.providers.map(function (provider) {\n              var transformedUseValue = provider.useValue;\n              var transformedUseExisting = provider.useExisting;\n              var transformedDeps = undefined;\n              if (provider.useExisting != null) {\n                  var existingDiDep = _this._getDependency({ token:\n              provider.useExisting }, eager, resolvedProvider.sourceSpan);\n                  if (existingDiDep.token != null) {\n                      transformedUseExisting = existingDiDep.token;\n                  }\n                  else {\n                      transformedUseExisting = null;\n                      transformedUseValue = existingDiDep.value;\n                  }\n              }\n              else if (provider.useFactory) {\n                  var deps = provider.deps ||\n              provider.useFactory.diDeps;\n                  transformedDeps =\n                  deps.map(function (dep) { return\n              _this._getDependency(dep, eager, resolvedProvider.sourceSpan); });\n              }\n              else if\n              (provider.useClass) {\n                  var deps = provider.deps || provider.useClass.diDeps;\n                  transformedDeps =\n                  deps.map(function (dep) { return _this._getDependency(dep, eager,\n              resolvedProvider.sourceSpan); });\n              }\n              return _transformProvider(provider, {\n              useExisting: transformedUseExisting,\n              useValue: transformedUseValue,\n              deps:\n              transformedDeps\n          });\n          }\n          transformedProviderAst =\n          _transformProviderAst(resolvedProvider, { eager: eager, providers: transformedProviders });\n          this._transformedProviders.set(tokenReference(token), transformedProviderAst);\n          return\n          transformedProviderAst;\n      };\n      NgModuleProviderAnalyzer.prototype._getDependency = function (dep,\n      eager, requestorSourceSpan) {\n          if (eager === void 0) { eager = false; }\n          var foundLocal = false;\n          if (!dep.isSkipSelf && dep.token != null) {\n              // access the injector\n              if\n              (tokenReference(dep.token) ===\n              this.reflector.resolveExternalReference(Identifiers.Injector) ||\n              tokenReference(dep.token) ===\n              this.reflector.resolveExternalReference(Identifiers.ComponentFactoryResolver)) {\n                  foundLocal =\n              true;\n              }\n              // access providers\n              }\n              else if (this._getOrCreateLocalProvider(dep.token,\n              eager) != null) {\n                  foundLocal = true;\n              }\n              }\n              return dep;\n          }\n          return\n      };\n
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NgModuleProviderAnalyzer;\n  }());\n  function _transformProvider(provider, _a) {\n    var useExisting =
_a.useExisting, useValue = _a.useValue, deps = _a.deps;\n    return {\n      token: provider.token,\n      useClass: provider.useClass,\n      useExisting: useExisting,\n      useFactory: provider.useFactory,\n      useValue: useValue,\n      deps: deps,\n      multi: provider.multi\n    };\n  }\n  function
_transformProviderAst(provider, _a) {\n    var eager = _a.eager, providers = _a.providers;\n    return new
ProviderAst(provider.token, provider.multiProvider, provider.eager || eager, providers, provider.providerType,
provider.lifecycleHooks, provider.sourceSpan, provider.isModule);\n  }\n  function
_resolveProvidersFromDirectives(directives, sourceSpan, targetErrors) {\n    var providersByToken = new
Map();\n    directives.forEach(function (directive) {\n      var dirProvider = { token: { identifier: directive.type
}, useClass: directive.type };\n      _resolveProviders([dirProvider], directive.isComponent ?
exports.ProviderAstType.Component : exports.ProviderAstType.Directive, true, sourceSpan, targetErrors,
providersByToken, /* isModule */ false);\n    });\n    // Note: directives need to be able to overwrite providers
of a component!\n    var directivesWithComponentFirst = directives.filter(function (dir) { return dir.isComponent;
}).concat(directives.filter(function (dir) { return !dir.isComponent; }));\n    directivesWithComponentFirst.forEach(function (directive) {\n      _resolveProviders(directive.providers,
exports.ProviderAstType.PublicService, false, sourceSpan, targetErrors, providersByToken, /* isModule */ false);\n      _resolveProviders(directive.viewProviders, exports.ProviderAstType.PrivateService, false, sourceSpan,
targetErrors, providersByToken, /* isModule */ false);\n    });\n    return providersByToken;\n  }\n  function
_resolveProviders(providers, providerType, eager, sourceSpan, targetErrors, targetProvidersByToken, isModule) {\n
    providers.forEach(function (provider) {\n      var resolvedProvider =
targetProvidersByToken.get(tokenReference(provider.token));\n      if (resolvedProvider != null &&
!!resolvedProvider.multiProvider !== !provider.multi) {\n        targetErrors.push(new ProviderError("Mixing
multi and non multi provider is not possible for token \" + tokenName(resolvedProvider.token), sourceSpan));\n      }\n      if (!resolvedProvider) {\n        var lifecycleHooks = provider.token.identifier &&\n
provider.token.identifier.lifecycleHooks ?\n        provider.token.identifier.lifecycleHooks :\n        [];\n        var isUseValue = !(provider.useClass || provider.useExisting || provider.useFactory);\n        resolvedProvider = new ProviderAst(provider.token, !provider.multi, eager || isUseValue, [provider], providerType,
lifecycleHooks, sourceSpan, isModule);\n        targetProvidersByToken.set(tokenReference(provider.token),
resolvedProvider);\n      }\n      else {\n        if (!provider.multi) {\n
resolvedProvider.providers.length = 0;\n        }\n        resolvedProvider.providers.push(provider);\n      }\n    });\n  }\n  function _getViewQueries(component) {\n    // Note: queries start with id 1 so we can use the
number in a Bloom filter!\n    var viewQueryId = 1;\n    var viewQueries = new Map();\n    if
(component.viewQueries) {\n      component.viewQueries.forEach(function (query) { return
_addQueryToTokenMap(viewQueries, { meta: query, queryId: viewQueryId++ }); });\n    }\n    return
viewQueries;\n  }\n  function _getContentQueries(contentQueryStartId, directives) {\n    var contentQueryId =
contentQueryStartId;\n    var contentQueries = new Map();\n    directives.forEach(function (directive,
directiveIndex) {\n      if (directive.queries) {\n        directive.queries.forEach(function (query) { return
_addQueryToTokenMap(contentQueries, { meta: query, queryId: contentQueryId++ }); });\n      }\n    });\n    return contentQueries;\n  }\n  function _addQueryToTokenMap(map, query) {\n
query.meta.selectors.forEach(function (token) {\n      var entry = map.get(tokenReference(token));\n      if
(!entry) {\n        entry = [];\n        map.set(tokenReference(token), entry);\n      }\n      entry.push(query);\n    });\n  }\n  /**\n   * @license\n   * Copyright Google LLC All Rights Reserved.\n
*\n   * Use of this source code is governed by an MIT-style license that can be\n   * found in the LICENSE file at
https://angular.io/license\n   *\n   var StyleWithImports = /** @class */ (function () {\n    function
StyleWithImports(style, styleUrls) {\n      this.style = style;\n      this.styleUrls = styleUrls;\n    }\n    return StyleWithImports;\n  }());\n  function isStyleUrlResolvable(url) {\n    if (url == null || url.length === 0 ||
url[0] == '/')\n      return false;\n    var schemeMatch = url.match(URL_WITH_SCHEMA_REGEXP);\n    return schemeMatch === null || schemeMatch[1] == 'package' || schemeMatch[1] == 'asset';\n  })\n  /**\n   *

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+ \"\\\" (\" + typeof expression + \")\", sourceSpan);
    }
    });
    return
targetEvents_1;
    }
    return null;
    };
    BindingParser.prototype.parseInterpolation =
function (value, sourceSpan) {
    var sourceInfo = sourceSpan.start.toString();
    try {
        var
ast = this._exprParser.parseInterpolation(value, sourceInfo, sourceSpan.start.offset, this._interpolationConfig);
        if (ast)
            this._reportExpressionParserErrors(ast.errors, sourceSpan);
        this._checkPipes(ast, sourceSpan);
        return ast;
    }
    catch (e) {
        this._reportError(\"\" + e, sourceSpan);
        return this._exprParser.wrapLiteralPrimitive('ERROR',
sourceInfo, sourceSpan.start.offset);
    }
};
/**
 * Similar to `parseInterpolation`, but treats
the provided string as a single expression
 * element that would normally appear within the interpolation
prefix and suffix (`{` and `}`).
 * This is used for parsing the switch expression in ICUs.
 */
BindingParser.prototype.parseInterpolationExpression = function (expression, sourceSpan) {
    var sourceInfo
= sourceSpan.start.toString();
    try {
        var ast =
this._exprParser.parseInterpolationExpression(expression, sourceInfo, sourceSpan.start.offset);
        if (ast)
            this._reportExpressionParserErrors(ast.errors, sourceSpan);
        this._checkPipes(ast,
sourceSpan);
        return ast;
    }
    catch (e) {
        this._reportError(\"\" + e,
sourceSpan);
        return this._exprParser.wrapLiteralPrimitive('ERROR', sourceInfo,
sourceSpan.start.offset);
    }
};
/**
 * Parses the bindings in a microsyntax expression, and
converts them to
 * `ParsedProperty` or `ParsedVariable`.
 * @param tplKey template binding
name
 * @param tplValue template binding value
 * @param sourceSpan span of template binding
relative to entire the template
 * @param absoluteValueOffset start of the tplValue relative to the entire
template
 * @param targetMatchableAttrs potential attributes to match in the template
 * @param
targetProps target property bindings in the template
 * @param targetVars target variables in the template
 */
BindingParser.prototype.parseInlineTemplateBinding = function (tplKey, tplValue, sourceSpan,
absoluteValueOffset, targetMatchableAttrs, targetProps, targetVars, isIvyAst) {
    var e_1, _a;
    var
absoluteKeyOffset = sourceSpan.start.offset + TEMPLATE_ATTR_PREFIX.length;
    var bindings =
this._parseTemplateBindings(tplKey, tplValue, sourceSpan, absoluteKeyOffset, absoluteValueOffset);
    try
{
        for (var bindings_1 = __values(bindings), bindings_1_1 = bindings_1.next(); !bindings_1_1.done;
bindings_1_1 = bindings_1.next()) {
            var binding = bindings_1_1.value;
            // sourceSpan is
for the entire HTML attribute. bindingSpan is for a particular
            // binding within the microsyntax
expression so it's more narrow than sourceSpan.
            var bindingSpan =
moveParseSourceSpan(sourceSpan, binding.sourceSpan);
            var key = binding.key.source;
            var keySpan = moveParseSourceSpan(sourceSpan, binding.key.span);
            if (binding instanceof
VariableBinding) {
                var value = binding.value ? binding.value.source : '$implicit';
                var valueSpan = binding.value ? moveParseSourceSpan(sourceSpan, binding.value.span) : undefined;
                targetVars.push(new ParsedVariable(key, value, bindingSpan, keySpan, valueSpan));
            }
            else if (binding.value) {
                var srcSpan = isIvyAst ? bindingSpan : sourceSpan;
                var
valueSpan = moveParseSourceSpan(sourceSpan, binding.value.ast.sourceSpan);
                this._parsePropertyAst(key, binding.value, srcSpan, keySpan, valueSpan, targetMatchableAttrs, targetProps);
            }
            else {
                targetMatchableAttrs.push([key, \"/* value */\"]);
                // Since
this is a literal attribute with no RHS, source span should be
                // just the key span.
                this.parseLiteralAttr(key, null /* value */, keySpan, absoluteValueOffset, undefined /* valueSpan */,
targetMatchableAttrs, targetProps, keySpan);
            }
        }
    }
    catch (e_1_1) {
        e_1 =
{ error: e_1_1 };
    }
    finally {
        try {
            if (bindings_1_1 && !bindings_1_1.done &&
(_a = bindings_1.return)) _a.call(bindings_1);
        }
        finally {
            if (e_1) throw e_1.error;
        }
    }
};
/**
 * Parses the bindings in a microsyntax expression, e.g.
 * ``
 * <tag
*tplKey=\"let value1 = prop; let value2 = localVar\">
 * ``
 * @param tplKey template
binding name
 * @param tplValue template binding value
 * @param sourceSpan span of template
binding relative to entire the template
 * @param absoluteKeyOffset start of the `tplKey`
 * @param

```

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absoluteValueOffset start of the `tplValue`\n      */\n      BindingParser.prototype._parseTemplateBindings =
function (tplKey, tplValue, sourceSpan, absoluteKeyOffset, absoluteValueOffset) {\n      var _this = this;\n      var sourceInfo = sourceSpan.start.toString();\n      try {\n      var bindingsResult =
this._exprParser.parseTemplateBindings(tplKey, tplValue, sourceInfo, absoluteKeyOffset, absoluteValueOffset);\n      this._reportExpressionParserErrors(bindingsResult.errors, sourceSpan);\n      bindingsResult.templateBindings.forEach(function (binding) {\n      if (binding.value instanceof
ASTWithSource) {\n      _this._checkPipes(binding.value, sourceSpan);\n      }\n      });\n      bindingsResult.warnings.forEach(function (warning) {\n      _this._reportError(warning,
sourceSpan, exports.ParseErrorLevel.WARNING);\n      });\n      return
bindingsResult.templateBindings;\n      }\n      catch (e) {\n      this._reportError("\n" + e,
sourceSpan);\n      return [];\n      }\n      };\n      BindingParser.prototype.parseLiteralAttr = function
(name, value, sourceSpan, absoluteOffset, valueSpan, targetMatchableAttrs, \n      // TODO(atscott): keySpan is
only optional here so VE template parser implementation does not\n      // have to change This should be required
when VE is removed.\n      targetProps, keySpan) {\n      if (isAnimationLabel(name)) {\n      name =
name.substring(1);\n      if (value) {\n      this._reportError("Assigning animation triggers via
@property=\\\\"exp\\\\" attributes with an expression is invalid." +\n      "\n" + " Use property bindings (e.g.
[@prop]=\\\\"exp\\\\" or use an attribute without a value (e.g. @prop) instead.", sourceSpan,
exports.ParseErrorLevel.ERROR);\n      }\n      this._parseAnimation(name, value, sourceSpan,
absoluteOffset, keySpan, valueSpan, targetMatchableAttrs, targetProps);\n      }\n      else {\n      targetProps.push(new ParsedProperty(name, this._exprParser.wrapLiteralPrimitive(value, "\n", absoluteOffset),
exports.ParsedPropertyType.LITERAL_ATTR, sourceSpan, keySpan, valueSpan));\n      }\n      };\n      BindingParser.prototype.parsePropertyBinding = function (name, expression, isHost, sourceSpan, absoluteOffset,
valueSpan, \n      // TODO(atscott): keySpan is only optional here so VE template parser implementation does not\n      // have to change This should be required when VE is removed.\n      targetMatchableAttrs, targetProps,
keySpan) {\n      if (name.length === 0) {\n      this._reportError("Property name is missing in binding",
sourceSpan);\n      }\n      var isAnimationProp = false;\n      if
(name.startsWith(ANIMATE_PROP_PREFIX)) {\n      isAnimationProp = true;\n      name =
name.substring(ANIMATE_PROP_PREFIX.length);\n      }\n      else if (isAnimationLabel(name)) {\n      isAnimationProp = true;\n      name = name.substring(1);\n      }\n      if (isAnimationProp) {\n      this._parseAnimation(name, expression, sourceSpan, absoluteOffset, keySpan, valueSpan, targetMatchableAttrs,
targetProps);\n      }\n      else {\n      this._parsePropertyAst(name, this._parseBinding(expression,
isHost, valueSpan || sourceSpan, absoluteOffset), sourceSpan, keySpan, valueSpan, targetMatchableAttrs,
targetProps);\n      }\n      };\n      BindingParser.prototype.parsePropertyInterpolation = function (name, value,
sourceSpan, valueSpan, targetMatchableAttrs, \n      // TODO(atscott): keySpan is only optional here so VE
template parser implementation does not\n      // have to change This should be required when VE is removed.\n      targetProps, keySpan) {\n      var expr = this.parseInterpolation(value, valueSpan || sourceSpan);\n      if
(expr) {\n      this._parsePropertyAst(name, expr, sourceSpan, keySpan, valueSpan, targetMatchableAttrs,
targetProps);\n      return true;\n      }\n      return false;\n      };\n      BindingParser.prototype._parsePropertyAst = function (name, ast, sourceSpan, keySpan, valueSpan,
targetMatchableAttrs, targetProps) {\n      targetMatchableAttrs.push([name, ast.source]);\n      targetProps.push(new ParsedProperty(name, ast, exports.ParsedPropertyType.DEFAULT, sourceSpan, keySpan,
valueSpan));\n      };\n      BindingParser.prototype._parseAnimation = function (name, expression, sourceSpan,
absoluteOffset, keySpan, valueSpan, targetMatchableAttrs, targetProps) {\n      if (name.length === 0) {\n      this._reportError('Animation trigger is missing', sourceSpan);\n      }\n      // This will occur when a
@trigger is not paired with an expression.\n      // For animations it is valid to not have an expression since
*/void\n      // states will be applied by angular when the element is attached/detached\n      var ast =
this._parseBinding(expression || 'undefined', false, valueSpan || sourceSpan, absoluteOffset);\n      targetMatchableAttrs.push([name, ast.source]);\n      targetProps.push(new ParsedProperty(name, ast,

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exports.ParsedPropertyType.ANIMATION, sourceSpan, keySpan, valueSpan));\n    };\n
BindingParser.prototype._parseBinding = function (value, isHostBinding, sourceSpan, absoluteOffset) {\n
var sourceInfo = (sourceSpan && sourceSpan.start || '(unknown)').toString();\n    try {\n        var ast =
isHostBinding ?\n        this._exprParser.parseSimpleBinding(value, sourceInfo, absoluteOffset,
this._interpolationConfig) :\n        this._exprParser.parseBinding(value, sourceInfo, absoluteOffset,
this._interpolationConfig);\n        if (ast)\n            this._reportExpressionParserErrors(ast.errors,
sourceSpan);\n        this._checkPipes(ast, sourceSpan);\n        return ast;\n    } catch (e) {\n
        this._reportError(`" + e, sourceSpan);\n        return this._exprParser.wrapLiteralPrimitive('ERROR',
sourceInfo, absoluteOffset);\n    };\n    BindingParser.prototype.createBoundElementProperty =
function (elementSelector, boundProp, skipValidation, mapPropertyName) {\n        if (skipValidation === void 0)
{ skipValidation = false; }\n        if (mapPropertyName === void 0) { mapPropertyName = true; }\n        if
(boundProp.isAnimation) {\n            return new BoundElementProperty(boundProp.name, 4 /* Animation */,
SecurityContext.NONE, boundProp.expression, null, boundProp.sourceSpan, boundProp.keySpan,
boundProp.valueSpan);\n        }\n        var unit = null;\n        var bindingType = undefined;\n        var
boundPropertyName = null;\n        var parts = boundProp.name.split(PROPERTY_PARTS_SEPARATOR);\n
        var securityContexts = undefined;\n        // Check for special cases (prefix style, attr, class)\n        if
(parts.length > 1) {\n            if (parts[0] === ATTRIBUTE_PREFIX) {\n                boundPropertyName =
parts.slice(1).join(PROPERTY_PARTS_SEPARATOR);\n                if (!skipValidation) {\n
this._validatePropertyOrAttributeName(boundPropertyName, boundProp.sourceSpan, true);\n                }\n
                securityContexts = calcPossibleSecurityContexts(this._schemaRegistry, elementSelector, boundPropertyName,
true);\n                var nsSeparatorIdx = boundPropertyName.indexOf(':');\n                if (nsSeparatorIdx > -1) {\n
                    var ns = boundPropertyName.substring(0, nsSeparatorIdx);\n                    var name =
boundPropertyName.substring(nsSeparatorIdx + 1);\n                    boundPropertyName = mergeNsAndName(ns,
name);\n                }\n                bindingType = 1 /* Attribute */;\n            } else if (parts[0] ===
CLASS_PREFIX) {\n                boundPropertyName = parts[1];\n                bindingType = 2 /* Class */;\n
                securityContexts = [SecurityContext.NONE];\n            } else if (parts[0] === STYLE_PREFIX)
{\n                unit = parts.length > 2 ? parts[2] : null;\n                boundPropertyName = parts[1];\n
                bindingType = 3 /* Style */;\n                securityContexts = [SecurityContext.STYLE];\n            }
            }\n        // If not a special case, use the full property name\n        if (boundPropertyName === null) {\n            var
mappedPropName = this._schemaRegistry.getMappedPropName(boundProp.name);\n            boundPropertyName = mapPropertyName ? mappedPropName : boundProp.name;\n            securityContexts =
calcPossibleSecurityContexts(this._schemaRegistry, elementSelector, mappedPropName, false);\n            bindingType = 0 /* Property */;\n            if (!skipValidation) {\n
this._validatePropertyOrAttributeName(mappedPropName, boundProp.sourceSpan, false);\n            }\n        }\n
        return new BoundElementProperty(boundPropertyName, bindingType, securityContexts[0],
boundProp.expression, unit, boundProp.sourceSpan, boundProp.keySpan, boundProp.valueSpan);\n    };\n
BindingParser.prototype.parseEvent = function (name, expression, sourceSpan, handlerSpan, targetMatchableAttrs,
targetEvents) {\n        if (name.length === 0) {\n            this._reportError(`"Event name is missing in binding"`,
sourceSpan);\n        }\n        if (isAnimationLabel(name)) {\n            name = name.substr(1);\n
this._parseAnimationEvent(name, expression, sourceSpan, handlerSpan, targetEvents);\n        } else {\n
            this._parseRegularEvent(name, expression, sourceSpan, handlerSpan, targetMatchableAttrs, targetEvents);\n
        }\n    };\n    BindingParser.prototype.calcPossibleSecurityContexts = function (selector, propName,
isAttribute) {\n        var prop = this._schemaRegistry.getMappedPropName(propName);\n        return
calcPossibleSecurityContexts(this._schemaRegistry, selector, prop, isAttribute);\n    };\n
BindingParser.prototype._parseAnimationEvent = function (name, expression, sourceSpan, handlerSpan,
targetEvents) {\n        var matches = splitAtPeriod(name, [name, "]);\n        var eventName = matches[0];\n
        var phase = matches[1].toLowerCase();\n        if (phase) {\n            switch (phase) {\n                case
'start':\n                    case 'done':\n                        var ast = this._parseAction(expression, handlerSpan);\n

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targetEvents.push(new ParsedEvent(eventName, phase, 1 /* Animation */, ast, sourceSpan, handlerSpan));\n
    break;\n        default:\n            this._reportError("The provided animation output phase value\n
            ||'" + phase + "' for ||'"@'" + eventName + "' is not supported (use start or done)", sourceSpan);\n
        break;\n        }\n        }\n        else {\n            this._reportError("The animation trigger output event\n
            (@'" + eventName + "' is missing its phase value name (start or done are currently supported)", sourceSpan);\n
        }\n    };\n    BindingParser.prototype._parseRegularEvent = function (name, expression, sourceSpan,\n
    handlerSpan, targetMatchableAttrs, targetEvents) {\n        // long format: 'target: eventName\n        var _a =\n
    __read(splitAtColon(name, [null, name]), 2), target = _a[0], eventName = _a[1];\n        var ast =\n
    this._parseAction(expression, handlerSpan);\n        targetMatchableAttrs.push([name, ast.source]);\n
    targetEvents.push(new ParsedEvent(eventName, target, 0 /* Regular */, ast, sourceSpan, handlerSpan));\n        //\n
    Don't detect directives for event names for now,\n        // so don't add the event name to the matchableAttrs\n
    };\n    BindingParser.prototype._parseAction = function (value, sourceSpan) {\n        var sourceInfo =\n
    (sourceSpan && sourceSpan.start || '(unknown)').toString();\n        var absoluteOffset = (sourceSpan &&\n
    sourceSpan.start) ? sourceSpan.start.offset : 0;\n        try {\n            var ast =\n
    this._exprParser.parseAction(value, sourceInfo, absoluteOffset, this._interpolationConfig);\n            if (ast) {\n
    this._reportExpressionParserErrors(ast.errors, sourceSpan);\n            }\n            if (!ast || ast.ast\n
    instanceof EmptyExpr) {\n                this._reportError("Empty expressions are not allowed", sourceSpan);\n
                return this._exprParser.wrapLiteralPrimitive('ERROR', sourceInfo, absoluteOffset);\n            }\n
    this._checkPipes(ast, sourceSpan);\n            return ast;\n        }\n        catch (e) {\n
    this._reportError("'" + e, sourceSpan);\n            return this._exprParser.wrapLiteralPrimitive('ERROR',\n
    sourceInfo, absoluteOffset);\n        }\n    };\n    BindingParser.prototype._reportError = function (message,\n
    sourceSpan, level) {\n        if (level === void 0) { level = exports.ParseErrorLevel.ERROR; }\n
    this.errors.push(new ParseError(sourceSpan, message, level));\n    };\n\n
    BindingParser.prototype._reportExpressionParserErrors = function (errors, sourceSpan) {\n        var e_2, _a;\n
    try {\n        for (var errors_1 = __values(errors), errors_1_1 = errors_1.next(); !errors_1_1.done; errors_1_1 =\n
    errors_1.next()) {\n            var error = errors_1_1.value;\n            this._reportError(error.message,\n
    sourceSpan);\n        }\n        }\n        catch (e_2_1) { e_2 = { error: e_2_1 }; }\n        finally {\n
    try {\n            if (errors_1_1 && !errors_1_1.done && (_a = errors_1.return)) _a.call(errors_1);\n        }\n
        finally { if (e_2) throw e_2.error; }\n        }\n        };\n        // Make sure all the used pipes are known in\n
    `this.pipesByName`\n    BindingParser.prototype._checkPipes = function (ast, sourceSpan) {\n        var _this =\n
    this;\n        if (ast && this.pipesByName) {\n            var collector = new PipeCollector();\n
    ast.visit(collector);\n            collector.pipes.forEach(function (ast, pipeName) {\n                var pipeMeta =\n
    _this.pipesByName.get(pipeName);\n                if (!pipeMeta) {\n                    _this._reportError("The pipe '"\n
    + pipeName + "' could not be found", new ParseSourceSpan(sourceSpan.start.moveBy(ast.span.start),\n
    sourceSpan.start.moveBy(ast.span.end)));\n                }\n                else {\n
    _this._usedPipes.set(pipeName, pipeMeta);\n                }\n            });\n        }\n        };\n        /**\n
    *\n
    * @param propName the name of the property / attribute\n        * @param sourceSpan\n        * @param isAttr true\n
    when binding to an attribute\n        */\n    BindingParser.prototype._validatePropertyOrAttributeName = function\n
    (propName, sourceSpan, isAttr) {\n        var report = isAttr ? this._schemaRegistry.validateAttribute(propName)\n
    : this._schemaRegistry.validateProperty(propName);\n        if (report.error) {\n
    this._reportError(report.msg, sourceSpan, exports.ParseErrorLevel.ERROR);\n        }\n        }\n        return\n
    BindingParser;\n    }());\n    var PipeCollector = /** @class */ (function (_super) {\n        __extends(PipeCollector,\n
    _super);\n        function PipeCollector() {\n            var _this = _super.apply(this, __spread(arguments)) || this;\n
            _this.pipes = new Map();\n            return _this;\n        }\n        PipeCollector.prototype.visitPipe = function (ast,\n
    context) {\n            this.pipes.set(ast.name, ast);\n            ast.exp.visit(this);\n            this.visitAll(ast.args, context);\n
            return null;\n        };\n        return PipeCollector;\n    })(RecursiveAstVisitor$1));\n    function\n
    isAnimationLabel(name) {\n        return name[0] == '@';\n    }\n    function calcPossibleSecurityContexts(registry,\n
    selector, propName, isAttribute) {\n        var ctxs = [];\n        CssSelector.parse(selector).forEach(function (selector)

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{\n      var elementNames = selector.element ? [selector.element] : registry.allKnownElementNames();\n
var notElementNames = new Set(selector.notSelectors.filter(function (selector) { return
selector.isElementSelector(); }));\n      .map(function (selector) { return selector.element; });\n      var
possibleElementNames = elementNames.filter(function (elementName) { return
!notElementNames.has(elementName); });\n      ctxs.push.apply(ctxs,
__spread(possibleElementNames.map(function (elementName) { return registry.securityContext(elementName,
propName, isAttribute); }));\n      });\n      return ctxs.length === 0 ? [SecurityContext.NONE] : Array.from(new
Set(ctxs)).sort();\n  }\n  /**\n   * Compute a new ParseSourceSpan based off an original `sourceSpan` by using\n
   * absolute offsets from the specified `absoluteSpan`.\n   * @param sourceSpan original source span\n   *
   * @param absoluteSpan absolute source span to move to\n   * ^/\n   function moveParseSourceSpan(sourceSpan,
absoluteSpan) {\n      // The difference of two absolute offsets provide the relative offset\n      var startDiff =
absoluteSpan.start - sourceSpan.start.offset;\n      var endDiff = absoluteSpan.end - sourceSpan.end.offset;\n
return new ParseSourceSpan(sourceSpan.start.moveBy(startDiff), sourceSpan.end.moveBy(endDiff),
sourceSpan.fullStart.moveBy(startDiff), sourceSpan.details);\n  }\n\n  /**\n   * @license\n   * Copyright
Google LLC All Rights Reserved.\n   * Use of this source code is governed by an MIT-style license that can
be\n   * found in the LICENSE file at https://angular.io/license\n   * ^/\n   var NG_CONTENT_SELECT_ATTR =
'select';\n   var LINK_ELEMENT = 'link';\n   var LINK_STYLE_REL_ATTR = 'rel';\n   var
LINK_STYLE_HREF_ATTR = 'href';\n   var LINK_STYLE_REL_VALUE = 'stylesheet';\n   var
STYLE_ELEMENT = 'style';\n   var SCRIPT_ELEMENT = 'script';\n   var NG_NON_BINDABLE_ATTR =
'ngNonBindable';\n   var NG_PROJECT_AS = 'ngProjectAs';\n   function preparseElement(ast) {\n      var
selectAttr = null;\n      var hrefAttr = null;\n      var relAttr = null;\n      var nonBindable = false;\n      var
projectAs = "";\n      ast.attrs.forEach(function (attr) {\n          var lcAttrName = attr.name.toLowerCase();\n
if (lcAttrName == NG_CONTENT_SELECT_ATTR) {\n              selectAttr = attr.value;\n          }\n          else if
(lcAttrName == LINK_STYLE_HREF_ATTR) {\n              hrefAttr = attr.value;\n          }\n          else if
(lcAttrName == LINK_STYLE_REL_ATTR) {\n              relAttr = attr.value;\n          }\n          else if (attr.name
== NG_NON_BINDABLE_ATTR) {\n              nonBindable = true;\n          }\n          else if (attr.name ==
NG_PROJECT_AS) {\n              if (attr.value.length > 0) {\n                  projectAs = attr.value;\n              }\n
          }\n      });\n      selectAttr = normalizeNgContentSelect(selectAttr);\n      var nodeName =
ast.name.toLowerCase();\n      var type = PreparedElementType.OTHER;\n      if (isNgContent(nodeName)) {\n
          type = PreparedElementType.NG_CONTENT;\n      }\n      else if (nodeName == STYLE_ELEMENT) {\n
          type = PreparedElementType.STYLE;\n      }\n      else if (nodeName == SCRIPT_ELEMENT) {\n
          type = PreparedElementType.SCRIPT;\n      }\n      else if (nodeName == LINK_ELEMENT && relAttr ==
LINK_STYLE_REL_VALUE) {\n          type = PreparedElementType.STYLESHEET;\n      }\n      return new
PreparedElement(type, selectAttr, hrefAttr, nonBindable, projectAs);\n  }\n  var PreparedElementType;\n
(function (PreparedElementType) {\n      PreparedElementType[PreparedElementType["NG_CONTENT"] =
0] = "NG_CONTENT";\n      PreparedElementType[PreparedElementType["STYLE"] = 1] = "STYLE";\n
      PreparedElementType[PreparedElementType["STYLESHEET"] = 2] = "STYLESHEET";\n
      PreparedElementType[PreparedElementType["SCRIPT"] = 3] = "SCRIPT";\n
      PreparedElementType[PreparedElementType["OTHER"] = 4] = "OTHER";\n  })(PreparedElementType ||
(PreparedElementType = {}));\n  var PreparedElement = /** @class */ (function () {\n      function
PreparedElement(type, selectAttr, hrefAttr, nonBindable, projectAs) {\n          this.type = type;\n
          this.selectAttr = selectAttr;\n          this.hrefAttr = hrefAttr;\n          this.nonBindable = nonBindable;\n
          this.projectAs = projectAs;\n      }\n      return PreparedElement;\n  }());\n  function
normalizeNgContentSelect(selectAttr) {\n      if (selectAttr === null || selectAttr.length === 0) {\n          return
'';\n      }\n      return selectAttr;\n  }\n\n  var BIND_NAME_REGEXP = /^(?:((?:(bind-)|(let-)|(ref-#)|(on-
)|(bindon-)|(@))(.*))\\[[^\\]]+\\]|\\[[^\\]]+\\]|\\[[^\\]]+\\]\\$)/;\n  // Group 1 = "bind-\n  var
KW_BIND_IDX = 1;\n  // Group 2 = "let-\n  var KW_LET_IDX = 2;\n  // Group 3 = "ref-#\n  var
KW_REF_IDX = 3;\n  // Group 4 = "on-\n  var KW_ON_IDX = 4;\n  // Group 5 = "bindon-\n  var

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KW_BINDON_IDX = 5;\n // Group 6 = \"@\" \n var KW_AT_IDX = 6;\n // Group 7 = the identifier after
\"bind-\", \"let-\", \"ref-/#\", \"on-\", \"bindon-\" or \"@\" \n var IDENT_KW_IDX = 7;\n // Group 8 = identifier
inside [] \n var IDENT_BANANA_BOX_IDX = 8;\n // Group 9 = identifier inside () \n var
IDENT_PROPERTY_IDX = 9;\n // Group 10 = identifier inside () \n var IDENT_EVENT_IDX = 10;\n var
TEMPLATE_ATTR_PREFIX$1 = '*';\n var CLASS_ATTR = 'class';\n var _TEXT_CSS_SELECTOR;\n
function TEXT_CSS_SELECTOR() {\n if (!TEXT_CSS_SELECTOR) {\n _TEXT_CSS_SELECTOR
= CssSelector.parse('*')[0];\n }\n return _TEXT_CSS_SELECTOR;\n }\n var TemplateParseError = /**
@class */ (function (_super) {\n __extends(TemplateParseError, _super);\n function
TemplateParseError(message, span, level) {\n return _super.call(this, span, message, level) || this;\n }\n
return TemplateParseError;\n }(ParseError));\n var TemplateParseResult = /** @class */ (function () {\n
function TemplateParseResult(templateAst, usedPipes, errors) {\n this.templateAst = templateAst;\n
this.usedPipes = usedPipes;\n this.errors = errors;\n }\n return TemplateParseResult;\n }());\n var
TemplateParser = /** @class */ (function () {\n function TemplateParser(_config, _reflector, _exprParser,
_schemaRegistry, _htmlParser, _console, transforms) {\n this._config = _config;\n this._reflector =
_reflector;\n this._exprParser = _exprParser;\n this._schemaRegistry = _schemaRegistry;\n
this._htmlParser = _htmlParser;\n this._console = _console;\n this.transforms = transforms;\n }\n
Object.defineProperty(TemplateParser.prototype, \"expressionParser\", {\n get: function () {\n
return this._exprParser;\n },\n enumerable: false,\n configurable: true\n });\n
TemplateParser.prototype.parse = function (component, template, directives, pipes, schemas, templateUrl,
preserveWhitespaces) {\n var _a;\n var result = this.tryParse(component, template, directives, pipes,
schemas, templateUrl, preserveWhitespaces);\n var warnings = result.errors.filter(function (error) { return
error.level === exports.ParseErrorLevel.WARNING; });\n var errors = result.errors.filter(function (error) {
return error.level === exports.ParseErrorLevel.ERROR; });\n if (warnings.length > 0) {\n (_a =
this._console) === null || _a === void 0 ? void 0 : _a.warn(\"Template parse warnings:\\n\" + warnings.join(\"\\n\"));\n
}\n if (errors.length > 0) {\n var errorString = errors.join(\"\\n\");\n throw
syntaxError(\"Template parse errors:\\n\" + errorString, errors);\n }\n return { template:
result.templateAst, pipes: result.usedPipes };;\n TemplateParser.prototype.tryParse = function
(component, template, directives, pipes, schemas, templateUrl, preserveWhitespaces) {\n var htmlParseResult
= typeof template === 'string' ?\n this._htmlParser.parse(template, templateUrl, {\n
tokenizeExpansionForms: true,\n interpolationConfig: this.getInterpolationConfig(component)\n
}) :;\n template;\n if (!preserveWhitespaces) {\n htmlParseResult =
removeWhitespaces(htmlParseResult);\n }\n return
this.tryParseHtml(this.expandHtml(htmlParseResult), component, directives, pipes, schemas);\n };;\n
TemplateParser.prototype.tryParseHtml = function (htmlAstWithErrors, component, directives, pipes, schemas) {\n
var result;\n var errors = htmlAstWithErrors.errors;\n var usedPipes = [];\n if
(htmlAstWithErrors.rootNodes.length > 0) {\n var uniqDirectives =
removeSummaryDuplicates(directives);\n var uniqPipes = removeSummaryDuplicates(pipes);\n
var providerViewContext = new ProviderViewContext(this._reflector, component);\n var
interpolationConfig = undefined;\n if (component.template && component.template.interpolation) {\n
interpolationConfig = {\n start: component.template.interpolation[0],\n end:
component.template.interpolation[1]\n };;\n var bindingParser = new
BindingParser(this._exprParser, interpolationConfig, this._schemaRegistry, uniqPipes, errors);\n var
parseVisitor = new TemplateParseVisitor(this._reflector, this._config, providerViewContext, uniqDirectives,
bindingParser, this._schemaRegistry, schemas, errors);\n result = visitAll$1(parseVisitor,
htmlAstWithErrors.rootNodes, EMPTY_ELEMENT_CONTEXT);\n errors.push.apply(errors,
__spread(providerViewContext.errors));\n usedPipes.push.apply(usedPipes,
__spread(bindingParser.getUsedPipes()));\n }\n else {\n result = [];\n }\n
this._assertNoReferenceDuplicationOnTemplate(result, errors);\n if (errors.length > 0) {\n return

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new TemplateParseResult(result, usedPipes, errors);\n        }\n        if (this.transforms) {\n
this.transforms.forEach(function (transform) {\n            result = templateVisitAll(transform, result);\n
});\n        }\n        return new TemplateParseResult(result, usedPipes, errors);\n    });\n
TemplateParser.prototype.expandHtml = function (htmlAstWithErrors, forced) {\n        if (forced === void 0) {\n
forced = false; }\n        var errors = htmlAstWithErrors.errors;\n        if (errors.length === 0 || forced) {\n
// Transform ICU messages to angular directives\n            var expandedHtmlAst =\n
expandNodes(htmlAstWithErrors.rootNodes);\n            errors.push.apply(errors,\n
__spread(expandedHtmlAst.errors));\n            htmlAstWithErrors = new\n
ParseTreeResult(expandedHtmlAst.nodes, errors);\n        }\n        return htmlAstWithErrors;\n    };\n
TemplateParser.prototype.getInterpolationConfig = function (component) {\n        if (component.template) {\n
return InterpolationConfig.fromArray(component.template.interpolation);\n        }\n        return\n
undefined;\n    };\n    /** @internal */\n
TemplateParser.prototype._assertNoReferenceDuplicationOnTemplate = function (result, errors) {\n        var\n
existingReferences = [];\n        result.filter(function (element) { return !!element.references; });\n
.forEach(function (element) { return element.references.forEach(function (reference) {\n            var name =\n
reference.name;\n            if (existingReferences.indexOf(name) < 0) {\n
existingReferences.push(name);\n            }\n            else {\n                var error = new\n
TemplateParseError("\\\"Reference '\\\"#\\\" + name + '\\\" is defined several times\\\", reference.sourceSpan,\n
exports.ParseErrorLevel.ERROR);\n                errors.push(error);\n            }\n        });\n    });\n    return TemplateParser;\n});\n
var TemplateParseVisitor = /** @class */ (function () {\n    function\n
TemplateParseVisitor(reflector, config, providerViewContext, directives, _bindingParser, _schemaRegistry,\n
_schemas, _targetErrors) {\n        var _this = this;\n        this.reflector = reflector;\n        this.config =\n
config;\n        this.providerViewContext = providerViewContext;\n        this._bindingParser = _bindingParser;\n
this._schemaRegistry = _schemaRegistry;\n        this._schemas = _schemas;\n        this._targetErrors =\n
_targetErrors;\n        this.selectorMatcher = new SelectorMatcher();\n        this.directivesIndex = new Map();\n
this.ngContentCount = 0;\n        // Note: queries start with id 1 so we can use the number in a Bloom filter!\n
this.contentQueryStartId = providerViewContext.component.viewQueries.length + 1;\n
directives.forEach(function (directive, index) {\n            var selector = CssSelector.parse(directive.selector);\n
_this.selectorMatcher.addSelectable(selector, directive);\n            _this.directivesIndex.set(directive,\n
index);\n        });\n    }\n    TemplateParseVisitor.prototype.visitExpansion = function (expansion, context)\n
{\n        return null;\n    };\n    TemplateParseVisitor.prototype.visitExpansionCase = function\n
(expansionCase, context) {\n        return null;\n    };\n    TemplateParseVisitor.prototype.visitText = function\n
(text, parent) {\n        var ngContentIndex = parent.findNgContentIndex(TEXT_CSS_SELECTOR);\n        var\n
valueNoNgsp = replaceNgsp(text.value);\n        var expr = this._bindingParser.parseInterpolation(valueNoNgsp,\n
text.sourceSpan);\n        return expr ? new BoundTextAst(expr, ngContentIndex, text.sourceSpan) :\n
new TextAst(valueNoNgsp, ngContentIndex, text.sourceSpan);\n    };\n
TemplateParseVisitor.prototype.visitAttribute = function (attribute, context) {\n        return new\n
AttrAst(attribute.name, attribute.value, attribute.sourceSpan);\n    };\n
TemplateParseVisitor.prototype.visitComment = function (comment, context) {\n        return null;\n    };\n
TemplateParseVisitor.prototype.visitElement = function (element, parent) {\n        var _this = this;\n        var\n
queryStartIndex = this.contentQueryStartId;\n        var elName = element.name;\n        var preparedElement =\n
prepareElement(element);\n        if (preparedElement.type === PreparedElementType.SCRIPT ||\n
preparedElement.type === PreparedElementType.STYLE) {\n            // Skipping <script> for security reasons\n
// Skipping <style> as we already processed them\n            // in the StyleCompiler\n            return\n
null;\n        }\n        if (preparedElement.type === PreparedElementType.STYLESHEET &&\n
isStyleUrlResolvable(preparedElement.hrefAttr)) {\n            // Skipping stylesheets with either relative urls or\n
package scheme as we already processed\n            // them in the StyleCompiler\n            return null;\n        }\n        var matchableAttrs = [];\n        var elementOrDirectiveProps = [];\n        var elementOrDirectiveRefs

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= [];\n      var elementVars = [];\n      var events = [];\n      var templateElementOrDirectiveProps = [];\n      var templateMatchableAttrs = [];\n      var templateElementVars = [];\n      var hasInlineTemplates =\nfalse;\n      var attrs = [];\n      var isTemplateElement = isNgTemplate(element.name);\n      element.attrs.forEach(function (attr) {\n      var parsedVariables = [];\n      var hasBinding =\n      _this._parseAttr(isTemplateElement, attr, matchableAttrs, elementOrDirectiveProps, events,\n      elementOrDirectiveRefs, elementVars);\n      elementVars.push.apply(elementVars,\n      __spread(parsedVariables.map(function (v) { return VariableAst.fromParsedVariable(v); }));\n      var\n      templateValue;\n      var templateKey;\n      var normalizedName =\n      _this._normalizeAttributeName(attr.name);\n      if\n      (normalizedName.startsWith(TEMPLATE_ATTR_PREFIX$1)) {\n      templateValue = attr.value;\n      templateKey = normalizedName.substring(TEMPLATE_ATTR_PREFIX$1.length);\n      }\n      var hasTemplateBinding = templateValue != null;\n      if (hasTemplateBinding) {\n      if\n      (hasInlineTemplates) {\n      _this._reportError(`Can't have multiple template bindings on one element.\n      Use only one attribute prefixed with *`, attr.sourceSpan);\n      hasInlineTemplates = true;\n      var parsedVariables_1 = [];\n      var absoluteOffset = (attr.valueSpan ||\n      attr.sourceSpan).start.offset;\n      _this._bindingParser.parseInlineTemplateBinding(templateKey,\n      templateValue, attr.sourceSpan, absoluteOffset, templateMatchableAttrs, templateElementOrDirectiveProps,\n      parsedVariables_1, false /* isIvyAst */);\n      templateElementVars.push.apply(templateElementVars,\n      __spread(parsedVariables_1.map(function (v) { return VariableAst.fromParsedVariable(v); }));\n      }\n      if (!hasBinding && !hasTemplateBinding) {\n      // don't include the bindings as attributes as well in\n      the AST\n      attrs.push(_this.visitAttribute(attr, null));\n      matchableAttrs.push([attr.name,\n      attr.value]);\n      }\n      var elementCssSelector = createElementCssSelector(elName,\n      matchableAttrs);\n      var _b = this._parseDirectives(this.selectorMatcher, elementCssSelector, directiveMetas\n      = _b.directives, matchElement = _b.matchElement);\n      var references = [];\n      var\n      boundDirectivePropNames = new Set();\n      var directiveAsts = this._createDirectiveAsts(isTemplateElement,\n      element.name, directiveMetas, elementOrDirectiveProps, elementOrDirectiveRefs, element.sourceSpan, references,\n      boundDirectivePropNames);\n      var elementProps = this._createElementPropertyAsts(element.name,\n      elementOrDirectiveProps, boundDirectivePropNames);\n      var isViewRoot = parent.isTemplateElement ||\n      hasInlineTemplates;\n      var providerContext = new ProviderElementContext(this.providerViewContext,\n      parent.providerContext, isViewRoot, directiveAsts, attrs, references, isTemplateElement, queryStartIndex,\n      element.sourceSpan);\n      var children = visitAll$(preparsedElement.nonBindable ?\n      NON_BINDABLE_VISITOR : this, element.children, ElementContext.create(isTemplateElement, directiveAsts,\n      isTemplateElement ? parent.providerContext : providerContext));\n      providerContext.afterElement();\n      // Override the actual selector when the `ngProjectAs` attribute is provided\n      var projectionSelector =\n      preparsedElement.projectAs != " ?\n      CssSelector.parse(preparsedElement.projectAs)[0] :\n      elementCssSelector;\n      var ngContentIndex = parent.findNgContentIndex(projectionSelector);\n      var\n      parsedElement;\n      if (preparsedElement.type === PreparsedElementType.NG_CONTENT) {\n      //\n      `` element\n      if (element.children && !element.children.every(_isEmptyTextNode)) {\n      this._reportError(`` element cannot have content.`, element.sourceSpan);\n      }\n      parsedElement = new NgContentAst(this.ngContentCount++, hasInlineTemplates ? null : ngContentIndex,\n      element.sourceSpan);\n      }\n      else if (isTemplateElement) {\n      // `` element\n      this._assertAllEventsPublishedByDirectives(directiveAsts, events);\n      this._assertNoComponentsNorElementBindingsOnTemplate(directiveAsts, elementProps, element.sourceSpan);\n      parsedElement = new EmbeddedTemplateAst(attrs, events, references, elementVars,\n      providerContext.transformedDirectiveAsts, providerContext.transformProviders,\n      providerContext.transformedHasViewContainer, providerContext.queryMatches, children, hasInlineTemplates ?\n      null : ngContentIndex, element.sourceSpan);\n      }\n      else {\n      // element other than `` and ``\n      this._assertElementExists(matchElement, element);\n
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this._assertOnlyOneComponent(directiveAsts, element.sourceSpan);\n        var ngContentIndex_1 =
hasInlineTemplates ? null : parent.findNgContentIndex(projectionSelector);\n        parsedElement = new
ElementAst(eName, attrs, elementProps, events, references, providerContext.transformedDirectiveAsts,
providerContext.transformProviders, providerContext.transformedHasViewContainer,
providerContext.queryMatches, children, hasInlineTemplates ? null : ngContentIndex_1, element.sourceSpan,
element.endSourceSpan || null);\n        }\n        if (hasInlineTemplates) {\n        // The element as a *-
attribute\n        var templateQueryStartIndex = this.contentQueryStartId;\n        var templateSelector =
createElementCssSelector('ng-template', templateMatchableAttrs);\n        var directives =
this._parseDirectives(this.selectorMatcher, templateSelector).directives;\n        var
templateBoundDirectivePropNames = new Set();\n        var templateDirectiveAsts =
this._createDirectiveAsts(true, eName, directives, templateElementOrDirectiveProps, [], element.sourceSpan, [],
templateBoundDirectivePropNames);\n        var templateElementProps =
this._createElementPropertyAsts(eName, templateElementOrDirectiveProps,
templateBoundDirectivePropNames);\n        this._assertNoComponentsNorElementBindingsOnTemplate(templateDirectiveAsts, templateElementProps,
element.sourceSpan);\n        var templateProviderContext = new
ProviderElementContext(this.providerViewContext, parent.providerContext, parent.isTemplateElement,
templateDirectiveAsts, [], [], true, templateQueryStartIndex, element.sourceSpan);\n        templateProviderContext.afterElement();\n        parsedElement = new EmbeddedTemplateAst([], [], [],
templateElementVars, templateProviderContext.transformedDirectiveAsts,
templateProviderContext.transformProviders, templateProviderContext.transformedHasViewContainer,
templateProviderContext.queryMatches, [parsedElement], ngContentIndex, element.sourceSpan);\n        }\n        return parsedElement;\n        };\n        TemplateParseVisitor.prototype._parseAttr = function (isTemplateElement,
attr, targetMatchableAttrs, targetProps, targetEvents, targetRefs, targetVars) {\n        var name =
this._normalizeAttributeName(attr.name);\n        var value = attr.value;\n        var srcSpan = attr.sourceSpan;\n        var absoluteOffset = attr.valueSpan ? attr.valueSpan.start.offset : srcSpan.start.offset;\n        var boundEvents
= [];\n        var bindParts = name.match(BIND_NAME_REGEXP);\n        var hasBinding = false;\n        if
(bindParts !== null) {\n        hasBinding = true;\n        if (bindParts[KW_BIND_IDX] !== null) {\n
this._bindingParser.parsePropertyBinding(bindParts[IDENT_KW_IDX], value, false, srcSpan, absoluteOffset,
attr.valueSpan, targetMatchableAttrs, targetProps);\n        }\n        else if (bindParts[KW_LET_IDX]) {\n
if (isTemplateElement) {\n        var identifier = bindParts[IDENT_KW_IDX];\n
this._parseVariable(identifier, value, srcSpan, targetVars);\n        }\n        else {\n
this._reportError("\"let-\" is only supported on ng-template elements.\", srcSpan);\n        }\n        }\n
        else if (bindParts[KW_REF_IDX]) {\n        var identifier = bindParts[IDENT_KW_IDX];\n
this._parseReference(identifier, value, srcSpan, targetRefs);\n        }\n        else if
(bindParts[KW_ON_IDX]) {\n        this._bindingParser.parseEvent(bindParts[IDENT_KW_IDX], value,
srcSpan, attr.valueSpan || srcSpan, targetMatchableAttrs, boundEvents);\n        }\n        else if
(bindParts[KW_BINDON_IDX]) {\n
this._bindingParser.parsePropertyBinding(bindParts[IDENT_KW_IDX], value, false, srcSpan, absoluteOffset,
attr.valueSpan, targetMatchableAttrs, targetProps);\n
this._parseAssignmentEvent(bindParts[IDENT_KW_IDX], value, srcSpan, attr.valueSpan || srcSpan,
targetMatchableAttrs, boundEvents);\n        }\n        else if (bindParts[KW_AT_IDX]) {\n
this._bindingParser.parseLiteralAttr(name, value, srcSpan, absoluteOffset, attr.valueSpan, targetMatchableAttrs,
targetProps);\n        }\n        else if (bindParts[IDENT_BANANA_BOX_IDX]) {\n
this._bindingParser.parsePropertyBinding(bindParts[IDENT_BANANA_BOX_IDX], value, false, srcSpan,
absoluteOffset, attr.valueSpan, targetMatchableAttrs, targetProps);\n
this._parseAssignmentEvent(bindParts[IDENT_BANANA_BOX_IDX], value, srcSpan, attr.valueSpan || srcSpan,
targetMatchableAttrs, boundEvents);\n        }\n        else if (bindParts[IDENT_PROPERTY_IDX]) {\n

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    this._bindingParser.parsePropertyBinding(bindParts[IDENT_PROPERTY_IDX], value, false, srcSpan,
absoluteOffset, attr.valueSpan, targetMatchableAttrs, targetProps);\n        }\n        else if
(bindParts[IDENT_EVENT_IDX]) {\n
this._bindingParser.parseEvent(bindParts[IDENT_EVENT_IDX], value, srcSpan, attr.valueSpan || srcSpan,
targetMatchableAttrs, boundEvents);\n        }\n        }\n        else {\n        hasBinding =
this._bindingParser.parsePropertyInterpolation(name, value, srcSpan, attr.valueSpan, targetMatchableAttrs,
targetProps);\n        }\n        if (!hasBinding) {\n        this._bindingParser.parseLiteralAttr(name, value,
srcSpan, absoluteOffset, attr.valueSpan, targetMatchableAttrs, targetProps);\n        }\n
targetEvents.push.apply(targetEvents, __spread(boundEvents.map(function (e) { return
BoundEventAst.fromParsedEvent(e); }));\n        return hasBinding;\n        });\n
TemplateParseVisitor.prototype._normalizeAttributeName = function (attrName) {\n        return /^data-
/i.test(attrName) ? attrName.substring(5) : attrName;\n        });\n
TemplateParseVisitor.prototype._parseVariable
= function (identifier, value, sourceSpan, targetVars) {\n        if (identifier.indexOf('-') > -1) {\n
this._reportError("\"\\\"-\\\" is not allowed in variable names\"", sourceSpan);\n        }\n        else if
(identifier.length === 0) {\n        this._reportError("\"Variable does not have a name\"", sourceSpan);\n        }\n
targetVars.push(new VariableAst(identifier, value, sourceSpan));\n        });\n
TemplateParseVisitor.prototype._parseReference = function (identifier, value, sourceSpan, targetRefs) {\n        if
(identifier.indexOf('-') > -1) {\n        this._reportError("\"\\\"-\\\" is not allowed in reference names\"",
sourceSpan);\n        }\n        else if (identifier.length === 0) {\n        this._reportError("\"Reference does not
have a name\"", sourceSpan);\n        }\n        targetRefs.push(new ElementOrDirectiveRef(identifier, value,
sourceSpan));\n        });\n
TemplateParseVisitor.prototype._parseAssignmentEvent = function (name,
expression, sourceSpan, valueSpan, targetMatchableAttrs, targetEvents) {\n
this._bindingParser.parseEvent(name + \"Change\", expression + \"=\"$event\", sourceSpan, valueSpan,
targetMatchableAttrs, targetEvents);\n        });\n
TemplateParseVisitor.prototype._parseDirectives = function
(selectorMatcher, elementCssSelector) {\n        var _this = this;\n        // Need to sort the directives so that we
get consistent results throughout,\n        // as selectorMatcher uses Maps inside.\n        // Also deduplicate
directives as they might match more than one time!\n        var directives = newArray(this.directivesIndex.size);\n
// Whether any directive selector matches on the element name\n        var matchElement = false;\n
selectorMatcher.match(elementCssSelector, function (selector, directive) {\n
directives[_this.directivesIndex.get(directive)] = directive;\n        matchElement = matchElement ||
selector.hasElementSelector();\n        });\n        return {\n        directives: directives.filter(function (dir) {
return !!dir; }),\n        matchElement: matchElement,\n        });\n        });\n
TemplateParseVisitor.prototype._createDirectiveAsts = function (isTemplateElement, elementName, directives,
props, elementOrDirectiveRefs, elementSourceSpan, targetReferences, targetBoundDirectivePropNames) {\n
var _this = this;\n        var matchedReferences = new Set();\n        var component = null;\n        var
directiveAsts = directives.map(function (directive) {\n        var sourceSpan = new
ParseSourceSpan(elementSourceSpan.start, elementSourceSpan.end, elementSourceSpan.fullStart, \"Directive \" +
identifierName(directive.type));\n        if (directive.isComponent) {\n        component = directive;\n
}\n        var directiveProperties = [];\n        var boundProperties =
_this._bindingParser.createDirectiveHostPropertyAsts(directive, elementName, sourceSpan);\n        var
hostProperties = boundProperties.map(function (prop) { return
BoundElementPropertyAst.fromBoundProperty(prop); });\n        // Note: We need to check the host properties
here as well,\n        // as we don't know the element name in the DirectiveWrapperCompiler yet.\n
hostProperties = _this._checkPropertiesInSchema(elementName, hostProperties);\n        var parsedEvents =
_this._bindingParser.createDirectiveHostEventAsts(directive, sourceSpan);\n
_this._createDirectivePropertyAsts(directive.inputs, props, directiveProperties, targetBoundDirectivePropNames);\n
elementOrDirectiveRefs.forEach(function (elOrDirRef) {\n        if ((elOrDirRef.value.length === 0
&& directive.isComponent) ||\n        (elOrDirRef.isReferenceToDirective(directive))) {\n

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targetReferences.push(new ReferenceAst(elOrDirRef.name, createTokenForReference(directive.type.reference),
elOrDirRef.value, elOrDirRef.sourceSpan));\n                matchedReferences.add(elOrDirRef.name);\n            }\n        });\n        var hostEvents = parsedEvents.map(function (e) { return
BoundEventAst.fromParsedEvent(e); });\n        var contentQueryStartId = _this.contentQueryStartId;\n        _this.contentQueryStartId += directive.queries.length;\n        return new DirectiveAst(directive,
directiveProperties, hostProperties, hostEvents, contentQueryStartId, sourceSpan);\n    });\n    elementOrDirectiveRefs.forEach(function (elOrDirRef) {\n        if (elOrDirRef.value.length > 0) {\n            if (!matchedReferences.has(elOrDirRef.name)) {\n                _this._reportError("There is no directive with
\\\\"exportAs\\" set to \\\\" + elOrDirRef.value + \\\\"", elOrDirRef.sourceSpan);\n            }\n        }\n        else if (!component) {\n            var refToken = null;\n            if (isTemplateElement) {\n                refToken = createTokenForExternalReference(_this.reflector, Identifiers.TemplateRef);\n            }\n            targetReferences.push(new ReferenceAst(elOrDirRef.name, refToken, elOrDirRef.value,
elOrDirRef.sourceSpan));\n        }\n    });\n    return directiveAsts;\n};\n\nTemplateParseVisitor.prototype._createDirectivePropertyAsts = function (directiveProperties, boundProps,
targetBoundDirectiveProps, targetBoundDirectivePropNames) {\n    if (directiveProperties) {\n        var
boundPropsByName_1 = new Map();\n        boundProps.forEach(function (boundProp) {\n            var
prevValue = boundPropsByName_1.get(boundProp.name);\n            if (!prevValue || prevValue.isLiteral) {\n                // give [a]=\\"b\\" a higher precedence than a\\"b\\" on the same element\n                boundPropsByName_1.set(boundProp.name, boundProp);\n            }\n        });\n        Object.keys(directiveProperties).forEach(function (dirProp) {\n            var elProp =
directiveProperties[dirProp];\n            var boundProp = boundPropsByName_1.get(elProp);\n            //
Bindings are optional, so this binding only needs to be set up if an expression is given.\n            if (boundProp)
{\n                targetBoundDirectivePropNames.add(boundProp.name);\n                if
(!isEmptyExpression(boundProp.expression)) {\n                    targetBoundDirectiveProps.push(new
BoundDirectivePropertyAst(dirProp, boundProp.name, boundProp.expression, boundProp.sourceSpan));\n                }\n            }\n        });\n    }\n};\n\nTemplateParseVisitor.prototype._createElementPropertyAsts = function (elementName, props,
boundDirectivePropNames) {\n    var _this = this;\n    var boundElementProps = [];\n    props.forEach(function (prop) {\n        if (!prop.isLiteral && !boundDirectivePropNames.has(prop.name)) {\n            var boundProp = _this._bindingParser.createBoundElementProperty(elementName, prop);\n            boundElementProps.push(BoundElementPropertyAst.fromBoundProperty(boundProp));\n        }\n    });\n    return this._checkPropertiesInSchema(elementName, boundElementProps);\n};\n\nTemplateParseVisitor.prototype._findComponentDirectives = function (directives) {\n    return
directives.filter(function (directive) { return directive.directive.isComponent; });\n};\n\nTemplateParseVisitor.prototype._findComponentDirectiveNames = function (directives) {\n    return
this._findComponentDirectives(directives)\n        .map(function (directive) { return
identifierName(directive.directive.type); });\n};\n\nTemplateParseVisitor.prototype._assertOnlyOneComponent = function (directives, sourceSpan) {\n    var
componentTypeNames = this._findComponentDirectiveNames(directives);\n    if
(componentTypeNames.length > 1) {\n        this._reportError("More than one component matched on this
element.\\n\\n" +\n            "\\nMake sure that only one component's selector can match a given element.\\n\\n" +\n            ("Conflicting components: " + componentTypeNames.join(','), sourceSpan);\n    }\n};\n\n/**\n * Make sure that non-angular tags conform to the schemas.\n * Note: An element is
considered an angular tag when at least one directive selector matches the\n * tag name.\n * @param matchElement Whether any directive has matched on the tag name\n * @param element the html
element\n */\n\nTemplateParseVisitor.prototype._assertElementExists = function (matchElement, element)
{\n    var elName = element.name.replace(/^:xhtml:/, "");\n    if (!matchElement &&
!this._schemaRegistry.hasElement(elName, this._schemas)) {\n        var errorMsg = "\\n" + elName + "\\n" is not a

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known element:\n";\n      errorMsg += \"1. If \" + elName + \" is an Angular component, then verify that it is
part of this module.\n\";\n      if (elName.indexOf('-') > -1) {\n          errorMsg += \"2. If \" + elName +
\" is a Web Component then add 'CUSTOM_ELEMENTS_SCHEMA' to the '@NgModule.schemas' of this
component to suppress this message.\n\";\n      }\n      else {\n          errorMsg +=\n\"2. To allow any element add 'NO_ERRORS_SCHEMA' to the '@NgModule.schemas' of this component.\n\";\n      }\n      this._reportError(errorMsg, element.sourceSpan);\n      }\n      });\n
TemplateParseVisitor.prototype._assertNoComponentsNorElementBindingsOnTemplate = function (directives,
elementProps, sourceSpan) {\n      var _this = this;\n      var componentTypeNames =
this._findComponentDirectiveNames(directives);\n      if (componentTypeNames.length > 0) {\n
this._reportError(\"Components on an embedded template: \" + componentTypeNames.join(','), sourceSpan);\n
      }\n      elementProps.forEach(function (prop) {\n          _this._reportError(\"Property binding \" + prop.name
+ \" not used by any directive on an embedded template. Make sure that the property name is spelled correctly and
all directives are listed in the \" + \"@NgModule.declarations\" + \".\", sourceSpan);\n      });\n      });\n
TemplateParseVisitor.prototype._assertAllEventsPublishedByDirectives = function (directives, events) {\n
var _this = this;\n      var allDirectiveEvents = new Set();\n      directives.forEach(function (directive) {\n
      Object.keys(directive.directive.outputs).forEach(function (k) {\n          var eventName =
directive.directive.outputs[k];\n          allDirectiveEvents.add(eventName);\n      });\n      });\n
events.forEach(function (event) {\n      if (event.target !== null || !allDirectiveEvents.has(event.name)) {\n
      _this._reportError(\"Event binding \" + event\n          .fullName + \" not emitted by any directive on an
embedded template. Make sure that the event name is spelled correctly and all directives are listed in the
\" + \"@NgModule.declarations\" + \".\", event.sourceSpan);\n      }\n      });\n      });\n
TemplateParseVisitor.prototype._checkPropertiesInSchema = function (elementName, boundProps) {\n      var
_this = this;\n      // Note: We can't filter out empty expressions before this method,\n      // as we still want to
validate them!\n      return boundProps.filter(function (boundProp) {\n          if (boundProp.type === 0 /*
Property */ &&\n          !_this._schemaRegistry.hasProperty(elementName, boundProp.name,
_this._schemas)) {\n          var errorMsg = \"Can't bind to \" + boundProp.name + \" since it isn't a known
property of \" + elementName + \".\n\";\n          if (elementName.startsWith('ng-')) {\n          errorMsg
+=\n          \"\n1. If \" + boundProp\n          .name + \" is an Angular directive, then add
'CommonModule' to the '@NgModule.imports' of this component.\n\" +\n          \"\n2. To allow any
property add 'NO_ERRORS_SCHEMA' to the '@NgModule.schemas' of this component.\n\";\n          }\n
          else if (elementName.indexOf('-') > -1) {\n          errorMsg +=\n          \"\n1. If \" +
elementName + \" is an Angular component and it has \" + boundProp.name + \" input, then verify that it is part of
this module.\n\" +\n          \"\n2. If \" + elementName + \" is a Web Component then add
'CUSTOM_ELEMENTS_SCHEMA' to the '@NgModule.schemas' of this component to suppress this message.\n\")
+\n          \"\n3. To allow any property add 'NO_ERRORS_SCHEMA' to the '@NgModule.schemas'
of this component.\n\";\n          }\n          _this._reportError(errorMsg, boundProp.sourceSpan);\n
      }\n      return !isEmptyExpression(boundProp.value);\n      });\n      });\n
TemplateParseVisitor.prototype._reportError = function (message, sourceSpan, level) {\n      if (level === void
0) { level = exports.ParseErrorLevel.ERROR; }\n      this._targetErrors.push(new ParseError(sourceSpan,
message, level));\n      });\n      return TemplateParseVisitor;\n      });\n      var NonBindableVisitor = /** @class */
(function () {\n      function NonBindableVisitor() {\n      }\n      NonBindableVisitor.prototype.visitElement =
function (ast, parent) {\n          var preparsedElement = preparseElement(ast);\n          if (preparsedElement.type
=== PreparsedElementType.SCRIPT ||\n          preparsedElement.type === PreparsedElementType.STYLE ||\n
preparsedElement.type === PreparsedElementType.STYLESHEET) {\n          // Skipping <script> for
security reasons\n          // Skipping <style> and stylesheets as we already processed them\n          // in the
StyleCompiler\n          return null;\n          }\n          var attrNameAndValues = ast.attrs.map(function (attr) {\n
return [attr.name, attr.value]; });\n          var selector = createElementCssSelector(ast.name,
attrNameAndValues);\n          var ngContentIndex = parent.findNgContentIndex(selector);\n          var children =

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visitAll$(this, ast.children, EMPTY_ELEMENT_CONTEXT);\n        return new ElementAst(ast.name,
visitAll$(this, ast.attrs, [], [], [], [], false, [], children, ngContentIndex, ast.sourceSpan, ast.endSourceSpan);\n
    };\n    NonBindableVisitor.prototype.visitComment = function (comment, context) {\n        return null;\n    };\n    NonBindableVisitor.prototype.visitAttribute = function (attribute, context) {\n        return new
AttrAst(attribute.name, attribute.value, attribute.sourceSpan);\n    };\n
NonBindableVisitor.prototype.visitText = function (text, parent) {\n        var ngContentIndex =
parent.findNgContentIndex(TEXT_CSS_SELECTOR());\n        return new TextAst(text.value, ngContentIndex,
text.sourceSpan);\n    };\n    NonBindableVisitor.prototype.visitExpansion = function (expansion, context) {\n
        return expansion;\n    };\n    NonBindableVisitor.prototype.visitExpansionCase = function (expansionCase,
context) {\n        return expansionCase;\n    };\n    return NonBindableVisitor;\n }());\n /**\n  * A
reference to an element or directive in a template. E.g., the reference in this template:\n  *<div
#myMenu=\'coolMenu\'>\n  *<div * would be {name: 'myMenu', value: 'coolMenu', sourceSpan: ...}\n  */\n
var ElementOrDirectiveRef = /** @class */ (function () {\n    function ElementOrDirectiveRef(name, value,
sourceSpan) {\n        this.name = name;\n        this.value = value;\n        this.sourceSpan = sourceSpan;\n
    }\n    /** Gets whether this is a reference to the given directive. */\n
ElementOrDirectiveRef.prototype.isReferenceToDirective = function (directive) {\n        return
splitExportAs(directive.exportAs).indexOf(this.value) !== -1;\n    };\n    return ElementOrDirectiveRef;\n
}());\n /** Splits a raw, potentially comma-delimited `exportAs` value into an array of names. */\n
function
splitExportAs(exportAs) {\n    return exportAs ? exportAs.split(',').map(function (e) { return e.trim(); }) : [];\n
}\n
function splitClasses(classAttrValue) {\n    return classAttrValue.trim().split(/\s+/g);\n }\n
var
ElementContext = /** @class */ (function () {\n    function ElementContext(isTemplateElement,
_ngContentIndexMatcher, _wildcardNgContentIndex, providerContext) {\n        this.isTemplateElement =
isTemplateElement;\n        this._ngContentIndexMatcher = _ngContentIndexMatcher;\n
this._wildcardNgContentIndex = _wildcardNgContentIndex;\n        this.providerContext = providerContext;\n
}\n    ElementContext.create = function (isTemplateElement, directives, providerContext) {\n        var matcher
= new SelectorMatcher();\n        var wildcardNgContentIndex = null;\n        var component =
directives.find(function (directive) { return directive.directive.isComponent; });\n        if (component) {\n
var ngContentSelectors = component.directive.template.ngContentSelectors;\n        for (var i = 0; i <
ngContentSelectors.length; i++) {\n            var selector = ngContentSelectors[i];\n            if (selector ===
'*') {\n                wildcardNgContentIndex = i;\n            }\n            else {\n
matcher.addSelectable(CssSelector.parse(ngContentSelectors[i]), i);\n            }\n        }\n        return new ElementContext(isTemplateElement, matcher, wildcardNgContentIndex, providerContext);\n    };\n
ElementContext.prototype.findNgContentIndex = function (selector) {\n        var ngContentIndices = [];\n
this._ngContentIndexMatcher.match(selector, function (selector, ngContentIndex) {\n
ngContentIndices.push(ngContentIndex);\n        });\n        ngContentIndices.sort();\n        if
(this._wildcardNgContentIndex !== null) {\n            ngContentIndices.push(this._wildcardNgContentIndex);\n
}\n        return ngContentIndices.length > 0 ? ngContentIndices[0] : null;\n    };\n    return
ElementContext;\n }());\n
function createElementCssSelector(elementName, attributes) {\n    var cssSelector
= new CssSelector();\n    var elNameNoNs = splitNsName(elementName)[1];\n
cssSelector.setElement(elNameNoNs);\n    for (var i = 0; i < attributes.length; i++) {\n        var attrName =
attributes[i][0];\n        var attrNameNoNs = splitNsName(attrName)[1];\n        var attrValue = attributes[i][1];\n
cssSelector.addAttribute(attrNameNoNs, attrValue);\n        if (attrName.toLowerCase() === CLASS_ATTR)\n        {\n            var classes = splitClasses(attrValue);\n            classes.forEach(function (className) { return
cssSelector.addClassName(className); });\n        }\n        return cssSelector;\n    }\n
var
EMPTY_ELEMENT_CONTEXT = new ElementContext(true, new SelectorMatcher(), null, null);\n
var
NON_BINDABLE_VISITOR = new NonBindableVisitor();\n
function _isEmptyTextNode(node) {\n    return
node instanceof Text$3 && node.value.trim().length === 0;\n }\n
function removeSummaryDuplicates(items) {\n
var map = new Map();\n    items.forEach(function (item) {\n        if (!map.get(item.type.reference)) {\n

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    map.set(item.type.reference, item);\n        }\n    });\n    return Array.from(map.values());\n }\n
function isEmptyExpression(ast) {\n    if (ast instanceof ASTWithSource) {\n        ast = ast.ast;\n    }\n    return ast instanceof EmptyExpr;\n }\n\n /**\n  * @license\n  * Copyright Google LLC All Rights Reserved.\n  * Use of this source code is governed by an MIT-style license that can be\n  * found in the LICENSE file at https://angular.io/license\n  */\n\n /**\n  * Parses string representation of a style and converts it into object literal.\n  * @param value string representation of style as used in the `style` attribute in HTML.\n  * Example: `color: red; height: auto`\n  * @returns An array of style property name and value pairs, e.g. `[ 'color', 'red', 'height', 'auto' ]`\n  */\n function parse(value) {\n    // we use a string array here instead of a string map\n    // because a string-map is not guaranteed to retain the\n    // order of the entries whereas a string array can be\n    // constructed in a [key, value, key, value] format.\n    var styles = [];\n    var i = 0;\n    var parenDepth = 0;\n    var quote = 0 /* QuoteNone */;\n    var valueStart = 0;\n    var propStart = 0;\n    var currentProp = null;\n    var valueHasQuotes = false;\n    while (i < value.length) {\n        var token = value.charCodeAtAt(i++);\n        switch (token) {\n            case 40 /* OpenParen */:\n                parenDepth++;\n                break;\n            case 41 /* CloseParen */:\n                parenDepth--;\n                break;\n            case 39 /* QuoteSingle */:\n                // valueStart needs to be there since prop values don't\n                // have quotes in CSS\n                valueHasQuotes = valueHasQuotes || valueStart > 0;\n                if (quote === 0 /* QuoteNone */) {\n                    quote = 39 /* QuoteSingle */;\n                } else if (quote === 39 /* QuoteSingle */ && value.charCodeAtAt(i - 1) !== 92 /* BackSlash */) {\n                    quote = 0 /* QuoteNone */;\n                } else {\n                    break;\n                }\n            case 34 /* QuoteDouble */:\n                // same logic as above\n                valueHasQuotes = valueHasQuotes || valueStart > 0;\n                if (quote === 0 /* QuoteNone */) {\n                    quote = 34 /* QuoteDouble */;\n                } else if (quote === 34 /* QuoteDouble */ && value.charCodeAtAt(i - 1) !== 92 /* BackSlash */) {\n                    quote = 0 /* QuoteNone */;\n                } else {\n                    break;\n                }\n            case 58 /* Colon */:\n                if (!currentProp && parenDepth === 0 && quote === 0 /* QuoteNone */) {\n                    currentProp = hyphenate(value.substring(propStart, i - 1).trim());\n                    valueStart = i;\n                } else {\n                    break;\n                }\n            case 59 /* Semicolon */:\n                if (currentProp && valueStart > 0 && parenDepth === 0 && quote === 0 /* QuoteNone */) {\n                    var styleVal = value.substring(valueStart, i - 1).trim();\n                    styles.push(currentProp, valueHasQuotes ? stripUnnecessaryQuotes(styleVal) : styleVal);\n                }\n                propStart = i;\n                valueStart = 0;\n                currentProp = null;\n                valueHasQuotes = false;\n            }\n        }\n        break;\n    }\n    if (currentProp && valueStart) {\n        var styleVal = value.substr(valueStart).trim();\n        styles.push(currentProp, valueHasQuotes ? stripUnnecessaryQuotes(styleVal) : styleVal);\n    }\n    return styles;\n }\n\n function stripUnnecessaryQuotes(value) {\n    var qS = value.charCodeAtAt(0);\n    var qE = value.charCodeAtAt(value.length - 1);\n    if (qS === qE && (qS === 39 /* QuoteSingle */ || qS === 34 /* QuoteDouble */)) {\n        var tempValue = value.substring(1, value.length - 1);\n        // special case to avoid using a multi-quoted string that was just chomped\n        // (e.g. `font-family: \"Verdana\", \"sans-serif\"`)\n        if (tempValue.indexOf("\\") === -1 && tempValue.indexOf("\"") === -1) {\n            value = tempValue;\n        }\n    }\n    return value;\n }\n\n function hyphenate(value) {\n    return value\n        .replace(/([a-z][A-Z])/g, function (v) {\n            return v.charAt(0) + '-' + v.charAt(1);\n        })\n        .toLowerCase();\n }\n\n var IMPORTANT_FLAG = '!important';\n /**\n  * Minimum amount of binding slots required in the runtime for style/class bindings.\n  * Styling in Angular uses up two slots in the runtime LView/TData data structures to\n  * record binding data, property information and metadata.\n  * When a binding is registered it will place the following information in the `LView`:\n  * slot 1) binding value\n  * slot 2) cached value (all other values collected before it in string form)\n  * When a binding is registered it will place the following information in the `TData`:\n  * slot 1) prop name\n  * slot 2) binding index that points to the previous style/class binding (and some extra config\n  * values)\n  * Let's imagine we have a binding that looks like so:\n  * ```\n  * <div [style.width]=\"x\" [style.height]=\"y\">\n  * ```\n  * Our `LView` and `TData` data-structures look like so:\n  * ```\n  * typescript\n  * LView = [\n  * // ... \n  * x, // value of x\n
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    * `width: x`,\n    * y, // value of y\n    * `width: x; height: y`,\n    * // ... \n    * ];\n    * TData
= [\n    * // ... \n    * `width`, // binding slot 20\n    * 0,\n    * `height`,\n    * 20,\n    * // ... \n
];\n    * ``\n    * */\n    var MIN_STYLING_BINDING_SLOTS_REQUIRED = 2;\n    /**\n    * Produces
creation/update instructions for all styling bindings (class and style)\n    * It also produces the creation
instruction to register all initial styling values\n    * (which are all the static class=`...` and style=`...` attribute
values that exist\n    * on an element within a template).\n    * The builder class below handles producing
instructions for the following cases:\n    * - Static style/class attributes (style=`...` and class=`...`)\n    * -
Dynamic style/class map bindings ([style]=`map` and [class]=`map|string`)\n    * - Dynamic style/class property
bindings ([style.prop]=`exp` and [class.name]=`exp`)\n    * Due to the complex relationship of all of these
cases, the instructions generated\n    * for these attributes/properties/bindings must be done so in the correct order.
The\n    * order which these must be generated is as follows:\n    * if (createMode) {\n    * styling(...)\n    *
}\n    * if (updateMode) {\n    * styleMap(...)\n    * classMap(...)\n    * styleProp(...)\n    * classProp(...)\n
* }\n    * The creation/update methods within the builder class produce these instructions.\n    */\n    var
StylingBuilder = /** @class */ (function () {\n    function StylingBuilder(_directiveExpr) {\n
this._directiveExpr = _directiveExpr;\n    /** Whether or not there are any static styling values present */\n
this._hasInitialValues = false;\n    /**\n    * Whether or not there are any styling bindings present\n
* (i.e. `[style]`, `[class]`, `[style.prop]` or `[class.name]`)\n    */\n    this.hasBindings = false;\n
this.hasBindingsWithPipes = false;\n    /** the input for [class] (if it exists) */\n    this._classMapInput =
null;\n    /** the input for [style] (if it exists) */\n    this._styleMapInput = null;\n    /** an array of
each [style.prop] input */\n    this._singleStyleInputs = null;\n    /** an array of each [class.name] input
*/\n    this._singleClassInputs = null;\n    this._lastStylingInput = null;\n    this._firstStylingInput =
null;\n    // maps are used instead of hash maps because a Map will\n    // retain the ordering of the keys\n
/**\n    * Represents the location of each style binding in the template\n    * (e.g. `

` implies\n    * that `width=0` and `height=1`)\n    */\n
this._stylesIndex = new Map();\n    /**\n    * Represents the location of each class binding in the
template\n    * (e.g. `

` implies\n    * that `big=0` and
`hidden=1`)\n    */\n    this._classesIndex = new Map();\n    this._initialStyleValues = [];\n
this._initialClassValues = [];\n    }\n    /**\n    * Registers a given input to the styling builder to be later used
when producing AOT code.\n    * The code below will only accept the input if it is somehow tied to
styling (whether it be\n    * style/class bindings or static style/class attributes).\n    */\n
StylingBuilder.prototype.registerBoundInput = function (input) {\n    // [attr.style] or [attr.class] are skipped in
the code below,\n    // they should not be treated as styling-based bindings since\n    // they are intended to
be written directly to the attr and\n    // will therefore skip all style/class resolution that is present\n    //
with style=``, [style]=`` and [style.prop]=``, class=``,\n    // [class.prop]=``, [class]=`` assignments\n
var binding = null;\n    var name = input.name;\n    switch (input.type) {\n    case 0 /* Property
*/:\n    binding = this.registerInputBasedOnName(name, input.value, input.sourceSpan);\n
break;\n    case 3 /* Style */:\n    binding = this.registerStyleInput(name, false, input.value,
input.sourceSpan, input.unit);\n    break;\n    case 2 /* Class */:\n    binding =
this.registerClassInput(name, false, input.value, input.sourceSpan);\n    break;\n    }\n    return
binding ? true : false;\n    }; StylingBuilder.prototype.registerInputBasedOnName = function (name,
expression, sourceSpan) {\n    var binding = null;\n    var prefix = name.substring(0, 6);\n    var
isStyle = name === `style` || prefix === `style.` || prefix === `style!`;\n    var isClass = !isStyle && (name ===
`class` || prefix === `class.` || prefix === `class!`);\n    if (isStyle || isClass) {\n    var isMapBased =
name.charAt(5) !== `.`; // style.prop or class.prop makes this a no\n    var property =
name.substr(isMapBased ? 5 : 6); // the dot explains why there's a +1\n    if (isStyle) {\n    binding
= this.registerStyleInput(property, isMapBased, expression, sourceSpan);\n    } else {\n
binding = this.registerClassInput(property, isMapBased, expression, sourceSpan);\n    }\n    }\n
return binding;\n    }; StylingBuilder.prototype.registerStyleInput = function (name, isMapBased, value,


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sourceSpan, suffix) {\n      if (isEmptyExpression(value)) {\n          return null;\n      }\n      name =
normalizePropName(name);\n      var _a = parseProperty(name), property = _a.property, hasOverrideFlag =
_a.hasOverrideFlag, bindingSuffix = _a.suffix;\n      suffix = typeof suffix === 'string' && suffix.length !== 0 ?
suffix : bindingSuffix;\n      var entry = { name: property, suffix: suffix, value: value, sourceSpan: sourceSpan,
hasOverrideFlag: hasOverrideFlag };\n      if (isMapBased) {\n          this._styleMapInput = entry;\n      }\n      else {\n          (this._singleStyleInputs = this._singleStyleInputs || []).push(entry);\n      }\n      registerIntoMap(this._stylesIndex, property);\n      this._lastStylingInput = entry;\n      this._firstStylingInput = this._firstStylingInput || entry;\n      this._checkForPipes(value);\n      this.hasBindings = true;\n      return entry;\n    };\n    StylingBuilder.prototype.registerClassInput = function
(name, isMapBased, value, sourceSpan) {\n      if (isEmptyExpression(value)) {\n          return null;\n      }\n      var _a = parseProperty(name), property = _a.property, hasOverrideFlag = _a.hasOverrideFlag;\n      var entry = { name: property, value: value, sourceSpan: sourceSpan, hasOverrideFlag: hasOverrideFlag, suffix: null
};\n      if (isMapBased) {\n          if (this._classMapInput) {\n              throw new Error('[class] and
[classname] bindings cannot be used on the same element simultaneously');\n          }\n          this._classMapInput = entry;\n      }\n      else {\n          (this._singleClassInputs = this._singleClassInputs
|| []).push(entry);\n          registerIntoMap(this._classesIndex, property);\n      }\n      this._lastStylingInput
= entry;\n      this._firstStylingInput = this._firstStylingInput || entry;\n      this._checkForPipes(value);\n      this.hasBindings = true;\n      return entry;\n    };\n    StylingBuilder.prototype._checkForPipes = function
(value) {\n      if ((value instanceof ASTWithSource) && (value.ast instanceof BindingPipe)) {\n          this.hasBindingsWithPipes = true;\n      }\n    };\n    /**\n     * Registers the element's static style string
value to the builder.\n     * @param value the style string (e.g. `width:100px; height:200px;`)\n     */\n    StylingBuilder.prototype.registerStyleAttr = function (value) {\n      this._initialStyleValues = parse(value);\n      this._hasInitialValues = true;\n    };\n    /**\n     * Registers the element's static class string value to the
builder.\n     * @param value the className string (e.g. `disabled gold zoom`)\n     */\n    StylingBuilder.prototype.registerClassAttr = function (value) {\n      this._initialClassValues =
value.trim().split(/\\s+/g);\n      this._hasInitialValues = true;\n    };\n    /**\n     * Appends all styling-
related expressions to the provided attrs array.\n     * @param attrs an existing array where each of the
styling expressions\n     * will be inserted into.\n     */\n    StylingBuilder.prototype.populateInitialStylingAttrs = function (attrs) {\n      // [CLASS_MARKER, 'foo', 'bar',
'baz' ...]\n      if (this._initialClassValues.length) {\n          attrs.push(literal(1 /* Classes */));\n          for
(var i = 0; i < this._initialClassValues.length; i++) {\n              attrs.push(literal(this._initialClassValues[i]));\n          }\n          // [STYLE_MARKER, 'width', '200px', 'height', '100px', ...]\n          if
(this._initialStyleValues.length) {\n              attrs.push(literal(2 /* Styles */));\n              for (var i = 0; i <
this._initialStyleValues.length; i += 2) {\n                  attrs.push(literal(this._initialStyleValues[i]),
literal(this._initialStyleValues[i + 1]));\n              }\n          };\n          /**\n           * Builds an instruction with
all the expressions and parameters for `elementHostAttrs`.\n           * The instruction generation code below
is used for producing the AOT statement code which is\n           * responsible for registering initial styles (within a
directive hostBindings' creation block),\n           * as well as any of the provided attribute values, to the directive host
element.\n           */\n          StylingBuilder.prototype.assignHostAttrs = function (attrs, definitionMap) {\n              if
(this._directiveExpr && (attrs.length || this._hasInitialValues)) {\n                  this.populateInitialStylingAttrs(attrs);\n                  definitionMap.set('hostAttrs', literalArr(attrs));\n              }\n          };\n          /**\n           * Builds an instruction
with all the expressions and parameters for `classMap`.\n           * The instruction data will contain all
expressions for `classMap` to function\n           * which includes the `[class]` expression params.\n           */\n          StylingBuilder.prototype.buildClassMapInstruction = function (valueConverter) {\n              if (this._classMapInput)
{\n                  return this._buildMapBasedInstruction(valueConverter, true, this._classMapInput);\n              }\n              return null;\n          };\n          /**\n           * Builds an instruction with all the expressions and parameters for
`styleMap`.\n           * The instruction data will contain all expressions for `styleMap` to function\n           *
which includes the `[style]` expression params.\n           */\n          StylingBuilder.prototype.buildStyleMapInstruction =

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function (valueConverter) {\n      if (this._styleMapInput) {\n          return
this._buildMapBasedInstruction(valueConverter, false, this._styleMapInput);\n      }\n      return null;\n
};\n  StylingBuilder.prototype._buildMapBasedInstruction = function (valueConverter, isClassBased,
stylingInput) {\n      // each styling binding value is stored in the LView\n      // map-based bindings allocate
two slots: one for the\n      // previous binding value and another for the previous\n      // className or style
attribute value.\n      var totalBindingSlotsRequired = MIN_STYLING_BINDING_SLOTS_REQUIRED;\n
// these values must be outside of the update block so that they can\n      // be evaluated (the AST visit call)
during creation time so that any\n      // pipes can be picked up in time before the template is built\n      var
mapValue = stylingInput.value.visit(valueConverter);\n      var reference;\n      if (mapValue instanceof
Interpolation) {\n          totalBindingSlotsRequired += mapValue.expressions.length;\n          reference =
isClassBased ? getClassMapInterpolationExpression(mapValue) :\n
getStyleMapInterpolationExpression(mapValue);\n      }\n      else {\n          reference = isClassBased ?
Identifiers$.classMap : Identifiers$.styleMap;\n      }\n      return {\n          reference: reference,\n
calls: [{\n          supportsInterpolation: true,\n          sourceSpan: stylingInput.sourceSpan,\n
allocateBindingSlots: totalBindingSlotsRequired,\n          params: function (convertFn) {\n
var convertResult = convertFn(mapValue);\n          var params = Array.isArray(convertResult) ?
convertResult : [convertResult];\n          return params;\n          }\n          }]\n      };\n
};\n  StylingBuilder.prototype._buildSingleInputs = function (reference, inputs, valueConverter,
getInterpolationExpressionFn, isClassBased) {\n      var instructions = [];\n      inputs.forEach(function
(input) {\n          var previousInstruction = instructions[instructions.length - 1];\n          var value =
input.value.visit(valueConverter);\n          var referenceForCall = reference;\n          // each styling binding
value is stored in the LView\n          // but there are two values stored for each binding:\n          // 1) the
value itself\n          // 2) an intermediate value (concatenation of style up to this point).\n          // We need
to store the intermediate value so that we don't allocate\n          // the strings on each CD.\n          var
totalBindingSlotsRequired = MIN_STYLING_BINDING_SLOTS_REQUIRED;\n          if (value instanceof
Interpolation) {\n              totalBindingSlotsRequired += value.expressions.length;\n              if
(getInterpolationExpressionFn) {\n                  referenceForCall = getInterpolationExpressionFn(value);\n
              }\n          }\n          var call = {\n              sourceSpan: input.sourceSpan,\n
allocateBindingSlots: totalBindingSlotsRequired,\n              supportsInterpolation:
!!getInterpolationExpressionFn,\n              params: function (convertFn) {\n                  // params =>
stylingProp(propName, value, suffix)\n                  var params = [];\n
params.push(literal(input.name));\n                  var convertResult = convertFn(value);\n                  if
(Array.isArray(convertResult)) {\n                      params.push.apply(params, __spread(convertResult));\n
                  }\n                  else {\n                      params.push(convertResult);\n                  }\n
// [style.prop] bindings may use suffix values (e.g. px, em, etc...), therefore,\n                  // if that is detected then
we need to pass that in as an optional param.\n                  if (!isClassBased && input.suffix !== null) {\n
                      params.push(literal(input.suffix));\n                  }\n                  return params;\n              }\n
          };\n          // If we ended up generating a call to the same instruction as the previous styling property\n
// we can chain the calls together safely to save some bytes, otherwise we have to generate\n          // a separate
instruction call. This is primarily a concern with interpolation instructions\n          // where we may start off with
one `reference`, but end up using another based on the\n          // number of interpolations.\n          if
(previousInstruction && previousInstruction.reference === referenceForCall) {\n              previousInstruction.calls.push(call);\n          }\n          else {\n              instructions.push({ reference:
referenceForCall, calls: [call] });\n          }\n      });\n      return instructions;\n  };\n
StylingBuilder.prototype._buildClassInputs = function (valueConverter) {\n      if (this._singleClassInputs) {\n
return this._buildSingleInputs(Identifiers$.classProp, this._singleClassInputs, valueConverter, null, true);\n
      }\n      return [];\n  };\n  StylingBuilder.prototype._buildStyleInputs = function (valueConverter) {\n
if (this._singleStyleInputs) {\n      return this._buildSingleInputs(Identifiers$.styleProp,

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this._singleStyleInputs, valueConverter, getStylePropInterpolationExpression, false);
    });
    /**
     * Constructs all instructions which contain the expressions that will be placed
     * into the update block of a template function or a directive hostBindings function.
     */
    StylingBuilder.prototype.buildUpdateLevelInstructions = function (valueConverter) {
        var instructions = [];
        if (this.hasBindings) {
            var styleMapInstruction = this.buildStyleMapInstruction(valueConverter);
            if (styleMapInstruction) {
                instructions.push(styleMapInstruction);
            }
            var classMapInstruction = this.buildClassMapInstruction(valueConverter);
            if (classMapInstruction) {
                instructions.push(classMapInstruction);
            }
            instructions.push.apply(instructions, __spread(this._buildStyleInputs(valueConverter)));
            instructions.push.apply(instructions, __spread(this._buildClassInputs(valueConverter)));
        }
        return instructions;
    };
    return StylingBuilder;
})();
function registerIntoMap(map, key) {
    if (!map.has(key)) {
        map.set(key, map.size);
    }
}
function parseProperty(name) {
    var hasOverrideFlag = false;
    var overrideIndex = name.indexOf(IMPORTANT_FLAG);
    if (overrideIndex !== -1) {
        name = overrideIndex > 0 ? name.substring(0, overrideIndex) : '';
        hasOverrideFlag = true;
    }
    var suffix = null;
    var property = name;
    var unitIndex = name.lastIndexOf('.');
    if (unitIndex > 0) {
        suffix = name.substr(unitIndex + 1);
        property = name.substring(0, unitIndex);
    }
    return {
        property: property,
        suffix: suffix,
        hasOverrideFlag: hasOverrideFlag
    };
}
/**
 * Gets the instruction to generate for an interpolated class map.
 * @param interpolation An Interpolation AST
 */
function getClassMapInterpolationExpression(interpolation) {
    switch (getInterpolationArgsLength(interpolation)) {
        case 1:
            return Identifiers$1.classMap;
        case 3:
            return Identifiers$1.classMapInterpolate1;
        case 5:
            return Identifiers$1.classMapInterpolate2;
        case 7:
            return Identifiers$1.classMapInterpolate3;
        case 9:
            return Identifiers$1.classMapInterpolate4;
        case 11:
            return Identifiers$1.classMapInterpolate5;
        case 13:
            return Identifiers$1.classMapInterpolate6;
        case 15:
            return Identifiers$1.classMapInterpolate7;
        case 17:
            return Identifiers$1.classMapInterpolate8;
        default:
            return Identifiers$1.classMapInterpolateV;
    }
}
/**
 * Gets the instruction to generate for an interpolated style map.
 * @param interpolation An Interpolation AST
 */
function getStyleMapInterpolationExpression(interpolation) {
    switch (getInterpolationArgsLength(interpolation)) {
        case 1:
            return Identifiers$1.styleMap;
        case 3:
            return Identifiers$1.styleMapInterpolate1;
        case 5:
            return Identifiers$1.styleMapInterpolate2;
        case 7:
            return Identifiers$1.styleMapInterpolate3;
        case 9:
            return Identifiers$1.styleMapInterpolate4;
        case 11:
            return Identifiers$1.styleMapInterpolate5;
        case 13:
            return Identifiers$1.styleMapInterpolate6;
        case 15:
            return Identifiers$1.styleMapInterpolate7;
        case 17:
            return Identifiers$1.styleMapInterpolate8;
        default:
            return Identifiers$1.styleMapInterpolateV;
    }
}
/**
 * Gets the instruction to generate for an interpolated style prop.
 * @param interpolation An Interpolation AST
 */
function getStylePropInterpolationExpression(interpolation) {
    switch (getInterpolationArgsLength(interpolation)) {
        case 1:
            return Identifiers$1.styleProp;
        case 3:
            return Identifiers$1.stylePropInterpolate1;
        case 5:
            return Identifiers$1.stylePropInterpolate2;
        case 7:
            return Identifiers$1.stylePropInterpolate3;
        case 9:
            return Identifiers$1.stylePropInterpolate4;
        case 11:
            return Identifiers$1.stylePropInterpolate5;
        case 13:
            return Identifiers$1.stylePropInterpolate6;
        case 15:
            return Identifiers$1.stylePropInterpolate7;
        case 17:
            return Identifiers$1.stylePropInterpolate8;
        default:
            return Identifiers$1.stylePropInterpolateV;
    }
}
function normalizePropName(prop) {
    return hyphenate(prop);
}
/**
 * @license
 * Copyright Google LLC All Rights Reserved.
 * Use of this source code is governed by an MIT-style license that can be
 * found in the LICENSE file at https://angular.io/license
 */
(function (TokenType) {

```

```

TokenType[TokenType["Character"] = 0] = "Character";\n    TokenType[TokenType["Identifier"] = 1] =
"Identifier";\n    TokenType[TokenType["Keyword"] = 2] = "Keyword";\n
TokenType[TokenType["String"] = 3] = "String";\n    TokenType[TokenType["Operator"] = 4] =
"Operator";\n    TokenType[TokenType["Number"] = 5] = "Number";\n
TokenType[TokenType["Error"] = 6] = "Error";\n    })(exports.TokenType || (exports.TokenType = {}));\n    var
KEYWORDS = ['var', 'let', 'as', 'null', 'undefined', 'true', 'false', 'if', 'else', 'this'];\n    var Lexer = /** @class */
(function () {\n    function Lexer() {\n    }\n    Lexer.prototype.tokenize = function (text) {\n    var
scanner = new _Scanner(text);\n    var tokens = [];\n    var token = scanner.scanToken();\n    while
(token != null) {\n    tokens.push(token);\n    token = scanner.scanToken();\n    }\n    return
tokens;\n    };\n    return Lexer;\n    }());\n    var Token$1 = /** @class */ (function () {\n    function
Token(index, end, type, numValue, strValue) {\n    this.index = index;\n    this.end = end;\n
this.type = type;\n    this.numValue = numValue;\n    this.strValue = strValue;\n    }\n
Token.prototype.isCharacter = function (code) {\n    return this.type == exports.TokenType.Character &&
this.numValue == code;\n    };\n    Token.prototype.isNumber = function () {\n    return this.type ==
exports.TokenType.Number;\n    };\n    Token.prototype.isString = function () {\n    return this.type ==
exports.TokenType.String;\n    };\n    Token.prototype.isOperator = function (operator) {\n    return
this.type == exports.TokenType.Operator && this.strValue == operator;\n    };\n    Token.prototype.isIdentifier
= function () {\n    return this.type == exports.TokenType.Identifier;\n    };\n
Token.prototype.isKeyword = function () {\n    return this.type == exports.TokenType.Keyword;\n    };\n
Token.prototype.isKeywordLet = function () {\n    return this.type == exports.TokenType.Keyword &&
this.strValue == 'let';\n    };\n    Token.prototype.isKeywordAs = function () {\n    return this.type ==
exports.TokenType.Keyword && this.strValue == 'as';\n    };\n    Token.prototype.isKeywordNull = function ()
{\n    return this.type == exports.TokenType.Keyword && this.strValue == 'null';\n    };\n
Token.prototype.isKeywordUndefined = function () {\n    return this.type == exports.TokenType.Keyword &&
this.strValue == 'undefined';\n    };\n    Token.prototype.isKeywordTrue = function () {\n    return this.type
== exports.TokenType.Keyword && this.strValue == 'true';\n    };\n    Token.prototype.isKeywordFalse =
function () {\n    return this.type == exports.TokenType.Keyword && this.strValue == 'false';\n    };\n
Token.prototype.isKeywordThis = function () {\n    return this.type == exports.TokenType.Keyword &&
this.strValue == 'this';\n    };\n    Token.prototype.isError = function () {\n    return this.type ==
exports.TokenType.Error;\n    };\n    Token.prototype.toNumber = function () {\n    return this.type ==
exports.TokenType.Number ? this.numValue : -1;\n    };\n    Token.prototype.toString = function () {\n
switch (this.type) {\n    case exports.TokenType.Character:\n    case exports.TokenType.Identifier:\n
case exports.TokenType.Keyword:\n    case exports.TokenType.Operator:\n    case
exports.TokenType.String:\n    case exports.TokenType.Error:\n    return this.strValue;\n
case exports.TokenType.Number:\n    return this.numValue.toString();\n    default:\n
return null;\n    }\n    };\n    return Token;\n    }());\n    function newCharacterToken(index, end, code) {\n
return new Token$1(index, end, exports.TokenType.Character, code, String.fromCharCode(code));\n    }\n
function newIdentifierToken(index, end, text) {\n    return new Token$1(index, end,
exports.TokenType.Identifier, 0, text);\n    }\n    function newKeywordToken(index, end, text) {\n    return new
Token$1(index, end, exports.TokenType.Keyword, 0, text);\n    }\n    function newOperatorToken(index, end, text)
{\n    return new Token$1(index, end, exports.TokenType.Operator, 0, text);\n    }\n    function
newStringToken(index, end, text) {\n    return new Token$1(index, end, exports.TokenType.String, 0, text);\n
}\n    function newNumberToken(index, end, n) {\n    return new Token$1(index, end,
exports.TokenType.Number, n, "");\n    }\n    function newErrorToken(index, end, message) {\n    return new
Token$1(index, end, exports.TokenType.Error, 0, message);\n    }\n    var EOF = new Token$1(-1, -1,
exports.TokenType.Character, 0, "");\n    var _Scanner = /** @class */ (function () {\n    function _Scanner(input)
{\n    this.input = input;\n    this.peek = 0;\n    this.index = -1;\n    this.length = input.length;\n
this.advance();\n    }\n    _Scanner.prototype.advance = function () {\n    this.peek = ++this.index >=

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this.length ? $EOF : this.input.charCodeAtAt(this.index);\n    };\n    _Scanner.prototype.scanToken = function ()
{\n    var input = this.input, length = this.length;\n    var peek = this.peek, index = this.index;\n    //
Skip whitespace.\n    while (peek <= $SPACE) {\n        if (++index >= length) {\n            peek =
$EOF;\n            break;\n        }\n        else {\n            peek = input.charCodeAtAt(index);\n
}\n    }\n    this.peek = peek;\n    this.index = index;\n    if (index >= length) {\n        return
null;\n    }\n    // Handle identifiers and numbers.\n    if (isIdentifierStart(peek))\n        return
this.scanIdentifier();\n    if (isDigit(peek))\n        return this.scanNumber(index);\n    var start =
index;\n    switch (peek) {\n        case $PERIOD:\n            this.advance();\n            return
isDigit(this.peek) ? this.scanNumber(start) : \n                newCharacterToken(start, this.index, $PERIOD);\n
        case $LPAREN:\n        case $RPAREN:\n        case $LBRACE:\n        case $RBRACE:\n
        case $LBACKET:\n        case $RBRACKET:\n        case $COMMA:\n        case $COLON:\n
        case $SEMICOLON:\n            return this.scanCharacter(start, peek);\n        case $SQ:\n        case
$DQ:\n            return this.scanString();\n        case $HASH:\n        case $PLUS:\n        case
$MINUS:\n        case $STAR:\n        case $SLASH:\n        case $PERCENT:\n        case
$CARET:\n            return this.scanOperator(start, String.fromCharCode(peek));\n        case
$QUESTION:\n            return this.scanComplexOperator(start, '?', $PERIOD, '.');\n        case $LT:\n
        case $GT:\n            return this.scanComplexOperator(start, String.fromCharCode(peek), $EQ, '=');\n
        case $BANG:\n        case $EQ:\n            return this.scanComplexOperator(start,
String.fromCharCode(peek), $EQ, '=', $EQ, '=');\n        case $AMPERSAND:\n            return
this.scanComplexOperator(start, '&', $AMPERSAND, '&');\n        case $BAR:\n            return
this.scanComplexOperator(start, '|', $BAR, '|');\n        case $NBSP:\n            while
(isWhitespace(this.peek))\n                this.advance();\n            return this.scanToken();\n    }\n
this.advance();\n    return this.error("Unexpected character [" + String.fromCharCode(peek) + "]", 0);\n
};\n    _Scanner.prototype.scanCharacter = function (start, code) {\n        this.advance();\n        return
newCharacterToken(start, this.index, code);\n    };\n    _Scanner.prototype.scanOperator = function (start, str)
{\n        this.advance();\n        return newOperatorToken(start, this.index, str);\n    }; \n    /**\n     *
Tokenize a 2/3 char long operator\n     * @param start start index in the expression\n     * @param one
first symbol (always part of the operator)\n     * @param twoCode code point for the second symbol\n     *
@param two second symbol (part of the operator when the second code point matches)\n     * @param threeCode
code point for the third symbol\n     * @param three third symbol (part of the operator when provided and
matches source expression)\n     */\n    _Scanner.prototype.scanComplexOperator = function (start, one,
twoCode, two, threeCode, three) {\n        this.advance();\n        var str = one;\n        if (this.peek ==
twoCode)\n        {\n            this.advance();\n            str += two;\n        }\n        if (threeCode != null && this.peek ==
threeCode)\n        {\n            this.advance();\n            str += three;\n        }\n        return newOperatorToken(start,
this.index, str);\n    }; \n    _Scanner.prototype.scanIdentifier = function () {\n        var start = this.index;\n
        this.advance();\n        while (isIdentifierPart(this.peek))\n            this.advance();\n        var str =
this.input.substring(start, this.index);\n        return KEYWORDS.indexOf(str) > -1 ? newKeywordToken(start,
this.index, str) : \n            newIdentifierToken(start, this.index, str);\n    }; \n    _Scanner.prototype.scanNumber = function (start) {\n        var simple = (this.index === start);\n
        this.advance(); // Skip initial digit.\n        while (true) {\n            if (isDigit(this.peek)) {\n                // Do
nothing.\n            }\n            else if (this.peek == $PERIOD) {\n                simple = false;\n            }\n
            else if (isExponentStart(this.peek)) {\n                this.advance();\n                if (isExponentSign(this.peek))\n
                    this.advance();\n                if (!isDigit(this.peek))\n                    return this.error('Invalid exponent',
-1);\n                simple = false;\n            }\n            else {\n                break;\n            }\n
        }\n        this.advance();\n        var str = this.input.substring(start, this.index);\n        var value = simple ?
parseFloat(str) : parseIntAutoRadix(str);\n        return newNumberToken(start, this.index, value);\n    }; \n    _Scanner.prototype.scanString = function () {\n        var start = this.index;\n        var quote = this.peek;\n
        this.advance(); // Skip initial quote.\n        var buffer = "";\n        var marker = this.index;\n        var input =

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this.input;\n      while (this.peek != quote) {\n          if (this.peek == $BACKSLASH) {\n              buffer
+= input.substring(marker, this.index);\n              this.advance();\n              var unescapedCode = void 0;\n              // Workaround for TS2.1-introduced type strictness\n              this.peek = this.peek;\n              if
(this.peek == $u) {\n                  // 4 character hex code for unicode character.\n                  var hex =
input.substring(this.index + 1, this.index + 5);\n                  if (/^[0-9a-f]+$/.test(hex)) {\n
unescapedCode = parseInt(hex, 16);\n                  }\n                  else {\n                      return
this.error("Invalid unicode escape [\\u" + hex + "]", 0);\n                  }\n                  for (var i = 0; i < 5;
i++) {\n                      this.advance();\n                  }\n                  }\n                  else {\n
unescapedCode = unescape(this.peek);\n                  this.advance();\n                  }\n                  buffer +=
String.fromCharCode(unescapedCode);\n                  marker = this.index;\n                  }\n                  else if (this.peek
== $EOF) {\n                      return this.error('Unterminated quote', 0);\n                  }\n                  else {\n
this.advance();\n                  }\n                  }\n                  var last = input.substring(marker, this.index);\n
this.advance(); // Skip terminating quote.\n                  return newStringToken(start, this.index, buffer + last);\n                  };\n
_Scanner.prototype.error = function (message, offset) {\n          var position = this.index + offset;\n          return
newErrorToken(position, this.index, "Lexer Error: " + message + " at column " + position + " in expression [" +
this.input + "]\n      });\n      return _Scanner;\n      }());\n      function isIdentifierStart(code) {\n          return ($a <=
code && code <= $z) || ($A <= code && code <= $Z) ||\n              (code == $_) || (code == $S);\n      }\n      function
isIdentifier(input) {\n          if (input.length == 0)\n              return false;\n          var scanner = new _Scanner(input);\n          if (!isIdentifierStart(scanner.peek))\n              return false;\n          scanner.advance();\n          while (scanner.peek !==
$EOF) {\n              if (!isIdentifierPart(scanner.peek))\n                  return false;\n              scanner.advance();\n          }\n          return true;\n      }\n      function isIdentifierPart(code) {\n          return isAsciiLetter(code) || isDigit(code) || (code ==
$_) ||\n              (code == $S);\n      }\n      function isExponentStart(code) {\n          return code == $e || code == $E;\n      }\n      function
isExponentSign(code) {\n          return code == $MINUS || code == $PLUS;\n      }\n      function
isQuote(code) {\n          return code === $SQ || code === $DQ || code === $BT;\n      }\n      function unescape(code)
{\n          switch (code) {\n              case $n:\n                  return $LF;\n              case $f:\n                  return $FF;\n              case $r:\n                  return $CR;\n              case $t:\n                  return $TAB;\n              case $v:\n                  return
$VTAB;\n              default:\n                  return code;\n          }\n      }\n      function parseIntAutoRadix(text) {\n          var
result = parseInt(text);\n          if (isNaN(result)) {\n              throw new Error('Invalid integer literal when parsing ' +
text);\n          }\n          return result;\n      }\n      var SplitInterpolation = /** @class */ (function () {\n          function
SplitInterpolation(strings, stringSpans, expressions, expressionsSpans, offsets) {\n              this.strings = strings;\n              this.stringSpans = stringSpans;\n              this.expressions = expressions;\n              this.expressionsSpans =
expressionsSpans;\n              this.offsets = offsets;\n          }\n          return SplitInterpolation;\n      }());\n      var
TemplateBindingParseResult = /** @class */ (function () {\n          function
TemplateBindingParseResult(templateBindings, warnings, errors) {\n              this.templateBindings =
templateBindings;\n              this.warnings = warnings;\n              this.errors = errors;\n          }\n          return
TemplateBindingParseResult;\n      }());\n      var defaultInterpolateRegExp =
_createInterpolateRegExp(DEFAULT_INTERPOLATION_CONFIG);\n      function _getInterpolateRegExp(config) {\n          if (config ===
DEFAULT_INTERPOLATION_CONFIG) {\n              return defaultInterpolateRegExp;\n          }\n          else {\n              return
_createInterpolateRegExp(config);\n          }\n      }\n      function
_createInterpolateRegExp(config) {\n          var pattern = escapeRegExp(config.start) + '([\\s\\S]*)' +
escapeRegExp(config.end);\n          return new RegExp(pattern, 'g');\n      }\n      var Parser$1 = /** @class */ (function
() {\n          function Parser(_lexer) {\n              this._lexer = _lexer;\n              this.errors = [];\n          }\n          this.simpleExpressionChecker = SimpleExpressionChecker;\n          Parser.prototype.parseAction = function
(input, location, absoluteOffset, interpolationConfig) {\n              if (interpolationConfig === void 0) {\n
interpolationConfig = DEFAULT_INTERPOLATION_CONFIG;\n              }\n              this._checkNoInterpolation(input,
location, interpolationConfig);\n              var sourceToLex = this._stripComments(input);\n              var tokens =
this._lexer.tokenize(this._stripComments(input));\n              var ast = new _ParseAST(input, location, absoluteOffset,
tokens, sourceToLex.length, true, this.errors, input.length - sourceToLex.length)\n                  .parseChain();\n          }

```

```

return new ASTWithSource(ast, input, location, absoluteOffset, this.errors);\n    };\n
Parser.prototype.parseBinding = function (input, location, absoluteOffset, interpolationConfig) {\n    if
(interpolationConfig === void 0) { interpolationConfig = DEFAULT_INTERPOLATION_CONFIG; }\n    var
ast = this._parseBindingAst(input, location, absoluteOffset, interpolationConfig);\n    return new
ASTWithSource(ast, input, location, absoluteOffset, this.errors);\n    };\n
Parser.prototype.checkSimpleExpression = function (ast) {\n    var checker = new
this.simpleExpressionChecker();\n    ast.visit(checker);\n    return checker.errors;\n    };\n
Parser.prototype.parseSimpleBinding = function (input, location, absoluteOffset, interpolationConfig) {\n    if
(interpolationConfig === void 0) { interpolationConfig = DEFAULT_INTERPOLATION_CONFIG; }\n    var
ast = this._parseBindingAst(input, location, absoluteOffset, interpolationConfig);\n    var errors =
this.checkSimpleExpression(ast);\n    if (errors.length > 0) {\n        this._reportError("Host binding
expression cannot contain \" + errors.join(' '), input, location);\n    }\n    return new ASTWithSource(ast,
input, location, absoluteOffset, this.errors);\n    };\n    Parser.prototype._reportError = function (message, input,
errLocation, ctxLocation) {\n        this.errors.push(new ParserError(message, input, errLocation, ctxLocation));\n
    };\n    Parser.prototype._parseBindingAst = function (input, location, absoluteOffset, interpolationConfig) {\n
        // Quotes expressions use 3rd-party expression language. We don't want to use\n        // our lexer or parser for
that, so we check for that ahead of time.\n        var quote = this._parseQuote(input, location, absoluteOffset);\n
        if (quote != null) {\n            return quote;\n        }\n        this._checkNoInterpolation(input, location,
interpolationConfig);\n        var sourceToLex = this._stripComments(input);\n        var tokens =
this._lexer.tokenize(sourceToLex);\n        return new _ParseAST(input, location, absoluteOffset, tokens,
sourceToLex.length, false, this.errors, input.length - sourceToLex.length)\n            .parseChain();\n    };\n
Parser.prototype._parseQuote = function (input, location, absoluteOffset) {\n    if (input == null)\nreturn null;\n    var prefixSeparatorIndex = input.indexOf(':');\n    if (prefixSeparatorIndex == -1)\nreturn null;\n    var prefix = input.substring(0, prefixSeparatorIndex).trim();\n    if (!isIdentifier(prefix))\nreturn null;\n    var uninterpretedExpression = input.substring(prefixSeparatorIndex + 1);\n    var
span = new ParseSpan(0, input.length);\n    return new Quote(span, span.toAbsolute(absoluteOffset), prefix,
uninterpretedExpression, location);\n    };\n    /**\n     * Parse microsyntax template expression and return a
list of bindings or\n     * parsing errors in case the given expression is invalid.\n     *\n     * For example,\n     * ``\n     * <div *ngFor="let item of items">\n     *     ^ ^ absoluteValueOffset for `templateValue`\n     *     absoluteKeyOffset for `templateKey`\n     * ``\n     * contains three bindings:\n     * 1. ngFor ->
null\n     * 2. item -> NgForOfContext.$simplicit\n     * 3. ngForOf -> items\n     *\n     * This is apparent
from the de-sugared template:\n     * ``\n     * <ng-template ngFor let-item [ngForOf]="items">\n     *
``\n     *\n     * @param templateKey name of directive, without the * prefix. For example: ngIf, ngFor\n
     * @param templateValue RHS of the microsyntax attribute\n     * @param templateUrl template filename if it's
external, component filename if it's inline\n     * @param absoluteKeyOffset start of the `templateKey`\n     *
     * @param absoluteValueOffset start of the `templateValue`\n     */\n    Parser.prototype.parseTemplateBindings
= function (templateKey, templateValue, templateUrl, absoluteKeyOffset, absoluteValueOffset) {\n    var
tokens = this._lexer.tokenize(templateValue);\n    var parser = new _ParseAST(templateValue, templateUrl,
absoluteValueOffset, tokens, templateValue.length, false /* parseAction */, this.errors, 0 /* relative offset */);\n
    return parser.parseTemplateBindings({\n        source: templateKey,\n        span: new
AbsoluteSourceSpan(absoluteKeyOffset, absoluteKeyOffset + templateKey.length),\n    });\n    };\n
Parser.prototype.parseInterpolation = function (input, location, absoluteOffset, interpolationConfig) {\n    if
(interpolationConfig === void 0) { interpolationConfig = DEFAULT_INTERPOLATION_CONFIG; }\n    var
split = this.splitInterpolation(input, location, interpolationConfig);\n    if (split == null)\nreturn null;\n
    var expressions = [];\n    for (var i = 0; i < split.expressions.length; ++i) {\n        var expressionText
= split.expressions[i];\n        var sourceToLex = this._stripComments(expressionText);\n        var tokens =
this._lexer.tokenize(sourceToLex);\n        var ast = new _ParseAST(input, location, absoluteOffset, tokens,
sourceToLex.length, false, this.errors, split.offsets[i] + (expressionText.length - sourceToLex.length))\n

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.parseChain();\n        expressions.push(ast);\n        }\n        return this.createInterpolationAst(split.strings,\nexpressions, input, location, absoluteOffset);\n    };\n    /**\n     * Similar to `parseInterpolation`, but treats\nthe provided string as a single expression\n     * element that would normally appear within the interpolation\nprefix and suffix (`{` and `}`).\n     * This is used for parsing the switch expression in ICUs.\n     */\nParser.prototype.parseInterpolationExpression = function (expression, location, absoluteOffset) {\n    var\nsourceToLex = this._stripComments(expression);\n    var tokens = this._lexer.tokenize(sourceToLex);\n    var ast = new _ParseAST(expression, location, absoluteOffset, tokens, sourceToLex.length, \n        /* parseAction\n*/ false, this.errors, 0)\n        .parseChain();\n    var strings = ["", "]; // The prefix and suffix strings are both\nempty\n    return this.createInterpolationAst(strings, [ast], expression, location, absoluteOffset);\n};\nParser.prototype.createInterpolationAst = function (strings, expressions, input, location, absoluteOffset) {\n    var span = new ParseSpan(0, input.length);\n    var interpolation = new Interpolation(span,\nspan.toAbsolute(absoluteOffset), strings, expressions);\n    return new ASTWithSource(interpolation, input,\nlocation, absoluteOffset, this.errors);\n};\n/**\n * Splits a string of text into "raw" text segments and\nexpressions present in interpolations in\n * the string.\n * Returns `null` if there are no interpolations,\notherwise a\n * `SplitInterpolation` with splits that look like\n * <raw text> <expression> <raw text> ...  
<raw text> <expression> <raw text>\n */\nParser.prototype.splitInterpolation = function (input, location,\ninterpolationConfig) {\n    if (interpolationConfig === void 0) { interpolationConfig =\nDEFAULT_INTERPOLATION_CONFIG; }\n    var strings = [];\n    var expressions = [];\n    var\noffsets = [];\n    var stringSpans = [];\n    var expressionSpans = [];\n    var i = 0;\n    var\natInterpolation = false;\n    var extendLastString = false;\n    var interpStart = interpolationConfig.start,\ninterpEnd = interpolationConfig.end;\n    while (i < input.length) {\n        if (!atInterpolation) {\n            // parse until starting {\n            var start = i;\n            i = input.indexOf(interpStart, i);\n            if (i\n=== -1) {\n                i = input.length;\n            }\n            var part = input.substring(start, i);\n            strings.push(part);\n            stringSpans.push({ start: start, end: i });\n            atInterpolation = true;\n        }\n        else {\n            // parse from starting {{ to ending }}\n            var fullStart = i;\n            var exprStart = fullStart + interpStart.length;\n            var exprEnd = input.indexOf(interpEnd, exprStart);\n            if (exprEnd === -1) {\n                // Could not find the end of the interpolation; do not parse an\nexpression.\n                // Instead we should extend the content on the last raw string.\n                atInterpolation = false;\n                extendLastString = true;\n                break;\n            }\n            var fullEnd = exprEnd + interpEnd.length;\n            var part = input.substring(exprStart, exprEnd);\n            if (part.trim().length > 0) {\n                expressions.push(part);\n            }\n            else {\n                this._reportError('Blank expressions are not allowed in interpolated strings', input, `at column ` + i + ` in`,\nlocation);\n                expressions.push('$simplikit');\n            }\n            offsets.push(exprStart);\n            expressionSpans.push({ start: fullStart, end: fullEnd });\n            i = fullEnd;\n            atInterpolation\n= false;\n        }\n        }\n        if (!atInterpolation) {\n            // If we are now at a text section, add the\nremaining content as a raw string.\n            if (extendLastString) {\n                strings[strings.length - 1] +=\ninput.substring(i);\n                stringSpans[stringSpans.length - 1].end = input.length;\n            }\n            else\n{\n                strings.push(input.substring(i));\n                stringSpans.push({ start: i, end: input.length });\n            }\n        }\n        }\n        return expressions.length === 0 ?\n        null :\n        new\nSplitInterpolation(strings, stringSpans, expressions, expressionSpans, offsets);\n};\nParser.prototype.wrapLiteralPrimitive = function (input, location, absoluteOffset) {\n    var span = new\nParseSpan(0, input == null ? 0 : input.length);\n    return new ASTWithSource(new LiteralPrimitive(span,\nspan.toAbsolute(absoluteOffset), input), input, location, absoluteOffset, this.errors);\n};\nParser.prototype._stripComments = function (input) {\n    var i = this._commentStart(input);\n    return i\n!= null ? input.substring(0, i).trim() : input;\n};\nParser.prototype._commentStart = function (input) {\n    var outerQuote = null;\n    for (var i = 0; i < input.length - 1; i++) {\n        var char =\ninput.charCodeAtAt(i);\n        var nextChar = input.charCodeAtAt(i + 1);\n        if (char === $SLASH &&\nnextChar == $SLASH && outerQuote == null)\n            return i;\n        if (outerQuote === char) {\n

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    outerQuote = null;\n        }\n        else if (outerQuote == null && isQuote(char)) {\n
outerQuote = char;\n        }\n        }\n        return null;\n    };\n
Parser.prototype._checkNoInterpolation = function (input, location, interpolationConfig) {\n    var regexp =
_getInterpolateRegExp(interpolationConfig);\n    var parts = input.split(regexp);\n    if (parts.length > 1)
{\n    this._reportError("\nGot interpolation (\n + interpolationConfig.start + interpolationConfig.end + \n")
where expression was expected", input, \n"at column \n" + this._findInterpolationErrorColumn(parts, 1,
interpolationConfig) + \n" in", location);\n    }\n    };\n    Parser.prototype._findInterpolationErrorColumn
= function (parts, partInErrIdx, interpolationConfig) {\n    var errLocation = "\n";\n    for (var j = 0; j <
partInErrIdx; j++) {\n    errLocation += j % 2 === 0 ?\n    parts[j] :\n    "\n" +
interpolationConfig.start + parts[j] + interpolationConfig.end;\n    }\n    return errLocation.length;\n
};\n    return Parser;\n    }());\n    var IvyParser = /** @class */ (function (_super) {\n    __extends(IvyParser,
_super);\n    function IvyParser() {\n    var _this = _super.apply(this, __spread(arguments)) || this;\n    _this.simpleExpressionChecker = IvySimpleExpressionChecker; /\n    return _this;\n    }\n    return
IvyParser;\n    }(Parser$1));\n    /** Describes a stateful context an expression parser is in. */\n    var
ParseContextFlags;\n    (function (ParseContextFlags) {\n    ParseContextFlags[ParseContextFlags["None"] = 0]
= "None";\n    /**\n    * A Writable context is one in which a value may be written to an lvalue.\n    * For
example, after we see a property access, we may expect a write to the\n    * property via the "=" operator.\n
* prop\n    * ^ possible "=" after\n    */\n    ParseContextFlags[ParseContextFlags["Writable"] = 1]
= "Writable";\n    })(ParseContextFlags || (ParseContextFlags = {}));\n    var _ParseAST = /** @class */ (function
() {\n    function _ParseAST(input, location, absoluteOffset, tokens, inputLength, parseAction, errors, offset) {\n
    this.input = input;\n    this.location = location;\n    this.absoluteOffset = absoluteOffset;\n
this.tokens = tokens;\n    this.inputLength = inputLength;\n    this.parseAction = parseAction;\n
this.errors = errors;\n    this.offset = offset;\n    this.rparensExpected = 0;\n    this.rbracketsExpected =
0;\n    this.rbracesExpected = 0;\n    this.context = ParseContextFlags.None;\n    // Cache of
expression start and input indices to the absolute source span they map to, used to\n    // prevent creating
superfluous source spans in `sourceSpan`.\n    // A serial of the expression start and input index is used for
mapping because both are stateful\n    // and may change for subsequent expressions visited by the parser.\n
    this.sourceSpanCache = new Map();\n    this.index = 0;\n    }\n    _ParseAST.prototype.peek = function
(offset) {\n    var i = this.index + offset;\n    return i < this.tokens.length ? this.tokens[i] : EOF;\n    };\n
    Object.defineProperty(_ParseAST.prototype, "next", {\n    get: function () {\n    return
this.peek(0);\n    },\n    enumerable: false,\n    configurable: true\n    });\n    Object.defineProperty(_ParseAST.prototype, "atEOF", {\n    /** Whether all the parser input has been
processed. */\n    get: function () {\n    return this.index >= this.tokens.length;\n    },\n    enumerable: false,\n    configurable: true\n    });\n    Object.defineProperty(_ParseAST.prototype,
"inputIndex", {\n    /**\n    * Index of the next token to be processed, or the end of the last token if all
have been\n    * processed.\n    */\n    get: function () {\n    return this.atEOF ?
this.currentEndIndex : this.next.index + this.offset;\n    },\n    enumerable: false,\n    configurable:
true\n    });\n    Object.defineProperty(_ParseAST.prototype, "currentEndIndex", {\n    /**\n    * End index of the last processed token, or the start of the first token if none have been\n    * processed.\n
*/\n    get: function () {\n    if (this.index > 0) {\n    var curToken = this.peek(-1);\n
return curToken.end + this.offset;\n    }\n    // No tokens have been processed yet; return the next
token's start or the length of the input\n    // if there is no token.\n    if (this.tokens.length === 0) {\n
return this.inputLength + this.offset;\n    }\n    return this.next.index + this.offset;\n    },\n    enumerable: false,\n    configurable: true\n    });\n    Object.defineProperty(_ParseAST.prototype, "currentAbsoluteOffset", {\n    /**\n    * Returns the
absolute offset of the start of the current token.\n    */\n    get: function () {\n    return
this.absoluteOffset + this.inputIndex;\n    },\n    enumerable: false,\n    configurable: true\n    });\n
_ParseAST.prototype.span = function (start) {\n    return new ParseSpan(start, this.currentEndIndex);\n
}

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};\n    _ParseAST.prototype.sourceSpan = function (start) {\n        var serial = start + "@" + this.inputIndex;\n        if (!this.sourceSpanCache.has(serial)) {\n            this.sourceSpanCache.set(serial,\n            this.span(start).toAbsolute(this.absoluteOffset));\n        }\n        return this.sourceSpanCache.get(serial);\n    };\n    _ParseAST.prototype.advance = function () {\n        this.index++;\n    }; \n    /**\n     * Executes a\n     * callback in the provided context.\n     */\n    _ParseAST.prototype.withContext = function (context, cb) {\n        this.context |= context;\n        var ret = cb();\n        this.context ^= context;\n        return ret;\n    };\n    _ParseAST.prototype.consumeOptionalCharacter = function (code) {\n        if (this.next.isCharacter(code)) {\n            this.advance();\n            return true;\n        }\n        else {\n            return false;\n        }\n    };\n    _ParseAST.prototype.peekKeywordLet = function () {\n        return this.next.isKeywordLet();\n    };\n    _ParseAST.prototype.peekKeywordAs = function () {\n        return this.next.isKeywordAs();\n    }; \n    /**\n     * Consumes an expected character, otherwise emits an error about the missing expected character\n     * and\n     * skips over the token stream until reaching a recoverable point.\n     * \n     * See `this.error` and `this.skip` for\n     * more details.\n     */\n    _ParseAST.prototype.expectCharacter = function (code) {\n        if\n        (this.consumeOptionalCharacter(code))\n            return;\n        this.error("Missing expected \"" +\n        String.fromCharCode(code));\n    };\n    _ParseAST.prototype.consumeOptionalOperator = function (op) {\n        if (this.next.isOperator(op)) {\n            this.advance();\n            return true;\n        }\n        else {\n            return false;\n        }\n    };\n    _ParseAST.prototype.expectOperator = function (operator) {\n        if\n        (this.consumeOptionalOperator(operator))\n            return;\n        this.error("Missing expected operator \"" +\n        operator);\n    };\n    _ParseAST.prototype.prettyPrintToken = function (tok) {\n        return tok === EOF ?\n        'end of input' : "token " + tok;\n    };\n    _ParseAST.prototype.expectIdentifierOrKeyword = function () {\n        var n = this.next;\n        if (!n.isIdentifier() && !n.isKeyword()) {\n            this.error("Unexpected \"" +\n            this.prettyPrintToken(n) + "\", expected identifier or keyword");\n            return ";\n        }\n        this.advance();\n        return n.toString();\n    };\n    _ParseAST.prototype.expectIdentifierOrKeywordOrString = function () {\n        var n = this.next;\n        if\n        (!n.isIdentifier() && !n.isKeyword() && !n.isString())\n            this.error("Unexpected \"" +\n            this.prettyPrintToken(n) + "\", expected identifier, keyword, or string");\n        return ";\n    };\n    this.advance();\n        return n.toString();\n    };\n    _ParseAST.prototype.parseChain = function () {\n        var exprs = [];\n        var start = this.inputIndex;\n        while (this.index < this.tokens.length) {\n            var\n            expr = this.parsePipe();\n            exprs.push(expr);\n            if\n            (this.consumeOptionalCharacter($SEMICOLON)) {\n                if (!this.parseAction) {\n                    this.error("Binding expression cannot contain chained expression");\n                }\n                while\n                (this.consumeOptionalCharacter($SEMICOLON)) {\n                    } // read all semicolons\n                }\n            }\n            else if (this.index < this.tokens.length) {\n                this.error("Unexpected token \"" + this.next + "\"");\n            }\n        }\n        if (exprs.length == 0)\n            return new EmptyExpr(this.span(start),\n            this.sourceSpan(start));\n        if (exprs.length == 1)\n            return exprs[0];\n        return new\n        Chain(this.span(start), this.sourceSpan(start), exprs);\n    };\n    _ParseAST.prototype.parsePipe = function () {\n        {\n            var result = this.parseExpression();\n            if (this.consumeOptionalOperator('|')) {\n                if\n                (this.parseAction) {\n                    this.error('Cannot have a pipe in an action expression');\n                }\n            }\n        }\n        do {\n            var nameStart = this.inputIndex;\n            var nameSpan = this.sourceSpan(nameStart);\n            var name = this.expectIdentifierOrKeyword();\n            var args = [];\n            while\n            (this.consumeOptionalCharacter($COLON)) {\n                args.push(this.parseExpression());\n            }\n            var start = result.span.start;\n            result =\n            new BindingPipe(this.span(start),\n            this.sourceSpan(start), result, name, args, nameSpan);\n        } while (this.consumeOptionalOperator('|'));\n    }\n    return result;\n    };\n    _ParseAST.prototype.parseExpression = function () {\n        return\n        this.parseConditional();\n    };\n    _ParseAST.prototype.parseConditional = function () {\n        var start =\n        this.inputIndex;\n        var result = this.parseLogicalOr();\n        if (this.consumeOptionalOperator('?')) {\n            {\n                var yes = this.parsePipe();\n                var no = void 0;\n                if (!this.consumeOptionalCharacter($COLON))\n                {\n                    var end = this.inputIndex;\n                    var expression = this.input.substring(start, end);\n                }\n            }\n        }\n    };\n
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this.error("\Conditional expression \" + expression + \" requires all 3 expressions\");\n          no = new
EmptyExpr(this.span(start), this.sourceSpan(start));\n          }\n          else {\n          no =
this.parsePipe();\n          }\n          return new Conditional(this.span(start), this.sourceSpan(start), result, yes,
no);\n          }\n          else {\n          return result;\n          }\n          };\n
_ParseAST.prototype.parseLogicalOr = function () {\n          // \"|\n          var result = this.parseLogicalAnd();\n          while (this.consumeOptionalOperator(\"|\")) {\n          var right = this.parseLogicalAnd();\n          var start =
result.span.start;\n          result = new Binary(this.span(start), this.sourceSpan(start), \"|\", result, right);\n          }\n          return result;\n          };\n          _ParseAST.prototype.parseLogicalAnd = function () {\n          // '&&'\n
var result = this.parseEquality();\n          while (this.consumeOptionalOperator('&&')) {\n          var right =
this.parseEquality();\n          var start = result.span.start;\n          result = new Binary(this.span(start),
this.sourceSpan(start), '&&', result, right);\n          }\n          return result;\n          };\n
_ParseAST.prototype.parseEquality = function () {\n          // '==','!','=','===','!=='\n          var result =
this.parseRelational();\n          while (this.next.type == exports.TokenType.Operator) {\n          var operator =
this.next.strValue;\n          switch (operator) {\n          case '==':\n          case '===':\n          case
'!=':\n          case '!==':\n          this.advance();\n          var right = this.parseRelational();\n          var start = result.span.start;\n          result = new Binary(this.span(start), this.sourceSpan(start),
operator, result, right);\n          continue;\n          }\n          break;\n          }\n          return result;\n          };\n          _ParseAST.prototype.parseRelational = function () {\n          // '<','>','<=','>='\n          var result =
this.parseAdditive();\n          while (this.next.type == exports.TokenType.Operator) {\n          var operator =
this.next.strValue;\n          switch (operator) {\n          case '<':\n          case '>':\n          case
'<=':\n          case '>=':\n          this.advance();\n          var right = this.parseAdditive();\n          var start = result.span.start;\n          result = new Binary(this.span(start), this.sourceSpan(start),
operator, result, right);\n          continue;\n          }\n          break;\n          }\n          return result;\n          };\n          _ParseAST.prototype.parseAdditive = function () {\n          // '+','-'\n          var result =
this.parseMultiplicative();\n          while (this.next.type == exports.TokenType.Operator) {\n          var operator
= this.next.strValue;\n          switch (operator) {\n          case '+':\n          case '-':\n          this.advance();\n          var right = this.parseMultiplicative();\n          var start = result.span.start;\n          result = new Binary(this.span(start), this.sourceSpan(start), operator, result, right);\n          continue;\n          }\n          break;\n          }\n          return result;\n          };\n
_ParseAST.prototype.parseMultiplicative = function () {\n          // '*','%','/'\n          var result =
this.parsePrefix();\n          while (this.next.type == exports.TokenType.Operator) {\n          var operator =
this.next.strValue;\n          switch (operator) {\n          case '*':\n          case '%':\n          case
'/':\n          this.advance();\n          var right = this.parsePrefix();\n          var start =
result.span.start;\n          result = new Binary(this.span(start), this.sourceSpan(start), operator, result,
right);\n          continue;\n          }\n          break;\n          }\n          return result;\n          };\n
_ParseAST.prototype.parsePrefix = function () {\n          if (this.next.type == exports.TokenType.Operator) {\n
var start = this.inputIndex;\n          var operator = this.next.strValue;\n          var result = void 0;\n          switch (operator) {\n          case '+':\n          this.advance();\n          result =
this.parsePrefix();\n          return Unary.createPlus(this.span(start), this.sourceSpan(start), result);\n          case '-':\n          this.advance();\n          result = this.parsePrefix();\n          return
Unary.createMinus(this.span(start), this.sourceSpan(start), result);\n          case '!':\n          this.advance();\n          result = this.parsePrefix();\n          return new PrefixNot(this.span(start),
this.sourceSpan(start), result);\n          }\n          }\n          return this.parseCallChain();\n          };\n
_ParseAST.prototype.parseCallChain = function () {\n          var _this = this;\n          var result =
this.parsePrimary();\n          var resultStart = result.span.start;\n          while (true) {\n          if
(this.consumeOptionalCharacter($PERIOD)) {\n          result = this.parseAccessMemberOrMethodCall(result,
false);\n          }\n          else if (this.consumeOptionalOperator('?.')) {\n          result =
this.parseAccessMemberOrMethodCall(result, true);\n          }\n          else if

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(this.consumeOptionalCharacter($LBRACKET)) {\n                this.withContext(ParseContextFlags.Writable,
function () {\n                _this.rbracketsExpected++;;\n                var key = _this.parsePipe();;\n
if (key instanceof EmptyExpr) {\n                _this.error("\Key access cannot be empty\");;\n                }\n
                _this.rbracketsExpected--;\n                _this.expectCharacter($RBRACKET);;\n                if
(_this.consumeOptionalOperator('=')) {\n                var value = _this.parseConditional();;\n
result = new KeyedWrite(_this.span(resultStart), _this.sourceSpan(resultStart), result, key, value);;\n
}\n                else {\n                result =\n                new KeyedRead(_this.span(resultStart),
_this.sourceSpan(resultStart), result, key);;\n                }\n                }\n                else if
(this.consumeOptionalCharacter($LPAREN)) {\n                this.rparensExpected++;;\n                var args =
this.parseCallArguments();;\n                this.rparensExpected--;\n                this.expectCharacter($RPAREN);;\n
                result =\n                new FunctionCall(this.span(resultStart), this.sourceSpan(resultStart), result,
args);;\n                }\n                else if (this.consumeOptionalOperator('!')) {\n                result = new
NonNullAssert(this.span(resultStart), this.sourceSpan(resultStart), result);;\n                }\n                else {\n
return result;;\n                }\n                }\n                }\n                _ParseAST.prototype.parsePrimary = function () {\n                var
start = this.inputIndex;;\n                if (this.consumeOptionalCharacter($LPAREN)) {\n
this.rparensExpected++;;\n                var result = this.parsePipe();;\n                this.rparensExpected--;\n
this.expectCharacter($RPAREN);;\n                return result;;\n                }\n                else if (this.next.isKeywordNull())
{\n                this.advance();;\n                return new LiteralPrimitive(this.span(start), this.sourceSpan(start), null);;\n
}\n                else if (this.next.isKeywordUndefined()) {\n                this.advance();;\n                return new
LiteralPrimitive(this.span(start), this.sourceSpan(start), void 0);;\n                }\n                else if
(this.next.isKeywordTrue()) {\n                this.advance();;\n                return new LiteralPrimitive(this.span(start),
this.sourceSpan(start), true);;\n                }\n                else if (this.next.isKeywordFalse()) {\n                this.advance();;\n
return new LiteralPrimitive(this.span(start), this.sourceSpan(start), false);;\n                }\n                else if
(this.next.isKeywordThis()) {\n                this.advance();;\n                return new ThisReceiver(this.span(start),
this.sourceSpan(start));;\n                }\n                else if (this.consumeOptionalCharacter($LBRACKET)) {\n
this.rbracketsExpected++;;\n                var elements = this.parseExpressionList($RBRACKET);;\n
this.rbracketsExpected--;\n                this.expectCharacter($RBRACKET);;\n                return new
LiteralArray(this.span(start), this.sourceSpan(start), elements);;\n                }\n                else if
(this.next.isCharacter($LBRACE)) {\n                return this.parseLiteralMap();;\n                }\n                else if
(this.next.isIdentifier()) {\n                return this.parseAccessMemberOrMethodCall(new
ImplicitReceiver(this.span(start), this.sourceSpan(start)), false);;\n                }\n                else if (this.next.isNumber()) {\n
var value = this.next.toNumber();;\n                this.advance();;\n                return new
LiteralPrimitive(this.span(start), this.sourceSpan(start), value);;\n                }\n                else if (this.next.isString()) {\n
var literalValue = this.next.toString();;\n                this.advance();;\n                return new
LiteralPrimitive(this.span(start), this.sourceSpan(start), literalValue);;\n                }\n                else if (this.index >=
this.tokens.length) {\n                this.error("\Unexpected end of expression: \" + this.input);;\n                return new
EmptyExpr(this.span(start), this.sourceSpan(start));;\n                }\n                else {\n                this.error("\Unexpected
token \" + this.next);;\n                return new EmptyExpr(this.span(start), this.sourceSpan(start));;\n                }\n
};;\n                _ParseAST.prototype.parseExpressionList = function (terminator) {\n                var result = [];;\n                if
(!this.next.isCharacter(terminator)) {\n                do {\n                result.push(this.parsePipe());;\n                } while
(this.consumeOptionalCharacter($COMMA));;\n                }\n                return result;;\n                };;\n
_ParseAST.prototype.parseLiteralMap = function () {\n                var keys = [];;\n                var values = [];;\n                var
start = this.inputIndex;;\n                this.expectCharacter($LBRACE);;\n                if
(!this.consumeOptionalCharacter($RBRACE)) {\n                this.rbracesExpected++;;\n                do {\n
var quoted = this.next.isString();;\n                var key = this.expectIdentifierOrKeywordOrString();;\n
keys.push({ key: key, quoted: quoted });;\n                this.expectCharacter($COLON);;\n
values.push(this.parsePipe());;\n                } while (this.consumeOptionalCharacter($COMMA));;\n
this.rbracesExpected--;\n                this.expectCharacter($RBRACE);;\n                }\n                return new

```



```

LiteralMap(this.span(start), this.sourceSpan(start), keys, values);\n    };\n
_ParseAST.prototype.parseAccessMemberOrMethodCall = function (receiver, isSafe) {\n    if (isSafe === void\n0) { isSafe = false; }\n    var start = receiver.span.start;\n    var nameStart = this.inputIndex;\n    var id\n= this.expectIdentifierOrKeyword();\n    var nameSpan = this.sourceSpan(nameStart);\n    if\n(this.consumeOptionalCharacter($LPAREN)) {\n    this.rparensExpected++;;\n    var args =\nthis.parseCallArguments();\n    this.expectCharacter($RPAREN);\n    this.rparensExpected--;\n    var span = this.span(start);\n    var sourceSpan = this.sourceSpan(start);\n    return isSafe ? new\nSafeMethodCall(span, sourceSpan, nameSpan, receiver, id, args) :\nnew MethodCall(span, sourceSpan,\nnameSpan, receiver, id, args);\n    } else {\n    if (isSafe) {\n    if\n(this.consumeOptionalOperator('=')) {\n    this.error("The '\\'?.' operator cannot be used in the\nassignment");\n    return new EmptyExpr(this.span(start), this.sourceSpan(start));\n    }\n    else {\n    return new SafePropertyRead(this.span(start), this.sourceSpan(start), nameSpan,\nreceiver, id);\n    }\n    } else {\n    if (this.consumeOptionalOperator('=')) {\n    if (!this.parseAction) {\n    this.error('Bindings cannot contain assignments');\n    return new EmptyExpr(this.span(start), this.sourceSpan(start));\n    }\n    var value =\nthis.parseConditional();\n    return new PropertyWrite(this.span(start), this.sourceSpan(start),\nnameSpan, receiver, id, value);\n    }\n    else {\n    return new\nPropertyRead(this.span(start), this.sourceSpan(start), nameSpan, receiver, id);\n    }\n    }\n    }\n    };\n    _ParseAST.prototype.parseCallArguments = function () {\n    if\n(this.next.isCharacter($RPAREN))\nreturn [];\n    var positionals = [];\n    do {\n    positionals.push(this.parsePipe());\n    } while (this.consumeOptionalCharacter($COMMA));\n    return\npositionals;\n    };\n    /**\n    * Parses an identifier, a keyword, a string with an optional ` ` in between,\n    * and returns the string along with its absolute source span.\n    */\n    _ParseAST.prototype.expectTemplateBindingKey = function () {\n    var result = ";\n    var operatorFound\n= false;\n    var start = this.currentAbsoluteOffset;\n    do {\n    result +=\nthis.expectIdentifierOrKeywordOrString();\n    operatorFound = this.consumeOptionalOperator('-');\n    if (operatorFound) {\n    result += '-';\n    } while (operatorFound);\n    return {\n    source: result,\n    span: new AbsoluteSourceSpan(start, start + result.length),\n    };\n    };\n    /**\n    * Parse microsyntax template expression and return a list of bindings or\n    * parsing errors in case\nthe given expression is invalid.\n    * For example,\n    * <div *ngFor="let item of\nitems; index as i; trackBy: func">\n    * contains five bindings:\n    * 1. ngFor -> null\n    * 2.\nitem -> NgForOfContext.$Simplicit\n    * 3. ngForOf -> items\n    * 4. i -> NgForOfContext.index\n    * 5.\nngForTrackBy -> func\n    * For a full description of the microsyntax grammar, see\n    *\nhttps://gist.github.com/mhevery/d3530294cff2e4a1b3fe15ff75d08855\n    *\n    * @param templateKey name\nof the microsyntax directive, like ngIf, ngFor,\n    * without the *, along with its absolute span.\n    */\n    _ParseAST.prototype.parseTemplateBindings = function (templateKey) {\n    var bindings = [];\n    // The\nfirst binding is for the template key itself\n    // In *ngFor="let item of items", key = "ngFor", value = null\n    // In *ngIf="cond | pipe", key = "ngIf", value = "cond | pipe"\n    bindings.push.apply(bindings,\n__spread(this.parseDirectiveKeywordBindings(templateKey)));\n    while (this.index < this.tokens.length) {\n    // If it starts with 'let', then this must be variable declaration\n    var letBinding =\nthis.parseLetBinding();\n    if (letBinding) {\n    bindings.push(letBinding);\n    }\n    else {\n    // Two possible cases here, either `value `as` key` or\n    // `directive-keyword\nexpression`. We don't know which case, but both\n    // `value` and `directive-keyword` are template\nbinding key, so consume\n    // the key first.\n    var key = this.expectTemplateBindingKey();\n    // Peek at the next token, if it is `as` then this must be variable\n    // declaration.\n    var binding = this.parseAsBinding(key);\n    if (binding) {\n    bindings.push(binding);\n    }\n    else {\n    // Otherwise the key must be a directive keyword, like `of`.\n    Transform\n    // the key to actual key. Eg. of -> ngForOf, trackBy -> ngForTrackBy\n
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index) {\n      if (index === void 0) { index = null; }\n      this.errors.push(new ParserError(message,\nthis.input, this.locationText(index), this.location));\n      this.skip();\n    };\n\n_ParseAST.prototype.locationText = function (index) {\n      if (index === void 0) { index = null; }\n      if\n(index == null)\n      index = this.index;\n      return (index < this.tokens.length) ? \"at column \" +\n(this.tokens[index].index + 1) + \" in\" :\n      \"at the end of the expression\";\n    };\n\n    /**\n     * Error\nrecovery should skip tokens until it encounters a recovery point. skip() treats\n     * the end of input and a ';' as\nunconditionally a recovery point. It also treats ','\n     * ',' and ']' as conditional recovery points if one of calling\nproductions is expecting\n     * one of these symbols. This allows skip() to recover from errors such as '(a.) + 1'\nallowing\n     * more of the AST to be retained (it doesn't skip any tokens as the ')' is retained because\n     * of\nthe '(' begins an '(' <expr> ')' production). The recovery points of grouping symbols\n     * must be conditional as\nthey must be skipped if none of the calling productions are not\n     * expecting the closing token else we will\nnever make progress in the case of an\n     * extraneous group closing symbol (such as a stray ')'). This is not the\ncase for ';' because\n     * parseChain() is always the root production and it expects a ';'.\n     *\nFurthermore, the presence of a stateful context can add more recovery points.\n     * - in a `Writable` context, we\nare able to recover after seeing the `=` operator, which\n     * signals the presence of an independent rvalue\nexpression following the `=` operator.\n     *\n     * If a production expects one of these token it increments the\ncorresponding nesting count,\n     * and then decrements it just prior to checking if the token is in the input.\n\n*/\n\n_ParseAST.prototype.skip = function () {\n      var n = this.next;\n      while (this.index <\nthis.tokens.length && !n.isCharacter($SEMICOLON) &&\n      (this.rparensExpected <= 0 ||\n!n.isCharacter($RPAREN)) &&\n      (this.rbracesExpected <= 0 || !n.isCharacter($RBRACE)) &&\n      (this.rbracketsExpected <= 0 || !n.isCharacter($RBRACKET)) &&\n      (!(this.context &\nParseContextFlags.Writable) || !n.isOperator('='))) {\n      if (this.next.isError()) {\nthis.errors.push(new ParserError(this.next.toString(), this.input, this.locationText(), this.location));\n      }\n      this.advance();\n      n = this.next;\n    };\n\n    return _ParseAST;\n  }();\n\n  var\nSimpleExpressionChecker = /** @class */ (function () {\n    function SimpleExpressionChecker() {\nthis.errors = [];\n    }\n\n    SimpleExpressionChecker.prototype.visitImplicitReceiver = function (ast, context) {\n};\n\n    SimpleExpressionChecker.prototype.visitThisReceiver = function (ast, context) {\n};\n\n    SimpleExpressionChecker.prototype.visitInterpolation = function (ast, context) {\n};\n\n    SimpleExpressionChecker.prototype.visitLiteralPrimitive = function (ast, context) {\n};\n\n    SimpleExpressionChecker.prototype.visitPropertyRead = function (ast, context) {\n};\n\n    SimpleExpressionChecker.prototype.visitPropertyWrite = function (ast, context) {\n};\n\n    SimpleExpressionChecker.prototype.visitSafePropertyRead = function (ast, context) {\n};\n\n    SimpleExpressionChecker.prototype.visitMethodCall = function (ast, context) {\n};\n\n    SimpleExpressionChecker.prototype.visitSafeMethodCall = function (ast, context) {\n};\n\n    SimpleExpressionChecker.prototype.visitFunctionCall = function (ast, context) {\n};\n\n    SimpleExpressionChecker.prototype.visitLiteralArray = function (ast, context) {\nthis.visitAll(ast.expressions, context);\n    };\n\n    SimpleExpressionChecker.prototype.visitLiteralMap =\nfunction (ast, context) {\n      this.visitAll(ast.values, context);\n    };\n\n    SimpleExpressionChecker.prototype.visitUnary = function (ast, context) {\n};\n\n    SimpleExpressionChecker.prototype.visitBinary = function (ast, context) {\n};\n\n    SimpleExpressionChecker.prototype.visitPrefixNot = function (ast, context) {\n};\n\n    SimpleExpressionChecker.prototype.visitNonNullAssert = function (ast, context) {\n};\n\n    SimpleExpressionChecker.prototype.visitConditional = function (ast, context) {\n};\n\n    SimpleExpressionChecker.prototype.visitPipe = function (ast, context) {\n      this.errors.push('pipes');\n    };\n\n    SimpleExpressionChecker.prototype.visitKeyedRead = function (ast, context) {\n};\n\n    SimpleExpressionChecker.prototype.visitKeyedWrite = function (ast, context) {\n};\n\n    SimpleExpressionChecker.prototype.visitAll = function (asts, context) {\n      var _this = this;\n      return\nasts.map(function (node) { return node.visit(_this, context); });\n    };\n  };\n
```



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`element1,element2,...^parentElement`. \n * Here the individual elements are separated by `,` (commas). Every
element in the list \n * has identical properties. \n * \n * An `element` may inherit additional properties from
`parentElement` If no `parentElement` is \n * specified then `""` (blank) element is assumed. \n * \n *
NOTE: The blank element inherits from root `[Element]` element, the super element of all \n * elements. \n * \n
* NOTE an element prefix such as `:svg:` has no special meaning to the schema. \n * \n * ## Properties \n * \n
* Each element has a set of properties separated by `,` (commas). Each property can be prefixed \n * by a special
character designating its type: \n * \n * - (no prefix): property is a string. \n * - `*`: property represents an
event. \n * - `!`: property is a boolean. \n * - `#`: property is a number. \n * - `%`: property is an object. \n * \n
* ## Query \n * \n * The class creates an internal squas representation which allows to easily answer the query
of \n * if a given property exist on a given element. \n * \n * NOTE: We don't yet support querying for types or
events. \n * NOTE: This schema is auto extracted from `schema_extractor.ts` located in the test folder, \n *
see dom_element_schema_registry_spec.ts \n * \n //

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===== \n //
===== \n // ===== STOP - STOP - STOP - STOP - STOP - STOP
===== \n //
===== \n //
===== \n // \n // DO NOT EDIT THIS DOM SCHEMA WITHOUT A SECURITY
REVIEW! \n // \n // Newly added properties must be security reviewed and assigned an appropriate
SecurityContext in \n // dom_security_schema.ts. Reach out to mprobst & rjamat for details. \n // \n //
=====

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===== \n var SCHEMA = [ \n
'[Element]|textContent,%classList,className,id,innerHTML,*beforecopy,*beforecut,*beforepaste,*copy,*cut,*paste,*search,*selectstart,*webkitfullscreenchange,*webkitfullscreenerror,*wheel,outerHTML,#scrollLeft,#scrollTop,slot' + \n /* added manually to avoid breaking changes */ \n
',*message,*mozfullscreenchange,*mozfullscreenerror,*mozpointerlockchange,*mozpointerlockerror,*webglcontextcreationerror,*webglcontextlost,*webglcontextrestored', \n
'[HTMLMLElement]^[Element]|accessKey,contentEditable,dir,!draggable,!hidden,innerText,lang,*abort,*auxclick,*blur,*cancel,*canplay,*canplaythrough,*change,*click,*close,*contextmenu,*cuechange,*dblclick,*drag,*dragend,*dragenter,*dragleave,*dragover,*dragstart,*drop,*durationchange,*emptied,*ended,*error,*focus,*gotpointercapture,*input,*invalid,*keydown,*keypress,*keyup,*load,*loadeddata,*loadedmetadata,*loadstart,*lostpointercapture,*mousedown,*mouseenter,*mouseleave,*mousemove,*mouseout,*mouseover,*mouseup,*mousewheel,*pause,*play,*playing,*pointercancel,*pointerdown,*pointerenter,*pointerleave,*pointermove,*pointerout,*pointerover,*pointerup,*progress,*ratechange,*reset,*resize,*scroll,*seeked,*seeking,*select,*show,*stalled,*submit,*suspend,*timeupdate,*toggle,*volumechange,*waiting,outerText,!spellcheck,%style,#tabIndex,title,!translate', \n
'abbr,address,article,aside,b,bdi,bdo,cite,code,dd,dfn,dt,em,figcaption,figure,footer,header,i,kbd,main,mark,nav,noscript,rb,rp,rt,rtc,ruby,s,samp,section,small,strong,sub,sup,u,var,wbr^[HTMLMLElement]|accessKey,contentEditable,dir,!draggable,!hidden,innerText,lang,*abort,*auxclick,*blur,*cancel,*canplay,*canplaythrough,*change,*click,*close,*contextmenu,*cuechange,*dblclick,*drag,*dragend,*dragenter,*dragleave,*dragover,*dragstart,*drop,*durationchange,*emptied,*ended,*error,*focus,*gotpointercapture,*input,*invalid,*keydown,*keypress,*keyup,*load,*loadeddata,*loadedmetadata,*loadstart,*lostpointercapture,*mousedown,*mouseenter,*mouseleave,*mousemove,*mouseout,*mouseover,*mouseup,*mousewheel,*pause,*play,*playing,*pointercancel,*pointerdown,*pointerenter,*pointerleave,*pointermove,*pointerout,*pointerover,*pointerup,*progress,*ratechange,*reset,*resize,*scroll,*seeked,*seeking,*select,*show,*stalled,*submit,*suspend,*timeupdate,*toggle,*volumechange,*waiting,outerText,!spellcheck,%style,#tabIndex,title,!translate', \n

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'media^[HTMLInputElement]!autoplay,!controls,%controlsList,%crossOrigin,#currentTime,!defaultMuted,#defaultPlaybackRate,!disableRemotePlayback,!loop,!muted,*encrypted,*waitingforkey,#playbackRate,preload,src,%srcObject,#volume',\n

'svg^[HTMLInputElement]*abort,*auxclick,*blur,*cancel,*canplay,*canplaythrough,*change,*click,*close,*contextmenu,*cuechange,*dblclick,*drag,*dragend,*dragenter,*dragleave,*dragover,*dragstart,*drop,*durationchange,*emptied,*ended,*error,*focus,*gotpointercapture,*input,*invalid,*keydown,*keypress,*keyup,*load,*loadeddata,*loadmetadata,*loadstart,*lostpointercapture,*mousedown,*mouseenter,*mouseleave,*mousemove,*mouseout,*mouseover,*mouseup,*mousewheel,*pause,*play,*playing,*pointercancel,*pointerdown,*pointerenter,*pointerleave,*pointermove,*pointerout,*pointerover,*pointerup,*progress,*ratechange,*reset,*resize,*scroll,*seeked,*seeking,*select,*show,*stalled,*submit,*suspend,*timeupdate,*toggle,*volumechange,*waiting,%style,#tabIndex',\n

'svg:graphics^:svg:',\n 'svg:animation^:svg:*begin,*end,*repeat',\n 'svg:geometry^:svg:',\n

'svg:componentTransferFunction^:svg:',\n 'svg:gradient^:svg:',\n 'svg:textContent^:svg:graphics',\n

'svg:textPositioning^:svg:textContent',\n

'a^[HTMLInputElement]charset,coords,download,hash,host,hostname,href,hreflang,name,password,pathname,ping,port,protocol,referrerPolicy,rel,rev,search,shape,target,text,type,username',\n

'area^[HTMLInputElement]alt,coords,download,hash,host,hostname,href,!noHref,password,pathname,ping,port,protocol,referrerPolicy,rel,search,shape,target,username',\n 'audio^media',\n 'br^[HTMLInputElement]clear',\n

'base^[HTMLInputElement]href,target',\n

'body^[HTMLInputElement]aLink,background,bgColor,link,*beforeunload,*blur,*error,*focus,*hashchange,*languagechange,*load,*message,*offline,*online,*pagehide,*pageshow,*popstate,*rejectionhandled,*resize,*scroll,*storage,*unhandledrejection,*unload,text,vLink',\n

'button^[HTMLInputElement]!autofocus,!disabled,formAction,formEnctype,formMethod,!formNoValidate,formTarget,name,type,value',\n 'canvas^[HTMLInputElement]#height,#width',\n 'content^[HTMLInputElement]select',\n

'dl^[HTMLInputElement]!compact',\n 'datalist^[HTMLInputElement]',\n 'details^[HTMLInputElement]!open',\n

'dialog^[HTMLInputElement]!open,returnValue',\n 'dir^[HTMLInputElement]!compact',\n

'div^[HTMLInputElement]align',\n 'embed^[HTMLInputElement]align,height,name,src,type,width',\n

'fieldset^[HTMLInputElement]!disabled,name',\n 'font^[HTMLInputElement]color,face,size',\n

'form^[HTMLInputElement]acceptCharset,action,autocomplete,encoding,enctype,method,name,!noValidate,target',\n

'frame^[HTMLInputElement]frameBorder,longDesc,marginHeight,marginWidth,name,!noResize,scrolling,src',\n

'frameset^[HTMLInputElement]cols,*beforeunload,*blur,*error,*focus,*hashchange,*languagechange,*load,*message,*offline,*online,*pagehide,*pageshow,*popstate,*rejectionhandled,*resize,*scroll,*storage,*unhandledrejection,*unload,rows',\n 'hr^[HTMLInputElement]align,color,!noShade,size,width',\n 'head^[HTMLInputElement]',\n

'h1,h2,h3,h4,h5,h6^[HTMLInputElement]align',\n 'html^[HTMLInputElement]version',\n

'iframe^[HTMLInputElement]align,!allowFullscreen,frameBorder,height,longDesc,marginHeight,marginWidth,name,referrerPolicy,%sandbox,scrolling,src,srcdoc,width',\n

'img^[HTMLInputElement]align,alt,border,%crossOrigin,#height,#hspace,!isMap,longDesc,lowsrc,name,referrerPolicy,sizes,src,srcset,useMap,#vspace,#width',\n

'input^[HTMLInputElement]accept,align,alt,autocapitalize,autocomplete,!autofocus,!checked,!defaultChecked,defaultValue,dirName,!disabled,%files,formAction,formEnctype,formMethod,!formNoValidate,formTarget,#height,!incremental,!indeterminate,max,#maxLength,min,#minLength,!multiple,name,pattern,placeholder,!readOnly,!required,selectionDirection,#selectionEnd,#selectionStart,#size,src,step,type,useMap,value,%valueAsDate,#valueAsNumber,#width',\n 'li^[HTMLInputElement]type,#value',\n 'label^[HTMLInputElement]htmlFor',\n

'legend^[HTMLInputElement]align',\n

'link^[HTMLInputElement]as,charset,%crossOrigin,!disabled,href,hreflang,integrity,media,referrerPolicy,rel,%relList,rev,%sizes,target,type',\n 'map^[HTMLInputElement]name',\n

'marquee^[HTMLInputElement]behavior,bgColor,direction,height,#hspace,#loop,#scrollAmount,#scrollDelay,!trueSpeed,#vspace,width',\n 'menu^[HTMLInputElement]!compact',\n

'meta^[HTMLInputElement]content,httpEquiv,name,scheme',\n

'meter^[HTMLInputElement]#high,#low,#max,#min,#optimum,#value',\n 'ins,del^[HTMLInputElement]|cite,dateTime',\n 'ol^[HTMLInputElement]!compact,!reversed,#start,type',\n 'object^[HTMLInputElement]|align,archive,border,code,codeBase,codeType,data,!declare,height,#hspace,name,standby,type,useMap,#vspace,width',\n 'optgroup^[HTMLInputElement]!disabled,label',\n 'option^[HTMLInputElement]!defaultSelected,!disabled,label,!selected,text,value',\n 'output^[HTMLInputElement]|defaultValue,%htmlFor,name,value',\n 'p^[HTMLInputElement]|align',\n 'param^[HTMLInputElement]|name,type,value,valueType',\n 'picture^[HTMLInputElement]',\n 'pre^[HTMLInputElement]#width',\n 'progress^[HTMLInputElement]#max,#value',\n 'q,blockquote,cite^[HTMLInputElement]',\n 'script^[HTMLInputElement]!async,charset,%crossOrigin,!defer,event,htmlFor,integrity,src,text,type',\n 'select^[HTMLInputElement]!autofocus,!disabled,#length,!multiple,name,!required,#selectedIndex,#size,value',\n 'shadow^[HTMLInputElement]',\n 'slot^[HTMLInputElement]|name',\n 'source^[HTMLInputElement]|media,sizes,src,srcset,type',\n 'span^[HTMLInputElement]',\n 'style^[HTMLInputElement]!disabled,media,type',\n 'caption^[HTMLInputElement]|align',\n 'th,td^[HTMLInputElement]|abbr,align,axis,bgColor,ch,chOff,#colSpan,headers,height,!noWrap,#rowSpan,scope,vAlign,width',\n 'col,colgroup^[HTMLInputElement]|align,ch,chOff,#span,vAlign,width',\n 'table^[HTMLInputElement]|align,bgColor,border,%caption,cellPadding,cellSpacing,frame,rules,summary,%tfoot,%thead,width',\n 'tr^[HTMLInputElement]|align,bgColor,ch,chOff,vAlign',\n 'tfoot,thead,tbody^[HTMLInputElement]|align,ch,chOff,vAlign',\n 'template^[HTMLInputElement]',\n 'textarea^[HTMLInputElement]|autocapitalize,!autofocus,#cols,defaultValue,dirName,!disabled,#maxLength,#minLength,name,placeholder,!readOnly,!required,#rows,selectionDirection,#selectionEnd,#selectionStart,value,wrap',\n 'title^[HTMLInputElement]|text',\n 'track^[HTMLInputElement]!default,kind,label,src,srclang',\n 'ul^[HTMLInputElement]!compact,type',\n 'unknown^[HTMLInputElement]',\n 'video^media|#height,poster,#width',\n ':svg:a^:svg:graphics',\n ':svg:animate^:svg:animation',\n ':svg:animateMotion^:svg:animation',\n ':svg:animateTransform^:svg:animation',\n ':svg:circle^:svg:geometry',\n ':svg:clipPath^:svg:graphics',\n ':svg:defs^:svg:graphics',\n ':svg:desc^:svg:',\n ':svg:discard^:svg:',\n ':svg:ellipse^:svg:geometry',\n ':svg:feBlend^:svg:',\n ':svg:feColorMatrix^:svg:',\n ':svg:feComponentTransfer^:svg:',\n ':svg:feComposite^:svg:',\n ':svg:feConvolveMatrix^:svg:',\n ':svg:feDiffuseLighting^:svg:',\n ':svg:feDisplacementMap^:svg:',\n ':svg:feDistantLight^:svg:',\n ':svg:feDropShadow^:svg:',\n ':svg:feFlood^:svg:',\n ':svg:feFuncA^:svg:componentTransferFunction',\n ':svg:feFuncB^:svg:componentTransferFunction',\n ':svg:feFuncG^:svg:componentTransferFunction',\n ':svg:feFuncR^:svg:componentTransferFunction',\n ':svg:feGaussianBlur^:svg:',\n ':svg:feImage^:svg:',\n ':svg:feMerge^:svg:',\n ':svg:feMergeNode^:svg:',\n ':svg:feMorphology^:svg:',\n ':svg:feOffset^:svg:',\n ':svg:fePointLight^:svg:',\n ':svg:feSpecularLighting^:svg:',\n ':svg:feSpotLight^:svg:',\n ':svg:feTile^:svg:',\n ':svg:feTurbulence^:svg:',\n ':svg:filter^:svg:',\n ':svg:foreignObject^:svg:graphics',\n ':svg:g^:svg:graphics',\n ':svg:image^:svg:graphics',\n ':svg:line^:svg:geometry',\n ':svg:linearGradient^:svg:gradient',\n ':svg:mpath^:svg:',\n ':svg:marker^:svg:',\n ':svg:mask^:svg:',\n ':svg:metadata^:svg:',\n ':svg:path^:svg:geometry',\n ':svg:pattern^:svg:',\n ':svg:polygon^:svg:geometry',\n ':svg:polyline^:svg:geometry',\n ':svg:radialGradient^:svg:gradient',\n ':svg:rect^:svg:geometry',\n ':svg:svg^:svg:graphics|#currentScale,#zoomAndPan',\n ':svg:script^:svg:type',\n ':svg:set^:svg:animation',\n ':svg:stop^:svg:',\n ':svg:style^:svg:|!disabled,media,title,type',\n ':svg:switch^:svg:graphics',\n ':svg:symbol^:svg:',\n ':svg:tspan^:svg:textPositioning',\n ':svg:text^:svg:textPositioning',\n ':svg:textPath^:svg:textContent',\n ':svg:title^:svg:',\n ':svg:use^:svg:graphics',\n ':svg:view^:svg:|#zoomAndPan',\n 'data^[HTMLInputElement]|value',\n 'keygen^[HTMLInputElement]!autofocus,challenge,!disabled,form,keytype,name',\n 'menuitem^[HTMLInputElement]|type,label,icon,!disabled,!checked,radiogroup,!default',\n

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'summary^[HTMLInputElement]|',\n      'time^[HTMLInputElement]|dateTime',\n      'svg:cursor^:svg:|',\n      ];\n      var
      _ATTR_TO_PROP = {\n        'class': 'className',\n        'for': 'htmlFor',\n        'formaction': 'formAction',\n        'innerHTML': 'innerHTML',\n        'readonly': 'readOnly',\n        'tabindex': 'tabIndex',\n      };\n      var
      DomElementSchemaRegistry = /** @class */ (function (_super) {\n        __extends(DomElementSchemaRegistry,
        _super);\n        function DomElementSchemaRegistry() {\n          var _this = _super.call(this) || this;\n          _this._schema = {};\n          SCHEMA.forEach(function (encodedType) {\n            var type = {};\n            var
            _a = __read(encodedType.split('|'), 2), strType = _a[0], strProperties = _a[1];\n            var properties =
            strProperties.split(';');\n            var _b = __read(strType.split('^'), 2), typeNames = _b[0], superName = _b[1];\n            typeNames.split(',').forEach(function (tag) { return _this._schema[tag.toLowerCase()] = type; });\n            var superType = superName && _this._schema[superName.toLowerCase()];\n            if (superType) {\n              Object.keys(superType).forEach(function (prop) {\n                type[prop] = superType[prop];\n              });\n            }\n            properties.forEach(function (property) {\n              if (property.length > 0) {\n                switch (property[0]) {\n                  case '*':\n                    // We don't yet support events.\n                    // If ever allowing to bind to events, GO THROUGH A SECURITY REVIEW, allowing events\n                    // will\n                    // almost certainly introduce bad XSS vulnerabilities.\n                    type[property.substring(1)] = EVENT;\n                    break;\n                    case '!':\n                    type[property.substring(1)] = BOOLEAN;\n                    break;\n                    case '#':\n                    type[property.substring(1)] = NUMBER;\n                    break;\n                    case '%':\n                    type[property.substring(1)] = OBJECT;\n                    break;\n                    default:\n                    type[property] = STRING;\n                }\n              }\n            });\n            return _this;\n          });\n          DomElementSchemaRegistry.prototype.hasProperty = function (tagName, propName, schemaMetas) {\n            if (schemaMetas.some(function (schema) { return schema.name === NO_ERRORS_SCHEMA.name; })) {\n              return true;\n            }\n            if (tagName.indexOf('-') > -1) {\n              if (isNgContainer(tagName) ||
              isNgContent(tagName)) {\n                return false;\n              }\n              if (schemaMetas.some(function
              (schema) { return schema.name === CUSTOM_ELEMENTS_SCHEMA.name; })) {\n                // Can't tell now
                as we don't know which properties a custom element will get\n                // once it is instantiated\n                return true;\n              }\n              var elementProperties = this._schema[tagName.toLowerCase()];\n              this._schema['unknown'];\n              return !!elementProperties[propName];\n            }\n          }\n          DomElementSchemaRegistry.prototype.hasElement = function (tagName, schemaMetas) {\n            if
            (schemaMetas.some(function (schema) { return schema.name === NO_ERRORS_SCHEMA.name; })) {\n              return true;\n            }\n            if (tagName.indexOf('-') > -1) {\n              if (isNgContainer(tagName) ||
              isNgContent(tagName)) {\n                return true;\n              }\n              if (schemaMetas.some(function
              (schema) { return schema.name === CUSTOM_ELEMENTS_SCHEMA.name; })) {\n                // Allow any
                custom elements\n                return true;\n              }\n              return
              !!this._schema[tagName.toLowerCase()];\n            }\n            /**\n             * securityContext returns the security context
             for the given property on the given DOM tag.\n             *\n             * Tag and property name are statically known and
             cannot change at runtime, i.e. it is not\n             * possible to bind a value into a changing attribute or tag name.\n             *\n             * The filtering is based on a list of allowed tags|attributes. All attributes in the schema\n             * above are
             assumed to have the 'NONE' security context, i.e. that they are safe inert\n             * string values. Only specific well
             known attack vectors are assigned their appropriate context.\n             */\n          }\n          DomElementSchemaRegistry.prototype.securityContext = function (tagName, propName, isAttribute) {\n            if
            (isAttribute) {\n              // NB: For security purposes, use the mapped property name, not the attribute name.\n              propName = this.getMappedPropName(propName);\n            }\n            // Make sure comparisons are case
            insensitive, so that case differences between attribute and\n            // property names do not have a security impact.\n            tagName = tagName.toLowerCase();\n            propName = propName.toLowerCase();\n            var ctx =
            SECURITY_SCHEMA()[tagName + '|' + propName];\n            if (ctx) {\n              return ctx;\n            }\n            ctx = SECURITY_SCHEMA()['*' + propName];\n            return ctx ? ctx : SecurityContext.NONE;\n          }\n          DomElementSchemaRegistry.prototype.getMappedPropName = function (propName) {\n            return

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(isI18nRootElement) {\n          if (this.inI18nBlock) {\n          this.reportError('Cannot mark an element as
translatable inside of a translatable section. Please remove the nested i18n marker.', element.sourceSpan);\n
}\n          this.inI18nBlock = true;\n          }\n          var preparsedElement = preparsedElement(element);\n
if (preparsedElement.type === PreparsedElementType.SCRIPT) {\n          return null;\n          }\n          else if
(preparsedElement.type === PreparsedElementType.STYLE) {\n          var contents = textContents(element);\n
          if (contents !== null) {\n          this.styles.push(contents);\n          }\n          return null;\n
}\n          else if (preparsedElement.type === PreparsedElementType.STYLESHEET &&\n
isStyleUrlResolvable(preparsedElement.hrefAttr)) {\n          this.styleUrls.push(preparsedElement.hrefAttr);\n
          return null;\n          }\n          // Whether the element is a ``\n          var isTemplateElement =
isNgTemplate(element.name);\n          var parsedProperties = [];\n          var boundEvents = [];\n          var
variables = [];\n          var references = [];\n          var attributes = [];\n          var i18nAttrsMeta = {};\n          var
templateParsedProperties = [];\n          var templateVariables = [];\n          // Whether the element has any *-
attribute\n          var elementHasInlineTemplate = false;\n          try {\n          for (var _b =
__values(element.attrs), _c = _b.next(); !_c.done; _c = _b.next()) {\n          var attribute = _c.value;\n
          var hasBinding = false;\n          var normalizedName = normalizeAttributeName(attribute.name);\n
          // `*attr` defines template bindings\n          var isTemplateBinding = false;\n          if (attribute.i18n) {\n
          i18nAttrsMeta[attribute.name] = attribute.i18n;\n          }\n          if
(normalizedName.startsWith(TEMPLATE_ATTR_PREFIX$2)) {\n          // *-attributes\n          if
(elementHasInlineTemplate) {\n          this.reportError("Can't have multiple template bindings on one
element. Use only one attribute prefixed with *", attribute.sourceSpan);\n          }\n
          isTemplateBinding = true;\n          elementHasInlineTemplate = true;\n          var templateValue =
attribute.value;\n          var templateKey =
normalizedName.substring(TEMPLATE_ATTR_PREFIX$2.length);\n          var parsedVariables = [];\n
          var absoluteValueOffset = attribute.valueSpan ?\n          attribute.valueSpan.start.offset :\n
          // If there is no value span the attribute does not have a value, like `attr` in\n          // `

`\n          if (element.children &&\n
!element.children.every(function (node) { return isEmptyTextNode(node) || isCommentNode(node); })) {\n
          this.reportError("`<ng-content> element cannot have content.", element.sourceSpan);\n          }\n
          var selector = preparsedElement.selectAttr;\n          var attrs = element.attrs.map(function (attr) { return
_this.visitAttribute(attr); });\n          parsedElement = new Content(selector, attrs, element.sourceSpan,
element.i18n);\n          this.ngContentSelectors.push(selector);\n          }\n          else if (isTemplateElement)
{\n          // ``\n          var attrs = this.extractAttributes(element.name, parsedProperties,
i18nAttrsMeta);\n          parsedElement = new Template(element.name, attributes, attrs.bound, boundEvents, [ /*
no template attributes */], children, references, variables, element.sourceSpan, element.startSourceSpan,


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element.endSourceSpan, element.i18n);\n        }\n        else {\n            var attrs =
this.extractAttributes(element.name, parsedProperties, i18nAttrsMeta);\n            parsedElement = new
Element(element.name, attributes, attrs.bound, boundEvents, children, references, element.sourceSpan,
element.startSourceSpan, element.endSourceSpan, element.i18n);\n        }\n        if (elementHasInlineTemplate)
{\n            // If this node is an inline-template (e.g. has *ngFor) then we need to create a template\n            //
node that contains this node.\n            // Moreover, if the node is an element, then we need to hoist its attributes to
the template\n            // node for matching against content projection selectors.\n            var attrs =
this.extractAttributes('ng-template', templateParsedProperties, i18nAttrsMeta);\n            var templateAttrs_1 =
[];\n            attrs.literal.forEach(function (attr) { return templateAttrs_1.push(attr); });\n            attrs.bound.forEach(function (attr) { return templateAttrs_1.push(attr); });\n            var hoistedAttrs =
parsedElement instanceof Element ?\n                {\n                    attributes: parsedElement.attributes,\n                    inputs: parsedElement.inputs,\n                    outputs: parsedElement.outputs,\n                } :\n                {\n                    attributes: [], inputs: [], outputs: [] };\n            // For <ng-template>s with structural directives on them, avoid
passing i18n information to\n            // the wrapping template to prevent unnecessary i18n instructions from being
generated. The\n            // necessary i18n meta information will be extracted from child elements.\n            var
i18n = isTemplateElement && isI18nRootElement ? undefined : element.i18n;\n            // TODO(pk): test for this
case\n            parsedElement = new Template(parsedElement.name, hoistedAttrs.attributes, hoistedAttrs.inputs,
hoistedAttrs.outputs, templateAttrs_1, [parsedElement], [/* no references */], templateVariables,
element.sourceSpan, element.startSourceSpan, element.endSourceSpan, i18n);\n        }\n        if
(isI18nRootElement) {\n            this.inI18nBlock = false;\n        }\n        return parsedElement;\n    };\n    HtmlAstToIvyAst.prototype.visitAttribute = function (attribute) {\n        return new TextAttribute(attribute.name,
attribute.value, attribute.sourceSpan, attribute.valueSpan, attribute.i18n);\n    };\n    HtmlAstToIvyAst.prototype.visitText = function (text) {\n        return this._visitTextWithInterpolation(text.value,
text.sourceSpan, text.i18n);\n    };\n    HtmlAstToIvyAst.prototype.visitExpansion = function (expansion) {\n        var _this = this;\n        if (!expansion.i18n) {\n            // do not generate Icu in case it was created\n
// outside of i18n block in a template\n            return null;\n        }\n        if
(!isI18nRootNode(expansion.i18n)) {\n            throw new Error("Invalid type '" + expansion.i18n.constructor
+ "'" for '" + expansion.i18n"' property of '" + expansion.sourceSpan.toString() + "'. Expected a '" + expansion.i18n.constructor
+ "'");\n        }\n        var message = expansion.i18n;\n        var vars = {};\n        var placeholders = {};\n        // extract
VARs from ICUs - we process them separately while\n        // assembling resulting message via goog.getMsg
function, since\n        // we need to pass them to top-level goog.getMsg call\n        Object.keys(message.placeholders).forEach(function (key) {\n            var value = message.placeholders[key];\n            if (key.startsWith(I18N_ICU_VAR_PREFIX)) {\n                // Currently when the `plural` or `select`
keywords in an ICU contain trailing spaces (e.g.\n                // `{count, select , ...}`), these spaces are also included
into the key names in ICU vars\n                // (e.g. `VAR_SELECT `). These trailing spaces are not desirable,
since they will later be\n                // converted into `_` symbols while normalizing placeholder names, which
might lead to\n                // mismatches at runtime (i.e. placeholder will not be replaced with the correct value).\n                var formattedKey = key.trim();\n                var ast =
_this.bindingParser.parseInterpolationExpression(value.text, value.sourceSpan);\n                vars[formattedKey] =
new BoundText(ast, value.sourceSpan);\n            }\n            else {\n                placeholders[key] =
_this._visitTextWithInterpolation(value.text, value.sourceSpan);\n            }\n        });\n        return new
Icu(vars, placeholders, expansion.sourceSpan, message);\n    };\n    HtmlAstToIvyAst.prototype.visitExpansionCase = function (expansionCase) {\n        return null;\n    };\n    HtmlAstToIvyAst.prototype.visitComment = function (comment) {\n        return null;\n    };\n    // convert
view engine `ParsedProperty` to a format suitable for IVY\n    HtmlAstToIvyAst.prototype.extractAttributes =
function (elementName, properties, i18nPropsMeta) {\n        var _this = this;\n        var bound = [];\n        var
literal = [];\n        properties.forEach(function (prop) {\n            var i18n = i18nPropsMeta[prop.name];\n            if (prop.isLiteral) {\n                literal.push(new TextAttribute(prop.name, prop.expression.source || ",

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prop.sourceSpan, undefined, i18n));\n        }\n        else {\n            // Note that validation is skipped
and property mapping is disabled\n            // due to the fact that we need to make sure a given prop is not an\n            // input of a directive and directive matching happens at runtime.\n            var bep =
_this.bindingParser.createBoundElementProperty(elementName, prop, /* skipValidation */ true, /*
mapPropertyName */ false);\n            bound.push(BoundAttribute.fromBoundElementProperty(bep, i18n));\n        }\n    });\n    return { bound: bound, literal: literal };\n    };\n
HtmlAstToIvyAst.prototype.parseAttribute = function (isTemplateElement, attribute, matchableAttributes,
parsedProperties, boundEvents, variables, references) {\n        var name =
normalizeAttributeName(attribute.name);\n        var value = attribute.value;\n        var srcSpan =
attribute.sourceSpan;\n        var absoluteOffset = attribute.valueSpan ? attribute.valueSpan.start.offset :
srcSpan.start.offset;\n        function createKeySpan(srcSpan, prefix, identifier) {\n            // We need to adjust
the start location for the keySpan to account for the removed 'data-\n            // prefix from
`normalizeAttributeName`.\n            var normalizationAdjustment = attribute.name.length - name.length;\n            var keySpanStart = srcSpan.start.moveBy(prefix.length + normalizationAdjustment);\n            var keySpanEnd
= keySpanStart.moveBy(identifier.length);\n            return new ParseSourceSpan(keySpanStart, keySpanEnd,
keySpanStart, identifier);\n        }\n        var bindParts = name.match(BIND_NAME_REGEXP$1);\n        var
hasBinding = false;\n        if (bindParts) {\n            hasBinding = true;\n            if
(bindParts[KW_BIND_IDX$1] != null) {\n                var identifier = bindParts[IDENT_KW_IDX$1];\n                var keySpan = createKeySpan(srcSpan, bindParts[KW_BIND_IDX$1], identifier);\n                this.bindingParser.parsePropertyBinding(identifier, value, false, srcSpan, absoluteOffset, attribute.valueSpan,
matchableAttributes, parsedProperties, keySpan);\n            }\n            else if (bindParts[KW_LET_IDX$1]) {\n                if (isTemplateElement) {\n                    var identifier = bindParts[IDENT_KW_IDX$1];\n                    var keySpan = createKeySpan(srcSpan, bindParts[KW_LET_IDX$1], identifier);\n                    this.parseVariable(identifier, value, srcSpan, keySpan, attribute.valueSpan, variables);\n                }\n            }\n            else {\n                this.reportError("\\\\\\"let-\\\\\\" is only supported on ng-template elements.", srcSpan);\n            }\n        }\n        else if (bindParts[KW_REF_IDX$1]) {\n            var identifier =
bindParts[IDENT_KW_IDX$1];\n            this.parseReference(identifier, value, srcSpan, attribute.valueSpan,
references);\n        }\n        else if (bindParts[KW_ON_IDX$1]) {\n            var events = [];\n            var identifier = bindParts[IDENT_KW_IDX$1];\n            this.bindingParser.parseEvent(identifier, value,
srcSpan, attribute.valueSpan || srcSpan, matchableAttributes, events);\n            addEvents(events,
boundEvents);\n        }\n        else if (bindParts[KW_BINDON_IDX$1]) {\n            var identifier =
bindParts[IDENT_KW_IDX$1];\n            var keySpan = createKeySpan(srcSpan,
bindParts[KW_BINDON_IDX$1], identifier);\n            this.bindingParser.parsePropertyBinding(identifier,
value, false, srcSpan, absoluteOffset, attribute.valueSpan, matchableAttributes, parsedProperties, keySpan);\n            this.parseAssignmentEvent(identifier, value, srcSpan, attribute.valueSpan, matchableAttributes,
boundEvents);\n        }\n        else if (bindParts[KW_AT_IDX$1]) {\n            var keySpan =
createKeySpan(srcSpan, "", name);\n            this.bindingParser.parseLiteralAttr(name, value, srcSpan,
absoluteOffset, attribute.valueSpan, matchableAttributes, parsedProperties, keySpan);\n        }\n        else
if (bindParts[IDENT_BANANA_BOX_IDX$1]) {\n            var keySpan = createKeySpan(srcSpan, '[',\n            bindParts[IDENT_BANANA_BOX_IDX$1]);\n            this.bindingParser.parsePropertyBinding(bindParts[IDENT_BANANA_BOX_IDX$1], value, false, srcSpan,
absoluteOffset, attribute.valueSpan, matchableAttributes, parsedProperties, keySpan);\n            this.parseAssignmentEvent(bindParts[IDENT_BANANA_BOX_IDX$1], value, srcSpan, attribute.valueSpan,
matchableAttributes, boundEvents);\n        }\n        else if (bindParts[IDENT_PROPERTY_IDX$1]) {\n            var keySpan = createKeySpan(srcSpan, '[', bindParts[IDENT_PROPERTY_IDX$1]);\n            this.bindingParser.parsePropertyBinding(bindParts[IDENT_PROPERTY_IDX$1], value, false, srcSpan,
absoluteOffset, attribute.valueSpan, matchableAttributes, parsedProperties, keySpan);\n        }\n        else
if (bindParts[IDENT_EVENT_IDX$1]) {\n            var events = [];\n

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this.bindingParser.parseEvent(bindParts[IDENT_EVENT_IDX$1], value, srcSpan, attribute.valueSpan || srcSpan,
matchableAttributes, events);\n      addEvents(events, boundEvents);\n      }\n      }\n      else
{\n      var keySpan = createKeySpan(srcSpan, "/* prefix */, name);\n      hasBinding =
this.bindingParser.parsePropertyInterpolation(name, value, srcSpan, attribute.valueSpan, matchableAttributes,
parsedProperties, keySpan);\n      }\n      return hasBinding;\n      };\n
HtmlAstToIvyAst.prototype._visitTextWithInterpolation = function (value, sourceSpan, i18n) {\n      var
valueNoNgsp = replaceNgsp(value);\n      var expr = this.bindingParser.parseInterpolation(valueNoNgsp,
sourceSpan);\n      return expr ? new BoundText(expr, sourceSpan, i18n) : new Text(valueNoNgsp,
sourceSpan);\n      };\n      HtmlAstToIvyAst.prototype.parseVariable = function (identifier, value, sourceSpan,
keySpan, valueSpan, variables) {\n      if (identifier.indexOf('.') > -1) {\n      this.reportError("\\\\\\"-\\\\" is
not allowed in variable names\\", sourceSpan);\n      }\n      else if (identifier.length === 0) {\n
this.reportError("\\\"Variable does not have a name\\", sourceSpan);\n      }\n      variables.push(new
Variable(identifier, value, sourceSpan, keySpan, valueSpan));\n      };\n
HtmlAstToIvyAst.prototype.parseReference = function (identifier, value, sourceSpan, valueSpan, references) {\n
if (identifier.indexOf('.') > -1) {\n      this.reportError("\\\\\\"-\\\\" is not allowed in reference names\\",
sourceSpan);\n      }\n      else if (identifier.length === 0) {\n      this.reportError("\\\"Reference does not
have a name\\", sourceSpan);\n      }\n      references.push(new Reference(identifier, value, sourceSpan,
valueSpan));\n      };\n      HtmlAstToIvyAst.prototype.parseAssignmentEvent = function (name, expression,
sourceSpan, valueSpan, targetMatchableAttrs, boundEvents) {\n      var events = [];\n
this.bindingParser.parseEvent(name + \"Change\\", expression + \"=\"$event\\", sourceSpan, valueSpan || sourceSpan,
targetMatchableAttrs, events);\n      addEvents(events, boundEvents);\n      };\n
HtmlAstToIvyAst.prototype.reportError = function (message, sourceSpan, level) {\n      if (level === void 0) {\
level = exports.ParseErrorLevel.ERROR; }\n      this.errors.push(new ParseError(sourceSpan, message,
level));\n      };\n      return HtmlAstToIvyAst;\n      }());\n      var NonBindableVisitor$1 = /** @class */ (function ()
{\n      function NonBindableVisitor() {\n      }\n      NonBindableVisitor.prototype.visitElement = function (ast)
{\n      var preparedElement = prepareElement(ast);\n      if (preparedElement.type ===
PreparedElementType.SCRIPT ||\n      preparedElement.type === PreparedElementType.STYLE ||\n
preparedElement.type === PreparedElementType.STYLESHEET) {\n      // Skipping <script> for security
reasons\n      // Skipping <style> and stylesheets as we already processed them\n      // in the
StyleCompiler\n      return null;\n      }\n      var children = visitAll$1(this, ast.children, null);\n
return new Element(ast.name, visitAll$1(this, ast.attrs), \n      /* inputs */ [], /* outputs */ [], children, /*
references */ [], ast.sourceSpan, ast.startSourceSpan, ast.endSourceSpan);\n      };\n
NonBindableVisitor.prototype.visitComment = function (comment) {\n      return null;\n      };\n
NonBindableVisitor.prototype.visitAttribute = function (attribute) {\n      return new
TextAttribute(attribute.name, attribute.value, attribute.sourceSpan, undefined, attribute.i18n);\n      };\n
NonBindableVisitor.prototype.visitText = function (text) {\n      return new Text(text.value, text.sourceSpan);\n
}\n      NonBindableVisitor.prototype.visitExpansion = function (expansion) {\n      return null;\n      };\n
NonBindableVisitor.prototype.visitExpansionCase = function (expansionCase) {\n      return null;\n      };\n
return NonBindableVisitor;\n      }());\n      var NON_BINDABLE_VISITOR$1 = new NonBindableVisitor$1();\n
function normalizeAttributeName(attrName) {\n      return /^data-/.test(attrName) ? attrName.substring(5) :
attrName;\n      }\n      function addEvents(events, boundEvents) {\n      boundEvents.push.apply(boundEvents,
__spread(events.map(function (e) { return BoundEvent.fromParsedEvent(e); }));\n      }\n      function
isEmptyTextNode(node) {\n      return node instanceof Text$3 && node.value.trim().length == 0;\n      }\n
function isCommentNode(node) {\n      return node instanceof Comment;\n      }\n      function textContents(node) {\n
if (node.children.length !== 1 || !(node.children[0] instanceof Text$3)) {\n      return null;\n      }\n      else
{\n      return node.children[0].value;\n      }\n      }\n      var TagType;\n      (function (TagType) {\n
TagType[TagType[\"ELEMENT\"] = 0] = \"ELEMENT\";\n      TagType[TagType[\"TEMPLATE\"] = 1] =
\"TEMPLATE\";\n      })(TagType || (TagType = {}));\n      /**\n      * Generates an object that is used as a shared state

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between parent and all child contexts.\n  */\n  function setupRegistry() {\n    return { getUniqueId:\n    getSeqNumberGenerator(), icus: new Map() };}\n  }\n  /**\n   * I18nContext is a helper class which keeps track\n   * of all i18n-related aspects\n   * (accumulates placeholders, bindings, etc) between i18nStart and i18nEnd\n   * instructions.\n   * When we enter a nested template, the top-level context is being passed down\n   * to the nested component, which uses this context to generate a child instance\n   * of I18nContext class (to handle nested\n   * template) and at the end, reconciles it back\n   * with the parent context.\n   * @param index Instruction\n   * index of i18nStart, which initiates this context\n   * @param ref Reference to a translation const that represents the\n   * content if thus context\n   * @param level Nestng level defined for child contexts\n   * @param templateIndex\n   * Instruction index of a template which this context belongs to\n   * @param meta Meta information (id, meaning,\n   * description, etc) associated with this context\n   */\n  var I18nContext = /** @class */ (function () {\n    function I18nContext(index, ref, level, templateIndex, meta, registry) {\n      if (level === void 0) { level = 0; }\n      if (templateIndex === void 0) { templateIndex = null; }\n      this.index = index;\n      this.ref = ref;\n      this.level = level;\n      this.templateIndex = templateIndex;\n      this.meta = meta;\n      this.registry\n      = registry;\n      this.bindings = new Set();\n      this.placeholders = new Map();\n      this.isEmitted =\n      false;\n      this._unresolvedCtxCount = 0;\n      this._registry = registry || setupRegistry();\n      this.id =\n      this._registry.getUniqueId();\n    }\n    I18nContext.prototype.appendTag = function (type, node, index, closed)\n    {\n      if (node.isVoid && closed) {\n        return; // ignore \"close\" for void tags\n      }\n      var ph\n      = node.isVoid || !closed ? node.startName : node.closeName;\n      var content = { type: type, index: index, ctx:\n      this.id, isVoid: node.isVoid, closed: closed };\n      updatePlaceholderMap(this.placeholders, ph, content);\n    };\n    Object.defineProperty(I18nContext.prototype, \"icus\", {\n      get: function () {\n        return\n        this._registry.icus;\n      },\n      enumerable: false,\n      configurable: true\n    });\n    Object.defineProperty(I18nContext.prototype, \"isRoot\", {\n      get: function () {\n        return this.level\n        === 0;\n      },\n      enumerable: false,\n      configurable: true\n    });\n    Object.defineProperty(I18nContext.prototype, \"isResolved\", {\n      get: function () {\n        return\n        this._unresolvedCtxCount === 0;\n      },\n      enumerable: false,\n      configurable: true\n    });\n    I18nContext.prototype.getSerializedPlaceholders = function () {\n      var result = new Map();\n      this.placeholders.forEach(function (values, key) { return result.set(key, values.map(serializePlaceholderValue));\n      });\n      return result;\n    }; // public API to accumulate i18n-related content\n    I18nContext.prototype.appendBinding = function (binding) {\n      this.bindings.add(binding);\n    };\n    I18nContext.prototype.appendIcu = function (name, ref) {\n      updatePlaceholderMap(this._registry.icus, name,\n      ref);\n    };\n    I18nContext.prototype.appendBoundText = function (node) {\n      var _this = this;\n      var phs = assembleBoundTextPlaceholders(node, this.bindings.size, this.id);\n      phs.forEach(function (values,\n      key) { return updatePlaceholderMap.apply(void 0, __spread([_this.placeholders, key], values)); });\n    };\n    I18nContext.prototype.appendTemplate = function (node, index) {\n      // add open and close tags at the same\n      time,\n      // since we process nested templates separately\n      this.appendTag(TagType.TEMPLATE, node,\n      index, false);\n      this.appendTag(TagType.TEMPLATE, node, index, true);\n      this._unresolvedCtxCount++;\n    };\n    I18nContext.prototype.appendElement = function (node, index, closed)\n    {\n      this.appendTag(TagType.ELEMENT, node, index, closed);\n    };\n    I18nContext.prototype.appendProjection = function (node, index) {\n      // Add open and close tags at the same\n      time, since `<ng-content>` has no content,\n      // so when we come across `<ng-content>` we can register both\n      open and close tags.\n      // Note: runtime i18n logic doesn't distinguish `<ng-content>` tag placeholders and\n      // regular element tag placeholders, so we generate element placeholders for both types.\n      this.appendTag(TagType.ELEMENT, node, index, false);\n      this.appendTag(TagType.ELEMENT, node,\n      index, true);\n    }; // Generates an instance of a child context based on the root one,\n    * when we enter a nested template within I18n section.\n    * @param index Instruction index of\n    * corresponding i18nStart, which initiates this context\n    * @param templateIndex Instruction index of a template\n    * which this context belongs to\n    * @param meta Meta information (id, meaning, description, etc) associated\n    * with this context\n    * @returns I18nContext instance\n    */\n  })\n  */\n
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I18nContext.prototype.forkChildContext = function (index, templateIndex, meta) {\n      return new
I18nContext(index, this.ref, this.level + 1, templateIndex, meta, this._registry);\n    };\n    /**\n     *
Reconciles child context into parent one once the end of the i18n block is reached (i18nEnd).\n     *\n     *
@param context Child I18nContext instance to be reconciled with parent context.\n     */\n
I18nContext.prototype.reconcileChildContext = function (context) {\n      var _this = this;\n      // set the right
context id for open and close\n      // template tags, so we can use it as sub-block ids\n      ['start',
'close'].forEach(function (op) {\n      var key = context.meta[op + \"Name\"];\n      var phs =
_this.placeholders.get(key) || [];\n      var tag = phs.find(findTemplateFn(_this.id, context.templateIndex));\n
      if (tag) {\n      tag.ctx = context.id;\n      });\n      // reconcile placeholders\n
var childPhs = context.placeholders;\n      childPhs.forEach(function (values, key) {\n      var phs =
_this.placeholders.get(key);\n      if (!phs) {\n      _this.placeholders.set(key, values);\n
return;\n      }\n      // try to find matching template...\n      var tmplIdx =
phs.findIndex(findTemplateFn(context.id, context.templateIndex));\n      if (tmplIdx >= 0) {\n      // ...
if found - replace it with nested template content\n      var isCloseTag = key.startsWith('CLOSE');\n
      var isTemplateTag = key.endsWith('NG-TEMPLATE');\n      if (isTemplateTag) {\n      //
current template's content is placed before or after\n      // parent template tag, depending on the
open/close attribute\n      phs.splice.apply(phs, __spread([tmplIdx + (isCloseTag ? 0 : 1), 0], values));\n
      }\n      else {\n      var idx = isCloseTag ? values.length - 1 : 0;\n
values[idx].tmpl = phs[tmplIdx];\n      phs.splice.apply(phs, __spread([tmplIdx, 1], values));\n
      }\n      }\n      else {\n      // ... otherwise just append content to placeholder value\n
phs.push.apply(phs, __spread(values));\n      }\n      _this.placeholders.set(key, phs);\n      });\n
this._unresolvedCtxCount--;\n    };\n    return I18nContext;\n  }());\n  //\n  // Helper methods\n  //\n
function wrap(symbol, index, contextId, closed) {\n    var state = closed ? '': '';\n    return
wrapI18nPlaceholder(\"\\\" + state + symbol + index, contextId);\n  }\n  function wrapTag(symbol, _a, closed) {\n
    var index = _a.index, ctx = _a.ctx, isVoid = _a.isVoid;\n    return isVoid ? wrap(symbol, index, ctx) +
wrap(symbol, index, ctx, true) : wrap(symbol, index, ctx, closed);\n  }\n  function findTemplateFn(ctx,
templateIndex) {\n    return function (token) { return typeof token === 'object' && token.type ===
TagType.TEMPLATE &&\n      token.index === templateIndex && token.ctx === ctx; };\n  }\n  function
serializePlaceholderValue(value) {\n    var element = function (data, closed) { return wrapTag('#', data, closed);
};\n    var template = function (data, closed) { return wrapTag('*', data, closed); };\n    var projection = function
(data, closed) { return wrapTag('!', data, closed); };\n    switch (value.type) {\n      case
TagType.ELEMENT:\n      // close element tag\n      if (value.closed) {\n      return
element(value, true) + (value.tmpl ? template(value.tmpl, true) : '');\n      }\n      // open element tag that
also initiates a template\n      if (value.tmpl) {\n      return template(value.tmpl) + element(value) +\n
      (value.isVoid ? template(value.tmpl, true) : '');\n      }\n      return element(value);\n
    case TagType.TEMPLATE:\n      return template(value, value.closed);\n      default:\n      return
value;\n    }\n  }\n  /**\n   * @license\n   * Copyright Google LLC All Rights Reserved.\n   * Use
of this source code is governed by an MIT-style license that can be\n   * found in the LICENSE file at
https://angular.io/license\n   */\n  var IcuSerializerVisitor = /** @class */ (function () {\n    function
IcuSerializerVisitor() {\n    }\n    IcuSerializerVisitor.prototype.visitText = function (text) {\n      return
text.value;\n    };\n    IcuSerializerVisitor.prototype.visitContainer = function (container) {\n      var _this =
this;\n      return container.children.map(function (child) { return child.visit(_this); }).join(\"\");\n    };\n
    IcuSerializerVisitor.prototype.visitIcu = function (icu) {\n      var _this = this;\n      var strCases =
Object.keys(icu.cases).map(function (k) { return k + \" {\" + icu.cases[k].visit(_this) + \"}\"; });\n      var result =
\"{\" + icu.expressionPlaceholder + \"\", \"\" + icu.type + \"\", \"\" + strCases.join(' ') + \"}\";\n      return result;\n
    };\n    IcuSerializerVisitor.prototype.visitTagPlaceholder = function (ph) {\n      var _this = this;\n
return ph.isVoid ?\n      this.formatPh(ph.startName) :\n      \"\" + this.formatPh(ph.startName) +
ph.children.map(function (child) { return child.visit(_this); }).join(\"\") + this.formatPh(ph.closeName);\n    };\n

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IcuSerializerVisitor.prototype.visitPlaceholder = function (ph) {\n      return this.formatPh(ph.name);\n    };\n    IcuSerializerVisitor.prototype.visitIcuPlaceholder = function (ph, context) {\n      return\n    this.formatPh(ph.name);\n    };\n    IcuSerializerVisitor.prototype.formatPh = function (value) {\n      return\n    \"{\n\" + formatI18nPlaceholderName(value, /* useCamelCase */ false) + \"}\n\";\n    };\n    return\n    IcuSerializerVisitor;\n  }());\n  var serializer = new IcuSerializerVisitor();\n  function serializeIcuNode(icu) {\n    return icu.visit(serializer);\n  }\n  /**\n   * @license\n   * Copyright Google LLC All Rights Reserved.\n   *\n   * Use of this source code is governed by an MIT-style license that can be\n   * found in the LICENSE file at\n   https://angular.io/license\n   *\n   var TAG_TO_PLACEHOLDER_NAMES = {\n    'A': 'LINK',\n    'B':\n    'BOLD_TEXT',\n    'BR': 'LINE_BREAK',\n    'EM': 'EMPHASISED_TEXT',\n    'H1':\n    'HEADING_LEVEL1',\n    'H2': 'HEADING_LEVEL2',\n    'H3': 'HEADING_LEVEL3',\n    'H4':\n    'HEADING_LEVEL4',\n    'H5': 'HEADING_LEVEL5',\n    'H6': 'HEADING_LEVEL6',\n    'HR':\n    'HORIZONTAL_RULE',\n    'I': 'ITALIC_TEXT',\n    'LI': 'LIST_ITEM',\n    'LINK': 'MEDIA_LINK',\n    'OL': 'ORDERED_LIST',\n    'P': 'PARAGRAPH',\n    'Q': 'QUOTATION',\n    'S':\n    'STRIKETHROUGH_TEXT',\n    'SMALL': 'SMALL_TEXT',\n    'SUB': 'SUBSCRIPT',\n    'SUP':\n    'SUPERSCRIPT',\n    'TBODY': 'TABLE_BODY',\n    'TD': 'TABLE_CELL',\n    'TFOOT':\n    'TABLE_FOOTER',\n    'TH': 'TABLE_HEADER_CELL',\n    'THEAD': 'TABLE_HEADER',\n    'TR':\n    'TABLE_ROW',\n    'TT': 'MONOSPACED_TEXT',\n    'U': 'UNDERLINED_TEXT',\n    'UL':\n    'UNORDERED_LIST',\n  };\n  /**\n   * Creates unique names for placeholder with different content.\n   *\n   * Returns the same placeholder name when the content is identical.\n   */\n  var PlaceholderRegistry = /** @class\n   */ (function () {\n    function PlaceholderRegistry() {\n      // Count the occurrence of the base name top\n    generate a unique name\n      this._placeholderNameCounts = {};\n      // Maps signature to placeholder\n    names\n      this._signatureToName = {};\n    }\n    PlaceholderRegistry.prototype.getStartTagPlaceholderName = function (tag, attrs, isVoid) {\n      var signature =\n    this._hashTag(tag, attrs, isVoid);\n      if (this._signatureToName[signature]) {\n        return\n    this._signatureToName[signature];\n      }\n      var upperTag = tag.toUpperCase();\n      var baseName =\n    TAG_TO_PLACEHOLDER_NAMES[upperTag] || \"TAG_\" + upperTag;\n      var name =\n    this._generateUniqueName(isVoid ? baseName : \"START_\" + baseName);\n      this._signatureToName[signature] = name;\n      return name;\n    };\n    PlaceholderRegistry.prototype.getCloseTagPlaceholderName = function (tag) {\n      var signature =\n    this._hashClosingTag(tag);\n      if (this._signatureToName[signature]) {\n        return\n    this._signatureToName[signature];\n      }\n      var upperTag = tag.toUpperCase();\n      var baseName =\n    TAG_TO_PLACEHOLDER_NAMES[upperTag] || \"TAG_\" + upperTag;\n      var name =\n    this._generateUniqueName(\"CLOSE_\" + baseName);\n      this._signatureToName[signature] = name;\n      return name;\n    };\n    PlaceholderRegistry.prototype.getPlaceholderName = function (name, content) {\n      var upperName = name.toUpperCase();\n      var signature = \"PH: \" + upperName + \"=\" + content;\n      if (this._signatureToName[signature]) {\n        return this._signatureToName[signature];\n      }\n      var\n    uniqueName = this._generateUniqueName(upperName);\n      this._signatureToName[signature] =\n    uniqueName;\n      return uniqueName;\n    };\n    PlaceholderRegistry.prototype.getUniquePlaceholder =\n    function (name) {\n      return this._generateUniqueName(name.toUpperCase());\n    };\n    // Generate a\n    hash for a tag - does not take attribute order into account\n    PlaceholderRegistry.prototype._hashTag = function\n    (tag, attrs, isVoid) {\n      var start = \"<\" + tag;\n      var strAttrs = Object.keys(attrs).sort().map(function\n    (name) { return \" \" + name + \"=\" + attrs[name]; }).join(\"\");\n      var end = isVoid ? '>' : '><\" + tag +\n    \">\";\n      return start + strAttrs + end;\n    };\n    PlaceholderRegistry.prototype._hashClosingTag =\n    function (tag) {\n      return this._hashTag(\"/\" + tag, {}, false);\n    };\n    PlaceholderRegistry.prototype._generateUniqueName = function (base) {\n      var seen =\n    this._placeholderNameCounts.hasOwnProperty(base);\n      if (!seen) {\n        this._placeholderNameCounts[base] = 1;\n        return base;\n      }\n      var id =\n    this._placeholderNameCounts[base];\n      this._placeholderNameCounts[base] = id + 1;\n      return base +

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    \"_\" + id;\n    });\n    return PlaceholderRegistry;\n  }());\n\n  /**\n   * @license\n   * Copyright Google\n   * LLC All Rights Reserved.\n   * Use of this source code is governed by an MIT-style license that can be\n   * found in the LICENSE file at https://angular.io/license\n   */\n  var _expParser = new Parser$(new Lexer());\n\n  /**\n   * Returns a function converting html nodes to an i18n Message given an interpolationConfig\n   */\n  function createI18nMessageFactory(interpolationConfig) {\n    var visitor = new _I18nVisitor(_expParser,\n    interpolationConfig);\n    return function (nodes, meaning, description, customId, visitNodeFn) { return\n    visitor.toI18nMessage(nodes, meaning, description, customId, visitNodeFn); }\n  }\n\n  function\n  noopVisitNodeFn(_html, i18n) {\n    return i18n;\n  }\n  var _I18nVisitor = /** @class */ (function () {\n    function _I18nVisitor(_expressionParser, _interpolationConfig) {\n      this._expressionParser =\n      _expressionParser;\n      this._interpolationConfig = _interpolationConfig;\n    }\n\n    _I18nVisitor.prototype.toI18nMessage = function (nodes, meaning, description, customId, visitNodeFn) {\n    if (meaning === void 0) { meaning = "; }\n    if (description === void 0) { description = "; }\n    if\n    (customId === void 0) { customId = "; }\n    var context = {\n      isIcu: nodes.length === 1 && nodes[0]\n    instanceof Expansion,\n      icuDepth: 0,\n      placeholderRegistry: new PlaceholderRegistry(),\n      placeholderToContent: {},\n      placeholderToMessage: {},\n      visitNodeFn: visitNodeFn ||\n      noopVisitNodeFn,\n    }; \n    var i18nodes = visitAll$(this, nodes, context);\n    return new\n    Message(i18nodes, context.placeholderToContent, context.placeholderToMessage, meaning, description,\n    customId);\n  }\n\n  _I18nVisitor.prototype.visitElement = function (el, context) {\n    var _a;\n    var children = visitAll$(this, el.children, context);\n    var attrs = {};\n    el.attrs.forEach(function (attr)\n    {\n      // Do not visit the attributes, translatable ones are top-level ASTs\n      attrs[attr.name] =\n      attr.value;\n    });\n    var isVoid = getHtmlTagDefinition(el.name).isVoid;\n    var startPhName =\n    context.placeholderRegistry.getStartTagPlaceholderName(el.name, attrs, isVoid);\n    context.placeholderToContent[startPhName] = {\n      text: el.startSourceSpan.toString(),\n      sourceSpan: el.startSourceSpan,\n    }; \n    var closePhName = "; \n    if (!isVoid) {\n      closePhName = context.placeholderRegistry.getCloseTagPlaceholderName(el.name);\n      context.placeholderToContent[closePhName] = {\n        text: "<\" + el.name + >\",\n        sourceSpan: (_a = el.endSourceSpan) !== null && _a !== void 0 ? _a : el.sourceSpan,\n      }; \n    } \n\n    var node = new TagPlaceholder(el.name, attrs, startPhName, closePhName, children, isVoid, el.sourceSpan,\n    el.startSourceSpan, el.endSourceSpan);\n    return context.visitNodeFn(el, node);\n  }\n\n  _I18nVisitor.prototype.visitAttribute = function (attribute, context) {\n    var node =\n    this._visitTextWithInterpolation(attribute.value, attribute.sourceSpan, context);\n    return\n    context.visitNodeFn(attribute, node);\n  }\n\n  _I18nVisitor.prototype.visitText = function (text, context) {\n    var\n    node = this._visitTextWithInterpolation(text.value, text.sourceSpan, context);\n    return\n    context.visitNodeFn(text, node);\n  }\n\n  _I18nVisitor.prototype.visitComment = function (comment,\n  context) {\n    return null;\n  }\n\n  _I18nVisitor.prototype.visitExpansion = function (icu, context) {\n    var\n    _this = this;\n    context.icuDepth++;\n    var i18nIcuCases = {};\n    var i18nIcu = new\n    Icu$(icu.switchValue, icu.type, i18nIcuCases, icu.sourceSpan);\n    icu.cases.forEach(function (caze) {\n      i18nIcuCases[caze.value] = new Container(caze.expression.map(function (node) { return node.visit(_this,\n      context); }), caze.expSourceSpan);\n    });\n    context.icuDepth--;\n    if (context.isIcu ||\n    context.icuDepth > 0) {\n      // Returns an ICU node when:\n      // - the message (vs a part of the\n      message) is an ICU message, or\n      // - the ICU message is nested.\n      var expPh =\n      context.placeholderRegistry.getUniquePlaceholder(\"VAR_\" + icu.type);\n      i18nIcu.expressionPlaceholder\n      = expPh;\n      context.placeholderToContent[expPh] = {\n        text: icu.switchValue,\n        sourceSpan: icu.switchValueSourceSpan,\n      }; \n      return context.visitNodeFn(icu, i18nIcu);\n    }\n\n    // Else returns a placeholder\n    // ICU placeholders should not be replaced with their original\n    content but with the their\n    // translations.\n    // TODO(vicb): add a html.Node -> i18n.Message cache\n    to avoid having to re-create the msg\n    var phName = context.placeholderRegistry.getPlaceholderName('ICU',\n    icu.sourceSpan.toString());\n    context.placeholderToMessage[phName] = this.toI18nMessage([icu], ", ", ", ",

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this._setLegacyIds(message, meta);\n        return message;\n    };\n    I18nMetaVisitor.prototype.visitElement
= function (element) {\n        var e_1, _a, e_2, _b;\n        if (hasI18nAttrs(element)) {\n
this.hasI18nMeta = true;\n            var attrs = [];\n            var attrsMeta = {};\n            try {\n                for
(var _c = __values(element.attrs), _d = _c.next(); !_d.done; _d = _c.next()) {\n                    var attr = _d.value;\n
                    if (attr.name === I18N_ATTR) {\n                        // root 'i18n' node attribute\n                        var
i18n_1 = element.i18n || attr.value;\n                        var message = this._generateI18nMessage(element.children,
i18n_1, setI18nRefs);\n                        // do not assign empty i18n meta\n                        if
(message.nodes.length) {\n                            element.i18n = message;\n                        }\n
                        else if (attr.name.startsWith(I18N_ATTR_PREFIX)) {\n                            // 'i18n-*' attributes\n
                            var key = attr.name.slice(I18N_ATTR_PREFIX.length);\n                            attrsMeta[key] = attr.value;\n
                        }\n                        else {\n                            // non-i18n attributes\n                            attrs.push(attr);\n
                        }\n                    }\n                } catch (e_1_1) { e_1 = { error: e_1_1 }; }\n                finally {\n
                    try {\n                        if (_d && !_d.done && (_a = _c.return)) _a.call(_c);\n                    }\n                    finally
{ if (e_1) throw e_1.error; }\n                }\n                // set i18n meta for attributes\n                if
(Object.keys(attrsMeta).length) {\n                    try {\n                        for (var attrs_1 = __values(attrs), attrs_1_1 =
attrs_1.next(); !attrs_1_1.done; attrs_1_1 = attrs_1.next()) {\n                            var attr = attrs_1_1.value;\n
                            var meta = attrsMeta[attr.name];\n                            // do not create translation for empty attributes\n
                            if (meta !== undefined && attr.value) {\n                                attr.i18n = this._generateI18nMessage([attr,
attr.i18n || meta]);\n                            }\n                        } catch (e_2_1) { e_2 = { error:
e_2_1 }; }\n                    } finally {\n                        try {\n                            if (attrs_1_1 && !attrs_1_1.done && (_b
= attrs_1.return)) _b.call(attrs_1);\n                        }\n                    } finally { if (e_2) throw e_2.error; }\n
                }\n                if (!this.keepI18nAttrs) {\n                    // update element's attributes,\n                    //
keeping only non-i18n related ones\n                    element.attrs = attrs;\n                }\n            }\n        }\n        return element;\n    };\n
I18nMetaVisitor.prototype.visitExpansion = function (expansion, currentMessage) {\n        var message;\n        var meta = expansion.i18n;\n        this.hasI18nMeta = true;\n        if (meta instanceof IcuPlaceholder) {\n
            // set ICU placeholder name (e.g. `ICU_1`),\n            // generated while processing root element contents,\n            // so we can reference it when we output translation\n            var name = meta.name;\n            message =
this._generateI18nMessage([expansion], meta);\n            var icu = icuFromI18nMessage(message);\n            icu.name = name;\n        } else {\n            // ICU is a top level message, try to use metadata from
container element if provided via\n            // `context` argument. Note: context may not be available for
standalone ICUs (without\n            // wrapping element), so fallback to ICU metadata in this case.\n            message = this._generateI18nMessage([expansion], currentMessage || meta);\n        }\n        expansion.i18n =
message;\n        return expansion;\n    };\n    I18nMetaVisitor.prototype.visitText = function (text) {\n
return text;\n    };\n    I18nMetaVisitor.prototype.visitAttribute = function (attribute) {\n        return
attribute;\n    };\n    I18nMetaVisitor.prototype.visitComment = function (comment) {\n        return
comment;\n    };\n    I18nMetaVisitor.prototype.visitExpansionCase = function (expansionCase) {\n
return expansionCase;\n    };\n    /**\n     * Parse the general form `meta` passed into extract the explicit
metadata needed to create a\n     * `Message`.\n     *\n     * There are three possibilities for the `meta`
variable\n     * 1) a string from an `i18n` template attribute: parse it to extract the metadata values.\n     * 2) a
`Message` from a previous processing pass: reuse the metadata values in the message.\n     * 4) other: ignore this
and just process the message metadata as normal\n     *\n     * @param meta the bucket that holds information
about the message\n     * @returns the parsed metadata.\n     */\n
I18nMetaVisitor.prototype._parseMetadata = function (meta) {\n        return typeof meta === 'string' ?
parseI18nMeta(meta) : meta instanceof Message ? meta : {};\n    };\n    /**\n     * Generate (or
restore) message id if not specified already.\n     */\n    I18nMetaVisitor.prototype._setMessageId = function
(message, meta) {\n        if (!message.id) {\n            message.id = meta instanceof Message && meta.id ||
decimalDigest(message);\n        }\n    };\n    /**\n     * Update the `message` with a `legacyId` if

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necessary.\n      *\n      * @param message the message whose legacy id should be set\n      * @param meta
information about the message being processed\n      *\n      I18nMetaVisitor.prototype._setLegacyIds = function
(message, meta) {\n      if (this.enableI18nLegacyMessageIdFormat) {\n      message.legacyIds =
[computeDigest(message), computeDecimalDigest(message)];\n      } else if (typeof meta !== 'string')
{\n      // This occurs if we are doing the 2nd pass after whitespace removal (see `parseTemplate()` in\n
// `packages/compiler/src/render3/view/template.ts`).\n      // In that case we want to reuse the legacy message
generated in the 1st pass (see\n      // `setI18nRefs()`).\n      var previousMessage = meta instanceof
Message ?\n      meta :\n      meta instanceof IcuPlaceholder ? meta.previousMessage : undefined;\n      message.legacyIds = previousMessage ? previousMessage.legacyIds : [];\n      }\n      }\n      return
I18nMetaVisitor;\n      }());\n      /** I18n separators for metadata **/\n      var I18N_MEANING_SEPARATOR = "|";\n      var I18N_ID_SEPARATOR = '@@';\n      /**\n      * Parses i18n metas like:\n      * - "@@id",\n      * -
"description[@@id]",\n      * - "meaning|description[@@id]"
* and returns an object with parsed output.\n
*\n      * @param meta String that represents i18n meta\n      * @returns Object with id, meaning and description
fields\n      */\n      function parseI18nMeta(meta) {\n      var _a, _b;\n      if (meta === void 0) { meta = ""; }\n      var customId;\n      var meaning;\n      var description;\n      meta = meta.trim();\n      if (meta) {\n      var
idIndex = meta.indexOf(I18N_ID_SEPARATOR);\n      var descIndex =
meta.indexOf(I18N_MEANING_SEPARATOR);\n      var meaningAndDesc = void 0;\n      _a =
__read((idIndex > -1) ? [meta.slice(0, idIndex), meta.slice(idIndex + 2)] : [meta, "], 2), meaningAndDesc = _a[0],
customId = _a[1];\n      _b = __read((descIndex > -1) ?\n      [meaningAndDesc.slice(0, descIndex),
meaningAndDesc.slice(descIndex + 1)] :\n      ["", meaningAndDesc], 2), meaning = _b[0], description =
_b[1];\n      }\n      return { customId: customId, meaning: meaning, description: description };\n      }\n      //
Converts i18n meta information for a message (id, description, meaning)\n      // to a JsDoc statement formatted as
expected by the Closure compiler.\n      function i18nMetaToJSDoc(meta) {\n      var tags = [];\n      if
(meta.description) {\n      tags.push({ tagName: "desc" /* Desc */, text: meta.description });\n      }\n      if
(meta.meaning) {\n      tags.push({ tagName: "meaning" /* Meaning */, text: meta.meaning });\n      }\n      return tags.length == 0 ? null : jsDocComment(tags);\n      }\n      /** Closure uses `goog.getMsg(message)` to
lookup translations */\n      var GOOG_GET_MSG = 'goog.getMsg';\n      function
createGoogleGetMsgStatements(variable$1, message, closureVar, params) {\n      var messageString =
serializeI18nMessageForGetMsg(message);\n      var args = [literal(messageString)];\n      if
(Object.keys(params).length) {\n      args.push(mapLiteral(params, true));\n      }\n      /**\n      // * @desc
description of message\n      // * @meaning meaning of message\n      // */\n      // const MSG_... =
goog.getMsg(...);\n      // I18N_X = MSG_...;\n      var googGetMsgStmt =
closureVar.set(variable(GOOG_GET_MSG).callFn(args)).toConstDecl();\n      var metaComment =
i18nMetaToJSDoc(message);\n      if (metaComment !== null) {\n      googGetMsgStmt.addLeadingComment(metaComment);\n      }\n      var i18nAssignmentStmt = new
ExpressionStatement(variable$1.set(closureVar));\n      return [googGetMsgStmt, i18nAssignmentStmt];\n      }\n      /**\n      * This visitor walks over i18n tree and generates its string representation, including ICUs and\n
* placeholders in `${placeholder}` (for plain messages) or `{PLACEHOLDER}` (inside ICUs) format.\n
*/\n      var
GetMsgSerializerVisitor = /** @class */ (function () {\n      function GetMsgSerializerVisitor() {\n      }\n      GetMsgSerializerVisitor.prototype.formatPh = function (value) {\n      return "${$" +
formatI18nPlaceholderName(value) + `}`";\n      }\n      GetMsgSerializerVisitor.prototype.visitText = function
(text) {\n      return text.value;\n      }\n      GetMsgSerializerVisitor.prototype.visitContainer = function
(container) {\n      var _this = this;\n      return container.children.map(function (child) { return
child.visit(_this); }).join("");\n      }\n      GetMsgSerializerVisitor.prototype.visitIcu = function (icu) {\n      return serializeIcuNode(icu);\n      }\n      GetMsgSerializerVisitor.prototype.visitTagPlaceholder = function (ph)
{\n      var _this = this;\n      return ph.isVoid ?\n      this.formatPh(ph.startName) :\n      "" +
this.formatPh(ph.startName) + ph.children.map(function (child) { return child.visit(_this); }).join("") +
this.formatPh(ph.closeName);\n      }\n      GetMsgSerializerVisitor.prototype.visitPlaceholder = function (ph) {\n

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        return this.formatPh(ph.name);\n    };\n    GetMsgSerializerVisitor.prototype.visitIcuPlaceholder =
function (ph, context) {\n        return this.formatPh(ph.name);\n    };\n    return GetMsgSerializerVisitor;\n
}());\n    var serializerVisitor$1 = new GetMsgSerializerVisitor();\n    function
serializeI18nMessageForGetMsg(message) {\n        return message.nodes.map(function (node) { return
node.visit(serializerVisitor$1, null); }).join("");\n    }\n\n    function createLocalizeStatements(variable, message,
params) {\n        var _c = serializeI18nMessageForLocalize(message), messageParts = _c.messageParts,
placeholders = _c.placeholders;\n        var sourceSpan = getSourceSpan(message);\n        var expressions =
placeholders.map(function (ph) { return params[ph.text]; });\n        var localizedString$1 =
localizedString(message, messageParts, placeholders, expressions, sourceSpan);\n        var variableInitialization =
variable.set(localizedString$1);\n        return [new ExpressionStatement(variableInitialization)];\n    }\n    /**\n     *
This visitor walks over an i18n tree, capturing literal strings and placeholders.\n     * \n     * The result can be used
for generating the `localize` tagged template literals.\n     * \n     * @param LocalizeSerializerVisitor\n     */
(function () {\n        function LocalizeSerializerVisitor() {\n        }\n
LocalizeSerializerVisitor.prototype.visitText = function (text, context) {\n            if (context[context.length - 1]
instanceof LiteralPiece) {\n                // Two literal pieces in a row means that there was some comment node in-
between.\n                context[context.length - 1].text += text.value;\n            }\n            else {\n
context.push(new LiteralPiece(text.value, text.sourceSpan));\n            }\n        };\n
LocalizeSerializerVisitor.prototype.visitContainer = function (container, context) {\n            var _this = this;\n
container.children.forEach(function (child) { return child.visit(_this, context); });\n        };\n
LocalizeSerializerVisitor.prototype.visitIcu = function (icu, context) {\n            context.push(new
LiteralPiece(serializeIcuNode(icu), icu.sourceSpan));\n        };\n
LocalizeSerializerVisitor.prototype.visitTagPlaceholder = function (ph, context) {\n            var _this = this;\n
var _a, _b;\n            context.push(this.createPlaceholderPiece(ph.startName, (_a = ph.startSourceSpan) !== null &&
_a !== void 0 ? _a : ph.sourceSpan));\n            if (!ph.isVoid) {\n                ph.children.forEach(function (child) {
return child.visit(_this, context); });\n                context.push(this.createPlaceholderPiece(ph.closeName, (_b =
ph.endSourceSpan) !== null && _b !== void 0 ? _b : ph.sourceSpan));\n            }\n        };\n
LocalizeSerializerVisitor.prototype.visitPlaceholder = function (ph, context) {\n
context.push(this.createPlaceholderPiece(ph.name, ph.sourceSpan));\n        };\n
LocalizeSerializerVisitor.prototype.visitIcuPlaceholder = function (ph, context) {\n
context.push(this.createPlaceholderPiece(ph.name, ph.sourceSpan));\n        };\n
LocalizeSerializerVisitor.prototype.createPlaceholderPiece = function (name, sourceSpan) {\n            return new
PlaceholderPiece(formatI18nPlaceholderName(name, /* useCamelCase */ false), sourceSpan);\n        };\n        return
LocalizeSerializerVisitor;\n    }());\n    var serializerVisitor$2 = new LocalizeSerializerVisitor();\n    /**\n     *
Serialize an i18n message into two arrays: messageParts and placeholders.\n     * \n     * These arrays will be used to
generate `localize` tagged template literals.\n     * \n     * @param message The message to be serialized.\n     *
@returns an object containing the messageParts and placeholders.\n     * \n     */
(function ()\n    serializeI18nMessageForLocalize(message) {\n        var pieces = [];\n        message.nodes.forEach(function (node) {\n
return node.visit(serializerVisitor$2, pieces); });\n        return processMessagePieces(pieces);\n    })\n    function
getSourceSpan(message) {\n        var startNode = message.nodes[0];\n        var endNode =
message.nodes[message.nodes.length - 1];\n        return new ParseSourceSpan(startNode.sourceSpan.start,
endNode.sourceSpan.end, startNode.sourceSpan.fullStart, startNode.sourceSpan.details);\n    }\n    /**\n     *
Convert the list of serialized MessagePieces into two arrays.\n     * \n     * One contains the literal string pieces and
the other the placeholders that will be replaced by\n     * expressions when rendering `localize` tagged template
literals.\n     * \n     * @param pieces The pieces to process.\n     * \n     * @returns an object containing the messageParts
and placeholders.\n     * \n     */
(function ()\n    function processMessagePieces(pieces) {\n        var messageParts = [];\n        var
placeholders = [];\n        if (pieces[0] instanceof PlaceholderPiece) {\n            // The first piece was a placeholder so
we need to add an initial empty message part.\n
messageParts.push(createEmptyMessagePart(pieces[0].sourceSpan.start));\n        }\n        for (var i = 0; i <

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pieces.length; i++) {\n      var part = pieces[i];\n      if (part instanceof LiteralPiece) {\n
messageParts.push(part);\n      }\n      else {\n      placeHolders.push(part);\n      if (pieces[i - 1]
instanceof PlaceholderPiece) {\n      // There were two placeholders in a row, so we need to add an empty
message part.\n      messageParts.push(createEmptyMessagePart(pieces[i - 1].sourceSpan.end));\n
}\n      }\n      }\n      if (pieces[pieces.length - 1] instanceof PlaceholderPiece) {\n      // The last piece was
a placeholder so we need to add a final empty message part.\n
messageParts.push(createEmptyMessagePart(pieces[pieces.length - 1].sourceSpan.end));\n      }\n      return {\n
messageParts: messageParts, placeHolders: placeHolders };\n      }\n      function createEmptyMessagePart(location)
{\n      return new LiteralPiece("", new ParseSourceSpan(location, location));\n      }\n      }\n      // Selector attribute name
of ``\n      var NG_CONTENT_SELECT_ATTR$1 = 'select';\n      // Attribute name of `ngProjectAs`.\n
var NG_PROJECT_AS_ATTR_NAME = 'ngProjectAs';\n      // Global symbols available only inside event
bindings.\n      var EVENT_BINDING_SCOPE_GLOBALS = new Set(['$event']);\n      // List of supported global
targets for event listeners\n      var GLOBAL_TARGET_RESOLVERS = new Map([[ 'window',
Identifiers$1.resolveWindow], [ 'document', Identifiers$1.resolveDocument], [ 'body', Identifiers$1.resolveBody]]);\n
var LEADING_TRIVIA_CHARS = [ ' ', '\n', '\r', '\t'];\n      // if (rf & flags) { .. }\n      function
renderFlagCheckIfStmt(flags, statements) {\n      return
ifStmt(variable(RENDER_FLAGS).bitwiseAnd(literal(flags), null, false), statements);\n      }\n      function
prepareEventListenerParameters(eventAst, handlerName, scope) {\n      if (handlerName === void 0) {\n
handlerName = null; }\n      if (scope === void 0) {\n      scope = null; }\n      var type = eventAst.type, name =
eventAst.name, target = eventAst.target, phase = eventAst.phase, handler = eventAst.handler;\n      if (target &&
!GLOBAL_TARGET_RESOLVERS.has(target)) {\n      throw new Error("Unexpected global target \"" + target
+ "\" defined for \"" + name + "\" event.\n      Supported list of global targets: \"" +
Array.from(GLOBAL_TARGET_RESOLVERS.keys()) + "\".");\n      }\n      var eventArgumentName =
'$event';\n      var implicitReceiverAccesses = new Set();\n      var implicitReceiverExpr = (scope === null ||
scope.bindingLevel === 0) ?\n      variable(CONTEXT_NAME) :\n
scope.getOrCreateSharedContextVar(0);\n      var bindingExpr = convertActionBinding(scope,
implicitReceiverExpr, handler, 'b', function () { return error("Unexpected interpolation"); }, eventAst.handlerSpan,
implicitReceiverAccesses, EVENT_BINDING_SCOPE_GLOBALS);\n      var statements = [];\n      if (scope) {\n
statements.push.apply(statements, __spread(scope.restoreViewStatement()));\n
statements.push.apply(statements, __spread(scope.variableDeclarations()));\n      }\n
statements.push.apply(statements, __spread(bindingExpr.render3Stmts));\n      var eventName = type === 1 /*
Animation */ ? prepareSyntheticListenerName(name, phase) : name;\n      var fnName = handlerName &&
sanitizeIdentifier(handlerName);\n      var fnArgs = [];\n      if
(implicitReceiverAccesses.has(eventArgumentName)) {\n      fnArgs.push(new FnParam(eventArgumentName,
DYNAMIC_TYPE));\n      }\n      var handlerFn = fn(fnArgs, statements, INFERRED_TYPE, null, fnName);\n
var params = [literal(eventName), handlerFn];\n      if (target) {\n      params.push(literal(false), //
`useCapture` flag, defaults to `false`\n      importExpr(GLOBAL_TARGET_RESOLVERS.get(target));\n
}\n      return params;\n      }\n      function createComponentDefConsts() {\n      return {\n      prepareStatements: [],
constExpressions: [] };\n      }\n      var TemplateDefinitionBuilder = /** @class */ (function () {\n      function
TemplateDefinitionBuilder(constantPool, parentBindingScope, level, contextName, i18nContext, templateIndex,
templateName, directiveMatcher, directives, pipeTypeByName, pipes, _namespace, relativeContextFilePath,
i18nUseExternalIds, _constants) {\n      var _this = this;\n      if (level === void 0) {\n      level = 0; }\n      if
(_constants === void 0) {\n      _constants = createComponentDefConsts(); }\n      this.constantPool = constantPool;\n
this.level = level;\n      this.contextName = contextName;\n      this.i18nContext = i18nContext;\n
this.templateIndex = templateIndex;\n      this.templateName = templateName;\n      this.directiveMatcher =
directiveMatcher;\n      this.directives = directives;\n      this.pipeTypeByName = pipeTypeByName;\n
this.pipes = pipes;\n      this._namespace = _namespace;\n      this.i18nUseExternalIds =
i18nUseExternalIds;\n      this._constants = _constants;\n      this._dataIndex = 0;\n

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this._bindingContext = 0;\n      this._prefixCode = [];\n      /**\n      * List of callbacks to generate
creation mode instructions. We store them here as we process\n      * the template so bindings in listeners are
resolved only once all nodes have been visited.\n      * This ensures all local refs and context variables are
available for matching.\n      */\n      this._creationCodeFns = [];\n      /**\n      * List of callbacks to
generate update mode instructions. We store them here as we process\n      * the template so bindings are
resolved only once all nodes have been visited. This ensures\n      * all local refs and context variables are
available for matching.\n      */\n      this._updateCodeFns = [];\n      /** Index of the currently-selected
node. *\n      this._currentIndex = 0;\n      /** Temporary variable declarations generated from visiting pipes,
literals, etc. *\n      this._tempVariables = [];\n      /**\n      * List of callbacks to build nested templates.
Nested templates must not be visited until\n      * after the parent template has finished visiting all of its nodes.
This ensures that all\n      * local ref bindings in nested templates are able to find local ref values if the refs\n
      * are defined after the template declaration.\n      */\n      this._nestedTemplateFns = [];\n
this._unsupported = unsupported;\n      // i18n context local to this template\n      this.i18n = null;\n      //
Number of slots to reserve for pureFunctions\n      this._pureFunctionSlots = 0;\n      // Number of binding
slots\n      this._bindingSlots = 0;\n      // Projection slots found in the template. Projection slots can distribute
projected\n      // nodes based on a selector, or can just use the wildcard selector to match\n      // all nodes
which aren't matching any selector.\n      this._ngContentReservedSlots = [];\n      // Number of non-default
selectors found in all parent templates of this template. We need to\n      // track it to properly adjust projection
slot index in the `projection` instruction.\n      this._ngContentSelectorsOffset = 0;\n      // Expression that
should be used as implicit receiver when converting template\n      // expressions to output AST.\n
this._implicitReceiverExpr = null;\n      // These should be handled in the template or element directly.\n
this.visitReference = invalid$1;\n      this.visitVariable = invalid$1;\n      this.visitTextAttribute =
invalid$1;\n      this.visitBoundAttribute = invalid$1;\n      this.visitBoundEvent = invalid$1;\n
this._bindingScope = parentBindingScope.nestedScope(level);\n      // Turn the relative context file path into an
identifier by replacing non-alphanumeric\n      // characters with underscores.\n      this.fileBasedI18nSuffix =
relativeContextFilePath.replace(/[^A-Za-z0-9]/g, '_' + '_);\n      this._valueConverter = new
ValueConverter(constantPool, function () { return _this.allocateDataSlot(); }, function (numSlots) { return
_this.allocatePureFunctionSlots(numSlots); }, function (name, localName, slot, value) {\n      var pipeType =
pipeTypeByName.get(name);\n      if (pipeType) {\n      _this.pipes.add(pipeType);\n      }\n
      _this._bindingScope.set(_this.level, localName, value);\n      _this.creationInstruction(null,
Identifiers$1.pipe, [literal(slot), literal(name)]);\n      });\n      }\n
TemplateDefinitionBuilder.prototype.buildTemplateFunction = function (nodes, variables,
ngContentSelectorsOffset, i18n) {\n      var _this = this;\n      if (ngContentSelectorsOffset === void 0) {\n
ngContentSelectorsOffset = 0; }\n      this._ngContentSelectorsOffset = ngContentSelectorsOffset;\n      if
(this._namespace !== Identifiers$1.namespaceHTML) {\n      this.creationInstruction(null,
this._namespace);\n      }\n      // Create variable bindings\n      variables.forEach(function (v) { return
_this.registerContextVariables(v); });\n      // Initiate i18n context in case:\n      // - this template has parent
i18n context\n      // - or the template has i18n meta associated with it,\n      // but it's not initiated by the
Element (e.g. <ng-template i18n>)\n      var initI18nContext = this.i18nContext ||\n
(isI18nRootNode(i18n) && !isSingleI18nIcu(i18n) &&\n      !(isSingleElementTemplate(nodes) &&
nodes[0].i18n === i18n));\n      var selfClosingI18nInstruction = hasTextChildrenOnly(nodes);\n      if
(initI18nContext) {\n      this.i18nStart(null, i18n, selfClosingI18nInstruction);\n      }\n      // This is
the initial pass through the nodes of this template. In this pass, we\n      // queue all creation mode and update
mode instructions for generation in the second\n      // pass. It's necessary to separate the passes to ensure local
refs are defined before\n      // resolving bindings. We also count bindings in this pass as we walk bound
expressions.\n      visitAll(this, nodes);\n      // Add total binding count to pure function count so pure
function instructions are\n      // generated with the correct slot offset when update instructions are processed.\n
      this._pureFunctionSlots += this._bindingSlots;\n      // Pipes are walked in the first pass (to enqueue `pipe()

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creation instructions and\n      // `pipeBind` update instructions), so we have to update the slot offsets manually\n
      // to account for bindings.\n      this._valueConverter.updatePipeSlotOffsets(this._bindingSlots);\n      //
Nested templates must be processed before creation instructions so template()\n      // instructions can be
generated with the correct internal const count.\n      this._nestedTemplateFns.forEach(function
(buildTemplateFn) { return buildTemplateFn(); });\n      // Output the `projectionDef` instruction when some
`<ng-content>` tags are present.\n      // The `projectionDef` instruction is only emitted for the component
template and\n      // is skipped for nested templates (<ng-template> tags).\n      if (this.level === 0 &&
this._ngContentReservedSlots.length) {\n          var parameters = [];\n          // By default the `projectionDef`
instructions creates one slot for the wildcard\n          // selector if no parameters are passed. Therefore we only
want to allocate a new\n          // array for the projection slots if the default projection slot is not sufficient.\n          if (this._ngContentReservedSlots.length > 1 || this._ngContentReservedSlots[0] !== '*') {\n              var
r3ReservedSlots = this._ngContentReservedSlots.map(function (s) { return s !== '*' ? parseSelectorToR3Selector(s)
: s; });\n              parameters.push(this.constantPool.getConstLiteral(asLiteral(r3ReservedSlots), true));\n          }
}\n      // Since we accumulate ngContent selectors while processing template elements,\n      // we
*prepend* `projectionDef` to creation instructions block, to put it before\n      // any `projection` instructions\n      this.creationInstruction(null, Identifiers$.projectionDef, parameters, /* prepend */ true);\n      }\n
if (initI18nContext) {\n      this.i18nEnd(null, selfClosingI18nInstruction);\n      }\n      // Generate all
the creation mode instructions (e.g. resolve bindings in listeners)\n      var creationStatements =
this._creationCodeFns.map(function (fn) { return fn(); });\n      // Generate all the update mode instructions (e.g.
resolve property or text bindings)\n      var updateStatements = this._updateCodeFns.map(function (fn) { return
fn(); });\n      // Variable declaration must occur after binding resolution so we can generate context\n      //
instructions that build on each other.\n      // e.g. const b = nextContext().$simplicit(); const b = nextContext();\n      var creationVariables = this._bindingScope.viewSnapshotStatements();\n      var updateVariables =
this._bindingScope.variableDeclarations().concat(this._tempVariables);\n      var creationBlock =
creationStatements.length > 0 ?\n          [renderFlagCheckIfStmnt(1 /* Create */,
creationVariables.concat(creationStatements))]\n          : [];\n      var updateBlock = updateStatements.length
> 0 ?\n          [renderFlagCheckIfStmnt(2 /* Update */, updateVariables.concat(updateStatements))]\n          :
[];\n      return fn(\n          // i.e. (rf: RenderFlags, ctx: any)\n          [new FnParam(RENDER_FLAGS,
NUMBER_TYPE), new FnParam(CONTEXT_NAME, null)], __spread(this._prefixCode, creationBlock,
updateBlock), INFERRED_TYPE, null, this.templateName);\n      };\n      // LocalResolver\n      TemplateDefinitionBuilder.prototype.getLocal = function (name) {\n          return this._bindingScope.get(name);\n      };\n      // LocalResolver\n      TemplateDefinitionBuilder.prototype.notifyImplicitReceiverUse = function ()
{\n          this._bindingScope.notifyImplicitReceiverUse();\n      };\n
TemplateDefinitionBuilder.prototype.i18nTranslate = function (message, params, ref, transformFn) {\n      var
_c;\n      if (params === void 0) { params = {}; }\n      var _ref = ref || this.i18nGenerateMainBlockVar();\n      // Closure Compiler requires const names to start with `MSG_` but disallows any other const to\n      // start
with `MSG_`. We define a variable starting with `MSG_` just for the `goog.getMessage` call\n      var closureVar =
this.i18nGenerateClosureVar(message.id);\n      var statements = getTranslationDeclStmnts(message, _ref,
closureVar, params, transformFn);\n      (_c = this._constants.prepareStatements).push.apply(_c,
__spread(statements));\n      return _ref;\n      };\n
TemplateDefinitionBuilder.prototype.registerContextVariables = function (variable$1) {\n      var scopedName =
this._bindingScope.freshReferenceName();\n      var retrievalLevel = this.level;\n      var lhs =
variable(variable$1.name + scopedName);\n      this._bindingScope.set(retrievalLevel, variable$1.name, lhs, 1 /*
CONTEXT */, function (scope, relativeLevel) {\n          var rhs;\n          if (scope.bindingLevel ===
retrievalLevel) {\n              // e.g. ctx\n              rhs = variable(CONTEXT_NAME);\n          }\n          else {\n              var sharedCtxVar = scope.getSharedContextName(retrievalLevel);\n              // e.g. ctx_r0
OR x(2);\n              rhs = sharedCtxVar ? sharedCtxVar : generateNextContextExpr(relativeLevel);\n          }\n          // e.g. const $item$ = x(2).$simplicit;\n          return [lhs.set(rhs.prop(variable$1.value ||

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IMPLICIT_REFERENCE)).toConstDecl();\n    });\n    };\n
TemplateDefinitionBuilder.prototype.i18nAppendBindings = function (expressions) {\n    var _this = this;\n    if (expressions.length > 0) {\n        expressions.forEach(function (expression) { return\n        _this.i18n.appendBinding(expression); });\n    }\n};\n
TemplateDefinitionBuilder.prototype.i18nBindProps = function (props) {\n    var _this = this;\n    var\n    bound = {};\n    Object.keys(props).forEach(function (key) {\n        var prop = props[key];\n        if\n        (prop instanceof Text) {\n            bound[key] = literal(prop.value);\n        }\n        else {\n            if\n            var value = prop.value.visit(_this._valueConverter);\n            _this.allocateBindingSlots(value);\n            if\n            (value instanceof Interpolation) {\n                var strings = value.strings, expressions = value.expressions;\n                var _c = _this.i18n, id = _c.id, bindings = _c.bindings;\n                var label =\n                assembleI18nBoundString(strings, bindings.size, id);\n                _this.i18nAppendBindings(expressions);\n                bound[key] = literal(label);\n            }\n        }\n    });\n    return bound;\n};\n
// Generates top level vars for i18n blocks (i.e. `i18n_N`).\n
TemplateDefinitionBuilder.prototype.i18nGenerateMainBlockVar = function () {\n    return\n    variable(this.constantPool.uniqueName(TRANSLATION_VAR_PREFIX));\n};\n    // Generates vars with\n    Closure-specific names for i18n blocks (i.e. `MSG_XXX`).\n
TemplateDefinitionBuilder.prototype.i18nGenerateClosureVar = function (messageId) {\n    var name;\n    var suffix = this.fileBasedI18nSuffix.toUpperCase();\n    if (this.i18nUseExternalIds) {\n        var prefix =\n        getTranslationConstPrefix(`EXTERNAL_${}`);\n        var uniqueSuffix =\n        this.constantPool.uniqueName(suffix);\n        name = `\" + prefix + sanitizeIdentifier(messageId) + `\"$$\" +\n        uniqueSuffix;\n    }\n    else {\n        var prefix = getTranslationConstPrefix(suffix);\n        name\n        = this.constantPool.uniqueName(prefix);\n    }\n    return variable(name);\n};\n
TemplateDefinitionBuilder.prototype.i18nUpdateRef = function (context) {\n    var icu = context.icu, meta =\n    context.meta, isRoot = context.isRoot, isResolved = context.isResolved, isEmitted = context.isEmitted;\n    if\n    (isRoot && isResolved && !isEmitted && !isSingleI18nIcu(meta)) {\n        context.isEmitted = true;\n        var placeholders = context.getSerializedPlaceholders();\n        var icuMapping_1 = {};\n        var\n        params_1 = placeholders.size ? placeholdersToParams(placeholders) : {};\n        if (icu.size) {\n            icu.forEach(function (refs, key) {\n                if (refs.length === 1) {\n                    // if we have one ICU\n                    defined for a given\n                    // placeholder - just output its reference\n                    params_1[key] =\n                    refs[0];\n                }\n                else {\n                    // ... otherwise we need to activate post-\n                    processing\n                    // to replace ICU placeholders with proper values\n                    var placeholder =\n                    wrapI18nPlaceholder(`\" + I18N_ICU_MAPPING_PREFIX + key);`\n                    params_1[key] =\n                    literal(placeholder);\n                    icuMapping_1[key] = literalArr(refs);\n                }\n            });\n            // translation requires post processing in 2 cases:\n            // - if we have placeholders with\n            multiple values (ex. `START_DIV`: [#1, #2, ...])\n            // - if we have multiple ICUs that refer to the same\n            placeholder name\n            var needsPostprocessing = Array.from(placeholders.values()).some(function (value) {\n                return value.length > 1; })\n            ||\n            Object.keys(icuMapping_1).length;\n            var transformFn = void\n            0;\n            if (needsPostprocessing) {\n                transformFn = function (raw) {\n                    var args =\n                    [raw];\n                    if (Object.keys(icuMapping_1).length) {\n                        args.push(mapLiteral(icuMapping_1, true));\n                    }\n                    return instruction(null,\n                    Identifiers$.i18nPostprocess, args);\n                };\n            }\n            this.i18nTranslate(meta, params_1,\n            context.ref, transformFn);\n        }\n    }\n};\n
TemplateDefinitionBuilder.prototype.i18nStart = function\n    (span, meta, selfClosing) {\n    if (span === void 0) { span = null; }\n    var index =\n    this.allocateDataSlot();\n    this.i18n = this.i18nContext ?\n    this.i18nContext.forkChildContext(index,\n    this.templateIndex, meta) :\n    new I18nContext(index, this.i18nGenerateMainBlockVar(), 0,\n    this.templateIndex, meta);\n    // generate i18nStart instruction\n    var _c = this.i18n, id = _c.id, ref =\n    _c.ref;\n    var params = [literal(index), this.addToConsts(ref)];\n    if (id > 0) {\n        // do not push\n        3rd argument (sub-block id)\n        // into i18nStart call for top level i18n context\n    }\n};\n

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params.push(literal(id));\n      }\n      this.creationInstruction(span, selfClosing ? Identifiers$1.i18n :
Identifiers$1.i18nStart, params);\n    });\n    TemplateDefinitionBuilder.prototype.i18nEnd = function (span,
selfClosing) {\n      var _this = this;\n      if (span === void 0) { span = null; }\n      if (!this.i18n) {\n        throw new Error('i18nEnd is executed with no i18n context present');\n      }\n      if (this.i18nContext)\n        this.i18nContext.reconcileChildContext(this.i18n);\n      this.i18nUpdateRef(this.i18nContext);\n    }\n    else {\n      this.i18nUpdateRef(this.i18n);\n    }\n    // setup accumulated bindings\n    var _c = this.i18n, index = _c.index, bindings = _c.bindings;\n    if (bindings.size) {\n      var
chainBindings_1 = [];\n      bindings.forEach(function (binding) {\n        chainBindings_1.push({
sourceSpan: span, value: function () { return _this.convertPropertyBinding(binding); } });\n      });\n      // for i18n block, advance to the most recent element index (by taking the current number of\n      // elements
and subtracting one) before invoking `i18nExp` instructions, to make sure the\n      // necessary lifecycle
hooks of components/directives are properly flushed.\n    }\n    this.updateInstructionChainWithAdvance(this.getConstCount() - 1, Identifiers$1.i18nExp, chainBindings_1);\n    this.updateInstruction(span, Identifiers$1.i18nApply, [literal(index)]);\n    }\n    if (!selfClosing) {\n      this.creationInstruction(span, Identifiers$1.i18nEnd);\n    }\n    this.i18n = null; // reset local i18n
context\n  });\n  TemplateDefinitionBuilder.prototype.i18nAttributesInstruction = function (nodeIndex, attrs,
sourceSpan) {\n    var _this = this;\n    var hasBindings = false;\n    var i18nAttrArgs = [];\n    var bindings = [];\n    attrs.forEach(function (attr) {\n      var message = attr.i18n;\n      var
converted = attr.value.visit(_this._valueConverter);\n      _this.allocateBindingSlots(converted);\n      if
(converted instanceof Interpolation) {\n        var placeholders =
assembleBoundTextPlaceholders(message);\n        var params = placeholdersToParams(placeholders);\n        i18nAttrArgs.push(literal(attr.name), _this.i18nTranslate(message, params));\n      }\n      converted.expressions.forEach(function (expression) {\n        hasBindings = true;\n      });\n      bindings.push({\n        sourceSpan: sourceSpan,\n        value: function () { return
_this.convertPropertyBinding(expression); },\n      });\n    });\n    if (bindings.length > 0) {\n      this.updateInstructionChainWithAdvance(nodeIndex, Identifiers$1.i18nExp,
bindings);\n    }\n    if (i18nAttrArgs.length > 0) {\n      var index = literal(this.allocateDataSlot());\n      var constIndex = this.addToConsts(literalArr(i18nAttrArgs));\n    }\n    this.creationInstruction(sourceSpan, Identifiers$1.i18nAttributes, [index, constIndex]);\n    if (hasBindings)\n      this.updateInstruction(sourceSpan, Identifiers$1.i18nApply, [index]);\n    });\n    TemplateDefinitionBuilder.prototype.getNamespaceInstruction = function (namespaceKey) {\n      switch (namespaceKey) {\n        case 'math':\n          return Identifiers$1.namespaceMathML;\n        case 'svg':\n          return Identifiers$1.namespaceSVG;\n        default:\n          return
Identifiers$1.namespaceHTML;\n      }\n    });\n    TemplateDefinitionBuilder.prototype.addNamespaceInstruction = function (nsInstruction, element) {\n      this._namespace = nsInstruction;\n      this.creationInstruction(element.startSourceSpan, nsInstruction);\n    };\n    /**\n     * Adds an update instruction for an interpolated property or attribute, such as\n     *
`prop="{{ value }}"` or `attr.title="{{ value }}"`\n     */\n    TemplateDefinitionBuilder.prototype.interpolatedUpdateInstruction = function (instruction, elementIndex,
attrName, input, value, params) {\n      var _this = this;\n      this.updateInstructionWithAdvance(elementIndex, input.sourceSpan, instruction, function () { return
__spread([literal(attrName)], _this.getUpdateInstructionArguments(value), params); });\n    });\n    TemplateDefinitionBuilder.prototype.visitContent = function (ngContent) {\n      var slot =
this.allocateDataSlot();\n      var projectionSlotIdx = this._ngContentSelectorsOffset +
this._ngContentReservedSlots.length;\n      var parameters = [literal(slot)];\n      this._ngContentReservedSlots.push(ngContent.selector);\n      var nonContentSelectAttributes =
ngContent.attributes.filter(function (attr) { return attr.name.toLowerCase() !==
NG_CONTENT_SELECT_ATTR$1; });\n      var attributes = this.getAttributeExpressions(ngContent.name,

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nonContentSelectAttributes, [], []);\n        if (attributes.length > 0) {\n
parameters.push(literal(projectionSlotIdx), literalArr(attributes));\n        }\n        else if (projectionSlotIdx !==\n
0) {\n        parameters.push(literal(projectionSlotIdx));\n        }\n
this.creationInstruction(ngContent.sourceSpan, Identifiers$1.projection, parameters);\n        if (this.i18n) {\n
        this.i18n.appendProjection(ngContent.i18n, slot);\n        }\n        };\n
TemplateDefinitionBuilder.prototype.visitElement = function (element) {\n        var e_1, _c;\n        var _this =\n
this;\n        var _a, _b;\n        var elementIndex = this.allocateDataSlot();\n        var stylingBuilder = new\n
StylingBuilder(null);\n        var isNonBindableMode = false;\n        var isI18nRootElement =\n
isI18nRootNode(element.i18n) && !isSingleI18nIcu(element.i18n);\n        var outputAttrs = [];\n        var _d =\n
__read(splitNsName(element.name), 2), namespaceKey = _d[0], elementName = _d[1];\n        var\n
isNgContainer$1 = isNgContainer(element.name);\n        try {\n        // Handle styling, i18n, ngNonBindable\n
attributes\n        for (var _e = __values(element.attributes), _f = _e.next(); !_f.done; _f = _e.next()) {\n
        var attr = _f.value;\n        var name = attr.name, value = attr.value;\n        if (name ===\n
NON_BINDABLE_ATTR) {\n        isNonBindableMode = true;\n        }\n        else if\n
(name === 'style') {\n        stylingBuilder.registerStyleAttr(value);\n        }\n        else if\n
(name === 'class') {\n        stylingBuilder.registerClassAttr(value);\n        }\n        else {\n
        outputAttrs.push(attr);\n        }\n        }\n        }\n        catch (e_1_1) { e_1 = { error:\n
e_1_1 }; }\n        finally {\n        try {\n        if (_f && !_f.done && (_c = _e.return)) _c.call(_e);\n
        }\n        finally { if (e_1) throw e_1.error; }\n        }\n        // Match directives on non i18n\n
attributes\n        this.matchDirectives(element.name, element);\n        // Regular element or ng-container\n
creation mode\n        var parameters = [literal(elementIndex)];\n        if (!isNgContainer$1) {\n
parameters.push(literal(elementName));\n        }\n        // Add the attributes\n        var allOtherInputs = [];\n
        var boundI18nAttrs = [];\n        element.inputs.forEach(function (input) {\n        var stylingInputWasSet\n
= stylingBuilder.registerBoundInput(input);\n        if (!stylingInputWasSet) {\n        if (input.type === 0\n
/* Property */ && input.i18n) {\n        boundI18nAttrs.push(input);\n        }\n        else {\n
        allOtherInputs.push(input);\n        }\n        }\n        });\n        // add attributes for\n
directive and projection matching purposes\n        var attributes = this.getAttributeExpressions(element.name,\n
outputAttrs, allOtherInputs, element.outputs, stylingBuilder, [], boundI18nAttrs);\n
parameters.push(this.addAttrsToConsts(attributes));\n        // local refs (ex.: <div #foo #bar="baz">)\n        var\n
refs = this.prepareRefsArray(element.references);\n        parameters.push(this.addToConsts(refs));\n        var\n
wasInNamespace = this._namespace;\n        var currentNamespace =\n
this.getNamespaceInstruction(namespaceKey);\n        // If the namespace is changing now, include an instruction\n
to change it\n        // during element creation.\n        if (currentNamespace !== wasInNamespace) {\n
this.addNamespaceInstruction(currentNamespace, element);\n        }\n        if (this.i18n) {\n
this.i18n.appendElement(element.i18n, elementIndex);\n        }\n        // Note that we do not append text node\n
instructions and ICUs inside i18n section,\n        // so we exclude them while calculating whether current element\n
has children\n        var hasChildren = (!isI18nRootElement && this.i18n) ?\n
!hasTextChildrenOnly(element.children) : element.children.length > 0;\n        var\n
createSelfClosingInstruction = !stylingBuilder.hasBindingsWithPipes &&\n        element.outputs.length === 0\n
&& boundI18nAttrs.length === 0 && !hasChildren;\n        var createSelfClosingI18nInstruction =\n
!createSelfClosingInstruction && hasTextChildrenOnly(element.children);\n        if\n
(createSelfClosingInstruction) {\n        this.creationInstruction(element.sourceSpan, isNgContainer$1 ?\n
Identifiers$1.elementContainer : Identifiers$1.element, trimTrailingNulls(parameters));\n        }\n        else {\n
        this.creationInstruction(element.startSourceSpan, isNgContainer$1 ? Identifiers$1.elementContainerStart :\n
Identifiers$1.elementStart, trimTrailingNulls(parameters));\n        }\n        if (isNonBindableMode) {\n
this.creationInstruction(element.startSourceSpan, Identifiers$1.disableBindings);\n        }\n        if\n
(boundI18nAttrs.length > 0) {\n        this.i18nAttributesInstruction(elementIndex, boundI18nAttrs, (_a =\n
element.startSourceSpan) !== null && _a !== void 0 ? _a : element.sourceSpan);\n        }\n        //

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Generate Listeners (outputs)\n          if (element.outputs.length > 0) {\n          var listeners =
element.outputs.map(function (outputAst) { return ({\n          sourceSpan: outputAst.sourceSpan,\n          params: _this.prepareListenerParameter(element.name, outputAst, elementIndex)\n          }); });\n          this.creationInstructionChain(Identifiers$.listener, listeners);\n          }\n          // Note: it's important to
keep i18n/i18nStart instructions after i18nAttributes and\n          // listeners, to make sure i18nAttributes
instruction targets current element at runtime.\n          if (isI18nRootElement) {\n
this.i18nStart(element.startSourceSpan, element.i18n, createSelfClosingI18nInstruction);\n          }\n          }\n          // the code here will collect all update-level styling instructions and add them to the\n          // update block of
the template function AOT code. Instructions like `styleProp`,\n          // `styleMap`, `classMap`, `classProp`\n          // are all generated and assigned in the code below.\n          var stylingInstructions =
stylingBuilder.buildUpdateLevelInstructions(this._valueConverter);\n          var limit = stylingInstructions.length -
1;\n          for (var i = 0; i <= limit; i++) {\n          var instruction_1 = stylingInstructions[i];\n
this._bindingSlots += this.processStylingUpdateInstruction(elementIndex, instruction_1);\n          }\n          // the
reason why `undefined` is used is because the renderer understands this as a\n          // special value to symbolize
that there is no RHS to this binding\n          // TODO (matsko): revisit this once FW-959 is approached\n          var
emptyValueBindInstruction = literal(undefined);\n          var propertyBindings = [];\n          var attributeBindings
= [];\n          // Generate element input bindings\n          allOtherInputs.forEach(function (input) {\n          var
inputType = input.type;\n          if (inputType === 4 /* Animation */) {\n          var value_1 =
input.value.visit(_this._valueConverter);\n          // animation bindings can be presented in the following
formats:\n          // 1. [@binding]="fooExp"\n          // 2. [@binding]="value:fooExp",
params:{...}"\n          // 3. [@binding]\n          // 4. @binding\n          // All formats will be valid
for when a synthetic binding is created.\n          // The reasoning for this is because the renderer should get
each\n          // synthetic binding value in the order of the array that they are\n          // defined in...\n
          var hasValue_1 = value_1 instanceof LiteralPrimitive ? !value_1.value : true;\n
_this.allocateBindingSlots(value_1);\n          propertyBindings.push({\n          name:
prepareSyntheticPropertyName(input.name),\n          sourceSpan: input.sourceSpan,\n          value:
function () { return hasValue_1 ? _this.convertPropertyBinding(value_1) : emptyValueBindInstruction; }\n
          });\n          }\n          else {\n          // we must skip attributes with associated i18n context, since these
attributes are handled\n          // separately and corresponding `i18nExp` and `i18nApply` instructions will be
generated\n          if (input.i18n)\n          return;\n          var value_2 =
input.value.visit(_this._valueConverter);\n          if (value_2 !== undefined) {\n          var params_2 =
[];\n          var _c = __read(splitNsName(input.name), 2), attrNamespace = _c[0], attrName_1 = _c[1];\n
          var isAttributeBinding = inputType === 1 /* Attribute */;\n          var sanitizationRef =
resolveSanitizationFn(input.securityContext, isAttributeBinding);\n          if (sanitizationRef)\n          params_2.push(sanitizationRef);\n          if (attrNamespace) {\n          var namespaceLiteral =
literal(attrNamespace);\n          if (sanitizationRef) {\n
          params_2.push(namespaceLiteral);\n          }\n          else {\n          // If there
wasn't a sanitization ref, we need to add\n          // an extra param so that we can pass in the
namespace.\n          params_2.push(literal(null), namespaceLiteral);\n          }\n          }\n          _this.allocateBindingSlots(value_2);\n          if (inputType === 0 /* Property */) {\n
          if (value_2 instanceof Interpolation) {\n          // prop="{{value}}" and friends\n
          _this.interpolatedUpdateInstruction(getPropertyInterpolationExpression(value_2), elementIndex,
attrName_1, input, value_2, params_2);\n          }\n          else {\n          //
[prop]="value"\n          // Collect all the properties so that we can chain into a single function at the
end.\n          propertyBindings.push({\n          name: attrName_1,\n
          sourceSpan: input.sourceSpan,\n          value: function () { return
_this.convertPropertyBinding(value_2); },\n          params: params_2\n          });\n          }\n          }\n          else if (inputType === 1 /* Attribute */) {\n          if

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(value_2 instanceof Interpolation && getInterpolationArgsLength(value_2) > 1) {\n          //
attr.name="text{{ value }}" and friends\n
_this.interpolatedUpdateInstruction(getAttributeInterpolationExpression(value_2), elementIndex, attrName_1, input,
value_2, params_2);\n          }\n          else {\n          var boundValue_1 =
value_2 instanceof Interpolation ? value_2.expressions[0] : value_2;\n          // [attr.name]="value" or
attr.name="{{ value }}" \n          // Collect the attribute bindings so that they can be chained at the
end.\n          attributeBindings.push({\n          name: attrName_1,\n
sourceSpan: input.sourceSpan,\n          value: function () { return
_this.convertPropertyBinding(boundValue_1); },\n          params: params_2\n
});\n          }\n          }\n          else {\n          // class prop\n
_this.updateInstructionWithAdvance(elementIndex, input.sourceSpan, Identifiers$.classProp, function () {\n
return __spread([\n          literal(elementIndex), literal(attrName_1),
_this.convertPropertyBinding(value_2)\n          ], params_2);\n          });\n          }\n          }\n          });\n          if (propertyBindings.length > 0) {\n
this.updateInstructionChainWithAdvance(elementIndex, Identifiers$.property, propertyBindings);\n          }\n
if (attributeBindings.length > 0) {\n          this.updateInstructionChainWithAdvance(elementIndex,
Identifiers$.attribute, attributeBindings);\n          }\n          // Traverse element child nodes\n          visitAll(this,
element.children);\n          if (!isI18nRootElement && this.i18n) {\n
this.i18n.appendElement(element.i18n, elementIndex, true);\n          }\n          if (!createSelfClosingInstruction)
{\n          // Finish element construction mode.\n          var span = (_b = element.endSourceSpan) !== null &&
_b !== void 0 ? _b : element.sourceSpan;\n          if (isI18nRootElement) {\n          this.i18nEnd(span,
createSelfClosingI18nInstruction);\n          }\n          if (isNonBindableMode) {\n
this.creationInstruction(span, Identifiers$.enableBindings);\n          }\n          this.creationInstruction(span,
isNgContainer$.? Identifiers$.elementContainerEnd : Identifiers$.elementEnd);\n          }\n          };\n
TemplateDefinitionBuilder.prototype.visitTemplate = function (template) {\n          var _this = this;\n          var
_a;\n          var NG_TEMPLATE_TAG_NAME = 'ng-template';\n          var templateIndex =
this.allocateDataSlot();\n          if (this.i18n) {\n          this.i18n.appendTemplate(template.i18n,
templateIndex);\n          }\n          var tagName = sanitizeIdentifier(template.tagName || '');\n          var
contextName = \"\" + this.contextName + (tagName ? '_' + tagName : '') + \"_\" + templateIndex;\n          var
templateName = contextName + \"_Template\";\n          var parameters = [\n          literal(templateIndex),\n
variable(templateName),\n          // We don't care about the tag's namespace here, because we infer\n
// it based on the parent nodes inside the template instruction.\n          literal(template.tagName ?
splitNsName(template.tagName)[1] : template.tagName),\n          ];\n          // find directives matching on a given
<ng-template> node\n          this.matchDirectives(NG_TEMPLATE_TAG_NAME, template);\n          // prepare
attributes parameter (including attributes used for directive matching)\n          var attrsExprs =
this.getAttributeExpressions(NG_TEMPLATE_TAG_NAME, template.attributes, template.inputs,
template.outputs, undefined /* styles */, template.templateAttrs);\n
parameters.push(this.addAttrsToConsts(attrsExprs));\n          // local refs (ex.: <ng-template #foo>)\n          if
(template.references && template.references.length) {\n          var refs =
this.prepareRefsArray(template.references);\n          parameters.push(this.addToConsts(refs));\n
parameters.push(importExpr(Identifiers$.templateRefExtractor));\n          }\n          // Create the template
function\n          var templateVisitor = new TemplateDefinitionBuilder(this.constantPool, this._bindingScope,
this.level + 1, contextName, this.i18n, templateIndex, templateName, this.directiveMatcher, this.directives,
this.pipeTypeByName, this.pipes, this._namespace, this.fileBasedI18nSuffix, this.i18nUseExternalIds,
this._constants);\n          // Nested templates must not be visited until after their parent templates have completed\n
// processing, so they are queued here until after the initial pass. Otherwise, we wouldn't\n          // be able to
support bindings in nested templates to local refs that occur after the\n          // template definition. e.g. <div
*ngIf="showing">{{ foo }}</div> <div #foo></div>\n          this._nestedTemplateFns.push(function () {\n

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    var _c;\n        var templateFunctionExpr = templateVisitor.buildTemplateFunction(template.children,
template.variables, _this._ngContentReservedSlots.length + _this._ngContentSelectorsOffset, template.i18n);\n
    _this.constantPool.statements.push(templateFunctionExpr.toDeclStmt(templateName));\n        if
(templateVisitor._ngContentReservedSlots.length) {\n            (_c =
_this._ngContentReservedSlots).push.apply(_c, __spread(templateVisitor._ngContentReservedSlots));\n
        }\n        });\n        // e.g. template(1, MyComp_Template_1)\n
this.creationInstruction(template.sourceSpan, Identifiers$1.templateCreate, function () {\n
parameters.splice(2, 0, literal(templateVisitor.getConstCount()), literal(templateVisitor.getVarCount()));\n
return trimTrailingNulls(parameters);\n        });\n        // handle property bindings e.g. property('ngForOf',
ctx.items), et al;\n        this.templatePropertyBindings(templateIndex, template.templateAttrs);\n        // Only
add normal input/output binding instructions on explicit <ng-template> elements.\n        if (template.tagName
=== NG_TEMPLATE_TAG_NAME) {\n            var _c = __read(partitionArray(template.inputs, hasI18nMeta),
2), i18nInputs = _c[0], inputs = _c[1];\n            // Add i18n attributes that may act as inputs to directives. If such
attributes are present,\n            // generate `i18nAttributes` instruction. Note: we generate it only for explicit <ng-
template>\n            // elements, in case of inline templates, corresponding instructions will be generated in the\n
            // nested template function.\n            if (i18nInputs.length > 0) {\n
this.i18nAttributesInstruction(templateIndex, i18nInputs, (_a = template.startSourceSpan) !== null && _a !== void
0 ? _a : template.sourceSpan);\n            }\n            // Add the input bindings\n            if (inputs.length > 0) {\n
this.templatePropertyBindings(templateIndex, inputs);\n            }\n            // Generate listeners for
directive output\n            if (template.outputs.length > 0) {\n                var listeners =
template.outputs.map(function (outputAst) { return ({\n                    sourceSpan: outputAst.sourceSpan,\n
                    params: _this.prepareListenerParameter('ng_template', outputAst, templateIndex)\n                }); });\n
this.creationInstructionChain(Identifiers$1.listener, listeners);\n            }\n        }\n        });\n
TemplateDefinitionBuilder.prototype.visitBoundText = function (text) {\n        var _this = this;\n        if
(this.i18n) {\n            var value_3 = text.value.visit(this._valueConverter);\n
this.allocateBindingSlots(value_3);\n            if (value_3 instanceof Interpolation) {\n
this.i18n.appendBoundText(text.i18n);\n                this.i18nAppendBindings(value_3.expressions);\n            }\n
return;\n        }\n        var nodeIndex = this.allocateDataSlot();\n
this.creationInstruction(text.sourceSpan, Identifiers$1.text, [literal(nodeIndex)]);\n        var value =
text.value.visit(this._valueConverter);\n        this.allocateBindingSlots(value);\n        if (value instanceof
Interpolation) {\n            this.updateInstructionWithAdvance(nodeIndex, text.sourceSpan,
getTextInterpolationExpression(value), function () { return _this.getUpdateInstructionArguments(value); });\n
        }\n        else {\n            error('Text nodes should be interpolated and never bound directly.);\n        }\n
};\n        TemplateDefinitionBuilder.prototype.visitText = function (text) {\n            // when a text element is located
within a translatable\n            // block, we exclude this text element from instructions set,\n            // since it will be
captured in i18n content and processed at runtime\n            if (!this.i18n) {\n
this.creationInstruction(text.sourceSpan, Identifiers$1.text, [literal(this.allocateDataSlot()), literal(text.value)]);\n
            }\n        });\n        TemplateDefinitionBuilder.prototype.visitIcu = function (icu) {\n            var initWasInvoked =
false;\n            // if an ICU was created outside of i18n block, we still treat\n            // it as a translatable entity and
invoke i18nStart and i18nEnd\n            // to generate i18n context and the necessary instructions\n            if
(!this.i18n) {\n                initWasInvoked = true;\n                this.i18nStart(null, icu.i18n, true);\n            }\n
var i18n = this.i18n;\n            var vars = this.i18nBindProps(icu.vars);\n            var placeholders =
this.i18nBindProps(icu.placeholders);\n            // output ICU directly and keep ICU reference in context\n            var
message = icu.i18n;\n            // we always need post-processing function for ICUs, to make sure that:\n            // - all
placeholders in a form of {PLACEHOLDER} are replaced with actual values (note:\n            // `goog.getMsg` does
not process ICUs and uses the `{PLACEHOLDER}` format for placeholders\n            // inside ICUs)\n            // - all
ICU vars (such as `VAR_SELECT` or `VAR_PLURAL`) are replaced with correct values\n            var transformFn
= function (raw) {\n                var params = Object.assign(Object.assign({}, vars), placeholders);\n                var

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formatted = i18nFormatPlaceholderNames(params, /* useCamelCase */ false);\n      return instruction(null,
Identifiers$1.i18nPostprocess, [raw, mapLiteral(formatted, true)]);\n    });\n    // in case the whole i18n
message is a single ICU - we do not need to\n    // create a separate top-level translation, we can use the root ref
instead\n    // and make this ICU a top-level translation\n    // note: ICU placeholders are replaced with
actual values in `i18nPostprocess` function\n    // separately, so we do not pass placeholders into
`i18nTranslate` function.\n    if (isSingleI18nIcu(i18n.meta)) {\n      this.i18nTranslate(message, /*
placeholders */ {}, i18n.ref, transformFn);\n    }\n    else {\n      // output ICU directly and keep ICU
reference in context\n      var ref = this.i18nTranslate(message, /* placeholders */ {}, /* ref */ undefined,
transformFn);\n      i18n.appendIcu(icuFromI18nMessage(message).name, ref);\n    }\n    if
(initWasInvoked) {\n      this.i18nEnd(null, true);\n    }\n    return null;\n  });\n
TemplateDefinitionBuilder.prototype.allocateDataSlot = function () {\n    return this._dataIndex++;\n  });\n
TemplateDefinitionBuilder.prototype.getConstCount = function () {\n    return this._dataIndex;\n  });\n
TemplateDefinitionBuilder.prototype.getVarCount = function () {\n    return this._pureFunctionSlots;\n
};\n
TemplateDefinitionBuilder.prototype.getConsts = function () {\n    return this._constants;\n  });\n
TemplateDefinitionBuilder.prototype.getNgContentSelectors = function () {\n    return
this._ngContentReservedSlots.length ?\n
this.constantPool.getConstLiteral(asLiteral(this._ngContentReservedSlots), true) : null;\n  });\n
TemplateDefinitionBuilder.prototype.bindingContext = function () {\n    return "" +
this._bindingContext++;\n  });\n
TemplateDefinitionBuilder.prototype.templatePropertyBindings = function
(templateIndex, attrs) {\n    var _this = this;\n    var propertyBindings = [];\n    attrs.forEach(function
(input) {\n      if (input instanceof BoundAttribute) {\n        var value_4 =
input.value.visit(_this._valueConverter);\n        if (value_4 !== undefined) {\n
_this.allocateBindingSlots(value_4);\n        if (value_4 instanceof Interpolation) {\n          //
Params typically contain attribute namespace and value sanitizer, which is applicable\n          // for
regular HTML elements, but not applicable for <ng-template> (since props act as\n          // inputs to
directives), so keep params array empty.\n          var params = [];\n          //
prop="{ { value } }" case\n          _this.interpolatedUpdateInstruction(getPropertyInterpolationExpression(value_4), templateIndex, input.name, input,
value_4, params);\n        }\n        else {\n          // [prop]="value" case\n          propertyBindings.push({\n            name: input.name,\n            sourceSpan:
input.sourceSpan,\n            value: function () { return _this.convertPropertyBinding(value_4); }\n          });\n        }\n        if (propertyBindings.length > 0) {\n
this.updateInstructionChainWithAdvance(templateIndex, Identifiers$1.property, propertyBindings);\n        }\n        // Bindings must only be resolved after all local refs have been visited, so all\n        // instructions
are queued in callbacks that execute once the initial pass has completed.\n        // Otherwise, we wouldn't be able to
support local refs that are defined after their\n        // bindings. e.g. { { foo } } <div #foo></div>\n
TemplateDefinitionBuilder.prototype.instructionFn = function (fns, span, reference, paramsOrFn, prepend) {\n
if (prepend === void 0) { prepend = false; }\n    fns[prepend ? 'unshift' : 'push'](function () {\n      var
params = Array.isArray(paramsOrFn) ? paramsOrFn : paramsOrFn();\n      return instruction(span, reference,
params).toStmt();\n    });\n  });\n
TemplateDefinitionBuilder.prototype.processStylingUpdateInstruction
= function (elementIndex, instruction) {\n    var _this = this;\n    var allocateBindingSlots = 0;\n    if
(instruction) {\n      var calls_1 = [];\n      instruction.calls.forEach(function (call) {\n
allocateBindingSlots += call.allocateBindingSlots;\n      calls_1.push({\n        sourceSpan:
call.sourceSpan,\n        value: function () {\n          return call.params(function (value) { return
(call.supportsInterpolation && value instanceof Interpolation) ?\n          _this.getUpdateInstructionArguments(value) :\n            _this.convertPropertyBinding(value); });\n        }\n      });\n      this.updateInstructionChainWithAdvance(elementIndex,
instruction.reference, calls_1);\n    }\n    return allocateBindingSlots;\n  });\n

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TemplateDefinitionBuilder.prototype.creationInstruction = function (span, reference, paramsOrFn, prepend) {\n
  this.instructionFn(this._creationCodeFns, span, reference, paramsOrFn || [], prepend);\n
};\n
TemplateDefinitionBuilder.prototype.creationInstructionChain = function (reference, calls) {\n
  var span = calls.length ? calls[0].sourceSpan : null;\n
  this._creationCodeFns.push(function () {\n
    return chainedInstruction(reference, calls.map(function (call) { return call.params(); }), span).toStmnt();\n
  });\n
};\n
TemplateDefinitionBuilder.prototype.updateInstructionWithAdvance = function (nodeIndex, span, reference, paramsOrFn) {\n
  this.addAdvanceInstructionIfNecessary(nodeIndex, span);\n
  this.updateInstruction(span, reference, paramsOrFn);\n
};\n
TemplateDefinitionBuilder.prototype.updateInstruction = function (span, reference, paramsOrFn) {\n
  this.instructionFn(this._updateCodeFns, span, reference, paramsOrFn || []);\n
};\n
TemplateDefinitionBuilder.prototype.updateInstructionChain = function (reference, bindings) {\n
  var span = bindings.length ? bindings[0].sourceSpan : null;\n
  this._updateCodeFns.push(function () {\n
    var calls = bindings.map(function (property) {\n
      var value = property.value();\n
      var fnParams = Array.isArray(value) ? value : [value];\n
      if (property.params) {\n
        fnParams.push.apply(fnParams, __spread(property.params));\n
      }\n
      if (property.name) {\n
        // We want the property name to always be the first function parameter.\n
        fnParams.unshift(literal(property.name));\n
      }\n
      return fnParams;\n
    });\n
    return chainedInstruction(reference, calls, span).toStmnt();\n
  });\n
};\n
TemplateDefinitionBuilder.prototype.updateInstructionChainWithAdvance = function (nodeIndex, reference, bindings) {\n
  this.addAdvanceInstructionIfNecessary(nodeIndex, bindings.length ? bindings[0].sourceSpan : null);\n
  this.updateInstructionChain(reference, bindings);\n
};\n
TemplateDefinitionBuilder.prototype.addAdvanceInstructionIfNecessary = function (nodeIndex, span) {\n
  if (nodeIndex !== this._currentIndex) {\n
    var delta = nodeIndex - this._currentIndex;\n
    if (delta < 1) {\n
      throw new Error('advance instruction can only go forwards');\n
    }\n
    this.instructionFn(this._updateCodeFns, span, Identifiers.$1.advance, [literal(delta)]);\n
    this._currentIndex = nodeIndex;\n
  }\n
};\n
TemplateDefinitionBuilder.prototype.allocatePureFunctionSlots = function (numSlots) {\n
  var originalSlots = this._pureFunctionSlots;\n
  this._pureFunctionSlots += numSlots;\n
  return originalSlots;\n
};\n
TemplateDefinitionBuilder.prototype.allocateBindingSlots = function (value) {\n
  this._bindingSlots += value instanceof Interpolation ? value.expressions.length : 1;\n
};\n
/**\n
 * Gets an expression that refers to the implicit receiver. The implicit receiver is always the root level context.\n
 */\n
TemplateDefinitionBuilder.prototype.getImplicitReceiverExpr = function () {\n
  if (this._implicitReceiverExpr) {\n
    return this._implicitReceiverExpr;\n
  }\n
  return this._implicitReceiverExpr = this.level === 0 ?\n
    variable(CONTEXT_NAME) :\n
    this._bindingScope.getOrCreateSharedContextVar(0);\n
};\n
TemplateDefinitionBuilder.prototype.convertPropertyBinding = function (value) {\n
  var _c;\n
  var convertedPropertyBinding = convertPropertyBinding(this, this.getImplicitReceiverExpr(), value, this.bindingContext(), BindingForm.Expression, function () { return error('Unexpected interpolation'); });\n
  var valExpr = convertedPropertyBinding.currValExpr;\n
  (_c = this._tempVariables).push.apply(_c, __spread(convertedPropertyBinding.stmts));\n
  return valExpr;\n
};\n
/**\n
 * Gets a list of argument expressions to pass to an update instruction expression. Also updates the temp variables state with temp variables that were identified as needing to be created while visiting the arguments.\n
 * @param value The original expression we will be resolving an arguments list from.\n
 */\n
TemplateDefinitionBuilder.prototype.getUpdateInstructionArguments = function (value) {\n
  var _c;\n
  var _d = convertUpdateArguments(this, this.getImplicitReceiverExpr(), value, this.bindingContext(), args = _d.args, stmts = _d.stmts;\n
  (_c = this._tempVariables).push.apply(_c, __spread(stmts));\n
  return args;\n
};\n
TemplateDefinitionBuilder.prototype.matchDirectives = function (elementName, elOrTpl) {\n
  var _this = this;\n
  if (this.directiveMatcher) {\n
    var selector = createCssSelector(elementName, getAttrsForDirectiveMatching(elOrTpl));\n
    this.directiveMatcher.match(selector, function (cssSelector,

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staticType) {\n      _this.directives.add(staticType);\n    });\n  });\n  };\n  /**\n   *
Prepares all attribute expression values for the `TAttributes` array.\n   * The purpose of this function is
to properly construct an attributes array that\n   * is passed into the `elementStart` (or just `element`) functions.
Because there\n   * are many different types of attributes, the array needs to be constructed in a\n   * special
way so that `elementStart` can properly evaluate them.\n   * The format looks like this:\n   *\n   * ``\n   * attr = [prop, value, prop2, value2,\n   * PROJECT_AS, selector,\n   * CLASSES, class1,
class2,\n   * STYLES, style1, value1, style2, value2,\n   * BINDINGS, name1, name2, name3,\n   *
TEMPLATE, name4, name5, name6,\n   * I18N, name7, name8, ...]\n   * ``\n   * Note that this
function will fully ignore all synthetic (@foo) attribute values\n   * because those values are intended to always
be generated as property instructions.\n   */\n  TemplateDefinitionBuilder.prototype.getAttributeExpressions
= function (elementName, renderAttributes, inputs, outputs, styles, templateAttrs, boundI18nAttrs) {\n    var
e_2, _c;\n    if (templateAttrs === void 0) { templateAttrs = []; }\n    if (boundI18nAttrs === void 0) {
boundI18nAttrs = []; }\n    var alreadySeen = new Set();\n    var attrExprs = [];\n    var
ngProjectAsAttr;\n    try {\n      for (var renderAttributes_1 = __values(renderAttributes),
renderAttributes_1_1 = renderAttributes_1.next(); !renderAttributes_1_1.done; renderAttributes_1_1 =
renderAttributes_1.next()) {\n        var attr = renderAttributes_1_1.value;\n        if (attr.name ===
NG_PROJECT_AS_ATTR_NAME) {\n          ngProjectAsAttr = attr;\n        }\n        // Note
that static i18n attributes aren't in the i18n array,\n        // because they're treated in the same way as regular
attributes.\n        if (attr.i18n) {\n          attrExprs.push(literal(attr.name),
this.i18nTranslate(attr.i18n));\n        } else {\n          attrExprs.push.apply(attrExprs,
__spread(getAttributeNameLiterals(attr.name), [trustedConstAttribute(elementName, attr)]);\n        }\n      }\n    } catch (e_2_1) { e_2 = { error: e_2_1 }; }\n    finally {\n      try {\n        if
(renderAttributes_1_1 && !renderAttributes_1_1.done && (_c = renderAttributes_1.return))
_c.call(renderAttributes_1);\n      } finally { if (e_2) throw e_2.error; }\n    } // Keep
ngProjectAs next to the other name, value pairs so we can verify that we match\n    // ngProjectAs marker in the
attribute name slot.\n    if (ngProjectAsAttr) {\n      attrExprs.push.apply(attrExprs,
__spread(getNgProjectAsLiteral(ngProjectAsAttr));\n    } function addAttrExpr(key, value) {\n      if (typeof key === 'string') {\n        if (!alreadySeen.has(key)) {\n          attrExprs.push.apply(attrExprs, __spread(getAttributeNameLiterals(key));\n          value !== undefined &&
attrExprs.push(value);\n          alreadySeen.add(key);\n        } else {\n          attrExprs.push(literal(key));\n        } }\n      // it's important that this occurs before BINDINGS
and TEMPLATE because once `elementStart`\n      // comes across the BINDINGS or TEMPLATE markers
then it will continue reading each value as\n      // as single property value cell by cell.\n      if (styles) {\n        styles.populateInitialStylingAttrs(attrExprs);\n      } if (inputs.length || outputs.length) {\n        var
attrsLengthBeforeInputs = attrExprs.length;\n        for (var i = 0; i < inputs.length; i++) {\n          var
input = inputs[i];\n          // We don't want the animation and attribute bindings in the\n          // attributes
array since they aren't used for directive matching.\n          if (input.type !== 4 /* Animation */ && input.type
!== 1 /* Attribute */) {\n            addAttrExpr(input.name);\n          } }\n          for (var i
= 0; i < outputs.length; i++) {\n            var output = outputs[i];\n            if (output.type !== 1 /* Animation
*/) {\n              addAttrExpr(output.name);\n            } }\n          // this is a cheap way of
adding the marker only after all the input/output\n          // values have been filtered (by not including the
animation ones) and added\n          // to the expressions. The marker is important because it tells the runtime\n          // code that this is where attributes without values start...\n          if (attrExprs.length !==
attrsLengthBeforeInputs) {\n            attrExprs.splice(attrsLengthBeforeInputs, 0, literal(3 /* Bindings */));\n          }\n        } }\n        if (templateAttrs.length) {\n          attrExprs.push(literal(4 /* Template */));\n        }\n        templateAttrs.forEach(function (attr) { return addAttrExpr(attr.name); });\n      } if
(boundI18nAttrs.length) {\n        attrExprs.push(literal(6 /* I18n */));\n      }\n      boundI18nAttrs.forEach(function (attr) { return addAttrExpr(attr.name); });\n    } return attrExprs;\n  }

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};\n    TemplateDefinitionBuilder.prototype.addToConsts = function (expression) {\n        if
(isNull(expression)) {\n            return TYPED_NULL_EXPR;\n        }\n        var consts =
this._constants.constExpressions;\n        // Try to reuse a literal that's already in the array, if possible.\n        for
(var i = 0; i < consts.length; i++) {\n            if (consts[i].isEquivalent(expression)) {\n                return
literal(i);\n            }\n        }\n        return literal(consts.push(expression) - 1);\n    };\n
TemplateDefinitionBuilder.prototype.addAttrsToConsts = function (attrs) {\n        return attrs.length > 0 ?
this.addToConsts(literalArr(attrs)) : TYPED_NULL_EXPR;\n    };\n
TemplateDefinitionBuilder.prototype.prepareRefsArray = function (references) {\n        var _this = this;\n
if (!references || references.length === 0) {\n            return TYPED_NULL_EXPR;\n        }\n        var
refsParam = flatten(references.map(function (reference) {\n            var slot = _this.allocateDataSlot();\n
// Generate the update temporary.\n            var variableName = _this._bindingScope.freshReferenceName();\n
            var retrievalLevel = _this.level;\n            var lhs = variable(variableName);\n
            _this._bindingScope.set(retrievalLevel, reference.name, lhs, 0 /* DEFAULT */, function (scope, relativeLevel) {\n
                // e.g. nextContext(2);\n                var nextContextStmt = relativeLevel > 0 ?
[generateNextContextExpr(relativeLevel).toStmt()]: [];\n                // e.g. const $foo$ = reference(1);\n
                var refExpr = lhs.set(importExpr(Identifiers.$1.reference).callFn([literal(slot)]));\n                return
nextContextStmt.concat(refExpr.toConstDecl());\n            }, true);\n            return [reference.name,
reference.value];\n        }));\n        return asLiteral(refsParam);\n    };\n
TemplateDefinitionBuilder.prototype.prepareListenerParameter = function (tagName, outputAst, index) {\n
var _this = this;\n        return function () {\n            var eventName = outputAst.name;\n            var
bindingFnName = outputAst.type === 1 /* Animation */ ?\n                // synthetic @listener.foo values are treated
the exact same as are standard listeners\n                prepareSyntheticListenerFunctionName(eventName,
outputAst.phase) : \n                sanitizeIdentifier(eventName);\n            var handlerName = _this.templateName
+ \"_\" + tagName + \"_\" + bindingFnName + \"_\" + index + \"_listener\";\n            var scope =
_this._bindingScope.nestedScope(_this._bindingScope.bindingLevel, EVENT_BINDING_SCOPE_GLOBALS);\n
            return prepareEventListenerParameters(outputAst, handlerName, scope);\n        };\n    };\n
return
TemplateDefinitionBuilder;\n    }());\n    var ValueConverter = /** @class */ (function (_super) {\n
__extends(ValueConverter, _super);\n        function ValueConverter(constantPool, allocateSlot,
allocatePureFunctionSlots, definePipe) {\n            var _this = _super.call(this) || this;\n            _this.constantPool =
constantPool;\n            _this.allocateSlot = allocateSlot;\n            _this.allocatePureFunctionSlots =
allocatePureFunctionSlots;\n            _this.definePipe = definePipe;\n            _this._pipeBindExprs = [];\n
return _this;\n        }\n        // AstMemoryEfficientTransformer\n        ValueConverter.prototype.visitPipe = function
(pipe, context) {\n            // Allocate a slot to create the pipe\n            var slot = this.allocateSlot();\n            var
slotPseudoLocal = \"PIPE:\" + slot;\n            // Allocate one slot for the result plus one slot per pipe argument\n
            var pureFunctionSlot = this.allocatePureFunctionSlots(2 + pipe.args.length);\n            var target = new
PropertyRead(pipe.span, pipe.sourceSpan, pipe.nameSpan, new ImplicitReceiver(pipe.span, pipe.sourceSpan),
slotPseudoLocal);\n            var _c = pipeBindingCallInfo(pipe.args), identifier = _c.identifier, isVarLength =
_c.isVarLength;\n            this.definePipe(pipe.name, slotPseudoLocal, slot, importExpr(identifier));\n            var args
= __spread([pipe.exp], pipe.args);\n            var convertedArgs = isVarLength ?\n                this.visitAll([new
LiteralArray(pipe.span, pipe.sourceSpan, args)]) : \n                this.visitAll(args);\n            var pipeBindExpr = new
FunctionCall(pipe.span, pipe.sourceSpan, target, __spread([\n                new LiteralPrimitive(pipe.span,
pipe.sourceSpan, slot),\n                new LiteralPrimitive(pipe.span, pipe.sourceSpan, pureFunctionSlot)\n            ],
convertedArgs));\n            this._pipeBindExprs.push(pipeBindExpr);\n            return pipeBindExpr;\n        };\n
ValueConverter.prototype.updatePipeSlotOffsets = function (bindingSlots) {\n
this._pipeBindExprs.forEach(function (pipe) {\n            // update the slot offset arg (index 1) to account for
binding slots\n            var slotOffset = pipe.args[1];\n            slotOffset.value += bindingSlots;\n        });\n
};\n    ValueConverter.prototype.visitLiteralArray = function (array, context) {\n        var _this = this;\n
return new BuiltinFunctionCall(array.span, array.sourceSpan, this.visitAll(array.expressions), function (values) {\n

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    // If the literal has calculated (non-literal) elements transform it into\n      // calls to literal factories that
compose the literal and will cache intermediate\n      // values.\n      var literal = literalArr(values);\n    return getLiteralFactory(_this.constantPool, literal, _this.allocatePureFunctionSlots);\n  });\n  ValueConverter.prototype.visitLiteralMap = function (map, context) {\n    var _this = this;\n    return new
BuiltinFunctionCall(map.span, map.sourceSpan, this.visitAll(map.values), function (values) {\n      // If the
literal has calculated (non-literal) elements transform it into\n      // calls to literal factories that compose the
literal and will cache intermediate\n      // values.\n      var literal = literalMap(values.map(function
(value, index) { return ({ key: map.keys[index].key, value: value, quoted: map.keys[index].quoted }); }));\n
return getLiteralFactory(_this.constantPool, literal, _this.allocatePureFunctionSlots);\n  });\n  return
ValueConverter;\n  }(AstMemoryEfficientTransformer));\n  // Pipes always have at least one parameter,
the value they operate on\n  var pipeBindingIdentifiers = [Identifiers$1.pipeBind1, Identifiers$1.pipeBind2,
Identifiers$1.pipeBind3, Identifiers$1.pipeBind4];\n  function pipeBindingCallInfo(args) {\n    var identifier =
pipeBindingIdentifiers[args.length];\n    return {\n      identifier: identifier || Identifiers$1.pipeBindV,\n
isVarLength: !identifier,\n    };\n  }\n  var pureFunctionIdentifiers = [\n    Identifiers$1.pureFunction0,
Identifiers$1.pureFunction1, Identifiers$1.pureFunction2, Identifiers$1.pureFunction3,
Identifiers$1.pureFunction4,\n    Identifiers$1.pureFunction5, Identifiers$1.pureFunction6,
Identifiers$1.pureFunction7, Identifiers$1.pureFunction8\n  ];\n  function pureFunctionCallInfo(args) {\n    var
identifier = pureFunctionIdentifiers[args.length];\n    return {\n      identifier: identifier ||
Identifiers$1.pureFunctionV,\n      isVarLength: !identifier,\n    };\n  }\n  function instruction(span,
reference, params) {\n    return importExpr(reference, null, span).callFn(params, span);\n  }\n  // e.g. x(2);\n
function generateNextContextExpr(relativeLevelDiff) {\n    return importExpr(Identifiers$1.nextContext)\n
.callFn(relativeLevelDiff > 1 ? [literal(relativeLevelDiff)] : []);\n  }\n  function getLiteralFactory(constantPool,
literal$1, allocateSlots) {\n    var _c = constantPool.getLiteralFactory(literal$1), literalFactory = _c.literalFactory,
literalFactoryArguments = _c.literalFactoryArguments;\n    // Allocate 1 slot for the result plus 1 per argument\n
var startSlot = allocateSlots(1 + literalFactoryArguments.length);\n    var _d =
pureFunctionCallInfo(literalFactoryArguments), identifier = _d.identifier, isVarLength = _d.isVarLength;\n    //
Literal factories are pure functions that only need to be re-invoked when the parameters\n    // change.\n    var
args = [literal(startSlot), literalFactory];\n    if (isVarLength) {\n
args.push(literalArr(literalFactoryArguments));\n    } else {\n      args.push.apply(args,
__spread(literalFactoryArguments));\n    }\n    return importExpr(identifier).callFn(args);\n  }\n  /**\n   *
Gets an array of literals that can be added to an expression\n   * to represent the name and namespace of an
attribute. E.g.\n   * `:xlink:href` turns into `[AttributeMarker.NamespaceURI, 'xlink', 'href']`\n   * \n   * @param
name Name of the attribute, including the namespace.\n   * \n   * \n   * function getAttributeNameLiterals(name) {\n
var _c = __read(splitNsName(name), 2), attributeNamespace = _c[0], attributeName = _c[1];\n    var nameLiteral
= literal(attributeName);\n    if (attributeNamespace) {\n      return [\n        literal(0 /* NamespaceURI */),
literal(attributeNamespace), nameLiteral\n      ];\n    }\n    return [nameLiteral];\n  }\n  /** The prefix
used to get a shared context in BindingScope's map. *\n  var SHARED_CONTEXT_KEY = '$$shared_ctx$$';\n
var BindingScope = /** @class */ (function () {\n    function BindingScope(bindingLevel, parent, globals) {\n
var e_3, _c;\n      if (bindingLevel === void 0) { bindingLevel = 0; }\n      if (parent === void 0) { parent =
null; }\n      this.bindingLevel = bindingLevel;\n      this.parent = parent;\n      this.globals = globals;\n
    /** Keeps a map from local variables to their BindingData. *\n      this.map = new Map();\n
this.referenceNameIndex = 0;\n      this.restoreViewVariable = null;\n      if (globals !== undefined) {\n
try {\n        for (var globals_1 = __values(globals), globals_1_1 = globals_1.next(); !globals_1_1.done;\n
globals_1_1 = globals_1.next()) {\n          var name = globals_1_1.value;\n          this.set(0, name,
variable(name));\n        }\n      } catch (e_3_1) { e_3 = { error: e_3_1 }; }\n      finally\n
{\n        try {\n          if (globals_1_1 && !globals_1_1.done && (_c = globals_1.return))\n
_c.call(globals_1);\n        }\n        finally { if (e_3) throw e_3.error; }\n      }\n    }\n
BindingScope.createRootScope = function () {\n      return new BindingScope();\n    };\n  };\n

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BindingScope.prototype.get = function (name) {\n      var current = this;\n      while (current) {\n
var value = current.map.get(name);\n      if (value !== null) {\n      if (current !== this) {\n
// make a local copy and reset the `declare` state\n      value = {\n      retrievalLevel:
value.retrievalLevel,\n      lhs: value.lhs,\n      declareLocalCallback:
value.declareLocalCallback,\n      declare: false,\n      priority: value.priority,\n
      localRef: value.localRef\n      };\n      // Cache the value locally.\n
this.map.set(name, value);\n      // Possibly generate a shared context var\n
this.maybeGenerateSharedContextVar(value);\n      this.maybeRestoreView(value.retrievalLevel,
value.localRef);\n      }\n      if (value.declareLocalCallback && !value.declare) {\n
value.declare = true;\n      }\n      return value.lhs;\n      }\n      current =
current.parent;\n      }\n      // If we get to this point, we are looking for a property on the top level
component\n      // - If level === 0, we are on the top and don't need to re-declare `ctx`.\n      // - If level > 0,
we are in an embedded view. We need to retrieve the name of the\n      // local var we used to store the
component context, e.g. const $comp$ = x();\n      return this.bindingLevel === 0 ? null :
this.getComponentProperty(name);\n      };\n      /**\n      * Create a local variable for later reference.\n      *\n
      * @param retrievalLevel The level from which this value can be retrieved\n      * @param name Name of the
variable.\n      * @param lhs AST representing the left hand side of the `let lhs = rhs;`.\n      * @param priority
The sorting priority of this var\n      * @param declareLocalCallback The callback to invoke when declaring this
local var\n      * @param localRef Whether or not this is a local ref\n      */\n      BindingScope.prototype.set =
function (retrievalLevel, name, lhs, priority /* DEFAULT */, declareLocalCallback, localRef) {\n      if (priority
=== void 0) { priority = 0; }\n      if (this.map.has(name)) {\n      if (localRef) {\n      // Do not
throw an error if it's a local ref and do not update existing value.\n      // so the first defined ref is always
returned.\n      return this;\n      }\n      error(`The name ` + name + ` is already defined in
scope to be ` + this.map.get(name));\n      }\n      this.map.set(name, {\n      retrievalLevel:
retrievalLevel,\n      lhs: lhs,\n      declare: false,\n      declareLocalCallback:
declareLocalCallback,\n      priority: priority,\n      localRef: localRef || false\n      });\n      return
this;\n      };\n      // Implemented as part of LocalResolver.\n      BindingScope.prototype.getLocal = function
(name) {\n      return this.get(name);\n      };\n      // Implemented as part of LocalResolver.\n
BindingScope.prototype.notifyImplicitReceiverUse = function () {\n      if (this.bindingLevel !== 0) {\n
// Since the implicit receiver is accessed in an embedded view, we need to\n      // ensure that we declare a
shared context variable for the current template\n      // in the update variables.\n
this.map.get(SHARED_CONTEXT_KEY + 0).declare = true;\n      }\n      };\n
BindingScope.prototype.nestedScope = function (level, globals) {\n      var newScope = new
BindingScope(level, this, globals);\n      if (level > 0)\n      newScope.generateSharedContextVar(0);\n
      return newScope;\n      };\n      /**\n      * Gets or creates a shared context variable and returns its expression.
Note that\n      * this does not mean that the shared variable will be declared. Variables in the\n      * binding
scope will be only declared if they are used.\n      */\n      BindingScope.prototype.getOrCreateSharedContextVar
= function (retrievalLevel) {\n      var bindingKey = SHARED_CONTEXT_KEY + retrievalLevel;\n      if
(!this.map.has(bindingKey)) {\n      this.generateSharedContextVar(retrievalLevel);\n      }\n      //
Shared context variables are always generated as `ReadVarExpr`.\n      return this.map.get(bindingKey).lhs;\n
      };\n      BindingScope.prototype.getSharedContextName = function (retrievalLevel) {\n      var sharedCtxObj
= this.map.get(SHARED_CONTEXT_KEY + retrievalLevel);\n      // Shared context variables are always
generated as `ReadVarExpr`.\n      return sharedCtxObj && sharedCtxObj.declare ? sharedCtxObj.lhs : null;\n
      };\n      BindingScope.prototype.maybeGenerateSharedContextVar = function (value) {\n      if
(value.priority === 1 /* CONTEXT */ &&\n      value.retrievalLevel < this.bindingLevel) {\n      var
sharedCtxObj = this.map.get(SHARED_CONTEXT_KEY + value.retrievalLevel);\n      if (sharedCtxObj) {\n
sharedCtxObj.declare = true;\n      }\n      else {\n
this.generateSharedContextVar(value.retrievalLevel);\n      }\n      }\n      };\n

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BindingScope.prototype.generateSharedContextVar = function (retrievalLevel) {\n      var lhs =
variable(CONTEXT_NAME + this.freshReferenceName());\n      this.map.set(SHARED_CONTEXT_KEY +
retrievalLevel, {\n      retrievalLevel: retrievalLevel,\n      lhs: lhs,\n      declareLocalCallback:
function (scope, relativeLevel) {\n      // const ctx_r0 = nextContext(2);\n      return
[lhs.set(generateNextContextExpr(relativeLevel)).toConstDecl()];\n      },\n      declare: false,\n      priority: 2 /* SHARED_CONTEXT */,\n      localRef: false\n      });\n      };\n
BindingScope.prototype.getComponentProperty = function (name) {\n      var componentValue =
this.map.get(SHARED_CONTEXT_KEY + 0);\n      componentValue.declare = true;\n      this.maybeRestoreView(0, false);\n      return componentValue.lhs.prop(name);\n      };\n
BindingScope.prototype.maybeRestoreView = function (retrievalLevel, localRefLookup) {\n      // We want to
restore the current view in listener fns if:\n      // 1 - we are accessing a value in a parent view, which requires
walking the view tree rather\n      // than using the ctx arg. In this case, the retrieval and binding level will be
different.\n      // 2 - we are looking up a local ref, which requires restoring the view where the local\n      // ref is stored\n      if (this.isListenerScope() && (retrievalLevel < this.bindingLevel || localRefLookup)) {\n
      if (!this.parent.restoreViewVariable) {\n      // parent saves variable to generate a shared `const $$ =
getCurrentView();` instruction\n      this.parent.restoreViewVariable =
variable(this.parent.freshReferenceName());\n      }\n      this.restoreViewVariable =
this.parent.restoreViewVariable;\n      };\n      BindingScope.prototype.restoreViewStatement =
function () {\n      // restoreView($state$);\n      return this.restoreViewVariable ?\n
[instruction(null, Identifiers$1.restoreView, [this.restoreViewVariable]).toStmnt()] :\n      [];\n      };\n
BindingScope.prototype.viewSnapshotStatements = function () {\n      // const $state$ = getCurrentView();\n
var getCurrentViewInstruction = instruction(null, Identifiers$1.getCurrentView, []);\n      return
this.restoreViewVariable ?\n      [this.restoreViewVariable.set(getCurrentViewInstruction).toConstDecl()] :\n
[];\n      };\n      BindingScope.prototype.isListenerScope = function () {\n      return this.parent &&
this.parent.bindingLevel === this.bindingLevel;\n      };\n      BindingScope.prototype.variableDeclarations =
function () {\n      var _this = this;\n      var currentContextLevel = 0;\n      return
Array.from(this.map.values())\n      .filter(function (value) { return value.declare; })\n      .sort(function
(a, b) { return b.retrievalLevel - a.retrievalLevel || b.priority - a.priority; })\n      .reduce(function (stmts, value)
{\n      var levelDiff = _this.bindingLevel - value.retrievalLevel;\n      var currStmts =
value.declareLocalCallback(_this, levelDiff - currentContextLevel);\n      currentContextLevel = levelDiff;\n
return stmts.concat(currStmts);\n      }, []);\n      };\n      BindingScope.prototype.freshReferenceName =
function () {\n      var current = this;\n      // Find the top scope as it maintains the global reference count\n
while (current.parent)\n      current = current.parent;\n      var ref = \"\" + REFERENCE_PREFIX +
current.referenceNameIndex++;\n      return ref;\n      };\n      return BindingScope;\n      }());\n      /**\n      *
Creates a `CssSelector` given a tag name and a map of attributes\n      */\n      function
createCssSelector(elementName, attributes) {\n      var cssSelector = new CssSelector();\n      var
elementNameNoNs = splitNsName(elementName)[1];\n      cssSelector.setElement(elementNameNoNs);\n
Object.getOwnPropertyNames(attributes).forEach(function (name) {\n      var nameNoNs =
splitNsName(name)[1];\n      var value = attributes[name];\n      cssSelector.addAttribute(nameNoNs,
value);\n      if (name.toLowerCase() === 'class') {\n      var classes = value.trim().split(/\\s+/);\n
classes.forEach(function (className) { return cssSelector.addClassName(className); });\n      });\n
return cssSelector;\n      };\n      /**\n      * Creates an array of expressions out of an `ngProjectAs` attributes\n      *
which can be added to the instruction parameters.\n      */\n      function getNgProjectAsLiteral(attribute) {\n      //
Parse the attribute value into a CssSelectorList. Note that we only take the\n      // first selector, because we don't
support multiple selectors in ngProjectAs.\n      var parsedR3Selector =
parseSelectorToR3Selector(attribute.value)[0];\n      return [literal(5 /* ProjectAs */),
asLiteral(parsedR3Selector)];\n      };\n      /**\n      * Gets the instruction to generate for an interpolated property\n      *
@param interpolation An Interpolation AST\n      */\n      function getPropertyInterpolationExpression(interpolation)

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{\n    switch (getInterpolationArgsLength(interpolation)) {\n        case 1:\n            return Identifiers$1.propertyInterpolate;\n        case 3:\n            return Identifiers$1.propertyInterpolate1;\n        case 5:\n            return Identifiers$1.propertyInterpolate2;\n        case 7:\n            return Identifiers$1.propertyInterpolate3;\n        case 9:\n            return Identifiers$1.propertyInterpolate4;\n        case 11:\n            return Identifiers$1.propertyInterpolate5;\n        case 13:\n            return Identifiers$1.propertyInterpolate6;\n        case 15:\n            return Identifiers$1.propertyInterpolate7;\n        case 17:\n            return Identifiers$1.propertyInterpolate8;\n        default:\n            return Identifiers$1.propertyInterpolateV;\n    }\n } \n /** \n  * Gets the instruction to generate for an interpolated attribute \n  * @param interpolation An Interpolation AST \n  */ \n function getAttributeInterpolationExpression(interpolation) {\n    switch (getInterpolationArgsLength(interpolation)) {\n        case 3:\n            return Identifiers$1.attributeInterpolate1;\n        case 5:\n            return Identifiers$1.attributeInterpolate2;\n        case 7:\n            return Identifiers$1.attributeInterpolate3;\n        case 9:\n            return Identifiers$1.attributeInterpolate4;\n        case 11:\n            return Identifiers$1.attributeInterpolate5;\n        case 13:\n            return Identifiers$1.attributeInterpolate6;\n        case 15:\n            return Identifiers$1.attributeInterpolate7;\n        case 17:\n            return Identifiers$1.attributeInterpolate8;\n        default:\n            return Identifiers$1.attributeInterpolateV;\n    }\n } \n /** \n  * Gets the instruction to generate for interpolated text. \n  * @param interpolation An Interpolation AST \n  */ \n function getTextInterpolationExpression(interpolation) {\n    switch (getInterpolationArgsLength(interpolation)) {\n        case 1:\n            return Identifiers$1.textInterpolate;\n        case 3:\n            return Identifiers$1.textInterpolate1;\n        case 5:\n            return Identifiers$1.textInterpolate2;\n        case 7:\n            return Identifiers$1.textInterpolate3;\n        case 9:\n            return Identifiers$1.textInterpolate4;\n        case 11:\n            return Identifiers$1.textInterpolate5;\n        case 13:\n            return Identifiers$1.textInterpolate6;\n        case 15:\n            return Identifiers$1.textInterpolate7;\n        case 17:\n            return Identifiers$1.textInterpolate8;\n        default:\n            return Identifiers$1.textInterpolateV;\n    }\n } \n /** \n  * Parse a template into render3 `Node`s and additional metadata, with no other dependencies. \n  * @param template text of the template to parse \n  * @param templateUrl URL to use for source mapping of the parsed template \n  * @param options options to modify how the template is parsed \n  */ \n function parseTemplate(template, templateUrl, options) {\n    if (options === void 0) { options = {}; }\n    var interpolationConfig = options.interpolationConfig, preserveWhitespaces = options.preserveWhitespaces, enableI18nLegacyMessageIdFormat = options.enableI18nLegacyMessageIdFormat;\n    var bindingParser = makeBindingParser(interpolationConfig);\n    var htmlParser = new HtmlParser();\n    var parseResult = htmlParser.parse(template, templateUrl, Object.assign(Object.assign({ leadingTriviaChars: LEADING_TRIVIA_CHARS }, options), { tokenizeExpansionForms: true }));\n    if (parseResult.errors && parseResult.errors.length > 0) {\n        // TODO(ayazhafiz): we may not always want to bail out at this point (e.g. in the context of a language service).\n        return {\n            interpolationConfig: interpolationConfig,\n            preserveWhitespaces: preserveWhitespaces,\n            template: template,\n            errors: parseResult.errors,\n            nodes: [],\n            styleUrls: [],\n            styles: [],\n            ngContentSelectors: []\n        };\n    }\n    var rootNodes = parseResult.rootNodes;\n    // process i18n meta information (scan attributes, generate ids)\n    // before we run whitespace removal process, because existing i18n extraction process (ng extract-i18n) relies on a raw content to generate message ids\n    var i18nMetaVisitor = new I18nMetaVisitor(interpolationConfig, /* keepI18nAttrs */ !preserveWhitespaces, enableI18nLegacyMessageIdFormat);\n    rootNodes = visitAll$(i18nMetaVisitor, rootNodes);\n    if (!preserveWhitespaces) {\n        rootNodes = visitAll$(new WhitespaceVisitor(), rootNodes);\n        // run i18n meta visitor again in case whitespaces are removed (because that might affect generated i18n message content) and first pass indicated that i18n content is present in a template. During this pass i18n IDs generated at the first pass will be preserved, so we can mimic existing extraction process (ng extract-i18n)\n        if (i18nMetaVisitor.hasI18nMeta) {\n            rootNodes = visitAll$(new I18nMetaVisitor(interpolationConfig, /* keepI18nAttrs */ false), rootNodes);\n        }\n    }\n}

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}\n    }\n    var _c = htmlAstToRender3Ast(rootNodes, bindingParser), nodes = _c.nodes, errors = _c.errors,
styleUrls = _c.styleUrls, styles = _c.styles, ngContentSelectors = _c.ngContentSelectors;\n    return {\n
interpolationConfig: interpolationConfig,\n        preserveWhitespaces: preserveWhitespaces,\n        errors:
errors.length > 0 ? errors : null,\n        template: template,\n        nodes: nodes,\n        styleUrls: styleUrls,\n        styles: styles,\n        ngContentSelectors: ngContentSelectors\n    };\n    }\n    var elementRegistry = new
DomElementSchemaRegistry();\n    /**\n     * Construct a `BindingParser` with a default configuration.\n     */\n    function makeBindingParser(interpolationConfig) {\n        if (interpolationConfig === void 0) { interpolationConfig
= DEFAULT_INTERPOLATION_CONFIG; }\n        return new BindingParser(new IvyParser(new Lexer()),
interpolationConfig, elementRegistry, null, []);\n    }\n    function resolveSanitizationFn(context, isAttribute) {\n
switch (context) {\n        case SecurityContext.HTML:\n            return
importExpr(Identifiers$1.sanitizeHtml);\n        case SecurityContext.SCRIPT:\n            return
importExpr(Identifiers$1.sanitizeScript);\n        case SecurityContext.STYLE:\n            // the compiler does not
fill in an instruction for [style.prop?] binding\n            // values because the style algorithm knows internally what
props are subject\n            // to sanitization (only [attr.style] values are explicitly sanitized)\n            return
isAttribute ? importExpr(Identifiers$1.sanitizeStyle) : null;\n        case SecurityContext.URL:\n            return
importExpr(Identifiers$1.sanitizeUrl);\n        case SecurityContext.RESOURCE_URL:\n            return
importExpr(Identifiers$1.sanitizeResourceUrl);\n        default:\n            return null;\n    }\n    }\n    function
trustedConstAttribute(tagName, attr) {\n        var value = asLiteral(attr.value);\n        switch
(elementRegistry.securityContext(tagName, attr.name, /* isAttribute */ true)) {\n            case
SecurityContext.HTML:\n                return importExpr(Identifiers$1.trustConstantHtml).callFn([value],
attr.valueSpan);\n            case SecurityContext.SCRIPT:\n                return
importExpr(Identifiers$1.trustConstantScript).callFn([value], attr.valueSpan);\n            case
SecurityContext.RESOURCE_URL:\n                return
importExpr(Identifiers$1.trustConstantResourceUrl).callFn([value], attr.valueSpan);\n            default:\n
return value;\n        }\n    }\n    function isSingleElementTemplate(children) {\n        return children.length === 1
&& children[0] instanceof Element;\n    }\n    function isTextNode(node) {\n        return node instanceof Text || node
instanceof BoundText || node instanceof Icu;\n    }\n    function hasTextChildrenOnly(children) {\n        return
children.every(isTextNode);\n    }\n    /** Name of the global variable that is used to determine if we use Closure
translations or not */\n    var NG_I18N_CLOSURE_MODE = 'ngI18nClosureMode';\n    /**\n     * Generate
statements that define a given translation message.\n     */\n    *``\n    * var I18N_1;\n    * if (typeof
ngI18nClosureMode !== undefined && ngI18nClosureMode) {\n    *     var MSG_EXTERNAL_XXX =
goog.getMsg(\n    *         \"Some message with ${interpolation}!\",\n    *         { \"interpolation\":
\"\\uFFFFD0\\uFFFFD\" }\n    *     );\n    *     I18N_1 = MSG_EXTERNAL_XXX;\n    * } \n    * else {\n    *
I18N_1 = $localize`Some message with ${\"\\uFFFFD0\\uFFFFD`}!`; \n    * } \n    * ``\n    * \n    * @param message
The original i18n AST message node\n    * @param variable The variable that will be assigned the translation, e.g.
`I18N_1`.\n    * @param closureVar The variable for Closure `goog.getMsg` calls, e.g.
`MSG_EXTERNAL_XXX`.\n    * @param params Object mapping placeholder names to their values (e.g.\n    * `{
\"interpolation\": \"\\uFFFFD0\\uFFFFD\" }`).\n    * @param transformFn Optional transformation function that will
be applied to the translation (e.g.\n    * post-processing).\n    * @returns An array of statements that defined a given
translation.\n    */\n    function getTranslationDeclStmts(message, variable, closureVar, params, transformFn) {\n
        if (params === void 0) { params = {}; }\n        var statements = [\n            declareI18nVariable(variable),\n
            ifStmt(createClosureModeGuard(), createGoogleGetMsgStatements(variable, message, closureVar,
i18nFormatPlaceholderNames(params, /* useCamelCase */ true)), createLocalizeStatements(variable, message,
i18nFormatPlaceholderNames(params, /* useCamelCase */ false))),\n        ];\n        if (transformFn) {\n
statements.push(new ExpressionStatement(variable.set(transformFn(variable))));\n        }\n        return statements;\n
    }\n    /**\n     * Create the expression that will be used to guard the closure mode block\n     */\n    * It is equivalent to:\n
*\n    * ``\n    * \n    * typeof ngI18nClosureMode !== undefined && ngI18nClosureMode\n    * ``\n    */\n    function
createClosureModeGuard() {\n        return typeof Expr(variable(NG_I18N_CLOSURE_MODE))\n

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.notIdentical(literal('undefined', STRING_TYPE))\n      .and(variable(NG_I18N_CLOSURE_MODE));\n  }\n\n  var EMPTY_ARRAY = [];\n  // This regex matches any binding names that contain the \"attr.\" prefix, e.g.\n  \"attr.required\"\n  // If there is a match, the first matching group will contain the attribute name to bind.\n  var\n  ATTR_REGEX = /attr\\.([^\n]+)/;\n  function baseDirectiveFields(meta, constantPool, bindingParser) {\n    var\n    definitionMap = new DefinitionMap();\n    var selectors = parseSelectorToR3Selector(meta.selector);\n    // e.g.\n    `type: MyDirective`\n    definitionMap.set('type', meta.internalType);\n    // e.g. `selectors: [\"\", 'someDir', \"\"]`\n    if (selectors.length > 0) {\n      definitionMap.set('selectors', asLiteral(selectors));\n    }\n    if\n    (meta.queries.length > 0) {\n      // e.g. `contentQueries: (rf, ctx, dirIndex) => { ... }`\n      definitionMap.set('contentQueries', createContentQueriesFunction(meta.queries, constantPool, meta.name));\n    }\n    if (meta.viewQueries.length) {\n      definitionMap.set('viewQuery',\n      createViewQueriesFunction(meta.viewQueries, constantPool, meta.name));\n    }\n    // e.g. `hostBindings: (rf,\n    ctx) => { ... }`\n    definitionMap.set('hostBindings', createHostBindingsFunction(meta.host,\n    meta.typeSourceSpan, bindingParser, constantPool, meta.selector || \"\", meta.name, definitionMap));\n    // e.g.\n    `inputs: { a: 'a'}`\n    definitionMap.set('inputs', conditionallyCreateMapObjectLiteral(meta.inputs, true));\n    //\n    e.g `outputs: { a: 'a'}`\n    definitionMap.set('outputs', conditionallyCreateMapObjectLiteral(meta.outputs));\n    if (meta.exportAs !== null) {\n      definitionMap.set('exportAs', literalArr(meta.exportAs.map(function (e) {\n      return literal(e); })));;\n    }\n    return definitionMap;\n  }\n  /**\n   * Add features to the definition map.\n   *\n   * function addFeatures(definitionMap, meta) {\n    // e.g. `features: [NgOnChangesFeature]`\n    var\n    features = [];\n    var providers = meta.providers;\n    var viewProviders = meta.viewProviders;\n    if\n    (providers || viewProviders) {\n      var args = [providers || new LiteralArrayExpr([])];\n      if (viewProviders)\n      {\n        args.push(viewProviders);\n      }\n      features.push(importExpr(Identifiers$1.ProvidersFeature).callFn(args));\n    }\n    if (meta.usesInheritance) {\n      features.push(importExpr(Identifiers$1.InheritDefinitionFeature));\n    }\n    if (meta.fullInheritance) {\n      features.push(importExpr(Identifiers$1.CopyDefinitionFeature));\n    }\n    if\n    (meta.lifecycle.usesOnChanges) {\n      features.push(importExpr(Identifiers$1.NgOnChangesFeature));\n    }\n    if (features.length) {\n      definitionMap.set('features', literalArr(features));\n    }\n  }\n  /**\n   * Compile a directive for the render3 runtime as defined by the `R3DirectiveMetadata`.\n   *\n   * function\n    compileDirectiveFromMetadata(meta, constantPool, bindingParser) {\n    var definitionMap =\n    baseDirectiveFields(meta, constantPool, bindingParser);\n    addFeatures(definitionMap, meta);\n    var\n    expression = importExpr(Identifiers$1.defineDirective).callFn([definitionMap.toLiteralMap()]);\n    var\n    typeParams = createDirectiveTypeParams(meta);\n    var type =\n    expressionType(importExpr(Identifiers$1.DirectiveDefWithMeta, typeParams));\n    return { expression:\n    expression, type: type };;\n  }\n  /**\n   * Compile a component for the render3 runtime as defined by the\n   * `R3ComponentMetadata`.\n   *\n   * function compileComponentFromMetadata(meta, constantPool, bindingParser)\n    {\n    var e_1, _a;\n    var definitionMap = baseDirectiveFields(meta, constantPool, bindingParser);\n    addFeatures(definitionMap, meta);\n    var selector = meta.selector && CssSelector.parse(meta.selector);\n    var firstSelector = selector && selector[0];\n    // e.g. `attr: [\"class\", \".my.app\"]`\n    // This is optional an\n    only included if the first selector of a component specifies attributes.\n    if (firstSelector) {\n      var\n      selectorAttributes = firstSelector.getAttrs();\n      if (selectorAttributes.length) {\n        definitionMap.set('attrs', constantPool.getConstLiteral(literalArr(selectorAttributes.map(function (value) {\n        return\n        value != null ? literal(value) : literal(undefine); })),\n        /* forceShared */ true));\n      }\n    }\n    //\n    Generate the CSS matcher that recognize directive\n    var directiveMatcher = null;\n    if\n    (meta.directives.length > 0) {\n      var matcher = new SelectorMatcher();\n      try {\n        for (var _b =\n        __values(meta.directives), _c = _b.next(); !_c.done; _c = _b.next()) {\n          var _d = _c.value, selector_1 =\n          _d.selector, expression_1 = _d.expression;\n          matcher.addSelectable(CssSelector.parse(selector_1),\n          expression_1);\n        }\n      }\n      catch (e_1_1) { e_1 = { error: e_1_1 }; }\n      finally {\n        try {\n          if (_c && !_c.done && (_a = _b.return)) _a.call(_b);\n        }\n        finally { if (e_1)\n        throw e_1.error; }\n      }\n      directiveMatcher = matcher;\n    }\n    // e.g. `template: function

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MyComponent_Template(_ctx, _cm) {...}`\n    var templateTypeName = meta.name;\n    var templateName =
templateTypeName ? templateTypeName + \"_Template\" : null;\n    var directivesUsed = new Set();\n    var
pipesUsed = new Set();\n    var changeDetection = meta.changeDetection;\n    var template = meta.template;\n
    var templateBuilder = new TemplateDefinitionBuilder(constantPool, BindingScope.createRootScope(), 0,
templateTypeName, null, null, templateName, directiveMatcher, directivesUsed, meta.pipes, pipesUsed,
Identifiers$1.namespaceHTML, meta.relativeContextFilePath, meta.i18nUseExternalIds);\n    var
templateFunctionExpression = templateBuilder.buildTemplateFunction(template.nodes, []);\n    // We need to
provide this so that dynamically generated components know what\n    // projected content blocks to pass through
to the component when it is instantiated.\n    var ngContentSelectors =
templateBuilder.getNgContentSelectors();\n    if (ngContentSelectors) {\n
definitionMap.set('ngContentSelectors', ngContentSelectors);\n    }\n    // e.g. `decls: 2`\n
definitionMap.set('decls', literal(templateBuilder.getConstCount()));\n    // e.g. `vars: 2`\n
definitionMap.set('vars', literal(templateBuilder.getVarCount()));\n    // Generate `consts` section of
ComponentDef:\n    // - either as an array:\n    // `consts: [['one', 'two'], ['three', 'four']]`\n    // - or as a
factory function in case additional statements are present (to support i18n):\n    // `consts: function() { var
i18n_0; if (ngI18nClosureMode) {...} else {...} return [i18n_0]; }`\n    var _e = templateBuilder.getConsts(),
constExpressions = _e.constExpressions, prepareStatements = _e.prepareStatements;\n    if
(constExpressions.length > 0) {\n        var constsExpr = literalArr(constExpressions);\n        // Prepare
statements are present - turn `consts` into a function.\n        if (prepareStatements.length > 0) {\n
constsExpr = fn([], __spread(prepareStatements, [new ReturnStatement(constsExpr)]));\n        }\n
definitionMap.set('consts', constsExpr);\n    }\n    definitionMap.set('template', templateFunctionExpression);\n
    // e.g. `directives: [MyDirective]`\n    if (directivesUsed.size) {\n        var directivesExpr =
literalArr(Array.from(directivesUsed));\n        if (meta.wrapDirectivesAndPipesInClosure) {\n
directivesExpr = fn([], [new ReturnStatement(directivesExpr)]);\n        }\n        definitionMap.set('directives',
directivesExpr);\n    }\n    // e.g. `pipes: [MyPipe]`\n    if (pipesUsed.size) {\n        var pipesExpr =
literalArr(Array.from(pipesUsed));\n        if (meta.wrapDirectivesAndPipesInClosure) {\n            pipesExpr =
fn([], [new ReturnStatement(pipesExpr)]);\n        }\n        definitionMap.set('pipes', pipesExpr);\n    }\n    if
(meta.encapsulation === null) {\n        meta.encapsulation = ViewEncapsulation.Emulated;\n    }\n    // e.g.
`styles: [str1, str2]`\n    if (meta.styles && meta.styles.length) {\n        var styleValues = meta.encapsulation ===
ViewEncapsulation.Emulated ?\n        compileStyles(meta.styles, CONTENT_ATTR, HOST_ATTR) :\n        meta.styles;\n        var strings = styleValues.map(function (str) { return
constantPool.getConstLiteral(literal(str)); });\n        definitionMap.set('styles', literalArr(strings));\n    }\n
else if (meta.encapsulation === ViewEncapsulation.Emulated) {\n        // If there is no style, don't generate css
selectors on elements\n        meta.encapsulation = ViewEncapsulation.None;\n    }\n    // Only set view
encapsulation if it's not the default value\n    if (meta.encapsulation !== ViewEncapsulation.Emulated) {\n
definitionMap.set('encapsulation', literal(meta.encapsulation));\n    }\n    // e.g. `animation: [trigger('123', [])]`\n
    if (meta.animations !== null) {\n        definitionMap.set('data', literalMap([{\n            key: 'animation', value:
meta.animations, quoted: false\n        }]));\n    }\n    // Only set the change detection flag if it's defined and it's not the
default.\n    if (changeDetection !== null && changeDetection !== ChangeDetectionStrategy.Default) {\n
definitionMap.set('changeDetection', literal(changeDetection));\n    }\n    var expression =
importExpr(Identifiers$1.defineComponent).callFn([definitionMap.toLiteralMap()]);\n    var typeParams =
createDirectiveTypeParams(meta);\n
typeParams.push(stringArrayAsType(meta.template.ngContentSelectors));\n    var type =
expressionType(importExpr(Identifiers$1.ComponentDefWithMeta, typeParams));\n    return { expression:
expression, type: type }; }\n    /**\n     * A wrapper around `compileDirective` which depends on render2 global
analysis data as its input\n     * instead of the `R3DirectiveMetadata`.\n     * `R3DirectiveMetadata` is
computed from `CompileDirectiveMetadata` and other statically reflected\n     * information.\n     */\n    function
compileDirectiveFromRender2(outputCtx, directive, reflector, bindingParser) {\n        var name =

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identifierName(directive.type);\n    name || error(`Cannot resolver the name of ` + directive.type);\n    var
definitionField = outputCtx.constantPool.propertyNameOf(1 /* Directive */);\n    var meta =
directiveMetadataFromGlobalMetadata(directive, outputCtx, reflector);\n    var res =
compileDirectiveFromMetadata(meta, outputCtx.constantPool, bindingParser);\n    var factoryRes =
compileFactoryFunction(Object.assign(Object.assign({ }, meta), { injectFn: Identifiers$1.directiveInject, target:
exports.R3FactoryTarget.Directive }));\n    var ngFactoryDefStatement = new ClassStmt(name, null, [new
ClassField('fac', INFERRED_TYPE, [exports.StmtModifier.Static], factoryRes.factory)], [], new ClassMethod(null,
[], [], []);\n    var directiveDefStatement = new ClassStmt(name, null, [new ClassField(definitionField,
INFERRED_TYPE, [exports.StmtModifier.Static], res.expression)], [], new ClassMethod(null, [], [], []);\n    //
Create the partial class to be merged with the actual class.\n    outputCtx.statements.push(ngFactoryDefStatement,
directiveDefStatement);\n    }\n    /**\n     * A wrapper around `compileComponent` which depends on render2
global analysis data as its input\n     * instead of the `R3DirectiveMetadata`.\n     *\n     * `R3ComponentMetadata`
is computed from `CompileDirectiveMetadata` and other statically reflected\n     * information.\n     *\n     * function
compileComponentFromRender2(outputCtx, component, render3Ast, reflector, bindingParser, directiveTypeBySel,
pipeTypeByName) {\n    var name = identifierName(component.type);\n    name || error(`Cannot resolver the
name of ` + component.type);\n    var definitionField = outputCtx.constantPool.propertyNameOf(2 /*
Component */);\n    var summary = component.toSummary();\n    // Compute the R3ComponentMetadata from
the CompileDirectiveMetadata\n    var meta = Object.assign(Object.assign({ },
directiveMetadataFromGlobalMetadata(component, outputCtx, reflector)), { selector: component.selector, template:
{ nodes: render3Ast.nodes, ngContentSelectors: render3Ast.ngContentSelectors }, directives: [], pipes:
typeMapToExpressionMap(pipeTypeByName, outputCtx), viewQueries:
queriesFromGlobalMetadata(component.viewQueries, outputCtx), wrapDirectivesAndPipesInClosure: false, styles:
(summary.template && summary.template.styles) || EMPTY_ARRAY, encapsulation: (summary.template &&
summary.template.encapsulation) || ViewEncapsulation.Emulated, interpolation:
DEFAULT_INTERPOLATION_CONFIG, animations: null, viewProviders: component.viewProviders.length > 0 ?
new WrappedNodeExpr(component.viewProviders) : null, relativeContextFilePath: "", i18nUseExternalIds: true });\n
var res = compileComponentFromMetadata(meta, outputCtx.constantPool, bindingParser);\n    var factoryRes
= compileFactoryFunction(Object.assign(Object.assign({ }, meta), { injectFn: Identifiers$1.directiveInject, target:
exports.R3FactoryTarget.Directive }));\n    var ngFactoryDefStatement = new ClassStmt(name, null, [new
ClassField('fac', INFERRED_TYPE, [exports.StmtModifier.Static], factoryRes.factory)], [], new ClassMethod(null,
[], [], []);\n    var componentDefStatement = new ClassStmt(name, null, [new ClassField(definitionField,
INFERRED_TYPE, [exports.StmtModifier.Static], res.expression)], [], new ClassMethod(null, [], [], []);\n    //
Create the partial class to be merged with the actual class.\n    outputCtx.statements.push(ngFactoryDefStatement,
componentDefStatement);\n    }\n    /**\n     * Compute `R3DirectiveMetadata` given `CompileDirectiveMetadata`
and a `CompileReflector`.\n     *\n     * function directiveMetadataFromGlobalMetadata(directive, outputCtx,
reflector) {\n    // The global-analysis based Ivy mode in ngc is no longer utilized/supported.\n    throw new
Error('unsupported');\n    }\n    /**\n     * Convert `CompileQueryMetadata` into `R3QueryMetadata`.\n     *\n     * function
queriesFromGlobalMetadata(queries, outputCtx) {\n    return queries.map(function (query) {\n    var
read = null;\n    if (query.read && query.read.identifier) {\n    read =
outputCtx.importExpr(query.read.identifier.reference);\n    }\n    return {\n    propertyName:
query.propertyName,\n    first: query.first,\n    predicate:
selectorsFromGlobalMetadata(query.selectors, outputCtx),\n    descendants: query.descendants,\n
read: read,\n    static: !!query.static\n    };\n    });\n    }\n    /**\n     * Convert
`CompileTokenMetadata` for query selectors into either an expression for a predicate\n     * type, or a list of string
predicates.\n     *\n     * function selectorsFromGlobalMetadata(selectors, outputCtx) {\n    if (selectors.length > 1 ||
(selectors.length == 1 && selectors[0].value)) {\n    var selectorStrings = selectors.map(function (value) {\n
return value.value; });\n    selectorStrings.some(function (value) { return !value; }) &&\n    error('Found
a type among the string selectors expected');\n    return

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outputCtx.constantPool.getConstLiteral(literalArr(selectorStrings.map(function (value) { return literal(value); })));
  }\n  if (selectors.length == 1) {\n    var first = selectors[0];\n    if (first.identifier) {\n
return outputCtx.importExpr(first.identifier.reference);\n    }\n  }\n  error('Unexpected query form');\n
return NULL_EXPR;\n  }\n  function prepareQueryParams(query, constantPool) {\n    var parameters =
[getQueryPredicate(query, constantPool), literal(query.descendants)];\n    if (query.read) {\n
parameters.push(query.read);\n    }\n    return parameters;\n  }\n  function
convertAttributesToExpressions(attributes) {\n    var e_2, _a;\n    var values = [];\n    try {\n      for (var
_b = __values(Object.getOwnPropertyNames(attributes)), _c = _b.next(); !_c.done; _c = _b.next()) {\n        var
key = _c.value;\n        var value = attributes[key];\n        values.push(literal(key), value);\n      }\n
}\n    catch (e_2_1) { e_2 = { error: e_2_1 }; }\n    finally {\n      try {\n        if (_c && !_c.done &&
(_a = _b.return)) _a.call(_b);\n      }\n    } finally { if (e_2) throw e_2.error; }\n  }\n  return values;\n
}\n  // Define and update any content queries\n  function createContentQueriesFunction(queries, constantPool,
name) {\n    var e_3, _a;\n    var createStatements = [];\n    var updateStatements = [];\n    var
tempAllocator = temporaryAllocator(updateStatements, TEMPORARY_NAME);\n    try {\n      for (var
queries_1 = __values(queries), queries_1_1 = queries_1.next(); !queries_1_1.done; queries_1_1 = queries_1.next())
{\n        var query = queries_1_1.value;\n        var queryInstruction = query.static ?
Identifiers$1.staticContentQuery : Identifiers$1.contentQuery;\n        // creation, e.g. r3.contentQuery(dirIndex,
somePredicate, true, null);\n        createStatements.push(importExpr(queryInstruction)\n
.callFn(__spread([variable('dirIndex')], prepareQueryParams(query, constantPool)))\n        .toStmt());\n
// update, e.g. (r3.queryRefresh(tmp = r3.loadQuery()) && (ctx.someDir = tmp));\n        var temporary =
tempAllocator();\n        var getQueryList = importExpr(Identifiers$1.loadQuery).callFn([]);\n        var
refresh = importExpr(Identifiers$1.queryRefresh).callFn([temporary.set(getQueryList)]);\n        var
updateDirective = variable(CONTEXT_NAME)\n        .prop(query.propertyName)\n
.set(query.first ? temporary.prop('first') : temporary);\n
updateStatements.push(refresh.and(updateDirective).toStmt());\n      }\n    } catch (e_3_1) { e_3 = {
error: e_3_1 }; }\n    finally {\n      try {\n        if (queries_1_1 && !queries_1_1.done && (_a =
queries_1.return)) _a.call(queries_1);\n      }\n    } finally { if (e_3) throw e_3.error; }\n  }\n  var
contentQueriesFnName = name ? name + \"_ContentQueries\" : null;\n  return fn([\n    new
FnParam(RENDER_FLAGS, NUMBER_TYPE), new FnParam(CONTEXT_NAME, null),\n    new
FnParam('dirIndex', null)\n  ], [\n    renderFlagCheckIfStmt(1 /* Create */, createStatements),\n
renderFlagCheckIfStmt(2 /* Update */, updateStatements)\n  ], INFERRED_TYPE, null,
contentQueriesFnName);\n  }\n  function stringAsType(str) {\n    return expressionType(literal(str));\n  }\n
function stringMapAsType(map) {\n    var mapValues = Object.keys(map).map(function (key) {\n      var
value = Array.isArray(map[key]) ? map[key][0] : map[key];\n      return {\n        key: key,\n        value:
literal(value),\n        quoted: true,\n      };\n    });\n    return expressionType(literalMap(mapValues));\n
}\n  function stringArrayAsType(arr) {\n    return arr.length > 0 ? expressionType(literalArr(arr.map(function
(value) { return literal(value); }))) :\n    NONE_TYPE;\n  }\n  function createDirectiveTypeParams(meta)
{\n    // On the type side, remove newlines from the selector as it will need to fit into a TypeScript\n    // string
literal, which must be on one line.\n    var selectorForType = meta.selector !== null ? meta.selector.replace(/\n/g,
'') : null;\n    return [\n      typeWithParameters(meta.type.type, meta.typeArgumentCount),\n
selectorForType !== null ? stringAsType(selectorForType) : NONE_TYPE,\n      meta.exportAs !== null ?
stringArrayAsType(meta.exportAs) : NONE_TYPE,\n      stringMapAsType(meta.inputs),\n
stringMapAsType(meta.outputs),\n      stringArrayAsType(meta.queries.map(function (q) { return
q.propertyName; })),\n    ];\n  }\n  // Define and update any view queries\n  function
createViewQueriesFunction(viewQueries, constantPool, name) {\n    var createStatements = [];\n    var
updateStatements = [];\n    var tempAllocator = temporaryAllocator(updateStatements,
TEMPORARY_NAME);\n    viewQueries.forEach(function (query) {\n      var queryInstruction = query.static
? Identifiers$1.staticViewQuery : Identifiers$1.viewQuery;\n      // creation, e.g. r3.viewQuery(somePredicate,

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true);\n      var queryDefinition = importExpr(queryInstruction).callFn(prepareQueryParams(query,
constantPool));\n      createStatements.push(queryDefinition.toStmt());\n      // update, e.g.
(r3.queryRefresh(tmp = r3.loadQuery()) && (ctx.someDir = tmp));\n      var temporary = tempAllocator();\n      var getQueryList = importExpr(Identifiers$.loadQuery).callFn([]);\n      var refresh =
importExpr(Identifiers$.queryRefresh).callFn([temporary.set(getQueryList)]);\n      var updateDirective =
variable(CONTEXT_NAME)\n      .prop(query.propertyName)\n      .set(query.first ?
temporary.prop('first') : temporary);\n      updateStatements.push(refresh.and(updateDirective).toStmt());\n
});\n      var viewQueryFnName = name ? name + \"_Query\" : null;\n      return fn([new
FnParam(RENDER_FLAGS, NUMBER_TYPE), new FnParam(CONTEXT_NAME, null)], [n
renderFlagCheckIfStmt(1 /* Create */, createStatements),\n      renderFlagCheckIfStmt(2 /* Update */,
updateStatements)\n      ], INFERRED_TYPE, null, viewQueryFnName);\n    }]\n    // Return a host binding
function or null if one is not necessary.\n    function createHostBindingsFunction(hostBindingsMetadata,
typeSourceSpan, bindingParser, constantPool, selector, name, definitionMap) {\n      var bindingContext =
variable(CONTEXT_NAME);\n      var styleBuilder = new StylingBuilder(bindingContext);\n      var _a =
hostBindingsMetadata.specialAttributes, styleAttr = _a.styleAttr, classAttr = _a.classAttr;\n      if (styleAttr !==
undefined) {\n        styleBuilder.registerStyleAttr(styleAttr);\n      }\n      if (classAttr !== undefined) {\n
styleBuilder.registerClassAttr(classAttr);\n      }\n      var createStatements = [];\n      var updateStatements =
[];\n      var hostBindingSourceSpan = typeSourceSpan;\n      var directiveSummary =
metadataAsSummary(hostBindingsMetadata);\n      // Calculate host event bindings\n      var eventBindings =
bindingParser.createDirectiveHostEventAsts(directiveSummary, hostBindingSourceSpan);\n      if (eventBindings
&& eventBindings.length) {\n        var listeners = createHostListeners(eventBindings, name);\n
createStatements.push.apply(createStatements, __spread(listeners));\n      }\n      // Calculate the host property
bindings\n      var bindings = bindingParser.createBoundHostProperties(directiveSummary,
hostBindingSourceSpan);\n      var allOtherBindings = [];\n      // We need to calculate the total amount of binding
slots required by\n      // all the instructions together before any value conversions happen.\n      // Value
conversions may require additional slots for interpolation and\n      // bindings with pipes. These calculates happen
after this block.\n      var totalHostVarsCount = 0;\n      bindings && bindings.forEach(function (binding) {\n
var stylingInputWasSet = styleBuilder.registerInputBasedOnName(binding.name, binding.expression,
hostBindingSourceSpan);\n      if (stylingInputWasSet) {\n        totalHostVarsCount +=
MIN_STYLING_BINDING_SLOTS_REQUIRED;\n      }\n      else {\n
allOtherBindings.push(binding);\n        totalHostVarsCount++;\n      }\n    });\n      var
valueConverter;\n      var getValueConverter = function () {\n      if (!valueConverter) {\n        var
hostVarsCountFn = function (numSlots) {\n          var originalVarsCount = totalHostVarsCount;\n
totalHostVarsCount += numSlots;\n          return originalVarsCount;\n        };\n        valueConverter
= new ValueConverter(constantPool, function () { return error('Unexpected node'); }, // new nodes are illegal here\n
hostVarsCountFn, function () { return error('Unexpected pipe'); }); // pipes are illegal here\n      }\n
return valueConverter;\n    });\n      var propertyBindings = [];\n      var attributeBindings = [];\n      var
syntheticHostBindings = [];\n      allOtherBindings.forEach(function (binding) {\n      // resolve literal arrays
and literal objects\n      var value = binding.expression.visit(getValueConverter());\n      var bindingExpr =
bindingFn(bindingContext, value);\n      var _a = getBindingNameAndInstruction(binding), bindingName =
_a.bindingName, instruction = _a.instruction, isAttribute = _a.isAttribute;\n      var securityContexts =
bindingParser.calcPossibleSecurityContexts(selector, bindingName, isAttribute)\n      .filter(function (context)
{ return context !== SecurityContext.NONE; });\n      var sanitizerFn = null;\n      if
(securityContexts.length) {\n        if (securityContexts.length === 2 &&\n
securityContexts.indexOf(SecurityContext.URL) > -1 &&\n
securityContexts.indexOf(SecurityContext.RESOURCE_URL) > -1) {\n          // Special case for some URL
attributes (such as \"src\" and \"href\") that may be a part\n          // of different security contexts. In this case
we use special sanitization function and\n          // select the actual sanitizer at runtime based on a tag name

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that is provided while\n          // invoking sanitization function.\n          sanitizerFn =
importExpr(Identifiers$.sanitizeUrlOrResourceUrl);\n          }\n          else {\n          sanitizerFn =
resolveSanitizationFn(securityContexts[0], isAttribute);\n          }\n          }\n          var instructionParams =
[literal(bindingName), bindingExpr.currValExpr];\n          if (sanitizerFn) {\n
instructionParams.push(sanitizerFn);\n          }\n          updateStatements.push.apply(updateStatements,
__spread(bindingExpr.stmts));\n          if (instruction === Identifiers$.hostProperty) {\n
propertyBindings.push(instructionParams);\n          }\n          else if (instruction === Identifiers$.attribute) {\n
          attributeBindings.push(instructionParams);\n          }\n          else if (instruction ===
Identifiers$.syntheticHostProperty) {\n          syntheticHostBindings.push(instructionParams);\n          }\n
          else {\n          updateStatements.push(importExpr(instruction).callFn(instructionParams).toStmt());\n          }\n
          });\n          if (propertyBindings.length > 0) {\n
updateStatements.push(chainedInstruction(Identifiers$.hostProperty, propertyBindings).toStmt());\n          }\n          if
(attributeBindings.length > 0) {\n          updateStatements.push(chainedInstruction(Identifiers$.attribute,
attributeBindings).toStmt());\n          }\n          if (syntheticHostBindings.length > 0) {\n
updateStatements.push(chainedInstruction(Identifiers$.syntheticHostProperty, syntheticHostBindings).toStmt());\n
          }\n          // since we're dealing with directives/components and both have hostBinding\n          // functions, we need
to generate a special hostAttrs instruction that deals\n          // with both the assignment of styling as well as static
attributes to the host\n          // element. The instruction below will instruct all initial styling (styling\n          // that is
inside of a host binding within a directive/component) to be attached\n          // to the host element alongside any of
the provided host attributes that were\n          // collected earlier.\n          var hostAttrs =
convertAttributesToExpressions(hostBindingsMetadata.attributes);\n          styleBuilder.assignHostAttrs(hostAttrs,
definitionMap);\n          if (styleBuilder.hasBindings) {\n          // finally each binding that was registered in the
statement above will need to be added to\n          // the update block of a component/directive
templateFn/hostBindingsFn so that the bindings\n          // are evaluated and updated for the element.\n
styleBuilder.buildUpdateLevelInstructions(getValueConverter()).forEach(function (instruction) {\n          if
(instruction.calls.length > 0) {\n          var calls_1 = [];\n          instruction.calls.forEach(function (call)
{\n          // we subtract a value of `1` here because the binding slot was already allocated\n          //
at the top of this method when all the input bindings were counted.\n          totalHostVarsCount +=\n
Math.max(call.allocateBindingSlots - MIN_STYLING_BINDING_SLOTS_REQUIRED, 0);\n
          calls_1.push(convertStylingCall(call, bindingContext, bindingFn));\n          });\n
updateStatements.push(chainedInstruction(instruction.reference, calls_1).toStmt());\n          }\n          });\n
          }\n          if (totalHostVarsCount) {\n          definitionMap.set('hostVars', literal(totalHostVarsCount));\n          }\n
if (createStatements.length > 0 || updateStatements.length > 0) {\n          var hostBindingsFnName = name ? name +
\"_HostBindings\" : null;\n          var statements = [];\n          if (createStatements.length > 0) {\n
statements.push(renderFlagCheckIfStmt(1 /* Create */, createStatements));\n          }\n          if
(updateStatements.length > 0) {\n          statements.push(renderFlagCheckIfStmt(2 /* Update */,
updateStatements));\n          }\n          return fn([new FnParam(RENDER_FLAGS, NUMBER_TYPE), new
FnParam(CONTEXT_NAME, null)], statements, INFERRED_TYPE, null, hostBindingsFnName);\n          }\n
return null;\n          }\n          function bindingFn(implicit, value) {\n          return convertPropertyBinding(null, implicit,
value, 'b', BindingForm.Expression, function () { return error('Unexpected interpolation'); });\n          }\n          function
convertStylingCall(call, bindingContext, bindingFn) {\n          return call.params(function (value) { return
bindingFn(bindingContext, value).currValExpr; });\n          }\n          function getBindingNameAndInstruction(binding) {\n
          var bindingName = binding.name;\n          var instruction;\n          // Check to see if this is an attr binding or a
property binding\n          var attrMatches = bindingName.match(ATTR_REGEX);\n          if (attrMatches) {\n
bindingName = attrMatches[1];\n          instruction = Identifiers$.attribute;\n          }\n          else {\n          if
(binding.isAnimation) {\n          bindingName = prepareSyntheticPropertyName(bindingName);\n          //
host bindings that have a synthetic property (e.g. @foo) should always be rendered\n          // in the context of the
component and not the parent. Therefore there is a special\n          // compatibility instruction available for this

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purpose.\n      instruction = Identifiers$1.syntheticHostProperty;\n      }\n      else {\n
instruction = Identifiers$1.hostProperty;\n      }\n      }\n      return { bindingName: bindingName, instruction:
instruction, isAttribute: !!attrMatches };\n      }\n      function createHostListeners(eventBindings, name) {\n      var
listeners = [];\n      var syntheticListeners = [];\n      var instructions = [];\n      eventBindings.forEach(function
(binding) {\n      var bindingName = binding.name && sanitizeIdentifier(binding.name);\n      var
bindingFnName = binding.type === 1 /* Animation */ ?\n
prepareSyntheticListenerFunctionName(bindingName, binding.targetOrPhase) :\n      bindingName;\n
var handlerName = name && bindingName ? name + \"_\" + bindingFnName + \"_HostBindingHandler\" : null;\n
var params = prepareEventListenerParameters(BoundEvent.fromParsedEvent(binding), handlerName);\n
if (binding.type === 1 /* Animation */) {\n      syntheticListeners.push(params);\n      }\n      else {\n
listeners.push(params);\n      }\n      });\n      if (syntheticListeners.length > 0) {\n
instructions.push(chainedInstruction(Identifiers$1.syntheticHostListener, syntheticListeners).toStmnt());\n      }\n
if (listeners.length > 0) {\n      instructions.push(chainedInstruction(Identifiers$1.listener, listeners).toStmnt());\n
}\n      return instructions;\n      }\n      function metadataAsSummary(meta) {\n      // clang-format off\n      return
{\n      // This is used by the BindingParser, which only deals with listeners and properties. There's no\n      //
need to pass attributes to it.\n      hostAttributes: {},\n      hostListeners: meta.listeners,\n
hostProperties: meta.properties,\n      };\n      // clang-format on\n      }\n      function
typeMapToExpressionMap(map, outputCtx) {\n      // Convert each map entry into another entry where the value is
an expression importing the type.\n      var entries = Array.from(map).map(function (_a) {\n      var _b =
__read(_a, 2), key = _b[0], type = _b[1];\n      return [key, outputCtx.importExpr(type)];\n      });\n      return
new Map(entries);\n      }\n      var HOST_REG_EXP$1 = /^(?:(?:[^\]]+)](?:\(((?:[^\]]+))\))$/;\n      function
parseHostBindings(host) {\n      var e_4, _a;\n      var attributes = {};\n      var listeners = {};\n      var properties
= {};\n      var specialAttributes = {};\n      try {\n      for (var _b = __values(Object.keys(host)), _c =
_b.next(); !_c.done; _c = _b.next()) {\n      var key = _c.value;\n      var value = host[key];\n
var matches = key.match(HOST_REG_EXP$1);\n      if (matches === null) {\n      switch (key) {\n
case 'class':\n      if (typeof value !== 'string') {\n      // TODO(alxhub):
make this a diagnostic.\n      throw new Error(\"Class binding must be string\");\n
}\n      specialAttributes.classAttr = value;\n      break;\n      case 'style':\n
if (typeof value !== 'string') {\n      // TODO(alxhub): make this a diagnostic.\n
throw new Error(\"Style binding must be string\");\n      }\n
specialAttributes.styleAttr = value;\n      break;\n      default:\n      if (typeof
value === 'string') {\n      attributes[key] = literal(value);\n      }\n      else
{\n      attributes[key] = value;\n      }\n      }\n      }\n      else if
(matches[1 /* Binding */] !== null) {\n      if (typeof value !== 'string') {\n      // TODO(alxhub):
make this a diagnostic.\n      throw new Error(\"Property binding must be string\");\n      }\n
// synthetic properties (the ones that have a `@` as a prefix)\n      // are still treated the same as regular
properties. Therefore\n      // there is no point in storing them in a separate map.\n
properties[matches[1 /* Binding */] = value;\n      }\n      else if (matches[2 /* Event */] !== null) {\n
if (typeof value !== 'string') {\n      // TODO(alxhub): make this a diagnostic.\n
throw new Error(\"Event binding must be string\");\n      }\n      listeners[matches[2 /* Event */] =
value;\n      }\n      }\n      catch (e_4_1) { e_4 = { error: e_4_1 }; }\n      finally {\n      try
{\n      if (_c && !_c.done && (_a = _b.return)) _a.call(_b);\n      }\n      finally { if (e_4) throw
e_4.error; }\n      }\n      return { attributes: attributes, listeners: listeners, properties: properties, specialAttributes:
specialAttributes };\n      }\n      /**\n      * Verifies host bindings and returns the list of errors (if any). Empty array
indicates that a\n      * given set of host bindings has no errors.\n      * @param bindings set of host bindings to
verify.\n      * @param sourceSpan source span where host bindings were defined.\n      * @returns array of errors
associated with a given set of host bindings.\n      */\n      function verifyHostBindings(bindings, sourceSpan) {\n
var summary = metadataAsSummary(bindings);\n      // TODO: abstract out host bindings verification logic and

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use it instead of\n    // creating events and properties ASTs to detect errors (FW-996)\n    var bindingParser =
makeBindingParser();\n    bindingParser.createDirectiveHostEventAsts(summary, sourceSpan);\nbindingParser.createBoundHostProperties(summary, sourceSpan);\n    return bindingParser.errors;\n  }\nfunction compileStyles(styles, selector, hostSelector) {\n    var shadowCss = new ShadowCss();\n    return
styles.map(function (style) {\n        return shadowCss.shimCssText(style, selector, hostSelector);\n    });\n}\n\n/**\n * @license\n * Copyright Google LLC All Rights Reserved.\n * Use of this source code
is governed by an MIT-style license that can be\n * found in the LICENSE file at https://angular.io/license\n
*/\n\n/**\n * An interface for retrieving documents by URL that the compiler uses\n * to load templates.\n
*/\n  var ResourceLoader = /** @class */ (function () {\n    function ResourceLoader() {\n    }\nResourceLoader.prototype.get = function (url) {\n    return ";\n    }; return ResourceLoader;\n
})();\n\n  var CompilerFacadeImpl = /** @class */ (function () {\n    function CompilerFacadeImpl(jitEvaluator)
{\n    if (jitEvaluator === void 0) { jitEvaluator = new JitEvaluator(); }\n    this.jitEvaluator =
jitEvaluator;\n    this.R3ResolvedDependencyType = exports.R3ResolvedDependencyType;\n
this.R3FactoryTarget = exports.R3FactoryTarget;\n    this.ResourceLoader = ResourceLoader;\n
this.elementSchemaRegistry = new DomElementSchemaRegistry();\n  }\nCompilerFacadeImpl.prototype.compilePipe = function (angularCoreEnv, sourceMapUrl, facade) {\n    var
metadata = {\n    name: facade.name,\n    type: wrapReference$1(facade.type),\n
internalType: new WrappedNodeExpr(facade.type),\n    typeArgumentCount: facade.typeArgumentCount,\n
deps: convertR3DependencyMetadataArray(facade.deps),\n    pipeName: facade.pipeName,\n
pure: facade.pure,\n    };\n    var res = compilePipeFromMetadata(metadata);\n    return
this.jitExpression(res.expression, angularCoreEnv, sourceMapUrl, []);\n  };\nCompilerFacadeImpl.prototype.compileInjectable = function (angularCoreEnv, sourceMapUrl, facade) {\n
var _a = compileInjectable({\n    name: facade.name,\n    type: wrapReference$1(facade.type),\n
internalType: new WrappedNodeExpr(facade.type),\n    typeArgumentCount:
facade.typeArgumentCount,\n    providedIn: computeProvidedIn(facade.providedIn),\n    useClass:
wrapExpression(facade, USE_CLASS),\n    useFactory: wrapExpression(facade, USE_FACTORY),\n
useValue: wrapExpression(facade, USE_VALUE),\n    useExisting: wrapExpression(facade,
USE_EXISTING),\n    userDeps: convertR3DependencyMetadataArray(facade.userDeps) || undefined,\n
}), expression = _a.expression, statements = _a.statements;\n    return this.jitExpression(expression,
angularCoreEnv, sourceMapUrl, statements);\n  };\nCompilerFacadeImpl.prototype.compileInjector =
function (angularCoreEnv, sourceMapUrl, facade) {\n    var meta = {\n    name: facade.name,\n
type: wrapReference$1(facade.type),\n    internalType: new WrappedNodeExpr(facade.type),\n
deps: convertR3DependencyMetadataArray(facade.deps),\n    providers: new
WrappedNodeExpr(facade.providers),\n    imports: facade.imports.map(function (i) { return new
WrappedNodeExpr(i); }),\n    };\n    var res = compileInjector(meta);\n    return
this.jitExpression(res.expression, angularCoreEnv, sourceMapUrl, res.statements);\n  };\nCompilerFacadeImpl.prototype.compileNgModule = function (angularCoreEnv, sourceMapUrl, facade) {\n
var meta = {\n    type: wrapReference$1(facade.type),\n    internalType: new
WrappedNodeExpr(facade.type),\n    adjacentType: new WrappedNodeExpr(facade.type),\n
bootstrap: facade.bootstrap.map(wrapReference$1),\n    declarations:
facade.declarations.map(wrapReference$1),\n    imports: facade.imports.map(wrapReference$1),\n
exports: facade.exports.map(wrapReference$1),\n    emitInline: true,\n    containsForwardDecls:
false,\n    schemas: facade.schemas ? facade.schemas.map(wrapReference$1) : null,\n    id: facade.id
? new WrappedNodeExpr(facade.id) : null,\n    };\n    var res = compileNgModule(meta);\n    return
this.jitExpression(res.expression, angularCoreEnv, sourceMapUrl, []);\n  };\nCompilerFacadeImpl.prototype.compileDirective = function (angularCoreEnv, sourceMapUrl, facade) {\n
var constantPool = new ConstantPool();\n    var bindingParser = makeBindingParser();\n    var meta =
convertDirectiveFacadeToMetadata(facade);\n    var res = compileDirectiveFromMetadata(meta, constantPool,

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bindingParser);\n        return this.jitExpression(res.expression, angularCoreEnv, sourceMapUrl,
constantPool.statements);\n    });\n    CompilerFacadeImpl.prototype.compileComponent = function
(angularCoreEnv, sourceMapUrl, facade) {\n        // The ConstantPool is a requirement of the JIT'er.\n        var
constantPool = new ConstantPool();\n        var interpolationConfig = facade.interpolation ?\nInterpolationConfig.fromArray(facade.interpolation) :\n        DEFAULT_INTERPOLATION_CONFIG;\n        // Parse the template and check for errors.\n        var template = parseTemplate(facade.template, sourceMapUrl, {
preserveWhitespaces: facade.preserveWhitespaces, interpolationConfig: interpolationConfig });\n        if
(template.errors !== null) {\n            var errors = template.errors.map(function (err) { return err.toString();
}).join(', ');
            throw new Error("Errors during JIT compilation of template for '" + facade.name + "': '" +
errors);\n        }
        // Compile the component metadata, including template, into an expression.\n        //
TODO(alxhub): implement inputs, outputs, queries, etc.\n        var metadata =
Object.assign(Object.assign(Object.assign({}, facade), convertDirectiveFacadeToMetadata(facade)), { selector:
facade.selector || this.elementSchemaRegistry.getDefaultComponentElementName(), template: template,
wrapDirectivesAndPipesInClosure: false, styles: __spread(facade.styles, template.styles), encapsulation:
facade.encapsulation, interpolation: interpolationConfig, changeDetection: facade.changeDetection, animations:
facade.animations != null ? new WrappedNodeExpr(facade.animations) : null, viewProviders: facade.viewProviders
!= null ? new WrappedNodeExpr(facade.viewProviders) :\n            null, relativeContextFilePath: "",
i18nUseExternalIds: true });\n        var res = compileComponentFromMetadata(metadata, constantPool,
makeBindingParser(interpolationConfig));\n        var jitExpressionSourceMap = "ng:///" + facade.name +
".js";
        return this.jitExpression(res.expression, angularCoreEnv, jitExpressionSourceMap,
constantPool.statements);\n    });\n    CompilerFacadeImpl.prototype.compileFactory = function
(angularCoreEnv, sourceMapUrl, meta) {\n        var factoryRes = compileFactoryFunction({\n            name:
meta.name,\n            type: wrapReference$1(meta.type),\n            internalType: new
WrappedNodeExpr(meta.type),\n            typeArgumentCount: meta.typeArgumentCount,\n            deps:
convertR3DependencyMetadataArray(meta.deps),\n            injectFn: meta.injectFn === 'directiveInject' ?
Identifiers.directiveInject :\n            Identifiers.inject,\n            target: meta.target,\n        });\n        return
this.jitExpression(factoryRes.factory, angularCoreEnv, sourceMapUrl, factoryRes.statements);\n    });\n    CompilerFacadeImpl.prototype.createParseSourceSpan = function (kind, typeName, sourceUrl) {\n        return
r3JitTypeSourceSpan(kind, typeName, sourceUrl);\n    };
    /**
     * JIT compiles an expression and
returns the result of executing that expression.
     * @param def the definition which will be compiled
and executed to get the value to patch
     * @param context an object map of @angular/core symbol names to
symbols which will be available
     * in the context of the compiled expression
     * @param sourceUrl a
URL to use for the source map of the compiled expression
     * @param preStatements a collection of
statements that should be evaluated before the expression.
     */
    CompilerFacadeImpl.prototype.jitExpression = function (def, context, sourceUrl, preStatements) {\n        // The
ConstantPool may contain Statements which declare variables used in the final expression.
        // Therefore, its
statements need to precede the actual JIT operation. The final statement is a
        // declaration of $def which is
set to the expression being compiled.
        var statements = __spread(preStatements, [\n            new
DeclareVarStmnt('$def', def, undefined, [exports.StmtModifier.Exported]),\n        ]);\n        var res =
this.jitEvaluator.evaluateStatements(sourceUrl, statements, new R3JitReflector(context), /* enableSourceMaps */
true);\n        return res['$def'];\n    });\n    return CompilerFacadeImpl;\n})();\n    var USE_CLASS =
Object.keys({ useClass: null })[0];\n    var USE_FACTORY = Object.keys({ useFactory: null })[0];\n    var
USE_VALUE = Object.keys({ useValue: null })[0];\n    var USE_EXISTING = Object.keys({ useExisting: null
})[0];\n    var wrapReference$1 = function (value) {\n        var wrapped = new WrappedNodeExpr(value);\n
return { value: wrapped, type: wrapped };\n    };
    function convertToR3QueryMetadata(facade) {\n        return
Object.assign(Object.assign({}, facade), { predicate: Array.isArray(facade.predicate) ? facade.predicate :\n        new WrappedNodeExpr(facade.predicate), read: facade.read ? new WrappedNodeExpr(facade.read) : null, static:
facade.static });\n    }\n    function convertDirectiveFacadeToMetadata(facade) {\n        var inputsFromMetadata =

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parseInputOutputs(facade.inputs || []);\n    var outputsFromMetadata = parseInputOutputs(facade.outputs || []);\n    var propMetadata = facade.propMetadata;\n    var inputsFromType = {};\n    var outputsFromType = {};\n    var _loop_1 = function (field) {\n        if (propMetadata.hasOwnProperty(field)) {\n            propMetadata[field].forEach(function (ann) {\n                if (isInput(ann)) {\n                    inputsFromType[field] =\n                        ann.bindingPropertyName ? [ann.bindingPropertyName, field] : field;\n                }\n                else if (isOutput(ann)) {\n                    outputsFromType[field] =\n                        ann.bindingPropertyName || field;\n                }\n            });\n        }\n    }; \n    for (var field in propMetadata) {\n        _loop_1(field);\n    }\n    return Object.assign(Object.assign({}, facade), {\n        typeSourceSpan: facade.typeSourceSpan, type: wrapReference$1(facade.type), internalType: new\n        WrappedNodeExpr(facade.type), deps: convertR3DependencyMetadataArray(facade.deps), host:\n        extractHostBindings(facade.propMetadata, facade.typeSourceSpan, facade.host), inputs:\n        Object.assign(Object.assign({}, inputsFromMetadata), inputsFromType), outputs: Object.assign(Object.assign({},\n        outputsFromMetadata), outputsFromType), queries: facade.queries.map(convertToR3QueryMetadata), providers:\n        facade.providers != null ? new WrappedNodeExpr(facade.providers) : null, viewQueries:\n        facade.viewQueries.map(convertToR3QueryMetadata), fullInheritance: false });\n    }\n    function\n    wrapExpression(obj, property) {\n        if (obj.hasOwnProperty(property)) {\n            return new\n            WrappedNodeExpr(obj[property]);\n        }\n        else {\n            return undefined;\n        }\n    }\n    function\n    computeProvidedIn(providedIn) {\n        if (providedIn == null || typeof providedIn === 'string') {\n            return\n            new LiteralExpr(providedIn);\n        }\n        else {\n            return new WrappedNodeExpr(providedIn);\n        }\n    }\n    function convertR3DependencyMetadata(facade) {\n        var tokenExpr;\n        if (facade.token === null) {\n            tokenExpr = new LiteralExpr(null);\n        }\n        else if (facade.resolved ===\n        exports.R3ResolvedDependencyType.Attribute) {\n            tokenExpr = new LiteralExpr(facade.token);\n        }\n        else {\n            tokenExpr = new WrappedNodeExpr(facade.token);\n        }\n        return {\n            token:\n            tokenExpr,\n            attribute: null,\n            resolved: facade.resolved,\n            host: facade.host,\n            optional:\n            facade.optional,\n            self: facade.self,\n            skipSelf: facade.skipSelf,\n        };\n    }\n    function\n    convertR3DependencyMetadataArray(facades) {\n        return facades == null ? null :\n        facades.map(convertR3DependencyMetadata);\n    }\n    function extractHostBindings(propMetadata, sourceSpan,\n    host) {\n        // First parse the declarations from the metadata.\n        var bindings = parseHostBindings(host || {});\n        // After that check host bindings for errors\n        var errors = verifyHostBindings(bindings, sourceSpan);\n        if\n        (errors.length) {\n            throw new Error(errors.map(function (error) { return error.msg; }).join("\\n"));\n        }\n        var _loop_2 = function (field) {\n            if (propMetadata.hasOwnProperty(field)) {\n                propMetadata[field].forEach(function (ann) {\n                    if (isHostBinding(ann)) {\n                        bindings.properties[ann.hostPropertyName || field] = field;\n                    }\n                    else if (isHostListener(ann))\n                    {\n                        bindings.listeners[ann.eventName || field] = field + "(" + (ann.args || []).join(',') + ")";\n                    }\n                });\n            }\n        }; \n        // Next, loop over the properties of the object, looking for\n        @HostBinding and @HostListener.\n        for (var field in propMetadata) {\n            _loop_2(field);\n        }\n        return bindings;\n    }\n    function isHostBinding(value) {\n        return value.ngMetadataName ===\n        'HostBinding';\n    }\n    function isHostListener(value) {\n        return value.ngMetadataName === 'HostListener';\n    }\n    function isInput(value) {\n        return value.ngMetadataName === 'Input';\n    }\n    function isOutput(value)\n    {\n        return value.ngMetadataName === 'Output';\n    }\n    function parseInputOutputs(values) {\n        return\n        values.reduce(function (map, value) {\n            var _a = __read(value.split(',')).map(function (piece) { return\n            piece.trim(); });\n            field = _a[0], property = _a[1];\n            map[field] = property || field;\n            return map;\n        }, {});\n    }\n    function publishFacade(global) {\n        var ng = global.ng || (global.ng = {});\n        ng.compilerFacade = new CompilerFacadeImpl();\n    }\n    /**\n     * @license\n     * Copyright Google LLC All\n     Rights Reserved.\n     * Use of this source code is governed by an MIT-style license that can be\n     * found\n     in the LICENSE file at https://angular.io/license\n     */\n    var VERSION$1 = new Version('11.0.2');\n    /**\n     * @license\n     * Copyright Google LLC All Rights Reserved.\n     * Use of this source code is governed by\n     an MIT-style license that can be\n     * found in the LICENSE file at https://angular.io/license\n     */\n    var

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CompilerConfig = /** @class */ (function () {\n    function CompilerConfig(_a) {\n        var _b = _a === void
0 ? {} : _a, _c = _b.defaultEncapsulation, defaultEncapsulation = _c === void 0 ? ViewEncapsulation.Emulated :
_c, _d = _b.useJit, useJit = _d === void 0 ? true : _d, _e = _b.jitDevMode, jitDevMode = _e === void 0 ? false : _e,
_f = _b.missingTranslation, missingTranslation = _f === void 0 ? null : _f, preserveWhitespaces =
_b.preserveWhitespaces, strictInjectionParameters = _b.strictInjectionParameters;\n        this.defaultEncapsulation
= defaultEncapsulation;\n        this.useJit = !!useJit;\n        this.jitDevMode = !!jitDevMode;\n
this.missingTranslation = missingTranslation;\n        this.preserveWhitespaces =
preserveWhitespacesDefault(noUndefined(preserveWhitespaces));\n        this.strictInjectionParameters =
strictInjectionParameters === true;\n    }\n    return CompilerConfig;\n})();\n    function
preserveWhitespacesDefault(preserveWhitespacesOption, defaultSetting) {\n        if (defaultSetting === void 0) {\n
defaultSetting = false;\n        }\n        return preserveWhitespacesOption === null ? defaultSetting :
preserveWhitespacesOption;\n    }\n\n    var DirectiveNormalizer = /** @class */ (function () {\n        function
DirectiveNormalizer(_resourceLoader, _urlResolver, _htmlParser, _config) {\n            this._resourceLoader =
_resourceLoader;\n            this._urlResolver = _urlResolver;\n            this._htmlParser = _htmlParser;\n
this._config = _config;\n            this._resourceLoaderCache = new Map();\n        }\n        DirectiveNormalizer.prototype.clearCache = function () {\n            this._resourceLoaderCache.clear();\n        };\n
DirectiveNormalizer.prototype.clearCacheFor = function (normalizedDirective) {\n            var _this = this;\n
if (!normalizedDirective.isComponent) {\n                return;\n            }\n            var template =
normalizedDirective.template;\n            this._resourceLoaderCache.delete(template.templateUrl);\n
template.externalStylesheets.forEach(function (stylesheet) {\n                _this._resourceLoaderCache.delete(stylesheet.moduleUrl);\n            });\n        }\n        DirectiveNormalizer.prototype._fetch = function (url) {\n            var result = this._resourceLoaderCache.get(url);\n
if (!result) {\n                result = this._resourceLoader.get(url);\n                this._resourceLoaderCache.set(url,
result);\n            }\n            return result;\n        };\n        DirectiveNormalizer.prototype.normalizeTemplate =
function (prenormData) {\n            var _this = this;\n            if (isDefined(prenormData.template)) {\n                if
(isDefined(prenormData.templateUrl)) {\n                    throw syntaxError("\\" + stringify(prenormData.\n
.componentType) + "\" component cannot define both template and templateUrl");\n                }\n                if
(typeof prenormData.template !== 'string') {\n                    throw syntaxError("The template specified for
component \" + stringify(prenormData.componentType) + \" is not a string");\n                }\n            } else
if (isDefined(prenormData.templateUrl)) {\n                if (typeof prenormData.templateUrl !== 'string') {\n
                    throw syntaxError("The templateUrl specified for component \" + stringify(prenormData.componentType) + \" is
not a string");\n                }\n            } else {\n                throw syntaxError("No template specified for
component \" + stringify(prenormData.componentType));\n            }\n            if
(isDefined(prenormData.preserveWhitespaces) && typeof prenormData.preserveWhitespaces !==
'boolean') {\n                throw syntaxError("The preserveWhitespaces option for component \" +
stringify(prenormData.componentType) + \" must be a boolean");\n            }\n            return
SyncAsync.then(this._preParseTemplate(prenormData), function (preparsedTemplate) {\n                return
_this._normalizeTemplateMetadata(prenormData, preparsedTemplate);\n            });\n        }\n        DirectiveNormalizer.prototype._preParseTemplate = function (prenormData) {\n            var _this = this;\n            var
template;\n            var templateUrl;\n            if (prenormData.template != null) {\n                template =
prenormData.template;\n                templateUrl = prenormData.moduleUrl;\n            } else {\n                templateUrl = this._urlResolver.resolve(prenormData.moduleUrl, prenormData.templateUrl);\n                template =
this._fetch(templateUrl);\n            }\n            return SyncAsync.then(template, function (template) {\n                return
_this._preparseLoadedTemplate(prenormData, template, templateUrl);\n            });\n        }\n        DirectiveNormalizer.prototype._preparseLoadedTemplate = function (prenormData, template, templateUrl) {\n            var isInline = !!prenormData.template;\n            var interpolationConfig =
InterpolationConfig.fromArray(prenormData.interpolation);\n            var templateUrl = templateUrlSourceUrl({
reference: prenormData.ngModuleType }, { type: { reference: prenormData.componentType } }, { isInline: isInline,

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templateUrl: templateAbsUrl });\n        var rootNodesAndErrors = this._htmlParser.parse(template, templateUrl, {
tokenizeExpansionForms: true, interpolationConfig: interpolationConfig });\n        if
(rootNodesAndErrors.errors.length > 0) {\n            var errorString = rootNodesAndErrors.errors.join('\n');\n            throw syntaxError("\nTemplate parse errors:\n" + errorString);\n        }\n        var templateMetadataStyles =
this._normalizeStylesheet(new CompileStylesheetMetadata({ styles: prenormData.styles, moduleUrl:
prenormData.moduleUrl }));\n        var visitor = new TemplatePreparseVisitor();\n        visitAll$(visitor,
rootNodesAndErrors.rootNodes);\n        var templateStyles = this._normalizeStylesheet(new
CompileStylesheetMetadata({ styles: visitor.styles, styleUrls: visitor.styleUrls, moduleUrl: templateAbsUrl }));\n
        var styles = templateMetadataStyles.styles.concat(templateStyles.styles);\n        var inlineStyleUrls =
templateMetadataStyles.styleUrls.concat(templateStyles.styleUrls);\n        var styleUrls = this\n
._normalizeStylesheet(new CompileStylesheetMetadata({ styleUrls: prenormData.styleUrls, moduleUrl:
prenormData.moduleUrl })).styleUrls;\n        return {\n            templateUrl: templateUrl,\n            isInline: isInline,\n            htmlAst: rootNodesAndErrors,\n            styles: styles,\n            inlineStyleUrls: inlineStyleUrls,\n            styleUrls: styleUrls,\n            ngContentSelectors: visitor.ngContentSelectors,\n        };\n    };\n\nDirectiveNormalizer.prototype._normalizeTemplateMetadata = function (prenormData, preparedTemplate) {\n
    var _this = this;\n    return
SyncAsync.then(this._loadMissingExternalStylesheets(preparedTemplate.styleUrls.concat(preparedTemplate.inlin
eStyleUrls)), function (externalStylesheets) { return _this._normalizeLoadedTemplateMetadata(prenormData,
preparedTemplate, externalStylesheets); });\n\nDirectiveNormalizer.prototype._normalizeLoadedTemplateMetadata = function (prenormData, preparedTemplate,
stylesheets) {\n    var _this = this;\n    // Algorithm:\n    // - produce exactly 1 entry per original
styleUrl in\n    // CompileTemplateMetadata.externalStylesheets with all styles inlined\n    // - inline all
styles that are referenced by the template into CompileTemplateMetadata.styles.\n    // Reason: be able to
determine how many stylesheets there are even without loading\n    // the template nor the stylesheets, so we
can create a stub for TypeScript always synchronously\n    // (as resource loading may be async)\n    var
styles = __spread(preparedTemplate.styles);\n    this._inlineStyles(preparedTemplate.inlineStyleUrls,
stylesheets, styles);\n    var styleUrls = preparedTemplate.styleUrls;\n    var externalStylesheets =
styleUrls.map(function (styleUrl) {\n        var stylesheet = stylesheets.get(styleUrl);\n        var styles =
__spread(stylesheet.styles);\n        _this._inlineStyles(stylesheet.styleUrls, stylesheets, styles);\n        return
new CompileStylesheetMetadata({ moduleUrl: styleUrl, styles: styles });\n    });\n    var encapsulation =
prenormData.encapsulation;\n    if (encapsulation === null) {\n        encapsulation =
this._config.defaultEncapsulation;\n    }\n    if (encapsulation === ViewEncapsulation.Emulated &&
styles.length === 0 &&\n        styleUrls.length === 0) {\n        encapsulation =
ViewEncapsulation.None;\n    }\n    return new CompileTemplateMetadata({\n        encapsulation:
encapsulation,\n        templateUrl: preparedTemplate.templateUrl,\n        templateUrl:
preparedTemplate.templateUrl,\n        htmlAst: preparedTemplate.htmlAst,\n        styles: styles,\n
        styleUrls: styleUrls,\n        ngContentSelectors: preparedTemplate.ngContentSelectors,\n
        animations: prenormData.animations,\n        interpolation: prenormData.interpolation,\n        isInline:
preparedTemplate.isInline,\n        externalStylesheets: externalStylesheets,\n        preserveWhitespaces:
preserveWhitespacesDefault(prenormData.preserveWhitespaces, this._config.preserveWhitespaces),\n    });\n\n    DirectiveNormalizer.prototype._inlineStyles = function (styleUrls, stylesheets, targetStyles) {\n
        var _this = this;\n        styleUrls.forEach(function (styleUrl) {\n            var stylesheet =
stylesheets.get(styleUrl);\n            stylesheet.styles.forEach(function (style) { return targetStyles.push(style); });\n
            _this._inlineStyles(stylesheet.styleUrls, stylesheets, targetStyles);\n        });\n    };\n\nDirectiveNormalizer.prototype._loadMissingExternalStylesheets = function (styleUrls, loadedStylesheets) {\n
    var _this = this;\n    if (loadedStylesheets === void 0) { loadedStylesheets = new Map(); }\n    return
SyncAsync.then(SyncAsync.all(styleUrls.filter(function (styleUrl) { return !loadedStylesheets.has(styleUrl); })))

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    .map(function (styleUrl) { return SyncAsync.then(_this._fetch(styleUrl), function (loadedStyle) {\n
var stylesheet = _this._normalizeStylesheet(new CompileStylesheetMetadata({ styles: [loadedStyle], moduleUrl:
styleUrl }));\n        loadedStylesheets.set(styleUrl, stylesheet);\n        return
_this._loadMissingExternalStylesheets(stylesheet.styleUrls, loadedStylesheets);\n        }); })), function (_) {
return loadedStylesheets; });\n    });\n    DirectiveNormalizer.prototype._normalizeStylesheet = function
(stylesheet) {\n        var _this = this;\n        var moduleUrl = stylesheet.moduleUrl;\n        var allStyleUrls =
stylesheet.styleUrls.filter(isStyleUrlResolvable)\n            .map(function (url) { return
_this._urlResolver.resolve(moduleUrl, url); });\n        var allStyles = stylesheet.styles.map(function (style) {\n
        var styleWithImports = extractStyleUrls(_this._urlResolver, moduleUrl, style);\n
allStyleUrls.push.apply(allStyleUrls, __spread(styleWithImports.styleUrls));\n        return
styleWithImports.style;\n        });\n        return new CompileStylesheetMetadata({ styles: allStyles, styleUrls:
allStyleUrls, moduleUrl: moduleUrl });\n    });\n    return DirectiveNormalizer;\n    }());\n    var
TemplatePreparseVisitor = /** @class */ (function () {\n        function TemplatePreparseVisitor() {\n
this.ngContentSelectors = [];\n        this.styles = [];\n        this.styleUrls = [];\n
this.ngNonBindableStackCount = 0;\n        }\n        TemplatePreparseVisitor.prototype.visitElement = function (ast,
context) {\n        var preparsedElement = preparseElement(ast);\n        switch (preparsedElement.type) {\n
case PreparsedElementType.NG_CONTENT:\n            if (this.ngNonBindableStackCount === 0) {\n
                this.ngContentSelectors.push(preparsedElement.selectAttr);\n            }\n            break;\n
case PreparsedElementType.STYLE:\n            var textContent_1 = "";\n
ast.children.forEach(function (child) {\n                if (child instanceof Text$3) {\n
                    textContent_1 += child.value;\n                }\n            });\n            this.styles.push(textContent_1);\n
            break;\n            case PreparsedElementType.STYLESHEET:\n
this.styleUrls.push(preparsedElement.hrefAttr);\n            break;\n            default:\n                break;\n
        }\n        if (preparsedElement.nonBindable) {\n            this.ngNonBindableStackCount++;\n        }\n
visitAll$1(this, ast.children);\n        if (preparsedElement.nonBindable) {\n
            this.ngNonBindableStackCount--;\n        }\n        return null;\n    });\n    TemplatePreparseVisitor.prototype.visitExpansion = function (ast, context) {\n        visitAll$1(this, ast.cases);\n
    });\n    TemplatePreparseVisitor.prototype.visitExpansionCase = function (ast, context) {\n        visitAll$1(this,
ast.expression);\n    });\n    TemplatePreparseVisitor.prototype.visitComment = function (ast, context) {\n
return null;\n    });\n    TemplatePreparseVisitor.prototype.visitAttribute = function (ast, context) {\n
return null;\n    });\n    TemplatePreparseVisitor.prototype.visitText = function (ast, context) {\n        return
null;\n    });\n    return TemplatePreparseVisitor;\n    }());\n    /**\n     * @license\n     * Copyright Google
LLC All Rights Reserved.\n     * Use of this source code is governed by an MIT-style license that can be\n
     * found in the LICENSE file at https://angular.io/license\n     */\n    var QUERY_METADATA_IDENTIFIERS =
[\n        createViewChild,\n        createViewChildren,\n        createContentChild,\n        createContentChildren,\n
    ];\n    /**\n     * Resolve a `Type` for {@link Directive}.\n     * This interface can be overridden by the
application developer to create custom behavior.\n     * See {@link Compiler}\n     */\n    var
DirectiveResolver = /** @class */ (function () {\n        function DirectiveResolver(_reflector) {\n
this._reflector = _reflector;\n        }\n        DirectiveResolver.prototype.isDirective = function (type) {\n        var
typeMetadata = this._reflector.annotations(resolveForwardRef(type));\n        return typeMetadata &&
typeMetadata.some(isDirectiveMetadata);\n        });\n        DirectiveResolver.prototype.resolve = function (type,
throwIfNotFound) {\n        if (throwIfNotFound === void 0) { throwIfNotFound = true; }\n        var
typeMetadata = this._reflector.annotations(resolveForwardRef(type));\n        if (typeMetadata) {\n        var
metadata = findLast(typeMetadata, isDirectiveMetadata);\n        if (metadata) {\n        var
propertyMetadata = this._reflector.propMetadata(type);\n        var guards = this._reflector.guards(type);\n
            return this._mergeWithPropertyMetadata(metadata, propertyMetadata, guards, type);\n        }\n
        }\n        if (throwIfNotFound) {\n            throw new Error("No Directive annotation found on \" +
stringify(type));\n        }\n        return null;\n    });\n    }

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DirectiveResolver.prototype._mergeWithPropertyMetadata = function (dm, propertyMetadata, guards,
directiveType) {\n      var inputs = [];\n      var outputs = [];\n      var host = {};\n      var queries =
{};\n      Object.keys(propertyMetadata).forEach(function (propName) {\n      var input =
findLast(propertyMetadata[propName], function (a) { return createInput.isTypeOf(a); });\n      if (input) {\n
if (input.bindingPropertyName) {\n      inputs.push(propName + `:` +
input.bindingPropertyName);\n      } else {\n      inputs.push(propName);\n
}\n      }\n      var output = findLast(propertyMetadata[propName], function (a) { return
createOutput.isTypeOf(a); });\n      if (output) {\n      if (output.bindingPropertyName) {\n
outputs.push(propName + `:` + output.bindingPropertyName);\n      } else {\n
outputs.push(propName);\n      }\n      }\n      var hostBindings =
propertyMetadata[propName].filter(function (a) { return createHostBinding.isTypeOf(a); });\n
hostBindings.forEach(function (hostBinding) {\n      if (hostBinding.hostPropertyName) {\n
var startWith = hostBinding.hostPropertyName[0];\n      if (startWith === '(') {\n      throw
new Error(`@HostBinding can not bind to events. Use @HostListener instead.`);\n      }
else if (startWith === '[') {\n      throw new Error(`@HostBinding parameter should be a property
name, 'class.<name>', or 'attr.<name>.`);\n      }\n      host["[" +
hostBinding.hostPropertyName + "]" ] = propName;\n      } else {\n      host["[" +
+ propName + "]" ] = propName;\n      }\n      });\n      var hostListeners =
propertyMetadata[propName].filter(function (a) { return createHostListener.isTypeOf(a); });\n
hostListeners.forEach(function (hostListener) {\n      var args = hostListener.args || [];\n
host["(" + hostListener.eventName + ")" ] = propName + "(" + args.join(',') + ")";\n      });\n      var
query = findLast(propertyMetadata[propName], function (a) { return
QUERY_METADATA_IDENTIFIERS.some(function (i) { return i.isTypeOf(a); }); });\n      if (query) {\n
queries[propName] = query;\n      });\n      return this._merge(dm, inputs, outputs, host,
queries, guards, directiveType);\n      });\n      DirectiveResolver.prototype._extractPublicName = function (def)
{\n      return splitAtColon(def, [null, def])[1].trim();\n      });\n
DirectiveResolver.prototype._dedupeBindings = function (bindings) {\n      var names = new Set();\n      var
publicNames = new Set();\n      var reversedResult = [];\n      // go last to first to allow later entries to
overwrite previous entries\n      for (var i = bindings.length - 1; i >= 0; i--) {\n      var binding =
bindings[i];\n      var name = this._extractPublicName(binding);\n      publicNames.add(name);\n
if (!names.has(name)) {\n      names.add(name);\n      reversedResult.push(binding);\n
}\n      }\n      return reversedResult.reverse();\n      });\n      DirectiveResolver.prototype._merge = function
(directive, inputs, outputs, host, queries, guards, directiveType) {\n      var mergedInputs =
this._dedupeBindings(directive.inputs ? directive.inputs.concat(inputs) : inputs);\n      var mergedOutputs =
this._dedupeBindings(directive.outputs ? directive.outputs.concat(outputs) : outputs);\n      var mergedHost =
directive.host ? Object.assign(Object.assign({}, directive.host), host) : host;\n      var mergedQueries =
directive.queries ? Object.assign(Object.assign({}, directive.queries), queries) : queries;\n      if
(createComponent.isTypeOf(directive)) {\n      var comp = directive;\n      return createComponent({\n
selector: comp.selector,\n      inputs: mergedInputs,\n      outputs: mergedOutputs,\n
host: mergedHost,\n      exportAs: comp.exportAs,\n      moduleId: comp.moduleId,\n
queries: mergedQueries,\n      changeDetection: comp.changeDetection,\n      providers:
comp.providers,\n      viewProviders: comp.viewProviders,\n      entryComponents:
comp.entryComponents,\n      template: comp.template,\n      templateUrl: comp.templateUrl,\n
styles: comp.styles,\n      styleUrls: comp.styleUrls,\n      encapsulation:
comp.encapsulation,\n      animations: comp.animations,\n      interpolation: comp.interpolation,\n
preserveWhitespaces: directive.preserveWhitespaces,\n      });\n      } else {\n
return createDirective({\n      selector: directive.selector,\n      inputs: mergedInputs,\n
outputs: mergedOutputs,\n      host: mergedHost,\n      exportAs: directive.exportAs,\n

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queries: mergedQueries,\n                providers: directive.providers,\n                guards: guards\n            });\n        }\n    });\n    return DirectiveResolver;\n  }());\n  function isDirectiveMetadata(type) {\n    return\n    createDirective.isTypeOf(type) || createComponent.isTypeOf(type);\n  }\n  function findLast(arr, condition) {\n    for (var i = arr.length - 1; i >= 0; i--) {\n      if (condition(arr[i])) {\n        return arr[i];\n      }\n    }\n    return null;\n  }\n  /**\n   * An i18n error.\n   */\n  var I18nError = /** @class */ (function (_super) {\n    __extends(I18nError, _super);\n    function I18nError(span, msg) {\n      return _super.call(this, span, msg) ||\n      this;\n    }\n    return I18nError;\n  })(ParseError);\n  var _I18N_ATTR = 'i18n';\n  var\n  _I18N_ATTR_PREFIX = 'i18n-';\n  var _I18N_COMMENT_PREFIX_REGEXP = /^i18n:?.?;/\n  var\n  MEANING_SEPARATOR = '|';\n  var ID_SEPARATOR = '@@';\n  var i18nCommentsWarned = false;\n  /**\n   * Extract translatable messages from an html AST\n   */\n  function extractMessages(nodes,\n    interpolationConfig, implicitTags, implicitAttrs) {\n    var visitor = new _Visitor$2(implicitTags, implicitAttrs);\n    return visitor.extract(nodes, interpolationConfig);\n  }\n  function mergeTranslations(nodes, translations,\n    interpolationConfig, implicitTags, implicitAttrs) {\n    var visitor = new _Visitor$2(implicitTags, implicitAttrs);\n    return visitor.merge(nodes, translations, interpolationConfig);\n  }\n  var ExtractionResult = /** @class */\n  (function () {\n    function ExtractionResult(messages, errors) {\n      this.messages = messages;\n      this.errors = errors;\n    }\n    return ExtractionResult;\n  })();\n  var _VisitorMode;\n  (function\n  (_VisitorMode) {\n    _VisitorMode[_VisitorMode["Extract"] = 0] = "Extract";\n    _VisitorMode[_VisitorMode["Merge"] = 1] = "Merge";\n  })(_VisitorMode || (_VisitorMode = {}));\n  /**\n   * This Visitor is used:\n   * 1. to extract all the translatable strings from an html AST (see `extract()`),\n   * 2. to\n   * replace the translatable strings with the actual translations (see `merge()`)\n   */\n  * @internal\n  */\n  var\n  _Visitor$2 = /** @class */ (function () {\n    function _Visitor(_implicitTags, _implicitAttrs) {\n      this._implicitTags = _implicitTags;\n      this._implicitAttrs = _implicitAttrs;\n    }\n    /**\n     * Extracts\n     * the messages from the tree\n     */\n    _Visitor.prototype.extract = function (nodes, interpolationConfig) {\n      var _this = this;\n      this._init(_VisitorMode.Extract, interpolationConfig);\n      nodes.forEach(function\n      (node) {\n        return node.visit(_this, null);\n      });\n      if (this._inI18nBlock) {\n        this._reportError(nodes[nodes.length - 1], 'Unclosed block');\n      }\n      return new\n      ExtractionResult(this._messages, this._errors);\n    }\n    /**\n     * Returns a tree where all translatable\n     * nodes are translated\n     */\n    _Visitor.prototype.merge = function (nodes, translations, interpolationConfig)\n    {\n      this._init(_VisitorMode.Merge, interpolationConfig);\n      this._translations = translations;\n      //\n      Construct a single fake root element\n      var wrapper = new Element$1('wrapper', [], nodes, undefined,\n      undefined, undefined);\n      var translatedNode = wrapper.visit(this, null);\n      if (this._inI18nBlock) {\n        this._reportError(nodes[nodes.length - 1], 'Unclosed block');\n      }\n      return new\n      ParseTreeResult(translatedNode.children, this._errors);\n    }\n    _Visitor.prototype.visitExpansionCase =\n    function (icuCase, context) {\n      // Parse cases for translatable html attributes\n      var expression =\n      visitAll$1(this, icuCase.expression, context);\n      if (this._mode === _VisitorMode.Merge) {\n        return\n        new ExpansionCase(icuCase.value, expression, icuCase.sourceSpan, icuCase.valueSourceSpan,\n        icuCase.expSourceSpan);\n      }\n    }\n    _Visitor.prototype.visitExpansion = function (icu, context) {\n      this._maybeAddBlockChildren(icu);\n      var wasInIcu = this._inIcu;\n      if (!this._inIcu) {\n        // nested ICU messages should not be extracted but top-level translated as a whole\n        if\n        (this._isInTranslatableSection) {\n          this._addMessage([icu]);\n        }\n        this._inIcu = true;\n      }\n      var cases = visitAll$1(this, icu.cases, context);\n      if (this._mode === _VisitorMode.Merge)\n      {\n        icu = new Expansion(icu.switchValue, icu.type, cases, icu.sourceSpan, icu.switchValueSourceSpan);\n      }\n      this._inIcu = wasInIcu;\n      return icu;\n    }\n    _Visitor.prototype.visitComment =\n    function (comment, context) {\n      var isOpening = _isOpeningComment(comment);\n      if (isOpening &&\n      this._isInTranslatableSection) {\n        this._reportError(comment, 'Could not start a block inside a translatable\n        section');\n        return;\n      }\n      var isClosing = _isClosingComment(comment);\n      if\n      (isClosing && !this._inI18nBlock) {\n        this._reportError(comment, 'Trying to close an unopened block');\n        return;\n      }\n      if (!this._inI18nNode && !this._inIcu) {\n        if (!this._inI18nBlock) {\n

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        if (isOpening) {\n                // deprecated from v5 you should use <ng-container i18n> instead of i18n
comments\n                if (!i18nCommentsWarned && console && console.warn) {\n
i18nCommentsWarned = true;\n                var details = comment.sourceSpan.details ? '\n\n' +
comment.sourceSpan.details : '\n\n';\n                // TODO(ocombe): use a log service once there is a public one
available\n                console.warn("I18n comments are deprecated, use an <ng-container> element instead
(\" + comment.sourceSpan.start + details + \"\");\n                }\n                this._inI18nBlock = true;\n
                this._blockStartDepth = this._depth;\n                this._blockChildren = [];\n
this._blockMeaningAndDesc =\n                comment.value.replace(_I18N_COMMENT_PREFIX_REGEXP,
").trim();\n                this._openTranslatableSection(comment);\n                }\n                }\n                else {\n
                if (isClosing) {\n                if (this._depth == this._blockStartDepth) {\n
this._closeTranslatableSection(comment, this._blockChildren);\n                this._inI18nBlock = false;\n
                var message = this._addMessage(this._blockChildren, this._blockMeaningAndDesc);\n                //
merge attributes in sections\n                var nodes = this._translateMessage(comment, message);\n
                return visitAll$(this, nodes);\n                }\n                else {\n
this._reportError(comment, 'I18n blocks should not cross element boundaries');\n                return;\n
                }\n                }\n                }\n                }\n                }\n                }\n                _Visitor.prototype.visitText = function (text, context)
{\n                if (this._isInTranslatableSection) {\n                this._maybeAddBlockChildren(text);\n                }\n
return text;\n                }\n                _Visitor.prototype.visitElement = function (el, context) {\n                var _this = this;\n
this._maybeAddBlockChildren(el);\n                this._depth++;\n                var wasInI18nNode = this._inI18nNode;\n
                var wasInImplicitNode = this._inImplicitNode;\n                var childNodes = [];\n                var translatedChildNodes =
undefined;\n                // Extract:\n                // - top level nodes with the (implicit) \"i18n\" attribute if not already in a
section\n                // - ICU messages\n                var i18nAttr = _getI18nAttr(el);\n                var i18nMeta = i18nAttr ?
i18nAttr.value : '';\n                var isImplicit = this._implicitTags.some(function (tag) { return el.name === tag; }) &&
!this._inIcu &&\n                !this._isInTranslatableSection;\n                var isTopLevelImplicit = !wasInImplicitNode
&& isImplicit;\n                this._inImplicitNode = wasInImplicitNode || isImplicit;\n                if
(!this._isInTranslatableSection && !this._inIcu) {\n                if (i18nAttr || isTopLevelImplicit) {\n
this._inI18nNode = true;\n                var message = this._addMessage(el.children, i18nMeta);\n
translatedChildNodes = this._translateMessage(el, message);\n                }\n                if (this._mode ==
_VisitorMode.Extract) {\n                var isTranslatable = i18nAttr || isTopLevelImplicit;\n                if
(isTranslatable)\n                this._openTranslatableSection(el);\n                visitAll$(this, el.children);\n
                if (isTranslatable)\n                this._closeTranslatableSection(el, el.children);\n                }\n                }\n
                else {\n                if (i18nAttr || isTopLevelImplicit) {\n                this._reportError(el, 'Could not mark an
element as translatable inside a translatable section');\n                }\n                if (this._mode ==
_VisitorMode.Extract) {\n                // Descend into child nodes for extraction\n                visitAll$(this,
el.children);\n                }\n                }\n                if (this._mode === _VisitorMode.Merge) {\n                var visitNodes
= translatedChildNodes || el.children;\n                visitNodes.forEach(function (child) {\n                var visited =
child.visit(_this, context);\n                if (visited && !_this._isInTranslatableSection) {\n                // Do not
add the children from translatable sections (= i18n blocks here)\n                // They will be added later in this
loop when the block closes (i.e. on `<!-- /i18n -->`)\n                childNodes = childNodes.concat(visited);\n
                }\n                });\n                }\n                }\n                this._visitAttributesOf(el);\n                this._depth--;\n
this._inI18nNode = wasInI18nNode;\n                this._inImplicitNode = wasInImplicitNode;\n                if (this._mode
=== _VisitorMode.Merge) {\n                var translatedAttrs = this._translateAttributes(el);\n                return new
Element$(el.name, translatedAttrs, childNodes, el.sourceSpan, el.startSourceSpan, el.endSourceSpan);\n                }\n
                return null;\n                }\n                }\n                _Visitor.prototype.visitAttribute = function (attribute, context) {\n                throw
new Error('unreachable code');\n                }\n                _Visitor.prototype._init = function (mode, interpolationConfig) {\n
                this._mode = mode;\n                this._inI18nBlock = false;\n                this._inI18nNode = false;\n                this._depth =
0;\n                this._inIcu = false;\n                this._msgCountAtSectionStart = undefined;\n                this._errors = [];\n
                this._messages = [];\n                this._inImplicitNode = false;\n                this._createI18nMessage =

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createI18nMessageFactory(interpolationConfig);\n    \n    // looks for translatable attributes\n    _Visitor.prototype._visitAttributesOf = function (el) {\n        var _this = this;\n        var\n        explicitAttrNameToValue = {};\n        var implicitAttrNames = this._implicitAttrs[el.name] || [];\n        el.attrs.filter(function (attr) { return attr.name.startsWith(_I18N_ATTR_PREFIX); })\n            .forEach(function\n            (attr) { return explicitAttrNameToValue[attr.name.slice(_I18N_ATTR_PREFIX.length)] =\n                attr.value;\n            });\n        el.attrs.forEach(function (attr) {\n            if (attr.name in explicitAttrNameToValue) {\n                _this._addMessage([attr], explicitAttrNameToValue[attr.name]);\n            } else if\n            (implicitAttrNames.some(function (name) { return attr.name === name; })) {\n                _this._addMessage([attr]);\n            }\n        });\n        // add a translatable message\n        _Visitor.prototype._addMessage = function (ast, msgMeta) {\n            if (ast.length === 0 ||\n                ast.length ===\n                1 && ast[0] instanceof Attribute && !ast[0].value) {\n                // Do not create empty messages\n                return\n                null;\n            }\n            var _a = _parseMessageMeta(msgMeta), meaning = _a.meaning, description =\n                _a.description, id = _a.id;\n            var message = this._createI18nMessage(ast, meaning, description, id);\n            this._messages.push(message);\n            return message;\n        }; // Translates the given message given the\n        `TranslationBundle`\n        // This is used for translating elements / blocks - see `_translateAttributes` for attributes\n        // no-op when called in extraction mode (returns [])\n        _Visitor.prototype._translateMessage = function (el,\n        message) {\n            if (message && this._mode === _VisitorMode.Merge) {\n                var nodes =\n                this._translations.get(message);\n                if (nodes) {\n                    return nodes;\n                }\n            }\n            this._reportError(el, "Translation unavailable for message id=\\\\" + this._translations.digest(message) + "\\");\n            return [];\n        }; // translate the attributes of an element and remove i18n specific\n        attributes\n        _Visitor.prototype._translateAttributes = function (el) {\n            var _this = this;\n            var\n            attributes = el.attrs;\n            var i18nParsedMessageMeta = {};\n            attributes.forEach(function (attr) {\n                if (attr.name.startsWith(_I18N_ATTR_PREFIX)) {\n                    i18nParsedMessageMeta[attr.name.slice(_I18N_ATTR_PREFIX.length)] =\n                    _parseMessageMeta(attr.value);\n                }\n            });\n            var translatedAttributes = [];\n            attributes.forEach(function (attr) {\n                if (attr.name === _I18N_ATTR ||\n                    attr.name.startsWith(_I18N_ATTR_PREFIX)) {\n                    // strip i18n specific attributes\n                    return;\n                }\n                if (attr.value && attr.value !== "" && i18nParsedMessageMeta.hasOwnProperty(attr.name)) {\n                    var _a = i18nParsedMessageMeta[attr.name], meaning = _a.meaning, description = _a.description, id =\n                    _a.id;\n                    var message = _this._createI18nMessage([attr], meaning, description, id);\n                    var\n                    nodes = _this._translations.get(message);\n                    if (nodes) {\n                        if (nodes.length === 0) {\n                            translatedAttributes.push(new Attribute(attr.name, "", attr.sourceSpan));\n                        }\n                    } else if (nodes[0] instanceof Text) {\n                        var value = nodes[0].value;\n                        translatedAttributes.push(new Attribute(attr.name, value, attr.sourceSpan));\n                    } else\n                    {\n                        _this._reportError(el, "Unexpected translation for attribute \\\\" + attr.name + "\\\" (id=\\\\" +\n                        (id || _this._translations.digest(message)) + "\\");\n                    }\n                } else {\n                    _this._reportError(el, "Translation unavailable for attribute \\\\" + attr.name + "\\\" (id=\\\\" + (id ||\n                    _this._translations.digest(message)) + "\\");\n                }\n            });\n            translatedAttributes.push(attr);\n        });\n        return translatedAttributes;\n    }; /**\n    * Add the node as a child of the block when:\n    * - we are in a block,\n    * - we are not inside a ICU\n    message (those are handled separately),\n    * - the node is a "direct child" of the block\n    */\n    _Visitor.prototype._maybeAddBlockChildren = function (node) {\n        if (this._inI18nBlock && !this._inIcu\n            && this._depth === this._blockStartDepth) {\n            this._blockChildren.push(node);\n        }\n    }; /**\n    * Marks the start of a section, see `_closeTranslatableSection`\n    */\n    _Visitor.prototype._openTranslatableSection = function (node) {\n        if (this._isInTranslatableSection) {\n            this._reportError(node, 'Unexpected section start');\n        } else {\n            this._msgCountAtSectionStart = this._messages.length;\n        }\n    }; Object.defineProperty(_Visitor.prototype, "_isInTranslatableSection", {\n        /**\n        * A translatable

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section could be:\n      * - the content of translatable element,\n      * - nodes between `<!-- i18n -->` and
`<!-- /i18n -->` comments\n      */\n      get: function () {\n      return this._msgCountAtSectionStart
!== void 0;\n      },\n      enumerable: false,\n      configurable: true\n      });\n      /**\n      *
Terminates a section.\n      *\n      * If a section has only one significant children (comments not significant) then
we should not\n      * keep the message from this children:\n      *\n      * `

https://angular.io/license\n      */\n      var XmlTagDefinition = /** @class */ (function () {\n
function XmlTagDefinition() {\n      this.closedByParent = false;\n      this.contentType =
exports.TagContentType.PARSABLE_DATA;\n      this.isVoid = false;\n      this.ignoreFirstLf = false;\n
      this.canSelfClose = true;\n      this.preventNamespaceInheritance = false;\n      }\n
      XmlTagDefinition.prototype.requireExtraParent = function (currentParent) {\n      return false;\n      };\n
      XmlTagDefinition.prototype.isClosedByChild = function (name) {\n      return false;\n      };\n      return
      XmlTagDefinition;\n      }());\n      var _TAG_DEFINITION = new XmlTagDefinition();\n      function
getXmlTagDefinition(tagName) {\n      return _TAG_DEFINITION;\n      }\n      var XmlParser = /** @class */
(function (_super) {\n      __extends(XmlParser, _super);\n      function XmlParser() {\n      return
      _super.call(this, getXmlTagDefinition) || this;\n      }\n      XmlParser.prototype.parse = function (source, url,
options) {\n      return _super.prototype.parse.call(this, source, url, options);\n      };\n      return XmlParser;\n
      }(Parser));\n      var _VERSION = '1.2';\n      var _XMLNS = 'urn:oasis:names:tc:xliff:document:1.2';\n      //
TODO(vicb): make this a param (s/_/-/)\n      var _DEFAULT_SOURCE_LANG = 'en';\n      var
_PLACEHOLDER_TAG$1 = 'x';\n      var _MARKER_TAG = 'mrk';\n      var _FILE_TAG = 'file';\n      var
_SOURCE_TAG$1 = 'source';\n      var _SEGMENT_SOURCE_TAG = 'seg-source';\n      var _ALT_TRANS_TAG =
'alt-trans';\n      var _TARGET_TAG = 'target';\n      var _UNIT_TAG = 'trans-unit';\n      var
_CONTEXT_GROUP_TAG = 'context-group';\n      var _CONTEXT_TAG = 'context';\n      // http://docs.oasis-
open.org/xliff/v1.2/os/xliff-core.html\n      // http://docs.oasis-open.org/xliff/v1.2/xliff-profile-html/xliff-profile-html-
1.2.html\n      var Xliff = /** @class */ (function (_super) {\n      __extends(Xliff, _super);\n      function Xliff() {\n


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return _super !== null && _super.apply(this, arguments) || this;\n    }\n    Xliff.prototype.write = function
(messages, locale) {\n        var visitor = new _WriteVisitor();\n        var transUnits = [];\n        messages.forEach(function (message) {\n            var _a;\n            var contextTags = [];\n            message.sources.forEach(function (source) {\n                var contextGroupTag = new
Tag(_CONTEXT_GROUP_TAG, { purpose: 'location' });\n                contextGroupTag.children.push(new
CR(10), new Tag(_CONTEXT_TAG, { 'context-type': 'sourcefile' }, [new Text$2(source.filePath)], new CR(10),
new Tag(_CONTEXT_TAG, { 'context-type': 'linenumber' }, [new Text$2("\\n" + source.startLine)], new CR(8));\n                contextTags.push(new CR(8), contextGroupTag);\n            });\n            var transUnit = new
Tag(_UNIT_TAG, { id: message.id, datatype: 'html' });\n            (_a = transUnit.children).push.apply(_a,
__spread([new CR(8), new Tag(_SOURCE_TAG$1, {}, visitor.serialize(message.nodes)), contextTags]);\n            if (message.description) {\n                transUnit.children.push(new CR(8), new Tag('note', { priority: '1', from:
'description' }, [new Text$2(message.description)]));\n            }\n            if (message.meaning) {\n                transUnit.children.push(new CR(8), new Tag('note', { priority: '1', from: 'meaning' }, [new
Text$2(message.meaning)]));\n            }\n            transUnit.children.push(new CR(6));\n            transUnits.push(new CR(6), transUnit);\n        });\n        var body = new Tag('body', {}, __spread(transUnits,
[new CR(4)]);\n        var file = new Tag('file', {\n            'source-language': locale ||
_DEFAULT_SOURCE_LANG,\n            datatype: 'plaintext',\n            original: 'ng2.template',\n        },
[new CR(4), body, new CR(2)]);\n        var xliff = new Tag('xliff', { version: _VERSION, xmlns: _XMLNS },
[new CR(2), file, new CR()]);\n        return serialize([\n            new Declaration({ version: '1.0', encoding:
'UTF-8' }), new CR(), xliff, new CR()\n        ]);\n    };\n    Xliff.prototype.load = function (content, url) {\n
// xliff to xml nodes\n        var xliffParser = new XliffParser();\n        var _a = xliffParser.parse(content, url),
locale = _a.locale, msgIdToHtml = _a.msgIdToHtml, errors = _a.errors;\n        // xml nodes to i18n nodes\n        var i18nNodesByMsgId = {};\n        var converter = new XmlToI18n();\n        Object.keys(msgIdToHtml).forEach(function (msgId) {\n            var _a =
converter.convert(msgIdToHtml[msgId], url), i18nNodes = _a.i18nNodes, e = _a.errors;\n            errors.push.apply(errors, __spread(e));\n            i18nNodesByMsgId[msgId] = i18nNodes;\n        });\n        if
(errors.length) {\n            throw new Error("\\xliff parse errors:\\n" + errors.join("\\n"));
        }\n        return {
locale: locale, i18nNodesByMsgId: i18nNodesByMsgId };
    };\n    Xliff.prototype.digest = function
(message) {\n        return digest(message);\n    };
    return Xliff;\n    }(Serializer));\n    var _WriteVisitor =
/** @class */ (function () {\n        function _WriteVisitor() {\n        }\n        _WriteVisitor.prototype.visitText =
function (text, context) {\n            return [new Text$2(text.value)];\n        };\n        _WriteVisitor.prototype.visitContainer = function (container, context) {\n            var _this = this;\n            var nodes
= [];\n            container.children.forEach(function (node) { return nodes.push.apply(nodes,
__spread(node.visit(_this))); });\n            return nodes;\n        };
        _WriteVisitor.prototype.visitIcu = function
(icu, context) {\n            var _this = this;\n            var nodes = [new Text$2("\\{" + icu.expressionPlaceholder + \", \"\
+ icu.type + \", \"");\n            Object.keys(icu.cases).forEach(function (c) {\n                nodes.push.apply(nodes,
__spread([new Text$2(c + \" {\"}), icu.cases[c].visit(_this), [new Text$2(\" \"})]);
            });\n            nodes.push(new Text$2(\" \"}));\n            return nodes;\n        };
        _WriteVisitor.prototype.visitTagPlaceholder =
function (ph, context) {\n            var ctype = getCtypeForTag(ph.tag);\n            if (ph.isVoid) {\n                // void
tags have no children nor closing tags\n                return [new Tag(_PLACEHOLDER_TAG$1, { id: ph.startName,
ctype: ctype, 'equiv-text': \"<\" + ph.tag + \"/>\" }]);\n            }\n            var startTagPh = new
Tag(_PLACEHOLDER_TAG$1, { id: ph.startName, ctype: ctype, 'equiv-text': \"<\" + ph.tag + \"/>\" });\n            var
closeTagPh = new Tag(_PLACEHOLDER_TAG$1, { id: ph.closeName, ctype: ctype, 'equiv-text': \"<\" + ph.tag +
\"/>\" });\n            return __spread([startTagPh], this.serialize(ph.children), [closeTagPh]);
        };
        _WriteVisitor.prototype.visitPlaceholder = function (ph, context) {\n            return [new
Tag(_PLACEHOLDER_TAG$1, { id: ph.name, 'equiv-text': \"{{\" + ph.value + \"}}\" }]);
        };
        _WriteVisitor.prototype.visitIcuPlaceholder = function (ph, context) {\n            var equivText = \"{\" +
ph.value.expression + \", \" + ph.value.type + \", \" + Object.keys(ph.value.cases).map(function (value) { return

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value + ' {...}');}).join(' ') + '\}';\n      return [new Tag(_PLACEHOLDER_TAG$1, { id: ph.name, 'equiv-text':
equivText });\n      ];\n      _WriteVisitor.prototype.serialize = function (nodes) {\n      var _this = this;\n      return [].concat.apply([], __spread(nodes.map(function (node) { return node.visit(_this); })));;\n      };\n      return
_WriteVisitor;\n      }());\n      // TODO(vicb): add error management (structure)\n      // Extract messages as xml nodes
from the xliff file\n      var XliffParser = /** @class */ (function () {\n      function XliffParser() {\n      this._locale = null;\n      }\n      XliffParser.prototype.parse = function (xliff, url) {\n      this._unitMIString =
null;\n      this._msgIdToHtml = {};\n      var xml = new XmlParser().parse(xliff, url);\n      this._errors =
xml.errors;\n      visitAll$1(this, xml.rootNodes, null);\n      return {\n      msgIdToHtml:
this._msgIdToHtml,\n      errors: this._errors,\n      locale: this._locale,\n      };\n      };\n      XliffParser.prototype.visitElement = function (element, context) {\n      switch (element.name) {\n      case
_UNIT_TAG:\n      this._unitMIString = null;\n      var idAttr = element.attrs.find(function (attr) {\n      return attr.name === 'id'; });\n      if (!idAttr) {\n      this._addError(element, "<" +
_UNIT_TAG + "> misses the \"id\" attribute");\n      }\n      else {\n      var id =
idAttr.value;\n      if (this._msgIdToHtml.hasOwnProperty(id)) {\n      this._addError(element, "Duplicated translations for msg " + id);\n      }\n      else {\n      visitAll$1(this, element.children, null);\n      if (typeof this._unitMIString === 'string') {\n      this._msgIdToHtml[id] = this._unitMIString;\n      }\n      else {\n      this._addError(element, "Message " + id + " misses a translation");\n      }\n      }\n      }\n      }\n      break;\n      // ignore those tags\n      case _SOURCE_TAG$1:\n      case _SEGMENT_SOURCE_TAG:\n      case _ALT_TRANS_TAG:\n      break;\n      case
_TARGET_TAG:\n      var innerTextStart = element.startSourceSpan.end.offset;\n      var
innerTextEnd = element.endSourceSpan.start.offset;\n      var content =
element.startSourceSpan.start.file.content;\n      var innerText = content.slice(innerTextStart,
innerTextEnd);\n      this._unitMIString = innerText;\n      break;\n      case _FILE_TAG:\n      var localeAttr = element.attrs.find(function (attr) { return attr.name === 'target-language'; });\n      if (localeAttr) {\n      this._locale = localeAttr.value;\n      }\n      visitAll$1(this,
element.children, null);\n      break;\n      default:\n      // TODO(vicb): assert file structure,
xliff version\n      // For now only recurse on unhandled nodes\n      visitAll$1(this,
element.children, null);\n      };\n      };\n      XliffParser.prototype.visitAttribute = function (attribute, context)
{\n      };\n      XliffParser.prototype.visitText = function (text, context) {\n      };\n      XliffParser.prototype.visitComment =
function (comment, context) {\n      };\n      XliffParser.prototype.visitExpansion = function (expansion, context) {\n      };\n      XliffParser.prototype.visitExpansionCase = function (expansionCase, context) {\n      };\n      XliffParser.prototype._addError = function (node, message) {\n      this._errors.push(new
I18nError(node.sourceSpan, message));\n      };\n      return XliffParser;\n      }());\n      // Convert ml nodes (xliff
syntax) to i18n nodes\n      var XmlToI18n = /** @class */ (function () {\n      function XmlToI18n() {\n      }\n      XmlToI18n.prototype.convert = function (message, url) {\n      var xmlIcu = new XmlParser().parse(message,
url, { tokenizeExpansionForms: true });\n      this._errors = xmlIcu.errors;\n      var i18nNodes =
this._errors.length > 0 || xmlIcu.rootNodes.length === 0 ?\n      [] : [].concat.apply([], __spread(visitAll$1(this,
xmlIcu.rootNodes)));;\n      return {\n      i18nNodes: i18nNodes,\n      errors: this._errors,\n      };\n      };\n      XmlToI18n.prototype.visitText = function (text, context) {\n      return new Text$1(text.value,
text.sourceSpan);\n      };\n      XmlToI18n.prototype.visitElement = function (el, context) {\n      if (el.name
=== _PLACEHOLDER_TAG$1) {\n      var nameAttr = el.attrs.find(function (attr) { return attr.name ===
'id'; });\n      if (nameAttr) {\n      return new Placeholder(" ", nameAttr.value, el.sourceSpan);\n      }\n      this._addError(el, "<" + _PLACEHOLDER_TAG$1 + "> misses the \"id\" attribute");\n      return null;\n      }\n      if (el.name === _MARKER_TAG) {\n      return [].concat.apply([],
__spread(visitAll$1(this, el.children)));;\n      }\n      this._addError(el, "Unexpected tag");\n      return
null;\n      };\n      XmlToI18n.prototype.visitExpansion = function (icu, context) {\n      var caseMap = {};\n      visitAll$1(this, icu.cases).forEach(function (c) {\n      caseMap[c.value] = new Container(c.nodes,

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icu.sourceSpan);\n        });\n        return new Icu$1(icu.switchValue, icu.type, caseMap, icu.sourceSpan);\n    });\n    XmlToI18n.prototype.visitExpansionCase = function (icuCase, context) {\n        return {\n    value: icuCase.value,\n        nodes: visitAll$1(this, icuCase.expression),\n        });\n    });\n    XmlToI18n.prototype.visitComment = function (comment, context) { }\n    XmlToI18n.prototype.visitAttribute = function (attribute, context) { }\n    XmlToI18n.prototype._addError = function (node, message) {\n    this._errors.push(new I18nError(node.sourceSpan, message));\n    });\n    return XmlToI18n;\n    }());\n    function getCTypeForTag(tag) {\n        switch (tag.toLowerCase()) {\n            case 'br':\n                return 'lb';\n            case 'img':\n                return 'image';\n            default:\n                return "\"x-\" + tag;\n        }\n    }\n    var\n    _VERSION$1 = '2.0';\n    var _XMLNS$1 = 'urn:oasis:names:tc:xliff:document:2.0';\n    // TODO(vicb): make this\n    a param (s/_/-/)\n    var _DEFAULT_SOURCE_LANG$1 = 'en';\n    var _PLACEHOLDER_TAG$2 = 'ph';\n    var\n    _PLACEHOLDER_SPANNING_TAG = 'pc';\n    var _MARKER_TAG$1 = 'mrk';\n    var _XLIFF_TAG = 'xliff';\n    var\n    _SOURCE_TAG$2 = 'source';\n    var _TARGET_TAG$1 = 'target';\n    var _UNIT_TAG$1 = 'unit';\n    //\n    http://docs.oasis-open.org/xliff/xliff-core/v2.0/os/xliff-core-v2.0-os.html\n    var Xliff2 = /** @class */ (function\n    (_super) {\n        __extends(Xliff2, _super);\n        function Xliff2() {\n            return _super !== null &&\n            _super.apply(this, arguments) || this;\n        }\n        Xliff2.prototype.write = function (messages, locale) {\n    var visitor = new _WriteVisitor$1();\n        var units = [];\n        messages.forEach(function (message) {\n            var unit = new Tag(_UNIT_TAG$1, { id: message.id });\n            var notes = new Tag('notes');\n            if\n            (message.description || message.meaning) {\n                if (message.description) {\n                    notes.children.push(new CR(8), new Tag('note', { category: 'description' }, [new Text$2(message.description)]));\n                }\n                if (message.meaning) {\n                    notes.children.push(new CR(8), new Tag('note', {\n                    category: 'meaning' }, [new Text$2(message.meaning)]));\n                }\n            }\n            message.sources.forEach(function (source) {\n                notes.children.push(new CR(8), new Tag('note', {\n                category: 'location' }, [\n                    new Text$2(source.filePath + '\\:' + source.startLine + (source.endLine !==\n                    source.startLine ? ',' + source.endLine : ''))\n                ]));\n            });\n            notes.children.push(new\n            CR(6));\n            unit.children.push(new CR(6), notes);\n            var segment = new Tag('segment');\n            segment.children.push(new CR(8), new Tag(_SOURCE_TAG$2, {}, visitor.serialize(message.nodes)), new\n            CR(6));\n            unit.children.push(new CR(6), segment, new CR(4));\n            units.push(new CR(4), unit);\n        });\n        var file = new Tag('file', { 'original': 'ng.template', id: 'ngi18n' }, __spread(units, [new CR(2)]));\n        var xliff = new Tag(_XLIFF_TAG, { version: _VERSION$1, xmlns: _XMLNS$1, srcLang: locale ||\n        _DEFAULT_SOURCE_LANG$1 }, [new CR(2), file, new CR()]);\n        return serialize([\n            new\n            Declaration({ version: '1.0', encoding: 'UTF-8' }),\n            new CR(),\n            xliff,\n            new CR()\n        ]);\n    });\n    Xliff2.prototype.load = function (content, url) {\n        // xliff to xml nodes\n        var xliff2Parser = new\n        Xliff2Parser();\n        var _a = xliff2Parser.parse(content, url), locale = _a.locale, msgIdToHtml =\n        _a.msgIdToHtml, errors = _a.errors;\n        // xml nodes to i18n nodes\n        var i18nNodesByMsgId = {};\n        var converter = new XmlToI18n$1();\n        Object.keys(msgIdToHtml).forEach(function (msgId) {\n            var _a = converter.convert(msgIdToHtml[msgId], url), i18nNodes = _a.i18nNodes, e = _a.errors;\n            errors.push.apply(errors, __spread(e));\n            i18nNodesByMsgId[msgId] = i18nNodes;\n        });\n        if\n        (errors.length) {\n            throw new Error("xliff2 parse errors:\\n" + errors.join("\\n")); \n        }\n        return\n        { locale: locale, i18nNodesByMsgId: i18nNodesByMsgId };\n    });\n    Xliff2.prototype.digest = function\n    (message) {\n        return decimalDigest(message);\n    });\n    return Xliff2;\n    }(Serializer));\n    var\n    _WriteVisitor$1 = /** @class */ (function () {\n        function _WriteVisitor() {\n        }\n        _WriteVisitor.prototype.visitText = function (text, context) {\n            return [new Text$2(text.value)];\n        });\n        _WriteVisitor.prototype.visitContainer = function (container, context) {\n            var _this = this;\n            var nodes\n            = [];\n            container.children.forEach(function (node) {\n                return nodes.push.apply(nodes,\n                __spread(node.visit(_this));\n            });\n            return nodes;\n        });\n        _WriteVisitor.prototype.visitIcu = function\n        (icu, context) {\n            var _this = this;\n            var nodes = [new Text$2("\\{" + icu.expressionPlaceholder + "\\", \"\n            + icu.type + "\", \"\");\n            Object.keys(icu.cases).forEach(function (c) {\n                nodes.push.apply(nodes,\n                __spread([new Text$2(c + "\\{" + \"\");\n            }]);\n        });\n    });\n
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nodes.push(new Text$2("{}"));
return nodes;
};
_WriteVisitor.prototype.visitTagPlaceholder =
function (ph, context) {
var _this = this;
var type = getTypeForTag(ph.tag);
if (ph.isVoid)
{
var tagPh = new Tag(_PLACEHOLDER_TAG$2, {
id:
(this._nextPlaceholderId++).toString(),
equiv: ph.startName,
type: type,
disp: "<" + ph.tag + ">",
});
return [tagPh];
}
var tagPc = new
Tag(_PLACEHOLDER_SPANNING_TAG, {
id: (this._nextPlaceholderId++).toString(),
equivStart: ph.startName,
equivEnd: ph.closeName,
type: type,
dispStart: "<" +
ph.tag + ">",
dispEnd: "</" + ph.tag + ">",
});
var nodes = [].concat.apply([],
__spread(ph.children.map(function (node) { return node.visit(_this); })));
if (nodes.length) {
nodes.forEach(function (node) { return tagPc.children.push(node); });
}
else {
tagPc.children.push(new Text$2(""));
}
return [tagPc];
};
_WriteVisitor.prototype.visitPlaceholder = function (ph, context) {
var idStr =
(this._nextPlaceholderId++).toString();
return [new Tag(_PLACEHOLDER_TAG$2, {
id:
idStr,
equiv: ph.name,
disp: "{" + ph.value + "}"
});
];
_WriteVisitor.prototype.visitIcuPlaceholder = function (ph, context) {
var cases =
Object.keys(ph.value.cases).map(function (value) { return value + ' ...'; }).join(' ');
var idStr =
(this._nextPlaceholderId++).toString();
return [new Tag(_PLACEHOLDER_TAG$2, {
id: idStr,
equiv:
ph.name,
disp: "{" + ph.value.expression + ", " + ph.value.type + ", " + cases + "}"
});
];
_WriteVisitor.prototype.serialize = function (nodes) {
var _this = this;
this._nextPlaceholderId =
0;
return [].concat.apply([], __spread(nodes.map(function (node) { return node.visit(_this); })));
};
return _WriteVisitor;
})();
// Extract messages as xml nodes from the xliiff file
var Xliff2Parser = /**
@class */ (function () {
function Xliff2Parser() {
this._locale = null;
}
Xliff2Parser.prototype.parse = function (xliff, url) {
this._unitMIString = null;
this._msgIdToHtml
= {};
var xml = new XmlParser().parse(xliff, url);
this._errors = xml.errors;
visitAll$1(this, xml.rootNodes, null);
return {
msgIdToHtml: this._msgIdToHtml,
errors: this._errors,
locale: this._locale
};
};
Xliff2Parser.prototype.visitElement =
function (element, context) {
switch (element.name) {
case _UNIT_TAG$1:
this._unitMIString = null;
var idAttr = element.attrs.find(function (attr) { return attr.name === 'id';
});
if (!idAttr) {
this._addError(element, "<" + _UNIT_TAG$1 + "> misses the
'\\id' attribute");
}
else {
var id = idAttr.value;
if
(this._msgIdToHtml.hasOwnProperty(id)) {
this._addError(element, "Duplicated translations for
msg " + id);
}
else {
visitAll$1(this, element.children, null);
if (typeof this._unitMIString === 'string') {
this._msgIdToHtml[id] =
this._unitMIString;
}
else {
this._addError(element,
"Message " + id + " misses a translation");
}
}
break;
case _SOURCE_TAG$2:
// ignore source message
break;
case _TARGET_TAG$1:
var innerTextStart = element.startSourceSpan.end.offset;
var
innerTextEnd = element.endSourceSpan.start.offset;
var content =
element.startSourceSpan.start.file.content;
var innerText = content.slice(innerTextStart,
innerTextEnd);
this._unitMIString = innerText;
break;
case _XLIFF_TAG:
var localeAttr = element.attrs.find(function (attr) { return attr.name === 'trgLang'; });
if
(localeAttr) {
this._locale = localeAttr.value;
}
var versionAttr =
element.attrs.find(function (attr) { return attr.name === 'version'; });
if (versionAttr) {
var version = versionAttr.value;
if (version !== '2.0') {
this._addError(element,
"The XLIFF file version " + version + " is not compatible with XLIFF 2.0 serializer");
}
}
else {
visitAll$1(this, element.children, null);
}
}
break;
default:
visitAll$1(this, element.children, null);
}
};
};
Xliff2Parser.prototype.visitAttribute = function (attribute, context) {
};
Xliff2Parser.prototype.visitText =

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function (text, context) { };\n    Xliff2Parser.prototype.visitComment = function (comment, context) { };\n
Xliff2Parser.prototype.visitExpansion = function (expansion, context) { };\n
Xliff2Parser.prototype.visitExpansionCase = function (expansionCase, context) { };\n
Xliff2Parser.prototype._addError = function (node, message) {\n    this._errors.push(new\n
I18nError(node.sourceSpan, message));\n    });\n    return Xliff2Parser;\n    }());\n    // Convert ml nodes (xliff\n
syntax) to i18n nodes\n    var XmlToI18n$1 = /** @class */ (function () {\n    function XmlToI18n() {\n    }\n
    XmlToI18n.prototype.convert = function (message, url) {\n    var xmlIcu = new XmlParser().parse(message,\n
url, { tokenizeExpansionForms: true });\n    this._errors = xmlIcu.errors;\n    var i18nNodes =\n
this._errors.length > 0 || xmlIcu.rootNodes.length === 0 ?\n    [] : [].concat.apply([], __spread(visitAll$1(this,\n
xmlIcu.rootNodes)));\n    return {\n    i18nNodes: i18nNodes,\n    errors: this._errors,\n
};\n    };\n    XmlToI18n.prototype.visitText = function (text, context) {\n    return new Text$1(text.value,\n
text.sourceSpan);\n    };\n    XmlToI18n.prototype.visitElement = function (el, context) {\n    var _this =\n
this;\n    switch (el.name) {\n    case _PLACEHOLDER_TAG$2:\n    var nameAttr =\n
el.attrs.find(function (attr) { return attr.name === 'equiv'; });\n    if (nameAttr) {\n    return\n
[new Placeholder("", nameAttr.value, el.sourceSpan)];\n    }\n    this._addError(el, "\"<" +\n
_PLACEHOLDER_TAG$2 + "> misses the \"equiv\" attribute");\n    break;\n    case\n
_PLACEHOLDER_SPANNING_TAG:\n    var startAttr = el.attrs.find(function (attr) { return attr.name\n
=== 'equivStart'; });\n    var endAttr = el.attrs.find(function (attr) { return attr.name === 'equivEnd'; });\n
if (!startAttr) {\n    this._addError(el, "\"<" + _PLACEHOLDER_TAG$2 + "> misses the\n
\"equivStart\" attribute");\n    }\n    else if (!endAttr) {\n    this._addError(el,\n
\"<" + _PLACEHOLDER_TAG$2 + "> misses the \"equivEnd\" attribute");\n    }\n    else\n
{\n    var startId = startAttr.value;\n    var endId = endAttr.value;\n    var nodes\n
= [];\n    return nodes.concat.apply(nodes, __spread([new Placeholder("", startId, el.sourceSpan)],\n
el.children.map(function (node) { return node.visit(_this, null); })), [new Placeholder("", endId, el.sourceSpan)]);\n
}\n    break;\n    case _MARKER_TAG$1:\n    return [].concat.apply([],\n
__spread(visitAll$1(this, el.children)));\n    default:\n    this._addError(el, "Unexpected tag");\n
}\n    return null;\n    };\n    XmlToI18n.prototype.visitExpansion = function (icu, context) {\n
var caseMap = {};\n    visitAll$1(this, icu.cases).forEach(function (c) {\n    caseMap[c.value] = new\n
Container(c.nodes, icu.sourceSpan);\n    });\n    return new Icu$1(icu.switchValue, icu.type, caseMap,\n
icu.sourceSpan);\n    };\n    XmlToI18n.prototype.visitExpansionCase = function (icuCase, context) {\n
return {\n    value: icuCase.value,\n    nodes: [].concat.apply([], __spread(visitAll$1(this,\n
icuCase.expression)));\n    };\n    };\n    XmlToI18n.prototype.visitComment = function (comment,\n
context) { };;\n    XmlToI18n.prototype.visitAttribute = function (attribute, context) { };;\n
XmlToI18n.prototype._addError = function (node, message) {\n    this._errors.push(new\n
I18nError(node.sourceSpan, message));\n    });\n    return XmlToI18n;\n    }());\n    function\n
getTypeForTag(tag) {\n    switch (tag.toLowerCase()) {\n    case 'br':\n    case 'b':\n    case 'i':\n
case 'u':\n    return 'fmt';\n    case 'img':\n    return 'image';\n    case 'a':\n    return\n
'link';\n    default:\n    return 'other';\n    }\n    }\n    var _TRANSLATIONS_TAG =\n
'translationbundle';\n    var _TRANSLATION_TAG = 'translation';\n    var _PLACEHOLDER_TAG$3 = 'ph';\n
var Xtb = /** @class */ (function (_super) {\n    __extends(Xtb, _super);\n    function Xtb() {\n    return\n
_super !== null && _super.apply(this, arguments) || this;\n    }\n    Xtb.prototype.write = function (messages,\n
locale) {\n    throw new Error('Unsupported');\n    };\n    Xtb.prototype.load = function (content, url) {\n
// xtb to xml nodes\n    var xtbParser = new XtbParser();\n    var _a = xtbParser.parse(content, url),\n
locale = _a.locale, msgIdToHtml = _a.msgIdToHtml, errors = _a.errors;\n    // xml nodes to i18n nodes\n
var i18nNodesByMsgId = {};\n    var converter = new XmlToI18n$2();\n    // Because we should be able\n
to load xtb files that rely on features not supported by angular,\n    // we need to delay the conversion of html to\n
i18n nodes so that non angular messages are not\n    // converted\n
Object.keys(msgIdToHtml).forEach(function (msgId) {\n    var valueFn = function () {\n    var _a

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= converter.convert(msgIdToHtml[msgId], url), i18nNodes = _a.i18nNodes, errors = _a.errors;\n      if
(errors.length) {\n          throw new Error("\xtb parse errors:\n" + errors.join("\n")); \n      }\n      return i18nNodes;\n    });\n    createLazyProperty(i18nNodesByMsgId, msgId, valueFn);\n  });\n  if (errors.length) {\n    throw new Error("\xtb parse errors:\n" + errors.join("\n")); \n  }\n  return { locale: locale, i18nNodesByMsgId: i18nNodesByMsgId }; \n  Xtb.prototype.digest =
function (message) {\n    return digest$1(message);\n  }; \n  Xtb.prototype.createNameMapper =
function (message) {\n    return new SimplePlaceholderMapper(message, toPublicName);\n  }; \n  return
Xtb;\n  }(Serializer));\n  function createLazyProperty(messages, id, valueFn) {\n
Object.defineProperty(messages, id, {\n    configurable: true,\n    enumerable: true,\n    get: function
() {\n      var value = valueFn();\n      Object.defineProperty(messages, id, { enumerable: true, value:
value });\n      return value;\n    },\n    set: function (_) {\n      throw new Error('Could not
overwrite an XTB translation');\n    },\n  });\n  }\n  // Extract messages as xml nodes from the xtb file\n
var XtbParser = /** @class */ (function () {\n    function XtbParser() {\n      this._locale = null;\n    }\n
XtbParser.prototype.parse = function (xtb, url) {\n      this._bundleDepth = 0;\n      this._msgIdToHtml =
{};\n      // We can not parse the ICU messages at this point as some messages might not originate\n      //
from Angular that could not be lex'd.\n      var xml = new XmlParser().parse(xtb, url);\n      this._errors =
xml.errors;\n      visitAll$1(this, xml.rootNodes);\n      return {\n        msgIdToHtml:\n        this._msgIdToHtml,\n        errors: this._errors,\n        locale: this._locale,\n      }; \n    }\n
XtbParser.prototype.visitElement = function (element, context) {\n      switch (element.name) {\n        case
_TRANSLATIONS_TAG:\n          this._bundleDepth++;\n          if (this._bundleDepth > 1) {\n
this._addError(element, "\<" + _TRANSLATIONS_TAG + "\> elements can not be nested");\n          }\n
          var langAttr = element.attrs.find(function (attr) { return attr.name === 'lang'; });\n          if
(langAttr) {\n            this._locale = langAttr.value;\n          }\n          visitAll$1(this,
element.children, null);\n          this._bundleDepth--;\n          break;\n        case
_TRANSLATION_TAG:\n          var idAttr = element.attrs.find(function (attr) { return attr.name === 'id';
});\n          if (!idAttr) {\n            this._addError(element, "\<" + _TRANSLATION_TAG + "\> misses
the \"id\" attribute");\n          }\n          else {\n            var id = idAttr.value;\n            if
(this._msgIdToHtml.hasOwnProperty(id)) {\n              this._addError(element, "\Duplicated translations for
msg \" + id);\n            }\n            else {\n              var innerTextStart =
element.startSourceSpan.end.offset;\n              var innerTextEnd = element.endSourceSpan.start.offset;\n
              var content = element.startSourceSpan.start.file.content;\n              var innerText =
content.slice(innerTextStart, innerTextEnd);\n              this._msgIdToHtml[id] = innerText;\n            }\n
          }\n          break;\n        default:\n          this._addError(element, 'Unexpected tag');\n      }\n
    }; \n    XtbParser.prototype.visitAttribute = function (attribute, context) { }; \n
XtbParser.prototype.visitText = function (text, context) { }; \n    XtbParser.prototype.visitComment = function
(comment, context) { }; \n    XtbParser.prototype.visitExpansion = function (expansion, context) { }; \n
XtbParser.prototype.visitExpansionCase = function (expansionCase, context) { }; \n
XtbParser.prototype._addError = function (node, message) {\n      this._errors.push(new
I18nError(node.sourceSpan, message));\n    }; \n    return XtbParser;\n  }());\n  // Convert ml nodes (xtb
syntax) to i18n nodes\n  var XmlToI18n$2 = /** @class */ (function () {\n    function XmlToI18n() {\n
    }\n    XmlToI18n.prototype.convert = function (message, url) {\n      var xmlIcu = new XmlParser().parse(message,
url, { tokenizeExpansionForms: true });\n      this._errors = xmlIcu.errors;\n      var i18nNodes =
this._errors.length > 0 || xmlIcu.rootNodes.length === 0 ?\n        [] : \n        visitAll$1(this,
xmlIcu.rootNodes);\n      return {\n        i18nNodes: i18nNodes,\n        errors: this._errors,\n      }; \n
    }\n    XmlToI18n.prototype.visitText = function (text, context) {\n      return new Text$1(text.value,
text.sourceSpan);\n    }; \n    XmlToI18n.prototype.visitExpansion = function (icu, context) {\n      var
caseMap = {};\n      visitAll$1(this, icu.cases).forEach(function (c) {\n        caseMap[c.value] = new
Container(c.nodes, icu.sourceSpan);\n      });\n      return new Icu$1(icu.switchValue, icu.type, caseMap,

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icu.sourceSpan);
};
XmlToI18n.prototype.visitExpansionCase = function (icuCase, context) {
return {
value: icuCase.value,
nodes: visitAll$1(this, icuCase.expression),
};
};
XmlToI18n.prototype.visitElement = function (el, context) {
if (el.name ===
_PLACEHOLDER_TAG$3) {
var nameAttr = el.attrs.find(function (attr) { return attr.name === 'name';
});
if (nameAttr) {
return new Placeholder(" ", nameAttr.value, el.sourceSpan);
}
this._addError(el, "<" + _PLACEHOLDER_TAG$3 + "> misses the \"name\" attribute");
}
else {
this._addError(el, "Unexpected tag");
return null;
};
};
XmlToI18n.prototype.visitComment = function (comment, context) {
};
XmlToI18n.prototype.visitAttribute
= function (attribute, context) {
};
XmlToI18n.prototype._addError = function (node, message) {
this._errors.push(new I18nError(node.sourceSpan, message));
};
return XmlToI18n;
})();
/**
 * A container for translated messages
 */
var TranslationBundle = /** @class */ (function () {
function TranslationBundle(_i18nNodesByMsgId, locale, digest, mapperFactory, missingTranslationStrategy, console) {
if (_i18nNodesByMsgId === void 0) { _i18nNodesByMsgId = {}; }
if (missingTranslationStrategy === void 0) { missingTranslationStrategy = MissingTranslationStrategy.Warning; }
this._i18nNodesByMsgId = _i18nNodesByMsgId;
this.digest = digest;
this.mapperFactory = mapperFactory;
this._i18nToHtml = new I18nToHtmlVisitor(_i18nNodesByMsgId, locale, digest, mapperFactory, missingTranslationStrategy, console);
}
// Creates a `TranslationBundle` by parsing the given `content` with the `serializer`.
TranslationBundle.load = function (content, url, serializer, missingTranslationStrategy, console) {
var _a = serializer.load(content, url), locale = _a.locale, i18nNodesByMsgId = _a.i18nNodesByMsgId;
var digestFn = function (m) { return serializer.digest(m); };
var mapperFactory = function (m) { return serializer.createNameMapper(m); };
return new TranslationBundle(i18nNodesByMsgId, locale, digestFn, mapperFactory, missingTranslationStrategy, console);
};
// Returns the translation as HTML nodes from the given source message.
TranslationBundle.prototype.get = function (srcMsg) {
var html = this._i18nToHtml.convert(srcMsg);
if (html.errors.length) {
throw new Error(html.errors.join("\n"));
}
return html.nodes;
};
TranslationBundle.prototype.has = function (srcMsg) {
return this.digest(srcMsg) in this._i18nNodesByMsgId;
};
return TranslationBundle;
})();
var I18nToHtmlVisitor = /** @class */ (function () {
function I18nToHtmlVisitor(_i18nNodesByMsgId, _locale, _digest, _mapperFactory, _missingTranslationStrategy, _console) {
if (_i18nNodesByMsgId === void 0) { _i18nNodesByMsgId = {}; }
this._i18nNodesByMsgId = _i18nNodesByMsgId;
this._locale = _locale;
this._digest = _digest;
this._mapperFactory = _mapperFactory;
this._missingTranslationStrategy = _missingTranslationStrategy;
this._console = _console;
this._contextStack = [];
this._errors = [];
}
I18nToHtmlVisitor.prototype.convert = function (srcMsg) {
this._contextStack.length = 0;
this._errors.length = 0;
// i18n to text
var text = this._convertToText(srcMsg);
// text to html
var url = srcMsg.nodes[0].sourceSpan.start.file.url;
var html = new HtmlParser().parse(text, url, {
tokenizeExpansionForms: true });
return {
nodes: html.rootNodes,
errors: __spread(this._errors, html.errors),
};
};
I18nToHtmlVisitor.prototype.visitText = function (text, context) {
// `convert()` uses an `HtmlParser` to return `html.Node`s
// we should then make sure that any special characters are escaped
return escapeXml(text.value);
};
I18nToHtmlVisitor.prototype.visitContainer = function (container, context) {
var _this = this;
return container.children.map(function (n) { return n.visit(_this); }).join("");
};
I18nToHtmlVisitor.prototype.visitIcu = function (icu, context) {
var _this = this;
var cases = Object.keys(icu.cases).map(function (k) { return k + " {" + icu.cases[k].visit(_this) + "}"; });
// TODO(vicb): Once all format switch to using expression placeholders
// we should throw when the placeholder is not in the source message
var exp = this._srcMsg.placeholders.hasOwnProperty(icu.expression) ? this._srcMsg.placeholders[icu.expression].text : icu.expression;
return "{" + exp + ", " +

```



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icu.type + '\\, \\' + cases.join(' ') + '\\}";\n    });\n    I18nToHtmlVisitor.prototype.visitPlaceholder = function (ph,
context) {\n        var phName = this._mapper(ph.name);\n        if
(this._srcMsg.placeholders.hasOwnProperty(phName)) {\n            return
this._srcMsg.placeholders[phName].text;\n        }\n        if
(this._srcMsg.placeholderToMessage.hasOwnProperty(phName)) {\n            return
this._convertToText(this._srcMsg.placeholderToMessage[phName]);\n        }\n        this._addError(ph,
"Unknown placeholder \\\"\\\" + ph.name + "\\\"\\\"");\n        return ";;\n    };;\n    // Loaded message contains
only placeholders (vs tag and icu placeholders).\n    // However when a translation can not be found, we need to
serialize the source message\n    // which can contain tag placeholders\n
I18nToHtmlVisitor.prototype.visitTagPlaceholder = function (ph, context) {\n        var _this = this;\n        var
tag = "\\\" + ph.tag;\n        var attrs = Object.keys(ph.attrs).map(function (name) { return name + "\\\"=\\\"\\\" +
ph.attrs[name] + "\\\"\\\""; }).join(' ');;\n        if (ph.isVoid) {\n            return "<" + tag + "\\\" \" + attrs + "\\\">";\n
        }\n        var children = ph.children.map(function (c) { return c.visit(_this); }).join("");;\n        return "<" +
tag + "\\\" \" + attrs + "\\\">" + children + "\\\"<" + tag + "\\\">";;\n    };;\n    // Loaded message contains only
placeholders (vs tag and icu placeholders).\n    // However when a translation can not be found, we need to
serialize the source message\n    // which can contain tag placeholders\n
I18nToHtmlVisitor.prototype.visitIcuPlaceholder = function (ph, context) {\n        // An ICU placeholder
references the source message to be serialized\n        return
this._convertToText(this._srcMsg.placeholderToMessage[ph.name]);;\n    };;\n    /**\n     * Convert a source
message to a translated text string;\n     * - text nodes are replaced with their translation,\n     * - placeholders
are replaced with their content,\n     * - ICU nodes are converted to ICU expressions.\n     */\n
I18nToHtmlVisitor.prototype._convertToText = function (srcMsg) {\n        var _this = this;\n        var id =
this._digest(srcMsg);\n        var mapper = this._mapperFactory ? this._mapperFactory(srcMsg) : null;\n        var
nodes;\n        this._contextStack.push({ msg: this._srcMsg, mapper: this._mapper });\n        this._srcMsg =
srcMsg;\n        if (this._i18nNodesByMsgId.hasOwnProperty(id)) {\n            // When there is a translation use
its nodes as the source\n            // And create a mapper to convert serialized placeholder names to internal
names\n            nodes = this._i18nNodesByMsgId[id];\n            this._mapper = function (name) { return
mapper ? mapper.toInternalName(name) : name; };;\n        } else {\n            // When no translation has
been found\n            // - report an error / a warning / nothing,\n            // - use the nodes from the original
message\n            // - placeholders are already internal and need no mapper\n            if
(this._missingTranslationStrategy === MissingTranslationStrategy.Error) {\n                var ctx = this._locale ?
" for locale \\\"\\\" + this._locale + "\\\"\\\" : ";;\n                this._addError(srcMsg.nodes[0], "Missing translation for
message \\\"\\\" + id + "\\\"\\\" + ctx);\n            }\n            else if (this._console &&\n
this._missingTranslationStrategy === MissingTranslationStrategy.Warning) {\n                var ctx = this._locale ?
" for locale \\\"\\\" + this._locale + "\\\"\\\" : ";;\n                this._console.warn("Missing translation for message
\\\"\\\" + id + "\\\"\\\" + ctx);\n            }\n            nodes = srcMsg.nodes;\n            this._mapper = function
(name) { return name; };;\n            var text = nodes.map(function (node) { return node.visit(_this);
}).join("");;\n            var context = this._contextStack.pop();\n            this._srcMsg = context.msg;\n
this._mapper = context.mapper;\n            return text;\n        };;\n    I18nToHtmlVisitor.prototype._addError =
function (el, msg) {\n        this._errors.push(new I18nError(el.sourceSpan, msg));;\n    };;\n    return
I18nToHtmlVisitor;\n    }());;\n    /**\n     * @license\n     * Copyright Google LLC All Rights Reserved.\n     */\n
* Use of this source code is governed by an MIT-style license that can be\n     * found in the LICENSE file at
https://angular.io/license\n     */\n    var I18NHtmlParser = /** @class */ (function () {\n        function
I18NHtmlParser(_htmlParser, translations, translationsFormat, missingTranslation, console) {\n            if
(missingTranslation === void 0) { missingTranslation = MissingTranslationStrategy.Warning; }\n            this._htmlParser = _htmlParser;\n            if (translations) {\n                var serializer =
createSerializer(translationsFormat);\n                this._translationBundle =\n                TranslationBundle.load(translations, 'i18n', serializer, missingTranslation, console);\n            } else {\n

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    this._translationBundle =\n                new TranslationBundle({ }, null, digest, undefined, missingTranslation,\nconsole);\n    }\n    }\n    I18NHtmlParser.prototype.parse = function (source, url, options) {\n        if\n        (options === void 0) { options = {}; }\n        var interpolationConfig = options.interpolationConfig ||\n        DEFAULT_INTERPOLATION_CONFIG;\n        var parseResult = this._htmlParser.parse(source, url,\n        Object.assign({ interpolationConfig: interpolationConfig }, options));\n        if (parseResult.errors.length) {\n            return new ParseTreeResult(parseResult.rootNodes, parseResult.errors);\n        }\n        return\n        mergeTranslations(parseResult.rootNodes, this._translationBundle, interpolationConfig, [], {});\n    };\n    return I18NHtmlParser;\n    });\n    function createSerializer(format) {\n        format = (format ||\n        'xlf').toLowerCase();\n        switch (format) {\n            case 'xmb':\n                return new Xmb();\n            case\n            'xtb':\n                return new Xtb();\n            case 'xliff2':\n            case 'xlf2':\n                return new Xliff2();\n            case 'xliff':\n            case 'xlf':\n                default:\n                return new Xliff();\n        }\n    }\n    /**\n    *\n    @license\n    * Copyright Google LLC All Rights Reserved.\n    *\n    * Use of this source code is governed by an\n    MIT-style license that can be\n    * found in the LICENSE file at https://angular.io/license\n    */\n    var\n    QUOTED_KEYS = '$quoted$';\n    function convertValueToOutputAst(ctx, value, type) {\n        if (type === void\n        0) { type = null; }\n        return visitValue(value, new _ValueOutputAstTransformer(ctx), type);\n    }\n    var\n    _ValueOutputAstTransformer = /** @class */ (function () {\n        function _ValueOutputAstTransformer(ctx) {\n            this.ctx = ctx;\n        }\n        _ValueOutputAstTransformer.prototype.visitArray = function (arr, type) {\n            var values = [];\n            // Note Array.map() must not be used to convert the values because it will\n            // skip\n            over empty elements in arrays constructed using `new Array(length)`,\n            // resulting in `undefined` elements.\n            This breaks the type guarantee that\n            // all values in `o.LiteralArrayExpr` are of type `o.Expression`.\n            // See test case in `value_util_spec.ts`.\n            for (var i = 0; i < arr.length; ++i) {\n                values.push(visitValue(arr[i], this, null /* context */));\n            }\n            return literalArr(values, type);\n        };\n        _ValueOutputAstTransformer.prototype.visitStringMap = function (map, type) {\n            var _this = this;\n            var entries = [];\n            var quotedSet = new Set(map && map[QUOTED_KEYS]);\n            Object.keys(map).forEach(function (key) {\n                entries.push(new LiteralMapEntry(key, visitValue(map[key],\n                _this, null), quotedSet.has(key)));\n            });\n            return new LiteralMapExpr(entries, type);\n        };\n        _ValueOutputAstTransformer.prototype.visitPrimitive = function (value, type) {\n            return literal(value,\n            type);\n        };\n        _ValueOutputAstTransformer.prototype.visitOther = function (value, type) {\n            if (value\n            instanceof Expression) {\n                return value;\n            }\n            else {\n                return\n                this.ctx.importExpr(value);\n            }\n        };\n        return _ValueOutputAstTransformer;\n    }());\n    /**\n    *\n    @license\n    * Copyright Google LLC All Rights Reserved.\n    *\n    * Use of this source code is governed by an\n    MIT-style license that can be\n    * found in the LICENSE file at https://angular.io/license\n    */\n    function\n    mapEntry$1(key, value) {\n        return { key: key, value: value, quoted: false };\n    }\n    var InjectableCompiler =\n    /** @class */ (function () {\n        function InjectableCompiler(reflector, alwaysGenerateDef) {\n            this.reflector = reflector;\n            this.alwaysGenerateDef = alwaysGenerateDef;\n            this.tokenInjector =\n            reflector.resolveExternalReference(Identifiers.Injector);\n        }\n        InjectableCompiler.prototype.depsArray =\n        function (deps, ctx) {\n            var _this = this;\n            return deps.map(function (dep) {\n                var token =\n                dep;\n                var args = [token];\n                var flags = 0 /* Default */;\n                if (Array.isArray(dep)) {\n                    for (var i = 0; i < dep.length; i++) {\n                        var v = dep[i];\n                        if (v) {\n                            if (v.ngMetadataName === 'Optional') {\n                                flags |= 8 /* Optional */;\n                            }\n                            else if (v.ngMetadataName === 'SkipSelf') {\n                                flags |= 4 /* SkipSelf */;\n                            }\n                            }\n                            else if (v.ngMetadataName === 'Self') {\n                                flags |= 2 /* Self */;\n                            }\n                            }\n                            else if (v.ngMetadataName === 'Inject') {\n                                token = v.token;\n                            }\n                            }\n                            else {\n                                token = v;\n                            }\n                            }\n                            }\n                            }\n                            var tokenExpr;\n                            if (typeof token === 'string') {\n                                tokenExpr =\n                                literal(token);\n                            }\n                            else if (token === _this.tokenInjector) {\n                                tokenExpr =\n                                importExpr(Identifiers.INJECTOR);\n                            }\n                            else {\n                                tokenExpr =\n                                ctx.importExpr(token);\n                            }\n                            if (flags !== 0 /* Default */) {\n                                args = [tokenExpr,\n
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literal(flags)];\n          }\n          else {\n              args = [tokenExpr];\n          }\n          return
importExpr(Identifiers.inject).callFn(args);\n          });\n          };\n          InjectableCompiler.prototype.factoryFor =
function (injectable, ctx) {\n          var retValue;\n          if (injectable.useExisting) {\n              retValue =
importExpr(Identifiers.inject).callFn([ctx.importExpr(injectable.useExisting)]);\n          }\n          else if
(injectable.useFactory) {\n              var deps = injectable.deps || [];\n              if (deps.length > 0) {\n
retValue = ctx.importExpr(injectable.useFactory).callFn(this.depsArray(deps, ctx));\n          }\n          else {\n
return ctx.importExpr(injectable.useFactory);\n          }\n          }\n          else if
(injectable.useValue) {\n              retValue = convertValueToOutputAst(ctx, injectable.useValue);\n          }\n
else {\n              var clazz = injectable.useClass || injectable.symbol;\n              var depArgs =
this.depsArray(this.reflector.parameters(clazz), ctx);\n              retValue = new
InstantiateExpr(ctx.importExpr(clazz), depArgs);\n          }\n          return fn([], [new ReturnStatement(retValue)],
undefined, undefined, injectable.symbol.name + '_Factory');\n          };\n
InjectableCompiler.prototype.injectableDef = function (injectable, ctx) {\n          var providedIn = NULL_EXPR;\n
if (injectable.providedIn !== undefined) {\n          if (injectable.providedIn === null) {\n
providedIn = NULL_EXPR;\n          }\n          else if (typeof injectable.providedIn === 'string') {\n
providedIn = literal(injectable.providedIn);\n          }\n          else {\n              providedIn =
ctx.importExpr(injectable.providedIn);\n          }\n          }\n          var def = [\n              mapEntry$1('factory',
this.factoryFor(injectable, ctx)),\n              mapEntry$1('token', ctx.importExpr(injectable.type.reference)),\n
mapEntry$1('providedIn', providedIn),\n          ];\n          return
importExpr(Identifiers.defineInjectable).callFn([literalMap(def)]);\n          };\n
InjectableCompiler.prototype.compile = function (injectable, ctx) {\n          if (this.alwaysGenerateDef ||
injectable.providedIn !== undefined) {\n              var className = identifierName(injectable.type);\n              var
clazz = new ClassStmt(className, null, [\n                  new ClassField('prov', INFERRED_TYPE,
[exports.StmtModifier.Static], this.injectableDef(injectable, ctx)),\n                  ], [], new ClassMethod(null, [], []),
[]);\n              ctx.statements.push(clazz);\n          }\n          };\n          return InjectableCompiler;\n          }();\n          /**\n
* @license\n
* Copyright Google LLC All Rights Reserved.\n
* Use of this source code is governed by
an MIT-style license that can be\n
* found in the LICENSE file at https://angular.io/license\n
* var
STRIP_SRC_FILE_SUFFIXES = /(\\ts\\.d\\.ts\\.jsx\\.tsx)/;\n
var GENERATED_FILE =
^\\.ngfactory\\.\\.ngsummary\\.;/\n
var JIT_SUMMARY_FILE = ^\\.ngsummary\\.;/\n
var
JIT_SUMMARY_NAME = /NgSummary$/;\n
function ngfactoryFilePath(filePath, forceSourceFile) {\n          if
(forceSourceFile === void 0) { forceSourceFile = false; }\n          var urlWithSuffix = splitTypescriptSuffix(filePath,
forceSourceFile);\n          return urlWithSuffix[0] + \".ngfactory\" + normalizeGenFileSuffix(urlWithSuffix[1]);\n
}\n          function stripGeneratedFileSuffix(filePath) {\n          return filePath.replace(GENERATED_FILE, '.');\n          }\n
function isGeneratedFile(filePath) {\n          return GENERATED_FILE.test(filePath);\n          }\n          function
splitTypescriptSuffix(path, forceSourceFile) {\n          if (forceSourceFile === void 0) { forceSourceFile = false; }\n
if (path.endsWith('.d.ts')) {\n          return [path.slice(0, -5), forceSourceFile ? '.ts' : '.d.ts'];\n          }\n          var
lastDot = path.lastIndexOf('.');\n          if (lastDot !== -1) {\n          return [path.substring(0, lastDot),
path.substring(lastDot)];\n          }\n          return [path, ''];\n          }\n          function normalizeGenFileSuffix(srcFileSuffix) {\n
return srcFileSuffix === '.tsx' ? '.ts' : srcFileSuffix;\n          }\n          function summaryFileName(fileName) {\n          var
fileNameWithoutSuffix = fileName.replace(STRIP_SRC_FILE_SUFFIXES, '');\n          return
fileNameWithoutSuffix + \".ngsummary.json\";\n          }\n          function summaryForJitFileName(fileName,
forceSourceFile) {\n          if (forceSourceFile === void 0) { forceSourceFile = false; }\n          var urlWithSuffix =
splitTypescriptSuffix(stripGeneratedFileSuffix(fileName), forceSourceFile);\n          return urlWithSuffix[0] +
\".ngsummary\" + urlWithSuffix[1];\n          }\n          function stripSummaryForJitFileSuffix(filePath) {\n          return
filePath.replace(JIT_SUMMARY_FILE, '.');\n          }\n          function summaryForJitName(symbolName) {\n          return
symbolName + \"NgSummary\";\n          }\n          function stripSummaryForJitNameSuffix(symbolName) {\n          return
symbolName.replace(JIT_SUMMARY_NAME, '');\n          }\n          var LOWERED_SYMBOL = ^\\u0275\\d+$/;\n
function isLoweredSymbol(name) {\n          return LOWERED_SYMBOL.test(name);\n          }\n          function

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createLoweredSymbol(id) {\n    return \"\u0275\" + id;\n }\n\n /**\n  * @license\n  * Copyright Google\n  LLC All Rights Reserved.\n  *\n  * Use of this source code is governed by an MIT-style license that can be\n  * found in the LICENSE file at https://angular.io/license\n  */\n  var LifecycleHooks;\n  (function\n  (LifecycleHooks) {\n    LifecycleHooks[LifecycleHooks[\"OnInit\"] = 0] = \"OnInit\";\n    LifecycleHooks[LifecycleHooks[\"OnDestroy\"] = 1] = \"OnDestroy\";\n    LifecycleHooks[LifecycleHooks[\"DoCheck\"] = 2] = \"DoCheck\";\n    LifecycleHooks[LifecycleHooks[\"OnChanges\"] = 3] = \"OnChanges\";\n    LifecycleHooks[LifecycleHooks[\"AfterContentInit\"] = 4] = \"AfterContentInit\";\n    LifecycleHooks[LifecycleHooks[\"AfterContentChecked\"] = 5] = \"AfterContentChecked\";\n    LifecycleHooks[LifecycleHooks[\"AfterViewInit\"] = 6] = \"AfterViewInit\";\n    LifecycleHooks[LifecycleHooks[\"AfterViewChecked\"] = 7] = \"AfterViewChecked\";\n  })(LifecycleHooks ||\n  (LifecycleHooks = {}));\n  var LIFECYCLE_HOOKS_VALUES = [\n    LifecycleHooks.OnInit,\n    LifecycleHooks.OnDestroy, LifecycleHooks.DoCheck, LifecycleHooks.OnChanges,\n    LifecycleHooks.AfterContentInit, LifecycleHooks.AfterContentChecked, LifecycleHooks.AfterViewInit,\n    LifecycleHooks.AfterViewChecked\n  ];\n  function hasLifecycleHook(reflector, hook, token) {\n    return\n    reflector.hasLifecycleHook(token, getHookName(hook));\n  }\n  function getAllLifecycleHooks(reflector, token)\n  {\n    return LIFECYCLE_HOOKS_VALUES.filter(function (hook) { return hasLifecycleHook(reflector, hook,\n    token); });\n  }\n  function getHookName(hook) {\n    switch (hook) {\n      case LifecycleHooks.OnInit:\n        return 'ngOnInit';\n      case LifecycleHooks.OnDestroy:\n        return 'ngOnDestroy';\n      case\n    LifecycleHooks.DoCheck:\n        return 'ngDoCheck';\n      case LifecycleHooks.OnChanges:\n        return 'ngOnChanges';\n      case LifecycleHooks.AfterContentInit:\n        return 'ngAfterContentInit';\n      case\n    LifecycleHooks.AfterContentChecked:\n        return 'ngAfterContentChecked';\n      case\n    LifecycleHooks.AfterViewInit:\n        return 'ngAfterViewInit';\n      case\n    LifecycleHooks.AfterViewChecked:\n        return 'ngAfterViewChecked';\n      default:\n        // This\n        default case is not needed by TypeScript compiler, as the switch is exhaustive.\n        // However Closure\n        Compiler does not understand that and reports an error in typed mode.\n        // The `throw new Error` below\n        works around the problem, and the unexpected: never variable\n        // makes sure tsc still checks this code is\n        unreachable.\n        var unexpected = hook;\n        throw new Error(\"unexpected \" + unexpected);\n    }\n  }\n  var ERROR_COMPONENT_TYPE = 'ngComponentType';\n  // Design notes:\n  // - don't lazily\n  create metadata:\n  // For some metadata, we need to do async work sometimes,\n  // so the user has to kick off\n  this loading.\n  // But we want to report errors even when the async work is\n  // not required to check that the\n  user would have been able\n  // to wait correctly.\n  var CompileMetadataResolver = /** @class */ (function ()\n  {\n    function CompileMetadataResolver(_config, _htmlParser, _ngModuleResolver, _directiveResolver,\n    _pipeResolver, _summaryResolver, _schemaRegistry, _directiveNormalizer, _console, _staticSymbolCache,\n    _reflector, _errorCollector) {\n      this._config = _config;\n      this._htmlParser = _htmlParser;\n      this._ngModuleResolver = _ngModuleResolver;\n      this._directiveResolver = _directiveResolver;\n      this._pipeResolver = _pipeResolver;\n      this._summaryResolver = _summaryResolver;\n      this._schemaRegistry = _schemaRegistry;\n      this._directiveNormalizer = _directiveNormalizer;\n      this._console = _console;\n      this._staticSymbolCache = _staticSymbolCache;\n      this._reflector =\n    _reflector;\n      this._errorCollector = _errorCollector;\n      this._nonNormalizedDirectiveCache = new\n    Map();\n      this._directiveCache = new Map();\n      this._summaryCache = new Map();\n      this._pipeCache = new Map();\n      this._ngModuleCache = new Map();\n      this._ngModuleOfTypes =\n    new Map();\n      this._shallowModuleCache = new Map();\n    }\n    CompileMetadataResolver.prototype.getReflector = function () {\n      return this._reflector;\n    };\n    CompileMetadataResolver.prototype.clearCacheFor = function (type) {\n      var dirMeta =\n    this._directiveCache.get(type);\n      this._directiveCache.delete(type);\n      this._nonNormalizedDirectiveCache.delete(type);\n      this._summaryCache.delete(type);\n      this._pipeCache.delete(type);\n      this._ngModuleOfTypes.delete(type);\n      // Clear all of the NgModule

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as they contain transitive information!\n      this._ngModuleCache.clear();\n      if (dirMeta) {\n
this._directiveNormalizer.clearCacheFor(dirMeta);\n      }\n    };\n
CompileMetadataResolver.prototype.clearCache = function () {\n      this._directiveCache.clear();\n
this._nonNormalizedDirectiveCache.clear();\n      this._summaryCache.clear();\n
this._pipeCache.clear();\n      this._ngModuleCache.clear();\n      this._ngModuleOfTypes.clear();\n
this._directiveNormalizer.clearCache();\n    };\n    CompileMetadataResolver.prototype._createProxyClass =
function (baseType, name) {\n      var delegate = null;\n      var proxyClass = function () {\n        if
(!delegate) {\n          throw new Error("\Illegal state: Class \"" + name + "\" for type \"" + stringify(baseType) + "\"
is not compiled yet!");\n        }\n        return delegate.apply(this, arguments);\n      };\n
proxyClass.setDelegate = function (d) {\n      delegate = d;\n      proxyClass.prototype = d.prototype;\n
    };\n    // Make stringify work correctly\n    proxyClass.overriddenName = name;\n    return
proxyClass;\n  };\n  CompileMetadataResolver.prototype.getGeneratedClass = function (dirType, name) {\n
    if (dirType instanceof StaticSymbol) {\n      return
this._staticSymbolCache.get(ngfactoryFilePath(dirType.filePath), name);\n    }\n    else {\n
return this._createProxyClass(dirType, name);\n    }\n  };\n
CompileMetadataResolver.prototype.getComponentViewClass = function (dirType) {\n      return
this.getGeneratedClass(dirType, viewClassName(dirType, 0));\n    };\n
CompileMetadataResolver.prototype.getHostComponentViewClass = function (dirType) {\n      return
this.getGeneratedClass(dirType, hostViewClassName(dirType));\n    };\n
CompileMetadataResolver.prototype.getHostComponentType = function (dirType) {\n      var name =
identifierName({ reference: dirType }) + \"_Host\";\n      if (dirType instanceof StaticSymbol) {\n
return this._staticSymbolCache.get(dirType.filePath, name);\n      }\n      return
this._createProxyClass(dirType, name);\n    };\n    CompileMetadataResolver.prototype.getRendererType =
function (dirType) {\n      if (dirType instanceof StaticSymbol) {\n        return
this._staticSymbolCache.get(ngfactoryFilePath(dirType.filePath), rendererTypeName(dirType));\n      }\n
    else {\n      // returning an object as proxy,\n      // that we fill later during runtime compilation.\n
return {};\n    }\n  };\n  CompileMetadataResolver.prototype.getComponentFactory = function
(selector, dirType, inputs, outputs) {\n      if (dirType instanceof StaticSymbol) {\n        return
this._staticSymbolCache.get(ngfactoryFilePath(dirType.filePath), componentFactoryName(dirType));\n      }\n
    else {\n      var hostView = this.getHostComponentViewClass(dirType);\n      // Note:
ngContentSelectors will be filled later once the template is\n      // loaded.\n      var
createComponentFactory = this._reflector.resolveExternalReference(Identifiers.createComponentFactory);\n
return createComponentFactory(selector, dirType, hostView, inputs, outputs, []);\n    }\n  };\n
CompileMetadataResolver.prototype.initComponentFactory = function (factory, ngContentSelectors) {\n      var
_a;\n      if (!(factory instanceof StaticSymbol)) {\n        (_a = factory.ngContentSelectors).push.apply(_a,
__spread(ngContentSelectors));\n      }\n    };\n    CompileMetadataResolver.prototype._loadSummary =
function (type, kind) {\n      var typeSummary = this._summaryCache.get(type);\n      if (!typeSummary) {\n
var summary = this._summaryResolver.resolveSummary(type);\n      typeSummary = summary ?
summary.type : null;\n      this._summaryCache.set(type, typeSummary || null);\n    }\n    return
typeSummary && typeSummary.summaryKind === kind ? typeSummary : null;\n  };\n
CompileMetadataResolver.prototype.getHostComponentMetadata = function (compMeta, hostViewType) {\n
var hostType = this.getHostComponentType(compMeta.type.reference);\n      if (!hostViewType) {\n
hostViewType = this.getHostComponentViewClass(hostType);\n      }\n      // Note: ! is ok here as this
method should only be called with normalized directive\n      // metadata, which always fills in the selector.\n
var template = CssSelector.parse(compMeta.selector)[0].getMatchingElementTemplate();\n      var
templateUrl = \"\";\n      var htmlAst = this._htmlParser.parse(template, templateUrl);\n      return
CompileDirectiveMetadata.create({\n      isHost: true,\n      type: { reference: hostType, diDeps: [],
lifecycleHooks: [] },\n      template: new CompileTemplateMetadata({\n        encapsulation:

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ViewEncapsulation.None,\n          template: template,\n          templateUrl: templateUrl,\nhtmlAst: htmlAst,\n          styles: [],\n          styleUrls: [],\n          ngContentSelectors: [],\n          animations: [],\n          isInline: true,\n          externalStylesheets: [],\n          interpolation:\nnull,\n          preserveWhitespaces: false,\n          }},\n          exportAs: null,\nchangeDetection: ChangeDetectionStrategy.Default,\n          inputs: [],\n          outputs: [],\n          host:\n{\n          isComponent: true,\n          selector: '*',\n          providers: [],\n          viewProviders: [],\n          queries: [],\n          guards: {},\n          viewQueries: [],\n          componentViewType:\nhostViewType,\n          rendererType: { id: '__Host__', encapsulation: ViewEncapsulation.None, styles: [], data:\n{\n          } },\n          entryComponents: [],\n          componentFactory: null\n          });\n          };\nCompileMetadataResolver.prototype.loadDirectiveMetadata = function (ngModuleType, directiveType, isSync) {\n  var _this = this;\n  if (this._directiveCache.has(directiveType)) {\n    return null;\n  }\n  directiveType = resolveForwardRef(directiveType);\n  var _a =\nthis.getNonNormalizedDirectiveMetadata(directiveType), annotation = _a.annotation, metadata = _a.metadata;\n  var createDirectiveMetadata = function (templateMetadata) {\n    var normalizedDirMeta = new\nCompileDirectiveMetadata({\n      isHost: false,\n      type: metadata.type,\n      isComponent: metadata.isComponent,\n      selector: metadata.selector,\n      exportAs:\nmetadata.exportAs,\n      changeDetection: metadata.changeDetection,\n      inputs:\nmetadata.inputs,\n      outputs: metadata.outputs,\n      hostListeners: metadata.hostListeners,\n      hostProperties: metadata.hostProperties,\n      hostAttributes: metadata.hostAttributes,\n      providers: metadata.providers,\n      viewProviders: metadata.viewProviders,\n      queries:\nmetadata.queries,\n      guards: metadata.guards,\n      viewQueries: metadata.viewQueries,\n      entryComponents: metadata.entryComponents,\n      componentViewType:\nmetadata.componentViewType,\n      rendererType: metadata.rendererType,\n      componentFactory: metadata.componentFactory,\n      template: templateMetadata\n    });\n    if (templateMetadata) {\n      _this.initComponentFactory(metadata.componentFactory,\n      templateMetadata.ngContentSelectors);\n    }\n    _this._directiveCache.set(directiveType,\n    normalizedDirMeta);\n    _this._summaryCache.set(directiveType, normalizedDirMeta.toSummary());\n    return null;\n  }; \n  if (metadata.isComponent) {\n    var template = metadata.template;\n    var templateMeta = this._directiveNormalizer.normalizeTemplate({\n      ngModuleType:\nngModuleType,\n      componentType: directiveType,\n      templateUrl:\nthis._reflector.componentModuleUrl(directiveType, annotation),\n      encapsulation:\ntemplate.encapsulation,\n      template: template.template,\n      templateUrl:\ntemplate.templateUrl,\n      styles: template.styles,\n      styleUrls: template.styleUrls,\n      animations: template.animations,\n      interpolation: template.interpolation,\n      preserveWhitespaces: template.preserveWhitespaces\n    });\n    if (isPromise(templateMeta) &&\nisSync) {\n      this._reportError(componentStillLoadingError(directiveType), directiveType);\n    }\n    return null;\n  }\n  return SyncAsync.then(templateMeta, createDirectiveMetadata);\n} \n  else {\n    // directive\n    createDirectiveMetadata(null);\n    return null;\n  }\n};\nCompileMetadataResolver.prototype.getNonNormalizedDirectiveMetadata = function (directiveType) {\n  var _this = this;\n  directiveType = resolveForwardRef(directiveType);\n  if (!directiveType) {\n    return null;\n  }\n  var cacheEntry = this._nonNormalizedDirectiveCache.get(directiveType);\n  if (cacheEntry) {\n    return cacheEntry;\n  }\n  var dirMeta =\nthis._directiveResolver.resolve(directiveType, false);\n  if (!dirMeta) {\n    return null;\n  }\n  var nonNormalizedTemplateMetadata = undefined;\n  if (createComponent.isTypeOf(dirMeta)) {\n    // component\n    var compMeta = dirMeta;\n    assertArrayOfStrings('styles', compMeta.styles);\n    assertArrayOfStrings('styleUrls', compMeta.styleUrls);\n    assertInterpolationSymbols('interpolation',\n    compMeta.interpolation);\n    var animations = compMeta.animations;\n    nonNormalizedTemplateMetadata = new CompileTemplateMetadata({\n      encapsulation:

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noUndefined(compMeta.encapsulation),\n          template: noUndefined(compMeta.template),\n
templateUrl: noUndefined(compMeta.templateUrl),\n          htmlAst: null,\n          styles:
compMeta.styles || [],\n          styleUrls: compMeta.styleUrls || [],\n          animations: animations || [],\n
          interpolation: noUndefined(compMeta.interpolation),\n          isInline: !!compMeta.template,\n
          externalStylesheets: [],\n          ngContentSelectors: [],\n          preserveWhitespaces:
noUndefined(dirMeta.preserveWhitespaces),\n          });\n          }\n          var changeDetectionStrategy =
null;\n          var viewProviders = [];\n          var entryComponentMetadata = [];\n          var selector =
dirMeta.selector;\n          if (createComponent.isTypeOf(dirMeta)) {\n          // Component\n          var
compMeta = dirMeta;\n          changeDetectionStrategy = compMeta.changeDetection;\n          if
(compMeta.viewProviders) {\n          viewProviders = this._getProvidersMetadata(compMeta.viewProviders,
entryComponentMetadata, \"viewProviders for \" + stringifyType(directiveType) + \"\", [], directiveType);\n
          }\n          if (compMeta.entryComponents) {\n          entryComponentMetadata =
flattenAndDedupeArray(compMeta.entryComponents)\n          .map(function (type) { return
_this._getEntryComponentMetadata(type); })\n          .concat(entryComponentMetadata);\n          }\n
          if (!selector) {\n          selector = this._schemaRegistry.getDefaultComponentElementName();\n
          }\n          } else {\n          // Directive\n          if (!selector) {\n          selector = null;\n
          }\n          }\n          var providers = [];\n          if (dirMeta.providers != null) {\n          providers =
this._getProvidersMetadata(dirMeta.providers, entryComponentMetadata, \"providers for \" +
stringifyType(directiveType) + \"\", [], directiveType);\n          }\n          var queries = [];\n          var
viewQueries = [];\n          if (dirMeta.queries != null) {\n          queries =
this._getQueriesMetadata(dirMeta.queries, false, directiveType);\n          viewQueries =
this._getQueriesMetadata(dirMeta.queries, true, directiveType);\n          }\n          var metadata =
CompileDirectiveMetadata.create({\n          isHost: false,\n          selector: selector,\n          exportAs:
noUndefined(dirMeta.exportAs),\n          isComponent: !!nonNormalizedTemplateMetadata,\n          type:
this._getTypeMetadata(directiveType),\n          template: nonNormalizedTemplateMetadata,\n
          changeDetection: changeDetectionStrategy,\n          inputs: dirMeta.inputs || [],\n          outputs:
dirMeta.outputs || [],\n          host: dirMeta.host || {},\n          providers: providers || [],\n
          viewProviders: viewProviders || [],\n          queries: queries || [],\n          guards: dirMeta.guards || {},\n
          viewQueries: viewQueries || [],\n          entryComponents: entryComponentMetadata,\n
          componentViewType: nonNormalizedTemplateMetadata ? this.getComponentViewClass(directiveType) :
null,\n          rendererType: nonNormalizedTemplateMetadata ? this.getRendererType(directiveType) : null,\n
          componentFactory: null\n          });\n          if (nonNormalizedTemplateMetadata) {\n
          metadata.componentFactory =\n          this.getComponentFactory(selector, directiveType, metadata.inputs,
metadata.outputs);\n          }\n          cacheEntry = { metadata: metadata, annotation: dirMeta };\n
          this._nonNormalizedDirectiveCache.set(directiveType, cacheEntry);\n          return cacheEntry;\n
          };\n
/**\n * Gets the metadata for the given directive.\n * This assumes
`loadNgModuleDirectiveAndPipeMetadata` has been called first.\n */
CompileMetadataResolver.prototype.getDirectiveMetadata = function (directiveType) {\n          var dirMeta =
this._directiveCache.get(directiveType);\n          if (!dirMeta) {\n          this._reportError(syntaxError(\"Illegal
state: getDirectiveMetadata can only be called after loadNgModuleDirectiveAndPipeMetadata for a module that
declares it. Directive \" + stringifyType(directiveType) + \"\"), directiveType);\n          }\n          return dirMeta;\n
          };\n          CompileMetadataResolver.prototype.getDirectiveSummary = function (dirType) {\n          var
dirSummary = this._loadSummary(dirType, exports.CompileSummaryKind.Directive);\n          if (!dirSummary)
{\n          this._reportError(syntaxError(\"Illegal state: Could not load the summary for directive \" +
stringifyType(dirType) + \"\"), dirType);\n          }\n          return dirSummary;\n          };\n
          CompileMetadataResolver.prototype.isDirective = function (type) {\n          return !!this._loadSummary(type,
exports.CompileSummaryKind.Directive) ||\n          this._directiveResolver.isDirective(type);\n          };\n
          CompileMetadataResolver.prototype.isAbstractDirective = function (type) {\n          var summary =

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this._loadSummary(type, exports.CompileSummaryKind.Directive);\n      if (summary &&
!summary.isComponent) {\n          return !summary.selector;\n      }\n      var meta =
this._directiveResolver.resolve(type, false);\n      if (meta && !createComponent.isTypeOf(meta)) {\n
return !meta.selector;\n      }\n      return false;\n  };\n  CompileMetadataResolver.prototype.isPipe =
function (type) {\n      return !!this._loadSummary(type, exports.CompileSummaryKind.Pipe) ||\nthis._pipeResolver.isPipe(type);\n  };\n  CompileMetadataResolver.prototype.isNgModule = function (type)
{\n      return !!this._loadSummary(type, exports.CompileSummaryKind.NgModule) ||\nthis._ngModuleResolver.isNgModule(type);\n  };\n  CompileMetadataResolver.prototype.getNgModuleSummary = function (moduleType, alreadyCollecting) {\n
if (alreadyCollecting === void 0) { alreadyCollecting = null; }\n      var moduleSummary =
this._loadSummary(moduleType, exports.CompileSummaryKind.NgModule);\n      if (!moduleSummary) {\n
          var moduleMeta = this.getNgModuleMetadata(moduleType, false, alreadyCollecting);\n
moduleSummary = moduleMeta ? moduleMeta.toSummary() : null;\n          if (moduleSummary) {\n
this._summaryCache.set(moduleType, moduleSummary);\n          }\n          return
moduleSummary;\n      };\n      /**\n       * Loads the declared directives and pipes of an NgModule.\n       */\n
CompileMetadataResolver.prototype.loadNgModuleDirectiveAndPipeMetadata = function (moduleType, isSync,
throwIfNotFound) {\n      var _this = this;\n      if (throwIfNotFound === void 0) { throwIfNotFound = true;
}\n      var ngModule = this.getNgModuleMetadata(moduleType, throwIfNotFound);\n      var loading = [];\n
      if (ngModule) {\n          ngModule.declaredDirectives.forEach(function (id) {\n              var promise =
_this.loadDirectiveMetadata(moduleType, id.reference, isSync);\n              if (promise) {\n
loading.push(promise);\n              }\n          });\n          ngModule.declaredPipes.forEach(function (id) {\n
return _this._loadPipeMetadata(id.reference); });\n          return Promise.all(loading);\n      };\n
CompileMetadataResolver.prototype.getShallowModuleMetadata = function (moduleType) {\n      var
compileMeta = this._shallowModuleCache.get(moduleType);\n      if (compileMeta) {\n          return
compileMeta;\n      }\n      var ngModuleMeta = findLast(this._reflector.shallowAnnotations(moduleType),
createNgModule.isTypeOf);\n      compileMeta = {\n          type: this._getTypeMetadata(moduleType),\n
          rawExports: ngModuleMeta.exports,\n          rawImports: ngModuleMeta.imports,\n          rawProviders:
ngModuleMeta.providers,\n          };\n      this._shallowModuleCache.set(moduleType, compileMeta);\n
return compileMeta;\n  };\n  CompileMetadataResolver.prototype.getNgModuleMetadata = function
(moduleType, throwIfNotFound, alreadyCollecting) {\n      var _this = this;\n      if (throwIfNotFound ===
void 0) { throwIfNotFound = true; }\n      if (alreadyCollecting === void 0) { alreadyCollecting = null; }\n
moduleType = resolveForwardRef(moduleType);\n      var compileMeta =
this._ngModuleCache.get(moduleType);\n      if (compileMeta) {\n          return compileMeta;\n      }\n
      var meta = this._ngModuleResolver.resolve(moduleType, throwIfNotFound);\n      if (!meta) {\n
return null;\n      }\n      var declaredDirectives = [];\n      var exportedNonModuleIdentifiers = [];\n
var declaredPipes = [];\n      var importedModules = [];\n      var exportedModules = [];\n      var
providers = [];\n      var entryComponents = [];\n      var bootstrapComponents = [];\n      var schemas =
[];\n      if (meta.imports) {\n          flattenAndDedupeArray(meta.imports).forEach(function (importedType)
{\n              var importedModuleType = undefined;\n              if (isValidType(importedType)) {\n
importedModuleType = importedType;\n              }\n              else if (importedType &&
importedType.ngModule) {\n                  var moduleWithProviders = importedType;\n
importedModuleType = moduleWithProviders.ngModule;\n                  if (moduleWithProviders.providers) {\n
providers.push.apply(providers,
__spread(_this._getProvidersMetadata(moduleWithProviders.providers, entryComponents, "provider for the
NgModule \"" + stringifyType(importedModuleType) + "\", [], importedType));\n                  }\n
              }\n              if (importedModuleType) {\n                  if (_this._checkSelfImport(moduleType,
importedModuleType))\n                      return;\n                  if (!alreadyCollecting)\n
alreadyCollecting = new Set();\n                  if (alreadyCollecting.has(importedModuleType)) {\n

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_this._reportError(syntaxError(_this._getTypeDescriptor(importedModuleType) + \" \" +
stringifyType(importedType) + \" is imported recursively by the module \" + stringifyType(moduleType) + \"\".\"),
moduleType);\n
return;\n
}\n
alreadyCollecting.add(importedModuleType);\n
var importedModuleSummary =
_this.getNgModuleSummary(importedModuleType, alreadyCollecting);\n
alreadyCollecting.delete(importedModuleType);\n
if (!importedModuleSummary) {\n
_this._reportError(syntaxError(\"Unexpected \" + _this._getTypeDescriptor(importedType) + \" \" +
stringifyType(importedType) + \" imported by the module \" + stringifyType(moduleType) + \"\". Please add a
@NgModule annotation.\"), moduleType);\n
return;\n
}\n
importedModules.push(importedModuleSummary);\n
}\n
else {\n
_this._reportError(syntaxError(\"Unexpected value \" + stringifyType(importedType) + \" imported by the module
\" + stringifyType(moduleType) + \"\"\"), moduleType);\n
return;\n
}\n
});\n
}\n
if (meta.exports) {\n
flattenAndDedupeArray(meta.exports).forEach(function (exportedType)
{\n
if (!isValidType(exportedType)) {\n
_this._reportError(syntaxError(\"Unexpected
value \" + stringifyType(exportedType) + \" exported by the module \" + stringifyType(moduleType) + \"\"\"),
moduleType);\n
return;\n
}\n
if (!alreadyCollecting)\n
alreadyCollecting = new Set();\n
if (alreadyCollecting.has(exportedType)) {\n
_this._reportError(syntaxError(_this._getTypeDescriptor(exportedType) + \" \" + stringify(exportedType) + \" is
exported recursively by the module \" + stringifyType(moduleType) + \"\"\"), moduleType);\n
return;\n
}\n
alreadyCollecting.add(exportedType);\n
var
exportedModuleSummary = _this.getNgModuleSummary(exportedType, alreadyCollecting);\n
alreadyCollecting.delete(exportedType);\n
if (exportedModuleSummary) {\n
exportedModules.push(exportedModuleSummary);\n
}\n
else {\n
exportedNonModuleIdentifiers.push(_this._getIdentifierMetadata(exportedType));\n
}\n
});\n
}\n
// Note: This will be modified later, so we rely on\n
// getting a new instance every time!\n
var transitiveModule = this._getTransitiveNgModuleMetadata(importedModules, exportedModules);\n
if
(meta.declarations) {\n
flattenAndDedupeArray(meta.declarations).forEach(function (declaredType) {\n
if (!isValidType(declaredType)) {\n
_this._reportError(syntaxError(\"Unexpected value \" +
stringifyType(declaredType) + \" declared by the module \" + stringifyType(moduleType) + \"\"\"), moduleType);\n
return;\n
}\n
var declaredIdentifier =
_this._getIdentifierMetadata(declaredType);\n
if (_this.isDirective(declaredType)) {\n
if
(_this.isAbstractDirective(declaredType)) {\n
_this._reportError(syntaxError(\"Directive \" +
stringifyType(declaredType) + \" has no selector, please add it!\"), declaredType);\n
}\n
transitiveModule.addDirective(declaredIdentifier);\n
declaredDirectives.push(declaredIdentifier);\n
_this._addTypeToModule(declaredType, moduleType);\n
}\n
else if
(_this.isPipe(declaredType)) {\n
transitiveModule.addPipe(declaredIdentifier);\n
transitiveModule.pipes.push(declaredIdentifier);\n
declaredPipes.push(declaredIdentifier);\n
_this._addTypeToModule(declaredType, moduleType);\n
}\n
else {\n
_this._reportError(syntaxError(\"Unexpected \" + _this._getTypeDescriptor(declaredType) + \" \" +
stringifyType(declaredType) + \" declared by the module \" + stringifyType(moduleType) + \"\". Please add a
@Pipe/@Directive/@Component annotation.\"), moduleType);\n
return;\n
}\n
});\n
}\n
var exportedDirectives = [];\n
var exportedPipes = [];\n
exportedNonModuleIdentifiers.forEach(function (exportedId) {\n
if
(transitiveModule.directivesSet.has(exportedId.reference)) {\n
exportedDirectives.push(exportedId);\n
transitiveModule.addExportedDirective(exportedId);\n
}\n
else if
(transitiveModule.pipesSet.has(exportedId.reference)) {\n
exportedPipes.push(exportedId);\n
transitiveModule.addExportedPipe(exportedId);\n
}\n
else {\n
_this._reportError(syntaxError(\"Can't export \" + _this._getTypeDescriptor(exportedId.reference) + \" \" +

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stringifyType(exportedId.reference) + \" from \" + stringifyType(moduleType) + \" as it was neither declared nor
imported!\") , moduleType); \n          return; \n          } \n          }); \n          // The providers of the module
have to go last \n          // so that they overwrite any other provider we already added. \n          if (meta.providers)
{ \n          providers.push.apply(providers, __spread(this._getProvidersMetadata(meta.providers,
entryComponents, \"provider for the NgModule \" + stringifyType(moduleType) + \"\", [], moduleType))); \n
} \n          if (meta.entryComponents) { \n          entryComponents.push.apply(entryComponents,
__spread(flattenAndDedupeArray(meta.entryComponents) \n          .map(function (type) { return
_this._getEntryComponentMetadata(type); })); \n          } \n          if (meta.bootstrap) { \n
flattenAndDedupeArray(meta.bootstrap).forEach(function (type) { \n          if (!isValidType(type)) { \n
_this._reportError(syntaxError(\"Unexpected value \" + stringifyType(type) + \"\" used in the bootstrap property
of module \" + stringifyType(moduleType) + \"\", moduleType); \n          return; \n          } \n
bootstrapComponents.push(_this._getIdentifierMetadata(type)); \n          }); \n          } \n
entryComponents.push.apply(entryComponents, __spread(bootstrapComponents.map(function (type) { return
_this._getEntryComponentMetadata(type.reference); })); \n          if (meta.schemas) { \n
schemas.push.apply(schemas, __spread(flattenAndDedupeArray(meta.schemas)); \n          } \n          compileMeta
= new CompileNgModuleMetadata({ \n          type: this._getTypeMetadata(moduleType), \n          providers:
providers, \n          entryComponents: entryComponents, \n          bootstrapComponents:
bootstrapComponents, \n          schemas: schemas, \n          declaredDirectives: declaredDirectives, \n
exportedDirectives: exportedDirectives, \n          declaredPipes: declaredPipes, \n          exportedPipes:
exportedPipes, \n          importedModules: importedModules, \n          exportedModules: exportedModules, \n
transitiveModule: transitiveModule, \n          id: meta.id || null, \n          }); \n
entryComponents.forEach(function (id) { return transitiveModule.addEntryComponent(id); }); \n
providers.forEach(function (provider) { return transitiveModule.addProvider(provider, compileMeta.type); }); \n
transitiveModule.addModule(compileMeta.type); \n          this._ngModuleCache.set(moduleType,
compileMeta); \n          return compileMeta; \n          }; \n          CompileMetadataResolver.prototype._checkSelfImport
= function (moduleType, importedModuleType) { \n          if (moduleType === importedModuleType) { \n
this._reportError(syntaxError(\"\" + stringifyType(moduleType) + \"\" module can't import itself\"), moduleType); \n
return true; \n          } \n          return false; \n          }; \n
CompileMetadataResolver.prototype._getTypeDescriptor = function (type) { \n          if (isValidType(type)) { \n
if (this.isDirective(type)) { \n          return 'directive'; \n          } \n          if (this.isPipe(type)) { \n
return 'pipe'; \n          } \n          if (this.isNgModule(type)) { \n          return 'module'; \n
} \n          } \n          if (type.provide) { \n          return 'provider'; \n          } \n          return 'value'; \n          }; \n
CompileMetadataResolver.prototype._addTypeToModule = function (type, moduleType) { \n          var oldModule
= this._ngModuleOfTypes.get(type); \n          if (oldModule && oldModule !== moduleType) { \n
this._reportError(syntaxError(\"Type \" + stringifyType(type) + \" is part of the declarations of 2 modules: \" +
stringifyType(oldModule) + \" and \" + stringifyType(moduleType) + \"! \" + \n          (\"Please consider
moving \" + stringifyType(type) + \" to a higher module that imports \" + stringifyType(oldModule) + \" and \" +
stringifyType(moduleType) + \". \")) + \n          (\"You can also create a new NgModule that exports and
includes \" + stringifyType(type) + \" then import that NgModule in \" + stringifyType(oldModule) + \" and \" +
stringifyType(moduleType) + \".\")), moduleType); \n          return; \n          } \n
this._ngModuleOfTypes.set(type, moduleType); \n          }; \n
CompileMetadataResolver.prototype._getTransitiveNgModuleMetadata = function (importedModules,
exportedModules) { \n          // collect `providers` / `entryComponents` from all imported and all exported
modules \n          var result = new TransitiveCompileNgModuleMetadata(); \n          var modulesByToken = new
Map(); \n          importedModules.concat(exportedModules).forEach(function (modSummary) { \n
modSummary.modules.forEach(function (mod) { return result.addModule(mod); }); \n
modSummary.entryComponents.forEach(function (comp) { return result.addEntryComponent(comp); }); \n
var addedTokens = new Set(); \n          modSummary.providers.forEach(function (entry) { \n          var

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tokenRef = tokenReference(entry.provider.token);\n          var prevModules =
modulesByToken.get(tokenRef);\n          if (!prevModules) {\n          prevModules = new Set();\n          modulesByToken.set(tokenRef, prevModules);\n          }\n          var moduleRef =
entry.module.reference;\n          // Note: the providers of one module may still contain multiple providers\n          // per token (e.g. for multi providers), and we need to preserve these.\n          if
(addedTokens.has(tokenRef) || !prevModules.has(moduleRef)) {\n          prevModules.add(moduleRef);\n          addedTokens.add(tokenRef);\n          result.addProvider(entry.provider, entry.module);\n          }\n          });\n          });\n          exportedModules.forEach(function (modSummary) {\n
modSummary.exportedDirectives.forEach(function (id) { return result.addExportedDirective(id); });\n
modSummary.exportedPipes.forEach(function (id) { return result.addExportedPipe(id); });\n          });\n
importedModules.forEach(function (modSummary) {\n
modSummary.exportedDirectives.forEach(function (id) { return result.addDirective(id); });\n
modSummary.exportedPipes.forEach(function (id) { return result.addPipe(id); });\n          });\n          return
result;\n          });\n          CompileMetadataResolver.prototype._getIdentiferMetadata = function (type) {\n          type
= resolveForwardRef(type);\n          return { reference: type };;\n          });\n
CompileMetadataResolver.prototype.isInjectable = function (type) {\n          var annotations =
this._reflector.tryAnnotations(type);\n          return annotations.some(function (ann) { return
createInjectable.isTypeOf(ann); });\n          });\n          CompileMetadataResolver.prototype.getInjectableSummary =
function (type) {\n          return {\n          summaryKind: exports.CompileSummaryKind.Injectable,\n
type: this._getTypeMetadata(type, null, false)\n          };;\n          });\n
CompileMetadataResolver.prototype.getInjectableMetadata = function (type, dependencies,
throwOnUnknownDeps) {\n          if (dependencies === void 0) { dependencies = null; }\n          if
(throwOnUnknownDeps === void 0) { throwOnUnknownDeps = true; }\n          var typeSummary =
this._loadSummary(type, exports.CompileSummaryKind.Injectable);\n          var typeMetadata = typeSummary ?\n
typeSummary.type :\n          this._getTypeMetadata(type, dependencies, throwOnUnknownDeps);\n          var annotations = this._reflector.annotations(type).filter(function (ann) { return createInjectable.isTypeOf(ann);
});\n          if (annotations.length === 0) {\n          return null;\n          }\n          var meta =
annotations[annotations.length - 1];\n          return {\n          symbol: type,\n          type: typeMetadata,\n
providedIn: meta.providedIn,\n          useValue: meta.useValue,\n          useClass: meta.useClass,\n
useExisting: meta.useExisting,\n          useFactory: meta.useFactory,\n          deps: meta.deps,\n          });\n          });\n          CompileMetadataResolver.prototype._getTypeMetadata = function (type, dependencies,
throwOnUnknownDeps) {\n          if (dependencies === void 0) { dependencies = null; }\n          if
(throwOnUnknownDeps === void 0) { throwOnUnknownDeps = true; }\n          var identifier =
this._getIdentiferMetadata(type);\n          return {\n          reference: identifier.reference,\n          diDeps:
this._getDependenciesMetadata(identifier.reference, dependencies, throwOnUnknownDeps),\n
lifecycleHooks: getAllLifecycleHooks(this._reflector, identifier.reference),\n          });\n          });\n
CompileMetadataResolver.prototype._getFactoryMetadata = function (factory, dependencies) {\n          if
(dependencies === void 0) { dependencies = null; }\n          factory = resolveForwardRef(factory);\n          return
{ reference: factory, diDeps: this._getDependenciesMetadata(factory, dependencies) };;\n          });\n          /**\n          *
Gets the metadata for the given pipe.\n          * This assumes `loadNgModuleDirectiveAndPipeMetadata` has been
called first.\n          */\n          CompileMetadataResolver.prototype.getPipeMetadata = function (pipeType) {\n
var pipeMeta = this._pipeCache.get(pipeType);\n          if (!pipeMeta) {\n
this._reportError(syntaxError("Illegal state: getPipeMetadata can only be called after
loadNgModuleDirectiveAndPipeMetadata for a module that declares it. Pipe '" + stringifyType(pipeType) + "'."),
pipeType);\n          }\n          return pipeMeta || null;\n          });\n
CompileMetadataResolver.prototype.getPipeSummary = function (pipeType) {\n          var pipeSummary =
this._loadSummary(pipeType, exports.CompileSummaryKind.Pipe);\n          if (!pipeSummary) {\n
this._reportError(syntaxError("Illegal state: Could not load the summary for pipe '" + stringifyType(pipeType) +

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\".\");\n        }\n        return pipeSummary;\n    };\n
CompileMetadataResolver.prototype.getOrLoadPipeMetadata = function (pipeType) {\n        var pipeMeta =
this._pipeCache.get(pipeType);\n        if (!pipeMeta) {\n            pipeMeta =
this._loadPipeMetadata(pipeType);\n        }\n        return pipeMeta;\n    };\n
CompileMetadataResolver.prototype._loadPipeMetadata = function (pipeType) {\n        pipeType =
resolveForwardRef(pipeType);\n        var pipeAnnotation = this._pipeResolver.resolve(pipeType);\n        var
pipeMeta = new CompilePipeMetadata({\n            type: this._getTypeMetadata(pipeType),\n            name:
pipeAnnotation.name,\n            pure: !!pipeAnnotation.pure\n        });\n        this._pipeCache.set(pipeType,
pipeMeta);\n        this._summaryCache.set(pipeType, pipeMeta.toSummary());\n        return pipeMeta;\n
};\n
CompileMetadataResolver.prototype._getDependenciesMetadata = function (typeOrFunc, dependencies,
throwOnUnknownDeps) {\n        var _this = this;\n        if (throwOnUnknownDeps === void 0) {\n
throwOnUnknownDeps = true;\n        }\n        var hasUnknownDeps = false;\n        var params = dependencies ||
this._reflector.parameters(typeOrFunc) || [];\n        var dependenciesMetadata = params.map(function (param) {\n
            var isAttribute = false;\n            var isHost = false;\n            var isSelf = false;\n            var isSkipSelf
= false;\n            var isOptional = false;\n            var token = null;\n            if (Array.isArray(param)) {\n
                param.forEach(function (paramEntry) {\n                    if (createHost.isTypeOf(paramEntry)) {\n
                        isHost = true;\n                    }\n                    else if (createSelf.isTypeOf(paramEntry)) {\n
                        isSelf = true;\n                    }\n                    else if (createSkipSelf.isTypeOf(paramEntry)) {\n
                        isSkipSelf = true;\n                    }\n                    else if (createOptional.isTypeOf(paramEntry)) {\n
                        isOptional = true;\n                    }\n                    else if (createAttribute.isTypeOf(paramEntry)) {\n
                        isAttribute = true;\n                        token = paramEntry.attributeName;\n                    }\n
                    else if (createInject.isTypeOf(paramEntry)) {\n                        token = paramEntry.token;\n                    }\n
                    else if (createInjectionToken.isTypeOf(paramEntry) ||\n                        paramEntry instanceof
StaticSymbol) {\n                        token = paramEntry;\n                    }\n                    else if
(isValidType(paramEntry) && token === null) {\n                        token = paramEntry;\n                    }\n
                });\n            }\n            else {\n                token = param;\n            }\n            if (token === null) {\n
                hasUnknownDeps = true;\n                return {};\n            }\n            return {\n                isAttribute:
isAttribute,\n                isHost: isHost,\n                isSelf: isSelf,\n                isSkipSelf: isSkipSelf,\n
                isOptional: isOptional,\n                token: _this._getTokenMetadata(token)\n            };\n        });\n        if
(hasUnknownDeps) {\n            var depsTokens = dependenciesMetadata.map(function (dep) { return dep.token ?
stringifyType(dep.token) : '?'; }).join(', ');\n            var message = \"Can't resolve all parameters for \" +
stringifyType(typeOrFunc) + \": (\" + depsTokens + \").\";\n            if (throwOnUnknownDeps ||
this._config.strictInjectionParameters) {\n                this._reportError(syntaxError(message), typeOrFunc);\n
            }\n        }\n        return dependenciesMetadata;\n    };\n
CompileMetadataResolver.prototype._getTokenMetadata = function (token) {\n        token =
resolveForwardRef(token);\n        var compileToken;\n        if (typeof token === 'string') {\n
            compileToken = { value: token };\n        }\n        else {\n            compileToken = { identifier: { reference:
token } };\n        }\n        return compileToken;\n    };\n
CompileMetadataResolver.prototype._getProvidersMetadata = function (providers, targetEntryComponents,
debugInfo, compileProviders, type) {\n        var _this = this;\n        if (compileProviders === void 0) {\n
            compileProviders = [];\n        }\n        providers.forEach(function (provider, providerIdx) {\n            if
(Array.isArray(provider)) {\n                _this._getProvidersMetadata(provider, targetEntryComponents,
debugInfo, compileProviders);\n            }\n            else {\n                provider =
resolveForwardRef(provider);\n                var providerMeta = undefined;\n                if (provider && typeof
provider === 'object' && provider.hasOwnProperty('provide')) {\n
                    _this._validateProvider(provider);\n                    providerMeta = new ProviderMeta(provider.provide, provider);\n
                }\n                else if (isValidType(provider)) {\n                    providerMeta = new
ProviderMeta(provider, { useClass: provider });\n                }\n                else if (provider === void 0) {\n
            }

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    _this._reportError(syntaxError("Encountered undefined provider! Usually this means you have a circular
dependencies. This might be caused by using 'barrel' index.ts files.));\n        return;\n        }\n
    else {\n        var providersInfo = providers\n        .reduce(function (soFar, seenProvider,\nseenProviderIdx) {\n        if (seenProviderIdx < providerIdx) {\n        soFar.push("\n" +\nstringifyType(seenProvider));\n        }\n        else if (seenProviderIdx == providerIdx) {\n        soFar.push("\n?" + stringifyType(seenProvider) + "\n?");\n        }\n        else\nif (seenProviderIdx == providerIdx + 1) {\n        soFar.push('...');\n        }\n        return soFar;\n        }, [])\n        .join(', ');\n        _this._reportError(syntaxError("Invalid\n" + (debugInfo ?\n        debugInfo :\n'provider') + "\n" - only instances of Provider and Type are allowed, got: [\n" + providersInfo + "\n]"), type);\n        return;\n        }\n        if (providerMeta.token ===\n        _this._reflector.resolveExternalReference(Identifiers.ANALYZE_FOR_ENTRY_COMPONENTS)) {\n        targetEntryComponents.push.apply(targetEntryComponents,\n        __spread(_this._getEntryComponentsFromProvider(providerMeta, type));\n        }\n        else {\n        compileProviders.push(_this.getProviderMetadata(providerMeta);\n        }\n        }\n    });\n    return compileProviders;\n    };\n    CompileMetadataResolver.prototype._validateProvider =\nfunction (provider) {\n    if (provider.hasOwnProperty('useClass') && provider.useClass == null) {\n    this._reportError(syntaxError("Invalid provider for\n" + stringifyType(provider.provide) + "\n. useClass cannot be\n" +\nprovider.useClass + "\n.\n    Usually it happens when:\n    1. There's a circular dependency (might be\ncaused by using index.ts (barrel) files).\n    2. Class was used before it was declared. Use forwardRef in this\ncase.));\n    }\n    };\n    CompileMetadataResolver.prototype._getEntryComponentsFromProvider =\nfunction (provider, type) {\n    var _this = this;\n    var components = [];\n    var collectedIdentifiers =\n[];\n    if (provider.useFactory || provider.useExisting || provider.useClass) {\n    this._reportError(syntaxError("The ANALYZE_FOR_ENTRY_COMPONENTS token only supports useValue!"),\ntype);\n    return [];\n    }\n    if (!provider.multi) {\n    this._reportError(syntaxError("The\nANALYZE_FOR_ENTRY_COMPONENTS token only supports 'multi = true'!"), type);\n    return [];\n    }\n    extractIdentifiers(provider.useValue, collectedIdentifiers);\n    collectedIdentifiers.forEach(function (identifier) {\n    var entry =\n        _this._getEntryComponentMetadata(identifier.reference, false);\n    if (entry) {\n    components.push(entry);\n    }\n    });\n    return components;\n    };\n    CompileMetadataResolver.prototype._getEntryComponentMetadata = function (dirType, throwIfNotFound) {\n    if (throwIfNotFound === void 0) { throwIfNotFound = true; }\n    var dirMeta =\n        this.getNonNormalizedDirectiveMetadata(dirType);\n    if (dirMeta && dirMeta.metadata.isComponent) {\n    return { componentType: dirType, componentFactory: dirMeta.metadata.componentFactory };\n    }\n    var dirSummary = this._loadSummary(dirType, exports.CompileSummaryKind.Directive);\n    if\n    (dirSummary && dirSummary.isComponent) {\n    return { componentType: dirType, componentFactory:\ndirSummary.componentFactory };\n    }\n    if (throwIfNotFound) {\n    throw\n    syntaxError(dirType.name + "\n cannot be used as an entry component.);\n    }\n    return null;\n    };\n    CompileMetadataResolver.prototype._getInjectableTypeMetadata = function (type, dependencies) {\n    if\n    (dependencies === void 0) { dependencies = null; }\n    var typeSummary = this._loadSummary(type,\nexports.CompileSummaryKind.Injectable);\n    if (typeSummary) {\n    return typeSummary.type;\n    }\n    return this._getTypeMetadata(type, dependencies);\n    };\n    CompileMetadataResolver.prototype.getProviderMetadata = function (provider) {\n    var compileDeps =\n    undefined;\n    var compileTypeMetadata = null;\n    var compileFactoryMetadata = null;\n    var\ntoken = this._getTokenMetadata(provider.token);\n    if (provider.useClass) {\n    compileTypeMetadata\n    =\n        this._getInjectableTypeMetadata(provider.useClass, provider.dependencies);\n    compileDeps = compileTypeMetadata.diDeps;\n    if (provider.token === provider.useClass) {\n    // use the compileTypeMetadata as it contains information about lifecycleHooks...\n    token = { identifier:

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compileTypeMetadata };\n          }\n          }\n          else if (provider.useFactory) {\n
compileFactoryMetadata = this._getFactoryMetadata(provider.useFactory, provider.dependencies);\n
compileDeps = compileFactoryMetadata.diDeps;\n          }\n          return {\n          token: token,\n
useClass: compileTypeMetadata,\n          useValue: provider.useValue,\n          useFactory:\n
compileFactoryMetadata,\n          useExisting: provider.useExisting ?\n
this._getTokenMetadata(provider.useExisting) : undefined,\n          deps: compileDeps,\n          multi:\n
provider.multi\n          };\n          };\n          CompileMetadataResolver.prototype._getQueriesMetadata = function\n
(queries, isViewQuery, directiveType) {\n          var _this = this;\n          var res = [];\n
Object.keys(queries).forEach(function (propertyName) {\n          var query = queries[propertyName];\n
if (query.isViewQuery === isViewQuery) {\n          res.push(_this._getQueryMetadata(query, propertyName,\n
directiveType));\n          }\n          });\n          return res;\n          };\n
CompileMetadataResolver.prototype._queryVarBindings = function (selector) {\n          return\n
selector.split(/\\s*,\\s*/);\n          };\n          CompileMetadataResolver.prototype._getQueryMetadata = function (q,\n
propertyName, typeOrFunc) {\n          var _this = this;\n          var selectors;\n          if (typeof q.selector ===\n
'string') {\n          selectors =\n          this._queryVarBindings(q.selector).map(function (varName) { return\n
_this._getTokenMetadata(varName); });\n          }\n          else {\n          if (!q.selector) {\n
this._reportError(syntaxError("Can't construct a query for the property '\\\\'" + propertyName + '\\\\'" of '\\\\'" +\n
stringifyType(typeOrFunc) + '\\\\'" since the query selector wasn't defined."), typeOrFunc);\n          selectors\n
= [];\n          }\n          else {\n          selectors = [this._getTokenMetadata(q.selector)];\n          }\n
          }\n          return {\n          selectors: selectors,\n          first: q.first,\n          descendants:\n
q.descendants,\n          propertyName: propertyName,\n          read: q.read ? this._getTokenMetadata(q.read) :\n
null,\n          static: q.static\n          };\n          };\n          CompileMetadataResolver.prototype._reportError =\n
function (error, type, otherType) {\n          if (this._errorCollector) {\n          this._errorCollector(error, type);\n
          }\n          if (otherType) {\n          this._errorCollector(error, otherType);\n          }\n          else\n
{\n          throw error;\n          };\n          return CompileMetadataResolver;\n          }();\n          function\n
flattenArray(tree, out) {\n          if (out === void 0) { out = []; }\n          if (tree) {\n          for (var i = 0; i < tree.length;\n
i++) {\n          var item = resolveForwardRef(tree[i]);\n          if (Array.isArray(item)) {\n
flattenArray(item, out);\n          }\n          else {\n          out.push(item);\n          }\n          }\n
          }\n          return out;\n          }\n          function dedupeArray(array) {\n          if (array) {\n          return Array.from(new\n
Set(array));\n          }\n          return [];\n          }\n          function flattenAndDedupeArray(tree) {\n          return\n
dedupeArray(flattenArray(tree));\n          }\n          function isValidType(value) {\n          return (value instanceof\n
StaticSymbol) || (value instanceof Type);\n          }\n          function extractIdentifiers(value, targetIdentifiers) {\n
visitValue(value, new _CompileValueConverter(), targetIdentifiers);\n          }\n          var _CompileValueConverter = /**\n
@class */ (function (_super) {\n          __extends(_CompileValueConverter, _super);\n          function\n
_CompileValueConverter() {\n          return _super !== null && _super.apply(this, arguments) || this;\n          }\n
          _CompileValueConverter.prototype.visitOther = function (value, targetIdentifiers) {\n
targetIdentifiers.push({ reference: value });\n          };\n          return _CompileValueConverter;\n
          } (ValueTransformer));\n          function stringifyType(type) {\n          if (type instanceof StaticSymbol) {\n          return\n
type.name + " in " + type.filePath;\n          }\n          else {\n          return stringify(type);\n          }\n          }\n          /**\n
          *\n
          * Indicates that a component is still being loaded in a synchronous compile.\n
          */\n          function\n
componentStillLoadingError(compType) {\n          var error = Error("Can't compile synchronously as " +\n
stringify(compType) + " is still being loaded!");\n          error[ERROR_COMPONENT_TYPE] = compType;\n
          return error;\n          }\n          /**\n
          *\n
          * @license\n
          * Copyright Google LLC All Rights Reserved.\n
          *\n
          * Use of\n
          * this source code is governed by an MIT-style license that can be\n
          * found in the LICENSE file at\n
          * https://angular.io/license\n
          */\n          function providerDef(ctx, providerAst) {\n          var flags = 0 /* None */;\n          if\n
(!providerAst.eager) {\n          flags |= 4096 /* LazyProvider */;\n          }\n          if (providerAst.providerType ===\n
exports.ProviderAstType.PrivateService) {\n          flags |= 8192 /* PrivateProvider */;\n          }\n          if\n
(providerAst.isModule) {\n          flags |= 1073741824 /* TypeModuleProvider */;\n          }\n

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providerAst.lifecycleHooks.forEach(function (lifecycleHook) {\n      // for regular providers, we only support
ngOnDestroy\n      if (lifecycleHook === LifecycleHooks.OnDestroy ||\n      providerAst.providerType
=== exports.ProviderAstType.Directive ||\n      providerAst.providerType ===
exports.ProviderAstType.Component) {\n      flags |= lifecycleHookToNodeFlag(lifecycleHook);\n      }\n
});\n      var _a = providerAst.multiProvider ?\n      multiProviderDef(ctx, flags, providerAst.providers) :\n      singleProviderDef(ctx, flags, providerAst.providerType, providerAst.providers[0]), providerExpr =
_a.providerExpr, providerFlags = _a.flags, depsExpr = _a.depsExpr;\n      return {\n      providerExpr:
providerExpr,\n      flags: providerFlags,\n      depsExpr: depsExpr,\n      tokenExpr: tokenExpr(ctx,
providerAst.token),\n      };\n      }\n      function multiProviderDef(ctx, flags, providers) {\n      var allDepDefs =
[];\n      var allParams = [];\n      var exprs = providers.map(function (provider, providerIndex) {\n      var
expr;\n      if (provider.useClass) {\n      var depExprs = convertDeps(providerIndex, provider.deps ||
provider.useClass.diDeps);\n      expr = ctx.importExpr(provider.useClass.reference).instantiate(depExprs);\n
      }\n      else if (provider.useFactory) {\n      var depExprs = convertDeps(providerIndex, provider.deps
|| provider.useFactory.diDeps);\n      expr =
ctx.importExpr(provider.useFactory.reference).callFn(depExprs);\n      }\n      else if (provider.useExisting)
{\n      var depExprs = convertDeps(providerIndex, [{ token: provider.useExisting }]);\n      expr =
depExprs[0];\n      }\n      else {\n      expr = convertValueToOutputAst(ctx, provider.useValue);\n
      }\n      return expr;\n      });\n      var providerExpr = fn(allParams, [new ReturnStatement(literalArr(exprs))],
INFERRED_TYPE);\n      return {\n      providerExpr: providerExpr,\n      flags: flags | 1024 /*
TypeFactoryProvider */,\n      depsExpr: literalArr(allDepDefs)\n      };\n      function
convertDeps(providerIndex, deps) {\n      return deps.map(function (dep, depIndex) {\n      var
paramName = `p${providerIndex} + `_${depIndex}`;\n      allParams.push(new FnParam(paramName,
DYNAMIC_TYPE));\n      allDepDefs.push(depDef(ctx, dep));\n      return variable(paramName);\n
      });\n      }\n      }\n      function singleProviderDef(ctx, flags, providerType, providerMeta) {\n      var
providerExpr;\n      var deps;\n      if (providerType === exports.ProviderAstType.Directive || providerType ===
exports.ProviderAstType.Component) {\n      providerExpr =
ctx.importExpr(providerMeta.useClass.reference);\n      flags |= 16384 /* TypeDirective */;\n      deps =
providerMeta.deps || providerMeta.useClass.diDeps;\n      }\n      else {\n      if (providerMeta.useClass) {\n
      providerExpr = ctx.importExpr(providerMeta.useClass.reference);\n      flags |= 512 /*
TypeClassProvider */;\n      deps = providerMeta.deps || providerMeta.useClass.diDeps;\n      }\n
      else if (providerMeta.useFactory) {\n      providerExpr =
ctx.importExpr(providerMeta.useFactory.reference);\n      flags |= 1024 /* TypeFactoryProvider */;\n
      deps = providerMeta.deps || providerMeta.useFactory.diDeps;\n      }\n      else if (providerMeta.useExisting)
{\n      providerExpr = NULL_EXPR;\n      flags |= 2048 /* TypeUseExistingProvider */;\n
      deps = [{ token: providerMeta.useExisting }];\n      }\n      else {\n      providerExpr =
convertValueToOutputAst(ctx, providerMeta.useValue);\n      flags |= 256 /* TypeValueProvider */;\n
      deps = [];\n      }\n      }\n      var depsExpr = literalArr(deps.map(function (dep) { return depDef(ctx, dep);
}));\n      return { providerExpr: providerExpr, flags: flags, depsExpr: depsExpr };\n      }\n      function
tokenExpr(ctx, tokenMeta) {\n      return tokenMeta.identifier ? ctx.importExpr(tokenMeta.identifier.reference) :\n
      literal(tokenMeta.value);\n      }\n      function depDef(ctx, dep) {\n      // Note: the following fields have already
been normalized out by provider_analyzer:\n      // - isAttribute, isHost\n      var expr = dep.isValue ?
convertValueToOutputAst(ctx, dep.value) : tokenExpr(ctx, dep.token);\n      var flags = 0 /* None */;\n      if
(dep.isSkipSelf) {\n      flags |= 1 /* SkipSelf */;\n      }\n      if (dep.isOptional) {\n      flags |= 2 /*
Optional */;\n      }\n      if (dep.isSelf) {\n      flags |= 4 /* Self */;\n      }\n      if (dep.isValue) {\n
      flags |= 8 /* Value */;\n      }\n      return flags === 0 /* None */ ? expr : literalArr([literal(flags), expr]);\n
      }\n      }\n      function lifecycleHookToNodeFlag(lifecycleHook) {\n      var nodeFlag = 0 /* None */;\n      switch
(lifecycleHook) {\n      case LifecycleHooks.AfterContentChecked:\n      nodeFlag = 2097152 /*
AfterContentChecked */;\n      break;\n      case LifecycleHooks.AfterContentInit:\n      nodeFlag =

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1048576 /* AfterContentInit */;\n          break;\n          case LifecycleHooks.AfterViewChecked:\nnodeFlag = 8388608 /* AfterViewChecked */;\n          break;\n          case LifecycleHooks.AfterViewInit:\n      nodeFlag = 4194304 /* AfterViewInit */;\n          break;\n          case LifecycleHooks.DoCheck:\nnodeFlag = 262144 /* DoCheck */;\n          break;\n          case LifecycleHooks.OnChanges:\nnodeFlag = 524288 /* OnChanges */;\n          break;\n          case LifecycleHooks.OnDestroy:\nnodeFlag = 131072 /* OnDestroy */;\n          break;\n          case LifecycleHooks.OnInit:\nnodeFlag = 65536 /* OnInit */;\n          break;\n      }\n      return nodeFlag;\n  }\n  function\n  componentFactoryResolverProviderDef(reflector, ctx, flags, entryComponents) {\n    var\n  entryComponentFactories = entryComponents.map(function (entryComponent) { return\n  ctx.importExpr(entryComponent.componentFactory); });\n    var token =\n  createTokenForExternalReference(reflector, Identifiers.ComponentFactoryResolver);\n    var classMeta = {\n      diDeps: [\n        { isValue: true, value: literalArr(entryComponentFactories) },\n        { token: token,\n  isSkipSelf: true, isOptional: true },\n        { token: createTokenForExternalReference(reflector,\n  Identifiers.NgModuleRef) },\n      ],\n      lifecycleHooks: [],\n      reference:\n  reflector.resolveExternalReference(Identifiers.CodegenComponentFactoryResolver)\n    ];\n    var _a =\n  singleProviderDef(ctx, flags, exports.ProviderAstType.PrivateService, {\n      token: token,\n      multi:\n  false,\n      useClass: classMeta,\n    }, providerExpr = _a.providerExpr, providerFlags = _a.flags, depsExpr =\n  _a.depsExpr);\n    return { providerExpr: providerExpr, flags: providerFlags, depsExpr: depsExpr, tokenExpr:\n  tokenExpr(ctx, token) };\n  }\n  /**\n   * @license\n   * Copyright Google LLC All Rights Reserved.\n   *\n   * Use of this source code is governed by an MIT-style license that can be\n   * found in the LICENSE file at\n  https://angular.io/license\n   */\n  var NgModuleCompileResult = /** @class */ (function () {\n    function\n  NgModuleCompileResult(ngModuleFactoryVar) {\n      this.ngModuleFactoryVar = ngModuleFactoryVar;\n    }\n    return NgModuleCompileResult;\n  }());\n  var LOG_VAR = variable('_l');\n  var NgModuleCompiler\n  = /** @class */ (function () {\n    function NgModuleCompiler(reflector) {\n      this.reflector = reflector;\n    }\n    NgModuleCompiler.prototype.compile = function (ctx, ngModuleMeta, extraProviders) {\n      var\n  sourceSpan = typeSourceSpan('NgModule', ngModuleMeta.type);\n      var entryComponentFactories =\n  ngModuleMeta.transitiveModule.entryComponents;\n      var bootstrapComponents =\n  ngModuleMeta.bootstrapComponents;\n      var providerParser = new NgModuleProviderAnalyzer(this.reflector,\n  ngModuleMeta, extraProviders, sourceSpan);\n      var providerDefs =\n  [componentFactoryResolverProviderDef(this.reflector, ctx, 0 /* None */, entryComponentFactories)]\n  .concat(providerParser.parse().map(function (provider) { return providerDef(ctx, provider); }));\n      var ngModuleDef =\n  .map(function (_a) {\n        var providerExpr = _a.providerExpr, depsExpr = _a.depsExpr, flags = _a.flags,\n  tokenExpr = _a.tokenExpr;\n        return importExpr(Identifiers.moduleProviderDef).callFn([\n  literal(flags), tokenExpr, providerExpr, depsExpr\n        ]);\n      });\n      var ngModuleDefFactory =\n  importExpr(Identifiers.moduleDef).callFn([literalArr(providerDefs)];\n      var ngModuleDefFactory = fn([new\n  FnParam(LOG_VAR.name)], [new ReturnStatement(ngModuleDef)], INFERRED_TYPE);\n      var\n  ngModuleFactoryVar = identifierName(ngModuleMeta.type) + "NgFactory";\n      this._createNgModuleFactory(ctx, ngModuleMeta.type.reference,\n  importExpr(Identifiers.createModuleFactory).callFn([\n        ctx.importExpr(ngModuleMeta.type.reference),\n        literalArr(bootstrapComponents.map(function (id) { return ctx.importExpr(id.reference); })),\n      ]),\n  ngModuleDefFactory\n      ]);\n      if (ngModuleMeta.id) {\n        var id = typeof ngModuleMeta.id\n  === 'string' ? literal(ngModuleMeta.id) :\n        ctx.importExpr(ngModuleMeta.id);\n        var\n  registerFactoryStmt = importExpr(Identifiers.RegisterModuleFactoryFn)\n  .callFn([id,\n  variable(ngModuleFactoryVar)]);\n        ctx.statements.push(registerFactoryStmt);\n      }\n      return new NgModuleCompileResult(ngModuleFactoryVar);\n    }\n    NgModuleCompiler.prototype.createStub = function (ctx, ngModuleReference) {\n      this._createNgModuleFactory(ctx, ngModuleReference, NULL_EXPR);\n    }\n    NgModuleCompiler.prototype._createNgModuleFactory = function (ctx, reference, value) {\n      var

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ngModuleFactoryVar = identifierName({ reference: reference }) + "NgFactory";\n      var
ngModuleFactoryStmt = variable(ngModuleFactoryVar)\n      .set(value)\n      .toDeclStmt(importType(Identifiers.NgModuleFactory, [expressionType(ctx.importExpr(reference))],
[TypeModifier.Const]), [exports.StmtModifier.Final, exports.StmtModifier.Exported]);\n
ctx.statements.push(ngModuleFactoryStmt);\n    });\n    return NgModuleCompiler;\n  }());\n\n /**\n *
@license\n * Copyright Google LLC All Rights Reserved.\n * Use of this source code is governed by an
MIT-style license that can be\n * found in the LICENSE file at https://angular.io/license\n */\n
Resolves types to {@link NgModule}.\n */\n var NgModuleResolver = /** @class */ (function () {\n
function NgModuleResolver(_reflector) {\n    this._reflector = _reflector;\n  }\n
NgModuleResolver.prototype.isNgModule = function (type) {\n    return
this._reflector.annotations(type).some(createNgModule.isTypeOf);\n  };\n
NgModuleResolver.prototype.resolve = function (type, throwIfNotFound) {\n    if (throwIfNotFound === void
0) { throwIfNotFound = true; }\n    var ngModuleMeta = findLast(this._reflector.annotations(type),
createNgModule.isTypeOf);\n    if (ngModuleMeta) {\n      return ngModuleMeta;\n    }\n
else {\n    if (throwIfNotFound) {\n      throw new Error("No NgModule metadata found for '" +
stringify(type) + "'.");\n    }\n    return null;\n  }\n};\nreturn NgModuleResolver;\n
})();\n\n function debugOutputAstAsTypeScript(ast) {\n    var converter = new _TsEmitterVisitor();\n    var
ctx = EmitterVisitorContext.createRoot();\n    var asts = Array.isArray(ast) ? ast : [ast];\n
asts.forEach(function (ast) {\n    if (ast instanceof Statement) {\n      ast.visitStatement(converter, ctx);\n
    }\n    else if (ast instanceof Expression) {\n      ast.visitExpression(converter, ctx);\n    }\n
else if (ast instanceof Type$1) {\n      ast.visitType(converter, ctx);\n    }\n    else {\n      throw
new Error("Don't know how to print debug info for '" + ast);\n    }\n  });\n  return ctx.toSource();\n
}\n\n var TypeScriptEmitter = /** @class */ (function () {\n    function TypeScriptEmitter() {\n
}\n\n    TypeScriptEmitter.prototype.emitStatementsAndContext = function (genFilePath, stmts, preamble,
emitSourceMaps, referenceFilter, importFilter) {\n    if (preamble === void 0) { preamble = ""; }\n    if
(emitSourceMaps === void 0) { emitSourceMaps = true; }\n    var converter = new
_TsEmitterVisitor(referenceFilter, importFilter);\n    var ctx = EmitterVisitorContext.createRoot();\n
converter.visitAllStatements(stmts, ctx);\n    var preambleLines = preamble ? preamble.split("\\n") : [];\n
converter.reexports.forEach(function (reexports, exportedModuleName) {\n      var reexportsCode =
reexports.map(function (reexport) { return reexport.name + " as " + reexport.as; }).join(',');\n
preambleLines.push("export {" + reexportsCode + "} from " + exportedModuleName + ";" );\n
converter.importsWithPrefixes.forEach(function (prefix, importedModuleName) {\n      // Note: can't write
the real word for import as it screws up system.js auto detection...\n      preambleLines.push("imp" +\n
("ort * as " + prefix + " from " + importedModuleName + ";" ));\n      var sm =
emitSourceMaps ?\n      ctx.toSourceMapGenerator(genFilePath, preambleLines.length).toJsComment() :\n
"";\n      var lines = __spread(preambleLines, [ctx.toSource(), sm]);\n      if (sm) {\n        // always
add a newline at the end, as some tools have bugs without it.\n        lines.push("");\n      }\n
ctx.setPreambleLineCount(preambleLines.length);\n      return { sourceText: lines.join("\\n"), context: ctx };\n
});\n\n    TypeScriptEmitter.prototype.emitStatements = function (genFilePath, stmts, preamble) {\n    if
(preamble === void 0) { preamble = ""; }\n    return this.emitStatementsAndContext(genFilePath, stmts,
preamble).sourceText;\n  };\n\n    return TypeScriptEmitter;\n  }());\n\n var _TsEmitterVisitor = /** @class */
(function (_super) {\n    __extends(_TsEmitterVisitor, _super);\n    function _TsEmitterVisitor(referenceFilter,
importFilter) {\n      var _this = _super.call(this, false) || this;\n      _this.referenceFilter = referenceFilter;\n
      _this.importFilter = importFilter;\n      _this.typeExpression = 0;\n      _this.importsWithPrefixes = new
Map();\n      _this.reexports = new Map();\n      return _this;\n    }\n\n    _TsEmitterVisitor.prototype.visitType = function (t, ctx, defaultType) {\n    if (defaultType === void 0) {\n
defaultType = 'any'; }\n    if (t) {\n      this.typeExpression++;\n      t.visitType(this, ctx);\n
this.typeExpression--;\n    }\n    else {\n      ctx.print(null, defaultType);\n    }\n  };\n

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\private \");\n      }\n      ctx.print(null, \get \ + getter.name + \()\");\n
this._printColonType(getter.type, ctx);\n      ctx.println(null, \{\});\n      ctx.incIndent();\n
this.visitAllStatements(getter.body, ctx);\n      ctx.decIndent();\n      ctx.println(null, \}\");\n      };\n
_TsEmitterVisitor.prototype._visitClassConstructor = function (stmt, ctx) {\n      ctx.print(stmt,
\constructor(\");\n      this._visitParams(stmt.constructorMethod.params, ctx);\n      ctx.println(stmt, \)
{\});\n      ctx.incIndent();\n      this.visitAllStatements(stmt.constructorMethod.body, ctx);\n
ctx.decIndent();\n      ctx.println(stmt, \}\");\n      };\n      _TsEmitterVisitor.prototype._visitClassMethod =
function (method, ctx) {\n      if (method.hasModifier(exports.StmtModifier.Private)) {\n      ctx.print(null,
\private \");\n      }\n      ctx.print(null, method.name + \(\");\n      this._visitParams(method.params,
ctx);\n      ctx.print(null, \)\");\n      this._printColonType(method.type, ctx, 'void');\n      ctx.println(null,
\{\});\n      ctx.incIndent();\n      this.visitAllStatements(method.body, ctx);\n      ctx.decIndent();\n
ctx.println(null, \}\");\n      };\n      _TsEmitterVisitor.prototype.visitFunctionExpr = function (ast, ctx) {\n
if (ast.name) {\n      ctx.print(ast, 'function '); \n      ctx.print(ast, ast.name);\n      }\n
ctx.print(ast, \(\");\n      this._visitParams(ast.params, ctx);\n      ctx.print(ast, \)\");\n
this._printColonType(ast.type, ctx, 'void');\n      if (!ast.name) {\n      ctx.print(ast, \ => \");\n      }\n
ctx.println(ast, \{\});\n      ctx.incIndent();\n      this.visitAllStatements(ast.statements, ctx);\n
ctx.decIndent();\n      ctx.print(ast, \}\");\n      return null;\n      };\n
_TsEmitterVisitor.prototype.visitDeclareFunctionStmt = function (stmt, ctx) {\n      if
(stmt.hasModifier(exports.StmtModifier.Exported)) {\n      ctx.print(stmt, \export \");\n      }\n
ctx.print(stmt, \function \ + stmt.name + \(\");\n      this._visitParams(stmt.params, ctx);\n
ctx.print(stmt, \)\");\n      this._printColonType(stmt.type, ctx, 'void');\n      ctx.println(stmt, \{\});\n
ctx.incIndent();\n      this.visitAllStatements(stmt.statements, ctx);\n      ctx.decIndent();\n
ctx.println(stmt, \}\");\n      return null;\n      };\n      _TsEmitterVisitor.prototype.visitTryCatchStmt =
function (stmt, ctx) {\n      ctx.println(stmt, \try \{\});\n      ctx.incIndent();\n
this.visitAllStatements(stmt.bodyStmts, ctx);\n      ctx.decIndent();\n      ctx.println(stmt, \} catch (\ +
CATCH_ERROR_VAR$1.name + \) \{\});\n      ctx.incIndent();\n      var catchStmts =
[CATCH_STACK_VAR$1.set(CATCH_ERROR_VAR$1.prop('stack', null)).toDeclStmt(null, [\n
exports.StmtModifier.Final\n      ])].concat(stmt.catchStmts);\n      this.visitAllStatements(catchStmts,
ctx);\n      ctx.decIndent();\n      ctx.println(stmt, \}\");\n      return null;\n      };\n
_TsEmitterVisitor.prototype.visitBuiltinType = function (type, ctx) {\n      var typeStr;\n      switch
(type.name) {\n      case exports.BuiltinTypeName.Bool:\n      typeStr = 'boolean';\n      break;\n
case exports.BuiltinTypeName.Dynamic:\n      typeStr = 'any';\n      break;\n
case exports.BuiltinTypeName.Function:\n      typeStr = 'Function';\n      break;\n      case
exports.BuiltinTypeName.Number:\n      typeStr = 'number';\n      break;\n      case
exports.BuiltinTypeName.Int:\n      typeStr = 'number';\n      break;\n      case
exports.BuiltinTypeName.String:\n      typeStr = 'string';\n      break;\n      case
exports.BuiltinTypeName.None:\n      typeStr = 'never';\n      break;\n      default:\n
throw new Error("Unsupported builtin type \ + type.name);\n      }\n      ctx.print(null, typeStr);\n
return null;\n      };\n      _TsEmitterVisitor.prototype.visitExpressionType = function (ast, ctx) {\n      var _this
= this;\n      ast.value.visitExpression(this, ctx);\n      if (ast.typeParams !== null) {\n      ctx.print(null,
'<');\n      this.visitAllObjects(function (type) { return _this.visitType(type, ctx); }, ast.typeParams, ctx, ',');\n
ctx.print(null, '>');\n      }\n      return null;\n      };\n      _TsEmitterVisitor.prototype.visitArrayType
= function (type, ctx) {\n      this.visitType(type.of, ctx);\n      ctx.print(null, \[\]);\n      return null;\n
};\n      _TsEmitterVisitor.prototype.visitMapType = function (type, ctx) {\n      ctx.print(null, \{[key:
string]:\");\n      this.visitType(type.valueType, ctx);\n      ctx.print(null, \}\");\n      return null;\n
};\n      _TsEmitterVisitor.prototype.getBuiltinMethodName = function (method) {\n      var name;\n
switch (method) {\n      case exports.BuiltinMethod.ConcatArray:\n      name = 'concat';\n      break;\n
case exports.BuiltinMethod.SubscribeObservable:\n      name = 'subscribe';\n

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break;\n      case exports.BuiltinMethod.Bind:\n      name = 'bind';\n      break;\n
default:\n      throw new Error("Unknown builtin method: " + method);\n      }\n      return name;\n
};\n      _TsEmitterVisitor.prototype._visitParams = function (params, ctx) {\n      var _this = this;\n
this.visitAllObjects(function (param) {\n      ctx.print(null, param.name);\n
_this._printColonType(param.type, ctx);\n      }, params, ctx, ',');\n      };\n
_TsEmitterVisitor.prototype._visitIdentifier = function (value, typeParams, ctx) {\n      var _this = this;\n
var name = value.name, moduleName = value.moduleName;\n      if (this.referenceFilter &&\n
this.referenceFilter(value)) {\n      ctx.print(null, '(null as any)');\n      return;\n      }\n      if\n
(moduleName && (!this.importFilter || !this.importFilter(value))) {\n      var prefix =\n
this.importsWithPrefixes.get(moduleName);\n      if (prefix == null) {\n      prefix = "i" +\n
this.importsWithPrefixes.size;\n      this.importsWithPrefixes.set(moduleName, prefix);\n      }\n
ctx.print(null, prefix + ".");\n      }\n      ctx.print(null, name);\n      if (this.typeExpression > 0) {\n
// If we are in a type expression that refers to a generic type then supply\n      // the required type\n
parameters. If there were not enough type parameters\n      // supplied, supply any as the type. Outside a type\n
expression the reference\n      // should not supply type parameters and be treated as a simple value reference\n
// to the constructor function itself.\n      var suppliedParameters = typeParams || [];\n      if\n
(suppliedParameters.length > 0) {\n      ctx.print(null, "<");\n      this.visitAllObjects(function\n
(type) { return type.visitType(_this, ctx); }, typeParams, ctx, ',');\n      ctx.print(null, ">");\n      }\n
};\n      _TsEmitterVisitor.prototype._printColonType = function (type, ctx, defaultType) {\n      if\n
(type !== INFERRED_TYPE) {\n      ctx.print(null, ':');\n      this.visitType(type, ctx, defaultType);\n
};\n      }\n      return _TsEmitterVisitor;\n      }(AbstractEmitterVisitor);\n\n      /**\n      * @license\n      *\n
Copyright Google LLC All Rights Reserved.\n      *\n      * Use of this source code is governed by an MIT-style\n
license that can be\n      * found in the LICENSE file at https://angular.io/license\n      *\n      /**\n      * Resolve a\n
`Type` for {@link Pipe}.\n      *\n      * This interface can be overridden by the application developer to create custom\n
behavior.\n      *\n      * See {@link Compiler}\n      *\n      var PipeResolver = /** @class */ (function () {\n
function PipeResolver(_reflector) {\n      this._reflector = _reflector;\n      }\n
PipeResolver.prototype.isPipe = function (type) {\n      var typeMetadata =\n
this._reflector.annotations(resolveForwardRef(type));\n      return typeMetadata &&\n
typeMetadata.some(createPipe.isTypeOf);\n      };\n      /**\n      * Return {@link Pipe} for a given `Type`.\n
*\n      * PipeResolver.prototype.resolve = function (type, throwIfNotFound) {\n      if (throwIfNotFound ===\n
void 0) { throwIfNotFound = true; }\n      var metas = this._reflector.annotations(resolveForwardRef(type));\n
if (metas) {\n      var annotation = findLast(metas, createPipe.isTypeOf);\n      if (annotation) {\n
return annotation;\n      }\n      }\n      if (throwIfNotFound) {\n      throw new Error("No\n
Pipe decorator found on " + stringify(type));\n      }\n      return null;\n      };\n      return PipeResolver;\n
})();\n\n      /**\n      * Generates code that is used to type check templates.\n      *\n      var TypeCheckCompiler = /**\n      @class */ (function () {\n      function TypeCheckCompiler(options, reflector) {\n      this.options = options;\n
this.reflector = reflector;\n      }\n      /**\n      * Important notes:\n      * - This must not produce new\n
`import` statements, but only refer to types outside\n      * of the file via the variables provided via\n
externalReferenceVars.\n      * This allows Typescript to reuse the old program's structure as no imports have\n
changed.\n      * - This must not produce any exports, as this would pollute the .d.ts file\n      * and also violate\n
the point above.\n      *\n      TypeCheckCompiler.prototype.compileComponent = function (componentId,\n
component, template, usedPipes, externalReferenceVars, ctx) {\n      var _this = this;\n      var pipes = new\n
Map();\n      usedPipes.forEach(function (p) { return pipes.set(p.name, p.type.reference); });\n      var\n
embeddedViewCount = 0;\n      var viewBuilderFactory = function (parent, guards) {\n      var\n
embeddedViewIndex = embeddedViewCount++;\n      return new ViewBuilder(_this.options, _this.reflector,\n
externalReferenceVars, parent, component.type.reference, component.isHost, embeddedViewIndex, pipes, guards,\n
ctx, viewBuilderFactory);\n      };\n      var visitor = viewBuilderFactory(null, []);\n      visitor.visitAll([\n
template]);\n      return visitor.build(componentId);\n      };\n      return TypeCheckCompiler;\n      }());\n      var

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DYNAMIC_VAR_NAME = '_any';\n  var TypeCheckLocalResolver = /** @class */ (function () {\n    function
TypeCheckLocalResolver() {\n    }\n    TypeCheckLocalResolver.prototype.notifyImplicitReceiverUse =
function () { };\n    TypeCheckLocalResolver.prototype.getLocal = function (name) {\n      if (name ===
EventHandlerVars.event.name) {\n        // References to the event should not be type-checked.\n        //
TODO(chuckj): determine a better type for the event.\n        return variable(DYNAMIC_VAR_NAME);\n      }\n      return null;\n    };\n    return TypeCheckLocalResolver;\n  }());\n  var defaultResolver = new
TypeCheckLocalResolver();\n  var ViewBuilder = /** @class */ (function () {\n    function
ViewBuilder(options, reflector, externalReferenceVars, parent, component, isHostComponent,
embeddedViewIndex, pipes, guards, ctx, viewBuilderFactory) {\n      this.options = options;\n      this.reflector = reflector;\n      this.externalReferenceVars = externalReferenceVars;\n      this.parent =
parent;\n      this.component = component;\n      this.isHostComponent = isHostComponent;\n      this.embeddedViewIndex = embeddedViewIndex;\n      this.pipes = pipes;\n      this.guards = guards;\n      this.ctx = ctx;\n      this.viewBuilderFactory = viewBuilderFactory;\n      this.refOutputVars = new Map();\n      this.variables = [];\n      this.children = [];\n      this.updates = [];\n      this.actions = [];\n    }\n    ViewBuilder.prototype.getOutputVar = function (type) {\n      var varName;\n      if (type ===
this.component && this.isHostComponent) {\n        varName = DYNAMIC_VAR_NAME;\n      }\n      else if (type instanceof StaticSymbol) {\n        varName = this.externalReferenceVars.get(type);\n      }\n      else {\n        varName = DYNAMIC_VAR_NAME;\n      }\n      if (!varName) {\n        throw
new Error("Illegal State: referring to a type without a variable \"" + JSON.stringify(type));\n      }\n      return
varName;\n    };\n    ViewBuilder.prototype.getTypeGuardExpressions = function (ast) {\n      var e_1, _a,
e_2, _b;\n      var result = __spread(this.guards);\n      try {\n        for (var _c = __values(ast.directives),
_d = _c.next(); !_d.done; _d = _c.next()) {\n          var directive = _d.value;\n          try {\n            for (var _e = (e_2 = void 0, __values(directive.inputs)), _f = _e.next(); !_f.done; _f = _e.next()) {\n              var input = _f.value;\n              var guard = directive.directive.guards[input.directiveName];\n              if (guard) {\n                var useIf = guard === 'UseIf';\n                result.push({\n                  guard: guard,\n                  useIf: useIf,\n                  expression: {\n                    context: this.component,\n                    value: input.value,\n                    sourceSpan:
input.sourceSpan,\n                  },\n                });\n              }\n            }\n          }\n          catch (e_2_1) { e_2 = { error: e_2_1 }; }\n          finally {\n            try {\n              if (_f && !_f.done && (_b = _e.return)) _b.call(_e);\n            }\n            finally { if (e_2)
throw e_2.error; }\n          }\n        }\n      }\n      catch (e_1_1) { e_1 = { error: e_1_1 }; }\n      finally {\n        try {\n          if (_d && !_d.done && (_a = _c.return)) _a.call(_c);\n        }\n        finally { if (e_1) throw e_1.error; }\n      }\n      return result;\n    };\n    ViewBuilder.prototype.visitAll
= function (variables, astNodes) {\n      this.variables = variables;\n      templateVisitAll(this, astNodes);\n    };\n    ViewBuilder.prototype.build = function (componentId, targetStatements) {\n      var e_3, _a;\n      var _this = this;\n      if (targetStatements === void 0) { targetStatements = []; }\n      this.children.forEach(function (child) { return child.build(componentId, targetStatements); });\n      var
viewStmts = [variable(DYNAMIC_VAR_NAME).set(NULL_EXPR).toDeclStmnt(DYNAMIC_TYPE)];\n      var bindingCount = 0;\n      this.updates.forEach(function (expression) {\n        var _a =
_this.preprocessUpdateExpression(expression), sourceSpan = _a.sourceSpan, context = _a.context, value =
_a.value;\n        var bindingId = "\" + bindingCount++;\n        var nameResolver = context ===
_this.component ? _this : defaultResolver;\n        var _b = convertPropertyBinding(nameResolver,
variable(_this.getOutputVar(context)), value, bindingId, BindingForm.General), stmts = _b.stmts, currValExpr =
_b.currValExpr;\n        stmts.push(new ExpressionStatement(currValExpr));\n        viewStmts.push.apply(viewStmts, __spread(stmts.map(function (stmt) { return
applySourceSpanToStatementIfNeeded(stmt, sourceSpan); })));
      });\n      this.actions.forEach(function
(_a) {\n        var sourceSpan = _a.sourceSpan, context = _a.context, value = _a.value;\n        var bindingId
= "\" + bindingCount++;\n        var nameResolver = context === _this : defaultResolver;\n

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    var stmts = convertActionBinding(nameResolver, variable(_this.getOutputVar(context)), value,
bindingId).stmts;\n        viewStmts.push.apply(viewStmts, __spread(stmts.map(function (stmt) { return
applySourceSpanToStatementIfNeeded(stmt, sourceSpan); }));\n        });\n        if (this.guards.length) {\n
    var guardExpression = undefined;\n        try {\n            for (var _b = __values(this.guards), _c =
_b.next(); !_c.done; _c = _b.next()) {\n                var guard = _c.value;\n                var _d =
this.preprocessUpdateExpression(guard.expression), context = _d.context, value = _d.value;\n                var
bindingId = \"\" + bindingCount++;\n                var nameResolver = context === this.component ? this :
defaultResolver;\n                // We only support support simple expressions and ignore others as they\n
                // are unlikely to affect type narrowing.\n                var _e = convertPropertyBinding(nameResolver,
variable(this.getOutputVar(context)), value, bindingId, BindingForm.TrySimple), stmts = _e.stmts, currValExpr =
_e.currValExpr;\n                if (stmts.length === 0) {\n                    var guardClause = guard.useIf ?
currValExpr : this.ctx.importExpr(guard.guard).callFn([currValExpr]);\n                    guardExpression =
guardExpression ? guardExpression.and(guardClause) : guardClause;\n                }\n                }\n                catch (e_3_1) { e_3 = { error: e_3_1 }; }\n                finally {\n                    try {\n                        if (_c
&& !_c.done && (_a = _b.return)) _a.call(_b);\n                    }\n                    finally { if (e_3) throw e_3.error; }\n                }\n                if (guardExpression) {\n                    viewStmts = [new IfStmt(guardExpression, viewStmts)];\n                }\n                }\n                var viewName = \"_View_\" + componentId + \"_\" + this.embeddedViewIndex;\n                var viewFactory = new DeclareFunctionStmt(viewName, [], viewStmts);\n                targetStatements.push(viewFactory);\n                return targetStatements;\n            });\n        }\n        ViewBuilder.prototype.visitBoundText = function (ast, context) {\n            var _this = this;\n            var
astWithSource = ast.value;\n            var inter = astWithSource.ast;\n            inter.expressions.forEach(function (expr)
{ return _this.updates.push({ context: _this.component, value: expr, sourceSpan: ast.sourceSpan }); });\n        });\n        ViewBuilder.prototype.visitEmbeddedTemplate = function (ast, context) {\n
this.visitElementOrTemplate(ast);\n            // Note: The old view compiler used to use an `any` type\n            // for
the context in any embedded view.\n            // We keep this behavior behind a flag for now.\n            if
(this.options.fullTemplateTypeCheck) {\n                // Find any applicable type guards. For example, NgIf has a type
guard on ngIf\n                // (see NgIf.ngIfTypeGuard) that can be used to indicate that a template is only\n
// stamped out if ngIf is truthy so any bindings in the template can assume that,\n                // if a nullable type is
used for ngIf, that expression is not null or undefined.\n                var guards = this.getTypeGuardExpressions(ast);\n
                var childVisitor = this.viewBuilderFactory(this, guards);\n                this.children.push(childVisitor);\n
                childVisitor.visitAll(ast.variables, ast.children);\n            }\n        });\n        ViewBuilder.prototype.visitElement =
function (ast, context) {\n            var _this = this;\n            this.visitElementOrTemplate(ast);\n            var inputDefs
= [];\n            var updateRendererExpressions = [];\n            var outputDefs = [];\n            ast.inputs.forEach(function
(inputAst) {\n                _this.updates.push({ context: _this.component, value: inputAst.value, sourceSpan:
inputAst.sourceSpan });\n            });\n            templateVisitAll(this, ast.children);\n        });\n        ViewBuilder.prototype.visitElementOrTemplate = function (ast) {\n            var _this = this;\n
ast.directives.forEach(function (dirAst) {\n                _this.visitDirective(dirAst);\n            });\n            ast.references.forEach(function (ref) {\n                var outputVarType = null;\n                // Note: The old view
compiler used to use an `any` type\n                // for directives exposed via `exportAs`.\n                // We keep this
behavior behind a flag for now.\n                if (ref.value && ref.value.identifier &&
_this.options.fullTemplateTypeCheck) {\n                    outputVarType = ref.value.identifier.reference;\n                }\n                else {\n                    outputVarType = exports.BuiltinTypeName.Dynamic;\n                }\n                _this.refOutputVars.set(ref.name, outputVarType);\n            });\n            ast.outputs.forEach(function (outputAst)
{\n                _this.actions.push({ context: _this.component, value: outputAst.handler, sourceSpan:
outputAst.sourceSpan });\n            });\n        });\n        ViewBuilder.prototype.visitDirective = function (dirAst) {\n            var _this = this;\n            var dirType = dirAst.directive.type.reference;\n            dirAst.inputs.forEach(function
(input) { return _this.updates.push({ context: _this.component, value: input.value, sourceSpan: input.sourceSpan });
});\n            // Note: The old view compiler used to use an `any` type\n            // for expressions in host properties /

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events.\n      // We keep this behavior behind a flag for now.\n      if (this.options.fullTemplateTypeCheck)
{\n      dirAst.hostProperties.forEach(function (inputAst) { return _this.updates.push({ context: dirType,
value: inputAst.value, sourceSpan: inputAst.sourceSpan }); });\n      dirAst.hostEvents.forEach(function
(hostEventAst) { return _this.actions.push({\n      context: dirType,\n      value:
hostEventAst.handler,\n      sourceSpan: hostEventAst.sourceSpan\n      }); });\n      }\n      });\n
  ViewBuilder.prototype.notifyImplicitReceiverUse = function () { };\n  ViewBuilder.prototype.getLocal =
function (name) {\n      if (name === EventHandlerVars.event.name) {\n      return
variable(this.getOutputVar(exports.BuiltinTypeName.Dynamic));\n      }\n      for (var currBuilder = this;
currBuilder; currBuilder = currBuilder.parent) {\n      var outputVarType = void 0;\n      // check
references\n      outputVarType = currBuilder.refOutputVars.get(name);\n      if (outputVarType ===
null) {\n      // check variables\n      var varAst = currBuilder.variables.find(function (varAst) {
return varAst.name === name; });\n      if (varAst) {\n      outputVarType =
exports.BuiltinTypeName.Dynamic;\n      }\n      }\n      if (outputVarType !== null) {\n
return variable(this.getOutputVar(outputVarType));\n      }\n      }\n      return null;\n      };\n
ViewBuilder.prototype.pipeOutputVar = function (name) {\n      var pipe = this.pipes.get(name);\n      if
(!pipe) {\n      throw new Error("Illegal State: Could not find pipe '" + name + "' in template of '" +
this.component);\n      }\n      return this.getOutputVar(pipe);\n      };\n
ViewBuilder.prototype.preprocessUpdateExpression = function (expression) {\n      var _this = this;\n
return {\n      sourceSpan: expression.sourceSpan,\n      context: expression.context,\n      value:
convertPropertyBindingBuiltins({\n      createLiteralArrayConverter: function (argCount) { return function
(args) {\n      var arr = literalArr(args);\n      // Note: The old view compiler used to use an
`any` type\n      // for arrays.\n      return _this.options.fullTemplateTypeCheck ? arr :
arr.cast(DYNAMIC_TYPE);\n      }; },\n      createLiteralMapConverter: function (keys) { return
function (values) {\n      var entries = keys.map(function (k, i) { return ({\n      key: k.key,\n
value: values[i],\n      quoted: k.quoted,\n      }); });\n      var
map = literalMap(entries);\n      // Note: The old view compiler used to use an `any` type\n
// for maps.\n      return _this.options.fullTemplateTypeCheck ? map : map.cast(DYNAMIC_TYPE);\n
}; },\n      createPipeConverter: function (name, argCount) { return function (args) {\n
// Note: The old view compiler used to use an `any` type\n      // for pipes.\n      var pipeExpr
= _this.options.fullTemplateTypeCheck ?\n      variable(_this.pipeOutputVar(name)) : \n
variable(_this.getOutputVar(exports.BuiltinTypeName.Dynamic));\n      return
pipeExpr.callMethod('transform', args);\n      }; },\n      }, expression.value)\n      });\n      });\n
ViewBuilder.prototype.visitNgContent = function (ast, context) { };\n  ViewBuilder.prototype.visitText =
function (ast, context) { };\n  ViewBuilder.prototype.visitDirectiveProperty = function (ast, context) { };\n
ViewBuilder.prototype.visitReference = function (ast, context) { };\n  ViewBuilder.prototype.visitVariable =
function (ast, context) { };\n  ViewBuilder.prototype.visitEvent = function (ast, context) { };\n
ViewBuilder.prototype.visitElementProperty = function (ast, context) { };\n  ViewBuilder.prototype.visitAttr =
function (ast, context) { };\n  return ViewBuilder;\n  }());\n  var CLASS_ATTR$1 = 'class';\n  var
STYLE_ATTR = 'style';\n  var IMPLICIT_TEMPLATE_VAR = "\\$implicit";\n  var ViewCompileResult = /**
@class */ (function () {\n      function ViewCompileResult(viewClassVar, rendererTypeVar) {\n
this.viewClassVar = viewClassVar;\n      this.rendererTypeVar = rendererTypeVar;\n      }\n      return
ViewCompileResult;\n  }());\n  var ViewCompiler = /** @class */ (function () {\n      function
ViewCompiler(_reflector) {\n      this._reflector = _reflector;\n      }\n
ViewCompiler.prototype.compileComponent = function (outputCtx, component, template, styles, usedPipes) {\n
var _a;\n      var _this = this;\n      var embeddedViewCount = 0;\n      var renderComponentVarName
= undefined;\n      if (!component.isHost) {\n      var template_1 = component.template;\n      var
customRenderData = [];\n      if (template_1.animations && template_1.animations.length) {\n
customRenderData.push(new LiteralMapEntry('animation', convertValueToOutputAst(outputCtx,

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template_1.animations), true));\n          }\n          var renderComponentVar =
variable(rendererTypeName(component.type.reference));\n          renderComponentVarName =
renderComponentVar.name;\n          outputCtx.statements.push(renderComponentVar\n
.set(importExpr(Identifiers.createRendererType2).callFn([\n          new
LiteralMapEntry('encapsulation', literal(template_1.encapsulation), false),\n          new
LiteralMapEntry('styles', styles, false),\n          new LiteralMapEntry('data', new
LiteralMapExpr(customRenderData), false)\n          ]))\n
.toDeclStmt(importType(Identifiers.RendererType2), [exports.StmtModifier.Final,
exports.StmtModifier.Exported]));\n          }\n          var viewBuilderFactory = function (parent) {\n          var
embeddedViewIndex = embeddedViewCount++;\n          return new ViewBuilder$1(_this._reflector, outputCtx,
parent, component, embeddedViewIndex, usedPipes, viewBuilderFactory);\n          };\n          var visitor =
viewBuilderFactory(null);\n          visitor.visitAll([], template);\n          (_a = outputCtx.statements).push.apply(_a,
__spread(visitor.build()));\n          return new ViewCompileResult(visitor.viewName,
renderComponentVarName);\n          };\n          return ViewCompiler;\n          }());\n          var LOG_VAR$1 = variable('_l');\n          var VIEW_VAR = variable('_v');\n          var CHECK_VAR = variable('_ck');\n          var COMP_VAR = variable('_co');\n          var EVENT_NAME_VAR = variable('en');\n          var ALLOW_DEFAULT_VAR = variable('"ad");\n          var
ViewBuilder$1 = /** @class */ (function () {\n          function ViewBuilder(reflector, outputCtx, parent, component,
embeddedViewIndex, usedPipes, viewBuilderFactory) {\n          this.reflector = reflector;\n          this.outputCtx =
outputCtx;\n          this.parent = parent;\n          this.component = component;\n          this.embeddedViewIndex =
embeddedViewIndex;\n          this.usedPipes = usedPipes;\n          this.viewBuilderFactory =
viewBuilderFactory;\n          this.nodes = [];\n          this.purePipeNodeIndices = Object.create(null);\n          //
Need Object.create so that we don't have builtin values...\n          this.refNodeIndices = Object.create(null);\n          this.variables = [];\n          this.children = [];\n          // TODO(tbosch): The old view compiler used to use an `any`
type\n          // for the context in any embedded view. We keep this behavior for now\n          // to be able to
introduce the new view compiler without too many errors.\n          this.compType = this.embeddedViewIndex > 0
?\n          DYNAMIC_TYPE :\n          expressionType(outputCtx.importExpr(this.component.type.reference));\n          this.viewName =
viewClassName(this.component.type.reference, this.embeddedViewIndex);\n          }\n          ViewBuilder.prototype.visitAll = function (variables, astNodes) {\n          var _this = this;\n          this.variables =
variables;\n          // create the pipes for the pure pipes immediately, so that we know their indices.\n          if
(!this.parent) {\n          this.usedPipes.forEach(function (pipe) {\n          if (pipe.pure) {\n
_this.purePipeNodeIndices[pipe.name] = _this._createPipe(null, pipe);\n          }\n          });\n          }\n          if (!this.parent) {\n          this.component.viewQueries.forEach(function (query, queryIndex) {\n          //
Note: queries start with id 1 so we can use the number in a Bloom filter!\n          var queryId = queryIndex +
1;\n          var bindingType = query.first ? 0 /* First */ : 1 /* All */;\n          var flags = 134217728 /*
TypeViewQuery */ | calcStaticDynamicQueryFlags(query);\n          _this.nodes.push(function () { return ({\n
sourceSpan: null,\n          nodeFlags: flags,\n          nodeDef:
importExpr(Identifiers.queryDef).callFn([\n          literal(flags), literal(queryId),\n          new
LiteralMapExpr([new LiteralMapEntry(query.propertyName, literal(bindingType), false)])\n          ]))\n          }); });\n          });\n          }\n          templateVisitAll(this, astNodes);\n          if (this.parent &&
(astNodes.length === 0 || needsAdditionalRootNode(astNodes))) {\n          // if the view is an embedded view,
then we need to add an additional root node in some cases\n          this.nodes.push(function () { return ({\n
sourceSpan: null,\n          nodeFlags: 1 /* TypeElement */,\n          nodeDef:
importExpr(Identifiers.anchorDef).callFn([\n          literal(0 /* None */), NULL_EXPR, NULL_EXPR,\n          literal(0)\n          ])\n          }); });\n          }\n          });\n          ViewBuilder.prototype.build = function
(targetStatements) {\n          if (targetStatements === void 0) { targetStatements = []; }\n          this.children.forEach(function (child) { return child.build(targetStatements); });\n          var _a =
this._createNodeExpressions(), updateRendererStmts = _a.updateRendererStmts, updateDirectivesStmts =

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_a.updateDirectivesStmts, nodeDefExprs = _a.nodeDefExprs;\n      var updateRendererFn =
this._createUpdateFn(updateRendererStmts);\n      var updateDirectivesFn =
this._createUpdateFn(updateDirectivesStmts);\n      var viewFlags = 0 /* None */;\n      if (!this.parent &&
this.component.changeDetection === ChangeDetectionStrategy.OnPush) {\n        viewFlags |= 2 /* OnPush
*/;\n      }\n      var viewFactory = new DeclareFunctionStmt(this.viewName, [new
FnParam(LOG_VAR.$1.name)], [new ReturnStatement(importExpr(Identifiers.viewDef).callFn([\n
literal(viewFlags),\n        literalArr(nodeDefExprs),\n        updateDirectivesFn,\n        updateRendererFn,\n        ])], importType(Identifiers.ViewDefinition), this.embeddedViewIndex === 0 ?
[exports.StmtModifier.Exported] : []);\n      targetStatements.push(viewFactory);\n      return
targetStatements;\n    };\n    ViewBuilder.prototype._createUpdateFn = function (updateStmts) {\n      var
updateFn;\n      if (updateStmts.length > 0) {\n        var preStmts = [];\n        if (!this.component.isHost
&& findReadVarNames(updateStmts).has(COMP_VAR.name)) {\n          preStmts.push(COMP_VAR.set(VIEW_VAR.prop('component')).toDeclStmt(this.compType));\n        }\n        updateFn = fn([\n          new FnParam(CHECK_VAR.name, INFERRED_TYPE),\n          new
FnParam(VIEW_VAR.name, INFERRED_TYPE)\n        ], __spread(preStmts, updateStmts),
INFERRED_TYPE);\n      }\n      else {\n        updateFn = NULL_EXPR;\n      }\n      return
updateFn;\n    };\n    ViewBuilder.prototype.visitNgContent = function (ast, context) {\n      //
ngContentDef(ngContentIndex: number, index: number): NodeDef;\n      this.nodes.push(function () { return
({\n        sourceSpan: ast.sourceSpan,\n        nodeFlags: 8 /* TypeNgContent */,\n        nodeDef:
importExpr(Identifiers.ngContentDef)\n          .callFn([literal(ast.ngContentIndex), literal(ast.index)])\n
}); });\n    };\n    ViewBuilder.prototype.visitText = function (ast, context) {\n      // Static text nodes have
no check function\n      var checkIndex = -1;\n      this.nodes.push(function () { return ({\n        sourceSpan: ast.sourceSpan,\n        nodeFlags: 2 /* TypeText */,\n        nodeDef:
importExpr(Identifiers.textDef).callFn([\n          literal(checkIndex),\n          literal(ast.ngContentIndex),\n          literalArr([literal(ast.value)]),\n          ])\n        }); });\n    };\n    ViewBuilder.prototype.visitBoundText = function (ast, context) {\n      var _this = this;\n      var nodeIndex =
this.nodes.length;\n      // reserve the space in the nodeDefs array\n      this.nodes.push(null);\n      var
astWithSource = ast.value;\n      var inter = astWithSource.ast;\n      var updateRendererExpressions =
inter.expressions.map(function (expr, bindingIndex) { return _this._preprocessUpdateExpression({ nodeIndex:
nodeIndex, bindingIndex: bindingIndex, sourceSpan: ast.sourceSpan, context: COMP_VAR, value: expr }); });\n      // Check index is the same as the node index during compilation\n      // They might only differ at runtime\n      var checkIndex = nodeIndex;\n      this.nodes[nodeIndex] = function () { return ({\n        sourceSpan:
ast.sourceSpan,\n        nodeFlags: 2 /* TypeText */,\n        nodeDef:
importExpr(Identifiers.textDef).callFn([\n          literal(checkIndex),\n          literal(ast.ngContentIndex),\n          literalArr(inter.strings.map(function (s) { return literal(s); })),\n          ])\n        }); });\n    };\n    ViewBuilder.prototype.visitEmbeddedTemplate = function (ast, context) {\n      var _this = this;\n      var
nodeIndex = this.nodes.length;\n      // reserve the space in the nodeDefs array\n      this.nodes.push(null);\n      var _a = this._visitElementOrTemplate(nodeIndex, ast), flags = _a.flags, queryMatchesExpr =
_a.queryMatchesExpr, hostEvents = _a.hostEvents;\n      var childVisitor = this.viewBuilderFactory(this);\n      this.children.push(childVisitor);\n      childVisitor.visitAll(ast.variables, ast.children);\n      var childCount =
this.nodes.length - nodeIndex - 1;\n      // anchorDef\n      // flags: NodeFlags, matchedQueries: [string,
QueryValueType][], ngContentIndex: number,\n      // childCount: number, handleEventFn?:
ElementHandleEventFn, templateFactory?:\n      // ViewDefinitionFactory): NodeDef;\n      this.nodes[nodeIndex] = function () { return ({\n        sourceSpan: ast.sourceSpan,\n        nodeFlags: 1 /*
TypeElement */ | flags,\n        nodeDef: importExpr(Identifiers.anchorDef).callFn([\n          literal(flags),\n          queryMatchesExpr,\n          literal(ast.ngContentIndex),\n          literal(childCount),\n          _this._createElementHandleEventFn(nodeIndex, hostEvents),\n

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var queryMatchExprs = [];\n      ast.queryMatches.forEach(function (match) {\n          var valueType =
undefined;\n          if (tokenReference(match.value) ===\n
_this.reflector.resolveExternalReference(Identifiers.ElementRef)) {\n              valueType = 0 /* ElementRef */;\n
          }\n          else if (tokenReference(match.value) ===\n
_this.reflector.resolveExternalReference(Identifiers.ViewContainerRef)) {\n              valueType = 3 /*
ViewContainerRef */;\n          }\n          else if (tokenReference(match.value) ===\n
_this.reflector.resolveExternalReference(Identifiers.TemplateRef)) {\n              valueType = 2 /* TemplateRef
*/;\n          }\n          if (valueType !== null) {\n
queryMatchExprs.push(literalArr([literal(match.queryId), literal(valueType)]));\n          }\n          });\n
ast.references.forEach(function (ref) {\n          var valueType = undefined;\n          if (!ref.value) {\n
valueType = 1 /* RenderElement */;\n          }\n          else if (tokenReference(ref.value) ===\n
_this.reflector.resolveExternalReference(Identifiers.TemplateRef)) {\n              valueType = 2 /* TemplateRef
*/;\n          }\n          if (valueType !== null) {\n              _this.refNodeIndices[ref.name] = nodeIndex;\n
queryMatchExprs.push(literalArr([literal(ref.name), literal(valueType)]));\n          }\n          });\n
ast.outputs.forEach(function (outputAst) {\n          hostEvents.push({ context: COMP_VAR, eventAst:
outputAst, dirAst: null });\n          });\n          return {\n              flags: flags,\n              usedEvents:
Array.from(usedEvents.values()),\n              queryMatchesExpr: queryMatchExprs.length ?
literalArr(queryMatchExprs) : NULL_EXPR,\n              hostBindings: hostBindings,\n              hostEvents:
hostEvents\n          };\n          });\n          ViewBuilder.prototype._visitDirective = function (providerAst, dirAst, refs,
queryMatches, usedEvents) {\n          var _this = this;\n          var nodeIndex = this.nodes.length;\n          //
reserve the space in the nodeDefs array so we can add children\n          this.nodes.push(null);\n
dirAst.directive.queries.forEach(function (query, queryIndex) {\n          var queryId =
dirAst.contentQueryStartId + queryIndex;\n          var flags = 67108864 /* TypeContentQuery */ |
calcStaticDynamicQueryFlags(query);\n          var bindingType = query.first ? 0 /* First */ : 1 /* All */;\n
_this.nodes.push(function () { return ({\n              sourceSpan: dirAst.sourceSpan,\n              nodeFlags:
flags,\n              nodeDef: importExpr(Identifiers.queryDef).callFn([\n                  literal(flags),
literal(queryId),\n                  new LiteralMapExpr([new LiteralMapEntry(query.propertyName,
literal(bindingType), false)]),\n                  ]),\n              }); });\n          });\n          // Note: the operation below
might also create new nodeDefs,\n          // but we don't want them to be a child of a directive,\n          // as they
might be a provider/pipe on their own.\n          // I.e. we only allow queries as children of directives nodes.\n
var childCount = this.nodes.length - nodeIndex - 1;\n          var _a = this._visitProviderOrDirective(providerAst,
queryMatches), flags = _a.flags, queryMatchExprs = _a.queryMatchExprs, providerExpr = _a.providerExpr,
depsExpr = _a.depsExpr;\n          refs.forEach(function (ref) {\n          if (ref.value &&
tokenReference(ref.value) === tokenReference(providerAst.token)) {\n              _this.refNodeIndices[ref.name]
= nodeIndex;\n              queryMatchExprs.push(literalArr([literal(ref.name), literal(4 /* Provider */)]));\n
          }\n          });\n          if (dirAst.directive.isComponent) {\n              flags |= 32768 /* Component */;\n
          }\n          var inputDefs = dirAst.inputs.map(function (inputAst, inputIndex) {\n          var mapValue =
literalArr([literal(inputIndex), literal(inputAst.directiveName)]);\n          // Note: it's important to not quote the
key so that we can capture renames by minifiers!\n          return new LiteralMapEntry(inputAst.directiveName,
mapValue, false);\n          });\n          var outputDefs = [];\n          var dirMeta = dirAst.directive;\n
Object.keys(dirMeta.outputs).forEach(function (propName) {\n          var eventName =
dirMeta.outputs[propName];\n          if (usedEvents.has(eventName)) {\n              // Note: it's important to not
quote the key so that we can capture renames by minifiers!\n              outputDefs.push(new
LiteralMapEntry(propName, literal(eventName), false));\n          }\n          });\n          var
updateDirectiveExpressions = [];\n          if (dirAst.inputs.length || (flags & (262144 /* DoCheck */ | 65536 /*
OnInit */) > 0)) {\n              updateDirectiveExpressions =\n              dirAst.inputs.map(function (input,
bindingIndex) { return _this._preprocessUpdateExpression({\n                  nodeIndex: nodeIndex,\n
bindingIndex: bindingIndex,\n                  sourceSpan: input.sourceSpan,\n                  context:

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COMP_VAR,\n                value: input.value\n                }); });\n                }\n                var dirContextExpr =
importExpr(Identifiers.nodeValue).callFn([VIEW_VAR, literal(nodeIndex)]);\n                var hostBindings =
dirAst.hostProperties.map(function (inputAst) { return ({\n                context: dirContextExpr,\n                dirAst:
dirAst,\n                inputAst: inputAst,\n                }); });\n                var hostEvents = dirAst.hostEvents.map(function
(hostEventAst) { return ({\n                context: dirContextExpr,\n                eventAst: hostEventAst,\n                dirAst: dirAst,\n                }); });\n                // Check index is the same as the node index during compilation\n                //
They might only differ at runtime\n                var checkIndex = nodeIndex;\n                this.nodes[nodeIndex] = function
() { return ({\n                sourceSpan: dirAst.sourceSpan,\n                nodeFlags: 16384 /* TypeDirective */ | flags,\n                nodeDef: importExpr(Identifiers.directiveDef).callFn([\n                literal(checkIndex),\n                literal(flags),\n                queryMatchExprs.length ? literalArr(queryMatchExprs) : NULL_EXPR,\n                literal(childCount),\n                providerExpr,\n                depsExpr,\n                inputDefs.length ? new
LiteralMapExpr(inputDefs) : NULL_EXPR,\n                outputDefs.length ? new LiteralMapExpr(outputDefs) :
NULL_EXPR,\n                ]),\n                updateDirectives: updateDirectiveExpressions,\n                directive:
dirAst.directive.type,\n                }); });\n                return { hostBindings: hostBindings, hostEvents: hostEvents };
\n                });\n                ViewBuilder.prototype._visitProvider = function (providerAst, queryMatches) {\n
this._addProviderNode(this._visitProviderOrDirective(providerAst, queryMatches));\n                });\n                ViewBuilder.prototype._visitComponentFactoryResolverProvider = function (directives) {\n                var
componentDirMeta = directives.find(function (dirAst) { return dirAst.directive.isComponent; });\n                if
(componentDirMeta && componentDirMeta.directive.entryComponents.length) {\n                var _a =
componentFactoryResolverProviderDef(this.reflector, this.outputCtx, 8192 /* PrivateProvider */,
componentDirMeta.directive.entryComponents), providerExpr = _a.providerExpr, depsExpr = _a.depsExpr, flags =
_a.flags, tokenExpr = _a.tokenExpr;\n                this._addProviderNode({\n                providerExpr:
providerExpr,\n                depsExpr: depsExpr,\n                flags: flags,\n                tokenExpr: tokenExpr,\n                queryMatchExprs: [],\n                sourceSpan: componentDirMeta.sourceSpan\n                });\n                }\n                });\n                ViewBuilder.prototype._addProviderNode = function (data) {\n                // providerDef\n                //
flags: NodeFlags, matchedQueries: [string, QueryValueType][], token:any,\n                // value: any, deps:
([DepFlags, any] | any)[]): NodeDef;\n                this.nodes.push(function () { return ({\n                sourceSpan:
data.sourceSpan,\n                nodeFlags: data.flags,\n                nodeDef:
importExpr(Identifiers.providerDef).callFn([\n                literal(data.flags),\n                data.queryMatchExprs.length ? literalArr(data.queryMatchExprs) : NULL_EXPR,\n                data.tokenExpr,\n                data.providerExpr, data.depsExpr\n                ])\n                }); });\n                });\n                ViewBuilder.prototype._visitProviderOrDirective = function (providerAst, queryMatches) {\n                var flags = 0 /*
None */;\n                var queryMatchExprs = [];\n                queryMatches.forEach(function (match) {\n                if
(tokenReference(match.value) === tokenReference(providerAst.token)) {\n                queryMatchExprs.push(literalArr([literal(match.queryId), literal(4 /* Provider */)]));\n                }\n                });\n                var _a = providerDef(this.outputCtx, providerAst), providerExpr = _a.providerExpr, depsExpr = _a.depsExpr,
providerFlags = _a.flags, tokenExpr = _a.tokenExpr;\n                return {\n                flags: flags | providerFlags,\n                queryMatchExprs: queryMatchExprs,\n                providerExpr: providerExpr,\n                depsExpr: depsExpr,\n                tokenExpr: tokenExpr,\n                sourceSpan: providerAst.sourceSpan\n                });\n                });\n                ViewBuilder.prototype.getLocal = function (name) {\n                if (name === EventHandlerVars.event.name) {\n                return EventHandlerVars.event;\n                }\n                var currViewExpr = VIEW_VAR;\n                for (var
currBuilder = this; currBuilder; currBuilder = currBuilder.parent,\n                currViewExpr =
currViewExpr.prop('parent').cast(DYNAMIC_TYPE)) {\n                // check references\n                var refNodeIndex
= currBuilder.refNodeIndices[name];\n                if (refNodeIndex !== null) {\n                return
importExpr(Identifiers.nodeValue).callFn([currViewExpr, literal(refNodeIndex)]);\n                }\n                // check
variables\n                var varAst = currBuilder.variables.find(function (varAst) { return varAst.name === name; });\n                if (varAst) {\n                var varValue = varAst.value || IMPLICIT_TEMPLATE_VAR;\n                return currViewExpr.prop('context').prop(varValue);\n                }\n                }\n                return null;\n                });\n

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ViewBuilder.prototype.notifyImplicitReceiverUse = function () {\n      // Not needed in View Engine as View
Engine walks through the generated\n      // expressions to figure out if the implicit receiver is used and needs\n
      // to be generated as part of the pre-update statements.\n      };\n
ViewBuilder.prototype._createLiteralArrayConverter = function (sourceSpan, argCount) {\n      if (argCount
=== 0) {\n          var valueExpr_1 = importExpr(Identifiers.EMPTY_ARRAY);\n          return function () {\n
return valueExpr_1; };\n      }\n      var checkIndex = this.nodes.length;\n      this.nodes.push(function () {\n
return ({\n          sourceSpan: sourceSpan,\n          nodeFlags: 32 /* TypePureArray */,\n          nodeDef:
importExpr(Identifiers.pureArrayDef).callFn([\n          literal(checkIndex),\n          literal(argCount),\n
          ])\n      }); });\n      return function (args) { return callCheckStmt(checkIndex, args); }; }\n
ViewBuilder.prototype._createLiteralMapConverter = function (sourceSpan, keys) {\n      if (keys.length === 0)
{\n          var valueExpr_2 = importExpr(Identifiers.EMPTY_MAP);\n          return function () { return
valueExpr_2; }\n      }\n      var map = literalMap(keys.map(function (e, i) { return
(Object.assign(Object.assign({}, e), { value: literal(i) })); }));\n      var checkIndex = this.nodes.length;\n
this.nodes.push(function () { return ({\n          sourceSpan: sourceSpan,\n          nodeFlags: 64 /*
TypePureObject */,\n          nodeDef: importExpr(Identifiers.pureObjectDef).callFn([\n
literal(checkIndex),\n          map,\n          ])\n      }); });\n      return function (args) { return
callCheckStmt(checkIndex, args); }; }\n
ViewBuilder.prototype._createPipeConverter = function
(expression, name, argCount) {\n      var pipe = this.usedPipes.find(function (pipeSummary) { return
pipeSummary.name === name; });\n      if (pipe.pure) {\n          var checkIndex_1 = this.nodes.length;\n
this.nodes.push(function () { return ({\n          sourceSpan: expression.sourceSpan,\n
nodeFlags: 128 /* TypePurePipe */,\n          nodeDef: importExpr(Identifiers.purePipeDef).callFn([\n
literal(checkIndex_1),\n          literal(argCount),\n          ])\n      }); });\n      // find
underlying pipe in the component view\n      var compViewExpr = VIEW_VAR;\n      var compBuilder
= this;\n      while (compBuilder.parent) {\n          compBuilder = compBuilder.parent;\n
compViewExpr = compViewExpr.prop('parent').cast(DYNAMIC_TYPE);\n      }\n      var
pipeNodeIndex = compBuilder.purePipeNodeIndices[name];\n      var pipeValueExpr_1 =
importExpr(Identifiers.nodeValue).callFn([compViewExpr, literal(pipeNodeIndex)]);\n      return function
(args) { return callUnwrapValue(expression.nodeIndex, expression.bindingIndex, callCheckStmt(checkIndex_1,
[pipeValueExpr_1].concat(args))); }\n      } else {\n          var nodeIndex =
this._createPipe(expression.sourceSpan, pipe);\n          var nodeValueExpr_1 =
importExpr(Identifiers.nodeValue).callFn([VIEW_VAR, literal(nodeIndex)]);\n          return function (args) {\n
return callUnwrapValue(expression.nodeIndex, expression.bindingIndex, nodeValueExpr_1.callMethod('transform',
args)); }\n      }\n      }\n      ViewBuilder.prototype._createPipe = function (sourceSpan, pipe) {\n      var
_this = this;\n      var nodeIndex = this.nodes.length;\n      var flags = 0 /* None */;\n
pipe.type.lifecycleHooks.forEach(function (lifecycleHook) {\n          // for pipes, we only support
ngOnDestroy\n          if (lifecycleHook === LifecycleHooks.OnDestroy) {\n          flags |=
lifecycleHookToNodeFlag(lifecycleHook);\n          }\n      });\n      var depExprs =
pipe.type.diDeps.map(function (diDep) { return depDef(_this.outputCtx, diDep); });\n      // function pipeDef(\n
      // flags: NodeFlags, ctor: any, deps: ([DepFlags, any] | any)[]): NodeDef\n      this.nodes.push(function () {\n
return ({\n          sourceSpan: sourceSpan,\n          nodeFlags: 16 /* TypePipe */,\n          nodeDef:
importExpr(Identifiers.pipeDef).callFn([\n          literal(flags),
_this.outputCtx.importExpr(pipe.type.reference), literalArr(depExprs)\n          ])\n      }); });\n      return
nodeIndex;\n      });\n      /**\n      * For the AST in `UpdateExpression.value`:\n      * - create nodes for pipes,
literal arrays and, literal maps,\n      * - update the AST to replace pipes, literal arrays and, literal maps with calls
to check fn.\n      *\n      * WARNING: This might create new nodeDefs (for pipes and literal arrays and literal
maps)!\n      *\n      ViewBuilder.prototype._preprocessUpdateExpression = function (expression) {\n      var
_this = this;\n      return {\n          nodeIndex: expression.nodeIndex,\n          bindingIndex:
expression.bindingIndex,\n          sourceSpan: expression.sourceSpan,\n          context: expression.context,\n

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    value: convertPropertyBindingBuiltins({\n
        createLiteralArrayConverter: function (argCount) {\n
return _this._createLiteralArrayConverter(expression.sourceSpan, argCount); },\n
createLiteralMapConverter: function (keys) {\n
return _this._createLiteralMapConverter(expression.sourceSpan,\n
keys); },\n
createPipeConverter: function (name, argCount) {\n
return\n
_this._createPipeConverter(expression, name, argCount); }\n
}, expression.value)\n
};\n
};\n
ViewBuilder.prototype._createNodeExpressions = function () {\n
var self = this;\n
var\n
updateBindingCount = 0;\n
var updateRendererStmts = [];\n
var updateDirectivesStmts = [];\n
var nodeDefExprs = this.nodes.map(function (factory, nodeIndex) {\n
var _a = factory(), nodeDef =\n
_a.nodeDef, nodeFlags = _a.nodeFlags, updateDirectives = _a.updateDirectives, updateRenderer =\n
_a.updateRenderer, sourceSpan = _a.sourceSpan;\n
if (updateRenderer) {\n
updateRendererStmts.push.apply(updateRendererStmts, __spread(createUpdateStatements(nodeIndex, sourceSpan,\n
updateRenderer, false)));\n
}\n
if (updateDirectives) {\n
updateDirectivesStmts.push.apply(updateDirectivesStmts, __spread(createUpdateStatements(nodeIndex,\n
sourceSpan, updateDirectives, (nodeFlags & (262144 /* DoCheck */ | 65536 /* OnInit */) > 0)));\n
}\n
// We use a comma expression to call the log function before\n
// the nodeDef function, but still use\n
the result of the nodeDef function\n
// as the value.\n
// Note: We only add the logger to elements\n
/ text nodes,\n
// so we don't generate too much code.\n
var logWithNodeDef = nodeFlags & 3 /*\n
CatRenderNode */ ?\n
new CommaExpr([LOG_VAR$1.callFn([], callFn([], nodeDef))] :)\n
nodeDef);\n
return applySourceSpanToExpressionIfNeeded(logWithNodeDef, sourceSpan);\n
});\n
return { updateRendererStmts: updateRendererStmts, updateDirectivesStmts: updateDirectivesStmts,\n
nodeDefExprs: nodeDefExprs }; }\n
function createUpdateStatements(nodeIndex, sourceSpan, expressions,\n
allowEmptyExprs) {\n
var updateStmts = [];\n
var exprs = expressions.map(function (_a) {\n
var sourceSpan = _a.sourceSpan, context = _a.context, value = _a.value;\n
var bindingId = "" +\n
updateBindingCount++;\n
var nameResolver = context === COMP_VAR ? self : null;\n
var\n
_b = convertPropertyBinding(nameResolver, context, value, bindingId, BindingForm.General), stmts = _b.stmts,\n
currValExpr = _b.currValExpr;\n
updateStmts.push.apply(updateStmts, __spread(stmts.map(function\n
(stmt) {\n
return applySourceSpanToStatementIfNeeded(stmt, sourceSpan); }));\n
return\n
applySourceSpanToExpressionIfNeeded(currValExpr, sourceSpan);\n
});\n
if (expressions.length\n
|| allowEmptyExprs) {\n
updateStmts.push(applySourceSpanToStatementIfNeeded(callCheckStmt(nodeIndex, exprs).toStmt(),\n
sourceSpan));\n
}\n
return updateStmts;\n
});\n
};\n
ViewBuilder.prototype._createElementHandleEventFn = function (nodeIndex, handlers) {\n
var _this =\n
this;\n
var handleEventStmts = [];\n
var handleEventBindingCount = 0;\n
handlers.forEach(function (_a) {\n
var context = _a.context, eventAst = _a.eventAst, dirAst = _a.dirAst;\n
var bindingId = "" + handleEventBindingCount++;\n
var nameResolver = context ===\n
COMP_VAR ? _this : null;\n
var _b = convertActionBinding(nameResolver, context, eventAst.handler,\n
bindingId), stmts = _b.stmts, allowDefault = _b.allowDefault;\n
var trueStmts = stmts;\n
if\n
(allowDefault) {\n
trueStmts.push(ALLOW_DEFAULT_VAR.set(allowDefault.and(ALLOW_DEFAULT_VAR)).toStmt());\n
}\n
var _c = elementEventNameAndTarget(eventAst, dirAst), eventTarget = _c.target, eventName =\n
_c.name;\n
var fullEventName = elementEventFullName(eventTarget, eventName);\n
handleEventStmts.push(applySourceSpanToStatementIfNeeded(new\n
IfStmt(literal(fullEventName).identical(EVENT_NAME_VAR), trueStmts), eventAst.sourceSpan));\n
});\n
var handleEventFn;\n
if (handleEventStmts.length > 0) {\n
var preStmts =\n
[ALLOW_DEFAULT_VAR.set(literal(true)).toDeclStmt(BOOL_TYPE)];\n
if (!this.component.isHost\n
&& findReadVarNames(handleEventStmts).has(COMP_VAR.name)) {\n
preStmts.push(COMP_VAR.set(VIEW_VAR.prop('component')).toDeclStmt(this.compType));\n
}\n
handleEventFn = fn([\n
new FnParam(VIEW_VAR.name, INFERRED_TYPE),\n
new

```

```

FnParam(EVENT_NAME_VAR.name, INFERRED_TYPE),\n                new
FnParam(EventHandlerVars.event.name, INFERRED_TYPE)\n                ], __spread(preStmts, handleEventStmts,
[new ReturnStatement(ALLOW_DEFAULT_VAR)], INFERRED_TYPE);\n                }\n                else {\n
handleEventFn = NULL_EXPR;\n                }\n                return handleEventFn;\n                };\n
ViewBuilder.prototype.visitDirective = function (ast, context) { };\n
ViewBuilder.prototype.visitDirectiveProperty = function (ast, context) { };\n
ViewBuilder.prototype.visitReference = function (ast, context) { };\n    ViewBuilder.prototype.visitVariable =
function (ast, context) { };\n    ViewBuilder.prototype.visitEvent = function (ast, context) { };\n
ViewBuilder.prototype.visitElementProperty = function (ast, context) { };\n    ViewBuilder.prototype.visitAttr =
function (ast, context) { };\n    return ViewBuilder;\n    }());\n    function needsAdditionalRootNode(astNodes)
{\n    var lastAstNode = astNodes[astNodes.length - 1];\n    if (lastAstNode instanceof EmbeddedTemplateAst)
{\n    return lastAstNode.hasViewContainer;\n    }\n    if (lastAstNode instanceof ElementAst) {\n    if
(isNgContainer(lastAstNode.name) && lastAstNode.children.length) {\n    return
needsAdditionalRootNode(lastAstNode.children);\n    }\n    return lastAstNode.hasViewContainer;\n
}\n    return lastAstNode instanceof NgContentAst;\n    }\n    function elementBindingDef(inputAst, dirAst) {\n
var inputType = inputAst.type;\n    switch (inputType) {\n    case 1 /* Attribute */:\n    return
literalArr([\n    literal(1 /* TypeElementAttribute */), literal(inputAst.name),\n
literal(inputAst.securityContext)\n    ]);\n    case 0 /* Property */:\n    return literalArr([\n
literal(8 /* TypeProperty */), literal(inputAst.name),\n    literal(inputAst.securityContext)\n
]);\n    case 4 /* Animation */:\n    var bindingType = 8 /* TypeProperty */ |\n    (dirAst &&
dirAst.directive.isComponent ? 32 /* SyntheticHostProperty */ : 16 /* SyntheticProperty */);\n
return literalArr([\n    literal(bindingType), literal('@' + inputAst.name),
literal(inputAst.securityContext)\n    ]);\n    case 2 /* Class */:\n    return literalArr([literal(2 /*
TypeElementClass */), literal(inputAst.name), NULL_EXPR]);\n    case 3 /* Style */:\n    return
literalArr([\n    literal(4 /* TypeElementStyle */), literal(inputAst.name), literal(inputAst.unit)\n
]);\n    default:\n    // This default case is not needed by TypeScript compiler, as the switch is
exhaustive.\n    // However Closure Compiler does not understand that and reports an error in typed mode.\n
// The `throw new Error` below works around the problem, and the unexpected: never variable\n    //
makes sure tsc still checks this code is unreachable.\n    var unexpected = inputType;\n    throw new
Error("unexpected " + unexpected);\n    }\n    }\n    function fixedAttrsDef(elementAst) {\n    var mapResult =
Object.create(null);\n    elementAst.attrs.forEach(function (attrAst) {\n    mapResult[attrAst.name] =
attrAst.value;\n    });\n    elementAst.directives.forEach(function (dirAst) {\n
Object.keys(dirAst.directive.hostAttributes).forEach(function (name) {\n    var value =
dirAst.directive.hostAttributes[name];\n    var prevValue = mapResult[name];\n    mapResult[name]
= prevValue != null ? mergeAttributeValue(name, prevValue, value) : value;\n    });\n    });\n    // Note:
We need to sort to get a defined output order\n    // for tests and for caching generated artifacts...\n    return
literalArr(Object.keys(mapResult).sort().map(function (attrName) { return literalArr([literal(attrName),
literal(mapResult[attrName])]); }));\n    }\n    function mergeAttributeValue(attrName, attrValue1, attrValue2) {\n
if (attrName == CLASS_ATTR$1 || attrName == STYLE_ATTR) {\n    return attrValue1 + "\" \" +
attrValue2;\n    }\n    else {\n    return attrValue2;\n    }\n    }\n    function callCheckStmt(nodeIndex,
exprs) {\n    if (exprs.length > 10) {\n    return CHECK_VAR.callFn([VIEW_VAR, literal(nodeIndex),
literal(1 /* Dynamic */), literalArr(exprs)]);\n    }\n    else {\n    return
CHECK_VAR.callFn(__spread([VIEW_VAR, literal(nodeIndex), literal(0 /* Inline */)], exprs));\n    }\n    }\n
function callUnwrapValue(nodeIndex, bindingIdx, expr) {\n    return
importExpr(Identifiers.unwrapValue).callFn([\n    VIEW_VAR, literal(nodeIndex), literal(bindingIdx), expr\n
]);\n    }\n    function elementEventNameAndTarget(eventAst, dirAst) {\n    if (eventAst.isAnimation) {\n
return {\n    name: "@" + eventAst.name + "." + eventAst.phase,\n    target: dirAst &&
dirAst.directive.isComponent ? 'component' : null\n    };\n    }\n    else {\n    return eventAst;\n
}

```

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}\n }\n function calcStaticDynamicQueryFlags(query) {\n     var flags = 0 /* None */;\n     // Note: We only
make queries static that query for a single item and the user specifically\n     // set the to be static. This is because
of backwards compatibility with the old view compiler...\n     if (query.first && query.static) {\n         flags |=
268435456 /* StaticQuery */;\n     }\n     else {\n         flags |= 536870912 /* DynamicQuery */;\n     }\n
return flags;\n }\n function elementEventFullName(target, name) {\n     return target ? target + \"\":" + name :
name;\n }\n\n /**\n  * A container for message extracted from the templates.\n  */\n var MessageBundle =
/** @class */ (function () {\n     function MessageBundle(_htmlParser, _implicitTags, _implicitAttrs, _locale) {\n
        if (_locale === void 0) { _locale = null; }\n         this._htmlParser = _htmlParser;\n         this._implicitTags
= _implicitTags;\n         this._implicitAttrs = _implicitAttrs;\n         this._locale = _locale;\n
this._messages = [];\n     }\n     MessageBundle.prototype.updateFromTemplate = function (html, url,
interpolationConfig) {\n         var _a;\n         var htmlParserResult = this._htmlParser.parse(html, url, {
tokenizeExpansionForms: true, interpolationConfig: interpolationConfig });\n         if
(htmlParserResult.errors.length) {\n             return htmlParserResult.errors;\n         }\n         var
i18nParserResult = extractMessages(htmlParserResult.rootNodes, interpolationConfig, this._implicitTags,
this._implicitAttrs);\n         if (i18nParserResult.errors.length) {\n             return i18nParserResult.errors;\n
}\n         (_a = this._messages).push.apply(_a, __spread(i18nParserResult.messages));\n         return [];\n     });\n
    // Return the message in the internal format\n     // The public (serialized) format might be different, see the
`write` method.\n     MessageBundle.prototype.getMessages = function () {\n         return this._messages;\n
};\n     MessageBundle.prototype.write = function (serializer, filterSources) {\n         var messages = {};\n
var mapperVisitor = new MapPlaceholderNames();\n         // Deduplicate messages based on their ID\n
this._messages.forEach(function (message) {\n             var _a;\n             var id = serializer.digest(message);\n
            if (!messages.hasOwnProperty(id)) {\n                 messages[id] = message;\n             }\n             else {\n
                (_a = messages[id].sources).push.apply(_a, __spread(message.sources));\n             }\n         });\n
    // Transform placeholder names using the serializer mapping\n     var msgList =
Object.keys(messages).map(function (id) {\n         var mapper = serializer.createNameMapper(messages[id]);\n
        var src = messages[id];\n         var nodes = mapper ? mapperVisitor.convert(src.nodes, mapper) :
src.nodes;\n         var transformedMessage = new Message(nodes, {}, {}, src.meaning, src.description, id);\n
        transformedMessage.sources = src.sources;\n         if (filterSources) {\n
transformedMessage.sources.forEach(function (source) { return source.filePath = filterSources(source.filePath);
});\n         }\n         return transformedMessage;\n     });\n     return serializer.write(msgList,
this._locale);\n     });\n     return MessageBundle;\n }());\n // Transform an i18n AST by renaming the
placeholder nodes with the given mapper\n var MapPlaceholderNames = /** @class */ (function (_super) {\n
__extends(MapPlaceholderNames, _super);\n     function MapPlaceholderNames() {\n         return _super !==
null && _super.apply(this, arguments) || this;\n     }\n     MapPlaceholderNames.prototype.convert = function
(nodes, mapper) {\n         var _this = this;\n         return mapper ? nodes.map(function (n) { return n.visit(_this,
mapper); }) : nodes;\n     }; \n     MapPlaceholderNames.prototype.visitTagPlaceholder = function (ph, mapper)
{\n         var _this = this;\n         var startName = mapper.toPublicName(ph.startName);\n         var closeName
= ph.closeName ? mapper.toPublicName(ph.closeName) : ph.closeName;\n         var children =
ph.children.map(function (n) { return n.visit(_this, mapper); });\n         return new TagPlaceholder(ph.tag, ph.attrs,
startName, closeName, children, ph.isVoid, ph.sourceSpan, ph.startSourceSpan, ph.endSourceSpan);\n     }; \n
    MapPlaceholderNames.prototype.visitPlaceholder = function (ph, mapper) {\n         return new
Placeholder(ph.value, mapper.toPublicName(ph.name), ph.sourceSpan);\n     }; \n
    MapPlaceholderNames.prototype.visitIcuPlaceholder = function (ph, mapper) {\n         return new
IcuPlaceholder(ph.value, mapper.toPublicName(ph.name), ph.sourceSpan);\n     }; \n     return
MapPlaceholderNames;\n } (CloneVisitor));\n\n /**\n  * @license\n  * Copyright Google LLC All Rights
Reserved.\n  * \n  * Use of this source code is governed by an MIT-style license that can be\n  * found in the
LICENSE file at https://angular.io/license\n  */\n var GeneratedFile = /** @class */ (function () {\n     function
GeneratedFile(srcFileUrl, genFileUrl, sourceOrStmts) {\n         this.srcFileUrl = srcFileUrl;\n

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this.genFileUrl = genFileUrl;\n      if (typeof sourceOrStmts === 'string') {\n          this.source =
sourceOrStmts;\n          this.stmts = null;\n      }\n      else {\n          this.source = null;\n
this.stmts = sourceOrStmts;\n      }\n      }\n      GeneratedFile.prototype.isEquivalent = function (other) {\n
    if (this.genFileUrl !== other.genFileUrl) {\n        return false;\n      }\n      if (this.source) {\n
return this.source === other.source;\n      }\n      if (other.stmts === null) {\n        return false;\n
      }\n      // Note: the constructor guarantees that if this.source is not filled,\n      // then this.stmts is.\n      return areAllEquivalent(this.stmts, other.stmts);\n    };\n    return GeneratedFile;\n  }());\n  function
toTypeScript(file, preamble) {\n    if (preamble === void 0) { preamble = ""; }\n    if (!file.stmts) {\n
throw new Error("Illegal state: No stmts present on GeneratedFile \"" + file.genFileUrl);\n    }\n    return new
TypeScriptEmitter().emitStatements(file.genFileUrl, file.stmts, preamble);\n  }\n  function
listLazyRoutes(moduleMeta, reflector) {\n    var e_1, _a, e_2, _b;\n    var allLazyRoutes = [];\n    try {\n
for (var _c = __values(moduleMeta.transitiveModule.providers), _d = _c.next(); !_d.done; _d = _c.next()) {\n
    var _e = _d.value, provider = _e.provider, module = _e.module;\n    if (tokenReference(provider.token)
=== reflector.ROUTES) {\n        var loadChildren = __collectLoadChildren(provider.useValue);\n
try {\n            for (var loadChildren_1 = (e_2 = void 0, __values(loadChildren)), loadChildren_1_1 =
loadChildren_1.next(); !loadChildren_1_1.done; loadChildren_1_1 = loadChildren_1.next()) {\n
var route = loadChildren_1_1.value;\n                allLazyRoutes.push(parseLazyRoute(route, reflector,
module.reference));\n            }\n        }\n        catch (e_2_1) { e_2 = { error: e_2_1 }; }\n
finally {\n            try {\n                if (loadChildren_1_1 && !loadChildren_1_1.done && (_b =
loadChildren_1.return)) _b.call(loadChildren_1);\n            }\n            finally { if (e_2) throw
e_2.error; }\n        }\n    }\n    }\n    catch (e_1_1) { e_1 = { error: e_1_1 }; }\n
finally {\n        try {\n            if (_d && !_d.done && (_a = _c.return)) _a.call(_c);\n        }\n
finally {\n            if (e_1) throw e_1.error; }\n        }\n        return allLazyRoutes;\n    }\n    function __collectLoadChildren(routes,
target) {\n        var e_3, _a;\n        if (target === void 0) { target = []; }\n        if (typeof routes === 'string') {\n
target.push(routes);\n        }\n        else if (Array.isArray(routes)) {\n            try {\n                for (var routes_1 =
__values(routes), routes_1_1 = routes_1.next(); !routes_1_1.done; routes_1_1 = routes_1.next()) {\n                    var
route = routes_1_1.value;\n                    __collectLoadChildren(route, target);\n                }\n            }\n            catch
(e_3_1) { e_3 = { error: e_3_1 }; }\n            finally {\n                try {\n                    if (routes_1_1 &&
!routes_1_1.done && (_a = routes_1.return)) _a.call(routes_1);\n                }\n                finally { if (e_3) throw
e_3.error; }\n            }\n        }\n        else if (routes.loadChildren) {\n
__collectLoadChildren(routes.loadChildren, target);\n        }\n        else if (routes.children) {\n
__collectLoadChildren(routes.children, target);\n        }\n        return target;\n    }\n    function parseLazyRoute(route,
reflector, module) {\n        var _a = __read(route.split("#"), 2), routePath = _a[0], routeName = _a[1];\n        var
referencedModule = reflector.resolveExternalReference({\n            moduleName: routePath,\n            name:
routeName,\n        }, module ? module.filePath : undefined);\n        return { route: route, module: module ||
referencedModule, referencedModule: referencedModule };\n    }\n    var TS = /^(?!.*\\.d\\.ts$).*\\.ts$/;\n    var
ResolvedStaticSymbol = /** @class */ (function () {\n        function ResolvedStaticSymbol(symbol, metadata) {\n
            this.symbol = symbol;\n            this.metadata = metadata;\n        }\n        return ResolvedStaticSymbol;\n
    }());\n    var SUPPORTED_SCHEMA_VERSION = 4;\n    /**\n     * This class is responsible for loading metadata
per symbol,\n     * and normalizing references between symbols.\n     *\n     * Internally, it only uses symbols
without members,\n     * and deduces the values for symbols with members based\n     * on these symbols.\n     */\n
var StaticSymbolResolver = /** @class */ (function () {\n        function StaticSymbolResolver(host,
staticSymbolCache, summaryResolver, errorRecorder) {\n            this.host = host;\n            this.staticSymbolCache
= staticSymbolCache;\n            this.summaryResolver = summaryResolver;\n            this.errorRecorder =
errorRecorder;\n            this.metadataCache = new Map();\n            // Note: this will only contain StaticSymbols
without members!\n            this.resolvedSymbols = new Map();\n            // Note: this will only contain
StaticSymbols without members!\n            this.importAs = new Map();\n            this.symbolResourcePaths = new
Map();\n            this.symbolFromFile = new Map();\n            this.knownFileNameToModuleNames = new Map();\n

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    }\n    StaticSymbolResolver.prototype.resolveSymbol = function (staticSymbol) {\n        if
(staticSymbol.members.length > 0) {\n            return this._resolveSymbolMembers(staticSymbol);\n        }\n        // Note: always ask for a summary first,\n        // as we might have read shallow metadata via a .d.ts file\n        // for the symbol.\n        var resultFromSummary = this._resolveSymbolFromSummary(staticSymbol);\n        if
(resultFromSummary) {\n            return resultFromSummary;\n        }\n        var resultFromCache =
this.resolvedSymbols.get(staticSymbol);\n        if (resultFromCache) {\n            return resultFromCache;\n        }\n        // Note: Some users use libraries that were not compiled with ngc, i.e. they don't\n        // have
summaries, only .d.ts files. So we always need to check both, the summary\n        // and metadata.\n        this._createSymbolsOf(staticSymbol.filePath);\n        return this.resolvedSymbols.get(staticSymbol);\n    };\n    /**\n     * getImportAs produces a symbol that can be used to import the given symbol.\n     * The import
might be different than the symbol if the symbol is exported from\n     * a library with a summary; in which case
we want to import the symbol from the\n     * ngfactory re-export instead of directly to avoid introducing a direct
dependency\n     * on an otherwise indirect dependency.\n     * @param staticSymbol the symbol for
which to generate a import symbol\n     */\n    StaticSymbolResolver.prototype.getImportAs = function
(staticSymbol, useSummaries) {\n        if (useSummaries === void 0) { useSummaries = true; }\n        if
(staticSymbol.members.length) {\n            var baseSymbol = this.getStaticSymbol(staticSymbol.filePath,
staticSymbol.name);\n            var baseImportAs = this.getImportAs(baseSymbol, useSummaries);\n            return baseImportAs ?\n                this.getStaticSymbol(baseImportAs.filePath, baseImportAs.name,
staticSymbol.members) :\n                null;\n        }\n        var summarizedFileName =
stripSummaryForJitFileSuffix(staticSymbol.filePath);\n        if (summarizedFileName !== staticSymbol.filePath)
{\n            var summarizedName = stripSummaryForJitNameSuffix(staticSymbol.name);\n            var
baseSymbol = this.getStaticSymbol(summarizedFileName, summarizedName, staticSymbol.members);\n            var
baseImportAs = this.getImportAs(baseSymbol, useSummaries);\n            return baseImportAs ?\n                this.getStaticSymbol(summaryForJitFileName(baseImportAs.filePath), summaryForJitName(baseImportAs.name),
baseSymbol.members) :\n                null;\n        }\n        var result = (useSummaries &&
this.summaryResolver.getImportAs(staticSymbol)) || null;\n        if (!result) {\n            result =
this.importAs.get(staticSymbol);\n        }\n        return result;\n    };\n    /**\n     * getResourcePath
produces the path to the original location of the symbol and should\n     * be used to determine the relative
location of resource references recorded in\n     * symbol metadata.\n     */\n    StaticSymbolResolver.prototype.getResourcePath = function (staticSymbol) {\n        return
this.symbolResourcePaths.get(staticSymbol) || staticSymbol.filePath;\n    };\n    /**\n     * getTypeArity
returns the number of generic type parameters the given symbol\n     * has. If the symbol is not a type the result is
null.\n     */\n    StaticSymbolResolver.prototype.getTypeArity = function (staticSymbol) {\n        // If the file
is a factory/ngsummary file, don't resolve the symbol as doing so would\n        // cause the metadata for an
factory/ngsummary file to be loaded which doesn't exist.\n        // All references to generated classes must include
the correct arity whenever\n        // generating code.\n        if (isGeneratedFile(staticSymbol.filePath)) {\n            return null;\n        }\n        var resolvedSymbol =
unwrapResolvedMetadata(this.resolveSymbol(staticSymbol));\n        while (resolvedSymbol &&
resolvedSymbol.metadata instanceof StaticSymbol) {\n            resolvedSymbol =
unwrapResolvedMetadata(this.resolveSymbol(resolvedSymbol.metadata));\n        }\n        return
(resolvedSymbol && resolvedSymbol.metadata && resolvedSymbol.metadata.arity) || null;\n    };\n    StaticSymbolResolver.prototype.getKnownModuleName = function (filePath) {\n        return
this.knownFileNameToModuleNames.get(filePath) || null;\n    };\n    StaticSymbolResolver.prototype.recordImportAs = function (sourceSymbol, targetSymbol) {\n        sourceSymbol.assertNoMembers();\n        targetSymbol.assertNoMembers();\n        this.importAs.set(sourceSymbol, targetSymbol);\n    };\n    StaticSymbolResolver.prototype.recordModuleNameForFileName = function (fileName, moduleName) {\n        this.knownFileNameToModuleNames.set(fileName, moduleName);\n    };\n    /**\n     * Invalidate all

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information derived from the given file and return the
    * static symbols contained in the file.\n
    *\n
    *
@param fileName the file to invalidate\n
    */\n
StaticSymbolResolver.prototype.invalidateFile = function
(fileName) {\n
    var e_1, _a;\n
    this.metadataCache.delete(fileName);\n
    var symbols =
this.symbolFromFile.get(fileName);\n
    if (!symbols) {\n
        return [];\n
    }\n
this.symbolFromFile.delete(fileName);\n
    try {\n
        for (var symbols_1 = __values(symbols),
symbols_1_1 = symbols_1.next(); !symbols_1_1.done; symbols_1_1 = symbols_1.next()) {\n
            var
symbol = symbols_1_1.value;\n
            this.resolvedSymbols.delete(symbol);\n
this.importAs.delete(symbol);\n
            this.symbolResourcePaths.delete(symbol);\n
        }\n
    } catch (e_1_1) { e_1 = { error: e_1_1 }; }\n
    finally {\n
        try {\n
            if (symbols_1_1 &&
!symbols_1_1.done && (_a = symbols_1.return)) _a.call(symbols_1);\n
        }\n
    } finally { if (e_1)
throw e_1.error; }\n
    }\n
    return symbols;\n
};\n
/** @internal */\n
StaticSymbolResolver.prototype.ignoreErrorsFor = function (cb) {\n
    var recorder = this.errorRecorder;\n
    this.errorRecorder = function () { };\n
    try {\n
        return cb();\n
    }\n
    finally {\n
this.errorRecorder = recorder;\n
    }\n
};\n
StaticSymbolResolver.prototype._resolveSymbolMembers
= function (staticSymbol) {\n
    var members = staticSymbol.members;\n
    var baseResolvedSymbol =
this.resolveSymbol(this.getStaticSymbol(staticSymbol.filePath, staticSymbol.name));\n
    if
(!baseResolvedSymbol) {\n
        return null;\n
    }\n
    var baseMetadata =
unwrapResolvedMetadata(baseResolvedSymbol.metadata);\n
    if (baseMetadata instanceof StaticSymbol) {\n
        return new ResolvedStaticSymbol(staticSymbol, this.getStaticSymbol(baseMetadata.filePath,
baseMetadata.name, members));\n
    }\n
    else if (baseMetadata && baseMetadata.__symbolic ===
'class') {\n
        if (baseMetadata.statics && members.length === 1) {\n
            return new
ResolvedStaticSymbol(staticSymbol, baseMetadata.statics[members[0]]);\n
        }\n
    }\n
    else {\n
        var value = baseMetadata;\n
        for (var i = 0; i < members.length && value; i++) {\n
            value
= value[members[i]];\n
        }\n
        return new ResolvedStaticSymbol(staticSymbol, value);\n
    }\n
    return null;\n
};\n
StaticSymbolResolver.prototype._resolveSymbolFromSummary = function
(staticSymbol) {\n
    var summary = this.summaryResolver.resolveSummary(staticSymbol);\n
    return
summary ? new ResolvedStaticSymbol(staticSymbol, summary.metadata) : null;\n
};\n
/**\n
 *
 * All
 * getStaticSymbol produces a Type whose metadata is known but whose implementation is not loaded.\n
 * All
 * types passed to the StaticResolver should be pseudo-types returned by this method.\n
 * *\n
 * *\n
 * @param
 * declarationFile the absolute path of the file where the symbol is declared\n
 * *\n
 * @param name the name of the
 * type.\n
 * *\n
 * @param members a symbol for a static member of the named type\n
 */\n
StaticSymbolResolver.prototype.getStaticSymbol = function (declarationFile, name, members) {\n
    return
this.staticSymbolCache.get(declarationFile, name, members);\n
};\n
/**\n
 * hasDecorators checks a
 * file's metadata for the presence of decorators without evaluating the\n
 * metadata.\n
 * *\n
 * *\n
 * @param
 * filePath the absolute path to examine for decorators.\n
 * *\n
 * @returns true if any class in the file has a decorator.\n
 */\n
StaticSymbolResolver.prototype.hasDecorators = function (filePath) {\n
    var metadata =
this.getModuleMetadata(filePath);\n
    if (metadata['metadata']) {\n
        return
Object.keys(metadata['metadata']).some(function (metadataKey) {\n
            var entry =
metadata['metadata'][metadataKey];\n
            return entry && entry.__symbolic === 'class' &&
entry.decorators;\n
        });\n
    }\n
    return false;\n
};\n
StaticSymbolResolver.prototype.getSymbolsOf = function (filePath) {\n
    var summarySymbols =
this.summaryResolver.getSymbolsOf(filePath);\n
    if (summarySymbols) {\n
        return
summarySymbols;\n
    }\n
    // Note: Some users use libraries that were not compiled with ngc, i.e. they
don't\n
    // have summaries, only .d.ts files, but `summaryResolver.isLibraryFile` returns true.\n
this._createSymbolsOf(filePath);\n
    return this.symbolFromFile.get(filePath) || [];\n
};\n
StaticSymbolResolver.prototype._createSymbolsOf = function (filePath) {\n
    var e_2, _a, e_3, _b;\n
    var _this = this;\n
    if (this.symbolFromFile.has(filePath)) {\n
        return;\n
    }\n
    var
resolvedSymbols = [];\n
    var metadata = this.getModuleMetadata(filePath);\n
    if (metadata['importAs'])

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{\n          // Index bundle indices should use the importAs module name defined\n          // in the bundle.\n      this.knownFileNameToModuleNames.set(filePath, metadata['importAs']);\n      }\n      // handle the symbols in one of the re-export location\n      if (metadata['exports']) {\n          var _loop_1 = function (moduleExport) {\n              // handle the symbols in the list of explicitly re-exported symbols.\n              if (moduleExport.export) {\n                  moduleExport.export.forEach(function (exportSymbol) {\n                      var symbolName;\n                      if (typeof exportSymbol === 'string') {\n                          symbolName = exportSymbol;\n                      }\n                      else {\n                          symbolName = exportSymbol.as;\n                      }\n                      symbolName = unescapeIdentifier(symbolName);\n                      var symName = symbolName;\n                      if (typeof exportSymbol !== 'string') {\n                          symName = unescapeIdentifier(exportSymbol.name);\n                      }\n                      var resolvedModule = _this.resolveModule(moduleExport.from, filePath);\n                      if (resolvedModule) {\n                          var targetSymbol = _this.getStaticSymbol(resolvedModule, symName);\n                          var sourceSymbol = _this.getStaticSymbol(filePath, symbolName);\n                          resolvedSymbols.push(_this.createExport(sourceSymbol, targetSymbol));\n                      }\n                  });\n              }\n              else {\n                  // Handle the symbols loaded by 'export *' directives.\n                  var resolvedModule = this._1.resolveModule(moduleExport.from, filePath);\n                  if (resolvedModule && resolvedModule !== filePath) {\n                      var nestedExports = this._1.getSymbolsOf(resolvedModule);\n                      nestedExports.forEach(function (targetSymbol) {\n                          var sourceSymbol = _this.getStaticSymbol(filePath, targetSymbol.name);\n                          resolvedSymbols.push(_this.createExport(sourceSymbol, targetSymbol));\n                      });\n                  }\n              }\n          }; \n          var this_1 = this;\n          try {\n              for (var _c = __values(metadata['exports']), _d = _c.next(); !_d.done; _d = _c.next()) {\n                  var moduleExport = _d.value;\n                  _loop_1(moduleExport);\n              }\n          } catch (e_2_1) { e_2 = { error: e_2_1 }; }\n          finally {\n              try {\n                  if (_d && !_d.done && (_a = _c.return)) _a.call(_c);\n              }\n              finally { if (e_2) throw e_2.error; }\n          }\n          // handle the actual metadata. Has to be after the exports\n          // as there might be collisions in the names, and we want the symbols\n          // of the current module to win over reexports.\n          if (metadata['metadata']) {\n              // handle direct declarations of the symbol\n              var topLevelSymbolNames_1 = new Set(Object.keys(metadata['metadata']).map(unescapeIdentifier));\n              var origins_1 = metadata['origins'] || {};\n              Object.keys(metadata['metadata']).forEach(function (metadataKey) {\n                  var symbolMeta = metadata['metadata'][metadataKey];\n                  var name = unescapeIdentifier(metadataKey);\n                  var symbol = _this.getStaticSymbol(filePath, name);\n                  var origin = origins_1.hasOwnProperty(metadataKey) && origins_1[metadataKey];\n                  if (origin) {\n                      // If the symbol is from a bundled index, use the declaration location of the\n                      // references (such as './my.html') will be calculated\n                      // correctly.\n                      var originFilePath = _this.resolveModule(origin, filePath);\n                      if (!originFilePath) {\n                          _this.reportError(new Error("Couldn't resolve original symbol for \" + origin + \" from \" + _this.host.getOutputName(filePath)));\n                      }\n                      else {\n                          _this.symbolResourcePaths.set(symbol, originFilePath);\n                      }\n                  }\n                  resolvedSymbols.push(_this.createResolvedSymbol(symbol, filePath, topLevelSymbolNames_1, symbolMeta));\n              });\n          }\n          var uniqueSymbols = new Set();\n          try {\n              for (var resolvedSymbols_1 = __values(resolvedSymbols), resolvedSymbols_1_1 = resolvedSymbols_1.next(); !resolvedSymbols_1_1.done; resolvedSymbols_1_1 = resolvedSymbols_1.next()) {\n                  var resolvedSymbol = resolvedSymbols_1_1.value;\n                  this.resolvedSymbols.set(resolvedSymbol.symbol, resolvedSymbol);\n                  uniqueSymbols.add(resolvedSymbol.symbol);\n              }\n          } catch (e_3_1) { e_3 = { error: e_3_1 }; }\n          finally {\n              try {\n                  if (resolvedSymbols_1_1 && !resolvedSymbols_1_1.done && (_b = resolvedSymbols_1.return)) _b.call(resolvedSymbols_1);\n              }\n              finally { if (e_3) throw e_3.error; }\n          }\n          this.symbolFromFile.set(filePath, Array.from(uniqueSymbols));\n      }\n  }\n}

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StaticSymbolResolver.prototype.createResolvedSymbol = function (sourceSymbol, topLevelPath,
topLevelSymbolNames, metadata) {\n      var _this = this;\n      // For classes that don't have Angular
summaries / metadata,\n      // we only keep their arity, but nothing else\n      // (e.g. their constructor
parameters).\n      // We do this to prevent introducing deep imports\n      // as we didn't generate .ngfactory.ts
files with proper reexports.\n      var isTsFile = TS.test(sourceSymbol.filePath);\n      if
(this.summaryResolver.isLibraryFile(sourceSymbol.filePath) && !isTsFile && metadata &&\n
metadata['__symbolic'] === 'class') {\n      var transformedMeta_1 = { __symbolic: 'class', arity:
metadata.arity };\n      return new ResolvedStaticSymbol(sourceSymbol, transformedMeta_1);\n      }\n
var _originalFileMemo;\n      var getOriginalName = function () {\n      if (!_originalFileMemo) {\n
// Guess what the original file name is from the reference. If it has a `.d.ts` extension\n
// replace it
with `.ts`. If it already has `.ts` just leave it in place. If it doesn't have\n
// .ts or .d.ts, append `.ts`. Also, if
it is in `node_modules`, trim the `node_module`\n
// location as it is not important to finding the file.\n
_originalFileMemo =\n      _this.host.getOutputName(topLevelPath.replace(/((\.\.ts)|(\.\.d\.\.ts))$/,\n
'.ts'))\n
      .replace(/^(.*node_modules[\\\/], "));\n      }\n      return _originalFileMemo;\n
};\n      var self = this;\n      var ReferenceTransformer = /** @class */ (function (_super) {\n
__extends(ReferenceTransformer, _super);\n      function ReferenceTransformer() {\n      return
_super !== null && _super.apply(this, arguments) || this;\n      }\n
ReferenceTransformer.prototype.visitStringMap = function (map, functionParams) {\n      var symbolic =
map['__symbolic'];\n      if (symbolic === 'function') {\n      var oldLen =
functionParams.length;\n      functionParams.push.apply(functionParams, __spread((map['parameters'] ||
[])));\n      var result = _super.prototype.visitStringMap.call(this, map, functionParams);\n
functionParams.length = oldLen;\n      return result;\n      }\n      else if (symbolic ===
'reference') {\n      var module = map['module'];\n      var name = map['name'] ?
unescapeIdentifier(map['name']) : map['name'];\n      if (!name) {\n      return null;\n
}\n      var filePath = void 0;\n      if (module) {\n      filePath =
self.resolveModule(module, sourceSymbol.filePath);\n      if (!filePath) {\n      return
{\n      __symbolic: 'error',\n      message: \"Could not resolve \" + module + \"
relative to \" + self.host.getMetadataFor(sourceSymbol.filePath) + \".\", \n
line: map['line'],\n
character: map['character'],\n      fileName: getOriginalName()\n
};\n      }\n      return {\n      __symbolic: 'resolved',\n
symbol: self.getStaticSymbol(filePath, name),\n      line: map['line'],\n
character: map['character'],\n      fileName: getOriginalName()\n
};\n      }\n      else if (functionParams.indexOf(name) >= 0) {\n      // reference to a function
parameter\n      return { __symbolic: 'reference', name: name };\n      }\n      else
{\n      if (topLevelSymbolNames.has(name)) {\n      return
self.getStaticSymbol(topLevelPath, name);\n      }\n      // ambient value\n
null;\n      }\n      }\n      else if (symbolic === 'error') {\n      return
Object.assign(Object.assign({}, map), { fileName: getOriginalName() });\n      }\n      else {\n
return _super.prototype.visitStringMap.call(this, map, functionParams);\n      }\n      };\n
return ReferenceTransformer;\n      }(ValueTransformer));\n      var transformedMeta =
visitValue(metadata, new ReferenceTransformer(), []);\n      var unwrappedTransformedMeta =
unwrapResolvedMetadata(transformedMeta);\n      if (unwrappedTransformedMeta instanceof StaticSymbol) {\n
return this.createExport(sourceSymbol, unwrappedTransformedMeta);\n      }\n      return new
ResolvedStaticSymbol(sourceSymbol, transformedMeta);\n      };\n
StaticSymbolResolver.prototype.createExport = function (sourceSymbol, targetSymbol) {\n
sourceSymbol.assertNoMembers();\n      targetSymbol.assertNoMembers();\n      if
(this.summaryResolver.isLibraryFile(sourceSymbol.filePath) &&\n
this.summaryResolver.isLibraryFile(targetSymbol.filePath)) {\n      // This case is for an ng library importing

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symbols from a plain ts library\n          // transitively.\n          // Note: We rely on the fact that we discover
symbols in the direction\n          // from source files to library files\n          this.importAs.set(targetSymbol,
this.getImportAs(sourceSymbol) || sourceSymbol);\n          }\n          return new
ResolvedStaticSymbol(sourceSymbol, targetSymbol);\n          };\n          StaticSymbolResolver.prototype.reportError =
function (error, context, path) {\n          if (this.errorRecorder) {\n          this.errorRecorder(error, (context &&
context.filePath) || path);\n          }\n          else {\n          throw error;\n          }\n          };\n          /**\n          *
@param module an absolute path to a module file.\n          */\n          StaticSymbolResolver.prototype.getModuleMetadata = function (module) {\n          var moduleMetadata =
this.metadataCache.get(module);\n          if (!moduleMetadata) {\n          var moduleMetadatas =
this.host.getMetadataFor(module);\n          if (moduleMetadatas) {\n          var maxVersion_1 = -1;\n          moduleMetadatas.forEach(function (md) {\n          if (md && md['version'] > maxVersion_1) {\n
maxVersion_1 = md['version'];\n          moduleMetadata = md;\n          }\n
});\n          }\n          if (!moduleMetadata) {\n          moduleMetadata =\n          { __symbolic:
'module', version: SUPPORTED_SCHEMA_VERSION, module: module, metadata: { } };\n          }\n
if (moduleMetadata['version'] != SUPPORTED_SCHEMA_VERSION) {\n          var errorMessage =
moduleMetadata['version'] == 2 ?\n          "Unsupported metadata version \"" + moduleMetadata['version'] +
\" for module \"" + module + \". This module should be compiled with a newer version of ngc\" :\n
\"Metadata version mismatch for module \"" + this.host.getOutputName(module) + \", found version \"" +
moduleMetadata['version'] + \", expected \"" + SUPPORTED_SCHEMA_VERSION;\n
this.reportError(new Error(errorMessage));\n          }\n          this.metadataCache.set(module,
moduleMetadata);\n          }\n          return moduleMetadata;\n          };\n          StaticSymbolResolver.prototype.getSymbolByModule = function (module, symbolName, containingFile) {\n
var filePath = this.resolveModule(module, containingFile);\n          if (!filePath) {\n          this.reportError(new
Error(\"Could not resolve module \"" + module + (containingFile ? ' relative to ' +
this.host.getOutputName(containingFile) : \"));\n          return this.getStaticSymbol(\"ERROR:\" + module,
symbolName);\n          }\n          return this.getStaticSymbol(filePath, symbolName);\n          };\n          StaticSymbolResolver.prototype.resolveModule = function (module, containingFile) {\n          try {\n
return this.host.moduleNameToFileName(module, containingFile);\n          }\n          catch (e) {\n
console.error(\"Could not resolve module \"" + module + "\" relative to file \"" + containingFile);\n
this.reportError(e, undefined, containingFile);\n          }\n          return null;\n          };\n          return
StaticSymbolResolver;\n          }());\n          // Remove extra underscore from escaped identifier.\n          // See
https://github.com/Microsoft/TypeScript/blob/master/src/compiler/utilities.ts\n          function
unescapeIdentifier(identifier) {\n          return identifier.startsWith('__') ? identifier.substr(1) : identifier;\n          }\n
function unwrapResolvedMetadata(metadata) {\n          if (metadata && metadata.__symbolic === 'resolved') {\n
return metadata.symbol;\n          }\n          return metadata;\n          }\n          function serializeSummaries(srcFileName,
forJitCtx, summaryResolver, symbolResolver, symbols, types, createExternalSymbolReexports) {\n          if
(createExternalSymbolReexports === void 0) { createExternalSymbolReexports = false; }\n          var
toJsonSerializer = new ToJsonSerializer(symbolResolver, summaryResolver, srcFileName);\n          // for symbols,
we use everything except for the class metadata itself\n          // (we keep the statics though), as the class metadata is
contained in the\n          // CompileTypeSummary.\n          symbols.forEach(function (resolvedSymbol) { return
toJsonSerializer.addSummary({ symbol: resolvedSymbol.symbol, metadata: resolvedSymbol.metadata }); });\n
// Add type summaries.\n          types.forEach(function (_a) {\n          var summary = _a.summary, metadata =
_a.metadata;\n          toJsonSerializer.addSummary({ symbol: summary.type.reference, metadata: undefined, type:
summary });\n          });\n          var _a = toJsonSerializer.serialize(createExternalSymbolReexports), json = _a.json,
exportAs = _a.exportAs;\n          if (forJitCtx) {\n          var forJitSerializer_1 = new ForJitSerializer(forJitCtx,
symbolResolver, summaryResolver);\n          types.forEach(function (_a) {\n          var summary = _a.summary,
metadata = _a.metadata;\n          forJitSerializer_1.addSourceType(summary, metadata);\n          });\n
toJsonSerializer.unprocessedSymbolSummariesBySymbol.forEach(function (summary) {\n          if

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(summaryResolver.isLibraryFile(summary.symbol.filePath) && summary.type) {\n
forJitSerializer_1.addLibType(summary.type);\n        }\n    });\n
forJitSerializer_1.serialize(exportAs);\n    }\n    return { json: json, exportAs: exportAs };\n }\n function
deserializeSummaries(symbolCache, summaryResolver, libraryFileName, json) {\n    var deserializer = new
FromJsonDeserializer(symbolCache, summaryResolver);\n    return deserializer.deserialize(libraryFileName,
json);\n }\n function createForJitStub(outputCtx, reference) {\n    return
createSummaryForJitFunction(outputCtx, reference, NULL_EXPR);\n }\n function
createSummaryForJitFunction(outputCtx, reference, value) {\n    var fnName =
summaryForJitName(reference.name);\n    outputCtx.statements.push(fn([], [new ReturnStatement(value)], new
ArrayType(DYNAMIC_TYPE)).toDeclStmt(fnName, [\n        exports.StmtModifier.Final,
exports.StmtModifier.Exported\n    ]));\n }\n var toJsonSerializer = /** @class */ (function (_super) {\n
__extends(toJsonSerializer, _super);\n    function toJsonSerializer(symbolResolver, summaryResolver,
srcFileName) {\n        var _this = _super.call(this) || this;\n        _this.symbolResolver = symbolResolver;\n        _this.summaryResolver = summaryResolver;\n        _this.srcFileName = srcFileName;\n        // Note: This
only contains symbols without members.\n        _this.symbols = [];\n        _this.indexBySymbol = new Map();\n        _this.reexportedBy = new Map();\n        // This now contains a `__symbol: number` in the place of\n
// StaticSymbols, but otherwise has the same shape as the original objects.\n
        _this.processedSummaryBySymbol = new Map();\n        _this.processedSummaries = [];\n
        _this.unprocessedSymbolSummariesBySymbol = new Map();\n        _this.moduleName =
symbolResolver.getKnownModuleName(srcFileName);\n        return _this;\n    }\n
toJsonSerializer.prototype.addSummary = function (summary) {\n        var _this = this;\n        var
unprocessedSummary = this.unprocessedSymbolSummariesBySymbol.get(summary.symbol);\n        var
processedSummary = this.processedSummaryBySymbol.get(summary.symbol);\n        if (!unprocessedSummary)
{\n            unprocessedSummary = { symbol: summary.symbol, metadata: undefined };\n
this.unprocessedSymbolSummariesBySymbol.set(summary.symbol, unprocessedSummary);\n
processedSummary = { symbol: this.processValue(summary.symbol, 0 /* None */) };\n
this.processedSummaries.push(processedSummary);\n
this.processedSummaryBySymbol.set(summary.symbol, processedSummary);\n        }\n        if
(!unprocessedSummary.metadata && summary.metadata) {\n            var metadata_1 = summary.metadata || {};\n
            if (metadata_1.__symbolic === 'class') {\n                // For classes, we keep everything except their class
decorators.\n                // We need to keep e.g. the ctor args, method names, method decorators\n                // so
that the class can be extended in another compilation unit.\n                // We don't keep the class decorators as\n
                // 1) they refer to data\n                // that should not cause a rebuild of downstream compilation units\n
                // (e.g. inline templates of @Component, or @NgModule.declarations)\n                // 2) their data is
already captured in TypeSummaries, e.g. DirectiveSummary.\n                var clone_1 = {};\n
Object.keys(metadata_1).forEach(function (propName) {\n                    if (propName !== 'decorators') {\n
                        clone_1[propName] = metadata_1[propName];\n                    }\n                });\n                metadata_1
= clone_1;\n            }\n            else if (isCall(metadata_1)) {\n                if (!isFunctionCall(metadata_1) &&
!isMethodCallOnVariable(metadata_1)) {\n                    // Don't store complex calls as we won't be able to
simplify them anyways later on.\n                    metadata_1 = {\n                        __symbolic: 'error',\n
                        message: 'Complex function calls are not supported.',\n                    };\n                }\n            }\n
// Note: We need to keep storing ctor calls for e.g.\n            // `export const x = new InjectionToken(...)`\n
unprocessedSummary.metadata = metadata_1;\n            processedSummary.metadata =
this.processValue(metadata_1, 1 /* ResolveValue */);\n            if (metadata_1 instanceof StaticSymbol &&\n
                this.summaryResolver.isLibraryFile(metadata_1.filePath)) {\n                var declarationSymbol =
this.symbols[this.indexBySymbol.get(metadata_1)];\n                if (!isLoweredSymbol(declarationSymbol.name))
{\n                    // Note: symbols that were introduced during codegen in the user file can have a reexport\n
                    // if a user used `export *`. However, we can't rely on this as tsickle will change\n                    // `export *`

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into named exports, using only the information from the typechecker.\n          // As we introduce the new
symbols after typecheck, Tsickle does not know about them,\n          // and omits them when expanding
`export *`.\n          // So we have to keep reexporting these symbols manually via .ngfactory files.\n    this.reexportedBy.set(declarationSymbol, summary.symbol);\n          }\n          }\n          }\n          if
(!unprocessedSummary.type && summary.type) {\n          unprocessedSummary.type = summary.type;\n
// Note: We don't add the summaries of all referenced symbols as for the ResolvedSymbols,\n          // as the
type summaries already contain the transitive data that they require\n          // (in a minimal way).\n
processedSummary.type = this.processValue(summary.type, 0 /* None */);\n          // except for reexported
directives / pipes, so we need to store\n          // their summaries explicitly.\n          if
(summary.type.summaryKind === exports.CompileSummaryKind.NgModule) {\n          var
ngModuleSummary = summary.type;\n
ngModuleSummary.exportedDirectives.concat(ngModuleSummary.exportedPipes).forEach(function (id) {\n
    var symbol = id.reference;\n          if (_this.summaryResolver.isLibraryFile(symbol.filePath) &&\n
        !_this.unprocessedSymbolSummariesBySymbol.has(symbol)) {\n          var summary_1 =
_this.summaryResolver.resolveSummary(symbol);\n          if (summary_1) {\n
_this.addSummary(summary_1);\n          }\n          }\n          });\n          }\n          }\n
};\n    /**\n     * @param createExternalSymbolReexports Whether external static symbols should be re-
exported.\n     * This can be enabled if external symbols should be re-exported by the current module in\n     *
order to avoid dynamically generated module dependencies which can break strict dependency\n     *
enforcements (as in Google3). Read more here: https://github.com/angular/angular/issues/25644\n     */\n
ToJsonSerializer.prototype.serialize = function (createExternalSymbolReexports) {\n    var _this = this;\n
var exportAs = [];\n    var json = JSON.stringify({\n    moduleName: this.moduleName,\n
summaries: this.processedSummaries,\n    symbols: this.symbols.map(function (symbol, index) {\n
    symbol.assertNoMembers();\n    var importAs = undefined;\n    if
(_this.summaryResolver.isLibraryFile(symbol.filePath)) {\n    var reexportSymbol =
_this.reexportedBy.get(symbol);\n    if (reexportSymbol) {\n    // In case the given
external static symbol is already manually exported by the\n    // user, we just proxy the external
static symbol reference to the manual export.\n    // This ensures that the AOT compiler imports the
external symbol through the\n    // user export and does not introduce another dependency which is
not needed.\n    importAs = _this.indexBySymbol.get(reexportSymbol);\n    }\n
    else if (createExternalSymbolReexports) {\n    // In this case, the given external static symbol is
*not* manually exported by\n    // the user, and we manually create a re-export in the factory file so
that we\n    // don't introduce another module dependency. This is useful when running within\n
    // Bazel so that the AOT compiler does not introduce any module dependencies\n    //
which can break the strict dependency enforcement. (e.g. as in Google3)\n    // Read more about this
here: https://github.com/angular/angular/issues/25644\n    var summary =
_this.unprocessedSymbolSummariesBySymbol.get(symbol);\n    if (!summary || !summary.metadata
|| summary.metadata.__symbolic !== 'interface') {\n    importAs = symbol.name + \"_\" + index;\n
    exportAs.push({ symbol: symbol, exportAs: importAs });\n    }\n    }\n
    }\n    return {\n    __symbolic: index,\n    name: symbol.name,\n
    filePath: _this.summaryResolver.toSummaryFileName(symbol.filePath, _this.srcFileName),\n
importAs: importAs\n    };\n    });\n    return { json: json, exportAs: exportAs };\n
};\n    ToJsonSerializer.prototype.processValue = function (value, flags) {\n    return visitValue(value,
this, flags);\n    };\n    ToJsonSerializer.prototype.visitOther = function (value, context) {\n    if (value
instanceof StaticSymbol) {\n    var baseSymbol = this.symbolResolver.getStaticSymbol(value.filePath,
value.name);\n    var index = this.visitStaticSymbol(baseSymbol, context);\n    return { __symbolic:
index, members: value.members };\n    }\n    };\n    /**\n     * Strip line and character numbers from
ngsummaries.\n     * Emitting them causes white spaces changes to retrigger upstream\n     * recompilations in

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bazel.\n      * TODO: find out a way to have line and character numbers in errors without\n      * excessive
recompilation in bazel.\n      *\n      ToJsonSerializer.prototype.visitStringMap = function (map, context) {\n
  if (map['__symbolic'] === 'resolved') {\n      return visitValue(map['symbol'], this, context);\n      }\n
  if (map['__symbolic'] === 'error') {\n      delete map['line'];\n      delete map['character'];\n      }\n
  return _super.prototype.visitStringMap.call(this, map, context);\n  };\n  /**\n   * Returns null if the
options.resolveValue is true, and the summary for the symbol\n   * resolved to a type or could not be resolved.\n
  *\n  ToJsonSerializer.prototype.visitStaticSymbol = function (baseSymbol, flags) {\n      var index =
this.indexBySymbol.get(baseSymbol);\n      var summary = null;\n      if (flags & 1 /* ResolveValue */ &&\n
this.summaryResolver.isLibraryFile(baseSymbol.filePath)) {\n          if
(this.unprocessedSymbolSummariesBySymbol.has(baseSymbol)) {\n              // the summary for this symbol
was already added\n              // -> nothing to do.\n              return index;\n          }\n          summary =
this.loadSummary(baseSymbol);\n          if (summary && summary.metadata instanceof StaticSymbol) {\n
              // The summary is a reexport\n              index = this.visitStaticSymbol(summary.metadata, flags);\n
              // reset the summary as it is just a reexport, so we don't want to store it.\n              summary = null;\n
          }\n          else if (index != null) {\n              // Note: === on purpose to compare with undefined!\n
              // No summary and the symbol is already added -> nothing to do.\n              return index;\n          }\n
          // Note: === on purpose to compare with undefined!\n          if (index == null) {\n              index =
this.symbols.length;\n              this.symbols.push(baseSymbol);\n          }\n
          this.indexBySymbol.set(baseSymbol, index);\n          if (summary) {\n              this.addSummary(summary);\n
          }\n          return index;\n      };\n
  ToJsonSerializer.prototype.loadSummary = function (symbol) {\n
  var summary = this.summaryResolver.resolveSummary(symbol);\n      if (!summary) {\n          // some
symbols might originate from a plain typescript library\n          // that just exported .d.ts and .metadata.json files,
i.e. where no summary\n          // files were created.\n          var resolvedSymbol =
this.symbolResolver.resolveSymbol(symbol);\n          if (resolvedSymbol) {\n              summary = { symbol:
resolvedSymbol.symbol, metadata: resolvedSymbol.metadata }; \n          }\n          return summary;\n
      };\n      return ToJsonSerializer.prototype.loadSummary.call(this, (ValueTransformer));\n
  }\n
  ForJitSerializer = /** @class */ (function ()\n  {\n      function ForJitSerializer(outputCtx, symbolResolver, summaryResolver) {\n          this.outputCtx =
outputCtx;\n          this.symbolResolver = symbolResolver;\n          this.summaryResolver = summaryResolver;\n
          this.data = [];\n      }\n
      ForJitSerializer.prototype.addSourceType = function (summary, metadata) {\n
          this.data.push({ summary: summary, metadata: metadata, isLibrary: false });\n      }\n
      ForJitSerializer.prototype.addLibType = function (summary) {\n          this.data.push({ summary: summary,
metadata: null, isLibrary: true });\n      }\n
      ForJitSerializer.prototype.serialize = function (exportAsArr) {\n
          var e_1, _a, e_2, _b, e_3, _c;\n          var _this = this;\n          var exportAsBySymbol = new Map();\n          try\n          {\n              for (var exportAsArr_1 = __values(exportAsArr), exportAsArr_1_1 = exportAsArr_1.next();\n
!exportAsArr_1_1.done; exportAsArr_1_1 = exportAsArr_1.next()) {\n                  var _d =
exportAsArr_1_1.value, symbol = _d.symbol, exportAs = _d.exportAs;\n
                  exportAsBySymbol.set(symbol, exportAs);\n              }\n              catch (e_1_1) { e_1 = { error: e_1_1 }; }\n
              finally {\n                  try {\n                      if (exportAsArr_1_1 && !exportAsArr_1_1.done && (_a =
exportAsArr_1.return)) _a.call(exportAsArr_1);\n                      finally { if (e_1) throw e_1.error; }\n
                  }\n                  var ngModuleSymbols = new Set();\n                  try {\n                      for (var _e = __values(this.data), _f =
_e.next(); !_f.done; _f = _e.next()) {\n                          var _g = _f.value, summary = _g.summary, metadata =
_g.metadata, isLibrary = _g.isLibrary;\n                          if (summary.summaryKind ===
exports.CompileSummaryKind.NgModule) {\n                              // collect the symbols that refer to NgModule
classes.\n                              // Note: we can't just rely on `summary.type.summaryKind` to determine this as\n
                              // we don't add the summaries of all referenced symbols when we serialize type summaries.\n
                              // See serializeSummaries for details.\n                              ngModuleSymbols.add(summary.type.reference);\n
                              var modSummary = summary;\n                              try {\n                                  for (var _h = (e_3 = void 0,\n
__values(modSummary.modules)), _j = _h.next(); !_j.done; _j = _h.next()) {\n                                      var mod =

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    _j.value;\n
        ngModuleSymbols.add(mod.reference);\n
    }\n
    }\n
    catch (e_3_1) { e_3 = { error: e_3_1 }; }\n
    finally {\n
    try {\n
    if (_j && !_j.done && (_c = _h.return)) _c.call(_h);\n
    }\n
    finally { if (e_3)\n
    throw e_3.error; }\n
    }\n
    }\n
    if (!isLibrary) {\n
    var fnName =\n
    summaryForJitName(summary.type.reference.name);\n
    createSummaryForJitFunction(this.outputCtx,\n
    summary.type.reference, this.serializeSummaryWithDeps(summary, metadata));\n
    }\n
    }\n
    catch (e_2_1) { e_2 = { error: e_2_1 }; }\n
    finally {\n
    try {\n
    if (_f &&\n
    !_f.done && (_b = _e.return)) _b.call(_e);\n
    }\n
    finally { if (e_2) throw e_2.error; }\n
    }\n
    }\n
    ngModuleSymbols.forEach(function (ngModuleSymbol) {\n
    if\n
    (_this.summaryResolver.isLibraryFile(ngModuleSymbol.filePath)) {\n
    var exportAs =\n
    exportAsBySymbol.get(ngModuleSymbol) || ngModuleSymbol.name;\n
    var jitExportAsName =\n
    summaryForJitName(exportAs);\n
    _this.outputCtx.statements.push(variable(jitExportAsName)\n
    .set(_this.serializeSummaryRef(ngModuleSymbol))\n
    .toDeclStmt(null,\n
    [exports.StmtModifier.Exported]));\n
    }\n
    });\n
    });\n
    ForJitSerializer.prototype.serializeSummaryWithDeps = function (summary, metadata) {\n
    var _this = this;\n
    var expressions = [this.serializeSummary(summary)];\n
    var providers = [];\n
    if (metadata\n
    instanceof CompileNgModuleMetadata) {\n
    expressions.push.apply(expressions, __spread(\n
    //\n
    For directives / pipes, we only add the declared ones,\n
    // and rely on transitively importing NgModules to\n
    get the transitive\n
    // summaries.\n
    metadata.declaredDirectives.concat(metadata.declaredPipes)\n
    .map(function (type) { return type.reference; }));\n
    // For modules,\n
    // we also add\n
    the summaries for modules\n
    // from libraries.\n
    // This is ok as we produce reexports for all\n
    transitive modules.\n
    .concat(metadata.transitiveModule.modules.map(function (type) { return\n
    type.reference; }));\n
    .filter(function (ref) { return ref !== metadata.type.reference; }));\n
    .map(function (ref) { return _this.serializeSummaryRef(ref); }));\n
    // Note: We don't use\n
    `NgModuleSummary.providers`, as that one is transitive,\n
    // and we already have transitive modules.\n
    providers = metadata.providers;\n
    }\n
    else if (summary.summaryKind ===\n
    exports.CompileSummaryKind.Directive) {\n
    var dirSummary = summary;\n
    providers =\n
    dirSummary.providers.concat(dirSummary.viewProviders);\n
    }\n
    // Note: We can't just refer to the\n
    `ngsummary.ts` files for `useClass` providers (as we do for\n
    // declaredDirectives / declaredPipes), as we\n
    allow\n
    // providers without ctor arguments to skip the `@Injectable` decorator,\n
    // i.e. we didn't\n
    generate .ngsummary.ts files for these.\n
    expressions.push.apply(expressions,\n
    __spread(providers.filter(function (provider) { return !provider.useClass; }).map(function (provider) { return\n
    _this.serializeSummary({\n
    summaryKind: exports.CompileSummaryKind.Injectable,\n
    type:\n
    provider.useClass\n
    }); }));\n
    return literalArr(expressions);\n
    });\n
    ForJitSerializer.prototype.serializeSummaryRef = function (typeSymbol) {\n
    var jitImportedSymbol =\n
    this.symbolResolver.getStaticSymbol(summaryForJitFileName(typeSymbol.filePath),\n
    summaryForJitName(typeSymbol.name));\n
    return this.outputCtx.importExpr(jitImportedSymbol);\n
    };\n
    ForJitSerializer.prototype.serializeSummary = function (data) {\n
    var outputCtx = this.outputCtx;\n
    var Transformer = /** @class */ (function () {\n
    function Transformer() {\n
    }\n
    Transformer.prototype.visitArray = function (arr, context) {\n
    var _this = this;\n
    return\n
    literalArr(arr.map(function (entry) { return visitValue(entry, _this, context); }));\n
    };\n
    Transformer.prototype.visitStringMap = function (map, context) {\n
    var _this = this;\n
    return\n
    new LiteralMapExpr(Object.keys(map).map(function (key) { return new LiteralMapEntry(key,\n
    visitValue(map[key], _this, context), false); }));\n
    };\n
    Transformer.prototype.visitPrimitive =\n
    function (value, context) {\n
    return literal(value);\n
    };\n
    Transformer.prototype.visitOther = function (value, context) {\n
    if (value instanceof StaticSymbol) {\n
    return outputCtx.importExpr(value);\n
    }\n
    else {\n
    throw new\n
    Error(`Illegal State: Encountered value ` + value);\n
    }\n
    }\n
    return Transformer;\n
    };\n

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    this._analyzedFiles.set(fileName, analyzedFile);\n        }\n        return analyzedFile;\n    };\n
AotCompiler.prototype._analyzeFileForInjectables = function (fileName) {\n    var analyzedFile =
this._analyzedFilesForInjectables.get(fileName);\n    if (!analyzedFile) {\n        analyzedFile =
analyzeFileForInjectables(this._host, this._symbolResolver, this._metadataResolver, fileName);\n
this._analyzedFilesForInjectables.set(fileName, analyzedFile);\n    }\n    return analyzedFile;\n};\n
AotCompiler.prototype.findGeneratedFileNames = function (fileName) {\n    var _this = this;\n    var
genFileNames = [];\n    var file = this._analyzeFile(fileName);\n    // Make sure we create a .ngfactory if
we have a injectable/directive/pipe/NgModule\n    // or a reference to a non source file.\n    // Note: This is
overestimating the required .ngfactory files as the real calculation is harder.\n    // Only do this for
StubEmitFlags.Basic, as adding a type check block\n    // does not change this file (as we generate type check
blocks based on NgModules).\n    if (this._options.allowEmptyCodegenFiles || file.directives.length ||
file.pipes.length ||\n        file.injectables.length || file.ngModules.length || file.exportsNonSourceFiles) {\n
    genFileNames.push(ngfactoryFilePath(file.fileName, true));\n        if (this._options.enableSummariesForJit)
{\n            genFileNames.push(summaryForJitFileName(file.fileName, true));\n        }\n    }\n
var fileSuffix = normalizeGenFileSuffix(splitTypescriptSuffix(file.fileName, true)[1]);\n
file.directives.forEach(function (dirSymbol) {\n    var compMeta =
_this._metadataResolver.getNonNormalizedDirectiveMetadata(dirSymbol).metadata;\n        if
(!compMeta.isComponent) {\n            return;\n        }\n        // Note: compMeta is a component and
therefore template is non null.\n        compMeta.template.styleUrls.forEach(function (styleUrl) {\n
var normalizedUrl = _this._host.resourceNameToFileUrl(styleUrl, file.fileName);\n            if
(!normalizedUrl) {\n                throw syntaxError("\'Couldn't resolve resource \' + styleUrl + \' relative to \' +
file.fileName);\n            }\n            var needsShim = (compMeta.template.encapsulation ||\n
_this._config.defaultEncapsulation) === ViewEncapsulation.Emulated;\n
genFileNames.push(_stylesModuleUrl(normalizedUrl, needsShim, fileSuffix));\n            if
(!_this._options.allowEmptyCodegenFiles) {\n                genFileNames.push(_stylesModuleUrl(normalizedUrl,
!needsShim, fileSuffix));\n            }\n        });\n    });\n    return genFileNames;\n};\n
AotCompiler.prototype.emitBasicStub = function (genFileName, originalFileName) {\n    var outputCtx =
this._createOutputContext(genFileName);\n    if (genFileName.endsWith('.ngfactory.ts')) {\n        if
(!originalFileName) {\n            throw new Error("\'Assertion error: require the original file for .ngfactory.ts
stubs. File: \' + genFileName);\n        }\n        var originalFile = this._analyzeFile(originalFileName);\n
        this._createNgFactoryStub(outputCtx, originalFile, 1 /* Basic */);\n    }\n    else if
(genFileName.endsWith('.ngsummary.ts')) {\n        if (this._options.enableSummariesForJit) {\n            if
(!originalFileName) {\n                throw new Error("\'Assertion error: require the original file for .ngsummary.ts
stubs. File: \' + genFileName);\n            }\n            var originalFile =
this._analyzeFile(originalFileName);\n            _createEmptyStub(outputCtx);\n
originalFile.ngModules.forEach(function (ngModule) {\n                // create exports that user code can
reference\n                createForJitStub(outputCtx, ngModule.type.reference);\n            });\n        }\n
    }\n    else if (genFileName.endsWith('.ngstyle.ts')) {\n        _createEmptyStub(outputCtx);\n    }\n
    // Note: for the stubs, we don't need a property srcFileUrl,\n    // as later on in emitAllImpls we will create
the proper GeneratedFiles with the\n    // correct srcFileUrl.\n    // This is good as e.g. for .ngstyle.ts files
we can't derive\n    // the url of components based on the genFileUrl.\n    return
this._codegenSourceModule('unknown', outputCtx);\n};\n
AotCompiler.prototype.emitTypeCheckStub =
function (genFileName, originalFileName) {\n    var originalFile = this._analyzeFile(originalFileName);\n
    var outputCtx = this._createOutputContext(genFileName);\n    if (genFileName.endsWith('.ngfactory.ts')) {\n
        this._createNgFactoryStub(outputCtx, originalFile, 2 /* TypeCheck */);\n    }\n    return
outputCtx.statements.length > 0 ?\n        this._codegenSourceModule(originalFile.fileName, outputCtx) :\n
        null;\n};\n
AotCompiler.prototype.loadFilesAsync = function (fileNames, tsFiles) {\n    var _this
= this;\n    var files = fileNames.map(function (fileName) { return _this._analyzeFile(fileName); });\n
};\n

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var loadingPromises = [];\n      files.forEach(function (file) { return file.ngModules.forEach(function
(ngModule) { return
loadingPromises.push(_this._metadataResolver.loadNgModuleDirectiveAndPipeMetadata(ngModule.type.reference
, false)); }); });\n      var analyzedInjectables = tsFiles.map(function (tsFile) { return
_this._analyzeFileForInjectables(tsFile); });\n      return Promise.all(loadingPromises).then(function (_) { return
({\n      analyzedModules: mergeAndValidateNgFiles(files),\n      analyzedInjectables:
analyzedInjectables,\n      }); });\n      AotCompiler.prototype.loadFilesSync = function (fileNames,
tsFiles) {\n      var _this = this;\n      var files = fileNames.map(function (fileName) { return
_this._analyzeFile(fileName); });\n      files.forEach(function (file) { return file.ngModules.forEach(function
(ngModule) { return _this._metadataResolver.loadNgModuleDirectiveAndPipeMetadata(ngModule.type.reference,
true); }); });\n      var analyzedInjectables = tsFiles.map(function (tsFile) { return
_this._analyzeFileForInjectables(tsFile); });\n      return {\n      analyzedModules:
mergeAndValidateNgFiles(files),\n      analyzedInjectables: analyzedInjectables,\n      });\n      AotCompiler.prototype._createNgFactoryStub = function (outputCtx, file, emitFlags) {\n      var _this = this;\n      var componentId = 0;\n      file.ngModules.forEach(function (ngModuleMeta, ngModuleIndex) {\n
// Note: the code below needs to be executed for StubEmitFlags.Basic and StubEmitFlags.TypeCheck,\n      // so
we don't change the .ngfactory file too much when adding the type-check block.\n      // create exports that
user code can reference\n      _this._ngModuleCompiler.createStub(outputCtx,
ngModuleMeta.type.reference);\n      // add references to the symbols from the metadata.\n      // These
can be used by the type check block for components,\n      // and they also cause TypeScript to include these
files into the program too,\n      // which will make them part of the analyzedFiles.\n      var
externalReferences = __spread(ngModuleMeta.transitiveModule.directives.map(function (d) { return d.reference; })),
ngModuleMeta.transitiveModule.pipes.map(function (d) { return d.reference; })),
ngModuleMeta.importedModules.map(function (m) { return m.type.reference; })),
ngModuleMeta.exportedModules.map(function (m) { return m.type.reference; })),
_this._externalIdentifierReferences([Identifiers.TemplateRef, Identifiers.ElementRef]));\n      var
externalReferenceVars = new Map();\n      externalReferences.forEach(function (ref, typeIndex) {\n
externalReferenceVars.set(ref, \"_decl\" + ngModuleIndex + \"_\" + typeIndex);\n      });\n
externalReferenceVars.forEach(function (varName, reference) {\n
outputCtx.statements.push(variable(varName)\n      .set(NULL_EXPR.cast(DYNAMIC_TYPE))\n
.toDeclStmt(expressionType(outputCtx.importExpr(reference, /* typeParams */ null, /* useSummaries */
false)))));\n      });\n      if (emitFlags & 2 /* TypeCheck */) {\n      // add the type-check block
for all components of the NgModule\n      ngModuleMeta.declaredDirectives.forEach(function (dirId) {\n
var compMeta = _this._metadataResolver.getDirectiveMetadata(dirId.reference);\n      if
(!compMeta.isComponent) {\n      return;\n      }\n      componentId++;\n
_this._createTypeCheckBlock(outputCtx, compMeta.type.reference.name + \"_Host_\" + componentId,
ngModuleMeta, _this._metadataResolver.getHostComponentMetadata(compMeta), [compMeta.type],
externalReferenceVars);\n      _this._createTypeCheckBlock(outputCtx, compMeta.type.reference.name
+ \"_\" + componentId, ngModuleMeta, compMeta, ngModuleMeta.transitiveModule.directives,
externalReferenceVars);\n      });\n      });\n      });\n      if (outputCtx.statements.length === 0)
{\n      _createEmptyStub(outputCtx);\n      });\n      AotCompiler.prototype._externalIdentifierReferences = function (references) {\n      var e_1, _a;\n      var
result = [];\n      try {\n      for (var references_1 = __values(references), references_1_1 =
references_1.next(); !references_1_1.done; references_1_1 = references_1.next()) {\n      var reference =
references_1_1.value;\n      var token = createTokenForExternalReference(this.reflector, reference);\n
if (token.identifier) {\n      result.push(token.identifier.reference);\n      }\n      }\n
}\n      catch (e_1_1) { e_1 = { error: e_1_1 }; }\n      finally {\n      try {\n      if
(references_1_1 && !references_1_1.done && (_a = references_1.return)) _a.call(references_1);\n      }\n
}

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    finally { if (e_1) throw e_1.error; }
    }
    return result;
  };
  AotCompiler.prototype._createTypeCheckBlock = function (ctx, componentId, moduleMeta, compMeta, directives,
  externalReferenceVars) {
    var _a;
    var _b = this._parseTemplate(compMeta, moduleMeta,
  directives), parsedTemplate = _b.template, usedPipes = _b.pipes;
    (_a = ctx.statements).push.apply(_a,
  __spread(this._typeCheckCompiler.compileComponent(componentId, compMeta, parsedTemplate, usedPipes,
  externalReferenceVars, ctx)));
  };
  AotCompiler.prototype.emitMessageBundle = function
  (analyzeResult, locale) {
    var _this = this;
    var errors = [];
    var htmlParser = new
  HtmlParser();
    // TODO(vicb): implicit tags & attributes
    var messageBundle = new
  MessageBundle(htmlParser, [], {}, locale);
    analyzeResult.files.forEach(function (file) {
      var
  compMetas = [];
      file.directives.forEach(function (directiveType) {
        var dirMeta =
  _this._metadataResolver.getDirectiveMetadata(directiveType);
        if (dirMeta && dirMeta.isComponent)
        {
          compMetas.push(dirMeta);
        }
      });
      compMetas.forEach(function (compMeta) {
        var html = compMeta.template.template;
        //
  Template URL points to either an HTML or TS file depending on whether
        // the file is used with
        `templateUrl:` or `template:`, respectively.
        var templateUrl = compMeta.template.templateUrl;
        var interpolationConfig = InterpolationConfig.fromArray(compMeta.template.interpolation);
        errors.push.apply(errors, __spread(messageBundle.updateFromTemplate(html, templateUrl,
  interpolationConfig)));
      });
      if (errors.length) {
        throw new
  Error(errors.map(function (e) { return e.toString(); }).join('\n'));
      }
      return messageBundle;
    });
    AotCompiler.prototype.emitAllPartialModules = function (_a, r3Files) {
      var _this = this;
      var ngModuleByPipeOrDirective = _a.ngModuleByPipeOrDirective, files = _a.files;
      var contextMap = new
  Map();
      var getContext = function (fileName) {
        if (!contextMap.has(fileName)) {
          contextMap.set(fileName, _this._createOutputContext(fileName));
        }
        return
  contextMap.get(fileName);
      };
      files.forEach(function (file) {
        return
  _this._compilePartialModule(file.fileName, ngModuleByPipeOrDirective, file.directives, file.pipes, file.ngModules,
  file.injectables, getContext(file.fileName));
      });
      r3Files.forEach(function (file) {
        return
  _this._compileShallowModules(file.fileName, file.shallowModules, getContext(file.fileName));
      });
      return
  Array.from(contextMap.values())
        .map(function (context) {
          return ({
            fileName:
  context.genFilePath,
            statements: __spread(context.constantPool.statements, context.statements),
          });
        });
    };
    AotCompiler.prototype._compileShallowModules = function (fileName, shallowModules,
  context) {
      var _this = this;
      shallowModules.forEach(function (module) {
        return
  compileNgModuleFromRender2(context, module, _this._injectableCompiler);
      });
    };
    AotCompiler.prototype._compilePartialModule = function (fileName, ngModuleByPipeOrDirective, directives,
  pipes, ngModules, injectables, context) {
      var _this = this;
      var errors = [];
      var
  schemaRegistry = new DomElementSchemaRegistry();
      var hostBindingParser = new
  BindingParser(this._templateParser.expressionParser, DEFAULT_INTERPOLATION_CONFIG, schemaRegistry,
  [], errors);
      // Process all components and directives
      directives.forEach(function (directiveType) {
        var directiveMetadata = _this._metadataResolver.getDirectiveMetadata(directiveType);
        if
  (directiveMetadata.isComponent) {
          var module = ngModuleByPipeOrDirective.get(directiveType);
          module ||
            error("Cannot determine the module for component \"" +
  identifierName(directiveMetadata.type) + "\"");
          var htmlAst = directiveMetadata.template.htmlAst;
          var preserveWhitespaces = directiveMetadata.template.preserveWhitespaces;
          if
  (!preserveWhitespaces) {
            htmlAst = removeWhitespaces(htmlAst);
          }
          var
  render3Ast = htmlAstToRender3Ast(htmlAst.rootNodes, hostBindingParser);
          // Map of StaticType by
  directive selectors
          var directiveTypeBySel_1 = new Map();
          var directives_1 =
  module.transitiveModule.directives.map(function (dir) {
            return
  _this._metadataResolver.getDirectiveSummary(dir.reference);
          });
          directives_1.forEach(function
  (directive) {
            if (directive.selector) {
              directiveTypeBySel_1.set(directive.selector,

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directive.type.reference);\n                }\n                });\n                // Map of StaticType by pipe names\n                var pipeTypeByName_1 = new Map();\n                var pipes_1 =\nmodule.transitiveModule.pipes.map(function (pipe) { return\n_this._metadataResolver.getPipeSummary(pipe.reference); });\n                pipes_1.forEach(function (pipe) {\n                pipeTypeByName_1.set(pipe.name, pipe.type.reference);\n                });\ncompileComponentFromRender2(context, directiveMetadata, render3Ast, _this.reflector, hostBindingParser,\ndirectiveTypeBySel_1, pipeTypeByName_1);\n                }\n                else {\ncompileDirectiveFromRender2(context, directiveMetadata, _this.reflector, hostBindingParser);\n                }\n});\n                pipes.forEach(function (pipeType) {\n                var pipeMetadata =\n_this._metadataResolver.getPipeMetadata(pipeType);\n                if (pipeMetadata) {\ncompilePipeFromRender2(context, pipeMetadata, _this.reflector);\n                }\n});\ninjectables.forEach(function (injectable) { return _this._injectableCompiler.compile(injectable, context); });\n});\nAotCompiler.prototype.emitAllPartialModules2 = function (files) {\n                var _this = this;\n                //\nUsing reduce like this is a select many pattern (where map is a select pattern)\n                return files.reduce(function (r,\nfile) {\n                r.push.apply(r, __spread(_this._emitPartialModule2(file.fileName, file.injectables));\nreturn r;\n                }, []);\n});\nAotCompiler.prototype._emitPartialModule2 = function (fileName,\ninjectables) {\n                var _this = this;\n                var context = this._createOutputContext(fileName);\ninjectables.forEach(function (injectable) { return _this._injectableCompiler.compile(injectable, context); });\nif (context.statements && context.statements.length > 0) {\n                return [{ fileName: fileName, statements:\n__spread(context.constantPool.statements, context.statements) }];\n                }\n                return [];\n});\nAotCompiler.prototype.emitAllImpls = function (analyzeResult) {\n                var _this = this;\n                var\nngModuleByPipeOrDirective = analyzeResult.ngModuleByPipeOrDirective, files = analyzeResult.files;\n                var\nsourceModules = files.map(function (file) { return _this._compileImplFile(file.fileName,\nngModuleByPipeOrDirective, file.directives, file.pipes, file.ngModules, file.injectables); });\n                return\nflatten(sourceModules);\n});\nAotCompiler.prototype._compileImplFile = function (srcFileUrl,\nngModuleByPipeOrDirective, directives, pipes, ngModules, injectables) {\n                var _this = this;\n                var\nfileSuffix = normalizeGenFileSuffix(splitTypescriptSuffix(srcFileUrl, true)[1]);\n                var generatedFiles = [];\n                var\noutputCtx = this._createOutputContext(ngfactoryFilePath(srcFileUrl, true));\n                generatedFiles.push.apply(generatedFiles, __spread(this._createSummary(srcFileUrl, directives, pipes, ngModules,\ninjectables, outputCtx));\n                // compile all ng modules\n                ngModules.forEach(function (ngModuleMeta)\n{ return _this._compileModule(outputCtx, ngModuleMeta); });\n                // compile components\n                directives.forEach(function (dirType) {\n                var compMeta =\n_this._metadataResolver.getDirectiveMetadata(dirType);\n                if (!compMeta.isComponent) {\nreturn;\n                }\n                var ngModule = ngModuleByPipeOrDirective.get(dirType);\n                if\n(!ngModule) {\n                throw new Error("Internal Error: cannot determine the module for component \"" +\nidentifierName(compMeta.type) + "!");\n                }\n                // compile styles\n                var\ncomponentStylesheet = _this._styleCompiler.compileComponent(outputCtx, compMeta);\n                // Note:\ncompMeta is a component and therefore template is non null.\n                compMeta.template.externalStylesheets.forEach(function (stylesheetMeta) {\n                // Note: fill non shim and\nshim style files as they might\n                // be shared by component with and without ViewEncapsulation.\n                var shim = _this._styleCompiler.needsStyleShim(compMeta);\n                generatedFiles.push(_this._codegenStyles(srcFileUrl, compMeta, stylesheetMeta, shim, fileSuffix));\n                }\n                if\n(!_this._options.allowEmptyCodegenFiles) {\n                generatedFiles.push(_this._codegenStyles(srcFileUrl,\ncompMeta, stylesheetMeta, !shim, fileSuffix));\n                }\n                });\n                // compile components\n                var compViewVars = _this._compileComponent(outputCtx, compMeta, ngModule,\nngModule.transitiveModule.directives, componentStylesheet, fileSuffix);\n                _this._compileComponentFactory(outputCtx, compMeta, ngModule, fileSuffix);\n                });\n                if\n(outputCtx.statements.length > 0 || this._options.allowEmptyCodegenFiles) {\n                var srcModule =

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this._codegenSourceModule(srcFileUrl, outputCtx);\n        generatedFiles.unshift(srcModule);\n        }\n    return generatedFiles;\n    });\n    AotCompiler.prototype._createSummary = function (srcFileName,\n    directives, pipes, ngModules, injectables, ngFactoryCtx) {\n        var _this = this;\n        var symbolSummaries\n    = this._symbolResolver.getSymbolsOf(srcFileName)\n        .map(function (symbol) { return\n    _this._symbolResolver.resolveSymbol(symbol); });\n        var typeData = __spread(ngModules.map(function\n    (meta) { return ({\n            summary: _this._metadataResolver.getNgModuleSummary(meta.type.reference),\n            metadata: _this._metadataResolver.getNgModuleMetadata(meta.type.reference)\n        }); })),\n    directives.map(function (ref) { return ({\n            summary: _this._metadataResolver.getDirectiveSummary(ref),\n            metadata: _this._metadataResolver.getDirectiveMetadata(ref)\n        }); })), pipes.map(function (ref) {\n    return ({\n            summary: _this._metadataResolver.getPipeSummary(ref),\n            metadata:\n    _this._metadataResolver.getPipeMetadata(ref)\n        }); })), injectables.map(function (ref) { return ({\n    summary: _this._metadataResolver.getInjectableSummary(ref.symbol),\n            metadata:\n    _this._metadataResolver.getInjectableSummary(ref.symbol).type\n        }); }));\n        var forJitOutputCtx =\n    this._options.enableSummariesForJit ?\n    this._createOutputContext(summaryForJitFileName(srcFileName, true)) :\n        null;\n        var _a =\n    serializeSummaries(srcFileName, forJitOutputCtx, this._summaryResolver, this._symbolResolver,\n    symbolSummaries, typeData, this._options.createExternalSymbolFactoryReexports), json = _a.json, exportAs =\n    _a.exportAs;\n        exportAs.forEach(function (entry) {\n    ngFactoryCtx.statements.push(variable(entry.exportAs).set(ngFactoryCtx.importExpr(entry.symbol)).toDeclStmt(\n    ll, [\n            exports.StmtModifier.Exported\n        ]));\n        var summaryJson = new\n    GeneratedFile(srcFileName, summaryFileName(srcFileName), json);\n        var result = [summaryJson];\n    if (forJitOutputCtx) {\n        result.push(this._codegenSourceModule(srcFileName, forJitOutputCtx));\n    }\n    return result;\n    });\n    AotCompiler.prototype._compileModule = function (outputCtx, ngModule)\n    {\n        var providers = [];\n        if (this._options.locale) {\n            var normalizedLocale =\n    this._options.locale.replace(/_/g, '-');\n            providers.push({\n                token:\n    createTokenForExternalReference(this.reflector, Identifiers.LOCALE_ID),\n                useValue:\n    normalizedLocale,\n            });\n        }\n        if (this._options.i18nFormat) {\n            providers.push({\n                token: createTokenForExternalReference(this.reflector, Identifiers.TRANSLATIONS_FORMAT),\n                useValue: this._options.i18nFormat\n            });\n        }\n    this._ngModuleCompiler.compile(outputCtx, ngModule, providers);\n    }\n    AotCompiler.prototype._compileComponentFactory = function (outputCtx, compMeta, ngModule, fileSuffix) {\n        var hostMeta = this._metadataResolver.getHostComponentMetadata(compMeta);\n        var\n    hostViewFactoryVar = this._compileComponent(outputCtx, hostMeta, ngModule, [compMeta.type], null,\n    fileSuffix)\n        .viewClassVar;\n        var compFactoryVar =\n    componentFactoryName(compMeta.type.reference);\n        var inputsExprs = [];\n        for (var propName in\n    compMeta.inputs) {\n            var templateName = compMeta.inputs[propName];\n            // Don't quote so that\n    the key gets minified...\n            inputsExprs.push(new LiteralMapEntry(propName, literal(templateName),\n    false));\n        }\n        var outputsExprs = [];\n        for (var propName in compMeta.outputs) {\n            var templateName = compMeta.outputs[propName];\n            // Don't quote so that the key gets minified...\n            outputsExprs.push(new LiteralMapEntry(propName, literal(templateName), false));\n        }\n    outputCtx.statements.push(variable(compFactoryVar)\n    .set(importExpr(Identifiers.createComponentFactory).callFn([\n            literal(compMeta.selector),\n    outputCtx.importExpr(compMeta.type.reference),\n            variable(hostViewFactoryVar), new\n    LiteralMapExpr(inputsExprs),\n            new LiteralMapExpr(outputsExprs),\n    literalArr(compMeta.template.ngContentSelectors.map(function (selector) { return literal(selector); })))\n        ]))\n        .toDeclStmt(importType(Identifiers.ComponentFactory),\n    [expressionType(outputCtx.importExpr(compMeta.type.reference))], [TypeModifier.Const]),\n    [exports.StmtModifier.Final, exports.StmtModifier.Exported]);\n    }\n}

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AotCompiler.prototype._compileComponent = function (outputCtx, compMeta, ngModule, directiveIdentifiers,
componentStyles, fileSuffix) {\n      var _a = this._parseTemplate(compMeta, ngModule, directiveIdentifiers),
parsedTemplate = _a.template, usedPipes = _a.pipes;\n      var stylesExpr = componentStyles ?
variable(componentStyles.stylesVar) : literalArr([]);\n      var viewResult =
this._viewCompiler.compileComponent(outputCtx, compMeta, parsedTemplate, stylesExpr, usedPipes);\n      if
(componentStyles) {\n      _resolveStyleStatements(this._symbolResolver, componentStyles,
this._styleCompiler.needsStyleShim(compMeta), fileSuffix);\n      }\n      return viewResult;\n    };\n
AotCompiler.prototype._parseTemplate = function (compMeta, ngModule, directiveIdentifiers) {\n      var _this
= this;\n      if (this._templateAstCache.has(compMeta.type.reference)) {\n      return
this._templateAstCache.get(compMeta.type.reference);\n      }\n      var preserveWhitespaces =
compMeta.template.preserveWhitespaces;\n      var directives = directiveIdentifiers.map(function (dir) { return
_this._metadataResolver.getDirectiveSummary(dir.reference); });\n      var pipes =
ngModule.transitiveModule.pipes.map(function (pipe) { return
_this._metadataResolver.getPipeSummary(pipe.reference); });\n      var result =
this._templateParser.parse(compMeta, compMeta.template.htmlAst, directives, pipes, ngModule.schemas,
templateSourceUrl(ngModule.type, compMeta, compMeta.template), preserveWhitespaces);\n
this._templateAstCache.set(compMeta.type.reference, result);\n      return result;\n    };\n
AotCompiler.prototype._createOutputContext = function (genFilePath) {\n      var _this = this;\n      var
importExpr$1 = function (symbol, typeParams, useSummaries) {\n      if (typeParams === void 0) {\n
typeParams = null; }\n      if (useSummaries === void 0) { useSummaries = true; }\n      if (!(symbol
instanceof StaticSymbol)) {\n      throw new Error("\nInternal error: unknown identifier\n" +
JSON.stringify(symbol));\n      }\n      var arity = _this._symbolResolver.getTypeArity(symbol) || 0;\n
var _a = _this._symbolResolver.getImportAs(symbol, useSummaries) || symbol, filePath = _a.filePath, name =
_a.name, members = _a.members;\n      var importModule = _this._fileNameToModuleName(filePath,
genFilePath);\n      // It should be good enough to compare filePath to genFilePath and if they are equal\n
// there is a self reference. However, ngfactory files generate to .ts but their\n      // symbols have .d.ts so a
simple compare is insufficient. They should be canonical\n      // and is tracked by #17705.\n      var
selfReference = _this._fileNameToModuleName(genFilePath, genFilePath);\n      var moduleName =
importModule === selfReference ? null : importModule;\n      // If we are in a type expression that refers to a
generic type then supply\n      // the required type parameters. If there were not enough type parameters\n
// supplied, supply any as the type. Outside a type expression the reference\n      // should not supply type
parameters and be treated as a simple value reference\n      // to the constructor function itself.\n      var
suppliedTypeParams = typeParams || [];\n      var missingTypeParamsCount = arity -
suppliedTypeParams.length;\n      var allTypeParams =
suppliedTypeParams.concat(newArray(missingTypeParamsCount, DYNAMIC_TYPE));\n      return
members.reduce(function (expr, memberName) { return expr.prop(memberName); }, importExpr(new
ExternalReference(moduleName, name, null), allTypeParams));\n      }\n      return { statements: [],
genFilePath: genFilePath, importExpr: importExpr$1, constantPool: new ConstantPool() };\n    };\n
AotCompiler.prototype._fileNameToModuleName = function (importedFilePath, containingFilePath) {\n
return this._summaryResolver.getKnownModuleName(importedFilePath) ||\n
this._symbolResolver.getKnownModuleName(importedFilePath) ||\n
this._host.fileNameToModuleName(importedFilePath, containingFilePath);\n    };\n
AotCompiler.prototype._codegenStyles = function (srcFileUrl, compMeta, stylesheetMetadata, isShimmed,
fileSuffix) {\n      var outputCtx = this._createOutputContext(_stylesModuleUrl(stylesheetMetadata.moduleUrl,
isShimmed, fileSuffix));\n      var compiledStylesheet = this._styleCompiler.compileStyles(outputCtx,
compMeta, stylesheetMetadata, isShimmed);\n      _resolveStyleStatements(this._symbolResolver,
compiledStylesheet, isShimmed, fileSuffix);\n      return this._codegenSourceModule(srcFileUrl, outputCtx);\n
    };\n
AotCompiler.prototype._codegenSourceModule = function (srcFileUrl, ctx) {\n      return new

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GeneratedFile(srcFileUrl, ctx.genFilePath, ctx.statements);\n    };\n    AotCompiler.prototype.listLazyRoutes =
function (entryRoute, analyzedModules) {\n    var e_2, _a, e_3, _b;\n    var self = this;\n    if
(entryRoute) {\n    var symbol = parseLazyRoute(entryRoute, this.reflector).referencedModule;\n
return visitLazyRoute(symbol);\n    }\n    else if (analyzedModules) {\n    var allLazyRoutes = [];\n
    try {\n    for (var _c = __values(analyzedModules.ngModules), _d = _c.next(); !_d.done; _d =
_c.next()) {\n    var ngModule = _d.value;\n    var lazyRoutes = listLazyRoutes(ngModule,
this.reflector);\n    try {\n    for (var lazyRoutes_1 = (e_3 = void 0,
__values(lazyRoutes)), lazyRoutes_1_1 = lazyRoutes_1.next(); !lazyRoutes_1_1.done; lazyRoutes_1_1 =
lazyRoutes_1.next()) {\n    var lazyRoute = lazyRoutes_1_1.value;\n
allLazyRoutes.push(lazyRoute);\n    }\n    }\n    catch (e_3_1) { e_3 = {
error: e_3_1 }; }\n    finally {\n    try {\n    if (lazyRoutes_1_1 &&
!lazyRoutes_1_1.done && (_b = lazyRoutes_1.return)) _b.call(lazyRoutes_1);\n    }\n
finally { if (e_3) throw e_3.error; }\n    }\n    }\n    catch (e_2_1) { e_2 =
{ error: e_2_1 }; }\n    finally {\n    try {\n    if (_d && !_d.done && (_a = _c.return))
_a.call(_c);\n    }\n    finally { if (e_2) throw e_2.error; }\n    }\n    return
allLazyRoutes;\n    }\n    else {\n    throw new Error("Either route or analyzedModules has to be
specified!");\n    }\n    function visitLazyRoute(symbol, seenRoutes, allLazyRoutes) {\n    var e_4,
_a;\n    if (seenRoutes === void 0) { seenRoutes = new Set(); }\n    if (allLazyRoutes === void 0) {
allLazyRoutes = []; }\n    // Support pointing to default exports, but stop recursing there,\n    // as the
StaticReflector does not yet support default exports.\n    if (seenRoutes.has(symbol) || !symbol.name) {\n
return allLazyRoutes;\n    }\n    seenRoutes.add(symbol);\n    var lazyRoutes =
listLazyRoutes(self._metadataResolver.getNgModuleMetadata(symbol, true), self.reflector);\n    try {\n
for (var lazyRoutes_2 = __values(lazyRoutes), lazyRoutes_2_1 = lazyRoutes_2.next(); !lazyRoutes_2_1.done;
lazyRoutes_2_1 = lazyRoutes_2.next()) {\n    var lazyRoute = lazyRoutes_2_1.value;\n
allLazyRoutes.push(lazyRoute);\n    visitLazyRoute(lazyRoute.referencedModule, seenRoutes,
allLazyRoutes);\n    }\n    }\n    catch (e_4_1) { e_4 = { error: e_4_1 }; }\n    finally
{\n    try {\n    if (lazyRoutes_2_1 && !lazyRoutes_2_1.done && (_a = lazyRoutes_2.return))
_a.call(lazyRoutes_2);\n    }\n    finally { if (e_4) throw e_4.error; }\n    }\n
return allLazyRoutes;\n    }\n    };\n    return AotCompiler;\n    }());\n    function
_createEmptyStub(outputCtx) {\n    // Note: We need to produce at least one import statement so that\n    //
TypeScript knows that the file is an es6 module. Otherwise our generated\n    // exports / imports won't be emitted
properly by TypeScript.\n    outputCtx.statements.push(importExpr(Identifiers.ComponentFactory).toStmnt());\n
}\n    function _resolveStyleStatements(symbolResolver, compileResult, needsShim, fileSuffix) {\n
compileResult.dependencies.forEach(function (dep) {\n
dep.setValue(symbolResolver.getStaticSymbol(_stylesModuleUrl(dep.moduleUrl, needsShim, fileSuffix),
dep.name));\n    });\n    }\n    function _stylesModuleUrl(stylesheetUrl, shim, suffix) {\n    return "\"\" +
stylesheetUrl + (shim ? '.shim' : '') + \".ngstyle\" + suffix;\n    }\n    function analyzeNgModules(fileNames, host,
staticSymbolResolver, metadataResolver) {\n    var files = _analyzeFilesIncludingNonProgramFiles(fileNames,
host, staticSymbolResolver, metadataResolver);\n    return mergeAnalyzedFiles(files);\n    }\n    function
analyzeAndValidateNgModules(fileNames, host, staticSymbolResolver, metadataResolver) {\n    return
validateAnalyzedModules(analyzeNgModules(fileNames, host, staticSymbolResolver, metadataResolver));\n    }\n
function validateAnalyzedModules(analyzedModules) {\n    if (analyzedModules.symbolsMissingModule &&
analyzedModules.symbolsMissingModule.length) {\n    var messages =
analyzedModules.symbolsMissingModule.map(function (s) { return "\"Cannot determine the module for class \" +
s.name + \" in \" + s.filePath + \"! Add \" + s.name + \" to the NgModule to fix it.\"; });\n    throw
syntaxError(messages.join("\n")); }\n    return analyzedModules;\n    }\n    // Analyzes all of the program
files,\n    // including files that are not part of the program\n    // but are referenced by an NgModule.\n    function
_analyzeFilesIncludingNonProgramFiles(fileNames, host, staticSymbolResolver, metadataResolver) {\n    var

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seenFiles = new Set();\n    var files = [];\n    var visitFile = function (fileName) {\n        if
(seenFiles.has(fileName) || !host.isSourceFile(fileName)) {\n            return false;\n        }\n
seenFiles.add(fileName);\n        var analyzedFile = analyzeFile(host, staticSymbolResolver, metadataResolver,
fileName);\n        files.push(analyzedFile);\n        analyzedFile.ngModules.forEach(function (ngModule) {\n
    ngModule.transitiveModule.modules.forEach(function (modMeta) { return
visitFile(modMeta.reference.filePath); });\n        });\n        fileNames.forEach(function (fileName) {
return visitFile(fileName); });\n        return files;\n    }\n    function analyzeFile(host, staticSymbolResolver,
metadataResolver, fileName) {\n        var abstractDirectives = [];\n        var directives = [];\n        var pipes = [];\n
var injectables = [];\n        var ngModules = [];\n        var hasDecorators =
staticSymbolResolver.hasDecorators(fileName);\n        var exportsNonSourceFiles = false;\n        var
isDeclarationFile = fileName.endsWith('.d.ts');\n        // Don't analyze .d.ts files that have no decorators as a
shortcut\n        // to speed up the analysis. This prevents us from\n        // resolving the references in these files.\n
// Note: exportsNonSourceFiles is only needed when compiling with summaries,\n        // which is not the case when
.d.ts files are treated as input files.\n        if (!isDeclarationFile || hasDecorators) {\n
staticSymbolResolver.getSymbolsOf(fileName).forEach(function (symbol) {\n            var resolvedSymbol =
staticSymbolResolver.resolveSymbol(symbol);\n            var symbolMeta = resolvedSymbol.metadata;\n
if (!symbolMeta || symbolMeta.__symbolic === 'error') {\n                return;\n            }\n            var
isNgSymbol = false;\n            if (symbolMeta.__symbolic === 'class') {\n                if
(metadataResolver.isDirective(symbol)) {\n                    isNgSymbol = true;\n                    // This directive
either has a selector or doesn't. Selector-less directives get tracked\n                    // in abstractDirectives, not
directives. The compiler doesn't deal with selector-less\n                    // directives at all, really, other than to
persist their metadata. This is done so that\n                    // apps will have an easier time migrating to Ivy, which
requires the selector-less\n                    // annotations to be applied.\n                    if
(!metadataResolver.isAbstractDirective(symbol)) {\n                        // The directive is an ordinary directive.\n
                        directives.push(symbol);\n                    } else {\n                        // The directive has
no selector and is an \"abstract\" directive, so track it\n                        // accordingly.\n
abstractDirectives.push(symbol);\n                    }\n                    } else if
(metadataResolver.isPipe(symbol)) {\n                        isNgSymbol = true;\n                        pipes.push(symbol);\n
                    }\n                    else if (metadataResolver.isNgModule(symbol)) {\n                        var ngModule =
metadataResolver.getNgModuleMetadata(symbol, false);\n                        if (ngModule) {\n
isNgSymbol = true;\n                            ngModules.push(ngModule);\n                        }\n                    }\n
                    else if (metadataResolver.isInjectable(symbol)) {\n                        isNgSymbol = true;\n                        var injectable
= metadataResolver.getInjectableMetadata(symbol, null, false);\n                        if (injectable) {\n
injectables.push(injectable);\n                        }\n                    }\n                    }\n                    if (!isNgSymbol) {\n
exportsNonSourceFiles =\n                        exportsNonSourceFiles || isValueExportingNonSourceFile(host,
symbolMeta);\n                    }\n                });\n            }\n            return {\n                fileName: fileName,\n                directives:
directives,\n                abstractDirectives: abstractDirectives,\n                pipes: pipes,\n                ngModules: ngModules,\n
                injectables: injectables,\n                exportsNonSourceFiles: exportsNonSourceFiles,\n            };\n        }\n    }\n    function
analyzeFileForInjectables(host, staticSymbolResolver, metadataResolver, fileName) {\n        var injectables = [];\n
        var shallowModules = [];\n        if (staticSymbolResolver.hasDecorators(fileName)) {\n
staticSymbolResolver.getSymbolsOf(fileName).forEach(function (symbol) {\n            var resolvedSymbol =
staticSymbolResolver.resolveSymbol(symbol);\n            var symbolMeta = resolvedSymbol.metadata;\n
if (!symbolMeta || symbolMeta.__symbolic === 'error') {\n                return;\n            }\n            if
(symbolMeta.__symbolic === 'class') {\n                if (metadataResolver.isInjectable(symbol)) {\n
var injectable = metadataResolver.getInjectableMetadata(symbol, null, false);\n                if (injectable) {\n
                    injectables.push(injectable);\n                }\n            }\n            else if
(metadataResolver.isNgModule(symbol)) {\n                var module =
metadataResolver.getShallowModuleMetadata(symbol);\n                if (module) {\n

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shallowModules.push(module);\n                }\n                }\n                }\n                });\n            }\n            return {\n            fileName: fileName, injectables: injectables, shallowModules: shallowModules };\n        }\n        function\n        isValueExportingNonSourceFile(host, metadata) {\n            var exportsNonSourceFiles = false;\n            var Visitor = /**\n            @class */(function () {\n                function Visitor() {\n                }\n                Visitor.prototype.visitArray = function (arr,\n                context) {\n                    var _this = this;\n                    arr.forEach(function (v) { return visitValue(v, _this, context); });\n                }\n                Visitor.prototype.visitStringMap = function (map, context) {\n                    var _this = this;\n                    Object.keys(map).forEach(function (key) { return visitValue(map[key], _this, context); });\n                }\n                Visitor.prototype.visitPrimitive = function (value, context) {\n                }\n                Visitor.prototype.visitOther = function\n                (value, context) {\n                    if (value instanceof StaticSymbol && !host.isSourceFile(value.filePath)) {\n                        exportsNonSourceFiles = true;\n                    }\n                }\n                return Visitor;\n            }());\n            visitValue(metadata, new Visitor(), null);\n            return exportsNonSourceFiles;\n        }\n        function\n        mergeAnalyzedFiles(analyzedFiles) {\n            var allNgModules = [];\n            var ngModuleByPipeOrDirective = new\n            Map();\n            var allPipesAndDirectives = new Set();\n            analyzedFiles.forEach(function (af) {\n            af.ngModules.forEach(function (ngModule) {\n                allNgModules.push(ngModule);\n                ngModule.declaredDirectives.forEach(function (d) { return ngModuleByPipeOrDirective.set(d.reference,\n                ngModule); });\n                ngModule.declaredPipes.forEach(function (p) { return\n                ngModuleByPipeOrDirective.set(p.reference, ngModule); });\n                af.directives.forEach(function (d)\n                { return allPipesAndDirectives.add(d); });\n                af.pipes.forEach(function (p) { return\n                allPipesAndDirectives.add(p); });\n                var symbolsMissingModule = [];\n                allPipesAndDirectives.forEach(function (ref) {\n                    if (!ngModuleByPipeOrDirective.has(ref)) {\n                        symbolsMissingModule.push(ref);\n                    }\n                });\n                return {\n                    ngModules: allNgModules,\n                    ngModuleByPipeOrDirective: ngModuleByPipeOrDirective,\n                    symbolsMissingModule:\n                    symbolsMissingModule,\n                    files: analyzedFiles\n                };\n            })\n            function mergeAndValidateNgFiles(files)\n            {\n                return validateAnalyzedModules(mergeAnalyzedFiles(files));\n            }\n            var FORMATTED_MESSAGE =\n            'ngFormattedMessage';\n            function indentStr(level) {\n                if (level <= 0)\n                    return '';\n                if (level < 6)\n                    return [' ', ' ', ' ', ' ', ' ', ' ', ' '][level];\n                var half = indentStr(Math.floor(level / 2));\n                return half + half +\n                (level % 2 === 1 ? ' ': '');\n            }\n            function formatChain(chain, indent) {\n                var e_1, _a;\n                if (indent ===\n                void 0) { indent = 0; }\n                if (!chain)\n                    return '';\n                var position = chain.position ?\n                chain.position.fileName + '\\(' + (chain.position.line + 1) + '\\,' + (chain.position.column + 1) + '\\)'\n                : '';\n                var prefix = position && indent === 0 ? position + '\\: '\\: '' : '';\n                var postfix = position && indent !== 0 ? '\\ at\n                '+ position : '';\n                var message = '\\'' + prefix + chain.message + postfix;\n                if (chain.next) {\n                    try {\n                        for (var _b = __values(chain.next), _c = _b.next(); !_c.done; _c = _b.next()) {\n                            var kid =\n                            _c.value;\n                            message += '\\n' + formatChain(kid, indent + 2);\n                        }\n                    } catch\n                    (e_1_1) { e_1_1 = { error: e_1_1 }; }\n                    finally {\n                        try {\n                            if (_c && !_c.done && (_a =\n                            _b.return)) _a.call(_b);\n                        }\n                        finally { if (e_1) throw e_1.error; }\n                    }\n                }\n                return\n                '\\'' + indentStr(indent) + message;\n            }\n            function formattedError(chain) {\n                var message =\n                formatChain(chain) + '.';\n                var error = syntaxError(message);\n                error[FORMATTED_MESSAGE] = true;\n                error.chain = chain;\n                error.position = chain.position;\n                return error;\n            }\n            function\n            isFormattedError(error) {\n                return !!error[FORMATTED_MESSAGE];\n            }\n            var ANGULAR_CORE =\n            '@angular/core';\n            var ANGULAR_ROUTER = '@angular/router';\n            var HIDDEN_KEY = /^\\$.*\\$/;\n            var\n            IGNORE = {\n                __symbolic: 'ignore'\n            };\n            var USE_VALUE$1 = 'useValue';\n            var PROVIDE =\n            'provide';\n            var REFERENCE_SET = new Set([USE_VALUE$1, 'useFactory', 'data', 'id', 'loadChildren']);\n            var\n            TYPEGUARD_POSTFIX = 'TypeGuard';\n            var USE_IF = 'UseIf';\n            function shouldIgnore(value) {\n                return\n                value && value.__symbolic === 'ignore';\n            }\n            /**\n            * A static reflector implements enough of the Reflector\n            API that is necessary to compile\n            * templates statically.\n            */\n            var StaticReflector = /** @class */(function\n            () {\n                function StaticReflector(summaryResolver, symbolResolver, knownMetadataClasses,\n                knownMetadataFunctions, errorRecorder) {\n                    var _this = this;\n                    if (knownMetadataClasses === void\n                    0) { knownMetadataClasses = []; }\n                    if (knownMetadataFunctions === void 0) { knownMetadataFunctions =

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is not a StaticSymbol\"), type);\n        return [];\n    }\n    try {\n        var parameters_1 =
this.parameterCache.get(type);\n        if (!parameters_1) {\n            var classMetadata =
this.getTypeMetadata(type);\n            var parentType = this.findParentType(type, classMetadata);\n            var members = classMetadata ? classMetadata['members'] : null;\n            var ctorData = members ?
members['__ctor__'] : null;\n            if (ctorData) {\n                var ctor = ctorData.find(function (a) {\n
return a['__symbolic'] == 'constructor'; });\n                var rawParameterTypes = ctor['parameters'] || [];\n                var parameterDecorators_1 = this.simplify(type, ctor['parameterDecorators'] || []);\n            }\n            parameters_1 = [];\n            rawParameterTypes.forEach(function (rawParamType, index) {\n
var nestedResult = [];\n            var paramType = _this.trySimplify(type, rawParamType);\n            if (paramType)\n                nestedResult.push(paramType);\n            var decorators =
parameterDecorators_1 ? parameterDecorators_1[index] : null;\n            if (decorators) {\n
                nestedResult.push.apply(nestedResult, __spread(decorators));\n            }\n            parameters_1.push(nestedResult);\n        });\n    }\n    else if (parentType) {\n
        parameters_1 = this.parameters(parentType);\n    }\n    if (!parameters_1) {\n
        parameters_1 = [];\n    }\n    this.parameterCache.set(type, parameters_1);\n    }\n    return parameters_1;\n    }\n    catch (e) {\n        console.error(\"Failed on type \" +
JSON.stringify(type) + \" with error \" + e);\n        throw e;\n    }\n    };\n
StaticReflector.prototype._methodNames = function (type) {\n    var methodNames =
this.methodCache.get(type);\n    if (!methodNames) {\n        var classMetadata =
this.getTypeMetadata(type);\n        methodNames = {};\n        var parentType = this.findParentType(type,
classMetadata);\n        if (parentType) {\n            var parentMethodNames_1 =
this._methodNames(parentType);\n            Object.keys(parentMethodNames_1).forEach(function (parentProp)\n            {\n                methodNames[parentProp] = parentMethodNames_1[parentProp];\n            });\n        }\n        var members_2 = classMetadata['members'] || {};\n        Object.keys(members_2).forEach(function
(propName) {\n            var propData = members_2[propName];\n            var isMethod =
propData.some(function (a) {\n                return a['__symbolic'] == 'method';\n            });\n            methodNames[propName] =
methodNames[propName] || isMethod;\n        });\n        this.methodCache.set(type, methodNames);\n    }\n    return methodNames;\n    };\n
StaticReflector.prototype._staticMembers = function (type) {\n
var staticMembers = this.staticCache.get(type);\n    if (!staticMembers) {\n        var classMetadata =
this.getTypeMetadata(type);\n        var staticMemberData = classMetadata['statics'] || {};\n        staticMembers = Object.keys(staticMemberData);\n        this.staticCache.set(type, staticMembers);\n    }\n    return staticMembers;\n    };\n
StaticReflector.prototype.findParentType = function (type,
classMetadata) {\n    var parentType = this.trySimplify(type, classMetadata['extends']);\n    if (parentType
instanceof StaticSymbol) {\n        return parentType;\n    }\n    };\n
StaticReflector.prototype.hasLifecycleHook = function (type, lcProperty) {\n    if (!(type instanceof
StaticSymbol)) {\n        this.reportError(new Error(\"hasLifecycleHook received \" + JSON.stringify(type) + \"
which is not a StaticSymbol\"), type);\n    }\n    try {\n        return
!!this._methodNames(type)[lcProperty];\n    }\n    catch (e) {\n        console.error(\"Failed on type \" +
JSON.stringify(type) + \" with error \" + e);\n        throw e;\n    }\n    };\n
StaticReflector.prototype.guards = function (type) {\n    var e_2, _a;\n    if (!(type instanceof
StaticSymbol)) {\n        this.reportError(new Error(\"guards received \" + JSON.stringify(type) + \" which is not
a StaticSymbol\"), type);\n        return {};\n    }\n    var staticMembers = this._staticMembers(type);\n    var result = {};\n    try {\n        for (var staticMembers_1 = __values(staticMembers),
staticMembers_1_1 = staticMembers_1.next(); !staticMembers_1_1.done; staticMembers_1_1 =
staticMembers_1.next()) {\n            var name = staticMembers_1_1.value;\n            if
(name.endsWith(TYPEGUARD_POSTFIX)) {\n                var property = name.substr(0, name.length -
TYPEGUARD_POSTFIX.length);\n                var value = void 0;\n                if
(property.endsWith(USE_IF)) {\n                    property = name.substr(0, property.length - USE_IF.length);\n                }\n            }\n        }\n    }\n    return result;\n    };\n

```

```

        value = USE_IF;\n                }\n                else {\n                value =
this.getStaticSymbol(type.filePath, type.name, [name]);\n                }\n                result[property] =
value;\n                }\n                }\n                catch (e_2_1) { e_2 = { error: e_2_1 }; }\n                finally {\n
        try {\n                if (staticMembers_1_1 && !staticMembers_1_1.done && (_a = staticMembers_1.return))
_a.call(staticMembers_1);\n                }\n                finally { if (e_2) throw e_2.error; }\n                }\n                return
result;\n        };\n        StaticReflector.prototype._registerDecoratorOrConstructor = function (type, ctor) {\n
this.conversionMap.set(type, function (context, args) { return new (ctor.bind.apply(ctor, __spread([void 0], args)))();\n
});\n        }\n        StaticReflector.prototype._registerFunction = function (type, fn) {\n
this.conversionMap.set(type, function (context, args) { return fn.apply(undefined, args); });\n        }\n        }\n
StaticReflector.prototype.initializeConversionMap = function () {\n
this._registerDecoratorOrConstructor(this.findDeclaration(ANGULAR_CORE, 'Injectable'), createInjectable);\n
this.injectionToken = this.findDeclaration(ANGULAR_CORE, 'InjectionToken');\n        this.opaqueToken =
this.findDeclaration(ANGULAR_CORE, 'OpaqueToken');\n        this.ROUTES =
this.tryFindDeclaration(ANGULAR_ROUTER, 'ROUTES');\n
this.ANALYZE_FOR_ENTRY_COMPONENTS =\n        this.findDeclaration(ANGULAR_CORE,
'ANALYZE_FOR_ENTRY_COMPONENTS');\n
this._registerDecoratorOrConstructor(this.findDeclaration(ANGULAR_CORE, 'Host'), createHost);\n
this._registerDecoratorOrConstructor(this.findDeclaration(ANGULAR_CORE, 'Self'), createSelf);\n
this._registerDecoratorOrConstructor(this.findDeclaration(ANGULAR_CORE, 'SkipSelf'), createSkipSelf);\n
this._registerDecoratorOrConstructor(this.findDeclaration(ANGULAR_CORE, 'Inject'), createInject);\n
this._registerDecoratorOrConstructor(this.findDeclaration(ANGULAR_CORE, 'Optional'), createOptional);\n
this._registerDecoratorOrConstructor(this.findDeclaration(ANGULAR_CORE, 'Attribute'), createAttribute);\n
this._registerDecoratorOrConstructor(this.findDeclaration(ANGULAR_CORE, 'ContentChild'),
createContentChild);\n        this._registerDecoratorOrConstructor(this.findDeclaration(ANGULAR_CORE,
'ContentChildren'), createContentChildren);\n
this._registerDecoratorOrConstructor(this.findDeclaration(ANGULAR_CORE, 'ViewChild'), createViewChild);\n
this._registerDecoratorOrConstructor(this.findDeclaration(ANGULAR_CORE, 'ViewChildren'),
createViewChildren);\n        this._registerDecoratorOrConstructor(this.findDeclaration(ANGULAR_CORE,
'Input'), createInput);\n        this._registerDecoratorOrConstructor(this.findDeclaration(ANGULAR_CORE,
'Output'), createOutput);\n        this._registerDecoratorOrConstructor(this.findDeclaration(ANGULAR_CORE,
'Pipe'), createPipe);\n        this._registerDecoratorOrConstructor(this.findDeclaration(ANGULAR_CORE,
'HostBinding'), createHostBinding);\n
this._registerDecoratorOrConstructor(this.findDeclaration(ANGULAR_CORE, 'HostListener'),
createHostListener);\n        this._registerDecoratorOrConstructor(this.findDeclaration(ANGULAR_CORE,
'Directive'), createDirective);\n
this._registerDecoratorOrConstructor(this.findDeclaration(ANGULAR_CORE, 'Component'), createComponent);\n
this._registerDecoratorOrConstructor(this.findDeclaration(ANGULAR_CORE, 'NgModule'),
createNgModule);\n        // Note: Some metadata classes can be used directly with Provider.deps.\n
this._registerDecoratorOrConstructor(this.findDeclaration(ANGULAR_CORE, 'Host'), createHost);\n
this._registerDecoratorOrConstructor(this.findDeclaration(ANGULAR_CORE, 'Self'), createSelf);\n
this._registerDecoratorOrConstructor(this.findDeclaration(ANGULAR_CORE, 'SkipSelf'), createSkipSelf);\n
this._registerDecoratorOrConstructor(this.findDeclaration(ANGULAR_CORE, 'Optional'), createOptional);\n
};\n        /**\n        * getStaticSymbol produces a Type whose metadata is known but whose implementation is not
loaded.\n        * All types passed to the StaticResolver should be pseudo-types returned by this method.\n        *\n        * @param declarationFile the absolute path of the file where the symbol is declared\n        * @param name the
name of the type.\n        */\n        StaticReflector.prototype.getStaticSymbol = function (declarationFile, name,
members) {\n        return this.symbolResolver.getStaticSymbol(declarationFile, name, members);\n        };\n
/**\n        * Simplify but discard any errors\n        */\n        StaticReflector.prototype.trySimplify = function

```



```

(context, value) {\n      var originalRecorder = this.errorRecorder;\n      this.errorRecorder = function (error,\nfileName) { }\n      var result = this.simplify(context, value);\n      this.errorRecorder = originalRecorder;\n      return result;\n    };\n    /** @internal */\n    StaticReflector.prototype.simplify = function (context,\nvalue, lazy) {\n      if (lazy === void 0) { lazy = false; }\n      var self = this;\n      var scope =\nBindingScope$.empty;\n      var calling = new Map();\n      var rootContext = context;\n      function\nsimplifyInContext(context, value, depth, references) {\n      function resolveReferenceValue(staticSymbol) {\n      var resolvedSymbol = self.symbolResolver.resolveSymbol(staticSymbol);\n      return\nresolvedSymbol ? resolvedSymbol.metadata : null;\n      }\n      function simplifyEagerly(value) {\n      return simplifyInContext(context, value, depth, 0);\n      }\n      function simplifyLazily(value)\n{\n      return simplifyInContext(context, value, depth, references + 1);\n      }\n      function\nsimplifyNested(nestedContext, value) {\n      if (nestedContext === context) {\n      // If the\ncontext hasn't changed let the exception propagate unmodified.\n      return\nsimplifyInContext(nestedContext, value, depth + 1, references);\n      }\n      try {\n      return simplifyInContext(nestedContext, value, depth + 1, references);\n      }\n      catch (e) {\n      if (isMetadataError(e)) {\n      // Propagate the message text up but add a message to the\nchain that explains how we got\n      // here.\n      // e.chain implies e.symbol\n      var summaryMsg = e.chain ? 'references \\\" + e.symbol.name + '\\\" : errorSummary(e);\n      var\nsummary = '\\\"' + nestedContext.name + '\\\"' + summaryMsg;\n      var chain = { message: summary,\nposition: e.position, next: e.chain }; \n      // TODO(chuckj): retrieve the position information indirectly\nfrom the collectors node\n      // map if the metadata is from a .ts file.\n      self.error({\n      message: e.message,\n      advise: e.advise,\n      context:\ne.context,\n      chain: chain,\n      symbol: nestedContext\n      },\ncontext);\n      }\n      else {\n      // It is probably an internal error.\n      throw e;\n      }\n      }\n      }\n      function simplifyCall(functionSymbol,\ntargetFunction, args, targetExpression) {\n      if (targetFunction && targetFunction['__symbolic'] ==\n'function') {\n      if (calling.get(functionSymbol)) {\n      self.error({\n      message: 'Recursion is not supported',\n      summary: '\\\"called \\\" + functionSymbol.name + '\\\"'\nrecursively\",\n      value: targetFunction\n      }, functionSymbol);\n      }\n      try {\n      var value_1 = targetFunction['value'];\n      if (value_1 && (depth\n!= 0 || value_1.__symbolic != 'error')) {\n      var parameters = targetFunction['parameters'];\n      var defaults = targetFunction.defaults;\n      args = args.map(function (arg) { return\nsimplifyNested(context, arg); })\n      .map(function (arg) { return shouldIgnore(arg) ? undefined :\narg; });\n      if (defaults && defaults.length > args.length) {\n      args.push.apply(args, __spread(defaults.slice(args.length).map(function (value) { return simplify(value); }));\n      }\n      calling.set(functionSymbol, true);\n      var functionScope =\nBindingScope$.build();\n      for (var i = 0; i < parameters.length; i++) {\n      functionScope.define(parameters[i], args[i]);\n      }\n      var oldScope = scope;\n      var result_1;\n      try {\n      scope = functionScope.done();\n      result_1 = simplifyNested(functionSymbol, value_1);\n      }\n      finally {\n      scope = oldScope;\n      }\n      return result_1;\n      }\n      }\n      }\n      finally {\n      calling.delete(functionSymbol);\n      }\n      }\n      }\n      if (depth === 0) {\n      // If depth is 0 we are evaluating the top\nlevel expression that is describing element\n      // decorator. In this case, it is a decorator we don't\nunderstand, such as a custom\n      // non-angular decorator, and we should just ignore it.\n      return IGNORE;\n      }\n      var position = undefined;\n      if (targetExpression &&\ntargetExpression.__symbolic == 'resolved') {\n      var line = targetExpression.line;\n      var\ncharacter = targetExpression.character;\n      var fileName = targetExpression.fileName;\n      if (fileName != null && line != null && character != null) {\n      position = { fileName: fileName,\n
```

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line: line, column: character };
\n
    }\n
    }\n
    self.error({
\n
    message:
FUNCTION_CALL_NOT_SUPPORTED,\n
    context: functionSymbol,\n
    value:
targetFunction,\n
    position: position\n
    }, context);\n
    }\n
    function
simplify(expression) {\n
    var e_3, _a, e_4, _b;\n
    if (isPrimitive(expression)) {\n
return expression;\n
    }\n
    if (Array.isArray(expression)) {\n
    var result_2 = [];\n
        try {\n
            for (var expression_1 = __values(expression), expression_1_1 =
expression_1.next(); !expression_1_1.done; expression_1_1 = expression_1.next()) {\n
                var item
= expression_1_1.value;\n
                // Check for a spread expression\n
                if (item &&
item.__symbolic === 'spread') {\n
                    // We call with references as 0 because we require the
actual value and cannot\n
                    // tolerate a reference here.\n
                    var spreadArray
= simplifyEagerly(item.expression);\n
                    if (Array.isArray(spreadArray)) {\n
                        try {\n
                            for (var spreadArray_1 = (e_4 = void 0, __values(spreadArray)),
spreadArray_1_1 = spreadArray_1.next(); !spreadArray_1_1.done; spreadArray_1_1 = spreadArray_1.next()) {\n
                                var spreadItem = spreadArray_1_1.value;\n
result_2.push(spreadItem);\n
                                }\n
                                }\n
                            }\n
                        finally {\n
                            try {\n
                                if (spreadArray_1_1 && !spreadArray_1_1.done && (_b = spreadArray_1.return))
_b.call(spreadArray_1);\n
                                }\n
                                finally { if (e_4) throw
e_4.error; }\n
                                }\n
                                continue;\n
                                }\n
                            }\n
                            var value_2 = simplify(item);\n
                            if (shouldIgnore(value_2)) {\n
                                continue;\n
                                }\n
                                result_2.push(value_2);\n
                                }\n
                                }\n
                                catch (e_3_1) { e_3 = { error: e_3_1 }; }\n
                                finally {\n
try {\n
    if (expression_1_1 && !expression_1_1.done && (_a = expression_1.return))
_a.call(expression_1);\n
    }\n
    finally { if (e_3) throw e_3.error; }\n
}\n
return result_2;\n
    }\n
    if (expression instanceof StaticSymbol) {\n
        // Stop simplification at builtin symbols or if we are in a reference context and\n
        // the symbol
doesn't have members.\n
        if (expression === self.injectionToken || self.conversionMap.has(expression))\n
        (references > 0 && !expression.members.length)) {\n
            return expression;\n
        }\n
        else {\n
            var staticSymbol = expression;\n
            var
declarationValue = resolveReferenceValue(staticSymbol);\n
            if (declarationValue !== null) {\n
                return simplifyNested(staticSymbol, declarationValue);\n
            }\n
            else {\n
                return staticSymbol;\n
            }\n
        }\n
        }\n
        }\n
        if
(expression) {\n
            if (expression['__symbolic']) {\n
                var staticSymbol = void 0;\n
                switch (expression['__symbolic']) {\n
                    case 'binop':\n
                        var left =
simplify(expression['left']);\n
                        if (shouldIgnore(left))\n
                            return left;\n
                        var right = simplify(expression['right']);\n
                        if (shouldIgnore(right))\n
                            return right;\n
                        switch (expression['operator']) {\n
                            case
'&&':\n
                                return left && right;\n
                            case '||':\n
                                return left || right;\n
                            case '|':\n
                                return left | right;\n
                            case '&':\n
                                return left & right;\n
                            case '^':\n
                                return left ^ right;\n
                            case '==':\n
                                return left == right;\n
                            case '!=':\n
                                return left != right;\n
                            case
'===':\n
                                return left === right;\n
                            case '!==':\n
                                return left !== right;\n
                            case '<':\n
                                return left < right;\n
                            case '>':\n
                                return left > right;\n
                            case '<=':\n
                                return left <= right;\n
                            case '>=':\n
                                return left
>= right;\n
                            case '<<':\n
                                return left << right;\n
                            case '>>':\n
                                return left >> right;\n
                            case '+':\n

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return left + right;\n
case '*':\n
return left / right;\n
right;\n
}\n
var condition = simplify(expression['condition']);\n
simplify(expression['thenExpression']) :)\n
case 'pre':\n
(shouldIgnore(operand))\n
(expression['operator']) {\n
case '-':\n
return !operand;\n
}\n
return null;\n
indexTarget = simplifyEagerly(expression['expression']);\n
simplifyEagerly(expression['index']);\n
return indexTarget[index];\n
var member = expression['member'];\n
var selectTarget = simplify(expression['expression']);\n
StaticSymbol) {\n
selectContext =\n
members);\n
if (declarationValue != null) {\n
declarationValue);\n
selectContext;\n
isPrimitive(member))\n
return null;\n
deal with variable references, as symbol references have\n
// in the StaticSymbolResolver.\n
var localValue = scope.resolve(name);\n
BindingScope$.missing) {\n
break;\n
simplify(expression.symbol);\n
// If an error is reported evaluating the symbol record the position of the\n
error so it can\n
if (isMetadataError(e) && expression.fileName != null &&\n
expression.line != null && expression.character != null) {\n
fileName: expression.fileName,\n
column: expression.character\n
throw e;\n
context;\n
'new':\n
0);\n
=== self.injectionToken || staticSymbol === self.opaqueToken) {\n
new InjectionToken, don't create an InjectionToken,\n
which the InjectionToken is assigned to.\n
required by the language service to\n
return context;\n
expression['arguments'] || [];\n
case '-':\n
return left * right;\n
case '%':\n
return null;\n
return null;\n
case '+':\n
return -operand;\n
case '~':\n
return null;\n
if (indexTarget && isPrimitive(index))\n
return null;\n
case 'select':\n
var selectContext = context;\n
if (selectTarget instanceof\n
StaticSymbol) {\n
var members = selectTarget.members.concat(member);\n
self.getStaticSymbol(selectTarget.filePath, selectTarget.name,\n
members);\n
var declarationValue = resolveReferenceValue(selectContext);\n
return simplifyNested(selectContext,\n
else {\n
return\n
if (selectTarget &&\n
isPrimitive(member))\n
return simplifyNested(selectContext, selectTarget[member]);\n
case 'reference':\n
// Note: This only has to\n
// been converted into 'resolved'\n
var name = expression['name'];\n
if (localValue !=\n
return localValue;\n
}\n
try {\n
return\n
catch (e) {\n
// reference in the\n
// be reported in the error message generated from the exception.\n
if (isMetadataError(e) && expression.fileName != null &&\n
expression.line != null && expression.character != null) {\n
e.position = {\n
line: expression.line,\n
};\n
}\n
return\n
case 'class':\n
return\n
case\n
// Determine if the function is a built-in conversion\n
staticSymbol = simplifyInContext(context, expression['expression'], depth + 1, /* references */\n
if (staticSymbol instanceof StaticSymbol) {\n
if (staticSymbol\n
if (staticSymbol === self.injectionToken || staticSymbol === self.opaqueToken) {\n
// if somebody calls\n
// but rather return the symbol to\n
// OpaqueToken is supported too as it is\n
// support v4 and prior versions of Angular.\n
var argExpressions =\n
var converter = self.conversionMap.get(staticSymbol);\n

```

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        if (converter) {\n
return simplifyNested(context, arg); })\n
shouldIgnore(arg) ? undefined : arg; });\n
        }\n
simplify.\n
        else {\n
        var targetFunction = resolveReferenceValue(staticSymbol);\n
return simplifyCall(staticSymbol, targetFunction, argExpressions, expression['expression']);\n
        }\n
        }\n
        return IGNORE;\n
        case 'error':\n
        var message = expression.message;\n
        self.error({\n
        message: message,\n
        context:\n
expression.context,\n
        value: expression,\n
        position: {\n
        fileName: expression['fileName'],\n
        line: expression['line'],\n
        column: expression['character']\n
        }\n
        },\n
context);\n
        }\n
        else {\n
        self.error({ message:\n
message, context: expression.context }, context);\n
        }\n
        return\n
IGNORE;\n
        case 'ignore':\n
        return expression;\n
        }\n
        return mapStringMap(expression, function (value, name) {\n
        if (REFERENCE_SET.has(name)) {\n
        if (name === USE_VALUES$1 &&\n
PROVIDE in expression) {\n
        // If this is a provider expression, check for special tokens that\n
        need the value\n
        // during analysis.\n
        var provide =\n
simplify(expression.provide);\n
        if (provide === self.ROUTES || provide ==\n
self.ANALYZE_FOR_ENTRY_COMPONENTS) {\n
        return simplify(value);\n
        }\n
        }\n
        return simplifyLazily(value);\n
        }\n
        return simplify(value);\n
        });\n
        }\n
        return IGNORE;\n
        }\n
        }\n
        var result;\n
        try {\n
        result = simplifyInContext(context,\n
value, 0, lazy ? 1 : 0);\n
        }\n
        catch (e) {\n
        if (this.errorRecorder) {\n
        this.reportError(e, context);\n
        }\n
        else {\n
        throw formatMetadataError(e, context);\n
        }\n
        }\n
        if (shouldIgnore(result)) {\n
        return undefined;\n
        }\n
        return\n
result;\n
        });\n
        StaticReflector.prototype.getTypeMetadata = function (type) {\n
        var resolvedSymbol =\n
this.symbolResolver.resolveSymbol(type);\n
        return resolvedSymbol && resolvedSymbol.metadata ?\n
resolvedSymbol.metadata :\n
        { __symbolic: 'class' }; }\n
        });\n
        StaticReflector.prototype.reportError\n
= function (error, context, path) {\n
        if (this.errorRecorder) {\n
        this.errorRecorder(formatMetadataError(error, context), (context && context.filePath) || path);\n
        }\n
        else {\n
        throw error;\n
        }\n
        });\n
        StaticReflector.prototype.error = function (_a,\n
reportingContext) {\n
        var message = _a.message, summary = _a.summary, advise = _a.advise, position =\n
_a.position, context = _a.context, value = _a.value, symbol = _a.symbol, chain = _a.chain;\n
        this.reportError(metadataError(message, summary, advise, position, symbol, context, chain), reportingContext);\n
        };\n
        return StaticReflector;\n
    }());\n
    var METADATA_ERROR = 'ngMetadataError';\n
    function\n
metadataError(message, summary, advise, position, symbol, context, chain) {\n
        var error =\n
syntaxError(message);\n
        error[METADATA_ERROR] = true;\n
        if (advise)\n
        error.advise =\n
advise;\n
        if (position)\n
        error.position = position;\n
        if (summary)\n
        error.summary =\n
summary;\n
        if (context)\n
        error.context = context;\n
        if (chain)\n
        error.chain = chain;\n
        if\n
(symbol)\n
        error.symbol = symbol;\n
        return error;\n
    }\n
    function isMetadataError(error) {\n
return !!error[METADATA_ERROR]; }\n
    var REFERENCE_TO_NONEXPORTED_CLASS = 'Reference to\n
non-exported class';\n
    var VARIABLE_NOT_INITIALIZED = 'Variable not initialized';\n
    var\n
DESTRUCTURE_NOT_SUPPORTED = 'Destructuring not supported';\n
    var COULD_NOT_RESOLVE_TYPE\n
= 'Could not resolve type';\n
    var FUNCTION_CALL_NOT_SUPPORTED = 'Function call not supported';\n
    var\n
REFERENCE_TO_LOCAL_SYMBOL = 'Reference to a local symbol';\n
    var LAMBDA_NOT_SUPPORTED =\n
'Lambda not supported';\n
    function expandedMessage(message, context) {\n
        switch (message) {\n
        case

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REFERENCE_TO_NONEXPORTED_CLASS:\n          if (context && context.className) {\n
return \"References to a non-exported class are not supported in decorators but \" + context.className + \" was\n
referenced.\";\n          }\n          break;\n          case VARIABLE_NOT_INITIALIZED:\n          return\n'Only initialized variables and constants can be referenced in decorators because the value of this variable is needed\n
by the template compiler';\n          case DESTRUCTURE_NOT_SUPPORTED:\n          return 'Referencing an\n
exported destructured variable or constant is not supported in decorators and this value is needed by the template\n
compiler';\n          case COULD_NOT_RESOLVE_TYPE:\n          if (context && context.typeName) {\n
return \"Could not resolve type \" + context.typeName;\n          }\n          break;\n          case\n
FUNCTION_CALL_NOT_SUPPORTED:\n          if (context && context.name) {\n          return\n
\"Function calls are not supported in decorators but \" + context.name + \" was called\";\n          }\n
return 'Function calls are not supported in decorators';\n          case REFERENCE_TO_LOCAL_SYMBOL:\n
if (context && context.name) {\n          return \"Reference to a local (non-exported) symbols are not\n
supported in decorators but \" + context.name + \" was referenced\";\n          }\n          break;\n          case\n
LAMBDA_NOT_SUPPORTED:\n          return \"Function expressions are not supported in decorators\";\n
}\n          return message;\n          }\n          function messageAdvise(message, context) {\n          switch (message) {\n
case REFERENCE_TO_NONEXPORTED_CLASS:\n          if (context && context.className) {\n
return \"Consider exporting \" + context.className + \"\"\";\n          }\n          break;\n          case\n
DESTRUCTURE_NOT_SUPPORTED:\n          return 'Consider simplifying to avoid destructuring';\n
case REFERENCE_TO_LOCAL_SYMBOL:\n          if (context && context.name) {\n          return\n
\"Consider exporting \" + context.name + \"\"\";\n          }\n          break;\n          case\n
LAMBDA_NOT_SUPPORTED:\n          return \"Consider changing the function expression into an exported\n
function\";\n          }\n          return undefined;\n          }\n          function errorSummary(error) {\n          if (error.summary) {\n
return error.summary;\n          }\n          switch (error.message) {\n          case\n
REFERENCE_TO_NONEXPORTED_CLASS:\n          if (error.context && error.context.className) {\n
return \"references non-exported class \" + error.context.className;\n          }\n          break;\n
case VARIABLE_NOT_INITIALIZED:\n          return 'is not initialized';\n          case\n
DESTRUCTURE_NOT_SUPPORTED:\n          return 'is a destructured variable';\n          case\n
COULD_NOT_RESOLVE_TYPE:\n          return 'could not be resolved';\n          case\n
FUNCTION_CALL_NOT_SUPPORTED:\n          if (error.context && error.context.name) {\n
return \"calls \" + error.context.name + \"\"\";\n          }\n          return \"calls a function\";\n          case\n
REFERENCE_TO_LOCAL_SYMBOL:\n          if (error.context && error.context.name) {\n          return\n
\"references local variable \" + error.context.name;\n          }\n          return \"references a local variable\";\n
}\n          return 'contains the error';\n          }\n          function mapStringMap(input, transform) {\n          if (!input)\n
return {};\n          var result = {};\n          Object.keys(input).forEach(function (key) {\n          var value =\n
transform(input[key], key);\n          if (!shouldIgnore(value)) {\n          if (HIDDEN_KEY.test(key)) {\n
Object.defineProperty(result, key, { enumerable: false, configurable: true, value: value });\n          }\n
else {\n          result[key] = value;\n          }\n          });\n          return result;\n          }\n          function\n
isPrimitive(o) {\n          return o === null || (typeof o !== 'function' && typeof o !== 'object');\n          }\n          var\n
BindingScope$1 = /** @class */ (function () {\n          function BindingScope() {\n          }\n          BindingScope.build\n
= function () {\n          var current = new Map();\n          return {\n          define: function (name, value) {\n
current.set(name, value);\n          return this;\n          },\n          done: function () {\n
return current.size > 0 ? new PopulatedScope(current) : BindingScope.empty;\n          }\n          });\n          return BindingScope;\n          }());\n          BindingScope$1.missing = {};\n          BindingScope$1.empty = { resolve: function\n
(name) { return BindingScope$1.missing; } };\n          var PopulatedScope = /** @class */ (function (_super) {\n
__extends(PopulatedScope, _super);\n          function PopulatedScope(bindings) {\n          var _this =\n
_super.call(this) || this;\n          _this.bindings = bindings;\n          return _this;\n          }\n
PopulatedScope.prototype.resolve = function (name) {\n          return this.bindings.has(name) ?\n
this.bindings.get(name) : BindingScope$1.missing;\n          };\n          return PopulatedScope;\n
}

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})(BindingScope$1));\n  function formatMetadataMessageChain(chain, advise) {\n    var expanded =
expandedMessage(chain.message, chain.context);\n    var nesting = chain.symbol ? \" in \" + chain.symbol.name
+ \"\" : \"\";\n    var message = \"\" + expanded + nesting;\n    var position = chain.position;\n    var next =
chain.next ?\n      formatMetadataMessageChain(chain.next, advise) : \n      advise ? { message: advise } :
undefined;\n    return { message: message, position: position, next: next ? [next] : undefined }; \n  }\n  function
formatMetadataError(e, context) {\n    if (isMetadataError(e)) {\n      // Produce a formatted version of the and
leaving enough information in the original error\n      // to recover the formatting information to eventually
produce a diagnostic error message.\n      var position = e.position;\n      var chain = {\n        message:
\"Error during template compile of \" + context.name + \"\", \n        position: position, \n        next: {
message: e.message, next: e.chain, context: e.context, symbol: e.symbol } \n      }; \n      var advise = e.advise
|| messageAdvise(e.message, e.context);\n      return formattedError(formatMetadataMessageChain(chain,
advise)); \n    } \n    return e; \n  } \n  /** \n   * @license \n   * Copyright Google LLC All Rights
Reserved. \n   * \n   * Use of this source code is governed by an MIT-style license that can be \n   * found in the
LICENSE file at https://angular.io/license \n   * \n   var AotSummaryResolver = /** @class */ (function () {\n
function AotSummaryResolver(host, staticSymbolCache) {\n    this.host = host;\n    this.staticSymbolCache = staticSymbolCache; \n    // Note: this will only contain StaticSymbols without
members! \n    this.summaryCache = new Map(); \n    this.loadedFilePaths = new Map(); \n    // Note:
this will only contain StaticSymbols without members! \n    this.importAs = new Map(); \n    this.knownFileNameToModuleNames = new Map(); \n  } \n  AotSummaryResolver.prototype.isLibraryFile =
function (filePath) {\n    // Note: We need to strip the .ngfactory. file path, \n    // so this method also works
for generated files \n    // (for which host.isSourceFile will always return false). \n    return
!this.host.isSourceFile(stripGeneratedFileSuffix(filePath)); \n  }; \n  AotSummaryResolver.prototype.toSummaryFileName = function (filePath, referringSrcFileName) {\n    return
this.host.toSummaryFileName(filePath, referringSrcFileName); \n  }; \n  AotSummaryResolver.prototype.fromSummaryFileName = function (fileName, referringLibFileName) {\n
return this.host.fromSummaryFileName(fileName, referringLibFileName); \n  }; \n  AotSummaryResolver.prototype.resolveSummary = function (staticSymbol) {\n    var rootSymbol =
staticSymbol.members.length ? \n      this.staticSymbolCache.get(staticSymbol.filePath, staticSymbol.name)
: \n      staticSymbol; \n    var summary = this.summaryCache.get(rootSymbol); \n    if (!summary) {\n      this._loadSummaryFile(staticSymbol.filePath); \n      summary =
this.summaryCache.get(staticSymbol); \n    } \n    return (rootSymbol === staticSymbol && summary) ||
null; \n  }; \n  AotSummaryResolver.prototype.getSymbolsOf = function (filePath) {\n    if
(this._loadSummaryFile(filePath)) {\n      return Array.from(this.summaryCache.keys()).filter(function
(symbol) { return symbol.filePath === filePath; }); \n    } \n    return null; \n  }; \n  AotSummaryResolver.prototype.getImportAs = function (staticSymbol) {\n
staticSymbol.assertNoMembers(); \n    return this.importAs.get(staticSymbol); \n  }; \n  /** \n   *
Converts a file path to a module name that can be used as an `import`. \n   * \n   AotSummaryResolver.prototype.getKnownModuleName = function (importedFilePath) {\n    return
this.knownFileNameToModuleNames.get(importedFilePath) || null; \n  }; \n  AotSummaryResolver.prototype.addSummary = function (summary) {\n
this.summaryCache.set(summary.symbol, summary); \n  }; \n  AotSummaryResolver.prototype._loadSummaryFile = function (filePath) {\n    var _this = this; \n    var
hasSummary = this.loadedFilePaths.get(filePath); \n    if (hasSummary != null) {\n      return
hasSummary; \n    } \n    var json = null; \n    if (this.isLibraryFile(filePath)) {\n      var
summaryFilePath = summaryFileName(filePath); \n      try {\n        json =
this.host.loadSummary(summaryFilePath); \n      } \n      catch (e) {\n        console.error(\"Error
loading summary file \" + summaryFilePath); \n        throw e; \n      } \n    } \n    hasSummary =
json != null; \n    this.loadedFilePaths.set(filePath, hasSummary); \n    if (json) {\n      var _a =

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deserializeSummaries(this.staticSymbolCache, this, filePath, json), moduleName = _a.moduleName, summaries =
_a.summaries, importAs = _a.importAs;\n      summaries.forEach(function (summary) { return
_this.summaryCache.set(summary.symbol, summary); });\n      if (moduleName) {\n
this.knownFileNameToModuleNames.set(filePath, moduleName);\n      }\n
importAs.forEach(function (importAs) {\n      _this.importAs.set(importAs.symbol, importAs.importAs);\n
});\n      }\n      return hasSummary;\n    });\n    return AotSummaryResolver;\n  }());\n\n/**\n * @license\n * Copyright Google LLC All Rights Reserved.\n * Use of this source code is
governed by an MIT-style license that can be\n * found in the LICENSE file at https://angular.io/license\n */\n
function createAotUrlResolver(host) {\n  return {\n    resolve: function (basePath, url) {\n      var
filePath = host.resourceNameToFileName(url, basePath);\n      if (!filePath) {\n        throw
syntaxError("Couldn't resolve resource '" + url + "' from '" + basePath);\n      }\n      return filePath;\n
    }\n  };\n}\n\n/**\n * Creates a new AotCompiler based on options and a host.\n */\n function
createAotCompiler(compilerHost, options, errorCollector) {\n  var translations = options.translations || "";\n
var urlResolver = createAotUrlResolver(compilerHost);\n  var symbolCache = new StaticSymbolCache();\n
var summaryResolver = new AotSummaryResolver(compilerHost, symbolCache);\n  var symbolResolver = new
StaticSymbolResolver(compilerHost, symbolCache, summaryResolver);\n  var staticReflector = new
StaticReflector(summaryResolver, symbolResolver, [], [], errorCollector);\n  var htmlParser;\n  if
(!options.enableIvy) {\n    // Ivy handles i18n at the compiler level so we must use a regular parser\n
htmlParser = new HtmlParser();\n  } else {\n    htmlParser = new I18NHtmlParser(new HtmlParser(),
translations, options.i18nFormat, options.missingTranslation, console);\n  }\n  var config = new
CompilerConfig({\n    defaultEncapsulation: ViewEncapsulation.Emulated,\n    useJit: false,\n
missingTranslation: options.missingTranslation,\n    preserveWhitespaces: options.preserveWhitespaces,\n
strictInjectionParameters: options.strictInjectionParameters,\n  });\n  var normalizer = new
DirectiveNormalizer({ get: function (url) { return compilerHost.loadResource(url); } }, urlResolver, htmlParser,
config);\n  var expressionParser = new Parser$1(new Lexer());\n  var elementSchemaRegistry = new
DomElementSchemaRegistry();\n  var tmplParser = new TemplateParser(config, staticReflector,
expressionParser, elementSchemaRegistry, htmlParser, console, []);\n  var resolver = new
CompileMetadataResolver(config, htmlParser, new NgModuleResolver(staticReflector), new
DirectiveResolver(staticReflector), new PipeResolver(staticReflector), summaryResolver, elementSchemaRegistry,
normalizer, console, symbolCache, staticReflector, errorCollector);\n  // TODO(vicb): do not pass
options.i18nFormat here\n  var viewCompiler = new ViewCompiler(staticReflector);\n  var
typeCheckCompiler = new TypeCheckCompiler(options, staticReflector);\n  var compiler = new
AotCompiler(config, options, compilerHost, staticReflector, resolver, tmplParser, new StyleCompiler(urlResolver),
viewCompiler, typeCheckCompiler, new NgModuleCompiler(staticReflector), new
InjectableCompiler(staticReflector, !options.enableIvy), new TypeScriptEmitter(), summaryResolver,
symbolResolver);\n  return { compiler: compiler, reflector: staticReflector };\n}\n\n var SummaryResolver =
/** @class */ (function () {\n  function SummaryResolver() {\n  }\n  return SummaryResolver;\n
})();\n  var JitSummaryResolver = /** @class */ (function () {\n  function JitSummaryResolver() {\n
this._summaries = new Map();\n  }\n  JitSummaryResolver.prototype.isLibraryFile = function () {\n
return false;\n  };\n  JitSummaryResolver.prototype.toSummaryFileName = function (fileName) {\n
return fileName;\n  };\n  JitSummaryResolver.prototype.fromSummaryFileName = function (fileName) {\n
return fileName;\n  };\n  JitSummaryResolver.prototype.resolveSummary = function (reference) {\n
return this._summaries.get(reference) || null;\n  };\n  JitSummaryResolver.prototype.getSymbolsOf =
function () {\n    return [];\n  };\n  JitSummaryResolver.prototype.getImportAs = function (reference)
{\n    return reference;\n  };\n  JitSummaryResolver.prototype.getKnownModuleName = function
(fileName) {\n    return null;\n  };\n  JitSummaryResolver.prototype.addSummary = function (summary)
{\n    this._summaries.set(summary.symbol, summary);\n  };\n  return JitSummaryResolver;\n
})();\n  function interpretStatements(statements, reflector) {\n    var ctx = new _ExecutionContext(null, null,

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null, new Map());\n    var visitor = new StatementInterpreter(reflector);\n    visitor.visitAllStatements(statements, ctx);\n    var result = {};\n    ctx.exports.forEach(function (exportName) {\n        result[exportName] = ctx.vars.get(exportName);\n    });\n    return result;\n }\n function\n _executeFunctionStatements(varNames, varValues, statements, ctx, visitor) {\n    var childCtx =\n    ctx.createChildWithLocalVars();\n    for (var i = 0; i < varNames.length; i++) {\n        childCtx.vars.set(varNames[i], varValues[i]);\n    }\n    var result = visitor.visitAllStatements(statements,\n    childCtx);\n    return result ? result.value : null;\n }\n var _ExecutionContext = /** @class */ (function () {\n    function _ExecutionContext(parent, instance, className, vars) {\n        this.parent = parent;\n        this.instance = instance;\n        this.className = className;\n        this.vars = vars;\n        this.exports = [];\n    }\n    _ExecutionContext.prototype.createChildWithLocalVars = function () {\n        return new\n        _ExecutionContext(this, this.instance, this.className, new Map());\n    };\n    return _ExecutionContext;\n\n})();\n var ReturnValue = /** @class */ (function () {\n    function ReturnValue(value) {\n        this.value =\n        value;\n    }\n    return ReturnValue;\n\n})();\n function createDynamicClass(_classStmt, _ctx, _visitor) {\n    var propertyDescriptors = {};\n    _classStmt.getters.forEach(function (getter) {\n        // Note: use `function`\n        instead of arrow function to capture `this`\n        propertyDescriptors[getter.name] = {\n            configurable:\n            false,\n            get: function () {\n                var instanceCtx = new _ExecutionContext(_ctx, this,\n                _classStmt.name, _ctx.vars);\n                return _executeFunctionStatements([], [], getter.body, instanceCtx,\n                _visitor);\n            }\n        };\n    });\n    _classStmt.methods.forEach(function (method) {\n        var\n        paramNames = method.params.map(function (param) { return param.name; });\n        // Note: use `function`\n        instead of arrow function to capture `this`\n        propertyDescriptors[method.name] = {\n            writable:\n            false,\n            configurable: false,\n            value: function () {\n                var args = [];\n                for\n                (var _i = 0; _i < arguments.length; _i++) {\n                    args[_i] = arguments[_i];\n                }\n                var instanceCtx = new _ExecutionContext(_ctx, this, _classStmt.name, _ctx.vars);\n                return\n                _executeFunctionStatements(paramNames, args, method.body, instanceCtx, _visitor);\n            }\n        };\n    });\n    var ctorParamNames = _classStmt.constructorMethod.params.map(function (param) { return param.name;\n    });\n    // Note: use `function` instead of arrow function to capture `this`\n    var ctor = function () {\n        var\n        _this = this;\n        var args = [];\n        for (var _i = 0; _i < arguments.length; _i++) {\n            args[_i] =\n            arguments[_i];\n        }\n        var instanceCtx = new _ExecutionContext(_ctx, this, _classStmt.name,\n        _ctx.vars);\n        _classStmt.fields.forEach(function (field) {\n            _this[field.name] = undefined;\n        });\n        _executeFunctionStatements(ctorParamNames, args, _classStmt.constructorMethod.body, instanceCtx,\n        _visitor);\n    };\n    var superClass = _classStmt.parent ? _classStmt.parent.visitExpression(_visitor, _ctx) :\n    Object;\n    ctor.prototype = Object.create(superClass.prototype, propertyDescriptors);\n    return ctor;\n }\n\n var StatementInterpreter = /** @class */ (function () {\n    function StatementInterpreter(reflector) {\n        this.reflector = reflector;\n    }\n    StatementInterpreter.prototype.debugAst = function (ast) {\n        return\n        debugOutputAstAsTypeScript(ast);\n    };\n    StatementInterpreter.prototype.visitDeclareVarStmt = function\n    (stmt, ctx) {\n        var initialValue = stmt.value ? stmt.value.visitExpression(this, ctx) : undefined;\n        ctx.vars.set(stmt.name, initialValue);\n        if (stmt.hasModifier(exports.StmtModifier.Exported)) {\n            ctx.exports.push(stmt.name);\n        }\n        return null;\n    };\n\n    StatementInterpreter.prototype.visitWriteVarExpr = function (expr, ctx) {\n        var value =\n        expr.value.visitExpression(this, ctx);\n        var currCtx = ctx;\n        while (currCtx != null) {\n            if\n            (currCtx.vars.has(expr.name)) {\n                currCtx.vars.set(expr.name, value);\n                return value;\n            }\n            currCtx = currCtx.parent;\n        }\n        throw new Error(`Not declared variable ` +\n        expr.name);\n    };\n\n    StatementInterpreter.prototype.visitWrappedNodeExpr = function (ast, ctx) {\n        throw new Error('Cannot interpret a WrappedNodeExpr.);\n    };\n\n    StatementInterpreter.prototype.visitTypeofExpr = function (ast, ctx) {\n        throw new Error('Cannot interpret a\n        TypeofExpr);\n    };\n\n    StatementInterpreter.prototype.visitReadVarExpr = function (ast, ctx) {\n        var\n        varName = ast.name;\n        if (ast.builtin != null) {\n            switch (ast.builtin) {\n                case\n                exports.BuiltinVar.Super:\n                    return Object.getPrototypeOf(ctx.instance);\n                case

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exports.BuiltinVar.This:\n                return ctx.instance;\n                case exports.BuiltinVar.CatchError:\n                varName = CATCH_ERROR_VAR$2;\n                break;\n                case\nexports.BuiltinVar.CatchStack:\n                varName = CATCH_STACK_VAR$2;\n                break;\n                default:\n                throw new Error("Unknown builtin variable \" + ast.builtin);\n                }\n}\n    var currCtx = ctx;\n    while (currCtx != null) {\n        if (currCtx.vars.has(varName)) {\n            return currCtx.vars.get(varName);\n        }\n        currCtx = currCtx.parent;\n    }\n    throw\nnew Error("Not declared variable \" + varName);\n};\nStatementInterpreter.prototype.visitWriteKeyExpr\n= function (expr, ctx) {\n    var receiver = expr.receiver.visitExpression(this, ctx);\n    var index =\nexpr.index.visitExpression(this, ctx);\n    var value = expr.value.visitExpression(this, ctx);\n    receiver[index] = value;\n    return value;\n};\nStatementInterpreter.prototype.visitWritePropExpr =\nfunction (expr, ctx) {\n    var receiver = expr.receiver.visitExpression(this, ctx);\n    var value =\nexpr.value.visitExpression(this, ctx);\n    receiver[expr.name] = value;\n    return value;\n};\nStatementInterpreter.prototype.visitInvokeMethodExpr = function (expr, ctx) {\n    var receiver =\nexpr.receiver.visitExpression(this, ctx);\n    var args = this.visitAllExpressions(expr.args, ctx);\n    var\nresult;\n    if (expr.builtin != null) {\n        switch (expr.builtin) {\n            case\nexports.BuiltinMethod.ConcatArray:\n                result = receiver.concat.apply(receiver, __spread(args));\n                break;\n            case exports.BuiltinMethod.SubscribeObservable:\n                result =\nreceiver.subscribe({ next: args[0] });\n                break;\n            case exports.BuiltinMethod.Bind:\n                result = receiver.bind.apply(receiver, __spread(args));\n                break;\n            default:\n                throw new Error("Unknown builtin method \" + expr.builtin);\n            }\n        }\n    } else {\n        result = receiver[expr.name].apply(receiver, args);\n    }\n    return result;\n};\nStatementInterpreter.prototype.visitInvokeFunctionExpr = function (stmt, ctx) {\n    var args =\nthis.visitAllExpressions(stmt.args, ctx);\n    var fnExpr = stmt.fn;\n    if (fnExpr instanceof ReadVarExpr\n&& fnExpr.builtin === exports.BuiltinVar.Super) {\n        ctx.instance.constructor.prototype.constructor.apply(ctx.instance, args);\n        return null;\n    }\n    else {\n        var fn = stmt.fn.visitExpression(this, ctx);\n        return fn.apply(null, args);\n    }\n};\nStatementInterpreter.prototype.visitReturnStmt = function (stmt, ctx) {\n    return new\nReturnValue(stmt.value.visitExpression(this, ctx));\n};\nStatementInterpreter.prototype.visitDeclareClassStmt = function (stmt, ctx) {\n    var clazz =\ncreateDynamicClass(stmt, ctx, this);\n    ctx.vars.set(stmt.name, clazz);\n    if\n(stmt.hasModifier(exports.StmtModifier.Exported)) {\n        ctx.exports.push(stmt.name);\n    }\n    return null;\n};\nStatementInterpreter.prototype.visitExpressionStmt = function (stmt, ctx) {\n    return stmt.expr.visitExpression(this, ctx);\n};\nStatementInterpreter.prototype.visitIfStmt = function\n(stmt, ctx) {\n    var condition = stmt.condition.visitExpression(this, ctx);\n    if (condition) {\n        return this.visitAllStatements(stmt.trueCase, ctx);\n    }\n    else if (stmt.falseCase != null) {\n        return this.visitAllStatements(stmt.falseCase, ctx);\n    }\n    return null;\n};\nStatementInterpreter.prototype.visitTryCatchStmt = function (stmt, ctx) {\n    try {\n        return\nthis.visitAllStatements(stmt.bodyStmts, ctx);\n    }\n    catch (e) {\n        var childCtx =\nctx.createChildWithLocalVars();\n        childCtx.vars.set(CATCH_ERROR_VAR$2, e);\n        childCtx.vars.set(CATCH_STACK_VAR$2, e.stack);\n        return this.visitAllStatements(stmt.catchStmts,\nchildCtx);\n    }\n};\nStatementInterpreter.prototype.visitThrowStmt = function (stmt, ctx) {\n    throw stmt.error.visitExpression(this, ctx);\n};\nStatementInterpreter.prototype.visitInstantiateExpr =\nfunction (ast, ctx) {\n    var args = this.visitAllExpressions(ast.args, ctx);\n    var clazz =\nast.classExpr.visitExpression(this, ctx);\n    return new (clazz.bind.apply(clazz, __spread([void 0], args)));\n};\nStatementInterpreter.prototype.visitLiteralExpr = function (ast, ctx) {\n    return ast.value;\n};\nStatementInterpreter.prototype.visitLocalizedString = function (ast, context) {\n    return null;\n};\nStatementInterpreter.prototype.visitExternalExpr = function (ast, ctx) {\n    return\nthis.reflector.resolveExternalReference(ast.value);\n};

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StatementInterpreter.prototype.visitConditionalExpr = function (ast, ctx) {\n      if
(ast.condition.visitExpression(this, ctx)) {\n          return ast.trueCase.visitExpression(this, ctx);\n      }\n      else if (ast.falseCase != null) {\n          return ast.falseCase.visitExpression(this, ctx);\n      }\n      return
null;\n  };\n  StatementInterpreter.prototype.visitNotExpr = function (ast, ctx) {\n      return
!ast.condition.visitExpression(this, ctx);\n  };\n  StatementInterpreter.prototype.visitAssertNotNullExpr =
function (ast, ctx) {\n      return ast.condition.visitExpression(this, ctx);\n  };\n  StatementInterpreter.prototype.visitCastExpr = function (ast, ctx) {\n      return ast.value.visitExpression(this,
ctx);\n  };\n  StatementInterpreter.prototype.visitFunctionExpr = function (ast, ctx) {\n      var
paramNames = ast.params.map(function (param) { return param.name; });\n      return _declareFn(paramNames,
ast.statements, ctx, this);\n  };\n  StatementInterpreter.prototype.visitDeclareFunctionStmt = function (stmt,
ctx) {\n      var paramNames = stmt.params.map(function (param) { return param.name; });\n      ctx.vars.set(stmt.name, _declareFn(paramNames, stmt.statements, ctx, this));\n      if
(stmt.hasModifier(exports.StmtModifier.Exported)) {\n          ctx.exports.push(stmt.name);\n      }\n      return null;\n  };\n  StatementInterpreter.prototype.visitUnaryOperatorExpr = function (ast, ctx) {\n      var _this = this;\n      var rhs = function () { return ast.expr.visitExpression(_this, ctx); };\n      switch
(ast.operator) {\n          case exports.UnaryOperator.Plus:\n              return +rhs();\n          case
exports.UnaryOperator.Minus:\n              return -rhs();\n          default:\n              throw new
Error("\Unknown operator \" + ast.operator);\n      }\n  };\n  StatementInterpreter.prototype.visitBinaryOperatorExpr = function (ast, ctx) {\n      var _this = this;\n      var
lhs = function () { return ast.lhs.visitExpression(_this, ctx); };\n      var rhs = function () { return
ast.rhs.visitExpression(_this, ctx); };\n      switch (ast.operator) {\n          case
exports.BinaryOperator.Equals:\n              return lhs() == rhs();\n          case
exports.BinaryOperator.Identical:\n              return lhs() === rhs();\n          case
exports.BinaryOperator.NotEquals:\n              return lhs() != rhs();\n          case
exports.BinaryOperator.NotIdentical:\n              return lhs() !== rhs();\n          case
exports.BinaryOperator.And:\n              return lhs() && rhs();\n          case exports.BinaryOperator.Or:\n
              return lhs() || rhs();\n          case exports.BinaryOperator.Plus:\n              return lhs() + rhs();\n          case exports.BinaryOperator.Minus:\n
              return lhs() - rhs();\n          case
exports.BinaryOperator.Divide:\n              return lhs() / rhs();\n          case
exports.BinaryOperator.Multiply:\n              return lhs() * rhs();\n          case
exports.BinaryOperator.Modulo:\n              return lhs() % rhs();\n          case
exports.BinaryOperator.Lower:\n              return lhs() < rhs();\n          case
exports.BinaryOperator.LowerEquals:\n              return lhs() <= rhs();\n          case
exports.BinaryOperator.Bigger:\n              return lhs() > rhs();\n          case
exports.BinaryOperator.BiggerEquals:\n              return lhs() >= rhs();\n          default:\n              throw
new Error("\Unknown operator \" + ast.operator);\n      }\n  };\n  StatementInterpreter.prototype.visitReadPropExpr = function (ast, ctx) {\n      var result;\n      var receiver =
ast.receiver.visitExpression(this, ctx);\n      result = receiver[ast.name];\n      return result;\n  };\n  StatementInterpreter.prototype.visitReadKeyExpr = function (ast, ctx) {\n      var receiver =
ast.receiver.visitExpression(this, ctx);\n      var prop = ast.index.visitExpression(this, ctx);\n      return
receiver[prop];\n  };\n  StatementInterpreter.prototype.visitLiteralArrayExpr = function (ast, ctx) {\n      return this.visitAllExpressions(ast.entries, ctx);\n  };\n  StatementInterpreter.prototype.visitLiteralMapExpr =
function (ast, ctx) {\n      var _this = this;\n      var result = {};\n      ast.entries.forEach(function (entry) {\n
          return result[entry.key] = entry.value.visitExpression(_this, ctx); });\n      return result;\n  };\n  StatementInterpreter.prototype.visitCommaExpr = function (ast, context) {\n      var values =
this.visitAllExpressions(ast.parts, context);\n      return values[values.length - 1];\n  };\n  StatementInterpreter.prototype.visitAllExpressions = function (expressions, ctx) {\n      var _this = this;\n      return expressions.map(function (expr) { return expr.visitExpression(_this, ctx); });\n  };\n

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StatementInterpreter.prototype.visitAllStatements = function (statements, ctx) {\n      for (var i = 0; i <
statements.length; i++) {\n          var stmt = statements[i];\n          var val = stmt.visitStatement(this, ctx);\n          if (val instanceof ReturnValue) {\n              return val;\n          }\n          return null;\n      };\n      return StatementInterpreter;\n  }());\n  function _declareFn(varNames, statements, ctx, visitor) {\n      return function () {\n          var args = [];\n          for (var _i = 0; _i < arguments.length; _i++) {\n              args[_i]
= arguments[_i];\n          }\n          return _executeFunctionStatements(varNames, args, statements, ctx, visitor);\n      };\n  }\n  var CATCH_ERROR_VAR$2 = 'error';\n  var CATCH_STACK_VAR$2 = 'stack';\n  /**\n   *
@license\n   * Copyright Google LLC All Rights Reserved.\n   * Use of this source code is governed by an
MIT-style license that can be\n   * found in the LICENSE file at https://angular.io/license\n   */\n   * An
internal module of the Angular compiler that begins with component types,\n   * extracts templates, and eventually
produces a compiled version of the component\n   * ready for linking into an application.\n   *\n   * @security
When compiling templates at runtime, you must ensure that the entire template comes\n   * from a trusted source.
Attacker-controlled data introduced by a template could expose your\n   * application to XSS risks. For more
detail, see the [Security Guide](http://g.co/ng/security).\n   */\n  var JitCompiler = /** @class */ (function () {\n      function JitCompiler(_metadataResolver, _templateParser, _styleCompiler, _viewCompiler, _ngModuleCompiler,
_summaryResolver, _reflector, _jitEvaluator, _compilerConfig, _console, getExtraNgModuleProviders) {\n          this._metadataResolver = _metadataResolver;\n          this._templateParser = _templateParser;\n          this._styleCompiler = _styleCompiler;\n          this._viewCompiler = _viewCompiler;\n          this._ngModuleCompiler = _ngModuleCompiler;\n          this._summaryResolver = _summaryResolver;\n          this._reflector = _reflector;\n          this._jitEvaluator = _jitEvaluator;\n          this._compilerConfig =
_compilerConfig;\n          this._console = _console;\n          this.getExtraNgModuleProviders =
getExtraNgModuleProviders;\n          this._compiledTemplateCache = new Map();\n          this._compiledHostTemplateCache = new Map();\n          this._compiledDirectiveWrapperCache = new Map();\n          this._compiledNgModuleCache = new Map();\n          this._sharedStylesheetCount = 0;\n          this._addedAotSummaries = new Set();\n      }\n      JitCompiler.prototype.compileModuleSync = function
(moduleType) {\n          return SyncAsync.assertSync(this._compileModuleAndComponents(moduleType, true));\n      };\n      JitCompiler.prototype.compileModuleAsync = function (moduleType) {\n          return
Promise.resolve(this._compileModuleAndComponents(moduleType, false));\n      };\n      JitCompiler.prototype.compileModuleAndAllComponentsSync = function (moduleType) {\n          return
SyncAsync.assertSync(this._compileModuleAndAllComponents(moduleType, true));\n      };\n      JitCompiler.prototype.compileModuleAndAllComponentsAsync = function (moduleType) {\n          return
Promise.resolve(this._compileModuleAndAllComponents(moduleType, false));\n      };\n      JitCompiler.prototype.getComponentFactory = function (component) {\n          var summary =
this._metadataResolver.getDirectiveSummary(component);\n          return summary.componentFactory;\n      };\n      JitCompiler.prototype.loadAotSummaries = function (summaries) {\n          this.clearCache();\n          this._addAotSummaries(summaries);\n      };\n      JitCompiler.prototype._addAotSummaries = function (fn) {\n          if (this._addedAotSummaries.has(fn)) {\n              return;\n          }\n          this._addedAotSummaries.add(fn);\n          var summaries = fn();\n          for (var i = 0; i < summaries.length; i++) {\n              var entry = summaries[i];\n              if (typeof entry === 'function') {\n                  this._addAotSummaries(entry);\n              }\n              else {\n                  var summary = entry;\n                  this._summaryResolver.addSummary({ symbol: summary.type.reference, metadata: null, type: summary });\n              }\n          }\n      };\n      JitCompiler.prototype.hasAotSummary = function (ref) {\n          return
!this._summaryResolver.resolveSummary(ref);\n      };\n      JitCompiler.prototype._filterJitIdentifiers = function
(ids) {\n          var _this = this;\n          return ids.map(function (mod) { return mod.reference; }).filter(function
(ref) { return !_this.hasAotSummary(ref); });\n      };\n      JitCompiler.prototype._compileModuleAndComponents = function (moduleType, isSync) {\n          var _this =
this;\n          return SyncAsync.then(this._loadModules(moduleType, isSync), function () {\n              _this._compileComponents(moduleType, null);\n              return _this._compileModule(moduleType);\n          });\n      };\n  });\n  }

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});\n    };\n    JitCompiler.prototype._compileModuleAndAllComponents = function (moduleType, isSync) {\n        var _this = this;\n        return SyncAsync.then(this._loadModules(moduleType, isSync), function () {\n            var componentFactories = [];\n            _this._compileComponents(moduleType, componentFactories);\n            return {\n                ngModuleFactory: _this._compileModule(moduleType),\n                componentFactories:\ncomponentFactories\n            };\n        });\n    });\n    JitCompiler.prototype._loadModules = function\n(mainModule, isSync) {\n        var _this = this;\n        var loading = [];\n        var mainNgModule =\nthis._metadataResolver.getNgModuleMetadata(mainModule);\n        // Note: for runtime compilation, we want to\ntransitively compile all modules,\n        // so we also need to load the declared directives / pipes for all nested\nmodules.\n        this._filterJitIdentifiers(mainNgModule.transitiveModule.modules).forEach(function\n(nestedNgModule) {\n            // getNgModuleMetadata only returns null if the value passed in is not an\nNgModule\n            var moduleMeta = _this._metadataResolver.getNgModuleMetadata(nestedNgModule);\n            _this._filterJitIdentifiers(moduleMeta.declaredDirectives).forEach(function (ref) {\n                var promise =\n_this._metadataResolver.loadDirectiveMetadata(moduleMeta.type.reference, ref, isSync);\n                if (promise)\n{\n                    loading.push(promise);\n                }\n            });\n            _this._filterJitIdentifiers(moduleMeta.declaredPipes)\n                .forEach(function (ref) { return\n_this._metadataResolver.getOrLoadPipeMetadata(ref); });\n            return SyncAsync.all(loading);\n        });\n    });\n    JitCompiler.prototype._compileModule = function (moduleType) {\n        var ngModuleFactory =\nthis._compiledNgModuleCache.get(moduleType);\n        if (!ngModuleFactory) {\n            var moduleMeta =\nthis._metadataResolver.getNgModuleMetadata(moduleType);\n            // Always provide a bound Compiler\n            var extraProviders = this.getExtraNgModuleProviders(moduleMeta.type.reference);\n            var outputCtx =\ncreateOutputContext();\n            var compileResult = this._ngModuleCompiler.compile(outputCtx, moduleMeta,\nextraProviders);\n            ngModuleFactory = this._interpretOrJit(ngModuleJitUrl(moduleMeta),\noutputCtx.statements)[compileResult.ngModuleFactoryVar];\n            this._compiledNgModuleCache.set(moduleMeta.type.reference, ngModuleFactory);\n        }\n        return\nngModuleFactory;\n    };\n    /**\n     * @internal\n     */\n    JitCompiler.prototype._compileComponents = function (mainModule, allComponentFactories) {\n        var _this\n= this;\n        var ngModule = this._metadataResolver.getNgModuleMetadata(mainModule);\n        var\nmoduleByJitDirective = new Map();\n        var templates = new Set();\n        var transJitModules =\nthis._filterJitIdentifiers(ngModule.transitiveModule.modules);\n        transJitModules.forEach(function\n(localMod) {\n            var localModuleMeta = _this._metadataResolver.getNgModuleMetadata(localMod);\n            _this._filterJitIdentifiers(localModuleMeta.declaredDirectives).forEach(function (dirRef) {\n                moduleByJitDirective.set(dirRef, localModuleMeta);\n                var dirMeta =\n_this._metadataResolver.getDirectiveMetadata(dirRef);\n                if (dirMeta.isComponent) {\n                    templates.add(_this._createCompiledTemplate(dirMeta, localModuleMeta));\n                }\n                if\n(allComponentFactories) {\n                    var template =\n_this._createCompiledHostTemplate(dirMeta.type.reference, localModuleMeta);\n                    templates.add(template);\n                    allComponentFactories.push(dirMeta.componentFactory);\n                }\n            });\n        });\n        transJitModules.forEach(function (localMod) {\n            var localModuleMeta = _this._metadataResolver.getNgModuleMetadata(localMod);\n            _this._filterJitIdentifiers(localModuleMeta.declaredDirectives).forEach(function (dirRef) {\n                var\n                dirMeta = _this._metadataResolver.getDirectiveMetadata(dirRef);\n                if (dirMeta.isComponent) {\n                    dirMeta.entryComponents.forEach(function (entryComponentType) {\n                        var moduleMeta =\nmoduleByJitDirective.get(entryComponentType.componentType);\n                        templates.add(_this._createCompiledHostTemplate(entryComponentType.componentType, moduleMeta));\n                    });\n                }\n            });\n            localModuleMeta.entryComponents.forEach(function\n(entryComponentType) {\n                if (!_this.hasAotSummary(entryComponentType.componentType)) {\n                    var moduleMeta = moduleByJitDirective.get(entryComponentType.componentType);\n                    templates.add(_this._createCompiledHostTemplate(entryComponentType.componentType, moduleMeta));\n                }\n            });\n        });\n    });\n}

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    });\n    });\n    templates.forEach(function (template) { return
_this._compileTemplate(template); });\n    });\n    JitCompiler.prototype.clearCacheFor = function (type) {\n
    this._compiledNgModuleCache.delete(type);\n    this._metadataResolver.clearCacheFor(type);\n
    this._compiledHostTemplateCache.delete(type);\n    var compiledTemplate =
    this._compiledTemplateCache.get(type);\n    if (compiledTemplate) {\n
    this._compiledTemplateCache.delete(type);\n    }\n    });\n    JitCompiler.prototype.clearCache = function
() {\n    // Note: don't clear the _addedAotSummaries, as they don't change!\n
    this._metadataResolver.clearCache();\n    this._compiledTemplateCache.clear();\n
    this._compiledHostTemplateCache.clear();\n    this._compiledNgModuleCache.clear();\n    });\n
    JitCompiler.prototype._createCompiledHostTemplate = function (compType, ngModule) {\n    if (!ngModule)
    {\n    throw new Error("Component \" + stringify(compType) + \" is not part of any NgModule or the
    module has not been imported into your module.");\n    }\n    var compiledTemplate =
    this._compiledHostTemplateCache.get(compType);\n    if (!compiledTemplate) {\n    var compMeta =
    this._metadataResolver.getDirectiveMetadata(compType);\n    assertComponent(compMeta);\n    var
    hostMeta = this._metadataResolver.getHostComponentMetadata(compMeta,
    compMeta.componentFactory.viewDefFactory);\n    compiledTemplate =\n    new
    CompiledTemplate(true, compMeta.type, hostMeta, ngModule, [compMeta.type]);\n
    this._compiledHostTemplateCache.set(compType, compiledTemplate);\n    }\n    return
    compiledTemplate;\n    });\n    JitCompiler.prototype._createCompiledTemplate = function (compMeta,
    ngModule) {\n    var compiledTemplate = this._compiledTemplateCache.get(compMeta.type.reference);\n
    if (!compiledTemplate) {\n    assertComponent(compMeta);\n    compiledTemplate = new
    CompiledTemplate(false, compMeta.type, compMeta, ngModule, ngModule.transitiveModule.directives);\n
    this._compiledTemplateCache.set(compMeta.type.reference, compiledTemplate);\n    }\n    return
    compiledTemplate;\n    });\n    JitCompiler.prototype._compileTemplate = function (template) {\n    var
    _this = this;\n    if (template.isCompiled) {\n    return;\n    }\n    var compMeta =
    template.compMeta;\n    var externalStylesheetsByModuleUrl = new Map();\n    var outputContext =
    createOutputContext();\n    var componentStylesheet = this._styleCompiler.compileComponent(outputContext,
    compMeta);\n    compMeta.template.externalStylesheets.forEach(function (stylesheetMeta) {\n    var
    compiledStylesheet = _this._styleCompiler.compileStyles(createOutputContext(), compMeta, stylesheetMeta);\n
    externalStylesheetsByModuleUrl.set(stylesheetMeta.moduleUrl, compiledStylesheet);\n    });\n
    this._resolveStylesCompileResult(componentStylesheet, externalStylesheetsByModuleUrl);\n    var pipes =
    template.ngModule.transitiveModule.pipes.map(function (pipe) { return
    _this._metadataResolver.getPipeSummary(pipe.reference); });\n    var _a = this._parseTemplate(compMeta,
    template.ngModule, template.directives), parsedTemplate = _a.template, usedPipes = _a.pipes;\n    var
    compileResult = this._viewCompiler.compileComponent(outputContext, compMeta, parsedTemplate,
    variable(componentStylesheet.stylesVar), usedPipes);\n    var evalResult =
    this._interpretOrJit(templateJitUrl(template.ngModule.type, template.compMeta), outputContext.statements);\n
    var viewClass = evalResult[compileResult.viewClassVar];\n    var rendererType =
    evalResult[compileResult.rendererTypeVar];\n    template.compiled(viewClass, rendererType);\n    });\n
    JitCompiler.prototype._parseTemplate = function (compMeta, ngModule, directiveIdentifiers) {\n    var _this =
    this;\n    // Note: ! is ok here as components always have a template.\n    var preserveWhitespaces =
    compMeta.template.preserveWhitespaces;\n    var directives = directiveIdentifiers.map(function (dir) { return
    _this._metadataResolver.getDirectiveSummary(dir.reference); });\n    var pipes =
    ngModule.transitiveModule.pipes.map(function (pipe) { return
    _this._metadataResolver.getPipeSummary(pipe.reference); });\n    return this._templateParser.parse(compMeta,
    compMeta.template.htmlAst, directives, pipes, ngModule.schemas, templateUrl(ngModule.type, compMeta,
    compMeta.template), preserveWhitespaces);\n    });\n    JitCompiler.prototype._resolveStylesCompileResult =
    function (result, externalStylesheetsByModuleUrl) {\n    var _this = this;\n

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result.dependencies.forEach(function (dep, i) {\n      var nestedCompileResult =
externalStylesheetsByModuleUrl.get(dep.moduleUrl);\n      var nestedStylesArr =
_this._resolveAndEvalStylesCompileResult(nestedCompileResult, externalStylesheetsByModuleUrl);\n
dep.setValue(nestedStylesArr);\n    });\n  });\n
JitCompiler.prototype._resolveAndEvalStylesCompileResult = function (result, externalStylesheetsByModuleUrl)
{\n  this._resolveStylesCompileResult(result, externalStylesheetsByModuleUrl);\n  return
this._interpretOrJit(sharedStylesheetJitUrl(result.meta, this._sharedStylesheetCount++),
result.outputCtx.statements)[result.stylesVar];\n  });\n  JitCompiler.prototype._interpretOrJit = function
(sourceUrl, statements) {\n    if (!this._compilerConfig.useJit) {\n      return
interpretStatements(statements, this._reflector);\n    } else {\n      return
this._jitEvaluator.evaluateStatements(sourceUrl, statements, this._reflector, this._compilerConfig.jitDevMode);\n    }\n  });\n  return JitCompiler;\n  });\n  var CompiledTemplate = /** @class */ (function () {\n
function CompiledTemplate(isHost, compType, compMeta, ngModule, directives) {\n    this.isHost = isHost;\n
this.compType = compType;\n    this.compMeta = compMeta;\n    this.ngModule = ngModule;\n
this.directives = directives;\n    this._viewClass = null;\n    this.isCompiled = false;\n  }\n
CompiledTemplate.prototype.compiled = function (viewClass, rendererType) {\n    this._viewClass =
viewClass;\n    this.compMeta.componentViewType.setDelegate(viewClass);\n    for (var prop in
rendererType) {\n      this.compMeta.rendererType[prop] = rendererType[prop];\n    }\n
this.isCompiled = true;\n  });\n  return CompiledTemplate;\n  });\n  function assertComponent(meta) {\n
if (!meta.isComponent) {\n    throw new Error("Could not compile \"" + identifierName(meta.type) + "\"
because it is not a component.");\n  }\n  }\n  function createOutputContext() {\n    var importExpr$1 =
function (symbol) { return importExpr({ name: identifierName(symbol), moduleName: null, runtime: symbol });\n
};\n    return { statements: [], genFilePath: "", importExpr: importExpr$1, constantPool: new ConstantPool() };\n
  }\n  /**\n   * @license\n   * Copyright Google LLC All Rights Reserved.\n   * Use of this source code
is governed by an MIT-style license that can be\n   * found in the LICENSE file at https://angular.io/license\n
*/\n  /**\n   * Provides access to reflection data about symbols that the compiler needs.\n   */\n  var
CompileReflector = /** @class */ (function () {\n    function CompileReflector() {\n    }\n    return
CompileReflector;\n  });\n  /**\n   * @license\n   * Copyright Google LLC All Rights Reserved.\n   *\n
* Use of this source code is governed by an MIT-style license that can be\n   * found in the LICENSE file at
https://angular.io/license\n   */\n  /**\n   * Create a {@link UrlResolver} with no package prefix.\n   */\n
function createUrlResolverWithoutPackagePrefix() {\n    return new UrlResolver();\n  }\n  function
createOfflineCompileUrlResolver() {\n    return new UrlResolver('.');\n  }\n  var UrlResolver = /** @class */
(function () {\n    function UrlResolverImpl(_packagePrefix) {\n      if (_packagePrefix === void 0) {\n
_packagePrefix = null;\n      }\n      this._packagePrefix = _packagePrefix;\n    }\n    /**\n     * Resolves the
`url` given the `baseUri`.\n     * - when the `url` is null, the `baseUri` is returned,\n     * - if `url` is relative
(path/to/here', './path/to/here'), the resolved url is a combination of\n     * `baseUri` and `url`,\n     * - if `url` is
absolute (it has a scheme: 'http://', 'https://' or start with '/'), the `url` is\n     * returned as is (ignoring the
`baseUri`)\n     */\n    UrlResolverImpl.prototype.resolve = function (baseUri, url) {\n      var resolvedUri =
url;\n      if (baseUri != null && baseUri.length > 0) {\n        resolvedUri = _resolveUri(baseUri,
resolvedUri);\n      }\n      var resolvedParts = _split(resolvedUri);\n      var prefix =
this._packagePrefix;\n      if (prefix != null && resolvedParts != null &&\n
resolvedParts[_ComponentIndex.Scheme] === 'package') {\n        var path =
resolvedParts[_ComponentIndex.Path];\n        prefix = prefix.replace(/\\/+$/, "");\n        path =
path.replace(/^\\/+/, "");\n        return prefix + "\\\" + path;\n      }\n      return resolvedUri;\n    };\n
return UrlResolverImpl;\n  });\n  /**\n   * Extract the scheme of a URL.\n   */\n  function getUrlScheme(url)
{\n    var match = _split(url);\n    return (match && match[_ComponentIndex.Scheme]) || ""; \n  }\n  // The
code below is adapted from Traceur:\n  // https://github.com/google/traceur-
compiler/blob/9511c1dafa972bf0de1202a8a863bad02f0f95a8/src/runtime/url.js\n  /**\n   * Builds a URI string

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from already-encoded parts. `*\n * No encoding is performed. Any component may be omitted as either null or\n * undefined.\n * @param opt_scheme The scheme such as 'http'.\n * @param opt_userInfo The user name before the '@'.\n * @param opt_domain The domain such as 'www.google.com', already\n * URI-encoded.\n * @param opt_port The port number.\n * @param opt_path The path, already URI-encoded. If it is not\n * empty, it must begin with a slash.\n * @param opt_queryData The URI-encoded query data.\n * @param opt_fragment The URI-encoded fragment identifier.\n * @return The fully combined URI.\n */\n function _buildFromEncodedParts(opt_scheme, opt_userInfo, opt_domain, opt_port, opt_path, opt_queryData, opt_fragment) {\n var out = [];\n if (opt_scheme != null) {\n out.push(opt_scheme + ':');\n }\n if (opt_domain != null) {\n out.push('//');\n if (opt_userInfo != null) {\n out.push(opt_userInfo + '@');\n }\n out.push(opt_domain);\n if (opt_port != null) {\n out.push(': ' + opt_port);\n }\n }\n if (opt_path != null) {\n out.push(opt_path);\n }\n if (opt_queryData != null) {\n out.push('? ' + opt_queryData);\n }\n if (opt_fragment != null) {\n out.push('# ' + opt_fragment);\n }\n return out.join('');\n }\n /**\n * A regular expression for breaking a URI into its component parts.\n * @link http://www.gbiv.com/protocols/uri/rfc/rfc3986.html#RFC2234\n * As the "first-match-wins" algorithm is identical to the "greedy" disambiguation method used by POSIX regular expressions, it is natural and commonplace to use a regular expression for parsing the potential five components of a URI reference.\n * The following line is the regular expression for breaking-down a well-formed URI reference into its components.\n * <pre>\n ^(([^:/?#]+):)?(//([^/?#]*))?([^?#]*)(\\?([^#]*))?(#(.*))? 12 3 4 5 6 7 8 9\n * </pre>\n * The numbers in the second line above are only to assist readability; they indicate the reference points for each subexpression (i.e., each paired parenthesis). We refer to the value matched for subexpression <n> as $<n>.\n * For example, matching the above expression to\n * <pre>\n http://www.ics.uci.edu/pub/ietf/uri/#Related\n * </pre>\n * results in the following subexpression matches:\n * <pre>\n * $1 = http\n * $2 = http\n * $3 = //www.ics.uci.edu\n * $4 = www.ics.uci.edu\n * $5 = /pub/ietf/uri/\n * $6 = <undefined>\n * $7 = <undefined>\n * $8 = #Related\n * $9 = Related\n * </pre>\n * where <undefined> indicates that the component is not present, as is the case for the query component in the above example. Therefore, we can determine the value of the five components as\n * <pre>\n * scheme = $2\n * authority = $4\n * path = $5\n * query = $7\n * fragment = $9\n * </pre>\n * The regular expression has been modified slightly to expose the userInfo, domain, and port separately from the authority.\n * The modified version yields\n * <pre>\n * $1 = http\n * $2 = <undefined>\n * $3 = www.ics.uci.edu\n * $4 = domain\n * $5 = authority\n * $6 = <undefined>\n * $7 = port\n * $8 = /pub/ietf/uri/\n * $9 = path\n * $10 = <undefined>\n * $11 = <undefined>\n * $12 = Related\n * $13 = fragment without #\n * </pre>\n * @internal\n * @param var _splitRe = new RegExp('^ + (?: + ([^:/?#.] + // scheme - ignore special characters // used by other URL parts such as :, // ?, /, #, and . ':)? + (?:// + (?:([^\?#]*)@)? + // userInfo '([\\w\\d\\-\\.\\u0100-\\uffff.%]*)' + // domain - restrict to letters, // digits, dashes, dots, percent // escapes, and unicode characters. '(?:([0-9]+))?' + // port ')' + '([^?#]+)' + // path '(?:\\?([^\?#]*)?)?' + // query '(?:#(.*))?' + // fragment '$');\n * The index of each URI component in the return value of goog.uri.utils.split.\n * @enum {number}\n * @var _ComponentIndex;\n (function (_ComponentIndex) {\n _ComponentIndex[_ComponentIndex["Scheme"] = 1] = "Scheme";\n _ComponentIndex[_ComponentIndex["UserInfo"] = 2] = "UserInfo";\n _ComponentIndex[_ComponentIndex["Domain"] = 3] = "Domain";\n _ComponentIndex[_ComponentIndex["Port"] = 4] = "Port";\n _ComponentIndex[_ComponentIndex["Path"] = 5] = "Path";\n _ComponentIndex[_ComponentIndex["QueryData"] = 6] = "QueryData";\n _ComponentIndex[_ComponentIndex["Fragment"] = 7] = "Fragment";\n })(_ComponentIndex || (_ComponentIndex = {}));\n * Splits a URI into its component parts.\n * Each component can be accessed via the component indices; for example:\n * <pre>\n *`

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goog.uri.utils.split(someStr)[goog.uri.utils.ComponentIndex.QUERY_DATA];\n * </pre>\n * \n * @param
uri The URI string to examine.\n * @return Each component still URI-encoded.\n * Each component that is
present will contain the encoded value, whereas\n * components that are not present will be undefined or
empty, depending\n * on the browser's regular expression implementation. Never null, since\n * arbitrary
strings may still look like path names.\n * \n function _split(uri) {\n return uri.match(_splitRe);\n }\n
/**\n * Removes dot segments in given path component, as described in\n * RFC 3986, section 5.2.4.\n * \n
* @param path A non-empty path component.\n * @return Path component with removed dot segments.\n * \n
function _removeDotSegments(path) {\n if (path == '/')\n return '/';\n var leadingSlash = path[0] ==
 '/' ? '/' : '';\n var trailingSlash = path[path.length - 1] === '/' ? '/' : '';\n var segments = path.split('/');\n var
out = [];\n var up = 0;\n for (var pos = 0; pos < segments.length; pos++) {\n var segment =
 segments[pos];\n switch (segment) {\n case '':\n case '.':\n case '..':\n break;\n
case '..':\n if (out.length > 0) {\n out.pop();\n }\n else {\n
up++;\n }\n break;\n default:\n out.push(segment);\n }\n
}\n if (leadingSlash == '/')\n while (up-- > 0) {\n out.unshift('.');\n }\n if
(out.length === 0)\n out.push('.');\n }\n return leadingSlash + out.join('/') + trailingSlash;\n }\n
/**\n * Takes an array of the parts from split and canonicalizes the path part\n * and then joins all the parts.\n
* \n function _joinAndCanonicalizePath(parts) {\n var path = parts[_ComponentIndex.Path];\n path =
path == null ? '' : _removeDotSegments(path);\n parts[_ComponentIndex.Path] = path;\n return
_buildFromEncodedParts(parts[_ComponentIndex.Scheme], parts[_ComponentIndex.UserInfo],
parts[_ComponentIndex.Domain], parts[_ComponentIndex.Port], path, parts[_ComponentIndex.QueryData],
parts[_ComponentIndex.Fragment]);\n }\n /**\n * Resolves a URL.\n * @param base The URL acting as
the base URL.\n * @param to The URL to resolve.\n * \n function _resolveUrl(base, url) {\n var parts =
_split(encodeURI(url));\n var baseParts = _split(base);\n if (parts[_ComponentIndex.Scheme] != null) {\n
return _joinAndCanonicalizePath(parts);\n }\n else {\n parts[_ComponentIndex.Scheme] =
baseParts[_ComponentIndex.Scheme];\n }\n for (var i = _ComponentIndex.Scheme; i <=
_ComponentIndex.Port; i++) {\n if (parts[i] == null) {\n parts[i] = baseParts[i];\n }\n }\n
if (parts[_ComponentIndex.Path][0] == '/')\n return _joinAndCanonicalizePath(parts);\n }\n var
path = baseParts[_ComponentIndex.Path];\n if (path == null)\n path = '/';\n var index =
path.lastIndexOf('/');\n path = path.substring(0, index + 1) + parts[_ComponentIndex.Path];\n
parts[_ComponentIndex.Path] = path;\n return _joinAndCanonicalizePath(parts);\n }\n\n var Extractor = /**
@class */ (function () {\n function Extractor(host, staticSymbolResolver, messageBundle, metadataResolver)
{\n this.host = host;\n this.staticSymbolResolver = staticSymbolResolver;\n this.messageBundle
= messageBundle;\n this.metadataResolver = metadataResolver;\n }\n Extractor.prototype.extract =
function (rootFiles) {\n var _this = this;\n var _a = analyzeAndValidateNgModules(rootFiles, this.host,
this.staticSymbolResolver, this.metadataResolver), files = _a.files, ngModules = _a.ngModules;\n return
Promise\n .all(ngModules.map(function (ngModule) { return
_this.metadataResolver.loadNgModuleDirectiveAndPipeMetadata(ngModule.type.reference, false); })))\n
.then(function () {\n var errors = [];\n files.forEach(function (file) {\n var compMetas
= [];\n file.directives.forEach(function (directiveType) {\n var dirMeta =
_this.metadataResolver.getDirectiveMetadata(directiveType);\n if (dirMeta &&
dirMeta.isComponent) {\n compMetas.push(dirMeta);\n }\n });\n
compMetas.forEach(function (compMeta) {\n var html = compMeta.template.template;\n
// Template URL points to either an HTML or TS file depending on\n // whether the file is used
with `templateUrl` or `template`,\n // respectively.\n var templateUrl =
compMeta.template.templateUrl;\n var interpolationConfig =
InterpolationConfig.fromArray(compMeta.template.interpolation);\n errors.push.apply(errors,
__spread(_this.messageBundle.updateFromTemplate(html, templateUrl, interpolationConfig));\n });\n
if (errors.length) {\n throw new Error(errors.map(function (e) { return e.toString();

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}).join('\n');\n    }\n    return _this.messageBundle;\n    });\n    });\n    Extractor.create =
function (host, locale) {\n    var htmlParser = new HtmlParser();\n    var urlResolver =
createAotUrlResolver(host);\n    var symbolCache = new StaticSymbolCache();\n    var summaryResolver
= new AotSummaryResolver(host, symbolCache);\n    var staticSymbolResolver = new
StaticSymbolResolver(host, symbolCache, summaryResolver);\n    var staticReflector = new
StaticReflector(summaryResolver, staticSymbolResolver);\n    var config = new CompilerConfig({
defaultEncapsulation: ViewEncapsulation.Emulated, useJit: false });\n    var normalizer = new
DirectiveNormalizer({ get: function (url) { return host.loadResource(url); } }, urlResolver, htmlParser, config);\n
    var elementSchemaRegistry = new DomElementSchemaRegistry();\n    var resolver = new
CompileMetadataResolver(config, htmlParser, new NgModuleResolver(staticReflector), new
DirectiveResolver(staticReflector), new PipeResolver(staticReflector), summaryResolver, elementSchemaRegistry,
normalizer, console, symbolCache, staticReflector);\n    // TODO(vicb): implicit tags & attributes\n    var
messageBundle = new MessageBundle(htmlParser, [], {}, locale);\n    var extractor = new Extractor(host,
staticSymbolResolver, messageBundle, resolver);\n    return { extractor: extractor, staticReflector:
staticReflector };\n    });\n    return Extractor;\n    }());\n\n    /**\n     * @license\n     * Copyright Google LLC
All Rights Reserved.\n     * Use of this source code is governed by an MIT-style license that can be\n     *
found in the LICENSE file at https://angular.io/license\n     *\n     * Processes `Target`s with a given set of
directives and performs a binding operation, which\n     * returns an object similar to TypeScript's `ts.TypeChecker`
that contains knowledge about the\n     * target.\n     */\n    var R3TargetBinder = /** @class */ (function () {\n
function R3TargetBinder(directiveMatcher) {\n    this.directiveMatcher = directiveMatcher;\n    }\n
/**\n     * Perform a binding operation on the given `Target` and return a `BoundTarget` which contains\n     *
metadata about the types referenced in the template.\n     */\n    R3TargetBinder.prototype.bind = function
(target) {\n    if (!target.template) {\n    // TODO(alxhub): handle targets which contain things like
HostBindings, etc.\n    throw new Error('Binding without a template not yet supported');\n    }\n
// First, parse the template into a `Scope` structure. This operation captures the syntactic\n    // scopes in the
template and makes them available for later use.\n    var scope = Scope.apply(target.template);\n    // Use
the `Scope` to extract the entities present at every level of the template.\n    var templateEntities =
extractTemplateEntities(scope);\n    // Next, perform directive matching on the template using the
`DirectiveBinder`. This returns:\n    // - directives: Map of nodes (elements & ng-templates) to the directives
on them.\n    // - bindings: Map of inputs, outputs, and attributes to the directive/element that claims\n    //
them. TODO(alxhub): handle multiple directives claiming an input/output/etc.\n    // - references: Map of
#references to their targets.\n    var _b = DirectiveBinder.apply(target.template, this.directiveMatcher),
directives = _b.directives, bindings = _b.bindings, references = _b.references;\n    // Finally, run the
TemplateBinder to bind references, variables, and other entities within the\n    // template. This extracts all the
metadata that doesn't depend on directive matching.\n    var _c = TemplateBinder.apply(target.template, scope),
expressions = _c.expressions, symbols = _c.symbols, nestingLevel = _c.nestingLevel, usedPipes = _c.usedPipes;\n
    return new R3BoundTarget(target, directives, bindings, references, expressions, symbols, nestingLevel,
templateEntities, usedPipes);\n    };\n    return R3TargetBinder;\n    }());\n\n    /**\n     * Represents a binding
scope within a template.\n     * Any variables, references, or other named entities declared within the template
will\n     * be captured and available by name in `namedEntities`. Additionally, child templates will\n     * be
analyzed and have their child `Scope`s available in `childScopes`.\n     */\n    var Scope = /** @class */ (function ()
{\n    function Scope(parentScope, template) {\n    this.parentScope = parentScope;\n    this.template =
template;\n    }\n
/**\n     * Named members of the `Scope`, such as `Reference`s or `Variable`s.\n     */\n    this.namedEntities = new Map();\n
/**\n     * Child `Scope`s for immediately nested
`Template`s.\n     */\n    this.childScopes = new Map();\n    }\n    Scope.newRootScope = function ()
{\n    return new Scope(null, null);\n    };\n
/**\n     * Process a template (either as a `Template` sub-
template with variables, or a plain array of\n     * template `Node`s) and construct its `Scope`.\n     */\n
Scope.apply = function (template) {\n    var scope = Scope.newRootScope();\n    scope.ingest(template);\n

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        return scope;\n    };\n    /**\n     * Internal method to process the template and populate the `Scope`.\n     *\n     * Scope.prototype.ingest = function (template) {\n     *     var _this = this;\n     *     if (template instanceof\n     *     Template) {\n     *         // Variables on an <ng-template> are defined in the inner scope.\n     *         template.variables.forEach(function (node) { return _this.visitVariable(node); });\n     *         // Process the nodes of the template.\n     *         template.children.forEach(function (node) { return node.visit(_this); });\n     *     }\n     *     else {\n     *         // No overarching `Template` instance, so process the nodes directly.\n     *         template.forEach(function (node) { return node.visit(_this); });\n     *     }\n     *     Scope.prototype.visitElement = function (element) {\n     *         var _this = this;\n     *         // `Element`'s in the template may have `Reference`'s which are captured in the scope.\n     *         element.references.forEach(function (node) {\n     *             return _this.visitReference(node); });\n     *         // Recurse into the `Element`'s children.\n     *         element.children.forEach(function (node) { return node.visit(_this); });\n     *     }\n     *     Scope.prototype.visitTemplate = function (template) {\n     *         var _this = this;\n     *         // References on a <ng-template> are defined in the outer scope, so capture them before\n     *         // processing the template's child scope.\n     *         template.references.forEach(function (node) { return _this.visitReference(node); });\n     *         // Next, create an inner scope and process the template within it.\n     *         var scope = new Scope(this, template);\n     *         scope.ingest(template);\n     *         this.childScopes.set(template, scope);\n     *     }\n     *     Scope.prototype.visitVariable = function (variable) {\n     *         // Declare the variable if it's not already.\n     *         this.maybeDeclare(variable);\n     *     }\n     *     Scope.prototype.visitReference = function (reference) {\n     *         // Declare the variable if it's not already.\n     *         this.maybeDeclare(reference);\n     *     }\n     *     // Unused visitors.\n     *     Scope.prototype.visitContent = function (content) {\n     *     }\n     *     Scope.prototype.visitBoundAttribute = function (attr) {\n     *     }\n     *     Scope.prototype.visitBoundEvent = function (event) {\n     *     }\n     *     Scope.prototype.visitBoundText = function (text) {\n     *     }\n     *     Scope.prototype.visitText = function (text) {\n     *     }\n     *     Scope.prototype.visitTextAttribute = function (attr) {\n     *     }\n     *     Scope.prototype.visitIcu = function (icu) {\n     *     }\n     *     Scope.prototype.maybeDeclare = function (thing) {\n     *         // Declare something with a name, as long as that name isn't taken.\n     *         if\n     *         (!this.namedEntities.has(thing.name)) {\n     *             this.namedEntities.set(thing.name, thing);\n     *         }\n     *     }\n     *     /**\n     *      * Look up a variable within this `Scope`.\n     *      *\n     *      * This can recurse into a parent `Scope` if it's available.\n     *      *\n     *      * Scope.prototype.lookup = function (name) {\n     *          if (this.namedEntities.has(name))\n     *          {\n     *              // Found in the local scope.\n     *              return this.namedEntities.get(name);\n     *          }\n     *          else if\n     *          (this.parentScope !== null) {\n     *              // Not in the local scope, but there's a parent scope so check there.\n     *              return this.parentScope.lookup(name);\n     *          }\n     *          else {\n     *              // At the top level and it wasn't found.\n     *              return null;\n     *          }\n     *      }\n     *      /**\n     *       * Get the child scope for a `Template`.\n     *       *\n     *       * This should always be defined.\n     *       *\n     *       * Scope.prototype.getChildScope = function (template) {\n     *           var\n     *           res = this.childScopes.get(template);\n     *           if (res === undefined) {\n     *               throw new Error(`Assertion error: child scope for\n     *               ` + template + ` not found`);\n     *           }\n     *           return res;\n     *       }\n     *       return Scope;\n     *   }());\n     *   /**\n     *    * Processes a template and matches directives on nodes (elements and templates).\n     *    *\n     *    * Usually used via the static `apply()` method.\n     *    *\n     *    * var DirectiveBinder = /** @class */ (function () {\n     *        function\n     *        DirectiveBinder(matcher, directives, bindings, references) {\n     *            this.matcher = matcher;\n     *            this.directives\n     *            = directives;\n     *            this.bindings = bindings;\n     *            this.references = references;\n     *        }\n     *        /**\n     *         * Process a template (list of `Node`'s) and perform directive matching against each node.\n     *         *\n     *         * @param\n     *         template the list of template `Node`'s to match (recursively).\n     *         *\n     *         * @param selectorMatcher a `SelectorMatcher` containing the directives that are in scope for\n     *         *\n     *         * this template.\n     *         *\n     *         * @returns three maps which contain information about directives in the template: the\n     *         *\n     *         * `directives` map which lists directives matched on each node, the `bindings` map which\n     *         *\n     *         * indicates which directives claimed which bindings (inputs, outputs, etc), and the `references`\n     *         *\n     *         * map which resolves #references (`Reference`'s) within the template to the named directive or\n     *         *\n     *         * template node.\n     *         *\n     *         * DirectiveBinder.apply = function (template, selectorMatcher)\n     *         *\n     *         *\n     *         {\n     *             var directives = new Map();\n     *             var bindings = new Map();\n     *             var references = new Map();\n     *             var matcher = new DirectiveBinder(selectorMatcher, directives, bindings, references);\n     *             matcher.ingest(template);\n     *             return { directives: directives, bindings: bindings, references: references };\n     *         }\n     *     }());

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};\n    DirectiveBinder.prototype.ingest = function (template) {\n        var _this = this;\n        template.forEach(function (node) { return node.visit(_this); });\n    });\n    DirectiveBinder.prototype.visitElement = function (element) {\n        this.visitElementOrTemplate(element.name,\n        element);\n    });\n    DirectiveBinder.prototype.visitTemplate = function (template) {\n        this.visitElementOrTemplate('ng-template', template);\n    });\n    DirectiveBinder.prototype.visitElementOrTemplate = function (elementName, node) {\n        var _this = this;\n        // First, determine the HTML shape of the node for the purpose of directive matching.\n        // Do this by building up a `CssSelector` for the node.\n        var cssSelector = createCssSelector(elementName,\n        getAttrsForDirectiveMatching(node));\n        // Next, use the `SelectorMatcher` to get the list of directives on the\n        node.\n        var directives = [];\n        this.matcher.match(cssSelector, function (_, directive) { return\n        directives.push(directive); });\n        if (directives.length > 0) {\n            this.directives.set(node, directives);\n        }\n        // Resolve any references that are created on this node.\n        node.references.forEach(function\n        (ref) {\n            var dirTarget = null;\n            // If the reference expression is empty, then it matches the\n            \"primary\" directive on the node\n            // (if there is one). Otherwise it matches the host node itself (either an\n            element or\n            // <ng-template> node).\n            if (ref.value.trim() === \"\") {\n                // This could be\n                a reference to a component if there is one.\n                dirTarget = directives.find(function (dir) { return\n                dir.isComponent; }) || null;\n            }\n            else {\n                // This should be a reference to a directive\n                exported via exportAs.\n                dirTarget =\n                directives.find(function (dir) { return dir.exportAs\n                !== null && dir.exportAs.some(function (value) { return value === ref.value; }); }) ||\n                null;\n            }\n            // Check if a matching directive was found.\n            if (dirTarget === null) {\n                // No\n                matching directive was found - this reference points to an unknown target. Leave it\n                // unmapped.\n                return;\n            }\n            if (dirTarget !== null) {\n                // This reference\n                points to a directive.\n                _this.references.set(ref, { directive: dirTarget, node: node });\n            }\n            else {\n                // This reference points to the node itself.\n                _this.references.set(ref, node);\n            }\n        });\n        var setAttributeBinding = function (attribute, ioType) {\n            var dir =\n            directives.find(function (dir) { return dir[ioType].hasBindingPropertyName(attribute.name); });\n            var\n            binding = dir !== undefined ? dir : node;\n            _this.bindings.set(attribute, binding);\n        });\n        //\n        Node inputs (bound attributes) and text attributes can be bound to an\n        // input on a directive.\n        node.inputs.forEach(function (input) { return setAttributeBinding(input, 'inputs'); });\n        node.attributes.forEach(function (attr) { return setAttributeBinding(attr, 'inputs'); });\n        if (node instanceof\n        Template) {\n            node.templateAttrs.forEach(function (attr) { return setAttributeBinding(attr, 'inputs'); });\n        }\n        // Node outputs (bound events) can be bound to an output on a directive.\n        node.outputs.forEach(function (output) { return setAttributeBinding(output, 'outputs'); });\n        // Recurse into\n        the node's children.\n        node.children.forEach(function (child) { return child.visit(_this); });\n    });\n    //\n    Unused visitors.\n    DirectiveBinder.prototype.visitContent = function (content) { }; \n    DirectiveBinder.prototype.visitVariable = function (variable) { }; \n    DirectiveBinder.prototype.visitReference =\n    function (reference) { }; \n    DirectiveBinder.prototype.visitTextAttribute = function (attribute) { }; \n    DirectiveBinder.prototype.visitBoundAttribute = function (attribute) { }; \n    DirectiveBinder.prototype.visitBoundEvent = function (attribute) { }; \n    DirectiveBinder.prototype.visitBoundAttributeOrEvent = function (node) { }; \n    DirectiveBinder.prototype.visitText = function (text) { }; \n    DirectiveBinder.prototype.visitBoundText =\n    function (text) { }; \n    DirectiveBinder.prototype.visitIcu = function (icu) { }; \n    return DirectiveBinder;\n    }();\n    /**\n     * Processes a template and extract metadata about expressions and symbols within.\n     *\n     * This is a companion to the `DirectiveBinder` that doesn't require knowledge of directives matched\n     * within the\n     * template in order to operate.\n     *\n     * Expressions are visited by the superclass `RecursiveAstVisitor`, with\n     * custom logic provided\n     * by overridden methods from that visitor.\n     */\n    var TemplateBinder = /** @class\n    */ (function (_super) {\n        __extends(TemplateBinder, _super);\n        function TemplateBinder(bindings,\n        symbols, usedPipes, nestingLevel, scope, template, level) {\n            var _this = _super.call(this) || this;\n
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_this.bindings = bindings;\n      _this.symbols = symbols;\n      _this.usedPipes = usedPipes;\n      _this.nestingLevel = nestingLevel;\n      _this.scope = scope;\n      _this.template = template;\n      _this.level = level;\n      _this.pipesUsed = [];\n      // Save a bit of processing time by constructing this\n      closure in advance.\n      _this.visitNode = function (node) { return node.visit(_this); }; return _this;\n    }\n    // This method is defined to reconcile the type of TemplateBinder since both\n    // RecursiveAstVisitor and Visitor define the visit() method in their\n    // interfaces.\n    TemplateBinder.prototype.visit = function\n    (node, context) {\n      if (node instanceof AST) {\n        node.visit(this, context);\n      } else\n      {\n        node.visit(this);\n      }\n    }; /**\n     * Process a template and extract metadata about\n     * expressions and symbols within.\n     * @param template the nodes of the template to process\n     * @param scope the `Scope` of the template being processed.\n     * @returns three maps which contain metadata\n     * about the template: `expressions` which interprets\n     * special `AST` nodes in expressions as pointing to\n     * references or variables declared within the\n     * template, `symbols` which maps those variables and references\n     * to the nested `Template` which\n     * declares them, if any, and `nestingLevel` which associates each `Template`\n     * with a integer\n     * nesting level (how many levels deep within the template structure the `Template` is),\n     * starting\n     * at 1.\n     */\n    TemplateBinder.apply = function (template, scope) {\n      var expressions\n      = new Map();\n      var symbols = new Map();\n      var nestingLevel = new Map();\n      var usedPipes =\n      new Set();\n      // The top-level template has nesting level 0.\n      var binder = new\n      TemplateBinder(expressions, symbols, usedPipes, nestingLevel, scope, template instanceof Template ? template :\n      null, 0);\n      binder.ingest(template);\n      return { expressions: expressions, symbols: symbols,\n      nestingLevel: nestingLevel, usedPipes: usedPipes }; }\n    TemplateBinder.prototype.ingest = function\n    (template) {\n      if (template instanceof Template) {\n        // For <ng-template>s, process only variables\n        and child nodes. Inputs, outputs, templateAttrs,\n        // and references were all processed in the scope of the\n        containing template.\n        template.variables.forEach(this.visitNode);\n        template.children.forEach(this.visitNode);\n        // Set the nesting level.\n        this.nestingLevel.set(template, this.level);\n      } else {\n        // Visit each node from the top-level\n        template.\n        template.forEach(this.visitNode);\n      }\n    }; \n    TemplateBinder.prototype.visitElement = function (element) {\n      // Visit the inputs, outputs, and children of\n      the element.\n      element.inputs.forEach(this.visitNode);\n      element.outputs.forEach(this.visitNode);\n      element.children.forEach(this.visitNode);\n    }; \n    TemplateBinder.prototype.visitTemplate = function\n    (template) {\n      // First, visit inputs, outputs and template attributes of the template node.\n      template.inputs.forEach(this.visitNode);\n      template.outputs.forEach(this.visitNode);\n      template.templateAttrs.forEach(this.visitNode);\n      // References are also evaluated in the outer context.\n      template.references.forEach(this.visitNode);\n      // Next, recurse into the template using its scope, and bumping\n      the nesting level up by one.\n      var childScope = this.scope.getChildScope(template);\n      var binder =\n      new TemplateBinder(this.bindings, this.symbols, this.usedPipes, this.nestingLevel, childScope, template, this.level\n      + 1);\n      binder.ingest(template);\n    }; \n    TemplateBinder.prototype.visitVariable = function (variable)\n    {\n      // Register the `Variable` as a symbol in the current `Template`.\n      if (this.template !== null) {\n        this.symbols.set(variable, this.template);\n      }\n    }; \n    TemplateBinder.prototype.visitReference =\n    function (reference) {\n      // Register the `Reference` as a symbol in the current `Template`.\n      if\n      (this.template !== null) {\n        this.symbols.set(reference, this.template);\n      }\n    }; \n    // Unused\n    template visitors\n    TemplateBinder.prototype.visitText = function (text) { }; \n    TemplateBinder.prototype.visitContent = function (content) { }; \n    TemplateBinder.prototype.visitTextAttribute\n    = function (attribute) { }; \n    TemplateBinder.prototype.visitIcu = function (icu) {\n      var _this = this;\n      Object.keys(icu.vars).forEach(function (key) { return icu.vars[key].visit(_this); });\n      Object.keys(icu.placeholders).forEach(function (key) { return icu.placeholders[key].visit(_this); });\n    }; \n    // \n    The remaining visitors are concerned with processing AST expressions within template bindings\n    TemplateBinder.prototype.visitBoundAttribute = function (attribute) {\n      attribute.value.visit(this);\n    }; \n    TemplateBinder.prototype.visitBoundEvent = function (event) {\n      event.handler.visit(this);\n    }; \n
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TemplateBinder.prototype.visitBoundText = function (text) {\n      text.value.visit(this);\n    };\n
TemplateBinder.prototype.visitPipe = function (ast, context) {\n      this.usedPipes.add(ast.name);\n      return\n      _super.prototype.visitPipe.call(this, ast, context);\n    };\n    // These five types of AST expressions can refer to\n    expression roots, which could be variables\n    // or references in the current scope.\n
TemplateBinder.prototype.visitPropertyRead = function (ast, context) {\n      this.maybeMap(context, ast,\n      ast.name);\n      return _super.prototype.visitPropertyRead.call(this, ast, context);\n    };\n
TemplateBinder.prototype.visitSafePropertyRead = function (ast, context) {\n      this.maybeMap(context, ast,\n      ast.name);\n      return _super.prototype.visitSafePropertyRead.call(this, ast, context);\n    };\n
TemplateBinder.prototype.visitPropertyWrite = function (ast, context) {\n      this.maybeMap(context, ast,\n      ast.name);\n      return _super.prototype.visitPropertyWrite.call(this, ast, context);\n    };\n
TemplateBinder.prototype.visitMethodCall = function (ast, context) {\n      this.maybeMap(context, ast,\n      ast.name);\n      return _super.prototype.visitMethodCall.call(this, ast, context);\n    };\n
TemplateBinder.prototype.visitSafeMethodCall = function (ast, context) {\n      this.maybeMap(context, ast,\n      ast.name);\n      return _super.prototype.visitSafeMethodCall.call(this, ast, context);\n    };\n
TemplateBinder.prototype.maybeMap = function (scope, ast, name) {\n      // If the receiver of the expression\n      isn't the `ImplicitReceiver`, this isn't the root of an\n      // `AST` expression that maps to a `Variable` or\n      `Reference`.\n      if (!(ast.receiver instanceof ImplicitReceiver)) {\n        return;\n      }\n      // Check\n      whether the name exists in the current scope. If so, map it. Otherwise, the name is\n      // probably a property on\n      the top-level component context.\n      var target = this.scope.lookup(name);\n      if (target !== null) {\n        this.bindings.set(ast, target);\n      }\n    };\n    return TemplateBinder;\n  }(RecursiveAstVisitor$1));\n
/**\n * Metadata container for a `Target` that allows queries for specific bits of metadata.\n * See\n * `BoundTarget` for documentation on the individual methods.\n */\n var R3BoundTarget = /** @class */\n (function () {\n   function R3BoundTarget(target, directives, bindings, references, exprTargets, symbols,\n   nestingLevel, templateEntities, usedPipes) {\n     this.target = target;\n     this.directives = directives;\n     this.bindings = bindings;\n     this.references = references;\n     this.exprTargets = exprTargets;\n     this.symbols = symbols;\n     this.nestingLevel = nestingLevel;\n     this.templateEntities =\n     templateEntities;\n     this.usedPipes = usedPipes;\n   }\n   R3BoundTarget.prototype.getEntitiesInTemplateScope = function (template) {\n     var _a;\n     return (_a =\n     this.templateEntities.get(template)) !== null && _a !== void 0 ? _a : new Set();\n   };\n   R3BoundTarget.prototype.getDirectivesOfNode = function (node) {\n     return this.directives.get(node) ||\n     null;\n   };\n   R3BoundTarget.prototype.getReferenceTarget = function (ref) {\n     return\n     this.references.get(ref) || null;\n   };\n   R3BoundTarget.prototype.getConsumerOfBinding = function\n   (binding) {\n     return this.bindings.get(binding) || null;\n   };\n   R3BoundTarget.prototype.getExpressionTarget = function (expr) {\n     return this.exprTargets.get(expr) ||\n     null;\n   };\n   R3BoundTarget.prototype.getTemplateOfSymbol = function (symbol) {\n     return\n     this.symbols.get(symbol) || null;\n   };\n   R3BoundTarget.prototype.getNestingLevel = function (template)\n   {\n     return this.nestingLevel.get(template) || 0;\n   };\n   R3BoundTarget.prototype.getUsedDirectives =\n   function () {\n     var set = new Set();\n     this.directives.forEach(function (dirs) { return\n     dirs.forEach(function (dir) { return set.add(dir); }); });\n     return Array.from(set.values());\n   };\n   R3BoundTarget.prototype.getUsedPipes = function () {\n     return Array.from(this.usedPipes);\n   };\n   return R3BoundTarget;\n }());\n function extractTemplateEntities(rootScope) {\n   var e_1, _b, e_2, _c;\n   var entityMap = new Map();\n   function extractScopeEntities(scope) {\n     if\n     (entityMap.has(scope.template)) {\n       return entityMap.get(scope.template);\n     }\n     var\n     currentEntities = scope.namedEntities;\n     var templateEntities;\n     if (scope.parentScope !== null) {\n       templateEntities = new Map(__spread(extractScopeEntities(scope.parentScope),\n       currentEntities));\n     }\n     else {\n       templateEntities = new Map(currentEntities);\n     }\n     entityMap.set(scope.template, templateEntities);\n     return templateEntities;\n   }\n   var\n   scopesToProcess = [rootScope];\n   while (scopesToProcess.length > 0) {\n     var scope =

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scopesToProcess.pop();\n      try {\n          for (var _d = (e_1 = void 0, __values(scope.childScopes.values())),\n              _e = _d.next(); !_e.done; _e = _d.next()) {\n              var childScope = _e.value;\n              scopesToProcess.push(childScope);\n          }\n      } catch (e_1_1) { e_1 = { error: e_1_1 }; }\n      finally {\n          try {\n              if (_e && !_e.done && (_b = _d.return)) _b.call(_d);\n          }\n          finally {\n              if (e_1) throw e_1.error; }\n      }\n      extractScopeEntities(scope);\n      var\n      templateEntities = new Map();\n      try {\n          for (var entityMap_1 = __values(entityMap), entityMap_1_1 =\n              entityMap_1.next(); !entityMap_1_1.done; entityMap_1_1 = entityMap_1.next()) {\n              var _f =\n              __read(entityMap_1_1.value, 2), template = _f[0], entities = _f[1];\n              templateEntities.set(template, new\n              Set(entities.values()));\n          }\n      } catch (e_2_1) { e_2 = { error: e_2_1 }; }\n      finally {\n          try\n          {\n              if (entityMap_1_1 && !entityMap_1_1.done && (_c = entityMap_1.return)) _c.call(entityMap_1);\n          }\n          finally {\n              if (e_2) throw e_2.error; }\n          }\n          return templateEntities;\n      }\n      /**\n      *\n      * @license\n      * Copyright Google LLC All Rights Reserved.\n      *\n      * Use of this source code is governed by an\n      * MIT-style license that can be\n      * found in the LICENSE file at https://angular.io/license\n      *\n      * // This file\n      * only reexports content of the `src` folder. Keep it that way.\n      * // This function call has a global side effects and\n      * publishes the compiler into global namespace for\n      * // the late binding of the Compiler to the @angular/core for jit\n      * compilation.\n      * publishFacade(_global);\n      *\n      /**\n      *\n      * @license\n      * Copyright Google LLC All Rights\n      * Reserved.\n      *\n      * Use of this source code is governed by an MIT-style license that can be\n      * found in the\n      * LICENSE file at https://angular.io/license\n      *\n      * // This file only reexports content of the `src` folder. Keep it\n      * that way.\n      *\n      /**\n      *\n      * @license\n      * Copyright Google LLC All Rights Reserved.\n      *\n      * Use of this\n      * source code is governed by an MIT-style license that can be\n      * found in the LICENSE file at\n      * https://angular.io/license\n      *\n      *\n      /**\n      *\n      * @license\n      * Copyright Google LLC All Rights Reserved.\n      *\n      * Use of this source code is governed by an MIT-style license that can be\n      * found in the LICENSE file at\n      * https://angular.io/license\n      *\n      *\n      exports.AST = AST;\n      exports.ASTWithName = ASTWithName;\n      exports.ASTWithSource = ASTWithSource;\n      exports.AbsoluteSourceSpan = AbsoluteSourceSpan;\n      exports.AotCompiler = AotCompiler;\n      exports.AotSummaryResolver = AotSummaryResolver;\n      exports.ArrayType = ArrayType;\n      exports.AssertNotNull = AssertNotNull;\n      exports.AstMemoryEfficientTransformer = AstMemoryEfficientTransformer;\n      exports.AstPath = AstPath;\n      exports.AstTransformer = AstTransformer$1;\n      exports.AttrAst = AttrAst;\n      exports.Attribute = Attribute;\n      exports.Binary = Binary;\n      exports.BinaryOperatorExpr = BinaryOperatorExpr;\n      exports.BindingPipe =\n      BindingPipe;\n      exports.BoundDirectivePropertyAst = BoundDirectivePropertyAst;\n      exports.BoundElementProperty = BoundElementProperty;\n      exports.BoundElementPropertyAst =\n      BoundElementPropertyAst;\n      exports.BoundEventAst = BoundEventAst;\n      exports.BoundTextAst =\n      BoundTextAst;\n      exports.BuiltinType = BuiltinType;\n      exports.CONTENT_ATTR = CONTENT_ATTR;\n      exports.CUSTOM_ELEMENTS_SCHEMA = CUSTOM_ELEMENTS_SCHEMA;\n      exports.CastExpr =\n      CastExpr;\n      exports.Chain = Chain;\n      exports.ClassField = ClassField;\n      exports.ClassMethod =\n      ClassMethod;\n      exports.ClassStmt = ClassStmt;\n      exports.CommaExpr = CommaExpr;\n      exports.Comment =\n      Comment;\n      exports.CompileDirectiveMetadata = CompileDirectiveMetadata;\n      exports.CompileMetadataResolver = CompileMetadataResolver;\n      exports.CompileNgModuleMetadata =\n      CompileNgModuleMetadata;\n      exports.CompilePipeMetadata = CompilePipeMetadata;\n      exports.CompileReflector = CompileReflector;\n      exports.CompileShallowModuleMetadata =\n      CompileShallowModuleMetadata;\n      exports.CompileStylesheetMetadata = CompileStylesheetMetadata;\n      exports.CompileTemplateMetadata = CompileTemplateMetadata;\n      exports.CompiledStylesheet =\n      CompiledStylesheet;\n      exports.CompilerConfig = CompilerConfig;\n      exports.Conditional = Conditional;\n      exports.ConditionalExpr = ConditionalExpr;\n      exports.ConstantPool = ConstantPool;\n      exports.CssSelector =\n      CssSelector;\n      exports.DEFAULT_INTERPOLATION_CONFIG = DEFAULT_INTERPOLATION_CONFIG;\n      exports.DYNAMIC_TYPE = DYNAMIC_TYPE;\n      exports.DeclareFunctionStmt = DeclareFunctionStmt;\n      exports.DeclareVarStmt = DeclareVarStmt;\n      exports.DirectiveAst = DirectiveAst;\n      exports.DirectiveNormalizer = DirectiveNormalizer;\n      exports.DirectiveResolver = DirectiveResolver;\n
```

exports.DomElementSchemaRegistry = DomElementSchemaRegistry;\n exports.EOF = EOF;\n exports.ERROR_COMPONENT_TYPE = ERROR_COMPONENT_TYPE;\n exports.Element = Element\$1;\n exports.ElementAst = ElementAst;\n exports.ElementSchemaRegistry = ElementSchemaRegistry;\n exports.EmbeddedTemplateAst = EmbeddedTemplateAst;\n exports.EmitterVisitorContext = EmitterVisitorContext;\n exports.EmptyExpr = EmptyExpr;\n exports.Expansion = Expansion;\n exports.ExpansionCase = ExpansionCase;\n exports.Expression = Expression;\n exports.ExpressionBinding = ExpressionBinding;\n exports.ExpressionStatement = ExpressionStatement;\n exports.ExpressionType = ExpressionType;\n exports.ExternalExpr = ExternalExpr;\n exports.ExternalReference = ExternalReference;\n exports.Extractor = Extractor;\n exports.FunctionCall = FunctionCall;\n exports.FunctionExpr = FunctionExpr;\n exports.GeneratedFile = GeneratedFile;\n exports.HOST_ATTR = HOST_ATTR;\n exports.HtmlParser = HtmlParser;\n exports.HtmlTagDefinition = HtmlTagDefinition;\n exports.I18NHtmlParser = I18NHtmlParser;\n exports.Indentifiers = Identifiers;\n exports.IfStmt = IfStmt;\n exports.ImplicitReceiver = ImplicitReceiver;\n exports.InstantiateExpr = InstantiateExpr;\n exports.Interpolation = Interpolation;\n exports.InterpolationConfig = InterpolationConfig;\n exports.InvokeFunctionExpr = InvokeFunctionExpr;\n exports.InvokeMethodExpr = InvokeMethodExpr;\n exports.IvyParser = IvyParser;\n exports.JSDocComment = JSDocComment;\n exports.JitCompiler = JitCompiler;\n exports.JitEvaluator = JitEvaluator;\n exports.JitSummaryResolver = JitSummaryResolver;\n exports.KeyedRead = KeyedRead;\n exports.KeyedWrite = KeyedWrite;\n exports.LeadingComment = LeadingComment;\n exports.Lexer = Lexer;\n exports.LiteralArray = LiteralArray;\n exports.LiteralArrayExpr = LiteralArrayExpr;\n exports.LiteralExpr = LiteralExpr;\n exports.LiteralMap = LiteralMap;\n exports.LiteralMapExpr = LiteralMapExpr;\n exports.LiteralPrimitive = LiteralPrimitive;\n exports.LocalizedString = LocalizedString;\n exports.MapType = MapType;\n exports.MessageBundle = MessageBundle;\n exports.MethodCall = MethodCall;\n exports.NAMED_ENTITIES = NAMED_ENTITIES;\n exports.NGSP_UNICODE = NGSP_UNICODE;\n exports.NONE_TYPE = NONE_TYPE;\n exports.NO_ERRORS_SCHEMA = NO_ERRORS_SCHEMA;\n exports.NgContentAst = NgContentAst;\n exports.NgModuleCompiler = NgModuleCompiler;\n exports.NgModuleResolver = NgModuleResolver;\n exports.NodeWithI18n = NodeWithI18n;\n exports.NonNullAssert = NonNullAssert;\n exports.NotExpr = NotExpr;\n exports.NullTemplateVisitor = NullTemplateVisitor;\n exports.ParseError = ParseError;\n exports.ParseLocation = ParseLocation;\n exports.ParseSourceFile = ParseSourceFile;\n exports.ParseSourceSpan = ParseSourceSpan;\n exports.ParseSpan = ParseSpan;\n exports.ParseTreeResult = ParseTreeResult;\n exports.ParsedEvent = ParsedEvent;\n exports.ParsedProperty = ParsedProperty;\n exports.ParsedVariable = ParsedVariable;\n exports.Parser = Parser\$1;\n exports.ParserError = ParserError;\n exports.PipeResolver = PipeResolver;\n exports.PrefixNot = PrefixNot;\n exports.PropertyRead = PropertyRead;\n exports.PropertyWrite = PropertyWrite;\n exports.ProviderAst = ProviderAst;\n exports.ProviderMeta = ProviderMeta;\n exports.Quote = Quote;\n exports.R3BoundTarget = R3BoundTarget;\n exports.R3Identifiers = Identifiers\$1;\n exports.R3TargetBinder = R3TargetBinder;\n exports.ReadKeyExpr = ReadKeyExpr;\n exports.ReadPropExpr = ReadPropExpr;\n exports.ReadVarExpr = ReadVarExpr;\n exports.RecursiveAstVisitor = RecursiveAstVisitor\$1;\n exports.RecursiveTemplateAstVisitor = RecursiveTemplateAstVisitor;\n exports.RecursiveVisitor = RecursiveVisitor\$1;\n exports.ReferenceAst = ReferenceAst;\n exports.ResolvedStaticSymbol = ResolvedStaticSymbol;\n exports.ResourceLoader = ResourceLoader;\n exports.ReturnStatement = ReturnStatement;\n exports.STRING_TYPE = STRING_TYPE;\n exports.SafeMethodCall = SafeMethodCall;\n exports.SafePropertyRead = SafePropertyRead;\n exports.SelectorContext = SelectorContext;\n exports.SelectorListContext = SelectorListContext;\n exports.SelectorMatcher = SelectorMatcher;\n exports.Serializer = Serializer;\n exports.SplitInterpolation = SplitInterpolation;\n exports.Statement = Statement;\n exports.StaticReflector = StaticReflector;\n exports.StaticSymbol = StaticSymbol;\n exports.StaticSymbolCache = StaticSymbolCache;\n exports.StaticSymbolResolver = StaticSymbolResolver;\n exports.StyleCompiler = StyleCompiler;\n exports.StylesCompileDependency = StylesCompileDependency;\n exports.SummaryResolver =

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SummaryResolver;\n exports.TemplateBindingParseResult = TemplateBindingParseResult;\n
exports.TemplateParseError = TemplateParseError;\n exports.TemplateParseResult = TemplateParseResult;\n
exports.TemplateParser = TemplateParser;\n exports.Text = Text$3;\n exports.TextAst = TextAst;\n
exports.ThisReceiver = ThisReceiver;\n exports.ThrowStmt = ThrowStmt;\n exports.TmplAstBoundAttribute =
BoundAttribute;\n exports.TmplAstBoundEvent = BoundEvent;\n exports.TmplAstBoundText = BoundText;\n
exports.TmplAstContent = Content;\n exports.TmplAstElement = Element;\n exports.TmplAstIcu = Icu;\n
exports.TmplAstRecursiveVisitor = RecursiveVisitor;\n exports.TmplAstReference = Reference;\n
exports.TmplAstTemplate = Template;\n exports.TmplAstText = Text;\n exports.TmplAstTextAttribute =
TextAttribute;\n exports.TmplAstVariable = Variable;\n exports.Token = Token$1;\n
exports.TransitiveCompileNgModuleMetadata = TransitiveCompileNgModuleMetadata;\n exports.TreeError =
TreeError;\n exports.TryCatchStmt = TryCatchStmt;\n exports.Type = Type$1;\n exports.TypeScriptEmitter =
TypeScriptEmitter;\n exports.TypeofExpr = TypeofExpr;\n exports.Unary = Unary;\n
exports.UnaryOperatorExpr = UnaryOperatorExpr;\n exports.UriResolver = UriResolver;\n exports.VERSION =
VERSION$1;\n exports.VariableAst = VariableAst;\n exports.VariableBinding = VariableBinding;\n
exports.Version = Version;\n exports.ViewCompiler = ViewCompiler;\n exports.WrappedNodeExpr =
WrappedNodeExpr;\n exports.WriteKeyExpr = WriteKeyExpr;\n exports.WritePropExpr = WritePropExpr;\n
exports.WriteVarExpr = WriteVarExpr;\n exports.Xliff = Xliff;\n exports.Xliff2 = Xliff2;\n exports.Xmb =
Xmb;\n exports.XmlParser = XmlParser;\n exports.Xtb = Xtb;\n exports._ParseAST = _ParseAST;\n
exports.analyzeAndValidateNgModules = analyzeAndValidateNgModules;\n exports.analyzeFile = analyzeFile;\n
exports.analyzeFileForInjectables = analyzeFileForInjectables;\n exports.analyzeNgModules =
analyzeNgModules;\n exports.collectExternalReferences = collectExternalReferences;\n
exports.compileComponentFromMetadata = compileComponentFromMetadata;\n
exports.compileDirectiveFromMetadata = compileDirectiveFromMetadata;\n exports.compileFactoryFunction =
compileFactoryFunction;\n exports.compileInjectable = compileInjectable;\n exports.compileInjector =
compileInjector;\n exports.compileNgModule = compileNgModule;\n exports.compilePipeFromMetadata =
compilePipeFromMetadata;\n exports.componentFactoryName = componentFactoryName;\n
exports.computeMsgId = computeMsgId;\n exports.core = core;\n exports.createAotCompiler =
createAotCompiler;\n exports.createAotUrlResolver = createAotUrlResolver;\n
exports.createElementCssSelector = createElementCssSelector;\n exports.createLoweredSymbol =
createLoweredSymbol;\n exports.createOfflineCompileUrlResolver = createOfflineCompileUrlResolver;\n
exports.createUrlResolverWithoutPackagePrefix = createUrlResolverWithoutPackagePrefix;\n
exports.debugOutputAstAsTypeScript = debugOutputAstAsTypeScript;\n exports.findNode = findNode;\n
exports.flatten = flatten;\n exports.formattedError = formattedError;\n exports.getHtmlTagDefinition =
getHtmlTagDefinition;\n exports.getNsPrefix = getNsPrefix;\n exports.getParseErrors = getParseErrors;\n
exports.getUrlScheme = getUrlScheme;\n exports.hostViewClassName = hostViewClassName;\n
exports.identifierModuleUrl = identifierModuleUrl;\n exports.identifierName = identifierName;\n
exports.isEmptyExpression = isEmptyExpression;\n exports.isFormattedError = isFormattedError;\n
exports.isIdentifier = isIdentifier;\n exports.isLoweredSymbol = isLoweredSymbol;\n exports.isNgContainer =
isNgContainer;\n exports.isNgContent = isNgContent;\n exports.isNgTemplate = isNgTemplate;\n
exports.isQuote = isQuote;\n exports.isSyntaxError = isSyntaxError;\n exports.jsDocComment =
jsDocComment;\n exports.leadingComment = leadingComment;\n exports.literalMap = literalMap;\n
exports.makeBindingParser = makeBindingParser;\n exports.mergeAnalyzedFiles = mergeAnalyzedFiles;\n
exports.mergeNsAndName = mergeNsAndName;\n exports.ngModuleJitUrl = ngModuleJitUrl;\n
exports.parseHostBindings = parseHostBindings;\n exports.parseTemplate = parseTemplate;\n
exports.preserveWhitespacesDefault = preserveWhitespacesDefault;\n exports.publishFacade = publishFacade;\n
exports.r3JitTypeSourceSpan = r3JitTypeSourceSpan;\n exports.removeSummaryDuplicates =
removeSummaryDuplicates;\n exports.rendererTypeName = rendererTypeName;\n exports.sanitizeIdentifier =
sanitizeIdentifier;\n exports.sharedStylesheetJitUrl = sharedStylesheetJitUrl;\n exports.splitClasses =

```


B,IAAM,SAUC,GACzC,IAAIC,EAAU,IAAIC,EAAGBF,GAEIC,OADAS5C,KAAK0C,UAAUd,KAAKiB,GACbA,EAQAE,cAEnBZ,EAAMbTB,UAAUmC,mBAAqB,WAC9C,QAAShD,KAAK0C,UAAUT,QAS5BE,EAAMbTB,UAAUoC,OAAS,SAUL,EAAMK,GACjD,IAAIC,EAAC,IAAIC,EAAR,EAAMK,GACxCID,KAAKuC,cAAcX,KAAKuB,IAQ5BhB,EAAMbTB,UAAUwC,KAAO,SAAUT,EAAMK,GAC/CID,KAAKwC,aAAAc,IAAIV,EAAM,IAM/Bf,EAAMbTB,UAAU0C,MAAQ,WACjC,GAA8B,IAA1BvD,KAAK0C,UAAUT,OACf,MAAM,IAAIuB,MAAM,gCAEpB,GACIxD,KAAKyD,gBAAgBzD,KAAK0C,UAAUgB,eAC/BID,KAAK0C,UAAUT,OAAS,GACjC,KAAK2D,mCAKTxB,EAAMbTB,UAAU8C,gCAAcC,WAC3D,GAAkC,IAA9B3D,KAAKuC,cAAcN,OAASvB,CAGA,IADA,IAAI2B,EAAO,GACFrC,EAAL,EAAGA,EAIVB,KAAKuC,cAAcN,OAQV,IAE3CqC,EAAMhC,KADa5B,KAAKuC,cAAcB,GACfQb,KAE1B,MAAM,IAAIY,MAAM,yBAA2BI,EAAMK,KAAK,SAEzD1B,EAAMbTB,UAAU4C,gBAAkB,SAAUZ,GACrD,IAAID,EAAMC,EAQD,IACIB,GAAI5C,KAAKuC,cAAcN,OAAS,EAAG,CAC/B,IAAIkB,EAACnD,KAAKuC,cAAc,GACrC,GAAIY,EAAYP,KAAOA,EAAGnB,OAYChB,SAASkB,EAOC,EAAMC,GACIB,IAAIC,EAQF,EAAMK,QAAQF,GACrBC,GAAS,GACTF,EAAMK,OAQF,EAAMC,OA9CXH,CAA09D,KAAKuC,cAAeY,QAC3BN,EAAMQb,SAASjB,EAAYD,UAIrC,IAAIID,KAAKwC,aAAa6B,IAAIzB,GAK1B,MAAM,IAAIY,MAAM,sBAAwBZ,GAJpC,IAAIM,EAAMWID,KAAKwC,aAAAG,IAAIC,GACrCC,EAAMQb,SAAQb,MAAZIB,EAAMb,KAAOA,IAK5Cf,EAHf4B,CAIFrCrC,EAASwE,gBACpXB,EAAMiC,WACjC,SAASA,EAAGBF,GACrB,IAAIP,EAAMQrC,KACZA,KAAK4C,IAAMA,EACX5C,KAAKuE,QAAU,IAAIC,SAAQ,SAUC,EAAMK,GACtCrC,EAAMsC,QAAUF,EACHBpC,EAAMuC,OAASF,KAcvB,OAXA5B,EAAGbjC,UAAUd,SAAW,SAAUIB,GAC3B,MAAZA,EACAID,KAAK4E,OAAS,kBAAoB5E,KAAK4C,KAGrC5C,KAAK2E,QAAQzB,IAGrBJ,EAAGbjC,UAAUkC,WAAa,WACnC,OAAS/C,KAAKuE,SAETzB,EApByB,GASbHC,M,EACA,SAASA,EAAR,EAAMK,GACvBID,KAAK4C,IAAMA,EACX5C,KAAKkD,SAAWA,GAKbP2B,EAAMoC,WACpC,SAASA,EAAMBC,EAAMoBC,EAAMiBC,EAAMkBC,EAAMBC,GACIGIF,KAAK8E,mBAAqBA,EAC1B9E,KAAK+E,gBAAkBA,EACvB/E,KAAKGF,iBAAMBA,EACxBhF,KAAKiF,kBAAoBA,EACzBjF,KAAKkF,kBAAoBA,EA+C7B,OA7CAL,EAAMbHE,UAAUsE,YAAc,SAUC,EAASC,EAAMC,GACpE,IAAIzD,EAAMQ7B,KAAK8E,mBAAMBO,GACpC,YAAiB,IAAVxD,GAA0BA,GAERcGD,EAAMbHE,UAAU0E,WAAa,SAAUH,EAASI,GACzD,IAAI3D,EAAMQ7B,KAAKGF,iBAAMBI,EAAMQK,eAC1C,YAAiB,IAAV5D,GAA0BA,GAERcGD,EAAMbHE,UAAU6E,qBAAuB,WACHD,OAASOtF,OAASOuF,KAAK3F,KAAKGF,mBAE5BH,EAAMbHE,UAAU+E,gBAAkB,SAUC,EAAMC,EAAMC,GACzE,OAASOhG,EAASiG,KAAKc,gBAAGBC,MAEZCPB,EAAMbHE,UAAUqF,kBAAoB,SAUC,GACvD,OAASOnG,KAAK+E,gBAAGBoB,IAAaA,GAE7CtB,EAAMbHE,UAAUuF,+BAAMiC,WAC1D,MAAO,gBAEXvB,EAAMbHE,UAAUwF,iBAAMB,SAUC,GACtD,OAAMiG,KAAKiF,kBAAMkF,QAAQoC,IAAS,EACjC,CAAExE,OAAS,EAAMyE,IAAM,wBAA0BD,EAAM,wCAGrD,CAAExE,OAAS,IAAGxB+C,EAAMbHE,UAAU2F,kBAAoB,SAAUf,GACvD,OAAMiG,KAAKkF,kBAAMkH,QAAQoC,IAAS,EACjC,CACHxE,OAAS,EACPyE,IAAM,yBAA2BD,EAAM,wCAIpC,CAAExE,OAAS,IAAGxB+C,EAAMbHE,UAAU4F,gCAAcC,SAUC,GACrE,OAASOA,GAEX7B,EAAMbHE,UAAU8F,6BAA+B,SAUC,EAAMC,EAAMKBC,GACnG,MAAO,CAAEhF,MAAO,KAAMD,MAAOiF,EAAMC,aAE9BIC,EARd4B,GA4DnCMC,EAAMC,SAAU5E,GAejD,SAAS4E,EAASBC,GAC3B,IAAI5E,EAAMQD,EAAMQZ,KAAKxB,KAAAMiH,IAAcjH,KAE5C,OADAQc,EAAM6E,YAAc,IAAIzE,IACjBJ,EAYX,OAAMBA3B,EAAMsG,EAAMuB5E,GAMjC4E,EAAMsBnG,UAAU8D,QAAU,SAAUwC,EAAMC,GAETD,YADwB,IAApBA,IAA8BA,GAAMkB,GAC7CpH,KAAKkH,YAAyVE,IAAIwE,IAAS/E,EAAMoB,UAAMU8D,QAAQnD,KAAKxB,KAAAMmH,EAAMC,IAAMnFJ,EAAMsBnG,UAAUwG,aAAe,SAAUf,EAAMG,GAC3DtH,KAAKkH,YAAy5D,IAAI6D,EAAMG,IAEXBN,EAjB+B,CakBxCiH,EAAMsYH,mBAEPC,EAAMsC,SAAUfF,GAehD,SAASoF,EAAMQBP,GAC1B,IAAI5E,EAAMQD,EAAMQZ,KAAKxB,KAAAMiH,IAAcjH,KAE5C,OADAQc,EAAMoF,WAAa,IAAIhF,IACHBJ,EAAMkX,OAAMBA3B,EAAMU8G,EAAMsBpF,GASHCoF,EAAMQ3G,UAAU6G,YAAc,SAAUf,EAAMG,GACzDtH,KAAKyH,WAAWnE,IAAI6D,EAAMG,IAQ9BE,EAAMQ3G,UAAU8D,QAAU,SAAUwC,EAAMC,GAERD,YADwB,IAApBA,IAA8BA,GAAMkB,GAC7CpH,KAAKyH,WAAW9E,IAAIwE,IAAS/E,EAAMoB,UAAU8D,QAAQnD,KAAKxB,KAAAMmH,EAAMC,IAE3EI,EAAMvB8B,CAAMvC1H,EAAM6H,kBAEPC,EAAMkC,SAAMuF,GAE5C,SAAMsWf,EAAMiBC,GACtB,IAAMxI,EAAMQD,EAAMQZ,KAAKxB,KAAAM6H,IAAMa7H,KAE3C,OADAQc,EAAMyF,OAAS,IAAMrF,IACZJ,EAAMsBX,OAAMBA3B,EAAMuKH,EAAMkXf,GAS5BwF,EAAMiB/G,UAAMuKH,QAAU,SAAUZ,EAAMG,GACjDtH,KAAK8H,OAAMoxE,IAAI6D,EAAMG,IAQ1BM,EAAMiB/G,UAAU8D,QAAU,SAAMuWc,EAAMC,QACzB,IAApBA,IAA8BA,GAAMkB,GACpD,IAAMIE,EAAMwTH,KAAK8H,OAAMonF,IA

```

AIwE,GAI/B,OAHKG,IACDA,EAAWIF,EAAOvB,UAAU8D,QAAQnD,KAAKxB,KAAMmH,EAAMC,IAEIDE,
GAEJM,EA3B0B,CA4BnC9H,EAASkI;;;;;;;;;;;;;AA+BXzI,EAAQyH,sBAAwBA,EACChZH,EAAQiI,qBAA
uBA,EAC/BjI,EAAQqI,iBAAmBA,EAC3BrI,EAAQ4C,mBAAqBA,EAC7B5C,EAAQsF,mBAAqBA,EAE7BzE,O
AAO6H,eAAeII,EAAS,aAAc,CAAEsC,OAAO","sourcesContent":["/**\n * @license Angular v11.0.2\n * (c)
2010-2020 Google LLC. https://angular.io\n * License: MIT\n *\n\n(function (global, factory) {\n  typeof exports
=== 'object' && typeof module !== 'undefined' ? factory(exports, require('@angular/compiler')) :\n  typeof define
=== 'function' && define.amd ? define('@angular/compiler/testing', ['exports', '@angular/compiler'], factory) :\n
(global = global || self, factory((global.ng = global.ng || {}), global.ng.compiler = global.ng.compiler || {}),
global.ng.compiler.testing = {}), global.ng.compiler));\n})(this, (function (exports, compiler) { 'use strict';\n\n /*!
*****\n Copyright (c)
Microsoft Corporation.\n\n Permission to use, copy, modify, and/or distribute this software for any\n purpose
with or without fee is hereby granted.\n\n THE SOFTWARE IS PROVIDED "AS IS" AND THE AUTHOR
DISCLAIMS ALL WARRANTIES WITH\n REGARD TO THIS SOFTWARE INCLUDING ALL IMPLIED
WARRANTIES OF MERCHANTABILITY\n AND FITNESS. IN NO EVENT SHALL THE AUTHOR BE
LIABLE FOR ANY SPECIAL, DIRECT,\n INDIRECT, OR CONSEQUENTIAL DAMAGES OR ANY
DAMAGES WHATSOEVER RESULTING FROM\n LOSS OF USE, DATA OR PROFITS, WHETHER IN AN
ACTION OF CONTRACT, NEGLIGENCE OR\n OTHER TORTIOUS ACTION, ARISING OUT OF OR IN
CONNECTION WITH THE USE OR\n PERFORMANCE OF THIS SOFTWARE.\n
*****\n\n /* global
Reflect, Promise *\n\n var extendStatics = function (d, b) {\n  extendStatics = Object.setPrototypeOf ||\n
({ __proto__: [] } instanceof Array && function (d, b) { d.__proto__ = b; }) ||\n  function (d, b) { for (var p in
b)\n    if (b.hasOwnProperty(p))\n      d[p] = b[p]; }; return extendStatics(d, b);\n};\n\n function __extends(d, b) {\n  extendStatics(d, b);\n  function __() { this.constructor = d; }\n  d.prototype
= b === null ? Object.create(b) : (__proto__ = b.prototype, new __());\n  }\n  var __assign = function () {\n  __assign = Object.assign || function __assign(t) {\n    for (var s, i = 1, n = arguments.length; i < n; i++) {\n
s = arguments[i];\n    for (var p in s)\n      if (Object.prototype.hasOwnProperty.call(s, p))\n        t[p] = s[p];\n    }\n    return t;\n  }; return __assign.apply(this, arguments);\n};\n\n function __rest(s, e) {\n  var t = {};\n  for (var p in s)\n    if (Object.prototype.hasOwnProperty.call(s, p)
&& e.indexOf(p) < 0)\n      t[p] = s[p];\n  if (s != null && typeof Object.getOwnPropertySymbols ===
"function")\n    for (var i = 0, p = Object.getOwnPropertySymbols(s); i < p.length; i++) {\n      if
(e.indexOf(p[i]) < 0 && Object.prototype.propertyIsEnumerable.call(s, p[i]))\n        t[p[i]] = s[p[i]];\n    }\n  return t;\n  }\n  function __decorate(decorators, target, key, desc) {\n  var c = arguments.length, r = c
< 3 ? target : desc === null ? desc = Object.getOwnPropertyDescriptor(target, key) : desc, d;\n  if (typeof Reflect
=== "object" && typeof Reflect.decorate === "function")\n    r = Reflect.decorate(decorators, target, key,
desc);\n  else\n    for (var i = decorators.length - 1; i >= 0; i--)\n      if (d = decorators[i])\n        r = (c < 3 ? d(r) : c > 3 ? d(target, key, r) : d(target, key)) || r;\n  return c > 3 && r &&
Object.defineProperty(target, key, r, r);\n  }\n  function __param(paramIndex, decorator) {\n  return function
(target, key) { decorator(target, key, paramIndex); }\n  }\n  function __metadata(metadataKey, metadataValue)
{\n  if (typeof Reflect === "object" && typeof Reflect.metadata === "function")\n    return
Reflect.metadata(metadataKey, metadataValue);\n  }\n  function __awaiter(thisArg, _arguments, P, generator) {\n
function adopt(value) { return value instanceof P ? value : new P(function (resolve) { resolve(value); }); }\n
return new (P || (P = Promise))(function (resolve, reject) {\n  function fulfilled(value) { try {\n
step(generator.next(value));\n  }\n  catch (e) {\n  reject(e);\n  }\n  }\n  function
rejected(value) { try {\n  step(generator["throw"](value));\n  }\n  catch (e) {\n
reject(e);\n  }\n  }\n  function step(result) { result.done ? resolve(result.value) :
adopt(result.value).then(fulfilled, rejected); }\n  step((generator = generator.apply(thisArg, _arguments ||
[])).next());\n  });\n  }\n  function __generator(thisArg, body) {\n  var _ = { label: 0, sent: function () { if
(t[0] & 1)\n    throw t[1]; return t[1]; }, trys: [], ops: [] }, f, y, t, g;\n  return g = { next: verb(0), "throw":

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verb(1), \return\ : verb(2) }, typeof Symbol === \function\ && (g[Symbol.iterator] = function () { return this; }),
g;\n    function verb(n) { return function (v) { return step([n, v]); }; }\n    function step(op) {\n        if (f)\n            throw new TypeError(\`Generator is already executing.\`);\n        while (\_)\n            try {\n                if
(f = 1, y && (t = op[0] & 2 ? y[\`return\`] : op[0] ? y[\`throw\`] || ((t = y[\`return\`]) && t.call(y, 0) : y.next) &&
!(t = t.call(y, op[1])).done)\n                    return t;\n                if (y = 0, t)\n                    op = [op[0] & 2,
t.value];\n                switch (op[0]) {\n                    case 0:\n                        case 1:\n                            t = op;\n
break;\n                    case 4:\n                        \_.label++;\n                        return { value: op[1],
done: false };}\n                    case 5:\n                        \_.label++;\n                        y = op[1];\n
op = [0];\n                    continue;\n                    case 7:\n                        op = \_.ops.pop();\n
\_.trys.pop();\n                    continue;\n                    default:\n                        if (!(t = \_.trys, t = t.length > 0
&& t[t.length - 1]) && (op[0] === 6 || op[0] === 2)) {\n                            \_ = 0;\n                            continue;\n
}\n                        if (op[0] === 3 && (!t || (op[1] > t[0] && op[1] < t[3]))) {\n                            \n
\_.label = op[1];\n                            break;\n                        }\n                        if (op[0] === 6 && \_.label <
t[1]) {\n                            \n
\_.label = t[1];\n                            t = op;\n                            break;\n
}\n                            if (t && \_.label < t[2]) {\n                                \n
\_.label = t[2];\n                                \n
\_.ops.push(op);\n                                break;\n                            }\n                            if (t[2])\n
\_.ops.pop();\n                            \n
\_.trys.pop();\n                            continue;\n                        }\n                        op =
body.call(thisArg, \_);\n                    }\n                    catch (e) {\n                        op = [6, e];\n                        y = 0;\n
}\n                    finally {\n                        f = t = 0;\n                    }\n                    if (op[0] & 5)\n                        throw op[1];\n
return { value: op[0] ? op[1] : void 0, done: true };}\n                }\n                \n
var __createBinding = Object.create ? (function
(o, m, k, k2) {\n                    if (k2 === undefined)\n                        k2 = k;\n                    Object.defineProperty(o, k2, { enumerable: true,
get: function () { return m[k]; } });\n                }) : (function (o, m, k, k2) {\n                    if (k2 === undefined)\n                        k2 = k;\n
o[k2] = m[k];\n                });\n                function __exportStar(m, exports) {\n                    for (var p in m)\n                        if (p !== \`default\`
&& !exports.hasOwnProperty(p))\n                            __createBinding(exports, m, p);\n                }\n                function __values(o) {\n
var s = typeof Symbol === \`function\` && Symbol.iterator, m = s && o[s], i = 0;\n                    if (m)\n                        return
m.call(o);\n                    if (o && typeof o.length === \`number\`)\n                        return {\n                            next: function () {\n
                                if (o && i <= o.length)\n                                    o = void 0;\n                                    return { value: o && o[i++], done: !o };
}\n                            }\n                    }\n                    throw new TypeError(s ? \`Object is not iterable.\` : \`Symbol.iterator is not defined.\`);\n
}\n                function __read(o, n) {\n                    var m = typeof Symbol === \`function\` && o[Symbol.iterator];\n                    if (!m)\n
return o;\n                    var i = m.call(o), r, ar = [], e;\n                    try {\n                        while ((n === void 0 || n-- > 0) && !(r =
i.next()).done)\n                            ar.push(r.value);\n                    }\n                    catch (error) {\n                        e = { error: error };\n                    }\n
finally {\n                        try {\n                            if (r && !r.done && (m = i[\`return\`]))\n                                m.call(i);\n                        }\n
finally {\n                            if (e)\n                                throw e.error;\n                        }\n                    }\n                    return ar;\n                }\n                function
__spread() {\n                    for (var ar = [], i = 0; i < arguments.length; i++)\n                        ar = ar.concat(__read(arguments[i]));\n                    return ar;\n                }\n                function __spreadArrays() {\n                    for (var s = 0, i = 0, il = arguments.length; i < il; i++)\n
s += arguments[i].length;\n                    for (var r = Array(s), k = 0, i = 0; i < il; i++)\n                        for (var a = arguments[i], j
= 0, jl = a.length; j < jl; j++, k++)\n                            r[k] = a[j];\n                    return r;\n                }\n                ;\n                function __await(v) {\n
return this instanceof __await ? (this.v = v, this) : new __await(v);\n                }\n                function __asyncGenerator(thisArg,
_arguments, generator) {\n                    if (!Symbol.asyncIterator)\n                        throw new TypeError(\`Symbol.asyncIterator is
not defined.\`);\n                    var g = generator.apply(thisArg, _arguments || []), i, q = [];\n                    return i = { }, verb(\`next\`),
verb(\`throw\`), verb(\`return\`), i[Symbol.asyncIterator] = function () { return this; }, i;\n                    function verb(n) { if
(g[n])\n                        i[n] = function (v) { return new Promise(function (a, b) { q.push([n, v, a, b]) > 1 || resume(n, v); }); };\n                    }\n                    function resume(n, v) { try {\n                        step(g[n](v));\n                    }\n                    catch (e) {\n                        settle(q[0][3], e);\n
                    }\n                    }\n                    function step(r) { r.value instanceof __await ? Promise.resolve(r.value.v).then(fulfill, reject) :
settle(q[0][2], r); }\n                    function fulfill(value) { resume(\`next\`, value); }\n                    function reject(value) {\n
resume(\`throw\`, value); }\n                    function settle(f, v) { if (f(v), q.shift(), q.length)\n                        resume(q[0][0], q[0][1]);\n                    }\n                }\n                function __asyncDelegator(o) {\n                    var i, p;\n                    return i = { }, verb(\`next\`), verb(\`throw\`,
function (e) { throw e; }), verb(\`return\`), i[Symbol.iterator] = function () { return this; }, i;\n                    function verb(n,

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f) { i[n] = o[n] ? function (v) { return (p = !p) ? { value: __await(o[n](v)), done: n === "return" } : f ? f(v) : v; } : f;
}
}
function __asyncValues(o) {
  if (!Symbol.asyncIterator) throw new
  TypeError("Symbol.asyncIterator is not defined.");
  var m = o[Symbol.asyncIterator], i;
  return m ?
  m.call(o) : (o = typeof __values === "function" ? __values(o) : o[Symbol.iterator](), i = {}, verb("next"),
  verb("throw"), verb("return"), i[Symbol.asyncIterator] = function () { return this; }, i);
  function verb(n) {
    i[n] = o[n] && function (v) { return new Promise(function (resolve, reject) { v = o[n](v), settle(resolve, reject,
    v.done, v.value); }); });
  }
  function settle(resolve, reject, d, v) { Promise.resolve(v).then(function (v) {
  resolve({ value: v, done: d }); }, reject);
}
}
function __makeTemplateObject(cooked, raw) {
  if
  (Object.defineProperty) {
    Object.defineProperty(cooked, "raw", { value: raw });
  }
  else {
    cooked.raw = raw;
  }
  return cooked;
}
;
var __setModuleDefault = Object.create ?
(function (o, v) {
  Object.defineProperty(o, "default", { enumerable: true, value: v });
}) : function (o, v) {
  o["default"] = v;
};
function __importStar(mod) {
  if (mod && mod.__esModule)
  return mod;
  var result = {};
  if (mod != null)
    for (var k in mod)
      if
      (Object.hasOwnProperty.call(mod, k))
        __createBinding(result, mod, k);
  __setModuleDefault(result, mod);
  return result;
}
function __importDefault(mod) {
  return (mod
  && mod.__esModule) ? mod : { default: mod };
}
function __classPrivateFieldGet(receiver, privateMap)
{
  if (!privateMap.has(receiver))
    throw new TypeError("attempted to get private field on non-
    instance");
  return privateMap.get(receiver);
}
function __classPrivateFieldSet(receiver,
privateMap, value) {
  if (!privateMap.has(receiver))
    throw new TypeError("attempted to set private
    field on non-instance");
  privateMap.set(receiver, value);
  return value;
}
/**
 * A
  mock implementation of {@link ResourceLoader} that allows outgoing requests to be mocked
  * and responded
  to within a single test, without going to the network.
  */
var MockResourceLoader = /** @class */ (function
(_super) {
  __extends(MockResourceLoader, _super);
  function MockResourceLoader() {
    var
    _this = _super.apply(this, __spread(arguments)) || this;
    _this._expectations = [];
    _this._definitions
    = new Map();
    _this._requests = [];
    return _this;
  }
  MockResourceLoader.prototype.get
  = function (url) {
    var request = new _PendingRequest(url);
    this._requests.push(request);
    return request.getPromise();
  };
  MockResourceLoader.prototype.hasPendingRequests = function () {
    return !!this._requests.length;
  };
  /**
   * Add an expectation for the given URL. Incoming
  requests will be checked against
  * the next expectation (in FIFO order). The
  `verifyNoOutstandingExpectations` method
  * can be used to check if any expectations have not yet been
  met.
  *
  * The response given will be returned if the expectation matches.
  */
  MockResourceLoader.prototype.expect = function (url, response) {
    var expectation = new
    _Expectation(url, response);
    this._expectations.push(expectation);
  };
  /**
   * Add a
  definition for the given URL to return the given response. Unlike expectations,
  * definitions have no order
  and will satisfy any matching request at any time. Also
  * unlike expectations, unused definitions do not cause
  `verifyNoOutstandingExpectations`
  * to return an error.
  */
  MockResourceLoader.prototype.when = function (url, response) {
    this._definitions.set(url, response);
  };
  /**
   * Process pending requests and verify there are no outstanding expectations. Also fails
  *
  * if no requests are pending.
  */
  MockResourceLoader.prototype.flush = function () {
    if
    (this._requests.length === 0)
      throw new Error("No pending requests to flush");
    do
    {
      this._processRequest(this._requests.shift());
    } while (this._requests.length > 0);
    this.verifyNoOutstandingExpectations();
  };
  /**
   * Throw an exception if any expectations have
  not been satisfied.
  */
  MockResourceLoader.prototype.verifyNoOutstandingExpectations = function () {
    if (this._expectations.length === 0)
      return;
    var urls = [];
    for (var i = 0; i <
    this._expectations.length; i++) {
      var expectation = this._expectations[i];
      urls.push(expectation.url);
    }
    throw new Error("Unsatisfied requests: " + urls.join(", "));
  };
  MockResourceLoader.prototype._processRequest = function (request) {
    var url = request.url;
    if
    (this._expectations.length > 0)
      var expectation = this._expectations[0];
      if (expectation.url

```

```

== url) {\n
    remove(this._expectations, expectation);\n
request.complete(expectation.response);\n
    return;\n
}\n
}\n
if\n
(this._definitions.has(url)) {\n
    var response = this._definitions.get(url);\n
request.complete(response == null ? null : response);\n
    return;\n
}\n
throw new\n
Error("Unexpected request '" + url);\n
");\n
return MockResourceLoader;\n
}\n
(compiler.ResourceLoader));\n
var _PendingRequest = /** @class */ (function () {\n
function\n
_PendingRequest(url) {\n
    var _this = this;\n
    this.url = url;\n
    this.promise = new\n
Promise(function (res, rej) {\n
        _this.resolve = res;\n
        _this.reject = rej;\n
    });\n
}\n
_PendingRequest.prototype.complete = function (response) {\n
    if (response == null) {\n
this.reject("Failed to load '" + this.url);\n
    }\n
    else {\n
        this.resolve(response);\n
    }\n
};\n
_PendingRequest.prototype.getPromise = function () {\n
    return this.promise;\n
};\n
return\n
_PendingRequest;\n
})();\n
var _Expectation = /** @class */ (function () {\n
function _Expectation(url,\n
response) {\n
    this.url = url;\n
    this.response = response;\n
}\n
return _Expectation;\n
})();\n
function remove(list, el) {\n
    var index = list.indexOf(el);\n
    if (index > -1) {\n
        list.splice(index, 1);\n
    }\n
}\n
}\n
/**\n
 * @license\n
 * Copyright Google LLC All Rights Reserved.\n
 * Use of this\n
source code is governed by an MIT-style license that can be\n
 * found in the LICENSE file at\n
https://angular.io/license\n
 */\n
var MockSchemaRegistry = /** @class */ (function () {\n
function\n
MockSchemaRegistry(existingProperties, attrPropMapping, existingElements, invalidProperties, invalidAttributes)\n
{\n
    this.existingProperties = existingProperties;\n
    this.attrPropMapping = attrPropMapping;\n
this.existingElements = existingElements;\n
    this.invalidProperties = invalidProperties;\n
this.invalidAttributes = invalidAttributes;\n
}\n
MockSchemaRegistry.prototype.hasProperty = function\n
(tagName, property, schemas) {\n
    var value = this.existingProperties[property];\n
    return value ===\n
void 0 ? true : value;\n
};\n
MockSchemaRegistry.prototype.hasElement = function (tagName,\n
schemaMetas) {\n
    var value = this.existingElements[tagName.toLowerCase()];\n
    return value ===\n
void 0 ? true : value;\n
};\n
MockSchemaRegistry.prototype.allKnownElementNames = function () {\n
    return Object.keys(this.existingElements);\n
};\n
MockSchemaRegistry.prototype.securityContext =\n
function (selector, property, isAttribute) {\n
    return compiler.core.SecurityContext.NONE;\n
};\n
MockSchemaRegistry.prototype.getMappedPropName = function (attrName) {\n
    return\n
this.attrPropMapping[attrName] || attrName;\n
};\n
MockSchemaRegistry.prototype.getDefaultComponentElementName = function () {\n
    return 'ng-\n
component';\n
};\n
MockSchemaRegistry.prototype.validateProperty = function (name) {\n
    if\n
(this.invalidProperties.indexOf(name) > -1) {\n
        return { error: true, msg: "Binding to property '" + name +\n
'" is disallowed for security reasons" };\n
    }\n
    else {\n
        return { error: false };\n
    }\n
};\n
MockSchemaRegistry.prototype.validateAttribute = function (name) {\n
    if\n
(this.invalidAttributes.indexOf(name) > -1) {\n
        return {\n
error: true,\n
msg:\n
"Binding to attribute '" + name + "'" is disallowed for security reasons"\n
};\n
    }\n
    else {\n
        return { error: false };\n
    }\n
};\n
MockSchemaRegistry.prototype.normalizeAnimationStyleProperty = function (propName) {\n
    return\n
propName;\n
};\n
MockSchemaRegistry.prototype.normalizeAnimationStyleValue = function\n
(camelCaseProp, userProvidedProp, val) {\n
    return { error: null, value: val.toString() };\n
};\n
return\n
MockSchemaRegistry;\n
})();\n
/**\n
 * An implementation of { @link DirectiveResolver } that allows\n
overriding\n
 * various properties of directives.\n
 */\n
var MockDirectiveResolver = /** @class */ (function\n
(_super) {\n
__extends(MockDirectiveResolver, _super);\n
function MockDirectiveResolver(reflector) {\n
    var _this = _super.call(this, reflector) || this;\n
    _this._directives = new Map();\n
    return _this;\n
}\n
MockDirectiveResolver.prototype.resolve = function (type, throwIfNotFound) {\n
    if\n
(throwIfNotFound === void 0) { throwIfNotFound = true; }\n
    return this._directives.get(type) ||\n
_super.prototype.resolve.call(this, type, throwIfNotFound);\n
};\n
/**\n
 * Overrides the { @link\n
core.Directive } for a directive.\n
 */\n
MockDirectiveResolver.prototype.setDirective = function (type,\n

```


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DAMAGES WHATSOEVER RESULTING FROM\r\nLOSS OF USE, DATA OR PROFITS, WHETHER IN AN
ACTION OF CONTRACT, NEGLIGENCE OR\r\nOTHER TORTIOUS ACTION, ARISING OUT OF OR IN
CONNECTION WITH THE USE OR\r\nPERFORMANCE OF THIS
SOFTWARE.\r\n*****

```
*/\r\n/* global Reflect, Promise */\r\n\r\nvar extendStatics = function(d, b) {\r\n  extendStatics =  
Object.setPrototypeOf ||\r\n  ({ __proto__: [] } instanceof Array && function(d, b) { d.__proto__ = b; }) ||\r\n  function(d, b) { for (var p in b) if (b.hasOwnProperty(p)) d[p] = b[p]; }; \r\n  return extendStatics(d,  
b);\r\n};\r\n\r\n\r\nexport function __extends(d, b) {\r\n  extendStatics(d, b);\r\n  function __() { this.constructor = d;  
}\r\n  d.prototype = b === null ? Object.create(b) : ( __.prototype = b.prototype, new __());\r\n}\r\n\r\n\r\nexport var  
__assign = function() {\r\n  __assign = Object.assign || function __assign(t) {\r\n    for (var s, i = 1, n =  
arguments.length; i < n; i++) {\r\n      s = arguments[i];\r\n      for (var p in s) if  
(Object.prototype.hasOwnProperty.call(s, p)) t[p] = s[p];\r\n    }\r\n    return t;\r\n  }\r\n  return  
__assign.apply(this, arguments);\r\n}\r\n\r\n\r\nexport function __rest(s, e) {\r\n  var t = {};\r\n  for (var p in s) if  
(Object.prototype.hasOwnProperty.call(s, p) && e.indexOf(p) < 0)\r\n    t[p] = s[p];\r\n  if (s != null && typeof  
Object.getOwnPropertySymbols === \"function\")\r\n    for (var i = 0, p = Object.getOwnPropertySymbols(s); i <  
p.length; i++) {\r\n      if (e.indexOf(p[i]) < 0 && Object.prototype.propertyIsEnumerable.call(s, p[i]))\r\n        t[p[i]] = s[p[i]];\r\n    }\r\n  return t;\r\n}\r\n\r\n\r\nexport function __decorate(decorators, target, key, desc) {\r\n  var c = arguments.length, r = c < 3 ? target : desc === null ? desc = Object.getOwnPropertyDescriptor(target, key) :  
desc, d;\r\n  if (typeof Reflect === \"object\" && typeof Reflect.decorate === \"function\") r =  
Reflect.decorate(decorators, target, key, desc);\r\n  else for (var i = decorators.length - 1; i >= 0; i--) if (d =  
Object.defineProperty(target, key, r), r);\r\n}\r\n\r\n\r\nexport function __param(paramIndex, decorator) {\r\n  return  
function (target, key) { decorator(target, key, paramIndex); }\r\n}\r\n\r\n\r\nexport function __metadata(metadataKey,  
metadataValue) {\r\n  if (typeof Reflect === \"object\" && typeof Reflect.metadata === \"function\") return  
Reflect.metadata(metadataKey, metadataValue);\r\n}\r\n\r\n\r\nexport function __awaiter(thisArg, _arguments, P,  
generator) {\r\n  function adopt(value) { return value instanceof P ? value : new P(function (resolve) {  
resolve(value); }); }\r\n  return new (P || (P = Promise))(function (resolve, reject) {\r\n    function fulfilled(value) { try {  
step(generator[\"throw\"](value)); } catch (e) { reject(e); } }\r\n    function rejected(value) { try {  
step(generator[\"throw\"](value)); } catch (e) { reject(e); } }\r\n    function step(result) { result.done ?  
resolve(result.value) : adopt(result.value).then(fulfilled, rejected); }\r\n    step((generator =  
generator.apply(thisArg, _arguments || []).next()).value);\r\n  });\r\n}\r\n\r\n\r\nexport function __generator(thisArg, body)  
{\r\n  var _ = { label: 0, sent: function() { if (t[0] & 1) throw t[1]; return t[1]; }, trys: [], ops: [] }, f, y, t, g;\r\n  return g = { next: verb(0), \"throw\": verb(1), \"return\": verb(2) }, typeof Symbol === \"function\" &&  
(g[Symbol.iterator] = function() { return this; }), g;\r\n  function verb(n) { return function (v) { return step([n, v]);  
}; }\r\n  function step(op) {\r\n    if (f) throw new TypeError(\"Generator is already executing.\");\r\n    while  
(_) try {\r\n      if (f = 1, y && (t = op[0] & 2 ? y[\"return\"] : op[0] ? y[\"throw\"] || ((t = y[\"return\"])) &&  
t.call(y, 0) : y.next) && !(t = t.call(y, op[1])).done) return t;\r\n      if (y = 0, t) op = [op[0] & 2, t.value];\r\n      switch (op[0]) {\r\n        case 0: case 1: t = op; break;\r\n        case 4: _.label++; return { value: op[1],  
done: false };\r\n        case 5: _.label++; y = op[1]; op = [0]; continue;\r\n        case 7: op = _.ops.pop();  
_.trys.pop(); continue;\r\n        default:\r\n          if (!(t = _.trys, t = t.length > 0 && t[t.length - 1]) &&  
(op[0] === 6 || op[0] === 2)) { _ = 0; continue; }\r\n          if (op[0] === 3 && (!t || (op[1] > t[0] && op[1] <  
t[3]))) { _.label = op[1]; break; }\r\n          if (op[0] === 6 && _.label < t[1]) { _.label = t[1]; t = op; break;  
}\r\n          if (t && _.label < t[2]) { _.label = t[2]; _.ops.push(op); break; }\r\n          if (t[2])  
_.ops.pop();\r\n          _.trys.pop(); continue;\r\n        }\r\n      op = body.call(thisArg, _); \r\n    } catch
```



```

All Rights Reserved.\n *\n * Use of this source code is governed by an MIT-style license that can be\n * found in
the LICENSE file at https://angular.io/license\n *\n\nimport {ResourceLoader} from '@angular/compiler';\n\n/**\n * A mock implementation of {@link ResourceLoader} that allows outgoing requests to be mocked\n * and
responded to within a single test, without going to the network.\n */\nexport class MockResourceLoader extends
ResourceLoader {\n private _expectations: _Expectation[] = [];\n private _definitions = new Map<string,
string>();\n private _requests: _PendingRequest[] = [];\n\n get(url: string): Promise<string> {\n const request =
new _PendingRequest(url);\n this._requests.push(request);\n return request.getPromise();\n }\n\n
hasPendingRequests() {\n return !!this._requests.length;\n }\n\n /**\n * Add an expectation for the given URL.
Incoming requests will be checked against\n * the next expectation (in FIFO order). The
`verifyNoOutstandingExpectations` method\n * can be used to check if any expectations have not yet been met.\n
*\n * The response given will be returned if the expectation matches.\n */\n expect(url: string, response: string)
{\n const expectation = new _Expectation(url, response);\n this._expectations.push(expectation);\n }\n\n /**\n
* Add a definition for the given URL to return the given response. Unlike expectations,\n * definitions have no
order and will satisfy any matching request at any time. Also\n * unlike expectations, unused definitions do not
cause `verifyNoOutstandingExpectations`\n * to return an error.\n */\n when(url: string, response: string) {\n
this._definitions.set(url, response);\n }\n\n /**\n * Process pending requests and verify there are no outstanding
expectations. Also fails\n * if no requests are pending.\n */\n flush() {\n if (this._requests.length === 0) {\n
throw new Error('No pending requests to flush');\n }\n\n do {\n
this._processRequest(this._requests.shift());\n } while (this._requests.length > 0);\n\n
this.verifyNoOutstandingExpectations();\n }\n\n /**\n * Throw an exception if any expectations have not been
satisfied.\n */\n verifyNoOutstandingExpectations() {\n if (this._expectations.length === 0) return;\n\n const
urls: string[] = [];\n for (let i = 0; i < this._expectations.length; i++) {\n const expectation =
this._expectations[i];\n urls.push(expectation.url);\n }\n\n throw new Error('Unsatisfied requests:
${urls.join(', ')}');\n }\n\n private _processRequest(request: _PendingRequest) {\n const url = request.url;\n\n
(this._expectations.length > 0) {\n const expectation = this._expectations[0];\n if (expectation.url == url) {\n
remove(this._expectations, expectation);\n request.complete(expectation.response);\n return;\n }\n\n
if (this._definitions.has(url)) {\n const response = this._definitions.get(url);\n
request.complete(response == null ? null : response);\n return;\n }\n\n throw new Error('Unexpected request
${url}');\n }\n\n\n\nclass _PendingRequest {\n // TODO(issue/24571): remove '!'\n resolve!: (result: string) =>
void;\n // TODO(issue/24571): remove '!'\n reject!: (error: any) => void;\n promise: Promise<string>;\n\n
constructor(public url: string) {\n this.promise = new Promise((res, rej) => {\n this.resolve = res;\n
this.reject = rej;\n });\n }\n\n complete(response: string|null) {\n if (response == null) {\n this.reject('Failed
to load ${this.url}');\n } else {\n this.resolve(response);\n }\n }\n\n getPromise(): Promise<string> {\n
return this.promise;\n }\n\n\nclass _Expectation {\n url: string;\n response: string;\n constructor(url: string,
response: string) {\n this.url = url;\n this.response = response;\n }\n\n\nfunction remove<T>(list: T[], el: T):
void {\n const index = list.indexOf(el);\n if (index > -1) {\n list.splice(index, 1);\n }\n\n\n"/**\n * @license\n *
Copyright Google LLC All Rights Reserved.\n *\n * Use of this source code is governed by an MIT-style license
that can be\n * found in the LICENSE file at https://angular.io/license\n */\n\nimport {core,
ElementSchemaRegistry} from '@angular/compiler';\n\nexport class MockSchemaRegistry implements
ElementSchemaRegistry {\n constructor(\n public existingProperties: {[key: string]: boolean},\n public
attrPropMapping: {[key: string]: string},\n public existingElements: {[key: string]: boolean},\n public
invalidProperties: Array<string>,\n public invalidAttributes: Array<string>) {\n\n hasProperty(tagName: string,
property: string, schemas: core.SchemaMetadata[]): boolean {\n const value = this.existingProperties[property];\n
return value === void 0 ? true : value;\n }\n\n hasElement(tagName: string, schemaMetas:
core.SchemaMetadata[]): boolean {\n const value = this.existingElements[tagName.toLowerCase()];\n return
value === void 0 ? true : value;\n }\n\n allKnownElementNames(): string[] {\n return
Object.keys(this.existingElements);\n }\n\n securityContext(selector: string, property: string, isAttribute: boolean):
core.SecurityContext {\n return core.SecurityContext.NONE;\n }\n\n getMappedPropName(attrName: string):

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string {\n  return this.attrPropMapping[attrName] || attrName;\n }\n\n getDefaultComponentElementName():
string {\n  return 'ng-component';\n }\n\n validateProperty(name: string): {error: boolean, msg?: string} {\n  if
(this.invalidProperties.indexOf(name) > -1) {\n    return {error: true, msg: `Binding to property '${name}' is
disallowed for security reasons`};\n  } else {\n    return {error: false};\n  }\n }\n\n validateAttribute(name:
string): {error: boolean, msg?: string} {\n  if (this.invalidAttributes.indexOf(name) > -1) {\n    return {\n
error: true,\n    msg: `Binding to attribute '${name}' is disallowed for security reasons`\n  };
}\n  } else {\n    return {error: false};\n  }\n }\n\n normalizeAnimationStyleProperty(propName: string): string {\n  return
propName;\n }\n\n normalizeAnimationStyleValue(camelCaseProp: string, userProvidedProp: string, val:
string|number):\n  {error: string, value: string} {\n    return {error: null!, value: val.toString()};\n  }\n }\n\n"/**\n *
@license\n * Copyright Google LLC All Rights Reserved.\n *\n * Use of this source code is governed by an MIT-
style license that can be\n * found in the LICENSE file at https://angular.io/license\n */\n\nimport {CompileReflector,
core, DirectiveResolver} from '@angular/compiler';\n\n"/**\n * An implementation of {@link DirectiveResolver}
that allows overriding\n * various properties of directives.\n */\n\nexport class MockDirectiveResolver extends
DirectiveResolver {\n  private _directives = new Map<core.Type, core.Directive>();\n\n  constructor(reflector:
CompileReflector) {\n    super(reflector);\n  }\n\n  resolve(type: core.Type): core.Directive;\n  resolve(type:
core.Type, throwIfNotFound: true): core.Directive;\n  resolve(type: core.Type, throwIfNotFound: boolean):
core.Directive|null;\n  resolve(type: core.Type, throwIfNotFound = true): core.Directive|null {\n    return
this._directives.get(type) || super.resolve(type, throwIfNotFound);\n  }\n }\n\n"/**\n * Overrides the {@link
core.Directive} for a directive.\n */\n  setDirective(type: core.Type, metadata: core.Directive): void {\n    this._directives.set(type, metadata);\n  }\n }\n\n"/**\n * @license\n * Copyright Google LLC All Rights Reserved.\n *\n * Use of this source code is governed by an MIT-style license that can be\n * found in the LICENSE file at
https://angular.io/license\n */\n\nimport {CompileReflector, core, NgModuleResolver} from
'@angular/compiler';\n\nexport class MockNgModuleResolver extends NgModuleResolver {\n  private _ngModules
= new Map<core.Type, core.NgModule>();\n\n  constructor(reflector: CompileReflector) {\n    super(reflector);\n
}\n\n"/**\n * Overrides the {@link NgModule} for a module.\n */\n  setNgModule(type: core.Type, metadata:
core.NgModule): void {\n    this._ngModules.set(type, metadata);\n  }\n }\n\n"/**\n * Returns the {@link NgModule}
for a module:\n * - Set the {@link NgModule} to the overridden view when it exists or fallback to the\n *
default\n * `NgModuleResolver`, see `setNgModule`\n */\n  resolve(type: core.Type, throwIfNotFound = true):
core.NgModule {\n    return this._ngModules.get(type) || super.resolve(type, throwIfNotFound!);\n  }\n }\n\n"/**\n *
@license\n * Copyright Google LLC All Rights Reserved.\n *\n * Use of this source code is governed by an MIT-
style license that can be\n * found in the LICENSE file at https://angular.io/license\n */\n\nimport
{CompileReflector, core, PipeResolver} from '@angular/compiler';\n\nexport class MockPipeResolver extends
PipeResolver {\n  private _pipes = new Map<core.Type, core.Pipe>();\n\n  constructor(reflector: CompileReflector)
{\n    super(reflector);\n  }\n\n"/**\n * Overrides the {@link Pipe} for a pipe.\n */\n  setPipe(type: core.Type,
metadata: core.Pipe): void {\n    this._pipes.set(type, metadata);\n  }\n }\n\n"/**\n * Returns the {@link Pipe} for a
pipe:\n * - Set the {@link Pipe} to the overridden view when it exists or fallback to the\n * default\n *
`PipeResolver`, see `setPipe`\n */\n  resolve(type: core.Type, throwIfNotFound = true): core.Pipe {\n    let
metadata = this._pipes.get(type);\n    if (!metadata) {\n      metadata = super.resolve(type, throwIfNotFound!);\n
}\n    return metadata;\n  }\n }\n\n"/**\n * @license\n * Copyright Google LLC All Rights Reserved.\n *\n * Use of
this source code is governed by an MIT-style license that can be\n * found in the LICENSE file at
https://angular.io/license\n */\n\n"/**\n * @module\n * @description\n * Entry point for all APIs of the compiler
package.\n *\n * <div class="callout is-critical">\n * <header>Unstable APIs</header>\n * <p>\n * All
compiler apis are currently considered experimental and private!\n * </p>\n * <p>\n * We expect the APIs in
this package to keep on changing. Do not rely on them.\n * </p>\n * </div>\n */\n\nexport * from
'./resource_loader_mock';\nexport * from './schema_registry_mock';\nexport * from
'./directive_resolver_mock';\nexport * from './ng_module_resolver_mock';\nexport * from
'./pipe_resolver_mock';\n\n"/**\n * @license\n * Copyright Google LLC All Rights Reserved.\n *\n * Use of this
source code is governed by an MIT-style license that can be\n * found in the LICENSE file at

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https://angular.io/license\n *\n\n// <reference types=\"node\" />\n\n**\n * @module\n * @description\n * Entry point for all public APIs of this package.\n *\n\nexport * from './src/testing';\n\n// This file only reexports content of the `src` folder. Keep it that way.\n\n",/**\n * @license\n * Copyright Google LLC All Rights Reserved.\n *\n * Use of this source code is governed by an MIT-style license that can be\n * found in the LICENSE file at https://angular.io/license\n *\n\n// This file is not used to build this module. It is only used during editing\n// by the TypeScript language service and during build for verification. `ngc`\n// replaces this file with production index.ts when it rewrites private symbol\n// names.\n\nexport * from './public_api';\n\n",/**\n * Generated bundle index. Do not edit.\n *\n\nexport * from './index';\n\n"],"names":["ResourceLoader","core","DirectiveResolver","NgModuleResolver","PipeResolver"],"mappings":";;;;;;;;;;IAAA;;;;;;;;;;IAcA;IAEA,IAAI,aAAa,GAAG,UAAS,CAAC,EAAE,CAAC;QAC7B,aAAa,GAAG,MAAM,CAAC,cAAc;aAChC,EAAE,SAAS,EAAE,EAAE,EAAE,YAAY,KAAK,IAAI,UAAU,CAAC,EAAE,CAAC,IAAI,CAAC,CAAC,SAAS,GAAG,CAAC,CAAC,EAAE,CAAC;YAC5E,UAAU,CAAC,EAAE,CAAC,IAAI,KAAK,IAAI,CAAC,IAAI,CAAC;gBAAE,IAAI,CAAC,CAAC,cAAc,CAAC,CAAC,CAAC;oBAAE,CAAC,CAAC,CAAC,CAAC,GAAG,CAAC,CAAC,CAAC,CAAC,CAAC,EAAE,CAAC;QAC/E,OAAO,aAAa,CAAC,CAAC,EAAE,CAAC,CAAC,CAAC;IAC/B,CAAC,CAAC;aAEc,SAAS,CAAC,CAAC,EAAE,CAAC;QAC1B,aAAa,CAAC,CAAC,EAAE,CAAC,CAAC,CAAC;QACpB,SAAS,EAAE,KAAK,IAAI,CAAC,WAAW,GAAG,CAAC,CAAC,EAAE;QACvC,CAAC,CAAC,SAAS,GAAG,CAAC,KAAK,IAAI,GAAG,MAAM,CAAC,MAAM,CAAC,CAAC,CAAC,IAAI,EAAE,CAAC,SAAS,GAAG,CAAC,CAAC,SAAS,EAAE,IAAI,EAAE,EAAE,CAAC,CAAC;IACzF,CAAC;IAEM,IAAI,QAAQ,GAAG;QACIB,QAAQ,GAAG,MAAM,CAAC,MAAM,IAAI,SAAS,QAAQ,CAAC,CAAC;YAC3C,KAAK,IAAI,CAAC,EAAE,CAAC,GAAG,CAAC,EAAE,CAAC,GAAG,SAAS,CAAC,MAAM,EAAE,CAAC,GAAG,CAAC,EAAE,CAAC,EAAE,EAAE;gBACjD,CAAC,GAAG,SAAS,CAAC,CAAC,CAAC;gBACjB,KAAK,IAAI,CAAC,IAAI,CAAC;oBAAE,IAAI,MAAM,CAAC,SAAS,CAAC,cAAc,CAAC,IAAI,CAAC,CAAC,EAAE,CAAC,CAAC;wBAAE,CAAC,CAAC,CAAC,CAAC,GAAG,CAAC,CAAC,CAAC,CAAC,CAAC;aAChF;YACD,OAAO,CAAC,CAAC;SACZ,CAAA;QACD,OAAO,QAAQ,CAAC,KAAK,CAAC,IAAI,EAAE,SAAS,CAAC,CAAC;IAC3C,CAAC,CAAA;aAEe,MAAM,CAAC,CAAC,EAAE,CAAC;QACvB,IAAI,CAAC,GAAG,EAAE,CAAC;QACX,KAAK,IAAI,CAAC,IAAI,CAAC;YAAE,IAAI,MAAM,CAAC,SAAS,CAAC,cAAc,CAAC,IAAI,CAAC,CAAC,EAAE,CAAC,CAAC,IAAI,CAAC,CAAC,OAAO,CAAC,CAAC,CAAC,GAAG,CAAC;gBAC/E,CAAC,CAAC,CAAC,CAAC,GAAG,CAAC,CAAC,CAAC,CAAC,CAAC;QACkB,IAAI,CAAC,IAAI,IAAI,IAAI,OAAO,MAAM,CAAC,qBAAqB,KAAK,UAAU;YAC/D,KAAK,IAAI,CAAC,GAAG,CAAC,EAAE,CAAC,GAAG,MAAM,CAAC,qBAAqB,CAAC,CAAC,CAAC,EAAE,CAAC,GAAG,CAAC,CAAC,MAAM,EAAE,CAAC,EAAE,EAAE;gBACpE,IAAI,CAAC,CAAC,OAAO,CAAC,CAAC,CAAC,CAAC,CAAC,CAAC,GAAG,CAAC,IAAI,MAAM,CAAC,SAAS,CAAC,oBAAoB,CAAC,IAAI,CAAC,CAAC,EAAE,CAAC,CAAC,CAAC,CAAC,CAAC;oBACIE,CAAC,CAAC,CAAC,CAAC,CAAC,CAAC,CAAC,GAAG,CAAC,CAAC,CAAC,CAAC,CAAC,CAAC,CAAC,CAAC,CAAC,CAAC,CAAC;AACzB;QACL,OAAO,CAAC,CAAC;IACb,CAAC;aAEe,UAAU,CAAC,UAAU,EAAE,MAAM,EAAE,GAAG,EAAE,IAAI;QACpD,IAAI,CAAC,GAAG,SAAS,CAAC,MAAM,EAAE,CAAC,GAAG,CAAC,GAAG,CAAC,GAAG,MAAM,GAAG,IAAI,KAAK,IAAI,GAAG,IAAI,GAAG,MAAM,CAAC,wBAAwB,CAAC,MAAM,EAAE,GAAG,CAAC,GAAG,IAAI,EAAE,CAAC,CAAC;QAC7H,IAAI,OAAO,OAAO,KAAK,QAAQ,IAAI,OAAO,OAAO,CAAC,QAAQ,KAAK,UAAU;YAAE,CAAC,GAAG,OAAO,CAAC,QAAQ,CAAC,UAAU,EAAE,MAAM,EAAE,GAAG,EAAE,IAAI,CAAC,CAAC;;YACIH,KAAK,IAAI,CAAC,GAAG,UAAU,CAAC,MAAM,GAAG,CAAC,EAAE,CAAC,IAAI,CAAC,EAAE,CAAC,EAAE;gBAAE,IAAI,CAAC,GAAG,UAAU,CAAC,CAAC,CAAC;oBAAE,CAAC,GAAG,CAAC,CAAC,GAAG,CAAC,GAAG,CAAC,CAAC,CAAC,CAAC,CAAC,GAAG,CAAC,GAAG,CAAC,GAAG,CAAC,CAAC,MAAM,EAAE,GAAG,EAAE,CAAC,CAAC,GAAG,CAAC,CAAC,MAAM,EAAE,GAAG,CAAC,KAAK,CAAC,CAAC;QACIJ,OAAO,CAAC,GAAG,CAAC,IAAI,CAAC,IAAI,MAAM,CAAC,cAAc,CAAC,MAAM,EAAE,GAAG,EAAE,CAAC,CAAC,EAAE,CAAC,CAAC;IACIE,CAAC;aAEe,OAAO,CAAC,UAAU,EAAE,SAAS;QACzC,OAAO,UAAU,MAAM,EAAE,GAAG,IAAI,SAAS,CAAC,MAAM,EAAE,GAAG,EAAE,UAAU,CAAC,CAAC,EAAE,CAAA;IACzE,CAAC;aAEe,UAAU,CAAC,WAAW,EAAE,aAAa;QACjD,IAAI,OAAO,OAAO,KAAK,QAAQ,IAAI,OAAO,OAAO,CAAC,QAAQ,KAAK,UAAU;YAAE,OAAO,OAAO,CAAC,QAAQ,CAAC,WAAW,EAAE,aAAa,CAAC,CAAC;IACnI,CAAC;aAEe,SAAS,CAAC,OAAO,EAAE,UAAU,EAAE

E,CAAC,EAAE,SAAS;QACvD,SAAS,KAAK,CAAC,KAAK,IAAI,OAAO,KAAK,YAA Y,CAAC,GAAG,KAAK,GAAG,IAAI,CAAC,CAAC,UAAU,OAAO,IAAI,OAAO,CAAC,KAAK,CAAC,CAAC,EAAE,CAAC,CAAC,EAAE;QAC5G,OAAO,KAAK,CAAC,KAAK,CAAC,GAAG,OAAO,CAAC,EAAE,UAAU,OAAO,EAAE,MAAM;YACrD,SAAS,SAAS,CAAC,KAAK,IAAI,IAAI;gBAAE,IAAI,CAAC,SAAS,CAAC,IAAI,CAAC,KAAK,CAAC,CAAC,CAAC;aAAE;YAAC,OAAO,CAAC,EAAE;gBAAE,MAAM,CAAC,CAAC,CAAC,CAAC;aAAE,EAAE;YAC3F,SAAS,QAAQ,CAAC,KAAK,IAAI,IAAI;gBAAE,IAAI,CAAC,SAAS,CAAC,OAAO,CAAC,CAAC,KAAK,CAAC,CAAC,CAAC;aAAE;YAAC,OAAO,CAAC,EAAE;gBAAE,MAAM,CAAC,CAAC,CAAC,CAAC;aAAE,EAAE;YAC9F,SAAS,IAAI,CAAC,MAAM,IAAI,MAAM,CAAC,IAAI,GAAG,OAAO,CAAC,MAAM,CAAC,KAAK,CAAC,GAAG,KAAK,CAAC,MAAM,CAAC,KAAK,CAAC,CAAC,IAAI,CAAC,SAAS,EAAE,QAAQ,CAAC,CAAC,EAAE;YAC9G,IAAI,CAAC,CAAC,SAAS,GAAG,SAAS,CAAC,KAAK,CAAC,OAAO,EAAE,UAAU,IAAI,EAAE,CAAC,EAAE,IAAI,EAAE,CAAC,CAAC;SACzE,CAAC,CAAC;IACP,CAAC;aAEe,WAAW,CAAC,OAAO,EAAE,IAAI;QACrC,IAAI,CAAC,GAAG,EAAE,KAAK,EAAE,CAAC,EAAE,IAAI,EAAE,cAAa,IAAI,CAAC,CAAC,CAAC,GAAG,CAAC;gBAAE,MAAM,CAAC,CAAC,CAAC,CAAC,CAAC,CAAC,OAAO,CAAC,CAAC,CAAC,CAAC,EAAE,EAAE,IAAI,EAAE,EAAE,EAAE,GAAG,EAAE,EAAE,EAAE,EAAE,CAAC,EAAE,CAAC,EAAE,CAAC,CAAC;QACjH,OAAO,CAAC,GAAG,EAAE,IAAI,EAAE,IAAI,CAAC,CAAC,CAAC,EAAE,OAAO,EAAE,IAAI,CAAC,CAAC,CAAC,EAAE,QAAQ,EAAE,IAAI,CAAC,CAAC,CAAC,EAAE,EAAE,OAAO,MAAM,KAAK,UAAU,KAAK,CAAC,CAAC,MAAM,CAAC,QAAQ,CAAC,GAAG,cAAa,OAAO,IAAI,CAAC,EAAE,CAAC,EAAE,CAAC,CAAC;QACzJ,SAAS,IAAI,CAAC,CAAC,IAAI,OAAO,UAAU,CAAC,IAAI,OAAO,IAAI,CAAC,CAAC,CAAC,EAAE,CAAC,CAAC,CAAC,CAAC,EAAE,CAAC,EAAE;QACIE,SAAS,IAAI,CAAC,EAAE;YACZ,IAAI,CAAC;gBAAE,MAAM,IAAI,SAAS,CAAC,iCAAiC,CAAC,CAAC;YAC9D,OAAO,CAAC;gBAAE,IAAI;oBACV,IAAI,CAAC,GAAG,CAAC,EAAE,CAAC,KAAK,CAAC,GAAG,EAAE,CAAC,CAAC,CAAC,GAAG,CAAC,GAAG,CAAC,CAAC,QAAQ,CAAC,GAAG,EAAE,CAAC,CAAC,CAAC,GAAG,CAAC,CAAC,OAAO,CAAC,KAAK,CAAC,CAAC,GAAG,CAAC,CAAC,QAAQ,CAAC,KAAK,CAAC,CAAC,IAAI,CAAC,CAAC,CAAC,EAAE,CAAC,CAAC,GAAG,CAAC,CAAC,IAAI,CAAC,IAAI,CAAC,CAAC,CAAC,GAAG,CAAC,CAAC,IAAI,CAAC,CAAC,EAAE,EAAE,CAAC,CAAC,CAAC,CAAC,EAAE,IAAI;wBAAE,OAAO,CAAC,CAAC;oBAC7J,IAAI,CAAC,GAAG,CAAC,EAAE,CAAC;wBAAE,EAAE,GAAG,CAAC,EAAE,CAAC,CAAC,CAAC,GAAG,CAAC,EAAE,CAAC,CAAC,KAAK,CAAC,CAAC;oBACx C,QAAQ,EAAE,CAAC,CAAC,CAAC;wBACT,KAAK,CAAC,CAAC;wBAAC,KAAK,CAAC;4BAAE,CAAC,GAAG,EAAE,CAAC;4BAAC,MAAM;wBAC9B,KAAK,CAAC;4BAAE,CAAC,CAAC,KAAK,EAAE,CAAC;4BAAC,OAAO,EAAE,KAAK,EAAE,EAAE,CAAC,CAAC,CAAC,EAAE,IAAI,EAAE,KAAK,EAAE,CAAC;wBACxD,KAAK,CAAC;4BAAE,CAAC,CAAC,KAAK,EAAE,CAAC;4BAAC,CAAC,GAAG,EAAE,CAAC,CAAC,CAAC,CAAC;4BAAC,EAAE,GAAG,CAAC,CAAC,CAAC,CAAC;4BAAC,SAAS;wBACjD,KAAK,CAAC;4BAAE,EAAE,GAAG,CAAC,CAAC,GAAG,CAAC,GAAG,EAAE,CAAC;4BAAC,CAAC,CAAC,IAAI,CAAC,GAAG,EAAE,CAAC;4BAAC,SAAS;wBACjD;4BACl,IAAI,EAAE,CAAC,GAAG,CAAC,CAAC,IAAI,EAAE,CAAC,GAAG,CAAC,CAAC,MAAM,GAAG,CAAC,IAAI,CAAC,CAAC,CAAC,CAAC,MAAM,GAAG,CAAC,CAAC,CAAC,KAAK,EAAE,CAAC,CAAC,CAAC,KAAK,CAAC,IAAI,EAAE,CAAC,CAAC,CAAC,KAAK,CAAC,CAAC,EAAE;gCAA E,CAAC,GAAG,CAAC,CAAC;gCAAC,SAAS;6BAAE;4BAC5G,IAAI,EAAE,CAAC,CAAC,CAAC,KAAK,CAAC,KAAK,CAAC,CAAC,KAAK,EAAE,CAAC,CAAC,CAAC,GAAG,CAAC,CAAC,CAAC,CAAC,IAAI,EAAE,CAAC,CAAC,CAAC,GAAG,CAAC,CAAC,CAAC,CAAC,EAAE;gCAA E,CAAC,CAAC,KAAK,GAAG,EAAE,CAAC,CAAC,CAAC,CAAC;gCAA E,CAAC,CAAC,KAAK,GAAG,CAAC,CAAC,CAAC,CAAC,CAAC;gCAAC,CAAC,GAAG,EAAE,CAAC;gCAAC,MAAM;6BAAE;4BACrE,IAAI,CAAC,IAAI,CAAC,CAAC,KAAK,GAAG,CAAC,CAAC,CAAC,CAAC,EAAE;gCAA E,CAAC,CAAC,KAAK,GAAG,CAAC,CAAC,CAAC,CAAC;gCAAC,CAAC,CAAC,GAAG,CAAC,IAAI,CAAC,EAAE,CAAC,CAAC;gCAAC,MAAM;6BAAE;4BACnE,IAAI,CAAC,CAAC,CAAC,CAAC;gCAA E,CAAC,CAAC,GAAG,CAAC,GAAG,EAAE,CAAC;4BACtB,CAAC,CAAC,IAAI,CAAC,GAAG,EAAE,CAAC;4BAAC,SAAS;qBAC9B;oBACD,EAAE,GAAG,IAAI,CAAC,IAAI,CAAC,OAAO,EAAE,CAAC,CAAC,CAAC;iBAC9B;gBAAC,OAAO,CAAC,EAAE;oBAAE,EAAE,GAAG,CAAC,CAAC,EAAE,CAAC,CAAC,CAAC;oBAAC,CAAC,GAAG,CAAC,CAAC;iBAA

E;wBAAS;oBAAE,CAAC,GAAG,CAAC,GAAG,CAAC,CAAC;iBAAE;YAC1D,IAAI,EAAE,CAAC,CAAC,CAA
C,GAAG,CAAC;gBAAE,MAAM,EAAE,CAAC,CAAC,CAAC,CAAC;YAAC,OAAO,EAAE,KAAK,EAAE,EAA
E,CAAC,CAAC,CAAC,GAAG,EAAE,CAAC,CAAC,CAAC,GAAG,KAAK,CAAC,EAAE,IAAI,EAAE,IAAI,EA
AE,CAAC;SACpF;IACL,CAAC;IAEM,IAAI,eAAe,GAAG,MAAM,CAAC,MAAM,IAAI,UAAS,CAAC,EAAE,C
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B,MAAM,CAAC,cAAc,CAAC,CAAC,EAAE,EAAE,EAAE,EAAE,UAAU,EAAE,IAAI,EAAE,GAAG,EAAE,cA
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- * /opt/cola/permits/1358260597_1657134837.1052659/0/compiler-11-0-2-tgz/package/src/ml_parser/lexer.d.ts
- * /opt/cola/permits/1358260597_1657134837.1052659/0/compiler-11-0-2-tgz/package/src/render3/view/i18n/localize_utils.d.ts
- * /opt/cola/permits/1358260597_1657134837.1052659/0/compiler-11-0-2-tgz/package/src/compiler_util/expression_converter.d.ts
- * /opt/cola/permits/1358260597_1657134837.1052659/0/compiler-11-0-2-tgz/package/esm2015/src/render3/r3_pipe_compiler.js
- * /opt/cola/permits/1358260597_1657134837.1052659/0/compiler-11-0-2-tgz/package/src/css_parser/css_ast.js
- * /opt/cola/permits/1358260597_1657134837.1052659/0/compiler-11-0-2-tgz/package/src/pipe_resolver.d.ts
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No license file was found, but licenses were detected in source scan.

/**

* @license Angular v11.0.2
* (c) 2010-2020 Google LLC. <https://angular.io/>
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*/

Found in path(s):

* /opt/cola/permits/1358260597_1657134837.1052659/0/compiler-11-0-2-tgz/package/testing.d.ts

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get_msg_utils.ts", "../..../packages/compiler/src/render3/view/i18n/localize_utils.ts", "../..../packages/compile
r/src/render3/view/template.ts", "../..../packages/compiler/src/render3/view/compiler.ts", "../..../packages/comp
iler/src/resource_loader.ts", "../..../packages/compiler/src/jit_compiler_facade.ts", "../..../packages/compiler/
src/version.ts", "../..../packages/compiler/src/config.ts", "../..../packages/compiler/src/directive_normalizer.ts"
", "../..../packages/compiler/src/directive_resolver.ts", "../..../packages/compiler/src/i18n/parse_util.ts", "../..
../..../packages/compiler/src/i18n/extractor_merger.ts", "../..../packages/compiler/src/ml_parser/xml_tags.ts", "../..
../..../packages/compiler/src/ml_parser/xml_parser.ts", "../..../packages/compiler/src/i18n/serializers/xliff.ts", "../..
../..../packages/compiler/src/i18n/serializers/xliff2.ts", "../..../packages/compiler/src/i18n/serializers/xtb.ts", "../..
../..../packages/compiler/src/i18n/translation_bundle.ts", "../..../packages/compiler/src/i18n/i18n_html_parser.ts",
"../..../packages/compiler/src/output/value_util.ts", "../..../packages/compiler/src/injectable_compiler.ts", "../..
../..../packages/compiler/src/aot/util.ts", "../..../packages/compiler/src/lifecycle_reflector.ts", "../..../packages
/compiler/src/metadata_resolver.ts", "../..../packages/compiler/src/view_compiler/provider_compiler.ts", "../..../..
../..../packages/compiler/src/ng_module_compiler.ts", "../..../packages/compiler/src/ng_module_resolver.ts", "../..
../..../packages/compiler/src/output/ts_emitter.ts", "../..../packages/compiler/src/pipe_resolver.ts", "../....//package
s/compiler/src/view_compiler/type_check_compiler.ts", "../..../packages/compiler/src/view_compiler/view_com
piler.ts", "../..../packages/compiler/src/i18n/message_bundle.ts", "../..../packages/compiler/src/aot/generated_
file.ts", "../..../packages/compiler/src/aot/lazy_routes.ts", "../..../packages/compiler/src/aot/static_symbol_res
olver.ts", "../..../packages/compiler/src/aot/summary_serializer.ts", "../..../packages/compiler/src/aot/compiler
.ts", "../..../packages/compiler/src/aot/formatted_error.ts", "../..../packages/compiler/src/aot/static_reflector.ts
", "../..../packages/compiler/src/aot/summary_resolver.ts", "../..../packages/compiler/src/aot/compiler_factory
.ts", "../..../packages/compiler/src/summary_resolver.ts", "../..../packages/compiler/src/output/output_interpre
ter.ts", "../..../packages/compiler/src/jit/compiler.ts", "../..../packages/compiler/src/compile_reflector.ts", "../..
../..../packages/compiler/src/url_resolver.ts", "../..../packages/compiler/src/i18n/extractor.ts", "../..../packages
/compiler/src/i18n/index.ts", "../..../packages/compiler/src/render3/view/t2_binder.ts", "../..../packages/compil
er/src/compiler.ts", "../..../packages/compiler/public_api.ts", "../..../packages/compiler/compiler.ts", "../..../..
../..../packages/compiler/index.ts"], "sourcesContent": ["/*!

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```

\`${elementName}\` expecting \`:namespace:name\`);n }n\n return [elementName.slice(1, colonIndex),
elementName.slice(colonIndex + 1)];n}n\n// <ng-container>` tags work the same regardless the
namespace\nexport function isNgContainer(tagName: string): boolean {n return splitNsName(tagName)[1] ===
'ng-container';n}n\n// <ng-content>` tags work the same regardless the namespace\nexport function
isNgContent(tagName: string): boolean {n return splitNsName(tagName)[1] === 'ng-content';n}n\n// <ng-
template>` tags work the same regardless the namespace\nexport function isNgTemplate(tagName: string): boolean
{n return splitNsName(tagName)[1] === 'ng-template';n}n\n\nexport function getNsPrefix(fullName: string):
string;\nexport function getNsPrefix(fullName: null): null;\nexport function getNsPrefix(fullName: string|null):
string|null {n return fullName === null ? null : splitNsName(fullName)[0];n}n\n\nexport function
mergeNsAndName(prefix: string, localName: string): string {n return prefix ? `:${prefix}:${localName}` :
localName;n}n\n\n// see http://www.w3.org/TR/html5/syntax.html#named-character-references\n// see
https://html.spec.whatwg.org/multipage/entities.json\n// This list is not exhaustive to keep the compiler footprint
low.\n// The `&#123;` / `&#x1ab;` syntax should be used when the named character reference does not\n//
exist.\nexport const NAMED_ENTITIES: {[k: string]: string} = {n 'Aacute': '\u00C1',n 'aacute': '\u00E1',n
'Acirc': '\u00C2',n 'acirc': '\u00E2',n 'acute': '\u00B4',n 'AElig': '\u00C6',n 'aelig': '\u00E6',n 'Agrave':
'\u00C0',n 'agrave': '\u00E0',n 'alefsym': '\u2135',n 'Alpha': '\u0391',n 'alpha': '\u03B1',n 'amp': '&',n 'and':
'\u2227',n 'ang': '\u2220',n 'apos': '\u0027',n 'Aring': '\u00C5',n 'aring': '\u00E5',n 'asymp': '\u2248',n
'Atilde': '\u00C3',n 'atilde': '\u00E3',n 'Auml': '\u00C4',n 'auml': '\u00E4',n 'bdquo': '\u201E',n 'Beta':
'\u0392',n 'beta': '\u03B2',n 'brvbar': '\u00A6',n 'bull': '\u2022',n 'cap': '\u2229',n 'Ccedil': '\u00C7',n
'ccedil': '\u00E7',n 'cedil': '\u00B8',n 'cent': '\u00A2',n 'Chi': '\u0397',n 'chi': '\u03C7',n 'circ': '\u02C6',n
'clubs': '\u2663',n 'cong': '\u2245',n 'copy': '\u00A9',n 'carr': '\u21B5',n 'cup': '\u222A',n 'curren':
'\u00A4',n 'dagger': '\u2020',n 'Dagger': '\u2021',n 'darr': '\u2193',n 'dArr': '\u21D3',n 'deg': '\u00B0',n
'Delta': '\u0394',n 'delta': '\u03B4',n 'diams': '\u2666',n 'divide': '\u00F7',n 'Eacute': '\u00C9',n 'eacute':
'\u00E9',n 'Ecirc': '\u00CA',n 'ecirc': '\u00EA',n 'Egrave': '\u00C8',n 'egrave': '\u00E8',n 'empty': '\u2205',n
'emsp': '\u2003',n 'ensp': '\u2002',n 'Epsilon': '\u0395',n 'epsilon': '\u03B5',n 'equiv': '\u2261',n 'Eta':
'\u0397',n 'eta': '\u03B7',n 'ETH': '\u00D0',n 'eth': '\u00F0',n 'Euml': '\u00CB',n 'euml': '\u00EB',n 'euro':
'\u20AC',n 'exist': '\u2203',n 'fnof': '\u0192',n 'forall': '\u2200',n 'frac12': '\u00BD',n 'frac14': '\u00BC',n
'frac34': '\u00BE',n 'frasl': '\u2044',n 'Gamma': '\u0393',n 'gamma': '\u03B3',n 'ge': '\u2265',n 'gt': '>',n
'harr': '\u2194',n 'hArr': '\u21D4',n 'hearts': '\u2665',n 'hellip': '\u2026',n 'Iacute': '\u00CD',n 'iacute':
'\u00ED',n 'Icirc': '\u00CE',n 'icirc': '\u00EE',n 'iexcl': '\u00A1',n 'Igrave': '\u00CC',n 'igrave': '\u00EC',n
'image': '\u2111',n 'infin': '\u221E',n 'int': '\u222B',n 'Iota': '\u0399',n 'iota': '\u03B9',n 'iquest': '\u00BF',n
'isin': '\u2208',n 'Iuml': '\u00CF',n 'iuml': '\u00EF',n 'Kappa': '\u039A',n 'kappa': '\u03BA',n 'Lambda':
'\u039B',n 'lambda': '\u03BB',n 'lang': '\u27E8',n 'laquo': '\u00AB',n 'larr': '\u2190',n 'lArr': '\u21D0',n
'lceil': '\u2308',n 'ldquo': '\u201C',n 'le': '\u2264',n 'lfloor': '\u230A',n 'lowast': '\u2217',n 'loz': '\u25CA',n
'lrm': '\u200E',n 'lsaquo': '\u2039',n 'lsquo': '\u2018',n 'lt': '<',n 'macr': '\u00AF',n 'mdash': '\u2014',n
'micro': '\u00B5',n 'middot': '\u00B7',n 'minus': '\u2212',n 'Mu': '\u039C',n 'mu': '\u03BC',n 'nabla':
'\u2207',n 'nbsp': '\u00A0',n 'ndash': '\u2013',n 'ne': '\u2260',n 'ni': '\u220B',n 'not': '\u00AC',n 'notin':
'\u2209',n 'nsub': '\u2284',n 'Ntilde': '\u00D1',n 'ntilde': '\u00F1',n 'Nu': '\u039D',n 'nu': '\u03BD',n
'Oacute': '\u00D3',n 'oacute': '\u00F3',n 'Ocirc': '\u00D4',n 'ocirc': '\u00F4',n 'OElig': '\u0152',n 'oelig':
'\u0153',n 'Ograve': '\u00D2',n 'ograve': '\u00F2',n 'oline': '\u203E',n 'Omega': '\u0399',n 'omega':
'\u03C9',n 'Omicron': '\u039F',n 'omicron': '\u03BF',n 'oplus': '\u2295',n 'or': '\u2228',n 'ordf': '\u00AA',n
'ordm': '\u00BA',n 'Oslash': '\u00D8',n 'oslash': '\u00F8',n 'Otilde': '\u00D5',n 'otilde': '\u00F5',n 'otimes':
'\u2297',n 'Ouml': '\u00D6',n 'ouml': '\u00F6',n 'para': '\u00B6',n 'perml': '\u2030',n 'perp': '\u22A5',n
'Phi': '\u0396',n 'phi': '\u03C6',n 'Pi': '\u0390',n 'pi': '\u03C0',n 'piv': '\u03D6',n 'plusmn': '\u00B1',n
'pound': '\u00A3',n 'prime': '\u2032',n 'Prime': '\u2033',n 'prod': '\u220F',n 'prop': '\u221D',n 'Psi':
'\u0398',n 'psi': '\u03C8',n 'quot': '\u0022',n 'radic': '\u221A',n 'rang': '\u27E9',n 'raquo': '\u00BB',n 'rarr':
'\u2192',n 'rArr': '\u21D2',n 'rceil': '\u2309',n 'rdquo': '\u201D',n 'real': '\u211C',n 'reg': '\u00AE',n 'rfloor':
'\u230B',n 'Rho': '\u0391',n 'rho': '\u03C1',n 'rlm': '\u200F',n 'rsaquo': '\u203A',n 'rsquo': '\u2019',n

```

'sbquo': '\u201A',\n 'Scaron': '\u0160',\n 'scaron': '\u0161',\n 'sdot': '\u22C5',\n 'sect': '\u00A7',\n 'shy': '\u00AD',\n 'Sigma': '\u03A3',\n 'sigma': '\u03C3',\n 'sigmaf': '\u03C2',\n 'sim': '\u223C',\n 'spades': '\u2660',\n 'sub': '\u2282',\n 'sube': '\u2286',\n 'sum': '\u2211',\n 'sup': '\u2283',\n 'sup1': '\u00B9',\n 'sup2': '\u00B2',\n 'sup3': '\u00B3',\n 'supe': '\u2287',\n 'szlig': '\u00DF',\n 'Tau': '\u03A4',\n 'tau': '\u03C4',\n 'there4': '\u2234',\n 'Theta': '\u0398',\n 'theta': '\u03B8',\n 'thetasym': '\u03D1',\n 'thinsp': '\u2009',\n 'THORN': '\u00DE',\n 'thorn': '\u00FE',\n 'tilde': '\u02DC',\n 'times': '\u00D7',\n 'trade': '\u2122',\n 'Uacute': '\u00DA',\n 'uacute': '\u00FA',\n 'uarr': '\u2191',\n 'uArr': '\u21D1',\n 'Ucirc': '\u00DB',\n 'ucirc': '\u00FB',\n 'Ugrave': '\u00D9',\n 'ugrave': '\u00F9',\n 'uml': '\u00A8',\n 'upsih': '\u03D2',\n 'Upsilon': '\u03A5',\n 'upsilon': '\u03C5',\n 'Uuml': '\u00DC',\n 'uuml': '\u00FC',\n 'weierp': '\u2118',\n 'Xi': '\u039E',\n 'xi': '\u03BE',\n 'Yacute': '\u00DD',\n 'yacute': '\u00FD',\n 'yen': '\u00A5',\n 'yuml': '\u00FF',\n 'Yuml': '\u0178',\n 'Zeta': '\u0396',\n 'zeta': '\u03B6',\n 'zwnj': '\u200D',\n 'zwnj': '\u200C',\n};\n\n// The pseudo-entity is denoting a space. see:\n//

[https://github.com/dart-](https://github.com/dart-lang/angular/blob/0bb611387d29d65b5af7f9d2515ab571fd3fbee4/_tests/test/compiler/preserve_whitespace_test.dart)

```
lang/angular/blob/0bb611387d29d65b5af7f9d2515ab571fd3fbee4/_tests/test/compiler/preserve_whitespace_test.dart\n\nexport const NGSP_UNICODE = '\uE500';\n\nexport const NAMED_ENTITIES['ngsp'] = NGSP_UNICODE;\n\n * @license\n * Copyright Google LLC All Rights Reserved.\n * Use of this source code is governed by an MIT-style license that can be\n * found in the LICENSE file at https://angular.io/license\n */\nimport
```

```
{TagContentType, TagDefinition} from './tags';\n\nexport class HtmlTagDefinition implements TagDefinition {\n  private closedByChildren: {[key: string]: boolean} = {};\n  closedByParent: boolean = false;\n  implicitNamespacePrefix: string|null;\n  contentType: TagContentType;\n  isVoid: boolean;\n  ignoreFirstLf: boolean;\n  canSelfClose: boolean = false;\n  preventNamespaceInheritance: boolean;\n\n  constructor({\n    closedByChildren,\n    implicitNamespacePrefix,\n    contentType = TagContentType.PARSABLE_DATA,\n    closedByParent = false,\n    isVoid = false,\n    ignoreFirstLf = false,\n    preventNamespaceInheritance = false\n  }:\n    {\n      closedByChildren?: string[],\n      closedByParent?: boolean,\n      implicitNamespacePrefix?: string,\n      contentType?: TagContentType,\n      isVoid?: boolean,\n      ignoreFirstLf?: boolean,\n      preventNamespaceInheritance?: boolean\n    } = {})\n    {\n      if (closedByChildren && closedByChildren.length > 0) {\n        closedByChildren.forEach(tagName => this.closedByChildren[tagName] = true);\n      }\n      this.isVoid = isVoid;\n      this.closedByParent = closedByParent || isVoid;\n      this.implicitNamespacePrefix = implicitNamespacePrefix || null;\n      this.contentType = contentType;\n      this.ignoreFirstLf = ignoreFirstLf;\n      this.preventNamespaceInheritance = preventNamespaceInheritance;\n    }\n\n  isClosedByChild(name: string): boolean {\n    return this.isVoid || name.toLowerCase() in this.closedByChildren;\n  }\n}\n\nlet\n\n_DEFAULT_TAG_DEFINITION!: HtmlTagDefinition;\n\n// see
```

<http://www.w3.org/TR/html51/syntax.html#optional-tags>// This implementation does not fully conform to the

```
HTML5 spec.\n\nlet TAG_DEFINITIONS!: {[key: string]: HtmlTagDefinition};\n\nexport function\n\ngetHtmlTagDefinition(tagName: string): HtmlTagDefinition {\n  if (!TAG_DEFINITIONS) {\n    _DEFAULT_TAG_DEFINITION = new HtmlTagDefinition();\n    TAG_DEFINITIONS = {\n      'base': new HtmlTagDefinition({isVoid: true}),\n      'meta': new HtmlTagDefinition({isVoid: true}),\n      'area': new HtmlTagDefinition({isVoid: true}),\n      'embed': new HtmlTagDefinition({isVoid: true}),\n      'link': new HtmlTagDefinition({isVoid: true}),\n      'img': new HtmlTagDefinition({isVoid: true}),\n      'input': new HtmlTagDefinition({isVoid: true}),\n      'param': new HtmlTagDefinition({isVoid: true}),\n      'hr': new HtmlTagDefinition({isVoid: true}),\n      'br': new HtmlTagDefinition({isVoid: true}),\n      'source': new HtmlTagDefinition({isVoid: true}),\n      'track': new HtmlTagDefinition({isVoid: true}),\n      'wbr': new HtmlTagDefinition({isVoid: true}),\n      'p': new HtmlTagDefinition({\n        closedByChildren: [\n          'address',\n          'article',\n          'aside',\n          'blockquote',\n          'div',\n          'dl',\n          'fieldset',\n          'footer',\n          'form',\n          'h1',\n          'h2',\n          'h3',\n          'h4',\n          'h5',\n          'h6',\n          'header',\n          'hgroup',\n          'hr',\n          'main',\n          'nav',\n          'ol',\n          'p',\n          'pre',\n          'section',\n          'table',\n          'ul'\n        ],\n        closedByParent: true\n      }),\n      'thead': new HtmlTagDefinition({closedByChildren: ['tbody', 'tfoot']}),\n      'tbody': new HtmlTagDefinition({closedByChildren: ['tbody', 'tfoot'], closedByParent: true}),\n      'tfoot': new HtmlTagDefinition({closedByChildren: ['tbody'], closedByParent: true}),\n      'tr': new HtmlTagDefinition({closedByChildren: ['tr'], closedByParent: true}),\n      'td': new
```

```

HtmlTagDefinition({closedByChildren: ['td', 'th'], closedByParent: true}),\n  'th': new
HtmlTagDefinition({closedByChildren: ['td', 'th'], closedByParent: true}),\n  'col': new
HtmlTagDefinition({isVoid: true}),\n  'svg': new HtmlTagDefinition({implicitNamespacePrefix: 'svg'}),\n
'foreignObject': new HtmlTagDefinition({\n    // Usually the implicit namespace here would be redundant since it
will be inherited from\n    // the parent `svg`, but we have to do it for `foreignObject`, because the way the
parser\n    // works is that the parent node of an end tag is its own start tag which means that\n    // the
`preventNamespaceInheritance` on `foreignObject` would have it default to the\n    // implicit namespace which is
`html`, unless specified otherwise.\n    implicitNamespacePrefix: 'svg',\n    // We want to prevent children of
foreignObject from inheriting its namespace, because\n    // the point of the element is to allow nodes from other
namespaces to be inserted.\n    preventNamespaceInheritance: true,\n  })),\n  'math': new
HtmlTagDefinition({implicitNamespacePrefix: 'math'}),\n  'li': new HtmlTagDefinition({closedByChildren: ['li'],
closedByParent: true}),\n  'dt': new HtmlTagDefinition({closedByChildren: ['dt', 'dd']}),\n  'dd': new
HtmlTagDefinition({closedByChildren: ['dt', 'dd'], closedByParent: true}),\n  'rb': new HtmlTagDefinition(\n
{closedByChildren: ['rb', 'rt', 'rtc', 'rp'], closedByParent: true}),\n  'rt': new HtmlTagDefinition(\n
{closedByChildren: ['rb', 'rt', 'rtc', 'rp'], closedByParent: true}),\n  'rtc': new
HtmlTagDefinition({closedByChildren: ['rb', 'rt', 'rtc', 'rp'], closedByParent: true}),\n  'rp': new HtmlTagDefinition(\n
{closedByChildren: ['rb', 'rt', 'rtc', 'rp'], closedByParent: true}),\n  'optgroup': new
HtmlTagDefinition({closedByChildren: ['optgroup'], closedByParent: true}),\n  'option':\n    new
HtmlTagDefinition({closedByChildren: ['option', 'optgroup'], closedByParent: true}),\n  'pre': new
HtmlTagDefinition({ignoreFirstLf: true}),\n  'listing': new HtmlTagDefinition({ignoreFirstLf: true}),\n  'style':
new HtmlTagDefinition({contentType: TagContentType.RAW_TEXT}),\n  'script': new
HtmlTagDefinition({contentType: TagContentType.RAW_TEXT}),\n  'title': new
HtmlTagDefinition({contentType: TagContentType.ESCAPABLE_RAW_TEXT}),\n  'textarea': new
HtmlTagDefinition(\n    {contentType: TagContentType.ESCAPABLE_RAW_TEXT, ignoreFirstLf: true}),\n
};\n }\n // We have to make both a case-sensitive and a case-insensitive lookup, because\n // HTML tag names are
case insensitive, whereas some SVG tags are case sensitive.\n return TAG_DEFINITIONS[tagName] ??
TAG_DEFINITIONS[tagName.toLowerCase()] ??\n  _DEFAULT_TAG_DEFINITION;\n}\n\n"/>**\n *
@license\n * Copyright Google LLC All Rights Reserved.\n * *\n * Use of this source code is governed by an MIT-
style license that can be\n * found in the LICENSE file at https://angular.io/license\n * *\n\nimport
{getHtmlTagDefinition} from './ml_parser/html_tags';\n\nconst _SELECTOR_REGEXP = new RegExp(\n
'\\\\\\\\\\\\\\\\:not\\\\\\\\\\\\\\\\()'+\n    // 1: ":".not("\\n    '([\\\\\\\\\\\\\\\\|\\\\\\\\\\\\\\\\#]?)[-\\\\\\\\\\\\\\\\w+]'+ // 2: "tag"; 3: "\\.\\.\\.\\.\\.#";\n    // "\-\" should
appear first in the regexp below as FF31 parses "[.-\\\\\\\\w]" as a range\n    // 4: attribute; 5: attribute_string; 6:
attribute_value\n    '(?:\\\\\\\\\\\\\\\\[[-.\\\\\\\\w*]+](?:=[\\\\\\\\\\\\\\\\'']?([\\\\\\\\\\\\\\\\|\\\\\\\\\\\\\\\\'']*\\\\\\\\\\\\\\\\5)?\\\\\\\\\\\\\\\\)'+ // "[name]", "[name=value]",\n
// "[name='value']"\n    // "\n    '\\[name='value']"' +\n    '\\(\\\\\\\\\\\\\\\\)'+\n    // 7: ")"\n    '\\(\\\\\\\\\\\\\\\\s*\\\\\\\\\\\\\\\\s*)',\n
// 8: "\,","\n  'g');\n\n/**\n * These offsets should match the match-groups in `_SELECTOR_REGEXP`\n
offsets.\n * *\n\nconst enum SelectorRegexp {\n  ALL = 0, // The whole match\n  NOT = 1,\n  TAG = 2,\n  PREFIX =
3,\n  ATTRIBUTE = 4,\n  ATTRIBUTE_STRING = 5,\n  ATTRIBUTE_VALUE = 6,\n  NOT_END = 7,\n  SEPARATOR = 8,\n}\n\n/**\n * A css selector contains an element name,\n * css classes and attribute/value pairs
with the purpose\n * of selecting subsets out of them.\n * *\n\nexport class CssSelector {\n  element: string|null =
null;\n  classNames: string[] = [];\n  /**\n   * The selectors are encoded in pairs where:\n   * - even locations are
attribute names\n   * - odd locations are attribute values.\n   * *\n   * Example:\n   * Selector: `[key1=value1][key2`
would parse to:\n   * `"\n   * ["key1", 'value1', 'key2', "]\n   * `"\n   * *\n   * attrs: string[] = [];\n   * notSelectors:
CssSelector[] = [];\n\n  static parse(selector: string): CssSelector[] {\n    const results: CssSelector[] = [];\n    const
_addResult = (res: CssSelector[], cssSel: CssSelector) => {\n      if (cssSel.notSelectors.length > 0 &&\n        !cssSel.element && cssSel.classNames.length == 0 &&\n          cssSel.attrs.length == 0) {\n        cssSel.element =
*';\n      }\n      res.push(cssSel);\n    };\n    let cssSelector = new CssSelector();\n    let match: string[]|null; let
current = cssSelector;\n    let inNot = false;\n    _SELECTOR_REGEXP.lastIndex = 0;\n    while (match =

```

```

_SELECTOR_REGEX.exec(selector)) {\n  if (match[SelectorRegexp.NOT]) {\n    if (inNot) {\n      throw
new Error('Nesting :not in a selector is not allowed');\n    }\n    inNot = true;\n    current = new
CssSelector();\n    cssSelector.notSelectors.push(current);\n  }\n  const tag = match[SelectorRegexp.TAG];\n  if (tag) {\n    const prefix = match[SelectorRegexp.PREFIX];\n    if (prefix === '#') {\n      // #hash\n      current.addAttribute('id', tag.substr(1));\n    } else if (prefix === '.') {\n      // Class\n      current.addClassName(tag.substr(1));\n    } else {\n      // Element\n      current.setElement(tag);\n    }\n  }\n  const attribute = match[SelectorRegexp.ATTRIBUTE];\n  if (attribute) {\n    current.addAttribute(attribute, match[SelectorRegexp.ATTRIBUTE_VALUE]);\n  }\n  if
(match[SelectorRegexp.NOT_END]) {\n    inNot = false;\n    current = cssSelector;\n  }\n  if
(match[SelectorRegexp.SEPARATOR]) {\n    if (inNot) {\n      throw new Error('Multiple selectors in :not are
not supported');\n    }\n    _addResult(results, cssSelector);\n    cssSelector = current = new CssSelector();\n  }\n  _addResult(results, cssSelector);\n  return results;\n}\n\n isElementSelector(): boolean {\n  return
this.hasElementSelector() && this.classNames.length === 0 && this.attrs.length === 0 &&\n
this.notSelectors.length === 0;\n}\n\n hasElementSelector(): boolean {\n  return !!this.element;\n}\n\n
setElement(element: string|null = null) {\n  this.element = element;\n}\n\n /** Gets a template string for an
element that matches the selector. */\n getMatchingElementTemplate(): string {\n  const tagName = this.element ||
'div';\n  const classAttr = this.classNames.length > 0 ? `class="${this.classNames.join(' ')}" ` : '';\n  let attrs =
'';\n  for (let i = 0; i < this.attrs.length; i += 2) {\n    const attrName = this.attrs[i];\n    const attrValue =
this.attrs[i + 1] !== ' ? `=${this.attrs[i + 1]}" ` : '';\n    attrs += ` ${attrName} ${attrValue}`;\n  }\n  return
getHtmlTagDefinition(tagName).isVoid ? `<${tagName} ${classAttr} ${attrs}>` :\n
`<${tagName} ${classAttr} ${attrs}></${tagName}>`;\n}\n\n getAttrs(): string[] {\n  const result: string[] = [];\n  if
(this.classNames.length > 0) {\n    result.push('class', this.classNames.join(' '));\n  }\n  return
result.concat(this.attrs);\n}\n\n addAttribute(name: string, value: string = '') {\n  this.attrs.push(name, value &&
value.toLowerCase() || '');\n}\n\n addClassName(name: string) {\n  this.classNames.push(name.toLowerCase());\n}\n\n
toString(): string {\n  let res: string = this.element || '';\n  if
(this.classNames) {\n    this.classNames.forEach(klass => res += `.${klass}`);\n  }\n  if (this.attrs) {\n    for (let
i = 0; i < this.attrs.length; i += 2) {\n      const name = this.attrs[i];\n      const value = this.attrs[i + 1];\n      res +=
` ${name} ${value ? '=' + value : ''}`;\n    }\n  }\n  this.notSelectors.forEach(notSelector => res +=
` :not(${notSelector})`);\n  return res;\n}\n\n/**\n * Reads a list of CssSelectors and allows to calculate which
ones\n * are contained in a given CssSelector.\n */\nexport class SelectorMatcher<T = any> {\n  static
createNotMatcher(notSelectors: CssSelector[]): SelectorMatcher<null> {\n    const notMatcher = new
SelectorMatcher<null>();\n    notMatcher.addSelectable(notSelectors, null);\n    return notMatcher;\n  }\n  private
_elementMap = new Map<string, SelectorContext<T>[]>();\n  private _elementPartialMap = new Map<string,
SelectorMatcher<T>>[]>();\n  private _classMap = new Map<string, SelectorContext<T>[]>();\n  private
_classPartialMap = new Map<string, SelectorMatcher<T>>[]>();\n  private _attrValueMap = new Map<string,
Map<string, SelectorContext<T>[]>>[]>();\n  private _attrValuePartialMap = new Map<string, Map<string,
SelectorMatcher<T>>>[]>();\n  private _listContexts: SelectorListContext[] = [];\n  addSelectable(cssSelectors:
CssSelector[], callbackCtx: T) {\n    let listContext: SelectorListContext = null!;\n    if (cssSelectors.length > 1) {\n
      listContext = new SelectorListContext(cssSelectors);\n      this._listContexts.push(listContext);\n    }\n    for (let i
= 0; i < cssSelectors.length; i++) {\n      this._addSelectable(cssSelectors[i], callbackCtx as T, listContext);\n    }\n  }\n  /**\n   * Add an object that can be found later on by calling `match`.\n   * @param cssSelector A css
selector\n   * @param callbackCtx An opaque object that will be given to the callback of the `match` function\n   */\n  private _addSelectable(\n    cssSelector: CssSelector, callbackCtx: T, listContext: SelectorListContext) {\n    let
matcher: SelectorMatcher<T> = this;\n    const element = cssSelector.element;\n    const classNames =
cssSelector.classNames;\n    const attrs = cssSelector.attrs;\n    const selectable = new SelectorContext(cssSelector,
callbackCtx, listContext);\n    if (element) {\n      const isTerminal = attrs.length === 0 && classNames.length
=== 0;\n      if (isTerminal) {\n        this._addTerminal(matcher._elementMap, element, selectable);\n      } else {\n
matcher = this._addPartial(matcher._elementPartialMap, element);\n      }\n    }\n    if (classNames) {\n      for

```

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(let i = 0; i < classNames.length; i++) {\n    const isTerminal = attrs.length === 0 && i === classNames.length -
1;\n    const className = classNames[i];\n    if (isTerminal) {\n        this._addTerminal(matcher._classMap,
className, selectable);\n    } else {\n        matcher = this._addPartial(matcher._classPartialMap, className);\n    }\n}\n\nif (attrs) {\n    for (let i = 0; i < attrs.length; i += 2) {\n        const isTerminal = i ===
attrs.length - 2;\n        const name = attrs[i];\n        const value = attrs[i + 1];\n        if (isTerminal) {\n            const
terminalMap = matcher._attrValueMap;\n            let terminalValuesMap = terminalMap.get(name);\n            if
(!terminalValuesMap) {\n                terminalValuesMap = new Map<string, SelectorContext<T>[]>();\n                terminalMap.set(name, terminalValuesMap);\n            }\n            this._addTerminal(terminalValuesMap, value,
selectable);\n        } else {\n            const partialMap = matcher._attrValuePartialMap;\n            let partialValuesMap =
partialMap.get(name);\n            if (!partialValuesMap) {\n                partialValuesMap = new Map<string,
SelectorMatcher<T>>();\n                partialMap.set(name, partialValuesMap);\n            }\n            matcher =
this._addPartial(partialValuesMap, value);\n        }\n    }\n}\n\nprivate _addTerminal(\n    map:
Map<string, SelectorContext<T>[]>, name: string, selectable: SelectorContext<T>) {\n    let terminalList =
map.get(name);\n    if (!terminalList) {\n        terminalList = [];\n        map.set(name, terminalList);\n    }\n    terminalList.push(selectable);\n}\n\nprivate _addPartial(map: Map<string, SelectorMatcher<T>>, name: string):
SelectorMatcher<T> {\n    let matcher = map.get(name);\n    if (!matcher) {\n        matcher = new
SelectorMatcher<T>();\n        map.set(name, matcher);\n    }\n    return matcher;\n}\n\n/**\n * Find the objects
that have been added via `addSelectable`\n * whose css selector is contained in the given css selector.\n *
@param cssSelector A css selector\n * @param matchedCallback This callback will be called with the object
handed into `addSelectable`\n * @return boolean true if a match was found\n */\nmatch(cssSelector:
CssSelector, matchedCallback: ((c: CssSelector, a: T) => void)|null): boolean {\n    let result = false;\n    const
element = cssSelector.element!;\n    const classNames = cssSelector.classNames;\n    const attrs =
cssSelector.attrs;\n\n    for (let i = 0; i < this._listContexts.length; i++) {\n        this._listContexts[i].alreadyMatched =
false;\n    }\n\n    result = this._matchTerminal(this._elementMap, element, cssSelector, matchedCallback) || result;\n\n    result = this._matchPartial(this._elementPartialMap, element, cssSelector, matchedCallback) ||\n    result;\n\n    if (classNames) {\n        for (let i = 0; i < classNames.length; i++) {\n            const className = classNames[i];\n            result =\n                this._matchTerminal(this._classMap, className, cssSelector, matchedCallback) || result;\n            result =\n                this._matchPartial(this._classPartialMap, className, cssSelector, matchedCallback) ||\n            result;\n        }\n    }\n\n    if (attrs) {\n        for (let i = 0; i < attrs.length; i += 2) {\n            const name = attrs[i];\n            const value = attrs[i + 1];\n            const terminalValuesMap = this._attrValueMap.get(name)!;\n            if (value) {\n                result =\n                    this._matchTerminal(terminalValuesMap, value, cssSelector, matchedCallback) || result;\n            }\n            result =\n                this._matchTerminal(terminalValuesMap, value, cssSelector, matchedCallback) || result;\n        }\n    }\n\n    const partialValuesMap = this._attrValuePartialMap.get(name)!;\n    if (value) {\n        result =
this._matchPartial(partialValuesMap, value, cssSelector, matchedCallback) || result;\n    }\n\n    result =\n        this._matchPartial(partialValuesMap, value, cssSelector, matchedCallback) || result;\n    }\n}\n\nreturn result;\n}\n\n/** @internal */\n_matchTerminal(\n    map: Map<string, SelectorContext<T>[]>, name: string,
cssSelector: CssSelector,\n    matchedCallback: ((c: CssSelector, a: any) => void)|null): boolean {\n    if (!map ||
typeof name !== 'string') {\n        return false;\n    }\n\n    let selectables: SelectorContext<T>[] = map.get(name) ||
[];\n    const starSelectables: SelectorContext<T>[] = map.get('*')!;\n    if (starSelectables) {\n        selectables =
selectables.concat(starSelectables);\n    }\n\n    if (selectables.length === 0) {\n        return false;\n    }\n\n    let selectable:
SelectorContext<T>;\n    let result = false;\n    for (let i = 0; i < selectables.length; i++) {\n        selectable =
selectables[i];\n        result = selectable.finalize(cssSelector, matchedCallback) || result;\n    }\n\n    return result;\n}\n\n/** @internal */\n_matchPartial(\n    map: Map<string, SelectorMatcher<T>>, name: string, cssSelector:
CssSelector,\n    matchedCallback: ((c: CssSelector, a: any) => void)|null): boolean {\n    if (!map || typeof name
!== 'string') {\n        return false;\n    }\n\n    const nestedSelector = map.get(name);\n    if (!nestedSelector) {\n        return false;\n    }\n\n    // TODO(perf): get rid of recursion and measure again\n    // TODO(perf): don't pass the
whole selector into the recursion,\n    // but only the not processed parts\n    return nestedSelector.match(cssSelector,
matchedCallback);\n}\n}\n\nexport class SelectorListContext {\n    alreadyMatched: boolean = false;\n}

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constructor(public selectors: CssSelector[]) {}
}

// Store context to pass back selector and context when a
// selector is matched
export class SelectorContext<T = any> {
  notSelectors: CssSelector[];

  constructor(
    public selector: CssSelector,
    public cbContext: T,
    public listContext: SelectorListContext
  ) {
    this.notSelectors =
      selector.notSelectors;
  }

  finalize(cssSelector: CssSelector, callback: ((c: CssSelector, a: T) => void)|null):
  boolean {
    let result = true;
    if (this.notSelectors.length > 0 && (!this.listContext ||
      !this.listContext.alreadyMatched)) {
      const notMatcher =
        SelectorMatcher.createNotMatcher(this.notSelectors);
      result = !notMatcher.match(cssSelector, null);
    }
    if (result && callback && (!this.listContext || !this.listContext.alreadyMatched)) {
      if (this.listContext) {
        this.listContext.alreadyMatched = true;
      }
      callback(this.selector, this.cbContext);
    }
    return result;
  }
}

/**
 * @license
 * Copyright Google LLC All Rights Reserved.
 * Use of this source code is
 * governed by an MIT-style license that can be
 * found in the LICENSE file at https://angular.io/license
 */

// This file duplicates types and values from @angular/core
// so that we are able to make
// @angular/compiler independent of @angular/core.
// This is important to prevent a build cycle, as @angular/core
// needs to
// be compiled with the compiler.
import {CssSelector} from './selector';
export interface Inject {
  token: any;
}
export const createInject = makeMetadataFactory<Inject>('Inject', (token: any) =>
  ({token}));
export const createInjectionToken = makeMetadataFactory<object>(\n 'InjectionToken', (desc:
  string) => ({_desc: desc, prov: undefined}));
export interface Attribute {
  attributeName: string;
}
export const createAttribute = \n makeMetadataFactory<Attribute>('Attribute', (attributeName: string) =>
  ({attributeName}));
export interface Query {
  descendants: boolean;
  first: boolean;
  read: any;
  isViewQuery: boolean;
  selector: any;
  static?: boolean;
}
export const createContentChildren =
  makeMetadataFactory<Query>(\n 'ContentChildren', \n (selector?: any, data: any = {}) => \n ({selector, first:
  false, isViewQuery: false, descendants: false, ...data}));
export const createContentChild =
  makeMetadataFactory<Query>(\n 'ContentChild', \n (selector?: any, data: any = {}) => \n ({selector, first:
  true, isViewQuery: false, descendants: true, ...data}));
export const createViewChildren =
  makeMetadataFactory<Query>(\n 'ViewChildren', \n (selector?: any, data: any = {}) => \n ({selector, first:
  false, isViewQuery: true, descendants: true, ...data}));
export const createViewChild =
  makeMetadataFactory<Query>(\n 'ViewChild', \n (selector: any, data: any) => \n ({selector, first: true,
  isViewQuery: true, descendants: true, ...data}));
export interface Directive {
  selector?: string;
  inputs?:
  string[];
  outputs?: string[];
  host?: {[key: string]: string};
  providers?: Provider[];
  exportAs?: string;
  queries?: {[key: string]: any};
  guards?: {[key: string]: any};
}
export const createDirective = \n
  makeMetadataFactory<Directive>('Directive', (dir: Directive = {}) => dir);
export interface Component extends
  Directive {
  changeDetection?: ChangeDetectionStrategy;
  viewProviders?: Provider[];
  moduleId?: string;
  templateUrl?: string;
  template?: string;
  styleUrls?: string[];
  styles?: string[];
  animations?: any[];
  encapsulation?: ViewEncapsulation;
  interpolation?: [string, string];
  entryComponents?: Array<Type<any[]>;
  preserveWhitespaces?: boolean;
}
export enum ViewEncapsulation {
  Emulated = 0, // Historically the 1
  value was for `Native` encapsulation which has been removed as of v11.
  None = 2,
  ShadowDom =
  3
}
export enum ChangeDetectionStrategy {
  OnPush = 0,
  Default = 1
}
export const createComponent =
  makeMetadataFactory<Component>(\n 'Component', (c: Component = {}) => ({changeDetection:
  ChangeDetectionStrategy.Default, ...c}));
export interface Pipe {
  name: string;
  pure?: boolean;
}
export const createPipe = makeMetadataFactory<Pipe>('Pipe', (p: Pipe) => ({pure: true, ...p}));
export interface Input {
  bindingPropertyName?: string;
}
export const createInput = \n makeMetadataFactory<Input>('Input',
  (bindingPropertyName?: string) => ({bindingPropertyName}));
export interface Output {
  bindingPropertyName?: string;
}
export const createOutput = makeMetadataFactory<Output>(\n 'Output',
  (bindingPropertyName?: string) => ({bindingPropertyName}));
export interface HostBinding {
  hostPropertyName?: string;
}
export const createHostBinding = makeMetadataFactory<HostBinding>(\n
  'HostBinding', (hostPropertyName?: string) => ({hostPropertyName}));
export interface HostListener {
  eventName?: string;
  args?: string[];
}
export const createHostListener =
  makeMetadataFactory<HostListener>(\n 'HostListener', (eventName?: string, args?: string[]) => ({eventName,

```

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args));\n\nexport interface NgModule {\n  providers?: Provider[];\n  declarations?: Array<Type|any[]>;\n  imports?: Array<Type|ModuleWithProviders|any[]>;\n  exports?: Array<Type|any[]>;\n  entryComponents?:\n  Array<Type|any[]>;\n  bootstrap?: Array<Type|any[]>;\n  schemas?: Array<SchemaMetadata|any[]>;\n  id?:\n  string;\n}\n\nexport const createNgModule =\n  makeMetadataFactory<NgModule>('NgModule', (ngModule:\n  NgModule) => ngModule);\n\nexport interface ModuleWithProviders {\n  ngModule: Type;\n  providers?:\n  Provider[];\n}\n\nexport interface Injectable {\n  providedIn?: Type|'root'|any;\n  useClass?: Type|any;\n  useExisting?: Type|any;\n  useValue?: any;\n  useFactory?: Type|any;\n  deps?: Array<Type|any[]>;\n}\n\nexport\n  const createInjectable =\n  makeMetadataFactory('Injectable', (injectable: Injectable = {}) => injectable);\n\nexport\n  interface SchemaMetadata {\n  name: string;\n}\n\nexport const CUSTOM_ELEMENTS_SCHEMA:\n  SchemaMetadata = {\n  name: 'custom-elements'\n};\n\nexport const NO_ERRORS_SCHEMA: SchemaMetadata =\n  {\n  name: 'no-errors-schema'\n};\n\nexport const createOptional = makeMetadataFactory('Optional');\nexport const\n  createSelf = makeMetadataFactory('Self');\nexport const createSkipSelf = makeMetadataFactory('SkipSelf');\nexport\n  const createHost = makeMetadataFactory('Host');\n\nexport interface Type extends Function {\n  new(...args: any[]):\n  any;\n}\n\nexport const Type = Function;\n\nexport enum SecurityContext {\n  NONE = 0,\n  HTML = 1,\n  STYLE\n  = 2,\n  SCRIPT = 3,\n  URL = 4,\n  RESOURCE_URL = 5,\n}\n\nexport type Provider = any;\n\nexport const enum\n  NodeFlags {\n  None = 0,\n  TypeElement = 1 << 0,\n  TypeText = 1 << 1,\n  ProjectedTemplate = 1 << 2,\n  CatRenderNode = TypeElement | TypeText,\n  TypeNgContent = 1 << 3,\n  TypePipe = 1 << 4,\n  TypePureArray =\n  1 << 5,\n  TypePureObject = 1 << 6,\n  TypePurePipe = 1 << 7,\n  CatPureExpression = TypePureArray |  
  TypePureObject | TypePurePipe,\n  TypeValueProvider = 1 << 8,\n  TypeClassProvider = 1 << 9,\n  TypeFactoryProvider = 1 << 10,\n  TypeUseExistingProvider = 1 << 11,\n  LazyProvider = 1 << 12,\n  PrivateProvider = 1 << 13,\n  TypeDirective = 1 << 14,\n  Component = 1 << 15,\n  CatProviderNoDirective =\n  TypeValueProvider | TypeClassProvider | TypeFactoryProvider | TypeUseExistingProvider,\n  CatProvider =\n  CatProviderNoDirective | TypeDirective,\n  OnInit = 1 << 16,\n  OnDestroy = 1 << 17,\n  DoCheck = 1 << 18,\n  OnChanges = 1 << 19,\n  AfterContentInit = 1 << 20,\n  AfterContentChecked = 1 << 21,\n  AfterViewInit = 1 <<\n  22,\n  AfterViewChecked = 1 << 23,\n  EmbeddedViews = 1 << 24,\n  ComponentView = 1 << 25,\n  TypeContentQuery = 1 << 26,\n  TypeViewQuery = 1 << 27,\n  StaticQuery = 1 << 28,\n  DynamicQuery = 1 <<\n  29,\n  TypeModuleProvider = 1 << 30,\n  CatQuery = TypeContentQuery | TypeViewQuery,\n\n  // mutually\n  exclusive values...\n  Types = CatRenderNode | TypeNgContent | TypePipe | CatPureExpression | CatProvider |  
  CatQuery\n}\n\nexport const enum DepFlags {\n  None = 0,\n  SkipSelf = 1 << 0,\n  Optional = 1 << 1,\n  Self = 1\n  << 2,\n  Value = 1 << 3,\n}\n\n/**\n * Injection flags for DI.\n */\nexport const enum InjectFlags {\n  Default =\n  0,\n\n  /**\n   * Specifies that an injector should retrieve a dependency from any injector until reaching the\n   * host\n   * element of the current component. (Only used with Element Injector)\n   */\n  Host = 1 << 0,\n\n  /**\n   * Don't descend\n   * into ancestors of the node requesting injection.\n   */\n  Self = 1 << 1,\n\n  /**\n   * Skip the node that is requesting injection.\n   */\n  SkipSelf = 1 << 2,\n\n  /**\n   * Inject `defaultValue` instead if token not found.\n   */\n  Optional = 1 << 3,\n}\n\nexport\n  const enum ArgumentType {\n  Inline = 0,\n  Dynamic = 1\n}\n\nexport const enum BindingFlags {\n  TypeElementAttribute = 1 << 0,\n  TypeElementClass = 1 << 1,\n  TypeElementStyle = 1 << 2,\n  TypeProperty = 1\n  << 3,\n  SyntheticProperty = 1 << 4,\n  SyntheticHostProperty = 1 << 5,\n  CatSyntheticProperty =\n  SyntheticProperty | SyntheticHostProperty,\n\n  // mutually exclusive values...\n  Types = TypeElementAttribute |  
  TypeElementClass | TypeElementStyle | TypeProperty\n}\n\nexport const enum QueryBindingType {\n  First = 0,\n  All = 1\n}\n\nexport const enum QueryValueType {\n  ElementRef = 0,\n  RenderElement = 1,\n  TemplateRef =\n  2,\n  ViewContainerRef = 3,\n  Provider = 4\n}\n\nexport const enum ViewFlags {\n  None = 0,\n  OnPush = 1 <<\n  1,\n}\n\nexport enum MissingTranslationStrategy {\n  Error = 0,\n  Warning = 1,\n  Ignore = 2,\n}\n\nexport\n  interface MetadataFactory<T> {\n  (...args: any[]): T;\n  isTypeOf(obj: any): obj is T;\n  ngMetadataName:\n  string;\n}\n\nfunction makeMetadataFactory<T>(name: string, props?: (...args: any[]) => T): MetadataFactory<T>\n  {\n  // This must be declared as a function, not a fat arrow, so that ES2015 devmode produces code\n  // that works\n  // with the static_reflector.ts in the ViewEngine compiler.\n  // In particular, `_registerDecoratorOrConstructor`\n  // assumes that the value returned here can be\n  // new'ed.\n  function factory(...args: any[]) {\n    const values = props\n    ? props(...args) : {};\n    return {\n      ngMetadataName: name,\n      ...values,\n    };\n  }\n  (factory as

```



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any).isTypeOf = (obj: any) => obj && obj.ngMetadataName === name;\n (factory as any).ngMetadataName =
name;\n return factory as any;\n}\n\nexport interface Route {\n children?: Route[];\n loadChildren?:
string|Type|any;\n}\n\n/**\n * Flags used to generate R3-style CSS Selectors. They are pasted from\n *
core/src/render3/projection.ts because they cannot be referenced directly.\n */\nexport const enum SelectorFlags {\n
/** Indicates this is the beginning of a new negative selector *\n NOT = 0b0001,\n\n /** Mode for matching
attributes *\n ATTRIBUTE = 0b0010,\n\n /** Mode for matching tag names *\n ELEMENT = 0b0100,\n\n /**
Mode for matching class names *\n CLASS = 0b1000,\n}\n\n// These are a copy the CSS types from
core/src/render3/interfaces/projection.ts\n// They are duplicated here as they cannot be directly referenced from
core.\nexport type R3CssSelector = (string|SelectorFlags)[];\nexport type R3CssSelectorList =
R3CssSelector[];\n\nfunction parserSelectorToSimpleSelector(selector: CssSelector): R3CssSelector {\n const
classes = selector.classNames && selector.classNames.length ?\n [SelectorFlags.CLASS, ...selector.classNames]
:\n [];\n const elementName = selector.element && selector.element !== '*' ? selector.element : '';\n return
[elementName, ...selector.attrs, ...classes];\n}\n\nfunction parserSelectorToNegativeSelector(selector: CssSelector):
R3CssSelector {\n const classes = selector.classNames && selector.classNames.length ?\n
[SelectorFlags.CLASS, ...selector.classNames] :\n [];\n\n if (selector.element) {\n return [\n
SelectorFlags.NOT | SelectorFlags.ELEMENT, selector.element, ...selector.attrs, ...classes\n ];\n } else if
(selector.attrs.length) {\n return [SelectorFlags.NOT | SelectorFlags.ATTRIBUTE, ...selector.attrs, ...classes];\n }
else {\n return selector.classNames && selector.classNames.length ?\n [SelectorFlags.NOT |
SelectorFlags.CLASS, ...selector.classNames] :\n [];\n }\n}\n\nfunction parserSelectorToR3Selector(selector:
CssSelector): R3CssSelector {\n const positive = parserSelectorToSimpleSelector(selector);\n const negative:
R3CssSelectorList = selector.notSelectors && selector.notSelectors.length ?\n
selector.notSelectors.map(notSelector => parserSelectorToNegativeSelector(notSelector)) :\n [];\n\n return
positive.concat(...negative);\n}\n\nexport function parseSelectorToR3Selector(selector: string|null):
R3CssSelectorList {\n return selector ? CssSelector.parse(selector).map(parserSelectorToR3Selector) : [];\n}\n\n//
Pasted from render3/interfaces/definition since it cannot be referenced directly\n\n/**\n * Flags passed into template
functions to determine which blocks (i.e. creation, update)\n * should be executed.\n * Typically, a template runs
both the creation block and the update block on initialization and\n * subsequent runs only execute the update block.
However, dynamically created views require that\n * the creation block be executed separately from the update
block (for backwards compat).\n */\nexport const enum RenderFlags {\n /** Whether to run the creation block (e.g.
create elements and directives) *\n Create = 0b01,\n\n /** Whether to run the update block (e.g. refresh bindings)
*\n Update = 0b10\n}\n\n// Pasted from render3/interfaces/node.ts\n\n/**\n * A set of marker values to be used in the
attributes arrays. These markers indicate that some\n * items are not regular attributes and the processing should be
adapted accordingly.\n */\nexport const enum AttributeMarker {\n /**\n * Marker indicates that the following 3
values in the attributes array are:\n * namespaceUri, attributeName, attributeValue\n * in that order.\n */\n
NamespaceURI = 0,\n\n /**\n * Signals class declaration.\n * Each value following `Classes` designates a
class name to include on the element.\n * ## Example:\n * Given:\n * ```\n * <div class="foo bar
baz">...</div>\n * ```\n * the generated code is:\n * ```\n * var _c1 = [AttributeMarker.Classes, 'foo', 'bar',
'baz'];\n * ```\n */\n Classes = 1,\n\n /**\n * Signals style declaration.\n * Each pair of values following
`Styles` designates a style name and value to include on the\n * element.\n * ## Example:\n * Given:\n *
```\n * <div style="width:100px; height:200px; color:red">...</div>\n * ```\n * the generated code is:\n *
```\n * var _c1 = [AttributeMarker.Styles, 'width', '100px', 'height', '200px', 'color', 'red'];\n * ```\n */\n
Styles = 2,\n\n /**\n * Signals that the following attribute names were extracted from input or output bindings.\n *
For example, given the following HTML:\n * Given:\n * ```\n * <div moo="car" [foo]="exp" (bar)="doSth()">\n *
```\n * the generated code is:\n * Given:\n * ```\n * var _c1 = ['moo', 'car', AttributeMarker.Bindings, 'foo',
'bar'];\n * ```\n */\n Bindings = 3,\n\n /**\n * Signals that the following attribute names were hoisted from an
inline-template declaration.\n * For example, given the following HTML:\n * Given:\n * ```\n * <div
*ngFor="let value of values; trackBy:trackBy" dirA [dirB]="value">\n * ```\n * the generated code for the
`template()` instruction would include:\n * Given:\n * ```\n * ['dirA', '', AttributeMarker.Bindings, 'dirB',

```



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abstract isEquivalent(e: Expression): boolean;\n\n /**\n * Return true if the expression is constant.\n */\n
abstract isConstant(): boolean;\n\n prop(name: string, sourceSpan?: ParseSourceSpan|null): ReadPropExpr {\n
return new ReadPropExpr(this, name, null, sourceSpan);\n }\n\n key(index: Expression, type?: Type|null,\n
sourceSpan?: ParseSourceSpan|null): ReadKeyExpr {\n return new ReadKeyExpr(this, index, type, sourceSpan);\n
}\n\n callMethod(name: string|BuiltinMethod, params: Expression[], sourceSpan?: ParseSourceSpan|null):\n
InvokeMethodExpr {\n return new InvokeMethodExpr(this, name, params, null, sourceSpan);\n }\n\n
callFn(params: Expression[], sourceSpan?: ParseSourceSpan|null, pure?: boolean):\n InvokeFunctionExpr {\n
return new InvokeFunctionExpr(this, params, null, sourceSpan, pure);\n }\n\n instantiate(params: Expression[],\n
type?: Type|null, sourceSpan?: ParseSourceSpan|null):\n InstantiateExpr {\n return new InstantiateExpr(this,\n
params, type, sourceSpan);\n }\n\n conditional(\n trueCase: Expression, falseCase: Expression|null = null,\n
sourceSpan?: ParseSourceSpan|null): ConditionalExpr {\n return new ConditionalExpr(this, trueCase, falseCase,\n
null, sourceSpan);\n }\n\n equals(rhs: Expression, sourceSpan?: ParseSourceSpan|null): BinaryOperatorExpr {\n
return new BinaryOperatorExpr(BinaryOperator.Equals, this, rhs, null, sourceSpan);\n }\n\n notEquals(rhs:\n
Expression, sourceSpan?: ParseSourceSpan|null): BinaryOperatorExpr {\n return new\n
BinaryOperatorExpr(BinaryOperator.NotEquals, this, rhs, null, sourceSpan);\n }\n\n identical(rhs: Expression,\n
sourceSpan?: ParseSourceSpan|null): BinaryOperatorExpr {\n return new\n
BinaryOperatorExpr(BinaryOperator.Identical, this, rhs, null, sourceSpan);\n }\n\n notIdentical(rhs: Expression,\n
sourceSpan?: ParseSourceSpan|null): BinaryOperatorExpr {\n return new\n
BinaryOperatorExpr(BinaryOperator.NotIdentical, this, rhs, null, sourceSpan);\n }\n\n minus(rhs: Expression,\n
sourceSpan?: ParseSourceSpan|null): BinaryOperatorExpr {\n return new\n
BinaryOperatorExpr(BinaryOperator.Minus, this, rhs, null, sourceSpan);\n }\n\n plus(rhs: Expression, sourceSpan?:\n
ParseSourceSpan|null): BinaryOperatorExpr {\n return new BinaryOperatorExpr(BinaryOperator.Plus, this, rhs,\n
null, sourceSpan);\n }\n\n divide(rhs: Expression, sourceSpan?: ParseSourceSpan|null): BinaryOperatorExpr {\n
return new BinaryOperatorExpr(BinaryOperator.Divide, this, rhs, null, sourceSpan);\n }\n\n multiply(rhs:\n
Expression, sourceSpan?: ParseSourceSpan|null): BinaryOperatorExpr {\n return new\n
BinaryOperatorExpr(BinaryOperator.Multiply, this, rhs, null, sourceSpan);\n }\n\n modulo(rhs: Expression,\n
sourceSpan?: ParseSourceSpan|null): BinaryOperatorExpr {\n return new\n
BinaryOperatorExpr(BinaryOperator.Modulo, this, rhs, null, sourceSpan);\n }\n\n and(rhs: Expression, sourceSpan?:\n
ParseSourceSpan|null): BinaryOperatorExpr {\n return new BinaryOperatorExpr(BinaryOperator.And, this, rhs,\n
null, sourceSpan);\n }\n\n bitwiseAnd(rhs: Expression, sourceSpan?: ParseSourceSpan|null, parens: boolean =\n
true):\n BinaryOperatorExpr {\n return new BinaryOperatorExpr(BinaryOperator.BitwiseAnd, this, rhs, null,\n
sourceSpan, parens);\n }\n\n or(rhs: Expression, sourceSpan?: ParseSourceSpan|null): BinaryOperatorExpr {\n
return new BinaryOperatorExpr(BinaryOperator.Or, this, rhs, null, sourceSpan);\n }\n\n lower(rhs: Expression,\n
sourceSpan?: ParseSourceSpan|null): BinaryOperatorExpr {\n return new\n
BinaryOperatorExpr(BinaryOperator.Lower, this, rhs, null, sourceSpan);\n }\n\n lowerEquals(rhs: Expression,\n
sourceSpan?: ParseSourceSpan|null): BinaryOperatorExpr {\n return new\n
BinaryOperatorExpr(BinaryOperator.LowerEquals, this, rhs, null, sourceSpan);\n }\n\n bigger(rhs: Expression,\n
sourceSpan?: ParseSourceSpan|null): BinaryOperatorExpr {\n return new\n
BinaryOperatorExpr(BinaryOperator.Bigger, this, rhs, null, sourceSpan);\n }\n\n biggerEquals(rhs: Expression,\n
sourceSpan?: ParseSourceSpan|null): BinaryOperatorExpr {\n return new\n
BinaryOperatorExpr(BinaryOperator.BiggerEquals, this, rhs, null, sourceSpan);\n }\n\n isBlank(sourceSpan?:\n
ParseSourceSpan|null): Expression {\n // Note: We use equals by purpose here to compare to null and undefined in\n
JS.\n // We use the typed null to allow strictNullChecks to narrow types.\n return\n
this.equals(TYPED_NULL_EXPR, sourceSpan);\n }\n\n cast(type: Type, sourceSpan?: ParseSourceSpan|null):\n
Expression {\n return new CastExpr(this, type, sourceSpan);\n }\n\n toStmt(): Statement {\n return new\n
ExpressionStatement(this, null);\n }\n\n}\n\n\nexport enum BuiltinVar {\n This,\n Super,\n CatchError,\n
CatchStack\n}\n\n\nexport class ReadVarExpr extends Expression {\n public name: string|null;\n public builtin:\n
BuiltinVar|null;\n\n constructor(name: string|BuiltinVar, type?: Type|null, sourceSpan?: ParseSourceSpan|null) {\n

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super(type, sourceSpan);\n if (typeof name === 'string') {\n this.name = name;\n this.builtin = null;\n }\n else {\n this.name = null;\n this.builtin = name;\n }\n}\n\nisEquivalent(e: Expression): boolean {\n return e instanceof ReadVarExpr && this.name === e.name && this.builtin === e.builtin;\n}\n\nisConstant() {\n return false;\n}\n\nvisitExpression(visitor: ExpressionVisitor, context: any): any {\n return\n visitor.visitReadVarExpr(this, context);\n}\n\nset(value: Expression): WriteVarExpr {\n if (!this.name) {\n throw new Error(`Built in variable ${this.builtin} can not be assigned to.`);\n }\n return new\n WriteVarExpr(this.name, value, null, this.sourceSpan);\n}\n}\n\n\nexport class TypeofExpr extends Expression {\n constructor(public expr: Expression, type?: Type|null, sourceSpan?: ParseSourceSpan|null) {\n super(type,\n sourceSpan);\n }\n\n visitExpression(visitor: ExpressionVisitor, context: any) {\n return\n visitor.visitTypeofExpr(this, context);\n }\n\n isEquivalent(e: Expression): boolean {\n return e instanceof\n TypeofExpr && e.expr.isEquivalent(this.expr);\n }\n\n isConstant(): boolean {\n return this.expr.isConstant();\n }\n}\n\n\nexport class WrappedNodeExpr<T> extends Expression {\n constructor(public node: T, type?: Type|null,\n sourceSpan?: ParseSourceSpan|null) {\n super(type, sourceSpan);\n }\n\n isEquivalent(e: Expression): boolean\n {\n return e instanceof WrappedNodeExpr && this.node === e.node;\n }\n\n isConstant() {\n return false;\n }\n\n visitExpression(visitor: ExpressionVisitor, context: any): any {\n return visitor.visitWrappedNodeExpr(this,\n context);\n }\n}\n\n\nexport class WriteVarExpr extends Expression {\n public value: Expression;\n constructor(\n public name: string, value: Expression, type?: Type|null, sourceSpan?: ParseSourceSpan|null) {\n super(type ||\n value.type, sourceSpan);\n this.value = value;\n }\n\n isEquivalent(e: Expression): boolean {\n return e\n instanceof WriteVarExpr && this.name === e.name && this.value.isEquivalent(e.value);\n }\n\n isConstant() {\n return false;\n }\n\n visitExpression(visitor: ExpressionVisitor, context: any): any {\n return\n visitor.visitWriteVarExpr(this, context);\n }\n\n toDeclStmt(type?: Type|null, modifiers?: StmtModifier[]):\n DeclareVarStmt {\n return new DeclareVarStmt(this.name, this.value, type, modifiers, this.sourceSpan);\n }\n\n toConstDecl(): DeclareVarStmt {\n return this.toDeclStmt(INFERRED_TYPE, [StmtModifier.Final]);\n }\n}\n\n\nexport class WriteKeyExpr extends Expression {\n public value: Expression;\n constructor(\n public receiver: Expression, public index: Expression, value: Expression, type?: Type|null,\n sourceSpan?:\n ParseSourceSpan|null) {\n super(type || value.type, sourceSpan);\n this.value = value;\n }\n\n isEquivalent(e:\n Expression): boolean {\n return e instanceof WriteKeyExpr && this.receiver.isEquivalent(e.receiver) &&\n this.index.isEquivalent(e.index) && this.value.isEquivalent(e.value);\n }\n\n isConstant() {\n return false;\n }\n\n visitExpression(visitor: ExpressionVisitor, context: any): any {\n return visitor.visitWriteKeyExpr(this,\n context);\n }\n}\n\n\nexport class WritePropExpr extends Expression {\n public value: Expression;\n constructor(\n public receiver: Expression, public name: string, value: Expression, type?: Type|null,\n sourceSpan?:\n ParseSourceSpan|null) {\n super(type || value.type, sourceSpan);\n this.value = value;\n }\n\n isEquivalent(e: Expression): boolean {\n return e instanceof WritePropExpr &&\n this.receiver.isEquivalent(e.receiver) &&\n this.name === e.name && this.value.isEquivalent(e.value);\n }\n\n isConstant() {\n return false;\n }\n\n visitExpression(visitor: ExpressionVisitor, context: any): any {\n return\n visitor.visitWritePropExpr(this, context);\n }\n}\n\n\nexport enum BuiltinMethod {\n ConcatArray,\n SubscribeObservable,\n Bind\n}\n\n\nexport class InvokeMethodExpr extends Expression {\n public name:\n string|null;\n public builtin: BuiltinMethod|null;\n constructor(\n public receiver: Expression, method:\n string|BuiltinMethod, public args: Expression[],\n type?: Type|null, sourceSpan?: ParseSourceSpan|null) {\n super(type, sourceSpan);\n if (typeof method === 'string') {\n this.name = method;\n this.builtin = null;\n }\n else {\n this.name = null;\n this.builtin = <BuiltinMethod>method;\n }\n }\n\n isEquivalent(e:\n Expression): boolean {\n return e instanceof InvokeMethodExpr && this.receiver.isEquivalent(e.receiver) &&\n this.name === e.name && this.builtin === e.builtin && areAllEquivalent(this.args, e.args);\n }\n\n isConstant()\n {\n return false;\n }\n\n visitExpression(visitor: ExpressionVisitor, context: any): any {\n return\n visitor.visitInvokeMethodExpr(this, context);\n }\n}\n\n\nexport class InvokeFunctionExpr extends Expression {\n constructor(\n public fn: Expression, public args: Expression[], type?: Type|null,\n sourceSpan?:\n ParseSourceSpan|null, public pure = false) {\n super(type, sourceSpan);\n }\n\n isEquivalent(e: Expression):\n boolean {\n return e instanceof InvokeFunctionExpr && this.fn.isEquivalent(e.fn) &&\n
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areAllEquivalent(this.args, e.args) && this.pure === e.pure;\n }\n\n isConstant() {\n return false;\n }\n\n visitExpression(visitor: ExpressionVisitor, context: any): any {\n return visitor.visitInvokeFunctionExpr(this, context);\n }\n}\n\n\nexport class InstantiateExpr extends Expression {\n constructor(\n public classExpr: Expression, public args: Expression[], type?: Type|null,\n sourceSpan?: ParseSourceSpan|null) {\n super(type, sourceSpan);\n }\n\n isEquivalent(e: Expression): boolean {\n return e instanceof InstantiateExpr && this.classExpr.isEquivalent(e.classExpr) &&\n areAllEquivalent(this.args, e.args);\n }\n\n isConstant() {\n return false;\n }\n\n visitExpression(visitor: ExpressionVisitor, context: any): any {\n return visitor.visitInstantiateExpr(this, context);\n }\n}\n\n\nexport class LiteralExpr extends Expression {\n constructor(\n public value: number|string|boolean|null|undefined, type?: Type|null,\n sourceSpan?: ParseSourceSpan|null) {\n super(type, sourceSpan);\n }\n\n isEquivalent(e: Expression): boolean {\n return e instanceof LiteralExpr && this.value === e.value;\n }\n\n isConstant() {\n return true;\n }\n\n visitExpression(visitor: ExpressionVisitor, context: any): any {\n return visitor.visitLiteralExpr(this, context);\n }\n}\n\n\nexport abstract class MessagePiece {\n constructor(public text: string, public sourceSpan: ParseSourceSpan) {\n }\n}\n\n\nexport class LiteralPiece extends MessagePiece {\n}\n\n\nexport class PlaceholderPiece extends MessagePiece {\n}\n\n\nexport class LocalizedString extends Expression {\n constructor(\n readonly metaBlock: I18nMeta, readonly messageParts: LiteralPiece[],\n readonly placeHolderNames: PlaceholderPiece[], readonly expressions: Expression[],\n sourceSpan?: ParseSourceSpan|null) {\n super(String_Type, sourceSpan);\n }\n\n isEquivalent(e: Expression): boolean {\n // return e instanceof LocalizedString && this.message === e.message;\n return false;\n }\n\n isConstant() {\n return false;\n }\n\n visitExpression(visitor: ExpressionVisitor, context: any): any {\n return visitor.visitLocalizedString(this, context);\n }\n}\n\n\n/**\n * Serialize the given `meta` and `messagePart` into `cooked` and `raw` strings that can be used\n * in a `$localize` tagged string. The format of the metadata is the same as that parsed by\n * `parseI18nMeta()`. \n * @param meta The metadata to serialize\n * @param messagePart The first part of the tagged string\n */\nexport function serializeI18nHead(): CookedRawString {\n const MEANING_SEPARATOR = '|';\n const ID_SEPARATOR = '@@';\n const LEGACY_ID_INDICATOR = ";"\n let metaBlock = this.metaBlock.description || ""\n if (this.metaBlock.meaning) {\n metaBlock = `>${this.metaBlock.meaning}${MEANING_SEPARATOR}${metaBlock}`;\n }\n if (this.metaBlock.customId) {\n metaBlock = `${metaBlock}${ID_SEPARATOR}${this.metaBlock.customId}`;\n }\n if (this.metaBlock.legacyIds) {\n this.metaBlock.legacyIds.forEach(legacyId => {\n metaBlock = `${metaBlock}${LEGACY_ID_INDICATOR}${legacyId}`;\n });\n }\n return createCookedRawString(\n metaBlock, this.messageParts[0].text, this.getMessagePartSourceSpan(0);\n);\n}\n\ngetMessagePartSourceSpan(i: number): ParseSourceSpan|null {\n return this.messageParts[i]?.sourceSpan ?? this.sourceSpan;\n}\n\ngetPlaceholderSourceSpan(i: number): ParseSourceSpan {\n return this.placeholderNames[i]?.sourceSpan ?? this.expressions[i]?.sourceSpan ?? this.sourceSpan;\n}\n\n/**\n * Serialize the given `placeholderName` and `messagePart` into `cooked` and `raw` strings that\n * can be used in a `$localize` tagged string.\n * @param placeholderName The placeholder name to serialize\n * @param messagePart The following message string after this placeholder\n */\nexport function serializeI18nTemplatePart(partIndex: number): CookedRawString {\n const placeholderName = this.placeholderNames[partIndex - 1].text;\n const messagePart = this.messageParts[partIndex];\n return createCookedRawString(\n placeholderName, messagePart.text, this.getMessagePartSourceSpan(partIndex));\n }\n}\n\n\n/**\n * A structure to hold the cooked and raw strings of a template literal element, along with its\n * source-span range.\n */\nexport interface CookedRawString {\n cooked: string;\n raw: string;\n range: ParseSourceSpan|null;\n}\n\n\nconst escapeSlashes = (str: string): string => str.replace(/\\/g, '\\\\\\\\\\\\\\\\\\\\\\\\\\');\nconst escapeStartingColon = (str: string): string => str.replace(/^:/, '\\\\\\\\\\\\\\\\\\\\\\\\\\');\nconst escapeColons = (str: string): string => str.replace(/:/g, '\\\\\\\\\\\\\\\\\\\\\\\\\\');\nconst escapeForMessagePart = (str: string): string => str.replace(/$/g, '\\\\\\\\\\\\\\\\\\\\\\\\\\').replace(/\\$/g, '\\\\\\\\\\\\\\\\\\\\\\\\\\');\n\n/**\n * Creates a `{cooked, raw}` object from the `metaBlock` and `messagePart`. \n * The `raw` text must have various character sequences escaped:\n * * `\\` would otherwise indicate that the next character is a control character.\n * * `\"` and `\"$` are template string control sequences that would otherwise prematurely indicate\n * the end of a message part.\n * * `\":` inside a

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metablock would prematurely indicate the end of the metablock. \n \* \* \":\" at the start of a messagePart with no metablock would erroneously indicate the start of a \n \* metablock. \n \* \n \* @param metaBlock Any metadata that should be prepended to the string \n \* @param messagePart The message part of the string \n \*/\nfunction createCookedRawString(\n metaBlock: string, messagePart: string, range: ParseSourceSpan|null): CookedRawString {\n if (metaBlock === '') {\n return {\n cooked: messagePart,\n raw: escapeForMessagePart(escapeStartingColon(escapeSlashes(messagePart))),\n range,\n }; \n } else {\n return {\n cooked: `:\${metaBlock}:\${messagePart}`, \n raw: escapeForMessagePart(`:\${escapeColons(escapeSlashes(metaBlock))}:\${escapeSlashes(messagePart)}`), \n range,\n }; \n }\n}\n\nexport class ExternalExpr extends Expression {\n constructor(\n public value: ExternalReference, type?: Type|null, public typeParams: Type[]|null = null, \n sourceSpan?: ParseSourceSpan|null) {\n super(type, sourceSpan);\n }\n\n isEquivalent(e: Expression): boolean {\n return e instanceof ExternalExpr && this.value.name === e.value.name && \n this.value.moduleName === e.value.moduleName && \n this.value.runtime === e.value.runtime;\n }\n\n isConstant() {\n return false;\n }\n\n visitExpression(visitor: ExpressionVisitor, context: any): any {\n return visitor.visitExternalExpr(this, context);\n }\n}\n\nexport class ExternalReference {\n constructor(public moduleName: string|null, public name: string|null, public runtime?: any|null) {\n }\n // Note: no isEquivalent method here as we use this as an interface too.\n}\n\nexport class ConditionalExpr extends Expression {\n public trueCase: Expression;\n\n constructor(\n public condition: Expression, trueCase: Expression, public falseCase: Expression|null = null, \n type?: Type|null, sourceSpan?: ParseSourceSpan|null) {\n super(type || trueCase.type, sourceSpan);\n this.trueCase = trueCase;\n }\n\n isEquivalent(e: Expression): boolean {\n return e instanceof ConditionalExpr && \n this.condition.isEquivalent(e.condition) && \n this.trueCase.isEquivalent(e.trueCase) && \n nullSafeIsEquivalent(this.falseCase, e.falseCase);\n }\n\n isConstant() {\n return false;\n }\n\n visitExpression(visitor: ExpressionVisitor, context: any): any {\n return visitor.visitConditionalExpr(this, context);\n }\n}\n\nexport class NotExpr extends Expression {\n constructor(public condition: Expression, sourceSpan?: ParseSourceSpan|null) {\n super(BOOL\_TYPE, sourceSpan);\n }\n\n isEquivalent(e: Expression): boolean {\n return e instanceof NotExpr && this.condition.isEquivalent(e.condition);\n }\n\n isConstant() {\n return false;\n }\n\n visitExpression(visitor: ExpressionVisitor, context: any): any {\n return visitor.visitNotExpr(this, context);\n }\n}\n\nexport class AssertNotNull extends Expression {\n constructor(public condition: Expression, sourceSpan?: ParseSourceSpan|null) {\n super(condition.type, sourceSpan);\n }\n\n isEquivalent(e: Expression): boolean {\n return e instanceof AssertNotNull && \n this.condition.isEquivalent(e.condition);\n }\n\n isConstant() {\n return false;\n }\n\n visitExpression(visitor: ExpressionVisitor, context: any): any {\n return visitor.visitAssertNotNullExpr(this, context);\n }\n}\n\nexport class CastExpr extends Expression {\n constructor(public value: Expression, type?: Type|null, sourceSpan?: ParseSourceSpan|null) {\n super(type, sourceSpan);\n }\n\n isEquivalent(e: Expression): boolean {\n return e instanceof CastExpr && this.value.isEquivalent(e.value);\n }\n\n isConstant() {\n return false;\n }\n\n visitExpression(visitor: ExpressionVisitor, context: any): any {\n return visitor.visitCastExpr(this, context);\n }\n}\n\nexport class FnParam {\n constructor(public name: string, public type: Type|null = null) {\n }\n\n isEquivalent(param: FnParam): boolean {\n return this.name === param.name;\n }\n}\n\nexport class FunctionExpr extends Expression {\n constructor(\n public params: FnParam[], public statements: Statement[], type?: Type|null, \n sourceSpan?: ParseSourceSpan|null, public name?: string|null) {\n super(type, sourceSpan);\n }\n\n isEquivalent(e: Expression): boolean {\n return e instanceof FunctionExpr && \n areAllEquivalent(this.params, e.params) && \n areAllEquivalent(this.statements, e.statements);\n }\n\n isConstant() {\n return false;\n }\n\n visitExpression(visitor: ExpressionVisitor, context: any): any {\n return visitor.visitFunctionExpr(this, context);\n }\n\n toDeclStmt(name: string, modifiers?: StmtModifier[]): DeclareFunctionStmt {\n return new DeclareFunctionStmt(\n name, this.params, this.statements, this.type, \n modifiers, this.sourceSpan);\n }\n}\n\nexport class UnaryOperatorExpr extends Expression {\n constructor(\n public operator: UnaryOperator, public expr: Expression, type?: Type|null, \n sourceSpan?: ParseSourceSpan|null, public parens: boolean = true) {\n super(type || NUMBER\_TYPE, sourceSpan);\n }\n\n isEquivalent(e:

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Expression): boolean {\n return e instanceof UnaryOperatorExpr && this.operator === e.operator &&\n
this.expr.isEquivalent(e.expr);\n }\n\n isConstant() {\n return false;\n }\n\n visitExpression(visitor:\n
ExpressionVisitor, context: any): any {\n return visitor.visitUnaryOperatorExpr(this, context);\n }\n}\n\nexport\n
class BinaryOperatorExpr extends Expression {\n public lhs: Expression;\n constructor(\n public operator:\n
BinaryOperator, lhs: Expression, public rhs: Expression, type?: Type|null,\n sourceSpan?: ParseSourceSpan|null,\n
public parens: boolean = true) {\n super(type || lhs.type, sourceSpan);\n this.lhs = lhs;\n }\n\n isEquivalent(e:\n
Expression): boolean {\n return e instanceof BinaryOperatorExpr && this.operator === e.operator &&\n
this.lhs.isEquivalent(e.lhs) && this.rhs.isEquivalent(e.rhs);\n }\n\n isConstant() {\n return false;\n }\n\n
visitExpression(visitor: ExpressionVisitor, context: any): any {\n return visitor.visitBinaryOperatorExpr(this,\n
context);\n }\n}\n\nexport class ReadPropExpr extends Expression {\n constructor(\n public receiver:\n
Expression, public name: string, type?: Type|null,\n sourceSpan?: ParseSourceSpan|null) {\n super(type,\n
sourceSpan);\n }\n\n isEquivalent(e: Expression): boolean {\n return e instanceof ReadPropExpr &&\n
this.receiver.isEquivalent(e.receiver) &&\n this.name === e.name;\n }\n\n isConstant() {\n return false;\n }\n\n
visitExpression(visitor: ExpressionVisitor, context: any): any {\n return visitor.visitReadPropExpr(this,\n
context);\n }\n\n set(value: Expression): WritePropExpr {\n return new WritePropExpr(this.receiver, this.name,\n
value, null, this.sourceSpan);\n }\n}\n\nexport class ReadKeyExpr extends Expression {\n constructor(\n
public receiver: Expression, public index: Expression, type?: Type|null,\n sourceSpan?: ParseSourceSpan|null)\n
{\n super(type, sourceSpan);\n }\n\n isEquivalent(e: Expression): boolean {\n return e instanceof ReadKeyExpr\n
&& this.receiver.isEquivalent(e.receiver) &&\n this.index.isEquivalent(e.index);\n }\n\n isConstant() {\n
return false;\n }\n\n visitExpression(visitor: ExpressionVisitor, context: any): any {\n return\n
visitor.visitReadKeyExpr(this, context);\n }\n\n set(value: Expression): WriteKeyExpr {\n return new\n
WriteKeyExpr(this.receiver, this.index, value, null, this.sourceSpan);\n }\n}\n\nexport class LiteralArrayExpr\n
extends Expression {\n public entries: Expression[];\n constructor(entries: Expression[], type?: Type|null,\n
sourceSpan?: ParseSourceSpan|null) {\n super(type, sourceSpan);\n this.entries = entries;\n }\n\n isConstant()\n
{\n return this.entries.every(e => e.isConstant());\n }\n\n isEquivalent(e: Expression): boolean {\n return e\n
instanceof LiteralArrayExpr && areAllEquivalent(this.entries, e.entries);\n }\n\n visitExpression(visitor:\n
ExpressionVisitor, context: any): any {\n return visitor.visitLiteralArrayExpr(this, context);\n }\n}\n\nexport class\n
LiteralMapEntry {\n constructor(public key: string, public value: Expression, public quoted: boolean) {\n }\n\n
isEquivalent(e: LiteralMapEntry): boolean {\n return this.key === e.key && this.value.isEquivalent(e.value);\n }\n}\n\n
export class LiteralMapExpr extends Expression {\n public valueType: Type|null = null;\n constructor(\n
public entries: LiteralMapEntry[], type?: MapType|null, sourceSpan?: ParseSourceSpan|null) {\n super(type,\n
sourceSpan);\n if (type) {\n this.valueType = type.valueType;\n }\n }\n\n isEquivalent(e: Expression):\n
boolean {\n return e instanceof LiteralMapExpr && areAllEquivalent(this.entries, e.entries);\n }\n\n isConstant()\n
{\n return this.entries.every(e => e.value.isConstant());\n }\n\n visitExpression(visitor: ExpressionVisitor,\n
context: any): any {\n return visitor.visitLiteralMapExpr(this, context);\n }\n}\n\nexport class CommaExpr\n
extends Expression {\n constructor(public parts: Expression[], sourceSpan?: ParseSourceSpan|null) {\n super(parts[parts.length - 1].type,\n
sourceSpan);\n }\n\n isEquivalent(e: Expression): boolean {\n return e\n
instanceof CommaExpr && areAllEquivalent(this.parts, e.parts);\n }\n\n isConstant() {\n return false;\n }\n\n
visitExpression(visitor: ExpressionVisitor, context: any): any {\n return visitor.visitCommaExpr(this, context);\n }\n}\n\n
export interface ExpressionVisitor {\n visitReadVarExpr(ast: ReadVarExpr, context: any): any;\n visitWriteVarExpr(expr: WriteVarExpr, context: any): any;\n visitWriteKeyExpr(expr: WriteKeyExpr, context:\n
any): any;\n visitWritePropExpr(expr: WritePropExpr, context: any): any;\n visitInvokeMethodExpr(ast:\n
InvokeMethodExpr, context: any): any;\n visitInvokeFunctionExpr(ast: InvokeFunctionExpr, context: any): any;\n visitInstantiateExpr(ast: InstantiateExpr, context: any): any;\n visitLiteralExpr(ast: LiteralExpr, context: any):\n
any;\n visitLocalizedString(ast: LocalizedString, context: any): any;\n visitExternalExpr(ast: ExternalExpr,\n
context: any): any;\n visitConditionalExpr(ast: ConditionalExpr, context: any): any;\n visitNotExpr(ast: NotExpr,\n
context: any): any;\n visitAssertNotNullExpr(ast: AssertNotNull, context: any): any;\n visitCastExpr(ast: CastExpr,\n
context: any): any;\n visitFunctionExpr(ast: FunctionExpr, context: any): any;\n visitUnaryOperatorExpr(ast:

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Expression) {\n super(type, modifiers);\n }\n isEquivalent(f: ClassField) {\n return this.name === f.name;\n
}\n}\n\nexport class ClassMethod extends AbstractClassPart {\n constructor(\n public name: string|null, public
params: FnParam[], public body: Statement[],\n type?: Type|null, modifiers?: StmtModifier[]) {\n super(type,
modifiers);\n }\n isEquivalent(m: ClassMethod) {\n return this.name === m.name &&
areAllEquivalent(this.body, m.body);\n }\n}\n\nexport class ClassGetter extends AbstractClassPart {\n
constructor(\n public name: string, public body: Statement[], type?: Type|null, modifiers?: StmtModifier[]) {\n
super(type, modifiers);\n }\n isEquivalent(m: ClassGetter) {\n return this.name === m.name &&
areAllEquivalent(this.body, m.body);\n }\n}\n\nexport class ClassStmt extends Statement {\n constructor(\n
public name: string, public parent: Expression|null, public fields: ClassField[],\n public getters: ClassGetter[],
public constructorMethod: ClassMethod,\n public methods: ClassMethod[], modifiers?: StmtModifier[],
sourceSpan?: ParseSourceSpan|null,\n leadingComments?: LeadingComment[]) {\n super(modifiers,
sourceSpan, leadingComments);\n }\n isEquivalent(stmt: Statement): boolean {\n return stmt instanceof
ClassStmt && this.name === stmt.name &&\n nullSafeIsEquivalent(this.parent, stmt.parent) &&\n
areAllEquivalent(this.fields, stmt.fields) &&\n areAllEquivalent(this.getters, stmt.getters) &&\n
this.constructorMethod.isEquivalent(stmt.constructorMethod) &&\n areAllEquivalent(this.methods,
stmt.methods);\n }\n visitStatement(visitor: StatementVisitor, context: any): any {\n return
visitor.visitDeclareClassStmt(this, context);\n }\n}\n\nexport class IfStmt extends Statement {\n constructor(\n
public condition: Expression, public trueCase: Statement[],\n public falseCase: Statement[] = [], sourceSpan?:
ParseSourceSpan|null,\n leadingComments?: LeadingComment[]) {\n super([], sourceSpan,
leadingComments);\n }\n isEquivalent(stmt: Statement): boolean {\n return stmt instanceof IfStmt &&
this.condition.isEquivalent(stmt.condition) &&\n areAllEquivalent(this.trueCase, stmt.trueCase) &&\n
areAllEquivalent(this.falseCase, stmt.falseCase);\n }\n visitStatement(visitor: StatementVisitor, context: any): any
{\n return visitor.visitIfStmt(this, context);\n }\n}\n\nexport class TryCatchStmt extends Statement {\n
constructor(\n public bodyStmts: Statement[], public catchStmts: Statement[],\n sourceSpan:
ParseSourceSpan|null = null, leadingComments?: LeadingComment[]) {\n super([], sourceSpan,
leadingComments);\n }\n isEquivalent(stmt: Statement): boolean {\n return stmt instanceof TryCatchStmt &&
areAllEquivalent(this.bodyStmts, stmt.bodyStmts) &&\n areAllEquivalent(this.catchStmts, stmt.catchStmts);\n
}\n visitStatement(visitor: StatementVisitor, context: any): any {\n return visitor.visitTryCatchStmt(this,
context);\n }\n}\n\nexport class ThrowStmt extends Statement {\n constructor(\n public error: Expression,
sourceSpan: ParseSourceSpan|null = null,\n leadingComments?: LeadingComment[]) {\n super([], sourceSpan,
leadingComments);\n }\n isEquivalent(stmt: ThrowStmt): boolean {\n return stmt instanceof TryCatchStmt &&
this.error.isEquivalent(stmt.error);\n }\n visitStatement(visitor: StatementVisitor, context: any): any {\n return
visitor.visitThrowStmt(this, context);\n }\n}\n\nexport interface StatementVisitor {\n visitDeclareVarStmt(stmt:
DeclareVarStmt, context: any): any;\n visitDeclareFunctionStmt(stmt: DeclareFunctionStmt, context: any): any;\n
visitExpressionStmt(stmt: ExpressionStatement, context: any): any;\n visitReturnStmt(stmt: ReturnStatement,
context: any): any;\n visitDeclareClassStmt(stmt: ClassStmt, context: any): any;\n visitIfStmt(stmt: IfStmt, context:
any): any;\n visitTryCatchStmt(stmt: TryCatchStmt, context: any): any;\n visitThrowStmt(stmt: ThrowStmt,
context: any): any;\n}\n\nexport class AstTransformer implements StatementVisitor, ExpressionVisitor {\n
transformExpr(expr: Expression, context: any): Expression {\n return expr;\n }\n\n transformStmt(stmt:
Statement, context: any): Statement {\n return stmt;\n }\n\n visitReadVarExpr(ast: ReadVarExpr, context: any):
any {\n return this.transformExpr(ast, context);\n }\n\n visitWrappedNodeExpr(ast: WrappedNodeExpr<any>,
context: any): any {\n return this.transformExpr(ast, context);\n }\n\n visitTypeofExpr(expr: TypeofExpr,
context: any): any {\n return this.transformExpr(\n new TypeofExpr(expr.expr.visitExpression(this, context),
expr.type, expr.sourceSpan),\n context);\n }\n\n visitWriteVarExpr(expr: WriteVarExpr, context: any): any {\n
return this.transformExpr(\n new WriteVarExpr(\n expr.name, expr.value.visitExpression(this, context),
expr.type, expr.sourceSpan),\n context);\n }\n\n visitWriteKeyExpr(expr: WriteKeyExpr, context: any): any
{\n return this.transformExpr(\n new WriteKeyExpr(\n expr.receiver.visitExpression(this, context),
expr.index.visitExpression(this, context),\n expr.value.visitExpression(this, context), expr.type,

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expr.sourceSpan),\n context);\n }\n\n visitWritePropExpr(expr: WritePropExpr, context: any): any {\n return this.transformExpr(\n new WritePropExpr(\n expr.receiver.visitExpression(this, context), expr.name,\n expr.value.visitExpression(this, context), expr.type, expr.sourceSpan),\n context);\n }\n\n visitInvokeMethodExpr(ast: InvokeMethodExpr, context: any): any {\n const method = ast.builtin || ast.name;\n return this.transformExpr(\n new InvokeMethodExpr(\n ast.receiver.visitExpression(this, context),\n method!,\n this.visitAllExpressions(ast.args, context), ast.type, ast.sourceSpan),\n context);\n }\n\n visitInvokeFunctionExpr(ast: InvokeFunctionExpr, context: any): any {\n return this.transformExpr(\n new InvokeFunctionExpr(\n ast.fn.visitExpression(this, context), this.visitAllExpressions(ast.args, context),\n ast.type, ast.sourceSpan),\n context);\n }\n\n visitInstantiateExpr(ast: InstantiateExpr, context: any): any {\n return this.transformExpr(\n new InstantiateExpr(\n ast.classExpr.visitExpression(this, context),\n this.visitAllExpressions(ast.args, context), ast.type, ast.sourceSpan),\n context);\n }\n\n visitLiteralExpr(ast: LiteralExpr, context: any): any {\n return this.transformExpr(ast, context);\n }\n\n visitLocalizedString(ast: LocalizedString, context: any): any {\n return this.transformExpr(\n new LocalizedString(\n ast.metaBlock, ast.messageParts, ast.placeholderNames,\n this.visitAllExpressions(ast.expressions, context),\n ast.sourceSpan),\n context);\n }\n\n visitExternalExpr(ast: ExternalExpr, context: any): any {\n return this.transformExpr(ast, context);\n }\n\n visitConditionalExpr(ast: ConditionalExpr, context: any): any {\n return this.transformExpr(\n new ConditionalExpr(\n ast.condition.visitExpression(this, context),\n ast.trueCase.visitExpression(this, context),\n ast.falseCase!.visitExpression(this, context), ast.type,\n ast.sourceSpan),\n context);\n }\n\n visitNotExpr(ast: NotExpr, context: any): any {\n return this.transformExpr(\n new NotExpr(ast.condition.visitExpression(this, context), ast.sourceSpan),\n context);\n }\n\n visitAssertNotNullExpr(ast: AssertNotNull, context: any): any {\n return this.transformExpr(\n new AssertNotNull(ast.condition.visitExpression(this, context), ast.sourceSpan),\n context);\n }\n\n visitCastExpr(ast: CastExpr, context: any): any {\n return this.transformExpr(\n new CastExpr(ast.value.visitExpression(this, context), ast.type, ast.sourceSpan),\n context);\n }\n\n visitFunctionExpr(ast: FunctionExpr, context: any): any {\n return this.transformExpr(\n new FunctionExpr(\n ast.params, this.visitAllStatements(ast.statements, context),\n ast.type, ast.sourceSpan),\n context);\n }\n\n visitUnaryOperatorExpr(ast: UnaryOperatorExpr, context: any): any {\n return this.transformExpr(\n new UnaryOperatorExpr(\n ast.operator, ast.expr.visitExpression(this, context), ast.type, ast.sourceSpan),\n context);\n }\n\n visitBinaryOperatorExpr(ast: BinaryOperatorExpr, context: any): any {\n return this.transformExpr(\n new BinaryOperatorExpr(\n ast.operator, ast.lhs.visitExpression(this, context),\n ast.rhs.visitExpression(this, context), ast.type, ast.sourceSpan),\n context);\n }\n\n visitReadPropExpr(ast: ReadPropExpr, context: any): any {\n return this.transformExpr(\n new ReadPropExpr(\n ast.receiver.visitExpression(this, context), ast.name, ast.type, ast.sourceSpan),\n context);\n }\n\n visitReadKeyExpr(ast: ReadKeyExpr, context: any): any {\n return this.transformExpr(\n new ReadKeyExpr(\n ast.receiver.visitExpression(this, context), ast.index.visitExpression(this, context),\n ast.type, ast.sourceSpan),\n context);\n }\n\n visitLiteralArrayExpr(ast: LiteralArrayExpr, context: any): any {\n return this.transformExpr(\n new LiteralArrayExpr(\n this.visitAllExpressions(ast.entries, context),\n ast.type, ast.sourceSpan),\n context);\n }\n\n visitLiteralMapExpr(ast: LiteralMapExpr, context: any): any {\n const entries = ast.entries.map(\n (entry): LiteralMapEntry => new LiteralMapEntry(\n entry.key, entry.value.visitExpression(this, context), entry.quoted));\n const mapType = new MapType(ast.valueType);\n return this.transformExpr(new LiteralMapExpr(entries, mapType, ast.sourceSpan), context);\n }\n\n visitCommaExpr(ast: CommaExpr, context: any): any {\n return this.transformExpr(\n new CommaExpr(this.visitAllExpressions(ast.parts, context), ast.sourceSpan),\n context);\n }\n\n visitAllExpressions(exprs: Expression[], context: any): Expression[] {\n return exprs.map(expr => expr.visitExpression(this, context));\n }\n\n visitDeclareVarStmt(stmt: DeclareVarStmt, context: any): any {\n const value = stmt.value && stmt.value.visitExpression(this, context);\n return this.transformStmt(\n new DeclareVarStmt(\n stmt.name, value, stmt.type, stmt.modifiers, stmt.sourceSpan, stmt.leadingComments),\n context);\n }\n\n visitDeclareFunctionStmt(stmt: DeclareFunctionStmt, context: any): any {\n return

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this.transformStmt(\n new DeclareFunctionStmt(\n stmt.name, stmt.params,
this.visitAllStatements(stmt.statements, context), stmt.type,\n stmt.modifiers, stmt.sourceSpan,
stmt.leadingComments),\n context);\n }\n\n visitExpressionStmt(stmt: ExpressionStatement, context: any): any
{\n return this.transformStmt(\n new ExpressionStatement(\n stmt.expr.visitExpression(this, context),
stmt.sourceSpan, stmt.leadingComments),\n context);\n }\n\n visitReturnStmt(stmt: ReturnStatement, context:
any): any {\n return this.transformStmt(\n new ReturnStatement(\n stmt.value.visitExpression(this,
context), stmt.sourceSpan, stmt.leadingComments),\n context);\n }\n\n visitDeclareClassStmt(stmt: ClassStmt,
context: any): any {\n const parent = stmt.parent!.visitExpression(this, context);\n const getters =
stmt.getters.map(\n getter => new ClassGetter(\n getter.name, this.visitAllStatements(getter.body,
context), getter.type,\n getter.modifiers));\n const ctorMethod = stmt.constructorMethod &&\n new
ClassMethod(stmt.constructorMethod.name, stmt.constructorMethod.params,\n this.visitAllStatements(stmt.constructorMethod.body, context),\n stmt.constructorMethod.type,
stmt.constructorMethod.modifiers);\n const methods = stmt.methods.map(\n method => new ClassMethod(\n
 method.name, method.params, this.visitAllStatements(method.body, context), method.type,\n method.modifiers));\n return this.transformStmt(\n new ClassStmt(\n stmt.name, parent, stmt.fields,
getters, ctorMethod, methods, stmt.modifiers,\n stmt.sourceSpan),\n context);\n }\n\n visitIfStmt(stmt:
IfStmt, context: any): any {\n return this.transformStmt(\n new IfStmt(\n stmt.condition.visitExpression(this, context),\n this.visitAllStatements(stmt.trueCase, context),\n this.visitAllStatements(stmt.falseCase, context), stmt.sourceSpan,\n stmt.leadingComments),\n context);\n }\n\n visitTryCatchStmt(stmt: TryCatchStmt, context: any): any {\n return this.transformStmt(\n
 new TryCatchStmt(\n this.visitAllStatements(stmt.bodyStmts, context),\n this.visitAllStatements(stmt.catchStmts, context), stmt.sourceSpan,\n stmt.leadingComments),\n context);\n }\n\n visitThrowStmt(stmt: ThrowStmt, context: any): any {\n return this.transformStmt(\n new
ThrowStmt(\n stmt.error.visitExpression(this, context), stmt.sourceSpan, stmt.leadingComments),\n context);\n }\n\n visitAllStatements(stmts: Statement[], context: any): Statement[] {\n return stmts.map(stmt =>
stmt.visitStatement(this, context));\n }\n}\n\n\nexport class RecursiveAstVisitor implements StatementVisitor,
ExpressionVisitor {\n visitType(ast: Type, context: any): any {\n return ast;\n }\n visitExpression(ast:
Expression, context: any): any {\n if (ast.type) {\n ast.type.visitType(this, context);\n }\n return ast;\n }\n visitBuiltinType(type: BuiltinType, context: any): any {\n return this.visitType(type, context);\n }\n visitExpressionType(type: ExpressionType, context: any): any {\n type.value.visitExpression(this, context);\n if
(type.typeParams !== null) {\n type.typeParams.forEach(param => this.visitType(param, context));\n }\n return this.visitType(type, context);\n }\n visitArrayType(type: ArrayType, context: any): any {\n return
this.visitType(type, context);\n }\n visitMapType(type: MapType, context: any): any {\n return
this.visitType(type, context);\n }\n visitWrappedNodeExpr(ast: WrappedNodeExpr<any>, context: any): any {\n return ast;\n }\n visitTypeofExpr(ast: TypeofExpr, context: any): any {\n return this.visitExpression(ast,
context);\n }\n visitReadVarExpr(ast: ReadVarExpr, context: any): any {\n return this.visitExpression(ast,
context);\n }\n visitWriteVarExpr(ast: WriteVarExpr, context: any): any {\n ast.value.visitExpression(this,
context);\n return this.visitExpression(ast, context);\n }\n visitWriteKeyExpr(ast: WriteKeyExpr, context: any):
any {\n ast.receiver.visitExpression(this, context);\n ast.index.visitExpression(this, context);\n ast.value.visitExpression(this, context);\n return this.visitExpression(ast, context);\n }\n visitWritePropExpr(ast:
WritePropExpr, context: any): any {\n ast.receiver.visitExpression(this, context);\n ast.value.visitExpression(this, context);\n return this.visitExpression(ast, context);\n }\n visitInvokeMethodExpr(ast: InvokeMethodExpr, context: any): any {\n ast.receiver.visitExpression(this,
context);\n this.visitAllExpressions(ast.args, context);\n return this.visitExpression(ast, context);\n }\n visitInvokeFunctionExpr(ast: InvokeFunctionExpr, context: any): any {\n ast.fn.visitExpression(this, context);\n this.visitAllExpressions(ast.args, context);\n return this.visitExpression(ast, context);\n }\n visitInstantiateExpr(ast: InstantiateExpr, context: any): any {\n ast.classExpr.visitExpression(this, context);\n this.visitAllExpressions(ast.args, context);\n return this.visitExpression(ast, context);\n }\n visitLiteralExpr(ast:

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LiteralExpr, context: any): any {\n return this.visitExpression(ast, context);\n }\n visitLocalizedString(ast:
LocalizedString, context: any): any {\n return this.visitExpression(ast, context);\n }\n visitExternalExpr(ast:
ExternalExpr, context: any): any {\n if (ast.typeParams) {\n ast.typeParams.forEach(type =>
type.visitType(this, context));\n }\n return this.visitExpression(ast, context);\n }\n visitConditionalExpr(ast:
ConditionalExpr, context: any): any {\n ast.condition.visitExpression(this, context);\n
ast.trueCase.visitExpression(this, context);\n ast.falseCase!.visitExpression(this, context);\n return
this.visitExpression(ast, context);\n }\n visitNotExpr(ast: NotExpr, context: any): any {\n
ast.condition.visitExpression(this, context);\n return this.visitExpression(ast, context);\n }\n
visitAssertNotNullExpr(ast: AssertNotNull, context: any): any {\n ast.condition.visitExpression(this, context);\n
return this.visitExpression(ast, context);\n }\n visitCastExpr(ast: CastExpr, context: any): any {\n
ast.value.visitExpression(this, context);\n return this.visitExpression(ast, context);\n }\n visitFunctionExpr(ast:
FunctionExpr, context: any): any {\n this.visitAllStatements(ast.statements, context);\n return
this.visitExpression(ast, context);\n }\n visitUnaryOperatorExpr(ast: UnaryOperatorExpr, context: any): any {\n
ast.expr.visitExpression(this, context);\n return this.visitExpression(ast, context);\n }\n
visitBinaryOperatorExpr(ast: BinaryOperatorExpr, context: any): any {\n ast.lhs.visitExpression(this, context);\n
ast.rhs.visitExpression(this, context);\n return this.visitExpression(ast, context);\n }\n visitReadPropExpr(ast:
ReadPropExpr, context: any): any {\n ast.receiver.visitExpression(this, context);\n return
this.visitExpression(ast, context);\n }\n visitReadKeyExpr(ast: ReadKeyExpr, context: any): any {\n
ast.receiver.visitExpression(this, context);\n ast.index.visitExpression(this, context);\n return
this.visitExpression(ast, context);\n }\n visitLiteralArrayExpr(ast: LiteralArrayExpr, context: any): any {\n
this.visitAllExpressions(ast.entries, context);\n return this.visitExpression(ast, context);\n }\n
visitLiteralMapExpr(ast: LiteralMapExpr, context: any): any {\n ast.entries.forEach((entry) =>
entry.value.visitExpression(this, context));\n return this.visitExpression(ast, context);\n }\n visitCommaExpr(ast:
CommaExpr, context: any): any {\n this.visitAllExpressions(ast.parts, context);\n return this.visitExpression(ast,
context);\n }\n visitAllExpressions(exprs: Expression[], context: any): void {\n exprs.forEach(expr =>
expr.visitExpression(this, context));\n }\n\n visitDeclareVarStmt(stmt: DeclareVarStmt, context: any): any {\n if
(stmt.value) {\n stmt.value.visitExpression(this, context);\n }\n if (stmt.type) {\n stmt.type.visitType(this,
context);\n }\n return stmt;\n }\n visitDeclareFunctionStmt(stmt: DeclareFunctionStmt, context: any): any {\n
this.visitAllStatements(stmt.statements, context);\n if (stmt.type) {\n stmt.type.visitType(this, context);\n }\n
return stmt;\n }\n visitExpressionStmt(stmt: ExpressionStatement, context: any): any {\n
stmt.expr.visitExpression(this, context);\n return stmt;\n }\n visitReturnStmt(stmt: ReturnStatement, context:
any): any {\n stmt.value.visitExpression(this, context);\n return stmt;\n }\n visitDeclareClassStmt(stmt:
ClassStmt, context: any): any {\n stmt.parent!.visitExpression(this, context);\n stmt.getters.forEach(getter =>
this.visitAllStatements(getter.body, context));\n if (stmt.constructorMethod) {\n
this.visitAllStatements(stmt.constructorMethod.body, context);\n }\n stmt.methods.forEach(method =>
this.visitAllStatements(method.body, context));\n return stmt;\n }\n visitIfStmt(stmt: IfStmt, context: any): any
{\n stmt.condition.visitExpression(this, context);\n this.visitAllStatements(stmt.trueCase, context);\n
this.visitAllStatements(stmt.falseCase, context);\n return stmt;\n }\n visitTryCatchStmt(stmt: TryCatchStmt,
context: any): any {\n this.visitAllStatements(stmt.bodyStmts, context);\n
this.visitAllStatements(stmt.catchStmts, context);\n return stmt;\n }\n visitThrowStmt(stmt: ThrowStmt, context:
any): any {\n stmt.error.visitExpression(this, context);\n return stmt;\n }\n visitAllStatements(stmts:
Statement[], context: any): void {\n stmts.forEach(stmt => stmt.visitStatement(this, context));\n }\n\n\nexport
function findReadVarNames(stmts: Statement[]): Set<string> {\n const visitor = new _ReadVarVisitor();\n
visitor.visitAllStatements(stmts, null);\n return visitor.varNames;\n }\n\n\nclass _ReadVarVisitor extends
RecursiveAstVisitor {\n varNames = new Set<string>();\n visitDeclareFunctionStmt(stmt: DeclareFunctionStmt,
context: any): any {\n // Don't descend into nested functions\n return stmt;\n }\n visitDeclareClassStmt(stmt:
ClassStmt, context: any): any {\n // Don't descend into nested classes\n return stmt;\n }\n visitReadVarExpr(ast:
ReadVarExpr, context: any): any {\n if (ast.name) {\n this.varNames.add(ast.name);\n }\n return null;\n
}

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}\n}\n\nexport function collectExternalReferences(stmts: Statement[]): ExternalReference[] {\n const visitor = new
_FindExternalReferencesVisitor();\n visitor.visitAllStatements(stmts, null);\n return
visitor.externalReferences;\n}\n\n\nclass _FindExternalReferencesVisitor extends RecursiveAstVisitor {\n
externalReferences: ExternalReference[] = [];\n visitExternalExpr(e: ExternalExpr, context: any) {\n
this.externalReferences.push(e.value);\n return super.visitExternalExpr(e, context);\n }\n}\n\n\nexport function
applySourceSpanToStatementIfNeeded(\n stmt: Statement, sourceSpan: ParseSourceSpan|null): Statement {\n if
(!sourceSpan) {\n return stmt;\n }\n const transformer = new _ApplySourceSpanTransformer(sourceSpan);\n
return stmt.visitStatement(transformer, null);\n}\n\n\nexport function applySourceSpanToExpressionIfNeeded(\n
expr: Expression, sourceSpan: ParseSourceSpan|null): Expression {\n if (!sourceSpan) {\n return expr;\n }\n
const transformer = new _ApplySourceSpanTransformer(sourceSpan);\n return expr.visitExpression(transformer,
null);\n}\n\n\n\nclass _ApplySourceSpanTransformer extends AstTransformer {\n constructor(private sourceSpan:
ParseSourceSpan) {\n super();\n }\n private _clone(obj: any): any {\n const clone =
Object.create(obj.constructor.prototype);\n for (let prop of Object.keys(obj)) {\n clone[prop] = obj[prop];\n
}\n return clone;\n }\n transformExpr(expr: Expression, context: any): Expression {\n if (!expr.sourceSpan)
{\n expr = this._clone(expr);\n expr.sourceSpan = this.sourceSpan;\n }\n return expr;\n }\n transformStmt(stmt: Statement, context: any): Statement {\n if (!stmt.sourceSpan) {\n stmt =
this._clone(stmt);\n stmt.sourceSpan = this.sourceSpan;\n }\n return stmt;\n }\n}\n\n\nexport function
leadingComment(\n text: string, multiline: boolean = false, trailingNewline: boolean = true): LeadingComment {\n
return new LeadingComment(text, multiline, trailingNewline);\n}\n\n\nexport function jsDocComment(tags:
JSDocTag[] = []): JSDocComment {\n return new JSDocComment(tags);\n}\n\n\nexport function variable(\n name:
string, type?: Type|null, sourceSpan?: ParseSourceSpan|null): ReadVarExpr {\n return new ReadVarExpr(name,
type, sourceSpan);\n}\n\n\nexport function importExpr(\n id: ExternalReference, typeParams: Type[]|null = null,\n
sourceSpan?: ParseSourceSpan|null): ExternalExpr {\n return new ExternalExpr(id, null, typeParams,
sourceSpan);\n}\n\n\nexport function importType(\n id: ExternalReference, typeParams?: Type[]|null,\n
typeModifiers?: TypeModifier[]): ExpressionType|null {\n return id != null ? expressionType(importExpr(id,
typeParams, null), typeModifiers) : null;\n}\n\n\nexport function expressionType(\n expr: Expression,
typeModifiers?: TypeModifier[], typeParams?: Type[]|null): ExpressionType {\n return new ExpressionType(expr,
typeModifiers, typeParams);\n}\n\n\nexport function typeofExpr(expr: Expression) {\n return new
TypeofExpr(expr);\n}\n\n\nexport function literalArr(\n values: Expression[], type?: Type|null, sourceSpan?:
ParseSourceSpan|null): LiteralArrayExpr {\n return new LiteralArrayExpr(values, type, sourceSpan);\n}\n\n\nexport
function literalMap(\n values: {key: string, quoted: boolean, value: Expression}[],\n type: MapType|null = null):
LiteralMapExpr {\n return new LiteralMapExpr(\n values.map(e => new LiteralMapEntry(e.key, e.value,
e.quoted)), type, null);\n}\n\n\nexport function unary(\n operator: UnaryOperator, expr: Expression, type?: Type,\n
sourceSpan?: ParseSourceSpan|null): UnaryOperatorExpr {\n return new UnaryOperatorExpr(operator, expr, type,
sourceSpan);\n}\n\n\nexport function not(expr: Expression, sourceSpan?: ParseSourceSpan|null): NotExpr {\n return
new NotExpr(expr, sourceSpan);\n}\n\n\nexport function assertNotNull(expr: Expression, sourceSpan?:
ParseSourceSpan|null): AssertNotNull {\n return new AssertNotNull(expr, sourceSpan);\n}\n\n\nexport function fn(\n
params: FnParam[], body: Statement[], type?: Type|null, sourceSpan?: ParseSourceSpan|null,\n name?:
string|null): FunctionExpr {\n return new FunctionExpr(params, body, type, sourceSpan, name);\n}\n\n\nexport
function ifStmt(\n condition: Expression, thenClause: Statement[], elseClause?: Statement[],\n sourceSpan?:
ParseSourceSpan, leadingComments?: LeadingComment[]) {\n return new IfStmt(condition, thenClause,
elseClause, sourceSpan, leadingComments);\n}\n\n\nexport function literal(\n value: any, type?: Type|null,
sourceSpan?: ParseSourceSpan|null): LiteralExpr {\n return new LiteralExpr(value, type, sourceSpan);\n}\n\n\nexport
function localizedString(\n metaBlock: I18nMeta, messageParts: LiteralPiece[], placeholderNames:
PlaceholderPiece[],\n expressions: Expression[], sourceSpan?: ParseSourceSpan|null): LocalizedString {\n return
new LocalizedString(metaBlock, messageParts, placeholderNames, expressions, sourceSpan);\n}\n\n\nexport function
isNull(exp: Expression): boolean {\n return exp instanceof LiteralExpr && exp.value === null;\n}\n\n\n// The list of
JSDoc tags that we currently support. Extend it if needed.\nexport const enum JSDocTagName {\n Desc = 'desc',\n

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Id = 'id',
 Meaning = 'meaning',
}

TypeScript has an API for JSDoc already, but it's not exposed.
https://github.com/Microsoft/TypeScript/issues/7393
For now we create types that are similar to theirs so that
migrating to their API will be easier. See e.g. `ts.JSDocTag` and `ts.JSDocComment`.

export type
 JSDocTag = {
 tagName: string;
 text?: string;
 };
Any remaining text on the tag, e.g. the description
documentation that occurs before any `@param` lines
 tagName?: undefined;
 text: string;
}

Serializes a
`Tag` into a string.
Returns a string like `@foo {bar} baz` (note the leading whitespace before `@foo`).

function tagToString(tag: JSDocTag): string {
 let out = "";
 if (tag.tagName) {
 out += `
 @${tag.tagName}`;
 }
 if (tag.text) {
 if (tag.text.match(/\\/|*|\\/|\\/)) {
 throw new Error("JSDoc text
 cannot contain `\"` and `\"*\"");
 }
 out += ' ' + tag.text.replace(/@/g, "\\@");
 }
 return
 out;
}

function serializeTags(tags: JSDocTag[]): string {
 if (tags.length === 0) return "";
 if (tags.length
 === 1 && tags[0].tagName && !tags[0].text) {
 // The JSDOC comment is a single simple tag: e.g. `/**
 @tagname */`
 return `>${tagToString(tags[0])}`;
 }
 let out = `*`;
 for (const tag of tags) {
 out += `
 *`;
 // If the tagToString is multi-line, insert ` * ` prefixes on lines.
 out += tagToString(tag).replace(/\\n/g,
 "\\n * ");
 }
 out += `
 `;
 return out;
}

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found in the
LICENSE file at https://angular.io/license

import { ConstantPool } from './constant_pool';
import * as o
from './output/output_ast';
import { ParseError } from './parse_util';
const DASH_CASE_REGEXP = /-+([a-z0-
9])/g;
export function dashCaseToCamelCase(input: string): string {
 return
 input.replace(DASH_CASE_REGEXP, (...m: any[]) => m[1].toUpperCase());
}

export function
splitAtColon(input: string, defaultValues: string[]): string[] {
 return _splitAt(input, ':',
 defaultValues);
}

export function splitAtPeriod(input: string, defaultValues: string[]): string[] {
 return
 _splitAt(input, '.', defaultValues);
}

export function _splitAt(input: string, character: string, defaultValues: string[]):
string[] {
 const characterIndex = input.indexOf(character);
 if (characterIndex === -1) return defaultValues;
 return [input.slice(0, characterIndex).trim(), input.slice(characterIndex + 1).trim()];
}

export function
visitValue(value: any, visitor: ValueVisitor, context: any): any {
 if (Array.isArray(value)) {
 return
 visitor.visitArray(<any[]>value, context);
 }
 if (isStrictStringMap(value)) {
 return
 visitor.visitStringMap(<{[key: string]: any}>value, context);
 }
 if (value == null || typeof value == 'string' ||
 typeof value == 'number' ||
 typeof value == 'boolean') {
 return visitor.visitPrimitive(value, context);
 }
 return visitor.visitOther(value, context);
}

export function isDefined(val: any): boolean {
 return val !== null
 && val !== undefined;
}

export function noUndefined<T>(val: T|undefined): T {
 return val === undefined ?
 null! : val;
}

export interface ValueVisitor {
 visitArray(arr: any[], context: any): any;
 visitStringMap(map:
 {[key: string]: any}, context: any): any;
 visitPrimitive(value: any, context: any): any;
 visitOther(value: any, context: any): any;
}

export class ValueTransformer implements ValueVisitor {
 visitArray(arr: any[],
 context: any): any {
 return arr.map(value => visitValue(value, this, context));
 }
 visitStringMap(map: {[key:
 string]: any}, context: any): any {
 const result: {[key: string]: any} = {};
 Object.keys(map).forEach(key =>
 {
 result[key] = visitValue(map[key], this, context);
 });
 return result;
 }
 visitPrimitive(value: any,
 context: any): any {
 return value;
 }
 visitOther(value: any, context: any): any {
 return value;
 }
}

export type SyncAsync<T> = T|Promise<T>;
export const SyncAsync = {
 assertSync: <T>(value:
 SyncAsync<T>): T => {
 if (isPromise(value)) {
 throw new Error("Illegal state: value cannot be a
 promise");
 }
 return value;
 },
 then: <T, R>(value: SyncAsync<T>, cb: (value: T) => R | Promise<R>):
 SyncAsync<R>:
 SyncAsync<R> => {
 return isPromise(value) ? value.then(cb) : cb(value);
 },
 all: <T>(syncAsyncValues: SyncAsync<T>[]): SyncAsync<T[]> => {
 return syncAsyncValues.some(isPromise)
 ? Promise.all(syncAsyncValues) : syncAsyncValues as T[];
 }
};

export function error(msg: string): never {
 throw new Error("Internal Error: " + msg);
}

export function syntaxError(msg: string, parseErrors?:
ParseError[]): Error {
 const error = Error(msg);
 (error as any)[ERROR_SYNTAX_ERROR] = true;
 if
 (parseErrors) (error as any)[ERROR_PARSE_ERRORS] = parseErrors;
 return error;
}

const
ERROR_SYNTAX_ERROR = 'ngSyntaxError';
const ERROR_PARSE_ERRORS = 'ngParseErrors';
export

```

```

function isSyntaxError(error: Error): boolean {\n return (error as any)[ERROR_SYNTAX_ERROR];\n}\n\nexport
function getParseErrors(error: Error): ParseError[] {\n return (error as any)[ERROR_PARSE_ERRORS] ||
[];\n}\n\n// Escape characters that have a special meaning in Regular Expressions\nexport function escapeRegExp(s:
string): string {\n return s.replace(/([.*+?^=!:${}()|\[\]\/\\\])/g, '\\\\$1');\n}\n\nconst STRING_MAP_PROTO =
Object.getPrototypeOf({});\nfunction isStrictStringMap(obj: any): boolean {\n return typeof obj === 'object' &&
obj !== null && Object.getPrototypeOf(obj) === STRING_MAP_PROTO;\n}\n\nexport type Byte =
number;\n\nexport function utf8Encode(str: string): Byte[] {\n let encoded: Byte[] = [];\n for (let index = 0; index <
str.length; index++) {\n let codePoint = str.charCodeAt(index);\n\n // decode surrogate\n // see
https://mathiasbynens.be/notes/javascript-encoding#surrogate-formulae\n if (codePoint >= 0xd800 && codePoint
<= 0xdbff && str.length > (index + 1)) {\n const low = str.charCodeAt(index + 1);\n if (low >= 0xdc00 &&
low <= 0xdfff) {\n index++;\n codePoint = ((codePoint - 0xd800) << 10) + low - 0xdc00 + 0x10000;\n
}\n }\n\n if (codePoint <= 0x7f) {\n encoded.push(codePoint);\n } else if (codePoint <= 0x7ff) {\n
encoded.push(((codePoint >> 6) & 0x1f) | 0xc0, (codePoint & 0x3f) | 0x80);\n } else if (codePoint <= 0xffff) {\n
encoded.push(\n (codePoint >> 12) | 0xe0, ((codePoint >> 6) & 0x3f) | 0x80, (codePoint & 0x3f) | 0x80);\n
} else if (codePoint <= 0x1ffff) {\n encoded.push(\n ((codePoint >> 18) & 0x07) | 0xf0, ((codePoint >>
12) & 0x3f) | 0x80,\n ((codePoint >> 6) & 0x3f) | 0x80, (codePoint & 0x3f) | 0x80);\n }\n }\n\n return
encoded;\n}\n\nexport interface OutputContext {\n genFilePath: string;\n statements: o.Statement[];\n
constantPool: ConstantPool;\n importExpr(reference: any, typeParams?: o.Type[]|null, useSummaries?: boolean):
o.Expression;\n}\n\nexport function stringify(token: any): string {\n if (typeof token === 'string') {\n return
token;\n }\n\n if (Array.isArray(token)) {\n return '[' + token.map(stringify).join(', ') + ']';\n }\n\n if (token ==
null) {\n return '' + token;\n }\n\n if (token.overriddenName) {\n return `${token.overriddenName}`;\n }\n\n if
(token.name) {\n return `${token.name}`;\n }\n\n if (!token.toString) {\n return 'object';\n }\n\n //
WARNING: do not try to `JSON.stringify(token)` here\n // see https://github.com/angular/angular/issues/23440\n
const res = token.toString();\n if (res === null) {\n return '' + res;\n }\n\n const newLineIndex =
res.indexOf('\\n');\n return newLineIndex === -1 ? res : res.substring(0, newLineIndex);\n}\n\n/**\n * Lazily
retrieves the reference value from a forwardRef.\n */\nexport function resolveForwardRef(type: any): any {\n if
(typeof type === 'function' && type.hasOwnProperty('__forward_ref__')) {\n return type();\n } else {\n return
type;\n }\n}\n\n/**\n * Determine if the argument is shaped like a Promise\n */\nexport function isPromise<T> =
any>(obj: any): obj is Promise<T> {\n // allow any Promise/A+ compliant thenable.\n // It's up to the caller to
ensure that obj.then conforms to the spec\n return !!obj && typeof obj.then === 'function';\n}\n\nexport class
Version {\n public readonly major: string;\n public readonly minor: string;\n public readonly patch: string;\n\n
constructor(public full: string) {\n const splits = full.split('.');\n this.major = splits[0];\n this.minor =
splits[1];\n this.patch = splits.slice(2).join('.);\n }\n}\n\nexport interface Console {\n log(message: string): void;\n
warn(message: string): void;\n}\n\ndeclare var WorkerGlobalScope: any;\n// CommonJS / Node have global
context exposed as \"global\" variable.\n// We don't want to include the whole node.d.ts this this compilation unit so
we'll just fake\n// the global \"global\" var for now.\ndeclare var global: any;\nconst __window = typeof window !==
'undefined' && window;\nconst __self = typeof self !== 'undefined' && typeof WorkerGlobalScope !== 'undefined'
&&\n self instanceof WorkerGlobalScope && self;\nconst __global = typeof global !== 'undefined' &&
global;\n\n// Check __global first, because in Node tests both __global and __window may be defined and
__global\n// should be __global in that case.\nconst _global: {[name: string]: any} = __global || __window ||
__self;\nexport { _global as global};\n\nexport function newArray<T = any>(size: number): T[];\nexport function
newArray<T>(size: number, value: T): T[];\nexport function newArray<T>(size: number, value?: T): T[] {\n const
list: T[] = [];\n for (let i = 0; i < size; i++) {\n list.push(value!);\n }\n return list;\n}\n\n/**\n * Partitions a given
array into 2 arrays, based on a boolean value returned by the condition\n * function.\n * @param arr Input array
that should be partitioned\n * @param conditionFn Condition function that is called for each item in a given array
and returns a\n * boolean value.\n */\nexport function partitionArray<T, F = T>(arr: (T|F)[], conditionFn:
(value: T|F) => boolean): [T[], F[]] {\n const truthy: T[] = [];\n const falsy: F[] = [];\n for (const item of arr) {\n
(conditionFn(item) ? truthy : falsy).push(item as any);\n }\n return [truthy, falsy];\n}\n\n", /**\n * @license\n *

```

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Copyright Google LLC All Rights Reserved.\n *\n * Use of this source code is governed by an MIT-style license
that can be\n * found in the LICENSE file at https://angular.io/license\n *\n\nimport * as o from
'./output/output_ast';\nimport {error, OutputContext} from './util';\n\nconst CONSTANT_PREFIX = '_c';\n\n**\n * `ConstantPool` tries to reuse literal factories when two or more literals are identical.\n * We determine whether
literals are identical by creating a key out of their AST using the\n * `KeyVisitor`. This constant is used to replace
dynamic expressions which can't be safely\n * converted into a key. E.g. given an expression `foo: bar()`, since
we don't know what\n * the result of `bar` will be, we create a key that looks like `foo: <unknown>`. Note\n * that
we use a variable, rather than something like `null` in order to avoid collisions.\n *\n\nconst
UNKNOWN_VALUE_KEY = o.variable('<unknown>');\n\nexport const enum DefinitionKind {\n Injector,\n
Directive,\n Component,\n Pipe\n}\n\n**\n * Context to use when producing a key.\n *\n * This ensures we see
the constant not the reference variable when producing\n * a key.\n *\n\nconst KEY_CONTEXT = {};\n\n**\n *
Generally all primitive values are excluded from the `ConstantPool`, but there is an exclusion\n * for strings that
reach a certain length threshold. This constant defines the length threshold for\n * strings.\n *\n\nconst
POOL_INCLUSION_LENGTH_THRESHOLD_FOR_STRINGS = 50;\n\n**\n * A node that is a place-holder that
allows the node to be replaced when the actual\n * node is known.\n *\n * This allows the constant pool to change
an expression from a direct reference to\n * a constant to a shared constant. It returns a fix-up node that is later
allowed to\n * change the referenced expression.\n *\n\nclass FixupExpression extends o.Expression {\n private
original: o.Expression;\n\n // TODO(issue/24571): remove '!'.\n shared!: boolean;\n\n constructor(public resolved:
o.Expression) {\n super(resolved.type);\n this.original = resolved;\n }\n\n visitExpression(visitor:
o.ExpressionVisitor, context: any): any {\n if (context === KEY_CONTEXT) {\n // When producing a key we
want to traverse the constant not the\n // variable used to refer to it.\n return
this.original.visitExpression(visitor, context);\n } else {\n return this.resolved.visitExpression(visitor,
context);\n }\n }\n\n isEquivalent(e: o.Expression): boolean {\n return e instanceof FixupExpression &&
this.resolved.isEquivalent(e.resolved);\n }\n\n isConstant() {\n return true;\n }\n\n fixup(expression:
o.Expression) {\n this.resolved = expression;\n this.shared = true;\n }\n}\n\n**\n * A constant pool allows a
code emitter to share constant in an output context.\n *\n * The constant pool also supports sharing access to ivy
definitions references.\n *\n\nexport class ConstantPool {\n statements: o.Statement[] = [];\n private literals = new
Map<string, FixupExpression>();\n private literalFactories = new Map<string, o.Expression>();\n private
injectorDefinitions = new Map<any, FixupExpression>();\n private directiveDefinitions = new Map<any,
FixupExpression>();\n private componentDefinitions = new Map<any, FixupExpression>();\n private
pipeDefinitions = new Map<any, FixupExpression>();\n\n private nextNameIndex = 0;\n\n constructor(private
readonly isClosureCompilerEnabled: boolean = false) {\n\n getConstLiteral(literal: o.Expression, forceShared?:
boolean): o.Expression {\n if ((literal instanceof o.LiteralExpr && !isLongStringLiteral(literal)) ||\n literal
instanceof FixupExpression) {\n // Do not put simple literals into the constant pool or try to produce a constant for
a\n // reference to a constant.\n return literal;\n }\n const key = this.keyOf(literal);\n let fixup =
this.literals.get(key);\n let newValue = false;\n if (!fixup) {\n fixup = new FixupExpression(literal);\n
this.literals.set(key, fixup);\n newValue = true;\n }\n if ((!newValue && !fixup.shared) || (newValue &&
forceShared)) {\n // Replace the expression with a variable\n const name = this.freshName();\n let
definition: o.WriteVarExpr;\n let usage: o.Expression;\n if (this.isClosureCompilerEnabled &&
isLongStringLiteral(literal)) {\n // For string literals, Closure will **always** inline the string at\n //
all usages, duplicating it each time. For large strings, this\n // unnecessarily bloats bundle size. To work
around this restriction, we\n // wrap the string in a function, and call that function for each usage.\n // This
tricks Closure into using inline logic for functions instead of\n // string literals. Function calls are only inlined if
the body is small\n // enough to be worth it. By doing this, very large strings will be\n // shared across
multiple usages, rather than duplicating the string at\n // each usage site.\n //\n // const myStr =
function() { return `very very very long string`; }; \n // const usage1 = myStr(); \n // const usage2 =
myStr(); \n definition = o.variable(name).set(new o.FunctionExpr(\n // Params.\n // [\n // \n //
Statements.\n // new o.ReturnStatement(literal),\n //],\n //)); \n usage =

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o.variable(name).callFn([]);\n } else {\n // Just declare and use the variable directly, without a function call\n // indirection. This saves a few bytes and avoids an unnecessary call.\n definition =\n o.variable(name).set(literal);\n usage = o.variable(name);\n }\n\n this.statements.push(definition.toDeclStmt(o.INFERRED_TYPE, [o.StmtModifier.Final]));\n\n fixup.fixup(usage);\n }\n\n return fixup;\n }\n\n getDefinition(type: any, kind: DefinitionKind, ctx:\n OutputContext, forceShared: boolean = false):\n o.Expression {\n const definitions = this.definitionsOf(kind);\n let fixup = definitions.get(type);\n let newValue = false;\n if (!fixup) {\n const property =\n this.propertyNameOf(kind);\n fixup = new FixupExpression(ctx.importExpr(type).prop(property));\n }\n definitions.set(type, fixup);\n newValue = true;\n }\n\n if ((!newValue && !fixup.shared) || (newValue &&\n forceShared)) {\n const name = this.freshName();\n this.statements.push(\n o.variable(name).set(fixup.resolved).toDeclStmt(o.INFERRED_TYPE, [o.StmtModifier.Final]));\n fixup.fixup(o.variable(name));\n }\n\n return fixup;\n }\n\n getLiteralFactory(literal:\n o.LiteralArrayExpr|o.LiteralMapExpr):\n {literalFactory: o.Expression, literalFactoryArguments: o.Expression[]}\n {\n // Create a pure function that builds an array of a mix of constant and variable expressions\n if (literal\n instanceof o.LiteralArrayExpr) {\n const argumentsForKey = literal.entries.map(e => e.isConstant() ? e :\n UNKNOWN_VALUE_KEY);\n const key = this.keyOf(o.literalArr(argumentsForKey));\n return\n this._getLiteralFactory(key, literal.entries, entries => o.literalArr(entries));\n } else {\n const expressionForKey\n = o.literalMap(\n literal.entries.map(e => ({\n key: e.key,\n value:\n e.value.isConstant() ? e.value : UNKNOWN_VALUE_KEY,\n quoted: e.quoted\n }));\n const key = this.keyOf(expressionForKey);\n return this._getLiteralFactory(\n key,\n literal.entries.map(e => e.value),\n entries => o.literalMap(entries.map((value, index) => ({\n key: literal.entries[index].key,\n value,\n }));\n quoted: literal.entries[index].quoted\n));\n }\n }\n\n private _getLiteralFactory(\n key: string, values: o.Expression[], resultMap: (parameters: o.Expression[]) => o.Expression):\n {literalFactory: o.Expression, literalFactoryArguments: o.Expression[]}\n {\n let literalFactory =\n this.literalFactories.get(key);\n const literalFactoryArguments = values.filter((e => !e.isConstant()));\n if\n (!literalFactory) {\n const resultExpressions = values.map(\n (e, index) => e.isConstant() ?\n this.getConstLiteral(e, true) : o.variable(`a${index}`));\n const parameters =\n resultExpressions.filter(isVariable).map(e => new o.FnParam(e.name!, o.DYNAMIC_TYPE));\n const\n pureFunctionDeclaration =\n o.fn(parameters, [new o.ReturnStatement(resultMap(resultExpressions))],\n o.INFERRED_TYPE);\n const name = this.freshName();\n this.statements.push(\n o.variable(name).set(pureFunctionDeclaration).toDeclStmt(o.INFERRED_TYPE, [\n o.StmtModifier.Final\n]));\n literalFactory = o.variable(name);\n this.literalFactories.set(key, literalFactory);\n }\n\n return\n {literalFactory, literalFactoryArguments};\n }\n\n /**\n * Produce a unique name.\n */\n * The name might be\n unique among different prefixes if any of the prefixes end in\n * a digit so the prefix should be a constant string\n (not based on user input) and\n * must not end in a digit.\n */\n *^ uniqueName(prefix: string): string {\n return\n `${prefix}${this.nextNameIndex++}`;\n }\n\n private definitionsOf(kind: DefinitionKind): Map<any,\n FixupExpression> {\n switch (kind) {\n case DefinitionKind.Component:\n return\n this.componentDefinitions;\n case DefinitionKind.Directive:\n return this.directiveDefinitions;\n case\n DefinitionKind.Injector:\n return this.injectorDefinitions;\n case DefinitionKind.Pipe:\n return\n this.pipeDefinitions;\n }\n\n error(`Unknown definition kind ${kind}`);\n return this.componentDefinitions;\n }\n\n public propertyNameOf(kind: DefinitionKind): string {\n switch (kind) {\n case\n DefinitionKind.Component:\n return 'cmp';\n case DefinitionKind.Directive:\n return 'dir';\n case\n DefinitionKind.Injector:\n return 'inj';\n case DefinitionKind.Pipe:\n return 'pipe';\n }\n\n error(`Unknown definition kind ${kind}`);\n return '<unknown>';\n }\n\n private freshName(): string {\n return\n this.uniqueName(CONSTANT_PREFIX);\n }\n\n private keyOf(expression: o.Expression) {\n return\n expression.visitExpression(new KeyVisitor(), KEY_CONTEXT);\n }\n\n /**\n * Visitor used to determine if 2\n expressions are equivalent and can be shared in the\n * `ConstantPool`.\n */\n * When the id (string) generated by the

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visitor is equal, expressions are considered equivalent.\n */\n\n class KeyVisitor implements o.ExpressionVisitor {\n
 visitLiteralExpr(ast: o.LiteralExpr): string {\n return `${typeof ast.value === 'string' ? '"' + ast.value + '"' :\n
 ast.value}`;\n }\n\n visitLiteralArrayExpr(ast: o.LiteralArrayExpr, context: object): string {\n return\n
 `[${ast.entries.map(entry => entry.visitExpression(this, context)).join(',')}]`;\n }\n\n visitLiteralMapExpr(ast:\n
 o.LiteralMapExpr, context: object): string {\n const mapKey = (entry: o.LiteralMapEntry) => {\n const quote =\n
 entry.quoted ? '"' : '';\n return `${quote}${entry.key}${quote}`;\n };\n const mapEntry = (entry:\n
 o.LiteralMapEntry) => {\n return `${mapKey(entry)}:${entry.value.visitExpression(this, context)}`;\n };\n return\n
 `[${ast.entries.map(mapEntry).join(',')}]`;\n }\n\n visitExternalExpr(ast: o.ExternalExpr): string {\n return\n
 ast.value.moduleName ? `EX:${ast.value.moduleName}:${ast.value.name}` :\n
 `EX:${ast.value.runtime.name}`;\n }\n\n visitReadVarExpr(node: o.ReadVarExpr) {\n return\n
 `VAR:${node.name}`;\n }\n\n visitTypeofExpr(node: o.TypeofExpr, context: any): string {\n return\n
 `TYPEOF:${node.expr.visitExpression(this, context)}`;\n }\n\n visitWrappedNodeExpr = invalid;\n
 visitWriteVarExpr = invalid;\n
 visitWriteKeyExpr = invalid;\n
 visitWritePropExpr = invalid;\n
 visitInvokeMethodExpr = invalid;\n
 visitInvokeFunctionExpr = invalid;\n
 visitInstantiateExpr = invalid;\n
 visitConditionalExpr = invalid;\n
 visitNotExpr = invalid;\n
 visitAssertNotNullExpr = invalid;\n
 visitCastExpr =\n
 invalid;\n
 visitFunctionExpr = invalid;\n
 visitUnaryOperatorExpr = invalid;\n
 visitBinaryOperatorExpr =\n
 invalid;\n
 visitReadPropExpr = invalid;\n
 visitReadKeyExpr = invalid;\n
 visitCommaExpr = invalid;\n
 visitLocalizedString = invalid;\n}\n\nfunction invalid<T>(this: o.ExpressionVisitor, arg: o.Expression|o.Statement):\n
 never {\n throw new Error(\n `Invalid state: Visitor ${this.constructor.name} doesn't handle\n
 ${arg.constructor.name}`);\n}\n\nfunction isVariable(e: o.Expression): e is o.ReadVarExpr {\n return e instanceof\n
 o.ReadVarExpr;\n}\n\nfunction isLongStringLiteral(expr: o.Expression): boolean {\n return expr instanceof\n
 o.LiteralExpr && typeof expr.value === 'string' &&\n
 expr.value.length >=\n
 POOL_INCLUSION_LENGTH_THRESHOLD_FOR_STRINGS;\n}\n\n"/**\n * @license\n * Copyright Google\n * All Rights Reserved.\n * Use of this source code is governed by an MIT-style license that can be\n * found\n
 in the LICENSE file at https://angular.io/license\n */\n\nimport {CompileTokenMetadata} from\n
 './compile_metadata';\nimport {CompileReflector} from './compile_reflector';\nimport * as o from\n
 './output/output_ast';\n\nconst CORE = '@angular/core';\n\nexport class Identifiers {\n static\n
 ANALYZE_FOR_ENTRY_COMPONENTS: o.ExternalReference = {\n name:\n
 'ANALYZE_FOR_ENTRY_COMPONENTS',\n moduleName: CORE,\n };\n static ElementRef:\n
 o.ExternalReference = {\n name: 'ElementRef',\n moduleName: CORE;\n };\n static NgModuleRef: o.ExternalReference =\n
 {\n name: 'NgModuleRef',\n moduleName: CORE;\n };\n static ViewContainerRef: o.ExternalReference = {\n name:\n
 'ViewContainerRef',\n moduleName: CORE;\n };\n static ChangeDetectorRef: o.ExternalReference = {\n name:\n
 'ChangeDetectorRef',\n moduleName: CORE,\n };\n static QueryList: o.ExternalReference = {\n name:\n
 'QueryList',\n moduleName: CORE;\n };\n static TemplateRef: o.ExternalReference = {\n name: 'TemplateRef',\n
 moduleName: CORE;\n };\n static Renderer2: o.ExternalReference = {\n name: 'Renderer2',\n moduleName: CORE;\n };\n
 static CodegenComponentFactoryResolver: o.ExternalReference = {\n name:\n
 'CodegenComponentFactoryResolver',\n moduleName: CORE,\n };\n static ComponentFactoryResolver:\n
 o.ExternalReference = {\n name: 'ComponentFactoryResolver',\n moduleName: CORE,\n };\n static\n
 ComponentFactory: o.ExternalReference = {\n name: 'ComponentFactory',\n moduleName: CORE;\n };\n static\n
 ComponentRef: o.ExternalReference = {\n name: 'ComponentRef',\n moduleName: CORE;\n };\n static NgModuleFactory:\n
 o.ExternalReference = {\n name: 'NgModuleFactory',\n moduleName: CORE;\n };\n static createModuleFactory:\n
 o.ExternalReference = {\n name: 'cmf',\n moduleName: CORE,\n };\n static moduleDef: o.ExternalReference =\n
 {\n name: 'mod',\n moduleName: CORE,\n };\n static moduleProviderDef: o.ExternalReference = {\n name:\n
 'mpd',\n moduleName: CORE,\n };\n static RegisterModuleFactoryFn: o.ExternalReference = {\n name:\n
 'registerModuleFactory',\n moduleName: CORE,\n };\n static inject: o.ExternalReference = {\n name:\n
 'inject',\n moduleName: CORE;\n };\n static directiveInject: o.ExternalReference = {\n name: 'directiveInject',\n
 moduleName: CORE;\n };\n static INJECTOR: o.ExternalReference = {\n name: 'INJECTOR',\n moduleName: CORE;\n };\n
 static Injector: o.ExternalReference = {\n name: 'Injector',\n moduleName: CORE;\n };\n static defineInjectable:\n

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o.ExternalReference = {name: 'defineInjectable', moduleName: CORE};\n static InjectableDef:
o.ExternalReference = {name: 'InjectableDef', moduleName: CORE};\n static ViewEncapsulation:
o.ExternalReference = {\n name: 'ViewEncapsulation',\n moduleName: CORE,\n\n }; \n static
ChangeDetectionStrategy: o.ExternalReference = {\n name: 'ChangeDetectionStrategy',\n moduleName:
CORE,\n\n }; \n static SecurityContext: o.ExternalReference = {\n name: 'SecurityContext',\n moduleName:
CORE,\n\n }; \n static LOCALE_ID: o.ExternalReference = {name: 'LOCALE_ID', moduleName: CORE};\n
static TRANSLATIONS_FORMAT: o.ExternalReference = {\n name: 'TRANSLATIONS_FORMAT',\n
moduleName: CORE,\n\n }; \n static inlineInterpolate: o.ExternalReference = {\n name: 'inlineInterpolate',\n
moduleName: CORE,\n }; \n static interpolate: o.ExternalReference = {name: 'interpolate', moduleName:
CORE};\n static EMPTY_ARRAY: o.ExternalReference = {name: 'EMPTY_ARRAY', moduleName: CORE};\n
static EMPTY_MAP: o.ExternalReference = {name: 'EMPTY_MAP', moduleName: CORE};\n static Renderer:
o.ExternalReference = {name: 'Renderer', moduleName: CORE};\n static viewDef: o.ExternalReference = {name:
'vid', moduleName: CORE};\n static elementDef: o.ExternalReference = {name: 'eld', moduleName: CORE};\n
static anchorDef: o.ExternalReference = {name: 'and', moduleName: CORE};\n static textDef: o.ExternalReference
= {name: 'ted', moduleName: CORE};\n static directiveDef: o.ExternalReference = {name: 'did', moduleName:
CORE};\n static providerDef: o.ExternalReference = {name: 'prd', moduleName: CORE};\n static queryDef:
o.ExternalReference = {name: 'qud', moduleName: CORE};\n static pureArrayDef: o.ExternalReference = {name:
'pad', moduleName: CORE};\n static pureObjectDef: o.ExternalReference = {name: 'pod', moduleName: CORE};\n
static purePipeDef: o.ExternalReference = {name: 'ppd', moduleName: CORE};\n static pipeDef:
o.ExternalReference = {name: 'pid', moduleName: CORE};\n static nodeValue: o.ExternalReference = {name:
'nov', moduleName: CORE};\n static ngContentDef: o.ExternalReference = {name: 'ncd', moduleName: CORE};\n
static unwrapValue: o.ExternalReference = {name: 'unv', moduleName: CORE};\n static createRendererType2:
o.ExternalReference = {name: 'crt', moduleName: CORE};\n // type only\n static RendererType2:
o.ExternalReference = {\n name: 'RendererType2',\n moduleName: CORE,\n\n }; \n // type only\n static
ViewDefinition: o.ExternalReference = {\n name: 'ViewDefinition',\n moduleName: CORE,\n }; \n static
createComponentFactory: o.ExternalReference = {name: 'ccf', moduleName: CORE};\n static setClassMetadata:
o.ExternalReference = {name: 'setClassMetadata', moduleName: CORE};\n\n\nexport function
createTokenForReference(reference: any): CompileTokenMetadata {\n return {identifier: {reference:
reference}};\n}\n\nexport function createTokenForExternalReference(\n reflector: CompileReflector, reference:
o.ExternalReference): CompileTokenMetadata {\n return
createTokenForReference(reflector.resolveExternalReference(reference));\n}\n\n"/**\n * @license\n * Copyright
Google LLC All Rights Reserved.\n * \n * Use of this source code is governed by an MIT-style license that can be\n
* found in the LICENSE file at https://angular.io/license\n * \n\n/**\n * A token representing the a reference to a
static type.\n * \n * This token is unique for a filePath and name and can be used as a hash table key.\n * \n\nexport
class StaticSymbol {\n constructor(public filePath: string, public name: string, public members: string[]) {} \n\n
assertNoMembers() {\n if (this.members.length) {\n throw new Error(\n `Illegal state: symbol without
members expected, but got ${JSON.stringify(this)}.`);\n } \n }\n\n\n/**\n * A cache of static symbol used by the
StaticReflector to return the same symbol for the\n * same symbol values.\n * \n\nexport class StaticSymbolCache {\n
private cache = new Map<string, StaticSymbol>();\n get(declarationFile: string, name: string, members?:
string[]): StaticSymbol {\n members = members || [];\n const memberSuffix = members.length ?
`${members.join('.')}` : "";\n const key = `\"${declarationFile}\".${name}${memberSuffix}`;\n let result =
this.cache.get(key);\n if (!result) {\n result = new StaticSymbol(declarationFile, name, members);\n
this.cache.set(key, result);\n } \n return result;\n } \n}\n\n"/**\n * @license\n * Copyright Google LLC All Rights
Reserved.\n * \n * Use of this source code is governed by an MIT-style license that can be\n * found in the
LICENSE file at https://angular.io/license\n * \n\nimport {StaticSymbol} from './aot/static_symbol';\nimport
{ChangeDetectionStrategy, SchemaMetadata, Type, ViewEncapsulation} from './core';\nimport {LifecycleHooks}
from './lifecycle_reflector';\nimport {ParseTreeResult as HtmlParseTreeResult} from './ml_parser/parser';\nimport
{splitAtColon, stringify} from './util';\n\n// group 0: \"[prop] or (event) or @trigger\"\n// group 1: \"prop\" from

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["prop"]\n// group 2: \"event\" from \"(event)\" \n// group 3: \"@trigger\" from \"@trigger\" \nconst
HOST_REG_EXP = /^(?:\([\^\]]+\)|\(\(?([\^\]]+\)\)|\(\@[-\w]+\)$)/;\n\nexport function
sanitizeIdentifier(name: string): string {\n return name.replace(/\\W/g, '_');\n}\n\nlet _anonymousTypeIndex =
0;\n\nexport function identifierName(compileIdentifier: CompileIdentifierMetadata|null|undefined): string|\n null
{\n if (!compileIdentifier || !compileIdentifier.reference) {\n return null;\n }\n const ref =
compileIdentifier.reference;\n if (ref instanceof StaticSymbol) {\n return ref.name;\n }\n if
(ref['__anonymousType']) {\n return ref['__anonymousType'];\n }\n let identifier = stringify(ref);\n if
(identifier.indexOf('(') >= 0) {\n // case: anonymous functions!\n identifier =
`anonymous_${_anonymousTypeIndex++}`;\n ref['__anonymousType'] = identifier;\n } else {\n identifier =
sanitizeIdentifier(identifier);\n }\n return identifier;\n}\n\nexport function identifierModuleUrl(compileIdentifier:
CompileIdentifierMetadata): string {\n const ref = compileIdentifier.reference;\n if (ref instanceof StaticSymbol)
{\n return ref.filePath;\n }\n // Runtime type\n return `.${stringify(ref)}`;\n}\n\nexport function
viewClassName(compType: any, embeddedTemplateIndex: number): string {\n return
`View_${identifierName({reference: compType})}_${embeddedTemplateIndex}`;\n}\n\nexport function
rendererTypeName(compType: any): string {\n return `RenderType_${identifierName({reference:
compType})}`;\n}\n\nexport function hostViewClassName(compType: any): string {\n return
`HostView_${identifierName({reference: compType})}`;\n}\n\nexport function
componentFactoryName(compType: any): string {\n return `${identifierName({reference:
compType})}NgFactory`;\n}\n\nexport interface ProxyClass {\n setDelegate(delegate: any): void;\n}\n\nexport
interface CompileIdentifierMetadata {\n reference: any;\n}\n\nexport enum CompileSummaryKind {\n Pipe,\n Directive,\n NgModule,\n Injectable\n}\n\n/**\n * A CompileSummary is the data needed to use a directive / pipe /
module\n * in other modules / components. However, this data is not enough to compile\n * the directive / module
itself.\n */\n\nexport interface CompileTypeSummary {\n summaryKind: CompileSummaryKind|null;\n type:
CompileTypeMetadata;\n}\n\nexport interface CompileDiDependencyMetadata {\n isAttribute?: boolean;\n
isSelf?: boolean;\n isHost?: boolean;\n isSkipSelf?: boolean;\n isOptional?: boolean;\n isValue?: boolean;\n
token?: CompileTokenMetadata;\n value?: any;\n}\n\nexport interface CompileProviderMetadata {\n token:
CompileTokenMetadata;\n useClass?: CompileTypeMetadata;\n useValue?: any;\n useExisting?:
CompileTokenMetadata;\n useFactory?: CompileFactoryMetadata;\n deps?: CompileDiDependencyMetadata[];\n
multi?: boolean;\n}\n\nexport interface CompileFactoryMetadata extends CompileIdentifierMetadata {\n diDeps:
CompileDiDependencyMetadata[];\n reference: any;\n}\n\nexport function tokenName(token:
CompileTokenMetadata) {\n return token.value != null ? sanitizeIdentifier(token.value) :
identifierName(token.identifier);\n}\n\nexport function tokenReference(token: CompileTokenMetadata) {\n if
(token.identifier != null) {\n return token.identifier.reference;\n } else {\n return token.value;\n }\n}\n\nexport
interface CompileTokenMetadata {\n value?: any;\n identifier?:
CompileIdentifierMetadata|CompileTypeMetadata;\n}\n\nexport interface CompileInjectableMetadata {\n symbol:
StaticSymbol;\n type: CompileTypeMetadata;\n\n providedIn?: StaticSymbol;\n\n useValue?: any;\n useClass?:
StaticSymbol;\n useExisting?: StaticSymbol;\n useFactory?: StaticSymbol;\n deps?: any[];\n}\n\n/**\n * Metadata
regarding compilation of a type.\n */\n\nexport interface CompileTypeMetadata extends CompileIdentifierMetadata
{\n diDeps: CompileDiDependencyMetadata[];\n lifecycleHooks: LifecycleHooks[];\n reference:
any;\n}\n\nexport interface CompileQueryMetadata {\n selectors: Array<CompileTokenMetadata>;\n descendants:
boolean;\n first: boolean;\n propertyName: string;\n read: CompileTokenMetadata;\n static?: boolean;\n}\n\n/**\n * Metadata
about a stylesheet\n */\n\nexport class CompileStylesheetMetadata {\n moduleUrl: string|null;\n styles:
string[];\n styleUrls: string[];\n constructor(\n {moduleUrl, styles, styleUrls}: \n {moduleUrl?: string,
styles?: string[], styleUrls?: string[]} = {})\n {\n this.moduleUrl = moduleUrl || null;\n this.styles =
_normalizeArray(styles);\n this.styleUrls = _normalizeArray(styleUrls);\n }\n}\n\n/**\n * Summary Metadata
regarding compilation of a template.\n */\n\nexport interface CompileTemplateSummary {\n ngContentSelectors:
string[];\n encapsulation: ViewEncapsulation|null;\n styles: string[];\n animations: any[]|null;\n}\n\n/**\n *
Metadata regarding compilation of a template.\n */\n\nexport class CompileTemplateMetadata {\n encapsulation:

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ViewEncapsulation|null;\n template: string|null;\n templateUrl: string|null;\n htmlAst: HtmlParseTreeResult|null;\n
isInline: boolean;\n styles: string[];\n styleUrls: string[];\n externalStylesheets: CompileStylesheetMetadata[];\n
animations: any[];\n ngContentSelectors: string[];\n interpolation: [string, string]|null;\n preserveWhitespaces:
boolean;\n constructor({\n encapsulation,\n template,\n templateUrl,\n htmlAst,\n styles,\n styleUrls,\n
externalStylesheets,\n animations,\n ngContentSelectors,\n interpolation,\n isInline,\n
preserveWhitespaces\n }): {\n encapsulation: ViewEncapsulation|null,\n template: string|null,\n templateUrl:
string|null,\n htmlAst: HtmlParseTreeResult|null,\n styles: string[],\n styleUrls: string[],\n
externalStylesheets: CompileStylesheetMetadata[],\n ngContentSelectors: string[],\n animations: any[],\n
interpolation: [string, string]|null,\n isInline: boolean,\n preserveWhitespaces: boolean\n }) {\n
this.encapsulation = encapsulation;\n this.template = template;\n this.templateUrl = templateUrl;\n
this.htmlAst = htmlAst;\n this.styles = _normalizeArray(styles);\n this.styleUrls = _normalizeArray(styleUrls);\n
 this.externalStylesheets = _normalizeArray(externalStylesheets);\n this.animations = animations ?
flatten(animations) : [];\n this.ngContentSelectors = ngContentSelectors || [];\n if (interpolation &&
interpolation.length !== 2) {\n throw new Error(`interpolation` should have a start and an end symbol.`);\n }\n
this.interpolation = interpolation;\n this.isInline = isInline;\n this.preserveWhitespaces = preserveWhitespaces;\n
}\n\n toSummary(): CompileTemplateSummary {\n return {\n ngContentSelectors: this.ngContentSelectors,\n
encapsulation: this.encapsulation,\n styles: this.styles,\n animations: this.animations\n };}\n}\n\nexport
interface CompileEntryComponentMetadata {\n componentType: any;\n componentFactory:
StaticSymbol|object;\n}\n\n// Note: This should only use interfaces as nested data types\n// as we need to be able to
serialize this from/to JSON!\nexport interface CompileDirectiveSummary extends CompileTypeSummary {\n type:
CompileTypeMetadata;\n isComponent: boolean;\n selector: string|null;\n exportAs: string|null;\n inputs: {[key:
string]: string};\n outputs: {[key: string]: string};\n hostListeners: {[key: string]: string};\n hostProperties: {[key:
string]: string};\n hostAttributes: {[key: string]: string};\n providers: CompileProviderMetadata[];\n
viewProviders: CompileProviderMetadata[];\n queries: CompileQueryMetadata[];\n guards: {[key: string]: any};\n
viewQueries: CompileQueryMetadata[];\n entryComponents: CompileEntryComponentMetadata[];\n
changeDetection: ChangeDetectionStrategy|null;\n template: CompileTemplateSummary|null;\n
componentViewType: StaticSymbol|ProxyClass|null;\n rendererType: StaticSymbol|object|null;\n
componentFactory: StaticSymbol|object|null;\n}\n\n/**\n * Metadata regarding compilation of a directive.\n
*/\nexport class CompileDirectiveMetadata {\n static create({\n isHost,\n type,\n isComponent,\n selector,\n
exportAs,\n changeDetection,\n inputs,\n outputs,\n host,\n providers,\n viewProviders,\n queries,\n
guards,\n viewQueries,\n entryComponents,\n template,\n componentViewType,\n rendererType,\n
componentFactory\n }): {\n isHost: boolean,\n type: CompileTypeMetadata,\n isComponent: boolean,\n
selector: string|null,\n exportAs: string|null,\n changeDetection: ChangeDetectionStrategy|null,\n inputs:
string[],\n outputs: string[],\n host: {[key: string]: string},\n providers: CompileProviderMetadata[],\n
viewProviders: CompileProviderMetadata[],\n queries: CompileQueryMetadata[],\n guards: {[key: string]:
any};\n viewQueries: CompileQueryMetadata[],\n entryComponents: CompileEntryComponentMetadata[],\n
template: CompileTemplateMetadata,\n componentViewType: StaticSymbol|ProxyClass|null,\n rendererType:
StaticSymbol|object|null,\n componentFactory: StaticSymbol|object|null,\n }): CompileDirectiveMetadata {\n
const hostListeners: {[key: string]: string} = {};\n const hostProperties: {[key: string]: string} = {};\n const
hostAttributes: {[key: string]: string} = {};\n if (host !== null) {\n Object.keys(host).forEach(key => {\n
const value = host[key];\n const matches = key.match(HOST_REG_EXP);\n if (matches === null) {\n
hostAttributes[key] = value;\n } else if (matches[1] !== null) {\n hostProperties[matches[1]] = value;\n
 } else if (matches[2] !== null) {\n hostListeners[matches[2]] = value;\n }\n });\n }\n const
inputsMap: {[key: string]: string} = {};\n if (inputs !== null) {\n inputs.forEach((bindConfig: string) => {\n
// canonical syntax: `dirProp: elProp`\n // if there is no `:` , use dirProp = elProp\n const parts =
splitAtColon(bindConfig, [bindConfig, bindConfig]);\n inputsMap[parts[0]] = parts[1];\n });\n }\n const
outputsMap: {[key: string]: string} = {};\n if (outputs !== null) {\n outputs.forEach((bindConfig: string) => {\n
// canonical syntax: `dirProp: elProp`\n // if there is no `:` , use dirProp = elProp\n const parts =

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splitAtColon(bindConfig, [bindConfig, bindConfig]);\n outputsMap[parts[0]] = parts[1];\n });\n }\n\n return new CompileDirectiveMetadata({\n isHost,\n type,\n isComponent: !!isComponent,\n selector,\n exportAs,\n changeDetection,\n inputs: inputsMap,\n outputs: outputsMap,\n hostListeners,\n hostProperties,\n hostAttributes,\n providers,\n viewProviders,\n queries,\n guards,\n viewQueries,\n entryComponents,\n template,\n componentViewType,\n rendererType,\n componentFactory,\n });\n }\n isHost: boolean;\n type: CompileTypeMetadata;\n isComponent: boolean;\n selector: string|null;\n exportAs: string|null;\n changeDetection: ChangeDetectionStrategy|null;\n inputs: {[key: string]: string};\n outputs: {[key: string]: string};\n hostListeners: {[key: string]: string};\n hostProperties: {[key: string]: string};\n hostAttributes: {[key: string]: string};\n providers: CompileProviderMetadata[];\n viewProviders: CompileProviderMetadata[];\n queries: CompileQueryMetadata[];\n guards: {[key: string]: any};\n viewQueries: CompileQueryMetadata[];\n entryComponents: CompileEntryComponentMetadata[];\n\n template: CompileTemplateMetadata|null;\n\n componentViewType: StaticSymbol|ProxyClass|null;\n rendererType: StaticSymbol|object|null;\n componentFactory: StaticSymbol|object|null;\n\n constructor({\n isHost,\n type,\n isComponent,\n selector,\n exportAs,\n changeDetection,\n inputs,\n outputs,\n hostListeners,\n hostProperties,\n hostAttributes,\n providers,\n viewProviders,\n queries,\n guards,\n viewQueries,\n entryComponents,\n template,\n componentViewType,\n rendererType,\n componentFactory\n }): {\n isHost: boolean,\n type: CompileTypeMetadata,\n isComponent: boolean,\n selector: string|null,\n exportAs: string|null,\n changeDetection: ChangeDetectionStrategy|null,\n inputs: {[key: string]: string},\n outputs: {[key: string]: string},\n hostListeners: {[key: string]: string},\n hostProperties: {[key: string]: string},\n hostAttributes: {[key: string]: string},\n providers: CompileProviderMetadata[],\n viewProviders: CompileProviderMetadata[],\n queries: CompileQueryMetadata[],\n guards: {[key: string]: any},\n viewQueries: CompileQueryMetadata[],\n entryComponents: CompileEntryComponentMetadata[],\n template: CompileTemplateMetadata|null,\n componentViewType: StaticSymbol|ProxyClass|null,\n rendererType: StaticSymbol|object|null,\n componentFactory: StaticSymbol|object|null,\n }) {\n this.isHost = !!isHost;\n this.type = type;\n this.isComponent = isComponent;\n this.selector = selector;\n this.exportAs = exportAs;\n this.changeDetection = changeDetection;\n this.inputs = inputs;\n this.outputs = outputs;\n this.hostListeners = hostListeners;\n this.hostProperties = hostProperties;\n this.hostAttributes = hostAttributes;\n this.providers = _normalizeArray(providers);\n this.viewProviders = _normalizeArray(viewProviders);\n this.queries = _normalizeArray(queries);\n this.guards = guards;\n this.viewQueries = _normalizeArray(viewQueries);\n this.entryComponents = _normalizeArray(entryComponents);\n this.template = template;\n\n this.componentViewType = componentViewType;\n this.rendererType = rendererType;\n this.componentFactory = componentFactory;\n }\n\n toSummary(): CompileDirectiveSummary {\n return {\n summaryKind: CompileSummaryKind.Directive,\n type: this.type,\n isComponent: this.isComponent,\n selector: this.selector,\n exportAs: this.exportAs,\n inputs: this.inputs,\n outputs: this.outputs,\n hostListeners: this.hostListeners,\n hostProperties: this.hostProperties,\n hostAttributes: this.hostAttributes,\n providers: this.providers,\n viewProviders: this.viewProviders,\n queries: this.queries,\n guards: this.guards,\n viewQueries: this.viewQueries,\n entryComponents: this.entryComponents,\n changeDetection: this.changeDetection,\n template: this.template && this.template.toSummary(),\n componentViewType: this.componentViewType,\n rendererType: this.rendererType,\n componentFactory: this.componentFactory\n };}\n }\n}\n\nexport interface CompilePipeSummary extends CompileTypeSummary {\n type: CompileTypeMetadata;\n name: string;\n pure: boolean;\n}\n\nexport class CompilePipeMetadata {\n type: CompileTypeMetadata;\n name: string;\n pure: boolean;\n\n constructor({type, name, pure}): {\n type: CompileTypeMetadata,\n name: string,\n pure: boolean,\n }) {\n this.type = type;\n this.name = name;\n this.pure = !!pure;\n }\n\n toSummary(): CompilePipeSummary {\n return {\n summaryKind: CompileSummaryKind.Pipe,\n type: this.type,\n name: this.name,\n pure: this.pure\n };}\n }\n}\n\n// Note: This should only use interfaces as nested data types\n// as we need to be able to serialize this from/to JSON!\n\nexport interface CompileNgModuleSummary extends CompileTypeSummary {\n type: CompileTypeMetadata;\n\n // Note: This is transitive over the exported modules.\n exportedDirectives:

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CompileIdentifierMetadata[];\n // Note: This is transitive over the exported modules.\n exportedPipes:
CompileIdentifierMetadata[];\n\n // Note: This is transitive.\n entryComponents:
CompileEntryComponentMetadata[];\n // Note: This is transitive.\n providers: {provider:
CompileProviderMetadata, module: CompileIdentifierMetadata[]};\n // Note: This is transitive.\n modules:
CompileTypeMetadata[];\n}\n\nexport class CompileShallowModuleMetadata {\n // TODO(issue/24571): remove
'!\n type!: CompileTypeMetadata;\n\n rawExports: any;\n rawImports: any;\n rawProviders: any;\n}\n\n**\n *
Metadata regarding compilation of a module.\n *\nexport class CompileNgModuleMetadata {\n type:
CompileTypeMetadata;\n declaredDirectives: CompileIdentifierMetadata[];\n exportedDirectives:
CompileIdentifierMetadata[];\n declaredPipes: CompileIdentifierMetadata[];\n\n exportedPipes:
CompileIdentifierMetadata[];\n entryComponents: CompileEntryComponentMetadata[];\n bootstrapComponents:
CompileIdentifierMetadata[];\n providers: CompileProviderMetadata[];\n\n importedModules:
CompileNgModuleSummary[];\n exportedModules: CompileNgModuleSummary[];\n schemas:
SchemaMetadata[];\n id: string|null;\n\n transitiveModule: TransitiveCompileNgModuleMetadata;\n\n
constructor({\n type,\n providers,\n declaredDirectives,\n exportedDirectives,\n declaredPipes,\n
exportedPipes,\n entryComponents,\n bootstrapComponents,\n importedModules,\n exportedModules,\n
schemas,\n transitiveModule,\n id\n }): {\n type: CompileTypeMetadata,\n providers:
CompileProviderMetadata[],\n declaredDirectives: CompileIdentifierMetadata[],\n exportedDirectives:
CompileIdentifierMetadata[],\n declaredPipes: CompileIdentifierMetadata[],\n exportedPipes:
CompileIdentifierMetadata[],\n entryComponents: CompileEntryComponentMetadata[],\n
bootstrapComponents: CompileIdentifierMetadata[],\n importedModules: CompileNgModuleSummary[],\n
exportedModules: CompileNgModuleSummary[],\n transitiveModule: TransitiveCompileNgModuleMetadata,\n
schemas: SchemaMetadata[],\n id: string|null\n }) {\n this.type = type || null;\n this.declaredDirectives =
_normalizeArray(declaredDirectives);\n this.exportedDirectives = _normalizeArray(exportedDirectives);\n
this.declaredPipes = _normalizeArray(declaredPipes);\n this.exportedPipes = _normalizeArray(exportedPipes);\n
this.providers = _normalizeArray(providers);\n this.entryComponents = _normalizeArray(entryComponents);\n
this.bootstrapComponents = _normalizeArray(bootstrapComponents);\n this.importedModules =
_normalizeArray(importedModules);\n this.exportedModules = _normalizeArray(exportedModules);\n
this.schemas = _normalizeArray(schemas);\n this.id = id || null;\n this.transitiveModule = transitiveModule ||
null;\n }\n\n toSummary(): CompileNgModuleSummary {\n const module = this.transitiveModule!;\n return
{\n summaryKind: CompileSummaryKind.NgModule,\n type: this.type,\n entryComponents:
module.entryComponents,\n providers: module.providers,\n modules: module.modules,\n
exportedDirectives: module.exportedDirectives,\n exportedPipes: module.exportedPipes\n };\n }\n}\n\nexport
class TransitiveCompileNgModuleMetadata {\n directivesSet = new Set<any>();\n directives:
CompileIdentifierMetadata[] = [];\n exportedDirectivesSet = new Set<any>();\n exportedDirectives:
CompileIdentifierMetadata[] = [];\n pipesSet = new Set<any>();\n pipes: CompileIdentifierMetadata[] = [];\n
exportedPipesSet = new Set<any>();\n exportedPipes: CompileIdentifierMetadata[] = [];\n modulesSet = new
Set<any>();\n modules: CompileTypeMetadata[] = [];\n entryComponentsSet = new Set<any>();\n
entryComponents: CompileEntryComponentMetadata[] = [];\n\n providers: {provider: CompileProviderMetadata,
module: CompileIdentifierMetadata}[] = [];\n\n addProvider(provider: CompileProviderMetadata, module:
CompileIdentifierMetadata) {\n this.providers.push({provider: provider, module: module});\n }\n\n
addDirective(id: CompileIdentifierMetadata) {\n if (!this.directivesSet.has(id.reference)) {\n
this.directivesSet.add(id.reference);\n this.directives.push(id);\n }\n }\n\n addExportedDirective(id:
CompileIdentifierMetadata) {\n if (!this.exportedDirectivesSet.has(id.reference)) {\n
this.exportedDirectivesSet.add(id.reference);\n this.exportedDirectives.push(id);\n }\n }\n\n addPipe(id:
CompileIdentifierMetadata) {\n if (!this.pipesSet.has(id.reference)) {\n this.pipesSet.add(id.reference);\n
this.pipes.push(id);\n }\n }\n\n addExportedPipe(id: CompileIdentifierMetadata) {\n if
(!this.exportedPipesSet.has(id.reference)) {\n this.exportedPipesSet.add(id.reference);\n
this.exportedPipes.push(id);\n }\n }\n\n addModule(id: CompileTypeMetadata) {\n if

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(!this.modulesSet.has(id.reference)) {\n this.modulesSet.add(id.reference);\n this.modules.push(id);\n }\n }\n addEntryComponent(ec: CompileEntryComponentMetadata) {\n if\n (!this.entryComponentsSet.has(ec.componentType)) {\n this.entryComponentsSet.add(ec.componentType);\n this.entryComponents.push(ec);\n }\n }\n\nfunction _normalizeArray(obj: any[]|undefined|null): any[] {\n return obj || [];\n}\n\nexport class ProviderMeta {\n token: any;\n useClass: Type|null;\n useValue: any;\n useExisting: any;\n useFactory: Function|null;\n dependencies: Object[]|null;\n multi: boolean;\n\n constructor(token: any, {useClass, useValue, useExisting, useFactory, deps, multi}: {\n useClass?: Type,\n useValue?: any,\n useExisting?: any,\n useFactory?: Function|null,\n deps?: Object[]|null,\n multi?:\n boolean\n }) {\n this.token = token;\n this.useClass = useClass || null;\n this.useValue = useValue;\n this.useExisting = useExisting;\n this.useFactory = useFactory || null;\n this.dependencies = deps || null;\n this.multi = !!multi;\n }\n}\n\nexport function flatten<T>(list: Array<T|T[]>): T[] {\n return list.reduce((flat: any[],\n item: T|T[]): T[] => {\n const flatItem = Array.isArray(item) ? flatten(item) : item;\n return\n (<T[]>flat).concat(flatItem);\n }, []);\n}\n\nfunction jitSourceUrl(url: string) {\n // Note: We need 3 "\\^" so that ng\n shows up as a separate domain\n // in the chrome dev tools.\n return url.replace(/(\\w+:\\\\|\\w+:-|\\w+)?(\\w+)?/,
'ng:///');\n}\n\nexport function templateUrl(\n ngModuleType: CompileIdentifierMetadata, compMeta:
{type: CompileIdentifierMetadata},\n templateMeta: {isInline: boolean, templateUrl: string|null}) {\n let url:
string;\n if (templateMeta.isInline) {\n if (compMeta.type.reference instanceof StaticSymbol) {\n // Note: a ts
file might contain multiple components with inline templates,\n // so we need to give them unique urls, as these
will be used for sourcemaps.\n url =
`${compMeta.type.reference.filePath}.${compMeta.type.reference.name}.html`;\n } else {\n url =
`${identifierName(ngModuleType)}${identifierName(compMeta.type)}.html`;\n }\n } else {\n url =
templateMeta.templateUrl!;\n }\n return compMeta.type.reference instanceof StaticSymbol ? url :
jitSourceUrl(url);\n}\n\nexport function sharedStylesheetJitUrl(meta: CompileStylesheetMetadata, id: number) {\n const pathParts = meta.moduleUrl!.split(/\\|\\/|\\/g);\n const baseName = pathParts[pathParts.length - 1];\n return
jitSourceUrl(`css/${id}${baseName}.ngstyle.js`);\n}\n\nexport function ngModuleJitUrl(moduleMeta:
CompileNgModuleMetadata): string {\n return
jitSourceUrl(`${identifierName(moduleMeta.type)}/module.ngfactory.js`);\n}\n\nexport function templateUrl(\n ngModuleType: CompileIdentifierMetadata, compMeta: CompileDirectiveMetadata): string {\n return
jitSourceUrl(\n
`${identifierName(ngModuleType)}${identifierName(compMeta.type)}.ngfactory.js`);\n}\n\n"/**\n * @license\n *
Copyright Google LLC All Rights Reserved.\n * Use of this source code is governed by an MIT-style license
that can be\n * found in the LICENSE file at https://angular.io/license\n */\n\nimport * as o from
'./output/output_ast';\n\nconst CORE = '@angular/core';\n\nexport class Identifiers {\n /* Methods */\n static
NEW_METHOD = 'factory';\n static TRANSFORM_METHOD = 'transform';\n static PATCH_DEPS =
'patchedDeps';\n\n /* Instructions */\n static namespaceHTML: o.ExternalReference = {name: 'namespaceHTML',
moduleName: CORE};\n\n static namespaceMathML: o.ExternalReference = {name: 'namespaceMathML',
moduleName: CORE};\n\n static namespaceSVG: o.ExternalReference = {name: 'namespaceSVG', moduleName:
CORE};\n\n static element: o.ExternalReference = {name: 'element', moduleName: CORE};\n\n static
elementStart: o.ExternalReference = {name: 'elementStart', moduleName: CORE};\n\n static
elementEnd: o.ExternalReference = {name: 'elementEnd', moduleName: CORE};\n\n static
advance: o.ExternalReference = {name: 'advance', moduleName: CORE};\n\n static
syntheticHostProperty: o.ExternalReference = {name:
'syntheticHostProperty', moduleName: CORE};\n\n static
syntheticHostListener: o.ExternalReference = {name:
'syntheticHostListener', moduleName: CORE};\n\n static
attribute: o.ExternalReference = {name:
'attribute', moduleName: CORE};\n\n static
attributeInterpolate1: o.ExternalReference = {name:
'attributeInterpolate1', moduleName: CORE};\n\n static
attributeInterpolate2: o.ExternalReference = {name:
'attributeInterpolate2', moduleName: CORE};\n\n static
attributeInterpolate3: o.ExternalReference = {name:
'attributeInterpolate3', moduleName: CORE};\n\n static
attributeInterpolate4: o.ExternalReference = {name:
'attributeInterpolate4', moduleName: CORE};\n\n static
attributeInterpolate5: o.ExternalReference = {name:


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o.ExternalReference = {name: 'textInterpolate5', moduleName: CORE};\n static textInterpolate6:
o.ExternalReference = {name: 'textInterpolate6', moduleName: CORE};\n static textInterpolate7:
o.ExternalReference = {name: 'textInterpolate7', moduleName: CORE};\n static textInterpolate8:
o.ExternalReference = {name: 'textInterpolate8', moduleName: CORE};\n static textInterpolateV:
o.ExternalReference = {name: 'textInterpolateV', moduleName: CORE};\n\n static restoreView:
o.ExternalReference = {name: 'restoreView', moduleName: CORE};\n\n static pureFunction0: o.ExternalReference
= {name: 'pureFunction0', moduleName: CORE};\n static pureFunction1: o.ExternalReference = {name:
'pureFunction1', moduleName: CORE};\n static pureFunction2: o.ExternalReference = {name: 'pureFunction2',
moduleName: CORE};\n static pureFunction3: o.ExternalReference = {name: 'pureFunction3', moduleName:
CORE};\n static pureFunction4: o.ExternalReference = {name: 'pureFunction4', moduleName: CORE};\n static
pureFunction5: o.ExternalReference = {name: 'pureFunction5', moduleName: CORE};\n static pureFunction6:
o.ExternalReference = {name: 'pureFunction6', moduleName: CORE};\n static pureFunction7: o.ExternalReference
= {name: 'pureFunction7', moduleName: CORE};\n static pureFunction8: o.ExternalReference = {name:
'pureFunction8', moduleName: CORE};\n static pureFunctionV: o.ExternalReference = {name: 'pureFunctionV',
moduleName: CORE};\n\n static pipeBind1: o.ExternalReference = {name: 'pipeBind1', moduleName: CORE};\n\n
static pipeBind2: o.ExternalReference = {name: 'pipeBind2', moduleName: CORE};\n static pipeBind3:
o.ExternalReference = {name: 'pipeBind3', moduleName: CORE};\n static pipeBind4: o.ExternalReference =
{name: 'pipeBind4', moduleName: CORE};\n static pipeBindV: o.ExternalReference = {name: 'pipeBindV',
moduleName: CORE};\n\n static hostProperty: o.ExternalReference = {name: 'hostProperty', moduleName:
CORE};\n\n static property: o.ExternalReference = {name: 'property', moduleName: CORE};\n\n static
propertyInterpolate:\n o.ExternalReference = {name: 'propertyInterpolate', moduleName: CORE};\n static
propertyInterpolate1:\n o.ExternalReference = {name: 'propertyInterpolate1', moduleName: CORE};\n static
propertyInterpolate2:\n o.ExternalReference = {name: 'propertyInterpolate2', moduleName: CORE};\n static
propertyInterpolate3:\n o.ExternalReference = {name: 'propertyInterpolate3', moduleName: CORE};\n static
propertyInterpolate4:\n o.ExternalReference = {name: 'propertyInterpolate4', moduleName: CORE};\n static
propertyInterpolate5:\n o.ExternalReference = {name: 'propertyInterpolate5', moduleName: CORE};\n static
propertyInterpolate6:\n o.ExternalReference = {name: 'propertyInterpolate6', moduleName: CORE};\n static
propertyInterpolate7:\n o.ExternalReference = {name: 'propertyInterpolate7', moduleName: CORE};\n static
propertyInterpolate8:\n o.ExternalReference = {name: 'propertyInterpolate8', moduleName: CORE};\n static
propertyInterpolateV:\n o.ExternalReference = {name: 'propertyInterpolateV', moduleName: CORE};\n\n static
i18n: o.ExternalReference = {name: 'i18n', moduleName: CORE};\n static i18nAttributes: o.ExternalReference =
{name: 'i18nAttributes', moduleName: CORE};\n static i18nExp: o.ExternalReference = {name: 'i18nExp',
moduleName: CORE};\n static i18nStart: o.ExternalReference = {name: 'i18nStart', moduleName: CORE};\n\n
static i18nEnd: o.ExternalReference = {name: 'i18nEnd', moduleName: CORE};\n static i18nApply:
o.ExternalReference = {name: 'i18nApply', moduleName: CORE};\n static i18nPostprocess: o.ExternalReference =
{name: 'i18nPostprocess', moduleName: CORE};\n\n static pipe: o.ExternalReference = {name: 'pipe',
moduleName: CORE};\n\n static projection: o.ExternalReference = {name: 'projection', moduleName: CORE};\n\n
static projectionDef: o.ExternalReference = {name: 'projectionDef', moduleName: CORE};\n\n static reference:
o.ExternalReference = {name: 'reference', moduleName: CORE};\n\n static inject: o.ExternalReference = {name:
'inject', moduleName: CORE};\n\n static injectAttribute: o.ExternalReference = {name: 'injectAttribute',
moduleName: CORE};\n\n static injectPipeChangeDetectorRef:\n o.ExternalReference = {name:
'injectPipeChangeDetectorRef', moduleName: CORE};\n\n static directiveInject: o.ExternalReference = {name:
'directiveInject', moduleName: CORE};\n static invalidFactory: o.ExternalReference = {name: 'invalidFactory',
moduleName: CORE};\n static invalidFactoryDep: o.ExternalReference = {name: 'invalidFactoryDep',
moduleName: CORE};\n\n static templateRefExtractor:\n o.ExternalReference = {name: 'templateRefExtractor',
moduleName: CORE};\n\n static resolveWindow: o.ExternalReference = {name: 'resolveWindow', moduleName:
CORE};\n static resolveDocument: o.ExternalReference = {name: 'resolveDocument', moduleName: CORE};\n\n
static resolveBody: o.ExternalReference = {name: 'resolveBody', moduleName: CORE};\n\n static

```

```

defineComponent: o.ExternalReference = {name: 'defineComponent', moduleName: CORE};\n\n static
setComponentScope: o.ExternalReference = {name: 'setComponentScope', moduleName: CORE};\n\n static
ComponentDefWithMeta: o.ExternalReference = {\n name: 'ComponentDefWithMeta',\n moduleName:
CORE,\n }; \n\n static FactoryDef: o.ExternalReference = {\n name: 'FactoryDef',\n moduleName: CORE,\n
};\n\n static defineDirective: o.ExternalReference = {\n name: 'defineDirective',\n moduleName: CORE,\n
};\n\n static DirectiveDefWithMeta: o.ExternalReference = {\n name: 'DirectiveDefWithMeta',\n moduleName:
CORE,\n }; \n\n static InjectorDef: o.ExternalReference = {\n name: 'InjectorDef',\n moduleName: CORE,\n
};\n\n static defineInjector: o.ExternalReference = {\n name: 'defineInjector',\n moduleName: CORE,\n }; \n\n
static NgModuleDefWithMeta: o.ExternalReference = {\n name: 'NgModuleDefWithMeta',\n moduleName:
CORE,\n }; \n\n static ModuleWithProviders: o.ExternalReference = {\n name: 'ModuleWithProviders',\n
moduleName: CORE,\n }; \n\n static defineNgModule: o.ExternalReference = {name: 'defineNgModule',
moduleName: CORE}; \n\n static setNgModuleScope: o.ExternalReference = {name: 'setNgModuleScope',
moduleName: CORE}; \n\n static PipeDefWithMeta: o.ExternalReference = {name: 'PipeDefWithMeta',
moduleName: CORE}; \n\n static definePipe: o.ExternalReference = {name: 'definePipe', moduleName:
CORE}; \n\n static queryRefresh: o.ExternalReference = {name: 'queryRefresh', moduleName: CORE}; \n\n static
viewQuery: o.ExternalReference = {name: 'viewQuery', moduleName: CORE}; \n\n static staticViewQuery:
o.ExternalReference = {name: 'staticViewQuery', moduleName: CORE}; \n\n static staticContentQuery:
o.ExternalReference = {name: 'staticContentQuery', moduleName: CORE}; \n\n static loadQuery:
o.ExternalReference = {name: 'loadQuery', moduleName: CORE}; \n\n static contentQuery: o.ExternalReference =
{name: 'contentQuery', moduleName: CORE}; \n\n static NgOnChangesFeature: o.ExternalReference = {name:
'NgOnChangesFeature', moduleName: CORE}; \n\n static InheritDefinitionFeature:\n o.ExternalReference =
{name: 'InheritDefinitionFeature', moduleName: CORE}; \n\n static CopyDefinitionFeature:\n
o.ExternalReference = {name: 'CopyDefinitionFeature', moduleName: CORE}; \n\n static ProvidersFeature:
o.ExternalReference = {name: 'ProvidersFeature', moduleName: CORE}; \n\n static listener: o.ExternalReference =
{name: 'listener', moduleName: CORE}; \n\n static getFactoryOf: o.ExternalReference = {\n name:
'getFactoryOf',\n moduleName: CORE,\n }; \n\n static getInheritedFactory: o.ExternalReference = {\n name:
'getInheritedFactory',\n moduleName: CORE,\n }; \n\n // sanitization-related functions\n static sanitizeHtml:
o.ExternalReference = {name: 'sanitizeHtml', moduleName: CORE}; \n\n static sanitizeStyle: o.ExternalReference =
{name: 'sanitizeStyle', moduleName: CORE}; \n\n static sanitizeResourceUrl:\n o.ExternalReference = {name:
'sanitizeResourceUrl', moduleName: CORE}; \n\n static sanitizeScript: o.ExternalReference = {name: 'sanitizeScript',
moduleName: CORE}; \n\n static sanitizeUrl: o.ExternalReference = {name: 'sanitizeUrl', moduleName: CORE}; \n\n
static sanitizeUrlOrResourceUrl:\n o.ExternalReference = {name: 'sanitizeUrlOrResourceUrl', moduleName:
CORE}; \n\n static trustConstantHtml: o.ExternalReference = {name: 'trustConstantHtml', moduleName: CORE}; \n\n
static trustConstantScript:\n o.ExternalReference = {name: 'trustConstantScript', moduleName: CORE}; \n\n static
trustConstantResourceUrl:\n o.ExternalReference = {name: 'trustConstantResourceUrl', moduleName:
CORE}; \n\n}\n\n", "/*\n * @license\n * Copyright Google LLC All Rights Reserved.\n *\n * Use of this source code is
governed by an MIT-style license that can be\n * found in the LICENSE file at https://angular.io/license\n
*/\n\nimport {StaticSymbol} from './aot/static_symbol';\nimport * as o from './output/output_ast';\nimport
{OutputContext} from './util';\n\n/**\n * Convert an object map with `Expression` values into a
`LiteralMapExpr`.\n */\nexport function mapToMapExpression(map: {[key: string]: o.Expression|undefined}):
o.LiteralMapExpr {\n const result = Object.keys(map).map(\n key => ({\n key,\n // The assertion here is
because really TypeScript doesn't allow us to express that if the\n // key is present, it will have a value, but this
is true in reality.\n value: map[key]!,\n quoted: false,\n }));\n return o.literalMap(result);\n}\n\n/**\n *
Convert metadata into an `Expression` in the given `OutputContext`.\n */\n * This operation will handle arrays,
references to symbols, or literal `null` or `undefined`.\n */\nexport function convertMetaToOutput(meta: any, ctx:
OutputContext): o.Expression {\n if (Array.isArray(meta)) {\n return o.literalArr(meta.map(entry =>
convertMetaToOutput(entry, ctx))); \n } \n if (meta instanceof StaticSymbol) {\n return ctx.importExpr(meta); \n
} \n if (meta == null) {\n return o.literal(meta); \n } \n\n throw new Error(`Internal error: Unsupported or unknown

```



```

event.type, event.handler, target, phase, event.sourceSpan, event.handlerSpan);
}

visit<Result>(visitor: Visitor<Result>): Result {
 return visitor.visitBoundEvent(this);
}

export class Element implements Node {
 constructor(
 public name: string, public attributes: TextAttribute[], public inputs:
 BoundAttribute[],
 public outputs: BoundEvent[], public children: Node[], public references: Reference[],
 public sourceSpan: ParseSourceSpan, public startSourceSpan: ParseSourceSpan,
 public endSourceSpan: ParseSourceSpan|null, public i18n?: I18nMeta) {}
 visit<Result>(visitor: Visitor<Result>): Result {
 return visitor.visitElement(this);
 }
}

export class Template implements Node {
 constructor(
 public tagName: string, public attributes: TextAttribute[],
 public inputs: BoundAttribute[],
 public outputs: BoundEvent[], public templateAttrs: (BoundAttribute|TextAttribute)[],
 public children: Node[], public references: Reference[], public
 variables: Variable[],
 public sourceSpan: ParseSourceSpan, public startSourceSpan: ParseSourceSpan,
 public endSourceSpan: ParseSourceSpan|null, public i18n?: I18nMeta) {}
 visit<Result>(visitor: Visitor<Result>): Result {
 return visitor.visitTemplate(this);
 }
}

export class Content implements Node {
 readonly name = 'ng-content';
 constructor(
 public selector: string, public attributes: TextAttribute[],
 public sourceSpan: ParseSourceSpan, public i18n?: I18nMeta) {}
 visit<Result>(visitor: Visitor<Result>): Result {
 return visitor.visitContent(this);
 }
}

export class Variable implements Node {
 constructor(
 public name: string, public value: string, public sourceSpan: ParseSourceSpan,
 readonly keySpan: ParseSourceSpan, public valueSpan?: ParseSourceSpan) {}
 visit<Result>(visitor: Visitor<Result>): Result {
 return visitor.visitVariable(this);
 }
}

export class Reference implements Node {
 constructor(
 public name: string, public value: string, public sourceSpan: ParseSourceSpan,
 public valueSpan?: ParseSourceSpan) {}
 visit<Result>(visitor: Visitor<Result>): Result {
 return visitor.visitReference(this);
 }
}

export class Icu implements Node {
 constructor(
 public vars: {[name: string]: BoundText},
 public placeholders: {[name: string]: Text|BoundText},
 public sourceSpan: ParseSourceSpan,
 public i18n?: I18nMeta) {}
 visit<Result>(visitor: Visitor<Result>): Result {
 return visitor.visitIcu(this);
 }
}

export interface Visitor<Result = any> {
 // Returning a truthy value from `visit()` will prevent `visitAll()` from the call to the
 // typed method and result returned will become the result included in `visitAll()`'s result array.
 visit?(node: Node): Result;
 visitElement(element: Element): Result;
 visitTemplate(template: Template): Result;
 visitContent(content: Content): Result;
 visitVariable(variable: Variable): Result;
 visitReference(reference: Reference): Result;
 visitTextAttribute(attribute: TextAttribute): Result;
 visitBoundAttribute(attribute: BoundAttribute): Result;
 visitBoundEvent(attribute: BoundEvent): Result;
 visitText(text: Text): Result;
 visitBoundText(text: BoundText): Result;
 visitIcu(icu: Icu): Result;
}

export class NullVisitor implements Visitor<void> {
 visitElement(element: Element): void {}
 visitTemplate(template: Template): void {}
 visitContent(content: Content): void {}
 visitVariable(variable: Variable): void {}
 visitReference(reference: Reference): void {}
 visitTextAttribute(attribute: TextAttribute): void {}
 visitBoundAttribute(attribute: BoundAttribute): void {}
 visitBoundEvent(attribute: BoundEvent): void {}
 visitText(text: Text): void {}
 visitBoundText(text: BoundText): void {}
 visitIcu(icu: Icu): void {}
}

export class RecursiveVisitor implements Visitor<void> {
 visitElement(element: Element): void {
 visitAll(this, element.attributes);
 visitAll(this, element.children);
 visitAll(this, element.references);
 }
 visitTemplate(template: Template): void {
 visitAll(this, template.attributes);
 visitAll(this, template.children);
 visitAll(this, template.references);
 visitAll(this, template.variables);
 }
 visitContent(content: Content): void {}
 visitVariable(variable: Variable): void {}
 visitReference(reference: Reference): void {}
 visitTextAttribute(attribute: TextAttribute): void {}
 visitBoundAttribute(attribute: BoundAttribute): void {}
 visitBoundEvent(attribute: BoundEvent): void {}
 visitText(text: Text): void {}
 visitBoundText(text: BoundText): void {}
 visitIcu(icu: Icu): void {}
}

export class TransformVisitor implements Visitor<Node> {
 visitElement(element: Element): Node {
 const newAttributes = transformAll(this, element.attributes);
 const newInputs = transformAll(this, element.inputs);
 const newOutputs = transformAll(this, element.outputs);
 const newChildren = transformAll(this, element.children);
 const newReferences = transformAll(this, element.references);
 if (newAttributes != element.attributes || newInputs != element.inputs ||
 newOutputs != element.outputs || newChildren != element.children ||
 newReferences != element.references) {
 return

```



```

expressionPlaceholder!: string;\n constructor(\n public expression: string, public type: string, public cases: {[k:
string]: Node},\n public sourceSpan: ParseSourceSpan) {\n\n visit(visitor: Visitor, context?: any): any {\n
return visitor.visitIcu(this, context);\n }\n\n\nexport class TagPlaceholder implements Node {\n constructor(\n
public tag: string, public attrs: {[k: string]: string}, public startName: string,\n public closeName: string, public
children: Node[], public isVoid: boolean,\n // TODO sourceSpan should cover all (we need a startSourceSpan
and endSourceSpan)\n public sourceSpan: ParseSourceSpan, public startSourceSpan: ParseSourceSpan|null,\n
public endSourceSpan: ParseSourceSpan|null) {\n\n visit(visitor: Visitor, context?: any): any {\n return
visitor.visitTagPlaceholder(this, context);\n }\n\n\nexport class Placeholder implements Node {\n
constructor(public value: string, public name: string, public sourceSpan: ParseSourceSpan) {\n\n visit(visitor:
Visitor, context?: any): any {\n return visitor.visitPlaceholder(this, context);\n }\n\n\nexport class IcuPlaceholder
implements Node {\n /** Used to capture a message computed from a previous processing pass (see
`setI18nRefs`). */\n previousMessage?: Message;\n constructor(public value: Icu, public name: string, public
sourceSpan: ParseSourceSpan) {\n\n visit(visitor: Visitor, context?: any): any {\n return
visitor.visitIcuPlaceholder(this, context);\n }\n\n\n/**\n * Each HTML node that is affect by an i18n tag will also
have an `i18n` property that is of type\n * `I18nMeta`.\n * This information is either a `Message`, which indicates it
is the root of an i18n message, or a\n * `Node`, which indicates is it part of a containing `Message`.\n */\n\nexport
type I18nMeta = Message|Node;\n\nexport interface Visitor {\n visitText(text: Text, context?: any): any;\n
visitContainer(container: Container, context?: any): any;\n visitIcu(icu: Icu, context?: any): any;\n
visitTagPlaceholder(ph: TagPlaceholder, context?: any): any;\n visitPlaceholder(ph: Placeholder, context?: any):
any;\n visitIcuPlaceholder(ph: IcuPlaceholder, context?: any): any;\n}\n\n// Clone the AST\nexport class
CloneVisitor implements Visitor {\n visitText(text: Text, context?: any): Text {\n return new Text(text.value,
text.sourceSpan);\n }\n\n visitContainer(container: Container, context?: any): Container {\n const children =
container.children.map(n => n.visit(this, context));\n return new Container(children, container.sourceSpan);\n
}\n\n visitIcu(icu: Icu, context?: any): Icu {\n const cases: {[k: string]: Node} = {};\n
Object.keys(icu.cases).forEach(key => cases[key] = icu.cases[key].visit(this, context));\n const msg = new
Icu(icu.expression, icu.type, cases, icu.sourceSpan);\n msg.expressionPlaceholder = icu.expressionPlaceholder;\n
return msg;\n }\n\n visitTagPlaceholder(ph: TagPlaceholder, context?: any): TagPlaceholder {\n const children =
ph.children.map(n => n.visit(this, context));\n return new TagPlaceholder(\n ph.tag, ph.attrs, ph.startName,
ph.closeName, children, ph.isVoid, ph.sourceSpan,\n ph.startSourceSpan, ph.endSourceSpan);\n }\n\n
visitPlaceholder(ph: Placeholder, context?: any): Placeholder {\n return new Placeholder(ph.value, ph.name,
ph.sourceSpan);\n }\n\n visitIcuPlaceholder(ph: IcuPlaceholder, context?: any): IcuPlaceholder {\n return new
IcuPlaceholder(ph.value, ph.name, ph.sourceSpan);\n }\n}\n\n// Visit all the nodes recursively\nexport class
RecurseVisitor implements Visitor {\n visitText(text: Text, context?: any): any {\n\n visitContainer(container:
Container, context?: any): any {\n container.children.forEach(child => child.visit(this));\n }\n\n visitIcu(icu: Icu,
context?: any): any {\n Object.keys(icu.cases).forEach(k => {\n icu.cases[k].visit(this);\n });\n }\n\n
visitTagPlaceholder(ph: TagPlaceholder, context?: any): any {\n ph.children.forEach(child => child.visit(this));\n
}\n\n visitPlaceholder(ph: Placeholder, context?: any): any {\n\n visitIcuPlaceholder(ph: IcuPlaceholder, context?:
any): any {\n}\n}\n\n", "/*\n * @license\n * Copyright Google LLC All Rights Reserved.\n * Use of this source
code is governed by an MIT-style license that can be\n * found in the LICENSE file at https://angular.io/license\n
*/\n\n/**\n * Represents a big integer using a buffer of its individual digits, with the least significant\n * digit stored
at the beginning of the array (little endian).\n */\n * For performance reasons, each instance is mutable. The addition
operation can be done in-place\n * to reduce memory pressure of allocation for the digits array.\n */\n\nexport class
BigInteger {\n static zero(): BigInteger {\n return new BigInteger([0]);\n }\n\n static one(): BigInteger {\n
return new BigInteger([1]);\n }\n\n /**\n * Creates a big integer using its individual digits in little endian
storage.\n */\n private constructor(private readonly digits: number[]) {\n\n /**\n * Creates a clone of this
instance.\n */\n clone(): BigInteger {\n return new BigInteger(this.digits.slice());\n }\n\n /**\n * Returns a new
big integer with the sum of `this` and `other` as its value. This does not mutate\n * `this` but instead returns a new
instance, unlike `addToSelf`.\n */\n add(other: BigInteger): BigInteger {\n const result = this.clone();\n

```

```

result.addToSelf(other);
return result;
}

/**
 * Adds `other` to the instance itself, thereby mutating its
value.
 */
addToSelf(other: BigInteger): void {
const maxNrOfDigits = Math.max(this.digits.length,
other.digits.length);
let carry = 0;
for (let i = 0; i < maxNrOfDigits; i++) {
let digitSum = carry;
if (i < this.digits.length) {
digitSum += this.digits[i];
}
if (i < other.digits.length) {
digitSum +=
other.digits[i];
}
if (digitSum >= 10) {
this.digits[i] = digitSum - 10;
carry = 1;
} else {
this.digits[i] = digitSum;
carry = 0;
}
}
// Apply a remaining carry if needed.
if (carry > 0) {
this.digits[maxNrOfDigits] = 1;
}
}

/**
 * Builds the decimal string representation of
the big integer. As this is stored in
 * little endian, the digits are concatenated in reverse order.
 */
toString():
string {
let res = "";
for (let i = this.digits.length - 1; i >= 0; i--) {
res += this.digits[i];
}
return
res;
}
}

/**
 * Represents a big integer which is optimized for multiplication operations, as its power-of-
twos
 * are memoized. See `multiplyBy()` for details on the multiplication algorithm.
 */
export class
BigIntForMultiplication {
/**
 * Stores all memoized power-of-twos, where each index represents `this.number
 * 2^index`.
 */
private readonly powerOfTwos: BigInteger[];

constructor(value: BigInteger) {
this.powerOfTwos = [value];
}

/**
 * Returns the big integer itself.
 */
getValue(): BigInteger {
return this.powerOfTwos[0];
}

/**
 * Computes the value for `num * b`, where `num` is a JS number and
`b` is a big integer. The
 * value for `b` is represented by a storage model that is optimized for this computation.
 */
 * This operation is implemented in $N(\log_2(\text{num}))$ by continuous halving of the number, where the
 * least-
significant bit (LSB) is tested in each iteration. If the bit is set, the bit's index is
 * used as exponent into the
power-of-two multiplication of `b`.
 * As an example, consider the multiplication num=42, b=1337. In
binary 42 is 0b00101010 and the
 * algorithm unrolls into the following iterations:
 */
 * Iteration | num |
LSB | b * 2^iter | Add? | product
 * -----|-----|-----|-----|-----
 * 0 | 0b00101010 | 0 | 1337 | No | 0
 * 1 | 0b00010101 | 1 | 2674 | Yes | 2674
 * 2 | 0b00001010 | 0 | 5348 | No | 2674
 * 3 | 0b00000101 | 1 | 10696 | Yes | 13370
 * 4 | 0b00000010 | 0 | 21392 | No | 13370
 * 5 | 0b00000001 | 1 | 42784 | Yes | 56154
 * 6 | 0b00000000 | 0 | 85568 | No | 56154
 */
 * The computed product of 56154 is indeed the correct result.
 */
 * The
`BigIntForMultiplication` representation for a big integer provides memoized access to the
 * power-of-two
values to reduce the workload in computing those values.
 */
multiplyBy(num: number): BigInteger {
const
product = BigInteger.zero();
this.multiplyByAndAddTo(num, product);
return product;
}

/**
 * See
`multiplyBy()` for details. This function allows for the computed product to be added
 * directly to the provided
result big integer.
 */
multiplyByAndAddTo(num: number, result: BigInteger): void {
for (let exponent = 0;
num !== 0; num = num >>> 1, exponent++) {
if (num & 1) {
const value =
this.getMultipliedByPowerOfTwo(exponent);
result.addToSelf(value);
}
}
}

/**
 * Computes and memoizes the big integer value for `this.number * 2^exponent`.
 */
private
getMultipliedByPowerOfTwo(exponent: number): BigInteger {
// Compute the powers up until the requested
exponent, where each value is computed from its
// predecessor. This is simple as `this.number * 2^(exponent -
1)` only has to be doubled (i.e.
// added to itself) to reach `this.number * 2^exponent`.
for (let i =
this.powerOfTwos.length; i <= exponent; i++) {
const previousPower = this.powerOfTwos[i - 1];
this.powerOfTwos[i] = previousPower.add(previousPower);
}
return this.powerOfTwos[exponent];
}
}

/**
 * Represents an exponentiation operation for the provided base, of which exponents are computed
and
 * memoized. The results are represented by a `BigIntForMultiplication` which is tailored for
 * multiplication
operations by memoizing the power-of-twos. This effectively results in a matrix
 * representation
that is lazily computed upon request.
 */
export class BigIntExponentiation {
private readonly exponents =
[new BigIntForMultiplication(BigInteger.one())];

constructor(private readonly base: number) {}

/**
 * Compute the value for `this.base^exponent`, resulting in a big integer that is optimized for
 * further
multiplication operations.
 */
toThePowerOf(exponent: number): BigIntForMultiplication {
// Compute the
results up until the requested exponent, where every value is computed from its
// predecessor. This is because
`this.base^(exponent - 1)` only has to be multiplied by `base`
// to reach `this.base^exponent`.
for (let i =
this.exponents.length; i <= exponent; i++) {
const value = this.exponents[i - 1].multiplyBy(this.base);
}
}
}

```



```

this.exponents[i] = new BigIntForMultiplication(value);\n }\n return this.exponents[exponent];\n }\n\n"/**\n * @license\n * Copyright Google LLC All Rights Reserved.\n *\n * Use of this source code is governed by an MIT-\n style license that can be\n * found in the LICENSE file at https://angular.io/license\n *\n\nimport {Byte, newArray,\n utf8Encode} from './util';\nimport {BigIntExponentiation} from './big_integer';\nimport * as i18n from\n './i18n_ast';\n\n/**\n * Return the message id or compute it using the XLIFF1 digest.\n */\nexport function\n digest(message: i18n.Message): string {\n return message.id || computeDigest(message);\n }\n\n/**\n * Compute the\n message id using the XLIFF1 digest.\n */\nexport function computeDigest(message: i18n.Message): string {\n return sha1(serializeNodes(message.nodes).join("") + `[${message.meaning}]`);\n }\n\n/**\n * Return the message id\n or compute it using the XLIFF2/XMB/$localize digest.\n */\nexport function decimalDigest(message:\n i18n.Message): string {\n return message.id || computeDecimalDigest(message);\n }\n\n/**\n * Compute the\n message id using the XLIFF2/XMB/$localize digest.\n */\nexport function computeDecimalDigest(message:\n i18n.Message): string {\n const visitor = new _SerializerIgnoreIcuExpVisitor();\n const parts =\n message.nodes.map(a => a.visit(visitor, null));\n return computeMsgId(parts.join(""), message.meaning);\n }\n\n/**\n * Serialize the i18n ast to something xml-like in order to generate an UID.\n *\n * The visitor is also used in the i18n\n parser tests\n *\n * @internal\n */\n\nclass _SerializerVisitor implements i18n.Visitor {\n visitText(text: i18n.Text,\n context: any): any {\n return text.value;\n }\n\n visitContainer(container: i18n.Container, context: any): any {\n return `[${container.children.map(child => child.visit(this)).join(', ')}];`\n }\n\n visitIcu(icu: i18n.Icu, context:\n any): any {\n const strCases =\n Object.keys(icu.cases).map((k: string) => `${k}`\n `${icu.cases[k].visit(this)}`);\n return `${icu.expression}, ${icu.type}, ${strCases.join(', ')}`;\n }\n\n visitTagPlaceholder(ph: i18n.TagPlaceholder, context: any): any {\n return ph.isVoid ?\n `<ph tag\n name="${ph.startName}"/>`\n :\n `<ph tag name="${ph.startName}">${\n ph.children.map(child =>\n child.visit(this)).join(', ')}</ph name="${ph.closeName}">`\n }\n\n visitPlaceholder(ph: i18n.Placeholder,\n context: any): any {\n return ph.value ? `<ph name="${ph.name}">${ph.value}</ph>`\n : `<ph\n name="${ph.name}"/>`\n }\n\n visitIcuPlaceholder(ph: i18n.IcuPlaceholder, context?: any): any {\n return\n `<ph icu name="${ph.name}">${ph.value.visit(this)}</ph>`\n }\n\n const serializerVisitor = new\n _SerializerVisitor();\n export function serializeNodes(nodes: i18n.Node[]): string[] {\n return nodes.map(a =>\n a.visit(serializerVisitor, null));\n }\n\n /**\n * Serialize the i18n ast to something xml-like in order to generate an\n UID.\n *\n * Ignore the ICU expressions so that message IDs stays identical if only the expression changes.\n *\n * @internal\n */\n\nclass _SerializerIgnoreIcuExpVisitor extends _SerializerVisitor {\n visitIcu(icu: i18n.Icu, context:\n any): any {\n let strCases = Object.keys(icu.cases).map((k: string) => `${k}`\n `${icu.cases[k].visit(this)}`);\n //\n Do not take the expression into account\n return `${icu.type}, ${strCases.join(', ')}`;\n }\n\n /**\n * Compute\n the SHA1 of the given string\n *\n * see http://csrc.nist.gov/publications/fips/fips180-4/fips-180-4.pdf\n *\n * WARNING: this function has not been designed not tested with security in mind.\n * DO NOT USE IT IN A\n SECURITY SENSITIVE CONTEXT.\n */\n export function sha1(str: string): string {\n const utf8 =\n utf8Encode(str);\n const words32 = bytesToWords32(utf8, Endian.Big);\n const len = utf8.length * 8;\n\n const w\n = newArray(80);\n let a = 0x67452301, b = 0xefcdab89, c = 0x98badcfe, d = 0x10325476, e = 0xc3d2e1f0;\n\n words32[len >> 5] |= 0x80 << (24 - len % 32);\n words32[((len + 64 >> 9) << 4) + 15] = len;\n\n for (let i = 0; i <\n words32.length; i += 16) {\n const h0 = a, h1 = b, h2 = c, h3 = d, h4 = e;\n for (let j = 0; j < 80; j++) {\n if (j\n < 16) {\n w[j] = words32[i + j];\n } else {\n w[j] = rol32(w[j - 3] ^ w[j - 8] ^ w[j - 14] ^ w[j - 16], 1);\n }\n\n const fkVal = fk(j, b, c, d);\n const f = fkVal[0];\n const k = fkVal[1];\n const temp = [rol32(a, 5),\n f, e, k, w[j]].reduce(add32);\n e = d;\n d = c;\n c = rol32(b, 30);\n b = a;\n a = temp;\n }\n a =\n add32(a, h0);\n b = add32(b, h1);\n c = add32(c, h2);\n d = add32(d, h3);\n e = add32(e, h4);\n }\n\n return\n bytesToHexString(words32ToByteString([a, b, c, d, e]));\n }\n\n function fk(index: number, b: number, c: number, d:\n number): [number, number] {\n if (index < 20) {\n return [(b & c) | (~b & d), 0x5a827999];\n }\n\n if (index <\n 40) {\n return [b ^ c ^ d, 0x6ed9eba1];\n }\n\n if (index < 60) {\n return [(b & c) | (b & d) | (c & d),\n 0x8f1bbcdd];\n }\n\n return [b ^ c ^ d, 0xca62c1d6];\n }\n\n /**\n * Compute the fingerprint of the given string\n *\n * The output is 64 bit number encoded as a decimal string\n *\n * based on:\n *\n * https://github.com/google/closure-

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compiler/blob/master/src/com/google/javascript/jscomp/GoogleJsMessageIdGenerator.java\n *
\nexport function
fingerprint(str: string): [number, number] {\n const utf8 = utf8Encode(str);\n let hi = hash32(utf8, 0);\n let lo =
hash32(utf8, 102072);\n if (hi == 0 && (lo == 0 || lo == 1)) {\n hi = hi ^ 0x130f9bef;\n lo = lo ^ -
0x6b5f56d8;\n }\n return [hi, lo];\n}\n\nexport function computeMsgId(msg: string, meaning: string = ""): string
{\n let msgFingerprint = fingerprint(msg);\n if (meaning) {\n const meaningFingerprint =
fingerprint(meaning);\n msgFingerprint = add64(rol64(msgFingerprint, 1), meaningFingerprint);\n }\n const hi
= msgFingerprint[0];\n const lo = msgFingerprint[1];\n return wordsToDecimalString(hi & 0x7ffffff,
lo);\n}\n\nfunction hash32(bytes: Byte[], c: number): number {\n let a = 0x9e3779b9, b = 0x9e3779b9;\n let i:
number;\n const len = bytes.length;\n for (i = 0; i + 12 <= len; i += 12) {\n a = add32(a, wordAt(bytes, i,
Endian.Little));\n b = add32(b, wordAt(bytes, i + 4, Endian.Little));\n c = add32(c, wordAt(bytes, i + 8,
Endian.Little));\n const res = mix(a, b, c);\n a = res[0], b = res[1], c = res[2];\n }\n a = add32(a,
wordAt(bytes, i, Endian.Little));\n b = add32(b, wordAt(bytes, i + 4, Endian.Little));\n // the first byte of c is
reserved for the length\n c = add32(c, len);\n c = add32(c, wordAt(bytes, i + 8, Endian.Little) << 8);\n return
mix(a, b, c)[2];\n}\n\n// clang-format off\nfunction mix(a: number, b: number, c: number): [number, number,
number] {\n a = sub32(a, b); a = sub32(a, c); a ^= c >>> 13;\n b = sub32(b, c); b = sub32(b, a); b ^= a << 8;\n c =
sub32(c, a); c = sub32(c, b); c ^= b >>> 13;\n a = sub32(a, b); a = sub32(a, c); a ^= c >>> 12;\n b = sub32(b, c); b
= sub32(b, a); b ^= a << 16;\n c = sub32(c, a); c = sub32(c, b); c ^= b >>> 5;\n a = sub32(a, b); a = sub32(a, c); a
^= c >>> 3;\n b = sub32(b, c); b = sub32(b, a); b ^= a << 10;\n c = sub32(c, a); c = sub32(c, b); c ^= b >>> 15;\n
return [a, b, c];\n}\n\n// clang-format on\n\n// Utils\n\nenum Endian {\n Little,\n Big,\n}\n\nfunction add32(a:
number, b: number): number {\n return add32to64(a, b)[1];\n}\n\nfunction add32to64(a: number, b: number):
[number, number] {\n const low = (a & 0xffff) + (b & 0xffff);\n const high = (a >>> 16) + (b >>> 16) + (low >>>
16);\n return [high >>> 16, (high << 16) | (low & 0xffff)];\n}\n\nfunction add64(a: [number, number], b: [number,
number]): [number, number] {\n const ah = a[0], al = a[1];\n const bh = b[0], bl = b[1];\n const result =
add32to64(al, bl);\n const carry = result[0];\n const l = result[1];\n const h = add32(add32(ah, bh), carry);\n return
[h, l];\n}\n\nfunction sub32(a: number, b: number): number {\n const low = (a & 0xffff) - (b & 0xffff);\n const
high = (a >> 16) - (b >> 16) + (low >> 16);\n return (high << 16) | (low & 0xffff);\n}\n\n// Rotate a 32b number left
`count` position\nfunction rol32(a: number, count: number): number {\n return (a << count) | (a >>> (32 -
count));\n}\n\n// Rotate a 64b number left `count` position\nfunction rol64(num: [number, number], count: number):
[number, number] {\n const hi = num[0], lo = num[1];\n const h = (hi << count) | (lo >>> (32 - count));\n const l =
(lo << count) | (hi >>> (32 - count));\n return [h, l];\n}\n\nfunction bytesToWords32(bytes: Byte[], endian: Endian):
number[] {\n const size = (bytes.length + 3) >>> 2;\n const words32 = [];\n for (let i = 0; i < size; i++) {\n
words32[i] = wordAt(bytes, i * 4, endian);\n }\n return words32;\n}\n\nfunction byteAt(bytes: Byte[], index:
number): Byte {\n return index >= bytes.length ? 0 : bytes[index];\n}\n\nfunction wordAt(bytes: Byte[], index:
number, endian: Endian): number {\n let word = 0;\n if (endian === Endian.Big) {\n for (let i = 0; i < 4; i++) {\n
word += byteAt(bytes, index + i) << (24 - 8 * i);\n }\n } else {\n for (let i = 0; i < 4; i++) {\n word +=
byteAt(bytes, index + i) << 8 * i;\n }\n }\n return word;\n}\n\nfunction words32ToByteString(words32:
number[]): Byte[] {\n return words32.reduce((bytes, word) => bytes.concat(word32ToByteString(word)), [] as
Byte[]);\n}\n\nfunction word32ToByteString(word: number): Byte[] {\n let bytes: Byte[] = [];\n for (let i = 0; i < 4;
i++) {\n bytes.push((word >>> 8 * (3 - i)) & 0xff);\n }\n return bytes;\n}\n\nfunction bytesToHexString(bytes:
Byte[]): string {\n let hex: string = "";\n for (let i = 0; i < bytes.length; i++) {\n const b = byteAt(bytes, i);\n hex
+= (b >>> 4).toString(16) + (b & 0x0f).toString(16);\n }\n return hex.toLowerCase();\n}\n\n/**\n * Create a
shared exponentiation pool for base-256 computations. This shared pool provides memoized\n * power-of-256
results with memoized power-of-two computations for efficient multiplication.\n * For our purposes, this can be
safely stored as a global without memory concerns. The reason is\n * that we encode two words, so only need the
0th (for the low word) and 4th (for the high word)\n * exponent.\n */\nconst base256 = new
BigIntExponentiation(256);\n\n/**\n * Represents two 32-bit words as a single decimal number. This requires a big
integer storage\n * model as JS numbers are not accurate enough to represent the 64-bit number.\n * Based on
http://www.danvk.org/hex2dec.html\n */\nfunction wordsToDecimalString(hi: number, lo: number): string {\n //

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Encode the four bytes in lo in the lower digits of the decimal number.\n // Note: the multiplication results in lo itself
but represented by a big integer using its\n // decimal digits.\n const decimal =
base256.toThePowerOf(0).multiplyBy(lo);\n\n // Encode the four bytes in hi above the four lo bytes. lo is a
maximum of (2^8)^4, which is why\n // this multiplication factor is applied.\n
base256.toThePowerOf(4).multiplyByAndAddTo(hi, decimal);\n\n return decimal.toString();\n}\n"/**\n *
@license\n * Copyright Google LLC All Rights Reserved.\n *\n * Use of this source code is governed by an MIT-
style license that can be\n * found in the LICENSE file at https://angular.io/license\n *\n\nimport * as i18n from
'./i18n_ast';\n\nexport abstract class Serializer {\n // - The `placeholders` and `placeholderToMessage` properties
are irrelevant in the input messages\n // - The `id` contains the message id that the serializer is expected to use\n // -
Placeholder names are already map to public names using the provided mapper\n abstract write(messages:
i18n.Message[], locale: string|null): string;\n\n abstract load(content: string, url: string):\n { locale: string|null,
i18n.NodesByMsgId: {[msgId: string]: i18n.Node[]]};\n\n abstract digest(message: i18n.Message): string;\n\n //
Creates a name mapper, see `PlaceholderMapper`\n // Returning `null` means that no name mapping is used.\n
createNameMapper(message: i18n.Message): PlaceholderMapper|null {\n return null;\n }\n}\n\n/**\n * A
`PlaceholderMapper` converts placeholder names from internal to serialized representation and\n * back.\n *\n * It
should be used for serialization format that put constraints on the placeholder names.\n */\nexport interface
PlaceholderMapper {\n toPublicName(internalName: string): string|null;\n\n toInternalName(publicName: string):
string|null;\n}\n\n/**\n * A simple mapper that take a function to transform an internal name to a public name\n
*\n */\nexport class SimplePlaceholderMapper extends i18n.RecurseVisitor implements PlaceholderMapper {\n private
internalToPublic: {[k: string]: string} = {};\n private publicToNextId: {[k: string]: number} = {};\n private
publicToInternal: {[k: string]: string} = {};\n\n // create a mapping from the message\n constructor(message:
i18n.Message, private mapName: (name: string) => string) {\n super();\n message.nodes.forEach(node =>
node.visit(this));\n }\n\n toPublicName(internalName: string): string|null {\n return
this.internalToPublic.hasOwnProperty(internalName) ?\n this.internalToPublic[internalName] :\n null;\n
}\n\n toInternalName(publicName: string): string|null {\n return
this.publicToInternal.hasOwnProperty(publicName) ?\n this.publicToInternal[publicName] :\n
null;\n }\n\n visitText(text: i18n.Text, context?: any): any {\n return null;\n }\n\n
visitTagPlaceholder(ph: i18n.TagPlaceholder, context?: any): any {\n this.visitPlaceholderName(ph.startName);\n
super.visitTagPlaceholder(ph, context);\n this.visitPlaceholderName(ph.closeName);\n }\n\n
visitPlaceholder(ph: i18n.Placeholder, context?: any): any {\n this.visitPlaceholderName(ph.name);\n }\n\n
visitIcuPlaceholder(ph: i18n.IcuPlaceholder, context?: any): any {\n this.visitPlaceholderName(ph.name);\n }\n\n
// XMB placeholders could only contains A-Z, 0-9 and _\n private visitPlaceholderName(internalName: string):
void {\n if (!internalName || this.internalToPublic.hasOwnProperty(internalName)) {\n return;\n }\n\n let
publicName = this.mapName(internalName);\n\n if (this.publicToInternal.hasOwnProperty(publicName)) {\n //
Create a new XMB when it has already been used\n const nextId = this.publicToNextId[publicName];\n
this.publicToNextId[publicName] = nextId + 1;\n publicName = `${publicName}_${nextId}`;\n } else {\n
this.publicToNextId[publicName] = 1;\n }\n\n this.internalToPublic[internalName] = publicName;\n
this.publicToInternal[publicName] = internalName;\n }\n}\n"/**\n * @license\n * Copyright Google LLC All
Rights Reserved.\n *\n * Use of this source code is governed by an MIT-style license that can be\n * found in the
LICENSE file at https://angular.io/license\n *\n\nexport interface IVisitor {\n visitTag(tag: Tag): any;\n
visitText(text: Text): any;\n visitDeclaration(decl: Declaration): any;\n visitDoctype(doctype: Doctype):
any;\n}\n\nclass _Visitor implements IVisitor {\n visitTag(tag: Tag): string {\n const strAttrs =
this._serializeAttributes(tag.attrs);\n\n if (tag.children.length == 0) {\n return `<${tag.name}${strAttrs}/>`;\n
}\n\n const strChildren = tag.children.map(node => node.visit(this));\n return
`<${tag.name}${strAttrs}>${strChildren.join("")}</${tag.name}>`;\n }\n\n visitText(text: Text): string {\n return
text.value;\n }\n\n visitDeclaration(decl: Declaration): string {\n return
`<?xml${this._serializeAttributes(decl.attrs)}?>`;\n }\n\n private _serializeAttributes(attrs: {[k: string]: string})
{\n const strAttrs = Object.keys(attrs).map((name: string) => `${name}="${attrs[name]}"`).join(' ');
return

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SimplePlaceholderMapper(message, toPublicName);\n } }\n\nclass _Visitor implements i18n.Visitor {\n
visitText(text: i18n.Text, context?: any): xml.Node[] {\n return [new xml.Text(text.value)];\n }\n\n
visitContainer(container: i18n.Container, context: any): xml.Node[] {\n const nodes: xml.Node[] = [];\n
container.children.forEach((node: i18n.Node) => nodes.push(...node.visit(this)));\n return nodes;\n }\n\n
visitIcu(icu: i18n.Icu, context?: any): xml.Node[] {\n const nodes = [new
xml.Text(` ${icu.expressionPlaceholder}, ${icu.type}, `);\n\n Object.keys(icu.cases).forEach((c: string) => {\n
nodes.push(new xml.Text(` ${c} `), ...icu.cases[c].visit(this), new xml.Text(` `));\n });\n\n nodes.push(new
xml.Text(` `));\n\n return nodes;\n }\n\n
visitTagPlaceholder(ph: i18n.TagPlaceholder, context?: any):
xml.Node[] {\n const startTagAsText = new xml.Text(<${ph.tag}>);\n const startEx = new
xml.Tag(_EXAMPLE_TAG, {}, [startTagAsText]);\n // TC requires PH to have a non empty EX, and uses the
text node to show the \"original\" value.\n const startTagPh =\n new xml.Tag(_PLACEHOLDER_TAG,
{name: ph.startName}, [startEx, startTagAsText]);\n if (ph.isVoid) {\n // void tags have no children nor closing
tags\n return [startTagPh];\n }\n\n const closeTagAsText = new xml.Text(</${ph.tag}>);\n const closeEx
= new xml.Tag(_EXAMPLE_TAG, {}, [closeTagAsText]);\n // TC requires PH to have a non empty EX, and uses the
text node to show the \"original\" value.\n const closeTagPh =\n new xml.Tag(_PLACEHOLDER_TAG,
{name: ph.closeName}, [closeEx, closeTagAsText]);\n\n return [startTagPh, ...this.serialize(ph.children),
closeTagPh];\n }\n\n
visitPlaceholder(ph: i18n.Placeholder, context?: any): xml.Node[] {\n const
interpolationAsText = new xml.Text(` ${ph.value} `);\n // Example tag needs to be not-empty for TC.\n
const exTag = new xml.Tag(_EXAMPLE_TAG, {}, [interpolationAsText]);\n return [\n // TC requires PH to
have a non empty EX, and uses the text node to show the \"original\" value.\n new
xml.Tag(_PLACEHOLDER_TAG, {name: ph.name}, [exTag, interpolationAsText])\n];\n }\n\n
visitIcuPlaceholder(ph: i18n.IcuPlaceholder, context?: any): xml.Node[] {\n const icuExpression =
ph.value.expression;\n const icuType = ph.value.type;\n const icuCases =
Object.keys(ph.value.cases).map((value: string) => value + ' {...}').join(' ');\n const icuAsText = new
xml.Text(` ${icuExpression}, ${icuType}, ${icuCases} `);\n const exTag = new xml.Tag(_EXAMPLE_TAG,
{}, [icuAsText]);\n return [\n // TC requires PH to have a non empty EX, and uses the text node to show the
\"original\" value.\n new xml.Tag(_PLACEHOLDER_TAG, {name: ph.name}, [exTag, icuAsText])\n];\n }\n\n
serialize(nodes: i18n.Node[]): xml.Node[] {\n return [].concat(...nodes.map(node => node.visit(this)));\n
}\n\n\nexport function digest(message: i18n.Message): string {\n return decimalDigest(message);\n }\n\n// TC
requires at least one non-empty example on placeholders\nclass ExampleVisitor implements xml.IVisitor {\n
addDefaultExamples(node: xml.Node): xml.Node {\n node.visit(this);\n return node;\n }\n\n
visitTag(tag: xml.Tag): void {\n if (tag.name === _PLACEHOLDER_TAG) {\n if (!tag.children || tag.children.length === 0)
{\n const exText = new xml.Text(tag.attrs['name'] || '...');\n tag.children = [new
xml.Tag(_EXAMPLE_TAG, {}, [exText]);\n }\n } else if (tag.children) {\n tag.children.forEach(node =>
node.visit(this));\n }\n }\n\n
visitText(text: xml.Text): void {\n }\n\n
visitDeclaration(decl: xml.Declaration): void
{\n }\n\n
visitDoctype(doctype: xml.Doctype): void {\n }\n\n\n// XMB/XTB placeholders can only contain A-Z, 0-9 and
_\nexport function toPublicName(internalName: string): string {\n return
internalName.toUpperCase().replace(/^[A-Z0-9_]/g, '_');\n }\n\n\n/**\n * @license\n * Copyright Google LLC All
Rights Reserved.\n *\n * Use of this source code is governed by an MIT-style license that can be\n * found in the
LICENSE file at https://angular.io/license\n *\nimport * as i18n from './../i18n/i18n_ast';\nimport
{toPublicName} from './../i18n/serializers/xmb';\nimport * as html from './../ml_parser/ast';\nimport * as o from
'./../output/output_ast';\nimport * as t from './../r3_ast';\n\n/** Closure variables holding messages must be named
`MSG_[A-Z0-9]+` *\nconst CLOSURE_TRANSLATION_VAR_PREFIX = 'MSG_';\n\n/**\n * Prefix for non-`goog.getMsg` i18n-related vars.\n * Note: the prefix uses lowercase characters intentionally due to a Closure
behavior that\n * considers variables like `I18N_0` as constants and throws an error when their value changes.\n
*\nexport const TRANSLATION_VAR_PREFIX = 'i18n_';\n\n/** Name of the i18n attributes **\nexport const
I18N_ATTR = 'i18n';\nexport const I18N_ATTR_PREFIX = 'i18n-';\n\n/** Prefix of var expressions used in ICUs\n
*\nexport const I18N_ICU_VAR_PREFIX = 'VAR_';\n\n/** Prefix of ICU expressions for post processing

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*\nexport const I18N_ICU_MAPPING_PREFIX = 'I18N_EXP_';\n\n/** Placeholder wrapper for i18n expressions
**\nexport const I18N_PLACEHOLDER_SYMBOL = ";\n\nexport function isI18nAttribute(name: string): boolean
{\n return name === I18N_ATTR || name.startsWith(I18N_ATTR_PREFIX);\n}\n\nexport function
isI18nRootNode(meta?: i18n.I18nMeta): meta is i18n.Message {\n return meta instanceof
i18n.Message;\n}\n\nexport function isSingleI18nIcu(meta?: i18n.I18nMeta): boolean {\n return
isI18nRootNode(meta) && meta.nodes.length === 1 && meta.nodes[0] instanceof i18n.Icu;\n}\n\nexport function
hasI18nMeta(node: t.Node&{i18n?: i18n.I18nMeta}): boolean {\n return !!node.i18n;\n}\n\nexport function
hasI18nAttrs(element: html.Element): boolean {\n return element.attrs.some((attr: html.Attribute) =>
isI18nAttribute(attr.name));\n}\n\nexport function icuFromI18nMessage(message: i18n.Message) {\n return
message.nodes[0] as i18n.IcuPlaceholder;\n}\n\nexport function wrapI18nPlaceholder(content: string|number,
contextId: number = 0): string {\n const blockId = contextId > 0 ? `:${contextId}` : ";\n return
`${I18N_PLACEHOLDER_SYMBOL}${content}${blockId}${I18N_PLACEHOLDER_SYMBOL}`;\n}\n\n\nexport
function assembleI18nBoundString(\n strings: string[], bindingStartIndex: number = 0, contextId: number = 0):
string {\n if (!strings.length) return ";\n let acc = ";\n const lastIdx = strings.length - 1;\n for (let i = 0; i < lastIdx;
i++) {\n acc += `${strings[i]}${wrapI18nPlaceholder(bindingStartIndex + i, contextId)} `;\n } \n acc +=
strings[lastIdx];\n return acc;\n}\n\nexport function getSeqNumberGenerator(startsAt: number = 0): () => number
{\n let current = startsAt;\n return () => current++;\n}\n\nexport function placeholdersToParams(placeholders:
Map<string, string[]>):\n {[name: string]: o.LiteralExpr} {\n const params: {[name: string]: o.LiteralExpr} =
{};\n placeholders.forEach((values: string[], key: string) => {\n params[key] = o.literal(values.length > 1 ?
`${values.join("")}` : values[0]);\n });\n return params;\n}\n\nexport function updatePlaceholderMap(map:
Map<string, any[]>, name: string, ...values: any[]) {\n const current = map.get(name) || [];\n
current.push(...values);\n map.set(name, current);\n}\n\nexport function assembleBoundTextPlaceholders(\n
meta: i18n.I18nMeta, bindingStartIndex: number = 0, contextId: number = 0): Map<string, any[]> {\n const
startIdx = bindingStartIndex;\n const placeholders = new Map<string, any>();\n const node =\n meta instanceof
i18n.Message ? meta.nodes.find(node => node instanceof i18n.Container) : meta;\n if (node) {\n (node as
i18n.Container)\n .children\n .filter((child: i18n.Node): child is i18n.Placeholder => child instanceof
i18n.Placeholder)\n .forEach((child: i18n.Placeholder, idx: number) => {\n const content =
wrapI18nPlaceholder(startIdx + idx, contextId);\n updatePlaceholderMap(placeholders, child.name,
content);\n });\n }\n return placeholders;\n}\n\n\n**\n * Format the placeholder names in a map of placeholders
to expressions.\n * \n * The placeholder names are converted from "internal" format (e.g. `START_TAG_DIV_1`)
to "external" format (e.g. `startTagDiv_1`).\n * \n * @param params A map of placeholder names to
expressions.\n * @param useCamelCase whether to camelCase the placeholder name when formatting.\n * @returns
A new map of formatted placeholder names to expressions.\n\nexport function i18nFormatPlaceholderNames(\n
params: {[name: string]: o.Expression} = {}, useCamelCase: boolean) {\n const _params: {[key: string]:
o.Expression} = {};\n if (params && Object.keys(params).length) {\n Object.keys(params).forEach(\n key
=> _params[formatI18nPlaceholderName(key, useCamelCase)] = params[key]);\n }\n return _params;\n}\n\n\n**\n *
Converts internal placeholder names to public-facing format\n * (for example to use in goog.getMsg call).\n *
Example: `START_TAG_DIV_1` is converted to `startTagDiv_1`.\n * \n * @param name The placeholder name
that should be formatted\n * @returns Formatted placeholder name\n\nexport function
formatI18nPlaceholderName(name: string, useCamelCase: boolean = true): string {\n const publicName =
toPublicName(name);\n if (!useCamelCase) {\n return publicName;\n }\n const chunks =
publicName.split('_');\n if (chunks.length === 1) {\n // if no "_" found - just lowercase the value\n return
name.toLowerCase();\n }\n let postfix;\n // eject last element if it's a number\n if
(/^\d+$/ .test(chunks[chunks.length - 1])) {\n postfix = chunks.pop();\n }\n let raw =
chunks.shift().toLowerCase();\n if (chunks.length) {\n raw += chunks.map(c => c.charAt(0).toUpperCase() +
c.slice(1).toLowerCase()).join("");\n }\n return postfix ? `${raw}_${postfix}` : raw;\n}\n\n\n**\n * Generates a
prefix for translation\n const name.\n * \n * @param extra Additional local prefix that should be injected into
translation\n var name\n * @returns Complete translation\n const prefix\n\nexport function

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getTranslationConstPrefix(extra: string): string {\n return
`$${CLOSURE_TRANSLATION_VAR_PREFIX}${extra}`.toUpperCase();\n}\n\n/**\n * Generate AST to declare
a variable. E.g. `var I18N_1;`\n * @param variable the name of the variable to declare.\n */\nexport function
declareI18NVariable(variable: o.ReadVarExpr): o.Statement {\n return new o.DeclareVarStmt(\n variable.name!,
undefined, o.INFERRED_TYPE, undefined, variable.sourceSpan);\n}\n\n"/**\n * @license\n * Copyright Google
LLC All Rights Reserved.\n *\n * Use of this source code is governed by an MIT-style license that can be\n * found
in the LICENSE file at https://angular.io/license\n */\n\nimport {ConstantPool} from '../constant_pool';\nimport
{Interpolation} from '../expression_parser/ast';\nimport * as o from '../output/output_ast';\nimport
{ParseSourceSpan} from '../parse_util';\nimport {splitAtColon} from '../util';\nimport * as t from
'../r3_ast';\nimport {R3QueryMetadata} from './api';\nimport {isI18nAttribute} from './i18n/util';\n\n/**\n *
Checks whether an object key contains potentially unsafe chars, thus the key should be wrapped in\n * quotes. Note:
we do not wrap all keys into quotes, as it may have impact on minification and may\n * not work in some cases
when object keys are mangled by minifier.\n *\n * TODO(FW-1136): this is a temporary solution, we need to come
up with a better way of working with\n * inputs that contain potentially unsafe chars.\n */\n\nconst
UNSAFE_OBJECT_KEY_NAME_REGEXP = /[-.]/;\n\n/**\n * Name of the temporary to use during data binding\n */\nexport
const TEMPORARY_NAME = '_t';\n\n/**\n * Name of the context parameter passed into a template
function\n */\nexport const CONTEXT_NAME = 'ctx';\n\n/**\n * Name of the RenderFlag passed into a template
function\n */\nexport const RENDER_FLAGS = 'rf';\n\n/**\n * The prefix reference variables\n */\nexport const
REFERENCE_PREFIX = '_r';\n\n/**\n * The name of the implicit context reference\n */\nexport const
IMPLICIT_REFERENCE = '$implicit';\n\n/**\n * Non bindable attribute name\n */\nexport const
NON_BINDABLE_ATTR = 'ngNonBindable';\n\n/**\n *\n * Creates an allocator for a temporary variable.\n *\n * A
variable declaration is added to the statements the first time the allocator is invoked.\n */\nexport function
temporaryAllocator(statements: o.Statement[], name: string): () => o.ReadVarExpr {\n let temp:
o.ReadVarExpr|null = null;\n return () => {\n if (!temp) {\n statements.push(new
o.DeclareVarStmt(TEMPORARY_NAME, undefined, o.DYNAMIC_TYPE));\n temp = o.variable(name);\n }\n return temp;\n };}\n\nexport function unsupported(this: void|Function, feature: string): never {\n if (this)
{\n throw new Error(`Builder ${this.constructor.name} doesn't support ${feature} yet`);\n }\n throw new
Error(`Feature ${feature} is not supported yet`);\n}\n\nexport function invalid<T>(this: t.Visitor, arg:
o.Expression|o.Statement|t.Node): never {\n throw new Error(`Invalid state: Visitor ${this.constructor.name}
doesn't handle ${arg.constructor.name}`);\n}\n\nexport function asLiteral(value: any): o.Expression {\n if
(Array.isArray(value)) {\n return o.literalArr(value.map(asLiteral));\n }\n return o.literal(value,
o.INFERRED_TYPE);\n}\n\nexport function conditionallyCreateMapObjectLiteral(\n keys: {[key: string]:
string|string[]}, keepDeclared?: boolean): o.Expression|null {\n if (Object.getOwnPropertyNames(keys).length > 0)
{\n return mapToExpression(keys, keepDeclared);\n }\n return null;\n}\n\nfunction mapToExpression(\n map:
{[key: string]: string|string[]}, keepDeclared?: boolean): o.Expression {\n return
o.literalMap(Object.getOwnPropertyNames(map).map(key => {\n // canonical syntax: `dirProp: publicProp`\n //
if there is no `:` use dirProp = elProp\n const value = map[key];\n let declaredName: string;\n let publicName:
string;\n let minifiedName: string;\n if (Array.isArray(value)) {\n [publicName, declaredName] = value;\n }
else {\n [declaredName, publicName] = splitAtColon(key, [key, value]);\n }\n minifiedName =
declaredName;\n return {\n key: minifiedName,\n // put quotes around keys that contain potentially unsafe
characters\n quoted: UNSAFE_OBJECT_KEY_NAME_REGEXP.test(minifiedName),\n value:
(keepDeclared && publicName !== declaredName) ?\n o.literalArr([asLiteral(publicName),
asLiteral(declaredName)]) :\n asLiteral(publicName)\n });\n }});\n\n/**\n * Remove trailing null nodes as
they are implied.\n */\nexport function trimTrailingNulls(parameters: o.Expression[]): o.Expression[] {\n while
(o.isNull(parameters[parameters.length - 1])) {\n parameters.pop();\n }\n return parameters;\n}\n\nexport
function getQueryPredicate(\n query: R3QueryMetadata, constantPool: ConstantPool): o.Expression {\n if
(Array.isArray(query.predicate)) {\n let predicate: o.Expression[] = [];\n query.predicate.forEach((selector:
string): void => {\n // Each item in predicates array may contain strings with comma-separated refs\n // (for

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Type of the target being created by the factory.\n */\n target: R3FactoryTarget;\n}\n\nexport enum
R3FactoryDelegateType {\n Class,\n Function,\n Factory,\n}\n\nexport interface R3DelegatedFactoryMetadata
extends R3ConstructorFactoryMetadata {\n delegate: o.Expression;\n delegateType:
R3FactoryDelegateType.Factory;\n}\n\nexport interface R3DelegatedFnOrClassMetadata extends
R3ConstructorFactoryMetadata {\n delegate: o.Expression;\n delegateType:
R3FactoryDelegateType.Class|R3FactoryDelegateType.Function;\n delegateDeps:
R3DependencyMetadata[];\n}\n\nexport interface R3ExpressionFactoryMetadata extends
R3ConstructorFactoryMetadata {\n expression: o.Expression;\n}\n\nexport type R3FactoryMetadata =
R3ConstructorFactoryMetadata|R3DelegatedFactoryMetadata|\n
R3DelegatedFnOrClassMetadata|R3ExpressionFactoryMetadata;\n\nexport enum R3FactoryTarget {\n Directive =
0,\n Component = 1,\n Injectable = 2,\n Pipe = 3,\n NgModule = 4,\n}\n\n/**\n * Resolved type of a
dependency.\n * Occasionally, dependencies will have special significance which is known statically. In that\n *
case the `R3ResolvedDependencyType` informs the factory generator that a particular dependency\n * should be
generated specially (usually by calling a special injection function instead of the\n * standard one).\n */\nexport
enum R3ResolvedDependencyType {\n /**\n * A normal token dependency.\n */\n Token = 0,\n /**\n * The
dependency is for an attribute.\n */\n Attribute = 1,\n /**\n * Injecting the `ChangeDetectorRef` token. Needs special handling when injected into a
pipe.\n */\n ChangeDetectorRef = 2,\n /**\n * An invalid dependency (no token could be determined). An
error should be thrown at runtime.\n */\n Invalid = 3,\n}\n\n/**\n * Metadata representing a single dependency to
be injected into a constructor or function call.\n */\nexport interface R3DependencyMetadata {\n /**\n * An
expression representing the token or value to be injected.\n */\n token: o.Expression;\n /**\n * If an
@Attribute decorator is present, this is the literal type of the attribute name, or\n * the unknown type if no literal
type is available (e.g. the attribute name is an expression).\n * Will be null otherwise.\n */\n attribute:
o.Expression|null;\n /**\n * An enum indicating whether this dependency has special meaning to Angular and
needs to be\n * injected specially.\n */\n resolved: R3ResolvedDependencyType;\n /**\n * Whether the
dependency has an @Host qualifier.\n */\n host: boolean;\n /**\n * Whether the dependency has an @Optional
qualifier.\n */\n optional: boolean;\n /**\n * Whether the dependency has an @Self qualifier.\n */\n self:
boolean;\n /**\n * Whether the dependency has an @SkipSelf qualifier.\n */\n skipSelf: boolean;\n}\n\nexport
interface R3FactoryFn {\n factory: o.Expression;\n statements: o.Statement[];\n type:
o.ExpressionType;\n}\n\n/**\n * Construct a factory function expression for the given `R3FactoryMetadata`.\n
*/\nexport function compileFactoryFunction(meta: R3FactoryMetadata): R3FactoryFn {\n const t = o.variable('t');\n
const statements: o.Statement[] = [];\n let ctorDepsType: o.Type = o.NONE_TYPE;\n\n // The type to instantiate
via constructor invocation. If there is no delegated factory, meaning\n // this type is always created by constructor
invocation, then this is the type-to-create\n // parameter provided by the user (t) if specified, or the current type if
not. If there is a\n // delegated factory (which is used to create the current type) then this is only the type-to-\n //
create parameter (t).\n const typeForCtor = lisDelegatedMetadata(meta) ?\n new
o.BinaryOperatorExpr(o.BinaryOperator.Or, t, meta.internalType) :\n t;\n let ctorExpr: o.Expression|null =
null;\n if (meta.deps !== null) {\n // There is a constructor (either explicitly or implicitly defined).\n if
(meta.deps !== 'invalid') {\n ctorExpr = new o.InstantiateExpr(\n typeForCtor,\n
injectDependencies(meta.deps, meta.injectFn, meta.target === R3FactoryTarget.Pipe));\n\n ctorDepsType =
createCtorDepsType(meta.deps);\n }\n } else {\n const baseFactory =
o.variable(`${meta.name}_BaseFactory`);\n const getInheritedFactory = o.importExpr(R3.getInheritedFactory);\n
const baseFactoryStmt =\n baseFactory\n .set(getInheritedFactory.callFn(\n
[meta.internalType], /* sourceSpan */ undefined, /* pure */ true))\n .toDeclStmt(o.INFERRED_TYPE,
[o.StmtModifier.Exported, o.StmtModifier.Final]);\n statements.push(baseFactoryStmt);\n\n // There is no
constructor, use the base class' factory to construct typeForCtor.\n ctorExpr =
baseFactory.callFn([typeForCtor]);\n }\n const ctorExprFinal = ctorExpr;\n\n const body: o.Statement[] = [];\n let
retExpr: o.Expression|null = null;\n\n function makeConditionalFactory(nonCtorExpr: o.Expression):

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o.ReadVarExpr {\n const r = o.variable('r');\n body.push(r.set(o.NULL_EXPR).toDeclStmt());\n let ctorStmt:\n o.Statement|null = null;\n if (ctorExprFinal !== null) {\n ctorStmt = r.set(ctorExprFinal).toStmt();\n } else {\n ctorStmt = o.importExpr(R3.invalidFactory).callFn([]).toStmt();\n }\n body.push(o.ifStmt(t, [ctorStmt],\n [r.set(nonCtorExpr).toStmt()]);\n return r;}\n\nif (isDelegatedMetadata(meta) && meta.delegateType ===\n R3FactoryDelegateType.Factory) {\n const delegateFactory = o.variable(`${meta.name}_BaseFactory`);\n const\n getFactoryOf = o.importExpr(R3.getFactoryOf);\n if (meta.delegate.isEquivalent(meta.internalType)) {\n throw new Error(`Illegal state: compiling factory that delegates to itself`);\n }\n const delegateFactoryStmt =\n delegateFactory.set(getFactoryOf.callFn([meta.delegate])).toDeclStmt(o.INFERRED_TYPE, [\n o.StmtModifier.Exported, o.StmtModifier.Final\n]);\n statements.push(delegateFactoryStmt);\n retExpr =\n makeConditionalFactory(delegateFactory.callFn([]));\n } else if (isDelegatedMetadata(meta)) {\n // This type is\n created with a delegated factory. If a type parameter is not specified, call\n // the factory instead.\n const\n delegateArgs =\n injectDependencies(meta.delegateDeps, meta.injectFn, meta.target ===\n R3FactoryTarget.Pipe);\n // Either call `new delegate(...)` or `delegate(...)` depending on meta.delegateType.\n const factoryExpr = new (\n meta.delegateType === R3FactoryDelegateType.Class ?\n o.InstantiateExpr\n :\n o.InvokeFunctionExpr)(meta.delegate, delegateArgs);\n retExpr =\n makeConditionalFactory(factoryExpr);\n } else if (isExpressionFactoryMetadata(meta)) {\n // TODO(alxhub):\n decide whether to lower the value here or in the caller\n retExpr = makeConditionalFactory(meta.expression);\n }\n else {\n retExpr = ctorExpr;\n }\n if (retExpr !== null) {\n body.push(new o.ReturnStatement(retExpr));\n }\n else {\n body.push(o.importExpr(R3.invalidFactory).callFn([]).toStmt());\n }\n return {\n factory: o.fn(\n [new o.FnParam('t', o.DYNAMIC_TYPE)], body, o.INFERRED_TYPE, undefined,\n `${meta.name}_Factory`),\n statements,\n type: o.expressionType(o.importExpr(\n R3.FactoryDef,\n [typeWithParameters(meta.type.type, meta.typeArgumentCount), ctorDepsType]))\n };\n}\n\nfunction\n injectDependencies(\n deps: R3DependencyMetadata[], injectFn: o.ExternalReference, isPipe: boolean):\n o.Expression[] {\n return deps.map((dep, index) => compileInjectDependency(dep, injectFn, isPipe,\n index));\n}\n\nfunction compileInjectDependency(\n dep: R3DependencyMetadata, injectFn: o.ExternalReference,\n isPipe: boolean,\n index: number): o.Expression {\n // Interpret the dependency according to its resolved type.\n switch (dep.resolved) {\n case R3ResolvedDependencyType.Token:\n case\n R3ResolvedDependencyType.ChangeDetectorRef:\n // Build up the injection flags according to the metadata.\n const flags = InjectFlags.Default | (dep.self ? InjectFlags.Self : 0) |\n (dep.skipSelf ? InjectFlags.SkipSelf : 0) |\n (dep.host ? InjectFlags.Host : 0) |\n (dep.optional ? InjectFlags.Optional : 0);\n // If this dependency is\n optional or otherwise has non-default flags, then additional\n // parameters describing how to inject the\n dependency must be passed to the inject function\n // that's being used.\n let flagsParam: o.LiteralExpr|null\n =\n (flags !== InjectFlags.Default || dep.optional) ? o.literal(flags) : null;\n // We have a separate\n instruction for injecting ChangeDetectorRef into a pipe.\n if (isPipe && dep.resolved ===\n R3ResolvedDependencyType.ChangeDetectorRef) {\n return\n o.importExpr(R3.injectPipeChangeDetectorRef).callFn(flagsParam ? [flagsParam] : []);\n }\n // Build up the\n arguments to the injectFn call.\n const injectArgs = [dep.token];\n if (flagsParam) {\n injectArgs.push(flagsParam);\n }\n return o.importExpr(injectFn).callFn(injectArgs);\n case\n R3ResolvedDependencyType.Attribute:\n // In the case of attributes, the attribute name in question is given as\n the token.\n return o.importExpr(R3.injectAttribute).callFn([dep.token]);\n case\n R3ResolvedDependencyType.Invalid:\n return o.importExpr(R3.invalidFactoryDep).callFn([o.literal(index)];\n default:\n return unsupported(\n `Unknown R3ResolvedDependencyType:\n ${R3ResolvedDependencyType[dep.resolved]}`);\n }\n}\n\nfunction createCtorDepsType(deps:\n R3DependencyMetadata[]): o.Type {\n let hasTypes = false;\n const attributeTypes = deps.map(dep => {\n const\n type = createCtorDepType(dep);\n if (type !== null) {\n hasTypes = true;\n return type;\n } else {\n return o.literal(null);\n }\n });\n if (hasTypes) {\n return o.expressionType(o.literalArr(attributeTypes));\n }\n else {\n return o.NONE_TYPE;\n }\n}\n\nfunction createCtorDepType(dep: R3DependencyMetadata):\n o.LiteralMapExpr|null {\n const entries: {key: string, quoted: boolean, value: o.Expression}[] = [];\n if

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(dep.resolved === R3ResolvedDependencyType.Attribute) {\n if (dep.attribute !== null) {\n entries.push({key:
'attribute', value: dep.attribute, quoted: false});\n }\n}\n if (dep.optional) {\n entries.push({key: 'optional',
value: o.literal(true), quoted: false});\n}\n if (dep.host) {\n entries.push({key: 'host', value: o.literal(true), quoted:
false});\n}\n if (dep.self) {\n entries.push({key: 'self', value: o.literal(true), quoted: false});\n}\n if
(dep.skipSelf) {\n entries.push({key: 'skipSelf', value: o.literal(true), quoted: false});\n}\n\n return entries.length
> 0 ? o.literalMap(entries) : null;\n}\n\n/**\n * A helper function useful for extracting `R3DependencyMetadata`
from a Render2\n * `CompileTypeMetadata` instance.\n */\nexport function dependenciesFromGlobalMetadata(\n type: CompileTypeMetadata, outputCtx: OutputContext,\n reflector: CompileReflector):
R3DependencyMetadata[] {\n // Use the `CompileReflector` to look up references to some well-known Angular
types. These will\n // be compared with the token to statically determine whether the token has significance to\n // Angular, and set the correct `R3ResolvedDependencyType` as a result.\n const injectorRef =
reflector.resolveExternalReference(Identifiers.Injector);\n\n // Iterate through the type's DI dependencies and
produce `R3DependencyMetadata` for each of them.\n const deps: R3DependencyMetadata[] = [];\n for (let
dependency of type.diDeps) {\n if (dependency.token) {\n const tokenRef =
tokenReference(dependency.token);\n let resolved: R3ResolvedDependencyType = dependency.isAttribute ?\n R3ResolvedDependencyType.Attribute : \n R3ResolvedDependencyType.Token;\n\n // In the case of
most dependencies, the token will be a reference to a type. Sometimes,\n // however, it can be a string, in the case
of older Angular code or @Attribute injection.\n const token =\n tokenRef instanceof StaticSymbol ?
outputCtx.importExpr(tokenRef) : o.literal(tokenRef);\n\n // Construct the dependency.\n deps.push({\n token,\n attribute: null,\n resolved,\n host: !!dependency.isHost,\n optional:
!!dependency.isOptional,\n self: !!dependency.isSelf,\n skipSelf: !!dependency.isSkipSelf,\n });\n }
else {\n unsupported('dependency without a token');\n }\n }\n return deps;\n}\n\nfunction
isDelegatedMetadata(meta: R3FactoryMetadata): meta is R3DelegatedFactoryMetadata|\n
R3DelegatedFnOrClassMetadata {\n return (meta as any).delegateType !== undefined;\n}\n\nfunction
isExpressionFactoryMetadata(meta: R3FactoryMetadata): meta is R3ExpressionFactoryMetadata {\n return (meta
as any).expression !== undefined;\n}\n\n"/**\n * @license\n * Copyright Google LLC All Rights Reserved.\n */\n *
Use of this source code is governed by an MIT-style license that can be\n * found in the LICENSE file at
https://angular.io/license\n */\n\nimport {Identifiers} from './identifiers';\nimport * as o from
'./output/output_ast';\nimport {compileFactoryFunction, R3DependencyMetadata, R3FactoryDelegateType,
R3FactoryMetadata, R3FactoryTarget} from './render3/r3_factory';\nimport {mapToMapExpression, R3Reference,
typeWithParameters} from './render3/util';\n\nexport interface InjectableDef {\n expression: o.Expression;\n type:
o.Type;\n statements: o.Statement[];\n}\n\nexport interface R3InjectableMetadata {\n name: string;\n type:
R3Reference;\n internalType: o.Expression;\n typeArgumentCount: number;\n providedIn: o.Expression;\n
useClass?: o.Expression;\n useFactory?: o.Expression;\n useExisting?: o.Expression;\n useValue?: o.Expression;\n
userDeps?: R3DependencyMetadata[];\n}\n\nexport function compileInjectable(meta: R3InjectableMetadata):
InjectableDef {\n let result: {factory: o.Expression, statements: o.Statement[]}|null = null;\n\n const factoryMeta:
R3FactoryMetadata = {\n name: meta.name,\n type: meta.type,\n internalType: meta.internalType,\n
typeArgumentCount: meta.typeArgumentCount,\n deps: [],\n injectFn: Identifiers.inject,\n target:
R3FactoryTarget.Injectable,\n };\n\n if (meta.useClass !== undefined) {\n // meta.useClass has two modes of
operation. Either deps are specified, in which case `new` is\n // used to instantiate the class with dependencies
injected, or deps are not specified and\n // the factory of the class is used to instantiate it.\n //\n // A special
case exists for useClass: Type where Type is the injectable type itself and no\n // deps are specified, in which case
'useClass' is effectively ignored.\n\n const useClassOnSelf = meta.useClass.isEquivalent(meta.internalType);\n
let deps: R3DependencyMetadata[]|undefined = undefined;\n if (meta.userDeps !== undefined) {\n deps =
meta.userDeps;\n }\n\n if (deps !== undefined) {\n // factory: () => new meta.useClass(...deps)\n result =
compileFactoryFunction({\n ...factoryMeta,\n delegate: meta.useClass,\n delegateDeps: deps,\n
delegateType: R3FactoryDelegateType.Class,\n });\n } else if (useClassOnSelf) {\n result =
compileFactoryFunction(factoryMeta);\n } else {\n result = delegateToFactory(\n meta.type.value as

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o.WrappedNodeExpr<any>, meta.useClass as o.WrappedNodeExpr<any>);\n }\n } else if (meta.useFactory !==
undefined) {\n if (meta.userDeps !== undefined) {\n result = compileFactoryFunction({\n ...factoryMeta,\n delegate: meta.useFactory,\n delegateDeps: meta.userDeps || [],\n delegateType:
R3FactoryDelegateType.Function,\n });\n } else {\n result = {\n statements: [],\n factory: o.fn([\n
[new o.ReturnStatement(meta.useFactory.callFn([]))]\n]);\n }\n } else if (meta.useValue !== undefined) {\n
// Note: it's safe to use `meta.useValue` instead of the `USE_VALUE` in meta` check used for\n // client code
because meta.useValue is an Expression which will be defined even if the actual\n // value is undefined.\n result
= compileFactoryFunction({\n ...factoryMeta,\n expression: meta.useValue,\n });\n } else if
(meta.useExisting !== undefined) {\n // useExisting is an `inject` call on the existing token.\n result =
compileFactoryFunction({\n ...factoryMeta,\n expression:
o.importExpr(Identifiers.inject).callFn([meta.useExisting]),\n });\n } else {\n result = delegateToFactory(\n
meta.type.value as o.WrappedNodeExpr<any>, meta.internalType as o.WrappedNodeExpr<any>);\n }\n\n const
token = meta.internalType;\n\n const injectableProps: {[key: string]: o.Expression} = {token, factory:
result.factory};\n\n // Only generate providedIn property if it has a non-null value\n if ((meta.providedIn as
o.LiteralExpr).value !== null) {\n injectableProps.providedIn = meta.providedIn;\n }\n\n const expression =\n o.importExpr(Identifiers.defineInjectable).callFn([mapToMapExpression(injectableProps)];\n\n const type = new
o.ExpressionType(o.importExpr(\n Identifiers.InjectableDef, [typeWithParameters(meta.type.type,
meta.type.argumentCount)]));\n\n return {\n expression,\n type,\n statements: result.statements,\n
};\n}\n\nfunction delegateToFactory(type: o.WrappedNodeExpr<any>, internalType: o.WrappedNodeExpr<any>)\n
{\n return {\n statements: [],\n // If types are the same, we can generate `factory: type.fac`\n // If types are
different, we have to generate a wrapper function to ensure\n // the internal type has been resolved (`factory:
function(t) { return type.fac(t); })`\n factory: type.node === internalType.node ?\n internalType.prop('fac') : \n
o.fn([new o.FnParam('t', o.DYNAMIC_TYPE)], [new o.ReturnStatement(internalType.callMethod(\n
 'fac', [o.variable('t')]))])\n];\n }\n\n}"/**\n * @license\n * Copyright Google LLC All Rights
Reserved.\n *\n * Use of this source code is governed by an MIT-style license that can be\n * found in the
LICENSE file at https://angular.io/license\n */\n\nexport function assertArrayOfStrings(identifier: string, value:
any) {\n if (value == null) {\n return;\n }\n if (!Array.isArray(value)) {\n throw new Error(`Expected
'${identifier}' to be an array of strings.`);\n }\n for (let i = 0; i < value.length; i += 1) {\n if (typeof value[i] !==
'string') {\n throw new Error(`Expected '${identifier}' to be an array of strings.`);\n }\n }\n}\n\nconst
UNUSABLE_INTERPOLATION_REGEXPS = [\n /\\s$/, // empty\n /<>/, // html tag\n /^{}$/,\n // i18n expansion\n /&#[a-z]/i, // character reference,\n /^\\|\\|/, // comment\n];\n\nexport function
assertInterpolationSymbols(identifier: string, value: any): void {\n if (value != null && !(Array.isArray(value) &&
value.length == 2)) {\n throw new Error(`Expected '${identifier}' to be an array, [start, end].`);\n } else if (value
!= null) {\n const start = value[0] as string;\n const end = value[1] as string;\n // Check for unusable
interpolation symbols\n UNUSABLE_INTERPOLATION_REGEXPS.forEach(regex => {\n if
(regex.test(start) || regex.test(end)) {\n throw new Error(`[${start}', '${end}'] contains unusable interpolation
symbol.`);\n }\n });\n }\n}\n\n}"/**\n * @license\n * Copyright Google LLC All Rights Reserved.\n *\n * Use
of this source code is governed by an MIT-style license that can be\n * found in the LICENSE file at
https://angular.io/license\n */\n\nimport {assertInterpolationSymbols} from './assertions';\n\nexport class
InterpolationConfig {\n static fromArray(markers: [string, string]|null): InterpolationConfig {\n if (!markers) {\n
return DEFAULT_INTERPOLATION_CONFIG;\n }\n\n assertInterpolationSymbols('interpolation',
markers);\n return new InterpolationConfig(markers[0], markers[1]);\n }\n\n constructor(public start: string,
public end: string) {\n }\n}\n\nexport const DEFAULT_INTERPOLATION_CONFIG: InterpolationConfig =\n new
InterpolationConfig('{{', '}}');\n\n}"/**\n * @license\n * Copyright Google LLC All Rights Reserved.\n *\n * Use
of this source code is governed by an MIT-style license that can be\n * found in the LICENSE file at
https://angular.io/license\n */\n\nimport {utf8Encode} from './util';\n\n//
https://docs.google.com/document/d/1UIRGAehQwRypUTovF1KRIpiOFze0b-_2gc6fAH0KY0k/edit\n\nconst
VERSION = 3;\n\nconst JS_B64_PREFIX = '# sourceMappingURL=data:application/json;base64,';\n\n}ntype

```



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value in the range [0, 63`);\n }\n\n return B64_DIGITS[value];\n}\n", "/*\n * @license\n * Copyright Google
LLC All Rights Reserved.\n *\n * Use of this source code is governed by an MIT-style license that can be\n * found
in the LICENSE file at https://angular.io/license\n *\n\nimport {ParseSourceSpan} from './parse_util';\nimport * as
o from './output_ast';\nimport {SourceMapGenerator} from './source_map';\n\nconst
_SINGLE_QUOTE_ESCAPE_STRING_RE = /\\|\\\\|\\n|\\r|\\$|/g;\nconst _LEGAL_IDENTIFIER_RE = /^[$_A-Z][0-
9A-Z_$]*$/i;\nconst _INDENT_WITH = ' ';\nexport const CATCH_ERROR_VAR = o.variable('error', null,
null);\nexport const CATCH_STACK_VAR = o.variable('stack', null, null);\n\nexport interface OutputEmitter {\n
emitStatements(genFilePath: string, stmts: o.Statement[], preamble?: string|null): string;\n}\n\n\nclass _EmittedLine
{\n partsLength = 0;\n parts: string[] = [];\n srcSpans: (ParseSourceSpan|null)[] = [];\n constructor(public indent:
number) {\n }\n\n\nexport class EmitterVisitorContext {\n static createRoot(): EmitterVisitorContext {\n return
new EmitterVisitorContext(0);\n }\n\n private _lines: _EmittedLine[];\n private _classes: o.ClassStmt[] = [];\n
private _preambleLineCount = 0;\n\n constructor(private _indent: number) {\n this._lines = [new
_EmittedLine(_indent)];\n }\n\n /*\n * @internal strip this from published d.ts files due to\n *
https://github.com/microsoft/TypeScript/issues/36216\n *\n private get _currentLine(): _EmittedLine {\n return
this._lines[this._lines.length - 1];\n }\n\n println(from?: {sourceSpan: ParseSourceSpan|null}|null, lastPart: string =
''): void {\n this.print(from || null, lastPart, true);\n }\n\n lineIsEmpty(): boolean {\n return
this._currentLine.parts.length === 0;\n }\n\n lineLength(): number {\n return this._currentLine.indent *
_INDENT_WITH.length + this._currentLine.partsLength;\n }\n\n print(from: {sourceSpan:
ParseSourceSpan|null}|null, part: string, newLine: boolean = false) {\n if (part.length > 0) {\n
this._currentLine.parts.push(part);\n this._currentLine.partsLength += part.length;\n
this._currentLine.srcSpans.push(from && from.sourceSpan || null);\n }\n if (newLine) {\n
this._lines.push(new _EmittedLine(this._indent));\n }\n }\n\n removeEmptyLastLine() {\n if
(this.lineIsEmpty()) {\n this._lines.pop();\n }\n }\n\n incIndent() {\n this._indent++;\n if
(this.lineIsEmpty()) {\n this._currentLine.indent = this._indent;\n }\n }\n\n decIndent() {\n this._indent--;\n
if (this.lineIsEmpty()) {\n this._currentLine.indent = this._indent;\n }\n }\n\n pushClass(clazz: o.ClassStmt)
{\n this._classes.push(clazz);\n }\n\n popClass(): o.ClassStmt {\n return this._classes.pop()!;\n }\n\n get
currentClass(): o.ClassStmt|null {\n return this._classes.length > 0 ? this._classes[this._classes.length - 1] : null;\n
}\n\n toSource(): string {\n return this.sourceLines\n .map(l => l.parts.length > 0 ? _createIndent(l.indent) +
l.parts.join('') : '')\n .join('\\n');\n }\n\n toSourceMapGenerator(genFilePath: string, startsAtLine: number = 0):
SourceMapGenerator {\n const map = new SourceMapGenerator(genFilePath);\n let firstOffsetMapped =
false;\n const mapFirstOffsetIfNeeded = () => {\n if (!firstOffsetMapped) {\n // Add a single space so that
tools won't try to load the file from disk.\n // Note: We are using virtual urls like `ng://`, so we have to\n //
provide a content here.\n map.addSource(genFilePath, '').addMapping(0, genFilePath, 0, 0);\n
firstOffsetMapped = true;\n }\n }; \n for (let i = 0; i < startsAtLine; i++) {\n map.addLine();\n
mapFirstOffsetIfNeeded();\n }\n\n this.sourceLines.forEach((line, lineIdx) => {\n map.addLine();\n
const spans = line.srcSpans;\n const parts = line.parts;\n let col0 = line.indent * _INDENT_WITH.length;\n
let spanIdx = 0;\n // skip leading parts without source spans\n while (spanIdx < spans.length &&
!spans[spanIdx]) {\n col0 += parts[spanIdx].length;\n spanIdx++;\n }\n if (spanIdx < spans.length
&& lineIdx === 0 && col0 === 0) {\n firstOffsetMapped = true;\n } else {\n
mapFirstOffsetIfNeeded();\n }\n\n while (spanIdx < spans.length) {\n const span = spans[spanIdx]!;\n
const source = span.start.file;\n const sourceLine = span.start.line;\n const sourceCol = span.start.col;\n
map.addSource(source.url, source.content)\n .addMapping(col0, source.url, sourceLine, sourceCol);\n
col0 += parts[spanIdx].length;\n spanIdx++;\n\n // assign parts without span or the same span to the
previous segment\n while (spanIdx < spans.length && (span === spans[spanIdx] || !spans[spanIdx])) {\n
col0 += parts[spanIdx].length;\n spanIdx++;\n }\n }\n\n return map;\n }\n\n
setPreambleLineCount(count: number) {\n return this._preambleLineCount = count;\n }\n\n spanOf(line:
number, column: number): ParseSourceSpan|null {\n const emittedLine = this._lines[line -
this._preambleLineCount];\n if (emittedLine) {\n let columnsLeft = column -

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_createIndent(emittedLine.indent).length;\n for (let partIndex = 0; partIndex < emittedLine.parts.length;
partIndex++) {\n const part = emittedLine.parts[partIndex];\n if (part.length > columnsLeft) {\n return
emittedLine.srcSpans[partIndex];\n }\n columnsLeft -= part.length;\n }\n return null;\n }\n\n/**\n * @internal strip this from published d.ts files due to\n */
https://github.com/microsoft/TypeScript/issues/36216\n */\n private get sourceLines(): _EmittedLine[] {\n if
(this._lines.length && this._lines[this._lines.length - 1].parts.length === 0) {\n return this._lines.slice(0, -1);\n
}\n return this._lines;\n }\n}\n\nexport abstract class AbstractEmitterVisitor implements o.StatementVisitor,
o.ExpressionVisitor {\n constructor(private _escapeDollarInStrings: boolean) {}\n\n protected
printLeadingComments(stmt: o.Statement, ctx: EmitterVisitorContext): void {\n if (stmt.leadingComments ===
undefined) {\n return;\n }\n for (const comment of stmt.leadingComments) {\n if (comment instanceof
o.JSDocComment) {\n ctx.print(stmt, `/${comment.toString()}*/`, comment.trailingNewline);\n } else {\n
 if (comment.multiline) {\n ctx.print(stmt, `/* ${comment.text} */`, comment.trailingNewline);\n } else
{\n comment.text.split(`\n`).forEach((line) => {\n ctx.println(stmt, `// ${line}`);\n });\n }\n }\n }\n }\n\n visitExpressionStmt(stmt: o.ExpressionStatement, ctx: EmitterVisitorContext): any {\n
 this.printLeadingComments(stmt, ctx);\n stmt.expr.visitExpression(this, ctx);\n ctx.println(stmt, `;`);\n return
null;\n }\n\n visitReturnStmt(stmt: o.ReturnStatement, ctx: EmitterVisitorContext): any {\n
 this.printLeadingComments(stmt, ctx);\n ctx.print(stmt, `return `);\n stmt.value.visitExpression(this, ctx);\n
 ctx.println(stmt, `;`);\n return null;\n }\n\n abstract visitCastExpr(ast: o.CastExpr, context: any): any;\n\n abstract
visitDeclareClassStmt(stmt: o.ClassStmt, ctx: EmitterVisitorContext): any;\n\n visitIfStmt(stmt: o.IfStmt, ctx:
EmitterVisitorContext): any {\n this.printLeadingComments(stmt, ctx);\n ctx.print(stmt, `if (`);\n
 stmt.condition.visitExpression(this, ctx);\n ctx.print(stmt, `)`);\n const hasElseCase = stmt.falseCase != null
&& stmt.falseCase.length > 0;\n if (stmt.trueCase.length <= 1 && !hasElseCase) {\n ctx.print(stmt, ` `);\n
 this.visitAllStatements(stmt.trueCase, ctx);\n ctx.removeEmptyLastLine();\n ctx.print(stmt, ` `);\n } else {\n
 ctx.println();\n ctx.incIndent();\n this.visitAllStatements(stmt.trueCase, ctx);\n ctx.decIndent();\n if
(hasElseCase) {\n ctx.println(stmt, ` } else (`);\n ctx.incIndent();\n
 this.visitAllStatements(stmt.falseCase, ctx);\n ctx.decIndent();\n }\n }\n ctx.println(stmt, `)`);\n return
null;\n }\n\n abstract visitTryCatchStmt(stmt: o.TryCatchStmt, ctx: EmitterVisitorContext): any;\n\n visitThrowStmt(stmt: o.ThrowStmt, ctx: EmitterVisitorContext): any {\n
 this.printLeadingComments(stmt, ctx);\n ctx.print(stmt, `throw `);\n stmt.error.visitExpression(this, ctx);\n ctx.println(stmt, `;`);\n return null;\n }\n\n abstract visitDeclareVarStmt(stmt: o.DeclareVarStmt, ctx: EmitterVisitorContext): any;\n\n
 visitWriteVarExpr(expr: o.WriteVarExpr, ctx: EmitterVisitorContext): any {\n const lineWasEmpty =
ctx.lineIsEmpty();\n if (!lineWasEmpty) {\n ctx.print(expr, '(');\n }\n ctx.print(expr, `${expr.name} = `);\n
 expr.value.visitExpression(this, ctx);\n if (!lineWasEmpty) {\n ctx.print(expr, ')');\n }\n return null;\n }\n\n visitWriteKeyExpr(expr: o.WriteKeyExpr, ctx: EmitterVisitorContext): any {\n const lineWasEmpty =
ctx.lineIsEmpty();\n if (!lineWasEmpty) {\n ctx.print(expr, '(');\n }\n expr.receiver.visitExpression(this,
ctx);\n ctx.print(expr, `[`);\n expr.index.visitExpression(this, ctx);\n ctx.print(expr, `] = `);\n
 expr.value.visitExpression(this, ctx);\n if (!lineWasEmpty) {\n ctx.print(expr, ')');\n }\n return null;\n }\n\n visitWritePropExpr(expr: o.WritePropExpr, ctx: EmitterVisitorContext): any {\n const lineWasEmpty =
ctx.lineIsEmpty();\n if (!lineWasEmpty) {\n ctx.print(expr, '(');\n }\n expr.receiver.visitExpression(this,
ctx);\n ctx.print(expr, `.${expr.name} = `);\n expr.value.visitExpression(this, ctx);\n if (!lineWasEmpty) {\n
 ctx.print(expr, ')');\n }\n return null;\n }\n\n visitInvokeMethodExpr(expr: o.InvokeMethodExpr, ctx:
EmitterVisitorContext): any {\n expr.receiver.visitExpression(this, ctx);\n let name = expr.name;\n if
(expr.builtin != null) {\n name = this.getBuiltinMethodName(expr.builtin);\n if (name == null) {\n //
 some builtins just mean to skip the call.\n return null;\n }\n }\n ctx.print(expr, `.${name}(`);\n
 this.visitAllExpressions(expr.args, ctx, ` `);\n ctx.print(expr, `)`);\n return null;\n }\n\n abstract
getBuiltinMethodName(method: o.BuiltinMethod): string;\n\n visitInvokeFunctionExpr(expr:
o.InvokeFunctionExpr, ctx: EmitterVisitorContext): any {\n expr.fn.visitExpression(this, ctx);\n ctx.print(expr,
`(`);\n this.visitAllExpressions(expr.args, ctx, ` `);\n ctx.print(expr, `)`);\n return null;\n }\n

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visitWrappedNodeExpr(ast: o.WrappedNodeExpr<any>, ctx: EmitterVisitorContext): any {\n throw new
Error('Abstract emitter cannot visit WrappedNodeExpr.');
```

```

}\n visitTypeofExpr(expr: o.TypeofExpr, ctx:
EmitterVisitorContext): any {\n ctx.print(expr, 'typeof ');
expr.expr.visitExpression(this, ctx);\n }\n
visitReadVarExpr(ast: o.ReadVarExpr, ctx: EmitterVisitorContext): any {\n let varName = ast.name!;\n if
(ast.builtin != null) {\n switch (ast.builtin) {\n case o.BuiltinVar.Super:\n varName = 'super';\n break;\n case o.BuiltinVar.This:\n varName = 'this';\n break;\n case o.BuiltinVar.CatchError:\n varName = CATCH_ERROR_VAR.name!;\n break;\n case o.BuiltinVar.CatchStack:\n varName
= CATCH_STACK_VAR.name!;\n break;\n default:\n throw new Error('Unknown builtin variable
${ast.builtin}');
```

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}\n }\n }\n ctx.print(ast, varName);\n return null;\n }\n }\n visitInstantiateExpr(ast:
o.InstantiateExpr, ctx: EmitterVisitorContext): any {\n ctx.print(ast, `new `);\n
ast.classExpr.visitExpression(this, ctx);\n ctx.print(ast, `(`);\n this.visitAllExpressions(ast.args, ctx, ',');\n
ctx.print(ast, `)`);\n return null;\n }\n }\n visitLiteralExpr(ast: o.LiteralExpr, ctx: EmitterVisitorContext): any {\n
const value = ast.value;\n if (typeof value === 'string') {\n ctx.print(ast, escapeIdentifier(value,
this._escapeDollarInStrings));\n } else {\n ctx.print(ast, `${value}`);\n }\n return null;\n }\n }\n
visitLocalizedString(ast: o.LocalizedString, ctx: EmitterVisitorContext): any {\n const head =
ast.serializeI18nHead();\n ctx.print(ast, '$localize ` + head.raw);\n for (let i = 1; i < ast.messageParts.length; i++)
{\n ctx.print(ast, `${}`);\n ast.expressions[i - 1].visitExpression(this, ctx);\n ctx.print(ast,
`${ast.serializeI18nTemplatePart(i).raw}`);\n }\n ctx.print(ast, `)`);\n return null;\n }\n }\n abstract
visitExternalExpr(ast: o.ExternalExpr, ctx: EmitterVisitorContext): any;\n }\n visitConditionalExpr(ast:
o.ConditionalExpr, ctx: EmitterVisitorContext): any {\n ctx.print(ast, `(`);\n ast.condition.visitExpression(this,
ctx);\n ctx.print(ast, `? `);\n ast.trueCase.visitExpression(this, ctx);\n ctx.print(ast, ` `);\n ast.falseCase!.visitExpression(this, ctx);\n ctx.print(ast, `)`);\n return null;\n }\n }\n visitNotExpr(ast: o.NotExpr,
ctx: EmitterVisitorContext): any {\n ctx.print(ast, `!`);\n ast.condition.visitExpression(this, ctx);\n return null;\n }\n }\n
visitAssertNotNullExpr(ast: o.AssertNotNull, ctx: EmitterVisitorContext): any {\n
ast.condition.visitExpression(this, ctx);\n return null;\n }\n }\n abstract visitFunctionExpr(ast: o.FunctionExpr, ctx:
EmitterVisitorContext): any;\n }\n abstract visitDeclareFunctionStmt(stmt: o.DeclareFunctionStmt, context: any):
any;\n }\n }\n visitUnaryOperatorExpr(ast: o.UnaryOperatorExpr, ctx: EmitterVisitorContext): any {\n let opStr:
string;\n switch (ast.operator) {\n case o.UnaryOperator.Plus:\n opStr = '+';\n break;\n case
o.UnaryOperator.Minus:\n opStr = '-';\n break;\n default:\n throw new Error('Unknown operator
${ast.operator}');
```

```

}\n }\n if (ast.parens) ctx.print(ast, `(`);\n ctx.print(ast, opStr);\n
ast.expr.visitExpression(this, ctx);\n if (ast.parens) ctx.print(ast, `)`);\n return null;\n }\n }\n
visitBinaryOperatorExpr(ast: o.BinaryOperatorExpr, ctx: EmitterVisitorContext): any {\n let opStr: string;\n
switch (ast.operator) {\n case o.BinaryOperator.Equals:\n opStr = '==';\n break;\n case
o.BinaryOperator.Identical:\n opStr = '===';\n break;\n case o.BinaryOperator.NotEquals:\n opStr =
'!=';\n break;\n case o.BinaryOperator.NotIdentical:\n opStr = '!===';\n break;\n case
o.BinaryOperator.And:\n opStr = '&&';\n break;\n case o.BinaryOperator.BitwiseAnd:\n opStr =
'&';\n break;\n case o.BinaryOperator.Or:\n opStr = '||';\n break;\n case o.BinaryOperator.Plus:\n
 opStr = '+';\n break;\n case o.BinaryOperator.Minus:\n opStr = '-';\n break;\n case
o.BinaryOperator.Divide:\n opStr = '/';\n break;\n case o.BinaryOperator.Multiply:\n opStr = '*';\n
 break;\n case o.BinaryOperator.Modulo:\n opStr = '%';\n break;\n case o.BinaryOperator.Lower:\n
 opStr = '<';\n break;\n case o.BinaryOperator.LowerEquals:\n opStr = '<=';\n break;\n case
o.BinaryOperator.Bigger:\n opStr = '>';\n break;\n case o.BinaryOperator.BiggerEquals:\n opStr =
'>=';\n break;\n default:\n throw new Error('Unknown operator ${ast.operator}');
```

```

}\n }\n if
(ast.parens) ctx.print(ast, `(`);\n ast.lhs.visitExpression(this, ctx);\n ctx.print(ast, ` ${opStr} `);\n
ast.rhs.visitExpression(this, ctx);\n if (ast.parens) ctx.print(ast, `)`);\n return null;\n }\n }\n
visitReadPropExpr(ast: o.ReadPropExpr, ctx: EmitterVisitorContext): any {\n ast.receiver.visitExpression(this,
ctx);\n ctx.print(ast, `.`);\n ctx.print(ast, ast.name);\n return null;\n }\n }\n visitReadKeyExpr(ast:
o.ReadKeyExpr, ctx: EmitterVisitorContext): any {\n ast.receiver.visitExpression(this, ctx);\n ctx.print(ast,
```



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 `[]`;\n ast.index.visitExpression(this, ctx);\n ctx.print(ast, `[]`);\n return null;\n }\n visitLiteralArrayExpr(ast:
o.LiteralArrayExpr, ctx: EmitterVisitorContext): any {\n ctx.print(ast, `[]`);\n this.visitAllExpressions(ast.entries,
ctx, `');\n ctx.print(ast, `[]`);\n return null;\n }\n visitLiteralMapExpr(ast: o.LiteralMapExpr, ctx:
EmitterVisitorContext): any {\n ctx.print(ast, `{}`);\n this.visitAllObjects(entry => {\n ctx.print(ast,
`${escapeIdentifier(entry.key, this._escapeDollarInStrings, entry.quoted)}:`);\n entry.value.visitExpression(this,
ctx);\n }, ast.entries, ctx, `');\n ctx.print(ast, `{}`);\n return null;\n }\n visitCommaExpr(ast: o.CommaExpr,
ctx: EmitterVisitorContext): any {\n ctx.print(ast, `(`);\n this.visitAllExpressions(ast.parts, ctx, `');\n
ctx.print(ast, `)`);\n return null;\n }\n visitAllExpressions(expressions: o.Expression[], ctx: EmitterVisitorContext,
separator: string):\n void {\n this.visitAllObjects(expr => expr.visitExpression(this, ctx), expressions, ctx,
separator);\n }\n visitAllObjects<T>(\n handler: (t: T) => void, expressions: T[], ctx: EmitterVisitorContext,\n separator: string): void {\n let incrementedIndent = false;\n for (let i = 0; i < expressions.length; i++) {\n if
(i > 0) {\n if (ctx.lineLength() > 80) {\n ctx.print(null, separator, true);\n if (!incrementedIndent) {\n
// continuation are marked with double indent.\n ctx.incIndent();\n ctx.incIndent();\n
incrementedIndent = true;\n } else {\n ctx.print(null, separator, false);\n }\n }\n handler(expressions[i]);\n }\n if (incrementedIndent) {\n // continuation are marked with double indent.\n
ctx.decIndent();\n ctx.decIndent();\n }\n }\n }\n visitAllStatements(statements: o.Statement[], ctx:
EmitterVisitorContext): void {\n statements.forEach((stmt) => stmt.visitStatement(this, ctx));\n }\n\nexport
function escapeIdentifier(\n input: string, escapeDollar: boolean, alwaysQuote: boolean = true): any {\n if (input
== null) {\n return null;\n }\n const body = input.replace(_SINGLE_QUOTE_ESCAPE_STRING_RE, (...match:
string[]) => {\n if (match[0] == '$') {\n return escapeDollar ? '\\\\$': '$';\n } else if (match[0] == '\\n') {\n
return '\\\\n';\n } else if (match[0] == '\\r') {\n return '\\\\r';\n } else {\n return `\\\\\\${match[0]}`;\n }\n
});\n const requiresQuotes = alwaysQuote || !_LEGAL_IDENTIFIER_RE.test(body);\n return requiresQuotes ?
`\\${body}` : body;\n }\n\nfunction _createIndent(count: number): string {\n let res = ";\n for (let i = 0; i < count;
i++) {\n res += _INDENT_WITH;\n }\n return res;\n }\n\n"/**\n * @license\n * Copyright Google LLC All
Rights Reserved.\n *\n * Use of this source code is governed by an MIT-style license that can be\n * found in the
LICENSE file at https://angular.io/license\n */\n\nimport {AbstractEmitterVisitor, CATCH_ERROR_VAR,
CATCH_STACK_VAR, EmitterVisitorContext, escapeIdentifier} from './abstract_emitter';\nimport * as o from
'./output_ast';\n\nexport abstract class AbstractJsEmitterVisitor extends AbstractEmitterVisitor {\n constructor() {\n
super(false);\n }\n visitDeclareClassStmt(stmt: o.ClassStmt, ctx: EmitterVisitorContext): any {\n
ctx.pushClass(stmt);\n this._visitClassConstructor(stmt, ctx);\n if (stmt.parent != null) {\n ctx.print(stmt,
`${stmt.name}.prototype = Object.create(`);\n stmt.parent.visitExpression(this, ctx);\n ctx.println(stmt,
`.prototype)`);\n }\n stmt.getters.forEach((getter) => this._visitClassGetter(stmt, getter, ctx));\n
stmt.methods.forEach((method) => this._visitClassMethod(stmt, method, ctx);\n ctx.popClass();\n return null;\n
})\n\n private _visitClassConstructor(stmt: o.ClassStmt, ctx: EmitterVisitorContext) {\n ctx.print(stmt, `function
${stmt.name}(`);\n if (stmt.constructorMethod != null) {\n this._visitParams(stmt.constructorMethod.params,
ctx);\n }\n ctx.println(stmt, `)`);\n ctx.incIndent();\n if (stmt.constructorMethod != null) {\n if
(stmt.constructorMethod.body.length > 0) {\n ctx.println(stmt, `var self = this;`);\n
this.visitAllStatements(stmt.constructorMethod.body, ctx);\n }\n }\n ctx.decIndent();\n ctx.println(stmt,
`)`);\n }\n\n private _visitClassGetter(stmt: o.ClassStmt, getter: o.ClassGetter, ctx: EmitterVisitorContext) {\n
ctx.println(\n stmt, \n `Object.defineProperty(${stmt.name}.prototype, '${getter.name}', { get: function()
{`);\n ctx.incIndent();\n if (getter.body.length > 0) {\n ctx.println(stmt, `var self = this;`);\n
this.visitAllStatements(getter.body, ctx);\n }\n ctx.decIndent();\n ctx.println(stmt, `}`);\n }\n\n private
_visitClassMethod(stmt: o.ClassStmt, method: o.ClassMethod, ctx: EmitterVisitorContext) {\n ctx.print(stmt,
`${stmt.name}.prototype.${method.name} = function(`);\n this._visitParams(method.params, ctx);\n
ctx.println(stmt, `)`);\n ctx.incIndent();\n if (method.body.length > 0) {\n ctx.println(stmt, `var self =
this;`);\n this.visitAllStatements(method.body, ctx);\n }\n ctx.decIndent();\n ctx.println(stmt, `}`);\n }\n\n
visitWrappedNodeExpr(ast: o.WrappedNodeExpr<any>, ctx: EmitterVisitorContext): any {\n throw new
Error('Cannot emit a WrappedNodeExpr in Javascript.);\n }\n\n visitReadVarExpr(ast: o.ReadVarExpr, ctx:

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EmitterVisitorContext): string|null {\n if (ast.builtin === o.BuiltinVar.This) {\n ctx.print(ast, 'self');\n } else if
(ast.builtin === o.BuiltinVar.Super) {\n throw new Error(`\n `super' needs to be handled at a parent ast
node, not at the variable level!`);\n } else {\n super.visitReadVarExpr(ast, ctx);\n }\n return null;\n }\n
visitDeclareVarStmt(stmt: o.DeclareVarStmt, ctx: EmitterVisitorContext): any {\n ctx.print(stmt, `var
${stmt.name}`);\n if (stmt.value) {\n ctx.print(stmt, '=');\n stmt.value.visitExpression(this, ctx);\n }\n
ctx.println(stmt, `;`);\n return null;\n }\n visitCastExpr(ast: o.CastExpr, ctx: EmitterVisitorContext): any {\n
ast.value.visitExpression(this, ctx);\n return null;\n }\n visitInvokeFunctionExpr(expr: o.InvokeFunctionExpr,
ctx: EmitterVisitorContext): string|null {\n const fnExpr = expr.fn;\n if (fnExpr instanceof o.ReadVarExpr &&
fnExpr.builtin === o.BuiltinVar.Super) {\n ctx.currentClass!.parent!.visitExpression(this, ctx);\n
ctx.print(expr, `.call(this`);\n if (expr.args.length > 0) {\n ctx.print(expr, `, `);\n
this.visitAllExpressions(expr.args, ctx, ` `);\n }\n ctx.print(expr, `)`);\n } else {\n
super.visitInvokeFunctionExpr(expr, ctx);\n }\n return null;\n }\n visitFunctionExpr(ast: o.FunctionExpr, ctx:
EmitterVisitorContext): any {\n ctx.print(ast, `function${ast.name ? '' + ast.name : ''}(`);\n
this._visitParams(ast.params, ctx);\n ctx.println(ast, `)`);\n ctx.incIndent();\n
this.visitAllStatements(ast.statements, ctx);\n ctx.decIndent();\n ctx.print(ast, `)`);\n return null;\n }\n
visitDeclareFunctionStmt(stmt: o.DeclareFunctionStmt, ctx: EmitterVisitorContext): any {\n ctx.print(stmt,
`function ${stmt.name}(`);\n this._visitParams(stmt.params, ctx);\n ctx.println(stmt, `)`);\n ctx.incIndent();\n
this.visitAllStatements(stmt.statements, ctx);\n ctx.decIndent();\n ctx.println(stmt, `)`);\n return null;\n }\n
visitTryCatchStmt(stmt: o.TryCatchStmt, ctx: EmitterVisitorContext): any {\n ctx.println(stmt, `try `);\n
ctx.incIndent();\n this.visitAllStatements(stmt.bodyStmts, ctx);\n ctx.decIndent();\n ctx.println(stmt, `)
catch
(${CATCH_ERROR_VAR.name}) `);\n ctx.incIndent();\n const catchStmts =\n
[<o.Statement>CATCH_STACK_VAR.set(CATCH_ERROR_VAR.prop('stack')).toDeclStmt(null, [\n
o.StmtModifier.Final\n])].concat(stmt.catchStmts);\n this.visitAllStatements(catchStmts, ctx);\n
ctx.decIndent();\n ctx.println(stmt, `)`);\n return null;\n }\n\n visitLocalizedString(ast: o.LocalizedString,
ctx: EmitterVisitorContext): any {\n // The following convoluted piece of code is effectively the downlevelled
equivalent of\n //```\n // $localize `...`\n //```\n // which is effectively like:\n //```\n //
$localize(__makeTemplateObject(cooked, raw), expression1, expression2, ...);\n //```\n //\n // The `localize`
function expects a "template object", which is an array of "cooked" strings\n // plus a `raw` property that
contains an array of "raw" strings.\n //\n // In some environments a helper function called
`__makeTemplateObject(cooked, raw)` might be\n // available, in which case we use that. Otherwise we must
create our own helper function\n // inline.\n //\n // In the inline function, if `Object.defineProperty` is available
we use that to attach the\n // `raw` array.\n ctx.print(\n ast,\n
`$localize((this&&this.__makeTemplateObject|function(e,t){return
Object.defineProperty?Object.defineProperty(e,"raw",{value:t}):e.raw=t,e}))`);\n const parts =
[ast.serializeI18nHead();\n for (let i = 1; i < ast.messageParts.length; i++) {\n
parts.push(ast.serializeI18nTemplatePart(i));\n }\n ctx.print(ast, `[$ {parts.map(part =>
escapeIdentifier(part.cooked, false)).join(', ')}, `);\n ctx.print(ast, `[$ {parts.map(part =>
escapeIdentifier(part.raw, false)).join(', ')}]);\n ast.expressions.forEach(expression => {\n ctx.print(ast, ` `);\n
expression.visitExpression(this, ctx);\n });\n ctx.print(ast, `)`);\n return null;\n }\n\n private
_visitParams(params: o.FnParam[], ctx: EmitterVisitorContext): void {\n this.visitAllObjects(param =>
ctx.print(null, param.name), params, ctx, ` `);\n }\n\n getBuiltinMethodName(method: o.BuiltinMethod): string {\n
let name: string;\n switch (method) {\n case o.BuiltinMethod.ConcatArray:\n name = 'concat';\n
break;\n case o.BuiltinMethod.SubscribeObservable:\n name = 'subscribe';\n break;\n case
o.BuiltinMethod.Bind:\n name = 'bind';\n break;\n default:\n throw new Error(`Unknown builtin
method: ${method}`);\n }\n return name;\n }\n}\n"/**\n * @license\n * Copyright Google LLC All Rights
Reserved.\n * Use of this source code is governed by an MIT-style license that can be\n * found in the
LICENSE file at https://angular.io/license\n */\n\nimport {identifierName} from '../compile_metadata';\nimport
{CompileReflector} from '../compile_reflector';\nimport {EmitterVisitorContext} from

```

```

./abstract_emitter';\nimport {AbstractJsEmitterVisitor} from './abstract_js_emitter';\nimport * as o from
./output_ast';\n\n/**\n * A helper class to manage the evaluation of JIT generated code.\n */\nexport class
JitEvaluator {\n /**\n * @param sourceUrl The URL of the generated code.\n * @param statements An
array of Angular statement AST nodes to be evaluated.\n * @param reflector A helper used when converting the
statements to executable code.\n * @param createSourceMaps If true then create a source-map for the generated
code and include it\n * inline as a source-map comment.\n * @returns A map of all the variables in the generated
code.\n */\n evaluateStatements(\n sourceUrl: string, statements: o.Statement[], reflector: CompileReflector,\n createSourceMaps: boolean): {[key: string]: any} {\n const converter = new JitEmitterVisitor(reflector);\n const ctx = EmitterVisitorContext.createRoot();\n // Ensure generated code is in strict mode\n if
(statements.length > 0 && !isUseStrictStatement(statements[0])) {\n statements = [\n o.literal('use
strict').toStmt(),\n ...statements,\n];\n }\n converter.visitAllStatements(statements, ctx);\n converter.createReturnStmt(ctx);\n return this.evaluateCode(sourceUrl, ctx, converter.getArgs(),
createSourceMaps);\n }\n\n /**\n * Evaluate a piece of JIT generated code.\n * @param sourceUrl The URL of
this generated code.\n * @param ctx A context object that contains an AST of the code to be evaluated.\n *
@param vars A map containing the names and values of variables that the evaluated code might\n * reference.\n *
@param createSourceMap If true then create a source-map for the generated code and include it\n * inline as a
source-map comment.\n * @returns The result of evaluating the code.\n */\n evaluateCode(\n sourceUrl:
string, ctx: EmitterVisitorContext, vars: {[key: string]: any},\n createSourceMap: boolean): any {\n let fnBody
= `\"use strict\";${ctx.toSource()}\n\n// sourceURL=${sourceUrl}`;\n const fnArgNames: string[] = [];\n const
fnArgValues: any[] = [];\n for (const argName in vars) {\n fnArgValues.push(vars[argName]);\n fnArgNames.push(argName);\n }\n if (createSourceMap) {\n // using `new Function(...)` generates a header,
1 line of no arguments, 2 lines otherwise\n // E.g. ``\n // function anonymous(a,b,c\n // /**/) { ... }``\n // We don't want to hard code this fact, so we auto detect it via an empty function first.\n const emptyFn = new
Function(...fnArgNames.concat('return null;')).toString();\n const headerLines = emptyFn.slice(0,
emptyFn.indexOf('return null;').split('\n').length - 1);\n fnBody += `\n${ctx.toSourceMapGenerator(sourceUrl,
headerLines).toJsComment()}`;\n }\n const fn = new Function(...fnArgNames.concat(fnBody));\n return
this.executeFunction(fn, fnArgValues);\n }\n\n /**\n * Execute a JIT generated function by calling it.\n *
This method can be overridden in tests to capture the functions that are generated\n * by this `JitEvaluator` class.\n *
@param fn A function to execute.\n * @param args The arguments to pass to the function being executed.\n *
@returns The return value of the executed function.\n */\n executeFunction(fn: Function, args: any[]) {\n
return fn(...args);\n }\n\n /**\n * An Angular AST visitor that converts AST nodes into executable JavaScript
code.\n */\nexport class JitEmitterVisitor extends AbstractJsEmitterVisitor {\n private _evalArgNames: string[] =
[];\n private _evalArgValues: any[] = [];\n private _evalExportedVars: string[] = [];\n\n constructor(private
reflector: CompileReflector) {\n super();\n }\n\n createReturnStmt(ctx: EmitterVisitorContext) {\n const stmt =
new o.ReturnStatement(new o.LiteralMapExpr(this._evalExportedVars.map(\n resultVar => new
o.LiteralMapEntry(resultVar, o.variable(resultVar), false)));\n stmt.visitStatement(this, ctx);\n }\n\n getArgs():
{[key: string]: any} {\n const result: {[key: string]: any} = {};\n for (let i = 0; i < this._evalArgNames.length;
i++) {\n result[this._evalArgNames[i]] = this._evalArgValues[i];\n }\n return result;\n }\n\n visitExternalExpr(ast: o.ExternalExpr, ctx: EmitterVisitorContext): any {\n this._emitReferenceToExternal(ast,
this.reflector.resolveExternalReference(ast.value), ctx);\n return null;\n }\n\n visitWrappedNodeExpr(ast:
o.WrappedNodeExpr<any>, ctx: EmitterVisitorContext): any {\n this._emitReferenceToExternal(ast, ast.node,
ctx);\n return null;\n }\n\n visitDeclareVarStmt(stmt: o.DeclareVarStmt, ctx: EmitterVisitorContext): any {\n
if (stmt.hasModifier(o.StmtModifier.Exported)) {\n this._evalExportedVars.push(stmt.name);\n }\n return
super.visitDeclareVarStmt(stmt, ctx);\n }\n\n visitDeclareFunctionStmt(stmt: o.DeclareFunctionStmt, ctx:
EmitterVisitorContext): any {\n if (stmt.hasModifier(o.StmtModifier.Exported)) {\n this._evalExportedVars.push(stmt.name);\n }\n return super.visitDeclareFunctionStmt(stmt, ctx);\n }\n\n visitDeclareClassStmt(stmt: o.ClassStmt, ctx: EmitterVisitorContext): any {\n if
(stmt.hasModifier(o.StmtModifier.Exported)) {\n this._evalExportedVars.push(stmt.name);\n }\n return

```

```

super.visitDeclareClassStmt(stmt, ctx);\n }\n\n private _emitReferenceToExternal(ast: o.Expression, value: any,
ctx: EmitterVisitorContext):\n void {\n let id = this._evalArgValues.indexOf(value);\n if (id === -1) {\n id
= this._evalArgValues.length;\n this._evalArgValues.push(value);\n const name = identifierName({reference:
value}) || 'val';\n this._evalArgNames.push(`jit_${name}_${id}`);\n }\n ctx.print(ast,
this._evalArgNames[id]);\n }\n}\n\nfunction isUseStrictStatement(statement: o.Statement): boolean {\n return
statement.isEquivalent(o.literal('use strict').toStmt());\n}\n\n"/**\n * @license\n * Copyright Google LLC All Rights
Reserved.\n * \n * Use of this source code is governed by an MIT-style license that can be\n * found in the
LICENSE file at https://angular.io/license\n * \n\nexport const $EOF = 0;\nexport const $BSPACE = 8;\nexport
const $TAB = 9;\nexport const $LF = 10;\nexport const $VTAB = 11;\nexport const $FF = 12;\nexport const $CR =
13;\nexport const $SPACE = 32;\nexport const $BANG = 33;\nexport const $DQ = 34;\nexport const $HASH =
35;\nexport const $$ = 36;\nexport const $PERCENT = 37;\nexport const $AMPERSAND = 38;\nexport const $$Q =
39;\nexport const $LPAREN = 40;\nexport const $RPAREN = 41;\nexport const $STAR = 42;\nexport const
$PLUS = 43;\nexport const $COMMA = 44;\nexport const $MINUS = 45;\nexport const $PERIOD = 46;\nexport
const $SLASH = 47;\nexport const $COLON = 58;\nexport const $SEMICOLON = 59;\nexport const $LT =
60;\nexport const $EQ = 61;\nexport const $GT = 62;\nexport const $QUESTION = 63;\n\nexport const $0 =
48;\nexport const $7 = 55;\nexport const $9 = 57;\n\nexport const $A = 65;\nexport const $E = 69;\nexport const $F
= 70;\nexport const $X = 88;\nexport const $Z = 90;\n\nexport const $LBRACKET = 91;\nexport const
$BACKSLASH = 92;\nexport const $RBRACKET = 93;\nexport const $CARET = 94;\nexport const $ _ =
95;\n\nexport const $a = 97;\nexport const $b = 98;\nexport const $e = 101;\nexport const $f = 102;\nexport const
$n = 110;\nexport const $r = 114;\nexport const $t = 116;\nexport const $u = 117;\nexport const $v = 118;\nexport
const $x = 120;\nexport const $z = 122;\n\nexport const $LBRACE = 123;\nexport const $BAR = 124;\nexport
const $RBACE = 125;\nexport const $NBSP = 160;\n\nexport const $PIPE = 124;\nexport const $TILDA =
126;\nexport const $AT = 64;\n\nexport const $BT = 96;\n\nexport function isWhitespace(code: number): boolean
{\n return (code >= $TAB && code <= $SPACE) || (code === $NBSP);\n}\n\nexport function isDigit(code:
number): boolean {\n return $0 <= code && code <= $9;\n}\n\nexport function isAsciiLetter(code: number):
boolean {\n return code >= $a && code <= $z || code >= $A && code <= $Z;\n}\n\nexport function
isAsciiHexDigit(code: number): boolean {\n return code >= $a && code <= $f || code >= $A && code <= $F ||
isDigit(code);\n}\n\nexport function isNewLine(code: number): boolean {\n return code === $LF || code ===
$CR;\n}\n\nexport function isOctalDigit(code: number): boolean {\n return $0 <= code && code <=
$7;\n}\n\n"/**\n * @license\n * Copyright Google LLC All Rights Reserved.\n * \n * Use of this source code is
governed by an MIT-style license that can be\n * found in the LICENSE file at https://angular.io/license\n * \n\nimport * as chars from './chars';\nimport {CompileIdentifierMetadata, identifierModuleUrl, identifierName}
from './compile_metadata';\n\nexport class ParseLocation {\n constructor(\n public file: ParseSourceFile, public
offset: number, public line: number,\n public col: number) {\n\n toString(): string {\n return this.offset != null
? `${this.file.url}@${this.line}:${this.col}` : this.file.url;\n }\n\n moveBy(delta: number): ParseLocation {\n
const source = this.file.content;\n const len = source.length;\n let offset = this.offset;\n let line = this.line;\n
let col = this.col;\n while (offset > 0 && delta < 0) {\n offset--;\n delta++;\n const ch =
source.charCodeAt(offset);\n if (ch === chars.$LF) {\n line--;\n const priorLine = source.substr(0, offset -
1).lastIndexOf(String.fromCharCode(chars.$LF));\n col = priorLine > 0 ? offset - priorLine : offset;\n } else
{\n col--;\n }\n }\n while (offset < len && delta > 0) {\n const ch = source.charCodeAt(offset);\n
offset++;\n delta--;\n if (ch === chars.$LF) {\n line++;\n col = 0;\n } else {\n col++;\n }\n }\n
return new ParseLocation(this.file, offset, line, col);\n }\n\n // Return the source around the location\n // Up
to `maxChars` or `maxLines` on each side of the location\n getContext(maxChars: number, maxLines: number):
{before: string, after: string}|null {\n const content = this.file.content;\n let startOffset = this.offset;\n\n if
(startOffset != null) {\n if (startOffset > content.length - 1) {\n startOffset = content.length - 1;\n }\n
let endOffset = startOffset;\n let ctxChars = 0;\n let ctxLines = 0;\n\n while (ctxChars < maxChars &&
startOffset > 0) {\n startOffset--;\n ctxChars++;\n if (content[startOffset] === '\\n') {\n if
(++ctxLines === maxLines) {\n break;\n }\n }\n }\n\n ctxChars = 0;\n ctxLines = 0;\n

```



```

hasLifecycleHook(type: any, lcProperty: string): boolean {\n throw new Error('Not implemented.');
```

```

guards(typeOrFunc: any): {[key: string]: any;} {\n throw new Error('Not implemented.');
```

```

componentModuleUrl(type: any, cmpMetadata: any): string {\n throw new Error('Not implemented.');
```

```

}\n}\n", "/*\n * @license\n * Copyright Google LLC All Rights Reserved.\n *\n * Use of this source code is governed by an MIT-style license that can be\n * found in the LICENSE file at https://angular.io/license\n */\n\nimport * as o from './output_ast';\n\nexport type MapEntry = {\n key: string,\n quoted: boolean,\n value: o.Expression\n};\n\nexport type MapLiteral = MapEntry[];\n\nexport function mapEntry(key: string, value: o.Expression): MapEntry {\n return {key, value, quoted: false};\n}\n\nexport function mapLiteral(\n obj: {[key: string]: o.Expression},\n quoted: boolean = false): o.Expression {\n return o.literalMap(Object.keys(obj).map(key => ({\n key,\n quoted,\n value: obj[key],\n })));}\n", "/*\n * @license\n * Copyright Google LLC All Rights Reserved.\n *\n * Use of this source code is governed by an MIT-style license that can be\n * found in the LICENSE file at https://angular.io/license\n */\n\nimport {CompileShallowModuleMetadata, identifierName} from './compile_metadata';\nimport {InjectableCompiler} from './injectable_compiler';\nimport {mapLiteral} from './output/map_util';\nimport * as o from './output/output_ast';\nimport {OutputContext} from './util';\nimport {compileFactoryFunction, R3DependencyMetadata, R3FactoryTarget} from './r3_factory';\nimport {Identifiers as R3} from './r3_identifiers';\nimport {convertMetaToOutput, jitOnlyGuardedExpression, mapToMapExpression, R3Reference} from './util';\n\nexport interface R3NgModuleDef {\n expression: o.Expression;\n type: o.Type;\n additionalStatements: o.Statement[];\n}\n\n/**\n * Metadata required by the module compiler to generate a module def `mod` for a type.\n */\nexport interface R3NgModuleMetadata {\n /**\n * An expression representing the module type being compiled.\n */\n type: R3Reference;\n /**\n * An expression representing the module type being compiled, intended for use within a class\n * definition itself.\n */\n /**\n * This can differ from the outer `type` if the class is being compiled by ngcc and is inside\n * an IIFE structure that uses a different name internally.\n */\n internalType: o.Expression;\n /**\n * An expression intended for use by statements that are adjacent (i.e. tightly coupled) to but\n * not internal to a class definition.\n */\n /**\n * This can differ from the outer `type` if the class is being compiled by ngcc and is inside\n * an IIFE structure that uses a different name internally.\n */\n adjacentType: o.Expression;\n /**\n * An array of expressions representing the bootstrap components specified by the module.\n */\n bootstrap: R3Reference[];\n /**\n * An array of expressions representing the directives and pipes declared by the module.\n */\n declarations: R3Reference[];\n /**\n * An array of expressions representing the imports of the module.\n */\n imports: R3Reference[];\n /**\n * An array of expressions representing the exports of the module.\n */\n exports: R3Reference[];\n /**\n * Whether to emit the selector scope values (declarations, imports, exports) inline into the\n * module definition, or to generate additional statements which patch them on. Inline emission\n * does not allow components to be tree-shaken, but is useful for JIT mode.\n */\n emitInline: boolean;\n /**\n * Whether to generate closure wrappers for bootstrap, declarations, imports, and exports.\n */\n containsForwardDecls: boolean;\n /**\n * The set of schemas that declare elements to be allowed in the NgModule.\n */\n schemas: R3Reference[]|null;\n /**\n * Unique ID or expression representing the unique ID of an NgModule.\n */\n id: o.Expression|null;\n}\n\n/**\n * Construct an `R3NgModuleDef` for the given `R3NgModuleMetadata`.\n */\nexport function compileNgModule(meta: R3NgModuleMetadata): R3NgModuleDef {\n const {\n internalType,\n type: moduleType,\n bootstrap,\n declarations,\n imports,\n exports,\n schemas,\n containsForwardDecls,\n emitInline,\n id\n } = meta;\n\n const additionalStatements: o.Statement[] = [];\n const definitionMap = {type: internalType} as {\n type: o.Expression,\n bootstrap: o.Expression,\n declarations: o.Expression,\n imports: o.Expression,\n exports: o.Expression,\n schemas: o.LiteralArrayExpr,\n id: o.Expression\n };\n\n // Only generate the keys in the metadata if the arrays have values.\n if (bootstrap.length) {\n definitionMap.bootstrap = refsToArray(bootstrap, containsForwardDecls);\n }\n\n // If requested to emit scope information inline, pass the declarations, imports and exports to\n // the `defineNgModule` call. The JIT compilation uses this.\n if (emitInline) {\n if (declarations.length) {\n definitionMap.declarations = refsToArray(declarations, containsForwardDecls);\n }\n\n if (imports.length) {\n definitionMap.imports = refsToArray(imports,\n
```

```

containsForwardDecls);
}

if (exports.length) {
 definitionMap.exports = refsToArray(exports,
containsForwardDecls);
}

// If not emitting inline, the scope information is not passed into
`defineNgModule` as it would
// prevent tree-shaking of the declarations, imports and exports references.
else {
 const setNgModuleScopeCall = generateSetNgModuleScopeCall(meta);
 if (setNgModuleScopeCall !==
null) {
 additionalStatements.push(setNgModuleScopeCall);
 }

 if (schemas && schemas.length) {
 definitionMap.schemas = o.literalArr(schemas.map(ref => ref.value));
 }

 if (id) {
 definitionMap.id =
id;
 }

 const expression =
o.importExpr(R3.defineNgModule).callFn([mapToMapExpression(definitionMap)];
const type = new
o.ExpressionType(o.importExpr(R3.NgModuleDefWithMeta, [
new o.ExpressionType(moduleType.type),
tupleTypeOf(declarations), tupleTypeOf(imports),
tupleTypeOf(exports)
]));

return {expression, type,
additionalStatements};
}

/* Generates a function call to `setNgModuleScope` with all necessary
information so that the
* transitive module scope can be computed during runtime in JIT mode. This call is
marked pure
* such that the references to declarations, imports and exports may be elided causing these
* symbols to become tree-shakeable.
*/
function generateSetNgModuleScopeCall(meta: R3NgModuleMetadata):
o.Statement|null {
 const {adjacentType: moduleType, declarations, imports, exports, containsForwardDecls} =
meta;

 const scopeMap = {} as {
 declarations: o.Expression,
 imports: o.Expression,
 exports:
o.Expression,
 };

 if (declarations.length) {
 scopeMap.declarations = refsToArray(declarations,
containsForwardDecls);
 }

 if (imports.length) {
 scopeMap.imports = refsToArray(imports,
containsForwardDecls);
 }

 if (exports.length) {
 scopeMap.exports = refsToArray(exports,
containsForwardDecls);
 }

 if (Object.keys(scopeMap).length === 0) {
 return null;
 }

 //
setNgModuleScope(...)
const fnCall = new o.InvokeFunctionExpr(
/* fn */
o.importExpr(R3.setNgModuleScope),
/* args */[moduleType, mapToMapExpression(scopeMap)];

//
(ngJitMode guard) && setNgModuleScope(...)
const guardedCall = jitOnlyGuardedExpression(fnCall);

//
function() { (ngJitMode guard) && setNgModuleScope(...); }
const iife = new o.FunctionExpr(
/* params
*/[],
/* statements */[guardedCall.toStmnt()]);

//
(function() { (ngJitMode guard) &&
setNgModuleScope(...); })()
const iifeCall = new o.InvokeFunctionExpr(
/* fn */ iife,
/* args */[]);

return iifeCall.toStmnt();
}

export interface R3InjectorDef {
 expression: o.Expression;
 type: o.Type;
 statements: o.Statement[];
}

export interface R3InjectorMetadata {
 name: string;
 type: R3Reference;
 internalType: o.Expression;
 deps: R3DependencyMetadata[]|null;
 providers: o.Expression|null;
 imports:
o.Expression[];
}

export function compileInjector(meta: R3InjectorMetadata): R3InjectorDef {
 const result =
compileFactoryFunction({
 name: meta.name,
 type: meta.type,
 internalType: meta.internalType,
 typeArgumentCount: 0,
 deps: meta.deps,
 injectFn: R3.inject,
 target: R3FactoryTarget.NgModule,
 });

 const definitionMap = {
 factory: result.factory,
 } as {factory: o.Expression, providers: o.Expression, imports:
o.Expression};

 if (meta.providers !== null) {
 definitionMap.providers = meta.providers;
 }

 if
(meta.imports.length > 0) {
 definitionMap.imports = o.literalArr(meta.imports);
 }

 const expression =
o.importExpr(R3.defineInjector).callFn([mapToMapExpression(definitionMap)];
const type =
new
o.ExpressionType(o.importExpr(R3.InjectorDef, [new o.ExpressionType(meta.type.type)]));
return {expression,
type, statements: result.statements};
}

// TODO(alxhub): integrate this with `compileNgModule`. Currently the
two are separate operations.
export function compileNgModuleFromRender2(
 ctx: OutputContext, ngModule:
CompileShallowModuleMetadata,
 injectableCompiler: InjectableCompiler): void {
 const className =
identifierName(ngModule.type);
 const rawImports = ngModule.rawImports ? [ngModule.rawImports] : [];
 const rawExports = ngModule.rawExports ? [ngModule.rawExports] : [];
 const injectorDefArg =
mapLiteral({
 'factory':
injectableCompiler.factoryFor({type: ngModule.type, symbol:
ngModule.type.reference}, ctx),
 'providers': convertMetaToOutput(ngModule.rawProviders, ctx),
 'imports':
convertMetaToOutput([...rawImports, ...rawExports], ctx),
 });

 const injectorDef =
o.importExpr(R3.defineInjector).callFn([injectorDefArg]);
 ctx.statements.push(new o.ClassStmnt(
/* name
*/ className,
/* parent */ null,
/* fields */[new o.ClassField(
/* name */ 'inj',
/* type */
o.INFERRED_TYPE,
/* modifiers */[o.StmntModifier.Static],
/* initializer */ injectorDef,

```

```

)],\n /* getters */[],\n /* constructorMethod */ new o.ClassMethod(null, [], []),\n /* methods
*/[]);\n}\n\nfunction accessExportScope(module: o.Expression): o.Expression {\n const selectorScope = new
o.ReadPropExpr(module, 'mod');\n return new o.ReadPropExpr(selectorScope, 'exported');\n}\n\nfunction
tupleTypeOf(exp: R3Reference[]): o.Type {\n const types = exp.map(ref => o.typeofExpr(ref.type));\n return
exp.length > 0 ? o.expressionType(o.literalArr(types)) : o.NONE_TYPE;\n}\n\nfunction refsToArray(refs:
R3Reference[], shouldForwardDeclare: boolean): o.Expression {\n const values = o.literalArr(refs.map(ref =>
ref.value));\n return shouldForwardDeclare ? o.fn([], [new o.ReturnStatement(values)]) : values;\n}\n\n"/**\n *
@license\n * Copyright Google LLC All Rights Reserved.\n * Use of this source code is governed by an MIT-
style license that can be\n * found in the LICENSE file at https://angular.io/license\n */\n\nimport
{ CompilePipeMetadata, identifierName } from '../compile_metadata';\nimport { CompileReflector } from
'./compile_reflector';\nimport { DefinitionKind } from './constant_pool';\nimport * as o from
'./output/output_ast';\nimport { error, OutputContext } from './util';\n\nimport { compileFactoryFunction,
dependenciesFromGlobalMetadata, R3DependencyMetadata, R3FactoryTarget } from './r3_factory';\nimport
{ Identifiers as R3 } from './r3_identifiers';\nimport { R3Reference, typeWithParameters, wrapReference } from
'./util';\n\nexport interface R3PipeMetadata {\n /**\n * Name of the pipe type.\n */\n name: string;\n /**\n * An expression representing a reference to the pipe itself.\n */\n type: R3Reference;\n /**\n * An expression
representing the pipe being compiled, intended for use within a class definition\n */\n itself: o.Expression;\n /**\n * This can differ
from the outer `type` if the class is being compiled by ngcc and is inside an\n */\n IIFE structure that uses a different
name internally.\n */\n internalType: o.Expression;\n /**\n * Number of generic type parameters of the type
itself.\n */\n typeArgumentCount: number;\n /**\n * Name of the pipe.\n */\n pipeName: string;\n /**\n * Dependencies of the pipe's constructor.\n */\n deps: R3DependencyMetadata[]|null;\n /**\n * Whether the
pipe is marked as pure.\n */\n pure: boolean;\n}\n\nexport function compilePipeFromMetadata(metadata:
R3PipeMetadata) {\n const definitionMapValues: {key: string, quoted: boolean, value: o.Expression}[] = [];\n //
e.g. `name: 'myPipe`\n definitionMapValues.push({key: 'name', value: o.literal(metadata.pipeName), quoted:
false});\n // e.g. `type: MyPipe`\n definitionMapValues.push({key: 'type', value: metadata.type.value, quoted:
false});\n // e.g. `pure: true`\n definitionMapValues.push({key: 'pure', value: o.literal(metadata.pure), quoted:
false});\n const expression = o.importExpr(R3.definePipe).callFn([o.literalMap(definitionMapValues)]);\n const
type = new o.ExpressionType(o.importExpr(R3.PipeDefWithMeta, [o.typeWithParameters(metadata.type.type,
metadata.typeArgumentCount),\n new o.ExpressionType(new o.LiteralExpr(metadata.pipeName)),\n]));\n return
{expression, type};\n}\n\n/**\n * Write a pipe definition to the output context.\n */\nexport function
compilePipeFromRender2(\n outputCtx: OutputContext, pipe: CompilePipeMetadata, reflector: CompileReflector)
{\n const name = identifierName(pipe.type);\n if (!name) {\n return error(`Cannot resolve the name of
${pipe.type}`);\n }\n const type = outputCtx.importExpr(pipe.type.reference);\n const metadata:
R3PipeMetadata = {\n name,\n type: wrapReference(type),\n internalType: type,\n pipeName: pipe.name,\n
typeArgumentCount: 0,\n deps: dependenciesFromGlobalMetadata(pipe.type, outputCtx, reflector),\n pure:
pipe.pure,\n };\n const res = compilePipeFromMetadata(metadata);\n const factoryRes =
compileFactoryFunction(\n {...metadata, injectFn: R3.directiveInject, target: R3FactoryTarget.Pipe});\n const
definitionField = outputCtx.constantPool.propertyNameOf(DefinitionKind.Pipe);\n const ngFactoryDefStatement =
new o.ClassStmt(\n /* name */ name,\n /* parent */ null,\n /* fields */\n [new o.ClassField(\n /*
name */ 'fac',\n /* type */ o.INFERRED_TYPE,\n /* modifiers */ [o.StmtModifier.Static],\n /*
initializer */ factoryRes.factory)],\n /* getters */ [],\n /* constructorMethod */ new o.ClassMethod(null, [],
[]),\n /* methods */ []);\n const pipeDefStatement = new o.ClassStmt(\n /* name */ name,\n /* parent */
null,\n /* fields */ [new o.ClassField(\n /* name */ definitionField,\n /* type */
o.INFERRED_TYPE,\n /* modifiers */ [o.StmtModifier.Static],\n /* initializer */ res.expression)],\n /*
getters */ [],\n /* constructorMethod */ new o.ClassMethod(null, [], []),\n /* methods */ []);\n outputCtx.statements.push(ngFactoryDefStatement, pipeDefStatement);\n}\n\n"/**\n * @license\n * Copyright
Google LLC All Rights Reserved.\n * Use of this source code is governed by an MIT-style license that can be\n
* found in the LICENSE file at https://angular.io/license\n */\n\nimport { SecurityContext } from './core';\nimport

```



```

{ParseSourceSpan} from './parse_util';
\nexport class ParserError {
\n public message: string;
\n constructor(
\n message: string, public input: string, public errLocation: string, public ctxLocation?: any) {
\n this.message =
\n `Parser Error: ${message} ${errLocation} [${input}] in ${ctxLocation}`;
\n }
\n}
\nexport class ParseSpan {
\n constructor(public start: number, public end: number) {}
\n toAbsolute(absoluteOffset: number):
\n AbsoluteSourceSpan {
\n return new AbsoluteSourceSpan(absoluteOffset + this.start, absoluteOffset + this.end);
\n }
\n}
\nexport class AST {
\n constructor(
\n public span: ParseSpan,
\n /**
\n * Absolute location of the
\n * expression AST in a source code file.
\n */
\n public sourceSpan: AbsoluteSourceSpan) {}
\n visit(visitor:
\n AstVisitor, context: any = null): any {
\n return null;
\n }
\n toString(): string {
\n return 'AST';
\n }
\n}
\nexport
\nabstract class ASTWithName extends AST {
\n constructor(
\n span: ParseSpan, sourceSpan:
\n AbsoluteSourceSpan, public nameSpan: AbsoluteSourceSpan) {
\n super(span, sourceSpan);
\n }
\n}
\n/**
\n * Represents a quoted expression of the form:
\n * quote = prefix ` ` uninterpretedExpression
\n * prefix =
\n * identifier
\n * uninterpretedExpression = arbitrary string
\n * A quoted expression is meant to be pre-processed by
\n * an AST transformer that
\n * converts it into another AST that no longer contains quoted expressions.
\n * It is meant
\n * to allow third-party developers to extend Angular template
\n * expression language. The `uninterpretedExpression`
\n * part of the quote is
\n * therefore not interpreted by the Angular's own expression parser.
\n */
\nexport class Quote
\nextends AST {
\n constructor(
\n span: ParseSpan, sourceSpan: AbsoluteSourceSpan, public prefix: string,
\n public uninterpretedExpression: string, public location: any) {
\n super(span, sourceSpan);
\n }
\n visit(visitor:
\n AstVisitor, context: any = null): any {
\n return visitor.visitQuote(this, context);
\n }
\n toString(): string {
\n return 'Quote';
\n }
\n}
\nexport class EmptyExpr extends AST {
\n visit(visitor: AstVisitor, context: any = null) {
\n // do nothing
\n }
\n}
\nexport class ImplicitReceiver extends AST {
\n visit(visitor: AstVisitor, context: any =
\n null): any {
\n return visitor.visitImplicitReceiver(this, context);
\n }
\n}
\n/**
\n * Receiver when something is
\n * accessed through `this` (e.g. `this.foo`). Note that this class
\n * inherits from `ImplicitReceiver`, because accessing
\n * something through `this` is treated the
\n * same as accessing it implicitly inside of an Angular template (e.g.
\n * `[attr.title]="this.title"` is the same as `[attr.title]="title"`). Inheriting allows for the `this` accesses to be
\n * treated
\n * the same as implicit ones, except for a couple of exceptions like `$event` and `$any`.
\n * TODO: we
\n * should find a way for this class not to extend from `ImplicitReceiver` in the future.
\n */
\nexport class ThisReceiver
\nextends ImplicitReceiver {
\n visit(visitor: AstVisitor, context: any = null): any {
\n return
\n visitor.visitThisReceiver?.(this, context);
\n }
\n}
\n/**
\n * Multiple expressions separated by a semicolon.
\n */
\nexport class Chain extends AST {
\n constructor(span: ParseSpan, sourceSpan: AbsoluteSourceSpan, public
\n expressions: any[]) {
\n super(span, sourceSpan);
\n }
\n visit(visitor: AstVisitor, context: any = null): any {
\n return
\n visitor.visitChain(this, context);
\n }
\n}
\nexport class Conditional extends AST {
\n constructor(
\n span:
\n ParseSpan, sourceSpan: AbsoluteSourceSpan, public condition: AST, public trueExp: AST,
\n public falseExp:
\n AST) {
\n super(span, sourceSpan);
\n }
\n visit(visitor: AstVisitor, context: any = null): any {
\n return
\n visitor.visitConditional(this, context);
\n }
\n}
\nexport class PropertyRead extends ASTWithName {
\n constructor(
\n span: ParseSpan, sourceSpan: AbsoluteSourceSpan, nameSpan: AbsoluteSourceSpan,
\n public
\n receiver: AST, public name: string) {
\n super(span, sourceSpan, nameSpan);
\n }
\n visit(visitor: AstVisitor,
\n context: any = null): any {
\n return visitor.visitPropertyRead(this, context);
\n }
\n}
\nexport class PropertyWrite
\nextends ASTWithName {
\n constructor(
\n span: ParseSpan, sourceSpan: AbsoluteSourceSpan, nameSpan:
\n AbsoluteSourceSpan,
\n public receiver: AST, public name: string, public value: AST) {
\n super(span,
\n sourceSpan, nameSpan);
\n }
\n visit(visitor: AstVisitor, context: any = null): any {
\n return
\n visitor.visitPropertyWrite(this, context);
\n }
\n}
\nexport class SafePropertyRead extends ASTWithName {
\n constructor(
\n span: ParseSpan, sourceSpan: AbsoluteSourceSpan, nameSpan: AbsoluteSourceSpan,
\n public
\n receiver: AST, public name: string) {
\n super(span, sourceSpan, nameSpan);
\n }
\n visit(visitor: AstVisitor,
\n context: any = null): any {
\n return visitor.visitSafePropertyRead(this, context);
\n }
\n}
\nexport class
\nKeyedRead extends AST {
\n constructor(span: ParseSpan, sourceSpan: AbsoluteSourceSpan, public obj: AST,
\n public
\n key: AST) {
\n super(span, sourceSpan);
\n }
\n visit(visitor: AstVisitor, context: any = null): any {
\n return
\n visitor.visitKeyedRead(this, context);
\n }
\n}
\nexport class KeyedWrite extends AST {
\n constructor(
\n span: ParseSpan, sourceSpan: AbsoluteSourceSpan, public obj: AST, public key: AST,
\n public
\n value: AST) {
\n

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super(span, sourceSpan);\n } \n visit(visitor: AstVisitor, context: any = null): any {\n return
visitor.visitKeyedWrite(this, context);\n } \n} \n\nexport class BindingPipe extends ASTWithName {\n
constructor(\n span: ParseSpan, sourceSpan: AbsoluteSourceSpan, public exp: AST, public name: string, \n
public args: any[], nameSpan: AbsoluteSourceSpan) {\n super(span, sourceSpan, nameSpan);\n } \n visit(visitor:
AstVisitor, context: any = null): any {\n return visitor.visitPipe(this, context);\n } \n} \n\nexport class
LiteralPrimitive extends AST {\n constructor(span: ParseSpan, sourceSpan: AbsoluteSourceSpan, public value:
any) {\n super(span, sourceSpan);\n } \n visit(visitor: AstVisitor, context: any = null): any {\n return
visitor.visitLiteralPrimitive(this, context);\n } \n} \n\nexport class LiteralArray extends AST {\n constructor(span:
ParseSpan, sourceSpan: AbsoluteSourceSpan, public expressions: any[]) {\n super(span, sourceSpan);\n } \n
visit(visitor: AstVisitor, context: any = null): any {\n return visitor.visitLiteralArray(this, context);\n
} \n} \n\nexport type LiteralMapKey = {\n key: string; quoted: boolean;\n}; \n\nexport class LiteralMap extends AST
{\n constructor(\n span: ParseSpan, sourceSpan: AbsoluteSourceSpan, public keys: LiteralMapKey[], \n
public values: any[]) {\n super(span, sourceSpan);\n } \n visit(visitor: AstVisitor, context: any = null): any {\n
return visitor.visitLiteralMap(this, context);\n } \n} \n\nexport class Interpolation extends AST {\n constructor(\n
span: ParseSpan, sourceSpan: AbsoluteSourceSpan, public strings: any[], \n public expressions: any[]) {\n
super(span, sourceSpan);\n } \n visit(visitor: AstVisitor, context: any = null): any {\n return
visitor.visitInterpolation(this, context);\n } \n} \n\nexport class Binary extends AST {\n constructor(\n span:
ParseSpan, sourceSpan: AbsoluteSourceSpan, public operation: string, public left: AST, \n public right: AST) {\n
super(span, sourceSpan);\n } \n visit(visitor: AstVisitor, context: any = null): any {\n return
visitor.visitBinary(this, context);\n } \n} \n\n/** \n * For backwards compatibility reasons, `Unary` inherits from
`Binary` and mimics the binary AST \n * node that was originally used. This inheritance relation can be deleted in
some future major, \n * after consumers have been given a chance to fully support Unary. \n */ \n\nexport class Unary
extends Binary {\n // Redeclare the properties that are inherited from `Binary` as `never`, as consumers should not \n
// depend on these fields when operating on `Unary`. \n left: never; \n right: never; \n operation: never; \n /** \n *
Creates a unary minus expression \n * "-x", represented as `Binary` using \n * "0 - x". \n */ \n static createMinus(span:
ParseSpan, sourceSpan: AbsoluteSourceSpan, expr: AST): Unary {\n return new Unary(\n span, sourceSpan,
 '-', expr, '-', new LiteralPrimitive(span, sourceSpan, 0), expr);\n } \n /** \n * Creates a unary plus expression
\n * "+x", represented as `Binary` using \n * "x - 0". \n */ \n static createPlus(span: ParseSpan, sourceSpan:
AbsoluteSourceSpan, expr: AST): Unary {\n return new Unary(\n span, sourceSpan, '+', expr, '-', expr, new
LiteralPrimitive(span, sourceSpan, 0));\n } \n} \n\n/** \n * During the deprecation period this constructor is private, to
avoid consumers from creating \n * a `Unary` with the fallback properties for `Binary`. \n */ \n private
constructor(\n span: ParseSpan, sourceSpan: AbsoluteSourceSpan, public operator: string, public expr: AST, \n
binaryOp: string, binaryLeft: AST, binaryRight: AST) {\n super(span, sourceSpan, binaryOp, binaryLeft,
binaryRight);\n } \n} \n\n visit(visitor: AstVisitor, context: any = null): any {\n if (visitor.visitUnary !== undefined)
{\n return visitor.visitUnary(this, context);\n } \n return visitor.visitBinary(this, context);\n } \n} \n\nexport
class PrefixNot extends AST {\n constructor(span: ParseSpan, sourceSpan: AbsoluteSourceSpan, public expression:
AST) {\n super(span, sourceSpan);\n } \n visit(visitor: AstVisitor, context: any = null): any {\n return
visitor.visitPrefixNot(this, context);\n } \n} \n\nexport class NonNullAssert extends AST {\n constructor(span:
ParseSpan, sourceSpan: AbsoluteSourceSpan, public expression: AST) {\n super(span, sourceSpan);\n } \n
visit(visitor: AstVisitor, context: any = null): any {\n return visitor.visitNonNullAssert(this, context);\n
} \n} \n\nexport class MethodCall extends ASTWithName {\n constructor(\n span: ParseSpan, sourceSpan:
AbsoluteSourceSpan, nameSpan: AbsoluteSourceSpan, \n public receiver: AST, public name: string, public args:
any[]) {\n super(span, sourceSpan, nameSpan);\n } \n visit(visitor: AstVisitor, context: any = null): any {\n
return visitor.visitMethodCall(this, context);\n } \n} \n\nexport class SafeMethodCall extends ASTWithName {\n
constructor(\n span: ParseSpan, sourceSpan: AbsoluteSourceSpan, nameSpan: AbsoluteSourceSpan, \n public
receiver: AST, public name: string, public args: any[]) {\n super(span, sourceSpan, nameSpan);\n } \n
visit(visitor: AstVisitor, context: any = null): any {\n return visitor.visitSafeMethodCall(this, context);\n
} \n} \n\nexport class FunctionCall extends AST {\n constructor(\n span: ParseSpan, sourceSpan:

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AbsoluteSourceSpan, public target: AST|null,\n public args: any[] {\n super(span, sourceSpan);\n }
\n visit(visitor: AstVisitor, context: any = null): any {\n return visitor.visitFunctionCall(this, context);\n }
\n}
\n/n/**\n * Records the absolute position of a text span in a source file, where `start` and `end` are the\n *
starting and ending byte offsets, respectively, of the text span in a source file.\n */
\nexport class
AbsoluteSourceSpan {\n constructor(public readonly start: number, public readonly end: number) {\n}\n}
\nexport
class ASTWithSource extends AST {\n constructor(\n public ast: AST, public source: string|null, public
location: string, absoluteOffset: number,\n public errors: ParserError[] {\n super(\n new ParseSpan(0,
source === null ? 0 : source.length),\n new AbsoluteSourceSpan(\n absoluteOffset, source === null ?
absoluteOffset : absoluteOffset + source.length));\n }
\n visit(visitor: AstVisitor, context: any = null): any {\n if
(visitor.visitASTWithSource) {\n return visitor.visitASTWithSource(this, context);\n }\n return
this.ast.visit(visitor, context);\n }
\n toString(): string {\n return `${this.source} in ${this.location}`;\n }
\n}
\n/n/**\n * TemplateBinding refers to a particular key-value pair in a microsyntax\n * expression. A few
examples are:\n */
\n * |-----|-----|-----|-----|\n * | expression | key | value
| binding type |\n * |-----|-----|-----|-----|\n * | 1. let item | item | null |
variable |\n * | 2. of items | ngForOf | items | expression |\n * | 3. let x = y | x | y |
variable |\n * | 4. index as i | i | index | variable |\n * | 5. trackBy: func | ngForTrackBy | func |
expression |\n * | 6. *ngIf="cond" | ngIf | cond | expression |\n * |-----|-----|-----
|-----|
\n */
\n * (6) is a notable exception because it is a binding from the template key in\n * the LHS of a
HTML attribute to the expression in the RHS. All other bindings\n * in the example above are derived solely from
the RHS.\n */
\nexport type TemplateBinding = VariableBinding|ExpressionBinding;
\nexport class
VariableBinding {\n /**\n * @param sourceSpan entire span of the binding.\n * @param key name of the LHS
along with its span.\n * @param value optional value for the RHS along with its span.\n */
\n constructor(\n public readonly sourceSpan: AbsoluteSourceSpan,\n public readonly key: TemplateBindingIdentifier,\n public
readonly value: TemplateBindingIdentifier|null) {\n}\n}
\nexport class ExpressionBinding {\n /**\n * @param
sourceSpan entire span of the binding.\n * @param key binding name, like ngForOf, ngForTrackBy, ngIf, along
with its\n * span. Note that the length of the span may not be the same as\n * `key.source.length`. For example,\n
 * 1. key.source = ngFor, key.span is for `ngFor`\n * 2. key.source = ngForOf, key.span is for `of`\n * 3.
key.source = ngForTrackBy, key.span is for `trackBy`\n */
\n * @param value optional expression for the RHS.\n */
\n constructor(\n public readonly sourceSpan: AbsoluteSourceSpan,\n public readonly key:
TemplateBindingIdentifier, public readonly value: ASTWithSource|null) {\n}\n}
\nexport interface
TemplateBindingIdentifier {\n source: string;\n span: AbsoluteSourceSpan;\n}
\nexport interface AstVisitor {\n /**\n * The `visitUnary` method is declared as optional for backwards compatibility. In an upcoming\n * major
release, this method will be made required.\n */
\n visitUnary?(ast: Unary, context: any): any;\n visitBinary(ast:
Binary, context: any): any;\n visitChain(ast: Chain, context: any): any;\n visitConditional(ast: Conditional, context:
any): any;\n visitFunctionCall(ast: FunctionCall, context: any): any;\n /**\n * The `visitThisReceiver` method is
declared as optional for backwards compatibility.\n * In an upcoming major release, this method will be made
required.\n */
\n visitThisReceiver?(ast: ThisReceiver, context: any): any;\n visitImplicitReceiver(ast:
ImplicitReceiver, context: any): any;\n visitInterpolation(ast: Interpolation, context: any): any;\n visitKeyedRead(ast: KeyedRead, context: any): any;\n visitKeyedWrite(ast: KeyedWrite, context: any): any;\n visitLiteralArray(ast: LiteralArray, context: any): any;\n visitLiteralMap(ast: LiteralMap, context: any): any;\n visitLiteralPrimitive(ast: LiteralPrimitive, context: any): any;\n visitMethodCall(ast: MethodCall, context: any): any;\n visitPipe(ast: BindingPipe, context: any): any;\n visitPrefixNot(ast: PrefixNot, context: any): any;\n visitNonNullAssert(ast: NonNullAssert, context: any): any;\n visitPropertyRead(ast: PropertyRead, context: any): any;\n visitPropertyWrite(ast: PropertyWrite, context: any): any;\n visitQuote(ast: Quote, context: any): any;\n visitSafeMethodCall(ast: SafeMethodCall, context: any): any;\n visitSafePropertyRead(ast: SafePropertyRead, context: any): any;\n visitASTWithSource?(ast: ASTWithSource, context: any): any;\n /**\n * This function is
optionally defined to allow classes that implement this\n * interface to selectively decide if the specified `ast`
should be visited.\n * @param ast node to visit\n * @param context context that gets passed to the node and all its

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children\n */\n visit?(ast: AST, context?: any): any;\n}\n\nexport class RecursiveAstVisitor implements AstVisitor
{\n visit(ast: AST, context?: any): any {\n // The default implementation just visits every node.\n // Classes that
extend RecursiveAstVisitor should override this function\n // to selectively visit the specified node.\n
ast.visit(this, context);\n }\n\n visitUnary(ast: Unary, context: any): any {\n this.visit(ast.expr, context);\n }\n
visitBinary(ast: Binary, context: any): any {\n this.visit(ast.left, context);\n this.visit(ast.right, context);\n }\n
visitChain(ast: Chain, context: any): any {\n this.visitAll(ast.expressions, context);\n }\n\n visitConditional(ast:
Conditional, context: any): any {\n this.visit(ast.condition, context);\n this.visit(ast.trueExp, context);\n
this.visit(ast.falseExp, context);\n }\n\n visitPipe(ast: BindingPipe, context: any): any {\n this.visit(ast.exp,
context);\n this.visitAll(ast.args, context);\n }\n\n visitFunctionCall(ast: FunctionCall, context: any): any {\n if
(ast.target) {\n this.visit(ast.target, context);\n }\n this.visitAll(ast.args, context);\n }\n\n
visitImplicitReceiver(ast: ThisReceiver, context: any): any {\n visitThisReceiver(ast: ThisReceiver, context: any):
any {\n visitInterpolation(ast: Interpolation, context: any): any {\n this.visitAll(ast.expressions, context);\n }\n
visitKeyedRead(ast: KeyedRead, context: any): any {\n this.visit(ast.obj, context);\n this.visit(ast.key,
context);\n }\n\n visitKeyedWrite(ast: KeyedWrite, context: any): any {\n this.visit(ast.obj, context);\n
this.visit(ast.key, context);\n this.visit(ast.value, context);\n }\n\n visitLiteralArray(ast: LiteralArray, context: any):
any {\n this.visitAll(ast.expressions, context);\n }\n\n visitLiteralMap(ast: LiteralMap, context: any): any {\n
this.visitAll(ast.values, context);\n }\n\n visitLiteralPrimitive(ast: LiteralPrimitive, context: any): any {\n
visitMethodCall(ast: MethodCall, context: any): any {\n this.visit(ast.receiver, context);\n this.visitAll(ast.args,
context);\n }\n\n visitPrefixNot(ast: PrefixNot, context: any): any {\n this.visit(ast.expression, context);\n }\n
visitNonNullAssert(ast: NonNullAssert, context: any): any {\n this.visit(ast.expression, context);\n }\n
visitPropertyRead(ast: PropertyRead, context: any): any {\n this.visit(ast.receiver, context);\n }\n
visitPropertyWrite(ast: PropertyWrite, context: any): any {\n this.visit(ast.receiver, context);\n
this.visit(ast.value, context);\n }\n\n visitSafePropertyRead(ast: SafePropertyRead, context: any): any {\n
this.visit(ast.receiver, context);\n }\n\n visitSafeMethodCall(ast: SafeMethodCall, context: any): any {\n
this.visit(ast.receiver, context);\n this.visitAll(ast.args, context);\n }\n\n visitQuote(ast: Quote, context: any): any
{\n // This is not part of the AstVisitor interface, just a helper method\n visitAll(ast: AST[], context: any): any
{\n for (const ast of asts) {\n this.visit(ast, context);\n }\n }\n}\n\nexport class AstTransformer implements
AstVisitor {\n visitImplicitReceiver(ast: ImplicitReceiver, context: any): AST {\n return ast;\n }\n\n
visitThisReceiver(ast: ThisReceiver, context: any): AST {\n return ast;\n }\n\n visitInterpolation(ast:
Interpolation, context: any): AST {\n return new Interpolation(ast.span, ast.sourceSpan, ast.strings,
this.visitAll(ast.expressions));\n }\n\n visitLiteralPrimitive(ast: LiteralPrimitive, context: any): AST {\n return
new LiteralPrimitive(ast.span, ast.sourceSpan, ast.value);\n }\n\n visitPropertyRead(ast: PropertyRead, context:
any): AST {\n return new PropertyRead(\n ast.span, ast.sourceSpan, ast.nameSpan, ast.receiver.visit(this),
ast.name);\n }\n\n visitPropertyWrite(ast: PropertyWrite, context: any): AST {\n return new PropertyWrite(\n
ast.span, ast.sourceSpan, ast.nameSpan, ast.receiver.visit(this), ast.name,\n ast.value.visit(this));\n }\n\n
visitSafePropertyRead(ast: SafePropertyRead, context: any): AST {\n return new SafePropertyRead(\n
ast.span, ast.sourceSpan, ast.nameSpan, ast.receiver.visit(this), ast.name);\n }\n\n visitMethodCall(ast:
MethodCall, context: any): AST {\n return new MethodCall(\n ast.span, ast.sourceSpan, ast.nameSpan,
ast.receiver.visit(this), ast.name,\n this.visitAll(ast.args));\n }\n\n visitSafeMethodCall(ast: SafeMethodCall,
context: any): AST {\n return new SafeMethodCall(\n ast.span, ast.sourceSpan, ast.nameSpan,
ast.receiver.visit(this), ast.name,\n this.visitAll(ast.args));\n }\n\n visitFunctionCall(ast: FunctionCall, context:
any): AST {\n return new FunctionCall(\n ast.span, ast.sourceSpan, ast.target!.visit(this),
this.visitAll(ast.args));\n }\n\n visitLiteralArray(ast: LiteralArray, context: any): AST {\n return new
LiteralArray(ast.span, ast.sourceSpan, this.visitAll(ast.expressions));\n }\n\n visitLiteralMap(ast: LiteralMap,
context: any): AST {\n return new LiteralMap(ast.span, ast.sourceSpan, ast.keys, this.visitAll(ast.values));\n }\n\n
visitUnary(ast: Unary, context: any): AST {\n switch (ast.operator) {\n case '+':\n return
Unary.createPlus(ast.span, ast.sourceSpan, ast.expr.visit(this));\n case '-':\n return
Unary.createMinus(ast.span, ast.sourceSpan, ast.expr.visit(this));\n default:\n throw new Error(`Unknown

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unary operator ${ast.operator}`);\n }\n }\n\n visitBinary(ast: Binary, context: any): AST {\n return new
Binary(\n ast.span, ast.sourceSpan, ast.operation, ast.left.visit(this), ast.right.visit(this));\n }\n\n
visitPrefixNot(ast: PrefixNot, context: any): AST {\n return new PrefixNot(ast.span, ast.sourceSpan,
ast.expression.visit(this));\n }\n\n visitNonNullAssert(ast: NonNullAssert, context: any): AST {\n return new
NonNullAssert(ast.span, ast.sourceSpan, ast.expression.visit(this));\n }\n\n visitConditional(ast: Conditional,
context: any): AST {\n return new Conditional(\n ast.span, ast.sourceSpan, ast.condition.visit(this),
ast.trueExp.visit(this),\n ast.falseExp.visit(this));\n }\n\n visitPipe(ast: BindingPipe, context: any): AST {\n
return new BindingPipe(\n ast.span, ast.sourceSpan, ast.exp.visit(this), ast.name, this.visitAll(ast.args),\n
ast.nameSpan);\n }\n\n visitKeyedRead(ast: KeyedRead, context: any): AST {\n return new KeyedRead(ast.span,
ast.sourceSpan, ast.obj.visit(this), ast.key.visit(this));\n }\n\n visitKeyedWrite(ast: KeyedWrite, context: any): AST
{\n return new KeyedWrite(\n ast.span, ast.sourceSpan, ast.obj.visit(this), ast.key.visit(this),
ast.value.visit(this));\n }\n\n visitAll(ast: any[]): any[] {\n const res = [];\n for (let i = 0; i < asts.length; ++i)
{\n res[i] = asts[i].visit(this);\n }\n return res;\n }\n\n visitChain(ast: Chain, context: any): AST {\n return
new Chain(ast.span, ast.sourceSpan, this.visitAll(ast.expressions));\n }\n\n visitQuote(ast: Quote, context: any):
AST {\n return new Quote(\n ast.span, ast.sourceSpan, ast.prefix, ast.uninterpretedExpression, ast.location);\n
}\n}\n\n// A transformer that only creates new nodes if the transformer makes a change or\n// a change is made a
child node.\nexport class AstMemoryEfficientTransformer implements AstVisitor {\n visitImplicitReceiver(ast:
ImplicitReceiver, context: any): AST {\n return ast;\n }\n\n visitThisReceiver(ast: ThisReceiver, context: any):
AST {\n return ast;\n }\n\n visitInterpolation(ast: Interpolation, context: any): Interpolation {\n const
expressions = this.visitAll(ast.expressions);\n if (expressions !== ast.expressions)\n return new
Interpolation(ast.span, ast.sourceSpan, ast.strings, expressions);\n return ast;\n }\n\n visitLiteralPrimitive(ast:
LiteralPrimitive, context: any): AST {\n return ast;\n }\n\n visitPropertyRead(ast: PropertyRead, context: any):
AST {\n const receiver = ast.receiver.visit(this);\n if (receiver !== ast.receiver) {\n return new
PropertyRead(ast.span, ast.sourceSpan, ast.nameSpan, receiver, ast.name);\n }\n return ast;\n }\n\n
visitPropertyWrite(ast: PropertyWrite, context: any): AST {\n const receiver = ast.receiver.visit(this);\n const
value = ast.value.visit(this);\n if (receiver !== ast.receiver || value !== ast.value) {\n return new
PropertyWrite(ast.span, ast.sourceSpan, ast.nameSpan, receiver, ast.name, value);\n }\n return ast;\n }\n\n
visitSafePropertyRead(ast: SafePropertyRead, context: any): AST {\n const receiver = ast.receiver.visit(this);\n
if (receiver !== ast.receiver) {\n return new SafePropertyRead(ast.span, ast.sourceSpan, ast.nameSpan, receiver,
ast.name);\n }\n return ast;\n }\n\n visitMethodCall(ast: MethodCall, context: any): AST {\n const receiver =
ast.receiver.visit(this);\n const args = this.visitAll(ast.args);\n if (receiver !== ast.receiver || args !== ast.args) {\n
return new MethodCall(ast.span, ast.sourceSpan, ast.nameSpan, receiver, ast.name, args);\n }\n return ast;\n
}\n\n visitSafeMethodCall(ast: SafeMethodCall, context: any): AST {\n const receiver = ast.receiver.visit(this);\n
const args = this.visitAll(ast.args);\n if (receiver !== ast.receiver || args !== ast.args) {\n return new
SafeMethodCall(ast.span, ast.sourceSpan, ast.nameSpan, receiver, ast.name, args);\n }\n return ast;\n }\n\n
visitFunctionCall(ast: FunctionCall, context: any): AST {\n const target = ast.target && ast.target.visit(this);\n
const args = this.visitAll(ast.args);\n if (target !== ast.target || args !== ast.args) {\n return new
FunctionCall(ast.span, ast.sourceSpan, target, args);\n }\n return ast;\n }\n\n visitLiteralArray(ast: LiteralArray,
context: any): AST {\n const expressions = this.visitAll(ast.expressions);\n if (expressions !== ast.expressions)
{\n return new LiteralArray(ast.span, ast.sourceSpan, expressions);\n }\n return ast;\n }\n\n
visitLiteralMap(ast: LiteralMap, context: any): AST {\n const values = this.visitAll(ast.values);\n if (values !==
ast.values) {\n return new LiteralMap(ast.span, ast.sourceSpan, ast.keys, values);\n }\n return ast;\n }\n\n
visitUnary(ast: Unary, context: any): AST {\n const expr = ast.expr.visit(this);\n if (expr !== ast.expr) {\n
switch (ast.operator) {\n case '+':\n return Unary.createPlus(ast.span, ast.sourceSpan, expr);\n case '-':\n
return Unary.createMinus(ast.span, ast.sourceSpan, expr);\n default:\n throw new
Error(`Unknown unary operator ${ast.operator}`);\n }\n }\n return ast;\n }\n\n visitBinary(ast: Binary,
context: any): AST {\n const left = ast.left.visit(this);\n const right = ast.right.visit(this);\n if (left !== ast.left ||
right !== ast.right) {\n return new Binary(ast.span, ast.sourceSpan, ast.operation, left, right);\n }\n return

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ast;\n }\n\n visitPrefixNot(ast: PrefixNot, context: any): AST {\n const expression = ast.expression.visit(this);\n if (expression !== ast.expression) {\n return new PrefixNot(ast.span, ast.sourceSpan, expression);\n }\n return\n ast;\n }\n\n visitNonNullAssert(ast: NonNullAssert, context: any): AST {\n const expression =\n ast.expression.visit(this);\n if (expression !== ast.expression) {\n return new NonNullAssert(ast.span,\n ast.sourceSpan, expression);\n }\n return ast;\n }\n\n visitConditional(ast: Conditional, context: any): AST {\n const condition = ast.condition.visit(this);\n const trueExp = ast.trueExp.visit(this);\n const falseExp =\n ast.falseExp.visit(this);\n if (condition !== ast.condition || trueExp !== ast.trueExp || falseExp !== ast.falseExp) {\n return new Conditional(ast.span, ast.sourceSpan, condition, trueExp, falseExp);\n }\n return ast;\n }\n\n\n visitPipe(ast: BindingPipe, context: any): AST {\n const exp = ast.exp.visit(this);\n const args =\n this.visitAll(ast.args);\n if (exp !== ast.exp || args !== ast.args) {\n return new BindingPipe(ast.span,\n ast.sourceSpan, exp, ast.name, args, ast.nameSpan);\n }\n return ast;\n }\n\n\n visitKeyedRead(ast: KeyedRead,\n context: any): AST {\n const obj = ast.obj.visit(this);\n const key = ast.key.visit(this);\n if (obj !== ast.obj ||\n key !== ast.key) {\n return new KeyedRead(ast.span, ast.sourceSpan, obj, key);\n }\n return ast;\n }\n\n\n visitKeyedWrite(ast: KeyedWrite, context: any): AST {\n const obj = ast.obj.visit(this);\n const key =\n ast.key.visit(this);\n const value = ast.value.visit(this);\n if (obj !== ast.obj || key !== ast.key || value !==\n ast.value) {\n return new KeyedWrite(ast.span, ast.sourceSpan, obj, key, value);\n }\n return ast;\n }\n\n\n\n visitAll(ast: any[]): any[] {\n const res = [];\n let modified = false;\n for (let i = 0; i < asts.length; ++i) {\n const original = asts[i];\n const value = original.visit(this);\n res[i] = value;\n modified = modified || value\n !== original;\n }\n return modified ? res : asts;\n }\n\n\n\n visitChain(ast: Chain, context: any): AST {\n const\n expressions = this.visitAll(ast.expressions);\n if (expressions !== ast.expressions) {\n return new\n Chain(ast.span, ast.sourceSpan, expressions);\n }\n return ast;\n }\n\n\n\n visitQuote(ast: Quote, context: any): AST\n {\n return ast;\n }\n\n\n\n// Bindings\n\n\nexport class ParsedProperty {\n public readonly isLiteral: boolean;\n public readonly isAnimation: boolean;\n\n constructor(\n public name: string, public expression:\n ASTWithSource, public type: ParsedPropertyType,\n // TODO(atscott): `keySpan` should really be required but\n allows `undefined` so VE does\n // not need to be updated. Make `keySpan` required when VE is removed.\n public sourceSpan: ParseSourceSpan, readonly keySpan: ParseSourceSpan|undefined,\n public valueSpan:\n ParseSourceSpan|undefined) {\n this.isLiteral = this.type === ParsedPropertyType.LITERAL_ATTR;\n this.isAnimation = this.type === ParsedPropertyType.ANIMATION;\n }\n}\n\n\nexport enum ParsedPropertyType\n {\n DEFAULT,\n LITERAL_ATTR,\n ANIMATION\n}\n\n\nexport const enum ParsedEventType {\n // DOM or\n Directive event\n Regular,\n // Animation specific event\n Animation,\n}\n\n\nexport class ParsedEvent {\n //\n Regular events have a target\n // Animation events have a phase\n constructor(\n public name: string, public\n targetOrPhase: string, public type: ParsedEventType,\n public handler: ASTWithSource, public sourceSpan:\n ParseSourceSpan,\n public handlerSpan: ParseSourceSpan) {\n }\n}\n\n\n/**\n * ParsedVariable represents a variable\n declaration in a microsyntax expression.\n */\n\nexport class ParsedVariable {\n constructor(\n public readonly\n name: string, public readonly value: string,\n public readonly sourceSpan: ParseSourceSpan, public readonly\n keySpan: ParseSourceSpan,\n public readonly valueSpan?: ParseSourceSpan) {\n }\n}\n\n\nexport const enum\n BindingType {\n // A regular binding to a property (e.g. `[property]="expression"`).\n Property,\n // A binding to\n an element attribute (e.g. `[attr.name]="expression"`).\n Attribute,\n // A binding to a CSS class (e.g.\n `[class.name]="condition"`).\n Class,\n // A binding to a style rule (e.g. `[style.rule]="expression"`).\n Style,\n // A binding to an animation reference (e.g. `[animate.key]="expression"`).\n Animation,\n}\n\n\nexport class\n BoundElementProperty {\n constructor(\n public name: string, public type: BindingType, public\n securityContext: SecurityContext,\n public value: ASTWithSource, public unit: string|null, public sourceSpan:\n ParseSourceSpan,\n readonly keySpan: ParseSourceSpan|undefined, public valueSpan:\n ParseSourceSpan|undefined) {\n }\n}\n\n\n"/**\n * @license\n * Copyright Google LLC All Rights Reserved.\n */\n\n * Use of this source code is governed by an MIT-style license that can be\n * found in the LICENSE file at\n https://angular.io/license\n */\n\nimport * as cdAst from './expression_parser/ast';\nimport {Identifiers} from\n './identifiers';\nimport * as o from './output/output_ast';\nimport {ParseSourceSpan} from './parse_util';\n\nexport class EventHandlerVars {\n static event = o.variable('$event');\n}\n\nexport interface LocalResolver {\n
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getLocal(name: string): o.Expression|null;\n notifyImplicitReceiverUse(): void;\n globals?:
Set<string>;\n}\n\nexport class ConvertActionBindingResult {\n /**\n * Store statements which are render3
compatible.\n */\n render3Stmts: o.Statement[];\n constructor(\n /**\n * Render2 compatible statements,\n */\n public stmts: o.Statement[],\n /**\n * Variable name used with render2 compatible statements.\n */\n public allowDefault: o.ReadVarExpr) {\n /**\n * This is bit of a hack. It converts statements which
render2 expects to statements which are\n * expected by render3.\n */\n * Example: `<div
click=\"doSomething($event)\">` will generate:\n * Render3:\n * ``\n * const pd_b:any =
((<any>ctx.doSomething($event)) !== false);\n * return pd_b;\n * ``\n * but render2 expects:\n *
``\n * return ctx.doSomething($event);\n * ``\n */\n // TODO(misko): remove this hack once we no
longer support ViewEngine.\n this.render3Stmts = stmts.map((statement: o.Statement) => {\n if (statement
instanceof o.DeclareVarStmt && statement.name == allowDefault.name &&\n statement.value instanceof
o.BinaryOperatorExpr) {\n const lhs = statement.value.lhs as o.CastExpr;\n return new
o.ReturnStatement(lhs.value);\n }\n return statement;\n });\n }\n}\n\nexport type InterpolationFunction =
(args: o.Expression[]) => o.Expression;\n\n/**\n * Converts the given expression AST into an executable output
AST, assuming the expression is\n * used in an action binding (e.g. an event handler).\n */\n\nexport function
convertActionBinding(\n localResolver: LocalResolver|null, implicitReceiver: o.Expression, action: cdAst.AST,\n bindingId: string, interpolationFunction?: InterpolationFunction,\n baseSourceSpan?: ParseSourceSpan,
implicitReceiverAccesses?: Set<string>,\n globals?: Set<string>): ConvertActionBindingResult {\n if
(!localResolver) {\n localResolver = new DefaultLocalResolver(globals);\n }\n const actionWithoutBuiltins =
convertPropertyBindingBuiltins(\n {\n createLiteralArrayConverter: (argCount: number) => {\n //
Note: no caching for literal arrays in actions.\n return (args: o.Expression[]) => o.literalArr(args);\n },\n
createLiteralMapConverter: (keys: {key: string, quoted: boolean}[]) => {\n // Note: no caching for literal
maps in actions.\n return (values: o.Expression[]) => {\n const entries = keys.map((k, i) => ({\n
key: k.key,\n value: values[i],\n quoted: k.quoted,\n
})));\n return o.literalMap(entries);\n },\n },\n createPipeConverter: (name:
string) => {\n throw new Error(`Illegal State: Actions are not allowed to contain pipes. Pipe: ${name}`);\n
}\n },\n action);\n\n const visitor = new _AstToIrVisitor(\n localResolver, implicitReceiver, bindingId,
interpolationFunction, baseSourceSpan,\n implicitReceiverAccesses);\n const actionStmts: o.Statement[] = [];\n
flattenStatements(actionWithoutBuiltins.visit(visitor, _Mode.Statement), actionStmts);\n
prependTemporaryDecls(visitor temporaryCount, bindingId, actionStmts);\n\n if (visitor.usesImplicitReceiver) {\n
localResolver.notifyImplicitReceiverUse();\n }\n\n const lastIndex = actionStmts.length - 1;\n let
preventDefaultVar: o.ReadVarExpr = null!;\n if (lastIndex >= 0) {\n const lastStatement =
actionStmts[lastIndex];\n const returnExpr = convertStmtIntoExpression(lastStatement);\n if (returnExpr) {\n
// Note: We need to cast the result of the method call to dynamic,\n // as it might be a void method!\n
preventDefaultVar = createPreventDefaultVar(bindingId);\n actionStmts[lastIndex] =\n
preventDefaultVar.set(returnExpr.cast(o.DYNAMIC_TYPE).notIdentical(o.literal(false)))\n
.toDeclStmt(null, [o.StmtModifier.Final]);\n }\n }\n\n return new ConvertActionBindingResult(actionStmts,
preventDefaultVar);\n}\n\nexport interface BuiltinConverter {\n (args: o.Expression[]): o.Expression;\n}\n\nexport
interface BuiltinConverterFactory {\n createLiteralArrayConverter(argCount: number): BuiltinConverter;\n
createLiteralMapConverter(keys: {key: string, quoted: boolean}[]): BuiltinConverter;\n createPipeConverter(name:
string, argCount: number): BuiltinConverter;\n}\n\nexport function convertPropertyBindingBuiltins(\n
converterFactory: BuiltinConverterFactory, ast: cdAst.AST): cdAst.AST {\n return
convertBuiltins(converterFactory, ast);\n}\n\nexport class ConvertPropertyBindingResult {\n constructor(public
stmts: o.Statement[], public currValExpr: o.Expression) {\n }\n}\n\nexport enum BindingForm {\n // The general
form of binding expression, supports all expressions.\n General,\n\n // Try to generate a simple binding (no
temporaries or statements)\n // otherwise generate a general binding\n TrySimple,\n\n // Inlines assignment of
temporaries into the generated expression. The result may still\n // have statements attached for declarations of
temporary variables.\n // This is the only relevant form for Ivy, the other forms are only used in ViewEngine.\n
}

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Expression,\n}\n\n/**\n * Converts the given expression AST into an executable output AST, assuming the
expression\n * is used in property binding. The expression has to be preprocessed via\n *
`convertPropertyBindingBuiltins`.\n */\nexport function convertPropertyBinding(\n localResolver:
LocalResolver|null, implicitReceiver: o.Expression,\n expressionWithoutBuiltins: cdAst.AST, bindingId: string,
form: BindingForm,\n interpolationFunction?: InterpolationFunction): ConvertPropertyBindingResult {\n if
(!localResolver) {\n localResolver = new DefaultLocalResolver();\n }\n const visitor =\n new
_AstToIrVisitor(localResolver, implicitReceiver, bindingId, interpolationFunction);\n const outputExpr:
o.Expression = expressionWithoutBuiltins.visit(visitor, _Mode.Expression);\n const stmts: o.Statement[] =
getStatementsFromVisitor(visitor, bindingId);\n\n if (visitor.usesImplicitReceiver) {\n
localResolver.notifyImplicitReceiverUse();\n }\n\n if (visitor.temporaryCount === 0 && form ===
BindingForm.TrySimple) {\n return new ConvertPropertyBindingResult([], outputExpr);\n } else if (form ===
BindingForm.Expression) {\n return new ConvertPropertyBindingResult(stmts, outputExpr);\n }\n\n const
currValExpr = createCurrValueExpr(bindingId);\n stmts.push(currValExpr.set(outputExpr).toDeclStmt(o.DYNAMIC_TYPE, [o.StmtModifier.Final]));\n return new
ConvertPropertyBindingResult(stmts, currValExpr);\n}\n\n/**\n * Given some expression, such as a binding or
interpolation expression, and a context expression to\n * look values up on, visit each facet of the given expression
resolving values from the context\n * expression such that a list of arguments can be derived from the found values
that can be used as\n * arguments to an external update instruction.\n * @param localResolver The resolver to
use to look up expressions by name appropriately\n * @param contextVariableExpression The expression
representing the context variable used to create\n * the final argument expressions\n * @param
expressionWithArgumentsToExtract The expression to visit to figure out what values need to\n * be resolved and
what arguments list to build.\n * @param bindingId A name prefix used to create temporary variable names if
they're needed for the\n * arguments generated\n * @returns An array of expressions that can be passed as
arguments to instruction expressions like\n * `o.importExpr(R3.propertyInterpolate).callFn(result)`\n */\nexport
function convertUpdateArguments(\n localResolver: LocalResolver, contextVariableExpression: o.Expression,\n
expressionWithArgumentsToExtract: cdAst.AST, bindingId: string) {\n const visitor =\n new
_AstToIrVisitor(localResolver, contextVariableExpression, bindingId, undefined);\n const outputExpr:
o.InvokeFunctionExpr =\n expressionWithArgumentsToExtract.visit(visitor, _Mode.Expression);\n\n if
(visitor.usesImplicitReceiver) {\n localResolver.notifyImplicitReceiverUse();\n }\n\n const stmts =
getStatementsFromVisitor(visitor, bindingId);\n\n // Removing the first argument, because it was a length for
ViewEngine, not Ivy.\n let args = outputExpr.args.slice(1);\n if (expressionWithArgumentsToExtract instanceof
cdAst.Interpolation) {\n // If we're dealing with an interpolation of 1 value with an empty prefix and suffix, reduce
the\n // args returned to just the value, because we're going to pass it to a special instruction.\n const strings =
expressionWithArgumentsToExtract.strings;\n if (args.length === 3 && strings[0] === "" && strings[1] === "") {\n
 // Single argument interpolate instructions.\n args = [args[1]]; \n } else if (args.length >= 19) {\n
 // 19 or more arguments must be passed to the `interpolateV`-style instructions, which accept\n // an array of arguments\n args = [o.literalArr(args)];\n } \n }\n return {stmts, args};\n}\n\nfunction getStatementsFromVisitor(visitor:
_AstToIrVisitor, bindingId: string) {\n const stmts: o.Statement[] = [];\n for (let i = 0; i < visitor.temporaryCount;
i++) {\n stmts.push(temporaryDeclaration(bindingId, i));\n }\n return stmts;\n}\n\nfunction
convertBuiltins(converterFactory: BuiltinConverterFactory, ast: cdAst.AST): cdAst.AST {\n const visitor = new
_BuiltinAstConverter(converterFactory);\n return ast.visit(visitor);\n}\n\nfunction temporaryName(bindingId:
string, temporaryNumber: number): string {\n return `tmp_${bindingId}_${temporaryNumber}`;\n}\n\nexport
function temporaryDeclaration(bindingId: string, temporaryNumber: number): o.Statement {\n return new
o.DeclareVarStmt(temporaryName(bindingId, temporaryNumber), o.NULL_EXPR);\n}\n\nfunction
prependTemporaryDecls(\n temporaryCount: number, bindingId: string, statements: o.Statement[]) {\n for (let i =
temporaryCount - 1; i >= 0; i--) {\n statements.unshift(temporaryDeclaration(bindingId, i));\n }\n}\n\nenum
_Mode {\n Statement,\n Expression\n}\n\nfunction ensureStatementMode(mode: _Mode, ast: cdAst.AST) {\n if
(mode !== _Mode.Statement) {\n throw new Error(`Expected a statement, but saw ${ast}`);\n }\n}\n\nfunction

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ensureExpressionMode(mode: _Mode, ast: cdAst.AST) {\n if (mode !== _Mode.Expression) {\n throw new
Error(`Expected an expression, but saw ${ast}`);\n }\n}\n\nfunction convertToStatementIfNeeded(mode: _Mode,
expr: o.Expression): o.Expression|o.Statement {\n if (mode === _Mode.Statement) {\n return expr.toStmt();\n }
else {\n return expr;\n }\n}\n\nclass _BuiltinAstConverter extends cdAst.AstTransformer {\n constructor(private
_converterFactory: BuiltinConverterFactory) {\n super();\n }\n visitPipe(ast: cdAst.BindingPipe, context: any):
any {\n const args = [ast.expr, ...ast.args].map(ast => ast.visit(this, context));\n return new BuiltinFunctionCall(\n
ast.span, ast.sourceSpan, args,\n this._converterFactory.createPipeConverter(ast.name, args.length));\n }\n
visitLiteralArray(ast: cdAst.LiteralArray, context: any): any {\n const args = ast.expressions.map(ast =>
ast.visit(this, context));\n return new BuiltinFunctionCall(\n ast.span, ast.sourceSpan, args,\n
this._converterFactory.createLiteralArrayConverter(ast.expressions.length));\n }\n visitLiteralMap(ast:
cdAst.LiteralMap, context: any): any {\n const args = ast.values.map(ast => ast.visit(this, context));\n return
new BuiltinFunctionCall(\n ast.span, ast.sourceSpan, args,
this._converterFactory.createLiteralMapConverter(ast.keys));\n }\n}\n\nclass _AstToIrVisitor implements
cdAst.AstVisitor {\n private _nodeMap = new Map<cdAst.AST, cdAst.AST>();\n private _resultMap = new
Map<cdAst.AST, o.Expression>();\n private _currentTemporary: number = 0;\n public temporaryCount: number =
0;\n public usesImplicitReceiver: boolean = false;\n\n constructor(\n private _localResolver: LocalResolver,
private _implicitReceiver: o.Expression,\n private bindingId: string, private interpolationFunction:
InterpolationFunction|undefined,\n private baseSourceSpan?: ParseSourceSpan, private
implicitReceiverAccesses?: Set<string>) {\n\n visitUnary(ast: cdAst.Unary, mode: _Mode): any {\n let op:
o.UnaryOperator;\n switch (ast.operator) {\n case '+':\n op = o.UnaryOperator.Plus;\n break;\n case
'-':\n op = o.UnaryOperator.Minus;\n break;\n default:\n throw new Error(`Unsupported operator
${ast.operator}`);\n }\n\n return convertToStatementIfNeeded(\n mode,\n new o.UnaryOperatorExpr(\n
op, this._visit(ast.expr, _Mode.Expression), undefined,\n this.convertSourceSpan(ast.span));\n }\n}\n
visitBinary(ast: cdAst.Binary, mode: _Mode): any {\n let op: o.BinaryOperator;\n switch (ast.operation) {\n
case '+':\n op = o.BinaryOperator.Plus;\n break;\n case '-':\n op = o.BinaryOperator.Minus;\n
break;\n case '*':\n op = o.BinaryOperator.Multiply;\n break;\n case '/':\n op =
o.BinaryOperator.Divide;\n break;\n case '%':\n op = o.BinaryOperator.Modulo;\n break;\n case
'&&':\n op = o.BinaryOperator.And;\n break;\n case '||':\n op = o.BinaryOperator.Or;\n break;\n
case '==':\n op = o.BinaryOperator.Equals;\n break;\n case '!=':\n op =
o.BinaryOperator.NotEquals;\n break;\n case '===':\n op = o.BinaryOperator.Identical;\n break;\n
case '!==':\n op = o.BinaryOperator.NotIdentical;\n break;\n case '<':\n op =
o.BinaryOperator.Lower;\n break;\n case '>':\n op = o.BinaryOperator.Bigger;\n break;\n case
'<=':\n op = o.BinaryOperator.LowerEquals;\n break;\n case '>=':\n op =
o.BinaryOperator.BiggerEquals;\n break;\n default:\n throw new Error(`Unsupported operation
${ast.operation}`);\n }\n\n return convertToStatementIfNeeded(\n mode,\n new
o.BinaryOperatorExpr(\n op, this._visit(ast.left, _Mode.Expression), this._visit(ast.right,
_Mode.Expression),\n undefined, this.convertSourceSpan(ast.span));\n }\n}\n\n visitChain(ast: cdAst.Chain,
mode: _Mode): any {\n ensureStatementMode(mode, ast);\n return this.visitAll(ast.expressions, mode);\n }\n}\n
visitConditional(ast: cdAst.Conditional, mode: _Mode): any {\n const value: o.Expression =
this._visit(ast.condition, _Mode.Expression);\n return convertToStatementIfNeeded(\n mode,\n
value.conditional(\n this._visit(ast.trueExp, _Mode.Expression), this._visit(ast.falseExp,
_Mode.Expression),\n this.convertSourceSpan(ast.span));\n }\n}\n\n visitPipe(ast: cdAst.BindingPipe, mode:
_Mode): any {\n throw new Error(\n `Illegal state: Pipes should have been converted into functions. Pipe:
${ast.name}`);\n }\n}\n\n visitFunctionCall(ast: cdAst.FunctionCall, mode: _Mode): any {\n const convertedArgs =
this.visitAll(ast.args, _Mode.Expression);\n let fnResult: o.Expression;\n if (ast instanceof BuiltinFunctionCall)
{\n fnResult = ast.converter(convertedArgs);\n } else {\n fnResult = this._visit(ast.target!,
_Mode.Expression)\n .callFn(convertedArgs, this.convertSourceSpan(ast.span));\n }\n return
convertToStatementIfNeeded(mode, fnResult);\n }\n}\n\n visitImplicitReceiver(ast: cdAst.ImplicitReceiver, mode:

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_Mode): any {\n ensureExpressionMode(mode, ast);\n this.usesImplicitReceiver = true;\n return
this._implicitReceiver;\n }\n\n visitThisReceiver(ast: cdAst.ThisReceiver, mode: _Mode): any {\n return
this.visitImplicitReceiver(ast, mode);\n }\n\n visitInterpolation(ast: cdAst.Interpolation, mode: _Mode): any {\n
ensureExpressionMode(mode, ast);\n const args = [o.literal(ast.expressions.length)];\n for (let i = 0; i <
ast.strings.length - 1; i++) {\n args.push(o.literal(ast.strings[i]));\n args.push(this._visit(ast.expressions[i],
_Mode.Expression));\n }\n args.push(o.literal(ast.strings[ast.strings.length - 1]));\n if
(this.interpolationFunction) {\n return this.interpolationFunction(args);\n }\n return ast.expressions.length <=
9 ?\n o.importExpr(Identifiers.inlineInterpolate).callFn(args) :\n o.importExpr(Identifiers.interpolate).callFn([\n args[0], o.literalArr(args.slice(1), undefined,
this.convertSourceSpan(ast.span))\n]);\n }\n\n visitKeyedRead(ast: cdAst.KeyedRead, mode: _Mode): any {\n
const leftMostSafe = this.leftMostSafeNode(ast);\n if (leftMostSafe) {\n return this.convertSafeAccess(ast,
leftMostSafe, mode);\n } else {\n return convertToStatementIfNeeded(\n mode, this._visit(ast.obj,
_Mode.Expression).key(this._visit(ast.key, _Mode.Expression));\n }\n }\n\n visitKeyedWrite(ast:
cdAst.KeyedWrite, mode: _Mode): any {\n const obj: o.Expression = this._visit(ast.obj, _Mode.Expression);\n
const key: o.Expression = this._visit(ast.key, _Mode.Expression);\n const value: o.Expression =
this._visit(ast.value, _Mode.Expression);\n return convertToStatementIfNeeded(mode, obj.key(key).set(value));\n
}\n\n visitLiteralArray(ast: cdAst.LiteralArray, mode: _Mode): any {\n throw new Error(`Illegal State: literal
arrays should have been converted into functions`);\n }\n\n visitLiteralMap(ast: cdAst.LiteralMap, mode: _Mode):
any {\n throw new Error(`Illegal State: literal maps should have been converted into functions`);\n }\n\n
visitLiteralPrimitive(ast: cdAst.LiteralPrimitive, mode: _Mode): any {\n // For literal values of null, undefined,
true, or false allow type interference\n // to infer the type.\n const type =\n ast.value === null || ast.value ===
undefined || ast.value === true || ast.value === true ?\n o.INFERRED_TYPE :\n undefined;\n return
convertToStatementIfNeeded(\n mode, o.literal(ast.value, type, this.convertSourceSpan(ast.span));\n)\n\n
private _getLocal(name: string, receiver: cdAst.AST): o.Expression|null {\n if
(this._localResolver.globals?.has(name) && receiver instanceof cdAst.ThisReceiver) {\n return null;\n }\n\n
return this._localResolver.getLocal(name);\n }\n\n visitMethodCall(ast: cdAst.MethodCall, mode: _Mode): any {\n
if (ast.receiver instanceof cdAst.ImplicitReceiver &&\n !(ast.receiver instanceof cdAst.ThisReceiver) &&
ast.name === '$any') {\n const args = this.visitAll(ast.args, _Mode.Expression) as any[];\n if (args.length != 1)
{\n throw new Error(\n `Invalid call to $any, expected 1 argument but received ${args.length ||
'none'}`);\n }\n return (args[0] as o.Expression).cast(o.DYNAMIC_TYPE,
this.convertSourceSpan(ast.span));\n }\n\n const leftMostSafe = this.leftMostSafeNode(ast);\n if
(leftMostSafe) {\n return this.convertSafeAccess(ast, leftMostSafe, mode);\n } else {\n const args =
this.visitAll(ast.args, _Mode.Expression);\n const prevUsesImplicitReceiver = this.usesImplicitReceiver;\n let
result: any = null;\n const receiver = this._visit(ast.receiver, _Mode.Expression);\n if (receiver ===
this._implicitReceiver) {\n const varExpr = this._getLocal(ast.name, ast.receiver);\n if (varExpr) {\n //
Restore the previous \"usesImplicitReceiver\" state since the implicit\n // receiver has been replaced with a
resolved local expression.\n this.usesImplicitReceiver = prevUsesImplicitReceiver;\n result =
varExpr.callFn(args);\n this.addImplicitReceiverAccess(ast.name);\n }\n }\n if (result == null) {\n
result = receiver.callMethod(ast.name, args, this.convertSourceSpan(ast.span));\n }\n return
convertToStatementIfNeeded(mode, result);\n }\n }\n\n visitPrefixNot(ast: cdAst.PrefixNot, mode: _Mode): any
{\n return convertToStatementIfNeeded(mode, o.not(this._visit(ast.expression, _Mode.Expression));\n }\n\n
visitNonNullAssert(ast: cdAst.NonNullAssert, mode: _Mode): any {\n return convertToStatementIfNeeded(\n
mode, o.assertNotNull(this._visit(ast.expression, _Mode.Expression));\n }\n\n visitPropertyRead(ast:
cdAst.PropertyRead, mode: _Mode): any {\n const leftMostSafe = this.leftMostSafeNode(ast);\n if
(leftMostSafe) {\n return this.convertSafeAccess(ast, leftMostSafe, mode);\n } else {\n let result: any =
null;\n const prevUsesImplicitReceiver = this.usesImplicitReceiver;\n const receiver = this._visit(ast.receiver,
_Mode.Expression);\n if (receiver === this._implicitReceiver) {\n result = this._getLocal(ast.name,
ast.receiver);\n if (result) {\n // Restore the previous \"usesImplicitReceiver\" state since the implicit\n

```



```

leftMostSafe.nameSpan,\n leftMostSafe.receiver, leftMostSafe.name));\n }\n\n // Recursively convert
the node now without the guarded member access.\n const access = this._visit(ast, _Mode.Expression);\n\n //
Remove the mapping. This is not strictly required as the converter only traverses each node\n // once but is safer if
the conversion is changed to traverse the nodes more than once.\n this._nodeMap.delete(leftMostSafe);\n\n // If
we allocated a temporary, release it.\n if (temporary) {\n this.releaseTemporary(temporary);\n }\n\n //
Produce the conditional\n return convertToStatementIfNeeded(mode, condition.conditional(o.literal(null),
access));\n }\n\n // Given an expression of the form a?.b.c?.d.e then the left most safe node is\n // the (a?.b). The .
and ?. are left associative thus can be rewritten as:\n // (((a?.c).b).c)?.d).e. This returns the most deeply nested safe
read or\n // safe method call as this needs to be transformed initially to:\n // a == null ? null : a.c.b.c?.d.e\n // then
to:\n // a == null ? null : a.b.c == null ? null : a.b.c.d.e\n private leftMostSafeNode(ast: cdAst.AST):
cdAst.SafePropertyRead|cdAst.SafeMethodCall {\n const visit = (visitor: cdAst.AstVisitor, ast: cdAst.AST): any
=> {\n return (this._nodeMap.get(ast) || ast).visit(visitor);\n };\n return ast.visit({\n visitUnary(ast:
cdAst.Unary) {\n return null;\n },\n visitBinary(ast: cdAst.Binary) {\n return null;\n },\n },\n visitChain(ast: cdAst.Chain) {\n return null;\n },\n visitConditional(ast: cdAst.Conditional) {\n return
null;\n },\n visitFunctionCall(ast: cdAst.FunctionCall) {\n return null;\n },\n visitImplicitReceiver(ast: cdAst.ImplicitReceiver) {\n return null;\n },\n visitThisReceiver(ast:
cdAst.ThisReceiver) {\n return null;\n },\n visitInterpolation(ast: cdAst.Interpolation) {\n return
null;\n },\n visitKeyedRead(ast: cdAst.KeyedRead) {\n return visit(this, ast.obj);\n },\n visitKeyedWrite(ast: cdAst.KeyedWrite) {\n return null;\n },\n visitLiteralArray(ast: cdAst.LiteralArray)
{\n return null;\n },\n visitLiteralMap(ast: cdAst.LiteralMap) {\n return null;\n },\n visitLiteralPrimitive(ast: cdAst.LiteralPrimitive) {\n return null;\n },\n visitMethodCall(ast:
cdAst.MethodCall) {\n return visit(this, ast.receiver);\n },\n visitPipe(ast: cdAst.BindingPipe) {\n return
null;\n },\n visitPrefixNot(ast: cdAst.PrefixNot) {\n return null;\n },\n visitNonNullAssert(ast: cdAst.NonNullAssert) {\n return null;\n },\n visitPropertyRead(ast:
cdAst.PropertyRead) {\n return visit(this, ast.receiver);\n },\n visitPropertyWrite(ast:
cdAst.PropertyWrite) {\n return null;\n },\n visitQuote(ast: cdAst.Quote) {\n return null;\n },\n visitSafeMethodCall(ast: cdAst.SafeMethodCall) {\n return visit(this, ast.receiver) || ast;\n },\n visitSafePropertyRead(ast: cdAst.SafePropertyRead) {\n return visit(this, ast.receiver) || ast;\n }\n });\n\n }\n\n // Returns true if the AST includes a method or a pipe indicating that, if the\n // expression is used as the
target of a safe property or method access then\n // the expression should be stored into a temporary variable.\n private needsTemporary(ast: cdAst.AST): boolean {\n const visit = (visitor: cdAst.AstVisitor, ast: cdAst.AST):
boolean => {\n return ast && (this._nodeMap.get(ast) || ast).visit(visitor);\n };\n const visitSome = (visitor:
cdAst.AstVisitor, ast: cdAst.AST[]): boolean => {\n return ast.some(ast => visit(visitor, ast));\n };\n return
ast.visit({\n visitUnary(ast: cdAst.Unary): boolean {\n return visit(this, ast.expr);\n },\n visitBinary(ast: cdAst.Binary): boolean {\n return visit(this, ast.left) || visit(this, ast.right);\n },\n visitChain(ast: cdAst.Chain) {\n return false;\n },\n visitConditional(ast: cdAst.Conditional): boolean {\n return
visit(this, ast.condition) || visit(this, ast.trueExp) || visit(this, ast.falseExp);\n },\n visitFunctionCall(ast: cdAst.FunctionCall) {\n return true;\n },\n visitImplicitReceiver(ast:
cdAst.ImplicitReceiver) {\n return false;\n },\n visitThisReceiver(ast: cdAst.ThisReceiver) {\n return
false;\n },\n visitInterpolation(ast: cdAst.Interpolation) {\n return visitSome(this, ast.expressions);\n },\n visitKeyedRead(ast: cdAst.KeyedRead) {\n return false;\n },\n visitKeyedWrite(ast:
cdAst.KeyedWrite) {\n return false;\n },\n visitLiteralArray(ast: cdAst.LiteralArray) {\n return true;\n },\n visitLiteralMap(ast: cdAst.LiteralMap) {\n return true;\n },\n visitLiteralPrimitive(ast:
cdAst.LiteralPrimitive) {\n return false;\n },\n visitMethodCall(ast: cdAst.MethodCall) {\n return
true;\n },\n visitPipe(ast: cdAst.BindingPipe) {\n return true;\n },\n visitPrefixNot(ast:
cdAst.PrefixNot) {\n return visit(this, ast.expression);\n },\n visitNonNullAssert(ast: cdAst.PrefixNot) {\n return
visit(this, ast.expression);\n },\n visitPropertyRead(ast: cdAst.PropertyRead) {\n return false;\n },\n },\n visitPropertyWrite(ast: cdAst.PropertyWrite) {\n return false;\n },\n visitQuote(ast:

```

```

cdAst.Quote) {\n return false;\n },\n visitSafeMethodCall(ast: cdAst.SafeMethodCall) {\n return
true;\n },\n visitSafePropertyRead(ast: cdAst.SafePropertyRead) {\n return false;\n }\n});\n}\n\nprivate allocateTemporary(): o.ReadVarExpr {\n const tempNumber = this._currentTemporary++;\n this.temporaryCount = Math.max(this._currentTemporary, this.temporaryCount);\n return new
o.ReadVarExpr(temporaryName(this.bindingId, tempNumber));\n}\n\nprivate releaseTemporary(temporary:
o.ReadVarExpr) {\n this._currentTemporary--;\n if (temporary.name !== temporaryName(this.bindingId,
this._currentTemporary)) {\n throw new Error(`Temporary ${temporary.name} released out of order`);\n }\n}\n\n/**\n * Creates an absolute `ParseSourceSpan` from the relative `ParseSpan`.\n * \n * `ParseSpan` objects
are relative to the start of the expression.\n * This method converts these to full `ParseSourceSpan` objects that\n * show where the span is within the overall source file.\n * \n * @param span the relative span to convert.\n *
@return a `ParseSourceSpan` for the given span or null if no\n * `baseSourceSpan` was provided to this class.\n */\nprivate convertSourceSpan(span: cdAst.ParseSpan) {\n if (this.baseSourceSpan) {\n const start =
this.baseSourceSpan.start.moveBy(span.start);\n const end = this.baseSourceSpan.start.moveBy(span.end);\n const fullStart = this.baseSourceSpan.fullStart.moveBy(span.start);\n return new ParseSourceSpan(start, end,
fullStart);\n } else {\n return null;\n }\n}\n\n/** Adds the name of an AST to the list of implicit receiver
accesses. *\nprivate addImplicitReceiverAccess(name: string) {\n if (this.implicitReceiverAccesses) {\n
this.implicitReceiverAccesses.add(name);\n }\n}\n\nfunction flattenStatements(arg: any, output:
o.Statement[]) {\n if (Array.isArray(arg)) {\n (<any[]>arg).forEach((entry) => flattenStatements(entry, output));\n }
else {\n output.push(arg);\n }\n}\n\n\nclass DefaultLocalResolver implements LocalResolver {\n
constructor(public globals?: Set<string>) {}\n notifyImplicitReceiverUse(): void {}\n getLocal(name: string):
o.Expression|null {\n if (name === EventHandlerVars.event.name) {\n return EventHandlerVars.event;\n }\n return null;\n }\n}\n\nfunction createCurrValueExpr(bindingId: string): o.ReadVarExpr {\n return
o.variable(`currVal_${bindingId}`); // fix syntax highlighting: `}\n}\n\nfunction createPreventDefaultVar(bindingId:
string): o.ReadVarExpr {\n return o.variable(`pd_${bindingId}`);\n}\n}\n\nfunction convertStmtIntoExpression(stmt:
o.Statement): o.Expression|null {\n if (stmt instanceof o.ExpressionStatement) {\n return stmt.expr;\n } else if
(stmt instanceof o.ReturnStatement) {\n return stmt.value;\n }\n return null;\n}\n}\n\nexport class
BuiltinFunctionCall extends cdAst.FunctionCall {\n constructor(\n span: cdAst.ParseSpan, sourceSpan:
cdAst.AbsoluteSourceSpan, public args: cdAst.AST[],\n public converter: BuiltinConverter) {\n super(span,
sourceSpan, null, args);\n }\n}\n\n", "/*\n * @license\n * Copyright Google LLC All Rights Reserved.\n * \n * Use of
this source code is governed by an MIT-style license that can be\n * found in the LICENSE file at
https://angular.io/license\n */\n\n * This file is a port of shadowCSS from webcomponents.js to TypeScript.\n
*\n * Please make sure to keep to edits in sync with the source file.\n * \n * Source:\n *
https://github.com/webcomponents/webcomponentsjs/blob/4efecd7e0e/src/ShadowCSS/ShadowCSS.js\n * \n * The
original file level comment is reproduced below\n */\n\n * This is a limited shim for ShadowDOM css styling.\n
https://dvcs.w3.org/hg/webcomponents/raw-file/tip/spec/shadow/index.html#styles\n\n The intention here is to
support only the styling features which can be\n relatively simply implemented. The goal is to allow users to avoid
the\n most obvious pitfalls and do so without compromising performance significantly.\n For ShadowDOM styling
that's not covered here, a set of best practices\n can be provided that should allow users to accomplish more
complex styling.\n\n The following is a list of specific ShadowDOM styling features and a brief\n discussion of the
approach used to shim.\n\n Shimmed features:\n\n * :host, :host-context: ShadowDOM allows styling of the
shadowRoot's host\n element using the :host rule. To shim this feature, the :host styles are\n reformatted and
prefixed with a given scope name and promoted to a\n document level stylesheet.\n For example, given a scope
name of .foo, a rule like this:\n\n :host {\n background: red;\n }\n\n becomes:\n\n .foo {\n
background: red;\n }\n\n * encapsulation: Styles defined within ShadowDOM, apply only to\n dom inside the
ShadowDOM. Polymer uses one of two techniques to implement\n this feature.\n\n By default, rules are prefixed
with the host element tag name\n as a descendant selector. This ensures styling does not leak out of the 'top'\n of
the element's ShadowDOM. For example,\n\n div {\n font-weight: bold;\n }\n\n becomes:\n\n x-foo div {\n
font-weight: bold;\n }\n\n becomes:\n\n\n Alternatively, if WebComponents.ShadowCSS.strictStyling is set to

```

true then selectors are scoped by adding an attribute selector suffix to each simple selector that contains the host element tag name. Each element in the element's ShadowDOM template is also given the scope attribute. Thus, these rules match only elements that have the scope attribute. For example, given a scope name of x-foo, a rule like this:

```
div {
 font-weight: bold;
}
```

becomes:

```
div[x-foo] {
 font-weight: bold;
}
```

Note that elements that are dynamically added to a scope must have the scope selector added to them manually.

\* upper/lower bound encapsulation: Styles which are defined outside a shadowRoot should not cross the ShadowDOM boundary and should not apply inside a shadowRoot. This styling behavior is not emulated. Some possible ways to do this that were rejected due to complexity and/or performance concerns include: (1) reset every possible property for every possible selector for a given scope name; (2) re-implement css in javascript.

As an alternative, users should make sure to use selectors specific to the scope in which they are working.

\* ::distributed: This behavior is not emulated. It's often not necessary to style the contents of a specific insertion point and instead, descendants of the host element can be styled selectively. Users can also create an extra node around an insertion point and style that node's contents via descendent selectors. For example, with a shadowRoot like this:

```
<style>
 ::content(div) {
 background: red;
 }
</style>
<content></content>
```

could become:

```
<style>
 /*@polyfill .content-container div */
 ::content(div) {
 background: red;
 }
</style>
<div class="content-container">
<content></content>
</div>
```

Note the use of @polyfill in the comment above a ShadowDOM specific style declaration. This is a directive to the styling shim to use the selector in comments in lieu of the next selector when running under polyfill.

```
export class ShadowCss {
 strictStyling: boolean = true;
 constructor() {}
 /* Shim some cssText with the given selector. Returns cssText that can be included in the document via WebComponents.ShadowCSS.addCssToDocument(css).
 * When strictStyling is true:
 * - selector is the attribute added to all elements inside the host,
 * - hostSelector is the attribute added to the host itself.
 */
 shimCssText(cssText: string, selector: string, hostSelector: string = ""): string {
 const commentsWithHash = extractCommentsWithHash(cssText);
 cssText = stripComments(cssText);
 cssText = this._insertDirectives(cssText);
 const scopedCssText = this._scopeCssText(cssText, selector, hostSelector);
 return [scopedCssText, ...commentsWithHash].join("\n");
 }
 private _insertDirectives(cssText: string): string {
 cssText = this._insertPolyfillDirectivesInCssText(cssText);
 return this._insertPolyfillRulesInCssText(cssText);
 }
 /* Process styles to convert native ShadowDOM rules that will trip up the css parser; we rely on decorating the stylesheet with inert rules.
 * For example, we convert this rule:
 * polyfill-next-selector { content: 'host menu-item'; }
 * ::content menu-item
 * to this:
 * scopeName menu-item
 */
 private _insertPolyfillDirectivesInCssText(cssText: string): string {
 // Difference with webcomponents.js: does not handle comments
 return cssText.replace(_cssContentNextSelectorRe, function(...m: string[]) {
 return m[2] + '{';
 });
 }
 /* Process styles to add rules which will only apply under the polyfill
 * For example, we convert this rule:
 * polyfill-rule {
 * content: 'host menu-item';
 * ...
 * }
 * to this:
 * scopeName menu-item
 */
 private _insertPolyfillRulesInCssText(cssText: string): string {
 // Difference with webcomponents.js: does not handle comments
 return cssText.replace(_cssContentRuleRe, (...m: string[]) => {
 const rule = m[0].replace(m[1], "").replace(m[2], "");
 return m[4] + rule;
 });
 }
 /* Ensure styles are scoped. Pseudo-scoping takes a rule like:
 * .foo { ... }
 * and converts this to:
 * scopeName .foo { ... }
 */
 private _scopeCssText(cssText: string, scopeSelector: string, hostSelector: string): string {
 const unscopedRules = this._extractUnscopedRulesFromCssText(cssText);
 // replace :host and :host-context - shadowcsshost and -shadowcsshost respectively
 cssText = this._insertPolyfillHostInCssText(cssText);
 cssText = this._convertColonHost(cssText);
 cssText = this._convertColonHostContext(cssText);
 cssText = this._convertShadowDOMSelectors(cssText);
 if (scopeSelector) {
 cssText = this._scopeSelectors(cssText, scopeSelector, hostSelector);
 }
 cssText = cssText + "\n" + unscopedRules;
 return cssText.trim();
 }
 /* Process styles to add rules which will only apply under the polyfill and do not process via CSSOM. (CSSOM is destructive to rules on rare occasions, e.g. -webkit-calc on Safari.)
 * For example, we convert this rule:
 * @polyfill-unscoped-rule {
 * content: 'menu-item';
 * ...
 * }
 */

```

```

menu-item {...}\n *\n **/\n private _extractUnscopedRulesFromCssText(cssText: string): string {\n //
Difference with webcomponents.js: does not handle comments\n let r = ";\n let m: RegExpExecArray|null;\n
_cssContentUnscopedRuleRe.lastIndex = 0;\n while ((m = _cssContentUnscopedRuleRe.exec(cssText)) !== null)
{\n const rule = m[0].replace(m[2], "").replace(m[1], m[4]);\n r += rule + "\\n\\n";\n }\n return r;\n }\n\n
/*\n * convert a rule like :host(.foo) > .bar { }\n *\n * to\n *\n * .foo<scopeName> > .bar\n *\n private
_convertColonHost(cssText: string): string {\n return this._convertColonRule(cssText, _cssColonHostRe,
this._colonHostPartReplacer);\n }\n\n /*\n * convert a rule like :host-context(.foo) > .bar { }\n *\n * to\n *\n
* .foo<scopeName> > .bar, .foo scopeName > .bar { }\n *\n * and\n *\n * :host-context(.foo:host) .bar { ... }\n
*\n * to\n *\n * .foo<scopeName> .bar { ... }\n *\n private _convertColonHostContext(cssText: string): string
{\n return this._convertColonRule(\n cssText, _cssColonHostContextRe,
this._colonHostContextPartReplacer);\n }\n\n private _convertColonRule(cssText: string, regExp: RegExp,
partReplacer: Function): string {\n // m[1] = :host(-context), m[2] = contents of (), m[3] rest of rule\n return
cssText.replace(regExp, function(...m: string[]) {\n if (m[2]) {\n const parts = m[2].split(',');\n const r:
string[] = [];\n for (let i = 0; i < parts.length; i++) {\n const p = parts[i].trim();\n if (!p) break;\n
r.push(partReplacer(_polyfillHostNoCombinator, p, m[3]));\n }\n return r.join(',');\n } else {\n return
_polyfillHostNoCombinator + m[3];\n }\n });\n }\n\n private _colonHostContextPartReplacer(host: string,
part: string, suffix: string): string {\n if (part.indexOf(_polyfillHost) > -1) {\n return
this._colonHostPartReplacer(host, part, suffix);\n } else {\n return host + part + suffix + ', ' + part + ' ' + host +
suffix;\n }\n }\n\n private _colonHostPartReplacer(host: string, part: string, suffix: string): string {\n return host
+ part.replace(_polyfillHost, "") + suffix;\n }\n\n /*\n * Convert combinators like ::shadow and pseudo-elements
like ::content\n * by replacing with space.\n *\n private _convertShadowDOMSelectors(cssText: string): string
{\n return _shadowDOMSelectorsRe.reduce((result, pattern) => result.replace(pattern, ' '), cssText);\n }\n\n //
change a selector like 'div' to 'name div'\n private _scopeSelectors(cssText: string, scopeSelector: string,
hostSelector: string): string {\n return processRules(cssText, (rule: CssRule) => {\n let selector =
rule.selector;\n let content = rule.content;\n if (rule.selector[0] !== '@') {\n selector =\n
this._scopeSelector(rule.selector, scopeSelector, hostSelector, this.strictStyling);\n } else if (\n
rule.selector.startsWith('@media') || rule.selector.startsWith('@supports') ||\n rule.selector.startsWith('@page')
|| rule.selector.startsWith('@document')) {\n content = this._scopeSelectors(rule.content, scopeSelector,
hostSelector);\n }\n return new CssRule(selector, content);\n });\n }\n\n private _scopeSelector(\n
selector: string, scopeSelector: string, hostSelector: string, strict: boolean): string {\n return selector.split(',')\n
.map(part => part.trim().split(_shadowDeepSelectors))\n .map((deepParts) => {\n const [shallowPart,
...otherParts] = deepParts;\n const applyScope = (shallowPart: string) => {\n if
(this._selectorNeedsScoping(shallowPart, scopeSelector)) {\n return strict ?\n
this._applyStrictSelectorScope(shallowPart, scopeSelector, hostSelector) :\n
this._applySelectorScope(shallowPart, scopeSelector, hostSelector);\n } else {\n return shallowPart;\n
}\n });\n return [applyScope(shallowPart), ...otherParts].join(' '); }\n .join(', ');\n }\n\n private _selectorNeedsScoping(selector: string, scopeSelector: string): boolean {\n const re =
this._makeScopeMatcher(scopeSelector);\n return !re.test(selector);\n }\n\n private
_makeScopeMatcher(scopeSelector: string): RegExp {\n const lre = /\[/g;\n const rre = /\]/g;\n scopeSelector
= scopeSelector.replace(lre, '\\[').replace(rre, '\\]');\n return new RegExp('^(' + scopeSelector + ') +
_selectorReSuffix, 'm');\n }\n\n private _applySelectorScope(selector: string, scopeSelector: string, hostSelector:
string):\n string {\n // Difference from webcomponents.js: scopeSelector could not be an array\n return
this._applySimpleSelectorScope(selector, scopeSelector, hostSelector);\n }\n\n // scope via name and [is=name]\n
private _applySimpleSelectorScope(selector: string, scopeSelector: string, hostSelector: string):\n string {\n //
In Android browser, the lastIndex is not reset when the regex is used in String.replace()\n
_polyfillHostRe.lastIndex = 0;\n if (_polyfillHostRe.test(selector)) {\n const replaceBy = this.strictStyling ?
`[${hostSelector}]` : scopeSelector;\n return selector\n .replace(\n
_polyfillHostNoCombinatorRe,\n (hnc, selector) => {\n return selector.replace(\n

```









```

any): any;\n\n\nexport abstract class NodeWithI18n implements Node {\n constructor(public sourceSpan:
ParseSourceSpan, public i18n?: I18nMeta) {} \n abstract visit(visitor: Visitor, context: any): any;\n}\n\n\nexport class
Text extends NodeWithI18n {\n constructor(public value: string, sourceSpan: ParseSourceSpan, i18n?: I18nMeta)
{\n super(sourceSpan, i18n);\n }\n visit(visitor: Visitor, context: any): any {\n return visitor.visitText(this,
context);\n }\n}\n\n\nexport class Expansion extends NodeWithI18n {\n constructor(\n public switchValue:
string, public type: string, public cases: ExpansionCase[],\n sourceSpan: ParseSourceSpan, public
switchValueSourceSpan: ParseSourceSpan, i18n?: I18nMeta) {\n super(sourceSpan, i18n);\n }\n visit(visitor:
Visitor, context: any): any {\n return visitor.visitExpansion(this, context);\n }\n}\n\n\nexport class ExpansionCase
implements Node {\n constructor(\n public value: string, public expression: Node[], public sourceSpan:
ParseSourceSpan,\n public valueSourceSpan: ParseSourceSpan, public expSourceSpan: ParseSourceSpan) {} \n\n visit(visitor: Visitor, context: any): any {\n return visitor.visitExpansionCase(this, context);\n }\n}\n\n\nexport class
Attribute extends NodeWithI18n {\n constructor(\n public name: string, public value: string, sourceSpan:
ParseSourceSpan,\n public valueSpan?: ParseSourceSpan, i18n?: I18nMeta) {\n super(sourceSpan, i18n);\n }\n visit(visitor: Visitor, context: any): any {\n return visitor.visitAttribute(this, context);\n }\n}\n\n\nexport class
Element extends NodeWithI18n {\n constructor(\n public name: string, public attrs: Attribute[], public children:
Node[],\n sourceSpan: ParseSourceSpan, public startSourceSpan: ParseSourceSpan,\n public endSourceSpan:
ParseSourceSpan|null = null, i18n?: I18nMeta) {\n super(sourceSpan, i18n);\n }\n visit(visitor: Visitor, context:
any): any {\n return visitor.visitElement(this, context);\n }\n}\n\n\nexport class Comment implements Node {\n
constructor(public value: string|null, public sourceSpan: ParseSourceSpan) {} \n visit(visitor: Visitor, context: any):
any {\n return visitor.visitComment(this, context);\n }\n}\n\n\nexport interface Visitor {\n // Returning a truthy
value from `visit()` will prevent `visitAll()` from the call to the typed\n // method and result returned will become
the result included in `visitAll()`'s result array.\n visit?(node: Node, context: any): any;\n\n visitElement(element:
Element, context: any): any;\n\n visitAttribute(attribute: Attribute, context: any): any;\n\n visitText(text: Text, context:
any): any;\n\n visitComment(comment: Comment, context: any): any;\n\n visitExpansion(expansion: Expansion,
context: any): any;\n\n visitExpansionCase(expansionCase: ExpansionCase, context: any): any;\n}\n\n\nexport function
visitAll(visitor: Visitor, nodes: Node[], context: any = null): any[] {\n const result: any[] = [];\n\n const visit =
visitor.visit ?\n (ast: Node) => visitor.visit!(ast, context) || ast.visit(visitor, context) :\n (ast: Node) =>
ast.visit(visitor, context);\n\n nodes.forEach(ast => {\n const astResult = visit(ast);\n if (astResult) {\n
result.push(astResult);\n }\n });\n return result;\n}\n\n\nexport class RecursiveVisitor implements Visitor {\n
constructor() {} \n\n visitElement(ast: Element, context: any): any {\n this.visitChildren(context, visit => {\n
visit(ast.attrs);\n visit(ast.children);\n });\n }\n\n visitAttribute(ast: Attribute, context: any): any {} \n\n
visitText(ast: Text, context: any): any {} \n\n visitComment(ast: Comment, context: any): any {} \n\n\n visitExpansion(ast: Expansion, context: any): any {\n return this.visitChildren(context, visit => {\n
visit(ast.cases);\n });\n }\n\n visitExpansionCase(ast: ExpansionCase, context: any): any {} \n\n private
visitChildren<T extends Node>(\n context: any, cb: (visit: (<V extends Node>(children: V[]|undefined) => void))
=> void) {\n let results: any[][] = [];\n let t = this;\n function visit<T extends Node>(children: T[]|undefined)
{\n if (children) results.push(visitAll(t, children, context));\n }\n cb(visit);\n return
Array.prototype.concat.apply([], results);\n }\n}\n\n\nexport type HtmlAstPath = AstPath<Node>;\n\n\nfunction
spanOf(ast: Node) {\n const start = ast.sourceSpan.start.offset;\n let end = ast.sourceSpan.end.offset;\n if (ast
instanceof Element) {\n if (ast.endSourceSpan) {\n end = ast.endSourceSpan.end.offset;\n } else if
(ast.children && ast.children.length) {\n end = spanOf(ast.children[ast.children.length - 1]).end;\n }\n }\n return {start, end};\n}\n\n\nexport function findNode(nodes: Node[], position: number): HtmlAstPath {\n const path:
Node[] = [];\n\n const visitor = new class extends RecursiveVisitor {\n visit(ast: Node, context: any): any {\n
const span = spanOf(ast);\n if (span.start <= position && position < span.end) {\n path.push(ast);\n } else
{\n // Returning a value here will result in the children being skipped.\n return true;\n }\n };\n\n visitAll(visitor, nodes);\n\n return new AstPath<Node>(path, position);\n}\n\n", "/*\n * @license\n * Copyright
Google LLC All Rights Reserved.\n * \n * Use of this source code is governed by an MIT-style license that can be\n
* found in the LICENSE file at https://angular.io/license\n */\n\nimport * as chars from './chars';\nimport

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tokens: Token[] = [];\n errors: TokenError[] = [];\n nonNormalizedIcuExpressions: Token[] = [];\n\n /**\n *
@param _file The html source file being tokenized.\n * @param _getTagDefinition A function that will retrieve a
tag definition for a given tag name.\n * @param options Configuration of the tokenization.\n */\n constructor(\n
_file: ParseSourceFile, private _getTagDefinition: (tagName: string) => TagDefinition,\n options:
TokenizeOptions) {\n this._tokenizeIcu = options.tokenizeExpansionForms || false;\n this._interpolationConfig =
options.interpolationConfig || DEFAULT_INTERPOLATION_CONFIG;\n this._leadingTriviaCodePoints =\n options.leadingTriviaChars && options.leadingTriviaChars.map(c => c.codePointAt(0) || 0);\n const range =\n options.range || {endPos: _file.content.length, startPos: 0, startLine: 0, startCol: 0};\n this._cursor =
options.escapedString ? new EscapedCharacterCursor(_file, range) :\n new
PlainCharacterCursor(_file, range);\n this._preserveLineEndings = options.preserveLineEndings || false;\n
this._escapedString = options.escapedString || false;\n this._i18nNormalizeLineEndingsInICUs =
options.i18nNormalizeLineEndingsInICUs || false;\n try {\n this._cursor.init();\n } catch (e) {\n
this.handleError(e);\n }\n }\n\n private _processCarriageReturns(content: string): string {\n if
(this._preserveLineEndings) {\n return content;\n }\n //
http://www.w3.org/TR/html5/syntax.html#preprocessing-the-input-stream\n // In order to keep the original
position in the source, we can not\n // pre-process it.\n // Instead CRs are processed right before instantiating the
tokens.\n return content.replace(_CR_OR_CRLF_REGEXP, '\\n');\n }\n\n tokenize(): void {\n while
(this._cursor.peek() !== chars.$EOF) {\n const start = this._cursor.clone();\n try {\n if
(this._attemptCharCode(chars.$LT)) {\n if (this._attemptCharCode(chars.$BANG)) {\n if
(this._attemptCharCode(chars.$LBRACKET)) {\n this._consumeCdata(start);\n } else if
(this._attemptCharCode(chars.$MINUS)) {\n this._consumeComment(start);\n } else {\n
this._consumeDocType(start);\n }\n } else if (this._attemptCharCode(chars.$SLASH)) {\n
this._consumeTagClose(start);\n } else {\n this._consumeTagOpen(start);\n }\n } else if
(!(this._tokenizeIcu && this._tokenizeExpansionForm())) {\n this._consumeText();\n }\n } catch (e)
{\n this.handleError(e);\n }\n }\n this._beginToken(TokenType.EOF);\n this._endToken([]);\n }\n\n
/**\n * @returns whether an ICU token has been created\n * @internal\n */\n private
_tokenizeExpansionForm(): boolean {\n if (this.isExpansionFormStart()) {\n
this._consumeExpansionFormStart();\n return true;\n }\n\n if (isExpansionCaseStart(this._cursor.peek()) &&
this.isInExpansionForm()) {\n this._consumeExpansionCaseStart();\n return true;\n }\n\n if
(this._cursor.peek() === chars.$RBRACE) {\n if (this.isInExpansionCase()) {\n
this._consumeExpansionCaseEnd();\n return true;\n }\n\n if (this.isInExpansionForm()) {\n
this._consumeExpansionFormEnd();\n return true;\n }\n }\n\n return false;\n }\n\n private
_beginToken(type: TokenType, start = this._cursor.clone()) {\n this._currentTokenStart = start;\n
this._currentTokenType = type;\n }\n\n private _endToken(parts: string[], end?: CharacterCursor): Token {\n if
(this._currentTokenStart === null) {\n throw new TokenError(\n 'Programming error - attempted to end a
token when there was no start to the token',\n this._currentTokenType, this._cursor.getSpan(end));\n }\n if
(this._currentTokenType === null) {\n throw new TokenError(\n 'Programming error - attempted to end a
token which has no token type', null,\n this._cursor.getSpan(this._currentTokenStart));\n }\n const token =
new Token(\n this._currentTokenType, parts,\n this._cursor.getSpan(this._currentTokenStart,
this._leadingTriviaCodePoints));\n this.tokens.push(token);\n this._currentTokenStart = null;\n
this._currentTokenType = null;\n return token;\n }\n\n private _createError(msg: string, span: ParseSourceSpan):
_ControlFlowError {\n if (this.isInExpansionForm()) {\n msg += ` (Do you have an unescaped \"{\n}\" in your
template? Use \"{{ '{' }}\") to escape it.`;\n }\n const error = new TokenError(msg, this._currentTokenType,
span);\n this._currentTokenStart = null;\n this._currentTokenType = null;\n return new
_ControlFlowError(error);\n }\n\n private handleError(e: any) {\n if (e instanceof CursorError) {\n e =
this._createError(e.msg, this._cursor.getSpan(e.cursor));\n }\n if (e instanceof _ControlFlowError) {\n
this.errors.push(e.error);\n } else {\n throw e;\n }\n }\n\n private _attemptCharCode(charCode: number):
boolean {\n if (this._cursor.peek() === charCode) {\n this._cursor.advance();\n return true;\n }\n return

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false;\n }\n\n private _attemptCharCodeCaseInsensitive(charCode: number): boolean {\n if
(compareCharCodeCaseInsensitive(this._cursor.peek(), charCode)) {\n this._cursor.advance();\n return true;\n
}\n return false;\n }\n\n private _requireCharCode(charCode: number) {\n const location =
this._cursor.clone();\n if (!this._attemptCharCode(charCode)) {\n throw this._createError(\n
_unexpectedCharacterErrorMsg(this._cursor.peek()), this._cursor.getSpan(location));\n }\n }\n\n private
_attemptStr(chars: string): boolean {\n const len = chars.length;\n if (this._cursor.charsLeft() < len) {\n return
false;\n }\n const initialPosition = this._cursor.clone();\n for (let i = 0; i < len; i++) {\n if
(!this._attemptCharCode(chars.charCodeAt(i))) {\n // If attempting to parse the string fails, we want to reset the
parser\n // to where it was before the attempt\n this._cursor = initialPosition;\n return false;\n }\n
}\n return true;\n }\n\n private _attemptStrCaseInsensitive(chars: string): boolean {\n for (let i = 0; i <
chars.length; i++) {\n if (!this._attemptCharCodeCaseInsensitive(chars.charCodeAt(i))) {\n return false;\n
}\n }\n return true;\n }\n\n private _requireStr(chars: string) {\n const location = this._cursor.clone();\n if
(!this._attemptStr(chars)) {\n throw this._createError(\n
_unexpectedCharacterErrorMsg(this._cursor.peek()), this._cursor.getSpan(location));\n }\n }\n\n private
_attemptCharCodeUntilFn(predicate: (code: number) => boolean) {\n while (!predicate(this._cursor.peek())) {\n
this._cursor.advance();\n }\n }\n\n private _requireCharCodeUntilFn(predicate: (code: number) => boolean, len:
number) {\n const start = this._cursor.clone();\n this._attemptCharCodeUntilFn(predicate);\n if
(this._cursor.diff(start) < len) {\n throw this._createError(\n
_unexpectedCharacterErrorMsg(this._cursor.peek()), this._cursor.getSpan(start));\n }\n }\n\n private
_attemptUntilChar(char: number) {\n while (this._cursor.peek() !== char) {\n this._cursor.advance();\n }\n
}\n\n private _readChar(decodeEntities: boolean): string {\n if (decodeEntities && this._cursor.peek() ===
chars.$AMPERSAND) {\n return this._decodeEntity();\n } else {\n // Don't rely upon reading directly from
`_input` as the actual char value\n // may have been generated from an escape sequence.\n const char =
String.fromCodePoint(this._cursor.peek());\n this._cursor.advance();\n return char;\n }\n }\n\n private
_decodeEntity(): string {\n const start = this._cursor.clone();\n this._cursor.advance();\n if
(this._attemptCharCode(chars.$HASH)) {\n const isHex = this._attemptCharCode(chars.$x) ||
this._attemptCharCode(chars.$X);\n const codeStart = this._cursor.clone();\n
this._attemptCharCodeUntilFn(isDigitEntityEnd);\n if (this._cursor.peek() !== chars.$SEMICOLON) {\n //
Advance cursor to include the peeked character in the string provided to the error\n // message.\n
this._cursor.advance();\n const entityType = isHex ? CharacterReferenceType.HEX :
CharacterReferenceType.DEC;\n throw this._createError(\n _unparsableEntityErrorMsg(entityType,
this._cursor.getChars(start)),\n this._cursor.getSpan());\n }\n const strNum =
this._cursor.getChars(codeStart);\n this._cursor.advance();\n try {\n const charCode = parseInt(strNum,
isHex ? 16 : 10);\n return String.fromCharCode(charCode);\n } catch {\n throw this._createError(\n
_unknownEntityErrorMsg(this._cursor.getChars(start)), this._cursor.getSpan());\n }\n } else {\n const
nameStart = this._cursor.clone();\n this._attemptCharCodeUntilFn(isNamedEntityEnd);\n if
(this._cursor.peek() !== chars.$SEMICOLON) {\n this._cursor = nameStart;\n return '&';\n }\n const
name = this._cursor.getChars(nameStart);\n this._cursor.advance();\n const char =
NAMED_ENTITIES[name];\n if (!char) {\n throw this._createError(_unknownEntityErrorMsg(name),
this._cursor.getSpan(start));\n }\n return char;\n }\n }\n\n private _consumeRawText(decodeEntities:
boolean, endMarkerPredicate: () => boolean): Token {\n this._beginToken(decodeEntities ?
TokenType.ESCAPABLE_RAW_TEXT : TokenType.RAW_TEXT);\n const parts: string[] = [];\n while (true)
{\n const tagCloseStart = this._cursor.clone();\n const foundEndMarker = endMarkerPredicate();\n
this._cursor = tagCloseStart;\n if (foundEndMarker) {\n break;\n }\n
parts.push(this._readChar(decodeEntities));\n }\n return
this._endToken([this._processCarriageReturns(parts.join(""))]);\n }\n\n private _consumeComment(start:
CharacterCursor) {\n this._beginToken(TokenType.COMMENT_START, start);\n
this._requireCharCode(chars.$MINUS);\n this._endToken([]);\n this._consumeRawText(false, () =>

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this._attemptStr('-->');\n this._beginToken(TokenType.COMMENT_END);\n this._requireStr('-->');\n
this._endToken([]);\n }\n\n private _consumeCdata(start: CharacterCursor) {\n
this._beginToken(TokenType.CDATA_START, start);\n this._requireStr('CDATA[');\n this._endToken([]);\n
this._consumeRawText(false, () => this._attemptStr(']]>));\n this._beginToken(TokenType.CDATA_END);\n
this._requireStr(']]>');\n this._endToken([]);\n }\n\n private _consumeDocType(start: CharacterCursor) {\n
this._beginToken(TokenType.DOC_TYPE, start);\n const contentStart = this._cursor.clone();\n
this._attemptUntilChar(chars.$GT);\n const content = this._cursor.getChars(contentStart);\n
this._cursor.advance();\n this._endToken([content]);\n }\n\n private _consumePrefixAndName(): string[] {\n
const nameOrPrefixStart = this._cursor.clone();\n let prefix: string = '';\n while (this._cursor.peek() !==
chars.$COLON && !isPrefixEnd(this._cursor.peek())) {\n this._cursor.advance();\n }\n let nameStart:
CharacterCursor;\n if (this._cursor.peek() === chars.$COLON) {\n prefix =
this._cursor.getChars(nameOrPrefixStart);\n this._cursor.advance();\n nameStart = this._cursor.clone();\n }
else {\n nameStart = nameOrPrefixStart;\n }\n this._requireCharCodeUntilFn(isNameEnd, prefix === '' ? 0 :
1);\n const name = this._cursor.getChars(nameStart);\n return [prefix, name];\n }\n\n private
_consumeTagOpen(start: CharacterCursor) {\n let tagName: string;\n let prefix: string;\n let openTagToken:
Token|undefined;\n try {\n if (!chars.isAsciiLetter(this._cursor.peek())) {\n throw this._createError(\n
_unexpectedCharacterErrorMsg(this._cursor.peek(), this._cursor.getSpan(start));\n }\n\n openTagToken =
this._consumeTagOpenStart(start);\n prefix = openTagToken.parts[0];\n tagName =
openTagToken.parts[1];\n this._attemptCharCodeUntilFn(isNotWhitespace);\n while (this._cursor.peek() !==
chars.$SLASH && this._cursor.peek() !== chars.$GT && this._cursor.peek() !== chars.$LT) {\n
this._consumeAttributeName();\n this._attemptCharCodeUntilFn(isNotWhitespace);\n if
(this._attemptCharCode(chars.$EQ)) {\n this._attemptCharCodeUntilFn(isNotWhitespace);\n
this._consumeAttributeValue();\n }\n this._attemptCharCodeUntilFn(isNotWhitespace);\n }\n
this._consumeTagOpenEnd();\n } catch (e) {\n if (e instanceof _ControlFlowError) {\n if (openTagToken)
{\n // We errored before we could close the opening tag, so it is incomplete.\n openTagToken.type =
TokenType.INCOMPLETE_TAG_OPEN;\n } else {\n // When the start tag is invalid, assume we want a
'<' as text.\n // Back to back text tokens are merged at the end.\n this._beginToken(TokenType.TEXT,
start);\n this._endToken(['<']);\n }\n return;\n }\n\n throw e;\n }\n\n const
contentTokenType = this._getTagDefinition(tagName).contentType;\n if (contentTokenType ===
TagContentType.RAW_TEXT) {\n this._consumeRawTextWithTagClose(prefix, tagName, false);\n } else if
(contentTokenType === TagContentType.ESCAPABLE_RAW_TEXT) {\n
this._consumeRawTextWithTagClose(prefix, tagName, true);\n }\n }\n\n private
_consumeRawTextWithTagClose(prefix: string, tagName: string, decodeEntities: boolean) {\n const textToken =
this._consumeRawText(decodeEntities, () => {\n if (!this._attemptCharCode(chars.$LT)) return false;\n if
(!this._attemptCharCode(chars.$SLASH)) return false;\n this._attemptCharCodeUntilFn(isNotWhitespace);\n
if (!this._attemptStrCaseInsensitive(tagName)) return false;\n
this._attemptCharCodeUntilFn(isNotWhitespace);\n return this._attemptCharCode(chars.$GT);\n });\n
this._beginToken(TokenType.TAG_CLOSE);\n this._requireCharCodeUntilFn(code => code === chars.$GT,
3);\n this._cursor.advance(); // Consume the `>`\n this._endToken([prefix, tagName]);\n }\n\n private
_consumeTagOpenStart(start: CharacterCursor) {\n this._beginToken(TokenType.TAG_OPEN_START, start);\n
const parts = this._consumePrefixAndName();\n return this._endToken(parts);\n }\n\n private
_consumeAttributeName() {\n const attrNameStart = this._cursor.peek();\n if (attrNameStart === chars.$SQ ||
attrNameStart === chars.$DQ) {\n throw this._createError(_unexpectedCharacterErrorMsg(attrNameStart,
this._cursor.getSpan()));\n }\n this._beginToken(TokenType.ATTR_NAME);\n const prefixAndName =
this._consumePrefixAndName();\n this._endToken(prefixAndName);\n }\n\n private _consumeAttributeValue()
{\n let value: string;\n if (this._cursor.peek() === chars.$SQ || this._cursor.peek() === chars.$DQ) {\n
this._beginToken(TokenType.ATTR_QUOTE);\n const quoteChar = this._cursor.peek();\n
this._cursor.advance();\n this._endToken([String.fromCharCode(quoteChar)]);\n

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this._beginToken(TokenType.ATTR_VALUE);\n const parts: string[] = [];\n while (this._cursor.peek() !==\nquoteChar) {\n parts.push(this._readChar(true));\n }\n value = parts.join(");\nthis._endToken([this._processCarriageReturns(value)]);\n this._beginToken(TokenType.ATTR_QUOTE);\nthis._cursor.advance();\n this._endToken([String.fromCodePoint(quoteChar)]);\n } else {\nthis._beginToken(TokenType.ATTR_VALUE);\n const valueStart = this._cursor.clone();\nthis._requireCharCodeUntilFn(isNameEnd, 1);\n value = this._cursor.getChars(valueStart);\nthis._endToken([this._processCarriageReturns(value)]);\n }\n}\n\nprivate _consumeTagOpenEnd() {\n const\n tokenType =\n this._attemptCharCode(chars.$SLASH) ? TokenType.TAG_OPEN_END_VOID :\n TokenType.TAG_OPEN_END;\n this._beginToken(tokenType);\n this._requireCharCode(chars.$GT);\nthis._endToken([]);\n}\n\nprivate _consumeTagClose(start: CharacterCursor) {\nthis._beginToken(TokenType.TAG_CLOSE, start);\n this._attemptCharCodeUntilFn(isNotWhitespace);\n const\n prefixAndName = this._consumePrefixAndName();\n this._attemptCharCodeUntilFn(isNotWhitespace);\nthis._requireCharCode(chars.$GT);\n this._endToken(prefixAndName);\n}\n\nprivate\n _consumeExpansionFormStart() {\n this._beginToken(TokenType.EXPANSION_FORM_START);\nthis._requireCharCode(chars.$LBRACE);\n this._endToken([]);\n}\n\nthis._expansionCaseStack.push(TokenType.EXPANSION_FORM_START);\n\nthis._beginToken(TokenType.RAW_TEXT);\n const condition = this._readUntil(chars.$COMMA);\n const\n normalizedCondition = this._processCarriageReturns(condition);\n if (this._i18nNormalizeLineEndingsInICUs)\n {\n // We explicitly want to normalize line endings for this text.\n this._endToken([normalizedCondition]);\n } else {\n // We are not normalizing line endings.\n const conditionToken = this._endToken([condition]);\n if (normalizedCondition !== condition) {\n this.nonNormalizedIcuExpressions.push(conditionToken);\n }\n }\n this._requireCharCode(chars.$COMMA);\n this._attemptCharCodeUntilFn(isNotWhitespace);\n\nthis._beginToken(TokenType.RAW_TEXT);\n const type = this._readUntil(chars.$COMMA);\nthis._endToken([type]);\n this._requireCharCode(chars.$COMMA);\n\nthis._attemptCharCodeUntilFn(isNotWhitespace);\n}\n\nprivate _consumeExpansionCaseStart() {\nthis._beginToken(TokenType.EXPANSION_CASE_VALUE);\n const value =\nthis._readUntil(chars.$LBRACE).trim();\n this._endToken([value]);\nthis._attemptCharCodeUntilFn(isNotWhitespace);\n\nthis._beginToken(TokenType.EXPANSION_CASE_EXP_START);\nthis._requireCharCode(chars.$LBRACE);\n this._endToken([]);\n\nthis._attemptCharCodeUntilFn(isNotWhitespace);\n\nthis._expansionCaseStack.push(TokenType.EXPANSION_CASE_EXP_START);\n}\n\nprivate\n _consumeExpansionCaseEnd() {\n this._beginToken(TokenType.EXPANSION_CASE_EXP_END);\nthis._requireCharCode(chars.$RBRACE);\n this._endToken([]);\n\nthis._attemptCharCodeUntilFn(isNotWhitespace);\n\nthis._expansionCaseStack.pop();\n}\n\nprivate\n _consumeExpansionFormEnd() {\n this._beginToken(TokenType.EXPANSION_FORM_END);\nthis._requireCharCode(chars.$RBRACE);\n this._endToken([]);\n\nthis._expansionCaseStack.pop();\n}\n\nprivate\n _consumeText() {\n const start = this._cursor.clone();\n this._beginToken(TokenType.TEXT, start);\n const parts: string[] = [];\n do {\n if (this._interpolationConfig &&\nthis._attemptStr(this._interpolationConfig.start)) {\n parts.push(this._interpolationConfig.start);\nthis._inInterpolation = true;\n } else if (\n this._interpolationConfig && this._inInterpolation &&\nthis._attemptStr(this._interpolationConfig.end)) {\n parts.push(this._interpolationConfig.end);\nthis._inInterpolation = false;\n } else {\n parts.push(this._readChar(true));\n }\n } while\n (!this._isTextEnd());\n this._endToken([this._processCarriageReturns(parts.join(")]);\n}\n\nprivate\n _isTextEnd(): boolean {\n if (this._cursor.peek() === chars.$LT || this._cursor.peek() === chars.$EOF) {\nreturn true;\n }\n if (this._tokenizeIcu && !this._inInterpolation) {\n if (this.isExpansionFormStart()) {\n // start of an expansion form\n return true;\n }\n if (this._cursor.peek() === chars.$RBRACE &&\nthis._isInExpansionCase()) {\n // end of and expansion case\n return true;\n }\n }\n return false;\n}

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range.endPos;\n this.state = {\n peek: -1,\n offset: range.startPos,\n line: range.startLine,\n column: range.startCol,\n };\n }\n }\n clone(): PlainCharacterCursor {\n return new\n PlainCharacterCursor(this);\n }\n peek() {\n return this.state.peek;\n }\n charsLeft() {\n return this.end -\n this.state.offset;\n }\n diff(other: this) {\n return this.state.offset - other.state.offset;\n }\n advance(): void {\n this.advanceState(this.state);\n }\n init(): void {\n this.updatePeek(this.state);\n }\n getSpan(start?: this,\n leadingTriviaCodePoints?: number[]): ParseSourceSpan {\n start = start || this;\n let fullStart = start;\n if\n (leadingTriviaCodePoints) {\n while (this.diff(start) > 0 && leadingTriviaCodePoints.indexOf(start.peek()) !== -\n 1) {\n if (fullStart === start) {\n start = start.clone() as this;\n }\n start.advance();\n }\n }\n const startLocation = this.locationFromCursor(start);\n const endLocation = this.locationFromCursor(this);\n const fullStartLocation =\n fullStart !== start ? this.locationFromCursor(fullStart) : startLocation;\n return\n new ParseSourceSpan(startLocation, endLocation, fullStartLocation);\n }\n getChars(start: this): string {\n return this.input.substring(start.state.offset, this.state.offset);\n }\n charAt(pos: number): number {\n return\n this.input.charCodeAt(pos);\n }\n protected advanceState(state: CursorState) {\n if (state.offset >= this.end) {\n this.state = state;\n throw new CursorError("Unexpected character \\\"EOF\\\"", this);\n }\n const currentChar =\n this.charAt(state.offset);\n if (currentChar === chars.$LF) {\n state.line++;\n state.column = 0;\n } else if\n (!chars.isNewLine(currentChar)) {\n state.column++;\n }\n state.offset++;\n this.updatePeek(state);\n }\n protected updatePeek(state: CursorState): void {\n state.peek = state.offset >= this.end ? chars.$EOF :\n this.charAt(state.offset);\n }\n private locationFromCursor(cursor: this): ParseLocation {\n return new\n ParseLocation(\n cursor.file, cursor.state.offset, cursor.state.line, cursor.state.column);\n }\n }\n }\n class\n EscapedCharacterCursor extends PlainCharacterCursor {\n protected internalState: CursorState;\n constructor(fileOrCursor: EscapedCharacterCursor);\n constructor(fileOrCursor: ParseSourceFile, range:\n LexerRange);\n constructor(fileOrCursor: ParseSourceFile|EscapedCharacterCursor, range?: LexerRange) {\n if\n (fileOrCursor instanceof EscapedCharacterCursor) {\n super(fileOrCursor);\n this.internalState =\n {...fileOrCursor.internalState};\n } else {\n super(fileOrCursor, range!);\n this.internalState = this.state;\n }\n }\n advance(): void {\n this.state = this.internalState;\n super.advance();\n }\n this.processEscapeSequence();\n }\n init(): void {\n super.init();\n this.processEscapeSequence();\n }\n clone(): EscapedCharacterCursor {\n return new EscapedCharacterCursor(this);\n }\n getChars(start: this):\n string {\n const cursor = start.clone();\n let chars = "";\n while (cursor.internalState.offset <\n this.internalState.offset) {\n chars += String.fromCodePoint(cursor.peek());\n cursor.advance();\n }\n return chars;\n }\n /**\n * Process the escape sequence that starts at the current position in the text.\n *\n * This method is called to ensure that `peek` has the unescaped value of escape sequences.\n *\n * protected\n processEscapeSequence(): void {\n const peek = () => this.internalState.peek;\n if (peek() ===\n chars.$BACKSLASH) {\n // We have hit an escape sequence so we need the internal state to become\n independent\n // of the external state.\n this.internalState = {...this.state};\n // Move past the backslash\n this.advanceState(this.internalState);\n // First check for standard control char sequences\n if (peek() ===\n chars.$n) {\n this.state.peek = chars.$LF;\n } else if (peek() === chars.$r) {\n this.state.peek =\n chars.$CR;\n } else if (peek() === chars.$v) {\n this.state.peek = chars.$VTAB;\n } else if (peek() ===\n chars.$t) {\n this.state.peek = chars.$TAB;\n } else if (peek() === chars.$b) {\n this.state.peek =\n chars.$BSPACE;\n } else if (peek() === chars.$f) {\n this.state.peek = chars.$FF;\n }\n // Now\n consider more complex sequences\n else if (peek() === chars.$u) {\n // Unicode code-point sequence\n this.advanceState(this.internalState);\n // advance past the `u` char\n if (peek() === chars.$LBRACE) {\n //\n Variable length Unicode, e.g. `\\x{123}`\n this.advanceState(this.internalState);\n // advance past the `` char`\n // Advance past the variable number of hex digits until we hit a `` char\n const digitStart = this.clone();\n let length = 0;\n while (peek() !== chars.$RBRACE) {\n this.advanceState(this.internalState);\n length++;\n }\n this.state.peek = this.decodeHexDigits(digitStart, length);\n } else {\n //\n Fixed length Unicode, e.g. `\\u1234`\n const digitStart = this.clone();\n this.advanceState(this.internalState);\n this.advanceState(this.internalState);\n this.advanceState(this.internalState);\n this.state.peek = this.decodeHexDigits(digitStart, 4);\n }\n }\n }\n }\n}

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 else if (peek() === chars.$x) {\n // Hex char code, e.g. `\\x2F`\n this.advanceState(this.internalState); //
advance past the `x` char\n const digitStart = this.clone();\n this.advanceState(this.internalState);\nthis.state.peek = this.decodeHexDigits(digitStart, 2);\n }\n\n else if (chars.isOctalDigit(peek())) {\n //
Octal char code, e.g. `\\012`,\n let octal = "";\n let length = 0;\n let previous = this.clone();\n while
(chars.isOctalDigit(peek()) && length < 3) {\n previous = this.clone();\n octal +=
String.fromCharCode(peek());\n this.advanceState(this.internalState);\n length++;\n }\n
this.state.peek = parseInt(octal, 8);\n // Backup one char\n this.internalState = previous.internalState;\n
}\n\n else if (chars.isNewLine(this.internalState.peek)) {\n // Line continuation `` followed by a new line\n
this.advanceState(this.internalState); // advance over the newline\n this.state = this.internalState;\n }\n\n
else {\n // If none of the `if` blocks were executed then we just have an escaped normal character.\n // In
that case we just, effectively, skip the backslash from the character.\n this.state.peek = this.internalState.peek;\n
 }\n }\n}\n\n protected decodeHexDigits(start: EscapedCharacterCursor, length: number): number {\n const
hex = this.input.substr(start.internalState.offset, length);\n const charCode = parseInt(hex, 16);\n if
(!isNaN(charCode)) {\n return charCode;\n } else {\n start.state = start.internalState;\n throw new
CursorError('Invalid hexadecimal escape sequence', start);\n }\n}\n}\n\n export class CursorError {\n
constructor(public msg: string, public cursor: CharacterCursor) {}\n}\n\n /**\n * @license\n * Copyright Google
LLC All Rights Reserved.\n * Use of this source code is governed by an MIT-style license that can be\n * found
in the LICENSE file at https://angular.io/license\n */\n import {ParseError, ParseSourceSpan} from
'./parse_util';\n import * as html from './ast';\n import * as lex from './lexer';\n import {getNsPrefix,
mergeNsAndName, splitNsName, TagDefinition} from './tags';\n export class TreeError extends ParseError {\n
static create(elementName: string|null, span: ParseSourceSpan, msg: string): TreeError {\n return new
TreeError(elementName, span, msg);\n}\n\n constructor(public elementName: string|null, span: ParseSourceSpan,
msg: string) {\n super(span, msg);\n }\n}\n\n export class ParseTreeResult {\n constructor(public rootNodes:
html.Node[], public errors: ParseError[]) {}\n}\n\n export class Parser {\n constructor(public getTagDefinition:
(tagName: string) => TagDefinition) {}\n\n parse(source: string, url: string, options?: lex.TokenizeOptions):
ParseTreeResult {\n const tokenizeResult = lex.tokenize(source, url, this.getTagDefinition, options);\n const
parser = new _TreeBuilder(tokenizeResult.tokens, this.getTagDefinition);\n parser.build();\n return new
ParseTreeResult(\n parser.rootNodes,\n (tokenizeResult.errors as ParseError[]).concat(parser.errors),\n
);\n }\n}\n\n class _TreeBuilder {\n private _index: number = -1;\n // ` _peek` will be initialized by the call to
`advance()` in the constructor.\n private _peek!: lex.Token;\n private _elementStack: html.Element[] = [];\n\n
rootNodes: html.Node[] = [];\n errors: TreeError[] = [];\n\n constructor(\n private tokens: lex.Token[], private
getTagDefinition: (tagName: string) => TagDefinition) {\n this._advance();\n }\n\n build(): void {\n while
(this._peek.type !== lex.TokenType.EOF) {\n if (this._peek.type === lex.TokenType.TAG_OPEN_START ||\n
this._peek.type === lex.TokenType.INCOMPLETE_TAG_OPEN) {\n
this._consumeStartTag(this._advance());\n } else if (this._peek.type === lex.TokenType.TAG_CLOSE) {\n
this._consumeEndTag(this._advance());\n } else if (this._peek.type === lex.TokenType.CDATA_START) {\n
this._closeVoidElement();\n this._consumeCdata(this._advance());\n } else if (this._peek.type ===
lex.TokenType.COMMENT_START) {\n this._closeVoidElement();\n
this._consumeComment(this._advance());\n } else if (\n this._peek.type === lex.TokenType.TEXT ||\n
this._peek.type === lex.TokenType.RAW_TEXT ||\n this._peek.type ===
lex.TokenType.ESCAPABLE_RAW_TEXT) {\n this._closeVoidElement();\n
this._consumeText(this._advance());\n } else if (this._peek.type ===
lex.TokenType.EXPANSION_FORM_START) {\n this._consumeExpansion(this._advance());\n } else {\n
// Skip all other tokens...\n this._advance();\n }\n }\n }\n\n private _advance(): lex.Token {\n const
prev = this._peek;\n if (this._index < this.tokens.length - 1) {\n // Note: there is always an EOF token at the
end\n this._index++;\n }\n this._peek = this.tokens[this._index];\n return prev;\n}\n\n private
_advanceIf(type: lex.TokenType): lex.Token|null {\n if (this._peek.type === type) {\n return this._advance();\n
}\n return null;\n}\n\n private _consumeCdata(_startToken: lex.Token) {\n

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this._consumeText(this._advance());\n this._advanceIf(lex.TokenType.CDATA_END);\n }\n\n private
_consumeComment(token: lex.Token) {\n const text = this._advanceIf(lex.TokenType.RAW_TEXT);\n
this._advanceIf(lex.TokenType.COMMENT_END);\n const value = text != null ? text.parts[0].trim() : null;\n
this._addToParent(new html.Comment(value, token.sourceSpan));\n }\n\n private _consumeExpansion(token:
lex.Token) {\n const switchValue = this._advance();\n const type = this._advance();\n const cases:
html.ExpansionCase[] = [];\n // read =\n while (this._peek.type ===
lex.TokenType.EXPANSION_CASE_VALUE) {\n const expCase = this._parseExpansionCase();\n if
(!expCase) return; // error\n cases.push(expCase);\n }\n\n // read the final }\n if (this._peek.type !==
lex.TokenType.EXPANSION_FORM_END) {\n this.errors.push(\n TreeError.create(null,
this._peek.sourceSpan, `Invalid ICU message. Missing '}'.`));\n return;\n }\n const sourceSpan = new
ParseSourceSpan(\n token.sourceSpan.start, this._peek.sourceSpan.end, token.sourceSpan.fullStart);\n
this._addToParent(new html.Expansion(\n switchValue.parts[0], type.parts[0], cases, sourceSpan,
switchValue.sourceSpan));\n this._advance();\n }\n\n private _parseExpansionCase(): html.ExpansionCase|null
{\n const value = this._advance();\n // read {\n if (this._peek.type !==
lex.TokenType.EXPANSION_CASE_EXP_START) {\n this.errors.push(\n TreeError.create(null,
this._peek.sourceSpan, `Invalid ICU message. Missing '{'.`));\n return null;\n }\n\n // read until }\n const
start = this._advance();\n const exp = this._collectExpansionExpTokens(start);\n if (!exp) return null;\n\n
const end = this._advance();\n exp.push(new lex.Token(lex.TokenType.EOF, [], end.sourceSpan));\n\n // parse
everything in between { and }\n const expansionCaseParser = new _TreeBuilder(exp, this.getTagDefinition);\n
expansionCaseParser.build();\n if (expansionCaseParser.errors.length > 0) {\n this.errors =
this.errors.concat(expansionCaseParser.errors);\n return null;\n }\n\n const sourceSpan =\n new
ParseSourceSpan(value.sourceSpan.start, end.sourceSpan.end, value.sourceSpan.fullStart);\n const expSourceSpan
=\n new ParseSourceSpan(start.sourceSpan.start, end.sourceSpan.end, start.sourceSpan.fullStart);\n return
new html.ExpansionCase(\n value.parts[0], expansionCaseParser.rootNodes, sourceSpan, value.sourceSpan,
expSourceSpan);\n }\n\n private _collectExpansionExpTokens(start: lex.Token): lex.Token[]|null {\n const exp:
lex.Token[] = [];\n const expansionFormStack = [lex.TokenType.EXPANSION_CASE_EXP_START];\n\n
while (true) {\n if (this._peek.type === lex.TokenType.EXPANSION_FORM_START ||\n this._peek.type
=== lex.TokenType.EXPANSION_CASE_EXP_START) {\n expansionFormStack.push(this._peek.type);\n
}\n\n if (this._peek.type === lex.TokenType.EXPANSION_CASE_EXP_END) {\n if
(lastOnStack(expansionFormStack, lex.TokenType.EXPANSION_CASE_EXP_START)) {\n
expansionFormStack.pop();\n if (expansionFormStack.length === 0) return exp;\n\n } else {\n
this.errors.push(\n TreeError.create(null, start.sourceSpan, `Invalid ICU message. Missing '}'.`));\n
return null;\n }\n }\n\n if (this._peek.type === lex.TokenType.EXPANSION_FORM_END) {\n if
(lastOnStack(expansionFormStack, lex.TokenType.EXPANSION_FORM_START)) {\n
expansionFormStack.pop();\n } else {\n this.errors.push(\n TreeError.create(null, start.sourceSpan,
`Invalid ICU message. Missing '}'.`));\n return null;\n }\n }\n\n if (this._peek.type ===
lex.TokenType.EOF) {\n this.errors.push(\n TreeError.create(null, start.sourceSpan, `Invalid ICU
message. Missing '}'.`));\n return null;\n }\n\n exp.push(this._advance());\n }\n }\n\n private
_consumeText(token: lex.Token) {\n let text = token.parts[0];\n if (text.length > 0 && text[0] === '\n') {\n
const parent = this._getParentElement();\n if (parent != null && parent.children.length === 0 &&\n
this.getTagDefinition(parent.name).ignoreFirstLf) {\n text = text.substring(1);\n }\n }\n\n if (text.length
> 0) {\n this._addToParent(new html.Text(text, token.sourceSpan));\n }\n }\n\n private _closeVoidElement():
void {\n const el = this._getParentElement();\n if (el && this.getTagDefinition(el.name).isVoid) {\n
this._elementStack.pop();\n }\n }\n\n private _consumeStartTag(startTagToken: lex.Token) {\n const [prefix,
name] = startTagToken.parts;\n const attrs: html.Attribute[] = [];\n while (this._peek.type ===
lex.TokenType.ATTR_NAME) {\n attrs.push(this._consumeAttr(this._advance()));\n }\n const fullName =
this._getElementFullName(prefix, name, this._getParentElement());\n let selfClosing = false;\n // Note: There
could have been a tokenizer error\n // so that we don't get a token for the end tag...\n if (this._peek.type ===

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lex.TokenType.TAG_OPEN_END_VOID) {\n this._advance();\n selfClosing = true;\n const tagDef =
this.getTagDefinition(fullName);\n if (!(tagDef.canSelfClose || getNsPrefix(fullName) !== null || tagDef.isVoid))
{\n this.errors.push(TreeError.create(\n fullName, startTagToken.sourceSpan,\n `Only void and
foreign elements can be self closed \`${startTagToken.parts[1]}\`));\n }\n } else if (this._peek.type ===
lex.TokenType.TAG_OPEN_END) {\n this._advance();\n selfClosing = false;\n }\n const end =
this._peek.sourceSpan.start;\n const span = new ParseSourceSpan(\n startTagToken.sourceSpan.start, end,
startTagToken.sourceSpan.fullStart);\n // Create a separate `startSpan` because `span` will be modified when there
is an `end` span.\n const startSpan = new ParseSourceSpan(\n startTagToken.sourceSpan.start, end,
startTagToken.sourceSpan.fullStart);\n const el = new html.Element(fullName, attrs, [], span, startSpan,
undefined);\n this._pushElement(el);\n if (selfClosing) {\n // Elements that are self-closed have their
`endSourceSpan` set to the full span, as the\n // element start tag also represents the end tag.\n this._popElement(fullName, span);\n } else if (startTagToken.type ===
lex.TokenType.INCOMPLETE_TAG_OPEN) {\n // We already know the opening tag is not complete, so it is
unlikely it has a corresponding\n // close tag. Let's optimistically parse it as a full element and emit an error.\n this._popElement(fullName, null);\n this.errors.push(\n TreeError.create(fullName, span, `Opening tag
\`${fullName}\` not terminated.`));\n }\n }\n\n private _pushElement(el: html.Element) {\n const parentEl =
this._getParentElement();\n if (parentEl && this.getTagDefinition(parentEl.name).isClosedByChild(el.name))
{\n this._elementStack.pop();\n }\n this._addToParent(el);\n this._elementStack.push(el);\n }\n\n private
_consumeEndTag(endTagToken: lex.Token) {\n const fullName = this._getElementFullName(\n
endTagToken.parts[0], endTagToken.parts[1], this._getParentElement());\n if
(this.getTagDefinition(fullName).isVoid) {\n this.errors.push(TreeError.create(\n fullName,
endTagToken.sourceSpan,\n `Void elements do not have end tags \`${endTagToken.parts[1]}\`));\n } else if
(!this._popElement(fullName, endTagToken.sourceSpan)) {\n const errMsg = `Unexpected closing tag \`${\n
fullName}\`. It may happen when the tag has already been closed by another tag. For more info see
https://www.w3.org/TR/html5/syntax.html#closing-elements-that-have-IMPLIED-END-TAGS`;\n
this.errors.push(TreeError.create(fullName, endTagToken.sourceSpan, errMsg));\n }\n }\n\n /**\n * Closes the
nearest element with the tag name `fullName` in the parse tree.\n * `endSourceSpan` is the span of the closing tag,
or null if the element does\n * not have a closing tag (for example, this happens when an incomplete\n * opening
tag is recovered).\n */\n private _popElement(fullName: string, endSourceSpan: ParseSourceSpan|null): boolean
{\n for (let stackIndex = this._elementStack.length - 1; stackIndex >= 0; stackIndex--) {\n const el =
this._elementStack[stackIndex];\n if (el.name === fullName) {\n // Record the parse span with the element
that is being closed. Any elements that are\n // removed from the element stack at this point are closed
implicitly, so they won't get\n // an end source span (as there is no explicit closing element).\n el.endSourceSpan = endSourceSpan;\n el.sourceSpan.end = endSourceSpan !== null ? endSourceSpan.end :
el.sourceSpan.end;\n this._elementStack.splice(stackIndex, this._elementStack.length - stackIndex);\n return true;\n }\n }\n if (!this.getTagDefinition(el.name).closedByParent) {\n return false;\n }\n }\n\n return false;\n}\n\n private _consumeAttr(attrName: lex.Token): html.Attribute {\n const fullName =
mergeNsAndName(attrName.parts[0], attrName.parts[1]);\n let end = attrName.sourceSpan.end;\n let value =
";\n let valueSpan: ParseSourceSpan = undefined!;\n if (this._peek.type === lex.TokenType.ATTR_QUOTE)
{\n this._advance();\n }\n if (this._peek.type === lex.TokenType.ATTR_VALUE) {\n const valueToken =
this._advance();\n value = valueToken.parts[0];\n end = valueToken.sourceSpan.end;\n valueSpan =
valueToken.sourceSpan;\n }\n if (this._peek.type === lex.TokenType.ATTR_QUOTE) {\n const quoteToken =
this._advance();\n end = quoteToken.sourceSpan.end;\n }\n return new html.Attribute(\n fullName,
value,\n new ParseSourceSpan(attrName.sourceSpan.start, end, attrName.sourceSpan.fullStart),\n valueSpan);\n }\n\n private _getParentElement(): html.Element|null {\n return this._elementStack.length > 0 ?
this._elementStack[this._elementStack.length - 1] : null;\n }\n\n private _addToParent(node: html.Node) {\n
const parent = this._getParentElement();\n if (parent != null) {\n parent.children.push(node);\n } else {\n
this.rootNodes.push(node);\n }\n }\n\n private _getElementFullName(prefix: string, localName: string,

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parentElement: html.Element|null):\n string {\n if (prefix === ") {\n prefix =
this.getTagDefinition(localName).implicitNamespacePrefix || ";;\n if (prefix === " && parentElement != null) {\n
 const parentTagName = splitNsName(parentElement.name)[1];\n const parentTagDefinition =
this.getTagDefinition(parentTagName);\n if (!parentTagDefinition.preventNamespaceInheritance) {\n
prefix = getNsPrefix(parentElement.name);\n }\n }\n }\n return mergeNsAndName(prefix,
localName);\n }\n}\n\nfunction lastOnStack(stack: any[], element: any): boolean {\n return stack.length > 0 &&
stack[stack.length - 1] === element;\n}\n\n"/**\n * @license\n * Copyright Google LLC All Rights Reserved.\n *
* Use of this source code is governed by an MIT-style license that can be\n * found in the LICENSE file at
https://angular.io/license\n */\n\nimport {getHtmlTagDefinition} from './html_tags';\nimport {TokenizeOptions}
from './lexer';\nimport {Parser, ParseTreeResult} from './parser';\n\nexport {ParseTreeResult, TreeError} from
 './parser';\n\nexport class HtmlParser extends Parser {\n constructor() {\n super(getHtmlTagDefinition);\n }\n\n parse(source: string, url: string, options?: TokenizeOptions): ParseTreeResult {\n return super.parse(source, url,
options);\n }\n}\n\n"/**\n * @license\n * Copyright Google LLC All Rights Reserved.\n *
* Use of this source code is governed by an MIT-style license that can be\n * found in the LICENSE file at https://angular.io/license\n */\n\nimport * as html from './ast';\nimport {ParseTreeResult} from './parser';\nimport {NGSP_UNICODE} from
 './tags';\n\nexport const PRESERVE_WS_ATTR_NAME = 'ngPreserveWhitespaces';\n\nconst
SKIP_WS_TRIM_TAGS = new Set(['pre', 'template', 'textarea', 'script', 'style']);\n\n// Equivalent to \s with \u00a0
(non-breaking space) excluded.\n// Based on https://developer.mozilla.org/en-
US/docs/Web/JavaScript/Reference/Global_Objects/RegExp\nconst WS_CHARS = '
\\f\\n\\r\\t\\v\\u1680\\u180e\\u2000-\\u200a\\u2028\\u2029\\u202f\\u205f\\u3000\\uffeff';\nconst NO_WS_REGEXP
= new RegExp(`^[${WS_CHARS}]`);\nconst WS_REPLACE_REGEXP = new RegExp(`[${WS_CHARS}]{2,}`,
'g');\n\nfunction hasPreserveWhitespacesAttr(attrs: html.Attribute[]): boolean {\n return attrs.some((attr:
html.Attribute) => attr.name === PRESERVE_WS_ATTR_NAME);\n}\n\n/**\n * Angular Dart introduced
as a placeholder for non-removable space, see:\n * https://github.com/dart-
lang/angular/blob/0bb611387d29d65b5af7f9d2515ab571fd3fbee4/_tests/test/compiler/preserve_whitespace_test.dart
#L25-L32\n * In Angular Dart is converted to the 0xE500 PUA (Private Use Areas) unicode character\n *
and later on replaced by a space. We are re-implementing the same idea here.\n */\n\nexport function
replaceNgsp(value: string): string {\n // lexer is replacing the pseudo-entity with NGSP_UNICODE\n
return value.replace(new RegExp(NGSP_UNICODE, 'g'), ' ');\n}\n\n/**\n * This visitor can walk HTML parse tree
and remove / trim text nodes using the following rules:\n * - consider spaces, tabs and new lines as whitespace
characters;\n * - drop text nodes consisting of whitespace characters only;\n * - for all other text nodes replace
consecutive whitespace characters with one space;\n * - convert pseudo-entity to a single space;\n */\n
\nRemoval and trimming of whitespaces have positive performance impact (less code to generate\n * while compiling
templates, faster view creation). At the same time it can be \"destructive\"\n * in some cases (whitespaces can
influence layout). Because of the potential of breaking layout\n * this visitor is not activated by default in Angular 5
and people need to explicitly opt-in for\n * whitespace removal. The default option for whitespace removal will be
revisited in Angular 6\n * and might be changed to \"on\" by default.\n */\n\nexport class WhitespaceVisitor
implements html.Visitor {\n visitElement(element: html.Element, context: any): any {\n if
(SKIP_WS_TRIM_TAGS.has(element.name) || hasPreserveWhitespacesAttr(element.attrs)) {\n // don't descent
into elements where we need to preserve whitespaces\n // but still visit all attributes to eliminate one used as a
market to preserve WS\n return new html.Element(\n element.name, html.visitAll(this, element.attrs),
element.children, element.sourceSpan,\n element.startSourceSpan, element.endSourceSpan, element.i18n);\n }\n\n return new html.Element(\n element.name, element.attrs, visitAllWithSiblings(this, element.children),\n
 element.sourceSpan, element.startSourceSpan, element.endSourceSpan, element.i18n);\n }\n\n visitAttribute(attribute: html.Attribute, context: any): any {\n return attribute.name !==
PRESERVE_WS_ATTR_NAME ? attribute : null;\n }\n\n visitText(text: html.Text, context:
SiblingVisitorContext|null): any {\n const isNotBlank = text.value.match(NO_WS_REGEXP);\n const
hasExpansionSibling = context &&\n (context.prev instanceof html.Expansion || context.next instanceof

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html.Expansion);
if (isNotBlank || hasExpansionSibling) {
 return new html.Text(
 replaceNgsp(text.value).replace(WS_REPLACE_REGEXP, ' '), text.sourceSpan, text.i18n);
}
return null;
}
visitComment(comment: html.Comment, context: any): any {
 return comment;
}
visitExpansion(expansion: html.Expansion, context: any): any {
 return expansion;
}
visitExpansionCase(expansionCase: html.ExpansionCase, context: any): any {
 return expansionCase;
}
}
export function removeWhitespaces(htmlAstWithErrors: ParseTreeResult): ParseTreeResult {
 return new ParseTreeResult(
 html.visitAll(new WhitespaceVisitor(), htmlAstWithErrors.rootNodes),
 htmlAstWithErrors.errors);
}
interface SiblingVisitorContext {
 prev: html.Node|undefined;
 next: html.Node|undefined;
}
function visitAllWithSiblings(visitor: WhitespaceVisitor, nodes: html.Node[]): any[] {
 const result: any[] = [];
 nodes.forEach((ast, i) => {
 const context: SiblingVisitorContext = { prev: nodes[i - 1], next: nodes[i + 1] };
 const astResult = ast.visit(visitor, context);
 if (astResult) {
 result.push(astResult);
 }
 });
 return result;
}
/**
 * @license
 * Copyright Google LLC All Rights Reserved.
 * Use of this source code is governed by an MIT-style license that can be found in the
 * LICENSE file at https://angular.io/license
 */
import { ParseError, ParseSourceSpan } from
'./parse_util';
import * as html from './ast';
// http://cldr.unicode.org/index/cldr-spec/plural-rules
const PLURAL_CASES: string[] = ['zero', 'one', 'two', 'few', 'many', 'other'];
/**
 * Expands special forms into elements.
 * For example,
 * ``{ messages.length, plural,
 * =0 {zero}
 * =1 {one}
 * other {more than one}
 * }``
 * will be expanded into
 * ``<ng-container
 [ngPlural]="messages.length">
 <ng-template ngPluralCase="=0">zero</ng-template>
 <ng-template
 ngPluralCase="=1">one</ng-template>
 <ng-template ngPluralCase="other">more than one</ng-
 template>
 </ng-container>``
 */
export function expandNodes(nodes: html.Node[]): ExpansionResult {
 const expander = new _Expander();
 return new ExpansionResult(html.visitAll(expander, nodes),
 expander.isExpanded, expander.errors);
}
export class ExpansionResult {
 constructor(public nodes: html.Node[], public expanded: boolean, public errors: ParseError[]) {}
}
export class ExpansionError extends ParseError {
 constructor(span: ParseSourceSpan, errorMsg: string) {
 super(span, errorMsg);
 }
}
/**
 * Expand expansion forms (plural, select) to directives
 */
@internal
class _Expander implements html.Visitor {
 isExpanded: boolean = false;
 errors: ParseError[] = [];
 visitElement(element: html.Element, context: any): any {
 return new html.Element(
 element.name, element.attrs, html.visitAll(this, element.children), element.sourceSpan,
 element.startSourceSpan, element.endSourceSpan);
 }
 visitAttribute(attribute: html.Attribute, context: any): any {
 return attribute;
 }
 visitText(text: html.Text, context: any): any {
 return text;
 }
 visitComment(comment: html.Comment, context: any): any {
 return comment;
 }
 visitExpansion(icu: html.Expansion, context: any): any {
 this.isExpanded = true;
 return icu.type == 'plural' ? _expandPluralForm(icu, this.errors) : _expandDefaultForm(icu,
 this.errors);
 }
 visitExpansionCase(icuCase: html.ExpansionCase, context: any): any {
 throw new Error('Should not be reached');
 }
}
// Plural forms are expanded to `NgPlural` and `NgPluralCase`
function _expandPluralForm(ast: html.Expansion, errors: ParseError[]): html.Element {
 const children = ast.cases.map(c => {
 if (PLURAL_CASES.indexOf(c.value) == -1 && !c.value.match(/^\d+$/)) {
 errors.push(new ExpansionError(
 c.valueSourceSpan, `Plural cases should be "<number>" or one of
 ${PLURAL_CASES.join(', ')}`);
 }
 const expansionResult = expandNodes(c.expression);
 errors.push(...expansionResult.errors);
 });
 return new html.Element(
 `ng-template`, [new html.Attribute('ngPluralCase', `${c.value}`, c.valueSourceSpan)],
 expansionResult.nodes, c.sourceSpan, c.sourceSpan, c.sourceSpan);
 const switchAttr = new html.Attribute(['ngPlural'], ast.switchValue, ast.switchValueSourceSpan);
 return new html.Element(
 'ng-container', [switchAttr], children, ast.sourceSpan, ast.sourceSpan, ast.sourceSpan);
}
// ICU messages (excluding plural form) are expanded to `NgSwitch` and `NgSwitchCase`
function _expandDefaultForm(ast: html.Expansion, errors: ParseError[]): html.Element {
 const children = ast.cases.map(c => {
 const expansionResult = expandNodes(c.expression);
 errors.push(...expansionResult.errors);
 if (c.value === 'other') {
 // other is the default case when no values match
 return new html.Element(
 `ng-template`, [new html.Attribute('ngSwitchDefault', "",

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c.valueSourceSpan)],\n expansionResult.nodes, c.sourceSpan, c.sourceSpan, c.sourceSpan);\n }\n\n return\n new html.Element(\n `ng-template`, [new html.Attribute('ngSwitchCase', `${c.value}`, c.valueSourceSpan)],\n expansionResult.nodes, c.sourceSpan, c.sourceSpan, c.sourceSpan);\n });\n const switchAttr = new\n html.Attribute('ngSwitch', ast.switchValue, ast.switchValueSourceSpan);\n return new html.Element(\n 'ng-\n container', [switchAttr], children, ast.sourceSpan, ast.sourceSpan, ast.sourceSpan);\n}\n\n"/**\n * @license\n * Copyright Google LLC All Rights Reserved.\n * Use of this source code is governed by an MIT-style license\n * that can be\n * found in the LICENSE file at https://angular.io/license\n */\n\nimport { AstPath } from\n'./ast_path';\nimport { CompileDirectiveSummary, CompileProviderMetadata, CompileTokenMetadata } from\n'./compile_metadata';\nimport { SecurityContext } from './core';\nimport { ASTWithSource, BindingType,\n BoundElementProperty, ParsedEvent, ParsedEventType, ParsedVariable } from './expression_parser/ast';\nimport\n{ LifecycleHooks } from './lifecycle_reflector';\nimport { ParseSourceSpan } from './parse_util';\n\n/**\n * An\n * Abstract Syntax Tree node representing part of a parsed Angular template.\n */\nexport interface TemplateAst {\n /**\n * The source span from which this node was parsed.\n */\n sourceSpan: ParseSourceSpan;\n\n /**\n * Visit this node and possibly transform it.\n */\n visit(visitor: TemplateAstVisitor, context: any): any;\n}\n\n/**\n * A segment of text within the template.\n */\nexport class TextAst implements TemplateAst {\n constructor(\n public value: string, public ngContentIndex: number, public sourceSpan: ParseSourceSpan) {}\n\n visit(visitor:\n TemplateAstVisitor, context: any): any {\n return visitor.visitText(this, context);\n }\n}\n\n/**\n * A bound\n * expression within the text of a template.\n */\nexport class BoundTextAst implements TemplateAst {\n constructor(\n public value: ASTWithSource, public ngContentIndex: number,\n public sourceSpan:\n ParseSourceSpan) {}\n\n visit(visitor: TemplateAstVisitor, context: any): any {\n return visitor.visitBoundText(this,\n context);\n }\n}\n\n/**\n * A plain attribute on an element.\n */\nexport class AttrAst implements TemplateAst {\n constructor(public name: string, public value: string, public sourceSpan: ParseSourceSpan) {}\n\n visit(visitor:\n TemplateAstVisitor, context: any): any {\n return visitor.visitAttr(this, context);\n }\n}\n\nexport const enum\n PropertyBindingType {\n // A normal binding to a property (e.g. `[property]="expression"`).\n Property,\n // A\n binding to an element attribute (e.g. `[attr.name]="expression"`).\n Attribute,\n // A binding to a CSS class (e.g.\n `[class.name]="condition"`).\n Class,\n // A binding to a style rule (e.g. `[style.rule]="expression"`).\n Style,\n // A\n binding to an animation reference (e.g. `[animate.key]="expression"`).\n Animation,\n }\n\nconst\n BoundPropertyMapping = {\n [BindingType.Animation]: PropertyBindingType.Animation,\n [BindingType.Attribute]: PropertyBindingType.Attribute,\n [BindingType.Class]: PropertyBindingType.Class,\n [BindingType.Property]: PropertyBindingType.Property,\n [BindingType.Style]:\n PropertyBindingType.Style,\n };\n\n/**\n * A binding for an element property (e.g. `[property]="expression"`) or\n * an animation trigger (e.g. `[@trigger]="stateExp"`) \n */\nexport class BoundElementPropertyAst implements\n TemplateAst {\n readonly isAnimation: boolean;\n\n constructor(\n public name: string, public type:\n PropertyBindingType,\n public securityContext: SecurityContext, public value: ASTWithSource,\n public\n unit: string|null, public sourceSpan: ParseSourceSpan) {\n this.isAnimation = this.type ===\n PropertyBindingType.Animation;\n }\n\n static fromBoundProperty(prop: BoundElementProperty) {\n const\n type = BoundPropertyMapping[prop.type];\n return new BoundElementPropertyAst(\n prop.name, type,\n prop.securityContext, prop.value, prop.unit, prop.sourceSpan);\n }\n\n visit(visitor: TemplateAstVisitor, context:\n any): any {\n return visitor.visitElementProperty(this, context);\n }\n}\n\n/**\n * A binding for an element event\n * (e.g. `(event)="handler()"`) or an animation trigger event (e.g. `(@trigger.phase)="callback($event)"`).\n */\nexport class BoundEventAst implements TemplateAst {\n readonly fullName: string;\n readonly isAnimation:\n boolean;\n\n constructor(\n public name: string, public target: string|null, public phase: string|null,\n public\n handler: ASTWithSource, public sourceSpan: ParseSourceSpan,\n public handlerSpan: ParseSourceSpan) {\n this.fullName = BoundEventAst.calcFullName(this.name, this.target, this.phase);\n this.isAnimation =\n !!this.phase;\n }\n\n static calcFullName(name: string, target: string|null, phase: string|null): string {\n if (target)\n {\n return `${target}.${name}`;\n }\n if (phase) {\n return `@${name}.${phase}`;\n }\n return\n name;\n }\n\n static fromParsedEvent(event: ParsedEvent) {\n const target: string|null = event.type ===\n ParsedEventType.Regular ? event.targetOrPhase : null;\n const phase: string|null =\n event.type ===

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ElementAst, context: any): any;\n visitReference(ast: ReferenceAst, context: any): any;\n visitVariable(ast:
VariableAst, context: any): any;\n visitEvent(ast: BoundEventAst, context: any): any;\n visitElementProperty(ast:
BoundElementPropertyAst, context: any): any;\n visitAttr(ast: AttrAst, context: any): any;\n visitBoundText(ast:
BoundTextAst, context: any): any;\n visitText(ast: TextAst, context: any): any;\n visitDirective(ast: DirectiveAst,
context: any): any;\n visitDirectiveProperty(ast: BoundDirectivePropertyAst, context: any): any;\n}\n\n/**\n * A
visitor that accepts each node but doesn't do anything. It is intended to be used\n * as the base class for a visitor that
is only interested in a subset of the node types.\n */\nexport class NullTemplateVisitor implements
TemplateAstVisitor {\n visitNgContent(ast: NgContentAst, context: any): void {}\n visitEmbeddedTemplate(ast:
EmbeddedTemplateAst, context: any): void {}\n visitElement(ast: ElementAst, context: any): void {}\n
visitReference(ast: ReferenceAst, context: any): void {}\n visitVariable(ast: VariableAst, context: any): void {}\n
visitEvent(ast: BoundEventAst, context: any): void {}\n visitElementProperty(ast: BoundElementPropertyAst,
context: any): void {}\n visitAttr(ast: AttrAst, context: any): void {}\n visitBoundText(ast: BoundTextAst, context:
any): void {}\n visitText(ast: TextAst, context: any): void {}\n visitDirective(ast: DirectiveAst, context: any): void
{}\n visitDirectiveProperty(ast: BoundDirectivePropertyAst, context: any): void {}\n}\n\n/**\n * Base class that
can be used to build a visitor that visits each node\n * in an template ast recursively.\n */\nexport class
RecursiveTemplateAstVisitor extends NullTemplateVisitor implements TemplateAstVisitor {\n constructor() {\n
super();\n }\n\n // Nodes with children\n visitEmbeddedTemplate(ast: EmbeddedTemplateAst, context: any): any
{\n return this.visitChildren(context, visit => {\n visit(ast.attrs);\n visit(ast.references);\n
visit(ast.variables);\n visit(ast.directives);\n visit(ast.providers);\n visit(ast.children);\n });\n }\n\n
visitElement(ast: ElementAst, context: any): any {\n return this.visitChildren(context, visit => {\n
visit(ast.attrs);\n visit(ast.inputs);\n visit(ast.outputs);\n visit(ast.references);\n visit(ast.directives);\n
visit(ast.providers);\n visit(ast.children);\n });\n }\n\n visitDirective(ast: DirectiveAst, context: any): any {\n
return this.visitChildren(context, visit => {\n visit(ast.inputs);\n visit(ast.hostProperties);\n
visit(ast.hostEvents);\n });\n }\n\n protected visitChildren(\n context: any,\n cb: (visit: (<V extends
TemplateAst>(children: V[]|undefined) => void) => void) {\n let results: any[][] = [];\n let t = this;\n function
visit<T extends TemplateAst>(children: T[]|undefined) {\n if (children && children.length)
results.push(templateVisitAll(t, children, context));\n }\n cb(visit);\n return Array.prototype.concat.apply([],
results);\n }\n}\n\n/**\n * Visit every node in a list of {@link TemplateAst}s with the given {@link
TemplateAstVisitor}.\n */\nexport function templateVisitAll(\n visitor: TemplateAstVisitor, asts: TemplateAst[],
context: any = null): any[] {\n const result: any[] = [];\n const visit = visitor.visit ?\n (ast: TemplateAst) =>
visitor.visit!(ast, context) || ast.visit(visitor, context) :\n (ast: TemplateAst) => ast.visit(visitor, context);\n
asts.forEach(ast => {\n const astResult = visit(ast);\n if (astResult) {\n result.push(astResult);\n }\n });\n
return result;\n}\n\nexport type TemplateAstPath = AstPath<TemplateAst>;\n\n", "/*\n * @license\n * Copyright
Google LLC All Rights Reserved.\n * Use of this source code is governed by an MIT-style license that can be\n
* found in the LICENSE file at https://angular.io/license\n */\n\nimport {CompileDiDependencyMetadata,
CompileDirectiveMetadata, CompileDirectiveSummary, CompileNgModuleMetadata, CompileProviderMetadata,
CompileQueryMetadata, CompileTokenMetadata, CompileTypeMetadata, tokenName, tokenReference} from
'./compile_metadata';\nimport {CompileReflector} from './compile_reflector';\nimport
{createTokenForExternalReference, Identifiers} from './identifiers';\nimport {ParseError, ParseSourceSpan} from
'./parse_util';\nimport {AttrAst, DirectiveAst, ProviderAst, ProviderAstType, QueryMatch, ReferenceAst} from
'./template_parser/template_ast';\n\nexport class ProviderError extends ParseError {\n constructor(message: string,
span: ParseSourceSpan) {\n super(span, message);\n }\n}\n\nexport interface QueryWithId {\n meta:
CompileQueryMetadata;\n queryId: number;\n}\n\nexport class ProviderViewContext {\n /**\n * @internal\n
*/\n viewQueries: Map<any, QueryWithId>;\n /**\n * @internal\n */\n viewProviders: Map<any, boolean>;\n
errors: ProviderError[] = [];\n\n constructor(public reflector: CompileReflector, public component:
CompileDirectiveMetadata) {\n this.viewQueries = _getViewQueries(component);\n this.viewProviders = new
Map<any, boolean>();\n component.viewProviders.forEach((provider) => {\n if
(this.viewProviders.get(tokenReference(provider.token)) == null) {\n

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this.viewProviders.set(tokenReference(provider.token), true);\n }\n });\n }\n}\n\nexport class
ProviderElementContext {\n private _contentQueries: Map<any, QueryWithId[]>;\n private
_transformedProviders = new Map<any, ProviderAst>();\n private _seenProviders = new Map<any, boolean>();\n
private _allProviders: Map<any, ProviderAst>;\n private _attrs: {[key: string]: string};\n private _queriedTokens =
new Map<any, QueryMatch[]>();\n public readonly transformedHasViewContainer: boolean = false;\n private
constructor(\n public viewContext: ProviderViewContext, private _parent: ProviderElementContext,\n private _isViewRoot: boolean, private _directiveAsts: DirectiveAst[], attrs: AttrAst[],\n refs: ReferenceAst[],
isTemplate: boolean, contentQueryStartId: number,\n private _sourceSpan: ParseSourceSpan) {\n this._attrs =
{\n attrs.forEach((attrAst) => this._attrs[attrAst.name] = attrAst.value);\n const directivesMeta =
_directiveAsts.map(directiveAst => directiveAst.directive);\n this._allProviders =\n
_resolveProvidersFromDirectives(directivesMeta, _sourceSpan, viewContext.errors);\n this._contentQueries =
_getContentQueries(contentQueryStartId, directivesMeta);\n
Array.from(this._allProviders.values()).forEach((provider) => {\n this._addQueryReadsTo(provider.token,
provider.token, this._queriedTokens);\n });\n if (isTemplate) {\n const templateRefId =\n
createTokenForExternalReference(this.viewContext.reflector, Identifiers.TemplateRef);\n
this._addQueryReadsTo(templateRefId, templateRefId, this._queriedTokens);\n }\n refs.forEach((refAst) => {\n
 let defaultQueryValue = refAst.value ||\n createTokenForExternalReference(this.viewContext.reflector,
Identifiers.ElementRef);\n this._addQueryReadsTo({value: refAst.name}, defaultQueryValue,
this._queriedTokens);\n });\n if (this._queriedTokens.get(\n
this.viewContext.reflector.resolveExternalReference(Identifiers.ViewContainerRef))) {\n
this.transformedHasViewContainer = true;\n }\n // create the providers that we know are eager first\n
Array.from(this._allProviders.values()).forEach((provider) => {\n const eager = provider.eager ||
this._queriedTokens.get(tokenReference(provider.token));\n if (eager) {\n
this._getOrCreateLocalProvider(provider.providerType, provider.token, true);\n }\n });\n afterElement()\n
{\n // collect lazy providers\n Array.from(this._allProviders.values()).forEach((provider) => {\n
this._getOrCreateLocalProvider(provider.providerType, provider.token, false);\n });\n }\n get
transformProviders(): ProviderAst[] {\n // Note: Maps keep their insertion order.\n const lazyProviders:
ProviderAst[] = [];\n const eagerProviders: ProviderAst[] = [];\n this._transformedProviders.forEach(provider
=> {\n if (provider.eager) {\n eagerProviders.push(provider);\n } else {\n
 lazyProviders.push(provider);\n }\n });\n return lazyProviders.concat(eagerProviders);\n }\n get
transformedDirectiveAsts(): DirectiveAst[] {\n const sortedProviderTypes = this.transformProviders.map(provider
=> provider.token.identifier);\n const sortedDirectives = this._directiveAsts.slice();\n sortedDirectives.sort(\n
(dir1, dir2) => sortedProviderTypes.indexOf(dir1.directive.type) -\n
sortedProviderTypes.indexOf(dir2.directive.type));\n return sortedDirectives;\n }\n get queryMatches():
QueryMatch[] {\n const allMatches: QueryMatch[] = [];\n this._queriedTokens.forEach((matches:
QueryMatch[]) => {\n allMatches.push(...matches);\n });\n return allMatches;\n }\n private
_addQueryReadsTo(\n token: CompileTokenMetadata, defaultValue: CompileTokenMetadata,\n queryReadTokens: Map<any, QueryMatch[]>) {\n this._getQueriesFor(token).forEach((query) => {\n const
queryValue = query.meta.read || defaultValue;\n const tokenRef = tokenReference(queryValue);\n let
queryMatches = queryReadTokens.get(tokenRef);\n if (!queryMatches) {\n queryMatches = [];\n
 queryReadTokens.set(tokenRef, queryMatches);\n }\n queryMatches.push({queryId: query.queryId, value:
queryValue});\n });\n }\n private _getQueriesFor(token: CompileTokenMetadata): QueryWithId[] {\n const
result: QueryWithId[] = [];\n let currentEl: ProviderElementContext = this;\n let distance = 0;\n let queries:
QueryWithId[]\n while (currentEl !== null) {\n queries =
currentEl._contentQueries.get(tokenReference(token));\n if (queries) {\n result.push(...queries.filter((query)
=> query.meta.descendants || distance <= 1));\n }\n if (currentEl._directiveAsts.length > 0) {\n
 distance++;\n }\n currentEl = currentEl._parent;\n }\n queries =
this.viewContext.viewQueries.get(tokenReference(token));\n if (queries) {\n result.push(...queries);\n }\n

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return result;\n }\n\n private _getOrCreateLocalProvider(\n requestingProviderType: ProviderAstType, token:
CompileTokenMetadata,\n eager: boolean): ProviderAst|null {\n const resolvedProvider =
this._allProviders.get(tokenReference(token));\n if (!resolvedProvider ||\n ((requestingProviderType ===
ProviderAstType.Directive ||\n requestingProviderType === ProviderAstType.PublicService) &&\nresolvedProvider.providerType === ProviderAstType.PrivateService) ||\n ((requestingProviderType ===
ProviderAstType.PrivateService ||\n requestingProviderType === ProviderAstType.PublicService) &&\nresolvedProvider.providerType === ProviderAstType.Builtin)) {\n return null;\n }\n let
transformedProviderAst = this._transformedProviders.get(tokenReference(token));\n if (transformedProviderAst)
{\n return transformedProviderAst;\n }\n if (this._seenProviders.get(tokenReference(token)) != null) {\n
this.viewContext.errors.push(new ProviderError(\n `Cannot instantiate cyclic dependency!\n
${tokenName(token)}`, this._sourceSpan));\n return null;\n }\n
this._seenProviders.set(tokenReference(token), true);\n const transformedProviders =
resolvedProvider.providers.map((provider) => {\n let transformedUseValue = provider.useValue;\n let
transformedUseExisting = provider.useExisting!;\n let transformedDeps: CompileDiDependencyMetadata[] =
undefined!;\n if (provider.useExisting != null) {\n const existingDiDep = this._getDependency(\n
resolvedProvider.providerType, {token: provider.useExisting}, eager)!;\n if (existingDiDep.token != null) {\n
transformedUseExisting = existingDiDep.token;\n } else {\n transformedUseExisting = null!;\n
transformedUseValue = existingDiDep.value;\n }\n } else if (provider.useFactory) {\n const deps =
provider.deps || provider.useFactory.diDeps;\n transformedDeps =\n deps.map((dep) =>
this._getDependency(resolvedProvider.providerType, dep, eager)!);\n } else if (provider.useClass) {\n const
deps = provider.deps || provider.useClass.diDeps;\n transformedDeps =\n deps.map((dep) =>
this._getDependency(resolvedProvider.providerType, dep, eager)!);\n }\n return _transformProvider(provider,
{\n useExisting: transformedUseExisting,\n useValue: transformedUseValue,\n deps:
transformedDeps\n });\n });\n transformedProviderAst =\n _transformProviderAst(resolvedProvider,
{eager: eager, providers: transformedProviders});\n this._transformedProviders.set(tokenReference(token),
transformedProviderAst);\n return transformedProviderAst;\n }\n\n private _getLocalDependency(\n
requestingProviderType: ProviderAstType, dep: CompileDiDependencyMetadata,\n eager: boolean = false):
CompileDiDependencyMetadata|null {\n if (dep.isAttribute) {\n const attrValue =
this._attrs[dep.token!.value];\n return {isValue: true, value: attrValue == null ? null : attrValue};\n }\n\n if
(dep.token != null) {\n // access builtins\n if ((requestingProviderType === ProviderAstType.Directive ||\n
requestingProviderType === ProviderAstType.Component)) {\n if (tokenReference(dep.token) ===\n
this.viewContext.reflector.resolveExternalReference(Identifiers.Renderer) ||\n tokenReference(dep.token)
===\n this.viewContext.reflector.resolveExternalReference(Identifiers.ElementRef) ||\n
tokenReference(dep.token) ===\n this.viewContext.reflector.resolveExternalReference(\n
Identifiers.ChangeDetectorRef) ||\n tokenReference(dep.token) ===\n
this.viewContext.reflector.resolveExternalReference(Identifiers.TemplateRef)) {\n return dep;\n }\n }
if (tokenReference(dep.token) ===\n
this.viewContext.reflector.resolveExternalReference(Identifiers.ViewContainerRef)) {\n (this as
{transformedHasViewContainer: boolean}).transformedHasViewContainer = true;\n }\n // access the
injector\n if (tokenReference(dep.token) ===\n
this.viewContext.reflector.resolveExternalReference(Identifiers.Injector)) {\n return dep;\n }\n // access
providers\n if (this._getOrCreateLocalProvider(requestingProviderType, dep.token, eager) != null) {\n return
dep;\n }\n }\n return null;\n }\n\n private _getDependency(\n requestingProviderType: ProviderAstType,
dep: CompileDiDependencyMetadata,\n eager: boolean = false): CompileDiDependencyMetadata|null {\n let
currElement: ProviderElementContext = this;\n let currEager: boolean = eager;\n let result:
CompileDiDependencyMetadata|null = null;\n if (!dep.isSkipSelf) {\n result =
this._getLocalDependency(requestingProviderType, dep, eager);\n }\n if (dep.isSelf) {\n if (!result &&
dep.isOptional) {\n result = {isValue: true, value: null};\n }\n } else {\n // check parent elements\n

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while (!result && currElement._parent) {\n const prevElement = currElement;\n currElement =\n currElement._parent;\n if (prevElement._isViewRoot) {\n currEager = false;\n }\n result =\n currElement._getLocalDependency(ProviderAstType.PublicService, dep, currEager);\n }\n // check @Host\n restriction\n if (!result) {\n if (!dep.isHost || this.viewContext.component.isHost ||\n this.viewContext.component.type.reference === tokenReference(dep.token!))\n this.viewContext.viewProviders.get(tokenReference(dep.token!)) != null) {\n result = dep;\n } else {\n result = dep.isOptional ? {isValue: true, value: null} : null;\n }\n }\n if (!result) {\n this.viewContext.errors.push(\n new ProviderError(`No provider for ${tokenName(dep.token!)}`,\n this._sourceSpan));\n }\n return result;\n}\n\nexport class NgModuleProviderAnalyzer {\n private\n _transformedProviders = new Map<any, ProviderAst>();\n private _seenProviders = new Map<any, boolean>();\n private _allProviders: Map<any, ProviderAst>;\n private _errors: ProviderError[] = [];\n\n constructor(\n private\n reflector: CompileReflector, ngModule: CompileNgModuleMetadata,\n extraProviders:\n CompileProviderMetadata[], sourceSpan: ParseSourceSpan) {\n this._allProviders = new Map<any,\n ProviderAst>();\n ngModule.transitiveModule.modules.forEach((ngModuleType: CompileTypeMetadata) => {\n const ngModuleProvider = {token: {identifier: ngModuleType}, useClass: ngModuleType};\n _resolveProviders(\n [ngModuleProvider], ProviderAstType.PublicService, true, sourceSpan, this._errors,\n this._allProviders, /* isModule */ true);\n });\n _resolveProviders(\n ngModule.transitiveModule.providers.map(entry => entry.provider).concat(extraProviders),\n ProviderAstType.PublicService, false, sourceSpan, this._errors, this._allProviders,\n /* isModule */ false);\n }\n\n parse(): ProviderAst[] {\n Array.from(this._allProviders.values()).forEach((provider) => {\n this._getOrCreateLocalProvider(provider.token, provider.eager);\n });\n if (this._errors.length > 0) {\n const\n errorString = this._errors.join(`\\n`);\n throw new Error(`Provider parse errors:\\n${errorString}`);\n }\n //\n Note: Maps keep their insertion order.\n const lazyProviders: ProviderAst[] = [];\n const eagerProviders:\n ProviderAst[] = [];\n this._transformedProviders.forEach(provider => {\n if (provider.eager) {\n eagerProviders.push(provider);\n } else {\n lazyProviders.push(provider);\n }\n });\n return\n lazyProviders.concat(eagerProviders);\n }\n\n private _getOrCreateLocalProvider(token: CompileTokenMetadata,\n eager: boolean): ProviderAst|null {\n const resolvedProvider = this._allProviders.get(tokenReference(token));\n if (!resolvedProvider) {\n return null;\n }\n let transformedProviderAst =\n this._transformedProviders.get(tokenReference(token));\n if (transformedProviderAst) {\n return\n transformedProviderAst;\n }\n if (this._seenProviders.get(tokenReference(token)) != null) {\n this._errors.push(new ProviderError(\n `Cannot instantiate cyclic dependency! ${tokenName(token)}`,\n resolvedProvider.sourceSpan));\n return null;\n }\n this._seenProviders.set(tokenReference(token), true);\n const transformedProviders = resolvedProvider.providers.map((provider) => {\n let transformedUseValue =\n provider.useValue;\n let transformedUseExisting = provider.useExisting!;\n let transformedDeps:\n CompileDiDependencyMetadata[] = undefined!;\n if (provider.useExisting != null) {\n const existingDiDep\n =\n this._getDependency({token: provider.useExisting}, eager, resolvedProvider.sourceSpan);\n if\n (existingDiDep.token != null) {\n transformedUseExisting = existingDiDep.token;\n } else {\n transformedUseExisting = null!;\n transformedUseValue = existingDiDep.value;\n }\n } else if\n (provider.useFactory) {\n const deps = provider.deps || provider.useFactory.diDeps;\n transformedDeps =\n deps.map((dep) => this._getDependency(dep, eager, resolvedProvider.sourceSpan));\n } else if\n (provider.useClass) {\n const deps = provider.deps || provider.useClass.diDeps;\n transformedDeps =\n deps.map((dep) => this._getDependency(dep, eager, resolvedProvider.sourceSpan));\n }\n return\n _transformProvider(provider, {\n useExisting: transformedUseExisting,\n useValue:\n transformedUseValue,\n deps: transformedDeps\n });\n });\n transformedProviderAst =\n _transformProviderAst(resolvedProvider, {eager: eager, providers: transformedProviders});\n this._transformedProviders.set(tokenReference(token), transformedProviderAst);\n return\n transformedProviderAst;\n }\n\n private _getDependency(\n dep: CompileDiDependencyMetadata, eager:\n boolean = false,\n requestorSourceSpan: ParseSourceSpan): CompileDiDependencyMetadata {\n let

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foundLocal = false;\n if (!dep.isSkipSelf && dep.token != null) {\n // access the injector\n if
(tokenReference(dep.token) ===\n this.reflector.resolveExternalReference(Identifiers.Injector) ||\n tokenReference(dep.token) ===\n this.reflector.resolveExternalReference(Identifiers.ComponentFactoryResolver)) {\n foundLocal = true;\n //
access providers\n } else if (this._getOrCreateLocalProvider(dep.token, eager) != null) {\n foundLocal =
true;\n }\n }\n return dep;\n}\n\nfunction _transformProvider(\n provider: CompileProviderMetadata,\n {useExisting, useValue, deps}:\n {useExisting: CompileTokenMetadata, useValue: any, deps:
CompileDiDependencyMetadata[]}) {\n return {\n token: provider.token,\n useClass: provider.useClass,\n useExisting: useExisting,\n useFactory: provider.useFactory,\n useValue: useValue,\n deps: deps,\n multi:
provider.multi\n };\n}\n\nfunction _transformProviderAst(\n provider: ProviderAst,\n {eager, providers}:
{eager: boolean, providers: CompileProviderMetadata[]}): ProviderAst {\n return new ProviderAst(\n provider.token, provider.multiProvider, provider.eager || eager, providers,\n provider.providerType,
provider.lifecycleHooks, provider.sourceSpan, provider.isModule);\n}\n\nfunction
_resolveProvidersFromDirectives(\n directives: CompileDirectiveSummary[], sourceSpan: ParseSourceSpan,\n targetErrors: ParseError[]): Map<any, ProviderAst> {\n const providersByToken = new Map<any,
ProviderAst>();\n directives.forEach((directive) => {\n const dirProvider:\n CompileProviderMetadata =
{token: {identifier: directive.type}, useClass: directive.type};\n _resolveProviders(\n [dirProvider],\n directive.isComponent ? ProviderAstType.Component : ProviderAstType.Directive, true,\n sourceSpan,
targetErrors, providersByToken, /* isModule */ false);\n });\n // Note: directives need to be able to overwrite
providers of a component!\n const directivesWithComponentFirst =\n directives.filter(dir =>
dir.isComponent).concat(directives.filter(dir => !dir.isComponent));\n directivesWithComponentFirst.forEach((directive) => {\n _resolveProviders(\n directive.providers,
ProviderAstType.PublicService, false, sourceSpan, targetErrors,\n providersByToken, /* isModule */ false);\n _resolveProviders(\n directive.viewProviders, ProviderAstType.PrivateService, false, sourceSpan,
targetErrors,\n providersByToken, /* isModule */ false);\n });\n return providersByToken;\n}\n\nfunction
_resolveProviders(\n providers: CompileProviderMetadata[], providerType: ProviderAstType, eager: boolean,\n sourceSpan: ParseSourceSpan, targetErrors: ParseError[],\n targetProvidersByToken: Map<any, ProviderAst>,
isModule: boolean) {\n providers.forEach((provider) => {\n let resolvedProvider =
targetProvidersByToken.get(tokenReference(provider.token));\n if (resolvedProvider != null &&
!resolvedProvider.multiProvider !== !provider.multi) {\n targetErrors.push(new ProviderError(\n `Mixing
multi and non multi provider is not possible for token ${\n tokenName(resolvedProvider.token)}\n `,\n sourceSpan));\n }\n if (!resolvedProvider) {\n const lifecycleHooks = provider.token.identifier &&\n
(<CompileTypeMetadata>provider.token.identifier).lifecycleHooks ?\n
(<CompileTypeMetadata>provider.token.identifier).lifecycleHooks :\n [];\n const isUseValue =
!(provider.useClass || provider.useExisting || provider.useFactory);\n resolvedProvider = new ProviderAst(\n provider.token, !provider.multi, eager || isUseValue, [provider], providerType,\n lifecycleHooks, sourceSpan,
isModule);\n targetProvidersByToken.set(tokenReference(provider.token), resolvedProvider);\n } else {\n if
(!provider.multi) {\n resolvedProvider.providers.length = 0;\n }\n resolvedProvider.providers.push(provider);\n }\n });\n}\n\nfunction _getViewQueries(component:
CompileDirectiveMetadata): Map<any, QueryWithId[]> {\n // Note: queries start with id 1 so we can use the
number in a Bloom filter!\n let viewQueryId = 1;\n const viewQueries = new Map<any, QueryWithId[]>();\n if
(component.viewQueries) {\n component.viewQueries.forEach(\n (query) =>
_addQueryToTokenMap(viewQueries, {meta: query, queryId: viewQueryId++});\n }\n }\n return
viewQueries;\n}\n\nfunction _getContentQueries(\n contentQueryStartId: number, directives:
CompileDirectiveSummary[]): Map<any, QueryWithId[]> {\n let contentQueryId = contentQueryStartId;\n const
contentQueries = new Map<any, QueryWithId[]>();\n directives.forEach((directive, directiveIndex) => {\n if
(directive.queries) {\n directive.queries.forEach(\n (query) => _addQueryToTokenMap(contentQueries,
{meta: query, queryId: contentQueryId++});\n }\n });\n }\n return contentQueries;\n}\n\nfunction

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dirMeta.hostProperties[propName];\n if (typeof expression === 'string') {\n this.parsePropertyBinding(\n propName, expression, true, sourceSpan, sourceSpan.start.offset, undefined, [],\n // Use the\n `sourceSpan` for `keySpan`. This isn't really accurate, but neither is the\n // sourceSpan, as it represents the\n sourceSpan of the host itself rather than the\n // source of the host binding (which doesn't exist in the\n template). Regardless,\n // neither of these values are used in Ivy but are only here to satisfy the function\n // signature. This should likely be refactored in the future so that `sourceSpan`\n // isn't being used\n inaccurately.\n boundProps, sourceSpan);\n } else {\n this._reportError(\n `Value of the\n host property binding \"${\n propName}\n \" needs to be a string representing an expression but got \"${\n expression}\n \" (${typeof expression})`,\n sourceSpan);\n }\n return boundProps;\n}\nreturn null;\n}\n\ncreateDirectiveHostPropertyAsts(\n dirMeta: CompileDirectiveSummary,\n elementSelector: string,\n sourceSpan: ParseSourceSpan): BoundElementProperty[]\n{\n const boundProps\n = this.createBoundHostProperties(dirMeta, sourceSpan);\n return boundProps &&\n boundProps.map((prop)\n => this.createBoundElementProperty(elementSelector, prop));\n}\n\ncreateDirectiveHostEventAsts(\n dirMeta:\n CompileDirectiveSummary, sourceSpan: ParseSourceSpan):\n ParsedEvent[]\n{\n if (dirMeta.hostListeners)\n {\n const targetEvents: ParsedEvent[] = [];\n Object.keys(dirMeta.hostListeners).forEach(propName => {\n const expression = dirMeta.hostListeners[propName];\n if (typeof expression === 'string') {\n // TODO:\n pass a more accurate handlerSpan for this event.\n this.parseEvent(propName, expression, sourceSpan,\n sourceSpan, [], targetEvents);\n } else {\n this._reportError(\n `Value of the host listener \"${\n propName}\n \" needs to be a string representing an expression but got \"${\n expression}\n \"\n (${typeof expression})`,\n sourceSpan);\n }\n });\n return targetEvents;\n }\n return null;\n}\n\nparseInterpolation(value: string, sourceSpan: ParseSourceSpan): ASTWithSource\n{\n const sourceInfo =\n sourceSpan.start.toString();\n try {\n const ast = this._exprParser.parseInterpolation(\n value,\n sourceInfo, sourceSpan.start.offset, this._interpolationConfig!);\n if (ast)\n this._reportExpressionParserErrors(ast.errors, sourceSpan);\n this._checkPipes(ast, sourceSpan);\n return\n ast;\n } catch (e) {\n this._reportError(`${e}`, sourceSpan);\n return\n this._exprParser.wrapLiteralPrimitive('ERROR', sourceInfo, sourceSpan.start.offset);\n }\n}\n\n/**\n * Similar\n * to `parseInterpolation`, but treats the provided string as a single expression\n * element that would normally appear\n * within the interpolation prefix and suffix (`{{` and `}}`).\n * This is used for parsing the switch expression in\n * ICUs.\n */\nparseInterpolationExpression(expression: string, sourceSpan: ParseSourceSpan): ASTWithSource\n{\n const sourceInfo = sourceSpan.start.toString();\n try {\n const ast =\n this._exprParser.parseInterpolationExpression(\n expression, sourceInfo, sourceSpan.start.offset);\n if (ast)\n this._reportExpressionParserErrors(ast.errors, sourceSpan);\n this._checkPipes(ast, sourceSpan);\n return\n ast;\n } catch (e) {\n this._reportError(`${e}`, sourceSpan);\n return\n this._exprParser.wrapLiteralPrimitive('ERROR', sourceInfo, sourceSpan.start.offset);\n }\n}\n\n/**\n * Parses\n * the bindings in a microsyntax expression, and converts them to\n * `ParsedProperty` or `ParsedVariable`.\n */\n@param tplKey template binding name\n * @param tplValue template binding value\n * @param sourceSpan\n * span of template binding relative to entire the template\n * @param absoluteValueOffset start of the tplValue\n * relative to the entire template\n * @param targetMatchableAttrs potential attributes to match in the template\n * @param targetProps target property bindings in the template\n * @param targetVars target variables in the\n * template\n */\nparseInlineTemplateBinding(\n tplKey: string, tplValue: string, sourceSpan: ParseSourceSpan,\n absoluteValueOffset: number,\n targetMatchableAttrs: string[][], targetProps: ParsedProperty[], targetVars:\n ParsedVariable[],\n isIvyAst: boolean) {\n const absoluteKeyOffset = sourceSpan.start.offset +\n TEMPLATE_ATTR_PREFIX.length;\n const bindings = this._parseTemplateBindings(\n tplKey, tplValue,\n sourceSpan, absoluteKeyOffset, absoluteValueOffset);\n for (const binding of bindings) {\n // sourceSpan is\n for the entire HTML attribute. bindingSpan is for a particular\n // binding within the microsyntax expression so\n it's more narrow than sourceSpan.\n const bindingSpan = moveParseSourceSpan(sourceSpan,\n binding.sourceSpan);\n const key = binding.key.source;\n const keySpan =\n moveParseSourceSpan(sourceSpan, binding.key.span);\n if (binding instanceof VariableBinding) {\n const

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value = binding.value ? binding.value.source : '$implicit';\n const valueSpan =\n binding.value ?
moveParseSourceSpan(sourceSpan, binding.value.span) : undefined;\n targetVars.push(new
ParsedVariable(key, value, bindingSpan, keySpan, valueSpan));\n } else if (binding.value) {\n const srcSpan
= isIvyAst ? bindingSpan : sourceSpan;\n const valueSpan = moveParseSourceSpan(sourceSpan,
binding.value.ast.sourceSpan);\n this._parsePropertyAst(\n key, binding.value, srcSpan, keySpan,
valueSpan, targetMatchableAttrs, targetProps);\n } else {\n targetMatchableAttrs.push([key, " /* value */");\n
 // Since this is a literal attribute with no RHS, source span should be\n // just the key span.\n
this.parseLiteralAttr(\n key, null /* value */, keySpan, absoluteValueOffset, undefined /* valueSpan */,\n
targetMatchableAttrs, targetProps, keySpan);\n }\n }\n }\n /**\n * Parses the bindings in a microsyntax
expression, e.g.\n * <tag *tplKey="let value1 = prop; let value2 = localVar">\n * @param tplKey template binding name\n
 * @param tplValue template binding value\n * @param sourceSpan
span of template binding relative to entire the template\n * @param absoluteKeyOffset start of the `tplKey`\n
 * @param absoluteValueOffset start of the `tplValue`\n */\n private _parseTemplateBindings(\n tplKey: string,
tplValue: string, sourceSpan: ParseSourceSpan, absoluteKeyOffset: number,\n absoluteValueOffset: number):
TemplateBinding[] {\n const sourceInfo = sourceSpan.start.toString();\n try {\n const bindingsResult =
this._exprParser.parseTemplateBindings(\n tplKey, tplValue, sourceInfo, absoluteKeyOffset,
absoluteValueOffset);\n this._reportExpressionParserErrors(bindingsResult.errors, sourceSpan);\n
bindingsResult.templateBindings.forEach((binding) => {\n if (binding.value instanceof ASTWithSource) {\n
 this._checkPipes(binding.value, sourceSpan);\n }\n });\n bindingsResult.warnings.forEach((warning)
=> {\n this._reportError(warning, sourceSpan, ParseErrorLevel.WARNING);\n });\n return
bindingsResult.templateBindings;\n } catch (e) {\n this._reportError(`${e}`, sourceSpan);\n return [];\n }\n }\n }\n parseLiteralAttr(\n name: string, value: string|null, sourceSpan: ParseSourceSpan, absoluteOffset:
number,\n valueSpan: ParseSourceSpan|undefined, targetMatchableAttrs: string[][],\n // TODO(atscott):
keySpan is only optional here so VE template parser implementation does not\n // have to change This should be
required when VE is removed.\n targetProps: ParsedProperty[], keySpan?: ParseSourceSpan) {\n if
(isAnimationLabel(name)) {\n name = name.substring(1);\n if (value) {\n this._reportError(\n
`Assigning animation triggers via @prop="exp" attributes with an expression is invalid.` +\n ` Use
property bindings (e.g. [@prop]="exp") or use an attribute without a value (e.g. @prop) instead.`,\n
sourceSpan, ParseErrorLevel.ERROR);\n }\n this._parseAnimation(\n name, value, sourceSpan,
absoluteOffset, keySpan, valueSpan, targetMatchableAttrs,\n targetProps);\n } else {\n
targetProps.push(new ParsedProperty(\n name, this._exprParser.wrapLiteralPrimitive(value, "\n
absoluteOffset),\n ParsedPropertyType.LITERAL_ATTR, sourceSpan, keySpan, valueSpan));\n }\n }\n }\n parsePropertyBinding(\n name: string, expression: string, isHost: boolean, sourceSpan: ParseSourceSpan,\n
absoluteOffset: number, valueSpan: ParseSourceSpan|undefined,\n // TODO(atscott): keySpan is only optional
here so VE template parser implementation does not\n // have to change This should be required when VE is
removed.\n targetMatchableAttrs: string[][], targetProps: ParsedProperty[], keySpan?: ParseSourceSpan) {\n if
(name.length === 0) {\n this._reportError(`Property name is missing in binding`, sourceSpan);\n }\n let
isAnimationProp = false;\n if (name.startsWith(ANIMATE_PROP_PREFIX)) {\n isAnimationProp = true;\n
name = name.substring(ANIMATE_PROP_PREFIX.length);\n } else if (isAnimationLabel(name)) {\n
isAnimationProp = true;\n name = name.substring(1);\n }\n if (isAnimationProp) {\n
this._parseAnimation(\n name, expression, sourceSpan, absoluteOffset, keySpan, valueSpan,\n
targetMatchableAttrs,\n targetProps);\n } else {\n this._parsePropertyAst(\n name,
this._parseBinding(expression, isHost, valueSpan || sourceSpan, absoluteOffset),\n sourceSpan, keySpan,
valueSpan, targetMatchableAttrs, targetProps);\n }\n }\n }\n parsePropertyInterpolation(\n name: string, value:
string, sourceSpan: ParseSourceSpan,\n valueSpan: ParseSourceSpan|undefined, targetMatchableAttrs:
string[][],\n // TODO(atscott): keySpan is only optional here so VE template parser implementation does not\n
 // have to change This should be required when VE is removed.\n targetProps: ParsedProperty[], keySpan?:
ParseSourceSpan): boolean {\n const expr = this.parseInterpolation(value, valueSpan || sourceSpan);\n if (expr)

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{\n this._parsePropertyAst(\n name, expr, sourceSpan, keySpan, valueSpan, targetMatchableAttrs,
targetProps);\n return true;\n } \n return false;\n } \n\n private _parsePropertyAst(\n name: string, ast:
ASTWithSource, sourceSpan: ParseSourceSpan, \n keySpan: ParseSourceSpan|undefined, valueSpan:
ParseSourceSpan|undefined, \n targetMatchableAttrs: string[][], targetProps: ParsedProperty[]) {\n
targetMatchableAttrs.push([name, ast.source!]);\n targetProps.push(\n new ParsedProperty(name, ast,
ParsedPropertyType.DEFAULT, sourceSpan, keySpan, valueSpan));\n } \n\n private _parseAnimation(\n name:
string, expression: string|null, sourceSpan: ParseSourceSpan, absoluteOffset: number, \n keySpan:
ParseSourceSpan|undefined, valueSpan: ParseSourceSpan|undefined, \n targetMatchableAttrs: string[][],
targetProps: ParsedProperty[]) {\n if (name.length === 0) {\n this._reportError('Animation trigger is missing',
sourceSpan);\n } \n\n // This will occur when a @trigger is not paired with an expression. \n // For animations it
is valid to not have an expression since */void \n // states will be applied by angular when the element is
attached/detached \n const ast = this._parseBinding(\n expression || 'undefined', false, valueSpan || sourceSpan,
absoluteOffset);\n targetMatchableAttrs.push([name, ast.source!]);\n targetProps.push(new ParsedProperty(\n
name, ast, ParsedPropertyType.ANIMATION, sourceSpan, keySpan, valueSpan));\n } \n\n private
_parseBinding(\n value: string, isHostBinding: boolean, sourceSpan: ParseSourceSpan, \n absoluteOffset:
number): ASTWithSource {\n const sourceInfo = (sourceSpan && sourceSpan.start || '(unknown)').toString();\n \n
try {\n const ast = isHostBinding ? \n this._exprParser.parseSimpleBinding(\n value, sourceInfo,
absoluteOffset, this._interpolationConfig) : \n this._exprParser.parseBinding(\n value, sourceInfo,
absoluteOffset, this._interpolationConfig);\n if (ast) this._reportExpressionParserErrors(ast.errors, sourceSpan);\n
 this._checkPipes(ast, sourceSpan);\n return ast;\n } catch (e) {\n this._reportError(`${e}`, sourceSpan);\n
 return this._exprParser.wrapLiteralPrimitive('ERROR', sourceInfo, absoluteOffset);\n } \n\n\n
createBoundElementProperty(\n elementSelector: string, boundProp: ParsedProperty, skipValidation: boolean =
false, \n mapPropertyName: boolean = true): BoundElementProperty {\n if (boundProp.isAnimation) {\n
return new BoundElementProperty(\n boundProp.name, BindingType.Animation, SecurityContext.NONE,
boundProp.expression, null, \n boundProp.sourceSpan, boundProp.keySpan, boundProp.valueSpan);\n } \n\n
let unit: string|null = null;\n let bindingType: BindingType = undefined!;\n let boundPropertyName: string|null =
null;\n const parts = boundProp.name.split(PROPERTY_PARTS_SEPARATOR);\n let securityContexts:
SecurityContext[] = undefined!;\n\n // Check for special cases (prefix style, attr, class) \n if (parts.length > 1) {\n
if (parts[0] === ATTRIBUTE_PREFIX) {\n boundPropertyName =
parts.slice(1).join(PROPERTY_PARTS_SEPARATOR);\n if (!skipValidation) {\n
this._validatePropertyOrAttributeName(boundPropertyName, boundProp.sourceSpan, true);\n }\n securityContexts =
calcPossibleSecurityContexts(\n this._schemaRegistry, elementSelector,
boundPropertyName, true);\n\n const nsSeparatorIdx = boundPropertyName.indexOf(':');\n if
(nsSeparatorIdx > -1) {\n const ns = boundPropertyName.substr(0, nsSeparatorIdx);\n const name =
boundPropertyName.substr(nsSeparatorIdx + 1);\n boundPropertyName = mergeNsAndName(ns, name);\n
 } \n\n bindingType = BindingType.Attribute;\n } else if (parts[0] === CLASS_PREFIX) {\n
boundPropertyName = parts[1];\n bindingType = BindingType.Class;\n securityContexts =
[SecurityContext.NONE];\n } else if (parts[0] === STYLE_PREFIX) {\n unit = parts.length > 2 ? parts[2] :
null;\n boundPropertyName = parts[1];\n bindingType = BindingType.Style;\n securityContexts =
[SecurityContext.STYLE];\n } \n\n } \n\n\n // If not a special case, use the full property name \n if
(boundPropertyName === null) {\n const mappedPropName =
this._schemaRegistry.getMappedPropName(boundProp.name);\n boundPropertyName = mapPropertyName ?
mappedPropName : boundProp.name;\n securityContexts = calcPossibleSecurityContexts(\n
this._schemaRegistry, elementSelector, mappedPropName, false);\n bindingType = BindingType.Property;\n
if (!skipValidation) {\n this._validatePropertyOrAttributeName(mappedPropName, boundProp.sourceSpan,
false);\n } \n\n } \n\n\n return new BoundElementProperty(\n boundPropertyName, bindingType,
securityContexts[0], boundProp.expression, unit, \n boundProp.sourceSpan, boundProp.keySpan,
boundProp.valueSpan);\n } \n\n\n parseEvent(\n name: string, expression: string, sourceSpan: ParseSourceSpan,

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handlerSpan: ParseSourceSpan,\n targetMatchableAttrs: string[][], targetEvents: ParsedEvent[]) {\n if
(name.length === 0) {\n this._reportError(`Event name is missing in binding`, sourceSpan);\n }\n if
(isAnimationLabel(name)) {\n name = name.substr(1);\n this._parseAnimationEvent(name, expression,
sourceSpan, handlerSpan, targetEvents);\n } else {\n this._parseRegularEvent(\n name, expression,
sourceSpan, handlerSpan, targetMatchableAttrs, targetEvents);\n }\n}\n\n
calcPossibleSecurityContexts(selector: string, propName: string, isAttribute: boolean):\n SecurityContext[] {\n
const prop = this._schemaRegistry.getMappedPropName(propName);\n return
calcPossibleSecurityContexts(this._schemaRegistry, selector, prop, isAttribute);\n}\n\n private
_parseAnimationEvent(\n name: string, expression: string, sourceSpan: ParseSourceSpan, handlerSpan:
ParseSourceSpan,\n targetEvents: ParsedEvent[]) {\n const matches = splitAtPeriod(name, [name, "]);\n const
eventName = matches[0];\n const phase = matches[1].toLowerCase();\n if (phase) {\n switch (phase) {\n
case 'start':\n case 'done':\n const ast = this._parseAction(expression, handlerSpan);\n
targetEvents.push(new ParsedEvent(\n eventName, phase, ParsedEventType.Animation, ast, sourceSpan,
handlerSpan));\n break;\n\n default:\n this._reportError(\n `The provided animation output
phase value \"${phase}\" for \"@${\n eventName}\" is not supported (use start or done)`,\n
sourceSpan);\n break;\n }\n } else {\n this._reportError(\n `The animation trigger output event
(@${\n eventName}) is missing its phase value name (start or done are currently supported)`,\n
sourceSpan);\n }\n}\n\n private _parseRegularEvent(\n name: string, expression: string, sourceSpan:
ParseSourceSpan, handlerSpan: ParseSourceSpan,\n targetMatchableAttrs: string[][], targetEvents:
ParsedEvent[]) {\n // long format: 'target: eventName'\n const [target, eventName] = splitAtColon(name, [null!,
name]);\n const ast = this._parseAction(expression, handlerSpan);\n targetMatchableAttrs.push([name!,
ast.source!]);\n targetEvents.push(\n new ParsedEvent(eventName, target, ParsedEventType.Regular, ast,
sourceSpan, handlerSpan));\n // Don't detect directives for event names for now,\n // so don't add the event name
to the matchableAttrs\n }\n\n private _parseAction(value: string, sourceSpan: ParseSourceSpan): ASTWithSource
{\n const sourceInfo = (sourceSpan && sourceSpan.start || '(unknown)').toString();\n const absoluteOffset =
(sourceSpan && sourceSpan.start) ? sourceSpan.start.offset : 0;\n\n try {\n const ast =
this._exprParser.parseAction(\n value, sourceInfo, absoluteOffset, this._interpolationConfig);\n if (ast) {\n
 this._reportExpressionParserErrors(ast.errors, sourceSpan);\n }\n if (!ast || ast.ast instanceof EmptyExpr)
{\n this._reportError(`Empty expressions are not allowed`, sourceSpan);\n return
this._exprParser.wrapLiteralPrimitive('ERROR', sourceInfo, absoluteOffset);\n }\n this._checkPipes(ast,
sourceSpan);\n return ast;\n } catch (e) {\n this._reportError(`${e}`, sourceSpan);\n return
this._exprParser.wrapLiteralPrimitive('ERROR', sourceInfo, absoluteOffset);\n }\n}\n\n private _reportError(\n
message: string, sourceSpan: ParseSourceSpan,\n level: ParseErrorLevel = ParseErrorLevel.ERROR) {\n
this.errors.push(new ParseError(sourceSpan, message, level));\n}\n\n private
_reportExpressionParserErrors(errors: ParseError[], sourceSpan: ParseSourceSpan) {\n for (const error of errors)
{\n this._reportError(error.message, sourceSpan);\n }\n}\n\n // Make sure all the used pipes are known in
`this.pipesByName`\n private _checkPipes(ast: ASTWithSource, sourceSpan: ParseSourceSpan): void {\n if (ast
&& this.pipesByName) {\n const collector = new PipeCollector();\n ast.visit(collector);\n
collector.pipes.forEach((ast, pipeName) => {\n const pipeMeta = this.pipesByName!.get(pipeName);\n if
(!pipeMeta) {\n this._reportError(\n `The pipe '${pipeName}' could not be found`,\n
 new
ParseSourceSpan(\n sourceSpan.start.moveBy(ast.span.start), sourceSpan.start.moveBy(ast.span.end));\n
 }\n } else {\n this._usedPipes.set(pipeName, pipeMeta);\n }\n });\n }\n}\n\n /**\n * @param
propName the name of the property / attribute\n * @param sourceSpan\n * @param isAttr true when binding to
an attribute\n */\n private _validatePropertyOrAttributeName(\n propName: string, sourceSpan:
ParseSourceSpan, isAttr: boolean): void {\n const report = isAttr ?
this._schemaRegistry.validateAttribute(propName) :\n
this._schemaRegistry.validateProperty(propName);\n if (report.error) {\n this._reportError(report.msg!,
sourceSpan, ParseErrorLevel.ERROR);\n }\n}\n}\n\nexport class PipeCollector extends RecursiveAstVisitor {\n

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pipes = new Map<string, BindingPipe>();\n visitPipe(ast: BindingPipe, context: any): any {\n
this.pipes.set(ast.name, ast);\n ast.exp.visit(this);\n this.visitAll(ast.args, context);\n return null;\n
}\n}\n\nfunction isAnimationLabel(name: string): boolean {\n return name[0] === '@';\n}\n\nexport function
calcPossibleSecurityContexts(\n registry: ElementSchemaRegistry, selector: string, propName: string,\n isAttribute: boolean): SecurityContext[] {\n const ctxs: SecurityContext[] = [];\n
CssSelector.parse(selector).forEach((selector) => {\n const elementNames = selector.element ? [selector.element
: registry.allKnownElementNames();\n const notElementNames =\n new
Set(selector.notSelectors.filter(selector => selector.isElementSelector()))\n .map((selector) =>
selector.element));\n const possibleElementNames =\n elementNames.filter(elementName =>
!notElementNames.has(elementName));\n\n ctxs.push(...possibleElementNames.map(\n elementName =>
registry.securityContext(elementName, propName, isAttribute));\n });\n return ctxs.length === 0 ?
[SecurityContext.NONE] : Array.from(new Set(ctxs)).sort();\n}\n}\n\n/**\n * Compute a new ParseSourceSpan based
off an original `sourceSpan` by using\n * absolute offsets from the specified `absoluteSpan`.\n * @param
sourceSpan original source span\n * @param absoluteSpan absolute source span to move to\n */\nfunction
moveParseSourceSpan(\n sourceSpan: ParseSourceSpan, absoluteSpan: AbsoluteSourceSpan): ParseSourceSpan
{\n // The difference of two absolute offsets provide the relative offset\n const startDiff = absoluteSpan.start -
sourceSpan.start.offset;\n const endDiff = absoluteSpan.end - sourceSpan.end.offset;\n return new
ParseSourceSpan(\n sourceSpan.start.moveBy(startDiff), sourceSpan.end.moveBy(endDiff),\n
sourceSpan.fullStart.moveBy(startDiff), sourceSpan.details);\n}\n}\n\n", "/*\n * @license\n * Copyright Google LLC
All Rights Reserved.\n * Use of this source code is governed by an MIT-style license that can be\n * found in
the LICENSE file at https://angular.io/license\n */\n\nimport * as html from './ml_parser/ast';\nimport
{isNgContent} from './ml_parser/tags';\n\nconst NG_CONTENT_SELECT_ATTR = 'select';\nconst
LINK_ELEMENT = 'link';\nconst LINK_STYLE_REL_ATTR = 'rel';\nconst LINK_STYLE_HREF_ATTR =
'href';\nconst LINK_STYLE_REL_VALUE = 'stylesheet';\nconst STYLE_ELEMENT = 'style';\nconst
SCRIPT_ELEMENT = 'script';\nconst NG_NON_BINDABLE_ATTR = 'ngNonBindable';\nconst
NG_PROJECT_AS = 'ngProjectAs';\n\nexport function preparseElement(ast: html.Element): PreparedElement {\n
let selectAttr: string = null!;\n let hrefAttr: string = null!;\n let relAttr: string = null!;\n let nonBindable = false;\n
let projectAs = '';\n ast.attrs.forEach(attr => {\n const lcAttrName = attr.name.toLowerCase();\n if (lcAttrName
=== NG_CONTENT_SELECT_ATTR) {\n selectAttr = attr.value;\n } else if (lcAttrName ===
LINK_STYLE_HREF_ATTR) {\n hrefAttr = attr.value;\n } else if (lcAttrName ===
LINK_STYLE_REL_ATTR) {\n relAttr = attr.value;\n } else if (attr.name === NG_NON_BINDABLE_ATTR)
{\n nonBindable = true;\n } else if (attr.name === NG_PROJECT_AS) {\n if (attr.value.length > 0) {\n
projectAs = attr.value;\n }\n }\n });\n selectAttr = normalizeNgContentSelect(selectAttr);\n const nodeName
= ast.name.toLowerCase();\n let type = PreparedElementType.OTHER;\n if (isNgContent(nodeName)) {\n type =
PreparedElementType.NG_CONTENT;\n } else if (nodeName === STYLE_ELEMENT) {\n type =
PreparedElementType.STYLE;\n } else if (nodeName === SCRIPT_ELEMENT) {\n type =
PreparedElementType.SCRIPT;\n } else if (nodeName === LINK_ELEMENT && relAttr ===
LINK_STYLE_REL_VALUE) {\n type = PreparedElementType.STYLESHEET;\n }\n return new
PreparedElement(type, selectAttr, hrefAttr, nonBindable, projectAs);\n}\n\nexport enum PreparedElementType
{\n NG_CONTENT,\n STYLE,\n STYLESHEET,\n SCRIPT,\n OTHER\n}\n\nexport class PreparedElement
{\n constructor(\n public type: PreparedElementType, public selectAttr: string, public hrefAttr: string,\n
public nonBindable: boolean, public projectAs: string) {}\n}\n\nfunction normalizeNgContentSelect(selectAttr:
string): string {\n if (selectAttr === null || selectAttr.length === 0) {\n return '*';\n }\n return
selectAttr;\n}\n}\n\n", "/*\n * @license\n * Copyright Google LLC All Rights Reserved.\n * Use of this source code
is governed by an MIT-style license that can be\n * found in the LICENSE file at https://angular.io/license\n
*/\n\nimport {CompileDirectiveMetadata, CompileDirectiveSummary, CompilePipeSummary,\n CompileTokenMetadata, CompileTypeMetadata, identifierName} from './compile_metadata';\nimport
{CompileReflector} from './compile_reflector';\nimport {CompilerConfig} from './config';\nimport

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{SchemaMetadata} from './core';\nimport {AST, ASTWithSource, EmptyExpr, ParsedEvent, ParsedProperty,
ParsedVariable} from './expression_parser/ast';\nimport {Parser} from './expression_parser/parser';\nimport
{createTokenForExternalReference, createTokenForReference, Identifiers} from './identifiers';\nimport * as html
from './ml_parser/ast';\nimport {HtmlParser, ParseTreeResult} from './ml_parser/html_parser';\nimport
{removeWhitespaces, replaceNgsp} from './ml_parser/html_whitespaces';\nimport {expandNodes} from
'./ml_parser/icu_ast_expander';\nimport {InterpolationConfig} from './ml_parser/interpolation_config';\nimport
{isNgTemplate, splitNsName} from './ml_parser/tags';\nimport {ParseError, ParseErrorLevel, ParseSourceSpan}
from './parse_util';\nimport {ProviderElementContext, ProviderViewContext} from './provider_analyzer';\nimport
{ElementSchemaRegistry} from './schema/element_schema_registry';\nimport {CssSelector, SelectorMatcher}
from './selector';\nimport {isStyleUrlResolvable} from './style_url_resolver';\nimport {Console, newArray,
syntaxError} from './util';\n\nimport {BindingParser} from './binding_parser';\nimport * as t from
'./template_ast';\nimport {PreparsedElementType, preparsedElement} from './template_preparser';\n\nconst
BIND_NAME_REGEXP =\n /^(?:(?:?:(bind-)|(let-)|(ref-#)|(on-)|(bindon-
)|(@))(?:@)(.*)$);\n\nconst KW_BIND_IDX = 1;\n// Group 1 = \"bind-\"\nconst KW_BIND_IDX = 1;\n// Group 2 = \"let-\"\nconst KW_LET_IDX = 2;\n// Group 3 = \"ref-#\"\nconst KW_REF_IDX = 3;\n// Group 4 =
\"on-\"\nconst KW_ON_IDX = 4;\n// Group 5 = \"bindon-\"\nconst KW_BINDON_IDX = 5;\n// Group 6 =
\"@\"\nconst KW_AT_IDX = 6;\n// Group 7 = the identifier after \"bind-\", \"let-\", \"ref-#\", \"on-\", \"bindon-\" or
\"@\"\nconst IDENT_KW_IDX = 7;\n// Group 8 = identifier inside []\nconst IDENT_BANANA_BOX_IDX =
8;\n// Group 9 = identifier inside []\nconst IDENT_PROPERTY_IDX = 9;\n// Group 10 = identifier inside ()\nconst
IDENT_EVENT_IDX = 10;\n\nconst TEMPLATE_ATTR_PREFIX = '*';\nconst CLASS_ATTR = 'class';\n\nlet
_TEXT_CSS_SELECTOR!: CssSelector;\nfunction TEXT_CSS_SELECTOR(): CssSelector {\n if
(!_TEXT_CSS_SELECTOR) {\n _TEXT_CSS_SELECTOR = CssSelector.parse('*')[0];\n }\n return
_TEXT_CSS_SELECTOR;\n}\n\nexport class TemplateParseError extends ParseError {\n constructor(message:
string, span: ParseSourceSpan, level: ParseErrorLevel) {\n super(span, message, level);\n }\n}\n\nexport class
TemplateParseResult {\n constructor(\n public templateAst?: t.TemplateAst[], public usedPipes?:
CompilePipeSummary[],\n public errors?: ParseError[])\n}\n\nexport class TemplateParser {\n constructor(\n
private _config: CompilerConfig, private _reflector: CompileReflector,\n private _exprParser: Parser, private
_schemaRegistry: ElementSchemaRegistry,\n private _htmlParser: HtmlParser, private _console: Console|null,\n
public transforms: t.TemplateAstVisitor[])\n\n public get expressionParser() {\n return this._exprParser;\n
}\n\n parse(\n component: CompileDirectiveMetadata, template: string|ParseTreeResult,\n directives:
CompileDirectiveSummary[], pipes: CompilePipeSummary[], schemas: SchemaMetadata[],\n templateUrl:
string,\n preserveWhitespaces: boolean): {\n template: t.TemplateAst[], pipes: CompilePipeSummary[]\n } {\n
const result = this.tryParse(\n component, template, directives, pipes, schemas, templateUrl, preserveWhitespaces);\n
const warnings = result.errors!.filter(error => error.level === ParseErrorLevel.WARNING);\n const errors =
result.errors!.filter(error => error.level === ParseErrorLevel.ERROR);\n\n if (warnings.length > 0) {\n
this._console?.warn(`Template parse warnings:\\n${warnings.join('\\n')}`);\n }\n\n if (errors.length > 0) {\n
const errorString = errors.join('\\n');\n throw syntaxError(`Template parse errors:\\n${errorString}`, errors);\n
}\n\n return {template: result.templateAst!, pipes: result.usedPipes!};\n }\n\n tryParse(\n component:
CompileDirectiveMetadata, template: string|ParseTreeResult,\n directives: CompileDirectiveSummary[], pipes:
CompilePipeSummary[], schemas: SchemaMetadata[],\n templateUrl: string, preserveWhitespaces: boolean):
TemplateParseResult {\n let htmlParseResult = typeof template === 'string' ?\n
this._htmlParser!.parse(template, templateUrl, {\n tokenizeExpansionForms: true,\n interpolationConfig:
this.getInterpolationConfig(component)\n }):\n template;\n\n if (!preserveWhitespaces) {\n
htmlParseResult = removeWhitespaces(htmlParseResult);\n }\n\n return this.tryParseHtml(\n
this.expandHtml(htmlParseResult), component, directives, pipes, schemas);\n }\n\n tryParseHtml(\n
htmlAstWithErrors: ParseTreeResult, component: CompileDirectiveMetadata,\n directives:
CompileDirectiveSummary[], pipes: CompilePipeSummary[],\n schemas: SchemaMetadata[]):
TemplateParseResult {\n let result: t.TemplateAst[];\n const errors = htmlAstWithErrors.errors;\n const

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usedPipes: CompilePipeSummary[] = [];\n if (htmlAstWithErrors.rootNodes.length > 0) {\n const
uniqDirectives = removeSummaryDuplicates(directives);\n const uniqPipes =
removeSummaryDuplicates(pipes);\n const providerViewContext = new ProviderViewContext(this._reflector,
component);\n let interpolationConfig: InterpolationConfig = undefined!;\n if (component.template &&
component.template.interpolation) {\n interpolationConfig = {\n start:
component.template.interpolation[0],\n end: component.template.interpolation[1]\n };\n }\n const
bindingParser = new BindingParser(\n this._exprParser, interpolationConfig!, this._schemaRegistry,
uniqPipes, errors);\n const parseVisitor = new TemplateParseVisitor(\n this._reflector, this._config,
providerViewContext, uniqDirectives, bindingParser,\n this._schemaRegistry, schemas, errors);\n result =
html.visitAll(parseVisitor, htmlAstWithErrors.rootNodes, EMPTY_ELEMENT_CONTEXT);\n errors.push(...providerViewContext.errors);\n usedPipes.push(...bindingParser.getUsedPipes());\n } else {\n
result = [];\n }\n this._assertNoReferenceDuplicationOnTemplate(result, errors);\n if (errors.length > 0) {\n
return new TemplateParseResult(result, usedPipes, errors);\n }\n if (this.transforms) {\n
this.transforms.forEach((transform: t.TemplateAstVisitor) => {\n result = t.templateVisitAll(transform,
result);\n });\n }\n return new TemplateParseResult(result, usedPipes, errors);\n}\n\nexpandHtml(htmlAstWithErrors: ParseTreeResult, forced: boolean = false): ParseTreeResult {\n const errors:
ParseError[] = htmlAstWithErrors.errors;\n if (errors.length === 0 || forced) {\n // Transform ICU messages to
angular directives\n const expandedHtmlAst = expandNodes(htmlAstWithErrors.rootNodes);\n errors.push(...expandedHtmlAst.errors);\n htmlAstWithErrors = new ParseTreeResult(expandedHtmlAst.nodes,
errors);\n }\n return htmlAstWithErrors;\n}\n\ngetInterpolationConfig(component:
CompileDirectiveMetadata): InterpolationConfig|undefined {\n if (component.template) {\n return
InterpolationConfig.fromArray(component.template.interpolation);\n }\n return undefined;\n}\n\n/**
@internal */\n_assertNoReferenceDuplicationOnTemplate(result: t.TemplateAst[], errors:
TemplateParseError[]):\n void {\n const existingReferences: string[] = [];\n result.filter(element =>
!!(<any>element).references)\n .forEach(element => (<any>element).references.forEach((reference:
t.ReferenceAst) => {\n const name = reference.name;\n if (existingReferences.indexOf(name) < 0) {\n
existingReferences.push(name);\n } else {\n const error = new TemplateParseError(\n
`Reference \"#${name}\" is defined several times`, reference.sourceSpan,\n ParseErrorLevel.ERROR);\n errors.push(error);\n }\n });\n }\n}\n\nclass TemplateParseVisitor implements html.Visitor {\n
selectorMatcher = new SelectorMatcher();\n directivesIndex = new Map<CompileDirectiveSummary, number>();\n
ngContentCount = 0;\n contentQueryStartId: number;\n\n constructor(\n private reflector: CompileReflector,\n private config: CompilerConfig,\n public providerViewContext: ProviderViewContext, directives:
CompileDirectiveSummary[],\n private _bindingParser: BindingParser, private _schemaRegistry:
ElementSchemaRegistry,\n private _schemas: SchemaMetadata[], private _targetErrors: TemplateParseError[])
{\n // Note: queries start with id 1 so we can use the number in a Bloom filter!\n this.contentQueryStartId =
providerViewContext.component.viewQueries.length + 1;\n directives.forEach((directive, index) => {\n const
selector = CssSelector.parse(directive.selector!);\n this.selectorMatcher.addSelectable(selector, directive);\n
this.directivesIndex.set(directive, index);\n });\n }\n\n visitExpansion(expansion: html.Expansion, context: any):
any {\n return null;\n }\n\n visitExpansionCase(expansionCase: html.ExpansionCase, context: any): any {\n
return null;\n }\n\n visitText(text: html.Text, parent: ElementContext): any {\n const ngContentIndex =
parent.findNgContentIndex(TEXT_CSS_SELECTOR());\n const valueNoNgsp = replaceNgsp(text.value);\n const expr = this._bindingParser.parseInterpolation(valueNoNgsp, text.sourceSpan);\n return expr ? new
t.BoundTextAst(expr, ngContentIndex, text.sourceSpan) :\n new t.TextAst(valueNoNgsp,\n ngContentIndex, text.sourceSpan);\n }\n\n visitAttribute(attribute: html.Attribute, context: any): any {\n return
new t.AttrAst(attribute.name, attribute.value, attribute.sourceSpan);\n }\n\n visitComment(comment:
html.Comment, context: any): any {\n return null;\n }\n\n visitElement(element: html.Element, parent:
ElementContext): any {\n const queryStartIndex = this.contentQueryStartId;\n const elName = element.name;\n const preparsedElement = preparseElement(element);\n if (preparsedElement.type ===

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PreparsedElementType.SCRIPT ||\n preparsedElement.type === PreparsedElementType.STYLE) {\n //
Skipping <script> for security reasons\n // Skipping <style> as we already processed them\n // in the
StyleCompiler\n return null;\n }\n if (preparsedElement.type === PreparsedElementType.STYLESHEET
&&\n isStyleUrlResolvable(preparsedElement.hrefAttr)) {\n // Skipping stylesheets with either relative urls
or package scheme as we already processed\n // them in the StyleCompiler\n return null;\n }\n const
matchableAttrs: [string, string][] = [];\n const elementOrDirectiveProps: ParsedProperty[] = [];\n const
elementOrDirectiveRefs: ElementOrDirectiveRef[] = [];\n const elementVars: t.VariableAst[] = [];\n const
events: t.BoundEventAst[] = [];\n const templateElementOrDirectiveProps: ParsedProperty[] = [];\n const
templateMatchableAttrs: [string, string][] = [];\n const templateElementVars: t.VariableAst[] = [];\n let
hasInlineTemplates = false;\n const attrs: t.AttrAst[] = [];\n const isTemplateElement =
isNgTemplate(element.name);\n element.attrs.forEach(attr => {\n const parsedVariables: ParsedVariable[] =
[];\n const hasBinding = this._parseAttr(\n isTemplateElement, attr, matchableAttrs,
elementOrDirectiveProps, events,\n elementOrDirectiveRefs, elementVars);\n elementVars.push(...parsedVariables.map(v => t.VariableAst.fromParsedVariable(v)));\n let templateValue:
string|undefined;\n let templateKey: string|undefined;\n const normalizedName =
this._normalizeAttributeName(attr.name);\n if (normalizedName.startsWith(TEMPLATE_ATTR_PREFIX))
{\n templateValue = attr.value;\n templateKey =
normalizedName.substring(TEMPLATE_ATTR_PREFIX.length);\n }\n const hasTemplateBinding =
templateValue != null;\n if (hasTemplateBinding) {\n if (hasInlineTemplates) {\n this._reportError(\n
`Can't have multiple template bindings on one element. Use only one attribute prefixed with *`,\n
attr.sourceSpan);\n }\n hasInlineTemplates = true;\n const parsedVariables: ParsedVariable[] = [];\n
const absoluteOffset = (attr.valueSpan || attr.sourceSpan).start.offset;\n
this._bindingParser.parseInlineTemplateBinding(\n templateKey!, templateValue!, attr.sourceSpan,
absoluteOffset, templateMatchableAttrs,\n templateElementOrDirectiveProps, parsedVariables, false /*
isIvyAst */);\n templateElementVars.push(...parsedVariables.map(v =>
t.VariableAst.fromParsedVariable(v)));\n }\n if (!hasBinding && !hasTemplateBinding) {\n // don't
include the bindings as attributes as well in the AST\n attrs.push(this.visitAttribute(attr, null));\n
matchableAttrs.push([attr.name, attr.value]);\n }\n });\n const elementCssSelector =
createElementCssSelector(elName, matchableAttrs);\n const {directives: directiveMetas, matchElement} =\n
this._parseDirectives(this.selectorMatcher, elementCssSelector);\n const references: t.ReferenceAst[] = [];\n
const boundDirectivePropNames = new Set<string>();\n const directiveAsts = this._createDirectiveAsts(\n
isTemplateElement, element.name, directiveMetas, elementOrDirectiveProps,\n elementOrDirectiveRefs,
element.sourceSpan, references, boundDirectivePropNames);\n const elementProps: t.BoundElementPropertyAst[]
= this._createElementPropertyAsts(\n element.name, elementOrDirectiveProps, boundDirectivePropNames);\n
const isViewRoot = parent.isTemplateElement || hasInlineTemplates;\n const providerContext = new
ProviderElementContext(\n this.providerViewContext, parent.providerContext!, isViewRoot, directiveAsts,
attrs,\n references, isTemplateElement, queryStartIndex, element.sourceSpan);\n const children:
t.TemplateAst[] = html.visitAll(\n preparsedElement.nonBindable ? NON_BINDABLE_VISITOR : this,
element.children,\n ElementContext.create(\n isTemplateElement, directiveAsts,\n
isTemplateElement ? parent.providerContext! : providerContext));\n providerContext.afterElement();\n //
Override the actual selector when the `ngProjectAs` attribute is provided\n const projectionSelector =
preparsedElement.projectAs != " ?\n CssSelector.parse(preparsedElement.projectAs)[0] :\n
elementCssSelector;\n const ngContentIndex = parent.findNgContentIndex(projectionSelector!);\n let
parsedElement: t.TemplateAst;\n if (preparsedElement.type === PreparsedElementType.NG_CONTENT) {\n
// `` element\n if (element.children && !element.children.every(_isEmptyTextNode)) {\n
this._reportError(`<ng-content> element cannot have content.`, element.sourceSpan);\n }\n parsedElement =
new t.NgContentAst(\n this.ngContentCount++, hasInlineTemplates ? null! : ngContentIndex,
element.sourceSpan);\n } else if (isTemplateElement) {\n // `` element\n

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this._assertAllEventsPublishedByDirectives(directiveAsts, events);\n
this._assertNoComponentsNorElementBindingsOnTemplate(\n directiveAsts, elementProps,\n element.sourceSpan);\n parsedElement = new t.EmbeddedTemplateAst(\n attrs, events, references,\n elementVars, providerContext.transformedDirectiveAsts,\n providerContext.transformProviders,\n providerContext.transformedHasViewContainer,\n providerContext.queryMatches, children,\n hasInlineTemplates ? null : ngContentIndex,\n element.sourceSpan);\n } else {\n // element other than\n `<ng-content>` and `<ng-template>`\n this._assertElementExists(matchElement, element);\n this._assertOnlyOneComponent(directiveAsts, element.sourceSpan);\n const ngContentIndex =\n hasInlineTemplates ? null : parent.findNgContentIndex(projectionSelector);\n parsedElement = new\n t.ElementAst(\n elName, attrs, elementProps, events, references, providerContext.transformedDirectiveAsts,\n providerContext.transformProviders, providerContext.transformedHasViewContainer,\n providerContext.queryMatches, children, hasInlineTemplates ? null : ngContentIndex,\n element.sourceSpan,\n element.endSourceSpan || null);\n }\n if (hasInlineTemplates) {\n // The element as a *-attribute\n const\n templateQueryStartIndex = this.contentQueryStartId;\n const templateSelector = createElementCssSelector('ng-\n template', templateMatchableAttrs);\n const { directives } = this._parseDirectives(this.selectorMatcher,\n templateSelector);\n const templateBoundDirectivePropNames = new Set<string>();\n const\n templateDirectiveAsts = this._createDirectiveAsts(\n true, elName, directives,\n templateElementOrDirectiveProps, [], element.sourceSpan, [],\n templateBoundDirectivePropNames);\n const templateElementProps: t.BoundElementPropertyAst[] = this._createElementPropertyAsts(\n elName,\n templateElementOrDirectiveProps, templateBoundDirectivePropNames);\n this._assertNoComponentsNorElementBindingsOnTemplate(\n templateDirectiveAsts, templateElementProps,\n element.sourceSpan);\n const templateProviderContext = new ProviderElementContext(\n this.providerViewContext, parent.providerContext!, parent.isTemplateElement,\n templateDirectiveAsts, [], [],\n true, templateQueryStartIndex, element.sourceSpan);\n templateProviderContext.afterElement();\n parsedElement = new t.EmbeddedTemplateAst(\n [], [], [], templateElementVars,\n templateProviderContext.transformedDirectiveAsts,\n templateProviderContext.transformProviders,\n templateProviderContext.transformedHasViewContainer, templateProviderContext.queryMatches,\n [parsedElement], ngContentIndex, element.sourceSpan);\n }\n return parsedElement;\n}\n\nprivate\n_parseAttr(\n isTemplateElement: boolean, attr: html.Attribute, targetMatchableAttrs: string[][],\n targetProps: ParsedProperty[], targetEvents: t.BoundEventAst[],\n targetRefs: ElementOrDirectiveRef[],\n targetVars: t.VariableAst[]): boolean {\n const name = this._normalizeAttributeName(attr.name);\n const value\n = attr.value;\n const srcSpan = attr.sourceSpan;\n const absoluteOffset = attr.valueSpan ?\n attr.valueSpan.start.offset : srcSpan.start.offset;\n const boundEvents: ParsedEvent[] = [];\n const bindParts =\n name.match(BIND_NAME_REGEXP);\n let hasBinding = false;\n if (bindParts !== null) {\n hasBinding =\n true;\n if (bindParts[KW_BIND_IDX] !== null) {\n this._bindingParser.parsePropertyBinding(\n bindParts[IDENT_KW_IDX], value, false, srcSpan, absoluteOffset, attr.valueSpan,\n targetMatchableAttrs,\n targetProps);\n }\n else if (bindParts[KW_LET_IDX]) {\n if (isTemplateElement) {\n const identifier =\n bindParts[IDENT_KW_IDX];\n this._parseVariable(identifier, value, srcSpan, targetVars);\n }\n else {\n this._reportError(`"let-" is only supported on ng-template elements.`, srcSpan);\n }\n }\n else if\n (bindParts[KW_REF_IDX]) {\n const identifier = bindParts[IDENT_KW_IDX];\n this._parseReference(identifier, value, srcSpan, targetRefs);\n }\n else if (bindParts[KW_ON_IDX]) {\n this._bindingParser.parseEvent(\n bindParts[IDENT_KW_IDX], value, srcSpan, attr.valueSpan || srcSpan,\n targetMatchableAttrs, boundEvents);\n }\n else if (bindParts[KW_BINDON_IDX]) {\n this._bindingParser.parsePropertyBinding(\n bindParts[IDENT_KW_IDX], value, false, srcSpan,\n absoluteOffset, attr.valueSpan,\n targetMatchableAttrs, targetProps);\n this._parseAssignmentEvent(\n bindParts[IDENT_KW_IDX], value, srcSpan, attr.valueSpan || srcSpan,\n targetMatchableAttrs,\n boundEvents);\n }\n else if (bindParts[KW_AT_IDX]) {\n this._bindingParser.parseLiteralAttr(\n name, value, srcSpan, absoluteOffset, attr.valueSpan, targetMatchableAttrs,\n targetProps);\n }\n else if

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(bindParts[IDENT_BANANA_BOX_IDX]) {\n this._bindingParser.parsePropertyBinding(\n
bindParts[IDENT_BANANA_BOX_IDX], value, false, srcSpan, absoluteOffset, attr.valueSpan,\n
targetMatchableAttrs, targetProps);\n this._parseAssignmentEvent(\n
bindParts[IDENT_BANANA_BOX_IDX], value, srcSpan, attr.valueSpan || srcSpan,\n targetMatchableAttrs,
boundEvents);\n\n } else if (bindParts[IDENT_PROPERTY_IDX]) {\n
this._bindingParser.parsePropertyBinding(\n bindParts[IDENT_PROPERTY_IDX], value, false, srcSpan,
absoluteOffset, attr.valueSpan,\n targetMatchableAttrs, targetProps);\n\n } else if
(bindParts[IDENT_EVENT_IDX]) {\n this._bindingParser.parseEvent(\n
bindParts[IDENT_EVENT_IDX], value, srcSpan, attr.valueSpan || srcSpan,\n targetMatchableAttrs,
boundEvents);\n }\n } else {\n hasBinding = this._bindingParser.parsePropertyInterpolation(\n name,
value, srcSpan, attr.valueSpan, targetMatchableAttrs, targetProps);\n }\n\n if (!hasBinding) {\n
this._bindingParser.parseLiteralAttr(\n name, value, srcSpan, absoluteOffset, attr.valueSpan,
targetMatchableAttrs, targetProps);\n }\n\n targetEvents.push(...boundEvents.map(e =>
t.BoundEventAst.fromParsedEvent(e)));\n\n return hasBinding;\n }\n\n private
_normalizeAttributeName(attrName: string): string {\n return /^data-/i.test(attrName) ? attrName.substring(5) :
attrName;\n }\n\n private _parseVariable(\n identifier: string, value: string, sourceSpan: ParseSourceSpan,
targetVars: t.VariableAst[]) {\n if (identifier.indexOf('-') > -1) {\n this._reportError(`\"-\" is not allowed in
variable names`, sourceSpan);\n } else if (identifier.length === 0) {\n this._reportError(`Variable does not have
a name`, sourceSpan);\n }\n\n targetVars.push(new t.VariableAst(identifier, value, sourceSpan));\n }\n\n private _parseReference(\n identifier: string, value: string, sourceSpan: ParseSourceSpan,\n targetRefs:
ElementOrDirectiveRef[]) {\n if (identifier.indexOf('-') > -1) {\n this._reportError(`\"-\" is not allowed in
reference names`, sourceSpan);\n } else if (identifier.length === 0) {\n this._reportError(`Reference does not
have a name`, sourceSpan);\n }\n\n targetRefs.push(new ElementOrDirectiveRef(identifier, value,
sourceSpan));\n }\n\n private _parseAssignmentEvent(\n name: string, expression: string, sourceSpan:
ParseSourceSpan, valueSpan: ParseSourceSpan,\n targetMatchableAttrs: string[][], targetEvents: ParsedEvent[])
{\n this._bindingParser.parseEvent(\n `${name}Change`, `${expression}=${event}`, sourceSpan, valueSpan,
targetMatchableAttrs,\n targetEvents);\n }\n\n private _parseDirectives(selectorMatcher: SelectorMatcher,
elementCssSelector: CssSelector):\n {directives: CompileDirectiveSummary[], matchElement: boolean} {\n //
Need to sort the directives so that we get consistent results throughout,\n // as selectorMatcher uses Maps inside.\n // Also deduplicate directives as they might match more than one time!\n const directives =
new Array(this.directivesIndex.size);\n // Whether any directive selector matches on the element name\n let
matchElement = false;\n\n selectorMatcher.match(elementCssSelector, (selector, directive) => {\n
directives[this.directivesIndex.get(directive)!] = directive;\n matchElement = matchElement ||
selector.hasElementSelector();\n });\n\n return {\n directives: directives.filter(dir => !!dir),\n
matchElement,\n };\n }\n\n private _createDirectiveAsts(\n isTemplateElement: boolean, elementName:
string, directives: CompileDirectiveSummary[],\n props: ParsedProperty[], elementOrDirectiveRefs:
ElementOrDirectiveRef[],\n elementSourceSpan: ParseSourceSpan, targetReferences: t.ReferenceAst[],\n targetBoundDirectivePropNames: Set<string>): t.DirectiveAst[] {\n const matchedReferences = new
Set<string>();\n let component: CompileDirectiveSummary = null!;\n\n const directiveAsts =
directives.map((directive) => {\n const sourceSpan = new ParseSourceSpan(\n elementSourceSpan.start,
elementSourceSpan.end, elementSourceSpan.fullStart,\n `Directive ${identifierName(directive.type)}`);\n\n if (directive.isComponent) {\n component = directive;\n }\n\n const directiveProperties:
t.BoundDirectivePropertyAst[] = [];\n const boundProperties =\n
this._bindingParser.createDirectiveHostPropertyAsts(directive, elementName, sourceSpan)!;\n\n let
hostProperties =\n boundProperties.map(prop => t.BoundElementPropertyAst.fromBoundProperty(prop));\n\n // Note: We need to check the host properties here as well,\n // as we don't know the element name in the
DirectiveWrapperCompiler yet.\n hostProperties = this._checkPropertiesInSchema(elementName,
hostProperties);\n\n const parsedEvents = this._bindingParser.createDirectiveHostEventAsts(directive,

```

```

sourceSpan)!;\n this._createDirectivePropertyAsts(\n directive.inputs, props, directiveProperties,
targetBoundDirectivePropNames);\n elementOrDirectiveRefs.forEach((elOrDirRef) => {\n if
((elOrDirRef.value.length === 0 && directive.isComponent) ||\n
(elOrDirRef.isReferenceToDirective(directive))) {\n targetReferences.push(new t.ReferenceAst(\n
elOrDirRef.name, createTokenForReference(directive.type.reference), elOrDirRef.value,\n
elOrDirRef.sourceSpan));\n matchedReferences.add(elOrDirRef.name);\n }\n });\n const hostEvents
= parsedEvents.map(e => t.BoundEventAst.fromParsedEvent(e));\n const contentQueryStartId =
this.contentQueryStartId;\n this.contentQueryStartId += directive.queries.length;\n return new
t.DirectiveAst(\n directive, directiveProperties, hostProperties, hostEvents, contentQueryStartId,\n
sourceSpan);\n });\n\n elementOrDirectiveRefs.forEach((elOrDirRef) => {\n if (elOrDirRef.value.length > 0)
{\n if (!matchedReferences.has(elOrDirRef.name)) {\n this._reportError(\n `There is no directive
with \"exportAs\" set to \"${elOrDirRef.value}\"`,\n elOrDirRef.sourceSpan);\n }\n } else if
(!component) {\n let refToken: CompileTokenMetadata = null!;\n if (isTemplateElement) {\n
refToken = createTokenForExternalReference(this.reflector, Identifiers.TemplateRef);\n }\n targetReferences.push(\n
 new t.ReferenceAst(elOrDirRef.name, refToken, elOrDirRef.value,\n
elOrDirRef.sourceSpan);\n }\n });\n return directiveAsts;\n })\n\n private _createDirectivePropertyAsts(\n
directiveProperties: {[key: string]: string}, boundProps: ParsedProperty[],\n targetBoundDirectiveProps:
t.BoundDirectivePropertyAst[],\n targetBoundDirectivePropNames: Set<string>) {\n if (directiveProperties)
{\n const boundPropsByName = new Map<string, ParsedProperty>();\n boundProps.forEach(boundProp =>
{\n const prevValue = boundPropsByName.get(boundProp.name);\n if (!prevValue || prevValue.isLiteral)
{\n // give [a]="b" a higher precedence than a="b" on the same element\n
boundPropsByName.set(boundProp.name, boundProp);\n }\n });\n\n Object.keys(directiveProperties).forEach(dirProp => {\n const elProp = directiveProperties[dirProp];\n const boundProp = boundPropsByName.get(elProp);\n\n // Bindings are optional, so this binding only needs to
be set up if an expression is given.\n if (boundProp) {\n targetBoundDirectivePropNames.add(boundProp.name);\n if (!isEmptyExpression(boundProp.expression)) {\n targetBoundDirectiveProps.push(new t.BoundDirectivePropertyAst(\n
 dirProp, boundProp.name,\n
boundProp.expression, boundProp.sourceSpan);\n }\n }\n });\n\n private
_createElementPropertyAsts(\n elementName: string, props: ParsedProperty[],\n boundDirectivePropNames:
Set<string>): t.BoundElementPropertyAst[] {\n const boundElementProps: t.BoundElementPropertyAst[] = [];\n\n props.forEach((prop: ParsedProperty) => {\n if (!prop.isLiteral &&
!boundDirectivePropNames.has(prop.name)) {\n const boundProp =
this._bindingParser.createBoundElementProperty(elementName, prop);\n boundElementProps.push(t.BoundElementPropertyAst.fromBoundProperty(boundProp));\n }\n });\n return
this._checkPropertiesInSchema(elementName, boundElementProps);\n }\n\n private
_findComponentDirectives(directives: t.DirectiveAst[]): t.DirectiveAst[] {\n return directives.filter(directive =>
directive.directive.isComponent);\n }\n\n private _findComponentDirectiveNames(directives: t.DirectiveAst[]):
string[] {\n return this._findComponentDirectives(directives)\n .map(directive =>
identifierName(directive.directive.type)!);\n }\n\n private _assertOnlyOneComponent(directives: t.DirectiveAst[],
sourceSpan: ParseSourceSpan) {\n const componentTypeNames =
this._findComponentDirectiveNames(directives);\n if (componentTypeNames.length > 1) {\n this._reportError(\n `More than one component matched on this element.\\n` +\n `Make sure that only
one component's selector can match a given element.\\n` +\n `Conflicting components:
${componentTypeNames.join(',')}`,\n sourceSpan);\n }\n }\n\n /**\n * Make sure that non-angular tags
conform to the schemas.\n *\n * Note: An element is considered an angular tag when at least one directive
selector matches the\n * tag name.\n *\n * @param matchElement Whether any directive has matched on the tag
name\n * @param element the html element\n */\n private _assertElementExists(matchElement: boolean,
element: html.Element) {\n const elName = element.name.replace(/^(?:xhtml?:/, "");\n if (!matchElement &&

```

```

!this._schemaRegistry.hasElement(elName, this._schemas)) {\n let errorMsg = `'{elName}' is not a known
element:\n`;n errorMsg += `1. If '${\n elName}' is an Angular component, then verify that it is part of this
module.\n`;n if (elName.indexOf('-') > -1) {\n errorMsg += `2. If '${\n elName}' is a Web
Component then add 'CUSTOM_ELEMENTS_SCHEMA' to the '@NgModule.schemas' of this component to
suppress this message.`;\n } else {\n errorMsg +=\n `2. To allow any element add
'NO_ERRORS_SCHEMA' to the '@NgModule.schemas' of this component.`;\n }\n}
this._reportError(errorMsg, element.sourceSpan);\n }\n }\n private
_assertNoComponentsNorElementBindingsOnTemplate(\n directives: t.DirectiveAst[], elementProps:
t.BoundElementPropertyAst[],\n sourceSpan: ParseSourceSpan) {\n const componentTypeNames: string[] =
this._findComponentDirectiveNames(directives);\n if (componentTypeNames.length > 0) {\n
this._reportError(\n `Components on an embedded template: ${componentTypeNames.join(',')}`,\n
sourceSpan);\n }\n elementProps.forEach(prop => {\n this._reportError(\n `Property binding ${\n
prop.name} not used by any directive on an embedded template. Make sure that the property name is spelled
correctly and all directives are listed in the '@NgModule.declarations'.`,\n sourceSpan);\n });\n }\n private
_assertAllEventsPublishedByDirectives(\n directives: t.DirectiveAst[], events: t.BoundEventAst[]) {\n
const allDirectiveEvents = new Set<string>();\n directives.forEach(directive => {\n
Object.keys(directive.directive.outputs).forEach(k => {\n const eventName = directive.directive.outputs[k];\n
allDirectiveEvents.add(eventName);\n });\n });\n events.forEach(event => {\n if (event.target !== null ||
!allDirectiveEvents.has(event.name)) {\n this._reportError(\n `Event binding ${\n
event\n .fullName} not emitted by any directive on an embedded template. Make sure that the event name is spelled
correctly and all directives are listed in the '@NgModule.declarations'.`,\n event.sourceSpan);\n }\n
});\n }\n private _checkPropertiesInSchema(elementName: string, boundProps: t.BoundElementPropertyAst[]) {\n
t.BoundElementPropertyAst[] {\n // Note: We can't filter out empty expressions before this method,\n // as we
still want to validate them!\n return boundProps.filter((boundProp) => {\n if (boundProp.type ===
t.PropertyBindingType.Property &&\n !this._schemaRegistry.hasProperty(elementName, boundProp.name,
this._schemas)) {\n let errorMsg = `Can't bind to '${boundProp.name}' since it isn't a known property of '${\n
elementName}'`;\n if (elementName.startsWith('ng-')) {\n errorMsg +=\n `\\n1. If '${\n
boundProp\n .name}' is an Angular directive, then add 'CommonModule' to the
'@NgModule.imports' of this component.` +\n `\\n2. To allow any property add 'NO_ERRORS_SCHEMA'
to the '@NgModule.schemas' of this component.`;\n } else if (elementName.indexOf('-') > -1) {\n
errorMsg +=\n `\\n1. If '${elementName}' is an Angular component and it has '${\n
boundProp.name}' input, then verify that it is part of this module.` +\n `\\n2. If '${\n
elementName}' is a Web Component then add 'CUSTOM_ELEMENTS_SCHEMA' to the '@NgModule.schemas' of
this component to suppress this message.` +\n `\\n3. To allow any property add 'NO_ERRORS_SCHEMA'
to the '@NgModule.schemas' of this component.`;\n }\n this._reportError(errorMsg,
boundProp.sourceSpan);\n }\n return !isEmptyExpression(boundProp.value);\n });\n }\n private
_reportError(\n message: string, sourceSpan: ParseSourceSpan,\n level: ParseErrorLevel =
ParseErrorLevel.ERROR) {\n this._targetErrors.push(new ParseError(sourceSpan, message, level));\n
}\n }\n class NonBindableVisitor implements html.Visitor {\n visitElement(ast: html.Element, parent:
ElementContext): t.ElementAst|null {\n const preparsedElement = preparseElement(ast);\n if
(preparsedElement.type === PreparsedElementType.SCRIPT ||\n preparsedElement.type ===
PreparsedElementType.STYLE ||\n preparsedElement.type === PreparsedElementType.STYLESHEET) {\n
// Skipping <script> for security reasons\n // Skipping <style> and stylesheets as we already processed them\n
// in the StyleCompiler\n return null;\n }\n const attrNameAndValues = ast.attrs.map((attr): [string, string]
=> [attr.name, attr.value]);\n const selector = createElementCssSelector(ast.name, attrNameAndValues);\n const
ngContentIndex = parent.findNgContentIndex(selector);\n const children: t.TemplateAst[] = html.visitAll(this,
ast.children, EMPTY_ELEMENT_CONTEXT);\n return new t.ElementAst(\n ast.name, html.visitAll(this,
ast.attrs), [], [], [], false, [], children,\n ngContentIndex, ast.sourceSpan, ast.endSourceSpan);\n }\n}

```



```

*\n * @param value string representation of style as used in the `style` attribute in HTML.\n * Example: `color:
red; height: auto`.\n * @returns An array of style property name and value pairs, e.g. `['color', 'red', 'height',\n *
'auto']`\n * ^\nexport function parse(value: string): string[] {\n // we use a string array here instead of a string map\n
// because a string-map is not guaranteed to retain the\n // order of the entries whereas a string array can be\n //
constructed in a [key, value, key, value] format.\n const styles: string[] = [];\n\n let i = 0;\n let parenDepth = 0;\n
let quote: Char = Char.QuoteNone;\n let valueStart = 0;\n let propStart = 0;\n let currentProp: string|null = null;\n
let valueHasQuotes = false;\n while (i < value.length) {\n const token = value.charCodeAt(i++) as Char;\n
switch (token) {\n case Char.OpenParen:\n parenDepth++;\n break;\n case Char.CloseParen:\n
parenDepth--;\n break;\n case Char.QuoteSingle:\n // valueStart needs to be there since prop values
don't\n // have quotes in CSS\n valueHasQuotes = valueHasQuotes || valueStart > 0;\n if (quote ===
Char.QuoteNone) {\n quote = Char.QuoteSingle;\n } else if (quote === Char.QuoteSingle &&
value.charCodeAt(i - 1) !== Char.BackSlash) {\n quote = Char.QuoteNone;\n } break;\n case
Char.QuoteDouble:\n // same logic as above\n valueHasQuotes = valueHasQuotes || valueStart > 0;\n if
(quote === Char.QuoteNone) {\n quote = Char.QuoteDouble;\n } else if (quote === Char.QuoteDouble
&& value.charCodeAt(i - 1) !== Char.BackSlash) {\n quote = Char.QuoteNone;\n } break;\n
case Char.Colon:\n if (!currentProp && parenDepth === 0 && quote === Char.QuoteNone) {\n
currentProp = hyphenate(value.substring(propStart, i - 1).trim());\n valueStart = i;\n } break;\n
case Char.Semicolon:\n if (currentProp && valueStart > 0 && parenDepth === 0 && quote ===
Char.QuoteNone) {\n const styleVal = value.substring(valueStart, i - 1).trim();\n styles.push(currentProp,
valueHasQuotes ? stripUnnecessaryQuotes(styleVal) : styleVal);\n propStart = i;\n valueStart = 0;\n
currentProp = null;\n valueHasQuotes = false;\n } break;\n }\n }\n\n if (currentProp &&
valueStart) {\n const styleVal = value.substr(valueStart).trim();\n styles.push(currentProp, valueHasQuotes ?
stripUnnecessaryQuotes(styleVal) : styleVal);\n }\n\n return styles;\n}\n\nexport function
stripUnnecessaryQuotes(value: string): string {\n const qS = value.charCodeAt(0);\n const qE =
value.charCodeAt(value.length - 1);\n if (qS === qE && (qS === Char.QuoteSingle || qS === Char.QuoteDouble)) {\n
const tempValue = value.substring(1, value.length - 1);\n // special case to avoid using a multi-quoted string that
was just chomped\n // (e.g. `font-family: \"Verdana\", \"sans-serif\"`)\n if (tempValue.indexOf("\\") === -1 &&
tempValue.indexOf(\"'\") === -1) {\n value = tempValue;\n }\n }\n return value;\n}\n\nexport function
hyphenate(value: string): string {\n return value\n .replace(\n /[a-z][A-Z]/g,\n v => {\n return
v.charAt(0) + '-' + v.charAt(1);\n })\n .toLowerCase();\n}\n\n}

```

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**Minimum amount of binding slots required in the runtime for style/class bindings.**  
 Styling in Angular uses up two slots in the runtime LView/TData data structures to record binding data, property information and metadata.  
 When a binding is registered it will place the following information in the LView:  
 slot 1) binding value  
 slot 2) cached value (all other values collected before it in string form)  
 When a binding is registered it will place the following information in the TData:  
 slot 1) prop name  
 slot 2) binding index that points to the previous style/class binding (and some extra config values)  
 Let's imagine we have a binding that looks like so:  

```

<div [style.width]="x" [style.height]="y">

```

 Our LView and TData data-structures look like so:  

```

typescript
LView = [
 // ...
 x, // value of x
 "width: x",
 y, // value of y
 "width: x; height: y",
 // ...
];
TData = [
 // ...
 "width", // binding slot 20
 0,
 "height",
 20,
 // ...
];

```

**A styling expression summary**

that is to be processed by the compiler

```

export interface StylingInstruction {
 reference:
 o.ExternalReference;
 /** Calls to individual styling instructions. Used when chaining calls to the same
 instruction. */
 calls: StylingInstructionCall[];
}
export interface StylingInstructionCall {
 sourceSpan:
 ParseSourceSpan|null;
 supportsInterpolation: boolean;
 allocateBindingSlots: number;
 params: ((convertFn:
 (value: any) => o.Expression | o.Expression[]) => o.Expression[]);
}
/** An internal record of the input data
 for a styling binding */
interface BoundStylingEntry {
 hasOverrideFlag: boolean;
 name: string|null;
 suffix: string|null;
 sourceSpan: ParseSourceSpan;
 value: AST;
}
/** Produces creation/update
 instructions for all styling bindings (class and style)
 * It also produces the creation instruction to register all
 initial styling values
 * (which are all the static class="..." and style="..." attribute values that exist
 * on an
 element within a template).
 * The builder class below handles producing instructions for the following cases:
 * - Static style/class attributes (style="..." and class="...")
 * - Dynamic style/class map bindings
 ([style]="map" and [class]="map|string")
 * - Dynamic style/class property bindings ([style.prop]="exp" and
 [class.name]="exp")
 * Due to the complex relationship of all of these cases, the instructions generated
 * for
 these attributes/properties/bindings must be done so in the correct order. The
 * order which these must be
 generated is as follows:
 * if (createMode) {
 * styling(...)
 * }
 * if (updateMode) {
 * styleMap(...)
 * classMap(...)
 * styleProp(...)
 * classProp(...)
 * }
 * The creation/update methods within the builder
 class produce these instructions.
 export class StylingBuilder {
 /** Whether or not there are any static styling
 values present */
 private _hasInitialValues = false;
 /** Whether or not there are any styling bindings
 present
 * (i.e. [style], [class], [style.prop] or [class.name]) */
 public hasBindings = false;
 public
 hasBindingsWithPipes = false;
 /** the input for [class] (if it exists) */
 private _classMapInput:
 BoundStylingEntry|null = null;
 /** the input for [style] (if it exists) */
 private _styleMapInput:
 BoundStylingEntry|null = null;
 /** an array of each [style.prop] input */
 private _singleStyleInputs:
 BoundStylingEntry[]|null = null;
 /** an array of each [class.name] input */
 private _singleClassInputs:
 BoundStylingEntry[]|null = null;
 private _lastStylingInput: BoundStylingEntry|null = null;
 private
 _firstStylingInput: BoundStylingEntry|null = null;
 // maps are used instead of hash maps because a Map will
 // retain the ordering of the keys
 /** Represents the location of each style binding in the template
 * (e.g.
 <div [style.width]="w" [style.height]="h"> implies
 * that width=0 and height=1) */
 private
 _stylesIndex = new Map<string, number>();
 /** Represents the location of each class binding in the
 template
 * (e.g. <div [class.big]="b" [class.hidden]="h"> implies
 * that big=0 and hidden=1) */
 private
 _classesIndex = new Map<string, number>();
 private _initialStyleValues: string[] = [];
 private
 _initialClassValues: string[] = [];
 constructor(private _directiveExpr: o.Expression|null) {}
 /**
 Registers a given input to the styling builder to be later used when producing AOT code.
 * The code below
 will only accept the input if it is somehow tied to styling (whether it be
 * style/class bindings or static style/class
 attributes).
 * registerBoundInput(input: t.BoundAttribute): boolean {
 // [attr.style] or [attr.class] are
 skipped in the code below,
 // they should not be treated as styling-based bindings since
 // they are intended to
 be written directly to the attr and
 // will therefore skip all style/class resolution that is present
 // with
 style="", [style]="..." and [style.prop]="...", class="",
 // [class.prop]="...", [class]="..." assignments
 let
 binding: BoundStylingEntry|null = null;
 let name = input.name;
 switch (input.type) {
 case
 BindingType.Property:
 binding = this.registerInputBasedOnName(name, input.value, input.sourceSpan);
 break;
 case BindingType.Style:
 binding = this.registerStyleInput(name, false, input.value,
 input.sourceSpan, input.unit);
 break;
 case BindingType.Class:
 binding =
 this.registerClassInput(name, false, input.value, input.sourceSpan);
 break;
 }
 return binding ? true :
 false;
 }
 registerInputBasedOnName(name: string, expression: AST, sourceSpan: ParseSourceSpan) {
 let
 binding: BoundStylingEntry|null = null;
 const prefix = name.substring(0, 6);
 const isStyle = name === 'style'
 || prefix === 'style.' || prefix === 'style!';
 const isClass = !isStyle && (name === 'class' || prefix === 'class.' ||
 prefix === 'class!');
 if (isStyle || isClass) {
 const isMapBased = name.charAt(5) !== '.'; // style.prop or
 class.prop makes this a no
 const property = name.substr(isMapBased ? 5 : 6); // the dot explains why there's a
 +1
 if (isStyle) {
 binding = this.registerStyleInput(property, isMapBased, expression, sourceSpan);
 }
 }
 }
 }

```

```

else {\n binding = this.registerClassInput(property, isMapBased, expression, sourceSpan);\n }\n }\n return binding;\n }\n\n registerStyleInput(\n name: string, isMapBased: boolean, value: AST, sourceSpan: ParseSourceSpan,\n suffix?: string|null): BoundStylingEntry|null {\n if (isEmptyExpression(value)) {\n return null;\n }\n name = normalizePropName(name);\n const {property, hasOverrideFlag, suffix: bindingSuffix} = parseProperty(name);\n suffix = typeof suffix === 'string' && suffix.length !== 0 ? suffix : bindingSuffix;\n const entry:\n BoundStylingEntry = {name: property, suffix: suffix, value, sourceSpan, hasOverrideFlag};\n if (isMapBased) {\n this._styleMapInput = entry;\n } else {\n (this._singleStyleInputs = this._singleStyleInputs || []).push(entry);\n registerIntoMap(this._stylesIndex, property);\n }\n this._lastStylingInput = entry;\n this._firstStylingInput = this._firstStylingInput || entry;\n this._checkForPipes(value);\n this.hasBindings = true;\n return entry;\n }\n\n registerClassInput(name: string, isMapBased: boolean, value: AST, sourceSpan: ParseSourceSpan):\n BoundStylingEntry|null {\n if (isEmptyExpression(value)) {\n return null;\n }\n const {property, hasOverrideFlag} = parseProperty(name);\n const entry:\n BoundStylingEntry = {name: property, value, sourceSpan, hasOverrideFlag, suffix: null};\n if (isMapBased) {\n if (this._classMapInput) {\n throw new Error(\n '[class] and [className] bindings cannot be used on the same element simultaneously');\n }\n this._classMapInput = entry;\n } else {\n (this._singleClassInputs = this._singleClassInputs || []).push(entry);\n registerIntoMap(this._classesIndex, property);\n }\n this._lastStylingInput = entry;\n this._firstStylingInput = this._firstStylingInput || entry;\n this._checkForPipes(value);\n this.hasBindings = true;\n return entry;\n }\n\n private _checkForPipes(value: AST) {\n if ((value instanceof ASTWithSource) && (value.ast instanceof BindingPipe)) {\n this.hasBindingsWithPipes = true;\n }\n }\n\n /**\n * Registers the element's static style string value to the builder.\n * @param value the style string (e.g. `width:100px; height:200px;`)\n */\n registerStyleAttr(value: string) {\n this._initialStyleValues = parseStyle(value);\n this._hasInitialValues = true;\n }\n\n /**\n * Registers the element's static class string value to the builder.\n * @param value the className string (e.g. `disabled gold zoom`)\n */\n registerClassAttr(value: string) {\n this._initialClassValues = value.trim().split(/\\s+/g);\n this._hasInitialValues = true;\n }\n\n /**\n * Appends all styling-related expressions to the provided attrs array.\n * @param attrs an existing array where each of the styling expressions\n * will be inserted into.\n */\n populateInitialStylingAttrs(attrs: o.Expression[]): void {\n // [CLASS_MARKER, 'foo', 'bar', 'baz' ...]\n if (this._initialClassValues.length) {\n attrs.push(o.literal(AttributeMarker.Classes));\n for (let i = 0; i < this._initialClassValues.length; i++) {\n attrs.push(o.literal(this._initialClassValues[i]));\n }\n }\n // [STYLE_MARKER, 'width', '200px', 'height', '100px', ...]\n if (this._initialStyleValues.length) {\n attrs.push(o.literal(AttributeMarker.Styles));\n for (let i = 0; i < this._initialStyleValues.length; i += 2) {\n attrs.push(\n o.literal(this._initialStyleValues[i]), o.literal(this._initialStyleValues[i + 1]));\n }\n }\n }\n\n /**\n * Builds an instruction with all the expressions and parameters for `elementHostAttrs`.\n * The instruction generation code below is used for producing the AOT statement code which is\n * responsible for registering initial styles (within a directive hostBindings' creation block),\n * as well as any of the provided attribute values, to the directive host element.\n */\n assignHostAttrs(attrs: o.Expression[], definitionMap: DefinitionMap): void {\n if (this._directiveExpr && (attrs.length || this._hasInitialValues)) {\n this.populateInitialStylingAttrs(attrs);\n definitionMap.set('hostAttrs', o.literalArr(attrs));\n }\n }\n\n /**\n * Builds an instruction with all the expressions and parameters for `classMap`.\n * The instruction data will contain all expressions for `classMap` to function\n * which includes the `[class]` expression params.\n */\n buildClassMapInstruction(valueConverter: ValueConverter): StylingInstruction|null {\n if (this._classMapInput) {\n return this._buildMapBasedInstruction(valueConverter, true, this._classMapInput);\n }\n return null;\n }\n\n /**\n * Builds an instruction with all the expressions and parameters for `styleMap`.\n * The instruction data will contain all expressions for `styleMap` to function\n * which includes the `[style]` expression params.\n */\n buildStyleMapInstruction(valueConverter: ValueConverter): StylingInstruction|null {\n if (this._styleMapInput) {\n return this._buildMapBasedInstruction(valueConverter, false, this._styleMapInput);\n }\n return null;\n }\n\n private _buildMapBasedInstruction(\n valueConverter: ValueConverter, isClassBased: boolean,\n stylingInput: BoundStylingEntry): StylingInstruction {\n // each styling binding value is stored in

```

```

the LView\n // map-based bindings allocate two slots: one for the\n // previous binding value and another for the
previous\n // className or style attribute value.\n let totalBindingSlotsRequired =
MIN_STYLING_BINDING_SLOTS_REQUIRED;\n\n // these values must be outside of the update block so that
they can\n // be evaluated (the AST visit call) during creation time so that any\n // pipes can be picked up in time
before the template is built\n const mapValue = stylingInput.value.visit(valueConverter);\n let reference:
o.ExternalReference;\n if (mapValue instanceof Interpolation) {\n totalBindingSlotsRequired +=
mapValue.expressions.length;\n reference = isClassBased ? getClassMapInterpolationExpression(mapValue) :\n
getStyleMapInterpolationExpression(mapValue);\n } else {\n reference = isClassBased ?
R3.classMap : R3.styleMap;\n }\n\n return {\n reference,\n calls: [{\n supportsInterpolation: true,\n
sourceSpan: stylingInput.sourceSpan,\n allocateBindingSlots: totalBindingSlotsRequired,\n params:
(convertFn: (value: any) => o.Expression|o.Expression[]) => {\n const convertResult =
convertFn(mapValue);\n const params = Array.isArray(convertResult) ? convertResult : [convertResult];\n
return params;\n }\n }]\n };\n\n private _buildSingleInputs(\n reference: o.ExternalReference,\n
inputs: BoundStylingEntry[], valueConverter: ValueConverter,\n getInterpolationExpressionFn: ((value:
Interpolation) => o.ExternalReference)|null,\n isClassBased: boolean): StylingInstruction[] {\n const
instructions: StylingInstruction[] = [];\n\n inputs.forEach(input => {\n const previousInstruction:
StylingInstruction|undefined =\n instructions[instructions.length - 1];\n const value =
input.value.visit(valueConverter);\n let referenceForCall = reference;\n // each styling binding value is
stored in the LView\n // but there are two values stored for each binding:\n // 1) the value itself\n // 2) an
intermediate value (concatenation of style up to this point).\n // We need to store the intermediate value so that
we don't allocate\n // the strings on each CD.\n let totalBindingSlotsRequired =
MIN_STYLING_BINDING_SLOTS_REQUIRED;\n\n if (value instanceof Interpolation) {\n
totalBindingSlotsRequired += value.expressions.length;\n\n if (getInterpolationExpressionFn) {\n
referenceForCall = getInterpolationExpressionFn(value);\n }\n }\n\n const call = {\n sourceSpan:
input.sourceSpan,\n allocateBindingSlots: totalBindingSlotsRequired,\n supportsInterpolation:
!!getInterpolationExpressionFn,\n params: (convertFn: (value: any) => o.Expression | o.Expression[]) => {\n
// params => stylingProp(propName, value, suffix)\n const params: o.Expression[] = [];\n
params.push(o.literal(input.name));\n\n const convertResult = convertFn(value);\n if
(Array.isArray(convertResult)) {\n params.push(...convertResult);\n } else {\n
params.push(convertResult);\n }\n\n // [style.prop] bindings may use suffix values (e.g. px, em, etc...),
therefore,\n // if that is detected then we need to pass that in as an optional param.\n if (!isClassBased
&& input.suffix !== null) {\n params.push(o.literal(input.suffix));\n }\n\n return params;\n
}\n };\n\n // If we ended up generating a call to the same instruction as the previous styling property\n // we
can chain the calls together safely to save some bytes, otherwise we have to generate\n // a separate instruction
call. This is primarily a concern with interpolation instructions\n // where we may start off with one `reference`,
but end up using another based on the\n // number of interpolations.\n if (previousInstruction &&
previousInstruction.reference === referenceForCall) {\n previousInstruction.calls.push(call);\n } else {\n
instructions.push({reference: referenceForCall, calls: [call]});\n }\n\n return instructions;\n }\n\n private
_buildClassInputs(valueConverter: ValueConverter): StylingInstruction[] {\n if (this._singleClassInputs)
{\n return this._buildSingleInputs(\n R3.classProp, this._singleClassInputs, valueConverter, null, true);\n
}\n\n return [];\n }\n\n private _buildStyleInputs(valueConverter: ValueConverter): StylingInstruction[] {\n
if (this._singleStyleInputs) {\n return this._buildSingleInputs(\n R3.styleProp, this._singleStyleInputs,
valueConverter,\n getStylePropInterpolationExpression, false);\n }\n\n return [];\n }\n\n /**\n * Constructs
all instructions which contain the expressions that will be placed\n * into the update block of a template function or
a directive hostBindings function.\n */\n buildUpdateLevelInstructions(valueConverter: ValueConverter) {\n
const instructions: StylingInstruction[] = [];\n\n if (this.hasBindings) {\n const styleMapInstruction =
this.buildStyleMapInstruction(valueConverter);\n\n if (styleMapInstruction) {\n
instructions.push(styleMapInstruction);\n }\n\n const classMapInstruction =

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this.buildClassMapInstruction(valueConverter);\n if (classMapInstruction) {\n
instructions.push(classMapInstruction);\n }\n instructions.push(...this._buildStyleInputs(valueConverter));\n
instructions.push(...this._buildClassInputs(valueConverter));\n }\n return instructions;\n }\n}\n\nfunction
registerIntoMap(map: Map<string, number>, key: string) {\n if (!map.has(key)) {\n map.set(key, map.size);\n
 }\n}\n\nexport function parseProperty(name: string):\n {property: string, suffix: string|null, hasOverrideFlag:
boolean} {\n let hasOverrideFlag = false;\n const overrideIndex = name.indexOf(IMPORTANT_FLAG);\n if
(overrideIndex !== -1) {\n name = overrideIndex > 0 ? name.substring(0, overrideIndex) : '';\n hasOverrideFlag
= true;\n }\n let suffix: string|null = null;\n let property = name;\n const unitIndex = name.lastIndexOf('.');\n if
(unitIndex > 0) {\n suffix = name.substr(unitIndex + 1);\n property = name.substring(0, unitIndex);\n }\n return {property, suffix, hasOverrideFlag};\n}\n\n/**\n * Gets the instruction to generate for an interpolated class
map.\n * @param interpolation An Interpolation AST\n */\nfunction
getClassMapInterpolationExpression(interpolation: Interpolation): o.ExternalReference {\n switch
(getInterpolationArgsLength(interpolation)) {\n case 1:\n return R3.classMap;\n case 3:\n return
R3.classMapInterpolate1;\n case 5:\n return R3.classMapInterpolate2;\n case 7:\n return
R3.classMapInterpolate3;\n case 9:\n return R3.classMapInterpolate4;\n case 11:\n return
R3.classMapInterpolate5;\n case 13:\n return R3.classMapInterpolate6;\n case 15:\n return
R3.classMapInterpolate7;\n case 17:\n return R3.classMapInterpolate8;\n default:\n return
R3.classMapInterpolateV;\n }\n}\n\n/**\n * Gets the instruction to generate for an interpolated style map.\n *
@param interpolation An Interpolation AST\n */\nfunction
getStyleMapInterpolationExpression(interpolation:
Interpolation): o.ExternalReference {\n switch (getInterpolationArgsLength(interpolation)) {\n case 1:\n return
R3.styleMap;\n case 3:\n return R3.styleMapInterpolate1;\n case 5:\n return R3.styleMapInterpolate2;\n
case 7:\n return R3.styleMapInterpolate3;\n case 9:\n return R3.styleMapInterpolate4;\n case 11:\n
return R3.styleMapInterpolate5;\n case 13:\n return R3.styleMapInterpolate6;\n case 15:\n return
R3.styleMapInterpolate7;\n case 17:\n return R3.styleMapInterpolate8;\n default:\n return
R3.styleMapInterpolateV;\n }\n}\n\n/**\n * Gets the instruction to generate for an interpolated style prop.\n *
@param interpolation An Interpolation AST\n */\nfunction
getStylePropInterpolationExpression(interpolation:
Interpolation) {\n switch (getInterpolationArgsLength(interpolation)) {\n case 1:\n return R3.styleProp;\n
case 3:\n return R3.stylePropInterpolate1;\n case 5:\n return R3.stylePropInterpolate2;\n case 7:\n
return R3.stylePropInterpolate3;\n case 9:\n return R3.stylePropInterpolate4;\n case 11:\n return
R3.stylePropInterpolate5;\n case 13:\n return R3.stylePropInterpolate6;\n case 15:\n return
R3.stylePropInterpolate7;\n case 17:\n return R3.stylePropInterpolate8;\n default:\n return
R3.stylePropInterpolateV;\n }\n}\n\nfunction normalizePropName(prop: string): string {\n return
hyphenate(prop);\n}\n\n",/**\n * @license\n * Copyright Google LLC All Rights Reserved.\n * Use of this
source code is governed by an MIT-style license that can be\n * found in the LICENSE file at
https://angular.io/license\n */\nimport * as chars from './chars';\n\nexport enum TokenType {\n Character,\n Identifier,\n Keyword,\n String,\n Operator,\n Number,\n Error\n}\n\nconst KEYWORDS = ['var', 'let', 'as', 'null',
'undefined', 'true', 'false', 'if', 'else', 'this'];\n\nexport class Lexer {\n tokenize(text: string): Token[] {\n const
scanner = new _Scanner(text);\n const tokens: Token[] = [];\n let token = scanner.scanToken();\n while (token
!== null) {\n tokens.push(token);\n token = scanner.scanToken();\n }\n return tokens;\n }\n}\n\nexport
class Token {\n constructor(\n public index: number, public end: number, public type: TokenType, public
numValue: number, public strValue: string) {\n }\n\n isCharacter(code: number): boolean {\n return this.type
=== TokenType.Character && this.numValue === code;\n }\n\n isNumber(): boolean {\n return this.type ===
TokenType.Number;\n }\n\n isString(): boolean {\n return this.type === TokenType.String;\n }\n\n isOperator(operator: string): boolean {\n return this.type === TokenType.Operator && this.strValue === operator;\n
 }\n\n isIdentifier(): boolean {\n return this.type === TokenType.Identifier;\n }\n\n isKeyword(): boolean {\n
return this.type === TokenType.Keyword;\n }\n\n isKeywordLet(): boolean {\n return this.type ===
TokenType.Keyword && this.strValue === 'let';\n }\n\n isKeywordAs(): boolean {\n return this.type ===
TokenType.Keyword && this.strValue === 'as';\n }\n\n isKeywordNull(): boolean {\n return this.type ==

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(part of the operator when the second code point matches)\n * @param threeCode code point for the third symbol\n
* @param three third symbol (part of the operator when provided and matches source expression)\n */\n
scanComplexOperator(\n start: number, one: string, twoCode: number, two: string, threeCode?: number,\n three?: string): Token {\n this.advance();\n let str: string = one;\n if (this.peek == twoCode) {\n this.advance();\n str += two;\n }\n if (threeCode != null && this.peek == threeCode) {\n this.advance();\n str += three;\n }\n return newOperatorToken(start, this.index, str);\n }\n\n scanIdentifier(): Token {\n const\n start: number = this.index;\n this.advance();\n while (isIdentifierPart(this.peek)) this.advance();\n const str:\n string = this.input.substring(start, this.index);\n return KEYWORDS.indexOf(str) > -1 ? newKeywordToken(start,\n this.index, str) :\n newIdentifierToken(start, this.index, str);\n }\n\n scanNumber(start:\n number): Token {\n let simple: boolean = (this.index === start);\n this.advance(); // Skip initial digit.\n while\n (true) {\n if (chars.isDigit(this.peek)) {\n // Do nothing.\n } else if (this.peek == chars.$PERIOD) {\n simple = false;\n } else if (isExponentStart(this.peek)) {\n this.advance();\n if\n (isExponentSign(this.peek)) this.advance();\n if (!chars.isDigit(this.peek)) return this.error('Invalid exponent', -\n 1);\n simple = false;\n } else {\n break;\n }\n this.advance();\n }\n const str: string =\n this.input.substring(start, this.index);\n const value: number = simple ? parseIntAutoRadix(str) : parseFloat(str);\n return newNumberToken(start, this.index, value);\n }\n\n scanString(): Token {\n const start: number =\n this.index;\n const quote: number = this.peek;\n this.advance(); // Skip initial quote.\n\n let buffer: string = "";\n let marker: number = this.index;\n const input: string = this.input;\n while (this.peek != quote) {\n if\n (this.peek == chars.$BACKSLASH) {\n buffer += input.substring(marker, this.index);\n this.advance();\n let unescapedCode: number;\n // Workaround for TS2.1-introduced type strictness\n this.peek =\n this.peek;\n if (this.peek == chars.$u) {\n // 4 character hex code for unicode character.\n const hex:\n string = input.substring(this.index + 1, this.index + 5);\n if (/^[0-9a-f]+$/.test(hex)) {\n unescapedCode\n = parseInt(hex, 16);\n } else {\n return this.error('Invalid unicode escape [\\u${hex}]', 0);\n }\n for (let i: number = 0; i < 5; i++) {\n this.advance();\n }\n } else {\n unescapedCode =\n unescape(this.peek);\n this.advance();\n }\n buffer += String.fromCharCode(unescapedCode);\n marker = this.index;\n } else if (this.peek == chars.$EOF) {\n return this.error('Unterminated quote', 0);\n } else {\n this.advance();\n }\n }\n\n const last: string = input.substring(marker, this.index);\n this.advance(); // Skip terminating quote.\n return newStringToken(start, this.index, buffer + last);\n }\n\n error(message: string, offset: number): Token {\n const position: number = this.index + offset;\n return\n newErrorToken(\n position, this.index, `Lexer Error: ${message} at column ${position} in expression\n [${this.input}]`);\n }\n\nfunction isIdentifierStart(code: number): boolean {\n return (chars.$a <= code &&\n code <= chars.$z) || (chars.$A <= code && code <= chars.$Z) ||\n (code == chars.$_) || (code ==\n chars.$$);\n }\n\nexport function isIdentifier(input: string): boolean {\n if (input.length == 0) return false;\n const\n scanner = new _Scanner(input);\n if (!isIdentifierStart(scanner.peek)) return false;\n scanner.advance();\n while\n (scanner.peek != chars.$EOF) {\n if (!isIdentifierPart(scanner.peek)) return false;\n scanner.advance();\n }\n return true;\n }\n\nfunction isIdentifierPart(code: number): boolean {\n return chars.isAsciiLetter(code) ||\n chars.isDigit(code) || (code == chars.$_) ||\n (code == chars.$$);\n }\n\nfunction isExponentStart(code: number):\n boolean {\n return code == chars.$e || code == chars.$E;\n }\n\nfunction isExponentSign(code: number): boolean\n {\n return code == chars.$MINUS || code == chars.$PLUS;\n }\n\nexport function isQuote(code: number): boolean\n {\n return code === chars.$SQ || code === chars.$DQ || code === chars.$BT;\n }\n\nfunction unescape(code:\n number): number {\n switch (code) {\n case chars.$n:\n return chars.$LF;\n case chars.$f:\n return\n chars.$FF;\n case chars.$r:\n return chars.$CR;\n case chars.$t:\n return chars.$TAB;\n case chars.$v:\n return\n chars.$VTAB;\n default:\n return code;\n }\n }\n\nfunction parseIntAutoRadix(text: string): number {\n const\n result: number = parseInt(text);\n if (isNaN(result)) {\n throw new Error('Invalid integer literal when\n parsing ' + text);\n }\n return result;\n }\n\n"/**\n * @license\n * Copyright Google LLC All Rights Reserved.\n *\n * Use of this source code is governed by an MIT-style license that can be\n * found in the LICENSE file at\n https://angular.io/license\n */\n\nimport * as chars from './chars';\nimport\n {DEFAULT_INTERPOLATION_CONFIG, InterpolationConfig} from './ml_parser/interpolation_config';

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{escapeRegExp} from './util';\n\nimport {AbsoluteSourceSpan, AST, AstVisitor, ASTWithSource, Binary,
BindingPipe, Chain, Conditional, EmptyExpr, ExpressionBinding, FunctionCall, ImplicitReceiver, Interpolation,
KeyedRead, KeyedWrite, LiteralArray, LiteralMap, LiteralMapKey, LiteralPrimitive, MethodCall, NonNullAssert,
ParserError, ParseSpan, PrefixNot, PropertyRead, PropertyWrite, Quote, RecursiveAstVisitor, SafeMethodCall,
SafePropertyRead, TemplateBinding, TemplateBindingIdentifier, ThisReceiver, Unary, VariableBinding} from
 './ast';\n\nimport {EOF, isIdentifier, isQuote, Lexer, Token, TokenType} from './lexer';\n\nexport class
SplitInterpolation {\n constructor(\n public strings: string[], public stringSpans: {start: number, end:
number}[]),\n public expressions: string[], public expressionsSpans: {start: number, end: number}[]),\n public
offsets: number[]) {} }\n\nexport class TemplateBindingParseResult {\n constructor(\n public
templateBindings: TemplateBinding[], public warnings: string[],\n public errors: ParserError[]) {} }\n\nconst
defaultInterpolateRegExp = _createInterpolateRegExp(DEFAULT_INTERPOLATION_CONFIG);\n\nfunction
_getInterpolateRegExp(config: InterpolationConfig): RegExp {\n if (config ===
DEFAULT_INTERPOLATION_CONFIG) {\n return defaultInterpolateRegExp;\n } else {\n return
_createInterpolateRegExp(config);\n }\n}\n\nfunction _createInterpolateRegExp(config: InterpolationConfig):
RegExp {\n const pattern = escapeRegExp(config.start) + '([\\s\\S]*?)' + escapeRegExp(config.end);\n return
new RegExp(pattern, 'g');\n}\n\nexport class Parser {\n private errors: ParserError[] = [];\n constructor(private
_lexer: Lexer) {} \n\n simpleExpressionChecker = SimpleExpressionChecker;\n parseAction(\n input: string,
location: any, absoluteOffset: number,\n interpolationConfig: InterpolationConfig =
DEFAULT_INTERPOLATION_CONFIG): ASTWithSource {\n this._checkNoInterpolation(input, location,
interpolationConfig);\n const sourceToLex = this._stripComments(input);\n const tokens =
this._lexer.tokenize(this._stripComments(input));\n const ast = new _ParseAST(\n input, location,
absoluteOffset, tokens, sourceToLex.length, true, this.errors,\n input.length - sourceToLex.length)\n .parseChain();\n return new ASTWithSource(ast, input, location, absoluteOffset, this.errors);\n }\n\n parseBinding(\n input: string, location: any, absoluteOffset: number,\n interpolationConfig:
InterpolationConfig = DEFAULT_INTERPOLATION_CONFIG): ASTWithSource {\n const ast =
this._parseBindingAst(input, location, absoluteOffset, interpolationConfig);\n return new ASTWithSource(ast,
input, location, absoluteOffset, this.errors);\n }\n\n private checkSimpleExpression(ast: AST): string[] {\n const
checker = new this.simpleExpressionChecker();\n ast.visit(checker);\n return checker.errors;\n }\n\n parseSimpleBinding(\n input: string, location: string, absoluteOffset: number,\n interpolationConfig:
InterpolationConfig = DEFAULT_INTERPOLATION_CONFIG): ASTWithSource {\n const ast =
this._parseBindingAst(input, location, absoluteOffset, interpolationConfig);\n const errors =
this.checkSimpleExpression(ast);\n if (errors.length > 0) {\n this._reportError(\n `Host binding expression
cannot contain ${errors.join(' ')}`, input, location);\n }\n return new ASTWithSource(ast, input, location,
absoluteOffset, this.errors);\n }\n\n private _reportError(message: string, input: string, errLocation: string,
ctxLocation?: any) {\n this.errors.push(new ParserError(message, input, errLocation, ctxLocation));\n }\n\n private _parseBindingAst(\n input: string, location: string, absoluteOffset: number,\n interpolationConfig:
InterpolationConfig): AST {\n // Quotes expressions use 3rd-party expression language. We don't want to use\n
// our lexer or parser for that, so we check for that ahead of time.\n const quote = this._parseQuote(input, location,
absoluteOffset);\n if (quote != null) {\n return quote;\n }\n this._checkNoInterpolation(input, location,
interpolationConfig);\n const sourceToLex = this._stripComments(input);\n const tokens =
this._lexer.tokenize(sourceToLex);\n return new _ParseAST(\n input, location, absoluteOffset, tokens,
sourceToLex.length, false, this.errors,\n input.length - sourceToLex.length)\n .parseChain();\n }\n\n private _parseQuote(input: string|null, location: any, absoluteOffset: number): AST|null {\n if (input == null)
return null;\n const prefixSeparatorIndex = input.indexOf(':');\n if (prefixSeparatorIndex == -1) return null;\n const prefix = input.substring(0, prefixSeparatorIndex).trim();\n if (!isIdentifier(prefix)) return null;\n const
uninterpretedExpression = input.substring(prefixSeparatorIndex + 1);\n const span = new ParseSpan(0,
input.length);\n return new Quote(\n span, span.toAbsolute(absoluteOffset), prefix, uninterpretedExpression,
location);\n }\n\n /**\n * Parse microsyntax template expression and return a list of bindings or\n * parsing

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errors in case the given expression is invalid.\n * For example,\n * ```\n * <div *ngFor="let item of
items">\n * ^ ^ absoluteValueOffset for `templateValue`\n * absoluteKeyOffset for `templateKey`\n
* ```\n * contains three bindings:\n * 1. ngFor -> null\n * 2. item -> NgForOfContext.$implicit\n * 3. ngForOf
-> items\n *\n * This is apparent from the de-sugared template:\n * ```\n * <ng-template ngFor let-item
[ngForOf]="items">\n * ```\n *\n * @param templateKey name of directive, without the * prefix. For example:
ngIf, ngFor\n * @param templateValue RHS of the microsyntax attribute\n * @param templateUrl template
filename if it's external, component filename if it's inline\n * @param absoluteKeyOffset start of the
`templateKey`\n * @param absoluteValueOffset start of the `templateValue`\n */\n parseTemplateBindings(\n
templateKey: string, templateValue: string, templateUrl: string, absoluteKeyOffset: number,\n
absoluteValueOffset: number): TemplateBindingParseResult {\n const tokens =
this._lexer.tokenize(templateValue);\n const parser = new _ParseAST(\n templateValue, templateUrl,
absoluteValueOffset, tokens, templateValue.length,\n false /* parseAction */, this.errors, 0 /* relative offset
*/);\n return parser.parseTemplateBindings({\n source: templateKey,\n span: new
AbsoluteSourceSpan(absoluteKeyOffset, absoluteKeyOffset + templateKey.length),\n });\n }\n\n
parseInterpolation(\n input: string, location: any, absoluteOffset: number,\n interpolationConfig:
InterpolationConfig = DEFAULT_INTERPOLATION_CONFIG): ASTWithSource|null {\n const split =
this.splitInterpolation(input, location, interpolationConfig);\n if (split === null) return null;\n\n const expressions:
AST[] = [];\n\n for (let i = 0; i < split.expressions.length; ++i) {\n const expressionText = split.expressions[i];\n
 const sourceToLex = this._stripComments(expressionText);\n const tokens =
this._lexer.tokenize(sourceToLex);\n const ast = new _ParseAST(\n input, location, absoluteOffset,
tokens, sourceToLex.length, false,\n this.errors, split.offsets[i] + (expressionText.length -
sourceToLex.length))\n .parseChain();\n expressions.push(ast);\n }\n\n return
this.createInterpolationAst(split.strings, expressions, input, location, absoluteOffset);\n }\n\n /**\n * Similar to
`parseInterpolation`, but treats the provided string as a single expression\n * element that would normally appear
within the interpolation prefix and suffix (`{` and `}`).\n * This is used for parsing the switch expression in
ICUs.\n */\n parseInterpolationExpression(expression: string, location: any, absoluteOffset: number):\n
ASTWithSource {\n const sourceToLex = this._stripComments(expression);\n const tokens =
this._lexer.tokenize(sourceToLex);\n const ast = new _ParseAST(\n expression, location,
absoluteOffset, tokens, sourceToLex.length,\n /* parseAction */ false, this.errors, 0)\n .parseChain();\n const strings = ["", ""]; // The prefix and suffix strings are both empty\n return
this.createInterpolationAst(strings, [ast], expression, location, absoluteOffset);\n }\n\n private
createInterpolationAst(\n strings: string[], expressions: AST[], input: string, location: string,\n absoluteOffset:
number): ASTWithSource {\n const span = new ParseSpan(0, input.length);\n const interpolation =\n new
Interpolation(span, span.toAbsolute(absoluteOffset), strings, expressions);\n return new
ASTWithSource(interpolation, input, location, absoluteOffset, this.errors);\n }\n\n /**\n * Splits a string of text
into `raw` text segments and expressions present in interpolations in\n * the string.\n * Returns `null` if there are
no interpolations, otherwise a\n * `SplitInterpolation` with splits that look like\n * <raw text> <expression>
<raw text> ... <raw text> <expression> <raw text>\n */\n splitInterpolation(\n input: string, location: string,\n
interpolationConfig: InterpolationConfig = DEFAULT_INTERPOLATION_CONFIG): SplitInterpolation\n |null
{\n const strings: string[] = [];\n const expressions: string[] = [];\n const offsets: number[] = [];\n const
stringSpans: {start: number, end: number}[] = [];\n const expressionSpans: {start: number, end: number}[] = [];\n
 let i = 0;\n let atInterpolation = false;\n let extendLastString = false;\n let {start: interpStart, end: interpEnd} =
interpolationConfig;\n while (i < input.length) {\n if (!atInterpolation) {\n // parse until starting
{\n const start = i;\n i = input.indexOf(interpStart, i);\n if (i === -1) {\n i = input.length;\n }\n
 const part = input.substring(start, i);\n strings.push(part);\n stringSpans.push({start, end: i});\n\n
 atInterpolation = true;\n } else {\n // parse from starting {{ to ending }}\n const fullStart = i;\n const
exprStart = fullStart + interpStart.length;\n const exprEnd = input.indexOf(interpEnd, exprStart);\n if
(exprEnd === -1) {\n // Could not find the end of the interpolation; do not parse an expression.\n //

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Instead we should extend the content on the last raw string.\n
 atInterpolation = false;\n extendLastString
= true;\n break;\n }\n const fullEnd = exprEnd + interpEnd.length;\n const part =
input.substring(exprStart, exprEnd);\n if (part.trim().length > 0) {\n expressions.push(part);\n } else
{\n this._reportError(\n 'Blank expressions are not allowed in interpolated strings', input,\n `at
column ${i} in`, location);\n expressions.push('$implicit');\n }\n offsets.push(exprStart);\n
expressionSpans.push({start: fullStart, end: fullEnd});\n i = fullEnd;\n atInterpolation = false;\n }\n
}\n if (!atInterpolation) {\n // If we are now at a text section, add the remaining content as a raw string.\n if
(extendLastString) {\n strings[strings.length - 1] += input.substring(i);\n stringSpans[stringSpans.length -
1].end = input.length;\n } else {\n strings.push(input.substring(i));\n stringSpans.push({start: i, end:
input.length});\n }\n }\n return expressions.length === 0 ?\n null :\n new SplitInterpolation(strings,
stringSpans, expressions, expressionSpans, offsets);\n }\n\n wrapLiteralPrimitive(input: string|null, location: any,
absoluteOffset: number): ASTWithSource {\n const span = new ParseSpan(0, input == null ? 0 : input.length);\n return new
ASTWithSource(\n new LiteralPrimitive(span, span.toAbsolute(absoluteOffset), input), input,
location,\n absoluteOffset, this.errors);\n }\n\n private _stripComments(input: string): string {\n const i =
this._commentStart(input);\n return i != null ? input.substring(0, i).trim() : input;\n }\n\n private
_commentStart(input: string): number|null {\n let outerQuote: number|null = null;\n for (let i = 0; i < input.length
- 1; i++) {\n const char = input.charCodeAt(i);\n const nextChar = input.charCodeAt(i + 1);\n\n if (char
=== chars.$SLASH && nextChar == chars.$SLASH && outerQuote == null) return i;\n if (outerQuote ===
char) {\n outerQuote = null;\n } else if (outerQuote == null && isQuote(char)) {\n outerQuote = char;\n
 }\n }\n return null;\n }\n\n private _checkNoInterpolation(\n input: string, location: any,
interpolationConfig: InterpolationConfig): void {\n const regexp = _getInterpolateRegExp(interpolationConfig);\n const
parts = input.split(regexp);\n if (parts.length > 1) {\n this._reportError(\n `Got interpolation
(${interpolationConfig.start}${\n interpolationConfig.end}) where expression was expected`,\n input,\n `at column ${this._findInterpolationErrorColumn(parts, 1, interpolationConfig)} in`,\n location);\n }\n }\n\n private _findInterpolationErrorColumn(\n parts: string[], partInErrIdx: number,
interpolationConfig: InterpolationConfig): number {\n let errLocation = ";\n for (let j = 0; j < partInErrIdx; j++)
{\n errLocation += j % 2 === 0 ?\n parts[j] :\n `${interpolationConfig.start}${parts[j]}${interpolationConfig.end}`;\n }\n return errLocation.length;\n }\n\n}\n\nexport class IvyParser extends Parser {\n simpleExpressionChecker = IvySimpleExpressionChecker;\n /\n\n/** Describes a stateful context an expression parser is in. */\n enum ParseContextFlags {\n None = 0,\n /**\n * A Writable context is one in which a value may be written to an lvalue.\n * For example, after we see a
property access, we may expect a write to the\n * property via the "=" operator.\n * prop\n * ^ possible
"=" after\n */\n Writable = 1,\n }\n\nexport class _ParseAST {\n private rprensExpected = 0;\n private
rbracketsExpected = 0;\n private rbracesExpected = 0;\n private context = ParseContextFlags.None;\n\n // Cache
of expression start and input indeces to the absolute source span they map to, used to\n // prevent creating
superfluous source spans in `sourceSpan`.\n // A serial of the expression start and input index is used for mapping
because both are stateful\n // and may change for subsequent expressions visited by the parser.\n private
sourceSpanCache = new Map<string, AbsoluteSourceSpan>();\n index: number = 0;\n\n constructor(\n public
input: string, public location: any, public absoluteOffset: number,\n public tokens: Token[], public inputLength:
number, public parseAction: boolean,\n private errors: ParserError[], private offset: number) {\n }\n\n peek(offset:
number): Token {\n const i = this.index + offset;\n return i < this.tokens.length ? this.tokens[i] : EOF;\n }\n\n
get next(): Token {\n return this.peek(0);\n }\n\n /** Whether all the parser input has been processed. */\n get
atEOF(): boolean {\n return this.index >= this.tokens.length;\n }\n\n /**\n * Index of the next token to be
processed, or the end of the last token if all have been\n * processed.\n */\n get inputIndex(): number {\n return
this.atEOF ? this.currentEndIndex : this.next.index + this.offset;\n }\n\n /**\n * End index of the last processed
token, or the start of the first token if none have been\n * processed.\n */\n get currentEndIndex(): number {\n
return if (this.index > 0) {\n const curToken = this.peek(-1);\n return curToken.end + this.offset;\n }\n // No
tokens have been processed yet; return the next token's start or the length of the input\n // if there is no token.\n

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if (this.tokens.length === 0) {\n return this.inputLength + this.offset;\n }\n return this.next.index +
this.offset;\n }\n\n /**\n * Returns the absolute offset of the start of the current token.\n */\n get
currentAbsoluteOffset(): number {\n return this.absoluteOffset + this.inputIndex;\n }\n\n span(start: number) {\n
 return new ParseSpan(start, this.currentEndIndex);\n }\n\n sourceSpan(start: number): AbsoluteSourceSpan {\n
 const serial = `${start}@${this.inputIndex}`;\n if (!this.sourceSpanCache.has(serial)) {\n
 this.sourceSpanCache.set(serial, this.span(start).toAbsolute(this.absoluteOffset));\n }\n return
this.sourceSpanCache.get(serial);\n }\n\n advance() {\n this.index++;\n }\n\n /**\n * Executes a callback in
the provided context.\n */\n private withContext<T>(context: ParseContextFlags, cb: () => T): T {\n this.context
|= context;\n const ret = cb();\n this.context ^= context;\n return ret;\n }\n\n consumeOptionalCharacter(code:
number): boolean {\n if (this.next.isCharacter(code)) {\n this.advance();\n return true;\n } else {\n
return false;\n }\n }\n\n peekKeywordLet(): boolean {\n return this.next.isKeywordLet();\n }\n\n
peekKeywordAs(): boolean {\n return this.next.isKeywordAs();\n }\n\n /**\n * Consumes an expected
character, otherwise emits an error about the missing expected character\n * and skips over the token stream until
reaching a recoverable point.\n */\n * See `this.error` and `this.skip` for more details.\n */\n
expectCharacter(code: number) {\n if (this.consumeOptionalCharacter(code)) return;\n this.error(`Missing
expected ${String.fromCharCode(code)}`);\n }\n\n consumeOptionalOperator(op: string): boolean {\n if
(this.next.isOperator(op)) {\n this.advance();\n return true;\n } else {\n return false;\n }\n }\n\n
expectOperator(operator: string) {\n if (this.consumeOptionalOperator(operator)) return;\n this.error(`Missing
expected operator ${operator}`);\n }\n\n prettyPrintToken(tok: Token): string {\n return tok === EOF ? `end of
input` : `token ${tok}`;\n }\n\n expectIdentifierOrKeyword(): string {\n const n = this.next;\n if (!n.isIdentifier()
&& !n.isKeyword()) {\n this.error(`Unexpected ${this.prettyPrintToken(n)}, expected identifier or keyword`);\n
return ";\n }\n this.advance();\n return n.toString() as string;\n }\n\n expectIdentifierOrKeywordOrString():
string {\n const n = this.next;\n if (!n.isIdentifier() && !n.isKeyword() && !n.isString()) {\n
this.error(`Unexpected ${this.prettyPrintToken(n)}, expected identifier, keyword, or string`);\n return ";\n }\n
this.advance();\n return n.toString() as string;\n }\n\n parseChain(): AST {\n const exprs: AST[] = [];\n const
start = this.inputIndex;\n while (this.index < this.tokens.length) {\n const expr = this.parsePipe();\n
exprs.push(expr);\n\n if (this.consumeOptionalCharacter(chars.$SEMICOLON)) {\n if (!this.parseAction)
{\n this.error(`Binding expression cannot contain chained expression`);\n }\n while
(this.consumeOptionalCharacter(chars.$SEMICOLON)) {\n } // read all semicolons\n } else if (this.index <
this.tokens.length) {\n this.error(`Unexpected token '${this.next}'`);\n }\n }\n if (exprs.length == 0)
return new EmptyExpr(this.span(start), this.sourceSpan(start));\n if (exprs.length == 1) return exprs[0];\n return
new Chain(this.span(start), this.sourceSpan(start), exprs);\n }\n\n parsePipe(): AST {\n let result =
this.parseExpression();\n if (this.consumeOptionalOperator('|')) {\n if (this.parseAction) {\n
this.error(`Cannot have a pipe in an action expression`);\n }\n do {\n const nameStart =
this.inputIndex;\n const name = this.expectIdentifierOrKeyword();\n const nameSpan =
this.sourceSpan(nameStart);\n const args: AST[] = [];\n while
(this.consumeOptionalCharacter(chars.$COLON)) {\n args.push(this.parseExpression());\n }\n const
{start} = result.span;\n result =\n new BindingPipe(this.span(start), this.sourceSpan(start), result, name,
args, nameSpan);\n } while (this.consumeOptionalOperator('|'));\n }\n\n return result;\n }\n\n
parseExpression(): AST {\n return this.parseConditional();\n }\n\n parseConditional(): AST {\n const start =
this.inputIndex;\n const result = this.parseLogicalOr();\n if (this.consumeOptionalOperator('?')) {\n const
yes = this.parsePipe();\n let no: AST;\n if (!this.consumeOptionalCharacter(chars.$COLON)) {\n const
end = this.inputIndex;\n const expression = this.input.substring(start, end);\n this.error(`Conditional
expression ${expression} requires all 3 expressions`);\n no = new EmptyExpr(this.span(start),
this.sourceSpan(start));\n } else {\n no = this.parsePipe();\n }\n return new Conditional(this.span(start),
this.sourceSpan(start), result, yes, no);\n } else {\n return result;\n }\n }\n\n parseLogicalOr(): AST {\n //
||\n let result = this.parseLogicalAnd();\n while (this.consumeOptionalOperator('|')) {\n const right =
this.parseLogicalAnd();\n const {start} = result.span;\n result = new Binary(this.span(start),

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this.sourceSpan(start), '|', result, right);\n }\n return result;\n }\n\n parseLogicalAnd(): AST {\n // '&&'\n let
result = this.parseEquality();\n while (this.consumeOptionalOperator('&&')) {\n const right =
this.parseEquality();\n const {start} = result.span;\n result = new Binary(this.span(start),
this.sourceSpan(start), '&&', result, right);\n }\n return result;\n }\n\n parseEquality(): AST {\n //
'==','!=','===','!=='\n let result = this.parseRelational();\n while (this.next.type == TokenType.Operator) {\n
const operator = this.next.strValue;\n switch (operator) {\n case '==':\n case '===':\n case '!=':\n
case '!==':\n this.advance();\n const right = this.parseRelational();\n const {start} = result.span;\n
 result = new Binary(this.span(start), this.sourceSpan(start), operator, result, right);\n continue;\n }\n
break;\n }\n return result;\n }\n\n parseRelational(): AST {\n // '<', '>', '<=', '>='\n let result =
this.parseAdditive();\n while (this.next.type == TokenType.Operator) {\n const operator = this.next.strValue;\n
switch (operator) {\n case '<':\n case '>':\n case '<=':\n case '>=':\n this.advance();\n
const right = this.parseAdditive();\n const {start} = result.span;\n result = new Binary(this.span(start),
this.sourceSpan(start), operator, result, right);\n continue;\n }\n break;\n }\n return result;\n }\n\n
parseAdditive(): AST {\n // '+', '-'\n let result = this.parseMultiplicative();\n while (this.next.type ==
TokenType.Operator) {\n const operator = this.next.strValue;\n switch (operator) {\n case '+':\n case
'-':\n this.advance();\n let right = this.parseMultiplicative();\n const {start} = result.span;\n
 result = new Binary(this.span(start), this.sourceSpan(start), operator, result, right);\n continue;\n }\n
break;\n }\n return result;\n }\n\n parseMultiplicative(): AST {\n // '*', '%', '/'\n let result =
this.parsePrefix();\n while (this.next.type == TokenType.Operator) {\n const operator = this.next.strValue;\n
switch (operator) {\n case '*':\n case '%':\n case '/':\n this.advance();\n let right =
this.parsePrefix();\n const {start} = result.span;\n result = new Binary(this.span(start),
this.sourceSpan(start), operator, result, right);\n continue;\n }\n break;\n }\n return result;\n }\n\n
parsePrefix(): AST {\n if (this.next.type == TokenType.Operator) {\n const start = this.inputIndex;\n const
operator = this.next.strValue;\n let result: AST;\n switch (operator) {\n case '+':\n this.advance();\n
 result = this.parsePrefix();\n return Unary.createPlus(this.span(start), this.sourceSpan(start), result);\n
 case '-':\n this.advance();\n result = this.parsePrefix();\n return Unary.createMinus(this.span(start),
this.sourceSpan(start), result);\n case '!':\n this.advance();\n result = this.parsePrefix();\n return
new PrefixNot(this.span(start), this.sourceSpan(start), result);\n }\n }\n return this.parseCallChain();\n }\n\n
parseCallChain(): AST {\n let result = this.parsePrimary();\n const resultStart = result.span.start;\n while (true)
{\n if (this.consumeOptionalCharacter(chars.$PERIOD)) {\n result =
this.parseAccessMemberOrMethodCall(result, false);\n } else if (this.consumeOptionalOperator('?.')) {\n
result = this.parseAccessMemberOrMethodCall(result, true);\n } else if
(this.consumeOptionalCharacter(chars.$LBRACKET)) {\n this.withContext(ParseContextFlags.Writable, () =>
{\n this.rbracketsExpected++;\n const key = this.parsePipe();\n if (key instanceof EmptyExpr) {\n
 this.error(`Key access cannot be empty`);\n }\n this.rbracketsExpected--;\n
this.expectCharacter(chars.$RBRACKET);\n if (this.consumeOptionalOperator('=')) {\n const value =
this.parseConditional();\n result = new KeyedWrite(\n this.span(resultStart),\n
this.sourceSpan(resultStart), result, key, value);\n } else {\n result =\n new
KeyedRead(this.span(resultStart), this.sourceSpan(resultStart), result, key);\n }\n });\n } else if
(this.consumeOptionalCharacter(chars.$LPAREN)) {\n this.rparensExpected++;\n const args =
this.parseCallArguments();\n this.rparensExpected--;\n this.expectCharacter(chars.$RPAREN);\n result
=\n new FunctionCall(this.span(resultStart), this.sourceSpan(resultStart), result, args);\n } else if
(this.consumeOptionalOperator('!')) {\n result = new NonNullAssert(this.span(resultStart),
this.sourceSpan(resultStart), result);\n } else {\n return result;\n }\n }\n }\n\n parsePrimary(): AST
{\n const start = this.inputIndex;\n if (this.consumeOptionalCharacter(chars.$LPAREN)) {\n
this.rparensExpected++;\n const result = this.parsePipe();\n this.rparensExpected--;\n
this.expectCharacter(chars.$RPAREN);\n return result;\n } else if (this.next.isKeywordNull()) {\n
this.advance();\n return new LiteralPrimitive(this.span(start), this.sourceSpan(start), null);\n } else if

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(this.next.isKeywordUndefined()) {\n this.advance();\n return new LiteralPrimitive(this.span(start),
this.sourceSpan(start), void 0);\n\n } else if (this.next.isKeywordTrue()) {\n this.advance();\n return new
LiteralPrimitive(this.span(start), this.sourceSpan(start), true);\n\n } else if (this.next.isKeywordFalse()) {\n
this.advance();\n return new LiteralPrimitive(this.span(start), this.sourceSpan(start), false);\n\n } else if
(this.next.isKeywordThis()) {\n this.advance();\n return new ThisReceiver(this.span(start),
this.sourceSpan(start));\n } else if (this.consumeOptionalCharacter(chars.$LBRACKET)) {\n
this.rbracketsExpected++;\n const elements = this.parseExpressionList(chars.$RBRACKET);\nthis.rbracketsExpected--;\n this.expectCharacter(chars.$RBRACKET);\n return new
LiteralArray(this.span(start), this.sourceSpan(start), elements);\n\n } else if
(this.next.isCharacter(chars.$LBRACE)) {\n return this.parseLiteralMap();\n\n } else if (this.next.isIdentifier())
{\n return this.parseAccessMemberOrMethodCall(\n new ImplicitReceiver(this.span(start),
this.sourceSpan(start)), false);\n\n } else if (this.next.isNumber()) {\n const value = this.next.toNumber();\n
this.advance();\n return new LiteralPrimitive(this.span(start), this.sourceSpan(start), value);\n\n } else if
(this.next.isString()) {\n const literalValue = this.next.toString();\n this.advance();\n return new
LiteralPrimitive(this.span(start), this.sourceSpan(start), literalValue);\n\n } else if (this.index >=
this.tokens.length) {\n this.error(`Unexpected end of expression: ${this.input}`);\n return new
EmptyExpr(this.span(start), this.sourceSpan(start));\n } else {\n this.error(`Unexpected token ${this.next}`);\n
return new EmptyExpr(this.span(start), this.sourceSpan(start));\n }\n }\n\n parseExpressionList(terminator:
number): AST[] {\n const result: AST[] = [];\n if (!this.next.isCharacter(terminator)) {\n do {\n
result.push(this.parsePipe());\n } while (this.consumeOptionalCharacter(chars.$COMMA));\n }\n return
result;\n }\n\n parseLiteralMap(): LiteralMap {\n const keys: LiteralMapKey[] = [];\n const values: AST[] =
[];\n const start = this.inputIndex;\n this.expectCharacter(chars.$LBRACE);\n if
(!this.consumeOptionalCharacter(chars.$RBRACE)) {\n this.rbracesExpected++;\n do {\n const quoted =
this.next.isString();\n const key = this.expectIdentifierOrKeywordOrString();\n keys.push({key, quoted});\n
this.expectCharacter(chars.$COLON);\n values.push(this.parsePipe());\n } while
(this.consumeOptionalCharacter(chars.$COMMA));\n this.rbracesExpected--;\n
this.expectCharacter(chars.$RBRACE);\n }\n return new LiteralMap(this.span(start), this.sourceSpan(start),
keys, values);\n }\n\n parseAccessMemberOrMethodCall(receiver: AST, isSafe: boolean = false): AST {\n const
start = receiver.span.start;\n const nameStart = this.inputIndex;\n const id = this.expectIdentifierOrKeyword();\n
const nameSpan = this.sourceSpan(nameStart);\n if (this.consumeOptionalCharacter(chars.$LPAREN)) {\n
this.rparensExpected++;\n const args = this.parseCallArguments();\n
this.expectCharacter(chars.$RPAREN);\n this.rparensExpected--;\n const span = this.span(start);\n const
sourceSpan = this.sourceSpan(start);\n return isSafe ? new SafeMethodCall(span, sourceSpan, nameSpan,
receiver, id, args) :\n new MethodCall(span, sourceSpan, nameSpan, receiver, id, args);\n\n } else {\n
if (isSafe) {\n if (this.consumeOptionalOperator('=')) {\n this.error(`The '?' operator cannot be used
in the assignment`);\n return new EmptyExpr(this.span(start), this.sourceSpan(start));\n } else {\n
return new SafePropertyRead(\n this.span(start), this.sourceSpan(start), nameSpan, receiver, id);\n }\n
} else {\n if (this.consumeOptionalOperator('=')) {\n if (!this.parseAction) {\n this.error(`Bindings
cannot contain assignments`);\n return new EmptyExpr(this.span(start), this.sourceSpan(start));\n }\n\n
const value = this.parseConditional();\n return new PropertyWrite(\n this.span(start),
this.sourceSpan(start), nameSpan, receiver, id, value);\n } else {\n return new
PropertyRead(this.span(start), this.sourceSpan(start), nameSpan, receiver, id);\n }\n }\n }\n\n parseCallArguments(): BindingPipe[] {\n if (this.next.isCharacter(chars.$RPAREN)) return [];\n const
positionals: AST[] = [];\n do {\n positionals.push(this.parsePipe());\n } while
(this.consumeOptionalCharacter(chars.$COMMA));\n return positionals as BindingPipe[];\n }\n\n /**\n *
Parses an identifier, a keyword, a string with an optional ` ` in between,\n * and returns the string along with its
absolute source span.\n */\n expectTemplateBindingKey(): TemplateBindingIdentifier {\n let result = "";\n let
operatorFound = false;\n const start = this.currentAbsoluteOffset;\n do {\n result +=

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@param value name of the value in the declaration, `NgIf` in the example above, along with its absolute
span.
private parseAsBinding(value: TemplateBindingIdentifier): TemplateBinding|null {
 if (!this.peekKeywordAs()) {
 return null;
 }
 this.advance(); // consume the 'as' keyword
 const key = this.expectTemplateBindingKey();
 this.consumeStatementTerminator();
 const sourceSpan = new AbsoluteSourceSpan(value.span.start, this.currentAbsoluteOffset);
 return new VariableBinding(sourceSpan, key, value);
}

/**
 * Return the binding for a variable declared using `let`. For example,
 *
 * ngFor="let item of items; let i=index;"
 *
 * In the first binding, `item` is bound to `NgForOfContext.$implicit`.
 * In the second binding, `i` is bound to `NgForOfContext.index`.
private parseLetBinding(): TemplateBinding|null {
 if (!this.peekKeywordLet()) {
 return null;
 }
 const spanStart = this.currentAbsoluteOffset;
 this.advance(); // consume the 'let' keyword
 const key = this.expectTemplateBindingKey();
 let value: TemplateBindingIdentifier|null = null;
 if (this.consumeOptionalOperator('=')) {
 value = this.expectTemplateBindingKey();
 }
 this.consumeStatementTerminator();
 const sourceSpan = new AbsoluteSourceSpan(spanStart, this.currentAbsoluteOffset);
 return new VariableBinding(sourceSpan, key, value);
}

/**
 * Consume the optional statement terminator: semicolon or comma.
private consumeStatementTerminator() {
 this.consumeOptionalCharacter(chars.$SEMICOLON) ||
 this.consumeOptionalCharacter(chars.$COMMA);
}

/**
 * Records an error and skips over the token stream until reaching a recoverable point. See `this.skip` for more details on token skipping.
private error(message: string, index: number|null = null) {
 this.errors.push(new ParserError(message, this.input, this.locationText(index), this.location));
 this.skip();
}

private locationText(index: number|null = null) {
 if (index == null) index = this.index;
 return (index < this.tokens.length) ? `at column ${this.tokens[index].index + 1} in` : `at the end of the expression`;
}

/**
 * Error recovery should skip tokens until it encounters a recovery point. skip() treats the end of input and a ';' as unconditionally a recovery point. It also treats ')', '}' and ']' as conditional recovery points if one of calling productions is expecting one of these symbols. This allows skip() to recover from errors such as '(a.) + 1' allowing more of the AST to be retained (it doesn't skip any tokens as the ')' is retained because of the '(' begins an '(' <expr> ')' production). The recovery points of grouping symbols must be conditional as they must be skipped if none of the calling productions are not expecting the closing token else we will never make progress in the case of an extraneous group closing symbol (such as a stray ')'). This is not the case for ';' because parseChain() is always the root production and it expects a ';'. Furthermore, the presence of a stateful context can add more recovery points. - in a `Writable` context, we are able to recover after seeing the `=` operator, which signals the presence of an independent rvalue expression following the `=` operator.
 *
 * If a production expects one of these token it increments the corresponding nesting count, and then decrements it just prior to checking if the token is in the input.
private skip() {
 let n = this.next;
 while (this.index < this.tokens.length && !n.isCharacter(chars.$SEMICOLON) && (this.rparensExpected <= 0 || !n.isCharacter(chars.$RPAREN)) && (this.rbracesExpected <= 0 || !n.isCharacter(chars.$RBRACE)) && (this.rbracketsExpected <= 0 || !n.isCharacter(chars.$RBRACKET)) && (!(this.context & ParseContextFlags.Writable) || !n.isOperator('='))) {
 if (this.next.isError()) {
 this.errors.push(new ParserError(this.next.toString(), this.input, this.locationText(), this.location));
 }
 this.advance();
 n = this.next;
 }
}

class SimpleExpressionChecker implements AstVisitor {
 errors: string[] = [];

 visitImplicitReceiver(ast: ImplicitReceiver, context: any) {}
 visitThisReceiver(ast: ThisReceiver, context: any) {}
 visitInterpolation(ast: Interpolation, context: any) {}
 visitLiteralPrimitive(ast: LiteralPrimitive, context: any) {}
 visitPropertyRead(ast: PropertyRead, context: any) {}
 visitPropertyWrite(ast: PropertyWrite, context: any) {}
 visitSafePropertyRead(ast: SafePropertyRead, context: any) {}
 visitMethodCall(ast: MethodCall, context: any) {}
 visitSafeMethodCall(ast: SafeMethodCall, context: any) {}
 visitFunctionCall(ast: FunctionCall, context: any) {}
 visitLiteralArray(ast: LiteralArray, context: any) {
 this.visitAll(ast.expressions, context);
 }
 visitLiteralMap(ast: LiteralMap, context: any) {
 this.visitAll(ast.values, context);
 }
 visitUnary(ast: Unary, context: any) {}
 visitBinary(ast: Binary, context: any) {}
}

```



```

{error: string, value: string};\n\n"/**\n * @license\n * Copyright Google LLC All Rights Reserved.\n *\n * Use
of this source code is governed by an MIT-style license that can be\n * found in the LICENSE file at
https://angular.io/license\n */\n\nimport {CUSTOM_ELEMENTS_SCHEMA, NO_ERRORS_SCHEMA,
SchemaMetadata, SecurityContext} from './core';\n\nimport {isNgContainer, isNgContent} from
'./ml_parser/tags';\n\nimport {dashCaseToCamelCase} from './util';\n\nimport {SECURITY_SCHEMA} from
'./dom_security_schema';\n\nimport {ElementSchemaRegistry} from './element_schema_registry';\n\nconst
BOOLEAN = 'boolean';\n\nconst NUMBER = 'number';\n\nconst STRING = 'string';\n\nconst OBJECT =
'object';\n\n/**\n * This array represents the DOM schema. It encodes inheritance, properties, and events.\n *\n * ##
Overview\n *\n * Each line represents one kind of element. The `element_inheritance` and properties are joined\n *
using `element_inheritance|properties` syntax.\n *\n * ## Element Inheritance\n *\n * The `element_inheritance` can
be further subdivided as `element1,element2,...^parentElement`.\n *\n * Here the individual elements are separated by
`,` (commas). Every element in the list\n * has identical properties.\n *\n * An `element` may inherit additional
properties from `parentElement` If no `^parentElement` is\n * specified then `""` (blank) element is assumed.\n *\n *
NOTE: The blank element inherits from root `[Element]` element, the super element of all\n * elements.\n *\n *
NOTE an element prefix such as `:svg:` has no special meaning to the schema.\n *\n * ## Properties\n *\n * Each
element has a set of properties separated by`,` (commas). Each property can be prefixed\n * by a special character
designating its type:\n *\n * - (no prefix): property is a string.\n * - `*`: property represents an event.\n * - `!`:
property is a boolean.\n * - `#`: property is a number.\n * - `%`: property is an object.\n *\n * ## Query\n *\n * The
class creates an internal squas representation which allows to easily answer the query of\n * if a given property exist
on a given element.\n *\n * NOTE: We don't yet support querying for types or events.\n * NOTE: This schema is
auto extracted from `schema_extractor.ts` located in the test folder,\n * see
dom_element_schema_registry_spec.ts\n */\n\n

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=====\n//
=====\n//
=====\n// ===== STOP - STOP - STOP - STOP - STOP - STOP
=====\n//
=====\n//

```

```

=====\n/\n// DO NOT EDIT THIS DOM SCHEMA WITHOUT A SECURITY
REVIEW!\n/\n// Newly added properties must be security reviewed and assigned an appropriate SecurityContext
in\n// dom_security_schema.ts. Reach out to mprobst & rjamet for details.\n/\n//

```

```

=====\n\nconst SCHEMA: string[] = [\n
' [Element]|textContent,%classList,className,id,innerHTML,*beforecopy,*beforecut,*beforepaste,*copy,*cut,*paste,*search,*selectstart,*webkitfullscreenchange,*webkitfullscreenerror,*wheel,outerHTML,#scrollLeft,#scrollTop,slot' +\n /* added manually to avoid breaking changes *\n
',*message,*mozfullscreenchange,*mozfullscreenerror,*mozpointerlockchange,*mozpointerlockerror,*webglcontextcreationerror,*webglcontextlost,*webglcontextrestored',\n
'[HTMLInputElement]^ [Element]|accessKey,contentEditable,dir,!draggable,!hidden,innerText,lang,*abort,*auxclick,*blur,*cancel,*canplay,*canplaythrough,*change,*click,*close,*contextmenu,*cuechange,*dblclick,*drag,*dragend,*dragenter,*dragleave,*dragover,*dragstart,*drop,*durationchange,*emptied,*ended,*error,*focus,*gotpointercapture,*input,*invalid,*keydown,*keypress,*keyup,*load,*loadeddata,*loadedmetadata,*loadstart,*lostpointercapture,*mousedown,*mouseenter,*mouseleave,*mousemove,*mouseout,*mouseover,*mouseup,*mousewheel,*pause,*play,*playing,*pointercancel,*pointerdown,*pointerenter,*pointerleave,*pointermove,*pointerout,*pointerover,*pointerup,*progress,*ratechange,*reset,*resize,*scroll,*seeked,*seeking,*select,*show,*stalled,*submit,*suspend,*timeupdate,*toggle,*volumechange,*waiting,outerText,!spellcheck,%style,#tabIndex,title,!translate',\n

```

'abbr,address,article,aside,b,bdi,bdo,cite,code,dd,dfn,dt,em,figcaption,figure,footer,header,i,kbd,main,mark,nav,noscript,rb,rp,rt,rtc,ruby,s,samp,section,small,strong,sub,sup,u,var,wbr^[HTMLInputElement]|accessKey,contentEditable,dir,!draggable,!hidden,innerText,lang,\*abort,\*auxclick,\*blur,\*cancel,\*canplay,\*canplaythrough,\*change,\*click,\*close,\*contextmenu,\*cuechange,\*dblclick,\*drag,\*dragend,\*dragenter,\*dragleave,\*dragover,\*dragstart,\*drop,\*durationchange,\*emptied,\*ended,\*error,\*focus,\*gotpointercapture,\*input,\*invalid,\*keydown,\*keypress,\*keyup,\*load,\*loadeddata,\*loadedmetadata,\*loadstart,\*lostpointercapture,\*mousedown,\*mouseenter,\*mouseleave,\*mousemove,\*mouseout,\*mouseover,\*mouseup,\*mousewheel,\*pause,\*play,\*playing,\*pointercancel,\*pointerdown,\*pointerenter,\*pointerleave,\*pointermove,\*pointerout,\*pointerover,\*pointerup,\*progress,\*ratechange,\*reset,\*resize,\*scroll,\*seeked,\*seeking,\*select,\*show,\*stalled,\*submit,\*suspend,\*timeupdate,\*toggle,\*volumechange,\*waiting,outerText,!spellcheck,%style,#tabIndex,title,!translate',\n

'media^[HTMLInputElement]|autoplay,!controls,%controlsList,%crossOrigin,#currentTime,!defaultMuted,#defaultPlaybackRate,!disableRemotePlayback,!loop,!muted,\*encrypted,\*waitingforkey,#playbackRate,preload,src,%srcObject,#volume',\n

':svg^[HTMLInputElement]|\*abort,\*auxclick,\*blur,\*cancel,\*canplay,\*canplaythrough,\*change,\*click,\*close,\*contextmenu,\*cuechange,\*dblclick,\*drag,\*dragend,\*dragenter,\*dragleave,\*dragover,\*dragstart,\*drop,\*durationchange,\*emptied,\*ended,\*error,\*focus,\*gotpointercapture,\*input,\*invalid,\*keydown,\*keypress,\*keyup,\*load,\*loadeddata,\*loadedmetadata,\*loadstart,\*lostpointercapture,\*mousedown,\*mouseenter,\*mouseleave,\*mousemove,\*mouseout,\*mouseover,\*mouseup,\*mousewheel,\*pause,\*play,\*playing,\*pointercancel,\*pointerdown,\*pointerenter,\*pointerleave,\*pointermove,\*pointerout,\*pointerover,\*pointerup,\*progress,\*ratechange,\*reset,\*resize,\*scroll,\*seeked,\*seeking,\*select,\*show,\*stalled,\*submit,\*suspend,\*timeupdate,\*toggle,\*volumechange,\*waiting,%style,#tabIndex',\n

':svg:graphics^:svg:|',\n ':svg:animation^:svg:|\*begin,\*end,\*repeat',\n ':svg:geometry^:svg:|',\n

':svg:componentTransferFunction^:svg:|',\n ':svg:gradient^:svg:|',\n ':svg:textContent^:svg:graphics|',\n

':svg:textPositioning^:svg:textContent|',\n

'a^[HTMLInputElement]|charset,coords,download,hash,host,hostname,href,hreflang,name,password,pathname,ping,port,protocol,referrerPolicy,rel,rev,search,shape,target,text,type,username',\n

'area^[HTMLInputElement]|alt,coords,download,hash,host,hostname,href,!noHref,password,pathname,ping,port,protocol,referrerPolicy,rel,search,shape,target,username',\n 'audio^media|',\n 'br^[HTMLInputElement]|clear',\n

'base^[HTMLInputElement]|href,target',\n

'body^[HTMLInputElement]|aLink,background,bgColor,link,\*beforeunload,\*blur,\*error,\*focus,\*hashchange,\*languagechange,\*load,\*message,\*offline,\*online,\*pagehide,\*pageshow,\*popstate,\*rejectionhandled,\*resize,\*scroll,\*storage,\*unhandledrejection,\*unload,text,vLink',\n

'button^[HTMLInputElement]|autofocus,!disabled,formAction,formEnctype,formMethod,!formNoValidate,formTarget,name,type,value',\n 'canvas^[HTMLInputElement]|#height,#width',\n 'content^[HTMLInputElement]|select',\n

'dl^[HTMLInputElement]|compact',\n 'datalist^[HTMLInputElement]|',\n 'details^[HTMLInputElement]|open',\n

'dialog^[HTMLInputElement]|open,returnValue',\n 'dir^[HTMLInputElement]|compact',\n 'div^[HTMLInputElement]|align',\n

'embed^[HTMLInputElement]|align,height,name,src,type,width',\n 'fieldset^[HTMLInputElement]|disabled,name',\n

'font^[HTMLInputElement]|color,face,size',\n

'form^[HTMLInputElement]|acceptCharset,action,autocomplete,encoding,enctype,method,name,!noValidate,target',\n

'frame^[HTMLInputElement]|frameBorder,longDesc,marginHeight,marginWidth,name,!noResize,scrolling,src',\n

'frameset^[HTMLInputElement]|cols,\*beforeunload,\*blur,\*error,\*focus,\*hashchange,\*languagechange,\*load,\*message,\*offline,\*online,\*pagehide,\*pageshow,\*popstate,\*rejectionhandled,\*resize,\*scroll,\*storage,\*unhandledrejection,\*unload,rows',\n 'hr^[HTMLInputElement]|align,color,!noShade,size,width',\n 'head^[HTMLInputElement]|',\n

'h1,h2,h3,h4,h5,h6^[HTMLInputElement]|align',\n 'html^[HTMLInputElement]|version',\n

'iframe^[HTMLInputElement]|align,!allowFullscreen,frameBorder,height,longDesc,marginHeight,marginWidth,name,referrerPolicy,%sandbox,scrolling,src,srcdoc,width',\n

'img^[HTMLInputElement]|align,alt,border,%crossOrigin,#height,#hspace,!isMap,longDesc,lowsrc,name,referrerPolicy,sizes,src,srcset,useMap,#vspace,#width',\n

'input^[HTMLInputElement]|accept,align,alt,autocapitalize,autocomplete,!autofocus,!checked,!defaultChecked,defaultVa

lue,dirName,!disabled,% files,formAction,formEnctype,formMethod,!formNoValidate,formTarget,#height,!incremental,!indeterminate,max,#maxLength,min,#minLength,!multiple,name,pattern,placeholder,!readOnly,!required,selectionDirection,#selectionEnd,#selectionStart,#size,src,step,type,useMap,value,% valueAsDate,#valueAsNumber,#width',\n 'li^[HTMLInputElement]|type,#value',\n 'label^[HTMLInputElement]|htmlFor',\n 'legend^[HTMLInputElement]|align',\n 'link^[HTMLInputElement]|as,charset,% crossOrigin,!disabled,href,hreflang,integrity,media,referrerPolicy,rel,% relList,rev,% sizes,target,type',\n 'map^[HTMLInputElement]|name',\n 'marquee^[HTMLInputElement]|behavior,bgColor,direction,height,#hspace,#loop,#scrollAmount,#scrollDelay,!trueSpeed,#vspace,width',\n 'menu^[HTMLInputElement]|compact',\n 'meta^[HTMLInputElement]|content,httpEquiv,name,scheme',\n 'meter^[HTMLInputElement]|#high,#low,#max,#min,#optimum,#value',\n 'ins,del^[HTMLInputElement]|cite,dateTime',\n 'ol^[HTMLInputElement]|compact,!reversed,#start,type',\n 'object^[HTMLInputElement]|align,archive,border,code,codeBase,codeType,data,!declare,height,#hspace,name,standby,type,useMap,#vspace,width',\n 'optgroup^[HTMLInputElement]|disabled,label',\n 'option^[HTMLInputElement]|defaultSelected,!disabled,label,!selected,text,value',\n 'output^[HTMLInputElement]|defaultValue,% htmlFor,name,value',\n 'p^[HTMLInputElement]|align',\n 'param^[HTMLInputElement]|name,type,value,valueType',\n 'picture^[HTMLInputElement]',\n 'pre^[HTMLInputElement]|#width',\n 'progress^[HTMLInputElement]|#max,#value',\n 'q,blockquote,cite^[HTMLInputElement]',\n 'script^[HTMLInputElement]|!async,charset,% crossOrigin,!defer,event,htmlFor,integrity,src,text,type',\n 'select^[HTMLInputElement]|!autofocus,!disabled,#length,!multiple,name,!required,#selectedIndex,#size,value',\n 'shadow^[HTMLInputElement]',\n 'slot^[HTMLInputElement]|name',\n 'source^[HTMLInputElement]|media,sizes,src,srcset,type',\n 'span^[HTMLInputElement]',\n 'style^[HTMLInputElement]|!disabled,media,type',\n 'caption^[HTMLInputElement]|align',\n 'th,td^[HTMLInputElement]|abbr,align,axis,bgColor,ch,chOff,#colSpan,headers,height,!noWrap,#rowSpan,scope,vAlign,width',\n 'col,colgroup^[HTMLInputElement]|align,ch,chOff,#span,vAlign,width',\n 'table^[HTMLInputElement]|align,bgColor,border,% caption,cellPadding,cellSpacing,frame,rules,summary,% tFoot,% tHead,width',\n 'tr^[HTMLInputElement]|align,bgColor,ch,chOff,vAlign',\n 'tfoot,thead,tbody^[HTMLInputElement]|align,ch,chOff,vAlign',\n 'template^[HTMLInputElement]',\n 'textarea^[HTMLInputElement]|autocapitalize,!autofocus,#cols,defaultValue,dirName,!disabled,#maxLength,#minLength,name,placeholder,!readOnly,!required,#rows,selectionDirection,#selectionEnd,#selectionStart,value,wrap',\n 'title^[HTMLInputElement]|text',\n 'track^[HTMLInputElement]|!default,kind,label,src,srcLang',\n 'ul^[HTMLInputElement]|compact,type',\n 'unknown^[HTMLInputElement]',\n 'video^#height,poster,#width',\n ':svg:a^:svg:graphics',\n ':svg:animate^:svg:animation',\n ':svg:animateMotion^:svg:animation',\n ':svg:animateTransform^:svg:animation',\n ':svg:circle^:svg:geometry',\n ':svg:clipPath^:svg:graphics',\n ':svg:defs^:svg:graphics',\n ':svg:desc^:svg:',\n ':svg:discard^:svg:',\n ':svg:ellipse^:svg:geometry',\n ':svg:feBlend^:svg:',\n ':svg:feColorMatrix^:svg:',\n ':svg:feComponentTransfer^:svg:',\n ':svg:feComposite^:svg:',\n ':svg:feConvolveMatrix^:svg:',\n ':svg:feDiffuseLighting^:svg:',\n ':svg:feDisplacementMap^:svg:',\n ':svg:feDistantLight^:svg:',\n ':svg:feDropShadow^:svg:',\n ':svg:feFlood^:svg:',\n ':svg:feFuncA^:svg:componentTransferFunction',\n ':svg:feFuncB^:svg:componentTransferFunction',\n ':svg:feFuncG^:svg:componentTransferFunction',\n ':svg:feFuncR^:svg:componentTransferFunction',\n ':svg:feGaussianBlur^:svg:',\n ':svg:feImage^:svg:',\n ':svg:feMerge^:svg:',\n ':svg:feMergeNode^:svg:',\n ':svg:feMorphology^:svg:',\n ':svg:feOffset^:svg:',\n ':svg:fePointLight^:svg:',\n ':svg:feSpecularLighting^:svg:',\n ':svg:feSpotLight^:svg:',\n ':svg:feTile^:svg:',\n ':svg:feTurbulence^:svg:',\n ':svg:filter^:svg:',\n ':svg:foreignObject^:svg:graphics',\n ':svg:g^:svg:graphics',\n ':svg:image^:svg:graphics',\n ':svg:line^:svg:geometry',\n ':svg:linearGradient^:svg:gradient',\n ':svg:mpath^:svg:',\n ':svg:marker^:svg:',\n ':svg:mask^:svg:',\n ':svg:metadata^:svg:',\n ':svg:path^:svg:geometry',\n ':svg:pattern^:svg:',\n ':svg:polygon^:svg:geometry',\n ':svg:polyline^:svg:geometry',\n ':svg:radialGradient^:svg:gradient',\n ':svg:rect^:svg:geometry',\n

```

'svg:svg^:svg:graphics|#currentScale,#zoomAndPan',\n 'svg:script^:svg:|type',\n 'svg:set^:svg:animation',\n
'svg:stop^:svg:',\n 'svg:style^:svg:|!disabled,media,title,type',\n 'svg:switch^:svg:graphics',\n
'svg:symbol^:svg:',\n 'svg:tspan^:svg:textPositioning',\n 'svg:text^:svg:textPositioning',\n
'svg:textPath^:svg:textContent',\n 'svg:title^:svg:',\n 'svg:use^:svg:graphics',\n
'svg:view^:svg:|#zoomAndPan',\n 'data^[HTMLInputElement]|value',\n
'keygen^[HTMLInputElement]!autofocus,challenge,!disabled,form,keytype,name',\n
'menuitem^[HTMLInputElement]|type,label,icon,!disabled,!checked,radiogroup,!default',\n
'summary^[HTMLInputElement]',\n 'time^[HTMLInputElement]|dateTime',\n 'svg:cursor^:svg:',\n);\n\nconst
_ATTR_TO_PROP: {[name: string]: string} = {\n 'class': 'className',\n 'for': 'htmlFor',\n 'formaction':
'formAction',\n 'innerHTML': 'innerHTML',\n 'readonly': 'readOnly',\n 'tabindex': 'tabIndex',\n};\n\nexport class
DomElementSchemaRegistry extends ElementSchemaRegistry {\n private _schema: {[element: string]: {[property:
string]: string}} = {};\n\n constructor() {\n super();\n SCHEMA.forEach(encodedType => {\n const type:
{[property: string]: string} = {};\n const [strType, strProperties] = encodedType.split('|');\n const properties =
strProperties.split(',');\n const [typeName, superName] = strType.split('^');\n typeName.split(',').forEach(tag
=> this._schema[tag.toLowerCase()] = type);\n const superType = superName &&
this._schema[superName.toLowerCase()];\n if (superType) {\n Object.keys(superType).forEach((prop:
string) => {\n type[prop] = superType[prop];\n });\n }\n properties.forEach((property: string) => {\n
if (property.length > 0) {\n switch (property[0]) {\n case '*':\n // We don't yet support
events.\n // If ever allowing to bind to events, GO THROUGH A SECURITY REVIEW, allowing events\n
// will\n // almost certainly introduce bad XSS vulnerabilities.\n // type[property.substring(1)]
= EVENT;\n break;\n case '!':\n type[property.substring(1)] = BOOLEAN;\n break;\n
case '#':\n type[property.substring(1)] = NUMBER;\n break;\n case '%':\n
type[property.substring(1)] = OBJECT;\n break;\n default:\n type[property] = STRING;\n
}\n }\n });\n });\n }\n\n hasProperty(tagName: string, propName: string, schemaMetas:
SchemaMetadata[]): boolean {\n if (schemaMetas.some((schema) => schema.name ===
NO_ERRORS_SCHEMA.name)) {\n return true;\n }\n\n if (tagName.indexOf('-') > -1) {\n if
(isNgContainer(tagName) || isNgContent(tagName)) {\n return false;\n }\n\n if
(schemaMetas.some((schema) => schema.name === CUSTOM_ELEMENTS_SCHEMA.name)) {\n // Can't
tell now as we don't know which properties a custom element will get\n // once it is instantiated\n return
true;\n }\n }\n\n const elementProperties = this._schema[tagName.toLowerCase()] ||
this._schema['unknown'];\n return !!elementProperties[propName];\n }\n\n hasElement(tagName: string,
schemaMetas: SchemaMetadata[]): boolean {\n if (schemaMetas.some((schema) => schema.name ===
NO_ERRORS_SCHEMA.name)) {\n return true;\n }\n\n if (tagName.indexOf('-') > -1) {\n if
(isNgContainer(tagName) || isNgContent(tagName)) {\n return true;\n }\n\n if
(schemaMetas.some((schema) => schema.name === CUSTOM_ELEMENTS_SCHEMA.name)) {\n // Allow
any custom elements\n return true;\n }\n }\n\n return !!this._schema[tagName.toLowerCase()];\n }\n\n
/**\n * securityContext returns the security context for the given property on the given DOM tag.\n * Tag
and property name are statically known and cannot change at runtime, i.e. it is not\n * possible to bind a value into
a changing attribute or tag name.\n * The filtering is based on a list of allowed tags|attributes. All attributes in
the schema\n * above are assumed to have the 'NONE' security context, i.e. that they are safe inert\n * string
values. Only specific well known attack vectors are assigned their appropriate context.\n */\n
securityContext(tagName: string, propName: string, isAttribute: boolean): SecurityContext {\n if (isAttribute) {\n
// NB: For security purposes, use the mapped property name, not the attribute name.\n propName =
this.getMappedPropName(propName);\n }\n\n // Make sure comparisons are case insensitive, so that case
differences between attribute and\n // property names do not have a security impact.\n tagName =
tagName.toLowerCase();\n propName = propName.toLowerCase();\n let ctx =
SECURITY_SCHEMA()[tagName + '|' + propName];\n if (ctx) {\n return ctx;\n }\n ctx =
SECURITY_SCHEMA()['*' + propName];\n return ctx ? ctx : SecurityContext.NONE;\n }\n\n

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```

ParseError[] = [];
styles: string[] = [];
styleUrls: string[] = [];
ngContentSelectors: string[] = [];
private
inI18nBlock: boolean = false;
constructor(private bindingParser: BindingParser) {}
// HTML visitor
visitElement(element: html.Element): t.Node|null {
 const isI18nRootElement =
isI18nRootNode(element.i18n);
 if (isI18nRootElement) {
 if (this.inI18nBlock) {
 this.reportError(
 'Cannot mark an element as translatable inside of a translatable section. Please remove the nested i18n
marker.',
 element.sourceSpan);
 }
 this.inI18nBlock = true;
 }
 const preparsedElement =
preparseElement(element);
 if (preparsedElement.type === PreparsedElementType.SCRIPT) {
 return null;
 } else if (preparsedElement.type === PreparsedElementType.STYLE) {
 const contents =
textContents(element);
 if (contents !== null) {
 this.styles.push(contents);
 }
 return null;
 } else if (
preparsedElement.type === PreparsedElementType.STYLESHEET &&
isStyleUrlResolvable(preparsedElement.hrefAttr)) {
 this.styleUrls.push(preparsedElement.hrefAttr);
 return null;
 }
 // Whether the element is a <ng-template>
 const isTemplateElement =
isNgTemplate(element.name);
 const parsedProperties: ParsedProperty[] = [];
 const boundEvents:
t.BoundEvent[] = [];
 const variables: t.Variable[] = [];
 const references: t.Reference[] = [];
 const
attributes: t.TextAttribute[] = [];
 const i18nAttrsMeta: {[key: string]: i18n.I18nMeta} = {};
 const
templateParsedProperties: ParsedProperty[] = [];
 const templateVariables: t.Variable[] = [];
 // Whether the
element has any *-attribute
 let elementHasInlineTemplate = false;
 for (const attribute of element.attrs) {
 let hasBinding = false;
 const normalizedName = normalizeAttributeName(attribute.name);
 // `*attr`
defines template bindings
 let isTemplateBinding = false;
 if (attribute.i18n) {
 i18nAttrsMeta[attribute.name] = attribute.i18n;
 }
 if
(normalizedName.startsWith(TEMPLATE_ATTR_PREFIX)) {
 // *-attributes
 if
(elementHasInlineTemplate) {
 this.reportError(
 `Can't have multiple template bindings on one
element. Use only one attribute prefixed with *,`
 attribute.sourceSpan);
 }
 isTemplateBinding
= true;
 elementHasInlineTemplate = true;
 const templateValue = attribute.value;
 const
templateKey = normalizedName.substring(TEMPLATE_ATTR_PREFIX.length);
 const parsedVariables:
ParsedVariable[] = [];
 const absoluteValueOffset = attribute.valueSpan ?
attribute.valueSpan.start.offset :
// If there is no value span the attribute does not have a value, like `attr`
in
// <div attr></div>. In this case, point to one character beyond the last character of
// the
attribute name.
attribute.sourceSpan.start.offset + attribute.name.length;
 this.bindingParser.parseInlineTemplateBinding(
 templateKey, templateValue, attribute.sourceSpan,
absoluteValueOffset, [],
 templateParsedProperties, parsedVariables, true /* isIvyAst */);
 templateVariables.push(...parsedVariables.map(
 v => new t.Variable(v.name, v.value, v.sourceSpan,
v.keySpan, v.valueSpan)));
 } else {
 // Check for variables, events, property bindings, interpolation
hasBinding = this.parseAttribute(
 isTemplateElement, attribute, [], parsedProperties, boundEvents,
variables, references);
 }
 if (!hasBinding && !isTemplateBinding) {
 // don't include the bindings
as attributes as well in the AST
 attributes.push(this.visitAttribute(attribute) as t.TextAttribute);
 }
 }
 const children: t.Node[] =
html.visitAll(preparsedElement.nonBindable ?
NON_BINDABLE_VISITOR : this, element.children);
 let parsedElement: t.Node|undefined;
 if
(preparsedElement.type === PreparsedElementType.NG_CONTENT) {
 // `<ng-content>`
 if
(element.children &&
!element.children.every(
 (node: html.Node) => isEmptyTextNode(node) ||
isCommentNode(node))) {
 this.reportError(`<ng-content> element cannot have content.`,
 element.sourceSpan);
 }
 const selector = preparsedElement.selectAttr;
 const attrs: t.TextAttribute[] =
element.attrs.map(attr => this.visitAttribute(attr));
 parsedElement = new t.Content(selector, attrs,
element.sourceSpan, element.i18n);
 this.ngContentSelectors.push(selector);
 } else if (isTemplateElement) {
 // `<ng-template>`
 const attrs = this.extractAttributes(element.name, parsedProperties,
i18nAttrsMeta);
 parsedElement = new t.Template(
 element.name, attributes, attrs.bound,
boundEvents, /* no template attributes */,
 children, references, variables, element.sourceSpan,
element.startSourceSpan,
 element.endSourceSpan, element.i18n);
 } else {
 const attrs =

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this.extractAttributes(element.name, parsedProperties, i18nAttrsMeta);\n parsedElement = new t.Element(\n
element.name, attributes, attrs.bound, boundEvents, children, references,\n element.sourceSpan,\n
element.startSourceSpan, element.endSourceSpan, element.i18n);\n }\n\n if (elementHasInlineTemplate) {\n
// If this node is an inline-template (e.g. has *ngFor) then we need to create a template\n // node that contains this\n
node.\n // Moreover, if the node is an element, then we need to hoist its attributes to the template\n // node for\n
matching against content projection selectors.\n const attrs = this.extractAttributes('ng-template',\n
templateParsedProperties, i18nAttrsMeta);\n const templateAttrs: (t.TextAttribute|t.BoundAttribute)[] = [];\n
attrs.literal.forEach(attr => templateAttrs.push(attr));\n attrs.bound.forEach(attr => templateAttrs.push(attr));\n
const hoistedAttrs = parsedElement instanceof t.Element ?\n {\n attributes: parsedElement.attributes,\n
inputs: parsedElement.inputs,\n outputs: parsedElement.outputs,\n } :\n {\n attributes: [],\n inputs:\n
[],\n outputs: []\n };\n // For <ng-template>s with structural directives on them, avoid passing i18n information to\n
// the wrapping template to prevent unnecessary i18n instructions from being generated. The\n // necessary i18n\n
meta information will be extracted from child elements.\n const i18n = isTemplateElement &&\n
isI18nRootElement ? undefined : element.i18n;\n\n // TODO(pk): test for this case\n parsedElement = new\n
t.Template(\n (parsedElement as t.Element | t.Content).name, hoistedAttrs.attributes,\n
hoistedAttrs.inputs, hoistedAttrs.outputs, templateAttrs, [parsedElement],\n /* no references */,\n
templateVariables, element.sourceSpan, element.startSourceSpan,\n element.endSourceSpan, i18n);\n }\n\n if (isI18nRootElement) {\n this.inI18nBlock = false;\n }\n return parsedElement;\n}\n\nvisitAttribute(attribute: html.Attribute): t.TextAttribute {\n return new t.TextAttribute(\n attribute.name,\n
attribute.value, attribute.sourceSpan, attribute.valueSpan, attribute.i18n);\n}\n\nvisitText(text: html.Text): t.Node\n{\n return this._visitTextWithInterpolation(text.value, text.sourceSpan, text.i18n);\n}\n\nvisitExpansion(expansion: html.Expansion): t.Icu|null {\n if (!expansion.i18n) {\n // do not generate Icu in case\n
it was created\n // outside of i18n block in a template\n return null;\n }\n if\n
(!isI18nRootNode(expansion.i18n)) {\n throw new Error(`Invalid type \"${expansion.i18n.constructor}\" for\n
\"i18n\" property of ${\n expansion.sourceSpan.toString()}. Expected a \"Message\"`);\n }\n const message\n
= expansion.i18n;\n const vars: {[name: string]: t.BoundText} = {};\n const placeholders: {[name: string]:\n
t.Text|t.BoundText} = {};\n // extract VARs from ICUs - we process them separately while\n // assembling\n
resulting message via goog.getMsg function, since\n // we need to pass them to top-level goog.getMsg call\n
Object.keys(message.placeholders).forEach(key => {\n const value = message.placeholders[key];\n if\n
(key.startsWith(I18N_ICU_VAR_PREFIX)) {\n // Currently when the `plural` or `select` keywords in an ICU\n
contain trailing spaces (e.g.\n // `{count, select , ...}`), these spaces are also included into the key names in ICU\n
vars\n // (e.g. `VAR_SELECT `). These trailing spaces are not desirable, since they will later be\n //\n
converted into `_` symbols while normalizing placeholder names, which might lead to\n // mismatches at\n
runtime (i.e. placeholder will not be replaced with the correct value).\n const formattedKey = key.trim();\n
const ast = this.bindingParser.parseInterpolationExpression(value.text, value.sourceSpan);\n\n vars[formattedKey] = new t.BoundText(ast, value.sourceSpan);\n }\n else {\n placeholders[key] =\n
this._visitTextWithInterpolation(value.text, value.sourceSpan);\n }\n });\n return new t.Icu(vars,\n
placeholders, expansion.sourceSpan, message);\n}\n\nvisitExpansionCase(expansionCase: html.ExpansionCase):\n
null {\n return null;\n}\n\nvisitComment(comment: html.Comment): null {\n return null;\n}\n\n// convert\n
view engine `ParsedProperty` to a format suitable for IVY\n private extractAttributes(\n elementName: string,\n
properties: ParsedProperty[],\n i18nPropsMeta: {[key: string]: i18n.I18nMeta});\n {\n bound:\n
t.BoundAttribute[],\n literal: t.TextAttribute[]\n } {\n const bound: t.BoundAttribute[] = [];\n const literal:\n
t.TextAttribute[] = [];\n properties.forEach(prop => {\n const i18n = i18nPropsMeta[prop.name];\n if\n
(prop.isLiteral) {\n literal.push(new t.TextAttribute(\n prop.name, prop.expression.source || ",\n
prop.sourceSpan, undefined, i18n));\n }\n else {\n // Note that validation is skipped and property mapping is\n
disabled\n // due to the fact that we need to make sure a given prop is not an\n // input of a directive and\n
directive matching happens at runtime.\n const bep = this.bindingParser.createBoundElementProperty(\n
elementName, prop, /* skipValidation */ true, /* mapPropertyName */ false);\n

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bound.push(t.BoundAttribute.fromBoundElementProperty(bep, i18n));\n }\n });\n return {bound, literal};\n}\n\nprivate parseAttribute(\n isTemplateElement: boolean, attribute: html.Attribute, matchableAttributes:\n string[][],\n parsedProperties: ParsedProperty[], boundEvents: t.BoundEvent[], variables: t.Variable[],\n references: t.Reference[]) {\n const name = normalizeAttributeName(attribute.name);\n const value =\n attribute.value;\n const srcSpan = attribute.sourceSpan;\n const absoluteOffset =\n attribute.valueSpan ?\n attribute.valueSpan.start.offset : srcSpan.start.offset;\n\n function createKeySpan(srcSpan: ParseSourceSpan,\n prefix: string, identifier: string) {\n // We need to adjust the start location for the keySpan to account for the\n removed 'data-'\n // prefix from `normalizeAttributeName`.\n const normalizationAdjustment =\n attribute.name.length - name.length;\n const keySpanStart = srcSpan.start.moveBy(prefix.length +\n normalizationAdjustment);\n const keySpanEnd = keySpanStart.moveBy(identifier.length);\n return new\n ParseSourceSpan(keySpanStart, keySpanEnd, keySpanStart, identifier);\n }\n\n const bindParts =\n name.match(BIND_NAME_REGEXP);\n let hasBinding = false;\n\n if (bindParts) {\n hasBinding = true;\n if (bindParts[KW_BIND_IDX] != null) {\n const identifier = bindParts[IDENT_KW_IDX];\n const\n keySpan = createKeySpan(srcSpan, bindParts[KW_BIND_IDX], identifier);\n this.bindingParser.parsePropertyBinding(\n identifier, value, false, srcSpan, absoluteOffset,\n attribute.valueSpan,\n matchableAttributes, parsedProperties, keySpan);\n } else if\n (bindParts[KW_LET_IDX]) {\n if (isTemplateElement) {\n const identifier =\n bindParts[IDENT_KW_IDX];\n const keySpan = createKeySpan(srcSpan, bindParts[KW_LET_IDX],\n identifier);\n this.parseVariable(identifier, value, srcSpan, keySpan, attribute.valueSpan, variables);\n } else {\n this.reportError(`"let-" is only supported on ng-template elements.`, srcSpan);\n }\n } else if\n (bindParts[KW_REF_IDX]) {\n const identifier = bindParts[IDENT_KW_IDX];\n this.parseReference(identifier, value, srcSpan, attribute.valueSpan, references);\n } else if\n (bindParts[KW_ON_IDX]) {\n const events: ParsedEvent[] = [];\n const identifier =\n bindParts[IDENT_KW_IDX];\n this.bindingParser.parseEvent(\n identifier, value, srcSpan,\n attribute.valueSpan || srcSpan, matchableAttributes,\n events);\n addEvents(events, boundEvents);\n } else if\n (bindParts[KW_BINDON_IDX]) {\n const identifier = bindParts[IDENT_KW_IDX];\n const\n keySpan = createKeySpan(srcSpan, bindParts[KW_BINDON_IDX], identifier);\n this.bindingParser.parsePropertyBinding(\n identifier, value, false, srcSpan, absoluteOffset,\n attribute.valueSpan,\n matchableAttributes, parsedProperties, keySpan);\n this.parseAssignmentEvent(\n identifier, value, srcSpan, attribute.valueSpan, matchableAttributes, boundEvents);\n } else if\n (bindParts[KW_AT_IDX]) {\n const keySpan = createKeySpan(srcSpan, "", name);\n this.bindingParser.parseLiteralAttr(\n name, value, srcSpan, absoluteOffset, attribute.valueSpan,\n matchableAttributes,\n parsedProperties, keySpan);\n } else if\n (bindParts[IDENT_BANANA_BOX_IDX]) {\n const keySpan = createKeySpan(srcSpan, '[',\n bindParts[IDENT_BANANA_BOX_IDX]);\n this.bindingParser.parsePropertyBinding(\n bindParts[IDENT_BANANA_BOX_IDX], value, false, srcSpan, absoluteOffset,\n attribute.valueSpan,\n matchableAttributes, parsedProperties, keySpan);\n this.parseAssignmentEvent(\n bindParts[IDENT_BANANA_BOX_IDX], value, srcSpan, attribute.valueSpan,\n matchableAttributes,\n boundEvents);\n } else if\n (bindParts[IDENT_PROPERTY_IDX]) {\n const keySpan =\n createKeySpan(srcSpan, '[', bindParts[IDENT_PROPERTY_IDX]);\n this.bindingParser.parsePropertyBinding(\n bindParts[IDENT_PROPERTY_IDX], value, false, srcSpan,\n absoluteOffset,\n attribute.valueSpan, matchableAttributes, parsedProperties, keySpan);\n } else if\n (bindParts[IDENT_EVENT_IDX]) {\n const events: ParsedEvent[] = [];\n this.bindingParser.parseEvent(\n bindParts[IDENT_EVENT_IDX], value, srcSpan, attribute.valueSpan || srcSpan,\n matchableAttributes, events);\n addEvents(events, boundEvents);\n } else {\n const keySpan =\n createKeySpan(srcSpan, "/* prefix */", name);\n hasBinding = this.bindingParser.parsePropertyInterpolation(\n name, value, srcSpan, attribute.valueSpan, matchableAttributes, parsedProperties,\n keySpan);\n }\n }\n\n return hasBinding;\n}\n\nprivate _visitTextWithInterpolation(\n value: string, sourceSpan: ParseSourceSpan,

```

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i18n?: i18n.I18nMeta): t.Text|t.BoundText {\n const valueNoNgsp = replaceNgsp(value);\n const expr =
this.bindingParser.parseInterpolation(valueNoNgsp, sourceSpan);\n return expr ? new t.BoundText(expr,
sourceSpan, i18n) : new t.Text(valueNoNgsp, sourceSpan);\n }\n\n private parseVariable(\n identifier: string,
value: string, sourceSpan: ParseSourceSpan, keySpan: ParseSourceSpan,\n valueSpan:
ParseSourceSpan|undefined, variables: t.Variable[]) {\n if (identifier.indexOf('-') > -1) {\n this.reportError(`"-
\' is not allowed in variable names`, sourceSpan);\n } else if (identifier.length === 0) {\n
this.reportError(`Variable does not have a name`, sourceSpan);\n }\n\n variables.push(new t.Variable(identifier,
value, sourceSpan, keySpan, valueSpan));\n }\n\n private parseReference(\n identifier: string, value: string,
sourceSpan: ParseSourceSpan,\n valueSpan: ParseSourceSpan|undefined, references: t.Reference[]) {\n if
(identifier.indexOf('-') > -1) {\n this.reportError(`"-\' is not allowed in reference names`, sourceSpan);\n } else
if (identifier.length === 0) {\n this.reportError(`Reference does not have a name`, sourceSpan);\n }\n\n references.push(new t.Reference(identifier, value, sourceSpan, valueSpan));\n }\n\n private
parseAssignmentEvent(\n name: string, expression: string, sourceSpan: ParseSourceSpan,\n valueSpan:
ParseSourceSpan|undefined, targetMatchableAttrs: string[][],\n boundEvents: t.BoundEvent[]) {\n const events:
ParsedEvent[] = [];\n this.bindingParser.parseEvent(\n `${name}Change`, `${expression}=${event}`,
sourceSpan, valueSpan || sourceSpan,\n targetMatchableAttrs, events);\n addEvents(events, boundEvents);\n
}\n\n private reportError(\n message: string, sourceSpan: ParseSourceSpan,\n level: ParseErrorLevel =
ParseErrorLevel.ERROR) {\n this.errors.push(new ParseError(sourceSpan, message, level));\n }\n}\n\nnclass
NonBindableVisitor implements html.Visitor {\n visitElement(ast: html.Element): t.Element|null {\n const
preparsedElement = preparseElement(ast);\n if (preparsedElement.type === PreparedElementType.SCRIPT ||\n
preparsedElement.type === PreparedElementType.STYLE ||\n preparsedElement.type ===
PreparedElementType.STYLESHEET) {\n // Skipping <script> for security reasons\n // Skipping <style>
and stylesheets as we already processed them\n // in the StyleCompiler\n return null;\n }\n\n const
children: t.Node[] = html.visitAll(this, ast.children, null);\n return new t.Element(\n ast.name,
html.visitAll(this, ast.attrs as t.TextAttribute[],\n /* inputs */[], /* outputs */[], children, /* references */[],
ast.sourceSpan,\n ast.startSourceSpan, ast.endSourceSpan);\n)\n\n visitComment(comment: html.Comment):
any {\n return null;\n }\n\n visitAttribute(attribute: html.Attribute): t.TextAttribute {\n return new
t.TextAttribute(\n attribute.name, attribute.value, attribute.sourceSpan, undefined, attribute.i18n);\n }\n\n
visitText(text: html.Text): t.Text {\n return new t.Text(text.value, text.sourceSpan);\n }\n\n
visitExpansion(expansion: html.Expansion): any {\n return null;\n }\n\n visitExpansionCase(expansionCase:
html.ExpansionCase): any {\n return null;\n }\n}\n\nconst NON_BINDABLE_VISITOR = new
NonBindableVisitor();\n\nfunction normalizeAttributeName(attrName: string): string {\n return /^data-
/i.test(attrName) ? attrName.substring(5) : attrName;\n}\n\nfunction addEvents(events: ParsedEvent[], boundEvents:
t.BoundEvent[]) {\n boundEvents.push(...events.map(e => t.BoundEvent.fromParsedEvent(e));\n }\n\nfunction
isEmptyTextNode(node: html.Node): boolean {\n return node instanceof html.Text && node.value.trim().length ===
0;\n }\n\nfunction isCommentNode(node: html.Node): boolean {\n return node instanceof
html.Comment;\n }\n\nfunction textContents(node: html.Element): string|null {\n if (node.children.length !== 1 ||
!(node.children[0] instanceof html.Text)) {\n return null;\n } else {\n return (node.children[0] as
html.Text).value;\n }\n}\n\n"/**\n * @license\n * Copyright Google LLC All Rights Reserved.\n * Use of this
source code is governed by an MIT-style license that can be\n * found in the LICENSE file at
https://angular.io/license\n */\nimport {AST} from './../expression_parser/ast';\nimport * as i18n from
'./../i18n/i18n_ast';\nimport * as o from './../output/output_ast';\nimport {assembleBoundTextPlaceholders,
getSeqNumberGenerator, updatePlaceholderMap, wrapI18nPlaceholder} from './util';\n\nenum TagType {\n
ELEMENT,\n TEMPLATE,\n }\n\n/**\n * Generates an object that is used as a shared\n * state between parent and all
child contexts.\n */\nfunction setupRegistry() {\n return {getUniqueId: getSeqNumberGenerator(), icus: new
Map<string, any[]>());\n }\n\n/**\n * I18nContext is a helper class which keeps track of all i18n-related aspects\n *
(accumulates placeholders, bindings, etc) between i18nStart and i18nEnd instructions.\n */\n * When we enter a
nested template, the top-level context is being passed down\n * to the nested component, which uses this context to

```

```

generate a child instance\n * of I18nContext class (to handle nested template) and at the end, reconciles it back\n *
with the parent context.\n *\n * @param index Instruction index of i18nStart, which initiates this context\n *
@param ref Reference to a translation const that represents the content if thus context\n * @param level Nestng
level defined for child contexts\n * @param templateIndex Instruction index of a template which this context
belongs to\n * @param meta Meta information (id, meaning, description, etc) associated with this context\n
*/\nexport class I18nContext {\n public readonly id: number;\n public bindings = new Set<AST>();\n public
placeholders = new Map<string, any[]>();\n public isEmitted: boolean = false;\n\n private _registry!: any;\n
private _unresolvedCtxCount: number = 0;\n\n constructor(\n readonly index: number, readonly ref:
o.ReadVarExpr, readonly level: number = 0,\n readonly templateIndex: number|null = null, readonly meta:
i18n.I18nMeta,\n private registry?: any) {\n this._registry = registry || setupRegistry();\n this.id =
this._registry.getUniqueId();\n }\n\n private appendTag(type: TagType, node: i18n.TagPlaceholder, index: number,
closed?: boolean) {\n if (node.isVoid && closed) {\n return; // ignore \"close\" for void tags\n }\n const ph
= node.isVoid || !closed ? node.startName : node.closeName;\n const content = {type, index, ctx: this.id, isVoid:
node.isVoid, closed};\n updatePlaceholderMap(this.placeholders, ph, content);\n }\n\n get icus() {\n return
this._registry.icus;\n }\n get isRoot() {\n return this.level === 0;\n }\n get isResolved() {\n return
this._unresolvedCtxCount === 0;\n }\n\n getSerializedPlaceholders() {\n const result = new Map<string,
any[]>();\n this.placeholders.forEach(\n (values, key) => result.set(key,
values.map(serializePlaceholderValue));\n);\n return result;\n }\n\n // public API to accumulate i18n-related
content\n appendBinding(binding: AST) {\n this.bindings.add(binding);\n }\n appendIcu(name: string, ref:
o.Expression) {\n updatePlaceholderMap(this._registry.icus, name, ref);\n }\n appendBoundText(node:
i18n.I18nMeta) {\n const phs = assembleBoundTextPlaceholders(node, this.bindings.size, this.id);\n phs.forEach((values, key) => updatePlaceholderMap(this.placeholders, key, ...values));\n }\n
appendTemplate(node: i18n.I18nMeta, index: number) {\n // add open and close tags at the same time,\n // since
we process nested templates separately\n this.appendTag(TagType.TEMPLATE, node as i18n.TagPlaceholder,
index, false);\n this.appendTag(TagType.TEMPLATE, node as i18n.TagPlaceholder, index, true);\n this._unresolvedCtxCount++;\n }\n appendElement(node: i18n.I18nMeta, index: number, closed?: boolean) {\n this.appendTag(TagType.ELEMENT, node as i18n.TagPlaceholder, index, closed);\n }\n appendProjection(node:
i18n.I18nMeta, index: number) {\n // Add open and close tags at the same time, since `<ng-content>` has no
content,\n // so when we come across `<ng-content>` we can register both open and close tags.\n // Note: runtime
i18n logic doesn't distinguish `<ng-content>` tag placeholders and\n // regular element tag placeholders, so we
generate element placeholders for both types.\n this.appendTag(TagType.ELEMENT, node as
i18n.TagPlaceholder, index, false);\n this.appendTag(TagType.ELEMENT, node as i18n.TagPlaceholder, index,
true);\n }\n\n /**\n * Generates an instance of a child context based on the root one,\n * when we enter a nested
template within I18n section.\n *\n * @param index Instruction index of corresponding i18nStart, which initiates
this context\n * @param templateIndex Instruction index of a template which this context belongs to\n * @param
meta Meta information (id, meaning, description, etc) associated with this context\n *\n * @returns I18nContext
instance\n */\n forkChildContext(index: number, templateIndex: number, meta: i18n.I18nMeta) {\n return new
I18nContext(index, this.ref, this.level + 1, templateIndex, meta, this._registry);\n }\n\n /**\n * Reconciles child
context into parent one once the end of the i18n block is reached (i18nEnd).\n *\n * @param context Child
I18nContext instance to be reconciled with parent context.\n */\n reconcileChildContext(context: I18nContext) {\n
// set the right context id for open and close\n // template tags, so we can use it as sub-block ids\n ['start',
'close'].forEach((op: string) => {\n const key = (context.meta as any)[`${op}Name`];\n const phs =
this.placeholders.get(key) || [];\n const tag = phs.find(findTemplateFn(this.id, context.templateIndex));\n if
(tag) {\n tag.ctx = context.id;\n }\n });\n\n // reconcile placeholders\n const childPhs =
context.placeholders;\n childPhs.forEach((values: any[], key: string) => {\n const phs =
this.placeholders.get(key);\n if (!phs) {\n this.placeholders.set(key, values);\n return;\n }\n // try to
find matching template...\n const tmpIdx = phs.findIndex(findTemplateFn(context.id, context.templateIndex));\n if (tmpIdx >= 0) {\n // ... if found - replace it with nested template content\n const isCloseTag =

```



```

string]: number} = {};\n // Maps signature to placeholder names\n private _signatureToName: {[k: string]: string}
= {};\n\n getStartTagPlaceholderName(tag: string, attrs: {[k: string]: string}, isVoid: boolean): string {\n const
signature = this._hashTag(tag, attrs, isVoid);\n if (this._signatureToName[signature]) {\n return
this._signatureToName[signature];\n }\n\n const upperTag = tag.toUpperCase();\n const baseName =
TAG_TO_PLACEHOLDER_NAMES[upperTag] || `TAG_${upperTag}`;\n const name =
this._generateUniqueName(isVoid ? baseName : `START_${baseName}`);\n\n this._signatureToName[signature]
= name;\n\n return name;\n }\n\n getCloseTagPlaceholderName(tag: string): string {\n const signature =
this._hashClosingTag(tag);\n if (this._signatureToName[signature]) {\n return
this._signatureToName[signature];\n }\n\n const upperTag = tag.toUpperCase();\n const baseName =
TAG_TO_PLACEHOLDER_NAMES[upperTag] || `TAG_${upperTag}`;\n const name =
this._generateUniqueName(`CLOSE_${baseName}`);\n\n this._signatureToName[signature] = name;\n\n return
name;\n }\n\n getPlaceholderName(name: string, content: string): string {\n const upperName =
name.toUpperCase();\n const signature = `PH: ${upperName}=${content}`;\n if
(this._signatureToName[signature]) {\n return this._signatureToName[signature];\n }\n\n const uniqueName
= this._generateUniqueName(upperName);\n this._signatureToName[signature] = uniqueName;\n\n return
uniqueName;\n }\n\n getUniquePlaceholder(name: string): string {\n return
this._generateUniqueName(name.toUpperCase());\n }\n\n // Generate a hash for a tag - does not take attribute
order into account\n private _hashTag(tag: string, attrs: {[k: string]: string}, isVoid: boolean): string {\n const
start = `<${tag}`;\n const strAttrs = Object.keys(attrs).sort().map((name) => `
${name}=${attrs[name]}`).join(" ");\n const end = isVoid ? '>' : `>${tag}>`;\n\n return start + strAttrs + end;\n
}\n\n private _hashClosingTag(tag: string): string {\n return this._hashTag(`/${tag}`, {}, false);\n }\n\n private
_generateUniqueName(base: string): string {\n const seen =
this._placeholderNameCounts.hasOwnProperty(base);\n if (!seen) {\n this._placeholderNameCounts[base] =
1;\n return base;\n }\n\n const id = this._placeholderNameCounts[base];\n
this._placeholderNameCounts[base] = id + 1;\n return `${base}_${id}`;\n }\n\n\n"/>**\n * @license\n *
Copyright Google LLC All Rights Reserved.\n * \n * Use of this source code is governed by an MIT-style license
that can be\n * found in the LICENSE file at https://angular.io/license\n */\n\nimport {Lexer as ExpressionLexer}
from './expression_parser/lexer';\nimport {Parser as ExpressionParser} from './expression_parser/parser';\nimport *
as html from './ml_parser/ast';\nimport {getHtmlTagDefinition} from './ml_parser/html_tags';\nimport
{InterpolationConfig} from './ml_parser/interpolation_config';\nimport {ParseSourceSpan} from
'./parse_util';\n\nimport * as i18n from './i18n_ast';\nimport {PlaceholderRegistry} from
'./serializers/placeholder';\n\nconst _expParser = new ExpressionParser(new ExpressionLexer());\n\nexport type
VisitNodeFn = (html: html.Node, i18n: i18n.Node) => i18n.Node;\n\nexport interface I18nMessageFactory {\n
(nodes: html.Node[], meaning: string|undefined, description: string|undefined,\n customId: string|undefined,\n
visitNodeFn?: VisitNodeFn): i18n.Message;\n}\n\n/**\n * Returns a function converting html nodes to an i18n
Message given an interpolationConfig\n */\n\nexport function createI18nMessageFactory(interpolationConfig:
InterpolationConfig): I18nMessageFactory {\n const visitor = new _I18nVisitor(_expParser,\n
interpolationConfig);\n return (nodes, meaning, description, customId, visitNodeFn) =>\n
visitor.toI18nMessage(nodes, meaning, description, customId, visitNodeFn);\n}\n\ninterface
I18nMessageVisitorContext {\n isIcu: boolean;\n icuDepth: number;\n placeholderRegistry:
PlaceholderRegistry;\n placeholderToContent: {[phName: string]: i18n.MessagePlaceholder};\n
placeholderToMessage: {[phName: string]: i18n.Message};\n visitNodeFn: VisitNodeFn;\n}\n\nfunction
noopVisitNodeFn(_html: html.Node, i18n: i18n.Node): i18n.Node {\n return i18n;\n}\n\nclass _I18nVisitor
implements html.Visitor {\n constructor(\n private _expressionParser: ExpressionParser,\n private
_interpolationConfig: InterpolationConfig) {}\n\n public toI18nMessage(\n nodes: html.Node[], meaning = ",\n
description = ", customId = ",\n visitNodeFn: VisitNodeFn|undefined): i18n.Message {\n const context:
I18nMessageVisitorContext = {\n isIcu: nodes.length == 1 && nodes[0] instanceof html.Expansion,\n
icuDepth: 0,\n placeholderRegistry: new PlaceholderRegistry(),\n placeholderToContent: {},\n

```



```

placeholderToMessage: {},\n visitNodeFn: visitNodeFn || noopVisitNodeFn,\n };\n\n const i18nodes:\n i18n.Node[] = html.visitAll(this, nodes, context);\n\n return new i18n.Message(\n i18nodes,\n context.placeholderToContent, context.placeholderToMessage, meaning, description,\n customId);\n\n }\n\n visitElement(el: html.Element, context: I18nMessageVisitorContext): i18n.Node {\n const children =\n html.visitAll(this, el.children, context);\n const attrs: {[k: string]: string} = {};\n el.attrs.forEach(attr => {\n //\n Do not visit the attributes, translatable ones are top-level ASTs\n attrs[attr.name] = attr.value;\n });\n\n const\n isVoid: boolean = getHtmlTagDefinition(el.name).isVoid;\n const startPhName =\n context.placeholderRegistry.getStartTagPlaceholderName(el.name, attrs, isVoid);\n\n context.placeholderToContent[startPhName] = {\n text: el.startSourceSpan.toString(),\n sourceSpan:\n el.startSourceSpan,\n };\n\n let closePhName = "";\n if (!isVoid) {\n closePhName =\n context.placeholderRegistry.getCloseTagPlaceholderName(el.name);\n\n context.placeholderToContent[closePhName] = {\n text: `</${el.name}>`,\n sourceSpan: el.endSourceSpan\n ?? el.sourceSpan,\n };\n }\n\n const node = new i18n.TagPlaceholder(\n el.name, attrs, startPhName,\n closePhName, children, isVoid, el.sourceSpan,\n el.startSourceSpan, el.endSourceSpan);\n return\n context.visitNodeFn(el, node);\n }\n\n visitAttribute(attribute: html.Attribute, context:\n I18nMessageVisitorContext): i18n.Node {\n const node = this._visitTextWithInterpolation(attribute.value,\n attribute.sourceSpan, context);\n return context.visitNodeFn(attribute, node);\n }\n\n visitText(text: html.Text,\n context: I18nMessageVisitorContext): i18n.Node {\n const node = this._visitTextWithInterpolation(text.value,\n text.sourceSpan, context);\n return context.visitNodeFn(text, node);\n }\n\n visitComment(comment:\n html.Comment, context: I18nMessageVisitorContext): i18n.Node|null {\n return null;\n }\n\n visitExpansion(icu:\n html.Expansion, context: I18nMessageVisitorContext): i18n.Node {\n context.icuDepth++;\n const\n i18nIcuCases: {[k: string]: i18n.Node} = {};\n const i18nIcu = new i18n.Icu(icu.switchValue, icu.type,\n i18nIcuCases, icu.sourceSpan);\n icu.cases.forEach((caze): void => {\n i18nIcuCases[caze.value] = new\n i18n.Container(\n caze.expression.map((node) => node.visit(this, context)),\n caze.expSourceSpan);\n });\n\n context.icuDepth--;\n\n if (context.isIcu || context.icuDepth > 0) {\n // Returns an ICU node when:\n // - the\n message (vs a part of the message) is an ICU message, or\n // - the ICU message is nested.\n const expPh =\n context.placeholderRegistry.getUniquePlaceholder(`VAR_${icu.type}`);\n i18nIcu.expressionPlaceholder =\n expPh;\n context.placeholderToContent[expPh] = {\n text: icu.switchValue,\n sourceSpan:\n icu.switchValueSourceSpan,\n };\n return context.visitNodeFn(icu, i18nIcu);\n }\n\n // Else returns a\n placeholder\n // ICU placeholders should not be replaced with their original content but with the their\n //\n translations.\n // TODO(vicb): add a html.Node -> i18n.Message cache to avoid having to re-create the msg\n const phName = context.placeholderRegistry.getPlaceholderName('ICU', icu.sourceSpan.toString());\n context.placeholderToMessage[phName] = this.toI18nMessage([icu], "", "", undefined);\n const node = new\n i18n.IcuPlaceholder(i18nIcu, phName, icu.sourceSpan);\n return context.visitNodeFn(icu, node);\n }\n\n visitExpansionCase(_icuCase: html.ExpansionCase, _context: I18nMessageVisitorContext): i18n.Node {\n throw\n new Error("Unreachable code");\n }\n\n private _visitTextWithInterpolation(\n text: string, sourceSpan:\n ParseSourceSpan, context: I18nMessageVisitorContext): i18n.Node {\n const splitInterpolation =\n this._expressionParser.splitInterpolation(\n text, sourceSpan.start.toString(), this._interpolationConfig);\n\n (!splitInterpolation) {\n // No expression, return a single text\n return new i18n.Text(text, sourceSpan);\n }\n\n // Return a group of text + expressions\n const nodes: i18n.Node[] = [];\n const container = new\n i18n.Container(nodes, sourceSpan);\n const {start: sDelimiter, end: eDelimiter} = this._interpolationConfig;\n\n for (let i = 0; i < splitInterpolation.strings.length - 1; i++) {\n const expression =\n splitInterpolation.expressions[i];\n const baseName = _extractPlaceholderName(expression) ||\n 'INTERPOLATION';\n const phName = context.placeholderRegistry.getPlaceholderName(baseName,\n expression);\n\n if (splitInterpolation.strings[i].length) {\n // No need to add empty strings\n const\n stringSpan = getOffsetSourceSpan(sourceSpan, splitInterpolation.stringSpans[i]);\n nodes.push(new\n i18n.Text(splitInterpolation.strings[i], stringSpan));\n }\n\n const expressionSpan =\n getOffsetSourceSpan(sourceSpan, splitInterpolation.expressionsSpans[i]);\n nodes.push(new

```



```

html.Expansion, currentMessage: i18n.Message|undefined): any {
 let message;
 const meta =
 expansion.i18n;
 this.hasI18nMeta = true;
 if (meta instanceof i18n.IcuPlaceholder) {
 // set ICU
 placeholder name (e.g. "ICU_1"),
 // generated while processing root element contents,
 // so we can
 reference it when we output translation
 const name = meta.name;
 message =
 this._generateI18nMessage([expansion], meta);
 const icu = icuFromI18nMessage(message);
 icu.name =
 name;
 } else {
 // ICU is a top level message, try to use metadata from container element if provided via
 // `context` argument. Note: context may not be available for standalone ICUs (without
 // wrapping element),
 so fallback to ICU metadata in this case.
 message = this._generateI18nMessage([expansion], currentMessage ||
 meta);
 }
 expansion.i18n = message;
 return expansion;
}

visitText(text: html.Text): any {
 return text;
}

visitAttribute(attribute: html.Attribute): any {
 return attribute;
}

visitComment(comment:
html.Comment): any {
 return comment;
}

visitExpansionCase(expansionCase: html.ExpansionCase): any
{
 return expansionCase;
}

/**
 * Parse the general form `meta` passed into extract the explicit metadata
needed to create a `Message`.
 *
 * There are three possibilities for the `meta` variable
 * 1) a string
from an `i18n` template attribute: parse it to extract the metadata values.
 * 2) a `Message` from a previous
processing pass: reuse the metadata values in the message.
 * 4) other: ignore this and just process the message
metadata as normal
 *
 * @param meta the bucket that holds information about the message
 * @returns the
parsed metadata.
 */
private _parseMetadata(meta: string|i18n.I18nMeta): I18nMeta {
 return typeof meta
=== 'string' ? parseI18nMeta(meta) :
meta instanceof i18n.Message ? meta : {};
}

/**
 * Generate (or restore) message id if not specified already.
 */
private _setMessageId(message:
i18n.Message, meta: string|i18n.I18nMeta): void {
 if (!message.id) {
 message.id = meta instanceof
i18n.Message && meta.id || decimalDigest(message);
 }
}

/**
 * Update the `message` with a
`legacyId` if necessary.
 *
 * @param message the message whose legacy id should be set
 * @param meta
information about the message being processed
 */
private _setLegacyIds(message: i18n.Message, meta:
string|i18n.I18nMeta): void {
 if (this.enableI18nLegacyMessageIdFormat) {
 message.legacyIds =
[computeDigest(message), computeDecimalDigest(message)];
 } else if (typeof meta !== 'string') {
 // This
occurs if we are doing the 2nd pass after whitespace removal (see `parseTemplate()` in
`packages/compiler/src/render3/view/template.ts`).
 // In that case we want to reuse the legacy message
generated in the 1st pass (see
`setI18nRefs()`).
 const previousMessage = meta instanceof i18n.Message
? meta :
meta instanceof i18n.IcuPlaceholder ? meta.previousMessage : undefined;
 message.legacyIds = previousMessage ? previousMessage.legacyIds : [];
 }
}

/** I18n separators for
metadata */
const I18N_MEANING_SEPARATOR = '|';
const I18N_ID_SEPARATOR = '@@';

/**
 * Parses i18n metas like:
 * - "@@id",
 * - "description[@@id]",
 * - "meaning[description[@@id]]"
 * and
returns an object with parsed output.
 *
 * @param meta String that represents i18n meta
 * @returns Object
with id, meaning and description fields
 */
export function parseI18nMeta(meta: string = ""): I18nMeta {
 let
customId: string|undefined;
 let meaning: string|undefined;
 let description: string|undefined;

 meta =
meta.trim();
 if (meta) {
 const idIndex = meta.indexOf(I18N_ID_SEPARATOR);
 const descIndex =
meta.indexOf(I18N_MEANING_SEPARATOR);
 let meaningAndDesc: string;
 [meaningAndDesc,
customId] =
(idIndex > -1) ? [meta.slice(0, idIndex), meta.slice(idIndex + 2)] : [meta, "];
 [meaning,
description] =
(descIndex > -1) ? [meaningAndDesc.slice(0, descIndex), meaningAndDesc.slice(descIndex +
1)] : [
"", meaningAndDesc];
 }
 return {customId, meaning, description};
}

/** Converts i18n meta
information for a message (id, description, meaning)
to a JsDoc statement formatted as expected by the Closure
compiler.
 */
export function i18nMetaToJSDoc(meta: I18nMeta): o.JSDocComment|null {
 const tags:
o.JSDocTag[] = [];
 if (meta.description) {
 tags.push({tagName: o.JSDocTagName.Desc, text:
meta.description});
 }
 if (meta.meaning) {
 tags.push({tagName: o.JSDocTagName.Meaning, text:
meta.meaning});
 }
 return tags.length === 0 ? null : o.jsDocComment(tags);
}

/**
 * @license
 * Copyright Google LLC All Rights Reserved.
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that can be
 * found in the LICENSE file at https://angular.io/license
 */
import * as i18n from
'./../i18n/i18n_ast';
import {mapLiteral} from './../output/map_util';
import * as o from

```

```

'./././output/output_ast';\n\nimport {serializeIcuNode} from './icu_serializer';\nimport {i18nMetaToJSDoc} from
'./meta';\nimport {formatI18nPlaceholderName} from './util';\n\n/** Closure uses `goog.getMsg(message)` to lookup
translations *\n\nconst GOOG_GET_MSG = 'goog.getMsg';\n\nexport function createGoogleGetMsgStatements(\n
variable: o.ReadVarExpr, message: i18n.Message, closureVar: o.ReadVarExpr,\n
params: {[name: string]:
o.Expression}): o.Statement[] {\n
const messageString = serializeI18nMessageForGetMsg(message);\n
const args
= [o.literal(messageString) as o.Expression];\n
if (Object.keys(params).length) {\n
args.push(mapLiteral(params,
true));\n
}\n\n //**\n // * @desc description of message\n // * @meaning meaning of message\n // *\n // const
MSG_... = goog.getMsg(...);\n // I18N_X = MSG_...;\n
const googGetMsgStmt =
closureVar.set(o.variable(GOOG_GET_MSG).callFn(args)).toConstDecl();\n
const metaComment =
i18nMetaToJSDoc(message);\n
if (metaComment !== null) {\n
googGetMsgStmt.addLeadingComment(metaComment);\n
}\n
const i18nAssignmentStmt = new
o.ExpressionStatement(variable.set(closureVar));\n
return [googGetMsgStmt, i18nAssignmentStmt];\n\n}\n\n/**\n *
This visitor walks over i18n tree and generates its string representation, including ICUs and\n * placeholders in
`{$placeholder}` (for plain messages) or `{PLACEHOLDER}` (inside ICUs) format.\n *\n\nclass
GetMsgSerializerVisitor implements i18n.Visitor {\n
private formatPh(value: string): string {\n
return
`$$${formatI18nPlaceholderName(value)}$$`;\n
}\n\n visitText(text: i18n.Text): any {\n
return text.value;\n
}\n\n visitContainer(container: i18n.Container): any {\n
return container.children.map(child =>
child.visit(this)).join("");\n
}\n\n visitIcu(icu: i18n.Icu): any {\n
return serializeIcuNode(icu);\n
}\n\n visitTagPlaceholder(ph: i18n.TagPlaceholder): any {\n
return ph.isVoid ?\n
this.formatPh(ph.startName) :\n
`${this.formatPh(ph.startName)}${ph.children.map(child => child.visit(this)).join("")}${\n
this.formatPh(ph.closeName)}`;\n
}\n\n visitPlaceholder(ph: i18n.Placeholder): any {\n
return
this.formatPh(ph.name);\n
}\n\n visitIcuPlaceholder(ph: i18n.IcuPlaceholder, context?: any): any {\n
return
this.formatPh(ph.name);\n
}\n\n\nconst serializerVisitor = new GetMsgSerializerVisitor();\n\nexport function
serializeI18nMessageForGetMsg(message: i18n.Message): string {\n
return message.nodes.map(node =>
node.visit(serializerVisitor, null)).join("");\n\n"}, /**\n * @license\n * Copyright Google LLC All Rights
Reserved.\n *\n * Use of this source code is governed by an MIT-style license that can be\n * found in the
LICENSE file at https://angular.io/license\n *\n\nimport * as i18n from './././i18n/i18n_ast';\nimport * as o from
'./././output/output_ast';\nimport {ParseLocation, ParseSourceSpan} from './././parse_util';\nimport
{serializeIcuNode} from './icu_serializer';\nimport {formatI18nPlaceholderName} from './util';\n\nexport function
createLocalizeStatements(\n
variable: o.ReadVarExpr, message: i18n.Message,\n
params: {[name: string]:
o.Expression}): o.Statement[] {\n
const {messageParts, placeHolders} =
serializeI18nMessageForLocalize(message);\n
const sourceSpan = getSourceSpan(message);\n
const expressions =
placeHolders.map(ph => params[ph.text]);\n
const localizedString =\n
o.localizedString(message, messageParts,
placeHolders, expressions, sourceSpan);\n
const variableInitialization = variable.set(localizedString);\n
return [new
o.ExpressionStatement(variableInitialization)];\n\n}\n\n/**\n * This visitor walks over an i18n tree, capturing literal
strings and placeholders.\n *\n * The result can be used for generating the `localize` tagged template literals.\n
*\n\nclass LocalizeSerializerVisitor implements i18n.Visitor {\n
visitText(text: i18n.Text, context:
o.MessagePiece[]): any {\n
if (context[context.length - 1] instanceof o.LiteralPiece) {\n
// Two literal pieces in
a row means that there was some comment node in-between.\n
context[context.length - 1].text += text.value;\n
} else {\n
context.push(new o.LiteralPiece(text.value, text.sourceSpan));\n
}\n
}\n\n visitContainer(container:
i18n.Container, context: o.MessagePiece[]): any {\n
container.children.forEach(child => child.visit(this,
context));\n
}\n\n visitIcu(icu: i18n.Icu, context: o.MessagePiece[]): any {\n
context.push(new
o.LiteralPiece(serializeIcuNode(icu), icu.sourceSpan));\n
}\n\n visitTagPlaceholder(ph: i18n.TagPlaceholder,
context: o.MessagePiece[]): any {\n
context.push(this.createPlaceholderPiece(ph.startName, ph.startSourceSpan
?? ph.sourceSpan);\n
if (!ph.isVoid) {\n
ph.children.forEach(child => child.visit(this, context));\n
context.push(this.createPlaceholderPiece(ph.closeName, ph.endSourceSpan ?? ph.sourceSpan));\n
}\n
}\n\n visitPlaceholder(ph: i18n.Placeholder, context: o.MessagePiece[]): any {\n
context.push(this.createPlaceholderPiece(ph.name, ph.sourceSpan));\n
}\n\n visitIcuPlaceholder(ph:

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i18n.IcuPlaceholder, context?: any): any {\n context.push(this.createPlaceholderPiece(ph.name,
ph.sourceSpan));\n }\n\n private createPlaceholderPiece(name: string, sourceSpan: ParseSourceSpan):
o.PlaceholderPiece {\n return new o.PlaceholderPiece(\n formatI18nPlaceholderName(name, /*
useCamelCase */ false), sourceSpan);\n }\n}\n\nconst serializerVisitor = new LocalizeSerializerVisitor();\n\n/**\n * Serialize an i18n message into two arrays: messageParts and placeholders.\n * These arrays will be used to
generate `localize` tagged template literals.\n * @param message The message to be serialized.\n * @returns an
object containing the messageParts and placeholders.\n */\nexport function
serializeI18nMessageForLocalize(message: i18n.Message):\n {messageParts: o.LiteralPiece[], placeHolders:
o.PlaceholderPiece[]} {\n const pieces: o.MessagePiece[] = [];\n message.nodes.forEach(node =>
node.visit(serializerVisitor, pieces));\n return processMessagePieces(pieces);\n }\n\nfunction
getSourceSpan(message: i18n.Message): ParseSourceSpan {\n const startNode = message.nodes[0];\n const
endNode = message.nodes[message.nodes.length - 1];\n return new ParseSourceSpan(\n
startNode.sourceSpan.start, endNode.sourceSpan.end, startNode.sourceSpan.fullStart,\n
startNode.sourceSpan.details);\n }\n\n/**\n * Convert the list of serialized MessagePieces into two arrays.\n * One
contains the literal string pieces and the other the placeholders that will be replaced by\n * expressions when
rendering `localize` tagged template literals.\n * @param pieces The pieces to process.\n * @returns an object
containing the messageParts and placeholders.\n */\nfunction processMessagePieces(pieces: o.MessagePiece[]):\n {messageParts: o.LiteralPiece[], placeHolders: o.PlaceholderPiece[]} {\n const messageParts: o.LiteralPiece[] =
[];\n const placeHolders: o.PlaceholderPiece[] = [];\n\n if (pieces[0] instanceof o.PlaceholderPiece) {\n // The
first piece was a placeholder so we need to add an initial empty message part.\n
messageParts.push(createEmptyMessagePart(pieces[0].sourceSpan.start));\n }\n\n for (let i = 0; i < pieces.length;
i++) {\n const part = pieces[i];\n if (part instanceof o.LiteralPiece) {\n messageParts.push(part);\n } else {\n
 placeHolders.push(part);\n if (pieces[i - 1] instanceof o.PlaceholderPiece) {\n // There were two
placeholders in a row, so we need to add an empty message part.\n
messageParts.push(createEmptyMessagePart(pieces[i - 1].sourceSpan.end));\n }\n }\n\n if
(pieces[pieces.length - 1] instanceof o.PlaceholderPiece) {\n // The last piece was a placeholder so we need to add
a final empty message part.\n messageParts.push(createEmptyMessagePart(pieces[pieces.length -
1].sourceSpan.end));\n }\n\n return {messageParts, placeHolders};\n }\n}\n\nfunction
createEmptyMessagePart(location: ParseLocation): o.LiteralPiece {\n return new o.LiteralPiece(", new
ParseSourceSpan(location, location));\n }\n\n", /**\n * @license\n * Copyright Google LLC All Rights Reserved.\n
*\n * Use of this source code is governed by an MIT-style license that can be\n * found in the LICENSE file at
https://angular.io/license\n */\n\nimport {flatten, sanitizeIdentifier} from '../compile_metadata';\nimport
{BindingForm, BuiltinFunctionCall, convertActionBinding, convertPropertyBinding, convertUpdateArguments,
LocalResolver} from '../compiler_util/expression_converter';\nimport {ConstantPool} from
 '../constant_pool';\nimport * as core from '../core';\nimport {AST, AstMemoryEfficientTransformer,
BindingPipe, BindingType, FunctionCall, ImplicitReceiver, Interpolation, LiteralArray, LiteralMap,
LiteralPrimitive, ParsedEventType, PropertyRead, ThisReceiver} from '../expression_parser/ast';\nimport {Lexer}
from '../expression_parser/lexer';\nimport {IvyParser} from '../expression_parser/parser';\nimport * as i18n from
 '../i18n/i18n_ast';\nimport * as html from '../ml_parser/ast';\nimport {HtmlParser} from
 '../ml_parser/html_parser';\nimport {WhitespaceVisitor} from '../ml_parser/html_whitespaces';\nimport
{DEFAULT_INTERPOLATION_CONFIG, InterpolationConfig} from
 '../ml_parser/interpolation_config';\nimport {LexerRange} from '../ml_parser/lexer';\nimport {isNgContainer as
checkIsNgContainer, splitNsName} from '../ml_parser/tags';\nimport {mapLiteral} from
 '../output/map_util';\nimport * as o from '../output/output_ast';\nimport {ParseError, ParseSourceSpan} from
 '../parse_util';\nimport {DomElementSchemaRegistry} from '../schema/dom_element_schema_registry';\nimport
{CssSelector, SelectorMatcher} from '../selector';\nimport {BindingParser} from
 '../template_parser/binding_parser';\nimport {error, partitionArray} from '../util';\nimport * as t from
 '../r3_ast';\nimport {Identifiers as R3} from '../r3_identifiers';\nimport {htmlAstToRender3Ast} from

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'./r3_template_transform';\nimport {prepareSyntheticListenerFunctionName, prepareSyntheticListenerName,
prepareSyntheticPropertyName} from './util';\n\nimport {I18nContext} from './i18n/context';\nimport
{createGoogleGetMsgStatements} from './i18n/get_msg_utils';\nimport {createLocalizeStatements} from
'./i18n/localize_utils';\nimport {I18nMetaVisitor} from './i18n/meta';\nimport {assembleBoundTextPlaceholders,
assembleI18nBoundString, declareI18nVariable, getTranslationConstPrefix, hasI18nMeta,
I18N_ICU_MAPPING_PREFIX, i18nFormatPlaceholderNames, icuFromI18nMessage, isI18nRootNode,
isSingleI18nIcu, placeholdersToParams, TRANSLATION_VAR_PREFIX, wrapI18nPlaceholder} from
'./i18n/util';\nimport {StylingBuilder, StylingInstruction} from './styling_builder';\nimport {asLiteral,
chainedInstruction, CONTEXT_NAME, getAttrsForDirectiveMatching, getInterpolationArgsLength,
IMPLICIT_REFERENCE, invalid, NON_BINDABLE_ATTR, REFERENCE_PREFIX, RENDER_FLAGS,
trimTrailingNulls, unsupported} from './util';\n\n\n// Selector attribute name of `<ng-content>`\nconst
NG_CONTENT_SELECT_ATTR = 'select';\n\n// Attribute name of `ngProjectAs`.\nconst
NG_PROJECT_AS_ATTR_NAME = 'ngProjectAs';\n\n// Global symbols available only inside event
bindings.\nconst EVENT_BINDING_SCOPE_GLOBALS = new Set<string>(['$event']);\n\n// List of supported
global targets for event listeners\nconst GLOBAL_TARGET_RESOLVERS = new Map<string,
o.ExternalReference>(\n [['window', R3.resolveWindow], ['document', R3.resolveDocument], ['body',
R3.resolveBody]]);\n\nexport const LEADING_TRIVIA_CHARS = [' ', '\\n', '\\r', '\\t'];\n\n// if (rf & flags) { ..
}\nexport function renderFlagCheckIfStmt(\n flags: core.RenderFlags, statements: o.Statement[]): o.IfStmt {\n
return o.IfStmt(o.variable(RENDER_FLAGS).bitwiseAnd(o.literal(flags), null, false), statements);\n}\n\nexport
function prepareEventListenerParameters(\n eventAst: t.BoundEvent, handlerName: string|null = null,\n scope:
BindingScope|null = null): o.Expression[] {\n const {type, name, target, phase, handler} = eventAst;\n if (target
&& !GLOBAL_TARGET_RESOLVERS.has(target)) {\n throw new Error('Unexpected global target `${target}`
defined for `${name}` event.\n Supported list of global targets:\n `${Array.from(GLOBAL_TARGET_RESOLVERS.keys())}`');\n }\n const eventName = '$event';\n const implicitReceiverAccesses = new Set<string>();\n const implicitReceiverExpr = (scope === null ||
scope.bindingLevel === 0) ?\n o.variable(CONTEXT_NAME) :\n scope.getOrCreateSharedContextVar(0);\n const bindingExpr = convertActionBinding(\n scope, implicitReceiverExpr, handler, 'b', () => error('Unexpected
interpolation'),\n eventAst.handlerSpan, implicitReceiverAccesses, EVENT_BINDING_SCOPE_GLOBALS);\n const statements = [];\n if (scope) {\n statements.push(...scope.restoreViewStatement());\n statements.push(...scope.variableDeclarations());\n }\n statements.push(...bindingExpr.render3Stmts);\n\n const
eventName: string =\n type === ParsedEventType.Animation ? prepareSyntheticListenerName(name, phase!) :
name;\n const fnName = handlerName && sanitizeIdentifier(handlerName);\n const fnArgs: o.FnParam[] = [];\n if (implicitReceiverAccesses.has(eventName)) {\n fnArgs.push(new o.FnParam(eventName,
o.DYNAMIC_TYPE));\n }\n const handlerFn = o.fn(fnArgs, statements, o.INFERRED_TYPE, null, fnName);\n const params: o.Expression[] = [o.literal(eventName), handlerFn];\n if (target) {\n params.push(\n
o.literal(false), // `useCapture` flag, defaults to `false`\n
o.importExpr(GLOBAL_TARGET_RESOLVERS.get(target!));\n }\n return params;\n}\n\n// Collects
information needed to generate `const` field of the ComponentDef.\n// When a constant requires some pre-
processing, the `prepareStatements` section\n// contains corresponding statements.\nexport interface
ComponentDefConsts {\n prepareStatements: o.Statement[];\n constExpressions: o.Expression[];\n}\n\nfunction
createComponentDefConsts(): ComponentDefConsts {\n return {prepareStatements: [], constExpressions:
[]};\n}\n\nexport class TemplateDefinitionBuilder implements t.Visitor<void>, LocalResolver {\n private
_dataIndex = 0;\n private _bindingContext = 0;\n private _prefixCode: o.Statement[] = [];\n /**\n * List of
callbacks to generate creation mode instructions. We store them here as we process\n * the template so bindings in
listeners are resolved only once all nodes have been visited.\n * This ensures all local refs and context variables are
available for matching.\n */\n private _creationCodeFns: (() => o.Statement)[] = [];\n /**\n * List of callbacks to
generate update mode instructions. We store them here as we process\n * the template so bindings are resolved
only once all nodes have been visited. This ensures\n * all local refs and context variables are available for

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matching.\n */\n private _updateCodeFns: (() => o.Statement)[] = [];\n\n /** Index of the currently-selected node.
*/\n private _currentIndex: number = 0;\n\n /** Temporary variable declarations generated from visiting pipes,
literals, etc. */\n private _tempVariables: o.Statement[] = [];\n\n /**\n * List of callbacks to build nested templates.
Nested templates must not be visited until\n * after the parent template has finished visiting all of its nodes. This
ensures that all\n * local ref bindings in nested templates are able to find local ref values if the refs\n * are defined
after the template declaration.\n */\n private _nestedTemplateFns: (() => void)[] = [];\n\n /**\n * This scope
contains local variables declared in the update mode block of the template.\n * (e.g. refs and context vars in
bindings)\n */\n private _bindingScope: BindingScope;\n private _valueConverter: ValueConverter;\n private
_unsupported = unsupported;\n\n // i18n context local to this template\n private i18n: I18nContext|null = null;\n\n
// Number of slots to reserve for pureFunctions\n private _pureFunctionSlots = 0;\n\n // Number of binding slots\n
private _bindingSlots = 0;\n\n private fileBasedI18nSuffix: string;\n\n // Projection slots found in the template.
Projection slots can distribute projected\n // nodes based on a selector, or can just use the wildcard selector to
match\n // all nodes which aren't matching any selector.\n private _ngContentReservedSlots: (string|'*)[] = [];\n\n
// Number of non-default selectors found in all parent templates of this template. We need to\n // track it to properly
adjust projection slot index in the `projection` instruction.\n private _ngContentSelectorsOffset = 0;\n\n //
Expression that should be used as implicit receiver when converting template\n // expressions to output AST.\n
private _implicitReceiverExpr: o.ReadVarExpr|null = null;\n\n constructor(\n private constantPool:
ConstantPool, parentBindingScope: BindingScope, private level = 0,\n private contextName: string|null, private
i18nContext: I18nContext|null,\n private templateIndex: number|null, private templateName: string|null,\n
private directiveMatcher: SelectorMatcher|null, private directives: Set<o.Expression>,\n private
pipeTypeByName: Map<string, o.Expression>, private pipes: Set<o.Expression>,\n private _namespace:
o.ExternalReference, relativeContextFilePath: string,\n private i18nUseExternalIds: boolean,\n private
_constants: ComponentDefConsts = createComponentDefConsts()) {\n this._bindingScope =
parentBindingScope.nestedScope(level);\n\n // Turn the relative context file path into an identifier by replacing
non-alphanumeric\n // characters with underscores.\n this.fileBasedI18nSuffix =
relativeContextFilePath.replace(/[^A-Za-z0-9]/g, '_') + '_';\n\n this._valueConverter = new ValueConverter(\n
constantPool, () => this.allocateDataSlot(),\n (numSlots: number) =>
this.allocatePureFunctionSlots(numSlots),\n (name, localName, slot, value: o.Expression) => {\n const
pipeType = pipeTypeByName.get(name);\n if (pipeType) {\n this.pipes.add(pipeType);\n }\n
this._bindingScope.set(this.level, localName, value);\n this.creationInstruction(null, R3.pipe, [o.literal(slot),
o.literal(name)]);\n });\n }\n\n buildTemplateFunction(\n nodes: t.Node[], variables: t.Variable[],
ngContentSelectorsOffset: number = 0,\n i18n?: i18n.I18nMeta): o.FunctionExpr {\n
this._ngContentSelectorsOffset = ngContentSelectorsOffset;\n\n if (this._namespace !== R3.namespaceHTML)
{\n this.creationInstruction(null, this._namespace);\n }\n\n // Create variable bindings\n variables.forEach(v
=> this.registerContextVariables(v));\n\n // Initiate i18n context in case:\n // - this template has parent i18n
context\n // - or the template has i18n meta associated with it,\n // but it's not initiated by the Element (e.g. <ng-
template i18n>)\n const initI18nContext = this.i18nContext ||\n (isI18nRootNode(i18n) &&
!isSingleI18nIcu(i18n) &&\n !(isSingleElementTemplate(nodes) && nodes[0].i18n === i18n));\n const
selfClosingI18nInstruction = hasTextChildrenOnly(nodes);\n if (initI18nContext) {\n this.i18nStart(null, i18n!,
selfClosingI18nInstruction);\n }\n\n // This is the initial pass through the nodes of this template. In this pass,
we\n // queue all creation mode and update mode instructions for generation in the second\n // pass. It's
necessary to separate the passes to ensure local refs are defined before\n // resolving bindings. We also count
bindings in this pass as we walk bound expressions.\n t.visitAll(this, nodes);\n\n // Add total binding count to
pure function count so pure function instructions are\n // generated with the correct slot offset when update
instructions are processed.\n this._pureFunctionSlots += this._bindingSlots;\n\n // Pipes are walked in the first
pass (to enqueue `pipe()` creation instructions and\n // `pipeBind` update instructions), so we have to update the
slot offsets manually\n // to account for bindings.\n
this._valueConverter.updatePipeSlotOffsets(this._bindingSlots);\n\n // Nested templates must be processed before

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creation instructions so template()\n // instructions can be generated with the correct internal const count.\n
this._nestedTemplateFns.forEach(buildTemplateFn => buildTemplateFn());\n // Output the `projectionDef`
instruction when some `` tags are present.\n // The `projectionDef` instruction is only emitted for the
component template and\n // is skipped for nested templates (<ng-template> tags).\n if (this.level === 0 &&
this._ngContentReservedSlots.length) {\n const parameters: o.Expression[] = [];\n // By default the
`projectionDef` instructions creates one slot for the wildcard\n // selector if no parameters are passed. Therefore
we only want to allocate a new\n // array for the projection slots if the default projection slot is not sufficient.\n
if (this._ngContentReservedSlots.length > 1 || this._ngContentReservedSlots[0] !== '*') {\n const
r3ReservedSlots = this._ngContentReservedSlots.map(\n s => s !== '*' ? core.parseSelectorToR3Selector(s) :
s);\n parameters.push(this.constantPool.getConstLiteral(asLiteral(r3ReservedSlots), true));\n }\n //
Since we accumulate ngContent selectors while processing template elements,\n // we *prepend* `projectionDef`
to creation instructions block, to put it before\n // any `projection` instructions\n this.creationInstruction(null,
R3.projectionDef, parameters, /* prepend */ true);\n }\n if (initI18nContext) {\n this.i18nEnd(null,
selfClosingI18nInstruction);\n }\n // Generate all the creation mode instructions (e.g. resolve bindings in
listeners)\n const creationStatements = this._creationCodeFns.map((fn: () => o.Statement) => fn());\n //
Generate all the update mode instructions (e.g. resolve property or text bindings)\n const updateStatements =
this._updateCodeFns.map((fn: () => o.Statement) => fn());\n // Variable declaration must occur after binding
resolution so we can generate context\n // instructions that build on each other.\n // e.g. const b =
nextContext().$implicit(); const b = nextContext();\n const creationVariables =
this._bindingScope.viewSnapshotStatements();\n const updateVariables =
this._bindingScope.variableDeclarations().concat(this._tempVariables);\n const creationBlock =
creationStatements.length > 0 ?\n [renderFlagCheckIfStmt(\n core.RenderFlags.Create,
creationVariables.concat(creationStatements))]:\n [];\n const updateBlock = updateStatements.length > 0
?\n [renderFlagCheckIfStmt(core.RenderFlags.Update, updateVariables.concat(updateStatements))]:\n [];\n return o.fn(\n // i.e. (rf: RenderFlags, ctx: any)\n [new o.FnParam(RENDER_FLAGS,
o.NUMBER_TYPE), new o.FnParam(CONTEXT_NAME, null)],\n [\n // Temporary variable declarations
for query refresh (i.e. let _t: any;)\n ...this._prefixCode,\n // Creating mode (i.e. if (rf &
RenderFlags.Create) { ... })\n ...creationBlock,\n // Binding and refresh mode (i.e. if (rf &
RenderFlags.Update) { ... })\n ...updateBlock,\n],\n o.INFERRED_TYPE, null, this.templateName);\n }\n // LocalResolver\n getLocal(name: string): o.Expression|null {\n return this._bindingScope.get(name);\n }\n // LocalResolver\n notifyImplicitReceiverUse(): void {\n
this._bindingScope.notifyImplicitReceiverUse();\n }\n private i18nTranslate(\n message: i18n.Message,
params: {[name: string]: o.Expression} = {}, ref?: o.ReadVarExpr,\n transformFn?: (raw: o.ReadVarExpr) =>
o.Expression): o.ReadVarExpr {\n const _ref = ref || this.i18nGenerateMainBlockVar();\n // Closure Compiler
requires const names to start with `MSG_` but disallows any other const to\n // start with `MSG_`. We define a
variable starting with `MSG_` just for the `goog.getMessage` call\n const closureVar =
this.i18nGenerateClosureVar(message.id);\n const statements = getTranslationDeclStmts(message, _ref,
closureVar, params, transformFn);\n this._constants.prepareStatements.push(...statements);\n return _ref;\n }\n private registerContextVariables(variable: t.Variable) {\n const scopedName =
this._bindingScope.freshReferenceName();\n const retrievalLevel = this.level;\n const lhs =
o.variable(variable.name + scopedName);\n this._bindingScope.set(\n retrievalLevel, variable.name, lhs,
DeclarationPriority.CONTEXT,\n (scope: BindingScope, relativeLevel: number) => {\n let rhs:
o.Expression;\n if (scope.bindingLevel === retrievalLevel) {\n // e.g. ctx\n rhs =
o.variable(CONTEXT_NAME);\n } else {\n const sharedCtxVar =
scope.getSharedContextName(retrievalLevel);\n // e.g. ctx_r0 OR x(2);\n rhs = sharedCtxVar ?
sharedCtxVar : generateNextContextExpr(relativeLevel);\n }\n // e.g. const $item$ = x(2).$implicit;\n return [lhs.set(rhs.prop(variable.value || IMPLICIT_REFERENCE)).toConstDecl()];\n });\n }\n private
i18nAppendBindings(expressions: AST[]) {\n if (expressions.length > 0) {\n expressions.forEach(expression

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=> this.i18n!.appendBinding(expression));\n }\n }\n\n private i18nBindProps(props: {[key: string]:
t.Text|t.BoundText}): {[key: string]: o.Expression} {\n const bound: {[key: string]: o.Expression} = {};\n
Object.keys(props).forEach(key => {\n const prop = props[key];\n if (prop instanceof t.Text) {\n
bound[key] = o.literal(prop.value);\n } else {\n const value = prop.value.visit(this._valueConverter);\n
this.allocateBindingSlots(value);\n if (value instanceof Interpolation) {\n const {strings, expressions} =
value;\n const {id, bindings} = this.i18n!;\n const label = assembleI18nBoundString(strings,
bindings.size, id);\n this.i18nAppendBindings(expressions);\n bound[key] = o.literal(label);\n }\n
});\n return bound;\n }\n\n // Generates top level vars for i18n blocks (i.e. `i18n_N`).\n private
i18nGenerateMainBlockVar(): o.ReadVarExpr {\n return
o.variable(this.constantPool.uniqueName(TRANSLATION_VAR_PREFIX));\n }\n\n // Generates vars with
Closure-specific names for i18n blocks (i.e. `MSG_XXX`).\n private i18nGenerateClosureVar(messageId: string):
o.ReadVarExpr {\n let name: string;\n const suffix = this.fileBasedI18nSuffix.toUpperCase();\n if
(this.i18nUseExternalIds) {\n const prefix = getTranslationConstPrefix(`EXTERNAL_`);\n const
uniqueSuffix = this.constantPool.uniqueName(suffix);\n name =
`${prefix}${sanitizeIdentifier(messageId)}${uniqueSuffix}`;\n } else {\n const prefix =
getTranslationConstPrefix(suffix);\n name = this.constantPool.uniqueName(prefix);\n }\n return
o.variable(name);\n }\n\n private i18nUpdateRef(context: I18nContext): void {\n const {icus, meta, isRoot,
isResolved, isEmitted} = context;\n if (isRoot && isResolved && !isEmitted && !isSingleI18nIcu(meta)) {\n
context.isEmitted = true;\n const placeholders = context.getSerializedPlaceholders();\n let icuMapping:
{[name: string]: o.Expression} = {};\n let params: {[name: string]: o.Expression} =\n placeholders.size ?
placeholdersToParams(placeholders) : {};\n if (icus.size) {\n icus.forEach((refs: o.Expression[], key: string)
=> {\n if (refs.length === 1) {\n // if we have one ICU defined for a given\n // placeholder - just
output its reference\n params[key] = refs[0];\n } else {\n // ... otherwise we need to activate post-
processing\n // to replace ICU placeholders with proper values\n const placeholder: string =
wrapI18nPlaceholder(`${I18N_ICU_MAPPING_PREFIX}${key}`);\n params[key] =
o.literal(placeholder);\n icuMapping[key] = o.literalArr(refs);\n }\n });\n }\n\n // translation
requires post processing in 2 cases:\n // - if we have placeholders with multiple values (ex. `START_DIV`: [#1,
#2, ...])\n // - if we have multiple ICUs that refer to the same placeholder name\n const needsPostprocessing
=\n Array.from(placeholders.values()).some((value: string[]) => value.length > 1) ||\n
Object.keys(icuMapping).length;\n let transformFn;\n if (needsPostprocessing) {\n transformFn = (raw:
o.ReadVarExpr) => {\n const args: o.Expression[] = [raw];\n if (Object.keys(icuMapping).length) {\n
args.push(mapLiteral(icuMapping, true));\n }\n return instruction(null, R3.i18nPostprocess, args);\n
};\n }\n this.i18nTranslate(meta as i18n.Message, params, context.ref, transformFn);\n }\n }\n\n private
i18nStart(span: ParseSourceSpan|null = null, meta: i18n.I18nMeta, selfClosing?: boolean):\n void {\n const
index = this.allocateDataSlot();\n this.i18n = this.i18nContext ?\n this.i18nContext.forkChildContext(index,
this.templateIndex!, meta) :\n new I18nContext(index, this.i18nGenerateMainBlockVar(), 0, this.templateIndex,
meta);\n // generate i18nStart instruction\n const {id, ref} = this.i18n;\n const params: o.Expression[] =
[o.literal(index), this.addToConsts(ref)];\n if (id > 0) {\n // do not push 3rd argument (sub-block id)\n // into
i18nStart call for top level i18n context\n params.push(o.literal(id));\n }\n this.creationInstruction(span,
selfClosing ? R3.i18n : R3.i18nStart, params);\n }\n\n private i18nEnd(span: ParseSourceSpan|null = null,
selfClosing?: boolean): void {\n if (!this.i18n) {\n throw new Error('i18nEnd is executed with no i18n context
present');\n }\n\n if (this.i18nContext) {\n this.i18nContext.reconcileChildContext(this.i18n);\n
this.i18nUpdateRef(this.i18nContext);\n } else {\n this.i18nUpdateRef(this.i18n);\n }\n\n // setup
accumulated bindings\n const {index, bindings} = this.i18n;\n if (bindings.size) {\n const chainBindings:
ChainableBindingInstruction[] = [];\n bindings.forEach(binding => {\n chainBindings.push({sourceSpan:
span, value: () => this.convertPropertyBinding(binding)});\n });\n // for i18n block, advance to the most recent
element index (by taking the current number of\n // elements and subtracting one) before invoking `i18nExp`
instructions, to make sure the\n // necessary lifecycle hooks of components/directives are properly flushed.\n

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this.updateInstructionChainWithAdvance(this.getConstCount() - 1, R3.i18nExp, chainBindings);\n
this.updateInstruction(span, R3.i18nApply, [o.literal(index)]);\n } \n if (!selfClosing) {\n
this.creationInstruction(span, R3.i18nEnd);\n } \n this.i18n = null; // reset local i18n context\n } \n\n private
i18nAttributesInstruction(\n nodeId: number, attrs: t.BoundAttribute[], sourceSpan: ParseSourceSpan): void
{\n let hasBindings: boolean = false;\n const i18nAttrArgs: o.Expression[] = [];\n const bindings:
ChainableBindingInstruction[] = [];\n attrs.forEach(attr => {\n const message = attr.i18n! as i18n.Message;\n
const converted = attr.value.visit(this._valueConverter);\n this.allocateBindingSlots(converted);\n if
(converted instanceof Interpolation) {\n const placeholders = assembleBoundTextPlaceholders(message);\n
const params = placeholdersToParams(placeholders);\n i18nAttrArgs.push(o.literal(attr.name),
this.i18nTranslate(message, params));\n converted.expressions.forEach(expression => {\n hasBindings =
true;\n bindings.push({\n sourceSpan,\n value: () => this.convertPropertyBinding(expression),\n
 });\n });\n }\n });\n if (bindings.length > 0) {\n
this.updateInstructionChainWithAdvance(nodeIndex, R3.i18nExp, bindings);\n } \n if (i18nAttrArgs.length > 0)
{\n const index: o.Expression = o.literal(this.allocateDataSlot());\n const constIndex =
this.addToConsts(o.literalArr(i18nAttrArgs));\n this.creationInstruction(sourceSpan, R3.i18nAttributes, [index,
constIndex]);\n if (hasBindings) {\n this.updateInstruction(sourceSpan, R3.i18nApply, [index]);\n }\n
}\n\n private getNamespaceInstruction(namespaceKey: string|null) {\n switch (namespaceKey) {\n case
'math':\n return R3.namespaceMathML;\n case 'svg':\n return R3.namespaceSVG;\n default:\n
return R3.namespaceHTML;\n }\n }\n\n private addNamespaceInstruction(nsInstruction: o.ExternalReference,
element: t.Element) {\n this._namespace = nsInstruction;\n this.creationInstruction(element.startSourceSpan,
nsInstruction);\n }\n\n /**\n * Adds an update instruction for an interpolated property or attribute, such as\n *
`prop="{value}"` or `attr.title="{value}"`\n */\n private interpolatedUpdateInstruction(\n instruction:
o.ExternalReference, elementIndex: number, attrName: string,\n input: t.BoundAttribute, value: any, params:
any[]) {\n this.updateInstructionWithAdvance(\n elementIndex, input.sourceSpan, instruction,\n () =>
[o.literal(attrName), ...this.getUpdateInstructionArguments(value), ...params]);\n }\n\n visitContent(ngContent:
t.Content) {\n const slot = this.allocateDataSlot();\n const projectionSlotIdx = this._ngContentSelectorsOffset +
this._ngContentReservedSlots.length;\n const parameters: o.Expression[] = [o.literal(slot)];\n
this._ngContentReservedSlots.push(ngContent.selector);\n const nonContentSelectAttributes =\n
ngContent.attributes.filter(attr => attr.name.toLowerCase() !== NG_CONTENT_SELECT_ATTR);\n const
attributes =\n this.getAttributeExpressions(ngContent.name, nonContentSelectAttributes, [], []);\n if
(attributes.length > 0) {\n parameters.push(o.literal(projectionSlotIdx), o.literalArr(attributes));\n } else if
(projectionSlotIdx !== 0) {\n parameters.push(o.literal(projectionSlotIdx));\n }\n\n this.creationInstruction(ngContent.sourceSpan, R3.projection, parameters);\n if (this.i18n) {\n
this.i18n.appendProjection(ngContent.i18n!, slot);\n }\n }\n\n visitElement(element: t.Element) {\n const
elementIndex = this.allocateDataSlot();\n const stylingBuilder = new StylingBuilder(null);\n let
isNonBindableMode: boolean = false;\n const isI18nRootElement: boolean =\n
isI18nRootNode(element.i18n) && !isSingleI18nIcu(element.i18n);\n\n const outputAttrs: t.TextAttribute[] = [];\n
 const [namespaceKey, elementName] = splitNsName(element.name);\n const isNgContainer =
checkIsNgContainer(element.name);\n\n // Handle styling, i18n, ngNonBindable attributes\n for (const attr of
element.attributes) {\n const {name, value} = attr;\n if (name === NON_BINDABLE_ATTR) {\n
isNonBindableMode = true;\n } else if (name === 'style') {\n stylingBuilder.registerStyleAttr(value);\n }
else if (name === 'class') {\n stylingBuilder.registerClassAttr(value);\n } else {\n
outputAttrs.push(attr);\n }\n }\n\n // Match directives on non i18n attributes\n
this.matchDirectives(element.name, element);\n\n // Regular element or ng-container creation mode\n const
parameters: o.Expression[] = [o.literal(elementIndex)];\n if (!isNgContainer) {\n
parameters.push(o.literal(elementName));\n }\n\n // Add the attributes\n const allOtherInputs:
t.BoundAttribute[] = [];\n const boundI18nAttrs: t.BoundAttribute[] = [];\n\n element.inputs.forEach(input =>
{\n const stylingInputWasSet = stylingBuilder.registerBoundInput(input);\n if (!stylingInputWasSet) {\n

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if (input.type === BindingType.Property && input.i18n) {\n boundI18nAttrs.push(input);\n } else {\n allOtherInputs.push(input);\n }\n });\n\n // add attributes for directive and projection matching purposes\n const attributes: o.Expression[] = this.getAttributeExpressions(\n element.name, outputAttrs, allOtherInputs, element.outputs, stylingBuilder, [],\n boundI18nAttrs);\n parameters.push(this.addAttrsToConsts(attributes));\n\n // local refs (ex.: <div #foo #bar="baz">)\n const refs = this.prepareRefsArray(element.references);\n parameters.push(this.addToConsts(refs));\n\n const wasInNamespace = this._namespace;\n const currentNamespace = this.getNamespaceInstruction(namespaceKey);\n\n // If the namespace is changing now, include an instruction to change it\n // during element creation.\n if (currentNamespace !== wasInNamespace) {\n this.addNamespaceInstruction(currentNamespace, element);\n }\n\n if (this.i18n) {\n this.i18n.appendElement(element.i18n!, elementIndex);\n }\n\n // Note that we do not append text node instructions and ICUs inside i18n section,\n // so we exclude them while calculating whether current element has children\n const hasChildren = (!isI18nRootElement && this.i18n) ? !hasTextChildrenOnly(element.children) :\n element.children.length > 0;\n const createSelfClosingInstruction = !stylingBuilder.hasBindingsWithPipes &&\n element.outputs.length === 0 && boundI18nAttrs.length === 0 && !hasChildren;\n const createSelfClosingI18nInstruction =\n !createSelfClosingInstruction && hasTextChildrenOnly(element.children);\n if (createSelfClosingInstruction) {\n this.creationInstruction(\n element.sourceSpan, isNgContainer ? R3.elementContainer : R3.element,\n trimTrailingNulls(parameters));\n } else {\n this.creationInstruction(\n element.startSourceSpan, isNgContainer ? R3.elementContainerStart : R3.elementStart,\n trimTrailingNulls(parameters));\n }\n\n if (isNonBindableMode) {\n this.creationInstruction(element.startSourceSpan, R3.disableBindings);\n }\n\n if (boundI18nAttrs.length > 0) {\n this.i18nAttributesInstruction(\n elementIndex, boundI18nAttrs, element.startSourceSpan ?? element.sourceSpan);\n }\n\n // Generate Listeners (outputs)\n if (element.outputs.length > 0) {\n const listeners = element.outputs.map(\n (outputAst: t.BoundEvent) => ({\n sourceSpan: outputAst.sourceSpan,\n params: this.prepareListenerParameter(element.name, outputAst, elementIndex)\n }));\n this.creationInstructionChain(R3.listener, listeners);\n }\n\n // Note: it's important to keep i18n/i18nStart instructions after i18nAttributes and\n // listeners, to make sure i18nAttributes instruction targets current element at runtime.\n if (isI18nRootElement) {\n this.i18nStart(element.startSourceSpan, element.i18n!, createSelfClosingI18nInstruction);\n }\n\n // the code here will collect all update-level styling instructions and add them to the\n // update block of the template function AOT code. Instructions like `styleProp`,\n // `styleMap`, `classMap`, `classProp`\n // are all generated and assigned in the code below.\n const stylingInstructions = stylingBuilder.buildUpdateLevelInstructions(this._valueConverter);\n const limit = stylingInstructions.length - 1;\n for (let i = 0; i <= limit; i++) {\n const instruction = stylingInstructions[i];\n this._bindingSlots += this.processStylingUpdateInstruction(elementIndex, instruction);\n }\n\n // the reason why `undefined` is used is because the renderer understands this as a\n // special value to symbolize that there is no RHS to this binding\n // TODO (matsko): revisit this once FW-959 is approached\n const emptyValueBindInstruction = o.literal(undefined);\n const propertyBindings: ChainableBindingInstruction[] = [];\n const attributeBindings: ChainableBindingInstruction[] = [];\n\n // Generate element input bindings\n allOtherInputs.forEach(input => {\n const inputType = input.type;\n if (inputType === BindingType.Animation) {\n const value = input.value.visit(this._valueConverter);\n // animation bindings can be presented in the following formats:\n // 1. [@binding]="fooExp"\n // 2. [@binding]="{value:fooExp, params:{...}}"\n // 3. [@binding]\n // 4. @binding\n // All formats will be valid for when a synthetic binding is created.\n // The reasoning for this is because the renderer should get each\n // synthetic binding value in the order of the array that they are\n // defined in...\n const hasValue = value instanceof LiteralPrimitive ? !value.value : true;\n this.allocateBindingSlots(value);\n\n propertyBindings.push({\n name: prepareSyntheticPropertyName(input.name),\n sourceSpan: input.sourceSpan,\n value: () => hasValue ? this.convertPropertyBinding(value) : emptyValueBindInstruction\n });\n } else {\n // we must skip attributes with associated i18n context,

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this.prepareRefsArray(template.references);\n parameters.push(this.addToConsts(refs));\n
parameters.push(o.importExpr(R3.templateRefExtractor));\n }\n\n // Create the template function\n const
templateVisitor = new TemplateDefinitionBuilder(\n this.constantPool, this._bindingScope, this.level + 1,
contextName, this.i18n,\n templateIndex, templateName, this.directiveMatcher, this.directives,
this.pipeTypeByName,\n this.pipes, this._namespace, this.fileBasedI18nSuffix, this.i18nUseExternalIds,\nthis._constants);\n\n // Nested templates must not be visited until after their parent templates have completed\n // processing, so they are queued here until after the initial pass. Otherwise, we wouldn't\n // be able to support
bindings in nested templates to local refs that occur after the\n // template definition. e.g. <div
*ngIf="showing">{{ foo }}</div> <div #foo></div>\n this._nestedTemplateFns.push(() => {\n const
templateFunctionExpr = templateVisitor.buildTemplateFunction(\n template.children, template.variables,\n this._ngContentReservedSlots.length + this._ngContentSelectorsOffset, template.i18n);\n
this.constantPool.statements.push(templateFunctionExpr.toDeclStmt(templateName));\n if
(templateVisitor._ngContentReservedSlots.length) {\n
this._ngContentReservedSlots.push(...templateVisitor._ngContentReservedSlots);\n }\n });\n\n // e.g.
template(1, MyComp_Template_1)\n this.creationInstruction(template.sourceSpan, R3.templateCreate, () => {\n
parameters.splice(\n 2, 0, o.literal(templateVisitor.getConstCount()),\n
o.literal(templateVisitor.getVarCount()));\n return trimTrailingNulls(parameters);\n });\n\n // handle property
bindings e.g. property('ngForOf', ctx.items), et al;\n this.templatePropertyBindings(templateIndex,
template.templateAttrs);\n\n // Only add normal input/output binding instructions on explicit <ng-template>
elements.\n if (template.tagName === NG_TEMPLATE_TAG_NAME) {\n const [i18nInputs, inputs] =\npartitionArray<t.BoundAttribute, t.BoundAttribute>(template.inputs, hasI18nMeta);\n\n // Add i18n attributes
that may act as inputs to directives. If such attributes are present,\n // generate `i18nAttributes` instruction. Note:
we generate it only for explicit <ng-template>\n // elements, in case of inline templates, corresponding
instructions will be generated in the\n // nested template function.\n if (i18nInputs.length > 0) {\n
this.i18nAttributesInstruction(\n templateIndex, i18nInputs, template.startSourceSpan ??
template.sourceSpan);\n }\n\n // Add the input bindings\n if (inputs.length > 0) {\n
this.templatePropertyBindings(templateIndex, inputs);\n }\n\n // Generate listeners for directive output\n if
(template.outputs.length > 0) {\n const listeners = template.outputs.map(\n (outputAst: t.BoundEvent) =>
({\n sourceSpan: outputAst.sourceSpan,\n params: this.prepareListenerParameter('ng_template',
outputAst, templateIndex)\n }));\n this.creationInstructionChain(R3.listener, listeners);\n }\n }\n\n // These should be handled in the template or element directly.\n readonly visitReference = invalid;\n
readonly visitVariable = invalid;\n readonly visitTextAttribute = invalid;\n readonly visitBoundAttribute =
invalid;\n readonly visitBoundEvent = invalid;\n\n visitBoundText(text: t.BoundText) {\n if (this.i18n) {\n
const value = text.value.visit(this._valueConverter);\n this.allocateBindingSlots(value);\n if (value instanceof
Interpolation) {\n this.i18n.appendBoundText(text.i18n!);\n this.i18nAppendBindings(value.expressions);\n
 }\n return;\n }\n\n const nodeIndex = this.allocateDataSlot();\n
this.creationInstruction(text.sourceSpan, R3.text, [o.literal(nodeIndex)]);\n\n const value =
text.value.visit(this._valueConverter);\n this.allocateBindingSlots(value);\n\n if (value instanceof Interpolation)
{\n this.updateInstructionWithAdvance(\n nodeIndex, text.sourceSpan,
getTextInterpolationExpression(value),\n () => this.getUpdateInstructionArguments(value));\n } else {\n
error('Text nodes should be interpolated and never bound directly.);\n }\n }\n\n visitText(text: t.Text) {\n //
when a text element is located within a translatable\n // block, we exclude this text element from instructions set,\n
// since it will be captured in i18n content and processed at runtime\n if (!this.i18n) {\n
this.creationInstruction(\n text.sourceSpan, R3.text, [o.literal(this.allocateDataSlot()), o.literal(text.value)]);\n
 }\n }\n\n visitIcu(icu: t.Icu) {\n let initWasInvoked = false;\n\n // if an ICU was created outside of i18n block,
we still treat\n // it as a translatable entity and invoke i18nStart and i18nEnd\n // to generate i18n context and the
necessary instructions\n if (!this.i18n) {\n initWasInvoked = true;\n this.i18nStart(null, icu.i18n!, true);\n
 }\n\n const i18n = this.i18n!;\n const vars = this.i18nBindProps(icu.vars);\n const placeholders =

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this.i18nBindProps(icu.placeholders);\n\n // output ICU directly and keep ICU reference in context\n const
message = icu.i18n! as i18n.Message;\n\n // we always need post-processing function for ICUs, to make sure
that:\n // - all placeholders in a form of {PLACEHOLDER} are replaced with actual values (note:\n //
`goog.getMsg` does not process ICUs and uses the `{PLACEHOLDER}` format for placeholders\n // inside
ICUs)\n // - all ICU vars (such as `VAR_SELECT` or `VAR_PLURAL`) are replaced with correct values\n
const transformFn = (raw: o.ReadVarExpr) => {\n const params = {...vars, ...placeholders};\n const formatted
= i18nFormatPlaceholderNames(params, /* useCamelCase */ false);\n return instruction(null,
R3.i18nPostprocess, [raw, mapLiteral(formatted, true)]);\n };}\n\n // in case the whole i18n message is a single
ICU - we do not need to\n // create a separate top-level translation, we can use the root ref instead\n // and make
this ICU a top-level translation\n // note: ICU placeholders are replaced with actual values in `i18nPostprocess`
function\n // separately, so we do not pass placeholders into `i18nTranslate` function.\n if
(isSingleI18nIcu(i18n.meta)) {\n this.i18nTranslate(message, /* placeholders */ {}, i18n.ref, transformFn);\n }
else {\n // output ICU directly and keep ICU reference in context\n const ref =\n
this.i18nTranslate(message, /* placeholders */ {}, /* ref */ undefined, transformFn);\n
i18n.appendIcu(icuFromI18nMessage(message).name, ref);\n }\n\n if (initWasInvoked) {\n
this.i18nEnd(null, true);\n }\n return null;\n }\n\n private allocateDataSlot() {\n return this._dataIndex++;\n
}\n\n getConstCount() {\n return this._dataIndex;\n }\n\n getVarCount() {\n return this._pureFunctionSlots;\n
}\n\n getConsts(): ComponentDefConsts {\n return this._constants;\n }\n\n getNgContentSelectors():
o.Expression|null {\n return this._ngContentReservedSlots.length ?\n
this.constantPool.getConstLiteral(asLiteral(this._ngContentReservedSlots), true) :\n null;\n }\n\n private
bindingContext() {\n return `${this._bindingContext++}`;\n }\n\n private templatePropertyBindings(\n
templateIndex: number, attrs: (t.BoundAttribute|t.TextAttribute)[]) {\n const propertyBindings:
ChainableBindingInstruction[] = [];\n attrs.forEach(input => {\n if (input instanceof t.BoundAttribute) {\n
const value = input.value.visit(this._valueConverter);\n\n if (value !== undefined) {\n
this.allocateBindingSlots(value);\n\n if (value instanceof Interpolation) {\n // Params typically contain
attribute namespace and value sanitizer, which is applicable\n // for regular HTML elements, but not
applicable for <ng-template> (since props act as\n // inputs to directives), so keep params array empty.\n
const params: any[] = [];\n\n // prop="{ {value} }" case\n this.interpolatedUpdateInstruction(\n
getPropertyInterpolationExpression(value), templateIndex, input.name, input, value,\n params);\n
} else {\n // [prop]="value" case\n propertyBindings.push({\n name: input.name,\n
sourceSpan: input.sourceSpan,\n value: () => this.convertPropertyBinding(value)\n });\n }\n
}\n\n });\n\n if (propertyBindings.length > 0) {\n
this.updateInstructionChainWithAdvance(templateIndex, R3.property, propertyBindings);\n }\n }\n\n // Bindings
must only be resolved after all local refs have been visited, so all\n // instructions are queued in callbacks that
execute once the initial pass has completed.\n // Otherwise, we wouldn't be able to support local refs that are
defined after their\n // bindings. e.g. {{ foo }} <div #foo></div>\n private instructionFn(\n fns: (() =>
o.Statement)[], span: ParseSourceSpan|null, reference: o.ExternalReference,\n paramsOrFn: o.Expression[]|(() =>
o.Expression[]), prepend: boolean = false): void {\n fns[prepend ? 'unshift' : 'push'](() => {\n const params =
Array.isArray(paramsOrFn) ? paramsOrFn : paramsOrFn();\n return instruction(span, reference,
params).toStmt();\n });\n }\n\n private processStylingUpdateInstruction(\n elementIndex: number, instruction:
StylingInstruction|null) {\n let allocateBindingSlots = 0;\n if (instruction) {\n const calls:
ChainableBindingInstruction[] = [];\n instruction.calls.forEach(call => {\n allocateBindingSlots +=
call.allocateBindingSlots;\n calls.push({\n sourceSpan: call.sourceSpan,\n value: () => {\n
return call.params(\n value => (call.supportsInterpolation && value instanceof Interpolation) ?\n
this.getUpdateInstructionArguments(value) :\n this.convertPropertyBinding(value)) as
o.Expression[];\n });\n });\n\n this.updateInstructionChainWithAdvance(elementIndex,
instruction.reference, calls);\n }\n\n return allocateBindingSlots;\n }\n\n private creationInstruction(\n span:
ParseSourceSpan|null, reference: o.ExternalReference,\n paramsOrFn?: o.Expression[]|(() => o.Expression[]),

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prepend?: boolean) {\n this.instructionFn(this._creationCodeFns, span, reference, paramsOrFn || [], prepend);\n }\n\n private creationInstructionChain(reference: o.ExternalReference, calls: {\n sourceSpan: ParseSourceSpan|null,\n params: () => o.Expression[]\n }[]) {\n const span = calls.length ? calls[0].sourceSpan : null;\n this._creationCodeFns.push(() => {\n return chainedInstruction(reference, calls.map(call => call.params()), span).toStmt();\n });\n }\n\n private updateInstructionWithAdvance(\n nodeIndex: number, span: ParseSourceSpan|null, reference: o.ExternalReference,\n paramsOrFn?: o.Expression[])((() => o.Expression[])) {\n this.addAdvanceInstructionIfNecessary(nodeIndex, span);\n this.updateInstruction(span, reference, paramsOrFn);\n }\n\n private updateInstruction(\n span: ParseSourceSpan|null, reference: o.ExternalReference,\n paramsOrFn?: o.Expression[])((() => o.Expression[])) {\n this.instructionFn(this._updateCodeFns, span, reference, paramsOrFn || []);\n }\n\n private updateInstructionChain(\n reference: o.ExternalReference, bindings: ChainableBindingInstruction[]) {\n const span = bindings.length ? bindings[0].sourceSpan : null;\n\n this._updateCodeFns.push(() => {\n const calls = bindings.map(property => {\n const value = property.value();\n const fnParams = Array.isArray(value) ? value : [value];\n if (property.params) {\n fnParams.push(...property.params);\n }\n if (property.name) {\n // We want the property name to always be the first function parameter.\n fnParams.unshift(o.literal(property.name));\n }\n return fnParams;\n });\n\n return chainedInstruction(reference, calls, span).toStmt();\n });\n }\n\n private updateInstructionChainWithAdvance(\n nodeIndex: number, reference: o.ExternalReference, bindings: ChainableBindingInstruction[]) {\n this.addAdvanceInstructionIfNecessary(\n nodeIndex, bindings.length ? bindings[0].sourceSpan : null);\n this.updateInstructionChain(reference, bindings);\n }\n\n private addAdvanceInstructionIfNecessary(nodeIndex: number, span: ParseSourceSpan|null) {\n if (nodeIndex !== this._currentIndex) {\n const delta = nodeIndex - this._currentIndex;\n\n if (delta < 1) {\n throw new Error('advance instruction can only go forwards');\n }\n\n this.instructionFn(this._updateCodeFns, span, R3.advance, [o.literal(delta)]);\n this._currentIndex = nodeIndex;\n }\n }\n\n private allocatePureFunctionSlots(numSlots: number): number {\n const originalSlots = this._pureFunctionSlots;\n this._pureFunctionSlots += numSlots;\n return originalSlots;\n }\n\n private allocateBindingSlots(value: AST|null) {\n this._bindingSlots += value instanceof Interpolation ? value.expressions.length : 1;\n }\n\n /**\n * Gets an expression that refers to the implicit receiver. The implicit receiver is always the root level context.\n */\n private getImplicitReceiverExpr(): o.ReadVarExpr {\n if (this._implicitReceiverExpr) {\n return this._implicitReceiverExpr;\n }\n\n return this._implicitReceiverExpr = this.level === 0 ?\n o.variable(CONTEXT_NAME) :\n this._bindingScope.getOrCreateSharedContextVar(0);\n }\n\n private convertPropertyBinding(value: AST): o.Expression {\n const convertedPropertyBinding = convertPropertyBinding(\n this, this.getImplicitReceiverExpr(), value, this.bindingContext(), BindingForm.Expression,\n () => error('Unexpected interpolation'));\n const valExpr = convertedPropertyBinding.currValExpr;\n this._tempVariables.push(...convertedPropertyBinding.stmts);\n return valExpr;\n }\n\n /**\n * Gets a list of argument expressions to pass to an update instruction expression. Also updates the temp variables state with temp variables that were identified as needing to be created while visiting the arguments.\n */\n @param value The original expression we will be resolving an arguments list from.\n private\n getUpdateInstructionArguments(value: AST): o.Expression[] {\n const {args, stmts} =\n convertUpdateArguments(this, this.getImplicitReceiverExpr(), value, this.bindingContext());\n this._tempVariables.push(...stmts);\n return args;\n }\n\n private matchDirectives(elementName: string, elOrTpl: t.Element|t.Template) {\n if (this.directiveMatcher) {\n const selector = createCssSelector(elementName, getAttrsForDirectiveMatching(elOrTpl));\n this.directiveMatcher.match(selector, (cssSelector, staticType) => {\n this.directives.add(staticType);\n });\n }\n }\n\n /**\n * Prepares all attribute expression values for the `TAttributes` array.\n */\n /**\n * The purpose of this function is to properly construct an attributes array that is passed into the `elementStart` (or just `element`) functions. Because there are many different types of attributes, the array needs to be constructed in a special way so that `elementStart` can properly evaluate them.\n */\n /**\n * The format looks like this:\n */\n attr = [prop, value, prop2, value2,\n
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PROJECT_AS, selector,\n * CLASSES, class1, class2,\n * STYLES, style1, value1, style2, value2,\n * BINDINGS, name1, name2, name3,\n * TEMPLATE, name4, name5, name6,\n * I18N, name7, name8, ...)\n * ```\n *\n * Note that this function will fully ignore all synthetic (@foo) attribute values\n * because those values are intended to always be generated as property instructions.\n *\n private getAttributeExpressions(\n elementName: string, renderAttributes: t.TextAttribute[], inputs: t.BoundAttribute[],\n outputs: t.BoundEvent[], styles?: StylingBuilder,\n templateAttrs: (t.BoundAttribute|t.TextAttribute)[] = [],\n boundI18nAttrs: t.BoundAttribute[] = []): o.Expression[] {\n const alreadySeen = new Set<string>();\n const attrExprs: o.Expression[] = [];\n let ngProjectAsAttr: t.TextAttribute|undefined;\n\n for (const attr of renderAttributes) {\n if (attr.name === NG_PROJECT_AS_ATTR_NAME) {\n ngProjectAsAttr = attr;\n }\n\n // Note that static i18n attributes aren't in the i18n array,\n // because they're treated in the same way as regular attributes.\n if (attr.i18n) {\n attrExprs.push(o.literal(attr.name), this.i18nTranslate(attr.i18n as i18n.Message));\n } else {\n attrExprs.push(\n ...getAttributeNameLiterals(attr.name), trustedConstAttribute(elementName,\n attr));\n }\n }\n\n // Keep ngProjectAs next to the other name, value pairs so we can verify that we match\n // ngProjectAs marker in the attribute name slot.\n if (ngProjectAsAttr) {\n attrExprs.push(...getNgProjectAsLiteral(ngProjectAsAttr));\n }\n\n function addAttrExpr(key: string|number, value?: o.Expression): void {\n if (typeof key === 'string') {\n if (!alreadySeen.has(key)) {\n attrExprs.push(...getAttributeNameLiterals(key));\n value !== undefined && attrExprs.push(value);\n alreadySeen.add(key);\n }\n } else {\n attrExprs.push(o.literal(key));\n }\n }\n\n // it's important that this occurs before BINDINGS and TEMPLATE because once `elementStart`\n // comes across the BINDINGS or TEMPLATE markers then it will continue reading each value as\n // as single property value cell by cell.\n if (styles) {\n styles.populateInitialStylingAttrs(attrExprs);\n }\n\n if (inputs.length || outputs.length) {\n const attrsLengthBeforeInputs = attrExprs.length;\n for (let i = 0; i < inputs.length; i++) {\n const input = inputs[i];\n // We don't want the animation and attribute bindings in the\n // attributes array since they aren't used for directive matching.\n if (input.type !== BindingType.Animation && input.type !== BindingType.Attribute) {\n addAttrExpr(input.name);\n }\n }\n\n for (let i = 0; i < outputs.length; i++) {\n const output = outputs[i];\n if (output.type !== ParsedEventType.Animation) {\n addAttrExpr(output.name);\n }\n }\n\n // this is a cheap way of adding the marker only after all the input/output\n // values have been filtered (by not including the animation ones) and added\n // to the expressions. The marker is important because it tells the runtime\n // code that this is where attributes without values start...\n if (attrExprs.length !== attrsLengthBeforeInputs) {\n attrExprs.splice(attrsLengthBeforeInputs, 0, o.literal(core.AttributeMarker.Bindings));\n }\n\n if (templateAttrs.length) {\n attrExprs.push(o.literal(core.AttributeMarker.Template));\n }\n\n templateAttrs.forEach(attr => addAttrExpr(attr.name));\n }\n\n if (boundI18nAttrs.length) {\n attrExprs.push(o.literal(core.AttributeMarker.I18N));\n boundI18nAttrs.forEach(attr => addAttrExpr(attr.name));\n }\n\n return attrExprs;\n }\n\n private addToConsts(expression: o.Expression): o.LiteralExpr {\n if (o.isNull(expression)) {\n return o.TYPED_NULL_EXPR;\n }\n\n const consts = this._constants.constExpressions;\n\n // Try to reuse a literal that's already in the array, if possible.\n for (let i = 0; i < consts.length; i++) {\n if (consts[i].isEquivalent(expression)) {\n return o.literal(i);\n }\n }\n\n return o.literal(consts.push(expression) - 1);\n }\n\n private addAttrsToConsts(attrs: o.Expression[]): o.LiteralExpr {\n return attrs.length > 0 ? this.addToConsts(o.literalArr(attrs)) : o.TYPED_NULL_EXPR;\n }\n\n private prepareRefsArray(references: t.Reference[]): o.Expression {\n if (!references || references.length === 0) {\n return o.TYPED_NULL_EXPR;\n }\n\n const refsParam = flatten(references.map(reference => {\n const slot = this.allocateDataSlot();\n // Generate the update temporary.\n const variableName = this._bindingScope.freshReferenceName();\n const retrievalLevel = this.level;\n const lhs = o.variable(variableName);\n this._bindingScope.set(\n retrievalLevel, reference.name, lhs,\n DeclarationPriority.DEFAULT, (scope: BindingScope, relativeLevel: number) => {\n // e.g. nextContext(2);\n const nextContextStmt =\n relativeLevel > 0 ?\n [generateNextContextExpr(relativeLevel).toStmt()] : [];\n // e.g. const foo = reference(1);\n const

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refExpr = lhs.set(o.importExpr(R3.reference).callFn([o.literal(slot)]));\n return
nextContextStmt.concat(refExpr.toConstDecl());\n }, true);\n return [reference.name, reference.value];\n }));\n\n return asLiteral(refsParam);\n }\n\n private prepareListenerParameter(tagName: string, outputAst:
t.BoundEvent, index: number):\n () => o.Expression[] {\n return () => {\n const eventName: string =
outputAst.name;\n const bindingFnName = outputAst.type === ParsedEventType.Animation ?\n //
synthetic @listener.foo values are treated the exact same as are standard listeners\n
prepareSyntheticListenerFunctionName(eventName, outputAst.phase!) :\n sanitizeIdentifier(eventName);\n const handlerName = `${this.templateName}_${tagName}_${bindingFnName}_${index}_listener`;\n const
scope = this._bindingScope.nestedScope(\n this._bindingScope.bindingLevel,
EVENT_BINDING_SCOPE_GLOBALS);\n return prepareEventListenerParameters(outputAst, handlerName,
scope);\n };\n }\n }\n\n nexport class ValueConverter extends AstMemoryEfficientTransformer {\n private
_pipeBindExprs: FunctionCall[] = [];\n\n constructor(\n private constantPool: ConstantPool, private allocateSlot:
() => number,\n private allocatePureFunctionSlots: (numSlots: number) => number,\n private definePipe:\n (name: string, localName: string, slot: number, value: o.Expression) => void) {\n super();\n }\n\n //
AstMemoryEfficientTransformer\n visitPipe(pipe: BindingPipe, context: any): AST {\n // Allocate a slot to create
the pipe\n const slot = this.allocateSlot();\n const slotPseudoLocal = `PIPE:${slot}`;\n // Allocate one slot for
the result plus one slot per pipe argument\n const pureFunctionSlot = this.allocatePureFunctionSlots(2 +
pipe.args.length);\n const target = new PropertyRead(\n pipe.span, pipe.sourceSpan, pipe.nameSpan, new
ImplicitReceiver(pipe.span, pipe.sourceSpan),\n slotPseudoLocal);\n const {identifier, isVarLength} =
pipeBindingCallInfo(pipe.args);\n this.definePipe(pipe.name, slotPseudoLocal, slot, o.importExpr(identifier));\n const
args: AST[] = [pipe.exp, ...pipe.args];\n const convertedArgs: AST[] = isVarLength ?\n this.visitAll([new LiteralArray(pipe.span, pipe.sourceSpan, args)]) :\n this.visitAll(args);\n\n const
pipeBindExpr = new FunctionCall(pipe.span, pipe.sourceSpan, target, [\n new LiteralPrimitive(pipe.span,
pipe.sourceSpan, slot),\n new LiteralPrimitive(pipe.span, pipe.sourceSpan, pureFunctionSlot),\n ...convertedArgs,\n]);\n this._pipeBindExprs.push(pipeBindExpr);\n return pipeBindExpr;\n }\n\n updatePipeSlotOffsets(bindingSlots: number) {\n this._pipeBindExprs.forEach((pipe: FunctionCall) => {\n //
update the slot offset arg (index 1) to account for binding slots\n const slotOffset = pipe.args[1] as
LiteralPrimitive;\n (slotOffset.value as number) += bindingSlots;\n });\n }\n\n visitLiteralArray(array:
LiteralArray, context: any): AST {\n return new BuiltinFunctionCall(\n array.span, array.sourceSpan,
this.visitAll(array.expressions), values => {\n // If the literal has calculated (non-literal) elements transform it
into\n // calls to literal factories that compose the literal and will cache intermediate\n // values.\n const literal = o.literalArr(values);\n return getLiteralFactory(this.constantPool, literal,
this.allocatePureFunctionSlots);\n });\n }\n\n visitLiteralMap(map: LiteralMap, context: any): AST {\n return new BuiltinFunctionCall(map.span, map.sourceSpan, this.visitAll(map.values), values => {\n // If the
literal has calculated (non-literal) elements transform it into\n // calls to literal factories that compose the literal
and will cache intermediate\n // values.\n const literal = o.literalMap(values.map(\n (value, index) =>
({key: map.keys[index].key, value, quoted: map.keys[index].quoted}));\n return
getLiteralFactory(this.constantPool, literal, this.allocatePureFunctionSlots);\n });\n }\n }\n\n // Pipes always have
at least one parameter, the value they operate on\n const pipeBindingIdentifiers = [R3.pipeBind1, R3.pipeBind2,
R3.pipeBind3, R3.pipeBind4];\n\n function pipeBindingCallInfo(args: o.Expression[]) {\n const identifier =
pipeBindingIdentifiers[args.length];\n return {\n identifier: identifier || R3.pipeBindV,\n isVarLength:
!identifier,\n };\n }\n\n const pureFunctionIdentifiers = [\n R3.pureFunction0, R3.pureFunction1, R3.pureFunction2,
R3.pureFunction3, R3.pureFunction4,\n R3.pureFunction5, R3.pureFunction6, R3.pureFunction7,
R3.pureFunction8\n];\n\n function pureFunctionCallInfo(args: o.Expression[]) {\n const identifier =
pureFunctionIdentifiers[args.length];\n return {\n identifier: identifier || R3.pureFunctionV,\n isVarLength:
!identifier,\n };\n }\n\n function instruction(\n span: ParseSourceSpan|null, reference: o.ExternalReference,\n params: o.Expression[]): o.Expression {\n return o.importExpr(reference, null, span).callFn(params, span);\n }\n\n //
e.g. x(2);\n function generateNextContextExpr(relativeLevelDiff: number): o.Expression {\n return

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o.importExpr(R3.nextContext)\n .callFn(relativeLevelDiff > 1 ? [o.literal(relativeLevelDiff)] : []);\n}\n\nfunction
getLiteralFactory(\n constantPool: ConstantPool, literal: o.LiteralArrayExpr|o.LiteralMapExpr,\n allocateSlots:
(numSlots: number) => number): o.Expression {\n const {literalFactory, literalFactoryArguments} =
constantPool.getLiteralFactory(literal);\n // Allocate 1 slot for the result plus 1 per argument\n const startSlot =
allocateSlots(1 + literalFactoryArguments.length);\n const {identifier, isVarLength} =
pureFunctionCallInfo(literalFactoryArguments);\n \n // Literal factories are pure functions that only need to be re-
invoked when the parameters\n // change.\n const args = [o.literal(startSlot), literalFactory];\n \n if (isVarLength)
{\n args.push(o.literalArr(literalFactoryArguments));\n } else {\n args.push(...literalFactoryArguments);\n }\n \n return o.importExpr(identifier).callFn(args);\n}\n\n/**\n * Gets an array of literals that can be added to an
expression\n * to represent the name and namespace of an attribute. E.g.\n * `:xlink:href` turns into
`[AttributeMarker.NamespaceURI, 'xlink', 'href']`.\n * \n * @param name Name of the attribute, including the
namespace.\n * \n * ^\nfunction getAttributeNameLiterals(name: string): o.LiteralExpr[] {\n const [attributeNamespace,
attributeName] = splitNsName(name);\n const nameLiteral = o.literal(attributeName);\n \n if (attributeNamespace)
{\n return [\n o.literal(core.AttributeMarker.NamespaceURI), o.literal(attributeNamespace), nameLiteral\n
];\n }\n \n return [nameLiteral];\n}\n\n/**\n * Function which is executed whenever a variable is referenced for the
first time in a given\n * scope.\n * \n * It is expected that the function creates the `const localName = expression`
statement.\n * \n * ^\nexport type DeclareLocalVarCallback = (scope: BindingScope, relativeLevel: number) =>
o.Statement[];\n\n/** The prefix used to get a shared context in BindingScope's map. *\n\nconst
SHARED_CONTEXT_KEY = '$$shared_ctx$$';\n\n/**\n * This is used when one refers to variable such as: 'let abc
= nextContext(2).simplicit`\n * - key to the map is the string literal `\"abc\"`.\n * - value `retrievalLevel` is the level
from which this value can be retrieved, which is 2 levels\n * up in example.\n * - value `lhs` is the left hand side
which is an AST representing `abc`.\n * - value `declareLocalCallback` is a callback that is invoked when declaring
the local.\n * - value `declare` is true if this value needs to be declared.\n * - value `localRef` is true if we are storing
a local reference\n * - value `priority` dictates the sorting priority of this var declaration compared\n * to other var
declarations on the same retrieval level. For example, if there is a\n * context variable and a local ref accessing the
same parent view, the context var\n * declaration should always come before the local ref declaration.\n * \n * ^\n\nenum
BindingData = {\n retrievalLevel: number; lhs: o.Expression;\n declareLocalCallback?: DeclareLocalVarCallback;\n
declare: boolean; priority: number;\n localRef: boolean;\n};\n\n/**\n * The sorting priority of a local variable
declaration. Higher numbers\n * mean the declaration will appear first in the generated code.\n * \n * ^\n\nconst enum
DeclarationPriority {\n DEFAULT = 0,\n CONTEXT = 1,\n SHARED_CONTEXT = 2\n}\n\nexport class
BindingScope implements LocalResolver {\n /** Keeps a map from local variables to their BindingData. *\n private map = new Map<string, BindingData>();\n private referenceNameIndex = 0;\n private
restoreViewVariable: o.ReadVarExpr|null = null;\n static createRootScope(): BindingScope {\n return new
BindingScope();\n }\n private constructor(\n public bindingLevel: number = 0, private parent:
BindingScope|null = null,\n public globals?: Set<string>) {\n if (globals !== undefined) {\n for (const name
of globals) {\n this.set(0, name, o.variable(name));\n }\n }\n }\n get(name: string): o.Expression|null {\n
let current: BindingScope|null = this;\n while (current) {\n let value = current.map.get(name);\n if (value !=
null) {\n if (current !== this) {\n // make a local copy and reset the `declare` state\n value = {\n
retrievalLevel: value.retrievalLevel,\n lhs: value.lhs,\n declareLocalCallback:
value.declareLocalCallback,\n declare: false,\n priority: value.priority,\n localRef:
value.localRef\n };\n // Cache the value locally.\n this.map.set(name, value);\n // Possibly
generate a shared context var\n this.maybeGenerateSharedContextVar(value);\n this.maybeRestoreView(value.retrievalLevel, value.localRef);\n }\n \n if (value.declareLocalCallback &&
!value.declare) {\n value.declare = true;\n }\n return value.lhs;\n }\n current = current.parent;\n
}\n \n // If we get to this point, we are looking for a property on the top level component\n // - If level === 0, we
are on the top and don't need to re-declare `ctx`.\n // - If level > 0, we are in an embedded view. We need to
retrieve the name of the\n // local var we used to store the component context, e.g. const $comp$ = x();\n return
this.bindingLevel === 0 ? null : this.getComponentProperty(name);\n}\n\n/**\n * Create a local variable for

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later reference.\n * \n * @param retrievalLevel The level from which this value can be retrieved\n * @param
name Name of the variable.\n * @param lhs AST representing the left hand side of the `let lhs = rhs;`\n *
@param priority The sorting priority of this var\n * @param declareLocalCallback The callback to invoke when
declaring this local var\n * @param localRef Whether or not this is a local ref\n * ^\n set(retrievalLevel: number,
name: string, lhs: o.Expression,\n priority: number = DeclarationPriority.DEFAULT,\n
declareLocalCallback?: DeclareLocalVarCallback, localRef?: true): BindingScope {\n if (this.map.has(name)) {\n
if (localRef) {\n // Do not throw an error if it's a local ref and do not update existing value,\n // so the first
defined ref is always returned.\n return this;\n }\n error(`The name ${name} is already defined in scope to
be ${this.map.get(name)}`);\n }\n this.map.set(name, {\n retrievalLevel: retrievalLevel,\n lhs: lhs,\n
declare: false,\n declareLocalCallback: declareLocalCallback,\n priority: priority,\n localRef: localRef ||
false\n });\n return this;\n }\n\n // Implemented as part of LocalResolver.\n getLocal(name: string):
(o.Expression|null) {\n return this.get(name);\n }\n\n // Implemented as part of LocalResolver.\n
notifyImplicitReceiverUse(): void {\n if (this.bindingLevel !== 0) {\n // Since the implicit receiver is accessed
in an embedded view, we need to\n // ensure that we declare a shared context variable for the current template\n
// in the update variables.\n this.map.get(SHARED_CONTEXT_KEY + 0)!.declare = true;\n }\n }\n\n
nestedScope(level: number, globals?: Set<string>): BindingScope {\n const newScope = new BindingScope(level,
this, globals);\n if (level > 0) newScope.generateSharedContextVar(0);\n return newScope;\n }\n\n /**\n *
Gets or creates a shared context variable and returns its expression. Note that\n * this does not mean that the shared
variable will be declared. Variables in the\n * binding scope will be only declared if they are used.\n * ^\n
getOrCreateSharedContextVar(retrievalLevel: number): o.ReadVarExpr {\n const bindingKey =
SHARED_CONTEXT_KEY + retrievalLevel;\n if (!this.map.has(bindingKey)) {\n
this.generateSharedContextVar(retrievalLevel);\n }\n // Shared context variables are always generated as
`ReadVarExpr`.\n return this.map.get(bindingKey)!.lhs as o.ReadVarExpr;\n }\n\n
getSharedContextName(retrievalLevel: number): o.ReadVarExpr|null {\n const sharedCtxObj =
this.map.get(SHARED_CONTEXT_KEY + retrievalLevel);\n // Shared context variables are always generated as
`ReadVarExpr`.\n return sharedCtxObj && sharedCtxObj.declare ? sharedCtxObj.lhs as o.ReadVarExpr : null;\n
}\n\n maybeGenerateSharedContextVar(value: BindingData) {\n if (value.priority ===
DeclarationPriority.CONTEXT &&\n value.retrievalLevel < this.bindingLevel) {\n const sharedCtxObj =
this.map.get(SHARED_CONTEXT_KEY + value.retrievalLevel);\n if (sharedCtxObj) {\n
sharedCtxObj.declare = true;\n } else {\n this.generateSharedContextVar(value.retrievalLevel);\n }\n
}\n }\n\n generateSharedContextVar(retrievalLevel: number) {\n const lhs = o.variable(CONTEXT_NAME +
this.freshReferenceName());\n this.map.set(SHARED_CONTEXT_KEY + retrievalLevel, {\n retrievalLevel:
retrievalLevel,\n lhs: lhs,\n declareLocalCallback: (scope: BindingScope, relativeLevel: number) => {\n //
const ctx_r0 = nextContext(2);\n return [lhs.set(generateNextContextExpr(relativeLevel)).toConstDecl()];\n
},\n declare: false,\n priority: DeclarationPriority.SHARED_CONTEXT,\n localRef: false\n });\n }\n\n
getComponentProperty(name: string): o.Expression {\n const componentValue =
this.map.get(SHARED_CONTEXT_KEY + 0)!;\n componentValue.declare = true;\n this.maybeRestoreView(0,
false);\n return componentValue.lhs.prop(name);\n }\n\n maybeRestoreView(retrievalLevel: number,
localRefLookup: boolean) {\n // We want to restore the current view in listener fns if:\n // 1 - we are accessing a
value in a parent view, which requires walking the view tree rather\n // than using the ctx arg. In this case, the
retrieval and binding level will be different.\n // 2 - we are looking up a local ref, which requires restoring the view
where the local\n // ref is stored\n if (this.isListenerScope() && (retrievalLevel < this.bindingLevel ||
localRefLookup)) {\n if (!this.parent!.restoreViewVariable) {\n // parent saves variable to generate a shared
`const $$ = getCurrentView();` instruction\n this.parent!.restoreViewVariable =
o.variable(this.parent!.freshReferenceName());\n }\n this.restoreViewVariable =
this.parent!.restoreViewVariable;\n }\n }\n\n restoreViewState(): o.Statement[] {\n //
restoreView($state$);\n return this.restoreViewVariable ?\n [instruction(null, R3.restoreView,
[this.restoreViewVariable]).toStmt()]:\n [];\n }\n\n viewSnapshotStatements(): o.Statement[] {\n // const

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$state$ = getCurrentView();\n const getCurrentViewInstruction = instruction(null, R3.getCurrentView, []);\n return this.restoreViewVariable ?\n [this.restoreViewVariable.set(getCurrentViewInstruction).toConstDecl()\n];\n }\n isListenerScope() {\n return this.parent && this.parent.bindingLevel === this.bindingLevel;\n }\n variableDeclarations(): o.Statement[] {\n let currentContextLevel = 0;\n return\n Array.from(this.map.values())\n .filter(value => value.declare)\n .sort((a, b) => b.retrievalLevel -\n a.retrievalLevel || b.priority - a.priority)\n .reduce((stmts: o.Statement[], value: BindingData) => {\n const levelDiff = this.bindingLevel - value.retrievalLevel;\n const currStmts =\n value.declareLocalCallback!(this, levelDiff - currentContextLevel);\n currentContextLevel = levelDiff;\n return stmts.concat(currStmts);\n }, []) as o.Statement[];\n }\n freshReferenceName(): string\n {\n let current: BindingScope = this;\n // Find the top scope as it maintains the global reference count\n while\n (current.parent) current = current.parent;\n const ref =\n `${REFERENCE_PREFIX}${current.referenceNameIndex++}`;\n return ref;\n }\n }\n /**\n * Creates a\n * `CssSelector` given a tag name and a map of attributes\n * ^\n * @export function createCssSelector(\n * elementName:\n * string, attributes: {[name: string]: string}): CssSelector {\n * const cssSelector = new CssSelector();\n * const\n * elementNameNoNs = splitNsName(elementName)[1];\n * cssSelector.setElement(elementNameNoNs);\n * Object.getOwnPropertyNames(attributes).forEach((name) => {\n * const nameNoNs = splitNsName(name)[1];\n * const value = attributes[name];\n * cssSelector.addAttribute(nameNoNs, value);\n * if (name.toLowerCase() ===\n * 'class') {\n * const classes = value.trim().split(/s+/);\n * classes.forEach(className =>\n * cssSelector.addClassName(className));\n * }\n * });\n * return cssSelector;\n * }\n * ^\n * Creates an array of\n * expressions out of an `ngProjectAs` attributes\n * which can be added to the instruction parameters.\n * ^\n * @function\n * getNgProjectAsLiteral(attribute: t.TextAttribute): o.Expression[] {\n * // Parse the attribute value into a\n * CssSelectorList. Note that we only take the\n * // first selector, because we don't support multiple selectors in\n * ngProjectAs.\n * const parsedR3Selector = core.parseSelectorToR3Selector(attribute.value)[0];\n * return\n * [o.literal(core.AttributeMarker.ProjectAs), asLiteral(parsedR3Selector)];\n * }\n * ^\n * Gets the instruction to\n * generate for an interpolated property\n * @param interpolation An Interpolation AST\n * ^\n * @function\n * getPropertyInterpolationExpression(interpolation: Interpolation) {\n * switch\n * (getInterpolationArgsLength(interpolation)) {\n * case 1:\n * return R3.propertyInterpolate;\n * case 3:\n * return\n * R3.propertyInterpolate1;\n * case 5:\n * return R3.propertyInterpolate2;\n * case 7:\n * return\n * R3.propertyInterpolate3;\n * case 9:\n * return R3.propertyInterpolate4;\n * case 11:\n * return\n * R3.propertyInterpolate5;\n * case 13:\n * return R3.propertyInterpolate6;\n * case 15:\n * return\n * R3.propertyInterpolate7;\n * case 17:\n * return R3.propertyInterpolate8;\n * default:\n * return\n * R3.propertyInterpolateV;\n * }\n * }\n * ^\n * Gets the instruction to generate for an interpolated attribute\n * @param\n * interpolation An Interpolation AST\n * ^\n * @function\n * getAttributeInterpolationExpression(interpolation: Interpolation)\n * {\n * switch (getInterpolationArgsLength(interpolation)) {\n * case 3:\n * return R3.attributeInterpolate1;\n * case\n * 5:\n * return R3.attributeInterpolate2;\n * case 7:\n * return R3.attributeInterpolate3;\n * case 9:\n * return\n * R3.attributeInterpolate4;\n * case 11:\n * return R3.attributeInterpolate5;\n * case 13:\n * return\n * R3.attributeInterpolate6;\n * case 15:\n * return R3.attributeInterpolate7;\n * case 17:\n * return\n * R3.attributeInterpolate8;\n * default:\n * return R3.attributeInterpolateV;\n * }\n * }\n * ^\n * Gets the instruction to\n * generate for interpolated text.\n * @param\n * interpolation An Interpolation AST\n * ^\n * @function\n * getTextInterpolationExpression(interpolation: Interpolation): o.ExternalReference {\n * switch\n * (getInterpolationArgsLength(interpolation)) {\n * case 1:\n * return R3.textInterpolate;\n * case 3:\n * return\n * R3.textInterpolate1;\n * case 5:\n * return R3.textInterpolate2;\n * case 7:\n * return R3.textInterpolate3;\n * case\n * 9:\n * return R3.textInterpolate4;\n * case 11:\n * return R3.textInterpolate5;\n * case 13:\n * return\n * R3.textInterpolate6;\n * case 15:\n * return R3.textInterpolate7;\n * case 17:\n * return R3.textInterpolate8;\n * default:\n * return R3.textInterpolateV;\n * }\n * }\n * ^\n * Options that can be used to modify how a template is\n * parsed by `parseTemplate()`. ^\n * @export interface ParseTemplateOptions {\n * /**\n * * Include whitespace nodes in\n * the parsed output.\n * ^\n * preserveWhitespaces?: boolean;\n * /**\n * * How to parse interpolation markers.\n * ^\n * interpolationConfig?: InterpolationConfig;\n * /**\n * * The start and end point of the text to parse within the `source`

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string.\n * The entire `source` string is parsed if this is not provided.\n * /\n range?: LexerRange;\n /**\n * If
this text is stored in a JavaScript string, then we have to deal with escape sequences.\n *\n * ***Example 1:**\n
*\n * ``\n * |"abc|\\nghi"\n * ``\n *\n * - The `\\` must be converted to `\"`.\n * - The `\\n` must be
converted to a new line character in a token,\n * but it should not increment the current line for source mapping.\n
*\n * ***Example 2:**\n *\n * ``\n * |"abc|\\n * def"\n * ``\n *\n * The line continuation (`\\` followed
by a newline) should be removed from a token\n * but the new line should increment the current line for source
mapping.\n *\n escapedString?: boolean;\n /**\n * An array of characters that should be considered as leading
trivia.\n * Leading trivia are characters that are not important to the developer, and so should not be\n * included
in source-map segments. A common example is whitespace.\n *\n leadingTriviaChars?: string[];\n\n /**\n *
Render `$localize` message ids with additional legacy message ids.\n *\n * This option defaults to `true` but in the
future the default will be flipped.\n *\n * For now set this option to false if you have migrated the translation files
to use the new\n * `$localize` message id format and you are not using compile time translation merging.\n *\n
enableI18nLegacyMessageIdFormat?: boolean;\n /**\n * If this text is stored in an external template (e.g. via
`templateUrl`) then we need to decide\n * whether or not to normalize the line-endings (from `\\r\\n` to `\\n`) when
processing ICU\n * expressions.\n *\n * If `true` then we will normalize ICU expression line endings.\n * The
default is `false`, but this will be switched in a future major release.\n *\n i18nNormalizeLineEndingsInICUs?:
boolean;\n\n /**\n * Parse a template into render3 `Node`s and additional metadata, with no other dependencies.\n
*\n * @param template text of the template to parse\n * @param templateUrl URL to use for source mapping of the
parsed template\n * @param options options to modify how the template is parsed\n */\nexport function
parseTemplate(\n template: string, templateUrl: string, options: ParseTemplateOptions = {}): ParsedTemplate {\n
 const {interpolationConfig, preserveWhitespaces, enableI18nLegacyMessageIdFormat} = options;\n const
 bindingParser = makeBindingParser(interpolationConfig);\n const htmlParser = new HtmlParser();\n const
 parseResult = htmlParser.parse(\n template, templateUrl,\n {leadingTriviaChars:
 LEADING_TRIVIA_CHARS, ...options, tokenizeExpansionForms: true});\n if (parseResult.errors &&
 parseResult.errors.length > 0) {\n // TODO(ayazhafiz): we may not always want to bail out at this point (e.g. in\n
 // the context of a language service).\n return {\n interpolationConfig,\n preserveWhitespaces,\n
 template,\n errors: parseResult.errors,\n nodes: [],\n styleUrls: [],\n styles: [],\n ngContentSelectors:
 []\n };\n }\n let rootNodes: html.Node[] = parseResult.rootNodes;\n // process i18n meta information (scan
 attributes, generate ids)\n // before we run whitespace removal process, because existing i18n\n // extraction
 process (ng extract-i18n) relies on a raw content to generate\n // message ids\n const i18nMetaVisitor = new
 I18nMetaVisitor(\n interpolationConfig, /* keepI18nAttrs */ !preserveWhitespaces,\n enableI18nLegacyMessageIdFormat);\n rootNodes = html.visitAll(i18nMetaVisitor, rootNodes);\n if
 (!preserveWhitespaces) {\n rootNodes = html.visitAll(new WhitespaceVisitor(), rootNodes);\n }\n // run i18n
 meta visitor again in case whitespaces are removed (because that might affect\n // generated i18n message content)
 and first pass indicated that i18n content is present in a\n // template. During this pass i18n IDs generated at the
 first pass will be preserved, so we can\n // mimic existing extraction process (ng extract-i18n)\n if
 (i18nMetaVisitor.hasI18nMeta) {\n rootNodes = html.visitAll(\n new I18nMetaVisitor(interpolationConfig,
 /* keepI18nAttrs */ false), rootNodes);\n }\n }\n const {nodes, errors, styleUrls, styles, ngContentSelectors}
 =\n htmlAstToRender3Ast(rootNodes, bindingParser);\n return {\n interpolationConfig,\n preserveWhitespaces,\n errors: errors.length > 0 ? errors : null,\n template,\n nodes,\n styleUrls,\n styles,\n ngContentSelectors\n };\n\n const elementRegistry = new DomElementSchemaRegistry();\n\n /**\n * Construct
 a `BindingParser` with a default configuration.\n */\n export function makeBindingParser(\n interpolationConfig:
 InterpolationConfig = DEFAULT_INTERPOLATION_CONFIG): BindingParser {\n return new BindingParser(\n new IvyParser(new Lexer()), interpolationConfig, elementRegistry, null, []);\n }\n\n export function
 resolveSanitizationFn(context: core.SecurityContext, isAttribute?: boolean) {\n switch (context) {\n case
 core.SecurityContext.HTML:\n return o.importExpr(R3.sanitizeHtml);\n case core.SecurityContext.SCRIPT:\n
 return o.importExpr(R3.sanitizeScript);\n case core.SecurityContext.STYLE:\n // the compiler does not fill in
 an instruction for [style.prop?] binding\n // values because the style algorithm knows internally what props are

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subject\n // to sanitization (only [attr.style] values are explicitly sanitized)\n return isAttribute ?
o.importExpr(R3.sanitizeStyle) : null;\n case core.SecurityContext.URL:\n return
o.importExpr(R3.sanitizeUrl);\n case core.SecurityContext.RESOURCE_URL:\n return
o.importExpr(R3.sanitizeResourceUrl);\n default:\n return null;\n }\n}\n\nfunction
trustedConstAttribute(tagName: string, attr: t.TextAttribute): o.Expression {\n const value = asLiteral(attr.value);\n
switch (elementRegistry.securityContext(tagName, attr.name, /* isAttribute */ true)) {\n case
core.SecurityContext.HTML:\n return o.importExpr(R3.trustConstantHtml).callFn([value], attr.valueSpan);\n
case core.SecurityContext.SCRIPT:\n return o.importExpr(R3.trustConstantScript).callFn([value],
attr.valueSpan);\n case core.SecurityContext.RESOURCE_URL:\n return
o.importExpr(R3.trustConstantResourceUrl).callFn([value], attr.valueSpan);\n default:\n return value;\n
}\n}\n\nfunction isSingleElementTemplate(children: t.Node[]): children is[t.Element] {\n return children.length
=== 1 && children[0] instanceof t.Element;\n}\n\nfunction isTextNode(node: t.Node): boolean {\n return node
instanceof t.Text || node instanceof t.BoundText || node instanceof t.Icu;\n}\n\nfunction
hasTextChildrenOnly(children: t.Node[]): boolean {\n return children.every(isTextNode);\n}\n\ninterface
ChainableBindingInstruction {\n name?: string;\n sourceSpan: ParseSourceSpan|null;\n value: () => o.Expression |
o.Expression[];\n params?: any[];\n}\n\n/** Name of the global variable that is used to determine if we use Closure
translations or not */\nconst NG_I18N_CLOSURE_MODE = 'ngI18nClosureMode';\n\n/**\n * Generate statements
that define a given translation message.\n *\n * var I18N_1;\n * if (typeof ngI18nClosureMode !== undefined
&& ngI18nClosureMode) {\n * var MSG_EXTERNAL_XXX = goog.getMsg(\n * `Some message with
${interpolation}!`,\n * { `interpolation`: `\\uFFFFD0\\uFFFFD` }\n *);\n * I18N_1 =
MSG_EXTERNAL_XXX;\n * } \n * else {\n * I18N_1 = $localize`Some message with
${`\\uFFFFD0\\uFFFFD`}`;\n * }\n * ``\n * @param message The original i18n AST message node\n * @param
variable The variable that will be assigned the translation, e.g. `I18N_1`\n * @param closureVar The variable for
Closure `goog.getMsg` calls, e.g. `MSG_EXTERNAL_XXX`\n * @param params Object mapping placeholder
names to their values (e.g. \n * { `interpolation`: `\\uFFFFD0\\uFFFFD` }`).\n * @param transformFn Optional
transformation function that will be applied to the translation (e.g. \n * post-processing).\n * @returns An array of
statements that defined a given translation.\n */\nexport function getTranslationDeclStmts(\n message:
i18n.Message, variable: o.ReadVarExpr, closureVar: o.ReadVarExpr,\n params: {[name: string]: o.Expression} =
{\n },\n transformFn?: (raw: o.ReadVarExpr) => o.Expression): o.Statement[] {\n const statements: o.Statement[] =
[\n declareI18nVariable(variable),\n o.ifStmnt(\n createClosureModeGuard(),\n
createGoogleGetMsgStatements(\n variable, message, closureVar,\n
i18nFormatPlaceholderNames(params, /* useCamelCase */ true)),\n createLocalizeStatements(\n
variable, message, i18nFormatPlaceholderNames(params, /* useCamelCase */ false))),\n];\n\n if (transformFn) {\n
statements.push(new o.ExpressionStatement(variable.set(transformFn(variable))));\n }\n\n return
statements;\n}\n\n/**\n * Create the expression that will be used to guard the closure mode block\n * It is equivalent
to:\n *\n * ``\n * typeof ngI18nClosureMode !== undefined && ngI18nClosureMode\n * ``\n */\nfunction
createClosureModeGuard(): o.BinaryOperatorExpr {\n return
o.typeofExpr(o.variable(NG_I18N_CLOSURE_MODE))\n .notIdentical(o.literal('undefined',
o.STRING_TYPE))\n .and(o.variable(NG_I18N_CLOSURE_MODE));\n}\n\n/**\n * Information about the
template which was extracted during parsing.\n *\n * This contains the actual parsed template as well as any
metadata collected during its parsing,\n * some of which might be useful for re-parsing the template with different
options.\n */\nexport interface ParsedTemplate {\n /**\n * Include whitespace nodes in the parsed output.\n */\n
preserveWhitespaces?: boolean;\n\n /**\n * How to parse interpolation markers.\n */\n interpolationConfig?:
InterpolationConfig;\n\n /**\n * The string contents of the template.\n *\n * This is the "logical" template
string, after expansion of any escaped characters (for inline\n * templates). This may differ from the actual
template bytes as they appear in the .ts file.\n */\n template: string;\n\n /**\n * Any errors from parsing the
template the first time.\n *\n * `null` if there are no errors. Otherwise, the array of errors is guaranteed to be non-
empty.\n */\n errors: ParseError[]|null;\n\n /**\n * The template AST, parsed from the template.\n */\n nodes:

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t.Node[];\n\n /**\n * Any styleUrls extracted from the metadata.\n */\n styleUrls: string[];\n\n /**\n * Any inline styles extracted from the metadata.\n */\n styles: string[];\n\n /**\n * Any ng-content selectors extracted from the template.\n */\n ngContentSelectors: string[];\n\n", "*/\n * @license\n * Copyright Google LLC All Rights Reserved.\n */\n * Use of this source code is governed by an MIT-style license that can be\n * found in the LICENSE file at https://angular.io/license\n */\n\nimport {StaticSymbol} from './aot/static_symbol';\nimport {CompileDirectiveMetadata, CompileDirectiveSummary, CompileQueryMetadata, CompileTokenMetadata, identifierName, sanitizeIdentifier} from './compile_metadata';\nimport {CompileReflector} from './compile_reflector';\nimport {BindingForm, convertPropertyBinding} from './compiler_util/expression_converter';\nimport {ConstantPool, DefinitionKind} from './constant_pool';\nimport * as core from './core';\nimport {AST, ParsedEvent, ParsedEventType, ParsedProperty} from './expression_parser/ast';\nimport {DEFAULT_INTERPOLATION_CONFIG} from './ml_parser/interpolation_config';\nimport * as o from './output/output_ast';\nimport {ParseError, ParseSourceSpan} from './parse_util';\nimport {CssSelector, SelectorMatcher} from './selector';\nimport {ShadowCss} from './shadow_css';\nimport {CONTENT_ATTR, HOST_ATTR} from './style_compiler';\nimport {BindingParser} from './template_parser/binding_parser';\nimport {error, OutputContext} from './util';\nimport {BoundEvent} from './r3_ast';\nimport {compileFactoryFunction, R3DependencyMetadata, R3FactoryTarget, R3ResolvedDependencyType} from './r3_factory';\nimport {Identifiers as R3} from './r3_identifiers';\nimport {Render3ParseResult} from './r3_template_transform';\nimport {prepareSyntheticListenerFunctionName, prepareSyntheticPropertyName, typeWithParameters} from './util';\nimport {R3ComponentDef, R3ComponentMetadata, R3DirectiveDef, R3DirectiveMetadata, R3HostMetadata, R3QueryMetadata} from './api';\nimport {MIN_STYLING_BINDING_SLOTS_REQUIRED, StylingBuilder, StylingInstructionCall} from './styling_builder';\nimport {BindingScope, makeBindingParser, prepareEventListenerParameters, renderFlagCheckIfStmt, resolveSanitizationFn, TemplateDefinitionBuilder, ValueConverter} from './template';\nimport {asLiteral, chainedInstruction, conditionallyCreateMapObjectLiteral, CONTEXT_NAME, DefinitionMap, getQueryPredicate, RENDER_FLAGS, TEMPORARY_NAME, temporaryAllocator} from './util';\n\nconst EMPTY_ARRAY: any[] = [];\n\n// This regex matches any binding names that contain the "attr." prefix, e.g. "attr.required"\n// If there is a match, the first matching group will contain the attribute name to bind.\nconst ATTR_REGEX = /attr\\.([^\|]+)/;\n\nfunction baseDirectiveFields(\n meta: R3DirectiveMetadata, constantPool: ConstantPool,\n bindingParser: BindingParser): DefinitionMap {\n const definitionMap = new DefinitionMap();\n const selectors =\n core.parseSelectorToR3Selector(meta.selector);\n // e.g. `type: MyDirective`\n definitionMap.set('type', meta.internalType);\n // e.g. `selectors: [{"someDir", ""}]`\n if (selectors.length > 0) {\n definitionMap.set('selectors', asLiteral(selectors));\n }\n if (meta.queries.length > 0) {\n // e.g. `contentQueries: (rf, ctx, dirIndex) => { ... }`\n definitionMap.set(\n 'contentQueries',\n createContentQueriesFunction(meta.queries, constantPool, meta.name));\n }\n if (meta.viewQueries.length) {\n definitionMap.set(\n 'viewQuery', createViewQueriesFunction(meta.viewQueries, constantPool, meta.name));\n }\n // e.g. `hostBindings: (rf, ctx) => { ... }`\n definitionMap.set(\n 'hostBindings',\n createHostBindingsFunction(\n meta.host, meta.typeSourceSpan, bindingParser, constantPool, meta.selector ||\n meta.name, definitionMap));\n // e.g. `inputs: {a: 'a'}`\n definitionMap.set('inputs',\n conditionallyCreateMapObjectLiteral(meta.inputs, true));\n // e.g. `outputs: {a: 'a'}`\n definitionMap.set('outputs',\n conditionallyCreateMapObjectLiteral(meta.outputs));\n if (meta.exportAs !== null) {\n definitionMap.set('exportAs', o.literalArr(meta.exportAs.map(e => o.literal(e))));\n }\n return definitionMap;\n}\n\n/**\n * Add features to the definition map.\n */\nfunction addFeatures(definitionMap: DefinitionMap, meta: R3DirectiveMetadata|R3ComponentMetadata) {\n // e.g. `features: [NgOnChangesFeature]`\n const features: o.Expression[] = [];\n const providers = meta.providers;\n const viewProviders = (meta as R3ComponentMetadata).viewProviders;\n if (providers || viewProviders) {\n const args = [providers || new o.LiteralArrayExpr([])];\n if (viewProviders) {\n args.push(viewProviders);\n }\n features.push(o.importExpr(R3.ProvidersFeature).callFn(args));\n }\n if (meta.usesInheritance) {\n
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definitionMap.set('pipes', pipesExpr);\n }\n\n if (meta.encapsulation === null) {\n meta.encapsulation =
core.ViewEncapsulation.Emulated;\n }\n\n // e.g. `styles: [str1, str2]`\n if (meta.styles && meta.styles.length) {\n
const styleValues = meta.encapsulation == core.ViewEncapsulation.Emulated ?\n compileStyles(meta.styles,
CONTENT_ATTR, HOST_ATTR) :\n meta.styles;\n const strings = styleValues.map(str =>
constantPool.getConstLiteral(o.literal(str)));\n definitionMap.set('styles', o.literalArr(strings));\n } else if
(meta.encapsulation === core.ViewEncapsulation.Emulated) {\n // If there is no style, don't generate css selectors
on elements\n meta.encapsulation = core.ViewEncapsulation.None;\n }\n\n // Only set view encapsulation if it's
not the default value\n if (meta.encapsulation !== core.ViewEncapsulation.Emulated) {\n
definitionMap.set('encapsulation', o.literal(meta.encapsulation));\n }\n\n // e.g. `animation: [trigger('123', [])]`\n if
(meta.animations !== null) {\n definitionMap.set(\n 'data', o.literalMap([[key: 'animation', value:
meta.animations, quoted: false]]);\n }\n\n // Only set the change detection flag if it's defined and it's not the
default.\n if (changeDetection != null && changeDetection !== core.ChangeDetectionStrategy.Default) {\n
definitionMap.set('changeDetection', o.literal(changeDetection));\n }\n\n const expression =
o.importExpr(R3.defineComponent).callFn([definitionMap.toLiteralMap()]);\n\n const typeParams =
createDirectiveTypeParams(meta);\n typeParams.push(stringArrayAsType(meta.template.ngContentSelectors));\n
const type = o.expressionType(o.importExpr(R3.ComponentDefWithMeta, typeParams));\n\n return {expression,
type};\n}\n\n/**\n * A wrapper around `compileDirective` which depends on render2 global analysis data as its
input\n * instead of the `R3DirectiveMetadata`. \n * \n * `R3DirectiveMetadata` is computed from
`CompileDirectiveMetadata` and other statically reflected\n * information.\n */\nexport function
compileDirectiveFromRender2(\n outputCtx: OutputContext, directive: CompileDirectiveMetadata, reflector:
CompileReflector,\n bindingParser: BindingParser) {\n const name = identifierName(directive.type)!;\n name ||
error(`Cannot resolver the name of ${directive.type}`);\n\n const definitionField =
outputCtx.constantPool.propertyNameOf(DefinitionKind.Directive);\n\n const meta =
directiveMetadataFromGlobalMetadata(directive, outputCtx, reflector);\n const res =
compileDirectiveFromMetadata(meta, outputCtx.constantPool, bindingParser);\n const factoryRes =
compileFactoryFunction(\n {...meta, injectFn: R3.directiveInject, target: R3FactoryTarget.Directive});\n const
ngFactoryDefStatement = new o.ClassStmt(\n name, null,\n [new o.ClassField('fac', o.INFERRED_TYPE,
[o.StmtModifier.Static], factoryRes.factory)], [],\n new o.ClassMethod(null, [], [], []);\n const
directiveDefStatement = new o.ClassStmt(\n name, null,\n [new o.ClassField(definitionField,
o.INFERRED_TYPE, [o.StmtModifier.Static], res.expression)],\n [], new o.ClassMethod(null, [], [], []);\n\n //
Create the partial class to be merged with the actual class.\n outputCtx.statements.push(ngFactoryDefStatement,
directiveDefStatement);\n}\n\n/**\n * A wrapper around `compileComponent` which depends on render2 global
analysis data as its input\n * instead of the `R3DirectiveMetadata`. \n * \n * `R3ComponentMetadata` is computed
from `CompileDirectiveMetadata` and other statically reflected\n * information.\n */\nexport function
compileComponentFromRender2(\n outputCtx: OutputContext, component: CompileDirectiveMetadata,
render3Ast: Render3ParseResult,\n reflector: CompileReflector, bindingParser: BindingParser,
directiveTypeBySel: Map<string, any>,\n pipeTypeByName: Map<string, any>) {\n const name =
identifierName(component.type)!;\n name || error(`Cannot resolver the name of ${component.type}`);\n\n const
definitionField = outputCtx.constantPool.propertyNameOf(DefinitionKind.Component);\n\n const summary =
component.toSummary();\n\n // Compute the R3ComponentMetadata from the CompileDirectiveMetadata\n const
meta: R3ComponentMetadata = {\n ...directiveMetadataFromGlobalMetadata(component, outputCtx, reflector),\n
selector: component.selector,\n template: {nodes: render3Ast.nodes, ngContentSelectors:
render3Ast.ngContentSelectors},\n directives: [],\n pipes: typeMapToExpressionMap(pipeTypeByName,
outputCtx),\n viewQueries: queriesFromGlobalMetadata(component.viewQueries, outputCtx),\n
wrapDirectivesAndPipesInClosure: false,\n styles: (summary.template && summary.template.styles) ||
EMPTY_ARRAY,\n encapsulation:\n (summary.template && summary.template.encapsulation) ||
core.ViewEncapsulation.Emulated,\n interpolation: DEFAULT_INTERPOLATION_CONFIG,\n animations:
null,\n viewProviders:\n component.viewProviders.length > 0 ? new

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o.WrappedNodeExpr(component.viewProviders) : null,\n relativeContextFilePath: ",\n i18nUseExternalIds:
true,\n });\n const res = compileComponentFromMetadata(meta, outputCtx.constantPool, bindingParser);\n const
factoryRes = compileFactoryFunction(\n {...meta, injectFn: R3.directiveInject, target:
R3FactoryTarget.Directive});\n const ngFactoryDefStatement = new o.ClassStmt(\n name, null,\n [new
o.ClassField('fac', o.INFERRED_TYPE, [o.StmtModifier.Static], factoryRes.factory)], [],\n new
o.ClassMethod(null, [], [], []);\n const componentDefStatement = new o.ClassStmt(\n name, null,\n [new
o.ClassField(definitionField, o.INFERRED_TYPE, [o.StmtModifier.Static], res.expression)],\n [], new
o.ClassMethod(null, [], [], []);\n \n // Create the partial class to be merged with the actual class.\n outputCtx.statements.push(ngFactoryDefStatement, componentDefStatement);\n \n \n \n * Compute
`R3DirectiveMetadata` given `CompileDirectiveMetadata` and a `CompileReflector`.\n * ^\nfunction
directiveMetadataFromGlobalMetadata(\n directive: CompileDirectiveMetadata, outputCtx: OutputContext,\n reflector: CompileReflector): R3DirectiveMetadata {\n // The global-analysis based Ivy mode in ngc is no longer
utilized/supported.\n throw new Error('unsupported');\n }\n \n \n * Convert `CompileQueryMetadata` into
`R3QueryMetadata`.\n * ^\nfunction queriesFromGlobalMetadata(\n queries: CompileQueryMetadata[], outputCtx:
OutputContext): R3QueryMetadata[] {\n return queries.map(query => {\n let read: o.Expression|null = null;\n if
(query.read && query.read.identifier) {\n read = outputCtx.importExpr(query.read.identifier.reference);\n }\n return {\n propertyName: query.propertyName,\n first: query.first,\n predicate:
selectorsFromGlobalMetadata(query.selectors, outputCtx),\n descendants: query.descendants,\n read,\n static: !!query.static\n };\n });\n }\n \n \n * Convert `CompileTokenMetadata` for query selectors into either an
expression for a predicate\n * type, or a list of string predicates.\n * ^\nfunction selectorsFromGlobalMetadata(\n selectors: CompileTokenMetadata[], outputCtx: OutputContext): o.Expression|string[] {\n if (selectors.length > 1 ||
(selectors.length == 1 && selectors[0].value)) {\n const selectorStrings = selectors.map(value => value.value as
string);\n selectorStrings.some(value => !value) &&\n error('Found a type among the string selectors
expected');\n return outputCtx.constantPool.getConstLiteral(\n o.literalArr(selectorStrings.map(value =>
o.literal(value))));\n }\n \n if (selectors.length == 1) {\n const first = selectors[0];\n if (first.identifier) {\n return outputCtx.importExpr(first.identifier.reference);\n }\n \n error('Unexpected query form');\n return
o.NULL_EXPR;\n }\n \n function prepareQueryParams(query: R3QueryMetadata, constantPool: ConstantPool):
o.Expression[] {\n const parameters = [getQueryPredicate(query, constantPool), o.literal(query.descendants)];\n if
(query.read) {\n parameters.push(query.read);\n }\n return parameters;\n }\n \n function
convertAttributesToExpressions(attributes: {[name: string]: o.Expression}): o.Expression[] {\n const values:
o.Expression[] = [];\n for (let key of Object.getOwnPropertyNames(attributes)) {\n const value =
attributes[key];\n values.push(o.literal(key), value);\n }\n return values;\n }\n \n // Define and update any content
queries\n function createContentQueriesFunction(\n queries: R3QueryMetadata[], constantPool: ConstantPool,
name?: string): o.Expression {\n const createStatements: o.Statement[] = [];\n const updateStatements:
o.Statement[] = [];\n const tempAllocator = temporaryAllocator(updateStatements, TEMPORARY_NAME);\n \n for (const query of queries) {\n const queryInstruction = query.static ? R3.staticContentQuery :
R3.contentQuery;\n \n // creation, e.g. r3.contentQuery(dirIndex, somePredicate, true, null);\n createStatements.push(\n o.importExpr(queryInstruction)\n .callFn([o.variable('dirIndex'),
...prepareQueryParams(query, constantPool) as any])\n .toStmt());\n \n // update, e.g. (r3.queryRefresh(tmp
= r3.loadQuery()) && (ctx.someDir = tmp));\n const temporary = tempAllocator();\n const getQueryList =
o.importExpr(R3.loadQuery).callFn([]);\n const refresh =
o.importExpr(R3.queryRefresh).callFn([temporary.set(getQueryList)]);\n const updateDirective =
o.variable(CONTEXT_NAME)\n .prop(query.propertyName)\n .set(query.first ? temporary.prop('first') : temporary);\n \n updateStatements.push(refresh.and(updateDirective).toStmt());\n }\n \n const contentQueriesFnName = name ?
`${name}_ContentQueries` : null;\n return o.fn(\n [\n new o.FiParam(RENDER_FLAGS,
o.NUMBER_TYPE), new o.FiParam(CONTEXT_NAME, null),\n new o.FiParam('dirIndex', null)\n],\n [\n renderFlagCheckIfStmt(core.RenderFlags.Create, createStatements),\n

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renderFlagCheckIfStmt(core.RenderFlags.Update, updateStatements)\n],\n o.INFERRED_TYPE, null,
contentQueriesFnName);\n}\n\nfunction stringAsType(str: string): o.Type {\n return
o.expressionType(o.literal(str));\n}\n\nfunction stringMapAsType(map: {[key: string]: string|string[]}): o.Type {\n
const mapValues = Object.keys(map).map(key => {\n const value = Array.isArray(map[key]) ? map[key][0] :
map[key];\n return {\n key,\n value: o.literal(value),\n quoted: true,\n };\n});\n return
o.expressionType(o.literalMap(mapValues));\n}\n\nfunction stringArrayAsType(arr: ReadonlyArray<string|null>):
o.Type {\n return arr.length > 0 ? o.expressionType(o.literalArr(arr.map(value => o.literal(value)))) : \n
o.NONE_TYPE;\n}\n\nfunction createDirectiveTypeParams(meta: R3DirectiveMetadata): o.Type[] {\n // On the
type side, remove newlines from the selector as it will need to fit into a TypeScript\n // string literal, which must be
on one line.\n const selectorForType = meta.selector !== null ? meta.selector.replace(/\\n/g, " ") : null;\n return [\n
typeWithParameters(meta.type.type, meta.typeArgumentCount),\n selectorForType !== null ?
stringAsType(selectorForType) : o.NONE_TYPE,\n meta.exportAs !== null ? stringArrayAsType(meta.exportAs)
: o.NONE_TYPE,\n stringMapAsType(meta.inputs),\n stringMapAsType(meta.outputs),\n
stringArrayAsType(meta.queries.map(q => q.propertyName)),\n];\n}\n\n// Define and update any view
queries\nfunction createViewQueriesFunction(\n viewQueries: R3QueryMetadata[], constantPool: ConstantPool,
name?: string): o.Expression {\n const createStatements: o.Statement[] = [];\n const updateStatements:
o.Statement[] = [];\n const tempAllocator = temporaryAllocator(updateStatements, TEMPORARY_NAME);\n\n
viewQueries.forEach((query: R3QueryMetadata) => {\n const queryInstruction = query.static ?
R3.staticViewQuery : R3.viewQuery;\n\n // creation, e.g. r3.viewQuery(somePredicate, true);\n const
queryDefinition =\n o.importExpr(queryInstruction).callFn(prepareQueryParams(query, constantPool));\n createStatements.push(queryDefinition.toStmt());\n\n // update, e.g. (r3.queryRefresh(tmp = r3.loadQuery()) &&
(ctx.someDir = tmp));\n const temporary = tempAllocator();\n const getQueryList =
o.importExpr(R3.loadQuery).callFn([]);\n const refresh =
o.importExpr(R3.queryRefresh).callFn([temporary.set(getQueryList)]);\n const updateDirective =
o.variable(CONTEXT_NAME)\n .prop(query.propertyName)\n .set(query.first ? temporary.prop('first') : temporary);\n
updateStatements.push(refresh.and(updateDirective).toStmt());\n });\n\n const viewQueryFnName = name ?
`_${name}_Query` : null;\n return o.fn(\n [new o.FnParam(RENDER_FLAGS, o.NUMBER_TYPE), new
o.FnParam(CONTEXT_NAME, null)],\n [\n renderFlagCheckIfStmt(core.RenderFlags.Create,
createStatements),\n renderFlagCheckIfStmt(core.RenderFlags.Update, updateStatements)\n],\n o.INFERRED_TYPE, null, viewQueryFnName);\n}\n\n// Return a host binding function or null if one is not
necessary.\nfunction createHostBindingsFunction(\n hostBindingsMetadata: R3HostMetadata, typeSourceSpan:
ParseSourceSpan,\n bindingParser: BindingParser, constantPool: ConstantPool, selector: string, name: string,\n definitionMap: DefinitionMap): o.Expression|null {\n const bindingContext = o.variable(CONTEXT_NAME);\n
const styleBuilder = new StylingBuilder(bindingContext);\n\n const {styleAttr, classAttr} =
hostBindingsMetadata.specialAttributes;\n if (styleAttr !== undefined) {\n
styleBuilder.registerStyleAttr(styleAttr);\n }\n if (classAttr !== undefined) {\n
styleBuilder.registerClassAttr(classAttr);\n }\n\n const createStatements: o.Statement[] = [];\n const
updateStatements: o.Statement[] = [];\n\n const hostBindingSourceSpan = typeSourceSpan;\n const
directiveSummary = metadataAsSummary(hostBindingsMetadata);\n\n // Calculate host event bindings\n const
eventBindings =\n bindingParser.createDirectiveHostEventAsts(directiveSummary, hostBindingSourceSpan);\n
if (eventBindings && eventBindings.length) {\n const listeners = createHostListeners(eventBindings, name);\n
createStatements.push(...listeners);\n }\n\n // Calculate the host property bindings\n const bindings =
bindingParser.createBoundHostProperties(directiveSummary, hostBindingSourceSpan);\n const allOtherBindings:
ParsedProperty[] = [];\n\n // We need to calculate the total amount of binding slots required by\n // all the
instructions together before any value conversions happen.\n // Value conversions may require additional slots for
interpolation and\n // bindings with pipes. These calculates happen after this block.\n let totalHostVarsCount = 0;\n
bindings && bindings.forEach((binding: ParsedProperty) => {\n const stylingInputWasSet =

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styleBuilder.registerInputBasedOnName(\n binding.name, binding.expression, hostBindingSourceSpan);\n if
(stylingInputWasSet) {\n totalHostVarsCount += MIN_STYLING_BINDING_SLOTS_REQUIRED;\n } else
{\n allOtherBindings.push(binding);\n totalHostVarsCount++;\n }\n});\n\n let valueConverter:
ValueConverter;\n const getValueConverter = () => {\n if (!valueConverter) {\n const hostVarsCountFn =
(numSlots: number): number => {\n const originalVarsCount = totalHostVarsCount;\n totalHostVarsCount
+= numSlots;\n return originalVarsCount;\n };\n valueConverter = new ValueConverter(\n
constantPool,\n () => error('Unexpected node'), // new nodes are illegal here\n hostVarsCountFn,\n
() => error('Unexpected pipe')); // pipes are illegal here\n }\n return valueConverter;\n};\n\n const
propertyBindings: o.Expression[][] = [];\n const attributeBindings: o.Expression[][] = [];\n const
syntheticHostBindings: o.Expression[][] = [];\n allOtherBindings.forEach((binding: ParsedProperty) => {\n //
resolve literal arrays and literal objects\n const value = binding.expression.visit(getValueConverter());\n const
bindingExpr = bindingFn(bindingContext, value);\n\n const {bindingName, instruction, isAttribute} =
getBindingNameAndInstruction(binding);\n\n const securityContexts =\n
bindingParser.calcPossibleSecurityContexts(selector, bindingName, isAttribute)\n .filter(context => context
!== core.SecurityContext.NONE);\n\n let sanitizerFn: o.ExternalExpr|null = null;\n if (securityContexts.length)
{\n if (securityContexts.length === 2 &&\n securityContexts.indexOf(core.SecurityContext.URL) > -1
&&\n securityContexts.indexOf(core.SecurityContext.RESOURCE_URL) > -1) {\n // Special case for
some URL attributes (such as \"src\" and \"href\") that may be a part\n // of different security contexts. In this
case we use special sanitization function and\n // select the actual sanitizer at runtime based on a tag name that
is provided while\n // invoking sanitization function.\n sanitizerFn =
o.importExpr(R3.sanitizeUrlOrResourceUrl);\n } else {\n sanitizerFn =
resolveSanitizationFn(securityContexts[0], isAttribute);\n }\n }\n const instructionParams =
[o.literal(bindingName), bindingExpr.currValExpr];\n if (sanitizerFn) {\n
instructionParams.push(sanitizerFn);\n }\n\n updateStatements.push(...bindingExpr.stmts);\n\n if (instruction
=== R3.hostProperty) {\n propertyBindings.push(instructionParams);\n } else if (instruction === R3.attribute)
{\n attributeBindings.push(instructionParams);\n } else if (instruction === R3.syntheticHostProperty) {\n
syntheticHostBindings.push(instructionParams);\n } else {\n
updateStatements.push(o.importExpr(instruction).callFn(instructionParams).toStmt());\n }\n});\n\n if
(propertyBindings.length > 0) {\n updateStatements.push(chainedInstruction(R3.hostProperty,
propertyBindings).toStmt());\n}\n\n if (attributeBindings.length > 0) {\n
updateStatements.push(chainedInstruction(R3.attribute, attributeBindings).toStmt());\n}\n\n if
(syntheticHostBindings.length > 0) {\n updateStatements.push(\n
chainedInstruction(R3.syntheticHostProperty, syntheticHostBindings).toStmt());\n}\n\n // since we're dealing with
directives/components and both have hostBinding\n // functions, we need to generate a special hostAttrs instruction
that deals\n // with both the assignment of styling as well as static attributes to the host\n // element. The instruction
below will instruct all initial styling (styling\n // that is inside of a host binding within a directive/component) to be
attached\n // to the host element alongside any of the provided host attributes that were\n // collected earlier.\n
const hostAttrs = convertAttributesToExpressions(hostBindingsMetadata.attributes);\n
styleBuilder.assignHostAttrs(hostAttrs, definitionMap);\n\n if (styleBuilder.hasBindings) {\n // finally each
binding that was registered in the statement above will need to be added to\n // the update block of a
component/directive templateFn/hostBindingsFn so that the bindings\n // are evaluated and updated for the
element.\n styleBuilder.buildUpdateLevelInstructions(getValueConverter()).forEach(instruction => {\n if
(instruction.calls.length > 0) {\n const calls: o.Expression[][] = [];\n\n instruction.calls.forEach(call => {\n
// we subtract a value of `1` here because the binding slot was already allocated\n // at the top of this
method when all the input bindings were counted.\n totalHostVarsCount +=\n
Math.max(call.allocateBindingSlots - MIN_STYLING_BINDING_SLOTS_REQUIRED, 0);\n
calls.push(convertStylingCall(call, bindingContext, bindingFn));\n });\n\n
updateStatements.push(chainedInstruction(instruction.reference, calls).toStmt());\n }\n});\n\n if

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(totalHostVarsCount) {\n definitionMap.set('hostVars', o.literal(totalHostVarsCount));\n }\n\n if
(createStatements.length > 0 || updateStatements.length > 0) {\n const hostBindingsFnName = name ?
`_${name}_HostBindings` : null;\n const statements: o.Statement[] = [];\n if (createStatements.length > 0) {\n
statements.push(renderFlagCheckIfStmt(core.RenderFlags.Create, createStatements));\n }\n if
(updateStatements.length > 0) {\n statements.push(renderFlagCheckIfStmt(core.RenderFlags.Update,
updateStatements));\n }\n return o.fn(\n [new o.FnParam(RENDER_FLAGS, o.NUMBER_TYPE), new
o.FnParam(CONTEXT_NAME, null)], statements,\n o.INFERRED_TYPE, null, hostBindingsFnName);\n
}\n\n return null;\n}\n\nfunction bindingFn(implicit: any, value: AST) {\n return convertPropertyBinding(\n
null, implicit, value, 'b', BindingForm.Expression, () => error('Unexpected interpolation'));\n}\n\nfunction
convertStylingCall(\n call: StylingInstructionCall, bindingContext: any, bindingFn: Function) {\n return
call.params(value => bindingFn(bindingContext, value).currValExpr);\n}\n\nfunction
getBindingNameAndInstruction(binding: ParsedProperty):\n {bindingName: string, instruction:
o.ExternalReference, isAttribute: boolean} {\n let bindingName = binding.name;\n let instruction!:
o.ExternalReference;\n // Check to see if this is an attr binding or a property binding\n const attrMatches =
bindingName.match(ATTR_REGEX);\n if (attrMatches) {\n bindingName = attrMatches[1];\n instruction =
R3.attribute;\n } else {\n if (binding.isAnimation) {\n bindingName =
prepareSyntheticPropertyName(bindingName);\n // host bindings that have a synthetic property (e.g. @foo)
should always be rendered\n // in the context of the component and not the parent. Therefore there is a special\n
// compatibility instruction available for this purpose.\n instruction = R3.syntheticHostProperty;\n } else {\n
instruction = R3.hostProperty;\n }\n }\n\n return {bindingName, instruction, isAttribute:
!!attrMatches};\n}\n\nfunction createHostListeners(eventBindings: ParsedEvent[], name?: string): o.Statement[] {\n
const listeners: o.Expression[][] = [];\n const syntheticListeners: o.Expression[][] = [];\n const instructions:
o.Statement[] = [];\n eventBindings.forEach(binding => {\n let bindingName = binding.name &&
sanitizeIdentifier(binding.name);\n const bindingFnName = binding.type === ParsedEventType.Animation ?\n
prepareSyntheticListenerFunctionName(bindingName, binding.targetOrPhase) :\n bindingName;\n const
handlerName = name && bindingName ? `_${name}_${bindingFnName}_HostBindingHandler` : null;\n const
params = prepareEventListenerParameters(BoundEvent.fromParsedEvent(binding), handlerName);\n\n if
(binding.type === ParsedEventType.Animation) {\n syntheticListeners.push(params);\n } else {\n
listeners.push(params);\n }\n });\n\n if (syntheticListeners.length > 0) {\n
instructions.push(chainedInstruction(R3.syntheticHostListener, syntheticListeners).toStmt());\n }\n\n if
(listeners.length > 0) {\n instructions.push(chainedInstruction(R3.listener, listeners).toStmt());\n }\n\n return
instructions;\n}\n\nfunction metadataAsSummary(meta: R3HostMetadata): CompileDirectiveSummary {\n // clang-
format off\n return {\n // This is used by the BindingParser, which only deals with listeners and properties. There's
no\n // need to pass attributes to it.\n hostAttributes: {},\n hostListeners: meta.listeners,\n hostProperties:
meta.properties,\n } as CompileDirectiveSummary;\n // clang-format on\n}\n\nfunction
typeMapToExpressionMap(\n map: Map<string, StaticSymbol>, outputCtx: OutputContext): Map<string,
o.Expression> {\n // Convert each map entry into another entry where the value is an expression importing the
type.\n const entries = Array.from(map).map(\n ([key, type]): [string, o.Expression] => [key,
outputCtx.importExpr(type)];\n return new Map(entries);\n}\n\nconst HOST_REG_EXP =
/^(?:(?!(?:[^\]]+)))(?:((?!(?:[^\]]+))\))$/;\n\n// Represents the groups in the above regex.\nconst enum HostBindingGroup
{\n // group 1: \"prop\" from \"[prop]\", or \"attr.role\" from \"[attr.role]\", or @anim from [@anim]\n Binding =
1,\n\n // group 2: \"event\" from \"(event)\"\n Event = 2,\n}\n\n// Defines Host Bindings structure that contains
attributes, listeners, and properties,\n// parsed from the `host` object defined for a Type.\nexport interface
ParsedHostBindings {\n attributes: {[key: string]: o.Expression};\n listeners: {[key: string]: string};\n properties:
{[key: string]: string};\n specialAttributes: {styleAttr?: string; classAttr?: string;};\n}\n\nexport function
parseHostBindings(host: {[key: string]: string|o.Expression}): ParsedHostBindings {\n const attributes: {[key:
string]: o.Expression} = {};\n const listeners: {[key: string]: string} = {};\n const properties: {[key: string]:
string} = {};\n const specialAttributes: {styleAttr?: string; classAttr?: string;} = {};\n\n for (const key of

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Object.keys(host)) {\n const value = host[key];\n const matches = key.match(HOST_REG_EXP);\n if
(matches === null) {\n switch (key) {\n case 'class':\n if (typeof value !== 'string') {\n //
TODO(alxhub): make this a diagnostic.\n throw new Error(`Class binding must be string`);\n }\n
specialAttributes.classAttr = value;\n break;\n case 'style':\n if (typeof value !== 'string') {\n //
TODO(alxhub): make this a diagnostic.\n throw new Error(`Style binding must be string`);\n }\n
specialAttributes.styleAttr = value;\n break;\n default:\n if (typeof value === 'string') {\n
attributes[key] = o.literal(value);\n } else {\n attributes[key] = value;\n }\n } else if
(matches[HostBindingGroup.Binding] != null) {\n if (typeof value !== 'string') {\n // TODO(alxhub): make
this a diagnostic.\n throw new Error(`Property binding must be string`);\n }\n // synthetic properties (the
ones that have a `@` as a prefix)\n // are still treated the same as regular properties. Therefore\n // there is no
point in storing them in a separate map.\n properties[matches[HostBindingGroup.Binding]] = value;\n } else if
(matches[HostBindingGroup.Event] != null) {\n if (typeof value !== 'string') {\n // TODO(alxhub): make this
a diagnostic.\n throw new Error(`Event binding must be string`);\n }\n
listeners[matches[HostBindingGroup.Event]] = value;\n }\n }\n }\n return {attributes, listeners, properties,
specialAttributes};\n}\n\n/**\n * Verifies host bindings and returns the list of errors (if any). Empty array indicates
that a\n * given set of host bindings has no errors.\n * @param bindings set of host bindings to verify.\n *
@param sourceSpan source span where host bindings were defined.\n * @returns array of errors associated with a
given set of host bindings.\n */\nexport function verifyHostBindings(\n bindings: ParsedHostBindings,\n sourceSpan: ParseSourceSpan): ParseError[] {\n const summary = metadataAsSummary(bindings);\n // TODO:
abstract out host bindings verification logic and use it instead of\n // creating events and properties ASTs to detect
errors (FW-996)\n const bindingParser = makeBindingParser();\n bindingParser.createDirectiveHostEventAsts(summary, sourceSpan);\n
bindingParser.createBoundHostProperties(summary, sourceSpan);\n return bindingParser.errors;\n}\n\nfunction
compileStyles(styles: string[], selector: string, hostSelector: string): string[] {\n const shadowCss = new
ShadowCss();\n return styles.map(style => {\n return shadowCss!.shimCssText(style, selector, hostSelector);\n
 });\n}\n\n", "/*\n * @license\n * Copyright Google LLC All Rights Reserved.\n * \n * Use of this source code is
governed by an MIT-style license that can be\n * found in the LICENSE file at https://angular.io/license\n
*/\n\n/**\n * An interface for retrieving documents by URL that the compiler uses\n * to load templates.\n
/\nexport class ResourceLoader {\n get(url: string): Promise<string>|string {\n return ";\n }\n}\n\n", "/\n *
@license\n * Copyright Google LLC All Rights Reserved.\n * \n * Use of this source code is governed by an MIT-
style license that can be\n * found in the LICENSE file at https://angular.io/license\n */\n\n\nimport
{CompilerFacade, CoreEnvironment, ExportedCompilerFacade, R3ComponentMetadataFacade,\nR3DependencyMetadataFacade, R3DirectiveMetadataFacade, R3FactoryDefMetadataFacade,\nR3InjectableMetadataFacade, R3InjectorMetadataFacade, R3NgModuleMetadataFacade, R3PipeMetadataFacade,\nR3QueryMetadataFacade, StringMap, StringMapWithRename} from './compiler_facade_interface';\nimport
{ConstantPool} from './constant_pool';\nimport {HostBinding, HostListener, Input, Output, Type} from
'/core';\nimport {Identifiers} from './identifiers';\nimport {compileInjectable} from
'/injectable_compiler_2';\nimport {DEFAULT_INTERPOLATION_CONFIG, InterpolationConfig} from
'/ml_parser/interpolation_config';\nimport {DeclareVarStmt, Expression, LiteralExpr, Statement, StmtModifier,\nWrappedNodeExpr} from './output/output_ast';\nimport {JitEvaluator} from './output/output_jit';\nimport
{ParseError, ParseSourceSpan, r3JitTypeSourceSpan} from './parse_util';\nimport {compileFactoryFunction,\nR3DependencyMetadata, R3FactoryTarget, R3ResolvedDependencyType} from './render3/r3_factory';\nimport
{R3JitReflector} from './render3/r3_jit';\nimport {compileInjector, compileNgModule, R3InjectorMetadata,\nR3NgModuleMetadata} from './render3/r3_module_compiler';\nimport {compilePipeFromMetadata,\nR3PipeMetadata} from './render3/r3_pipe_compiler';\nimport {R3Reference} from './render3/util';\nimport
{R3DirectiveMetadata, R3QueryMetadata} from './render3/view/api';\nimport {compileComponentFromMetadata,\ncompileDirectiveFromMetadata, ParsedHostBindings, parseHostBindings, verifyHostBindings} from
'/render3/view/compiler';\nimport {makeBindingParser, parseTemplate} from './render3/view/template';\nimport

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{ResourceLoader} from './resource_loader';\nimport { DomElementSchemaRegistry } from
 './schema/dom_element_schema_registry';\n\nexport class CompilerFacadeImpl implements CompilerFacade {\n
R3ResolvedDependencyType = R3ResolvedDependencyType as any;\n R3FactoryTarget = R3FactoryTarget as
any;\n ResourceLoader = ResourceLoader;\n private elementSchemaRegistry = new
DomElementSchemaRegistry();\n\n constructor(private jitEvaluator = new JitEvaluator()) {\n\n
compilePipe(angularCoreEnv: CoreEnvironment, sourceMapUrl: string, facade: R3PipeMetadataFacade):\n any
{\n const metadata: R3PipeMetadata = {\n name: facade.name,\n type: wrapReference(facade.type),\n
internalType: new WrappedNodeExpr(facade.type),\n typeArgumentCount: facade.typeArgumentCount,\n
deps: convertR3DependencyMetadataArray(facade.deps),\n pipeName: facade.pipeName,\n pure:
facade.pure,\n }; \n const res = compilePipeFromMetadata(metadata);\n return
this.jitExpression(res.expression, angularCoreEnv, sourceMapUrl, []);\n }\n\n compileInjectable(\n
angularCoreEnv: CoreEnvironment, sourceMapUrl: string,\n facade: R3InjectableMetadataFacade): any {\n
const {expression, statements} = compileInjectable({\n name: facade.name,\n type:
wrapReference(facade.type),\n internalType: new WrappedNodeExpr(facade.type),\n typeArgumentCount:
facade.typeArgumentCount,\n providedIn: computeProvidedIn(facade.providedIn),\n useClass:
wrapExpression(facade, USE_CLASS),\n useFactory: wrapExpression(facade, USE_FACTORY),\n
useValue: wrapExpression(facade, USE_VALUE),\n useExisting: wrapExpression(facade, USE_EXISTING),\n
userDeps: convertR3DependencyMetadataArray(facade.userDeps) || undefined,\n });\n\n return
this.jitExpression(expression, angularCoreEnv, sourceMapUrl, statements);\n }\n\n compileInjector(\n
angularCoreEnv: CoreEnvironment, sourceMapUrl: string,\n facade: R3InjectorMetadataFacade): any {\n const
meta: R3InjectorMetadata = {\n name: facade.name,\n type: wrapReference(facade.type),\n internalType:
new WrappedNodeExpr(facade.type),\n deps: convertR3DependencyMetadataArray(facade.deps),\n
providers: new WrappedNodeExpr(facade.providers),\n imports: facade.imports.map(i => new
WrappedNodeExpr(i)),\n }; \n const res = compileInjector(meta);\n return this.jitExpression(res.expression,
angularCoreEnv, sourceMapUrl, res.statements);\n }\n\n compileNgModule(\n angularCoreEnv:
CoreEnvironment, sourceMapUrl: string,\n facade: R3NgModuleMetadataFacade): any {\n const meta:
R3NgModuleMetadata = {\n type: wrapReference(facade.type),\n internalType: new
WrappedNodeExpr(facade.type),\n adjacentType: new WrappedNodeExpr(facade.type),\n bootstrap:
facade.bootstrap.map(wrapReference),\n declarations: facade.declarations.map(wrapReference),\n imports:
facade.imports.map(wrapReference),\n exports: facade.exports.map(wrapReference),\n emitInline: true,\n
containsForwardDecls: false,\n schemas: facade.schemas ? facade.schemas.map(wrapReference) : null,\n id:
facade.id ? new WrappedNodeExpr(facade.id) : null,\n }; \n const res = compileNgModule(meta);\n return
this.jitExpression(res.expression, angularCoreEnv, sourceMapUrl, []);\n }\n\n compileDirective(\n
angularCoreEnv: CoreEnvironment, sourceMapUrl: string,\n facade: R3DirectiveMetadataFacade): any {\n
const constantPool = new ConstantPool();\n const bindingParser = makeBindingParser();\n\n const meta:
R3DirectiveMetadata = convertDirectiveFacadeToMetadata(facade);\n const res =
compileDirectiveFromMetadata(meta, constantPool, bindingParser);\n return this.jitExpression(\n
res.expression, angularCoreEnv, sourceMapUrl, constantPool.statements);\n }\n\n compileComponent(\n
angularCoreEnv: CoreEnvironment, sourceMapUrl: string,\n facade: R3ComponentMetadataFacade): any {\n //
The ConstantPool is a requirement of the JIT'er.\n const constantPool = new ConstantPool();\n\n const
interpolationConfig = facade.interpolation ?\n InterpolationConfig.fromArray(facade.interpolation) : \n
DEFAULT_INTERPOLATION_CONFIG;\n // Parse the template and check for errors.\n const template =
parseTemplate(\n facade.template, sourceMapUrl,\n {preserveWhitespaces: facade.preserveWhitespaces,\n
interpolationConfig});\n if (template.errors !== null) {\n const errors = template.errors.map(err =>
err.toString()).join(' '); \n throw new Error(`Errors during JIT compilation of template for ${facade.name}:
${errors}`);\n }\n\n // Compile the component metadata, including template, into an expression.\n //
TODO(alxhub): implement inputs, outputs, queries, etc.\n const metadata = {\n ...facade as
R3ComponentMetadataFacadeNoPropAndWhitespace,\n ...convertDirectiveFacadeToMetadata(facade),\n

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selector: facade.selector || this.elementSchemaRegistry.getDefaultComponentElementName(),\n template,\n wrapDirectivesAndPipesInClosure: false,\n styles: [...facade.styles, ...template.styles],\n encapsulation:\n facade.encapsulation as any,\n interpolation: interpolationConfig,\n changeDetection:\n facade.changeDetection,\n animations: facade.animations != null ? new WrappedNodeExpr(facade.animations) :\n null,\n viewProviders: facade.viewProviders != null ? new WrappedNodeExpr(facade.viewProviders) :\n null,\n relativeContextFilePath: ",\n i18nUseExternalIds: true,\n });\n const res =\n compileComponentFromMetadata(\n metadata, constantPool, makeBindingParser(interpolationConfig));\n const jitExpressionSourceMap = `ng:///${facade.name}.js`;\n return this.jitExpression(\n res.expression,\n angularCoreEnv, jitExpressionSourceMap, constantPool.statements);\n }\n compileFactory(\n angularCoreEnv: CoreEnvironment, sourceMapUrl: string, meta: R3FactoryDefMetadataFacade) {\n const\n factoryRes = compileFactoryFunction({\n name: meta.name,\n type: wrapReference(meta.type),\n internalType: new WrappedNodeExpr(meta.type),\n typeArgumentCount: meta.typeArgumentCount,\n deps:\n convertR3DependencyMetadataArray(meta.deps),\n injectFn: meta.injectFn === 'directiveInject' ?\n Identifiers.directiveInject :\n Identifiers.inject,\n target: meta.target,\n });\n return this.jitExpression(\n factoryRes.factory, angularCoreEnv, sourceMapUrl, factoryRes.statements);\n }\n createParseSourceSpan(kind: string, typeName: string, sourceUrl: string): ParseSourceSpan {\n return\n r3JitTypeSourceSpan(kind, typeName, sourceUrl);\n }\n /**\n * JIT compiles an expression and returns the\n result of executing that expression.\n * @param def the definition which will be compiled and executed to get\n the value to patch\n * @param context an object map of @angular/core symbol names to symbols which will be\n available\n * in the context of the compiled expression\n * @param sourceUrl a URL to use for the source map of\n the compiled expression\n * @param preStatements a collection of statements that should be evaluated before the\n expression.\n */\n private jitExpression(\n def: Expression, context: {[key: string]: any}, sourceUrl: string,\n preStatements: Statement[]): any {\n // The ConstantPool may contain Statements which declare variables used in\n the final expression.\n // Therefore, its statements need to precede the actual JIT operation. The final statement is\n a\n // declaration of $def which is set to the expression being compiled.\n const statements: Statement[] = [\n ...preStatements,\n new DeclareVarStmt('$def', def, undefined, [StmtModifier.Exported]),\n];\n const res =\n this.jitEvaluator.evaluateStatements(\n sourceUrl, statements, new R3JitReflector(context), /*\n enableSourceMaps */ true);\n return res['$def'];\n }\n }\n }\n // This seems to be needed to placate TS v3.0\n only\ntype R3ComponentMetadataFacadeNoPropAndWhitespace = Pick<\n R3ComponentMetadataFacade,\n Exclude<Exclude<keyof R3ComponentMetadataFacade, 'preserveWhitespaces'>,\n 'propMetadata'>>;\n \n const\n USE_CLASS = Object.keys({useClass: null})[0];\n const USE_FACTORY = Object.keys({useFactory:\n null})[0];\n const USE_VALUE = Object.keys({useValue: null})[0];\n const USE_EXISTING =\n Object.keys({useExisting: null})[0];\n const wrapReference = function(value: any): R3Reference {\n const\n wrapped = new WrappedNodeExpr(value);\n return { value: wrapped, type: wrapped};\n };\n \n function\n convertToR3QueryMetadata(facade: R3QueryMetadataFacade): R3QueryMetadata {\n return {\n ...facade,\n predicate: Array.isArray(facade.predicate) ? facade.predicate :\n new\n WrappedNodeExpr(facade.predicate),\n read: facade.read ? new WrappedNodeExpr(facade.read) : null,\n };\n }\n \n function convertDirectiveFacadeToMetadata(facade: R3DirectiveMetadataFacade):\n R3DirectiveMetadata {\n const inputsFromMetadata = parseInputOutputs(facade.inputs || []);\n const\n outputsFromMetadata = parseInputOutputs(facade.outputs || []);\n const propMetadata = facade.propMetadata;\n const inputsFromType: StringMapWithRename = {};\n const outputsFromType: StringMap = {};\n for (const field\n in propMetadata) {\n if (propMetadata.hasOwnProperty(field)) {\n propMetadata[field].forEach(ann => {\n if (isInput(ann)) {\n inputsFromType[field] =\n ann.bindingPropertyName ?\n [ann.bindingPropertyName, field] : field;\n } else if (isOutput(ann)) {\n outputsFromType[field] =\n ann.bindingPropertyName || field;\n }\n });\n }\n }\n return {\n ...facade as\n R3DirectiveMetadataFacadeNoPropAndWhitespace,\n typeSourceSpan: facade.typeSourceSpan,\n type:\n wrapReference(facade.type),\n internalType: new WrappedNodeExpr(facade.type),\n deps:\n convertR3DependencyMetadataArray(facade.deps),\n host: extractHostBindings(facade.propMetadata),

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facade.typeSourceSpan, facade.host),\n inputs: {...inputsFromMetadata, ...inputsFromType},\n outputs:
{...outputsFromMetadata, ...outputsFromType},\n queries: facade.queries.map(convertToR3QueryMetadata),\n
providers: facade.providers != null ? new WrappedNodeExpr(facade.providers) : null,\n viewQueries:
facade.viewQueries.map(convertToR3QueryMetadata),\n fullInheritance: false,\n });\n\n// This seems to be
needed to placate TS v3.0 only\ntype R3DirectiveMetadataFacadeNoPropAndWhitespace =\nPick<R3DirectiveMetadataFacade, Exclude<keyof R3DirectiveMetadataFacade, 'propMetadata'>>;\n\nfunction
wrapExpression(obj: any, property: string): WrappedNodeExpr<any>|undefined {\n if
(obj.hasOwnProperty(property)) {\n return new WrappedNodeExpr(obj[property]);\n } else {\n return
undefined;\n }\n}\n\nfunction computeProvidedIn(providedIn: Type|string|null|undefined): Expression {\n if
(providedIn == null || typeof providedIn === 'string') {\n return new LiteralExpr(providedIn);\n } else {\n return
new WrappedNodeExpr(providedIn);\n }\n}\n\nfunction convertR3DependencyMetadata(facade:
R3DependencyMetadataFacade): R3DependencyMetadata {\n let tokenExpr;\n if (facade.token === null) {\n
tokenExpr = new LiteralExpr(null);\n } else if (facade.resolved === R3ResolvedDependencyType.Attribute) {\n
tokenExpr = new LiteralExpr(facade.token);\n } else {\n tokenExpr = new WrappedNodeExpr(facade.token);\n
}\n return {\n token: tokenExpr,\n attribute: null,\n resolved: facade.resolved,\n host: facade.host,\n
optional: facade.optional,\n self: facade.self,\n skipSelf: facade.skipSelf,\n };\n}\n\nfunction
convertR3DependencyMetadataArray(facades: R3DependencyMetadataFacade[]|null|\n
undefined): R3DependencyMetadata[]|null {\n return facades == null ? null :
facades.map(convertR3DependencyMetadata);\n}\n\nfunction extractHostBindings(\n propMetadata: {[key:
string]: any[]}, sourceSpan: ParseSourceSpan,\n host?: {[key: string]: string}): ParsedHostBindings {\n // First
parse the declarations from the metadata.\n const bindings = parseHostBindings(host || {});\n // After that check
host bindings for errors\n const errors = verifyHostBindings(bindings, sourceSpan);\n if (errors.length) {\n throw
new Error(errors.map((error: ParseError) => error.msg).join('\n'));\n }\n // Next, loop over the properties of the
object, looking for @HostBinding and @HostListener.\n for (const field in propMetadata) {\n if
(propMetadata.hasOwnProperty(field)) {\n propMetadata[field].forEach(ann => {\n if (isHostBinding(ann))
{\n bindings.properties[ann.hostPropertyName || field] = field;\n } else if (isHostListener(ann)) {\n
bindings.listeners[ann.eventName || field] = `${field}(${(ann.args || []).join(',')})`;\n }\n });\n }\n }\n return bindings;\n}\n\nfunction isHostBinding(value: any): value is HostBinding {\n return value.ngMetadataName
=== 'HostBinding';\n}\n\nfunction isHostListener(value: any): value is HostListener {\n return
value.ngMetadataName === 'HostListener';\n}\n\nfunction isInput(value: any): value is Input {\n return
value.ngMetadataName === 'Input';\n}\n\nfunction isOutput(value: any): value is Output {\n return
value.ngMetadataName === 'Output';\n}\n\nfunction parseInputOutputs(values: string[]): StringMap {\n return
values.reduce((map, value) => {\n const [field, property] = value.split(',').map(piece => piece.trim());\n
map[field] = property || field;\n return map;\n }, {}) as StringMap;\n}\n\nexport function publishFacade(global:
any) {\n const ng: ExportedCompilerFacade = global.ng || (global.ng = {});\n ng.compilerFacade = new
CompilerFacadeImpl();\n}\n\n"/**\n * @license\n * Copyright Google LLC All Rights Reserved.\n * Use of this
source code is governed by an MIT-style license that can be\n * found in the LICENSE file at
https://angular.io/license\n * @module\n * @description\n * Entry point for all public APIs of the
common package.\n * \n * import { Version } from './util';\n * export const VERSION = new
Version('11.0.2');\n */\n\n"/**\n * @license\n * Copyright Google LLC All Rights Reserved.\n * Use of this source
code is governed by an MIT-style license that can be\n * found in the LICENSE file at https://angular.io/license\n * \n * import { MissingTranslationStrategy, ViewEncapsulation } from './core';\n * import { noUndefined } from
 './util';\n * export class CompilerConfig {\n * public defaultEncapsulation: ViewEncapsulation|null;\n * public useJit:
boolean;\n * public jitDevMode: boolean;\n * public missingTranslation: MissingTranslationStrategy|null;\n * public
preserveWhitespaces: boolean;\n * public strictInjectionParameters: boolean;\n * constructor({\n * defaultEncapsulation = ViewEncapsulation.Emulated,\n * useJit = true,\n * jitDevMode = false,\n * missingTranslation = null,\n * preserveWhitespaces,\n * strictInjectionParameters\n * }): {\n * defaultEncapsulation?:
ViewEncapsulation,\n * useJit?: boolean,\n * jitDevMode?: boolean,\n * missingTranslation?:

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MissingTranslationStrategy|null,\n preserveWhitespaces?: boolean,\n strictInjectionParameters?: boolean,\n } =
{ }) {\n this.defaultEncapsulation = defaultEncapsulation;\n this.useJit = !!useJit;\n this.jitDevMode =
!!jitDevMode;\n this.missingTranslation = missingTranslation;\n this.preserveWhitespaces =
preserveWhitespacesDefault(noUndefined(preserveWhitespaces));\n this.strictInjectionParameters =
strictInjectionParameters === true;\n } }\n\nexport function preserveWhitespacesDefault(\n
preserveWhitespacesOption: boolean|null, defaultSetting = false): boolean {\n return preserveWhitespacesOption
=== null ? defaultSetting : preserveWhitespacesOption;\n } }\n", "/*\n * @license\n * Copyright Google LLC All
Rights Reserved.\n * Use of this source code is governed by an MIT-style license that can be\n * found in the
LICENSE file at https://angular.io/license\n */\n\nimport { CompileDirectiveMetadata, CompileStylesheetMetadata,
CompileTemplateMetadata, templateUrl } from './compile_metadata';\nimport { CompilerConfig,
preserveWhitespacesDefault } from './config';\nimport { ViewEncapsulation } from './core';\nimport * as html from
 './ml_parser/ast';\nimport { HtmlParser } from './ml_parser/html_parser';\nimport { InterpolationConfig } from
 './ml_parser/interpolation_config';\nimport { ParseTreeResult as HtmlParseTreeResult } from
 './ml_parser/parser';\nimport { ResourceLoader } from './resource_loader';\nimport { extractStyleUrls,
isStyleUrlResolvable } from './style_url_resolver';\nimport { PreparedElementType, prepareElement } from
 './template_parser/template_preparer';\nimport { UrlResolver } from './url_resolver';\nimport { isDefined, stringify,
SyncAsync, syntaxError } from './util';\n\nexport interface PrenormalizedTemplateMetadata {\n ngModuleType:
any;\n componentType: any;\n moduleId: string;\n template: string|null;\n templateUrl: string|null;\n styles:
string[];\n styleUrls: string[];\n interpolation: [string, string]|null;\n encapsulation: ViewEncapsulation|null;\n
 animations: any[];\n preserveWhitespaces: boolean|null;\n}\n\nexport class DirectiveNormalizer {\n private
_resourceLoaderCache = new Map<string, SyncAsync<string>>());\n\n constructor(\n private _resourceLoader:
ResourceLoader, private _urlResolver: UrlResolver,\n private _htmlParser: HtmlParser, private _config:
CompilerConfig) {\n }\n\n clearCache(): void {\n this._resourceLoaderCache.clear();\n }\n\n clearCacheFor(normalizedDirective: CompileDirectiveMetadata): void {\n if (!normalizedDirective.isComponent)
{\n return;\n }\n const template = normalizedDirective.template !;\n this._resourceLoaderCache.delete(template.templateUrl!);\n template.externalStylesheets.forEach((stylesheet) =>
{\n this._resourceLoaderCache.delete(stylesheet.moduleUrl!);\n });\n }\n\n private _fetch(url: string):
SyncAsync<string> {\n let result = this._resourceLoaderCache.get(url);\n if (!result) {\n result =
this._resourceLoader.get(url);\n this._resourceLoaderCache.set(url, result);\n }\n return result;\n }\n\n normalizeTemplate(prenormData: PrenormalizedTemplateMetadata):\n SyncAsync<CompileTemplateMetadata>
{\n if (isDefined(prenormData.template)) {\n if (isDefined(prenormData.templateUrl)) {\n throw
syntaxError(`${\n stringify(prenormData.\n .componentType)}' component cannot define both
template and templateUrl`);\n }\n if (typeof prenormData.template !== 'string') {\n throw
syntaxError(`The template specified for component ${\n stringify(prenormData.componentType)} is not a
string`);\n }\n } else if (isDefined(prenormData.templateUrl)) {\n if (typeof prenormData.templateUrl !==
'string') {\n throw syntaxError(`The templateUrl specified for component ${\n stringify(prenormData.componentType)} is not a string`);\n }\n } else {\n throw syntaxError(`No
template specified for component ${stringify(prenormData.componentType)}`);\n }\n\n if
(isDefined(prenormData.preserveWhitespaces) &&\n typeof prenormData.preserveWhitespaces !== 'boolean')
{\n throw syntaxError(`The preserveWhitespaces option for component ${\n stringify(prenormData.componentType)} must be a boolean`);\n }\n\n return SyncAsync.then(\n
this._preParseTemplate(prenormData),\n (preparedTemplate) =>\n this._normalizeTemplateMetadata(prenormData, preparedTemplate));\n }\n\n private
_preParseTemplate(prenormData: PrenormalizedTemplateMetadata):\n SyncAsync<PreparedTemplate> {\n let
template: SyncAsync<string>;\n let templateUrl: string;\n if (prenormData.template != null) {\n template =
prenormData.template;\n templateUrl = prenormData.moduleUrl;\n } else {\n templateUrl =
this._urlResolver.resolve(prenormData.moduleUrl, prenormData.templateUrl!);\n template =
this._fetch(templateUrl);\n }\n return SyncAsync.then(\n template, (template) =>

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this._preparseLoadedTemplate(prenormData, template, templateUrl);\n }\n\n private _preparseLoadedTemplate(\n
 prenormData: PrenormalizedTemplateMetadata, template: string,\n templateUrl: string):\n
 PreparedTemplate {\n const isInline = !!prenormData.template;\n const interpolationConfig =\n
 InterpolationConfig.fromArray(prenormData.interpolation!);\n const templateUrl = templateUrlSourceUrl(\n
 {reference: prenormData.ngModuleType}, {type: {reference: prenormData.componentType}});\n {isInline,\n
 templateUrl: templateUrl});\n const rootNodesAndErrors = this._htmlParser.parse(\n template,\n
 templateUrl, {tokenizeExpansionForms: true, interpolationConfig});\n if (rootNodesAndErrors.errors.length > 0)\n
 {\n const errorString = rootNodesAndErrors.errors.join("\\n");\n throw syntaxError(`Template parse\n
 errors:\\n${errorString}`);\n }\n\n const templateMetadataStyles = this._normalizeStylesheet(new\n
 CompileStylesheetMetadata(\n {styles: prenormData.styles, moduleUrl: prenormData.moduleUrl}));\n\n const\n
 visitor = new TemplatePreparseVisitor();\n html.visitAll(visitor, rootNodesAndErrors.rootNodes);\n const\n
 templateStyles = this._normalizeStylesheet(new CompileStylesheetMetadata(\n {styles: visitor.styles, styleUrls:\n
 visitor.styleUrls, moduleUrl: templateUrl}));\n\n const styles =\n
 templateMetadataStyles.styles.concat(templateStyles.styles);\n\n const inlineStyleUrls =\n
 templateMetadataStyles.styleUrls.concat(templateStyles.styleUrls);\n\n const styleUrls = this\n
 ._normalizeStylesheet(new CompileStylesheetMetadata(\n {styleUrls: prenormData.styleUrls,\n
 moduleUrl: prenormData.moduleUrl})))\n .styleUrls;\n return {\n template,\n templateUrl:\n
 templateUrl,\n isInline,\n htmlAst: rootNodesAndErrors,\n styles,\n inlineStyleUrls,\n
 styleUrls,\n ngContentSelectors: visitor.ngContentSelectors,\n };\n }\n\n private\n
_normalizeTemplateMetadata(\n prenormData: PrenormalizedTemplateMetadata,\n preparedTemplate:\n
 PreparedTemplate): SyncAsync<CompileTemplateMetadata> {\n return SyncAsync.then(\n
 this._loadMissingExternalStylesheets(\n
 preparedTemplate.styleUrls.concat(preparedTemplate.inlineStyleUrls)),\n (externalStylesheets) =>\n
 this._normalizeLoadedTemplateMetadata(\n prenormData, preparedTemplate, externalStylesheets));\n }\n\n private\n
_normalizeLoadedTemplateMetadata(\n prenormData: PrenormalizedTemplateMetadata,\n
 preparedTemplate: PreparedTemplate,\n stylesheets: Map<string, CompileStylesheetMetadata>):\n
 CompileTemplateMetadata {\n // Algorithm:\n // - produce exactly 1 entry per original styleUrl in\n //\n
 CompileTemplateMetadata.externalStylesheets with all styles inlined\n // - inline all styles that are referenced by\n
 the template into CompileTemplateMetadata.styles.\n // Reason: be able to determine how many stylesheets there\n
 are even without loading\n // the template nor the stylesheets, so we can create a stub for TypeScript always\n
 synchronously\n // (as resource loading may be async)\n\n const styles = [...preparedTemplate.styles];\n\n
 this._inlineStyles(preparedTemplate.inlineStyleUrls, stylesheets, styles);\n const styleUrls =\n
 preparedTemplate.styleUrls;\n\n const externalStylesheets = styleUrls.map(styleUrl => {\n const stylesheet =\n
 stylesheets.get(styleUrl)!;\n const styles = [...stylesheet.styles];\n this._inlineStyles(stylesheet.styleUrls,\n
 stylesheets, styles);\n return new CompileStylesheetMetadata({moduleUrl: styleUrl, styles: styles});\n });\n\n
 let encapsulation = prenormData.encapsulation;\n if (encapsulation === null) {\n encapsulation =\n
 this._config.defaultEncapsulation;\n }\n if (encapsulation === ViewEncapsulation.Emulated && styles.length\n
 === 0 &&\n styleUrls.length === 0) {\n encapsulation = ViewEncapsulation.None;\n }\n return new\n
 CompileTemplateMetadata({\n encapsulation,\n template: preparedTemplate.template,\n templateUrl:\n
 preparedTemplate.templateUrl,\n htmlAst: preparedTemplate.htmlAst,\n styles,\n styleUrls,\n
 ngContentSelectors: preparedTemplate.ngContentSelectors,\n animations: prenormData.animations,\n
 interpolation: prenormData.interpolation,\n isInline: preparedTemplate.isInline,\n externalStylesheets,\n
 preserveWhitespaces: preserveWhitespacesDefault(\n prenormData.preserveWhitespaces,\n
 this._config.preserveWhitespaces),\n });\n }\n\n private _inlineStyles(\n styleUrls: string[], stylesheets:\n
 Map<string, CompileStylesheetMetadata>,\n targetStyles: string[]) {\n styleUrls.forEach(styleUrl => {\n
 const stylesheet = stylesheets.get(styleUrl)!;\n stylesheet.styles.forEach(style => targetStyles.push(style));\n
 this._inlineStyles(stylesheet.styleUrls, stylesheets, targetStyles);\n });\n }\n\n private\n
_loadMissingExternalStylesheets(\n styleUrls: string[],\n loadedStylesheets:\n Map<string,

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CompileStylesheetMetadata> = new Map<string, CompileStylesheetMetadata>():\n SyncAsync<Map<string,
CompileStylesheetMetadata>> {\n return SyncAsync.then(\n SyncAsync.all(styleUrls.filter((styleUrl) =>
!loadedStylesheets.has(styleUrl))\n .map(\n styleUrl => SyncAsync.then(\n
 this._fetch(styleUrl),\n (loadedStyle) => {\n const stylesheet
=\n this._normalizeStylesheet(new CompileStylesheetMetadata(\n
{styles: [loadedStyle], moduleUrl: styleUrl}));\n loadedStylesheets.set(styleUrl, stylesheet);\n
return this._loadMissingExternalStylesheets(\n stylesheet.styleUrls,
loadedStylesheets);\n })),\n (_ => loadedStylesheets);\n })\n\n private
_normalizeStylesheet(stylesheet: CompileStylesheetMetadata): CompileStylesheetMetadata {\n const moduleUrl
= stylesheet.moduleUrl!;\n const allStyleUrls = stylesheet.styleUrls.filter(isStyleUrlResolvable)\n
.map(url => this._urlResolver.resolve(moduleUrl, url));\n\n const allStyles = stylesheet.styles.map(style => {\n
const styleWithImports = extractStyleUrls(this._urlResolver, moduleUrl, style);\n
allStyleUrls.push(...styleWithImports.styleUrls);\n return styleWithImports.style;\n });\n\n return new
CompileStylesheetMetadata(\n {styles: allStyles, styleUrls: allStyleUrls, moduleUrl: moduleUrl});\n
}\n\ninterface PreparedTemplate {\n template: string;\n templateUrl: string;\n isInline: boolean;\n htmlAst:
HtmlParseTreeResult;\n styles: string[];\n inlineStyleUrls: string[];\n styleUrls: string[];\n ngContentSelectors:
string[];\n}\n\nclass TemplatePreparseVisitor implements html.Visitor {\n ngContentSelectors: string[] = [];\n
styles: string[] = [];\n styleUrls: string[] = [];\n ngNonBindableStackCount: number = 0;\n visitElement(ast:
html.Element, context: any): any {\n const preparedElement = preparseElement(ast);\n switch
(preparedElement.type) {\n case PreparedElementType.NG_CONTENT:\n if
(this.ngNonBindableStackCount === 0) {\n this.ngContentSelectors.push(preparedElement.selectAttr);\n
}\n break;\n case PreparedElementType.STYLE:\n let textContent = "";\n ast.children.forEach(child
=> {\n if (child instanceof html.Text) {\n textContent += child.value;\n }\n });\n
this.styles.push(textContent);\n break;\n case PreparedElementType.STYLESHEET:\n
this.styleUrls.push(preparedElement.hrefAttr);\n break;\n default:\n break;\n }\n if
(preparedElement.nonBindable) {\n this.ngNonBindableStackCount++;\n }\n html.visitAll(this,
ast.children);\n if (preparedElement.nonBindable) {\n this.ngNonBindableStackCount--;\n }\n return
null;\n }\n\n visitExpansion(ast: html.Expansion, context: any): any {\n html.visitAll(this, ast.cases);\n
}\n\n visitExpansionCase(ast: html.ExpansionCase, context: any): any {\n html.visitAll(this, ast.expression);\n
}\n\n visitComment(ast: html.Comment, context: any): any {\n return null;\n }\n visitAttribute(ast: html.Attribute,
context: any): any {\n return null;\n }\n visitText(ast: html.Text, context: any): any {\n return null;\n
}\n}\n\n"/**\n * @license\n * Copyright Google LLC All Rights Reserved.\n * Use of this source code is
governed by an MIT-style license that can be\n * found in the LICENSE file at https://angular.io/license\n
*/\n\nimport {CompileReflector} from './compile_reflector';\nimport {Component, createComponent,
createContentChild, createContentChildren, createDirective, createHostBinding, createHostListener, createInput,
createOutput, createViewChild, createViewChildren, Directive, Type} from './core';\nimport {resolveForwardRef,
splitAtColon, stringify} from './util';\n\nconst QUERY_METADATA_IDENTIFIERS = [\n createViewChild,\n
createViewChildren,\n createContentChild,\n createContentChildren,\n];\n\n/**\n * Resolve a `Type` for {@link
Directive}.\n * This interface can be overridden by the application developer to create custom behavior.\n * See
{@link Compiler}\n */\nexport class DirectiveResolver {\n constructor(private _reflector: CompileReflector)
{\n }\n\n isDirective(type: Type) {\n const typeMetadata = this._reflector.annotations(resolveForwardRef(type));\n
return typeMetadata && typeMetadata.some(isDirectiveMetadata);\n }\n\n /**\n * Return {@link Directive} for
a given `Type`.\n */\n resolve(type: Type): Directive;\n resolve(type: Type, throwIfNotFound: true): Directive;\n
resolve(type: Type, throwIfNotFound: boolean): Directive|null;\n resolve(type: Type, throwIfNotFound = true):
Directive|null {\n const typeMetadata = this._reflector.annotations(resolveForwardRef(type));\n if
(typeMetadata) {\n const metadata = findLast(typeMetadata, isDirectiveMetadata);\n if (metadata) {\n
const propertyMetadata = this._reflector.propMetadata(type);\n const guards = this._reflector.guards(type);\n
return this._mergeWithPropertyMetadata(metadata, propertyMetadata, guards, type);\n }\n }\n\n if

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(throwIfNotFound) {\n throw new Error(`No Directive annotation found on ${stringify(type)}`);\n }\n\n
return null;\n }\n\n private _mergeWithPropertyMetadata(\n dm: Directive, propertyMetadata: {[key: string]:
any[]}, guards: {[key: string]: any},\n directiveType: Type): Directive {\n const inputs: string[] = [];\n const
outputs: string[] = [];\n const host: {[key: string]: string} = {};\n const queries: {[key: string]: any} = {};\n
Object.keys(propertyMetadata).forEach((propName: string) => {\n const input =
findLast(propertyMetadata[propName], (a) => createInput.isTypeOf(a));\n if (input) {\n if
(input.bindingPropertyName) {\n inputs.push(`${propName}: ${input.bindingPropertyName}`);\n } else
{\n inputs.push(propName);\n }\n }\n const output = findLast(propertyMetadata[propName], (a) =>
createOutput.isTypeOf(a));\n if (output) {\n if (output.bindingPropertyName) {\n
outputs.push(`${propName}: ${output.bindingPropertyName}`);\n } else {\n outputs.push(propName);\n
 }\n }\n const hostBindings = propertyMetadata[propName].filter(a => createHostBinding.isTypeOf(a));\n
hostBindings.forEach(hostBinding => {\n if (hostBinding.hostPropertyName) {\n const startWith =
hostBinding.hostPropertyName[0];\n if (startWith === '(') {\n throw new Error(`@HostBinding can not
bind to events. Use @HostListener instead.`);\n } else if (startWith === '[') {\n throw new Error(`\n
 `@HostBinding parameter should be a property name, 'class.<name>', or 'attr.<name>.`);\n }\n
host[`${hostBinding.hostPropertyName}`] = propName;\n } else {\n host[`${propName}`] =
propName;\n }\n });\n const hostListeners = propertyMetadata[propName].filter(a =>
createHostListener.isTypeOf(a));\n hostListeners.forEach(hostListener => {\n const args = hostListener.args
|| [];\n host[`${hostListener.eventName}`] = `${propName}(${args.join(',')}`);\n });\n const query =
findLast(\n propertyMetadata[propName], (a) => QUERY_METADATA_IDENTIFIERS.some(i =>
i.isTypeOf(a));\n if (query) {\n queries[propName] = query;\n }\n });\n return this._merge(dm,
inputs, outputs, host, queries, guards, directiveType);\n }\n\n private _extractPublicName(def: string) {\n return
splitAtColon(def, [null!, def])[1].trim();\n }\n\n private _dedupeBindings(bindings: string[]): string[] {\n const
names = new Set<string>();\n const publicNames = new Set<string>();\n const reversedResult: string[] = [];\n
// go last to first to allow later entries to overwrite previous entries\n for (let i = bindings.length - 1; i >= 0; i--) {\n
const binding = bindings[i];\n const name = this._extractPublicName(binding);\n publicNames.add(name);\n
 if (!names.has(name)) {\n names.add(name);\n reversedResult.push(binding);\n }\n }\n return
reversedResult.reverse();\n }\n\n private _merge(\n directive: Directive, inputs: string[], outputs: string[], host:
{[key: string]: string},\n queries: {[key: string]: any}, guards: {[key: string]: any}, directiveType: Type):
Directive {\n const mergedInputs =\n this._dedupeBindings(directive.inputs ? directive.inputs.concat(inputs) :
inputs);\n const mergedOutputs =\n this._dedupeBindings(directive.outputs ? directive.outputs.concat(outputs)
: outputs);\n const mergedHost = directive.host ? [...directive.host, ...host] : host;\n const mergedQueries =
directive.queries ? {...directive.queries, ...queries} : queries;\n if (createComponent.isTypeOf(directive)) {\n
const comp = directive as Component;\n return createComponent({\n selector: comp.selector,\n inputs:
mergedInputs,\n outputs: mergedOutputs,\n host: mergedHost,\n exportAs: comp.exportAs,\n
moduleId: comp.moduleId,\n queries: mergedQueries,\n changeDetection: comp.changeDetection,\n
providers: comp.providers,\n viewProviders: comp.viewProviders,\n entryComponents:
comp.entryComponents,\n template: comp.template,\n templateUrl: comp.templateUrl,\n styles:
comp.styles,\n styleUrls: comp.styleUrls,\n encapsulation: comp.encapsulation,\n animations:
comp.animations,\n interpolation: comp.interpolation,\n preserveWhitespaces:
directive.preserveWhitespaces,\n });\n } else {\n return createDirective({\n selector: directive.selector,\n
inputs: mergedInputs,\n outputs: mergedOutputs,\n host: mergedHost,\n exportAs:
directive.exportAs,\n queries: mergedQueries,\n providers: directive.providers,\n guards\n });\n
}\n }\n\nfunction isDirectiveMetadata(type: any): type is Directive {\n return createDirective.isTypeOf(type) ||
createComponent.isTypeOf(type);\n }\n\nexport function findLast<T>(arr: T[], condition: (value: T) => boolean):
T|null {\n for (let i = arr.length - 1; i >= 0; i--) {\n if (condition(arr[i])) {\n return arr[i];\n }\n
}\n return
null;\n }\n\n"/**\n * @license\n * Copyright Google LLC All Rights Reserved.\n * Use of this source code is
governed by an MIT-style license that can be\n * found in the LICENSE file at https://angular.io/license\n

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*\n\nimport {ParseError, ParseSourceSpan} from './parse_util';\n\n/**\n * An i18n error.\n */\nexport class I18nError extends ParseError {\n constructor(span: ParseSourceSpan, msg: string) {\n super(span, msg);\n }\n}\n\n",/**\n * @license\n * Copyright Google LLC All Rights Reserved.\n * Use of this source code is governed by an MIT-style license that can be\n * found in the LICENSE file at https://angular.io/license\n */\n\nimport * as html from './ml_parser/ast';\nimport {InterpolationConfig} from './ml_parser/interpolation_config';\nimport {ParseTreeResult} from './ml_parser/parser';\nimport * as i18n from './i18n_ast';\nimport {createI18nMessageFactory, I18nMessageFactory} from './i18n_parser';\nimport {I18nError} from './parse_util';\nimport {TranslationBundle} from './translation_bundle';\n\nconst _I18N_ATTR = 'i18n';\nconst _I18N_ATTR_PREFIX = 'i18n-';\nconst _I18N_COMMENT_PREFIX_REGEXP = /^i18n:?:\nconst MEANING_SEPARATOR = '|';\nconst ID_SEPARATOR = '@@';\nlet i18nCommentsWarned = false;\n\n/**\n * Extract translatable messages from an html AST\n */\nexport function extractMessages(\n nodes: html.Node[],\n interpolationConfig: InterpolationConfig, implicitTags: string[],\n implicitAttrs: {[k: string]: string[]}):\n ExtractionResult {\n const visitor = new _Visitor(implicitTags, implicitAttrs);\n return visitor.extract(nodes, interpolationConfig);\n}\n\nexport function mergeTranslations(\n nodes: html.Node[], translations: TranslationBundle, interpolationConfig: InterpolationConfig,\n implicitTags: string[], implicitAttrs: {[k: string]: string[]}): ParseTreeResult {\n const visitor = new _Visitor(implicitTags, implicitAttrs);\n return visitor.merge(nodes, translations, interpolationConfig);\n}\n\nexport class ExtractionResult {\n constructor(public messages: i18n.Message[], public errors: I18nError[]) {}\n}\n\nenum _VisitorMode {\n Extract,\n Merge\n}\n\n/**\n * This Visitor is used:\n * 1. to extract all the translatable strings from an html AST (see `extract()`),\n * 2. to replace the translatable strings with the actual translations (see `merge()`)\n */\n\n * @internal\n */\nexport class _Visitor implements html.Visitor {\n // TODO(issue/24571): remove '!.\n private _depth!: number;\n\n // TODO(issue/24571): remove '!.\n private _inI18nNode!: boolean;\n\n // TODO(issue/24571): remove '!.\n private _inImplicitNode!: boolean;\n\n // <!--i18n-->...<!--/i18n-->\n // TODO(issue/24571): remove '!.\n private _inI18nBlock!: boolean;\n\n // TODO(issue/24571): remove '!.\n private _blockMeaningAndDesc!: string;\n\n // TODO(issue/24571): remove '!.\n private _blockChildren!: html.Node[];\n\n // TODO(issue/24571): remove '!.\n private _blockStartDepth!: number;\n\n // <icu message>\n // TODO(issue/24571): remove '!.\n private _inIcu!: boolean;\n\n // set to void 0 when not in a section\n private _msgCountAtSectionStart: number|undefined;\n\n // TODO(issue/24571): remove '!.\n private _errors!: I18nError[];\n\n // TODO(issue/24571): remove '!.\n private _mode!: _VisitorMode;\n\n // _VisitorMode.Extract only\n // TODO(issue/24571): remove '!.\n private _messages!: i18n.Message[];\n\n // _VisitorMode.Merge only\n // TODO(issue/24571): remove '!.\n private _translations!: TranslationBundle;\n\n // TODO(issue/24571): remove '!.\n private _createI18nMessage!: I18nMessageFactory;\n\n constructor(private _implicitTags: string[], private _implicitAttrs: {[k: string]: string[]}) {\n }\n\n /**\n * Extracts the messages from the tree\n */\n extract(nodes: html.Node[], interpolationConfig: InterpolationConfig): ExtractionResult {\n this._init(_VisitorMode.Extract, interpolationConfig);\n\n nodes.forEach(node => node.visit(this, null));\n\n if (this._inI18nBlock) {\n this._reportError(nodes[nodes.length - 1], 'Unclosed block');\n }\n\n return new ExtractionResult(this._messages, this._errors);\n }\n\n /**\n * Returns a tree where all translatable nodes are translated\n */\n merge(\n nodes: html.Node[], translations: TranslationBundle,\n interpolationConfig: InterpolationConfig): ParseTreeResult {\n this._init(_VisitorMode.Merge, interpolationConfig);\n\n this._translations = translations;\n\n // Construct a single fake root element\n const wrapper = new html.Element('wrapper', [], nodes, undefined!, undefined!, undefined!);\n\n const translatedNode = wrapper.visit(this, null);\n\n if (this._inI18nBlock) {\n this._reportError(nodes[nodes.length - 1], 'Unclosed block');\n }\n\n return new ParseTreeResult(translatedNode.children, this._errors);\n }\n\n visitExpansionCase(icuCase: html.ExpansionCase, context: any): any {\n // Parse cases for translatable html attributes\n const expression = html.visitAll(this, icuCase.expression, context);\n\n if (this._mode === _VisitorMode.Merge) {\n return new html.ExpansionCase(\n icuCase.value, expression, icuCase.sourceSpan, icuCase.valueSourceSpan,\n icuCase.expSourceSpan);\n }\n }\n\n visitExpansion(icu: html.Expansion, context: any): html.Expansion {\n this._maybeAddBlockChildren(icu);\n\n const wasInIcu =

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this._inIcu;\n\n if (!this._inIcu) {\n // nested ICU messages should not be extracted but top-level translated as a
whole\n if (this._isInTranslatableSection) {\n this._addMessage([icu]);\n }\n this._inIcu = true;\n
}\n\n const cases = html.visitAll(this, icu.cases, context);\n\n if (this._mode === _VisitorMode.Merge) {\n
icu = new html.Expansion(\n icu.switchValue, icu.type, cases, icu.sourceSpan, icu.switchValueSourceSpan);\n
}\n\n this._inIcu = wasInIcu;\n\n return icu;\n }\n\n visitComment(comment: html.Comment, context: any):
any {\n const isOpening = _isOpeningComment(comment);\n\n if (isOpening && this._isInTranslatableSection)
{\n this._reportError(comment, 'Could not start a block inside a translatable section');\n return;\n }\n\n
const isClosing = _isClosingComment(comment);\n\n if (isClosing && !this._inI18nBlock) {\n
this._reportError(comment, 'Trying to close an unopened block');\n return;\n }\n\n if (!this._inI18nNode &&
!this._inIcu) {\n if (!this._inI18nBlock) {\n if (isOpening) {\n // deprecated from v5 you should use
<ng-container i18n> instead of i18n comments\n if (!i18nCommentsWarned && <any>console &&
<any>console.warn) {\n i18nCommentsWarned = true;\n const details = comment.sourceSpan.details
?`, ${comment.sourceSpan.details}` : ";\n // TODO(ocombe): use a log service once there is a public one
available\n console.warn(`I18n comments are deprecated, use an <ng-container> element instead (${comment.sourceSpan.start}${details})`);\n }\n this._inI18nBlock = true;\n this._blockStartDepth
= this._depth;\n this._blockChildren = [];\n this._blockMeaningAndDesc =\n
comment.value!.replace(_I18n_COMMENT_PREFIX_REGEXP, "").trim();\n
this._openTranslatableSection(comment);\n }\n } else {\n if (isClosing) {\n if (this._depth ===
this._blockStartDepth) {\n this._closeTranslatableSection(comment, this._blockChildren);\n
this._inI18nBlock = false;\n const message = this._addMessage(this._blockChildren,
this._blockMeaningAndDesc!);\n // merge attributes in sections\n const nodes =
this._translateMessage(comment, message);\n return html.visitAll(this, nodes);\n } else {\n
this._reportError(comment, 'I18n blocks should not cross element boundaries');\n return;\n }\n }\n
}\n }\n }\n\n visitText(text: html.Text, context: any): html.Text {\n if (this._isInTranslatableSection) {\n
this._maybeAddBlockChildren(text);\n }\n return text;\n }\n\n visitElement(el: html.Element, context: any):
html.Element|null {\n this._maybeAddBlockChildren(el);\n this._depth++;\n const wasInI18nNode =
this._inI18nNode;\n const wasInImplicitNode = this._inImplicitNode;\n let childNodes: html.Node[] = [];\n let
translatedChildNodes: html.Node[] = undefined!;\n // Extract:\n // - top level nodes with the (implicit) `i18n`
attribute if not already in a section\n // - ICU messages\n const i18nAttr = _getI18nAttr(el);\n const i18nMeta
= i18nAttr ? i18nAttr.value : ";\n const isImplicit = this._implicitTags.some(tag => el.name === tag) &&
!this._inIcu &&\n !this._isInTranslatableSection;\n const isTopLevelImplicit = !wasInImplicitNode &&
isImplicit;\n this._inImplicitNode = wasInImplicitNode || isImplicit;\n\n if (!this._isInTranslatableSection &&
!this._inIcu) {\n if (i18nAttr || isTopLevelImplicit) {\n this._inI18nNode = true;\n const message =
this._addMessage(el.children, i18nMeta!);\n translatedChildNodes = this._translateMessage(el, message);\n
}\n\n if (this._mode === _VisitorMode.Extract) {\n const isTranslatable = i18nAttr || isTopLevelImplicit;\n
if (isTranslatable) this._openTranslatableSection(el);\n html.visitAll(this, el.children);\n if (isTranslatable)
this._closeTranslatableSection(el, el.children);\n }\n } else {\n if (i18nAttr || isTopLevelImplicit) {\n
this._reportError(\n el, 'Could not mark an element as translatable inside a translatable section');\n }\n\n
if (this._mode === _VisitorMode.Extract) {\n // Descend into child nodes for extraction\n html.visitAll(this,
el.children);\n }\n }\n\n if (this._mode === _VisitorMode.Merge) {\n const visitNodes =
translatedChildNodes || el.children;\n visitNodes.forEach(child => {\n const visited = child.visit(this,
context);\n if (visited && !this._isInTranslatableSection) {\n // Do not add the children from translatable
sections (= i18n blocks here)\n // They will be added later in this loop when the block closes (i.e. on `<!-- /i18n
-->`)\n childNodes = childNodes.concat(visited);\n }\n });\n }\n\n this._visitAttributesOf(el);\n\n
this._depth--;\n this._inI18nNode = wasInI18nNode;\n this._inImplicitNode = wasInImplicitNode;\n\n if
(this._mode === _VisitorMode.Merge) {\n const translatedAttrs = this._translateAttributes(el);\n return new
html.Element(\n el.name, translatedAttrs, childNodes, el.sourceSpan, el.startSourceSpan,\n
el.endSourceSpan);\n }\n return null;\n }\n\n visitAttribute(attribute: html.Attribute, context: any): any {\n

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throw new Error('unreachable code');\n }\n\n private _init(mode: _VisitorMode, interpolationConfig:
InterpolationConfig): void {\n this._mode = mode;\n this._inI18nBlock = false;\n this._inI18nNode = false;\n
this._depth = 0;\n this._inIcu = false;\n this._msgCountAtSectionStart = undefined;\n this._errors = [];\n
this._messages = [];\n this._inImplicitNode = false;\n this._createI18nMessage =
createI18nMessageFactory(interpolationConfig);\n }\n\n // looks for translatable attributes\n private
_visitAttributesOf(el: html.Element): void {\n const explicitAttrNameToValue: {[k: string]: string} = {};\n const
implicitAttrNames: string[] = this._implicitAttrs[el.name] || [];\n\n el.attrs.filter(attr =>
attr.name.startsWith(_I18N_ATTR_PREFIX))\n .forEach(\n attr =>
explicitAttrNameToValue[attr.name.slice(_I18N_ATTR_PREFIX.length)] =\n attr.value);\n\n el.attrs.forEach(attr => {\n if (attr.name in explicitAttrNameToValue) {\n this._addMessage([attr,
explicitAttrNameToValue[attr.name]]);\n } else if (implicitAttrNames.some(name => attr.name === name)) {\n
this._addMessage([attr]);\n }\n });\n }\n\n // add a translatable message\n private _addMessage(ast:
html.Node[], msgMeta?: string): i18n.Message|null {\n if (ast.length === 0 ||\n ast.length === 1 && ast[0]
instanceof html.Attribute && !(<html.Attribute>ast[0]).value) {\n // Do not create empty messages\n return
null;\n }\n\n const {meaning, description, id} = _parseMessageMeta(msgMeta);\n const message =
this._createI18nMessage(ast, meaning, description, id);\n this._messages.push(message);\n return message;\n
}\n\n // Translates the given message given the `TranslationBundle`\n // This is used for translating elements /
blocks - see `_translateAttributes` for attributes\n // no-op when called in extraction mode (returns [])\n private
_translateMessage(el: html.Node, message: i18n.Message): html.Node[] {\n if (message && this._mode ===
_VisitorMode.Merge) {\n const nodes = this._translations.get(message);\n\n if (nodes) {\n return nodes;\n
}\n\n this._reportError(\n el, `Translation unavailable for message
id=\"${this._translations.digest(message)}\"`);\n }\n\n return [];\n }\n\n // translate the attributes of an element
and remove i18n specific attributes\n private _translateAttributes(el: html.Element): html.Attribute[] {\n const
attributes = el.attrs;\n const i18nParsedMessageMeta: \n {[name: string]: {meaning: string, description: string,
id: string}} = {};\n\n attributes.forEach(attr => {\n if (attr.name.startsWith(_I18N_ATTR_PREFIX)) {\n
i18nParsedMessageMeta[attr.name.slice(_I18N_ATTR_PREFIX.length)] =\n
_parseMessageMeta(attr.value);\n }\n });\n\n const translatedAttributes: html.Attribute[] = [];\n\n
attributes.forEach((attr) => {\n if (attr.name === _I18N_ATTR || attr.name.startsWith(_I18N_ATTR_PREFIX))
{\n // strip i18n specific attributes\n return;\n }\n\n if (attr.value && attr.value !== "" &&
i18nParsedMessageMeta.hasOwnProperty(attr.name)) {\n const {meaning, description, id} =
i18nParsedMessageMeta[attr.name];\n const message: i18n.Message = this._createI18nMessage([attr], meaning,
description, id);\n const nodes = this._translations.get(message);\n if (nodes) {\n if (nodes.length ===
0) {\n translatedAttributes.push(new html.Attribute(attr.name, "", attr.sourceSpan));\n } else if (nodes[0]
instanceof html.Text) {\n const value = (nodes[0] as html.Text).value;\n translatedAttributes.push(new
html.Attribute(attr.name, value, attr.sourceSpan));\n } else {\n this._reportError(\n el,\n
`Unexpected translation for attribute \"${attr.name}\" (id=\"${\n id ||
this._translations.digest(message)}\"`);\n }\n } else {\n this._reportError(\n el,\n
`Translation unavailable for attribute \"${attr.name}\" (id=\"${\n id ||
this._translations.digest(message)}\"`);\n }\n } else {\n translatedAttributes.push(attr);\n }\n });\n\n
return translatedAttributes;\n }\n\n\n /**\n * Add the node as a child of the block when:\n * - we are in a
block,\n * - we are not inside a ICU message (those are handled separately),\n * - the node is a `direct child` of
the block\n */\n private _maybeAddBlockChildren(node: html.Node): void {\n if (this._inI18nBlock &&
!this._inIcu && this._depth === this._blockStartDepth) {\n this._blockChildren.push(node);\n }\n }\n\n /**\n * Marks the start of a section, see `_closeTranslatableSection`\n */\n private _openTranslatableSection(node:
html.Node): void {\n if (this._isInTranslatableSection) {\n this._reportError(node, 'Unexpected section start');\n
} else {\n this._msgCountAtSectionStart = this._messages.length;\n }\n }\n\n /**\n * A translatable section
could be:\n * - the content of translatable element,\n * - nodes between `<!-- i18n -->` and `<!-- /i18n -->`
comments\n */\n private get _isInTranslatableSection(): boolean {\n return this._msgCountAtSectionStart !==

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'seg-source';\nconst _ALT_TRANS_TAG = 'alt-trans';\nconst _TARGET_TAG = 'target';\nconst _UNIT_TAG =
'trans-unit';\nconst _CONTEXT_GROUP_TAG = 'context-group';\nconst _CONTEXT_TAG = 'context';\n\n//
http://docs.oasis-open.org/xliff/v1.2/os/xliff-core.html\n// http://docs.oasis-open.org/xliff/v1.2/xliff-profile-
html/xliff-profile-html-1.2.html\nexport class Xliff extends Serializer {\n write(messages: i18n.Message[], locale:
string|null): string {\n const visitor = new _WriteVisitor();\n const transUnits: xml.Node[] = [];\n\n messages.forEach(message => {\n let contextTags: xml.Node[] = [];\n message.sources.forEach((source:
i18n.MessageSpan) => {\n let contextGroupTag = new xml.Tag(_CONTEXT_GROUP_TAG, {purpose:
'location'});\n contextGroupTag.children.push(\n new xml.CR(10),\n new xml.Tag(\n _CONTEXT_TAG, {'context-type': 'sourcefile'}, [new xml.Text(source.filePath)],\n new xml.CR(10),\n new xml.Tag(_CONTEXT_TAG, {'context-type': 'linenumber'}, [new xml.Text(\n
 `${source.startLine}`)]),\n new xml.CR(8));\n contextTags.push(new xml.CR(8),
contextGroupTag);\n });\n\n const transUnit = new xml.Tag(_UNIT_TAG, {id: message.id, datatype:
'html'});\n transUnit.children.push(\n new xml.CR(8), new xml.Tag(_SOURCE_TAG, {},
visitor.serialize(message.nodes)),\n ...contextTags);\n\n if (message.description) {\n
transUnit.children.push(\n new xml.CR(8),\n new xml.Tag(\n 'note', {priority: '1', from:
'description'}, [new xml.Text(message.description)]);\n }\n\n if (message.meaning) {\n
transUnit.children.push(\n new xml.CR(8),\n new xml.Tag('note', {priority: '1', from: 'meaning'}, [new
xml.Text(message.meaning)]);\n }\n\n transUnit.children.push(new xml.CR(6));\n\n transUnits.push(new
xml.CR(6), transUnit);\n });\n\n const body = new xml.Tag('body', {}, [...transUnits, new xml.CR(4)];\n const
file = new xml.Tag(\n 'file', {\n 'source-language': locale || _DEFAULT_SOURCE_LANG,\n datatype: 'plaintext',\n original: 'ng2.template',\n },\n [new xml.CR(4), body, new xml.CR(2)];\n const xliff = new xml.Tag(\n 'xliff', {version: _VERSION, xmlns: _XMLNS}, [new xml.CR(2), file, new
xml.CR());\n\n return xml.serialize([\n new xml.Declaration({version: '1.0', encoding: 'UTF-8'}), new
xml.CR(), xliff, new xml.CR()\n]);\n }\n\n load(content: string, url: string):\n {locale: string,
i18nNodesByMsgId: {[msgId: string]: i18n.Node[]}} {\n // xliff to xml nodes\n const xliffParser = new
XliffParser();\n const {locale, msgIdToHtml, errors} = xliffParser.parse(content, url);\n\n // xml nodes to i18n
nodes\n const i18nNodesByMsgId: {[msgId: string]: i18n.Node[]} = {};\n const converter = new
XmlToI18n();\n\n Object.keys(msgIdToHtml).forEach(msgId => {\n const {i18nNodes, errors: e} =
converter.convert(msgIdToHtml[msgId], url);\n errors.push(...e);\n i18nNodesByMsgId[msgId] =
i18nNodes;\n });\n\n if (errors.length) {\n throw new Error(`xliff parse errors:\n${errors.join("\n")}`);\n
 }\n\n return {locale: locale!, i18nNodesByMsgId};\n }\n\n digest(message: i18n.Message): string {\n return
digest(message);\n }\n }\n\n class _WriteVisitor implements i18n.Visitor {\n visitText(text: i18n.Text, context?:
any): xml.Node[] {\n return [new xml.Text(text.value)];\n }\n\n visitContainer(container: i18n.Container,
context?: any): xml.Node[] {\n const nodes: xml.Node[] = [];\n container.children.forEach((node: i18n.Node) =>
nodes.push(...node.visit(this)));\n return nodes;\n }\n\n visitIcu(icu: i18n.Icu, context?: any): xml.Node[] {\n
const nodes = [new xml.Text(`${icu.expressionPlaceholder}`, `${icu.type}`, `)];\n\n Object.keys(icu.cases).forEach((c: string) => {\n nodes.push(new xml.Text(`${c} {`, ...icu.cases[c].visit(this),
new xml.Text(`}`));\n });\n\n nodes.push(new xml.Text(``));\n return nodes;\n }\n\n visitTagPlaceholder(ph: i18n.TagPlaceholder, context?: any): xml.Node[] {\n const ctype =
getCTypeForTag(ph.tag);\n\n if (ph.isVoid) {\n // void tags have no children nor closing tags\n return [new
xml.Tag(\n _PLACEHOLDER_TAG, {id: ph.startName, ctype, 'equiv-text': `<${ph.tag}/>`});\n }\n\n const startTagPh =\n new xml.Tag(_PLACEHOLDER_TAG, {id: ph.startName, ctype, 'equiv-text':
`<${ph.tag}>`);\n const closeTagPh =\n new xml.Tag(_PLACEHOLDER_TAG, {id: ph.closeName, ctype,
'equiv-text': `</${ph.tag}>`});\n return [startTagPh, ...this.serialize(ph.children), closeTagPh];\n }\n\n visitPlaceholder(ph: i18n.Placeholder, context?: any): xml.Node[] {\n return [new
xml.Tag(_PLACEHOLDER_TAG, {id: ph.name, 'equiv-text': `${ph.value}}`});\n }\n\n visitIcuPlaceholder(ph: i18n.IcuPlaceholder, context?: any): xml.Node[] {\n const equivText =
`${ph.value.expression}, ${ph.value.type}, ${\n Object.keys(ph.value.cases).map((value: string) => value + '

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{...}).join(' ')}';\n return [new xml.Tag(_PLACEHOLDER_TAG, {id: ph.name, 'equiv-text': equivText});\n
}\n\n serialize(nodes: i18n.Node[]): xml.Node[] {\n return [].concat(...nodes.map(node => node.visit(this));\n
}\n}\n\n// TODO(vicb): add error management (structure)\n// Extract messages as xml nodes from the xliff
file\n\nclass XliffParser implements ml.Visitor {\n // TODO(issue/24571): remove '!.\n private _unitMIString!:
string|null;\n // TODO(issue/24571): remove '!.\n private _errors!: I18nError[];\n // TODO(issue/24571): remove
'!\n private _msgIdToHtml!: {[msgId: string]: string};\n private _locale: string|null = null;\n\n parse(xliff: string,
url: string) {\n this._unitMIString = null;\n this._msgIdToHtml = {};\n\n const xml = new
XmlParser().parse(xliff, url);\n\n this._errors = xml.errors;\n ml.visitAll(this, xml.rootNodes, null);\n\n return
{\n msgIdToHtml: this._msgIdToHtml,\n errors: this._errors,\n locale: this._locale,\n };}\n\n visitElement(element: ml.Element, context: any): any {\n switch (element.name) {\n case _UNIT_TAG:\n this._unitMIString = null!;\n const idAttr = element.attrs.find((attr) => attr.name === 'id');\n if (!idAttr) {\n this._addError(element, `<${_UNIT_TAG}> misses the "id" attribute`);\n } else {\n const id =
idAttr.value;\n if (this._msgIdToHtml.hasOwnProperty(id)) {\n this._addError(element, `Duplicated
translations for msg ${id}`);\n } else {\n ml.visitAll(this, element.children, null);\n if (typeof
this._unitMIString === 'string') {\n this._msgIdToHtml[id] = this._unitMIString;\n } else {\n this._addError(element, `Message ${id} misses a translation`);\n }\n }\n break;\n\n //
ignore those tags\n case _SOURCE_TAG:\n case _SEGMENT_SOURCE_TAG:\n case
_ALT_TRANS_TAG:\n break;\n\n case _TARGET_TAG:\n const innerTextStart =
element.startSourceSpan.end.offset;\n const innerTextEnd = element.endSourceSpan!.start.offset;\n const
content = element.startSourceSpan.start.file.content;\n const innerText = content.slice(innerTextStart,
innerTextEnd);\n this._unitMIString = innerText;\n break;\n\n case _FILE_TAG:\n const localeAttr
= element.attrs.find((attr) => attr.name === 'target-language');\n if (localeAttr) {\n this._locale =
localeAttr.value;\n }\n ml.visitAll(this, element.children, null);\n break;\n\n default:\n //
TODO(vicb): assert file structure, xliff version\n // For now only recurse on unhandled nodes\n ml.visitAll(this, element.children, null);\n }\n }\n\n visitAttribute(attribute: ml.Attribute, context: any): any
{\n }\n\n visitText(text: ml.Text, context: any): any {\n }\n\n visitComment(comment: ml.Comment, context: any): any
{\n }\n\n visitExpansion(expansion: ml.Expansion, context: any): any {\n }\n\n visitExpansionCase(expansionCase:
ml.ExpansionCase, context: any): any {\n }\n\n private _addError(node: ml.Node, message: string): void {\n this._errors.push(new I18nError(node.sourceSpan, message));\n }\n\n // Convert ml nodes (xliff syntax) to i18n
nodes\n \nclass XmlToI18n implements ml.Visitor {\n // TODO(issue/24571): remove '!.\n private _errors!:
I18nError[];\n\n convert(message: string, url: string) {\n const xmlIcu = new XmlParser().parse(message, url,
{tokenizeExpansionForms: true});\n this._errors = xmlIcu.errors;\n\n const i18nNodes = this._errors.length > 0 ||
xmlIcu.rootNodes.length === 0 ?\n [] :\n [].concat(...ml.visitAll(this, xmlIcu.rootNodes));\n\n return {\n i18nNodes: i18nNodes,\n errors: this._errors,\n };\n }\n\n visitText(text: ml.Text, context: any) {\n return
new i18n.Text(text.value, text.sourceSpan);\n }\n\n visitElement(el: ml.Element, context: any):\n i18n.Placeholder|ml.Node[]|null {\n if (el.name === _PLACEHOLDER_TAG) {\n const nameAttr =
el.attrs.find((attr) => attr.name === 'id');\n if (nameAttr) {\n return new i18n.Placeholder("", nameAttr.value,
el.sourceSpan);\n }\n\n this._addError(el, `<${_PLACEHOLDER_TAG}> misses the "id" attribute`);\n return null;\n }\n\n if (el.name === _MARKER_TAG) {\n return [].concat(...ml.visitAll(this, el.children));\n }\n\n this._addError(el, `Unexpected tag`);\n return null;\n }\n\n visitExpansion(icu: ml.Expansion, context:
any) {\n const caseMap: {[value: string]: i18n.Node} = {};\n\n ml.visitAll(this, icu.cases).forEach((c: any) =>
{\n caseMap[c.value] = new i18n.Container(c.nodes, icu.sourceSpan);\n });\n\n return new
i18n.Icu(icu.switchValue, icu.type, caseMap, icu.sourceSpan);\n }\n\n visitExpansionCase(icuCase:
ml.ExpansionCase, context: any): any {\n return {\n value: icuCase.value,\n nodes: ml.visitAll(this,
icuCase.expression),\n };\n }\n\n visitComment(comment: ml.Comment, context: any) {\n }\n\n visitAttribute(attribute: ml.Attribute, context: any) {\n }\n\n private _addError(node: ml.Node, message: string): void
{\n this._errors.push(new I18nError(node.sourceSpan, message));\n }\n }\n\n function getCtypeForTag(tag: string):
string {\n switch (tag.toLowerCase()) {\n case 'br':\n return 'lb';\n case 'img':\n return 'image';\n }\n }\n

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default:\n return `x-${tag}`;\n }\n}\n"/**\n * @license\n * Copyright Google LLC All Rights Reserved.\n *\n * Use of this source code is governed by an MIT-style license that can be\n * found in the LICENSE file at\n https://angular.io/license\n */\n\nimport * as ml from './ml_parser/ast';\nimport {XmlParser} from\n './ml_parser/xml_parser';\nimport {decimalDigest} from './digest';\nimport * as i18n from './i18n_ast';\nimport\n {I18nError} from './parse_util';\nimport {Serializer} from './serializer';\nimport * as xml from\n './xml_helper';\n\nconst _VERSION = '2.0';\nconst _XMLNS = 'urn:oasis:names:tc:xliff:document:2.0';\n//\n TODO(vicb): make this a param (s/_/_/)\nconst _DEFAULT_SOURCE_LANG = 'en';\nconst\n _PLACEHOLDER_TAG = 'ph';\nconst _PLACEHOLDER_SPANNING_TAG = 'pc';\nconst _MARKER_TAG =\n 'mrk';\nconst _XLIFF_TAG = 'xliff';\nconst _SOURCE_TAG = 'source';\nconst _TARGET_TAG =\n 'target';\nconst _UNIT_TAG = 'unit';\n\n// http://docs.oasis-open.org/xliff/xliff-core/v2.0/os/xliff-core-v2.0-\nos.html\nexport class Xliff2 extends Serializer {\n write(messages: i18n.Message[], locale: string|null): string {\n const visitor = new _WriteVisitor();\n const units: xml.Node[] = [];\n\n messages.forEach(message => {\n const unit = new xml.Tag(_UNIT_TAG, {id: message.id});\n const notes = new xml.Tag('notes');\n if\n (message.description || message.meaning) {\n if (message.description) {\n notes.children.push(\n new xml.CR(8),\n new xml.Tag('note', {category: 'description'}, [new xml.Text(message.description)]);\n }\n if (message.meaning) {\n notes.children.push(\n new xml.CR(8),\n new\n xml.Tag('note', {category: 'meaning'}, [new xml.Text(message.meaning)]);\n }\n }\n\n message.sources.forEach((source: i18n.MessageSpan) => {\n notes.children.push(new xml.CR(8), new\n xml.Tag('note', {category: 'location'}, [\n new xml.Text(`${source.filePath}:${source.startLine}${\n source.endLine !== source.startLine ? ',' + source.endLine : ''}`)\n]));\n });\n\n notes.children.push(new\n xml.CR(6));\n unit.children.push(new xml.CR(6), notes);\n const segment = new xml.Tag('segment');\n \n segment.children.push(\n new xml.CR(8), new xml.Tag(_SOURCE_TAG, {\n visitor.serialize(message.nodes)),\n new xml.CR(6));\n unit.children.push(new xml.CR(6), segment, new\n xml.CR(4));\n units.push(new xml.CR(4), unit);\n });\n\n const file =\n new xml.Tag('file', {'original':\n 'ng.template', id: 'ngi18n'}, [...units, new xml.CR(2)]);\n\n const xliff = new xml.Tag(\n _XLIFF_TAG,\n {version: _VERSION, xmlns: _XMLNS, srcLang: locale || _DEFAULT_SOURCE_LANG},\n [new\n xml.CR(2), file, new xml.CR()]);\n\n return xml.serialize([\n new xml.Declaration({version: '1.0', encoding:\n 'UTF-8'}),\n new xml.CR(),\n xliff,\n new xml.CR()\n]);\n }\n\n load(content: string, url: string):\n {locale: string,\n i18nNodesByMsgId: {[msgId: string]: i18n.Node[]}} {\n // xliff to xml nodes\n const xliff2Parser = new\n Xliff2Parser();\n const {locale, msgIdToHtml, errors} = xliff2Parser.parse(content, url);\n // xml nodes to i18n\n nodes\n const i18nNodesByMsgId: {[msgId: string]: i18n.Node[]} = {};\n const converter = new\n XmlToI18n();\n\n Object.keys(msgIdToHtml).forEach(msgId => {\n const {i18nNodes, errors: e} =\n converter.convert(msgIdToHtml[msgId], url);\n errors.push(...e);\n i18nNodesByMsgId[msgId] =\n i18nNodes;\n });\n\n if (errors.length) {\n throw new Error(`xliff2 parse errors:\n \\n${errors.join('\\n')}`);\n }\n\n return {locale: locale!, i18nNodesByMsgId};\n }\n\n digest(message: i18n.Message): string {\n return\n decimalDigest(message);\n }\n}\n\n\nclass _WriteVisitor implements i18n.Visitor {\n // TODO(issue/24571):\n remove '!'.\n private _nextPlaceholderId!: number;\n\n visitText(text: i18n.Text, context?: any): xml.Node[] {\n return [new xml.Text(text.value)];\n }\n\n visitContainer(container: i18n.Container, context?: any): xml.Node[] {\n const nodes: xml.Node[] = [];\n container.children.forEach((node: i18n.Node) =>\n nodes.push(...node.visit(this));\n return nodes;\n }\n\n visitIcu(icu: i18n.Icu, context?: any): xml.Node[] {\n const nodes = [new xml.Text(`${icu.expressionPlaceholder}, ${icu.type},`);\n Object.keys(icu.cases).forEach((c: string) => {\n nodes.push(new xml.Text(`${c} {`, ...icu.cases[c].visit(this),\n new xml.Text(`}`));\n });\n\n nodes.push(new xml.Text(``));\n return nodes;\n }\n\n visitTagPlaceholder(ph: i18n.TagPlaceholder, context?: any): xml.Node[] {\n const type =\n getTypeForTag(ph.tag);\n if (ph.isVoid) {\n const tagPh = new xml.Tag(_PLACEHOLDER_TAG, {\n id: (this._nextPlaceholderId++).toString(),\n equiv: ph.startName,\n type: type,\n disp:\n `<${ph.tag}/>`,\n });\n return [tagPh];\n }\n\n const tagPc = new\n xml.Tag(_PLACEHOLDER_SPANNING_TAG, {\n id: (this._nextPlaceholderId++).toString(),\n equivStart:

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ph.startName,\n equivEnd: ph.closeName,\n type: type,\n dispStart: `<${ph.tag}>`,\n dispEnd:
`</${ph.tag}>`,\n });\n const nodes: xml.Node[] = [].concat(...ph.children.map(node => node.visit(this)));
\n if
(nodes.length) {\n nodes.forEach((node: xml.Node) => tagPc.children.push(node));\n } else {\n
tagPc.children.push(new xml.Text("));\n }\n return [tagPc];\n }\n visitPlaceholder(ph: i18n.Placeholder,
context?: any): xml.Node[] {\n const idStr = (this._nextPlaceholderId++).toString();\n return [new
xml.Tag(_PLACEHOLDER_TAG, {\n id: idStr,\n equiv: ph.name,\n disp: `{{${ph.value}}`,\n });\n]\n visitIcuPlaceholder(ph: i18n.IcuPlaceholder, context?: any): xml.Node[] {\n const cases =
Object.keys(ph.value.cases).map((value: string) => value + ' {...}').join(' ');
\n const idStr =
(this._nextPlaceholderId++).toString();\n return [new xml.Tag(\n _PLACEHOLDER_TAG,\n {id: idStr,
equiv: ph.name, disp: `${ph.value.expression}, ${ph.value.type}, ${cases}`});\n }\n }\n serialize(nodes:
i18n.Node[]): xml.Node[] {\n this._nextPlaceholderId = 0;\n return [].concat(...nodes.map(node =>
node.visit(this));\n }\n}\n\n// Extract messages as xml nodes from the xliiff file\n\nclass Xliff2Parser implements
ml.Visitor {\n // TODO(issue/24571): remove '!.\n private _unitMlString!: string|null;\n // TODO(issue/24571):
remove '!.\n private _errors!: I18nError[];\n // TODO(issue/24571): remove '!.\n private _msgIdToHtml!:
{[msgId: string]: string};\n private _locale: string|null = null;\n\n parse(xliff: string, url: string) {\n
this._unitMlString = null;\n this._msgIdToHtml = {};\n\n const xml = new XmlParser().parse(xliff, url);\n\n
this._errors = xml.errors;\n ml.visitAll(this, xml.rootNodes, null);\n\n return {\n msgIdToHtml:
this._msgIdToHtml,\n errors: this._errors,\n locale: this._locale,\n };\n }\n\n visitElement(element:
ml.Element, context: any): any {\n switch (element.name) {\n case _UNIT_TAG:\n this._unitMlString =
null;\n const idAttr = element.attrs.find((attr) => attr.name === 'id');\n if (!idAttr) {\n
this._addError(element, `<${_UNIT_TAG}> misses the \"id\" attribute`);\n } else {\n const id =
idAttr.value;\n if (this._msgIdToHtml.hasOwnProperty(id)) {\n this._addError(element, `Duplicated
translations for msg ${id}`);\n } else {\n ml.visitAll(this, element.children, null);\n if (typeof
this._unitMlString === 'string') {\n this._msgIdToHtml[id] = this._unitMlString;\n } else {\n
this._addError(element, `Message ${id} misses a translation`);\n }\n }\n break;\n\n case
_SOURCE_TAG:\n // ignore source message\n break;\n\n case _TARGET_TAG:\n const
innerTextStart = element.startSourceSpan.end.offset;\n const innerTextEnd =
element.endSourceSpan!.start.offset;\n const content = element.startSourceSpan.start.file.content;\n const
innerText = content.slice(innerTextStart, innerTextEnd);\n this._unitMlString = innerText;\n break;\n\n case _XLIFF_TAG:\n const localeAttr = element.attrs.find((attr) => attr.name === 'trgLang');\n if
(localeAttr) {\n this._locale = localeAttr.value;\n }\n\n const versionAttr = element.attrs.find((attr) =>
attr.name === 'version');\n if (versionAttr) {\n const version = versionAttr.value;\n if (version !==
'2.0') {\n this._addError(\n element,\n `The XLIFF file version ${version} is not
compatible with XLIFF 2.0 serializer`);\n } else {\n ml.visitAll(this, element.children, null);\n }\n }\n break;\n\n default:\n ml.visitAll(this, element.children, null);\n }\n }\n\n visitAttribute(attribute:
ml.Attribute, context: any): any {\n }\n\n visitText(text: ml.Text, context: any): any {\n }\n\n visitComment(comment:
ml.Comment, context: any): any {\n }\n\n visitExpansion(expansion: ml.Expansion, context: any): any {\n }\n\n visitExpansionCase(expansionCase: ml.ExpansionCase, context: any): any {\n }\n\n private _addError(node:
ml.Node, message: string): void {\n this._errors.push(new I18nError(node.sourceSpan, message));\n }\n }\n }\n\n //
Convert ml nodes (xliff syntax) to i18n nodes\n \nclass XmlToI18n implements ml.Visitor {\n // TODO(issue/24571):
remove '!.\n private _errors!: I18nError[];\n\n convert(message: string, url: string) {\n const xmlIcu = new
XmlParser().parse(message, url, {tokenizeExpansionForms: true});\n this._errors = xmlIcu.errors;\n\n const
i18nNodes = this._errors.length > 0 || xmlIcu.rootNodes.length === 0 ?\n [] :\n [].concat(...ml.visitAll(this,
xmlIcu.rootNodes));\n\n return {\n i18nNodes,\n errors: this._errors,\n };\n }\n\n visitText(text: ml.Text,
context: any) {\n return new i18n.Text(text.value, text.sourceSpan);\n }\n\n visitElement(el: ml.Element, context:
any): i18n.Node[]|null {\n switch (el.name) {\n case _PLACEHOLDER_TAG:\n const nameAttr =
el.attrs.find((attr) => attr.name === 'equiv');\n if (nameAttr) {\n return [new i18n.Placeholder(",
nameAttr.value, el.sourceSpan)];\n }\n\n this._addError(el, `<${_PLACEHOLDER_TAG}> misses the

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\"equiv\" attribute`);\n break;\n case _PLACEHOLDER_SPANNING_TAG:\n const startAttr =
el.attrs.find((attr) => attr.name === 'equivStart');\n const endAttr = el.attrs.find((attr) => attr.name ===
'equivEnd');\n if (!startAttr) {\n this._addError(el, `<${_PLACEHOLDER_TAG}> misses the
\"equivStart\" attribute`);\n } else if (!endAttr) {\n this._addError(el, `<${_PLACEHOLDER_TAG}>
misses the \"equivEnd\" attribute`);\n } else {\n const startId = startAttr.value;\n const endId =
endAttr.value;\n const nodes: i18n.Node[] = [];\n return nodes.concat(\n new
i18n.Placeholder(\"\", startId, el.sourceSpan),\n ...el.children.map(node => node.visit(this, null)),\n new i18n.Placeholder(\"\", endId, el.sourceSpan));\n }\n break;\n case _MARKER_TAG:\n return
[].concat(...ml.visitAll(this, el.children));\n default:\n this._addError(el, `Unexpected tag`);\n }\n return
null;\n }\n visitExpansion(icu: ml.Expansion, context: any) {\n const caseMap: {[value: string]: i18n.Node} =
{};\n ml.visitAll(this, icu.cases).forEach((c: any) => {\n caseMap[c.value] = new i18n.Container(c.nodes,
icu.sourceSpan);\n });\n return new i18n.Icu(icu.switchValue, icu.type, caseMap, icu.sourceSpan);\n }\n visitExpansionCase(icuCase: ml.ExpansionCase, context: any): any {\n return {\n value: icuCase.value,\n nodes: [].concat(...ml.visitAll(this, icuCase.expression)),\n };\n }\n visitComment(comment: ml.Comment,
context: any) {\n }\n visitAttribute(attribute: ml.Attribute, context: any) {\n }\n private _addError(node: ml.Node,
message: string): void {\n this._errors.push(new I18nError(node.sourceSpan, message));\n }\n function
getTypeForTag(tag: string): string {\n switch (tag.toLowerCase()) {\n case 'br':\n case 'b':\n case 'i':\n case
'u':\n return 'fmt';\n case 'img':\n return 'image';\n case 'a':\n return 'link';\n default:\n return
'other';\n }\n }\n \"/*\n * @license\n * Copyright Google LLC All Rights Reserved.\n * Use of this source code
is governed by an MIT-style license that can be\n * found in the LICENSE file at https://angular.io/license\n
*/\nimport * as ml from '../ml_parser/ast';\nimport {XmlParser} from '../ml_parser/xml_parser';\nimport * as
i18n from './i18n_ast';\nimport {I18nError} from './parse_util';\nimport {PlaceholderMapper, Serializer,
SimplePlaceholderMapper} from './serializer';\nimport {digest, toPublicName} from './xmb';\nconst
_TRANSLATIONS_TAG = 'translationbundle';\nconst _TRANSLATION_TAG = 'translation';\nconst
_PLACEHOLDER_TAG = 'ph';\nexport class Xtb extends Serializer {\n write(messages: i18n.Message[], locale:
string|null): string {\n throw new Error('Unsupported');\n }\n load(content: string, url: string):\n {locale:
string, i18nNodesByMsgId: {[msgId: string]: i18n.Node[]}} {\n // xtb to xml nodes\n const xtbParser = new
XtbParser();\n const {locale, msgIdToHtml, errors} = xtbParser.parse(content, url);\n // xml nodes to i18n
nodes\n const i18nNodesByMsgId: {[msgId: string]: i18n.Node[]} = {};\n const converter = new
XmlToI18n();\n // Because we should be able to load xtb files that rely on features not supported by angular,\n
// we need to delay the conversion of html to i18n nodes so that non angular messages are not\n // converted\n
Object.keys(msgIdToHtml).forEach(msgId => {\n const valueFn = function() {\n const {i18nNodes, errors}
= converter.convert(msgIdToHtml[msgId], url);\n if (errors.length) {\n throw new Error(`xtb parse
errors:\n\n${errors.join('\n')}`);\n }\n return i18nNodes;\n };\n createLazyProperty(i18nNodesByMsgId, msgId, valueFn);\n });\n if (errors.length) {\n throw new
Error(`xtb parse errors:\n\n${errors.join('\n')}`);\n }\n return {locale: locale!, i18nNodesByMsgId};\n }\n digest(message: i18n.Message): string {\n return digest(message);\n }\n createNameMapper(message:
i18n.Message): PlaceholderMapper {\n return new SimplePlaceholderMapper(message, toPublicName);\n }\n function createLazyProperty(messages: any, id: string, valueFn: () => any) {\n
Object.defineProperty(messages, id, {\n configurable: true,\n enumerable: true,\n get: function() {\n const
value = valueFn();\n Object.defineProperty(messages, id, {enumerable: true, value});\n return value;\n },\n set: _ => {\n throw new Error('Could not overwrite an XTB translation');\n },\n });\n}\n\n// Extract messages
as xml nodes from the xtb file\nclass XtbParser implements ml.Visitor {\n // TODO(issue/24571): remove '!.\n private _bundleDepth!: number;\n // TODO(issue/24571): remove '!.\n private _errors!: I18nError[];\n //
TODO(issue/24571): remove '!.\n private _msgIdToHtml!: {[msgId: string]: string};\n private _locale: string|null
= null;\n parse(xtb: string, url: string) {\n this._bundleDepth = 0;\n this._msgIdToHtml = {};\n // We can
not parse the ICU messages at this point as some messages might not originate\n // from Angular that could not be
lex'd.\n const xml = new XmlParser().parse(xtb, url);\n this._errors = xml.errors;\n ml.visitAll(this,

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xml.rootNodes);\n\n return {\n msgIdToHtml: this._msgIdToHtml,\n errors: this._errors,\n locale:
this._locale,\n };}\n\n visitElement(element: ml.Element, context: any): any {\n switch (element.name) {\n
case _TRANSLATIONS_TAG:\n this._bundleDepth++;\n if (this._bundleDepth > 1) {\n
this._addError(element, `<${_TRANSLATIONS_TAG}> elements can not be nested`);\n }\n const
langAttr = element.attrs.find((attr) => attr.name === 'lang');\n if (langAttr) {\n this._locale =
langAttr.value;\n }\n ml.visitAll(this, element.children, null);\n this._bundleDepth--;\n break;\n\n
case _TRANSLATION_TAG:\n const idAttr = element.attrs.find((attr) => attr.name === 'id');\n if
(!idAttr) {\n this._addError(element, `<${_TRANSLATION_TAG}> misses the \"id\" attribute`);\n } else
{\n const id = idAttr.value;\n if (this._msgIdToHtml.hasOwnProperty(id)) {\n
this._addError(element, `Duplicated translations for msg ${id}`);\n } else {\n const innerTextStart =
element.startSourceSpan.end.offset;\n const innerTextEnd = element.endSourceSpan!.start.offset;\n
const content = element.startSourceSpan.start.file.content;\n const innerText = content.slice(innerTextStart!,
innerTextEnd!);\n this._msgIdToHtml[id] = innerText;\n }\n }\n break;\n\n default:\n
this._addError(element, 'Unexpected tag');\n }\n}\n\n visitAttribute(attribute: ml.Attribute, context: any): any
{\n}\n\n visitText(text: ml.Text, context: any): any {\n}\n\n visitComment(comment: ml.Comment, context: any): any
{\n}\n\n visitExpansion(expansion: ml.Expansion, context: any): any {\n}\n\n visitExpansionCase(expansionCase:
ml.ExpansionCase, context: any): any {\n}\n\n private _addError(node: ml.Node, message: string): void {\n
this._errors.push(new I18nError(node.sourceSpan, message));\n }\n}\n\n// Convert ml nodes (xtb syntax) to i18n
nodes\nclass XmlToI18n implements ml.Visitor {\n // TODO(issue/24571): remove '!.\n private _errors!:
I18nError[];\n\n convert(message: string, url: string) {\n const xmlIcu = new XmlParser().parse(message, url,
{tokenizeExpansionForms: true});\n this._errors = xmlIcu.errors;\n const i18nNodes = this._errors.length > 0 ||
xmlIcu.rootNodes.length == 0 ?\n []:\n ml.visitAll(this, xmlIcu.rootNodes);\n\n return {\n
i18nNodes,\n errors: this._errors,\n };}\n\n visitText(text: ml.Text, context: any) {\n return new
i18n.Text(text.value, text.sourceSpan);\n }\n\n visitExpansion(icu: ml.Expansion, context: any) {\n const
caseMap: {[value: string]: i18n.Node} = {};\n\n ml.visitAll(this, icu.cases).forEach(c => {\n caseMap[c.value]
= new i18n.Container(c.nodes, icu.sourceSpan);\n });\n\n return new i18n.Icu(icu.switchValue, icu.type,
caseMap, icu.sourceSpan);\n }\n\n visitExpansionCase(icuCase: ml.ExpansionCase, context: any): any {\n return
{\n value: icuCase.value,\n nodes: ml.visitAll(this, icuCase.expression),\n };\n }\n\n visitElement(el:
ml.Element, context: any): i18n.Placeholder|null {\n if (el.name === _PLACEHOLDER_TAG) {\n const
nameAttr = el.attrs.find((attr) => attr.name === 'name');\n if (nameAttr) {\n return new i18n.Placeholder(",
nameAttr.value, el.sourceSpan);\n }\n\n this._addError(el, `<${_PLACEHOLDER_TAG}> misses the
\"name\" attribute`);\n } else {\n this._addError(el, 'Unexpected tag`);\n }\n return null;\n }\n\n
visitComment(comment: ml.Comment, context: any) {\n}\n\n visitAttribute(attribute: ml.Attribute, context: any)
{\n}\n\n private _addError(node: ml.Node, message: string): void {\n this._errors.push(new
I18nError(node.sourceSpan, message));\n }\n}\n\n"/>**\n * @license\n * Copyright Google LLC All Rights
Reserved.\n * Use of this source code is governed by an MIT-style license that can be\n * found in the
LICENSE file at https://angular.io/license\n */\n\nimport {MissingTranslationStrategy} from './core';\nimport * as
html from './ml_parser/ast';\nimport {HtmlParser} from './ml_parser/html_parser';\nimport {Console} from
 './util';\nimport * as i18n from './i18n_ast';\nimport {I18nError} from './parse_util';\nimport {PlaceholderMapper,
Serializer} from './serializers/serializer';\nimport {escapeXml} from './serializers/xml_helper';\n\n/**\n * A
container for translated messages\n */\nexport class TranslationBundle {\n private _i18nToHtml:
I18nToHtmlVisitor;\n\n constructor(\n private _i18nNodesByMsgId: {[msgId: string]: i18n.Node[]} = {},\n
 locale: string|null,\n public digest: (m: i18n.Message) => string,\n public mapperFactory?: (m: i18n.Message)
=> PlaceholderMapper,\n missingTranslationStrategy: MissingTranslationStrategy =
MissingTranslationStrategy.Warning,\n console?: Console) {\n this._i18nToHtml = new I18nToHtmlVisitor(\n
 _i18nNodesByMsgId, locale, digest, mapperFactory!, missingTranslationStrategy, console);\n }\n\n // Creates a
`TranslationBundle` by parsing the given `content` with the `serializer`.\n static load(\n content: string, url:
string, serializer: Serializer,\n missingTranslationStrategy: MissingTranslationStrategy,\n console?: Console):

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placeholder names to internal names\n nodes = this._i18nNodesByMsgId[id];\n this._mapper = (name: string)
=> mapper ? mapper.toInternalName(name)! : name;\n } else {\n // When no translation has been found\n //
- report an error / a warning / nothing,\n // - use the nodes from the original message\n // - placeholders are
already internal and need no mapper\n if (this._missingTranslationStrategy ===
MissingTranslationStrategy.Error) {\n const ctx = this._locale ? ` for locale `\"${this._locale}\"` : \"\";\n
this._addError(srcMsg.nodes[0], `Missing translation for message `\"${id}\"\"${ctx}`);\n } else if (\n
this._console &&\n this._missingTranslationStrategy === MissingTranslationStrategy.Warning) {\n const
ctx = this._locale ? ` for locale `\"${this._locale}\"` : \"\";\n this._console.warn(`Missing translation for message
`\"${id}\"\"${ctx}`);\n }\n nodes = srcMsg.nodes;\n this._mapper = (name: string) => name;\n }\n const
text = nodes.map(node => node.visit(this)).join(\"\");\n const context = this._contextStack.pop();\n this._srcMsg =
context.msg;\n this._mapper = context.mapper;\n return text;\n }\n\n private _addError(el: i18n.Node, msg:
string) {\n this._errors.push(new I18nError(el.sourceSpan, msg));\n }\n}\n\n\"/*\n * @license\n * Copyright
Google LLC All Rights Reserved.\n * Use of this source code is governed by an MIT-style license that can be\n
* found in the LICENSE file at https://angular.io/license\n */\n\nimport {MissingTranslationStrategy} from
'./core';\nimport {HtmlParser} from './ml_parser/html_parser';\nimport
{DEFAULT_INTERPOLATION_CONFIG} from './ml_parser/interpolation_config';\nimport {TokenizeOptions}
from './ml_parser/lexer';\nimport {ParseTreeResult} from './ml_parser/parser';\nimport {Console} from
'./util';\nimport {digest} from './digest';\nimport {mergeTranslations} from './extractor_merger';\nimport
{Serializer} from './serializers/serializer';\nimport {Xliff} from './serializers/xliff';\nimport {Xliff2} from
'./serializers/xliff2';\nimport {Xmb} from './serializers/xmb';\nimport {Xtb} from './serializers/xtb';\nimport
{TranslationBundle} from './translation_bundle';\n\nexport class I18NHtmlParser implements HtmlParser {\n //
@override\n getTagDefinition: any;\n\n private _translationBundle: TranslationBundle;\n\n constructor(\n
private _htmlParser: HtmlParser, translations?: string, translationsFormat?: string,\n missingTranslation:
MissingTranslationStrategy = MissingTranslationStrategy.Warning,\n console?: Console) {\n if (translations)
{\n const serializer = createSerializer(translationsFormat);\n this._translationBundle =\n
TranslationBundle.load(translations, 'i18n', serializer, missingTranslation, console);\n } else {\n
this._translationBundle =\n new TranslationBundle({}, null, digest, undefined, missingTranslation, console);\n
 }\n }\n\n parse(source: string, url: string, options: TokenizeOptions = {}): ParseTreeResult {\n const
interpolationConfig = options.interpolationConfig || DEFAULT_INTERPOLATION_CONFIG;\n const
parseResult = this._htmlParser.parse(source, url, {interpolationConfig, ...options});\n\n if
(parseResult.errors.length) {\n return new ParseTreeResult(parseResult.rootNodes, parseResult.errors);\n }\n\n
return mergeTranslations(\n parseResult.rootNodes, this._translationBundle, interpolationConfig, [], {});\n
}\n\n\nfunction createSerializer(format?: string): Serializer {\n format = (format || 'xlf').toLowerCase();\n\n switch
(format) {\n case 'xmb':\n return new Xmb();\n case 'xtb':\n return new Xtb();\n case 'xliff2':\n case
'xlf2':\n return new Xliff2();\n case 'xliff':\n case 'xlf':\n default:\n return new Xliff();\n }\n }\n\n\"/*\n * @license\n * Copyright Google LLC All Rights Reserved.\n * Use of this source code is governed by an MIT-
style license that can be\n * found in the LICENSE file at https://angular.io/license\n */\n\nimport
{OutputContext, ValueTransformer, visitValue} from './util';\nimport * as o from './output_ast';\n\nexport const
QUOTED_KEYS = `quoted$`;\n\nexport function convertValueToOutputAst(\n ctx: OutputContext, value: any,
type: o.Type|null = null): o.Expression {\n return visitValue(value, new _ValueOutputAstTransformer(ctx),
type);\n}\n\n\nclass _ValueOutputAstTransformer implements ValueTransformer {\n constructor(private ctx:
OutputContext) {}\n visitArray(arr: any[], type: o.Type): o.Expression {\n const values: o.Expression[] = [];\n //
Note Array.map() must not be used to convert the values because it will\n // skip over empty elements in arrays
constructed using `new Array(length)`,\n // resulting in `undefined` elements. This breaks the type guarantee that\n
// all values in `o.LiteralArrayExpr` are of type `o.Expression`\n // See test case in `value_util_spec.ts`\n for
(let i = 0; i < arr.length; ++i) {\n values.push(visitValue(arr[i], this, null /* context */));\n }\n return
o.literalArr(values, type);\n }\n\n visitStringMap(map: {[key: string]: any}, type: o.MapType): o.Expression {\n
const entries: o.LiteralMapEntry[] = [];\n const quotedSet = new Set<string>(map && map[QUOTED_KEYS]);\n

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Object.keys(map).forEach(key => {\n entries.push(\n new o.LiteralMapEntry(key, visitValue(map[key],
this, null), quotedSet.has(key));\n });\n return new o.LiteralMapExpr(entries, type);\n }\n\n
visitPrimitive(value: any, type: o.Type): o.Expression {\n return o.literal(value, type);\n }\n\n
visitOther(value: any, type: o.Type): o.Expression {\n if (value instanceof o.Expression) {\n return value;\n } else {\n return
this.ctx.importExpr(value);\n }\n }\n\n
"/**\n * @license\n * Copyright Google LLC All Rights Reserved.\n
*\n * Use of this source code is governed by an MIT-style license that can be\n * found in the LICENSE file at
https://angular.io/license\n */\n\n
import { StaticSymbol } from './aot/static_symbol';\n
import { CompileInjectableMetadata, CompileNgModuleMetadata, CompileProviderMetadata, identifierName } from
 './compile_metadata';\n
import { CompileReflector } from './compile_reflector';\n
import { InjectFlags, NodeFlags } from './core';\n
import { Identifiers } from './identifiers';\n
import * as o from './output/output_ast';\n
import { convertValueToOutputAst } from './output/value_util';\n
import { typeSourceSpan } from './parse_util';\n
import { NgModuleProviderAnalyzer } from './provider_analyzer';\n
import { OutputContext } from './util';\n
import { componentFactoryResolverProviderDef, depDef, providerDef } from './view_compiler/provider_compiler';\n\n
type MapEntry = {\n key: string,\n quoted: boolean,\n value: o.Expression\n};\n
type MapLiteral = MapEntry[];\n\n
function mapEntry(key: string, value: o.Expression): MapEntry {\n return {key, value, quoted:
false};\n }\n\n
export class InjectableCompiler {\n private tokenInjector: StaticSymbol;\n constructor(private
reflector: CompileReflector, private alwaysGenerateDef: boolean) {\n this.tokenInjector =
reflector.resolveExternalReference(Identifiers.Injector);\n }\n\n private depsArray(deps: any[], ctx:
OutputContext): o.Expression[] {\n return deps.map(dep => {\n let token = dep;\n let args = [token];\n let
flags: InjectFlags = InjectFlags.Default;\n if (Array.isArray(dep)) {\n for (let i = 0; i < dep.length; i++) {\n
 const v = dep[i];\n if (v) {\n if (v.ngMetadataName === 'Optional') {\n flags |=
InjectFlags.Optional;\n } else if (v.ngMetadataName === 'SkipSelf') {\n flags |=
InjectFlags.SkipSelf;\n } else if (v.ngMetadataName === 'Self') {\n flags |= InjectFlags.Self;\n
 } else if (v.ngMetadataName === 'Inject') {\n token = v.token;\n } else {\n token = v;\n
 }\n }\n }\n }\n let tokenExpr: o.Expression;\n if (typeof token === 'string') {\n tokenExpr
= o.literal(token);\n } else if (token === this.tokenInjector) {\n tokenExpr =
o.importExpr(Identifiers.INJECTOR);\n } else {\n tokenExpr = ctx.importExpr(token);\n }\n if
(flags !== InjectFlags.Default) {\n args = [tokenExpr, o.literal(flags)];\n } else {\n args = [tokenExpr];\n
 }\n return o.importExpr(Identifiers.inject).callFn(args);\n });\n }\n\n factoryFor(injectable:
CompileInjectableMetadata, ctx: OutputContext): o.Expression {\n let retValue: o.Expression;\n if
(injectable.useExisting) {\n retValue =
o.importExpr(Identifiers.inject).callFn([ctx.importExpr(injectable.useExisting)]);\n } else if
(injectable.useFactory) {\n const deps = injectable.deps || [];\n if (deps.length > 0) {\n retValue =
ctx.importExpr(injectable.useFactory).callFn(this.depsArray(deps, ctx));\n } else {\n return
ctx.importExpr(injectable.useFactory);\n }\n } else if (injectable.useValue) {\n retValue =
convertValueToOutputAst(ctx, injectable.useValue);\n } else {\n const clazz = injectable.useClass ||
injectable.symbol;\n const depArgs = this.depsArray(this.reflector.parameters(clazz), ctx);\n retValue = new
o.InstantiateExpr(ctx.importExpr(clazz), depArgs);\n }\n return o.fn(\n [], [new
o.ReturnStatement(retValue)], undefined, undefined,\n injectable.symbol.name + '_Factory');\n }\n\n
injectableDef(injectable: CompileInjectableMetadata, ctx: OutputContext): o.Expression {\n let providedIn:
o.Expression = o.NULL_EXPR;\n if (injectable.providedIn !== undefined) {\n if (injectable.providedIn ===
null) {\n providedIn = o.NULL_EXPR;\n } else if (typeof injectable.providedIn === 'string') {\n
 providedIn = o.literal(injectable.providedIn);\n } else {\n providedIn =
ctx.importExpr(injectable.providedIn);\n }\n }\n const def: MapLiteral = [\n mapEntry('factory',
this.factoryFor(injectable, ctx)),\n mapEntry('token', ctx.importExpr(injectable.type.reference)),\n
 mapEntry('providedIn', providedIn),\n];\n return
o.importExpr(Identifiers.defineInjectable).callFn([o.literalMap(def)];\n }\n\n compile(injectable:
CompileInjectableMetadata, ctx: OutputContext): void {\n if (this.alwaysGenerateDef || injectable.providedIn !==

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mode.\n // The `throw new Error` below works around the problem, and the unexpected: never variable\n //
makes sure tsc still checks this code is unreachable.\n const unexpected: never = hook;\n throw new
Error(`unexpected ${unexpected}`);\n }\n\n"/**\n * @license\n * Copyright Google LLC All Rights Reserved.\n
*\n * Use of this source code is governed by an MIT-style license that can be\n * found in the LICENSE file at
https://angular.io/license\n */\n\nimport {StaticSymbol, StaticSymbolCache} from './aot/static_symbol';\nimport
{ngfactoryFilePath} from './aot/util';\nimport {assertArrayOfStrings, assertInterpolationSymbols} from
 './assertions';\nimport * as cpl from './compile_metadata';\nimport {CompileReflector} from
 './compile_reflector';\nimport {CompilerConfig} from './config';\nimport {ChangeDetectionStrategy, Component,
createAttribute, createComponent, createHost, createInject, createInjectable, createInjectionToken, createNgModule,
createOptional, createSelf, createSkipSelf, Directive, Injectable, ModuleWithProviders, Provider, Query,
SchemaMetadata, Type, ViewEncapsulation} from './core';\nimport {DirectiveNormalizer} from
 './directive_normalizer';\nimport {DirectiveResolver, findLast} from './directive_resolver';\nimport {Identifiers}
from './identifiers';\nimport {getAllLifecycleHooks} from './lifecycle_reflector';\nimport {HtmlParser} from
 './ml_parser/html_parser';\nimport {NgModuleResolver} from './ng_module_resolver';\nimport {PipeResolver} from
 './pipe_resolver';\nimport {ElementSchemaRegistry} from './schema/element_schema_registry';\nimport
{CssSelector} from './selector';\nimport {SummaryResolver} from './summary_resolver';\nimport {Console,
isPromise, noUndefined, resolveForwardRef, stringify, SyncAsync, syntaxError, ValueTransformer, visitValue}
from './util';\n\nexport type ErrorCollector = (error: any, type?: any) => void;\n\nexport const
ERROR_COMPONENT_TYPE = 'ngComponentType';\n\n// Design notes:\n// - don't lazily create metadata:\n//
For some metadata, we need to do async work sometimes,\n// so the user has to kick off this loading.\n// But we
want to report errors even when the async work is\n// not required to check that the user would have been able\n//
to wait correctly.\n\nexport class CompileMetadataResolver {\n private _nonNormalizedDirectiveCache =\n new
Map<Type, {annotation: Directive, metadata: cpl.CompileDirectiveMetadata}>();\n private _directiveCache = new
Map<Type, cpl.CompileDirectiveMetadata>();\n private _summaryCache = new Map<Type,
cpl.CompileTypeSummary|null>();\n private _pipeCache = new Map<Type, cpl.CompilePipeMetadata>();\n
private _ngModuleCache = new Map<Type, cpl.CompileNgModuleMetadata>();\n private _ngModuleOfTypes =
new Map<Type, Type>();\n private _shallowModuleCache = new Map<Type,
cpl.CompileShallowModuleMetadata>();\n\n constructor(\n private _config: CompilerConfig, private
_htmlParser: HtmlParser,\n private _ngModuleResolver: NgModuleResolver, private _directiveResolver:
DirectiveResolver,\n private _pipeResolver: PipeResolver, private _summaryResolver:
SummaryResolver<any>,\n private _schemaRegistry: ElementSchemaRegistry,\n private
_directiveNormalizer: DirectiveNormalizer, private _console: Console,\n private _staticSymbolCache:
StaticSymbolCache, private _reflector: CompileReflector,\n private _errorCollector?: ErrorCollector) {\n\n
getReflector(): CompileReflector {\n return this._reflector;\n }\n\n clearCacheFor(type: Type) {\n const
dirMeta = this._directiveCache.get(type);\n this._directiveCache.delete(type);\n
this._nonNormalizedDirectiveCache.delete(type);\n this._summaryCache.delete(type);\n
this._pipeCache.delete(type);\n this._ngModuleOfTypes.delete(type);\n // Clear all of the NgModule as they
contain transitive information!\n this._ngModuleCache.clear();\n if (dirMeta) {\n
this._directiveNormalizer.clearCacheFor(dirMeta);\n }\n }\n\n clearCache(): void {\n
this._directiveCache.clear();\n this._nonNormalizedDirectiveCache.clear();\n this._summaryCache.clear();\n
this._pipeCache.clear();\n this._ngModuleCache.clear();\n this._ngModuleOfTypes.clear();\n
this._directiveNormalizer.clearCache();\n }\n\n private _createClass(baseType: any, name: string):
cpl.ProxyClass {\n let delegate: any = null;\n const proxyClass: cpl.ProxyClass = <any>function(this: unknown)
{\n if (!delegate) {\n throw new Error(`Illegal state: Class ${name} for type ${stringify(baseType)}
is not compiled yet!`);\n }\n return delegate.apply(this, arguments);\n };\n proxyClass.setDelegate = (d) =>
{\n delegate = d;\n (<any>proxyClass).prototype = d.prototype;\n };\n // Make stringify work correctly\n
(<any>proxyClass).overriddenName = name;\n return proxyClass;\n }\n\n private getGeneratedClass(dirType:
any, name: string): StaticSymbol|cpl.ProxyClass {\n if (dirType instanceof StaticSymbol) {\n return

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this._staticSymbolCache.get(ngfactoryFilePath(dirType.filePath), name);\n } else {\n return
this._createClass(dirType, name);\n }\n }\n\n private getComponentViewClass(dirType: any):
StaticSymbol|cpl.ProxyClass {\n return this.getGeneratedClass(dirType, cpl.viewClassName(dirType, 0));\n }\n\n
getHostComponentViewClass(dirType: any): StaticSymbol|cpl.ProxyClass {\n return
this.getGeneratedClass(dirType, cpl.hostViewClassName(dirType));\n }\n\n getHostComponentType(dirType:
any): StaticSymbol|cpl.ProxyClass {\n const name = `${cpl.identifierName({reference: dirType})}_Host`;\n if
(dirType instanceof StaticSymbol) {\n return this._staticSymbolCache.get(dirType.filePath, name);\n }\n\n
return this._createClass(dirType, name);\n }\n\n private getRendererType(dirType: any): StaticSymbol|object
{\n if (dirType instanceof StaticSymbol) {\n return this._staticSymbolCache.get(\n
ngfactoryFilePath(dirType.filePath), cpl.rendererTypeName(dirType));\n } else {\n // returning an object as
proxy,\n // that we fill later during runtime compilation.\n return <any>{};\n }\n }\n\n private
getComponentFactory(\n selector: string, dirType: any, inputs: {[key: string]: string}|null,\n outputs: {[key:
string]: string}): StaticSymbol|object {\n if (dirType instanceof StaticSymbol) {\n return
this._staticSymbolCache.get(\n ngfactoryFilePath(dirType.filePath), cpl.componentFactoryName(dirType));\n
} else {\n const hostView = this.getHostComponentViewClass(dirType);\n // Note: ngContentSelectors will
be filled later once the template is\n // loaded.\n const createComponentFactory =\n this._reflector.resolveExternalReference(Identifiers.createComponentFactory);\n return
createComponentFactory(selector, dirType, <any>hostView, inputs, outputs, []);\n }\n }\n\n private
initComponentFactory(factory: StaticSymbol|object, ngContentSelectors: string[]) {\n if (!(factory instanceof
StaticSymbol)) {\n (factory as any).ngContentSelectors.push(...ngContentSelectors);\n }\n }\n\n private
_loadSummary(type: any, kind: cpl.CompileSummaryKind): cpl.CompileTypeSummary|null {\n let typeSummary
= this._summaryCache.get(type);\n if (!typeSummary) {\n const summary =
this._summaryResolver.resolveSummary(type);\n typeSummary = summary ? summary.type : null;\n
this._summaryCache.set(type, typeSummary || null);\n }\n return typeSummary &&
typeSummary.summaryKind === kind ? typeSummary : null;\n }\n\n getHostComponentMetadata(\n
compMeta: cpl.CompileDirectiveMetadata,\n hostViewType?: StaticSymbol|cpl.ProxyClass):
cpl.CompileDirectiveMetadata {\n const hostType = this.getHostComponentType(compMeta.type.reference);\n
if (!hostViewType) {\n hostViewType = this.getHostComponentViewClass(hostType);\n }\n // Note: ! is ok
here as this method should only be called with normalized directive\n // metadata, which always fills in the
selector.\n const template = CssSelector.parse(compMeta.selector!)[0].getMatchingElementTemplate();\n const
templateUrl = ";\n const htmlAst = this._htmlParser.parse(template, templateUrl);\n return
cpl.CompileDirectiveMetadata.create({\n isHost: true,\n type: {reference: hostType, diDeps: [],
lifecycleHooks: []},\n template: new cpl.CompileTemplateMetadata({\n encapsulation:
ViewEncapsulation.None,\n template,\n templateUrl,\n htmlAst,\n styles: [],\n styleUrls: [],\n
ngContentSelectors: [],\n animations: [],\n isInline: true,\n externalStylesheets: [],\n
interpolation: null,\n preserveWhitespaces: false,\n }),\n exportAs: null,\n changeDetection:
ChangeDetectionStrategy.Default,\n inputs: [],\n outputs: [],\n host: {},\n isComponent: true,\n
selector: '*',\n providers: [],\n viewProviders: [],\n queries: [],\n guards: {},\n viewQueries: [],\n
componentViewType: hostViewType,\n rendererType: {id: '__Host__', encapsulation: ViewEncapsulation.None,
styles: [], data: {}} as\n object,\n entryComponents: [],\n componentFactory: null\n });\n }\n\n
loadDirectiveMetadata(ngModuleType: any, directiveType: any, isSync: boolean): SyncAsync<null> {\n if
(this._directiveCache.has(directiveType)) {\n return null;\n }\n directiveType =
resolveForwardRef(directiveType);\n const {annotation, metadata} =
this.getNonNormalizedDirectiveMetadata(directiveType!);\n\n const createDirectiveMetadata =
(templateMetadata: cpl.CompileTemplateMetadata|null) => {\n const normalizedDirMeta = new
cpl.CompileDirectiveMetadata({\n isHost: false,\n type: metadata.type,\n isComponent:
metadata.isComponent,\n selector: metadata.selector,\n exportAs: metadata.exportAs,\n
changeDetection: metadata.changeDetection,\n inputs: metadata.inputs,\n outputs: metadata.outputs,\n

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hostListeners: metadata.hostListeners,\n hostProperties: metadata.hostProperties,\n hostAttributes:
metadata.hostAttributes,\n providers: metadata.providers,\n viewProviders: metadata.viewProviders,\n
queries: metadata.queries,\n guards: metadata.guards,\n viewQueries: metadata.viewQueries,\n
entryComponents: metadata.entryComponents,\n componentViewType: metadata.componentViewType,\n
rendererType: metadata.rendererType,\n componentFactory: metadata.componentFactory,\n template:
templateMetadata\n });\n if (templateMetadata) {\n
this.initComponentFactory(metadata.componentFactory!, templateMetadata.ngContentSelectors);\n }\n
this._directiveCache.set(directiveType, normalizedDirMeta);\n this._summaryCache.set(directiveType,
normalizedDirMeta.toSummary());\n return null;\n };\n\n if (metadata.isComponent) {\n const template =
metadata.template !;\n const templateMeta = this._directiveNormalizer.normalizeTemplate({\n
ngModuleType,\n componentType: directiveType,\n moduleName:
this._reflector.componentModuleName(directiveType, annotation),\n encapsulation: template.encapsulation,\n
template: template.template,\n templateUrl: template.templateUrl,\n styles: template.styles,\n styleUrls:
template.styleUrls,\n animations: template.animations,\n interpolation: template.interpolation,\n
preserveWhitespaces: template.preserveWhitespaces\n });\n if (isPromise(templateMeta) && isSync) {\n
this._reportError(componentStillLoadingError(directiveType), directiveType);\n return null;\n }\n return
SyncAsync.then(templateMeta, createDirectiveMetadata);\n } else {\n // directive\n
createDirectiveMetadata(null);\n return null;\n }\n }\n\n getNonNormalizedDirectiveMetadata(directiveType:
any):\n { annotation: Directive, metadata: cpl.CompileDirectiveMetadata } | null {\n directiveType =
resolveForwardRef(directiveType);\n if (!directiveType) {\n return null;\n }\n let cacheEntry =
this._nonNormalizedDirectiveCache.get(directiveType);\n if (cacheEntry) {\n return cacheEntry;\n }\n
const dirMeta = this._directiveResolver.resolve(directiveType, false);\n if (!dirMeta) {\n return null;\n }\n
let nonNormalizedTemplateMetadata: cpl.CompileTemplateMetadata = undefined!;\n if
(createComponent.isTypeOf(dirMeta)) {\n // component\n const compMeta = dirMeta as Component;\n
assertArrayOfStrings('styles', compMeta.styles);\n assertArrayOfStrings('styleUrls', compMeta.styleUrls);\n
assertInterpolationSymbols('interpolation', compMeta.interpolation);\n const animations =
compMeta.animations;\n\n nonNormalizedTemplateMetadata = new cpl.CompileTemplateMetadata({\n
encapsulation: noUndefined(compMeta.encapsulation),\n template: noUndefined(compMeta.template),\n
templateUrl: noUndefined(compMeta.templateUrl),\n htmlAst: null,\n styles: compMeta.styles || [],\n
styleUrls: compMeta.styleUrls || [],\n animations: animations || [],\n interpolation:
noUndefined(compMeta.interpolation),\n isInline: !!compMeta.template,\n externalStylesheets: [],\n
ngContentSelectors: [],\n preserveWhitespaces: noUndefined(dirMeta.preserveWhitespaces),\n });\n }\n\n
let changeDetectionStrategy: ChangeDetectionStrategy = null!;\n let viewProviders:
cpl.CompileProviderMetadata[] = [];\n let entryComponentMetadata: cpl.CompileEntryComponentMetadata[] =
[];\n let selector = dirMeta.selector;\n\n if (createComponent.isTypeOf(dirMeta)) {\n // Component\n
const compMeta = dirMeta as Component;\n changeDetectionStrategy = compMeta.changeDetection!;\n if
(compMeta.viewProviders) {\n viewProviders = this._getProvidersMetadata(\n
compMeta.viewProviders, entryComponentMetadata,\n `viewProviders for
\"${stringifyType(directiveType)}\"`, [], directiveType);\n }\n if (compMeta.entryComponents) {\n
entryComponentMetadata = flattenAndDedupeArray(compMeta.entryComponents)\n
.map((type) => this._getEntryComponentMetadata(type))\n
.concat(entryComponentMetadata);\n }\n if (!selector) {\n selector =
this._schemaRegistry.getDefaultComponentElementName();\n }\n } else {\n // Directive\n if (!selector)
{\n selector = null!;\n }\n }\n\n let providers: cpl.CompileProviderMetadata[] = [];\n if
(dirMeta.providers != null) {\n providers = this._getProvidersMetadata(\n dirMeta.providers,
entryComponentMetadata,\n `providers for \"${stringifyType(directiveType)}\"`, [], directiveType);\n }\n
let queries: cpl.CompileQueryMetadata[] = [];\n let viewQueries: cpl.CompileQueryMetadata[] = [];\n if
(dirMeta.queries != null) {\n queries = this._getQueriesMetadata(dirMeta.queries, false, directiveType);\n

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viewQueries = this._getQueriesMetadata(dirMeta.queries, true, directiveType);\n }\n\n const metadata =
cpl.CompileDirectiveMetadata.create({\n isHost: false,\n selector: selector,\n exportAs:
noUndefined(dirMeta.exportAs),\n isComponent: !!nonNormalizedTemplateMetadata,\n type:
this._getTypeMetadata(directiveType),\n template: nonNormalizedTemplateMetadata,\n changeDetection:
changeDetectionStrategy,\n inputs: dirMeta.inputs || [],\n outputs: dirMeta.outputs || [],\n host: dirMeta.host
|| {},\n providers: providers || [],\n viewProviders: viewProviders || [],\n queries: queries || [],\n guards:
dirMeta.guards || {},\n viewQueries: viewQueries || [],\n entryComponents: entryComponentMetadata,\n componentViewType: nonNormalizedTemplateMetadata ? this.getComponentViewClass(directiveType) :\n
null,\n rendererType: nonNormalizedTemplateMetadata ?
this.getRendererType(directiveType) : null,\n componentFactory: null\n });\n if
(nonNormalizedTemplateMetadata) {\n metadata.componentFactory =\n this.getComponentFactory(selector, directiveType, metadata.inputs, metadata.outputs);\n }\n cacheEntry =
{metadata, annotation: dirMeta};\n this._nonNormalizedDirectiveCache.set(directiveType, cacheEntry);\n return
cacheEntry;\n }\n\n /**\n * Gets the metadata for the given directive.\n * This assumes
`loadNgModuleDirectiveAndPipeMetadata` has been called first.\n */\n getDirectiveMetadata(directiveType:
any): cpl.CompileDirectiveMetadata {\n const dirMeta = this._directiveCache.get(directiveType)!;\n if
(!dirMeta) {\n this._reportError(\n syntaxError(\n `Illegal state: getDirectiveMetadata can only be
called after loadNgModuleDirectiveAndPipeMetadata for a module that declares it. Directive ${\n
stringifyType(directiveType)}.\n directiveType);\n }\n return dirMeta;\n }\n\n getDirectiveSummary(dirType: any): cpl.CompileDirectiveSummary {\n const dirSummary =\n <cpl.CompileDirectiveSummary>this._loadSummary(dirType, cpl.CompileSummaryKind.Directive);\n if
(!dirSummary) {\n this._reportError(\n syntaxError(\n `Illegal state: Could not load the summary
for directive ${stringifyType(dirType)}.\n dirType);\n }\n return dirSummary;\n }\n\n isDirective(type:
any) {\n return !!this._loadSummary(type, cpl.CompileSummaryKind.Directive) ||\n
this._directiveResolver.isDirective(type);\n }\n\n isAbstractDirective(type: any): boolean {\n const summary =\n this._loadSummary(type, cpl.CompileSummaryKind.Directive) as cpl.CompileDirectiveSummary;\n if
(summary && !summary.isComponent) {\n return !summary.selector;\n }\n\n const meta =
this._directiveResolver.resolve(type, false);\n if (meta && !createComponent.isTypeOf(meta)) {\n return
!meta.selector;\n }\n\n return false;\n }\n\n isPipe(type: any) {\n return !!this._loadSummary(type,
cpl.CompileSummaryKind.Pipe) ||\n this._pipeResolver.isPipe(type);\n }\n\n isNgModule(type: any) {\n
return !!this._loadSummary(type, cpl.CompileSummaryKind.NgModule) ||\n
this._ngModuleResolver.isNgModule(type);\n }\n\n getNgModuleSummary(moduleType: any, alreadyCollecting:
Set<any>|null = null):\n cpl.CompileNgModuleSummary|null {\n let moduleSummary:
cpl.CompileNgModuleSummary|null =\n <cpl.CompileNgModuleSummary>this._loadSummary(moduleType,
cpl.CompileSummaryKind.NgModule);\n if (!moduleSummary) {\n const moduleMeta =
this.getNgModuleMetadata(moduleType, false, alreadyCollecting);\n moduleSummary = moduleMeta ?
moduleMeta.toSummary() : null;\n if (moduleSummary) {\n this._summaryCache.set(moduleType,
moduleSummary);\n }\n }\n\n return moduleSummary;\n }\n\n /**\n * Loads the declared directives and
pipes of an NgModule.\n */\n loadNgModuleDirectiveAndPipeMetadata(moduleType: any, isSync: boolean,
throwIfNotFound = true):\n Promise<any> {\n const ngModule = this.getNgModuleMetadata(moduleType,
throwIfNotFound);\n const loading: Promise<any>[] = [];\n if (ngModule) {\n
ngModule.declaredDirectives.forEach((id) => {\n const promise = this.loadDirectiveMetadata(moduleType,
id.reference, isSync);\n if (promise) {\n loading.push(promise);\n }\n });\n
ngModule.declaredPipes.forEach((id) => this._loadPipeMetadata(id.reference));\n }\n\n return
Promise.all(loading);\n }\n\n getShallowModuleMetadata(moduleType: any):
cpl.CompileShallowModuleMetadata|null {\n let compileMeta = this._shallowModuleCache.get(moduleType);\n
if (compileMeta) {\n return compileMeta;\n }\n\n const ngModuleMeta =\n findLast(this._reflector.shallowAnnotations(moduleType), createNgModule.isTypeOf);\n\n compileMeta = {\n

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type: this._getTypeMetadata(moduleType),\n rawExports: ngModuleMeta.exports,\n rawImports:
ngModuleMeta.imports,\n rawProviders: ngModuleMeta.providers,\n });\n\nthis._shallowModuleCache.set(moduleType, compileMeta);\n return compileMeta;\n }\n\ngetNgModuleMetadata(\n moduleType: any, throwIfNotFound = true,\n alreadyCollecting: Set<any>|null =
null): cpl.CompileNgModuleMetadata|null {\n moduleType = resolveForwardRef(moduleType);\n let
compileMeta = this._ngModuleCache.get(moduleType);\n if (compileMeta) {\n return compileMeta;\n }\n const meta = this._ngModuleResolver.resolve(moduleType, throwIfNotFound);\n if (!meta) {\n return null;\n
 }\n const declaredDirectives: cpl.CompileIdentifierMetadata[] = [];\n const exportedNonModuleIdentifiers:
cpl.CompileIdentifierMetadata[] = [];\n const declaredPipes: cpl.CompileIdentifierMetadata[] = [];\n const
importedModules: cpl.CompileNgModuleSummary[] = [];\n const exportedModules:
cpl.CompileNgModuleSummary[] = [];\n const providers: cpl.CompileProviderMetadata[] = [];\n const
entryComponents: cpl.CompileEntryComponentMetadata[] = [];\n const bootstrapComponents:
cpl.CompileIdentifierMetadata[] = [];\n const schemas: SchemaMetadata[] = [];\n\n if (meta.imports) {\n
 flattenAndDedupeArray(meta.imports).forEach((importedType) => {\n let importedModuleType: Type =
undefined!;\n if (isValidType(importedType)) {\n importedModuleType = importedType;\n } else if
(importedType && importedType.ngModule) {\n const moduleWithProviders: ModuleWithProviders =
importedType;\n importedModuleType = moduleWithProviders.ngModule;\n if
(moduleWithProviders.providers) {\n providers.push(...this._getProvidersMetadata(\n
moduleWithProviders.providers, entryComponents,\n `provider for the NgModule
'${stringifyType(importedModuleType)}', [],\n importedType));\n }\n }\n\n if
(importedModuleType) {\n if (this._checkSelfImport(moduleType, importedModuleType)) return;\n if
(!alreadyCollecting) alreadyCollecting = new Set();\n if (alreadyCollecting.has(importedModuleType)) {\n
 this._reportError(\n syntaxError(` ${this._getTypeDescriptor(importedModuleType)} '${\n
stringifyType(importedType)}' is imported recursively by the module '${\n
stringifyType(moduleType)}'.`),\n moduleType);\n return;\n }\n alreadyCollecting.add(importedModuleType);\n const importedModuleSummary =\n this.getNgModuleSummary(importedModuleType, alreadyCollecting);\n alreadyCollecting.delete(importedModuleType);\n if (!importedModuleSummary) {\n
 this._reportError(\n syntaxError(` Unexpected ${this._getTypeDescriptor(importedType)} '${\n
stringifyType(importedType)}' imported by the module '${\n stringifyType(moduleType)}'. Please add a
@NgModule annotation.`),\n moduleType);\n return;\n }\n importedModules.push(importedModuleSummary);\n } else {\n this._reportError(\n
syntaxError(\n `Unexpected value '${stringifyType(importedType)}' imported by the module '${\n
stringifyType(moduleType)}'`),\n moduleType);\n return;\n }\n });\n }\n\n if
(meta.exports) {\n flattenAndDedupeArray(meta.exports).forEach((exportedType) => {\n if
(!isValidType(exportedType)) {\n this._reportError(\n syntaxError(\n `Unexpected value
'${stringifyType(exportedType)}' exported by the module '${\n stringifyType(moduleType)}'`),\n moduleType);\n return;\n }\n if (!alreadyCollecting) alreadyCollecting = new Set();\n if
(alreadyCollecting.has(exportedType)) {\n this._reportError(\n syntaxError(` ${this._getTypeDescriptor(exportedType)} '${\n stringify(exportedType)}' is exported
recursively by the module '${\n stringifyType(moduleType)}'`),\n moduleType);\n return;\n }\n alreadyCollecting.add(exportedType);\n const exportedModuleSummary =
this.getNgModuleSummary(exportedType, alreadyCollecting);\n alreadyCollecting.delete(exportedType);\n if (exportedModuleSummary) {\n exportedModules.push(exportedModuleSummary);\n } else {\n
exportedNonModuleIdentifiers.push(this._getIdentifierMetadata(exportedType));\n }\n });\n }\n\n //
Note: This will be modified later, so we rely on\n // getting a new instance every time!\n const transitiveModule
= this._getTransitiveNgModuleMetadata(importedModules, exportedModules);\n if (meta.declarations) {\n
 flattenAndDedupeArray(meta.declarations).forEach((declaredType) => {\n if (!isValidType(declaredType)) {\n

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 this._reportError(\n syntaxError(\n `Unexpected value '${stringifyType(declaredType)}'
declared by the module '${\n stringifyType(moduleType)}'`),\n moduleType);\n return;\n }\n const declaredIdentifier = this._getIdentifierMetadata(declaredType);\n if
(this.isDirective(declaredType)) {\n if (this.isAbstractDirective(declaredType)) {\n this._reportError(\n syntaxError(\n `Directive ${stringifyType(declaredType)} has no selector, please add it!`),\n declaredType);\n }\n transitiveModule.addDirective(declaredIdentifier);\n declaredDirectives.push(declaredIdentifier);\n this._addTypeToModule(declaredType, moduleType);\n }
else if (this.isPipe(declaredType)) {\n transitiveModule.addPipe(declaredIdentifier);\n transitiveModule.pipes.push(declaredIdentifier);\n declaredPipes.push(declaredIdentifier);\n this._addTypeToModule(declaredType, moduleType);\n } else {\n this._reportError(\n syntaxError(`Unexpected ${this._getTypeDescriptor(declaredType)} '${\n stringifyType(declaredType)}'
declared by the module '${\n stringifyType(\n moduleType)}'. Please add a
@Pipe/@Directive/@Component annotation.`),\n moduleType);\n return;\n }\n });\n }\n }\n const exportedDirectives: cpl.CompileIdentifierMetadata[] = [];\n const exportedPipes:
cpl.CompileIdentifierMetadata[] = [];\n exportedNonModuleIdentifiers.forEach((exportedId) => {\n if
(transitiveModule.directivesSet.has(exportedId.reference)) {\n exportedDirectives.push(exportedId);\n transitiveModule.addExportedDirective(exportedId);\n } else if
(transitiveModule.pipesSet.has(exportedId.reference)) {\n exportedPipes.push(exportedId);\n transitiveModule.addExportedPipe(exportedId);\n } else {\n this._reportError(\n syntaxError(` Can't
export ${this._getTypeDescriptor(exportedId.reference)} '${\n stringifyType(exportedId.reference)}' from
${\n stringifyType(moduleType)} as it was neither declared nor imported!`),\n moduleType);\n return;\n }\n });\n // The providers of the module have to go last\n // so that they overwrite any other
provider we already added.\n if (meta.providers) {\n providers.push(...this._getProvidersMetadata(\n meta.providers, entryComponents,\n `provider for the NgModule '${stringifyType(moduleType)}'`, [],
moduleType));\n }\n if (meta.entryComponents) {\n entryComponents.push(...flattenAndDedupeArray(meta.entryComponents)\n .map(type =>
this._getEntryComponentMetadata(type!));\n }\n if (meta.bootstrap) {\n flattenAndDedupeArray(meta.bootstrap).forEach(type => {\n if (!isValidType(type)) {\n this._reportError(\n syntaxError(` Unexpected value '${\n stringifyType(type)}' used in the
bootstrap property of module '${\n stringifyType(moduleType)}'`),\n moduleType);\n return;\n }\n bootstrapComponents.push(this._getIdentifierMetadata(type));\n });\n }\n entryComponents.push(\n ...bootstrapComponents.map(type =>
this._getEntryComponentMetadata(type.reference!));\n }\n if (meta.schemas) {\n schemas.push(...flattenAndDedupeArray(meta.schemas));\n }\n }\n compileMeta = new
cpl.CompileNgModuleMetadata({\n type: this._getTypeMetadata(moduleType),\n providers,\n entryComponents,\n bootstrapComponents,\n schemas,\n declaredDirectives,\n exportedDirectives,\n declaredPipes,\n exportedPipes,\n importedModules,\n exportedModules,\n transitiveModule,\n id:
meta.id || null,\n });\n entryComponents.forEach((id) => transitiveModule.addEntryComponent(id));\n providers.forEach((provider) => transitiveModule.addProvider(provider, compileMeta!.type));\n transitiveModule.addModule(compileMeta.type);\n this._ngModuleCache.set(moduleType, compileMeta);\n return compileMeta;\n }\n private _checkSelfImport(moduleType: Type, importedModuleType: Type): boolean
{\n if (moduleType === importedModuleType) {\n this._reportError(\n syntaxError(` '${stringifyType(moduleType)}' module can't import itself`), moduleType);\n return true;\n }\n return false;\n }\n private _getTypeDescriptor(type: Type): string {\n if (isValidType(type)) {\n if
(this.isDirective(type)) {\n return 'directive';\n }\n if (this.isPipe(type)) {\n return 'pipe';\n }\n if (this.isNgModule(type)) {\n return 'module';\n }\n }\n if ((type as any).provide) {\n return
'provider';\n }\n return 'value';\n }\n private _addTypeToModule(type: Type, moduleType: Type) {\n const oldModule = this._ngModuleOfTypes.get(type);\n if (oldModule && oldModule !== moduleType) {\n

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this._reportError(\n syntaxError(\n `Type ${stringifyType(type)} is part of the declarations of 2
modules: ${\n stringifyType(oldModule)} and ${stringifyType(moduleType)}!` +\n `Please
consider moving ${stringifyType(type)} to a higher module that imports ${\n stringifyType(oldModule)}
and ${stringifyType(moduleType)}.` +\n `You can also create a new NgModule that exports and includes
${\n stringifyType(type)} then import that NgModule in ${\n stringifyType(oldModule)} and
${stringifyType(moduleType)}.`),\n moduleType);\n return;\n }\n this._ngModuleOfTypes.set(type,
moduleType);\n }\n\n private _getTransitiveNgModuleMetadata(\n importedModules:
cpl.CompileNgModuleSummary[],\n exportedModules: cpl.CompileNgModuleSummary[]):
cpl.TransitiveCompileNgModuleMetadata {\n // collect `providers` / `entryComponents` from all imported and all
exported modules\n const result = new cpl.TransitiveCompileNgModuleMetadata();\n const modulesByToken =
new Map<any, Set<any>>();\n importedModules.concat(exportedModules).forEach((modSummary) => {\n
modSummary.modules.forEach((mod) => result.addModule(mod));\n
modSummary.entryComponents.forEach((comp) => result.addEntryComponent(comp));\n const addedTokens =
new Set<any>();\n modSummary.providers.forEach((entry) => {\n const tokenRef =
cpl.tokenReference(entry.provider.token);\n let prevModules = modulesByToken.get(tokenRef);\n if
(!prevModules) {\n prevModules = new Set<any>();\n modulesByToken.set(tokenRef, prevModules);\n
 }\n const moduleRef = entry.module.reference;\n // Note: the providers of one module may still contain
multiple providers\n // per token (e.g. for multi providers), and we need to preserve these.\n if
(addedTokens.has(tokenRef) || !prevModules.has(moduleRef)) {\n prevModules.add(moduleRef);\n
addedTokens.add(tokenRef);\n result.addProvider(entry.provider, entry.module);\n }\n });\n });\n
exportedModules.forEach((modSummary) => {\n modSummary.exportedDirectives.forEach((id) =>
result.addExportedDirective(id));\n modSummary.exportedPipes.forEach((id) => result.addExportedPipe(id));\n
});\n importedModules.forEach((modSummary) => {\n modSummary.exportedDirectives.forEach((id) =>
result.addDirective(id));\n modSummary.exportedPipes.forEach((id) => result.addPipe(id));\n });\n return
result;\n }\n\n private _getIdentifierMetadata(type: Type): cpl.CompileIdentifierMetadata {\n type =
resolveForwardRef(type);\n return {reference: type};\n }\n\n isInjectable(type: any): boolean {\n const
annotations = this._reflector.tryAnnotations(type);\n return annotations.some(ann =>
createInjectable.isTypeOf(ann));\n }\n\n getInjectableSummary(type: any): cpl.CompileTypeSummary {\n return
{\n summaryKind: cpl.CompileSummaryKind.Injectable,\n type: this._getTypeMetadata(type, null, false)\n
};\n }\n\n getInjectableMetadata(\n type: any, dependencies: any[]|null = null,\n throwOnUnknownDeps:
boolean = true): cpl.CompileInjectableMetadata|null {\n const typeSummary = this._loadSummary(type,
cpl.CompileSummaryKind.Injectable);\n const typeMetadata = typeSummary ?\n typeSummary.type : \n
this._getTypeMetadata(type, dependencies, throwOnUnknownDeps);\n\n const annotations: Injectable[] =\n
this._reflector.annotations(type).filter(ann => createInjectable.isTypeOf(ann));\n\n if (annotations.length === 0)
{\n return null;\n }\n\n const meta = annotations[annotations.length - 1];\n return {\n symbol: type,\n
type: typeMetadata,\n providedIn: meta.providedIn,\n useValue: meta.useValue,\n useClass:
meta.useClass,\n useExisting: meta.useExisting,\n useFactory: meta.useFactory,\n deps: meta.deps,\n
};\n }\n\n private _getTypeMetadata(type: Type, dependencies: any[]|null = null, throwOnUnknownDeps = true):\n
cpl.CompileTypeMetadata {\n const identifier = this._getIdentifierMetadata(type);\n return {\n reference:
identifier.reference,\n diDeps: this._getDependenciesMetadata(identifier.reference, dependencies,
throwOnUnknownDeps),\n lifecycleHooks: getAllLifecycleHooks(this._reflector, identifier.reference),\n
};\n }\n\n private _getFactoryMetadata(factory: Function, dependencies: any[]|null = null):\n
cpl.CompileFactoryMetadata {\n factory = resolveForwardRef(factory);\n return {reference: factory, diDeps:
this._getDependenciesMetadata(factory, dependencies)};\n }\n\n /**\n * Gets the metadata for the given pipe.\n
* This assumes `loadNgModuleDirectiveAndPipeMetadata` has been called first.\n */\n getPipeMetadata(pipeType: any): cpl.CompilePipeMetadata|null {\n const pipeMeta =
this._pipeCache.get(pipeType);\n if (!pipeMeta) {\n this._reportError(\n syntaxError(\n `Illegal
state: getPipeMetadata can only be called after loadNgModuleDirectiveAndPipeMetadata for a module that declares

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it. Pipe ${\n stringifyType(pipeType)}.`),\n pipeType);\n }\n return pipeMeta || null;\n }\n\ngetPipeSummary(pipeType: any): cpl.CompilePipeSummary {\n const pipeSummary =\n <cpl.CompilePipeSummary>this._loadSummary(pipeType, cpl.CompileSummaryKind.Pipe);\n if\n (!pipeSummary) {\n this._reportError(\n syntaxError(\n `Illegal state: Could not load the summary\n for pipe ${stringifyType(pipeType)}.`),\n pipeType);\n }\n return pipeSummary;\n }\n\ngetOrLoadPipeMetadata(pipeType: any): cpl.CompilePipeMetadata {\n let pipeMeta =\n this._pipeCache.get(pipeType);\n if (!pipeMeta) {\n pipeMeta = this._loadPipeMetadata(pipeType);\n }\n return pipeMeta;\n }\n\n private _loadPipeMetadata(pipeType: any): cpl.CompilePipeMetadata {\n pipeType =\n resolveForwardRef(pipeType);\n const pipeAnnotation = this._pipeResolver.resolve(pipeType)!;\n const\n pipeMeta = new cpl.CompilePipeMetadata({\n type: this._getTypeMetadata(pipeType),\n name:\n pipeAnnotation.name,\n pure: !!pipeAnnotation.pure\n });\n this._pipeCache.set(pipeType, pipeMeta);\n this._summaryCache.set(pipeType, pipeMeta.toSummary());\n return pipeMeta;\n }\n\n private\n _getDependenciesMetadata(\n typeOrFunc: Type|Function, dependencies: any[]|null,\n throwOnUnknownDeps = true): cpl.CompileDiDependencyMetadata[] {\n let hasUnknownDeps = false;\n const\n params = dependencies || this._reflector.parameters(typeOrFunc) || [];\n const dependenciesMetadata:\n cpl.CompileDiDependencyMetadata[] = params.map((param) => {\n let isAttribute = false;\n let isHost =\n false;\n let isSelf = false;\n let isSkipSelf = false;\n let isOptional = false;\n let token: any = null;\n if\n (Array.isArray(param)) {\n param.forEach((paramEntry: any) => {\n if\n (createHost.isTypeOf(paramEntry)) {\n isHost = true;\n } else if (createSelf.isTypeOf(paramEntry)) {\n \n isSelf = true;\n } else if (createSkipSelf.isTypeOf(paramEntry)) {\n isSkipSelf = true;\n }\n else if (createOptional.isTypeOf(paramEntry)) {\n isOptional = true;\n } else if\n (createAttribute.isTypeOf(paramEntry)) {\n isAttribute = true;\n token = (paramEntry as\n any).attributeName;\n } else if (createInject.isTypeOf(paramEntry)) {\n token = (paramEntry as\n any).token;\n } else if (\n createInjectionToken.isTypeOf(paramEntry) ||\n (paramEntry as\n any) instanceof StaticSymbol) {\n token = paramEntry;\n } else if (isValidType(paramEntry) && token\n == null) {\n token = paramEntry;\n }\n });\n } else {\n token = param;\n }\n if (token\n == null) {\n hasUnknownDeps = true;\n return {};\n }\n return {\n isAttribute,\n isHost,\n isSelf,\n isSkipSelf,\n isOptional,\n token: this._getTokenMetadata(token)\n };\n });\n if\n (hasUnknownDeps) {\n const depsTokens =\n dependenciesMetadata.map((dep) => dep.token ?\n stringifyType(dep.token) : '?').join(', ');\n const message =\n `Can't resolve all parameters for\n ${stringifyType(typeOrFunc)}: (${depsTokens}).`\n if (throwOnUnknownDeps ||\n this._config.strictInjectionParameters) {\n this._reportError(syntaxError(message), typeOrFunc);\n }\n }\n return dependenciesMetadata;\n }\n\n private _getTokenMetadata(token: any): cpl.CompileTokenMetadata\n {\n token = resolveForwardRef(token);\n let compileToken: cpl.CompileTokenMetadata;\n if (typeof token\n === 'string') {\n compileToken = {value: token};\n } else {\n compileToken = {identifier: {reference:\n token}};\n }\n return compileToken;\n }\n\n private _getProvidersMetadata(\n providers: Provider[],\n targetEntryComponents: cpl.CompileEntryComponentMetadata[],\n debugInfo?: string, compileProviders:\n cpl.CompileProviderMetadata[] = [],\n type?: any): cpl.CompileProviderMetadata[] {\n providers.forEach((provider: any, providerIdx: number) => {\n if (Array.isArray(provider)) {\n this._getProvidersMetadata(provider, targetEntryComponents, debugInfo, compileProviders);\n } else {\n provider = resolveForwardRef(provider);\n let providerMeta: cpl.ProviderMeta = undefined!;\n if (provider\n && typeof provider === 'object' && provider.hasOwnProperty('provide')) {\n this._validateProvider(provider);\n providerMeta = new cpl.ProviderMeta(provider.provide, provider);\n }\n else if (isValidType(provider)) {\n providerMeta = new cpl.ProviderMeta(provider, {useClass: provider});\n }\n else if (provider === void 0) {\n this._reportError(syntaxError(\n `Encountered undefined provider!\n Usually this means you have a circular dependencies. This might be caused by using 'barrel' index.ts files.`));\n }\n return;\n } else {\n const providersInfo =\n providers\n .reduce(\n (soFar:\n string[], seenProvider: any, seenProviderIdx: number) => {\n if (seenProviderIdx < providerIdx) {\n
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 soFar.push(`${stringifyType(seenProvider)}`);
 } else if (seenProviderIdx ===
providerIdx) {
 soFar.push(`${stringifyType(seenProvider)}?`);
 } else if
(seenProviderIdx === providerIdx + 1) {
 soFar.push('...');
 }
 return
soFar;
},
[]
.join(', ');
this._reportError(
syntaxError(`Invalid ${
debugInfo ?
debugInfo :
'provider'} - only
instances of Provider and Type are allowed, got: [${
providersInfo}]`),
type);
return;
}
if (providerMeta.token ===
this._reflector.resolveExternalReference(Identifiers.ANALYZE_FOR_ENTRY_COMPONENTS)) {
targetEntryComponents.push(...this._getEntryComponentsFromProvider(providerMeta, type));
} else {
compileProviders.push(this.getProviderMetadata(providerMeta));
}
return
compileProviders;
}
private _validateProvider(provider: any): void {
if
(provider.hasOwnProperty('useClass') && provider.useClass === null) {
this._reportError(syntaxError(`Invalid
provider for ${
stringifyType(provider.provider)}. useClass cannot be ${provider.useClass}.
Usually
it happens when:
1. There's a circular dependency (might be caused by using index.ts (barrel) files).
2. Class was used before it was declared. Use forwardRef in this case.`));
}
}
private
_getEntryComponentsFromProvider(provider: cpl.ProviderMeta, type?: any):
cpl.CompileEntryComponentMetadata[] {
const components: cpl.CompileEntryComponentMetadata[] = [];
const collectedIdentifiers: cpl.CompileIdentifierMetadata[] = [];
if (provider.useFactory || provider.useExisting
|| provider.useClass) {
this._reportError(
syntaxError(`The
ANALYZE_FOR_ENTRY_COMPONENTS token only supports useValue!`),
type);
return [];
}
if
(!provider.multi) {
this._reportError(
syntaxError(`The ANALYZE_FOR_ENTRY_COMPONENTS
token only supports 'multi = true!`),
type);
return [];
}
extractIdentifiers(provider.useValue,
collectedIdentifiers);
collectedIdentifiers.forEach((identifier) => {
const entry =
this._getEntryComponentMetadata(identifier.reference, false);
if (entry) {
components.push(entry);
}
});
return components;
}
private _getEntryComponentMetadata(dirType: any, throwIfNotFound =
true):
cpl.CompileEntryComponentMetadata|null {
const dirMeta =
this.getNonNormalizedDirectiveMetadata(dirType);
if (dirMeta && dirMeta.metadata.isComponent) {
return {componentType: dirType, componentFactory: dirMeta.metadata.componentFactory!};
}
const
dirSummary =
<cpl.CompileDirectiveSummary>this._loadSummary(dirType,
cpl.CompileSummaryKind.Directive);
if (dirSummary && dirSummary.isComponent) {
return
{componentType: dirType, componentFactory: dirSummary.componentFactory!};
}
if (throwIfNotFound) {
throw syntaxError(`${dirType.name} cannot be used as an entry component.`);
}
return null;
}
private _getInjectableTypeMetadata(type: Type, dependencies: any[]|null = null):
cpl.CompileTypeMetadata
{
const typeSummary = this._loadSummary(type, cpl.CompileSummaryKind.Injectable);
if (typeSummary) {
return typeSummary.type;
}
return this._getTypeMetadata(type, dependencies);
}
private
getProviderMetadata(provider: cpl.ProviderMeta): cpl.CompileProviderMetadata {
let compileDeps:
cpl.CompileDiDependencyMetadata[] = undefined;
let compileTypeMetadata: cpl.CompileTypeMetadata =
null;
let compileFactoryMetadata: cpl.CompileFactoryMetadata = null;
let token:
cpl.CompileTokenMetadata = this._getTokenMetadata(provider.token);
if (provider.useClass) {
compileTypeMetadata =
this._getInjectableTypeMetadata(provider.useClass, provider.dependencies);
compileDeps = compileTypeMetadata.diDeps;
if (provider.token === provider.useClass) {
// use the
compileTypeMetadata as it contains information about lifecycleHooks...
token = {identifier:
compileTypeMetadata};
}
} else if (provider.useFactory) {
compileFactoryMetadata =
this._getFactoryMetadata(provider.useFactory, provider.dependencies);
compileDeps =
compileFactoryMetadata.diDeps;
}
return {
token: token,
useClass: compileTypeMetadata,
useValue: provider.useValue,
useFactory: compileFactoryMetadata,
useExisting: provider.useExisting ?
this._getTokenMetadata(provider.useExisting) : undefined,
deps: compileDeps,
multi: provider.multi
};
}
private
_getQueriesMetadata(queries: {[key: string]: Query}, isViewQuery: boolean,

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directiveType: Type): cpl.CompileQueryMetadata[] {\n const res: cpl.CompileQueryMetadata[] = [];\n\n Object.keys(queries).forEach((propertyName: string) => {\n const query = queries[propertyName];\n if\n (query.isViewQuery === isViewQuery) {\n res.push(this._getQueryMetadata(query, propertyName,\n directiveType));\n }\n });\n\n return res;\n}\n\nprivate _queryVarBindings(selector: any): string[] {\n\n return selector.split(/\\s*,\\s*/);\n}\n\nprivate _getQueryMetadata(q: Query, propertyName: string, typeOrFunc:\n Type|Function):\n cpl.CompileQueryMetadata {\n let selectors: cpl.CompileTokenMetadata[];\n if (typeof\n q.selector === 'string') {\n selectors =\n this._queryVarBindings(q.selector).map(varName =>\n this._getTokenMetadata(varName));\n } else {\n if (!q.selector) {\n this._reportError(\n syntaxError(`Can't construct a query for the property\n \"${propertyName}\" of\n \"${\n stringifyType(typeOrFunc)}\" since the query selector wasn't defined.`),\n typeOrFunc);\n selectors =\n [];\n } else {\n selectors = [this._getTokenMetadata(q.selector)];\n }\n }\n\n return {\n selectors,\n first: q.first,\n descendants: q.descendants,\n propertyName,\n read: q.read ?\n this._getTokenMetadata(q.read) : null!,\n static: q.static\n };}\n\nprivate _reportError(error: any, type?:\n any, otherType?: any) {\n if (this._errorCollector) {\n this._errorCollector(error, type);\n if (otherType) {\n this._errorCollector(error, otherType);\n }\n } else {\n throw error;\n }\n}\n\nfunction\n flattenArray(tree: any[], out: Array<any> = []): Array<any> {\n if (tree) {\n for (let i = 0; i < tree.length; i++) {\n const item = resolveForwardRef(tree[i]);\n if (Array.isArray(item)) {\n flattenArray(item, out);\n } else\n {\n out.push(item);\n }\n }\n }\n\n return out;\n}\n\nfunction dedupeArray(array: any[]): Array<any> {\n if\n (array) {\n return Array.from(new Set(array));\n }\n\n return [];\n}\n\nfunction flattenAndDedupeArray(tree:\n any[]): Array<any> {\n return dedupeArray(flattenArray(tree));\n}\n\nfunction isValidType(value: any): boolean\n {\n return (value instanceof StaticSymbol) || (value instanceof Type);\n}\n\nfunction extractIdentifiers(value: any,\n targetIdentifiers: cpl.CompileIdentifierMetadata[]) {\n visitValue(value, new _CompileValueConverter(),\n targetIdentifiers);\n}\n\nclass _CompileValueConverter extends ValueTransformer {\n visitOther(value: any,\n targetIdentifiers: cpl.CompileIdentifierMetadata[]): any {\n targetIdentifiers.push({reference: value});\n }\n}\n\nfunction stringifyType(type: any): string {\n if (type instanceof StaticSymbol) {\n return `${type.name}\n in\n ${type.filePath}`;\n }\n else {\n return stringify(type);\n }\n}\n\n/**\n * Indicates that a component is still being\n loaded in a synchronous compile.\n */\nfunction componentStillLoadingError(compType: Type) {\n const error =\n new\n Error(`Can't compile synchronously as\n ${stringify(compType)} is still being loaded!`);\n (error as\n any)[ERROR_COMPONENT_TYPE] = compType;\n return error;\n}\n\n/**\n * @license\n * Copyright Google\n LLC All Rights Reserved.\n * Use of this source code is governed by an MIT-style license that can be\n * found\n in the LICENSE file at\n https://angular.io/license\n */\nimport {CompileDiDependencyMetadata,\n CompileEntryComponentMetadata, CompileProviderMetadata, CompileTokenMetadata} from\n './compile_metadata';\nimport {CompileReflector} from './compile_reflector';\nimport {DepFlags, NodeFlags}\n from './core';\nimport {createTokenForExternalReference, Identifiers} from './identifiers';\nimport\n {LifecycleHooks} from './lifecycle_reflector';\nimport * as o from './output/output_ast';\nimport\n {convertValueToOutputAst} from './output/value_util';\nimport {ProviderAst, ProviderAstType} from\n './template_parser/template_ast';\nimport {OutputContext} from './util';\n\nexport function providerDef(ctx:\n OutputContext, providerAst: ProviderAst): {\n providerExpr: o.Expression,\n flags: NodeFlags,\n depsExpr:\n o.Expression,\n tokenExpr: o.Expression\n} {\n let flags = NodeFlags.None;\n if (!providerAst.eager) {\n flags\n |= NodeFlags.LazyProvider;\n }\n if (providerAst.providerType === ProviderAstType.PrivateService) {\n flags\n |= NodeFlags.PrivateProvider;\n }\n if (providerAst.isModule) {\n flags |= NodeFlags.TypeModuleProvider;\n }\n providerAst.lifecycleHooks.forEach((lifecycleHook) => {\n // for regular providers, we only support\n ngOnDestroy\n if (lifecycleHook === LifecycleHooks.OnDestroy ||\n providerAst.providerType ===\n ProviderAstType.Directive ||\n providerAst.providerType === ProviderAstType.Component) {\n flags |=\n lifecycleHookToNodeFlag(lifecycleHook);\n }\n });\n const {providerExpr, flags: providerFlags, depsExpr} =\n providerAst.multiProvider ?\n multiProviderDef(ctx, flags, providerAst.providers) :\n singleProviderDef(ctx,\n flags, providerAst.providerType, providerAst.providers[0]);\n return {\n providerExpr,\n flags: providerFlags,\n depsExpr,\n tokenExpr: tokenExpr(ctx, providerAst.token),\n };}\n\nfunction multiProviderDef(\n ctx:

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OutputContext, flags: NodeFlags, providers: CompileProviderMetadata[]):\n {providerExpr: o.Expression, flags:
NodeFlags, depsExpr: o.Expression} {\n const allDepDefs: o.Expression[] = [];\n const allParams: o.FnParam[] =
[];\n const exprs = providers.map((provider, providerIndex) => {\n let expr: o.Expression;\n if
(provider.useClass) {\n const depExprs = convertDeps(providerIndex, provider.deps ||
provider.useClass.diDeps);\n expr = ctx.importExpr(provider.useClass.reference).instantiate(depExprs);\n }
else if (provider.useFactory) {\n const depExprs = convertDeps(providerIndex, provider.deps ||
provider.useFactory.diDeps);\n expr = ctx.importExpr(provider.useFactory.reference).callFn(depExprs);\n }
else if (provider.useExisting) {\n const depExprs = convertDeps(providerIndex, [{token:
provider.useExisting}]);\n expr = depExprs[0];\n } else {\n expr = convertValueToOutputAst(ctx,
provider.useValue);\n }\n return expr;\n });\n const providerExpr =\n o.fn(allParams, [new
o.ReturnStatement(o.literalArr(exprs)), o.INFERRED_TYPE);\n return {\n providerExpr,\n flags: flags |
NodeFlags.TypeFactoryProvider,\n depsExpr: o.literalArr(allDepDefs)\n };\n\n function
convertDeps(providerIndex: number, deps: CompileDiDependencyMetadata[]) {\n return deps.map((dep,
depIndex) => {\n const paramName = `p${providerIndex}_${depIndex}`;\n allParams.push(new
o.FnParam(paramName, o.DYNAMIC_TYPE);\n allDepDefs.push(depDef(ctx, dep));\n return
o.variable(paramName);\n });\n }\n\n function singleProviderDef(\n ctx: OutputContext, flags: NodeFlags,
providerType: ProviderAstType,\n providerMeta: CompileProviderMetadata):\n {providerExpr: o.Expression,
flags: NodeFlags, depsExpr: o.Expression} {\n let providerExpr: o.Expression;\n let deps:
CompileDiDependencyMetadata[];\n if (providerType === ProviderAstType.Directive || providerType ===
ProviderAstType.Component) {\n providerExpr = ctx.importExpr(providerMeta.useClass!.reference);\n flags |=
NodeFlags.TypeDirective;\n deps = providerMeta.deps || providerMeta.useClass!.diDeps;\n } else {\n if
(providerMeta.useClass) {\n providerExpr = ctx.importExpr(providerMeta.useClass.reference);\n flags |=
NodeFlags.TypeClassProvider;\n deps = providerMeta.deps || providerMeta.useClass.diDeps;\n } else if
(providerMeta.useFactory) {\n providerExpr = ctx.importExpr(providerMeta.useFactory.reference);\n flags |=
NodeFlags.TypeFactoryProvider;\n deps = providerMeta.deps || providerMeta.useFactory.diDeps;\n } else if
(providerMeta.useExisting) {\n providerExpr = o.NULL_EXPR;\n flags |=
NodeFlags.TypeUseExistingProvider;\n deps = [{token: providerMeta.useExisting}];\n } else {\n
providerExpr = convertValueToOutputAst(ctx, providerMeta.useValue);\n flags |=
NodeFlags.TypeValueProvider;\n deps = [];\n }\n }\n const depsExpr = o.literalArr(deps.map(dep =>
depDef(ctx, dep)));\n return {providerExpr, flags, depsExpr};\n }\n\n function tokenExpr(ctx: OutputContext,
tokenMeta: CompileTokenMetadata): o.Expression {\n return tokenMeta.identifier ?
ctx.importExpr(tokenMeta.identifier.reference) :\n o.literal(tokenMeta.value);\n }\n\n export
function depDef(ctx: OutputContext, dep: CompileDiDependencyMetadata): o.Expression {\n // Note: the
following fields have already been normalized out by provider_analyzer:\n // - isAttribute, isHost\n const expr =
dep.isValue ? convertValueToOutputAst(ctx, dep.value) : tokenExpr(ctx, dep.token!);\n let flags =
DepFlags.None;\n if (dep.isSkipSelf) {\n flags |= DepFlags.SkipSelf;\n }\n if (dep.isOptional) {\n flags |=
DepFlags.Optional;\n }\n if (dep.isSelf) {\n flags |= DepFlags.Self;\n }\n if (dep.isValue) {\n flags |=
DepFlags.Value;\n }\n return flags === DepFlags.None ? expr : o.literalArr([o.literal(flags), expr]);\n }\n\n export
function lifecycleHookToNodeFlag(lifecycleHook: LifecycleHooks): NodeFlags {\n let nodeFlag =
NodeFlags.None;\n switch (lifecycleHook) {\n case LifecycleHooks.AfterContentChecked:\n nodeFlag =
NodeFlags.AfterContentChecked;\n break;\n case LifecycleHooks.AfterContentInit:\n nodeFlag =
NodeFlags.AfterContentInit;\n break;\n case LifecycleHooks.AfterViewChecked:\n nodeFlag =
NodeFlags.AfterViewChecked;\n break;\n case LifecycleHooks.AfterViewInit:\n nodeFlag =
NodeFlags.AfterViewInit;\n break;\n case LifecycleHooks.DoCheck:\n nodeFlag = NodeFlags.DoCheck;\n
break;\n case LifecycleHooks.OnChanges:\n nodeFlag = NodeFlags.OnChanges;\n break;\n case
LifecycleHooks.OnDestroy:\n nodeFlag = NodeFlags.OnDestroy;\n break;\n case LifecycleHooks.OnInit:\n
nodeFlag = NodeFlags.OnInit;\n break;\n }\n return nodeFlag;\n }\n\n export function
componentFactoryResolverProviderDef(\n reflector: CompileReflector, ctx: OutputContext, flags: NodeFlags,\n

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entryComponents: CompileEntryComponentMetadata[]: {\n providerExpr: o.Expression,\n flags: NodeFlags,\n depsExpr: o.Expression,\n tokenExpr: o.Expression}\n }\n const entryComponentFactories =\n entryComponents.map((entryComponent) => ctx.importExpr(entryComponent.componentFactory));\n const token = createTokenForExternalReference(reflector, Identifiers.ComponentFactoryResolver);\n const classMeta = {\n diDeps: [\n {isValue: true, value: o.literalArr(entryComponentFactories)},\n {token: token, isSkipSelf: true, isOptional: true},\n {token: createTokenForExternalReference(reflector, Identifiers.NgModuleRef)},\n],\n lifecycleHooks: [],\n reference:\n reflector.resolveExternalReference(Identifiers.CodegenComponentFactoryResolver)\n };\n const {providerExpr, flags: providerFlags, depsExpr} =\n singleProviderDef(ctx, flags, ProviderAstType.PrivateService, {\n token,\n multi: false,\n useClass: classMeta,\n });\n return {providerExpr, flags: providerFlags, depsExpr, tokenExpr: tokenExpr(ctx, token)};\n }\n\n"/**\n * @license\n * Copyright Google LLC All Rights Reserved.\n *\n * Use of this source code is governed by an MIT-style license that can be\n * found in the LICENSE file at https://angular.io/license\n */\n\nimport {CompileNgModuleMetadata, CompileProviderMetadata, identifierName} from './compile_metadata';\nimport {CompileReflector} from './compile_reflector';\nimport {NodeFlags} from './core';\nimport {Identifiers} from './identifiers';\nimport * as o from './output/output_ast';\nimport {typeSourceSpan} from './parse_util';\nimport {NgModuleProviderAnalyzer} from './provider_analyzer';\nimport {OutputContext} from './util';\nimport {componentFactoryResolverProviderDef, depDef, providerDef} from './view_compiler/provider_compiler';\n\nexport class NgModuleCompileResult {\n constructor(public ngModuleFactoryVar: string) {} }\n\nconst LOG_VAR = o.variable('_l');\n\nexport class NgModuleCompiler {\n constructor(private reflector: CompileReflector) {} }\n\ncompile(\n ctx: OutputContext,\n ngModuleMeta: CompileNgModuleMetadata,\n extraProviders: CompileProviderMetadata[]):\n NgModuleCompileResult {\n const sourceSpan = typeSourceSpan('NgModule', ngModuleMeta.type);\n const entryComponentFactories = ngModuleMeta.transitiveModule.entryComponents;\n const bootstrapComponents = ngModuleMeta.bootstrapComponents;\n const providerParser =\n new NgModuleProviderAnalyzer(this.reflector, ngModuleMeta, extraProviders, sourceSpan);\n const providerDefs =\n [componentFactoryResolverProviderDef(\n this.reflector, ctx, NodeFlags.None, entryComponentFactories)]\n .concat(providerParser.parse().map((provider) => providerDef(ctx, provider)))\n .map(({providerExpr, depsExpr, flags, tokenExpr}) => {\n return o.importExpr(Identifiers.moduleProviderDef).callFn([\n o.literal(flags), tokenExpr, providerExpr, depsExpr\n]);\n });\n const ngModuleDef =\n o.importExpr(Identifiers.moduleDef).callFn([o.literalArr(providerDefs)];\n const ngModuleDefFactory =\n o.fn([new o.FnParam(LOG_VAR.name!), [new o.ReturnStatement(ngModuleDef)], o.INFERRED_TYPE);\n const ngModuleFactoryVar = `${identifierName(ngModuleMeta.type)}NgFactory`;\n this._createNgModuleFactory(\n ctx, ngModuleMeta.type.reference,\n o.importExpr(Identifiers.createModuleFactory).callFn([\n ctx.importExpr(ngModuleMeta.type.reference),\n o.literalArr(bootstrapComponents.map(id => ctx.importExpr(id.reference))),\n ngModuleDefFactory\n]));\n if (ngModuleMeta.id) {\n const id = typeof ngModuleMeta.id === 'string' ? o.literal(ngModuleMeta.id) :\n ctx.importExpr(ngModuleMeta.id);\n const registerFactoryStmt =\n o.importExpr(Identifiers.RegisterModuleFactoryFn)\n .callFn([id, o.variable(ngModuleFactoryVar)])\n .toStmt();\n ctx.statements.push(registerFactoryStmt);\n }\n return new NgModuleCompileResult(ngModuleFactoryVar);\n }\n\ncreateStub(ctx: OutputContext, ngModuleReference: any) {\n this._createNgModuleFactory(ctx, ngModuleReference, o.NULL_EXPR);\n }\n\nprivate _createNgModuleFactory(ctx: OutputContext, reference: any, value: o.Expression) {\n const ngModuleFactoryVar = `${identifierName({reference: reference})}NgFactory`;\n const ngModuleFactoryStmt =\n o.variable(ngModuleFactoryVar)\n .set(value)\n .toDeclStmt(\n o.importType(Identifiers.NgModuleFactory, [o.expressionType(ctx.importExpr(reference))]),\n [o.TypeModifier.Const],\n [o.StmtModifier.Final, o.StmtModifier.Exported]);\n}

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ctx.statements.push(ngModuleFactoryStmt);\n }\n}\n"/**\n * @license\n * Copyright Google LLC All Rights Reserved.\n *\n * Use of this source code is governed by an MIT-style license that can be\n * found in the LICENSE file at https://angular.io/license\n */\nimport {CompileReflector} from './compile_reflector';\nimport {createNgModule, NgModule, Type} from './core';\nimport {findLast} from './directive_resolver';\nimport {stringify} from './util';\n\n/**\n * Resolves types to {@link NgModule}.\n */\nexport class NgModuleResolver {\n constructor(private _reflector: CompileReflector) {}\n isNgModule(type: any) {\n return this._reflector.annotations(type).some(createNgModule.isTypeOf);\n }\n resolve(type: Type, throwIfNotFound = true): NgModule|null {\n const ngModuleMeta: NgModule =\n findLast(this._reflector.annotations(type), createNgModule.isTypeOf);\n if (ngModuleMeta) {\n return ngModuleMeta;\n } else {\n if (throwIfNotFound) {\n throw new Error(`No NgModule metadata found for '${stringify(type)}'.`);\n }\n return null;\n }\n }\n}\n"/**\n * @license\n * Copyright Google LLC All Rights Reserved.\n *\n * Use of this source code is governed by an MIT-style license that can be\n * found in the LICENSE file at https://angular.io/license\n */\nimport {AbstractEmitterVisitor, CATCH_ERROR_VAR, CATCH_STACK_VAR, EmitterVisitorContext, OutputEmitter} from './abstract_emitter';\nimport * as o from './output_ast';\nexport function debugOutputAstAsTypeScript(ast: o.Statement|o.Expression|o.Type|any[]): string {\n const converter = new _TsEmitterVisitor();\n const ctx = EmitterVisitorContext.createRoot();\n const asts: any[] = Array.isArray(ast) ? ast : [ast];\n asts.forEach((ast) => {\n if (ast instanceof o.Statement) {\n ast.visitStatement(converter, ctx);\n } else if (ast instanceof o.Expression) {\n ast.visitExpression(converter, ctx);\n } else if (ast instanceof o.Type) {\n ast.visitType(converter, ctx);\n } else {\n throw new Error(`Don't know how to print debug info for ${ast}`);\n }\n });\n return ctx.toSource();\n}\n\nexport type ReferenceFilter = (reference: o.ExternalReference) => boolean;\nexport class TypeScriptEmitter implements OutputEmitter {\n emitStatementsAndContext(genFilePath: string, stmts: o.Statement[], preamble: string = "", emitSourceMaps: boolean = true, referenceFilter?: ReferenceFilter, importFilter?: ReferenceFilter): {sourceText: string, context: EmitterVisitorContext} {\n const converter = new _TsEmitterVisitor(referenceFilter, importFilter);\n const ctx = EmitterVisitorContext.createRoot();\n converter.visitAllStatements(stmts, ctx);\n const preambleLines = preamble ? preamble.split("\\n") : [];\n converter.reexports.forEach((reexports, exportedModuleName) => {\n const reexportsCode =\n reexports.map(reexport => `${reexport.name} as ${reexport.as}`).join(',');\n preambleLines.push(`export ${reexportsCode} from '${exportedModuleName}'.`);\n });\n converter.importsWithPrefixes.forEach((prefix, importedModuleName) => {\n // Note: can't write the real word for import as it screws up system.js auto detection...\n preambleLines.push(`import ${prefix} * as ${importedModuleName} from '${importedModuleName}'.`);\n });\n const sm = emitSourceMaps ?\n ctx.toSourceMapGenerator(genFilePath, preambleLines.length).toJsComment() :\n "";\n const lines = [...preambleLines, ctx.toSource(), sm];\n if (sm) {\n // always add a newline at the end, as some tools have bugs without it.\n lines.push("");\n }\n ctx.setPreambleLineCount(preambleLines.length);\n return {sourceText: lines.join("\\n"), context: ctx};\n }\n emitStatements(genFilePath: string, stmts: o.Statement[], preamble: string = "") {\n return this.emitStatementsAndContext(genFilePath, stmts, preamble).sourceText;\n }\n}\n\nclass _TsEmitterVisitor extends AbstractEmitterVisitor implements o.TypeVisitor {\n private typeExpression = 0;\n constructor(private referenceFilter?: ReferenceFilter, private importFilter?: ReferenceFilter) {\n super(false);\n }\n importsWithPrefixes = new Map<string, string>();\n reexports = new Map<string, {name: string, as: string}>();\n visitType(t: o.Type|null, ctx: EmitterVisitorContext, defaultType: string = 'any') {\n if (t) {\n this.typeExpression++;\n t.visitType(this, ctx);\n this.typeExpression--;\n } else {\n ctx.print(null, defaultType);\n }\n }\n visitLiteralExpr(ast: o.LiteralExpr, ctx: EmitterVisitorContext): any {\n const value = ast.value;\n if (value == null && ast.type != o.INFERRED_TYPE) {\n ctx.print(ast, `(${value} as any)`);\n return null;\n }\n return super.visitLiteralExpr(ast, ctx);\n }\n // Temporary workaround to support strictNullCheck enabled consumers of ngc emit.\n // In SNC mode, [] have the type never[], so we cast here to any[].\n // TODO: narrow the cast to a more explicit type, or use a pattern that does not\n // start with [].concat. see https://github.com/angular/angular/pull/11846\n visitLiteralArrayExpr(ast: o.LiteralArrayExpr, ctx:

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EmitterVisitorContext): any {\n if (ast.entries.length === 0) {\n ctx.print(ast, '(');\n }\n const result =
super.visitLiteralArrayExpr(ast, ctx);\n if (ast.entries.length === 0) {\n ctx.print(ast, ' as any[]);\n }\n
return result;\n }\n\n visitExternalExpr(ast: o.ExternalExpr, ctx: EmitterVisitorContext): any {\n
this._visitIdentifier(ast.value, ast.typeParams, ctx);\n return null;\n }\n\n visitAssertNotNullExpr(ast:
o.AssertNotNull, ctx: EmitterVisitorContext): any {\n const result = super.visitAssertNotNullExpr(ast, ctx);\n
ctx.print(ast, '!);\n return result;\n }\n\n visitDeclareVarStmt(stmt: o.DeclareVarStmt, ctx:
EmitterVisitorContext): any {\n if (stmt.hasModifier(o.StmtModifier.Exported) && stmt.value instanceof
o.ExternalExpr &&\n !stmt.type) {\n // check for a reexport\n const {name, moduleName} =
stmt.value.value;\n if (moduleName) {\n let reexports = this.reexports.get(moduleName);\n if
(!reexports) {\n reexports = [];\n this.reexports.set(moduleName, reexports);\n }\n
reexports.push({ name: name!, as: stmt.name});\n return null;\n }\n }\n if
(stmt.hasModifier(o.StmtModifier.Exported)) {\n ctx.print(stmt, `export `);\n }\n if
(stmt.hasModifier(o.StmtModifier.Final)) {\n ctx.print(stmt, `const`);\n } else {\n ctx.print(stmt, `var`);\n
}\n ctx.print(stmt, ` ${stmt.name}`);\n this._printColonType(stmt.type, ctx);\n if (stmt.value) {\n
ctx.print(stmt, ` = `);\n stmt.value.visitExpression(this, ctx);\n }\n ctx.println(stmt, `);\n return null;\n
}\n\n visitWrappedNodeExpr(ast: o.WrappedNodeExpr<any>, ctx: EmitterVisitorContext): never {\n throw new
Error('Cannot visit a WrappedNodeExpr when outputting Typescript.);\n }\n\n visitCastExpr(ast: o.CastExpr, ctx:
EmitterVisitorContext): any {\n ctx.print(ast, `(<`);\n ast.type!.visitType(this, ctx);\n ctx.print(ast, `>`);\n
ast.value.visitExpression(this, ctx);\n ctx.print(ast, `)`);\n return null;\n }\n\n visitInstantiateExpr(ast:
o.InstantiateExpr, ctx: EmitterVisitorContext): any {\n ctx.print(ast, `new `);\n this.typeExpression++;\n
ast.classExpr.visitExpression(this, ctx);\n this.typeExpression--;\n ctx.print(ast, `(`);\n
this.visitAllExpressions(ast.args, ctx, ',');\n ctx.print(ast, `)`);\n return null;\n }\n\n visitDeclareClassStmt(stmt:
o.ClassStmt, ctx: EmitterVisitorContext): any {\n ctx.pushClass(stmt);\n if
(stmt.hasModifier(o.StmtModifier.Exported)) {\n ctx.print(stmt, `export `);\n }\n ctx.print(stmt, `class
${stmt.name}`);\n if (stmt.parent != null) {\n ctx.print(stmt, ` extends `);\n this.typeExpression++;\n
stmt.parent.visitExpression(this, ctx);\n this.typeExpression--;\n }\n ctx.println(stmt, ` `);\n
ctx.incIndent();\n stmt.fields.forEach((field) => this._visitClassField(field, ctx));\n if (stmt.constructorMethod !=
null) {\n this._visitClassConstructor(stmt, ctx);\n }\n stmt.getters.forEach((getter) =>
this._visitClassGetter(getter, ctx));\n stmt.methods.forEach((method) => this._visitClassMethod(method, ctx));\n
ctx.decIndent();\n ctx.println(stmt, ` `);\n ctx.popClass();\n return null;\n }\n\n private _visitClassField(field:
o.ClassField, ctx: EmitterVisitorContext) {\n if (field.hasModifier(o.StmtModifier.Private)) {\n // comment out
as a workaround for #10967\n ctx.print(null, `/*private*/ `);\n }\n if
(field.hasModifier(o.StmtModifier.Static)) {\n ctx.print(null, 'static ');\n }\n ctx.print(null, field.name);\n
this._printColonType(field.type, ctx);\n if (field.initializer) {\n ctx.print(null, ' = ');\n
field.initializer.visitExpression(this, ctx);\n }\n ctx.println(null, `);\n }\n\n private _visitClassGetter(getter:
o.ClassGetter, ctx: EmitterVisitorContext) {\n if (getter.hasModifier(o.StmtModifier.Private)) {\n
ctx.print(null, `private `);\n }\n ctx.print(null, `get ${getter.name}()`);\n this._printColonType(getter.type,
ctx);\n ctx.println(null, ` `);\n ctx.incIndent();\n this.visitAllStatements(getter.body, ctx);\n
ctx.decIndent();\n ctx.println(null, ` `);\n }\n\n private _visitClassConstructor(stmt: o.ClassStmt, ctx:
EmitterVisitorContext) {\n ctx.print(stmt, `constructor(`);\n this._visitParams(stmt.constructorMethod.params,
ctx);\n ctx.println(stmt, ` `);\n ctx.incIndent();\n this.visitAllStatements(stmt.constructorMethod.body, ctx);\n
ctx.decIndent();\n ctx.println(stmt, ` `);\n }\n\n private _visitClassMethod(method: o.ClassMethod, ctx:
EmitterVisitorContext) {\n if (method.hasModifier(o.StmtModifier.Private)) {\n ctx.print(null, `private `);\n
}\n ctx.print(null, `${method.name}()`);\n this._visitParams(method.params, ctx);\n ctx.print(null, `)`);\n
this._printColonType(method.type, ctx, 'void');\n ctx.println(null, ` `);\n ctx.incIndent();\n
this.visitAllStatements(method.body, ctx);\n ctx.decIndent();\n ctx.println(null, ` `);\n }\n\n
visitFunctionExpr(ast: o.FunctionExpr, ctx: EmitterVisitorContext): any {\n if (ast.name) {\n ctx.print(ast,
'function ');\n ctx.print(ast, ast.name);\n }\n ctx.print(ast, `(`);\n this._visitParams(ast.params, ctx);\n

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ctx.print(ast, `)`);\n this._printColonType(ast.type, ctx, 'void');\n if (!ast.name) {\n ctx.print(ast, ` => `);\n }\n ctx.println(ast, `{`);\n ctx.incIndent();\n this.visitAllStatements(ast.statements, ctx);\n ctx.decIndent();\n ctx.print(ast, `}`);\n\n return null;\n }\n\n visitDeclareFunctionStmt(stmt: o.DeclareFunctionStmt, ctx: EmitterVisitorContext): any {\n if (stmt.hasModifier(o.StmtModifier.Exported)) {\n ctx.print(stmt, `export `);\n }\n ctx.print(stmt, `function ${stmt.name}(`);\n this._visitParams(stmt.params, ctx);\n ctx.print(stmt, `)`);\n this._printColonType(stmt.type, ctx, 'void');\n ctx.println(stmt, `{`);\n ctx.incIndent();\n this.visitAllStatements(stmt.statements, ctx);\n ctx.decIndent();\n ctx.println(stmt, `}`);\n return null;\n }\n\n visitTryCatchStmt(stmt: o.TryCatchStmt, ctx: EmitterVisitorContext): any {\n ctx.println(stmt, `try {`);\n ctx.incIndent();\n this.visitAllStatements(stmt.bodyStmts, ctx);\n ctx.decIndent();\n ctx.println(stmt, `} catch (${CATCH_ERROR_VAR.name}) {`);\n ctx.incIndent();\n const catchStmts = [\n <Statement>CATCH_STACK_VAR.set(CATCH_ERROR_VAR.prop('stack', null)).toDeclStmt(null, [\n o.StmtModifier.Final\n])].concat(stmt.catchStmts);\n this.visitAllStatements(catchStmts, ctx);\n ctx.decIndent();\n ctx.println(stmt, `}`);\n return null;\n }\n\n visitBuiltinType(type: o.BuiltinType, ctx: EmitterVisitorContext): any {\n let typeStr: string;\n switch (type.name) {\n case o.BuiltinTypeName.Bool:\n typeStr = 'boolean';\n break;\n case o.BuiltinTypeName.Dynamic:\n typeStr = 'any';\n break;\n case o.BuiltinTypeName.Function:\n typeStr = 'Function';\n break;\n case o.BuiltinTypeName.Number:\n typeStr = 'number';\n break;\n case o.BuiltinTypeName.Int:\n typeStr = 'number';\n break;\n case o.BuiltinTypeName.String:\n typeStr = 'string';\n break;\n case o.BuiltinTypeName.None:\n typeStr = 'never';\n break;\n default:\n throw new Error(`Unsupported builtin type ${type.name}`);\n }\n ctx.print(null, typeStr);\n return null;\n }\n\n visitExpressionType(ast: o.ExpressionType, ctx: EmitterVisitorContext): any {\n ast.value.visitExpression(this, ctx);\n if (ast.typeParams !== null) {\n ctx.print(null, '<');\n this.visitAllObjects(type => this.visitType(type, ctx), ast.typeParams, ctx, ',');\n ctx.print(null, '>');\n }\n return null;\n }\n\n visitArrayType(type: o.ArrayType, ctx: EmitterVisitorContext): any {\n this.visitType(type.of, ctx);\n ctx.print(null, `[]`);\n return null;\n }\n\n visitMapType(type: o.MapType, ctx: EmitterVisitorContext): any {\n ctx.print(null, `{[key: string]:`);\n this.visitType(type.valueType, ctx);\n ctx.print(null, `}`);\n return null;\n }\n\n getBuiltinMethodName(method: o.BuiltinMethod): string {\n let name: string;\n switch (method) {\n case o.BuiltinMethod.ConcatArray:\n name = 'concat';\n break;\n case o.BuiltinMethod.SubscribeObservable:\n name = 'subscribe';\n break;\n case o.BuiltinMethod.Bind:\n name = 'bind';\n break;\n default:\n throw new Error(`Unknown builtin method: ${method}`);\n }\n return name;\n }\n\n private _visitParams(params: o.FnParam[], ctx: EmitterVisitorContext): void {\n this.visitAllObjects(param => {\n ctx.print(null, param.name);\n this._printColonType(param.type, ctx);\n }, params, ctx, ',');\n }\n\n private _visitIdentifier(\n value: o.ExternalReference, typeParams: o.Type[]|null, ctx: EmitterVisitorContext): void {\n const {name, moduleName} = value;\n if (this.referenceFilter && this.referenceFilter(value)) {\n ctx.print(null, '(null as any)');\n return;\n }\n if (moduleName && (!this.importFilter || !this.importFilter(value))) {\n let prefix = this.importsWithPrefixes.get(moduleName);\n if (prefix == null) {\n prefix = `i${this.importsWithPrefixes.size}`;\n this.importsWithPrefixes.set(moduleName, prefix);\n }\n ctx.print(null, `${prefix}.`);\n }\n ctx.print(null, name!);\n }\n\n if (this.typeExpression > 0) {\n // If we are in a type expression that refers to a generic type then supply\n // the required type parameters. If there were not enough type parameters\n // supplied, supply any as the type. Outside a type expression the reference\n // should not supply type parameters and be treated as a simple value reference\n // to the constructor function itself.\n const suppliedParameters = typeParams || [];\n if (suppliedParameters.length > 0) {\n ctx.print(null, '<');\n this.visitAllObjects(type => type.visitType(this, ctx), typeParams!, ctx, ',');\n ctx.print(null, '>');\n }\n }\n }\n\n private _printColonType(type: o.Type|null, ctx: EmitterVisitorContext, defaultType?: string) {\n if (type !== o.INFERRED_TYPE) {\n ctx.print(null, ':');\n this.visitType(type, ctx, defaultType);\n }\n }\n\n }

/**\n * @license\n * Copyright Google LLC All Rights Reserved.\n * Use of this source code is governed by an MIT-style license that can be\n * found in the LICENSE file at https://angular.io/license\n */\n\nimport {CompileReflector} from

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./compile_reflector';\nimport {createPipe, Pipe, Type} from './core';\nimport {findLast} from
./directive_resolver';\nimport {resolveForwardRef, stringify} from './util';\n\n/**\n * Resolve a `Type` for {@link
Pipe}.\n *\n * This interface can be overridden by the application developer to create custom behavior.\n *\n * See
{@link Compiler}\n */\nexport class PipeResolver {\n constructor(private _reflector: CompileReflector) {\n\n
isPipe(type: Type) {\n const typeMetadata = this._reflector.annotations(resolveForwardRef(type));\n return
typeMetadata && typeMetadata.some(createPipe.isTypeOf);\n }\n\n /**\n * Return {@link Pipe} for a given
`Type`.\n *\n resolve(type: Type, throwIfNotFound = true): Pipe|null {\n const metas =
this._reflector.annotations(resolveForwardRef(type));\n if (metas) {\n const annotation = findLast(metas,
createPipe.isTypeOf);\n if (annotation) {\n return annotation;\n }\n }\n if (throwIfNotFound) {\n
throw new Error(`No Pipe decorator found on ${stringify(type)}`);\n }\n return null;\n }\n}\n\n"/**\n *
@license\n * Copyright Google LLC All Rights Reserved.\n *\n * Use of this source code is governed by an MIT-
style license that can be\n * found in the LICENSE file at https://angular.io/license\n */\n\nimport
{AotCompilerOptions} from './aot/compiler_options';\nimport {StaticReflector} from
./aot/static_reflector';\nimport {StaticSymbol} from './aot/static_symbol';\nimport {CompileDirectiveMetadata,
CompilePipeSummary} from './compile_metadata';\nimport {BindingForm, convertActionBinding,
convertPropertyBinding, convertPropertyBindingBuiltins, EventHandlerVars, LocalResolver} from
./compiler_util/expression_converter';\nimport {AST, ASTWithSource, Interpolation} from
./expression_parser/ast';\nimport * as as from './output/output_ast';\nimport {ParseSourceSpan} from
./parse_util';\nimport {AttrAst, BoundDirectivePropertyAst, BoundElementPropertyAst, BoundEventAst,
BoundTextAst, DirectiveAst, ElementAst, EmbeddedTemplateAst, NgContentAst, ReferenceAst, TemplateAst,
TemplateAstVisitor, templateVisitAll, TextAst, VariableAst} from './template_parser/template_ast';\nimport
{OutputContext} from './util';\n\n/**\n *\n * Generates code that is used to type check templates.\n *\nexport class
TypeCheckCompiler {\n constructor(private options: AotCompilerOptions, private reflector: StaticReflector) {\n\n
/**\n * Important notes:\n * - This must not produce new `import` statements, but only refer to types outside\n *
of the file via the variables provided via externalReferenceVars.\n * - This allows Typescript to reuse the old
program's structure as no imports have changed.\n * - This must not produce any exports, as this would pollute the
.d.ts file\n * and also violate the point above.\n */\n compileComponent(\n componentId: string, component:
CompileDirectiveMetadata, template: TemplateAst[],\n usedPipes: CompilePipeSummary[],
externalReferenceVars: Map<StaticSymbol, string>,\n ctx: OutputContext): o.Statement[] {\n const pipes =
new Map<string, StaticSymbol>();\n usedPipes.forEach(p => pipes.set(p.name, p.type.reference));\n let
embeddedViewCount = 0;\n const viewBuilderFactory =\n (parent: ViewBuilder|null, guards:
GuardExpression[]): ViewBuilder => {\n const embeddedViewIndex = embeddedViewCount++;\n return
new ViewBuilder(\n this.options, this.reflector, externalReferenceVars, parent, component.type.reference,\n
 component.isHost, embeddedViewIndex, pipes, guards, ctx, viewBuilderFactory);\n };\n\n const visitor
= viewBuilderFactory(null, []);\n visitor.visitAll([], template);\n\n return visitor.build(componentId);\n }\n}\n\ninterface GuardExpression {\n guard: StaticSymbol;\n useIf: boolean;\n expression:
Expression;\n}\n\ninterface ViewBuilderFactory {\n (parent: ViewBuilder, guards: GuardExpression[]):
ViewBuilder;\n}\n\n// Note: This is used as key in Map and should therefore be\n// unique per value.\ntype
OutputVarType = o.BuiltinTypeName|StaticSymbol;\n\ninterface Expression {\n context: OutputVarType;\n sourceSpan: ParseSourceSpan;\n value: AST;\n}\n\nconst DYNAMIC_VAR_NAME = '_any';\n\nclass
TypeCheckLocalResolver implements LocalResolver {\n notifyImplicitReceiverUse(): void {\n }\n getLocal(name:
string): o.Expression|null {\n if (name === EventHandlerVars.event.name) {\n // References to the event
should not be type-checked.\n // TODO(chuckj): determine a better type for the event.\n return
o.variable(DYNAMIC_VAR_NAME);\n }\n return null;\n }\n}\n\nconst defaultResolver = new
TypeCheckLocalResolver();\n\nclass ViewBuilder implements TemplateAstVisitor, LocalResolver {\n private
refOutputVars = new Map<string, OutputVarType>();\n private variables: VariableAst[] = [];\n private children:
ViewBuilder[] = [];\n private updates: Expression[] = [];\n private actions: Expression[] = [];\n\n constructor(\n
private options: AotCompilerOptions, private reflector: StaticReflector,\n private externalReferenceVars:

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Map<StaticSymbol, string>, private parent: ViewBuilder|null,\n private component: StaticSymbol, private
isHostComponent: boolean,\n private embeddedViewIndex: number, private pipes: Map<string,
StaticSymbol>,\n private guards: GuardExpression[], private ctx: OutputContext,\n private
viewBuilderFactory: ViewBuilderFactory) {} \n\n private getOutputVar(type: o.BuiltinTypeName|StaticSymbol):
string {\n let varName: string|undefined;\n if (type === this.component && this.isHostComponent) {\n
varName = DYNAMIC_VAR_NAME;\n } else if (type instanceof StaticSymbol) {\n varName =
this.externalReferenceVars.get(type);\n } else {\n varName = DYNAMIC_VAR_NAME;\n }\n if
(!varName) {\n throw new Error(\n `Illegal State: referring to a type without a variable
${JSON.stringify(type)}`);\n }\n return varName;\n }\n\n private getTypeGuardExpressions(ast:
EmbeddedTemplateAst): GuardExpression[] {\n const result = [...this.guards];\n for (let directive of
ast.directives) {\n for (let input of directive.inputs) {\n const guard =
directive.directive.guards[input.directiveName];\n if (guard) {\n const useIf = guard === 'UseIf';\n
result.push({\n guard,\n useIf,\n expression: {\n context: this.component,\n
value: input.value,\n sourceSpan: input.sourceSpan,\n },\n });\n }\n }\n
return result;\n }\n\n visitAll(variables: VariableAst[], astNodes: TemplateAst[]) {\n this.variables = variables;\n
templateVisitAll(this, astNodes);\n }\n\n build(componentId: string, targetStatements: o.Statement[] = []):
o.Statement[] {\n this.children.forEach((child) => child.build(componentId, targetStatements));\n let viewStmts:
o.Statement[] =\n [o.variable(DYNAMIC_VAR_NAME).set(o.NULL_EXPR).toDeclStmt(o.DYNAMIC_TYPE)];\n let
bindingCount = 0;\n this.updates.forEach((expression) => {\n const {sourceSpan, context, value} =
this.preprocessUpdateExpression(expression);\n const bindingId = `${bindingCount++}`;\n const
nameResolver = context === this.component ? this : defaultResolver;\n const {stmts, currValExpr} =
convertPropertyBinding(\n nameResolver, o.variable(this.getOutputVar(context)), value, bindingId,\n BindingForm.General);\n stmts.push(new o.ExpressionStatement(currValExpr));\n
viewStmts.push(...stmts.map(\n (stmt: o.Statement) => o.applySourceSpanToStatementIfNeeded(stmt,
sourceSpan));\n });\n\n this.actions.forEach(({sourceSpan, context, value}) => {\n const bindingId =
`${bindingCount++}`;\n const nameResolver = context === this.component ? this : defaultResolver;\n const
{stmts} = convertActionBinding(\n nameResolver, o.variable(this.getOutputVar(context)), value, bindingId);\n
viewStmts.push(...stmts.map(\n (stmt: o.Statement) => o.applySourceSpanToStatementIfNeeded(stmt,
sourceSpan));\n });\n\n if (this.guards.length) {\n let guardExpression: o.Expression|undefined =
undefined;\n for (const guard of this.guards) {\n const {context, value} =
this.preprocessUpdateExpression(guard.expression);\n const bindingId = `${bindingCount++}`;\n const
nameResolver = context === this.component ? this : defaultResolver;\n // We only support support simple
expressions and ignore others as they\n // are unlikely to affect type narrowing.\n const {stmts,
currValExpr} = convertPropertyBinding(\n nameResolver, o.variable(this.getOutputVar(context)), value,
bindingId,\n BindingForm.TrySimple);\n if (stmts.length == 0) {\n const guardClause =\n guard.useIf ? currValExpr : this.ctx.importExpr(guard.guard).callFn([currValExpr]);\n guardExpression =
guardExpression ? guardExpression.and(guardClause) : guardClause;\n }\n }\n if (guardExpression) {\n
viewStmts = [new o.IfStmt(guardExpression, viewStmts)];\n }\n }\n\n const viewName =
`_View_${componentId}_${this.embeddedViewIndex}`;\n const viewFactory = new
o.DeclareFunctionStmt(viewName, [], viewStmts);\n targetStatements.push(viewFactory);\n return
targetStatements;\n }\n\n visitBoundText(ast: BoundTextAst, context: any): any {\n const astWithSource =
<ASTWithSource>ast.value;\n const inter = <Interpolation>astWithSource.ast;\n\n inter.expressions.forEach(\n
(expr) =>{\n this.updates.push({context: this.component, value: expr, sourceSpan: ast.sourceSpan});\n
 })\n\n visitEmbeddedTemplate(ast: EmbeddedTemplateAst, context: any): any {\n
this.visitElementOrTemplate(ast);\n // Note: The old view compiler used to use an `any` type\n // for the context
in any embedded view.\n // We keep this behavior behind a flag for now.\n if
(this.options.fullTemplateTypeCheck) {\n // Find any applicable type guards. For example, NgIf has a type guard

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on ngIf\n // (see NgIf.ngIfTypeGuard) that can be used to indicate that a template is only\n // stamped out if
ngIf is truthy so any bindings in the template can assume that,\n // if a nullable type is used for ngIf, that
expression is not null or undefined.\n const guards = this.getTypeGuardExpressions(ast);\n const childVisitor
= this.viewBuilderFactory(this, guards);\n this.children.push(childVisitor);\n
childVisitor.visitAll(ast.variables, ast.children);\n }\n }\n visitElement(ast: ElementAst, context: any): any {\n
this.visitElementOrTemplate(ast);\n \n let inputDefs: o.Expression[] = [];\n let updateRendererExpressions:
Expression[] = [];\n let outputDefs: o.Expression[] = [];\n ast.inputs.forEach((inputAst) => {\n
this.updates.push(\n {context: this.component, value: inputAst.value, sourceSpan: inputAst.sourceSpan});\n
});\n \n templateVisitAll(this, ast.children);\n }\n \n private visitElementOrTemplate(ast: {\n outputs:
BoundEventAst[],\n directives: DirectiveAst[],\n references: ReferenceAst[],\n }) {\n
ast.directives.forEach((dirAst) => {\n this.visitDirective(dirAst);\n });\n \n ast.references.forEach((ref) => {\n
 let outputVarType: OutputVarType = null!;\n // Note: The old view compiler used to use an `any` type\n //
for directives exposed via `exportAs`.\n // We keep this behavior behind a flag for now.\n if (ref.value &&
ref.value.identifier && this.options.fullTemplateTypeCheck) {\n outputVarType =
ref.value.identifier.reference;\n } else {\n outputVarType = o.BuiltinTypeName.Dynamic;\n }\n
this.refOutputVars.set(ref.name, outputVarType);\n });\n \n ast.outputs.forEach((outputAst) => {\n
this.actions.push(\n {context: this.component, value: outputAst.handler, sourceSpan:
outputAst.sourceSpan});\n });\n }\n \n visitDirective(dirAst: DirectiveAst) {\n const dirType =
dirAst.directive.type.reference;\n dirAst.inputs.forEach(\n (input) => this.updates.push(\n {context:
this.component, value: input.value, sourceSpan: input.sourceSpan});\n // Note: The old view compiler used to use
an `any` type\n // for expressions in host properties / events.\n // We keep this behavior behind a flag for now.\n
if (this.options.fullTemplateTypeCheck) {\n dirAst.hostProperties.forEach(\n (inputAst) =>
this.updates.push(\n {context: dirType, value: inputAst.value, sourceSpan: inputAst.sourceSpan});\n
});\n \n dirAst.hostEvents.forEach((hostEventAst) => this.actions.push({\n context: dirType,\n value:
hostEventAst.handler,\n sourceSpan: hostEventAst.sourceSpan\n }));\n }\n \n \n notifyImplicitReceiverUse(): void {\n getLocal(name: string): o.Expression|null {\n if (name ==
EventHandlerVars.event.name) {\n return o.variable(this.getOutputVar(o.BuiltinTypeName.Dynamic));\n }\n
for (let currBuilder: ViewBuilder|null = this; currBuilder; currBuilder = currBuilder.parent) {\n let
outputVarType: OutputVarType|undefined;\n // check references\n outputVarType =
currBuilder.refOutputVars.get(name);\n if (outputVarType == null) {\n // check variables\n const varAst
= currBuilder.variables.find((varAst) => varAst.name === name);\n if (varAst) {\n outputVarType =
o.BuiltinTypeName.Dynamic;\n }\n }\n if (outputVarType != null) {\n return
o.variable(this.getOutputVar(outputVarType));\n }\n }\n return null;\n }\n \n private pipeOutputVar(name:
string): string {\n const pipe = this.pipes.get(name);\n if (!pipe) {\n throw new Error(\n `Illegal State:
Could not find pipe ${name} in template of ${this.component}`);\n }\n return this.getOutputVar(pipe);\n }\n \n
private preprocessUpdateExpression(expression: Expression): Expression {\n return {\n sourceSpan:
expression.sourceSpan,\n context: expression.context,\n value: convertPropertyBindingBuiltins(\n {\n
createLiteralArrayConverter: (argCount: number) => (args: o.Expression[]) => {\n const arr =
o.literalArr(args);\n // Note: The old view compiler used to use an `any` type\n // for arrays.\n
return this.options.fullTemplateTypeCheck ? arr : arr.cast(o.DYNAMIC_TYPE);\n },\n
createLiteralMapConverter: (keys: {key: string, quoted: boolean}[]) =>(\n values: o.Expression[]) => {\n
const entries = keys.map((k, i) => ({\n key: k.key,\n
value: values[i],\n quoted: k.quoted,\n }));\n const
map = o.literalMap(entries);\n // Note: The old view compiler used to use an `any` type\n // for
maps.\n return this.options.fullTemplateTypeCheck ? map : map.cast(o.DYNAMIC_TYPE);\n },\n
createPipeConverter: (name: string, argCount: number) => (args: o.Expression[]) => {\n // Note:
The old view compiler used to use an `any` type\n // for pipes.\n const pipeExpr =
this.options.fullTemplateTypeCheck ?\n o.variable(this.pipeOutputVar(name)) :\n

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o.variable(this.getOutputVar(o.BuiltinTypeName.Dynamic));\n return pipeExpr.callMethod('transform',
args);\n },\n },\n expression.value)\n });\n}\n\nvisitNgContent(ast: NgContentAst, context:
any): any {\n visitText(ast: TextAst, context: any): any {\n visitDirectiveProperty(ast:
BoundDirectivePropertyAst, context: any): any {\n visitReference(ast: ReferenceAst, context: any): any {\n
visitVariable(ast: VariableAst, context: any): any {\n visitEvent(ast: BoundEventAst, context: any): any {\n
visitElementProperty(ast: BoundElementPropertyAst, context: any): any {\n visitAttr(ast: AttrAst, context: any):
any {\n}\n}\n"/**\n * @license\n * Copyright Google LLC All Rights Reserved.\n * \n * Use of this source code is
governed by an MIT-style license that can be\n * found in the LICENSE file at https://angular.io/license\n
*\n\nimport { CompileDirectiveMetadata, CompilePipeSummary, CompileQueryMetadata, rendererTypeName,
tokenReference, viewClassName } from './compile_metadata';\nimport { CompileReflector } from
'./compile_reflector';\nimport { BindingForm, BuiltinConverter, convertActionBinding, convertPropertyBinding,
convertPropertyBindingBuiltins, EventHandlerVars, LocalResolver } from
'./compiler_util/expression_converter';\nimport { ArgumentType, BindingFlags, ChangeDetectionStrategy,
NodeFlags, QueryBindingType, QueryValueType, ViewFlags } from './core';\nimport { AST, ASTWithSource,
Interpolation } from './expression_parser/ast';\nimport { Identifiers } from './identifiers';\nimport { LifecycleHooks }
from './lifecycle_reflector';\nimport { isNgContainer } from './ml_parser/tags';\nimport * as o from
'./output/output_ast';\nimport { convertValueToOutputAst } from './output/value_util';\nimport { ParseSourceSpan }
from './parse_util';\nimport { AttrAst, BoundDirectivePropertyAst, BoundElementPropertyAst, BoundEventAst,
BoundTextAst, DirectiveAst, ElementAst, EmbeddedTemplateAst, NgContentAst, PropertyBindingType,
ProviderAst, QueryMatch, ReferenceAst, TemplateAst, TemplateAstVisitor, templateVisitAll, TextAst,
VariableAst } from './template_parser/template_ast';\nimport { OutputContext } from './util';\n\nimport
{ componentFactoryResolverProviderDef, depDef, lifecycleHookToNodeFlag, providerDef } from
'./provider_compiler';\n\nconst CLASS_ATTR = 'class';\nconst STYLE_ATTR = 'style';\nconst
IMPLICIT_TEMPLATE_VAR = '$implicit';\n\nexport class ViewCompileResult {\n constructor(public
viewClassVar: string, public rendererTypeVar: string) {\n}\n\nexport class ViewCompiler {\n constructor(private
_reflector: CompileReflector) {\n}\n\n compileComponent(\n outputCtx: OutputContext, component:
CompileDirectiveMetadata, template: TemplateAst[],\n styles: o.Expression, usedPipes:
CompilePipeSummary[]): ViewCompileResult {\n let embeddedViewCount = 0;\n\n let
renderComponentVarName: string = undefined;\n if (!component.isHost) {\n const template =
component.template !;\n const customRenderData: o.LiteralMapEntry[] = [];\n if (template.animations &&
template.animations.length) {\n customRenderData.push(new o.LiteralMapEntry(\n 'animation',
convertValueToOutputAst(outputCtx, template.animations), true));\n }\n\n const renderComponentVar =
o.variable(rendererTypeName(component.type.reference));\n renderComponentVarName =
renderComponentVar.name !;\n outputCtx.statements.push(\n renderComponentVar\n
.set(o.importExpr(Identifiers.createRendererType2).callFn([new o.LiteralMapExpr([\n new
o.LiteralMapEntry('encapsulation', o.literal(template.encapsulation), false),\n new
o.LiteralMapEntry('styles', styles, false),\n new o.LiteralMapEntry('data', new
o.LiteralMapExpr(customRenderData), false)\n]]))\n .toDeclStmt(\n
o.importType(Identifiers.RendererType2),\n [o.StmtModifier.Final, o.StmtModifier.Exported]));\n }\n\n
const viewBuilderFactory = (parent: ViewBuilder|null): ViewBuilder => {\n const embeddedViewIndex =
embeddedViewCount++;\n return new ViewBuilder(\n this._reflector, outputCtx, parent, component,
embeddedViewIndex, usedPipes,\n viewBuilderFactory);\n };\n\n const visitor =
viewBuilderFactory(null);\n visitor.visitAll([], template);\n\n outputCtx.statements.push(...visitor.build());\n\n
return new ViewCompileResult(visitor.viewName, renderComponentVarName);\n }\n}\n\ninterface
ViewBuilderFactory {\n (parent: ViewBuilder): ViewBuilder;\n}\n\ninterface UpdateExpression {\n context:
o.Expression;\n nodeIndex: number;\n bindingIndex: number;\n sourceSpan: ParseSourceSpan;\n value:
AST;\n}\n\nconst LOG_VAR = o.variable('_l');\nconst VIEW_VAR = o.variable('_v');\nconst CHECK_VAR =
o.variable('_ck');\nconst COMP_VAR = o.variable('_co');\nconst EVENT_NAME_VAR = o.variable('en');\nconst

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ALLOW_DEFAULT_VAR = o.variable('ad');\n\nclass ViewBuilder implements TemplateAstVisitor,
LocalResolver {\n private compType: o.Type;\n private nodes: (() => {\n sourceSpan: ParseSourceSpan | null,\n nodeDef: o.Expression,\n nodeFlags: NodeFlags,\n updateDirectives?: UpdateExpression[],\n updateRenderer?: UpdateExpression[]\n })[] = [];\n private purePipeNodeIndices: [{pipeName: string}: number] =
Object.create(null);\n // Need Object.create so that we don't have builtin values...\n private refNodeIndices:
[{refName: string}: number] = Object.create(null);\n private variables: VariableAst[] = [];\n private children:
ViewBuilder[] = [];\n\n public readonly viewName: string;\n\n constructor(\n private reflector:
CompileReflector, private outputCtx: OutputContext,\n private parent: ViewBuilder | null, private component:
CompileDirectiveMetadata,\n private embeddedViewIndex: number, private usedPipes:
CompilePipeSummary[],\n private viewBuilderFactory: ViewBuilderFactory) {\n // TODO(tbosch): The old
view compiler used to use an `any` type\n // for the context in any embedded view. We keep this behavior for
now\n // to be able to introduce the new view compiler without too many errors.\n this.compType =
this.embeddedViewIndex > 0 ?\n o.DYNAMIC_TYPE :\n o.expressionType(outputCtx.importExpr(this.component.type.reference));\n this.viewName =
viewClassName(this.component.type.reference, this.embeddedViewIndex);\n }\n\n visitAll(variables:
VariableAst[], astNodes: TemplateAst[]) {\n this.variables = variables;\n // create the pipes for the pure pipes
immediately, so that we know their indices.\n if (!this.parent) {\n this.usedPipes.forEach((pipe) => {\n if
(pipe.pure) {\n this.purePipeNodeIndices[pipe.name] = this._createPipe(null, pipe);\n }\n });\n }\n\n if (!this.parent) {\n this.component.viewQueries.forEach((query, queryIndex) => {\n // Note: queries start
with id 1 so we can use the number in a Bloom filter!\n const queryId = queryIndex + 1;\n const
bindingType = query.first ? QueryBindingType.First : QueryBindingType.All;\n const flags =
NodeFlags.TypeViewQuery | calcStaticDynamicQueryFlags(query);\n this.nodes.push(() => ({\n
sourceSpan: null,\n nodeFlags: flags,\n nodeDef:
o.importExpr(Identifiers.queryDef).callFn([\n o.literal(flags), o.literal(queryId),\n
new o.LiteralMapExpr([new o.LiteralMapEntry(\n query.propertyName, o.literal(bindingType),
false)])\n])\n }));\n });\n }\n\n templateVisitAll(this, astNodes);\n if
(this.parent && (astNodes.length === 0 || needsAdditionalRootNode(astNodes))) {\n // if the view is an
embedded view, then we need to add an additional root node in some cases\n this.nodes.push(() => ({\n
sourceSpan: null,\n nodeFlags: NodeFlags.TypeElement,\n nodeDef:
o.importExpr(Identifiers.anchorDef).callFn([\n o.literal(NodeFlags.None), o.NULL_EXPR,
o.NULL_EXPR, o.literal(0)\n])\n }));\n }\n }\n\n build(targetStatements:
o.Statement[] = []): o.Statement[] {\n this.children.forEach((child) => child.build(targetStatements));\n\n const
{updateRendererStmts, updateDirectivesStmts, nodeDefExprs} =\n this._createNodeExpressions();\n\n const
updateRendererFn = this._createUpdateFn(updateRendererStmts);\n const updateDirectivesFn =
this._createUpdateFn(updateDirectivesStmts);\n\n let viewFlags = ViewFlags.None;\n if (!this.parent &&
this.component.changeDetection === ChangeDetectionStrategy.OnPush) {\n viewFlags |= ViewFlags.OnPush;\n
}\n\n const viewFactory = new o.DeclareFunctionStmt(\n this.viewName, [new
o.FnParam(LOG_VAR.name!),\n [new o.ReturnStatement(o.importExpr(Identifiers.viewDef).callFn([\n
o.literal(viewFlags),\n o.literalArr(nodeDefExprs),\n updateDirectivesFn,\n updateRendererFn,\n
])],\n o.importType(Identifiers.ViewDefinition),\n this.embeddedViewIndex === 0 ?
[o.StmtModifier.Exported] : []);\n\n targetStatements.push(viewFactory);\n return targetStatements;\n }\n\n
private _createUpdateFn(updateStmts: o.Statement[]): o.Expression {\n let updateFn: o.Expression;\n if
(updateStmts.length > 0) {\n const preStmts: o.Statement[] = [];\n if (!this.component.isHost &&
o.findReadVarNames(updateStmts).has(COMP_VAR.name!)) {\n
preStmts.push(COMP_VAR.set(VIEW_VAR.prop('component')).toDeclStmt(this.compType));\n }\n
updateFn = o.fn(\n [\n new o.FnParam(CHECK_VAR.name!, o.INFERRED_TYPE),\n new
o.FnParam(VIEW_VAR.name!, o.INFERRED_TYPE)\n],\n [...preStmts, ...updateStmts],
o.INFERRED_TYPE);\n } else {\n updateFn = o.NULL_EXPR;\n }\n return updateFn;\n }\n\n

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visitNgContent(ast: NgContentAst, context: any): any {\n // ngContentDef(ngContentIndex: number, index:
number): NodeDef;\n this.nodes.push() => ({\n sourceSpan: ast.sourceSpan,\n
nodeFlags: NodeFlags.TypeNgContent,\n nodeDef: o.importExpr(Identifiers.ngContentDef)\n
.callFn([o.literal(ast.ngContentIndex), o.literal(ast.index)])\n });\n }\n\n visitText(ast:
TextAst, context: any): any {\n // Static text nodes have no check function\n const checkIndex = -1;\n
this.nodes.push() => ({\n sourceSpan: ast.sourceSpan,\n nodeFlags:
NodeFlags.TypeText,\n nodeDef: o.importExpr(Identifiers.textDef).callFn([\n
o.literal(checkIndex),\n o.literal(ast.ngContentIndex),\n
o.literalArr([o.literal(ast.value)])\n])\n });\n }\n\n visitBoundText(ast: BoundTextAst,
context: any): any {\n const nodeIndex = this.nodes.length;\n // reserve the space in the nodeDefs array\n
this.nodes.push(null!);\n\n const astWithSource = <ASTWithSource>ast.value;\n const inter =
<Interpolation>astWithSource.ast;\n\n const updateRendererExpressions = inter.expressions.map(\n (expr,
bindingIndex) => this._preprocessUpdateExpression(\n {nodeIndex, bindingIndex, sourceSpan:
ast.sourceSpan, context: COMP_VAR, value: expr});\n\n // Check index is the same as the node index during
compilation\n // They might only differ at runtime\n const checkIndex = nodeIndex;\n\n this.nodes[nodeIndex]
= () => ({\n sourceSpan: ast.sourceSpan,\n nodeFlags: NodeFlags.TypeText,\n nodeDef:
o.importExpr(Identifiers.textDef).callFn([\n o.literal(checkIndex),\n o.literal(ast.ngContentIndex),\n
o.literalArr(inter.strings.map(s => o.literal(s))),\n]),\n updateRenderer: updateRendererExpressions\n
});\n }\n\n visitEmbeddedTemplate(ast: EmbeddedTemplateAst, context: any): any {\n const nodeIndex =
this.nodes.length;\n // reserve the space in the nodeDefs array\n this.nodes.push(null!);\n\n const {flags,
queryMatchesExpr, hostEvents} = this._visitElementOrTemplate(nodeIndex, ast);\n\n const childVisitor =
this.viewBuilderFactory(this);\n this.children.push(childVisitor);\n childVisitor.visitAll(ast.variables,
ast.children);\n\n const childCount = this.nodes.length - nodeIndex - 1;\n\n // anchorDef(\n // flags:
NodeFlags, matchedQueries: [string, QueryValueType][], ngContentIndex: number,\n // childCount: number,
handleEventFn?: ElementHandleEventFn, templateFactory?:\n // ViewDefinitionFactory): NodeDef;\n
this.nodes[nodeIndex] = () => ({\n sourceSpan: ast.sourceSpan,\n nodeFlags: NodeFlags.TypeElement |
flags,\n nodeDef: o.importExpr(Identifiers.anchorDef).callFn([\n o.literal(flags),\n queryMatchesExpr,\n
o.literal(ast.ngContentIndex),\n o.literal(childCount),\n this._createElementHandleEventFn(nodeIndex,
hostEvents),\n o.variable(childVisitor.viewName),\n])\n });\n }\n\n visitElement(ast: ElementAst,
context: any): any {\n const nodeIndex = this.nodes.length;\n // reserve the space in the nodeDefs array so we
can add children\n this.nodes.push(null!);\n\n // Using a null element name creates an anchor.\n const elName:
string|null = isNgContainer(ast.name) ? null : ast.name;\n\n const {flags, usedEvents, queryMatchesExpr,
hostBindings: dirHostBindings, hostEvents} =\n this._visitElementOrTemplate(nodeIndex, ast);\n\n let
inputDefs: o.Expression[] = [];\n let updateRendererExpressions: UpdateExpression[] = [];\n let outputDefs:
o.Expression[] = [];\n if (elName) {\n const hostBindings: any[] = ast.inputs\n
.map((inputAst) => ({\n context: COMP_VAR as o.Expression,\n
inputAst,\n dirAst: null as any,\n })))\n
.concat(dirHostBindings);\n if (hostBindings.length) {\n updateRendererExpressions =\n
hostBindings.map((hostBinding, bindingIndex) => this._preprocessUpdateExpression({\n context:
hostBinding.context,\n nodeIndex,\n bindingIndex,\n sourceSpan:
hostBinding.inputAst.sourceSpan,\n value: hostBinding.inputAst.value\n }));\n inputDefs =
hostBindings.map(\n hostBinding => elementBindingDef(hostBinding.inputAst, hostBinding.dirAst));\n
}\n\n outputDefs = usedEvents.map(\n ([target, eventName]) => o.literalArr([o.literal(target),
o.literal(eventName)]));\n }\n\n templateVisitAll(this, ast.children);\n\n const childCount = this.nodes.length -
nodeIndex - 1;\n\n const compAst = ast.directives.find(dirAst => dirAst.directive.isComponent);\n let
compRendererType = o.NULL_EXPR as o.Expression;\n let compView = o.NULL_EXPR as o.Expression;\n if
(compAst) {\n compView = this.outputCtx.importExpr(compAst.directive.componentViewType);\n
compRendererType = this.outputCtx.importExpr(compAst.directive.rendererType);\n }\n\n // Check index is the

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same as the node index during compilation\n // They might only differ at runtime\n const checkIndex =
nodeIndex;\n\n this.nodes[nodeIndex] = () => ({\n sourceSpan: ast.sourceSpan,\n nodeFlags:
NodeFlags.TypeElement | flags,\n nodeDef: o.importExpr(Identifiers.elementDef).callFn([\n
o.literal(checkIndex),\n o.literal(flags),\n queryMatchesExpr,\n o.literal(ast.ngContentIndex),\n
o.literal(childCount),\n o.literal(elName),\n elName ? fixedAttrsDef(ast) : o.NULL_EXPR,\n
inputDefs.length ? o.literalArr(inputDefs) : o.NULL_EXPR,\n outputDefs.length ? o.literalArr(outputDefs) :
o.NULL_EXPR,\n this._createElementHandleEventFn(nodeIndex, hostEvents),\n compView,\n
compRendererType,\n]),\n updateRenderer: updateRendererExpressions\n });\n\n private
_visitElementOrTemplate(nodeIndex: number, ast: {\n hasViewContainer: boolean,\n outputs:
BoundEventAst[],\n directives: DirectiveAst[],\n providers: ProviderAst[],\n references: ReferenceAst[],\n
queryMatches: QueryMatch[]\n }): {\n flags: NodeFlags,\n usedEvents: [string | null, string] >(),\n
queryMatchesExpr: o.Expression,\n hostBindings: {\n context: o.Expression, inputAst:
BoundElementPropertyAst, dirAst: DirectiveAst[]\n },\n hostEvents: {\n context: o.Expression, eventAst:
BoundEventAst, dirAst: DirectiveAst[]\n } }\n\n const usedEvents = new Map<string, [string | null, string] >();\n
ast.outputs.forEach((event) => {\n const {name, target} = elementEventNameAndTarget(event, null);\n
usedEvents.set(elementEventFullName(target, name), [target, name]);\n });\n ast.directives.forEach((dirAst) =>
{\n dirAst.hostEvents.forEach((event) => {\n const {name, target} = elementEventNameAndTarget(event,
dirAst);\n usedEvents.set(elementEventFullName(target, name), [target, name]);\n });\n });\n const
hostBindings: {\n context: o.Expression, inputAst: BoundElementPropertyAst, dirAst: DirectiveAst[]\n } = [];\n
const hostEvents: {\n context: o.Expression, eventAst: BoundEventAst, dirAst: DirectiveAst[]\n } = [];\n
this._visitComponentFactoryResolverProvider(ast.directives);\n\n ast.providers.forEach(providerAst => {\n let
dirAst: DirectiveAst = undefined!\n ast.directives.forEach(localDirAst => {\n if
(localDirAst.directive.type.reference === tokenReference(providerAst.token)) {\n dirAst = localDirAst;\n
}\n });\n if (dirAst) {\n const {hostBindings: dirHostBindings, hostEvents: dirHostEvents} =\n
this._visitDirective(providerAst, dirAst, ast.references, ast.queryMatches, usedEvents);\n
hostBindings.push(...dirHostBindings);\n hostEvents.push(...dirHostEvents);\n } else {\n
this._visitProvider(providerAst, ast.queryMatches);\n }\n });\n\n let queryMatchExprs: o.Expression[] = [];\n
ast.queryMatches.forEach((match) => {\n let valueType: QueryValueType = undefined!\n if
(tokenReference(match.value) ===\n this.reflector.resolveExternalReference(Identifiers.ElementRef)) {\n
valueType = QueryValueType.ElementRef;\n } else if (\n tokenReference(match.value) ===\n
this.reflector.resolveExternalReference(Identifiers.ViewContainerRef)) {\n valueType =
QueryValueType.ViewContainerRef;\n } else if (\n tokenReference(match.value) ===\n
this.reflector.resolveExternalReference(Identifiers.TemplateRef)) {\n valueType =
QueryValueType.TemplateRef;\n }\n if (valueType != null) {\n
queryMatchExprs.push(o.literalArr([o.literal(match.queryId), o.literal(valueType)]));\n }\n });\n
ast.references.forEach((ref) => {\n let valueType: QueryValueType = undefined!\n if (!ref.value) {\n
valueType = QueryValueType.RenderElement;\n } else if (\n tokenReference(ref.value) ===\n
this.reflector.resolveExternalReference(Identifiers.TemplateRef)) {\n valueType =
QueryValueType.TemplateRef;\n }\n if (valueType != null) {\n this.refNodeIndices[ref.name] =
nodeIndex;\n queryMatchExprs.push(o.literalArr([o.literal(ref.name), o.literal(valueType)]));\n }\n });\n
ast.outputs.forEach((outputAst) => {\n hostEvents.push({context: COMP_VAR, eventAst: outputAst, dirAst:
null!});\n });\n\n return {\n flags,\n usedEvents: Array.from(usedEvents.values()),\n
queryMatchesExpr: queryMatchExprs.length ? o.literalArr(queryMatchExprs) : o.NULL_EXPR,\n
hostBindings,\n hostEvents: hostEvents\n };\n\n private _visitDirective(\n providerAst: ProviderAst,
dirAst: DirectiveAst, refs: ReferenceAst[],\n queryMatches: QueryMatch[], usedEvents: Map<string, any>): {\n
hostBindings: {\n context: o.Expression, inputAst: BoundElementPropertyAst, dirAst: DirectiveAst[]\n },\n
hostEvents: {\n context: o.Expression, eventAst: BoundEventAst, dirAst: DirectiveAst[]\n } }\n\n const nodeIndex =

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this.nodes.length;\n // reserve the space in the nodeDefs array so we can add children\n
this.nodes.push(null!);\n\n dirAst.directive.queries.forEach((query, queryIndex) => {\n const queryId =
dirAst.contentQueryStartId + queryIndex;\n const flags = NodeFlags.TypeContentQuery |
calcStaticDynamicQueryFlags(query);\n const bindingType = query.first ? QueryBindingType.First :
QueryBindingType.All;\n this.nodes.push(() => ({\n sourceSpan: dirAst.sourceSpan,\n nodeFlags: flags,\n nodeDef: o.importExpr(Identifiers.queryDef).callFn([\n
o.literal(flags), o.literal(queryId),\n new o.LiteralMapExpr([new o.LiteralMapEntry(\n
 query.propertyName, o.literal(bindingType), false)])\n]),\n }));\n\n // Note:
the operation below might also create new nodeDefs,\n // but we don't want them to be a child of a directive,\n //
as they might be a provider/pipe on their own.\n // I.e. we only allow queries as children of directives nodes.\n
const childCount = this.nodes.length - nodeIndex - 1;\n\n let {flags, queryMatchExprs, providerExpr, depsExpr}
=\n this._visitProviderOrDirective(providerAst, queryMatches);\n\n refs.forEach((ref) => {\n if (ref.value
&& tokenReference(ref.value) === tokenReference(providerAst.token)) {\n this.refNodeIndices[ref.name] =
nodeIndex;\n queryMatchExprs.push(\n o.literalArr([o.literal(ref.name),
o.literal(QueryValueType.Provider)]));\n }\n });\n\n if (dirAst.directive.isComponent) {\n flags |=
NodeFlags.Component;\n }\n\n const inputDefs = dirAst.inputs.map((inputAst, inputIndex) => {\n const
mapValue = o.literalArr([o.literal(inputIndex), o.literal(inputAst.directiveName)]);\n // Note: it's important to not
quote the key so that we can capture renames by minifiers!\n return new
o.LiteralMapEntry(inputAst.directiveName, mapValue, false);\n });\n\n const outputDefs: o.LiteralMapEntry[] =
[];\n const dirMeta = dirAst.directive;\n Object.keys(dirMeta.outputs).forEach((propName) => {\n const
eventName = dirMeta.outputs[propName];\n if (usedEvents.has(eventName)) {\n // Note: it's important to
not quote the key so that we can capture renames by minifiers!\n outputDefs.push(new
o.LiteralMapEntry(propName, o.literal(eventName), false);\n }\n });\n let updateDirectiveExpressions:
UpdateExpression[] = [];\n if (dirAst.inputs.length || (flags & (NodeFlags.DoCheck | NodeFlags.OnInit)) > 0) {\n
updateDirectiveExpressions =\n dirAst.inputs.map((input, bindingIndex) =>
this._preprocessUpdateExpression({\n nodeIndex,\n bindingIndex,\n sourceSpan:
input.sourceSpan,\n context: COMP_VAR,\n value: input.value\n }));\n }\n\n const
dirContextExpr =\n o.importExpr(Identifiers.nodeValue).callFn([VIEW_VAR, o.literal(nodeIndex)]);\n const
hostBindings = dirAst.hostProperties.map((inputAst) => ({\n context:
dirContextExpr,\n dirAst,\n inputAst,\n }));\n const hostEvents = dirAst.hostEvents.map((hostEventAst) => ({\n
context: dirContextExpr,\n eventAst: hostEventAst,\n }));\n\n dirAst,\n }));\n\n // Check index is the same as the node index during compilation\n //
They might only differ at runtime\n const checkIndex = nodeIndex;\n\n this.nodes[nodeIndex] = () => ({\n
sourceSpan: dirAst.sourceSpan,\n nodeFlags: NodeFlags.TypeDirective | flags,\n nodeDef:
o.importExpr(Identifiers.directiveDef).callFn([\n o.literal(checkIndex),\n o.literal(flags),\n
queryMatchExprs.length ? o.literalArr(queryMatchExprs) : o.NULL_EXPR,\n o.literal(childCount),\n
providerExpr,\n depsExpr,\n inputDefs.length ? new o.LiteralMapExpr(inputDefs) : o.NULL_EXPR,\n
outputDefs.length ? new o.LiteralMapExpr(outputDefs) : o.NULL_EXPR,\n]),\n updateDirectives:
updateDirectiveExpressions,\n directive: dirAst.directive.type,\n });\n\n return {hostBindings, hostEvents};\n
}\n\n private _visitProvider(providerAst: ProviderAst, queryMatches: QueryMatch[]): void {\n
this._addProviderNode(this._visitProviderOrDirective(providerAst, queryMatches));\n }\n\n private
_visitComponentFactoryResolverProvider(directives: DirectiveAst[]) {\n const componentDirMeta =
directives.find(dirAst => dirAst.directive.isComponent);\n if (componentDirMeta &&
componentDirMeta.directive.entryComponents.length) {\n const {providerExpr, depsExpr, flags, tokenExpr} =
componentFactoryResolverProviderDef(\n this.reflector, this.outputCtx, NodeFlags.PrivateProvider,\n
componentDirMeta.directive.entryComponents);\n this._addProviderNode({\n providerExpr,\n
depsExpr,\n flags,\n tokenExpr,\n queryMatchExprs: [],\n sourceSpan:

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componentDirMeta.sourceSpan\n });\n }\n }\n\n private _addProviderNode(data: {\n flags: NodeFlags,\n queryMatchExprs: o.Expression[],\n providerExpr: o.Expression,\n depsExpr: o.Expression,\n tokenExpr: o.Expression,\n sourceSpan: ParseSourceSpan\n }) {\n // providerDef(\n // flags: NodeFlags,\n matchedQueries: [string, QueryValueType][], token:any,\n // value: any, deps: ([DepFlags, any] | any)[]):\n NodeDef;\n this.nodes.push(\n () => ({\n sourceSpan: data.sourceSpan,\n nodeFlags: data.flags,\n nodeDef: o.importExpr(Identifiers.providerDef).callFn([\n o.literal(data.flags),\n data.queryMatchExprs.length ? o.literalArr(data.queryMatchExprs) : o.NULL_EXPR,\n data.tokenExpr,\n data.providerExpr, data.depsExpr\n])\n }));\n }\n\n private _visitProviderOrDirective(providerAst: ProviderAst, queryMatches: QueryMatch[]): {\n flags: NodeFlags,\n tokenExpr: o.Expression,\n sourceSpan: ParseSourceSpan,\n queryMatchExprs: o.Expression[],\n providerExpr: o.Expression,\n depsExpr: o.Expression\n } {\n let flags = NodeFlags.None;\n let queryMatchExprs: o.Expression[] = [];\n queryMatches.forEach((match) => {\n if (tokenReference(match.value) === tokenReference(providerAst.token))\n {\n queryMatchExprs.push(\n o.literalArr([o.literal(match.queryId),\n o.literal(QueryValueType.Provider)]));\n }\n });\n const {providerExpr, depsExpr, flags: providerFlags, tokenExpr} =\n providerDef(this.outputCtx, providerAst);\n return {\n flags: flags | providerFlags,\n queryMatchExprs,\n providerExpr,\n depsExpr,\n tokenExpr,\n sourceSpan: providerAst.sourceSpan\n };\n}\n\n getLocal(name: string): o.Expression|null {\n if (name === EventHandlerVars.event.name) {\n return EventHandlerVars.event;\n }\n let currViewExpr: o.Expression = VIEW_VAR;\n for (let currBuilder: ViewBuilder|null = this; currBuilder; currBuilder = currBuilder.parent,\n currViewExpr = currViewExpr.prop('parent').cast(o.DYNAMIC_TYPE)) {\n // check references\n const refNodeIndex = currBuilder.refNodeIndices[name];\n if (refNodeIndex !== null) {\n return o.importExpr(Identifiers.nodeValue).callFn([currViewExpr, o.literal(refNodeIndex)]);\n }\n // check variables\n const varAst = currBuilder.variables.find((varAst) => varAst.name === name);\n if (varAst) {\n const varValue = varAst.value || IMPLICIT_TEMPLATE_VAR;\n return currViewExpr.prop('context').prop(varValue);\n }\n }\n return null;\n}\n\n notifyImplicitReceiverUse(): void {\n // Not needed in View Engine as View Engine walks through the generated\n // expressions to figure out if the implicit receiver is used and needs\n // to be generated as part of the pre-update statements.\n}\n\n private _createLiteralArrayConverter(sourceSpan: ParseSourceSpan, argCount: number):\n BuiltinConverter {\n if (argCount === 0) {\n const valueExpr = o.importExpr(Identifiers.EMPTY_ARRAY);\n return () => valueExpr;\n }\n const checkIndex = this.nodes.length;\n this.nodes.push(() => ({\n sourceSpan,\n nodeFlags: NodeFlags.TypePureArray,\n nodeDef: o.importExpr(Identifiers.pureArrayDef).callFn([\n o.literal(checkIndex),\n o.literal(argCount),\n])\n }));\n return (args: o.Expression[]) => callCheckStmt(checkIndex, args);\n}\n\n private _createLiteralMapConverter(\n sourceSpan: ParseSourceSpan, keys: {key: string, quoted: boolean}[]): BuiltinConverter {\n if (keys.length === 0) {\n const valueExpr = o.importExpr(Identifiers.EMPTY_MAP);\n return () => valueExpr;\n }\n const map = o.literalMap(keys.map((e, i) => ({...e, value: o.literal(i)}));\n const checkIndex = this.nodes.length;\n this.nodes.push(() => ({\n sourceSpan,\n nodeFlags: NodeFlags.TypePureObject,\n nodeDef: o.importExpr(Identifiers.pureObjectDef).callFn([\n o.literal(checkIndex),\n map,\n])\n }));\n return (args: o.Expression[]) => callCheckStmt(checkIndex, args);\n}\n\n private _createPipeConverter(expression: UpdateExpression, name: string, argCount: number):\n BuiltinConverter {\n const pipe = this.usedPipes.find((pipeSummary) => pipeSummary.name === name!);\n if (pipe.pure) {\n const checkIndex = this.nodes.length;\n this.nodes.push(() => ({\n sourceSpan: expression.sourceSpan,\n nodeFlags: NodeFlags.TypePurePipe,\n nodeDef: o.importExpr(Identifiers.purePipeDef).callFn([\n o.literal(checkIndex),\n o.literal(argCount),\n])\n }));\n // find underlying pipe in the component view\n let compViewExpr: o.Expression = VIEW_VAR;\n let compBuilder: ViewBuilder = this;\n while (compBuilder.parent) {\n compBuilder = compBuilder.parent;\n compViewExpr =

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compViewExpr.prop('parent').cast(o.DYNAMIC_TYPE);\n }\n const pipeNodeIndex =
compBuilder.purePipeNodeIndices[name];\n const pipeValueExpr: o.Expression =\n o.importExpr(Identifiers.nodeValue).callFn([compViewExpr, o.literal(pipeNodeIndex)]);\n return (args:
o.Expression[]) => callUnwrapValue(\n expression.nodeIndex, expression.bindingIndex,\n callCheckStmt(checkIndex, [pipeValueExpr].concat(args));\n } else {\n const nodeIndex =
this._createPipe(expression.sourceSpan, pipe);\n const nodeValueExpr =\n o.importExpr(Identifiers.nodeValue).callFn([VIEW_VAR, o.literal(nodeIndex)]);\n return (args:
o.Expression[]) => callUnwrapValue(\n expression.nodeIndex, expression.bindingIndex,\n nodeValueExpr.callMethod('transform', args));\n }\n }\n private _createPipe(sourceSpan:
ParseSourceSpan|null, pipe: CompilePipeSummary): number {\n const nodeIndex = this.nodes.length;\n let flags
= NodeFlags.None;\n pipe.type.lifecycleHooks.forEach((lifecycleHook) => {\n // for pipes, we only support
ngOnDestroy\n if (lifecycleHook === LifecycleHooks.OnDestroy) {\n flags |=
lifecycleHookToNodeFlag(lifecycleHook);\n }\n });\n const depExprs = pipe.type.diDeps.map((diDep) =>
depDef(this.outputCtx, diDep));\n // function pipeDef(\n // flags: NodeFlags, ctor: any, deps: ([DepFlags, any] |
any)[]): NodeDef\n this.nodes.push(\n () => ({\n sourceSpan,\n nodeFlags: NodeFlags.TypePipe,\n nodeDef: o.importExpr(Identifiers.pipeDef).callFn([\n o.literal(flags),
this.outputCtx.importExpr(pipe.type.reference), o.literalArr(depExprs)\n])\n }));\n return nodeIndex;\n }\n /**\n * For the AST in `UpdateExpression.value`:\n * - create nodes for pipes, literal arrays and, literal
maps,\n * - update the AST to replace pipes, literal arrays and, literal maps with calls to check fn.\n * *\n * WARNING: This might create new nodeDefs (for pipes and literal arrays and literal maps)!*\n */\n private
_preprocessUpdateExpression(expression: UpdateExpression): UpdateExpression {\n return {\n nodeIndex:
expression.nodeIndex,\n bindingIndex: expression.bindingIndex,\n sourceSpan: expression.sourceSpan,\n context: expression.context,\n value: convertPropertyBindingBuiltins(\n {\n
createLiteralArrayConverter: (argCount: number) =>\n
this._createLiteralArrayConverter(expression.sourceSpan, argCount),\n createLiteralMapConverter: (keys:
[key: string, quoted: boolean]) =>\n this._createLiteralMapConverter(expression.sourceSpan, keys),\n createPipeConverter: (name: string, argCount: number) =>\n this._createPipeConverter(expression,
name, argCount)\n },\n expression.value)\n };\n }\n private _createNodeExpressions(): {\n
updateRendererStmts: o.Statement[],\n updateDirectivesStmts: o.Statement[],\n nodeDefExprs: o.Expression[]\n } {\n const self = this;\n let updateBindingCount = 0;\n const updateRendererStmts: o.Statement[] = [];\n const updateDirectivesStmts: o.Statement[] = [];\n const nodeDefExprs = this.nodes.map((factory, nodeIndex) =>
{\n const {nodeDef, nodeFlags, updateDirectives, updateRenderer, sourceSpan} = factory();\n if
(updateRenderer) {\n updateRendererStmts.push(\n ...createUpdateStatements(nodeIndex, sourceSpan,
updateRenderer, false);\n }\n if (updateDirectives) {\n
updateDirectivesStmts.push(...createUpdateStatements(\n nodeIndex, sourceSpan, updateDirectives,\n
(nodeFlags & (NodeFlags.DoCheck | NodeFlags.OnInit)) > 0));\n }\n // We use a comma expression to call
the log function before\n // the nodeDef function, but still use the result of the nodeDef function\n // as the
value.\n // Note: We only add the logger to elements / text nodes,\n // so we don't generate too much code.\n const logWithNodeDef = nodeFlags & NodeFlags.CatRenderNode ?\n new
o.CommaExpr([LOG_VAR.callFn([], callFn([], nodeDef))] :\n nodeDef;\n return
o.applySourceSpanToExpressionIfNeeded(logWithNodeDef, sourceSpan);\n });\n return {updateRendererStmts,
updateDirectivesStmts, nodeDefExprs};\n }\n function createUpdateStatements(\n nodeIndex: number,\n sourceSpan: ParseSourceSpan|null, expressions: UpdateExpression[],\n allowEmptyExprs: boolean):
o.Statement[] {\n const updateStmts: o.Statement[] = [];\n const exprs = expressions.map(({sourceSpan,
context, value}) => {\n const bindingId = `${updateBindingCount++}`;\n const nameResolver = context
=== COMP_VAR ? self : null;\n const {stmts, currValExpr} =\n convertPropertyBinding(nameResolver,
context, value, bindingId, BindingForm.General);\n updateStmts.push(...stmts.map(\n (stmt: o.Statement)
=> o.applySourceSpanToStatementIfNeeded(stmt, sourceSpan));\n return

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o.applySourceSpanToExpressionIfNeeded(currValExpr, sourceSpan);\n });\n if (expressions.length ||
allowEmptyExprs) {\n updateStmts.push(o.applySourceSpanToStatementIfNeeded(\n
callCheckStmt(nodeIndex, exprs).toStmt(), sourceSpan));\n }\n return updateStmts;\n }\n }\n\n private
_createElementHandleEventFn(\n nodeIndex: number,\n handlers: {context: o.Expression, eventAst:
BoundEventAst, dirAst: DirectiveAst}[]) {\n const handleEventStmts: o.Statement[] = [];\n let
handleEventBindingCount = 0;\n handlers.forEach(({context, eventAst, dirAst}) => {\n const bindingId =
`${handleEventBindingCount++}`;\n const nameResolver = context === COMP_VAR ? this : null;\n const
{stmts, allowDefault} =\n convertActionBinding(nameResolver, context, eventAst.handler, bindingId);\n const trueStmts = stmts;\n if (allowDefault) {\n
trueStmts.push(ALLOW_DEFAULT_VAR.set(allowDefault.and(ALLOW_DEFAULT_VAR)).toStmt());\n }\n
 const {target: eventTarget, name: eventName} = elementEventNameAndTarget(eventAst, dirAst);\n const
fullEventName = elementEventFullName(eventTarget, eventName);\n
handleEventStmts.push(o.applySourceSpanToStatementIfNeeded(\n new
o.IfStmt(o.literal(fullEventName).identical(EVENT_NAME_VAR), trueStmts),\n eventAst.sourceSpan));\n
});\n let handleEventFn: o.Expression;\n if (handleEventStmts.length > 0) {\n const preStmts: o.Statement[]
=\n [ALLOW_DEFAULT_VAR.set(o.literal(true)).toDeclStmt(o.BOOL_TYPE)];\n if
(!this.component.isHost && o.findReadVarNames(handleEventStmts).has(COMP_VAR.name!)) {\n
preStmts.push(COMP_VAR.set(VIEW_VAR.prop('component')).toDeclStmt(this.compType));\n }\n
handleEventFn = o.fn(\n [\n new o.FiParam(VIEW_VAR.name!, o.INFERRED_TYPE),\n new
o.FiParam(EVENT_NAME_VAR.name!, o.INFERRED_TYPE),\n new
o.FiParam(EventHandlerVars.event.name!, o.INFERRED_TYPE)\n],\n [...preStmts,
...handleEventStmts, new o.ReturnStatement(ALLOW_DEFAULT_VAR)],\n o.INFERRED_TYPE);\n }
else {\n handleEventFn = o.NULL_EXPR;\n }\n return handleEventFn;\n }\n\n visitDirective(ast:
DirectiveAst, context: {usedEvents: Set<string>}): any {\n visitDirectiveProperty(ast:
BoundDirectivePropertyAst, context: any): any {\n visitReference(ast: ReferenceAst, context: any): any {\n
visitVariable(ast: VariableAst, context: any): any {\n visitEvent(ast: BoundEventAst, context: any): any {\n
visitElementProperty(ast: BoundElementPropertyAst, context: any): any {\n visitAttr(ast: AttrAst, context: any):
any {\n }\n}\n\nfunction needsAdditionalRootNode(astNodes: TemplateAst[]): boolean {\n const lastAstNode =
astNodes[astNodes.length - 1];\n if (lastAstNode instanceof EmbeddedTemplateAst) {\n return
lastAstNode.hasViewContainer;\n }\n if (lastAstNode instanceof ElementAst) {\n if
(isNgContainer(lastAstNode.name) && lastAstNode.children.length) {\n return
needsAdditionalRootNode(lastAstNode.children);\n }\n return lastAstNode.hasViewContainer;\n }\n return
lastAstNode instanceof NgContentAst;\n }\n\nfunction elementBindingDef(inputAst: BoundElementPropertyAst,
dirAst: DirectiveAst): o.Expression {\n const inputType = inputAst.type;\n switch (inputType) {\n case
PropertyBindingType.Attribute:\n return o.literalArr([\n o.literal(BindingFlags.TypeElementAttribute),
o.literal(inputAst.name),\n o.literal(inputAst.securityContext)\n]);\n case
PropertyBindingType.Property:\n return o.literalArr([\n o.literal(BindingFlags.TypeProperty),
o.literal(inputAst.name),\n o.literal(inputAst.securityContext)\n]);\n case
PropertyBindingType.Animation:\n const bindingType = BindingFlags.TypeProperty |\n (dirAst &&
dirAst.directive.isComponent ? BindingFlags.SyntheticHostProperty :\n BindingFlags.SyntheticProperty);\n return o.literalArr([\n o.literal(bindingType), o.literal('@' +
inputAst.name), o.literal(inputAst.securityContext)\n]);\n case PropertyBindingType.Class:\n return
o.literalArr(\n [o.literal(BindingFlags.TypeElementClass), o.literal(inputAst.name), o.NULL_EXPR]);\n case
PropertyBindingType.Style:\n return o.literalArr([\n o.literal(BindingFlags.TypeElementStyle),
o.literal(inputAst.name), o.literal(inputAst.unit)\n]);\n default:\n // This default case is not needed by
TypeScript compiler, as the switch is exhaustive.\n // However Closure Compiler does not understand that and
reports an error in typed mode.\n // The `throw new Error` below works around the problem, and the unexpected:
never variable\n // makes sure tsc still checks this code is unreachable.\n const unexpected: never =

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inputType;\n throw new Error(`unexpected ${unexpected}`);\n }\n}\n\nfunction fixedAttrsDef(elementAst:
ElementAst): o.Expression {\n const mapResult: {[key: string]: string} = Object.create(null);\n
elementAst.attrs.forEach(attrAst => {\n mapResult[attrAst.name] = attrAst.value;\n });\n
elementAst.directives.forEach(dirAst => {\n Object.keys(dirAst.directive.hostAttributes).forEach(name => {\n
const value = dirAst.directive.hostAttributes[name];\n const prevValue = mapResult[name];\n
mapResult[name] = prevValue != null ? mergeAttributeValue(name, prevValue, value) : value;\n });\n });\n //
Note: We need to sort to get a defined output order\n // for tests and for caching generated artifacts...\n return
o.literalArr(Object.keys(mapResult).sort().map(\n (attrName) => o.literalArr([o.literal(attrName),
o.literal(mapResult[attrName])]);\n});\n\nfunction mergeAttributeValue(attrName: string, attrValue1: string,
attrValue2: string): string {\n if (attrName == CLASS_ATTR || attrName == STYLE_ATTR) {\n return
`${attrValue1} ${attrValue2}`;\n } else {\n return attrValue2;\n }\n}\n\nfunction callCheckStmt(nodeIndex:
number, exprs: o.Expression[]): o.Expression {\n if (exprs.length > 10) {\n return CHECK_VAR.callFn(\n
[VIEW_VAR, o.literal(nodeIndex), o.literal(ArgumentType.Dynamic), o.literalArr(exprs)];\n } else {\n return
CHECK_VAR.callFn(\n [VIEW_VAR, o.literal(nodeIndex), o.literal(ArgumentType.Inline), ...exprs];\n)\n}\n}\n\nfunction callUnwrapValue(nodeIndex: number, bindingIdx: number, expr: o.Expression): o.Expression {\n
return o.importExpr(Identifiers.unwrapValue).callFn([\n VIEW_VAR, o.literal(nodeIndex), o.literal(bindingIdx),
expr\n]);\n}\n\nfunction elementEventNameAndTarget(\n eventAst: BoundEventAst, dirAst: DirectiveAst|null):
{name: string, target: string|null} {\n if (eventAst.isAnimation) {\n return {\n name:
`@${eventAst.name}.${eventAst.phase}`,\n target: dirAst && dirAst.directive.isComponent ? 'component' :
null\n }; \n } else {\n return eventAst;\n }\n}\n}\n\nfunction calcStaticDynamicQueryFlags(query:
CompileQueryMetadata) {\n let flags = NodeFlags.None;\n // Note: We only make queries static that query for a
single item and the user specifically\n // set the to be static. This is because of backwards compatibility with the old
view compiler...\n if (query.first && query.static) {\n flags |= NodeFlags.StaticQuery;\n } else {\n flags |=
NodeFlags.DynamicQuery;\n }\n return flags;\n}\n}\n\nexport function elementEventFullName(target: string|null,
name: string): string {\n return target ? `${target}:${name}` : name;\n}\n\n"/**\n * @license\n * Copyright Google
LLC All Rights Reserved.\n * Use of this source code is governed by an MIT-style license that can be\n * found
in the LICENSE file at https://angular.io/license\n */\n\nimport {HtmlParser} from
'./ml_parser/html_parser';\nimport {InterpolationConfig} from './ml_parser/interpolation_config';\nimport
{ParseError} from './parse_util';\nimport {extractMessages} from './extractor_merger';\nimport * as i18n from
'./i18n_ast';\nimport {PlaceholderMapper, Serializer} from './serializers/serializer';\n\n/**\n * A container for
message extracted from the templates.\n */\nexport class MessageBundle {\n private _messages: i18n.Message[] =
[];\n\n constructor(\n private _htmlParser: HtmlParser, private _implicitTags: string[],\n private
_implicitAttrs: {[k: string]: string[]}, private _locale: string|null = null) {\n\n updateFromTemplate(html: string,
url: string, interpolationConfig: InterpolationConfig):\n ParseError[] {\n const htmlParserResult =\n
this._htmlParser.parse(html, url, {tokenizeExpansionForms: true, interpolationConfig});\n\n if
(htmlParserResult.errors.length) {\n return htmlParserResult.errors;\n }\n\n const i18nParserResult =
extractMessages(\n htmlParserResult.rootNodes, interpolationConfig, this._implicitTags,
this._implicitAttrs);\n\n if (i18nParserResult.errors.length) {\n return i18nParserResult.errors;\n }\n\n
this._messages.push(...i18nParserResult.messages);\n return [];\n }\n\n // Return the message in the internal
format\n // The public (serialized) format might be different, see the `write` method.\n getMessages():
i18n.Message[] {\n return this._messages;\n }\n\n write(serializer: Serializer, filterSources?: (path: string) =>
string): string {\n const messages: {[id: string]: i18n.Message} = {};\n const mapperVisitor = new
MapPlaceholderNames();\n\n // Deduplicate messages based on their ID\n this._messages.forEach(message =>
{\n const id = serializer.digest(message);\n if (!messages.hasOwnProperty(id)) {\n messages[id] =
message;\n } else {\n messages[id].sources.push(...message.sources);\n }\n});\n\n // Transform
placeholder names using the serializer mapping\n const msgList = Object.keys(messages).map(id => {\n const
mapper = serializer.createNameMapper(messages[id]);\n const src = messages[id];\n const nodes = mapper ?
mapperVisitor.convert(src.nodes, mapper) : src.nodes;\n let transformedMessage = new i18n.Message(nodes, {}),

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 }, src.meaning, src.description, id);\n transformedMessage.sources = src.sources;\n if (filterSources) {\n
transformedMessage.sources.forEach(\n (source: i18n.MessageSpan) => source.filePath =
filterSources(source.filePath));\n }\n return transformedMessage;\n });\n\n return serializer.write(msgList,
this._locale);\n }\n}\n\n// Transform an i18n AST by renaming the placeholder nodes with the given mapper\nclass
MapPlaceholderNames extends i18n.CloneVisitor {\n convert(nodes: i18n.Node[], mapper: PlaceholderMapper):
i18n.Node[] {\n return mapper ? nodes.map(n => n.visit(this, mapper)) : nodes;\n }\n\n visitTagPlaceholder(ph:
i18n.TagPlaceholder, mapper: PlaceholderMapper): i18n.TagPlaceholder {\n const startName =
mapper.toPublicName(ph.startName!);\n const closeName = ph.closeName ?
mapper.toPublicName(ph.closeName)! : ph.closeName;\n const children = ph.children.map(n => n.visit(this,
mapper));\n return new i18n.TagPlaceholder(\n ph.tag, ph.attrs, startName, closeName, children, ph.isVoid,
ph.sourceSpan,\n ph.startSourceSpan, ph.endSourceSpan);\n }\n\n visitPlaceholder(ph: i18n.Placeholder,
mapper: PlaceholderMapper): i18n.Placeholder {\n return new i18n.Placeholder(ph.value,
mapper.toPublicName(ph.name!), ph.sourceSpan);\n }\n\n visitIcuPlaceholder(ph: i18n.IcuPlaceholder, mapper:
PlaceholderMapper): i18n.IcuPlaceholder {\n return new i18n.IcuPlaceholder(ph.value,
mapper.toPublicName(ph.name!), ph.sourceSpan);\n }\n}\n\n"/**\n * @license\n * Copyright Google LLC All
Rights Reserved.\n * Use of this source code is governed by an MIT-style license that can be\n * found in the
LICENSE file at https://angular.io/license\n */\n\nimport {areAllEquivalent, Statement} from
'./output/output_ast';\nimport {TypeScriptEmitter} from './output/ts_emitter';\n\nexport class GeneratedFile {\n
 public source: string|null;\n public stmts: Statement[]|null;\n\n constructor(\n public srcFileUrl: string, public
genFileUrl: string, sourceOrStmts: string|Statement[]) {\n if (typeof sourceOrStmts === 'string') {\n this.source
= sourceOrStmts;\n this.stmts = null;\n } else {\n this.source = null;\n this.stmts = sourceOrStmts;\n }\n
 }\n\n isEquivalent(other: GeneratedFile): boolean {\n if (this.genFileUrl !== other.genFileUrl) {\n return
false;\n }\n if (this.source) {\n return this.source === other.source;\n }\n if (other.stmts == null) {\n
return false;\n }\n // Note: the constructor guarantees that if this.source is not filled,\n // then this.stmts is.\n
return areAllEquivalent(this.stmts!, other.stmts!);\n }\n}\n\nexport function toTypeScript(file: GeneratedFile,
preamble: string = ""): string {\n if (!file.stmts) {\n throw new Error('Illegal state: No stmts present on
GeneratedFile ${file.genFileUrl}');\n }\n return new TypeScriptEmitter().emitStatements(file.genFileUrl,
file.stmts, preamble);\n}\n\n"/**\n * @license\n * Copyright Google LLC All Rights Reserved.\n * Use of this
source code is governed by an MIT-style license that can be\n * found in the LICENSE file at
https://angular.io/license\n */\n\nimport {CompileNgModuleMetadata, tokenReference} from
'./compile_metadata';\nimport {Route} from './core';\nimport {StaticReflector} from './static_reflector';\nimport
{StaticSymbol} from './static_symbol';\n\nexport interface LazyRoute {\n module: StaticSymbol;\n route: string;\n
referencedModule: StaticSymbol;\n}\n\nexport function listLazyRoutes(\n moduleMeta:
CompileNgModuleMetadata, reflector: StaticReflector): LazyRoute[] {\n const allLazyRoutes: LazyRoute[] = [];\n
for (const {provider, module} of moduleMeta.transitiveModule.providers) {\n if (tokenReference(provider.token)
=== reflector.ROUTES) {\n const loadChildren = _collectLoadChildren(provider.useValue);\n for (const
route of loadChildren) {\n allLazyRoutes.push(parseLazyRoute(route, reflector, module.reference));\n }\n
 }\n }\n return allLazyRoutes;\n}\n\nfunction _collectLoadChildren(routes: string|Route|Route[], target: string[] =
[]): string[] {\n if (typeof routes === 'string') {\n target.push(routes);\n } else if (Array.isArray(routes)) {\n
for (const route of routes) {\n _collectLoadChildren(route, target);\n }\n } else if (routes.loadChildren) {\n
_collectLoadChildren(routes.loadChildren, target);\n } else if (routes.children) {\n
_collectLoadChildren(routes.children, target);\n }\n return target;\n}\n\nexport function parseLazyRoute(\n route:
string, reflector: StaticReflector, module?: StaticSymbol): LazyRoute {\n const [routePath, routeName] =
route.split('#');\n const referencedModule = reflector.resolveExternalReference(\n {\n moduleName:
routePath,\n name: routeName,\n },\n module ? module.filePath : undefined);\n return {route: route,
module: module || referencedModule, referencedModule};\n}\n\n"/**\n * @license\n * Copyright Google LLC All
Rights Reserved.\n * Use of this source code is governed by an MIT-style license that can be\n * found in the
LICENSE file at https://angular.io/license\n */\n\nimport {SummaryResolver} from './summary_resolver';\nimport

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{ValueTransformer, visitValue} from './util';\n\nimport {StaticSymbol, StaticSymbolCache} from
 './static_symbol';\n\nimport {isGeneratedFile, stripSummaryForJitFileSuffix, stripSummaryForJitNameSuffix,
summaryForJitFileName, summaryForJitName} from './util';\n\nconst TS = /^(?!.*\\.d\\.ts$).*\\.ts$/;\n\nexport class
ResolvedStaticSymbol {\n constructor(public symbol: StaticSymbol, public metadata: any) {} \n\n /**\n * The
host of the SymbolResolverHost disconnects the implementation from TypeScript / other\n * language\n * services
and from underlying file systems.\n */\n export interface StaticSymbolResolverHost {\n /**\n * Return a
ModuleMetadata for the given module.\n */\n Angular CLI will produce this metadata for a module whenever a .d.ts
files is\n * produced and the module has exported variables or classes with decorators. Module metadata can\n *
also be produced directly from TypeScript sources by using MetadataCollector in tools/metadata.\n */\n * @param
modulePath is a string identifier for a module as an absolute path.\n * @returns the metadata for the given
module.\n */\n getMetadataFor(modulePath: string): {[key: string]: any}[]|undefined;\n\n /**\n * Converts a
module name that is used in an `import` to a file path.\n * I.e.\n * `path/to/containingFile.ts` containing `import
{...} from 'module-name'`\n */\n moduleNameToFile(moduleName: string, containingFile?: string):
string|null;\n\n /**\n * Get a file suitable for display to the user that should be relative to the project directory\n *
or the current directory.\n */\n getOutputName(filePath: string): string;\n\n }\n\n const
SUPPORTED_SCHEMA_VERSION = 4;\n\n /**\n * This class is responsible for loading metadata per symbol,\n *
and normalizing references between symbols.\n */\n * Internally, it only uses symbols without members,\n *
and deduces the values for symbols with members based\n * on these symbols.\n */\n export class StaticSymbolResolver
{\n private metadataCache = new Map<string, {[key: string]: any}>();\n // Note: this will only contain
StaticSymbols without members!\n private resolvedSymbols = new Map<StaticSymbol,
ResolvedStaticSymbol>();\n // Note: this will only contain StaticSymbols without members!\n private importAs =
new Map<StaticSymbol, StaticSymbol>();\n private symbolResourcePaths = new Map<StaticSymbol, string>();\n private
symbolFromFile = new Map<string, StaticSymbol[]>();\n private knownFileNameToModuleNames = new
Map<string, string>();\n\n constructor(\n private host: StaticSymbolResolverHost, private staticSymbolCache:
StaticSymbolCache,\n private summaryResolver: SummaryResolver<StaticSymbol>,\n private
errorRecorder?: (error: any, fileName?: string) => void) {\n\n resolveSymbol(staticSymbol: StaticSymbol):
ResolvedStaticSymbol {\n if (staticSymbol.members.length > 0) {\n return
this._resolveSymbolMembers(staticSymbol)!;\n } \n // Note: always ask for a summary first,\n // as we might
have read shallow metadata via a .d.ts file\n // for the symbol.\n const resultFromSummary =
this._resolveSymbolFromSummary(staticSymbol)!;\n if (resultFromSummary) {\n return
resultFromSummary;\n } \n const resultFromCache = this.resolvedSymbols.get(staticSymbol);\n if
(resultFromCache) {\n return resultFromCache;\n } \n // Note: Some users use libraries that were not
compiled with ngc, i.e. they don't\n // have summaries, only .d.ts files. So we always need to check both, the
summary\n // and metadata.\n this._createSymbolsOf(staticSymbol.filePath);\n return
this.resolvedSymbols.get(staticSymbol)!;\n } \n\n /**\n * getImportAs produces a symbol that can be used to
import the given symbol.\n * The import might be different than the symbol if the symbol is exported from\n *
a library with a summary; in which case we want to import the symbol from the\n * ngfactory re-export instead of
directly to avoid introducing a direct dependency\n * on an otherwise indirect dependency.\n */\n * @param
staticSymbol the symbol for which to generate a import symbol\n */\n getImportAs(staticSymbol: StaticSymbol,
useSummaries: boolean = true): StaticSymbol|null {\n if (staticSymbol.members.length) {\n const baseSymbol
= this.getStaticSymbol(staticSymbol.filePath, staticSymbol.name);\n const baseImportAs =
this.getImportAs(baseSymbol, useSummaries);\n return baseImportAs ?\n this.getStaticSymbol(baseImportAs.filePath, baseImportAs.name, staticSymbol.members) :\n null;\n } \n const summarizedFileName = stripSummaryForJitFileSuffix(staticSymbol.filePath);\n if (summarizedFileName
!== staticSymbol.filePath) {\n const summarizedName = stripSummaryForJitNameSuffix(staticSymbol.name);\n const
baseSymbol =\n this.getStaticSymbol(summarizedFileName, summarizedName,\n staticSymbol.members);\n const baseImportAs = this.getImportAs(baseSymbol, useSummaries);\n return
baseImportAs ? this.getStaticSymbol(\n summarizedFileName(baseImportAs.filePath),\n

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summaryForJitName(baseImportAs.name), baseSymbol.members) : \n null; \n } \n
let result = (useSummaries && this.summaryResolver.getImportAs(staticSymbol)) || null; \n if (!result) { \n
result = this.importAs.get(staticSymbol); \n } \n return result; \n } \n \n /** \n * getResourcePath produces the
path to the original location of the symbol and should \n * be used to determine the relative location of resource
references recorded in \n * symbol metadata. \n * \n * getResourcePath(staticSymbol: StaticSymbol): string { \n
return this.symbolResourcePaths.get(staticSymbol) || staticSymbol.filePath; \n } \n \n /** \n * getTypeAriy returns
the number of generic type parameters the given symbol \n * has. If the symbol is not a type the result is null. \n
* \n * getTypeAriy(staticSymbol: StaticSymbol): number | null { \n // If the file is a factory/ngsummary file, don't
resolve the symbol as doing so would \n // cause the metadata for an factory/ngsummary file to be loaded which
doesn't exist. \n // All references to generated classes must include the correct arity whenever \n // generating
code. \n if (isGeneratedFile(staticSymbol.filePath)) { \n return null; \n } \n let resolvedSymbol =
unwrapResolvedMetadata(this.resolveSymbol(staticSymbol)); \n while (resolvedSymbol &&
resolvedSymbol.metadata instanceof StaticSymbol) { \n resolvedSymbol =
unwrapResolvedMetadata(this.resolveSymbol(resolvedSymbol.metadata)); \n } \n return (resolvedSymbol &&
resolvedSymbol.metadata && resolvedSymbol.metadata.arity) || null; \n } \n \n getKnownModuleName(filePath:
string): string | null { \n return this.knownFileNameToModuleNames.get(filePath) || null; \n } \n \n
recordImportAs(sourceSymbol: StaticSymbol, targetSymbol: StaticSymbol) { \n
sourceSymbol.assertNoMembers(); \n targetSymbol.assertNoMembers(); \n this.importAs.set(sourceSymbol,
targetSymbol); \n } \n \n recordModuleNameForFileName(fileName: string, moduleName: string) { \n
this.knownFileNameToModuleNames.set(fileName, moduleName); \n } \n \n /** \n * Invalidate all information
derived from the given file and return the \n * static symbols contained in the file. \n * \n * @param fileName the
file to invalidate \n * \n * invalidateFile(fileName: string): StaticSymbol[] { \n
this.metadataCache.delete(fileName); \n const symbols = this.symbolFromFile.get(fileName); \n if (!symbols) { \n
return []; \n } \n this.symbolFromFile.delete(fileName); \n for (const symbol of symbols) { \n
this.resolvedSymbols.delete(symbol); \n this.importAs.delete(symbol); \n
this.symbolResourcePaths.delete(symbol); \n } \n return symbols; \n } \n \n /** @internal * \n
ignoreErrorsFor<T>(cb: () => T) { \n const recorder = this.errorRecorder; \n this.errorRecorder = () => {}; \n try
{ \n return cb(); \n } finally { \n this.errorRecorder = recorder; \n } \n } \n \n private
_resolveSymbolMembers(staticSymbol: StaticSymbol): ResolvedStaticSymbol | null { \n const members =
staticSymbol.members; \n const baseResolvedSymbol = \n
this.resolveSymbol(this.getStaticSymbol(staticSymbol.filePath, staticSymbol.name)); \n if (!baseResolvedSymbol)
{ \n return null; \n } \n let baseMetadata = unwrapResolvedMetadata(baseResolvedSymbol.metadata); \n if
(baseMetadata instanceof StaticSymbol) { \n return new ResolvedStaticSymbol(\n staticSymbol,
this.getStaticSymbol(baseMetadata.filePath, baseMetadata.name, members)); \n } else if (baseMetadata &&
baseMetadata.__symbolic === 'class') { \n if (baseMetadata.statics && members.length === 1) { \n return
new ResolvedStaticSymbol(staticSymbol, baseMetadata.statics[members[0]]); \n } \n } else { \n let value =
baseMetadata; \n for (let i = 0; i < members.length && value; i++) { \n value = value[members[i]]; \n } \n
return new ResolvedStaticSymbol(staticSymbol, value); \n } \n return null; \n } \n \n private
_resolveSymbolFromSummary(staticSymbol: StaticSymbol): ResolvedStaticSymbol | null { \n const summary =
this.summaryResolver.resolveSummary(staticSymbol); \n return summary ? new
ResolvedStaticSymbol(staticSymbol, summary.metadata) : null; \n } \n \n /** \n * getStaticSymbol produces a Type
whose metadata is known but whose implementation is not loaded. \n * All types passed to the StaticResolver
should be pseudo-types returned by this method. \n * \n * @param declarationFile the absolute path of the file
where the symbol is declared \n * @param name the name of the type. \n * @param members a symbol for a static
member of the named type \n * \n * getStaticSymbol(declarationFile: string, name: string, members?: string[]):
StaticSymbol { \n return this.staticSymbolCache.get(declarationFile, name, members); \n } \n \n /** \n *
hasDecorators checks a file's metadata for the presence of decorators without evaluating the \n * metadata. \n * \n
* @param filePath the absolute path to examine for decorators. \n * @returns true if any class in the file has a

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decorator.\n */\n hasDecorators(filePath: string): boolean {\n const metadata =
this.getModuleMetadata(filePath);\n if (metadata['metadata']) {\n return
Object.keys(metadata['metadata']).some((metadataKey) => {\n const entry =
metadata['metadata'][metadataKey];\n return entry && entry.__symbolic === 'class' && entry.decorators;\n
});\n }\n return false;\n }\n\n getSymbolsOf(filePath: string): StaticSymbol[] {\n const summarySymbols =
this.summaryResolver.getSymbolsOf(filePath);\n if (summarySymbols) {\n return summarySymbols;\n }\n
// Note: Some users use libraries that were not compiled with ngc, i.e. they don't\n // have summaries, only .d.ts
files, but `summaryResolver.isLibraryFile` returns true.\n this._createSymbolsOf(filePath);\n return
this.symbolFromFile.get(filePath) || [];\n }\n\n private _createSymbolsOf(filePath: string) {\n if
(this.symbolFromFile.has(filePath)) {\n return;\n }\n const resolvedSymbols: ResolvedStaticSymbol[] = [];\n
const metadata = this.getModuleMetadata(filePath);\n if (metadata['importAs']) {\n // Index bundle indices
should use the importAs module name defined\n // in the bundle.\n
this.knownFileNameToModuleNames.set(filePath, metadata['importAs']);\n }\n // handle the symbols in one of
the re-export location\n if (metadata['exports']) {\n for (const moduleExport of metadata['exports']) {\n //
handle the symbols in the list of explicitly re-exported symbols.\n if (moduleExport.export) {\n
moduleExport.export.forEach((exportSymbol: any) => {\n let symbolName: string;\n if (typeof
exportSymbol === 'string') {\n symbolName = exportSymbol;\n } else {\n symbolName =
exportSymbol.as;\n }\n symbolName = unescapeIdentifier(symbolName);\n let symName =
symbolName;\n if (typeof exportSymbol !== 'string') {\n symName =
unescapeIdentifier(exportSymbol.name);\n }\n const resolvedModule =
this.resolveModule(moduleExport.from, filePath);\n if (resolvedModule) {\n const targetSymbol =
this.getStaticSymbol(resolvedModule, symName);\n const sourceSymbol = this.getStaticSymbol(filePath,
symbolName);\n resolvedSymbols.push(this.createExport(sourceSymbol, targetSymbol));\n }\n
});\n } else {\n // Handle the symbols loaded by 'export *' directives.\n const resolvedModule =
this.resolveModule(moduleExport.from, filePath);\n if (resolvedModule && resolvedModule !== filePath) {\n
const nestedExports = this.getSymbolsOf(resolvedModule);\n nestedExports.forEach((targetSymbol)
=> {\n const sourceSymbol = this.getStaticSymbol(filePath, targetSymbol.name);\n
resolvedSymbols.push(this.createExport(sourceSymbol, targetSymbol));\n });\n }\n }\n }\n\n // handle the actual metadata. Has to be after the exports\n // as there might be collisions in the names, and
we want the symbols\n // of the current module to win after reexports.\n if (metadata['metadata']) {\n //
handle direct declarations of the symbol\n const topLevelSymbolNames =\n new
Set<string>(Object.keys(metadata['metadata']).map(unescapeIdentifier));\n const origins: {[index: string]: string}
= metadata['origins'] || {};\n Object.keys(metadata['metadata']).forEach((metadataKey) => {\n const
symbolMeta = metadata['metadata'][metadataKey];\n const name = unescapeIdentifier(metadataKey);\n
const symbol = this.getStaticSymbol(filePath, name);\n\n const origin = origins.hasOwnProperty(metadataKey)
&& origins[metadataKey];\n if (origin) {\n // If the symbol is from a bundled index, use the declaration
location of the\n // symbol so relative references (such as './my.html') will be calculated\n // correctly.\n
const originFilePath = this.resolveModule(origin, filePath);\n if (!originFilePath) {\n
this.reportError(new Error(`Couldn't resolve original symbol for ${origin} from ${\n
this.host.getOutputName(filePath)}`));\n } else {\n this.symbolResourcePaths.set(symbol,
originFilePath);\n }\n resolvedSymbols.push(\n this.createResolvedSymbol(symbol,
filePath, topLevelSymbolNames, symbolMeta);\n);\n }\n }\n const uniqueSymbols = new
Set<StaticSymbol>();\n for (const resolvedSymbol of resolvedSymbols) {\n
this.resolvedSymbols.set(resolvedSymbol.symbol, resolvedSymbol);\n
uniqueSymbols.add(resolvedSymbol.symbol);\n }\n this.symbolFromFile.set(filePath,
Array.from(uniqueSymbols));\n }\n\n private createResolvedSymbol(\n sourceSymbol: StaticSymbol,\n
topLevelPath: string, topLevelSymbolNames: Set<string>,\n metadata: any): ResolvedStaticSymbol {\n // For
classes that don't have Angular summaries / metadata,\n // we only keep their arity, but nothing else\n // (e.g.

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their constructor parameters).\n // We do this to prevent introducing deep imports\n // as we didn't generate
.ngfactory.ts files with proper reexports.\n const isTsFile = TS.test(sourceSymbol.filePath);\n if
(this.summaryResolver.isLibraryFile(sourceSymbol.filePath) && !isTsFile && metadata &&\n
metadata['__symbolic'] === 'class') {\n const transformedMeta = {__symbolic: 'class', arity: metadata.arity};\n
return new ResolvedStaticSymbol(sourceSymbol, transformedMeta);\n }\n\n let _originalFileMemo:
string|undefined;\n const getOriginalName: () => string = () => {\n if (!_originalFileMemo) {\n // Guess
what the original file name is from the reference. If it has a `.d.ts` extension\n // replace it with `.ts`. If it already
has `.ts` just leave it in place. If it doesn't have\n // `.ts` or `.d.ts`, append `.ts`. Also, if it is in `node_modules`, trim
the `node_module`\n // location as it is not important to finding the file.\n _originalFileMemo =\n this.host.getOutputName(topLevelPath.replace(/((\\ts)|(\\.d\\.ts))$/, '.ts'))\n
.replace(/^(.*node_modules[\\|\\/], "));\n }\n return _originalFileMemo;\n };\n\n const self = this;\n
class ReferenceTransformer extends ValueTransformer {\n visitStringMap(map: {[key: string]: any},
functionParams: string[]): any {\n const symbolic = map['__symbolic'];\n if (symbolic === 'function') {\n
const oldLen = functionParams.length;\n functionParams.push...(map['parameters'] || []);\n const
result = super.visitStringMap(map, functionParams);\n functionParams.length = oldLen;\n return
result;\n } else if (symbolic === 'reference') {\n const module = map['module'];\n const name =
map['name'] ? unescapeIdentifier(map['name']) : map['name'];\n if (!name) {\n return null;\n }\n
let filePath: string;\n if (module) {\n filePath = self.resolveModule(module,
sourceSymbol.filePath);\n if (!filePath) {\n return {\n __symbolic: 'error',\n
message: `Could not resolve ${module} relative to ${\n
self.host.getMetadataFor(sourceSymbol.filePath)}.`,\n line: map['line'],\n character:
map['character'],\n fileName: getOriginalName()\n };\n }\n return {\n
__symbolic: 'resolved',\n symbol: self.getStaticSymbol(filePath, name),\n line: map['line'],\n
character: map['character'],\n fileName: getOriginalName()\n }; } else if
(functionParams.indexOf(name) >= 0) {\n // reference to a function parameter\n return {__symbolic:
'reference', name: name};\n } else {\n if (topLevelSymbolNames.has(name)) {\n return
self.getStaticSymbol(topLevelPath, name);\n }\n // ambient value\n null;\n }\n } else
if (symbolic === 'error') {\n return {...map, fileName: getOriginalName()};\n } else {\n return
super.visitStringMap(map, functionParams);\n }\n }\n }\n\n const transformedMeta = visitValue(metadata,
new ReferenceTransformer(), []);\n let unwrappedTransformedMeta =
unwrapResolvedMetadata(transformedMeta);\n if (unwrappedTransformedMeta instanceof StaticSymbol) {\n
return this.createExport(sourceSymbol, unwrappedTransformedMeta);\n }\n return new
ResolvedStaticSymbol(sourceSymbol, transformedMeta);\n }\n\n private createExport(sourceSymbol:
StaticSymbol, targetSymbol: StaticSymbol):\n ResolvedStaticSymbol {\n sourceSymbol.assertNoMembers();\n
targetSymbol.assertNoMembers();\n if (this.summaryResolver.isLibraryFile(sourceSymbol.filePath) &&\n
this.summaryResolver.isLibraryFile(targetSymbol.filePath)) {\n // This case is for an ng library importing
symbols from a plain ts library\n // transitively.\n // Note: We rely on the fact that we discover symbols in the
direction\n // from source files to library files\n this.importAs.set(targetSymbol,
this.getImportAs(sourceSymbol) || sourceSymbol);\n }\n return new ResolvedStaticSymbol(sourceSymbol,
targetSymbol);\n }\n\n private reportError(error: Error, context?: StaticSymbol, path?: string) {\n if
(this.errorRecorder) {\n this.errorRecorder(error, (context && context.filePath) || path);\n } else {\n throw
error;\n }\n }\n\n /**\n * @param module an absolute path to a module file.\n */\n private
getModuleMetadata(module: string): {[key: string]: any} {\n let moduleMetadata =
this.metadataCache.get(module);\n if (!moduleMetadata) {\n const moduleMetadatas =
this.host.getMetadataFor(module);\n if (moduleMetadatas) {\n let maxVersion = -1;\n
moduleMetadatas.forEach((md) => {\n if (md && md['version'] > maxVersion) {\n maxVersion =
md['version'];\n moduleMetadata = md;\n }\n });\n }\n if (!moduleMetadata) {\n
moduleMetadata =\n {__symbolic: 'module', version: SUPPORTED_SCHEMA_VERSION, module:

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module, metadata: {});\n }\n if (moduleMetadata['version'] != SUPPORTED_SCHEMA_VERSION) {\n
const errorMessage = moduleMetadata['version'] == 2 ?\n `Unsupported metadata version\n
${moduleMetadata['version']} for module ${\n module}. This module should be compiled with a newer\n
version of ngc` :\n `Metadata version mismatch for module ${\n
this.host.getOutputName(module)}, found version ${\n moduleMetadata['version']}, expected\n
${SUPPORTED_SCHEMA_VERSION}`;\n this.reportError(new Error(errorMessage));\n }\n
this.metadataCache.set(module, moduleMetadata);\n }\n return moduleMetadata;\n }\n\n
getSymbolByModule(module: string, symbolName: string, containingFile?: string): StaticSymbol {\n const\n
filePath = this.resolveModule(module, containingFile);\n if (!filePath) {\n this.reportError(new Error(`Could\n
not resolve module ${module}${\n containingFile ? ' relative to ' + this.host.getOutputName(containingFile) :\n
''`));\n return this.getStaticSymbol(`ERROR:${module}`, symbolName);\n }\n return\n
this.getStaticSymbol(filePath, symbolName);\n }\n\n
private resolveModule(module: string, containingFile?:\n
string): string|null {\n try {\n return this.host.moduleNameToFileName(module, containingFile);\n } catch (e)\n
{\n console.error(`Could not resolve module '${module}' relative to file ${containingFile}`);\n
this.reportError(e, undefined, containingFile);\n }\n return null;\n }\n}\n\n// Remove extra underscore from\n
escaped identifier.\n// See https://github.com/Microsoft/TypeScript/blob/master/src/compiler/utilities.ts\nexport\n
function unescapeIdentifier(identifier: string): string {\n return identifier.startsWith('__') ? identifier.substr(1) :\n
identifier;\n}\n\nexport function unwrapResolvedMetadata(metadata: any): any {\n if (metadata &&\n
metadata.__symbolic === 'resolved') {\n return metadata.symbol;\n }\n return metadata;\n}\n\n"/**\n *
@license\n * Copyright Google LLC All Rights Reserved.\n * Use of this source code is governed by an MIT-\n
style license that can be\n * found in the LICENSE file at https://angular.io/license\n */\nimport\n
{CompileDirectiveMetadata, CompileDirectiveSummary, CompileNgModuleMetadata,\n
CompileNgModuleSummary, CompilePipeMetadata, CompileProviderMetadata, CompileSummaryKind,\n
CompileTypeMetadata, CompileTypeSummary} from './compile_metadata';\nimport * as o from\n
'./output/output_ast';\nimport {Summary, SummaryResolver} from './summary_resolver';\nimport {OutputContext,\n
ValueTransformer, ValueVisitor, visitValue} from './util';\nimport {StaticSymbol, StaticSymbolCache} from\n
'./static_symbol';\nimport {ResolvedStaticSymbol, StaticSymbolResolver, unwrapResolvedMetadata} from\n
'./static_symbol_resolver';\nimport {isLoweredSymbol, ngfactoryFilePath, summaryForJitFileName,\n
summaryForJitName} from './util';\nexport function serializeSummaries(\n srcFileName: string, forJitCtx:\n
OutputContext|null,\n summaryResolver: SummaryResolver<StaticSymbol>, symbolResolver:\n
StaticSymbolResolver,\n symbols: ResolvedStaticSymbol[], types: {\n summary: CompileTypeSummary,\n
metadata: CompileNgModuleMetadata|CompileDirectiveMetadata|CompilePipeMetadata|\n
CompileTypeMetadata\n }[],\n createExternalSymbolReexports =\n false): {json: string, exportAs:\n
{symbol: StaticSymbol, exportAs: string}[]} {\n const toJsonSerializer = new ToJsonSerializer(symbolResolver,\n
summaryResolver, srcFileName);\n // for symbols, we use everything except for the class metadata itself\n
// (we\n
keep the statics though), as the class metadata is contained in the\n
// CompileTypeSummary.\n symbols.forEach(\n
 (resolvedSymbol) => toJsonSerializer.addSummary(\n {symbol: resolvedSymbol.symbol, metadata:\n
resolvedSymbol.metadata});\n // Add type summaries.\n types.forEach(({summary, metadata}) => {\n
toJsonSerializer.addSummary(\n {symbol: summary.type.reference, metadata: undefined, type: summary});\n
});\n const {json, exportAs} = toJsonSerializer.serialize(createExternalSymbolReexports);\n if (forJitCtx) {\n
const forJitSerializer = new ForJitSerializer(forJitCtx, symbolResolver, summaryResolver);\n
types.forEach(({summary, metadata}) => {\n forJitSerializer.addSourceType(summary, metadata);\n });\n
toJsonSerializer.unprocessedSymbolSummariesBySymbol.forEach((summary) => {\n if\n
(summaryResolver.isLibraryFile(summary.symbol.filePath) && summary.type) {\n
forJitSerializer.addLibType(summary.type);\n }\n });\n forJitSerializer.serialize(exportAs);\n}\n}\n\nreturn\n
{json, exportAs};\n}\n\nexport function deserializeSummaries(\n symbolCache: StaticSymbolCache,\n
summaryResolver: SummaryResolver<StaticSymbol>,\n libraryFileName: string, json: string): {\n moduleName:\n
string|null,\n summaries: Summary<StaticSymbol>[],\n importAs: {symbol: StaticSymbol, importAs:

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StaticSymbol>[]\n } {\n const deserializer = new FromJsonDeserializer(symbolCache, summaryResolver);\n return
deserializer.deserialize(libraryFileName, json);\n}\n\nexport function createForJitStub(outputCtx: OutputContext,
reference: StaticSymbol) {\n return createSummaryForJitFunction(outputCtx, reference,
o.NULL_EXPR);\n}\n\nfunction createSummaryForJitFunction(\n outputCtx: OutputContext, reference:
StaticSymbol, value: o.Expression) {\n const fnName = summaryForJitName(reference.name);\n
outputCtx.statements.push(\n o.fn([], [new o.ReturnStatement(value)], new
o.ArrayType(o.DYNAMIC_TYPE)).toDeclStmt(fnName, [\n o.StmtModifier.Final, o.StmtModifier.Exported\n
]));\n}\n\nconst enum SerializationFlags {\n None = 0,\n ResolveValue = 1,\n}\n\nclass ToJsonSerializer extends
ValueTransformer {\n // Note: This only contains symbols without members.\n private symbols: StaticSymbol[] =
[];\n private indexBySymbol = new Map<StaticSymbol, number>();\n private reexportedBy = new
Map<StaticSymbol, StaticSymbol>();\n // This now contains a `__symbol: number` in the place of\n //
StaticSymbols, but otherwise has the same shape as the original objects.\n private processedSummaryBySymbol =
new Map<StaticSymbol, any>();\n private processedSummaries: any[] = [];\n private moduleName: string|null;\n\n
unprocessedSymbolSummariesBySymbol = new Map<StaticSymbol, Summary<StaticSymbol>>());\n\n
constructor(\n private symbolResolver: StaticSymbolResolver,\n private summaryResolver:
SummaryResolver<StaticSymbol>, private srcFileName: string) {\n super();\n this.moduleName =
symbolResolver.getKnownModuleName(srcFileName);\n }\n\n addSummary(summary:
Summary<StaticSymbol>) {\n let unprocessedSummary =
this.unprocessedSymbolSummariesBySymbol.get(summary.symbol);\n let processedSummary =
this.processedSummaryBySymbol.get(summary.symbol);\n if (!unprocessedSummary) {\n
unprocessedSummary = {symbol: summary.symbol, metadata: undefined};\n
this.unprocessedSymbolSummariesBySymbol.set(summary.symbol, unprocessedSummary);\n
processedSummary = {symbol: this.processValue(summary.symbol, SerializationFlags.None)};\n
this.processedSummaries.push(processedSummary);\n this.processedSummaryBySymbol.set(summary.symbol,
processedSummary);\n }\n if (!unprocessedSummary.metadata && summary.metadata) {\n let metadata =
summary.metadata || {};\n if (metadata.__symbolic === 'class') {\n // For classes, we keep everything except
their class decorators.\n // We need to keep e.g. the ctor args, method names, method decorators\n // so that
the class can be extended in another compilation unit.\n // We don't keep the class decorators as\n // 1) they
refer to data\n // that should not cause a rebuild of downstream compilation units\n // (e.g. inline
templates of @Component, or @NgModule.declarations)\n // 2) their data is already captured in
TypeSummaries, e.g. DirectiveSummary.\n const clone: {[key: string]: any} = {};\n
Object.keys(metadata).forEach((propName) => {\n if (propName !== 'decorators') {\n
clone[propName] = metadata[propName];\n }\n });\n metadata = clone;\n } else if
(isCall(metadata)) {\n if (!isFunctionCall(metadata) && !isMethodCallOnVariable(metadata)) {\n // Don't
store complex calls as we won't be able to simplify them anyways later on.\n metadata = {\n
__symbolic: 'error',\n message: 'Complex function calls are not supported.',\n }; \n }\n }\n //
Note: We need to keep storing ctor calls for e.g.\n // `export const x = new InjectionToken(...)`\n
unprocessedSummary.metadata = metadata;\n processedSummary.metadata = this.processValue(metadata,
SerializationFlags.ResolveValue);\n if (metadata instanceof StaticSymbol &&\n
this.summaryResolver.isLibraryFile(metadata.filePath)) {\n const declarationSymbol =
this.symbols[this.indexBySymbol.get(metadata)];\n if (!isLoweredSymbol(declarationSymbol.name)) {\n
// Note: symbols that were introduced during codegen in the user file can have a reexport\n // if a user used
`export *`. However, we can't rely on this as tsickle will change\n // `export *` into named exports, using only
the information from the typechecker.\n // As we introduce the new symbols after typecheck, Tsickle does not
know about them,\n // and omits them when expanding `export *`.\n // So we have to keep reexporting
these symbols manually via .ngfactory files.\n this.reexportedBy.set(declarationSymbol, summary.symbol);\n
}\n }\n }\n if (!unprocessedSummary.type && summary.type) {\n unprocessedSummary.type =
summary.type;\n // Note: We don't add the summaries of all referenced symbols as for the ResolvedSymbols,\n

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// as the type summaries already contain the transitive data that they require\n // (in a minimal way).\n
processedSummary.type = this.processValue(summary.type, SerializationFlags.None);\n // except for reexported
directives / pipes, so we need to store\n // their summaries explicitly.\n if (summary.type.summaryKind ===
CompileSummaryKind.NgModule) {\n const ngModuleSummary =
<CompileNgModuleSummary>summary.type;\n
ngModuleSummary.exportedDirectives.concat(ngModuleSummary.exportedPipes).forEach((id => {\n const
symbol: StaticSymbol = id.reference;\n if (this.summaryResolver.isLibraryFile(symbol.filePath) &&\n
!this.unprocessedSymbolSummariesBySymbol.has(symbol)) {\n const summary =
this.summaryResolver.resolveSummary(symbol);\n if (summary) {\n this.addSummary(summary);\n
}\n }\n });\n }\n }\n }\n\n /**\n * @param createExternalSymbolReexports Whether external
static symbols should be re-exported.\n * This can be enabled if external symbols should be re-exported by the
current module in\n * order to avoid dynamically generated module dependencies which can break strict
dependency\n * enforcements (as in Google3). Read more here: https://github.com/angular/angular/issues/25644\n
*\n * serialize(createExternalSymbolReexports: boolean):\n {json: string, exportAs: {symbol: StaticSymbol,
exportAs: string}[]} {\n const exportAs: {symbol: StaticSymbol, exportAs: string}[] = [];\n const json =
JSON.stringify({\n moduleName: this.moduleName,\n summaries: this.processedSummaries,\n symbols:
this.symbols.map((symbol, index) => {\n symbol.assertNoMembers();\n let importAs: string|number =
undefined!;\n if (this.summaryResolver.isLibraryFile(symbol.filePath)) {\n const reexportSymbol =
this.reexportedBy.get(symbol);\n if (reexportSymbol) {\n // In case the given external static symbol is
already manually exported by the\n // user, we just proxy the external static symbol reference to the manual
export.\n // This ensures that the AOT compiler imports the external symbol through the\n // user
export and does not introduce another dependency which is not needed.\n importAs =
this.indexBySymbol.get(reexportSymbol)!;\n } else if (createExternalSymbolReexports) {\n // In this
case, the given external static symbol is *not* manually exported by\n // the user, and we manually create a
re-export in the factory file so that we\n // don't introduce another module dependency. This is useful when
running within\n // Bazel so that the AOT compiler does not introduce any module dependencies\n //
which can break the strict dependency enforcement. (e.g. as in Google3)\n // Read more about this here:
https://github.com/angular/angular/issues/25644\n
const summary =
this.unprocessedSymbolSummariesBySymbol.get(symbol);\n if (!summary || !summary.metadata ||
summary.metadata.__symbolic !== 'interface') {\n importAs = `${symbol.name}_${index}`;\n
exportAs.push({symbol, exportAs: importAs});\n }\n }\n }\n return {\n __symbolic:
index,\n name: symbol.name,\n filePath: this.summaryResolver.toSummaryFileName(symbol.filePath,
this.srcFileName),\n importAs: importAs\n }; \n });\n return {json, exportAs};\n }\n\n private
processValue(value: any, flags: SerializationFlags): any {\n return visitValue(value, this, flags);\n }\n\n
visitOther(value: any, context: any): any {\n if (value instanceof StaticSymbol) {\n let baseSymbol =
this.symbolResolver.getStaticSymbol(value.filePath, value.name);\n const index =
this.visitStaticSymbol(baseSymbol, context);\n return {__symbolic: index, members: value.members};\n }\n
}\n\n /**\n * Strip line and character numbers from ngsummaries.\n * Emitting them causes white spaces
changes to retrigger upstream\n * recompilations in bazel.\n * TODO: find out a way to have line and character
numbers in errors without\n * excessive recompilation in bazel.\n */\n visitStringMap(map: {[key: string]: any},
context: any): any {\n if (map['__symbolic'] === 'resolved') {\n return visitValue(map['symbol'], this,
context);\n }\n if (map['__symbolic'] === 'error') {\n delete map['line'];\n delete map['character'];\n
}\n return super.visitStringMap(map, context);\n }\n\n /**\n * Returns null if the options.resolveValue is true, and the
summary for the symbol\n * resolved to a type or could not be resolved.\n */\n private
visitStaticSymbol(baseSymbol: StaticSymbol, flags: SerializationFlags): number {\n let index:
number|undefined|null = this.indexBySymbol.get(baseSymbol);\n let summary: Summary<StaticSymbol>|null =
null;\n if (flags & SerializationFlags.ResolveValue &&\n
this.summaryResolver.isLibraryFile(baseSymbol.filePath)) {\n if

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(this.unprocessedSymbolSummariesBySymbol.has(baseSymbol)) {\n // the summary for this symbol was
already added\n // -> nothing to do.\n return index!;\n }\n summary =
this.loadSummary(baseSymbol);\n if (summary && summary.metadata instanceof StaticSymbol) {\n // The
summary is a reexport\n index = this.visitStaticSymbol(summary.metadata, flags);\n // reset the summary as
it is just a reexport, so we don't want to store it.\n summary = null;\n }\n } else if (index != null) {\n //
Note: == on purpose to compare with undefined!\n // No summary and the symbol is already added -> nothing to
do.\n return index;\n }\n // Note: == on purpose to compare with undefined!\n if (index == null) {\n
index = this.symbols.length;\n this.symbols.push(baseSymbol);\n }\n this.indexBySymbol.set(baseSymbol,
index);\n if (summary) {\n this.addSummary(summary);\n }\n return index;\n }\n\n private
loadSummary(symbol: StaticSymbol): Summary<StaticSymbol>|null {\n let summary =
this.summaryResolver.resolveSummary(symbol);\n if (!summary) {\n // some symbols might originate from a
plain typescript library\n // that just exported .d.ts and .metadata.json files, i.e. where no summary\n // files
were created.\n const resolvedSymbol = this.symbolResolver.resolveSymbol(symbol);\n if (resolvedSymbol)
{\n summary = {symbol: resolvedSymbol.symbol, metadata: resolvedSymbol.metadata};\n }\n }\n return
summary;\n }\n\n\n class ForJitSerializer {\n private data: Array<{\n summary: CompileTypeSummary,\n
metadata: CompileNgModuleMetadata|CompileDirectiveMetadata|CompilePipeMetadata|\n
CompileTypeMetadata|null,\n isLibrary: boolean\n }> = [];\n\n constructor(\n private outputCtx:
OutputContext, private symbolResolver: StaticSymbolResolver,\n private summaryResolver:
SummaryResolver<StaticSymbol>) {\n\n addSourceType(\n summary: CompileTypeSummary,\n metadata:
CompileNgModuleMetadata|CompileDirectiveMetadata|CompilePipeMetadata|\n CompileTypeMetadata) {\n
this.data.push({summary, metadata, isLibrary: false});\n }\n\n addLibType(summary: CompileTypeSummary) {\n
this.data.push({summary, metadata: null, isLibrary: true});\n }\n\n serialize(exportAsArr: {symbol: StaticSymbol,
exportAs: string}[]): void {\n const exportAsBySymbol = new Map<StaticSymbol, string>();\n for (const
{symbol, exportAs} of exportAsArr) {\n exportAsBySymbol.set(symbol, exportAs);\n }\n\n const
ngModuleSymbols = new Set<StaticSymbol>();\n\n for (const {summary, metadata, isLibrary} of this.data) {\n
if (summary.summaryKind === CompileSummaryKind.NgModule) {\n // collect the symbols that refer to
NgModule classes.\n // Note: we can't just rely on `summary.type.summaryKind` to determine this as\n //
we don't add the summaries of all referenced symbols when we serialize type summaries.\n // See
serializeSummaries for details.\n ngModuleSymbols.add(summary.type.reference);\n const modSummary =
<CompileNgModuleSummary>summary;\n for (const mod of modSummary.modules) {\n
ngModuleSymbols.add(mod.reference);\n }\n }\n\n if (!isLibrary) {\n const fnName =
summaryForJitName(summary.type.reference.name);\n createSummaryForJitFunction(\n this.outputCtx,
summary.type.reference,\n this.serializeSummaryWithDeps(summary, metadata!);\n }\n }\n\n ngModuleSymbols.forEach((ngModuleSymbol) => {\n if
(this.summaryResolver.isLibraryFile(ngModuleSymbol.filePath)) {\n let exportAs =
exportAsBySymbol.get(ngModuleSymbol) || ngModuleSymbol.name;\n const jitExportAsName =
summaryForJitName(exportAs);\n this.outputCtx.statements.push(o.variable(jitExportAsName)\n
.set(this.serializeSummaryRef(ngModuleSymbol))\n
.toDeclStmt(null,
[o.StmtModifier.Exported]));\n }\n });\n }\n\n private serializeSummaryWithDeps(\n summary:
CompileTypeSummary,\n metadata:
CompileNgModuleMetadata|CompileDirectiveMetadata|CompilePipeMetadata|\n CompileTypeMetadata):
o.Expression {\n const expressions: o.Expression[] = [this.serializeSummary(summary)];\n let providers:
CompileProviderMetadata[] = [];\n if (metadata instanceof CompileNgModuleMetadata) {\n
expressions.push(...\n // For directives / pipes, we only add the declared ones,\n // and
rely on transitively importing NgModules to get the transitive\n // summaries.\n
metadata.declaredDirectives.concat(metadata.declaredPipes)\n .map(type => type.reference)\n
// For modules,\n // we also add the summaries for modules\n // from
libraries.\n // This is ok as we produce reexports for all transitive modules.\n

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CompilePipeSummary, CompileProviderMetadata, CompileShallowModuleMetadata, CompileStylesheetMetadata,
CompileTypeMetadata, CompileTypeSummary, componentFactoryName, flatten, identifierName,
templateSourceUrl} from './compile_metadata';\nimport {CompilerConfig} from './config';\nimport
{ConstantPool} from './constant_pool';\nimport {ViewEncapsulation} from './core';\nimport {MessageBundle}
from './i18n/message_bundle';\nimport {createTokenForExternalReference, Identifiers} from './identifiers';\nimport
{InjectableCompiler} from './injectable_compiler';\nimport {CompileMetadataResolver} from
'./metadata_resolver';\nimport {HtmlParser} from './ml_parser/html_parser';\nimport {removeWhitespaces} from
'./ml_parser/html_whitespaces';\nimport {DEFAULT_INTERPOLATION_CONFIG, InterpolationConfig} from
'./ml_parser/interpolation_config';\nimport {NgModuleCompiler} from './ng_module_compiler';\nimport
{OutputEmitter} from './output/abstract_emitter';\nimport * as o from './output/output_ast';\nimport {ParseError}
from './parse_util';\nimport {compileNgModuleFromRender2 as compileR3Module} from
'./render3/r3_module_compiler';\nimport {compilePipeFromRender2 as compileR3Pipe} from
'./render3/r3_pipe_compiler';\nimport {htmlAstToRender3Ast} from './render3/r3_template_transform';\nimport
{compileComponentFromRender2 as compileR3Component, compileDirectiveFromRender2 as
compileR3Directive} from './render3/view/compiler';\nimport {DomElementSchemaRegistry} from
'./schema/dom_element_schema_registry';\nimport {CompiledStylesheet, StyleCompiler} from
'./style_compiler';\nimport {SummaryResolver} from './summary_resolver';\nimport {BindingParser} from
'./template_parser/binding_parser';\nimport {TemplateAst} from './template_parser/template_ast';\nimport
{TemplateParser} from './template_parser/template_parser';\nimport {error, newArray, OutputContext, syntaxError,
ValueVisitor, visitValue} from './util';\nimport {TypeCheckCompiler} from
'./view_compiler/type_check_compiler';\nimport {ViewCompiler, ViewCompileResult} from
'./view_compiler/view_compiler';\n\nimport {AotCompilerHost} from './compiler_host';\nimport
{AotCompilerOptions} from './compiler_options';\nimport {GeneratedFile} from './generated_file';\nimport
{LazyRoute, listLazyRoutes, parseLazyRoute} from './lazy_routes';\nimport {PartialModule} from
'./partial_module';\nimport {StaticReflector} from './static_reflector';\nimport {StaticSymbol} from
'./static_symbol';\nimport {StaticSymbolResolver} from './static_symbol_resolver';\nimport {createForJitStub,
serializeSummaries} from './summary_serializer';\nimport {ngfactoryFilePath, normalizeGenFileSuffix,
splitTypescriptSuffix, summaryFileName, summaryForJitFileName} from './util';\n\nconst enum StubEmitFlags {\n
Basic = 1 << 0,\n TypeCheck = 1 << 1,\n All = TypeCheck | Basic\n}\n\nexport class AotCompiler {\n private
_templateAstCache =\n new Map<StaticSymbol, {template: TemplateAst[], pipes:
CompilePipeSummary[]}>();\n private _analyzedFiles = new Map<string, NgAnalyzedFile>();\n private
_analyzedFilesForInjectables = new Map<string, NgAnalyzedFileWithInjectables>();\n\n constructor(\n private
_config: CompilerConfig, private _options: AotCompilerOptions,\n private _host: AotCompilerHost, readonly
reflector: StaticReflector,\n private _metadataResolver: CompileMetadataResolver, private _templateParser:
TemplateParser,\n private _styleCompiler: StyleCompiler, private _viewCompiler: ViewCompiler,\n private
_typeCheckCompiler: TypeCheckCompiler, private _ngModuleCompiler: NgModuleCompiler,\n private
_injectableCompiler: InjectableCompiler, private _outputEmitter: OutputEmitter,\n private _summaryResolver:
SummaryResolver<StaticSymbol>,\n private _symbolResolver: StaticSymbolResolver) {\n\n clearCache() {\n
this._metadataResolver.clearCache();\n }\n\n analyzeModulesSync(rootFiles: string[]): NgAnalyzedModules {\n
const analyzeResult = analyzeAndValidateNgModules(\n rootFiles, this._host, this._symbolResolver,
this._metadataResolver);\n analyzeResult.ngModules.forEach(\n ngModule =>
this._metadataResolver.loadNgModuleDirectiveAndPipeMetadata(\n ngModule.type.reference, true));\n
return analyzeResult;\n }\n\n analyzeModulesAsync(rootFiles: string[]): Promise<NgAnalyzedModules> {\n
const analyzeResult = analyzeAndValidateNgModules(\n rootFiles, this._host, this._symbolResolver,
this._metadataResolver);\n return Promise\n .all(analyzeResult.ngModules.map(\n ngModule =>
this._metadataResolver.loadNgModuleDirectiveAndPipeMetadata(\n ngModule.type.reference, false)))\n
.then(() => analyzeResult);\n }\n\n private _analyzeFile(fileName: string): NgAnalyzedFile {\n let analyzedFile
= this._analyzedFiles.get(fileName);\n if (!analyzedFile) {\n analyzedFile =\n analyzeFile(this._host,

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this._symbolResolver, this._metadataResolver, fileName);\n this._analyzedFiles.set(fileName, analyzedFile);\n }\n return analyzedFile;\n }\n\n private _analyzeFileForInjectables(fileName: string):\n NgAnalyzedFileWithInjectables {\n let analyzedFile = this._analyzedFilesForInjectables.get(fileName);\n if\n (!analyzedFile) {\n analyzedFile = analyzeFileForInjectables(\n this._host, this._symbolResolver,\n this._metadataResolver, fileName);\n this._analyzedFilesForInjectables.set(fileName, analyzedFile);\n }\n return analyzedFile;\n }\n\n findGeneratedFileNames(fileName: string): string[] {\n const genFileNames: string[]\n = [];\n const file = this._analyzeFile(fileName);\n // Make sure we create a .ngfactory if we have a\n injectable/directive/pipe/NgModule\n // or a reference to a non source file.\n // Note: This is overestimating the\n required .ngfactory files as the real calculation is harder.\n // Only do this for StubEmitFlags.Basic, as adding a\n type check block\n // does not change this file (as we generate type check blocks based on NgModules).\n if\n (this._options.allowEmptyCodegenFiles || file.directives.length || file.pipes.length ||\n file.injectables.length ||\n file.ngModules.length || file.exportsNonSourceFiles) {\n genFileNames.push(ngfactoryFilePath(file.fileName,\n true));\n if (this._options.enableSummariesForJit) {\n genFileNames.push(summaryForJitFileName(file.fileName, true));\n }\n }\n const fileSuffix =\n normalizeGenFileSuffix(splitTypescriptSuffix(file.fileName, true)[1]);\n file.directives.forEach((dirSymbol) =>\n {\n const compMeta =\n this._metadataResolver.getNonNormalizedDirectiveMetadata(dirSymbol)!.\n metadata;\n if\n (!compMeta.isComponent) {\n return;\n }\n // Note: compMeta is a component and therefore template is\n non null.\n compMeta.template!.styleUrls.forEach((styleUrl) => {\n const normalizedUrl =\n this._host.resourceNameToFileName(styleUrl, file.fileName);\n if (!normalizedUrl) {\n throw\n syntaxError(` Couldn't resolve resource ${styleUrl} relative to ${file.fileName}`);\n }\n const needsShim =\n (compMeta.template!.encapsulation ||\n this._config.defaultEncapsulation) ===\n ViewEncapsulation.Emulated;\n genFileNames.push(_stylesModuleUrl(normalizedUrl, needsShim,\n fileSuffix));\n if (this._options.allowEmptyCodegenFiles) {\n genFileNames.push(_stylesModuleUrl(normalizedUrl, !needsShim, fileSuffix));\n }\n });\n }\n }\n return\n genFileNames;\n }\n\n emitBasicStub(genFileName: string, originalFileName?: string): GeneratedFile {\n const\n outputCtx = this._createOutputContext(genFileName);\n if (genFileName.endsWith('.ngfactory.ts')) {\n if\n (!originalFileName) {\n throw new Error(\n `Assertion error: require the original file for .ngfactory.ts\n stubs. File: ${\n genFileName}`);\n }\n const originalFile = this._analyzeFile(originalFileName);\n this._createNgFactoryStub(outputCtx, originalFile, StubEmitFlags.Basic);\n } else if\n (genFileName.endsWith('.ngsummary.ts')) {\n if (this._options.enableSummariesForJit) {\n if\n (!originalFileName) {\n throw new Error(\n `Assertion error: require the original file for\n .ngsummary.ts stubs. File: ${\n genFileName}`);\n }\n const originalFile =\n this._analyzeFile(originalFileName);\n _createEmptyStub(outputCtx);\n originalFile.ngModules.forEach(ngModule => {\n // create exports that user code can reference\n createForJitStub(outputCtx, ngModule.type.reference);\n });\n }\n } else if\n (genFileName.endsWith('.ngstyle.ts')) {\n _createEmptyStub(outputCtx);\n }\n // Note: for the stubs, we don't\n need a property srcFileUrl,\n // as later on in emitAllImpls we will create the proper GeneratedFiles with the\n //\n correct srcFileUrl.\n // This is good as e.g. for .ngstyle.ts files we can't derive\n // the url of components based on\n the genFileUrl.\n return this._codegenSourceModule('unknown', outputCtx);\n }\n\n emitTypeCheckStub(genFileName: string, originalFileName: string): GeneratedFile|null {\n const originalFile =\n this._analyzeFile(originalFileName);\n const outputCtx = this._createOutputContext(genFileName);\n if\n (genFileName.endsWith('.ngfactory.ts')) {\n this._createNgFactoryStub(outputCtx, originalFile,\n StubEmitFlags.TypeCheck);\n }\n return outputCtx.statements.length > 0 ?\n this._codegenSourceModule(originalFile.fileName, outputCtx) :\n null;\n }\n\n loadFilesAsync(fileNames:\n string[], tsFiles: string[]): Promise<\n {analyzedModules: NgAnalyzedModules, analyzedInjectables:\n NgAnalyzedFileWithInjectables[]}> {\n const files = fileNames.map(fileName => this._analyzeFile(fileName));\n const loadingPromises: Promise<NgAnalyzedModules>[] = [];\n files.forEach(\n file =>

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file.ngModules.forEach(\n ngModule =>\n
loadingPromises.push(this._metadataResolver.loadNgModuleDirectiveAndPipeMetadata(\n
ngModule.type.reference, false));\n const analyzedInjectables = tsFiles.map(tsFile =>
this._analyzeFileForInjectables(tsFile));\n return Promise.all(loadingPromises).then(_ => ({\n
 analyzedModules: mergeAndValidateNgFiles(files),\n analyzedInjectables:
analyzedInjectables,\n
 }));\n }\n\n loadFilesSync(fileNames: string[], tsFiles:
string[]):\n { analyzedModules: NgAnalyzedModules, analyzedInjectables: NgAnalyzedFileWithInjectables[] }
{\n const files = fileNames.map(fileName => this._analyzeFile(fileName));\n files.forEach(\n file =>
file.ngModules.forEach(\n ngModule =>
this._metadataResolver.loadNgModuleDirectiveAndPipeMetadata(\n ngModule.type.reference, true));\n
const analyzedInjectables = tsFiles.map(tsFile => this._analyzeFileForInjectables(tsFile));\n return {\n
analyzedModules: mergeAndValidateNgFiles(files),\n analyzedInjectables: analyzedInjectables,\n };\n }\n\n
private _createNgFactoryStub(\n outputCtx: OutputContext, file: NgAnalyzedFile, emitFlags: StubEmitFlags)
{\n let componentId = 0;\n file.ngModules.forEach((ngModuleMeta, ngModuleIndex) => {\n // Note: the
code below needs to executed for StubEmitFlags.Basic and StubEmitFlags.TypeCheck,\n // so we don't change
the .ngfactory file too much when adding the type-check block.\n // create exports that user code can
reference\n this._ngModuleCompiler.createStub(outputCtx, ngModuleMeta.type.reference);\n // add
references to the symbols from the metadata.\n // These can be used by the type check block for components,\n
// and they also cause TypeScript to include these files into the program too,\n // which will make them part of
the analyzedFiles.\n const externalReferences: StaticSymbol[] = [\n // Add references that are available from
all the modules and imports.\n ...ngModuleMeta.transitiveModule.directives.map(d => d.reference),\n
...ngModuleMeta.transitiveModule.pipes.map(d => d.reference),\n ...ngModuleMeta.importedModules.map(m
=> m.type.reference),\n ...ngModuleMeta.exportedModules.map(m => m.type.reference),\n // Add
references that might be inserted by the template compiler.\n
...this._externalIdentifierReferences([Identifiers.TemplateRef, Identifiers.ElementRef]),\n];\n const
externalReferenceVars = new Map<any, string>();\n externalReferences.forEach((ref, typeIndex) => {\n
externalReferenceVars.set(ref, `_decl${ngModuleIndex}_${typeIndex}`);\n });\n
externalReferenceVars.forEach((varName, reference) => {\n outputCtx.statements.push(\n
o.variable(varName)\n .set(o.NULL_EXPR.cast(o.DYNAMIC_TYPE))\n
.toDeclStmt(o.expressionType(outputCtx.importExpr(\n reference, /* typeParams */ null, /*
useSummaries */ false));\n });\n if (emitFlags & StubEmitFlags.TypeCheck) {\n // add the type-check
block for all components of the NgModule\n ngModuleMeta.declaredDirectives.forEach((dirId) => {\n
const compMeta = this._metadataResolver.getDirectiveMetadata(dirId.reference);\n if
(!compMeta.isComponent) {\n return;\n }\n componentId++;\n
this._createTypeCheckBlock(\n outputCtx, `${compMeta.type.reference.name}_Host_${componentId}`,
ngModuleMeta,\n this._metadataResolver.getHostComponentMetadata(compMeta), [compMeta.type],\n
externalReferenceVars);\n this._createTypeCheckBlock(\n outputCtx,
`${compMeta.type.reference.name}_${componentId}`, ngModuleMeta, compMeta,\n
ngModuleMeta.transitiveModule.directives, externalReferenceVars);\n });\n }\n });\n if
(outputCtx.statements.length === 0) {\n _createEmptyStub(outputCtx);\n }\n }\n\n private
_externalIdentifierReferences(references: o.ExternalReference[]): StaticSymbol[] {\n const result: StaticSymbol[]
= [];\n for (let reference of references) {\n const token = createTokenForExternalReference(this.reflector,
reference);\n if (token.identifier) {\n result.push(token.identifier.reference);\n }\n }\n return result;\n
}\n\n private _createTypeCheckBlock(\n ctx: OutputContext, componentId: string, moduleMeta:
CompileNgModuleMetadata,\n compMeta: CompileDirectiveMetadata, directives:
CompileIdentifierMetadata[],\n externalReferenceVars: Map<any, string>) {\n const {template:
parsedTemplate, pipes: usedPipes} =\n this._parseTemplate(compMeta, moduleMeta, directives);\n
ctx.statements.push(...this._typeCheckCompiler.compileComponent(\n componentId, compMeta,

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parsedTemplate, usedPipes, externalReferenceVars, ctx));\n }\n\n emitMessageBundle(analyzeResult:
NgAnalyzedModules, locale: string|null): MessageBundle {\n const errors: ParseError[] = [];\n const htmlParser
= new HtmlParser();\n\n // TODO(vicb): implicit tags & attributes\n const messageBundle = new
MessageBundle(htmlParser, [], {}, locale);\n\n analyzeResult.files.forEach(file => {\n const compMetas:
CompileDirectiveMetadata[] = [];\n file.directives.forEach(directiveType => {\n const dirMeta =
this._metadataResolver.getDirectiveMetadata(directiveType);\n if (dirMeta && dirMeta.isComponent) {\n
compMetas.push(dirMeta);\n }\n });\n compMetas.forEach(compMeta => {\n const html =
compMeta.template !.template !;\n // Template URL points to either an HTML or TS file depending on
whether\n // the file is used with `templateUrl:` or `template:`, respectively.\n const templateUrl =
compMeta.template !.templateUrl!;\n const interpolationConfig =\n InterpolationConfig.fromArray(compMeta.template !.interpolation);\n\n errors.push(...messageBundle.updateFromTemplate(html, templateUrl, interpolationConfig!));\n });\n });\n\n if (errors.length) {\n throw new Error(errors.map(e => e.toString()).join('\n'));\n }\n\n return
messageBundle;\n }\n\n emitAllPartialModules(\n {ngModuleByPipeOrDirective, files}:
NgAnalyzedModules,\n r3Files: NgAnalyzedFileWithInjectables[]): PartialModule[] {\n const contextMap =
new Map<string, OutputContext>();\n\n const getContext = (fileName: string): OutputContext => {\n if
(!contextMap.has(fileName)) {\n contextMap.set(fileName, this._createOutputContext(fileName));\n }\n
return contextMap.get(fileName)!;\n };\n\n files.forEach(\n file => this._compilePartialModule(\n
file.fileName, ngModuleByPipeOrDirective, file.directives, file.pipes, file.ngModules,\n file.injectables,
getContext(file.fileName));\n r3Files.forEach(\n file => this._compileShallowModules(\n
file.fileName, file.shallowModules, getContext(file.fileName));\n \n return Array.from(contextMap.values())\n
.map(context => ({\n fileName: context.genFilePath,\n statements:
[...context.constantPool.statements, ...context.statements],\n }));\n });\n\n private
_compileShallowModules(\n fileName: string, shallowModules: CompileShallowModuleMetadata[],\n context:
OutputContext): void {\n shallowModules.forEach(module => compileR3Module(context, module,
this._injectableCompiler));\n }\n\n private _compilePartialModule(\n fileName: string,
ngModuleByPipeOrDirective: Map<StaticSymbol, CompileNgModuleMetadata>,\n directives: StaticSymbol[],
pipes: StaticSymbol[], ngModules: CompileNgModuleMetadata[],\n injectables: CompileInjectableMetadata[],
context: OutputContext): void {\n const errors: ParseError[] = [];\n\n const schemaRegistry = new
DomElementSchemaRegistry();\n const hostBindingParser = new BindingParser(\n
this._templateParser.expressionParser, DEFAULT_INTERPOLATION_CONFIG, schemaRegistry, [],\n errors);\n\n // Process all components and directives\n directives.forEach(directiveType => {\n const
directiveMetadata = this._metadataResolver.getDirectiveMetadata(directiveType);\n if
(directiveMetadata.isComponent) {\n const module = ngModuleByPipeOrDirective.get(directiveType)!;\n
module ||\n error(`Cannot determine the module for component '${\n
identifierName(directiveMetadata.type)}')`);\n let htmlAst = directiveMetadata.template !.htmlAst!;\n
const preserveWhitespaces = directiveMetadata!.template !.preserveWhitespaces;\n if (!preserveWhitespaces)
{\n htmlAst = removeWhitespaces(htmlAst);\n }\n const render3Ast =
htmlAstToRender3Ast(htmlAst.rootNodes, hostBindingParser);\n\n // Map of StaticType by directive
selectors\n const directiveTypeBySel = new Map<string, any>();\n const directives =
module.transitiveModule.directives.map(\n dir =>
this._metadataResolver.getDirectiveSummary(dir.reference));\n\n directives.forEach(directive => {\n if
(directive.selector) {\n directiveTypeBySel.set(directive.selector, directive.type.reference);\n }\n
});\n\n // Map of StaticType by pipe names\n const pipeTypeByName = new Map<string, any>();\n const pipes = module.transitiveModule.pipes.map(\n pipe =>
this._metadataResolver.getPipeSummary(pipe.reference));\n\n pipes.forEach(pipe => {\n pipeTypeByName.set(pipe.name, pipe.type.reference);\n });\n\n compileR3Component(\n context,
directiveMetadata, render3Ast, this.reflector, hostBindingParser,\n directiveTypeBySel,

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pipeTypeByName);
 } else {
 compileR3Directive(context, directiveMetadata, this.reflector,
 hostBindingParser);
 }
 pipes.forEach(pipeType => {
 const pipeMetadata =
 this._metadataResolver.getPipeMetadata(pipeType);
 if (pipeMetadata) {
 compileR3Pipe(context,
 pipeMetadata, this.reflector);
 }
 });
 injectables.forEach(injectable =>
 this._injectableCompiler.compile(injectable, context));
 emitAllPartialModules2(files:
 NgAnalyzedFileWithInjectables[]): PartialModule[] {
 // Using reduce like this is a select many pattern (where
 map is a select pattern)
 return files.reduce<PartialModule[]>((r, file) => {
 r.push(...this._emitPartialModule2(file.fileName, file.injectables));
 return r;
 }, [], []);
 }
 private
 _emitPartialModule2(fileName: string, injectables: CompileInjectableMetadata[]):
 PartialModule[] {
 const
 context = this._createOutputContext(fileName);
 injectables.forEach(injectable =>
 this._injectableCompiler.compile(injectable, context));
 if (context.statements && context.statements.length >
 0) {
 return [{
 fileName,
 statements: [...context.constantPool.statements, ...context.statements]
 }];
 }
 return
 [];
 }
 emitAllImpls(analyzeResult: NgAnalyzedModules): GeneratedFile[] {
 const
 {ngModuleByPipeOrDirective, files} = analyzeResult;
 const sourceModules = files.map((file =>
 this._compileImplFile(
 file.fileName, ngModuleByPipeOrDirective, file.directives, file.pipes,
 file.ngModules, file.injectables));
 return flatten(sourceModules);
 }
 private _compileImplFile(
 srcFileUrl: string, ngModuleByPipeOrDirective: Map<StaticSymbol, CompileNgModuleMetadata>,
 directives: StaticSymbol[], pipes: StaticSymbol[], ngModules: CompileNgModuleMetadata[],
 injectables:
 CompileInjectableMetadata[]): GeneratedFile[] {
 const fileSuffix =
 normalizeGenFileSuffix(splitTypescriptSuffix(srcFileUrl, true)[1]);
 const generatedFiles: GeneratedFile[] =
 [];
 const outputCtx = this._createOutputContext(ngfactoryFilePath(srcFileUrl, true));
 generatedFiles.push(...this._createSummary(srcFileUrl, directives, pipes, ngModules, injectables,
 outputCtx));
 // compile all ng modules
 ngModules.forEach((ngModuleMeta) =>
 this._compileModule(outputCtx, ngModuleMeta));
 // compile components
 directives.forEach((dirType) => {
 const compMeta = this._metadataResolver.getDirectiveMetadata(<any>dirType);
 if
 (!compMeta.isComponent) {
 return;
 }
 const ngModule =
 ngModuleByPipeOrDirective.get(dirType);
 if (!ngModule) {
 throw new Error(`Internal Error: cannot
 determine the module for component ${
 identifierName(compMeta.type)}!`);
 }
 // compile
 styles
 const componentStylesheet = this._styleCompiler.compileComponent(outputCtx, compMeta);
 //
 Note: compMeta is a component and therefore template is non null.
 compMeta.template
 !.externalStylesheets.forEach((stylesheetMeta) => {
 // Note: fill non shim and shim style files as they might
 // be shared by component with and without ViewEncapsulation.
 const shim =
 this._styleCompiler.needsStyleShim(compMeta);
 generatedFiles.push(
 this._codegenStyles(srcFileUrl, compMeta, stylesheetMeta, shim, fileSuffix));
 if
 (this._options.allowEmptyCodegenFiles) {
 generatedFiles.push(
 this._codegenStyles(srcFileUrl,
 compMeta, stylesheetMeta, !shim, fileSuffix));
 }
 });
 // compile components
 const
 compViewVars = this._compileComponent(
 outputCtx, compMeta, ngModule,
 ngModule.transitiveModule.directives, componentStylesheet,
 fileSuffix);
 this._compileComponentFactory(outputCtx, compMeta, ngModule, fileSuffix);
 });
 if
 (outputCtx.statements.length > 0 || this._options.allowEmptyCodegenFiles) {
 const srcModule =
 this._codegenSourceModule(srcFileUrl, outputCtx);
 generatedFiles.unshift(srcModule);
 }
 return
 generatedFiles;
 }
 private _createSummary(
 srcFileName: string, directives: StaticSymbol[], pipes:
 StaticSymbol[],
 ngModules: CompileNgModuleMetadata[], injectables: CompileInjectableMetadata[],
 ngFactoryCtx: OutputContext): GeneratedFile[] {
 const symbolSummaries =
 this._symbolResolver.getSymbolsOf(srcFileName)
 .map(symbol =>
 this._symbolResolver.resolveSymbol(symbol));
 const typeData: {
 summary: CompileTypeSummary,
 metadata: CompileNgModuleMetadata|CompileDirectiveMetadata|CompilePipeMetadata|
 CompileTypeMetadata
 }[] =
 [...ngModules.map(meta => ({
 summary:

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this._metadataResolver.getNgModuleSummary(meta.type.reference)!,\n metadata:
this._metadataResolver.getNgModuleMetadata(meta.type.reference)!\n })),\n ...directives.map(ref =>
({\n summary: this._metadataResolver.getDirectiveSummary(ref)!,\n metadata:
this._metadataResolver.getDirectiveMetadata(ref)!\n })),\n ...pipes.map(ref => ({\n summary: this._metadataResolver.getPipeSummary(ref)!,\n metadata:
this._metadataResolver.getPipeMetadata(ref)!\n })),\n ...injectables.map(\n ref => ({\n summary: this._metadataResolver.getInjectableSummary(ref.symbol)!,\n metadata:
this._metadataResolver.getInjectableSummary(ref.symbol)!.type\n })),\n];\n const forJitOutputCtx =
this._options.enableSummariesForJit ?\n this._createOutputContext(summaryForJitFileName(srcFileName,
true)) :\n null;\n const {json, exportAs} = serializeSummaries(\n srcFileName, forJitOutputCtx,
this._summaryResolver, this._symbolResolver, symbolSummaries,\n typeData,
this._options.createExternalSymbolFactoryReexports);\n exportAs.forEach((entry) => {\n
ngFactoryCtx.statements.push(\n
o.variable(entry.exportAs).set(ngFactoryCtx.importExpr(entry.symbol)).toDeclStmt(null, [\n
o.StmtModifier.Exported\n]));\n });\n const summaryJson = new GeneratedFile(srcFileName,
summaryFileName(srcFileName), json);\n const result = [summaryJson];\n if (forJitOutputCtx) {\n
result.push(this._codegenSourceModule(srcFileName, forJitOutputCtx));\n }\n return result;\n }\n\n private
_compileModule(outputCtx: OutputContext, ngModule: CompileNgModuleMetadata): void {\n const providers:
CompileProviderMetadata[] = [];\n if (this._options.locale) {\n const normalizedLocale =
this._options.locale.replace(/_/g, '-');\n providers.push({\n token:
createTokenForExternalReference(this.reflector, Identifiers.LOCALE_ID),\n useValue: normalizedLocale,\n });\n }\n if (this._options.i18nFormat) {\n providers.push({\n token:
createTokenForExternalReference(this.reflector, Identifiers.TRANSLATIONS_FORMAT),\n useValue:
this._options.i18nFormat\n });\n }\n this._ngModuleCompiler.compile(outputCtx, ngModule, providers);\n }\n\n private _compileComponentFactory(\n outputCtx: OutputContext, compMeta:
CompileDirectiveMetadata,\n ngModule: CompileNgModuleMetadata, fileSuffix: string): void {\n const
hostMeta = this._metadataResolver.getHostComponentMetadata(compMeta);\n const hostViewFactoryVar =\n this._compileComponent(outputCtx, hostMeta, ngModule, [compMeta.type], null, fileSuffix)\n .viewClassVar;\n const compFactoryVar = componentFactoryName(compMeta.type.reference);\n const
inputsExprs: o.LiteralMapEntry[] = [];\n for (let propName in compMeta.inputs) {\n const templateName =
compMeta.inputs[propName];\n // Don't quote so that the key gets minified...\n inputsExprs.push(new
o.LiteralMapEntry(propName, o.literal(templateName), false));\n }\n const outputsExprs: o.LiteralMapEntry[] =
[];\n for (let propName in compMeta.outputs) {\n const templateName = compMeta.outputs[propName];\n //
Don't quote so that the key gets minified...\n outputsExprs.push(new o.LiteralMapEntry(propName,
o.literal(templateName), false));\n }\n outputCtx.statements.push(\n o.variable(compFactoryVar)\n .set(o.importExpr(Identifiers.createComponentFactory).callFn([\n o.literal(compMeta.selector),
outputCtx.importExpr(compMeta.type.reference),\n o.variable(hostViewFactoryVar), new
o.LiteralMapExpr(inputsExprs),\n new o.LiteralMapExpr(outputsExprs),\n o.literalArr(\n
compMeta.template!.ngContentSelectors.map(selector => o.literal(selector))\n]))\n .toDeclStmt(\n
o.importType(\n Identifiers.ComponentFactory,\n
[o.expressionType(outputCtx.importExpr(compMeta.type.reference))],\n [o.TypeModifier.Const]),\n
[o.StmtModifier.Final, o.StmtModifier.Exported]));\n }\n private _compileComponent(\n outputCtx:
OutputContext, compMeta: CompileDirectiveMetadata,\n ngModule: CompileNgModuleMetadata,
directiveIdentifiers: CompileIdentifierMetadata[],\n componentStyles: CompiledStylesheet|null, fileSuffix:
string): ViewCompileResult {\n const {template: parsedTemplate, pipes: usedPipes} =\n this._parseTemplate(compMeta, ngModule, directiveIdentifiers);\n const stylesExpr = componentStyles ?
o.variable(componentStyles.stylesVar) : o.literalArr([]);\n const viewResult =
this._viewCompiler.compileComponent(\n outputCtx, compMeta, parsedTemplate, stylesExpr, usedPipes);\n }

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if (componentStyles) {\n _resolveStyleStatements(\n this._symbolResolver, componentStyles,\n this._styleCompiler.needsStyleShim(compMeta),\n fileSuffix);\n }\n return viewResult;\n }\n\n private\n _parseTemplate(\n compMeta: CompileDirectiveMetadata, ngModule: CompileNgModuleMetadata,\n directiveIdentifiers: CompileIdentifierMetadata[]):\n {template: TemplateAst[], pipes: CompilePipeSummary[]}\n {\n if (this._templateAstCache.has(compMeta.type.reference)) {\n return\n this._templateAstCache.get(compMeta.type.reference)!;\n }\n const preserveWhitespaces = compMeta!.template\n !.preserveWhitespaces;\n const directives =\n directiveIdentifiers.map(dir =>\n this._metadataResolver.getDirectiveSummary(dir.reference));\n const pipes =\n ngModule.transitiveModule.pipes.map(\n pipe => this._metadataResolver.getPipeSummary(pipe.reference));\n const result = this._templateParser.parse(\n compMeta, compMeta.template!.htmlAst!, directives, pipes,\n ngModule.schemas,\n templateUrl(ngModule.type, compMeta, compMeta.template!),\n preserveWhitespaces);\n this._templateAstCache.set(compMeta.type.reference, result);\n return result;\n }\n\n private _createOutputContext(genFilePath: string): OutputContext {\n const importExpr =\n (symbol:\n StaticSymbol, typeParams: o.Type[]|null = null, useSummaries: boolean = true) => {\n if (!(symbol instanceof\n StaticSymbol)) {\n throw new Error(`Internal error: unknown identifier ${JSON.stringify(symbol)}`);\n }\n const arity = this._symbolResolver.getTypeArity(symbol) || 0;\n const {filePath, name, members} =\n this._symbolResolver.getImportAs(symbol, useSummaries) || symbol;\n const importModule =\n this._fileNameToModuleName(filePath, genFilePath);\n // It should be good enough to compare filePath to\n genFilePath and if they are equal\n // there is a self reference. However, ngfactory files generate to .ts but\n their\n // symbols have .d.ts so a simple compare is insufficient. They should be canonical\n // and is\n tracked by #17705.\n const selfReference = this._fileNameToModuleName(genFilePath, genFilePath);\n const moduleName = importModule === selfReference ? null : importModule;\n // If we are in a type\n expression that refers to a generic type then supply\n // the required type parameters. If there were not enough\n type parameters\n // supplied, supply any as the type. Outside a type expression the reference\n // should\n not supply type parameters and be treated as a simple value reference\n // to the constructor function itself.\n const suppliedTypeParams = typeParams || [];\n const missingTypeParamsCount = arity -\n suppliedTypeParams.length;\n const allTypeParams =\n suppliedTypeParams.concat(newArray(missingTypeParamsCount, o.DYNAMIC_TYPE));\n return\n members.reduce(\n (expr, memberName) => expr.prop(memberName),\n <o.Expression>o.importExpr(\n new o.ExternalReference(moduleName, name, null), allTypeParams));\n };\n return {statements: [], genFilePath, importExpr, constantPool: new ConstantPool()};\n }\n\n private\n _fileNameToModuleName(importedFilePath: string, containingFilePath: string): string {\n return\n this._summaryResolver.getKnownModuleName(importedFilePath) ||\n this._symbolResolver.getKnownModuleName(importedFilePath) ||\n this._host.fileNameToModuleName(importedFilePath, containingFilePath);\n }\n\n private _codegenStyles(\n srcFileUrl: string, compMeta: CompileDirectiveMetadata,\n stylesheetMetadata: CompileStylesheetMetadata,\n isShimmed: boolean,\n fileSuffix: string): GeneratedFile {\n const outputCtx = this._createOutputContext(\n _stylesModuleUrl(stylesheetMetadata.moduleUrl!, isShimmed, fileSuffix));\n const compiledStylesheet =\n this._styleCompiler.compileStyles(outputCtx, compMeta, stylesheetMetadata, isShimmed);\n _resolveStyleStatements(this._symbolResolver, compiledStylesheet, isShimmed, fileSuffix);\n return\n this._codegenSourceModule(srcFileUrl, outputCtx);\n }\n\n private _codegenSourceModule(srcFileUrl: string, ctx:\n OutputContext): GeneratedFile {\n return new GeneratedFile(srcFileUrl, ctx.genFilePath, ctx.statements);\n }\n\n listLazyRoutes(entryRoute?: string, analyzedModules?: NgAnalyzedModules): LazyRoute[] {\n const self =\n this;\n if (entryRoute) {\n const symbol = parseLazyRoute(entryRoute, this.reflector).referencedModule;\n return visitLazyRoute(symbol);\n } else if (analyzedModules) {\n const allLazyRoutes: LazyRoute[] = [];\n for (const ngModule of analyzedModules.ngModules) {\n const lazyRoutes = listLazyRoutes(ngModule,\n this.reflector);\n for (const lazyRoute of lazyRoutes) {\n allLazyRoutes.push(lazyRoute);\n }\n }\n return allLazyRoutes;\n } else {\n throw new Error(`Either route or analyzedModules has to be specified!`);\n }\n}

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 }\n function visitLazyRoute(\n symbol: StaticSymbol, seenRoutes = new Set<StaticSymbol>(),\n allLazyRoutes: LazyRoute[] = []): LazyRoute[] {\n // Support pointing to default exports, but stop recursing\n there,\n // as the StaticReflector does not yet support default exports.\n if (seenRoutes.has(symbol) ||\n !symbol.name) {\n return allLazyRoutes;\n }\n seenRoutes.add(symbol);\n const lazyRoutes =\n listLazyRoutes(self._metadataResolver.getNgModuleMetadata(symbol, true)!, self.reflector);\n for (const\n lazyRoute of lazyRoutes) {\n allLazyRoutes.push(lazyRoute);\n }\n visitLazyRoute(lazyRoute.referencedModule, seenRoutes, allLazyRoutes);\n }\n return allLazyRoutes;\n }\n}\n\nfunction _createEmptyStub(outputCtx: OutputContext) {\n // Note: We need to produce at least one import\n statement so that\n // TypeScript knows that the file is an es6 module. Otherwise our generated\n // exports /\n imports won't be emitted properly by TypeScript.\n outputCtx.statements.push(o.importExpr(Identifiers.ComponentFactory).toStmt());\n}\n\nfunction\n_resolveStyleStatements(\n symbolResolver: StaticSymbolResolver, compileResult: CompiledStylesheet,\n needsShim: boolean,\n fileSuffix: string): void {\n compileResult.dependencies.forEach((dep) => {\n dep.setValue(symbolResolver.getStaticSymbol(\n _stylesModuleUrl(dep.moduleUrl, needsShim, fileSuffix),\n dep.name));\n });\n}\n\nfunction _stylesModuleUrl(stylesheetUrl: string, shim: boolean, suffix: string): string {\n return `${stylesheetUrl}${shim ? '.shim' : ''}.ngstyle${suffix}`;\n}\n\nexport interface NgAnalyzedModules {\n ngModules: CompileNgModuleMetadata[];\n ngModuleByPipeOrDirective: Map<StaticSymbol,\n CompileNgModuleMetadata>;\n files: NgAnalyzedFile[];\n symbolsMissingModule?:\n StaticSymbol[];\n}\n\nexport interface NgAnalyzedFileWithInjectables {\n fileName: string;\n injectables:\n CompileInjectableMetadata[];\n shallowModules: CompileShallowModuleMetadata[];\n}\n\nexport interface\nNgAnalyzedFile {\n fileName: string;\n directives: StaticSymbol[];\n abstractDirectives: StaticSymbol[];\n pipes:\n StaticSymbol[];\n ngModules: CompileNgModuleMetadata[];\n injectables: CompileInjectableMetadata[];\n exportsNonSourceFiles: boolean;\n}\n\nexport interface NgAnalyzeModulesHost {\n isSourceFile(filePath: string):\n boolean;\n}\n\nexport function analyzeNgModules(\n fileNames: string[], host: NgAnalyzeModulesHost,\n staticSymbolResolver: StaticSymbolResolver,\n metadataResolver: CompileMetadataResolver):\nNgAnalyzedModules {\n const files = _analyzeFilesIncludingNonProgramFiles(\n fileNames, host,\n staticSymbolResolver, metadataResolver);\n return mergeAnalyzedFiles(files);\n}\n\nexport function\nanalyzeAndValidateNgModules(\n fileNames: string[], host: NgAnalyzeModulesHost, staticSymbolResolver:\n StaticSymbolResolver,\n metadataResolver: CompileMetadataResolver): NgAnalyzedModules {\n return\n validateAnalyzedModules(\n analyzeNgModules(fileNames, host, staticSymbolResolver,\n metadataResolver));\n}\n\nfunction validateAnalyzedModules(analyzedModules: NgAnalyzedModules):\nNgAnalyzedModules {\n if (analyzedModules.symbolsMissingModule &&\n analyzedModules.symbolsMissingModule.length) {\n const messages =\n analyzedModules.symbolsMissingModule.map(\n s => `Cannot determine the module for class ${s.name} in\n ${s.filePath}! Add ${\n s.name} to the NgModule to fix it.`);\n throw syntaxError(messages.join("\\n"));\n }\n return analyzedModules;\n}\n\n// Analyzes all of the program files,\n// including files that are not part of the\n// program\n// but are referenced by an NgModule.\nfunction _analyzeFilesIncludingNonProgramFiles(\n fileNames:\n string[], host: NgAnalyzeModulesHost, staticSymbolResolver: StaticSymbolResolver,\n metadataResolver:\n CompileMetadataResolver): NgAnalyzedFile[] {\n const seenFiles = new Set<string>();\n const files:\n NgAnalyzedFile[] = [];\n const visitFile = (fileName: string) => {\n if (seenFiles.has(fileName) ||\n !host.isSourceFile(fileName)) {\n return false;\n }\n seenFiles.add(fileName);\n const analyzedFile =\n analyzeFile(host, staticSymbolResolver, metadataResolver, fileName);\n files.push(analyzedFile);\n analyzedFile.ngModules.forEach(ngModule => {\n ngModule.transitiveModule.modules.forEach(modMeta =>\n visitFile(modMeta.reference.filePath));\n });\n }; \n fileNames.forEach((fileName) => visitFile(fileName));\n return files;\n}\n\nexport function analyzeFile(\n host: NgAnalyzeModulesHost, staticSymbolResolver:\n StaticSymbolResolver,\n metadataResolver: CompileMetadataResolver, fileName: string): NgAnalyzedFile {\n const abstractDirectives: StaticSymbol[] = [];\n const directives: StaticSymbol[] = [];\n const pipes: StaticSymbol[]\n = [];\n const injectables: CompileInjectableMetadata[] = [];\n const ngModules: CompileNgModuleMetadata[] =

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[];\n const hasDecorators = staticSymbolResolver.hasDecorators(fileName);\n let exportsNonSourceFiles = false;\n const isDeclarationFile = fileName.endsWith('.d.ts');\n // Don't analyze .d.ts files that have no decorators as a\n shortcut\n // to speed up the analysis. This prevents us from\n // resolving the references in these files.\n // Note:\n exportsNonSourceFiles is only needed when compiling with summaries,\n // which is not the case when .d.ts files\n are treated as input files.\n if (!isDeclarationFile || hasDecorators) {\n staticSymbolResolver.getSymbolsOf(fileName).forEach((symbol) => {\n const resolvedSymbol =\n staticSymbolResolver.resolveSymbol(symbol);\n const symbolMeta = resolvedSymbol.metadata;\n if\n (!symbolMeta || symbolMeta.__symbolic === 'error') {\n return;\n }\n let isNgSymbol = false;\n if\n (symbolMeta.__symbolic === 'class') {\n if (metadataResolver.isDirective(symbol)) {\n isNgSymbol =\n true;\n // This directive either has a selector or doesn't. Selector-less directives get tracked\n // in\n abstractDirectives, not directives. The compiler doesn't deal with selector-less\n // directives at all, really, other\n than to persist their metadata. This is done so that\n // apps will have an easier time migrating to Ivy, which\n requires the selector-less\n // annotations to be applied.\n if\n (!metadataResolver.isAbstractDirective(symbol)) {\n // The directive is an ordinary directive.\n directives.push(symbol);\n } else {\n // The directive has no selector and is an \"abstract\" directive, so\n track it\n // accordingly.\n abstractDirectives.push(symbol);\n }\n } else if\n (metadataResolver.isPipe(symbol)) {\n isNgSymbol = true;\n pipes.push(symbol);\n } else if\n (metadataResolver.isNgModule(symbol)) {\n const ngModule =\n metadataResolver.getNgModuleMetadata(symbol, false);\n if (ngModule) {\n isNgSymbol = true;\n ngModules.push(ngModule);\n }\n } else if (metadataResolver.isInjectable(symbol)) {\n isNgSymbol = true;\n const injectable = metadataResolver.getInjectableMetadata(symbol, null, false);\n if (injectable) {\n injectables.push(injectable);\n }\n }\n }\n if (!isNgSymbol) {\n exportsNonSourceFiles =\n exportsNonSourceFiles || isValueExportingNonSourceFile(host, symbolMeta);\n }\n });\n }\n return {\n fileName,\n directives,\n abstractDirectives,\n pipes,\n ngModules,\n injectables,\n exportsNonSourceFiles,\n };\n}\n\nexport function analyzeFileForInjectables(\n host:\n NgAnalyzeModulesHost, staticSymbolResolver: StaticSymbolResolver,\n metadataResolver:\n CompileMetadataResolver, fileName: string): NgAnalyzedFileWithInjectables {\n const injectables:\n CompileInjectableMetadata[] = [];\n const shallowModules: CompileShallowModuleMetadata[] = [];\n if\n (staticSymbolResolver.hasDecorators(fileName)) {\n staticSymbolResolver.getSymbolsOf(fileName).forEach((symbol) => {\n const resolvedSymbol =\n staticSymbolResolver.resolveSymbol(symbol);\n const symbolMeta = resolvedSymbol.metadata;\n if\n (!symbolMeta || symbolMeta.__symbolic === 'error') {\n return;\n }\n if (symbolMeta.__symbolic ===\n 'class') {\n if (metadataResolver.isInjectable(symbol)) {\n const injectable =\n metadataResolver.getInjectableMetadata(symbol, null, false);\n if (injectable) {\n injectables.push(injectable);\n }\n } else if (metadataResolver.isNgModule(symbol)) {\n const\n module = metadataResolver.getShallowModuleMetadata(symbol);\n if (module) {\n shallowModules.push(module);\n }\n }\n }\n });\n }\n return {fileName, injectables,\n shallowModules};\n}\n\nfunction isValueExportingNonSourceFile(host: NgAnalyzeModulesHost, metadata: any):\n boolean {\n let exportsNonSourceFiles = false;\n\n class Visitor implements ValueVisitor {\n visitArray(arr:\n any[], context: any): any {\n arr.forEach(v => visitValue(v, this, context));\n }\n visitStringMap(map: {[key:\n string]: any}, context: any): any {\n Object.keys(map).forEach((key) => visitValue(map[key], this, context));\n }\n visitPrimitive(value: any, context: any): any {\n }\n visitOther(value: any, context: any): any {\n if (value\n instanceof StaticSymbol && !host.isSourceFile(value.filePath)) {\n exportsNonSourceFiles = true;\n }\n }\n }\n\n visitValue(metadata, new Visitor(), null);\n return exportsNonSourceFiles;\n}\n\nexport function\n mergeAnalyzedFiles(analyzedFiles: NgAnalyzedFile[]): NgAnalyzedModules {\n const allNgModules:\n CompileNgModuleMetadata[] = [];\n const ngModuleByPipeOrDirective = new Map<StaticSymbol,\n CompileNgModuleMetadata>();\n const allPipesAndDirectives = new Set<StaticSymbol>();\n\n analyzedFiles.forEach(af => {\n af.ngModules.forEach(ngModule => {\n allNgModules.push(ngModule);\n

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ngModule.declaredDirectives.forEach(\n d => ngModuleByPipeOrDirective.set(d.reference, ngModule));\n
ngModule.declaredPipes.forEach(p => ngModuleByPipeOrDirective.set(p.reference, ngModule));\n });\n
af.directives.forEach(d => allPipesAndDirectives.add(d));\n af.pipes.forEach(p =>\n
allPipesAndDirectives.add(p));\n });\n\n const symbolsMissingModule: StaticSymbol[] = [];\n
allPipesAndDirectives.forEach(ref => {\n if (!ngModuleByPipeOrDirective.has(ref)) {\n
symbolsMissingModule.push(ref);\n }\n });\n return {\n ngModules: allNgModules,\n
ngModuleByPipeOrDirective,\n symbolsMissingModule,\n files: analyzedFiles\n };\n}\n\nfunction\n
mergeAndValidateNgFiles(files: NgAnalyzedFile[]): NgAnalyzedModules {\n return\n
validateAnalyzedModules(mergeAnalyzedFiles(files));\n}\n\n"/**\n * @license\n * Copyright Google LLC All\n
Rights Reserved.\n * \n * Use of this source code is governed by an MIT-style license that can be\n * found in the\n
LICENSE file at https://angular.io/license\n */\n\nimport {syntaxError} from './util';\n\nexport interface Position\n
{\n fileName: string;\n line: number;\n column: number;\n}\n\nexport interface FormattedMessageChain {\n
message: string;\n position?: Position;\n next?: FormattedMessageChain[];\n}\n\nexport type FormattedError =\n
Error & {\n chain: FormattedMessageChain;\n position?: Position;\n};\n\nconst FORMATTED_MESSAGE =\n
'ngFormattedMessage';\n\nfunction indentStr(level: number): string {\n if (level <= 0) return '';\n if (level < 6)\n
return [' ', ' ', ' ', ' ', ' ', ' ', ' '][level];\n const half = indentStr(Math.floor(level / 2));\n return half + half + (level %\n
2 === 1 ? ' ': '');\n}\n\nfunction formatChain(chain: FormattedMessageChain|undefined, indent: number = 0): string\n
{\n if (!chain) return '';\n const position = chain.position ? ` ${chain.position.fileName}(${chain.position.line +\n
1}), ${chain.position.column + 1})` : '';\n const prefix = position && indent === 0 ? ` ${position}: ` : '';\n const\n
postfix = position && indent !== 0 ? ` at ${position}` : '';\n let message =\n
`${prefix}${chain.message}${postfix}`;\n if (chain.next) {\n for (const kid of chain.next) {\n message +=\n
`\n' + formatChain(kid, indent + 2);\n }\n }\n return `${indentStr(indent)}${message}`;\n}\n\nexport function\n
formattedError(chain: FormattedMessageChain): FormattedError {\n const message = formatChain(chain) + '!';\n
const error = syntaxError(message) as FormattedError;\n (error as any)[FORMATTED_MESSAGE] = true;\n
error.chain = chain;\n error.position = chain.position;\n return error;\n}\n\nexport function isFormattedError(error:\n
Error): error is FormattedError {\n return !!(error as any)[FORMATTED_MESSAGE];\n}\n\n"/**\n * @license\n * Copyright Google LLC All Rights Reserved.\n * \n * Use of this source code is governed by an MIT-style license\n
that can be\n * found in the LICENSE file at https://angular.io/license\n */\n\nimport {CompileSummaryKind} from\n
'./compile_metadata';\nimport {CompileReflector} from './compile_reflector';\nimport {createAttribute,\n
createComponent, createContentChild, createContentChildren, createDirective, createHost, createHostBinding,\n
createHostListener, createInject, createInjectable, createInput, createNgModule, createOptional, createOutput,\n
createPipe, createSelf, createSkipSelf, createViewChild, createViewChildren, MetadataFactory} from\n
'./core';\nimport * as o from './output/output_ast';\nimport {SummaryResolver} from\n
'./summary_resolver';\nimport {syntaxError} from './util';\nimport {formattedError, FormattedMessageChain}\n
from './formatted_error';\nimport {StaticSymbol} from './static_symbol';\nimport {StaticSymbolResolver} from\n
'./static_symbol_resolver';\n\nconst ANGULAR_CORE = '@angular/core';\nconst ANGULAR_ROUTER =\n
 '@angular/router';\nconst HIDDEN_KEY = /^\\$.*\\$/;\nconst IGNORE = {\n __symbolic:\n
'ignore'\n};\nconst USE_VALUE = 'useValue';\nconst PROVIDE = 'provide';\nconst REFERENCE_SET = new\n
Set([USE_VALUE, 'useFactory', 'data', 'id', 'loadChildren']);\nconst TYPEGUARD_POSTFIX =\n
'TypeGuard';\nconst USE_IF = 'UseIf';\n\nfunction shouldIgnore(value: any): boolean {\n return value &&\n
value.__symbolic === 'ignore';\n}\n\n/**\n * A static reflector implements enough of the Reflector API that is\n
necessary to compile\n * templates statically.\n */\n\nexport class StaticReflector implements CompileReflector {\n
private annotationCache = new Map<StaticSymbol, any[]>();\n private shallowAnnotationCache = new\n
Map<StaticSymbol, any[]>();\n private propertyCache = new Map<StaticSymbol, {[key: string]: any[]}>();\n
private parameterCache = new Map<StaticSymbol, any[]>();\n private methodCache = new Map<StaticSymbol,\n
{[key: string]: boolean}>();\n private staticCache = new Map<StaticSymbol, string[]>();\n private conversionMap\n
= new Map<StaticSymbol, (context: StaticSymbol, args: any[]) => any>();\n private resolvedExternalReferences =\n
new Map<string, StaticSymbol>();\n // TODO(issue/24571): remove '!'.\n private injectionToken!: StaticSymbol;\n

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// TODO(issue/24571): remove '!.\n private opaqueToken!: StaticSymbol;\n // TODO(issue/24571): remove '!.\n
ROUTES!: StaticSymbol;\n // TODO(issue/24571): remove '!.\n private
ANALYZE_FOR_ENTRY_COMPONENTS!: StaticSymbol;\n private
annotationForParentClassWithSummaryKind =\n new Map<CompileSummaryKind,
MetadataFactory<any>[]>());\n\n constructor(\n private summaryResolver: SummaryResolver<StaticSymbol>,\n private symbolResolver: StaticSymbolResolver,\n knownMetadataClasses: {name: string, filePath: string, ctor:
any}[] = [],\n knownMetadataFunctions: {name: string, filePath: string, fn: any}[] = [],\n private
errorRecorder?: (error: any, fileName?: string) => void) {\n this.initializeConversionMap();\n
knownMetadataClasses.forEach(\n (kc) => this._registerDecoratorOrConstructor(\n
this.getStaticSymbol(kc.filePath, kc.name), kc.ctor));\n knownMetadataFunctions.forEach(\n (kf) =>
this._registerFunction(this.getStaticSymbol(kf.filePath, kf.name), kf.fn));\n
this.annotationForParentClassWithSummaryKind.set(\n CompileSummaryKind.Directive, [createDirective,
createComponent]);\n this.annotationForParentClassWithSummaryKind.set(CompileSummaryKind.Pipe,
[createPipe]);\n this.annotationForParentClassWithSummaryKind.set(CompileSummaryKind.NgModule,
[createNgModule]);\n this.annotationForParentClassWithSummaryKind.set(\n
CompileSummaryKind.Injectable,\n [createInjectable, createPipe, createDirective, createComponent,
createNgModule]);\n }\n\n componentModuleUrl(typeOrFunc: StaticSymbol): string {\n const staticSymbol =
this.findSymbolDeclaration(typeOrFunc);\n return this.symbolResolver.getResourcePath(staticSymbol);\n }\n\n
/**\n * Invalidate the specified `symbols` on program change.\n * @param symbols\n */\n
invalidateSymbols(symbols: StaticSymbol[]) {\n for (const symbol of symbols) {\n
this.annotationCache.delete(symbol);\n this.shallowAnnotationCache.delete(symbol);\n
this.propertyCache.delete(symbol);\n this.parameterCache.delete(symbol);\n
this.methodCache.delete(symbol);\n this.staticCache.delete(symbol);\n this.conversionMap.delete(symbol);\n
 }\n }\n\n resolveExternalReference(ref: o.ExternalReference, containingFile?: string): StaticSymbol {\n let key:
string|undefined = undefined;\n if (!containingFile) {\n key = `${ref.moduleName}:${ref.name}`;\n const
declarationSymbol = this.resolvedExternalReferences.get(key);\n if (declarationSymbol) return
declarationSymbol;\n }\n const refSymbol =\n this.symbolResolver.getSymbolByModule(ref.moduleName!,
ref.name!, containingFile);\n const declarationSymbol = this.findSymbolDeclaration(refSymbol);\n if
(!containingFile) {\n this.symbolResolver.recordModuleNameForFileName(refSymbol.filePath,
ref.moduleName!);\n this.symbolResolver.recordImportAs(declarationSymbol, refSymbol);\n }\n if (key) {\n
this.resolvedExternalReferences.set(key, declarationSymbol);\n }\n return declarationSymbol;\n }\n\n
findDeclaration(moduleUrl: string, name: string, containingFile?: string): StaticSymbol {\n return
this.findSymbolDeclaration(\n this.symbolResolver.getSymbolByModule(moduleUrl, name, containingFile));\n
 }\n\n tryFindDeclaration(moduleUrl: string, name: string, containingFile?: string): StaticSymbol {\n return
this.symbolResolver.ignoreErrorsFor(\n () => this.findDeclaration(moduleUrl, name, containingFile));\n }\n\n
findSymbolDeclaration(symbol: StaticSymbol): StaticSymbol {\n const resolvedSymbol =
this.symbolResolver.resolveSymbol(symbol);\n if (resolvedSymbol) {\n let resolvedMetadata =
resolvedSymbol.metadata;\n if (resolvedMetadata && resolvedMetadata.__symbolic === 'resolved') {\n
resolvedMetadata = resolvedMetadata.symbol;\n }\n if (resolvedMetadata instanceof StaticSymbol) {\n
return this.findSymbolDeclaration(resolvedSymbol.metadata);\n }\n }\n return symbol;\n }\n\n
public
tryAnnotations(type: StaticSymbol): any[] {\n const originalRecorder = this.errorRecorder;\n this.errorRecorder
= (error: any, fileName?: string) => {};\n try {\n return this.annotations(type);\n } finally {\n
this.errorRecorder = originalRecorder;\n }\n }\n\n public annotations(type: StaticSymbol): any[] {\n return
this._annotations(\n type, (type: StaticSymbol, decorators: any) => this.simplify(type, decorators),\n
this.annotationCache);\n }\n\n public shallowAnnotations(type: StaticSymbol): any[] {\n return
this._annotations(\n type, (type: StaticSymbol, decorators: any) => this.simplify(type, decorators, true),\n
this.shallowAnnotationCache);\n }\n\n private _annotations(\n type: StaticSymbol, simplify: (type:
StaticSymbol, decorators: any) => any,\n annotationCache: Map<StaticSymbol, any[]>): any[] {\n let

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annotations = annotationCache.get(type);\n if (!annotations) {\n annotations = [];\n const classMetadata =\n this.getTypeMetadata(type);\n const parentType = this.findParentType(type, classMetadata);\n if (parentType)\n {\n const parentAnnotations = this.annotations(parentType);\n annotations.push(...parentAnnotations);\n }\n let ownAnnotations: any[] = [];\n if (classMetadata['decorators']) {\n ownAnnotations = simplify(type,\n classMetadata['decorators']);\n if (ownAnnotations) {\n annotations.push(...ownAnnotations);\n }\n }\n if (parentType && !this.summaryResolver.isLibraryFile(type.filePath) &&\n this.summaryResolver.isLibraryFile(parentType.filePath)) {\n const summary =\n this.summaryResolver.resolveSummary(parentType);\n if (summary && summary.type) {\n const\n requiredAnnotationTypes =\n this.annotationForParentClassWithSummaryKind.get(summary.type.summaryKind!);\n const\n typeHasRequiredAnnotation = requiredAnnotationTypes.some(\n (requiredType) =>\n ownAnnotations.some(ann => requiredType.isTypeOf(ann)));\n if (!typeHasRequiredAnnotation) {\n this.reportError(\n formatMetadataError(\n metadataError(\n `Class\n ${type.name} in ${type.filePath} extends from a\n CompileSummaryKind[${summary.type.summaryKind!}\n] in another compilation unit without duplicating\n the decorator`,\n /* summary */ undefined,\n `Please add a ${\n requiredAnnotationTypes.map((type) => type.ngMetadataName)\n .join(' or ')} decorator to the\n class`,\n type),\n type);\n }\n }\n annotationCache.set(type,\n annotations.filter(ann => !!ann));\n }\n return annotations;\n }\n\n public propMetadata(type: StaticSymbol):\n {[key: string]: any[]} {\n let propMetadata = this.propertyCache.get(type);\n if (!propMetadata) {\n const\n classMetadata = this.getTypeMetadata(type);\n propMetadata = {};\n const parentType =\n this.findParentType(type, classMetadata);\n if (parentType) {\n const parentPropMetadata =\n this.propMetadata(parentType);\n Object.keys(parentPropMetadata).forEach((parentProp) => {\n propMetadata[parentProp] = parentPropMetadata[parentProp];\n });\n }\n const members =\n classMetadata['members'] || {};\n Object.keys(members).forEach((propName) => {\n const propData =\n members[propName];\n const prop = (<any[]>propData)\n .find(a => a['__symbolic'] ==\n 'property' || a['__symbolic'] == 'method');\n const decorators: any[] = [];\n // hasOwnProperty() is used here\n to make sure we do not look up methods\n // on `Object.prototype`.\n if\n (propMetadata?.hasOwnProperty(propName)) {\n decorators.push(...propMetadata[propName]);\n }\n propMetadata[propName] = decorators;\n if (prop && prop['decorators']) {\n decorators.push(...this.simplify(type, prop['decorators']));\n }\n });\n this.propertyCache.set(type,\n propMetadata);\n }\n return propMetadata;\n }\n\n public parameters(type: StaticSymbol): any[] {\n if (!(type\n instanceof StaticSymbol)) {\n this.reportError(\n new Error(`parameters received ${JSON.stringify(type)}\n which is not a StaticSymbol`),\n type);\n return [];\n }\n try {\n let parameters =\n this.parameterCache.get(type);\n if (!parameters) {\n const classMetadata = this.getTypeMetadata(type);\n const parentType = this.findParentType(type, classMetadata);\n const members = classMetadata ?\n classMetadata['members'] : null;\n const ctorData = members ? members['__ctor__'] : null;\n if (ctorData)\n {\n const ctor = (<any[]>ctorData).find(a => a['__symbolic'] == 'constructor');\n const\n rawParameterTypes = <any[]>ctor['parameters'] || [];\n const parameterDecorators = <any[]>this.simplify(type,\n ctor['parameterDecorators'] || []);\n parameters = [];\n rawParameterTypes.forEach((rawParamType,\n index) => {\n const nestedResult: any[] = [];\n const paramType = this.trySimplify(type,\n rawParamType);\n if (paramType) nestedResult.push(paramType);\n const decorators =\n parameterDecorators ? parameterDecorators[index] : null;\n if (decorators) {\n nestedResult.push(...decorators);\n }\n parameters!.push(nestedResult);\n });\n }\n } else if\n (parentType) {\n parameters = this.parameters(parentType);\n }\n if (!parameters) {\n parameters = [];\n }\n this.parameterCache.set(type, parameters);\n }\n return parameters;\n } catch\n (e) {\n console.error(`Failed on type ${JSON.stringify(type)} with error ${e}`);\n throw e;\n }\n }\n\n private _methodNames(type: any): {[key: string]: boolean} {\n let methodNames = this.methodCache.get(type);\n }

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if (!methodNames) {\n const classMetadata = this.getTypeMetadata(type);\n methodNames = {};\n const\n parentType = this.findParentType(type, classMetadata);\n if (parentType) {\n const parentMethodNames =\n this._methodNames(parentType);\n Object.keys(parentMethodNames).forEach((parentProp) => {\n\n methodNames![parentProp] = parentMethodNames[parentProp];\n });\n }\n const members =\n classMetadata['members'] || {};\n Object.keys(members).forEach((propName) => {\n const propData =\n members[propName];\n const isMethod = (<any[]>propData).some(a => a['__symbolic'] == 'method');\n methodNames![propName] = methodNames![propName] || isMethod;\n });\n this.methodCache.set(type,\n methodNames);\n}\nreturn methodNames;\n}\n\nprivate _staticMembers(type: StaticSymbol): string[] {\n let staticMembers = this.staticCache.get(type);\n if (!staticMembers) {\n const classMetadata =\n this.getTypeMetadata(type);\n const staticMemberData = classMetadata['statics'] || {};\n staticMembers =\n Object.keys(staticMemberData);\n this.staticCache.set(type, staticMembers);\n }\n return staticMembers;\n}\n\nprivate findParentType(type: StaticSymbol, classMetadata: any): StaticSymbol|undefined {\n const\n parentType = this.trySimplify(type, classMetadata['extends']);\n if (parentType instanceof StaticSymbol) {\n\n return parentType;\n }\n}\n\nhasLifecycleHook(type: any, lcProperty: string): boolean {\n if (!(type\n instanceof StaticSymbol)) {\n this.reportError(\n new Error(\n `hasLifecycleHook received\n ${JSON.stringify(type)} which is not a StaticSymbol`),\n type);\n }\n try {\n return\n !!this._methodNames(type)[lcProperty];\n } catch (e) {\n console.error(`Failed on type\n ${JSON.stringify(type)} with error ${e}`);\n throw e;\n }\n}\n\nguards(type: any): {[key: string]:\n StaticSymbol} {\n if (!(type instanceof StaticSymbol)) {\n this.reportError(\n new Error(`guards received\n ${JSON.stringify(type)} which is not a StaticSymbol`), type);\n return {};\n }\n const staticMembers =\n this._staticMembers(type);\n const result: {[key: string]: StaticSymbol} = {};\n for (let name of staticMembers)\n {\n if (name.endsWith(TYPEGUARD_POSTFIX)) {\n let property = name.substr(0, name.length -\n TYPEGUARD_POSTFIX.length);\n let value: any;\n if (property.endsWith(USE_IF)) {\n property =\n name.substr(0, property.length - USE_IF.length);\n value = USE_IF;\n } else {\n value =\n this.getStaticSymbol(type.filePath, type.name, [name]);\n }\n result[property] = value;\n }\n }\n return result;\n}\n\nprivate _registerDecoratorOrConstructor(type: StaticSymbol, ctor: any): void {\n this.conversionMap.set(type, (context: StaticSymbol, args: any[]) => new ctor(...args));\n}\n\nprivate\n_registerFunction(type: StaticSymbol, fn: any): void {\n this.conversionMap.set(type, (context: StaticSymbol,\n args: any[]) => fn.apply(undefined, args));\n}\n\nprivate initializeConversionMap(): void {\n this._registerDecoratorOrConstructor(\n this.findDeclaration(ANGULAR_CORE, 'Injectable'),\n createInjectable);\n this.injectionToken = this.findDeclaration(ANGULAR_CORE, 'InjectionToken');\n this.opaqueToken = this.findDeclaration(ANGULAR_CORE, 'OpaqueToken');\n this.ROUTES =\n this.tryFindDeclaration(ANGULAR_ROUTER, 'ROUTES');\n this.ANALYZE_FOR_ENTRY_COMPONENTS\n =\n this.findDeclaration(ANGULAR_CORE, 'ANALYZE_FOR_ENTRY_COMPONENTS');\n this._registerDecoratorOrConstructor(this.findDeclaration(ANGULAR_CORE, 'Host'), createHost);\n this._registerDecoratorOrConstructor(this.findDeclaration(ANGULAR_CORE, 'Self'), createSelf);\n this._registerDecoratorOrConstructor(\n this.findDeclaration(ANGULAR_CORE, 'SkipSelf'), createSkipSelf);\n this._registerDecoratorOrConstructor(\n this.findDeclaration(ANGULAR_CORE, 'Inject'), createInject);\n this._registerDecoratorOrConstructor(\n this.findDeclaration(ANGULAR_CORE, 'Optional'),\n createOptional);\n this._registerDecoratorOrConstructor(\n this.findDeclaration(ANGULAR_CORE,\n 'Attribute'), createAttribute);\n this._registerDecoratorOrConstructor(\n this.findDeclaration(ANGULAR_CORE, 'ContentChild'), createContentChild);\n this._registerDecoratorOrConstructor(\n this.findDeclaration(ANGULAR_CORE, 'ContentChildren'),\n createContentChildren);\n this._registerDecoratorOrConstructor(\n this.findDeclaration(ANGULAR_CORE,\n 'ViewChild'), createViewChild);\n this._registerDecoratorOrConstructor(\n this.findDeclaration(ANGULAR_CORE, 'ViewChildren'),\n createViewChildren);\n this._registerDecoratorOrConstructor(this.findDeclaration(ANGULAR_CORE, 'Input'), createInput);\n this._registerDecoratorOrConstructor(\n this.findDeclaration(ANGULAR_CORE, 'Output'), createOutput);\n}

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this._registerDecoratorOrConstructor(this.findDeclaration(ANGULAR_CORE, 'Pipe'), createPipe);\n
this._registerDecoratorOrConstructor(\n this.findDeclaration(ANGULAR_CORE, 'HostBinding'),\n
createHostBinding);\n this._registerDecoratorOrConstructor(\n this.findDeclaration(ANGULAR_CORE,\n
'HostListener'), createHostListener);\n this._registerDecoratorOrConstructor(\n
this.findDeclaration(ANGULAR_CORE, 'Directive'), createDirective);\n this._registerDecoratorOrConstructor(\n
 this.findDeclaration(ANGULAR_CORE, 'Component'), createComponent);\n
this._registerDecoratorOrConstructor(\n this.findDeclaration(ANGULAR_CORE, 'NgModule'),\n
createNgModule);\n\n // Note: Some metadata classes can be used directly with Provider.deps.\n
this._registerDecoratorOrConstructor(this.findDeclaration(ANGULAR_CORE, 'Host'), createHost);\n
this._registerDecoratorOrConstructor(this.findDeclaration(ANGULAR_CORE, 'Self'), createSelf);\n
this._registerDecoratorOrConstructor(\n this.findDeclaration(ANGULAR_CORE, 'SkipSelf'), createSkipSelf);\n
 this._registerDecoratorOrConstructor(\n this.findDeclaration(ANGULAR_CORE, 'Optional'),\n
createOptional);\n } \n\n /**\n * getStaticSymbol produces a Type whose metadata is known but whose\n
implementation is not loaded.\n * All types passed to the StaticResolver should be pseudo-types returned by this\n
method.\n *\n * @param declarationFile the absolute path of the file where the symbol is declared\n * @param\n
name the name of the type.\n * ^\n getStaticSymbol(declarationFile: string, name: string, members?: string[]):\n
StaticSymbol {\n return this.symbolResolver.getStaticSymbol(declarationFile, name, members);\n } \n\n /**\n *\n
Simplify but discard any errors\n *\n private trySimplify(context: StaticSymbol, value: any): any {\n const\n
originalRecorder = this.errorRecorder;\n this.errorRecorder = (error: any, fileName?: string) => {};\n const\n
result = this.simplify(context, value);\n this.errorRecorder = originalRecorder;\n return result;\n } \n\n /**\n
@internal *\n public simplify(context: StaticSymbol, value: any, lazy: boolean = false): any {\n const self =\n
this;\n let scope = BindingScope.empty;\n const calling = new Map<StaticSymbol, boolean>();\n const\n
rootContext = context;\n\n function simplifyInContext(\n context: StaticSymbol, value: any, depth: number,\n
references: number): any {\n function resolveReferenceValue(staticSymbol: StaticSymbol): any {\n const\n
resolvedSymbol = self.symbolResolver.resolveSymbol(staticSymbol);\n return resolvedSymbol ?\n
resolvedSymbol.metadata : null;\n }\n\n function simplifyEagerly(value: any): any {\n return\n
simplifyInContext(context, value, depth, 0);\n }\n\n function simplifyLazily(value: any): any {\n return\n
simplifyInContext(context, value, depth, references + 1);\n }\n\n function simplifyNested(nestedContext:\n
StaticSymbol, value: any): any {\n if (nestedContext === context) {\n // If the context hasn't changed let\n
the exception propagate unmodified.\n return simplifyInContext(nestedContext, value, depth + 1,\n
references);\n }\n try {\n return simplifyInContext(nestedContext, value, depth + 1, references);\n
} catch (e) {\n if (isMetadataError(e)) {\n // Propagate the message text up but add a message to the\n
chain that explains how we got\n // here.\n // e.chain implies e.symbol\n const summaryMsg =\n
e.chain ? 'references \\\" + e.symbol!.name + '\\\" : errorSummary(e);\n const summary =\n
`$${nestedContext.name} $${summaryMsg}`;\n const chain = {message: summary, position: e.position, next:\n
e.chain};\n // TODO(chuckj): retrieve the position information indirectly from the collectors node\n //\n
map if the metadata is from a .ts file.\n self.error(\n {\n message: e.message,\n
advise: e.advise,\n context: e.context,\n chain,\n symbol: nestedContext\n
},\n context);\n } else {\n // It is probably an internal error.\n throw e;\n }\n
}\n }\n\n function simplifyCall(\n functionSymbol: StaticSymbol, targetFunction: any, args: any[],\n
targetExpression: any) {\n if (targetFunction && targetFunction['__symbolic'] === 'function') {\n if\n
(calling.get(functionSymbol)) {\n self.error(\n {\n message: 'Recursion is not\n
supported',\n summary: `called '${functionSymbol.name}' recursively`,\n value:\n
targetFunction\n },\n functionSymbol);\n }\n try {\n const value =\n
targetFunction['value'];\n if (value && (depth != 0 || value.__symbolic != 'error')) {\n const\n
parameters: string[] = targetFunction['parameters'];\n const defaults: any[] = targetFunction.defaults;\n
args = args.map(arg => simplifyNested(context, arg))\n .map(arg => shouldIgnore(arg) ? undefined\n
: arg);\n if (defaults && defaults.length > args.length) {\n

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args.push(...defaults.slice(args.length).map((value: any) => simplify(value)));
 }
 calling.set(functionSymbol, true);
 const functionScope = BindingScope.build();
 for (let i = 0; i <
parameters.length; i++) {
 functionScope.define(parameters[i], args[i]);
 }
 const
oldScope = scope;
 let result: any;
 try {
 scope = functionScope.done();
 }
 result = simplifyNested(functionSymbol, value);
 } finally {
 scope = oldScope;
 }
 return result;
} finally {
 calling.delete(functionSymbol);
}
}
}
if
(depth === 0) {
 // If depth is 0 we are evaluating the top level expression that is describing element
 // decorator. In this case, it is a decorator we don't understand, such as a custom
 // non-angular decorator, and
 we should just ignore it.
 return IGNORE;
}
let position: Position | undefined = undefined;
if (targetExpression && targetExpression.__symbolic === 'resolved') {
 const line = targetExpression.line;
 const character = targetExpression.character;
 const fileName = targetExpression.fileName;
 if
(fileName !== null && line !== null && character !== null) {
 position = {fileName, line, column: character};
 }
}
self.error({
 message: FUNCTION_CALL_NOT_SUPPORTED,
 context: functionSymbol,
 value: targetFunction,
 position,
 context
});
}
function simplify(expression: any): any {
 if (isPrimitive(expression)) {
 return expression;
 }
 if (Array.isArray(expression)) {
 const result: any[] = [];
 for (const item of
(<any>expression)) {
 // Check for a spread expression
 if (item && item.__symbolic === 'spread') {
 // We call with references as 0 because we require the actual value and cannot
 // tolerate a
 reference here.
 const spreadArray = simplifyEagerly(item.expression);
 if
(Array.isArray(spreadArray)) {
 for (const spreadItem of spreadArray) {
 result.push(spreadItem);
 }
 }
 continue;
 }
 const value =
simplify(item);
 if (shouldIgnore(value)) {
 continue;
 }
 result.push(value);
 }
 return result;
 }
 if (expression instanceof StaticSymbol) {
 // Stop simplification at
 builtin symbols or if we are in a reference context and
 // the symbol doesn't have members.
 if
(expression === self.injectionToken || self.conversionMap.has(expression) ||
 (references > 0 &&
!expression.members.length)) {
 return expression;
 } else {
 const staticSymbol =
expression;
 const declarationValue = resolveReferenceValue(staticSymbol);
 if (declarationValue
!== null) {
 return simplifyNested(staticSymbol, declarationValue);
 } else {
 return
staticSymbol;
 }
 }
 }
 if (expression) {
 if (expression['__symbolic']) {
 let
staticSymbol: StaticSymbol;
 switch (expression['__symbolic']) {
 case 'binop':
 let left =
simplify(expression['left']);
 if (shouldIgnore(left)) return left;
 let right =
simplify(expression['right']);
 if (shouldIgnore(right)) return right;
 switch
(expression['operator']) {
 case '&&':
 return left && right;
 case '||':
 return left || right;
 case '|':
 return left | right;
 case '^':
 return left
^ right;
 case '&':
 return left & right;
 case '==':
 return left ==
right;
 case '!=':
 return left != right;
 case '===':
 return left ===
right;
 case '!==':
 return left !==
right;
 case '<':
 return left <
right;
 case '>':
 return left > right;
 case '<=':
 return left <=
right;
 case '>=':
 return left >= right;
 case '<<':
 return left <<
right;
 case '>>':
 return left >> right;
 case '+':
 return left +
right;
 case '-':
 return left - right;
 case '*':
 return left * right;
 case '/':
 return left / right;
 case '%':
 return left % right;
 }
 }
 return null;
 }
 case 'if':
 let condition = simplify(expression['condition']);
 return
condition ? simplify(expression['thenExpression']) :
 simplify(expression['elseExpression']);
 case 'pre':
 let operand = simplify(expression['operand']);
 if (shouldIgnore(operand))
return operand;
 switch (expression['operator']) {
 case '+':
 return operand;
 case '-':
 return -operand;
 case '!':
 return !operand;
 case
'~':
 return ~operand;
 }
 }
 return null;
 }
 case 'index':
 let

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indexTarget = simplifyEagerly(expression['expression']);\n let index =
simplifyEagerly(expression['index']);\n if (indexTarget && isPrimitive(index)) return
indexTarget[index];\n return null;\n case 'select':\n const member =
expression['member'];\n let selectContext = context;\n let selectTarget =
simplify(expression['expression']);\n if (selectTarget instanceof StaticSymbol) {\n const
members = selectTarget.members.concat(member);\n selectContext =\nself.getStaticSymbol(selectTarget.filePath, selectTarget.name, members);\n const declarationValue =
resolveReferenceValue(selectContext);\n if (declarationValue != null) {\n return
simplifyNested(selectContext, declarationValue);\n } else {\n return selectContext;\n }\n }\n if (selectTarget && isPrimitive(member))\n return
simplifyNested(selectContext, selectTarget[member]);\n return null;\n case 'reference':\n // Note: This only has to deal with variable references, as symbol references have\n // been converted into
'resolved'\n // in the StaticSymbolResolver.\n const name: string = expression['name'];\n const localValue = scope.resolve(name);\n if (localValue != BindingScope.missing) {\n return
localValue;\n }\n break;\n case 'resolved':\n try {\n return
simplify(expression.symbol);\n } catch (e) {\n // If an error is reported evaluating the symbol
record the position of the\n // reference in the error so it can\n // be reported in the error
message generated from the exception.\n if (isMetadataError(e) && expression.fileName != null &&\n expression.line != null && expression.character != null) {\n e.position = {\n
fileName: expression.fileName,\n line: expression.line,\n column: expression.character\n
};\n }\n throw e;\n }\n case 'class':\n return context;\n case 'function':\n return context;\n case 'new':\n case 'call':\n // Determine if the
function is a built-in conversion\n staticSymbol = simplifyInContext(\n context,
expression['expression'], depth + 1, /* references */ 0);\n if (staticSymbol instanceof StaticSymbol) {\n
 if (staticSymbol === self.injectionToken || staticSymbol === self.opaqueToken) {\n // if somebody
calls new InjectionToken, don't create an InjectionToken,\n // but rather return the symbol to which the
InjectionToken is assigned to.\n // OpaqueToken is supported too as it is required by the language
service to\n // support v4 and prior versions of Angular.\n return context;\n }\n
 const argExpressions: any[] = expression['arguments'] || [];\n let converter =
self.conversionMap.get(staticSymbol);\n if (converter) {\n const args =
argExpressions.map(arg => simplifyNested(context, arg))\n .map(arg => shouldIgnore(arg) ?
undefined : arg);\n return converter(context, args);\n } else {\n // Determine if the
function is one we can simplify.\n const targetFunction = resolveReferenceValue(staticSymbol);\n
 return simplifyCall(\n staticSymbol, targetFunction, argExpressions, expression['expression']);\n
 }\n }\n return IGNORE;\n case 'error':\n let message =
expression.message;\n if (expression['line'] != null) {\n self.error(\n {\n
message,\n context: expression.context,\n value: expression,\n position:
{\n fileName: expression['fileName'],\n line: expression['line'],\n
column: expression['character']\n }\n },\n context);\n } else {\n
 self.error({message, context: expression.context}, context);\n }\n return IGNORE;\n
 case 'ignore':\n return expression;\n }\n return null;\n }\n return
mapStringMap(expression, (value, name) => {\n if (REFERENCE_SET.has(name)) {\n if (name ===
USE_VALUE && PROVIDE in expression) {\n // If this is a provider expression, check for special tokens
that need the value\n // during analysis.\n const provide = simplify(expression.provide);\n
 if (provide === self.ROUTES || provide === self.ANALYZE_FOR_ENTRY_COMPONENTS) {\n return
simplify(value);\n }\n }\n return simplifyLazily(value);\n }\n return
simplify(value);\n });\n }\n return IGNORE;\n }\n return simplify(value);\n }\n return
result: any;\n try {\n result = simplifyInContext(context, value, 0, lazy ? 1 : 0);\n } catch (e) {\n if

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(this.errorRecorder) {\n this.reportError(e, context);\n } else {\n throw formatMetadataError(e,
context);\n }\n } if (shouldIgnore(result)) {\n return undefined;\n }\n return result;\n }\n\n private
getTypeMetadata(type: StaticSymbol): {[key: string]: any} {\n const resolvedSymbol =
this.symbolResolver.resolveSymbol(type);\n return resolvedSymbol && resolvedSymbol.metadata ?
resolvedSymbol.metadata :\n {__symbolic: 'class'};\n }\n\n private
reportError(error: Error, context: StaticSymbol, path?: string) {\n if (this.errorRecorder) {\n
this.errorRecorder(\n formatMetadataError(error, context), (context && context.filePath) || path);\n } else {\n
throw error;\n }\n }\n\n private error(\n {message, summary, advise, position, context, value, symbol,
chain}: {\n message: string,\n summary?: string,\n advise?: string,\n position?: Position,\n
context?: any,\n value?: any,\n symbol?: StaticSymbol,\n chain?: MetadataMessageChain\n },\n
reportingContext: StaticSymbol) {\n this.reportError(\n metadataError(message, summary, advise, position,
symbol, context, chain),\n reportingContext);\n }\n}\n\ninterface Position {\n fileName: string;\n
line:
number;\n column: number;\n}\n\ninterface MetadataMessageChain {\n message: string;\n
summary?: string;\n
position?: Position;\n context?: any;\n symbol?: StaticSymbol;\n next?: MetadataMessageChain;\n}\n\n
type
MetadataError = Error & {\n position?: Position;\n advise?: string;\n summary?: string;\n
context?: any;\n
symbol?: StaticSymbol;\n chain?: MetadataMessageChain;\n};\n\nconst METADATA_ERROR =
'ngMetadataError';\n\nfunction metadataError(\n message: string, summary?: string, advise?: string, position?:
Position, symbol?: StaticSymbol,\n context?: any, chain?: MetadataMessageChain): MetadataError {\n const error
= syntaxError(message) as MetadataError;\n (error as any)[METADATA_ERROR] = true;\n if (advise)
error.advise = advise;\n if (position) error.position = position;\n if (summary) error.summary = summary;\n
if (context) error.context = context;\n if (chain) error.chain = chain;\n if (symbol) error.symbol = symbol;\n
return
error;\n}\n\nfunction isMetadataError(error: Error): error is MetadataError {\n return
!!(error as
any)[METADATA_ERROR];\n}\n\nconst REFERENCE_TO_NONEXPORTED_CLASS = 'Reference to non-
exported class';\nconst VARIABLE_NOT_INITIALIZED = 'Variable not initialized';\nconst
DESTRUCTURE_NOT_SUPPORTED = 'Destructuring not supported';\nconst COULD_NOT_RESOLVE_TYPE
= 'Could not resolve type';\nconst FUNCTION_CALL_NOT_SUPPORTED = 'Function call not supported';\nconst
REFERENCE_TO_LOCAL_SYMBOL = 'Reference to a local symbol';\nconst LAMBDA_NOT_SUPPORTED =
'Lambda not supported';\n\nfunction expandedMessage(message: string, context: any): string {\n switch (message)
{\n case REFERENCE_TO_NONEXPORTED_CLASS:\n if (context && context.className) {\n return
`References to a non-exported class are not supported in decorators but ${\n context.className} was
referenced.`;\n }\n break;\n case VARIABLE_NOT_INITIALIZED:\n return 'Only initialized variables
and constants can be referenced in decorators because the value of this variable is needed by the template
compiler';\n case DESTRUCTURE_NOT_SUPPORTED:\n return 'Referencing an exported destructured
variable or constant is not supported in decorators and this value is needed by the template compiler';\n case
COULD_NOT_RESOLVE_TYPE:\n if (context && context.typeName) {\n return `Could not resolve type
${context.typeName}`;\n }\n break;\n case FUNCTION_CALL_NOT_SUPPORTED:\n if (context &&
context.name) {\n return `Function calls are not supported in decorators but '${context.name}' was called`;\n
 }\n return 'Function calls are not supported in decorators';\n case REFERENCE_TO_LOCAL_SYMBOL:\n
if (context && context.name) {\n return `Reference to a local (non-exported) symbols are not supported
in decorators but '${\n context.name}' was referenced.`;\n }\n break;\n case
LAMBDA_NOT_SUPPORTED:\n return `Function expressions are not supported in decorators`;\n }\n return
message;\n}\n\nfunction messageAdvise(message: string, context: any): string|undefined {\n switch (message) {\n
case REFERENCE_TO_NONEXPORTED_CLASS:\n if (context && context.className) {\n return
`Consider exporting '${context.className}'`; \n }\n break;\n case DESTRUCTURE_NOT_SUPPORTED:\n
return 'Consider simplifying to avoid destructuring';\n case REFERENCE_TO_LOCAL_SYMBOL:\n if
(context && context.name) {\n return `Consider exporting '${context.name}'`; \n }\n break;\n case
LAMBDA_NOT_SUPPORTED:\n return `Consider changing the function expression into an exported
function`;\n }\n return undefined;\n}\n\nfunction errorSummary(error: MetadataError): string {\n if

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(error.summary) {\n return error.summary;\n }\n switch (error.message) {\n case
REFERENCE_TO_NONEXPORTED_CLASS:\n if (error.context && error.context.className) {\n return
`references non-exported class ${error.context.className}`;\n }\n break;\n case
VARIABLE_NOT_INITIALIZED:\n return 'is not initialized';\n case
DESTRUCTURE_NOT_SUPPORTED:\n return 'is a destructured variable';\n case
COULD_NOT_RESOLVE_TYPE:\n return 'could not be resolved';\n case
FUNCTION_CALL_NOT_SUPPORTED:\n if (error.context && error.context.name) {\n return `calls
`${error.context.name}``;\n }\n return `calls a function`;\n case REFERENCE_TO_LOCAL_SYMBOL:\n
if (error.context && error.context.name) {\n return `references local variable ${error.context.name}`;\n }\n
return `references a local variable`;\n }\n return 'contains the error';\n}\n\nfunction mapStringMap(input: {[key:
string]: any}, transform: (value: any, key: string) => any): {[key: string]: any} {\n if (!input) return {};\n const
result: {[key: string]: any} = {};\n Object.keys(input).forEach((key) => {\n const value = transform(input[key],
key);\n if (!shouldIgnore(value)) {\n if (HIDDEN_KEY.test(key)) {\n Object.defineProperty(result, key,
{enumerable: false, configurable: true, value: value});\n } else {\n result[key] = value;\n }\n }\n });\n return result;\n}\n\nfunction isPrimitive(o: any): boolean {\n return o === null || (typeof o !== 'function' && typeof
o !== 'object');\n}\n\ninterface BindingScopeBuilder {\n define(name: string, value: any): BindingScopeBuilder;\n
done(): BindingScope;\n}\n\nabstract class BindingScope {\n abstract resolve(name: string): any;\n public static
missing = {};\n public static empty: BindingScope = {resolve: name => BindingScope.missing};\n\n public static
build(): BindingScopeBuilder {\n const current = new Map<string, any>();\n return {\n define:
function(name, value) {\n current.set(name, value);\n return this;\n },\n done: function() {\n
return current.size > 0 ? new PopulatedScope(current) : BindingScope.empty;\n }\n };\n}\n\nclass
PopulatedScope extends BindingScope {\n constructor(private bindings: Map<string, any>) {\n super();\n }\n\n resolve(name: string): any {\n return this.bindings.has(name) ? this.bindings.get(name) : BindingScope.missing;\n }\n}\n\nfunction formatMetadataMessageChain(\n chain: MetadataMessageChain, advise: string|undefined):
FormattedMessageChain {\n const expanded = expandedMessage(chain.message, chain.context);\n const nesting =
chain.symbol ? ` in '${chain.symbol.name}' : `;\n const message = `${expanded}${nesting}`;\n const position =
chain.position;\n const next: FormattedMessageChain|undefined = chain.next ?\n formatMetadataMessageChain(chain.next, advise) :\n advise ? {message: advise} : undefined;\n return
{message, position, next: next ? [next] : undefined};\n}\n\nfunction formatMetadataError(e: Error, context:
StaticSymbol): Error {\n if (isMetadataError(e)) {\n // Produce a formatted version of the and leaving enough
information in the original error\n // to recover the formatting information to eventually produce a diagnostic error
message.\n const position = e.position;\n const chain: MetadataMessageChain = {\n message: `Error during
template compile of '${context.name}'`,\n position: position,\n next: {message: e.message, next: e.chain,
context: e.context, symbol: e.symbol}\n };\n const advise = e.advise || messageAdvise(e.message, e.context);\n
return formattedError(formatMetadataMessageChain(chain, advise));\n }\n return e;\n}\n\n"/**\n * @license\n *
Copyright Google LLC All Rights Reserved.\n * Use of this source code is governed by an MIT-style license
that can be\n * found in the LICENSE file at https://angular.io/license\n */\n\nimport {Summary,
SummaryResolver} from './summary_resolver';\nimport {StaticSymbol, StaticSymbolCache} from
'./static_symbol';\nimport {deserializeSummaries} from './summary_serializer';\nimport {stripGeneratedFileSuffix,
summaryFileName} from './util';\n\nexport interface AotSummaryResolverHost {\n /**\n * Loads an
NgModule/Directive/Pipe summary file\n */\n loadSummary(filePath: string): string|null;\n\n /**\n * Returns
whether a file is a source file or not.\n */\n isSourceFile(sourceFilePath: string): boolean;\n\n /**\n * Converts a
file name into a representation that should be stored in a summary file.\n * This has to include changing the suffix
as well.\n * E.g. \n * `some_file.ts` -> `some_file.d.ts`\n */\n * @param referringSrcFileName the source file that
refers to fileName\n */\n toSummaryFileName(fileName: string, referringSrcFileName: string): string;\n\n /**\n * Converts a fileName that was processed by `toSummaryFileName` back into a real fileName\n * given the
fileName of the library that is referring to it.\n */\n fromSummaryFileName(fileName: string,
referringLibFileName: string): string;\n}\n\nexport class AotSummaryResolver implements

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SummaryResolver<StaticSymbol> {\n // Note: this will only contain StaticSymbols without members!\n private
summaryCache = new Map<StaticSymbol, Summary<StaticSymbol>>();\n private loadedFilePaths = new
Map<string, boolean>();\n // Note: this will only contain StaticSymbols without members!\n private importAs =
new Map<StaticSymbol, StaticSymbol>();\n private knownFileNameToModuleNames = new Map<string,
string>();\n\n constructor(private host: AotSummaryResolverHost, private staticSymbolCache: StaticSymbolCache)
{\n\n isLibraryFile(filePath: string): boolean {\n // Note: We need to strip the .ngfactory. file path,\n // so this
method also works for generated files\n // (for which host.isSourceFile will always return false).\n return
!this.host.isSourceFile(stripGeneratedFileSuffix(filePath));\n }\n\n toSummaryFileName(filePath: string,
referringSrcFileName: string) {\n return this.host.toSummaryFileName(filePath, referringSrcFileName);\n }\n\n
fromSummaryFileName(fileName: string, referringLibFileName: string) {\n return
this.host.fromSummaryFileName(fileName, referringLibFileName);\n }\n\n resolveSummary(staticSymbol:
StaticSymbol): Summary<StaticSymbol>|null {\n const rootSymbol = staticSymbol.members.length ?\n
this.staticSymbolCache.get(staticSymbol.filePath, staticSymbol.name) : \n staticSymbol;\n let summary =
this.summaryCache.get(rootSymbol);\n if (!summary) {\n this._loadSummaryFile(staticSymbol.filePath);\n
summary = this.summaryCache.get(staticSymbol);\n }\n return (rootSymbol === staticSymbol && summary) ||
null;\n }\n\n getSymbolsOf(filePath: string): StaticSymbol[]|null {\n if (this._loadSummaryFile(filePath)) {\n
return Array.from(this.summaryCache.keys()).filter((symbol) => symbol.filePath === filePath);\n }\n return
null;\n }\n\n getImportAs(staticSymbol: StaticSymbol): StaticSymbol {\n staticSymbol.assertNoMembers();\n
return this.importAs.get(staticSymbol);\n }\n\n /**\n * Converts a file path to a module name that can be used as
an `import`.\n * *\n getKnownModuleName(importedFilePath: string): string|null {\n return
this.knownFileNameToModuleNames.get(importedFilePath) || null;\n }\n\n addSummary(summary:
Summary<StaticSymbol>) {\n this.summaryCache.set(summary.symbol, summary);\n }\n\n private
_loadSummaryFile(filePath: string): boolean {\n let hasSummary = this.loadedFilePaths.get(filePath);\n if
(hasSummary != null) {\n return hasSummary;\n }\n let json: string|null = null;\n if
(this.isLibraryFile(filePath)) {\n const summaryFilePath = summaryFileName(filePath);\n try {\n json =
this.host.loadSummary(summaryFilePath);\n } catch (e) {\n console.error(`Error loading summary file
${summaryFilePath}`);\n throw e;\n }\n }\n hasSummary = json != null;\n
this.loadedFilePaths.set(filePath, hasSummary);\n if (json) {\n const { moduleName, summaries, importAs } =\n
deserializeSummaries(this.staticSymbolCache, this, filePath, json);\n summaries.forEach((summary) =>
this.summaryCache.set(summary.symbol, summary));\n if (moduleName) {\n
this.knownFileNameToModuleNames.set(filePath, moduleName);\n }\n importAs.forEach((importAs) => {\n
this.importAs.set(importAs.symbol, importAs.importAs);\n });\n }\n return hasSummary;\n
}\n\n", "/*\n * @license\n * Copyright Google LLC All Rights Reserved.\n * Use of this source code is
governed by an MIT-style license that can be\n * found in the LICENSE file at https://angular.io/license\n
*\n\nimport { CompilerConfig } from './config';\nimport { ViewEncapsulation } from './core';\nimport
{ DirectiveNormalizer } from './directive_normalizer';\nimport { DirectiveResolver } from
'./directive_resolver';\nimport { Lexer } from './expression_parser/lexer';\nimport { Parser } from
'./expression_parser/parser';\nimport { I18NHtmlParser } from './i18n/i18n_html_parser';\nimport
{ InjectableCompiler } from './injectable_compiler';\nimport { CompileMetadataResolver } from
'./metadata_resolver';\nimport { HtmlParser } from './ml_parser/html_parser';\nimport { NgModuleCompiler } from
'./ng_module_compiler';\nimport { NgModuleResolver } from './ng_module_resolver';\nimport { TypeScriptEmitter }
from './output/ts_emitter';\nimport { PipeResolver } from './pipe_resolver';\nimport { DomElementSchemaRegistry }
from './schema/dom_element_schema_registry';\nimport { StyleCompiler } from './style_compiler';\nimport
{ TemplateParser } from './template_parser/template_parser';\nimport { UrlResolver } from './url_resolver';\nimport
{ syntaxError } from './util';\nimport { TypeCheckCompiler } from './view_compiler/type_check_compiler';\nimport
{ ViewCompiler } from './view_compiler/view_compiler';\n\nimport { AotCompiler } from './compiler';\nimport
{ AotCompilerHost } from './compiler_host';\nimport { AotCompilerOptions } from './compiler_options';\nimport
{ StaticReflector } from './static_reflector';\nimport { StaticSymbolCache } from './static_symbol';\nimport

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{StaticSymbolResolver} from './static_symbol_resolver';\nimport {AotSummaryResolver} from
'./summary_resolver';\n\nexport function createAotUrlResolver(\n host:
{resourceNameToFileName(resourceName: string, containingFileName: string): string|null;})\n UriResolver {\n
return {\n resolve: (basePath: string, url: string) => {\n const filePath = host.resourceNameToFileName(url,
basePath);\n if (!filePath) {\n throw syntaxError(`Couldn't resolve resource ${url} from ${basePath}`);\n
}\n return filePath;\n }\n};\n\n/**\n * Creates a new AotCompiler based on options and a host.\n */\nexport
function createAotCompiler(\n compilerHost: AotCompilerHost, options: AotCompilerOptions,\n errorCollector?: (error: any, type?: any) =>\n void): {compiler: AotCompiler, reflector: StaticReflector} {\n let
translations: string = options.translations || "";\n\n const urlResolver = createAotUrlResolver(compilerHost);\n const
symbolCache = new StaticSymbolCache();\n const summaryResolver = new AotSummaryResolver(compilerHost,
symbolCache);\n const symbolResolver = new StaticSymbolResolver(compilerHost, symbolCache,
summaryResolver);\n const staticReflector =\n new StaticReflector(summaryResolver, symbolResolver, [], [],
errorCollector);\n let htmlParser: I18NHtmlParser;\n if (!options.enableIvy) {\n // Ivy handles i18n at the
compiler level so we must use a regular parser\n htmlParser = new HtmlParser() as I18NHtmlParser;\n } else {\n
htmlParser = new I18NHtmlParser(\n new HtmlParser(), translations, options.i18nFormat,
options.missingTranslation, console);\n }\n const config = new CompilerConfig({\n defaultEncapsulation:
ViewEncapsulation.Emulated,\n useJit: false,\n missingTranslation: options.missingTranslation,\n
preserveWhitespaces: options.preserveWhitespaces,\n strictInjectionParameters:
options.strictInjectionParameters,\n });\n const normalizer = new DirectiveNormalizer(\n {get: (url: string) =>
compilerHost.loadResource(url)}, urlResolver, htmlParser, config);\n const expressionParser = new Parser(new
Lexer());\n const elementSchemaRegistry = new DomElementSchemaRegistry();\n const tmplParser = new
TemplateParser(\n config, staticReflector, expressionParser, elementSchemaRegistry, htmlParser, console, []);\n
const resolver = new CompileMetadataResolver(\n config, htmlParser, new
NgModuleResolver(staticReflector),\n new DirectiveResolver(staticReflector), new
PipeResolver(staticReflector), summaryResolver,\n elementSchemaRegistry, normalizer, console, symbolCache,
staticReflector, errorCollector);\n // TODO(vicb): do not pass options.i18nFormat here\n const viewCompiler =
new ViewCompiler(staticReflector);\n const typeCheckCompiler = new TypeCheckCompiler(options,
staticReflector);\n const compiler = new AotCompiler(\n config, options, compilerHost, staticReflector, resolver,
tmplParser,\n new StyleCompiler(urlResolver), viewCompiler, typeCheckCompiler,\n new
NgModuleCompiler(staticReflector),\n new InjectableCompiler(staticReflector, !options.enableIvy), new
TypeScriptEmitter(),\n summaryResolver, symbolResolver);\n return {compiler, reflector:
staticReflector};\n}\n\n"/**\n * @license\n * Copyright Google LLC All Rights Reserved.\n */\n * Use of this source
code is governed by an MIT-style license that can be\n * found in the LICENSE file at https://angular.io/license\n
*/\nimport {CompileTypeSummary} from './compile_metadata';\nimport {Type} from './core';\n\nexport interface
Summary<T> {\n symbol: T;\n metadata: any;\n type?: CompileTypeSummary;\n}\n\nexport abstract class
SummaryResolver<T> {\n abstract isLibraryFile(fileName: string): boolean;\n abstract
toSummaryFileName(fileName: string, referringSrcFileName: string): string;\n abstract
fromSummaryFileName(fileName: string, referringLibFileName: string): string;\n abstract
resolveSummary(reference: T): Summary<T>|null;\n abstract getSymbolsOf(filePath: string): T[]|null;\n abstract
getImportAs(reference: T): T;\n abstract getKnownModuleName(fileName: string): string|null;\n abstract
addSummary(summary: Summary<T>): void;\n}\n\nexport class JitSummaryResolver implements
SummaryResolver<Type> {\n private _summaries = new Map<Type, Summary<Type>>();\n\n isLibraryFile():
boolean {\n return false;\n }\n toSummaryFileName(fileName: string): string {\n return fileName;\n }\n
fromSummaryFileName(fileName: string): string {\n return fileName;\n }\n resolveSummary(reference: Type):
Summary<Type>|null {\n return this._summaries.get(reference) || null;\n }\n getSymbolsOf(): Type[] {\n return
[];\n }\n getImportAs(reference: Type): Type {\n return reference;\n }\n getKnownModuleName(fileName:
string) {\n return null;\n }\n addSummary(summary: Summary<Type>) {\n
this._summaries.set(summary.symbol, summary);\n }\n}\n\n"/**\n * @license\n * Copyright Google LLC All

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Rights Reserved.\n *\n * Use of this source code is governed by an MIT-style license that can be\n * found in the
LICENSE file at https://angular.io/license\n *\nimport { CompileReflector } from './compile_reflector';\nimport * as
o from './output_ast';\nimport { debugOutputAstAsTypeScript } from './ts_emitter';\n\nexport function
interpretStatements(\n statements: o.Statement[], reflector: CompileReflector): {[key: string]: any} {\n const ctx =
new _ExecutionContext(null, null, null, new Map<string, any>());\n const visitor = new
StatementInterpreter(reflector);\n visitor.visitAllStatements(statements, ctx);\n const result: {[key: string]: any} =
{};\n ctx.exports.forEach((exportName) => {\n result[exportName] = ctx.vars.get(exportName);\n });\n return
result;\n}\n\nfunction _executeFunctionStatements(\n varNames: string[], varValues: any[], statements:
o.Statement[], ctx: _ExecutionContext,\n visitor: StatementInterpreter): any {\n const childCtx =
ctx.createChildWithLocalVars();\n for (let i = 0; i < varNames.length; i++) {\n childCtx.vars.set(varNames[i],
varValues[i]);\n }\n const result = visitor.visitAllStatements(statements, childCtx);\n return result ? result.value :
null;\n}\n\nclass _ExecutionContext {\n exports: string[] = [];\n\n constructor(\n public parent:
_ExecutionContext|null, public instance: Object|null,\n public className: string|null, public vars: Map<string,
any>) {}\n\n createChildWithLocalVars(): _ExecutionContext {\n return new _ExecutionContext(this,
this.instance, this.className, new Map<string, any>());\n }\n}\n\nclass ReturnValue {\n constructor(public value:
any) {}\n}\n\nfunction createDynamicClass(\n _classStmt: o.ClassStmt, _ctx: _ExecutionContext, _visitor:
StatementInterpreter): Function {\n const propertyDescriptors: {[key: string]: any} = {};\n\n _classStmt.getters.forEach((getter: o.ClassGetter) => {\n // Note: use `function` instead of arrow function to
capture `this`\n propertyDescriptors[getter.name] = {\n configurable: false,\n get: function() {\n const
instanceCtx = new _ExecutionContext(_ctx, this, _classStmt.name, _ctx.vars);\n return
_executeFunctionStatements([], [], getter.body, instanceCtx, _visitor);\n }\n };\n });\n\n _classStmt.methods.forEach(function(method: o.ClassMethod) {\n const paramNames =
method.params.map(param => param.name);\n // Note: use `function` instead of arrow function to capture `this`\n propertyDescriptors[method.name!] = {\n writable: false,\n configurable: false,\n value: function(...args:
any[]) {\n const instanceCtx = new _ExecutionContext(_ctx, this, _classStmt.name, _ctx.vars);\n return
_executeFunctionStatements(paramNames, args, method.body, instanceCtx, _visitor);\n }\n };\n });\n\n const
ctorParamNames = _classStmt.constructorMethod.params.map(param => param.name);\n // Note: use `function`
instead of arrow function to capture `this`\n const ctor = function(this: Object, ...args: any[]) {\n const instanceCtx =
new _ExecutionContext(_ctx, this, _classStmt.name, _ctx.vars);\n _classStmt.fields.forEach((field) => {\n
(this as any)[field.name] = undefined;\n });\n _executeFunctionStatements(\n ctorParamNames, args,
_classStmt.constructorMethod.body, instanceCtx, _visitor);\n });\n const superClass = _classStmt.parent ?
_classStmt.parent.visitExpression(_visitor, _ctx) : Object;\n ctor.prototype = Object.create(superClass.prototype,
propertyDescriptors);\n return ctor;\n}\n\nclass StatementInterpreter implements o.StatementVisitor,
o.ExpressionVisitor {\n constructor(private reflector: CompileReflector) {}\n debugAst(ast:
o.Expression|o.Statement|o.Type): string {\n return debugOutputAstAsTypeScript(ast);\n }\n\n visitDeclareVarStmt(stmt: o.DeclareVarStmt, ctx: _ExecutionContext): any {\n const initialValue = stmt.value ?
stmt.value.visitExpression(this, ctx) : undefined;\n ctx.vars.set(stmt.name, initialValue);\n if
(stmt.hasModifier(o.StmtModifier.Exported)) {\n ctx.exports.push(stmt.name);\n }\n return null;\n }\n\n visitWriteVarExpr(expr: o.WriteVarExpr, ctx: _ExecutionContext): any {\n const value =
expr.value.visitExpression(this, ctx);\n let currCtx = ctx;\n while (currCtx != null) {\n if
(currCtx.vars.has(expr.name)) {\n currCtx.vars.set(expr.name, value);\n return value;\n }\n currCtx =
currCtx.parent!;\n }\n throw new Error(`Not declared variable ${expr.name}`);\n }\n\n visitWrappedNodeExpr(ast: o.WrappedNodeExpr<any>, ctx: _ExecutionContext): never {\n throw new
Error(`Cannot interpret a WrappedNodeExpr.`);\n }\n\n visitTypeofExpr(ast: o.TypeofExpr, ctx: _ExecutionContext):
never {\n throw new Error(`Cannot interpret a TypeofExpr.`);\n }\n\n visitReadVarExpr(ast: o.ReadVarExpr, ctx:
_ExecutionContext): any {\n let varName = ast.name!;\n if (ast.builtin != null) {\n switch (ast.builtin) {\n
case o.BuiltinVar.Super:\n return Object.getPrototypeOf(ctx.instance);\n case o.BuiltinVar.This:\n
return ctx.instance;\n case o.BuiltinVar.CatchError:\n varName = CATCH_ERROR_VAR;\n

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break;\n case o.BuiltinVar.CatchStack:\n varName = CATCH_STACK_VAR;\n break;\n default:\n throw new Error(`Unknown builtin variable ${ast.builtin}`);\n }\n }\n let currCtx = ctx;\n while (currCtx != null) {\n if (currCtx.vars.has(varName)) {\n return currCtx.vars.get(varName);\n }\n currCtx = currCtx.parent!;\n }\n throw new Error(`Not declared variable ${varName}`);\n}\n\nvisitWriteKeyExpr(expr: o.WriteKeyExpr, ctx: _ExecutionContext): any {\n const receiver =\n expr.receiver.visitExpression(this, ctx);\n const index = expr.index.visitExpression(this, ctx);\n const value =\n expr.value.visitExpression(this, ctx);\n receiver[index] = value;\n return value;\n}\n\nvisitWritePropExpr(expr:\no.WritePropExpr, ctx: _ExecutionContext): any {\n const receiver = expr.receiver.visitExpression(this, ctx);\n const value = expr.value.visitExpression(this, ctx);\n receiver[expr.name] = value;\n return value;\n}\n\nvisitInvokeMethodExpr(expr: o.InvokeMethodExpr, ctx: _ExecutionContext): any {\n const receiver =\n expr.receiver.visitExpression(this, ctx);\n const args = this.visitAllExpressions(expr.args, ctx);\n let result:\n any;\n if (expr.builtin != null) {\n switch (expr.builtin) {\n case o.BuiltinMethod.ConcatArray:\n result = receiver.concat(...args);\n break;\n case o.BuiltinMethod.SubscribeObservable:\n result =\n receiver.subscribe({next: args[0]});\n break;\n case o.BuiltinMethod.Bind:\n result =\n receiver.bind(...args);\n break;\n default:\n throw new Error(`Unknown builtin method\n ${expr.builtin}`);\n }\n } else {\n result = receiver[expr.name!].apply(receiver, args);\n }\n return\n result;\n}\n\nvisitInvokeFunctionExpr(stmt: o.InvokeFunctionExpr, ctx: _ExecutionContext): any {\n const args =\n this.visitAllExpressions(stmt.args, ctx);\n const fnExpr = stmt.fn;\n if (fnExpr instanceof o.ReadVarExpr &&\n fnExpr.builtin === o.BuiltinVar.Super) {\n ctx.instance!.constructor.prototype.constructor.apply(ctx.instance,\n args);\n return null;\n } else {\n const fn = stmt.fn.visitExpression(this, ctx);\n return fn.apply(null,\n args);\n }\n}\n\nvisitReturnStmt(stmt: o.ReturnStatement, ctx: _ExecutionContext): any {\n return new\n ReturnValue(stmt.value.visitExpression(this, ctx));\n}\n\nvisitDeclareClassStmt(stmt: o.ClassStmt, ctx:\n _ExecutionContext): any {\n const clazz = createDynamicClass(stmt, ctx, this);\n ctx.vars.set(stmt.name,\n clazz);\n if (stmt.hasModifier(o.StmtModifier.Exported)) {\n ctx.exports.push(stmt.name);\n }\n return\n null;\n}\n\nvisitExpressionStmt(stmt: o.ExpressionStatement, ctx: _ExecutionContext): any {\n return\n stmt.expr.visitExpression(this, ctx);\n}\n\nvisitIfStmt(stmt: o.IfStmt, ctx: _ExecutionContext): any {\n const\n condition = stmt.condition.visitExpression(this, ctx);\n if (condition) {\n return\n this.visitAllStatements(stmt.trueCase, ctx);\n } else if (stmt.falseCase != null) {\n return\n this.visitAllStatements(stmt.falseCase, ctx);\n }\n return\n null;\n}\n\nvisitTryCatchStmt(stmt: o.TryCatchStmt,\n ctx: _ExecutionContext): any {\n try {\n return\n this.visitAllStatements(stmt.bodyStmts, ctx);\n } catch (e) {\n const childCtx = ctx.createChildWithLocalVars();\n childCtx.vars.set(CATCH_ERROR_VAR, e);\n childCtx.vars.set(CATCH_STACK_VAR, e.stack);\n return\n this.visitAllStatements(stmt.catchStmts, childCtx);\n }\n}\n\nvisitThrowStmt(stmt: o.ThrowStmt, ctx: _ExecutionContext): any {\n throw\n stmt.error.visitExpression(this, ctx);\n}\n\nvisitInstantiateExpr(ast: o.InstantiateExpr, ctx: _ExecutionContext): any\n{\n const args = this.visitAllExpressions(ast.args, ctx);\n const clazz = ast.classExpr.visitExpression(this, ctx);\n return\n new clazz(...args);\n}\n\nvisitLiteralExpr(ast: o.LiteralExpr, ctx: _ExecutionContext): any {\n return\n ast.value;\n}\n\nvisitLocalizedString(ast: o.LocalizedString, context: any): any {\n return\n null;\n}\n\nvisitExternalExpr(ast: o.ExternalExpr, ctx: _ExecutionContext): any {\n return\n this.reflector.resolveExternalReference(ast.value);\n}\n\nvisitConditionalExpr(ast: o.ConditionalExpr, ctx:\n _ExecutionContext): any {\n if (ast.condition.visitExpression(this, ctx)) {\n return\n ast.trueCase.visitExpression(this, ctx);\n } else if (ast.falseCase != null) {\n return\n ast.falseCase.visitExpression(this, ctx);\n }\n return\n null;\n}\n\nvisitNotExpr(ast: o.NotExpr, ctx:\n _ExecutionContext): any {\n return\n !ast.condition.visitExpression(this, ctx);\n}\n\nvisitAssertNotNullExpr(ast:\no.AssertNotNull, ctx: _ExecutionContext): any {\n return\n ast.condition.visitExpression(this, ctx);\n}\n\nvisitCastExpr(ast: o.CastExpr, ctx: _ExecutionContext): any {\n return\n ast.value.visitExpression(this, ctx);\n}\n\nvisitFunctionExpr(ast: o.FunctionExpr, ctx: _ExecutionContext): any {\n const paramNames =\n ast.params.map((param) => param.name);\n return\n _declareFn(paramNames, ast.statements, ctx, this);\n}\n\nvisitDeclareFunctionStmt(stmt: o.DeclareFunctionStmt, ctx: _ExecutionContext): any {\n const paramNames =

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stmt.params.map((param) => param.name);\n ctx.vars.set(stmt.name, _declareFn(paramNames, stmt.statements,
ctx, this));\n if (stmt.hasModifier(o.StmtModifier.Exported)) {\n ctx.exports.push(stmt.name);\n }\n return
null;\n }\n visitUnaryOperatorExpr(ast: o.UnaryOperatorExpr, ctx: _ExecutionContext): any {\n const rhs = () =>
ast.expr.visitExpression(this, ctx);\n\n switch (ast.operator) {\n case o.UnaryOperator.Plus:\n return
+rhs();\n case o.UnaryOperator.Minus:\n return -rhs();\n default:\n throw new Error(`Unknown
operator ${ast.operator}`);\n }\n }\n visitBinaryOperatorExpr(ast: o.BinaryOperatorExpr, ctx:
_ExecutionContext): any {\n const lhs = () => ast.lhs.visitExpression(this, ctx);\n const rhs = () =>
ast.rhs.visitExpression(this, ctx);\n\n switch (ast.operator) {\n case o.BinaryOperator.Equals:\n return lhs()
== rhs();\n case o.BinaryOperator.Idential:\n return lhs() === rhs();\n case
o.BinaryOperator.NotEquals:\n return lhs() != rhs();\n case o.BinaryOperator.NotIdentical:\n return lhs()
!== rhs();\n case o.BinaryOperator.And:\n return lhs() && rhs();\n case o.BinaryOperator.Or:\n
return lhs() || rhs();\n case o.BinaryOperator.Plus:\n return lhs() + rhs();\n case o.BinaryOperator.Minus:\n
return lhs() - rhs();\n case o.BinaryOperator.Divide:\n return lhs() / rhs();\n case
o.BinaryOperator.Multiply:\n return lhs() * rhs();\n case o.BinaryOperator.Modulo:\n return lhs() %
rhs();\n case o.BinaryOperator.Lower:\n return lhs() < rhs();\n case o.BinaryOperator.LowerEquals:\n
return lhs() <= rhs();\n case o.BinaryOperator.Bigger:\n return lhs() > rhs();\n case
o.BinaryOperator.BiggerEquals:\n return lhs() >= rhs();\n default:\n throw new Error(`Unknown
operator ${ast.operator}`);\n }\n }\n visitReadPropExpr(ast: o.ReadPropExpr, ctx: _ExecutionContext): any {\n
let result: any;\n const receiver = ast.receiver.visitExpression(this, ctx);\n result = receiver[ast.name];\n return
result;\n }\n visitReadKeyExpr(ast: o.ReadKeyExpr, ctx: _ExecutionContext): any {\n const receiver =
ast.receiver.visitExpression(this, ctx);\n const prop = ast.index.visitExpression(this, ctx);\n return
receiver[prop];\n }\n visitLiteralArrayExpr(ast: o.LiteralArrayExpr, ctx: _ExecutionContext): any {\n return
this.visitAllExpressions(ast.entries, ctx);\n }\n visitLiteralMapExpr(ast: o.LiteralMapExpr, ctx:
_ExecutionContext): any {\n const result: {[k: string]: any} = {};\n ast.entries.forEach(entry => result[entry.key]
= entry.value.visitExpression(this, ctx));\n return result;\n }\n visitCommaExpr(ast: o.CommaExpr, context: any):
any {\n const values = this.visitAllExpressions(ast.parts, context);\n return values[values.length - 1];\n }\n
visitAllExpressions(expressions: o.Expression[], ctx: _ExecutionContext): any {\n return expressions.map((expr)
=> expr.visitExpression(this, ctx));\n }\n\n visitAllStatements(statements: o.Statement[], ctx: _ExecutionContext):
ReturnValue|null {\n for (let i = 0; i < statements.length; i++) {\n const stmt = statements[i];\n const val =
stmt.visitStatement(this, ctx);\n if (val instanceof ReturnValue) {\n return val;\n }\n }\n return null;\n
}\n\nfunction _declareFn(n varNames: string[], statements: o.Statement[], ctx: _ExecutionContext, visitor:
StatementInterpreter): Function {\n return (...args: any[]) => _executeFunctionStatements(varNames, args,
statements, ctx, visitor);\n }\n\nconst CATCH_ERROR_VAR = 'error';\nconst CATCH_STACK_VAR =
'stack';\n"/**\n * @license\n * Copyright Google LLC All Rights Reserved.\n * Use of this source code is
governed by an MIT-style license that can be\n * found in the LICENSE file at https://angular.io/license\n
*/\n\nimport {CompileDirectiveMetadata, CompileIdentifierMetadata, CompileNgModuleMetadata,
CompilePipeSummary, CompileProviderMetadata, CompileStylesheetMetadata, CompileTypeSummary,
identifierName, ngModuleJitUrl, ProviderMeta, ProxyClass, sharedStylesheetJitUrl, templateJitUrl,
templateSourceUrl} from './compile_metadata';\nimport {CompileReflector} from './compile_reflector';\nimport
{CompilerConfig} from './config';\nimport {ConstantPool} from './constant_pool';\nimport {Type} from
'./core';\nimport {CompileMetadataResolver} from './metadata_resolver';\nimport {NgModuleCompiler} from
'./ng_module_compiler';\nimport * as ir from './output/output_ast';\nimport {interpretStatements} from
'./output/output_interpreter';\nimport {JitEvaluator} from './output/output_jit';\nimport {CompiledStylesheet,
StyleCompiler} from './style_compiler';\nimport {SummaryResolver} from './summary_resolver';\nimport
{TemplateAst} from './template_parser/template_ast';\nimport {TemplateParser} from
'./template_parser/template_parser';\nimport {Console, OutputContext, stringify, SyncAsync} from './util';\nimport
{ViewCompiler} from './view_compiler/view_compiler';\n\nexport interface ModuleWithComponentFactories {\n
ngModuleFactory: object;\n componentFactories: object[];\n }\n\n/**\n * An internal module of the Angular

```

compiler that begins with component types, \* extracts templates, and eventually produces a compiled version of the component \* ready for linking into an application. \* @security When compiling templates at runtime, you must ensure that the entire template comes \* from a trusted source. Attacker-controlled data introduced by a template could expose your \* application to XSS risks. For more detail, see the [Security Guide](http://g.co/ng/security).

```

export class JitCompiler {
 private _compiledTemplateCache = new Map<Type, CompiledTemplate>();
 private _compiledHostTemplateCache = new Map<Type, CompiledTemplate>();
 private _compiledDirectiveWrapperCache = new Map<Type, Type>();
 private _compiledNgModuleCache = new Map<Type, object>();
 private _sharedStylesheetCount = 0;
 private _addedAotSummaries = new Set<() => any[]>();

 constructor(
 private _metadataResolver: CompileMetadataResolver,
 private _templateParser: TemplateParser,
 private _styleCompiler: StyleCompiler,
 private _viewCompiler: ViewCompiler,
 private _ngModuleCompiler: NgModuleCompiler,
 private _summaryResolver: SummaryResolver<Type>,
 private _reflector: CompileReflector,
 private _jitEvaluator: JitEvaluator,
 private _compilerConfig: CompilerConfig,
 private _console: Console,
 private getExtraNgModuleProviders: (ngModule: any) => CompileProviderMetadata[]
) {}

 compileModuleSync(moduleType: Type): object {
 return SyncAsync.assertSync(this._compileModuleAndComponents(moduleType, true));
 }

 compileModuleAsync(moduleType: Type): Promise<object> {
 return Promise.resolve(this._compileModuleAndComponents(moduleType, false));
 }

 compileModuleAndAllComponentsSync(moduleType: Type): ModuleWithComponentFactories {
 return SyncAsync.assertSync(this._compileModuleAndAllComponents(moduleType, true));
 }

 compileModuleAndAllComponentsAsync(moduleType: Type): Promise<ModuleWithComponentFactories> {
 return Promise.resolve(this._compileModuleAndAllComponents(moduleType, false));
 }

 getComponentFactory(component: Type): object {
 const summary = this._metadataResolver.getDirectiveSummary(component);
 return summary.componentFactory as object;
 }

 loadAotSummaries(summaries: () => any[]) {
 this.clearCache();
 this._addAotSummaries(summaries);
 }

 private _addAotSummaries(fn: () => any[]) {
 if (this._addedAotSummaries.has(fn)) {
 return;
 }
 this._addedAotSummaries.add(fn);
 const summaries = fn();
 for (let i = 0; i < summaries.length; i++) {
 const entry = summaries[i];
 if (typeof entry === 'function') {
 this._addAotSummaries(entry);
 } else {
 const summary = entry as CompileTypeSummary;
 this._summaryResolver.addSummary({
 symbol: summary.type.reference,
 metadata: null,
 type: summary
 });
 }
 }
 }

 hasAotSummary(ref: Type) {
 return !!this._summaryResolver.resolveSummary(ref);
 }

 private _filterJitIdentifiers(ids: CompileIdentifierMetadata[]): any[] {
 return ids.map(mod => mod.reference).filter(ref => !this.hasAotSummary(ref));
 }

 private _compileModuleAndComponents(moduleType: Type, isSync: boolean): SyncAsync<object> {
 return SyncAsync.then(this._loadModules(moduleType, isSync), () => {
 this._compileComponents(moduleType, null);
 return this._compileModule(moduleType);
 });
 }

 private _compileModuleAndAllComponents(moduleType: Type, isSync: boolean): SyncAsync<ModuleWithComponentFactories> {
 return SyncAsync.then(this._loadModules(moduleType, isSync), () => {
 const componentFactories: object[] = [];
 this._compileComponents(moduleType, componentFactories);
 return {
 ngModuleFactory: this._compileModule(moduleType),
 componentFactories: componentFactories
 };
 });
 }

 private _loadModules(mainModule: any, isSync: boolean): SyncAsync<any> {
 const loading: Promise<any>[] = [];
 const mainNgModule = this._metadataResolver.getNgModuleMetadata(mainModule)!;
 // Note: for runtime compilation, we want to transitively compile all modules,
 // so we also need to load the declared directives / pipes for all nested modules.
 this._filterJitIdentifiers(mainNgModule.transitiveModule.modules).forEach((nestedNgModule) => {
 // getNgModuleMetadata only returns null if the value passed in is not an NgModule
 const moduleMeta = this._metadataResolver.getNgModuleMetadata(nestedNgModule)!;
 this._filterJitIdentifiers(moduleMeta.declaredDirectives).forEach((ref) => {
 const promise =

```



```

this._metadataResolver.loadDirectiveMetadata(moduleMeta.type.reference, ref, isSync);\n if (promise) {\n
loading.push(promise);\n }\n });\n this._filterJitIdentifiers(moduleMeta.declaredPipes)\n.forEach((ref) => this._metadataResolver.getOrLoadPipeMetadata(ref));\n });\n return SyncAsync.all(loading);\n
}\n\n private _compileModule(moduleType: Type): object {\n let ngModuleFactory =
this._compiledNgModuleCache.get(moduleType!);\n if (!ngModuleFactory) {\n const moduleMeta =
this._metadataResolver.getNgModuleMetadata(moduleType!);\n // Always provide a bound Compiler\n const
extraProviders = this.getExtraNgModuleProviders(moduleMeta.type.reference);\n const outputCtx =
createOutputContext();\n const compileResult = this._ngModuleCompiler.compile(outputCtx, moduleMeta,
extraProviders);\n ngModuleFactory = this._interpretOrJit(\n ngModuleJitUrl(moduleMeta),
outputCtx.statements)[compileResult.ngModuleFactoryVar];\n
this._compiledNgModuleCache.set(moduleMeta.type.reference, ngModuleFactory);\n }\n return
ngModuleFactory;\n
}\n\n /**\n * @internal\n */\n _compileComponents(mainModule: Type,
allComponentFactories: object[]|null) {\n const ngModule =
this._metadataResolver.getNgModuleMetadata(mainModule!);\n const moduleByJitDirective = new Map<any,
CompileNgModuleMetadata>();\n const templates = new Set<CompiledTemplate>();\n\n const transJitModules
= this._filterJitIdentifiers(ngModule.transitiveModule.modules);\n transJitModules.forEach((localMod) => {\n
const localModuleMeta = this._metadataResolver.getNgModuleMetadata(localMod!);\n
this._filterJitIdentifiers(localModuleMeta.declaredDirectives).forEach((dirRef) => {\n
moduleByJitDirective.set(dirRef, localModuleMeta);\n const dirMeta =
this._metadataResolver.getDirectiveMetadata(dirRef);\n if (dirMeta.isComponent) {\n
templates.add(this._createCompiledTemplate(dirMeta, localModuleMeta));\n if (allComponentFactories) {\n
const template =\n this._createCompiledHostTemplate(dirMeta.type.reference, localModuleMeta);\n
templates.add(template);\n allComponentFactories.push(dirMeta.componentFactory as object);\n
}\n }\n });\n });\n transJitModules.forEach((localMod) => {\n const localModuleMeta =
this._metadataResolver.getNgModuleMetadata(localMod!);\n
this._filterJitIdentifiers(localModuleMeta.declaredDirectives).forEach((dirRef) => {\n const dirMeta =
this._metadataResolver.getDirectiveMetadata(dirRef);\n if (dirMeta.isComponent) {\n
dirMeta.entryComponents.forEach((entryComponentType) => {\n const moduleMeta =
moduleByJitDirective.get(entryComponentType.componentType!);\n templates.add(\n
this._createCompiledHostTemplate(entryComponentType.componentType, moduleMeta));\n });\n }\n
localModuleMeta.entryComponents.forEach((entryComponentType) => {\n if
(!this.hasAotSummary(entryComponentType.componentType)) {\n const moduleMeta =
moduleByJitDirective.get(entryComponentType.componentType!);\n templates.add(\n
this._createCompiledHostTemplate(entryComponentType.componentType, moduleMeta));\n }\n });\n
templates.forEach((template) => this._compileTemplate(template));\n }\n\n clearCacheFor(type: Type) {\n
this._compiledNgModuleCache.delete(type);\n this._metadataResolver.clearCacheFor(type);\n
this._compiledHostTemplateCache.delete(type);\n const compiledTemplate =
this._compiledTemplateCache.get(type);\n if (compiledTemplate) {\n
this._compiledTemplateCache.delete(type);\n }\n }\n\n clearCache(): void {\n // Note: don't clear the
_addedAotSummaries, as they don't change!\n this._metadataResolver.clearCache();\n
this._compiledTemplateCache.clear();\n this._compiledHostTemplateCache.clear();\n
this._compiledNgModuleCache.clear();\n }\n\n private _createCompiledHostTemplate(compType: Type,
ngModule: CompileNgModuleMetadata):\n CompiledTemplate {\n if (!ngModule) {\n throw new
Error(`Component ${\n stringify(\n compType)\n } is not part of any NgModule or the module has not
been imported into your module.`);\n }\n let compiledTemplate =
this._compiledHostTemplateCache.get(compType);\n if (!compiledTemplate) {\n const compMeta =
this._metadataResolver.getDirectiveMetadata(compType);\n assertComponent(compMeta);\n\n const
hostMeta = this._metadataResolver.getHostComponentMetadata(\n compMeta, (compMeta.componentFactory

```



```

Function, rendererType: any) {\n this._viewClass = viewClass;\n
(<ProxyClass>this.compMeta.componentViewType).setDelegate(viewClass);\n for (let prop in rendererType) {\n
 (<any>this.compMeta.rendererType)[prop] = rendererType[prop];\n }\n this.isCompiled = true;\n
}\n}\n\nfunction assertComponent(meta: CompileDirectiveMetadata) {\n if (!meta.isComponent) {\n throw new
Error(\n `Could not compile '${identifierName(meta.type)}' because it is not a component.`);\n
}\n}\n\nfunction createOutputContext(): OutputContext {\n const importExpr = (symbol: any) =>\n
ir.importExpr({name: identifierName(symbol), moduleName: null, runtime: symbol});\n return {statements: [],
genFilePath: "", importExpr, constantPool: new ConstantPool()};\n}\n\n"/**\n * @license\n * Copyright Google LLC
All Rights Reserved.\n * Use of this source code is governed by an MIT-style license that can be\n * found in
the LICENSE file at https://angular.io/license\n */\n\nimport {Component} from './core';\nimport * as o from
'./output/output_ast';\n\n/**\n * Provides access to reflection data about symbols that the compiler needs.\n
*/\n\nexport abstract class CompileReflector {\n abstract parameters(typeOrFunc: /*Type*/ any): any[][];\n abstract
annotations(typeOrFunc: /*Type*/ any): any[];\n abstract shallowAnnotations(typeOrFunc: /*Type*/ any): any[];\n
 abstract tryAnnotations(typeOrFunc: /*Type*/ any): any[];\n abstract propMetadata(typeOrFunc: /*Type*/ any):
{[key: string]: any[]};\n abstract hasLifecycleHook(type: any, lcProperty: string): boolean;\n abstract
guards(typeOrFunc: /*Type*/ any): {[key: string]: any};\n abstract componentModuleUrl(type: /*Type*/ any,
cmpMetadata: Component): string;\n abstract resolveExternalReference(ref: o.ExternalReference):
any;\n}\n\n"/**\n * @license\n * Copyright Google LLC All Rights Reserved.\n * Use of this source code is
governed by an MIT-style license that can be\n * found in the LICENSE file at https://angular.io/license\n
*/\n\n/**\n * Create a {@link UrlResolver} with no package prefix.\n */\n\nexport function
createUrlResolverWithoutPackagePrefix(): UrlResolver {\n return new UrlResolver();\n}\n\nexport function
createOfflineCompileUrlResolver(): UrlResolver {\n return new UrlResolver('.');\n}\n\n/**\n * Used by the {@link
Compiler} when resolving HTML and CSS template URLs.\n * This class can be overridden by the application
developer to create custom behavior.\n * See {@link Compiler}\n * ## Example\n * {@example
compiler/ts/url_resolver/url_resolver.ts region='url_resolver'}\n * @security When compiling templates at
runtime, you must\n * ensure that the entire template comes from a trusted source.\n * Attacker-controlled data
introduced by a template could expose your\n * application to XSS risks. For more detail, see the [Security
Guide](http://g.co/ng/security).\n */\n\nexport interface UrlResolver {\n resolve(baseUrl: string, url: string):
string;\n}\n\nexport interface UrlResolverCtor {\n new(packagePrefix?: string|null): UrlResolver;\n}\n\nexport
const UrlResolver: UrlResolverCtor = class UrlResolverImpl {\n constructor(private _packagePrefix: string|null =
null) {\n\n /**\n * Resolves the `url` given the `baseUrl`:\n * - when the `url` is null, the `baseUrl` is returned,\n
 * - if `url` is relative ('path/to/here', './path/to/here'), the resolved url is a combination of\n * `baseUrl` and `url`.\n
 * - if `url` is absolute (it has a scheme: 'http://', 'https://' or start with '/'), the `url` is\n * returned as is (ignoring the
`baseUrl`)\n */\n resolve(baseUrl: string, url: string): string {\n let resolvedUrl = url;\n if (baseUrl != null &&
baseUrl.length > 0) {\n resolvedUrl = _resolveUrl(baseUrl, resolvedUrl);\n }\n const resolvedParts =
_split(resolvedUrl);\n let prefix = this._packagePrefix;\n if (prefix != null && resolvedParts != null &&\n
resolvedParts[_ComponentIndex.Scheme] == 'package') {\n let path = resolvedParts[_ComponentIndex.Path];\n
 prefix = prefix.replace(/\\+$/, "");\n path = path.replace(/^\+/, "");\n return `${prefix}/${path}`;\n }\n
 return resolvedUrl;\n };\n\n /**\n * Extract the scheme of a URL.\n */\n export function getUrlScheme(url:
string): string {\n const match = _split(url);\n return (match && match[_ComponentIndex.Scheme]) || "";\n }\n\n//
The code below is adapted from Traceur:\n// https://github.com/google/traceur-
compiler/blob/9511c1dafa972bf0de1202a8a863bad02f0f95a8/src/runtime/url.js\n\n/**\n * Builds a URI string from
already-encoded parts.\n * No encoding is performed. Any component may be omitted as either null or\n *
undefined.\n * @param opt_scheme The scheme such as 'http'.\n * @param opt_userInfo The user name before
the '@'.\n * @param opt_domain The domain such as 'www.google.com', already\n * URI-encoded.\n * @param
opt_port The port number.\n * @param opt_path The path, already URI-encoded. If it is not\n * empty, it must
begin with a slash.\n * @param opt_queryData The URI-encoded query data.\n * @param opt_fragment The URI-
encoded fragment identifier.\n * @return The fully combined URI.\n */\n\nfunction _buildFromEncodedParts(\n

```

```

opt_scheme?: string, opt_userInfo?: string, opt_domain?: string, opt_port?: string, \n opt_path?: string,
opt_queryData?: string, opt_fragment?: string): string {\n const out: string[] = [];\n\n if (opt_scheme != null) {\n out.push(opt_scheme + ':');\n }\n\n if (opt_domain != null) {\n out.push('//');\n\n if (opt_userInfo != null) {\n out.push(opt_userInfo + '@');\n }\n\n out.push(opt_domain);\n\n if (opt_port != null) {\n out.push(':' +
opt_port);\n }\n }\n\n if (opt_path != null) {\n out.push(opt_path);\n }\n\n if (opt_queryData != null) {\n out.push('? + opt_queryData);\n }\n\n if (opt_fragment != null) {\n out.push('# + opt_fragment);\n }\n\n return
out.join('');\n}\n\n/**\n * A regular expression for breaking a URI into its component parts.\n * \n * { @link
http://www.gbiv.com/protocols/uri/rfc/rfc3986.html#RFC2234 } says\n * As the \"first-match-wins\" algorithm is
identical to the \"greedy\" \n * disambiguation method used by POSIX regular expressions, it is natural and\n *
commonplace to use a regular expression for parsing the potential five\n * components of a URI reference.\n * \n *
The following line is the regular expression for breaking-down a\n * well-formed URI reference into its
components.\n * \n * <pre>\n * ^(([^:/?#]+):)?(//([^/?#]*))?(#[^#]*)?(\.(.*)?)?\n * 12 3 4 5
6 7 8 9\n * </pre>\n * \n * The numbers in the second line above are only to assist readability; they\n * indicate
the reference points for each subexpression (i.e., each paired\n * parenthesis). We refer to the value matched for
subexpression <n> as $<n>.\n * \n * For example, matching the above expression to\n * <pre>\n *
http://www.ics.uci.edu/pub/ietf/uri/#Related\n * </pre>\n * \n * results in the following subexpression matches:\n *
<pre>\n * $1 = http:\n * $2 = http\n * $3 = //www.ics.uci.edu\n * $4 = www.ics.uci.edu\n * $5 =
/pub/ietf/uri/\n * $6 = <undefined>\n * $7 = <undefined>\n * $8 = #Related\n * $9 = Related\n * </pre>\n *
where <undefined> indicates that the component is not present, as is the\n * case for the query component in the
above example. Therefore, we can\n * determine the value of the five components as\n * <pre>\n * scheme =
$2\n * authority = $4\n * path = $5\n * query = $7\n * fragment = $9\n * </pre>\n * \n * The regular
expression has been modified slightly to expose the\n * userInfo, domain, and port separately from the authority.\n *
The modified version yields\n * <pre>\n * $1 = http scheme\n * $2 = <undefined> userInfo -\\|\n *
$3 = www.ics.uci.edu domain | authority\n * $4 = <undefined> port -/\n * $5 = /pub/ietf/uri/ path\n *
$6 = <undefined> query without ?\n * $7 = Related fragment without #\n * </pre>\n * \n * @internal\n *
\nconst _splitRe = new RegExp(\n '^ +\n '(?: +\n '([^:/?#.]+' + // scheme - ignore special characters\n // used by other URL parts such as :,\n // ?, /, #, and .\n ')?' +\n '(?:/' +\n '([^/?#]*)@)?' +
 // userInfo\n '([\\w\\d\\-\\.\\u0100-\\uffff.%]*)' + // domain - restrict to letters,\n // digits, dashes, dots, percent\n // escapes, and unicode characters.\n '(?:([0-9]+))?' +
 // port\n ')?' +\n '([/?#]+)?' + // path\n '(?:\\|{([#]*)})?' + // query\n '(?:#(.*))?' + //
fragment\n '$');\n\n/**\n * The index of each URI component in the return value of goog.uri.utils.split.\n * \n * @enum
{number}\n * \n * @internal\n * \n * @return Array<ComponentIndex> {\n * Scheme = 1,\n * UserInfo,\n * Domain,\n * Port,\n * Path,\n * QueryData,\n * Fragment\n * }\n\n/**\n * Splits a URI into its component parts.\n * \n * Each component can be accessed via the
component indices; for example:\n * \n * <pre>\n *
goog.uri.utils.split(someStr)[goog.uri.utils.ComponentIndex.QUERY_DATA];\n * </pre>\n * \n * \n * @param uri The
URI string to examine.\n * \n * @return Each component still URI-encoded.\n * \n * Each component that is present will
contain the encoded value, whereas\n * components that are not present will be undefined or empty, depending\n *
on the browser's regular expression implementation. Never null, since\n * arbitrary strings may still look like
path names.\n * \n * \n * @function _split(uri: string): Array<string|any> {\n * return uri.match(_splitRe)!;\n * }\n\n/**\n * Removes dot segments in given path component, as described in\n * RFC 3986, section 5.2.4.\n * \n * \n * @param path
A non-empty path component.\n * \n * @return Path component with removed dot segments.\n * \n * \n * @function
_removeDotSegments(path: string): string {\n * if (path == '/') return '/';\n * \n * const leadingSlash = path[0] == '/' ? '/' :
'';\n * \n * const trailingSlash = path[path.length - 1] === '/' ? '/' : '';\n * \n * const segments = path.split('/');\n * \n * const out:
string[] = [];\n * \n * let up = 0;\n * \n * for (let pos = 0; pos < segments.length; pos++) {\n * const segment = segments[pos];\n * \n * switch (segment) {\n * case '':\n * break;\n * case '..':\n * if (out.length > 0) {\n * out.pop();\n * }\n * default:\n * out.push(segment);\n * }\n * \n * if (out.length === 0) out.push('');\n * \n * return leadingSlash + out.join('/') + trailingSlash;\n * }\n * }\n\n/**\n * Takes an array of the parts from split and

```



```

errors.push(...this.messageBundle.updateFromTemplate(\n html, templateUrl, interpolationConfig!);\n });\n });\n\n if (errors.length) {\n throw new Error(errors.map(e => e.toString()).join('\n'));\n }\n\n return this.messageBundle;\n });\n}\n\nstatic create(host: ExtractorHost, locale: string|null):\n {extractor: Extractor, staticReflector: StaticReflector} {\n const htmlParser = new HtmlParser();\n\n const\n urlResolver = createAotUrlResolver(host);\n const symbolCache = new StaticSymbolCache();\n const\n summaryResolver = new AotSummaryResolver(host, symbolCache);\n const staticSymbolResolver = new\n StaticSymbolResolver(host, symbolCache, summaryResolver);\n const staticReflector = new\n StaticReflector(summaryResolver, staticSymbolResolver);\n\n const config =\n new\n CompilerConfig({defaultEncapsulation: ViewEncapsulation.Emulated, useJit: false});\n\n const normalizer = new\n DirectiveNormalizer(\n {get: (url: string) => host.loadResource(url)}, urlResolver, htmlParser, config);\n\n const elementSchemaRegistry = new DomElementSchemaRegistry();\n const resolver = new\n CompileMetadataResolver(\n config, htmlParser, new NgModuleResolver(staticReflector),\n new\n DirectiveResolver(staticReflector), new PipeResolver(staticReflector), summaryResolver,\n elementSchemaRegistry, normalizer, console, symbolCache, staticReflector);\n\n // TODO(vicb): implicit tags &\n attributes\n const messageBundle = new MessageBundle(htmlParser, [], {}, locale);\n\n const extractor = new\n Extractor(host, staticSymbolResolver, messageBundle, resolver);\n return {extractor, staticReflector};\n}\n}\n\n"/**\n * @license\n * Copyright Google LLC All Rights Reserved.\n *\n * Use of this source code is\n governed by an MIT-style license that can be\n * found in the LICENSE file at https://angular.io/license\n *\n\nexport {computeMsgId} from './digest';\nexport {Extractor, ExtractorHost} from './extractor';\nexport\n {I18NHtmlParser} from './i18n_html_parser';\nexport {MessageBundle} from './message_bundle';\nexport\n {Serializer} from './serializers/serializer';\nexport {Xliff} from './serializers/xliff';\nexport {Xliff2} from\n './serializers/xliff2';\nexport {Xmb} from './serializers/xmb';\nexport {Xtb} from './serializers/xtb';\n\n"/**\n *\n * @license\n * Copyright Google LLC All Rights Reserved.\n *\n * Use of this source code is governed by an MIT-\n style license that can be\n * found in the LICENSE file at https://angular.io/license\n *\n\nimport {AST,\n BindingPipe, ImplicitReceiver, MethodCall, PropertyRead, PropertyWrite, RecursiveAstVisitor, SafeMethodCall,\n SafePropertyRead} from '../expression_parser/ast';\nimport {SelectorMatcher} from '../selector';\nimport\n {BoundAttribute, BoundEvent, BoundText, Content, Element, Icu, Node, Reference, Template, Text, TextAttribute,\n Variable, Visitor} from './r3_ast';\n\nimport {BoundTarget, DirectiveMeta, Target, TargetBinder} from\n './t2_api';\nimport {createCssSelector} from './template';\nimport {getAttrsForDirectiveMatching} from\n './util';\n\n\n/**\n * Processes `Target`s with a given set of directives and performs a binding operation, which\n * returns an object similar to TypeScript's `ts.TypeChecker` that contains knowledge about the\n * target.\n *\nexport\n class R3TargetBinder<DirectiveT extends DirectiveMeta> implements TargetBinder<DirectiveT> {\n\n constructor(private directiveMatcher: SelectorMatcher<DirectiveT>) {}\n\n /**\n * Perform a binding operation\n on the given `Target` and return a `BoundTarget` which contains\n * metadata about the types referenced in the\n template.\n *\n bind(target: Target): BoundTarget<DirectiveT> {\n if (!target.template) {\n //\n TODO(alxhub): handle targets which contain things like HostBindings, etc.\n throw new Error('Binding without\n a template not yet supported');\n }\n\n // First, parse the template into a `Scope` structure. This operation\n captures the syntactic\n // scopes in the template and makes them available for later use.\n const scope =\n Scope.apply(target.template);\n\n // Use the `Scope` to extract the entities present at every level of the\n template.\n const templateEntities = extractTemplateEntities(scope);\n\n // Next, perform directive matching on\n the template using the `DirectiveBinder`. This returns:\n // - directives: Map of nodes (elements & ng-templates)\n to the directives on them.\n // - bindings: Map of inputs, outputs, and attributes to the directive/element that\n claims\n // them. TODO(alxhub): handle multiple directives claiming an input/output/etc.\n // - references:\n Map of #references to their targets.\n const {directives, bindings, references} =\n DirectiveBinder.apply(target.template, this.directiveMatcher);\n\n // Finally, run the TemplateBinder to bind\n references, variables, and other entities within the\n // template. This extracts all the metadata that doesn't depend\n on directive matching.\n const {expressions, symbols, nestingLevel, usedPipes} =\n TemplateBinder.apply(target.template, scope);\n\n return new R3BoundTarget(\n target, directives, bindings,

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references, expressions, symbols, nestingLevel,\n templateEntities, usedPipes);\n }\n}\n\n/**\n * Represents a binding scope within a template.\n * Any variables, references, or other named entities declared within the template will\n * be captured and available by name in `namedEntities`. Additionally, child templates will\n * be analyzed and have their child `Scope`s available in `childScopes`.\n */\n\n/**\n * Named members of the `Scope`, such as `Reference`s or `Variable`s.\n */\n\nreadonly namedEntities = new Map<string, Reference|Variable>();\n\n/**\n * Child `Scope`s for immediately nested `Template`s.\n */\n\nreadonly childScopes = new Map<Template, Scope>();\n\nprivate constructor(readonly parentScope: Scope|null, readonly template: Template|null) {\n}\n\nstatic newRootScope(): Scope {\n return new Scope(null, null);\n}\n\n/**\n * Process a template (either as a `Template` sub-template with variables, or a plain array of\n * template `Node`s) and construct its `Scope`.\n */\n\nstatic apply(template: Node[]): Scope {\n const scope = Scope.newRootScope();\n scope.ingest(template);\n return scope;\n}\n\n/**\n * Internal method to process the template and populate the `Scope`.\n */\n\nprivate ingest(template: Template|Node[]): void {\n if (template instanceof Template) {\n // Variables on an <ng-template> are defined in the inner scope.\n template.variables.forEach(node => this.visitVariable(node));\n // Process the nodes of the template.\n template.children.forEach(node => node.visit(this));\n } else {\n // No overarching `Template` instance, so process the nodes directly.\n template.forEach(node => node.visit(this));\n }\n}\n\nvisitElement(element: Element) {\n // `Element`s in the template may have `Reference`s which are captured in the scope.\n element.references.forEach(node => this.visitReference(node));\n // Recurse into the `Element`'s children.\n element.children.forEach(node => node.visit(this));\n}\n\nvisitTemplate(template: Template) {\n // References on a <ng-template> are defined in the outer scope, so capture them before\n // processing the template's child scope.\n template.references.forEach(node => this.visitReference(node));\n // Next, create an inner scope and process the template within it.\n const scope = new Scope(this, template);\n scope.ingest(template);\n this.childScopes.set(template, scope);\n}\n\nvisitVariable(variable: Variable) {\n // Declare the variable if it's not already.\n this.maybeDeclare(variable);\n}\n\nvisitReference(reference: Reference) {\n // Declare the variable if it's not already.\n this.maybeDeclare(reference);\n}\n\n// Unused visitors.\nvisitContent(content: Content) {}\nvisitBoundAttribute(attr: BoundAttribute) {}\nvisitBoundEvent(event: BoundEvent) {}\nvisitBoundText(text: BoundText) {}\nvisitText(text: Text) {}\nvisitTextAttribute(attr: TextAttribute) {}\nvisitIcu(icu: Icu) {}\n\nprivate maybeDeclare(thing: Reference|Variable) {\n // Declare something with a name, as long as that name isn't taken.\n if (!this.namedEntities.has(thing.name)) {\n this.namedEntities.set(thing.name, thing);\n }\n}\n\n/**\n * Look up a variable within this `Scope`.\n * This can recurse into a parent `Scope` if it's available.\n */\n\nlookup(name: string): Reference|Variable|null {\n if (this.namedEntities.has(name)) {\n // Found in the local scope.\n return this.namedEntities.get(name)!;\n } else if (this.parentScope !== null) {\n // Not in the local scope, but there's a parent scope so check there.\n return this.parentScope.lookup(name);\n } else {\n // At the top level and it wasn't found.\n return null;\n }\n}\n\n/**\n * Get the child scope for a `Template`.\n * This should always be defined.\n */\n\ngetChildScope(template: Template): Scope {\n const res = this.childScopes.get(template);\n if (res === undefined) {\n throw new Error(`Assertion error: child scope for ${template} not found`);\n }\n return res;\n}\n\n/**\n * Processes a template and matches directives on nodes (elements and templates).\n * Usually used via the static `apply()` method.\n */\n\n/**\n * Implements Visitor\n */\n\nconstructor(\n private matcher: SelectorMatcher<DirectiveT>,\n private directives: Map<Element|Template, DirectiveT[]>,\n private bindings: Map<BoundAttribute|BoundEvent|TextAttribute, DirectiveT|Element|Template>,\n private references: Map<Reference, {directive: DirectiveT, node: Element|Template}|Element|Template>) {\n}\n\n/**\n * Process a template (list of `Node`s) and perform directive matching against each node.\n * @param template the list of template `Node`s to match (recursively).\n * @param selectorMatcher a `SelectorMatcher` containing the directives that are in scope for\n * this template.\n * @returns three maps which contain information about directives in the template: the\n * `directives` map which lists directives matched on each node, the `bindings` map which\n * indicates which directives claimed which bindings (inputs, outputs, etc), and the\n * `references` map which resolves #references (`Reference`s) within the

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Reference|Variable>,\n private symbols: Map<Reference|Variable, Template>, private usedPipes: Set<string>,\n private nestingLevel: Map<Template, number>, private scope: Scope,\n private template: Template|null,\n private level: number) {\n super();\n // Save a bit of processing time by constructing this closure in advance.\n this.visitNode = (node: Node) => node.visit(this);\n // This method is defined to reconcile the type of\n TemplateBinder since both\n // RecursiveAstVisitor and Visitor define the visit() method in their\n // interfaces.\n visit(node: AST|Node, context?: any) {\n if (node instanceof AST) {\n node.visit(this, context);\n } else {\n node.visit(this);\n }\n }\n /**\n * Process a template and extract metadata about expressions and symbols\n within.\n * @param template the nodes of the template to process\n * @param scope the `Scope` of the\n template being processed.\n * @returns three maps which contain metadata about the template: `expressions`\n which interprets\n * special `AST` nodes in expressions as pointing to references or variables declared within the\n * template, `symbols` which maps those variables and references to the nested `Template` which\n * declares them,\n if any, and `nestingLevel` which associates each `Template` with a integer\n * nesting level (how many levels deep\n within the template structure the `Template` is), starting\n * at 1.\n */\n static apply(template: Node[], scope:\n Scope): {\n expressions: Map<AST, Reference|Variable>,\n symbols: Map<Variable|Reference, Template>,\n nestingLevel: Map<Template, number>,\n usedPipes: Set<string>,\n } {\n const expressions = new Map<AST,\n Reference|Variable>();\n const symbols = new Map<Variable|Reference, Template>();\n const nestingLevel =\n new Map<Template, number>();\n const usedPipes = new Set<string>();\n // The top-level template has nesting\n level 0.\n const binder = new TemplateBinder(\n expressions, symbols, usedPipes, nestingLevel, scope,\n template instanceof Template ? template : null, 0);\n binder.ingest(template);\n return {expressions, symbols,\n nestingLevel, usedPipes};\n }\n private ingest(template: Template|Node[]): void {\n if (template instanceof\n Template) {\n // For <ng-template>s, process only variables and child nodes. Inputs, outputs, templateAttrs,\n // and references were all processed in the scope of the containing template.\n template.variables.forEach(this.visitNode);\n template.children.forEach(this.visitNode);\n // Set the nesting\n level.\n this.nestingLevel.set(template, this.level);\n } else {\n // Visit each node from the top-level\n template.\n template.forEach(this.visitNode);\n }\n visitElement(element: Element) {\n // Visit the\n inputs, outputs, and children of the element.\n element.inputs.forEach(this.visitNode);\n element.outputs.forEach(this.visitNode);\n element.children.forEach(this.visitNode);\n }\n visitTemplate(template: Template) {\n // First, visit inputs, outputs and template attributes of the template node.\n template.inputs.forEach(this.visitNode);\n template.outputs.forEach(this.visitNode);\n template.templateAttrs.forEach(this.visitNode);\n // References are also evaluated in the outer context.\n template.references.forEach(this.visitNode);\n // Next, recurse into the template using its scope, and bumping the\n nesting level up by one.\n const childScope = this.scope.getChildScope(template);\n const binder = new\n TemplateBinder(\n this.bindings, this.symbols, this.usedPipes, this.nestingLevel, childScope, template,\n this.level + 1);\n binder.ingest(template);\n }\n visitVariable(variable: Variable) {\n // Register the `Variable`\n as a symbol in the current `Template`.\n if (this.template !== null) {\n this.symbols.set(variable,\n this.template);\n }\n }\n visitReference(reference: Reference) {\n // Register the `Reference` as a symbol in\n the current `Template`.\n if (this.template !== null) {\n this.symbols.set(reference, this.template);\n }\n }\n // Unused template visitors\n visitText(text: Text) {\n visitContent(content: Content) {\n visitTextAttribute(attribute: TextAttribute) {\n visitIcu(icu: Icu): void {\n Object.keys(icu.vars).forEach(key =>\n icu.vars[key].visit(this));\n Object.keys(icu.placeholders).forEach(key => icu.placeholders[key].visit(this));\n }\n // The remaining visitors are concerned with processing AST expressions within template bindings\n visitBoundAttribute(attribute: BoundAttribute) {\n attribute.value.visit(this);\n }\n visitBoundEvent(event:\n BoundEvent) {\n event.handler.visit(this);\n }\n visitBoundText(text: BoundText) {\n text.value.visit(this);\n }\n visitPipe(ast: BindingPipe, context: any): any {\n this.usedPipes.add(ast.name);\n return super.visitPipe(ast,\n context);\n }\n // These five types of AST expressions can refer to expression roots, which could be variables\n // or references in the current scope.\n visitPropertyRead(ast: PropertyRead, context: any): any {\n this.maybeMap(context, ast, ast.name);\n return super.visitPropertyRead(ast, context);\n }\n visitSafePropertyRead(ast: SafePropertyRead, context: any): any {\n this.maybeMap(context, ast, ast.name);\n }

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return super.visitSafePropertyRead(ast, context);\n }\n\n visitPropertyWrite(ast: PropertyWrite, context: any): any
{\n this.maybeMap(context, ast, ast.name);\n return super.visitPropertyWrite(ast, context);\n }\n\n
visitMethodCall(ast: MethodCall, context: any): any {\n this.maybeMap(context, ast, ast.name);\n return
super.visitMethodCall(ast, context);\n }\n\n visitSafeMethodCall(ast: SafeMethodCall, context: any): any {\n
this.maybeMap(context, ast, ast.name);\n return super.visitSafeMethodCall(ast, context);\n }\n\n private
maybeMap(\n scope: Scope, ast: PropertyRead|SafePropertyRead|PropertyWrite|MethodCall|SafeMethodCall,\n name: string): void {\n // If the receiver of the expression isn't the `ImplicitReceiver`, this isn't the root of an\n
// `AST` expression that maps to a `Variable` or `Reference`.\n if (!(ast.receiver instanceof ImplicitReceiver)) {\n
 return;\n }\n\n // Check whether the name exists in the current scope. If so, map it. Otherwise, the name is\n // probably a property on the top-level component context.\n let target = this.scope.lookup(name);\n if (target !==
null) {\n this.bindings.set(ast, target);\n }\n }\n\n /**\n * Metadata container for a `Target` that allows
queries for specific bits of metadata.\n * See `BoundTarget` for documentation on the individual methods.\n
 */\n export class R3BoundTarget<DirectiveT extends DirectiveMeta> implements BoundTarget<DirectiveT> {\n
 constructor(\n readonly target: Target, private directives: Map<Element|Template, DirectiveT[]>,\n private
bindings: Map<BoundAttribute|BoundEvent|TextAttribute, DirectiveT|Element|Template>,\n private
references:\n Map<BoundAttribute|BoundEvent|Reference|TextAttribute,\n { directive: DirectiveT,\n
node: Element|Template}|Element|Template>,\n private exprTargets: Map<AST, Reference|Variable>,\n private symbols: Map<Reference|Variable, Template>,\n private nestingLevel: Map<Template, number>,\n private templateEntities: Map<Template|null, ReadonlySet<Reference|Variable>>,\n private usedPipes:
Set<string>) {\n\n getEntitiesInTemplateScope(template: Template|null): ReadonlySet<Reference|Variable> {\n
return this.templateEntities.get(template) ?? new Set();\n }\n\n getDirectivesOfNode(node: Element|Template):
DirectiveT[]|null {\n return this.directives.get(node) || null;\n }\n\n getReferenceTarget(ref: Reference):
{ directive: DirectiveT, node: Element|Template}|Element|\n |Template|null {\n return this.references.get(ref) ||
null;\n }\n\n getConsumerOfBinding(binding: BoundAttribute|BoundEvent|TextAttribute): DirectiveT|Element|\n
 |Template|null {\n return this.bindings.get(binding) || null;\n }\n\n getExpressionTarget(expr: AST):
Reference|Variable|null {\n return this.exprTargets.get(expr) || null;\n }\n\n getTemplateOfSymbol(symbol:
Reference|Variable): Template|null {\n return this.symbols.get(symbol) || null;\n }\n\n getNestingLevel(template:
Template): number {\n return this.nestingLevel.get(template) || 0;\n }\n\n getUsedDirectives(): DirectiveT[] {\n
const set = new Set<DirectiveT>();\n this.directives.forEach(dirs => dirs.forEach(dir => set.add(dir)));\n return
Array.from(set.values());\n }\n\n getUsedPipes(): string[] {\n return Array.from(this.usedPipes);\n }\n
 }\n\n function extractTemplateEntities(rootScope: Scope): Map<Template|null, Set<Reference|Variable>> {\n
const entityMap = new Map<Template|null, Map<string, Reference|Variable>>();\n\n function
extractScopeEntities(scope: Scope): Map<string, Reference|Variable> {\n if (entityMap.has(scope.template)) {\n
return entityMap.get(scope.template)!;\n }\n\n const currentEntities = scope.namedEntities;\n\n let
templateEntities: Map<string, Reference|Variable>;\n if (scope.parentScope !== null) {\n templateEntities =
new Map([...extractScopeEntities(scope.parentScope), ...currentEntities]);\n } else {\n templateEntities = new
Map(currentEntities);\n }\n\n entityMap.set(scope.template, templateEntities);\n return templateEntities;\n
 }\n\n const scopesToProcess: Scope[] = [rootScope];\n while (scopesToProcess.length > 0) {\n const scope =
scopesToProcess.pop()!;\n for (const childScope of scope.childScopes.values()) {\n
scopesToProcess.push(childScope);\n }\n\n extractScopeEntities(scope);\n }\n\n const templateEntities = new
Map<Template|null, Set<Reference|Variable>>();\n for (const [template, entities] of entityMap) {\n
templateEntities.set(template, new Set(entities.values()));\n }\n return templateEntities;\n }\n\n /**\n * @license\n
 * Copyright Google LLC All Rights Reserved.\n * Use of this source code is governed by an MIT-style license
that can be\n * found in the LICENSE file at https://angular.io/license\n */\n\n // THIS FILE HAS GLOBAL SIDE EFFECT (see bottom of file)\n\n /**\n * @module\n * @description\n * Entry point for all APIs of the compiler package.\n * <div class="callout is-critical">\n * <header>Unstable APIs</header>\n * <p>\n * All compiler apis are currently considered
experimental and private!\n * </p>\n * <p>\n * We expect the APIs in this package to keep on changing. Do

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not rely on them.\n * </p>\n * </div>\n * \n\nimport * as core from './core';\nimport { publishFacade } from
 './jit_compiler_facade';\nimport { global } from './util';\n\nexport { CUSTOM_ELEMENTS_SCHEMA,
NO_ERRORS_SCHEMA, SchemaMetadata } from './core';\nexport { core }; \n\nexport * from './version';\nexport *
from './template_parser/template_ast';\nexport { CompilerConfig, preserveWhitespacesDefault } from
 './config';\nexport * from './compile_metadata';\nexport * from './aot/compiler_factory';\nexport * from
 './aot/compiler';\nexport * from './aot/generated_file';\nexport * from './aot/compiler_options';\nexport * from
 './aot/compiler_host';\nexport * from './aot/formatted_error';\nexport * from './aot/partial_module';\nexport * from
 './aot/static_reflector';\nexport * from './aot/static_symbol';\nexport * from './aot/static_symbol_resolver';\nexport *
from './aot/summary_resolver';\nexport { isLoweredSymbol, createLoweredSymbol } from './aot/util';\nexport
 { LazyRoute } from './aot/lazy_routes';\nexport * from './ast_path';\nexport * from './summary_resolver';\nexport
 { Identifiers } from './identifiers';\nexport { JitCompiler } from './jit/compiler';\nexport * from
 './compile_reflector';\nexport * from './url_resolver';\nexport * from './resource_loader';\nexport { ConstantPool }
from './constant_pool';\nexport { DirectiveResolver } from './directive_resolver';\nexport { PipeResolver } from
 './pipe_resolver';\nexport { NgModuleResolver } from './ng_module_resolver';\nexport
 { DEFAULT_INTERPOLATION_CONFIG, InterpolationConfig } from './ml_parser/interpolation_config';\nexport *
from './schema/element_schema_registry';\nexport * from './i18n/index';\nexport * from
 './directive_normalizer';\nexport * from './expression_parser/ast';\nexport * from './expression_parser/lexer';\nexport
 * from './expression_parser/parser';\nexport * from './metadata_resolver';\nexport * from './ml_parser/ast';\nexport *
from './ml_parser/html_parser';\nexport * from './ml_parser/html_tags';\nexport * from
 './ml_parser/interpolation_config';\nexport * from './ml_parser/tags';\nexport { LexerRange } from
 './ml_parser/lexer';\nexport * from './ml_parser/xml_parser';\nexport { NgModuleCompiler } from
 './ng_module_compiler';\nexport { ArrayType, AssertNotNull, DYNAMIC_TYPE, BinaryOperator,
BinaryOperatorExpr, BuiltinMethod, BuiltinType, BuiltinTypeName, BuiltinVar, CastExpr, ClassField,
ClassMethod, ClassStmt, CommaExpr, ConditionalExpr, DeclareFunctionStmt, DeclareVarStmt, Expression,
ExpressionStatement, ExpressionType, ExpressionVisitor, ExternalExpr, ExternalReference, literalMap,
FunctionExpr, IfStmt, InstantiateExpr, InvokeFunctionExpr, InvokeMethodExpr, LiteralArrayExpr, LiteralExpr,
LiteralMapExpr, MapType, NotExpr, NONE_TYPE, ReadKeyExpr, ReadPropExpr, ReadVarExpr,
ReturnStatement, StatementVisitor, ThrowStmt, TryCatchStmt, Type, TypeVisitor, WrappedNodeExpr,
WriteKeyExpr, WritePropExpr, WriteVarExpr, StmtModifier, Statement, STRING_TYPE, TypeofExpr,
collectExternalReferences, jsDocComment, leadingComment, LeadingComment, JSDocComment, UnaryOperator,
UnaryOperatorExpr, LocalizedString } from './output/output_ast';\nexport { EmitterVisitorContext } from
 './output/abstract_emitter';\nexport { JitEvaluator } from './output/output_jit';\nexport * from
 './output/ts_emitter';\nexport * from './parse_util';\nexport * from './schema/dom_element_schema_registry';\nexport
 * from './selector';\nexport * from './style_compiler';\nexport * from './template_parser/template_parser';\nexport
 { ViewCompiler } from './view_compiler/view_compiler';\nexport { getParseErrors, isSyntaxError, syntaxError,
Version } from './util';\nexport { SourceMap } from './output/source_map';\nexport * from
 './injectable_compiler_2';\nexport * from './render3/view/api';\nexport { BoundAttribute as TmplAstBoundAttribute,
BoundEvent as TmplAstBoundEvent, BoundText as TmplAstBoundText, Content as TmplAstContent, Element as
TmplAstElement, Icu as TmplAstIcu, Node as TmplAstNode, RecursiveVisitor as TmplAstRecursiveVisitor,
Reference as TmplAstReference, Template as TmplAstTemplate, Text as TmplAstText, TextAttribute as
TmplAstTextAttribute, Variable as TmplAstVariable } from './render3/r3_ast';\nexport * from
 './render3/view/t2_api';\nexport * from './render3/view/t2_binder';\nexport { Identifiers as R3Identifiers } from
 './render3/r3_identifiers';\nexport { R3DependencyMetadata, R3ResolvedDependencyType,
compileFactoryFunction, R3FactoryMetadata, R3FactoryTarget } from './render3/r3_factory';\nexport
 { compileInjector, compileNgModule, R3InjectorMetadata, R3NgModuleMetadata } from
 './render3/r3_module_compiler';\nexport { compilePipeFromMetadata, R3PipeMetadata } from
 './render3/r3_pipe_compiler';\nexport { makeBindingParser, ParsedTemplate, parseTemplate,
ParseTemplateOptions } from './render3/view/template';\nexport { R3Reference } from './render3/util';\nexport

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{compileComponentFromMetadata, compileDirectiveFromMetadata, parseHostBindings, ParsedHostBindings,
verifyHostBindings} from './render3/view/compiler';\nexport {publishFacade} from './jit_compiler_facade';\n// This
file only reexports content of the `src` folder. Keep it that way.\n\n// This function call has a global side effects and
publishes the compiler into global namespace for\n// the late binding of the Compiler to the @angular/core for jit
compilation.\npublishFacade(global);\n"/**\n * @license\n * Copyright Google LLC All Rights Reserved.\n *\n *
Use of this source code is governed by an MIT-style license that can be\n * found in the LICENSE file at
https://angular.io/license\n *\n\n**\n * @module\n * @description\n * Entry point for all public APIs of this
package.\n *\n\nexport * from './src/compiler';\n\n// This file only reexports content of the `src` folder. Keep it that
way.\n"/**\n * @license\n * Copyright Google LLC All Rights Reserved.\n *\n * Use of this source code is
governed by an MIT-style license that can be\n * found in the LICENSE file at https://angular.io/license\n *\n\n\n//
This file is not used to build this module. It is only used during editing\n// by the TypeScript language service and
during build for verification. `ngc`\n// replaces this file with production index.ts when it rewrites private symbol\n//
names.\n\nexport * from './public_api';\n"/**\n * @license\n * Copyright Google LLC All Rights Reserved.\n *\n\n *
Use of this source code is governed by an MIT-style license that can be\n * found in the LICENSE file at
https://angular.io/license\n *\n\n\n// This file is not used to build this module. It is only used during editing\n// by
the TypeScript language service and during build for verification. `ngc`\n// replaces this file with production index.ts
when it rewrites private symbol\n// names.\n\nexport * from
'/compiler';\n"],"names":["TagContentType","BuiltinTypeName","Type","UnaryOperator","BinaryOperator","BUILT
inVar","StmntModifier","BuiltinMethod","o.variable","o.Expression","o.LiteralExpr","o.FunctionExpr","o.ReturnSta
tement","o.INFERRED_TYPE","o.StmntModifier","o.LiteralArrayExpr","o.literalArr","o.literalMap","o.FnParam","
o.DYNAMIC_TYPE","o.fn","o.ReadVarExpr","CompileSummaryKind","CORE","Identifiers","o.literal","o.express
ionType","o.ExternalExpr","o.BinaryOperatorExpr","o.BinaryOperator","o.TypeOfExpr","o.WrappedNodeExpr","T
ext","Icu","i18n.RecurseVisitor","_Visitor","xml.Tag","xml.Text","xml.CR","xml.serialize","xml.Declaration","xml
.Doctype","digest","i18n.Message","i18n.Icu","i18n.Container","i18n.Placeholder","o.DeclareVarStmnt","invalid","o
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C;aACxE;SACF;IACH,CAAC;IAED,IAAM,8BAA8B,GAAG;QACrC,OAAO;QACP,MAAM;QACN,QAAQ;QAC  
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AI,EAAE,OAAO,CAAC,CAAC;SAC1C;oBACF;KAPD,CAA2B,GAAG,GAO7B;;QAEgC,+BAAG;QACIC,qBAC  
I,IAAe,EAAE,UAA8B,EAAS,SAAc,EAAS,OAAU,EACpF,QAAa;YAFxB,YAGE,kBAAM,IAAI,EAAE,UAAU,C  
AAC,SACxB;YAH2D,eAAS,GAAT,SAAS,CAAK;YAAS,aAAO,GAAP,OAAO,CAAK;YACpF,cAAQ,GAAR,Q  
AAQ,CAAK;;SAEvB;QACD,2BAAK,GAAL,UAAmB,OAAmB,EAAE,OAAmB;YAAmB,wBAAA,EAAA,cAAmB  
;YAC5C,OAAO,OAAO,CAAC,gBAAgB,CAAC,IAAI,EAAE,OAAO,CAAC,CAAC;SACHd;0BACF;KATD,CAA  
iC,GAAG,GASnC;;QAEiC,gCAAW;QAC3C,sBACI,IAAe,EAAE,UAA8B,EAAS,QAA4B,EACtE,QAAa,EAAS,I  
AAY;YAF7C,YAGE,kBAAM,IAAI,EAAE,UAAU,EAAE,QAAQ,CAAC,SACIC;YAFU,cAAQ,GAAR,QAAQ,CA  
AK;YAAS,UAAI,GAAJ,IAAI,CAAQ;;SAE5C;QACD,4BAAK,GAAL,UAAmB,OAAmB,EAAE,OAAmB;YAAmB,  
wBAAA,EAAA,cAAmB;YAC5C,OAAO,OAAO,CAAC,iBAAiB,CAAC,IAAI,EAAE,OAAO,CAAC,CAAC;SACj  
D;2BACF;KATD,CAAKc,WAAW,GAS5C;;QAEkC,iCAAW;QAC5C,uBACI,IAAe,EAAE,UAA8B,EAAE,QAA4  
B,EACtE,QAAa,EAAS,IAAY,EAAS,KAAU;YAFhE,YAGE,kBAAM,IAAI,EAAE,UAAU,EAAE,QAAQ,CAAC,S  
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G,GA AH,GAAG,CAAe;YAAW,UAAK,GAAL,KAAK,CAAY;YACtE,kBAaA,GAAb,aAAa,CAAoB;YAAW,SA AI,GA AJ,IAAI,CAAe;YAC hE,aAAQ,GAAR,QAAQ,CAAM;YAVnB,aAAQ,GAAG,IAAI,GAAG,EAAO,CAAC; YAC1B,iBAAY,GAAG,IAAI,GAAG,EAAiB,CAAC;YACxC,cAAS,GAAY,KAAK,CAAC;YAG1B,wBAAmB,G AAW,CAAC,CAAC;YAMtC,IAAI,CAAC,SAAS,GAAG,QAAQ,IAAI,aAAa,EAAE,CAAC;YAC7C,IAAI,CAAC, EAAE,GAAG,IAAI,CAAC,SAAS,CAAC,WAAW,EAAE,CAAC;SACxC;QAE0,+BAAS,GAAT,UAAU,IAAa,EA AE,IAAyB,EAAE,KAAa,EAAE,MAAgB;YACzF,IAAI,IAAI,CAAC,MAAM,IAAI,MAAM,EAAE;gBACzB,OAA O;aACR;YACD,IAAM,EAAE,GAAG,IAAI,CAAC,MAAM,IAAI,CAAC,MAAM,GAAG,IAAI,CAAC,SAAS,GA AG,IAAI,CAAC,SAAS,CAAC;YACpE,IAAM,OAAO,GAAG,EAAC,IAAI,MAAA,EAAE,KAAK,OAAA,EAAE, GAAG,EAAE,IAAI,CAAC,EAAE,EAAE,MAAM,EAAE,IAAI,CAAC,MAAM,EAAE,MAAM,QAAA,EAAC,CA AC;YACzE,oBAAoB,CAAC,IAAI,CAAC,YAAY,EAAE,EAAE,EAAE,OAAO,CAAC,CAAC;SACtD;QAED,sBA AI,6BAAI;iBAAR;gBACE,OAAO,IAAI,CAAC,SAAS,CAAC,IAAI,CAAC;aAC5B;;;WAAA;QACD,sBAAI,+BA AM;iBAAV;gBACE,OAAO,IAAI,CAAC,KAAK,KAAK,CAAC,CAAC;aACzB;;;WAAA;QACD,sBAAI,mCAAU ;iBAAd;gBACE,OAAO,IAAI,CAAC,mBAAmB,KAAK,CAAC,CAAC;aACvC;;;WAAA;QAED,+CAAyB,GAAz B;YACE,IAAM,MAAM,GAAG,IAAI,GAAG,EAAiB,CAAC;YACxC,IAAI,CAAC,YAAY,CAAC,OAAO,CACrB, UAAC,MAAM,EAAE,GAAG,IAAK,OAAA,MAAM,CAAC,GAAG,CAAC,GAAG,EAAE,MAAM,CAAC,GAAG ,CAAC,yBAAYB,CAAC,CAAC,GAAA,CAAC,CAAC;YAC7E,OAAO,MAAM,CAAC;SACf;;QAGD,mCAAa,GA Ab,UAAc,OAAY;YACxB,IAAI,CAAC,QAAQ,CAAC,GAAG,CAAC,OAAO,CAAC,CAAC;SAC5B;QACD,+BA AS,GAAT,UAAU,IAAY,EAAE,GAAiB;YACvC,oBAAoB,CAAC,IAAI,CAAC,SAAS,CAAC,IAAI,EAAE,IAAI,E AAE,GAAG,CAAC,CAAC;SACtD;QACD,qCAAe,GAaf,UAAgB,IAAmB;YAA nC,iBAGC;YAFc,IAAM,GAAG ,GAAG,6BAA6B,CAAC,IAAI,EAAE,IAAI,CAAC,QAAQ,CAAC,IAAI,EAAE,IAAI,CAAC,EAAE,CAAC,CAAC ;YAC7E,GAAG,CAAC,OAAO,CAAC,UAAC,MAAM,EAAE,GAAG,IAAK,OAAA,oBAAoB,yBAAC,KAAI,CA AC,YAAY,EAAE,GAAG,GAAK,MAAM,KAAK,CAAC,CAAC;SACvF;QACD,oCAAc,GAAd,UAAe,IAAmB,E AAE,KAAa;;;YAG/C,IAAI,CAAC,SAAS,CAAC,OAAO,CAAC,QAAQ,EAAE,IAA2B,EAAE,KAAK,EAAE,KA AK,CAAC,CAAC;YAC5E,IAAI,CAAC,SAAS,CAAC,OAAO,CAAC,QAAQ,EAAE,IAA2B,EAAE,KAAK,EAAE ,IAAI,CAAC,CAAC;YAC3E,IAAI,CAAC,mBAAmB,EAAE,CAAC;SAC5B;QACD,mCAAa,GAAb,UAAc,IAAm B,EAAE,KAAa,EAAE,MAAgB;YAC hE,IAAI,CAAC,SAAS,CAAC,OAAO,CAAC,OAAO,EAAE,IAA2B,EAAE, KAAK,EAAE,MAAM,CAAC,CAAC;SAC7E;QACD,sCAAgB,GAAhB,UAAiB,IAAmB,EAAE,KAAa;;;YAKjD, IAAI,CAAC,SAAS,CAAC,OAAO,CAAC,OAAO,EAAE,IAA2B,EAAE,KAAK,EAAE,KAAK,CAAC,CAAC;YA C3E,IAAI,CAAC,SAAS,CAAC,OAAO,CAAC,OAAO,EAAE,IAA2B,EAAE,KAAK,EAAE,IAAI,CAAC,CAAC;S AC3E;;;QAYD,sCAAgB,GAAhB,UAAiB,KAAa,EAAE,aAAqB,EAAE,IAAmB;YACxE,OAAO,IAAI,WAA W,CAAC,KAAK,EAAE,IAAI,CAAC,GAAG,EAAE,IAAI,CAAC,KAAK,GAAG,CAAC,EAAE,aAAa,EAAE,IAA I,EAAE,IAAI,CAAC,SAAS,CAAC,CAAC;SAC9F;;;QAOD,2CAAqB,GAArB,UAAsB,OAAoB;YAA1C,iBA0C C;;;YAvCC,CAAC,OAAO,EAAE,OAAO,CAAC,CAAC,OAAO,CAAC,UAAC,EAAU;gBACpC,IAAM,GAAG,G AAI,OAAO,CAAC,IAAY,CAAI,EAAE,SAAM,CAAC,CAAC;gBAC/C,IAAM,GAAG,GAAG,KAAI,CAAC,YAA Y,CAAC,GAAG,CAAC,GAAG,CAAC,IAAI,EAAE,CAAC;gBAC7C,IAAM,GAAG,GAAG,GAAG,CAAC,IAAI, CAAC,cAAc,CAAC,KAAI,CAAC,EAAE,EAAE,OAAO,CAAC,aAAa,CAAC,CAAC,CAAC;gBACrE,IAAI,GAA G,EAAE;oBACP,GAAG,CAAC,GAAG,GAAG,OAAO,CAAC,EAAE,CAAC;iBACtB;aACf,CAAC,CAAC;;YAG H,IAAM,QAAQ,GAAG,OAAO,CAAC,YAAY,CAAC;YACtC,QAAQ,CAAC,OAAO,CAAC,UAAC,MAAA,EAA E,GAAW;gBAC1C,IAAM,GAAG,GAAG,KAAI,CAAC,YAAY,CAAC,GAAG,CAAC,GAAG,CAAC,CAAC;gBA CvC,IAAI,CAAC,GAAG,EAAE;oBACR,KAAI,CAAC,YAAY,CAAC,GAAG,CAAC,GAAG,EAAE,MAAM,CAA C,CAAC;oBACnC,OAAO;iBACR;;gBAED,IAAM,OAAO,GAAG,GAAG,CAAC,SAAS,CAAC,cAAc,CAAC,OA AO,CAAC,EAAE,EAAE,OAAO,CAAC,aAAa,CAAC,CAAC,CAAC;gBACjF,IAAI,OAAO,IAAI,CAAC,EAAE;;o BAEhB,IAAM,UAAU,GAAG,GAAG,CAAC,UAAU,CAAC,OAAO,CAAC,CAAC;oBAC3C,IAAM,aAAa,GAAG, GAAG,CAAC,QAAQ,CAAC,aAAa,CAAC,CAAC;oBACID,IAAI,aAAa,EAAE;;;wBAGjB,GAAG,CAAC,MAAM ,OAAV,GAAG,YAAQ,OAAO,IAAI,UAAU,GAAG,CAAC,GAAG,CAAC,CAAC,EAAE,CAAC,GAAK,MAAM, GAAE;qBAC1D;yBAAM;wBACL,IAAM,GAAG,GAAG,UAAU,GAAG,MAAM,CAAC,MAAM,GAAG,CAAC, GAAG,CAAC,CAAC;wBAC/C,MAAM,CAAC,GAAG,CAAC,CAAC,IAAI,GAAG,GAAG,CAAC,OAAO,CAAC, CAAC;wBAC hC,GAAG,CAAC,MAAM,OAAV,GAAG,YAAQ,OAAO,EAAE,CAAC,GAAK,MAAM,GAAE;qB

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xF;;QAGD,IAAI,eAAe,IAAI,IAAI,IAAI,eAAe,KAAKuN,uBAA4B,CAAC,OAAO,EAAE;YACvF,aAAa,CAAC,G  
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CAAC,GAAG,CAAC,IAAI,CAAC,CAAC;YAC7B,OAAO,iBAAM,SAAS,YAAC,GAAG,EAAE,OAAO,CAAC,C  
AAC;SACtC;;QAKD,0CAAiB,GAajB,UAAkB,GAaiB,EAAE,OAAE;YAC/C,IAAI,CAAC,QAAQ,CAAC,OAA  
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AAQ,CAAC,OAAO,EAAE,GAAG,EAAE,GAAG,CAAC,IAAI,CAAC,CAAC;YACtC,OAAO,iBAAM,qBAaqB,  
YAAE,GAAG,EAAE,OAAO,CAAC,CAAC;SACID;QAED,2CAaKB,GAaIB,UAAmB,GAaKB,EAAE,OAAE;Y  
ACjD,IAAI,CAAC,QAAQ,CAAC,OAAO,EAAE,GAAG,EAAE,GAAG,CAAC,IAAI,CAAC,CAAC;YACtC,OAA  
O,iBAAM,kBAaKB,YAAC,GAAG,EAAE,OAAO,CAAC,CAAC;SAC/C;QAED,wCAAE,GAaf,UAAgB,GAae,E  
AAE,OAAE;YAC3C,IAAI,CAAC,QAAQ,CAAC,OAAO,EAAE,GAAG,EAAE,GAAG,CAAC,IAAI,CAAC,CAA  
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UAAoB,GAAmB,EAAE,OAAE;YACnD,IAAI,CAAC,QAAQ,CAAC,OAAO,EAAE,GAAG,EAAE,GAAG,CAAC  
,IAAI,CAAC,CAAC;YACtC,OAAO,iBAAM,mBAAmB,YAAC,GAAG,EAAE,OAAO,CAAC,CAAC;SACnD;QA  
EO,iCAAQ,GAAR,UACJ,KAAE,EAAE,GAA0E,EACxF,IAAY;;YAGd,IAAI,EAAE,GAAG,CAAC,QAAQ,YAA  
Y,gBAAGB,CAAC,EAAE;gBAC/C,OAAO;aACR;;YAID,IAAI,MAAM,GAAG,IAAI,CAAC,KAAK,CAAC,MA  
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Found in path(s):

\* /opt/cola/permits/1358260597\_1657134837.1052659/0/compiler-11-0-2-tgz/package/bundles/compiler.umd.js.map

No license file was found, but licenses were detected in source scan.

```
/**
 * @license Angular v11.0.2
 * (c) 2010-2020 Google LLC. https://angular.io/
 * License: MIT
 */
/**
 * @license
 * Copyright Google LLC All Rights Reserved.
 *
 * Use of this source code is governed by an MIT-style license that can be
 * found in the LICENSE file at https://angular.io/license
 */
```

Found in path(s):

```
* /opt/cola/permits/1358260597_1657134837.1052659/0/compiler-11-0-2-tgz/package/fesm2015/testing.js
* /opt/cola/permits/1358260597_1657134837.1052659/0/compiler-11-0-2-tgz/package/fesm2015/compiler.js
No license file was found, but licenses were detected in source scan.
```

```
/**
```

```
 * @license
 * Copyright Google LLC All Rights Reserved.
 *
 * Use of this source code is governed by an MIT-style license that can be
 * found in the LICENSE file at https://angular.io/license
 */
```

Found in path(s):

```
* /opt/cola/permits/1358260597_1657134837.1052659/0/compiler-11-0-2-tgz/package/src/render3/view/i18n/util.js
* /opt/cola/permits/1358260597_1657134837.1052659/0/compiler-11-0-2-tgz/package/src/aot/summary_serializer.js
* /opt/cola/permits/1358260597_1657134837.1052659/0/compiler-11-0-2-tgz/package/src/parse_util.js
* /opt/cola/permits/1358260597_1657134837.1052659/0/compiler-11-0-2-tgz/package/src/i18n/index.js
* /opt/cola/permits/1358260597_1657134837.1052659/0/compiler-11-0-2-tgz/package/testing/src/directive_resolver_mock.js
No license file was found, but licenses were detected in source scan.
```

```
{ "version":3,"file":"testing.js","sources":["../../../../packages/compiler/testing/src/resource_loader_mock.ts", "../../../../packages/compiler/testing/src/schema_registry_mock.ts", "../../../../packages/compiler/testing/src/directive_resolver_mock.ts", "../../../../packages/compiler/testing/src/ng_module_resolver_mock.ts", "../../../../packages/compiler/testing/src/pipe_resolver_mock.ts", "../../../../packages/compiler/testing/src/testing.ts", "../../../../packages/compiler/testing/public_api.ts", "../../../../packages/compiler/testing/index.ts", "../../../../packages/compiler/testing/testing.ts"],"sourcesContent":["/**\n * @license\n * Copyright Google LLC All Rights Reserved.\n *\n * Use of this source code is governed by an MIT-style license that can be\n * found in the LICENSE file at\n https://angular.io/license\n *\n\nimport {ResourceLoader} from '@angular/compiler';\n\n\n * A mock\n implementation of {@link ResourceLoader} that allows outgoing requests to be mocked\n * and responded to\n within a single test, without going to the network.\n *\n\nexport class MockResourceLoader extends ResourceLoader\n {\n private _expectations: _Expectation[] = [];\n private _definitions = new Map<string, string>();\n private\n _requests: _PendingRequest[] = [];\n\n get(url: string): Promise<string> {\n const request = new\n _PendingRequest(url);\n this._requests.push(request);\n return request.getPromise();\n }\n\n\n hasPendingRequests() {\n return !!this._requests.length;\n }\n\n /**\n * Add an expectation for the given URL.\n Incoming requests will be checked against\n * the next expectation (in FIFO order). The\n `verifyNoOutstandingExpectations` method\n * can be used to check if any expectations have not yet been met.\n *\n * The response given will be returned if the expectation matches.\n *\n\n expect(url: string, response: string)\n {\n const expectation = new _Expectation(url, response);\n this._expectations.push(expectation);\n }\n\n /**\n * Add a definition for the given URL to return the given response. Unlike expectations,\n * definitions have no\n order and will satisfy any matching request at any time. Also\n * unlike expectations, unused definitions do not\n cause `verifyNoOutstandingExpectations`\n * to return an error.\n *\n\n when(url: string, response: string) {\n this._definitions.set(url, response);\n }\n\n /**\n * Process pending requests and verify there are no outstanding\n expectations. Also fails\n * if no requests are pending.\n *\n\n flush() {\n if (this._requests.length === 0) {\n throw new Error('No pending requests to flush');\n }\n\n do {\n
```

```

this._processRequest(this._requests.shift()!);\n } while (this._requests.length > 0);\n\n this.verifyNoOutstandingExpectations();\n }\n\n /**\n * Throw an exception if any expectations have not been
satisfied.\n */\n verifyNoOutstandingExpectations() {\n if (this._expectations.length === 0) return;\n\n const
urls: string[] = [];\n for (let i = 0; i < this._expectations.length; i++) {\n const expectation =
this._expectations[i];\n urls.push(expectation.url);\n }\n\n throw new Error('Unsatisfied requests:
${urls.join(', ')}');\n }\n\n private _processRequest(request: _PendingRequest) {\n const url = request.url;\n\n if
(this._expectations.length > 0) {\n const expectation = this._expectations[0];\n if (expectation.url == url) {\n
 remove(this._expectations, expectation);\n request.complete(expectation.response);\n return;\n }\n
 }\n\n if (this._definitions.has(url)) {\n const response = this._definitions.get(url);\n
 request.complete(response == null ? null : response);\n return;\n }\n\n throw new Error('Unexpected request
${url}');\n }\n\n \n\nclass _PendingRequest {\n // TODO(issue/24571): remove '!'.\n resolve!: (result: string) =>
void;\n // TODO(issue/24571): remove '!'.\n reject!: (error: any) => void;\n promise: Promise<string>;\n\n constructor(public url: string) {\n this.promise = new Promise((res, rej) => {\n this.resolve = res;\n
 this.reject = rej;\n });\n }\n\n complete(response: string|null) {\n if (response == null) {\n this.reject('Failed
to load ${this.url}');\n } else {\n this.resolve(response);\n }\n }\n\n getPromise(): Promise<string> {\n
 return this.promise;\n }\n\n \n\nclass _Expectation {\n url: string;\n response: string;\n constructor(url: string,
response: string) {\n this.url = url;\n this.response = response;\n }\n\n \n\nfunction remove<T>(list: T[], el: T):
void {\n const index = list.indexOf(el);\n if (index > -1) {\n list.splice(index, 1);\n }\n}\n\n"/**\n * @license\n *
Copyright Google LLC All Rights Reserved.\n * Use of this source code is governed by an MIT-style license
that can be\n * found in the LICENSE file at https://angular.io/license\n */\n\nimport {core,
ElementSchemaRegistry} from '@angular/compiler';\n\nexport class MockSchemaRegistry implements
ElementSchemaRegistry {\n constructor(\n public existingProperties: {[key: string]: boolean},\n public
attrPropMapping: {[key: string]: string},\n public existingElements: {[key: string]: boolean},\n public
invalidProperties: Array<string>,\n public invalidAttributes: Array<string>) {\n }\n\n hasProperty(tagName: string,
property: string, schemas: core.SchemaMetadata[]): boolean {\n const value = this.existingProperties[property];\n
 return value === void 0 ? true : value;\n }\n\n hasElement(tagName: string, schemaMetas:
core.SchemaMetadata[]): boolean {\n const value = this.existingElements[tagName.toLowerCase()];\n return
value === void 0 ? true : value;\n }\n\n allKnownElementNames(): string[] {\n return
Object.keys(this.existingElements);\n }\n\n securityContext(selector: string, property: string, isAttribute: boolean):
core.SecurityContext {\n return core.SecurityContext.NONE;\n }\n\n getMappedPropName(attrName: string):
string {\n return this.attrPropMapping[attrName] || attrName;\n }\n\n getDefaultComponentElementName():
string {\n return 'ng-component';\n }\n\n validateProperty(name: string): {error: boolean, msg?: string} {\n if
(this.invalidProperties.indexOf(name) > -1) {\n return {error: true, msg: `Binding to property '${name}' is
disallowed for security reasons`};\n } else {\n return {error: false};\n }\n }\n\n validateAttribute(name:
string): {error: boolean, msg?: string} {\n if (this.invalidAttributes.indexOf(name) > -1) {\n return {\n
error: true,\n msg: `Binding to attribute '${name}' is disallowed for security reasons`\n }; \n } else {\n
return {error: false};\n }\n }\n\n normalizeAnimationStyleProperty(propName: string): string {\n return
propName;\n }\n\n normalizeAnimationStyleValue(camelCaseProp: string, userProvidedProp: string, val:
string|number):\n {error: string, value: string} {\n return {error: null!, value: val.toString()};\n }\n}\n\n"/**\n *
@license\n * Copyright Google LLC All Rights Reserved.\n * Use of this source code is governed by an MIT-
style license that can be\n * found in the LICENSE file at https://angular.io/license\n */\n\nimport {CompileReflector,
core, DirectiveResolver} from '@angular/compiler';\n\n/**\n * An implementation of {@link DirectiveResolver}
that allows overriding\n * various properties of directives.\n */\nexport class MockDirectiveResolver extends
DirectiveResolver {\n private _directives = new Map<core.Type, core.Directive>();\n\n constructor(reflector:
CompileReflector) {\n super(reflector);\n }\n\n resolve(type: core.Type): core.Directive;\n resolve(type:
core.Type, throwIfNotFound: true): core.Directive;\n resolve(type: core.Type, throwIfNotFound: boolean):
core.Directive|null;\n resolve(type: core.Type, throwIfNotFound = true): core.Directive|null {\n return
this._directives.get(type) || super.resolve(type, throwIfNotFound);\n }\n\n /**\n * Overrides the {@link

```

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core.Directive} for a directive.\n *^/n setDirective(type: core.Type, metadata: core.Directive): void {\n
this._directives.set(type, metadata);\n }^/n\n"/**\n * @license\n * Copyright Google LLC All Rights Reserved.\n
*\n * Use of this source code is governed by an MIT-style license that can be\n * found in the LICENSE file at
https://angular.io/license\n */^/n\nimport {CompileReflector, core, NgModuleResolver} from
'@angular/compiler';\n\nexport class MockNgModuleResolver extends NgModuleResolver {\n private _ngModules
= new Map<core.Type, core.NgModule>();\n\n constructor(reflector: CompileReflector) {\n super(reflector);\n
}\n\n /**\n * Overrides the {@link NgModule} for a module.\n */ setNgModule(type: core.Type, metadata:
core.NgModule): void {\n this._ngModules.set(type, metadata);\n }\n\n /**\n * Returns the {@link NgModule}
for a module:\n * - Set the {@link NgModule} to the overridden view when it exists or fallback to the\n *
default\n * `NgModuleResolver`, see `setNgModule`.\n */ resolve(type: core.Type, throwIfNotFound = true):
core.NgModule {\n return this._ngModules.get(type) || super.resolve(type, throwIfNotFound!);\n }\n}\n"/**\n
* @license\n * Copyright Google LLC All Rights Reserved.\n *\n * Use of this source code is governed by an MIT-
style license that can be\n * found in the LICENSE file at https://angular.io/license\n */^/n\nimport
{CompileReflector, core, PipeResolver} from '@angular/compiler';\n\nexport class MockPipeResolver extends
PipeResolver {\n private _pipes = new Map<core.Type, core.Pipe>();\n\n constructor(reflector: CompileReflector)
{\n super(reflector);\n }\n\n /**\n * Overrides the {@link Pipe} for a pipe.\n */ setPipe(type: core.Type,
metadata: core.Pipe): void {\n this._pipes.set(type, metadata);\n }\n\n /**\n * Returns the {@link Pipe} for a
pipe:\n * - Set the {@link Pipe} to the overridden view when it exists or fallback to the\n * default\n *
`PipeResolver`, see `setPipe`.\n */ resolve(type: core.Type, throwIfNotFound = true): core.Pipe {\n let
metadata = this._pipes.get(type);\n if (!metadata) {\n metadata = super.resolve(type, throwIfNotFound!);\n
}\n return metadata;\n }\n}\n"/**\n * @license\n * Copyright Google LLC All Rights Reserved.\n *\n * Use of
this source code is governed by an MIT-style license that can be\n * found in the LICENSE file at
https://angular.io/license\n */^/n\n/**\n * @module\n * @description\n * Entry point for all APIs of the compiler
package.\n *\n * <div class="callout is-critical">\n * <header>Unstable APIs</header>\n * <p>\n * All
compiler apis are currently considered experimental and private!\n * </p>\n * <p>\n * We expect the APIs in
this package to keep on changing. Do not rely on them.\n * </p>\n * </div>\n */^/n\nexport * from
'./resource_loader_mock';\nexport * from './schema_registry_mock';\nexport * from
'./directive_resolver_mock';\nexport * from './ng_module_resolver_mock';\nexport * from
'./pipe_resolver_mock';\n"/**\n * @license\n * Copyright Google LLC All Rights Reserved.\n *\n * Use of this
source code is governed by an MIT-style license that can be\n * found in the LICENSE file at
https://angular.io/license\n */^/n\n// <reference types="node" />\n/**\n * @module\n * @description\n * Entry
point for all public APIs of this package.\n */^/n\nexport * from './src/testing';\n\n// This file only reexports content of
the `src` folder. Keep it that way.\n"/**\n * @license\n * Copyright Google LLC All Rights Reserved.\n *\n * Use
of this source code is governed by an MIT-style license that can be\n * found in the LICENSE file at
https://angular.io/license\n */^/n\n// This file is not used to build this module. It is only used during editing\n// by the
TypeScript language service and during build for verification. `ngc`\n// replaces this file with production index.ts
when it rewrites private symbol\n// names.\n\nexport * from './public_api';\n"/**\n * Generated bundle index. Do
not edit.\n */^/n\nexport * from
'./index';\n}], "names": [], "mappings": ";;;;;;;;;AAAA;;;;;;;;;AAUA;;;MAIa,kBAAmB,SAAQ,cAAc;IAAtD;;QACU,kB
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Found in path(s):

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No license file was found, but licenses were detected in source scan.

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```

string|null {\n return fullName === null ? null : splitNsName(fullName)[0];\n}\n\nexport function
mergeNsAndName(prefix: string, localName: string): string {\n return prefix ? `:${prefix}:${localName}` :
localName;\n}\n\n// see http://www.w3.org/TR/html51/syntax.html#named-character-references\n// see
https://html.spec.whatwg.org/multipage/entities.json\n// This list is not exhaustive to keep the compiler footprint
low.\n// The `{ / `ƫ` syntax should be used when the named character reference does not\n//
exist.\n\nexport const NAMED_ENTITIES: {[k: string]: string} = {\n 'Acute': '\\u00C1',\n 'acute': '\\u00E1',\n
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\u03B6',\n 'zwj': \u200D',\n 'zwnj': \u200C',\n};\n\n// The pseudo-entity is denoting a space. see:\n//
https://github.com/dart-
lang/angular/blob/0bb611387d29d65b5af7f9d2515ab571fd3fbee4/_tests/test/compiler/preserve_whitespace_test.dart
\nexport const NGSP_UNICODE = \uE500';\n\nNAMED_ENTITIES['ngsp'] = NGSP_UNICODE;\n","/**\n *
@license\n * Copyright Google LLC All Rights Reserved.\n *\n * Use of this source code is governed by an MIT-
style license that can be\n * found in the LICENSE file at https://angular.io/license\n */\n\nimport
{TagContentType, TagDefinition} from './tags';\n\nexport class HtmlTagDefinition implements TagDefinition {\n
private closedByChildren: {[key: string]: boolean} = {};\n\n closedByParent: boolean = false;\n\n
implicitNamespacePrefix: string|null;\n\n contentType: TagContentType;\n\n isVoid: boolean;\n\n ignoreFirstLf:
boolean;\n\n canSelfClose: boolean = false;\n\n preventNamespaceInheritance: boolean;\n\n\n constructor({\n
closedByChildren,\n\n implicitNamespacePrefix,\n\n contentType = TagContentType.PARSABLE_DATA,\n\n
closedByParent = false,\n\n isVoid = false,\n\n ignoreFirstLf = false,\n\n preventNamespaceInheritance = false\n }:\n
{\n\n closedByChildren?: string[],\n\n closedByParent?: boolean,\n\n implicitNamespacePrefix?: string,\n\n
contentType?: TagContentType,\n\n isVoid?: boolean,\n\n ignoreFirstLf?: boolean,\n\n
preventNamespaceInheritance?: boolean\n } = {}) {\n\n if (closedByChildren && closedByChildren.length > 0) {\n
closedByChildren.forEach(tagName => this.closedByChildren[tagName] = true);\n\n } \n\n this.isVoid =
isVoid;\n\n this.closedByParent = closedByParent || isVoid;\n\n this.implicitNamespacePrefix =
implicitNamespacePrefix || null;\n\n this.contentType = contentType;\n\n this.ignoreFirstLf = ignoreFirstLf;\n\n
this.preventNamespaceInheritance = preventNamespaceInheritance;\n\n }\n\n isClosedByChild(name: string):
boolean {\n\n return this.isVoid || name.toLowerCase() in this.closedByChildren;\n\n }\n\n}\n\nlet
_DEFAULT_TAG_DEFINITION!: HtmlTagDefinition;\n\n// see
http://www.w3.org/TR/html51/syntax.html#optional-tags\n\n This implementation does not fully conform to the
HTML5 spec.\n\nlet TAG_DEFINITIONS!: {[key: string]: HtmlTagDefinition};\n\nexport function
getHtmlTagDefinition(tagName: string): HtmlTagDefinition {\n\n if (!TAG_DEFINITIONS) {\n\n
_DEFAULT_TAG_DEFINITION = new HtmlTagDefinition();\n\n TAG_DEFINITIONS = {\n\n 'base': new
HtmlTagDefinition({isVoid: true}),\n\n 'meta': new HtmlTagDefinition({isVoid: true}),\n\n 'area': new
HtmlTagDefinition({isVoid: true}),\n\n 'embed': new HtmlTagDefinition({isVoid: true}),\n\n 'link': new
HtmlTagDefinition({isVoid: true}),\n\n 'img': new HtmlTagDefinition({isVoid: true}),\n\n 'input': new
HtmlTagDefinition({isVoid: true}),\n\n 'param': new HtmlTagDefinition({isVoid: true}),\n\n 'hr': new
HtmlTagDefinition({isVoid: true}),\n\n 'br': new HtmlTagDefinition({isVoid: true}),\n\n 'source': new
HtmlTagDefinition({isVoid: true}),\n\n 'track': new HtmlTagDefinition({isVoid: true}),\n\n 'wbr': new
HtmlTagDefinition({isVoid: true}),\n\n 'p': new HtmlTagDefinition({\n\n closedByChildren: [\n\n 'address',
'article', 'aside', 'blockquote', 'div', 'dl', 'fieldset',\n\n 'footer', 'form', 'h1', 'h2', 'h3', 'h4', 'h5',\n\n
'h6', 'header', 'hgroup', 'hr', 'main', 'nav', 'ol',\n\n 'p', 'pre', 'section', 'table', 'ul'\n\n],\n\n
closedByParent: true\n\n }),\n\n 'thead': new HtmlTagDefinition({closedByChildren: ['tbody', 'tfoot']}),\n\n
'tbody': new HtmlTagDefinition({closedByChildren: ['tbody', 'tfoot', closedByParent: true]}),\n\n 'tfoot': new
HtmlTagDefinition({closedByChildren: ['tbody'], closedByParent: true}),\n\n 'tr': new
HtmlTagDefinition({closedByChildren: ['tr'], closedByParent: true}),\n\n 'td': new
HtmlTagDefinition({closedByChildren: ['td', 'th'], closedByParent: true}),\n\n 'th': new
HtmlTagDefinition({closedByChildren: ['td', 'th'], closedByParent: true}),\n\n 'col': new
HtmlTagDefinition({isVoid: true}),\n\n 'svg': new HtmlTagDefinition({implicitNamespacePrefix: 'svg'}),\n\n
'foreignObject': new HtmlTagDefinition({\n\n // Usually the implicit namespace here would be redundant since it
will be inherited from\n\n // the parent `svg`, but we have to do it for `foreignObject`, because the way the
parser\n\n // works is that the parent node of an end tag is its own start tag which means that\n\n // the
`preventNamespaceInheritance` on `foreignObject` would have it default to the\n\n // implicit namespace which is
`html`, unless specified otherwise.\n\n implicitNamespacePrefix: 'svg',\n\n // We want to prevent children of

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(match[SelectorRegexp.NOT_END]) {\n inNot = false;\n current = cssSelector;\n }\n if
(match[SelectorRegexp.SEPARATOR]) {\n if (inNot) {\n throw new Error('Multiple selectors in :not are
not supported');\n }\n _addResult(results, cssSelector);\n cssSelector = current = new CssSelector();\n
}\n _addResult(results, cssSelector);\n return results;\n}\n\n isElementSelector(): boolean {\n return
this.hasElementSelector() && this.classNames.length === 0 && this.attrs.length === 0 &&\n
this.notSelectors.length === 0;\n}\n\n hasElementSelector(): boolean {\n return !!this.element;\n}\n\n
setElement(element: string|null = null) {\n this.element = element;\n }\n\n /** Gets a template string for an
element that matches the selector. */\n getMatchingElementTemplate(): string {\n const tagName = this.element ||
'div';\n const classAttr = this.classNames.length > 0 ? ` class="${this.classNames.join(' ')}" ` : '';\n let attrs =
'';\n for (let i = 0; i < this.attrs.length; i += 2) {\n const attrName = this.attrs[i];\n const attrValue =
this.attrs[i + 1] !== " ? `=${this.attrs[i + 1]}" ` : '';\n attrs += ` ${attrName}${attrValue}`;\n }\n\n return
getHtmlTagDefinition(tagName).isVoid ? `<${tagName}${classAttr}${attrs}>` :
`<${tagName}${classAttr}${attrs}></${tagName}>`;\n }\n\n getAttrs(): string[] {\n const result: string[] = [];\n
if (this.classNames.length > 0) {\n result.push('class', this.classNames.join(' '));\n }\n return
result.concat(this.attrs);\n }\n\n addAttribute(name: string, value: string = "") {\n this.attrs.push(name, value &&
value.toLowerCase() || '');\n }\n\n addClassName(name: string) {\n
this.classNames.push(name.toLowerCase());\n }\n\n toString(): string {\n let res: string = this.element || '';\n
if (this.classNames) {\n this.classNames.forEach(klass => res += `.${klass}`);\n }\n if (this.attrs) {\n for (let
i = 0; i < this.attrs.length; i += 2) {\n const name = this.attrs[i];\n const value = this.attrs[i + 1];\n res +=
`[${name}${value ? '=' + value : ''}]`;\n }\n }\n this.notSelectors.forEach(notSelector => res +=
`.not(${notSelector})`);\n return res;\n }\n}\n\n/**\n * Reads a list of CssSelectors and allows to calculate which
ones\n * are contained in a given CssSelector.\n */\nexport class SelectorMatcher<T = any> {\n static
createNotMatcher(notSelectors: CssSelector[]): SelectorMatcher<null> {\n const notMatcher = new
SelectorMatcher<null>();\n notMatcher.addSelectable(notSelectors, null);\n return notMatcher;\n }\n\n private
_elementMap = new Map<string, SelectorContext<T>[]>();\n private _elementPartialMap = new Map<string,
SelectorMatcher<T>>();\n private _classMap = new Map<string, SelectorContext<T>[]>();\n private
_classPartialMap = new Map<string, SelectorMatcher<T>>();\n private _attrValueMap = new Map<string,
Map<string, SelectorContext<T>[]>>();\n private _attrValuePartialMap = new Map<string, Map<string,
SelectorMatcher<T>>>());\n private _listContexts: SelectorListContext[] = [];\n\n addSelectable(cssSelectors:
CssSelector[], callbackCtx: T) {\n let listContext: SelectorListContext = null!;\n if (cssSelectors.length > 1) {\n
listContext = new SelectorListContext(cssSelectors);\n this._listContexts.push(listContext);\n }\n for (let i
= 0; i < cssSelectors.length; i++) {\n this._addSelectable(cssSelectors[i], callbackCtx as T, listContext);\n }\n
}\n\n /**\n * Add an object that can be found later on by calling `match`.\n * @param cssSelector A css
selector\n * @param callbackCtx An opaque object that will be given to the callback of the `match` function\n
*/\n private _addSelectable(\n cssSelector: CssSelector, callbackCtx: T, listContext: SelectorListContext) {\n
let matcher: SelectorMatcher<T> = this;\n const element = cssSelector.element;\n const classNames =
cssSelector.classNames;\n const attrs = cssSelector.attrs;\n const selectable = new SelectorContext(cssSelector,
callbackCtx, listContext);\n\n if (element) {\n const isTerminal = attrs.length === 0 && classNames.length
=== 0;\n if (isTerminal) {\n this._addTerminal(matcher._elementMap, element, selectable);\n } else {\n
matcher = this._addPartial(matcher._elementPartialMap, element);\n }\n }\n\n if (classNames) {\n for
(let i = 0; i < classNames.length; i++) {\n const isTerminal = attrs.length === 0 && i === classNames.length -
1;\n const className = classNames[i];\n if (isTerminal) {\n this._addTerminal(matcher._classMap,
className, selectable);\n } else {\n matcher = this._addPartial(matcher._classPartialMap, className);\n
}\n }\n }\n\n if (attrs) {\n for (let i = 0; i < attrs.length; i += 2) {\n const isTerminal = i ===
attrs.length - 2;\n const name = attrs[i];\n const value = attrs[i + 1];\n if (isTerminal) {\n const
terminalMap = matcher._attrValueMap;\n let terminalValuesMap = terminalMap.get(name);\n if
(!terminalValuesMap) {\n terminalValuesMap = new Map<string, SelectorContext<T>[]>();\n
terminalMap.set(name, terminalValuesMap);\n }\n this._addTerminal(terminalValuesMap, value,

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selectable);\n } else {\n const partialMap = matcher._attrValuePartialMap;\n let partialValuesMap =\n partialMap.get(name);\n if (!partialValuesMap) {\n partialValuesMap = new Map<string,\n SelectorMatcher<T>>();\n partialMap.set(name, partialValuesMap);\n }\n matcher =\n this._addPartial(partialValuesMap, value);\n }\n}\n\nprivate _addTerminal(\n map:\n Map<string, SelectorContext<T>[]>, name: string, selectable: SelectorContext<T>) {\n let terminalList =\n map.get(name);\n if (!terminalList) {\n terminalList = [];\n map.set(name, terminalList);\n }\n terminalList.push(selectable);\n}\n\nprivate _addPartial(map: Map<string, SelectorMatcher<T>>, name: string):\n SelectorMatcher<T> {\n let matcher = map.get(name);\n if (!matcher) {\n matcher = new\n SelectorMatcher<T>();\n map.set(name, matcher);\n }\n return matcher;\n}\n\n/**\n * Find the objects\n * that have been added via `addSelectable`\n * * whose css selector is contained in the given css selector.\n * *\n * @param cssSelector A css selector\n * * @param matchedCallback This callback will be called with the object\n * handed into `addSelectable`\n * * @return boolean true if a match was found\n * */\nmatch(cssSelector:\n CssSelector, matchedCallback: ((c: CssSelector, a: T) => void)|null): boolean {\n let result = false;\n const\n element = cssSelector.element!;\n const classNames = cssSelector.classNames;\n const attrs =\n cssSelector.attrs;\n\n for (let i = 0; i < this._listContexts.length; i++) {\n this._listContexts[i].alreadyMatched =\n false;\n }\n\n result = this._matchTerminal(this._elementMap, element, cssSelector, matchedCallback) || result;\n\n result = this._matchPartial(this._elementPartialMap, element, cssSelector, matchedCallback) ||\n result;\n\n if (classNames) {\n for (let i = 0; i < classNames.length; i++) {\n const className = classNames[i];\n result =\n this._matchTerminal(this._classMap, className, cssSelector, matchedCallback) || result;\n result =\n this._matchPartial(this._classPartialMap, className, cssSelector, matchedCallback) ||\n result;\n }\n }\n\n if (attrs) {\n for (let i = 0; i < attrs.length; i += 2) {\n const name = attrs[i];\n const value = attrs[i + 1];\n const terminalValuesMap = this._attrValueMap.get(name)!;\n if (value) {\n result =\n this._matchTerminal(terminalValuesMap, value, cssSelector, matchedCallback) || result;\n }\n result =\n this._matchTerminal(terminalValuesMap, value, cssSelector, matchedCallback) || result;\n }\n }\n\n const partialValuesMap = this._attrValuePartialMap.get(name)!;\n if (value) {\n result =\n this._matchPartial(partialValuesMap, value, cssSelector, matchedCallback) || result;\n }\n\n result =\n this._matchPartial(partialValuesMap, value, cssSelector, matchedCallback) || result;\n}\n\n/** @internal */\n_matchTerminal(\n map: Map<string, SelectorContext<T>[]>, name: string,\n cssSelector: CssSelector,\n matchedCallback: ((c: CssSelector, a: any) => void)|null): boolean {\n if (!map ||\n typeof name !== 'string') {\n return false;\n }\n\n let selectables: SelectorContext<T>[] = map.get(name) ||\n [];\n const starSelectables: SelectorContext<T>[] = map.get('*')!;\n if (starSelectables) {\n selectables =\n selectables.concat(starSelectables);\n }\n\n if (selectables.length === 0) {\n return false;\n }\n\n let selectable:\n SelectorContext<T>;\n let result = false;\n for (let i = 0; i < selectables.length; i++) {\n selectable =\n selectables[i];\n result = selectable.finalize(cssSelector, matchedCallback) || result;\n }\n\n return result;\n}\n\n/** @internal */\n_matchPartial(\n map: Map<string, SelectorMatcher<T>>, name: string, cssSelector:\n CssSelector,\n matchedCallback: ((c: CssSelector, a: any) => void)|null): boolean {\n if (!map ||\n typeof name !== 'string') {\n return false;\n }\n\n const nestedSelector = map.get(name);\n if (!nestedSelector) {\n return false;\n }\n\n // TODO(perf): get rid of recursion and measure again\n // TODO(perf): don't pass the\n whole selector into the recursion,\n // but only the not processed parts\n return nestedSelector.match(cssSelector,\n matchedCallback);\n}\n\nexport class SelectorListContext {\n alreadyMatched: boolean = false;\n\n constructor(public selectors: CssSelector[]) {}\n\n // Store context to pass back selector and context when a\n selector is matched\n export class SelectorContext<T = any> {\n notSelectors: CssSelector[];\n\n constructor(\n public selector: CssSelector, public cbContext: T, public listContext: SelectorListContext) {\n this.notSelectors =\n selector.notSelectors;\n }\n\n finalize(cssSelector: CssSelector, callback: ((c: CssSelector, a: T) => void)|null):\n boolean {\n let result = true;\n if (this.notSelectors.length > 0 && (!this.listContext ||\n !this.listContext.alreadyMatched)) {\n const notMatcher =\n SelectorMatcher.createNotMatcher(this.notSelectors);\n result = !notMatcher.match(cssSelector, null);\n }\n\n if (result && callback && (!this.listContext || !this.listContext.alreadyMatched)) {\n if (this.listContext) {\n
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this.listContext.alreadyMatched = true;\n }\n callback(this.selector, this.cbContext);\n }\n return result;\n}\n}\n", "/*\n * @license\n * Copyright Google LLC All Rights Reserved.\n * Use of this source code is governed by an MIT-style license that can be found in the LICENSE file at https://angular.io/license\n *\n// Attention:\n// This file duplicates types and values from @angular/core\n// so that we are able to make @angular/compiler independent of @angular/core.\n// This is important to prevent a build cycle, as @angular/core needs to\n// be compiled with the compiler.\n\nimport {CssSelector} from './selector';\n\nexport interface Inject {\n token: any;\n}\n\nexport const createInject = makeMetadataFactory<Inject>('Inject', (token: any) => ({token}));\n\nexport const createInjectionToken = makeMetadataFactory<object>(\n 'InjectionToken', (desc: string) => ({_desc: desc, prov: undefined}));\n\nexport interface Attribute {\n attributeName: string;\n}\n\nexport const createAttribute =\n makeMetadataFactory<Attribute>('Attribute', (attributeName: string) => ({attributeName}));\n\nexport interface Query {\n descendants: boolean;\n first: boolean;\n read: any;\n isViewQuery: boolean;\n selector: any;\n static?: boolean;\n}\n\nexport const createContentChildren =\n makeMetadataFactory<Query>(\n 'ContentChildren',\n (selector?: any, data: any = {}) =>\n ({selector, first: false, isViewQuery: false, descendants: false, ...data});\n);\n\nexport const createContentChild =\n makeMetadataFactory<Query>(\n 'ContentChild',\n (selector?: any, data: any = {}) =>\n ({selector, first: true, isViewQuery: false, descendants: true, ...data});\n);\n\nexport const createViewChildren =\n makeMetadataFactory<Query>(\n 'ViewChildren',\n (selector?: any, data: any = {}) =>\n ({selector, first: false, isViewQuery: true, descendants: true, ...data});\n);\n\nexport const createViewChild =\n makeMetadataFactory<Query>(\n 'ViewChild',\n (selector: any, data: any) =>\n ({selector, first: true, isViewQuery: true, descendants: true, ...data});\n);\n\nexport interface Directive {\n selector?: string;\n inputs?: string[];\n outputs?: string[];\n host?: {[key: string]: string};\n providers?: Provider[];\n exportAs?: string;\n queries?: {[key: string]: any};\n guards?: {[key: string]: any};\n}\n\nexport const createDirective =\n makeMetadataFactory<Directive>('Directive', (dir: Directive = {}) => dir);\n\nexport interface Component extends Directive {\n changeDetection?: ChangeDetectionStrategy;\n viewProviders?: Provider[];\n moduleId?: string;\n templateUrl?: string;\n template?: string;\n styleUrls?: string[];\n styles?: string[];\n animations?: any[];\n encapsulation?: ViewEncapsulation;\n interpolation?: [string, string];\n entryComponents?: Array<Type|any[]>;\n preserveWhitespaces?: boolean;\n}\n\nexport enum ViewEncapsulation {\n Emulated = 0, // Historically the 1 value was for `Native` encapsulation which has been removed as of v11.\n None = 2, \n ShadowDom = 3\n}\n\nexport enum ChangeDetectionStrategy {\n OnPush = 0, \n Default = 1\n}\n\nexport const createComponent =\n makeMetadataFactory<Component>(\n 'Component', (c: Component = {}) => ({changeDetection: ChangeDetectionStrategy.Default, ...c});\n);\n\nexport interface Pipe {\n name: string;\n pure?: boolean;\n}\n\nexport const createPipe =\n makeMetadataFactory<Pipe>('Pipe', (p: Pipe) => ({pure: true, ...p});\n);\n\nexport interface Input {\n bindingPropertyName?: string;\n}\n\nexport const createInput =\n makeMetadataFactory<Input>('Input', (bindingPropertyName?: string) => ({bindingPropertyName});\n);\n\nexport interface Output {\n bindingPropertyName?: string;\n}\n\nexport const createOutput =\n makeMetadataFactory<Output>(\n 'Output', (bindingPropertyName?: string) => ({bindingPropertyName});\n);\n\nexport interface HostBinding {\n hostPropertyName?: string;\n}\n\nexport const createHostBinding =\n makeMetadataFactory<HostBinding>(\n 'HostBinding', (hostPropertyName?: string) => ({hostPropertyName});\n);\n\nexport interface HostListener {\n eventName?: string;\n args?: string[];\n}\n\nexport const createHostListener =\n makeMetadataFactory<HostListener>(\n 'HostListener', (eventName?: string, args?: string[]) => ({eventName, args});\n);\n\nexport interface NgModule {\n providers?: Provider[];\n declarations?: Array<Type|any[]>;\n imports?: Array<Type|ModuleWithProviders|any[]>;\n exports?: Array<Type|any[]>;\n entryComponents?: Array<Type|any[]>;\n bootstrap?: Array<Type|any[]>;\n schemas?: Array<SchemaMetadata|any[]>;\n id?: string;\n}\n\nexport const createNgModule =\n makeMetadataFactory<NgModule>('NgModule', (ngModule: NgModule) => ngModule);\n\nexport interface ModuleWithProviders {\n ngModule: Type;\n providers?: Provider[];\n}\n\nexport interface Injectable {\n providedIn?: Type|root|any;\n useClass?: Type|any;\n useExisting?: Type|any;\n useValue?: any;\n useFactory?: Type|any;\n deps?: Array<Type|any[]>;\n}\n\nexport const createInjectable =\n makeMetadataFactory('Injectable', (injectable: Injectable = {}) => injectable);\n\nexport

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interface SchemaMetadata {\n name: string;\n}\n\nexport const CUSTOM_ELEMENTS_SCHEMA:
SchemaMetadata = {\n name: 'custom-elements'\n};\n\nexport const NO_ERRORS_SCHEMA: SchemaMetadata =
{\n name: 'no-errors-schema'\n};\n\nexport const createOptional = makeMetadataFactory('Optional');\nexport const
createSelf = makeMetadataFactory('Self');\nexport const createSkipSelf = makeMetadataFactory('SkipSelf');\nexport
const createHost = makeMetadataFactory('Host');\n\nexport interface Type extends Function {\n new(...args: any[]):
any;\n}\n\nexport const Type = Function;\n\nexport enum SecurityContext {\n NONE = 0,\n HTML = 1,\n STYLE
= 2,\n SCRIPT = 3,\n URL = 4,\n RESOURCE_URL = 5,\n}\n\nexport type Provider = any;\n\nexport const enum
NodeFlags {\n None = 0,\n TypeElement = 1 << 0,\n TypeText = 1 << 1,\n ProjectedTemplate = 1 << 2,\n
CatRenderNode = TypeElement | TypeText,\n TypeNgContent = 1 << 3,\n TypePipe = 1 << 4,\n TypePureArray =
1 << 5,\n TypePureObject = 1 << 6,\n TypePurePipe = 1 << 7,\n CatPureExpression = TypePureArray |
TypePureObject | TypePurePipe,\n TypeValueProvider = 1 << 8,\n TypeClassProvider = 1 << 9,\n
TypeFactoryProvider = 1 << 10,\n TypeUseExistingProvider = 1 << 11,\n LazyProvider = 1 << 12,\n
PrivateProvider = 1 << 13,\n TypeDirective = 1 << 14,\n Component = 1 << 15,\n CatProviderNoDirective =\n
TypeValueProvider | TypeClassProvider | TypeFactoryProvider | TypeUseExistingProvider,\n CatProvider =
CatProviderNoDirective | TypeDirective,\n OnInit = 1 << 16,\n OnDestroy = 1 << 17,\n DoCheck = 1 << 18,\n
OnChange = 1 << 19,\n AfterContentInit = 1 << 20,\n AfterContentChecked = 1 << 21,\n AfterViewInit = 1 <<
22,\n AfterViewChecked = 1 << 23,\n EmbeddedViews = 1 << 24,\n ComponentView = 1 << 25,\n
TypeContentQuery = 1 << 26,\n TypeViewQuery = 1 << 27,\n StaticQuery = 1 << 28,\n DynamicQuery = 1 <<
29,\n TypeModuleProvider = 1 << 30,\n CatQuery = TypeContentQuery | TypeViewQuery,\n\n // mutually
exclusive values...\n Types = CatRenderNode | TypeNgContent | TypePipe | CatPureExpression | CatProvider |
CatQuery\n}\n\nexport const enum DepFlags {\n None = 0,\n SkipSelf = 1 << 0,\n Optional = 1 << 1,\n Self = 1
<< 2,\n Value = 1 << 3,\n}\n\n/**\n * Injection flags for DI.\n */\n\nexport const enum InjectFlags {\n Default =
0,\n\n /**\n * Specifies that an injector should retrieve a dependency from any injector until reaching the\n * host
element of the current component. (Only used with Element Injector)\n */\n\n Host = 1 << 0,\n\n /** Don't descend
into ancestors of the node requesting injection.\n */\n\n Self = 1 << 1,\n\n /** Skip the node that is requesting injection.\n
*/\n\n SkipSelf = 1 << 2,\n\n /** Inject `defaultValue` instead if token not found.\n */\n\n Optional = 1 << 3,\n}\n\nexport
const enum ArgumentType {\n Inline = 0,\n Dynamic = 1\n}\n\nexport const enum BindingFlags {\n
TypeElementAttribute = 1 << 0,\n TypeElementClass = 1 << 1,\n TypeElementStyle = 1 << 2,\n TypeProperty = 1
<< 3,\n SyntheticProperty = 1 << 4,\n SyntheticHostProperty = 1 << 5,\n CatSyntheticProperty =
SyntheticProperty | SyntheticHostProperty,\n\n // mutually exclusive values...\n Types = TypeElementAttribute |
TypeElementClass | TypeElementStyle | TypeProperty\n}\n\nexport const enum QueryBindingType {\n First = 0,\n
All = 1\n}\n\nexport const enum QueryValueType {\n ElementRef = 0,\n RenderElement = 1,\n TemplateRef =
2,\n ViewContainerRef = 3,\n Provider = 4\n}\n\nexport const enum ViewFlags {\n None = 0,\n OnPush = 1 <<
1,\n}\n\nexport enum MissingTranslationStrategy {\n Error = 0,\n Warning = 1,\n Ignore = 2,\n}\n\nexport
interface MetadataFactory<T> {\n (...args: any[]): T;\n\n isTypeOf(obj: any): obj is T;\n\n ngMetadataName:
string;\n}\n\nfunction makeMetadataFactory<T>(name: string, props?: (...args: any[]) => T): MetadataFactory<T>
{\n // This must be declared as a function, not a fat arrow, so that ES2015 devmode produces code\n // that works
with the static_reflector.ts in the ViewEngine compiler.\n // In particular, `_registerDecoratorOrConstructor`
assumes that the value returned here can be\n // new'ed.\n\n function factory(...args: any[]) {\n const values = props
? props(...args) : {};\n return {\n ngMetadataName: name,\n ...values,\n };\n }\n\n (factory as
any).isTypeOf = (obj: any) => obj && obj.ngMetadataName === name;\n (factory as any).ngMetadataName =
name;\n return factory as any;\n}\n\nexport interface Route {\n children?: Route[];\n loadChildren?:
string|Type|any;\n}\n\n/**\n * Flags used to generate R3-style CSS Selectors. They are pasted from\n *
core/src/render3/projection.ts because they cannot be referenced directly.\n */\n\nexport const enum SelectorFlags {\n
/** Indicates this is the beginning of a new negative selector\n */\n\n NOT = 0b0001,\n\n /** Mode for matching
attributes\n */\n\n ATTRIBUTE = 0b0010,\n\n /** Mode for matching tag names\n */\n\n ELEMENT = 0b0100,\n\n /**
Mode for matching class names\n */\n\n CLASS = 0b1000,\n}\n\n// These are a copy the CSS types from
core/src/render3/interfaces/projection.ts\n// They are duplicated here as they cannot be directly referenced from

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core.\nexport type R3CssSelector = (string|SelectorFlags)[];\nexport type R3CssSelectorList =
R3CssSelector[];\n\nfunction parserSelectorToSimpleSelector(selector: CssSelector): R3CssSelector {\n const
classes = selector.classNames && selector.classNames.length ?\n [SelectorFlags.CLASS, ...selector.classNames]
:\n [];\n const elementName = selector.element && selector.element !== '*' ? selector.element : '';\n return
[elementName, ...selector.attrs, ...classes];\n}\n\nfunction parserSelectorToNegativeSelector(selector: CssSelector):
R3CssSelector {\n const classes = selector.classNames && selector.classNames.length ?\n [SelectorFlags.CLASS, ...selector.classNames] :\n [];\n\n if (selector.element) {\n return [\n SelectorFlags.NOT | SelectorFlags.ELEMENT, selector.element, ...selector.attrs, ...classes\n];\n } else if
(selector.attrs.length) {\n return [SelectorFlags.NOT | SelectorFlags.ATTRIBUTE, ...selector.attrs, ...classes];\n }
else {\n return selector.classNames && selector.classNames.length ?\n [SelectorFlags.NOT |
SelectorFlags.CLASS, ...selector.classNames] :\n [];\n }\n}\n\nfunction parserSelectorToR3Selector(selector:
CssSelector): R3CssSelector {\n const positive = parserSelectorToSimpleSelector(selector);\n const negative:
R3CssSelectorList = selector.notSelectors && selector.notSelectors.length ?\n selector.notSelectors.map(notSelector => parserSelectorToNegativeSelector(notSelector)) :\n [];\n\n return
positive.concat(...negative);\n}\n\nexport function parseSelectorToR3Selector(selector: string|null):
R3CssSelectorList {\n return selector ? CssSelector.parse(selector).map(parserSelectorToR3Selector) : [];\n}\n\n//
Pasted from render3/interfaces/definition since it cannot be referenced directly\n/**\n * Flags passed into template
functions to determine which blocks (i.e. creation, update)\n * should be executed.\n * Typically, a template runs
both the creation block and the update block on initialization and\n * subsequent runs only execute the update block.
However, dynamically created views require that\n * the creation block be executed separately from the update
block (for backwards compat).\n */\nexport const enum RenderFlags {\n /* Whether to run the creation block (e.g.
create elements and directives) */\n Create = 0b01,\n /* Whether to run the update block (e.g. refresh bindings)
*/\n Update = 0b10\n}\n\n// Pasted from render3/interfaces/node.ts\n/**\n * A set of marker values to be used in the
attributes arrays. These markers indicate that some\n * items are not regular attributes and the processing should be
adapted accordingly.\n */\nexport const enum AttributeMarker {\n /**\n * Marker indicates that the following 3
values in the attributes array are:\n * namespaceUri, attributeName, attributeValue\n * in that order.\n */\n NamespaceURI = 0,\n /**\n * Signals class declaration.\n * Each value following `Classes` designates a
class name to include on the element.\n * ## Example:\n * Given:\n * <div class="foo bar
baz">...</div>\n * the generated code is:\n * var _c1 = [AttributeMarker.Classes, 'foo', 'bar',
'baz'];\n * Classes = 1,\n * Signals style declaration.\n * Each pair of values following
`Styles` designates a style name and value to include on the\n * element.\n * ## Example:\n * Given:\n *
<div style="width:100px; height:200px; color:red">...</div>\n * the generated code is:\n *
var _c1 = [AttributeMarker.Styles, 'width', '100px', 'height', '200px', 'color', 'red'];\n * Styles =
2,\n * Signals that the following attribute names were extracted from input or output bindings.\n *
For example, given the following HTML:\n * <div moo="car" [foo]="exp" (bar)="doSth()">\n *
the generated code is:\n * var _c1 = ['moo', 'car', AttributeMarker.Bindings, 'foo',
'bar'];\n * Bindings = 3,\n * Signals that the following attribute names were hoisted from an
inline-template declaration.\n * For example, given the following HTML:\n * <div
*ngFor="let value of values; trackBy:trackBy" dirA [dirB]="value">\n * the generated code for the
`template()` instruction would include:\n * ['dirA', '', AttributeMarker.Bindings, 'dirB',
AttributeMarker.Template, 'ngFor', 'ngForOf',\n * 'ngForTrackBy', 'let-value']\n * while the
generated code for the `element()` instruction inside the template function would\n * include:\n *
['dirA', '', AttributeMarker.Bindings, 'dirB']\n * Template = 4,\n * Signals that the following
attribute is `ngProjectAs` and its value is a parsed `CssSelector`.\n * For example, given the following
HTML:\n * <h1 attr="value" ngProjectAs="[title]">\n * the generated code for the
`element()` instruction would include:\n * ['attr', 'value', AttributeMarker.ProjectAs, ['', 'title', '']]\n *
ProjectAs = 5,\n * Signals that the following attribute will be translated by runtime i18n\n *
For example, given the following HTML:\n * <div moo="car" foo="value" i18n-foo

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[bar]="binding" i18n-bar>\n * ```\n *\n * the generated code is:\n *\n * ```\n * var _c1 = ['moo', 'car',
AttributeMarker.I18n, 'foo', 'bar'];\n */\n I18n = 6,\n}\n",/**\n * @license\n * Copyright Google LLC All Rights
Reserved.\n *\n * Use of this source code is governed by an MIT-style license that can be\n * found in the
LICENSE file at https://angular.io/license\n */\n\nimport {ParseSourceSpan} from './parse_util';\nimport
{I18nMeta} from './render3/view/i18n/meta';\n\n/// Types\nexport enum TypeModifier {\n Const\n}\n\nexport
abstract class Type {\n constructor(public modifiers: TypeModifier[] = []) {\n abstract visitType(visitor:
TypeVisitor, context: any): any;\n\n hasModifier(modifier: TypeModifier): boolean {\n return
this.modifiers.indexOf(modifier) !== -1;\n }\n}\n\nexport enum BuiltinTypeName {\n Dynamic,\n Bool,\n
String,\n Int,\n Number,\n Function,\n Inferred,\n None,\n}\n\nexport class BuiltinType extends Type {\n
constructor(public name: BuiltinTypeName, modifiers?: TypeModifier[]) {\n super(modifiers);\n }\n
visitType(visitor: TypeVisitor, context: any): any {\n return visitor.visitBuiltinType(this, context);\n
}\n}\n\nexport class ExpressionType extends Type {\n constructor(\n public value: Expression, modifiers?:
TypeModifier[], public typeParams: Type[]|null = null) {\n super(modifiers);\n }\n visitType(visitor:
TypeVisitor, context: any): any {\n return visitor.visitExpressionType(this, context);\n }\n}\n\nexport
class ArrayType extends Type {\n constructor(public of: Type, modifiers?: TypeModifier[]) {\n super(modifiers);\n
}\n visitType(visitor: TypeVisitor, context: any): any {\n return visitor.visitArrayType(this, context);\n
}\n}\n\nexport class MapType extends Type {\n public valueType: Type|null;\n constructor(valueType:
Type|null|undefined, modifiers?: TypeModifier[]) {\n super(modifiers);\n this.valueType = valueType || null;\n
}\n visitType(visitor: TypeVisitor, context: any): any {\n return visitor.visitMapType(this, context);\n
}\n}\n\nexport const DYNAMIC_TYPE = new BuiltinType(BuiltinTypeName.Dynamic);\nexport const
INFERRED_TYPE = new BuiltinType(BuiltinTypeName.Inferred);\nexport const BOOL_TYPE = new
BuiltinType(BuiltinTypeName.Bool);\nexport const INT_TYPE = new BuiltinType(BuiltinTypeName.Int);\nexport
const NUMBER_TYPE = new BuiltinType(BuiltinTypeName.Number);\nexport const STRING_TYPE = new
BuiltinType(BuiltinTypeName.String);\nexport const FUNCTION_TYPE = new
BuiltinType(BuiltinTypeName.Function);\nexport const NONE_TYPE = new
BuiltinType(BuiltinTypeName.None);\n\nexport interface TypeVisitor {\n visitBuiltinType(type: BuiltinType,
context: any): any;\n visitExpressionType(type: ExpressionType, context: any): any;\n visitArrayType(type:
ArrayType, context: any): any;\n visitMapType(type: MapType, context: any): any;\n}\n\n////
Expressions\n\nexport enum UnaryOperator {\n Minus,\n Plus,\n}\n\nexport enum BinaryOperator {\n Equals,\n
NotEquals,\n Identical,\n NotIdentical,\n Minus,\n Plus,\n Divide,\n Multiply,\n Modulo,\n And,\n Or,\n
BitwiseAnd,\n Lower,\n LowerEquals,\n Bigger,\n BiggerEquals\n}\n\nexport function nullSafeIsEquivalent<T
extends {isEquivalent(other: T): boolean}>(\n base: T|null, other: T|null) {\n if (base == null || other == null) {\n
return base == other;\n }\n return base.isEquivalent(other);\n}\n\nexport function areAllEquivalent<T extends
{isEquivalent(other: T): boolean}>(\n base: T[], other: T[]) {\n const len = base.length;\n if (len !== other.length)
{\n return false;\n }\n for (let i = 0; i < len; i++) {\n if (!base[i].isEquivalent(other[i])) {\n return false;\n
}\n }\n return true;\n}\n\nexport abstract class Expression {\n public type: Type|null;\n public sourceSpan:
ParseSourceSpan|null;\n\n constructor(type: Type|null|undefined, sourceSpan?: ParseSourceSpan|null) {\n
this.type = type || null;\n this.sourceSpan = sourceSpan || null;\n }\n\n abstract visitExpression(visitor:
ExpressionVisitor, context: any): any;\n\n /**\n * Calculates whether this expression produces the same value as
the given expression.\n * Note: We don't check Types nor ParseSourceSpans nor function arguments.\n */\n
abstract isEquivalent(e: Expression): boolean;\n\n /**\n * Return true if the expression is constant.\n */\n
abstract isConstant(): boolean;\n\n prop(name: string, sourceSpan?: ParseSourceSpan|null): ReadPropExpr {\n
return new ReadPropExpr(this, name, null, sourceSpan);\n }\n\n key(index: Expression, type?: Type|null,
sourceSpan?: ParseSourceSpan|null): ReadKeyExpr {\n return new ReadKeyExpr(this, index, type, sourceSpan);\n
}\n\n callMethod(name: string|BuiltinMethod, params: Expression[], sourceSpan?: ParseSourceSpan|null):\n
InvokeMethodExpr {\n return new InvokeMethodExpr(this, name, params, null, sourceSpan);\n }\n\n callFn(params:
Expression[], sourceSpan?: ParseSourceSpan|null, pure?: boolean):\n InvokeFunctionExpr {\n return new
InvokeFunctionExpr(this, params, null, sourceSpan, pure);\n }\n\n instantiate(params: Expression[],

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type?: Type|null, sourceSpan?: ParseSourceSpan|null):\n InstantiateExpr {\n return new InstantiateExpr(this,
params, type, sourceSpan);\n }\n\n conditional(\n trueCase: Expression, falseCase: Expression|null = null,\nsourceSpan?: ParseSourceSpan|null): ConditionalExpr {\n return new ConditionalExpr(this, trueCase, falseCase,
null, sourceSpan);\n }\n\n equals(rhs: Expression, sourceSpan?: ParseSourceSpan|null): BinaryOperatorExpr {\n
return new BinaryOperatorExpr(BinaryOperator.Equals, this, rhs, null, sourceSpan);\n }\n\n notEquals(rhs:
Expression, sourceSpan?: ParseSourceSpan|null): BinaryOperatorExpr {\n return new
BinaryOperatorExpr(BinaryOperator.NotEquals, this, rhs, null, sourceSpan);\n }\n\n identical(rhs: Expression,
sourceSpan?: ParseSourceSpan|null): BinaryOperatorExpr {\n return new
BinaryOperatorExpr(BinaryOperator.Identical, this, rhs, null, sourceSpan);\n }\n\n notIdentical(rhs: Expression,
sourceSpan?: ParseSourceSpan|null): BinaryOperatorExpr {\n return new
BinaryOperatorExpr(BinaryOperator.NotIdentical, this, rhs, null, sourceSpan);\n }\n\n minus(rhs: Expression,
sourceSpan?: ParseSourceSpan|null): BinaryOperatorExpr {\n return new
BinaryOperatorExpr(BinaryOperator.Minus, this, rhs, null, sourceSpan);\n }\n\n plus(rhs: Expression, sourceSpan?:
ParseSourceSpan|null): BinaryOperatorExpr {\n return new BinaryOperatorExpr(BinaryOperator.Plus, this, rhs,
null, sourceSpan);\n }\n\n divide(rhs: Expression, sourceSpan?: ParseSourceSpan|null): BinaryOperatorExpr {\n
return new BinaryOperatorExpr(BinaryOperator.Divide, this, rhs, null, sourceSpan);\n }\n\n multiply(rhs:
Expression, sourceSpan?: ParseSourceSpan|null): BinaryOperatorExpr {\n return new
BinaryOperatorExpr(BinaryOperator.Multiply, this, rhs, null, sourceSpan);\n }\n\n modulo(rhs: Expression,
sourceSpan?: ParseSourceSpan|null): BinaryOperatorExpr {\n return new
BinaryOperatorExpr(BinaryOperator.Modulo, this, rhs, null, sourceSpan);\n }\n\n and(rhs: Expression, sourceSpan?:
ParseSourceSpan|null): BinaryOperatorExpr {\n return new BinaryOperatorExpr(BinaryOperator.And, this, rhs,
null, sourceSpan);\n }\n\n bitwiseAnd(rhs: Expression, sourceSpan?: ParseSourceSpan|null, parens: boolean =
true):\n BinaryOperatorExpr {\n return new BinaryOperatorExpr(BinaryOperator.BitwiseAnd, this, rhs, null,
sourceSpan, parens);\n }\n\n or(rhs: Expression, sourceSpan?: ParseSourceSpan|null): BinaryOperatorExpr {\n
return new BinaryOperatorExpr(BinaryOperator.Or, this, rhs, null, sourceSpan);\n }\n\n lower(rhs: Expression,
sourceSpan?: ParseSourceSpan|null): BinaryOperatorExpr {\n return new
BinaryOperatorExpr(BinaryOperator.Lower, this, rhs, null, sourceSpan);\n }\n\n lowerEquals(rhs: Expression,
sourceSpan?: ParseSourceSpan|null): BinaryOperatorExpr {\n return new
BinaryOperatorExpr(BinaryOperator.LowerEquals, this, rhs, null, sourceSpan);\n }\n\n bigger(rhs: Expression,
sourceSpan?: ParseSourceSpan|null): BinaryOperatorExpr {\n return new
BinaryOperatorExpr(BinaryOperator.Bigger, this, rhs, null, sourceSpan);\n }\n\n biggerEquals(rhs: Expression,
sourceSpan?: ParseSourceSpan|null): BinaryOperatorExpr {\n return new
BinaryOperatorExpr(BinaryOperator.BiggerEquals, this, rhs, null, sourceSpan);\n }\n\n isBlank(sourceSpan?:
ParseSourceSpan|null): Expression {\n // Note: We use equals by purpose here to compare to null and undefined in
JS.\n // We use the typed null to allow strictNullChecks to narrow types.\n return
this.equals(TYPED_NULL_EXPR, sourceSpan);\n }\n\n cast(type: Type, sourceSpan?: ParseSourceSpan|null):
Expression {\n return new CastExpr(this, type, sourceSpan);\n }\n\n toStmt(): Statement {\n return new
ExpressionStatement(this, null);\n }\n\n\nexport enum BuiltinVar {\n This,\n Super,\n CatchError,\n CatchStack\n}\n\nexport class ReadVarExpr extends Expression {\n public name: string|null;\n public builtin:
BuiltinVar|null;\n\n constructor(name: string|BuiltinVar, type?: Type|null, sourceSpan?: ParseSourceSpan|null) {\n
super(type, sourceSpan);\n if (typeof name === 'string') {\n this.name = name;\n this.builtin = null;\n }
else {\n this.name = null;\n this.builtin = name;\n }\n }\n\n isEquivalent(e: Expression): boolean {\n
return e instanceof ReadVarExpr && this.name === e.name && this.builtin === e.builtin;\n }\n\n isConstant() {\n
return false;\n }\n\n visitExpression(visitor: ExpressionVisitor, context: any): any {\n return
visitor.visitReadVarExpr(this, context);\n }\n\n set(value: Expression): WriteVarExpr {\n if (!this.name) {\n
throw new Error(`Built in variable ${this.builtin} can not be assigned to.`);\n }\n return new
WriteVarExpr(this.name, value, null, this.sourceSpan);\n }\n\n\nexport class TypeofExpr extends Expression {\n
constructor(public expr: Expression, type?: Type|null, sourceSpan?: ParseSourceSpan|null) {\n super(type,

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sourceSpan);\n }\n\n visitExpression(visitor: ExpressionVisitor, context: any) {\n return
visitor.visitTypeofExpr(this, context);\n }\n\n isEquivalent(e: Expression): boolean {\n return e instanceof
TypeofExpr && e.expr.isEquivalent(this.expr);\n }\n\n isConstant(): boolean {\n return this.expr.isConstant();\n
}\n}\n\nexport class WrappedNodeExpr<T> extends Expression {\n constructor(public node: T, type?: Type|null,
sourceSpan?: ParseSourceSpan|null) {\n super(type, sourceSpan);\n }\n\n isEquivalent(e: Expression): boolean
{\n return e instanceof WrappedNodeExpr && this.node === e.node;\n }\n\n isConstant() {\n return false;\n
}\n\n visitExpression(visitor: ExpressionVisitor, context: any): any {\n return visitor.visitWrappedNodeExpr(this,
context);\n }\n}\n\nexport class WriteVarExpr extends Expression {\n public value: Expression;\n constructor(\n
public name: string, value: Expression, type?: Type|null, sourceSpan?: ParseSourceSpan|null) {\n super(type ||
value.type, sourceSpan);\n this.value = value;\n }\n\n isEquivalent(e: Expression): boolean {\n return e
instanceof WriteVarExpr && this.name === e.name && this.value.isEquivalent(e.value);\n }\n\n isConstant() {\n
return false;\n }\n\n visitExpression(visitor: ExpressionVisitor, context: any): any {\n return
visitor.visitWriteVarExpr(this, context);\n }\n\n toDeclStmnt(type?: Type|null, modifiers?: StmtModifier[]):
DeclareVarStmnt {\n return new DeclareVarStmnt(this.name, this.value, type, modifiers, this.sourceSpan);\n }\n\n
toConstDecl(): DeclareVarStmnt {\n return this.toDeclStmnt(INFERRED_TYPE, [StmtModifier.Final]);\n
}\n}\n\nexport class WriteKeyExpr extends Expression {\n public value: Expression;\n constructor(\n public
receiver: Expression, public index: Expression, value: Expression, type?: Type|null,\n sourceSpan?:
ParseSourceSpan|null) {\n super(type || value.type, sourceSpan);\n this.value = value;\n }\n\n isEquivalent(e:
Expression): boolean {\n return e instanceof WriteKeyExpr && this.receiver.isEquivalent(e.receiver) &&\n
this.index.isEquivalent(e.index) && this.value.isEquivalent(e.value);\n }\n\n isConstant() {\n return false;\n
}\n\n visitExpression(visitor: ExpressionVisitor, context: any): any {\n return visitor.visitWriteKeyExpr(this,
context);\n }\n}\n\nexport class WritePropExpr extends Expression {\n public value: Expression;\n
constructor(\n public receiver: Expression, public name: string, value: Expression, type?: Type|null,\n sourceSpan?:
ParseSourceSpan|null) {\n super(type || value.type, sourceSpan);\n this.value = value;\n }\n\n
isEquivalent(e: Expression): boolean {\n return e instanceof WritePropExpr &&
this.receiver.isEquivalent(e.receiver) &&\n this.name === e.name && this.value.isEquivalent(e.value);\n }\n}\n\n
isConstant() {\n return false;\n }\n\n visitExpression(visitor: ExpressionVisitor, context: any): any {\n return
visitor.visitWritePropExpr(this, context);\n }\n}\n\nexport enum BuiltinMethod {\n ConcatArray,\n SubscribeObservable,\n Bind\n}\n\nexport class InvokeMethodExpr extends Expression {\n public name:
string|null;\n public builtin: BuiltinMethod|null;\n constructor(\n public receiver: Expression, method:
string|BuiltinMethod, public args: Expression[],\n type?: Type|null, sourceSpan?: ParseSourceSpan|null) {\n
super(type, sourceSpan);\n if (typeof method === 'string') {\n this.name = method;\n this.builtin = null;\n
} else {\n this.name = null;\n this.builtin = <BuiltinMethod>method;\n }\n }\n\n isEquivalent(e:
Expression): boolean {\n return e instanceof InvokeMethodExpr && this.receiver.isEquivalent(e.receiver) &&\n
this.name === e.name && this.builtin === e.builtin && areAllEquivalent(this.args, e.args);\n }\n\n isConstant()
{\n return false;\n }\n\n visitExpression(visitor: ExpressionVisitor, context: any): any {\n return
visitor.visitInvokeMethodExpr(this, context);\n }\n}\n\nexport class InvokeFunctionExpr extends Expression {\n
constructor(\n public fn: Expression, public args: Expression[], type?: Type|null,\n sourceSpan?:
ParseSourceSpan|null, public pure = false) {\n super(type, sourceSpan);\n }\n\n isEquivalent(e: Expression):
boolean {\n return e instanceof InvokeFunctionExpr && this.fn.isEquivalent(e.fn) &&\n
areAllEquivalent(this.args, e.args) && this.pure === e.pure;\n }\n\n isConstant() {\n return false;\n
}\n\n visitExpression(visitor: ExpressionVisitor, context: any): any {\n return visitor.visitInvokeFunctionExpr(this,
context);\n }\n}\n\nexport class InstantiateExpr extends Expression {\n constructor(\n public classExpr:
Expression, public args: Expression[], type?: Type|null,\n sourceSpan?: ParseSourceSpan|null) {\n super(type,
sourceSpan);\n }\n\n isEquivalent(e: Expression): boolean {\n return e instanceof InstantiateExpr &&
this.classExpr.isEquivalent(e.classExpr) &&\n areAllEquivalent(this.args, e.args);\n }\n\n isConstant() {\n
return false;\n }\n\n visitExpression(visitor: ExpressionVisitor, context: any): any {\n return
visitor.visitInstantiateExpr(this, context);\n }\n}\n\nexport class LiteralExpr extends Expression {\n

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}\n}\n\nexport class ExternalExpr extends Expression {\n constructor(\n public value: ExternalReference, type?:
Type|null, public typeParams: Type[]|null = null,\n sourceSpan?: ParseSourceSpan|null) {\n super(type,
sourceSpan);\n }\n\n isEquivalent(e: Expression): boolean {\n return e instanceof ExternalExpr &&
this.value.name === e.value.name &&\n this.value.moduleName === e.value.moduleName &&
this.value.runtime === e.value.runtime;\n }\n\n isConstant() {\n return false;\n }\n\n visitExpression(visitor:
ExpressionVisitor, context: any): any {\n return visitor.visitExternalExpr(this, context);\n }\n}\n\n\nexport class
ExternalReference {\n constructor(public moduleName: string|null, public name: string|null, public runtime?:
any|null) {\n }\n // Note: no isEquivalent method here as we use this as an interface too.\n}\n\n\nexport class
ConditionalExpr extends Expression {\n public trueCase: Expression;\n\n constructor(\n public condition:
Expression, trueCase: Expression, public falseCase: Expression|null = null,\n type?: Type|null, sourceSpan?:
ParseSourceSpan|null) {\n super(type || trueCase.type, sourceSpan);\n this.trueCase = trueCase;\n }\n\n isEquivalent(e: Expression): boolean {\n return e instanceof ConditionalExpr &&
this.condition.isEquivalent(e.condition) &&\n this.trueCase.isEquivalent(e.trueCase) &&
nullSafeIsEquivalent(this.falseCase, e.falseCase);\n }\n\n isConstant() {\n return false;\n }\n\n visitExpression(visitor: ExpressionVisitor, context: any): any {\n return visitor.visitConditionalExpr(this,
context);\n }\n}\n\n\nexport class NotExpr extends Expression {\n constructor(public condition: Expression,
sourceSpan?: ParseSourceSpan|null) {\n super(BOOL_TYPE, sourceSpan);\n }\n\n isEquivalent(e: Expression):
boolean {\n return e instanceof NotExpr && this.condition.isEquivalent(e.condition);\n }\n\n isConstant() {\n
return false;\n }\n\n visitExpression(visitor: ExpressionVisitor, context: any): any {\n return
visitor.visitNotExpr(this, context);\n }\n}\n\n\nexport class AssertNotNull extends Expression {\n constructor(public
condition: Expression, sourceSpan?: ParseSourceSpan|null) {\n super(condition.type, sourceSpan);\n }\n\n isEquivalent(e: Expression): boolean {\n return e instanceof AssertNotNull &&
this.condition.isEquivalent(e.condition);\n }\n\n isConstant() {\n return false;\n }\n\n visitExpression(visitor:
ExpressionVisitor, context: any): any {\n return visitor.visitAssertNotNullExpr(this, context);\n }\n}\n\n\nexport
class CastExpr extends Expression {\n constructor(public value: Expression, type?: Type|null, sourceSpan?:
ParseSourceSpan|null) {\n super(type, sourceSpan);\n }\n\n isEquivalent(e: Expression): boolean {\n return e
instanceof CastExpr && this.value.isEquivalent(e.value);\n }\n\n isConstant() {\n return false;\n }\n\n visitExpression(visitor: ExpressionVisitor, context: any): any {\n return visitor.visitCastExpr(this, context);\n
}\n}\n\n\nexport class FnParam {\n constructor(public name: string, public type: Type|null = null) {\n }\n\n isEquivalent(param: FnParam): boolean {\n return this.name === param.name;\n }\n}\n\n\nexport class
FunctionExpr extends Expression {\n constructor(\n public params: FnParam[], public statements: Statement[],
type?: Type|null,\n sourceSpan?: ParseSourceSpan|null, public name?: string|null) {\n super(type,
sourceSpan);\n }\n\n isEquivalent(e: Expression): boolean {\n return e instanceof FunctionExpr &&
areAllEquivalent(this.params, e.params) &&\n areAllEquivalent(this.statements, e.statements);\n }\n\n isConstant() {\n return false;\n }\n\n visitExpression(visitor: ExpressionVisitor, context: any): any {\n return
visitor.visitFunctionExpr(this, context);\n }\n\n toDeclStmt(name: string, modifiers?: StmtModifier[]):
DeclareFunctionStmt {\n return new DeclareFunctionStmt(\n name, this.params, this.statements, this.type,
modifiers, this.sourceSpan);\n }\n}\n\n\nexport class UnaryOperatorExpr extends Expression {\n constructor(\n
public operator: UnaryOperator, public expr: Expression, type?: Type|null,\n sourceSpan?: ParseSourceSpan|null,
public parens: boolean = true) {\n super(type || NUMBER_TYPE, sourceSpan);\n }\n\n isEquivalent(e:
Expression): boolean {\n return e instanceof UnaryOperatorExpr && this.operator === e.operator &&\n
this.expr.isEquivalent(e.expr);\n }\n\n isConstant() {\n return false;\n }\n\n visitExpression(visitor:
ExpressionVisitor, context: any): any {\n return visitor.visitUnaryOperatorExpr(this, context);\n }\n}\n\n\nexport
class BinaryOperatorExpr extends Expression {\n public lhs: Expression;\n\n constructor(\n public operator:
BinaryOperator, lhs: Expression, public rhs: Expression, type?: Type|null,\n sourceSpan?: ParseSourceSpan|null,
public parens: boolean = true) {\n super(type || lhs.type, sourceSpan);\n this.lhs = lhs;\n }\n\n isEquivalent(e:
Expression): boolean {\n return e instanceof BinaryOperatorExpr && this.operator === e.operator &&\n
this.lhs.isEquivalent(e.lhs) && this.rhs.isEquivalent(e.rhs);\n }\n\n isConstant() {\n return false;\n }\n}\n}

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visitExpression(visitor: ExpressionVisitor, context: any): any {
 return visitor.visitBinaryOperatorExpr(this, context);
}
}

nexport class ReadPropExpr extends Expression {
 constructor(
 public receiver: Expression, public name: string, type?: Type|null,
 sourceSpan?: ParseSourceSpan|null) {
 super(type, sourceSpan);
 }
 isEquivalent(e: Expression): boolean {
 return e instanceof ReadPropExpr && this.receiver.isEquivalent(e.receiver) && this.name === e.name;
 }
 isConstant() {
 return false;
 }
 visitExpression(visitor: ExpressionVisitor, context: any): any {
 return visitor.visitReadPropExpr(this, context);
 }
 set(value: Expression): WritePropExpr {
 return new WritePropExpr(this.receiver, this.name, value, null, this.sourceSpan);
 }
}

nexport class ReadKeyExpr extends Expression {
 constructor(
 public receiver: Expression, public index: Expression, type?: Type|null,
 sourceSpan?: ParseSourceSpan|null) {
 super(type, sourceSpan);
 }
 isEquivalent(e: Expression): boolean {
 return e instanceof ReadKeyExpr && this.receiver.isEquivalent(e.receiver) && this.index.isEquivalent(e.index);
 }
 isConstant() {
 return false;
 }
 visitExpression(visitor: ExpressionVisitor, context: any): any {
 return visitor.visitReadKeyExpr(this, context);
 }
 set(value: Expression): WriteKeyExpr {
 return new WriteKeyExpr(this.receiver, this.index, value, null, this.sourceSpan);
 }
}

nexport class LiteralArrayExpr extends Expression {
 public entries: Expression[];
 constructor(entries: Expression[], type?: Type|null, sourceSpan?: ParseSourceSpan|null) {
 super(type, sourceSpan);
 this.entries = entries;
 }
 isConstant() {
 return this.entries.every(e => e.isConstant());
 }
 isEquivalent(e: Expression): boolean {
 return e instanceof LiteralArrayExpr && areAllEquivalent(this.entries, e.entries);
 }
 visitExpression(visitor: ExpressionVisitor, context: any): any {
 return visitor.visitLiteralArrayExpr(this, context);
 }
}

nexport class LiteralMapEntry {
 constructor(public key: string, public value: Expression, public quoted: boolean) {}
 isEquivalent(e: LiteralMapEntry): boolean {
 return this.key === e.key && this.value.isEquivalent(e.value);
 }
}

nexport class LiteralMapExpr extends Expression {
 public valueType: Type|null = null;
 constructor(
 public entries: LiteralMapEntry[], type?: MapType|null, sourceSpan?: ParseSourceSpan|null) {
 super(type, sourceSpan);
 if (type) {
 this.valueType = type.valueType;
 }
 }
 isEquivalent(e: Expression): boolean {
 return e instanceof LiteralMapExpr && areAllEquivalent(this.entries, e.entries);
 }
 isConstant() {
 return this.entries.every(e => e.value.isConstant());
 }
 visitExpression(visitor: ExpressionVisitor, context: any): any {
 return visitor.visitLiteralMapExpr(this, context);
 }
}

nexport class CommaExpr extends Expression {
 constructor(public parts: Expression[], sourceSpan?: ParseSourceSpan|null) {
 super(parts[parts.length - 1].type, sourceSpan);
 }
 isEquivalent(e: Expression): boolean {
 return e instanceof CommaExpr && areAllEquivalent(this.parts, e.parts);
 }
 isConstant() {
 return false;
 }
 visitExpression(visitor: ExpressionVisitor, context: any): any {
 return visitor.visitCommaExpr(this, context);
 }
}

nexport interface ExpressionVisitor {
 visitReadVarExpr(ast: ReadVarExpr, context: any): any;
 visitWriteVarExpr(expr: WriteVarExpr, context: any): any;
 visitWriteKeyExpr(expr: WriteKeyExpr, context: any): any;
 visitWritePropExpr(expr: WritePropExpr, context: any): any;
 visitInvokeMethodExpr(ast: InvokeMethodExpr, context: any): any;
 visitInvokeFunctionExpr(ast: InvokeFunctionExpr, context: any): any;
 visitInstantiateExpr(ast: InstantiateExpr, context: any): any;
 visitLiteralExpr(ast: LiteralExpr, context: any): any;
 visitLocalizedString(ast: LocalizedString, context: any): any;
 visitExternalExpr(ast: ExternalExpr, context: any): any;
 visitConditionalExpr(ast: ConditionalExpr, context: any): any;
 visitNotExpr(ast: NotExpr, context: any): any;
 visitAssertNotNullExpr(ast: AssertNotNull, context: any): any;
 visitCastExpr(ast: CastExpr, context: any): any;
 visitFunctionExpr(ast: FunctionExpr, context: any): any;
 visitUnaryOperatorExpr(ast: UnaryOperatorExpr, context: any): any;
 visitBinaryOperatorExpr(ast: BinaryOperatorExpr, context: any): any;
 visitReadPropExpr(ast: ReadPropExpr, context: any): any;
 visitReadKeyExpr(ast: ReadKeyExpr, context: any): any;
 visitLiteralArrayExpr(ast: LiteralArrayExpr, context: any): any;
 visitLiteralMapExpr(ast: LiteralMapExpr, context: any): any;
 visitCommaExpr(ast: CommaExpr, context: any): any;
 visitWrappedNodeExpr(ast: WrappedNodeExpr<any>, context: any): any;
 visitTypeofExpr(ast: TypeofExpr, context: any): any;
}

nexport const THIS_EXPR = new ReadVarExpr(BuiltinVar.This, null, null);
nexport const SUPER_EXPR = new ReadVarExpr(BuiltinVar.Super, null, null);
nexport const CATCH_ERROR_VAR = new ReadVarExpr(BuiltinVar.CatchError, null, null);
nexport const CATCH_STACK_VAR = new

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ReadVarExpr(BuiltinVar.CatchStack, null, null);\nexport const NULL_EXPR = new LiteralExpr(null, null,
null);\nexport const TYPED_NULL_EXPR = new LiteralExpr(null, INFERRED_TYPE, null);\n\n///
Statements\nexport enum StmtModifier {\n Final,\n Private,\n Exported,\n Static,\n}\n\nexport class
LeadingComment {\n constructor(public text: string, public multiline: boolean, public trailingNewline: boolean)
{\n toString() {\n return this.multiline ? ` ${this.text} ` : this.text;\n }\n}\nexport class JSDocComment extends
LeadingComment {\n constructor(public tags: JSDocTag[]) {\n super(", /* multiline */ true, /* trailingNewline */
true);\n }\n toString(): string {\n return serializeTags(this.tags);\n }\n}\n\nexport abstract class Statement {\n
constructor(\n public modifiers: StmtModifier[] = [], public sourceSpan: ParseSourceSpan|null = null,\n public
leadingComments?: LeadingComment[]) {\n /**\n * Calculates whether this statement produces the same value
as the given statement.\n * Note: We don't check Types nor ParseSourceSpans nor function arguments.\n */\n
abstract isEquivalent(stmt: Statement): boolean;\n\n abstract visitStatement(visitor: StatementVisitor, context: any):
any;\n\n hasModifier(modifier: StmtModifier): boolean {\n return this.modifiers.indexOf(modifier) !== -1;\n
}\n\n addLeadingComment(leadingComment: LeadingComment): void {\n this.leadingComments =
this.leadingComments ?? [];\n this.leadingComments.push(leadingComment);\n }\n}\n\nexport class
DeclareVarStmt extends Statement {\n public type: Type|null;\n constructor(\n public name: string, public
value?: Expression, type?: Type|null, modifiers?: StmtModifier[],\n sourceSpan?: ParseSourceSpan|null,
leadingComments?: LeadingComment[]) {\n super(modifiers, sourceSpan, leadingComments);\n this.type = type
|| (value && value.type) || null;\n }\n isEquivalent(stmt: Statement): boolean {\n return stmt instanceof
DeclareVarStmt && this.name === stmt.name &&\n (this.value ? !stmt.value &&
this.value.isEquivalent(stmt.value) : !stmt.value);\n }\n visitStatement(visitor: StatementVisitor, context: any): any
{\n return visitor.visitDeclareVarStmt(this, context);\n }\n}\n\nexport class DeclareFunctionStmt extends
Statement {\n public type: Type|null;\n constructor(\n public name: string, public params: FnParam[], public
statements: Statement[],\n type?: Type|null, modifiers?: StmtModifier[], sourceSpan?: ParseSourceSpan|null,\n
leadingComments?: LeadingComment[]) {\n super(modifiers, sourceSpan, leadingComments);\n this.type = type
|| null;\n }\n isEquivalent(stmt: Statement): boolean {\n return stmt instanceof DeclareFunctionStmt &&
areAllEquivalent(this.params, stmt.params) &&\n areAllEquivalent(this.statements, stmt.statements);\n }\n
visitStatement(visitor: StatementVisitor, context: any): any {\n return visitor.visitDeclareFunctionStmt(this,
context);\n }\n}\n\nexport class ExpressionStatement extends Statement {\n constructor(\n public expr:
Expression, sourceSpan?: ParseSourceSpan|null,\n leadingComments?: LeadingComment[]) {\n super([],
sourceSpan, leadingComments);\n }\n isEquivalent(stmt: Statement): boolean {\n return stmt instanceof
ExpressionStatement && this.expr.isEquivalent(stmt.expr);\n }\n visitStatement(visitor: StatementVisitor, context:
any): any {\n return visitor.visitExpressionStmt(this, context);\n }\n}\n\nexport class ReturnStatement extends
Statement {\n constructor(\n public value: Expression, sourceSpan: ParseSourceSpan|null = null,\n
leadingComments?: LeadingComment[]) {\n super([], sourceSpan, leadingComments);\n }\n isEquivalent(stmt:
Statement): boolean {\n return stmt instanceof ReturnStatement && this.value.isEquivalent(stmt.value);\n }\n
visitStatement(visitor: StatementVisitor, context: any): any {\n return visitor.visitReturnStmt(this, context);\n
}\n}\n\nexport class AbstractClassPart {\n constructor(public type: Type|null = null, public modifiers:
StmtModifier[] = []) {\n hasModifier(modifier: StmtModifier): boolean {\n return
this.modifiers.indexOf(modifier) !== -1;\n }\n}\n\nexport class ClassField extends AbstractClassPart {\n
constructor(\n public name: string, type?: Type|null, modifiers?: StmtModifier[],\n public initializer?:
Expression) {\n super(type, modifiers);\n }\n isEquivalent(f: ClassField) {\n return this.name === f.name;\n
}\n}\n\nexport class ClassMethod extends AbstractClassPart {\n constructor(\n public name: string|null, public
params: FnParam[], public body: Statement[],\n type?: Type|null, modifiers?: StmtModifier[]) {\n super(type,
modifiers);\n }\n isEquivalent(m: ClassMethod) {\n return this.name === m.name &&
areAllEquivalent(this.body, m.body);\n }\n}\n\nexport class ClassGetter extends AbstractClassPart {\n
constructor(\n public name: string, public body: Statement[], type?: Type|null, modifiers?: StmtModifier[]) {\n
super(type, modifiers);\n }\n isEquivalent(m: ClassGetter) {\n return this.name === m.name &&
areAllEquivalent(this.body, m.body);\n }\n}\n\nexport class ClassStmt extends Statement {\n constructor(\n

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public name: string, public parent: Expression|null, public fields: ClassField[],\n public getters: ClassGetter[],
public constructorMethod: ClassMethod,\n public methods: ClassMethod[], modifiers?: StmtModifier[],
sourceSpan?: ParseSourceSpan|null,\n leadingComments?: LeadingComment[]) {\n super(modifiers,
sourceSpan, leadingComments);\n }
\n isEquivalent(stmt: Statement): boolean {\n return stmt instanceof
ClassStmt && this.name === stmt.name &&\n nullSafeIsEquivalent(this.parent, stmt.parent) &&\n
areAllEquivalent(this.fields, stmt.fields) &&\n areAllEquivalent(this.getters, stmt.getters) &&\n
this.constructorMethod.isEquivalent(stmt.constructorMethod) &&\n areAllEquivalent(this.methods,
stmt.methods);\n }\n visitStatement(visitor: StatementVisitor, context: any): any {\n return
visitor.visitDeclareClassStmt(this, context);\n }\n}\n\n\nexport class IfStmt extends Statement {\n constructor(\n
public condition: Expression, public trueCase: Statement[],\n public falseCase: Statement[] = [], sourceSpan?:
ParseSourceSpan|null,\n leadingComments?: LeadingComment[]) {\n super([], sourceSpan,
leadingComments);\n }\n isEquivalent(stmt: Statement): boolean {\n return stmt instanceof IfStmt &&
this.condition.isEquivalent(stmt.condition) &&\n areAllEquivalent(this.trueCase, stmt.trueCase) &&\n
areAllEquivalent(this.falseCase, stmt.falseCase);\n }\n visitStatement(visitor: StatementVisitor, context: any): any
{\n return visitor.visitIfStmt(this, context);\n }\n}\n\n\nexport class TryCatchStmt extends Statement {\n
constructor(\n public bodyStmts: Statement[], public catchStmts: Statement[],\n sourceSpan:
ParseSourceSpan|null = null, leadingComments?: LeadingComment[]) {\n super([], sourceSpan,
leadingComments);\n }\n isEquivalent(stmt: Statement): boolean {\n return stmt instanceof TryCatchStmt &&
areAllEquivalent(this.bodyStmts, stmt.bodyStmts) &&\n areAllEquivalent(this.catchStmts, stmt.catchStmts);\n
}\n visitStatement(visitor: StatementVisitor, context: any): any {\n return visitor.visitTryCatchStmt(this,
context);\n }\n}\n\n\nexport class ThrowStmt extends Statement {\n constructor(\n public error: Expression,
sourceSpan: ParseSourceSpan|null = null,\n leadingComments?: LeadingComment[]) {\n super([], sourceSpan,
leadingComments);\n }\n isEquivalent(stmt: ThrowStmt): boolean {\n return stmt instanceof TryCatchStmt &&
this.error.isEquivalent(stmt.error);\n }\n visitStatement(visitor: StatementVisitor, context: any): any {\n return
visitor.visitThrowStmt(this, context);\n }\n}\n\n\nexport interface StatementVisitor {\n visitDeclareVarStmt(stmt:
DeclareVarStmt, context: any): any;\n visitDeclareFunctionStmt(stmt: DeclareFunctionStmt, context: any): any;\n
visitExpressionStmt(stmt: ExpressionStatement, context: any): any;\n visitReturnStmt(stmt: ReturnStatement,
context: any): any;\n visitDeclareClassStmt(stmt: ClassStmt, context: any): any;\n visitIfStmt(stmt: IfStmt, context:
any): any;\n visitTryCatchStmt(stmt: TryCatchStmt, context: any): any;\n visitThrowStmt(stmt: ThrowStmt,
context: any): any;\n}\n\n\nexport class AstTransformer implements StatementVisitor, ExpressionVisitor {\n
transformExpr(expr: Expression, context: any): Expression {\n return expr;\n }\n\n transformStmt(stmt:
Statement, context: any): Statement {\n return stmt;\n }\n\n visitReadVarExpr(ast: ReadVarExpr, context: any):
any {\n return this.transformExpr(ast, context);\n }\n\n visitWrappedNodeExpr(ast: WrappedNodeExpr<any>,
context: any): any {\n return this.transformExpr(ast, context);\n }\n\n visitTypeofExpr(expr: TypeofExpr,
context: any): any {\n return this.transformExpr(\n new TypeofExpr(expr.expr.visitExpression(this, context),
expr.type, expr.sourceSpan),\n context);\n }\n\n visitWriteVarExpr(expr: WriteVarExpr, context: any): any {\n
return this.transformExpr(\n new WriteVarExpr(\n expr.name, expr.value.visitExpression(this, context),
expr.type, expr.sourceSpan),\n context);\n }\n\n visitWriteKeyExpr(expr: WriteKeyExpr, context: any): any
{\n return this.transformExpr(\n new WriteKeyExpr(\n expr.receiver.visitExpression(this, context),
expr.index.visitExpression(this, context),\n expr.value.visitExpression(this, context), expr.type,
expr.sourceSpan),\n context);\n }\n\n visitWritePropExpr(expr: WritePropExpr, context: any): any {\n return
this.transformExpr(\n new WritePropExpr(\n expr.receiver.visitExpression(this, context), expr.name,\n expr.value.visitExpression(this, context), expr.type, expr.sourceSpan),\n context);\n }\n}\n\n
visitInvokeMethodExpr(ast: InvokeMethodExpr, context: any): any {\n const method = ast.builtin || ast.name;\n return
this.transformExpr(\n new InvokeMethodExpr(\n ast.receiver.visitExpression(this, context),
method!,\n this.visitAllExpressions(ast.args, context), ast.type, ast.sourceSpan),\n context);\n }\n}\n\n
visitInvokeFunctionExpr(ast: InvokeFunctionExpr, context: any): any {\n return this.transformExpr(\n new
InvokeFunctionExpr(\n ast.fn.visitExpression(this, context), this.visitAllExpressions(ast.args, context),\n

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 ast.type, ast.sourceSpan),\n context);\n }\n\n visitInstantiateExpr(ast: InstantiateExpr, context: any): any {\n
return this.transformExpr(\n new InstantiateExpr(\n ast.classExpr.visitExpression(this, context),\n
this.visitAllExpressions(ast.args, context), ast.type, ast.sourceSpan),\n context);\n }\n\n visitLiteralExpr(ast:
LiteralExpr, context: any): any {\n return this.transformExpr(ast, context);\n }\n\n visitLocalizedString(ast:
LocalizedString, context: any): any {\n return this.transformExpr(\n new LocalizedString(\n
ast.metaBlock, ast.messageParts, ast.placeholderNames,\n this.visitAllExpressions(ast.expressions, context),
ast.sourceSpan),\n context);\n }\n\n visitExternalExpr(ast: ExternalExpr, context: any): any {\n return
this.transformExpr(ast, context);\n }\n\n visitConditionalExpr(ast: ConditionalExpr, context: any): any {\n return
this.transformExpr(\n new ConditionalExpr(\n ast.condition.visitExpression(this, context),\n
ast.trueCase.visitExpression(this, context),\n ast.falseCase!.visitExpression(this, context), ast.type,
ast.sourceSpan),\n context);\n }\n\n visitNotExpr(ast: NotExpr, context: any): any {\n return
this.transformExpr(\n new NotExpr(ast.condition.visitExpression(this, context), ast.sourceSpan), context);\n
}\n\n visitAssertNotNullExpr(ast: AssertNotNull, context: any): any {\n return this.transformExpr(\n new
AssertNotNull(ast.condition.visitExpression(this, context), ast.sourceSpan), context);\n }\n\n visitCastExpr(ast:
CastExpr, context: any): any {\n return this.transformExpr(\n new CastExpr(ast.value.visitExpression(this,
context), ast.type, ast.sourceSpan), context);\n }\n\n visitFunctionExpr(ast: FunctionExpr, context: any): any {\n
return this.transformExpr(\n new FunctionExpr(\n ast.params, this.visitAllStatements(ast.statements,
context), ast.type, ast.sourceSpan),\n context);\n }\n\n visitUnaryOperatorExpr(ast: UnaryOperatorExpr,
context: any): any {\n return this.transformExpr(\n new UnaryOperatorExpr(\n ast.operator,
ast.expr.visitExpression(this, context), ast.type, ast.sourceSpan),\n context);\n }\n\n
visitBinaryOperatorExpr(ast: BinaryOperatorExpr, context: any): any {\n return this.transformExpr(\n new
BinaryOperatorExpr(\n ast.operator, ast.lhs.visitExpression(this, context),\n
ast.rhs.visitExpression(this, context), ast.type, ast.sourceSpan),\n context);\n }\n\n visitReadPropExpr(ast:
ReadPropExpr, context: any): any {\n return this.transformExpr(\n new ReadPropExpr(\n
ast.receiver.visitExpression(this, context), ast.name, ast.type, ast.sourceSpan),\n context);\n }\n\n
visitReadKeyExpr(ast: ReadKeyExpr, context: any): any {\n return this.transformExpr(\n new
ReadKeyExpr(\n ast.receiver.visitExpression(this, context), ast.index.visitExpression(this, context),\n
ast.type, ast.sourceSpan),\n context);\n }\n\n visitLiteralArrayExpr(ast: LiteralArrayExpr, context: any): any
{\n return this.transformExpr(\n new LiteralArrayExpr(\n this.visitAllExpressions(ast.entries, context),
ast.type, ast.sourceSpan),\n context);\n }\n\n visitLiteralMapExpr(ast: LiteralMapExpr, context: any): any {\n
const entries = ast.entries.map(\n (entry): LiteralMapEntry => new LiteralMapEntry(\n entry.key,
entry.value.visitExpression(this, context), entry.quoted));\n const mapType = new MapType(ast.valueType);\n
return this.transformExpr(new LiteralMapExpr(entries, mapType, ast.sourceSpan), context);\n }\n\n
visitCommaExpr(ast: CommaExpr, context: any): any {\n return this.transformExpr(\n new
CommaExpr(this.visitAllExpressions(ast.parts, context), ast.sourceSpan), context);\n }\n\n
visitAllExpressions(exprs: Expression[], context: any): Expression[] {\n return exprs.map(expr =>
expr.visitExpression(this, context));\n }\n\n visitDeclareVarStmt(stmt: DeclareVarStmt, context: any): any {\n
const value = stmt.value && stmt.value.visitExpression(this, context);\n return this.transformStmt(\n new
DeclareVarStmt(\n stmt.name, value, stmt.type, stmt.modifiers, stmt.sourceSpan, stmt.leadingComments),\n
context);\n }\n\n visitDeclareFunctionStmt(stmt: DeclareFunctionStmt, context: any): any {\n return
this.transformStmt(\n new DeclareFunctionStmt(\n stmt.name, stmt.params,
this.visitAllStatements(stmt.statements, context), stmt.type,\n stmt.modifiers, stmt.sourceSpan,
stmt.leadingComments),\n context);\n }\n\n visitExpressionStmt(stmt: ExpressionStatement, context: any): any
{\n return this.transformStmt(\n new ExpressionStatement(\n stmt.expr.visitExpression(this, context),
stmt.sourceSpan, stmt.leadingComments),\n context);\n }\n\n visitReturnStmt(stmt: ReturnStatement, context:
any): any {\n return this.transformStmt(\n new ReturnStatement(\n stmt.value.visitExpression(this,
context), stmt.sourceSpan, stmt.leadingComments),\n context);\n }\n\n visitDeclareClassStmt(stmt: ClassStmt,
context: any): any {\n const parent = stmt.parent!.visitExpression(this, context);\n const getters =

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stmt.getters.map(\n getter => new ClassGetter(\n getter.name, this.visitAllStatements(getter.body,
context), getter.type,\n getter.modifiers));\n const ctorMethod = stmt.constructorMethod &&\n new
ClassMethod(stmt.constructorMethod.name, stmt.constructorMethod.params,\n
this.visitAllStatements(stmt.constructorMethod.body, context),\n stmt.constructorMethod.type,
stmt.constructorMethod.modifiers);\n const methods = stmt.methods.map(\n method => new ClassMethod(\n
method.name, method.params, this.visitAllStatements(method.body, context), method.type,\n
method.modifiers));\n return this.transformStmt(\n new ClassStmt(\n stmt.name, parent, stmt.fields,
getters, ctorMethod, methods, stmt.modifiers,\n stmt.sourceSpan),\n context);\n }\n\n visitIfStmt(stmt:
IfStmt, context: any): any {\n return this.transformStmt(\n new IfStmt(\n
stmt.condition.visitExpression(this, context),\n this.visitAllStatements(stmt.trueCase, context),\n
this.visitAllStatements(stmt.falseCase, context), stmt.sourceSpan,\n stmt.leadingComments),\n context);\n }\n\n visitTryCatchStmt(stmt: TryCatchStmt, context: any): any {\n return this.transformStmt(\n
new TryCatchStmt(\n this.visitAllStatements(stmt.bodyStmts, context),\n
this.visitAllStatements(stmt.catchStmts, context), stmt.sourceSpan,\n stmt.leadingComments),\n context);\n }\n\n visitThrowStmt(stmt: ThrowStmt, context: any): any {\n return this.transformStmt(\n
new ThrowStmt(\n stmt.error.visitExpression(this, context), stmt.sourceSpan, stmt.leadingComments),\n
context);\n }\n\n visitAllStatements(stmts: Statement[], context: any): Statement[] {\n return stmts.map(stmt =>
stmt.visitStatement(this, context));\n }\n}\n\n\nexport class RecursiveAstVisitor implements StatementVisitor,
ExpressionVisitor {\n visitType(ast: Type, context: any): any {\n return ast;\n }\n visitExpression(ast:
Expression, context: any): any {\n if (ast.type) {\n ast.type.visitType(this, context);\n }\n return ast;\n }\n visitBuiltinType(type: BuiltinType, context: any): any {\n return this.visitType(type, context);\n }\n visitExpressionType(type: ExpressionType, context: any): any {\n type.value.visitExpression(this, context);\n if
(type.typeParams !== null) {\n type.typeParams.forEach(param => this.visitType(param, context));\n }\n return this.visitType(type, context);\n }\n visitArrayType(type: ArrayType, context: any): any {\n return
this.visitType(type, context);\n }\n visitMapType(type: MapType, context: any): any {\n return
this.visitType(type, context);\n }\n visitWrappedNodeExpr(ast: WrappedNodeExpr<any>, context: any): any {\n return ast;\n }\n visitTypeofExpr(ast: TypeofExpr, context: any): any {\n return this.visitExpression(ast,
context);\n }\n visitReadVarExpr(ast: ReadVarExpr, context: any): any {\n return this.visitExpression(ast,
context);\n }\n visitWriteVarExpr(ast: WriteVarExpr, context: any): any {\n ast.value.visitExpression(this,
context);\n return this.visitExpression(ast, context);\n }\n visitWriteKeyExpr(ast: WriteKeyExpr, context: any):
any {\n ast.receiver.visitExpression(this, context);\n ast.index.visitExpression(this, context);\n ast.value.visitExpression(this, context);\n return this.visitExpression(ast, context);\n }\n visitWritePropExpr(ast:
WritePropExpr, context: any): any {\n ast.receiver.visitExpression(this, context);\n ast.value.visitExpression(this, context);\n return this.visitExpression(ast, context);\n }\n visitInvokeMethodExpr(ast: InvokeMethodExpr, context: any): any {\n ast.receiver.visitExpression(this,
context);\n this.visitAllExpressions(ast.args, context);\n return this.visitExpression(ast, context);\n }\n visitInvokeFunctionExpr(ast: InvokeFunctionExpr, context: any): any {\n ast.fn.visitExpression(this, context);\n this.visitAllExpressions(ast.args, context);\n return this.visitExpression(ast, context);\n }\n visitInstantiateExpr(ast: InstantiateExpr, context: any): any {\n ast.classExpr.visitExpression(this, context);\n this.visitAllExpressions(ast.args, context);\n return this.visitExpression(ast, context);\n }\n visitLiteralExpr(ast:
LiteralExpr, context: any): any {\n return this.visitExpression(ast, context);\n }\n visitLocalizedString(ast:
LocalizedString, context: any): any {\n return this.visitExpression(ast, context);\n }\n visitExternalExpr(ast:
ExternalExpr, context: any): any {\n if (ast.typeParams) {\n ast.typeParams.forEach(type =>
type.visitType(this, context));\n }\n return this.visitExpression(ast, context);\n }\n visitConditionalExpr(ast:
ConditionalExpr, context: any): any {\n ast.condition.visitExpression(this, context);\n ast.trueCase.visitExpression(this, context);\n ast.falseCase!.visitExpression(this, context);\n return
this.visitExpression(ast, context);\n }\n visitNotExpr(ast: NotExpr, context: any): any {\n ast.condition.visitExpression(this, context);\n return this.visitExpression(ast, context);\n }\n}

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visitAssertNotNullExpr(ast: AssertNotNull, context: any): any {\n ast.condition.visitExpression(this, context);\n
return this.visitExpression(ast, context);\n }\n
visitCastExpr(ast: CastExpr, context: any): any {\n
ast.value.visitExpression(this, context);\n return this.visitExpression(ast, context);\n }\n
visitFunctionExpr(ast: FunctionExpr, context: any): any {\n this.visitAllStatements(ast.statements, context);\n
return this.visitExpression(ast, context);\n }\n
visitUnaryOperatorExpr(ast: UnaryOperatorExpr, context: any): any {\n
ast.expr.visitExpression(this, context);\n return this.visitExpression(ast, context);\n }\n
visitBinaryOperatorExpr(ast: BinaryOperatorExpr, context: any): any {\n ast.lhs.visitExpression(this, context);\n
ast.rhs.visitExpression(this, context);\n return this.visitExpression(ast, context);\n }\n
visitReadPropExpr(ast: ReadPropExpr, context: any): any {\n ast.receiver.visitExpression(this, context);\n
return this.visitExpression(ast, context);\n }\n
visitReadKeyExpr(ast: ReadKeyExpr, context: any): any {\n
ast.receiver.visitExpression(this, context);\n ast.index.visitExpression(this, context);\n return
this.visitExpression(ast, context);\n }\n
visitLiteralArrayExpr(ast: LiteralArrayExpr, context: any): any {\n
this.visitAllExpressions(ast.entries, context);\n return this.visitExpression(ast, context);\n }\n
visitLiteralMapExpr(ast: LiteralMapExpr, context: any): any {\n ast.entries.forEach((entry) =>
entry.value.visitExpression(this, context));\n return this.visitExpression(ast, context);\n }\n
visitCommaExpr(ast: CommaExpr, context: any): any {\n this.visitAllExpressions(ast.parts, context);\n
return this.visitExpression(ast, context);\n }\n
visitAllExpressions(exprs: Expression[], context: any): void {\n exprs.forEach(expr =>
expr.visitExpression(this, context));\n }\n
visitDeclareVarStmt(stmt: DeclareVarStmt, context: any): any {\n if
(stmt.value) {\n stmt.value.visitExpression(this, context);\n }\n if (stmt.type) {\n stmt.type.visitType(this,
context);\n }\n return stmt;\n }\n
visitDeclareFunctionStmt(stmt: DeclareFunctionStmt, context: any): any {\n
this.visitAllStatements(stmt.statements, context);\n if (stmt.type) {\n stmt.type.visitType(this, context);\n
}\n return stmt;\n }\n
visitExpressionStmt(stmt: ExpressionStatement, context: any): any {\n
stmt.expr.visitExpression(this, context);\n return stmt;\n }\n
visitReturnStmt(stmt: ReturnStatement, context:
any): any {\n stmt.value.visitExpression(this, context);\n return stmt;\n }\n
visitDeclareClassStmt(stmt: ClassStmt, context: any): any {\n stmt.parent!.visitExpression(this, context);\n
stmt.getters.forEach(getter => this.visitAllStatements(getter.body, context));\n if (stmt.constructorMethod) {\n
this.visitAllStatements(stmt.constructorMethod.body, context);\n }\n stmt.methods.forEach(method =>
this.visitAllStatements(method.body, context));\n return stmt;\n }\n
visitIfStmt(stmt: IfStmt, context: any): any
{\n stmt.condition.visitExpression(this, context);\n this.visitAllStatements(stmt.trueCase, context);\n
this.visitAllStatements(stmt.falseCase, context);\n return stmt;\n }\n
visitTryCatchStmt(stmt: TryCatchStmt,
context: any): any {\n this.visitAllStatements(stmt.bodyStmts, context);\n
this.visitAllStatements(stmt.catchStmts, context);\n return stmt;\n }\n
visitThrowStmt(stmt: ThrowStmt, context:
any): any {\n stmt.error.visitExpression(this, context);\n return stmt;\n }\n
visitAllStatements(stmts: Statement[], context: any): void {\n
stmts.forEach(stmt => stmt.visitStatement(this, context));\n }\n
\nexport
function findReadVarNames(stmts: Statement[]): Set<string> {\n const visitor = new _ReadVarVisitor();\n
visitor.visitAllStatements(stmts, null);\n return visitor.varNames;\n }\n
\nclass _ReadVarVisitor extends
RecursiveAstVisitor {\n varNames = new Set<string>();\n
visitDeclareFunctionStmt(stmt: DeclareFunctionStmt, context: any): any {\n // Don't descend into nested functions\n
return stmt;\n }\n
visitDeclareClassStmt(stmt: ClassStmt, context: any): any {\n // Don't descend into nested classes\n
return stmt;\n }\n
visitReadVarExpr(ast: ReadVarExpr, context: any): any {\n if (ast.name) {\n this.varNames.add(ast.name);\n
}\n return null;\n }\n
\nexport function collectExternalReferences(stmts: Statement[]): ExternalReference[] {\n
const visitor = new _FindExternalReferencesVisitor();\n
visitor.visitAllStatements(stmts, null);\n return
visitor.externalReferences;\n }\n
\nclass _FindExternalReferencesVisitor extends RecursiveAstVisitor {\n
externalReferences: ExternalReference[] = [];\n
visitExternalExpr(e: ExternalExpr, context: any) {\n
this.externalReferences.push(e.value);\n return super.visitExternalExpr(e, context);\n }\n
\nexport function
applySourceSpanToStatementIfNeeded(\n stmt: Statement, sourceSpan: ParseSourceSpan|null): Statement {\n if
(!sourceSpan) {\n return stmt;\n }\n const transformer = new _ApplySourceSpanTransformer(sourceSpan);\n
return stmt.visitStatement(transformer, null);\n }\n
\nexport function applySourceSpanToExpressionIfNeeded(\n

```

```

expr: Expression, sourceSpan: ParseSourceSpan|null): Expression {\n if (!sourceSpan) {\n return expr;\n }\n
const transformer = new _ApplySourceSpanTransformer(sourceSpan);\n return expr.visitExpression(transformer,
null);\n}\n\nclass _ApplySourceSpanTransformer extends AstTransformer {\n constructor(private sourceSpan:
ParseSourceSpan) {\n super();\n }\n private _clone(obj: any): any {\n const clone =
Object.create(obj.constructor.prototype);\n for (let prop of Object.keys(obj)) {\n clone[prop] = obj[prop];\n
 }\n return clone;\n }\n transformExpr(expr: Expression, context: any): Expression {\n if (!expr.sourceSpan)
{\n expr = this._clone(expr);\n expr.sourceSpan = this.sourceSpan;\n }\n return expr;\n }\n transformStmt(stmt: Statement, context: any): Statement {\n if (!stmt.sourceSpan) {\n stmt =
this._clone(stmt);\n stmt.sourceSpan = this.sourceSpan;\n }\n return stmt;\n }\n}\n\nexport function
leadingComment(\n text: string, multiline: boolean = false, trailingNewline: boolean = true): LeadingComment {\n
return new LeadingComment(text, multiline, trailingNewline);\n}\n\nexport function jsDocComment(tags:
JSDocTag[] = []): JSDocComment {\n return new JSDocComment(tags);\n}\n\nexport function variable(\n name:
string, type?: Type|null, sourceSpan?: ParseSourceSpan|null): ReadVarExpr {\n return new ReadVarExpr(name,
type, sourceSpan);\n}\n\nexport function importExpr(\n id: ExternalReference, typeParams: Type[]|null = null,\n
sourceSpan?: ParseSourceSpan|null): ExternalExpr {\n return new ExternalExpr(id, null, typeParams,
sourceSpan);\n}\n\nexport function importType(\n id: ExternalReference, typeParams?: Type[]|null,\n
typeModifiers?: TypeModifier[]): ExpressionType|null {\n return id != null ? expressionType(importExpr(id,
typeParams, null), typeModifiers) : null;\n}\n\nexport function expressionType(\n expr: Expression,
typeModifiers?: TypeModifier[], typeParams?: Type[]|null): ExpressionType {\n return new ExpressionType(expr,
typeModifiers, typeParams);\n}\n\nexport function typeofExpr(expr: Expression) {\n return new
TypeofExpr(expr);\n}\n\nexport function literalArr(\n values: Expression[], type?: Type|null, sourceSpan?:
ParseSourceSpan|null): LiteralArrayExpr {\n return new LiteralArrayExpr(values, type, sourceSpan);\n}\n\nexport
function literalMap(\n values: {key: string, quoted: boolean, value: Expression}[],\n type: MapType|null = null):
LiteralMapExpr {\n return new LiteralMapExpr(\n values.map(e => new LiteralMapEntry(e.key, e.value,
e.quoted)), type, null);\n}\n\nexport function unary(\n operator: UnaryOperator, expr: Expression, type?: Type,\n
sourceSpan?: ParseSourceSpan|null): UnaryOperatorExpr {\n return new UnaryOperatorExpr(operator, expr, type,
sourceSpan);\n}\n\nexport function not(expr: Expression, sourceSpan?: ParseSourceSpan|null): NotExpr {\n return
new NotExpr(expr, sourceSpan);\n}\n\nexport function assertNotNull(expr: Expression, sourceSpan?:
ParseSourceSpan|null): AssertNotNull {\n return new AssertNotNull(expr, sourceSpan);\n}\n\nexport function fn(\n
params: FnParam[], body: Statement[], type?: Type|null, sourceSpan?: ParseSourceSpan|null,\n name?:
string|null): FunctionExpr {\n return new FunctionExpr(params, body, type, sourceSpan, name);\n}\n\nexport
function ifStmt(\n condition: Expression, thenClause: Statement[], elseClause?: Statement[],\n sourceSpan?:
ParseSourceSpan, leadingComments?: LeadingComment[]) {\n return new IfStmt(condition, thenClause,
elseClause, sourceSpan, leadingComments);\n}\n\nexport function literal(\n value: any, type?: Type|null,
sourceSpan?: ParseSourceSpan|null): LiteralExpr {\n return new LiteralExpr(value, type, sourceSpan);\n}\n\nexport
function localizedString(\n metaBlock: I18nMeta, messageParts: LiteralPiece[], placeholderNames:
PlaceholderPiece[],\n expressions: Expression[], sourceSpan?: ParseSourceSpan|null): LocalizedString {\n return
new LocalizedString(metaBlock, messageParts, placeholderNames, expressions, sourceSpan);\n}\n\nexport function
isNull(exp: Expression): boolean {\n return exp instanceof LiteralExpr && exp.value === null;\n}\n\n// The list of
JSDoc tags that we currently support. Extend it if needed.\nexport const enum JSDocTagName {\n Desc = 'desc',\n
Id = 'id',\n Meaning = 'meaning',\n}\n\n/*\n * TypeScript has an API for JSDoc already, but it's not exposed.\n *
https://github.com/Microsoft/TypeScript/issues/7393\n * For now we create types that are similar to theirs so that
migrating\n * to their API will be easier. See e.g. `ts.JSDocTag` and `ts.JSDocComment`.\n */\nexport type
JSDocTag = {\n // `tagName` is e.g. `@param` in an `@param` declaration\n tagName: JSDocTagName|string,\n //
Any remaining text on the tag, e.g. the description\n text?: string,\n}\n\n// no `tagName` for plain text
documentation that occurs before any `@param` lines\n tagName?: undefined, text: string,\n}\n\n/*\n * Serializes a
`Tag` into a string.\n * Returns a string like `@foo {bar} baz` (note the leading whitespace before `@foo`).\n
*/\nfunction tagToString(tag: JSDocTag): string {\n let out = ";\n if (tag.tagName) {\n out += `

```



```

https://mathiasbynens.be/notes/javascript-encoding#surrogate-formulae
if (codePoint >= 0xd800 && codePoint <= 0xdbff && str.length > (index + 1)) {
 const low = str.charCodeAt(index + 1);
 if (low >= 0xdc00 && low <= 0xdfff) {
 index++;
 codePoint = ((codePoint - 0xd800) << 10) + low - 0xdc00 + 0x10000;
 }
}
if (codePoint <= 0x7f) {
 encoded.push(codePoint);
} else if (codePoint <= 0x7ff) {
 encoded.push(((codePoint >> 6) & 0x1f) | 0xc0, (codePoint & 0x3f) | 0x80);
} else if (codePoint <= 0xffff) {
 encoded.push((codePoint >> 12) | 0xe0, ((codePoint >> 6) & 0x3f) | 0x80, (codePoint & 0x3f) | 0x80);
} else if (codePoint <= 0x1ffff) {
 encoded.push((codePoint >> 18) & 0x07) | 0xf0, ((codePoint >> 12) & 0x3f) | 0x80, ((codePoint >> 6) & 0x3f) | 0x80, (codePoint & 0x3f) | 0x80);
}
}
return encoded;
}
}
export interface OutputContext {
 genFilePath: string;
 statements: o.Statement[];
 constantPool: ConstantPool;
 importExpr(reference: any, typeParams?: o.Type[] | null, useSummaries?: boolean): o.Expression;
}
export function stringify(token: any): string {
 if (typeof token === 'string') {
 return token;
 }
 if (Array.isArray(token)) {
 return '[' + token.map(stringify).join(', ') + ']';
 }
 if (token == null) {
 return '' + token;
 }
 if (token.overriddenName) {
 return `${token.overriddenName}`;
 }
 if (token.name) {
 return `${token.name}`;
 }
 if (!token.toString) {
 return 'object';
 }
 // WARNING: do not try to `JSON.stringify(token)` here
 // see https://github.com/angular/angular/issues/23440
 const res = token.toString();
 if (res == null) {
 return '' + res;
 }
 const newLineIndex = res.indexOf('\n');
 return newLineIndex === -1 ? res : res.substring(0, newLineIndex);
}
/**
 * Lazily retrieves the reference value from a forwardRef.
 */
export function resolveForwardRef(type: any): any {
 if (typeof type === 'function' && type.hasOwnProperty('__forward_ref__')) {
 return type();
 } else {
 return type;
 }
}
/**
 * Determine if the argument is shaped like a Promise
 */
export function isPromise<T> = any>(obj: any): obj is Promise<T> {
 // allow any Promise/A+ compliant thenable.
 // It's up to the caller to ensure that obj.then conforms to the spec
 return !!obj && typeof obj.then === 'function';
}
export class Version {
 public readonly major: string;
 public readonly minor: string;
 public readonly patch: string;
 constructor(public full: string) {
 const splits = full.split('.');
 this.major = splits[0];
 this.minor = splits[1];
 this.patch = splits.slice(2).join('.');
 }
}
export interface Console {
 log(message: string): void;
 warn(message: string): void;
}
declare var WorkerGlobalScope: any;
// CommonJS / Node have global context exposed as "global" variable.
// We don't want to include the whole node.d.ts this this compilation unit so we'll just fake the global "global" var for now.
declare var global: any;
const __window = typeof window !== 'undefined' && window;
const __self = typeof self !== 'undefined' && typeof WorkerGlobalScope !== 'undefined' && self instanceof WorkerGlobalScope && self;
const __global = typeof global !== 'undefined' && global;
// Check __global first, because in Node tests both __global and __window may be defined and __global should be __global in that case.
const _global: { [name: string]: any } = __global || __window || __self;
export { _global as global };
export function newArray<T = any>(size: number): T[];
export function newArray<T>(size: number, value: T): T[];
export function newArray<T>(size: number, value?: T): T[] {
 const list: T[] = [];
 for (let i = 0; i < size; i++) {
 list.push(value!);
 }
 return list;
}
/**
 * Partitions a given array into 2 arrays, based on a boolean value returned by the condition
 * function.
 * @param arr Input array that should be partitioned
 * @param conditionFn Condition function that is called for each item in a given array and returns a
 * boolean value.
 */
export function partitionArray<T, F = T>(arr: (T|F)[], conditionFn: (value: T|F) => boolean): [T[], F[]] {
 const truthy: T[] = [];
 const falsy: F[] = [];
 for (const item of arr) {
 (conditionFn(item) ? truthy : falsy).push(item as any);
 }
 return [truthy, falsy];
}
}
/**
 * Copyright Google LLC All Rights Reserved.
 * Use of this source code is governed by an MIT-style license that can be
 * found in the LICENSE file at https://angular.io/license
 */
import * as o from './output/output_ast';
import { error, OutputContext } from './util';
const CONSTANT_PREFIX = '_c';
/**
 * `ConstantPool` tries to reuse literal factories when two or more literals are identical.
 * We determine whether literals are identical by creating a key out of their AST using the
 * `KeyVisitor`. This constant is used to replace dynamic expressions which can't be safely
 * converted into a key. E.g. given an expression `{foo: bar()}`, since we don't know what
 * the result of `bar` will be, we create a key that looks like `{foo: <unknown>}`. Note
 * that we use a variable, rather than something like `null` in order to avoid collisions.
 */
const

```

```

UNKNOWN_VALUE_KEY = o.variable('<unknown>');\n\nexport const enum DefinitionKind {\n Injector,\n Directive,\n Component,\n Pipe\n}\n\n/**\n * Context to use when producing a key.\n *\n * This ensures we see the constant not the reference variable when producing\n * a key.\n */\nconst KEY_CONTEXT = {};\n\n/**\n * Generally all primitive values are excluded from the `ConstantPool`, but there is an exclusion\n * for strings that reach a certain length threshold. This constant defines the length threshold for\n * strings.\n */\nconst POOL_INCLUSION_LENGTH_THRESHOLD_FOR_STRINGS = 50;\n\n/**\n * A node that is a place-holder that allows the node to be replaced when the actual\n * node is known.\n *\n * This allows the constant pool to change an expression from a direct reference to\n * a constant to a shared constant. It returns a fix-up node that is later allowed to\n * change the referenced expression.\n */\n\nclass FixupExpression extends o.Expression {\n private original: o.Expression;\n\n // TODO(issue/24571): remove '!'.\n shared!: boolean;\n\n constructor(public resolved: o.Expression) {\n super(resolved.type);\n this.original = resolved;\n }\n\n visitExpression(visitor: o.ExpressionVisitor, context: any): any {\n if (context === KEY_CONTEXT) {\n // When producing a key we want to traverse the constant not the\n // variable used to refer to it.\n return this.original.visitExpression(visitor, context);\n } else {\n return this.resolved.visitExpression(visitor, context);\n }\n }\n\n isEquivalent(e: o.Expression): boolean {\n return e instanceof FixupExpression && this.resolved.isEquivalent(e.resolved);\n }\n\n isConstant() {\n return true;\n }\n\n fixup(expression: o.Expression) {\n this.resolved = expression;\n this.shared = true;\n }\n}\n\n/**\n * A constant pool allows a code emitter to share constant in an output context.\n *\n * The constant pool also supports sharing access to ivy definitions references.\n */\n\nexport class ConstantPool {\n statements: o.Statement[] = [];\n private literals = new Map<string, FixupExpression>();\n private literalFactories = new Map<string, o.Expression>();\n private injectorDefinitions = new Map<any, FixupExpression>();\n private directiveDefinitions = new Map<any, FixupExpression>();\n private componentDefinitions = new Map<any, FixupExpression>();\n private pipeDefinitions = new Map<any, FixupExpression>();\n private nextNameIndex = 0;\n\n constructor(private readonly isClosureCompilerEnabled: boolean = false) {\n }\n\n getConstLiteral(literal: o.Expression, forceShared?: boolean): o.Expression {\n if ((literal instanceof o.LiteralExpr && !isLongStringLiteral(literal)) ||\n literal instanceof FixupExpression) {\n // Do not put simple literals into the constant pool or try to produce a constant for a\n // reference to a constant.\n return literal;\n }\n\n const key = this.keyOf(literal);\n let fixup = this.literals.get(key);\n let newValue = false;\n if (!fixup) {\n fixup = new FixupExpression(literal);\n this.literals.set(key, fixup);\n newValue = true;\n }\n\n if ((!newValue && !fixup.shared) || (newValue && forceShared)) {\n // Replace the expression with a variable\n const name = this.freshName();\n let definition: o.WriteVarExpr;\n let usage: o.Expression;\n if (this.isClosureCompilerEnabled && isLongStringLiteral(literal)) {\n // For string literals, Closure will **always** inline the string at\n // **all** usages, duplicating it each time. For large strings, this\n // unnecessarily bloats bundle size. To work around this restriction, we\n // wrap the string in a function, and call that function for each usage.\n // This tricks Closure into using inline logic for functions instead of\n // string literals. Function calls are only inlined if the body is small\n // enough to be worth it. By doing this, very large strings will be\n // shared across multiple usages, rather than duplicating the string at\n // each usage site.\n //\n // const myStr = function() { return `very very very long string`; };\n // const usage1 = myStr();\n // const usage2 = myStr();\n definition = o.variable(name).set(new o.FunctionExpr(\n [], // Params.\n [\n // Statements.\n new o.ReturnStatement(literal),\n],\n));\n usage = o.variable(name).callFn([]);\n } else {\n // Just declare and use the variable directly, without a function call\n // indirection. This saves a few bytes and avoids an unnecessary call.\n definition = o.variable(name).set(literal);\n usage = o.variable(name);\n }\n\n this.statements.push(definition.toDeclStmt(o.INFERRED_TYPE, [o.StmtModifier.Final]));\n fixup.fixup(usage);\n }\n\n return fixup;\n }\n\n getDefinition(type: any, kind: DefinitionKind, ctx: OutputContext, forceShared: boolean = false):\n o.Expression {\n const definitions = this.definitionsOf(kind);\n let fixup = definitions.get(type);\n let newValue = false;\n if (!fixup) {\n const property = this.propertyNameOf(kind);\n fixup = new FixupExpression(ctx.importExpr(type).prop(property));\n }\n }\n}

```

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definitions.set(type, fixup);\n newValue = true;\n }\n if ((!newValue && !fixup.shared) || (newValue &&
forceShared)) {\n const name = this.freshName();\n this.statements.push(\n
o.variable(name).set(fixup.resolved).toDeclStmt(o.INFERRED_TYPE, [o.StmtModifier.Final]));\n
fixup.fixup(o.variable(name));\n }\n return fixup;\n }\n getLiteralFactory(literal:
o.LiteralArrayExpr|o.LiteralMapExpr):\n {literalFactory: o.Expression, literalFactoryArguments: o.Expression[]}\n
{\n // Create a pure function that builds an array of a mix of constant and variable expressions\n if (literal
instanceof o.LiteralArrayExpr) {\n const argumentsForKey = literal.entries.map(e => e.isConstant() ? e :
UNKNOWN_VALUE_KEY);\n const key = this.keyOf(o.literalArr(argumentsForKey));\n return
this._getLiteralFactory(key, literal.entries, entries => o.literalArr(entries));\n } else {\n const expressionForKey
= o.literalMap(\n literal.entries.map(e => ({\n key: e.key,\n value:
e.value.isConstant() ? e.value : UNKNOWN_VALUE_KEY,\n quoted: e.quoted\n
}));\n const key = this.keyOf(expressionForKey);\n return this._getLiteralFactory(\n key,
literal.entries.map(e => e.value),\n entries => o.literalMap(entries.map((value, index) => ({\n
key: literal.entries[index].key,\n value,\n
quoted: literal.entries[index].quoted\n })))));\n }\n }\n private _getLiteralFactory(\n
key: string, values: o.Expression[], resultMap: (parameters: o.Expression[]) => o.Expression):\n
{literalFactory: o.Expression, literalFactoryArguments: o.Expression[]}\n {\n let literalFactory =
this.literalFactories.get(key);\n const literalFactoryArguments = values.filter((e => !e.isConstant()));\n if
(!literalFactory) {\n const resultExpressions = values.map(\n (e, index) => e.isConstant() ?
this.getConstLiteral(e, true) : o.variable(`a${index}`));\n const parameters =\n
resultExpressions.filter(isVariable).map(e => new o.FnParam(e.name!, o.DYNAMIC_TYPE));\n const
pureFunctionDeclaration =\n o.fn(parameters, [new o.ReturnStatement(resultMap(resultExpressions))],
o.INFERRED_TYPE);\n const name = this.freshName();\n this.statements.push(\n
o.variable(name).set(pureFunctionDeclaration).toDeclStmt(o.INFERRED_TYPE, [\n o.StmtModifier.Final\n
]));\n literalFactory = o.variable(name);\n this.literalFactories.set(key, literalFactory);\n }\n return
{literalFactory, literalFactoryArguments};\n }\n /**\n * Produce a unique name.\n * The name might be
unique among different prefixes if any of the prefixes end in\n * a digit so the prefix should be a constant string
(not based on user input) and\n * must not end in a digit.\n */\n uniqueName(prefix: string): string {\n return
`${prefix}${this.nextNameIndex++}`;\n }\n private definitionsOf(kind: DefinitionKind): Map<any,
FixupExpression> {\n switch (kind) {\n case DefinitionKind.Component:\n return
this.componentDefinitions;\n case DefinitionKind.Directive:\n return this.directiveDefinitions;\n case
DefinitionKind.Injector:\n return this.injectorDefinitions;\n case DefinitionKind.Pipe:\n return
this.pipeDefinitions;\n }\n error(`Unknown definition kind ${kind}`);\n return this.componentDefinitions;\n
}\n public propertyNameOf(kind: DefinitionKind): string {\n switch (kind) {\n case
DefinitionKind.Component:\n return 'cmp';\n case DefinitionKind.Directive:\n return 'dir';\n case
DefinitionKind.Injector:\n return 'inj';\n case DefinitionKind.Pipe:\n return 'pipe';\n }\n
error(`Unknown definition kind ${kind}`);\n return '<unknown>';\n }\n private freshName(): string {\n return
this.uniqueName(CONSTANT_PREFIX);\n }\n private keyOf(expression: o.Expression) {\n return
expression.visitExpression(new KeyVisitor(), KEY_CONTEXT);\n }\n /**\n * Visitor used to determine if 2
expressions are equivalent and can be shared in the\n * `ConstantPool`.\n * When the id (string) generated by the
visitor is equal, expressions are considered equivalent.\n */\n class KeyVisitor implements o.ExpressionVisitor {\n
visitLiteralExpr(ast: o.LiteralExpr): string {\n return `${typeof ast.value === 'string' ? '"' + ast.value + '"' :
ast.value}`;\n }\n visitLiteralArrayExpr(ast: o.LiteralArrayExpr, context: object): string {\n return
`${ast.entries.map(entry => entry.visitExpression(this, context)).join(',')}`;\n }\n visitLiteralMapExpr(ast:
o.LiteralMapExpr, context: object): string {\n const mapKey = (entry: o.LiteralMapEntry) => {\n const quote =
entry.quoted ? '"' : '';\n return `${quote}${entry.key}${quote}`;\n }; \n const mapEntry = (entry:
o.LiteralMapEntry) => {\n `${mapKey(entry)}:${entry.value.visitExpression(this, context)}`;\n return
`${ast.entries.map(mapEntry).join(',')}`;\n }\n visitExternalExpr(ast: o.ExternalExpr): string {\n return

```



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ast.value.moduleName ? `EX:${ast.value.moduleName}:${ast.value.name}` : \n
`EX:${ast.value.runtime.name}`;\n }\n\n visitReadVarExpr(node: o.ReadVarExpr) {\n return
`VAR:${node.name}`;\n }\n\n visitTypeofExpr(node: o.TypeofExpr, context: any): string {\n return
`TYPEOF:${node.expr.visitExpression(this, context)};\n }\n\n visitWrappedNodeExpr = invalid;\n
visitWriteVarExpr = invalid;\n visitWriteKeyExpr = invalid;\n visitWritePropExpr = invalid;\n
visitInvokeMethodExpr = invalid;\n visitInvokeFunctionExpr = invalid;\n visitInstantiateExpr = invalid;\n
visitConditionalExpr = invalid;\n visitNotExpr = invalid;\n visitAssertNotNullExpr = invalid;\n visitCastExpr =
invalid;\n visitFunctionExpr = invalid;\n visitUnaryOperatorExpr = invalid;\n visitBinaryOperatorExpr =
invalid;\n visitReadPropExpr = invalid;\n visitReadKeyExpr = invalid;\n visitCommaExpr = invalid;\n
visitLocalizedString = invalid;\n }\n\nfunction invalid<T>(this: o.ExpressionVisitor, arg: o.Expression|o.Statement):
never {\n throw new Error(\n `Invalid state: Visitor ${this.constructor.name} doesn't handle
${arg.constructor.name}`);\n }\n\nfunction isVariable(e: o.Expression): e is o.ReadVarExpr {\n return e instanceof
o.ReadVarExpr;\n }\n\nfunction isLongStringLiteral(expr: o.Expression): boolean {\n return expr instanceof
o.LiteralExpr && typeof expr.value === 'string' &&\n expr.value.length >=
POOL_INCLUSION_LENGTH_THRESHOLD_FOR_STRINGS;\n }\n\n"/**\n * @license\n * Copyright Google
LLC All Rights Reserved.\n * Use of this source code is governed by an MIT-style license that can be\n * found
in the LICENSE file at https://angular.io/license\n */\n\nimport {CompileTokenMetadata} from
'./compile_metadata';\nimport {CompileReflector} from './compile_reflector';\nimport * as o from
'./output/output_ast';\n\nconst CORE = '@angular/core';\n\nexport class Identifiers {\n static
ANALYZE_FOR_ENTRY_COMPONENTS: o.ExternalReference = {\n name:
'ANALYZE_FOR_ENTRY_COMPONENTS',\n moduleName: CORE,\n\n };
\n static ElementRef:
o.ExternalReference = {name: 'ElementRef', moduleName: CORE};\n static NgModuleRef: o.ExternalReference =
{name: 'NgModuleRef', moduleName: CORE};\n static ViewContainerRef: o.ExternalReference = {name:
'ViewContainerRef', moduleName: CORE};\n static ChangeDetectorRef: o.ExternalReference = {\n name:
'ChangeDetectorRef',\n moduleName: CORE,\n\n };
\n static QueryList: o.ExternalReference = {name:
'QueryList', moduleName: CORE};\n static TemplateRef: o.ExternalReference = {name: 'TemplateRef',
moduleName: CORE};\n static Renderer2: o.ExternalReference = {name: 'Renderer2', moduleName: CORE};\n
static CodegenComponentFactoryResolver: o.ExternalReference = {\n name:
'CodegenComponentFactoryResolver',\n moduleName: CORE,\n\n };
\n static ComponentFactoryResolver:
o.ExternalReference = {\n name: 'ComponentFactoryResolver',\n moduleName: CORE,\n\n };
\n static ComponentFactory: o.ExternalReference = {name: 'ComponentFactory', moduleName: CORE};\n
static ComponentRef: o.ExternalReference = {name: 'ComponentRef', moduleName: CORE};\n static NgModuleFactory:
o.ExternalReference = {name: 'NgModuleFactory', moduleName: CORE};\n static createModuleFactory:
o.ExternalReference = {\n name: 'cmf',\n moduleName: CORE,\n\n };
\n static moduleDef: o.ExternalReference
= {\n name: 'mod',\n moduleName: CORE,\n\n };
\n static moduleProviderDef: o.ExternalReference = {\n
name: 'mpd',\n moduleName: CORE,\n\n };
\n static RegisterModuleFactoryFn: o.ExternalReference = {\n
name: 'registerModuleFactory',\n moduleName: CORE,\n\n };
\n static inject: o.ExternalReference = {name:
'inject', moduleName: CORE};\n static directiveInject: o.ExternalReference = {name: 'directiveInject',
moduleName: CORE};\n static INJECTOR: o.ExternalReference = {name: 'INJECTOR', moduleName: CORE};\n
static Injector: o.ExternalReference = {name: 'Injector', moduleName: CORE};\n static defineInjectable:
o.ExternalReference = {name: 'defineInjectable', moduleName: CORE};\n static InjectableDef:
o.ExternalReference = {name: 'InjectableDef', moduleName: CORE};\n static ViewEncapsulation:
o.ExternalReference = {\n name: 'ViewEncapsulation',\n moduleName: CORE,\n\n };
\n static ChangeDetectionStrategy: o.ExternalReference = {\n name: 'ChangeDetectionStrategy',\n moduleName:
CORE,\n\n };
\n static SecurityContext: o.ExternalReference = {\n name: 'SecurityContext',\n moduleName:
CORE,\n\n };
\n static LOCALE_ID: o.ExternalReference = {name: 'LOCALE_ID', moduleName: CORE};\n
static TRANSLATIONS_FORMAT: o.ExternalReference = {\n name: 'TRANSLATIONS_FORMAT',\n
moduleName: CORE,\n\n };
\n static inlineInterpolate: o.ExternalReference = {\n name: 'inlineInterpolate',\n

```

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moduleName: CORE,\n };
static interpolate: o.ExternalReference = {name: 'interpolate', moduleName:
CORE};
static EMPTY_ARRAY: o.ExternalReference = {name: 'EMPTY_ARRAY', moduleName: CORE};
static EMPTY_MAP: o.ExternalReference = {name: 'EMPTY_MAP', moduleName: CORE};
static Renderer:
o.ExternalReference = {name: 'Renderer', moduleName: CORE};
static viewDef: o.ExternalReference = {name:
'vid', moduleName: CORE};
static elementDef: o.ExternalReference = {name: 'eld', moduleName: CORE};
static anchorDef: o.ExternalReference = {name: 'and', moduleName: CORE};
static textDef: o.ExternalReference
= {name: 'ted', moduleName: CORE};
static directiveDef: o.ExternalReference = {name: 'did', moduleName:
CORE};
static providerDef: o.ExternalReference = {name: 'prd', moduleName: CORE};
static queryDef:
o.ExternalReference = {name: 'qud', moduleName: CORE};
static pureArrayDef: o.ExternalReference = {name:
'pad', moduleName: CORE};
static pureObjectDef: o.ExternalReference = {name: 'pod', moduleName: CORE};
static purePipeDef: o.ExternalReference = {name: 'ppd', moduleName: CORE};
static pipeDef:
o.ExternalReference = {name: 'pid', moduleName: CORE};
static nodeValue: o.ExternalReference = {name:
'nov', moduleName: CORE};
static ngContentDef: o.ExternalReference = {name: 'ncd', moduleName: CORE};
static unwrapValue: o.ExternalReference = {name: 'unv', moduleName: CORE};
static createRendererType2:
o.ExternalReference = {name: 'crt', moduleName: CORE};
// type only
static RendererType2:
o.ExternalReference = {\n name: 'RendererType2',\n moduleName: CORE,\n\n };
// type only
static
ViewDefinition: o.ExternalReference = {\n name: 'ViewDefinition',\n moduleName: CORE,\n };
static
createComponentFactory: o.ExternalReference = {name: 'ccf', moduleName: CORE};
static setClassMetadata:
o.ExternalReference = {name: 'setClassMetadata', moduleName: CORE};
\n\nexport function
createTokenForReference(reference: any): CompileTokenMetadata {\n return {identifier: {reference:
reference}};\n}\n\nexport function createTokenForExternalReference(\n reflector: CompileReflector, reference:
o.ExternalReference): CompileTokenMetadata {\n return
createTokenForReference(reflector.resolveExternalReference(reference));\n}\n\n"/**\n * @license\n * Copyright
Google LLC All Rights Reserved.\n * Use of this source code is governed by an MIT-style license that can be\n
* found in the LICENSE file at https://angular.io/license\n *\n\n/**\n * A token representing the a reference to a
static type.\n * This token is unique for a filePath and name and can be used as a hash table key.\n *\n\nexport
class StaticSymbol {\n constructor(public filePath: string, public name: string, public members: string[]) {}
\n\nassertNoMembers() {\n if (this.members.length) {\n throw new Error(\n `Illegal state: symbol without
members expected, but got ${JSON.stringify(this)}.`);\n }\n }\n\n\n/**\n * A cache of static symbol used by the
StaticReflector to return the same symbol for the\n * same symbol values.\n *\n\nexport class StaticSymbolCache {\n
private cache = new Map<string, StaticSymbol>();\n\nget(declarationFile: string, name: string, members?:
string[]): StaticSymbol {\n members = members || [];\n const memberSuffix = members.length ?
`${members.join('.')}` : "";\n const key = `\"${declarationFile}\".${name}${memberSuffix}`;\n let result =
this.cache.get(key);\n if (!result) {\n result = new StaticSymbol(declarationFile, name, members);\n
this.cache.set(key, result);\n }\n return result;\n }\n}\n\n"/**\n * @license\n * Copyright Google LLC All Rights
Reserved.\n * Use of this source code is governed by an MIT-style license that can be\n * found in the
LICENSE file at https://angular.io/license\n *\n\nimport {StaticSymbol} from './aot/static_symbol';
\nimport
{ChangeDetectionStrategy, SchemaMetadata, Type, ViewEncapsulation} from './core';
\nimport {LifecycleHooks}
from './lifecycle_reflector';
\nimport {ParseTreeResult as HtmlParseTreeResult} from './ml_parser/parser';
\nimport
{splitAtColon, stringify} from './util';
\n\n// group 0: \"[prop] or (event) or @trigger\"\n// group 1: \"prop\"\n from
\"[prop]\"\n// group 2: \"event\"\n from \"(event)\"\n// group 3: \"@trigger\"\n from \"@trigger\"\nconst
HOST_REG_EXP = /^(?:(?!\[^\]]+\])|(?!((\[^\]]+\])))(\@[^\w]+)$/;
\n\nexport function
sanitizeIdentifier(name: string): string {\n return name.replace(/\\W/g, '_');\n}\n\nlet _anonymousTypeIndex =
0;\n\nexport function identifierName(compileIdentifier: CompileIdentifierMetadata|null|undefined): string\n null
{\n if (!compileIdentifier || !compileIdentifier.reference) {\n return null;\n }\n const ref =
compileIdentifier.reference;\n if (ref instanceof StaticSymbol) {\n return ref.name;\n }\n if
(ref['__anonymousType']) {\n return ref['__anonymousType'];\n }\n let identifier = stringify(ref);\n if
(identifier.indexOf('(') >= 0) {\n // case: anonymous functions!\n identifier =

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`anonymous_${_anonymousTypeIndex++}`;\n ref['__anonymousType'] = identifier;\n } else {\n identifier =
sanitizeIdentifier(identifier);\n }\n return identifier;\n}\n\nexport function identifierModuleUrl(compileIdentifier:
CompileIdentifierMetadata): string {\n const ref = compileIdentifier.reference;\n if (ref instanceof StaticSymbol)
{\n return ref.filePath;\n }\n // Runtime type\n return `.${stringify(ref)}`;\n}\n\nexport function
viewClassName(compType: any, embeddedTemplateIndex: number): string {\n return
`View_${identifierName({reference: compType})}_${embeddedTemplateIndex}`;\n}\n\nexport function
rendererTypeName(compType: any): string {\n return `RenderType_${identifierName({reference:
compType})}`;\n}\n\nexport function hostViewClassName(compType: any): string {\n return
`HostView_${identifierName({reference: compType})}`;\n}\n\nexport function
componentFactoryName(compType: any): string {\n return `${identifierName({reference:
compType})}NgFactory`;\n}\n\nexport interface ProxyClass {\n setDelegate(delegate: any): void;\n}\n\nexport
interface CompileIdentifierMetadata {\n reference: any;\n}\n\nexport enum CompileSummaryKind {\n Pipe,\n Directive,\n NgModule,\n Injectable\n}\n\n/**\n * A CompileSummary is the data needed to use a directive / pipe /
module\n * in other modules / components. However, this data is not enough to compile\n * the directive / module
itself.\n */\nexport interface CompileTypeSummary {\n summaryKind: CompileSummaryKind|null;\n type:
CompileTypeMetadata;\n}\n\nexport interface CompileDiDependencyMetadata {\n isAttribute?: boolean;\n isSelf?:
boolean;\n isHost?: boolean;\n isSkipSelf?: boolean;\n isOptional?: boolean;\n isValue?: boolean;\n token?:
CompileTokenMetadata;\n value?: any;\n}\n\nexport interface CompileProviderMetadata {\n token:
CompileTokenMetadata;\n useClass?: CompileTypeMetadata;\n useValue?: any;\n useExisting?:
CompileTokenMetadata;\n useFactory?: CompileFactoryMetadata;\n deps?: CompileDiDependencyMetadata[];\n multi?:
boolean;\n}\n\nexport interface CompileFactoryMetadata extends CompileIdentifierMetadata {\n diDeps:
CompileDiDependencyMetadata[];\n reference: any;\n}\n\nexport function tokenName(token:
CompileTokenMetadata) {\n return token.value != null ? sanitizeIdentifier(token.value) :
identifierName(token.identifier);\n}\n\nexport function tokenReference(token: CompileTokenMetadata) {\n if
(token.identifier != null) {\n return token.identifier.reference;\n } else {\n return token.value;\n }\n}\n\nexport
interface CompileTokenMetadata {\n value?: any;\n identifier?:
CompileIdentifierMetadata|CompileTypeMetadata;\n}\n\nexport interface CompileInjectableMetadata {\n symbol:
StaticSymbol;\n type: CompileTypeMetadata;\n\n providedIn?: StaticSymbol;\n\n useValue?: any;\n useClass?:
StaticSymbol;\n useExisting?: StaticSymbol;\n useFactory?: StaticSymbol;\n deps?: any[];\n}\n\n/**\n * Metadata
regarding compilation of a type.\n */\nexport interface CompileTypeMetadata extends CompileIdentifierMetadata
{\n diDeps: CompileDiDependencyMetadata[];\n lifecycleHooks: LifecycleHooks[];\n reference:
any;\n}\n\nexport interface CompileQueryMetadata {\n selectors: Array<CompileTokenMetadata>;\n descendants:
boolean;\n first: boolean;\n propertyName: string;\n read: CompileTokenMetadata;\n static?: boolean;\n}\n\n/**\n *
Metadata about a stylesheet\n */\nexport class CompileStylesheetMetadata {\n moduleUrl: string|null;\n styles:
string[];\n styleUrls: string[];\n constructor(\n {moduleUrl, styles, styleUrls}: \n {moduleUrl?: string,
styles?: string[], styleUrls?: string[]} = {}) {\n this.moduleUrl = moduleUrl || null;\n this.styles =
_normalizeArray(styles);\n this.styleUrls = _normalizeArray(styleUrls);\n }\n}\n\n/**\n * Summary Metadata
regarding compilation of a template.\n */\nexport interface CompileTemplateSummary {\n ngContentSelectors:
string[];\n encapsulation: ViewEncapsulation|null;\n styles: string[];\n animations: any[]|null;\n}\n\n/**\n *
Metadata regarding compilation of a template.\n */\nexport class CompileTemplateMetadata {\n encapsulation:
ViewEncapsulation|null;\n template: string|null;\n templateUrl: string|null;\n htmlAst: HtmlParseTreeResult|null;\n
isInline: boolean;\n styles: string[];\n styleUrls: string[];\n externalStylesheets: CompileStylesheetMetadata[];\n
animations: any[];\n ngContentSelectors: string[];\n interpolation: [string, string]|null;\n preserveWhitespaces:
boolean;\n constructor({\n encapsulation,\n template,\n templateUrl,\n htmlAst,\n styles,\n styleUrls,\n
externalStylesheets,\n animations,\n ngContentSelectors,\n interpolation,\n isInline,\n
preserveWhitespaces\n }): {\n encapsulation: ViewEncapsulation|null,\n template: string|null,\n templateUrl:
string|null,\n htmlAst: HtmlParseTreeResult|null,\n styles: string[],\n styleUrls: string[],\n
externalStylesheets: CompileStylesheetMetadata[],\n ngContentSelectors: string[],\n animations: any[],\n

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interpolation: [string, string]|null,\n isInline: boolean,\n preserveWhitespaces: boolean\n }) {\n
this.encapsulation = encapsulation;\n this.template = template;\n this.templateUrl = templateUrl;\n
this.htmlAst = htmlAst;\n this.styles = _normalizeArray(styles);\n this.styleUrls = _normalizeArray(styleUrls);\n
 this.externalStylesheets = _normalizeArray(externalStylesheets);\n this.animations = animations ?
flatten(animations) : [];\n this.ngContentSelectors = ngContentSelectors || [];\n if (interpolation &&
interpolation.length != 2) {\n throw new Error(`interpolation` should have a start and an end symbol.`);\n }\n
this.interpolation = interpolation;\n this.isInline = isInline;\n this.preserveWhitespaces = preserveWhitespaces;\n
}\n\n toSummary(): CompileTemplateSummary {\n return {\n ngContentSelectors: this.ngContentSelectors,\n
 encapsulation: this.encapsulation,\n styles: this.styles,\n animations: this.animations\n };}\n}\n\nexport
interface CompileEntryComponentMetadata {\n componentType: any;\n componentFactory:
StaticSymbol|object;\n}\n\n// Note: This should only use interfaces as nested data types\n// as we need to be able to
serialize this from/to JSON!\n\nexport interface CompileDirectiveSummary extends CompileTypeSummary {\n type:
CompileTypeMetadata;\n isComponent: boolean;\n selector: string|null;\n exportAs: string|null;\n inputs: {[key:
string]: string};\n outputs: {[key: string]: string};\n hostListeners: {[key: string]: string};\n hostProperties: {[key:
string]: string};\n hostAttributes: {[key: string]: string};\n providers: CompileProviderMetadata[];\n
viewProviders: CompileProviderMetadata[];\n queries: CompileQueryMetadata[];\n guards: {[key: string]: any};\n
viewQueries: CompileQueryMetadata[];\n entryComponents: CompileEntryComponentMetadata[];\n
changeDetection: ChangeDetectionStrategy|null;\n template: CompileTemplateSummary|null;\n
componentViewType: StaticSymbol|ProxyClass|null;\n rendererType: StaticSymbol|object|null;\n
componentFactory: StaticSymbol|object|null;\n}\n\n/**\n * Metadata regarding compilation of a directive.\n
*/\n\nexport class CompileDirectiveMetadata {\n static create({\n isHost,\n type,\n isComponent,\n selector,\n
exportAs,\n changeDetection,\n inputs,\n outputs,\n host,\n providers,\n viewProviders,\n queries,\n
guards,\n viewQueries,\n entryComponents,\n template,\n componentViewType,\n rendererType,\n
componentFactory\n }): {\n isHost: boolean,\n type: CompileTypeMetadata,\n isComponent: boolean,\n
selector: string|null,\n exportAs: string|null,\n changeDetection: ChangeDetectionStrategy|null,\n inputs:
string[],\n outputs: string[],\n host: {[key: string]: string},\n providers: CompileProviderMetadata[],\n
viewProviders: CompileProviderMetadata[],\n queries: CompileQueryMetadata[],\n guards: {[key: string]:
any};\n viewQueries: CompileQueryMetadata[],\n entryComponents: CompileEntryComponentMetadata[],\n
template: CompileTemplateMetadata,\n componentViewType: StaticSymbol|ProxyClass|null,\n rendererType:
StaticSymbol|object|null,\n componentFactory: StaticSymbol|object|null,\n }): CompileDirectiveMetadata {\n
 const hostListeners: {[key: string]: string} = {};\n const hostProperties: {[key: string]: string} = {};\n const
hostAttributes: {[key: string]: string} = {};\n if (host != null) {\n Object.keys(host).forEach(key => {\n
const value = host[key];\n const matches = key.match(HOST_REG_EXP);\n if (matches === null) {\n
hostAttributes[key] = value;\n } else if (matches[1] != null) {\n hostProperties[matches[1]] = value;\n
 } else if (matches[2] != null) {\n hostListeners[matches[2]] = value;\n }\n });\n }\n const
inputsMap: {[key: string]: string} = {};\n if (inputs != null) {\n inputs.forEach((bindConfig: string) => {\n
// canonical syntax: `dirProp: elProp`\n // if there is no `:` , use dirProp = elProp\n const parts =
splitAtColon(bindConfig, [bindConfig, bindConfig]);\n inputsMap[parts[0]] = parts[1];\n });\n }\n const
outputsMap: {[key: string]: string} = {};\n if (outputs != null) {\n outputs.forEach((bindConfig: string) => {\n
// canonical syntax: `dirProp: elProp`\n // if there is no `:` , use dirProp = elProp\n const parts =
splitAtColon(bindConfig, [bindConfig, bindConfig]);\n outputsMap[parts[0]] = parts[1];\n });\n }\n }\n
return new CompileDirectiveMetadata({\n isHost,\n type,\n isComponent: !!isComponent,\n selector,\n
exportAs,\n changeDetection,\n inputs: inputsMap,\n outputs: outputsMap,\n hostListeners,\n
hostProperties,\n hostAttributes,\n providers,\n viewProviders,\n queries,\n guards,\n
viewQueries,\n entryComponents,\n template,\n componentViewType,\n rendererType,\n
componentFactory,\n });\n}\n\n isHost: boolean;\n type: CompileTypeMetadata;\n isComponent: boolean;\n
selector: string|null;\n exportAs: string|null;\n changeDetection: ChangeDetectionStrategy|null;\n inputs: {[key:
string]: string};\n outputs: {[key: string]: string};\n hostListeners: {[key: string]: string};\n hostProperties: {[key:

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string]: string};\n hostAttributes: {[key: string]: string};\n providers: CompileProviderMetadata[];\n
viewProviders: CompileProviderMetadata[];\n queries: CompileQueryMetadata[];\n guards: {[key: string]: any};\n
viewQueries: CompileQueryMetadata[];\n entryComponents: CompileEntryComponentMetadata[];\n\n template:
CompileTemplateMetadata|null;\n\n componentViewType: StaticSymbol|ProxyClass|null;\n rendererType:
StaticSymbol|object|null;\n componentFactory: StaticSymbol|object|null;\n\n constructor({\n isHost,\n type,\n
isComponent,\n selector,\n exportAs,\n changeDetection,\n inputs,\n outputs,\n hostListeners,\n
hostProperties,\n hostAttributes,\n providers,\n viewProviders,\n queries,\n guards,\n viewQueries,\n
entryComponents,\n template,\n componentViewType,\n rendererType,\n componentFactory\n }): {\n
isHost: boolean,\n type: CompileTypeMetadata,\n isComponent: boolean,\n selector: string|null,\n exportAs:
string|null,\n changeDetection: ChangeDetectionStrategy|null,\n inputs: {[key: string]: string},\n outputs:
{[key: string]: string},\n hostListeners: {[key: string]: string},\n hostProperties: {[key: string]: string},\n
hostAttributes: {[key: string]: string},\n providers: CompileProviderMetadata[],\n viewProviders:
CompileProviderMetadata[],\n queries: CompileQueryMetadata[],\n guards: {[key: string]: any},\n
viewQueries: CompileQueryMetadata[],\n entryComponents: CompileEntryComponentMetadata[],\n template:
CompileTemplateMetadata|null,\n componentViewType: StaticSymbol|ProxyClass|null,\n rendererType:
StaticSymbol|object|null,\n componentFactory: StaticSymbol|object|null,\n }) {\n this.isHost = !!isHost;\n
this.type = type;\n this.isComponent = isComponent;\n this.selector = selector;\n this.exportAs = exportAs;\n
this.changeDetection = changeDetection;\n this.inputs = inputs;\n this.outputs = outputs;\n this.hostListeners =
hostListeners;\n this.hostProperties = hostProperties;\n this.hostAttributes = hostAttributes;\n this.providers =
_normalizeArray(providers);\n this.viewProviders = _normalizeArray(viewProviders);\n this.queries =
_normalizeArray(queries);\n this.guards = guards;\n this.viewQueries = _normalizeArray(viewQueries);\n
this.entryComponents = _normalizeArray(entryComponents);\n this.template = template;\n\n
this.componentViewType = componentViewType;\n this.rendererType = rendererType;\n
this.componentFactory = componentFactory;\n }\n\n toSummary(): CompileDirectiveSummary {\n return {\n
summaryKind: CompileSummaryKind.Directive,\n type: this.type,\n isComponent: this.isComponent,\n
selector: this.selector,\n exportAs: this.exportAs,\n inputs: this.inputs,\n outputs: this.outputs,\n
hostListeners: this.hostListeners,\n hostProperties: this.hostProperties,\n hostAttributes: this.hostAttributes,\n
providers: this.providers,\n viewProviders: this.viewProviders,\n queries: this.queries,\n guards:
this.guards,\n viewQueries: this.viewQueries,\n entryComponents: this.entryComponents,\n
changeDetection: this.changeDetection,\n template: this.template && this.template.toSummary(),\n
componentViewType: this.componentViewType,\n rendererType: this.rendererType,\n componentFactory:
this.componentFactory\n };\n }\n\n\nexport interface CompilePipeSummary extends CompileTypeSummary {\n
type: CompileTypeMetadata;\n name: string;\n pure: boolean;\n }\n\n\nexport class CompilePipeMetadata {\n type:
CompileTypeMetadata;\n name: string;\n pure: boolean;\n }\n\n constructor({type, name, pure}: {\n type:
CompileTypeMetadata,\n name: string,\n pure: boolean,\n }) {\n this.type = type;\n this.name = name;\n
this.pure = !!pure;\n }\n\n toSummary(): CompilePipeSummary {\n return {\n summaryKind:
CompileSummaryKind.Pipe,\n type: this.type,\n name: this.name,\n pure: this.pure\n };\n }\n\n\n//
Note: This should only use interfaces as nested data types\n// as we need to be able to serialize this from/to
JSON!\n\nexport interface CompileNgModuleSummary extends CompileTypeSummary {\n type:
CompileTypeMetadata;\n\n // Note: This is transitive over the exported modules.\n exportedDirectives:
CompileIdentifierMetadata[];\n // Note: This is transitive over the exported modules.\n exportedPipes:
CompileIdentifierMetadata[];\n\n // Note: This is transitive.\n entryComponents:
CompileEntryComponentMetadata[];\n\n // Note: This is transitive.\n providers: {provider:
CompileProviderMetadata, module: CompileIdentifierMetadata}[];\n\n // Note: This is transitive.\n modules:
CompileTypeMetadata[];\n\n\nexport class CompileShallowModuleMetadata {\n // TODO(issue/24571): remove
'!\n type!: CompileTypeMetadata;\n\n rawExports: any;\n rawImports: any;\n rawProviders: any;\n }\n\n\n**\n *
Metadata regarding compilation of a module.\n *\n\nexport class CompileNgModuleMetadata {\n type:
CompileTypeMetadata;\n declaredDirectives: CompileIdentifierMetadata[];\n exportedDirectives:

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CompileIdentifierMetadata[];\n declaredPipes: CompileIdentifierMetadata[];\n\n exportedPipes:
CompileIdentifierMetadata[];\n entryComponents: CompileEntryComponentMetadata[];\n bootstrapComponents:
CompileIdentifierMetadata[];\n providers: CompileProviderMetadata[];\n\n importedModules:
CompileNgModuleSummary[];\n exportedModules: CompileNgModuleSummary[];\n schemas:
SchemaMetadata[];\n id: string|null;\n\n transitiveModule: TransitiveCompileNgModuleMetadata;\n\n
constructor({\n type,\n providers,\n declaredDirectives,\n exportedDirectives,\n declaredPipes,\n
exportedPipes,\n entryComponents,\n bootstrapComponents,\n importedModules,\n exportedModules,\n
schemas,\n transitiveModule,\n id\n }): {\n type: CompileTypeMetadata,\n providers:
CompileProviderMetadata[],\n declaredDirectives: CompileIdentifierMetadata[],\n exportedDirectives:
CompileIdentifierMetadata[],\n declaredPipes: CompileIdentifierMetadata[],\n exportedPipes:
CompileIdentifierMetadata[],\n entryComponents: CompileEntryComponentMetadata[],\n
bootstrapComponents: CompileIdentifierMetadata[],\n importedModules: CompileNgModuleSummary[],\n
exportedModules: CompileNgModuleSummary[],\n transitiveModule: TransitiveCompileNgModuleMetadata,\n
schemas: SchemaMetadata[],\n id: string|null\n }) {\n this.type = type || null;\n this.declaredDirectives =
_normalizeArray(declaredDirectives);\n this.exportedDirectives = _normalizeArray(exportedDirectives);\n
this.declaredPipes = _normalizeArray(declaredPipes);\n this.exportedPipes = _normalizeArray(exportedPipes);\n
this.providers = _normalizeArray(providers);\n this.entryComponents = _normalizeArray(entryComponents);\n
this.bootstrapComponents = _normalizeArray(bootstrapComponents);\n this.importedModules =
_normalizeArray(importedModules);\n this.exportedModules = _normalizeArray(exportedModules);\n
this.schemas = _normalizeArray(schemas);\n this.id = id || null;\n this.transitiveModule = transitiveModule ||
null;\n }\n\n toSummary(): CompileNgModuleSummary {\n const module = this.transitiveModule!;\n return
{\n summaryKind: CompileSummaryKind.NgModule,\n type: this.type,\n entryComponents:
module.entryComponents,\n providers: module.providers,\n modules: module.modules,\n
exportedDirectives: module.exportedDirectives,\n exportedPipes: module.exportedPipes\n };}\n\n\nexport
class TransitiveCompileNgModuleMetadata {\n directivesSet = new Set<any>();\n directives:
CompileIdentifierMetadata[] = [];\n exportedDirectivesSet = new Set<any>();\n exportedDirectives:
CompileIdentifierMetadata[] = [];\n pipesSet = new Set<any>();\n pipes: CompileIdentifierMetadata[] = [];\n
exportedPipesSet = new Set<any>();\n exportedPipes: CompileIdentifierMetadata[] = [];\n modulesSet = new
Set<any>();\n modules: CompileTypeMetadata[] = [];\n entryComponentsSet = new Set<any>();\n
entryComponents: CompileEntryComponentMetadata[] = [];\n\n providers: {provider: CompileProviderMetadata,
module: CompileIdentifierMetadata}[] = [];\n\n addProvider(provider: CompileProviderMetadata, module:
CompileIdentifierMetadata) {\n this.providers.push({provider: provider, module: module});\n }\n\n
addDirective(id: CompileIdentifierMetadata) {\n if (!this.directivesSet.has(id.reference)) {\n
this.directivesSet.add(id.reference);\n this.directives.push(id);\n }\n }\n\n addExportedDirective(id:
CompileIdentifierMetadata) {\n if (!this.exportedDirectivesSet.has(id.reference)) {\n
this.exportedDirectivesSet.add(id.reference);\n this.exportedDirectives.push(id);\n }\n }\n\n addPipe(id:
CompileIdentifierMetadata) {\n if (!this.pipesSet.has(id.reference)) {\n this.pipesSet.add(id.reference);\n
this.pipes.push(id);\n }\n }\n\n addExportedPipe(id: CompileIdentifierMetadata) {\n if
(!this.exportedPipesSet.has(id.reference)) {\n this.exportedPipesSet.add(id.reference);\n
this.exportedPipes.push(id);\n }\n }\n\n addModule(id: CompileTypeMetadata) {\n if
(!this.modulesSet.has(id.reference)) {\n this.modulesSet.add(id.reference);\n this.modules.push(id);\n }\n
}\n\n addEntryComponent(ec: CompileEntryComponentMetadata) {\n if
(!this.entryComponentsSet.has(ec.componentType)) {\n this.entryComponentsSet.add(ec.componentType);\n
this.entryComponents.push(ec);\n }\n }\n\n\nfunction _normalizeArray(obj: any[]|undefined|null): any[] {\n
return obj || [];\n}\n\nexport class ProviderMeta {\n token: any;\n useClass: Type|null;\n useValue: any;\n
useExisting: any;\n useFactory: Function|null;\n dependencies: Object[]|null;\n multi: boolean;\n\n
constructor(token: any, {useClass, useValue, useExisting, useFactory, deps, multi}: {\n useClass?: Type,\n
useValue?: any,\n useExisting?: any,\n useFactory?: Function|null,\n deps?: Object[]|null,\n multi?:

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boolean\n }) {\n this.token = token;\n this.useClass = useClass || null;\n this.useValue = useValue;\n this.useExisting = useExisting;\n this.useFactory = useFactory || null;\n this.dependencies = deps || null;\n this.multi = !!multi;\n }}\n\nexport function flatten<T>(list: Array<T|T[]>): T[] {\n return list.reduce((flat: any[],\n item: T|T[]): T[] => {\n const flatItem = Array.isArray(item) ? flatten(item) : item;\n return\n (<T[]>flat).concat(flatItem);\n }, []);\n}\n\nfunction jitSourceUrl(url: string) {\n // Note: We need 3 `^` so that ng\n shows up as a separate domain\n // in the chrome dev tools.\n return url.replace(/(\\w+:\\\\w+\\/\\w+)?(\\w+)?/,
'ng:///');\n}\n\nexport function templateUrl(\n ngModuleType: CompileIdentifierMetadata, compMeta:
{type: CompileIdentifierMetadata},\n templateMeta: {isInline: boolean, templateUrl: string|null}) {\n let url:
string;\n if (templateMeta.isInline) {\n if (compMeta.type.reference instanceof StaticSymbol) {\n // Note: a ts
file might contain multiple components with inline templates,\n // so we need to give them unique urls, as these
will be used for sourcemaps.\n url =
`${compMeta.type.reference.filePath}.${compMeta.type.reference.name}.html`;\n } else {\n url =
`${identifierName(ngModuleType)}${identifierName(compMeta.type)}.html`;\n } } else {\n url =
templateMeta.templateUrl!;\n }\n return compMeta.type.reference instanceof StaticSymbol ? url :
jitSourceUrl(url);\n}\n\nexport function sharedStylesheetJitUrl(meta: CompileStylesheetMetadata, id: number) {\n const pathParts = meta.moduleUrl!.split(/\\|\\/|\\/g);\n const baseName = pathParts[pathParts.length - 1];\n return
jitSourceUrl(`css/${id}${baseName}.ngstyle.js`);\n}\n\nexport function ngModuleJitUrl(moduleMeta:
CompileNgModuleMetadata): string {\n return
jitSourceUrl(`${identifierName(moduleMeta.type)}/module.ngfactory.js`);\n}\n\nexport function templateUrl(\n ngModuleType: CompileIdentifierMetadata, compMeta: CompileDirectiveMetadata): string {\n return
jitSourceUrl(\n
`${identifierName(ngModuleType)}${identifierName(compMeta.type)}.ngfactory.js`);\n}\n\n"/**\n * @license\n *
Copyright Google LLC All Rights Reserved.\n * Use of this source code is governed by an MIT-style license
that can be\n * found in the LICENSE file at https://angular.io/license\n */\nimport * as o from
'../output/output_ast';\nconst CORE = '@angular/core';\nexport class Identifiers {\n /* Methods */\n static
NEW_METHOD = 'factory';\n static TRANSFORM_METHOD = 'transform';\n static PATCH_DEPS =
'patchedDeps';\n /* Instructions */\n static namespaceHTML: o.ExternalReference = {name: 'namespaceHTML',
moduleName: CORE};\n static namespaceMathML: o.ExternalReference = {name: 'namespaceMathML',
moduleName: CORE};\n static namespaceSVG: o.ExternalReference = {name: 'namespaceSVG', moduleName:
CORE};\n static element: o.ExternalReference = {name: 'element', moduleName: CORE};\n static
elementStart: o.ExternalReference = {name: 'elementStart', moduleName: CORE};\n static elementEnd:
o.ExternalReference = {name: 'elementEnd', moduleName: CORE};\n static advance: o.ExternalReference =
{name: 'advance', moduleName: CORE};\n static syntheticHostProperty:\n o.ExternalReference = {name:
'syntheticHostProperty', moduleName: CORE};\n static syntheticHostListener:\n o.ExternalReference =
{name: 'syntheticHostListener', moduleName: CORE};\n static attribute: o.ExternalReference = {name:
'attribute', moduleName: CORE};\n static attributeInterpolate1:\n o.ExternalReference = {name:
'attributeInterpolate1', moduleName: CORE};\n static attributeInterpolate2:\n o.ExternalReference = {name:
'attributeInterpolate2', moduleName: CORE};\n static attributeInterpolate3:\n o.ExternalReference = {name:
'attributeInterpolate3', moduleName: CORE};\n static attributeInterpolate4:\n o.ExternalReference = {name:
'attributeInterpolate4', moduleName: CORE};\n static attributeInterpolate5:\n o.ExternalReference = {name:
'attributeInterpolate5', moduleName: CORE};\n static attributeInterpolate6:\n o.ExternalReference = {name:
'attributeInterpolate6', moduleName: CORE};\n static attributeInterpolate7:\n o.ExternalReference = {name:
'attributeInterpolate7', moduleName: CORE};\n static attributeInterpolate8:\n o.ExternalReference = {name:
'attributeInterpolate8', moduleName: CORE};\n static attributeInterpolateV:\n o.ExternalReference = {name:
'attributeInterpolateV', moduleName: CORE};\n static classProp: o.ExternalReference = {name: 'classProp',
moduleName: CORE};\n static elementContainerStart:\n o.ExternalReference = {name:
'elementContainerStart', moduleName: CORE};\n static elementContainerEnd:\n o.ExternalReference =
{name: 'elementContainerEnd', moduleName: CORE};\n static elementContainer: o.ExternalReference = {name:

```





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moduleName: CORE};\n static pureFunction3: o.ExternalReference = {name: 'pureFunction3', moduleName:
CORE};\n static pureFunction4: o.ExternalReference = {name: 'pureFunction4', moduleName: CORE};\n static
pureFunction5: o.ExternalReference = {name: 'pureFunction5', moduleName: CORE};\n static pureFunction6:
o.ExternalReference = {name: 'pureFunction6', moduleName: CORE};\n static pureFunction7: o.ExternalReference
= {name: 'pureFunction7', moduleName: CORE};\n static pureFunction8: o.ExternalReference = {name:
'pureFunction8', moduleName: CORE};\n static pureFunctionV: o.ExternalReference = {name: 'pureFunctionV',
moduleName: CORE};\n\n static pipeBind1: o.ExternalReference = {name: 'pipeBind1', moduleName: CORE};\n\n
static pipeBind2: o.ExternalReference = {name: 'pipeBind2', moduleName: CORE};\n\n static pipeBind3:
o.ExternalReference = {name: 'pipeBind3', moduleName: CORE};\n\n static pipeBind4: o.ExternalReference =
{name: 'pipeBind4', moduleName: CORE};\n\n static pipeBindV: o.ExternalReference = {name: 'pipeBindV',
moduleName: CORE};\n\n\n static hostProperty: o.ExternalReference = {name: 'hostProperty', moduleName:
CORE};\n\n\n static property: o.ExternalReference = {name: 'property', moduleName: CORE};\n\n\n static
propertyInterpolate:\n o.ExternalReference = {name: 'propertyInterpolate', moduleName: CORE};\n\n static
propertyInterpolate1:\n o.ExternalReference = {name: 'propertyInterpolate1', moduleName: CORE};\n\n static
propertyInterpolate2:\n o.ExternalReference = {name: 'propertyInterpolate2', moduleName: CORE};\n\n static
propertyInterpolate3:\n o.ExternalReference = {name: 'propertyInterpolate3', moduleName: CORE};\n\n static
propertyInterpolate4:\n o.ExternalReference = {name: 'propertyInterpolate4', moduleName: CORE};\n\n static
propertyInterpolate5:\n o.ExternalReference = {name: 'propertyInterpolate5', moduleName: CORE};\n\n static
propertyInterpolate6:\n o.ExternalReference = {name: 'propertyInterpolate6', moduleName: CORE};\n\n static
propertyInterpolate7:\n o.ExternalReference = {name: 'propertyInterpolate7', moduleName: CORE};\n\n static
propertyInterpolate8:\n o.ExternalReference = {name: 'propertyInterpolate8', moduleName: CORE};\n\n static
propertyInterpolateV:\n o.ExternalReference = {name: 'propertyInterpolateV', moduleName: CORE};\n\n\n static
i18n: o.ExternalReference = {name: 'i18n', moduleName: CORE};\n\n static i18nAttributes: o.ExternalReference =
{name: 'i18nAttributes', moduleName: CORE};\n\n static i18nExp: o.ExternalReference = {name: 'i18nExp',
moduleName: CORE};\n\n static i18nStart: o.ExternalReference = {name: 'i18nStart', moduleName: CORE};\n\n
static i18nEnd: o.ExternalReference = {name: 'i18nEnd', moduleName: CORE};\n\n static i18nApply:
o.ExternalReference = {name: 'i18nApply', moduleName: CORE};\n\n static i18nPostprocess: o.ExternalReference =
{name: 'i18nPostprocess', moduleName: CORE};\n\n\n static pipe: o.ExternalReference = {name: 'pipe',
moduleName: CORE};\n\n\n static projection: o.ExternalReference = {name: 'projection', moduleName: CORE};\n\n
static projectionDef: o.ExternalReference = {name: 'projectionDef', moduleName: CORE};\n\n\n static reference:
o.ExternalReference = {name: 'reference', moduleName: CORE};\n\n\n static inject: o.ExternalReference = {name:
'inject', moduleName: CORE};\n\n\n static injectAttribute: o.ExternalReference = {name: 'injectAttribute',
moduleName: CORE};\n\n\n static injectPipeChangeDetectorRef:\n o.ExternalReference = {name:
'injectPipeChangeDetectorRef', moduleName: CORE};\n\n\n static directiveInject: o.ExternalReference = {name:
'directiveInject', moduleName: CORE};\n\n\n static invalidFactory: o.ExternalReference = {name: 'invalidFactory',
moduleName: CORE};\n\n\n static invalidFactoryDep: o.ExternalReference = {name: 'invalidFactoryDep',
moduleName: CORE};\n\n\n\n static templateRefExtractor:\n o.ExternalReference = {name: 'templateRefExtractor',
moduleName: CORE};\n\n\n\n static resolveWindow: o.ExternalReference = {name: 'resolveWindow', moduleName:
CORE};\n\n\n\n static resolveDocument: o.ExternalReference = {name: 'resolveDocument', moduleName: CORE};\n\n
static resolveBody: o.ExternalReference = {name: 'resolveBody', moduleName: CORE};\n\n\n\n static
defineComponent: o.ExternalReference = {name: 'defineComponent', moduleName: CORE};\n\n\n\n static
setComponentScope: o.ExternalReference = {name: 'setComponentScope', moduleName: CORE};\n\n\n\n static
ComponentDefWithMeta: o.ExternalReference = {\n name: 'ComponentDefWithMeta',\n\n moduleName:
CORE,\n\n };\n\n\n\n static FactoryDef: o.ExternalReference = {\n name: 'FactoryDef',\n\n moduleName: CORE,\n\n
};\n\n\n\n static defineDirective: o.ExternalReference = {\n name: 'defineDirective',\n\n moduleName: CORE,\n\n
};\n\n\n\n static DirectiveDefWithMeta: o.ExternalReference = {\n name: 'DirectiveDefWithMeta',\n\n moduleName:
CORE,\n\n };\n\n\n\n static InjectorDef: o.ExternalReference = {\n name: 'InjectorDef',\n\n moduleName: CORE,\n\n
};\n\n\n\n static defineInjector: o.ExternalReference = {\n name: 'defineInjector',\n\n moduleName: CORE,\n\n
};\n\n\n

```

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static NgModuleDefWithMeta: o.ExternalReference = {\n name: 'NgModuleDefWithMeta',\n moduleName:
CORE,\n };;\n\n static ModuleWithProviders: o.ExternalReference = {\n name: 'ModuleWithProviders',\n
moduleName: CORE,\n };;\n\n static defineNgModule: o.ExternalReference = {name: 'defineNgModule',
moduleName: CORE};;\n\n static setNgModuleScope: o.ExternalReference = {name: 'setNgModuleScope',
moduleName: CORE};;\n\n static PipeDefWithMeta: o.ExternalReference = {name: 'PipeDefWithMeta',
moduleName: CORE};;\n\n static definePipe: o.ExternalReference = {name: 'definePipe', moduleName:
CORE};;\n\n static queryRefresh: o.ExternalReference = {name: 'queryRefresh', moduleName: CORE};;\n\n static
viewQuery: o.ExternalReference = {name: 'viewQuery', moduleName: CORE};;\n\n static staticViewQuery:
o.ExternalReference = {name: 'staticViewQuery', moduleName: CORE};;\n\n static staticContentQuery:
o.ExternalReference = {name: 'staticContentQuery', moduleName: CORE};;\n\n static loadQuery:
o.ExternalReference = {name: 'loadQuery', moduleName: CORE};;\n\n static contentQuery: o.ExternalReference =
{name: 'contentQuery', moduleName: CORE};;\n\n static NgOnChangesFeature: o.ExternalReference = {name:
'NgOnChangesFeature', moduleName: CORE};;\n\n static InheritDefinitionFeature:\n o.ExternalReference =
{name: 'InheritDefinitionFeature', moduleName: CORE};;\n\n static CopyDefinitionFeature:\n
o.ExternalReference = {name: 'CopyDefinitionFeature', moduleName: CORE};;\n\n static ProvidersFeature:
o.ExternalReference = {name: 'ProvidersFeature', moduleName: CORE};;\n\n static listener: o.ExternalReference =
{name: 'listener', moduleName: CORE};;\n\n static getFactoryOf: o.ExternalReference = {\n name:
'getFactoryOf',\n moduleName: CORE,\n };;\n\n static getInheritedFactory: o.ExternalReference = {\n name:
'getInheritedFactory',\n moduleName: CORE,\n };;\n\n // sanitization-related functions\n\n static sanitizeHtml:
o.ExternalReference = {name: 'sanitizeHtml', moduleName: CORE};;\n\n static sanitizeStyle: o.ExternalReference =
{name: 'sanitizeStyle', moduleName: CORE};;\n\n static sanitizeResourceUrl:\n o.ExternalReference = {name:
'sanitizeResourceUrl', moduleName: CORE};;\n\n static sanitizeScript: o.ExternalReference = {name: 'sanitizeScript',
moduleName: CORE};;\n\n static sanitizeUrl: o.ExternalReference = {name: 'sanitizeUrl', moduleName: CORE};;\n\n
static sanitizeUrlOrResourceUrl:\n o.ExternalReference = {name: 'sanitizeUrlOrResourceUrl', moduleName:
CORE};;\n\n static trustConstantHtml: o.ExternalReference = {name: 'trustConstantHtml', moduleName: CORE};;\n\n
static trustConstantScript:\n o.ExternalReference = {name: 'trustConstantScript', moduleName: CORE};;\n\n static
trustConstantResourceUrl:\n o.ExternalReference = {name: 'trustConstantResourceUrl', moduleName:
CORE};;\n\n\n", "/*\n * @license\n * Copyright Google LLC All Rights Reserved.\n *\n * Use of this source code is
governed by an MIT-style license that can be\n * found in the LICENSE file at https://angular.io/license\n
*/\n\nimport {StaticSymbol} from './aot/static_symbol';\nimport * as o from './output/output_ast';\nimport
{OutputContext} from './util';\n\n/**\n * Convert an object map with `Expression` values into a
`LiteralMapExpr`.\n *\n * export function mapToMapExpression(map: {[key: string]: o.Expression|undefined}):
o.LiteralMapExpr {\n const result = Object.keys(map).map(\n key => ({\n key,\n // The assertion here is
because really TypeScript doesn't allow us to express that if the\n // key is present, it will have a value, but this
is true in reality.\n value: map[key]!,\n quoted: false,\n }));\n return o.literalMap(result);\n}\n\n/**\n * Convert metadata into an `Expression` in the given `OutputContext`.\n *\n * This operation will handle arrays,
references to symbols, or literal `null` or `undefined`.\n *\n * export function convertMetaToOutput(meta: any, ctx:
OutputContext): o.Expression {\n if (Array.isArray(meta)) {\n return o.literalArr(meta.map(entry =>
convertMetaToOutput(entry, ctx)));\n }\n if (meta instanceof StaticSymbol) {\n return ctx.importExpr(meta);\n
}\n if (meta == null) {\n return o.literal(meta);\n }\n throw new Error(`Internal error: Unsupported or unknown
metadata: ${meta}`);\n}\n\n * export function typeWithParameters(type: o.Expression, numParams: number):
o.ExpressionType {\n if (numParams === 0) {\n return o.expressionType(type);\n }\n const params: o.Type[] =
[];\n for (let i = 0; i < numParams; i++) {\n params.push(o.DYNAMIC_TYPE);\n }\n return
o.expressionType(type, undefined, params);\n}\n\n * export interface R3Reference {\n value: o.Expression;\n type:
o.Expression;\n}\n\nconst ANIMATE_SYMBOL_PREFIX = '@';\n * export function
prepareSyntheticPropertyName(name: string) {\n return
`${ANIMATE_SYMBOL_PREFIX}${name}`;\n}\n\n * export function prepareSyntheticListenerName(name: string,
phase: string) {\n return `${ANIMATE_SYMBOL_PREFIX}${name}.${phase}`;\n}\n\n * export function

```

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isSyntheticPropertyOrListener(name: string) {\n return name.charAt(0) ==
ANIMATE_SYMBOL_PREFIX;\n}\n\nexport function getSyntheticPropertyName(name: string) {\n // this will
strip out listener phase values...\n // @foo.start => @foo\n const i = name.indexOf('.');\n name = i > 0 ?
name.substring(0, i) : name;\n if (name.charAt(0) !== ANIMATE_SYMBOL_PREFIX) {\n name =
ANIMATE_SYMBOL_PREFIX + name;\n }\n return name;\n}\n\nexport function
prepareSyntheticListenerFunctionName(name: string, phase: string) {\n return
`animation_${name}_${phase}`;\n}\n\nexport function jitOnlyGuardedExpression(expr: o.Expression):
o.Expression {\n const ngJitMode = new o.ExternalExpr({name: 'ngJitMode', moduleName: null});\n const
jitFlagNotDefined = new o.BinaryOperatorExpr(\n o.BinaryOperator.Identical, new o.TypeofExpr(ngJitMode),
o.literal('undefined'));\n const jitFlagUndefinedOrTrue = new o.BinaryOperatorExpr(\n o.BinaryOperator.Or,
jitFlagNotDefined, ngJitMode, /* type */ undefined,\n /* sourceSpan */ undefined, true);\n return new
o.BinaryOperatorExpr(o.BinaryOperator.And, jitFlagUndefinedOrTrue, expr);\n}\n\nexport function
wrapReference(value: any): R3Reference {\n const wrapped = new o.WrappedNodeExpr(value);\n return {value:
wrapped, type: wrapped};\n}\n\n", "/*\n * @license\n * Copyright Google LLC All Rights Reserved.\n * Use of
this source code is governed by an MIT-style license that can be\n * found in the LICENSE file at
https://angular.io/license\n */\n\nimport {SecurityContext} from './core';\nimport {AST, BindingType,
BoundElementProperty, ParsedEvent, ParsedEventType} from './expression_parser/ast';\nimport {I18nMeta} from
 './i18n/i18n_ast';\nimport {ParseSourceSpan} from './parse_util';\n\nexport interface Node {\n sourceSpan:
ParseSourceSpan;\n visit<Result>(visitor: Visitor<Result>): Result;\n}\n\nexport class Text implements Node {\n
constructor(public value: string, public sourceSpan: ParseSourceSpan) {}\n visit<Result>(visitor: Visitor<Result>):
Result {\n return visitor.visitText(this);\n }\n}\n\nexport class BoundText implements Node {\n
constructor(public value: AST, public sourceSpan: ParseSourceSpan, public i18n?: I18nMeta) {}\n
visit<Result>(visitor: Visitor<Result>): Result {\n return visitor.visitBoundText(this);\n }\n}\n\nexport class
TextAttribute implements Node {\n constructor(\n public name: string, public value: string, public sourceSpan:
ParseSourceSpan,\n public valueSpan?: ParseSourceSpan, public i18n?: I18nMeta) {}\n visit<Result>(visitor:
Visitor<Result>): Result {\n return visitor.visitTextAttribute(this);\n }\n}\n\nexport class BoundAttribute
implements Node {\n constructor(\n public name: string, public type: BindingType, public securityContext:
SecurityContext,\n public value: AST, public unit: string|null, public sourceSpan: ParseSourceSpan,\n
readonly keySpan: ParseSourceSpan, public valueSpan: ParseSourceSpan|undefined,\n public i18n:
I18nMeta|undefined) {}\n\n static fromBoundElementProperty(prop: BoundElementProperty, i18n?: I18nMeta):
BoundAttribute {\n if (prop.keySpan === undefined) {\n throw new Error(\n `Unexpected state: keySpan
must be defined for bound attributes but was not for ${\n prop.name}: ${prop.sourceSpan}`);\n }\n
return new BoundAttribute(\n prop.name, prop.type, prop.securityContext, prop.value, prop.unit,
prop.sourceSpan,\n prop.keySpan, prop.valueSpan, i18n);\n }\n\n visit<Result>(visitor: Visitor<Result>):
Result {\n return visitor.visitBoundAttribute(this);\n }\n}\n\nexport class BoundEvent implements Node {\n
constructor(\n public name: string, public type: ParsedEventType, public handler: AST,\n public target:
string|null, public phase: string|null, public sourceSpan: ParseSourceSpan,\n public handlerSpan:
ParseSourceSpan) {}\n\n static fromParsedEvent(event: ParsedEvent) {\n const target: string|null = event.type
=== ParsedEventType.Regular ? event.targetOrPhase : null;\n const phase: string|null =\n event.type ===
ParsedEventType.Animation ? event.targetOrPhase : null;\n return new BoundEvent(\n event.name,
event.type, event.handler, target, phase, event.sourceSpan, event.handlerSpan);\n }\n\n visit<Result>(visitor:
Visitor<Result>): Result {\n return visitor.visitBoundEvent(this);\n }\n}\n\nexport class Element implements
Node {\n constructor(\n public name: string, public attributes: TextAttribute[], public inputs:
BoundAttribute[],\n public outputs: BoundEvent[], public children: Node[], public references: Reference[],\n
public sourceSpan: ParseSourceSpan, public startSourceSpan: ParseSourceSpan,\n public endSourceSpan:
ParseSourceSpan|null, public i18n?: I18nMeta) {}\n visit<Result>(visitor: Visitor<Result>): Result {\n return
visitor.visitElement(this);\n }\n}\n\nexport class Template implements Node {\n constructor(\n public tagName:
string, public attributes: TextAttribute[], public inputs: BoundAttribute[],\n public outputs: BoundEvent[], public

```





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constructor(public value: string, public name: string, public sourceSpan: ParseSourceSpan) {}
visit(visitor: Visitor, context?: any): any {
 return visitor.visitPlaceholder(this, context);
}
export class IcuPlaceholder implements Node {
 /** Used to capture a message computed from a previous processing pass (see `setI18nRefs()`). */
 previousMessage?: Message;
 constructor(public value: Icu, public name: string, public sourceSpan: ParseSourceSpan) {}
 visit(visitor: Visitor, context?: any): any {
 return visitor.visitIcuPlaceholder(this, context);
 }
}
/** Each HTML node that is affected by an i18n tag will also have an `i18n` property that is of type `I18nMeta`. This information is either a `Message`, which indicates it is the root of an i18n message, or a `Node`, which indicates it is part of a containing `Message`. */
export type I18nMeta = Message | Node;
export interface Visitor {
 visitText(text: Text, context?: any): any;
 visitContainer(container: Container, context?: any): any;
 visitIcu(icu: Icu, context?: any): any;
 visitTagPlaceholder(ph: TagPlaceholder, context?: any): any;
 visitPlaceholder(ph: Placeholder, context?: any): any;
 visitIcuPlaceholder(ph: IcuPlaceholder, context?: any): any;
}
// Clone the AST
export class CloneVisitor implements Visitor {
 visitText(text: Text, context?: any): Text {
 return new Text(text.value, text.sourceSpan);
 }
 visitContainer(container: Container, context?: any): Container {
 const children = container.children.map(n => n.visit(this, context));
 return new Container(children, container.sourceSpan);
 }
 visitIcu(icu: Icu, context?: any): Icu {
 const cases: {[k: string]: Node} = {};
 Object.keys(icu.cases).forEach(key => cases[key] = icu.cases[key].visit(this, context));
 const msg = new Icu(icu.expression, icu.type, cases, icu.sourceSpan);
 msg.expressionPlaceholder = icu.expressionPlaceholder;
 return msg;
 }
 visitTagPlaceholder(ph: TagPlaceholder, context?: any): TagPlaceholder {
 const children = ph.children.map(n => n.visit(this, context));
 return new TagPlaceholder(ph.tag, ph.attrs, ph.startName, ph.closeName, children, ph.isVoid, ph.sourceSpan, ph.startSourceSpan, ph.endSourceSpan);
 }
 visitPlaceholder(ph: Placeholder, context?: any): Placeholder {
 return new Placeholder(ph.value, ph.name, ph.sourceSpan);
 }
 visitIcuPlaceholder(ph: IcuPlaceholder, context?: any): IcuPlaceholder {
 return new IcuPlaceholder(ph.value, ph.name, ph.sourceSpan);
 }
}
// Visit all the nodes recursively
export class RecurseVisitor implements Visitor {
 visitText(text: Text, context?: any): any {}
 visitContainer(container: Container, context?: any): any {
 container.children.forEach(child => child.visit(this));
 }
 visitIcu(icu: Icu, context?: any): any {
 Object.keys(icu.cases).forEach(k => icu.cases[k].visit(this));
 }
 visitTagPlaceholder(ph: TagPlaceholder, context?: any): any {
 ph.children.forEach(child => child.visit(this));
 }
 visitPlaceholder(ph: Placeholder, context?: any): any {}
 visitIcuPlaceholder(ph: IcuPlaceholder, context?: any): any {}
}
/**
 * @license
 * Copyright Google LLC All Rights Reserved.
 * Use of this source code is governed by an MIT-style license that can be found in the LICENSE file at https://angular.io/license
 */
/** Represents a big integer using a buffer of its individual digits, with the least significant digit stored at the beginning of the array (little endian). For performance reasons, each instance is mutable. The addition operation can be done in-place to reduce memory pressure of allocation for the digits array. */
export class BigInteger {
 static zero(): BigInteger {
 return new BigInteger([0]);
 }
 static one(): BigInteger {
 return new BigInteger([1]);
 }
 /** Creates a big integer using its individual digits in little endian storage. */
 private constructor(private readonly digits: number[]) {}
 /** Creates a clone of this instance. */
 clone(): BigInteger {
 return new BigInteger(this.digits.slice());
 }
 /** Returns a new big integer with the sum of `this` and `other` as its value. This does not mutate `this` but instead returns a new instance, unlike `addToSelf`. */
 add(other: BigInteger): BigInteger {
 const result = this.clone();
 result.addToSelf(other);
 return result;
 }
 /** Adds `other` to the instance itself, thereby mutating its value. */
 addToSelf(other: BigInteger): void {
 const maxNrOfDigits = Math.max(this.digits.length, other.digits.length);
 let carry = 0;
 for (let i = 0; i < maxNrOfDigits; i++) {
 let digitSum = carry;
 if (i < this.digits.length) {
 digitSum += this.digits[i];
 }
 if (i < other.digits.length) {
 digitSum += other.digits[i];
 }
 if (digitSum >= 10) {
 this.digits[i] = digitSum - 10;
 carry = 1;
 } else {
 this.digits[i] = digitSum;
 carry = 0;
 }
 }
 // Apply a remaining carry if needed.
 if (carry > 0) {
 this.digits[maxNrOfDigits] = 1;
 }
 }
 /** Builds the decimal string representation of the big integer. As this is stored in little endian, the digits are concatenated in reverse order. */
 toString():

```

```

string {\n let res = ";\n for (let i = this.digits.length - 1; i >= 0; i--) {\n res += this.digits[i];\n }\n return
res;\n }\n}\n\n/**\n * Represents a big integer which is optimized for multiplication operations, as its power-of-
twos\n * are memoized. See `multiplyBy()` for details on the multiplication algorithm.\n */\nexport class
BigIntForMultiplication {\n /**\n * Stores all memoized power-of-twos, where each index represents `this.number
* 2^index`.\n */\n private readonly powerOfTwos: BigInteger[];\n\n constructor(value: BigInteger) {\n
this.powerOfTwos = [value];\n }\n\n /**\n * Returns the big integer itself.\n */\n getValue(): BigInteger {\n
return this.powerOfTwos[0];\n }\n\n /**\n * Computes the value for `num * b`, where `num` is a JS number and
`b` is a big integer. The\n * value for `b` is represented by a storage model that is optimized for this computation.\n
*\n * This operation is implemented in N(log2(num)) by continuous halving of the number, where the\n * least-
significant bit (LSB) is tested in each iteration. If the bit is set, the bit's index is\n * used as exponent into the
power-of-two multiplication of `b`.\n *\n * As an example, consider the multiplication num=42, b=1337. In
binary 42 is 0b00101010 and the\n * algorithm unrolls into the following iterations:\n *\n * Iteration | num |
LSB | b * 2^iter | Add? | product\n * -----|-----|-----|-----|-----\n * 0 | 0b00101010 | 0 | 1337 | No | 0\n * 1 | 0b00010101 | 1 | 2674 | Yes | 2674\n * 2 | 0b00001010 | 0 | 5348 | No | 2674\n * 3 | 0b00000101 | 1 | 10696 | Yes | 13370\n * 4 | 0b00000010 | 0 | 21392 | No | 13370\n * 5 | 0b00000001 | 1 | 42784 | Yes | 56154\n * 6 | 0b00000000 | 0 | 85568 | No |
56154\n *\n * The computed product of 56154 is indeed the correct result.\n *\n * The
`BigIntForMultiplication` representation for a big integer provides memoized access to the\n * power-of-two
values to reduce the workload in computing those values.\n */\n multiplyBy(num: number): BigInteger {\n const
product = BigInteger.zero();\n this.multiplyByAndAddTo(num, product);\n return product;\n }\n\n /**\n * See
`multiplyBy()` for details. This function allows for the computed product to be added\n * directly to the provided
result big integer.\n */\n multiplyByAndAddTo(num: number, result: BigInteger): void {\n for (let exponent = 0;
num !== 0; num = num >>> 1, exponent++) {\n if (num & 1) {\n const value =
this.getMultipliedByPowerOfTwo(exponent);\n result.addToSelf(value);\n }\n }\n }\n\n /**\n *
Computes and memoizes the big integer value for `this.number * 2^exponent`.\n */\n private
getMultipliedByPowerOfTwo(exponent: number): BigInteger {\n // Compute the powers up until the requested
exponent, where each value is computed from its\n // predecessor. This is simple as `this.number * 2^(exponent -
1)` only has to be doubled (i.e.\n // added to itself) to reach `this.number * 2^exponent`.\n for (let i =
this.powerOfTwos.length; i <= exponent; i++) {\n const previousPower = this.powerOfTwos[i - 1];\n
this.powerOfTwos[i] = previousPower.add(previousPower);\n }\n return this.powerOfTwos[exponent];\n
}\n}\n\n/**\n * Represents an exponentiation operation for the provided base, of which exponents are computed
and\n * memoized. The results are represented by a `BigIntForMultiplication` which is tailored for\n *
multiplication operations by memoizing the power-of-twos. This effectively results in a matrix\n * representation
that is lazily computed upon request.\n */\nexport class BigIntExponentiation {\n private readonly exponents =
[new BigIntForMultiplication(BigInteger.one());\n\n constructor(private readonly base: number) {\n }\n\n /**\n *
Compute the value for `this.base^exponent`, resulting in a big integer that is optimized for\n * further
multiplication operations.\n */\n toThePowerOf(exponent: number): BigIntForMultiplication {\n // Compute the
results up until the requested exponent, where every value is computed from its\n // predecessor. This is because
`this.base^(exponent - 1)` only has to be multiplied by `base`\n // to reach `this.base^exponent`.\n for (let i =
this.exponents.length; i <= exponent; i++) {\n const value = this.exponents[i - 1].multiplyBy(this.base);\n
this.exponents[i] = new BigIntForMultiplication(value);\n }\n return this.exponents[exponent];\n }\n}\n\n",/**\n
 * @license\n * Copyright Google LLC All Rights Reserved.\n *\n * Use of this source code is governed by an MIT-
style license that can be\n * found in the LICENSE file at https://angular.io/license\n */\n\nimport {Byte, new Array,
utf8Encode} from './util';\nimport {BigIntExponentiation} from './big_integer';\nimport * as i18n from
'/i18n_ast';\n\n/**\n * Return the message id or compute it using the XLIFF1 digest.\n */\nexport function
digest(message: i18n.Message): string {\n return message.id || computeDigest(message);\n }\n\n /**\n * Compute the
message id using the XLIFF1 digest.\n */\nexport function computeDigest(message: i18n.Message): string {\n
return sha1(serializeNodes(message.nodes).join("") + `[${message.meaning}]`);\n }\n}\n\n /**\n * Return the message id

```

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or compute it using the XLIFF2/XMB/$localize digest.\n *\nexport function decimalDigest(message:
i18n.Message): string {\n return message.id || computeDecimalDigest(message);\n}\n\n/**\n * Compute the
message id using the XLIFF2/XMB/$localize digest.\n *\nexport function computeDecimalDigest(message:
i18n.Message): string {\n const visitor = new _SerializerIgnoreIcuExpVisitor();\n const parts =
message.nodes.map(a => a.visit(visitor, null));\n return computeMsgId(parts.join(""), message.meaning);\n}\n\n/**\n
* Serialize the i18n ast to something xml-like in order to generate an UID.\n *\n * The visitor is also used in the i18n
parser tests\n *\n * @internal\n *\n\nclass _SerializerVisitor implements i18n.Visitor {\n visitText(text: i18n.Text,
context: any): any {\n return text.value;\n }\n\n visitContainer(container: i18n.Container, context: any): any {\n
return `${container.children.map(child => child.visit(this)).join(' ')}`;\n }\n\n visitIcu(icu: i18n.Icu, context:
any): any {\n const strCases =\n Object.keys(icu.cases).map((k: string) => `${k}`
`${icu.cases[k].visit(this)}`);\n return `${icu.expression}, ${icu.type}, ${strCases.join(' ')}`;\n }\n\n
visitTagPlaceholder(ph: i18n.TagPlaceholder, context: any): any {\n return ph.isVoid ?\n `<ph tag
name="\${ph.startName}"/>`:\n `<ph tag name="\${ph.startName}">${\n ph.children.map(child =>
child.visit(this)).join(' ')}</ph name="\${ph.closeName}"/>`\n }\n\n visitPlaceholder(ph: i18n.Placeholder,
context: any): any {\n return ph.value ? `<ph name="\${ph.name}">${ph.value}</ph>` : `<ph
name="\${ph.name}"/>`\n }\n\n visitIcuPlaceholder(ph: i18n.IcuPlaceholder, context?: any): any {\n return
`<ph icu name="\${ph.name}">${ph.value.visit(this)}</ph>`\n }\n}\n\nconst serializerVisitor = new
_SerializerVisitor();\n\nexport function serializeNodes(nodes: i18n.Node[]): string[] {\n return nodes.map(a =>
a.visit(serializerVisitor, null));\n}\n\n/**\n * Serialize the i18n ast to something xml-like in order to generate an
UID.\n *\n * Ignore the ICU expressions so that message IDs stays identical if only the expression changes.\n *\n *
@internal\n *\n\nclass _SerializerIgnoreIcuExpVisitor extends _SerializerVisitor {\n visitIcu(icu: i18n.Icu, context:
any): any {\n let strCases = Object.keys(icu.cases).map((k: string) => `${k}` `${icu.cases[k].visit(this)}`);\n //
Do not take the expression into account\n return `${icu.type}, ${strCases.join(' ')}`;\n }\n}\n\n/**\n * Compute
the SHA1 of the given string\n *\n * see http://csrc.nist.gov/publications/fips/fips180-4/fips-180-4.pdf\n *\n *
WARNING: this function has not been designed not tested with security in mind.\n * DO NOT USE IT IN A
SECURITY SENSITIVE CONTEXT.\n *\n\nexport function sha1(str: string): string {\n const utf8 =
utf8Encode(str);\n const words32 = bytesToWords32(utf8, Endian.Big);\n const len = utf8.length * 8;\n\n const w
= newArray(80);\n let a = 0x67452301, b = 0xefcdab89, c = 0x98badcfe, d = 0x10325476, e = 0xc3d2e1f0;\n\n
words32[len >> 5] |= 0x80 << (24 - len % 32);\n words32[((len + 64 >> 9) << 4) + 15] = len;\n\n for (let i = 0; i <
words32.length; i += 16) {\n const h0 = a, h1 = b, h2 = c, h3 = d, h4 = e;\n for (let j = 0; j < 80; j++) {\n if (j
< 16) {\n w[j] = words32[i + j];\n } else {\n w[j] = rol32(w[j - 3] ^ w[j - 8] ^ w[j - 14] ^ w[j - 16], 1);\n
}\n\n const fkVal = fk(j, b, c, d);\n const f = fkVal[0];\n const k = fkVal[1];\n const temp = [rol32(a, 5),
f, e, k, w[j]].reduce(add32);\n e = d;\n d = c;\n c = rol32(b, 30);\n b = a;\n a = temp;\n }\n a =
add32(a, h0);\n b = add32(b, h1);\n c = add32(c, h2);\n d = add32(d, h3);\n e = add32(e, h4);\n }\n\n return
bytesToHexString(words32ToByteString([a, b, c, d, e]));\n}\n\nfunction fk(index: number, b: number, c: number, d:
number): [number, number] {\n if (index < 20) {\n return [(b & c) | (~b & d), 0x5a827999];\n }\n\n if (index <
40) {\n return [b ^ c ^ d, 0x6ed9eba1];\n }\n\n if (index < 60) {\n return [(b & c) | (b & d) | (c & d),
0x8f1bbcdc];\n }\n\n return [b ^ c ^ d, 0xca62c1d6];\n}\n\n/**\n * Compute the fingerprint of the given string\n
*\n * The output is 64 bit number encoded as a decimal string\n *\n * based on:\n *\n
https://github.com/google/closure-
compiler/blob/master/src/com/google/javascript/jscomp/GoogleJsMessageIdGenerator.java\n *\n\nexport function
fingerprint(str: string): [number, number] {\n const utf8 = utf8Encode(str);\n\n let hi = hash32(utf8, 0);\n let lo =
hash32(utf8, 102072);\n\n if (hi == 0 && (lo == 0 || lo == 1)) {\n hi = hi ^ 0x130f9bef;\n lo = lo ^ -
0x6b5f56d8;\n }\n\n return [hi, lo];\n}\n\n\nexport function computeMsgId(msg: string, meaning: string = ""): string
{\n let msgFingerprint = fingerprint(msg);\n\n if (meaning) {\n const meaningFingerprint =
fingerprint(meaning);\n msgFingerprint = add64(rol64(msgFingerprint, 1), meaningFingerprint);\n }\n\n const hi
= msgFingerprint[0];\n const lo = msgFingerprint[1];\n\n return wordsToDecimalString(hi & 0x7fffffff,
lo);\n}\n\nfunction hash32(bytes: Byte[], c: number): number {\n let a = 0x9e3779b9, b = 0x9e3779b9;\n let i:

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number;\n\n const len = bytes.length;\n\n for (i = 0; i + 12 <= len; i += 12) {\n a = add32(a, wordAt(bytes, i,
Endian.Little));\n b = add32(b, wordAt(bytes, i + 4, Endian.Little));\n c = add32(c, wordAt(bytes, i + 8,
Endian.Little));\n const res = mix(a, b, c);\n a = res[0], b = res[1], c = res[2];\n } \n\n a = add32(a,
wordAt(bytes, i, Endian.Little));\n b = add32(b, wordAt(bytes, i + 4, Endian.Little));\n // the first byte of c is
reserved for the length\n c = add32(c, len);\n c = add32(c, wordAt(bytes, i + 8, Endian.Little) << 8);\n\n return
mix(a, b, c)[2];\n}\n\n// clang-format off\nfunction mix(a: number, b: number, c: number): [number, number,
number] {\n a = sub32(a, b); a = sub32(a, c); a ^= c >>> 13;\n b = sub32(b, c); b = sub32(b, a); b ^= a << 8;\n c =
sub32(c, a); c = sub32(c, b); c ^= b >>> 13;\n a = sub32(a, b); a = sub32(a, c); a ^= c >>> 12;\n b = sub32(b, c); b
= sub32(b, a); b ^= a << 16;\n c = sub32(c, a); c = sub32(c, b); c ^= b >>> 5;\n a = sub32(a, b); a = sub32(a, c); a
^= c >>> 3;\n b = sub32(b, c); b = sub32(b, a); b ^= a << 10;\n c = sub32(c, a); c = sub32(c, b); c ^= b >>> 15;\n
return [a, b, c];\n}\n\n// clang-format on\n\n// Utils\n\nenum Endian {\n Little,\n Big,\n}\n\nfunction add32(a:
number, b: number): number {\n return add32to64(a, b)[1];\n}\n\nfunction add32to64(a: number, b: number):
[number, number] {\n const low = (a & 0xffff) + (b & 0xffff);\n const high = (a >>> 16) + (b >>> 16) + (low >>>
16);\n return [high >>> 16, (high << 16) | (low & 0xffff)];\n}\n\nfunction add64(a: [number, number], b: [number,
number]): [number, number] {\n const ah = a[0], al = a[1];\n const bh = b[0], bl = b[1];\n const result =
add32to64(al, bl);\n const carry = result[0];\n const l = result[1];\n const h = add32(add32(ah, bh), carry);\n return
[h, l];\n}\n\nfunction sub32(a: number, b: number): number {\n const low = (a & 0xffff) - (b & 0xffff);\n const
high = (a >> 16) - (b >> 16) + (low >> 16);\n return (high << 16) | (low & 0xffff);\n}\n\n\n// Rotate a 32b number left
`count` position\nfunction rol32(a: number, count: number): number {\n return (a << count) | (a >>> (32 -
count));\n}\n\n\n// Rotate a 64b number left `count` position\nfunction rol64(num: [number, number], count: number):
[number, number] {\n const hi = num[0], lo = num[1];\n const h = (hi << count) | (lo >>> (32 - count));\n const l =
(lo << count) | (hi >>> (32 - count));\n return [h, l];\n}\n\nfunction bytesToWords32(bytes: Byte[], endian: Endian):
number[] {\n const size = (bytes.length + 3) >>> 2;\n const words32 = [];\n for (let i = 0; i < size; i++) {\n
words32[i] = wordAt(bytes, i * 4, endian);\n } \n\n return words32;\n}\n\nfunction byteAt(bytes: Byte[], index:
number): Byte {\n return index >= bytes.length ? 0 : bytes[index];\n}\n\nfunction wordAt(bytes: Byte[], index:
number, endian: Endian): number {\n let word = 0;\n if (endian === Endian.Big) {\n for (let i = 0; i < 4; i++) {\n
word += byteAt(bytes, index + i) << (24 - 8 * i);\n } \n } else {\n for (let i = 0; i < 4; i++) {\n word +=
byteAt(bytes, index + i) << 8 * i;\n } \n } \n return word;\n}\n\nfunction words32ToByteString(words32:
number[]): Byte[] {\n return words32.reduce((bytes, word) => bytes.concat(word32ToByteString(word)), [] as
Byte[]);\n}\n\nfunction word32ToByteString(word: number): Byte[] {\n let bytes: Byte[] = [];\n for (let i = 0; i < 4;
i++) {\n bytes.push((word >>> 8 * (3 - i)) & 0xff);\n } \n return bytes;\n}\n\nfunction bytesToHexString(bytes:
Byte[]): string {\n let hex: string = "";\n for (let i = 0; i < bytes.length; i++) {\n const b = byteAt(bytes, i);\n hex
+= (b >>> 4).toString(16) + (b & 0x0f).toString(16);\n } \n return hex.toLowerCase();\n}\n\n\n/**\n * Create a
shared exponentiation pool for base-256 computations. This shared pool provides memoized\n * power-of-256
results with memoized power-of-two computations for efficient multiplication.\n * \n * For our purposes, this can be
safely stored as a global without memory concerns. The reason is\n * that we encode two words, so only need the
0th (for the low word) and 4th (for the high word)\n * exponent.\n */\nconst base256 = new
BigIntExponentiation(256);\n\n\n/**\n * Represents two 32-bit words as a single decimal number. This requires a big
integer storage\n * model as JS numbers are not accurate enough to represent the 64-bit number.\n * \n * Based on
http://www.danvk.org/hex2dec.html\n */\nfunction wordsToDecimalString(hi: number, lo: number): string {\n //
Encode the four bytes in lo in the lower digits of the decimal number.\n // Note: the multiplication results in lo itself
but represented by a big integer using its\n // decimal digits.\n const decimal =
base256.toThePowerOf(0).multiplyBy(lo);\n\n // Encode the four bytes in hi above the four lo bytes. lo is a
maximum of (2^8)^4, which is why\n // this multiplication factor is applied.\n
base256.toThePowerOf(4).multiplyByAndAddTo(hi, decimal);\n\n return decimal.toString();\n}\n\n\n", /**\n *
@license\n * Copyright Google LLC All Rights Reserved.\n * \n * Use of this source code is governed by an MIT-
style license that can be\n * found in the LICENSE file at https://angular.io/license\n */\n\nimport * as i18n from
'./i18n_ast';\n\nexport abstract class Serializer {\n // - The `placeholders` and `placeholderToMessage` properties

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are irrelevant in the input messages\n // - The `id` contains the message id that the serializer is expected to use\n // -
Placeholder names are already map to public names using the provided mapper\n abstract write(messages:
i18n.Message[], locale: string|null): string;\n\n abstract load(content: string, url: string):\n {locale: string|null,
i18n.NodesByMsgId: {[msgId: string]: i18n.Node[]}};\n\n abstract digest(message: i18n.Message): string;\n\n //
Creates a name mapper, see `PlaceholderMapper`\n // Returning `null` means that no name mapping is used.\n
createNameMapper(message: i18n.Message): PlaceholderMapper|null {\n return null;\n } }\n\n\n * A
`PlaceholderMapper` converts placeholder names from internal to serialized representation and\n * back.\n * It
should be used for serialization format that put constraints on the placeholder names.\n * \n\nexport interface
PlaceholderMapper {\n toPublicName(internalName: string): string|null;\n\n toInternalName(publicName: string):
string|null;\n } }\n\n\n * A simple mapper that take a function to transform an internal name to a public name\n
*\n\nexport class SimplePlaceholderMapper extends i18n.RecurseVisitor implements PlaceholderMapper {\n private
internalToPublic: {[k: string]: string} = {};\n private publicToNextId: {[k: string]: number} = {};\n private
publicToInternal: {[k: string]: string} = {};\n\n // create a mapping from the message\n constructor(message:
i18n.Message, private mapName: (name: string) => string) {\n super();\n message.nodes.forEach(node =>
node.visit(this));\n }\n\n toPublicName(internalName: string): string|null {\n return
this.internalToPublic.hasOwnProperty(internalName) ?\n this.internalToPublic[internalName] :\n null;\n }\n\n toInternalName(publicName: string): string|null {\n return
this.publicToInternal.hasOwnProperty(publicName) ?\n this.publicToInternal[publicName] :\n null;\n }\n\n visitText(text: i18n.Text, context?: any): any {\n return null;\n }\n\n visitTagPlaceholder(ph: i18n.TagPlaceholder, context?: any): any {\n this.visitPlaceholderName(ph.startName);\n super.visitTagPlaceholder(ph, context);\n this.visitPlaceholderName(ph.closeName);\n }\n\n visitPlaceholder(ph: i18n.Placeholder, context?: any): any {\n this.visitPlaceholderName(ph.name);\n }\n\n visitIcuPlaceholder(ph: i18n.IcuPlaceholder, context?: any): any {\n this.visitPlaceholderName(ph.name);\n }\n\n // XMB placeholders could only contains A-Z, 0-9 and _\n private visitPlaceholderName(internalName: string):
void {\n if (!internalName || this.internalToPublic.hasOwnProperty(internalName)) {\n return;\n }\n let
publicName = this.mapName(internalName);\n if (this.publicToInternal.hasOwnProperty(publicName)) {\n //
Create a new XMB when it has already been used\n const nextId = this.publicToNextId[publicName];\n this.publicToNextId[publicName] = nextId + 1;\n publicName = `${publicName}_${nextId}`;\n } else {\n this.publicToNextId[publicName] = 1;\n }\n this.internalToPublic[internalName] = publicName;\n this.publicToInternal[publicName] = internalName;\n }\n\n " , /*\n * @license\n * Copyright Google LLC All
Rights Reserved.\n * Use of this source code is governed by an MIT-style license that can be\n * found in the
LICENSE file at https://angular.io/license\n */\n\nexport interface IVisitor {\n visitTag(tag: Tag): any;\n
visitText(text: Text): any;\n visitDeclaration(decl: Declaration): any;\n visitDoctype(doctype: Doctype):
any;\n }\n\n\nclass _Visitor implements IVisitor {\n visitTag(tag: Tag): string {\n const strAttrs =
this._serializeAttributes(tag.attrs);\n\n if (tag.children.length == 0) {\n return `<${tag.name}${strAttrs}>`;\n }\n\n const strChildren = tag.children.map(node => node.visit(this));\n return
`<${tag.name}${strAttrs}>${strChildren.join("")}</${tag.name}>`;\n }\n\n visitText(text: Text): string {\n return
text.value;\n }\n\n visitDeclaration(decl: Declaration): string {\n return
`<?xml${this._serializeAttributes(decl.attrs)} ?>`;\n }\n\n private _serializeAttributes(attrs: {[k: string]: string})
{\n const strAttrs = Object.keys(attrs).map((name: string) => `${name}="${attrs[name]}"`).join(' ');\n return
strAttrs.length > 0 ? ' ' + strAttrs : '';\n }\n\n visitDoctype(doctype: Doctype): any {\n return `<!DOCTYPE
${doctype.rootTag} [\n\n${doctype.dtd}\n\n]>`;\n }\n\n \n\nconst _visitor = new _Visitor();\n\nexport function
serialize(nodes: Node[]): string {\n return nodes.map((node: Node): string =>
node.visit(_visitor)).join("");\n }\n\n\nexport interface Node {\n visit(visitor: IVisitor): any;\n }\n\n\nexport class
Declaration implements Node {\n public attrs: {[k: string]: string} = {};\n\n constructor(unescapeAttrs: {[k:
string]: string}) {\n Object.keys(unescapeAttrs).forEach((k: string) => {\n this.attrs[k] =
escapeXml(unescapeAttrs[k]);\n });\n }\n\n visit(visitor: IVisitor): any {\n return
visitor.visitDeclaration(this);\n }\n }\n\n\nexport class Doctype implements Node {\n constructor(public rootTag:

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string, public dtd: string) {}
visit(visitor: IVisitor): any {
 return visitor.visitDoctype(this);
}
export class Tag implements Node {
 public attrs: {[k: string]: string} = {};
 constructor(public name: string,
 unescapedAttrs: {[k: string]: string} = {},
 public children: Node[] = []) {
 Object.keys(unescapedAttrs).forEach((k: string) => {
 this.attrs[k] = escapeXml(unescapedAttrs[k]);
 });
 }
visit(visitor: IVisitor): any {
 return visitor.visitTag(this);
}
}
export class Text implements Node {
 value: string;
 constructor(unescapedValue: string) {
 this.value = escapeXml(unescapedValue);
 }
}
visit(visitor: IVisitor): any {
 return visitor.visitText(this);
}
}
export class CR extends Text {
 constructor(ws: number = 0) {
 super(`${new Array(ws + 1).join(' ')}`);
 }
}
const _ESCAPED_CHARS: [RegExp, string][] = [
 [/&/g, '&'],
 [/\\"/g, '"'],
 [/'/g, '''],
 [/</g, '<'],
 [/>/g, '>'],
];
// Escape `_ESCAPED_CHARS` characters in the given text with encoded
entities
export function escapeXml(text: string): string {
 return _ESCAPED_CHARS.reduce((text: string,
 entry: [RegExp, string]) => text.replace(entry[0], entry[1]), text);
}
/**
 * @license
 * Copyright Google
 * LLC All Rights Reserved.
 * Use of this source code is governed by an MIT-style license that can be
 * found in the LICENSE file at https://angular.io/license
 */
import {decimalDigest} from './digest';
import * as i18n from './i18n_ast';
import {PlaceholderMapper, Serializer, SimplePlaceholderMapper} from './serializer';
import * as xml from './xml_helper';
const _MESSAGES_TAG = 'messagebundle';
const _MESSAGE_TAG = 'msg';
const _PLACEHOLDER_TAG = 'ph';
const _EXAMPLE_TAG = 'ex';
const _SOURCE_TAG = 'source';
const _DOCTYPE = `<!ELEMENT messagebundle (msg)*>
<!ATTLIST messagebundle class
CDATA #IMPLIED>
<!ELEMENT msg (#PCDATA|ph|source)*>
<!ATTLIST msg id CDATA
#IMPLIED>
<!ATTLIST msg seq CDATA #IMPLIED>
<!ATTLIST msg name CDATA
#IMPLIED>
<!ATTLIST msg desc CDATA #IMPLIED>
<!ATTLIST msg meaning CDATA
#IMPLIED>
<!ATTLIST msg obsolete (obsolete) #IMPLIED>
<!ATTLIST msg xml:space (default|preserve)
"default">
<!ATTLIST msg is_hidden CDATA #IMPLIED>
<!ELEMENT source
(PCDATA)>
<!ELEMENT ph (#PCDATA|ex)*>
<!ATTLIST ph name CDATA
#REQUIRED>
<!ELEMENT ex (#PCDATA)>`;
export class Xmb extends Serializer {
 write(messages: i18n.Message[], locale: string|null): string {
 const exampleVisitor = new ExampleVisitor();
 const visitor = new _Visitor();
 let rootNode = new xml.Tag(_MESSAGES_TAG);
 messages.forEach(message => {
 const attrs: {[k: string]: string} = {id: message.id};
 if (message.description) {
 attrs['desc'] = message.description;
 }
 if (message.meaning) {
 attrs['meaning'] = message.meaning;
 }
 let sourceTags: xml.Tag[] = [];
 message.sources.forEach((source: i18n.MessageSpan) => {
 sourceTags.push(new xml.Tag(_SOURCE_TAG, {}, [
 new xml.Text(`${source.filePath}:${source.startLine}${
 source.endLine !== source.startLine ? ':' +
 source.endLine : ''`)]));
 rootNode.children.push(new xml.CR(2), new xml.Tag(_MESSAGE_TAG, attrs, [...sourceTags, ...visitor.serialize(message.nodes)]));
 });
 rootNode.children.push(new xml.CR());
 return xml.serialize([
 new xml.Declaration({version: '1.0', encoding: 'UTF-8'}),
 new xml.CR(),
 new xml.Doctype(_MESSAGES_TAG, _DOCTYPE),
 new xml.CR(),
 exampleVisitor.addDefaultExamples(rootNode),
 new xml.CR(),
]);
 });
 load(content: string, url: string): {locale: string, i18nNodesByMsgId: {[msgId: string]: i18n.Node[]}} {
 throw new Error('Unsupported');
 }
 digest(message: i18n.Message): string {
 return digest(message);
 }
 createNameMapper(message: i18n.Message): PlaceholderMapper {
 return new SimplePlaceholderMapper(message, toPublicName);
 }
 }
class _Visitor implements i18n.Visitor {
 visitText(text: i18n.Text, context?: any): xml.Node[] {
 return [new xml.Text(text.value)];
 }
 visitContainer(container: i18n.Container, context: any): xml.Node[] {
 const nodes: xml.Node[] = [];
 container.children.forEach((node: i18n.Node) => nodes.push(...node.visit(this)));
 return nodes;
 }
 visitIcu(icu: i18n.Icu, context?: any): xml.Node[] {
 const nodes = [
 new xml.Text(`${icu.expressionPlaceholder}, ${icu.type},`),
 Object.keys(icu.cases).forEach((c: string) => {
 nodes.push(new xml.Text(`${c}`, ...icu.cases[c].visit(this), new xml.Text(`)`));
 });
 nodes.push(new xml.Text(`)`));
 return nodes;
 }
 visitTagPlaceholder(ph: i18n.TagPlaceholder, context?: any):

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xml.Node[] {\n const startTagAsText = new xml.Text(<${ph.tag}>);\n const startEx = new
xml.Tag(_EXAMPLE_TAG, {}, [startTagAsText]);\n // TC requires PH to have a non empty EX, and uses the
text node to show the \"original\" value.\n const startTagPh =\n new xml.Tag(_PLACEHOLDER_TAG,
{name: ph.startName}, [startEx, startTagAsText]);\n if (ph.isVoid) {\n // void tags have no children nor closing
tags\n return [startTagPh];\n }\n const closeTagAsText = new xml.Text(</${ph.tag}>);\n const closeEx
= new xml.Tag(_EXAMPLE_TAG, {}, [closeTagAsText]);\n // TC requires PH to have a non empty EX, and uses
the text node to show the \"original\" value.\n const closeTagPh =\n new xml.Tag(_PLACEHOLDER_TAG,
{name: ph.closeName}, [closeEx, closeTagAsText]);\n return [startTagPh, ...this.serialize(ph.children),
closeTagPh];\n }\n\n visitPlaceholder(ph: i18n.Placeholder, context?: any): xml.Node[] {\n const
interpolationAsText = new xml.Text(`${ph.value}`);\n // Example tag needs to be not-empty for TC.\n
const exTag = new xml.Tag(_EXAMPLE_TAG, {}, [interpolationAsText]);\n return [\n // TC requires PH to
have a non empty EX, and uses the text node to show the \"original\" value.\n new
xml.Tag(_PLACEHOLDER_TAG, {name: ph.name}, [exTag, interpolationAsText])\n];\n }\n\n visitIcuPlaceholder(ph: i18n.IcuPlaceholder, context?: any): xml.Node[] {\n const icuExpression =
ph.value.expression;\n const icuType = ph.value.type;\n const icuCases =
Object.keys(ph.value.cases).map((value: string) => value + ' {...}').join(' ');\n const icuAsText = new
xml.Text(`${icuExpression}, ${icuType}, ${icuCases}`);\n const exTag = new xml.Tag(_EXAMPLE_TAG,
{}, [icuAsText]);\n return [\n // TC requires PH to have a non empty EX, and uses the text node to show the
\"original\" value.\n new xml.Tag(_PLACEHOLDER_TAG, {name: ph.name}, [exTag, icuAsText])\n];\n }\n\n
serialize(nodes: i18n.Node[]): xml.Node[] {\n return [].concat(...nodes.map(node => node.visit(this)));\n
}\n\n\nexport function digest(message: i18n.Message): string {\n return decimalDigest(message);\n }\n\n// TC
requires at least one non-empty example on placeholders\n\nclass ExampleVisitor implements xml.IVisitor {\n
 addDefaultExamples(node: xml.Node): xml.Node {\n node.visit(this);\n return node;\n }\n\n visitTag(tag:
xml.Tag): void {\n if (tag.name === _PLACEHOLDER_TAG) {\n if (!tag.children || tag.children.length === 0)
{\n const exText = new xml.Text(tag.attrs['name'] || '...');\n tag.children = [new
xml.Tag(_EXAMPLE_TAG, {}, [exText])];\n }\n } else if (tag.children) {\n tag.children.forEach(node =>
node.visit(this));\n }\n }\n\n visitText(text: xml.Text): void {\n }\n\n visitDeclaration(decl: xml.Declaration): void
{\n }\n\n visitDoctype(doctype: xml.Doctype): void {\n }\n}\n\n// XMB/XTB placeholders can only contain A-Z, 0-9 and
_\n\nexport function toPublicName(internalName: string): string {\n return
internalName.toUpperCase().replace(/^[^A-Z0-9_]/g, '_');\n }\n\n/**\n * @license\n * Copyright Google LLC All
Rights Reserved.\n * Use of this source code is governed by an MIT-style license that can be\n * found in the
LICENSE file at https://angular.io/license\n * ^\nimport * as i18n from './../i18n/i18n_ast';\nimport
{toPublicName} from './../i18n/serializers/xmb';\nimport * as html from './../ml_parser/ast';\nimport * as o from
'./../output/output_ast';\nimport * as t from './../r3_ast';\n\n/* Closure variables holding messages must be named
`MSG_[A-Z0-9]+` *\nconst CLOSURE_TRANSLATION_VAR_PREFIX = 'MSG_';\n\n/**\n * Prefix for non-
`goog.getMsg` i18n-related vars.\n * Note: the prefix uses lowercase characters intentionally due to a Closure
behavior that\n * considers variables like `I18N_0` as constants and throws an error when their value changes.\n
*\nexport const TRANSLATION_VAR_PREFIX = 'i18n_';\n\n/** Name of the i18n attributes **\nexport const
I18N_ATTR = 'i18n';\nexport const I18N_ATTR_PREFIX = 'i18n-';\n\n/** Prefix of var expressions used in ICUs
\nexport const I18N_ICU_VAR_PREFIX = 'VAR_';\n\n/ Prefix of ICU expressions for post processing
\nexport const I18N_ICU_MAPPING_PREFIX = 'I18N_EXP_';\n\n/ Placeholder wrapper for i18n expressions
**\nexport const I18N_PLACEHOLDER_SYMBOL = ";\n\nexport function isI18nAttribute(name: string): boolean
{\n return name === I18N_ATTR || name.startsWith(I18N_ATTR_PREFIX);\n }\n\nexport function
isI18nRootNode(meta?: i18n.I18nMeta): meta is i18n.Message {\n return meta instanceof
i18n.Message;\n }\n\nexport function isSingleI18nIcu(meta?: i18n.I18nMeta): boolean {\n return
isI18nRootNode(meta) && meta.nodes.length === 1 && meta.nodes[0] instanceof i18n.Icu;\n }\n\nexport function
hasI18nMeta(node: t.Node&{i18n?: i18n.I18nMeta}): boolean {\n return !!node.i18n;\n }\n\nexport function
hasI18nAttrs(element: html.Element): boolean {\n return element.attrs.some((attr: html.Attribute) =>

```

```

isI18nAttribute(attr.name));\n\n\nexport function icuFromI18nMessage(message: i18n.Message) {\n return
message.nodes[0] as i18n.IcuPlaceholder;\n\n\nexport function wrapI18nPlaceholder(content: string|number,
contextId: number = 0): string {\n const blockIdx = contextId > 0 ? `:${contextId}` : ` `;\n return
`${I18N_PLACEHOLDER_SYMBOL}${content}${blockIdx}${I18N_PLACEHOLDER_SYMBOL}`;\n\n\nexport
function assembleI18nBoundString(\n strings: string[], bindingStartIndex: number = 0, contextId: number = 0):
string {\n if (!strings.length) return ` `;\n let acc = ` `;\n const lastIdx = strings.length - 1;\n for (let i = 0; i < lastIdx;
i++) {\n acc += `${strings[i]}${wrapI18nPlaceholder(bindingStartIndex + i, contextId)} `;\n }\n acc +=
strings[lastIdx];\n return acc;\n\n\nexport function getSeqNumberGenerator(startsAt: number = 0): () => number
{\n let current = startsAt;\n return () => current++;\n\n\nexport function placeholdersToParams(placeholders:
Map<string, string[]>):\n {[name: string]: o.LiteralExpr} {\n const params: {[name: string]: o.LiteralExpr} =
{};\n placeholders.forEach((values: string[], key: string) => {\n params[key] = o.literal(values.length > 1 ?
`${values.join(" ")}` : values[0]);\n });\n return params;\n\n\nexport function updatePlaceholderMap(map:
Map<string, any[]>, name: string, ...values: any[]) {\n const current = map.get(name) || [];\n current.push(...values);\n map.set(name, current);\n\n\nexport function assembleBoundTextPlaceholders(\n
meta: i18n.I18nMeta, bindingStartIndex: number = 0, contextId: number = 0): Map<string, any[]> {\n const
startIdx = bindingStartIndex;\n const placeholders = new Map<string, any>();\n const node =\n meta instanceof
i18n.Message ? meta.nodes.find(node => node instanceof i18n.Container) : meta;\n if (node) {\n (node as
i18n.Container)\n .children\n .filter((child: i18n.Node): child is i18n.Placeholder => child instanceof
i18n.Placeholder)\n .forEach((child: i18n.Placeholder, idx: number) => {\n const content =
wrapI18nPlaceholder(startIdx + idx, contextId);\n updatePlaceholderMap(placeholders, child.name,
content);\n });\n }\n return placeholders;\n\n\n/**\n * Format the placeholder names in a map of placeholders
to expressions.\n * The placeholder names are converted from "internal" format (e.g. `START_TAG_DIV_1`)
to "external" format (e.g. `startTagDiv_1`).\n * @param params A map of placeholder names to
expressions.\n * @param useCamelCase whether to camelCase the placeholder name when formatting.\n * @returns
A new map of formatted placeholder names to expressions.\n */\nexport function i18nFormatPlaceholderNames(\n
params: {[name: string]: o.Expression} = {}, useCamelCase: boolean) {\n const _params: {[key: string]:
o.Expression} = {};\n if (params && Object.keys(params).length) {\n Object.keys(params).forEach(\n key
=> _params[formatI18nPlaceholderName(key, useCamelCase)] = params[key]);\n }\n return _params;\n\n\n/**\n * Converts internal placeholder names to public-facing format\n * (for example to use in goog.getMsg call).\n *
Example: `START_TAG_DIV_1` is converted to `startTagDiv_1`.\n * @param name The placeholder name
that should be formatted\n * @returns Formatted placeholder name\n */\nexport function
formatI18nPlaceholderName(name: string, useCamelCase: boolean = true): string {\n const publicName =
toPublicName(name);\n if (!useCamelCase) {\n return publicName;\n }\n const chunks =
publicName.split('_');\n if (chunks.length === 1) {\n // if no "_" found - just lowercase the value\n return
name.toLowerCase();\n }\n let postfix;\n // eject last element if it's a number\n if
(/^\d+$/ .test(chunks[chunks.length - 1])) {\n postfix = chunks.pop();\n }\n let raw =
chunks.shift().toLowerCase();\n if (chunks.length) {\n raw += chunks.map(c => c.charAt(0).toUpperCase() +
c.slice(1).toLowerCase()).join("");\n }\n return postfix ? `${raw}_${postfix}` : raw;\n\n\n/**\n * Generates a
prefix for translation const name.\n * @param extra Additional local prefix that should be injected into
translation var name\n * @returns Complete translation const prefix\n */\nexport function
getTranslationConstPrefix(extra: string): string {\n return
`${CLOSURE_TRANSLATION_VAR_PREFIX}${extra}`.toUpperCase();\n\n\n/**\n * Generate AST to declare
a variable. E.g. `var I18N_1;`\n * @param variable the name of the variable to declare.\n */\nexport function
declareI18nVariable(variable: o.ReadVarExpr): o.Statement {\n return new o.DeclareVarStmt(\n variable.name!,
undefined, o.INFERRED_TYPE, undefined, variable.sourceSpan);\n\n\n"/**\n * @license\n * Copyright Google
LLC All Rights Reserved.\n * Use of this source code is governed by an MIT-style license that can be\n * found
in the LICENSE file at https://angular.io/license\n */\nimport {ConstantPool} from '../constant_pool';\nimport
{Interpolation} from '../expression_parser/ast';\nimport * as o from '../output/output_ast';\nimport

```



directive matching. For attributes on the element/template, this object maps a property name to its (static) value. For any bindings, this map simply maps the property name to an empty string.

```

export function
getAttrsForDirectiveMatching(elOrTpl: t.Element | t.Template): {[name: string]:
string} {
 const attributesMap: {[name: string]: string} = {};
 if (elOrTpl instanceof t.Template &&
 elOrTpl.tagName !== 'ng-template') {
 elOrTpl.templateAttrs.forEach(a => attributesMap[a.name] = "");
 } else {
 elOrTpl.attributes.forEach(a => {
 if (!isAttribute(a.name)) {
 attributesMap[a.name] =
 a.value;
 }
 });
 elOrTpl.inputs.forEach(i => {
 attributesMap[i.name] = "";
 });
 elOrTpl.outputs.forEach(o => {
 attributesMap[o.name] = "";
 });
 }
 return attributesMap;
}

Returns a call expression to a chained instruction, e.g. `property(params[0])(params[1])`.
export function
chainedInstruction(reference: o.ExternalReference, calls: o.Expression[], span?: ParseSourceSpan | null) {
 let
 expression = o.importExpr(reference, null, span) as o.Expression;
 if (calls.length > 0) {
 for (let i = 0; i <
 calls.length; i++) {
 expression = expression.callFn(calls[i], span);
 }
 } else {
 // Add a blank
 invocation, in case the `calls` array is empty.
 expression = expression.callFn([], span);
 }
 return
 expression;
}

Gets the number of arguments expected to be passed to a generated instruction in the case
of interpolation instructions.
export function
getInterpolationArgsLength(interpolation: Interpolation) {
 const {expressions, strings} = interpolation;
 if
 (expressions.length === 1 && strings.length === 2 && strings[0] === "" && strings[1] === "") {
 // If the
 interpolation has one interpolated value, but the prefix and suffix are both empty
 // strings, we only pass one
 argument, to a special instruction like `propertyInterpolate` or `textInterpolate`.
 return 1;
 } else {
 return
 expressions.length + strings.length;
 }
}

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LICENSE file at https://angular.io/license

import {StaticSymbol} from '../aot/static_symbol';
import {CompileTypeMetadata, tokenReference} from '../compile_metadata';
import {CompileReflector} from
'../compile_reflector';
import {InjectFlags} from '../core';
import {Identifiers} from '../identifiers';
import * as o
from '../output/output_ast';
import {Identifiers as R3} from '../render3/r3_identifiers';
import {OutputContext}
from '../util';
import {R3Reference, typeWithParameters} from '../util';
import {unsupported} from
'../view/util';

Metadata required by the factory generator to generate a `factory` function for a type.
export interface R3ConstructorFactoryMetadata {
 /**
 * String name of the type being generated (used to
 name the factory function).
 */
 name: string;
 /**
 * An expression representing the interface type being
 constructed.
 */
 type: R3Reference;
 /**
 * An expression representing the constructor type, intended for
 use within a class definition
 */
 itself: R3Reference;
 /**
 * This can differ from the outer `type` if the class is being compiled
 by ngcc and is inside
 */
 anIIFE: R3Reference;
 /**
 * an IIFE structure that uses a different name internally.
 */
 internalType: R3Reference;
 /**
 * Number of arguments for the `type`.
 */
 typeArgumentCount: number;
 /**
 * Regardless of whether `fnOrClass` is a constructor function or a user-defined factory, it
 may have 0 or more
 parameters, which will be injected according to the `R3DependencyMetadata`
 for those parameters. If this is
 `null`, then the type's constructor is nonexistent and will
 be inherited from `fnOrClass` which is interpreted as
 the current type. If this is `invalid`,
 then one or more of the parameters wasn't resolvable and any attempt to
 use these deps will
 result in a runtime error.
 */
 deps: R3DependencyMetadata[] | 'invalid' | null;
 /**
 * An expression for the function which will be used to inject dependencies. The API of this
 function could be
 different, and other options control how it will be invoked.
 */
 injectFn: o.ExternalReference;
 /**
 * Type of the target being created by the factory.
 */
 target: R3FactoryTarget;
}

export enum
R3FactoryDelegateType {
 Class,
 Function,
 Factory,
}

export interface R3DelegatedFactoryMetadata
extends R3ConstructorFactoryMetadata {
 delegate: o.Expression;
 delegateType:
R3FactoryDelegateType.Factory;
}

export interface R3DelegatedFnOrClassMetadata extends
R3ConstructorFactoryMetadata {
 delegate: o.Expression;
 delegateType:
R3FactoryDelegateType.Class | R3FactoryDelegateType.Function;
 delegateDeps:
R3DependencyMetadata[];
}

export interface R3ExpressionFactoryMetadata extends
R3ConstructorFactoryMetadata {
 expression: o.Expression;
}

export type R3FactoryMetadata =

```

```

R3ConstructorFactoryMetadata|R3DelegatedFactoryMetadata|\n
R3DelegatedFnOrClassMetadata|R3ExpressionFactoryMetadata;\n\nexport enum R3FactoryTarget {\n Directive =
0,\n Component = 1,\n Injectable = 2,\n Pipe = 3,\n NgModule = 4,\n}\n\n/**\n * Resolved type of a
dependency.\n *\n * Occasionally, dependencies will have special significance which is known statically. In that\n *
case the `R3ResolvedDependencyType` informs the factory generator that a particular dependency\n * should be
generated specially (usually by calling a special injection function instead of the\n * standard one).\n */\n\nexport
enum R3ResolvedDependencyType {\n /**\n * A normal token dependency.\n */\n Token = 0,\n /**\n * The
dependency is for an attribute.\n */\n Attribute = 1,\n\n /**\n * Injecting the `ChangeDetectorRef` token. Needs special handling when injected into a
pipe.\n */\n ChangeDetectorRef = 2,\n\n /**\n * An invalid dependency (no token could be determined). An
error should be thrown at runtime.\n */\n Invalid = 3,\n}\n\n/**\n * Metadata representing a single dependency to
be injected into a constructor or function call.\n */\n\nexport interface R3DependencyMetadata {\n /**\n * An
expression representing the token or value to be injected.\n */\n token: o.Expression;\n\n /**\n * If an
@Attribute decorator is present, this is the literal type of the attribute name, or\n * the unknown type if no literal
type is available (e.g. the attribute name is an expression).\n * Will be null otherwise.\n */\n attribute:
o.Expression|null;\n\n /**\n * An enum indicating whether this dependency has special meaning to Angular and
needs to be\n * injected specially.\n */\n resolved: R3ResolvedDependencyType;\n\n /**\n * Whether the
dependency has an @Host qualifier.\n */\n host: boolean;\n\n /**\n * Whether the dependency has an @Optional
qualifier.\n */\n optional: boolean;\n\n /**\n * Whether the dependency has an @Self qualifier.\n */\n self:
boolean;\n\n /**\n * Whether the dependency has an @SkipSelf qualifier.\n */\n skipSelf: boolean;\n}\n\nexport
interface R3FactoryFn {\n factory: o.Expression;\n statements: o.Statement[];\n type:
o.ExpressionType;\n}\n\n/**\n * Construct a factory function expression for the given `R3FactoryMetadata`.\n */\n\nexport function compileFactoryFunction(meta: R3FactoryMetadata): R3FactoryFn {\n const t = o.variable('t');\n\n const statements: o.Statement[] = [];\n let ctorDepsType: o.Type = o.NONE_TYPE;\n\n // The type to instantiate
via constructor invocation. If there is no delegated factory, meaning\n // this type is always created by constructor
invocation, then this is the type-to-create\n // parameter provided by the user (t) if specified, or the current type if
not. If there is a\n // delegated factory (which is used to create the current type) then this is only the type-to-\n //
create parameter (t).\n const typeForCtor = !isDelegatedMetadata(meta) ?\n new
o.BinaryOperatorExpr(o.BinaryOperator.Or, t, meta.internalType) :\n t;\n\n let ctorExpr: o.Expression|null =
null;\n if (meta.deps !== null) {\n // There is a constructor (either explicitly or implicitly defined).\n if
(meta.deps !== 'invalid') {\n ctorExpr = new o.InstantiateExpr(\n typeForCtor,\n
injectDependencies(meta.deps, meta.injectFn, meta.target === R3FactoryTarget.Pipe));\n\n ctorDepsType =
createCtorDepsType(meta.deps);\n }\n } else {\n const baseFactory =
o.variable(`${meta.name}_BaseFactory`);\n const getInheritedFactory = o.importExpr(R3.getInheritedFactory);\n
const baseFactoryStmt =\n baseFactory\n .set(getInheritedFactory.callFn(\n
[meta.internalType], /* sourceSpan */ undefined, /* pure */ true))\n .toDeclStmt(o.INFERRED_TYPE,
[o.StmtModifier.Exported, o.StmtModifier.Final]);\n statements.push(baseFactoryStmt);\n\n // There is no
constructor, use the base class' factory to construct typeForCtor.\n ctorExpr =
baseFactory.callFn([typeForCtor]);\n }\n\n const ctorExprFinal = ctorExpr;\n\n const body: o.Statement[] = [];\n let
retExpr: o.Expression|null = null;\n\n function makeConditionalFactory(nonCtorExpr: o.Expression):
o.ReadVarExpr {\n const r = o.variable('r');\n body.push(r.set(o.NULL_EXPR).toDeclStmt());\n let ctorStmt:
o.Statement|null = null;\n if (ctorExprFinal !== null) {\n ctorStmt = r.set(ctorExprFinal).toStmt();\n } else {\n
ctorStmt = o.importExpr(R3.invalidFactory).callFn([]).toStmt();\n }\n body.push(o.ifStmt(t, [ctorStmt],
[r.set(nonCtorExpr).toStmt()]));\n return r;\n }\n\n if (isDelegatedMetadata(meta) && meta.delegateType ===
R3FactoryDelegateType.Factory) {\n const delegateFactory = o.variable(`${meta.name}_BaseFactory`);\n const
getFactoryOf = o.importExpr(R3.getFactoryOf);\n if (meta.delegate.isEquivalent(meta.internalType)) {\n
throw new Error(`Illegal state: compiling factory that delegates to itself`);\n }\n const delegateFactoryStmt =\n
delegateFactory.set(getFactoryOf.callFn([meta.delegate])).toDeclStmt(o.INFERRED_TYPE, [\n

```



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o.StmtModifier.Exported, o.StmtModifier.Final\n]);\n\n statements.push(delegateFactoryStmt);\n retExpr =
makeConditionalFactory(delegateFactory.callFn([]));\n } else if (isDelegatedMetadata(meta)) {\n // This type is
created with a delegated factory. If a type parameter is not specified, call\n // the factory instead.\n const
delegateArgs =\n injectDependencies(meta.delegateDeps, meta.injectFn, meta.target ===
R3FactoryTarget.Pipe);\n // Either call `new delegate(...)` or `delegate(...)` depending on meta.delegateType.\n
const factoryExpr = new (\n meta.delegateType === R3FactoryDelegateType.Class ?\n o.InstantiateExpr
:\n o.InvokeFunctionExpr)(meta.delegate, delegateArgs);\n retExpr =
makeConditionalFactory(factoryExpr);\n } else if (isExpressionFactoryMetadata(meta)) {\n // TODO(alxhub):
decide whether to lower the value here or in the caller\n retExpr = makeConditionalFactory(meta.expression);\n }
else {\n retExpr = ctorExpr;\n }\n\n if (retExpr !== null) {\n body.push(new o.ReturnStatement(retExpr));\n }
else {\n body.push(o.importExpr(R3.invalidFactory).callFn([]).toStmt());\n }\n\n return {\n factory: o.fn(\n
[new o.FnParam('t', o.DYNAMIC_TYPE)], body, o.INFERRED_TYPE, undefined,\n
`${meta.name}_Factory`),\n statements,\n type: o.expressionType(o.importExpr(\n R3.FactoryDef,
[typeWithParameters(meta.type.type, meta.typeArgumentCount), ctorDepsType]))\n);\n }\n\nfunction
injectDependencies(\n deps: R3DependencyMetadata[], injectFn: o.ExternalReference, isPipe: boolean):
o.Expression[] {\n return deps.map((dep, index) => compileInjectDependency(dep, injectFn, isPipe,
index));\n }\n\nfunction compileInjectDependency(\n dep: R3DependencyMetadata, injectFn: o.ExternalReference,
isPipe: boolean,\n index: number): o.Expression {\n // Interpret the dependency according to its resolved type.\n
switch (dep.resolved) {\n case R3ResolvedDependencyType.Token:\n case
R3ResolvedDependencyType.ChangeDetectorRef:\n // Build up the injection flags according to the metadata.\n
const flags = InjectFlags.Default | (dep.self ? InjectFlags.Self : 0) |\n (dep.skipSelf ? InjectFlags.SkipSelf : 0) |
(dep.host ? InjectFlags.Host : 0) |\n (dep.optional ? InjectFlags.Optional : 0);\n // If this dependency is
optional or otherwise has non-default flags, then additional\n // parameters describing how to inject the
dependency must be passed to the inject function\n // that's being used.\n let flagsParam: o.LiteralExpr|null
=\n (flags !== InjectFlags.Default || dep.optional) ? o.literal(flags) : null;\n // We have a separate
instruction for injecting ChangeDetectorRef into a pipe.\n if (isPipe && dep.resolved ===
R3ResolvedDependencyType.ChangeDetectorRef) {\n return
o.importExpr(R3.injectPipeChangeDetectorRef).callFn(flagsParam ? [flagsParam] : []);\n }\n\n // Build up the
arguments to the injectFn call.\n const injectArgs = [dep.token];\n if (flagsParam) {\n
injectArgs.push(flagsParam);\n }\n return o.importExpr(injectFn).callFn(injectArgs);\n case
R3ResolvedDependencyType.Attribute:\n // In the case of attributes, the attribute name in question is given as
the token.\n return o.importExpr(R3.injectAttribute).callFn([dep.token]);\n case
R3ResolvedDependencyType.Invalid:\n return o.importExpr(R3.invalidFactoryDep).callFn([o.literal(index)]);\n
default:\n return unsupported(\n `Unknown R3ResolvedDependencyType:
${R3ResolvedDependencyType[dep.resolved]}`);\n }\n }\n\nfunction createCtorDepsType(deps:
R3DependencyMetadata[]): o.Type {\n let hasTypes = false;\n const attributeTypes = deps.map(dep => {\n const
type = createCtorDepType(dep);\n if (type !== null) {\n hasTypes = true;\n return type;\n } else {\n
return o.literal(null);\n }\n });\n\n if (hasTypes) {\n return o.expressionType(o.literalArr(attributeTypes));\n }
else {\n return o.NONE_TYPE;\n }\n }\n\nfunction createCtorDepType(dep: R3DependencyMetadata):
o.LiteralMapExpr|null {\n const entries: {key: string, quoted: boolean, value: o.Expression}[] = [];\n\n if
(dep.resolved === R3ResolvedDependencyType.Attribute) {\n if (dep.attribute !== null) {\n entries.push({key:
'attribute', value: dep.attribute, quoted: false});\n }\n }\n\n if (dep.optional) {\n entries.push({key: 'optional',
value: o.literal(true), quoted: false});\n }\n\n if (dep.host) {\n entries.push({key: 'host', value: o.literal(true), quoted:
false});\n }\n\n if (dep.self) {\n entries.push({key: 'self', value: o.literal(true), quoted: false});\n }\n\n if
(dep.skipSelf) {\n entries.push({key: 'skipSelf', value: o.literal(true), quoted: false});\n }\n\n return entries.length
> 0 ? o.literalMap(entries) : null;\n }\n\n/**\n * A helper function useful for extracting `R3DependencyMetadata`
from a Render2\n * `CompileTypeMetadata` instance.\n */\nexport function dependenciesFromGlobalMetadata(\n
type: CompileTypeMetadata, outputCtx: OutputContext,\n reflector: CompileReflector):

```

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R3DependencyMetadata[] {\n // Use the `CompileReflector` to look up references to some well-known Angular
types. These will\n // be compared with the token to statically determine whether the token has significance to\n //
Angular, and set the correct `R3ResolvedDependencyType` as a result.\n const injectorRef =
reflector.resolveExternalReference(Identifiers.Injector);\n\n // Iterate through the type's DI dependencies and
produce `R3DependencyMetadata` for each of them.\n const deps: R3DependencyMetadata[] = [];\n for (let
dependency of type.diDeps) {\n if (dependency.token) {\n const tokenRef =
tokenReference(dependency.token);\n let resolved: R3ResolvedDependencyType = dependency.isAttribute ?\n
R3ResolvedDependencyType.Attribute :\n R3ResolvedDependencyType.Token;\n\n // In the case of
most dependencies, the token will be a reference to a type. Sometimes,\n // however, it can be a string, in the case
of older Angular code or @Attribute injection.\n const token =\n tokenRef instanceof StaticSymbol ?
outputCtx.importExpr(tokenRef) : o.literal(tokenRef);\n\n // Construct the dependency.\n deps.push({\n
token,\n attribute: null,\n resolved,\n host: !!dependency.isHost,\n optional:
!!dependency.isOptional,\n self: !!dependency.isSelf,\n skipSelf: !!dependency.isSkipSelf,\n });\n }
else {\n unsupported('dependency without a token');\n }\n }\n return deps;\n}\n\nfunction
isDelegatedMetadata(meta: R3FactoryMetadata): meta is R3DelegatedFactoryMetadata|\n
R3DelegatedFnOrClassMetadata {\n return (meta as any).delegateType !== undefined;\n}\n\nfunction
isExpressionFactoryMetadata(meta: R3FactoryMetadata): meta is R3ExpressionFactoryMetadata {\n return (meta
as any).expression !== undefined;\n}\n\n"/**\n * @license\n * Copyright Google LLC All Rights Reserved.\n *\n *
Use of this source code is governed by an MIT-style license that can be\n * found in the LICENSE file at
https://angular.io/license\n *\n */\nimport {Identifiers} from './identifiers';\nimport * as o from
'./output/output_ast';\nimport {compileFactoryFunction, R3DependencyMetadata, R3FactoryDelegateType,
R3FactoryMetadata, R3FactoryTarget} from './render3/r3_factory';\nimport {mapToMapExpression, R3Reference,
typeWithParameters} from './render3/util';\n\nexport interface InjectableDef {\n expression: o.Expression;\n type:
o.Type;\n statements: o.Statement[];\n}\n\nexport interface R3InjectableMetadata {\n name: string;\n type:
R3Reference;\n internalType: o.Expression;\n typeArgumentCount: number;\n providedIn: o.Expression;\n
useClass?: o.Expression;\n useFactory?: o.Expression;\n useExisting?: o.Expression;\n useValue?: o.Expression;\n
userDeps?: R3DependencyMetadata[];\n}\n\nexport function compileInjectable(meta: R3InjectableMetadata):
InjectableDef {\n let result: {factory: o.Expression, statements: o.Statement[]} | null = null;\n\n const factoryMeta:
R3FactoryMetadata = {\n name: meta.name,\n type: meta.type,\n internalType: meta.internalType,\n
typeArgumentCount: meta.typeArgumentCount,\n deps: [],\n injectFn: Identifiers.inject,\n target:
R3FactoryTarget.Injectable,\n }; \n\n if (meta.useClass !== undefined) {\n // meta.useClass has two modes of
operation. Either deps are specified, in which case `new` is\n // used to instantiate the class with dependencies
injected, or deps are not specified and\n // the factory of the class is used to instantiate it.\n //\n // A special
case exists for useClass: Type where Type is the injectable type itself and no\n // deps are specified, in which case
`useClass` is effectively ignored.\n\n const useClassOnSelf = meta.useClass.isEquivalent(meta.internalType);\n
let deps: R3DependencyMetadata[] | undefined = undefined;\n if (meta.userDeps !== undefined) {\n deps =
meta.userDeps;\n } \n\n if (deps !== undefined) {\n // factory: () => new meta.useClass(...deps)\n result =
compileFactoryFunction({\n ...factoryMeta,\n delegate: meta.useClass,\n delegateDeps: deps,\n
delegateType: R3FactoryDelegateType.Class,\n });\n } else if (useClassOnSelf) {\n result =
compileFactoryFunction(factoryMeta);\n } else {\n result = delegateToFactory(\n meta.type.value as
o.WrappedNodeExpr<any>, meta.useClass as o.WrappedNodeExpr<any>);\n } \n } else if (meta.useFactory !==
undefined) {\n if (meta.userDeps !== undefined) {\n result = compileFactoryFunction({\n ...factoryMeta,\n
delegate: meta.useFactory,\n delegateDeps: meta.userDeps || [],\n delegateType:
R3FactoryDelegateType.Function,\n });\n } else {\n result = {\n statements: [],\n factory: o.fn([],
[new o.ReturnStatement(meta.useFactory.callFn([]))])\n }; \n } \n } else if (meta.useValue !== undefined) {\n
// Note: it's safe to use `meta.useValue` instead of the `USE_VALUE` in meta` check used for\n // client code
because meta.useValue is an Expression which will be defined even if the actual\n // value is undefined.\n result
= compileFactoryFunction({\n ...factoryMeta,\n expression: meta.useValue,\n });\n } \n } else if

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(meta.useExisting !== undefined) {\n // useExisting is an `inject` call on the existing token.\n result =
compileFactoryFunction({\n ...factoryMeta,\n expression:
o.importExpr(Identifiers.inject).callFn([meta.useExisting]),\n });\n } else {\n result = delegateToFactory(\n
meta.type.value as o.WrappedNodeExpr<any>, meta.internalType as o.WrappedNodeExpr<any>);\n }\n\n const
token = meta.internalType;\n\n const injectableProps: {[key: string]: o.Expression} = {token, factory:
result.factory};\n\n // Only generate providedIn property if it has a non-null value\n if ((meta.providedIn as
o.LiteralExpr).value !== null) {\n injectableProps.providedIn = meta.providedIn;\n }\n\n const expression =\n o.importExpr(Identifiers.defineInjectable).callFn([mapToMapExpression(injectableProps)]);\n const type = new
o.ExpressionType(o.importExpr(\n Identifiers.InjectableDef, [typeWithParameters(meta.type.type,
meta.typeArgumentCount)]));\n\n return {\n expression,\n type,\n statements: result.statements,\n
};\n}\n\nfunction delegateToFactory(type: o.WrappedNodeExpr<any>, internalType: o.WrappedNodeExpr<any>)\n
{\n return {\n statements: [],\n // If types are the same, we can generate `factory: type.fac`\n // If types are
different, we have to generate a wrapper function to ensure\n // the internal type has been resolved (^ factory:
function(t) { return type.fac(t); })\n factory: type.node === internalType.node ?\n internalType.prop('fac') :\n
o.fn([new o.FnParam('t', o.DYNAMIC_TYPE)], [new o.ReturnStatement(internalType.callMethod(\n
'fac', [o.variable('t')]))])\n };;\n}\n\n",/**\n * @license\n * Copyright Google LLC All Rights
Reserved.\n *\n * Use of this source code is governed by an MIT-style license that can be\n * found in the
LICENSE file at https://angular.io/license\n */\n\nexport function assertArrayOfStrings(identifier: string, value:
any) {\n if (value == null) {\n return;\n }\n if (!Array.isArray(value)) {\n throw new Error(`Expected
'${identifier}' to be an array of strings.`);\n }\n for (let i = 0; i < value.length; i += 1) {\n if (typeof value[i] !==
'string') {\n throw new Error(`Expected '${identifier}' to be an array of strings.`);\n }\n }\n}\n\nconst
UNUSABLE_INTERPOLATION_REGEXPS = [\n /\s$/, // empty\n /<\/$/, // html tag\n /{}/$/,
// i18n expansion\n /&#[a-z]/i, // character reference,\n /^\\|\\|/, // comment\n];\n\nexport function
assertInterpolationSymbols(identifier: string, value: any): void {\n if (value != null && !(Array.isArray(value) &&
value.length == 2)) {\n throw new Error(`Expected '${identifier}' to be an array, [start, end].`);\n } else if (value
!= null) {\n const start = value[0] as string;\n const end = value[1] as string;\n // Check for unusable
interpolation symbols\n UNUSABLE_INTERPOLATION_REGEXPS.forEach(regex => {\n if
(regex.test(start) || regex.test(end)) {\n throw new Error(`[${start}', '${end}'] contains unusable interpolation
symbol.`);\n }\n });\n }\n}\n\n",/**\n * @license\n * Copyright Google LLC All Rights Reserved.\n *\n * Use
of this source code is governed by an MIT-style license that can be\n * found in the LICENSE file at
https://angular.io/license\n */\n\nimport {assertInterpolationSymbols} from './assertions';\n\nexport class
InterpolationConfig {\n static fromArray(markers: [string, string]|null): InterpolationConfig {\n if (!markers) {\n
return DEFAULT_INTERPOLATION_CONFIG;\n }\n\n assertInterpolationSymbols('interpolation',
markers);\n return new InterpolationConfig(markers[0], markers[1]);\n }\n\n constructor(public start: string,
public end: string) {};\n}\n\nexport const DEFAULT_INTERPOLATION_CONFIG: InterpolationConfig =\n new
InterpolationConfig('{{', '}}');\n\n",/**\n * @license\n * Copyright Google LLC All Rights Reserved.\n *\n * Use
of this source code is governed by an MIT-style license that can be\n * found in the LICENSE file at
https://angular.io/license\n */\n\nimport {utf8Encode} from './util';\n\n//
https://docs.google.com/document/d/1U1RGAehQwRypUTovF1KRIpiOFze0b-_2gc6fAH0KY0k/edit\n\nconst
VERSION = 3;\n\nconst JS_B64_PREFIX = '# sourceMappingURL=data:application/json;base64,';\n\nntype
Segment = {\n col0: number,\n sourceUrl?: string,\n sourceLine0?: number,\n sourceCol0?:
number,\n};\n\nexport type SourceMap = {\n version: number,\n file?: string,\n sourceRoot: string,\n
sources: string[],\n sourcesContent: (string|null)[],\n mappings: string,\n};\n\nexport class
SourceMapGenerator {\n private sourcesContent: Map<string, string|null> = new Map();\n private lines:
Segment[][] = [];\n private lastCol0: number = 0;\n private hasMappings = false;\n\n constructor(private file:
string|null = null) {};\n\n // The content is `null` when the content is expected to be loaded using the URL\n
addSource(url: string, content: string|null = null): this {\n if (!this.sourcesContent.has(url)) {\n
this.sourcesContent.set(url, content);\n }\n return this;\n }\n\n addLine(): this {\n this.lines.push([]);\n

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{\n partsLength = 0;\n parts: string[] = [];\n srcSpans: (ParseSourceSpan|null)[] = [];\n constructor(public indent:
number) {} }\n}\n\nexport class EmitterVisitorContext {\n static createRoot(): EmitterVisitorContext {\n return
new EmitterVisitorContext(0);\n }\n\n private _lines: _EmittedLine[];\n private _classes: o.ClassStmt[] = [];\n
private _preambleLineCount = 0;\n\n constructor(private _indent: number) {\n this._lines = [new
_EmittedLine(_indent)];\n }\n\n /**\n * @internal strip this from published d.ts files due to\n *
https://github.com/microsoft/TypeScript/issues/36216\n */\n private get _currentLine(): _EmittedLine {\n return
this._lines[this._lines.length - 1];\n }\n\n println(from?: { sourceSpan: ParseSourceSpan|null }|null, lastPart: string =
''): void {\n this.print(from || null, lastPart, true);\n }\n\n lineIsEmpty(): boolean {\n return
this._currentLine.parts.length === 0;\n }\n\n lineLength(): number {\n return this._currentLine.indent *
_INDENT_WITH.length + this._currentLine.partsLength;\n }\n\n print(from: { sourceSpan:
ParseSourceSpan|null }|null, part: string, newLine: boolean = false) {\n if (part.length > 0) {\n
this._currentLine.parts.push(part);\n this._currentLine.partsLength += part.length;\n
this._currentLine.srcSpans.push(from && from.sourceSpan || null);\n }\n if (newLine) {\n
this._lines.push(new _EmittedLine(this._indent));\n }\n }\n\n removeEmptyLastLine() {\n if
(this.lineIsEmpty()) {\n this._lines.pop();\n }\n }\n\n incIndent() {\n this._indent++;\n if
(this.lineIsEmpty()) {\n this._currentLine.indent = this._indent;\n }\n }\n\n decIndent() {\n this._indent--;\n
if (this.lineIsEmpty()) {\n this._currentLine.indent = this._indent;\n }\n }\n\n pushClass(clazz: o.ClassStmt)
{\n this._classes.push(clazz);\n }\n\n popClass(): o.ClassStmt {\n return this._classes.pop();\n }\n\n get
currentClass(): o.ClassStmt|null {\n return this._classes.length > 0 ? this._classes[this._classes.length - 1] : null;\n
}\n\n toSource(): string {\n return this.sourceLines\n .map(l => l.parts.length > 0 ? _createIndent(l.indent) +
l.parts.join('') : '')\n .join('\n');\n }\n\n toSourceMapGenerator(genFilePath: string, startsAtLine: number = 0):
SourceMapGenerator {\n const map = new SourceMapGenerator(genFilePath);\n\n let firstOffsetMapped =
false;\n const mapFirstOffsetIfNeeded = () => {\n if (!firstOffsetMapped) {\n // Add a single space so that
tools won't try to load the file from disk.\n // Note: We are using virtual urls like `ng://`, so we have to\n //
provide a content here.\n map.addSource(genFilePath, '').addMapping(0, genFilePath, 0, 0);\n
firstOffsetMapped = true;\n }\n };\n\n for (let i = 0; i < startsAtLine; i++) {\n map.addLine();\n
mapFirstOffsetIfNeeded();\n }\n\n this.sourceLines.forEach((line, lineIdx) => {\n map.addLine();\n
const spans = line.srcSpans;\n const parts = line.parts;\n let col0 = line.indent * _INDENT_WITH.length;\n
let spanIdx = 0;\n // skip leading parts without source spans\n while (spanIdx < spans.length &&
!spans[spanIdx]) {\n col0 += parts[spanIdx].length;\n spanIdx++;\n }\n if (spanIdx < spans.length
&& lineIdx === 0 && col0 === 0) {\n firstOffsetMapped = true;\n } else {\n
mapFirstOffsetIfNeeded();\n }\n\n while (spanIdx < spans.length) {\n const span = spans[spanIdx];\n
const source = span.start.file;\n const sourceLine = span.start.line;\n const sourceCol = span.start.col;\n
map.addSource(source.url, source.content)\n .addMapping(col0, source.url, sourceLine, sourceCol);\n
col0 += parts[spanIdx].length;\n spanIdx++;\n\n // assign parts without span or the same span to the
previous segment\n while (spanIdx < spans.length && (span === spans[spanIdx] || !spans[spanIdx])) {\n
col0 += parts[spanIdx].length;\n spanIdx++;\n }\n }\n\n return map;\n }\n\n
setPreambleLineCount(count: number) {\n return this._preambleLineCount = count;\n }\n\n spanOf(line:
number, column: number): ParseSourceSpan|null {\n const emittedLine = this._lines[line -
this._preambleLineCount];\n if (emittedLine) {\n let columnsLeft = column -
_createIndent(emittedLine.indent).length;\n for (let partIndex = 0; partIndex < emittedLine.parts.length;
partIndex++) {\n const part = emittedLine.parts[partIndex];\n if (part.length > columnsLeft) {\n return
emittedLine.srcSpans[partIndex];\n }\n columnsLeft -= part.length;\n }\n }\n return null;\n }\n\n
/**\n * @internal strip this from published d.ts files due to\n *
https://github.com/microsoft/TypeScript/issues/36216\n */\n private get sourceLines(): _EmittedLine[] {\n if
(this._lines.length && this._lines[this._lines.length - 1].parts.length === 0) {\n return this._lines.slice(0, -1);\n
}\n return this._lines;\n }\n}\n\nexport abstract class AbstractEmitterVisitor implements o.StatementVisitor,
o.ExpressionVisitor {\n constructor(private _escapeDollarInStrings: boolean) {} }\n\n protected

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printLeadingComments(stmt: o.Statement, ctx: EmitterVisitorContext): void {\n if (stmt.leadingComments ===
undefined) {\n return;\n }\n for (const comment of stmt.leadingComments) {\n if (comment instanceof
o.JSDocComment) {\n ctx.print(stmt, `/*${comment.toString()}*/`, comment.trailingNewline);\n } else {\n
if (comment.multiline) {\n ctx.print(stmt, `* ${comment.text} */`, comment.trailingNewline);\n } else
{\n comment.text.split("\n").forEach((line) => {\n ctx.println(stmt, `// ${line}`);\n });\n }
}\n }\n}\n\nvisitExpressionStmt(stmt: o.ExpressionStatement, ctx: EmitterVisitorContext): any {\n
this.printLeadingComments(stmt, ctx);\n stmt.expr.visitExpression(this, ctx);\n ctx.println(stmt, `;`);\n return
null;\n}\n\nvisitReturnStmt(stmt: o.ReturnStatement, ctx: EmitterVisitorContext): any {\n
this.printLeadingComments(stmt, ctx);\n ctx.print(stmt, `return `);\n stmt.value.visitExpression(this, ctx);\n
ctx.println(stmt, `;`);\n return null;\n}\n\nabstract visitCastExpr(ast: o.CastExpr, context: any): any;\n\nabstract
visitDeclareClassStmt(stmt: o.ClassStmt, ctx: EmitterVisitorContext): any;\n\nvisitIfStmt(stmt: o.IfStmt, ctx:
EmitterVisitorContext): any {\n this.printLeadingComments(stmt, ctx);\n ctx.print(stmt, `if (`);\n stmt.condition.visitExpression(this, ctx);\n ctx.print(stmt, `) {\n const hasElseCase = stmt.falseCase != null
&& stmt.falseCase.length > 0;\n if (stmt.trueCase.length <= 1 && !hasElseCase) {\n ctx.print(stmt, ` `);\n
this.visitAllStatements(stmt.trueCase, ctx);\n ctx.removeEmptyLastLine();\n ctx.print(stmt, ` `);\n } else {\n
 ctx.println();\n ctx.incIndent();\n this.visitAllStatements(stmt.trueCase, ctx);\n ctx.decIndent();\n
 if (hasElseCase) {\n ctx.println(stmt, ` } else {`);\n ctx.incIndent();\n this.visitAllStatements(stmt.falseCase, ctx);\n ctx.decIndent();\n }\n }\n ctx.println(stmt, ` `);\n }
return null;\n}\n\nabstract visitTryCatchStmt(stmt: o.TryCatchStmt, ctx: EmitterVisitorContext): any;\n\nvisitThrowStmt(stmt: o.ThrowStmt, ctx: EmitterVisitorContext): any {\n this.printLeadingComments(stmt, ctx);\n
ctx.print(stmt, `throw `);\n stmt.error.visitExpression(this, ctx);\n ctx.println(stmt, `;`);\n return null;\n}\n\nabstract visitDeclareVarStmt(stmt: o.DeclareVarStmt, ctx: EmitterVisitorContext): any;\n\nvisitWriteVarExpr(expr: o.WriteVarExpr, ctx: EmitterVisitorContext): any {\n const lineWasEmpty =
ctx.lineIsEmpty();\n if (!lineWasEmpty) {\n ctx.print(expr, '(');\n }\n ctx.print(expr, `${expr.name} = `);\n
expr.value.visitExpression(this, ctx);\n if (!lineWasEmpty) {\n ctx.print(expr, ')');\n }\n return null;\n}\n\nvisitWriteKeyExpr(expr: o.WriteKeyExpr, ctx: EmitterVisitorContext): any {\n const lineWasEmpty =
ctx.lineIsEmpty();\n if (!lineWasEmpty) {\n ctx.print(expr, '(');\n }\n expr.receiver.visitExpression(this,
ctx);\n ctx.print(expr, `[`);\n expr.index.visitExpression(this, ctx);\n ctx.print(expr, `] = `);\n expr.value.visitExpression(this, ctx);\n if (!lineWasEmpty) {\n ctx.print(expr, ')');\n }\n return null;\n}\n\nvisitWritePropExpr(expr: o.WritePropExpr, ctx: EmitterVisitorContext): any {\n const lineWasEmpty =
ctx.lineIsEmpty();\n if (!lineWasEmpty) {\n ctx.print(expr, '(');\n }\n expr.receiver.visitExpression(this,
ctx);\n ctx.print(expr, `.${expr.name} = `);\n expr.value.visitExpression(this, ctx);\n if (!lineWasEmpty) {\n
ctx.print(expr, ')');\n }\n return null;\n}\n\nvisitInvokeMethodExpr(expr: o.InvokeMethodExpr, ctx:
EmitterVisitorContext): any {\n expr.receiver.visitExpression(this, ctx);\n let name = expr.name;\n if (expr.builtin != null) {\n name = this.getBuiltinMethodName(expr.builtin);\n if (name == null) {\n //
some builtins just mean to skip the call.\n return null;\n }\n }\n ctx.print(expr, `.${name}(`);\n this.visitAllExpressions(expr.args, ctx, ` `);\n ctx.print(expr, `)`);\n return null;\n}\n\nabstract
getBuiltinMethodName(method: o.BuiltinMethod): string;\n\nvisitInvokeFunctionExpr(expr:
o.InvokeFunctionExpr, ctx: EmitterVisitorContext): any {\n expr.fn.visitExpression(this, ctx);\n ctx.print(expr,
`(`);\n this.visitAllExpressions(expr.args, ctx, ` `);\n ctx.print(expr, `)`);\n return null;\n}\n\nvisitWrappedNodeExpr(ast: o.WrappedNodeExpr<any>, ctx: EmitterVisitorContext): any {\n throw new
Error('Abstract emitter cannot visit WrappedNodeExpr.);\n}\n\nvisitTypeofExpr(expr: o.TypeofExpr, ctx:
EmitterVisitorContext): any {\n ctx.print(expr, 'typeof `);\n expr.expr.visitExpression(this, ctx);\n}\n\nvisitReadVarExpr(ast: o.ReadVarExpr, ctx: EmitterVisitorContext): any {\n let varName = ast.name!;\n if (ast.builtin != null) {\n
switch (ast.builtin) {\n case o.BuiltinVar.Super:\n varName = 'super';\n break;\n case o.BuiltinVar.This:\n varName = 'this';\n break;\n case o.BuiltinVar.CatchError:\n
varName = CATCH_ERROR_VAR.name!;\n break;\n case o.BuiltinVar.CatchStack:\n varName
= CATCH_STACK_VAR.name!;\n break;\n default:\n throw new Error(`Unknown builtin variable

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 ${ast.builtin});\n }\n }\n ctx.print(ast, varName);\n return null;\n }\n visitInstantiateExpr(ast:\n o.InstantiateExpr, ctx: EmitterVisitorContext): any {\n ctx.print(ast, `new `);\n ast.classExpr.visitExpression(this, ctx);\n ctx.print(ast, `(`);\n this.visitAllExpressions(ast.args, ctx, ',');\n ctx.print(ast, `)`);\n return null;\n }\n visitLiteralExpr(ast: o.LiteralExpr, ctx: EmitterVisitorContext): any {\n const value = ast.value;\n if (typeof value === 'string') {\n ctx.print(ast, escapeIdentifier(value,\n this._escapeDollarInStrings));\n } else {\n ctx.print(ast, `${value}`);\n }\n return null;\n }\n visitLocalizedString(ast: o.LocalizedString, ctx: EmitterVisitorContext): any {\n const head =\n ast.serializeI18nHead();\n ctx.print(ast, `$localize ` + head.raw);\n for (let i = 1; i < ast.messageParts.length; i++)\n {\n ctx.print(ast, `${}`);\n ast.expressions[i - 1].visitExpression(this, ctx);\n ctx.print(ast,\n `}${ast.serializeI18nTemplatePart(i).raw}`);\n }\n ctx.print(ast, ``);\n return null;\n }\n abstract\n visitExternalExpr(ast: o.ExternalExpr, ctx: EmitterVisitorContext): any;\n visitConditionalExpr(ast:\n o.ConditionalExpr, ctx: EmitterVisitorContext): any {\n ctx.print(ast, `(`);\n ast.condition.visitExpression(this,\n ctx);\n ctx.print(ast, `? `);\n ast.trueCase.visitExpression(this, ctx);\n ctx.print(ast, `:`);\n ast.falseCase!.visitExpression(this, ctx);\n ctx.print(ast, `)`);\n return null;\n }\n visitNotExpr(ast: o.NotExpr,\n ctx: EmitterVisitorContext): any {\n ctx.print(ast, `!`);\n ast.condition.visitExpression(this, ctx);\n return null;\n }\n visitAssertNotNullExpr(ast: o.AssertNotNull, ctx: EmitterVisitorContext): any {\n ast.condition.visitExpression(this, ctx);\n return null;\n }\n abstract visitFunctionExpr(ast: o.FunctionExpr, ctx:\n EmitterVisitorContext): any;\n abstract visitDeclareFunctionStmt(stmt: o.DeclareFunctionStmt, context: any):\n any;\n visitUnaryOperatorExpr(ast: o.UnaryOperatorExpr, ctx: EmitterVisitorContext): any {\n let opStr:\n string;\n switch (ast.operator) {\n case o.UnaryOperator.Plus:\n opStr = '+';\n break;\n case\n o.UnaryOperator.Minus:\n opStr = '-';\n break;\n default:\n throw new Error(`Unknown operator\n ${ast.operator}`);\n }\n if (ast.parens) ctx.print(ast, `(`);\n ctx.print(ast, opStr);\n ast.expr.visitExpression(this, ctx);\n if (ast.parens) ctx.print(ast, `)`);\n return null;\n }\n visitBinaryOperatorExpr(ast: o.BinaryOperatorExpr, ctx: EmitterVisitorContext): any {\n let opStr: string;\n switch (ast.operator) {\n case o.BinaryOperator.Equals:\n opStr = '==';\n break;\n case\n o.BinaryOperator.Identical:\n opStr = '===';\n break;\n case o.BinaryOperator.NotEquals:\n opStr =\n '!=';\n break;\n case o.BinaryOperator.NotIdentical:\n opStr = '!==';\n break;\n case\n o.BinaryOperator.And:\n opStr = '&&';\n break;\n case o.BinaryOperator.BitwiseAnd:\n opStr =\n '&';\n break;\n case o.BinaryOperator.Or:\n opStr = '||';\n break;\n case o.BinaryOperator.Plus:\n opStr =\n '+';\n break;\n case o.BinaryOperator.Minus:\n opStr = '-';\n break;\n case\n o.BinaryOperator.Divide:\n opStr = '/';\n break;\n case o.BinaryOperator.Multiply:\n opStr = '*';\n break;\n case o.BinaryOperator.Modulo:\n opStr = '%';\n break;\n case o.BinaryOperator.Lower:\n opStr =\n '<';\n break;\n case o.BinaryOperator.LowerEquals:\n opStr = '<=';\n break;\n case\n o.BinaryOperator.Bigger:\n opStr = '>';\n break;\n case o.BinaryOperator.BiggerEquals:\n opStr =\n '>=';\n break;\n default:\n throw new Error(`Unknown operator\n ${ast.operator}`);\n }\n if\n (ast.parens) ctx.print(ast, `(`);\n ast.lhs.visitExpression(this, ctx);\n ctx.print(ast, ` ${opStr} `);\n ast.rhs.visitExpression(this, ctx);\n if (ast.parens) ctx.print(ast, `)`);\n return null;\n }\n visitReadPropExpr(ast: o.ReadPropExpr, ctx: EmitterVisitorContext): any {\n ast.receiver.visitExpression(this,\n ctx);\n ctx.print(ast, `.`);\n ctx.print(ast, ast.name);\n return null;\n }\n visitReadKeyExpr(ast:\n o.ReadKeyExpr, ctx: EmitterVisitorContext): any {\n ast.receiver.visitExpression(this, ctx);\n ctx.print(ast,\n `[`);\n ast.index.visitExpression(this, ctx);\n ctx.print(ast, `]`);\n return null;\n }\n visitLiteralArrayExpr(ast:\n o.LiteralArrayExpr, ctx: EmitterVisitorContext): any {\n ctx.print(ast, `[`);\n this.visitAllExpressions(ast.entries,\n ctx, ',');\n ctx.print(ast, `]`);\n return null;\n }\n visitLiteralMapExpr(ast: o.LiteralMapExpr, ctx:\n EmitterVisitorContext): any {\n ctx.print(ast, `{`);\n this.visitAllObjects(entry => {\n ctx.print(ast,\n `${escapeIdentifier(entry.key, this._escapeDollarInStrings, entry.quoted)}:`);\n entry.value.visitExpression(this,\n ctx);\n }, ast.entries, ctx, ',');\n ctx.print(ast, `}`);\n return null;\n }\n visitCommaExpr(ast: o.CommaExpr,\n ctx: EmitterVisitorContext): any {\n ctx.print(ast, `(`);\n this.visitAllExpressions(ast.parts, ctx, ',');\n ctx.print(ast, `)`);\n return null;\n }\n visitAllExpressions(expressions: o.Expression[], ctx: EmitterVisitorContext,

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separator: string):\n void {\n this.visitAllObjects(expr => expr.visitExpression(this, ctx), expressions, ctx,\n separator);\n }\n\n visitAllObjects<T>(\n handler: (t: T) => void, expressions: T[], ctx: EmitterVisitorContext,\n separator: string): void {\n let incrementedIndent = false;\n for (let i = 0; i < expressions.length; i++) {\n if (i > 0) {\n if (ctx.lineLength() > 80) {\n ctx.print(null, separator, true);\n if (!incrementedIndent) {\n // continuation are marked with double indent.\n ctx.incIndent();\n ctx.incIndent();\n }\n incrementedIndent = true;\n }\n } else {\n ctx.print(null, separator, false);\n }\n }\n }\n handler(expressions[i]);\n }\n\n if (incrementedIndent) {\n // continuation are marked with double indent.\n ctx.decIndent();\n ctx.decIndent();\n }\n }\n\n visitAllStatements(statements: o.Statement[], ctx:\n EmitterVisitorContext): void {\n statements.forEach((stmt) => stmt.visitStatement(this, ctx));\n }\n\n nextExport\n function escapeIdentifier(\n input: string, escapeDollar: boolean, alwaysQuote: boolean = true): any {\n if (input\n == null) {\n return null;\n }\n const body = input.replace(_SINGLE_QUOTE_ESCAPE_STRING_RE, (...match:\n string[]) => {\n if (match[0] == '$') {\n return escapeDollar ? '\\\\$': '$';\n } else if (match[0] == '\\n') {\n return '\\\\n';\n } else if (match[0] == '\\r') {\n return '\\\\r';\n } else {\n return '\\\\${match[0]}`;\n }\n });\n const requiresQuotes = alwaysQuote || !_LEGAL_IDENTIFIER_RE.test(body);\n return requiresQuotes ?\n `_${body}` : body;\n }\n\n function _createIndent(count: number): string {\n let res = ";\n for (let i = 0; i < count;\n i++) {\n res += _INDENT_WITH;\n }\n return res;\n }\n\n /**\n * @license\n * Copyright Google LLC All\n * Rights Reserved.\n * Use of this source code is governed by an MIT-style license that can be\n * found in the\n * LICENSE file at https://angular.io/license\n */\n import {AbstractEmitterVisitor, CATCH_ERROR_VAR,\n CATCH_STACK_VAR, EmitterVisitorContext, escapeIdentifier} from './abstract_emitter';\n import * as o from\n './output_ast';\n\n export abstract class AbstractJsEmitterVisitor extends AbstractEmitterVisitor {\n constructor() {\n super(false);\n }\n\n visitDeclareClassStmt(stmt: o.ClassStmt, ctx: EmitterVisitorContext): any {\n ctx.pushClass(stmt);\n this._visitClassConstructor(stmt, ctx);\n if (stmt.parent != null) {\n ctx.print(stmt,\n `${stmt.name}.prototype = Object.create(`);\n stmt.parent.visitExpression(this, ctx);\n ctx.println(stmt,\n `).prototype`);\n }\n stmt.getters.forEach((getter) => this._visitClassGetter(stmt, getter, ctx));\n stmt.methods.forEach((method) => this._visitClassMethod(stmt, method, ctx));\n ctx.popClass();\n return null;\n }\n\n private _visitClassConstructor(stmt: o.ClassStmt, ctx: EmitterVisitorContext) {\n ctx.print(stmt, `function\n ${stmt.name}(`);\n if (stmt.constructorMethod != null) {\n this._visitParams(stmt.constructorMethod.params,\n ctx);\n }\n ctx.println(stmt, `)`);\n ctx.incIndent();\n if (stmt.constructorMethod != null) {\n if\n (stmt.constructorMethod.body.length > 0) {\n ctx.println(stmt, `var self = this;`);\n this.visitAllStatements(stmt.constructorMethod.body, ctx);\n }\n }\n ctx.decIndent();\n ctx.println(stmt,\n `)`);\n }\n\n private _visitClassGetter(stmt: o.ClassStmt, getter: o.ClassGetter, ctx: EmitterVisitorContext) {\n ctx.println(\n stmt, `Object.defineProperty(${stmt.name}.prototype, '${getter.name}', { get: function(\n `);\n ctx.incIndent();\n if (getter.body.length > 0) {\n ctx.println(stmt, `var self = this;`);\n this.visitAllStatements(getter.body, ctx);\n }\n ctx.decIndent();\n ctx.println(stmt, `)`);\n }\n\n private\n _visitClassMethod(stmt: o.ClassStmt, method: o.ClassMethod, ctx: EmitterVisitorContext) {\n ctx.print(stmt,\n `${stmt.name}.prototype.${method.name} = function(`);\n this._visitParams(method.params, ctx);\n ctx.println(stmt, `)`);\n ctx.incIndent();\n if (method.body.length > 0) {\n ctx.println(stmt, `var self =\n this;`);\n this.visitAllStatements(method.body, ctx);\n }\n ctx.decIndent();\n ctx.println(stmt, `)`);\n }\n\n visitWrappedNodeExpr(ast: o.WrappedNodeExpr<any>, ctx: EmitterVisitorContext): any {\n throw new\n Error('Cannot emit a WrappedNodeExpr in Javascript.);\n }\n\n visitReadVarExpr(ast: o.ReadVarExpr, ctx:\n EmitterVisitorContext): string|null {\n if (ast.builtin === o.BuiltinVar.This) {\n ctx.print(ast, 'self');\n } else if\n (ast.builtin === o.BuiltinVar.Super) {\n throw new Error(`\n 'super' needs to be handled at a parent ast\n node, not at the variable level!`);\n } else {\n super.visitReadVarExpr(ast, ctx);\n }\n return null;\n }\n\n visitDeclareVarStmt(stmt: o.DeclareVarStmt, ctx: EmitterVisitorContext): any {\n ctx.print(stmt, `var\n ${stmt.name}`);\n if (stmt.value) {\n ctx.print(stmt, '=');\n stmt.value.visitExpression(this, ctx);\n }\n ctx.println(stmt, `);`);\n return null;\n }\n\n visitCastExpr(ast: o.CastExpr, ctx: EmitterVisitorContext): any {\n ast.value.visitExpression(this, ctx);\n return null;\n }\n\n visitInvokeFunctionExpr(expr: o.InvokeFunctionExpr,\n ctx: EmitterVisitorContext): string|null {\n const fnExpr = expr.fn;\n if (fnExpr instanceof o.ReadVarExpr &&

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fnExpr.builtin === o.BuiltinVar.Super) {\n ctx.currentClass!.parent!.visitExpression(this, ctx);\n ctx.print(expr, `call(this`);\n if (expr.args.length > 0) {\n ctx.print(expr, `, `);\n this.visitAllExpressions(expr.args, ctx, ` `);\n } else {\n super.visitInvokeFunctionExpr(expr, ctx);\n }\n return null;\n }\n visitFunctionExpr(ast: o.FunctionExpr, ctx: EmitterVisitorContext): any {\n ctx.print(ast, `function${ast.name ? '' + ast.name : ''}(`);\n this._visitParams(ast.params, ctx);\n ctx.println(ast, ` `);\n ctx.incIndent();\n this.visitAllStatements(ast.statements, ctx);\n ctx.decIndent();\n ctx.print(ast, ` `);\n return null;\n }\n visitDeclareFunctionStmt(stmt: o.DeclareFunctionStmt, ctx: EmitterVisitorContext): any {\n ctx.print(stmt, `function ${stmt.name}(`);\n this._visitParams(stmt.params, ctx);\n ctx.println(stmt, ` `);\n ctx.incIndent();\n this.visitAllStatements(stmt.statements, ctx);\n ctx.decIndent();\n ctx.println(stmt, ` `);\n return null;\n }\n visitTryCatchStmt(stmt: o.TryCatchStmt, ctx: EmitterVisitorContext): any {\n ctx.println(stmt, `try `);\n ctx.incIndent();\n this.visitAllStatements(stmt.bodyStmts, ctx);\n ctx.decIndent();\n ctx.println(stmt, ` catch (${CATCH_ERROR_VAR.name} `);\n ctx.incIndent();\n const catchStmts =\n [<o.Statement>CATCH_STACK_VAR.set(CATCH_ERROR_VAR.prop('stack')).toDeclStmt(null, [\n o.StmtModifier.Final\n])].concat(stmt.catchStmts);\n this.visitAllStatements(catchStmts, ctx);\n ctx.decIndent();\n ctx.println(stmt, ` `);\n return null;\n }\n visitLocalizedString(ast: o.LocalizedString, ctx: EmitterVisitorContext): any {\n // The following convoluted piece of code is effectively the downlevelled equivalent of\n // ``\n // $localize `...`\n // ``\n // which is effectively like:\n // ``\n // $localize(__makeTemplateObject(cooked, raw), expression1, expression2, ...);\n // ``\n // The `$localize` function expects a "template object", which is an array of "cooked" strings\n // plus a `raw` property that contains an array of "raw" strings.\n //\n // In some environments a helper function called `__makeTemplateObject(cooked, raw)` might be\n // available, in which case we use that. Otherwise we must create our own helper function\n // inline.\n //\n // In the inline function, if `Object.defineProperty` is available we use that to attach the\n // `raw` array.\n ctx.print(\n ast,\n '$localize((this&&this.__makeTemplateObject||function(e,t){return Object.defineProperty?Object.defineProperty(e,"raw",{value:t}):e.raw=t,e}))');\n const parts = [ast.serializeI18nHead()];\n for (let i = 1; i < ast.messageParts.length; i++) {\n parts.push(ast.serializeI18nTemplatePart(i));\n }\n ctx.print(ast, `[${parts.map(part => escapeIdentifier(part.cooked, false)).join(', ')}], `);\n ctx.print(ast, `[${parts.map(part => escapeIdentifier(part.raw, false)).join(', ')}])`);\n ast.expressions.forEach(expression => {\n ctx.print(ast, ` `);\n expression.visitExpression(this, ctx);\n });\n ctx.print(ast, ` `);\n return null;\n }\n private _visitParams(params: o.FnParam[], ctx: EmitterVisitorContext): void {\n this.visitAllObjects(param => ctx.print(null, param.name), params, ctx, ` `);\n }\n getBuiltinMethodName(method: o.BuiltinMethod): string {\n let name: string;\n switch (method) {\n case o.BuiltinMethod.ConcatArray:\n name = 'concat';\n break;\n case o.BuiltinMethod.SubscribeObservable:\n name = 'subscribe';\n break;\n case o.BuiltinMethod.Bind:\n name = 'bind';\n break;\n default:\n throw new Error(`Unknown builtin method: ${method}`);\n }\n return name;\n }\n}
"/**\n * @license\n * Copyright Google LLC All Rights Reserved.\n *\n * Use of this source code is governed by an MIT-style license that can be\n * found in the LICENSE file at https://angular.io/license\n */\nimport {identifierName} from './compile_metadata';\nimport {CompileReflector} from './compile_reflector';\nimport {EmitterVisitorContext} from './abstract_emitter';\nimport {AbstractJsEmitterVisitor} from './abstract_js_emitter';\nimport * as o from './output_ast';\n/**\n * A helper class to manage the evaluation of JIT generated code.\n */\nexport class JitEvaluator {\n /**\n * @param sourceUrl The URL of the generated code.\n * @param statements An array of Angular statement AST nodes to be evaluated.\n * @param reflector A helper used when converting the statements to executable code.\n * @param createSourceMaps If true then create a source-map for the generated code and include it\n * inline as a source-map comment.\n * @returns A map of all the variables in the generated code.\n */\n evaluateStatements(\n sourceUrl: string, statements: o.Statement[], reflector: CompileReflector,\n createSourceMaps: boolean): {[key: string]: any} {\n const converter = new JitEmitterVisitor(reflector);\n
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const ctx = EmitterVisitorContext.createRoot();\n // Ensure generated code is in strict mode\n if
(statements.length > 0 && !isUseStrictStatement(statements[0])) {\n statements = [\n o.literal('use
strict').toStmt(),\n ...statements,\n];\n }\n converter.visitAllStatements(statements, ctx);\n
converter.createReturnStmt(ctx);\n return this.evaluateCode(sourceUrl, ctx, converter.getArgs(),
createSourceMaps);\n }\n\n /**\n * Evaluate a piece of JIT generated code.\n * @param sourceUrl The URL of
this generated code.\n * @param ctx A context object that contains an AST of the code to be evaluated.\n *
@param vars A map containing the names and values of variables that the evaluated code might\n * reference.\n *
@param createSourceMap If true then create a source-map for the generated code and include it\n * inline as a
source-map comment.\n * @returns The result of evaluating the code.\n */\n evaluateCode(\n sourceUrl:
string, ctx: EmitterVisitorContext, vars: {[key: string]: any},\n createSourceMap: boolean): any {\n let fnBody
= \"use strict\";${ctx.toSource()}\\n/# sourceURL=${sourceUrl}`;\n const fnArgNames: string[] = [];\n const
fnArgValues: any[] = [];\n for (const argName in vars) {\n fnArgValues.push(vars[argName]);\n
fnArgNames.push(argName);\n }\n if (createSourceMap) {\n // using `new Function(...)` generates a header,
1 line of no arguments, 2 lines otherwise\n // E.g. ``\n // function anonymous(a,b,c\n // /**/) { ... }``\n
// We don't want to hard code this fact, so we auto detect it via an empty function first.\n const emptyFn = new
Function(...fnArgNames.concat('return null;')).toString();\n const headerLines = emptyFn.slice(0,
emptyFn.indexOf('return null;').split('\\n').length - 1);\n fnBody += `\\n${ctx.toSourceMapGenerator(sourceUrl,
headerLines).toJsComment()}`;\n }\n const fn = new Function(...fnArgNames.concat(fnBody));\n return
this.executeFunction(fn, fnArgValues);\n }\n\n /**\n * Execute a JIT generated function by calling it.\n *
This method can be overridden in tests to capture the functions that are generated\n * by this `JitEvaluator` class.\n
*\n * @param fn A function to execute.\n * @param args The arguments to pass to the function being executed.\n
*\n * @returns The return value of the executed function.\n */\n executeFunction(fn: Function, args: any[]) {\n
return fn(...args);\n }\n\n /**\n * An Angular AST visitor that converts AST nodes into executable JavaScript
code.\n */\nexport class JitEmitterVisitor extends AbstractJsEmitterVisitor {\n private _evalArgNames: string[] =
[];\n private _evalArgValues: any[] = [];\n private _evalExportedVars: string[] = [];\n\n constructor(private
reflector: CompileReflector) {\n super();\n }\n\n createReturnStmt(ctx: EmitterVisitorContext) {\n const stmt =
new o.ReturnStatement(new o.LiteralMapExpr(this._evalExportedVars.map(\n resultVar => new
o.LiteralMapEntry(resultVar, o.variable(resultVar), false))));\n stmt.visitStatement(this, ctx);\n }\n\n getArgs():
{[key: string]: any} {\n const result: {[key: string]: any} = {};\n for (let i = 0; i < this._evalArgNames.length;
i++) {\n result[this._evalArgNames[i]] = this._evalArgValues[i];\n }\n return result;\n }\n\n visitExternalExpr(ast: o.ExternalExpr, ctx: EmitterVisitorContext): any {\n this._emitReferenceToExternal(ast,
this.reflector.resolveExternalReference(ast.value), ctx);\n return null;\n }\n\n visitWrappedNodeExpr(ast:
o.WrappedNodeExpr<any>, ctx: EmitterVisitorContext): any {\n this._emitReferenceToExternal(ast, ast.node,
ctx);\n return null;\n }\n\n visitDeclareVarStmt(stmt: o.DeclareVarStmt, ctx: EmitterVisitorContext): any {\n if
(stmt.hasModifier(o.StmtModifier.Exported)) {\n this._evalExportedVars.push(stmt.name);\n }\n return
super.visitDeclareVarStmt(stmt, ctx);\n }\n\n visitDeclareFunctionStmt(stmt: o.DeclareFunctionStmt, ctx:
EmitterVisitorContext): any {\n if (stmt.hasModifier(o.StmtModifier.Exported)) {\n
this._evalExportedVars.push(stmt.name);\n }\n return super.visitDeclareFunctionStmt(stmt, ctx);\n }\n\n
visitDeclareClassStmt(stmt: o.ClassStmt, ctx: EmitterVisitorContext): any {\n if
(stmt.hasModifier(o.StmtModifier.Exported)) {\n this._evalExportedVars.push(stmt.name);\n }\n return
super.visitDeclareClassStmt(stmt, ctx);\n }\n\n private _emitReferenceToExternal(ast: o.Expression, value: any,
ctx: EmitterVisitorContext):\n void {\n let id = this._evalArgValues.indexOf(value);\n if (id === -1) {\n id
= this._evalArgValues.length;\n this._evalArgValues.push(value);\n const name = identifierName({reference:
value}) || 'val';\n this._evalArgNames.push(`jit_${name}_${id}`);\n }\n ctx.print(ast,
this._evalArgNames[id]);\n }\n\nfunction isUseStrictStatement(statement: o.Statement): boolean {\n return
statement.isEquivalent(o.literal('use strict').toStmt());\n }\n\n",/**\n * @license\n * Copyright Google LLC All Rights
Reserved.\n *\n * Use of this source code is governed by an MIT-style license that can be\n * found in the
LICENSE file at https://angular.io/license\n */\n\nexport const $EOF = 0;\nexport const $BSPACE = 8;\nexport

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const $TAB = 9;\nexport const $LF = 10;\nexport const $VTAB = 11;\nexport const $FF = 12;\nexport const $CR =
13;\nexport const $SPACE = 32;\nexport const $BANG = 33;\nexport const $DQ = 34;\nexport const $HASH =
35;\nexport const $$ = 36;\nexport const $PERCENT = 37;\nexport const $AMPERSAND = 38;\nexport const $$Q
= 39;\nexport const $LPAREN = 40;\nexport const $RPAREN = 41;\nexport const $STAR = 42;\nexport const
$PLUS = 43;\nexport const $COMMA = 44;\nexport const $MINUS = 45;\nexport const $PERIOD = 46;\nexport
const $SLASH = 47;\nexport const $COLON = 58;\nexport const $SEMICOLON = 59;\nexport const $LT =
60;\nexport const $EQ = 61;\nexport const $GT = 62;\nexport const $QUESTION = 63;\n\nexport const $0 =
48;\nexport const $7 = 55;\nexport const $9 = 57;\n\nexport const $A = 65;\nexport const $E = 69;\nexport const $F
= 70;\nexport const $X = 88;\nexport const $Z = 90;\n\nexport const $LBRACKET = 91;\nexport const
$BACKSLASH = 92;\nexport const $RBRACKET = 93;\nexport const $CARET = 94;\nexport const $ _ =
95;\n\nexport const $a = 97;\nexport const $b = 98;\nexport const $e = 101;\nexport const $f = 102;\nexport const
$n = 110;\nexport const $r = 114;\nexport const $t = 116;\nexport const $u = 117;\nexport const $v = 118;\nexport
const $x = 120;\nexport const $z = 122;\n\nexport const $LBRACE = 123;\nexport const $BAR = 124;\nexport
const $RBACE = 125;\nexport const $NBSP = 160;\n\nexport const $PIPE = 124;\nexport const $TILDA =
126;\nexport const $AT = 64;\n\nexport const $BT = 96;\n\nexport function isWhitespace(code: number): boolean
{\n return (code >= $TAB && code <= $SPACE) || (code === $NBSP);\n}\n\nexport function isDigit(code:
number): boolean {\n return $0 <= code && code <= $9;\n}\n\nexport function isAsciiLetter(code: number):
boolean {\n return code >= $a && code <= $z || code >= $A && code <= $Z;\n}\n\nexport function
isAsciiHexDigit(code: number): boolean {\n return code >= $a && code <= $f || code >= $A && code <= $F ||
isDigit(code);\n}\n\nexport function isNewLine(code: number): boolean {\n return code === $LF || code ===
$CR;\n}\n\nexport function isOctalDigit(code: number): boolean {\n return $0 <= code && code <=
$7;\n}\n\n"/**\n * @license\n * Copyright Google LLC All Rights Reserved.\n * \n * Use of this source code is
governed by an MIT-style license that can be\n * found in the LICENSE file at https://angular.io/license\n
*/\nimport * as chars from './chars';\nimport {CompileIdentifierMetadata, identifierModuleUrl, identifierName}
from './compile_metadata';\n\nexport class ParseLocation {\n constructor(\n public file: ParseSourceFile, public
offset: number, public line: number,\n public col: number) {}\n\n toString(): string {\n return this.offset != null
? `${this.file.url}@${this.line}:${this.col}` : this.file.url;\n }\n\n moveBy(delta: number): ParseLocation {\n
const source = this.file.content;\n const len = source.length;\n let offset = this.offset;\n let line = this.line;\n
let col = this.col;\n while (offset > 0 && delta < 0) {\n offset--;\n delta++;\n const ch =
source.charCodeAt(offset);\n if (ch === chars.$LF) {\n line--;\n const priorLine = source.substr(0, offset -
1).lastIndexOf(String.fromCharCode(chars.$LF));\n col = priorLine > 0 ? offset - priorLine : offset;\n } else
{\n col--;\n }\n }\n while (offset < len && delta > 0) {\n const ch = source.charCodeAt(offset);\n
offset++;\n delta--;\n if (ch === chars.$LF) {\n line++;\n col = 0;\n } else {\n col++;\n }\n
}\n return new ParseLocation(this.file, offset, line, col);\n }\n\n // Return the source around the location\n // Up
to `maxChars` or `maxLines` on each side of the location\n getContext(maxChars: number, maxLines: number):
{before: string, after: string}|null {\n const content = this.file.content;\n let startOffset = this.offset;\n\n if
(startOffset != null) {\n if (startOffset > content.length - 1) {\n startOffset = content.length - 1;\n }\n
let endOffset = startOffset;\n let ctxChars = 0;\n let ctxLines = 0;\n\n while (ctxChars < maxChars &&
startOffset > 0) {\n startOffset--;\n ctxChars++;\n if (content[startOffset] === '\\n') {\n if
(++ctxLines === maxLines) {\n break;\n }\n }\n ctxChars = 0;\n ctxLines = 0;\n
while (ctxChars < maxChars && endOffset < content.length - 1) {\n endOffset++;\n ctxChars++;\n if
(content[endOffset] === '\\n') {\n if (++ctxLines === maxLines) {\n break;\n }\n }\n
}\n return {\n before: content.substring(startOffset, this.offset),\n after: content.substring(this.offset, endOffset
+ 1),\n };\n }\n }\n\n return null;\n }\n}\n\nexport class ParseSourceFile {\n constructor(public content: string,
public url: string) {}\n}\n\nexport class ParseSourceSpan {\n /**\n * Create an object that holds information about
spans of tokens/nodes captured during\n * lexing/parsing of text.\n * \n * @param start\n * The location of the
start of the span (having skipped leading trivia).\n * \n * Skipping leading trivia makes source-spans more \"user
friendly\", since things like HTML\n * elements will appear to begin at the start of the opening tag, rather than at

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the start of any\n \* leading trivia, which could include newlines.\n \* \n \* @param end\n \* The location of the end of the span.\n \* \n \* @param fullStart\n \* The start of the token without skipping the leading trivia.\n \* This is used by tooling that splits tokens further, such as extracting Angular interpolations\n \* from text tokens. Such tooling creates new source-spans relative to the original token's\n \* source-span. If leading trivia characters have been skipped then the new source-spans may be\n \* incorrectly offset.\n \* \n \* @param details\n \* Additional information (such as identifier names) that should be associated with the span.\n \* /\n constructor(\n public start: ParseLocation, public end: ParseLocation,\n public fullStart: ParseLocation = start, public details: string|null = null) {\n\n toString(): string {\n return this.start.file.content.substring(this.start.offset, this.end.offset);\n }\n}\n\nexport enum ParseErrorLevel {\n WARNING,\n ERROR,\n}\n\nexport class ParseError {\n constructor(\n public span: ParseSourceSpan, public msg: string,\n public level: ParseErrorLevel = ParseErrorLevel.ERROR) {\n\n contextualMessage(): string {\n const ctx = this.span.start.getContext(100, 3);\n return ctx ? `\${this.msg} (\n"\${ctx.before}\${ParseErrorLevel[this.level]} ->\${ctx.after}")` : this.msg;\n }\n\n toString(): string {\n const details = this.span.details ? `, \${this.span.details}` : '';\n return `\${this.contextualMessage()}: \${this.span.start}\${details}`;\n }\n}\n\nexport function typeSourceSpan(kind: string, type: CompileIdentifierMetadata): ParseSourceSpan {\n const moduleUrl = identifierModuleUrl(type);\n const sourceFileName = moduleUrl != null ? `in \${kind} \${identifierName(type)} in \${moduleUrl}` : `in \${kind} \${identifierName(type)}`;\n const sourceFile = new ParseSourceFile("", sourceFileName);\n return new ParseSourceSpan(\n new ParseLocation(sourceFile, -1, -1, -1), new ParseLocation(sourceFile, -1, -1, -1));\n}\n\n/\*\*\n \* Generates Source Span object for a given R3 Type for JIT mode.\n \* \n \* @param kind Component or Directive.\n \* @param typeName name of the Component or Directive.\n \* @param sourceUrl reference to Component or Directive source.\n \* @returns instance of ParseSourceSpan that represent a given Component or Directive.\n \*/\nexport function r3JitTypeSourceSpan(\n kind: string, typeName: string, sourceUrl: string): ParseSourceSpan {\n const sourceFileName = `in \${kind} \${typeName} in \${sourceUrl}`;\n const sourceFile = new ParseSourceFile("", sourceFileName);\n return new ParseSourceSpan(\n new ParseLocation(sourceFile, -1, -1, -1), new ParseLocation(sourceFile, -1, -1, -1));\n}\n\n"/\*\*\n \* @license\n \* Copyright Google LLC All Rights Reserved.\n \* \n \* Use of this source code is governed by an MIT-style license that can be\n \* found in the LICENSE file at <https://angular.io/license>\n \*/\nimport {CompileReflector} from './compile\_reflector';\nimport \* as o from './output/output\_ast';\n\n/\*\*\n \* Implementation of `CompileReflector` which resolves references to @angular/core\n \* symbols at runtime, according to a consumer-provided mapping.\n \* \n \* Only supports `resolveExternalReference`, all other methods throw.\n \*/\nexport class R3JitReflector implements CompileReflector {\n constructor(private context: {[key: string]: any}) {\n\n resolveExternalReference(ref: o.ExternalReference): any {\n // This reflector only handles @angular/core imports.\n if (ref.moduleName !== '@angular/core') {\n throw new Error(`Cannot resolve external reference to \${ref.moduleName}, only references to @angular/core are supported.`);\n }\n if (!this.context.hasOwnProperty(ref.name!)) {\n throw new Error(`No value provided for @angular/core symbol '\${ref.name!}'`);\n }\n return this.context[ref.name!];\n }\n\n parameters(typeOrFunc: any): any[] {\n throw new Error('Not implemented.');\n }\n\n annotations(typeOrFunc: any): any[] {\n throw new Error('Not implemented.');\n }\n\n shallowAnnotations(typeOrFunc: any): any[] {\n throw new Error('Not implemented.');\n }\n\n tryAnnotations(typeOrFunc: any): any[] {\n throw new Error('Not implemented.');\n }\n\n propMetadata(typeOrFunc: any): {[key: string]: any[]}; {\n throw new Error('Not implemented.');\n }\n\n hasLifecycleHook(type: any, lcProperty: string): boolean {\n throw new Error('Not implemented.');\n }\n\n guards(typeOrFunc: any): {[key: string]: any}; {\n throw new Error('Not implemented.');\n }\n\n componentModuleUrl(type: any, cmpMetadata: any): string {\n throw new Error('Not implemented.');\n }\n}\n\n"/\*\*\n \* @license\n \* Copyright Google LLC All Rights Reserved.\n \* \n \* Use of this source code is governed by an MIT-style license that can be\n \* found in the LICENSE file at <https://angular.io/license>\n \*/\nimport \* as o from './output\_ast';\n\nexport type MapEntry = {\n key: string,\n quoted: boolean,\n value: o.Expression;\n};\n\nexport type MapLiteral = MapEntry[];\n\nexport function mapEntry(key: string, value: o.Expression): MapEntry {\n return {key, value, quoted: false};\n}\n\nexport function mapLiteral(\n obj: {[key:

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string]: o.Expression }, quoted: boolean = false): o.Expression {\n return o.literalMap(Object.keys(obj).map(key =>
({\n
key,\n
quoted,\n
value:
obj[key],\n
}));\n}\n"/**\n * @license\n * Copyright Google LLC All Rights
Reserved.\n *\n * Use of this source code is governed by an MIT-style license that can be\n * found in the
LICENSE file at https://angular.io/license\n */\n\nimport {CompileShallowModuleMetadata, identifierName} from
'./compile_metadata';\nimport {InjectableCompiler} from './injectable_compiler';\nimport {mapLiteral} from
'./output/map_util';\nimport * as o from './output/output_ast';\nimport {OutputContext} from './util';\nimport
{compileFactoryFunction, R3DependencyMetadata, R3FactoryTarget} from './r3_factory';\nimport {Identifiers as
R3} from './r3_identifiers';\nimport {convertMetaToOutput, jitOnlyGuardedExpression, mapToMapExpression,
R3Reference} from './util';\n\nexport interface R3NgModuleDef {\n expression: o.Expression;\n type: o.Type;\n
additionalStatements: o.Statement[];\n}\n\n/**\n * Metadata required by the module compiler to generate a module
def (`mod`) for a type.\n */\nexport interface R3NgModuleMetadata {\n /**\n * An expression representing the
module type being compiled.\n * type: R3Reference;\n */\n /**\n * An expression representing the module type
being compiled, intended for use within a class\n * definition itself.\n * This can differ from the outer `type`
if the class is being compiled by ngcc and is inside\n * an IIFE structure that uses a different name internally.\n
*/\n internalType: o.Expression;\n /**\n * An expression intended for use by statements that are adjacent (i.e.
tightly coupled) to but\n * not internal to a class definition.\n * This can differ from the outer `type` if the
class is being compiled by ngcc and is inside\n * an IIFE structure that uses a different name internally.\n */\n
adjacentType: o.Expression;\n /**\n * An array of expressions representing the bootstrap components specified
by the module.\n */\n bootstrap: R3Reference[];\n /**\n * An array of expressions representing the directives
and pipes declared by the module.\n */\n declarations: R3Reference[];\n /**\n * An array of expressions
representing the imports of the module.\n */\n imports: R3Reference[];\n /**\n * An array of expressions
representing the exports of the module.\n */\n exports: R3Reference[];\n /**\n * Whether to emit the selector
scope values (declarations, imports, exports) inline into the\n * module definition, or to generate additional
statements which patch them on. Inline emission\n * does not allow components to be tree-shaken, but is useful for
JIT mode.\n */\n emitInline: boolean;\n /**\n * Whether to generate closure wrappers for bootstrap,
declarations, imports, and exports.\n */\n containsForwardDecls: boolean;\n /**\n * The set of schemas that
declare elements to be allowed in the NgModule.\n */\n schemas: R3Reference[]|null;\n /**\n * Unique ID or
expression representing the unique ID of an NgModule.\n */\n id: o.Expression|null;\n}\n\n/**\n * Construct an
`R3NgModuleDef` for the given `R3NgModuleMetadata`.\n */\nexport function compileNgModule(meta:
R3NgModuleMetadata): R3NgModuleDef {\n const {\n internalType,\n type: moduleType,\n bootstrap,\n
declarations,\n imports,\n exports,\n schemas,\n containsForwardDecls,\n emitInline,\n id\n } =
meta;\n\n const additionalStatements: o.Statement[] = [];\n const definitionMap = {type: internalType} as {\n
type: o.Expression,\n bootstrap: o.Expression,\n declarations: o.Expression,\n imports: o.Expression,\n
exports: o.Expression,\n schemas: o.LiteralArrayExpr,\n id: o.Expression\n };\n\n // Only generate the keys in
the metadata if the arrays have values.\n if (bootstrap.length) {\n definitionMap.bootstrap =
refsToArray(bootstrap, containsForwardDecls);\n }\n\n // If requested to emit scope information inline, pass the
declarations, imports and exports to\n // the `defineNgModule` call. The JIT compilation uses this.\n if (emitInline)
{\n if (declarations.length) {\n definitionMap.declarations = refsToArray(declarations,
containsForwardDecls);\n }\n\n if (imports.length) {\n definitionMap.imports = refsToArray(imports,
containsForwardDecls);\n }\n\n if (exports.length) {\n definitionMap.exports = refsToArray(exports,
containsForwardDecls);\n }\n }\n\n // If not emitting inline, the scope information is not passed into
`defineNgModule` as it would\n // prevent tree-shaking of the declarations, imports and exports references.\n else
{\n const setNgModuleScopeCall = generateSetNgModuleScopeCall(meta);\n if (setNgModuleScopeCall !==
null) {\n additionalStatements.push(setNgModuleScopeCall);\n }\n\n if (schemas && schemas.length) {\n
definitionMap.schemas = o.literalArr(schemas.map(ref => ref.value));\n }\n\n if (id) {\n definitionMap.id =
id;\n }\n\n const expression =
o.importExpr(R3.defineNgModule).callFn([mapToMapExpression(definitionMap)];\n const type = new

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o.ExpressionType(o.importExpr(R3.NgModuleDefWithMeta, [\n new o.ExpressionType(moduleType.type),
tupleTypeOf(declarations), tupleTypeOf(imports),\n tupleTypeOf(exports)\n]));\n\n\n return {expression, type,
additionalStatements};\n}\n\n\n * Generates a function call to `setNgModuleScope` with all necessary
information so that the\n * transitive module scope can be computed during runtime in JIT mode. This call is
marked pure\n * such that the references to declarations, imports and exports may be elided causing these\n *
symbols to become tree-shakeable.\n */\nfunction generateSetNgModuleScopeCall(meta: R3NgModuleMetadata):
o.Statement|\nnull {\n const {adjacentType: moduleType, declarations, imports, exports, containsForwardDecls} =
meta;\n\n const scopeMap = {} as {\n declarations: o.Expression,\n imports: o.Expression,\n exports:
o.Expression,\n }; \n\n if (declarations.length) {\n scopeMap.declarations = refsToArray(declarations,
containsForwardDecls);\n }\n\n if (imports.length) {\n scopeMap.imports = refsToArray(imports,
containsForwardDecls);\n }\n\n if (exports.length) {\n scopeMap.exports = refsToArray(exports,
containsForwardDecls);\n }\n\n if (Object.keys(scopeMap).length === 0) {\n return null;\n }\n\n //
setNgModuleScope(...)\n const fnCall = new o.InvokeFunctionExpr(\n /* fn */
o.importExpr(R3.setNgModuleScope),\n /* args */[moduleType, mapToMapExpression(scopeMap)]);\n\n //
(ngJitMode guard) && setNgModuleScope(...)\n const guardedCall = jitOnlyGuardedExpression(fnCall);\n\n //
function() { (ngJitMode guard) && setNgModuleScope(...); }\n const iife = new o.FunctionExpr(\n /* params
/[],\n / statements */[guardedCall.toStmt()]);\n\n // (function() { (ngJitMode guard) &&
setNgModuleScope(...); })()\n const iifeCall = new o.InvokeFunctionExpr(\n /* fn */ iife,\n /* args */[]);\n\n
return iifeCall.toStmt();\n}\n\n\nexport interface R3InjectorDef {\n expression: o.Expression;\n type: o.Type;\n
statements: o.Statement[];\n}\n\n\nexport interface R3InjectorMetadata {\n name: string;\n type: R3Reference;\n
internalType: o.Expression;\n deps: R3DependencyMetadata[]|\nnull;\n providers: o.Expression|\nnull;\n imports:
o.Expression[];\n}\n\n\nexport function compileInjector(meta: R3InjectorMetadata): R3InjectorDef {\n const result =
compileFactoryFunction({\n name: meta.name,\n type: meta.type,\n internalType: meta.internalType,\n
typeArgumentCount: 0,\n deps: meta.deps,\n injectFn: R3.inject,\n target: R3FactoryTarget.NgModule,\n });\n\n
const definitionMap = {\n factory: result.factory,\n } as {\n factory: o.Expression, providers: o.Expression, imports:
o.Expression;\n};\n\n if (meta.providers !== null) {\n definitionMap.providers = meta.providers;\n }\n\n if
(meta.imports.length > 0) {\n definitionMap.imports = o.literalArr(meta.imports);\n }\n\n const expression =
o.importExpr(R3.defineInjector).callFn([mapToMapExpression(definitionMap)];\n const type =\n new
o.ExpressionType(o.importExpr(R3.InjectorDef, [new o.ExpressionType(meta.type.type)]));\n return {expression,
type, statements: result.statements};\n}\n\n\n// TODO(alxhub): integrate this with `compileNgModule`. Currently the
two are separate operations.\nexport function compileNgModuleFromRender2(\n ctx: OutputContext, ngModule:
CompileShallowModuleMetadata,\n injectableCompiler: InjectableCompiler): void {\n const className =
identifierName(ngModule.type);\n\n const rawImports = ngModule.rawImports ? [ngModule.rawImports] : [];\n\n
const rawExports = ngModule.rawExports ? [ngModule.rawExports] : [];\n\n const injectorDefArg =
mapLiteral({\n 'factory':\n injectableCompiler.factoryFor({type: ngModule.type, symbol:
ngModule.type.reference}, ctx),\n 'providers': convertMetaToOutput(ngModule.rawProviders, ctx),\n 'imports':
convertMetaToOutput([...rawImports, ...rawExports], ctx),\n });\n\n const injectorDef =
o.importExpr(R3.defineInjector).callFn([injectorDefArg]);\n\n ctx.statements.push(new o.ClassStmt(\n /* name
/ className,\n / parent */ null,\n /* fields */[new o.ClassField(\n /* name */ 'inj',\n /* type */
o.INFERRED_TYPE,\n /* modifiers */[o.StmtModifier.Static],\n /* initializer */ injectorDef,\n
)],\n /* getters */[],\n /* constructorMethod */ new o.ClassMethod(null, [], []),\n /* methods
*/[]);\n}\n\n\nfunction accessExportScope(module: o.Expression): o.Expression {\n const selectorScope = new
o.ReadPropExpr(module, 'mod');\n return new o.ReadPropExpr(selectorScope, 'exported');\n}\n\n\nfunction
tupleTypeOf(exp: R3Reference[]): o.Type {\n const types = exp.map(ref => o.typeofExpr(ref.type));\n return
exp.length > 0 ? o.expressionType(o.literalArr(types)) : o.NONE_TYPE;\n}\n\n\nfunction refsToArray(refs:
R3Reference[], shouldForwardDeclare: boolean): o.Expression {\n const values = o.literalArr(refs.map(ref =>
ref.value));\n return shouldForwardDeclare ? o.fn([], [new o.ReturnStatement(values)]) : values;\n}\n\n\n"/**\n *
@license\n * Copyright Google LLC All Rights Reserved.\n * Use of this source code is governed by an MIT-

```



```

abstract class ASTWithName extends AST {
 constructor(span: ParseSpan, sourceSpan: AbsoluteSourceSpan, public nameSpan: AbsoluteSourceSpan)
 super(span, sourceSpan);
}
}

Represents a quoted expression of the form:
quote = prefix ` ` uninterpretedExpression
prefix = identifier
uninterpretedExpression = arbitrary string

A quoted expression is meant to be pre-processed by an AST transformer that converts it into another AST that no longer contains quoted expressions.
It is meant to allow third-party developers to extend Angular template expression language.
The `uninterpretedExpression` part of the quote is therefore not interpreted by the Angular's own expression parser.

export class Quote extends AST {
 constructor(span: ParseSpan, sourceSpan: AbsoluteSourceSpan, public prefix: string, public uninterpretedExpression: string, public location: any)
 super(span, sourceSpan);
}
visit(visitor: AstVisitor, context: any = null): any {
 return visitor.visitQuote(this, context);
}
toString(): string {
 return `Quote`;
}
}

export class EmptyExpr extends AST {
 visit(visitor: AstVisitor, context: any = null) {
 // do nothing
 }
}

export class ImplicitReceiver extends AST {
 visit(visitor: AstVisitor, context: any = null): any {
 return visitor.visitImplicitReceiver(this, context);
 }
}

Receiver when something is accessed through `this` (e.g. `this.foo`). Note that this class inherits from `ImplicitReceiver`, because accessing something through `this` is treated the same as accessing it implicitly inside of an Angular template (e.g. `[attr.title]="this.title"` is the same as `[attr.title]="title"`). Inheriting allows for the `this` accesses to be treated the same as implicit ones, except for a couple of exceptions like `$event` and `$any`.
TODO: we should find a way for this class not to extend from `ImplicitReceiver` in the future.

export class ThisReceiver extends ImplicitReceiver {
 visit(visitor: AstVisitor, context: any = null): any {
 return visitor.visitThisReceiver?.(this, context);
 }
}

Multiple expressions separated by a semicolon.

export class Chain extends AST {
 constructor(span: ParseSpan, sourceSpan: AbsoluteSourceSpan, public expressions: any[])
 super(span, sourceSpan);
}
visit(visitor: AstVisitor, context: any = null): any {
 return visitor.visitChain(this, context);
}
}

export class Conditional extends AST {
 constructor(span: ParseSpan, sourceSpan: AbsoluteSourceSpan, public condition: AST, public trueExp: AST, public falseExp: AST)
 super(span, sourceSpan);
}
visit(visitor: AstVisitor, context: any = null): any {
 return visitor.visitConditional(this, context);
}
}

export class PropertyRead extends ASTWithName {
 constructor(span: ParseSpan, sourceSpan: AbsoluteSourceSpan, nameSpan: AbsoluteSourceSpan, public receiver: AST, public name: string)
 super(span, sourceSpan, nameSpan);
}
visit(visitor: AstVisitor, context: any = null): any {
 return visitor.visitPropertyRead(this, context);
}
}

export class PropertyWrite extends ASTWithName {
 constructor(span: ParseSpan, sourceSpan: AbsoluteSourceSpan, nameSpan: AbsoluteSourceSpan, public receiver: AST, public name: string, public value: AST)
 super(span, sourceSpan, nameSpan);
}
visit(visitor: AstVisitor, context: any = null): any {
 return visitor.visitPropertyWrite(this, context);
}
}

export class SafePropertyRead extends ASTWithName {
 constructor(span: ParseSpan, sourceSpan: AbsoluteSourceSpan, nameSpan: AbsoluteSourceSpan, public receiver: AST, public name: string)
 super(span, sourceSpan, nameSpan);
}
visit(visitor: AstVisitor, context: any = null): any {
 return visitor.visitSafePropertyRead(this, context);
}
}

export class KeyedRead extends AST {
 constructor(span: ParseSpan, sourceSpan: AbsoluteSourceSpan, public obj: AST, public key: AST)
 super(span, sourceSpan);
}
visit(visitor: AstVisitor, context: any = null): any {
 return visitor.visitKeyedRead(this, context);
}
}

export class KeyedWrite extends AST {
 constructor(span: ParseSpan, sourceSpan: AbsoluteSourceSpan, public obj: AST, public key: AST, public value: AST)
 super(span, sourceSpan);
}
visit(visitor: AstVisitor, context: any = null): any {
 return visitor.visitKeyedWrite(this, context);
}
}

export class BindingPipe extends ASTWithName {
 constructor(span: ParseSpan, sourceSpan: AbsoluteSourceSpan, public exp: AST, public name: string, public args: any[], nameSpan: AbsoluteSourceSpan)
 super(span, sourceSpan, nameSpan);
}
visit(visitor: AstVisitor, context: any = null): any {
 return visitor.visitPipe(this, context);
}
}

export class LiteralPrimitive extends AST {
 constructor(span: ParseSpan, sourceSpan: AbsoluteSourceSpan, public value: any)
 super(span, sourceSpan);
}
visit(visitor: AstVisitor, context: any = null): any {
 return visitor.visitLiteralPrimitive(this, context);
}
}

export class LiteralArray extends AST {
 constructor(span:

```



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ParseSpan, sourceSpan: AbsoluteSourceSpan, public expressions: any[] {\n
 super(span, sourceSpan);\n
}\n
visit(visitor: AstVisitor, context: any = null): any {\n
 return visitor.visitLiteralArray(this, context);\n
}\n
}\n
\nexport type LiteralMapKey = {\n
 key: string; quoted: boolean;\n
};\n
\nexport class LiteralMap extends AST {\n
 constructor(\n
 span: ParseSpan, sourceSpan: AbsoluteSourceSpan, public keys: LiteralMapKey[],\n
 public values: any[]) {\n
 super(span, sourceSpan);\n
 }\n
 visit(visitor: AstVisitor, context: any = null): any {\n
 return visitor.visitLiteralMap(this, context);\n
 }\n
}\n
\nexport class Interpolation extends AST {\n
 constructor(\n
 span: ParseSpan, sourceSpan: AbsoluteSourceSpan, public strings: any[],\n
 public expressions: any[]) {\n
 super(span, sourceSpan);\n
 }\n
 visit(visitor: AstVisitor, context: any = null): any {\n
 return
 visitor.visitInterpolation(this, context);\n
 }\n
}\n
\nexport class Binary extends AST {\n
 constructor(\n
 span:
 ParseSpan, sourceSpan: AbsoluteSourceSpan, public operation: string, public left: AST,\n
 public right: AST) {\n
 super(span, sourceSpan);\n
 }\n
 visit(visitor: AstVisitor, context: any = null): any {\n
 return
 visitor.visitBinary(this, context);\n
 }\n
}\n
\n/**\n
 * For backwards compatibility reasons, `Unary` inherits from
 `Binary` and mimics the binary AST\n
 * node that was originally used. This inheritance relation can be deleted in
 some future major,\n
 * after consumers have been given a chance to fully support Unary.\n
 */\n
\nexport class Unary
 extends Binary {\n
 // Redeclare the properties that are inherited from `Binary` as `never`, as consumers should not\n
 // depend on these fields when operating on `Unary`.\n
 left: never;\n
 right: never;\n
 operation: never;\n
}\n
\n/**\n
 * Creates a unary minus expression `"-x"`, represented as `Binary` using `"0 - x"`.\n
 */\n
\nstatic createMinus(span:
 ParseSpan, sourceSpan: AbsoluteSourceSpan, expr: AST): Unary {\n
 return new Unary(\n
 span, sourceSpan,
 '-', expr, '-', new LiteralPrimitive(span, sourceSpan, 0), expr);\n
}\n
\n/**\n
 * Creates a unary plus expression
 `"+x"`, represented as `Binary` using `"x - 0"`.\n
 */\n
\nstatic createPlus(span: ParseSpan, sourceSpan:
 AbsoluteSourceSpan, expr: AST): Unary {\n
 return new Unary(\n
 span, sourceSpan, '+', expr, '-', expr, new
 LiteralPrimitive(span, sourceSpan, 0));\n
}\n
}\n
\n/**\n
 * During the deprecation period this constructor is private, to
 avoid consumers from creating\n
 * a `Unary` with the fallback properties for `Binary`.\n
 */\n
\nprivate
 constructor(\n
 span: ParseSpan, sourceSpan: AbsoluteSourceSpan, public operator: string, public expr: AST,\n
 binaryOp: string, binaryLeft: AST, binaryRight: AST) {\n
 super(span, sourceSpan, binaryOp, binaryLeft,
 binaryRight);\n
 }\n
}\n
\nvisit(visitor: AstVisitor, context: any = null): any {\n
 if (visitor.visitUnary !== undefined)
 {\n
 return visitor.visitUnary(this, context);\n
 }\n
 return visitor.visitBinary(this, context);\n
}\n
}\n
\nexport
 class PrefixNot extends AST {\n
 constructor(span: ParseSpan, sourceSpan: AbsoluteSourceSpan, public expression:
 AST) {\n
 super(span, sourceSpan);\n
 }\n
 visit(visitor: AstVisitor, context: any = null): any {\n
 return
 visitor.visitPrefixNot(this, context);\n
 }\n
}\n
\nexport class NonNullAssert extends AST {\n
 constructor(span:
 ParseSpan, sourceSpan: AbsoluteSourceSpan, public expression: AST) {\n
 super(span, sourceSpan);\n
 }\n
 visit(visitor: AstVisitor, context: any = null): any {\n
 return visitor.visitNonNullAssert(this, context);\n
 }\n
}\n
}\n
\nexport class MethodCall extends ASTWithName {\n
 constructor(\n
 span: ParseSpan, sourceSpan:
 AbsoluteSourceSpan, nameSpan: AbsoluteSourceSpan,\n
 public receiver: AST, public name: string, public args:
 any[]) {\n
 super(span, sourceSpan, nameSpan);\n
 }\n
 visit(visitor: AstVisitor, context: any = null): any {\n
 return visitor.visitMethodCall(this, context);\n
 }\n
}\n
\nexport class SafeMethodCall extends ASTWithName {\n
 constructor(\n
 span: ParseSpan, sourceSpan: AbsoluteSourceSpan, nameSpan: AbsoluteSourceSpan,\n
 public
 receiver: AST, public name: string, public args: any[]) {\n
 super(span, sourceSpan, nameSpan);\n
 }\n
 visit(visitor: AstVisitor, context: any = null): any {\n
 return visitor.visitSafeMethodCall(this, context);\n
 }\n
}\n
}\n
\nexport class FunctionCall extends AST {\n
 constructor(\n
 span: ParseSpan, sourceSpan:
 AbsoluteSourceSpan, public target: AST|null,\n
 public args: any[]) {\n
 super(span, sourceSpan);\n
 }\n
 visit(visitor: AstVisitor, context: any = null): any {\n
 return visitor.visitFunctionCall(this, context);\n
 }\n
}\n
}\n
\n/**\n
 * Records the absolute position of a text span in a source file, where `start` and `end` are the\n
 * starting and ending byte offsets, respectively, of the text span in a source file.\n
 */\n
\nexport class
 AbsoluteSourceSpan {\n
 constructor(public readonly start: number, public readonly end: number) {\n
 }\n
}\n
\nexport
 class ASTWithSource extends AST {\n
 constructor(\n
 public ast: AST, public source: string|null, public
 location: string, absoluteOffset: number,\n
 public errors: ParserError[]) {\n
 super(\n
 new ParseSpan(0,
 source === null ? 0 : source.length),\n
 new AbsoluteSourceSpan(\n
 absoluteOffset, source === null ?

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absoluteOffset : absoluteOffset + source.length));\n }
\n visit(visitor: AstVisitor, context: any = null): any {\n if
(visitor.visitASTWithSource) {\n return visitor.visitASTWithSource(this, context);\n }\n return
this.ast.visit(visitor, context);\n }\n toString(): string {\n return `${this.source} in ${this.location}`;\n
}\n}\n\n/**\n * TemplateBinding refers to a particular key-value pair in a microsyntax\n * expression. A few
examples are:\n *\n * |-----|-----|-----|-----|\n * | expression | key | value
| binding type |\n * |-----|-----|-----|-----|\n * | 1. let item | item | null |
variable |\n * | 2. of items | ngForOf | items | expression |\n * | 3. let x = y | x | y |
variable |\n * | 4. index as i | i | index | variable |\n * | 5. trackBy: func | ngForTrackBy | func |
expression |\n * | 6. *ngIf="cond" | ngIf | cond | expression |\n * |-----|-----|-----
|-----|\n * (6) is a notable exception because it is a binding from the template key in\n * the LHS of a
HTML attribute to the expression in the RHS. All other bindings\n * in the example above are derived solely from
the RHS.\n */\nexport type TemplateBinding = VariableBinding|ExpressionBinding;\n\nexport class
VariableBinding {\n /**\n * @param sourceSpan entire span of the binding.\n * @param key name of the LHS
along with its span.\n * @param value optional value for the RHS along with its span.\n */\n constructor(\n
public readonly sourceSpan: AbsoluteSourceSpan,\n public readonly key: TemplateBindingIdentifier,\n public
readonly value: TemplateBindingIdentifier|null) {} }\n\nexport class ExpressionBinding {\n /**\n * @param
sourceSpan entire span of the binding.\n * @param key binding name, like ngForOf, ngForTrackBy, ngIf, along
with its\n * span. Note that the length of the span may not be the same as\n * `key.source.length`. For example,\n
* 1. key.source = ngFor, key.span is for `ngFor`\n * 2. key.source = ngForOf, key.span is for `of`\n * 3.
key.source = ngForTrackBy, key.span is for `trackBy`\n * @param value optional expression for the RHS.\n
*/\n constructor(\n public readonly sourceSpan: AbsoluteSourceSpan,\n public readonly key:
TemplateBindingIdentifier, public readonly value: ASTWithSource|null) {} }\n\nexport interface
TemplateBindingIdentifier {\n source: string;\n span: AbsoluteSourceSpan;\n}\n\nexport interface AstVisitor {\n
/**\n * The `visitUnary` method is declared as optional for backwards compatibility. In an upcoming\n * major
release, this method will be made required.\n */\n visitUnary?(ast: Unary, context: any): any;\n visitBinary(ast:
Binary, context: any): any;\n visitChain(ast: Chain, context: any): any;\n visitConditional(ast: Conditional, context:
any): any;\n visitFunctionCall(ast: FunctionCall, context: any): any;\n /**\n * The `visitThisReceiver` method is
declared as optional for backwards compatibility.\n * In an upcoming major release, this method will be made
required.\n */\n visitThisReceiver?(ast: ThisReceiver, context: any): any;\n visitImplicitReceiver(ast:
ImplicitReceiver, context: any): any;\n visitInterpolation(ast: Interpolation, context: any): any;\n
visitKeyedRead(ast: KeyedRead, context: any): any;\n visitKeyedWrite(ast: KeyedWrite, context: any): any;\n
visitLiteralArray(ast: LiteralArray, context: any): any;\n visitLiteralMap(ast: LiteralMap, context: any): any;\n
visitLiteralPrimitive(ast: LiteralPrimitive, context: any): any;\n visitMethodCall(ast: MethodCall, context: any):
any;\n visitPipe(ast: BindingPipe, context: any): any;\n visitPrefixNot(ast: PrefixNot, context: any): any;\n
visitNonNullAssert(ast: NonNullAssert, context: any): any;\n visitPropertyRead(ast: PropertyRead, context: any):
any;\n visitPropertyWrite(ast: PropertyWrite, context: any): any;\n visitQuote(ast: Quote, context: any): any;\n
visitSafeMethodCall(ast: SafeMethodCall, context: any): any;\n visitSafePropertyRead(ast: SafePropertyRead,
context: any): any;\n visitASTWithSource?(ast: ASTWithSource, context: any): any;\n /**\n * This function is
optionally defined to allow classes that implement this\n * interface to selectively decide if the specified `ast`
should be visited.\n * @param ast node to visit\n * @param context context that gets passed to the node and all its
children\n */\n visit?(ast: AST, context?: any): any;\n}\n\nexport class RecursiveAstVisitor implements AstVisitor
{\n visit(ast: AST, context?: any): any {\n // The default implementation just visits every node.\n // Classes that
extend RecursiveAstVisitor should override this function\n // to selectively visit the specified node.\n
ast.visit(this, context);\n }\n visitUnary(ast: Unary, context: any): any {\n this.visit(ast.expr, context);\n }\n
visitBinary(ast: Binary, context: any): any {\n this.visit(ast.left, context);\n this.visit(ast.right, context);\n
}\n visitChain(ast: Chain, context: any): any {\n this.visitAll(ast.expressions, context);\n }\n visitConditional(ast:
Conditional, context: any): any {\n this.visit(ast.condition, context);\n this.visit(ast.trueExp, context);\n
this.visit(ast.falseExp, context);\n }\n visitPipe(ast: BindingPipe, context: any): any {\n this.visit(ast.exp,

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context);\n this.visitAll(ast.args, context);\n }\n visitFunctionCall(ast: FunctionCall, context: any): any {\n if
(ast.target) {\n this.visit(ast.target, context);\n }\n this.visitAll(ast.args, context);\n }\n
visitImplicitReceiver(ast: ThisReceiver, context: any): any {} visitThisReceiver(ast: ThisReceiver, context: any):
any {} visitInterpolation(ast: Interpolation, context: any): any {\n this.visitAll(ast.expressions, context);\n }\n
visitKeyedRead(ast: KeyedRead, context: any): any {\n this.visit(ast.obj, context);\n this.visit(ast.key,
context);\n }\n visitKeyedWrite(ast: KeyedWrite, context: any): any {\n this.visit(ast.obj, context);\n
this.visit(ast.key, context);\n this.visit(ast.value, context);\n }\n visitLiteralArray(ast: LiteralArray, context: any):
any {\n this.visitAll(ast.expressions, context);\n }\n visitLiteralMap(ast: LiteralMap, context: any): any {\n
this.visitAll(ast.values, context);\n }\n visitLiteralPrimitive(ast: LiteralPrimitive, context: any): any {} visitMethodCall(ast: MethodCall, context: any): any {\n this.visit(ast.receiver, context);\n this.visitAll(ast.args,
context);\n }\n visitPrefixNot(ast: PrefixNot, context: any): any {\n this.visit(ast.expression, context);\n }\n
visitNonNullAssert(ast: NonNullAssert, context: any): any {\n this.visit(ast.expression, context);\n }\n
visitPropertyRead(ast: PropertyRead, context: any): any {\n this.visit(ast.receiver, context);\n }\n
visitPropertyWrite(ast: PropertyWrite, context: any): any {\n this.visit(ast.receiver, context);\n
this.visit(ast.value, context);\n }\n visitSafePropertyRead(ast: SafePropertyRead, context: any): any {\n
this.visit(ast.receiver, context);\n }\n visitSafeMethodCall(ast: SafeMethodCall, context: any): any {\n
this.visit(ast.receiver, context);\n this.visitAll(ast.args, context);\n }\n visitQuote(ast: Quote, context: any): any
{} // This is not part of the AstVisitor interface, just a helper method\n visitAll(asts: AST[], context: any): any
{\n for (const ast of asts) {\n this.visit(ast, context);\n }\n }\n\nexport class AstTransformer implements
AstVisitor {\n visitImplicitReceiver(ast: ImplicitReceiver, context: any): AST {\n return ast;\n }\n\n
visitThisReceiver(ast: ThisReceiver, context: any): AST {\n return ast;\n }\n\n visitInterpolation(ast:
Interpolation, context: any): AST {\n return new Interpolation(ast.span, ast.sourceSpan, ast.strings,
this.visitAll(ast.expressions));\n }\n\n visitLiteralPrimitive(ast: LiteralPrimitive, context: any): AST {\n return
new LiteralPrimitive(ast.span, ast.sourceSpan, ast.value);\n }\n\n visitPropertyRead(ast: PropertyRead, context:
any): AST {\n return new PropertyRead(\n ast.span, ast.sourceSpan, ast.nameSpan, ast.receiver.visit(this),
ast.name);\n }\n\n visitPropertyWrite(ast: PropertyWrite, context: any): AST {\n return new PropertyWrite(\n
ast.span, ast.sourceSpan, ast.nameSpan, ast.receiver.visit(this), ast.name,\n ast.value.visit(this));\n }\n\n
visitSafePropertyRead(ast: SafePropertyRead, context: any): AST {\n return new SafePropertyRead(\n
ast.span, ast.sourceSpan, ast.nameSpan, ast.receiver.visit(this), ast.name);\n }\n\n visitMethodCall(ast:
MethodCall, context: any): AST {\n return new MethodCall(\n ast.span, ast.sourceSpan, ast.nameSpan,
ast.receiver.visit(this), ast.name,\n this.visitAll(ast.args));\n }\n\n visitSafeMethodCall(ast: SafeMethodCall,
context: any): AST {\n return new SafeMethodCall(\n ast.span, ast.sourceSpan, ast.nameSpan,
ast.receiver.visit(this), ast.name,\n this.visitAll(ast.args));\n }\n\n visitFunctionCall(ast: FunctionCall, context:
any): AST {\n return new FunctionCall(\n ast.span, ast.sourceSpan, ast.target!.visit(this),
this.visitAll(ast.args));\n }\n\n visitLiteralArray(ast: LiteralArray, context: any): AST {\n return new
LiteralArray(ast.span, ast.sourceSpan, this.visitAll(ast.expressions));\n }\n\n visitLiteralMap(ast: LiteralMap,
context: any): AST {\n return new LiteralMap(ast.span, ast.sourceSpan, ast.keys, this.visitAll(ast.values));\n }\n\n
visitUnary(ast: Unary, context: any): AST {\n switch (ast.operator) {\n case '+':\n return
Unary.createPlus(ast.span, ast.sourceSpan, ast.expr.visit(this));\n case '-':\n return
Unary.createMinus(ast.span, ast.sourceSpan, ast.expr.visit(this));\n default:\n throw new Error(`Unknown
unary operator ${ast.operator}`);\n }\n }\n\n visitBinary(ast: Binary, context: any): AST {\n return new
Binary(\n ast.span, ast.sourceSpan, ast.operation, ast.left.visit(this), ast.right.visit(this));\n }\n\n
visitPrefixNot(ast: PrefixNot, context: any): AST {\n return new PrefixNot(ast.span, ast.sourceSpan,
ast.expression.visit(this));\n }\n\n visitNonNullAssert(ast: NonNullAssert, context: any): AST {\n return new
NonNullAssert(ast.span, ast.sourceSpan, ast.expression.visit(this));\n }\n\n visitConditional(ast: Conditional,
context: any): AST {\n return new Conditional(\n ast.span, ast.sourceSpan, ast.condition.visit(this),
ast.trueExp.visit(this),\n ast.falseExp.visit(this));\n }\n\n visitPipe(ast: BindingPipe, context: any): AST {\n
return new BindingPipe(\n ast.span, ast.sourceSpan, ast.exp.visit(this), ast.name, this.visitAll(ast.args),\n

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ast.nameSpan);\n }\n\n visitKeyedRead(ast: KeyedRead, context: any): AST {\n return new KeyedRead(ast.span,
ast.sourceSpan, ast.obj.visit(this), ast.key.visit(this));\n }\n\n visitKeyedWrite(ast: KeyedWrite, context: any): AST
{\n return new KeyedWrite(\n ast.span, ast.sourceSpan, ast.obj.visit(this), ast.key.visit(this),
ast.value.visit(this));\n }\n\n visitAll(ast: any[]): any[] {\n const res = [];\n for (let i = 0; i < asts.length; ++i)
{\n res[i] = asts[i].visit(this);\n }\n return res;\n }\n\n visitChain(ast: Chain, context: any): AST {\n return
new Chain(ast.span, ast.sourceSpan, this.visitAll(ast.expressions));\n }\n\n visitQuote(ast: Quote, context: any):
AST {\n return new Quote(\n ast.span, ast.sourceSpan, ast.prefix, ast.uninterpretedExpression, ast.location);\n
}\n}\n\n// A transformer that only creates new nodes if the transformer makes a change or\n// a change is made a
child node.\nexport class AstMemoryEfficientTransformer implements AstVisitor {\n visitImplicitReceiver(ast:
ImplicitReceiver, context: any): AST {\n return ast;\n }\n\n visitThisReceiver(ast: ThisReceiver, context: any):
AST {\n return ast;\n }\n\n visitInterpolation(ast: Interpolation, context: any): Interpolation {\n const
expressions = this.visitAll(ast.expressions);\n if (expressions !== ast.expressions)\n return new
Interpolation(ast.span, ast.sourceSpan, ast.strings, expressions);\n return ast;\n }\n\n visitLiteralPrimitive(ast:
LiteralPrimitive, context: any): AST {\n return ast;\n }\n\n visitPropertyRead(ast: PropertyRead, context: any):
AST {\n const receiver = ast.receiver.visit(this);\n if (receiver !== ast.receiver) {\n return new
PropertyRead(ast.span, ast.sourceSpan, ast.nameSpan, receiver, ast.name);\n }\n return ast;\n }\n\n
visitPropertyWrite(ast: PropertyWrite, context: any): AST {\n const receiver = ast.receiver.visit(this);\n const
value = ast.value.visit(this);\n if (receiver !== ast.receiver || value !== ast.value) {\n return new
PropertyWrite(ast.span, ast.sourceSpan, ast.nameSpan, receiver, ast.name, value);\n }\n return ast;\n }\n\n
visitSafePropertyRead(ast: SafePropertyRead, context: any): AST {\n const receiver = ast.receiver.visit(this);\n
if (receiver !== ast.receiver) {\n return new SafePropertyRead(ast.span, ast.sourceSpan, ast.nameSpan, receiver,
ast.name);\n }\n return ast;\n }\n\n visitMethodCall(ast: MethodCall, context: any): AST {\n const receiver =
ast.receiver.visit(this);\n const args = this.visitAll(ast.args);\n if (receiver !== ast.receiver || args !== ast.args) {\n
 return new MethodCall(ast.span, ast.sourceSpan, ast.nameSpan, receiver, ast.name, args);\n }\n return ast;\n
}\n\n visitSafeMethodCall(ast: SafeMethodCall, context: any): AST {\n const receiver = ast.receiver.visit(this);\n
const args = this.visitAll(ast.args);\n if (receiver !== ast.receiver || args !== ast.args) {\n return new
SafeMethodCall(ast.span, ast.sourceSpan, ast.nameSpan, receiver, ast.name, args);\n }\n return ast;\n }\n\n
visitFunctionCall(ast: FunctionCall, context: any): AST {\n const target = ast.target && ast.target.visit(this);\n
const args = this.visitAll(ast.args);\n if (target !== ast.target || args !== ast.args) {\n return new
FunctionCall(ast.span, ast.sourceSpan, target, args);\n }\n return ast;\n }\n\n visitLiteralArray(ast: LiteralArray,
context: any): AST {\n const expressions = this.visitAll(ast.expressions);\n if (expressions !== ast.expressions)
{\n return new LiteralArray(ast.span, ast.sourceSpan, expressions);\n }\n return ast;\n }\n\n
visitLiteralMap(ast: LiteralMap, context: any): AST {\n const values = this.visitAll(ast.values);\n if (values !==
ast.values) {\n return new LiteralMap(ast.span, ast.sourceSpan, ast.keys, values);\n }\n return ast;\n }\n\n
visitUnary(ast: Unary, context: any): AST {\n const expr = ast.expr.visit(this);\n if (expr !== ast.expr) {\n
switch (ast.operator) {\n case '+':\n return Unary.createPlus(ast.span, ast.sourceSpan, expr);\n case '-':\n
 return Unary.createMinus(ast.span, ast.sourceSpan, expr);\n default:\n throw new
Error(`Unknown unary operator ${ast.operator}`);\n }\n }\n return ast;\n }\n\n visitBinary(ast: Binary,
context: any): AST {\n const left = ast.left.visit(this);\n const right = ast.right.visit(this);\n if (left !== ast.left ||
right !== ast.right) {\n return new Binary(ast.span, ast.sourceSpan, ast.operation, left, right);\n }\n return
ast;\n }\n\n visitPrefixNot(ast: PrefixNot, context: any): AST {\n const expression = ast.expression.visit(this);\n
if (expression !== ast.expression) {\n return new PrefixNot(ast.span, ast.sourceSpan, expression);\n }\n return
ast;\n }\n\n visitNonNullAssert(ast: NonNullAssert, context: any): AST {\n const expression =
ast.expression.visit(this);\n if (expression !== ast.expression) {\n return new NonNullAssert(ast.span,
ast.sourceSpan, expression);\n }\n return ast;\n }\n\n visitConditional(ast: Conditional, context: any): AST {\n
const condition = ast.condition.visit(this);\n const trueExp = ast.trueExp.visit(this);\n const falseExp =
ast.falseExp.visit(this);\n if (condition !== ast.condition || trueExp !== ast.trueExp || falseExp !== ast.falseExp) {\n
 return new Conditional(ast.span, ast.sourceSpan, condition, trueExp, falseExp);\n }\n return ast;\n }\n}\n\n

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visitPipe(ast: BindingPipe, context: any): AST {\n const exp = ast.exp.visit(this);\n const args =
this.visitAll(ast.args);\n if (exp !== ast.exp || args !== ast.args) {\n return new BindingPipe(ast.span,
ast.sourceSpan, exp, ast.name, args, ast.nameSpan);\n }\n return ast;\n}\n\nvisitKeyedRead(ast: KeyedRead,
context: any): AST {\n const obj = ast.obj.visit(this);\n const key = ast.key.visit(this);\n if (obj !== ast.obj ||
key !== ast.key) {\n return new KeyedRead(ast.span, ast.sourceSpan, obj, key);\n }\n return ast;\n}\n\nvisitKeyedWrite(ast: KeyedWrite, context: any): AST {\n const obj = ast.obj.visit(this);\n const key =
ast.key.visit(this);\n const value = ast.value.visit(this);\n if (obj !== ast.obj || key !== ast.key || value !==
ast.value) {\n return new KeyedWrite(ast.span, ast.sourceSpan, obj, key, value);\n }\n return ast;\n}\n\nvisitAll(ast: any[]): any[] {\n const res = [];\n let modified = false;\n for (let i = 0; i < asts.length; ++i) {\n
const original = asts[i];\n const value = original.visit(this);\n res[i] = value;\n modified = modified || value
!== original;\n }\n return modified ? res : asts;\n}\n\nvisitChain(ast: Chain, context: any): AST {\n const
expressions = this.visitAll(ast.expressions);\n if (expressions !== ast.expressions) {\n return new
Chain(ast.span, ast.sourceSpan, expressions);\n }\n return ast;\n}\n\nvisitQuote(ast: Quote, context: any): AST
{\n return ast;\n}\n}\n\n// Bindings\n\nexport class ParsedProperty {\n public readonly isLiteral: boolean;\n
public readonly isAnimation: boolean;\n\n constructor(\n public name: string, public expression:
ASTWithSource, public type: ParsedPropertyType,\n // TODO(atscott): `keySpan` should really be required but
allows `undefined` so VE does\n // not need to be updated. Make `keySpan` required when VE is removed.\n
public sourceSpan: ParseSourceSpan, readonly keySpan: ParseSourceSpan|undefined,\n public valueSpan:
ParseSourceSpan|undefined) {\n this.isLiteral = this.type === ParsedPropertyType.LITERAL_ATTR;\n
this.isAnimation = this.type === ParsedPropertyType.ANIMATION;\n }\n}\n\nexport enum ParsedPropertyType
{\n DEFAULT,\n LITERAL_ATTR,\n ANIMATION\n}\n\nexport const enum ParsedEventType {\n // DOM or
Directive event\n Regular,\n // Animation specific event\n Animation,\n}\n\nexport class ParsedEvent {\n //
Regular events have a target\n // Animation events have a phase\n constructor(\n public name: string, public
targetOrPhase: string, public type: ParsedEventType,\n public handler: ASTWithSource, public sourceSpan:
ParseSourceSpan,\n public handlerSpan: ParseSourceSpan) {\n }\n}\n\n/**\n * ParsedVariable represents a variable
declaration in a microsyntax expression.\n */\nexport class ParsedVariable {\n constructor(\n public readonly
name: string, public readonly value: string,\n public readonly sourceSpan: ParseSourceSpan, public readonly
keySpan: ParseSourceSpan,\n public readonly valueSpan?: ParseSourceSpan) {\n }\n}\n\nexport const enum
BindingType {\n // A regular binding to a property (e.g. `[property]="expression"`).\n Property,\n // A binding to
an element attribute (e.g. `[attr.name]="expression"`).\n Attribute,\n // A binding to a CSS class (e.g.
`[class.name]="condition"`).\n Class,\n // A binding to a style rule (e.g. `[style.rule]="expression"`).\n Style,\n
// A binding to an animation reference (e.g. `[animate.key]="expression"`).\n Animation,\n}\n\nexport class
BoundElementProperty {\n constructor(\n public name: string, public type: BindingType, public
securityContext: SecurityContext,\n public value: ASTWithSource, public unit: string|null, public sourceSpan:
ParseSourceSpan,\n readonly keySpan: ParseSourceSpan|undefined, public valueSpan:
ParseSourceSpan|undefined) {\n }\n}\n\n"/**\n * @license\n * Copyright Google LLC All Rights Reserved.\n */\n *
Use of this source code is governed by an MIT-style license that can be\n * found in the LICENSE file at
https://angular.io/license\n */\nimport * as cdAst from './expression_parser/ast';\nimport {Identifiers} from
'./identifiers';\nimport * as o from './output/output_ast';\nimport {ParseSourceSpan} from './parse_util';\nexport
class EventHandlerVars {\n static event = o.variable('$event');\n}\n\nexport interface LocalResolver {\n
getLocal(name: string): o.Expression|null;\n notifyImplicitReceiverUse(): void;\n globals?:
Set<string>;\n}\n\nexport class ConvertActionBindingResult {\n /**\n * Store statements which are render3
compatible.\n */\n render3Stmts: o.Statement[];\n constructor(\n /**\n * Render2 compatible statements,\n
 */\n public stmts: o.Statement[],\n /**\n * Variable name used with render2 compatible statements.\n
 */\n public allowDefault: o.ReadVarExpr) {\n /**\n * This is bit of a hack. It converts statements which
render2 expects to statements which are\n * expected by render3.\n */\n * Example: `

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```\n * return ctx.doSomething($event);\n * ```\n * \n // TODO(misko): remove this hack once we no
longer support ViewEngine.\n this.render3Stmts = stmts.map((statement: o.Statement) => {\n if (statement
instanceof o.DeclareVarStmt && statement.name == allowDefault.name &&\n statement.value instanceof
o.BinaryOperatorExpr) {\n const lhs = statement.value.lhs as o.CastExpr;\n return new
o.ReturnStatement(lhs.value);\n }\n return statement;\n });\n }\n}\n\nexport type InterpolationFunction =
(args: o.Expression[]) => o.Expression;\n\n/**\n * Converts the given expression AST into an executable output
AST, assuming the expression is\n * used in an action binding (e.g. an event handler).\n */\n\nexport function
convertActionBinding(\n localResolver: LocalResolver|null, implicitReceiver: o.Expression, action: cdAst.AST,\n
bindingId: string, interpolationFunction?: InterpolationFunction,\n baseSourceSpan?: ParseSourceSpan,
implicitReceiverAccesses?: Set<string>,\n globals?: Set<string>): ConvertActionBindingResult {\n if
(!localResolver) {\n localResolver = new DefaultLocalResolver(globals);\n }\n const actionWithoutBuiltins =
convertPropertyBindingBuiltins(\n {\n createLiteralArrayConverter: (argCount: number) => {\n //
Note: no caching for literal arrays in actions.\n return (args: o.Expression[]) => o.literalArr(args);\n
},\n createLiteralMapConverter: (keys: {key: string, quoted: boolean}[]) => {\n // Note: no caching for literal
maps in actions.\n return (values: o.Expression[]) => {\n const entries = keys.map((k, i) => ({\n
key: k.key,\n value: values[i],\n quoted: k.quoted,\n
})));\n return o.literalMap(entries);\n },\n },\n createPipeConverter: (name:
string) => {\n throw new Error(`Illegal State: Actions are not allowed to contain pipes. Pipe: ${name}`);\n
})\n },\n action);\n\n const visitor = new _AstToIrVisitor(\n localResolver, implicitReceiver, bindingId,
interpolationFunction, baseSourceSpan,\n implicitReceiverAccesses);\n const actionStmts: o.Statement[] = [];\n
flattenStatements(actionWithoutBuiltins.visit(visitor, _Mode.Statement), actionStmts);\n
prependTemporaryDecls(visitor temporaryCount, bindingId, actionStmts);\n\n if (visitor.usesImplicitReceiver) {\n
localResolver.notifyImplicitReceiverUse();\n }\n\n const lastIndex = actionStmts.length - 1;\n let
preventDefaultVar: o.ReadVarExpr = null!;\n if (lastIndex >= 0) {\n const lastStatement =
actionStmts[lastIndex];\n const returnExpr = convertStmtIntoExpression(lastStatement);\n if (returnExpr) {\n
// Note: We need to cast the result of the method call to dynamic,\n // as it might be a void method!\n
preventDefaultVar = createPreventDefaultVar(bindingId);\n actionStmts[lastIndex] =\n
preventDefaultVar.set(returnExpr.cast(o.DYNAMIC_TYPE).notIdentical(o.literal(false)))\n
.toDeclStmt(null, [o.StmtModifier.Final]);\n }\n }\n\n return new ConvertActionBindingResult(actionStmts,
preventDefaultVar);\n }\n}\n\nexport interface BuiltinConverter {\n (args: o.Expression[]): o.Expression;\n }\n\nexport
interface BuiltinConverterFactory {\n createLiteralArrayConverter(argCount: number): BuiltinConverter;\n
createLiteralMapConverter(keys: {key: string, quoted: boolean}[]): BuiltinConverter;\n createPipeConverter(name:
string, argCount: number): BuiltinConverter;\n }\n\nexport function convertPropertyBindingBuiltins(\n
converterFactory: BuiltinConverterFactory, ast: cdAst.AST): cdAst.AST {\n return
convertBuiltins(converterFactory, ast);\n }\n\nexport class ConvertPropertyBindingResult {\n constructor(public
stmts: o.Statement[], public currValExpr: o.Expression) {\n }\n }\n\nexport enum BindingForm {\n // The general
form of binding expression, supports all expressions.\n General,\n\n // Try to generate a simple binding (no
temporaries or statements)\n\n // otherwise generate a general binding\n TrySimple,\n\n // Inlines assignment of
temporaries into the generated expression. The result may still\n // have statements attached for declarations of
temporary variables.\n\n // This is the only relevant form for Ivy, the other forms are only used in ViewEngine.\n
Expression,\n }\n\n/**\n * Converts the given expression AST into an executable output AST, assuming the
expression\n * is used in property binding. The expression has to be preprocessed via\n *
`convertPropertyBindingBuiltins`.\n */\n\nexport function convertPropertyBinding(\n localResolver:
LocalResolver|null, implicitReceiver: o.Expression,\n expressionWithoutBuiltins: cdAst.AST, bindingId: string,
form: BindingForm,\n interpolationFunction?: InterpolationFunction): ConvertPropertyBindingResult {\n if
(!localResolver) {\n localResolver = new DefaultLocalResolver();\n }\n const visitor =\n new
_AstToIrVisitor(localResolver, implicitReceiver, bindingId, interpolationFunction);\n const outputExpr:
o.Expression = expressionWithoutBuiltins.visit(visitor, _Mode.Expression);\n const stmts: o.Statement[] =

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getStatementsFromVisitor(visitor, bindingId);\n\n if (visitor.usesImplicitReceiver) {\n
localResolver.notifyImplicitReceiverUse();\n }\n\n if (visitor.temporaryCount === 0 && form ==
BindingForm.TrySimple) {\n  return new ConvertPropertyBindingResult([], outputExpr);\n } else if (form ===
BindingForm.Expression) {\n  return new ConvertPropertyBindingResult(stmts, outputExpr);\n }\n\n\n const
currValExpr = createCurrValueExpr(bindingId);\n
stmts.push(currValExpr.set(outputExpr).toDeclStmt(o.DYNAMIC_TYPE, [o.StmtModifier.Final]));\n return new
ConvertPropertyBindingResult(stmts, currValExpr);\n}\n\n/**\n * Given some expression, such as a binding or
interpolation expression, and a context expression to\n * look values up on, visit each facet of the given expression
resolving values from the context\n * expression such that a list of arguments can be derived from the found values
that can be used as\n * arguments to an external update instruction.\n *\n * @param localResolver The resolver to
use to look up expressions by name appropriately\n * @param contextVariableExpression The expression
representing the context variable used to create\n * the final argument expressions\n * @param
expressionWithArgumentsToExtract The expression to visit to figure out what values need to\n * be resolved and
what arguments list to build.\n * @param bindingId A name prefix used to create temporary variable names if
they're needed for the\n * arguments generated\n * @returns An array of expressions that can be passed as
arguments to instruction expressions like\n * `o.importExpr(R3.propertyInterpolate).callFn(result)`\n */\nexport
function convertUpdateArguments(\n  localResolver: LocalResolver, contextVariableExpression: o.Expression,\n
expressionWithArgumentsToExtract: cdAst.AST, bindingId: string) {\n  const visitor =\n    new
_AstToIrVisitor(localResolver, contextVariableExpression, bindingId, undefined);\n  const outputExpr:
o.InvokeFunctionExpr =\n    expressionWithArgumentsToExtract.visit(visitor, _Mode.Expression);\n\n  if
(visitor.usesImplicitReceiver) {\n    localResolver.notifyImplicitReceiverUse();\n  }\n\n  const stmts =
getStatementsFromVisitor(visitor, bindingId);\n\n  // Removing the first argument, because it was a length for
ViewEngine, not Ivy.\n  let args = outputExpr.args.slice(1);\n  if (expressionWithArgumentsToExtract instanceof
cdAst.Interpolation) {\n    // If we're dealing with an interpolation of 1 value with an empty prefix and suffix, reduce
the\n    // args returned to just the value, because we're going to pass it to a special instruction.\n    const strings =
expressionWithArgumentsToExtract.strings;\n    if (args.length === 3 && strings[0] === " && strings[1] === ") {\n
      // Single argument interpolate instructions.\n      args = [args[1]];\n    } else if (args.length >= 19) {\n
      // 19 or more arguments must be passed to the `interpolateV`-style instructions, which accept\n      // an array of arguments\n      args = [o.literalArr(args)];\n    }\n  }\n  return { stmts, args };\n}\n\nfunction getStatementsFromVisitor(visitor:
_AstToIrVisitor, bindingId: string) {\n  const stmts: o.Statement[] = [];\n  for (let i = 0; i < visitor.temporaryCount;
i++) {\n    stmts.push(temporaryDeclaration(bindingId, i));\n  }\n  return stmts;\n}\n\nfunction
convertBuiltins(converterFactory: BuiltinConverterFactory, ast: cdAst.AST): cdAst.AST {\n  const visitor = new
_BuiltinAstConverter(converterFactory);\n  return ast.visit(visitor);\n}\n\nfunction temporaryName(bindingId:
string, temporaryNumber: number): string {\n  return `tmp_${bindingId}_${temporaryNumber}`;\n}\n\nexport
function temporaryDeclaration(bindingId: string, temporaryNumber: number): o.Statement {\n  return new
o.DeclareVarStmt(temporaryName(bindingId, temporaryNumber), o.NULL_EXPR);\n}\n\nfunction
prependTemporaryDecls(\n  temporaryCount: number, bindingId: string, statements: o.Statement[]) {\n  for (let i =
temporaryCount - 1; i >= 0; i--) {\n    statements.unshift(temporaryDeclaration(bindingId, i));\n  }\n}\n\nenum
_Mode {\n  Statement,\n  Expression\n}\n\nfunction ensureStatementMode(mode: _Mode, ast: cdAst.AST) {\n  if
(mode !== _Mode.Statement) {\n    throw new Error(`Expected a statement, but saw ${ast}`);\n  }\n}\n\nfunction
ensureExpressionMode(mode: _Mode, ast: cdAst.AST) {\n  if (mode !== _Mode.Expression) {\n    throw new
Error(`Expected an expression, but saw ${ast}`);\n  }\n}\n\nfunction convertToStatementIfNeeded(mode: _Mode,
expr: o.Expression): o.Expression|o.Statement {\n  if (mode === _Mode.Statement) {\n    return expr.toStmt();\n  }
else {\n    return expr;\n  }\n}\n\nclass _BuiltinAstConverter extends cdAst.AstTransformer {\n  constructor(private
_converterFactory: BuiltinConverterFactory) {\n    super();\n  }\n  visitPipe(ast: cdAst.BindingPipe, context: any):
any {\n    const args = [ast.exp, ...ast.args].map(ast => ast.visit(this, context));\n    return new BuiltinFunctionCall(\n
ast.span, ast.sourceSpan, args,\n      this._converterFactory.createPipeConverter(ast.name, args.length));\n  }\n  visitLiteralArray(ast: cdAst.LiteralArray, context: any): any {\n    const args = ast.expressions.map(ast =>

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ast.visit(this, context));\n return new BuiltinFunctionCall(\n ast.span, ast.sourceSpan, args,\n this._converterFactory.createLiteralArrayConverter(ast.expressions.length));\n }\n visitLiteralMap(ast:\n cdAst.LiteralMap, context: any): any {\n const args = ast.values.map(ast => ast.visit(this, context));\n return\n new BuiltinFunctionCall(\n ast.span, ast.sourceSpan, args,\n this._converterFactory.createLiteralMapConverter(ast.keys));\n }\n}\n\nclass _AstToIrVisitor implements\n cdAst.AstVisitor {\n private _nodeMap = new Map<cdAst.AST, cdAst.AST>();\n private _resultMap = new\n Map<cdAst.AST, o.Expression>();\n private _currentTemporary: number = 0;\n public temporaryCount: number =\n 0;\n public usesImplicitReceiver: boolean = false;\n\n constructor(\n private _localResolver: LocalResolver,\n private _implicitReceiver: o.Expression,\n private bindingId: string, private interpolationFunction:\n InterpolationFunction|undefined,\n private baseSourceSpan?: ParseSourceSpan, private\n implicitReceiverAccesses?: Set<string>) {\n\n visitUnary(ast: cdAst.Unary, mode: _Mode): any {\n let op:\n o.UnaryOperator;\n switch (ast.operator) {\n case '+':\n op = o.UnaryOperator.Plus;\n break;\n case\n '-':\n op = o.UnaryOperator.Minus;\n break;\n default:\n throw new Error(`Unsupported operator\n ${ast.operator}`);\n }\n\n return convertToStatementIfNeeded(\n mode,\n new o.UnaryOperatorExpr(\n op, this._visit(ast.expr, _Mode.Expression), undefined,\n this.convertSourceSpan(ast.span)));\n }\n\n visitBinary(ast: cdAst.Binary, mode: _Mode): any {\n let op: o.BinaryOperator;\n switch (ast.operation) {\n case '+':\n op = o.BinaryOperator.Plus;\n break;\n case '-':\n op = o.BinaryOperator.Minus;\n break;\n case '*':\n op = o.BinaryOperator.Multiply;\n break;\n case '/':\n op =\n o.BinaryOperator.Divide;\n break;\n case '%':\n op = o.BinaryOperator.Modulo;\n break;\n case\n '&&':\n op = o.BinaryOperator.And;\n break;\n case '||':\n op = o.BinaryOperator.Or;\n break;\n case\n '==':\n op = o.BinaryOperator.Equals;\n break;\n case '!=':\n op =\n o.BinaryOperator.NotEquals;\n break;\n case '===':\n op = o.BinaryOperator.Identical;\n break;\n case\n '!==':\n op = o.BinaryOperator.NotIdentical;\n break;\n case '<':\n op =\n o.BinaryOperator.Lower;\n break;\n case '>':\n op = o.BinaryOperator.Bigger;\n break;\n case\n '<=':\n op = o.BinaryOperator.LowerEquals;\n break;\n case '>=':\n op =\n o.BinaryOperator.BiggerEquals;\n break;\n default:\n throw new Error(`Unsupported operation\n ${ast.operation}`);\n }\n\n return convertToStatementIfNeeded(\n mode,\n new\n o.BinaryOperatorExpr(\n op, this._visit(ast.left, _Mode.Expression), this._visit(ast.right,\n _Mode.Expression),\n undefined, this.convertSourceSpan(ast.span)));\n }\n\n visitChain(ast: cdAst.Chain,\n mode: _Mode): any {\n ensureStatementMode(mode, ast);\n return this.visitAll(ast.expressions, mode);\n }\n\n visitConditional(ast: cdAst.Conditional, mode: _Mode): any {\n const value: o.Expression =\n this._visit(ast.condition, _Mode.Expression);\n return convertToStatementIfNeeded(\n mode,\n value.conditional(\n this._visit(ast.trueExp, _Mode.Expression), this._visit(ast.falseExp,\n _Mode.Expression),\n this.convertSourceSpan(ast.span)));\n }\n\n visitPipe(ast: cdAst.BindingPipe, mode:\n _Mode): any {\n throw new Error(`\n `Illegal state: Pipes should have been converted into functions. Pipe:\n ${ast.name}`);\n }\n\n visitFunctionCall(ast: cdAst.FunctionCall, mode: _Mode): any {\n const convertedArgs =\n this.visitAll(ast.args, _Mode.Expression);\n let fnResult: o.Expression;\n if (ast instanceof BuiltinFunctionCall)\n {\n fnResult = ast.converter(convertedArgs);\n } else {\n fnResult = this._visit(ast.target!,\n _Mode.Expression)\n .callFn(convertedArgs, this.convertSourceSpan(ast.span));\n }\n\n return\n convertToStatementIfNeeded(mode, fnResult);\n }\n\n visitImplicitReceiver(ast: cdAst.ImplicitReceiver, mode:\n _Mode): any {\n ensureExpressionMode(mode, ast);\n this.usesImplicitReceiver = true;\n return\n this._implicitReceiver;\n }\n\n visitThisReceiver(ast: cdAst.ThisReceiver, mode: _Mode): any {\n return\n this.visitImplicitReceiver(ast, mode);\n }\n\n visitInterpolation(ast: cdAst.Interpolation, mode: _Mode): any {\n ensureExpressionMode(mode, ast);\n const args = [o.literal(ast.expressions.length)];\n for (let i = 0; i <\n ast.strings.length - 1; i++) {\n args.push(o.literal(ast.strings[i]));\n args.push(this._visit(ast.expressions[i],\n _Mode.Expression));\n }\n\n args.push(o.literal(ast.strings[ast.strings.length - 1]));\n\n if\n (this.interpolationFunction) {\n return this.interpolationFunction(args);\n }\n\n return ast.expressions.length <=\n 9 ?\n o.importExpr(Identifiers.inlineInterpolate).callFn(args) :\n

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o.importExpr(Identifiers.interpolate).callFn([\n      args[0], o.literalArr(args.slice(1), undefined,\nthis.convertSourceSpan(ast.span))\n    ]);\n  }\n\n  visitKeyedRead(ast: cdAst.KeyedRead, mode: _Mode): any {\n    const leftMostSafe = this.leftMostSafeNode(ast);\n    if (leftMostSafe) {\n      return this.convertSafeAccess(ast,\nleftMostSafe, mode);\n    } else {\n      return convertToStatementIfNeeded(\n      mode, this._visit(ast.obj,\n_Mode.Expression).key(this._visit(ast.key, _Mode.Expression)));\n    }\n  }\n\n  visitKeyedWrite(ast:\ncdAst.KeyedWrite, mode: _Mode): any {\n    const obj: o.Expression = this._visit(ast.obj, _Mode.Expression);\n    const key: o.Expression = this._visit(ast.key, _Mode.Expression);\n    const value: o.Expression =\nthis._visit(ast.value, _Mode.Expression);\n    return convertToStatementIfNeeded(mode, obj.key(key).set(value));\n  }\n\n  visitLiteralArray(ast: cdAst.LiteralArray, mode: _Mode): any {\n    throw new Error('Illegal State: literal\narrays should have been converted into functions');\n  }\n\n  visitLiteralMap(ast: cdAst.LiteralMap, mode: _Mode):\nany {\n    throw new Error('Illegal State: literal maps should have been converted into functions');\n  }\n\n  visitLiteralPrimitive(ast: cdAst.LiteralPrimitive, mode: _Mode): any {\n    // For literal values of null, undefined,\ntrue, or false allow type interference\n    // to infer the type.\n    const type =\n      ast.value === null || ast.value ===\nundefined || ast.value === true || ast.value === true ?\n      o.INFERRED_TYPE :\n      undefined;\n    return\nconvertToStatementIfNeeded(\n      mode, o.literal(ast.value, type, this.convertSourceSpan(ast.span)));\n  }\n\n  private _getLocal(name: string, receiver: cdAst.AST): o.Expression|null {\n    if\n(this._localResolver.globals?.has(name) && receiver instanceof cdAst.ThisReceiver) {\n      return null;\n    }\n\n    return this._localResolver.getLocal(name);\n  }\n\n  visitMethodCall(ast: cdAst.MethodCall, mode: _Mode): any {\n    if (ast.receiver instanceof cdAst.ImplicitReceiver &&\n      !(ast.receiver instanceof cdAst.ThisReceiver) &&\n      ast.name === '$any') {\n      const args = this.visitAll(ast.args, _Mode.Expression) as any[];\n      if (args.length !== 1)\n{\n        throw new Error(\n          `Invalid call to $any, expected 1 argument but received ${args.length ||\n'none'}`);\n      }\n      return (args[0] as o.Expression).cast(o.DYNAMIC_TYPE,\nthis.convertSourceSpan(ast.span));\n    }\n\n    const leftMostSafe = this.leftMostSafeNode(ast);\n    if\n(leftMostSafe) {\n      return this.convertSafeAccess(ast, leftMostSafe, mode);\n    } else {\n      const args =\nthis.visitAll(ast.args, _Mode.Expression);\n      const prevUsesImplicitReceiver = this.usesImplicitReceiver;\n      let\nresult: any = null;\n      const receiver = this._visit(ast.receiver, _Mode.Expression);\n      if (receiver ===\nthis._implicitReceiver) {\n        const varExpr = this._getLocal(ast.name, ast.receiver);\n        if (varExpr) {\n          //\nRestore the previous \"usesImplicitReceiver\" state since the implicit\n          // receiver has been replaced with a\nresolved local expression.\n          this.usesImplicitReceiver = prevUsesImplicitReceiver;\n          result =\nvarExpr.callFn(args);\n          this.addImplicitReceiverAccess(ast.name);\n        }\n      }\n      if (result == null) {\n        result = receiver.callMethod(ast.name, args, this.convertSourceSpan(ast.span));\n      }\n      return\nconvertToStatementIfNeeded(mode, result);\n    }\n  }\n\n  visitPrefixNot(ast: cdAst.PrefixNot, mode: _Mode): any\n{\n    return convertToStatementIfNeeded(mode, o.not(this._visit(ast.expression, _Mode.Expression)));\n  }\n\n  visitNonNullAssert(ast: cdAst.NonNullAssert, mode: _Mode): any {\n    return convertToStatementIfNeeded(\nmode, o.assertNotNull(this._visit(ast.expression, _Mode.Expression)));\n  }\n\n  visitPropertyRead(ast:\ncdAst.PropertyRead, mode: _Mode): any {\n    const leftMostSafe = this.leftMostSafeNode(ast);\n    if\n(leftMostSafe) {\n      return this.convertSafeAccess(ast, leftMostSafe, mode);\n    } else {\n      let result: any =\nnull;\n      const prevUsesImplicitReceiver = this.usesImplicitReceiver;\n      const receiver = this._visit(ast.receiver,\n_Mode.Expression);\n      if (receiver === this._implicitReceiver) {\n        result = this._getLocal(ast.name,\nast.receiver);\n        if (result) {\n          // Restore the previous \"usesImplicitReceiver\" state since the implicit\n          // receiver has been replaced with a resolved local expression.\n          this.usesImplicitReceiver =\nprevUsesImplicitReceiver;\n          this.addImplicitReceiverAccess(ast.name);\n        }\n      }\n      if (result == null)\n{\n        result = receiver.prop(ast.name);\n      }\n      return convertToStatementIfNeeded(mode, result);\n    }\n  }\n\n  visitPropertyWrite(ast: cdAst.PropertyWrite, mode: _Mode): any {\n    const receiver: o.Expression =\nthis._visit(ast.receiver, _Mode.Expression);\n    const prevUsesImplicitReceiver = this.usesImplicitReceiver;\n    let\nvarExpr: o.ReadPropExpr|null = null;\n    if (receiver === this._implicitReceiver) {\n      const localExpr =\nthis._getLocal(ast.name, ast.receiver);\n      if (localExpr) {\n        if (localExpr instanceof o.ReadPropExpr) {\n          // If the local variable is a property read expression, it's a reference\n          // to a 'context.property' value and will be

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used as the target of the\n      // write expression.\n      varExpr = localExpr;\n      // Restore the previous
\"usesImplicitReceiver\" state since the implicit\n      // receiver has been replaced with a resolved local
expression.\n      this.usesImplicitReceiver = prevUsesImplicitReceiver;\n
this.addImplicitReceiverAccess(ast.name);\n    } else {\n      // Otherwise it's an error.\n      const receiver =
ast.name;\n      const value = (ast.value instanceof cdAst.PropertyRead) ? ast.value.name : undefined;\n
throw new Error(`Cannot assign value \"${value}\" to template variable \"${\n      receiver}\". Template
variables are read-only.`);\n    }\n  }\n  // If no local expression could be produced, use the original
receiver's\n  // property as the target.\n  if (varExpr === null) {\n    varExpr = receiver.prop(ast.name);\n  }\n  return convertToStatementIfNeeded(mode, varExpr.set(this._visit(ast.value, _Mode.Expression));\n  }\n\n  visitSafePropertyRead(ast: cdAst.SafePropertyRead, mode: _Mode): any {\n    return this.convertSafeAccess(ast,
this.leftMostSafeNode(ast), mode);\n  }\n\n  visitSafeMethodCall(ast: cdAst.SafeMethodCall, mode: _Mode): any
{\n    return this.convertSafeAccess(ast, this.leftMostSafeNode(ast), mode);\n  }\n\n  visitAll(ast: cdAst.AST[],
mode: _Mode): any {\n    return asts.map(ast => this._visit(ast, mode));\n  }\n\n  visitQuote(ast: cdAst.Quote, mode:
_Mode): any {\n    throw new Error(`Quotes are not supported for evaluation!`\n    Statement:
${ast.uninterpretedExpression} located at ${ast.location}`);\n  }\n\n  private _visit(ast: cdAst.AST, mode: _Mode):
any {\n    const result = this._resultMap.get(ast);\n    if (result) return result;\n    return (this._nodeMap.get(ast) ||
ast).visit(this, mode);\n  }\n\n  private convertSafeAccess(\n    ast: cdAst.AST, leftMostSafe:
cdAst.SafeMethodCall|cdAst.SafePropertyRead, mode: _Mode): any {\n    // If the expression contains a safe access
node on the left it needs to be converted to\n    // an expression that guards the access to the member by checking the
receiver for blank. As\n    // execution proceeds from left to right, the left most part of the expression must be
guarded\n    // first but, because member access is left associative, the right side of the expression is at\n    // the top
of the AST. The desired result requires lifting a copy of the left part of the\n    // expression up to test it for blank
before generating the unguarded version.\n\n    // Consider, for example the following expression: a?.b.c?.d.e\n\n    // This results in the ast:\n    //      .\n    //      /\\|\n    //      ?. e\n    //      / \\|\n    //      . d\n    //      /\\|\n    //      ?. c\n    //      / \\|\n    //      a b\n\n    // The following tree should be generated:\n    //      /---- ? ----\\|\n    //      / | \\|\n    //      a /--- ? ---\\ null\n    //      / | \\|\n    //      . . null\n    //      /\\ \\|\n    //      . c . e\n    //      /\\ /
\\|\n    //      a b . d\n    //      /\\|\n    //      . c\n    //      /\\|\n    //      a b\n\n    // Notice that the first guard
condition is the left hand of the left most safe access node\n    // which comes in as leftMostSafe to this routine.\n\n    let guardedExpression = this._visit(leftMostSafe.receiver, _Mode.Expression);\n    let temporary: o.ReadVarExpr =
undefined!;\n    if (this.needsTemporary(leftMostSafe.receiver)) {\n      // If the expression has method calls or pipes
then we need to save the result into a\n      // temporary variable to avoid calling stateful or impure code more than
once.\n      temporary = this.allocateTemporary();\n      // Preserve the result in the temporary variable\n      guardedExpression = temporary.set(guardedExpression);\n      // Ensure all further references to the guarded
expression refer to the temporary instead.\n      this._resultMap.set(leftMostSafe.receiver, temporary);\n    }\n\n    const condition = guardedExpression.isBlank();\n    // Convert the ast to an unguarded access to the receiver's
member. The map will substitute\n    // leftMostNode with its unguarded version in the call to `this.visit()`. \n    if
(leftMostSafe instanceof cdAst.SafeMethodCall) {\n      this._nodeMap.set(\n        leftMostSafe,\n        new
cdAst.MethodCall(\n          leftMostSafe.span, leftMostSafe.sourceSpan, leftMostSafe.nameSpan,\n          leftMostSafe.receiver, leftMostSafe.name, leftMostSafe.args));\n    } else {\n      this._nodeMap.set(\n        leftMostSafe,\n        new cdAst.PropertyRead(\n          leftMostSafe.span, leftMostSafe.sourceSpan,
leftMostSafe.nameSpan,\n          leftMostSafe.receiver, leftMostSafe.name));\n    }\n\n    // Recursively convert
the node now without the guarded member access.\n    const access = this._visit(ast, _Mode.Expression);\n\n    //
Remove the mapping. This is not strictly required as the converter only traverses each node\n    // once but is safer if
the conversion is changed to traverse the nodes more than once.\n    this._nodeMap.delete(leftMostSafe);\n\n    // If
we allocated a temporary, release it.\n    if (temporary) {\n      this.releaseTemporary(temporary);\n    }\n\n    //
Produce the conditional\n    return convertToStatementIfNeeded(mode, condition.conditional(o.literal(null),
access));\n  }\n\n  // Given an expression of the form a?.b.c?.d.e then the left most safe node is\n  // the (a?.b). The .
and ? are left associative thus can be rewritten as\n  // (((a?.c).b).c)?.d.e. This returns the most deeply nested safe

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read or\n // safe method call as this needs to be transformed initially to:\n // a == null ? null : a.c.b.c?.d.e\n // then
to:\n // a == null ? null : a.b.c == null ? null : a.b.c.d.e\n private leftMostSafeNode(ast: cdAst.AST):
cdAst.SafePropertyRead|cdAst.SafeMethodCall {\n  const visit = (visitor: cdAst.AstVisitor, ast: cdAst.AST): any
=> {\n  return (this._nodeMap.get(ast) || ast).visit(visitor);\n  };\n  return ast.visit({\n  visitUnary(ast:
cdAst.Unary) {\n  return null;\n  },\n  visitBinary(ast: cdAst.Binary) {\n  return null;\n  },\n  visitChain(ast: cdAst.Chain) {\n  return null;\n  },\n  visitConditional(ast: cdAst.Conditional) {\n  return
null;\n  },\n  visitFunctionCall(ast: cdAst.FunctionCall) {\n  return null;\n  },\n  visitImplicitReceiver(ast: cdAst.ImplicitReceiver) {\n  return null;\n  },\n  visitThisReceiver(ast:
cdAst.ThisReceiver) {\n  return null;\n  },\n  visitInterpolation(ast: cdAst.Interpolation) {\n  return
null;\n  },\n  visitKeyedRead(ast: cdAst.KeyedRead) {\n  return visit(this, ast.obj);\n  },\n  visitKeyedWrite(ast: cdAst.KeyedWrite) {\n  return null;\n  },\n  visitLiteralArray(ast: cdAst.LiteralArray)
{\n  return null;\n  },\n  visitLiteralMap(ast: cdAst.LiteralMap) {\n  return null;\n  },\n  visitLiteralPrimitive(ast: cdAst.LiteralPrimitive) {\n  return null;\n  },\n  visitMethodCall(ast:
cdAst.MethodCall) {\n  return visit(this, ast.receiver);\n  },\n  visitPipe(ast: cdAst.BindingPipe) {\n
return null;\n  },\n  visitPrefixNot(ast: cdAst.PrefixNot) {\n  return null;\n  },\n  visitNonNullAssert(ast: cdAst.NonNullAssert) {\n  return null;\n  },\n  visitPropertyRead(ast:
cdAst.PropertyRead) {\n  return visit(this, ast.receiver);\n  },\n  visitPropertyWrite(ast:
cdAst.PropertyWrite) {\n  return null;\n  },\n  visitQuote(ast: cdAst.Quote) {\n  return null;\n  },\n  visitSafeMethodCall(ast: cdAst.SafeMethodCall) {\n  return visit(this, ast.receiver) || ast;\n  },\n  visitSafePropertyRead(ast: cdAst.SafePropertyRead) {\n  return visit(this, ast.receiver) || ast;\n  };\n  };\n  }\n\n // Returns true if the AST includes a method or a pipe indicating that, if the\n // expression is used as the
target of a safe property or method access then\n // the expression should be stored into a temporary variable.\n private needsTemporary(ast: cdAst.AST): boolean {\n  const visit = (visitor: cdAst.AstVisitor, ast: cdAst.AST):
boolean => {\n  return ast && (this._nodeMap.get(ast) || ast).visit(visitor);\n  };\n  const visitSome = (visitor:
cdAst.AstVisitor, ast: cdAst.AST[]): boolean => {\n  return ast.some(ast => visit(visitor, ast));\n  };\n  return
ast.visit({\n  visitUnary(ast: cdAst.Unary): boolean {\n  return visit(this, ast.expr);\n  },\n  visitBinary(ast: cdAst.Binary): boolean {\n  return visit(this, ast.left) || visit(this, ast.right);\n  },\n  visitChain(ast: cdAst.Chain) {\n  return false;\n  },\n  visitConditional(ast: cdAst.Conditional): boolean {\n
return visit(this, ast.condition) || visit(this, ast.trueExp) || visit(this, ast.falseExp);\n  },\n  visitFunctionCall(ast: cdAst.FunctionCall) {\n  return true;\n  },\n  visitImplicitReceiver(ast:
cdAst.ImplicitReceiver) {\n  return false;\n  },\n  visitThisReceiver(ast: cdAst.ThisReceiver) {\n  return
false;\n  },\n  visitInterpolation(ast: cdAst.Interpolation) {\n  return visitSome(this, ast.expressions);\n  },\n  visitKeyedRead(ast: cdAst.KeyedRead) {\n  return false;\n  },\n  visitKeyedWrite(ast:
cdAst.KeyedWrite) {\n  return false;\n  },\n  visitLiteralArray(ast: cdAst.LiteralArray) {\n  return true;\n  },\n  visitLiteralMap(ast: cdAst.LiteralMap) {\n  return true;\n  },\n  visitLiteralPrimitive(ast:
cdAst.LiteralPrimitive) {\n  return false;\n  },\n  visitMethodCall(ast: cdAst.MethodCall) {\n  return
true;\n  },\n  visitPipe(ast: cdAst.BindingPipe) {\n  return true;\n  },\n  visitPrefixNot(ast:
cdAst.PrefixNot) {\n  return visit(this, ast.expression);\n  },\n  visitNonNullAssert(ast: cdAst.PrefixNot) {\n
return visit(this, ast.expression);\n  },\n  visitPropertyRead(ast: cdAst.PropertyRead) {\n  return false;\n  },\n  visitPropertyWrite(ast: cdAst.PropertyWrite) {\n  return false;\n  },\n  visitQuote(ast:
cdAst.Quote) {\n  return false;\n  },\n  visitSafeMethodCall(ast: cdAst.SafeMethodCall) {\n  return
true;\n  },\n  visitSafePropertyRead(ast: cdAst.SafePropertyRead) {\n  return false;\n  };\n  };\n  }\n\n private allocateTemporary(): o.ReadVarExpr {\n  const tempNumber = this._currentTemporary++;\n  this.temporaryCount = Math.max(this._currentTemporary, this.tempemporaryCount);\n  return new
o.ReadVarExpr(temporaryName(this.bindingId, tempNumber));\n  }\n\n private releaseTemporary(temporary:
o.ReadVarExpr) {\n  this._currentTemporary--;\n  if (temporary.name != temporaryName(this.bindingId,
this._currentTemporary)) {\n  throw new Error(`Temporary ${temporary.name} released out of order`);\n  }\n  }\n\n /**\n  * Creates an absolute `ParseSourceSpan` from the relative `ParseSpan`.\n  * * `ParseSpan` objects

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are relative to the start of the expression.\n * This method converts these to full `ParseSourceSpan` objects that\n
* show where the span is within the overall source file.\n * @param span the relative span to convert.\n *
@returns a `ParseSourceSpan` for the given span or null if no\n * `baseSourceSpan` was provided to this class.\n
*/\n private convertSourceSpan(span: cdAst.ParseSpan) {\n if (this.baseSourceSpan) {\n const start =
this.baseSourceSpan.start.moveBy(span.start);\n const end = this.baseSourceSpan.start.moveBy(span.end);\n
const fullStart = this.baseSourceSpan.fullStart.moveBy(span.start);\n return new ParseSourceSpan(start, end,
fullStart);\n } else {\n return null;\n }\n }\n\n /** Adds the name of an AST to the list of implicit receiver
accesses. */\n private addImplicitReceiverAccess(name: string) {\n if (this.implicitReceiverAccesses) {\n
this.implicitReceiverAccesses.add(name);\n }\n }\n\nfunction flattenStatements(arg: any, output:
o.Statement[]) {\n if (Array.isArray(arg)) {\n (<any[]>arg).forEach((entry) => flattenStatements(entry, output));\n
} else {\n output.push(arg);\n }\n }\n\n\nclass DefaultLocalResolver implements LocalResolver {\n
constructor(public globals?: Set<string>) {}\n notifyImplicitReceiverUse(): void {}\n getLocal(name: string):
o.Expression|null {\n if (name === EventHandlerVars.event.name) {\n return EventHandlerVars.event;\n }\n
return null;\n }\n }\n\nfunction createCurrValueExpr(bindingId: string): o.ReadVarExpr {\n return
o.variable(`currVal_${bindingId}`); // fix syntax highlighting: `}\n\nfunction createPreventDefaultVar(bindingId:
string): o.ReadVarExpr {\n return o.variable(`pd_${bindingId}`);\n }\n\nfunction convertStmtIntoExpression(stmt:
o.Statement): o.Expression|null {\n if (stmt instanceof o.ExpressionStatement) {\n return stmt.expr;\n } else if
(stmt instanceof o.ReturnStatement) {\n return stmt.value;\n }\n return null;\n }\n\nexport class
BuiltinFunctionCall extends cdAst.FunctionCall {\n constructor(\n span: cdAst.ParseSpan, sourceSpan:
cdAst.AbsoluteSourceSpan, public args: cdAst.AST[],\n public converter: BuiltinConverter) {\n super(span,
sourceSpan, null, args);\n }\n }\n\n"/**\n * @license\n * Copyright Google LLC All Rights Reserved.\n *\n * Use of
this source code is governed by an MIT-style license that can be\n * found in the LICENSE file at
https://angular.io/license\n */\n\n/**\n * This file is a port of shadowCSS from webcomponents.js to TypeScript.\n
*\n * Please make sure to keep to edits in sync with the source file.\n *\n * Source:\n *
https://github.com/webcomponents/webcomponentsjs/blob/4efecd7e0e/src/ShadowCSS/ShadowCSS.js\n *\n * The
original file level comment is reproduced below\n */\n\n This is a limited shim for ShadowDOM css styling.\n
https://dvcs.w3.org/hg/webcomponents/raw-file/tip/spec/shadow/index.html#styles\n\n The intention here is to
support only the styling features which can be\n relatively simply implemented. The goal is to allow users to avoid
the\n most obvious pitfalls and do so without compromising performance significantly.\n For ShadowDOM styling
that's not covered here, a set of best practices\n can be provided that should allow users to accomplish more
complex styling.\n\n The following is a list of specific ShadowDOM styling features and a brief\n discussion of the
approach used to shim.\n\n Shimmed features:\n\n * :host, :host-context: ShadowDOM allows styling of the
shadowRoot's host\n element using the :host rule. To shim this feature, the :host styles are\n reformatted and
prefixed with a given scope name and promoted to a\n document level stylesheet.\n For example, given a scope
name of .foo, a rule like this:\n\n :host {\n background: red;\n }\n }\n\n becomes:\n\n .foo {\n
background: red;\n }\n\n * encapsulation: Styles defined within ShadowDOM, apply only to\n dom inside the
ShadowDOM. Polymer uses one of two techniques to implement\n this feature.\n\n By default, rules are prefixed
with the host element tag name\n as a descendant selector. This ensures styling does not leak out of the 'top'\n
of the element's ShadowDOM. For example,\n\n div {\n font-weight: bold;\n }\n\n becomes:\n\n x-foo div {\n
font-weight: bold;\n }\n\n becomes:\n\n\n Alternatively, if WebComponents.ShadowCSS.strictStyling is set to
true then\n selectors are scoped by adding an attribute selector suffix to each\n simple selector that contains the
host element tag name. Each element\n in the element's ShadowDOM template is also given the scope attribute.\n
Thus, these rules match only elements that have the scope attribute.\n For example, given a scope name of x-foo, a
rule like this:\n\n div {\n font-weight: bold;\n }\n\n becomes:\n\n div[x-foo] {\n font-weight: bold;\n
}\n\n Note that elements that are dynamically added to a scope must have the scope\n selector added to them
manually.\n\n * upper/lower bound encapsulation: Styles which are defined outside a\n shadowRoot should not
cross the ShadowDOM boundary and should not apply\n inside a shadowRoot.\n\n This styling behavior is not
emulated. Some possible ways to do this that\n were rejected due to complexity and/or performance concerns

```

include: (1) reset every possible property for every possible selector for a given scope name; (2) re-implement css in javascript.

As an alternative, users should make sure to use selectors specific to the scope in which they are working.

::distributed: This behavior is not emulated. It's often not necessary to style the contents of a specific insertion point and instead, descendants of the host element can be styled selectively. Users can also create an extra node around an insertion point and style that node's contents via descendent selectors. For example, with a shadowRoot like this:

```
<style>
  ::content(div) {
    background: red;
  }
</style>
<content></content>
```

could become:

```
<style>
  /*@polyfill .content-container div */
  ::content(div) {
    background: red;
  }
</style>
<div class="content-container">
  <content></content>
</div>
```

Note the use of @polyfill in the comment above a ShadowDOM specific style declaration. This is a directive to the styling shim to use the selector in comments in lieu of the next selector when running under polyfill.

```
export class ShadowCss {
  strictStyling: boolean = true;
  constructor() {}
  /* Shim some cssText with the given selector. Returns cssText that can be included in the document via WebComponents.ShadowCSS.addCssToDocument(css).
  * When strictStyling is true:
  * - selector is the attribute added to all elements inside the host,
  * - hostSelector is the attribute added to the host itself.
  */
  shimCssText(cssText: string, selector: string, hostSelector: string = "): string {
    const commentsWithHash = extractCommentsWithHash(cssText);
    cssText = stripComments(cssText);
    cssText = this._insertDirectives(cssText);
    const scopedCssText = this._scopeCssText(cssText, selector, hostSelector);
    return [scopedCssText, ...commentsWithHash].join("\n");
  }
  private _insertDirectives(cssText: string): string {
    cssText = this._insertPolyfillDirectivesInCssText(cssText);
    return this._insertPolyfillRulesInCssText(cssText);
  }
  /* Process styles to convert native ShadowDOM rules that will trip up the css parser; we rely on decorating the stylesheet with inert rules.
  * For example, we convert this rule:
  * polyfill-next-selector { content: 'host menu-item'; }
  * ::content menu-item {
  * to this:
  * scopeName menu-item {
  */
  private _insertPolyfillDirectivesInCssText(cssText: string): string {
    // Difference with webcomponents.js: does not handle comments
    return cssText.replace(_cssContentNextSelectorRe, function(...m: string[]) {
      return m[2] + '{';
    });
  }
  /* Process styles to add rules which will only apply under the polyfill
  * For example, we convert this rule:
  * polyfill-rule {
  * content: 'host menu-item';
  * ...
  * }
  * to this:
  * scopeName menu-item {
  */
  private _insertPolyfillRulesInCssText(cssText: string): string {
    // Difference with webcomponents.js: does not handle comments
    return cssText.replace(_cssContentRuleRe, (...m: string[]) => {
      const rule = m[0].replace(m[1], "").replace(m[2], "");
      return m[4] + rule;
    });
  }
  /* Ensure styles are scoped. Pseudo-scoping takes a rule like:
  * .foo { ... }
  * and converts this to:
  * scopeName .foo { ... }
  */
  private _scopeCssText(cssText: string, scopeSelector: string, hostSelector: string): string {
    const unscopedRules = this._extractUnscopedRulesFromCssText(cssText);
    // replace :host and :host-context - shadowcsshost and -shadowcsshost respectively
    cssText = this._insertPolyfillHostInCssText(cssText);
    cssText = this._convertColonHost(cssText);
    cssText = this._convertColonHostContext(cssText);
    cssText = this._convertShadowDOMSelectors(cssText);
    if (scopeSelector) {
      cssText = this._scopeSelectors(cssText, scopeSelector, hostSelector);
    }
    cssText = cssText + "\n" + unscopedRules;
    return cssText.trim();
  }
  /* Process styles to add rules which will only apply under the polyfill and do not process via CSSOM. (CSSOM is destructive to rules on rare occasions, e.g. -webkit-calc on Safari.)
  * For example, we convert this rule:
  * @polyfill-unscooped-rule {
  * content: 'menu-item';
  * ...
  * }
  * to this:
  * menu-item {
  */
  private _extractUnscopedRulesFromCssText(cssText: string): string {
    // Difference with webcomponents.js: does not handle comments
    let r = "";
    let m: RegExpExecArray|null;
    _cssContentUnscopedRuleRe.lastIndex = 0;
    while ((m = _cssContentUnscopedRuleRe.exec(cssText)) !== null) {
      const rule = m[0].replace(m[2], "").replace(m[1], m[4]);
      r += rule + "\n\n";
    }
    return r;
  }
  /* convert a rule like :host(.foo) > .bar { }
  * to:
  * .foo<scopeName> > .bar
  */
  private _convertColonHost(cssText: string): string {
    return this._convertColonRule(cssText, _cssColonHostRe, this._colonHostPartReplacer);
  }
  /* convert a rule like :host-context(.foo) > .bar { }
  * to:
  * .foo<scopeName> > .bar, .foo scopeName > .bar { }
  * and:
  * :host-context(.foo:host) .bar { ... }
  */

```

```

*\n * to\n *\n *.foo<scopeName>.bar { ... }\n */\n private _convertColonHostContext(cssText: string): string
{\n return this._convertColonRule(\n cssText, _cssColonHostContextRe,
this._colonHostContextPartReplacer);\n }\n\n private _convertColonRule(cssText: string, regExp: RegExp,
partReplacer: Function): string {\n // m[1] = :host(-context), m[2] = contents of (), m[3] rest of rule\n return
cssText.replace(regExp, function(...m: string[]) {\n if (m[2]) {\n const parts = m[2].split(',');\n const r:
string[] = [];\n for (let i = 0; i < parts.length; i++) {\n const p = parts[i].trim();\n if (!p) break;\n
r.push(partReplacer(_polyfillHostNoCombinator, p, m[3]));\n }\n return r.join(',');\n } else {\n return
_polyfillHostNoCombinator + m[3];\n }\n });\n }\n\n private _colonHostContextPartReplacer(host: string,
part: string, suffix: string): string {\n if (part.indexOf(_polyfillHost) > -1) {\n return
this._colonHostPartReplacer(host, part, suffix);\n } else {\n return host + part + suffix + ', ' + part + ' ' + host +
suffix;\n }\n }\n\n private _colonHostPartReplacer(host: string, part: string, suffix: string): string {\n return host
+ part.replace(_polyfillHost, '') + suffix;\n }\n\n /*\n * Convert combinators like ::shadow and pseudo-elements
like ::content\n * by replacing with space.\n */\n private _convertShadowDOMSelectors(cssText: string): string
{\n return _shadowDOMSelectorsRe.reduce((result, pattern) => result.replace(pattern, ' '), cssText);\n }\n\n //
change a selector like 'div' to 'name div'\n private _scopeSelectors(cssText: string, scopeSelector: string,
hostSelector: string): string {\n return processRules(cssText, (rule: CssRule) => {\n let selector =
rule.selector;\n let content = rule.content;\n if (rule.selector[0] != '@') {\n selector =\n
this._scopeSelector(rule.selector, scopeSelector, hostSelector, this.strictStyling);\n } else if (\n
rule.selector.startsWith('@media') || rule.selector.startsWith('@supports') ||\n rule.selector.startsWith('@page')
|| rule.selector.startsWith('@document')) {\n content = this._scopeSelectors(rule.content, scopeSelector,
hostSelector);\n }\n return new CssRule(selector, content);\n });\n }\n\n private _scopeSelector(\n
selector: string, scopeSelector: string, hostSelector: string, strict: boolean): string {\n return selector.split(',')\n
.map(part => part.trim().split(_shadowDeepSelectors))\n .map((deepParts) => {\n const [shallowPart,
...otherParts] = deepParts;\n const applyScope = (shallowPart: string) => {\n if
(this._selectorNeedsScoping(shallowPart, scopeSelector)) {\n return strict ?\n
this._applyStrictSelectorScope(shallowPart, scopeSelector, hostSelector) :\n
this._applySelectorScope(shallowPart, scopeSelector, hostSelector);\n } else {\n return shallowPart;\n
}\n });\n return [applyScope(shallowPart), ...otherParts].join(' '); }\n .join(', '); }\n\n private _selectorNeedsScoping(selector: string, scopeSelector: string): boolean {\n const re =
this._makeScopeMatcher(scopeSelector);\n return !re.test(selector);\n }\n\n private
_makeScopeMatcher(scopeSelector: string): RegExp {\n const lre = /\[/g;\n const rre = /\]/g;\n scopeSelector
= scopeSelector.replace(lre, '\\[').replace(rre, '\\]');\n return new RegExp('^(' + scopeSelector + ') ' +
_selectorReSuffix, 'm');\n }\n\n private _applySelectorScope(selector: string, scopeSelector: string, hostSelector:
string):\n string {\n // Difference from webcomponents.js: scopeSelector could not be an array\n return
this._applySimpleSelectorScope(selector, scopeSelector, hostSelector);\n }\n\n // scope via name and [is=name]\n
private _applySimpleSelectorScope(selector: string, scopeSelector: string, hostSelector: string):\n string {\n //
In Android browser, the lastIndex is not reset when the regex is used in String.replace()\n
_polyfillHostRe.lastIndex = 0;\n if (_polyfillHostRe.test(selector)) {\n const replaceBy = this.strictStyling ?
`[${hostSelector}]` : scopeSelector;\n return selector\n .replace(\n
_polyfillHostNoCombinatorRe,\n (hnc, selector) => {\n return selector.replace(\n
/([^(]*)(:*)(.*)/,n (_, : string, before: string, colon: string, after: string) => {\n return before
+ replaceBy + colon + after;\n }));\n })\n .replace(_polyfillHostRe, replaceBy + ');\n
}\n\n return scopeSelector + ' ' + selector;\n }\n\n // return a selector with [name] suffix on each simple selector\n
// e.g. .foo.bar > .zot becomes .foo[name].bar[name] > .zot[name] /** @internal */\n private
_applyStrictSelectorScope(selector: string, scopeSelector: string, hostSelector: string):\n string {\n const isRe =
/\[is=(\[^\]]*)\]/g;\n scopeSelector = scopeSelector.replace(isRe, (_, : string, ...parts: string[]) => parts[0]);\n
const attrName = '[' + scopeSelector + ']';\n const _scopeSelectorPart = (p: string) => {\n let scopedP =
p.trim();\n if (!scopedP) {\n return '';\n }\n if (p.indexOf(_polyfillHostNoCombinator) > -1) {\n

```

```

scopedP = this._applySimpleSelectorScope(p, scopeSelector, hostSelector);\n    } else {\n        // remove :host since
it should be unnecessary\n        const t = p.replace(_polyfillHostRe, "");\n        if (t.length > 0) {\n            const matches
= t.match(/(?:[^\:]*)(?:\.(?))/);\n            if (matches) {\n                scopedP = matches[1] + attrName + matches[2] +
matches[3];\n            }\n        }\n    }\n    return scopedP;\n};\n\nconst safeContent = new
SafeSelector(selector);\n    selector = safeContent.content();\n\n    let scopedSelector = ";\n    let startIndex = 0;\n    let res: RegExpExecArray|null;\n    const sep = /(>|\\+|~(?:!|=))\\s*/g;\n    // If a selector appears before :host it
should not be shimmed as it\n    // matches on ancestor elements and not on elements in the host's shadow\n    //
`:host-context(div)` is transformed to\n    // `-shadowcsshost-no-combinatordiv, div -shadowcsshost-no-
combinator`\n    // the `div` is not part of the component in the 2nd selectors and should not be scoped.\n    //
Historically `component-tag:host` was matching the component so we also want to preserve\n    // this behavior to
avoid breaking legacy apps (it should not match).\n    // The behavior should be:\n    // - `tag:host` -> `tag[h]` (this is
to avoid breaking legacy apps, should not match anything)\n    // - `tag :host` -> `tag [h]` (`tag` is not scoped because
it's considered part of a\n    // `:host-context(tag)`)\n    const hasHost =
selector.indexOf(_polyfillHostNoCombinator) > -1;\n    // Only scope parts after the first `-shadowcsshost-no-
combinator` when it is present\n    let shouldScope = !hasHost;\n\n    while ((res = sep.exec(selector)) !== null) {\n
        const separator = res[1];\n        const part = selector.slice(startIndex, res.index).trim();\n        shouldScope =
shouldScope || part.indexOf(_polyfillHostNoCombinator) > -1;\n        const scopedPart = shouldScope ?
_scopeSelectorPart(part) : part;\n        scopedSelector += `${scopedPart} ${separator} `;\n        startIndex =
sep.lastIndex;\n    }\n\n    const part = selector.substring(startIndex);\n    shouldScope = shouldScope ||
part.indexOf(_polyfillHostNoCombinator) > -1;\n    scopedSelector += shouldScope ? _scopeSelectorPart(part) :
part;\n\n    // replace the placeholders with their original values\n    return safeContent.restore(scopedSelector);\n
}\n\nprivate _insertPolyfillHostInCssText(selector: string): string {\n    return
selector.replace(_colonHostContextRe, _polyfillHostContext)\n        .replace(_colonHostRe, _polyfillHost);\n
}\n}\n\nclass SafeSelector {\n    private placeholders: string[] = [];\n    private index = 0;\n    private _content:
string;\n\n    constructor(selector: string) {\n        // Replaces attribute selectors with placeholders.\n        // The WS in
[attr="va lue="] would otherwise be interpreted as a selector separator.\n        selector =
selector.replace(/(?:[^\]]*)/g, (_, keep) => {\n            const replaceBy = `__ph-${this.index}__`;\n
            this.placeholders.push(keep);\n            this.index++;\n            return replaceBy;\n        });\n\n        // Replaces the expression in
`:nth-child(2n + 1)` with a placeholder.\n        // WS and `+` would otherwise be interpreted as selector separators.\n
this._content = selector.replace(/(:nth-[-\w+])((?:[^\]]+))/g, (_, pseudo, exp) => {\n            const replaceBy = `__ph-
${this.index}__`;\n            this.placeholders.push(exp);\n            this.index++;\n            return pseudo + replaceBy;\n
        });\n\n        restore(content: string): string {\n            return content.replace(/__ph-(\d+)__/g, (ph, index) =>
this.placeholders[+index]);\n        }\n\n        content(): string {\n            return this._content;\n        }\n    }\n\n    const
_cssContentNextSelectorRe = /\polyfill-next-
selector(?:[^\]]*content:([\s]*?([\^])?.*)\1[;]\s*)?{/gim;\n    const _cssContentRuleRe = /(polyfill-
rule)[^\]]*(content:([\s]*?([\^])?.*)\3[;]\s*)?{/gim;\n    const _cssContentUnscopedRuleRe = /\(polyfill-
unscoped-rule)[^\]]*(content:([\s]*?([\^])?.*)\3[;]\s*)?{/gim;\n    const _polyfillHost = '-shadowcsshost';\n    // note:
:host-context pre-processed to -shadowcsshostcontext.\n    const _polyfillHostContext = '-shadowcsscontext';\n    const
_parenSuffix = '(?:\\\\\\\\(' +\n        '(?:\\\\\\\\(?:[^\]]*)?)+\n        ')\\\\\\\\)?(?:[^\]]*)';\n    const _cssColonHostRe = new
RegExp('(' + _polyfillHost + _parenSuffix, 'gim');\n    const _cssColonHostContextRe = new RegExp('(' +
_polyfillHostContext + _parenSuffix, 'gim');\n    const _polyfillHostNoCombinator = _polyfillHost + '-no-
combinator';\n    const _polyfillHostNoCombinatorRe = /-shadowcsshost-no-combinator(?:[^\]]*)/;\n    const
_shadowDOMSelectorsRe = [/\:shadow/g, /\:content/g, /\n // Deprecated selectors\n // \\/shadow-deep\/g,\n
\/\/shadow\/g,\n];\n\n    // The deep combinator is deprecated in the CSS spec\n    // Support for `>>>`, `deep`, `:ng-
deep` is then also deprecated and will be removed in the future.\n    // see
https://github.com/angular/angular/pull/17677\n    const _shadowDeepSelectors = /(?:>>>)|(?:\/deep\/)|(?::ng-
deep)/g;\n    const _selectorReSuffix = '(?:>|\\\\\\\\s~+|\\\\\\\\[,{:][\\\\\\\\s\\\\\\\\s]*)?$',\n    const _polyfillHostRe = /-
shadowcsshost/gim;\n    const _colonHostRe = /:host/gim;\n    const _colonHostContextRe = /:host-context/gim;\n    const

```

```

_commentRe = /\s*[\s\S]*?\/g;\n\nfunction stripComments(input: string): string {\n return
input.replace(_commentRe, "");\n}\n\nconst _commentWithHashRe =
/\s*#\s*source(Mapping)?URL=[\s\S]+?\/g;\n\nfunction extractCommentsWithHash(input: string):
string[] {\n return input.match(_commentWithHashRe) || [];\n}\n\nconst BLOCK_PLACEHOLDER =
'%BLOCK%';\nconst QUOTE_PLACEHOLDER = '%QUOTED%';\nconst _ruleRe =
/(\s*)([^\{\}]+)(\s*)((?:%BLOCK%)?\s*)((?:\s*))\/g;\nconst _quotedRe = /%QUOTED%/g;\nconst
CONTENT_PAIRS = new Map([\s\S]);\nconst QUOTE_PAIRS = new Map([\s\S], [\s\S]);\n\nexport
class CssRule {\n constructor(public selector: string, public content: string) {} }\n\nexport function
processRules(input: string, ruleCallback: (rule: CssRule) => CssRule): string {\n const inputWithEscapedQuotes =
escapeBlocks(input, QUOTE_PAIRS, QUOTE_PLACEHOLDER);\n const inputWithEscapedBlocks =\n
escapeBlocks(inputWithEscapedQuotes.escapedString, CONTENT_PAIRS, BLOCK_PLACEHOLDER);\n let
nextBlockIndex = 0;\n let nextQuoteIndex = 0;\n return inputWithEscapedBlocks.escapedString\n
.replace(\n
_ruleRe,\n      (...m: string[]) => {\n          const selector = m[2];\n          let content = ";\n          let suffix =
m[4];\n          let contentPrefix = ";\n          if (suffix && suffix.startsWith('{ ' + BLOCK_PLACEHOLDER)) {\n
              content = inputWithEscapedBlocks.blocks[nextBlockIndex++];\n              suffix =
suffix.substring(BLOCK_PLACEHOLDER.length + 1);\n              contentPrefix = '{';\n          }\n          const rule
= ruleCallback(new CssRule(selector, content));\n          return
`${m[1]}${rule.selector}${m[3]}${contentPrefix}${rule.content}${suffix}`;\n      })\n
.replace(_quotedRe, ()
=> inputWithEscapedQuotes.blocks[nextQuoteIndex++]);\n}\n\n\nclass StringWithEscapedBlocks {\n
constructor(public escapedString: string, public blocks: string[]) {} }\n\nfunction escapeBlocks(\n input: string,
charPairs: Map<string, string>, placeholder: string): StringWithEscapedBlocks {\n const resultParts: string[] = [];\n
const escapedBlocks: string[] = [];\n let openCharCount = 0;\n let nonBlockStartIndex = 0;\n let blockStartIndex =
-1;\n let openChar: string|undefined;\n let closeChar: string|undefined;\n for (let i = 0; i < input.length; i++) {\n
const char = input[i];\n if (char === '\\') {\n     i++;\n } else if (char === closeChar) {\n     openCharCount--;\n
if (openCharCount === 0) {\n     escapedBlocks.push(input.substring(blockStartIndex, i));\n
resultParts.push(placeholder);\n     nonBlockStartIndex = i;\n     blockStartIndex = -1;\n     openChar =
closeChar = undefined;\n     }\n } else if (char === openChar) {\n     openCharCount++;\n } else if
(openCharCount === 0 && charPairs.has(char)) {\n     openChar = char;\n     closeChar = charPairs.get(char);\n
openCharCount = 1;\n     blockStartIndex = i + 1;\n     resultParts.push(input.substring(nonBlockStartIndex,
blockStartIndex));\n     }\n }\n if (blockStartIndex !== -1) {\n
escapedBlocks.push(input.substring(blockStartIndex));\n     resultParts.push(placeholder);\n } else {\n
resultParts.push(input.substring(nonBlockStartIndex));\n     }\n }\n return new
StringWithEscapedBlocks(resultParts.join(""), escapedBlocks);\n}\n\n"/**\n * @license\n * Copyright Google LLC
All Rights Reserved.\n * Use of this source code is governed by an MIT-style license that can be\n * found in
the LICENSE file at https://angular.io/license\n */\n\nimport { CompileDirectiveMetadata,
CompileIdentifierMetadata, CompileStylesheetMetadata, identifierModuleUrl, identifierName } from
'./compile_metadata';\nimport { ViewEncapsulation } from './core';\nimport * as o from './output/output_ast';\nimport
{ ShadowCss } from './shadow_css';\nimport { UrlResolver } from './url_resolver';\nimport { OutputContext } from
'./util';\n\nconst COMPONENT_VARIABLE = '%COMP%';\nexport const HOST_ATTR = `_${ng}host-
${COMPONENT_VARIABLE}`;\nexport const CONTENT_ATTR = `_${ng}content-
${COMPONENT_VARIABLE}`;\n\nexport class StylesCompileDependency {\n constructor(\n     public name:
string, public moduleUrl: string, public setValue: (value: any) => void) {} }\n\nexport class CompiledStylesheet
{\n constructor(\n     public outputCtx: OutputContext, public stylesVar: string,\n     public dependencies:
StylesCompileDependency[], public isShimmed: boolean,\n     public meta: CompileStylesheetMetadata)
{} }\n\nexport class StyleCompiler {\n private _shadowCss: ShadowCss = new ShadowCss();\n\n
constructor(private _urlResolver: UrlResolver) {} }\n\ncompileComponent(outputCtx: OutputContext, comp:
CompileDirectiveMetadata): CompiledStylesheet {\n const template = comp.template !;\n return
this._compileStyles(\n     outputCtx, comp, new CompileStylesheetMetadata({\n         styles: template.styles,\n

```



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    styleUrls: template.styleUrls,\n      moduleUrl: identifierModuleUrl(comp.type)\n    }},\n  this.needsStyleShim(comp), true);\n }\n\n compileStyles(\n  outputCtx: OutputContext, comp:\n  CompileDirectiveMetadata,\n  stylesheet: CompileStylesheetMetadata,\n  shim: boolean =\n  this.needsStyleShim(comp)): CompiledStylesheet {\n  return this._compileStyles(outputCtx, comp, stylesheet,\n  shim, false);\n }\n\n needsStyleShim(comp: CompileDirectiveMetadata): boolean {\n  return comp.template\n  !.encapsulation === ViewEncapsulation.Emulated;\n }\n\n private _compileStyles(\n  outputCtx:\n  OutputContext, comp: CompileDirectiveMetadata,\n  stylesheet: CompileStylesheetMetadata, shim: boolean,\n  isComponentStylesheet: boolean): CompiledStylesheet {\n  const styleExpressions: o.Expression[] =\n  stylesheet.styles.map(plainStyle => o.literal(this._shimIfNeeded(plainStyle, shim)));\n  const dependencies:\n  StylesCompileDependency[] = [];\n  stylesheet.styleUrls.forEach((styleUrl) => {\n  const exprIndex =\n  styleExpressions.length;\n  // Note: This placeholder will be filled later.\n  styleExpressions.push(null!);\n  dependencies.push(new StylesCompileDependency(\n  getStylesVarName(null), styleUrl,\n  (value) =>\n  styleExpressions[exprIndex] = outputCtx.importExpr(value));\n  });\n  // styles variable contains plain strings and\n  arrays of other styles arrays (recursive),\n  // so we set its type to dynamic.\n  const stylesVar =\n  getStylesVarName(isComponentStylesheet ? comp : null);\n  const stmt = o.variable(stylesVar)\n  .set(o.literalArr(\n  styleExpressions, new o.ArrayType(o.DYNAMIC_TYPE,\n  [o.TypeModifier.Const])))\n  .toDeclStmt(null, isComponentStylesheet ? [o.StmtModifier.Final] : [\n  o.StmtModifier.Final, o.StmtModifier.Exported\n  ]);\n  outputCtx.statements.push(stmt);\n  return new CompiledStylesheet(outputCtx, stylesVar, dependencies, shim, stylesheet);\n }\n\n private\n  _shimIfNeeded(style: string, shim: boolean): string {\n  return shim ? this._shadowCss.shimCssText(style,\n  CONTENT_ATTR, HOST_ATTR) : style;\n }\n\n\nfunction getStylesVarName(component:\n  CompileDirectiveMetadata|null): string {\n  let result = `styles`;\n  if (component) {\n  result +=\n  `_${identifierName(component.type)}`;\n  }\n  return result;\n}\n\n"/**\n * @license\n * Copyright Google LLC All Rights Reserved.\n * Use of this source code is governed by an MIT-style license that can be\n * found in the\n * LICENSE file at https://angular.io/license\n *\n * A path is an ordered set of elements. Typically a path is to\n * a\n * particular offset in a source file. The head of the list is the top\n * most node. The tail is the node that contains\n * the offset directly.\n * For example, the expression `a + b + c` might have an ast that looks\n * like:\n * +\n * /\n * a +\n * /\n * b c\n *\n * The path to the node at offset 9 would be `[ '+' at 1-10, '+' at 7-10, 'c' at\n * 9-10]` and the path the node at offset 1 would be\n * `[ '+' at 1-10, 'a' at 1-2]`.\n *\nexport class AstPath<T> {\n  constructor(private path: T[], public position: number = -1) {}\n  get empty(): boolean {\n  return !this.path ||\n  !this.path.length;\n }\n  get head(): T|undefined {\n  return this.path[0];\n }\n  get tail(): T|undefined {\n  return\n  this.path[this.path.length - 1];\n }\n  parentOf(node: T|undefined): T|undefined {\n  return node &&\n  this.path[this.path.indexOf(node) - 1];\n }\n  childOf(node: T): T|undefined {\n  return\n  this.path[this.path.indexOf(node) + 1];\n }\n  first<N extends T>(ctor: {new(...args: any[]): N}): N|undefined {\n  for (let i = this.path.length - 1; i >= 0; i--) {\n  let item = this.path[i];\n  if (item instanceof ctor) return\n  <N>item;\n  }\n  }\n  push(node: T) {\n  this.path.push(node);\n  }\n  pop(): T {\n  return this.path.pop()!;\n  }\n}\n\n"/**\n * @license\n * Copyright Google LLC All Rights Reserved.\n * Use of this source code is\n * governed by an MIT-style license that can be\n * found in the LICENSE file at https://angular.io/license\n *\nimport {AstPath} from './ast_path';\nimport {I18nMeta} from './i18n/i18n_ast';\nimport {ParseSourceSpan}\n  from './parse_util';\n\nexport interface Node {\n  sourceSpan: ParseSourceSpan;\n  visit(visitor: Visitor, context:\n  any): any;\n}\n\nexport abstract class NodeWithI18n implements Node {\n  constructor(public sourceSpan:\n  ParseSourceSpan, public i18n?: I18nMeta) {}\n  abstract visit(visitor: Visitor, context: any): any;\n}\n\nexport class Text extends NodeWithI18n {\n  constructor(public value: string, sourceSpan: ParseSourceSpan, i18n?: I18nMeta)\n  {\n  super(sourceSpan, i18n);\n  }\n  visit(visitor: Visitor, context: any): any {\n  return visitor.visitText(this,\n  context);\n  }\n}\n\nexport class Expansion extends NodeWithI18n {\n  constructor(\n  public switchValue:\n  string, public type: string, public cases: ExpansionCase[],\n  sourceSpan: ParseSourceSpan, public\n  switchValueSourceSpan: ParseSourceSpan, i18n?: I18nMeta) {\n  super(sourceSpan, i18n);\n  }\n  visit(visitor:\n  Visitor, context: any): any {\n  return visitor.visitExpansion(this, context);\n  }\n}\n\nexport class ExpansionCase

```

```

implements Node {
  constructor(
    public value: string, public expression: Node[], public sourceSpan:
    ParseSourceSpan,
    public valueSourceSpan: ParseSourceSpan, public expSourceSpan: ParseSourceSpan) {}
  visit(visitor: Visitor, context: any): any {
    return visitor.visitExpansionCase(this, context);
  }
}
export class
Attribute extends NodeWithI18n {
  constructor(
    public name: string, public value: string, sourceSpan:
    ParseSourceSpan,
    public valueSpan?: ParseSourceSpan, i18n?: I18nMeta) {
    super(sourceSpan, i18n);
  }
  visit(visitor: Visitor, context: any): any {
    return visitor.visitAttribute(this, context);
  }
}
export class
Element extends NodeWithI18n {
  constructor(
    public name: string, public attrs: Attribute[], public children:
    Node[],
    sourceSpan: ParseSourceSpan, public startSourceSpan: ParseSourceSpan,
    public endSourceSpan:
    ParseSourceSpan|null = null, i18n?: I18nMeta) {
    super(sourceSpan, i18n);
  }
  visit(visitor: Visitor, context:
  any): any {
    return visitor.visitElement(this, context);
  }
}
export class Comment implements Node {
  constructor(public value: string|null, public sourceSpan: ParseSourceSpan) {}
  visit(visitor: Visitor, context: any):
  any {
    return visitor.visitComment(this, context);
  }
}
export interface Visitor {
  // Returning a truthy
  value from `visit()` will prevent `visitAll()` from the call to the typed
  // method and result returned will become
  the result included in `visitAll()`'s result array.
  visit?(node: Node, context: any): any;
  visitElement(element:
  Element, context: any): any;
  visitAttribute(attribute: Attribute, context: any): any;
  visitText(text: Text, context:
  any): any;
  visitComment(comment: Comment, context: any): any;
  visitExpansion(expansion: Expansion,
  context: any): any;
  visitExpansionCase(expansionCase: ExpansionCase, context: any): any;
}
export function
visitAll(visitor: Visitor, nodes: Node[], context: any = null): any[] {
  const result: any[] = [];
  const visit =
  visitor.visit ?
  (ast: Node) => visitor.visit!(ast, context) || ast.visit(visitor, context) :
  (ast: Node) =>
  ast.visit(visitor, context);
  nodes.forEach(ast => {
    const astResult = visit(ast);
    if (astResult) {
      result.push(astResult);
    }
  });
  return result;
}
export class RecursiveVisitor implements Visitor {
  constructor() {}
  visitElement(ast: Element, context: any): any {
    this.visitChildren(context, visit => {
      visit(ast.attrs);
      visit(ast.children);
    });
  }
  visitAttribute(ast: Attribute, context: any): any {}
  visitText(ast: Text, context: any): any {}
  visitComment(ast: Comment, context: any): any {}
  visitExpansion(ast: Expansion, context: any): any {
    return this.visitChildren(context, visit => {
      visit(ast.cases);
    });
  }
  visitExpansionCase(ast: ExpansionCase, context: any): any {}
  private
  visitChildren<T extends Node>(
    context: any, cb: (visit: (<V extends Node>(children: V[]|undefined) => void))
    => void) {
    let results: any[][] = [];
    let t = this;
    function visit<T extends Node>(children: T[]|undefined)
    {
      if (children) results.push(visitAll(t, children, context));
    }
    cb(visit);
    return
    Array.prototype.concat.apply([], results);
  }
}
export type HtmlAstPath = AstPath<Node>;
function
spanOf(ast: Node) {
  const start = ast.sourceSpan.start.offset;
  let end = ast.sourceSpan.end.offset;
  if (ast
  instanceof Element) {
    if (ast.endSourceSpan) {
      end = ast.endSourceSpan.end.offset;
    } else if
    (ast.children && ast.children.length) {
      end = spanOf(ast.children[ast.children.length - 1]).end;
    }
  }
  return {start, end};
}
export function findNode(nodes: Node[], position: number): HtmlAstPath {
  const path:
  Node[] = [];
  const visitor = new class extends RecursiveVisitor {
    visit(ast: Node, context: any): any {
      const span = spanOf(ast);
      if (span.start <= position && position < span.end) {
        path.push(ast);
      } else
      {
        // Returning a value here will result in the children being skipped.
        return true;
      }
    }
  };
  visitAll(visitor, nodes);
  return new AstPath<Node>(path, position);
}
/**
 * @license
 * Copyright
  Google LLC All Rights Reserved.
  * Use of this source code is governed by an MIT-style license that can be
  * found in the LICENSE file at https://angular.io/license
  */
import * as chars from './chars';
import
{ParseError, ParseLocation, ParseSourceFile, ParseSourceSpan} from './parse_util';
import
{DEFAULT_INTERPOLATION_CONFIG, InterpolationConfig} from './interpolation_config';
import
{NAMED_ENTITIES, TagContentType, TagDefinition} from './tags';
export enum TokenType {
  TAG_OPEN_START,
  TAG_OPEN_END,
  TAG_OPEN_END_VOID,
  TAG_CLOSE,
  INCOMPLETE_TAG_OPEN,
  TEXT,
  ESCAPABLE_RAW_TEXT,
  RAW_TEXT,
  COMMENT_START,
  COMMENT_END,
  CDATA_START,
  CDATA_END,
  ATTR_NAME,
  ATTR_QUOTE,
  ATTR_VALUE,
  DOC_TYPE,
  EXPANSION_FORM_START,
  EXPANSION_CASE_VALUE,
  EXPANSION_CASE_EXP_START,
  EXPANSION_CASE_EXP_END,
}

```

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EXPANSION_FORM_END,\n EOF\n}\n\nexport class Token {\n  constructor(\n    public type: TokenType|null,\n    public parts: string[], public sourceSpan: ParseSourceSpan) {}\n}\n\nexport class TokenError extends ParseError\n{\n  constructor(errorMsg: string, public tokenType: TokenType|null, span: ParseSourceSpan) {\n    super(span,\n    errorMsg);\n  }\n}\n\nexport class TokenizeResult {\n  constructor(\n    public tokens: Token[], public errors:\n    TokenError[],\n    public nonNormalizedIcuExpressions: Token[]) {}\n}\n\nexport interface LexerRange {\n  startPos: number;\n  startLine: number;\n  startCol: number;\n  endPos: number;\n}\n\n/**\n * Options that modify\n how the text is tokenized.\n */\nexport interface TokenizeOptions {\n  /** Whether to tokenize ICU messages\n (considered as text nodes when false). */\n  tokenizeExpansionForms?: boolean;\n  /** How to tokenize\n interpolation markers. */\n  interpolationConfig?: InterpolationConfig;\n  /**\n * The start and end point of the text\n to parse within the `source` string.\n * The entire `source` string is parsed if this is not provided.\n */\n  range?:\n  LexerRange;\n  /**\n * If this text is stored in a JavaScript string, then we have to deal with escape sequences.\n */\n  /**\n * **Example 1:**\n * \n * ```\n * "abc\\|\\|def\\ng|hi"\n * ```\n * \n * - The `\\|\\|` must be converted to\n `\\|\\|`.\n * - The `\\n` must be converted to a new line character in a token,\n * but it should not increment the\n current line for source mapping.\n * \n * **Example 2:**\n * \n * ```\n * "abc\\|\\| * def"\n * ```\n * \n * The line continuation (`\\` followed by a newline) should be removed from a token\n * but the new line should\n increment the current line for source mapping.\n */\n  escapedString?: boolean;\n  /**\n * If this text is stored in\n an external template (e.g. via `templateUrl`) then we need to decide\n * whether or not to normalize the line-\n endings (from `\\r\\n` to `\\n`) when processing ICU\n * expressions.\n * \n * If `true` then we will normalize ICU\n expression line endings.\n * The default is `false`, but this will be switched in a future major release.\n */\n  i18nNormalizeLineEndingsInICUs?: boolean;\n  /**\n * An array of characters that should be considered as\n leading trivia.\n * Leading trivia are characters that are not important to the developer, and so should not be\n * included in source-map segments. A common example is whitespace.\n */\n  leadingTriviaChars?: string[];\n  /**\n * If true, do not convert CRLF to LF.\n */\n  preserveLineEndings?: boolean;\n}\n\nexport function\n tokenize(\n  source: string, url: string, getTagDefinition: (tagName: string) => TagDefinition,\n  options:\n  TokenizeOptions = {}): TokenizeResult {\n  const tokenizer = new _Tokenizer(new ParseSourceFile(source, url),\n  getTagDefinition, options);\n  tokenizer.tokenize();\n  return new TokenizeResult(\n  mergeTextTokens(tokenizer.tokens), tokenizer.errors, tokenizer.nonNormalizedIcuExpressions);\n}\n\nconst\n _CR_OR_CRLF_REGEX = /\\r\\n?/g;\n\nfunction _unexpectedCharacterErrorMsg(charCode: number): string {\n  const char = charCode === chars.EOF ? 'EOF' : String.fromCharCode(charCode);\n  return `Unexpected character\n \\`${char}``;\n}\n\nfunction _unknownEntityErrorMsg(entitySrc: string): string {\n  return `Unknown entity\n \\`${entitySrc}` - use the \\`&#lt;decimal>` or \\`&#x<hex>` syntax`;\n}\n\nfunction\n _unparsableEntityErrorMsg(type: CharacterReferenceType, entityStr: string): string {\n  return `Unable to parse\n entity \\`${entityStr}` - ${\n    type\n  } character reference entities must end with \\`;`;\n}\n\nenum\n CharacterReferenceType {\n  HEX = 'hexadecimal',\n  DEC = 'decimal',\n}\n\nclass _ControlFlowError {\n  constructor(public error: TokenError) {}\n}\n\n// See http://www.w3.org/TR/html51/syntax.html#writing\n\nclass\n _Tokenizer {\n  private _cursor: CharacterCursor;\n  private _tokenizeIcu: boolean;\n  private _interpolationConfig:\n  InterpolationConfig;\n  private _leadingTriviaCodePoints: number[]|undefined;\n  private _currentTokenStart:\n  CharacterCursor|null = null;\n  private _currentTokenType: TokenType|null = null;\n  private _expansionCaseStack:\n  TokenType[] = [];\n  private _inInterpolation: boolean = false;\n  private readonly _preserveLineEndings: boolean;\n  private readonly _escapedString: boolean;\n  private readonly _i18nNormalizeLineEndingsInICUs: boolean;\n  tokens: Token[] = [];\n  errors: TokenError[] = [];\n  nonNormalizedIcuExpressions: Token[] = [];\n  /**\n * \n * @param _file The html source file being tokenized.\n * @param _getTagDefinition A function that will retrieve a\n tag definition for a given tag name.\n * @param options Configuration of the tokenization.\n */\n  constructor(\n  _file: ParseSourceFile, private _getTagDefinition: (tagName: string) => TagDefinition,\n  options:\n  TokenizeOptions) {\n    this._tokenizeIcu = options.tokenizeExpansionForms || false;\n    this._interpolationConfig =\n    options.interpolationConfig || DEFAULT_INTERPOLATION_CONFIG;\n    this._leadingTriviaCodePoints =\n    options.leadingTriviaChars && options.leadingTriviaChars.map(c => c.codePointAt(0) || 0);\n    const range =\n    options.range || {endPos: _file.content.length, startPos: 0, startLine: 0, startCol: 0};\n    this._cursor =

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options.escapedString ? new EscapedCharacterCursor(_file, range) : \n
new
PlainCharacterCursor(_file, range); \n this._preserveLineEndings = options.preserveLineEndings || false; \n
this._escapedString = options.escapedString || false; \n this._i18nNormalizeLineEndingsInICUs =
options.i18nNormalizeLineEndingsInICUs || false; \n try { \n this._cursor.init(); \n } catch (e) { \n
this.handleError(e); \n } \n } \n private _processCarriageReturns(content: string): string { \n if
(this._preserveLineEndings) { \n return content; \n } \n //
http://www.w3.org/TR/html5/syntax.html#preprocessing-the-input-stream \n // In order to keep the original
position in the source, we can not \n // pre-process it. \n // Instead CRs are processed right before instantiating the
tokens. \n return content.replace(_CR_OR_CRLF_REGEXP, '\n'); \n } \n tokenize(): void { \n while
(this._cursor.peek() !== chars.$EOF) { \n const start = this._cursor.clone(); \n try { \n if
(this._attemptCharCode(chars.$LT)) { \n if (this._attemptCharCode(chars.$BANG)) { \n if
(this._attemptCharCode(chars.$LBRACKET)) { \n this._consumeCdata(start); \n } else if
(this._attemptCharCode(chars.$MINUS)) { \n this._consumeComment(start); \n } else { \n
this._consumeDocType(start); \n } \n } else if (this._attemptCharCode(chars.$SLASH)) { \n
this._consumeTagClose(start); \n } else { \n this._consumeTagOpen(start); \n } \n } else if
(!this._tokenizeIcu && this._tokenizeExpansionForm()) { \n this._consumeText(); \n } \n } catch (e)
{ \n this.handleError(e); \n } \n } \n this._beginToken(TokenType.EOF); \n this._endToken([]); \n } \n
/** \n * @returns whether an ICU token has been created \n * @internal \n */ \n private
_tokenizeExpansionForm(): boolean { \n if (this.isExpansionFormStart()) { \n
this._consumeExpansionFormStart(); \n return true; \n } \n if (isExpansionCaseStart(this._cursor.peek()) &&
this.isInExpansionForm()) { \n this._consumeExpansionCaseStart(); \n return true; \n } \n if
(this._cursor.peek() === chars.$RBRACE) { \n if (this.isInExpansionCase()) { \n
this._consumeExpansionCaseEnd(); \n return true; \n } \n if (this.isInExpansionForm()) { \n
this._consumeExpansionFormEnd(); \n return true; \n } \n } \n return false; \n } \n private
_beginToken(type: TokenType, start = this._cursor.clone()) { \n this._currentTokenStart = start; \n
this._currentTokenType = type; \n } \n private _endToken(parts: string[], end?: CharacterCursor): Token { \n if
(this._currentTokenStart === null) { \n throw new TokenError(\n 'Programming error - attempted to end a
token when there was no start to the token', \n this._currentTokenType, this._cursor.getSpan(end)); \n } \n if
(this._currentTokenType === null) { \n throw new TokenError(\n 'Programming error - attempted to end a
token which has no token type', null, \n this._cursor.getSpan(this._currentTokenStart)); \n } \n const token =
new Token(\n this._currentTokenType, parts, \n this._cursor.getSpan(this._currentTokenStart,
this._leadingTriviaCodePoints)); \n this.tokens.push(token); \n this._currentTokenStart = null; \n
this._currentTokenType = null; \n return token; \n } \n private _createError(msg: string, span: ParseSourceSpan):
_ControlFlowError { \n if (this.isInExpansionForm()) { \n msg += ` (Do you have an unescaped \"\{\" in your
template? Use \"\{\{ '{ }'\}) to escape it.`; \n } \n const error = new TokenError(msg, this._currentTokenType,
span); \n this._currentTokenStart = null; \n this._currentTokenType = null; \n return new
_ControlFlowError(error); \n } \n private handleError(e: any) { \n if (e instanceof CursorError) { \n e =
this._createError(e.msg, this._cursor.getSpan(e.cursor)); \n } \n if (e instanceof _ControlFlowError) { \n
this.errors.push(e.error); \n } else { \n throw e; \n } \n } \n private _attemptCharCode(charCode: number):
boolean { \n if (this._cursor.peek() === charCode) { \n this._cursor.advance(); \n return true; \n } \n return
false; \n } \n private _attemptCharCodeCaseInsensitive(charCode: number): boolean { \n if
(compareCharCodeCaseInsensitive(this._cursor.peek(), charCode)) { \n this._cursor.advance(); \n return true; \n
} \n return false; \n } \n private _requireCharCode(charCode: number) { \n const location =
this._cursor.clone(); \n if (!this._attemptCharCode(charCode)) { \n throw this._createError(\n
_unexpectedCharacterErrorMsg(this._cursor.peek()), this._cursor.getSpan(location)); \n } \n } \n private
_attemptStr(chars: string): boolean { \n const len = chars.length; \n if (this._cursor.charsLeft() < len) { \n return
false; \n } \n const initialPosition = this._cursor.clone(); \n for (let i = 0; i < len; i++) { \n if
(!this._attemptCharCode(chars.charCodeAt(i))) { \n // If attempting to parse the string fails, we want to reset the

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parser\n    // to where it was before the attempt\n    this._cursor = initialPosition;\n    return false;\n    }\n}\nreturn true;\n}\n\nprivate _attemptStrCaseInsensitive(chars: string): boolean {\n    for (let i = 0; i <  
chars.length; i++) {\n        if (!this._attemptCharCodeCaseInsensitive(chars.charCodeAt(i))) {\n            return false;\n        }\n    }\n    return true;\n}\n\nprivate _requireStr(chars: string) {\n    const location = this._cursor.clone();\n    if (!this._attemptStr(chars)) {\n        throw this._createError(\n            _unexpectedCharacterErrorMsg(this._cursor.peek(), this._cursor.getSpan(location));\n        );\n    }\n}\n\nprivate  
_attemptCharCodeUntilFn(predicate: (code: number) => boolean) {\n    while (!predicate(this._cursor.peek())) {\n        this._cursor.advance();\n    }\n}\n\nprivate _requireCharCodeUntilFn(predicate: (code: number) => boolean, len:  
number) {\n    const start = this._cursor.clone();\n    this._attemptCharCodeUntilFn(predicate);\n    if (this._cursor.diff(start) < len) {\n        throw this._createError(\n            _unexpectedCharacterErrorMsg(this._cursor.peek(), this._cursor.getSpan(start));\n        );\n    }\n}\n\nprivate  
_attemptUntilChar(char: number) {\n    while (this._cursor.peek() !== char) {\n        this._cursor.advance();\n    }\n}\n\nprivate _readChar(decodeEntities: boolean): string {\n    if (decodeEntities && this._cursor.peek() ===  
chars.$AMPERSAND) {\n        return this._decodeEntity();\n    } else {\n        // Don't rely upon reading directly from  
'_input' as the actual char value\n        // may have been generated from an escape sequence.\n        const char =  
String.fromCodePoint(this._cursor.peek());\n        this._cursor.advance();\n        return char;\n    }\n}\n\nprivate  
_decodeEntity(): string {\n    const start = this._cursor.clone();\n    this._cursor.advance();\n    if (this._attemptCharCode(chars.$HASH)) {\n        const isHex = this._attemptCharCode(chars.$x) ||  
this._attemptCharCode(chars.$X);\n        const codeStart = this._cursor.clone();\n        this._attemptCharCodeUntilFn(isDigitEntityEnd);\n        if (this._cursor.peek() !== chars.$SEMICOLON) {\n            //  
Advance cursor to include the peeked character in the string provided to the error\n            // message.\n            this._cursor.advance();\n            const entityType = isHex ? CharacterReferenceType.HEX :  
CharacterReferenceType.DEC;\n            throw this._createError(\n                _unparsableEntityErrorMsg(entityType,  
this._cursor.getChars(start)),\n                this._cursor.getSpan());\n        }\n        const strNum =  
this._cursor.getChars(codeStart);\n        this._cursor.advance();\n        try {\n            const charCode = parseInt(strNum,  
isHex ? 16 : 10);\n            return String.fromCharCode(charCode);\n        } catch {\n            throw this._createError(\n                _unknownEntityErrorMsg(this._cursor.getChars(start)), this._cursor.getSpan());\n        }\n    } else {\n        const  
nameStart = this._cursor.clone();\n        this._attemptCharCodeUntilFn(isNamedEntityEnd);\n        if (this._cursor.peek() !== chars.$SEMICOLON) {\n            this._cursor = nameStart;\n            return '&';\n        }\n        const  
name = this._cursor.getChars(nameStart);\n        this._cursor.advance();\n        const char =  
NAMED_ENTITIES[name];\n        if (!char) {\n            throw this._createError(_unknownEntityErrorMsg(name),  
this._cursor.getSpan(start));\n        }\n        return char;\n    }\n}\n\nprivate _consumeRawText(decodeEntities:  
boolean, endMarkerPredicate: () => boolean): Token {\n    this._beginToken(decodeEntities ?  
TokenType.ESCAPABLE_RAW_TEXT : TokenType.RAW_TEXT);\n    const parts: string[] = [];\n    while (true)  
{\n        const tagCloseStart = this._cursor.clone();\n        const foundEndMarker = endMarkerPredicate();\n        this._cursor = tagCloseStart;\n        if (foundEndMarker) {\n            break;\n        }\n        parts.push(this._readChar(decodeEntities));\n    }\n    return  
this._endToken([this._processCarriageReturns(parts.join(""))]);\n}\n\nprivate _consumeComment(start:  
CharacterCursor) {\n    this._beginToken(TokenType.COMMENT_START, start);\n    this._requireCharCode(chars.$MINUS);\n    this._endToken([]);\n    this._consumeRawText(false, () =>  
this._attemptStr('-->));\n    this._beginToken(TokenType.COMMENT_END);\n    this._requireStr('-->);\n    this._endToken([]);\n}\n\nprivate _consumeCdata(start: CharacterCursor) {\n    this._beginToken(TokenType.CDATA_START, start);\n    this._requireStr('CDATA[');\n    this._endToken([]);\n    this._consumeRawText(false, () => this._attemptStr(']]>));\n    this._beginToken(TokenType.CDATA_END);\n    this._requireStr(']]>);\n    this._endToken([]);\n}\n\nprivate _consumeDocType(start: CharacterCursor) {\n    this._beginToken(TokenType.DOC_TYPE, start);\n    const contentStart = this._cursor.clone();\n    this._attemptUntilChar(chars.$GT);\n    const content = this._cursor.getChars(contentStart);\n    this._cursor.advance();\n    this._endToken([content]);\n}\n\nprivate _consumePrefixAndName(): string[] {\n
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const nameOrPrefixStart = this._cursor.clone();\n  let prefix: string = ";\n  while (this._cursor.peek() !==
chars.$COLON && !isPrefixEnd(this._cursor.peek())) {\n    this._cursor.advance();\n  }\n  let nameStart:
CharacterCursor;\n  if (this._cursor.peek() === chars.$COLON) {\n    prefix =
this._cursor.getChars(nameOrPrefixStart);\n    this._cursor.advance();\n    nameStart = this._cursor.clone();\n  }
else {\n    nameStart = nameOrPrefixStart;\n  }\n  this._requireCharCodeUntilFn(isNameEnd, prefix === " ? 0 :
1);\n  const name = this._cursor.getChars(nameStart);\n  return [prefix, name];\n }\n\n private
_consumeTagOpen(start: CharacterCursor) {\n  let tagName: string;\n  let prefix: string;\n  let openTagToken:
Token|undefined;\n  try {\n    if (!chars.isAsciiLetter(this._cursor.peek())) {\n      throw this._createError(\n
_unexpectedCharacterErrorMsg(this._cursor.peek(), this._cursor.getSpan(start));\n    }\n    openTagToken =
this._consumeTagOpenStart(start);\n    prefix = openTagToken.parts[0];\n    tagName =
openTagToken.parts[1];\n    this._attemptCharCodeUntilFn(isNotWhitespace);\n    while (this._cursor.peek() !==
chars.$SLASH && this._cursor.peek() !== chars.$GT &&\n      this._cursor.peek() !== chars.$LT) {\n
this._consumeAttributeName();\n    this._attemptCharCodeUntilFn(isNotWhitespace);\n    if
(this._attemptCharCode(chars.$EQ)) {\n      this._attemptCharCodeUntilFn(isNotWhitespace);\n
this._consumeAttributeValue();\n    }\n    this._attemptCharCodeUntilFn(isNotWhitespace);\n  }\n  this._consumeTagOpenEnd();\n } catch (e) {\n  if (e instanceof _ControlFlowError) {\n    if (openTagToken)
{\n      // We errored before we could close the opening tag, so it is incomplete.\n      openTagToken.type =
TokenType.INCOMPLETE_TAG_OPEN;\n    } else {\n      // When the start tag is invalid, assume we want a
"<" as text.\n      // Back to back text tokens are merged at the end.\n      this._beginToken(TokenType.TEXT,
start);\n      this._endToken(['<']);\n    }\n    return;\n  }\n  throw e;\n }\n\n const
contentTokenType = this._getTagDefinition(tagName).contentType;\n  if (contentTokenType ===
TagContentType.RAW_TEXT) {\n    this._consumeRawTextWithTagClose(prefix, tagName, false);\n  } else if
(contentTokenType === TagContentType.ESCAPABLE_RAW_TEXT) {\n
this._consumeRawTextWithTagClose(prefix, tagName, true);\n  }\n }\n\n private
_consumeRawTextWithTagClose(prefix: string, tagName: string, decodeEntities: boolean) {\n  const textToken =
this._consumeRawText(decodeEntities, () => {\n    if (!this._attemptCharCode(chars.$LT)) return false;\n    if
(!this._attemptCharCode(chars.$SLASH)) return false;\n    this._attemptCharCodeUntilFn(isNotWhitespace);\n
if (!this._attemptStrCaseInsensitive(tagName)) return false;\n
this._attemptCharCodeUntilFn(isNotWhitespace);\n    return this._attemptCharCode(chars.$GT);\n  });\n  this._beginToken(TokenType.TAG_CLOSE);\n  this._requireCharCodeUntilFn(code => code === chars.$GT,
3);\n  this._cursor.advance(); // Consume the `>`\n  this._endToken([prefix, tagName]);\n }\n\n private
_consumeTagOpenStart(start: CharacterCursor) {\n  this._beginToken(TokenType.TAG_OPEN_START, start);\n
const parts = this._consumePrefixAndName();\n  return this._endToken(parts);\n }\n\n private
_consumeAttributeName() {\n  const attrNameStart = this._cursor.peek();\n  if (attrNameStart === chars.$SQ ||
attrNameStart === chars.$DQ) {\n    throw this._createError(_unexpectedCharacterErrorMsg(attrNameStart),
this._cursor.getSpan());\n  }\n  this._beginToken(TokenType.ATTR_NAME);\n  const prefixAndName =
this._consumePrefixAndName();\n  this._endToken(prefixAndName);\n }\n\n private _consumeAttributeValue()
{\n  let value: string;\n  if (this._cursor.peek() === chars.$SQ || this._cursor.peek() === chars.$DQ) {\n
this._beginToken(TokenType.ATTR_QUOTE);\n    const quoteChar = this._cursor.peek();\n
this._cursor.advance();\n    this._endToken([String.fromCharCode(quoteChar)]);\n
this._beginToken(TokenType.ATTR_VALUE);\n    const parts: string[] = [];\n    while (this._cursor.peek() !==
quoteChar) {\n      parts.push(this._readChar(true));\n    }\n    value = parts.join(");\n
this._endToken([this._processCarriageReturns(value)]);\n    this._beginToken(TokenType.ATTR_QUOTE);\n
this._cursor.advance();\n    this._endToken([String.fromCharCode(quoteChar)]);\n  } else {\n
this._beginToken(TokenType.ATTR_VALUE);\n    const valueStart = this._cursor.clone();\n
this._requireCharCodeUntilFn(isNameEnd, 1);\n    value = this._cursor.getChars(valueStart);\n
this._endToken([this._processCarriageReturns(value)]);\n  }\n }\n\n private _consumeTagOpenEnd() {\n  const
tokenType =\n    this._attemptCharCode(chars.$SLASH) ? TokenType.TAG_OPEN_END_VOID :

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TokenType.TAG_OPEN_END;\n this._beginToken(tokenType);\n this._requireCharCode(chars.$GT);\n
this._endToken([]);\n }\n\n private _consumeTagClose(start: CharacterCursor) {\n
this._beginToken(TokenType.TAG_CLOSE, start);\n this._attemptCharCodeUntilFn(isNotWhitespace);\n const
prefixAndName = this._consumePrefixAndName();\n this._attemptCharCodeUntilFn(isNotWhitespace);\n
this._requireCharCode(chars.$GT);\n this._endToken(prefixAndName);\n }\n\n private
_consumeExpansionFormStart() {\n this._beginToken(TokenType.EXPANSION_FORM_START);\n
this._requireCharCode(chars.$LBRACE);\n this._endToken([]);\n\n
this._expansionCaseStack.push(TokenType.EXPANSION_FORM_START);\n\n
this._beginToken(TokenType.RAW_TEXT);\n const condition = this._readUntil(chars.$COMMA);\n const
normalizedCondition = this._processCarriageReturns(condition);\n if (this._i18nNormalizeLineEndingsInICUs)
{\n // We explicitly want to normalize line endings for this text.\n this._endToken([normalizedCondition]);\n
} else {\n // We are not normalizing line endings.\n const conditionToken = this._endToken([condition]);\n
if (normalizedCondition !== condition) {\n this.nonNormalizedIcuExpressions.push(conditionToken);\n }\n
}\n this._requireCharCode(chars.$COMMA);\n this._attemptCharCodeUntilFn(isNotWhitespace);\n\n
this._beginToken(TokenType.RAW_TEXT);\n const type = this._readUntil(chars.$COMMA);\n
this._endToken([type]);\n this._requireCharCode(chars.$COMMA);\n\n
this._attemptCharCodeUntilFn(isNotWhitespace);\n }\n\n private _consumeExpansionCaseStart() {\n
this._beginToken(TokenType.EXPANSION_CASE_VALUE);\n const value =
this._readUntil(chars.$LBRACE).trim();\n this._endToken([value]);\n\n
this._attemptCharCodeUntilFn(isNotWhitespace);\n\n
this._beginToken(TokenType.EXPANSION_CASE_EXP_START);\n\n
this._requireCharCode(chars.$LBRACE);\n this._endToken([]);\n\n
this._attemptCharCodeUntilFn(isNotWhitespace);\n\n
this._expansionCaseStack.push(TokenType.EXPANSION_CASE_EXP_START);\n }\n\n private
_consumeExpansionCaseEnd() {\n this._beginToken(TokenType.EXPANSION_CASE_EXP_END);\n\n
this._requireCharCode(chars.$RBRACE);\n this._endToken([]);\n\n
this._attemptCharCodeUntilFn(isNotWhitespace);\n\n this._expansionCaseStack.pop();\n }\n\n private
_consumeExpansionFormEnd() {\n this._beginToken(TokenType.EXPANSION_FORM_END);\n\n
this._requireCharCode(chars.$RBRACE);\n this._endToken([]);\n\n this._expansionCaseStack.pop();\n }\n\n
private _consumeText() {\n const start = this._cursor.clone();\n this._beginToken(TokenType.TEXT, start);\n\n
const parts: string[] = [];\n\n do {\n if (this._interpolationConfig &&
this._attemptStr(this._interpolationConfig.start)) {\n parts.push(this._interpolationConfig.start);\n\n
this._inInterpolation = true;\n } else if (\n this._interpolationConfig && this._inInterpolation &&\n\n
this._attemptStr(this._interpolationConfig.end)) {\n parts.push(this._interpolationConfig.end);\n\n
this._inInterpolation = false;\n } else {\n parts.push(this._readChar(true));\n }\n } while
(!this._isTextEnd());\n\n this._endToken([this._processCarriageReturns(parts.join(""))]);\n }\n\n private
_isTextEnd(): boolean {\n if (this._cursor.peek() === chars.$LT || this._cursor.peek() === chars.$EOF) {\n\n
return true;\n }\n\n if (this._tokenizeIcu && !this._inInterpolation) {\n if (this.isExpansionFormStart()) {\n\n
// start of an expansion form\n return true;\n }\n\n if (this._cursor.peek() === chars.$RBRACE &&
this._isInExpansionCase()) {\n // end of and expansion case\n return true;\n }\n }\n\n return false;\n
}\n\n private _readUntil(char: number): string {\n const start = this._cursor.clone();\n\n
this._attemptUntilChar(char);\n return this._cursor.getChars(start);\n }\n\n private _isInExpansionCase():
boolean {\n return this._expansionCaseStack.length > 0 &&\n\n
this._expansionCaseStack[this._expansionCaseStack.length - 1] ===\n\n
TokenType.EXPANSION_CASE_EXP_START;\n }\n\n private _isInExpansionForm(): boolean {\n return\n\n
this._expansionCaseStack.length > 0 &&\n\n this._expansionCaseStack[this._expansionCaseStack.length - 1]
===\n\n TokenType.EXPANSION_FORM_START;\n }\n\n private isExpansionFormStart(): boolean {\n if\n\n
(this._cursor.peek() !== chars.$LBRACE) {\n return false;\n }\n\n if (this._interpolationConfig) {\n const

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start = this._cursor.clone();\n    const isInterpolation = this._attemptStr(this._interpolationConfig.start);\n    this._cursor = start;\n    return !isInterpolation;\n  }\n  return true;\n}\n\nfunction isNotWhitespace(code: number): boolean {\n  return !chars.isWhitespace(code) || code === chars.$EOF;\n}\n\nfunction isNameEnd(code: number): boolean {\n  return chars.isWhitespace(code) || code === chars.$GT || code === chars.$LT ||\n  code === chars.$SLASH || code === chars.$SQ || code === chars.$DQ || code === chars.$EQ;\n}\n\nfunction isPrefixEnd(code: number): boolean {\n  return (code < chars.$a || chars.$z < code) && (code < chars.$A || chars.$Z < code) &&\n  (code < chars.$0 || code > chars.$9);\n}\n\nfunction isDigitEntityEnd(code: number): boolean {\n  return code == chars.$SEMICOLON || code == chars.$EOF || !chars.isAsciiHexDigit(code);\n}\n\nfunction isNamedEntityEnd(code: number): boolean {\n  return code == chars.$SEMICOLON || code == chars.$EOF || !chars.isAsciiLetter(code);\n}\n\nfunction isExpansionCaseStart(peek: number): boolean {\n  return peek !== chars.$RBRACE;\n}\n\nfunction compareCharCodeCaseInsensitive(code1: number, code2: number): boolean {\n  return toUpperCaseCharCode(code1) == toUpperCaseCharCode(code2);\n}\n\nfunction toUpperCaseCharCode(code: number): number {\n  return code >= chars.$a && code <= chars.$z ? code - chars.$a + chars.$A : code;\n}\n\nfunction mergeTextTokens(srcTokens: Token[]): Token[] {\n  const dstTokens: Token[] = [];\n  let lastDstToken: Token|undefined = undefined;\n  for (let i = 0; i < srcTokens.length; i++) {\n    const token = srcTokens[i];\n    if (lastDstToken && lastDstToken.type == TokenType.TEXT && token.type == TokenType.TEXT) {\n      lastDstToken.parts[0]! += token.parts[0];\n      lastDstToken.sourceSpan.end = token.sourceSpan.end;\n    } else {\n      lastDstToken = token;\n      dstTokens.push(lastDstToken);\n    }\n  }\n  return dstTokens;\n}\n\n/**\n * The _Tokenizer uses objects of this type to move through the input text,\n * extracting \"parsed characters\". These could be more than one actual character\n * if the text contains escape sequences.\n */\ninterface CharacterCursor {\n  /** Initialize the cursor. */\n  init(): void;\n  /** The parsed character at the current cursor position. */\n  peek(): number;\n  /** Advance the cursor by one parsed character. */\n  advance(): void;\n  /** Get a span from the marked start point to the current point. */\n  getSpan(start?: this, leadingTriviaCodePoints?: number[]): ParseSourceSpan;\n  /** Get the parsed characters from the marked start point to the current point. */\n  getChars(start: this): string;\n  /** The number of characters left before the end of the cursor. */\n  charsLeft(): number;\n  /** The number of characters between `this` cursor and `other` cursor. */\n  diff(other: this): number;\n  /** Make a copy of this cursor */\n  clone(): CharacterCursor;\n}\n\ninterface CursorState {\n  peek: number;\n  offset: number;\n  line: number;\n  column: number;\n}\n\nPlainCharacterCursor implements CharacterCursor {\n  protected state: CursorState;\n  protected file: ParseSourceFile;\n  protected input: string;\n  protected end: number;\n\n  constructor(fileOrCursor: PlainCharacterCursor);\n  constructor(fileOrCursor: ParseSourceFile, range: LexerRange);\n  constructor(fileOrCursor: ParseSourceFile|PlainCharacterCursor, range?: LexerRange) {\n    if (fileOrCursor instanceof PlainCharacterCursor) {\n      this.file = fileOrCursor.file;\n      this.input = fileOrCursor.input;\n      this.end = fileOrCursor.end;\n    }\n    const state = fileOrCursor.state;\n    // Note: avoid using `...fileOrCursor.state` here as that has a severe performance penalty.\n    // In ES5 bundles the object spread operator is translated into the `__assign` helper, which\n    // is not optimized by VMs as efficiently as a raw object literal. Since this constructor is\n    // called in tight loops, this difference matters.\n    this.state = {\n      peek: state.peek,\n      offset: state.offset,\n      line: state.line,\n      column: state.column,\n    };\n  } else {\n    if (!range) {\n      throw new Error(`Programming error: the range argument must be provided with a file argument.`);\n    }\n    this.file = fileOrCursor;\n    this.input = fileOrCursor.content;\n    this.end = range.endPos;\n    this.state = {\n      peek: -1,\n      offset: range.startPos,\n      line: range.startLine,\n      column: range.startCol,\n    };\n  }\n}\n\nclone(): PlainCharacterCursor {\n  return new PlainCharacterCursor(this);\n}\n\npeek() {\n  return this.state.peek;\n}\n\ncharsLeft() {\n  return this.end - this.state.offset;\n}\n\ndiff(other: this) {\n  return this.state.offset - other.state.offset;\n}\n\nadvance(): void {\n  this.advanceState(this.state);\n}\n\ninit(): void {\n  this.updatePeek(this.state);\n}\n\ngetSpan(start?: this, leadingTriviaCodePoints?: number[]): ParseSourceSpan {\n  start = start || this;\n  let fullStart = start;\n  if (leadingTriviaCodePoints) {\n    while (this.diff(start) > 0 && leadingTriviaCodePoints.indexOf(start.peek()) !== -1) {\n      if (fullStart === start) {\n        start = start.clone() as this;\n      }\n      start.advance();\n    }\n  }\n}

```



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const startLocation = this.locationFromCursor(start);\n  const endLocation = this.locationFromCursor(this);\n  const fullStartLocation =\n    fullStart !== start ? this.locationFromCursor(fullStart) : startLocation;\n  return\n    new ParseSourceSpan(startLocation, endLocation, fullStartLocation);\n  }\n\n  getChars(start: this): string {\n    return this.input.substring(start.state.offset, this.state.offset);\n  }\n\n  charAt(pos: number): number {\n    return\n      this.input.charCodeAt(pos);\n  }\n\n  protected advanceState(state: CursorState) {\n    if (state.offset >= this.end) {\n      this.state = state;\n      throw new CursorError("Unexpected character \"EOF\"", this);\n    }\n    const currentChar =\n      this.charAt(state.offset);\n    if (currentChar === chars.$LF) {\n      state.line++;\n      state.column = 0;\n    } else if\n      (!chars.isNewLine(currentChar)) {\n      state.column++;\n    }\n    state.offset++;\n    this.updatePeek(state);\n  }\n\n  protected updatePeek(state: CursorState): void {\n    state.peak = state.offset >= this.end ? chars.$EOF :\n      this.charAt(state.offset);\n  }\n\n  private locationFromCursor(cursor: this): ParseLocation {\n    return new\n      ParseLocation(\n        cursor.file, cursor.state.offset, cursor.state.line, cursor.state.column);\n  }\n}\n\nclass\n  EscapedCharacterCursor extends PlainCharacterCursor {\n  protected internalState: CursorState;\n\n  constructor(fileOrCursor: EscapedCharacterCursor);\n  constructor(fileOrCursor: ParseSourceFile, range:\n    LexerRange);\n  constructor(fileOrCursor: ParseSourceFile|EscapedCharacterCursor, range?:\n    LexerRange) {\n    if\n      (fileOrCursor instanceof EscapedCharacterCursor) {\n      super(fileOrCursor);\n      this.internalState =\n        {...fileOrCursor.internalState};\n    } else {\n      super(fileOrCursor, range!);\n      this.internalState = this.state;\n    }\n  }\n\n  advance(): void {\n    this.state = this.internalState;\n    super.advance();\n    this.processEscapeSequence();\n  }\n\n  init(): void {\n    super.init();\n    this.processEscapeSequence();\n  }\n\n  clone(): EscapedCharacterCursor {\n    return new EscapedCharacterCursor(this);\n  }\n\n  getChars(start: this):\n    string {\n    const cursor = start.clone();\n    let chars = "";\n    while (cursor.internalState.offset <\n      this.internalState.offset) {\n      chars += String.fromCodePoint(cursor.peak());\n      cursor.advance();\n    }\n    return chars;\n  }\n\n  /**\n   * Process the escape sequence that starts at the current position in the text.\n   *\n   * This method is called to ensure that `peek` has the unescaped value of escape sequences.\n   *\n   * protected\n    processEscapeSequence(): void {\n    const peek = () => this.internalState.peak;\n\n    if (peek() ===\n      chars.$BACKSLASH) {\n      // We have hit an escape sequence so we need the internal state to become\n      independent\n      // of the external state.\n      this.internalState = {...this.state};\n\n      // Move past the backslash\n      this.advanceState(this.internalState);\n\n      // First check for standard control char sequences\n      if (peek() ===\n        chars.$n) {\n        this.state.peak = chars.$LF;\n      } else if (peek() === chars.$r) {\n        this.state.peak =\n        chars.$CR;\n      } else if (peek() === chars.$v) {\n        this.state.peak = chars.$VTAB;\n      } else if (peek() ===\n        chars.$t) {\n        this.state.peak = chars.$TAB;\n      } else if (peek() === chars.$b) {\n        this.state.peak =\n        chars.$BSPACE;\n      } else if (peek() === chars.$f) {\n        this.state.peak = chars.$FF;\n      }\n\n      // Now\n      consider more complex sequences\n      else if (peek() === chars.$u) {\n        // Unicode code-point sequence\n        this.advanceState(this.internalState);\n        // advance past the `u` char\n        if (peek() === chars.$LBRACE) {\n          //\n          Variable length Unicode, e.g. `\\x{123}`\n          this.advanceState(this.internalState);\n          // advance past the ` ` char\n          // Advance past the variable number of hex digits until we hit a ` ` char\n          const digitStart = this.clone();\n          let length = 0;\n          while (peek() !== chars.$RBRACE) {\n            this.advanceState(this.internalState);\n            length++;\n          }\n          this.state.peak = this.decodeHexDigits(digitStart, length);\n        } else {\n          //\n          Fixed length Unicode, e.g. `\\u1234`\n          const digitStart = this.clone();\n          this.advanceState(this.internalState);\n          this.advanceState(this.internalState);\n          this.advanceState(this.internalState);\n          this.state.peak = this.decodeHexDigits(digitStart, 4);\n        }\n      }\n    }\n\n    else if (peek() === chars.$x) {\n      // Hex char code, e.g. `\\x2F`\n      this.advanceState(this.internalState);\n      //\n      advance past the `x` char\n      const digitStart = this.clone();\n      this.advanceState(this.internalState);\n      this.state.peak = this.decodeHexDigits(digitStart, 2);\n    }\n\n    else if (chars.isOctalDigit(peek())) {\n      //\n      Octal char code, e.g. `\\012`,\n      let octal = "";\n      let length = 0;\n      let previous = this.clone();\n      while\n        (chars.isOctalDigit(peek()) && length < 3) {\n        previous = this.clone();\n        octal +=\n        String.fromCodePoint(peek());\n        this.advanceState(this.internalState);\n        length++;\n      }\n      this.state.peak = parseInt(octal, 8);\n      // Backup one char\n      this.internalState = previous.internalState;\n    }\n\n    else if (chars.isNewLine(this.internalState.peak)) {\n      // Line continuation `\\` followed by a new line\n
```



```

lex.TokenType.EXPANSION_FORM_END) {\n  this.errors.push(\n    TreeError.create(null,
this._peek.sourceSpan, `Invalid ICU message. Missing '}'.`));\n  return;\n }\n const sourceSpan = new
ParseSourceSpan(\n  token.sourceSpan.start, this._peek.sourceSpan.end, token.sourceSpan.fullStart);\n
this._addToParent(new html.Expansion(\n  switchValue.parts[0], type.parts[0], cases, sourceSpan,
switchValue.sourceSpan));\n\n  this._advance();\n }\n\n private _parseExpansionCase(): html.ExpansionCase|null
{\n  const value = this._advance();\n\n  // read {\n  if (this._peek.type !==
lex.TokenType.EXPANSION_CASE_EXP_START) {\n    this.errors.push(\n      TreeError.create(null,
this._peek.sourceSpan, `Invalid ICU message. Missing '{'.`));\n    return null;\n  }\n\n  // read until }\n  const
start = this._advance();\n\n  const exp = this._collectExpansionExpTokens(start);\n  if (!exp) return null;\n\n
const end = this._advance();\n  exp.push(new lex.Token(lex.TokenType.EOF, [], end.sourceSpan));\n\n  // parse
everything in between { and }\n  const expansionCaseParser = new _TreeBuilder(exp, this.getTagDefinition);\n
expansionCaseParser.build();\n  if (expansionCaseParser.errors.length > 0) {\n    this.errors =
this.errors.concat(expansionCaseParser.errors);\n    return null;\n  }\n\n  const sourceSpan =\n    new
ParseSourceSpan(value.sourceSpan.start, end.sourceSpan.end, value.sourceSpan.fullStart);\n  const expSourceSpan
=\n    new ParseSourceSpan(start.sourceSpan.start, end.sourceSpan.end, start.sourceSpan.fullStart);\n  return
new html.ExpansionCase(\n    value.parts[0], expansionCaseParser.rootNodes, sourceSpan, value.sourceSpan,
expSourceSpan);\n }\n\n private _collectExpansionExpTokens(start: lex.Token): lex.Token[]|null {\n  const exp:
lex.Token[] = [];\n  const expansionFormStack = [lex.TokenType.EXPANSION_CASE_EXP_START];\n\n  while (true) {\n
  if (this._peek.type === lex.TokenType.EXPANSION_FORM_START ||\n    this._peek.type
=== lex.TokenType.EXPANSION_CASE_EXP_START) {\n    expansionFormStack.push(this._peek.type);\n
  }\n\n  if (this._peek.type === lex.TokenType.EXPANSION_CASE_EXP_END) {\n    if
(lastOnStack(expansionFormStack, lex.TokenType.EXPANSION_CASE_EXP_START)) {\n
expansionFormStack.pop();\n    if (expansionFormStack.length === 0) return exp;\n\n    } else {\n
this.errors.push(\n      TreeError.create(null, start.sourceSpan, `Invalid ICU message. Missing '}'.`));\n
return null;\n    }\n\n    if (this._peek.type === lex.TokenType.EXPANSION_FORM_END) {\n    if
(lastOnStack(expansionFormStack, lex.TokenType.EXPANSION_FORM_START)) {\n
expansionFormStack.pop();\n    } else {\n    this.errors.push(\n      TreeError.create(null, start.sourceSpan,
`Invalid ICU message. Missing '}'.`));\n    return null;\n    }\n\n    if (this._peek.type ===
lex.TokenType.EOF) {\n    this.errors.push(\n      TreeError.create(null, start.sourceSpan, `Invalid ICU
message. Missing '}'.`));\n    return null;\n    }\n\n    exp.push(this._advance());\n  }\n }\n\n private
_consumeText(token: lex.Token) {\n  let text = token.parts[0];\n  if (text.length > 0 && text[0] === '\n') {\n
const parent = this._getParentElement();\n  if (parent !== null && parent.children.length === 0 &&\n
this.getTagDefinition(parent.name).ignoreFirstLf) {\n    text = text.substring(1);\n  }\n }\n\n  if (text.length
> 0) {\n    this._addToParent(new html.Text(text, token.sourceSpan));\n  }\n }\n\n private _closeVoidElement():
void {\n  const el = this._getParentElement();\n  if (el && this.getTagDefinition(el.name).isVoid) {\n
this._elementStack.pop();\n  }\n }\n\n private _consumeStartTag(startTagToken: lex.Token) {\n  const [prefix,
name] = startTagToken.parts;\n  const attrs: html.Attribute[] = [];\n  while (this._peek.type ===
lex.TokenType.ATTR_NAME) {\n    attrs.push(this._consumeAttr(this._advance()));\n  }\n  const fullName =
this._getElementFullName(prefix, name, this._getParentElement());\n  let selfClosing = false;\n  // Note: There
could have been a tokenizer error\n  // so that we don't get a token for the end tag...\n  if (this._peek.type ===
lex.TokenType.TAG_OPEN_END_VOID) {\n    this._advance();\n    selfClosing = true;\n    const tagDef =
this.getTagDefinition(fullName);\n    if (!(tagDef.canSelfClose || getNsPrefix(fullName) !== null || tagDef.isVoid))
{\n    this.errors.push(TreeError.create(\n      fullName, startTagToken.sourceSpan,\n      `Only void and
foreign elements can be self closed \"${startTagToken.parts[1]}\"));\n    }\n    } else if (this._peek.type ===
lex.TokenType.TAG_OPEN_END) {\n    this._advance();\n    selfClosing = false;\n  }\n  const end =
this._peek.sourceSpan.start;\n  const span = new ParseSourceSpan(\n    startTagToken.sourceSpan.start, end,
startTagToken.sourceSpan.fullStart);\n  // Create a separate `startSpan` because `span` will be modified when there
is an `end` span.\n  const startSpan = new ParseSourceSpan(\n    startTagToken.sourceSpan.start, end,

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startTagToken.sourceSpan.fullStart);\n  const el = new html.Element(fullName, attrs, [], span, startSpan,
undefined);\n  this._pushElement(el);\n  if (selfClosing) {\n    // Elements that are self-closed have their
`endSourceSpan` set to the full span, as the\n    // element start tag also represents the end tag.\n    this._popElement(fullName, span);\n  } else if (startTagToken.type ===
lex.TokenType.INCOMPLETE_TAG_OPEN) {\n    // We already know the opening tag is not complete, so it is
unlikely it has a corresponding\n    // close tag. Let's optimistically parse it as a full element and emit an error.\n    this._popElement(fullName, null);\n    this.errors.push(\n      TreeError.create(fullName, span, `Opening tag
\"${fullName}\" not terminated.`));\n  }\n}\n\n private _pushElement(el: html.Element) {\n  const parentEl =
this._getParentElement();\n  if (parentEl && this.getTagDefinition(parentEl.name).isClosedByChild(el.name))
{\n    this._elementStack.pop();\n  }\n  this._addToParent(el);\n  this._elementStack.push(el);\n}\n\n private
_consumeEndTag(endTagToken: lex.Token) {\n  const fullName = this._getElementFullName(\n
endTagToken.parts[0], endTagToken.parts[1], this._getParentElement());\n  if
(this.getTagDefinition(fullName).isVoid) {\n    this.errors.push(TreeError.create(\n      fullName,
endTagToken.sourceSpan,\n      `Void elements do not have end tags \"${endTagToken.parts[1]}\"`));\n  } else if
(!this._popElement(fullName, endTagToken.sourceSpan)) {\n    const errMsg = `Unexpected closing tag \"${\n
fullName}\". It may happen when the tag has already been closed by another tag. For more info see
https://www.w3.org/TR/html5/syntax.html#closing-elements-that-have-IMPLIED-END-TAGS`;\n
this.errors.push(TreeError.create(fullName, endTagToken.sourceSpan, errMsg));\n  }\n}\n\n /**\n * Closes the
nearest element with the tag name `fullName` in the parse tree.\n * `endSourceSpan` is the span of the closing tag,
or null if the element does\n * not have a closing tag (for example, this happens when an incomplete\n * opening
tag is recovered).\n */\n private _popElement(fullName: string, endSourceSpan: ParseSourceSpan|null): boolean
{\n  for (let stackIndex = this._elementStack.length - 1; stackIndex >= 0; stackIndex--) {\n    const el =
this._elementStack[stackIndex];\n    if (el.name === fullName) {\n      // Record the parse span with the element
that is being closed. Any elements that are\n      // removed from the element stack at this point are closed
implicitly, so they won't get\n      // an end source span (as there is no explicit closing element).\n      el.endSourceSpan = endSourceSpan;\n      el.sourceSpan.end = endSourceSpan !== null ? endSourceSpan.end :
el.sourceSpan.end;\n      this._elementStack.splice(stackIndex, this._elementStack.length - stackIndex);\n      return true;\n    }\n  }\n  if (!this.getTagDefinition(el.name).closedByParent) {\n    return false;\n  }\n}\n\n private _consumeAttr(attrName: lex.Token): html.Attribute {\n  const fullName =
mergeNsAndName(attrName.parts[0], attrName.parts[1]);\n  let end = attrName.sourceSpan.end;\n  let value =
";\n  let valueSpan: ParseSourceSpan = undefined!;\n  if (this._peek.type === lex.TokenType.ATTR_QUOTE)
{\n    this._advance();\n  }\n  if (this._peek.type === lex.TokenType.ATTR_VALUE) {\n    const valueToken =
this._advance();\n    value = valueToken.parts[0];\n    end = valueToken.sourceSpan.end;\n    valueSpan =
valueToken.sourceSpan;\n  }\n  if (this._peek.type === lex.TokenType.ATTR_QUOTE) {\n    const quoteToken =
this._advance();\n    end = quoteToken.sourceSpan.end;\n  }\n  return new html.Attribute(\n    fullName,\n    value,\n    new ParseSourceSpan(attrName.sourceSpan.start, end, attrName.sourceSpan.fullStart),\n    valueSpan);\n}\n\n private _getParentElement(): html.Element|null {\n  return this._elementStack.length > 0 ?
this._elementStack[this._elementStack.length - 1] : null;\n}\n\n private _addToParent(node: html.Node) {\n  const parent = this._getParentElement();\n  if (parent != null) {\n    parent.children.push(node);\n  } else {\n    this.rootNodes.push(node);\n  }\n}\n\n private _getElementFullName(prefix: string, localName: string,
parentElement: html.Element|null):\n  string {\n    if (prefix === "") {\n      prefix =
this.getTagDefinition(localName).implicitNamespacePrefix || ";\n    }\n    if (prefix === "" && parentElement != null) {\n      const parentTagName = splitNsName(parentElement.name)[1];\n      const parentTagDefinition =
this.getTagDefinition(parentTagName);\n      if (!parentTagDefinition.preventNamespaceInheritance) {\n        prefix = getNsPrefix(parentElement.name);\n      }\n    }\n  }\n  return mergeNsAndName(prefix,
localName);\n}\n}\n\nfunction lastOnStack(stack: any[], element: any): boolean {\n  return stack.length > 0 &&
stack[stack.length - 1] === element;\n}\n"/**\n * @license\n * Copyright Google LLC All Rights Reserved.\n */\n * Use of this source code is governed by an MIT-style license that can be\n * found in the LICENSE file at

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https://angular.io/license\n *\n\nimport {getHtmlTagDefinition} from './html_tags';\nimport {TokenizeOptions}
from './lexer';\nimport {Parser, ParseTreeResult} from './parser';\n\nexport {ParseTreeResult, TreeError} from
 './parser';\n\nexport class HtmlParser extends Parser {\n  constructor() {\n    super(getHtmlTagDefinition);\n  }\n\n  parse(source: string, url: string, options?: TokenizeOptions): ParseTreeResult {\n    return super.parse(source, url,
options);\n  }\n}\n\n"/**\n * @license\n * Copyright Google LLC All Rights Reserved.\n *\n * Use of this source
code is governed by an MIT-style license that can be\n * found in the LICENSE file at https://angular.io/license\n
*\n\nimport * as html from './ast';\nimport {ParseTreeResult} from './parser';\nimport {NGSP_UNICODE} from
 './tags';\n\nexport const PRESERVE_WS_ATTR_NAME = 'ngPreserveWhitespaces';\n\nconst
SKIP_WS_TRIM_TAGS = new Set(['pre', 'template', 'textarea', 'script', 'style']);\n\n// Equivalent to \\s with \\u00a0
(non-breaking space) excluded.\n// Based on https://developer.mozilla.org/en-
US/docs/Web/JavaScript/Reference/Global_Objects/RegExp\nconst WS_CHARS = '
\\f\\n\\r\\t\\v\\u1680\\u180e\\u2000-\\u200a\\u2028\\u2029\\u202f\\u205f\\u3000\\uffeff';\nconst NO_WS_REGEXP
= new RegExp(`^[${WS_CHARS}]`);\nconst WS_REPLACE_REGEXP = new RegExp(`[${WS_CHARS}]{2,}`,
'g');\n\nfunction hasPreserveWhitespacesAttr(attrs: html.Attribute[]): boolean {\n  return attrs.some((attr:
html.Attribute) => attr.name === PRESERVE_WS_ATTR_NAME);\n}\n\n/**\n * Angular Dart introduced &nbsp;
as a placeholder for non-removable space, see:\n * https://github.com/dart-
lang/angular/blob/0bb611387d29d65b5af7f9d2515ab571fd3fbee4/_tests/test/compiler/preserve_whitespace_test.dart
#L25-L32\n * In Angular Dart &nbsp; is converted to the 0xE500 PUA (Private Use Areas) unicode character\n
* and later on replaced by a space. We are re-implementing the same idea here.\n *\n\nexport function
replaceNgsp(value: string): string {\n  // lexer is replacing the &nbsp; pseudo-entity with NGSP_UNICODE\n
return value.replace(new RegExp(NGSP_UNICODE, 'g'), ' ');\n}\n\n/**\n * This visitor can walk HTML parse tree
and remove / trim text nodes using the following rules:\n * - consider spaces, tabs and new lines as whitespace
characters;\n * - drop text nodes consisting of whitespace characters only;\n * - for all other text nodes replace
consecutive whitespace characters with one space;\n * - convert &nbsp; pseudo-entity to a single space;\n *\n
* Removal and trimming of whitespaces have positive performance impact (less code to generate\n * while compiling
templates, faster view creation). At the same time it can be \"destructive\"\n * in some cases (whitespaces can
influence layout). Because of the potential of breaking layout\n * this visitor is not activated by default in Angular 5
and people need to explicitly opt-in for\n * whitespace removal. The default option for whitespace removal will be
revisited in Angular 6\n * and might be changed to \"on\" by default.\n *\n\nexport class WhitespaceVisitor
implements html.Visitor {\n  visitElement(element: html.Element, context: any): any {\n    if
(SKIP_WS_TRIM_TAGS.has(element.name) || hasPreserveWhitespacesAttr(element.attrs)) {\n      // don't descent
into elements where we need to preserve whitespaces\n      // but still visit all attributes to eliminate one used as a
market to preserve WS\n      return new html.Element(\n        element.name, html.visitAll(this, element.attrs),
element.children, element.sourceSpan,\n        element.startSourceSpan, element.endSourceSpan, element.i18n);\n
}\n\n    return new html.Element(\n      element.name, element.attrs, visitAllWithSiblings(this, element.children),\n
      element.sourceSpan, element.startSourceSpan, element.endSourceSpan, element.i18n);\n  }\n\n  visitAttribute(attribute: html.Attribute, context: any): any {\n    return attribute.name !==
PRESERVE_WS_ATTR_NAME ? attribute : null;\n  }\n\n  visitText(text: html.Text, context:
SiblingVisitorContext|null): any {\n    const isNotBlank = text.value.match(NO_WS_REGEXP);\n    const
hasExpansionSibling = context &&\n      (context.prev instanceof html.Expansion || context.next instanceof
html.Expansion);\n\n    if (isNotBlank || hasExpansionSibling) {\n      return new html.Text(\n
replaceNgsp(text.value).replace(WS_REPLACE_REGEXP, ' '), text.sourceSpan, text.i18n);\n    }\n\n    return
null;\n  }\n\n  visitComment(comment: html.Comment, context: any): any {\n    return comment;\n  }\n\n  visitExpansion(expansion: html.Expansion, context: any): any {\n    return expansion;\n  }\n\n  visitExpansionCase(expansionCase: html.ExpansionCase, context: any): any {\n    return expansionCase;\n
}\n}\n\nexport function removeWhitespaces(htmlAstWithErrors: ParseTreeResult): ParseTreeResult {\n  return new
ParseTreeResult(\n    html.visitAll(new WhitespaceVisitor(), htmlAstWithErrors.rootNodes),\n
htmlAstWithErrors.errors);\n}\n\ninterface SiblingVisitorContext {\n  prev: html.Node|undefined;\n  next:

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html.Node|undefined;\n\nfunction visitAllWithSiblings(visitor: WhitespaceVisitor, nodes: html.Node[]): any[]
{\n  const result: any[] = [];\n  nodes.forEach((ast, i) => {\n    const context: SiblingVisitorContext = {prev:
nodes[i - 1], next: nodes[i + 1]};\n    const astResult = ast.visit(visitor, context);\n    if (astResult) {\n
result.push(astResult);\n    }\n  });\n  return result;\n}\n\n"/**\n * @license\n * Copyright Google LLC All Rights
Reserved.\n * Use of this source code is governed by an MIT-style license that can be\n * found in the
LICENSE file at https://angular.io/license\n */\n\nimport {ParseError, ParseSourceSpan} from
'./parse_util';\n\nimport * as html from './ast';\n\n// http://cldr.unicode.org/index/cldr-spec/plural-rules\nconst
PLURAL_CASES: string[] = ['zero', 'one', 'two', 'few', 'many', 'other'];\n\n/**\n * Expands special forms into
elements.\n * For example,\n * ``\n * { messages.length, plural,\n *   =0 {zero}\n *   =1 {one}\n *   other
{more than one}\n * }\n * ``\n * will be expanded into\n * ``\n * <ng-container
[ngPlural]=\"messages.length\">\n *   <ng-template ngPluralCase=\"=0\">zero</ng-template>\n *   <ng-template
ngPluralCase=\"=1\">one</ng-template>\n *   <ng-template ngPluralCase=\"other\">more than one</ng-
template>\n * </ng-container>\n * ``\n */\n\nexport function expandNodes(nodes: html.Node[]): ExpansionResult {\n
const expander = new _Expander();\n  return new ExpansionResult(html.visitAll(expander, nodes),
expander.isExpanded, expander.errors);\n}\n\nexport class ExpansionResult {\n  constructor(public nodes:
html.Node[], public expanded: boolean, public errors: ParseError[]) {}\n}\n\nexport class ExpansionError extends
ParseError {\n  constructor(span: ParseSourceSpan, errorMsg: string) {\n    super(span, errorMsg);\n  }\n}\n\n/**\n
 * Expand expansion forms (plural, select) to directives\n * @internal\n */\n\nexport class _Expander implements
html.Visitor {\n  isExpanded: boolean = false;\n  errors: ParseError[] = [];\n\n  visitElement(element: html.Element,
context: any): any {\n    return new html.Element(\n      element.name, element.attrs, html.visitAll(this,
element.children), element.sourceSpan,\n      element.startSourceSpan, element.endSourceSpan);\n  }\n\n  visitAttribute(attribute: html.Attribute, context: any): any {\n    return attribute;\n  }\n\n  visitText(text: html.Text,
context: any): any {\n    return text;\n  }\n\n  visitComment(comment: html.Comment, context: any): any {\n
return comment;\n  }\n\n  visitExpansion(icu: html.Expansion, context: any): any {\n    this.isExpanded = true;\n
return icu.type == 'plural' ? _expandPluralForm(icu, this.errors) :\n      _expandDefaultForm(icu,
this.errors);\n  }\n\n  visitExpansionCase(icuCase: html.ExpansionCase, context: any): any {\n    throw new
Error('Should not be reached');\n  }\n}\n\n// Plural forms are expanded to `NgPlural` and `NgPluralCase`\n\nfunction
_expandPluralForm(ast: html.Expansion, errors: ParseError[]): html.Element {\n  const children = ast.cases.map(c
=> {\n    if (PLURAL_CASES.indexOf(c.value) == -1 && !c.value.match(/^\d+$/)) {\n      errors.push(new
ExpansionError(\n        c.valueSourceSpan,\n        `Plural cases should be \"=<number>\" or one of
${PLURAL_CASES.join(', ')});\n    }\n\n    const expansionResult = expandNodes(c.expression);\n    errors.push(...expansionResult.errors);\n\n    return new html.Element(\n      `ng-template`, [new
html.Attribute('ngPluralCase', `${c.value}`, c.valueSourceSpan)],\n      expansionResult.nodes, c.sourceSpan,
c.sourceSpan, c.sourceSpan);\n  });\n  const switchAttr = new html.Attribute(['ngPlural'], ast.switchValue,
ast.switchValueSourceSpan);\n  return new html.Element(\n    'ng-container', [switchAttr], children,
ast.sourceSpan, ast.sourceSpan, ast.sourceSpan);\n}\n\n// ICU messages (excluding plural form) are expanded to
`NgSwitch` and `NgSwitchCase`\n\nfunction _expandDefaultForm(ast: html.Expansion, errors: ParseError[]):
html.Element {\n  const children = ast.cases.map(c => {\n    const expansionResult = expandNodes(c.expression);\n
errors.push(...expansionResult.errors);\n\n    if (c.value === 'other') {\n      // other is the default case when no
values match\n      return new html.Element(\n        `ng-template`, [new html.Attribute('ngSwitchDefault', '',
c.valueSourceSpan)],\n        expansionResult.nodes, c.sourceSpan, c.sourceSpan, c.sourceSpan);\n    }\n\n    return
new html.Element(\n      `ng-template`, [new html.Attribute('ngSwitchCase', `${c.value}`, c.valueSourceSpan)],\n
      expansionResult.nodes, c.sourceSpan, c.sourceSpan, c.sourceSpan);\n  });\n  const switchAttr = new
html.Attribute(['ngSwitch'], ast.switchValue, ast.switchValueSourceSpan);\n  return new html.Element(\n    'ng-
container', [switchAttr], children, ast.sourceSpan, ast.sourceSpan, ast.sourceSpan);\n}\n\n"/**\n * @license\n *
Copyright Google LLC All Rights Reserved.\n * Use of this source code is governed by an MIT-style license
that can be\n * found in the LICENSE file at https://angular.io/license\n */\n\nimport {AstPath} from
'./ast_path';\n\nimport {CompileDirectiveSummary, CompileProviderMetadata, CompileTokenMetadata} from

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'./compile_metadata';\nimport {SecurityContext} from './core';\nimport {ASTWithSource, BindingType,
BoundElementProperty, ParsedEvent, ParsedEventType, ParsedVariable} from './expression_parser/ast';\nimport
{LifecycleHooks} from './lifecycle_reflector';\nimport {ParseSourceSpan} from './parse_util';\n\n\n/**\n * An
Abstract Syntax Tree node representing part of a parsed Angular template.\n */\nexport interface TemplateAst {\n
/**\n * The source span from which this node was parsed.\n */\n sourceSpan: ParseSourceSpan;\n\n /**\n *
Visit this node and possibly transform it.\n */\n visit(visitor: TemplateAstVisitor, context: any): any;\n}\n\n/**\n *
A segment of text within the template.\n */\nexport class TextAst implements TemplateAst {\n constructor(\n
public value: string, public ngContentIndex: number, public sourceSpan: ParseSourceSpan) {}\n visit(visitor:
TemplateAstVisitor, context: any): any {\n return visitor.visitText(this, context);\n }\n}\n\n/**\n * A bound
expression within the text of a template.\n */\nexport class BoundTextAst implements TemplateAst {\n
constructor(\n public value: ASTWithSource, public ngContentIndex: number,\n public sourceSpan:
ParseSourceSpan) {}\n visit(visitor: TemplateAstVisitor, context: any): any {\n return visitor.visitBoundText(this,
context);\n }\n}\n\n/**\n * A plain attribute on an element.\n */\nexport class AttrAst implements TemplateAst {\n
constructor(public name: string, public value: string, public sourceSpan: ParseSourceSpan) {}\n visit(visitor:
TemplateAstVisitor, context: any): any {\n return visitor.visitAttr(this, context);\n }\n}\n\nexport const enum
PropertyBindingType {\n // A normal binding to a property (e.g. `[property]="expression"`).\n Property,\n // A
binding to an element attribute (e.g. `[attr.name]="expression"`).\n Attribute,\n // A binding to a CSS class (e.g.
`[class.name]="condition"`).\n Class,\n // A binding to a style rule (e.g. `[style.rule]="expression"`).\n Style,\n
// A binding to an animation reference (e.g. `[animate.key]="expression"`).\n Animation,\n}\n\nconst
BoundPropertyMapping = {\n [BindingType.Animation]: PropertyBindingType.Animation,\n
[BindingType.Attribute]: PropertyBindingType.Attribute,\n [BindingType.Class]: PropertyBindingType.Class,\n
[BindingType.Property]: PropertyBindingType.Property,\n [BindingType.Style]:
PropertyBindingType.Style,\n};\n\n/**\n * A binding for an element property (e.g. `[property]="expression"`) or
an animation trigger (e.g. `[@trigger]="stateExp"`).\n */\nexport class BoundElementPropertyAst implements
TemplateAst {\n readonly isAnimation: boolean;\n\n constructor(\n public name: string, public type:
PropertyBindingType,\n public securityContext: SecurityContext, public value: ASTWithSource,\n public
unit: string|null, public sourceSpan: ParseSourceSpan) {\n this.isAnimation = this.type ===
PropertyBindingType.Animation;\n }\n\n static fromBoundProperty(prop: BoundElementProperty) {\n const
type = BoundPropertyMapping[prop.type];\n return new BoundElementPropertyAst(\n prop.name, type,
prop.securityContext, prop.value, prop.unit, prop.sourceSpan);\n }\n\n visit(visitor: TemplateAstVisitor, context:
any): any {\n return visitor.visitElementProperty(this, context);\n }\n}\n\n/**\n * A binding for an element event
(e.g. `(event)="handler()`) or an animation trigger event (e.g. `(@trigger.phase)="callback($event)`).\n */\n
export class BoundEventAst implements TemplateAst {\n readonly fullName: string;\n readonly isAnimation:
boolean;\n\n constructor(\n public name: string, public target: string|null, public phase: string|null,\n
public handler: ASTWithSource, public sourceSpan: ParseSourceSpan,\n public handlerSpan: ParseSourceSpan) {\n
this.fullName = BoundEventAst.calcFullName(this.name, this.target, this.phase);\n this.isAnimation =
!!this.phase;\n }\n\n static calcFullName(name: string, target: string|null, phase: string|null): string {\n
if (target) {\n return `${target}.${name}`;\n }\n if (phase) {\n return `@${name}.${phase}`;\n }\n\n return
name;\n }\n\n static fromParsedEvent(event: ParsedEvent) {\n const target: string|null = event.type ===
ParsedEventType.Regular ? event.targetOrPhase : null;\n const phase: string|null =\n event.type ===
ParsedEventType.Animation ? event.targetOrPhase : null;\n return new BoundEventAst(\n event.name, target,
phase, event.handler, event.sourceSpan, event.handlerSpan);\n }\n\n visit(visitor: TemplateAstVisitor, context:
any): any {\n return visitor.visitEvent(this, context);\n }\n}\n\n/**\n * A reference declaration on an element (e.g.
`let someName="expression"`).\n */\nexport class ReferenceAst implements TemplateAst {\n constructor(\n
public name: string, public value: CompileTokenMetadata, public originalValue: string,\n public sourceSpan:
ParseSourceSpan) {}\n visit(visitor: TemplateAstVisitor, context: any): any {\n return visitor.visitReference(this,
context);\n }\n}\n\n/**\n * A variable declaration on a <ng-template> (e.g. `var-
someName="someLocalName"`).\n */\nexport class VariableAst implements TemplateAst {\n constructor(\n

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EmbeddedTemplateAst, context: any): void {}
visitElement(ast: ElementAst, context: any): void {}
visitReference(ast: ReferenceAst, context: any): void {}
visitVariable(ast: VariableAst, context: any): void {}
visitEvent(ast: BoundEventAst, context: any): void {}
visitElementProperty(ast: BoundElementPropertyAst, context: any): void {}
visitAttr(ast: AttrAst, context: any): void {}
visitBoundText(ast: BoundTextAst, context: any): void {}
visitText(ast: TextAst, context: any): void {}
visitDirective(ast: DirectiveAst, context: any): void {}
visitDirectiveProperty(ast: BoundDirectivePropertyAst, context: any): void {}
}

Base class that can be used to build a visitor that visits each node in an template ast recursively.
RecursiveTemplateAstVisitor extends NullTemplateVisitor implements TemplateAstVisitor {
  constructor() {
    super();
  }
  // Nodes with children
  visitEmbeddedTemplate(ast: EmbeddedTemplateAst, context: any): any {
    return this.visitChildren(context, visit => {
      visit(ast.attrs);
      visit(ast.references);
      visit(ast.variables);
      visit(ast.directives);
      visit(ast.providers);
      visit(ast.children);
    });
  }
  visitElement(ast: ElementAst, context: any): any {
    return this.visitChildren(context, visit => {
      visit(ast.attrs);
      visit(ast.inputs);
      visit(ast.outputs);
      visit(ast.references);
      visit(ast.directives);
      visit(ast.providers);
      visit(ast.children);
    });
  }
  visitDirective(ast: DirectiveAst, context: any): any {
    return this.visitChildren(context, visit => {
      visit(ast.inputs);
      visit(ast.hostProperties);
      visit(ast.hostEvents);
    });
  }
  protected visitChildren(context: any, cb: (visit: (<V extends TemplateAst>(children: V[]|undefined) => void)) => void) {
    let results: any[][] = [];
    let t = this;
    function visit(<T extends TemplateAst>(children: T[]|undefined) {
      if (children && children.length)
        results.push(templateVisitAll(t, children, context));
    })
    cb(visit);
    return Array.prototype.concat.apply([], results);
  }
}

Visit every node in a list of TemplateAst's with the given TemplateAstVisitor.
export function templateVisitAll(visitor: TemplateAstVisitor, asts: TemplateAst[], context: any = null): any[] {
  const result: any[] = [];
  const visit = visitor.visit ? (ast: TemplateAst) => visitor.visit!(ast, context) || ast.visit(visitor, context) : (ast: TemplateAst) => ast.visit(visitor, context);
  asts.forEach(ast => {
    const astResult = visit(ast);
    if (astResult) {
      result.push(astResult);
    }
  });
  return result;
}

export type TemplateAstPath = AstPath<TemplateAst>;

/**
 * @license
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 */
import {CompileDiDependencyMetadata, CompileDirectiveMetadata, CompileDirectiveSummary, CompileNgModuleMetadata, CompileProviderMetadata, CompileQueryMetadata, CompileTokenMetadata, CompileTypeMetadata, tokenName, tokenReference} from './compile_metadata';
import {CompileReflector} from './compile_reflector';
import {createTokenForExternalReference, Identifiers} from './identifiers';
import {ParseError, ParseSourceSpan} from './parse_util';
import {AttrAst, DirectiveAst, ProviderAst, ProviderAstType, QueryMatch, ReferenceAst} from './template_parser/template_ast';
export class ProviderError extends ParseError {
  constructor(message: string, span: ParseSourceSpan) {
    super(span, message);
  }
}
export interface QueryWithId {
  meta: CompileQueryMetadata;
  queryId: number;
}
export class ProviderViewContext {
  /** @internal */
  viewQueries: Map<any, QueryWithId>;
  /** @internal */
  viewProviders: Map<any, boolean>;
  errors: ProviderError[] = [];
  constructor(public reflector: CompileReflector, public component: CompileDirectiveMetadata) {
    this.viewQueries = _getViewQueries(component);
    this.viewProviders = new Map<any, boolean>();
    component.viewProviders.forEach((provider) => {
      if (this.viewProviders.get(tokenReference(provider.token)) == null) {
        this.viewProviders.set(tokenReference(provider.token), true);
      }
    });
  }
}
export class ProviderElementContext {
  private _contentQueries: Map<any, QueryWithId>;
  private _transformedProviders = new Map<any, ProviderAst>();
  private _seenProviders = new Map<any, boolean>();
  private _allProviders: Map<any, ProviderAst>;
  private _attrs: {[key: string]: string};
  private _queriedTokens = new Map<any, QueryMatch>();
  public readonly transformedHasViewContainer: boolean = false;
  constructor(public viewContext: ProviderViewContext, private _parent: ProviderElementContext, private _isViewRoot: boolean, private _directiveAsts: DirectiveAst[], attrs: AttrAst[], refs: ReferenceAst[], isTemplate: boolean, contentQueryStartId: number, private _sourceSpan: ParseSourceSpan) {
    this._attrs =

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    {};\n    attrs.forEach((attrAst => this._attrs[attrAst.name] = attrAst.value);\n    const directivesMeta =\n    _directiveAsts.map(directiveAst => directiveAst.directive);\n    this._allProviders =\n    _resolveProvidersFromDirectives(directivesMeta, _sourceSpan, viewContext.errors);\n    this._contentQueries =\n    _getContentQueries(contentQueryStartId, directivesMeta);\n    Array.from(this._allProviders.values()).forEach((provider) => {\n    this._addQueryReadsTo(provider.token,\n    provider.token, this._queriedTokens);\n    });\n    if (isTemplate) {\n    const templateRefId =\n    createTokenForExternalReference(this.viewContext.reflector, Identifiers.TemplateRef);\n    this._addQueryReadsTo(templateRefId, templateRefId, this._queriedTokens);\n    }\n    refs.forEach((refAst) => {\n    let defaultQueryValue = refAst.value ||\n    createTokenForExternalReference(this.viewContext.reflector,\n    Identifiers.ElementRef);\n    this._addQueryReadsTo({value: refAst.name}, defaultQueryValue,\n    this._queriedTokens);\n    });\n    if (this._queriedTokens.get(\n    this.viewContext.reflector.resolveExternalReference(Identifiers.ViewContainerRef))) {\n    this.transformedHasViewContainer = true;\n    }\n    // create the providers that we know are eager first\n    Array.from(this._allProviders.values()).forEach((provider) => {\n    const eager = provider.eager ||\n    this._queriedTokens.get(tokenReference(provider.token));\n    if (eager) {\n    this._getOrCreateLocalProvider(provider.providerType, provider.token, true);\n    }\n    });\n    afterElement(\n    {\n    // collect lazy providers\n    Array.from(this._allProviders.values()).forEach((provider) => {\n    this._getOrCreateLocalProvider(provider.providerType, provider.token, false);\n    });\n    });\n    get\n    transformProviders(): ProviderAst[] {\n    // Note: Maps keep their insertion order.\n    const lazyProviders:\n    ProviderAst[] = [];\n    const eagerProviders: ProviderAst[] = [];\n    this._transformedProviders.forEach(provider\n    => {\n    if (provider.eager) {\n    eagerProviders.push(provider);\n    } else {\n    lazyProviders.push(provider);\n    }\n    });\n    return lazyProviders.concat(eagerProviders);\n    }\n    get\n    transformedDirectiveAsts(): DirectiveAst[] {\n    const sortedProviderTypes = this.transformProviders.map(provider\n    => provider.token.identifier);\n    const sortedDirectives = this._directiveAsts.slice();\n    sortedDirectives.sort(\n    (dir1, dir2) => sortedProviderTypes.indexOf(dir1.directive.type) -\n    sortedProviderTypes.indexOf(dir2.directive.type));\n    return sortedDirectives;\n    }\n    get queryMatches():\n    QueryMatch[] {\n    const allMatches: QueryMatch[] = [];\n    this._queriedTokens.forEach((matches:\n    QueryMatch[]) => {\n    allMatches.push(...matches);\n    });\n    return allMatches;\n    }\n    private\n    _addQueryReadsTo(\n    token: CompileTokenMetadata, defaultValue: CompileTokenMetadata,\n    queryReadTokens: Map<any, QueryMatch[]>) {\n    this._getQueriesFor(token).forEach((query) => {\n    const\n    queryValue = query.meta.read || defaultValue;\n    const tokenRef = tokenReference(queryValue);\n    let\n    queryMatches = queryReadTokens.get(tokenRef);\n    if (!queryMatches) {\n    queryMatches = [];\n    queryReadTokens.set(tokenRef, queryMatches);\n    }\n    queryMatches.push({queryId: query.queryId, value:\n    queryValue});\n    });\n    }\n    private _getQueriesFor(token: CompileTokenMetadata): QueryWithId[] {\n    const\n    result: QueryWithId[] = [];\n    let currentEl: ProviderElementContext = this;\n    let distance = 0;\n    let queries:\n    QueryWithId[]|undefined;\n    while (currentEl !== null) {\n    queries =\n    currentEl._contentQueries.get(tokenReference(token));\n    if (queries) {\n    result.push(...queries.filter((query)\n    => query.meta.descendants || distance <= 1));\n    }\n    if (currentEl._directiveAsts.length > 0) {\n    distance++;\n    }\n    currentEl = currentEl._parent;\n    }\n    queries =\n    this.viewContext.viewQueries.get(tokenReference(token));\n    if (queries) {\n    result.push(...queries);\n    }\n    return result;\n    }\n    private _getOrCreateLocalProvider(\n    requestingProviderType: ProviderAstType, token:\n    CompileTokenMetadata,\n    eager: boolean): ProviderAst|null {\n    const resolvedProvider =\n    this._allProviders.get(tokenReference(token));\n    if (!resolvedProvider ||\n    ((requestingProviderType ===\n    ProviderAstType.Directive ||\n    requestingProviderType === ProviderAstType.PublicService) &&\n    resolvedProvider.providerType === ProviderAstType.PrivateService) ||\n    ((requestingProviderType ===\n    ProviderAstType.PrivateService ||\n    requestingProviderType === ProviderAstType.PublicService) &&\n    resolvedProvider.providerType === ProviderAstType.Builtin)) {\n    return null;\n    }\n    let\n    transformedProviderAst = this._transformedProviders.get(tokenReference(token));\n    if (transformedProviderAst)

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{\n    return transformedProviderAst;\n  }\n  if (this._seenProviders.get(tokenReference(token)) != null) {\n
this.viewContext.errors.push(new ProviderError(`\n      `Cannot instantiate cyclic dependency!\n
${tokenName(token)}`, this._sourceSpan));\n    return null;\n  }\n
this._seenProviders.set(tokenReference(token), true);\n  const transformedProviders =
resolvedProvider.providers.map((provider) => {\n    let transformedUseValue = provider.useValue;\n    let
transformedUseExisting = provider.useExisting!;\n    let transformedDeps: CompileDiDependencyMetadata[] =
undefined!;\n    if (provider.useExisting != null) {\n      const existingDiDep = this._getDependency(\n
resolvedProvider.providerType, {token: provider.useExisting}, eager!);\n      if (existingDiDep.token != null) {\n
transformedUseExisting = existingDiDep.token;\n      } else {\n        transformedUseExisting = null!;\n
transformedUseValue = existingDiDep.value;\n      }\n    } else if (provider.useFactory) {\n      const deps =
provider.deps || provider.useFactory.diDeps;\n      transformedDeps =\n        deps.map((dep) =>
this._getDependency(resolvedProvider.providerType, dep, eager!);\n    } else if (provider.useClass) {\n      const
deps = provider.deps || provider.useClass.diDeps;\n      transformedDeps =\n        deps.map((dep) =>
this._getDependency(resolvedProvider.providerType, dep, eager!);\n    })\n    return _transformProvider(provider,
{\n      useExisting: transformedUseExisting,\n      useValue: transformedUseValue,\n      deps:
transformedDeps\n    });\n  });\n  transformedProviderAst =\n    _transformProviderAst(resolvedProvider,
{eager: eager, providers: transformedProviders});\n  this._transformedProviders.set(tokenReference(token),
transformedProviderAst);\n  return transformedProviderAst;\n }\n\n private _getLocalDependency(\n
requestingProviderType: ProviderAstType, dep: CompileDiDependencyMetadata,\n  eager: boolean = false):
CompileDiDependencyMetadata|null {\n  if (dep.isAttribute) {\n    const attrValue =
this._attrs[dep.token!.value];\n    return {isValue: true, value: attrValue == null ? null : attrValue};\n  }\n  if
(dep.token != null) {\n    // access builtins\n    if ((requestingProviderType === ProviderAstType.Directive ||\n
requestingProviderType === ProviderAstType.Component)) {\n      if (tokenReference(dep.token) ===\n
this.viewContext.reflector.resolveExternalReference(Identifiers.Renderer) ||\n
tokenReference(dep.token) ===\n
this.viewContext.reflector.resolveExternalReference(Identifiers.ElementRef) ||\n
tokenReference(dep.token) ===\n
this.viewContext.reflector.resolveExternalReference(\n
Identifiers.ChangeDetectorRef) ||\n
tokenReference(dep.token) ===\n
this.viewContext.reflector.resolveExternalReference(Identifiers.TemplateRef)) {\n      return dep;\n    }\n    if
(tokenReference(dep.token) ===\n
this.viewContext.reflector.resolveExternalReference(Identifiers.ViewContainerRef)) {\n      (this as
{transformedHasViewContainer: boolean}).transformedHasViewContainer = true;\n    }\n    // access the
injector\n    if (tokenReference(dep.token) ===\n
this.viewContext.reflector.resolveExternalReference(Identifiers.Injector)) {\n      return dep;\n    }\n    // access
providers\n    if (this._getOrCreateLocalProvider(requestingProviderType, dep.token, eager) != null) {\n      return
dep;\n    }\n  }\n  return null;\n }\n\n private _getDependency(\n  requestingProviderType: ProviderAstType,
dep: CompileDiDependencyMetadata,\n  eager: boolean = false): CompileDiDependencyMetadata|null {\n  let
currElement: ProviderElementContext = this;\n  let currEager: boolean = eager;\n  let result:
CompileDiDependencyMetadata|null = null;\n  if (!dep.isSkipSelf) {\n    result =
this._getLocalDependency(requestingProviderType, dep, eager);\n  }\n  if (dep.isSelf) {\n    if (!result &&
dep.isOptional) {\n      result = {isValue: true, value: null};\n    }\n  } else {\n    // check parent elements\n
while (!result && currElement._parent) {\n      const prevElement = currElement;\n      currElement =
currElement._parent;\n      if (prevElement._isViewRoot) {\n        currEager = false;\n      }\n      result =
currElement._getLocalDependency(ProviderAstType.PublicService, dep, currEager);\n    }\n    // check @Host
restriction\n    if (!result) {\n      if (!dep.isHost || this.viewContext.component.isHost ||\n
this.viewContext.component.type.reference === tokenReference(dep.token!)) ||\n
this.viewContext.viewProviders.get(tokenReference(dep.token!)) != null) {\n        result = dep;\n      } else {\n
result = dep.isOptional ? {isValue: true, value: null} : null;\n      }\n    }\n  }\n  if (!result) {\n
this.viewContext.errors.push(\n    new ProviderError(`No provider for ${tokenName(dep.token!)}`,

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this._sourceSpan));\n  }\n  return result;\n }\n}\n\nexport class NgModuleProviderAnalyzer {\n  private
_transformedProviders = new Map<any, ProviderAst>();\n  private _seenProviders = new Map<any, boolean>();\n  private _allProviders: Map<any, ProviderAst>;\n  private _errors: ProviderError[] = [];\n\n  constructor(\n    private
reflector: CompileReflector, ngModule: CompileNgModuleMetadata,\n    extraProviders:
CompileProviderMetadata[], sourceSpan: ParseSourceSpan) {\n    this._allProviders = new Map<any,
ProviderAst>();\n    ngModule.transitiveModule.modules.forEach((ngModuleType: CompileTypeMetadata) => {\n
const ngModuleProvider = {token: {identifier: ngModuleType}, useClass: ngModuleType};\n
_resolveProviders(\n      [ngModuleProvider], ProviderAstType.PublicService, true, sourceSpan, this._errors,\n      this._allProviders, /* isModule */ true);\n    });\n    _resolveProviders(\n
ngModule.transitiveModule.providers.map(entry => entry.provider).concat(extraProviders),\n
ProviderAstType.PublicService, false, sourceSpan, this._errors, this._allProviders,\n      /* isModule */ false);\n  }\n\n  parse(): ProviderAst[] {\n    Array.from(this._allProviders.values()).forEach((provider) => {\n
this._getOrCreateLocalProvider(provider.token, provider.eager);\n    });\n    if (this._errors.length > 0) {\n      const
errorString = this._errors.join("\n");\n      throw new Error(`Provider parse errors:\n${errorString}`);\n    }\n    //
Note: Maps keep their insertion order.\n    const lazyProviders: ProviderAst[] = [];\n    const eagerProviders:
ProviderAst[] = [];\n    this._transformedProviders.forEach(provider => {\n      if (provider.eager) {\n
eagerProviders.push(provider);\n      } else {\n        lazyProviders.push(provider);\n      }\n    });\n    return
lazyProviders.concat(eagerProviders);\n  }\n\n  private _getOrCreateLocalProvider(token: CompileTokenMetadata,
eager: boolean): ProviderAst|null {\n    const resolvedProvider = this._allProviders.get(tokenReference(token));\n
if (!resolvedProvider) {\n      return null;\n    }\n    let transformedProviderAst =
this._transformedProviders.get(tokenReference(token));\n    if (transformedProviderAst) {\n      return
transformedProviderAst;\n    }\n    if (this._seenProviders.get(tokenReference(token)) != null) {\n
this._errors.push(new ProviderError(`Cannot instantiate cyclic dependency! ${tokenName(token)}`,\n
resolvedProvider.sourceSpan));\n      return null;\n    }\n    this._seenProviders.set(tokenReference(token), true);\n
const transformedProviders = resolvedProvider.providers.map((provider) => {\n      let transformedUseValue =
provider.useValue;\n      let transformedUseExisting = provider.useExisting!;\n      let transformedDeps:
CompileDiDependencyMetadata[] = undefined!;\n      if (provider.useExisting != null) {\n        const existingDiDep
=\n          this._getDependency({token: provider.useExisting}, eager, resolvedProvider.sourceSpan);\n        if
(existingDiDep.token != null) {\n          transformedUseExisting = existingDiDep.token;\n        } else {\n
transformedUseExisting = null!;\n          transformedUseValue = existingDiDep.value;\n        }\n      } else if
(provider.useFactory) {\n        const deps = provider.deps || provider.useFactory.diDeps;\n        transformedDeps =\n
          deps.map((dep) => this._getDependency(dep, eager, resolvedProvider.sourceSpan));\n      } else if
(provider.useClass) {\n        const deps = provider.deps || provider.useClass.diDeps;\n        transformedDeps =\n
          deps.map((dep) => this._getDependency(dep, eager, resolvedProvider.sourceSpan));\n      }\n      return
_transformProvider(provider, {\n        useExisting: transformedUseExisting,\n        useValue:
transformedUseValue,\n        deps: transformedDeps\n      });\n    });\n    transformedProviderAst =\n
_transformProviderAst(resolvedProvider, {eager: eager, providers: transformedProviders});\n    this._transformedProviders.set(tokenReference(token), transformedProviderAst);\n    return
transformedProviderAst;\n  }\n\n  private _getDependency(\n    dep: CompileDiDependencyMetadata, eager:
boolean = false,\n    requestorSourceSpan: ParseSourceSpan): CompileDiDependencyMetadata {\n    let
foundLocal = false;\n    if (!dep.isSkipSelf && dep.token != null) {\n      // access the injector\n      if
(tokenReference(dep.token) ===\n        this.reflector.resolveExternalReference(Identifiers.Injector) ||\n
tokenReference(dep.token) ===\n        this.reflector.resolveExternalReference(Identifiers.ComponentFactoryResolver)) {\n        foundLocal = true;\n        //
access providers\n      } else if (this._getOrCreateLocalProvider(dep.token, eager) != null) {\n        foundLocal =
true;\n      }\n    }\n    return dep;\n  }\n\n  function _transformProvider(\n    provider: CompileProviderMetadata,\n
{useExisting, useValue, deps}:\n    {useExisting: CompileTokenMetadata, useValue: any, deps:
CompileDiDependencyMetadata[]}) {\n    return {\n      token: provider.token,\n      useClass: provider.useClass,\n

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styleUrls: string[] } }\n\n\nexport function isStyleUrlResolvable(url: string): boolean { \n if (url == null ||
url.length === 0 || url[0] == '/') return false;\n const schemeMatch =
url.match(URL_WITH_SCHEMA_REGEX);\n return schemeMatch === null || schemeMatch[1] == 'package' ||
schemeMatch[1] == 'asset';\n}\n\n/**\n * Rewrites stylesheets by resolving and removing the @import urls that\n *
are either relative or don't have a `package:` scheme\n */\nexport function extractStyleUrls(\n resolver:
UrlResolver, baseUrl: string, cssText: string): StyleWithImports {\n const foundUrls: string[] = [];\n\n const
modifiedCssText = cssText.replace(CSS_STRIPPABLE_COMMENT_REGEX, "")\n
.replace(CSS_IMPORT_REGEX, (...m: string[]) => {\n
const url = m[1] || m[2];\n
if (!isStyleUrlResolvable(url)) {\n
// Do not attempt to resolve non-package absolute
URLs with URI\n // scheme\n return m[0];\n }
foundUrls.push(resolver.resolve(baseUrl, url));\n return ";\n });\n
return new StyleWithImports(modifiedCssText, foundUrls);\n}\n\n\nconst CSS_IMPORT_REGEX =
/@import\s+(?:url\(\)\?|s*(?:\["\](["\"]*)\)|\s*\)|\s*)\s*\s*\s*/g;\nconst
CSS_STRIPPABLE_COMMENT_REGEX =
/\s*\s*\s*(?:#\s*(?:sourceURL|sourceMappingURL)=)\s*\s*\s*/g;\nconst URL_WITH_SCHEMA_REGEX =
/^(?:\/?#)\s*\/?;\n", "/*\n * @license\n * Copyright Google LLC All Rights Reserved.\n * \n * Use of this source code
is governed by an MIT-style license that can be\n * found in the LICENSE file at https://angular.io/license\n
*\n\nimport { CompileDirectiveSummary, CompilePipeSummary } from '../compile_metadata';\nimport
{ SecurityContext } from '../core';\nimport { AbsoluteSourceSpan, ASTWithSource, BindingPipe, BindingType,
BoundElementProperty, EmptyExpr, ParsedEvent, ParsedEventType, ParsedProperty, ParsedPropertyType,
ParsedVariable, ParserError, RecursiveAstVisitor, TemplateBinding, VariableBinding } from
'./expression_parser/ast';\nimport { Parser } from './expression_parser/parser';\nimport { InterpolationConfig } from
'./ml_parser/interpolation_config';\nimport { mergeNsAndName } from './ml_parser/tags';\nimport { ParseError,
ParseErrorLevel, ParseLocation, ParseSourceSpan } from './parse_util';\nimport { ElementSchemaRegistry } from
'./schema/element_schema_registry';\nimport { CssSelector } from './selector';\nimport { splitAtColon,
splitAtPeriod } from './util';\n\nconst PROPERTY_PARTS_SEPARATOR = '.';\nconst ATTRIBUTE_PREFIX =
'attr';\nconst CLASS_PREFIX = 'class';\nconst STYLE_PREFIX = 'style';\nconst TEMPLATE_ATTR_PREFIX =
'*';\nconst ANIMATE_PROP_PREFIX = 'animate-';\n\n/**\n * Parses bindings in templates and in the directive
host area.\n */\nexport class BindingParser {\n pipesByName: Map<string, CompilePipeSummary> | null = null;\n\n private _usedPipes: Map<string, CompilePipeSummary> = new Map();\n\n constructor(\n private _exprParser:
Parser, private _interpolationConfig: InterpolationConfig,\n private _schemaRegistry: ElementSchemaRegistry,\n pipes: CompilePipeSummary[] | null,\n public errors: ParseError[]) {\n // When the `pipes` parameter is `null`,
do not check for used pipes\n // This is used in IVY when we might not know the available pipes at compile time\n
if (pipes) {\n const pipesByName: Map<string, CompilePipeSummary> = new Map();\n pipes.forEach(pipe
=> pipesByName.set(pipe.name, pipe));\n this.pipesByName = pipesByName;\n }\n }\n\n get
interpolationConfig(): InterpolationConfig {\n return this._interpolationConfig;\n }\n\n getUsedPipes():
CompilePipeSummary[] {\n return Array.from(this._usedPipes.values());\n }\n\n
createBoundHostProperties(dirMeta: CompileDirectiveSummary, sourceSpan: ParseSourceSpan):\n
ParsedProperty[] | null {\n if (dirMeta.hostProperties) {\n const boundProps: ParsedProperty[] = [];\n
Object.keys(dirMeta.hostProperties).forEach(propName => {\n const expression =
dirMeta.hostProperties[propName];\n if (typeof expression === 'string') {\n this.parsePropertyBinding(\n
propName, expression, true, sourceSpan, sourceSpan.start.offset, undefined, [],\n // Use the
`sourceSpan` for `keySpan`. This isn't really accurate, but neither is the\n // sourceSpan, as it represents the
sourceSpan of the host itself rather than the\n // source of the host binding (which doesn't exist in the
template). Regardless,\n // neither of these values are used in Ivy but are only here to satisfy the function\n
// signature. This should likely be refactored in the future so that `sourceSpan`\n // isn't being used
inaccurately.\n boundProps, sourceSpan);\n } else {\n this._reportError(\n `Value of the
host property binding `${propName}` needs to be a string representing an expression but got `${propName}`

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    expression}" (${typeof expression})`,\n        sourceSpan);\n    }\n    });\n    return boundProps;\n  }\n  return null;\n  }\n  createDirectiveHostPropertyAsts(\n    dirMeta: CompileDirectiveSummary,\n    elementSelector: string,\n    sourceSpan: ParseSourceSpan): BoundElementProperty[]\n  null {\n    const boundProps = this.createBoundHostProperties(dirMeta, sourceSpan);\n    return boundProps &&\n      boundProps.map((prop) => this.createBoundElementProperty(elementSelector, prop));\n  }\n  createDirectiveHostEventAsts(dirMeta: CompileDirectiveSummary, sourceSpan: ParseSourceSpan):\n  ParsedEvent[]\n  null {\n    if (dirMeta.hostListeners) {\n      const targetEvents: ParsedEvent[] = [];\n      Object.keys(dirMeta.hostListeners).forEach(propName => {\n        const expression = dirMeta.hostListeners[propName];\n        if (typeof expression === 'string') {\n          // TODO: pass a more accurate handlerSpan for this event.\n          this.parseEvent(propName, expression, sourceSpan, sourceSpan, [], targetEvents);\n        } else {\n          this._reportError(\n            `Value of the host listener \"${\n              propName}\" needs to be a string representing an expression but got \"${\n                expression}\" (${typeof expression})`,\n            sourceSpan);\n        }\n      });\n      return targetEvents;\n    }\n    return null;\n  }\n  parseInterpolation(value: string, sourceSpan: ParseSourceSpan): ASTWithSource {\n    const sourceInfo = sourceSpan.start.toString();\n    try {\n      const ast = this._exprParser.parseInterpolation(\n        value, sourceInfo, sourceSpan.start.offset, this._interpolationConfig!);\n      if (ast) this._reportExpressionParserErrors(ast.errors, sourceSpan);\n      this._checkPipes(ast, sourceSpan);\n      return ast;\n    } catch (e) {\n      this._reportError(`${e}`, sourceSpan);\n      return this._exprParser.wrapLiteralPrimitive('ERROR', sourceInfo, sourceSpan.start.offset);\n    }\n  }\n  /**\n   * Similar to `parseInterpolation`, but treats the provided string as a single expression\n   * element that would normally appear within the interpolation prefix and suffix (`{` and `}`).\n   * This is used for parsing the switch expression in ICUs.\n   */\n  parseInterpolationExpression(expression: string, sourceSpan: ParseSourceSpan): ASTWithSource {\n    const sourceInfo = sourceSpan.start.toString();\n    try {\n      const ast = this._exprParser.parseInterpolationExpression(\n        expression, sourceInfo, sourceSpan.start.offset);\n      if (ast) this._reportExpressionParserErrors(ast.errors, sourceSpan);\n      this._checkPipes(ast, sourceSpan);\n      return ast;\n    } catch (e) {\n      this._reportError(`${e}`, sourceSpan);\n      return this._exprParser.wrapLiteralPrimitive('ERROR', sourceInfo, sourceSpan.start.offset);\n    }\n  }\n  /**\n   * Parses the bindings in a microsyntax expression, and converts them to\n   * `ParsedProperty` or `ParsedVariable`.\n   * @param tplKey template binding name\n   * @param tplValue template binding value\n   * @param sourceSpan span of template binding relative to entire the template\n   * @param absoluteValueOffset start of the tplValue relative to the entire template\n   * @param targetMatchableAttrs potential attributes to match in the template\n   * @param targetProps target property bindings in the template\n   * @param targetVars target variables in the template\n   */\n  parseInlineTemplateBinding(\n    tplKey: string, tplValue: string, sourceSpan: ParseSourceSpan, absoluteValueOffset: number,\n    targetMatchableAttrs: string[][], targetProps: ParsedProperty[], targetVars: ParsedVariable[],\n    isIvyAst: boolean) {\n    const absoluteKeyOffset = sourceSpan.start.offset + TEMPLATE_ATTR_PREFIX.length;\n    const bindings = this._parseTemplateBindings(\n      tplKey, tplValue, sourceSpan, absoluteKeyOffset, absoluteValueOffset);\n    for (const binding of bindings) {\n      // sourceSpan is for the entire HTML attribute. bindingSpan is for a particular\n      // binding within the microsyntax expression so it's more narrow than sourceSpan.\n      const bindingSpan = moveParseSourceSpan(sourceSpan, binding.sourceSpan);\n      const key = binding.key.source;\n      const keySpan = moveParseSourceSpan(sourceSpan, binding.key.span);\n      if (binding instanceof VariableBinding) {\n        const value = binding.value ? binding.value.source : '$implicit';\n        const valueSpan =\n          binding.value ? moveParseSourceSpan(sourceSpan, binding.value.span) : undefined;\n        targetVars.push(new ParsedVariable(key, value, bindingSpan, keySpan, valueSpan));\n      } else if (binding.value) {\n        const srcSpan = isIvyAst ? bindingSpan : sourceSpan;\n        const valueSpan = moveParseSourceSpan(sourceSpan, binding.value.ast.sourceSpan);\n        this._parsePropertyAst(\n          key, binding.value, srcSpan, keySpan, valueSpan, targetMatchableAttrs, targetProps);\n      } else {\n        targetMatchableAttrs.push([key, `/* value */`]);\n        // Since this is a literal attribute with no RHS, source span should be\n        // just the key span.\n        this.parseLiteralAttr(\n          key, `/* value */`, keySpan, absoluteValueOffset, undefined /* valueSpan */);\n      }\n    }\n  }\n}

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targetMatchableAttrs, targetProps, keySpan);\n    }\n    }\n    }\n\n    /**\n     * Parses the bindings in a microsyntax
expression, e.g.\n     * <tag *tplKey="let value1 = prop; let value2 = localVar">\n     * @param tplKey template binding name\n     * @param tplValue template binding value\n     * @param sourceSpan
span of template binding relative to entire the template\n     * @param absoluteKeyOffset start of the `tplKey`\n     *
@param absoluteValueOffset start of the `tplValue`\n     */\n    private _parseTemplateBindings(\n        tplKey: string,\n        tplValue: string, sourceSpan: ParseSourceSpan, absoluteKeyOffset: number,\n        absoluteValueOffset: number):
TemplateBinding[] {\n        const sourceInfo = sourceSpan.start.toString();\n\n        try {\n            const bindingsResult =
this._exprParser.parseTemplateBindings(\n                tplKey, tplValue, sourceInfo, absoluteKeyOffset,\n                absoluteValueOffset);\n            this._reportExpressionParserErrors(bindingsResult.errors, sourceSpan);\n
bindingsResult.templateBindings.forEach((binding) => {\n                if (binding.value instanceof ASTWithSource) {\n
                    this._checkPipes(binding.value, sourceSpan);\n                }\n            });\n            bindingsResult.warnings.forEach((warning)
=> {\n                this._reportError(warning, sourceSpan, ParseErrorLevel.WARNING);\n            });\n            return
bindingsResult.templateBindings;\n        } catch (e) {\n            this._reportError(`${e}`, sourceSpan);\n            return [];\n        }\n    }\n\n    parseLiteralAttr(\n        name: string, value: string|null, sourceSpan: ParseSourceSpan, absoluteOffset:
number,\n        valueSpan: ParseSourceSpan|undefined, targetMatchableAttrs: string[][],\n        // TODO(atscott):
keySpan is only optional here so VE template parser implementation does not\n        // have to change This should be
required when VE is removed.\n        targetProps: ParsedProperty[], keySpan?: ParseSourceSpan) {\n        if
(isAnimationLabel(name)) {\n            name = name.substring(1);\n            if (value) {\n                this._reportError(\n
`Assigning animation triggers via @prop="exp" attributes with an expression is invalid.` +\n                ` Use
property bindings (e.g. [@prop]="exp") or use an attribute without a value (e.g. @prop) instead.`,\n                sourceSpan, ParseErrorLevel.ERROR);\n            }\n            this._parseAnimation(\n                name, value, sourceSpan,\n                absoluteOffset, keySpan, valueSpan, targetMatchableAttrs,\n                targetProps);\n        } else {\n
            targetProps.push(new ParsedProperty(\n                name, this._exprParser.wrapLiteralPrimitive(value, "\n",
absoluteOffset),\n                ParsedPropertyType.LITERAL_ATTR, sourceSpan, keySpan, valueSpan));\n        }\n    }\n\n    parsePropertyBinding(\n        name: string, expression: string, isHost: boolean, sourceSpan: ParseSourceSpan,\n        absoluteOffset: number, valueSpan: ParseSourceSpan|undefined,\n        // TODO(atscott): keySpan is only optional
here so VE template parser implementation does not\n        // have to change This should be required when VE is
removed.\n        targetMatchableAttrs: string[][], targetProps: ParsedProperty[], keySpan?: ParseSourceSpan) {\n        if
(name.length === 0) {\n            this._reportError(`Property name is missing in binding`, sourceSpan);\n        }\n\n        let
isAnimationProp = false;\n        if (name.startsWith(ANIMATE_PROP_PREFIX)) {\n            isAnimationProp = true;\n
            name = name.substring(ANIMATE_PROP_PREFIX.length);\n        } else if (isAnimationLabel(name)) {\n
            isAnimationProp = true;\n            name = name.substring(1);\n        }\n\n        if (isAnimationProp) {\n
            this._parseAnimation(\n                name, expression, sourceSpan, absoluteOffset, keySpan, valueSpan,\n                targetMatchableAttrs,\n                targetProps);\n        } else {\n            this._parsePropertyAst(\n                name,\n                this._parseBinding(expression, isHost, valueSpan || sourceSpan, absoluteOffset),\n                sourceSpan, keySpan,\n                valueSpan, targetMatchableAttrs, targetProps);\n        }\n    }\n\n    parsePropertyInterpolation(\n        name: string, value:
string, sourceSpan: ParseSourceSpan,\n        valueSpan: ParseSourceSpan|undefined, targetMatchableAttrs:
string[][],\n        // TODO(atscott): keySpan is only optional here so VE template parser implementation does not\n
// have to change This should be required when VE is removed.\n        targetProps: ParsedProperty[], keySpan?:
ParseSourceSpan): boolean {\n        const expr = this.parseInterpolation(value, valueSpan || sourceSpan);\n        if (expr)
{\n            this._parsePropertyAst(\n                name, expr, sourceSpan, keySpan, valueSpan, targetMatchableAttrs,\n                targetProps);\n            return true;\n        }\n        return false;\n    }\n\n    private _parsePropertyAst(\n        name: string, ast:
ASTWithSource, sourceSpan: ParseSourceSpan,\n        keySpan: ParseSourceSpan|undefined, valueSpan:
ParseSourceSpan|undefined,\n        targetMatchableAttrs: string[][], targetProps: ParsedProperty[]) {\n        targetMatchableAttrs.push([name, ast.source!]);\n        targetProps.push(\n            new ParsedProperty(name, ast,\n                ParsedPropertyType.DEFAULT, sourceSpan, keySpan, valueSpan));\n        }\n\n        private _parseAnimation(\n            name:
string, expression: string|null, sourceSpan: ParseSourceSpan, absoluteOffset: number,\n            keySpan:
ParseSourceSpan|undefined, valueSpan: ParseSourceSpan|undefined,\n            targetMatchableAttrs: string[][],

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targetProps: ParsedProperty[]) {\n  if (name.length === 0) {\n    this._reportError('Animation trigger is missing',
sourceSpan);\n  }\n\n  // This will occur when a @trigger is not paired with an expression.\n  // For animations it
is valid to not have an expression since */void\n  // states will be applied by angular when the element is
attached/detached\n  const ast = this._parseBinding(\n    expression || 'undefined', false, valueSpan || sourceSpan,
absoluteOffset);\n  targetMatchableAttrs.push([name, ast.source!]);\n  targetProps.push(new ParsedProperty(\n
name, ast, ParsedPropertyType.ANIMATION, sourceSpan, keySpan, valueSpan));\n  }\n\n  private
_parseBinding(\n    value: string, isHostBinding: boolean, sourceSpan: ParseSourceSpan,\n    absoluteOffset:
number): ASTWithSource {\n    const sourceInfo = (sourceSpan && sourceSpan.start || '(unknown)').toString();\n\n
try {\n    const ast = isHostBinding ?\n      this._exprParser.parseSimpleBinding(\n        value, sourceInfo,
absoluteOffset, this._interpolationConfig) :\n      this._exprParser.parseBinding(\n        value, sourceInfo,
absoluteOffset, this._interpolationConfig);\n    if (ast) this._reportExpressionParserErrors(ast.errors, sourceSpan);\n
    this._checkPipes(ast, sourceSpan);\n    return ast;\n  } catch (e) {\n    this._reportError(`${e}`, sourceSpan);\n
    return this._exprParser.wrapLiteralPrimitive('ERROR', sourceInfo, absoluteOffset);\n  }\n}\n\n
createBoundElementProperty(\n  elementSelector: string, boundProp: ParsedProperty, skipValidation: boolean =
false,\n  mapPropertyName: boolean = true): BoundElementProperty {\n  if (boundProp.isAnimation) {\n
return new BoundElementProperty(\n    boundProp.name, BindingType.Animation, SecurityContext.NONE,
boundProp.expression, null,\n    boundProp.sourceSpan, boundProp.keySpan, boundProp.valueSpan);\n  }\n\n
let unit: string|null = null;\n  let bindingType: BindingType = undefined!;\n  let boundPropertyName: string|null =
null;\n  const parts = boundProp.name.split(PROPERTY_PARTS_SEPARATOR);\n  let securityContexts:
SecurityContext[] = undefined!;\n\n  // Check for special cases (prefix style, attr, class)\n  if (parts.length > 1) {\n
if (parts[0] === ATTRIBUTE_PREFIX) {\n    boundPropertyName =
parts.slice(1).join(PROPERTY_PARTS_SEPARATOR);\n    if (!skipValidation) {\n
this._validatePropertyOrAttributeName(boundPropertyName, boundProp.sourceSpan, true);\n    }\n
securityContexts = calcPossibleSecurityContexts(\n    this._schemaRegistry, elementSelector,
boundPropertyName, true);\n\n    const nsSeparatorIdx = boundPropertyName.indexOf(':');\n    if
(nsSeparatorIdx > -1) {\n    const ns = boundPropertyName.substr(0, nsSeparatorIdx);\n    const name =
boundPropertyName.substr(nsSeparatorIdx + 1);\n    boundPropertyName = mergeNsAndName(ns, name);\n
}\n\n    bindingType = BindingType.Attribute;\n  } else if (parts[0] === CLASS_PREFIX) {\n
boundPropertyName = parts[1];\n    bindingType = BindingType.Class;\n    securityContexts =
[SecurityContext.NONE];\n  } else if (parts[0] === STYLE_PREFIX) {\n    unit = parts.length > 2 ? parts[2] :
null;\n    boundPropertyName = parts[1];\n    bindingType = BindingType.Style;\n    securityContexts =
[SecurityContext.STYLE];\n  }\n}\n\n  // If not a special case, use the full property name\n  if
(boundPropertyName === null) {\n    const mappedPropName =
this._schemaRegistry.getMappedPropName(boundProp.name);\n    boundPropertyName = mapPropertyName ?
mappedPropName : boundProp.name;\n    securityContexts = calcPossibleSecurityContexts(\n
this._schemaRegistry, elementSelector, mappedPropName, false);\n    bindingType = BindingType.Property;\n
if (!skipValidation) {\n    this._validatePropertyOrAttributeName(mappedPropName, boundProp.sourceSpan,
false);\n  }\n}\n\n  return new BoundElementProperty(\n    boundPropertyName, bindingType,
securityContexts[0], boundProp.expression, unit,\n    boundProp.sourceSpan, boundProp.keySpan,
boundProp.valueSpan);\n}\n\n  parseEvent(\n  name: string, expression: string, sourceSpan: ParseSourceSpan,
handlerSpan: ParseSourceSpan,\n  targetMatchableAttrs: string[][], targetEvents: ParsedEvent[]) {\n  if
(name.length === 0) {\n    this._reportError('Event name is missing in binding', sourceSpan);\n  }\n\n  if
(isAnimationLabel(name)) {\n    name = name.substr(1);\n    this._parseAnimationEvent(name, expression,
sourceSpan, handlerSpan, targetEvents);\n  } else {\n    this._parseRegularEvent(\n    name, expression,
sourceSpan, handlerSpan, targetMatchableAttrs, targetEvents);\n  }\n}\n\n
calcPossibleSecurityContexts(selector: string, propName: string, isAttribute: boolean): SecurityContext[] {\n
const prop = this._schemaRegistry.getMappedPropName(propName);\n  return
calcPossibleSecurityContexts(this._schemaRegistry, selector, prop, isAttribute);\n}\n\n  private

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_parseAnimationEvent(\n  name: string, expression: string, sourceSpan: ParseSourceSpan, handlerSpan:
ParseSourceSpan,\n  targetEvents: ParsedEvent[]) {\n  const matches = splitAtPeriod(name, [name, "]);\n  const
eventName = matches[0];\n  const phase = matches[1].toLowerCase();\n  if (phase) {\n    switch (phase) {\n
case 'start':\n    case 'done':\n      const ast = this._parseAction(expression, handlerSpan);\n
targetEvents.push(new ParsedEvent(\n      eventName, phase, ParsedEventType.Animation, ast, sourceSpan,
handlerSpan));\n      break;\n\n    default:\n      this._reportError(\n        `The provided animation output
phase value \"${phase}\" for \"@${\n      eventName}\" is not supported (use start or done)`,\n
sourceSpan);\n      break;\n    }\n  } else {\n    this._reportError(\n      `The animation trigger output event
(@${\n      eventName}) is missing its phase value name (start or done are currently supported)`,\n
sourceSpan);\n  }\n}\n\n private _parseRegularEvent(\n  name: string, expression: string, sourceSpan:
ParseSourceSpan, handlerSpan: ParseSourceSpan,\n  targetMatchableAttrs: string[][], targetEvents:
ParsedEvent[]) {\n  // long format: 'target: eventName'\n  const [target, eventName] = splitAtColon(name, [null!,
name]);\n  const ast = this._parseAction(expression, handlerSpan);\n  targetMatchableAttrs.push([name!,
ast.source!]);\n  targetEvents.push(\n    new ParsedEvent(eventName, target, ParsedEventType.Regular, ast,
sourceSpan, handlerSpan));\n  // Don't detect directives for event names for now,\n  // so don't add the event name
to the matchableAttrs\n  }\n\n private _parseAction(value: string, sourceSpan: ParseSourceSpan): ASTWithSource
{\n  const sourceInfo = (sourceSpan && sourceSpan.start || '(unknown)').toString();\n  const absoluteOffset =
(sourceSpan && sourceSpan.start) ? sourceSpan.start.offset : 0;\n\n  try {\n    const ast =
this._exprParser.parseAction(\n      value, sourceInfo, absoluteOffset, this._interpolationConfig);\n    if (ast) {\n
this._reportExpressionParserErrors(ast.errors, sourceSpan);\n    }\n    if (!ast || ast.ast instanceof EmptyExpr)
{\n      this._reportError(`Empty expressions are not allowed`, sourceSpan);\n      return
this._exprParser.wrapLiteralPrimitive('ERROR', sourceInfo, absoluteOffset);\n    }\n    this._checkPipes(ast,
sourceSpan);\n    return ast;\n  } catch (e) {\n    this._reportError(`${e}`, sourceSpan);\n    return
this._exprParser.wrapLiteralPrimitive('ERROR', sourceInfo, absoluteOffset);\n  }\n}\n\n private _reportError(\n
message: string, sourceSpan: ParseSourceSpan,\n  level: ParseErrorLevel = ParseErrorLevel.ERROR) {\n
this.errors.push(new ParseError(sourceSpan, message, level));\n  }\n\n private
_reportExpressionParserErrors(errors: ParseError[], sourceSpan: ParseSourceSpan) {\n  for (const error of errors)
{\n    this._reportError(error.message, sourceSpan);\n  }\n}\n\n // Make sure all the used pipes are known in
`this.pipesByName`\n private _checkPipes(ast: ASTWithSource, sourceSpan: ParseSourceSpan): void {\n  if (ast
&& this.pipesByName) {\n    const collector = new PipeCollector();\n    ast.visit(collector);\n
collector.pipes.forEach((ast, pipeName) => {\n      const pipeMeta = this.pipesByName!.get(pipeName);\n      if
(!pipeMeta) {\n        this._reportError(\n          `The pipe '${pipeName}' could not be found`,\n          new
ParseSourceSpan(\n            sourceSpan.start.moveBy(ast.span.start), sourceSpan.start.moveBy(ast.span.end));\n
        }\n      } else {\n        this._usedPipes.set(pipeName, pipeMeta);\n      }\n    });\n  }\n}\n\n /**\n * @param
propName the name of the property / attribute\n * @param sourceSpan\n * @param isAttr true when binding to
an attribute\n */\n private _validatePropertyOrAttributeName(\n  propName: string, sourceSpan:
ParseSourceSpan, isAttr: boolean): void {\n  const report = isAttr ?
this._schemaRegistry.validateAttribute(propName) : \n
this._schemaRegistry.validateProperty(propName);\n  if (report.error) {\n    this._reportError(report.msg!,
sourceSpan, ParseErrorLevel.ERROR);\n  }\n}\n}\n\nexport class PipeCollector extends RecursiveAstVisitor {\n
pipes = new Map<string, BindingPipe>();\n visitPipe(ast: BindingPipe, context: any): any {\n
this.pipes.set(ast.name, ast);\n ast.exp.visit(this);\n this.visitAll(ast.args, context);\n return null;\n
}\n}\n\nfunction isAnimationLabel(name: string): boolean {\n  return name[0] === '@';\n}\n\nexport function
calcPossibleSecurityContexts(\n  registry: ElementSchemaRegistry, selector: string, propName: string,\n
isAttribute: boolean): SecurityContext[] {\n  const ctxs: SecurityContext[] = [];\n
CssSelector.parse(selector).forEach((selector) => {\n    const elementNames = selector.element ? [selector.element]
: registry.allKnownElementNames();\n    const notElementNames =\n      new
Set(selector.notSelectors.filter(selector => selector.isElementSelector()))\n      .map((selector) =>

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selector.element));\n  const possibleElementNames =\n    elementNames.filter(elementName =>
!notElementNames.has(elementName));\n\n  ctxs.push(...possibleElementNames.map(\n    elementName =>
registry.securityContext(elementName, propName, isAttribute))); \n  });\n  return ctxs.length === 0 ?
[SecurityContext.NONE] : Array.from(new Set(ctxs)).sort();\n}\n\n/**\n * Compute a new ParseSourceSpan based
off an original `sourceSpan` by using\n * absolute offsets from the specified `absoluteSpan`.\n * @param
sourceSpan original source span\n * @param absoluteSpan absolute source span to move to\n */\nfunction
moveParseSourceSpan(\n  sourceSpan: ParseSourceSpan, absoluteSpan: AbsoluteSourceSpan): ParseSourceSpan
{\n  // The difference of two absolute offsets provide the relative offset\n  const startDiff = absoluteSpan.start -
sourceSpan.start.offset;\n  const endDiff = absoluteSpan.end - sourceSpan.end.offset;\n  return new
ParseSourceSpan(\n    sourceSpan.start.moveBy(startDiff), sourceSpan.end.moveBy(endDiff),\n    sourceSpan.fullStart.moveBy(startDiff), sourceSpan.details);\n}\n\n"/**\n * @license\n * Copyright Google LLC
All Rights Reserved.\n * Use of this source code is governed by an MIT-style license that can be\n * found in
the LICENSE file at https://angular.io/license\n */\n\nimport * as html from './ml_parser/ast';\nimport
{isNgContent} from './ml_parser/tags';\n\nconst NG_CONTENT_SELECT_ATTR = 'select';\nconst
LINK_ELEMENT = 'link';\nconst LINK_STYLE_REL_ATTR = 'rel';\nconst LINK_STYLE_HREF_ATTR =
'href';\nconst LINK_STYLE_REL_VALUE = 'stylesheet';\nconst STYLE_ELEMENT = 'style';\nconst
SCRIPT_ELEMENT = 'script';\nconst NG_NON_BINDABLE_ATTR = 'ngNonBindable';\nconst
NG_PROJECT_AS = 'ngProjectAs';\n\nexport function preparseElement(ast: html.Element): PreparsedElement {\n
let selectAttr: string = null!;\n let hrefAttr: string = null!;\n let relAttr: string = null!;\n let nonBindable = false;\n
let projectAs = '';\n ast.attrs.forEach(attr => {\n  const lcAttrName = attr.name.toLowerCase();\n  if (lcAttrName
== NG_CONTENT_SELECT_ATTR) {\n    selectAttr = attr.value;\n  } else if (lcAttrName ==
LINK_STYLE_HREF_ATTR) {\n    hrefAttr = attr.value;\n  } else if (lcAttrName ==
LINK_STYLE_REL_ATTR) {\n    relAttr = attr.value;\n  } else if (attr.name == NG_NON_BINDABLE_ATTR)
{\n    nonBindable = true;\n  } else if (attr.name == NG_PROJECT_AS) {\n    if (attr.value.length > 0) {\n
projectAs = attr.value;\n    }\n  }\n });\n selectAttr = normalizeNgContentSelect(selectAttr);\n const nodeName
= ast.name.toLowerCase();\n let type = PreparsedElementType.OTHER;\n if (isNgContent(nodeName)) {\n  type =
PreparsedElementType.NG_CONTENT;\n } else if (nodeName == STYLE_ELEMENT) {\n  type =
PreparsedElementType.STYLE;\n } else if (nodeName == SCRIPT_ELEMENT) {\n  type =
PreparsedElementType.SCRIPT;\n } else if (nodeName == LINK_ELEMENT && relAttr ==
LINK_STYLE_REL_VALUE) {\n  type = PreparsedElementType.STYLESHEET;\n }\n\n return new
PreparsedElement(type, selectAttr, hrefAttr, nonBindable, projectAs);\n}\n\nexport enum PreparsedElementType
{\n  NG_CONTENT,\n  STYLE,\n  STYLESHEET,\n  SCRIPT,\n  OTHER\n}\n\nexport class PreparsedElement
{\n  constructor(\n    public type: PreparsedElementType, public selectAttr: string, public hrefAttr: string,\n
public nonBindable: boolean, public projectAs: string) {}\n}\n\nfunction normalizeNgContentSelect(selectAttr:
string): string {\n  if (selectAttr === null || selectAttr.length === 0) {\n    return '*';\n  }\n  return
selectAttr;\n}\n\n"/**\n * @license\n * Copyright Google LLC All Rights Reserved.\n * Use of this source code
is governed by an MIT-style license that can be\n * found in the LICENSE file at https://angular.io/license\n
*/\n\nimport {CompileDirectiveMetadata, CompileDirectiveSummary, CompilePipeSummary,
CompileTokenMetadata, CompileTypeMetadata, identifierName} from './compile_metadata';\nimport
{CompileReflector} from './compile_reflector';\nimport {CompilerConfig} from './config';\nimport
{SchemaMetadata} from './core';\nimport {AST, ASTWithSource, EmptyExpr, ParsedEvent, ParsedProperty,
ParsedVariable} from './expression_parser/ast';\nimport {Parser} from './expression_parser/parser';\nimport
{createTokenForExternalReference, createTokenForReference, Identifiers} from './identifiers';\nimport * as html
from './ml_parser/ast';\nimport {HtmlParser, ParseTreeResult} from './ml_parser/html_parser';\nimport
{removeWhitespaces, replaceNgsp} from './ml_parser/html_whitespaces';\nimport {expandNodes} from
'./ml_parser/icu_ast_expander';\nimport {InterpolationConfig} from './ml_parser/interpolation_config';\nimport
{isNgTemplate, splitNsName} from './ml_parser/tags';\nimport {ParseError, ParseErrorLevel, ParseSourceSpan}
from './parse_util';\nimport {ProviderElementContext, ProviderViewContext} from './provider_analyzer';\nimport

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providerViewContext, uniqDirectives, bindingParser,\n      this._schemaRegistry, schemas, errors);\n  result =
html.visitAll(parseVisitor, htmlAstWithErrors.rootNodes, EMPTY_ELEMENT_CONTEXT);\n
errors.push(...providerViewContext.errors);\n  usedPipes.push(...bindingParser.getUsedPipes());\n } else {\n
result = [];\n }\n  this._assertNoReferenceDuplicationOnTemplate(result, errors);\n\n if (errors.length > 0) {\n
return new TemplateParseResult(result, usedPipes, errors);\n }\n\n if (this.transforms) {\n
this.transforms.forEach((transform: t.TemplateAstVisitor) => {\n      result = t.templateVisitAll(transform,
result);\n    });\n }\n\n return new TemplateParseResult(result, usedPipes, errors);\n }\n\n
expandHtml(htmlAstWithErrors: ParseTreeResult, forced: boolean = false): ParseTreeResult {\n  const errors:
ParseError[] = htmlAstWithErrors.errors;\n\n  if (errors.length === 0 || forced) {\n    // Transform ICU messages to
angular directives\n    const expandedHtmlAst = expandNodes(htmlAstWithErrors.rootNodes);\n
errors.push(...expandedHtmlAst.errors);\n    htmlAstWithErrors = new ParseTreeResult(expandedHtmlAst.nodes,
errors);\n  }\n  return htmlAstWithErrors;\n }\n\n getInterpolationConfig(component:
CompileDirectiveMetadata): InterpolationConfig|undefined {\n  if (component.template) {\n    return
InterpolationConfig.fromArray(component.template.interpolation);\n  }\n  return undefined;\n }\n\n /**
@internal *\n  _assertNoReferenceDuplicationOnTemplate(result: t.TemplateAst[], errors:
TemplateParseError[]):\n  void {\n    const existingReferences: string[] = [];\n\n    result.filter(element =>
!!(<any>element).references)\n      .forEach(element => (<any>element).references.forEach((reference:
t.ReferenceAst) => {\n        const name = reference.name;\n        if (existingReferences.indexOf(name) < 0) {\n
existingReferences.push(name);\n        } else {\n          const error = new TemplateParseError(\n
`Reference \"#{name}\" is defined several times`, reference.sourceSpan,\n            ParseErrorLevel.ERROR);\n
errors.push(error);\n        }\n      });\n  }\n}\n\nclass TemplateParseVisitor implements html.Visitor {\n
selectorMatcher = new SelectorMatcher();\n  directivesIndex = new Map<CompileDirectiveSummary, number>();\n
ngContentCount = 0;\n  contentQueryStartId: number;\n\n  constructor(\n    private reflector: CompileReflector,
private config: CompilerConfig,\n    public providerViewContext: ProviderViewContext, directives:
CompileDirectiveSummary[],\n    private _bindingParser: BindingParser, private _schemaRegistry:
ElementSchemaRegistry,\n    private _schemas: SchemaMetadata[], private _targetErrors: TemplateParseError[])
{\n    // Note: queries start with id 1 so we can use the number in a Bloom filter!\n    this.contentQueryStartId =
providerViewContext.component.viewQueries.length + 1;\n    directives.forEach((directive, index) => {\n      const
selector = CssSelector.parse(directive.selector!);\n      this.selectorMatcher.addSelectable(selector, directive);\n
this.directivesIndex.set(directive, index);\n    });\n  }\n\n  visitExpansion(expansion: html.Expansion, context: any):
any {\n    return null;\n  }\n\n  visitExpansionCase(expansionCase: html.ExpansionCase, context: any): any {\n
return null;\n  }\n\n  visitText(text: html.Text, parent: ElementContext): any {\n    const ngContentIndex =
parent.findNgContentIndex(TEXT_CSS_SELECTOR());\n    const valueNoNgsp = replaceNgsp(text.value);\n
const expr = this._bindingParser.parseInterpolation(valueNoNgsp, text.sourceSpan);\n    return expr ? new
t.BoundTextAst(expr, ngContentIndex, text.sourceSpan) :\n      new t.TextAst(valueNoNgsp,
ngContentIndex, text.sourceSpan);\n  }\n\n  visitAttribute(attribute: html.Attribute, context: any): any {\n    return
new t.AttrAst(attribute.name, attribute.value, attribute.sourceSpan);\n  }\n\n  visitComment(comment:
html.Comment, context: any): any {\n    return null;\n  }\n\n  visitElement(element: html.Element, parent:
ElementContext): any {\n    const queryStartIndex = this.contentQueryStartId;\n    const elName = element.name;\n
const preparsedElement = preparseElement(element);\n    if (preparsedElement.type ===
PreparsedElementType.SCRIPT ||\n        preparsedElement.type === PreparsedElementType.STYLE) {\n      //
Skipping <script> for security reasons\n        // Skipping <style> as we already processed them\n        // in the
StyleCompiler\n      return null;\n    }\n    if (preparsedElement.type === PreparsedElementType.STYLESHEET
&&\n        isStyleUrlResolvable(preparsedElement.hrefAttr)) {\n      // Skipping stylesheets with either relative urls
or package scheme as we already processed\n        // them in the StyleCompiler\n      return null;\n    }\n\n    const
matchableAttrs: [string, string][] = [];\n    const elementOrDirectiveProps: ParsedProperty[] = [];\n    const
elementOrDirectiveRefs: ElementOrDirectiveRef[] = [];\n    const elementVars: t.VariableAst[] = [];\n    const
events: t.BoundEventAst[] = [];\n\n    const templateElementOrDirectiveProps: ParsedProperty[] = [];\n    const

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templateMatchableAttrs: [string, string][] = [];\n  const templateElementVars: t.VariableAst[] = [];\n\n  let
hasInlineTemplates = false;\n  const attrs: t.AttrAst[] = [];\n  const isTemplateElement =
isNgTemplate(element.name);\n\n  element.attrs.forEach(attr => {\n    const parsedVariables: ParsedVariable[] =
[];\n    const hasBinding = this._parseAttr(\n      isTemplateElement, attr, matchableAttrs,
elementOrDirectiveProps, events,\n      elementOrDirectiveRefs, elementVars);\n    elementVars.push(...parsedVariables.map(v => t.VariableAst.fromParsedVariable(v)));\n\n    let templateValue:
string|undefined;\n    let templateKey: string|undefined;\n    const normalizedName =
this._normalizeAttributeName(attr.name);\n\n    if (normalizedName.startsWith(TEMPLATE_ATTR_PREFIX))
{\n      templateValue = attr.value;\n      templateKey =
normalizedName.substring(TEMPLATE_ATTR_PREFIX.length);\n    }\n\n    const hasTemplateBinding =
templateValue != null;\n    if (hasTemplateBinding) {\n      if (hasInlineTemplates) {\n        this._reportError(\n
`Can't have multiple template bindings on one element. Use only one attribute prefixed with *`,\n
attr.sourceSpan);\n      }\n      hasInlineTemplates = true;\n      const parsedVariables: ParsedVariable[] = [];\n
const absoluteOffset = (attr.valueSpan || attr.sourceSpan).start.offset;\n
this._bindingParser.parseInlineTemplateBinding(\n      templateKey!, templateValue!, attr.sourceSpan,
absoluteOffset, templateMatchableAttrs,\n      templateElementOrDirectiveProps, parsedVariables, false /*
isIvyAst */);\n      templateElementVars.push(...parsedVariables.map(v =>
t.VariableAst.fromParsedVariable(v)));\n    }\n\n    if (!hasBinding && !hasTemplateBinding) {\n      // don't
include the bindings as attributes as well in the AST\n      attrs.push(this.visitAttribute(attr, null));\n
matchableAttrs.push([attr.name, attr.value]);\n    }\n  });\n\n  const elementCssSelector =
createElementCssSelector(eName, matchableAttrs);\n  const {directives: directiveMetas, matchElement} =\nthis._parseDirectives(this.selectorMatcher, elementCssSelector);\n  const references: t.ReferenceAst[] = [];\n
const boundDirectivePropNames = new Set<string>();\n  const directiveAsts = this._createDirectiveAsts(\n
isTemplateElement, element.name, directiveMetas, elementOrDirectiveProps,\n  elementOrDirectiveRefs,
element.sourceSpan, references, boundDirectivePropNames);\n  const elementProps: t.BoundElementPropertyAst[]
= this._createElementPropertyAsts(\n  element.name, elementOrDirectiveProps, boundDirectivePropNames);\n
const isViewRoot = parent.isTemplateElement || hasInlineTemplates;\n\n  const providerContext = new
ProviderElementContext(\n    this.providerViewContext, parent.providerContext!, isViewRoot, directiveAsts,
attrs,\n    references, isTemplateElement, queryStartIndex, element.sourceSpan);\n\n  const children:
t.TemplateAst[] = html.visitAll(\n    preparsedElement.nonBindable ? NON_BINDABLE_VISITOR : this,
element.children,\n    ElementContext.create(\n      isTemplateElement, directiveAsts,\n
isTemplateElement ? parent.providerContext! : providerContext));\n  providerContext.afterElement();\n  //
Override the actual selector when the `ngProjectAs` attribute is provided\n  const projectionSelector =
preparsedElement.projectAs != " ?\n    CssSelector.parse(preparsedElement.projectAs)[0] :\n
elementCssSelector;\n  const ngContentIndex = parent.findNgContentIndex(projectionSelector!);\n  let
parsedElement: t.TemplateAst;\n\n  if (preparsedElement.type === PreparsedElementType.NG_CONTENT) {\n
// `` element\n    if (element.children && !element.children.every(_isEmptyTextNode)) {\n
this._reportError(` element cannot have content.`, element.sourceSpan);\n    }\n\n    parsedElement =
new t.NgContentAst(\n      this.ngContentCount++, hasInlineTemplates ? null! : ngContentIndex,
element.sourceSpan);\n  } else if (isTemplateElement) {\n    // `` element\n
this._assertAllEventsPublishedByDirectives(directiveAsts, events);\n
this._assertNoComponentsNorElementBindingsOnTemplate(\n      directiveAsts, elementProps,
element.sourceSpan);\n\n    parsedElement = new t.EmbeddedTemplateAst(\n      attrs, events, references,
elementVars, providerContext.transformedDirectiveAsts,\n      providerContext.transformProviders,
providerContext.transformedHasViewContainer,\n      providerContext.queryMatches, children,
hasInlineTemplates ? null! : ngContentIndex,\n      element.sourceSpan);\n  } else {\n    // element other than
`<ng-content>` and `<ng-template>`\n    this._assertElementExists(matchElement, element);\n
this._assertOnlyOneComponent(directiveAsts, element.sourceSpan);\n\n    const ngContentIndex =\n

```

```

hasInlineTemplates ? null : parent.findNgContentIndex(projectionSelector);\n    parsedElement = new
t.ElementAst(\n        elName, attrs, elementProps, events, references, providerContext.transformedDirectiveAsts,\n        providerContext.transformProviders, providerContext.transformedHasViewContainer,\n        providerContext.queryMatches, children, hasInlineTemplates ? null : ngContentIndex,\n        element.sourceSpan, element.endSourceSpan || null);\n    }\n\n    if (hasInlineTemplates) {\n        // The element as a *-attribute\n        const templateQueryStartIndex = this.contentQueryStartId;\n        const templateSelector = createElementCssSelector('ng-template', templateMatchableAttrs);\n        const { directives } = this._parseDirectives(this.selectorMatcher, templateSelector);\n        const templateBoundDirectivePropNames = new Set<string>();\n        const templateDirectiveAsts = this._createDirectiveAsts(\n            true, elName, directives, templateElementOrDirectiveProps, [], element.sourceSpan, [],\n            templateBoundDirectivePropNames);\n        const templateElementProps: t.BoundElementPropertyAst[] = this._createElementPropertyAsts(\n            elName, templateElementOrDirectiveProps, templateBoundDirectivePropNames);\n        this._assertNoComponentsNorElementBindingsOnTemplate(\n            templateDirectiveAsts, templateElementProps, element.sourceSpan);\n        const templateProviderContext = new ProviderElementContext(\n            this.providerViewContext, parent.providerContext!, parent.isTemplateElement,\n            templateDirectiveAsts, [], [], true, templateQueryStartIndex, element.sourceSpan);\n        templateProviderContext.afterElement();\n        parsedElement = new t.EmbeddedTemplateAst(\n            [], [], [], templateElementVars, templateProviderContext.transformedDirectiveAsts,\n            templateProviderContext.transformProviders,\n            templateProviderContext.transformedHasViewContainer, templateProviderContext.queryMatches,\n            [parsedElement], ngContentIndex, element.sourceSpan);\n    }\n\n    return parsedElement;\n}\n\nprivate _parseAttr(\n    isTemplateElement: boolean, attr: html.Attribute, targetMatchableAttrs: string[][],\n    targetProps: ParsedProperty[], targetEvents: t.BoundEventAst[], targetRefs: ElementOrDirectiveRef[],\n    targetVars: t.VariableAst[]): boolean {\n    const name = this._normalizeAttributeName(attr.name);\n    const value = attr.value;\n    const srcSpan = attr.sourceSpan;\n    const absoluteOffset = attr.valueSpan ?\n        attr.valueSpan.start.offset : srcSpan.start.offset;\n\n    const boundEvents: ParsedEvent[] = [];\n    const bindParts = name.match(BIND_NAME_REGEXP);\n    let hasBinding = false;\n\n    if (bindParts !== null) {\n        hasBinding = true;\n        if (bindParts[KW_BIND_IDX] !== null) {\n            this._bindingParser.parsePropertyBinding(\n                bindParts[IDENT_KW_IDX], value, false, srcSpan, absoluteOffset, attr.valueSpan,\n                targetMatchableAttrs, targetProps);\n        }\n        else if (bindParts[KW_LET_IDX]) {\n            if (isTemplateElement) {\n                const identifier = bindParts[IDENT_KW_IDX];\n                this._parseVariable(identifier, value, srcSpan, targetVars);\n            }\n            else {\n                this._reportError(`"let-" is only supported on ng-template elements.`, srcSpan);\n            }\n        }\n        else if (bindParts[KW_REF_IDX]) {\n            const identifier = bindParts[IDENT_KW_IDX];\n            this._parseReference(identifier, value, srcSpan, targetRefs);\n        }\n        else if (bindParts[KW_ON_IDX]) {\n            this._bindingParser.parseEvent(\n                bindParts[IDENT_KW_IDX], value, srcSpan, attr.valueSpan || srcSpan,\n                targetMatchableAttrs, boundEvents);\n        }\n        else if (bindParts[KW_BINDON_IDX]) {\n            this._bindingParser.parsePropertyBinding(\n                bindParts[IDENT_KW_IDX], value, false, srcSpan, absoluteOffset, attr.valueSpan,\n                targetMatchableAttrs, targetProps);\n        }\n        this._parseAssignmentEvent(\n            bindParts[IDENT_KW_IDX], value, srcSpan, attr.valueSpan || srcSpan,\n            targetMatchableAttrs, boundEvents);\n        }\n        else if (bindParts[KW_AT_IDX]) {\n            this._bindingParser.parseLiteralAttr(\n                name, value, srcSpan, absoluteOffset, attr.valueSpan, targetMatchableAttrs,\n                targetProps);\n        }\n        else if (bindParts[IDENT_BANANA_BOX_IDX]) {\n            this._bindingParser.parsePropertyBinding(\n                bindParts[IDENT_BANANA_BOX_IDX], value, false, srcSpan, absoluteOffset, attr.valueSpan,\n                targetMatchableAttrs, targetProps);\n        }\n        this._parseAssignmentEvent(\n            bindParts[IDENT_BANANA_BOX_IDX], value, srcSpan, attr.valueSpan || srcSpan,\n            targetMatchableAttrs, boundEvents);\n        }\n        else if (bindParts[IDENT_PROPERTY_IDX]) {\n            this._bindingParser.parsePropertyBinding(\n                bindParts[IDENT_PROPERTY_IDX], value, false, srcSpan, absoluteOffset, attr.valueSpan,\n                targetMatchableAttrs, targetProps);\n        }\n        else if (bindParts[IDENT_EVENT_IDX]) {\n            this._bindingParser.parseEvent(\n

```

```

bindParts[IDENT_EVENT_IDX], value, srcSpan, attr.valueSpan || srcSpan,\n      targetMatchableAttrs,
boundEvents);\n  }\n } else {\n   hasBinding = this._bindingParser.parsePropertyInterpolation(\n     name,
value, srcSpan, attr.valueSpan, targetMatchableAttrs, targetProps);\n  }\n\n  if (!hasBinding) {\n    this._bindingParser.parseLiteralAttr(\n      name, value, srcSpan, absoluteOffset, attr.valueSpan,
targetMatchableAttrs, targetProps);\n  }\n\n  targetEvents.push(...boundEvents.map(e =>
t.BoundEventAst.fromParsedEvent(e));\n\n  return hasBinding;\n}\n\nprivate
_normalizeAttributeName(attrName: string): string {\n  return /^data-/i.test(attrName) ? attrName.substring(5) :
attrName;\n}\n\nprivate _parseVariable(\n  identifier: string, value: string, sourceSpan: ParseSourceSpan,
targetVars: t.VariableAst[]) {\n  if (identifier.indexOf('.') > -1) {\n    this._reportError(`"." is not allowed in
variable names`, sourceSpan);\n  } else if (identifier.length === 0) {\n    this._reportError(`Variable does not have
a name`, sourceSpan);\n  }\n\n  targetVars.push(new t.VariableAst(identifier, value, sourceSpan));\n}\n\nprivate _parseReference(\n  identifier: string, value: string, sourceSpan: ParseSourceSpan,\n  targetRefs:
ElementOrDirectiveRef[]) {\n  if (identifier.indexOf('.') > -1) {\n    this._reportError(`"." is not allowed in
reference names`, sourceSpan);\n  } else if (identifier.length === 0) {\n    this._reportError(`Reference does not
have a name`, sourceSpan);\n  }\n\n  targetRefs.push(new ElementOrDirectiveRef(identifier, value,
sourceSpan));\n}\n\nprivate _parseAssignmentEvent(\n  name: string, expression: string, sourceSpan:
ParseSourceSpan, valueSpan: ParseSourceSpan,\n  targetMatchableAttrs: string[][], targetEvents: ParsedEvent[])
{\n  this._bindingParser.parseEvent(\n    `${name}Change`, `${expression}=${event}`, sourceSpan, valueSpan,
targetMatchableAttrs,\n    targetEvents);\n}\n\nprivate _parseDirectives(selectorMatcher: SelectorMatcher,
elementCssSelector: CssSelector):\n  {directives: CompileDirectiveSummary[], matchElement: boolean} {\n  //
Need to sort the directives so that we get consistent results throughout,\n  // as selectorMatcher uses Maps inside.\n  // Also deduplicate directives as they might match more than one time!\n  const directives =
new Array(this.directivesIndex.size);\n  // Whether any directive selector matches on the element name\n  let
matchElement = false;\n\n  selectorMatcher.match(elementCssSelector, (selector, directive) => {\n
directives[this.directivesIndex.get(directive)!] = directive;\n  matchElement = matchElement ||
selector.hasElementSelector();\n});\n\n  return {\n    directives: directives.filter(dir => !!dir),\n
matchElement,\n  };\n}\n\nprivate _createDirectiveAsts(\n  isTemplateElement: boolean, elementName:
string, directives: CompileDirectiveSummary[],\n  props: ParsedProperty[], elementOrDirectiveRefs:
ElementOrDirectiveRef[],\n  elementSourceSpan: ParseSourceSpan, targetReferences: t.ReferenceAst[],\n  targetBoundDirectivePropNames: Set<string>): t.DirectiveAst[] {\n  const matchedReferences = new
Set<string>();\n  let component: CompileDirectiveSummary = null!;\n\n  const directiveAsts =
directives.map((directive) => {\n    const sourceSpan = new ParseSourceSpan(\n      elementSourceSpan.start,
elementSourceSpan.end, elementSourceSpan.fullStart,\n      `Directive ${identifierName(directive.type)}`);\n\n    if (directive.isComponent) {\n      component = directive;\n    }\n\n    const directiveProperties:
t.BoundDirectivePropertyAst[] = [];\n    const boundProperties =\n      this._bindingParser.createDirectiveHostPropertyAsts(directive, elementName, sourceSpan)!;\n\n    let
hostProperties =\n      boundProperties.map(prop => t.BoundElementPropertyAst.fromBoundProperty(prop));\n\n    // Note: We need to check the host properties here as well,\n    // as we don't know the element name in the
DirectiveWrapperCompiler yet.\n    hostProperties = this._checkPropertiesInSchema(elementName,
hostProperties);\n\n    const parsedEvents = this._bindingParser.createDirectiveHostEventAsts(directive,
sourceSpan)!;\n\n    this._createDirectivePropertyAsts(\n      directive.inputs, props, directiveProperties,
targetBoundDirectivePropNames);\n\n    elementOrDirectiveRefs.forEach((elOrDirRef) => {\n      if
((elOrDirRef.value.length === 0 && directive.isComponent) ||\n      (elOrDirRef.isReferenceToDirective(directive))) {\n        targetReferences.push(new t.ReferenceAst(\n          elOrDirRef.name, createTokenForReference(directive.type.reference), elOrDirRef.value,\n          elOrDirRef.sourceSpan));\n        matchedReferences.add(elOrDirRef.name);\n      }\n    });\n\n    const hostEvents
= parsedEvents.map(e => t.BoundEventAst.fromParsedEvent(e));\n\n    const contentQueryStartId =
this.contentQueryStartId;\n    this.contentQueryStartId += directive.queries.length;\n\n    return new

```



```

t.DirectiveAst(\n      directive, directiveProperties, hostProperties, hostEvents, contentQueryStartId,\n sourceSpan);\n });\n\n elementOrDirectiveRefs.forEach((elOrDirRef) => {\n   if (elOrDirRef.value.length > 0)\n   {\n     if (!matchedReferences.has(elOrDirRef.name)) {\n       this._reportError(\n         `There is no directive\n with \"exportAs\" set to \"${elOrDirRef.value}\",\n         elOrDirRef.sourceSpan);\n     }\n   } else if\n (!component) {\n     let refToken: CompileTokenMetadata = null!;\n     if (isTemplateElement) {\n       refToken = createTokenForExternalReference(this.reflector, Identifiers.TemplateRef);\n     }\n     targetReferences.push(\n       new t.ReferenceAst(elOrDirRef.name, refToken, elOrDirRef.value,\n elOrDirRef.sourceSpan));\n   }\n });\n\n return directiveAsts;\n }\n\n private _createDirectivePropertyAsts(\n directiveProperties: {[key: string]: string}, boundProps: ParsedProperty[],\n targetBoundDirectiveProps:\n t.BoundDirectivePropertyAst[],\n targetBoundDirectivePropNames: Set<string>) {\n   if (directiveProperties)\n   {\n     const boundPropsByName = new Map<string, ParsedProperty>();\n     boundProps.forEach(boundProp =>\n     {\n       const prevValue = boundPropsByName.get(boundProp.name);\n       if (!prevValue || prevValue.isLiteral)\n       {\n         // give [a]="b" a higher precedence than a="b" on the same element\n         boundPropsByName.set(boundProp.name, boundProp);\n       }\n     });\n\n     Object.keys(directiveProperties).forEach(dirProp => {\n       const elProp = directiveProperties[dirProp];\n       const boundProp = boundPropsByName.get(elProp);\n\n       // Bindings are optional, so this binding only needs to\n       be set up if an expression is given.\n       if (boundProp) {\n         targetBoundDirectivePropNames.add(boundProp.name);\n         if (!isEmptyExpression(boundProp.expression)) {\n           targetBoundDirectiveProps.push(new t.BoundDirectivePropertyAst(\n             dirProp, boundProp.name,\n             boundProp.expression, boundProp.sourceSpan);\n           }\n         }\n       }\n     });\n\n     private\n     _createElementPropertyAsts(\n       elementName: string, props: ParsedProperty[],\n       boundDirectivePropNames:\n       Set<string>): t.BoundElementPropertyAst[] {\n       const boundElementProps: t.BoundElementPropertyAst[] = [];\n\n       props.forEach((prop: ParsedProperty) => {\n         if (!prop.isLiteral &&\n         !boundDirectivePropNames.has(prop.name)) {\n           const boundProp =\n           this._bindingParser.createBoundElementProperty(elementName, prop);\n\n           boundElementProps.push(t.BoundElementPropertyAst.fromBoundProperty(boundProp));\n         }\n       });\n\n       return\n       this._checkPropertiesInSchema(elementName, boundElementProps);\n     }\n\n     private\n     _findComponentDirectives(directives: t.DirectiveAst[]): t.DirectiveAst[] {\n       return directives.filter(directive =>\n       directive.directive.isComponent);\n     }\n\n     private\n     _findComponentDirectiveNames(directives: t.DirectiveAst[]):\n     string[] {\n       return this._findComponentDirectives(directives)\n         .map(directive =>\n         identifierName(directive.directive.type!));\n     }\n\n     private\n     _assertOnlyOneComponent(directives: t.DirectiveAst[],\n sourceSpan: ParseSourceSpan) {\n       const componentTypeNames =\n       this._findComponentDirectiveNames(directives);\n       if (componentTypeNames.length > 1) {\n         this._reportError(\n           `More than one component matched on this element.\\n` +\n           `Make sure that only\n one component's selector can match a given element.\\n` +\n           `Conflicting components:\n ${componentTypeNames.join(',')}`,\n           sourceSpan);\n       }\n     }\n\n     /**\n      * Make sure that non-angular tags\n      conform to the schemas.\n      *\n      * Note: An element is considered an angular tag when at least one directive\n      selector matches the\n      * tag name.\n      *\n      * @param matchElement Whether any directive has matched on the tag\n      name\n      * @param element the html element\n      */\n     private\n     _assertElementExists(matchElement: boolean,\n element: html.Element) {\n       const elName = element.name.replace(/^:xhtml:/, "");\n\n       if (!matchElement &&\n         !this._schemaRegistry.hasElement(elName, this._schemas)) {\n         let errorMsg = `${elName}` is not a known\n element;\n         errorMsg += `1. If `${elName}` is an Angular component, then verify that it is part of this\n module.\\n`;\n         if (elName.indexOf('-') > -1) {\n           errorMsg += `2. If `${elName}` is a Web\n Component then add 'CUSTOM_ELEMENTS_SCHEMA' to the '@NgModule.schemas' of this component to\n suppress this message.`;\n         }\n       } else {\n         errorMsg += `2. To allow any element add\n 'NO_ERRORS_SCHEMA' to the '@NgModule.schemas' of this component.`;\n       }\n\n       this._reportError(errorMsg, element.sourceSpan);\n     }\n\n     private\n     _assertNoComponentsNorElementBindingsOnTemplate(\n       directives: t.DirectiveAst[], elementProps:

```

```

t.BoundElementPropertyAst[],\n    sourceSpan: ParseSourceSpan) {\n    const componentTypeNames: string[] =
this._findComponentDirectiveNames(directives);\n    if (componentTypeNames.length > 0) {\n
this._reportError(\n        `Components on an embedded template: ${componentTypeNames.join(',')}`,\n
sourceSpan);\n    }\n    elementProps.forEach(prop => {\n    this._reportError(\n        `Property binding ${\n
prop.name} not used by any directive on an embedded template. Make sure that the property name is spelled
correctly and all directives are listed in the '@NgModule.declarations'.`,\n        sourceSpan);\n    });\n    }\n\nprivate _assertAllEventsPublishedByDirectives(\n    directives: t.DirectiveAst[], events: t.BoundEventAst[]) {\n
const allDirectiveEvents = new Set<string>();\n    directives.forEach(directive => {\n
Object.keys(directive.directive.outputs).forEach(k => {\n    const eventName = directive.directive.outputs[k];\n
allDirectiveEvents.add(eventName);\n    });\n    });\n    events.forEach(event => {\n    if (event.target != null ||
!allDirectiveEvents.has(event.name)) {\n    this._reportError(\n        `Event binding ${\n
event\n
.fullName} not emitted by any directive on an embedded template. Make sure that the event name is spelled
correctly and all directives are listed in the '@NgModule.declarations'.`,\n        event.sourceSpan);\n    }\n
});\n    }\n\nprivate _checkPropertiesInSchema(elementName: string, boundProps: t.BoundElementPropertyAst[]):\n
t.BoundElementPropertyAst[] {\n    // Note: We can't filter out empty expressions before this method,\n    // as we
still want to validate them!\n    return boundProps.filter((boundProp) => {\n    if (boundProp.type ===
t.PropertyBindingType.Property &&\n        !this._schemaRegistry.hasProperty(elementName, boundProp.name,\n
this._schemas)) {\n    let errorMsg = `Can't bind to '${boundProp.name}' since it isn't a known property of '${\n
elementName}'.`; \n    if (elementName.startsWith('ng-')) {\n    errorMsg +=\n        `\\n1. If '${\n
boundProp\n
.name}' is an Angular directive, then add 'CommonModule' to the
'@NgModule.imports' of this component.` +\n        `\\n2. To allow any property add 'NO_ERRORS_SCHEMA'
to the '@NgModule.schemas' of this component.`;\n    } else if (elementName.indexOf('.') > -1) {\n
errorMsg +=\n        `\\n1. If '${elementName}' is an Angular component and it has '${\n
boundProp.name}' input, then verify that it is part of this module.` +\n        `\\n2. If '${\n
elementName}' is a Web Component then add 'CUSTOM_ELEMENTS_SCHEMA' to the '@NgModule.schemas' of
this component to suppress this message.` +\n        `\\n3. To allow any property add 'NO_ERRORS_SCHEMA'
to the '@NgModule.schemas' of this component.`;\n    }\n    this._reportError(errorMsg,\n
boundProp.sourceSpan);\n    }\n    return !isEmptyExpression(boundProp.value);\n    });\n    }\n\nprivate
_reportError(\n    message: string, sourceSpan: ParseSourceSpan,\n    level: ParseErrorLevel =
ParseErrorLevel.ERROR) {\n    this._targetErrors.push(new ParseError(sourceSpan, message, level));\n
}\n\n\nclass NonBindableVisitor implements html.Visitor {\n    visitElement(ast: html.Element, parent:
ElementContext): t.ElementAst|null {\n    const preparsedElement = preparseElement(ast);\n    if
(preparsedElement.type === PreparsedElementType.SCRIPT ||\n        preparsedElement.type ===
PreparsedElementType.STYLE ||\n        preparsedElement.type === PreparsedElementType.STYLESHEET) {\n
// Skipping <script> for security reasons\n    // Skipping <style> and stylesheets as we already processed them\n
// in the StyleCompiler\n    return null;\n    }\n\n    const attrNameAndValues = ast.attrs.map((attr): [string, string]
=> [attr.name, attr.value]);\n    const selector = createElementCssSelector(ast.name, attrNameAndValues);\n    const
ngContentIndex = parent.findNgContentIndex(selector);\n    const children: t.TemplateAst[] = html.visitAll(this,\n
ast.children, EMPTY_ELEMENT_CONTEXT);\n    return new t.ElementAst(\n        ast.name, html.visitAll(this,\n
ast.attrs), [], [], [], false, [], children,\n        ngContentIndex, ast.sourceSpan, ast.endSourceSpan);\n    }\n\n    visitComment(comment: html.Comment, context: any): any {\n    return null;\n    }\n\n    visitAttribute(attribute:
html.Attribute, context: any): t.AttrAst {\n    return new t.AttrAst(attribute.name, attribute.value,\n
attribute.sourceSpan);\n    }\n\n    visitText(text: html.Text, parent: ElementContext): t.TextAst {\n    const
ngContentIndex = parent.findNgContentIndex(TEXT_CSS_SELECTOR);\n    return new t.TextAst(text.value,\n
ngContentIndex, text.sourceSpan);\n    }\n\n    visitExpansion(expansion: html.Expansion, context: any): any {\n
return expansion;\n    }\n\n    visitExpansionCase(expansionCase: html.ExpansionCase, context: any): any {\n
return expansionCase;\n    }\n}\n\n**\n * A reference to an element or directive in a template. E.g., the reference in this
template:\n * <div #myMenu="coolMenu">\n * would be {name: 'myMenu', value: 'coolMenu',

```

```

sourceSpan: ...}\n */\n\nclass ElementOrDirectiveRef {\n  constructor(public name: string, public value: string, public
sourceSpan: ParseSourceSpan) {}}\n\n /** Gets whether this is a reference to the given directive. */\n
isReferenceToDirective(directive: CompileDirectiveSummary) {\n  return
splitExportAs(directive.exportAs).indexOf(this.value) !== -1;\n }}\n\n/** Splits a raw, potentially comma-
delimited `exportAs` value into an array of names. */\nfunction splitExportAs(exportAs: string|null): string[] {\n
return exportAs ? exportAs.split(',')\n.map(e => e.trim()) : [];\n}\n\nexport function splitClasses(classAttrValue:
string): string[] {\n  return classAttrValue.trim().split(/\\s+/g);\n}\n\n\nclass ElementContext {\n  static create(\n
isTemplateElement: boolean, directives: t.DirectiveAst[],\n  providerContext: ProviderElementContext):
ElementContext {\n  const matcher = new SelectorMatcher();\n  let wildcardNgContentIndex: number = null!;\n
const component = directives.find(directive => directive.directive.isComponent);\n  if (component) {\n  const
ngContentSelectors = component.directive.template.ngContentSelectors;\n  for (let i = 0; i <
ngContentSelectors.length; i++) {\n  const selector = ngContentSelectors[i];\n  if (selector === '*') {\n
wildcardNgContentIndex = i;\n  } else {\n
matcher.addSelectable(CssSelector.parse(ngContentSelectors[i]), i);\n  }\n  }\n  }\n  return new
ElementContext(isTemplateElement, matcher, wildcardNgContentIndex, providerContext);\n }}\n  constructor(\n
public isTemplateElement: boolean, private _ngContentIndexMatcher: SelectorMatcher,\n  private
_wildcardNgContentIndex: number|null,\n  public providerContext: ProviderElementContext|null) {}}\n\n
findNgContentIndex(selector: CssSelector): number|null {\n  const ngContentIndices: number[] = [];\n
this._ngContentIndexMatcher.match(selector, (selector, ngContentIndex) => {\n
ngContentIndices.push(ngContentIndex);\n });\n  ngContentIndices.sort();\n  if (this._wildcardNgContentIndex
!== null) {\n  ngContentIndices.push(this._wildcardNgContentIndex);\n  }\n  return ngContentIndices.length > 0
? ngContentIndices[0] : null;\n }}\n\n\nexport function createElementCssSelector(\n  elementName: string,
attributes: [string, string][]): CssSelector {\n  const cssSelector = new CssSelector();\n  const elNameNoNs =
splitNsName(elementName)[1];\n  cssSelector.setElement(elNameNoNs);\n  for (let i = 0; i < attributes.length;
i++) {\n  const attrName = attributes[i][0];\n  const attrNameNoNs = splitNsName(attrName)[1];\n  const
attrValue = attributes[i][1];\n  cssSelector.addAttribute(attrNameNoNs, attrValue);\n  if
(attrName.toLowerCase() === CLASS_ATTR) {\n  const classes = splitClasses(attrValue);\n
classes.forEach(className => cssSelector.addClassName(className));\n  }\n  }\n  return cssSelector;\n }\n\nconst
EMPTY_ELEMENT_CONTEXT = new ElementContext(true, new SelectorMatcher(), null, null);\nconst
NON_BINDABLE_VISITOR = new NonBindableVisitor();\n\nfunction _isEmptyTextNode(node: html.Node):
boolean {\n  return node instanceof html.Text && node.value.trim().length === 0;\n }\n\n\nexport function
removeSummaryDuplicates<T extends {type: CompileTypeMetadata}>(items: T[]): T[] {\n  const map = new
Map<any, T>();\n  items.forEach((item) => {\n  if (!map.get(item.type.reference)) {\n
map.set(item.type.reference, item);\n  }\n  });\n  return Array.from(map.values());\n }\n\n\nexport function
isEmptyExpression(ast: AST): boolean {\n  if (ast instanceof ASTWithSource) {\n  ast = ast.ast;\n  }\n  return ast
instanceof EmptyExpr;\n }\n\n", "/*\n * @license\n * Copyright Google LLC All Rights Reserved.\n * Use of this
source code is governed by an MIT-style license that can be\n * found in the LICENSE file at
https://angular.io/license\n */\n\nconst enum Char {\n  OpenParen = 40,\n  CloseParen = 41,\n  Colon = 58,\n
Semicolon = 59,\n  BackSlash = 92,\n  QuoteNone = 0, // indicating we are not inside a quote\n  QuoteDouble =
34,\n  QuoteSingle = 39,\n }\n\n\n/**\n * Parses string representation of a style and converts it into object literal.\n
*\n * @param value string representation of style as used in the `style` attribute in HTML.\n * Example: `color:
red; height: auto`\n * @returns An array of style property name and value pairs, e.g. `[color', 'red', 'height',\n *
'auto']`\n */\n\nexport function parse(value: string): string[] {\n  // we use a string array here instead of a string map\n
// because a string-map is not guaranteed to retain the\n // order of the entries whereas a string array can be\n //
constructed in a [key, value, key, value] format.\n  const styles: string[] = [];\n  let i = 0;\n  let parenDepth = 0;\n
let quote: Char = Char.QuoteNone;\n  let valueStart = 0;\n  let propStart = 0;\n  let currentProp: string|null = null;\n
let valueHasQuotes = false;\n  while (i < value.length) {\n  const token = value.charCodeAt(i++) as Char;\n
switch (token) {\n  case Char.OpenParen:\n  parenDepth++;\n  break;\n  case Char.CloseParen:\n

```


initial styling values (which are all the static class="..." and style="..." attribute values that exist on an element within a template). The builder class below handles producing instructions for the following cases:

- Static style/class attributes (style="..." and class="...")
- Dynamic style/class map bindings ([style]="map" and [class]="map|string")
- Dynamic style/class property bindings ([style.prop]="exp" and [class.name]="exp")

Due to the complex relationship of all of these cases, the instructions generated for these attributes/properties/bindings must be done so in the correct order. The order which these must be generated is as follows:

```

if (createMode) {
  styling(...)
}
if (updateMode) {
  styleMap(...)
  classMap(...)
  styleProp(...)
  classProp(...)
}

```

The creation/update methods within the builder class produce these instructions.

```

export class StylingBuilder {
  /** Whether or not there are any static styling values present */
  private _hasInitialValues = false;
  /** Whether or not there are any styling bindings present (i.e. [style], [class], [style.prop] or [class.name]) */
  private _hasBindings = false;
  private _hasBindingsWithPipes = false;
  /** the input for [class] (if it exists) */
  private _classMapInput: BoundStylingEntry|null = null;
  /** the input for [style] (if it exists) */
  private _styleMapInput: BoundStylingEntry|null = null;
  /** an array of each [style.prop] input */
  private _singleStyleInputs: BoundStylingEntry[]|null = null;
  /** an array of each [class.name] input */
  private _singleClassInputs: BoundStylingEntry[]|null = null;
  private _lastStylingInput: BoundStylingEntry|null = null;
  private _firstStylingInput: BoundStylingEntry|null = null;
  // maps are used instead of hash maps because a Map will retain the ordering of the keys
  /** Represents the location of each style binding in the template (e.g. <div [style.width]="w" [style.height]="h"> implies that width=0 and height=1) */
  private _stylesIndex = new Map<string, number>();
  /** Represents the location of each class binding in the template (e.g. <div [class.big]="b" [class.hidden]="h"> implies that big=0 and hidden=1) */
  private _classesIndex = new Map<string, number>();
  private _initialStyleValues: string[] = [];
  private _initialClassValues: string[] = [];
  constructor(private _directiveExpr: o.Expression|null) {}
  /** Registers a given input to the styling builder to be later used when producing AOT code. The code below will only accept the input if it is somehow tied to styling (whether it be style/class bindings or static style/class attributes). */
  registerBoundInput(input: t.BoundAttribute): boolean {
    // [attr.style] or [attr.class] are skipped in the code below, // they should not be treated as styling-based bindings since // they are intended to be written directly to the attr and // will therefore skip all style/class resolution that is present // with style="", [style]="", [style.prop]="", class="", // [class.prop]="", [class]=" assignments
    let binding: BoundStylingEntry|null = null;
    let name = input.name;
    switch (input.type) {
      case BindingType.Property:
        binding = this.registerInputBasedOnName(name, input.value, input.sourceSpan);
        break;
      case BindingType.Style:
        binding = this.registerStyleInput(name, false, input.value, input.sourceSpan, input.unit);
        break;
      case BindingType.Class:
        binding = this.registerClassInput(name, false, input.value, input.sourceSpan);
        break;
    }
    return binding ? true : false;
  }
  registerInputBasedOnName(name: string, expression: AST, sourceSpan: ParseSourceSpan) {
    let binding: BoundStylingEntry|null = null;
    const prefix = name.substring(0, 6);
    const isStyle = name === 'style' || prefix === 'style.' || prefix === 'style!';
    const isClass = !isStyle && (name === 'class' || prefix === 'class.' || prefix === 'class!');
    if (isStyle || isClass) {
      const isMapBased = name.charAt(5) !== '.'; // style.prop or class.prop makes this a no
      const property = name.substr(isMapBased ? 5 : 6); // the dot explains why there's a +1
      if (isStyle) {
        binding = this.registerStyleInput(property, isMapBased, expression, sourceSpan);
      } else {
        binding = this.registerClassInput(property, isMapBased, expression, sourceSpan);
      }
    }
    return binding;
  }
  registerStyleInput(name: string, isMapBased: boolean, value: AST, sourceSpan: ParseSourceSpan, suffix?: string|null): BoundStylingEntry|null {
    if (isEmptyExpression(value)) {
      return null;
    }
    name = normalizePropName(name);
    const {property, hasOverrideFlag, suffix: bindingSuffix} = parseProperty(name);
    suffix = typeof suffix === 'string' && suffix.length !== 0 ? suffix : bindingSuffix;
    const entry: BoundStylingEntry = {name: property, suffix: suffix, value, sourceSpan, hasOverrideFlag};
    if (isMapBased) {
      this._styleMapInput = entry;
    } else {
      (this._singleStyleInputs = this._singleStyleInputs || []).push(entry);
      registerIntoMap(this._stylesIndex, property);
    }
  }
}

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this._lastStylingInput = entry;\n  this._firstStylingInput = this._firstStylingInput || entry;\n
this._checkForPipes(value);\n  this.hasBindings = true;\n  return entry;\n }\n\n registerClassInput(name: string,\n isMapBased: boolean, value: AST, sourceSpan: ParseSourceSpan):\n  BoundStylingEntry|null {\n  if\n (isEmptyExpression(value)) {\n  return null;\n }\n  const {property, hasOverrideFlag} =\n parseProperty(name);\n  const entry:\n  BoundStylingEntry = {name: property, value, sourceSpan,\n hasOverrideFlag, suffix: null};\n  if (isMapBased) {\n  if (this._classMapInput) {\n  throw new Error(\n '[class] and [className] bindings cannot be used on the same element simultaneously');\n }\n this._classMapInput = entry;\n } else {\n (this._singleClassInputs = this._singleClassInputs || []).push(entry);\n registerIntoMap(this._classesIndex, property);\n }\n this._lastStylingInput = entry;\n this._firstStylingInput =\n this._firstStylingInput || entry;\n this._checkForPipes(value);\n this.hasBindings = true;\n return entry;\n }\n\n private _checkForPipes(value: AST) {\n  if ((value instanceof ASTWithSource) && (value.ast instanceof\n BindingPipe)) {\n  this.hasBindingsWithPipes = true;\n }\n }\n\n /**\n * Registers the element's static style\n string value to the builder.\n *\n * @param value the style string (e.g. `width:100px; height:200px;`)\n *\n registerStyleAttr(value: string) {\n  this._initialStyleValues = parseStyle(value);\n  this._hasInitialValues = true;\n }\n\n /**\n * Registers the element's static class string value to the builder.\n *\n * @param value the className\n string (e.g. `disabled gold zoom`)\n *\n registerClassAttr(value: string) {\n  this._initialClassValues =\n value.trim().split(/\\s+/g);\n  this._hasInitialValues = true;\n }\n\n /**\n * Appends all styling-related expressions\n to the provided attrs array.\n *\n * @param attrs an existing array where each of the styling expressions\n * will\n be inserted into.\n *\n populateInitialStylingAttrs(attrs: o.Expression[]): void {\n  // [CLASS_MARKER, 'foo',\n 'bar', 'baz' ...]\n  if (this._initialClassValues.length) {\n  attrs.push(o.literal(AttributeMarker.Classes));\n  for\n (let i = 0; i < this._initialClassValues.length; i++) {\n  attrs.push(o.literal(this._initialClassValues[i]));\n }\n }\n\n // [STYLE_MARKER, 'width', '200px', 'height', '100px', ...]\n  if (this._initialStyleValues.length) {\n  attrs.push(o.literal(AttributeMarker.Styles));\n  for (let i = 0; i < this._initialStyleValues.length; i += 2) {\n  attrs.push(\n o.literal(this._initialStyleValues[i]), o.literal(this._initialStyleValues[i + 1]));\n }\n }\n }\n\n /**\n * Builds an instruction with all the expressions and parameters for `elementHostAttrs`.\n *\n * The\n instruction generation code below is used for producing the AOT statement code which is\n * responsible for\n registering initial styles (within a directive hostBindings' creation block),\n * as well as any of the provided\n attribute values, to the directive host element.\n *\n assignHostAttrs(attrs: o.Expression[], definitionMap:\n DefinitionMap): void {\n  if (this._directiveExpr && (attrs.length || this._hasInitialValues)) {\n  this.populateInitialStylingAttrs(attrs);\n  definitionMap.set('hostAttrs', o.literalArr(attrs));\n }\n }\n\n /**\n * Builds an instruction with all the expressions and parameters for `classMap`.\n *\n * The instruction data will\n contain all expressions for `classMap` to function\n * which includes the `[class]` expression params.\n *\n buildClassMapInstruction(valueConverter: ValueConverter): StylingInstruction|null {\n  if (this._classMapInput)\n {\n  return this._buildMapBasedInstruction(valueConverter, true, this._classMapInput);\n }\n  return null;\n }\n\n /**\n * Builds an instruction with all the expressions and parameters for `styleMap`.\n *\n * The\n instruction data will contain all expressions for `styleMap` to function\n * which includes the `[style]` expression\n params.\n *\n buildStyleMapInstruction(valueConverter: ValueConverter): StylingInstruction|null {\n  if\n (this._styleMapInput) {\n  return this._buildMapBasedInstruction(valueConverter, false, this._styleMapInput);\n }\n  return null;\n }\n\n private _buildMapBasedInstruction(\n valueConverter: ValueConverter, isClassBased:\n boolean,\n stylingInput: BoundStylingEntry): StylingInstruction {\n  // each styling binding value is stored in\n the LView\n  // map-based bindings allocate two slots: one for the\n  // previous binding value and another for the\n previous\n  // className or style attribute value.\n  let totalBindingSlotsRequired =\n MIN_STYLING_BINDING_SLOTS_REQUIRED;\n  // these values must be outside of the update block so that\n they can\n  // be evaluated (the AST visit call) during creation time so that any\n  // pipes can be picked up in time\n before the template is built\n  const mapValue = stylingInput.value.visit(valueConverter);\n  let reference:\n o.ExternalReference;\n  if (mapValue instanceof Interpolation) {\n  totalBindingSlotsRequired +=\n mapValue.expressions.length;\n  reference = isClassBased ? getClassMapInterpolationExpression(mapValue) : \n  getStyleMapInterpolationExpression(mapValue);\n } else {\n  reference = isClassBased ?

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R3.classMap : R3.styleMap;\n } \n\n return {\n  reference,\n  calls: [{\n    supportsInterpolation: true,\n    sourceSpan: stylingInput.sourceSpan,\n    allocateBindingSlots: totalBindingSlotsRequired,\n    params: (convertFn: (value: any) => o.Expression|o.Expression[]) => {\n      const convertResult =\n      convertFn(mapValue);\n      const params = Array.isArray(convertResult) ? convertResult : [convertResult];\n      return params;\n    } \n  }]\n};\n\n private _buildSingleInputs(\n  reference: o.ExternalReference,\n  inputs: BoundStylingEntry[], valueConverter: ValueConverter,\n  getInterpolationExpressionFn: ((value: Interpolation) => o.ExternalReference)|null,\n  isClassBased: boolean): StylingInstruction[] {\n  const\n  instructions: StylingInstruction[] = [];\n\n  inputs.forEach(input => {\n    const previousInstruction:\n    StylingInstruction|undefined =\n    instructions[instructions.length - 1];\n    const value =\n    input.value.visit(valueConverter);\n    let referenceForCall = reference;\n\n    // each styling binding value is\n    stored in the LView\n    // but there are two values stored for each binding:\n    // 1) the value itself\n    // 2) an\n    intermediate value (concatenation of style up to this point).\n    // We need to store the intermediate value so that\n    we don't allocate\n    // the strings on each CD.\n    let totalBindingSlotsRequired =\n    MIN_STYLING_BINDING_SLOTS_REQUIRED;\n\n    if (value instanceof Interpolation) {\n      totalBindingSlotsRequired += value.expressions.length;\n\n      if (getInterpolationExpressionFn) {\n        referenceForCall = getInterpolationExpressionFn(value);\n      } \n    } \n\n    const call = {\n      sourceSpan:\n      input.sourceSpan,\n      allocateBindingSlots: totalBindingSlotsRequired,\n      supportsInterpolation:\n      !!getInterpolationExpressionFn,\n      params: (convertFn: (value: any) => o.Expression | o.Expression[]) => {\n        // params => stylingProp(propName, value, suffix)\n        const params: o.Expression[] = [];\n        params.push(o.literal(input.name));\n\n        const convertResult = convertFn(value);\n        if\n        (Array.isArray(convertResult)) {\n          params.push(...convertResult);\n        } else {\n          params.push(convertResult);\n        } \n        // [style.prop] bindings may use suffix values (e.g. px, em, etc...),\n        therefore,\n        // if that is detected then we need to pass that in as an optional param.\n        if (!isClassBased\n        && input.suffix !== null) {\n          params.push(o.literal(input.suffix));\n        } \n        return params;\n      } \n    };\n\n    // If we ended up generating a call to the same instruction as the previous styling property\n    // we can chain the calls together safely to save some bytes, otherwise we have to generate\n    // a separate instruction\n    call. This is primarily a concern with interpolation instructions\n    // where we may start off with one `reference`,\n    but end up using another based on the\n    // number of interpolations.\n    if (previousInstruction &&\n    previousInstruction.reference === referenceForCall) {\n      previousInstruction.calls.push(call);\n    } else {\n      instructions.push({reference: referenceForCall, calls: [call]});\n    } \n  });\n\n  return instructions;\n} \n\n private _buildClassInputs(valueConverter: ValueConverter): StylingInstruction[] {\n  if (this._singleClassInputs)\n  {\n    return this._buildSingleInputs(\n      R3.classProp, this._singleClassInputs, valueConverter, null, true);\n  } \n  return [];\n} \n\n private _buildStyleInputs(valueConverter: ValueConverter): StylingInstruction[] {\n  if\n  (this._singleStyleInputs) {\n    return this._buildSingleInputs(\n      R3.styleProp, this._singleStyleInputs,\n      valueConverter,\n      getStylePropInterpolationExpression, false);\n  } \n  return [];\n} \n\n /**\n * Constructs\n * all instructions which contain the expressions that will be placed\n * into the update block of a template function or\n * a directive hostBindings function.\n */\n buildUpdateLevelInstructions(valueConverter: ValueConverter) {\n  const instructions: StylingInstruction[] = [];\n  if (this.hasBindings) {\n    const styleMapInstruction =\n    this.buildStyleMapInstruction(valueConverter);\n    if (styleMapInstruction) {\n      instructions.push(styleMapInstruction);\n    } \n    const classMapInstruction =\n    this.buildClassMapInstruction(valueConverter);\n    if (classMapInstruction) {\n      instructions.push(classMapInstruction);\n    } \n    instructions.push(...this._buildStyleInputs(valueConverter));\n    instructions.push(...this._buildClassInputs(valueConverter));\n  } \n  return instructions;\n} \n\n function\n  registerIntoMap(map: Map<string, number>, key: string) {\n    if (!map.has(key)) {\n      map.set(key, map.size);\n    } \n  } \n\n export function parseProperty(name: string):\n  {property: string, suffix: string|null, hasOverrideFlag:\n  boolean} {\n    let hasOverrideFlag = false;\n    const overrideIndex = name.indexOf(IMPORTANT_FLAG);\n    if\n    (overrideIndex !== -1) {\n      name = overrideIndex > 0 ? name.substring(0, overrideIndex) : '';\n      hasOverrideFlag\n      = true;\n    } \n    let suffix: string|null = null;\n    let property = name;\n    const unitIndex = name.lastIndexOf('.');\n    if

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(unitIndex > 0) {\n  suffix = name.substr(unitIndex + 1);\n  property = name.substring(0, unitIndex);\n } \n\n
return {property, suffix, hasOverrideFlag};\n}\n\n/**\n * Gets the instruction to generate for an interpolated class
map.\n * @param interpolation An Interpolation AST\n */\nfunction
getClassMapInterpolationExpression(interpolation: Interpolation): o.ExternalReference {\n  switch
(getInterpolationArgsLength(interpolation)) {\n  case 1:\n    return R3.classMap;\n  case 3:\n    return
R3.classMapInterpolate1;\n  case 5:\n    return R3.classMapInterpolate2;\n  case 7:\n    return
R3.classMapInterpolate3;\n  case 9:\n    return R3.classMapInterpolate4;\n  case 11:\n    return
R3.classMapInterpolate5;\n  case 13:\n    return R3.classMapInterpolate6;\n  case 15:\n    return
R3.classMapInterpolate7;\n  case 17:\n    return R3.classMapInterpolate8;\n  default:\n    return
R3.classMapInterpolateV;\n  }\n}\n\n/**\n * Gets the instruction to generate for an interpolated style map.\n *
@param interpolation An Interpolation AST\n */\nfunction
getStyleMapInterpolationExpression(interpolation:
Interpolation): o.ExternalReference {\n  switch (getInterpolationArgsLength(interpolation)) {\n  case 1:\n
return R3.styleMap;\n  case 3:\n    return R3.styleMapInterpolate1;\n  case 5:\n    return R3.styleMapInterpolate2;\n
case 7:\n    return R3.styleMapInterpolate3;\n  case 9:\n    return R3.styleMapInterpolate4;\n  case 11:\n
return R3.styleMapInterpolate5;\n  case 13:\n    return R3.styleMapInterpolate6;\n  case 15:\n    return
R3.styleMapInterpolate7;\n  case 17:\n    return R3.styleMapInterpolate8;\n  default:\n    return
R3.styleMapInterpolateV;\n  }\n}\n\n/**\n * Gets the instruction to generate for an interpolated style prop.\n *
@param interpolation An Interpolation AST\n */\nfunction
getStylePropInterpolationExpression(interpolation:
Interpolation) {\n  switch (getInterpolationArgsLength(interpolation)) {\n  case 1:\n    return R3.styleProp;\n
case 3:\n    return R3.stylePropInterpolate1;\n  case 5:\n    return R3.stylePropInterpolate2;\n  case 7:\n
return R3.stylePropInterpolate3;\n  case 9:\n    return R3.stylePropInterpolate4;\n  case 11:\n    return
R3.stylePropInterpolate5;\n  case 13:\n    return R3.stylePropInterpolate6;\n  case 15:\n    return
R3.stylePropInterpolate7;\n  case 17:\n    return R3.stylePropInterpolate8;\n  default:\n    return
R3.stylePropInterpolateV;\n  }\n}\n\nfunction normalizePropName(prop: string): string {\n  return
hyphenate(prop);\n}\n\n",/**\n * @license\n * Copyright Google LLC All Rights Reserved.\n * Use of this
source code is governed by an MIT-style license that can be\n * found in the LICENSE file at
https://angular.io/license\n */\nimport * as chars from './chars';\n\nexport enum TokenType {\n  Character,\n  Identifier,\n  Keyword,\n  String,\n  Operator,\n  Number,\n  Error\n}\n\nconst KEYWORDS = ['var', 'let', 'as', 'null',
'undefined', 'true', 'false', 'if', 'else', 'this'];\n\nexport class Lexer {\n  tokenize(text: string): Token[] {\n    const
scanner = new _Scanner(text);\n    const tokens: Token[] = [];\n    let token = scanner.scanToken();\n    while (token
!= null) {\n      tokens.push(token);\n      token = scanner.scanToken();\n    }\n    return tokens;\n  }\n}\n\nexport
class Token {\n  constructor(\n    public index: number, public end: number, public type: TokenType, public
numValue: number,\n    public strValue: string) {\n  }\n\n  isCharacter(code: number): boolean {\n    return this.type
== TokenType.Character && this.numValue == code;\n  }\n\n  isNumber(): boolean {\n    return this.type ==
TokenType.Number;\n  }\n\n  isString(): boolean {\n    return this.type == TokenType.String;\n  }\n\n  isOperator(operator: string): boolean {\n    return this.type == TokenType.Operator && this.strValue == operator;\n
}\n\n  isIdentifier(): boolean {\n    return this.type == TokenType.Identifier;\n  }\n\n  isKeyword(): boolean {\n
return this.type == TokenType.Keyword;\n  }\n\n  isKeywordLet(): boolean {\n    return this.type ==
TokenType.Keyword && this.strValue == 'let';\n  }\n\n  isKeywordAs(): boolean {\n    return this.type ==
TokenType.Keyword && this.strValue == 'as';\n  }\n\n  isKeywordNull(): boolean {\n    return this.type ==
TokenType.Keyword && this.strValue == 'null';\n  }\n\n  isKeywordUndefined(): boolean {\n    return this.type ==
TokenType.Keyword && this.strValue == 'undefined';\n  }\n\n  isKeywordTrue(): boolean {\n    return this.type ==
TokenType.Keyword && this.strValue == 'true';\n  }\n\n  isKeywordFalse(): boolean {\n    return this.type ==
TokenType.Keyword && this.strValue == 'false';\n  }\n\n  isKeywordThis(): boolean {\n    return this.type ==
TokenType.Keyword && this.strValue == 'this';\n  }\n\n  isError(): boolean {\n    return this.type ==
TokenType.Error;\n  }\n\n  toNumber(): number {\n    return this.type == TokenType.Number ? this.numValue : -
1;\n  }\n\n  toString(): string|null {\n    switch (this.type) {\n    case TokenType.Character:\n    case
TokenType.Identifier:\n    case TokenType.Keyword:\n    case TokenType.Operator:\n    case

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TokenType.String:\n    case TokenType.Error:\n        return this.strValue;\n    case TokenType.Number:\n        return this.numValue.toString();\n    default:\n        return null;\n    }\n }\n}\n\nfunction
newCharacterToken(index: number, end: number, code: number): Token {\n    return new Token(index, end,
TokenType.Character, code, String.fromCharCode(code));\n}\n\nfunction newIdentifierToken(index: number, end:
number, text: string): Token {\n    return new Token(index, end, TokenType.Identifier, 0, text);\n}\n\nfunction
newKeywordToken(index: number, end: number, text: string): Token {\n    return new Token(index, end,
TokenType.Keyword, 0, text);\n}\n\nfunction newOperatorToken(index: number, end: number, text: string): Token
{\n    return new Token(index, end, TokenType.Operator, 0, text);\n}\n\nfunction newStringToken(index: number,
end: number, text: string): Token {\n    return new Token(index, end, TokenType.String, 0, text);\n}\n\nfunction
newNumberToken(index: number, end: number, n: number): Token {\n    return new Token(index, end,
TokenType.Number, n, "");\n}\n\nfunction newErrorToken(index: number, end: number, message: string): Token {\n
return new Token(index, end, TokenType.Error, 0, message);\n}\n\nexport const EOF: Token = new Token(-1, -1,
TokenType.Character, 0, "");\n\nclass _Scanner {\n    length: number;\n    peek: number = 0;\n    index: number = -1;\n\n    constructor(public input: string) {\n        this.length = input.length;\n        this.advance();\n    }\n\n    advance() {\n
this.peak = ++this.index >= this.length ? chars.EOF : this.input.charCodeAt(this.index);\n    }\n\n    scanToken():
Token|null {\n        const input = this.input, length = this.length;\n        let peek = this.peak, index = this.index;\n\n        //
Skip whitespace.\n        while (peek <= chars.SPACE) {\n            if (++index >= length) {\n                peek = chars.EOF;\n
                break;\n            } else {\n                peek = input.charCodeAt(index);\n            }\n        }\n\n        this.peak = peek;\n        this.index =
index;\n\n        if (index >= length) {\n            return null;\n        }\n\n        // Handle identifiers and numbers.\n        if
(isIdentifierStart(peek)) return this.scanIdentifier();\n        if (chars.isDigit(peek)) return this.scanNumber(index);\n\n        const start: number = index;\n        switch (peek) {\n            case chars.PERIOD:\n                this.advance();\n                return
chars.isDigit(this.peak) ? this.scanNumber(start) :\n                    newCharacterToken(start, this.index,
chars.PERIOD);\n            case chars.LPAREN:\n            case chars.RPAREN:\n            case chars.LBRACE:\n            case
chars.RBRACE:\n            case chars.LBRACKET:\n            case chars.RBRACKET:\n            case chars.COMMA:\n            case
chars.COLON:\n            case chars.SEMICOLON:\n                return this.scanCharacter(start, peek);\n            case
chars.SQ:\n            case chars.DQ:\n                return this.scanString();\n            case chars.HASH:\n            case chars.PLUS:\n            case
chars.MINUS:\n            case chars.STAR:\n            case chars.SLASH:\n            case chars.PERCENT:\n            case
chars.CARET:\n                return this.scanOperator(start, String.fromCharCode(peek));\n            case chars.QUESTION:\n                return
this.scanComplexOperator(start, '?', chars.PERIOD, '.');\n            case chars.LT:\n            case chars.GT:\n                return
this.scanComplexOperator(start, String.fromCharCode(peek), chars.EQ, '=');\n            case chars.BANG:\n            case
chars.EQ:\n                return this.scanComplexOperator(\n                    start, String.fromCharCode(peek), chars.EQ, '=',\n                    chars.EQ, '=');\n            case chars.AMPERSAND:\n                return this.scanComplexOperator(start, '&',
chars.AMPERSAND, '&');\n            case chars.BAR:\n                return this.scanComplexOperator(start, '|', chars.BAR,
'|');\n            case chars.NBSP:\n                while (chars.isWhitespace(this.peak)) this.advance();\n                return
this.scanToken();\n        }\n\n        this.advance();\n        return this.error(`Unexpected character
[${String.fromCharCode(peek)}]`, 0);\n    }\n\n    scanCharacter(start: number, code: number): Token {\n
this.advance();\n        return newCharacterToken(start, this.index, code);\n    }\n\n    scanOperator(start: number, str:
string): Token {\n        this.advance();\n        return newOperatorToken(start, this.index, str);\n    }\n\n    /**\n     * Tokenize a
2/3 char long operator\n     * @param start start index in the expression\n     * @param one first symbol (always
part of the operator)\n     * @param twoCode code point for the second symbol\n     * @param two second symbol
(part of the operator when the second code point matches)\n     * @param threeCode code point for the third symbol\n
     * @param three third symbol (part of the operator when provided and matches source expression)\n     */\n    scanComplexOperator(\n        start: number, one: string, twoCode: number, two: string, threeCode?: number,\n        three?: string): Token {\n        this.advance();\n        let str: string = one;\n        if (this.peak == twoCode) {\n
this.advance();\n            str += two;\n        }\n        if (threeCode != null && this.peak == threeCode) {\n            this.advance();\n
            str += three;\n        }\n        return newOperatorToken(start, this.index, str);\n    }\n\n    scanIdentifier(): Token {\n        const
start: number = this.index;\n        this.advance();\n        while (isIdentifierPart(this.peak)) this.advance();\n        const str:
string = this.input.substring(start, this.index);\n        return KEYWORDS.indexOf(str) > -1 ? newKeywordToken(start,

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this.index, str) : \n
                                newIdentifierToken(start, this.index, str); \n } \n \n scanNumber(start:
number): Token { \n let simple: boolean = (this.index === start); \n this.advance(); // Skip initial digit. \n while
(true) { \n if (chars.isDigit(this.peek)) { \n // Do nothing. \n } else if (this.peek == chars.$PERIOD) { \n
simple = false; \n } else if (isExponentStart(this.peek)) { \n this.advance(); \n if
(isExponentSign(this.peek)) this.advance(); \n if (!chars.isDigit(this.peek)) return this.error('Invalid exponent', -
1); \n simple = false; \n } else { \n break; \n } \n this.advance(); \n } \n const str: string =
this.input.substring(start, this.index); \n const value: number = simple ? parseIntAutoRadix(str) : parseFloat(str); \n
return newNumberToken(start, this.index, value); \n } \n \n scanString(): Token { \n const start: number =
this.index; \n const quote: number = this.peek; \n this.advance(); // Skip initial quote. \n \n let buffer: string = ""; \n
let marker: number = this.index; \n const input: string = this.input; \n \n while (this.peek != quote) { \n if
(this.peek == chars.$BACKSLASH) { \n buffer += input.substring(marker, this.index); \n this.advance(); \n
let unescapedCode: number; \n // Workaround for TS2.1-introduced type strictness \n this.peek =
this.peek; \n if (this.peek == chars.$u) { \n // 4 character hex code for unicode character. \n const hex:
string = input.substring(this.index + 1, this.index + 5); \n if (/^[0-9a-f]+$/.test(hex)) { \n unescapedCode
= parseInt(hex, 16); \n } else { \n return this.error('Invalid unicode escape [\\u$hex]', 0); \n } \n
for (let i: number = 0; i < 5; i++) { \n this.advance(); \n } \n } else { \n unescapedCode =
unescape(this.peek); \n this.advance(); \n } \n buffer += String.fromCharCode(unescapedCode); \n
marker = this.index; \n } else if (this.peek == chars.$EOF) { \n return this.error('Unterminated quote', 0); \n
} else { \n this.advance(); \n } \n } \n \n const last: string = input.substring(marker, this.index); \n
this.advance(); // Skip terminating quote. \n \n return newStringToken(start, this.index, buffer + last); \n } \n \n
error(message: string, offset: number): Token { \n const position: number = this.index + offset; \n return
newErrorToken(\n position, this.index, \n `Lexer Error: ${message} at column ${position} in expression
[${this.input}]`); \n } \n } \n \n function isIdentifierStart(code: number): boolean { \n return (chars.$a <= code &&
code <= chars.$z) || (chars.$A <= code && code <= chars.$Z) || \n (code == chars.$_) || (code ==
chars.$$); \n } \n \n export function isIdentifier(input: string): boolean { \n if (input.length == 0) return false; \n const
scanner = new _Scanner(input); \n if (!isIdentifierStart(scanner.peek)) return false; \n scanner.advance(); \n while
(scanner.peek != chars.$EOF) { \n if (!isIdentifierPart(scanner.peek)) return false; \n scanner.advance(); \n } \n
return true; \n } \n \n function isIdentifierPart(code: number): boolean { \n return chars.isAsciiLetter(code) ||
chars.isDigit(code) || (code == chars.$_) || \n (code == chars.$$); \n } \n \n function isExponentStart(code: number):
boolean { \n return code == chars.$e || code == chars.$E; \n } \n \n function isExponentSign(code: number): boolean
{ \n return code == chars.$MINUS || code == chars.$PLUS; \n } \n \n export function isQuote(code: number): boolean
{ \n return code === chars.$SQ || code === chars.$DQ || code === chars.$BT; \n } \n \n function unescape(code:
number): number { \n switch (code) { \n case chars.$n: \n return chars.$LF; \n case chars.$f: \n return
chars.$FF; \n case chars.$r: \n return chars.$CR; \n case chars.$t: \n return chars.$TAB; \n case chars.$v: \n
return chars.$VTAB; \n default: \n return code; \n } \n } \n \n function parseIntAutoRadix(text: string): number { \n
const result: number = parseInt(text); \n if (isNaN(result)) { \n throw new Error('Invalid integer literal when
parsing ' + text); \n } \n return result; \n } \n \n "/*\n * @license\n * Copyright Google LLC All Rights Reserved.\n *\n
* Use of this source code is governed by an MIT-style license that can be\n * found in the LICENSE file at
https://angular.io/license\n */\n\nimport * as chars from './chars'; \n\nimport
{DEFAULT_INTERPOLATION_CONFIG, InterpolationConfig} from './ml_parser/interpolation_config'; \n\nimport
{escapeRegExp} from './util'; \n\nimport {AbsoluteSourceSpan, AST, AstVisitor, ASTWithSource, Binary,
BindingPipe, Chain, Conditional, EmptyExpr, ExpressionBinding, FunctionCall, ImplicitReceiver, Interpolation,
KeyedRead, KeyedWrite, LiteralArray, LiteralMap, LiteralMapKey, LiteralPrimitive, MethodCall, NonNullAssert,
ParserError, ParseSpan, PrefixNot, PropertyRead, PropertyWrite, Quote, RecursiveAstVisitor, SafeMethodCall,
SafePropertyRead, TemplateBinding, TemplateBindingIdentifier, ThisReceiver, Unary, VariableBinding} from
 './ast'; \n\nimport {EOF, isIdentifier, isQuote, Lexer, Token, TokenType} from './lexer'; \n\nexport class
SplitInterpolation { \n constructor(\n public strings: string[], public stringSpans: {start: number, end:
number}[], \n public expressions: string[], public expressionsSpans: {start: number, end: number}[], \n public

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offsets: number[] } }\n\nexport class TemplateBindingParseResult {\n  constructor(\n    public
templateBindings: TemplateBinding[], public warnings: string[],\n    public errors: ParserError[] ) {} }\n\nconst
defaultInterpolateRegExp = _createInterpolateRegExp(DEFAULT_INTERPOLATION_CONFIG);\nfunction
_getInterpolateRegExp(config: InterpolationConfig): RegExp {\n  if (config ===
DEFAULT_INTERPOLATION_CONFIG) {\n    return defaultInterpolateRegExp;\n  } else {\n    return
_createInterpolateRegExp(config);\n  } }\n\nfunction _createInterpolateRegExp(config: InterpolationConfig):
RegExp {\n  const pattern = escapeRegExp(config.start) + '([\\s\\|\\S]*?)' + escapeRegExp(config.end);\n  return
new RegExp(pattern, 'g');\n}\n\nexport class Parser {\n  private errors: ParserError[] = [];\n  constructor(private
_lexer: Lexer) {\n\n    simpleExpressionChecker = SimpleExpressionChecker;\n\n    parseAction(\n      input: string,
location: any, absoluteOffset: number,\n      interpolationConfig: InterpolationConfig =
DEFAULT_INTERPOLATION_CONFIG): ASTWithSource {\n      this._checkNoInterpolation(input, location,
interpolationConfig);\n      const sourceToLex = this._stripComments(input);\n      const tokens =
this._lexer.tokenize(this._stripComments(input));\n      const ast = new _ParseAST(\n        input, location,
absoluteOffset, tokens, sourceToLex.length, true, this.errors,\n        input.length - sourceToLex.length)\n        .parseChain();\n      return new ASTWithSource(ast, input, location, absoluteOffset, this.errors);\n    }\n\n    parseBinding(\n      input: string, location: any, absoluteOffset: number,\n      interpolationConfig:
InterpolationConfig = DEFAULT_INTERPOLATION_CONFIG): ASTWithSource {\n      const ast =
this._parseBindingAst(input, location, absoluteOffset, interpolationConfig);\n      return new ASTWithSource(ast,
input, location, absoluteOffset, this.errors);\n    }\n\n    private checkSimpleExpression(ast: AST): string[] {\n      const
checker = new this.simpleExpressionChecker();\n      ast.visit(checker);\n      return checker.errors;\n    }\n\n    parseSimpleBinding(\n      input: string, location: string, absoluteOffset: number,\n      interpolationConfig:
InterpolationConfig = DEFAULT_INTERPOLATION_CONFIG): ASTWithSource {\n      const ast =
this._parseBindingAst(input, location, absoluteOffset, interpolationConfig);\n      const errors =
this.checkSimpleExpression(ast);\n      if (errors.length > 0) {\n        this._reportError(\n          `Host binding expression
cannot contain ${errors.join(' ')}` , input, location);\n      }\n      return new ASTWithSource(ast, input, location,
absoluteOffset, this.errors);\n    }\n\n    private _reportError(message: string, input: string, errLocation: string,
ctxLocation?: any) {\n      this.errors.push(new ParserError(message, input, errLocation, ctxLocation));\n    }\n\n    private _parseBindingAst(\n      input: string, location: string, absoluteOffset: number,\n      interpolationConfig:
InterpolationConfig): AST {\n      // Quotes expressions use 3rd-party expression language. We don't want to use\n
// our lexer or parser for that, so we check for that ahead of time.\n      const quote = this._parseQuote(input, location,
absoluteOffset);\n\n      if (quote != null) {\n        return quote;\n      }\n\n      this._checkNoInterpolation(input, location,
interpolationConfig);\n      const sourceToLex = this._stripComments(input);\n      const tokens =
this._lexer.tokenize(sourceToLex);\n      return new _ParseAST(\n        input, location, absoluteOffset, tokens,
sourceToLex.length, false, this.errors,\n        input.length - sourceToLex.length)\n        .parseChain();\n    }\n\n    private _parseQuote(input: string|null, location: any, absoluteOffset: number): AST|null {\n      if (input == null)
return null;\n      const prefixSeparatorIndex = input.indexOf(':');\n      if (prefixSeparatorIndex == -1) return null;\n      const prefix = input.substring(0, prefixSeparatorIndex).trim();\n      if (!isIdentifier(prefix)) return null;\n      const
uninterpretedExpression = input.substring(prefixSeparatorIndex + 1);\n      const span = new ParseSpan(0,
input.length);\n      return new Quote(\n        span, span.toAbsolute(absoluteOffset), prefix, uninterpretedExpression,
location);\n    }\n\n    /**\n     * Parse microsyntax template expression and return a list of bindings or\n     * parsing
errors in case the given expression is invalid.\n     * \n     * For example,\n     * ```\n     * <div *ngFor="let item of
items">\n     *   ^ ^ absoluteValueOffset for `templateValue`\n     *   absoluteKeyOffset for `templateKey`\n     * ```\n     * contains three bindings:\n     * 1. ngFor -> null\n     * 2. item -> NgForOfContext.$implicit\n     * 3. ngForOf
-> items\n     * \n     * This is apparent from the de-sugared template:\n     * ```\n     * <ng-template ngFor let-item
[ngForOf]="items">\n     * ```\n     * \n     * @param templateKey name of directive, without the * prefix. For example:
ngIf, ngFor\n     * @param templateValue RHS of the microsyntax attribute\n     * @param templateUrl template
filename if it's external, component filename if it's inline\n     * @param absoluteKeyOffset start of the
`templateKey`\n     * @param absoluteValueOffset start of the `templateValue`\n     */\n    parseTemplateBindings(\n

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templateKey: string, templateValue: string, templateUrl: string, absoluteKeyOffset: number,\n
absoluteValueOffset: number): TemplateBindingParseResult {\n  const tokens =
this._lexer.tokenize(templateValue);\n  const parser = new _ParseAST(\n    templateValue, templateUrl,\n    absoluteValueOffset, tokens, templateValue.length,\n    false /* parseAction */, this.errors, 0 /* relative offset
*/);\n  return parser.parseTemplateBindings({\n    source: templateKey,\n    span: new
AbsoluteSourceSpan(absoluteKeyOffset, absoluteKeyOffset + templateKey.length),\n  });\n}\n\n
parseInterpolation(\n  input: string, location: any, absoluteOffset: number,\n  interpolationConfig:
InterpolationConfig = DEFAULT_INTERPOLATION_CONFIG): ASTWithSource|null {\n  const split =
this.splitInterpolation(input, location, interpolationConfig);\n  if (split === null) return null;\n\n  const expressions:
AST[] = [];\n\n  for (let i = 0; i < split.expressions.length; ++i) {\n    const expressionText = split.expressions[i];\n
    const sourceToLex = this._stripComments(expressionText);\n    const tokens =
this._lexer.tokenize(sourceToLex);\n    const ast = new _ParseAST(\n      input, location, absoluteOffset,\n      tokens, sourceToLex.length, false,\n      this.errors, split.offsets[i] + (expressionText.length -
sourceToLex.length))\n      .parseChain();\n    expressions.push(ast);\n  }\n\n  return
this.createInterpolationAst(split.strings, expressions, input, location, absoluteOffset);\n}\n\n /**\n * Similar to
`parseInterpolation`, but treats the provided string as a single expression\n * element that would normally appear
within the interpolation prefix and suffix (`{{` and `}}`).\n * This is used for parsing the switch expression in
ICUs.\n */\n parseInterpolationExpression(expression: string, location: any, absoluteOffset: number):\n
ASTWithSource {\n  const sourceToLex = this._stripComments(expression);\n  const tokens =
this._lexer.tokenize(sourceToLex);\n  const ast = new _ParseAST(\n    expression, location,\n    absoluteOffset, tokens, sourceToLex.length,\n    /* parseAction */ false, this.errors, 0)\n    .parseChain();\n  const strings = ["", ""]; // The prefix and suffix strings are both empty\n  return
this.createInterpolationAst(strings, [ast], expression, location, absoluteOffset);\n}\n\n private
createInterpolationAst(\n  strings: string[], expressions: AST[], input: string, location: string,\n  absoluteOffset:
number): ASTWithSource {\n  const span = new ParseSpan(0, input.length);\n  const interpolation =\n  new
Interpolation(span, span.toAbsolute(absoluteOffset), strings, expressions);\n  return new
ASTWithSource(interpolation, input, location, absoluteOffset, this.errors);\n}\n\n /**\n * Splits a string of text
into `raw` text segments and expressions present in interpolations in\n * the string.\n * Returns `null` if there are
no interpolations, otherwise a\n * `SplitInterpolation` with splits that look like\n * <raw text> <expression>
<raw text> ... <raw text> <expression> <raw text>\n */\n splitInterpolation(\n  input: string, location: string,\n
interpolationConfig: InterpolationConfig = DEFAULT_INTERPOLATION_CONFIG): SplitInterpolation\n |null
{\n  const strings: string[] = [];\n  const expressions: string[] = [];\n  const offsets: number[] = [];\n  const
stringSpans: {start: number, end: number}[] = [];\n  const expressionSpans: {start: number, end: number}[] = [];\n
  let i = 0;\n  let atInterpolation = false;\n  let extendLastString = false;\n  let {start: interpStart, end: interpEnd} =
interpolationConfig;\n  while (i < input.length) {\n    if (!atInterpolation) {\n      // parse until starting {{\n
      const start = i;\n      i = input.indexOf(interpStart, i);\n      if (i === -1) {\n        i = input.length;\n      }\n
      const part = input.substring(start, i);\n      strings.push(part);\n      stringSpans.push({start, end: i});\n\n
      atInterpolation = true;\n    } else {\n      // parse from starting {{ to ending }}\n      const fullStart = i;\n      const
exprStart = fullStart + interpStart.length;\n      const exprEnd = input.indexOf(interpEnd, exprStart);\n      if
(exprEnd === -1) {\n        // Could not find the end of the interpolation; do not parse an expression.\n        //
Instead we should extend the content on the last raw string.\n        atInterpolation = false;\n        extendLastString
= true;\n        break;\n      }\n      const fullEnd = exprEnd + interpEnd.length;\n      const part =
input.substring(exprStart, exprEnd);\n      if (part.trim().length > 0) {\n        expressions.push(part);\n      } else
{\n        this._reportError(\n          'Blank expressions are not allowed in interpolated strings', input,\n          `at
column ${i} in`, location);\n        expressions.push('$implicit');\n      }\n      offsets.push(exprStart);\n      expressionSpans.push({start: fullStart, end: fullEnd});\n      i = fullEnd;\n      atInterpolation = false;\n    }\n  }\n  if (!atInterpolation) {\n    // If we are now at a text section, add the remaining content as a raw string.\n    if
(extendLastString) {\n      strings[strings.length - 1] += input.substring(i);\n      stringSpans[stringSpans.length -

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1].end = input.length;\n    } else {\n        strings.push(input.substring(i));\n        stringSpans.push({start: i, end:
input.length});\n    }\n    }\n    return expressions.length === 0 ?\n        null :\n        new SplitInterpolation(strings,
stringSpans, expressions, expressionSpans, offsets);\n    }\n\n    wrapLiteralPrimitive(input: string|null, location: any,
absoluteOffset: number): ASTWithSource {\n        const span = new ParseSpan(0, input == null ? 0 : input.length);\n        return new ASTWithSource(\n            new LiteralPrimitive(span, span.toAbsolute(absoluteOffset), input), input,
location,\n            absoluteOffset, this.errors);\n    }\n\n    private _stripComments(input: string): string {\n        const i =
this._commentStart(input);\n        return i != null ? input.substring(0, i).trim() : input;\n    }\n\n    private
_commentStart(input: string): number|null {\n        let outerQuote: number|null = null;\n        for (let i = 0; i < input.length
- 1; i++) {\n            const char = input.charCodeAt(i);\n            const nextChar = input.charCodeAt(i + 1);\n\n            if (char
=== chars.$SLASH && nextChar == chars.$SLASH && outerQuote == null) return i;\n            if (outerQuote ===
char) {\n                outerQuote = null;\n            } else if (outerQuote == null && isQuote(char)) {\n                outerQuote = char;\n
            }\n        }\n        return null;\n    }\n\n    private _checkNoInterpolation(\n        input: string, location: any,
interpolationConfig: InterpolationConfig): void {\n        const regexp = _getInterpolateRegExp(interpolationConfig);\n        const parts = input.split(regexp);\n        if (parts.length > 1) {\n            this._reportError(\n                `Got interpolation
(${interpolationConfig.start}${\n                    interpolationConfig.end}) where expression was expected`,\n                input,\n                `at column ${this._findInterpolationErrorColumn(parts, 1, interpolationConfig)} in`,\n                location);\n        }\n    }\n\n    private _findInterpolationErrorColumn(\n        parts: string[], partInErrIdx: number,
interpolationConfig: InterpolationConfig): number {\n        let errLocation = ";\n        for (let j = 0; j < partInErrIdx; j++)
{\n            errLocation += j % 2 === 0 ?\n                parts[j] :\n                `${interpolationConfig.start}${parts[j]}${interpolationConfig.end}`;\n        }\n\n        return errLocation.length;\n    }\n\n    }\n\n    export class IvyParser extends Parser {\n        simpleExpressionChecker = IvySimpleExpressionChecker;\n    }\n\n    /** Describes a stateful context an expression parser is in. */\n    enum ParseContextFlags {\n        None = 0,\n    }\n\n    /**\n     * A Writable context is one in which a value may be written to an lvalue.\n     * For example, after we see a
property access, we may expect a write to the\n     * property via the "=" operator.\n     * prop\n     *     ^ possible
"=" after\n     * ^\n     * Writable = 1,\n    }\n\n    export class _ParseAST {\n        private rparsesExpected = 0;\n        private
rbracketsExpected = 0;\n        private rbracesExpected = 0;\n        private context = ParseContextFlags.None;\n\n        // Cache
of expression start and input indeces to the absolute source span they map to, used to\n        // prevent creating
superfluous source spans in `sourceSpan`.\n        // A serial of the expression start and input index is used for mapping
because both are stateful\n        // and may change for subsequent expressions visited by the parser.\n        private
sourceSpanCache = new Map<string, AbsoluteSourceSpan>();\n        index: number = 0;\n\n        constructor(\n            public
input: string, public location: any, public absoluteOffset: number,\n            public tokens: Token[], public inputLength:
number, public parseAction: boolean,\n            private errors: ParserError[], private offset: number) {\n        }\n\n        peek(offset:
number): Token {\n            const i = this.index + offset;\n            return i < this.tokens.length ? this.tokens[i] : EOF;\n        }\n\n        get
next(): Token {\n            return this.peek(0);\n        }\n\n        /** Whether all the parser input has been processed. */\n        get
atEOF(): boolean {\n            return this.index >= this.tokens.length;\n        }\n\n        /**\n         * Index of the next token to be
processed, or the end of the last token if all have been\n         * processed.\n         */\n        get inputIndex(): number {\n            return
this.atEOF ? this.currentEndIndex : this.next.index + this.offset;\n        }\n\n        /**\n         * End index of the last processed
token, or the start of the first token if none have been\n         * processed.\n         */\n        get currentEndIndex(): number {\n            if (this.index > 0) {\n                const curToken = this.peek(-1);\n                return curToken.end + this.offset;\n            }\n            // No
tokens have been processed yet; return the next token's start or the length of the input\n            // if there is no token.\n            if (this.tokens.length === 0) {\n                return this.inputLength + this.offset;\n            }\n            return this.next.index +
this.offset;\n        }\n\n        /**\n         * Returns the absolute offset of the start of the current token.\n         */\n        get
currentAbsoluteOffset(): number {\n            return this.absoluteOffset + this.inputIndex;\n        }\n\n        span(start: number) {\n            return new ParseSpan(start, this.currentEndIndex);\n        }\n\n        sourceSpan(start: number): AbsoluteSourceSpan {\n            const serial = `${start}@${this.inputIndex}`;\n            if (!this.sourceSpanCache.has(serial)) {\n                this.sourceSpanCache.set(serial, this.span(start).toAbsolute(this.absoluteOffset));\n            }\n            return
this.sourceSpanCache.get(serial)!;\n        }\n\n        advance() {\n            this.index++;\n        }\n\n        /**\n         * Executes a callback in
the provided context.\n         */\n        private withContext<T>(context: ParseContextFlags, cb: () => T): T {\n            this.context

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|= context;\n  const ret = cb();\n  this.context ^= context;\n  return ret;\n }\n\n consumeOptionalCharacter(code:
number): boolean {\n  if (this.next.isCharacter(code)) {\n    this.advance();\n    return true;\n  } else {\n
return false;\n  }\n }\n\n peekKeywordLet(): boolean {\n  return this.next.isKeywordLet();\n }\n
peekKeywordAs(): boolean {\n  return this.next.isKeywordAs();\n }\n\n /**\n  * Consumes an expected
character, otherwise emits an error about the missing expected character\n  * and skips over the token stream until
reaching a recoverable point.\n  *\n  * See `this.error` and `this.skip` for more details.\n  */\n
expectCharacter(code: number) {\n  if (this.consumeOptionalCharacter(code)) return;\n  this.error(`Missing
expected ${String.fromCharCode(code)}`);\n }\n\n consumeOptionalOperator(op: string): boolean {\n  if
(this.next.isOperator(op)) {\n    this.advance();\n    return true;\n  } else {\n    return false;\n  }\n }\n
expectOperator(operator: string) {\n  if (this.consumeOptionalOperator(operator)) return;\n  this.error(`Missing
expected operator ${operator}`);\n }\n\n prettyPrintToken(tok: Token): string {\n  return tok === EOF ? `end of
input` : `token ${tok}`;\n }\n\n expectIdentifierOrKeyword(): string {\n  const n = this.next;\n  if (!n.isIdentifier()
&& !n.isKeyword()) {\n    this.error(`Unexpected ${this.prettyPrintToken(n)}, expected identifier or keyword`);\n
return ";\n  }\n  this.advance();\n  return n.toString() as string;\n }\n\n expectIdentifierOrKeywordOrString():
string {\n  const n = this.next;\n  if (!n.isIdentifier() && !n.isKeyword() && !n.isString()) {\n
this.error(`Unexpected ${this.prettyPrintToken(n)}, expected identifier, keyword, or string`);\n  return ";\n }\n
this.advance();\n  return n.toString() as string;\n }\n\n parseChain(): AST {\n  const exprs: AST[] = [];\n  const
start = this.inputIndex;\n  while (this.index < this.tokens.length) {\n    const expr = this.parsePipe();\n
exprs.push(expr);\n\n    if (this.consumeOptionalCharacter(chars.$SEMICOLON)) {\n      if (!this.parseAction)
{\n        this.error(`Binding expression cannot contain chained expression`);\n      }\n      while
(this.consumeOptionalCharacter(chars.$SEMICOLON)) {\n      } // read all semicolons\n    } else if (this.index <
this.tokens.length) {\n      this.error(`Unexpected token '${this.next}'`);\n    }\n  }\n  if (exprs.length == 0)
return new EmptyExpr(this.span(start), this.sourceSpan(start));\n  if (exprs.length == 1) return exprs[0];\n  return
new Chain(this.span(start), this.sourceSpan(start), exprs);\n }\n\n parsePipe(): AST {\n  let result =
this.parseExpression();\n  if (this.consumeOptionalOperator('|')) {\n    if (this.parseAction) {\n
this.error(`Cannot have a pipe in an action expression`);\n    }\n    do {\n      const nameStart =
this.inputIndex;\n      const name = this.expectIdentifierOrKeyword();\n      const nameSpan =
this.sourceSpan(nameStart);\n      const args: AST[] = [];\n      while
(this.consumeOptionalCharacter(chars.$COLON)) {\n        args.push(this.parseExpression());\n      }\n      const
{start} = result.span;\n      result =\n        new BindingPipe(this.span(start), this.sourceSpan(start), result, name,
args, nameSpan);\n    } while (this.consumeOptionalOperator('|'));\n  }\n\n  return result;\n }\n\n
parseExpression(): AST {\n  return this.parseConditional();\n }\n\n parseConditional(): AST {\n  const start =
this.inputIndex;\n  const result = this.parseLogicalOr();\n  if (this.consumeOptionalOperator('?')) {\n    const
yes = this.parsePipe();\n    let no: AST;\n    if (!this.consumeOptionalCharacter(chars.$COLON)) {\n      const
end = this.inputIndex;\n      const expression = this.input.substring(start, end);\n      this.error(`Conditional
expression ${expression} requires all 3 expressions`);\n      no = new EmptyExpr(this.span(start),
this.sourceSpan(start));\n    } else {\n      no = this.parsePipe();\n    }\n    return new Conditional(this.span(start),
this.sourceSpan(start), result, yes, no);\n  } else {\n    return result;\n  }\n }\n\n parseLogicalOr(): AST {\n  //
||\n  let result = this.parseLogicalAnd();\n  while (this.consumeOptionalOperator('|')) {\n    const right =
this.parseLogicalAnd();\n    const {start} = result.span;\n    result = new Binary(this.span(start),
this.sourceSpan(start), '|', result, right);\n  }\n  return result;\n }\n\n parseLogicalAnd(): AST {\n  // '&&'\n  let
result = this.parseEquality();\n  while (this.consumeOptionalOperator('&&')) {\n    const right =
this.parseEquality();\n    const {start} = result.span;\n    result = new Binary(this.span(start),
this.sourceSpan(start), '&&', result, right);\n  }\n  return result;\n }\n\n parseEquality(): AST {\n  //
'==','!','=','===','!=='\n  let result = this.parseRelational();\n  while (this.next.type == TokenType.Operator) {\n
const operator = this.next.strValue;\n  switch (operator) {\n    case '==':\n    case '===':\n    case '!=':\n    case '!==':\n      this.advance();\n      const right = this.parseRelational();\n      const {start} = result.span;\n
result = new Binary(this.span(start), this.sourceSpan(start), operator, result, right);\n      continue;\n    }\n

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break;\n }\n return result;\n }\n\n parseRelational(): AST {\n // '<', '>', '<=', '>='\n let result =
this.parseAdditive();\n while (this.next.type == TokenType.Operator) {\n const operator = this.next.strValue;\n
switch (operator) {\n case '<':\n case '>':\n case '<=':\n case '>=':\n this.advance();\n
const right = this.parseAdditive();\n const { start } = result.span;\n result = new Binary(this.span(start),
this.sourceSpan(start), operator, result, right);\n continue;\n }\n break;\n }\n return result;\n }\n\n
parseAdditive(): AST {\n // '+', '-'\n let result = this.parseMultiplicative();\n while (this.next.type ==
TokenType.Operator) {\n const operator = this.next.strValue;\n switch (operator) {\n case '+':\n case
'-':\n this.advance();\n let right = this.parseMultiplicative();\n const { start } = result.span;\n
result = new Binary(this.span(start), this.sourceSpan(start), operator, result, right);\n continue;\n }\n
break;\n }\n return result;\n }\n\n parseMultiplicative(): AST {\n // '*', '%', '/'\n let result =
this.parsePrefix();\n while (this.next.type == TokenType.Operator) {\n const operator = this.next.strValue;\n
switch (operator) {\n case '*':\n case '%':\n case '/':\n this.advance();\n let right =
this.parsePrefix();\n const { start } = result.span;\n result = new Binary(this.span(start),
this.sourceSpan(start), operator, result, right);\n continue;\n }\n break;\n }\n return result;\n }\n\n
parsePrefix(): AST {\n if (this.next.type == TokenType.Operator) {\n const start = this.inputIndex;\n const
operator = this.next.strValue;\n let result: AST;\n switch (operator) {\n case '+':\n this.advance();\n
result = this.parsePrefix();\n return Unary.createPlus(this.span(start), this.sourceSpan(start), result);\n
case '-':\n this.advance();\n result = this.parsePrefix();\n return Unary.createMinus(this.span(start),
this.sourceSpan(start), result);\n case '!':\n this.advance();\n result = this.parsePrefix();\n return
new PrefixNot(this.span(start), this.sourceSpan(start), result);\n }\n }\n return this.parseCallChain();\n }\n\n
parseCallChain(): AST {\n let result = this.parsePrimary();\n const resultStart = result.span.start;\n while (true)
{\n if (this.consumeOptionalCharacter(chars.$PERIOD)) {\n result =
this.parseAccessMemberOrMethodCall(result, false);\n\n } else if (this.consumeOptionalOperator('?.')) {\n
result = this.parseAccessMemberOrMethodCall(result, true);\n\n } else if
(this.consumeOptionalCharacter(chars.$LBRACKET)) {\n this.withContext(ParseContextFlags.Writable, () =>
{\n this.rbracketsExpected++;\n const key = this.parsePipe();\n if (key instanceof EmptyExpr) {\n
this.error(`Key access cannot be empty`);\n }\n this.rbracketsExpected--;\n
this.expectCharacter(chars.$RBRACKET);\n if (this.consumeOptionalOperator('=')) {\n const value =
this.parseConditional();\n result = new KeyedWrite(\n this.span(resultStart),
this.sourceSpan(resultStart), result, key, value);\n } else {\n result =\n new
KeyedRead(this.span(resultStart), this.sourceSpan(resultStart), result, key);\n }\n });\n } else if
(this.consumeOptionalCharacter(chars.$LPAREN)) {\n this.rparensExpected++;\n const args =
this.parseCallArguments();\n this.rparensExpected--;\n this.expectCharacter(chars.$RPAREN);\n result
=\n new FunctionCall(this.span(resultStart), this.sourceSpan(resultStart), result, args);\n\n } else if
(this.consumeOptionalOperator('!')) {\n result = new NonNullAssert(this.span(resultStart),
this.sourceSpan(resultStart), result);\n\n } else {\n return result;\n }\n }\n }\n\n parsePrimary(): AST
{\n const start = this.inputIndex;\n if (this.consumeOptionalCharacter(chars.$LPAREN)) {\n
this.rparensExpected++;\n const result = this.parsePipe();\n this.rparensExpected--;\n
this.expectCharacter(chars.$RPAREN);\n return result;\n\n } else if (this.next.isKeywordNull()) {\n
this.advance();\n return new LiteralPrimitive(this.span(start), this.sourceSpan(start), null);\n\n } else if
(this.next.isKeywordUndefined()) {\n this.advance();\n return new LiteralPrimitive(this.span(start),
this.sourceSpan(start), void 0);\n\n } else if (this.next.isKeywordTrue()) {\n this.advance();\n return new
LiteralPrimitive(this.span(start), this.sourceSpan(start), true);\n\n } else if (this.next.isKeywordFalse()) {\n
this.advance();\n return new LiteralPrimitive(this.span(start), this.sourceSpan(start), false);\n\n } else if
(this.next.isKeywordThis()) {\n this.advance();\n return new ThisReceiver(this.span(start),
this.sourceSpan(start));\n } else if (this.consumeOptionalCharacter(chars.$LBRACKET)) {\n
this.rbracketsExpected++;\n const elements = this.parseExpressionList(chars.$RBRACKET);\n
this.rbracketsExpected--;\n this.expectCharacter(chars.$RBRACKET);\n return new

```



```

`NgForOfContext.index`.n */n private parseLetBinding(): TemplateBinding|null {n if
(!this.peekKeywordLet()) {n return null;n }n const spanStart = this.currentAbsoluteOffset;n
this.advance(); // consume the 'let' keyword\n const key = this.expectTemplateBindingKey();n let value:
TemplateBindingIdentifier|null = null;n if (this.consumeOptionalOperator('=')) {n value =
this.expectTemplateBindingKey();n }n this.consumeStatementTerminator();n const sourceSpan = new
AbsoluteSourceSpan(spanStart, this.currentAbsoluteOffset);n return new VariableBinding(sourceSpan, key,
value);n }n\n /**\n * Consume the optional statement terminator: semicolon or comma.\n */n private
consumeStatementTerminator() {n this.consumeOptionalCharacter(chars.$SEMICOLON) ||
this.consumeOptionalCharacter(chars.$COMMA);n }n\n /**\n * Records an error and skips over the token
stream until reaching a recoverable point. See\n * `this.skip` for more details on token skipping.\n */n
error(message: string, index: number|null = null) {n this.errors.push(new ParserError(message, this.input,
this.locationText(index), this.location));n this.skip();n }n\n private locationText(index: number|null = null) {n
if (index == null) index = this.index;n return (index < this.tokens.length) ? `at column ${this.tokens[index].index
+ 1} in` :n `at the end of the expression`;n }n\n /**\n * Error recovery should skip
tokens until it encounters a recovery point. skip() treats\n * the end of input and a ';' as unconditionally a recovery
point. It also treats ')',\n * '}' and ']' as conditional recovery points if one of calling productions is expecting\n *
one of these symbols. This allows skip() to recover from errors such as '(a.) + 1' allowing\n * more of the AST to
be retained (it doesn't skip any tokens as the ')' is retained because\n * of the '(' begins an '(' <expr> ')' production).
The recovery points of grouping symbols\n * must be conditional as they must be skipped if none of the calling
productions are not\n * expecting the closing token else we will never make progress in the case of an\n *
extraneous group closing symbol (such as a stray ')'). This is not the case for ';' because\n * parseChain() is always
the root production and it expects a ';'.\n * Furthermore, the presence of a stateful context can add more
recovery points.\n * - in a `Writable` context, we are able to recover after seeing the `=` operator, which\n *
signals the presence of an independent rvalue expression following the `=` operator.\n */n * If a production
expects one of these token it increments the corresponding nesting count,\n * and then decrements it just prior to
checking if the token is in the input.\n */n private skip() {n let n = this.next;n while (this.index <
this.tokens.length && !n.isCharacter(chars.$SEMICOLON) &&n (this.rparensExpected <= 0 ||
!n.isCharacter(chars.$RPAREN)) &&n (this.rbracesExpected <= 0 || !n.isCharacter(chars.$RBRACE)) &&n
(this.rbracketsExpected <= 0 || !n.isCharacter(chars.$RBRACKET)) &&n (!(this.context &
ParseContextFlags.Writable) || !n.isOperator('='))) {n if (this.next.isError()) {n this.errors.push(\n
new ParserError(this.next.toString(), this.input, this.locationText(), this.location));n }n this.advance();n
n = this.next;n }n }n\n}n\nclass SimpleExpressionChecker implements AstVisitor {n errors: string[] = [];\n\n
visitImplicitReceiver(ast: ImplicitReceiver, context: any) {}n\n visitThisReceiver(ast: ThisReceiver, context: any)
{}n\n visitInterpolation(ast: Interpolation, context: any) {}n\n visitLiteralPrimitive(ast: LiteralPrimitive, context:
any) {}n\n visitPropertyRead(ast: PropertyRead, context: any) {}n\n visitPropertyWrite(ast: PropertyWrite,
context: any) {}n\n visitSafePropertyRead(ast: SafePropertyRead, context: any) {}n\n visitMethodCall(ast:
MethodCall, context: any) {}n\n visitSafeMethodCall(ast: SafeMethodCall, context: any) {}n\n
visitFunctionCall(ast: FunctionCall, context: any) {}n\n visitLiteralArray(ast: LiteralArray, context: any) {n
this.visitAll(ast.expressions, context);n }n\n visitLiteralMap(ast: LiteralMap, context: any) {n
this.visitAll(ast.values, context);n }n\n visitUnary(ast: Unary, context: any) {}n\n visitBinary(ast: Binary,
context: any) {}n\n visitPrefixNot(ast: PrefixNot, context: any) {}n\n visitNonNullAssert(ast: NonNullAssert,
context: any) {}n\n visitConditional(ast: Conditional, context: any) {}n\n visitPipe(ast: BindingPipe, context:
any) {n this.errors.push('pipes');n }n\n visitKeyedRead(ast: KeyedRead, context: any) {}n\n
visitKeyedWrite(ast: KeyedWrite, context: any) {}n\n visitAll(ast: any[], context: any): any[] {n return
asts.map(node => node.visit(this, context));n }n\n visitChain(ast: Chain, context: any) {}n\n visitQuote(ast:
Quote, context: any) {}n}\n\n/**\n * This class implements SimpleExpressionChecker used in View Engine and
performs more strict checks\n * to make sure host bindings do not contain pipes. In View Engine, having pipes in
host bindings is\n * not supported as well, but in some cases (like `!(value | async)`) the error is not triggered at\n *

```

compile time. In order to preserve View Engine behavior, more strict checks are introduced for Ivy mode only.

```
class IvySimpleExpressionChecker extends RecursiveAstVisitor implements SimpleExpressionChecker {
  errors: string[] = [];
  visitPipe() {
    this.errors.push('pipes');
  }
}
/**
 * @license
 * Copyright Google
 * LLC All Rights Reserved.
 * Use of this source code is governed by an MIT-style license that can be found
 * in the LICENSE file at https://angular.io/license
 */
import { SecurityContext } from './core';
```

```
=====
=====
```

```
===== STOP - STOP - STOP - STOP - STOP - STOP =====
```

```
=====
=====
```

```
===== DO NOT EDIT THIS LIST OF SECURITY SENSITIVE PROPERTIES
```

```
WITHOUT A SECURITY REVIEW!
```

```
Reach out to mprobst for details.
```

```
=====
/** Map from tagName|propertyName SecurityContext. Properties applying to all tags use
 * let _SECURITY_SCHEMA!: {[k: string]: SecurityContext};
 * export function SECURITY_SCHEMA():
 * {[k: string]: SecurityContext} {
 *   if (!_SECURITY_SCHEMA) {
 *     _SECURITY_SCHEMA = {};
 *     // Case is insignificant below, all element and attribute names are lower-cased for lookup.
```

```
registerContext(SecurityContext.HTML, ['iframe|srcdoc', '*|innerHTML', '*|outerHTML', ]);
registerContext(SecurityContext.STYLE, ['*|style']); // NB: no SCRIPT contexts here, they are never allowed
due to the parser stripping them.
registerContext(SecurityContext.URL, ['*|formAction', 'area|href', 'area|ping', 'audio|src', 'a|href', 'a|ping', 'blockquote|cite', 'body|background', 'del|cite', 'form|action', 'img|src', 'img|srcset', 'input|src', 'ins|cite', 'q|cite', 'source|src', 'source|srcset', 'track|src', 'video|poster', 'video|src', ]);
registerContext(SecurityContext.RESOURCE_URL, ['applet|code', 'applet|codebase', 'base|href', 'embed|src', 'frame|src', 'head|profile', 'html|manifest', 'iframe|src', 'link|href', 'media|src', 'object|codebase', 'object|data', 'script|src', ]);
}
return _SECURITY_SCHEMA;
}
function registerContext(ctx: SecurityContext, specs: string[]) {
  for (const spec of specs) _SECURITY_SCHEMA[spec.toLowerCase()] = ctx;
}
```

```
=====
/**
 * @license
 * Copyright Google
 * LLC All Rights Reserved.
 * Use of this source code is governed by an MIT-style license that can be found
 * in the LICENSE file at https://angular.io/license
 */
import { SchemaMetadata, SecurityContext } from
```

```
./core;
export abstract class ElementSchemaRegistry {
  abstract hasProperty(tagName: string, propName: string, schemaMetas: SchemaMetadata[]): boolean;
  abstract hasElement(tagName: string, schemaMetas: SchemaMetadata[]): boolean;
  abstract securityContext(elementName: string, propName: string, isAttribute: boolean): SecurityContext;
  abstract allKnownElementNames(): string[];
  abstract getMappedPropName(propName: string): string;
  abstract getDefaultComponentElementName(): string;
  abstract validateProperty(name: string): {error: boolean, msg?: string};
  abstract validateAttribute(name: string): {error: boolean, msg?: string};
  abstract normalizeAnimationStyleProperty(propName: string): string;
  abstract normalizeAnimationStyleValue(camelCaseProp: string, userProvidedProp: string, val: string|number): {error: string, value: string};
}
```

```
=====
/**
 * @license
 * Copyright Google
 * LLC All Rights Reserved.
 * Use of this source code is governed by an MIT-style license that can be found
 * in the LICENSE file at
 * https://angular.io/license
 */
import { CUSTOM_ELEMENTS_SCHEMA, NO_ERRORS_SCHEMA, SchemaMetadata, SecurityContext } from './core';
import { isNgContainer, isNgContent } from './ml_parser/tags';
import { dashCaseToCamelCase } from './util';
import { SECURITY_SCHEMA } from './dom_security_schema';
import { ElementSchemaRegistry } from './element_schema_registry';
const BOOLEAN = 'boolean';
const NUMBER = 'number';
const STRING = 'string';
const OBJECT =
```

```
'object';
/** This array represents the DOM schema. It encodes inheritance, properties, and events.
 */
```

Overview\n * Each line represents one kind of element. The `element_inheritance` and properties are joined\n * using `element_inheritance|properties` syntax.\n * ## Element Inheritance\n * The `element_inheritance` can be further subdivided as `element1,element2,...^parentElement`.\n * Here the individual elements are separated by`,` (commas). Every element in the list\n * has identical properties.\n * An `element` may inherit additional properties from `parentElement` If no `^parentElement` is\n * specified then `\"` (blank) element is assumed.\n * NOTE: The blank element inherits from root `[Element]` element, the super element of all\n * elements.\n * NOTE an element prefix such as `:svg:` has no special meaning to the schema.\n * ## Properties\n * Each element has a set of properties separated by`,` (commas). Each property can be prefixed\n * by a special character designating its type:\n * - (no prefix): property is a string.\n * - `*`: property represents an event.\n * - `!`: property is a boolean.\n * - `#`: property is a number.\n * - `%`: property is an object.\n * ## Query\n * The class creates an internal squas representation which allows to easily answer the query of\n * if a given property exist on a given element.\n * NOTE: We don't yet support querying for types or events.\n * NOTE: This schema is auto extracted from `schema_extractor.ts` located in the test folder,\n * see dom_element_schema_registry_spec.ts\n */

=====\n//

=====\n// ===== STOP - STOP - STOP - STOP - STOP - STOP

=====\n//

=====\n//

=====\n//\n

DO NOT EDIT THIS DOM SCHEMA WITHOUT A SECURITY

REVIEW!\n//\n Newly added properties must be security reviewed and assigned an appropriate SecurityContext in\n// dom_security_schema.ts. Reach out to mprobst & rjamet for details.\n//\n

=====\n\nconst SCHEMA: string[] = [\n

'[Element]|textContent,%classList,className,id,innerHTML,*beforecopy,*beforecut,*beforepaste,*copy,*cut,*paste,*search,*selectstart,*webkitfullscreenchange,*webkitfullscrenerror,*wheel,outerHTML,#scrollLeft,#scrollTop,scrollLeft,scrollTop' +\n // added manually to avoid breaking changes *\n

,'*message,*mozfullscreenchange,*mozfullscrenerror,*mozpointerlockchange,*mozpointerlockerror,*webkitcontextcreationerror,*webkitcontextlost,*webkitcontextrestored',\n

'[HTMLInputElement]^[Element]|accessKey,contentEditable,dir,!draggable,!hidden,innerText,lang,*abort,*auxclick,*blur,*cancel,*canplay,*canplaythrough,*change,*click,*close,*contextmenu,*cuechange,*dblclick,*drag,*dragend,*dragenter,*dragleave,*dragover,*dragstart,*drop,*durationchange,*emptied,*ended,*error,*focus,*gotpointercapture,*input,*invalid,*keydown,*keypress,*keyup,*load,*loadeddata,*loadedmetadata,*loadstart,*lostpointercapture,*mousedown,*mouseenter,*mouseleave,*mousemove,*mouseout,*mouseover,*mouseup,*mousewheel,*pause,*play,*playing,*pointercancel,*pointerdown,*pointerenter,*pointerleave,*pointermove,*pointerout,*pointerover,*pointerup,*progress,*ratechange,*reset,*resize,*scroll,*seeked,*seeking,*select,*show,*stalled,*submit,*suspend,*timeupdate,*toggle,*volumechange,*waiting,outerText,!spellcheck,%style,#tabIndex,title,!translate',\n

'abbr,address,article,aside,b,bdi,bdo,cite,code,dd,dfn,dt,em,figcaption,figure,footer,header,i,kbd,main,mark,nav,noscript,rb,rp,rt,rtc,ruby,s,samp,section,small,strong,sub,sup,u,var,wbr^[HTMLInputElement]|accessKey,contentEditable,dir,!draggable,!hidden,innerText,lang,*abort,*auxclick,*blur,*cancel,*canplay,*canplaythrough,*change,*click,*close,*contextmenu,*cuechange,*dblclick,*drag,*dragend,*dragenter,*dragleave,*dragover,*dragstart,*drop,*durationchange,*emptied,*ended,*error,*focus,*gotpointercapture,*input,*invalid,*keydown,*keypress,*keyup,*load,*loadeddata,*loadedmetadata,*loadstart,*lostpointercapture,*mousedown,*mouseenter,*mouseleave,*mousemove,*mouseout,*mouseover,*mouseup,*mousewheel,*pause,*play,*playing,*pointercancel,*pointerdown,*pointerenter,*pointerleave,*pointermove,*pointerout,*pointerover,*pointerup,*progress,*ratechange,*reset,*resize,*scroll,*seeked,*seekin

g,*select,*show,*stalled,*submit,*suspend,*timeupdate,*toggle,*volumechange,*waiting,outerText,!spellcheck,%style,#tabIndex,title,!translate',\n

'media^[HTMLInputElement]!autoplay,!controls,%controlsList,%crossOrigin,#currentTime,!defaultMuted,#defaultPlaybackRate,!disableRemotePlayback,!loop,!muted,*encrypted,*waitingforkey,#playbackRate,preload,src,%srcObject,#volume',\n

':svg^[HTMLInputElement]*abort,*auxclick,*blur,*cancel,*canplay,*canplaythrough,*change,*click,*close,*contextmenu,*cuechange,*dblclick,*drag,*dragend,*dragenter,*dragleave,*dragover,*dragstart,*drop,*durationchange,*emptied,*ended,*error,*focus,*gotpointercapture,*input,*invalid,*keydown,*keypress,*keyup,*load,*loadeddata,*loadmetadata,*loadstart,*lostpointercapture,*mousedown,*mouseenter,*mouseleave,*mousemove,*mouseout,*mouseover,*mouseup,*mousewheel,*pause,*play,*playing,*pointercancel,*pointerdown,*pointerenter,*pointerleave,*pointermove,*pointerout,*pointerover,*pointerup,*progress,*ratechange,*reset,*resize,*scroll,*seeked,*seeking,*select,*show,*stalled,*submit,*suspend,*timeupdate,*toggle,*volumechange,*waiting,%style,#tabIndex',\n

':svg:graphics^:svg:|',\n ':svg:animation^:svg:|*begin,*end,*repeat',\n ':svg:geometry^:svg:|',\n

':svg:componentTransferFunction^:svg:|',\n ':svg:gradient^:svg:|',\n ':svg:textContent^:svg:graphics|',\n

':svg:textPositioning^:svg:textContent|',\n

'a^[HTMLInputElement]charset,coords,download,hash,host,hostname,href,hreflang,name,password,pathname,ping,port,protocol,referrerPolicy,rel,rev,search,shape,target,text,type,username',\n

'area^[HTMLInputElement]alt,coords,download,hash,host,hostname,href,!noHref,password,pathname,ping,port,protocol,referrerPolicy,rel,search,shape,target,username',\n 'audio^media|',\n 'br^[HTMLInputElement]clear',\n

'base^[HTMLInputElement]href,target',\n

'body^[HTMLInputElement]aLink,background,bgColor,link,*beforeunload,*blur,*error,*focus,*hashchange,*languagechange,*load,*message,*offline,*online,*pagehide,*pageshow,*popstate,*rejectionhandled,*resize,*scroll,*storage,*unhandledrejection,*unload,text,vLink',\n

'button^[HTMLInputElement]!autofocus,!disabled,formAction,formEnctype,formMethod,!formNoValidate,formTarget,name,type,value',\n 'canvas^[HTMLInputElement]#height,#width',\n 'content^[HTMLInputElement]select',\n

'dl^[HTMLInputElement]!compact',\n 'datalist^[HTMLInputElement]|',\n 'details^[HTMLInputElement]!open',\n

'dialog^[HTMLInputElement]!open,returnValue',\n 'dir^[HTMLInputElement]!compact',\n 'div^[HTMLInputElement]align',\n

'embed^[HTMLInputElement]align,height,name,src,type,width',\n 'fieldset^[HTMLInputElement]!disabled,name',\n

'font^[HTMLInputElement]color,face,size',\n

'form^[HTMLInputElement]acceptCharset,action,autocomplete,encoding,enctype,method,name,!noValidate,target',\n

'frame^[HTMLInputElement]frameBorder,longDesc,marginHeight,marginWidth,name,!noResize,scrolling,src',\n

'frameset^[HTMLInputElement]cols,*beforeunload,*blur,*error,*focus,*hashchange,*languagechange,*load,*message,*offline,*online,*pagehide,*pageshow,*popstate,*rejectionhandled,*resize,*scroll,*storage,*unhandledrejection,*unload,rows',\n 'hr^[HTMLInputElement]align,color,!noShade,size,width',\n 'head^[HTMLInputElement]|',\n

'h1,h2,h3,h4,h5,h6^[HTMLInputElement]align',\n 'html^[HTMLInputElement]version',\n

'iframe^[HTMLInputElement]align,!allowFullscreen,frameBorder,height,longDesc,marginHeight,marginWidth,name,referrerPolicy,%sandbox,scrolling,src,srcdoc,width',\n

'img^[HTMLInputElement]align,alt,border,%crossOrigin,#height,#hspace,!isMap,longDesc,lowsrc,name,referrerPolicy,sizes,src,srcset,useMap,#vspace,#width',\n

'input^[HTMLInputElement]accept,align,alt,autocapitalize,autocomplete,!autofocus,!checked,!defaultChecked,defaultValue,dirName,!disabled,%files,formAction,formEnctype,formMethod,!formNoValidate,formTarget,#height,!incremental,!indeterminate,max,#maxLength,min,#minLength,!multiple,name,pattern,placeholder,!readOnly,!required,selectionDirection,#selectionEnd,#selectionStart,#size,src,step,type,useMap,value,%valueAsDate,#valueAsNumber,#width',\n 'li^[HTMLInputElement]type,#value',\n 'label^[HTMLInputElement]htmlFor',\n 'legend^[HTMLInputElement]align',\n

'link^[HTMLInputElement]as,charset,%crossOrigin,!disabled,href,hreflang,integrity,media,referrerPolicy,rel,%relList,rev,%sizes,target,type',\n 'map^[HTMLInputElement]name',\n

'marquee^[HTMLInputElement]behavior,bgColor,direction,height,#hspace,#loop,#scrollAmount,#scrollDelay,!trueSpeed,#vspace,width',\n 'menu^[HTMLInputElement]!compact',\n

'meta^[HTMLInputElement]|content,httpEquiv,name,scheme',\n

'meter^[HTMLInputElement]##high,#low,#max,#min,#optimum,#value',\n 'ins,del^[HTMLInputElement]|cite,dateTime',\n

'ol^[HTMLInputElement]!compact,!reversed,#start,type',\n

'object^[HTMLInputElement]|align,archive,border,code,codeBase,codeType,data,!declare,height,#hspace,name,standby,type,useMap,#vspace,width',\n 'optgroup^[HTMLInputElement]!disabled,label',\n

'option^[HTMLInputElement]!defaultSelected,!disabled,label,!selected,text,value',\n

'output^[HTMLInputElement]|defaultValue,%htmlFor,name,value',\n 'p^[HTMLInputElement]|align',\n

'param^[HTMLInputElement]|name,type,value,valueType',\n 'picture^[HTMLInputElement]',\n

'pre^[HTMLInputElement]##width',\n 'progress^[HTMLInputElement]##max,#value',\n

'q,blockquote,cite^[HTMLInputElement]',\n

'script^[HTMLInputElement]!async,charset,%crossOrigin,!defer,event,htmlFor,integrity,src,text,type',\n

'select^[HTMLInputElement]!autofocus,!disabled,#length,!multiple,name,!required,#selectedIndex,#size,value',\n

'shadow^[HTMLInputElement]',\n 'slot^[HTMLInputElement]|name',\n

'source^[HTMLInputElement]|media,sizes,src,srcset,type',\n 'span^[HTMLInputElement]',\n

'style^[HTMLInputElement]!disabled,media,type',\n 'caption^[HTMLInputElement]|align',\n

'th,td^[HTMLInputElement]|abbr,align,axis,bgColor,ch,chOff,#colSpan,headers,height,!noWrap,#rowSpan,scope,vAlign,width',\n 'col,colgroup^[HTMLInputElement]|align,ch,chOff,#span,vAlign,width',\n

'table^[HTMLInputElement]|align,bgColor,border,%caption,cellPadding,cellSpacing,frame,rules,summary,%tfoot,%thead,width',\n 'tr^[HTMLInputElement]|align,bgColor,ch,chOff,vAlign',\n

'tfoot,thead,tbody^[HTMLInputElement]|align,ch,chOff,vAlign',\n 'template^[HTMLInputElement]',\n

'textarea^[HTMLInputElement]|autocapitalize,!autofocus,#cols,defaultValue,dirName,!disabled,#maxLength,#minLength,name,placeholder,!readOnly,!required,#rows,selectionDirection,#selectionEnd,#selectionStart,value,wrap',\n

'title^[HTMLInputElement]|text',\n 'track^[HTMLInputElement]!default,kind,label,src,srclang',\n

'ul^[HTMLInputElement]!compact,type',\n 'unknown^[HTMLInputElement]',\n 'video^media/#height,poster,#width',\n

':svg:a^:svg:graphics',\n ':svg:animate^:svg:animation',\n ':svg:animateMotion^:svg:animation',\n

':svg:animateTransform^:svg:animation',\n ':svg:circle^:svg:geometry',\n ':svg:clipPath^:svg:graphics',\n

':svg:defs^:svg:graphics',\n ':svg:desc^:svg:',\n ':svg:discard^:svg:',\n ':svg:ellipse^:svg:geometry',\n

':svg:feBlend^:svg:',\n ':svg:feColorMatrix^:svg:',\n ':svg:feComponentTransfer^:svg:',\n

':svg:feComposite^:svg:',\n ':svg:feConvolveMatrix^:svg:',\n ':svg:feDiffuseLighting^:svg:',\n

':svg:feDisplacementMap^:svg:',\n ':svg:feDistantLight^:svg:',\n ':svg:feDropShadow^:svg:',\n

':svg:feFlood^:svg:',\n ':svg:feFuncA^:svg:componentTransferFunction',\n

':svg:feFuncB^:svg:componentTransferFunction',\n ':svg:feFuncG^:svg:componentTransferFunction',\n

':svg:feFuncR^:svg:componentTransferFunction',\n ':svg:feGaussianBlur^:svg:',\n ':svg:feImage^:svg:',\n

':svg:feMerge^:svg:',\n ':svg:feMergeNode^:svg:',\n ':svg:feMorphology^:svg:',\n ':svg:feOffset^:svg:',\n

':svg:fePointLight^:svg:',\n ':svg:feSpecularLighting^:svg:',\n ':svg:feSpotLight^:svg:',\n ':svg:feTile^:svg:',\n

':svg:feTurbulence^:svg:',\n ':svg:filter^:svg:',\n ':svg:foreignObject^:svg:graphics',\n ':svg:g^:svg:graphics',\n

':svg:image^:svg:graphics',\n ':svg:line^:svg:geometry',\n ':svg:linearGradient^:svg:gradient',\n

':svg:mpath^:svg:',\n ':svg:marker^:svg:',\n ':svg:mask^:svg:',\n ':svg:metadata^:svg:',\n

':svg:path^:svg:geometry',\n ':svg:pattern^:svg:',\n ':svg:polygon^:svg:geometry',\n

':svg:polyline^:svg:geometry',\n ':svg:radialGradient^:svg:gradient',\n ':svg:rect^:svg:geometry',\n

':svg:svg^:svg:graphics|#currentScale,#zoomAndPan',\n ':svg:script^:svg:|type',\n ':svg:set^:svg:animation',\n

':svg:stop^:svg:',\n ':svg:style^:svg:|!disabled,media,title,type',\n ':svg:switch^:svg:graphics',\n

':svg:symbol^:svg:',\n ':svg:tspan^:svg:textPositioning',\n ':svg:text^:svg:textPositioning',\n

':svg:textPath^:svg:textContent',\n ':svg:title^:svg:',\n ':svg:use^:svg:graphics',\n

':svg:view^:svg:|#zoomAndPan',\n 'data^[HTMLInputElement]|value',\n

'keygen^[HTMLInputElement]!autofocus,challenge,!disabled,form,keytype,name',\n

'menuitem^[HTMLInputElement]|type,label,icon,!disabled,!checked,radiogroup,!default',\n

'summary^[HTMLInputElement]',\n 'time^[HTMLInputElement]|dateTime',\n ':svg:cursor^:svg:',\n];\n\nconst

```

_ATTR_TO_PROP: {[name: string]: string} = {\n 'class': 'className',\n 'for': 'htmlFor',\n 'formaction':
'formAction',\n 'innerHTML': 'innerHTML',\n 'readonly': 'readOnly',\n 'tabindex': 'tabIndex',\n};\n\nexport class
DomElementSchemaRegistry extends ElementSchemaRegistry {\n private _schema: {[element: string]: {[property:
string]: string}} = {};\n\n constructor() {\n super();\n SCHEMA.forEach(encodedType => {\n const type:
{[property: string]: string} = {};\n const [strType, strProperties] = encodedType.split('|');\n const properties =
strProperties.split(',');\n const [typeName, superName] = strType.split('^');\n typeName.split(',').forEach(tag
=> this._schema[tag.toLowerCase()] = type);\n const superType = superName &&
this._schema[superName.toLowerCase()];\n if (superType) {\n Object.keys(superType).forEach((prop:
string) => {\n type[prop] = superType[prop];\n });\n };\n properties.forEach((property: string) => {\n
if (property.length > 0) {\n switch (property[0]) {\n case '*':\n // We don't yet support
events.\n // If ever allowing to bind to events, GO THROUGH A SECURITY REVIEW, allowing events\n
// will\n // almost certainly introduce bad XSS vulnerabilities.\n // type[property.substring(1)]
= EVENT;\n break;\n case '!':\n type[property.substring(1)] = BOOLEAN;\n break;\n
case '#':\n type[property.substring(1)] = NUMBER;\n break;\n case '%':\n
type[property.substring(1)] = OBJECT;\n break;\n default:\n type[property] = STRING;\n
}\n }\n });\n });\n }\n\n hasProperty(tagName: string, propName: string, schemaMetas:
SchemaMetadata[]): boolean {\n if (schemaMetas.some((schema) => schema.name ===
NO_ERRORS_SCHEMA.name)) {\n return true;\n }\n\n if (tagName.indexOf('-') > -1) {\n if
(isNgContainer(tagName) || isNgContent(tagName)) {\n return false;\n }\n\n if
(schemaMetas.some((schema) => schema.name === CUSTOM_ELEMENTS_SCHEMA.name)) {\n // Can't
tell now as we don't know which properties a custom element will get\n // once it is instantiated\n return
true;\n }\n }\n\n const elementProperties = this._schema[tagName.toLowerCase()] ||
this._schema['unknown'];\n return !!elementProperties[propName];\n }\n\n hasElement(tagName: string,
schemaMetas: SchemaMetadata[]): boolean {\n if (schemaMetas.some((schema) => schema.name ===
NO_ERRORS_SCHEMA.name)) {\n return true;\n }\n\n if (tagName.indexOf('-') > -1) {\n if
(isNgContainer(tagName) || isNgContent(tagName)) {\n return true;\n }\n\n if
(schemaMetas.some((schema) => schema.name === CUSTOM_ELEMENTS_SCHEMA.name)) {\n // Allow
any custom elements\n return true;\n }\n }\n\n return !!this._schema[tagName.toLowerCase()];\n }\n\n
/**\n * securityContext returns the security context for the given property on the given DOM tag.\n * Tag
and property name are statically known and cannot change at runtime, i.e. it is not\n * possible to bind a value into
a changing attribute or tag name.\n * The filtering is based on a list of allowed tags/attributes. All attributes in
the schema\n * above are assumed to have the 'NONE' security context, i.e. that they are safe inert\n * string
values. Only specific well known attack vectors are assigned their appropriate context.\n */\n
securityContext(tagName: string, propName: string, isAttribute: boolean): SecurityContext {\n if (isAttribute) {\n
// NB: For security purposes, use the mapped property name, not the attribute name.\n propName =
this.getMappedPropName(propName);\n }\n\n // Make sure comparisons are case insensitive, so that case
differences between attribute and\n // property names do not have a security impact.\n tagName =
tagName.toLowerCase();\n propName = propName.toLowerCase();\n let ctx =
SECURITY_SCHEMA()[tagName + '|' + propName];\n if (ctx) {\n return ctx;\n }\n ctx =
SECURITY_SCHEMA()['*' + propName];\n return ctx ? ctx : SecurityContext.NONE;\n }\n\n
getMappedPropName(propName: string): string {\n return _ATTR_TO_PROP[propName] || propName;\n }\n\n
getDefaultComponentElementName(): string {\n return 'ng-component';\n }\n\n validateProperty(name: string):
{error: boolean, msg?: string} {\n if (name.toLowerCase().startsWith('on')) {\n const msg = `Binding to event
property '${name}' is disallowed for security reasons, ` +\n `please use (${name.slice(2)})=...` +\n `\\nIf
'${name}' is a directive input, make sure the directive is imported by the` +\n `current module.`;\n return
{error: true, msg: msg};\n } else {\n return {error: false};\n }\n }\n\n validateAttribute(name: string): {error:
boolean, msg?: string} {\n if (name.toLowerCase().startsWith('on')) {\n const msg = `Binding to event attribute
'${name}' is disallowed for security reasons, ` +\n `please use (${name.slice(2)})=...`;\n return {error: true,

```



```

textContents(element);\n    if (contents !== null) {\n        this.styles.push(contents);\n    }\n    return null;\n  }\n  else if (\n    preparedElement.type === PreparedElementType.STYLESHEET &&\n    isStyleUrlResolvable(preparedElement.hrefAttr)) {\n    this.styleUrls.push(preparedElement.hrefAttr);\n    return null;\n  }\n  // Whether the element is a ``\n  const isTemplateElement =\n    isNgTemplate(element.name);\n  const parsedProperties: ParsedProperty[] = [];\n  const boundEvents:\n    t.BoundEvent[] = [];\n  const variables: t.Variable[] = [];\n  const references: t.Reference[] = [];\n  const\n    attributes: t.TextAttribute[] = [];\n  const i18nAttrsMeta: {[key: string]: i18n.I18nMeta} = {};\n  const\n    templateParsedProperties: ParsedProperty[] = [];\n  const templateVariables: t.Variable[] = [];\n  // Whether the\n    element has any *-attribute\n  let elementHasInlineTemplate = false;\n  for (const attribute of element.attrs) {\n    let hasBinding = false;\n    const normalizedName = normalizeAttributeName(attribute.name);\n    // `*attr`\n    defines template bindings\n    let isTemplateBinding = false;\n    if (attribute.i18n) {\n      i18nAttrsMeta[attribute.name] = attribute.i18n;\n    }\n    if\n      (normalizedName.startsWith(TEMPLATE_ATTR_PREFIX)) {\n        // *-attributes\n        if\n          (elementHasInlineTemplate) {\n            this.reportError(\n              `Can't have multiple template bindings on one\n              element. Use only one attribute prefixed with *,\n              attribute.sourceSpan);\n          }\n        isTemplateBinding\n          = true;\n        elementHasInlineTemplate = true;\n        const templateValue = attribute.value;\n        const\n          templateKey = normalizedName.substring(TEMPLATE_ATTR_PREFIX.length);\n        const parsedVariables:\n          ParsedVariable[] = [];\n        const absoluteValueOffset = attribute.valueSpan ?\n          attribute.valueSpan.start.offset :\n          // If there is no value span the attribute does not have a value, like `attr`\n          in\n          // `

`\n    if\n      (element.children &&\n        !element.children.every(\n          (node: html.Node) => isEmptyTextNode(node) ||\n          isCommentNode(node))) {\n      this.reportError(`<ng-content> element cannot have content.`,\n        element.sourceSpan);\n    }\n    const selector = preparedElement.selectAttr;\n    const attrs: t.TextAttribute[] =\n      element.attrs.map(attr => this.visitAttribute(attr));\n    parsedElement = new t.Content(selector, attrs,\n      element.sourceSpan, element.i18n);\n    this.ngContentSelectors.push(selector);\n  } else if (isTemplateElement)\n    {\n      // ``\n      const attrs = this.extractAttributes(element.name, parsedProperties,\n        i18nAttrsMeta);\n      parsedElement = new t.Template(\n        element.name, attributes, attrs.bound,\n        boundEvents, [/* no template attributes */],\n        children, references, variables, element.sourceSpan,\n        element.startSourceSpan,\n        element.endSourceSpan, element.i18n);\n    } else {\n      const attrs =\n        this.extractAttributes(element.name, parsedProperties, i18nAttrsMeta);\n      parsedElement = new t.Element(\n        element.name, attributes, attrs.bound, boundEvents, children, references,\n        element.sourceSpan,\n        element.startSourceSpan, element.endSourceSpan, element.i18n);\n    }\n  if (elementHasInlineTemplate) {\n    // If this node is an inline-template (e.g. has *ngFor) then we need to create a template\n    // node that contains this\n    // node.\n    // Moreover, if the node is an element, then we need to hoist its attributes to the template\n    // node for\n    matching against content projection selectors.\n    const attrs = this.extractAttributes('ng-template',\n      templateParsedProperties, i18nAttrsMeta);\n    const templateAttrs: (t.TextAttribute|t.BoundAttribute)[] = [];\n    attrs.literal.forEach(attr => templateAttrs.push(attr));\n    attrs.bound.forEach(attr => templateAttrs.push(attr));\n  }\n


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const hoistedAttrs = parsedElement instanceof t.Element ? {
  attributes: parsedElement.attributes,
  inputs: parsedElement.inputs,
  outputs: parsedElement.outputs
} : { attributes: [], inputs: [], outputs: [] };
// For <ng-template>s with structural directives on them, avoid passing i18n information to the wrapping template to prevent unnecessary i18n instructions from being generated. The necessary i18n meta information will be extracted from child elements.
const i18n = isTemplateElement && isI18nRootElement ? undefined : element.i18n;
// TODO(pk): test for this case
parsedElement = new t.Template(
  (parsedElement as t.Element | t.Content).name, hoistedAttrs.attributes,
  hoistedAttrs.inputs, hoistedAttrs.outputs, templateAttrs, [parsedElement],
  /* no references */,
  templateVariables, element.sourceSpan, element.startSourceSpan,
  element.endSourceSpan, i18n);
if (isI18nRootElement) {
  this.inI18nBlock = false;
}
return parsedElement;
}

visitAttribute(attribute: html.Attribute): t.TextAttribute {
  return new t.TextAttribute(
    attribute.name, attribute.value, attribute.sourceSpan, attribute.valueSpan, attribute.i18n);
}

visitText(text: html.Text): t.Node {
  return this._visitTextWithInterpolation(text.value, text.sourceSpan, text.i18n);
}

visitExpansion(expansion: html.Expansion): t.Icu | null {
  if (!expansion.i18n) {
    // do not generate Icu in case it was created outside of i18n block in a template
    return null;
  }
  if (!isI18nRootNode(expansion.i18n)) {
    throw new Error(`Invalid type "${expansion.i18n.constructor}" for "i18n" property of ${expansion.sourceSpan.toString()}. Expected a "Message"`);
  }
  const message = expansion.i18n;
  const vars: {[name: string]: t.BoundText} = {};
  const placeholders: {[name: string]: t.Text | t.BoundText} = {};
  // extract VARs from ICUs - we process them separately while assembling resulting message via goog.getMsg function, since we need to pass them to top-level goog.getMsg call
  Object.keys(message.placeholders).forEach(key => {
    const value = message.placeholders[key];
    if (key.startsWith(I18N_ICU_VAR_PREFIX)) {
      // Currently when the `plural` or `select` keywords in an ICU contain trailing spaces (e.g. `{count, select, ...}`), these spaces are also included into the key names in ICU vars (e.g. `VAR_SELECT `). These trailing spaces are not desirable, since they will later be converted into `_` symbols while normalizing placeholder names, which might lead to mismatches at runtime (i.e. placeholder will not be replaced with the correct value).
      const formattedKey = key.trim();
      const ast = this.bindingParser.parseInterpolationExpression(value.text, value.sourceSpan);
      vars[formattedKey] = new t.BoundText(ast, value.sourceSpan);
    } else {
      placeholders[key] = this._visitTextWithInterpolation(value.text, value.sourceSpan);
    }
  });
  return new t.Icu(vars, placeholders, expansion.sourceSpan, message);
}

visitExpansionCase(expansionCase: html.ExpansionCase): null {
  return null;
}

visitComment(comment: html.Comment): null {
  return null;
}

// convert view engine `ParsedProperty` to a format suitable for IVY
private extractAttributes(
  elementName: string,
  properties: ParsedProperty[],
  i18nPropsMeta: {[key: string]: i18n.I18nMeta}): { bound: t.BoundAttribute[], literal: t.TextAttribute[] } {
  const bound: t.BoundAttribute[] = [];
  const literal: t.TextAttribute[] = [];
  properties.forEach(prop => {
    const i18n = i18nPropsMeta[prop.name];
    if (prop.isLiteral) {
      literal.push(new t.TextAttribute(
        prop.name, prop.expression.source || "", prop.sourceSpan, undefined, i18n));
    } else {
      // Note that validation is skipped and property mapping is disabled due to the fact that we need to make sure a given prop is not an input of a directive and directive matching happens at runtime.
      const bep = this.bindingParser.createBoundElementProperty(
        elementName, prop, /* skipValidation */ true, /* mapPropertyName */ false);
      bound.push(t.BoundAttribute.fromBoundElementProperty(bep, i18n));
    }
  });
  return { bound, literal };
}

private parseAttribute(
  isTemplateElement: boolean,
  attribute: html.Attribute,
  matchableAttributes: string[],
  parsedProperties: ParsedProperty[],
  boundEvents: t.BoundEvent[],
  variables: t.Variable[],
  references: t.Reference[]) {
  const name = normalizeAttributeName(attribute.name);
  const value = attribute.value;
  const srcSpan = attribute.sourceSpan;
  const absoluteOffset = attribute.valueSpan ? attribute.valueSpan.start.offset : srcSpan.start.offset;
  function createKeySpan(srcSpan: ParseSourceSpan, prefix: string, identifier: string) {
    // We need to adjust the start location for the keySpan to account for the removed 'data-' prefix from `normalizeAttributeName`
    const normalizationAdjustment =

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attribute.name.length - name.length);\n    const keySpanStart = srcSpan.start.moveBy(prefix.length +
normalizationAdjustment);\n    const keySpanEnd = keySpanStart.moveBy(identifier.length);\n    return new
ParseSourceSpan(keySpanStart, keySpanEnd, keySpanStart, identifier);\n  }\n\n  const bindParts =
name.match(BIND_NAME_REGEXP);\n  let hasBinding = false;\n\n  if (bindParts) {\n    hasBinding = true;\n    if (bindParts[KW_BIND_IDX] != null) {\n      const identifier = bindParts[IDENT_KW_IDX];\n      const
keySpan = createKeySpan(srcSpan, bindParts[KW_BIND_IDX], identifier);\n      this.bindingParser.parsePropertyBinding(\n        identifier, value, false, srcSpan, absoluteOffset,
attribute.valueSpan,\n        matchableAttributes, parsedProperties, keySpan);\n\n    } else if
(bindParts[KW_LET_IDX]) {\n      if (isTemplateElement) {\n        const identifier =
bindParts[IDENT_KW_IDX];\n        const keySpan = createKeySpan(srcSpan, bindParts[KW_LET_IDX],
identifier);\n        this.parseVariable(identifier, value, srcSpan, keySpan, attribute.valueSpan, variables);\n      }
else {\n        this.reportError(`"let-" is only supported on ng-template elements.`, srcSpan);\n      }\n    } else if
(bindParts[KW_REF_IDX]) {\n      const identifier = bindParts[IDENT_KW_IDX];\n      this.parseReference(identifier, value, srcSpan, attribute.valueSpan, references);\n    } else if
(bindParts[KW_ON_IDX]) {\n      const events: ParsedEvent[] = [];\n      const identifier =
bindParts[IDENT_KW_IDX];\n      this.bindingParser.parseEvent(\n        identifier, value, srcSpan,
attribute.valueSpan || srcSpan, matchableAttributes,\n        events);\n      addEvents(events, boundEvents);\n    }
else if (bindParts[KW_BINDON_IDX]) {\n      const identifier = bindParts[IDENT_KW_IDX];\n      const
keySpan = createKeySpan(srcSpan, bindParts[KW_BINDON_IDX], identifier);\n      this.bindingParser.parsePropertyBinding(\n        identifier, value, false, srcSpan, absoluteOffset,
attribute.valueSpan,\n        matchableAttributes, parsedProperties, keySpan);\n      this.parseAssignmentEvent(\n
        identifier, value, srcSpan, attribute.valueSpan, matchableAttributes, boundEvents);\n    } else if
(bindParts[KW_AT_IDX]) {\n      const keySpan = createKeySpan(srcSpan, "", name);\n      this.bindingParser.parseLiteralAttr(\n        name, value, srcSpan, absoluteOffset, attribute.valueSpan,
matchableAttributes,\n        parsedProperties, keySpan);\n    } else if
(bindParts[IDENT_BANANA_BOX_IDX]) {\n      const keySpan = createKeySpan(srcSpan, '[',\nbindParts[IDENT_BANANA_BOX_IDX]);\n      this.bindingParser.parsePropertyBinding(\n
bindParts[IDENT_BANANA_BOX_IDX], value, false, srcSpan, absoluteOffset,\n        attribute.valueSpan,
matchableAttributes, parsedProperties, keySpan);\n      this.parseAssignmentEvent(\n
bindParts[IDENT_BANANA_BOX_IDX], value, srcSpan, attribute.valueSpan,\n        matchableAttributes,
boundEvents);\n    } else if (bindParts[IDENT_PROPERTY_IDX]) {\n      const keySpan =
createKeySpan(srcSpan, '[', bindParts[IDENT_PROPERTY_IDX]);\n      this.bindingParser.parsePropertyBinding(\n
        bindParts[IDENT_PROPERTY_IDX], value, false, srcSpan,
absoluteOffset,\n        attribute.valueSpan, matchableAttributes, parsedProperties, keySpan);\n    } else if
(bindParts[IDENT_EVENT_IDX]) {\n      const events: ParsedEvent[] = [];\n      this.bindingParser.parseEvent(\n
        bindParts[IDENT_EVENT_IDX], value, srcSpan, attribute.valueSpan || srcSpan,\n
matchableAttributes, events);\n      addEvents(events, boundEvents);\n    } }\n  } else {\n    const keySpan =
createKeySpan(srcSpan, "/* prefix */", name);\n    hasBinding = this.bindingParser.parsePropertyInterpolation(\n
      name, value, srcSpan, attribute.valueSpan, matchableAttributes, parsedProperties,\n      keySpan);\n  }\n\n  return hasBinding;\n}\n\nprivate _visitTextWithInterpolation(\n  value: string, sourceSpan: ParseSourceSpan,
i18n?: i18n.I18nMeta): t.Text|t.BoundText {\n  const valueNoNgsp = replaceNgsp(value);\n  const expr =
this.bindingParser.parseInterpolation(valueNoNgsp, sourceSpan);\n  return expr ? new t.BoundText(expr,
sourceSpan, i18n) : new t.Text(valueNoNgsp, sourceSpan);\n}\n\nprivate parseVariable(\n  identifier: string,
value: string, sourceSpan: ParseSourceSpan, keySpan: ParseSourceSpan,\n  valueSpan:
ParseSourceSpan|undefined, variables: t.Variable[]) {\n  if (identifier.indexOf('-') > -1) {\n    this.reportError(`"-
\' is not allowed in variable names`, sourceSpan);\n  } else if (identifier.length === 0) {\n
this.reportError(`Variable does not have a name`, sourceSpan);\n  }\n\n  variables.push(new t.Variable(identifier,
value, sourceSpan, keySpan, valueSpan));\n}\n\nprivate parseReference(\n  identifier: string, value: string,

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sourceSpan: ParseSourceSpan,\n    valueSpan: ParseSourceSpan|undefined, references: t.Reference[]) {\n    if
(identifier.indexOf('-') > -1) {\n        this.reportError(`\"-\" is not allowed in reference names`, sourceSpan);\n    } else
if (identifier.length === 0) {\n        this.reportError(`Reference does not have a name`, sourceSpan);\n    }\n\n    references.push(new t.Reference(identifier, value, sourceSpan, valueSpan));\n    }\n\n    private
parseAssignmentEvent(\n        name: string, expression: string, sourceSpan: ParseSourceSpan,\n        valueSpan:
ParseSourceSpan|undefined, targetMatchableAttrs: string[][],\n        boundEvents: t.BoundEvent[]) {\n        const events:
ParsedEvent[] = [];\n        this.bindingParser.parseEvent(\n            `${name}Change`, `${expression}=$event`,
sourceSpan, valueSpan || sourceSpan,\n            targetMatchableAttrs, events);\n        addEvents(events, boundEvents);\n    }\n\n    private reportError(\n        message: string, sourceSpan: ParseSourceSpan,\n        level: ParseErrorLevel =
ParseErrorLevel.ERROR) {\n        this.errors.push(new ParseError(sourceSpan, message, level));\n    }\n\n    class
NonBindableVisitor implements html.Visitor {\n        visitElement(ast: html.Element): t.Element|null {\n            const
preparsedElement = preparseElement(ast);\n            if (preparsedElement.type === PreparedElementType.SCRIPT ||\n                preparsedElement.type === PreparedElementType.STYLE ||\n                preparsedElement.type ===
PreparedElementType.STYLESHEET) {\n                // Skipping <script> for security reasons\n                // Skipping <style>
and stylesheets as we already processed them\n                // in the StyleCompiler\n                return null;\n            }\n\n            const
children: t.Node[] = html.visitAll(this, ast.children, null);\n            return new t.Element(\n                ast.name,
html.visitAll(this, ast.attrs) as t.TextAttribute[],\n                /* inputs */[], /* outputs */[], children, /* references */[],
ast.sourceSpan,\n                ast.startSourceSpan, ast.endSourceSpan);\n        }\n\n        visitComment(comment: html.Comment):
any {\n            return null;\n        }\n\n        visitAttribute(attribute: html.Attribute): t.TextAttribute {\n            return new
t.TextAttribute(\n                attribute.name, attribute.value, attribute.sourceSpan, undefined, attribute.i18n);\n        }\n\n        visitText(text: html.Text): t.Text {\n            return new t.Text(text.value, text.sourceSpan);\n        }\n\n        visitExpansion(expansion: html.Expansion): any {\n            return null;\n        }\n\n        visitExpansionCase(expansionCase:
html.ExpansionCase): any {\n            return null;\n        }\n\n        const NON_BINDABLE_VISITOR = new
NonBindableVisitor();\n\n        function normalizeAttributeName(attrName: string): string {\n            return /^data-
/i.test(attrName) ? attrName.substring(5) : attrName;\n        }\n\n        function addEvents(events: ParsedEvent[], boundEvents:
t.BoundEvent[]) {\n            boundEvents.push(...events.map(e => t.BoundEvent.fromParsedEvent(e)));\n        }\n\n        function
isEmptyTextNode(node: html.Node): boolean {\n            return node instanceof html.Text && node.value.trim().length ===
0;\n        }\n\n        function isCommentNode(node: html.Node): boolean {\n            return node instanceof
html.Comment;\n        }\n\n        function textContents(node: html.Element): string|null {\n            if (node.children.length !== 1 ||
!(node.children[0] instanceof html.Text)) {\n                return null;\n            } else {\n                return (node.children[0] as
html.Text).value;\n            }\n        }\n\n        /**\n         * @license\n         * Copyright Google LLC All Rights Reserved.\n         * Use of this
source code is governed by an MIT-style license that can be\n         * found in the LICENSE file at
https://angular.io/license\n         *\n         * @import {AST} from './../expression_parser/ast';\n         * @import * as i18n from
'./../i18n/i18n_ast';\n         * @import * as o from './../output/output_ast';\n         * @import {assembleBoundTextPlaceholders,
getSeqNumberGenerator, updatePlaceholderMap, wrapI18nPlaceholder} from './util';\n         * @enum TagType {\n            ELEMENT,\n            TEMPLATE,\n        }\n\n        /**\n         * Generates an object that is used as a shared state between parent and all
child contexts.\n         *\n         * @function setupRegistry()\n         * @return {getUniqueId: getSeqNumberGenerator(), icus: new
Map<string, any[]>()};\n        }\n\n        /**\n         * I18nContext is a helper class which keeps track of all i18n-related aspects\n         * (accumulates placeholders, bindings, etc) between i18nStart and i18nEnd instructions.\n         * \n         * When we enter a
nested template, the top-level context is being passed down\n         * to the nested component, which uses this context to
generate a child instance\n         * of I18nContext class (to handle nested template) and at the end, reconciles it back\n         * with the parent context.\n         * \n         * @param index Instruction index of i18nStart, which initiates this context\n         * \n         * @param ref Reference to a translation const that represents the content if thus context\n         * \n         * @param level Nesting
level defined for child contexts\n         * \n         * @param templateIndex Instruction index of a template which this context
belongs to\n         * \n         * @param meta Meta information (id, meaning, description, etc) associated with this context\n         *\n         * @export class I18nContext {\n            public readonly id: number;\n            public bindings = new Set<AST>();\n            public
placeholders = new Map<string, any[]>();\n            public isEmitted: boolean = false;\n\n            private _registry!: any;\n            private
_unresolvedCtxCount: number = 0;\n\n            constructor(\n                readonly index: number, readonly ref:

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o.ReadVarExpr, readonly level: number = 0,\n    readonly templateIndex: number|null = null, readonly meta:
i18n.I18nMeta,\n    private registry?: any) {\n    this._registry = registry || setupRegistry();\n    this.id =
this._registry.getUniqueId();\n    }\n\n    private appendTag(type: TagType, node: i18n.TagPlaceholder, index: number,
closed?: boolean) {\n    if (node.isVoid && closed) {\n    return; // ignore "close" for void tags\n    }\n    const ph
= node.isVoid || !closed ? node.startName : node.closeName;\n    const content = {type, index, ctx: this.id, isVoid:
node.isVoid, closed};\n    updatePlaceholderMap(this.placeholders, ph, content);\n    }\n\n    get icus() {\n    return
this._registry.icus;\n    }\n    get isRoot() {\n    return this.level === 0;\n    }\n    get isResolved() {\n    return
this._unresolvedCtxCount === 0;\n    }\n\n    get SerializedPlaceholders() {\n    const result = new Map<string,
any[]>();\n    this.placeholders.forEach(\n        (values, key) => result.set(key,
values.map(serializePlaceholderValue));\n    );\n    return result;\n    }\n\n    // public API to accumulate i18n-related
content\n    appendBinding(binding: AST) {\n    this.bindings.add(binding);\n    }\n\n    appendIcu(name: string, ref:
o.Expression) {\n    updatePlaceholderMap(this._registry.icus, name, ref);\n    }\n\n    appendBoundText(node:
i18n.I18nMeta) {\n    const phs = assembleBoundTextPlaceholders(node, this.bindings.size, this.id);\n    phs.forEach((values, key) => updatePlaceholderMap(this.placeholders, key, ...values));\n    }\n\n    appendTemplate(node: i18n.I18nMeta, index: number) {\n    // add open and close tags at the same time,\n    // since
we process nested templates separately\n    this.appendTag(TagType.TEMPLATE, node as i18n.TagPlaceholder,
index, false);\n    this.appendTag(TagType.TEMPLATE, node as i18n.TagPlaceholder, index, true);\n    this._unresolvedCtxCount++;\n    }\n\n    appendElement(node: i18n.I18nMeta, index: number, closed?: boolean) {\n    this.appendTag(TagType.ELEMENT, node as i18n.TagPlaceholder, index, closed);\n    }\n\n    appendProjection(node:
i18n.I18nMeta, index: number) {\n    // Add open and close tags at the same time, since `<ng-content>` has no
content,\n    // so when we come across `<ng-content>` we can register both open and close tags.\n    // Note: runtime
i18n logic doesn't distinguish `<ng-content>` tag placeholders and\n    // regular element tag placeholders, so we
generate element placeholders for both types.\n    this.appendTag(TagType.ELEMENT, node as
i18n.TagPlaceholder, index, false);\n    this.appendTag(TagType.ELEMENT, node as i18n.TagPlaceholder, index,
true);\n    }\n\n    /**\n    * Generates an instance of a child context based on the root one,\n    * when we enter a nested
template within I18n section.\n    * @param index Instruction index of corresponding i18nStart, which initiates
this context\n    * @param templateIndex Instruction index of a template which this context belongs to\n    * @param
meta Meta information (id, meaning, description, etc) associated with this context\n    * @returns I18nContext
instance\n    */\n    forkChildContext(index: number, templateIndex: number, meta: i18n.I18nMeta) {\n    return new
I18nContext(index, this.ref, this.level + 1, templateIndex, meta, this._registry);\n    }\n\n    /**\n    * Reconciles child
context into parent one once the end of the i18n block is reached (i18nEnd).\n    * @param context Child
I18nContext instance to be reconciled with parent context.\n    */\n    reconcileChildContext(context: I18nContext) {\n
    // set the right context id for open and close\n    // template tags, so we can use it as sub-block ids\n    ['start',
'close'].forEach((op: string) => {\n    const key = (context.meta as any)[`${op}Name`];\n    const phs =
this.placeholders.get(key) || [];\n    const tag = phs.find(findTemplateFn(this.id, context.templateIndex));\n    if
(tag) {\n    tag.ctx = context.id;\n    }\n    });\n\n    // reconcile placeholders\n    const childPhs =
context.placeholders;\n    childPhs.forEach((values: any[], key: string) => {\n    const phs =
this.placeholders.get(key);\n    if (!phs) {\n    this.placeholders.set(key, values);\n    return;\n    }\n    // try to
find matching template...\n    const tmpIdx = phs.findIndex(findTemplateFn(context.id, context.templateIndex));\n    if
(tmpIdx >= 0) {\n    // ... if found - replace it with nested template content\n    const isCloseTag =
key.startsWith('CLOSE');\n    const isTemplateTag = key.endsWith('NG-TEMPLATE');\n    if (isTemplateTag)
{\n    // current template's content is placed before or after\n    // parent template tag, depending on the
open/close attribute\n    phs.splice(tmpIdx + (isCloseTag ? 0 : 1), 0, ...values);\n    } else {\n    const idx =
isCloseTag ? values.length - 1 : 0;\n    values[idx].tmpl = phs[tmpIdx];\n    phs.splice(tmpIdx, 1,
...values);\n    }\n    } else {\n    // ... otherwise just append content to placeholder value\n    phs.push(...values);\n    }\n    this.placeholders.set(key, phs);\n    });\n    this._unresolvedCtxCount--;\n    }\n\n    }\n\n    /\n\n    // Helper methods\n\n    function wrap(symbol: string, index: number, contextId: number, closed?:
boolean): string {\n    const state = closed ? '/' : '';\n    return wrapI18nPlaceholder(`${state}${symbol}${index}`
,
```

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contextId);\n\nfunction wrapTag(symbol: string, {index, ctx, isVoid}: any, closed?: boolean): string {\n return
isVoid ? wrap(symbol, index, ctx) + wrap(symbol, index, ctx, true) :\n wrap(symbol, index, ctx,
closed);\n\nfunction findTemplateFn(ctx: number, templateIndex: number|null) {\n return (token: any) => typeof
token === 'object' && token.type === TagType.TEMPLATE &&\n token.index === templateIndex &&
token.ctx === ctx;\n\nfunction serializePlaceholderValue(value: any): string {\n const element = (data: any,
closed?: boolean) => wrapTag('#', data, closed);\n const template = (data: any, closed?: boolean) => wrapTag('*',
data, closed);\n const projection = (data: any, closed?: boolean) => wrapTag('!', data, closed);\n\n switch
(value.type) {\n case TagType.ELEMENT:\n // close element tag\n if (value.closed) {\n return
element(value, true) + (value.templ ? template(value.templ, true) : '');\n // open element tag that also initiates
a template\n if (value.templ) {\n return template(value.templ) + element(value) +\n (value.isVoid ?
template(value.templ, true) : '');\n }\n return element(value);\n\n case TagType.TEMPLATE:\n return
template(value, value.closed);\n\n default:\n return value;\n }\n}\n\n"/**\n * @license\n * Copyright Google
LLC All Rights Reserved.\n *\n * Use of this source code is governed by an MIT-style license that can be\n * found
in the LICENSE file at https://angular.io/license\n */\n\nimport * as i18n from './i18n/i18n_ast';\n\nimport
{formatI18nPlaceholderName} from './util';\n\nclass IcuSerializerVisitor implements i18n.Visitor {\n visitText(text:
i18n.Text): any {\n return text.value;\n }\n\n visitContainer(container: i18n.Container): any {\n return
container.children.map(child => child.visit(this)).join('');\n }\n\n visitIcu(icu: i18n.Icu): any {\n const strCases
= Object.keys(icu.cases).map((k: string) => `${k} {${icu.cases[k].visit(this)}}`);\n const result =
`${icu.expressionPlaceholder}, ${icu.type}, ${strCases.join(' ')}`;\n return result;\n }\n\n visitTagPlaceholder(ph:
i18n.TagPlaceholder): any {\n return ph.isVoid ?\n this.formatPh(ph.startName) :\n
`${this.formatPh(ph.startName)}${ph.children.map(child => child.visit(this)).join('')}${\n
this.formatPh(ph.closeName)}`;\n }\n\n visitPlaceholder(ph: i18n.Placeholder): any {\n return
this.formatPh(ph.name);\n }\n\n visitIcuPlaceholder(ph: i18n.IcuPlaceholder, context?: any): any {\n return
this.formatPh(ph.name);\n }\n\n private formatPh(value: string): string {\n return
`${formatI18nPlaceholderName(value, /* useCamelCase */ false)}`;\n }\n\nconst serializer = new
IcuSerializerVisitor();\n\nexport function serializeIcuNode(icu: i18n.Icu): string {\n return
icu.visit(serializer);\n}\n\n"/**\n * @license\n * Copyright Google LLC All Rights Reserved.\n *\n * Use of this
source code is governed by an MIT-style license that can be\n * found in the LICENSE file at
https://angular.io/license\n */\n\nconst TAG_TO_PLACEHOLDER_NAMES: {[k: string]: string} = {\n 'A':
'LINK',\n 'B': 'BOLD_TEXT',\n 'BR': 'LINE_BREAK',\n 'EM': 'EMPHASISED_TEXT',\n 'H1':
'HEADING_LEVEL1',\n 'H2': 'HEADING_LEVEL2',\n 'H3': 'HEADING_LEVEL3',\n 'H4':
'HEADING_LEVEL4',\n 'H5': 'HEADING_LEVEL5',\n 'H6': 'HEADING_LEVEL6',\n 'HR':
'HORIZONTAL_RULE',\n 'I': 'ITALIC_TEXT',\n 'LI': 'LIST_ITEM',\n 'LINK': 'MEDIA_LINK',\n 'OL':
'ORDERED_LIST',\n 'P': 'PARAGRAPH',\n 'Q': 'QUOTATION',\n 'S': 'STRIKETHROUGH_TEXT',\n 'SMALL':
'SMALL_TEXT',\n 'SUB': 'SUBSCRIPT',\n 'SUP': 'SUPERSCRIPT',\n 'TBODY': 'TABLE_BODY',\n 'TD':
'TABLE_CELL',\n 'TFOOT': 'TABLE_FOOTER',\n 'TH': 'TABLE_HEADER_CELL',\n 'THEAD':
'TABLE_HEADER',\n 'TR': 'TABLE_ROW',\n 'TT': 'MONOSPACED_TEXT',\n 'U': 'UNDERLINED_TEXT',\n
'UL': 'UNORDERED_LIST',\n};\n\n/**\n * Creates unique names for placeholder with different content.\n *\n * Returns the same placeholder name when the content is identical.\n */\n\nexport class PlaceholderRegistry {\n //
Count the occurrence of the base name top generate a unique name\n private _placeholderNameCounts: {[k:
string]: number} = {};\n // Maps signature to placeholder names\n private _signatureToName: {[k: string]: string}
= {};\n\n getStartTagPlaceholderName(tag: string, attrs: {[k: string]: string}, isVoid: boolean): string {\n const
signature = this._hashTag(tag, attrs, isVoid);\n if (this._signatureToName[signature]) {\n return
this._signatureToName[signature];\n }\n\n const upperTag = tag.toUpperCase();\n const baseName =
TAG_TO_PLACEHOLDER_NAMES[upperTag] || `TAG_${upperTag}`;\n const name =
this._generateUniqueName(isVoid ? baseName : `START_${baseName}`);\n this._signatureToName[signature]
= name;\n\n return name;\n }\n\n getCloseTagPlaceholderName(tag: string): string {\n const signature =
this._hashClosingTag(tag);\n if (this._signatureToName[signature]) {\n return

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this._signatureToName[signature];\n  }\n\n  const upperTag = tag.toUpperCase();\n  const baseName =
TAG_TO_PLACEHOLDER_NAMES[upperTag] || `TAG_${upperTag}`;\n  const name =
this._generateUniqueName(`CLOSE_${baseName}`);\n\n  this._signatureToName[signature] = name;\n\n  return
name;\n  }\n\n  getPlaceholderName(name: string, content: string): string {\n  const upperName =
name.toUpperCase();\n  const signature = `PH: ${upperName}=${content}`;\n  if
(this._signatureToName[signature]) {\n  return this._signatureToName[signature];\n  }\n\n  const uniqueName
= this._generateUniqueName(upperName);\n  this._signatureToName[signature] = uniqueName;\n\n  return
uniqueName;\n  }\n\n  getUniquePlaceholder(name: string): string {\n  return
this._generateUniqueName(name.toUpperCase());\n  }\n\n  // Generate a hash for a tag - does not take attribute
order into account\n  private _hashTag(tag: string, attrs: {[k: string]: string}, isVoid: boolean): string {\n  const
start = `<${tag}`;\n  const strAttrs = Object.keys(attrs).sort().map((name) => `
${name}=${attrs[name]}`).join(" ");\n  const end = isVoid ? '>' : `>${tag}>`;\n\n  return start + strAttrs + end;\n
}\n\n  private _hashClosingTag(tag: string): string {\n  return this._hashTag(`/${tag}`, {}, false);\n  }\n\n  private
_generateUniqueName(base: string): string {\n  const seen =
this._placeholderNameCounts.hasOwnProperty(base);\n  if (!seen) {\n  this._placeholderNameCounts[base] =
1;\n  return base;\n  }\n\n  const id = this._placeholderNameCounts[base];\n
this._placeholderNameCounts[base] = id + 1;\n  return `${base}_${id}`;\n  }\n\n  "/*\n * @license\n *
Copyright Google LLC All Rights Reserved.\n * Use of this source code is governed by an MIT-style license
that can be\n * found in the LICENSE file at https://angular.io/license\n */\n\nimport {Lexer as ExpressionLexer}
from './expression_parser/lexer';\nimport {Parser as ExpressionParser} from './expression_parser/parser';\nimport *
as html from './ml_parser/ast';\nimport {getHtmlTagDefinition} from './ml_parser/html_tags';\nimport
{InterpolationConfig} from './ml_parser/interpolation_config';\nimport {ParseSourceSpan} from
'./parse_util';\nimport * as i18n from './i18n_ast';\nimport {PlaceholderRegistry} from
'./serializers/placeholder';\n\nconst _expParser = new ExpressionParser(new ExpressionLexer());\n\nexport type
VisitNodeFn = (html: html.Node, i18n: i18n.Node) => i18n.Node;\n\nexport interface I18nMessageFactory {\n
(nodes: html.Node[], meaning: string|undefined, description: string|undefined,\n  customId: string|undefined,\n
visitNodeFn?: VisitNodeFn): i18n.Message;\n}\n\n/*\n * Returns a function converting html nodes to an i18n
Message given an interpolationConfig\n */\n\nexport function createI18nMessageFactory(interpolationConfig:
InterpolationConfig):\n  I18nMessageFactory {\n  const visitor = new _I18nVisitor(_expParser,\n
interpolationConfig);\n  return (nodes, meaning, description, customId, visitNodeFn) =>\n
visitor.toI18nMessage(nodes, meaning, description, customId, visitNodeFn);\n}\n\ninterface
I18nMessageVisitorContext {\n  isIcu: boolean;\n  icuDepth: number;\n  placeholderRegistry:
PlaceholderRegistry;\n  placeholderToContent: {[phName: string]: i18n.MessagePlaceholder};\n
placeholderToMessage: {[phName: string]: i18n.Message};\n  visitNodeFn: VisitNodeFn;\n}\n\nfunction
noopVisitNodeFn(_html: html.Node, i18n: i18n.Node): i18n.Node {\n  return i18n;\n}\n\nclass _I18nVisitor
implements html.Visitor {\n  constructor(\n    private _expressionParser: ExpressionParser,\n    private
_interpolationConfig: InterpolationConfig) {}\n\n  public toI18nMessage(\n    nodes: html.Node[], meaning = ",\n
description = ", customId = ",\n    visitNodeFn: VisitNodeFn|undefined): i18n.Message {\n  const context:
I18nMessageVisitorContext = {\n    isIcu: nodes.length == 1 && nodes[0] instanceof html.Expansion,\n
icuDepth: 0,\n    placeholderRegistry: new PlaceholderRegistry(),\n    placeholderToContent: {},\n
placeholderToMessage: {},\n    visitNodeFn: visitNodeFn || noopVisitNodeFn,\n  };\n\n  const i18nodes:
i18n.Node[] = html.visitAll(this, nodes, context);\n\n  return new i18n.Message(\n    i18nodes,\n
context.placeholderToContent, context.placeholderToMessage, meaning, description,\n    customId);\n  }\n\n  visitElement(el: html.Element, context: I18nMessageVisitorContext): i18n.Node {\n  const children =
html.visitAll(this, el.children, context);\n  const attrs: {[k: string]: string} = {};\n  el.attrs.forEach(attr => {\n  //
Do not visit the attributes, translatable ones are top-level ASTs\n    attrs[attr.name] = attr.value;\n  });\n\n  const
isVoid: boolean = getHtmlTagDefinition(el.name).isVoid;\n  const startPhName =\n    context.placeholderRegistry.getStartTagPlaceholderName(el.name, attrs, isVoid);\n

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context.placeholderToContent[startPhName] = {\n  text: el.startSourceSpan.toString(),\n  sourceSpan:
el.startSourceSpan,\n  };\n\n let closePhName = "";\n\n if (!isVoid) {\n  closePhName =
context.placeholderRegistry.getCloseTagPlaceholderName(el.name);\n
context.placeholderToContent[closePhName] = {\n  text: `</${el.name}>`,\n  sourceSpan: el.endSourceSpan
?? el.sourceSpan,\n  };\n  }\n\n const node = new i18n.TagPlaceholder(\n  el.name, attrs, startPhName,
closePhName, children, isVoid, el.sourceSpan,\n  el.startSourceSpan, el.endSourceSpan);\n  return
context.visitNodeFn(el, node);\n  }\n\n visitAttribute(attribute: html.Attribute, context:
I18nMessageVisitorContext): i18n.Node {\n  const node = this._visitTextWithInterpolation(attribute.value,
attribute.sourceSpan, context);\n  return context.visitNodeFn(attribute, node);\n  }\n\n visitText(text: html.Text,
context: I18nMessageVisitorContext): i18n.Node {\n  const node = this._visitTextWithInterpolation(text.value,
text.sourceSpan, context);\n  return context.visitNodeFn(text, node);\n  }\n\n visitComment(comment:
html.Comment, context: I18nMessageVisitorContext): i18n.Node|null {\n  return null;\n  }\n\n visitExpansion(icu:
html.Expansion, context: I18nMessageVisitorContext): i18n.Node {\n  context.icuDepth++;\n  const
i18nIcuCases: {[k: string]: i18n.Node} = {};\n  const i18nIcu = new i18n.Icu(icu.switchValue, icu.type,
i18nIcuCases, icu.sourceSpan);\n  icu.cases.forEach((caze): void => {\n  i18nIcuCases[caze.value] = new
i18n.Container(\n    caze.expression.map((node) => node.visit(this, context)), caze.expSourceSpan);\n  });\n
context.icuDepth--;\n\n if (context.isIcu || context.icuDepth > 0) {\n  // Returns an ICU node when:\n  // - the
message (vs a part of the message) is an ICU message, or\n  // - the ICU message is nested.\n  const expPh =
context.placeholderRegistry.getUniquePlaceholder(`VAR_${icu.type}`);\n  i18nIcu.expressionPlaceholder =
expPh;\n  context.placeholderToContent[expPh] = {\n  text: icu.switchValue,\n  sourceSpan:
icu.switchValueSourceSpan,\n  };\n  return context.visitNodeFn(icu, i18nIcu);\n  }\n\n // Else returns a
placeholder\n  // ICU placeholders should not be replaced with their original content but with the their\n  //
translations.\n  // TODO(vicb): add a html.Node -> i18n.Message cache to avoid having to re-create the msg\n
const phName = context.placeholderRegistry.getPlaceholderName('ICU', icu.sourceSpan.toString());\n
context.placeholderToMessage[phName] = this.toI18nMessage([icu], "", "", undefined);\n  const node = new
i18n.IcuPlaceholder(i18nIcu, phName, icu.sourceSpan);\n  return context.visitNodeFn(icu, node);\n  }\n\n
visitExpansionCase(_icuCase: html.ExpansionCase, _context: I18nMessageVisitorContext): i18n.Node {\n  throw
new Error('Unreachable code');\n  }\n\n private _visitTextWithInterpolation(\n  text: string, sourceSpan:
ParseSourceSpan, context: I18nMessageVisitorContext): i18n.Node {\n  const splitInterpolation =
this._expressionParser.splitInterpolation(\n  text, sourceSpan.start.toString(), this._interpolationConfig);\n\n
(!splitInterpolation) {\n  // No expression, return a single text\n  return new i18n.Text(text, sourceSpan);\n
}\n\n // Return a group of text + expressions\n  const nodes: i18n.Node[] = [];\n  const container = new
i18n.Container(nodes, sourceSpan);\n  const {start: sDelimiter, end: eDelimiter} = this._interpolationConfig;\n
for (let i = 0; i < splitInterpolation.strings.length - 1; i++) {\n  const expression =
splitInterpolation.expressions[i];\n  const baseName = _extractPlaceholderName(expression) ||
'INTERPOLATION';\n  const phName = context.placeholderRegistry.getPlaceholderName(baseName,
expression);\n  if (splitInterpolation.strings[i].length) {\n  // No need to add empty strings\n  const
stringSpan = getOffsetSourceSpan(sourceSpan, splitInterpolation.stringSpans[i]);\n  nodes.push(new
i18n.Text(splitInterpolation.strings[i], stringSpan));\n  }\n\n  const expressionSpan =\n
getOffsetSourceSpan(sourceSpan, splitInterpolation.expressionsSpans[i]);\n  nodes.push(new
i18n.Placeholder(expression, phName, expressionSpan);\n  context.placeholderToContent[phName] = {\n
text: sDelimiter + expression + eDelimiter,\n  sourceSpan: expressionSpan,\n  };\n  }\n\n // The last index
contains no expression\n  const lastStringIdx = splitInterpolation.strings.length - 1;\n  if
(splitInterpolation.strings[lastStringIdx].length) {\n  const stringSpan =\n  getOffsetSourceSpan(sourceSpan,
splitInterpolation.stringSpans[lastStringIdx]);\n  nodes.push(new
i18n.Text(splitInterpolation.strings[lastStringIdx], stringSpan));\n  }\n  return container;\n  }\n\n}\n\nfunction
getOffsetSourceSpan(\n  sourceSpan: ParseSourceSpan, {start, end}: {start: number, end: number}):
ParseSourceSpan {\n  return new ParseSourceSpan(sourceSpan.fullStart.moveBy(start),

```



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closureVar.set(o.variable(GOOG_GET_MSG).callFn(args)).toConstDecl();\n const metaComment =
i18nMetaToJSDoc(message);\n if (metaComment !== null) {\n
googGetMsgStmt.addLeadingComment(metaComment);\n }\n const i18nAssignmentStmt = new
o.ExpressionStatement(variable.set(closureVar));\n return [googGetMsgStmt, i18nAssignmentStmt];\n}\n\n/**\n *
This visitor walks over i18n tree and generates its string representation, including ICUs and\n * placeholders in
`{$placeholder}` (for plain messages) or `{PLACEHOLDER}` (inside ICUs) format.\n */\n\nclass
GetMsgSerializerVisitor implements i18n.Visitor {\n private formatPh(value: string): string {\n return
`$$${formatI18nPlaceholderName(value)}`;}\n }\n\n visitText(text: i18n.Text): any {\n return text.value;\n
}\n\n visitContainer(container: i18n.Container): any {\n return container.children.map(child =>
child.visit(this)).join("");\n }\n\n visitIcu(icu: i18n.Icu): any {\n return serializeIcuNode(icu);\n }\n\n
visitTagPlaceholder(ph: i18n.TagPlaceholder): any {\n return ph.isVoid ?\n this.formatPh(ph.startName) :\n
`${this.formatPh(ph.startName)}${ph.children.map(child => child.visit(this)).join("")}${\n
this.formatPh(ph.closeName)}`;}\n }\n\n visitPlaceholder(ph: i18n.Placeholder): any {\n return
this.formatPh(ph.name);\n }\n\n visitIcuPlaceholder(ph: i18n.IcuPlaceholder, context?: any): any {\n return
this.formatPh(ph.name);\n }\n}\n\nconst serializerVisitor = new GetMsgSerializerVisitor();\n\nexport function
serializeI18nMessageForGetMsg(message: i18n.Message): string {\n return message.nodes.map(node =>
node.visit(serializerVisitor, null)).join("");\n}\n\n"/**\n * @license\n * Copyright Google LLC All Rights
Reserved.\n *\n * Use of this source code is governed by an MIT-style license that can be\n * found in the
LICENSE file at https://angular.io/license\n */\n\nimport * as i18n from './../i18n/i18n_ast';\nimport * as o from
'./../output/output_ast';\nimport {ParseLocation, ParseSourceSpan} from './../parse_util';\nimport
{serializeIcuNode} from './icu_serializer';\nimport {formatI18nPlaceholderName} from './util';\n\nexport function
createLocalizeStatements(\n variable: o.ReadVarExpr, message: i18n.Message,\n params: {[name: string]:
o.Expression}): o.Statement[] {\n const {messageParts, placeHolders} =
serializeI18nMessageForLocalize(message);\n const sourceSpan = getSourceSpan(message);\n const expressions =
placeHolders.map(ph => params[ph.text]);\n const localizedString =\n o.localizedString(message, messageParts,
placeHolders, expressions, sourceSpan);\n const variableInitialization = variable.set(localizedString);\n return [new
o.ExpressionStatement(variableInitialization)];\n}\n\n/**\n * This visitor walks over an i18n tree, capturing literal
strings and placeholders.\n *\n * The result can be used for generating the `localize` tagged template literals.\n
*/\n\nclass LocalizeSerializerVisitor implements i18n.Visitor {\n visitText(text: i18n.Text, context:
o.MessagePiece[]): any {\n if (context[context.length - 1] instanceof o.LiteralPiece) {\n // Two literal pieces in
a row means that there was some comment node in-between.\n context[context.length - 1].text += text.value;\n
}\n else {\n context.push(new o.LiteralPiece(text.value, text.sourceSpan));\n }\n }\n\n visitContainer(container:
i18n.Container, context: o.MessagePiece[]): any {\n container.children.forEach(child => child.visit(this,
context));\n }\n\n visitIcu(icu: i18n.Icu, context: o.MessagePiece[]): any {\n context.push(new
o.LiteralPiece(serializeIcuNode(icu), icu.sourceSpan));\n }\n\n visitTagPlaceholder(ph: i18n.TagPlaceholder,
context: o.MessagePiece[]): any {\n context.push(this.createPlaceholderPiece(ph.startName, ph.startSourceSpan
?? ph.sourceSpan));\n if (!ph.isVoid) {\n ph.children.forEach(child => child.visit(this, context));\n
context.push(this.createPlaceholderPiece(ph.closeName, ph.endSourceSpan ?? ph.sourceSpan));\n }\n }\n\n
visitPlaceholder(ph: i18n.Placeholder, context: o.MessagePiece[]): any {\n
context.push(this.createPlaceholderPiece(ph.name, ph.sourceSpan));\n }\n\n visitIcuPlaceholder(ph:
i18n.IcuPlaceholder, context?: any): any {\n context.push(this.createPlaceholderPiece(ph.name,
ph.sourceSpan));\n }\n\n private createPlaceholderPiece(name: string, sourceSpan: ParseSourceSpan):
o.PlaceholderPiece {\n return new o.PlaceholderPiece(\n formatI18nPlaceholderName(name, /*
useCamelCase */ false), sourceSpan);\n }\n}\n\nconst serializerVisitor = new LocalizeSerializerVisitor();\n\n/**\n *
Serialize an i18n message into two arrays: messageParts and placeholders.\n *\n * These arrays will be used to
generate `localize` tagged template literals.\n *\n * @param message The message to be serialized.\n *\n * @returns an
object containing the messageParts and placeholders.\n */\n\nexport function
serializeI18nMessageForLocalize(message: i18n.Message):\n {messageParts: o.LiteralPiece[], placeHolders:

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chainedInstruction, CONTEXT_NAME, getAttrsForDirectiveMatching, getInterpolationArgsLength,
IMPLICIT_REFERENCE, invalid, NON_BINDABLE_ATTR, REFERENCE_PREFIX, RENDER_FLAGS,
trimTrailingNulls, unsupported} from './util';\n\n\n// Selector attribute name of `<ng-content>`\nconst
NG_CONTENT_SELECT_ATTR = 'select';\n\n// Attribute name of `ngProjectAs`.\nconst
NG_PROJECT_AS_ATTR_NAME = 'ngProjectAs';\n\n// Global symbols available only inside event
bindings.\nconst EVENT_BINDING_SCOPE_GLOBALS = new Set<string>(['$event']);\n\n// List of supported
global targets for event listeners\nconst GLOBAL_TARGET_RESOLVERS = new Map<string,
o.ExternalReference>(\n  [['window', R3.resolveWindow], ['document', R3.resolveDocument], ['body',
R3.resolveBody]]);\n\n\nexport const LEADING_TRIVIA_CHARS = [' ', '\\n', '\\r', '\\t'];\n\n// if (rf & flags) { ..
}\n\nexport function renderFlagCheckIfStmt(\n  flags: core.RenderFlags, statements: o.Statement[]): o.IfStmt {\n
return o.IfStmt(o.variable(RENDER_FLAGS).bitwiseAnd(o.literal(flags), null, false), statements);\n}\n\n\nexport
function prepareEventListenerParameters(\n  eventAst: t.BoundEvent, handlerName: string|null = null,\n  scope:
BindingScope|null = null): o.Expression[] {\n  const {type, name, target, phase, handler} = eventAst;\n  if (target
&& !GLOBAL_TARGET_RESOLVERS.has(target)) {\n    throw new Error(`Unexpected global target '${target}'
defined for '${name}' event.\n    Supported list of global targets:
${Array.from(GLOBAL_TARGET_RESOLVERS.keys())}`);\n  }\n\n  const eventName = '$event';\n
const implicitReceiverAccesses = new Set<string>();\n  const implicitReceiverExpr = (scope === null ||
scope.bindingLevel === 0) ?\n    o.variable(CONTEXT_NAME) : \n    scope.getOrCreateSharedContextVar(0);\n
const bindingExpr = convertActionBinding(\n  scope, implicitReceiverExpr, handler, 'b', () => error('Unexpected
interpolation'),\n  eventAst.handlerSpan, implicitReceiverAccesses, EVENT_BINDING_SCOPE_GLOBALS);\n
const statements = [];\n  if (scope) {\n    statements.push(...scope.restoreViewStatement());\n
statements.push(...scope.variableDeclarations());\n  }\n  statements.push(...bindingExpr.render3Stmts);\n\n  const
eventName: string =\n    type === ParsedEventType.Animation ? prepareSyntheticListenerName(name, phase!) :
name;\n  const fnName = handlerName && sanitizeIdentifier(handlerName);\n  const fnArgs: o.FnParam[] = [];\n
if (implicitReceiverAccesses.has(eventName)) {\n    fnArgs.push(new o.FnParam(eventName,
o.DYNAMIC_TYPE));\n  }\n\n  const handlerFn = o.fn(fnArgs, statements, o.INFERRED_TYPE, null, fnName);\n
const params: o.Expression[] = [o.literal(eventName), handlerFn];\n  if (target) {\n    params.push(\n
o.literal(false), // `useCapture` flag, defaults to `false`\n
o.importExpr(GLOBAL_TARGET_RESOLVERS.get(target!));\n  }\n  return params;\n}\n\n\n// Collects
information needed to generate `const` field of the ComponentDef.\n\n// When a constant requires some pre-
processing, the `prepareStatements` section\n// contains corresponding statements.\n\nexport interface
ComponentDefConsts {\n  prepareStatements: o.Statement[];\n  constExpressions: o.Expression[];\n}\n\n\nfunction
createComponentDefConsts(): ComponentDefConsts {\n  return {prepareStatements: [], constExpressions:
[]};\n}\n\n\nexport class TemplateDefinitionBuilder implements t.Visitor<void>, LocalResolver {\n  private
_dataIndex = 0;\n  private _bindingContext = 0;\n  private _prefixCode: o.Statement[] = [];\n  /**\n   * List of
callbacks to generate creation mode instructions. We store them here as we process\n   * the template so bindings in
listeners are resolved only once all nodes have been visited.\n   * This ensures all local refs and context variables are
available for matching.\n   */\n  private _creationCodeFns: (() => o.Statement)[] = [];\n  /**\n   * List of callbacks to
generate update mode instructions. We store them here as we process\n   * the template so bindings are resolved
only once all nodes have been visited. This ensures\n   * all local refs and context variables are available for
matching.\n   */\n  private _updateCodeFns: (() => o.Statement)[] = [];\n\n  /**\n   * Index of the currently-selected
node.\n   */\n  private _currentIndex: number = 0;\n\n  /**\n   * Temporary variable declarations generated from visiting pipes,
literals, etc.\n   */\n  private _tempVariables: o.Statement[] = [];\n\n  /**\n   * List of callbacks to build nested
templates. Nested templates must not be visited until\n   * after the parent template has finished visiting all of its
nodes. This ensures that all\n   * local ref bindings in nested templates are able to find local ref values if the refs\n
   * are defined after the template declaration.\n   */\n  private _nestedTemplateFns: (() => void)[] = [];\n\n  /**\n   * This
scope contains local variables declared in the update mode block of the template.\n   * (e.g. refs and context vars in
bindings)\n   */\n  private _bindingScope: BindingScope;\n  private _valueConverter: ValueConverter;\n  private

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_unsupported = unsupported;\n\n // i18n context local to this template\n private i18n: I18nContext|null = null;\n\n // Number of slots to reserve for pureFunctions\n private _pureFunctionSlots = 0;\n\n // Number of binding slots\n private _bindingSlots = 0;\n\n private fileBasedI18nSuffix: string;\n\n // Projection slots found in the template.\n Projection slots can distribute projected\n // nodes based on a selector, or can just use the wildcard selector to\n match\n // all nodes which aren't matching any selector.\n private _ngContentReservedSlots: (string|'*)[] = [];\n\n // Number of non-default selectors found in all parent templates of this template. We need to\n // track it to properly\n adjust projection slot index in the `projection` instruction.\n private _ngContentSelectorsOffset = 0;\n\n //\n Expression that should be used as implicit receiver when converting template\n // expressions to output AST.\n private _implicitReceiverExpr: o.ReadVarExpr|null = null;\n\n constructor(\n private constantPool:\n ConstantPool, parentBindingScope: BindingScope, private level = 0,\n private contextName: string|null, private\n i18nContext: I18nContext|null,\n private templateIndex: number|null, private templateName: string|null,\n private directiveMatcher: SelectorMatcher|null, private directives: Set<o.Expression>,\n private\n pipeTypeByName: Map<string, o.Expression>, private pipes: Set<o.Expression>,\n private _namespace:\n o.ExternalReference, relativeContextFilePath: string,\n private i18nUseExternalIds: boolean,\n private\n _constants: ComponentDefConsts = createComponentDefConsts()) {\n this._bindingScope =\n parentBindingScope.nestedScope(level);\n\n // Turn the relative context file path into an identifier by replacing\n non-alphanumeric\n // characters with underscores.\n this.fileBasedI18nSuffix =\n relativeContextFilePath.replace(/[^A-Za-z0-9]/g, '_') + '_';\n\n this._valueConverter = new ValueConverter(\n\n constantPool, () => this.allocateDataSlot(),\n (numSlots: number) =>\n\n this.allocatePureFunctionSlots(numSlots),\n (name, localName, slot, value: o.Expression) => {\n const\n\n pipeType = pipeTypeByName.get(name);\n if (pipeType) {\n this.pipes.add(pipeType);\n }\n\n this._bindingScope.set(this.level, localName, value);\n this.creationInstruction(null, R3.pipe, [o.literal(slot),\n\n o.literal(name)]);\n });\n }\n\n buildTemplateFunction(\n nodes: t.Node[], variables: t.Variable[],\n\n ngContentSelectorsOffset: number = 0,\n i18n?: i18n.I18nMeta): o.FunctionExpr {\n\n this._ngContentSelectorsOffset = ngContentSelectorsOffset;\n\n if (this._namespace !== R3.namespaceHTML)\n {\n this.creationInstruction(null, this._namespace);\n }\n\n // Create variable bindings\n variables.forEach(v\n => this.registerContextVariables(v));\n\n // Initiate i18n context in case:\n // - this template has parent i18n\n context\n // - or the template has i18n meta associated with it,\n // but it's not initiated by the Element (e.g. <ng-\n template i18n>)\n const initI18nContext = this.i18nContext ||\n (isI18nRootNode(i18n) &&\n\n !isSingleI18nIcu(i18n) &&\n\n !(isSingleElementTemplate(nodes) && nodes[0].i18n === i18n));\n const\n\n selfClosingI18nInstruction = hasTextChildrenOnly(nodes);\n if (initI18nContext) {\n this.i18nStart(null, i18n!,\n\n selfClosingI18nInstruction);\n }\n\n // This is the initial pass through the nodes of this template. In this pass,\n we\n // queue all creation mode and update mode instructions for generation in the second\n // pass. It's\n necessary to separate the passes to ensure local refs are defined before\n // resolving bindings. We also count\n bindings in this pass as we walk bound expressions.\n t.visitAll(this, nodes);\n\n // Add total binding count to\n pure function count so pure function instructions are\n // generated with the correct slot offset when update\n instructions are processed.\n this._pureFunctionSlots += this._bindingSlots;\n\n // Pipes are walked in the first\n pass (to enqueue `pipe()` creation instructions and\n // `pipeBind` update instructions), so we have to update the\n slot offsets manually\n // to account for bindings.\n\n this._valueConverter.updatePipeSlotOffsets(this._bindingSlots);\n\n // Nested templates must be processed before\n creation instructions so template()\n // instructions can be generated with the correct internal const count.\n\n this._nestedTemplateFns.forEach(buildTemplateFn => buildTemplateFn());\n\n // Output the `projectionDef`\n instruction when some `<ng-content>` tags are present.\n // The `projectionDef` instruction is only emitted for the\n component template and\n // is skipped for nested templates (<ng-template> tags).\n if (this.level === 0 &&\n\n this._ngContentReservedSlots.length) {\n const parameters: o.Expression[] = [];\n\n // By default the\n `projectionDef` instructions creates one slot for the wildcard\n // selector if no parameters are passed. Therefore\n we only want to allocate a new\n // array for the projection slots if the default projection slot is not sufficient.\n if (this._ngContentReservedSlots.length > 1 || this._ngContentReservedSlots[0] !== '*') {\n const

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r3ReservedSlots = this._ngContentReservedSlots.map(\n      s => s !== '*' ? core.parseSelectorToR3Selector(s) :
s);\n      parameters.push(this.constantPool.getConstLiteral(asLiteral(r3ReservedSlots), true));\n    }\n\n    //
Since we accumulate ngContent selectors while processing template elements,\n    // we *prepend* `projectionDef
to creation instructions block, to put it before\n    // any `projection` instructions\n    this.creationInstruction(null,
R3.projectionDef, parameters, /* prepend */ true);\n  }\n\n  if (initI18nContext) {\n    this.i18nEnd(null,
selfClosingI18nInstruction);\n  }\n\n  // Generate all the creation mode instructions (e.g. resolve bindings in
listeners)\n  const creationStatements = this._creationCodeFns.map((fn: () => o.Statement) => fn());\n\n  //
Generate all the update mode instructions (e.g. resolve property or text bindings)\n  const updateStatements =
this._updateCodeFns.map((fn: () => o.Statement) => fn());\n\n  // Variable declaration must occur after binding
resolution so we can generate context\n  // instructions that build on each other.\n  // e.g. const b =
nextContext().$implicit(); const b = nextContext();\n  const creationVariables =
this._bindingScope.viewSnapshotStatements();\n  const updateVariables =
this._bindingScope.variableDeclarations().concat(this._tempVariables);\n\n  const creationBlock =
creationStatements.length > 0 ?\n    [renderFlagCheckIfStmt(\n      core.RenderFlags.Create,
creationVariables.concat(creationStatements))]:\n    [];\n\n  const updateBlock = updateStatements.length > 0
?\n    [renderFlagCheckIfStmt(core.RenderFlags.Update, updateVariables.concat(updateStatements))]:\n    [];\n\n  return o.fn(\n    // i.e. (rf: RenderFlags, ctx: any)\n    [new o.FnParam(RENDER_FLAGS,
o.NUMBER_TYPE), new o.FnParam(CONTEXT_NAME, null)],\n    [\n      // Temporary variable declarations
for query refresh (i.e. let _t: any;)\n      ...this._prefixCode,\n      // Creating mode (i.e. if (rf &
RenderFlags.Create) { ... })\n      ...creationBlock,\n      // Binding and refresh mode (i.e. if (rf &
RenderFlags.Update) { ... })\n      ...updateBlock,\n    ],\n    o.INFERRED_TYPE, null, this.templateName);\n  }\n\n  // LocalResolver\n  getLocal(name: string): o.Expression|null {\n    return this._bindingScope.get(name);\n  }\n\n  // LocalResolver\n  notifyImplicitReceiverUse(): void {\n    this._bindingScope.notifyImplicitReceiverUse();\n  }\n\n  private i18nTranslate(\n    message: i18n.Message,
params: {[name: string]: o.Expression} = {}, ref?: o.ReadVarExpr,\n    transformFn?: (raw: o.ReadVarExpr) =>
o.Expression): o.ReadVarExpr {\n    const _ref = ref || this.i18nGenerateMainBlockVar();\n    // Closure Compiler
requires const names to start with `MSG_` but disallows any other const to\n    // start with `MSG_`. We define a
variable starting with `MSG_` just for the `goog.getMsg` call\n    const closureVar =
this.i18nGenerateClosureVar(message.id);\n    const statements = getTranslationDeclStmts(message, _ref,
closureVar, params, transformFn);\n    this._constants.prepareStatements.push(...statements);\n    return _ref;\n  }\n\n  private registerContextVariables(variable: t.Variable) {\n    const scopedName =
this._bindingScope.freshReferenceName();\n    const retrievalLevel = this.level;\n    const lhs =
o.variable(variable.name + scopedName);\n    this._bindingScope.set(\n      retrievalLevel, variable.name, lhs,
DeclarationPriority.CONTEXT,\n      (scope: BindingScope, relativeLevel: number) => {\n        let rhs:
o.Expression;\n        if (scope.bindingLevel === retrievalLevel) {\n          // e.g. ctx\n          rhs =
o.variable(CONTEXT_NAME);\n        } else {\n          const sharedCtxVar =
scope.getSharedContextName(retrievalLevel);\n          // e.g. ctx_r0 OR x(2);\n          rhs = sharedCtxVar ?
sharedCtxVar : generateNextContextExpr(relativeLevel);\n        }\n        // e.g. const $item$ = x(2).$implicit;\n        return [lhs.set(rhs.prop(variable.value || IMPLICIT_REFERENCE)).toConstDecl()];\n      });\n  }\n\n  private
i18nAppendBindings(expressions: AST[]) {\n    if (expressions.length > 0) {\n      expressions.forEach(expression
=> this.i18n!.appendBinding(expression));\n    }\n  }\n\n  private i18nBindProps(props: {[key: string]:
t.Text|t.BoundText}): {[key: string]: o.Expression} {\n    const bound: {[key: string]: o.Expression} = {};\n    Object.keys(props).forEach(key => {\n      const prop = props[key];\n      if (prop instanceof t.Text) {\n        bound[key] = o.literal(prop.value);\n      } else {\n        const value = prop.value.visit(this._valueConverter);\n        this.allocateBindingSlots(value);\n        if (value instanceof Interpolation) {\n          const {strings, expressions} =
value;\n          const {id, bindings} = this.i18n!;\n          const label = assembleI18nBoundString(strings,
bindings.size, id);\n          this.i18nAppendBindings(expressions);\n          bound[key] = o.literal(label);\n        }\n      }\n    });\n    return bound;\n  }\n\n  // Generates top level vars for i18n blocks (i.e. `i18n_N`).\n  private

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i18nGenerateMainBlockVar(): o.ReadVarExpr {\n  return
o.variable(this.constantPool.uniqueName(TRANSLATION_VAR_PREFIX));\n }\n\n // Generates vars with
Closure-specific names for i18n blocks (i.e. `MSG_XXX`).\n private i18nGenerateClosureVar(messageId: string):
o.ReadVarExpr {\n  let name: string;\n  const suffix = this.fileBasedI18nSuffix.toUpperCase();\n  if
(this.i18nUseExternalIds) {\n    const prefix = getTranslationConstPrefix(`EXTERNAL_`);\n    const
uniqueSuffix = this.constantPool.uniqueName(suffix);\n    name =
`${prefix}${sanitizeIdentifier(messageId)}${uniqueSuffix}`;\n  } else {\n    const prefix =
getTranslationConstPrefix(suffix);\n    name = this.constantPool.uniqueName(prefix);\n  }\n  return
o.variable(name);\n }\n\n private i18nUpdateRef(context: I18nContext): void {\n  const {icus, meta, isRoot,
isResolved, isEmitted} = context;\n  if (isRoot && isResolved && !isEmitted && !isSingleI18nIcu(meta)) {\n
context.isEmitted = true;\n  const placeholders = context.getSerializedPlaceholders();\n  let icuMapping:
{[name: string]: o.Expression} = {};\n  let params: {[name: string]: o.Expression} =\n    placeholders.size ?
placeholdersToParams(placeholders) : {};\n  if (icus.size) {\n    icus.forEach((refs: o.Expression[], key: string)
=> {\n      if (refs.length === 1) {\n        // if we have one ICU defined for a given\n        // placeholder - just
output its reference\n        params[key] = refs[0];\n      } else {\n        // ... otherwise we need to activate post-
processing\n        // to replace ICU placeholders with proper values\n        const placeholder: string =
wrapI18nPlaceholder(`${I18N_ICU_MAPPING_PREFIX}${key}`);\n        params[key] =
o.literal(placeholder);\n        icuMapping[key] = o.literalArr(refs);\n      }\n    });\n  }\n\n // translation
requires post processing in 2 cases:\n  // - if we have placeholders with multiple values (ex. `START_DIV`: [#1,
#2, ...])\n  // - if we have multiple ICUs that refer to the same placeholder name\n  const needsPostprocessing
=\n    Array.from(placeholders.values()).some((value: string[]) => value.length > 1) ||\n
Object.keys(icuMapping).length;\n\n  let transformFn;\n  if (needsPostprocessing) {\n    transformFn = (raw:
o.ReadVarExpr) => {\n      const args: o.Expression[] = [raw];\n      if (Object.keys(icuMapping).length) {\n
args.push(mapLiteral(icuMapping, true));\n      }\n      return instruction(null, R3.i18nPostprocess, args);\n
};\n  }\n\n  this.i18nTranslate(meta as i18n.Message, params, context.ref, transformFn);\n }\n\n private
i18nStart(span: ParseSourceSpan|null = null, meta: i18n.I18nMeta, selfClosing?: boolean):\n void {\n  const
index = this.allocateDataSlot();\n  this.i18n = this.i18nContext ?\n    this.i18nContext.forkChildContext(index,
this.templateIndex!, meta) :\n    new I18nContext(index, this.i18nGenerateMainBlockVar(), 0, this.templateIndex,
meta);\n\n // generate i18nStart instruction\n  const {id, ref} = this.i18n;\n  const params: o.Expression[] =
[o.literal(index), this.addToConsts(ref)];\n  if (id > 0) {\n    // do not push 3rd argument (sub-block id)\n    // into
i18nStart call for top level i18n context\n    params.push(o.literal(id));\n  }\n  this.creationInstruction(span,
selfClosing ? R3.i18n : R3.i18nStart, params);\n }\n\n private i18nEnd(span: ParseSourceSpan|null = null,
selfClosing?: boolean): void {\n  if (!this.i18n) {\n    throw new Error('i18nEnd is executed with no i18n context
present');\n  }\n\n  if (this.i18nContext) {\n    this.i18nContext.reconcileChildContext(this.i18n);\n  }\n\n  this.i18nUpdateRef(this.i18nContext);\n } else {\n  this.i18nUpdateRef(this.i18n);\n }\n\n // setup
accumulated bindings\n  const {index, bindings} = this.i18n;\n  if (bindings.size) {\n    const chainBindings:
ChainableBindingInstruction[] = [];\n    bindings.forEach(binding => {\n      chainBindings.push({sourceSpan:
span, value: () => this.convertPropertyBinding(binding)});\n    });\n    // for i18n block, advance to the most recent
element index (by taking the current number of\n    // elements and subtracting one) before invoking `i18nExp`
instructions, to make sure the\n    // necessary lifecycle hooks of components/directives are properly flushed.\n  }\n  this.updateInstructionChainWithAdvance(this.getConstCount() - 1, R3.i18nExp, chainBindings);\n  this.updateInstruction(span, R3.i18nApply, [o.literal(index)]);\n }\n\n if (!selfClosing) {\n  this.creationInstruction(span, R3.i18nEnd);\n }\n\n this.i18n = null; // reset local i18n context\n }\n\n private
i18nAttributesInstruction(\n  nodeIndex: number, attrs: t.BoundAttribute[], sourceSpan: ParseSourceSpan): void
{\n  let hasBindings: boolean = false;\n  const i18nAttrArgs: o.Expression[] = [];\n  const bindings:
ChainableBindingInstruction[] = [];\n  attrs.forEach(attr => {\n    const message = attr.i18n! as i18n.Message;\n    const converted = attr.value.visit(this._valueConverter);\n    this.allocateBindingSlots(converted);\n    if
(converted instanceof Interpolation) {\n      const placeholders = assembleBoundTextPlaceholders(message);\n

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const params = placeholdersToParams(placeholders);\n      i18nAttrArgs.push(o.literal(attr.name),
this.i18nTranslate(message, params));\n      converted.expressions.forEach(expression => {\n        hasBindings =
true;\n        bindings.push({\n          sourceSpan,\n          value: () => this.convertPropertyBinding(expression),\n        });\n      });\n    }\n  });\n  if (bindings.length > 0) {\n    this.updateInstructionChainWithAdvance(nodeIndex, R3.i18nExp, bindings);\n  }\n  if (i18nAttrArgs.length > 0)
{\n    const index: o.Expression = o.literal(this.allocateDataSlot());\n    const constIndex =
this.addToConsts(o.literalArr(i18nAttrArgs));\n    this.creationInstruction(sourceSpan, R3.i18nAttributes, [index,
constIndex]);\n    if (hasBindings) {\n      this.updateInstruction(sourceSpan, R3.i18nApply, [index]);\n    }\n  }\n  private getNamespaceInstruction(namespaceKey: string|null) {\n    switch (namespaceKey) {\n      case
'math':\n        return R3.namespaceMathML;\n      case 'svg':\n        return R3.namespaceSVG;\n      default:\n        return R3.namespaceHTML;\n    }\n  }\n  private addNamespaceInstruction(nsInstruction: o.ExternalReference,
element: t.Element) {\n    this._namespace = nsInstruction;\n    this.creationInstruction(element.startSourceSpan,
nsInstruction);\n  }\n  /**\n   * Adds an update instruction for an interpolated property or attribute, such as\n   *
`prop="{value}"` or `attr.title="{value}"`\n   */\n  private interpolatedUpdateInstruction(\n    instruction:
o.ExternalReference, elementIndex: number, attrName: string,\n    input: t.BoundAttribute, value: any, params:
any[]) {\n    this.updateInstructionWithAdvance(\n      elementIndex, input.sourceSpan, instruction,\n      () =>
[o.literal(attrName), ...this.getUpdateInstructionArguments(value), ...params]);\n  }\n  visitContent(ngContent:
t.Content) {\n    const slot = this.allocateDataSlot();\n    const projectionSlotIdx = this._ngContentSelectorsOffset +
this._ngContentReservedSlots.length;\n    const parameters: o.Expression[] = [o.literal(slot)];\n    this._ngContentReservedSlots.push(ngContent.selector);\n    const nonContentSelectAttributes =\n      ngContent.attributes.filter(attr => attr.name.toLowerCase() !== NG_CONTENT_SELECT_ATTR);\n    const
attributes =\n      this.getAttributeExpressions(ngContent.name, nonContentSelectAttributes, [], []);\n    if
(attributes.length > 0) {\n      parameters.push(o.literal(projectionSlotIdx), o.literalArr(attributes));\n    } else if
(projectionSlotIdx !== 0) {\n      parameters.push(o.literal(projectionSlotIdx));\n    }\n    this.creationInstruction(ngContent.sourceSpan, R3.projection, parameters);\n    if (this.i18n) {\n      this.i18n.appendProjection(ngContent.i18n!, slot);\n    }\n  }\n  visitElement(element: t.Element) {\n    const
elementIndex = this.allocateDataSlot();\n    const stylingBuilder = new StylingBuilder(null);\n    let
isNonBindableMode: boolean = false;\n    const isI18nRootElement: boolean =\n      isI18nRootNode(element.i18n) && !isSingleI18nIcu(element.i18n);\n    const outputAttrs: t.TextAttribute[] = [];\n    const [namespaceKey, elementName] = splitNsName(element.name);\n    const isNgContainer =
checkIsNgContainer(element.name);\n    // Handle styling, i18n, ngNonBindable attributes\n    for (const attr of
element.attributes) {\n      const {name, value} = attr;\n      if (name === NON_BINDABLE_ATTR) {\n        isNonBindableMode = true;\n      } else if (name === 'style') {\n        stylingBuilder.registerStyleAttr(value);\n      }
else if (name === 'class') {\n        stylingBuilder.registerClassAttr(value);\n      } else {\n        outputAttrs.push(attr);\n      }\n    }\n    // Match directives on non i18n attributes\n    this.matchDirectives(element.name, element);\n    // Regular element or ng-container creation mode\n    const
parameters: o.Expression[] = [o.literal(elementIndex)];\n    if (!isNgContainer) {\n      parameters.push(o.literal(elementName));\n    }\n    // Add the attributes\n    const allOtherInputs:
t.BoundAttribute[] = [];\n    const boundI18nAttrs: t.BoundAttribute[] = [];\n    element.inputs.forEach(input =>
{\n      const stylingInputWasSet = stylingBuilder.registerBoundInput(input);\n      if (!stylingInputWasSet) {\n        if (input.type === BindingType.Property && input.i18n) {\n          boundI18nAttrs.push(input);\n        } else {\n          allOtherInputs.push(input);\n        }\n      }\n    });\n    // add attributes for directive and projection matching
purposes\n    const attributes: o.Expression[] = this.getAttributeExpressions(\n      element.name, outputAttrs,
allOtherInputs, element.outputs, stylingBuilder, [],\n      boundI18nAttrs);\n    parameters.push(this.addAttrsToConsts(attributes));\n    // local refs (ex.: <div #foo #bar="baz">)\n    const refs
= this.prepareRefsArray(element.references);\n    parameters.push(this.addToConsts(refs));\n    const
wasInNamespace = this._namespace;\n    const currentNamespace =
this.getNamespaceInstruction(namespaceKey);\n    // If the namespace is changing now, include an instruction to

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change it\n // during element creation.\n  if (currentNamespace !== wasInNamespace) {\n
this.addNamespaceInstruction(currentNamespace, element);\n  }\n\n  if (this.i18n) {\n
this.i18n.appendElement(element.i18n!, elementIndex);\n  }\n\n  // Note that we do not append text node
instructions and ICUs inside i18n section,\n  // so we exclude them while calculating whether current element has
children\n  const hasChildren = (!isI18nRootElement && this.i18n) ? !hasTextChildrenOnly(element.children) :\n
element.children.length > 0;\n\n  const createSelfClosingInstruction =
!stylingBuilder.hasBindingsWithPipes &&\n    element.outputs.length === 0 && boundI18nAttrs.length === 0
&& !hasChildren;\n  const createSelfClosingI18nInstruction =\n    !createSelfClosingInstruction &&
hasTextChildrenOnly(element.children);\n\n  if (createSelfClosingInstruction) {\n    this.creationInstruction(\n
element.sourceSpan, isNgContainer ? R3.elementContainer : R3.element,\n    trimTrailingNulls(parameters));\n
  } else {\n    this.creationInstruction(\n    element.startSourceSpan, isNgContainer ? R3.elementContainerStart :
R3.elementStart,\n    trimTrailingNulls(parameters));\n\n    if (isNonBindableMode) {\n
this.creationInstruction(element.startSourceSpan, R3.disableBindings);\n    }\n\n    if (boundI18nAttrs.length > 0)
{\n    this.i18nAttributesInstruction(\n    elementIndex, boundI18nAttrs, element.startSourceSpan ??
element.sourceSpan);\n    }\n\n    // Generate Listeners (outputs)\n    if (element.outputs.length > 0) {\n    const
listeners = element.outputs.map(\n    (outputAst: t.BoundEvent) => ({\n    sourceSpan:
outputAst.sourceSpan,\n    params: this.prepareListenerParameter(element.name, outputAst, elementIndex)\n
    }));\n    this.creationInstructionChain(R3.listener, listeners);\n    }\n\n    // Note: it's important to keep
i18n/i18nStart instructions after i18nAttributes and\n    // listeners, to make sure i18nAttributes instruction targets
current element at runtime.\n    if (isI18nRootElement) {\n    this.i18nStart(element.startSourceSpan,
element.i18n!, createSelfClosingI18nInstruction);\n    }\n    }\n\n    // the code here will collect all update-level
styling instructions and add them to the\n    // update block of the template function AOT code. Instructions like
`styleProp`,\n    // `styleMap`, `classMap`, `classProp`\n    // are all generated and assigned in the code below.\n    const stylingInstructions = stylingBuilder.buildUpdateLevelInstructions(this._valueConverter);\n    const limit =
stylingInstructions.length - 1;\n    for (let i = 0; i <= limit; i++) {\n    const instruction = stylingInstructions[i];\n
this._bindingSlots += this.processStylingUpdateInstruction(elementIndex, instruction);\n    }\n\n    // the reason why
`undefined` is used is because the renderer understands this as a\n    // special value to symbolize that there is no
RHS to this binding\n    // TODO (matsko): revisit this once FW-959 is approached\n    const
emptyValueBindInstruction = o.literal(undefined);\n    const propertyBindings: ChainableBindingInstruction[] =
[];\n    const attributeBindings: ChainableBindingInstruction[] = [];\n\n    // Generate element input bindings\n    allOtherInputs.forEach(input => {\n    const inputType = input.type;\n    if (inputType ===
BindingType.Animation) {\n    const value = input.value.visit(this._valueConverter);\n    // animation bindings
can be presented in the following formats:\n    // 1. [@binding]="fooExp"\n    // 2.
[@binding]="{value:fooExp, params:{...}}"\n    // 3. [@binding]\n    // 4. @binding\n    // All formats will
be valid for when a synthetic binding is created.\n    // The reasoning for this is because the renderer should get
each\n    // synthetic binding value in the order of the array that they are\n    // defined in...\n    const
hasValue = value instanceof LiteralPrimitive ? !value.value : true;\n    this.allocateBindingSlots(value);\n\n    propertyBindings.push({\n    name: prepareSyntheticPropertyName(input.name),\n    sourceSpan:
input.sourceSpan,\n    value: () => hasValue ? this.convertPropertyBinding(value) :
emptyValueBindInstruction\n    });\n    } else {\n    // we must skip attributes with associated i18n context,
since these attributes are handled\n    // separately and corresponding `i18nExp` and `i18nApply` instructions will
be generated\n    if (input.i18n) return;\n\n    const value = input.value.visit(this._valueConverter);\n    if
(value !== undefined) {\n    const params: any[] = [];\n    const [attrNamespace, attrName] =
splitNsName(input.name);\n    const isAttributeBinding = inputType === BindingType.Attribute;\n    const
sanitizationRef = resolveSanitizationFn(input.securityContext, isAttributeBinding);\n    if (sanitizationRef)
params.push(sanitizationRef);\n    if (attrNamespace) {\n    const namespaceLiteral =
o.literal(attrNamespace);\n    if (sanitizationRef) {\n    params.push(namespaceLiteral);\n    } else
{\n    // If there wasn't a sanitization ref, we need to add\n    // an extra param so that we can pass in the

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namespace.\n      params.push(o.literal(null), namespaceLiteral);\n      }\n      }\n
this.allocateBindingSlots(value);\n      if (inputType === BindingType.Property) {\n      if (value instanceof
Interpolation) {\n      // prop="{ {value} }" and friends\n      this.interpolatedUpdateInstruction(\n
      getPropertyInterpolationExpression(value), elementIndex, attrName, input, value,\n      params);\n      }
else {\n      // [prop]="value"\n      // Collect all the properties so that we can chain into a single function
at the end.\n      propertyBindings.push({\n      name: attrName,\n      sourceSpan:
input.sourceSpan,\n      value: () => this.convertPropertyBinding(value),\n      params\n      });\n
      }\n      } else if (inputType === BindingType.Attribute) {\n      if (value instanceof Interpolation &&
getInterpolationArgsLength(value) > 1) {\n      // attr.name="text{ {value} }" and friends\n
this.interpolatedUpdateInstruction(\n      getAttributeInterpolationExpression(value), elementIndex,
attrName, input, value,\n      params);\n      } else {\n      const boundValue = value instanceof
Interpolation ? value.expressions[0] : value;\n      // [attr.name]="value" or attr.name="{ {value} }"\n
// Collect the attribute bindings so that they can be chained at the end.\n      attributeBindings.push({\n
name: attrName,\n      sourceSpan: input.sourceSpan,\n      value: () =>
this.convertPropertyBinding(boundValue),\n      params\n      });\n      }\n      } else {\n      //
class prop\n      this.updateInstructionWithAdvance(elementIndex, input.sourceSpan, R3.classProp, () => {\n
      return [\n      o.literal(elementIndex), o.literal(attrName), this.convertPropertyBinding(value),\n
...params\n      ];\n      });\n      }\n      }\n      }\n      }\n      });\n\n      if (propertyBindings.length > 0) {\n
this.updateInstructionChainWithAdvance(elementIndex, R3.property, propertyBindings);\n      }\n\n      if
(attributeBindings.length > 0) {\n      this.updateInstructionChainWithAdvance(elementIndex, R3.attribute,
attributeBindings);\n      }\n\n      // Traverse element child nodes\n      t.visitAll(this, element.children);\n\n      if
(!isI18nRootElement && this.i18n) {\n      this.i18n.appendElement(element.i18n!, elementIndex, true);\n      }\n\n
if (!createSelfClosingInstruction) {\n      // Finish element construction mode.\n      const span =
element.endSourceSpan ?? element.sourceSpan;\n      if (isI18nRootElement) {\n      this.i18nEnd(span,
createSelfClosingI18nInstruction);\n      }\n      if (isNonBindableMode) {\n      this.creationInstruction(span,
R3.enableBindings);\n      }\n      this.creationInstruction(span, isNgContainer ? R3.elementContainerEnd :
R3.elementEnd);\n      }\n      }\n\n      visitTemplate(template: t.Template) {\n      const NG_TEMPLATE_TAG_NAME
= 'ng-template';\n      const templateIndex = this.allocateDataSlot();\n\n      if (this.i18n) {\n
this.i18n.appendTemplate(template.i18n!, templateIndex);\n      }\n\n      const tagName =
sanitizeIdentifier(template.tagName || "");\n      const contextName = `${this.contextName}${tagName ? '_' + tagName
: ''}_${templateIndex}`;\n      const templateName = `${contextName}_Template`;\n      const parameters:
o.Expression[] = [\n      o.literal(templateIndex),\n      o.variable(templateName),\n      // We don't care about the
tag's namespace here, because we infer\n      // it based on the parent nodes inside the template instruction.\n
o.literal(template.tagName ? splitNsName(template.tagName)[1] : template.tagName),\n      ];\n      // find directives
matching on a given <ng-template> node\n      this.matchDirectives(NG_TEMPLATE_TAG_NAME, template);\n\n
// prepare attributes parameter (including attributes used for directive matching)\n      const attrsExprs: o.Expression[]
= this.getAttributeExpressions(\n      NG_TEMPLATE_TAG_NAME, template.attributes, template.inputs,
template.outputs,\n      undefined /* styles */, template.templateAttrs);\n
parameters.push(this.addAttrsToConsts(attrsExprs));\n\n      // local refs (ex.: <ng-template #foo>)\n      if
(template.references && template.references.length) {\n      const refs =
this.prepareRefsArray(template.references);\n      parameters.push(this.addToConsts(refs));\n
parameters.push(o.importExpr(R3.templateRefExtractor));\n      }\n\n      // Create the template function\n      const
templateVisitor = new TemplateDefinitionBuilder(\n      this.constantPool, this._bindingScope, this.level + 1,
contextName, this.i18n,\n      templateIndex, templateName, this.directiveMatcher, this.directives,
this.pipeTypeByName,\n      this.pipes, this._namespace, this.fileBasedI18nSuffix, this.i18nUseExternalIds,\n
this._constants);\n\n      // Nested templates must not be visited until after their parent templates have completed\n
// processing, so they are queued here until after the initial pass. Otherwise, we wouldn't\n      // be able to support
bindings in nested templates to local refs that occur after the\n      // template definition. e.g. <div

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*ngIf="showing">{{ foo }}</div> <div #foo></div>\n  this._nestedTemplateFns.push() => {\n  const
templateFunctionExpr = templateVisitor.buildTemplateFunction(\n    template.children, template.variables,\n    this._ngContentReservedSlots.length + this._ngContentSelectorsOffset, template.i18n);\n
this.constantPool.statements.push(templateFunctionExpr.toDeclStmt(templateName));\n  if
(templateVisitor._ngContentReservedSlots.length) {\n
this._ngContentReservedSlots.push(...templateVisitor._ngContentReservedSlots);\n  }\n  });\n\n // e.g.
template(1, MyComp_Template_1)\n  this.creationInstruction(template.sourceSpan, R3.templateCreate, () => {\n
parameters.splice(\n    2, 0, o.literal(templateVisitor.getConstCount()),\n    o.literal(templateVisitor.getVarCount()));\n  return trimTrailingNulls(parameters);\n  });\n\n // handle property
bindings e.g. property('ngForOf', ctx.items), et al;\n  this.templatePropertyBindings(templateIndex,
template.templateAttrs);\n\n // Only add normal input/output binding instructions on explicit <ng-template>
elements.\n  if (template.tagName === NG_TEMPLATE_TAG_NAME) {\n  const [i18nInputs, inputs] =\n  partitionArray<t.BoundAttribute, t.BoundAttribute>(template.inputs, hasI18nMeta);\n\n  // Add i18n attributes
that may act as inputs to directives. If such attributes are present,\n  // generate `i18nAttributes` instruction. Note:
we generate it only for explicit <ng-template>\n  // elements, in case of inline templates, corresponding
instructions will be generated in the\n  // nested template function.\n  if (i18nInputs.length > 0) {\n
this.i18nAttributesInstruction(\n    templateIndex, i18nInputs, template.startSourceSpan ??
template.sourceSpan);\n  }\n\n  // Add the input bindings\n  if (inputs.length > 0) {\n
this.templatePropertyBindings(templateIndex, inputs);\n  }\n\n  // Generate listeners for directive output\n  if
(template.outputs.length > 0) {\n  const listeners = template.outputs.map(\n    (outputAst: t.BoundEvent) =>
({\n    sourceSpan: outputAst.sourceSpan,\n    params: this.prepareListenerParameter('ng_template',
outputAst, templateIndex)\n  }));\n  this.creationInstructionChain(R3.listener, listeners);\n  }\n  }\n\n // These should be handled in the template or element directly.\n  readonly visitReference = invalid;\n
readonly visitVariable = invalid;\n  readonly visitTextAttribute = invalid;\n  readonly visitBoundAttribute =
invalid;\n  readonly visitBoundEvent = invalid;\n\n  visitBoundText(text: t.BoundText) {\n  if (this.i18n) {\n
const value = text.value.visit(this._valueConverter);\n  this.allocateBindingSlots(value);\n  if (value instanceof
Interpolation) {\n  this.i18n.appendBoundText(text.i18n!);\n  this.i18nAppendBindings(value.expressions);\n
  }\n  return;\n  }\n\n  const nodeIndex = this.allocateDataSlot();\n\n  this.creationInstruction(text.sourceSpan, R3.text, [o.literal(nodeIndex)]);\n\n  const value =
text.value.visit(this._valueConverter);\n  this.allocateBindingSlots(value);\n\n  if (value instanceof Interpolation)
{\n  this.updateInstructionWithAdvance(\n    nodeIndex, text.sourceSpan,
getTextInterpolationExpression(value),\n    () => this.getUpdateInstructionArguments(value));\n  } else {\n
error('Text nodes should be interpolated and never bound directly.);\n  }\n  }\n\n  visitText(text: t.Text) {\n  //
when a text element is located within a translatable\n  // block, we exclude this text element from instructions set,\n
// since it will be captured in i18n content and processed at runtime\n  if (!this.i18n) {\n
this.creationInstruction(\n    text.sourceSpan, R3.text, [o.literal(this.allocateDataSlot()), o.literal(text.value)]);\n
  }\n  }\n\n  visitIcu(icu: t.Icu) {\n  let initWasInvoked = false;\n\n  // if an ICU was created outside of i18n block,
we still treat\n  // it as a translatable entity and invoke i18nStart and i18nEnd\n  // to generate i18n context and the
necessary instructions\n  if (!this.i18n) {\n  initWasInvoked = true;\n  this.i18nStart(null, icu.i18n!, true);\n
  }\n\n  const i18n = this.i18n!;\n  const vars = this.i18nBindProps(icu.vars);\n  const placeholders =
this.i18nBindProps(icu.placeholders);\n\n  // output ICU directly and keep ICU reference in context\n  const
message = icu.i18n! as i18n.Message;\n\n  // we always need post-processing function for ICUs, to make sure
that:\n  // - all placeholders in a form of {PLACEHOLDER} are replaced with actual values (note:\n  //
`goog.getMsg` does not process ICUs and uses the `{PLACEHOLDER}` format for placeholders\n  // inside
ICUs)\n  // - all ICU vars (such as `VAR_SELECT` or `VAR_PLURAL`) are replaced with correct values\n
const transformFn = (raw: o.ReadVarExpr) => {\n  const params = {...vars, ...placeholders};\n  const formatted
= i18nFormatPlaceholderNames(params, /* useCamelCase */ false);\n  return instruction(null,
R3.i18nPostprocess, [raw, mapLiteral(formatted, true)]);\n  };\n\n  // in case the whole i18n message is a single

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ICU - we do not need to\n // create a separate top-level translation, we can use the root ref instead\n // and make
this ICU a top-level translation\n // note: ICU placeholders are replaced with actual values in `i18nPostprocess`
function\n // separately, so we do not pass placeholders into `i18nTranslate` function.\n if
(isSingleI18nIcu(i18n.meta)) {\n this.i18nTranslate(message, /* placeholders */ {}, i18n.ref, transformFn);\n }
else {\n // output ICU directly and keep ICU reference in context\n const ref =\n this.i18nTranslate(message, /* placeholders */ {}, /* ref */ undefined, transformFn);\n
i18n.appendIcu(icuFromI18nMessage(message).name, ref);\n }\n\n if (initWasInvoked) {\n
this.i18nEnd(null, true);\n }\n return null;\n }\n\n private allocateDataSlot() {\n return this._dataIndex++;\n
}\n\n getConstCount() {\n return this._dataIndex;\n }\n\n getVarCount() {\n return this._pureFunctionSlots;\n
}\n\n getConsts(): ComponentDefConsts {\n return this._constants;\n }\n\n getNgContentSelectors():
o.Expression|null {\n return this._ngContentReservedSlots.length ?\n
this.constantPool.getConstLiteral(asLiteral(this._ngContentReservedSlots), true) :\n null;\n }\n\n private
bindingContext() {\n return `${this._bindingContext++}`;\n }\n\n private templatePropertyBindings(\n
templateIndex: number, attrs: (t.BoundAttribute|t.TextAttribute)[]) {\n const propertyBindings:
ChainableBindingInstruction[] = [];\n attrs.forEach(input => {\n if (input instanceof t.BoundAttribute) {\n
const value = input.value.visit(this._valueConverter);\n\n if (value !== undefined) {\n
this.allocateBindingSlots(value);\n\n if (value instanceof Interpolation) {\n // Params typically contain
attribute namespace and value sanitizer, which is applicable\n // for regular HTML elements, but not
applicable for <ng-template> (since props act as\n // inputs to directives), so keep params array empty.\n
const params: any[] = [];\n\n // prop="{ {value} }" case\n this.interpolatedUpdateInstruction(\n
getPropertyInterpolationExpression(value), templateIndex, input.name, input, value,\n params);\n
} else {\n // [prop]="value" case\n propertyBindings.push({\n name: input.name,\n
sourceSpan: input.sourceSpan,\n value: () => this.convertPropertyBinding(value)\n });\n
}\n\n });\n\n if (propertyBindings.length > 0) {\n
this.updateInstructionChainWithAdvance(templateIndex, R3.property, propertyBindings);\n }\n\n // Bindings
must only be resolved after all local refs have been visited, so all\n // instructions are queued in callbacks that
execute once the initial pass has completed.\n // Otherwise, we wouldn't be able to support local refs that are
defined after their\n // bindings. e.g. {{ foo }} <div #foo></div>\n private instructionFn(\n fns: (() =>
o.Statement)[], span: ParseSourceSpan|null, reference: o.ExternalReference,\n paramsOrFn: o.Expression[]|(() =>
o.Expression[]), prepend: boolean = false): void {\n fns[prepend ? 'unshift' : 'push'](() => {\n const params =
Array.isArray(paramsOrFn) ? paramsOrFn : paramsOrFn();\n return instruction(span, reference,
params).toStmt();\n });\n }\n\n private processStylingUpdateInstruction(\n elementIndex: number, instruction:
StylingInstruction|null) {\n let allocateBindingSlots = 0;\n if (instruction) {\n const calls:
ChainableBindingInstruction[] = [];\n\n instruction.calls.forEach(call => {\n allocateBindingSlots +=
call.allocateBindingSlots;\n calls.push({\n sourceSpan: call.sourceSpan,\n value: () => {\n
return call.params(\n value => (call.supportsInterpolation && value instanceof Interpolation) ?\n
this.getUpdateInstructionArguments(value) :\n this.convertPropertyBinding(value)) as
o.Expression[];\n });\n });\n\n this.updateInstructionChainWithAdvance(elementIndex,
instruction.reference, calls);\n }\n\n return allocateBindingSlots;\n }\n\n private creationInstruction(\n span:
ParseSourceSpan|null, reference: o.ExternalReference,\n paramsOrFn?: o.Expression[]|(() => o.Expression[]),
prepend?: boolean) {\n this.instructionFn(this._creationCodeFns, span, reference, paramsOrFn || [], prepend);\n
}\n\n private creationInstructionChain(reference: o.ExternalReference, calls: {\n sourceSpan:
ParseSourceSpan|null,\n params: () => o.Expression[] }[]) {\n const span = calls.length ? calls[0].sourceSpan :
null;\n this._creationCodeFns.push(() => {\n return chainedInstruction(reference, calls.map(call =>
call.params()), span).toStmt();\n });\n }\n\n private updateInstructionWithAdvance(\n nodeIndex: number,
span: ParseSourceSpan|null, reference: o.ExternalReference,\n paramsOrFn?: o.Expression[]|(() =>
o.Expression[])) {\n this.addAdvanceInstructionIfNecessary(nodeIndex, span);\n this.updateInstruction(span,
reference, paramsOrFn);\n }\n\n private updateInstruction(\n span: ParseSourceSpan|null, reference:

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o.ExternalReference,\n  paramsOrFn?: o.Expression[]|(() => o.Expression[]) {\n
this.instructionFn(this._updateCodeFns, span, reference, paramsOrFn || []);\n }\n\n private
updateInstructionChain(\n  reference: o.ExternalReference, bindings: ChainableBindingInstruction[] {\n  const
span = bindings.length ? bindings[0].sourceSpan : null;\n\n  this._updateCodeFns.push(() => {\n  const calls =
bindings.map(property => {\n  const value = property.value();\n  const fnParams = Array.isArray(value) ?
value : [value];\n  if (property.params) {\n  fnParams.push(...property.params);\n  }\n  if
(property.name) {\n  // We want the property name to always be the first function parameter.\n
fnParams.unshift(o.literal(property.name));\n  }\n  return fnParams;\n });\n\n return
chainedInstruction(reference, calls, span).toStmt();\n });\n }\n\n private updateInstructionChainWithAdvance(\n
  nodeIndex: number, reference: o.ExternalReference, bindings: ChainableBindingInstruction[] {\n
this.addAdvanceInstructionIfNecessary(\n  nodeIndex, bindings.length ? bindings[0].sourceSpan : null);\n
this.updateInstructionChain(reference, bindings);\n }\n\n private addAdvanceInstructionIfNecessary(nodeIndex:
number, span: ParseSourceSpan|null) {\n  if (nodeIndex !== this._currentIndex) {\n  const delta = nodeIndex -
this._currentIndex;\n\n  if (delta < 1) {\n  throw new Error('advance instruction can only go forwards');\n
}\n\n  this.instructionFn(this._updateCodeFns, span, R3.advance, [o.literal(delta)]);\n  this._currentIndex =
nodeIndex;\n  }\n }\n\n private allocatePureFunctionSlots(numSlots: number): number {\n  const originalSlots =
this._pureFunctionSlots;\n  this._pureFunctionSlots += numSlots;\n  return originalSlots;\n }\n\n private
allocateBindingSlots(value: AST|null) {\n  this._bindingSlots += value instanceof Interpolation ?
value.expressions.length : 1;\n }\n\n /**\n  * Gets an expression that refers to the implicit receiver. The implicit\n
* receiver is always the root level context.\n  */\n private getImplicitReceiverExpr(): o.ReadVarExpr {\n  if
(this._implicitReceiverExpr) {\n  return this._implicitReceiverExpr;\n }\n\n return this._implicitReceiverExpr
= this.level === 0 ?\n  o.variable(CONTEXT_NAME) :\n
this._bindingScope.getOrCreateSharedContextVar(0);\n }\n\n private convertPropertyBinding(value: AST):
o.Expression {\n  const convertedPropertyBinding = convertPropertyBinding(\n  this,\n
this.getImplicitReceiverExpr(), value, this.bindingContext(), BindingForm.Expression,\n  () =>
error('Unexpected interpolation'));\n  const valExpr = convertedPropertyBinding.currValExpr;\n
this._tempVariables.push(...convertedPropertyBinding.stmts);\n  return valExpr;\n }\n\n /**\n  * Gets a list of
argument expressions to pass to an update instruction expression. Also updates\n  * the temp variables state with
temp variables that were identified as needing to be created\n  * while visiting the arguments.\n  * @param value
The original expression we will be resolving an arguments list from.\n  */\n private
getUpdateInstructionArguments(value: AST): o.Expression[] {\n  const {args, stmts} =\n
convertUpdateArguments(this, this.getImplicitReceiverExpr(), value, this.bindingContext());\n\n
this._tempVariables.push(...stmts);\n  return args;\n }\n\n private matchDirectives(elementName: string, elOrTpl:
t.Element|t.Template) {\n  if (this.directiveMatcher) {\n  const selector = createCssSelector(elementName,\n
getAttrsForDirectiveMatching(elOrTpl));\n  this.directiveMatcher.match(selector, (cssSelector, staticType) => {\n
  this.directives.add(staticType);\n  });\n  }\n }\n\n /**\n  * Prepares all attribute expression values for the
`TAttributes` array.\n  * The purpose of this function is to properly construct an attributes array that\n  * is
passed into the `elementStart` (or just `element`) functions. Because there\n  * are many different types of
attributes, the array needs to be constructed in a\n  * special way so that `elementStart` can properly evaluate
them.\n  * The format looks like this:\n  * ```\n  * attrs = [prop, value, prop2, value2,\n  *
PROJECT_AS, selector,\n  * CLASSES, class1, class2,\n  * STYLES, style1, value1, style2, value2,\n  *
BINDINGS, name1, name2, name3,\n  * TEMPLATE, name4, name5, name6,\n  * I18N, name7, name8, ...]\n
* ```\n  * Note that this function will fully ignore all synthetic (@foo) attribute values\n  * because those
values are intended to always be generated as property instructions.\n  */\n private getAttributeExpressions(\n
  elementName: string, renderAttributes: t.TextAttribute[], inputs: t.BoundAttribute[], outputs: t.BoundEvent[],
styles?: StylingBuilder,\n  templateAttrs: (t.BoundAttribute|t.TextAttribute)[] = [],\n  boundI18nAttrs:
t.BoundAttribute[] = []): o.Expression[] {\n  const alreadySeen = new Set<string>();\n  const attrExprs:
o.Expression[] = [];\n  let ngProjectAsAttr: t.TextAttribute|undefined;\n\n  for (const attr of renderAttributes) {\n

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    if (attr.name === NG_PROJECT_AS_ATTR_NAME) {\n      ngProjectAsAttr = attr;\n    }\n    // Note that
static i18n attributes aren't in the i18n array,\n    // because they're treated in the same way as regular attributes.\n
if (attr.i18n) {\n      attrExprs.push(o.literal(attr.name), this.i18nTranslate(attr.i18n as i18n.Message));\n    } else
{\n      attrExprs.push(\n        ...getAttributeNameLiterals(attr.name), trustedConstAttribute(elementName,
attr));\n    }\n  }\n  // Keep ngProjectAs next to the other name, value pairs so we can verify that we match\n
// ngProjectAs marker in the attribute name slot.\n  if (ngProjectAsAttr) {\n
attrExprs.push(...getNgProjectAsLiteral(ngProjectAsAttr);\n  }\n  function addAttrExpr(key: string|number,
value?: o.Expression): void {\n    if (typeof key === 'string') {\n      if (!alreadySeen.has(key)) {\n
attrExprs.push(...getAttributeNameLiterals(key);\n      value !== undefined && attrExprs.push(value);\n
alreadySeen.add(key);\n    }\n  } else {\n    attrExprs.push(o.literal(key));\n  }\n}\n  // it's important
that this occurs before BINDINGS and TEMPLATE because once `elementStart`\n  // comes across the
BINDINGS or TEMPLATE markers then it will continue reading each value as\n  // as single property value cell
by cell.\n  if (styles) {\n    styles.populateInitialStylingAttrs(attrExprs);\n  }\n  if (inputs.length ||
outputs.length) {\n    const attrsLengthBeforeInputs = attrExprs.length;\n    for (let i = 0; i < inputs.length; i++)
{\n      const input = inputs[i];\n      // We don't want the animation and attribute bindings in the\n      // attributes
array since they aren't used for directive matching.\n      if (input.type !== BindingType.Animation && input.type
!== BindingType.Attribute) {\n        addAttrExpr(input.name);\n      }\n    }\n    for (let i = 0; i <
outputs.length; i++) {\n      const output = outputs[i];\n      if (output.type !== ParsedEventType.Animation) {\n
addAttrExpr(output.name);\n    }\n  }\n  // this is a cheap way of adding the marker only after all the
input/output\n  // values have been filtered (by not including the animation ones) and added\n  // to the
expressions. The marker is important because it tells the runtime\n  // code that this is where attributes without
values start...\n  if (attrExprs.length !== attrsLengthBeforeInputs) {\n
attrExprs.splice(attrsLengthBeforeInputs, 0, o.literal(core.AttributeMarker.Bindings));\n  }\n  if
(templateAttrs.length) {\n    attrExprs.push(o.literal(core.AttributeMarker.Template));\n
templateAttrs.forEach(attr => addAttrExpr(attr.name));\n  }\n  if (boundI18nAttrs.length) {\n
attrExprs.push(o.literal(core.AttributeMarker.I18n));\n    boundI18nAttrs.forEach(attr =>
addAttrExpr(attr.name));\n  }\n  return attrExprs;\n}\n  private addToConsts(expression: o.Expression):
o.LiteralExpr {\n    if (o.isNull(expression)) {\n      return o.TYPED_NULL_EXPR;\n    }\n    const consts =
this._constants.constExpressions;\n    // Try to reuse a literal that's already in the array, if possible.\n    for (let i =
0; i < consts.length; i++) {\n      if (consts[i].isEquivalent(expression)) {\n        return o.literal(i);\n      }\n    }\n    return o.literal(consts.push(expression) - 1);\n  }\n  private addAttrsToConsts(attrs: o.Expression[]): o.LiteralExpr
{\n    return attrs.length > 0 ? this.addToConsts(o.literalArr(attrs)) : o.TYPED_NULL_EXPR;\n  }\n  private
prepareRefsArray(references: t.Reference[]): o.Expression {\n    if (!references || references.length === 0) {\n
return o.TYPED_NULL_EXPR;\n    }\n    const refsParam = flatten(references.map(reference => {\n      const slot
= this.allocateDataSlot();\n      // Generate the update temporary.\n      const variableName =
this._bindingScope.freshReferenceName();\n      const retrievalLevel = this.level;\n      const lhs =
o.variable(variableName);\n      this._bindingScope.set(\n        retrievalLevel, reference.name, lhs,\n        DeclarationPriority.DEFAULT, (scope: BindingScope, relativeLevel: number) => {\n          // e.g.
nextContext(2);\n          const nextContextStmt =\n            relativeLevel > 0 ?
[generateNextContextExpr(relativeLevel).toStmt()]: [];\n          // e.g. const $foo$ = reference(1);\n          const
refExpr = lhs.set(o.importExpr(R3.reference).callFn([o.literal(slot)]));\n          return
nextContextStmt.concat(refExpr.toConstDecl());\n        }, true);\n      return [reference.name, reference.value];\n
}));\n    return asLiteral(refsParam);\n  }\n  private prepareListenerParameter(tagName: string, outputAst:
t.BoundEvent, index: number):\n    () => o.Expression[] {\n    return () => {\n      const eventName: string =
outputAst.name;\n      const bindingFnName = outputAst.type === ParsedEventType.Animation ?\n        //
synthetic @listener.foo values are treated the exact same as are standard listeners\n
prepareSyntheticListenerFunctionName(eventName, outputAst.phase!):\n      sanitizeIdentifier(eventName);\n      const
handlerName = `${this.templateName}_${tagName}_${bindingFnName}_${index}_listener`;\n      const

```

```

scope = this._bindingScope.nestedScope(\n      this._bindingScope.bindingLevel,
EVENT_BINDING_SCOPE_GLOBALS);\n      return prepareEventListenerParameters(outputAst, handlerName,
scope);\n    };\n  }\n}\n\nexport class ValueConverter extends AstMemoryEfficientTransformer {\n  private
_pipeBindExprs: FunctionCall[] = [];\n\n  constructor(\n    private constantPool: ConstantPool, private allocateSlot:
() => number,\n    private allocatePureFunctionSlots: (numSlots: number) => number,\n    private definePipe:\n      (name: string, localName: string, slot: number, value: o.Expression) => void) {\n    super();\n  }\n\n  //
AstMemoryEfficientTransformer\n  visitPipe(pipe: BindingPipe, context: any): AST {\n    // Allocate a slot to create
the pipe\n    const slot = this.allocateSlot();\n    const slotPseudoLocal = `PIPE:${slot}`;\n    // Allocate one slot for
the result plus one slot per pipe argument\n    const pureFunctionSlot = this.allocatePureFunctionSlots(2 +
pipe.args.length);\n    const target = new PropertyRead(\n      pipe.span, pipe.sourceSpan, pipe.nameSpan, new
ImplicitReceiver(pipe.span, pipe.sourceSpan),\n      slotPseudoLocal);\n    const {identifier, isVarLength} =
pipeBindingCallInfo(pipe.args);\n    this.definePipe(pipe.name, slotPseudoLocal, slot, o.importExpr(identifier));\n
const args: AST[] = [pipe.exp, ...pipe.args];\n    const convertedArgs: AST[] = isVarLength ?\nthis.visitAll([new LiteralArray(pipe.span, pipe.sourceSpan, args)]) :\n    this.visitAll(args);\n\n    const
pipeBindExpr = new FunctionCall(pipe.span, pipe.sourceSpan, target, [\n      new LiteralPrimitive(pipe.span,
pipe.sourceSpan, slot),\n      new LiteralPrimitive(pipe.span, pipe.sourceSpan, pureFunctionSlot),\n
...convertedArgs,\n    ]);\n    this._pipeBindExprs.push(pipeBindExpr);\n    return pipeBindExpr;\n  }\n\n
updatePipeSlotOffsets(bindingSlots: number) {\n    this._pipeBindExprs.forEach((pipe: FunctionCall) => {\n      //
update the slot offset arg (index 1) to account for binding slots\n      const slotOffset = pipe.args[1] as
LiteralPrimitive;\n      (slotOffset.value as number) += bindingSlots;\n    });\n  }\n\n  visitLiteralArray(array:
LiteralArray, context: any): AST {\n    return new BuiltinFunctionCall(\n      array.span, array.sourceSpan,
this.visitAll(array.expressions), values => {\n      // If the literal has calculated (non-literal) elements transform it
into\n      // calls to literal factories that compose the literal and will cache intermediate\n      // values.\n
const literal = o.literalArr(values);\n      return getLiteralFactory(this.constantPool, literal,
this.allocatePureFunctionSlots);\n    });\n  }\n\n  visitLiteralMap(map: LiteralMap, context: any): AST {\n
return new BuiltinFunctionCall(map.span, map.sourceSpan, this.visitAll(map.values), values => {\n      // If the
literal has calculated (non-literal) elements transform it into\n      // calls to literal factories that compose the literal
and will cache intermediate\n      // values.\n      const literal = o.literalMap(values.map(\n        (value, index) =>
({key: map.keys[index].key, value, quoted: map.keys[index].quoted}));\n      return
getLiteralFactory(this.constantPool, literal, this.allocatePureFunctionSlots);\n    });\n  }\n}\n\n// Pipes always have
at least one parameter, the value they operate on\nconst pipeBindingIdentifiers = [R3.pipeBind1, R3.pipeBind2,
R3.pipeBind3, R3.pipeBind4];\n\nfunction pipeBindingCallInfo(args: o.Expression[]) {\n  const identifier =
pipeBindingIdentifiers[args.length];\n  return {\n    identifier: identifier || R3.pipeBindV,\n    isVarLength:
!identifier,\n  };\n}\n\nconst pureFunctionIdentifiers = [\n  R3.pureFunction0, R3.pureFunction1, R3.pureFunction2,
R3.pureFunction3, R3.pureFunction4,\n  R3.pureFunction5, R3.pureFunction6, R3.pureFunction7,
R3.pureFunction8\n];\n\nfunction pureFunctionCallInfo(args: o.Expression[]) {\n  const identifier =
pureFunctionIdentifiers[args.length];\n  return {\n    identifier: identifier || R3.pureFunctionV,\n    isVarLength:
!identifier,\n  };\n}\n\nfunction instruction(\n  span: ParseSourceSpan|null, reference: o.ExternalReference,\n  params: o.Expression[]): o.Expression {\n  return o.importExpr(reference, null, span).callFn(params, span);\n}\n\n//
e.g. x(2);\nfunction generateNextContextExpr(relativeLevelDiff: number): o.Expression {\n  return
o.importExpr(R3.nextContext)\n    .callFn(relativeLevelDiff > 1 ? [o.literal(relativeLevelDiff)] : []);\n}\n\nfunction
getLiteralFactory(\n  constantPool: ConstantPool, literal: o.LiteralArrayExpr|o.LiteralMapExpr,\n  allocateSlots:
(numSlots: number) => number): o.Expression {\n  const {literalFactory, literalFactoryArguments} =
constantPool.getLiteralFactory(literal);\n  // Allocate 1 slot for the result plus 1 per argument\n  const startSlot =
allocateSlots(1 + literalFactoryArguments.length);\n  const {identifier, isVarLength} =
pureFunctionCallInfo(literalFactoryArguments);\n\n  // Literal factories are pure functions that only need to be re-
invoked when the parameters\n  // change.\n  const args = [o.literal(startSlot), literalFactory];\n\n  if (isVarLength)
{\n    args.push(o.literalArr(literalFactoryArguments));\n  } else {\n    args.push(...literalFactoryArguments);\n  }\n}\n}

```



```

be ${this.map.get(name)}`);\n } \n this.map.set(name, {\n retrievalLevel: retrievalLevel,\n lhs: lhs,\n declare: false,\n declareLocalCallback: declareLocalCallback,\n priority: priority,\n localRef: localRef ||\n false\n });\n return this;\n }\n\n // Implemented as part of LocalResolver.\n getLocal(name: string):\n (o.Expression|null) {\n return this.get(name);\n }\n\n // Implemented as part of LocalResolver.\n notifyImplicitReceiverUse(): void {\n if (this.bindingLevel !== 0) {\n // Since the implicit receiver is accessed\n in an embedded view, we need to\n // ensure that we declare a shared context variable for the current template\n // in the update variables.\n this.map.get(SHARED_CONTEXT_KEY + 0)!.declare = true;\n } }\n\n nestedScope(level: number, globals?: Set<string>): BindingScope {\n const newScope = new BindingScope(level,\n this, globals);\n if (level > 0) newScope.generateSharedContextVar(0);\n return newScope;\n }\n\n /**\n * Gets or creates a shared context variable and returns its expression. Note that\n * this does not mean that the shared\n variable will be declared. Variables in the\n * binding scope will be only declared if they are used.\n */\n getOrCreateSharedContextVar(retrievalLevel: number): o.ReadVarExpr {\n const bindingKey =\n SHARED_CONTEXT_KEY + retrievalLevel;\n if (!this.map.has(bindingKey)) {\n this.generateSharedContextVar(retrievalLevel);\n } \n // Shared context variables are always generated as\n `ReadVarExpr`.\n return this.map.get(bindingKey)!.lhs as o.ReadVarExpr;\n }\n\n getSharedContextName(retrievalLevel: number): o.ReadVarExpr|null {\n const sharedCtxObj =\n this.map.get(SHARED_CONTEXT_KEY + retrievalLevel);\n // Shared context variables are always generated as\n `ReadVarExpr`.\n return sharedCtxObj && sharedCtxObj.declare ? sharedCtxObj.lhs as o.ReadVarExpr : null;\n }\n\n maybeGenerateSharedContextVar(value: BindingData) {\n if (value.priority ===\n DeclarationPriority.CONTEXT &&\n value.retrievalLevel < this.bindingLevel) {\n const sharedCtxObj =\n this.map.get(SHARED_CONTEXT_KEY + value.retrievalLevel);\n if (sharedCtxObj) {\n sharedCtxObj.declare = true;\n } else {\n this.generateSharedContextVar(value.retrievalLevel);\n }\n }\n }\n\n generateSharedContextVar(retrievalLevel: number) {\n const lhs = o.variable(CONTEXT_NAME +\n this.freshReferenceName());\n this.map.set(SHARED_CONTEXT_KEY + retrievalLevel, {\n retrievalLevel:\n retrievalLevel,\n lhs: lhs,\n declareLocalCallback: (scope: BindingScope, relativeLevel: number) => {\n //\n const ctx_r0 = nextContext(2);\n return [lhs.set(generateNextContextExpr(relativeLevel)).toConstDecl()];\n },\n declare: false,\n priority: DeclarationPriority.SHARED_CONTEXT,\n localRef: false\n });\n }\n\n GetComponentProperty(name: string): o.Expression {\n const componentValue =\n this.map.get(SHARED_CONTEXT_KEY + 0);\n componentValue.declare = true;\n this.maybeRestoreView(0,\n false);\n return componentValue.lhs.prop(name);\n }\n\n maybeRestoreView(retrievalLevel: number,\n localRefLookup: boolean) {\n // We want to restore the current view in listener fns if:\n // 1 - we are accessing a\n value in a parent view, which requires walking the view tree rather\n // than using the ctx arg. In this case, the\n retrieval and binding level will be different.\n // 2 - we are looking up a local ref, which requires restoring the view\n where the local\n // ref is stored\n if (this.isListenerScope() && (retrievalLevel < this.bindingLevel ||\n localRefLookup)) {\n if (!this.parent!.restoreViewVariable) {\n // parent saves variable to generate a shared\n `const $$ = getCurrentView();` instruction\n this.parent!.restoreViewVariable =\n o.variable(this.parent!.freshReferenceName());\n } \n this.restoreViewVariable =\n this.parent!.restoreViewVariable;\n }\n }\n\n restoreViewState(): o.Statement[] {\n //\n restoreView($state$);\n return this.restoreViewVariable ?\n [instruction(null, R3.restoreView,\n [this.restoreViewVariable]).toStmt()]\n : [];\n }\n\n viewSnapshotStatements(): o.Statement[] {\n // const\n $state$ = getCurrentView();\n const getCurrentViewInstruction = instruction(null, R3.getCurrentView, []);\n return this.restoreViewVariable ?\n [this.restoreViewVariable.set(getCurrentViewInstruction).toConstDecl()]\n : [];\n }\n\n isListenerScope() {\n return this.parent && this.parent.bindingLevel === this.bindingLevel;\n }\n\n variableDeclarations(): o.Statement[] {\n let currentContextLevel = 0;\n return\n Array.from(this.map.values())\n .filter(value => value.declare)\n .sort((a, b) => b.retrievalLevel -\n a.retrievalLevel || b.priority - a.priority)\n .reduce((stmts: o.Statement[], value: BindingData) => {\n const levelDiff = this.bindingLevel - value.retrievalLevel;\n const currStmts =\n value.declareLocalCallback!(this, levelDiff - currentContextLevel);\n currentContextLevel = levelDiff;\n

```

```

return stmts.concat(currStmts);
}, []) as o.Statement[];
}

freshReferenceName(): string
{
let current: BindingScope = this;
// Find the top scope as it maintains the global reference count
while
(current.parent) current = current.parent;
const ref =
`${REFERENCE_PREFIX}${current.referenceNameIndex++}`;
return ref;
}

`CssSelector` given a tag name and a map of attributes
export function createCssSelector(
elementName:
string, attributes: {[name: string]: string}): CssSelector {
const cssSelector = new CssSelector();
const
elementNameNoNs = splitNsName(elementName)[1];
cssSelector.setElement(elementNameNoNs);
Object.getOwnPropertyNames(attributes).forEach((name) => {
const nameNoNs = splitNsName(name)[1];
const value = attributes[name];
cssSelector.addAttribute(nameNoNs, value);
if (name.toLowerCase() ===
'class') {
const classes = value.trim().split(/\s+/);
classes.forEach(className =>
cssSelector.addClassName(className));
}
});
return cssSelector;
}

Creates an array of
expressions out of an `ngProjectAs` attributes
which can be added to the instruction parameters.
function
getNgProjectAsLiteral(attribute: t.TextAttribute): o.Expression[] {
// Parse the attribute value into a
CssSelectorList. Note that we only take the
// first selector, because we don't support multiple selectors in
ngProjectAs.
const parsedR3Selector = core.parseSelectorToR3Selector(attribute.value)[0];
return
[o.literal(core.AttributeMarker.ProjectAs), asLiteral(parsedR3Selector)];
}

Gets the instruction to
generate for an interpolated property
@param interpolation An Interpolation AST
function
getPropertyInterpolationExpression(interpolation: Interpolation) {
switch
(getInterpolationArgsLength(interpolation)) {
case 1:
return R3.propertyInterpolate;
case 3:
return
R3.propertyInterpolate1;
case 5:
return R3.propertyInterpolate2;
case 7:
return
R3.propertyInterpolate3;
case 9:
return R3.propertyInterpolate4;
case 11:
return
R3.propertyInterpolate5;
case 13:
return R3.propertyInterpolate6;
case 15:
return
R3.propertyInterpolate7;
case 17:
return R3.propertyInterpolate8;
default:
return
R3.propertyInterpolateV;
}
}

Gets the instruction to generate for an interpolated attribute
@param
interpolation An Interpolation AST
function
getAttributeInterpolationExpression(interpolation: Interpolation)
{
switch (getInterpolationArgsLength(interpolation)) {
case 3:
return R3.attributeInterpolate1;
case
5:
return R3.attributeInterpolate2;
case 7:
return R3.attributeInterpolate3;
case 9:
return
R3.attributeInterpolate4;
case 11:
return R3.attributeInterpolate5;
case 13:
return
R3.attributeInterpolate6;
case 15:
return R3.attributeInterpolate7;
case 17:
return
R3.attributeInterpolate8;
default:
return R3.attributeInterpolateV;
}
}

Gets the instruction to
generate for interpolated text.
@param interpolation An Interpolation AST
function
getTextInterpolationExpression(interpolation: Interpolation): o.ExternalReference {
switch
(getInterpolationArgsLength(interpolation)) {
case 1:
return R3.textInterpolate;
case 3:
return
R3.textInterpolate1;
case 5:
return R3.textInterpolate2;
case 7:
return R3.textInterpolate3;
case
9:
return R3.textInterpolate4;
case 11:
return R3.textInterpolate5;
case 13:
return
R3.textInterpolate6;
case 15:
return R3.textInterpolate7;
case 17:
return R3.textInterpolate8;
default:
return R3.textInterpolateV;
}
}

Options that can be used to modify how a template is
parsed by `parseTemplate()`.
export interface ParseTemplateOptions {
/**
* Include whitespace nodes in
the parsed output.
preserveWhitespaces?: boolean;
/**
* How to parse interpolation markers.
interpolationConfig?: InterpolationConfig;
/**
* The start and end point of the text to parse within the `source`
string.
* The entire `source` string is parsed if this is not provided.
range?: LexerRange;
/**
* If
this text is stored in a JavaScript string, then we have to deal with escape sequences.
* Example 1:
* `
* `abc\\nghi`
* `
* ` - The `\\n` must be converted to `
* ` - The `\\` must be
converted to a new line character in a token,
* but it should not increment the current line for source mapping.
* Example 2:
* `
* `abc\\n * def`
* `
* ` The line continuation (`\` followed
by a newline) should be removed from a token
* but the new line should increment the current line for source
mapping.
escapedString?: boolean;
/**
* An array of characters that should be considered as leading
trivia.
* Leading trivia are characters that are not important to the developer, and so should not be
* included

```

in source-map segments. A common example is `whitespace`.

```


  * leadingTriviaChars?: string[];
  * Render `$localize` message ids with additional legacy message ids.
  * This option defaults to `true` but in the future the default will be flipped.
  * For now set this option to false if you have migrated the translation files to use the new
  * `$localize` message id format and you are not using compile time translation merging.
  * enableI18nLegacyMessageIdFormat?: boolean;
  * If this text is stored in an external template (e.g. via `templateUrl`) then we need to decide
  * whether or not to normalize the line-endings (from `\\r\\n` to `\\n`) when processing ICU
  * expressions.
  * If `true` then we will normalize ICU expression line endings.
  * The default is `false`, but this will be switched in a future major release.
  * i18nNormalizeLineEndingsInICUs?: boolean;
  * Parse a template into render3 `Node`s and additional metadata, with no other dependencies.
  * @param template text of the template to parse
  * @param templateUrl URL to use for source mapping of the parsed template
  * @param options options to modify how the template is parsed
  */
export function parseTemplate(
  template: string, templateUrl: string, options: ParseTemplateOptions = {}): ParsedTemplate {
  const {interpolationConfig, preserveWhitespaces, enableI18nLegacyMessageIdFormat} = options;
  const bindingParser = makeBindingParser(interpolationConfig);
  const htmlParser = new HtmlParser();
  const parseResult = htmlParser.parse(
    template, templateUrl, {leadingTriviaChars: LEADING_TRIVIA_CHARS, ...options, tokenizeExpansionForms: true});
  if (parseResult.errors && parseResult.errors.length > 0) {
    // TODO(ayazhafiz): we may not always want to bail out at this point (e.g. in the context of a language service).
    return {
      interpolationConfig,
      preserveWhitespaces,
      template,
      errors: parseResult.errors,
      nodes: [],
      styleUrls: [],
      styles: [],
      ngContentSelectors: []
    };
  }
  let rootNodes: html.Node[] = parseResult.rootNodes;
  // process i18n meta information (scan attributes, generate ids)
  // before we run whitespace removal process, because existing i18n extraction process (ng extract-i18n) relies on a raw content to generate message ids
  const i18nMetaVisitor = new I18nMetaVisitor(
    interpolationConfig, /* keepI18nAttrs */ !preserveWhitespaces, enableI18nLegacyMessageIdFormat);
  rootNodes = html.visitAll(i18nMetaVisitor, rootNodes);
  if (!preserveWhitespaces) {
    rootNodes = html.visitAll(new WhitespaceVisitor(), rootNodes);
  }
  // run i18n meta visitor again in case whitespaces are removed (because that might affect generated i18n message content) and first pass indicated that i18n content is present in a template. During this pass i18n IDs generated at the first pass will be preserved, so we can mimic existing extraction process (ng extract-i18n)
  if (i18nMetaVisitor.hasI18nMeta) {
    rootNodes = html.visitAll(
      new I18nMetaVisitor(interpolationConfig, /* keepI18nAttrs */ false), rootNodes);
  }
  const {nodes, errors, styleUrls, styles, ngContentSelectors} = htmlAstToRender3Ast(rootNodes, bindingParser);
  return {
    interpolationConfig,
    preserveWhitespaces,
    errors: errors.length > 0 ? errors : null,
    template,
    nodes,
    styleUrls,
    styles,
    ngContentSelectors
  };
}

const elementRegistry = new DomElementSchemaRegistry();
* Construct a `BindingParser` with a default configuration.
*/
export function makeBindingParser(
  interpolationConfig: InterpolationConfig = DEFAULT_INTERPOLATION_CONFIG): BindingParser {
  return new BindingParser(
    new IvyParser(new Lexer()), interpolationConfig, elementRegistry, null, []);
}

export function resolveSanitizationFn(context: core.SecurityContext, isAttribute?: boolean) {
  switch (context) {
    case core.SecurityContext.HTML:
      return o.importExpr(R3.sanitizeHtml);
    case core.SecurityContext.SCRIPT:
      return o.importExpr(R3.sanitizeScript);
    case core.SecurityContext.STYLE:
      // the compiler does not fill in an instruction for [style.prop?] binding // values because the style algorithm knows internally what props are subject // to sanitization (only [attr.style] values are explicitly sanitized)
      return isAttribute ? o.importExpr(R3.sanitizeStyle) : null;
    case core.SecurityContext.URL:
      return o.importExpr(R3.sanitizeUrl);
    case core.SecurityContext.RESOURCE_URL:
      return o.importExpr(R3.sanitizeResourceUrl);
    default:
      return null;
  }
}

function trustedConstAttribute(tagName: string, attr: t.TextAttribute): o.Expression {
  const value = asLiteral(attr.value);
  switch (elementRegistry.securityContext(tagName, attr.name, /* isAttribute */ true)) {
    case core.SecurityContext.HTML:
      return o.importExpr(R3.trustConstantHtml).callFn([value], attr.valueSpan);
    case core.SecurityContext.SCRIPT:
      return o.importExpr(R3.trustConstantScript).callFn([value],


```

```

attr.valueSpan);\n case core.SecurityContext.RESOURCE_URL:\n return
o.importExpr(R3.trustConstantResourceUrl).callFn([value], attr.valueSpan);\n default:\n return value;\n
}\n}\n\nfunction isSingleElementTemplate(children: t.Node[]): children is[t.Element] {\n return children.length
=== 1 && children[0] instanceof t.Element;\n}\n\nfunction isTextNode(node: t.Node): boolean {\n return node
instanceof t.Text || node instanceof t.BoundText || node instanceof t.Icu;\n}\n\nfunction
hasTextChildrenOnly(children: t.Node[]): boolean {\n return children.every(isTextNode);\n}\n\ninterface
ChainableBindingInstruction {\n name?: string;\n sourceSpan: ParseSourceSpan|null;\n value: () => o.Expression |
o.Expression[];\n params?: any[];\n}\n\n/** Name of the global variable that is used to determine if we use Closure
translations or not */\nconst NG_I18N_CLOSURE_MODE = 'ngI18nClosureMode';\n\n/**\n * Generate statements
that define a given translation message.\n *\n * var I18N_1;\n * if (typeof ngI18nClosureMode !== undefined
&& ngI18nClosureMode) {\n *   var MSG_EXTERNAL_XXX = goog.getMsg(\n *     `Some message with
{$interpolation}!`,\n *     { `interpolation`: `\\uFFFFD0\\uFFFFD` }\n *   );\n *   I18N_1 =
MSG_EXTERNAL_XXX;\n * }*\n * else {\n *   I18N_1 = $localize`Some message with
${`\\uFFFFD0\\uFFFFD`}!`;*\n * }\n * ``*\n *\n * @param message The original i18n AST message node\n * @param
variable The variable that will be assigned the translation, e.g. `I18N_1`\n * @param closureVar The variable for
Closure `goog.getMsg` calls, e.g. `MSG_EXTERNAL_XXX`\n * @param params Object mapping placeholder
names to their values (e.g. \n * `{ `interpolation`: `\\uFFFFD0\\uFFFFD` }`).\n * @param transformFn Optional
transformation function that will be applied to the translation (e.g. \n * post-processing).\n * @returns An array of
statements that defined a given translation.\n */\nexport function getTranslationDeclStmts(\n message:
i18n.Message, variable: o.ReadVarExpr, closureVar: o.ReadVarExpr,\n params: {[name: string]: o.Expression} =
{},\n transformFn?: (raw: o.ReadVarExpr) => o.Expression): o.Statement[] {\n const statements: o.Statement[] =
[\n declareI18nVariable(variable),\n o.ifStmnt(\n createClosureModeGuard(),\n
createGoogleGetMsgStatements(\n variable, message, closureVar,\n
i18nFormatPlaceholderNames(params, /* useCamelCase */ true)),\n createLocalizeStatements(\n
variable, message, i18nFormatPlaceholderNames(params, /* useCamelCase */ false))),\n ];\n\n if (transformFn) {\n
statements.push(new o.ExpressionStatement(variable.set(transformFn(variable))));\n }\n\n return
statements;\n}\n\n/**\n * Create the expression that will be used to guard the closure mode block\n * It is equivalent
to:\n *\n * ``*\n * typeof ngI18nClosureMode !== undefined && ngI18nClosureMode\n * ``*\n */\nfunction
createClosureModeGuard(): o.BinaryOperatorExpr {\n return
o.typeofExpr(o.variable(NG_I18N_CLOSURE_MODE))\n .notIdentical(o.literal('undefined',
o.STRING_TYPE))\n .and(o.variable(NG_I18N_CLOSURE_MODE));\n}\n\n/**\n * Information about the
template which was extracted during parsing.\n *\n * This contains the actual parsed template as well as any
metadata collected during its parsing,\n * some of which might be useful for re-parsing the template with different
options.\n */\nexport interface ParsedTemplate {\n /**\n * Include whitespace nodes in the parsed output.\n */\n
preserveWhitespaces?: boolean;\n\n /**\n * How to parse interpolation markers.\n */\n interpolationConfig?:
InterpolationConfig;\n\n /**\n * The string contents of the template.\n *\n * This is the "logical" template
string, after expansion of any escaped characters (for inline\n * templates). This may differ from the actual
template bytes as they appear in the .ts file.\n */\n template: string;\n\n /**\n * Any errors from parsing the
template the first time.\n *\n * `null` if there are no errors. Otherwise, the array of errors is guaranteed to be non-
empty.\n */\n errors: ParseError[]|null;\n\n /**\n * The template AST, parsed from the template.\n */\n nodes:
t.Node[];\n\n /**\n * Any styleUrls extracted from the metadata.\n */\n styleUrls: string[];\n\n /**\n * Any
inline styles extracted from the metadata.\n */\n styles: string[];\n\n /**\n * Any ng-content selectors extracted
from the template.\n */\n ngContentSelectors: string[];\n}\n\n", /**\n * @license\n * Copyright Google LLC All
Rights Reserved.\n *\n * Use of this source code is governed by an MIT-style license that can be\n * found in the
LICENSE file at https://angular.io/license\n */\nimport {StaticSymbol} from '../aot/static_symbol';\nimport
{CompileDirectiveMetadata, CompileDirectiveSummary, CompileQueryMetadata, CompileTokenMetadata,
identifierName, sanitizeIdentifier} from '../compile_metadata';\nimport {CompileReflector} from
'../compile_reflector';\nimport {BindingForm, convertPropertyBinding} from

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'././compiler_util/expression_converter';\nimport { ConstantPool, DefinitionKind } from '././constant_pool';\nimport
* as core from '././core';\nimport { AST, ParsedEvent, ParsedEventType, ParsedProperty } from
'././expression_parser/ast';\nimport { DEFAULT_INTERPOLATION_CONFIG } from
'././ml_parser/interpolation_config';\nimport * as o from '././output/output_ast';\nimport { ParseError,
ParseSourceSpan } from '././parse_util';\nimport { CssSelector, SelectorMatcher } from '././selector';\nimport
{ ShadowCss } from '././shadow_css';\nimport { CONTENT_ATTR, HOST_ATTR } from
'././style_compiler';\nimport { BindingParser } from '././template_parser/binding_parser';\nimport { error,
OutputContext } from '././util';\nimport { BoundEvent } from './r3_ast';\nimport { compileFactoryFunction,
R3DependencyMetadata, R3FactoryTarget, R3ResolvedDependencyType } from './r3_factory';\nimport { Identifiers
as R3 } from './r3_identifiers';\nimport { Render3ParseResult } from './r3_template_transform';\nimport
{ prepareSyntheticListenerFunctionName, prepareSyntheticPropertyName, typeWithParameters } from
'./util';\n\nimport { R3ComponentDef, R3ComponentMetadata, R3DirectiveDef, R3DirectiveMetadata,
R3HostMetadata, R3QueryMetadata } from './api';\nimport { MIN_STYLING_BINDING_SLOTS_REQUIRED,
StylingBuilder, StylingInstructionCall } from './styling_builder';\nimport { BindingScope, makeBindingParser,
prepareEventListenerParameters, renderFlagCheckIfStmt, resolveSanitizationFn, TemplateDefinitionBuilder,
ValueConverter } from './template';\nimport { asLiteral, chainedInstruction, conditionallyCreateMapObjectLiteral,
CONTEXT_NAME, DefinitionMap, getQueryPredicate, RENDER_FLAGS, TEMPORARY_NAME,
temporaryAllocator } from './util';\n\nconst EMPTY_ARRAY: any[] = [];\n\n// This regex matches any binding
names that contain the "attr." prefix, e.g. "attr.required"\n\n// If there is a match, the first matching group will
contain the attribute name to bind.\n\nconst ATTR_REGEX = /attr\\.([^\|]+)/;\n\nfunction baseDirectiveFields(\n
meta: R3DirectiveMetadata, constantPool: ConstantPool,\n  bindingParser: BindingParser): DefinitionMap {\n
const definitionMap = new DefinitionMap();\n  const selectors =
core.parseSelectorToR3Selector(meta.selector);\n  // e.g. `type: MyDirective`\n  definitionMap.set('type',
meta.internalType);\n  // e.g. `selectors: [{"someDir", ""}]\n  if (selectors.length > 0) {\n
definitionMap.set('selectors', asLiteral(selectors));\n  }\n  if (meta.queries.length > 0) {\n  // e.g. `contentQueries:
(rf, ctx, dirIndex) => { ... }`\n  definitionMap.set(\n    'contentQueries',
createContentQueriesFunction(meta.queries, constantPool, meta.name));\n  }\n  if (meta.viewQueries.length) {\n
definitionMap.set(\n    'viewQuery', createViewQueriesFunction(meta.viewQueries, constantPool, meta.name));\n
}\n  // e.g. `hostBindings: (rf, ctx) => { ... }`\n  definitionMap.set(\n    'hostBindings',\n
createHostBindingsFunction(\n      meta.host, meta.typeSourceSpan, bindingParser, constantPool, meta.selector ||
",\n      meta.name, definitionMap));\n  // e.g. `inputs: {a: 'a'}`\n  definitionMap.set('inputs',
conditionallyCreateMapObjectLiteral(meta.inputs, true));\n  // e.g. `outputs: {a: 'a'}`\n  definitionMap.set('outputs',
conditionallyCreateMapObjectLiteral(meta.outputs));\n  if (meta.exportAs !== null) {\n
definitionMap.set('exportAs', o.literalArr(meta.exportAs.map(e => o.literal(e))));\n  }\n  return
definitionMap;\n}\n\n/**\n * Add features to the definition map.\n */\nfunction addFeatures(definitionMap:
DefinitionMap, meta: R3DirectiveMetadata|R3ComponentMetadata) {\n  // e.g. `features:
[NgOnChangesFeature]`\n  const features: o.Expression[] = [];\n  const providers = meta.providers;\n  const
viewProviders = (meta as R3ComponentMetadata).viewProviders;\n  if (providers || viewProviders) {\n  const args
= [providers || new o.LiteralArrayExpr([])];\n  if (viewProviders) {\n  args.push(viewProviders);\n  }\n
features.push(o.importExpr(R3.ProvidersFeature).callFn(args));\n  }\n  if (meta.usesInheritance) {\n
features.push(o.importExpr(R3.InheritDefinitionFeature));\n  }\n  if (meta.fullInheritance) {\n
features.push(o.importExpr(R3.CopyDefinitionFeature));\n  }\n  if (meta.lifecycle.usesOnChanges) {\n
features.push(o.importExpr(R3.NgOnChangesFeature));\n  }\n  if (features.length) {\n  definitionMap.set('features',
o.literalArr(features));\n  }\n}\n\n/**\n * Compile a directive for the render3 runtime as defined by the
`R3DirectiveMetadata`\n */\nexport function compileDirectiveFromMetadata(\n  meta: R3DirectiveMetadata,\n
constantPool: ConstantPool,\n  bindingParser: BindingParser): R3DirectiveDef {\n  const definitionMap =
baseDirectiveFields(meta, constantPool, bindingParser);\n  addFeatures(definitionMap, meta);\n  const expression =
o.importExpr(R3.defineDirective).callFn([definitionMap.toLiteralMap()]);\n  const typeParams =

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createDirectiveTypeParams(meta);\n const type = o.expressionType(o.importExpr(R3.DirectiveDefWithMeta,
typeParams));\n\n return {expression, type};\n}\n\n/**\n * Compile a component for the render3 runtime as defined
by the `R3ComponentMetadata`.\n * \nexport function compileComponentFromMetadata(\n  meta:
R3ComponentMetadata, constantPool: ConstantPool,\n  bindingParser: BindingParser): R3ComponentDef {\n
const definitionMap = baseDirectiveFields(meta, constantPool, bindingParser);\n addFeatures(definitionMap,
meta);\n\n const selector = meta.selector && CssSelector.parse(meta.selector);\n const firstSelector = selector &&
selector[0];\n\n // e.g. `attr: [\"class\", \".my.app\"]`\n // This is optional and only included if the first selector of a
component specifies attributes.\n if (firstSelector) {\n  const selectorAttributes = firstSelector.getAttrs();\n  if
(selectorAttributes.length) {\n   definitionMap.set(\n     'attrs',\n     constantPool.getConstLiteral(\n
o.literalArr(selectorAttributes.map(\n       value => value != null ? o.literal(value) : o.literal(undefined))),\n
     /* forceShared */ true));\n  }\n }\n\n // Generate the CSS matcher that recognize directive\n let
directiveMatcher: SelectorMatcher|null = null;\n\n if (meta.directives.length > 0) {\n  const matcher = new
SelectorMatcher();\n  for (const {selector, expression} of meta.directives) {\n
matcher.addSelectable(CssSelector.parse(selector), expression);\n }\n  directiveMatcher = matcher;\n }\n\n //
e.g. `template: function MyComponent_Template(_ctx, _cm) {...}`\n const templateTypeName = meta.name;\n
const templateName = templateTypeName ? `${templateTypeName}_Template` : null;\n\n const directivesUsed =
new Set<o.Expression>();\n const pipesUsed = new Set<o.Expression>();\n const changeDetection =
meta.changeDetection;\n\n const template = meta.template;\n const templateBuilder = new
TemplateDefinitionBuilder(\n  constantPool, BindingScope.createRootScope(), 0, templateTypeName, null, null,
templateName,\n  directiveMatcher, directivesUsed, meta.pipes, pipesUsed, R3.namespaceHTML,\n  meta.relativeContextFilePath, meta.i18nUseExternalIds);\n\n const templateFunctionExpression =
templateBuilder.buildTemplateFunction(template.nodes, []);\n\n // We need to provide this so that dynamically
generated components know what\n // projected content blocks to pass through to the component when it is
instantiated.\n const ngContentSelectors = templateBuilder.getNgContentSelectors();\n if (ngContentSelectors) {\n
definitionMap.set('ngContentSelectors', ngContentSelectors);\n }\n\n // e.g. `decls: 2`\n definitionMap.set('decls',
o.literal(templateBuilder.getConstCount()));\n\n // e.g. `vars: 2`\n definitionMap.set('vars',
o.literal(templateBuilder.getVarCount()));\n\n // Generate `const` section of ComponentDef:\n // - either as an
array:\n // `const: [['one', 'two'], ['three', 'four']]`\n // - or as a factory function in case additional statements are
present (to support i18n):\n // `const: function() { var i18n_0; if (ngI18nClosureMode) {...} else {...} return
[i18n_0]; }`\n const {constExpressions, prepareStatements} = templateBuilder.getConsts();\n if
(constExpressions.length > 0) {\n  let constExpr: o.LiteralArrayExpr|o.FunctionExpr =
o.literalArr(constExpressions);\n  // Prepare statements are present - turn `const` into a function.\n  if
(prepareStatements.length > 0) {\n   constExpr = o.fn([], [...prepareStatements, new
o.ReturnStatement(constExpr)]);\n  }\n  definitionMap.set('const', constExpr);\n }\n\n definitionMap.set('template', templateFunctionExpression);\n\n // e.g. `directives: [MyDirective]`\n if
(directivesUsed.size) {\n  let directivesExpr: o.Expression = o.literalArr(Array.from(directivesUsed));\n  if
(meta.wrapDirectivesAndPipesInClosure) {\n   directivesExpr = o.fn([], [new
o.ReturnStatement(directivesExpr)]);\n  }\n  definitionMap.set('directives', directivesExpr);\n }\n\n // e.g. `pipes:
[MyPipe]`\n if (pipesUsed.size) {\n  let pipesExpr: o.Expression = o.literalArr(Array.from(pipesUsed));\n  if
(meta.wrapDirectivesAndPipesInClosure) {\n   pipesExpr = o.fn([], [new o.ReturnStatement(pipesExpr)]);\n  }\n
definitionMap.set('pipes', pipesExpr);\n }\n\n if (meta.encapsulation === null) {\n  meta.encapsulation =
core.ViewEncapsulation.Emulated;\n }\n\n // e.g. `styles: [str1, str2]`\n if (meta.styles && meta.styles.length) {\n
const styleValues = meta.encapsulation === core.ViewEncapsulation.Emulated ?\n  compileStyles(meta.styles,
CONTENT_ATTR, HOST_ATTR) : meta.styles;\n  const strings = styleValues.map(str =>
constantPool.getConstLiteral(o.literal(str)));\n  definitionMap.set('styles', o.literalArr(strings));\n } else if
(meta.encapsulation === core.ViewEncapsulation.Emulated) {\n  // If there is no style, don't generate css selectors
on elements\n  meta.encapsulation = core.ViewEncapsulation.None;\n }\n\n // Only set view encapsulation if it's
not the default value\n if (meta.encapsulation !== core.ViewEncapsulation.Emulated) {\n

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definitionMap.set('encapsulation', o.literal(meta.encapsulation));\n }\n\n // e.g. `animation: [trigger('123', [])]`\n if
(meta.animations !== null) {\n  definitionMap.set(\n    'data', o.literalMap([[key: 'animation', value:
meta.animations, quoted: false]]);\n  }\n\n // Only set the change detection flag if it's defined and it's not the
default.\n  if (changeDetection !== null && changeDetection !== core.ChangeDetectionStrategy.Default) {\n
definitionMap.set('changeDetection', o.literal(changeDetection));\n  }\n\n  const expression =
o.importExpr(R3.defineComponent).callFn([definitionMap.toLiteralMap()]);\n\n  const typeParams =
createDirectiveTypeParams(meta);\n  typeParams.push(stringArrayAsType(meta.template.ngContentSelectors));\n
const type = o.expressionType(o.importExpr(R3.ComponentDefWithMeta, typeParams));\n\n  return {expression,
type};\n}\n\n/**\n * A wrapper around `compileDirective` which depends on render2 global analysis data as its
input\n * instead of the `R3DirectiveMetadata`. \n * \n * `R3DirectiveMetadata` is computed from
`CompileDirectiveMetadata` and other statically reflected\n * information.\n */\n\nexport function
compileDirectiveFromRender2(\n  outputCtx: OutputContext, directive: CompileDirectiveMetadata, reflector:
CompileReflector,\n  bindingParser: BindingParser) {\n  const name = identifierName(directive.type)!;\n  name ||
error(`Cannot resolver the name of ${directive.type}`);\n\n  const definitionField =
outputCtx.constantPool.propertyNameOf(DefinitionKind.Directive);\n\n  const meta =
directiveMetadataFromGlobalMetadata(directive, outputCtx, reflector);\n  const res =
compileDirectiveFromMetadata(meta, outputCtx.constantPool, bindingParser);\n  const factoryRes =
compileFactoryFunction(\n    {...meta, injectFn: R3.directiveInject, target: R3FactoryTarget.Directive});\n  const
ngFactoryDefStatement = new o.ClassStmt(\n    name, null,\n    [new o.ClassField('fac', o.INFERRED_TYPE,
[o.StmtModifier.Static], factoryRes.factory)], [],\n    new o.ClassMethod(null, [], [], []);\n  const
directiveDefStatement = new o.ClassStmt(\n    name, null,\n    [new o.ClassField(definitionField,
o.INFERRED_TYPE, [o.StmtModifier.Static], res.expression)],\n    [], new o.ClassMethod(null, [], [], []);\n\n //
Create the partial class to be merged with the actual class.\n  outputCtx.statements.push(ngFactoryDefStatement,
directiveDefStatement);\n}\n\n/**\n * A wrapper around `compileComponent` which depends on render2 global
analysis data as its input\n * instead of the `R3DirectiveMetadata`. \n * \n * `R3ComponentMetadata` is computed
from `CompileDirectiveMetadata` and other statically reflected\n * information.\n */\n\nexport function
compileComponentFromRender2(\n  outputCtx: OutputContext, component: CompileDirectiveMetadata,
render3Ast: Render3ParseResult,\n  reflector: CompileReflector, bindingParser: BindingParser,
directiveTypeBySel: Map<string, any>,\n  pipeTypeByName: Map<string, any>) {\n  const name =
identifierName(component.type)!;\n  name || error(`Cannot resolver the name of ${component.type}`);\n\n  const
definitionField = outputCtx.constantPool.propertyNameOf(DefinitionKind.Component);\n\n  const summary =
component.toSummary();\n\n // Compute the R3ComponentMetadata from the CompileDirectiveMetadata\n  const
meta: R3ComponentMetadata = {\n    ...directiveMetadataFromGlobalMetadata(component, outputCtx, reflector),\n
selector: component.selector,\n    template: {nodes: render3Ast.nodes, ngContentSelectors:
render3Ast.ngContentSelectors},\n    directives: [],\n    pipes: typeMapToExpressionMap(pipeTypeByName,
outputCtx),\n    viewQueries: queriesFromGlobalMetadata(component.viewQueries, outputCtx),\n
wrapDirectivesAndPipesInClosure: false,\n    styles: (summary.template && summary.template.styles) ||
EMPTY_ARRAY,\n    encapsulation:\n      (summary.template && summary.template.encapsulation) ||
core.ViewEncapsulation.Emulated,\n    interpolation: DEFAULT_INTERPOLATION_CONFIG,\n    animations:
null,\n    viewProviders:\n      component.viewProviders.length > 0 ? new
o.WrappedNodeExpr(component.viewProviders) : null,\n    relativeContextFilePath: ",\n    i18nUseExternalIds:
true,\n  }; \n  const res = compileComponentFromMetadata(meta, outputCtx.constantPool, bindingParser);\n  const
factoryRes = compileFactoryFunction(\n    {...meta, injectFn: R3.directiveInject, target:
R3FactoryTarget.Directive});\n  const ngFactoryDefStatement = new o.ClassStmt(\n    name, null,\n    [new
o.ClassField('fac', o.INFERRED_TYPE, [o.StmtModifier.Static], factoryRes.factory)], [],\n    new
o.ClassMethod(null, [], [], []);\n  const componentDefStatement = new o.ClassStmt(\n    name, null,\n    [new
o.ClassField(definitionField, o.INFERRED_TYPE, [o.StmtModifier.Static], res.expression)],\n    [], new
o.ClassMethod(null, [], [], []);\n\n // Create the partial class to be merged with the actual class.\n

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outputCtx.statements.push(ngFactoryDefStatement, componentDefStatement);\n\n\n\n * Compute
`R3DirectiveMetadata` given `CompileDirectiveMetadata` and a `CompileReflector`.\n\n\n\nfunction
directiveMetadataFromGlobalMetadata(\n  directive: CompileDirectiveMetadata, outputCtx: OutputContext,\n  reflector: CompileReflector): R3DirectiveMetadata {\n  // The global-analysis based Ivy mode in ngc is no longer
utilized/supported.\n  throw new Error('unsupported');\n\n\n\n\n * Convert `CompileQueryMetadata` into
`R3QueryMetadata`.\n\n\n\nfunction queriesFromGlobalMetadata(\n  queries: CompileQueryMetadata[], outputCtx:
OutputContext): R3QueryMetadata[] {\n  return queries.map(query => {\n    let read: o.Expression|null = null;\n    if
(query.read && query.read.identifier) {\n      read = outputCtx.importExpr(query.read.identifier.reference);\n    }\n    return {\n      propertyName: query.propertyName,\n      first: query.first,\n      predicate:
selectorsFromGlobalMetadata(query.selectors, outputCtx),\n      descendants: query.descendants,\n      read,\n      static: !!query.static\n    };\n  });\n\n\n\n\n * Convert `CompileTokenMetadata` for query selectors into either an
expression for a predicate\n * type, or a list of string predicates.\n\n\n\nfunction selectorsFromGlobalMetadata(\n
selectors: CompileTokenMetadata[], outputCtx: OutputContext): o.Expression|string[] {\n  if (selectors.length > 1 ||
(selectors.length == 1 && selectors[0].value)) {\n    const selectorStrings = selectors.map(value => value.value as
string);\n    selectorStrings.some(value => !value) &&\n      error('Found a type among the string selectors
expected');\n    return outputCtx.constantPool.getConstLiteral(\n      o.literalArr(selectorStrings.map(value =>
o.literal(value)));\n    }\n    if (selectors.length == 1) {\n      const first = selectors[0];\n      if (first.identifier) {\n
return outputCtx.importExpr(first.identifier.reference);\n      }\n    }\n    error('Unexpected query form');\n    return
o.NULL_EXPR;\n  }\n\n\nfunction prepareQueryParams(query: R3QueryMetadata, constantPool: ConstantPool):
o.Expression[] {\n  const parameters = [getQueryPredicate(query, constantPool), o.literal(query.descendants)];\n  if
(query.read) {\n    parameters.push(query.read);\n  }\n  return parameters;\n\n\n\nfunction
convertAttributesToExpressions(attributes: {[name: string]: o.Expression}): o.Expression[] {\n  const values:
o.Expression[] = [];\n  for (let key of Object.getOwnPropertyNames(attributes)) {\n    const value =
attributes[key];\n    values.push(o.literal(key), value);\n  }\n  return values;\n\n\n\n// Define and update any content
queries\nfunction createContentQueriesFunction(\n  queries: R3QueryMetadata[], constantPool: ConstantPool,
name?: string): o.Expression {\n  const createStatements: o.Statement[] = [];\n  const updateStatements:
o.Statement[] = [];\n  const tempAllocator = temporaryAllocator(updateStatements, TEMPORARY_NAME);\n  for (const query of queries) {\n    const queryInstruction = query.static ? R3.staticContentQuery :
R3.contentQuery;\n    // creation, e.g. r3.contentQuery(dirIndex, somePredicate, true, null);\n    createStatements.push(\n      o.importExpr(queryInstruction)\n        .callFn([o.variable('dirIndex'),
...prepareQueryParams(query, constantPool) as any])\n        .toStmt());\n    // update, e.g. (r3.queryRefresh(tmp
= r3.loadQuery()) && (ctx.someDir = tmp));\n    const temporary = tempAllocator();\n    const getQueryList =
o.importExpr(R3.loadQuery).callFn([]);\n    const refresh =
o.importExpr(R3.queryRefresh).callFn([temporary.set(getQueryList)]);\n    const updateDirective =
o.variable(CONTEXT_NAME)\n      .prop(query.propertyName)\n      .set(query.first ? temporary.prop('first') : temporary);\n    updateStatements.push(refresh.and(updateDirective).toStmt());\n  }\n  const contentQueriesFnName = name ?
`${name}_ContentQueries` : null;\n  return o.fn(\n    [\n      new o.FnParam(RENDER_FLAGS,
o.NUMBER_TYPE), new o.FnParam(CONTEXT_NAME, null),\n      new o.FnParam('dirIndex', null)\n    ],\n    [\n      renderFlagCheckIfStmt(core.RenderFlags.Create, createStatements),\n     
renderFlagCheckIfStmt(core.RenderFlags.Update, updateStatements)\n    ],\n    o.INFERRED_TYPE, null,
contentQueriesFnName);\n\n\n\nfunction stringAsType(str: string): o.Type {\n  return
o.expressionType(o.literal(str));\n\n\n\nfunction stringMapAsType(map: {[key: string]: string|string[]}): o.Type {\n
const mapValues = Object.keys(map).map(key => {\n  const value = Array.isArray(map[key]) ? map[key][0] :
map[key];\n  return {\n    key,\n    value: o.literal(value),\n    quoted: true,\n  };\n});\n  return
o.expressionType(o.literalMap(mapValues));\n\n\n\nfunction stringArrayAsType(arr: ReadonlyArray<string|null>):
o.Type {\n  return arr.length > 0 ? o.expressionType(o.literalArr(arr.map(value => o.literal(value)))) :\n    o.NONE_TYPE;\n\n\n\nfunction createDirectiveTypeParams(meta: R3DirectiveMetadata): o.Type[] {\n  // On the

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type side, remove newlines from the selector as it will need to fit into a TypeScript\n // string literal, which must be
on one line.\n const selectorForType = meta.selector !== null ? meta.selector.replace(/\\n/g, " ") : null;\n\n return [\n
typeWithParameters(meta.type.type, meta.typeArgumentCount),\n selectorForType !== null ?
stringAsType(selectorForType) : o.NONE_TYPE,\n meta.exportAs !== null ? stringArrayAsType(meta.exportAs)
: o.NONE_TYPE,\n stringMapAsType(meta.inputs),\n stringMapAsType(meta.outputs),\n
stringArrayAsType(meta.queries.map(q => q.propertyName)),\n ];\n\n\n// Define and update any view
queries\nfunction createViewQueriesFunction(\n viewQueries: R3QueryMetadata[], constantPool: ConstantPool,
name?: string): o.Expression {\n const createStatements: o.Statement[] = [];\n const updateStatements:
o.Statement[] = [];\n const tempAllocator = temporaryAllocator(updateStatements, TEMPORARY_NAME);\n\n
viewQueries.forEach((query: R3QueryMetadata) => {\n const queryInstruction = query.static ?
R3.staticViewQuery : R3.viewQuery;\n\n // creation, e.g. r3.viewQuery(somePredicate, true);\n const
queryDefinition =\n o.importExpr(queryInstruction).callFn(prepareQueryParams(query, constantPool));\n
createStatements.push(queryDefinition.toStmt());\n\n // update, e.g. (r3.queryRefresh(tmp = r3.loadQuery()) &&
(ctx.someDir = tmp));\n const temporary = tempAllocator();\n const getQueryList =
o.importExpr(R3.loadQuery).callFn([]);\n const refresh =
o.importExpr(R3.queryRefresh).callFn([temporary.set(getQueryList)]);\n const updateDirective =
o.variable(CONTEXT_NAME)\n .prop(query.propertyName)\n
.set(query.first ? temporary.prop('first') : temporary);\n
updateStatements.push(refresh.and(updateDirective).toStmt());\n });\n\n const viewQueryFnName = name ?
`_${name}_Query` : null;\n return o.fn(\n [new o.FnParam(RENDER_FLAGS, o.NUMBER_TYPE), new
o.FnParam(CONTEXT_NAME, null)],\n [\n renderFlagCheckIfStmt(core.RenderFlags.Create,
createStatements),\n renderFlagCheckIfStmt(core.RenderFlags.Update, updateStatements)\n ],\n
o.INFERRED_TYPE, null, viewQueryFnName);\n\n\n// Return a host binding function or null if one is not
necessary.\nfunction createHostBindingsFunction(\n hostBindingsMetadata: R3HostMetadata, typeSourceSpan:
ParseSourceSpan,\n bindingParser: BindingParser, constantPool: ConstantPool, selector: string, name: string,\n definitionMap: DefinitionMap): o.Expression|null {\n const bindingContext = o.variable(CONTEXT_NAME);\n
const styleBuilder = new StylingBuilder(bindingContext);\n\n const {styleAttr, classAttr} =
hostBindingsMetadata.specialAttributes;\n if (styleAttr !== undefined) {\n
styleBuilder.registerStyleAttr(styleAttr);\n }\n if (classAttr !== undefined) {\n
styleBuilder.registerClassAttr(classAttr);\n }\n\n const createStatements: o.Statement[] = [];\n const
updateStatements: o.Statement[] = [];\n\n const hostBindingSourceSpan = typeSourceSpan;\n const
directiveSummary = metadataAsSummary(hostBindingsMetadata);\n\n // Calculate host event bindings\n const
eventBindings =\n bindingParser.createDirectiveHostEventAsts(directiveSummary, hostBindingSourceSpan);\n
if (eventBindings && eventBindings.length) {\n const listeners = createHostListeners(eventBindings, name);\n
createStatements.push(...listeners);\n }\n\n // Calculate the host property bindings\n const bindings =
bindingParser.createBoundHostProperties(directiveSummary, hostBindingSourceSpan);\n const allOtherBindings:
ParsedProperty[] = [];\n\n // We need to calculate the total amount of binding slots required by\n // all the
instructions together before any value conversions happen.\n // Value conversions may require additional slots for
interpolation and\n // bindings with pipes. These calculates happen after this block.\n let totalHostVarsCount = 0;\n
bindings && bindings.forEach((binding: ParsedProperty) => {\n const stylingInputWasSet =
styleBuilder.registerInputBasedOnName(\n binding.name, binding.expression, hostBindingSourceSpan);\n if
(stylingInputWasSet) {\n totalHostVarsCount += MIN_STYLING_BINDING_SLOTS_REQUIRED;\n } else
{\n allOtherBindings.push(binding);\n totalHostVarsCount++;\n }\n });\n\n let valueConverter:
ValueConverter;\n const getValueConverter = () => {\n if (!valueConverter) {\n const hostVarsCountFn =
(numSlots: number): number => {\n const originalVarsCount = totalHostVarsCount;\n totalHostVarsCount
+= numSlots;\n return originalVarsCount;\n }; valueConverter = new ValueConverter(\n
constantPool,\n () => error('Unexpected node'), // new nodes are illegal here\n hostVarsCountFn,\n
() => error('Unexpected pipe')); // pipes are illegal here\n }\n return valueConverter;\n });\n\n const

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propertyBindings: o.Expression[][] = [];\n const attributeBindings: o.Expression[][] = [];\n const
syntheticHostBindings: o.Expression[][] = [];\n allOtherBindings.forEach((binding: ParsedProperty) => {\n //
resolve literal arrays and literal objects\n const value = binding.expression.visit(getValueConverter());\n const
bindingExpr = bindingFn(bindingContext, value);\n\n const {bindingName, instruction, isAttribute} =
getBindingNameAndInstruction(binding);\n\n const securityContexts =\n
bindingParser.calcPossibleSecurityContexts(selector, bindingName, isAttribute)\n .filter(context => context
!== core.SecurityContext.NONE);\n\n let sanitizerFn: o.ExternalExpr|null = null;\n if (securityContexts.length)
{\n if (securityContexts.length === 2 &&\n securityContexts.indexOf(core.SecurityContext.URL) > -1
&&\n securityContexts.indexOf(core.SecurityContext.RESOURCE_URL) > -1) {\n // Special case for
some URL attributes (such as \"src\" and \"href\") that may be a part\n // of different security contexts. In this
case we use special sanitization function and\n // select the actual sanitizer at runtime based on a tag name that
is provided while\n // invoking sanitization function.\n sanitizerFn =
o.importExpr(R3.sanitizeUrlOrResourceUrl);\n } else {\n sanitizerFn =
resolveSanitizationFn(securityContexts[0], isAttribute);\n }\n }\n const instructionParams =
[o.literal(bindingName), bindingExpr.currValExpr];\n if (sanitizerFn) {\n
instructionParams.push(sanitizerFn);\n }\n\n updateStatements.push(...bindingExpr.stmts);\n\n if (instruction
=== R3.hostProperty) {\n propertyBindings.push(instructionParams);\n } else if (instruction === R3.attribute)
{\n attributeBindings.push(instructionParams);\n } else if (instruction === R3.syntheticHostProperty) {\n
syntheticHostBindings.push(instructionParams);\n } else {\n
updateStatements.push(o.importExpr(instruction).callFn(instructionParams).toStmt());\n }\n\n if
(propertyBindings.length > 0) {\n updateStatements.push(chainedInstruction(R3.hostProperty,
propertyBindings).toStmt());\n }\n\n if (attributeBindings.length > 0) {\n
updateStatements.push(chainedInstruction(R3.attribute, attributeBindings).toStmt());\n }\n\n if
(syntheticHostBindings.length > 0) {\n updateStatements.push(\n
chainedInstruction(R3.syntheticHostProperty, syntheticHostBindings).toStmt());\n }\n\n // since we're dealing with
directives/components and both have hostBinding\n // functions, we need to generate a special hostAttrs instruction
that deals\n // with both the assignment of styling as well as static attributes to the host\n // element. The instruction
below will instruct all initial styling (styling\n // that is inside of a host binding within a directive/component) to be
attached\n // to the host element alongside any of the provided host attributes that were\n // collected earlier.\n
const hostAttrs = convertAttributesToExpressions(hostBindingsMetadata.attributes);\n
styleBuilder.assignHostAttrs(hostAttrs, definitionMap);\n\n if (styleBuilder.hasBindings) {\n // finally each
binding that was registered in the statement above will need to be added to\n // the update block of a
component/directive templateFn/hostBindingsFn so that the bindings\n // are evaluated and updated for the
element.\n styleBuilder.buildUpdateLevelInstructions(getValueConverter()).forEach(instruction => {\n if
(instruction.calls.length > 0) {\n const calls: o.Expression[][] = [];\n\n instruction.calls.forEach(call => {\n
// we subtract a value of `1` here because the binding slot was already allocated\n // at the top of this
method when all the input bindings were counted.\n totalHostVarsCount +=\n
Math.max(call.allocateBindingSlots - MIN_STYLING_BINDING_SLOTS_REQUIRED, 0);\n
calls.push(convertStylingCall(call, bindingContext, bindingFn));\n });\n\n
updateStatements.push(chainedInstruction(instruction.reference, calls).toStmt());\n }\n\n\n if
(totalHostVarsCount) {\n definitionMap.set('hostVars', o.literal(totalHostVarsCount));\n }\n\n if
(createStatements.length > 0 || updateStatements.length > 0) {\n const hostBindingsFnName = name ?
`${name}_HostBindings` : null;\n const statements: o.Statement[] = [];\n if (createStatements.length > 0) {\n
statements.push(renderFlagCheckIfStmt(core.RenderFlags.Create, createStatements));\n }\n\n if
(updateStatements.length > 0) {\n statements.push(renderFlagCheckIfStmt(core.RenderFlags.Update,
updateStatements));\n }\n\n return o.fn(\n [new o.FnParam(RENDER_FLAGS, o.NUMBER_TYPE), new
o.FnParam(CONTEXT_NAME, null)], statements,\n o.INFERRED_TYPE, null, hostBindingsFnName);\n
}\n\n return null;\n}\n\nfunction bindingFn(implicit: any, value: AST) {\n return convertPropertyBinding(\n

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null, implicit, value, 'b', BindingForm.Expression, () => error('Unexpected interpolation'));\n}\n\nfunction
convertStylingCall(\n  call: StylingInstructionCall, bindingContext: any, bindingFn: Function) {\n  return
call.params(value => bindingFn(bindingContext, value).currValExpr);\n}\n\nfunction
getBindingNameAndInstruction(binding: ParsedProperty):\n  {bindingName: string, instruction:
o.ExternalReference, isAttribute: boolean} {\n  let bindingName = binding.name;\n  let instruction!:
o.ExternalReference;\n  // Check to see if this is an attr binding or a property binding\n  const attrMatches =
bindingName.match(ATTR_REGEX);\n  if (attrMatches) {\n    bindingName = attrMatches[1];\n    instruction =
R3.attribute;\n  } else {\n    if (binding.isAnimation) {\n      bindingName =
prepareSyntheticPropertyName(bindingName);\n      // host bindings that have a synthetic property (e.g. @foo)
should always be rendered\n      // in the context of the component and not the parent. Therefore there is a special\n
      // compatibility instruction available for this purpose.\n      instruction = R3.syntheticHostProperty;\n    } else {\n
instruction = R3.hostProperty;\n    }\n  }\n  return {bindingName, instruction, isAttribute:
!!attrMatches};\n}\n\nfunction createHostListeners(eventBindings: ParsedEvent[], name?: string): o.Statement[] {\n
const listeners: o.Expression[][] = [];\n  const syntheticListeners: o.Expression[][] = [];\n  const instructions:
o.Statement[] = [];\n  eventBindings.forEach(binding => {\n    let bindingName = binding.name &&
sanitizeIdentifier(binding.name);\n    const bindingFnName = binding.type === ParsedEventType.Animation ?\n    prepareSyntheticListenerFunctionName(bindingName, binding.targetOrPhase) : bindingName;\n    const
handlerName = name && bindingName ? `${name}_${bindingFnName}_HostBindingHandler` : null;\n    const
params = prepareEventListenerParameters(BoundEvent.fromParsedEvent(binding), handlerName);\n    if
(binding.type === ParsedEventType.Animation) {\n      syntheticListeners.push(params);\n    } else {\n
listeners.push(params);\n    }\n  });\n  if (syntheticListeners.length > 0) {\n
instructions.push(chainedInstruction(R3.syntheticHostListener, syntheticListeners).toStmt());\n  }\n  if
(listeners.length > 0) {\n    instructions.push(chainedInstruction(R3.listener, listeners).toStmt());\n  }\n  return
instructions;\n}\n\nfunction metadataAsSummary(meta: R3HostMetadata): CompileDirectiveSummary {\n // clang-
format off\n  return {\n    // This is used by the BindingParser, which only deals with listeners and properties. There's
no\n    // need to pass attributes to it.\n    hostAttributes: {},\n    hostListeners: meta.listeners,\n    hostProperties:
meta.properties,\n  } as CompileDirectiveSummary;\n // clang-format on\n}\n\nfunction
typeMapToExpressionMap(\n  map: Map<string, StaticSymbol>, outputCtx: OutputContext): Map<string,
o.Expression> {\n // Convert each map entry into another entry where the value is an expression importing the
type.\n  const entries = Array.from(map).map(\n    ([key, type]): [string, o.Expression] => [key,
outputCtx.importExpr(type)];\n  return new Map(entries);\n}\n\nconst HOST_REG_EXP =
/^(?::\[[^\]]+\])|(?:\{([^\}]+\})\})$/;\n// Represents the groups in the above regex.\nconst enum HostBindingGroup
{\n // group 1: \"prop\" from \"[prop]\", or \"attr.role\" from \"[attr.role]\", or @anim from [@anim]\n Binding =
1,\n // group 2: \"event\" from \"(event)\"\n Event = 2,\n}\n\n// Defines Host Bindings structure that contains
attributes, listeners, and properties,\n// parsed from the `host` object defined for a Type.\nexport interface
ParsedHostBindings {\n  attributes: {[key: string]: o.Expression};\n  listeners: {[key: string]: string};\n  properties:
{[key: string]: string};\n  specialAttributes: {styleAttr?: string; classAttr?: string;};\n}\n\nexport function
parseHostBindings(host: {[key: string]: string|o.Expression}): ParsedHostBindings {\n  const attributes: {[key:
string]: o.Expression} = {};\n  const listeners: {[key: string]: string} = {};\n  const properties: {[key:
string]: string} = {};\n  const specialAttributes: {styleAttr?: string; classAttr?: string;} = {};\n  for (const key of
Object.keys(host)) {\n    const value = host[key];\n    const matches = key.match(HOST_REG_EXP);\n    if
(matches === null) {\n      switch (key) {\n        case 'class':\n          if (typeof value !== 'string') {\n
//\n          TODO(alxhub): make this a diagnostic.\n          throw new Error(`Class binding must be string`);\n          }\n
specialAttributes.classAttr = value;\n          break;\n        case 'style':\n          if (typeof value !== 'string') {\n
//\n          TODO(alxhub): make this a diagnostic.\n          throw new Error(`Style binding must be string`);\n          }\n
specialAttributes.styleAttr = value;\n          break;\n        default:\n          if (typeof value === 'string') {\n
attributes[key] = o.literal(value);\n          } else {\n            attributes[key] = value;\n          }\n        } else if
(matches[HostBindingGroup.Binding] != null) {\n          if (typeof value !== 'string') {\n            // TODO(alxhub): make

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this a diagnostic.\n    throw new Error(`Property binding must be string`);\n    }\n    // synthetic properties (the
ones that have a `@` as a prefix)\n    // are still treated the same as regular properties. Therefore\n    // there is no
point in storing them in a separate map.\n    properties[matches[HostBindingGroup.Binding]] = value;\n    } else if
(matches[HostBindingGroup.Event] != null) {\n    if (typeof value !== 'string') {\n    // TODO(alxhub): make this
a diagnostic.\n    throw new Error(`Event binding must be string`);\n    }\n
listeners[matches[HostBindingGroup.Event]] = value;\n    }\n    }\n\n    return {attributes, listeners, properties,
specialAttributes};\n}\n\n/**\n * Verifies host bindings and returns the list of errors (if any). Empty array indicates
that a\n * given set of host bindings has no errors.\n * @param bindings set of host bindings to verify.\n *
@param sourceSpan source span where host bindings were defined.\n * @returns array of errors associated with a
given set of host bindings.\n */\nexport function verifyHostBindings(\n    bindings: ParsedHostBindings,\n    sourceSpan: ParseSourceSpan): ParseError[] {\n    const summary = metadataAsSummary(bindings);\n    // TODO:
abstract out host bindings verification logic and use it instead of\n    // creating events and properties ASTs to detect
errors (FW-996)\n    const bindingParser = makeBindingParser();\n
bindingParser.createDirectiveHostEventAsts(summary, sourceSpan);\n
bindingParser.createBoundHostProperties(summary, sourceSpan);\n    return bindingParser.errors;\n}\n\nfunction
compileStyles(styles: string[], selector: string, hostSelector: string): string[] {\n    const shadowCss = new
ShadowCss();\n    return styles.map(style => {\n    return shadowCss!.shimCssText(style, selector, hostSelector);\n
});\n}\n\n", "/*\n * @license\n * Copyright Google LLC All Rights Reserved.\n * \n * Use of this source code is
governed by an MIT-style license that can be\n * found in the LICENSE file at https://angular.io/license\n
*/\n\n*/\n * An interface for retrieving documents by URL that the compiler uses\n * to load templates.\n
*/\nexport class ResourceLoader {\n    get(url: string): Promise<string>|string {\n    return ";\n    }\n}\n\n", "/*\n *
@license\n * Copyright Google LLC All Rights Reserved.\n * \n * Use of this source code is governed by an MIT-
style license that can be\n * found in the LICENSE file at https://angular.io/license\n */\n\n\nimport
{CompilerFacade, CoreEnvironment, ExportedCompilerFacade, R3ComponentMetadataFacade,\nR3DependencyMetadataFacade, R3DirectiveMetadataFacade, R3FactoryDefMetadataFacade,\nR3InjectableMetadataFacade, R3InjectorMetadataFacade, R3NgModuleMetadataFacade, R3PipeMetadataFacade,\nR3QueryMetadataFacade, StringMap, StringMapWithRename} from './compiler_facade_interface';\nimport
{ConstantPool} from './constant_pool';\nimport {HostBinding, HostListener, Input, Output, Type} from
'/core';\nimport {Identifiers} from './identifiers';\nimport {compileInjectable} from
'/injectable_compiler_2';\nimport {DEFAULT_INTERPOLATION_CONFIG, InterpolationConfig} from
'/ml_parser/interpolation_config';\nimport {DeclareVarStmt, Expression, LiteralExpr, Statement, StmtModifier,\nWrappedNodeExpr} from './output/output_ast';\nimport {JitEvaluator} from './output/output_jit';\nimport
{ParseError, ParseSourceSpan, r3JitTypeSourceSpan} from './parse_util';\nimport {compileFactoryFunction,\nR3DependencyMetadata, R3FactoryTarget, R3ResolvedDependencyType} from './render3/r3_factory';\nimport
{R3JitReflector} from './render3/r3_jit';\nimport {compileInjector, compileNgModule, R3InjectorMetadata,\nR3NgModuleMetadata} from './render3/r3_module_compiler';\nimport {compilePipeFromMetadata,\nR3PipeMetadata} from './render3/r3_pipe_compiler';\nimport {R3Reference} from './render3/util';\nimport
{R3DirectiveMetadata, R3QueryMetadata} from './render3/view/api';\nimport {compileComponentFromMetadata,\ncompileDirectiveFromMetadata, ParsedHostBindings, parseHostBindings, verifyHostBindings} from
'/render3/view/compiler';\nimport {makeBindingParser, parseTemplate} from './render3/view/template';\nimport
{ResourceLoader} from './resource_loader';\nimport {DomElementSchemaRegistry} from
'/schema/dom_element_schema_registry';\n\nexport class CompilerFacadeImpl implements CompilerFacade {\n
R3ResolvedDependencyType = R3ResolvedDependencyType as any;\n    R3FactoryTarget = R3FactoryTarget as
any;\n    ResourceLoader = ResourceLoader;\n    private elementSchemaRegistry = new
DomElementSchemaRegistry();\n\n    constructor(private jitEvaluator = new JitEvaluator()) {\n\n
compilePipe(angularCoreEnv: CoreEnvironment, sourceMapUrl: string, facade: R3PipeMetadataFacade):\n    any
{\n    const metadata: R3PipeMetadata = {\n    name: facade.name,\n    type: wrapReference(facade.type),\n
internalType: new WrappedNodeExpr(facade.type),\n    typeArgumentCount: facade.typeArgumentCount,\n

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deps: convertR3DependencyMetadataArray(facade.deps),\n  pipeName: facade.pipeName,\n  pure:
facade.pure,\n  });\n  const res = compilePipeFromMetadata(metadata);\n  return
this.jitExpression(res.expression, angularCoreEnv, sourceMapUrl, []);\n  }\n\n  compileInjectable(\n
angularCoreEnv: CoreEnvironment, sourceMapUrl: string,\n  facade: R3InjectableMetadataFacade): any {\n
const {expression, statements} = compileInjectable({\n  name: facade.name,\n  type:
wrapReference(facade.type),\n  internalType: new WrappedNodeExpr(facade.type),\n  typeArgumentCount:
facade.typeArgumentCount,\n  providedIn: computeProvidedIn(facade.providedIn),\n  useClass:
wrapExpression(facade, USE_CLASS),\n  useFactory: wrapExpression(facade, USE_FACTORY),\n
useValue: wrapExpression(facade, USE_VALUE),\n  useExisting: wrapExpression(facade, USE_EXISTING),\n
userDeps: convertR3DependencyMetadataArray(facade.userDeps) || undefined,\n  });\n\n  return
this.jitExpression(expression, angularCoreEnv, sourceMapUrl, statements);\n  }\n\n  compileInjector(\n
angularCoreEnv: CoreEnvironment, sourceMapUrl: string,\n  facade: R3InjectorMetadataFacade): any {\n
const meta: R3InjectorMetadata = {\n  name: facade.name,\n  type: wrapReference(facade.type),\n  internalType:
new WrappedNodeExpr(facade.type),\n  deps: convertR3DependencyMetadataArray(facade.deps),\n
providers: new WrappedNodeExpr(facade.providers),\n  imports: facade.imports.map(i => new
WrappedNodeExpr(i)),\n  });\n  const res = compileInjector(meta);\n  return this.jitExpression(res.expression,
angularCoreEnv, sourceMapUrl, res.statements);\n  }\n\n  compileNgModule(\n  angularCoreEnv:
CoreEnvironment, sourceMapUrl: string,\n  facade: R3NgModuleMetadataFacade): any {\n
const meta: R3NgModuleMetadata = {\n  type: wrapReference(facade.type),\n  internalType: new
WrappedNodeExpr(facade.type),\n  adjacentType: new WrappedNodeExpr(facade.type),\n  bootstrap:
facade.bootstrap.map(wrapReference),\n  declarations: facade.declarations.map(wrapReference),\n
imports: facade.imports.map(wrapReference),\n  exports: facade.exports.map(wrapReference),\n
emitInline: true,\n  containsForwardDecls: false,\n  schemas: facade.schemas ? facade.schemas.map(wrapReference) : null,\n
id: facade.id ? new WrappedNodeExpr(facade.id) : null,\n  });\n  const res = compileNgModule(meta);\n  return
this.jitExpression(res.expression, angularCoreEnv, sourceMapUrl, []);\n  }\n\n  compileDirective(\n
angularCoreEnv: CoreEnvironment, sourceMapUrl: string,\n  facade: R3DirectiveMetadataFacade): any {\n
const constantPool = new ConstantPool();\n  const bindingParser = makeBindingParser();\n\n  const meta:
R3DirectiveMetadata = convertDirectiveFacadeToMetadata(facade);\n  const res =
compileDirectiveFromMetadata(meta, constantPool, bindingParser);\n  return this.jitExpression(\n
res.expression, angularCoreEnv, sourceMapUrl, constantPool.statements);\n  }\n\n  compileComponent(\n
angularCoreEnv: CoreEnvironment, sourceMapUrl: string,\n  facade: R3ComponentMetadataFacade): any {\n
// The ConstantPool is a requirement of the JIT'er.\n  const constantPool = new ConstantPool();\n\n  const
interpolationConfig = facade.interpolation ?\n    InterpolationConfig.fromArray(facade.interpolation) :\n    DEFAULT_INTERPOLATION_CONFIG;\n  // Parse the template and check for errors.\n  const template =
parseTemplate(\n    facade.template, sourceMapUrl,\n    {preserveWhitespaces: facade.preserveWhitespaces,\n
interpolationConfig});\n  if (template.errors !== null) {\n    const errors = template.errors.map(err =>
err.toString()).join(' ');\n    throw new Error(`Errors during JIT compilation of template for ${facade.name}:
${errors}`);\n  }\n\n  // Compile the component metadata, including template, into an expression.\n  //
TODO(alxhub): implement inputs, outputs, queries, etc.\n  const metadata = {\n    ...facade as
R3ComponentMetadataFacadeNoPropAndWhitespace,\n    ...convertDirectiveFacadeToMetadata(facade),\n
selector: facade.selector || this.elementSchemaRegistry.getDefaultComponentElementName(),\n    template,\n
wrapDirectivesAndPipesInClosure: false,\n    styles: [...facade.styles, ...template.styles],\n    encapsulation:
facade.encapsulation as any,\n    interpolation: interpolationConfig,\n    changeDetection:
facade.changeDetection,\n    animations: facade.animations != null ? new WrappedNodeExpr(facade.animations) :
null,\n    viewProviders: facade.viewProviders != null ? new WrappedNodeExpr(facade.viewProviders) :\n      null,\n    relativeContextFilePath: '',\n    i18nUseExternalIds: true,\n  });\n  const res =
compileComponentFromMetadata(\n    metadata, constantPool, makeBindingParser(interpolationConfig));\n  const
jitExpressionSourceMap = `ng:///${facade.name}.js`;\n  return this.jitExpression(\n    res.expression,

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angularCoreEnv, jitExpressionSourceMap, constantPool.statements);\n }\n\n compileFactory(\n
angularCoreEnv: CoreEnvironment, sourceMapUrl: string, meta: R3FactoryDefMetadataFacade) {\n  const
factoryRes = compileFactoryFunction({\n    name: meta.name,\n    type: wrapReference(meta.type),\n
internalType: new WrappedNodeExpr(meta.type),\n    typeArgumentCount: meta.typeArgumentCount,\n  deps:
convertR3DependencyMetadataArray(meta.deps),\n    injectFn: meta.injectFn === 'directiveInject' ?
Identifiers.directiveInject :\n                                Identifiers.inject,\n    target: meta.target,\n  });\n
return this.jitExpression(\n    factoryRes.factory, angularCoreEnv, sourceMapUrl, factoryRes.statements);\n }\n\n
createParseSourceSpan(kind: string, typeName: string, sourceUrl: string): ParseSourceSpan {\n  return
r3JitTypeSourceSpan(kind, typeName, sourceUrl);\n }\n\n /**\n  * JIT compiles an expression and returns the
result of executing that expression.\n  *\n  * @param def the definition which will be compiled and executed to get
the value to patch\n  * @param context an object map of @angular/core symbol names to symbols which will be
available\n  * in the context of the compiled expression\n  * @param sourceUrl a URL to use for the source map of
the compiled expression\n  * @param preStatements a collection of statements that should be evaluated before the
expression.\n  */\n  private jitExpression(\n    def: Expression, context: {[key: string]: any}, sourceUrl: string,\n
preStatements: Statement[]): any {\n    // The ConstantPool may contain Statements which declare variables used in
the final expression.\n    // Therefore, its statements need to precede the actual JIT operation. The final statement is
a\n    // declaration of $def which is set to the expression being compiled.\n    const statements: Statement[] = [\n
...preStatements,\n    new DeclareVarStmt('$def', def, undefined, [StmtModifier.Exported]),\n  ];\n\n  const res =
this.jitEvaluator.evaluateStatements(\n    sourceUrl, statements, new R3JitReflector(context), /*
enableSourceMaps */ true);\n  return res['$def'];\n }\n}\n\n// This seems to be needed to placate TS v3.0
only\ntype R3ComponentMetadataFacadeNoPropAndWhitespace = Pick<\n  R3ComponentMetadataFacade,\n  Exclude<Exclude<keyof R3ComponentMetadataFacade, 'preserveWhitespaces'>, 'propMetadata'>>;\n\nconst
USE_CLASS = Object.keys({useClass: null})[0];\nconst USE_FACTORY = Object.keys({useFactory:
null})[0];\nconst USE_VALUE = Object.keys({useValue: null})[0];\nconst USE_EXISTING =
Object.keys({useExisting: null})[0];\nconst wrapReference = function(value: any): R3Reference {\n  const
wrapped = new WrappedNodeExpr(value);\n  return {value: wrapped, type: wrapped};\n};\n\nfunction
convertToR3QueryMetadata(facade: R3QueryMetadataFacade): R3QueryMetadata {\n  return {\n    ...facade,\n
predicate: Array.isArray(facade.predicate) ? facade.predicate :\n                                new
WrappedNodeExpr(facade.predicate),\n    read: facade.read ? new WrappedNodeExpr(facade.read) : null,\n    static:
facade.static\n  };\n}\n\nfunction convertDirectiveFacadeToMetadata(facade: R3DirectiveMetadataFacade):
R3DirectiveMetadata {\n  const inputsFromMetadata = parseInputOutputs(facade.inputs || []);\n  const
outputsFromMetadata = parseInputOutputs(facade.outputs || []);\n  const propMetadata = facade.propMetadata;\n
const inputsFromType: StringMapWithRename = {};\n  const outputsFromType: StringMap = {};\n  for (const field
in propMetadata) {\n    if (propMetadata.hasOwnProperty(field)) {\n      propMetadata[field].forEach(ann => {\n
if (isInput(ann)) {\n        inputsFromType[field] =\n          ann.bindingPropertyName ?
[ann.bindingPropertyName, field] : field;\n      } else if (isOutput(ann)) {\n        outputsFromType[field] =
ann.bindingPropertyName || field;\n      }\n    }\n  }\n}\n  return {\n    ...facade as
R3DirectiveMetadataFacadeNoPropAndWhitespace,\n    typeSourceSpan: facade.typeSourceSpan,\n    type:
wrapReference(facade.type),\n    internalType: new WrappedNodeExpr(facade.type),\n    deps:
convertR3DependencyMetadataArray(facade.deps),\n    host: extractHostBindings(facade.propMetadata,
facade.typeSourceSpan, facade.host),\n    inputs: {...inputsFromMetadata, ...inputsFromType},\n    outputs:
{...outputsFromMetadata, ...outputsFromType},\n    queries: facade.queries.map(convertToR3QueryMetadata),\n
providers: facade.providers != null ? new WrappedNodeExpr(facade.providers) : null,\n    viewQueries:
facade.viewQueries.map(convertToR3QueryMetadata),\n    fullInheritance: false,\n  };\n}\n\n// This seems to be
needed to placate TS v3.0 only\ntype R3DirectiveMetadataFacadeNoPropAndWhitespace =\nPick<R3DirectiveMetadataFacade, Exclude<keyof R3DirectiveMetadataFacade, 'propMetadata'>>;\n\nfunction
wrapExpression(obj: any, property: string): WrappedNodeExpr<any>|undefined {\n  if
(obj.hasOwnProperty(property)) {\n    return new WrappedNodeExpr(obj[property]);\n  } else {\n    return

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undefined;\n };\n\nfunction computeProvidedIn(providedIn: Type|string|null|undefined): Expression {\n  if
(providedIn == null || typeof providedIn === 'string') {\n    return new LiteralExpr(providedIn);\n  } else {\n    return
new WrappedNodeExpr(providedIn);\n  };\n}\n\nfunction convertR3DependencyMetadata(facade:
R3DependencyMetadataFacade): R3DependencyMetadata {\n  let tokenExpr;\n  if (facade.token === null) {\n
tokenExpr = new LiteralExpr(null);\n  } else if (facade.resolved === R3ResolvedDependencyType.Attribute) {\n
tokenExpr = new LiteralExpr(facade.token);\n  } else {\n    tokenExpr = new WrappedNodeExpr(facade.token);\n
}\n  return {\n    token: tokenExpr,\n    attribute: null,\n    resolved: facade.resolved,\n    host: facade.host,\n
optional: facade.optional,\n    self: facade.self,\n    skipSelf: facade.skipSelf,\n  };\n}\n\nfunction
convertR3DependencyMetadataArray(facades: R3DependencyMetadataFacade[]|null|\n
undefined): R3DependencyMetadata[]|null {\n  return facades == null ? null :
facades.map(convertR3DependencyMetadata);\n}\n\nfunction extractHostBindings(\n  propMetadata: {[key:
string]: any[]}, sourceSpan: ParseSourceSpan,\n  host?: {[key: string]: string}): ParsedHostBindings {\n  // First
parse the declarations from the metadata.\n  const bindings = parseHostBindings(host || {});\n  // After that check
host bindings for errors\n  const errors = verifyHostBindings(bindings, sourceSpan);\n  if (errors.length) {\n    throw
new Error(errors.map((error: ParseError) => error.msg).join('\n'));\n  }\n  // Next, loop over the properties of the
object, looking for @HostBinding and @HostListener.\n  for (const field in propMetadata) {\n    if
(propMetadata.hasOwnProperty(field)) {\n      propMetadata[field].forEach(ann => {\n        if (isHostBinding(ann))
{\n          bindings.properties[ann.hostPropertyName || field] = field;\n        } else if (isHostListener(ann)) {\n
bindings.listeners[ann.eventName || field] = `${field}(${ann.args || []}.join(','));\n          }\n        });\n      }\n    }\n  }\n  return bindings;\n}\n\nfunction isHostBinding(value: any): value is HostBinding {\n  return value.ngMetadataName
=== 'HostBinding';\n}\n\nfunction isHostListener(value: any): value is HostListener {\n  return
value.ngMetadataName === 'HostListener';\n}\n\nfunction isInput(value: any): value is Input {\n  return
value.ngMetadataName === 'Input';\n}\n\nfunction isOutput(value: any): value is Output {\n  return
value.ngMetadataName === 'Output';\n}\n\nfunction parseInputOutputs(values: string[]): StringMap {\n  return
values.reduce((map, value) => {\n    const [field, property] = value.split(',').map(piece => piece.trim());\n
map[field] = property || field;\n    return map;\n  }, {}) as StringMap);\n}\n\nexport function publishFacade(global:
any) {\n  const ng: ExportedCompilerFacade = global.ng || (global.ng = {});\n  ng.compilerFacade = new
CompilerFacadeImpl();\n}\n\n"/**\n * @license\n * Copyright Google LLC All Rights Reserved.\n * Use of this
source code is governed by an MIT-style license that can be\n * found in the LICENSE file at
https://angular.io/license\n * ^\n\n/**\n * @module\n * @description\n * Entry point for all public APIs of the
common package.\n * ^\n\nimport { Version } from './util';\n\nexport const VERSION = new
Version('11.0.2');\n"/**\n * @license\n * Copyright Google LLC All Rights Reserved.\n * Use of this source
code is governed by an MIT-style license that can be\n * found in the LICENSE file at https://angular.io/license\n * ^\n\nimport { MissingTranslationStrategy, ViewEncapsulation } from './core';\nimport { noUndefined } from
 './util';\n\nexport class CompilerConfig {\n  public defaultEncapsulation: ViewEncapsulation|null;\n  public useJit:
boolean;\n  public jitDevMode: boolean;\n  public missingTranslation: MissingTranslationStrategy|null;\n  public
preserveWhitespaces: boolean;\n  public strictInjectionParameters: boolean;\n\n  constructor({\n    defaultEncapsulation = ViewEncapsulation.Emulated,\n    useJit = true,\n    jitDevMode = false,\n    missingTranslation = null,\n    preserveWhitespaces,\n    strictInjectionParameters\n  }): {\n    defaultEncapsulation?:
ViewEncapsulation,\n    useJit?: boolean,\n    jitDevMode?: boolean,\n    missingTranslation?:
MissingTranslationStrategy|null,\n    preserveWhitespaces?: boolean,\n    strictInjectionParameters?: boolean,\n  } =
{}} {\n    this.defaultEncapsulation = defaultEncapsulation;\n    this.useJit = !!useJit;\n    this.jitDevMode =
!!jitDevMode;\n    this.missingTranslation = missingTranslation;\n    this.preserveWhitespaces =
preserveWhitespacesDefault(noUndefined(preserveWhitespaces));\n    this.strictInjectionParameters =
strictInjectionParameters === true;\n  };\n}\n\nexport function preserveWhitespacesDefault(\n
preserveWhitespacesOption: boolean|null, defaultSetting = false): boolean {\n  return preserveWhitespacesOption
=== null ? defaultSetting : preserveWhitespacesOption;\n}\n\n"/**\n * @license\n * Copyright Google LLC All
Rights Reserved.\n * Use of this source code is governed by an MIT-style license that can be\n * found in the

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LICENSE file at https://angular.io/license\n *\n\nimport { CompileDirectiveMetadata, CompileStylesheetMetadata,
CompileTemplateMetadata, templateSourceUrl } from './compile_metadata';\nimport { CompilerConfig,
preserveWhitespacesDefault } from './config';\nimport { ViewEncapsulation } from './core';\nimport * as html from
 './ml_parser/ast';\nimport { HtmlParser } from './ml_parser/html_parser';\nimport { InterpolationConfig } from
 './ml_parser/interpolation_config';\nimport { ParseTreeResult as HtmlParseTreeResult } from
 './ml_parser/parser';\nimport { ResourceLoader } from './resource_loader';\nimport { extractStyleUrls,
isStyleUrlResolvable } from './style_url_resolver';\nimport { PreparedElementType, prepareElement } from
 './template_parser/template_preparser';\nimport { UrlResolver } from './url_resolver';\nimport { isDefined, stringify,
SyncAsync, syntaxError } from './util';\n\nexport interface PrenormalizedTemplateMetadata {\n  ngModuleType:
any;\n  componentType: any;\n  moduleUrl: string;\n  template: string|null;\n  templateUrl: string|null;\n  styles:
string[];\n  styleUrls: string[];\n  interpolation: [string, string]|null;\n  encapsulation: ViewEncapsulation|null;\n
  animations: any[];\n  preserveWhitespaces: boolean|null;\n}\n\nexport class DirectiveNormalizer {\n  private
_resourceLoaderCache = new Map<string, SyncAsync<string>>();\n\n  constructor(\n    private _resourceLoader:
ResourceLoader, private _urlResolver: UrlResolver,\n    private _htmlParser: HtmlParser, private _config:
CompilerConfig) {}\n\n  clearCache(): void {\n    this._resourceLoaderCache.clear();\n  }\n\n  clearCacheFor(normalizedDirective: CompileDirectiveMetadata): void {\n    if (!normalizedDirective.isComponent)\n    {\n      return;\n    }\n    const template = normalizedDirective.template !;\n    this._resourceLoaderCache.delete(template.templateUrl!);\n    template.externalStylesheets.forEach((stylesheet) =>\n    {\n      this._resourceLoaderCache.delete(stylesheet.moduleUrl!);\n    });\n  }\n\n  private _fetch(url: string):
SyncAsync<string> {\n    let result = this._resourceLoaderCache.get(url);\n    if (!result) {\n      result =
this._resourceLoader.get(url);\n      this._resourceLoaderCache.set(url, result);\n    }\n    return result;\n  }\n\n  normalizeTemplate(prenormData: PrenormalizedTemplateMetadata):\n  SyncAsync<CompileTemplateMetadata>\n  {\n    if (isDefined(prenormData.template)) {\n      if (isDefined(prenormData.templateUrl)) {\n        throw
syntaxError(`${\n          stringify(prenormData.\n            componentType)}' component cannot define both
template and templateUrl`);\n      }\n      if (typeof prenormData.template !== 'string') {\n        throw
syntaxError(`The template specified for component ${\n          stringify(prenormData.componentType)} is not a
string`);\n      }\n    } else if (isDefined(prenormData.templateUrl)) {\n      if (typeof prenormData.templateUrl !==
'string') {\n        throw syntaxError(`The templateUrl specified for component ${\n          stringify(prenormData.componentType)} is not a string`);\n      }\n    } else {\n      throw syntaxError(`\n      `No
template specified for component ${stringify(prenormData.componentType)}`);\n    }\n\n    if
(isDefined(prenormData.preserveWhitespaces) &&\n      typeof prenormData.preserveWhitespaces !== 'boolean')\n    {\n      throw syntaxError(`The preserveWhitespaces option for component ${\n          stringify(prenormData.componentType)} must be a boolean`);\n    }\n\n    return SyncAsync.then(\n      this._preParseTemplate(prenormData),\n      (preparedTemplate) =>\n      this._normalizeTemplateMetadata(prenormData, preparedTemplate);\n    );\n  }\n\n  private
_preParseTemplate(prenormData: PrenormalizedTemplateMetadata):\n  SyncAsync<PreparedTemplate> {\n    let
template: SyncAsync<string>;\n    let templateUrl: string;\n    if (prenormData.template != null) {\n      template =
prenormData.template;\n      templateUrl = prenormData.moduleUrl;\n    } else {\n      templateUrl =
this._urlResolver.resolve(prenormData.moduleUrl, prenormData.templateUrl!);\n      template =
this._fetch(templateUrl);\n    }\n    return SyncAsync.then(\n      template, (template) =>\n      this._preparseLoadedTemplate(prenormData, template, templateUrl);\n    );\n  }\n\n  private _preparseLoadedTemplate(\n    prenormData: PrenormalizedTemplateMetadata, template: string,\n    templateAbsUrl: string):
PreparedTemplate {\n    const isInline = !!prenormData.template;\n    const interpolationConfig =
InterpolationConfig.fromArray(prenormData.interpolation!);\n    const templateUrl = templateSourceUrl(\n      {reference: prenormData.ngModuleType}, {type: {reference: prenormData.componentType}},\n      {isInline,
templateUrl: templateAbsUrl});\n    const rootNodesAndErrors = this._htmlParser.parse(\n      template,
templateUrl, {tokenizeExpansionForms: true, interpolationConfig});\n    if (rootNodesAndErrors.errors.length > 0)\n    {\n      const errorString = rootNodesAndErrors.errors.join("\\n");\n      throw syntaxError(`Template parse

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errors: \n${errorString}`); \n } \n \n const templateMetadataStyles = this._normalizeStylesheet(new
CompileStylesheetMetadata(\n {styles: prenormData.styles, moduleUrl: prenormData.moduleUrl}); \n \n const
visitor = new TemplatePreparseVisitor(); \n html.visitAll(visitor, rootNodesAndErrors.rootNodes); \n const
templateStyles = this._normalizeStylesheet(new CompileStylesheetMetadata(\n {styles: visitor.styles, styleUrls:
visitor.styleUrls, moduleUrl: templateAbsUrl}); \n \n const styles =
templateMetadataStyles.styles.concat(templateStyles.styles); \n \n const inlineStyleUrls =
templateMetadataStyles.styleUrls.concat(templateStyles.styleUrls); \n \n const styleUrls = this \n
._normalizeStylesheet(new CompileStylesheetMetadata(\n {styleUrls: prenormData.styleUrls,
moduleUrl: prenormData.moduleUrl})) \n .styleUrls; \n return {\n template, \n templateUrl:
templateAbsUrl, \n isInline, \n htmlAst: rootNodesAndErrors, \n styles, \n inlineStyleUrls, \n
styleUrls, \n ngContentSelectors: visitor.ngContentSelectors, \n }; \n } \n \n private
_normalizeTemplateMetadata(\n prenormData: PrenormalizedTemplateMetadata, \n preparedTemplate:
PreparedTemplate): SyncAsync<CompileTemplateMetadata> {\n return SyncAsync.then(\n
this._loadMissingExternalStylesheets(\n
preparedTemplate.styleUrls.concat(preparedTemplate.inlineStyleUrls), \n (externalStylesheets) =>
this._normalizeLoadedTemplateMetadata(\n prenormData, preparedTemplate, externalStylesheets)); \n } \n \n
private _normalizeLoadedTemplateMetadata(\n prenormData: PrenormalizedTemplateMetadata,
preparedTemplate: PreparedTemplate, \n stylesheets: Map<string, CompileStylesheetMetadata>):
CompileTemplateMetadata {\n // Algorithm: \n // - produce exactly 1 entry per original styleUrl in \n //
CompileTemplateMetadata.externalStylesheets with all styles inlined \n // - inline all styles that are referenced by
the template into CompileTemplateMetadata.styles. \n // Reason: be able to determine how many stylesheets there
are even without loading \n // the template nor the stylesheets, so we can create a stub for TypeScript always
synchronously \n // (as resource loading may be async) \n \n const styles = [...preparedTemplate.styles]; \n
this._inlineStyles(preparedTemplate.inlineStyleUrls, stylesheets, styles); \n const styleUrls =
preparedTemplate.styleUrls; \n \n const externalStylesheets = styleUrls.map(styleUrl => {\n const stylesheet =
stylesheets.get(styleUrl)!; \n const styles = [...stylesheet.styles]; \n this._inlineStyles(stylesheet.styleUrls,
stylesheet.styles); \n return new CompileStylesheetMetadata({moduleUrl: styleUrl, styles: styles}); \n }); \n \n
let encapsulation = prenormData.encapsulation; \n if (encapsulation == null) {\n encapsulation =
this._config.defaultEncapsulation; \n } \n if (encapsulation === ViewEncapsulation.Emulated && styles.length
=== 0 && \n styleUrls.length === 0) {\n encapsulation = ViewEncapsulation.None; \n } \n return new
CompileTemplateMetadata({\n encapsulation, \n template: preparedTemplate.template, \n templateUrl:
preparedTemplate.templateUrl, \n htmlAst: preparedTemplate.htmlAst, \n styles, \n styleUrls, \n
ngContentSelectors: preparedTemplate.ngContentSelectors, \n animations: prenormData.animations, \n
interpolation: prenormData.interpolation, \n isInline: preparedTemplate.isInline, \n externalStylesheets, \n
preserveWhitespaces: preserveWhitespacesDefault(\n prenormData.preserveWhitespaces,
this._config.preserveWhitespaces), \n }); \n } \n \n private _inlineStyles(\n styleUrls: string[], stylesheets:
Map<string, CompileStylesheetMetadata>, \n targetStyles: string[]) {\n styleUrls.forEach(styleUrl => {\n
const stylesheet = stylesheets.get(styleUrl)!; \n stylesheet.styles.forEach(style => targetStyles.push(style)); \n
this._inlineStyles(stylesheet.styleUrls, stylesheets, targetStyles); \n }); \n } \n \n private
_loadMissingExternalStylesheets(\n styleUrls: string[], \n loadedStylesheets: \n Map<string,
CompileStylesheetMetadata> = new Map<string, CompileStylesheetMetadata>(): \n SyncAsync<Map<string,
CompileStylesheetMetadata>> {\n return SyncAsync.then(\n SyncAsync.all(styleUrls.filter((styleUrl) =>
!loadedStylesheets.has(styleUrl)) \n .map(\n styleUrl => SyncAsync.then(\n
this._fetch(styleUrl), \n (loadedStyle) => {\n const stylesheet
= \n this._normalizeStylesheet(new CompileStylesheetMetadata(\n
{styles: [loadedStyle], moduleUrl: styleUrl}); \n loadedStylesheets.set(styleUrl, stylesheet); \n
return this._loadMissingExternalStylesheets(\n styleUrls, \n
loadedStylesheets); \n } \n \n private

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_normalizeStylesheet(stylesheet: CompileStylesheetMetadata): CompileStylesheetMetadata {\n  const moduleUrl
= stylesheet.moduleUrl!;\n  const allStyleUrls = stylesheet.styleUrls.filter(isStyleUrlResolvable)\n
.map(url => this._urlResolver.resolve(moduleUrl, url));\n\n  const allStyles = stylesheet.styles.map(style => {\n
const styleWithImports = extractStyleUrls(this._urlResolver, moduleUrl, style);\n
allStyleUrls.push(...styleWithImports.styleUrls);\n  return styleWithImports.style;\n  });\n\n  return new
CompileStylesheetMetadata(\n    styles: allStyles, styleUrls: allStyleUrls, moduleUrl: moduleUrl);\n
}\n\ninterface PreparedTemplate {\n  template: string;\n  templateUrl: string;\n  isInline: boolean;\n  htmlAst:
HtmlParseTreeResult;\n  styles: string[];\n  inlineStyleUrls: string[];\n  styleUrls: string[];\n  ngContentSelectors:
string[];\n}\n\nclass TemplatePreparseVisitor implements html.Visitor {\n  ngContentSelectors: string[] = [];\n
styles: string[] = [];\n  styleUrls: string[] = [];\n  ngNonBindableStackCount: number = 0;\n\n  visitElement(ast:
html.Element, context: any): any {\n    const preparedElement = preparseElement(ast);\n    switch
(preparedElement.type) {\n      case PreparedElementType.NG_CONTENT:\n        if
(this.ngNonBindableStackCount === 0) {\n          this.ngContentSelectors.push(preparedElement.selectAttr);\n
}\n        break;\n      case PreparedElementType.STYLE:\n        let textContent = "";\n        ast.children.forEach(child
=> {\n          if (child instanceof html.Text) {\n            textContent += child.value;\n          });\n
this.styles.push(textContent);\n        break;\n      case PreparedElementType.STYLESHEET:\n
this.styleUrls.push(preparedElement.hrefAttr);\n        break;\n      default:\n        break;\n    }\n    if
(preparedElement.nonBindable) {\n      this.ngNonBindableStackCount++;\n    }\n    html.visitAll(this,
ast.children);\n    if (preparedElement.nonBindable) {\n      this.ngNonBindableStackCount--;\n    }\n    return
null;\n  }\n\n  visitExpansion(ast: html.Expansion, context: any): any {\n    html.visitAll(this, ast.cases);\n  }\n\n
visitExpansionCase(ast: html.ExpansionCase, context: any): any {\n    html.visitAll(this, ast.expression);\n  }\n\n
visitComment(ast: html.Comment, context: any): any {\n    return null;\n  }\n\n  visitAttribute(ast: html.Attribute,
context: any): any {\n    return null;\n  }\n\n  visitText(ast: html.Text, context: any): any {\n    return null;\n
}\n}\n\n"/**\n * @license\n * Copyright Google LLC All Rights Reserved.\n * Use of this source code is
governed by an MIT-style license that can be\n * found in the LICENSE file at https://angular.io/license\n
*/\n\nimport {CompileReflector} from './compile_reflector';\nimport {Component, createComponent,
createContentChild, createContentChildren, createDirective, createHostBinding, createHostListener, createInput,
createOutput, createViewChild, createViewChildren, Directive, Type} from './core';\nimport {resolveForwardRef,
splitAtColon, stringify} from './util';\n\nconst QUERY_METADATA_IDENTIFIERS = [\n  createViewChild,\n
createViewChildren,\n  createContentChild,\n  createContentChildren,\n];\n\n/*\n * Resolve a `Type` for {@link
Directive}.\n * This interface can be overridden by the application developer to create custom behavior.\n *\n *
See {@link Compiler}\n */\nexport class DirectiveResolver {\n  constructor(private _reflector: CompileReflector)
{\n\n  isDirective(type: Type) {\n    const typeMetadata = this._reflector.annotations(resolveForwardRef(type));\n
return typeMetadata && typeMetadata.some(isDirectiveMetadata);\n  }\n\n  /**\n   * Return {@link Directive} for
a given `Type`.\n   *\n   resolve(type: Type): Directive;\n   resolve(type: Type, throwIfNotFound: true): Directive;\n
resolve(type: Type, throwIfNotFound: boolean): Directive|null;\n   resolve(type: Type, throwIfNotFound = true):
Directive|null {\n    const typeMetadata = this._reflector.annotations(resolveForwardRef(type));\n    if
(typeMetadata) {\n      const metadata = findLast(typeMetadata, isDirectiveMetadata);\n      if (metadata) {\n
const propertyMetadata = this._reflector.propMetadata(type);\n      const guards = this._reflector.guards(type);\n
return this._mergeWithPropertyMetadata(metadata, propertyMetadata, guards, type);\n    }\n  }\n\n  if
(throwIfNotFound) {\n    throw new Error(`No Directive annotation found on ${stringify(type)}`);\n  }\n\n
return null;\n  }\n\n  private _mergeWithPropertyMetadata(\n    dm: Directive, propertyMetadata: {[key: string]:
any[]}, guards: {[key: string]: any},\n    directiveType: Type): Directive {\n    const inputs: string[] = [];\n    const
outputs: string[] = [];\n    const host: {[key: string]: string} = {};\n    const queries: {[key: string]: any} = {};\n
Object.keys(propertyMetadata).forEach((propName: string) => {\n      const input =
findLast(propertyMetadata[propName], (a) => createInput.isTypeOf(a));\n      if (input) {\n        if
(input.bindingPropertyName) {\n          inputs.push(`${propName}: ${input.bindingPropertyName}`);\n        } else
{\n          inputs.push(propName);\n        }\n      }\n      const output = findLast(propertyMetadata[propName], (a) =>

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createOutput.isTypeOf(a));\n    if (output) {\n        if (output.bindingPropertyName) {\n            outputs.push(`${propName}: ${output.bindingPropertyName}`);\n        } else {\n            outputs.push(propName);\n        }\n    }\n    const hostBindings = propertyMetadata[propName].filter(a => createHostBinding.isTypeOf(a));\n    hostBindings.forEach(hostBinding => {\n        if (hostBinding.hostPropertyName) {\n            const startWith =\n            hostBinding.hostPropertyName[0];\n            if (startWith === '(') {\n                throw new Error(`@HostBinding can not\n                bind to events. Use @HostListener instead.`);\n            } else if (startWith === '[') {\n                throw new Error(`\n                @HostBinding parameter should be a property name, 'class.<name>', or 'attr.<name>.`);\n            }\n            host[`${hostBinding.hostPropertyName}`] = propName;\n        } else {\n            host[`${propName}`] =\n            propName;\n        }\n    });\n    const hostListeners = propertyMetadata[propName].filter(a =>\n    createHostListener.isTypeOf(a));\n    hostListeners.forEach(hostListener => {\n        const args = hostListener.args\n        || [];\n        host[`${hostListener.eventName}`] = `${propName}(${args.join(',')}`);\n    });\n    const query =\n    findLast(\n        propertyMetadata[propName], (a) => QUERY_METADATA_IDENTIFIERS.some(i =>\n    i.isTypeOf(a));\n    if (query) {\n        queries[propName] = query;\n    }\n    });\n    return this._merge(dm,\n    inputs, outputs, host, queries, guards, directiveType);\n    }\n\n    private _extractPublicName(def: string) {\n        return\n        splitAtColon(def, [null!, def])[1].trim();\n    }\n\n    private _dedupeBindings(bindings: string[]): string[] {\n        const\n        names = new Set<string>();\n        const publicNames = new Set<string>();\n        const reversedResult: string[] = [];\n        // go last to first to allow later entries to overwrite previous entries\n        for (let i = bindings.length - 1; i >= 0; i--) {\n            const binding = bindings[i];\n            const name = this._extractPublicName(binding);\n            publicNames.add(name);\n            if (!names.has(name)) {\n                names.add(name);\n                reversedResult.push(binding);\n            }\n        }\n        return\n        reversedResult.reverse();\n    }\n\n    private _merge(\n        directive: Directive, inputs: string[], outputs: string[], host:\n        {[key: string]: string},\n        queries: {[key: string]: any}, guards: {[key: string]: any}, directiveType: Type):\n        Directive {\n        const mergedInputs =\n            this._dedupeBindings(directive.inputs ? directive.inputs.concat(inputs) :\n            inputs);\n        const mergedOutputs =\n            this._dedupeBindings(directive.outputs ? directive.outputs.concat(outputs)\n            : outputs);\n        const mergedHost = directive.host ? [...directive.host, ...host] : host;\n        const mergedQueries =\n            directive.queries ? [...directive.queries, ...queries] : queries;\n        if (createComponent.isTypeOf(directive)) {\n            const comp = directive as Component;\n            return createComponent({\n                selector: comp.selector,\n                inputs:\n                mergedInputs,\n                outputs: mergedOutputs,\n                host: mergedHost,\n                exportAs: comp.exportAs,\n                moduleId: comp.moduleId,\n                queries: mergedQueries,\n                changeDetection: comp.changeDetection,\n                providers: comp.providers,\n                viewProviders: comp.viewProviders,\n                entryComponents:\n                comp.entryComponents,\n                template: comp.template,\n                templateUrl: comp.templateUrl,\n                styles:\n                comp.styles,\n                styleUrls: comp.styleUrls,\n                encapsulation: comp.encapsulation,\n                animations:\n                comp.animations,\n                interpolation: comp.interpolation,\n                preserveWhitespaces:\n                directive.preserveWhitespaces,\n            });\n        } else {\n            return createDirective({\n                selector: directive.selector,\n                inputs: mergedInputs,\n                outputs: mergedOutputs,\n                host: mergedHost,\n                exportAs:\n                directive.exportAs,\n                queries: mergedQueries,\n                providers: directive.providers,\n                guards\n            });\n        }\n    }\n\n    function isDirectiveMetadata(type: any): type is Directive {\n        return createDirective.isTypeOf(type) ||\n        createComponent.isTypeOf(type);\n    }\n\n    export function findLast<T>(arr: T[], condition: (value: T) => boolean):\n    T|null {\n        for (let i = arr.length - 1; i >= 0; i--) {\n            if (condition(arr[i])) {\n                return arr[i];\n            }\n        }\n        return\n        null;\n    }\n\n    /**\n     * @license\n     * Copyright Google LLC All Rights Reserved.\n     * \n     * Use of this source code is\n     governed by an MIT-style license that can be\n     * found in the LICENSE file at https://angular.io/license\n     *\n     *\n     import {ParseError, ParseSourceSpan} from './parse_util';\n     *\n     *\n     An i18n error.\n     *\n     export class\n     I18nError extends ParseError {\n         constructor(span: ParseSourceSpan, msg: string) {\n             super(span, msg);\n         }\n     }\n\n     /**\n     * @license\n     * Copyright Google LLC All Rights Reserved.\n     * \n     * Use of this source code is\n     governed by an MIT-style license that can be\n     * found in the LICENSE file at https://angular.io/license\n     *\n     *\n     import * as html from './ml_parser/ast';\n     import {InterpolationConfig} from\n     './ml_parser/interpolation_config';\n     import {ParseTreeResult} from './ml_parser/parser';\n     import * as i18n from\n     './i18n_ast';\n     import {createI18nMessageFactory, I18nMessageFactory} from './i18n_parser';\n     import {I18nError}\n     from './parse_util';\n     import {TranslationBundle} from './translation_bundle';\n     \n     const _I18N_ATTR = 'i18n';\n     const

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_I18N_ATTR_PREFIX = 'i18n-';\nconst _I18N_COMMENT_PREFIX_REGEX = /^i18n:?.*/;\nconst
MEANING_SEPARATOR = '|';\nconst ID_SEPARATOR = '@@';\nlet i18nCommentsWarned = false;\n\n/**\n *
Extract translatable messages from an html AST\n *^\nexport function extractMessages(\n  nodes: html.Node[],
interpolationConfig: InterpolationConfig, implicitTags: string[],\n  implicitAttrs: {[k: string]: string[]}):
ExtractionResult {\n  const visitor = new _Visitor(implicitTags, implicitAttrs);\n  return visitor.extract(nodes,
interpolationConfig);\n}\n\nexport function mergeTranslations(\n  nodes: html.Node[], translations:
TranslationBundle, interpolationConfig: InterpolationConfig,\n  implicitTags: string[], implicitAttrs: {[k: string]:
string[]}): ParseTreeResult {\n  const visitor = new _Visitor(implicitTags, implicitAttrs);\n  return
visitor.merge(nodes, translations, interpolationConfig);\n}\n\nexport class ExtractionResult {\n  constructor(public
messages: i18n.Message[], public errors: I18nError[]) {}\n}\n\nenum _VisitorMode {\n  Extract,\n  Merge\n}\n\n/**\n * This Visitor is used:\n * 1. to extract all the translatable strings from an html AST (see
`extract()`),\n * 2. to replace the translatable strings with the actual translations (see `merge()`)\n * \n * @internal\n *^\n\nclass _Visitor implements html.Visitor {\n  // TODO(issue/24571): remove '!.\n  private _depth!: number;\n\n  //
<el i18n>...</el>\n  // TODO(issue/24571): remove '!.\n  private _inI18nNode!: boolean;\n  // TODO(issue/24571):
remove '!.\n  private _inImplicitNode!: boolean;\n\n  // <!--i18n-->...<!--/i18n-->\n  // TODO(issue/24571): remove
'!\n  private _inI18nBlock!: boolean;\n  // TODO(issue/24571): remove '!.\n  private _blockMeaningAndDesc!:
string;\n  // TODO(issue/24571): remove '!.\n  private _blockChildren!: html.Node[];\n  // TODO(issue/24571):
remove '!.\n  private _blockStartDepth!: number;\n\n  // <icu message>\n  // TODO(issue/24571): remove '!.\n
private _inIcu!: boolean;\n\n  // set to void 0 when not in a section\n  private _msgCountAtSectionStart:
number|undefined;\n  // TODO(issue/24571): remove '!.\n  private _errors!: I18nError[];\n  // TODO(issue/24571):
remove '!.\n  private _mode!: _VisitorMode;\n\n  // _VisitorMode.Extract only\n  // TODO(issue/24571): remove
'!\n  private _messages!: i18n.Message[];\n\n  // _VisitorMode.Merge only\n  // TODO(issue/24571): remove '!.\n
private _translations!: TranslationBundle;\n  // TODO(issue/24571): remove '!.\n  private _createI18nMessage!:
I18nMessageFactory;\n\n  constructor(private _implicitTags: string[], private _implicitAttrs: {[k: string]: string[]})
{\n}\n\n /**\n * Extracts the messages from the tree\n *^\n  extract(nodes: html.Node[], interpolationConfig:
InterpolationConfig): ExtractionResult {\n  this._init(_VisitorMode.Extract, interpolationConfig);\n\n  nodes.forEach(node => node.visit(this, null));\n\n  if (this._inI18nBlock) {\n
this._reportError(nodes[nodes.length - 1], 'Unclosed block');\n  }\n\n  return new
ExtractionResult(this._messages, this._errors);\n  }\n\n /**\n * Returns a tree where all translatable nodes are
translated\n *^\n  merge(\n    nodes: html.Node[], translations: TranslationBundle,\n    interpolationConfig:
InterpolationConfig): ParseTreeResult {\n  this._init(_VisitorMode.Merge, interpolationConfig);\n\n  this._translations = translations;\n\n  // Construct a single fake root element\n  const wrapper = new
html.Element('wrapper', [], nodes, undefined!, undefined!, undefined);\n\n  const translatedNode =
wrapper.visit(this, null);\n\n  if (this._inI18nBlock) {\n  this._reportError(nodes[nodes.length - 1], 'Unclosed
block');\n  }\n\n  return new ParseTreeResult(translatedNode.children, this._errors);\n  }\n\n  visitExpansionCase(icuCase: html.ExpansionCase, context: any): any {\n  // Parse cases for translatable html
attributes\n  const expression = html.visitAll(this, icuCase.expression, context);\n\n  if (this._mode ===
_VisitorMode.Merge) {\n  return new html.ExpansionCase(\n    icuCase.value, expression,
icuCase.sourceSpan, icuCase.valueSourceSpan,\n    icuCase.expSourceSpan);\n  }\n  }\n\n  visitExpansion(icu:
html.Expansion, context: any): html.Expansion {\n  this._maybeAddBlockChildren(icu);\n\n  const wasInIcu =
this._inIcu;\n\n  if (!this._inIcu) {\n  // nested ICU messages should not be extracted but top-level translated as a
whole\n  if (this._isInTranslatableSection) {\n  this._addMessage([icu]);\n  }\n  this._inIcu = true;\n
}\n\n  const cases = html.visitAll(this, icu.cases, context);\n\n  if (this._mode === _VisitorMode.Merge) {\n
icu = new html.Expansion(\n    icu.switchValue, icu.type, cases, icu.sourceSpan, icu.switchValueSourceSpan);\n
}\n\n  this._inIcu = wasInIcu;\n\n  return icu;\n  }\n\n  visitComment(comment: html.Comment, context: any):
any {\n  const isOpening = _isOpeningComment(comment);\n\n  if (isOpening && this._isInTranslatableSection)
{\n  this._reportError(comment, 'Could not start a block inside a translatable section');\n  return;\n  }\n\n  const isClosing = _isClosingComment(comment);\n\n  if (isClosing && !this._inI18nBlock) {\n

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this._reportError(comment, 'Trying to close an unopened block');\n    return;\n    }\n\n    if (!this._inI18nNode &&\n    !this._inIcu) {\n    if (!this._inI18nBlock) {\n    if (isOpening) {\n    // deprecated from v5 you should use\n    <ng-container i18n> instead of i18n comments\n    if (!i18nCommentsWarned && <any>console &&\n    <any>console.warn) {\n    i18nCommentsWarned = true;\n    const details = comment.sourceSpan.details\n    ? ` ${comment.sourceSpan.details}` : '';\n    // TODO(ocombe): use a log service once there is a public one\n    available\n    console.warn(`I18n comments are deprecated, use an <ng-container> element instead (${comment\n    sourceSpan.start}${details})`);\n    }\n    this._inI18nBlock = true;\n    this._blockStartDepth\n    = this._depth;\n    this._blockChildren = [];\n    this._blockMeaningAndDesc =\n    comment.value!.replace(_I18N_COMMENT_PREFIX_REGEXP, '').trim();\n    this._openTranslatableSection(comment);\n    }\n    } else {\n    if (isClosing) {\n    if (this._depth ==\n    this._blockStartDepth) {\n    this._closeTranslatableSection(comment, this._blockChildren);\n    this._inI18nBlock = false;\n    const message = this._addMessage(this._blockChildren,\n    this._blockMeaningAndDesc);\n    // merge attributes in sections\n    const nodes =\n    this._translateMessage(comment, message);\n    return html.visitAll(this, nodes);\n    } else {\n    this._reportError(comment, 'I18N blocks should not cross element boundaries');\n    return;\n    }\n    }\n    }\n    }\n\n    visitText(text: html.Text, context: any): html.Text {\n    if (this._isInTranslatableSection) {\n    this._maybeAddBlockChildren(text);\n    }\n    return text;\n    }\n\n    visitElement(el: html.Element, context: any):\n    html.Element|null {\n    this._maybeAddBlockChildren(el);\n    this._depth++;\n    const wasInI18nNode =\n    this._inI18nNode;\n    const wasInImplicitNode = this._inImplicitNode;\n    let childNodes: html.Node[] = [];\n    let\n    translatedChildNodes: html.Node[] = undefined!;\n\n    // Extract:\n    // - top level nodes with the (implicit) `i18n`\n    attribute if not already in a section\n    // - ICU messages\n    const i18nAttr = _getI18nAttr(el);\n    const i18nMeta\n    = i18nAttr ? i18nAttr.value : '';\n    const isImplicit = this._implicitTags.some(tag => el.name === tag) &&\n    !this._inIcu &&\n    !this._isInTranslatableSection;\n    const isTopLevelImplicit = !wasInImplicitNode &&\n    isImplicit;\n    this._inImplicitNode = wasInImplicitNode || isImplicit;\n\n    if (!this._isInTranslatableSection &&\n    !this._inIcu) {\n    if (i18nAttr || isTopLevelImplicit) {\n    this._inI18nNode = true;\n    const message =\n    this._addMessage(el.children, i18nMeta);\n    translatedChildNodes = this._translateMessage(el, message);\n    }\n\n    if (this._mode == _VisitorMode.Extract) {\n    const isTranslatable = i18nAttr || isTopLevelImplicit;\n    if (isTranslatable) this._openTranslatableSection(el);\n    html.visitAll(this, el.children);\n    if (isTranslatable)\n    this._closeTranslatableSection(el, el.children);\n    }\n    } else {\n    if (i18nAttr || isTopLevelImplicit) {\n    this._reportError(\n    el, 'Could not mark an element as translatable inside a translatable section');\n    }\n\n    if (this._mode == _VisitorMode.Extract) {\n    // Descend into child nodes for extraction\n    html.visitAll(this,\n    el.children);\n    }\n    }\n\n    if (this._mode === _VisitorMode.Merge) {\n    const visitNodes =\n    translatedChildNodes || el.children;\n    visitNodes.forEach(child => {\n    const visited = child.visit(this,\n    context);\n    if (visited && !this._isInTranslatableSection) {\n    // Do not add the children from translatable\n    sections (= i18n blocks here)\n    // They will be added later in this loop when the block closes (i.e. on `<!-- /i18n\n    -->`)\n    childNodes = childNodes.concat(visited);\n    }\n    });\n    }\n\n    this._visitAttributesOf(el);\n\n    this._depth--;\n    this._inI18nNode = wasInI18nNode;\n    this._inImplicitNode = wasInImplicitNode;\n\n    if\n    (this._mode === _VisitorMode.Merge) {\n    const translatedAttrs = this._translateAttributes(el);\n    return new\n    html.Element(\n    el.name, translatedAttrs, childNodes, el.sourceSpan, el.startSourceSpan,\n    el.endSourceSpan);\n    }\n\n    return null;\n    }\n\n    visitAttribute(attribute: html.Attribute, context: any): any {\n    throw new Error('unreachable code');\n    }\n\n    private _init(mode: _VisitorMode, interpolationConfig:\n    InterpolationConfig): void {\n    this._mode = mode;\n    this._inI18nBlock = false;\n    this._inI18nNode = false;\n    this._depth = 0;\n    this._inIcu = false;\n    this._msgCountAtSectionStart = undefined;\n    this._errors = [];\n    this._messages = [];\n    this._inImplicitNode = false;\n    this._createI18nMessage =\n    createI18nMessageFactory(interpolationConfig);\n    }\n\n    // looks for translatable attributes\n    private\n    _visitAttributesOf(el: html.Element): void {\n    const explicitAttrNameToValue: {[k: string]: string} = {};\n    const\n    implicitAttrNames: string[] = this._implicitAttrs[el.name] || [];\n\n    el.attrs.filter(attr =>\n    attr.name.startsWith(_I18N_ATTR_PREFIX))\n    .forEach(attr =>

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explicitAttrNameToValue[attr.name.slice(_I18N_ATTR_PREFIX.length)] =\n      attr.value);\n\nel.attrs.forEach(attr => {\n  if (attr.name in explicitAttrNameToValue) {\n    this._addMessage([attr],\n    explicitAttrNameToValue[attr.name]);\n  } else if (implicitAttrNames.some(name => attr.name === name)) {\n    this._addMessage([attr]);\n  }\n});\n\n // add a translatable message\n private _addMessage(ast:\nhtml.Node[], msgMeta?: string): i18n.Message|null {\n  if (ast.length === 0 ||\n    ast.length === 1 && ast[0]\ninstanceof html.Attribute && !(<html.Attribute>ast[0]).value) {\n    // Do not create empty messages\n    return\nnull;\n  }\n\n  const {meaning, description, id} = _parseMessageMeta(msgMeta);\n  const message =\nthis._createI18nMessage(ast, meaning, description, id);\n  this._messages.push(message);\n  return message;\n}\n\n // Translates the given message given the `TranslationBundle`\n // This is used for translating elements /  
blocks - see `_translateAttributes` for attributes\n // no-op when called in extraction mode (returns [])\n private\n_translateMessage(el: html.Node, message: i18n.Message): html.Node[] {\n  if (message && this._mode ===\n_VisitorMode.Merge) {\n    const nodes = this._translations.get(message);\n    if (nodes) {\n      return nodes;\n    }\n\n    this._reportError(\n      el, `Translation unavailable for message\nid=\"${this._translations.digest(message)}\"`);\n  }\n\n  return [];\n}\n\n // translate the attributes of an element\n and remove i18n specific attributes\n private _translateAttributes(el: html.Element): html.Attribute[] {\n  const\nattributes = el.attrs;\n  const i18nParsedMessageMeta:\n    {[name: string]: {meaning: string, description: string,\nid: string}} = {};\n\n  attributes.forEach(attr => {\n    if (attr.name.startsWith(_I18N_ATTR_PREFIX)) {\n      i18nParsedMessageMeta[attr.name.slice(_I18N_ATTR_PREFIX.length)] =\n      _parseMessageMeta(attr.value);\n    }\n  });\n\n  const translatedAttributes: html.Attribute[] = [];\n\n  attributes.forEach((attr) => {\n    if (attr.name === _I18N_ATTR || attr.name.startsWith(_I18N_ATTR_PREFIX))\n{\n      // strip i18n specific attributes\n      return;\n    }\n\n    if (attr.value && attr.value !== "" &&\ni18nParsedMessageMeta.hasOwnProperty(attr.name)) {\n      const {meaning, description, id} =\ni18nParsedMessageMeta[attr.name];\n      const message: i18n.Message = this._createI18nMessage([attr], meaning,\ndescription, id);\n      const nodes = this._translations.get(message);\n      if (nodes) {\n        if (nodes.length ===\n0) {\n          translatedAttributes.push(new html.Attribute(attr.name, "", attr.sourceSpan));\n        } else if (nodes[0]\ninstanceof html.Text) {\n          const value = (nodes[0] as html.Text).value;\n          translatedAttributes.push(new\nhtml.Attribute(attr.name, value, attr.sourceSpan));\n        } else {\n          this._reportError(\n            el,\n            `Unexpected translation for attribute \"${attr.name}\" (id=\"${\n            id ||\nthis._translations.digest(message)}\"`);\n        }\n      } else {\n        this._reportError(\n          el,\n          `Translation unavailable for attribute \"${attr.name}\" (id=\"${\n            id ||\nthis._translations.digest(message)}\"`);\n      }\n    } else {\n      translatedAttributes.push(attr);\n    }\n  });\n\n  return translatedAttributes;\n}\n\n /**\n * Add the node as a child of the block when:\n * - we are in a\nblock,\n * - we are not inside a ICU message (those are handled separately),\n * - the node is a "direct child" of\nthe block\n */\n private _maybeAddBlockChildren(node: html.Node): void {\n  if (this._inI18nBlock &&\n!this._inIcu && this._depth === this._blockStartDepth) {\n    this._blockChildren.push(node);\n  }\n}\n\n /**\n * Marks the start of a section, see `_closeTranslatableSection`\n */\n private _openTranslatableSection(node:\nhtml.Node): void {\n  if (this._isInTranslatableSection) {\n    this._reportError(node, 'Unexpected section start');\n  }\n  else {\n    this._msgCountAtSectionStart = this._messages.length;\n  }\n}\n\n /**\n * A translatable section\ncould be:\n * - the content of translatable element,\n * - nodes between `<!-- i18n -->` and `<!-- /i18n -->`\ncomments\n */\n private get _isInTranslatableSection(): boolean {\n  return this._msgCountAtSectionStart !==\nvoid 0;\n}\n\n /**\n * Terminates a section.\n */\n * If a section has only one significant children (comments\nnot significant) then we should not\n * keep the message from this children.\n */\n * `<p\ni18n=\"meaning|description\">{ICU message}</p>` would produce two messages:\n * - one for the <p> content\nwith meaning and description,\n * - another one for the ICU message.\n */\n * In this case the last message is\ndiscarded as it contains less information (the AST is\n * otherwise identical).\n */\n * Note that we should still\nkeep messages extracted from attributes inside the section (ie in the\n * ICU message here)\n */\n private\n_closeTranslatableSection(node: html.Node, directChildren: html.Node[]): void {\n  if\n(!this._isInTranslatableSection) {\n    this._reportError(node, 'Unexpected section end');\n    return;\n  }\n}\n
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{\n  msgIdToHtml: this._msgIdToHtml,\n  errors: this._errors,\n  locale: this._locale,\n  };\n }\n\n visitElement(element: ml.Element, context: any): any {\n  switch (element.name) {\n    case _UNIT_TAG:\n      this._unitMlString = null!;\n      const idAttr = element.attrs.find((attr) => attr.name === 'id');\n      if (!idAttr) {\n        this._addError(element, `<${_UNIT_TAG}> misses the \"id\" attribute`);\n      } else {\n        const id = idAttr.value;\n        if (this._msgIdToHtml.hasOwnProperty(id)) {\n          this._addError(element, `Duplicated translations for msg ${id}`);\n        } else {\n          ml.visitAll(this, element.children, null);\n          if (typeof this._unitMlString === 'string') {\n            this._msgIdToHtml[id] = this._unitMlString;\n          } else {\n            this._addError(element, `Message ${id} misses a translation`);\n          }\n        }\n      }\n      break;\n\n    // ignore those tags\n    case _SOURCE_TAG:\n    case _SEGMENT_SOURCE_TAG:\n    case _ALT_TRANS_TAG:\n      break;\n\n    case _TARGET_TAG:\n      const innerTextStart = element.startSourceSpan.end.offset;\n      const innerTextEnd = element.endSourceSpan!.start.offset;\n      const content = element.startSourceSpan.start.file.content;\n      const innerText = content.slice(innerTextStart, innerTextEnd);\n      this._unitMlString = innerText;\n      break;\n\n    case _FILE_TAG:\n      const localeAttr = element.attrs.find((attr) => attr.name === 'target-language');\n      if (localeAttr) {\n        this._locale = localeAttr.value;\n      }\n      ml.visitAll(this, element.children, null);\n      break;\n\n    default:\n      // TODO(vicb): assert file structure, xcliff version\n      // For now only recurse on unhandled nodes\n      ml.visitAll(this, element.children, null);\n  }\n }\n\n visitAttribute(attribute: ml.Attribute, context: any): any {\n }\n\n visitText(text: ml.Text, context: any): any {\n }\n\n visitComment(comment: ml.Comment, context: any): any {\n }\n\n visitExpansion(expansion: ml.Expansion, context: any): any {\n }\n\n visitExpansionCase(expansionCase: ml.ExpansionCase, context: any): any {\n }\n\n private _addError(node: ml.Node, message: string): void {\n  this._errors.push(new I18nError(node.sourceSpan, message));\n }\n\n // Convert ml nodes (xcliff syntax) to i18n nodes\n class XmlToI18n implements ml.Visitor {\n   // TODO(issue/24571): remove '!'.\n   private _errors!: I18nError[];\n\n   convert(message: string, url: string) {\n     const xmlIcu = new XmlParser().parse(message, url, {tokenizeExpansionForms: true});\n     this._errors = xmlIcu.errors;\n     const i18nNodes = this._errors.length > 0 || xmlIcu.rootNodes.length === 0 ? [] : [].concat(...ml.visitAll(this, xmlIcu.rootNodes));\n     return {\n       i18nNodes: i18nNodes,\n       errors: this._errors,\n     };\n   }\n\n   visitText(text: ml.Text, context: any) {\n     return new i18n.Text(text.value, text.sourceSpan);\n   }\n\n   visitElement(el: ml.Element, context: any): i18n.Placeholder|ml.Node[]|null {\n     if (el.name === _PLACEHOLDER_TAG) {\n       const nameAttr = el.attrs.find((attr) => attr.name === 'id');\n       if (nameAttr) {\n         return new i18n.Placeholder("", nameAttr.value, el.sourceSpan);\n       }\n       this._addError(el, `<${_PLACEHOLDER_TAG}> misses the \"id\" attribute`);\n       return null;\n     }\n     if (el.name === _MARKER_TAG) {\n       return [].concat(...ml.visitAll(this, el.children));\n     }\n     this._addError(el, `Unexpected tag`);\n     return null;\n   }\n\n   visitExpansion(icu: ml.Expansion, context: any) {\n     const caseMap: {[value: string]: i18n.Node} = {};\n     ml.visitAll(this, icu.cases).forEach((c: any) => {\n       caseMap[c.value] = new i18n.Container(c.nodes, icu.sourceSpan);\n     });\n     return new i18n.Icu(icu.switchValue, icu.type, caseMap, icu.sourceSpan);\n   }\n\n   visitExpansionCase(icuCase: ml.ExpansionCase, context: any): any {\n     return {\n       value: icuCase.value,\n       nodes: ml.visitAll(this, icuCase.expression),\n     };\n   }\n\n   visitComment(comment: ml.Comment, context: any) {\n }\n\n   visitAttribute(attribute: ml.Attribute, context: any) {\n }\n\n   private _addError(node: ml.Node, message: string): void {\n     this._errors.push(new I18nError(node.sourceSpan, message));\n   }\n }\n\n function getCtypeForTag(tag: string): string {\n  switch (tag.toLowerCase()) {\n    case 'br':\n      return 'lb';\n    case 'img':\n      return 'image';\n    default:\n      return `x-${tag}`;\n  }\n }\n\n /**\n  * @license\n  * Copyright Google LLC All Rights Reserved.\n  * Use of this source code is governed by an MIT-style license that can be\n  * found in the LICENSE file at\n  * https://angular.io/license\n  */\n\n import * as ml from './ml_parser/ast';\n import {XmlParser} from './ml_parser/xml_parser';\n import {decimalDigest} from './digest';\n import * as i18n from './i18n_ast';\n import {I18nError} from './parse_util';\n import {Serializer} from './serializer';\n import * as xml from './xml_helper';\n\n const _VERSION = '2.0';\n const _XMLNS = 'urn:oasis:names:tc:xcliff:document:2.0';\n\n TODO(vicb): make this a param (s/-/-)\n const _DEFAULT_SOURCE_LANG = 'en';\n const _PLACEHOLDER_TAG = 'ph';\n const _PLACEHOLDER_SPANNING_TAG = 'pc';\n const _MARKER_TAG =

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'mrk';\n\nconst _XLIFF_TAG = 'xliff';\nconst _SOURCE_TAG = 'source';\nconst _TARGET_TAG =
'target';\nconst _UNIT_TAG = 'unit';\n\n// http://docs.oasis-open.org/xliff/xliff-core/v2.0/os/xliff-core-v2.0-
os.html\nexport class Xliff2 extends Serializer {\n  write(messages: i18n.Message[], locale: string|null): string {\n
  const visitor = new _WriteVisitor();\n  const units: xml.Node[] = [];\n\n  messages.forEach(message => {\n
  const unit = new xml.Tag(_UNIT_TAG, {id: message.id});\n  const notes = new xml.Tag('notes');\n\n  if
(message.description || message.meaning) {\n    if (message.description) {\n      notes.children.push(\n
new xml.CR(8),\n      new xml.Tag('note', {category: 'description'}, [new xml.Text(message.description)]);\n
    }\n\n    if (message.meaning) {\n      notes.children.push(\n        new xml.CR(8),\n        new
xml.Tag('note', {category: 'meaning'}, [new xml.Text(message.meaning)]);\n      }\n    }\n\n
message.sources.forEach((source: i18n.MessageSpan) => {\n      notes.children.push(new xml.CR(8), new
xml.Tag('note', {category: 'location'}, [\n        new xml.Text(`${source.filePath}:${source.startLine}${\n
source.endLine !== source.startLine ? ',' + source.endLine : ''}`)\n      ]));\n    });\n\n    notes.children.push(new
xml.CR(6));\n    unit.children.push(new xml.CR(6), notes);\n\n    const segment = new xml.Tag('segment');\n\n
segment.children.push(\n      new xml.CR(8), new xml.Tag(_SOURCE_TAG, {\n
visitor.serialize(message.nodes)),\n      new xml.CR(6));\n\n    unit.children.push(new xml.CR(6), segment, new
xml.CR(4));\n\n    units.push(new xml.CR(4), unit);\n  });\n\n  const file =\n    new xml.Tag('file', {'original':
'ng.template', id: 'ngi18n'}, [...units, new xml.CR(2)]);\n\n  const xliff = new xml.Tag(\n    _XLIFF_TAG,
{version: _VERSION, xmlns: _XMLNS, srcLang: locale || _DEFAULT_SOURCE_LANG},\n    [new
xml.CR(2), file, new xml.CR()]);\n\n  return xml.serialize([\n    new xml.Declaration({version: '1.0', encoding:
'UTF-8'}),\n    new xml.CR(),\n    xliff,\n    new xml.CR()\n  ]);\n\n  load(content: string, url: string):\n    {locale: string,
i18nNodesByMsgId: {[msgId: string]: i18n.Node[]}} {\n    // xliff to xml nodes\n    const xliff2Parser = new
Xliff2Parser();\n    const {locale, msgIdToHtml, errors} = xliff2Parser.parse(content, url);\n\n    // xml nodes to i18n
nodes\n    const i18nNodesByMsgId: {[msgId: string]: i18n.Node[]} = {};\n    const converter = new
XmlToI18n();\n\n    Object.keys(msgIdToHtml).forEach(msgId => {\n      const {i18nNodes, errors: e} =
converter.convert(msgIdToHtml[msgId], url);\n      errors.push(...e);\n      i18nNodesByMsgId[msgId] =
i18nNodes;\n    });\n\n    if (errors.length) {\n      throw new Error(`xliff2 parse errors:\n${errors.join("\n")}`);\n
    }\n\n    return {locale: locale!, i18nNodesByMsgId};\n  }\n\n  digest(message: i18n.Message): string {\n    return
decimalDigest(message);\n  }\n}\n\nclass _WriteVisitor implements i18n.Visitor {\n  // TODO(issue/24571):
remove '!\n  private _nextPlaceholderId!: number;\n\n  visitText(text: i18n.Text, context?: any): xml.Node[] {\n
return [new xml.Text(text.value)];\n  }\n\n  visitContainer(container: i18n.Container, context?: any): xml.Node[] {\n
const nodes: xml.Node[] = [];\n  container.children.forEach((node: i18n.Node) =>\n    nodes.push(...node.visit(this));\n  }\n
return nodes;\n  }\n\n  visitIcu(icu: i18n.Icu, context?: any): xml.Node[] {\n
const nodes = [new xml.Text(`${icu.expressionPlaceholder}`, `${icu.type}`, `)];\n
Object.keys(icu.cases).forEach((c: string) => {\n    nodes.push(new xml.Text(`${c} {`, ...icu.cases[c].visit(this),
new xml.Text(`}`));\n  });\n\n  nodes.push(new xml.Text(``));\n  return nodes;\n  }\n\n  visitTagPlaceholder(ph: i18n.TagPlaceholder, context?: any): xml.Node[] {\n
const type =
getTypeForTag(ph.tag);\n  if (ph.isVoid) {\n    const tagPh = new xml.Tag(_PLACEHOLDER_TAG, {\n
id: (this._nextPlaceholderId++).toString(),\n    equiv: ph.startName,\n    type: type,\n    disp:
`<${ph.tag}/>`,\n  });\n  return [tagPh];\n  }\n\n  const tagPc = new
xml.Tag(_PLACEHOLDER_SPANNING_TAG, {\n    id: (this._nextPlaceholderId++).toString(),\n    equivStart:
ph.startName,\n    equivEnd: ph.closeName,\n    type: type,\n    dispStart: `<${ph.tag}>`,\n    dispEnd:
`</${ph.tag}>`,\n  });\n  const nodes: xml.Node[] = [].concat(...ph.children.map(node => node.visit(this)));
if (nodes.length) {\n    nodes.forEach((node: xml.Node) => tagPc.children.push(node));\n  } else {\n
tagPc.children.push(new xml.Text("));\n  }\n\n  return [tagPc];\n  }\n\n  visitPlaceholder(ph: i18n.Placeholder,
context?: any): xml.Node[] {\n    const idStr = (this._nextPlaceholderId++).toString();\n    return [new
xml.Tag(_PLACEHOLDER_TAG, {\n      id: idStr,\n      equiv: ph.name,\n      disp: `{{${ph.value}}`,\n    });\n  }\n
visitIcuPlaceholder(ph: i18n.IcuPlaceholder, context?: any): xml.Node[] {\n    const cases =
Object.keys(ph.value.cases).map((value: string) => value + ' {...}').join(' ');
const idStr =

```

```

(this._nextPlaceholderId++).toString());\n return [new xml.Tag(\n _PLACEHOLDER_TAG,\n {id: idStr,
equiv: ph.name, disp: ` ${ph.value.expression}, ${ph.value.type}, ${cases} `)];\n }\n\n serialize(nodes:
i18n.Node[]): xml.Node[] {\n this._nextPlaceholderId = 0;\n return [].concat(...nodes.map(node =>
node.visit(this)));\n }\n}\n\n// Extract messages as xml nodes from the xliiff file\n\nclass Xliff2Parser implements
ml.Visitor {\n // TODO(issue/24571): remove '!.\n private _unitMlString!: string|null;\n // TODO(issue/24571):
remove '!.\n private _errors!: I18nError[];\n // TODO(issue/24571): remove '!.\n private _msgIdToHtml!:
{[msgId: string]: string};\n private _locale: string|null = null;\n\n parse(xliff: string, url: string) {\n
this._unitMlString = null;\n this._msgIdToHtml = {};\n\n const xml = new XmlParser().parse(xliff, url);\n\n
this._errors = xml.errors;\n ml.visitAll(this, xml.rootNodes, null);\n\n return {\n msgIdToHtml:
this._msgIdToHtml,\n errors: this._errors,\n locale: this._locale,\n };}\n\n visitElement(element:
ml.Element, context: any): any {\n switch (element.name) {\n case _UNIT_TAG:\n this._unitMlString =
null;\n const idAttr = element.attrs.find((attr) => attr.name === 'id');\n if (!idAttr) {\n
this._addError(element, `<${_UNIT_TAG}> misses the \"id\" attribute`);\n } else {\n const id =
idAttr.value;\n if (this._msgIdToHtml.hasOwnProperty(id)) {\n this._addError(element, `Duplicated
translations for msg ${id}`);\n } else {\n ml.visitAll(this, element.children, null);\n if (typeof
this._unitMlString === 'string') {\n this._msgIdToHtml[id] = this._unitMlString;\n } else {\n
this._addError(element, `Message ${id} misses a translation`);\n }\n }\n }\n break;\n\n case
_SOURCE_TAG:\n // ignore source message\n break;\n\n case _TARGET_TAG:\n const
innerTextStart = element.startSourceSpan.end.offset;\n const innerTextEnd =
element.endSourceSpan!.start.offset;\n const content = element.startSourceSpan.start.file.content;\n const
innerText = content.slice(innerTextStart, innerTextEnd);\n this._unitMlString = innerText;\n break;\n\n
case _XLIFF_TAG:\n const localeAttr = element.attrs.find((attr) => attr.name === 'trgLang');\n if
(localeAttr) {\n this._locale = localeAttr.value;\n }\n\n const versionAttr = element.attrs.find((attr) =>
attr.name === 'version');\n if (versionAttr) {\n const version = versionAttr.value;\n if (version !==
'2.0') {\n this._addError(\n element,\n `The XLIFF file version ${version} is not
compatible with XLIFF 2.0 serializer`);\n } else {\n ml.visitAll(this, element.children, null);\n }\n
}\n break;\n default:\n ml.visitAll(this, element.children, null);\n }\n }\n\n visitAttribute(attribute:
ml.Attribute, context: any): any {\n\n visitText(text: ml.Text, context: any): any {\n\n visitComment(comment:
ml.Comment, context: any): any {\n\n visitExpansion(expansion: ml.Expansion, context: any): any {\n\n
visitExpansionCase(expansionCase: ml.ExpansionCase, context: any): any {\n\n private _addError(node:
ml.Node, message: string): void {\n this._errors.push(new I18nError(node.sourceSpan, message));\n }\n}\n\n//
Convert ml nodes (xliiff syntax) to i18n nodes\n\nclass XmlToI18n implements ml.Visitor {\n // TODO(issue/24571):
remove '!.\n private _errors!: I18nError[];\n\n convert(message: string, url: string) {\n const xmlIcu = new
XmlParser().parse(message, url, {tokenizeExpansionForms: true});\n this._errors = xmlIcu.errors;\n\n const
i18nNodes = this._errors.length > 0 || xmlIcu.rootNodes.length === 0 ?\n [] : \n [].concat(...ml.visitAll(this,
xmlIcu.rootNodes));\n\n return {\n i18nNodes,\n errors: this._errors,\n };\n }\n\n visitText(text: ml.Text,
context: any) {\n return new i18n.Text(text.value, text.sourceSpan);\n }\n\n visitElement(el: ml.Element, context:
any): i18n.Node[]|null {\n switch (el.name) {\n case _PLACEHOLDER_TAG:\n const nameAttr =
el.attrs.find((attr) => attr.name === 'equiv');\n if (nameAttr) {\n return [new i18n.Placeholder(",
nameAttr.value, el.sourceSpan)];\n }\n\n this._addError(el, `<${_PLACEHOLDER_TAG}> misses the
\"equiv\" attribute`);\n break;\n case _PLACEHOLDER_SPANNING_TAG:\n const startAttr =
el.attrs.find((attr) => attr.name === 'equivStart');\n const endAttr = el.attrs.find((attr) => attr.name ===
'equivEnd');\n\n if (!startAttr) {\n this._addError(el, `<${_PLACEHOLDER_TAG}> misses the
\"equivStart\" attribute`);\n } else if (!endAttr) {\n this._addError(el, `<${_PLACEHOLDER_TAG}>
misses the \"equivEnd\" attribute`);\n } else {\n const startId = startAttr.value;\n const endId =
endAttr.value;\n\n const nodes: i18n.Node[] = [];\n\n return nodes.concat(\n new
i18n.Placeholder(", startId, el.sourceSpan),\n ...el.children.map(node => node.visit(this, null)),\n
new i18n.Placeholder(", endId, el.sourceSpan));\n }\n break;\n case _MARKER_TAG:\n return

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[].concat(...ml.visitAll(this, el.children));\n  default:\n    this._addError(el, `Unexpected tag`);\n  }\n\n  return\n  null;\n}\n\nvisitExpansion(icu: ml.Expansion, context: any) {\n  const caseMap: {[value: string]: i18n.Node} =\n  {};\n\n  ml.visitAll(this, icu.cases).forEach((c: any) => {\n    caseMap[c.value] = new i18n.Container(c.nodes,\n    icu.sourceSpan);\n  });\n\n  return new i18n.Icu(icu.switchValue, icu.type, caseMap, icu.sourceSpan);\n}\n\nvisitExpansionCase(icuCase: ml.ExpansionCase, context: any): any {\n  return {\n    value: icuCase.value,\n    nodes: [].concat(...ml.visitAll(this, icuCase.expression)),\n  };\n}\n\nvisitComment(comment: ml.Comment,\ncontext: any) {\n}\n\nvisitAttribute(attribute: ml.Attribute, context: any) {\n}\n\nprivate _addError(node: ml.Node,\nmessage: string): void {\n  this._errors.push(new I18nError(node.sourceSpan, message));\n}\n\nfunction\ngetTypeForTag(tag: string): string {\n  switch (tag.toLowerCase()) {\n    case 'br':\n    case 'b':\n    case 'i':\n    case\n    'u':\n    return 'fmt';\n    case 'img':\n    return 'image';\n    case 'a':\n    return 'link';\n    default:\n    return\n    'other';\n  }\n}\n\n"/**\n * @license\n * Copyright Google LLC All Rights Reserved.\n * Use of this source code\n is governed by an MIT-style license that can be\n * found in the LICENSE file at https://angular.io/license\n *\nimport * as ml from './ml_parser/ast';\nimport {XmlParser} from './ml_parser/xml_parser';\nimport * as\ni18n from './i18n_ast';\nimport {I18nError} from './parse_util';\nimport {PlaceholderMapper, Serializer,\nSimplePlaceholderMapper} from './serializer';\nimport {digest, toPublicName} from './xmb';\n\nconst\n_TRANSLATIONS_TAG = 'translationbundle';\nconst _TRANSLATION_TAG = 'translation';\nconst\n_PLACEHOLDER_TAG = 'ph';\n\nexport class Xtb extends Serializer {\n  write(messages: i18n.Message[], locale:\nstring|null): string {\n    throw new Error('Unsupported');\n  }\n\n  load(content: string, url: string):\n    {locale:\nstring, i18nNodesByMsgId: {[msgId: string]: i18n.Node[]}} {\n    // xtb to xml nodes\n    const xtbParser = new\nXtbParser();\n    const {locale, msgIdToHtml, errors} = xtbParser.parse(content, url);\n\n    // xml nodes to i18n\nnodes\n    const i18nNodesByMsgId: {[msgId: string]: i18n.Node[]} = {};\n    const converter = new\nXmlToI18n();\n\n    // Because we should be able to load xtb files that rely on features not supported by angular,\n// we need to delay the conversion of html to i18n nodes so that non angular messages are not\n// converted\nObject.keys(msgIdToHtml).forEach(msgId => {\n    const valueFn = function() {\n    const {i18nNodes, errors}\n= converter.convert(msgIdToHtml[msgId], url);\n    if (errors.length) {\n    throw new Error(`xtb parse\nerrors:\n\n${errors.join('\n')}`);\n    }\n    return i18nNodes;\n    };\n\n    createLazyProperty(i18nNodesByMsgId, msgId, valueFn);\n  });\n\n  if (errors.length) {\n    throw new\nError(`xtb parse errors:\n\n${errors.join('\n')}`);\n  }\n\n  return {locale: locale!, i18nNodesByMsgId};\n}\n\n  digest(message: i18n.Message): string {\n    return digest(message);\n  }\n\n  createNameMapper(message:\ni18n.Message): PlaceholderMapper {\n    return new SimplePlaceholderMapper(message, toPublicName);\n  }\n}\n\nfunction createLazyProperty(messages: any, id: string, valueFn: () => any) {\n\nObject.defineProperty(messages, id, {\n  configurable: true,\n  enumerable: true,\n  get: function() {\n    const\nvalue = valueFn();\n    Object.defineProperty(messages, id, {enumerable: true, value});\n    return value;\n  },\n  set: _ => {\n    throw new Error('Could not overwrite an XTB translation');\n  },\n});\n\n// Extract messages\nas xml nodes from the xtb file\nclass XtbParser implements ml.Visitor {\n  // TODO(issue/24571): remove '!'\nprivate _bundleDepth!: number;\n  // TODO(issue/24571): remove '!'\nprivate _errors!: I18nError[];\n  //\nTODO(issue/24571): remove '!'\nprivate _msgIdToHtml!: {[msgId: string]: string};\nprivate _locale: string|null\n= null;\n\n  parse(xtb: string, url: string) {\n    this._bundleDepth = 0;\n    this._msgIdToHtml = {};\n\n    // We can\nnot parse the ICU messages at this point as some messages might not originate\n// from Angular that could not be\nlex'd.\n    const xml = new XmlParser().parse(xtb, url);\n    this._errors = xml.errors;\n    ml.visitAll(this,\nxml.rootNodes);\n\n    return {\n      msgIdToHtml: this._msgIdToHtml,\n      errors: this._errors,\n      locale:\nthis._locale,\n    };\n  }\n\n  visitElement(element: ml.Element, context: any): any {\n    switch (element.name) {\n      case _TRANSLATIONS_TAG:\n        this._bundleDepth++;\n        if (this._bundleDepth > 1) {\n          this._addError(element, `<${_TRANSLATIONS_TAG}> elements can not be nested`);\n        }\n        const\nlangAttr = element.attrs.find((attr) => attr.name === 'lang');\n        if (langAttr) {\n          this._locale =\nlangAttr.value;\n        }\n        ml.visitAll(this, element.children, null);\n        this._bundleDepth--;\n        break;\n      case _TRANSLATION_TAG:\n        const idAttr = element.attrs.find((attr) => attr.name === 'id');\n        if\n(!idAttr) {\n          this._addError(element, `<${_TRANSLATION_TAG}> misses the \"id\" attribute`);\n        } else

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{\n      const id = idAttr.value;\n      if (this._msgIdToHtml.hasOwnProperty(id)) {\n
this._addError(element, `Duplicated translations for msg ${id}`);\n      } else {\n      const innerTextStart =
element.startSourceSpan.end.offset;\n      const innerTextEnd = element.endSourceSpan!.start.offset;\n
const content = element.startSourceSpan.start.file.content;\n      const innerText = content.slice(innerTextStart!,
innerTextEnd!);\n      this._msgIdToHtml[id] = innerText;\n      }\n      }\n      break;\n      default:\n
this._addError(element, 'Unexpected tag');\n      }\n      }\n      visitAttribute(attribute: ml.Attribute, context: any): any
{\n      }\n      visitText(text: ml.Text, context: any): any {\n      }\n      visitComment(comment: ml.Comment, context: any): any
{\n      }\n      visitExpansion(expansion: ml.Expansion, context: any): any {\n      }\n      visitExpansionCase(expansionCase:
ml.ExpansionCase, context: any): any {\n      }\n      private _addError(node: ml.Node, message: string): void {\n
this._errors.push(new I18nError(node.sourceSpan, message));\n      }\n      }\n      // Convert ml nodes (xtb syntax) to i18n
nodes\n      class XmlToI18n implements ml.Visitor {\n      // TODO(issue/24571): remove '!.\n      private _errors!:
I18nError[];\n      convert(message: string, url: string) {\n      const xmlIcu = new XmlParser().parse(message, url,
{tokenizeExpansionForms: true});\n      this._errors = xmlIcu.errors;\n      const i18nNodes = this._errors.length > 0 ||
xmlIcu.rootNodes.length == 0 ?\n      [] : \n      ml.visitAll(this, xmlIcu.rootNodes);\n      return {\n
i18nNodes,\n      errors: this._errors,\n      };\n      }\n      visitText(text: ml.Text, context: any) {\n      return new
i18n.Text(text.value, text.sourceSpan);\n      }\n      visitExpansion(icu: ml.Expansion, context: any) {\n      const
caseMap: {[value: string]: i18n.Node} = {};\n      ml.visitAll(this, icu.cases).forEach(c => {\n      caseMap[c.value]
= new i18n.Container(c.nodes, icu.sourceSpan);\n      });\n      return new i18n.Icu(icu.switchValue, icu.type,
caseMap, icu.sourceSpan);\n      }\n      visitExpansionCase(icuCase: ml.ExpansionCase, context: any): any {\n      return
{\n      value: icuCase.value,\n      nodes: ml.visitAll(this, icuCase.expression),\n      };\n      }\n      visitElement(el:
ml.Element, context: any): i18n.Placeholder|null {\n      if (el.name === _PLACEHOLDER_TAG) {\n      const
nameAttr = el.attrs.find((attr) => attr.name === 'name');\n      if (nameAttr) {\n      return new i18n.Placeholder(",
nameAttr.value, el.sourceSpan);\n      }\n      this._addError(el, `<${_PLACEHOLDER_TAG}> misses the
\"name\" attribute`);\n      } else {\n      this._addError(el, `Unexpected tag`);\n      }\n      return null;\n      }\n      }\n
visitComment(comment: ml.Comment, context: any) {\n      }\n      visitAttribute(attribute: ml.Attribute, context: any)
{\n      }\n      private _addError(node: ml.Node, message: string): void {\n      this._errors.push(new
I18nError(node.sourceSpan, message));\n      }\n      }\n      "/**\n      * @license\n      * Copyright Google LLC All Rights
Reserved.\n      *\n      * Use of this source code is governed by an MIT-style license that can be\n      * found in the
LICENSE file at https://angular.io/license\n      */\n      import {MissingTranslationStrategy} from './core';\n      import * as
html from './ml_parser/ast';\n      import {HtmlParser} from './ml_parser/html_parser';\n      import {Console} from
 './util';\n      import * as i18n from './i18n_ast';\n      import {I18nError} from './parse_util';\n      import {PlaceholderMapper,
Serializer} from './serializers/serializer';\n      import {escapeXml} from './serializers/xml_helper';\n      }\n      /**\n      * A
container for translated messages\n      */\n      export class TranslationBundle {\n      private _i18nToHtml:
I18nToHtmlVisitor;\n      constructor(\n      private _i18nNodesByMsgId: {[msgId: string]: i18n.Node[]} = {},
locale: string|null,\n      public digest: (m: i18n.Message) => string,\n      public mapperFactory?: (m: i18n.Message)
=> PlaceholderMapper,\n      missingTranslationStrategy: MissingTranslationStrategy =
MissingTranslationStrategy.Warning,\n      console?: Console) {\n      this._i18nToHtml = new I18nToHtmlVisitor(\n
      _i18nNodesByMsgId, locale, digest, mapperFactory!, missingTranslationStrategy, console);\n      }\n      // Creates a
`TranslationBundle` by parsing the given `content` with the `serializer`.\n      static load(\n      content: string, url:
string, serializer: Serializer,\n      missingTranslationStrategy: MissingTranslationStrategy,\n      console?: Console):
TranslationBundle {\n      const {locale, i18nNodesByMsgId} = serializer.load(content, url);\n      const digestFn = (m:
i18n.Message) => serializer.digest(m);\n      const mapperFactory = (m: i18n.Message) =>
serializer.createNameMapper(m);\n      return new TranslationBundle(\n      i18nNodesByMsgId, locale, digestFn,
mapperFactory, missingTranslationStrategy, console);\n      }\n      // Returns the translation as HTML nodes from the
given source message.\n      get(srcMsg: i18n.Message): html.Node[] {\n      const html =
this._i18nToHtml.convert(srcMsg);\n      if (html.errors.length) {\n      throw new Error(html.errors.join("\n"));
}\n      }\n      return html.nodes;\n      }\n      has(srcMsg: i18n.Message): boolean {\n      return this.digest(srcMsg) in
this._i18nNodesByMsgId;\n      }\n      }\n      class I18nToHtmlVisitor implements i18n.Visitor {\n      // TODO(issue/24571):

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remove '!'\n private _srcMsg!: i18n.Message;\n private _contextStack: {msg: i18n.Message, mapper: (name:
string) => string}[] = [];\n private _errors: I18nError[] = [];\n // TODO(issue/24571): remove '!'\n private
_mapper!: (name: string) => string;\n\n constructor(\n   private _i18nNodesByMsgId: {[msgId: string]:
i18n.Node[]} = {}, private _locale: string|null,\n   private _digest: (m: i18n.Message) => string,\n   private
_mapperFactory: (m: i18n.Message) => PlaceholderMapper,\n   private _missingTranslationStrategy:
MissingTranslationStrategy, private _console?: Console) {\n }\n\n convert(srcMsg: i18n.Message): {nodes:
html.Node[], errors: I18nError[]} {\n   this._contextStack.length = 0;\n   this._errors.length = 0;\n\n   // i18n to
text\n   const text = this._convertToText(srcMsg);\n\n   // text to html\n   const url =
srcMsg.nodes[0].sourceSpan.start.file.url;\n   const html = new HtmlParser().parse(text, url,
{tokenizeExpansionForms: true});\n\n   return {\n     nodes: html.rootNodes,\n     errors: [...this._errors,
...html.errors],\n   };\n }\n\n visitText(text: i18n.Text, context?: any): string {\n   // `convert()` uses an
`HtmlParser` to return `html.Node`s\n   // we should then make sure that any special characters are escaped\n
return escapeXml(text.value);\n }\n\n visitContainer(container: i18n.Container, context?: any): any {\n   return
container.children.map(n => n.visit(this)).join("");\n }\n\n visitIcu(icu: i18n.Icu, context?: any): any {\n   const
cases = Object.keys(icu.cases).map(k => `${k} {${icu.cases[k].visit(this)}}`);\n\n   // TODO(vicb): Once all format
switch to using expression placeholders\n   // we should throw when the placeholder is not in the source message\n
const exp = this._srcMsg.placeholders.hasOwnProperty(icu.expression) ?\n
this._srcMsg.placeholders[icu.expression].text :\n   icu.expression;\n\n   return `${exp}, ${icu.type},
${cases.join(' ')}`;\n }\n\n visitPlaceholder(ph: i18n.Placeholder, context?: any): string {\n   const phName =
this._mapper(ph.name);\n   if (this._srcMsg.placeholders.hasOwnProperty(phName)) {\n     return
this._srcMsg.placeholders[phName].text;\n   }\n\n   if
(this._srcMsg.placeholderToMessage.hasOwnProperty(phName)) {\n     return
this._convertToText(this._srcMsg.placeholderToMessage[phName]);\n   }\n\n   this._addError(ph, `Unknown
placeholder "${ph.name}"`);\n   return ";\n }\n\n // Loaded message contains only placeholders (vs tag and icu
placeholders).\n // However when a translation can not be found, we need to serialize the source message\n //
which can contain tag placeholders\n   visitTagPlaceholder(ph: i18n.TagPlaceholder, context?: any): string {\n
const tag = `${ph.tag}`;\n   const attrs = Object.keys(ph.attrs).map(name =>
`${name}=${ph.attrs[name]}`);\n\n   if (ph.isVoid) {\n     return `<${tag} ${attrs}/>`;\n   }\n\n   const
children = ph.children.map((c: i18n.Node) => c.visit(this)).join("");\n   return `<${tag}
${attrs}>${children}</${tag}>`;\n }\n\n // Loaded message contains only placeholders (vs tag and icu
placeholders).\n // However when a translation can not be found, we need to serialize the source message\n //
which can contain tag placeholders\n   visitIcuPlaceholder(ph: i18n.IcuPlaceholder, context?: any): string {\n   // An
ICU placeholder references the source message to be serialized\n   return
this._convertToText(this._srcMsg.placeholderToMessage[ph.name]);\n }\n\n /**\n * Convert a source message to
a translated text string:\n * - text nodes are replaced with their translation,\n * - placeholders are replaced with
their content,\n * - ICU nodes are converted to ICU expressions.\n */\n private _convertToText(srcMsg:
i18n.Message): string {\n   const id = this._digest(srcMsg);\n   const mapper = this._mapperFactory ?
this._mapperFactory(srcMsg) : null;\n   let nodes: i18n.Node[];\n\n   this._contextStack.push({msg: this._srcMsg,
mapper: this._mapper});\n   this._srcMsg = srcMsg;\n\n   if (this._i18nNodesByMsgId.hasOwnProperty(id)) {\n
// When there is a translation use its nodes as the source\n   // And create a mapper to convert serialized
placeholder names to internal names\n     nodes = this._i18nNodesByMsgId[id];\n     this._mapper = (name: string)
=> mapper ? mapper.toInternalName(name)! : name;\n   } else {\n     // When no translation has been found\n     //
- report an error / a warning / nothing,\n     // - use the nodes from the original message\n     // - placeholders are
already internal and need no mapper\n     if (this._missingTranslationStrategy ===
MissingTranslationStrategy.Error) {\n       const ctx = this._locale ? ` for locale "${this._locale}"` : ";\n
this._addError(srcMsg.nodes[0], `Missing translation for message "${id}"${ctx}`);\n     } else if (\n
this._console &&\n     this._missingTranslationStrategy === MissingTranslationStrategy.Warning) {\n       const
ctx = this._locale ? ` for locale "${this._locale}"` : ";\n       this._console.warn(`Missing translation for message

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\`${id}\`${ctx}`);\n  }\n  nodes = srcMsg.nodes;\n  this._mapper = (name: string) => name;\n  }\n  const
text = nodes.map(node => node.visit(this)).join("");\n  const context = this._contextStack.pop();\n  this._srcMsg =
context.msg;\n  this._mapper = context.mapper;\n  return text;\n  }\n\n  private _addError(el: i18n.Node, msg:
string) {\n    this._errors.push(new I18nError(el.sourceSpan, msg));\n  }\n}\n\n"/**\n * @license\n * Copyright
Google LLC All Rights Reserved.\n * Use of this source code is governed by an MIT-style license that can be\n
* found in the LICENSE file at https://angular.io/license\n */\n\nimport {MissingTranslationStrategy} from
'./core';\nimport {HtmlParser} from './ml_parser/html_parser';\nimport
{DEFAULT_INTERPOLATION_CONFIG} from './ml_parser/interpolation_config';\nimport {TokenizeOptions}
from './ml_parser/lexer';\nimport {ParseTreeResult} from './ml_parser/parser';\nimport {Console} from
'./util';\nimport {digest} from './digest';\nimport {mergeTranslations} from './extractor_merger';\nimport
{Serializer} from './serializers/serializer';\nimport {Xliff} from './serializers/xliff';\nimport {Xliff2} from
'./serializers/xliff2';\nimport {Xmb} from './serializers/xmb';\nimport {Xtb} from './serializers/xtb';\nimport
{TranslationBundle} from './translation_bundle';\n\nexport class I18NHtmlParser implements HtmlParser {\n  //
@override\n  getTagDefinition: any;\n\n  private _translationBundle: TranslationBundle;\n\n  constructor(\n
private _htmlParser: HtmlParser, translations?: string, translationsFormat?: string,\n    missingTranslation:
MissingTranslationStrategy = MissingTranslationStrategy.Warning,\n    console?: Console) {\n    if (translations)
{\n      const serializer = createSerializer(translationsFormat);\n      this._translationBundle =\n
TranslationBundle.load(translations, 'i18n', serializer, missingTranslation, console);\n    } else {\n
this._translationBundle =\n      new TranslationBundle({}, null, digest, undefined, missingTranslation, console);\n
    }\n  }\n\n  parse(source: string, url: string, options: TokenizeOptions = {}): ParseTreeResult {\n    const
interpolationConfig = options.interpolationConfig || DEFAULT_INTERPOLATION_CONFIG;\n    const
parseResult = this._htmlParser.parse(source, url, {interpolationConfig, ...options});\n\n    if
(parseResult.errors.length) {\n      return new ParseTreeResult(parseResult.rootNodes, parseResult.errors);\n    }\n
return mergeTranslations(\n      parseResult.rootNodes, this._translationBundle, interpolationConfig, [], {});\n
}\n\nfunction createSerializer(format?: string): Serializer {\n  format = (format || 'xlf').toLowerCase();\n  switch
(format) {\n    case 'xmb':\n      return new Xmb();\n    case 'xtb':\n      return new Xtb();\n    case 'xliff2':\n    case
'xlf2':\n      return new Xliff2();\n    case 'xliff':\n    case 'xlf':\n      default:\n        return new Xliff();\n    }\n  }\n}\n\n"/**\n * @license\n * Copyright
Google LLC All Rights Reserved.\n * Use of this source code is governed by an MIT-
style license that can be\n * found in the LICENSE file at https://angular.io/license\n */\n\nimport
{OutputContext, ValueTransformer, visitValue} from './util';\nimport * as o from './output_ast';\n\nexport const
QUOTED_KEYS = '$quoted$';\n\nexport function convertValueToOutputAst(\n  ctx: OutputContext, value: any,
type: o.Type|null = null): o.Expression {\n  return visitValue(value, new _ValueOutputAstTransformer(ctx),
type);\n}\n\nclass _ValueOutputAstTransformer implements ValueTransformer {\n  constructor(private ctx:
OutputContext) {}\n  visitArray(arr: any[], type: o.Type): o.Expression {\n    const values: o.Expression[] = [];\n    //
Note Array.map() must not be used to convert the values because it will\n    // skip over empty elements in arrays
constructed using `new Array(length)`,\n    // resulting in `undefined` elements. This breaks the type guarantee that\n
    // all values in `o.LiteralArrayExpr` are of type `o.Expression`.\n    // See test case in `value_util_spec.ts`.\n    for
(let i = 0; i < arr.length; ++i) {\n      values.push(visitValue(arr[i], this, null /* context */));\n    }\n    return
o.literalArr(values, type);\n  }\n  visitStringMap(map: {[key: string]: any}, type: o.MapType): o.Expression {\n
const entries: o.LiteralMapEntry[] = [];\n    const quotedSet = new Set<string>(map && map[QUOTED_KEYS]);\n
Object.keys(map).forEach(key => {\n      entries.push(\n        new o.LiteralMapEntry(key, visitValue(map[key],
this, null), quotedSet.has(key));\n    });\n    return new o.LiteralMapExpr(entries, type);\n  }\n\n  visitPrimitive(value: any, type: o.Type): o.Expression {\n
return o.literal(value, type);\n  }\n\n  visitOther(value: any, type: o.Type): o.Expression {\n    if (value instanceof o.Expression) {\n      return value;\n    } else {\n      return
this.ctx.importExpr(value);\n    }\n  }\n}\n\n"/**\n * @license\n * Copyright
Google LLC All Rights Reserved.\n * Use of this source code is governed by an MIT-style license that can be\n
* found in the LICENSE file at
https://angular.io/license\n */\n\nimport {StaticSymbol} from './aot/static_symbol';\nimport
{CompileInjectableMetadata, CompileNgModuleMetadata, CompileProviderMetadata, identifierName} from

```



```

ngfactoryFilePath(filePath: string, forceSourceFile = false): string {\n const urlWithSuffix =
splitTypescriptSuffix(filePath, forceSourceFile);\n return
`${urlWithSuffix[0]}.ngfactory${normalizeGenFileSuffix(urlWithSuffix[1])}`;\n}\n\nexport function
stripGeneratedFileSuffix(filePath: string): string {\n return filePath.replace(GENERATED_FILE, '');\n}\n\nexport
function isGeneratedFile(filePath: string): boolean {\n return GENERATED_FILE.test(filePath);\n}\n\nexport
function splitTypescriptSuffix(path: string, forceSourceFile = false): string[] {\n if (path.endsWith('.d.ts')) {\n
return [path.slice(0, -5), forceSourceFile ? '.ts' : '.d.ts'];\n }\n\n const lastDot = path.lastIndexOf('.');\n\n if (lastDot
!==-1) {\n return [path.substring(0, lastDot), path.substring(lastDot)];\n }\n\n return [path, ''];\n}\n\nexport
function normalizeGenFileSuffix(srcFileSuffix: string): string {\n return srcFileSuffix === '.tsx' ? '.ts' :
srcFileSuffix;\n}\n\nexport function summaryFileName(fileName: string): string {\n const fileNameWithoutSuffix
= fileName.replace(STRIP_SRC_FILE_SUFFIXES, '');\n return
`${fileNameWithoutSuffix}.ngsummary.json`;\n}\n\nexport function summaryForJitFileName(fileName: string,
forceSourceFile = false): string {\n const urlWithSuffix =
splitTypescriptSuffix(stripGeneratedFileSuffix(fileName), forceSourceFile);\n return
`${urlWithSuffix[0]}.ngsummary${urlWithSuffix[1]}`;\n}\n\nexport function
stripSummaryForJitFileSuffix(filePath: string): string {\n return filePath.replace(JIT_SUMMARY_FILE,
');\n}\n\nexport function summaryForJitName(symbolName: string): string {\n return
`${symbolName}NgSummary`;\n}\n\nexport function stripSummaryForJitNameSuffix(symbolName: string): string
{\n return symbolName.replace(JIT_SUMMARY_NAME, '');\n}\n\nconst LOWERED_SYMBOL =
/\u0275\d+;/;\n\nexport function isLoweredSymbol(name: string) {\n return
LOWERED_SYMBOL.test(name);\n}\n\nexport function createLoweredSymbol(id: number): string {\n return
`\u0275${id}`;\n}\n\n"/**\n * @license\n * Copyright Google LLC All Rights Reserved.\n * Use of this source
code is governed by an MIT-style license that can be\n * found in the LICENSE file at https://angular.io/license\n
*/\n\nimport {CompileReflector} from './compile_reflector';\n\nexport enum LifecycleHooks {\n OnInit,\n
OnDestroy,\n DoCheck,\n OnChanges,\n AfterContentInit,\n AfterContentChecked,\n AfterViewInit,\n
AfterViewChecked\n}\n\nexport const LIFECYCLE_HOOKS_VALUES = [\n LifecycleHooks.OnInit,\n
LifecycleHooks.OnDestroy,\n LifecycleHooks.DoCheck,\n LifecycleHooks.OnChanges,\n
LifecycleHooks.AfterContentInit,\n LifecycleHooks.AfterContentChecked,\n LifecycleHooks.AfterViewInit,\n
LifecycleHooks.AfterViewChecked\n];\n\nexport function hasLifecycleHook(\n reflector: CompileReflector,\n
hook: LifecycleHooks, token: any): boolean {\n return reflector.hasLifecycleHook(token,\n
getHookName(hook));\n}\n\nexport function getAllLifecycleHooks(reflector: CompileReflector, token: any):
LifecycleHooks[] {\n return LIFECYCLE_HOOKS_VALUES.filter(hook => hasLifecycleHook(reflector, hook,\n
token));\n}\n\nfunction getHookName(hook: LifecycleHooks): string {\n switch (hook) {\n case
LifecycleHooks.OnInit:\n return 'ngOnInit';\n case LifecycleHooks.OnDestroy:\n return 'ngOnDestroy';\n
case LifecycleHooks.DoCheck:\n return 'ngDoCheck';\n case LifecycleHooks.OnChanges:\n return
'ngOnChanges';\n case LifecycleHooks.AfterContentInit:\n return 'ngAfterContentInit';\n case
LifecycleHooks.AfterContentChecked:\n return 'ngAfterContentChecked';\n case
LifecycleHooks.AfterViewInit:\n return 'ngAfterViewInit';\n case LifecycleHooks.AfterViewChecked:\n
return 'ngAfterViewChecked';\n default:\n // This default case is not needed by TypeScript compiler, as the
switch is exhaustive.\n // However Closure Compiler does not understand that and reports an error in typed
mode.\n // The `throw new Error` below works around the problem, and the unexpected: never variable\n //
makes sure tsc still checks this code is unreachable.\n const unexpected: never = hook;\n throw new
Error(`unexpected ${unexpected}`);\n }\n}\n\n"/**\n * @license\n * Copyright Google LLC All Rights Reserved.\n
*/\n * Use of this source code is governed by an MIT-style license that can be\n * found in the LICENSE file at
https://angular.io/license\n */\n\nimport {StaticSymbol, StaticSymbolCache} from './aot/static_symbol';\n\nimport
{ngfactoryFilePath} from './aot/util';\n\nimport {assertArrayOfStrings, assertInterpolationSymbols} from
 './assertions';\n\nimport * as cpl from './compile_metadata';\n\nimport {CompileReflector} from
 './compile_reflector';\n\nimport {CompilerConfig} from './config';\n\nimport {ChangeDetectionStrategy, Component,

```

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createAttribute, createComponent, createHost, createInject, createInjectable, createInjectionToken, createNgModule,
createOptional, createSelf, createSkipSelf, Directive, Injectable, ModuleWithProviders, Provider, Query,
SchemaMetadata, Type, ViewEncapsulation} from './core';\nimport {DirectiveNormalizer} from
 './directive_normalizer';\nimport {DirectiveResolver, findLast} from './directive_resolver';\nimport {Identifiers}
 from './identifiers';\nimport {getAllLifecycleHooks} from './lifecycle_reflector';\nimport {HtmlParser} from
 './ml_parser/html_parser';\nimport {NgModuleResolver} from './ng_module_resolver';\nimport {PipeResolver} from
 './pipe_resolver';\nimport {ElementSchemaRegistry} from './schema/element_schema_registry';\nimport
 {CssSelector} from './selector';\nimport {SummaryResolver} from './summary_resolver';\nimport {Console,
isPromise, noUndefined, resolveForwardRef, stringify, SyncAsync, syntaxError, ValueTransformer, visitValue}
 from './util';\n\nexport type ErrorCollector = (error: any, type?: any) => void;\n\nexport const
ERROR_COMPONENT_TYPE = 'ngComponentType';\n\n// Design notes:\n// - don't lazily create metadata:\n//
For some metadata, we need to do async work sometimes,\n// so the user has to kick off this loading.\n// But we
want to report errors even when the async work is\n// not required to check that the user would have been able\n//
to wait correctly.\n\nexport class CompileMetadataResolver {\n  private _nonNormalizedDirectiveCache =\n    new
Map<Type, {annotation: Directive, metadata: cpl.CompileDirectiveMetadata}>();\n  private _directiveCache = new
Map<Type, cpl.CompileDirectiveMetadata>();\n  private _summaryCache = new Map<Type,
cpl.CompileTypeSummary|null>();\n  private _pipeCache = new Map<Type, cpl.CompilePipeMetadata>();\n
  private _ngModuleCache = new Map<Type, cpl.CompileNgModuleMetadata>();\n  private _ngModuleOfTypes =
new Map<Type, Type>();\n  private _shallowModuleCache = new Map<Type,
cpl.CompileShallowModuleMetadata>();\n\n  constructor(\n    private _config: CompilerConfig, private
_htmlParser: HtmlParser,\n    private _ngModuleResolver: NgModuleResolver, private _directiveResolver:
DirectiveResolver,\n    private _pipeResolver: PipeResolver, private _summaryResolver:
SummaryResolver<any>,\n    private _schemaRegistry: ElementSchemaRegistry,\n    private
_directiveNormalizer: DirectiveNormalizer, private _console: Console,\n    private _staticSymbolCache:
StaticSymbolCache, private _reflector: CompileReflector,\n    private _errorCollector?: ErrorCollector) {} \n\n
getReflector(): CompileReflector {\n  return this._reflector;\n } \n\n clearCacheFor(type: Type) {\n  const
dirMeta = this._directiveCache.get(type);\n  this._directiveCache.delete(type);\n
  this._nonNormalizedDirectiveCache.delete(type);\n  this._summaryCache.delete(type);\n
  this._pipeCache.delete(type);\n  this._ngModuleOfTypes.delete(type);\n  // Clear all of the NgModule as they
contain transitive information!\n  this._ngModuleCache.clear();\n  if (dirMeta) {\n
  this._directiveNormalizer.clearCacheFor(dirMeta);\n  }\n } \n\n clearCache(): void {\n
  this._directiveCache.clear();\n  this._nonNormalizedDirectiveCache.clear();\n  this._summaryCache.clear();\n
  this._pipeCache.clear();\n  this._ngModuleCache.clear();\n  this._ngModuleOfTypes.clear();\n
  this._directiveNormalizer.clearCache();\n } \n\n private _createProxyClass(baseType: any, name: string):
cpl.ProxyClass {\n  let delegate: any = null;\n  const proxyClass: cpl.ProxyClass = <any>function(this: unknown)
{\n    if (!delegate) {\n      throw new Error(`Illegal state: Class ${name} for type ${stringify(baseType)}
is not compiled yet!`);\n    }\n    return delegate.apply(this, arguments);\n  }; \n  proxyClass.setDelegate = (d) =>
{\n    delegate = d;\n    (<any>proxyClass).prototype = d.prototype;\n  }; \n  // Make stringify work correctly\n
(<any>proxyClass).overriddenName = name;\n  return proxyClass;\n } \n\n private getGeneratedClass(dirType:
any, name: string): StaticSymbol|cpl.ProxyClass {\n  if (dirType instanceof StaticSymbol) {\n    return
this._staticSymbolCache.get(ngfactoryFilePath(dirType.filePath), name);\n  } else {\n    return
this._createProxyClass(dirType, name);\n  } \n } \n\n private GetComponentViewClass(dirType: any):
StaticSymbol|cpl.ProxyClass {\n  return this.getGeneratedClass(dirType, cpl.viewClassName(dirType, 0));\n } \n\n
getHostComponentViewClass(dirType: any): StaticSymbol|cpl.ProxyClass {\n  return
this.getGeneratedClass(dirType, cpl.hostViewClassName(dirType));\n } \n\n getHostComponentType(dirType:
any): StaticSymbol|cpl.ProxyClass {\n  const name = `${cpl.identifierName({reference: dirType})}_Host`; \n  if
(dirType instanceof StaticSymbol) {\n    return this._staticSymbolCache.get(dirType.filePath, name);\n  } \n\n
return this._createProxyClass(dirType, name);\n } \n\n private getRendererType(dirType: any): StaticSymbol|object

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{\n  if (dirType instanceof StaticSymbol) {\n    return this._staticSymbolCache.get(\n
ngfactoryFilePath(dirType.filePath), cpl.rendererTypeName(dirType));\n  } else {\n    // returning an object as
proxy,\n    // that we fill later during runtime compilation.\n    return <any>{};\n  }\n }\n\n private
getComponentFactory(\n  selector: string, dirType: any, inputs: {[key: string]: string}|null,\n  outputs: {[key:
string]: string}): StaticSymbol|object {\n  if (dirType instanceof StaticSymbol) {\n    return
this._staticSymbolCache.get(\n    ngfactoryFilePath(dirType.filePath), cpl.componentFactoryName(dirType));\n
  } else {\n    const hostView = this.getHostComponentViewClass(dirType);\n    // Note: ngContentSelectors will
be filled later once the template is\n    // loaded.\n    const createComponentFactory =\n    this._reflector.resolveExternalReference(Identifiers.createComponentFactory);\n    return
createComponentFactory(selector, dirType, <any>hostView, inputs, outputs, []);\n  }\n }\n\n private
initComponentFactory(factory: StaticSymbol|object, ngContentSelectors: string[]) {\n  if (!(factory instanceof
StaticSymbol)) {\n    (factory as any).ngContentSelectors.push(...ngContentSelectors);\n  }\n }\n\n private
_loadSummary(type: any, kind: cpl.CompileSummaryKind): cpl.CompileTypeSummary|null {\n  let typeSummary
= this._summaryCache.get(type);\n  if (!typeSummary) {\n    const summary =
this._summaryResolver.resolveSummary(type);\n    typeSummary = summary ? summary.type : null;\n    this._summaryCache.set(type, typeSummary || null);\n  }\n  return typeSummary &&
typeSummary.summaryKind === kind ? typeSummary : null;\n }\n\n getHostComponentMetadata(\n
compMeta: cpl.CompileDirectiveMetadata,\n  hostViewType?: StaticSymbol|cpl.ProxyClass):
cpl.CompileDirectiveMetadata {\n  const hostType = this.getHostComponentType(compMeta.type.reference);\n
if (!hostViewType) {\n  hostViewType = this.getHostComponentViewClass(hostType);\n  }\n  // Note: ! is ok
here as this method should only be called with normalized directive\n  // metadata, which always fills in the
selector.\n  const template = CssSelector.parse(compMeta.selector!)[0].getMatchingElementTemplate();\n  const
templateUrl = ";\n  const htmlAst = this._htmlParser.parse(template, templateUrl);\n  return
cpl.CompileDirectiveMetadata.create({\n    isHost: true,\n    type: {reference: hostType, diDeps: [],
lifecycleHooks: []},\n    template: new cpl.CompileTemplateMetadata({\n      encapsulation:
ViewEncapsulation.None,\n      templateUrl,\n      htmlAst,\n      styles: [],\n      styleUrls: [],\n
      ngContentSelectors: [],\n      animations: [],\n      isInline: true,\n      externalStylesheets: [],\n
      interpolation: null,\n      preserveWhitespaces: false,\n    }),\n    exportAs: null,\n    changeDetection:
ChangeDetectionStrategy.Default,\n    inputs: [],\n    outputs: [],\n    host: {},\n    isComponent: true,\n
    selector: '*',\n    providers: [],\n    viewProviders: [],\n    queries: [],\n    guards: {},\n    viewQueries: [],\n
    componentViewType: hostViewType,\n    rendererType: {id: '__Host__', encapsulation: ViewEncapsulation.None,
styles: [], data: {}} as\n    object,\n    entryComponents: [],\n    componentFactory: null\n  });\n }\n\n
loadDirectiveMetadata(ngModuleType: any, directiveType: any, isSync: boolean): SyncAsync<null> {\n  if
(this._directiveCache.has(directiveType)) {\n    return null;\n  }\n  directiveType =
resolveForwardRef(directiveType);\n  const {annotation, metadata} =
this.getNonNormalizedDirectiveMetadata(directiveType!);\n  const createDirectiveMetadata =
(templateMetadata: cpl.CompileTemplateMetadata|null) => {\n    const normalizedDirMeta = new
cpl.CompileDirectiveMetadata({\n      isHost: false,\n      type: metadata.type,\n      isComponent:
metadata.isComponent,\n      selector: metadata.selector,\n      exportAs: metadata.exportAs,\n
      changeDetection: metadata.changeDetection,\n      inputs: metadata.inputs,\n      outputs: metadata.outputs,\n
      hostListeners: metadata.hostListeners,\n      hostProperties: metadata.hostProperties,\n      hostAttributes:
metadata.hostAttributes,\n      providers: metadata.providers,\n      viewProviders: metadata.viewProviders,\n
      queries: metadata.queries,\n      guards: metadata.guards,\n      viewQueries: metadata.viewQueries,\n
      entryComponents: metadata.entryComponents,\n      componentViewType: metadata.componentViewType,\n
      rendererType: metadata.rendererType,\n      componentFactory: metadata.componentFactory,\n      template:
templateMetadata\n    });\n    if (templateMetadata) {\n
this.initComponentFactory(metadata.componentFactory!, templateMetadata.ngContentSelectors);\n    }\n
this._directiveCache.set(directiveType, normalizedDirMeta);\n    this._summaryCache.set(directiveType,

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normalizedDirMeta.toSummary());\n    return null;\n  };\n\n  if (metadata.isComponent) {\n    const template =
metadata.template !;\n    const templateMeta = this._directiveNormalizer.normalizeTemplate({\n      ngModuleType,\n      componentType: directiveType,\n      moduleId:
this._reflector.componentModuleUrl(directiveType, annotation),\n      encapsulation: template.encapsulation,\n      template: template.template,\n      templateUrl: template.templateUrl,\n      styles: template.styles,\n      styleUrls:
template.styleUrls,\n      animations: template.animations,\n      interpolation: template.interpolation,\n      preserveWhitespaces: template.preserveWhitespaces\n    });\n    if (isPromise(templateMeta) && isSync) {\n      this._reportError(componentStillLoadingError(directiveType), directiveType);\n      return null;\n    }\n    return
SyncAsync.then(templateMeta, createDirectiveMetadata);\n  } else {\n    // directive\n    createDirectiveMetadata(null);\n    return null;\n  }\n}\n\ngetNonNormalizedDirectiveMetadata(directiveType:
any):\n  { annotation: Directive, metadata: cpl.CompileDirectiveMetadata } | null {\n    directiveType =
resolveForwardRef(directiveType);\n    if (!directiveType) {\n      return null;\n    }\n    let cacheEntry =
this._nonNormalizedDirectiveCache.get(directiveType);\n    if (cacheEntry) {\n      return cacheEntry;\n    }\n    const dirMeta = this._directiveResolver.resolve(directiveType, false);\n    if (!dirMeta) {\n      return null;\n    }\n    let nonNormalizedTemplateMetadata: cpl.CompileTemplateMetadata = undefined!;\n    if
(createComponent.isTypeOf(dirMeta)) {\n      // component\n      const compMeta = dirMeta as Component;\n      assertArrayOfStrings('styles', compMeta.styles);\n      assertArrayOfStrings('styleUrls', compMeta.styleUrls);\n      assertInterpolationSymbols('interpolation', compMeta.interpolation);\n      const animations =
compMeta.animations;\n\n      nonNormalizedTemplateMetadata = new cpl.CompileTemplateMetadata({\n        encapsulation: noUndefined(compMeta.encapsulation),\n        template: noUndefined(compMeta.template),\n        templateUrl: noUndefined(compMeta.templateUrl),\n        htmlAst: null,\n        styles: compMeta.styles || [],\n        styleUrls: compMeta.styleUrls || [],\n        animations: animations || [],\n        interpolation:
noUndefined(compMeta.interpolation),\n        isInline: !!compMeta.template,\n        externalStylesheets: [],\n        ngContentSelectors: [],\n        preserveWhitespaces: noUndefined(dirMeta.preserveWhitespaces),\n      });\n    }\n\n    let changeDetectionStrategy: ChangeDetectionStrategy = null!;\n    let viewProviders:
cpl.CompileProviderMetadata[] = [];\n    let entryComponentMetadata: cpl.CompileEntryComponentMetadata[] =
[];\n    let selector = dirMeta.selector;\n\n    if (createComponent.isTypeOf(dirMeta)) {\n      // Component\n      const compMeta = dirMeta as Component;\n      changeDetectionStrategy = compMeta.changeDetection!;\n      if
(compMeta.viewProviders) {\n        viewProviders = this._getProvidersMetadata(\n          compMeta.viewProviders, entryComponentMetadata,\n          `viewProviders for
\"${stringifyType(directiveType)}\"`, [], directiveType);\n      }\n      if (compMeta.entryComponents) {\n        entryComponentMetadata = flattenAndDedupeArray(compMeta.entryComponents)\n          .map((type) => this._getEntryComponentMetadata(type))\n          .concat(entryComponentMetadata);\n      }\n      if (!selector) {\n        selector =
this._schemaRegistry.getDefaultComponentElementName();\n      }\n    } else {\n      // Directive\n      if (!selector)
{\n        selector = null!;\n      }\n    }\n\n    let providers: cpl.CompileProviderMetadata[] = [];\n    if
(dirMeta.providers != null) {\n      providers = this._getProvidersMetadata(\n        dirMeta.providers,\n        entryComponentMetadata,\n        `providers for \"${stringifyType(directiveType)}\"`, [], directiveType);\n    }\n    let queries: cpl.CompileQueryMetadata[] = [];\n    let viewQueries: cpl.CompileQueryMetadata[] = [];\n    if
(dirMeta.queries != null) {\n      queries = this._getQueriesMetadata(dirMeta.queries, false, directiveType);\n      viewQueries = this._getQueriesMetadata(dirMeta.queries, true, directiveType);\n    }\n\n    const metadata =
cpl.CompileDirectiveMetadata.create({\n      isHost: false,\n      selector: selector,\n      exportAs:
noUndefined(dirMeta.exportAs),\n      isComponent: !!nonNormalizedTemplateMetadata,\n      type:
this._getTypeMetadata(directiveType),\n      template: nonNormalizedTemplateMetadata,\n      changeDetection:
changeDetectionStrategy,\n      inputs: dirMeta.inputs || [],\n      outputs: dirMeta.outputs || [],\n      host: dirMeta.host
|| {},\n      providers: providers || [],\n      viewProviders: viewProviders || [],\n      queries: queries || [],\n      guards:
dirMeta.guards || {},\n      viewQueries: viewQueries || [],\n      entryComponents: entryComponentMetadata,\n      componentViewType: nonNormalizedTemplateMetadata ? this.getComponentViewClass(directiveType) :\n
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        null,\n    rendererType: nonNormalizedTemplateMetadata ?
this.getRendererType.directiveType) : null,\n    componentFactory: null\n });\n if
(nonNormalizedTemplateMetadata) {\n    metadata.componentFactory =\nthis.getComponentFactory(selector, directiveType, metadata.inputs, metadata.outputs);\n } \n cacheEntry =
{metadata, annotation: dirMeta};\n    this._nonNormalizedDirectiveCache.set(directiveType, cacheEntry);\n    return
cacheEntry;\n } \n\n /**\n  * Gets the metadata for the given directive.\n  * This assumes
`loadNgModuleDirectiveAndPipeMetadata` has been called first.\n  */\n    getDirectiveMetadata(directiveType:
any): cpl.CompileDirectiveMetadata {\n    const dirMeta = this._directiveCache.get(directiveType)!;\n    if
(!dirMeta) {\n    this._reportError(\n        syntaxError(\n            `Illegal state: getDirectiveMetadata can only be
called after loadNgModuleDirectiveAndPipeMetadata for a module that declares it. Directive ${\n
stringifyType(directiveType)}.`),\n        directiveType);\n    }\n    return dirMeta;\n } \n\n
getDirectiveSummary(dirType: any): cpl.CompileDirectiveSummary {\n    const dirSummary =\n<cpl.CompileDirectiveSummary>this._loadSummary(dirType, cpl.CompileSummaryKind.Directive);\n    if
(!dirSummary) {\n    this._reportError(\n        syntaxError(\n            `Illegal state: Could not load the summary
for directive ${stringifyType(dirType)}.`),\n        dirType);\n    }\n    return dirSummary;\n } \n\n isDirective(type:
any) {\n    return !!this._loadSummary(type, cpl.CompileSummaryKind.Directive) ||\n
this._directiveResolver.isDirective(type);\n } \n\n isAbstractDirective(type: any): boolean {\n    const summary =\n    this._loadSummary(type, cpl.CompileSummaryKind.Directive) as cpl.CompileDirectiveSummary;\n    if
(summary && !summary.isComponent) {\n    return !summary.selector;\n    } \n\n    const meta =
this._directiveResolver.resolve(type, false);\n    if (meta && !createComponent.isTypeOf(meta)) {\n    return
!meta.selector;\n    } \n\n    return false;\n } \n\n isPipe(type: any) {\n    return !!this._loadSummary(type,
cpl.CompileSummaryKind.Pipe) ||\n    this._pipeResolver.isPipe(type);\n } \n\n isNgModule(type: any) {\n
return !!this._loadSummary(type, cpl.CompileSummaryKind.NgModule) ||\n
this._ngModuleResolver.isNgModule(type);\n } \n\n getNgModuleSummary(moduleType: any, alreadyCollecting:
Set<any>|null = null):\n    cpl.CompileNgModuleSummary|null {\n    let moduleSummary:
cpl.CompileNgModuleSummary|null =\n    <cpl.CompileNgModuleSummary>this._loadSummary(moduleType,
cpl.CompileSummaryKind.NgModule);\n    if (!moduleSummary) {\n    const moduleMeta =
this.getNgModuleMetadata(moduleType, false, alreadyCollecting);\n    moduleSummary = moduleMeta ?
moduleMeta.toSummary() : null;\n    if (moduleSummary) {\n    this._summaryCache.set(moduleType,
moduleSummary);\n    } \n\n    return moduleSummary;\n } \n\n /**\n  * Loads the declared directives and
pipes of an NgModule.\n  */\n    loadNgModuleDirectiveAndPipeMetadata(moduleType: any, isSync: boolean,
throwIfNotFound = true):\n    Promise<any> {\n    const ngModule = this.getNgModuleMetadata(moduleType,
throwIfNotFound);\n    const loading: Promise<any>[] = [];\n    if (ngModule) {\n
ngModule.declaredDirectives.forEach((id) => {\n    const promise = this.loadDirectiveMetadata(moduleType,
id.reference, isSync);\n    if (promise) {\n    loading.push(promise);\n    } \n\n    });\n
ngModule.declaredPipes.forEach((id) => this._loadPipeMetadata(id.reference));\n } \n\n    return
Promise.all(loading);\n } \n\n getShallowModuleMetadata(moduleType: any):
cpl.CompileShallowModuleMetadata|null {\n    let compileMeta = this._shallowModuleCache.get(moduleType);\n
if (compileMeta) {\n    return compileMeta;\n } \n\n    const ngModuleMeta =\n
findLast(this._reflector.shallowAnnotations(moduleType), createNgModule.isTypeOf);\n\n    compileMeta = {\n
type: this._getTypeMetadata(moduleType),\n    rawExports: ngModuleMeta.exports,\n    rawImports:
ngModuleMeta.imports,\n    rawProviders: ngModuleMeta.providers,\n    };\n\n    this._shallowModuleCache.set(moduleType, compileMeta);\n    return compileMeta;\n } \n\n
getNgModuleMetadata(\n    moduleType: any, throwIfNotFound = true,\n    alreadyCollecting: Set<any>|null =
null): cpl.CompileNgModuleMetadata|null {\n    moduleType = resolveForwardRef(moduleType);\n    let
compileMeta = this._ngModuleCache.get(moduleType);\n    if (compileMeta) {\n    return compileMeta;\n } \n\n
const meta = this._ngModuleResolver.resolve(moduleType, throwIfNotFound);\n    if (!meta) {\n    return null;\n
} \n\n    const declaredDirectives: cpl.CompileIdentifierMetadata[] = [];\n    const exportedNonModuleIdentifiers:

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cpl.CompileIdentifierMetadata[] = [];\n  const declaredPipes: cpl.CompileIdentifierMetadata[] = [];\n  const
importedModules: cpl.CompileNgModuleSummary[] = [];\n  const exportedModules:
cpl.CompileNgModuleSummary[] = [];\n  const providers: cpl.CompileProviderMetadata[] = [];\n  const
entryComponents: cpl.CompileEntryComponentMetadata[] = [];\n  const bootstrapComponents:
cpl.CompileIdentifierMetadata[] = [];\n  const schemas: SchemaMetadata[] = [];\n\n  if (meta.imports) {\n
flattenAndDedupeArray(meta.imports).forEach((importedType) => {\n    let importedModuleType: Type =
undefined;\n    if (isValidType(importedType)) {\n      importedModuleType = importedType;\n    } else if
(importedType && importedType.ngModule) {\n      const moduleWithProviders: ModuleWithProviders =
importedType;\n      importedModuleType = moduleWithProviders.ngModule;\n      if
(moduleWithProviders.providers) {\n        providers.push(...this._getProvidersMetadata(\n
moduleWithProviders.providers, entryComponents,\n          `provider for the NgModule
'${stringifyType(importedModuleType)}'`, [],\n          importedType));\n      }\n    }\n\n    if
(importedModuleType) {\n      if (this._checkSelfImport(moduleType, importedModuleType)) return;\n      if
(!alreadyCollecting) alreadyCollecting = new Set();\n      if (alreadyCollecting.has(importedModuleType)) {\n
this._reportError(\n        syntaxError(` ${this._getTypeDescriptor(importedModuleType)} '${\n
stringifyType(importedType)}' is imported recursively by the module '${\n
stringifyType(moduleType)}'.`),\n          moduleType);\n        return;\n      }\n
alreadyCollecting.add(importedModuleType);\n      const importedModuleSummary =\n
this.getNgModuleSummary(importedModuleType, alreadyCollecting);\n
alreadyCollecting.delete(importedModuleType);\n      if (!importedModuleSummary) {\n
this._reportError(\n        syntaxError(`Unexpected ${this._getTypeDescriptor(importedType)} '${\n
stringifyType(importedType)}' imported by the module '${\n
stringifyType(moduleType)}'. Please add a
@NgModule annotation.`),\n          moduleType);\n        return;\n      }\n
importedModules.push(importedModuleSummary);\n    } else {\n      this._reportError(\n
syntaxError(\n        `Unexpected value '${stringifyType(importedType)}' imported by the module '${\n
stringifyType(moduleType)}'`),\n          moduleType);\n        return;\n      }\n    });\n  }\n\n  if
(meta.exports) {\n    flattenAndDedupeArray(meta.exports).forEach((exportedType) => {\n      if
(!isValidType(exportedType)) {\n        this._reportError(\n          syntaxError(\n            `Unexpected value
'${stringifyType(exportedType)}' exported by the module '${\n
stringifyType(moduleType)}'`),\n            moduleType);\n        return;\n      }\n      if
(!alreadyCollecting) alreadyCollecting = new Set();\n      if
(alreadyCollecting.has(exportedType)) {\n        this._reportError(\n
syntaxError(` ${this._getTypeDescriptor(exportedType)} '${\n
stringify(exportedType)}' is exported
recursively by the module '${\n
stringifyType(moduleType)}'`),\n            moduleType);\n        return;\n      }\n
      alreadyCollecting.add(exportedType);\n      const exportedModuleSummary =
this.getNgModuleSummary(exportedType, alreadyCollecting);\n      alreadyCollecting.delete(exportedType);\n
if (exportedModuleSummary) {\n        exportedModules.push(exportedModuleSummary);\n      } else {\n
exportedNonModuleIdentifiers.push(this._getIdentifierMetadata(exportedType));\n      }\n    });\n  }\n\n  //
Note: This will be modified later, so we rely on\n  // getting a new instance every time!\n  const transitiveModule
= this._getTransitiveNgModuleMetadata(importedModules, exportedModules);\n  if (meta.declarations) {\n
flattenAndDedupeArray(meta.declarations).forEach((declaredType) => {\n      if (!isValidType(declaredType)) {\n
this._reportError(\n        syntaxError(\n          `Unexpected value '${stringifyType(declaredType)}'
declared by the module '${\n
stringifyType(moduleType)}'`),\n            moduleType);\n        return;\n      }\n
      const declaredIdentifier = this._getIdentifierMetadata(declaredType);\n      if
(this.isDirective(declaredType)) {\n        if (this.isAbstractDirective(declaredType)) {\n          this._reportError(\n
syntaxError(\n            `Directive ${stringifyType(declaredType)} has no selector, please add it!`),\n
            declaredType);\n        }\n        transitiveModule.addDirective(declaredIdentifier);\n
declaredDirectives.push(declaredIdentifier);\n        this._addTypeToModule(declaredType, moduleType);\n      }
      else if (this.isPipe(declaredType)) {\n        transitiveModule.addPipe(declaredIdentifier);\n

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transitiveModule.pipes.push(declaredIdentifier);\n      declaredPipes.push(declaredIdentifier);\n
this._addTypeToModule(declaredType, moduleType);\n    } else {\n      this._reportError(\n
syntaxError(`Unexpected ${this._getTypeDescriptor(declaredType)} '${\n
stringifyType(declaredType)}'\n
declared by the module '${\n
stringifyType(\n
moduleType)}'. Please add a\n
@Pipe/@Directive/@Component annotation.`),\n
moduleType);\n    return;\n  }\n  });\n  }\n  }\n
const exportedDirectives: cpl.CompileIdentifierMetadata[] = [];\n  const exportedPipes:\n
cpl.CompileIdentifierMetadata[] = [];\n  exportedNonModuleIdentifiers.forEach((exportedId) => {\n    if\n
(transitiveModule.directivesSet.has(exportedId.reference)) {\n      exportedDirectives.push(exportedId);\n
transitiveModule.addExportedDirective(exportedId);\n    } else if\n
(transitiveModule.pipesSet.has(exportedId.reference)) {\n      exportedPipes.push(exportedId);\n
transitiveModule.addExportedPipe(exportedId);\n    } else {\n      this._reportError(\n
syntaxError(`Can't\n
export ${this._getTypeDescriptor(exportedId.reference)} '${\n
stringifyType(exportedId.reference)}' from\n
${\n
stringifyType(moduleType)} as it was neither declared nor imported!`),\n
moduleType);\n
return;\n    }\n  });\n  // The providers of the module have to go last\n  // so that they overwrite any other\n
provider we already added.\n  if (meta.providers) {\n    providers.push(...this._getProvidersMetadata(\n
meta.providers, entryComponents,\n
`provider for the NgModule '${stringifyType(moduleType)}'`, [],\n
moduleType));\n  }\n  if (meta.entryComponents) {\n
entryComponents.push(...flattenAndDedupeArray(meta.entryComponents)\n
.map(type =>\n
this._getEntryComponentMetadata(type!));\n  }\n  if (meta.bootstrap) {\n
flattenAndDedupeArray(meta.bootstrap).forEach(type => {\n    if (!isValidType(type)) {\n
this._reportError(\n
syntaxError(`Unexpected value '${\n
stringifyType(type)}' used in the\n
bootstrap property of module '${\n
stringifyType(moduleType)}'`),\n
moduleType);\n
return;\n    }\n    bootstrapComponents.push(this._getIdentifierMetadata(type);\n  });\n  }\n  entryComponents.push(\n
...bootstrapComponents.map(type =>\n
this._getEntryComponentMetadata(type.reference!));\n  }\n  if (meta.schemas) {\n
schemas.push(...flattenAndDedupeArray(meta.schemas);\n  }\n  }\n  compileMeta = new\n
cpl.CompileNgModuleMetadata({\n    type: this._getTypeMetadata(moduleType),\n    providers,\n
entryComponents,\n    bootstrapComponents,\n    schemas,\n    declaredDirectives,\n    exportedDirectives,\n
declaredPipes,\n    exportedPipes,\n    importedModules,\n    exportedModules,\n    transitiveModule,\n    id:\n
meta.id || null,\n  });\n  entryComponents.forEach((id) => transitiveModule.addEntryComponent(id));\n
providers.forEach((provider) => transitiveModule.addProvider(provider, compileMeta!.type));\n
transitiveModule.addModule(compileMeta.type);\n  this._ngModuleCache.set(moduleType, compileMeta);\n
return compileMeta;\n  }\n  private _checkSelfImport(moduleType: Type, importedModuleType: Type): boolean\n
{\n    if (moduleType === importedModuleType) {\n      this._reportError(\n
syntaxError(`${stringifyType(moduleType)} module can't import itself`), moduleType);\n      return true;\n    }\n
return false;\n  }\n  private _getTypeDescriptor(type: Type): string {\n    if (isValidType(type)) {\n    if\n
(this.isDirective(type)) {\n      return 'directive';\n    }\n    if (this.isPipe(type)) {\n      return 'pipe';\n    }\n
if (this.isNgModule(type)) {\n      return 'module';\n    }\n  }\n  }\n  if ((type as any).provide) {\n    return\n
'provider';\n  }\n  return 'value';\n  }\n  private _addTypeToModule(type: Type, moduleType: Type) {\n
const oldModule = this._ngModuleOfTypes.get(type);\n    if (oldModule && oldModule !== moduleType) {\n
this._reportError(\n
syntaxError(\n
`Type ${stringifyType(type)} is part of the declarations of 2\n
modules: ${\n
stringifyType(oldModule)} and ${stringifyType(moduleType)}!` +\n
`Please\n
consider moving ${stringifyType(type)} to a higher module that imports ${\n
stringifyType(oldModule)}\n
and ${stringifyType(moduleType)}.` +\n
`You can also create a new NgModule that exports and includes\n
${\n
stringifyType(type)} then import that NgModule in ${\n
stringifyType(oldModule)} and\n
${stringifyType(moduleType)}.`),\n
moduleType);\n    return;\n  }\n  this._ngModuleOfTypes.set(type,\n
moduleType);\n  }\n  private _getTransitiveNgModuleMetadata(\n    importedModules:\n
cpl.CompileNgModuleSummary[],\n    exportedModules: cpl.CompileNgModuleSummary[]):

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cpl.TransitiveCompileNgModuleMetadata {\n // collect `providers` / `entryComponents` from all imported and all
exported modules\n const result = new cpl.TransitiveCompileNgModuleMetadata();\n const modulesByToken =
new Map<any, Set<any>>();\n importedModules.concat(exportedModules).forEach((modSummary) => {\n
modSummary.modules.forEach((mod) => result.addModule(mod));\n
modSummary.entryComponents.forEach((comp) => result.addEntryComponent(comp));\n const addedTokens =
new Set<any>();\n modSummary.providers.forEach((entry) => {\n const tokenRef =
cpl.tokenReference(entry.provider.token);\n let prevModules = modulesByToken.get(tokenRef);\n if
(!prevModules) {\n prevModules = new Set<any>();\n modulesByToken.set(tokenRef, prevModules);\n
}\n const moduleRef = entry.module.reference;\n // Note: the providers of one module may still contain
multiple providers\n // per token (e.g. for multi providers), and we need to preserve these.\n if
(addedTokens.has(tokenRef) || !prevModules.has(moduleRef)) {\n prevModules.add(moduleRef);\n
addedTokens.add(tokenRef);\n result.addProvider(entry.provider, entry.module);\n }\n });\n });\n
exportedModules.forEach((modSummary) => {\n modSummary.exportedDirectives.forEach((id) =>
result.addExportedDirective(id));\n modSummary.exportedPipes.forEach((id) => result.addExportedPipe(id));\n
});\n importedModules.forEach((modSummary) => {\n modSummary.exportedDirectives.forEach((id) =>
result.addDirective(id));\n modSummary.exportedPipes.forEach((id) => result.addPipe(id));\n });\n return
result;\n }\n\n private _getIdentifierMetadata(type: Type): cpl.CompileIdentifierMetadata {\n type =
resolveForwardRef(type);\n return {reference: type};\n }\n\n isInjectable(type: any): boolean {\n const
annotations = this._reflector.tryAnnotations(type);\n return annotations.some(ann =>
createInjectable.isTypeOf(ann));\n }\n\n getInjectableSummary(type: any): cpl.CompileTypeSummary {\n return
{\n summaryKind: cpl.CompileSummaryKind.Injectable,\n type: this._getTypeMetadata(type, null, false)\n
};\n }\n\n getInjectableMetadata(\n type: any, dependencies: any[]|null = null,\n throwOnUnknownDeps:
boolean = true): cpl.CompileInjectableMetadata|null {\n const typeSummary = this._loadSummary(type,
cpl.CompileSummaryKind.Injectable);\n const typeMetadata = typeSummary ?\n typeSummary.type :\n this._getTypeMetadata(type, dependencies, throwOnUnknownDeps);\n\n const annotations: Injectable[] =\n this._reflector.annotations(type).filter(ann => createInjectable.isTypeOf(ann));\n\n if (annotations.length === 0)
{\n return null;\n }\n\n const meta = annotations[annotations.length - 1];\n return {\n symbol: type,\n
type: typeMetadata,\n providedIn: meta.providedIn,\n useValue: meta.useValue,\n useClass:
meta.useClass,\n useExisting: meta.useExisting,\n useFactory: meta.useFactory,\n deps: meta.deps,\n
};\n }\n\n private _getTypeMetadata(type: Type, dependencies: any[]|null = null, throwOnUnknownDeps = true):\n
cpl.CompileTypeMetadata {\n const identifier = this._getIdentifierMetadata(type);\n return {\n reference:
identifier.reference,\n diDeps: this._getDependenciesMetadata(identifier.reference, dependencies,
throwOnUnknownDeps),\n lifecycleHooks: getAllLifecycleHooks(this._reflector, identifier.reference),\n
};\n }\n\n private _getFactoryMetadata(factory: Function, dependencies: any[]|null = null):\n
cpl.CompileFactoryMetadata {\n factory = resolveForwardRef(factory);\n return {reference: factory, diDeps:
this._getDependenciesMetadata(factory, dependencies)};\n }\n\n /**\n * Gets the metadata for the given pipe.\n
* This assumes `loadNgModuleDirectiveAndPipeMetadata` has been called first.\n */\n
getPipeMetadata(pipeType: any): cpl.CompilePipeMetadata|null {\n const pipeMeta =
this._pipeCache.get(pipeType);\n if (!pipeMeta) {\n this._reportError(\n syntaxError(\n `Illegal
state: getPipeMetadata can only be called after loadNgModuleDirectiveAndPipeMetadata for a module that declares
it. Pipe ${\n stringifyType(pipeType)}.`,\n pipeType);\n }\n return pipeMeta || null;\n }\n\n
getPipeSummary(pipeType: any): cpl.CompilePipeSummary {\n const pipeSummary =\n
<cpl.CompilePipeSummary>this._loadSummary(pipeType, cpl.CompileSummaryKind.Pipe);\n if
(!pipeSummary) {\n this._reportError(\n syntaxError(\n `Illegal state: Could not load the summary
for pipe ${stringifyType(pipeType)}.`,\n pipeType);\n }\n return pipeSummary;\n }\n\n
getOrLoadPipeMetadata(pipeType: any): cpl.CompilePipeMetadata {\n let pipeMeta =
this._pipeCache.get(pipeType);\n if (!pipeMeta) {\n pipeMeta = this._loadPipeMetadata(pipeType);\n
}\n return pipeMeta;\n }\n\n private _loadPipeMetadata(pipeType: any): cpl.CompilePipeMetadata {\n pipeType =

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resolveForwardRef(pipeType);\n  const pipeAnnotation = this._pipeResolver.resolve(pipeType)!;\n  const\n  pipeMeta = new cpl.CompilePipeMetadata({\n    type: this._getTypeMetadata(pipeType),\n    name:\n    pipeAnnotation.name,\n    pure: !!pipeAnnotation.pure\n  });\n  this._pipeCache.set(pipeType, pipeMeta);\n  this._summaryCache.set(pipeType, pipeMeta.toSummary());\n  return pipeMeta;\n }\n\n private\n  _getDependenciesMetadata(\n    typeOrFunc: Type|Function, dependencies: any[]|null,\n    throwOnUnknownDeps = true): cpl.CompileDiDependencyMetadata[] {\n    let hasUnknownDeps = false;\n    const\n    params = dependencies || this._reflector.parameters(typeOrFunc) || [];\n    const dependenciesMetadata:\n    cpl.CompileDiDependencyMetadata[] = params.map((param) => {\n      let isAttribute = false;\n      let isHost =\n      false;\n      let isSelf = false;\n      let isSkipSelf = false;\n      let isOptional = false;\n      let token: any = null;\n      if\n      (Array.isArray(param)) {\n        param.forEach((paramEntry: any) => {\n          if\n          (createHost.isTypeOf(paramEntry)) {\n            isHost = true;\n          } else if (createSelf.isTypeOf(paramEntry)) {\n            isSelf = true;\n          } else if (createSkipSelf.isTypeOf(paramEntry)) {\n            isSkipSelf = true;\n          }\n          else if (createOptional.isTypeOf(paramEntry)) {\n            isOptional = true;\n          } else if\n          (createAttribute.isTypeOf(paramEntry)) {\n            isAttribute = true;\n            token = (paramEntry as\n            any).attributeName;\n          } else if (createInject.isTypeOf(paramEntry)) {\n            token = (paramEntry as\n            any).token;\n          } else if (\n            createInjectionToken.isTypeOf(paramEntry) ||\n            (paramEntry as\n            any) instanceof StaticSymbol) {\n            token = paramEntry;\n          } else if (isValidType(paramEntry) && token\n            == null) {\n            token = paramEntry;\n          }\n        });\n      } else {\n        token = param;\n      }\n      if (token\n        == null) {\n        hasUnknownDeps = true;\n        return {};\n      }\n      return {\n        isAttribute,\n        isHost,\n        isSelf,\n        isSkipSelf,\n        isOptional,\n        token: this._getTokenMetadata(token)\n      }; \n    });\n    if\n    (hasUnknownDeps) {\n      const depsTokens =\n      dependenciesMetadata.map((dep) => dep.token ?\n      stringifyType(dep.token) : '?').join(', ');\n      const message =\n      `Can't resolve all parameters for\n      ${stringifyType(typeOrFunc)}: (${depsTokens}).`\n      if (throwOnUnknownDeps ||\n        this._config.strictInjectionParameters) {\n        this._reportError(syntaxError(message), typeOrFunc);\n      }\n    }\n    return dependenciesMetadata;\n  }\n\n private _getTokenMetadata(token: any): cpl.CompileTokenMetadata\n  {\n    token = resolveForwardRef(token);\n    let compileToken: cpl.CompileTokenMetadata;\n    if (typeof token\n      === 'string') {\n      compileToken = {value: token};\n    } else {\n      compileToken = {identifier: {reference:\n      token}};\n    }\n    return compileToken;\n  }\n\n private _getProvidersMetadata(\n    providers: Provider[],\n    targetEntryComponents: cpl.CompileEntryComponentMetadata[],\n    debugInfo?: string, compileProviders:\n    cpl.CompileProviderMetadata[] = [],\n    type?: any): cpl.CompileProviderMetadata[] {\n    providers.forEach((provider: any, providerIdx: number) => {\n      if (Array.isArray(provider)) {\n        this._getProvidersMetadata(provider, targetEntryComponents, debugInfo, compileProviders);\n      } else {\n        provider = resolveForwardRef(provider);\n        let providerMeta: cpl.ProviderMeta = undefined!;\n        if (provider\n          && typeof provider === 'object' && provider.hasOwnProperty('provide')) {\n          this._validateProvider(provider);\n          providerMeta = new cpl.ProviderMeta(provider.provide, provider);\n        }\n        else if (isValidType(provider)) {\n          providerMeta = new cpl.ProviderMeta(provider, {useClass: provider});\n        }\n        } else if (provider === void 0) {\n          this._reportError(syntaxError(\n            `Encountered undefined provider!\n            Usually this means you have a circular dependencies. This might be caused by using 'barrel' index.ts files.`));\n        }\n        return;\n      } else {\n        const providersInfo =\n        providers\n        .reduce(\n          (soFar:\n          string[], seenProvider: any, seenProviderIdx: number) => {\n            if (seenProviderIdx < providerIdx) {\n              soFar.push(`${stringifyType(seenProvider)}`);\n            } else if (seenProviderIdx ===\n              providerIdx) {\n              soFar.push(`${stringifyType(seenProvider)}?`);\n            } else if\n              (seenProviderIdx === providerIdx + 1) {\n              soFar.push('...');\n            }\n            return\n            soFar;\n          },\n          [],\n          ).join(', ');\n        this._reportError(\n          syntaxError(`Invalid ${\n            debugInfo ?\n            debugInfo :\n            debugInfo\n            'provider' - only\n            instances of Provider and Type are allowed, got: [${\n              providersInfo\n            }]),\n          type);\n        return;\n      }\n      if (providerMeta.token ===\n        this._reflector.resolveExternalReference(Identifiers.ANALYZE_FOR_ENTRY_COMPONENTS)) {\n
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targetEntryComponents.push(...this._getEntryComponentsFromProvider(providerMeta, type));\n    } else {\n
compileProviders.push(this.getProviderMetadata(providerMeta));\n    }\n  });\n  return
compileProviders;\n  }\n  private _validateProvider(provider: any): void {\n    if
(provider.hasOwnProperty('useClass') && provider.useClass == null) {\n      this._reportError(syntaxError('Invalid
provider for ${\n      stringifyType(provider.provider)}. useClass cannot be ${provider.useClass}.\n      Usually
it happens when:\n      1. There's a circular dependency (might be caused by using index.ts (barrel) files).\n
      2. Class was used before it was declared. Use forwardRef in this case.));\n    }\n  }\n  private
_getEntryComponentsFromProvider(provider: cpl.ProviderMeta, type?: any):\n
cpl.CompileEntryComponentMetadata[] {\n    const components: cpl.CompileEntryComponentMetadata[] = [];\n
const collectedIdentifiers: cpl.CompileIdentifierMetadata[] = [];\n    if (provider.useFactory || provider.useExisting
|| provider.useClass) {\n      this._reportError(\n      syntaxError(' The
ANALYZE_FOR_ENTRY_COMPONENTS token only supports useValue!'), type);\n      return [];\n    }\n    if
(!provider.multi) {\n      this._reportError(\n      syntaxError(' The ANALYZE_FOR_ENTRY_COMPONENTS
token only supports 'multi = true!'),\n      type);\n      return [];\n    }\n    extractIdentifiers(provider.useValue,
collectedIdentifiers);\n    collectedIdentifiers.forEach((identifier) => {\n      const entry =
this._getEntryComponentMetadata(identifier.reference, false);\n      if (entry) {\n        components.push(entry);\n
      }\n    });\n    return components;\n  }\n  private _getEntryComponentMetadata(dirType: any, throwIfNotFound =
true):\n  cpl.CompileEntryComponentMetadata|null {\n    const dirMeta =
this.getNonNormalizedDirectiveMetadata(dirType);\n    if (dirMeta && dirMeta.metadata.isComponent) {\n
return { componentType: dirType, componentFactory: dirMeta.metadata.componentFactory!};\n    }\n    const
dirSummary =\n    <cpl.CompileDirectiveSummary>this._loadSummary(dirType,
cpl.CompileSummaryKind.Directive);\n    if (dirSummary && dirSummary.isComponent) {\n      return
{ componentType: dirType, componentFactory: dirSummary.componentFactory!};\n    }\n    if (throwIfNotFound)
{\n      throw syntaxError(` ${dirType.name} cannot be used as an entry component.`);\n    }\n    return null;\n  }\n  private _getInjectableTypeMetadata(type: Type, dependencies: any[]|null = null):\n  cpl.CompileTypeMetadata
{\n    const typeSummary = this._loadSummary(type, cpl.CompileSummaryKind.Injectable);\n    if (typeSummary)
{\n      return typeSummary.type;\n    }\n    return this._getTypeMetadata(type, dependencies);\n  }\n  private
_getProviderMetadata(provider: cpl.ProviderMeta): cpl.CompileProviderMetadata {\n    let compileDeps:
cpl.CompileDiDependencyMetadata[] = undefined!;\n    let compileTypeMetadata: cpl.CompileTypeMetadata =
null!;\n    let compileFactoryMetadata: cpl.CompileFactoryMetadata = null!;\n    let token:
cpl.CompileTokenMetadata = this._getTokenMetadata(provider.token);\n    if (provider.useClass) {\n
compileTypeMetadata =\n      this._getInjectableTypeMetadata(provider.useClass, provider.dependencies);\n
compileDeps = compileTypeMetadata.diDeps;\n      if (provider.token === provider.useClass) {\n        // use the
compileTypeMetadata as it contains information about lifecycleHooks...\n        token = { identifier:
compileTypeMetadata};\n      }\n    } else if (provider.useFactory) {\n      compileFactoryMetadata =
this._getFactoryMetadata(provider.useFactory, provider.dependencies);\n      compileDeps =
compileFactoryMetadata.diDeps;\n    }\n    return {\n      token: token,\n      useClass: compileTypeMetadata,\n
useValue: provider.useValue,\n      useFactory: compileFactoryMetadata,\n      useExisting: provider.useExisting ?
this._getTokenMetadata(provider.useExisting) : undefined,\n      deps: compileDeps,\n      multi: provider.multi\n
};\n  }\n  private _getQueriesMetadata(\n  queries: {[key: string]: Query}, isViewQuery: boolean,\n  directiveType: Type): cpl.CompileQueryMetadata[] {\n    const res: cpl.CompileQueryMetadata[] = [];\n
Object.keys(queries).forEach((propertyName: string) => {\n      const query = queries[propertyName];\n      if
(query.isViewQuery === isViewQuery) {\n        res.push(this._getQueryMetadata(query, propertyName,
directiveType));\n      }\n    });\n    return res;\n  }\n  private _queryVarBindings(selector: any): string[] {\n
return selector.split(/\\s*|\\s*/);\n  }\n  private _getQueryMetadata(q: Query, propertyName: string, typeOrFunc:
Type|Function):\n  cpl.CompileQueryMetadata {\n    let selectors: cpl.CompileTokenMetadata[];\n    if (typeof
q.selector === 'string') {\n      selectors =\n        this._queryVarBindings(q.selector).map((varName =>
this._getTokenMetadata(varName));\n    } else {\n      if (!q.selector) {\n        this._reportError(\n

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syntaxError(`Can't construct a query for the property \`${propertyName}\` of \`${typeOrFunc}\` since the query selector wasn't defined.`),\n      typeOrFunc);\n      selectors =\n      [];\n    } else {\n      selectors = [this._getTokenMetadata(q.selector)];\n    }\n  }\n  return {\n    selectors,\n    first: q.first,\n    descendants: q.descendants,\n    propertyName,\n    read: q.read ?\n    this._getTokenMetadata(q.read) : null!,\n    static: q.static\n  };\n}\n\nprivate _reportError(error: any, type?:\nany, otherType?: any) {\n  if (this._errorCollector) {\n    this._errorCollector(error, type);\n    if (otherType) {\n      this._errorCollector(error, otherType);\n    }\n  } else {\n    throw error;\n  }\n}\n\nfunction\nflattenArray(tree: any[], out: Array<any> = []): Array<any> {\n  if (tree) {\n    for (let i = 0; i < tree.length; i++) {\n      const item = resolveForwardRef(tree[i]);\n      if (Array.isArray(item)) {\n        flattenArray(item, out);\n      } else\n      {\n        out.push(item);\n      }\n    }\n  }\n  return out;\n}\n\nfunction dedupeArray(array: any[]): Array<any> {\n  if\n  (array) {\n    return Array.from(new Set(array));\n  }\n  return [];\n}\n\nfunction flattenAndDedupeArray(tree:\nany[]): Array<any> {\n  return dedupeArray(flattenArray(tree));\n}\n\nfunction isValidType(value: any): boolean\n{\n  return (value instanceof StaticSymbol) || (value instanceof Type);\n}\n\nfunction extractIdentifiers(value: any,\ntargetIdentifiers: cpl.CompileIdentifierMetadata[]) {\n  visitValue(value, new _CompileValueConverter(),\ntargetIdentifiers);\n}\n\nclass _CompileValueConverter extends ValueTransformer {\n  visitOther(value: any,\ntargetIdentifiers: cpl.CompileIdentifierMetadata[]): any {\n    targetIdentifiers.push({reference: value});\n  }\n}\n\nfunction stringifyType(type: any): string {\n  if (type instanceof StaticSymbol) {\n    return `${type.name}\n    in ${type.filePath}`;\n  } else {\n    return stringify(type);\n  }\n}\n\n/**\n * Indicates that a component is still being\n * loaded in a synchronous compile.\n */\nfunction componentStillLoadingError(compType: Type) {\n  const error =\n  Error(`Can't compile synchronously as ${stringify(compType)} is still being loaded!`);\n  (error as\nany)[ERROR_COMPONENT_TYPE] = compType;\n  return error;\n}\n\n/**\n * @license\n * Copyright Google\n * LLC All Rights Reserved.\n * Use of this source code is governed by an MIT-style license that can be\n * found\n * in the LICENSE file at https://angular.io/license\n */\nimport {CompileDiDependencyMetadata,\nCompileEntryComponentMetadata, CompileProviderMetadata, CompileTokenMetadata} from\n'./compile_metadata';\nimport {CompileReflector} from './compile_reflector';\nimport {DepFlags, NodeFlags}\nfrom './core';\nimport {createTokenForExternalReference, Identifiers} from './identifiers';\nimport\n{LifecycleHooks} from './lifecycle_reflector';\nimport * as o from './output/output_ast';\nimport\n{convertValueToOutputAst} from './output/value_util';\nimport {ProviderAst, ProviderAstType} from\n'./template_parser/template_ast';\nimport {OutputContext} from './util';\n\nexport function providerDef(ctx:\nOutputContext, providerAst: ProviderAst): {\n  providerExpr: o.Expression,\n  flags: NodeFlags,\n  depsExpr:\no.Expression,\n  tokenExpr: o.Expression\n} {\n  let flags = NodeFlags.None;\n  if (!providerAst.eager) {\n    flags\n    |= NodeFlags.LazyProvider;\n  }\n  if (providerAst.providerType === ProviderAstType.PrivateService) {\n    flags\n    |= NodeFlags.PrivateProvider;\n  }\n  if (providerAst.isModule) {\n    flags |= NodeFlags.TypeModuleProvider;\n  }\n  providerAst.lifecycleHooks.forEach((lifecycleHook) => {\n    // for regular providers, we only support\n    ngOnDestroy\n    if (lifecycleHook === LifecycleHooks.OnDestroy ||\n        providerAst.providerType ===\n        ProviderAstType.Directive ||\n        providerAst.providerType === ProviderAstType.Component) {\n      flags |=\n      lifecycleHookToNodeFlag(lifecycleHook);\n    }\n  });\n  const {providerExpr, flags: providerFlags, depsExpr} =\n  providerAst.multiProvider ?\n  multiProviderDef(ctx, flags, providerAst.providers) :\n  singleProviderDef(ctx,\n  flags, providerAst.providerType, providerAst.providers[0]);\n  return {\n    providerExpr,\n    flags: providerFlags,\n    depsExpr,\n    tokenExpr: tokenExpr(ctx, providerAst.token),\n  };\n}\n\nfunction multiProviderDef(\n  ctx:\n  OutputContext, flags: NodeFlags, providers: CompileProviderMetadata[]):\n  {\n    providerExpr: o.Expression, flags:\n  NodeFlags, depsExpr: o.Expression\n} {\n  const allDepDefs: o.Expression[] = [];\n  const allParams: o.FnParam[] =\n  [];\n  const exprs = providers.map((provider, providerIndex) => {\n    let expr: o.Expression;\n    if\n    (provider.useClass) {\n      const depExprs = convertDeps(providerIndex, provider.deps ||\n      provider.useClass.diDeps);\n      expr = ctx.importExpr(provider.useClass.reference).instantiate(depExprs);\n    }\n    else if (provider.useFactory) {\n      const depExprs = convertDeps(providerIndex, provider.deps ||\n      provider.useFactory.diDeps);\n      expr = ctx.importExpr(provider.useFactory.reference).callFn(depExprs);\n    }\n    else if (provider.useExisting) {\n      const depExprs = convertDeps(providerIndex, [{token:

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provider.useExisting}]);\n  expr = depExprs[0];\n  } else {\n    expr = convertValueToOutputAst(ctx,\n    provider.useValue);\n  }\n  return expr;\n  });\n  const providerExpr =\n    o.fn(allParams, [new\n    o.ReturnStatement(o.literalArr(exprs)), o.INFERRED_TYPE);\n  return {\n    providerExpr,\n    flags: flags | NodeFlags.TypeFactoryProvider,\n    depsExpr: o.literalArr(allDepDefs)\n  };\n\n  function\n  convertDeps(providerIndex: number, deps: CompileDiDependencyMetadata[]) {\n    return deps.map((dep,\n    depIndex) => {\n      const paramName = `p${providerIndex}_${depIndex}`;\n      allParams.push(new\n      o.FnParam(paramName, o.DYNAMIC_TYPE);\n      allDepDefs.push(depDef(ctx, dep));\n      return\n      o.variable(paramName);\n    });\n  }\n\n  function singleProviderDef(\n    ctx: OutputContext, flags: NodeFlags,\n    providerType: ProviderAstType,\n    providerMeta: CompileProviderMetadata):\n    { providerExpr: o.Expression,\n    flags: NodeFlags, depsExpr: o.Expression } {\n    let providerExpr: o.Expression;\n    let deps:\n    CompileDiDependencyMetadata[];\n    if (providerType === ProviderAstType.Directive || providerType ===\n    ProviderAstType.Component) {\n      providerExpr = ctx.importExpr(providerMeta.useClass!.reference);\n      flags |=\n      NodeFlags.TypeDirective;\n      deps = providerMeta.deps || providerMeta.useClass!.diDeps;\n    } else {\n      if\n      (providerMeta.useClass) {\n        providerExpr = ctx.importExpr(providerMeta.useClass.reference);\n        flags |=\n        NodeFlags.TypeClassProvider;\n        deps = providerMeta.deps || providerMeta.useClass.diDeps;\n      } else if\n      (providerMeta.useFactory) {\n        providerExpr = ctx.importExpr(providerMeta.useFactory.reference);\n        flags |=\n        NodeFlags.TypeFactoryProvider;\n        deps = providerMeta.deps || providerMeta.useFactory.diDeps;\n      } else if\n      (providerMeta.useExisting) {\n        providerExpr = o.NULL_EXPR;\n        flags |=\n        NodeFlags.TypeUseExistingProvider;\n        deps = [{token: providerMeta.useExisting}];\n      } else {\n        providerExpr = convertValueToOutputAst(ctx, providerMeta.useValue);\n        flags |=\n        NodeFlags.TypeValueProvider;\n        deps = [];\n      }\n    }\n    const depsExpr = o.literalArr(deps.map(dep =>\n    depDef(ctx, dep)));\n    return {providerExpr, flags, depsExpr};\n  }\n\n  function tokenExpr(ctx: OutputContext,\n    tokenMeta: CompileTokenMetadata): o.Expression {\n    return tokenMeta.identifier ?\n    ctx.importExpr(tokenMeta.identifier.reference) :\n    o.literal(tokenMeta.value);\n  }\n\n  export\n  function depDef(ctx: OutputContext, dep: CompileDiDependencyMetadata): o.Expression {\n    // Note: the\n    following fields have already been normalized out by provider_analyzer:\n    // - isAttribute, isHost\n    const expr =\n    dep.isValue ? convertValueToOutputAst(ctx, dep.value) : tokenExpr(ctx, dep.token!);\n    let flags =\n    DepFlags.None;\n    if (dep.isSkipSelf) {\n      flags |= DepFlags.SkipSelf;\n    }\n    if (dep.isOptional) {\n      flags |=\n      DepFlags.Optional;\n    }\n    if (dep.isSelf) {\n      flags |= DepFlags.Self;\n    }\n    if (dep.isValue) {\n      flags |=\n      DepFlags.Value;\n    }\n    return flags === DepFlags.None ? expr : o.literalArr([o.literal(flags), expr]);\n  }\n\n  export\n  function lifecycleHookToNodeFlag(lifecycleHook: LifecycleHooks): NodeFlags {\n    let nodeFlag =\n    NodeFlags.None;\n    switch (lifecycleHook) {\n      case LifecycleHooks.AfterContentChecked:\n        nodeFlag =\n        NodeFlags.AfterContentChecked;\n        break;\n      case LifecycleHooks.AfterContentInit:\n        nodeFlag =\n        NodeFlags.AfterContentInit;\n        break;\n      case LifecycleHooks.AfterViewChecked:\n        nodeFlag =\n        NodeFlags.AfterViewChecked;\n        break;\n      case LifecycleHooks.AfterViewInit:\n        nodeFlag =\n        NodeFlags.AfterViewInit;\n        break;\n      case LifecycleHooks.DoCheck:\n        nodeFlag = NodeFlags.DoCheck;\n        break;\n      case LifecycleHooks.OnChanges:\n        nodeFlag = NodeFlags.OnChanges;\n        break;\n      case\n      LifecycleHooks.OnDestroy:\n        nodeFlag = NodeFlags.OnDestroy;\n        break;\n      case LifecycleHooks.OnInit:\n        nodeFlag = NodeFlags.OnInit;\n        break;\n    }\n    return nodeFlag;\n  }\n\n  export\n  function\n  componentFactoryResolverProviderDef(\n    reflector: CompileReflector, ctx: OutputContext, flags: NodeFlags,\n    entryComponents: CompileEntryComponentMetadata[]):\n    { providerExpr: o.Expression,\n    flags: NodeFlags,\n    depsExpr: o.Expression,\n    tokenExpr: o.Expression }\n  {\n    const entryComponentFactories =\n    entryComponents.map((entryComponent) => ctx.importExpr(entryComponent.componentFactory));\n    const token\n    = createTokenForExternalReference(reflector, Identifiers.ComponentFactoryResolver);\n    const classMeta = {\n    diDeps: [\n      {isValue: true, value: o.literalArr(entryComponentFactories)},\n      {token: token, isSkipSelf: true,\n      isOptional: true},\n      {token: createTokenForExternalReference(reflector, Identifiers.NgModuleRef)},\n    ],\n    lifecycleHooks: [],\n    reference:\n    reflector.resolveExternalReference(Identifiers.CodegenComponentFactoryResolver)\n  };\n    const {providerExpr,\n  
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flags: providerFlags, depsExpr} =\n    singleProviderDef(ctx, flags, ProviderAstType.PrivateService, {\n
token,\n    multi: false,\n    useClass: classMeta,\n    });\n return {providerExpr, flags: providerFlags,
depsExpr, tokenExpr: tokenExpr(ctx, token)};\n}\n"/**\n * @license\n * Copyright Google LLC All Rights
Reserved.\n *\n * Use of this source code is governed by an MIT-style license that can be\n * found in the
LICENSE file at https://angular.io/license\n */\n\nimport {CompileNgModuleMetadata, CompileProviderMetadata,
identifierName} from './compile_metadata';\nimport {CompileReflector} from './compile_reflector';\nimport
{NodeFlags} from './core';\nimport {Identifiers} from './identifiers';\nimport * as o from
'/output/output_ast';\nimport {typeSourceSpan} from './parse_util';\nimport {NgModuleProviderAnalyzer} from
'/provider_analyzer';\nimport {OutputContext} from './util';\nimport {componentFactoryResolverProviderDef,
depDef, providerDef} from './view_compiler/provider_compiler';\n\nexport class NgModuleCompileResult {\n
constructor(public ngModuleFactoryVar: string) {} }\n\nconst LOG_VAR = o.variable('_l');\n\nexport class
NgModuleCompiler {\n  constructor(private reflector: CompileReflector) {}\n  compile(\n    ctx: OutputContext,
ngModuleMeta: CompileNgModuleMetadata,\n    extraProviders: CompileProviderMetadata[]):
NgModuleCompileResult {\n    const sourceSpan = typeSourceSpan('NgModule', ngModuleMeta.type);\n    const
entryComponentFactories = ngModuleMeta.transitiveModule.entryComponents;\n    const bootstrapComponents =
ngModuleMeta.bootstrapComponents;\n    const providerParser =\n      new
NgModuleProviderAnalyzer(this.reflector, ngModuleMeta, extraProviders, sourceSpan);\n    const providerDefs =\n
      [componentFactoryResolverProviderDef(\n        this.reflector, ctx, NodeFlags.None,
entryComponentFactories)]\n        .concat(providerParser.parse().map((provider) => providerDef(ctx,
provider)))\n        .map(({providerExpr, depsExpr, flags, tokenExpr}) => {\n          return
o.importExpr(Identifiers.moduleProviderDef).callFn([\n            o.literal(flags), tokenExpr, providerExpr,
depsExpr\n          ]);\n        });\n    const ngModuleDef =
o.importExpr(Identifiers.moduleDef).callFn([o.literalArr(providerDefs)];\n    const ngModuleDefFactory =\n
o.fn([new o.FnParam(LOG_VAR.name!), [new o.ReturnStatement(ngModuleDef)], o.INFERRED_TYPE);\n    const
ngModuleFactoryVar = `${identifierName(ngModuleMeta.type)}NgFactory`;\n    this._createNgModuleFactory(\n
      ctx, ngModuleMeta.type.reference,
o.importExpr(Identifiers.createModuleFactory).callFn([\n        ctx.importExpr(ngModuleMeta.type.reference),\n
        o.literalArr(bootstrapComponents.map(id => ctx.importExpr(id.reference))),\n        ngModuleDefFactory\n
      ]));\n    if (ngModuleMeta.id) {\n      const id = typeof ngModuleMeta.id === 'string' ? o.literal(ngModuleMeta.id)
:\n        ctx.importExpr(ngModuleMeta.id);\n      const registerFactoryStmt =
o.importExpr(Identifiers.RegisterModuleFactoryFn)\n        .callFn([id,
o.variable(ngModuleFactoryVar)])\n        .toStmt();\n      ctx.statements.push(registerFactoryStmt);\n    }\n    return new
NgModuleCompileResult(ngModuleFactoryVar);\n  }\n\n  createStub(ctx: OutputContext, ngModuleReference:
any) {\n    this._createNgModuleFactory(ctx, ngModuleReference, o.NULL_EXPR);\n  }\n\n  private
_createNgModuleFactory(ctx: OutputContext, reference: any, value: o.Expression) {\n    const ngModuleFactoryVar
= `${identifierName({reference: reference})}NgFactory`;\n    const ngModuleFactoryStmt =\n
o.variable(ngModuleFactoryVar)\n      .set(value)\n      .toDeclStmt(\n        o.importType(\n
Identifiers.NgModuleFactory, [o.expressionType(ctx.importExpr(reference))]),\n
[o.TypeModifier.Const]),\n        [o.StmtModifier.Final, o.StmtModifier.Exported]);\n    ctx.statements.push(ngModuleFactoryStmt);\n  }\n}\n"/**\n * @license\n * Copyright Google LLC All Rights
Reserved.\n *\n * Use of this source code is governed by an MIT-style license that can be\n * found in the
LICENSE file at https://angular.io/license\n */\n\nimport {CompileReflector} from './compile_reflector';\nimport
{createNgModule, NgModule, Type} from './core';\nimport {findLast} from './directive_resolver';\nimport
{stringify} from './util';\n\n/**\n * Resolves types to {@link NgModule}.\n */\nexport class NgModuleResolver
{\n  constructor(private _reflector: CompileReflector) {}\n  isNgModule(type: any) {\n    return
this._reflector.annotations(type).some(createNgModule.isTypeOf);\n  }\n  resolve(type: Type, throwIfNotFound =
true): NgModule|null {\n    const ngModuleMeta: NgModule =\n      findLast(this._reflector.annotations(type),

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createNgModule.isTypeOf);\n\n if (ngModuleMeta) {\n  return ngModuleMeta;\n } else {\n  if
(throwIfNotFound) {\n   throw new Error(`No NgModule metadata found for '${stringify(type)}'.`);\n  }\n  return null;\n }\n }\n}\n"/**\n * @license\n * Copyright Google LLC All Rights Reserved.\n *\n * Use of this
source code is governed by an MIT-style license that can be\n * found in the LICENSE file at
https://angular.io/license\n */\n\nimport { AbstractEmitterVisitor, CATCH_ERROR_VAR, CATCH_STACK_VAR,
EmitterVisitorContext, OutputEmitter } from './abstract_emitter';\n\nimport * as o from './output_ast';\n\nexport
function debugOutputAstAsTypeScript(ast: o.Statement|o.Expression|o.Type|any[]): string {\n  const converter =
new _TsEmitterVisitor();\n  const ctx = EmitterVisitorContext.createRoot();\n  const asts: any[] = Array.isArray(ast)
? ast : [ast];\n\n  asts.forEach((ast) => {\n    if (ast instanceof o.Statement) {\n      ast.visitStatement(converter,
ctx);\n    } else if (ast instanceof o.Expression) {\n      ast.visitExpression(converter, ctx);\n    } else if (ast instanceof
o.Type) {\n      ast.visitType(converter, ctx);\n    } else {\n      throw new Error(`Don't know how to print debug info
for ${ast}`);\n    }\n  });\n  return ctx.toSource();\n}\n\nexport type ReferenceFilter = (reference:
o.ExternalReference) => boolean;\n\nexport class TypeScriptEmitter implements OutputEmitter {\n  emitStatementsAndContext(\n    genFilePath: string, stmts: o.Statement[], preamble: string = "",\n    emitSourceMaps: boolean = true, referenceFilter?: ReferenceFilter,\n    importFilter?: ReferenceFilter):
{sourceText: string, context: EmitterVisitorContext} {\n    const converter = new _TsEmitterVisitor(referenceFilter,
importFilter);\n    const ctx = EmitterVisitorContext.createRoot();\n\n    converter.visitAllStatements(stmts,
ctx);\n\n    const preambleLines = preamble ? preamble.split('\n') : [];\n    converter.reexports.forEach((reexports,
exportedModuleName) => {\n      const reexportsCode =\n        reexports.map(reexport => `${reexport.name} as
${reexport.as}`).join(',');\n      preambleLines.push(`export ${reexportsCode} from
'${exportedModuleName}'`);\n    });\n\n    converter.importsWithPrefixes.forEach((prefix, importedModuleName)
=> {\n      // Note: can't write the real word for import as it screws up system.js auto detection...\n\n      preambleLines.push(`\n      `imp` +\n      `ort * as ${prefix} from '${importedModuleName}'`);\n    });\n\n    const sm = emitSourceMaps ?\n      ctx.toSourceMapGenerator(genFilePath, preambleLines.length).toJsComment():\n      "";\n    const lines = [...preambleLines, ctx.toSource(), sm];\n    if (sm) {\n      // always add a newline at the
end, as some tools have bugs without it.\n      lines.push("");\n    }\n\n    ctx.setPreambleLineCount(preambleLines.length);\n    return {sourceText: lines.join('\n'), context: ctx};\n  }\n\n  emitStatements(genFilePath: string, stmts: o.Statement[], preamble: string = "") {\n    return
this.emitStatementsAndContext(genFilePath, stmts, preamble).sourceText;\n  }\n}\n\n\nclass _TsEmitterVisitor
extends AbstractEmitterVisitor implements o.TypeVisitor {\n  private typeExpression = 0;\n\n  constructor(private
referenceFilter?: ReferenceFilter, private importFilter?: ReferenceFilter) {\n    super(false);\n  }\n\n  importsWithPrefixes = new Map<string, string>();\n  reexports = new Map<string, {name: string, as:
string}>();\n\n  visitType(t: o.Type|null, ctx: EmitterVisitorContext, defaultType: string = 'any') {\n    if (t) {\n      this.typeExpression++;\n      t.visitType(this, ctx);\n      this.typeExpression--;\n    } else {\n      ctx.print(null,
defaultType);\n    }\n  }\n\n  visitLiteralExpr(ast: o.LiteralExpr, ctx: EmitterVisitorContext): any {\n    const value =
ast.value;\n    if (value == null && ast.type != o.INFERRED_TYPE) {\n      ctx.print(ast, `(${value} as any)`);\n      return null;\n    }\n    return super.visitLiteralExpr(ast, ctx);\n  }\n\n  // Temporary workaround to support
strictNullCheck enabled consumers of ngc emit.\n  // In SNC mode, [] have the type never[], so we cast here to
any[].\n  // TODO: narrow the cast to a more explicit type, or use a pattern that does not\n  // start with [].concat. see
https://github.com/angular/angular/pull/11846\n  visitLiteralArrayExpr(ast: o.LiteralArrayExpr, ctx:
EmitterVisitorContext): any {\n    if (ast.entries.length === 0) {\n      ctx.print(ast, '());\n    }\n    const result =
super.visitLiteralArrayExpr(ast, ctx);\n    if (ast.entries.length === 0) {\n      ctx.print(ast, ' as any[]');\n    }\n    return result;\n  }\n\n  visitExternalExpr(ast: o.ExternalExpr, ctx: EmitterVisitorContext): any {\n    this._visitIdentifier(ast.value, ast.typeParams, ctx);\n    return null;\n  }\n\n  visitAssertNotNullExpr(ast:
o.AssertNotNull, ctx: EmitterVisitorContext): any {\n    const result = super.visitAssertNotNullExpr(ast, ctx);\n    ctx.print(ast, '!');\n    return result;\n  }\n\n  visitDeclareVarStmt(stmt: o.DeclareVarStmt, ctx:
EmitterVisitorContext): any {\n    if (stmt.hasModifier(o.StmtModifier.Exported) && stmt.value instanceof
o.ExternalExpr &&\n      !stmt.type) {\n      // check for a reexport\n      const {name, moduleName} =

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stmt.value.value;\n    if (moduleName) {\n        let reexports = this.reexports.get(moduleName);\n        if (!reexports) {\n            reexports = [];\n            this.reexports.set(moduleName, reexports);\n        }\n        reexports.push({ name: name!, as: stmt.name});\n        return null;\n    }\n    if (stmt.hasModifier(o.StmtModifier.Exported)) {\n        ctx.print(stmt, `export `);\n    }\n    if (stmt.hasModifier(o.StmtModifier.Final)) {\n        ctx.print(stmt, `const`);\n    } else {\n        ctx.print(stmt, `var`);\n    }\n    ctx.print(stmt, `${stmt.name}`);\n    this._printColonType(stmt.type, ctx);\n    if (stmt.value) {\n        ctx.print(stmt, ` = `);\n        stmt.value.visitExpression(this, ctx);\n    }\n    ctx.println(stmt, ``);\n    return null;\n}\n\nvisitWrappedNodeExpr(ast: o.WrappedNodeExpr<any>, ctx: EmitterVisitorContext): never {\n    throw new Error('Cannot visit a WrappedNodeExpr when outputting Typescript.);\n}\n\nvisitCastExpr(ast: o.CastExpr, ctx: EmitterVisitorContext): any {\n    ctx.print(ast, `(<`);\n    ast.type!.visitType(this, ctx);\n    ctx.print(ast, `>`);\n    ast.value.visitExpression(this, ctx);\n    ctx.print(ast, `)`);\n    return null;\n}\n\nvisitInstantiateExpr(ast: o.InstantiateExpr, ctx: EmitterVisitorContext): any {\n    ctx.print(ast, `new `);\n    this.typeExpression++;\n    ast.classExpr.visitExpression(this, ctx);\n    this.typeExpression--;\n    ctx.print(ast, `(`);\n    this.visitAllExpressions(ast.args, ctx, ``,`);`\n    ctx.print(ast, `)`);\n    return null;\n}\n\nvisitDeclareClassStmt(stmt: o.ClassStmt, ctx: EmitterVisitorContext): any {\n    ctx.pushClass(stmt);\n    if (stmt.hasModifier(o.StmtModifier.Exported)) {\n        ctx.print(stmt, `export `);\n    }\n    ctx.print(stmt, `class ${stmt.name}`);\n    if (stmt.parent != null) {\n        ctx.print(stmt, ` extends `);\n        this.typeExpression++;\n        stmt.parent.visitExpression(this, ctx);\n        this.typeExpression--;\n    }\n    ctx.println(stmt, ` `);\n    ctx.incIndent();\n    stmt.fields.forEach((field) => this._visitClassField(field, ctx));\n    if (stmt.constructorMethod != null) {\n        this._visitClassConstructor(stmt, ctx);\n    }\n    stmt.getters.forEach((getter) => this._visitClassGetter(getter, ctx));\n    stmt.methods.forEach((method) => this._visitClassMethod(method, ctx));\n    ctx.decIndent();\n    ctx.println(stmt, ` `);\n    ctx.popClass();\n    return null;\n}\n\nprivate _visitClassField(field: o.ClassField, ctx: EmitterVisitorContext) {\n    if (field.hasModifier(o.StmtModifier.Private)) {\n        // comment out as a workaround for #10967\n        ctx.print(null, `/*private*/ `);\n    }\n    if (field.hasModifier(o.StmtModifier.Static)) {\n        ctx.print(null, `static `);\n    }\n    ctx.print(null, field.name);\n    this._printColonType(field.type, ctx);\n    if (field.initializer) {\n        ctx.print(null, ` = `);\n        field.initializer.visitExpression(this, ctx);\n    }\n    ctx.println(null, ` `);\n}\n\nprivate _visitClassGetter(getter: o.ClassGetter, ctx: EmitterVisitorContext) {\n    if (getter.hasModifier(o.StmtModifier.Private)) {\n        ctx.print(null, `private `);\n    }\n    ctx.print(null, `get ${getter.name}()`);\n    this._printColonType(getter.type, ctx);\n    ctx.println(null, ` `);\n    ctx.incIndent();\n    this.visitAllStatements(getter.body, ctx);\n    ctx.decIndent();\n    ctx.println(null, ` `);\n}\n\nprivate _visitClassConstructor(stmt: o.ClassStmt, ctx: EmitterVisitorContext) {\n    ctx.print(stmt, `constructor(`);\n    this._visitParams(stmt.constructorMethod.params, ctx);\n    ctx.println(stmt, ` `);\n    ctx.incIndent();\n    this.visitAllStatements(stmt.constructorMethod.body, ctx);\n    ctx.decIndent();\n    ctx.println(stmt, ` `);\n}\n\nprivate _visitClassMethod(method: o.ClassMethod, ctx: EmitterVisitorContext) {\n    if (method.hasModifier(o.StmtModifier.Private)) {\n        ctx.print(null, `private `);\n    }\n    ctx.print(null, `${method.name}()`);\n    this._visitParams(method.params, ctx);\n    ctx.print(null, `)`);\n    this._printColonType(method.type, ctx, `void`);\n    ctx.println(null, ` `);\n    ctx.incIndent();\n    this.visitAllStatements(method.body, ctx);\n    ctx.decIndent();\n    ctx.println(null, ` `);\n}\n\nvisitFunctionExpr(ast: o.FunctionExpr, ctx: EmitterVisitorContext): any {\n    if (ast.name) {\n        ctx.print(ast, `function `);\n        ctx.print(ast, ast.name);\n    }\n    ctx.print(ast, `(`);\n    this._visitParams(ast.params, ctx);\n    ctx.print(ast, `)`);\n    this._printColonType(ast.type, ctx, `void`);\n    if (!ast.name) {\n        ctx.print(ast, ` => `);\n    }\n    ctx.println(ast, `{`);\n    ctx.incIndent();\n    this.visitAllStatements(ast.statements, ctx);\n    ctx.decIndent();\n    ctx.print(ast, ` `);\n    return null;\n}\n\nvisitDeclareFunctionStmt(stmt: o.DeclareFunctionStmt, ctx: EmitterVisitorContext): any {\n    if (stmt.hasModifier(o.StmtModifier.Exported)) {\n        ctx.print(stmt, `export `);\n    }\n    ctx.print(stmt, `function ${stmt.name}(`);\n    this._visitParams(stmt.params, ctx);\n    ctx.print(stmt, `)`);\n    this._printColonType(stmt.type, ctx, `void`);\n    ctx.println(stmt, ` `);\n    ctx.incIndent();\n    this.visitAllStatements(stmt.statements, ctx);\n    ctx.decIndent();\n    ctx.println(stmt, ` `);\n    return null;\n}\n\nvisitTryCatchStmt(stmt: o.TryCatchStmt, ctx: EmitterVisitorContext): any {\n    ctx.println(stmt, `try {`);\n}

```



```

createPipe.isTypeOf);\n  if (annotation) {\n    return annotation;\n  }\n  if (throwIfNotFound) {\n    throw new Error(`No Pipe decorator found on ${stringify(type)}`);\n  }\n  return null;\n}\n\n"/**\n *  

@license\n * Copyright Google LLC All Rights Reserved.\n *\n * Use of this source code is governed by an MIT-  

style license that can be\n * found in the LICENSE file at https://angular.io/license\n */\n\nimport  

{AotCompilerOptions} from './aot/compiler_options';\nimport {StaticReflector} from  

'./aot/static_reflector';\nimport {StaticSymbol} from './aot/static_symbol';\nimport {CompileDirectiveMetadata,  

CompilePipeSummary} from './compile_metadata';\nimport {BindingForm, convertActionBinding,  

convertPropertyBinding, convertPropertyBindingBuiltins, EventHandlerVars, LocalResolver} from  

'./compiler_util/expression_converter';\nimport {AST, ASTWithSource, Interpolation} from  

'./expression_parser/ast';\nimport * as aso from './output/output_ast';\nimport {ParseSourceSpan} from  

'./parse_util';\nimport {AttrAst, BoundDirectivePropertyAst, BoundElementPropertyAst, BoundEventAst,  

BoundTextAst, DirectiveAst, ElementAst, EmbeddedTemplateAst, NgContentAst, ReferenceAst, TemplateAst,  

TemplateAstVisitor, templateVisitAll, TextAst, VariableAst} from './template_parser/template_ast';\nimport  

{OutputContext} from './util';\n\n/**\n * Generates code that is used to type check templates.\n */\n\nexport class  

TypeCheckCompiler {\n  constructor(private options: AotCompilerOptions, private reflector: StaticReflector) {}\n}\n\n/**\n * Important notes:\n * - This must not produce new `import` statements, but only refer to types outside\n *  

of the file via the variables provided via externalReferenceVars.\n * This allows Typescript to reuse the old  

program's structure as no imports have changed.\n * - This must not produce any exports, as this would pollute the  

.d.ts file\n * and also violate the point above.\n */\n\n compileComponent(\n  componentId: string, component:  

CompileDirectiveMetadata, template: TemplateAst[],\n  usedPipes: CompilePipeSummary[],  

externalReferenceVars: Map<StaticSymbol, string>,\n  ctx: OutputContext): o.Statement[] {\n  const pipes =  

new Map<string, StaticSymbol>();\n  usedPipes.forEach(p => pipes.set(p.name, p.type.reference));\n  let  

embeddedViewCount = 0;\n  const viewBuilderFactory =\n    (parent: ViewBuilder|null, guards:  

GuardExpression[]): ViewBuilder => {\n      const embeddedViewIndex = embeddedViewCount++;\n      return  

new ViewBuilder(\n        this.options, this.reflector, externalReferenceVars, parent, component.type.reference,\n        component.isHost, embeddedViewIndex, pipes, guards, ctx, viewBuilderFactory);\n    };\n\n  const visitor  

= viewBuilderFactory(null, []);\n  visitor.visitAll([], template);\n\n  return visitor.build(componentId);\n}\n}\n\ninterface GuardExpression {\n  guard: StaticSymbol;\n  useIf: boolean;\n  expression:  

Expression;\n}\n\ninterface ViewBuilderFactory {\n  (parent: ViewBuilder, guards: GuardExpression[]):  

ViewBuilder;\n}\n\n// Note: This is used as key in Map and should therefore be\n// unique per value.\n\ntype  

OutputVarType = o.BuiltinTypeName|StaticSymbol;\n\ninterface Expression {\n  context: OutputVarType;\n  sourceSpan: ParseSourceSpan;\n  value: AST;\n}\n\nconst DYNAMIC_VAR_NAME = '_any';\n\nclass  

TypeCheckLocalResolver implements LocalResolver {\n  notifyImplicitReceiverUse(): void {}  

  getLocal(name:  

string): o.Expression|null {\n    if (name === EventHandlerVars.event.name) {\n      // References to the event  

should not be type-checked.\n      // TODO(chuckj): determine a better type for the event.\n      return  

o.variable(DYNAMIC_VAR_NAME);\n    }\n    return null;\n  }\n}\n\nconst defaultResolver = new  

TypeCheckLocalResolver();\n\nclass ViewBuilder implements TemplateAstVisitor, LocalResolver {\n  private  

refOutputVars = new Map<string, OutputVarType>();\n  private variables: VariableAst[] = [];\n  private children:  

ViewBuilder[] = [];\n  private updates: Expression[] = [];\n  private actions: Expression[] = [];\n\n  constructor(\n    private options: AotCompilerOptions, private reflector: StaticReflector,\n    private externalReferenceVars:  

Map<StaticSymbol, string>, private parent: ViewBuilder|null,\n    private component: StaticSymbol, private  

isHostComponent: boolean,\n    private embeddedViewIndex: number, private pipes: Map<string,  

StaticSymbol>,\n    private guards: GuardExpression[], private ctx: OutputContext,\n    private  

viewBuilderFactory: ViewBuilderFactory) {}\n\n  private getOutputVar(type: o.BuiltinTypeName|StaticSymbol):  

string {\n    let varName: string|undefined;\n    if (type === this.component && this.isHostComponent) {\n      varName =  

DYNAMIC_VAR_NAME;\n    } else if (type instanceof StaticSymbol) {\n      varName =  

this.externalReferenceVars.get(type);\n    } else {\n      varName = DYNAMIC_VAR_NAME;\n    }\n    if  

(!varName) {\n      throw new Error(\n        `Illegal State: referring to a type without a variable`

```

```

${JSON.stringify(type)});
}
return varName;
}
private getTypeGuardExpressions(ast:
EmbeddedTemplateAst): GuardExpression[] {
  const result = [...this.guards];
  for (let directive of
ast.directives) {
    for (let input of directive.inputs) {
      const guard =
directive.directive.guards[input.directiveName];
      if (guard) {
        const useIf = guard === 'UseIf';
        result.push({
          guard,
          useIf,
          expression: {
            context: this.component,
            value: input.value,
            sourceSpan: input.sourceSpan,
          },
        });
      }
    }
  }
  return
result;
}
visitAll(variables: VariableAst[], astNodes: TemplateAst[]) {
  this.variables = variables;
  templateVisitAll(this, astNodes);
}
build(componentId: string, targetStatements: o.Statement[] = []):
o.Statement[] {
  this.children.forEach((child) => child.build(componentId, targetStatements));
  let viewStmts:
o.Statement[] =
[o.variable(DYNAMIC_VAR_NAME).set(o.NULL_EXPR).toDeclStmt(o.DYNAMIC_TYPE)];
  let
bindingCount = 0;
  this.updates.forEach((expression) => {
    const {sourceSpan, context, value} =
this.preprocessUpdateExpression(expression);
    const bindingId = `${bindingCount++}`;
    const
nameResolver = context === this.component ? this : defaultResolver;
    const {stmts, currValExpr} =
convertPropertyBinding(
      nameResolver, o.variable(this.getOutputVar(context)), value, bindingId,
      BindingForm.General);
    stmts.push(new o.ExpressionStatement(currValExpr));
    viewStmts.push(...stmts.map(
      (stmt: o.Statement) => o.applySourceSpanToStatementIfNeeded(stmt,
sourceSpan));
    });
    this.actions.forEach((sourceSpan, context, value) => {
      const bindingId =
`${bindingCount++}`;
      const nameResolver = context === this.component ? this : defaultResolver;
      const
{stmts} = convertActionBinding(
        nameResolver, o.variable(this.getOutputVar(context)), value, bindingId);
      viewStmts.push(...stmts.map(
        (stmt: o.Statement) => o.applySourceSpanToStatementIfNeeded(stmt,
sourceSpan));
      });
      if (this.guards.length) {
        let guardExpression: o.Expression|undefined =
undefined;
        for (const guard of this.guards) {
          const {context, value} =
this.preprocessUpdateExpression(guard.expression);
          const bindingId = `${bindingCount++}`;
          const
nameResolver = context === this.component ? this : defaultResolver;
          // We only support support simple
expressions and ignore others as they
          // are unlikely to affect type narrowing.
          const {stmts,
currValExpr} = convertPropertyBinding(
            nameResolver, o.variable(this.getOutputVar(context)), value,
bindingId,
            BindingForm.TrySimple);
          if (stmts.length == 0) {
            const guardClause =
guard.useIf ? currValExpr : this.ctx.importExpr(guard.guard).callFn([currValExpr]);
            guardExpression =
guardExpression ? guardExpression.and(guardClause) : guardClause;
          }
        }
        if (guardExpression) {
          viewStmts = [new o.IfStmt(guardExpression, viewStmts)];
        }
      }
      const viewName =
`_View_${componentId}_${this.embeddedViewIndex}`;
      const viewFactory = new
o.DeclareFunctionStmt(viewName, [], viewStmts);
      targetStatements.push(viewFactory);
    }
    return
targetStatements;
  }
  visitBoundText(ast: BoundTextAst, context: any): any {
    const astWithSource =
<ASTWithSource>ast.value;
    const inter = <Interpolation>astWithSource.ast;
    inter.expressions.forEach(
      (expr) =>
        this.updates.push({context: this.component, value: expr, sourceSpan: ast.sourceSpan});
    )
  }
  visitEmbeddedTemplate(ast: EmbeddedTemplateAst, context: any): any {
    this.visitElementOrTemplate(ast);
    // Note: The old view compiler used to use an `any` type
    // for the context
    in any embedded view.
    // We keep this behavior behind a flag for now.
    if
(this.options.fullTemplateTypeCheck) {
      // Find any applicable type guards. For example, NgIf has a type guard
    on ngIf
    // (see NgIf.ngIfTypeGuard) that can be used to indicate that a template is only
    // stamped out if
    ngIf is truthy so any bindings in the template can assume that,
    // if a nullable type is used for ngIf, that
    expression is not null or undefined.
    const guards = this.getTypeGuardExpressions(ast);
    const childVisitor
= this.viewBuilderFactory(this, guards);
    this.children.push(childVisitor);
    childVisitor.visitAll(ast.variables, ast.children);
  }
}
visitElement(ast: ElementAst, context: any): any {
  this.visitElementOrTemplate(ast);
  let inputDefs: o.Expression[] = [];
  let updateRendererExpressions:
Expression[] = [];
  let outputDefs: o.Expression[] = [];
  ast.inputs.forEach((inputAst) => {
    this.updates.push(
      {context: this.component, value: inputAst.value, sourceSpan: inputAst.sourceSpan});
  });
}

```



```

*\n\nimport { CompileDirectiveMetadata, CompilePipeSummary, CompileQueryMetadata, rendererTypeName,
tokenReference, viewClassName } from './compile_metadata';\nimport { CompileReflector } from
 './compile_reflector';\nimport { BindingForm, BuiltinConverter, convertActionBinding, convertPropertyBinding,
convertPropertyBindingBuiltins, EventHandlerVars, LocalResolver } from
 './compiler_util/expression_converter';\nimport { ArgumentType, BindingFlags, ChangeDetectionStrategy,
NodeFlags, QueryBindingType, QueryValueType, ViewFlags } from './core';\nimport { AST, ASTWithSource,
Interpolation } from './expression_parser/ast';\nimport { Identifiers } from './identifiers';\nimport { LifecycleHooks }
from './lifecycle_reflector';\nimport { isNgContainer } from './ml_parser/tags';\nimport * as o from
 './output/output_ast';\nimport { convertValueToOutputAst } from './output/value_util';\nimport { ParseSourceSpan }
from './parse_util';\nimport { AttrAst, BoundDirectivePropertyAst, BoundElementPropertyAst, BoundEventAst,
BoundTextAst, DirectiveAst, ElementAst, EmbeddedTemplateAst, NgContentAst, PropertyBindingType,
ProviderAst, QueryMatch, ReferenceAst, TemplateAst, TemplateAstVisitor, templateVisitAll, TextAst,
VariableAst } from './template_parser/template_ast';\nimport { OutputContext } from './util';\n\nimport
 { componentFactoryResolverProviderDef, depDef, lifecycleHookToNodeFlag, providerDef } from
 './provider_compiler';\n\nconst CLASS_ATTR = 'class';\nconst STYLE_ATTR = 'style';\nconst
IMPLICIT_TEMPLATE_VAR = '\\$simplicit';\n\nexport class ViewCompileResult {\n  constructor(public
viewClassVar: string, public rendererTypeVar: string) {}\n}\n\nexport class ViewCompiler {\n  constructor(private
_reflector: CompileReflector) {}\n  compileComponent(\n    outputCtx: OutputContext, component:
CompileDirectiveMetadata, template: TemplateAst[],\n    styles: o.Expression, usedPipes:
CompilePipeSummary[]): ViewCompileResult {\n    let embeddedViewCount = 0;\n\n    let
renderComponentVarName: string = undefined!;\n    if (!component.isHost) {\n      const template =
component.template !;\n      const customRenderData: o.LiteralMapEntry[] = [];\n      if (template.animations &&
template.animations.length) {\n        customRenderData.push(new o.LiteralMapEntry(\n          'animation',
convertValueToOutputAst(outputCtx, template.animations), true));\n      }\n\n      const renderComponentVar =
o.variable(rendererTypeName(component.type.reference));\n      renderComponentVarName =
renderComponentVar.name!;\n      outputCtx.statements.push(\n        renderComponentVar\n
.set(o.importExpr(Identifiers.createRendererType2).callFn([new o.LiteralMapExpr(\n          new
o.LiteralMapEntry('encapsulation', o.literal(template.encapsulation), false),\n          new
o.LiteralMapEntry('styles', styles, false),\n          new o.LiteralMapEntry('data', new
o.LiteralMapExpr(customRenderData), false)\n        ]))\n        .toDeclStmt(\n
o.importType(Identifiers.RendererType2),\n          [o.StmtModifier.Final, o.StmtModifier.Exported]));\n      }\n\n
const viewBuilderFactory = (parent: ViewBuilder|null): ViewBuilder => {\n      const embeddedViewIndex =
embeddedViewCount++;\n      return new ViewBuilder(\n        this._reflector, outputCtx, parent, component,
embeddedViewIndex, usedPipes,\n        viewBuilderFactory);\n    };\n\n    const visitor =
viewBuilderFactory(null);\n    visitor.visitAll([], template);\n\n    outputCtx.statements.push(...visitor.build());\n\n
return new ViewCompileResult(visitor.viewName, renderComponentVarName);\n  }\n}\n\ninterface
ViewBuilderFactory {\n  (parent: ViewBuilder): ViewBuilder;\n}\n\ninterface UpdateExpression {\n  context:
o.Expression;\n  nodeIndex: number;\n  bindingIndex: number;\n  sourceSpan: ParseSourceSpan;\n  value:
AST;\n}\n\nconst LOG_VAR = o.variable('_l');\nconst VIEW_VAR = o.variable('_v');\nconst CHECK_VAR =
o.variable('_ck');\nconst COMP_VAR = o.variable('_co');\nconst EVENT_NAME_VAR = o.variable('en');\nconst
ALLOW_DEFAULT_VAR = o.variable('ad');\n\nclass ViewBuilder implements TemplateAstVisitor,
LocalResolver {\n  private compType: o.Type;\n  private nodes: (() => {\n    sourceSpan: ParseSourceSpan | null,\n
nodeDef: o.Expression,\n    nodeFlags: NodeFlags,\n    updateDirectives?: UpdateExpression[],\n
updateRenderer?: UpdateExpression[]\n  })[] = [];\n  private purePipeNodeIndices: {[pipeName: string]: number} =
Object.create(null);\n  // Need Object.create so that we don't have builtin values...\n  private refNodeIndices:
{[refName: string]: number} = Object.create(null);\n  private variables: VariableAst[] = [];\n  private children:
ViewBuilder[] = [];\n\n  public readonly viewName: string;\n\n  constructor(\n    private reflector:
CompileReflector, private outputCtx: OutputContext,\n    private parent: ViewBuilder|null, private component:

```

```

CompileDirectiveMetadata,\n    private embeddedViewIndex: number, private usedPipes:
CompilePipeSummary[],\n    private viewBuilderFactory: ViewBuilderFactory) {\n // TODO(tbosch): The old
view compiler used to use an `any` type\n // for the context in any embedded view. We keep this behavior for
now\n // to be able to introduce the new view compiler without too many errors.\n    this.compType =
this.embeddedViewIndex > 0 ?\n        o.DYNAMIC_TYPE :\n
o.expressionType(outputCtx.importExpr(this.component.type.reference));\n    this.viewName =
viewClassName(this.component.type.reference, this.embeddedViewIndex);\n } \n\n visitAll(variables:
VariableAst[], astNodes: TemplateAst[]) {\n    this.variables = variables;\n // create the pipes for the pure pipes
immediately, so that we know their indices.\n    if (!this.parent) {\n        this.usedPipes.forEach((pipe) => {\n            if
(pipe.pure) {\n                this.purePipeNodeIndices[pipe.name] = this._createPipe(null, pipe);\n            }\n        });\n    }\n\n    if (!this.parent) {\n        this.component.viewQueries.forEach((query, queryIndex) => {\n // Note: queries start
with id 1 so we can use the number in a Bloom filter!\n            const queryId = queryIndex + 1;\n            const
bindingType = query.first ? QueryBindingType.First : QueryBindingType.All;\n            const flags =
NodeFlags.TypeViewQuery | calcStaticDynamicQueryFlags(query);\n            this.nodes.push(() => ({\n
sourceSpan: null,\n                nodeFlags: flags,\n                nodeDef:
o.importExpr(Identifiers.queryDef).callFn([\n                    o.literal(flags), o.literal(queryId),\n
new o.LiteralMapExpr([new o.LiteralMapEntry(\n                        query.propertyName, o.literal(bindingType),
false)])\n                ])\n            }));\n        });\n    }\n\n    templateVisitAll(this, astNodes);\n    if
(this.parent && (astNodes.length === 0 || needsAdditionalRootNode(astNodes))) {\n // if the view is an
embedded view, then we need to add an additional root node in some cases\n        this.nodes.push(() => ({\n
sourceSpan: null,\n                nodeFlags: NodeFlags.TypeElement,\n                nodeDef:
o.importExpr(Identifiers.anchorDef).callFn([\n                    o.literal(NodeFlags.None), o.NULL_EXPR,
o.NULL_EXPR, o.literal(0)\n                ])\n            }));\n        }\n    }\n\n    build(targetStatements:
o.Statement[] = []): o.Statement[] {\n        this.children.forEach((child) => child.build(targetStatements));\n\n        const
{updateRendererStmts, updateDirectivesStmts, nodeDefExprs} =\n            this._createNodeExpressions();\n\n        const
updateRendererFn = this._createUpdateFn(updateRendererStmts);\n        const updateDirectivesFn =
this._createUpdateFn(updateDirectivesStmts);\n\n        let viewFlags = ViewFlags.None;\n        if (!this.parent &&
this.component.changeDetection === ChangeDetectionStrategy.OnPush) {\n            viewFlags |= ViewFlags.OnPush;\n        }\n\n        const viewFactory = new o.DeclareFunctionStmt(\n            this.viewName, [new
o.FnParam(LOG_VAR.name!),\n                [new o.ReturnStatement(o.importExpr(Identifiers.viewDef).callFn([\n
o.literal(viewFlags),\n                    o.literalArr(nodeDefExprs),\n                    updateDirectivesFn,\n                    updateRendererFn,\n
                ])],\n                o.importType(Identifiers.ViewDefinition),\n                this.embeddedViewIndex === 0 ?
[o.StmtModifier.Exported] : []);\n            targetStatements.push(viewFactory);\n            return targetStatements;\n        }\n\n        private _createUpdateFn(updateStmts: o.Statement[]): o.Expression {\n            let updateFn: o.Expression;\n            if
(updateStmts.length > 0) {\n                const preStmts: o.Statement[] = [];\n                if (!this.component.isHost &&
o.findReadVarNames(updateStmts).has(COMP_VAR.name!)) {\n                    preStmts.push(COMP_VAR.set(VIEW_VAR.prop('component')).toDeclStmt(this.compType));\n                }\n\n                updateFn = o.fn(\n                    [\n                        new o.FnParam(CHECK_VAR.name!, o.INFERRED_TYPE),\n                        new
o.FnParam(VIEW_VAR.name!, o.INFERRED_TYPE)\n                    ],\n                    [...preStmts, ...updateStmts],
o.INFERRED_TYPE);\n            } else {\n                updateFn = o.NULL_EXPR;\n            }\n            return updateFn;\n        }\n\n        visitNgContent(ast: NgContentAst, context: any): any {\n // ngContentDef(ngContentIndex: number, index:
number): NodeDef;\n            this.nodes.push(() => ({\n                sourceSpan: ast.sourceSpan,\n
nodeFlags: NodeFlags.TypeNgContent,\n                nodeDef: o.importExpr(Identifiers.ngContentDef)\n                    .callFn([o.literal(ast.ngContentIndex), o.literal(ast.index)])\n            }));\n        }\n\n        visitText(ast:
TextAst, context: any): any {\n // Static text nodes have no check function\n            const checkIndex = -1;\n            this.nodes.push(() => ({\n                sourceSpan: ast.sourceSpan,\n
nodeFlags:
NodeFlags.TypeText,\n                nodeDef: o.importExpr(Identifiers.textDef).callFn([\n
o.literal(checkIndex),\n                    o.literal(ast.ngContentIndex),\n

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o.literalArr([o.literal(ast.value)]),\n          ])\n          }));\n }\n\n visitBoundText(ast: BoundTextAst,\n context: any): any {\n  const nodeIndex = this.nodes.length;\n  // reserve the space in the nodeDefs array\n  this.nodes.push(null!);\n  const astWithSource = <ASTWithSource>ast.value;\n  const inter =\n  <Interpolation>astWithSource.ast;\n  const updateRendererExpressions = inter.expressions.map(\n    (expr,\n bindingIndex) => this._preprocessUpdateExpression(\n      {nodeIndex, bindingIndex, sourceSpan:\n ast.sourceSpan, context: COMP_VAR, value: expr}));\n  // Check index is the same as the node index during\n  compilation\n  // They might only differ at runtime\n  const checkIndex = nodeIndex;\n  this.nodes[nodeIndex]\n = () => ({\n  sourceSpan: ast.sourceSpan,\n  nodeFlags: NodeFlags.TypeText,\n  nodeDef:\n o.importExpr(Identifiers.textDef).callFn([\n  o.literal(checkIndex),\n  o.literal(ast.ngContentIndex),\n o.literalArr(inter.strings.map(s => o.literal(s))),\n ]),\n updateRenderer: updateRendererExpressions\n }));\n }\n\n visitEmbeddedTemplate(ast: EmbeddedTemplateAst, context: any): any {\n  const nodeIndex =\n this.nodes.length;\n  // reserve the space in the nodeDefs array\n  this.nodes.push(null!);\n  const {flags,\n queryMatchesExpr, hostEvents} = this._visitElementOrTemplate(nodeIndex, ast);\n  const childVisitor =\n this.viewBuilderFactory(this);\n  this.children.push(childVisitor);\n  childVisitor.visitAll(ast.variables,\n ast.children);\n  const childCount = this.nodes.length - nodeIndex - 1;\n  // anchorDef\n  // flags:\n NodeFlags, matchedQueries: [string, QueryValueType][], ngContentIndex: number,\n // childCount: number,\n handleEventFn?: ElementHandleEventFn, templateFactory?:\n // ViewDefinitionFactory): NodeDef;\n this.nodes[nodeIndex] = () => ({\n  sourceSpan: ast.sourceSpan,\n  nodeFlags: NodeFlags.TypeElement | \n flags,\n  nodeDef: o.importExpr(Identifiers.anchorDef).callFn([\n  o.literal(flags),\n  queryMatchesExpr,\n  o.literal(ast.ngContentIndex),\n  o.literal(childCount),\n  this._createElementHandleEventFn(nodeIndex,\n hostEvents),\n  o.variable(childVisitor.viewName),\n ])\n }));\n }\n\n visitElement(ast: ElementAst,\n context: any): any {\n  const nodeIndex = this.nodes.length;\n  // reserve the space in the nodeDefs array so we\n  can add children\n  this.nodes.push(null!);\n  // Using a null element name creates an anchor.\n  const elName:\n string|null = isNgContainer(ast.name) ? null : ast.name;\n  const {flags, usedEvents, queryMatchesExpr,\n hostBindings: dirHostBindings, hostEvents} =\n this._visitElementOrTemplate(nodeIndex, ast);\n  let\n inputDefs: o.Expression[] = [];\n  let updateRendererExpressions: UpdateExpression[] = [];\n  let outputDefs:\n o.Expression[] = [];\n  if (elName) {\n  const hostBindings: any[] = ast.inputs\n .map((inputAst) => ({\n  context: COMP_VAR as o.Expression,\n  inputAst,\n  dirAst: null as any,\n })))\n .concat(dirHostBindings);\n  if (hostBindings.length) {\n  updateRendererExpressions =\n hostBindings.map((hostBinding, bindingIndex) => this._preprocessUpdateExpression({\n  context:\n hostBinding.context,\n  nodeIndex,\n  bindingIndex,\n  sourceSpan:\n hostBinding.inputAst.sourceSpan,\n  value: hostBinding.inputAst.value\n }));\n  inputDefs =\n hostBindings.map(\n  hostBinding => elementBindingDef(hostBinding.inputAst, hostBinding.dirAst));\n }\n  outputDefs = usedEvents.map(\n  ([target, eventName]) => o.literalArr([o.literal(target),\n o.literal(eventName)]));\n }\n  templateVisitAll(this, ast.children);\n  const childCount = this.nodes.length -\n nodeIndex - 1;\n  const compAst = ast.directives.find(dirAst => dirAst.directive.isComponent);\n  let\n compRendererType = o.NULL_EXPR as o.Expression;\n  let compView = o.NULL_EXPR as o.Expression;\n  if (compAst) {\n  compView = this.outputCtx.importExpr(compAst.directive.componentViewType);\n  compRendererType = this.outputCtx.importExpr(compAst.directive.rendererType);\n }\n  // Check index is the\n  same as the node index during compilation\n  // They might only differ at runtime\n  const checkIndex =\n nodeIndex;\n  this.nodes[nodeIndex] = () => ({\n  sourceSpan: ast.sourceSpan,\n  nodeFlags:\n NodeFlags.TypeElement | flags,\n  nodeDef: o.importExpr(Identifiers.elementDef).callFn([\n  o.literal(checkIndex),\n  o.literal(flags),\n  queryMatchesExpr,\n  o.literal(ast.ngContentIndex),\n o.literal(childCount),\n  o.literal(elName),\n  elName ? fixedAttrsDef(ast) : o.NULL_EXPR,\n inputDefs.length ? o.literalArr(inputDefs) : o.NULL_EXPR,\n  outputDefs.length ? o.literalArr(outputDefs) :\n o.NULL_EXPR,\n  this._createElementHandleEventFn(nodeIndex, hostEvents),\n  compView,\n  compRendererType,\n ]),\n updateRenderer: updateRendererExpressions\n }));\n }\n\n private

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_visitElementOrTemplate(nodeIndex: number, ast: { \n  hasViewContainer: boolean,\n  outputs:
BoundEventAst[],\n  directives: DirectiveAst[],\n  providers: ProviderAst[],\n  references: ReferenceAst[],\n
queryMatches: QueryMatch[]\n }): { \n  flags: NodeFlags,\n  usedEvents: [string|null, string][],\n
queryMatchesExpr: o.Expression,\n  hostBindings:\n    {context: o.Expression, inputAst:
BoundElementPropertyAst, dirAst: DirectiveAst}[],\n  hostEvents: {context: o.Expression, eventAst:
BoundEventAst, dirAst: DirectiveAst}[],\n } {\n  let flags = NodeFlags.None;\n  if (ast.hasViewContainer) {\n
flags |= NodeFlags.EmbeddedViews;\n  }\n  const usedEvents = new Map<string, [string | null, string]>();\n
ast.outputs.forEach((event) => {\n    const {name, target} = elementEventNameAndTarget(event, null);\n
usedEvents.set(elementEventFullName(target, name), [target, name]);\n  });\n  ast.directives.forEach((dirAst) =>
{\n    dirAst.hostEvents.forEach((event) => {\n      const {name, target} = elementEventNameAndTarget(event,
dirAst);\n      usedEvents.set(elementEventFullName(target, name), [target, name]);\n    });\n  });\n  const
hostBindings:\n    {context: o.Expression, inputAst: BoundElementPropertyAst, dirAst: DirectiveAst}[] = [];\n
const hostEvents: {context: o.Expression, eventAst: BoundEventAst, dirAst: DirectiveAst}[] = [];\n
this._visitComponentFactoryResolverProvider(ast.directives);\n\n  ast.providers.forEach(providerAst => {\n  let
dirAst: DirectiveAst = undefined!;\n  ast.directives.forEach(localDirAst => {\n    if
(localDirAst.directive.type.reference === tokenReference(providerAst.token)) {\n      dirAst = localDirAst;\n
}\n  });\n  if (dirAst) {\n    const {hostBindings: dirHostBindings, hostEvents: dirHostEvents} =\n
this._visitDirective(providerAst, dirAst, ast.references, ast.queryMatches, usedEvents);\n
hostBindings.push(...dirHostBindings);\n    hostEvents.push(...dirHostEvents);\n  } else {\n
this._visitProvider(providerAst, ast.queryMatches);\n  }\n  });\n  let queryMatchExprs: o.Expression[] = [];\n
ast.queryMatches.forEach((match) => {\n    let valueType: QueryValueType = undefined!;\n    if
(tokenReference(match.value) ===\n      this.reflector.resolveExternalReference(Identifiers.ElementRef)) {\n
valueType = QueryValueType.ElementRef;\n    } else if (\n      tokenReference(match.value) ===\n
this.reflector.resolveExternalReference(Identifiers.ViewContainerRef)) {\n      valueType =
QueryValueType.ViewContainerRef;\n    } else if (\n      tokenReference(match.value) ===\n
this.reflector.resolveExternalReference(Identifiers.TemplateRef)) {\n      valueType =
QueryValueType.TemplateRef;\n    }\n    if (valueType != null) {\n
queryMatchExprs.push(o.literalArr([o.literal(match.queryId), o.literal(valueType)]));\n    }\n  });\n
ast.references.forEach((ref) => {\n    let valueType: QueryValueType = undefined!;\n    if (!ref.value) {\n
valueType = QueryValueType.RenderElement;\n    } else if (\n      tokenReference(ref.value) ===\n
this.reflector.resolveExternalReference(Identifiers.TemplateRef)) {\n      valueType =
QueryValueType.TemplateRef;\n    }\n    if (valueType != null) {\n      this.refNodeIndices[ref.name] =
nodeIndex;\n      queryMatchExprs.push(o.literalArr([o.literal(ref.name), o.literal(valueType)]));\n    }\n  });\n
ast.outputs.forEach((outputAst) => {\n    hostEvents.push({context: COMP_VAR, eventAst: outputAst, dirAst:
null!});\n  });\n\n  return {\n    flags,\n    usedEvents: Array.from(usedEvents.values()),\n
queryMatchesExpr: queryMatchExprs.length ? o.literalArr(queryMatchExprs) : o.NULL_EXPR,\n
hostBindings,\n    hostEvents: hostEvents\n  };}\n\n  private _visitDirective(\n    providerAst: ProviderAst,
dirAst: DirectiveAst, refs: ReferenceAst[],\n    queryMatches: QueryMatch[], usedEvents: Map<string, any>): { \n
hostBindings:\n    {context: o.Expression, inputAst: BoundElementPropertyAst, dirAst: DirectiveAst}[],\n
hostEvents: {context: o.Expression, eventAst: BoundEventAst, dirAst: DirectiveAst}[]\n } {\n  const nodeIndex =
this.nodes.length;\n  // reserve the space in the nodeDefs array so we can add children\n
this.nodes.push(null!);\n\n  dirAst.directive.queries.forEach((query, queryIndex) => {\n    const queryId =
dirAst.contentQueryStartId + queryIndex;\n    const flags = NodeFlags.TypeContentQuery |
calcStaticDynamicQueryFlags(query);\n    const bindingType = query.first ? QueryBindingType.First :
QueryBindingType.All;\n    this.nodes.push(() => ({\n      sourceSpan: dirAst.sourceSpan,\n
nodeFlags: flags,\n      nodeDef: o.importExpr(Identifiers.queryDef).callFn(\n
o.literal(flags), o.literal(queryId),\n      new o.LiteralMapExpr([new o.LiteralMapEntry(\n
query.propertyName, o.literal(bindingType), false)])\n    ]),\n    }));\n  });\n  // Note:

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the operation below might also create new nodeDefs,\n // but we don't want them to be a child of a directive,\n //
as they might be a provider/pipe on their own.\n // I.e. we only allow queries as children of directives nodes.\n
const childCount = this.nodes.length - nodeIndex - 1;\n let { flags, queryMatchExprs, providerExpr, depsExpr }
=\n this._visitProviderOrDirective(providerAst, queryMatches);\n\n refs.forEach((ref) => {\n if (ref.value
&& tokenReference(ref.value) === tokenReference(providerAst.token)) {\n this.refNodeIndices[ref.name] =
nodeIndex;\n queryMatchExprs.push(\n o.literalArr([o.literal(ref.name),
o.literal(QueryValueType.Provider)]));\n }\n });\n\n if (dirAst.directive.isComponent) {\n flags |=
NodeFlags.Component;\n }\n\n const inputDefs = dirAst.inputs.map((inputAst, inputIndex) => {\n const
mapValue = o.literalArr([o.literal(inputIndex), o.literal(inputAst.directiveName)]);\n // Note: it's important to not
quote the key so that we can capture renames by minifiers!\n return new
o.LiteralMapEntry(inputAst.directiveName, mapValue, false);\n });\n\n const outputDefs: o.LiteralMapEntry[] =
[];\n const dirMeta = dirAst.directive;\n Object.keys(dirMeta.outputs).forEach((propName) => {\n const
eventName = dirMeta.outputs[propName];\n if (usedEvents.has(eventName)) {\n // Note: it's important to
not quote the key so that we can capture renames by minifiers!\n outputDefs.push(new
o.LiteralMapEntry(propName, o.literal(eventName), false);\n }\n });\n let updateDirectiveExpressions:
UpdateExpression[] = [];\n if (dirAst.inputs.length || (flags & (NodeFlags.DoCheck | NodeFlags.OnInit)) > 0) {\n
updateDirectiveExpressions =\n dirAst.inputs.map((input, bindingIndex) =>
this._preprocessUpdateExpression({\n nodeIndex,\n bindingIndex,\n sourceSpan:
input.sourceSpan,\n context: COMP_VAR,\n value: input.value\n }));\n }\n\n const
dirContextExpr =\n o.importExpr(Identifiers.nodeValue).callFn([VIEW_VAR, o.literal(nodeIndex)]);\n const
hostBindings = dirAst.hostProperties.map((inputAst) => ({\n context:
dirContextExpr,\n dirContextExpr,\n dirAst,\n inputAst,\n
})));\n const hostEvents = dirAst.hostEvents.map((hostEventAst) => ({\n
context: dirContextExpr,\n eventAst: hostEventAst,\n
dirAst,\n
}));\n\n // Check index is the same as the node index during compilation\n //
They might only differ at runtime\n const checkIndex = nodeIndex;\n\n this.nodes[nodeIndex] = () => ({\n
sourceSpan: dirAst.sourceSpan,\n nodeFlags: NodeFlags.TypeDirective | flags,\n nodeDef:
o.importExpr(Identifiers.directiveDef).callFn([\n o.literal(checkIndex),\n o.literal(flags),\n
queryMatchExprs.length ? o.literalArr(queryMatchExprs) : o.NULL_EXPR,\n o.literal(childCount),\n
providerExpr,\n depsExpr,\n inputDefs.length ? new o.LiteralMapExpr(inputDefs) : o.NULL_EXPR,\n
outputDefs.length ? new o.LiteralMapExpr(outputDefs) : o.NULL_EXPR,\n ]),\n updateDirectives:
updateDirectiveExpressions,\n directive: dirAst.directive.type,\n });\n\n return {hostBindings, hostEvents};\n
}\n\n private _visitProvider(providerAst: ProviderAst, queryMatches: QueryMatch[]): void {\n
this._addProviderNode(this._visitProviderOrDirective(providerAst, queryMatches));\n }\n\n private
_visitComponentFactoryResolverProvider(directives: DirectiveAst[]) {\n const componentDirMeta =
directives.find(dirAst => dirAst.directive.isComponent);\n if (componentDirMeta &&
componentDirMeta.directive.entryComponents.length) {\n const {providerExpr, depsExpr, flags, tokenExpr} =
componentFactoryResolverProviderDef(\n this.reflector, this.outputCtx, NodeFlags.PrivateProvider,\n
componentDirMeta.directive.entryComponents);\n this._addProviderNode({\n providerExpr,\n
depsExpr,\n flags,\n tokenExpr,\n queryMatchExprs: [],\n sourceSpan:
componentDirMeta.sourceSpan\n });\n }\n }\n\n private _addProviderNode(data: {\n flags: NodeFlags,\n
queryMatchExprs: o.Expression[],\n providerExpr: o.Expression,\n depsExpr: o.Expression,\n tokenExpr:
o.Expression,\n sourceSpan: ParseSourceSpan\n }) {\n // providerDef(\n // flags: NodeFlags,\n
matchedQueries: [string, QueryValueType][], token:any,\n // value: any, deps: ([DepFlags, any] | any)[]:
NodeDef;\n this.nodes.push(\n () => ({\n sourceSpan: data.sourceSpan,\n nodeFlags: data.flags,\n
nodeDef: o.importExpr(Identifiers.providerDef).callFn([\n o.literal(data.flags),\n
data.queryMatchExprs.length ? o.literalArr(data.queryMatchExprs) : o.NULL_EXPR,\n data.tokenExpr,\n
data.providerExpr, data.depsExpr\n ])\n }));\n }\n\n private _visitProviderOrDirective(providerAst:

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ProviderAst, queryMatches: QueryMatch[]): {\n  flags: NodeFlags,\n  tokenExpr: o.Expression,\n  sourceSpan: ParseSourceSpan,\n  queryMatchExprs: o.Expression[],\n  providerExpr: o.Expression,\n  depsExpr: o.Expression\n } {\n  let flags = NodeFlags.None;\n  let queryMatchExprs: o.Expression[] = [];\n  queryMatches.forEach((match) => {\n    if (tokenReference(match.value) === tokenReference(providerAst.token)) {\n      queryMatchExprs.push(\n        o.literalArr([o.literal(match.queryId),\n          o.literal(QueryValueType.Provider)]));\n    }\n  });\n  const {providerExpr, depsExpr, flags: providerFlags, tokenExpr} =\n    providerDef(this.outputCtx, providerAst);\n  return {\n    flags: flags | providerFlags,\n    queryMatchExprs,\n    providerExpr,\n    depsExpr,\n    tokenExpr,\n    sourceSpan: providerAst.sourceSpan\n  };\n}\n\ngetLocal(name: string): o.Expression|null {\n  if (name === EventHandlerVars.event.name) {\n    return EventHandlerVars.event;\n  }\n  let currViewExpr: o.Expression = VIEW_VAR;\n  for (let currBuilder: ViewBuilder|null = this; currBuilder; currBuilder = currBuilder.parent,\n    currViewExpr = currViewExpr.prop('parent').cast(o.DYNAMIC_TYPE)) {\n    // check references\n    const refNodeIndex = currBuilder.refNodeIndices[name];\n    if (refNodeIndex !== null) {\n      return o.importExpr(Identifiers.nodeValue).callFn([currViewExpr, o.literal(refNodeIndex)]);\n    }\n    // check variables\n    const varAst = currBuilder.variables.find((varAst) => varAst.name === name);\n    if (varAst) {\n      const varValue = varAst.value || IMPLICIT_TEMPLATE_VAR;\n      return currViewExpr.prop('context').prop(varValue);\n    }\n  }\n  return null;\n}\n\nnotifyImplicitReceiverUse(): void {\n  // Not needed in View Engine as View Engine walks through the generated\n  // expressions to figure out if the implicit receiver is used and needs\n  // to be generated as part of the pre-update statements.\n}\n\nprivate _createLiteralArrayConverter(sourceSpan: ParseSourceSpan, argCount: number):\n  BuiltinConverter {\n  if (argCount === 0) {\n    const valueExpr = o.importExpr(Identifiers.EMPTY_ARRAY);\n    return () => valueExpr;\n  }\n  const checkIndex = this.nodes.length;\n  this.nodes.push(() => ({\n    sourceSpan,\n    nodeFlags: NodeFlags.TypePureArray,\n    nodeDef: o.importExpr(Identifiers.pureArrayDef).callFn([\n      o.literal(checkIndex),\n      o.literal(argCount),\n    ])\n  }));\n  return (args: o.Expression[]) => callCheckStmt(checkIndex, args);\n}\n\nprivate _createLiteralMapConverter(\n  sourceSpan: ParseSourceSpan, keys: {key: string, quoted: boolean}[]):\n  BuiltinConverter {\n  if (keys.length === 0) {\n    const valueExpr = o.importExpr(Identifiers.EMPTY_MAP);\n    return () => valueExpr;\n  }\n  const map = o.literalMap(keys.map((e, i) => ({...e, value: o.literal(i)})));\n  const checkIndex = this.nodes.length;\n  this.nodes.push(() => ({\n    sourceSpan,\n    nodeFlags: NodeFlags.TypePureObject,\n    nodeDef: o.importExpr(Identifiers.pureObjectDef).callFn([\n      o.literal(checkIndex),\n      map,\n    ])\n  }));\n  return (args: o.Expression[]) => callCheckStmt(checkIndex, args);\n}\n\nprivate _createPipeConverter(expression: UpdateExpression, name: string, argCount: number):\n  BuiltinConverter {\n  const pipe = this.usedPipes.find((pipeSummary) => pipeSummary.name === name!);\n  if (pipe.pure) {\n    const checkIndex = this.nodes.length;\n    this.nodes.push(() => ({\n      sourceSpan: expression.sourceSpan,\n      nodeFlags: NodeFlags.TypePurePipe,\n      nodeDef: o.importExpr(Identifiers.purePipeDef).callFn([\n        o.literal(checkIndex),\n        o.literal(argCount),\n      ])\n    }));\n    // find underlying pipe in the component view\n    let compViewExpr: o.Expression = VIEW_VAR;\n    let compBuilder: ViewBuilder = this;\n    while (compBuilder.parent) {\n      compBuilder = compBuilder.parent;\n      compViewExpr = compViewExpr.prop('parent').cast(o.DYNAMIC_TYPE);\n    }\n    const pipeNodeIndex = compBuilder.purePipeNodeIndices[name];\n    const pipeValueExpr: o.Expression =\n      o.importExpr(Identifiers.nodeValue).callFn([compViewExpr, o.literal(pipeNodeIndex)]);\n    return (args: o.Expression[]) => callUnwrapValue(\n      expression.nodeIndex, expression.bindingIndex,\n      callCheckStmt(checkIndex, [pipeValueExpr].concat(args)));\n  } else {\n    const nodeIndex = this._createPipe(expression.sourceSpan, pipe);\n    const nodeValueExpr =\n      o.importExpr(Identifiers.nodeValue).callFn([VIEW_VAR, o.literal(nodeIndex)]);\n    return (args: o.Expression[]) => callUnwrapValue(\n      expression.nodeIndex, expression.bindingIndex,\n
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nodeValueExpr.callMethod('transform', args));\n  }\n }\n\n private _createPipe(sourceSpan:
ParseSourceSpan|null, pipe: CompilePipeSummary): number {\n  const nodeIndex = this.nodes.length;\n  let flags
= NodeFlags.None;\n  pipe.type.lifecycleHooks.forEach((lifecycleHook) => {\n    // for pipes, we only support
ngOnDestroy\n    if (lifecycleHook === LifecycleHooks.OnDestroy) {\n      flags |=
lifecycleHookToNodeFlag(lifecycleHook);\n    }\n  });\n\n  const depExprs = pipe.type.diDeps.map((diDep) =>
depDef(this.outputCtx, diDep));\n  // function pipeDef(\n  // flags: NodeFlags, ctor: any, deps: ([DepFlags, any] |
any)[]): NodeDef\n  this.nodes.push(\n    () => ({\n      sourceSpan,\n      nodeFlags: NodeFlags.TypePipe,\n      nodeDef: o.importExpr(Identifiers.pipeDef).callFn([\n        o.literal(flags),
this.outputCtx.importExpr(pipe.type.reference), o.literalArr(depExprs)\n      ])\n    }));\n  return nodeIndex;\n
}\n\n /**\n * For the AST in `UpdateExpression.value`:\n * - create nodes for pipes, literal arrays and, literal
maps,\n * - update the AST to replace pipes, literal arrays and, literal maps with calls to check fn.\n *\n *
WARNING: This might create new nodeDefs (for pipes and literal arrays and literal maps)!*\n private
_preprocessUpdateExpression(expression: UpdateExpression): UpdateExpression {\n  return {\n    nodeIndex:
expression.nodeIndex,\n    bindingIndex: expression.bindingIndex,\n    sourceSpan: expression.sourceSpan,\n
context: expression.context,\n    value: convertPropertyBindingBuiltins(\n      {\n
createLiteralArrayConverter: (argCount: number) =>\n
this._createLiteralArrayConverter(expression.sourceSpan, argCount),\n      createLiteralMapConverter: (keys:
[key: string, quoted: boolean][]) =>\n        this._createLiteralMapConverter(expression.sourceSpan, keys),\n
      createPipeConverter: (name: string, argCount: number) =>\n        this._createPipeConverter(expression,
name, argCount)\n    },\n    expression.value)\n  };\n }\n\n private _createNodeExpressions(): {\n
updateRendererStmts: o.Statement[],\n  updateDirectivesStmts: o.Statement[],\n  nodeDefExprs: o.Expression[]\n
} {\n  const self = this;\n  let updateBindingCount = 0;\n  const updateRendererStmts: o.Statement[] = [];\n
const updateDirectivesStmts: o.Statement[] = [];\n  const nodeDefExprs = this.nodes.map((factory, nodeIndex) =>
{\n    const {nodeDef, nodeFlags, updateDirectives, updateRenderer, sourceSpan} = factory();\n    if
(updateRenderer) {\n      updateRendererStmts.push(\n        ...createUpdateStatements(nodeIndex, sourceSpan,
updateRenderer, false));\n    }\n    if (updateDirectives) {\n
updateDirectivesStmts.push(...createUpdateStatements(\n      nodeIndex, sourceSpan, updateDirectives,\n
(nodeFlags & (NodeFlags.DoCheck | NodeFlags.OnInit)) > 0));\n    }\n    // We use a comma expression to call
the log function before\n    // the nodeDef function, but still use the result of the nodeDef function\n    // as the
value.\n    // Note: We only add the logger to elements / text nodes,\n    // so we don't generate too much code.\n
const logWithNodeDef = nodeFlags & NodeFlags.CatRenderNode ?\n      new
o.CommaExpr([LOG_VAR.callFn([], callFn([], nodeDef))] :\n      nodeDef;\n    return
o.applySourceSpanToExpressionIfNeeded(logWithNodeDef, sourceSpan);\n  });\n  return {updateRendererStmts,
updateDirectivesStmts, nodeDefExprs};\n\n  function createUpdateStatements(\n    nodeIndex: number,\n
sourceSpan: ParseSourceSpan|null, expressions: UpdateExpression[],\n    allowEmptyExprs: boolean):
o.Statement[] {\n    const updateStmts: o.Statement[] = [];\n    const exprs = expressions.map(({sourceSpan,
context, value}) => {\n      const bindingId = `${updateBindingCount++}`;\n      const nameResolver = context
=== COMP_VAR ? self : null;\n      const {stmts, currValExpr} =\n        convertPropertyBinding(nameResolver,
context, value, bindingId, BindingForm.General);\n      updateStmts.push(...stmts.map(\n        (stmt: o.Statement)
=> o.applySourceSpanToStatementIfNeeded(stmt, sourceSpan));\n      return
o.applySourceSpanToExpressionIfNeeded(currValExpr, sourceSpan);\n    });\n    if (expressions.length ||
allowEmptyExprs) {\n      updateStmts.push(o.applySourceSpanToStatementIfNeeded(\n
callCheckStmt(nodeIndex, exprs).toStmt(), sourceSpan));\n    }\n    return updateStmts;\n  }\n }\n\n private
_createElementHandleEventFn(\n  nodeIndex: number,\n  handlers: {context: o.Expression, eventAst:
BoundEventAst, dirAst: DirectiveAst}[]) {\n  const handleEventStmts: o.Statement[] = [];\n  let
handleEventBindingCount = 0;\n  handlers.forEach(({context, eventAst, dirAst}) => {\n    const bindingId =
`${handleEventBindingCount++}`;\n    const nameResolver = context === COMP_VAR ? this : null;\n    const
{stmts, allowDefault} =\n      convertActionBinding(nameResolver, context, eventAst.handler, bindingId);\n

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const trueStmts = stmts;\n  if (allowDefault) {\n
trueStmts.push(ALLOW_DEFAULT_VAR.set(allowDefault.and(ALLOW_DEFAULT_VAR)).toStmt());\n  }\n
  const {target: eventTarget, name: eventName} = elementEventNameAndTarget(eventAst, dirAst);\n  const
fullEventName = elementEventFullName(eventTarget, eventName);\n
handleEventStmts.push(o.applySourceSpanToStatementIfNeeded(\n    new
o.IfStmt(o.literal(fullEventName).identical(EVENT_NAME_VAR), trueStmts),\n    eventAst.sourceSpan));\n
});\n let handleEventFn: o.Expression;\n if (handleEventStmts.length > 0) {\n  const preStmts: o.Statement[]
=\n    [ALLOW_DEFAULT_VAR.set(o.literal(true)).toDeclStmt(o.BOOL_TYPE)];\n  if
(!this.component.isHost && o.findReadVarNames(handleEventStmts).has(COMP_VAR.name!)) {\n
preStmts.push(COMP_VAR.set(VIEW_VAR.prop('component')).toDeclStmt(this.compType));\n  }\n
handleEventFn = o.fn(\n    [\n      new o.FnParam(VIEW_VAR.name!, o.INFERRED_TYPE),\n      new
o.FnParam(EVENT_NAME_VAR.name!, o.INFERRED_TYPE),\n      new
o.FnParam(EventHandlerVars.event.name!, o.INFERRED_TYPE)\n    ],\n    [...preStmts,
...handleEventStmts, new o.ReturnStatement(ALLOW_DEFAULT_VAR)],\n    o.INFERRED_TYPE);\n  }
else {\n  handleEventFn = o.NULL_EXPR;\n  }\n  return handleEventFn;\n }\n\n visitDirective(ast:
DirectiveAst, context: {usedEvents: Set<string>}): any {\n  visitDirectiveProperty(ast:
BoundDirectivePropertyAst, context: any): any {\n  visitReference(ast: ReferenceAst, context: any): any {\n
visitVariable(ast: VariableAst, context: any): any {\n  visitEvent(ast: BoundEventAst, context: any): any {\n
visitElementProperty(ast: BoundElementPropertyAst, context: any): any {\n  visitAttr(ast: AttrAst, context: any):
any {\n  }\n}\n\nfunction needsAdditionalRootNode(astNodes: TemplateAst[]): boolean {\n  const lastAstNode =
astNodes[astNodes.length - 1];\n  if (lastAstNode instanceof EmbeddedTemplateAst) {\n  return
lastAstNode.hasViewContainer;\n  }\n  if (lastAstNode instanceof ElementAst) {\n  if
(isNgContainer(lastAstNode.name) && lastAstNode.children.length) {\n  return
needsAdditionalRootNode(lastAstNode.children);\n  }\n  return lastAstNode.hasViewContainer;\n  }\n  return
lastAstNode instanceof NgContentAst;\n  }\n}\n\nfunction elementBindingDef(inputAst: BoundElementPropertyAst,
dirAst: DirectiveAst): o.Expression {\n  const inputType = inputAst.type;\n  switch (inputType) {\n  case
PropertyBindingType.Attribute:\n  return o.literalArr([\n    o.literal(BindingFlags.TypeElementAttribute),\n
o.literal(inputAst.name),\n    o.literal(inputAst.securityContext)\n  ]);\n  case
PropertyBindingType.Property:\n  return o.literalArr([\n    o.literal(BindingFlags.TypeProperty),\n
o.literal(inputAst.name),\n    o.literal(inputAst.securityContext)\n  ]);\n  case
PropertyBindingType.Animation:\n  const bindingType = BindingFlags.TypeProperty |\n    (dirAst &&
dirAst.directive.isComponent ? BindingFlags.SyntheticHostProperty :\n    BindingFlags.SyntheticProperty);\n  return o.literalArr([\n    o.literal(bindingType), o.literal('@' +
inputAst.name), o.literal(inputAst.securityContext)\n  ]);\n  case PropertyBindingType.Class:\n  return
o.literalArr(\n    [o.literal(BindingFlags.TypeElementClass), o.literal(inputAst.name), o.NULL_EXPR]);\n  case
PropertyBindingType.Style:\n  return o.literalArr([\n    o.literal(BindingFlags.TypeElementStyle),\n
o.literal(inputAst.name), o.literal(inputAst.unit)\n  ]);\n  default:\n  // This default case is not needed by
TypeScript compiler, as the switch is exhaustive.\n  // However Closure Compiler does not understand that and
reports an error in typed mode.\n  // The `throw new Error` below works around the problem, and the unexpected:
never variable\n  // makes sure tsc still checks this code is unreachable.\n  const unexpected: never =
inputType;\n  throw new Error(`unexpected ${unexpected}`);\n  }\n}\n}\n\nfunction fixedAttrsDef(elementAst:
ElementAst): o.Expression {\n  const mapResult: {[key: string]: string} = Object.create(null);\n
elementAst.attrs.forEach(attrAst => {\n  mapResult[attrAst.name] = attrAst.value;\n  });\n
elementAst.directives.forEach(dirAst => {\n  Object.keys(dirAst.directive.hostAttributes).forEach(name => {\n
const value = dirAst.directive.hostAttributes[name];\n  const prevValue = mapResult[name];\n
mapResult[name] = prevValue != null ? mergeAttributeValue(name, prevValue, value) : value;\n  });\n  });\n  //
Note: We need to sort to get a defined output order\n  // for tests and for caching generated artifacts...\n  return
o.literalArr(Object.keys(mapResult).sort().map(\n    (attrName) => o.literalArr([o.literal(attrName),

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o.literal(mapResult[attrName]))));\n}\n\nfunction mergeAttributeValue(attrName: string, attrValue1: string,
attrValue2: string): string {\n  if (attrName == CLASS_ATTR || attrName == STYLE_ATTR) {\n    return
`${attrValue1} ${attrValue2}`;\n  } else {\n    return attrValue2;\n  }\n}\n\nfunction callCheckStmt(nodeIndex:
number, exprs: o.Expression[]): o.Expression {\n  if (exprs.length > 10) {\n    return CHECK_VAR.callFn(\n
[VIEW_VAR, o.literal(nodeIndex), o.literal(ArgumentType.Dynamic), o.literalArr(exprs)];\n  } else {\n    return
CHECK_VAR.callFn(\n    [VIEW_VAR, o.literal(nodeIndex), o.literal(ArgumentType.Inline), ...exprs]);\n  }\n}\n\nfunction callUnwrapValue(nodeIndex: number, bindingIdx: number, expr: o.Expression): o.Expression {\n
return o.importExpr(Identifiers.unwrapValue).callFn([\n  VIEW_VAR, o.literal(nodeIndex), o.literal(bindingIdx),
expr\n]);\n}\n\nfunction elementEventNameAndTarget(\n  eventAst: BoundEventAst, dirAst: DirectiveAst|null):
{name: string, target: string|null} {\n  if (eventAst.isAnimation) {\n    return {\n      name:
`@${eventAst.name}.${eventAst.phase}`,\n      target: dirAst && dirAst.directive.isComponent ? 'component' :
null\n    };\n  } else {\n    return eventAst;\n  }\n}\n\nfunction calcStaticDynamicQueryFlags(query:
CompileQueryMetadata) {\n  let flags = NodeFlags.None;\n  // Note: We only make queries static that query for a
single item and the user specifically\n  // set the to be static. This is because of backwards compatibility with the old
view compiler...\n  if (query.first && query.static) {\n    flags |= NodeFlags.StaticQuery;\n  } else {\n    flags |=
NodeFlags.DynamicQuery;\n  }\n  return flags;\n}\n\nexport function elementEventFullName(target: string|null,
name: string): string {\n  return target ? `${target}.${name}` : name;\n}\n\n"/**\n * @license\n * Copyright Google
LLC All Rights Reserved.\n * \n * Use of this source code is governed by an MIT-style license that can be\n * found
in the LICENSE file at https://angular.io/license\n */\n\nimport {HtmlParser} from
'./ml_parser/html_parser';\nimport {InterpolationConfig} from './ml_parser/interpolation_config';\nimport
{ParseError} from './parse_util';\nimport {extractMessages} from './extractor_merger';\nimport * as i18n from
'./i18n_ast';\nimport {PlaceholderMapper, Serializer} from './serializers/serializer';\n\n/**\n * A container for
message extracted from the templates.\n */\nexport class MessageBundle {\n  private _messages: i18n.Message[] =
[];\n\n  constructor(\n    private _htmlParser: HtmlParser, private _implicitTags: string[],\n    private
_implicitAttrs: {[k: string]: string[]}, private _locale: string|null = null) {\n\n    updateFromTemplate(html: string,
url: string, interpolationConfig: InterpolationConfig):\n    ParseError[] {\n      const htmlParserResult =\n
this._htmlParser.parse(html, url, {tokenizeExpansionForms: true, interpolationConfig});\n\n      if
(htmlParserResult.errors.length) {\n        return htmlParserResult.errors;\n      }\n\n      const i18nParserResult =
extractMessages(\n        htmlParserResult.rootNodes, interpolationConfig, this._implicitTags,\n
this._implicitAttrs);\n\n      if (i18nParserResult.errors.length) {\n        return i18nParserResult.errors;\n      }\n\n
this._messages.push(...i18nParserResult.messages);\n      return [];\n    }\n\n    // Return the message in the internal
format\n    // The public (serialized) format might be different, see the `write` method.\n    getMessages():
i18n.Message[] {\n      return this._messages;\n    }\n\n    write(serializer: Serializer, filterSources?: (path: string) =>
string): string {\n      const messages: {[id: string]: i18n.Message} = {};\n      const mapperVisitor = new
MapPlaceholderNames();\n\n      // Deduplicate messages based on their ID\n      this._messages.forEach(message =>
{\n        const id = serializer.digest(message);\n        if (!messages.hasOwnProperty(id)) {\n          messages[id] =
message;\n        } else {\n          messages[id].sources.push(...message.sources);\n        }\n      });\n\n      // Transform
placeholder names using the serializer mapping\n      const msgList = Object.keys(messages).map(id => {\n        const
mapper = serializer.createNameMapper(messages[id]);\n        const src = messages[id];\n        const nodes = mapper ?
mapperVisitor.convert(src.nodes, mapper) : src.nodes;\n        let transformedMessage = new i18n.Message(nodes, {},
{\n          src.meaning, src.description, id);\n        transformedMessage.sources = src.sources;\n        if (filterSources) {\n
transformedMessage.sources.forEach(\n          (source: i18n.MessageSpan) => source.filePath =
filterSources(source.filePath);\n        });\n        return transformedMessage;\n      });\n\n      return serializer.write(msgList,
this._locale);\n    }\n  }\n\n  // Transform an i18n AST by renaming the placeholder nodes with the given mapper\n  class
MapPlaceholderNames extends i18n.CloneVisitor {\n    convert(nodes: i18n.Node[], mapper: PlaceholderMapper):
i18n.Node[] {\n      return mapper ? nodes.map(n => n.visit(this, mapper)) : nodes;\n    }\n\n    visitTagPlaceholder(ph:
i18n.TagPlaceholder, mapper: PlaceholderMapper): i18n.TagPlaceholder {\n      const startName =
mapper.toPublicName(ph.startName);\n      const closeName = ph.closeName ?

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mapper.toPublicName(ph.closeName)! : ph.closeName;\n  const children = ph.children.map(n => n.visit(this,
mapper));\n  return new i18n.TagPlaceholder(\n    ph.tag, ph.attrs, startName, closeName, children, ph.isVoid,
ph.sourceSpan,\n    ph.startSourceSpan, ph.endSourceSpan);\n  }\n\n  visitPlaceholder(ph: i18n.Placeholder,
mapper: PlaceholderMapper): i18n.Placeholder {\n    return new i18n.Placeholder(ph.value,
mapper.toPublicName(ph.name)!, ph.sourceSpan);\n  }\n\n  visitIcuPlaceholder(ph: i18n.IcuPlaceholder, mapper:
PlaceholderMapper): i18n.IcuPlaceholder {\n    return new i18n.IcuPlaceholder(ph.value,
mapper.toPublicName(ph.name)!, ph.sourceSpan);\n  }\n}\n\n"/**\n * @license\n * Copyright Google LLC All
Rights Reserved.\n * Use of this source code is governed by an MIT-style license that can be\n * found in the
LICENSE file at https://angular.io/license\n */\n\nimport {areAllEquivalent, Statement} from
'./output/output_ast';\nimport {TypeScriptEmitter} from './output/ts_emitter';\n\nexport class GeneratedFile {\n
public source: string|null;\n public stmts: Statement[]|null;\n\n constructor(\n   public srcFileUrl: string, public
genFileUrl: string, sourceOrStmts: string|Statement[]) {\n   if (typeof sourceOrStmts === 'string') {\n     this.source
= sourceOrStmts;\n     this.stmts = null;\n   } else {\n     this.source = null;\n     this.stmts = sourceOrStmts;\n   }\n
}\n\n isEquivalent(other: GeneratedFile): boolean {\n   if (this.genFileUrl !== other.genFileUrl) {\n     return
false;\n   }\n   if (this.source) {\n     return this.source === other.source;\n   }\n   if (other.stmts === null) {\n
return false;\n   }\n   // Note: the constructor guarantees that if this.source is not filled,\n   // then this.stmts is.\n
return areAllEquivalent(this.stmts!, other.stmts!);\n }\n}\n\nexport function toTypeScript(file: GeneratedFile,
preamble: string = ""): string {\n   if (!file.stmts) {\n     throw new Error('Illegal state: No stmts present on
GeneratedFile ${file.genFileUrl}');\n   }\n   return new TypeScriptEmitter().emitStatements(file.genFileUrl,
file.stmts, preamble);\n }\n\n"/**\n * @license\n * Copyright Google LLC All Rights Reserved.\n * Use of this
source code is governed by an MIT-style license that can be\n * found in the LICENSE file at
https://angular.io/license\n */\n\nimport {CompileNgModuleMetadata, tokenReference} from
'./compile_metadata';\nimport {Route} from './core';\nimport {StaticReflector} from './static_reflector';\nimport
{StaticSymbol} from './static_symbol';\n\nexport interface LazyRoute {\n   module: StaticSymbol;\n   route: string;\n
referencedModule: StaticSymbol;\n}\n\nexport function listLazyRoutes(\n   moduleMeta:
CompileNgModuleMetadata, reflector: StaticReflector): LazyRoute[] {\n   const allLazyRoutes: LazyRoute[] = [];\n
for (const {provider, module} of moduleMeta.transitiveModule.providers) {\n   if (tokenReference(provider.token)
=== reflector.ROUTES) {\n     const loadChildren = _collectLoadChildren(provider.useValue);\n     for (const
route of loadChildren) {\n       allLazyRoutes.push(parseLazyRoute(route, reflector, module.reference));\n     }\n
}\n }\n return allLazyRoutes;\n }\n\nfunction _collectLoadChildren(routes: string|Route|Route[], target: string[] =
[]): string[] {\n   if (typeof routes === 'string') {\n     target.push(routes);\n   } else if (Array.isArray(routes)) {\n
for (const route of routes) {\n     _collectLoadChildren(route, target);\n   }\n } else if (routes.loadChildren) {\n
_collectLoadChildren(routes.loadChildren, target);\n } else if (routes.children) {\n
_collectLoadChildren(routes.children, target);\n }\n return target;\n }\n\nexport function parseLazyRoute(\n   route:
string, reflector: StaticReflector, module?: StaticSymbol): LazyRoute {\n   const [routePath, routeName] =
route.split('#);\n   const referencedModule = reflector.resolveExternalReference(\n     {\n       moduleName:
routePath,\n       name: routeName,\n     },\n     module ? module.filePath : undefined);\n   return {route: route,
module: module || referencedModule, referencedModule};\n }\n\n"/**\n * @license\n * Copyright Google LLC All
Rights Reserved.\n * Use of this source code is governed by an MIT-style license that can be\n * found in the
LICENSE file at https://angular.io/license\n */\n\nimport {SummaryResolver} from './summary_resolver';\nimport
{ValueTransformer, visitValue} from './util';\nimport {StaticSymbol, StaticSymbolCache} from
'./static_symbol';\nimport {isGeneratedFile, stripSummaryForJitFileSuffix, stripSummaryForJitNameSuffix,
summaryForJitFileName, summaryForJitName} from './util';\n\nconst TS = /^(?!.*\\.d\\.ts$).*\\.ts$/;\n\nexport class
ResolvedStaticSymbol {\n   constructor(public symbol: StaticSymbol, public metadata: any) {}\n}\n\n/**\n * The
host of the SymbolResolverHost disconnects the implementation from TypeScript / other\n * language\n * services
and from underlying file systems.\n */\nexport interface StaticSymbolResolverHost {\n   /**\n * Return a
ModuleMetadata for the given module.\n * Angular CLI will produce this metadata for a module whenever a .d.ts
files is\n * produced and the module has exported variables or classes with decorators. Module metadata can\n *

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also be produced directly from TypeScript sources by using MetadataCollector in tools/metadata.\n * \n * @param
modulePath is a string identifier for a module as an absolute path.\n * @returns the metadata for the given
module.\n * \n getMetadataFor(modulePath: string): {[key: string]: any}[]|undefined;\n\n /** \n * Converts a
module name that is used in an `import` to a file path.\n * I.e.\n * `path/to/containingFile.ts` containing `import
{...} from 'module-name'`.\n * \n moduleNameToFile(moduleName: string, containingFile?: string):
string|null;\n\n /** \n * Get a file suitable for display to the user that should be relative to the project directory \n *
or the current directory.\n * \n getOutputName(filePath: string): string;\n\n\nconst
SUPPORTED_SCHEMA_VERSION = 4;\n\n /** \n * This class is responsible for loading metadata per symbol, \n *
and normalizing references between symbols.\n * \n * Internally, it only uses symbols without members, \n *
and deduces the values for symbols with members based \n *
on these symbols.\n * \n\nexport class StaticSymbolResolver
{\n private metadataCache = new Map<string, {[key: string]: any}>();\n // Note: this will only contain
StaticSymbols without members!\n private resolvedSymbols = new Map<StaticSymbol,
ResolvedStaticSymbol>();\n // Note: this will only contain StaticSymbols without members!\n private importAs =
new Map<StaticSymbol, StaticSymbol>();\n private symbolResourcePaths = new Map<StaticSymbol, string>();\n
private symbolFromFile = new Map<string, StaticSymbol[]>();\n private knownFileNameToModuleNames = new
Map<string, string>();\n\n constructor(\n private host: StaticSymbolResolverHost, private staticSymbolCache:
StaticSymbolCache,\n private summaryResolver: SummaryResolver<StaticSymbol>,\n private
errorRecorder?: (error: any, fileName?: string) => void) {\n\n resolveSymbol(staticSymbol: StaticSymbol):
ResolvedStaticSymbol {\n if (staticSymbol.members.length > 0) {\n return
this._resolveSymbolMembers(staticSymbol)!;\n } \n // Note: always ask for a summary first, \n // as we might
have read shallow metadata via a .d.ts file \n // for the symbol.\n const resultFromSummary =
this._resolveSymbolFromSummary(staticSymbol)!;\n if (resultFromSummary) {\n return
resultFromSummary;\n } \n const resultFromCache = this.resolvedSymbols.get(staticSymbol);\n if
(resultFromCache) {\n return resultFromCache;\n } \n // Note: Some users use libraries that were not
compiled with ngc, i.e. they don't \n // have summaries, only .d.ts files. So we always need to check both, the
summary \n // and metadata.\n this._createSymbolsOf(staticSymbol.filePath);\n return
this.resolvedSymbols.get(staticSymbol)!;\n } \n\n /** \n * getImportAs produces a symbol that can be used to
import the given symbol.\n * The import might be different than the symbol if the symbol is exported from \n *
a library with a summary; in which case we want to import the symbol from the \n *
ngfactory re-export instead of directly to avoid introducing a direct dependency \n *
on an otherwise indirect dependency.\n * \n * @param
staticSymbol the symbol for which to generate a import symbol \n * \n getImportAs(staticSymbol: StaticSymbol,
useSummaries: boolean = true): StaticSymbol|null {\n if (staticSymbol.members.length) {\n const baseSymbol
= this.getStaticSymbol(staticSymbol.filePath, staticSymbol.name);\n const baseImportAs =
this.getImportAs(baseSymbol, useSummaries);\n return baseImportAs ? \n
this.getStaticSymbol(baseImportAs.filePath, baseImportAs.name, staticSymbol.members) : \n
null;\n } \n
const summarizedFileName = stripSummaryForJitFileSuffix(staticSymbol.filePath);\n if (summarizedFileName
!== staticSymbol.filePath) {\n const summarizedName = stripSummaryForJitNameSuffix(staticSymbol.name);\n
const baseSymbol = \n this.getStaticSymbol(summarizedFileName, summarizedName,
staticSymbol.members);\n const baseImportAs = this.getImportAs(baseSymbol, useSummaries);\n return
baseImportAs ? this.getStaticSymbol(\n
summaryForJitFileName(baseImportAs.filePath), \n
summaryForJitName(baseImportAs.name), baseSymbol.members) : \n
null;\n } \n
let result = (useSummaries && this.summaryResolver.getImportAs(staticSymbol)) || null;\n if (!result) {\n
result = this.importAs.get(staticSymbol)!;\n } \n return result;\n } \n\n /** \n * getResourcePath produces the
path to the original location of the symbol and should \n *
be used to determine the relative location of resource references recorded in \n *
symbol metadata.\n * \n getResourcePath(staticSymbol: StaticSymbol): string {\n
return this.symbolResourcePaths.get(staticSymbol) || staticSymbol.filePath;\n } \n\n /** \n * getTypeAriy returns
the number of generic type parameters the given symbol \n *
has. If the symbol is not a type the result is null.\n * \n
getTypeAriy(staticSymbol: StaticSymbol): number|null {\n // If the file is a factory/ngsummary file, don't

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resolve the symbol as doing so would\n // cause the metadata for an factory/ngsummary file to be loaded which
doesn't exist.\n // All references to generated classes must include the correct arity whenever\n // generating
code.\n if (isGeneratedFile(staticSymbol.filePath)) {\n return null;\n }\n let resolvedSymbol =
unwrapResolvedMetadata(this.resolveSymbol(staticSymbol));\n while (resolvedSymbol &&
resolvedSymbol.metadata instanceof StaticSymbol) {\n resolvedSymbol =
unwrapResolvedMetadata(this.resolveSymbol(resolvedSymbol.metadata));\n }\n return (resolvedSymbol &&
resolvedSymbol.metadata && resolvedSymbol.metadata.arity) || null;\n }\n\n getKnownModuleName(filePath:
string): string|null {\n return this.knownFileNameToModuleNames.get(filePath) || null;\n }\n\n
recordImportAs(sourceSymbol: StaticSymbol, targetSymbol: StaticSymbol) {\n
sourceSymbol.assertNoMembers();\n targetSymbol.assertNoMembers();\n this.importAs.set(sourceSymbol,
targetSymbol);\n }\n\n recordModuleNameForFileName(fileName: string, moduleName: string) {\n
this.knownFileNameToModuleNames.set(fileName, moduleName);\n }\n\n /**\n * Invalidate all information
derived from the given file and return the\n * static symbols contained in the file.\n * @param fileName the
file to invalidate\n */\n invalidateFile(fileName: string): StaticSymbol[] {\n
this.metadataCache.delete(fileName);\n const symbols = this.symbolFromFile.get(fileName);\n if (!symbols) {\n
return [];\n }\n this.symbolFromFile.delete(fileName);\n for (const symbol of symbols) {\n
this.resolvedSymbols.delete(symbol);\n this.importAs.delete(symbol);\n
this.symbolResourcePaths.delete(symbol);\n }\n return symbols;\n }\n\n /** @internal */\n
ignoreErrorsFor<T>(cb: () => T) {\n const recorder = this.errorRecorder;\n this.errorRecorder = () => {};\n try
{\n return cb();\n } finally {\n this.errorRecorder = recorder;\n }\n }\n\n private
_resolveSymbolMembers(staticSymbol: StaticSymbol): ResolvedStaticSymbol|null {\n const members =
staticSymbol.members;\n const baseResolvedSymbol =\n
this.resolveSymbol(this.getStaticSymbol(staticSymbol.filePath, staticSymbol.name));\n if (!baseResolvedSymbol)
{\n return null;\n }\n let baseMetadata = unwrapResolvedMetadata(baseResolvedSymbol.metadata);\n if
(baseMetadata instanceof StaticSymbol) {\n return new ResolvedStaticSymbol(\n staticSymbol,
this.getStaticSymbol(baseMetadata.filePath, baseMetadata.name, members));\n } else if (baseMetadata &&
baseMetadata.__symbolic === 'class') {\n if (baseMetadata.statics && members.length === 1) {\n return
new ResolvedStaticSymbol(staticSymbol, baseMetadata.statics[members[0]]);\n } } else {\n let value =
baseMetadata;\n for (let i = 0; i < members.length && value; i++) {\n value = value[members[i]];\n }
}\n return new ResolvedStaticSymbol(staticSymbol, value);\n }\n return null;\n }\n\n private
_resolveSymbolFromSummary(staticSymbol: StaticSymbol): ResolvedStaticSymbol|null {\n const summary =
this.summaryResolver.resolveSummary(staticSymbol);\n return summary ? new
ResolvedStaticSymbol(staticSymbol, summary.metadata) : null;\n }\n\n /**\n * getStaticSymbol produces a Type
whose metadata is known but whose implementation is not loaded.\n * All types passed to the StaticResolver
should be pseudo-types returned by this method.\n * @param declarationFile the absolute path of the file
where the symbol is declared\n * @param name the name of the type.\n * @param members a symbol for a static
member of the named type\n */\n getStaticSymbol(declarationFile: string, name: string, members?: string[]):
StaticSymbol {\n return this.staticSymbolCache.get(declarationFile, name, members);\n }\n\n /**\n *
hasDecorators checks a file's metadata for the presence of decorators without evaluating the\n * metadata.\n *
@param filePath the absolute path to examine for decorators.\n * @returns true if any class in the file has a
decorator.\n */\n hasDecorators(filePath: string): boolean {\n const metadata =
this.getModuleMetadata(filePath);\n if (metadata['metadata']) {\n return
Object.keys(metadata['metadata']).some((metadataKey) => {\n const entry =
metadata['metadata'][metadataKey];\n return entry && entry.__symbolic === 'class' && entry.decorators;\n
});\n }\n return false;\n }\n\n getSymbolsOf(filePath: string): StaticSymbol[] {\n const summarySymbols =
this.summaryResolver.getSymbolsOf(filePath);\n if (summarySymbols) {\n return summarySymbols;\n }\n
}\n\n // Note: Some users use libraries that were not compiled with ngc, i.e. they don't\n // have summaries, only .d.ts
files, but `summaryResolver.isLibraryFile` returns true.\n this._createSymbolsOf(filePath);\n return

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this.symbolFromFile.get(filePath) || [];
private _createSymbolsOf(filePath: string) {
  if (this.symbolFromFile.has(filePath)) {
    return;
  }
  const resolvedSymbols: ResolvedStaticSymbol[] = [];
  const metadata = this.getModuleMetadata(filePath);
  if (metadata['importAs']) {
    // Index bundle indices should use the importAs module name defined in the bundle.
    this.knownFileNameToModuleNames.set(filePath, metadata['importAs']);
    // handle the symbols in one of the re-export location
    if (metadata['exports']) {
      for (const moduleExport of metadata['exports']) {
        // handle the symbols in the list of explicitly re-exported symbols.
        if (moduleExport.export) {
          moduleExport.export.forEach((exportSymbol: any) => {
            let symbolName: string;
            if (typeof exportSymbol === 'string') {
              symbolName = exportSymbol;
            } else {
              symbolName = exportSymbol.as;
            }
            symbolName = unescapeIdentifier(symbolName);
            let symName = symbolName;
            if (typeof exportSymbol !== 'string') {
              symName = unescapeIdentifier(exportSymbol.name);
            }
            const resolvedModule = this.resolveModule(moduleExport.from, filePath);
            if (resolvedModule) {
              const targetSymbol = this.getStaticSymbol(resolvedModule, symName);
              const sourceSymbol = this.getStaticSymbol(filePath, symbolName);
              resolvedSymbols.push(this.createExport(sourceSymbol, targetSymbol));
            }
          });
        } else {
          // Handle the symbols loaded by 'export *' directives.
          const resolvedModule = this.resolveModule(moduleExport.from, filePath);
          if (resolvedModule && resolvedModule !== filePath) {
            const nestedExports = this.getSymbolsOf(resolvedModule);
            nestedExports.forEach((targetSymbol) => {
              const sourceSymbol = this.getStaticSymbol(filePath, targetSymbol.name);
              resolvedSymbols.push(this.createExport(sourceSymbol, targetSymbol));
            });
          }
        }
      }
    }
    // handle the actual metadata. Has to be after the exports as there might be collisions in the names, and we want the symbols of the current module to win over reexports.
    if (metadata['metadata']) {
      // handle direct declarations of the symbol
      const topLevelSymbolNames = new Set<string>(Object.keys(metadata['metadata']).map(unescapeIdentifier));
      const origins: {[index: string]: string} = metadata['origins'] || {};
      Object.keys(metadata['metadata']).forEach((metadataKey) => {
        const symbolMeta = metadata['metadata'][metadataKey];
        const name = unescapeIdentifier(metadataKey);
        const symbol = this.getStaticSymbol(filePath, name);
        const origin = origins.hasOwnProperty(metadataKey) && origins[metadataKey];
        if (origin) {
          // If the symbol is from a bundled index, use the declaration location of the symbol so relative references (such as './my.html') will be calculated correctly.
          const originFilePath = this.resolveModule(origin, filePath);
          if (!originFilePath) {
            this.reportError(new Error(`Couldn't resolve original symbol for ${origin} from ${this.host.getOutputName(filePath)}`));
          } else {
            this.symbolResourcePaths.set(symbol, originFilePath);
          }
          resolvedSymbols.push(this.createResolvedSymbol(symbol, filePath, topLevelSymbolNames, symbolMeta));
        }
      });
      const uniqueSymbols = new Set<StaticSymbol>();
      for (const resolvedSymbol of resolvedSymbols) {
        this.resolvedSymbols.set(resolvedSymbol.symbol, resolvedSymbol);
        uniqueSymbols.add(resolvedSymbol.symbol);
      }
      this.symbolFromFile.set(filePath, Array.from(uniqueSymbols));
    }
    private createResolvedSymbol(sourceSymbol: StaticSymbol, topLevelPath: string, topLevelSymbolNames: Set<string>, metadata: any): ResolvedStaticSymbol {
      // For classes that don't have Angular summaries / metadata, we only keep their arity, but nothing else (e.g. their constructor parameters). We do this to prevent introducing deep imports as we didn't generate .ngfactory.ts files with proper reexports.
      const isTsFile = TS.test(sourceSymbol.filePath);
      if (this.summaryResolver.isLibraryFile(sourceSymbol.filePath) && !isTsFile && metadata && metadata['__symbolic'] === 'class') {
        const transformedMeta = {__symbolic: 'class', arity: metadata.arity};
        return new ResolvedStaticSymbol(sourceSymbol, transformedMeta);
      }
      let _originalFileMemo: string|undefined;
      const getOriginalName: () => string = () => {
        if (!_originalFileMemo) {
          // Guess what the original file name is from the reference. If it has a `.d.ts` extension replace it with `.ts`. If it already has `.ts` just leave it in place. If it doesn't have `.ts` or `.d.ts`, append `.ts`. Also, if it is in `node_modules`, trim
        }
      }
    }
  }
}

```

```

the `node_module`\n // location as it is not important to finding the file.\n _originalFileMemo =\n this.host.getOutputName(topLevelPath.replace(/((\\ts)|(\\d\\ts))$/, '.ts')\n .replace(/^. *node_modules[\\|\\|\\|, "/>

```

```

filePath = this.resolveModule(module, containingFile);\n if (!filePath) {\n   this.reportError(new Error(`Could
not resolve module ${module} ${\n   containingFile ? ' relative to ' + this.host.getOutputName(containingFile) :
"}`));\n   return this.getStaticSymbol(`ERROR:${module}`, symbolName);\n } return
this.getStaticSymbol(filePath, symbolName);\n }\n\n private resolveModule(module: string, containingFile?:
string): string|null {\n   try {\n     return this.host.moduleNameToFileName(module, containingFile);\n   } catch (e)
{\n     console.error(`Could not resolve module '${module}' relative to file ${containingFile}`);\n
this.reportError(e, undefined, containingFile);\n   }\n   return null;\n }\n\n\n// Remove extra underscore from
escaped identifier.\n// See https://github.com/Microsoft/TypeScript/blob/master/src/compiler/utilities.ts\n\nexport
function unescapeIdentifier(identifier: string): string {\n   return identifier.startsWith('__') ? identifier.substr(1) :
identifier;\n }\n\n\nexport function unwrapResolvedMetadata(metadata: any): any {\n   if (metadata &&
metadata.__symbolic === 'resolved') {\n     return metadata.symbol;\n   }\n   return metadata;\n }\n\n", /**\n *
@license\n * Copyright Google LLC All Rights Reserved.\n * Use of this source code is governed by an MIT-
style license that can be\n * found in the LICENSE file at https://angular.io/license\n */\n\nimport
{CompileDirectiveMetadata, CompileDirectiveSummary, CompileNgModuleMetadata,
CompileNgModuleSummary, CompilePipeMetadata, CompileProviderMetadata, CompileSummaryKind,
CompileTypeMetadata, CompileTypeSummary} from './compile_metadata';\nimport * as o from
'./output/output_ast';\nimport {Summary, SummaryResolver} from './summary_resolver';\nimport {OutputContext,
ValueTransformer, ValueVisitor, visitValue} from './util';\nimport {StaticSymbol, StaticSymbolCache} from
'./static_symbol';\nimport {ResolvedStaticSymbol, StaticSymbolResolver, unwrapResolvedMetadata} from
'./static_symbol_resolver';\nimport {isLoweredSymbol, ngfactoryFilePath, summaryForJitFileName,
summaryForJitName} from './util';\n\nexport function serializeSummaries(\n   srcFileName: string, forJitCtx:
OutputContext|null,\n   summaryResolver: SummaryResolver<StaticSymbol>, symbolResolver:
StaticSymbolResolver,\n   symbols: ResolvedStaticSymbol[], types: {\n     summary: CompileTypeSummary,\n
metadata: CompileNgModuleMetadata|CompileDirectiveMetadata|CompilePipeMetadata|\n
CompileTypeMetadata\n   }[],\n   createExternalSymbolReexports =\n     false): {json: string, exportAs:
{symbol: StaticSymbol, exportAs: string}[]} {\n   const toJsonSerializer = new ToJsonSerializer(symbolResolver,
summaryResolver, srcFileName);\n   // for symbols, we use everything except for the class metadata itself\n // (we
keep the statics though), as the class metadata is contained in the\n // CompileTypeSummary.\n   symbols.forEach(\n
(resolvedSymbol) => toJsonSerializer.addSummary(\n     {symbol: resolvedSymbol.symbol, metadata:
resolvedSymbol.metadata});\n   // Add type summaries.\n   types.forEach(({summary, metadata}) => {\n
toJsonSerializer.addSummary(\n     {symbol: summary.type.reference, metadata: undefined, type: summary});\n
});\n   const {json, exportAs} = toJsonSerializer.serialize(createExternalSymbolReexports);\n   if (forJitCtx) {\n
const forJitSerializer = new ForJitSerializer(forJitCtx, symbolResolver, summaryResolver);\n
types.forEach(({summary, metadata}) => {\n     forJitSerializer.addSourceType(summary, metadata);\n   });\n
toJsonSerializer.unprocessedSymbolSummariesBySymbol.forEach((summary) => {\n     if
(summaryResolver.isLibraryFile(summary.symbol.filePath) && summary.type) {\n
forJitSerializer.addLibType(summary.type);\n     }\n   });\n   forJitSerializer.serialize(exportAs);\n }\n   return
{json, exportAs};\n }\n\n\nexport function deserializeSummaries(\n   symbolCache: StaticSymbolCache,
summaryResolver: SummaryResolver<StaticSymbol>,\n   libraryFileName: string, json: string): {\n   moduleName:
string|null,\n   summaries: Summary<StaticSymbol>[],\n   importAs: {symbol: StaticSymbol, importAs:
StaticSymbol}[]\n } {\n   const deserializer = new FromJsonDeserializer(symbolCache, summaryResolver);\n   return
deserializer.deserialize(libraryFileName, json);\n }\n\n\nexport function createForJitStub(outputCtx: OutputContext,
reference: StaticSymbol) {\n   return createSummaryForJitFunction(outputCtx, reference,
o.NULL_EXPR);\n }\n\n\nfunction createSummaryForJitFunction(\n   outputCtx: OutputContext, reference:
StaticSymbol, value: o.Expression) {\n   const fnName = summaryForJitName(reference.name);\n
outputCtx.statements.push(\n   o.fn([], [new o.ReturnStatement(value)], new
o.ArrayType(o.DYNAMIC_TYPE)).toDeclStmt(fnName, [\n     o.StmtModifier.Final, o.StmtModifier.Exported\n
]));\n }\n\n\nconst enum SerializationFlags {\n   None = 0,\n   ResolveValue = 1,\n }\n\n\nclass ToJsonSerializer extends

```

```

ValueTransformer {\n // Note: This only contains symbols without members.\n private symbols: StaticSymbol[] =
[];\n private indexBySymbol = new Map<StaticSymbol, number>();\n private reexportedBy = new
Map<StaticSymbol, StaticSymbol>();\n // This now contains a `__symbol: number` in the place of\n //
StaticSymbols, but otherwise has the same shape as the original objects.\n private processedSummaryBySymbol =
new Map<StaticSymbol, any>();\n private processedSummaries: any[] = [];\n private moduleName: string|null;\n\n
unprocessedSymbolSummariesBySymbol = new Map<StaticSymbol, Summary<StaticSymbol>>());\n\n
constructor(\n private symbolResolver: StaticSymbolResolver,\n private summaryResolver:
SummaryResolver<StaticSymbol>, private srcFileName: string) {\n super();\n this.moduleName =
symbolResolver.getKnownModuleName(srcFileName);\n }\n\n addSummary(summary:
Summary<StaticSymbol>) {\n let unprocessedSummary =
this.unprocessedSymbolSummariesBySymbol.get(summary.symbol);\n let processedSummary =
this.processedSummaryBySymbol.get(summary.symbol);\n if (!unprocessedSummary) {\n
unprocessedSummary = {symbol: summary.symbol, metadata: undefined};\n
this.unprocessedSymbolSummariesBySymbol.set(summary.symbol, unprocessedSummary);\n
processedSummary = {symbol: this.processValue(summary.symbol, SerializationFlags.None)};\n
this.processedSummaries.push(processedSummary);\n this.processedSummaryBySymbol.set(summary.symbol,
processedSummary);\n }\n if (!unprocessedSummary.metadata && summary.metadata) {\n let metadata =
summary.metadata || {};\n if (metadata.__symbolic === 'class') {\n // For classes, we keep everything except
their class decorators.\n // We need to keep e.g. the ctor args, method names, method decorators\n // so that
the class can be extended in another compilation unit.\n // We don't keep the class decorators as\n // 1) they
refer to data\n // that should not cause a rebuild of downstream compilation units\n // (e.g. inline
templates of @Component, or @NgModule.declarations)\n // 2) their data is already captured in
TypeSummaries, e.g. DirectiveSummary.\n const clone: {[key: string]: any} = {};\n
Object.keys(metadata).forEach((propName) => {\n if (propName !== 'decorators') {\n
clone[propName] = metadata[propName];\n }\n });\n metadata = clone;\n } else if
(isCall(metadata)) {\n if (!isFunctionCall(metadata) && !isMethodCallOnVariable(metadata)) {\n // Don't
store complex calls as we won't be able to simplify them anyways later on.\n metadata = {\n
__symbolic: 'error',\n message: 'Complex function calls are not supported.',\n };
}\n }\n }\n //
Note: We need to keep storing ctor calls for e.g.\n // `export const x = new InjectionToken(...)`\n
unprocessedSummary.metadata = metadata;\n processedSummary.metadata = this.processValue(metadata,
SerializationFlags.ResolveValue);\n if (metadata instanceof StaticSymbol &&\n
this.summaryResolver.isLibraryFile(metadata.filePath)) {\n const declarationSymbol =
this.symbols[this.indexBySymbol.get(metadata)];\n if (!isLoweredSymbol(declarationSymbol.name)) {\n
// Note: symbols that were introduced during codegen in the user file can have a reexport\n // if a user used
`export *`. However, we can't rely on this as tsickle will change\n // `export *` into named exports, using only
the information from the typechecker.\n // As we introduce the new symbols after typecheck, Tsickle does not
know about them,\n // and omits them when expanding `export *`.\n // So we have to keep reexporting
these symbols manually via .ngfactory files.\n this.reexportedBy.set(declarationSymbol, summary.symbol);\n
}\n }\n }\n if (!unprocessedSummary.type && summary.type) {\n unprocessedSummary.type =
summary.type;\n // Note: We don't add the summaries of all referenced symbols as for the ResolvedSymbols,\n
// as the type summaries already contain the transitive data that they require\n // (in a minimal way).\n
processedSummary.type = this.processValue(summary.type, SerializationFlags.None);\n // except for reexported
directives / pipes, so we need to store\n // their summaries explicitly.\n if (summary.type.summaryKind ===
CompileSummaryKind.NgModule) {\n const ngModuleSummary =
<CompileNgModuleSummary>summary.type;\n
ngModuleSummary.exportedDirectives.concat(ngModuleSummary.exportedPipes).forEach((id) => {\n const
symbol: StaticSymbol = id.reference;\n if (this.summaryResolver.isLibraryFile(symbol.filePath) &&\n
!this.unprocessedSymbolSummariesBySymbol.has(symbol)) {\n const summary =

```

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this.summaryResolver.resolveSummary(symbol);\n        if (summary) {\n            this.addSummary(summary);\n        }\n    });\n    }\n}\n\n /**\n * @param createExternalSymbolReexports Whether external\n static symbols should be re-exported.\n * This can be enabled if external symbols should be re-exported by the\n current module in\n * order to avoid dynamically generated module dependencies which can break strict\n dependency\n * enforcements (as in Google3). Read more here: https://github.com/angular/angular/issues/25644\n */\n serialize(createExternalSymbolReexports: boolean):\n {json: string, exportAs: {symbol: StaticSymbol,\n exportAs: string}[]} {\n    const exportAs: {symbol: StaticSymbol, exportAs: string}[] = [];\n    const json =\n JSON.stringify({\n        moduleName: this.moduleName,\n        summaries: this.processedSummaries,\n        symbols:\n this.symbols.map((symbol, index) => {\n            symbol.assertNoMembers();\n            let importAs: string|number =\n undefined!;\n            if (this.summaryResolver.isLibraryFile(symbol.filePath)) {\n                const reexportSymbol =\n this.reexportedBy.get(symbol);\n                if (reexportSymbol) {\n                    // In case the given external static symbol is\n already manually exported by the\n                    // user, we just proxy the external static symbol reference to the manual\n export.\n                    // This ensures that the AOT compiler imports the external symbol through the\n                    // user\n export and does not introduce another dependency which is not needed.\n                    importAs =\n this.indexBySymbol.get(reexportSymbol)!;\n                } else if (createExternalSymbolReexports) {\n                    // In this\n case, the given external static symbol is *not* manually exported by\n                    // the user, and we manually create a\n re-export in the factory file so that we\n                    // don't introduce another module dependency. This is useful when\n running within\n                    // Bazel so that the AOT compiler does not introduce any module dependencies\n                    // which can break the strict dependency enforcement. (e.g. as in Google3)\n                    // Read more about this here:\n https://github.com/angular/angular/issues/25644\n                    const summary =\n this.unprocessedSymbolSummariesBySymbol.get(symbol);\n                    if (!summary || !summary.metadata ||\n summary.metadata.__symbolic !== 'interface') {\n                        importAs = `${symbol.name}_${index}`;\n                        exportAs.push({symbol, exportAs: importAs});\n                    }\n                }\n                return {\n                    __symbolic:\n index,\n                    name: symbol.name,\n                    filePath: this.summaryResolver.toSummaryFileName(symbol.filePath,\n this.srcFileName),\n                    importAs: importAs\n                };\n            })\n        });\n    return {json, exportAs};\n}\n\n private\n processValue(value: any, flags: SerializationFlags): any {\n    return visitValue(value, this, flags);\n}\n\n visitOther(value: any, context: any): any {\n    if (value instanceof StaticSymbol) {\n        let baseSymbol =\n this.symbolResolver.getStaticSymbol(value.filePath, value.name);\n        const index =\n this.visitStaticSymbol(baseSymbol, context);\n        return {__symbolic: index, members: value.members};\n    }\n}\n\n /**\n * Strip line and character numbers from ngsummaries.\n * Emitting them causes white spaces\n changes to retrigger upstream\n * recompilations in bazel.\n * TODO: find out a way to have line and character\n numbers in errors without\n * excessive recompilation in bazel.\n */\n visitStringMap(map: {[key: string]: any},\n context: any): any {\n    if (map['__symbolic'] === 'resolved') {\n        return visitValue(map['symbol'], this,\n context);\n    }\n    if (map['__symbolic'] === 'error') {\n        delete map['line'];\n        delete map['character'];\n    }\n    return super.visitStringMap(map, context);\n}\n\n /**\n * Returns null if the options.resolveValue is true, and the\n summary for the symbol\n * resolved to a type or could not be resolved.\n */\n private\n visitStaticSymbol(baseSymbol: StaticSymbol, flags: SerializationFlags): number {\n    let index:\n number|undefined|null = this.indexBySymbol.get(baseSymbol);\n    let summary: Summary<StaticSymbol>|null =\n null;\n    if (flags & SerializationFlags.ResolveValue &&\n this.summaryResolver.isLibraryFile(baseSymbol.filePath)) {\n        if\n (this.unprocessedSymbolSummariesBySymbol.has(baseSymbol)) {\n            // the summary for this symbol was\n already added\n            // -> nothing to do.\n            return index!;\n        }\n        summary =\n this.loadSummary(baseSymbol);\n        if (summary && summary.metadata instanceof StaticSymbol) {\n            // The\n summary is a reexport\n            index = this.visitStaticSymbol(summary.metadata, flags);\n            // reset the summary as\n it is just a reexport, so we don't want to store it.\n            summary = null;\n        }\n    } else if (index !== null) {\n        //\n Note: == on purpose to compare with undefined!\n        // No summary and the symbol is already added -> nothing to\n do.\n        return index;\n    }\n    // Note: == on purpose to compare with undefined!\n    if (index == null) {\n        index = this.symbols.length;\n        this.symbols.push(baseSymbol);\n    }\n    this.indexBySymbol.set(baseSymbol,\n
```

```

index);\n if (summary) {\n   this.addSummary(summary);\n } \n return index;\n }\n\n private
loadSummary(symbol: StaticSymbol): Summary<StaticSymbol>|null {\n   let summary =
this.summaryResolver.resolveSummary(symbol);\n   if (!summary) {\n     // some symbols might originate from a
plain typescript library\n     // that just exported .d.ts and .metadata.json files, i.e. where no summary\n     // files
were created.\n     const resolvedSymbol = this.symbolResolver.resolveSymbol(symbol);\n     if (resolvedSymbol)
{\n       summary = {symbol: resolvedSymbol.symbol, metadata: resolvedSymbol.metadata};\n     }\n   }\n   return
summary;\n }\n}\n\nclass ForJitSerializer {\n  private data: Array<{\n    summary: CompileTypeSummary,\n    metadata: CompileNgModuleMetadata|CompileDirectiveMetadata|CompilePipeMetadata|\n    CompileTypeMetadata|null,\n    isLibrary: boolean\n  }> = [];\n\n  constructor(\n    private outputCtx:
OutputContext, private symbolResolver: StaticSymbolResolver,\n    private summaryResolver:
SummaryResolver<StaticSymbol>) {\n\n    addSourceType(\n      summary: CompileTypeSummary,\n      metadata:
CompileNgModuleMetadata|CompileDirectiveMetadata|CompilePipeMetadata|\n      CompileTypeMetadata) {\n        this.data.push({summary, metadata, isLibrary: false});\n      }\n\n      addLibType(summary: CompileTypeSummary) {\n        this.data.push({summary, metadata: null, isLibrary: true});\n      }\n\n      serialize(exportAsArr: {symbol: StaticSymbol,
exportAs: string}[]): void {\n        const exportAsBySymbol = new Map<StaticSymbol, string>();\n        for (const
{symbol, exportAs} of exportAsArr) {\n          exportAsBySymbol.set(symbol, exportAs);\n        }\n        const
ngModuleSymbols = new Set<StaticSymbol>();\n\n        for (const {summary, metadata, isLibrary} of this.data) {\n
          if (summary.summaryKind === CompileSummaryKind.NgModule) {\n            // collect the symbols that refer to
NgModule classes.\n            // Note: we can't just rely on `summary.type.summaryKind` to determine this as\n            //
we don't add the summaries of all referenced symbols when we serialize type summaries.\n            // See
serializeSummaries for details.\n            ngModuleSymbols.add(summary.type.reference);\n            const modSummary =
<CompileNgModuleSummary>summary;\n            for (const mod of modSummary.modules) {\n              ngModuleSymbols.add(mod.reference);\n            }\n            if (!isLibrary) {\n              const fnName =
summaryForJitName(summary.type.reference.name);\n              createSummaryForJitFunction(\n                this.outputCtx,
summary.type.reference,\n                this.serializeSummaryWithDeps(summary, metadata!);\n              }\n            }\n\n            ngModuleSymbols.forEach((ngModuleSymbol) => {\n              if
(this.summaryResolver.isLibraryFile(ngModuleSymbol.filePath)) {\n                let exportAs =
exportAsBySymbol.get(ngModuleSymbol) || ngModuleSymbol.name;\n                const jitExportAsName =
summaryForJitName(exportAs);\n                this.outputCtx.statements.push(o.variable(jitExportAsName)\n
                  .set(this.serializeSummaryRef(ngModuleSymbol))\n
                  .toDeclStmt(null,
[o.StmtModifier.Exported]));\n              }\n            });\n          }\n\n          private serializeSummaryWithDeps(\n            summary:
CompileTypeSummary,\n            metadata:
CompileNgModuleMetadata|CompileDirectiveMetadata|CompilePipeMetadata|\n            CompileTypeMetadata):
o.Expression {\n            const expressions: o.Expression[] = [this.serializeSummary(summary)];\n            let providers:
CompileProviderMetadata[] = [];\n            if (metadata instanceof CompileNgModuleMetadata) {\n              expressions.push(...\n                // For directives / pipes, we only add the declared ones,\n                // and
rely on transitively importing NgModules to get the transitive\n                // summaries.\n                metadata.declaredDirectives.concat(metadata.declaredPipes)\n                  .map(type => type.reference)\n                // For modules,\n                // we also add the summaries for modules\n                // from
libraries.\n                // This is ok as we produce reexports for all transitive modules.\n                metadata.transitiveModule.modules.map(type => type.reference)\n                  .filter(ref => ref
!== metadata.type.reference))\n                .map((ref) => this.serializeSummaryRef(ref));\n            // Note: We
don't use `NgModuleSummary.providers`, as that one is transitive,\n            // and we already have transitive modules.\n            providers = metadata.providers;\n          } else if (summary.summaryKind === CompileSummaryKind.Directive) {\n            const dirSummary = <CompileDirectiveSummary>summary;\n            providers =
dirSummary.providers.concat(dirSummary.viewProviders);\n          }\n          // Note: We can't just refer to the
`ngsummary.ts` files for `useClass` providers (as we do for\n          // declaredDirectives / declaredPipes), as we allow\n          // providers without ctor arguments to skip the `@Injectable` decorator,\n          // i.e. we didn't generate .ngsummary.ts

```



```

'./ml_parser/interpolation_config';\nimport {NgModuleCompiler} from './ng_module_compiler';\nimport
{OutputEmitter} from './output/abstract_emitter';\nimport * as o from './output/output_ast';\nimport {ParseError}
from './parse_util';\nimport {compileNgModuleFromRender2 as compileR3Module} from
'./render3/r3_module_compiler';\nimport {compilePipeFromRender2 as compileR3Pipe} from
'./render3/r3_pipe_compiler';\nimport {htmlAstToRender3Ast} from './render3/r3_template_transform';\nimport
{compileComponentFromRender2 as compileR3Component, compileDirectiveFromRender2 as
compileR3Directive} from './render3/view/compiler';\nimport {DomElementSchemaRegistry} from
'./schema/dom_element_schema_registry';\nimport {CompiledStylesheet, StyleCompiler} from
'./style_compiler';\nimport {SummaryResolver} from './summary_resolver';\nimport {BindingParser} from
'./template_parser/binding_parser';\nimport {TemplateAst} from './template_parser/template_ast';\nimport
{TemplateParser} from './template_parser/template_parser';\nimport {error, newArray, OutputContext, syntaxError,
ValueVisitor, visitValue} from './util';\nimport {TypeCheckCompiler} from
'./view_compiler/type_check_compiler';\nimport {ViewCompiler, ViewCompileResult} from
'./view_compiler/view_compiler';\n\nimport {AotCompilerHost} from './compiler_host';\nimport
{AotCompilerOptions} from './compiler_options';\nimport {GeneratedFile} from './generated_file';\nimport
{LazyRoute, listLazyRoutes, parseLazyRoute} from './lazy_routes';\nimport {PartialModule} from
'./partial_module';\nimport {StaticReflector} from './static_reflector';\nimport {StaticSymbol} from
'./static_symbol';\nimport {StaticSymbolResolver} from './static_symbol_resolver';\nimport {createForJitStub,
serializeSummaries} from './summary_serializer';\nimport {ngfactoryFilePath, normalizeGenFileSuffix,
splitTypescriptSuffix, summaryFileName, summaryForJitFileName} from './util';\n\nconst enum StubEmitFlags {\n
Basic = 1 << 0,\n TypeCheck = 1 << 1,\n All = TypeCheck | Basic\n}\n\nexport class AotCompiler {\n private
_templateAstCache =\n   new Map<StaticSymbol, {template: TemplateAst[], pipes:
CompilePipeSummary[]}>;\n private _analyzedFiles = new Map<string, NgAnalyzedFile>;\n private
_analyzedFilesForInjectables = new Map<string, NgAnalyzedFileWithInjectables>;\n\n constructor(\n private
_config: CompilerConfig, private _options: AotCompilerOptions,\n private _host: AotCompilerHost, readonly
reflector: StaticReflector,\n private _metadataResolver: CompileMetadataResolver, private _templateParser:
TemplateParser,\n private _styleCompiler: StyleCompiler, private _viewCompiler: ViewCompiler,\n private
_typeCheckCompiler: TypeCheckCompiler, private _ngModuleCompiler: NgModuleCompiler,\n private
_injectableCompiler: InjectableCompiler, private _outputEmitter: OutputEmitter,\n private _summaryResolver:
SummaryResolver<StaticSymbol>,\n private _symbolResolver: StaticSymbolResolver) {\n\n clearCache() {\n
this._metadataResolver.clearCache();\n }\n\n analyzeModulesSync(rootFiles: string[]): NgAnalyzedModules {\n
const analyzeResult = analyzeAndValidateNgModules(\n   rootFiles, this._host, this._symbolResolver,\n
this._metadataResolver);\n   analyzeResult.ngModules.forEach(\n     ngModule =>\n
this._metadataResolver.loadNgModuleDirectiveAndPipeMetadata(\n       ngModule.type.reference, true));\n
return analyzeResult;\n }\n\n analyzeModulesAsync(rootFiles: string[]): Promise<NgAnalyzedModules> {\n
const analyzeResult = analyzeAndValidateNgModules(\n   rootFiles, this._host, this._symbolResolver,\n
this._metadataResolver);\n   return Promise\n     .all(analyzeResult.ngModules.map(\n       ngModule =>\n
this._metadataResolver.loadNgModuleDirectiveAndPipeMetadata(\n         ngModule.type.reference, false)))\n
     .then(() => analyzeResult);\n }\n\n private _analyzeFile(fileName: string): NgAnalyzedFile {\n let analyzedFile
= this._analyzedFiles.get(fileName);\n if (!analyzedFile) {\n   analyzedFile =\n     analyzeFile(this._host,\n
this._symbolResolver, this._metadataResolver, fileName);\n   this._analyzedFiles.set(fileName, analyzedFile);\n
}\n return analyzedFile;\n }\n\n private _analyzeFileForInjectables(fileName: string):
NgAnalyzedFileWithInjectables {\n let analyzedFile = this._analyzedFilesForInjectables.get(fileName);\n if
(!analyzedFile) {\n   analyzedFile = analyzeFileForInjectables(\n     this._host, this._symbolResolver,\n
this._metadataResolver, fileName);\n   this._analyzedFilesForInjectables.set(fileName, analyzedFile);\n }\n
return analyzedFile;\n }\n\n findGeneratedFileNames(fileName: string): string[] {\n const genFileNames: string[]
= [];\n const file = this._analyzeFile(fileName);\n // Make sure we create a .ngfactory if we have a
injectable/directive/pipe/NgModule\n // or a reference to a non source file.\n // Note: This is overestimating the

```



```

required .ngfactory files as the real calculation is harder.\n // Only do this for StubEmitFlags.Basic, as adding a
type check block\n // does not change this file (as we generate type check blocks based on NgModules).\n if
(this._options.allowEmptyCodegenFiles || file.directives.length || file.pipes.length ||\n file.injectables.length ||
file.ngModules.length || file.exportsNonSourceFiles) {\n genFileNames.push(ngfactoryFilePath(file.fileName,
true));\n if (this._options.enableSummariesForJit) {\n
genFileNames.push(summaryForJitFileName(file.fileName, true));\n }\n }\n const fileSuffix =
normalizeGenFileSuffix(splitTypescriptSuffix(file.fileName, true)[1]);\n file.directives.forEach((dirSymbol) =>
{\n const compMeta =\n
this._metadataResolver.getNonNormalizedDirectiveMetadata(dirSymbol)!.metadata;\n if
(!compMeta.isComponent) {\n return;\n }\n // Note: compMeta is a component and therefore template is
non null.\n compMeta.template!.styleUrls.forEach((styleUrl) => {\n const normalizedUrl =
this._host.resourceNameToFileUrl(styleUrl, file.fileName);\n if (!normalizedUrl) {\n throw
syntaxError(` Couldn't resolve resource ${styleUrl} relative to ${file.fileName}`);\n }\n const needsShim =
(compMeta.template!.encapsulation ||\n this._config.defaultEncapsulation) ===
ViewEncapsulation.Emulated;\n genFileNames.push(_stylesModuleUrl(normalizedUrl, needsShim,
fileSuffix));\n if (this._options.allowEmptyCodegenFiles) {\n
genFileNames.push(_stylesModuleUrl(normalizedUrl, !needsShim, fileSuffix));\n }\n });\n });\n return
genFileNames;\n }\n\n emitBasicStub(genFileName: string, originalFileName?: string): GeneratedFile {\n const
outputCtx = this._createOutputContext(genFileName);\n if (genFileName.endsWith('.ngfactory.ts')) {\n if
(!originalFileName) {\n throw new Error(\n `Assertion error: require the original file for .ngfactory.ts
stubs. File: ${\n genFileName}`);\n }\n const originalFile = this._analyzeFile(originalFileName);\n
this._createNgFactoryStub(outputCtx, originalFile, StubEmitFlags.Basic);\n } else if
(genFileName.endsWith('.ngsummary.ts')) {\n if (this._options.enableSummariesForJit) {\n if
(!originalFileName) {\n throw new Error(\n `Assertion error: require the original file for
.ngsummary.ts stubs. File: ${\n genFileName}`);\n }\n const originalFile =
this._analyzeFile(originalFileName);\n _createEmptyStub(outputCtx);\n
originalFile.ngModules.forEach(ngModule => {\n // create exports that user code can reference\n
createForJitStub(outputCtx, ngModule.type.reference);\n });\n }\n } else if
(genFileName.endsWith('.ngstyle.ts')) {\n _createEmptyStub(outputCtx);\n }\n // Note: for the stubs, we don't
need a property srcFileUrl,\n // as later on in emitAllImpls we will create the proper GeneratedFiles with the\n //
correct srcFileUrl.\n // This is good as e.g. for .ngstyle.ts files we can't derive\n // the url of components based on
the genFileUrl.\n return this._codegenSourceModule('unknown', outputCtx);\n }\n\n emitTypeCheckStub(genFileName: string, originalFileName: string): GeneratedFile|null {\n const originalFile =
this._analyzeFile(originalFileName);\n const outputCtx = this._createOutputContext(genFileName);\n if
(genFileName.endsWith('.ngfactory.ts')) {\n this._createNgFactoryStub(outputCtx, originalFile,
StubEmitFlags.TypeCheck);\n }\n return outputCtx.statements.length > 0 ?\n
this._codegenSourceModule(originalFile.fileName, outputCtx) :\n null;\n }\n\n loadFilesAsync(fileNames:
string[], tsFiles: string[]): Promise<\n {analyzedModules: NgAnalyzedModules, analyzedInjectables:
NgAnalyzedFileWithInjectables[]}> {\n const files = fileNames.map(fileName => this._analyzeFile(fileName));\n
const loadingPromises: Promise<NgAnalyzedModules>[] = [];\n files.forEach(\n file =>
file.ngModules.forEach(\n ngModule =>\n
loadingPromises.push(this._metadataResolver.loadNgModuleDirectiveAndPipeMetadata(\n
ngModule.type.reference, false));\n const analyzedInjectables = tsFiles.map(tsFile =>
this._analyzeFileForInjectables(tsFile));\n return Promise.all(loadingPromises).then(_ => ({\n
analyzedModules: mergeAndValidateNgFiles(files),\n analyzedInjectables:
analyzedInjectables,\n
})));\n }\n\n loadFilesSync(fileNames: string[], tsFiles:
string[]):\n {analyzedModules: NgAnalyzedModules, analyzedInjectables: NgAnalyzedFileWithInjectables[]}\n
{\n const files = fileNames.map(fileName => this._analyzeFile(fileName));\n files.forEach(\n file =>

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file.ngModules.forEach(\n      ngModule =>
this._metadataResolver.loadNgModuleDirectiveAndPipeMetadata(\n      ngModule.type.reference, true));\n
const analyzedInjectables = tsFiles.map(tsFile => this._analyzeFileForInjectables(tsFile));\n  return {\n
analyzedModules: mergeAndValidateNgFiles(files),\n  analyzedInjectables: analyzedInjectables,\n  };\n }\n\n
private _createNgFactoryStub(\n  outputCtx: OutputContext, file: NgAnalyzedFile, emitFlags: StubEmitFlags)
{\n  let componentId = 0;\n  file.ngModules.forEach((ngModuleMeta, ngModuleIndex) => {\n    // Note: the
code below needs to be executed for StubEmitFlags.Basic and StubEmitFlags.TypeCheck,\n    // so we don't change
the .ngfactory file too much when adding the type-check block.\n    // create exports that user code can
reference\n    this._ngModuleCompiler.createStub(outputCtx, ngModuleMeta.type.reference);\n    // add
references to the symbols from the metadata.\n    // These can be used by the type check block for components,\n
// and they also cause TypeScript to include these files into the program too,\n    // which will make them part
of the analyzedFiles.\n    const externalReferences: StaticSymbol[] = [\n    // Add references that are available from
all the modules and imports.\n    ...ngModuleMeta.transitiveModule.directives.map(d => d.reference),\n
...ngModuleMeta.transitiveModule.pipes.map(d => d.reference),\n    ...ngModuleMeta.importedModules.map(m
=> m.type.reference),\n    ...ngModuleMeta.exportedModules.map(m => m.type.reference),\n    // Add
references that might be inserted by the template compiler.\n
...this._externalIdentifierReferences([Identifiers.TemplateRef, Identifiers.ElementRef]),\n    ];\n\n    const
externalReferenceVars = new Map<any, string>();\n    externalReferences.forEach((ref, typeIndex) => {\n
externalReferenceVars.set(ref, `_decl${ngModuleIndex}_${typeIndex}`);\n    });\n
externalReferenceVars.forEach((varName, reference) => {\n    outputCtx.statements.push(\n
o.variable(varName)\n      .set(o.NULL_EXPR.cast(o.DYNAMIC_TYPE))\n
.toDeclStmt(o.expressionType(outputCtx.importExpr(\n      reference, /* typeParams */ null, /*
useSummaries */ false)))));\n    });\n\n    if (emitFlags & StubEmitFlags.TypeCheck) {\n    // add the type-check
block for all components of the NgModule\n    ngModuleMeta.declaredDirectives.forEach((dirId) => {\n
const compMeta = this._metadataResolver.getDirectiveMetadata(dirId.reference);\n    if
(!compMeta.isComponent) {\n    return;\n    }\n    componentId++;\n
this._createTypeCheckBlock(\n    outputCtx, `${compMeta.type.reference.name}_Host_${componentId}`,
ngModuleMeta,\n    this._metadataResolver.getHostComponentMetadata(compMeta), [compMeta.type],\n
externalReferenceVars);\n    this._createTypeCheckBlock(\n    outputCtx,
`${compMeta.type.reference.name}_${componentId}`, ngModuleMeta, compMeta,\n
ngModuleMeta.transitiveModule.directives, externalReferenceVars);\n    });\n  });\n\n  if
(outputCtx.statements.length === 0) {\n    _createEmptyStub(outputCtx);\n  }\n }\n\n private
_externalIdentifierReferences(references: o.ExternalReference[]): StaticSymbol[] {\n  const result: StaticSymbol[]
= [];\n  for (let reference of references) {\n    const token = createTokenForExternalReference(this.reflector,
reference);\n    if (token.identifier) {\n    result.push(token.identifier.reference);\n    }\n  }\n  return result;\n
}\n\n private _createTypeCheckBlock(\n  ctx: OutputContext, componentId: string, moduleMeta:
CompileNgModuleMetadata,\n  compMeta: CompileDirectiveMetadata, directives:
CompileIdentifierMetadata[],\n  externalReferenceVars: Map<any, string>) {\n  const {template:
parsedTemplate, pipes: usedPipes} =\n    this._parseTemplate(compMeta, moduleMeta, directives);\n
ctx.statements.push(...this._typeCheckCompiler.compileComponent(\n    componentId, compMeta,
parsedTemplate, usedPipes, externalReferenceVars, ctx));\n  }\n\n  emitMessageBundle(analyzeResult:
NgAnalyzedModules, locale: string|null): MessageBundle {\n  const errors: ParseError[] = [];\n  const htmlParser
= new HtmlParser();\n\n  // TODO(vicb): implicit tags & attributes\n  const messageBundle = new
MessageBundle(htmlParser, [], {}, locale);\n\n  analyzeResult.files.forEach(file => {\n    const compMetas:
CompileDirectiveMetadata[] = [];\n    file.directives.forEach(directiveType => {\n    const dirMeta =
this._metadataResolver.getDirectiveMetadata(directiveType);\n    if (dirMeta && dirMeta.isComponent) {\n
compMetas.push(dirMeta);\n    }\n  });\n    compMetas.forEach(compMeta => {\n    const html =
compMeta.template !.template !;\n    // Template URL points to either an HTML or TS file depending on

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whether\n    // the file is used with `templateUrl:` or `template:`, respectively.\n    const templateUrl =
compMeta.template !.templateUrl!;\n    const interpolationConfig =\nInterpolationConfig.fromArray(compMeta.template !.interpolation);\nerrors.push(...messageBundle.updateFromTemplate(html, templateUrl, interpolationConfig!);\n    });\n    });\n\nif (errors.length) {\n    throw new Error(errors.map(e => e.toString()).join('\n'));\n    }\n\nreturn
messageBundle;\n    }\n\nemitAllPartialModules(\n    {ngModuleByPipeOrDirective, files}:
NgAnalyzedModules,\n    r3Files: NgAnalyzedFileWithInjectables[]): PartialModule[] {\n    const contextMap =
new Map<string, OutputContext>();\n\n    const getContext = (fileName: string): OutputContext => {\n    if
(!contextMap.has(fileName)) {\n        contextMap.set(fileName, this._createOutputContext(fileName));\n    }\n
return contextMap.get(fileName)!;\n    };\n\n    files.forEach(\n        file => this._compilePartialModule(\n
file.fileName, ngModuleByPipeOrDirective, file.directives, file.pipes, file.ngModules,\n            file.injectables,
getContext(file.fileName));\n        r3Files.forEach(\n            file => this._compileShallowModules(\n
file.fileName, file.shallowModules, getContext(file.fileName));\n        }\n\n        return Array.from(contextMap.values())\n
.map(context => ({\n            fileName: context.genFilePath,\n            statements:
[...context.constantPool.statements, ...context.statements],\n            }));\n        }\n\n        private
_compileShallowModules(\n            fileName: string, shallowModules: CompileShallowModuleMetadata[],\n            context: OutputContext): void {\n            shallowModules.forEach(module => compileR3Module(context, module,
this._injectableCompiler));\n        }\n\n        private _compilePartialModule(\n            fileName: string,
ngModuleByPipeOrDirective: Map<StaticSymbol, CompileNgModuleMetadata>,\n            directives: StaticSymbol[],
pipes: StaticSymbol[], ngModules: CompileNgModuleMetadata[],\n            injectables: CompileInjectableMetadata[],
context: OutputContext): void {\n            const errors: ParseError[] = [];\n\n            const schemaRegistry = new
DomElementSchemaRegistry();\n            const hostBindingParser = new BindingParser(\n
this._templateParser.expressionParser, DEFAULT_INTERPOLATION_CONFIG, schemaRegistry, [],\n            errors);\n\n            // Process all components and directives\n            directives.forEach(directiveType => {\n            const
directiveMetadata = this._metadataResolver.getDirectiveMetadata(directiveType);\n            if
(directiveMetadata.isComponent) {\n                const module = ngModuleByPipeOrDirective.get(directiveType)!;\n
module ||\n                error(`Cannot determine the module for component '${\n
identifierName(directiveMetadata.type)}'`);\n\n                let htmlAst = directiveMetadata.template !.htmlAst!;\n
const preserveWhitespaces = directiveMetadata!.template !.preserveWhitespaces;\n\n                if (!preserveWhitespaces)
{\n                    htmlAst = removeWhitespaces(htmlAst);\n                }\n\n                const render3Ast =
htmlAstToRender3Ast(htmlAst.rootNodes, hostBindingParser);\n\n                // Map of StaticType by directive
selectors\n                const directiveTypeBySel = new Map<string, any>();\n\n                const directives =
module.transitiveModule.directives.map(\n                    dir =>
this._metadataResolver.getDirectiveSummary(dir.reference));\n\n                directives.forEach(directive => {\n                if
(directive.selector) {\n                    directiveTypeBySel.set(directive.selector, directive.type.reference);\n                }\n
});\n\n                // Map of StaticType by pipe names\n                const pipeTypeByName = new Map<string, any>();\n\n                const pipes = module.transitiveModule.pipes.map(\n                    pipe =>
this._metadataResolver.getPipeSummary(pipe.reference));\n\n                pipes.forEach(pipe => {\n                pipeTypeByName.set(pipe.name, pipe.type.reference);\n                });\n\n                compileR3Component(\n                    context,
directiveMetadata, render3Ast, this.reflector, hostBindingParser,\n                    directiveTypeBySel,
pipeTypeByName);\n                } else {\n                    compileR3Directive(context, directiveMetadata, this.reflector,
hostBindingParser);\n                }\n            });\n\n            pipes.forEach(pipeType => {\n            const pipeMetadata =
this._metadataResolver.getPipeMetadata(pipeType);\n            if (pipeMetadata) {\n                compileR3Pipe(context,
pipeMetadata, this.reflector);\n            }\n        });\n\n            injectables.forEach(injectable =>
this._injectableCompiler.compile(injectable, context));\n        }\n\n        emitAllPartialModules2(files:
NgAnalyzedFileWithInjectables[]): PartialModule[] {\n            // Using reduce like this is a select many pattern (where
map is a select pattern)\n            return files.reduce<PartialModule[]>((r, file) => {\n
r.push(...this._emitPartialModule2(file.fileName, file.injectables));\n            return r;\n        }, [], []);\n        }\n\n        private

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_emitPartialModule2(fileName: string, injectables: CompileInjectableMetadata[]): PartialModule[] {
  const context = this._createOutputContext(fileName);
  injectables.forEach(injectable =>
    this._injectableCompiler.compile(injectable, context));
  if (context.statements && context.statements.length > 0) {
    return [{ fileName, statements: [...context.constantPool.statements, ...context.statements] }];
  }
  return [];
}

emitAllImpls(analyzeResult: NgAnalyzedModules): GeneratedFile[] {
  const { ngModuleByPipeOrDirective, files } = analyzeResult;
  const sourceModules = files.map(file =>
    this._compileImplFile(file.fileName, ngModuleByPipeOrDirective, file.directives, file.pipes,
      file.ngModules, file.injectables));
  return flatten(sourceModules);
}

private _compileImplFile(
  srcFileUrl: string, ngModuleByPipeOrDirective: Map<StaticSymbol, CompileNgModuleMetadata>,
  directives: StaticSymbol[], pipes: StaticSymbol[], ngModules: CompileNgModuleMetadata[],
  injectables: CompileInjectableMetadata[]): GeneratedFile[] {
  const fileSuffix =
    normalizeGenFileSuffix(splitTypescriptSuffix(srcFileUrl, true)[1]);
  const generatedFiles: GeneratedFile[] = [];
  const outputCtx = this._createOutputContext(ngfactoryFilePath(srcFileUrl, true));
  generatedFiles.push(...this._createSummary(srcFileUrl, directives, pipes, ngModules, injectables,
    outputCtx));
  // compile all ng modules
  ngModules.forEach((ngModuleMeta) =>
    this._compileModule(outputCtx, ngModuleMeta));
  // compile components
  directives.forEach((dirType) => {
    const compMeta = this._metadataResolver.getDirectiveMetadata(<any>dirType);
    if (!compMeta.isComponent) {
      return;
    }
    const ngModule =
      ngModuleByPipeOrDirective.get(dirType);
    if (!ngModule) {
      throw new Error(`Internal Error: cannot determine the module for component ${identifierName(compMeta.type)}`);
    }
    // compile styles
    const componentStylesheet = this._styleCompiler.compileComponent(outputCtx, compMeta);
    // Note: compMeta is a component and therefore template is non null.
    const compMetaTemplate = compMeta.template;
    !externalStylesheets.forEach((stylesheetMeta) => {
      // Note: fill non shim and shim style files as they might
      // be shared by component with and without ViewEncapsulation.
      const shim =
        this._styleCompiler.needsStyleShim(compMeta);
      generatedFiles.push(
        this._codegenStyles(srcFileUrl, compMeta, stylesheetMeta, shim, fileSuffix));
      if (this._options.allowEmptyCodegenFiles) {
        generatedFiles.push(
          this._codegenStyles(srcFileUrl, compMeta, stylesheetMeta, !shim, fileSuffix));
      }
    });
    // compile components
    const compViewVars = this._compileComponent(
      outputCtx, compMeta, ngModule,
      ngModule.transitiveModule.directives, componentStylesheet, fileSuffix);
    this._compileComponentFactory(outputCtx, compMeta, ngModule, fileSuffix);
    if (outputCtx.statements.length > 0 || this._options.allowEmptyCodegenFiles) {
      const srcModule =
        this._codegenSourceModule(srcFileUrl, outputCtx);
      generatedFiles.unshift(srcModule);
    }
    return generatedFiles;
  });
  private _createSummary(
    srcFileName: string, directives: StaticSymbol[], pipes: StaticSymbol[],
    ngModules: CompileNgModuleMetadata[], injectables: CompileInjectableMetadata[],
    ngFactoryCtx: OutputContext): GeneratedFile[] {
    const symbolSummaries =
      this._symbolResolver.getSymbolsOf(srcFileName).map(symbol =>
        this._symbolResolver.resolveSymbol(symbol));
    const typeData: {
      summary: CompileTypeSummary,
      metadata: CompileNgModuleMetadata|CompileDirectiveMetadata|CompilePipeMetadata|
        CompileTypeMetadata
    }[] =
      [...ngModules.map(meta => ({
        summary:
          this._metadataResolver.getNgModuleSummary(meta.type.reference),
        metadata:
          this._metadataResolver.getNgModuleMetadata(meta.type.reference)
      })),
      ...directives.map(ref => ({
        summary: this._metadataResolver.getDirectiveSummary(ref),
        metadata:
          this._metadataResolver.getDirectiveMetadata(ref)
      })),
      ...pipes.map(ref => ({
        summary: this._metadataResolver.getPipeSummary(ref),
        metadata:
          this._metadataResolver.getPipeMetadata(ref)
      })),
      ...injectables.map(ref => ({
        summary: this._metadataResolver.getInjectableSummary(ref.symbol),
        metadata:
          this._metadataResolver.getInjectableSummary(ref.symbol).type
      }))]
  ];
  const forJitOutputCtx =

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this._options.enableSummariesForJit ?\n    this._createOutputContext(summaryForJitFileName(srcFileName,
true)) :\n    null;\n    const {json, exportAs} = serializeSummaries(\n    srcFileName, forJitOutputCtx,
this._summaryResolver, this._symbolResolver, symbolSummaries,\n    typeData,
this._options.createExternalSymbolFactoryReexports);\n    exportAs.forEach((entry) => {\n
ngFactoryCtx.statements.push(\n
o.variable(entry.exportAs).set(ngFactoryCtx.importExpr(entry.symbol)).toDeclStmt(null, [\n
o.StmtModifier.Exported\n    ]));\n    });\n    const summaryJson = new GeneratedFile(srcFileName,
summaryFileName(srcFileName), json);\n    const result = [summaryJson];\n    if (forJitOutputCtx) {\n
result.push(this._codegenSourceModule(srcFileName, forJitOutputCtx));\n    }\n    return result;\n    }\n\n private
_compileModule(outputCtx: OutputContext, ngModule: CompileNgModuleMetadata): void {\n    const providers:
CompileProviderMetadata[] = [];\n\n    if (this._options.locale) {\n    const normalizedLocale =
this._options.locale.replace(/_/g, '-');\n    providers.push({\n    token:
createTokenForExternalReference(this.reflector, Identifiers.LOCALE_ID),\n    useValue: normalizedLocale,\n
});\n    }\n\n    if (this._options.i18nFormat) {\n    providers.push({\n    token:
createTokenForExternalReference(this.reflector, Identifiers.TRANSLATIONS_FORMAT),\n    useValue:
this._options.i18nFormat\n    });\n    }\n\n    this._ngModuleCompiler.compile(outputCtx, ngModule, providers);\n
}\n\n private _compileComponentFactory(\n    outputCtx: OutputContext, compMeta:
CompileDirectiveMetadata,\n    ngModule: CompileNgModuleMetadata, fileSuffix: string): void {\n    const
hostMeta = this._metadataResolver.getHostComponentMetadata(compMeta);\n    const hostViewFactoryVar =\n    this._compileComponent(outputCtx, hostMeta, ngModule, [compMeta.type], null, fileSuffix)\n
.viewClassVar;\n    const compFactoryVar = componentFactoryName(compMeta.type.reference);\n    const
inputsExprs: o.LiteralMapEntry[] = [];\n    for (let propName in compMeta.inputs) {\n    const templateName =
compMeta.inputs[propName];\n    // Don't quote so that the key gets minified...\n    inputsExprs.push(new
o.LiteralMapEntry(propName, o.literal(templateName), false));\n    }\n    const outputsExprs: o.LiteralMapEntry[] =
[];\n    for (let propName in compMeta.outputs) {\n    const templateName = compMeta.outputs[propName];\n    //
Don't quote so that the key gets minified...\n    outputsExprs.push(new o.LiteralMapEntry(propName,
o.literal(templateName), false));\n    }\n\n    outputCtx.statements.push(\n    o.variable(compFactoryVar)\n
.set(o.importExpr(Identifiers.createComponentFactory).callFn([\n    o.literal(compMeta.selector),
outputCtx.importExpr(compMeta.type.reference),\n    o.variable(hostViewFactoryVar), new
o.LiteralMapExpr(inputsExprs),\n    new o.LiteralMapExpr(outputsExprs),\n    o.literalArr(\n
compMeta.template!.ngContentSelectors.map(selector => o.literal(selector)))\n    ]))\n    .toDeclStmt(\n
o.importType(\n    Identifiers.ComponentFactory,\n
[o.expressionType(outputCtx.importExpr(compMeta.type.reference))],\n    [o.TypeModifier.Const]),\n
[o.StmtModifier.Final, o.StmtModifier.Exported]));\n    }\n\n private _compileComponent(\n    outputCtx:
OutputContext, compMeta: CompileDirectiveMetadata,\n    ngModule: CompileNgModuleMetadata,
directiveIdentifiers: CompileIdentifierMetadata[],\n    componentStyles: CompiledStylesheet|null, fileSuffix:
string): ViewCompileResult {\n    const {template: parsedTemplate, pipes: usedPipes} =\n    this._parseTemplate(compMeta, ngModule, directiveIdentifiers);\n    const stylesExpr = componentStyles ?
o.variable(componentStyles.stylesVar) : o.literalArr([]);\n    const viewResult =
this._viewCompiler.compileComponent(\n    outputCtx, compMeta, parsedTemplate, stylesExpr, usedPipes);\n
if (componentStyles) {\n    _resolveStyleStatements(\n    this._symbolResolver, componentStyles,
this._styleCompiler.needsStyleShim(compMeta),\n    fileSuffix);\n    }\n    return viewResult;\n    }\n\n private
_parseTemplate(\n    compMeta: CompileDirectiveMetadata, ngModule: CompileNgModuleMetadata,\n    directiveIdentifiers: CompileIdentifierMetadata[]):\n    {template: TemplateAst[], pipes: CompilePipeSummary[]}\n
{\n    if (this._templateAstCache.has(compMeta.type.reference)) {\n    return
this._templateAstCache.get(compMeta.type.reference)!;\n    }\n    const preserveWhitespaces = compMeta!.template
!.preserveWhitespaces;\n    const directives =\n    directiveIdentifiers.map(dir =>
this._metadataResolver.getDirectiveSummary(dir.reference));\n    const pipes =

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ngModule.transitiveModule.pipes.map(\n    pipe => this._metadataResolver.getPipeSummary(pipe.reference));\n
const result = this._templateParser.parse(\n    compMeta, compMeta.template !.htmlAst!, directives, pipes,\n
ngModule.schemas,\n    templateUrl(ngModule.type, compMeta, compMeta.template !),\n
preserveWhitespaces);\n    this._templateAstCache.set(compMeta.type.reference, result);\n    return result;\n } \n\n
private _createOutputContext(genFilePath: string): OutputContext {\n    const importExpr =\n        (symbol:\n
StaticSymbol, typeParams: o.Type[]|null = null, useSummaries: boolean = true) => {\n        if (!(symbol instanceof\n
StaticSymbol)) {\n            throw new Error(`Internal error: unknown identifier ${JSON.stringify(symbol)}`);\n
        }\n        const arity = this._symbolResolver.getTypeArity(symbol) || 0;\n        const {filePath, name, members} =\n            this._symbolResolver.getImportAs(symbol, useSummaries) || symbol;\n        const importModule =\n            this._fileNameToModuleName(filePath, genFilePath);\n        // It should be good enough to compare filePath to\n
genFilePath and if they are equal\n        // there is a self reference. However, ngfactory files generate to .ts but\n
their\n        // symbols have .d.ts so a simple compare is insufficient. They should be canonical\n        // and is\n
tracked by #17705.\n        const selfReference = this._fileNameToModuleName(genFilePath, genFilePath);\n
const moduleName = importModule === selfReference ? null : importModule;\n        // If we are in a type\n
expression that refers to a generic type then supply\n        // the required type parameters. If there were not enough\n
type parameters\n        // supplied, supply any as the type. Outside a type expression the reference\n        // should\n
not supply type parameters and be treated as a simple value reference\n        // to the constructor function itself.\n
        const suppliedTypeParams = typeParams || [];\n        const missingTypeParamsCount = arity -\n
suppliedTypeParams.length;\n        const allTypeParams =\n            suppliedTypeParams.concat(newArray(missingTypeParamsCount, o.DYNAMIC_TYPE));\n        return\n
members.reduce(\n            (expr, memberName) => expr.prop(memberName),\n
<o.Expression>o.importExpr(\n            new o.ExternalReference(moduleName, name, null), allTypeParams));\n
        });\n    return {statements: [], genFilePath, importExpr, constantPool: new ConstantPool()};\n } \n\n
private\n
_fileNameToModuleName(importedFilePath: string, containingFilePath: string): string {\n    return\n
this._summaryResolver.getKnownModuleName(importedFilePath) ||\n
this._symbolResolver.getKnownModuleName(importedFilePath) ||\n
this._host.fileNameToModuleName(importedFilePath, containingFilePath);\n } \n\n
private _codegenStyles(\n
srcFileUrl: string, compMeta: CompileDirectiveMetadata,\n
stylesheetMetadata: CompileStylesheetMetadata,\n
isShimmed: boolean,\n
fileSuffix: string): GeneratedFile {\n    const outputCtx = this._createOutputContext(\n
_stylesModuleUrl(stylesheetMetadata.moduleUrl!, isShimmed, fileSuffix));\n    const compiledStylesheet =\n        this._styleCompiler.compileStyles(outputCtx, compMeta, stylesheetMetadata, isShimmed);\n
_resolveStyleStatements(this._symbolResolver, compiledStylesheet, isShimmed, fileSuffix);\n    return\n
this._codegenSourceModule(srcFileUrl, outputCtx);\n } \n\n
private _codegenSourceModule(srcFileUrl: string, ctx:\n
OutputContext): GeneratedFile {\n    return new GeneratedFile(srcFileUrl, ctx.genFilePath, ctx.statements);\n } \n\n
listLazyRoutes(entryRoute?: string, analyzedModules?: NgAnalyzedModules): LazyRoute[] {\n    const self =\n
this;\n    if (entryRoute) {\n        const symbol = parseLazyRoute(entryRoute, this.reflector).referencedModule;\n
return visitLazyRoute(symbol);\n    } else if (analyzedModules) {\n        const allLazyRoutes: LazyRoute[] = [];\n
for (const ngModule of analyzedModules.ngModules) {\n            const lazyRoutes = listLazyRoutes(ngModule,\n
this.reflector);\n            for (const lazyRoute of lazyRoutes) {\n                allLazyRoutes.push(lazyRoute);\n            }\n
        }\n        return allLazyRoutes;\n    } else {\n        throw new Error(`Either route or analyzedModules has to be specified!`);\n
    }\n    }\n\n
function visitLazyRoute(\n    symbol: StaticSymbol, seenRoutes = new Set<StaticSymbol>(),\n
allLazyRoutes: LazyRoute[] = []): LazyRoute[] {\n    // Support pointing to default exports, but stop recursing\n
there,\n    // as the StaticReflector does not yet support default exports.\n    if (seenRoutes.has(symbol) ||\n
!symbol.name) {\n        return allLazyRoutes;\n    }\n    seenRoutes.add(symbol);\n    const lazyRoutes =\n        listLazyRoutes(self._metadataResolver.getNgModuleMetadata(symbol, true)!, self.reflector);\n    for (const\n
lazyRoute of lazyRoutes) {\n        allLazyRoutes.push(lazyRoute);\n        visitLazyRoute(lazyRoute.referencedModule, seenRoutes, allLazyRoutes);\n    }\n    return allLazyRoutes;\n }\n\n
}\n\n
function _createEmptyStub(outputCtx: OutputContext) {\n    // Note: We need to produce at least one import

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statement so that\n // TypeScript knows that the file is an es6 module. Otherwise our generated\n // exports /
imports won't be emitted properly by TypeScript.\n
outputCtx.statements.push(o.importExpr(Identifiers.ComponentFactory).toStmt());\n}\n\nfunction
_resolveStyleStatements(\n  symbolResolver: StaticSymbolResolver, compileResult: CompiledStylesheet,
needsShim: boolean,\n  fileSuffix: string): void {\n  compileResult.dependencies.forEach((dep) => {\n
dep.setValue(symbolResolver.getStaticSymbol(\n    _stylesModuleUrl(dep.moduleUrl, needsShim, fileSuffix),
dep.name));\n  });\n}\n\nfunction _stylesModuleUrl(stylesheetUrl: string, shim: boolean, suffix: string): string {\n
return `${stylesheetUrl}${shim ? '.shim' : ''}.ngstyle${suffix}`;\n}\n\nexport interface NgAnalyzedModules {\n
ngModules: CompileNgModuleMetadata[];\n ngModuleByPipeOrDirective: Map<StaticSymbol,
CompileNgModuleMetadata>;\n files: NgAnalyzedFile[];\n symbolsMissingModule?:
StaticSymbol[];\n}\n\nexport interface NgAnalyzedFileWithInjectables {\n fileName: string;\n injectables:
CompileInjectableMetadata[];\n shallowModules: CompileShallowModuleMetadata[];\n}\n\nexport interface
NgAnalyzedFile {\n fileName: string;\n directives: StaticSymbol[];\n abstractDirectives: StaticSymbol[];\n pipes:
StaticSymbol[];\n ngModules: CompileNgModuleMetadata[];\n injectables: CompileInjectableMetadata[];\n
exportsNonSourceFiles: boolean;\n}\n\nexport interface NgAnalyzeModulesHost {\n isSourceFile(filePath: string):
boolean;\n}\n\nexport function analyzeNgModules(\n  fileNames: string[], host: NgAnalyzeModulesHost,
staticSymbolResolver: StaticSymbolResolver,\n  metadataResolver: CompileMetadataResolver):
NgAnalyzedModules {\n  const files = _analyzeFilesIncludingNonProgramFiles(\n    fileNames, host,
staticSymbolResolver, metadataResolver);\n  return mergeAnalyzedFiles(files);\n}\n\nexport function
analyzeAndValidateNgModules(\n  fileNames: string[], host: NgAnalyzeModulesHost, staticSymbolResolver:
StaticSymbolResolver,\n  metadataResolver: CompileMetadataResolver): NgAnalyzedModules {\n  return
validateAnalyzedModules(\n    analyzeNgModules(fileNames, host, staticSymbolResolver,
metadataResolver));\n}\n\nfunction validateAnalyzedModules(analyzedModules: NgAnalyzedModules):
NgAnalyzedModules {\n  if (analyzedModules.symbolsMissingModule &&
analyzedModules.symbolsMissingModule.length) {\n    const messages =
analyzedModules.symbolsMissingModule.map(\n      s => `Cannot determine the module for class ${s.name} in
${s.filePath}! Add ${s.name} to the NgModule to fix it.`);\n    throw syntaxError(messages.join("\n"));
}\n  return analyzedModules;\n}\n\n// Analyzes all of the program files,\n// including files that are not part of the
program\n// but are referenced by an NgModule.\nfunction _analyzeFilesIncludingNonProgramFiles(\n  fileNames:
string[], host: NgAnalyzeModulesHost, staticSymbolResolver: StaticSymbolResolver,\n  metadataResolver:
CompileMetadataResolver): NgAnalyzedFile[] {\n  const seenFiles = new Set<string>;\n  const files:
NgAnalyzedFile[] = [];\n  const visitFile = (fileName: string) => {\n    if (seenFiles.has(fileName) ||
!host.isSourceFile(fileName)) {\n      return false;\n    }\n    seenFiles.add(fileName);\n    const analyzedFile =
analyzeFile(host, staticSymbolResolver, metadataResolver, fileName);\n    files.push(analyzedFile);\n
analyzedFile.ngModules.forEach(ngModule => {\n      ngModule.transitiveModule.modules.forEach(modMeta =>
visitFile(modMeta.reference.filePath));\n    });\n  }; fileNames.forEach((fileName) => visitFile(fileName));\n
return files;\n}\n\nexport function analyzeFile(\n  host: NgAnalyzeModulesHost, staticSymbolResolver:
StaticSymbolResolver,\n  metadataResolver: CompileMetadataResolver, fileName: string): NgAnalyzedFile {\n
const abstractDirectives: StaticSymbol[] = [];\n  const directives: StaticSymbol[] = [];\n  const pipes: StaticSymbol[]
= [];\n  const injectables: CompileInjectableMetadata[] = [];\n  const ngModules: CompileNgModuleMetadata[] =
[];\n  const hasDecorators = staticSymbolResolver.hasDecorators(fileName);\n  let exportsNonSourceFiles = false;\n
const isDeclarationFile = fileName.endsWith('.d.ts');\n  // Don't analyze .d.ts files that have no decorators as a
shortcut\n  // to speed up the analysis. This prevents us from\n  // resolving the references in these files.\n  // Note:
exportsNonSourceFiles is only needed when compiling with summaries,\n  // which is not the case when .d.ts files
are treated as input files.\n  if (!isDeclarationFile || hasDecorators) {\n
staticSymbolResolver.getSymbolsOf(fileName).forEach((symbol) => {\n    const resolvedSymbol =
staticSymbolResolver.resolveSymbol(symbol);\n    const symbolMeta = resolvedSymbol.metadata;\n    if
(!symbolMeta || symbolMeta.__symbolic === 'error') {\n      return;\n    }\n    let isNgSymbol = false;\n    if

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(symbolMeta.__symbolic === 'class') {\n    if (metadataResolver.isDirective(symbol)) {\n        isNgSymbol =
true;\n        // This directive either has a selector or doesn't. Selector-less directives get tracked\n        // in
abstractDirectives, not directives. The compiler doesn't deal with selector-less\n        // directives at all, really, other
than to persist their metadata. This is done so that\n        // apps will have an easier time migrating to Ivy, which
requires the selector-less\n        // annotations to be applied.\n        if
(!metadataResolver.isAbstractDirective(symbol)) {\n        // The directive is an ordinary directive.\n
directives.push(symbol);\n        } else {\n        // The directive has no selector and is an \"abstract\" directive, so
track it\n        // accordingly.\n        abstractDirectives.push(symbol);\n        }\n        } else if
(metadataResolver.isPipe(symbol)) {\n        isNgSymbol = true;\n        pipes.push(symbol);\n        } else if
(metadataResolver.isNgModule(symbol)) {\n        const ngModule =
metadataResolver.getNgModuleMetadata(symbol, false);\n        if (ngModule) {\n        isNgSymbol = true;\n
ngModules.push(ngModule);\n        }\n        } else if (metadataResolver.isInjectable(symbol)) {\n
isNgSymbol = true;\n        const injectable = metadataResolver.getInjectableMetadata(symbol, null, false);\n
if (injectable) {\n        injectables.push(injectable);\n        }\n        }\n        }\n        if (!isNgSymbol) {\n
exportsNonSourceFiles =\n        exportsNonSourceFiles || isValueExportingNonSourceFile(host, symbolMeta);\n
}\n        });\n    }\n    return {\n    fileName,\n    directives,\n    abstractDirectives,\n    pipes,\n    ngModules,\n
injectables,\n    exportsNonSourceFiles,\n    };\n}\n\nexport function analyzeFileForInjectables(\n host:
NgAnalyzeModulesHost, staticSymbolResolver: StaticSymbolResolver,\n metadataResolver:
CompileMetadataResolver, fileName: string): NgAnalyzedFileWithInjectables {\n    const injectables:
CompileInjectableMetadata[] = [];\n    const shallowModules: CompileShallowModuleMetadata[] = [];\n    if
(staticSymbolResolver.hasDecorators(fileName)) {\n
staticSymbolResolver.getSymbolsOf(fileName).forEach((symbol) => {\n        const resolvedSymbol =
staticSymbolResolver.resolveSymbol(symbol);\n        const symbolMeta = resolvedSymbol.metadata;\n        if
(!symbolMeta || symbolMeta.__symbolic === 'error') {\n        return;\n        }\n        if (symbolMeta.__symbolic ===
'class') {\n        if (metadataResolver.isInjectable(symbol)) {\n        const injectable =
metadataResolver.getInjectableMetadata(symbol, null, false);\n        if (injectable) {\n
injectables.push(injectable);\n        }\n        } else if (metadataResolver.isNgModule(symbol)) {\n        const
module = metadataResolver.getShallowModuleMetadata(symbol);\n        if (module) {\n
shallowModules.push(module);\n        }\n        }\n        });\n    }\n    return {fileName, injectables,
shallowModules};\n}\n\nfunction isValueExportingNonSourceFile(host: NgAnalyzeModulesHost, metadata: any):
boolean {\n    let exportsNonSourceFiles = false;\n\n    class Visitor implements ValueVisitor {\n        visitArray(arr:
any[], context: any): any {\n        arr.forEach(v => visitValue(v, this, context));\n        }\n        visitStringMap(map: {[key:
string]: any}, context: any): any {\n        Object.keys(map).forEach((key) => visitValue(map[key], this, context));\n
}\n        visitPrimitive(value: any, context: any): any {\n        visitOther(value: any, context: any): any {\n        if (value
instanceof StaticSymbol && !host.isSourceFile(value.filePath)) {\n        exportsNonSourceFiles = true;\n        }\n
}\n        }\n        visitValue(metadata, new Visitor(), null);\n        return exportsNonSourceFiles;\n    }\n\n    export function
mergeAnalyzedFiles(analyzedFiles: NgAnalyzedFile[]): NgAnalyzedModules {\n        const allNgModules:
CompileNgModuleMetadata[] = [];\n        const ngModuleByPipeOrDirective = new Map<StaticSymbol,
CompileNgModuleMetadata>();\n        const allPipesAndDirectives = new Set<StaticSymbol>();\n\n        analyzedFiles.forEach(af => {\n        af.ngModules.forEach(ngModule => {\n        allNgModules.push(ngModule);\n
ngModule.declaredDirectives.forEach(\n            d => ngModuleByPipeOrDirective.set(d.reference, ngModule);\n
ngModule.declaredPipes.forEach(p => ngModuleByPipeOrDirective.set(p.reference, ngModule));\n        });\n        af.directives.forEach(d => allPipesAndDirectives.add(d));\n        af.pipes.forEach(p =>
allPipesAndDirectives.add(p));\n        });\n\n        const symbolsMissingModule: StaticSymbol[] = [];\n        allPipesAndDirectives.forEach(ref => {\n        if (!ngModuleByPipeOrDirective.has(ref)) {\n
symbolsMissingModule.push(ref);\n        });\n        }\n        return {\n        ngModules: allNgModules,\n
ngModuleByPipeOrDirective,\n        symbolsMissingModule,\n        files: analyzedFiles\n        };\n    }\n\n    export function
mergeAndValidateNgFiles(files: NgAnalyzedFile[]): NgAnalyzedModules {\n        return

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validateAnalyzedModules(mergeAnalyzedFiles(files));\n}\n", "/*\n * @license\n * Copyright Google LLC All
Rights Reserved.\n *\n * Use of this source code is governed by an MIT-style license that can be\n * found in the
LICENSE file at https://angular.io/license\n */\n\nimport {syntaxError} from './util';\n\nexport interface Position
{\n  fileName: string;\n  line: number;\n  column: number;\n}\n\nexport interface FormattedMessageChain {\n
message: string;\n  position?: Position;\n  next?: FormattedMessageChain[];\n}\n\nexport type FormattedError =
Error & {\n  chain: FormattedMessageChain;\n  position?: Position;\n};\n\nconst FORMATTED_MESSAGE =
'ngFormattedMessage';\n\nfunction indentStr(level: number): string {\n  if (level <= 0) return '';\n  if (level < 6)
return [' ', ' ', ' ', ' ', ' ', ' ', ' '][level];\n  const half = indentStr(Math.floor(level / 2));\n  return half + half + (level %
2 === 1 ? ' ': '');\n}\n\nfunction formatChain(chain: FormattedMessageChain|undefined, indent: number = 0): string
{\n  if (!chain) return '';\n  const position = chain.position ? ` ${chain.position.fileName}(${chain.position.line +
1}), ${chain.position.column + 1}` : ` `;\n  const prefix = position && indent === 0 ? ` ${position}: ` : ` `;\n  const
postfix = position && indent !== 0 ? ` at ${position}` : ` `;\n  let message =
`${prefix}${chain.message}${postfix}`;\n\n  if (chain.next) {\n    for (const kid of chain.next) {\n      message +=
`\n' + formatChain(kid, indent + 2);\n    }\n  }\n\n  return `${indentStr(indent)}${message}`;\n}\n\nexport function
formattedError(chain: FormattedMessageChain): FormattedError {\n  const message = formatChain(chain) + ` `;\n  const
error = syntaxError(message) as FormattedError;\n  (error as any)[FORMATTED_MESSAGE] = true;\n  error.chain = chain;\n
error.position = chain.position;\n  return error;\n}\n\nexport function isFormattedError(error:
Error): error is FormattedError {\n  return !!(error as any)[FORMATTED_MESSAGE];\n}\n", "/*\n * @license\n *
Copyright Google LLC All Rights Reserved.\n *\n * Use of this source code is governed by an MIT-style license
that can be\n * found in the LICENSE file at https://angular.io/license\n */\n\nimport {CompileSummaryKind} from
'./compile_metadata';\nimport {CompileReflector} from './compile_reflector';\nimport {createAttribute,
createComponent, createContentChild, createContentChildren, createDirective, createHost, createHostBinding,
createHostListener, createInject, createInjectable, createInput, createNgModule, createOptional, createOutput,
createPipe, createSelf, createSkipSelf, createViewChild, createViewChildren, MetadataFactory} from
'./core';\nimport * as o from './output/output_ast';\nimport {SummaryResolver} from
'./summary_resolver';\nimport {syntaxError} from './util';\nimport {formattedError, FormattedMessageChain}
from './formatted_error';\nimport {StaticSymbol} from './static_symbol';\nimport {StaticSymbolResolver} from
'./static_symbol_resolver';\n\nconst ANGULAR_CORE = '@angular/core';\nconst ANGULAR_ROUTER =
 '@angular/router';\nconst HIDDEN_KEY = /^\\$.*\\$$;\nconst IGNORE = {\n  __symbolic:
'ignore'\n};\nconst USE_VALUE = 'useValue';\nconst PROVIDE = 'provide';\nconst REFERENCE_SET = new
Set([USE_VALUE, 'useFactory', 'data', 'id', 'loadChildren']);\nconst TYPEGUARD_POSTFIX =
'TypeGuard';\nconst USE_IF = 'UseIf';\n\nfunction shouldIgnore(value: any): boolean {\n  return value &&
value.__symbolic === 'ignore';\n}\n\n/**\n * A static reflector implements enough of the Reflector API that is
necessary to compile\n * templates statically.\n */\n\nexport class StaticReflector implements CompileReflector {\n
  private annotationCache = new Map<StaticSymbol, any[]>();\n  private shallowAnnotationCache = new
Map<StaticSymbol, any[]>();\n  private propertyCache = new Map<StaticSymbol, {[key: string]: any[]}>();\n
  private parameterCache = new Map<StaticSymbol, any[]>();\n  private methodCache = new Map<StaticSymbol,
{[key: string]: boolean}>();\n  private staticCache = new Map<StaticSymbol, string[]>();\n  private conversionMap
= new Map<StaticSymbol, (context: StaticSymbol, args: any[]) => any>();\n  private resolvedExternalReferences =
new Map<string, StaticSymbol>();\n  // TODO(issue/24571): remove '!.\n  private injectionToken!: StaticSymbol;\n
// TODO(issue/24571): remove '!.\n  private opaqueToken!: StaticSymbol;\n // TODO(issue/24571): remove '!.\n
  private ROUTES!: StaticSymbol;\n // TODO(issue/24571): remove '!.\n  private
  ANALYZE_FOR_ENTRY_COMPONENTS!: StaticSymbol;\n  private
  annotationForParentClassWithSummaryKind =\n    new Map<CompileSummaryKind,
  MetadataFactory<any>[]>();\n\n  constructor(\n    private summaryResolver: SummaryResolver<StaticSymbol>,\n
    private symbolResolver: StaticSymbolResolver,\n    knownMetadataClasses: {name: string, filePath: string, ctor:
any}[] = [],\n    knownMetadataFunctions: {name: string, filePath: string, fn: any}[] = [],\n    private
    errorRecorder?: (error: any, fileName?: string) => void) {\n    this.initializeConversionMap();\n

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knownMetadataClasses.forEach(\n      (kc) => this._registerDecoratorOrConstructor(\n
this.getStaticSymbol(kc.filePath, kc.name), kc.ctor));\n  knownMetadataFunctions.forEach(\n      (kf) =>
this._registerFunction(this.getStaticSymbol(kf.filePath, kf.name), kf.fn));\n
this.annotationForParentClassWithSummaryKind.set(\n      CompileSummaryKind.Directive, [createDirective,
createComponent]);\n  this.annotationForParentClassWithSummaryKind.set(CompileSummaryKind.Pipe,
[createPipe]);\n  this.annotationForParentClassWithSummaryKind.set(CompileSummaryKind.NgModule,
[createNgModule]);\n  this.annotationForParentClassWithSummaryKind.set(\n
CompileSummaryKind.Injectable,\n      [createInjectable, createPipe, createDirective, createComponent,
createNgModule]);\n  }\n\n  componentModuleUrl(typeOrFunc: StaticSymbol): string {\n    const staticSymbol =
this.findSymbolDeclaration(typeOrFunc);\n    return this.symbolResolver.getResourcePath(staticSymbol);\n  }\n\n  /**\n   * Invalidate the specified `symbols` on program change.\n   * @param symbols\n   */\n  invalidateSymbols(symbols: StaticSymbol[]) {\n    for (const symbol of symbols) {\n
this.annotationCache.delete(symbol);\n      this.shallowAnnotationCache.delete(symbol);\n
this.propertyCache.delete(symbol);\n      this.parameterCache.delete(symbol);\n
this.methodCache.delete(symbol);\n      this.staticCache.delete(symbol);\n      this.conversionMap.delete(symbol);\n
    }\n  }\n\n  resolveExternalReference(ref: o.ExternalReference, containingFile?: string): StaticSymbol {\n    let key:
string|undefined = undefined;\n    if (!containingFile) {\n      key = `${ref.moduleName}:${ref.name}`;\n      const
declarationSymbol = this.resolvedExternalReferences.get(key);\n      if (declarationSymbol) return
declarationSymbol;\n    }\n    const refSymbol =\n      this.symbolResolver.getSymbolByModule(ref.moduleName!,
ref.name!, containingFile);\n    const declarationSymbol = this.findSymbolDeclaration(refSymbol);\n    if
(!containingFile) {\n      this.symbolResolver.recordModuleNameForFileName(refSymbol.filePath,
ref.moduleName!);\n      this.symbolResolver.recordImportAs(declarationSymbol, refSymbol);\n    }\n    if (key) {\n
this.resolvedExternalReferences.set(key, declarationSymbol);\n    }\n    return declarationSymbol;\n  }\n\n  findDeclaration(moduleUrl: string, name: string, containingFile?: string): StaticSymbol {\n    return
this.findSymbolDeclaration(\n      this.symbolResolver.getSymbolByModule(moduleUrl, name, containingFile));\n
  }\n\n  tryFindDeclaration(moduleUrl: string, name: string, containingFile?: string): StaticSymbol {\n    return
this.symbolResolver.ignoreErrorsFor(\n      () => this.findDeclaration(moduleUrl, name, containingFile));\n  }\n\n  findSymbolDeclaration(symbol: StaticSymbol): StaticSymbol {\n    const resolvedSymbol =
this.symbolResolver.resolveSymbol(symbol);\n    if (resolvedSymbol) {\n      let resolvedMetadata =
resolvedSymbol.metadata;\n      if (resolvedMetadata && resolvedMetadata.__symbolic === 'resolved') {\n
resolvedMetadata = resolvedMetadata.symbol;\n      }\n      if (resolvedMetadata instanceof StaticSymbol) {\n
return this.findSymbolDeclaration(resolvedSymbol.metadata);\n      }\n    }\n    return symbol;\n  }\n\n  public
tryAnnotations(type: StaticSymbol): any[] {\n    const originalRecorder = this.errorRecorder;\n    this.errorRecorder
= (error: any, fileName?: string) => {};\n    try {\n      return this.annotations(type);\n    } finally {\n
this.errorRecorder = originalRecorder;\n    }\n  }\n\n  public annotations(type: StaticSymbol): any[] {\n    return
this._annotations(\n      type, (type: StaticSymbol, decorators: any) => this.simplify(type, decorators),\n
this.annotationCache);\n  }\n\n  public shallowAnnotations(type: StaticSymbol): any[] {\n    return
this._annotations(\n      type, (type: StaticSymbol, decorators: any) => this.simplify(type, decorators, true),\n
this.shallowAnnotationCache);\n  }\n\n  private _annotations(\n      type: StaticSymbol, simplify: (type:
StaticSymbol, decorators: any) => any,\n      annotationCache: Map<StaticSymbol, any[]>): any[] {\n    let
annotations = annotationCache.get(type);\n    if (!annotations) {\n      annotations = [];\n      const classMetadata =
this.getTypeMetadata(type);\n      const parentType = this.findParentType(type, classMetadata);\n      if (parentType)
{\n        const parentAnnotations = this.annotations(parentType);\n        annotations.push(...parentAnnotations);\n
      }\n      let ownAnnotations: any[] = [];\n      if (classMetadata['decorators']) {\n        ownAnnotations =
simplify(type, classMetadata['decorators']);\n        if (ownAnnotations) {\n          annotations.push(...ownAnnotations);\n
        }\n      }\n      if (parentType && !this.summaryResolver.isLibraryFile(type.filePath) &&\n
this.summaryResolver.isLibraryFile(parentType.filePath)) {\n        const summary =
this.summaryResolver.resolveSummary(parentType);\n        if (summary && summary.type) {\n          const

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requiredAnnotationTypes =\n
this.annotationForParentClassWithSummaryKind.get(summary.type.summaryKind!);\n      const
typeHasRequiredAnnotation = requiredAnnotationTypes.some(\n      (requiredType) =>
ownAnnotations.some(ann => requiredType.isTypeOf(ann));\n      if (!typeHasRequiredAnnotation) {\n
this.reportError(\n      formatMetadataError(\n      metadataError(\n      `Class
${type.name} in ${type.filePath} extends from a ${\n
CompileSummaryKind[summary.type.summaryKind!\n      ]) in another compilation unit without duplicating
the decorator`,\n      /* summary */ undefined,\n      `Please add a ${\n
requiredAnnotationTypes.map((type) => type.ngMetadataName)\n      .join(' or ')} decorator to the
class`),\n      type),\n      type);\n      }\n      }\n      }\n      annotationCache.set(type,
annotations.filter(ann => !!ann));\n      }\n      return annotations;\n      }\n\n      public propMetadata(type: StaticSymbol):
{[key: string]: any[]} {\n      let propMetadata = this.propertyCache.get(type);\n      if (!propMetadata) {\n      const
classMetadata = this.getTypeMetadata(type);\n      propMetadata = {};\n      const parentType =
this.findParentType(type, classMetadata);\n      if (parentType) {\n      const parentPropMetadata =
this.propMetadata(parentType);\n      Object.keys(parentPropMetadata).forEach((parentProp) => {\n
propMetadata[parentProp] = parentPropMetadata[parentProp];\n      });\n      }\n\n      const members =
classMetadata['members'] || {};\n      Object.keys(members).forEach((propName) => {\n      const propData =
members[propName];\n      const prop = (<any[]>propData)\n      .find(a => a['__symbolic'] ==
'property' || a['__symbolic'] == 'method');\n      const decorators: any[] = [];\n      // hasOwnProperty() is used here
to make sure we do not look up methods\n      // on `Object.prototype`.\n      if
(propMetadata?.hasOwnProperty(propName)) {\n      decorators.push(...propMetadata![propName]);\n      }\n
propMetadata![propName] = decorators;\n      if (prop && prop['decorators']) {\n
decorators.push(...this.simplify(type, prop['decorators']));\n      }\n      });\n      this.propertyCache.set(type,
propMetadata);\n      }\n      return propMetadata;\n      }\n\n      public parameters(type: StaticSymbol): any[] {\n      if (!(type
instanceof StaticSymbol)) {\n      this.reportError(\n      new Error(`parameters received ${JSON.stringify(type)}
which is not a StaticSymbol`),\n      type);\n      return [];\n      }\n      try {\n      let parameters =
this.parameterCache.get(type);\n      if (!parameters) {\n      const classMetadata = this.getTypeMetadata(type);\n
const parentType = this.findParentType(type, classMetadata);\n      const members = classMetadata ?
classMetadata['members'] : null;\n      const ctorData = members ? members['__ctor__'] : null;\n      if (ctorData)
{\n      const ctor = (<any[]>ctorData).find(a => a['__symbolic'] == 'constructor');\n      const
rawParameterTypes = <any[]>ctor['parameters'] || [];\n      const parameterDecorators = <any[]>this.simplify(type,
ctor['parameterDecorators'] || []);\n      parameters = [];\n      rawParameterTypes.forEach((rawParamType,
index) => {\n      const nestedResult: any[] = [];\n      const paramType = this.trySimplify(type,
rawParamType);\n      if (paramType) nestedResult.push(paramType);\n      const decorators =
parameterDecorators ? parameterDecorators[index] : null;\n      if (decorators) {\n
nestedResult.push(...decorators);\n      }\n      parameters!.push(nestedResult);\n      });\n      } else if
(parentType) {\n      parameters = this.parameters(parentType);\n      }\n      if (!parameters) {\n
parameters = [];\n      }\n      this.parameterCache.set(type, parameters);\n      }\n      return parameters;\n      } catch
(e) {\n      console.error(`Failed on type ${JSON.stringify(type)} with error ${e}`);\n      throw e;\n      }\n      }\n\n      private _methodNames(type: any): {[key: string]: boolean} {\n      let methodNames = this.methodCache.get(type);\n
if (!methodNames) {\n      const classMetadata = this.getTypeMetadata(type);\n      methodNames = {};\n      const
parentType = this.findParentType(type, classMetadata);\n      if (parentType) {\n      const parentMethodNames =
this._methodNames(parentType);\n      Object.keys(parentMethodNames).forEach((parentProp) => {\n
methodNames[parentProp] = parentMethodNames[parentProp];\n      });\n      }\n\n      const members =
classMetadata['members'] || {};\n      Object.keys(members).forEach((propName) => {\n      const propData =
members[propName];\n      const isMethod = (<any[]>propData).some(a => a['__symbolic'] == 'method');\n
methodNames![propName] = methodNames![propName] || isMethod;\n      });\n      this.methodCache.set(type,
methodNames);\n      }\n      return methodNames;\n      }\n\n      private _staticMembers(type: StaticSymbol): string[] {\n

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let staticMembers = this.staticCache.get(type);\n if (!staticMembers) {\n   const classMetadata =
this.getTypeMetadata(type);\n   const staticMemberData = classMetadata['statics'] || {};\n   staticMembers =
Object.keys(staticMemberData);\n   this.staticCache.set(type, staticMembers);\n } \n return staticMembers;\n
}\n\n private findParentType(type: StaticSymbol, classMetadata: any): StaticSymbol|undefined {\n const
parentType = this.trySimplify(type, classMetadata['extends']);\n if (parentType instanceof StaticSymbol) {\n
return parentType;\n } \n }\n\n hasLifecycleHook(type: any, lcProperty: string): boolean {\n if (!(type
instanceof StaticSymbol)) {\n   this.reportError(\n     new Error(\n       `hasLifecycleHook received
${JSON.stringify(type)} which is not a StaticSymbol`),\n     type);\n } \n try {\n   return
!!this._methodNames(type)[lcProperty];\n } catch (e) {\n   console.error(`Failed on type
${JSON.stringify(type)} with error ${e}`);\n   throw e;\n } \n }\n\n guards(type: any): {[key: string]:
StaticSymbol} {\n if (!(type instanceof StaticSymbol)) {\n   this.reportError(\n     new Error(`guards received
${JSON.stringify(type)} which is not a StaticSymbol`), type);\n   return {};\n } \n const staticMembers =
this._staticMembers(type);\n   const result: {[key: string]: StaticSymbol} = {};\n   for (let name of staticMembers)
{\n     if (name.endsWith(TYPEGUARD_POSTFIX)) {\n       let property = name.substr(0, name.length -
TYPEGUARD_POSTFIX.length);\n       let value: any;\n       if (property.endsWith(USE_IF)) {\n         property =
name.substr(0, property.length - USE_IF.length);\n         value = USE_IF;\n       } else {\n         value =
this.getStaticSymbol(type.filePath, type.name, [name]);\n       } \n       result[property] = value;\n     } \n } \n
return result;\n } \n\n private _registerDecoratorOrConstructor(type: StaticSymbol, ctor: any): void {\n
this.conversionMap.set(type, (context: StaticSymbol, args: any[]) => new ctor(...args));\n } \n\n private
_registerFunction(type: StaticSymbol, fn: any): void {\n   this.conversionMap.set(type, (context: StaticSymbol,
args: any[]) => fn.apply(undefined, args));\n } \n\n private initializeConversionMap(): void {\n
this._registerDecoratorOrConstructor(\n   this.findDeclaration(ANGULAR_CORE, 'Injectable'),
createInjectable);\n   this.injectionToken = this.findDeclaration(ANGULAR_CORE, 'InjectionToken');\n   this.opaqueToken =
this.findDeclaration(ANGULAR_CORE, 'OpaqueToken');\n   this.ROUTES =
this.tryFindDeclaration(ANGULAR_ROUTER, 'ROUTES');\n   this.ANALYZE_FOR_ENTRY_COMPONENTS
=\n     this.findDeclaration(ANGULAR_CORE, 'ANALYZE_FOR_ENTRY_COMPONENTS');\n\n   this._registerDecoratorOrConstructor(this.findDeclaration(ANGULAR_CORE, 'Host'), createHost);\n   this._registerDecoratorOrConstructor(this.findDeclaration(ANGULAR_CORE, 'Self'), createSelf);\n   this._registerDecoratorOrConstructor(\n     this.findDeclaration(ANGULAR_CORE, 'SkipSelf'), createSkipSelf);\n   this._registerDecoratorOrConstructor(\n     this.findDeclaration(ANGULAR_CORE, 'Inject'), createInject);\n   this._registerDecoratorOrConstructor(\n     this.findDeclaration(ANGULAR_CORE, 'Optional'),
createOptional);\n   this._registerDecoratorOrConstructor(\n     this.findDeclaration(ANGULAR_CORE,
'Attribute'), createAttribute);\n   this._registerDecoratorOrConstructor(\n     this.findDeclaration(ANGULAR_CORE, 'ContentChild'), createContentChild);\n   this._registerDecoratorOrConstructor(\n     this.findDeclaration(ANGULAR_CORE, 'ContentChildren'),
createContentChildren);\n   this._registerDecoratorOrConstructor(\n     this.findDeclaration(ANGULAR_CORE,
'ViewChild'), createViewChild);\n   this._registerDecoratorOrConstructor(\n     this.findDeclaration(ANGULAR_CORE, 'ViewChildren'), createViewChildren);\n   this._registerDecoratorOrConstructor(this.findDeclaration(ANGULAR_CORE, 'Input'), createInput);\n   this._registerDecoratorOrConstructor(\n     this.findDeclaration(ANGULAR_CORE, 'Output'), createOutput);\n   this._registerDecoratorOrConstructor(this.findDeclaration(ANGULAR_CORE, 'Pipe'), createPipe);\n   this._registerDecoratorOrConstructor(\n     this.findDeclaration(ANGULAR_CORE, 'HostBinding'),
createHostBinding);\n   this._registerDecoratorOrConstructor(\n     this.findDeclaration(ANGULAR_CORE,
'HostListener'), createHostListener);\n   this._registerDecoratorOrConstructor(\n     this.findDeclaration(ANGULAR_CORE, 'Directive'), createDirective);\n   this._registerDecoratorOrConstructor(\n     this.findDeclaration(ANGULAR_CORE, 'Component'), createComponent);\n   this._registerDecoratorOrConstructor(\n     this.findDeclaration(ANGULAR_CORE, 'NgModule'),
createNgModule);\n\n   // Note: Some metadata classes can be used directly with Provider.deps.\n

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this._registerDecoratorOrConstructor(this.findDeclaration(ANGULAR_CORE, 'Host'), createHost);\n
this._registerDecoratorOrConstructor(this.findDeclaration(ANGULAR_CORE, 'Self'), createSelf);\n
this._registerDecoratorOrConstructor(\n    this.findDeclaration(ANGULAR_CORE, 'SkipSelf'), createSkipSelf);\n
    this._registerDecoratorOrConstructor(\n    this.findDeclaration(ANGULAR_CORE, 'Optional'),\n
createOptional);\n } \n\n /**\n  * getStaticSymbol produces a Type whose metadata is known but whose\n
implementation is not loaded.\n  * All types passed to the StaticResolver should be pseudo-types returned by this\n
method.\n  *\n  * @param declarationFile the absolute path of the file where the symbol is declared\n  * @param\n
name the name of the type.\n  */\n  getStaticSymbol(declarationFile: string, name: string, members?: string[]):\n
StaticSymbol {\n    return this.symbolResolver.getStaticSymbol(declarationFile, name, members);\n  } \n\n /**\n  * Simplify but discard any errors\n  */\n  private trySimplify(context: StaticSymbol, value: any): any {\n    const\n
originalRecorder = this.errorRecorder;\n    this.errorRecorder = (error: any, fileName?: string) => {};\n    const\n
result = this.simplify(context, value);\n    this.errorRecorder = originalRecorder;\n    return result;\n  } \n\n /**\n  * @internal\n  */\n  public simplify(context: StaticSymbol, value: any, lazy: boolean = false): any {\n    const self =\n
this;\n    let scope = BindingScope.empty;\n    const calling = new Map<StaticSymbol, boolean>();\n    const\n
rootContext = context;\n\n    function simplifyInContext(\n        context: StaticSymbol, value: any, depth: number,\n
references: number): any {\n        function resolveReferenceValue(staticSymbol: StaticSymbol): any {\n            const\n
resolvedSymbol = self.symbolResolver.resolveSymbol(staticSymbol);\n            return resolvedSymbol ?\n
resolvedSymbol.metadata : null;\n        }\n\n        function simplifyEagerly(value: any): any {\n            return\n
simplifyInContext(context, value, depth, 0);\n        }\n\n        function simplifyLazily(value: any): any {\n            return\n
simplifyInContext(context, value, depth, references + 1);\n        }\n\n        function simplifyNested(nestedContext:\n
StaticSymbol, value: any): any {\n            if (nestedContext === context) {\n                // If the context hasn't changed let\n
the exception propagate unmodified.\n                return simplifyInContext(nestedContext, value, depth + 1,\n
references);\n            }\n            try {\n                return simplifyInContext(nestedContext, value, depth + 1, references);\n
            } catch (e) {\n                if (isMetadataError(e)) {\n                    // Propagate the message text up but add a message to the\n
chain that explains how we got\n                    // here.\n                    // e.chain implies e.symbol\n                    const summaryMsg =\n
e.chain ? 'references \\\" + e.symbol!.name + '\\\" : errorSummary(e);\n                    const summary =\n
`${nestedContext.name} ${summaryMsg}`;\n                    const chain = { message: summary, position: e.position, next:\n
e.chain };\n                    // TODO(chuckj): retrieve the position information indirectly from the collectors node\n                    //\n
map if the metadata is from a .ts file.\n                    self.error(\n                        {\n                            message: e.message,\n
advise: e.advise,\n                            context: e.context,\n                            chain,\n                            symbol: nestedContext\n
},\n                            context);\n                    } else {\n                        // It is probably an internal error.\n                        throw e;\n                    }\n
}\n        }\n\n        function simplifyCall(\n            functionSymbol: StaticSymbol, targetFunction: any, args: any[],\n
targetExpression: any) {\n            if (targetFunction && targetFunction['__symbolic'] === 'function') {\n                if\n
(calling.get(functionSymbol)) {\n                    self.error(\n                        {\n                            message: 'Recursion is not\n
supported',\n                            summary: `called '${functionSymbol.name}' recursively`,\n                            value:\n
targetFunction\n                            },\n                            functionSymbol);\n                    }\n                    try {\n                        const value =\n
targetFunction['value'];\n                        if (value && (depth !== 0 || value.__symbolic !== 'error')) {\n                            const\n
parameters: string[] = targetFunction['parameters'];\n                            const defaults: any[] = targetFunction.defaults;\n
args = args.map(arg => simplifyNested(context, arg))\n                                .map(arg => shouldIgnore(arg) ? undefined\n
: arg);\n                            if (defaults && defaults.length > args.length) {\n                                args.push(...defaults.slice(args.length).map((value: any) => simplify(value)));\n
}\n                            calling.set(functionSymbol, true);\n                            const functionScope = BindingScope.build();\n                            for (let i = 0; i <\n
parameters.length; i++) {\n                                functionScope.define(parameters[i], args[i]);\n                            }\n                            const\n
oldScope = scope;\n                            let result: any;\n                            try {\n                                scope = functionScope.done();\n
result = simplifyNested(functionSymbol, value);\n                            } finally {\n                                scope = oldScope;\n                            }\n
return result;\n                        }\n                    } finally {\n                        calling.delete(functionSymbol);\n                    }\n                }\n                if\n
(depth === 0) {\n                    // If depth is 0 we are evaluating the top level expression that is describing element\n                    //\n
decorator. In this case, it is a decorator we don't understand, such as a custom\n                    // non-angular decorator, and

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we should just ignore it.\n      return IGNORE;\n    }\n    let position: Position|undefined = undefined;\n    if (targetExpression && targetExpression.__symbolic === 'resolved') {\n      const line = targetExpression.line;\n      const character = targetExpression.character;\n      const fileName = targetExpression.fileName;\n      if\n      (fileName !== null && line !== null && character !== null) {\n        position = {fileName, line, column: character};\n      }\n    }\n    self.error(\n      {\n        message: FUNCTION_CALL_NOT_SUPPORTED,\n        context: functionSymbol,\n        value: targetFunction,\n        position\n      },\n      context);\n  }\n\n  function simplify(expression: any): any {\n    if (isPrimitive(expression)) {\n      return expression;\n    }\n    if (Array.isArray(expression)) {\n      const result: any[] = [];\n      for (const item of\n      (<any>expression)) {\n        // Check for a spread expression\n        if (item && item.__symbolic === 'spread')\n        {\n          // We call with references as 0 because we require the actual value and cannot\n          // tolerate a\n          reference here.\n          const spreadArray = simplifyEagerly(item.expression);\n          if\n          (Array.isArray(spreadArray)) {\n            for (const spreadItem of spreadArray) {\n              result.push(spreadItem);\n            }\n            continue;\n          }\n          const value =\n          simplify(item);\n          if (shouldIgnore(value)) {\n            continue;\n          }\n          result.push(value);\n        }\n      }\n      return result;\n    }\n    if (expression instanceof StaticSymbol) {\n      // Stop simplification at\n      builtin symbols or if we are in a reference context and\n      // the symbol doesn't have members.\n      if\n      (expression === self.injectionToken || self.conversionMap.has(expression) ||\n      (references > 0 &&\n      !expression.members.length)) {\n        return expression;\n      } else {\n        const staticSymbol =\n        expression;\n        const declarationValue = resolveReferenceValue(staticSymbol);\n        if (declarationValue\n        !== null) {\n          return simplifyNested(staticSymbol, declarationValue);\n        } else {\n          return\n          staticSymbol;\n        }\n      }\n    }\n    if (expression) {\n      if (expression['__symbolic']) {\n        let\n        staticSymbol: StaticSymbol;\n        switch (expression['__symbolic']) {\n          case 'binop':\n            let left =\n            simplify(expression['left']);\n            if (shouldIgnore(left)) return left;\n            let right =\n            simplify(expression['right']);\n            if (shouldIgnore(right)) return right;\n            switch\n            (expression['operator']) {\n              case '&&':\n                return left && right;\n              case '||':\n                return left || right;\n              case '|':\n                return left | right;\n              case '^':\n                return left\n                ^ right;\n              case '&':\n                return left & right;\n              case '==':\n                return left ==\n                right;\n              case '!=':\n                return left !=\n                right;\n              case '===':\n                return left ===\n                right;\n              case '!==':\n                return left !==\n                right;\n              case '<':\n                return left <\n                right;\n              case '>':\n                return left >\n                right;\n              case '<=':\n                return left <=\n                right;\n              case '>=':\n                return left >=\n                right;\n              case '<<':\n                return left <<\n                right;\n              case '>>':\n                return left >>\n                right;\n              case '+':\n                return left +\n                right;\n              case '-':\n                return left -\n                right;\n              case '*':\n                return left *\n                right;\n              case '/':\n                return left /\n                right;\n              case '%':\n                return left %\n                right;\n            }\n          }\n          return null;\n        }\n      }\n      let condition = simplify(expression['condition']);\n      return\n      condition ? simplify(expression['thenExpression']) :\n      simplify(expression['elseExpression']);\n    }\n    case 'pre':\n      let operand = simplify(expression['operand']);\n      if (shouldIgnore(operand))\n      return operand;\n      switch (expression['operator']) {\n        case '+':\n          return operand;\n        case '-':\n          return -operand;\n        case '!':\n          return !operand;\n        case\n        '~':\n          return ~operand;\n      }\n      return null;\n    }\n    case 'index':\n      let\n      indexTarget = simplifyEagerly(expression['expression']);\n      let index =\n      simplifyEagerly(expression['index']);\n      if (indexTarget && isPrimitive(index)) return\n      indexTarget[index];\n      return null;\n    }\n    case 'select':\n      const member =\n      expression['member'];\n      let selectContext = context;\n      let selectTarget =\n      simplify(expression['expression']);\n      if (selectTarget instanceof StaticSymbol) {\n        const\n        members = selectTarget.members.concat(member);\n        selectContext =\n        self.getStaticSymbol(selectTarget.filePath, selectTarget.name, members);\n        const declarationValue =\n        resolveReferenceValue(selectContext);\n        if (declarationValue !== null) {\n          return\n          declarationValue;\n        }\n      }\n    }\n  }\n}

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simplifyNested(selectContext, declarationValue);\n        } else {\n            return selectContext;\n        }\n    }\n    if (selectTarget && isPrimitive(member))\n        return\n        simplifyNested(selectContext, selectTarget[member]);\n        return null;\n        case 'reference':\n        // Note: This only has to deal with variable references, as symbol references have\n        // been converted into\n        'resolved'\n        // in the StaticSymbolResolver.\n        const name: string = expression['name'];\n        const localValue = scope.resolve(name);\n        if (localValue !== BindingScope.missing) {\n            return\n            localValue;\n        }\n        break;\n        case 'resolved':\n        try {\n            return\n            simplify(expression.symbol);\n        } catch (e) {\n            // If an error is reported evaluating the symbol\n            record the position of the\n            // reference in the error so it can\n            // be reported in the error\n            message generated from the exception.\n            if (isMetadataError(e) && expression.fileName !== null &&\n            expression.line !== null && expression.character !== null) {\n                e.position = {\n                fileName: expression.fileName,\n                line: expression.line,\n                column: expression.character\n                };\n            }\n            throw e;\n        }\n        case 'class':\n            return context;\n        case 'function':\n            return context;\n        case 'new':\n        case 'call':\n            // Determine if the\n            function is a built-in conversion\n            staticSymbol = simplifyInContext(\n            context,\n            expression['expression'], depth + 1, /* references */ 0);\n            if (staticSymbol instanceof StaticSymbol) {\n                if (staticSymbol === self.injectionToken || staticSymbol === self.opaqueToken) {\n                    // if somebody\n                    calls new InjectionToken, don't create an InjectionToken,\n                    // but rather return the symbol to which the\n                    InjectionToken is assigned to.\n                    // OpaqueToken is supported too as it is required by the language\n                    service to\n                    // support v4 and prior versions of Angular.\n                    return context;\n                }\n                const argExpressions: any[] = expression['arguments'] || [];\n                let converter =\n                self.conversionMap.get(staticSymbol);\n                if (converter) {\n                    const args =\n                    argExpressions.map(arg => simplifyNested(context, arg))\n                    .map(arg => shouldIgnore(arg) ?\n                    undefined : arg);\n                    return converter(context, args);\n                } else {\n                    // Determine if the\n                    function is one we can simplify.\n                    const targetFunction = resolveReferenceValue(staticSymbol);\n                    return simplifyCall(\n                    staticSymbol, targetFunction, argExpressions, expression['expression']);\n                }\n            }\n            return IGNORE;\n        case 'error':\n            let message =\n            expression.message;\n            if (expression['line'] !== null) {\n                self.error(\n                {\n                message,\n                context: expression.context,\n                value: expression,\n                position:\n                {\n                fileName: expression['fileName'],\n                line: expression['line'],\n                column: expression['character']\n                }\n                },\n                context);\n            } else {\n                self.error({message, context: expression.context}, context);\n            }\n            return IGNORE;\n        case 'ignore':\n            return expression;\n        }\n        return null;\n    }\n    return\n    mapStringMap(expression, (value, name) => {\n        if (REFERENCE_SET.has(name)) {\n            if (name ===\n            USE_VALUE && PROVIDE in expression) {\n                // If this is a provider expression, check for special tokens\n                that need the value\n                // during analysis.\n                const provide = simplify(expression.provide);\n                if (provide === self.ROUTES || provide === self.ANALYZE_FOR_ENTRY_COMPONENTS) {\n                    return\n                    simplify(value);\n                }\n                return simplifyLazily(value);\n            }\n            return\n            simplify(value);\n        });\n        return IGNORE;\n    });\n    return simplify(value);\n}\n\nlet\nresult: any;\ntry {\n    result = simplifyInContext(context, value, 0, lazy ? 1 : 0);\n} catch (e) {\n    if\n    (this.errorRecorder) {\n        this.reportError(e, context);\n    } else {\n        throw formatMetadataError(e,\n        context);\n    }\n}\nif (shouldIgnore(result))\n    return undefined;\nreturn result;\n}\n\nprivate\ngetTypeMetadata(type: StaticSymbol): {[key: string]: any} {\n    const resolvedSymbol =\n    this.symbolResolver.resolveSymbol(type);\n    return resolvedSymbol && resolvedSymbol.metadata ?\n    resolvedSymbol.metadata :\n    {\n        __symbolic: 'class';\n    }\n}\n\nprivate\nreportError(error: Error, context: StaticSymbol, path?: string) {\n    if (this.errorRecorder) {\n        this.errorRecorder(\n        formatMetadataError(error, context), (context && context.filePath) || path);\n    } else {\n        throw error;\n    }\n}\n\nprivate\nerror(\n    {message, summary, advise, position, context, value, symbol,

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chain}: {\n    message: string,\n    summary?: string,\n    advise?: string,\n    position?: Position,\n    context?: any,\n    value?: any,\n    symbol?: StaticSymbol,\n    chain?: MetadataMessageChain\n  },\n  reportingContext: StaticSymbol) {\n    this.reportError(\n      metadataError(message, summary, advise, position,\n        symbol, context, chain),\n      reportingContext);\n  }\n}\n\ninterface Position {\n  fileName: string;\n  line:\n  number;\n  column: number;\n}\n\ninterface MetadataMessageChain {\n  message: string;\n  summary?: string;\n  position?: Position;\n  context?: any;\n  symbol?: StaticSymbol;\n  next?: MetadataMessageChain;\n}\n\ninterface\n  MetadataError = Error & {\n    position?: Position;\n    advise?: string;\n    summary?: string;\n    context?: any;\n    symbol?: StaticSymbol;\n    chain?: MetadataMessageChain;\n};\n\nconst METADATA_ERROR =\n  'ngMetadataError';\n\nfunction metadataError(\n  message: string, summary?: string, advise?: string, position?:\n  Position, symbol?: StaticSymbol,\n  context?: any, chain?: MetadataMessageChain): MetadataError {\n  const error\n  = syntaxError(message) as MetadataError;\n  (error as any)[METADATA_ERROR] = true;\n  if (advise)\n    error.advise = advise;\n  if (position) error.position = position;\n  if (summary) error.summary = summary;\n  if\n  (context) error.context = context;\n  if (chain) error.chain = chain;\n  if (symbol) error.symbol = symbol;\n  return\n  error;\n}\n\nfunction isMetadataError(error: Error): error is MetadataError {\n  return\n  !! (error as\n  any)[METADATA_ERROR];\n}\n\nconst REFERENCE_TO_NONEXPORTED_CLASS = 'Reference to non-\n  exported class';\nconst VARIABLE_NOT_INITIALIZED = 'Variable not initialized';\nconst\n  DESTRUCTURE_NOT_SUPPORTED = 'Destructuring not supported';\nconst COULD_NOT_RESOLVE_TYPE\n  = 'Could not resolve type';\nconst FUNCTION_CALL_NOT_SUPPORTED = 'Function call not supported';\nconst\n  REFERENCE_TO_LOCAL_SYMBOL = 'Reference to a local symbol';\nconst LAMBDA_NOT_SUPPORTED =\n  'Lambda not supported';\n\nfunction expandedMessage(message: string, context: any): string {\n  switch (message)\n  {\n    case REFERENCE_TO_NONEXPORTED_CLASS:\n      if (context && context.className) {\n        return\n        `References to a non-exported class are not supported in decorators but ${\n          context.className\n        } was\n        referenced.`;\n      }\n      break;\n    case VARIABLE_NOT_INITIALIZED:\n      return 'Only initialized variables\n        and constants can be referenced in decorators because the value of this variable is\n        needed by the template\n        compiler';\n    case DESTRUCTURE_NOT_SUPPORTED:\n      return 'Referencing an exported destructured\n        variable or constant is not supported in decorators and this value is needed by the\n        template compiler';\n    case\n        COULD_NOT_RESOLVE_TYPE:\n      if (context && context.typeName) {\n        return `Could not resolve type\n        ${context.typeName}`;\n      }\n      break;\n    case FUNCTION_CALL_NOT_SUPPORTED:\n      if (context &&\n        context.name) {\n        return `Function calls are not supported in decorators but\n        '${context.name}' was called`;\n      }\n      return 'Function calls are not supported in decorators';\n    case\n        REFERENCE_TO_LOCAL_SYMBOL:\n      if (context && context.name) {\n        return `Reference to a local (non-exported) symbols are not supported\n        in\n        decorators but '${context.name}' was referenced`;\n      }\n      break;\n    case\n        LAMBDA_NOT_SUPPORTED:\n      return `Function expressions are not supported in decorators`;\n  }\n  return\n  message;\n}\n\nfunction messageAdvise(message: string, context: any): string | undefined {\n  switch\n  (message) {\n    case\n        REFERENCE_TO_NONEXPORTED_CLASS:\n      if (context && context.className) {\n        return\n        `Consider exporting '${context.className}'`;\n      }\n      break;\n    case\n        DESTRUCTURE_NOT_SUPPORTED:\n      return 'Consider simplifying to avoid destructuring';\n    case\n        REFERENCE_TO_LOCAL_SYMBOL:\n      if\n        (context && context.name) {\n        return `Consider exporting '${context.name}'`;\n      }\n      break;\n    case\n        LAMBDA_NOT_SUPPORTED:\n      return `Consider changing the function expression into an exported\n        function`;\n  }\n  return\n  undefined;\n}\n\nfunction errorSummary(error: MetadataError): string {\n  if\n  (error.summary) {\n    return error.summary;\n  }\n  switch\n  (error.message) {\n    case\n        REFERENCE_TO_NONEXPORTED_CLASS:\n      if (error.context && error.context.className) {\n        return\n        `references non-exported class ${error.context.className}`;\n      }\n      break;\n    case\n        VARIABLE_NOT_INITIALIZED:\n      return 'is not initialized';\n    case\n        DESTRUCTURE_NOT_SUPPORTED:\n      return 'is a destructured variable';\n    case\n        COULD_NOT_RESOLVE_TYPE:\n      return 'could not be resolved';\n    case\n        FUNCTION_CALL_NOT_SUPPORTED:\n      if (error.context && error.context.name) {\n        return `calls\n        '${error.context.name}'`;\n      }\n      return `calls a function`;\n    case\n        REFERENCE_TO_LOCAL_SYMBOL:\n  }

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if (error.context && error.context.name) {\n    return `references local variable ${error.context.name}`;\n  }\n  return `references a local variable`;\n }\n return 'contains the error';\n}\n\nfunction mapStringMap(input: {[key: string]: any}, transform: (value: any, key: string) => any): {[key: string]: any} {\n if (!input) return {};\n const result: {[key: string]: any} = {};\n Object.keys(input).forEach((key) => {\n  const value = transform(input[key], key);\n  if (!shouldIgnore(value)) {\n    if (HIDDEN_KEY.test(key)) {\n      Object.defineProperty(result, key, {enumerable: false, configurable: true, value: value});\n    } else {\n      result[key] = value;\n    }\n  }\n});\n return result;\n}\n\nfunction isPrimitive(o: any): boolean {\n return o === null || (typeof o !== 'function' && typeof o !== 'object');\n}\n\ninterface BindingScopeBuilder {\n define(name: string, value: any): BindingScopeBuilder;\n done(): BindingScope;\n}\n\nabstract class BindingScope {\n abstract resolve(name: string): any;\n public static missing = {};\n public static empty: BindingScope = {resolve: name => BindingScope.missing};\n\n public static build(): BindingScopeBuilder {\n  const current = new Map<string, any>();\n  return {\n    define: function(name, value) {\n      current.set(name, value);\n      return this;\n    },\n    done: function() {\n      return current.size > 0 ? new PopulatedScope(current) : BindingScope.empty;\n    }\n  };\n}\n\nclass PopulatedScope extends BindingScope {\n constructor(private bindings: Map<string, any>) {\n  super();\n }\n\n resolve(name: string): any {\n  return this.bindings.has(name) ? this.bindings.get(name) : BindingScope.missing;\n }\n}\n\nfunction formatMetadataMessageChain(chain: MetadataMessageChain, advise: string|undefined): FormattedMessageChain {\n const expanded = expandedMessage(chain.message, chain.context);\n const nesting = chain.symbol ? ` in '${chain.symbol.name}'` : '';\n const message = `${expanded}${nesting}`;\n const position = chain.position;\n const next: FormattedMessageChain|undefined = chain.next ?\n formatMetadataMessageChain(chain.next, advise) :\n  advise ? {message: advise} : undefined;\n return {message, position, next: next ? [next] : undefined};\n}\n\nfunction formatMetadataError(e: Error, context: StaticSymbol): Error {\n if (isMetadataError(e)) {\n  // Produce a formatted version of the and leaving enough information in the original error\n  // to recover the formatting information to eventually produce a diagnostic error message.\n  const position = e.position;\n  const chain: MetadataMessageChain = {\n    message: `Error during template compile of '${context.name}'`,\n    position: position,\n    next: {message: e.message, next: e.chain, context: e.context, symbol: e.symbol}\n  };\n  const advise = e.advise || messageAdvise(e.message, e.context);\n  return formattedError(formatMetadataMessageChain(chain, advise));\n }\n return e;\n}\n\n"/**\n * @license\n * Copyright Google LLC All Rights Reserved.\n * Use of this source code is governed by an MIT-style license that can be\n * found in the LICENSE file at https://angular.io/license\n */\n\nimport {Summary, SummaryResolver} from './summary_resolver';\nimport {StaticSymbol, StaticSymbolCache} from './static_symbol';\nimport {deserializeSummaries} from './summary_serializer';\nimport {stripGeneratedFileSuffix, summaryFileName} from './util';\n\nexport interface AotSummaryResolverHost {\n /**\n * Loads an NgModule/Directive/Pipe summary file\n * loadSummary(filePath: string): string|null;\n\n /**\n * Returns whether a file is a source file or not.\n * isSourceFile(sourceFilePath: string): boolean;\n\n /**\n * Converts a file name into a representation that should be stored in a summary file.\n * This has to include changing the suffix as well.\n * E.g.\n * `some_file.ts` -> `some_file.d.ts`\n\n * @param referringSrcFileName the source file that refers to fileName\n * toSummaryFileName(fileName: string, referringSrcFileName: string): string;\n\n /**\n * Converts a fileName that was processed by `toSummaryFileName` back into a real fileName\n * given the fileName of the library that is referring to it.\n * fromSummaryFileName(fileName: string, referringLibFileName: string): string;\n}\n\nexport class AotSummaryResolver implements SummaryResolver<StaticSymbol> {\n // Note: this will only contain StaticSymbols without members!\n private summaryCache = new Map<StaticSymbol, Summary<StaticSymbol>>();\n private loadedFilePaths = new Map<string, boolean>();\n // Note: this will only contain StaticSymbols without members!\n private importAs = new Map<StaticSymbol, StaticSymbol>();\n private knownFileNameToModuleNames = new Map<string, string>();\n\n constructor(private host: AotSummaryResolverHost, private staticSymbolCache: StaticSymbolCache) {\n }\n\n isLibraryFile(filePath: string): boolean {\n  // Note: We need to strip the .ngfactory. file path,\n  // so this method also works for generated files\n  // (for which host.isSourceFile will always return false).\n  return !this.host.isSourceFile(stripGeneratedFileSuffix(filePath));\n }\n\n toSummaryFileName(filePath: string,

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referringSrcFileName: string) {\n  return this.host.toSummaryFileName(filePath, referringSrcFileName);\n }\n\n
fromSummaryFileName(fileName: string, referringLibFileName: string) {\n  return
this.host.fromSummaryFileName(fileName, referringLibFileName);\n }\n\n resolveSummary(staticSymbol:
StaticSymbol): Summary<StaticSymbol>|null {\n  const rootSymbol = staticSymbol.members.length ?\n
this.staticSymbolCache.get(staticSymbol.filePath, staticSymbol.name) : \n  staticSymbol;\n  let summary =
this.summaryCache.get(rootSymbol);\n  if (!summary) {\n    this._loadSummaryFile(staticSymbol.filePath);\n
summary = this.summaryCache.get(staticSymbol);\n  }\n  return (rootSymbol === staticSymbol && summary) ||
null;\n }\n\n getSymbolsOf(filePath: string): StaticSymbol[]|null {\n  if (this._loadSummaryFile(filePath)) {\n
return Array.from(this.summaryCache.keys()).filter((symbol) => symbol.filePath === filePath);\n  }\n  return
null;\n }\n\n getImportAs(staticSymbol: StaticSymbol): StaticSymbol {\n  staticSymbol.assertNoMembers();\n
return this.importAs.get(staticSymbol);\n }\n\n /**\n  * Converts a file path to a module name that can be used as
an `import`.\n  *^\n  getKnownModuleName(importedFilePath: string): string|null {\n  return
this.knownFileNameToModuleNames.get(importedFilePath) || null;\n }\n\n addSummary(summary:
Summary<StaticSymbol>) {\n  this.summaryCache.set(summary.symbol, summary);\n }\n\n private
_loadSummaryFile(filePath: string): boolean {\n  let hasSummary = this.loadedFilePaths.get(filePath);\n  if
(hasSummary != null) {\n    return hasSummary;\n  }\n  let json: string|null = null;\n  if
(this.isLibraryFile(filePath)) {\n    const summaryFilePath = summaryFileName(filePath);\n    try {\n      json =
this.host.loadSummary(summaryFilePath);\n    } catch (e) {\n      console.error(`Error loading summary file
${summaryFilePath}`);\n      throw e;\n    }\n  }\n  hasSummary = json != null;\n
this.loadedFilePaths.set(filePath, hasSummary);\n  if (json) {\n    const {moduleName, summaries, importAs} =\n
deserializeSummaries(this.staticSymbolCache, this, filePath, json);\n    summaries.forEach((summary) =>
this.summaryCache.set(summary.symbol, summary));\n    if (moduleName) {\n
this.knownFileNameToModuleNames.set(filePath, moduleName);\n    }\n    importAs.forEach((importAs) => {\n
this.importAs.set(importAs.symbol, importAs.importAs);\n    });\n  }\n  return hasSummary;\n
}\n\n"/**\n * @license\n * Copyright Google LLC All Rights Reserved.\n * Use of this source code is
governed by an MIT-style license that can be\n * found in the LICENSE file at https://angular.io/license\n
*/\n\nimport {CompilerConfig} from './config';\nimport {ViewEncapsulation} from './core';\nimport
{DirectiveNormalizer} from './directive_normalizer';\nimport {DirectiveResolver} from
'./directive_resolver';\nimport {Lexer} from './expression_parser/lexer';\nimport {Parser} from
'./expression_parser/parser';\nimport {I18NHtmlParser} from './i18n/i18n_html_parser';\nimport
{InjectableCompiler} from './injectable_compiler';\nimport {CompileMetadataResolver} from
'./metadata_resolver';\nimport {HtmlParser} from './ml_parser/html_parser';\nimport {NgModuleCompiler} from
'./ng_module_compiler';\nimport {NgModuleResolver} from './ng_module_resolver';\nimport {TypeScriptEmitter}
from './output/ts_emitter';\nimport {PipeResolver} from './pipe_resolver';\nimport {DomElementSchemaRegistry}
from './schema/dom_element_schema_registry';\nimport {StyleCompiler} from './style_compiler';\nimport
{TemplateParser} from './template_parser/template_parser';\nimport {UrlResolver} from './url_resolver';\nimport
{syntaxError} from './util';\nimport {TypeCheckCompiler} from './view_compiler/type_check_compiler';\nimport
{ViewCompiler} from './view_compiler/view_compiler';\nimport {AotCompiler} from './compiler';\nimport
{AotCompilerHost} from './compiler_host';\nimport {AotCompilerOptions} from './compiler_options';\nimport
{StaticReflector} from './static_reflector';\nimport {StaticSymbolCache} from './static_symbol';\nimport
{StaticSymbolResolver} from './static_symbol_resolver';\nimport {AotSummaryResolver} from
'./summary_resolver';\n\nexport function createAotUrlResolver(\n  host:
{resourceNameToFileName(resourceName: string, containingFileName: string): string|null;}\n) {\n  return {\n
resolve: (basePath: string, url: string) => {\n    const filePath = host.resourceNameToFileName(url,
basePath);\n    if (!filePath) {\n      throw syntaxError(`Couldn't resolve resource ${url} from ${basePath}`);\n
    }\n    return filePath;\n  }\n};\n\n/**\n * Creates a new AotCompiler based on options and a host.\n */\n\nexport
function createAotCompiler(\n  compilerHost: AotCompilerHost, options: AotCompilerOptions,\n
errorCollector?: (error: any, type?: any) => void): {compiler: AotCompiler, reflector: StaticReflector} {\n  let

```

```

translations: string = options.translations || "";
const urlResolver = createAotUrlResolver(compilerHost);
const symbolCache = new StaticSymbolCache();
const summaryResolver = new AotSummaryResolver(compilerHost, symbolCache);
const symbolResolver = new StaticSymbolResolver(compilerHost, symbolCache, summaryResolver);
const staticReflector = new StaticReflector(summaryResolver, symbolResolver, [], [], errorCollector);
let htmlParser: I18NHtmlParser;
if (!options.enableIvy) {
  // Ivy handles i18n at the compiler level so we must use a regular parser
  htmlParser = new HtmlParser() as I18NHtmlParser;
} else {
  htmlParser = new I18NHtmlParser(new HtmlParser(), translations, options.i18nFormat, options.missingTranslation, console);
}
const config = new CompilerConfig({
  defaultEncapsulation: ViewEncapsulation.Emulated,
  useJit: false,
  missingTranslation: options.missingTranslation,
  preserveWhitespaces: options.preserveWhitespaces,
  strictInjectionParameters: options.strictInjectionParameters,
});
const normalizer = new DirectiveNormalizer({
  get: (url: string) => compilerHost.loadResource(url),
  urlResolver,
  htmlParser,
  config,
});
const expressionParser = new Parser(new Lexer());
const elementSchemaRegistry = new DomElementSchemaRegistry();
const tmplParser = new TemplateParser(config, staticReflector, expressionParser, elementSchemaRegistry, htmlParser, console, []);
const resolver = new CompileMetadataResolver(config, htmlParser, new NgModuleResolver(staticReflector), new DirectiveResolver(staticReflector), new PipeResolver(staticReflector), summaryResolver, elementSchemaRegistry, normalizer, console, symbolCache, staticReflector, errorCollector);
// TODO(vicb): do not pass options.i18nFormat here
const viewCompiler = new ViewCompiler(staticReflector);
const typeCheckCompiler = new TypeCheckCompiler(options, staticReflector);
const compiler = new AotCompiler(config, options, compilerHost, staticReflector, resolver, tmplParser, new StyleCompiler(urlResolver), viewCompiler, typeCheckCompiler, new NgModuleCompiler(staticReflector), new InjectableCompiler(staticReflector, !options.enableIvy), new TypeScriptEmitter(), summaryResolver, symbolResolver);
return { compiler, reflector: staticReflector };
}
"/**
 * @license
 * Copyright Google LLC All Rights Reserved.
 * Use of this source code is governed by an MIT-style license that can be found in the LICENSE file at https://angular.io/license
 */
import { MissingTranslationStrategy } from '../core';
export interface AotCompilerOptions {
  locale?: string;
  i18nFormat?: string;
  i18nUseExternalIds?: boolean;
  translations?: string;
  missingTranslation?: MissingTranslationStrategy;
  enableSummariesForJit?: boolean;
  preserveWhitespaces?: boolean;
  fullTemplateTypeCheck?: boolean;
  allowEmptyCodegenFiles?: boolean;
  strictInjectionParameters?: boolean;
  enableIvy?: boolean;
  createExternalSymbolFactoryReexports?: boolean;
}
"/**
 * @license
 * Copyright Google LLC All Rights Reserved.
 * Use of this source code is governed by an MIT-style license that can be found in the LICENSE file at https://angular.io/license
 */
import { StaticSymbolResolverHost } from './static_symbol_resolver';
import { AotSummaryResolverHost } from './summary_resolver';
/**
 * The host of the AotCompiler disconnects the implementation from TypeScript / other language services and from underlying file systems.
 */
export interface AotCompilerHost extends StaticSymbolResolverHost, AotSummaryResolverHost {
  /**
   * Converts a file path to a module name that can be used as an `import`.
   * I.e. `path/to/importedFile.ts` should be imported by `path/to/containingFile.ts`.
   * See ImportResolver.
   */
  fileNameToModuleName(importedFilePath: string, containingFilePath: string): string;
  /**
   * Converts a path that refers to a resource into an absolute filePath that can be later on used for loading the resource via `loadResource`.
   */
  resourceNameToFileName(resourceName: string, containingFileName: string): string | null;
  /**
   * Loads a resource (e.g. html / css)
   */
  loadResource(path: string): Promise<string> | string;
}
"/**
 * @license
 * Copyright Google LLC All Rights Reserved.
 * Use of this source code is governed by an MIT-style license that can be found in the LICENSE file at https://angular.io/license
 */
import * as o from './output/output_ast';
export interface PartialModule {
  fileName: string;
  statements: o.Statement[];
}
"/**
 * @license
 * Copyright Google LLC All Rights Reserved.
 * Use of this source code is governed by an MIT-style license that can be found in the LICENSE file at https://angular.io/license
 */
import { CompileTypeSummary } from './compile_metadata';
import { Type } from './core';
export interface Summary<T> {
  symbol: T;
  metadata: any;
  type?: CompileTypeSummary;
}
export abstract class

```

```

SummaryResolver<T> {\n  abstract isLibraryFile(fileName: string): boolean;\n  abstract
toSummaryFileName(fileName: string, referringSrcFileName: string): string;\n  abstract
fromSummaryFileName(fileName: string, referringLibFileName: string): string;\n  abstract
resolveSummary(reference: T): Summary<T>|null;\n  abstract getSymbolsOf(filePath: string): T[]|null;\n  abstract
getImportAs(reference: T): T;\n  abstract getKnownModuleName(fileName: string): string|null;\n  abstract
addSummary(summary: Summary<T>): void;\n}\n\nexport class JitSummaryResolver implements
SummaryResolver<Type> {\n  private _summaries = new Map<Type, Summary<Type>>();\n\n  isLibraryFile():
boolean {\n    return false;\n  }\n  toSummaryFileName(fileName: string): string {\n    return fileName;\n  }\n
fromSummaryFileName(fileName: string): string {\n    return fileName;\n  }\n  resolveSummary(reference: Type):
Summary<Type>|null {\n    return this._summaries.get(reference) || null;\n  }\n  getSymbolsOf(): Type[] {\n    return
[];\n  }\n  getImportAs(reference: Type): Type {\n    return reference;\n  }\n  getKnownModuleName(fileName:
string) {\n    return null;\n  }\n  addSummary(summary: Summary<Type>) {\n
this._summaries.set(summary.symbol, summary);\n  }\n}\n\n"/**\n * @license\n * Copyright Google LLC All
Rights Reserved.\n * Use of this source code is governed by an MIT-style license that can be\n * found in the
LICENSE file at https://angular.io/license\n */\nimport {CompileReflector} from './compile_reflector';\nimport * as
o from './output_ast';\nimport {debugOutputAstAsTypeScript} from './ts_emitter';\n\nexport function
interpretStatements(\n  statements: o.Statement[], reflector: CompileReflector): {[key: string]: any} {\n  const ctx =
new _ExecutionContext(null, null, null, new Map<string, any>());\n  const visitor = new
StatementInterpreter(reflector);\n  visitor.visitAllStatements(statements, ctx);\n  const result: {[key: string]: any} =
{};\n  ctx.exports.forEach((exportName) => {\n    result[exportName] = ctx.vars.get(exportName);\n  });\n  return
result;\n}\n\nfunction _executeFunctionStatements(\n  varNames: string[], varValues: any[], statements:
o.Statement[], ctx: _ExecutionContext,\n  visitor: StatementInterpreter): any {\n  const childCtx =
ctx.createChildWithLocalVars();\n  for (let i = 0; i < varNames.length; i++) {\n    childCtx.vars.set(varNames[i],
varValues[i]);\n  }\n  const result = visitor.visitAllStatements(statements, childCtx);\n  return result ? result.value :
null;\n}\n\nexport class _ExecutionContext {\n  exports: string[] = [];\n\n  constructor(\n    public parent:
_ExecutionContext|null, public instance: Object|null,\n    public className: string|null, public vars: Map<string,
any>) {}\n\n  createChildWithLocalVars(): _ExecutionContext {\n    return new _ExecutionContext(this,
this.instance, this.className, new Map<string, any>());\n  }\n}\n\nexport class ReturnValue {\n  constructor(public value:
any) {}\n}\n\nfunction createDynamicClass(\n  _classStmt: o.ClassStmt, _ctx: _ExecutionContext, _visitor:
StatementInterpreter): Function {\n  const propertyDescriptors: {[key: string]: any} = {};\n\n  _classStmt.getters.forEach((getter: o.ClassGetter) => {\n    // Note: use `function` instead of arrow function to
capture `this`\n    propertyDescriptors[getter.name] = {\n      configurable: false,\n      get: function() {\n        const
instanceCtx = new _ExecutionContext(_ctx, this, _classStmt.name, _ctx.vars);\n        return
_executeFunctionStatements([], [], getter.body, instanceCtx, _visitor);\n      }\n    };\n  });\n\n  _classStmt.methods.forEach(function(method: o.ClassMethod) {\n    const paramNames =
method.params.map(param => param.name);\n    // Note: use `function` instead of arrow function to capture `this`\n
propertyDescriptors[method.name!] = {\n      writable: false,\n      configurable: false,\n      value: function(...args:
any[]) {\n        const instanceCtx = new _ExecutionContext(_ctx, this, _classStmt.name, _ctx.vars);\n        return
_executeFunctionStatements(paramNames, args, method.body, instanceCtx, _visitor);\n      }\n    };\n  });\n\n  const
ctorParamNames = _classStmt.constructorMethod.params.map(param => param.name);\n  // Note: use `function`
instead of arrow function to capture `this`\n  const ctor = function(this: Object, ...args: any[]) {\n    const instanceCtx
= new _ExecutionContext(_ctx, this, _classStmt.name, _ctx.vars);\n    _classStmt.fields.forEach((field) => {\n
(this as any)[field.name] = undefined;\n  });\n  _executeFunctionStatements(\n    ctorParamNames, args,
_classStmt.constructorMethod.body, instanceCtx, _visitor);\n  }\n  const superClass = _classStmt.parent ?
_classStmt.parent.visitExpression(_visitor, _ctx) : Object;\n  ctor.prototype = Object.create(superClass.prototype,
propertyDescriptors);\n  return ctor;\n}\n\nexport class StatementInterpreter implements o.StatementVisitor,\no.ExpressionVisitor {\n  constructor(private reflector: CompileReflector) {}\n  debugAst(ast:
o.Expression|o.Statement|o.Type): string {\n    return debugOutputAstAsTypeScript(ast);\n  }\n}

```

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visitDeclareVarStmt(stmt: o.DeclareVarStmt, ctx: _ExecutionContext): any {\n  const initialValue = stmt.value ?
stmt.value.visitExpression(this, ctx) : undefined;\n  ctx.vars.set(stmt.name, initialValue);\n  if
(stmt.hasModifier(o.StmtModifier.Exported)) {\n    ctx.exports.push(stmt.name);\n  }\n  return null;\n }\n
visitWriteVarExpr(expr: o.WriteVarExpr, ctx: _ExecutionContext): any {\n  const value =
expr.value.visitExpression(this, ctx);\n  let currCtx = ctx;\n  while (currCtx != null) {\n    if
(currCtx.vars.has(expr.name)) {\n      currCtx.vars.set(expr.name, value);\n      return value;\n    }\n    currCtx =
currCtx.parent!;\n  }\n  throw new Error(`Not declared variable ${expr.name}`);\n }\n
visitWrappedNodeExpr(ast: o.WrappedNodeExpr<any>, ctx: _ExecutionContext): never {\n  throw new
Error(`Cannot interpret a WrappedNodeExpr.`);\n }\n
visitTypeofExpr(ast: o.TypeofExpr, ctx: _ExecutionContext): never {\n  throw new Error(`Cannot interpret a TypeofExpr`);\n }\n
visitReadVarExpr(ast: o.ReadVarExpr, ctx:
_ExecutionContext): any {\n  let varName = ast.name!;\n  if (ast.builtin != null) {\n    switch (ast.builtin) {\n
case o.BuiltinVar.Super:\n      return Object.getPrototypeOf(ctx.instance);\n    case o.BuiltinVar.This:\n
return ctx.instance;\n    case o.BuiltinVar.CatchError:\n      varName = CATCH_ERROR_VAR;\n    break;\n    case o.BuiltinVar.CatchStack:\n
varName = CATCH_STACK_VAR;\n    break;\n    default:\n      throw new Error(`Unknown builtin variable ${ast.builtin}`);\n    }\n  }\n  let currCtx = ctx;\n
while (currCtx != null) {\n    if (currCtx.vars.has(varName)) {\n      return currCtx.vars.get(varName);\n    }\n    currCtx = currCtx.parent!;\n  }\n  throw new Error(`Not declared variable ${varName}`);\n }\n
visitWriteKeyExpr(expr: o.WriteKeyExpr, ctx: _ExecutionContext): any {\n  const receiver =
expr.receiver.visitExpression(this, ctx);\n  const index = expr.index.visitExpression(this, ctx);\n  const value =
expr.value.visitExpression(this, ctx);\n  receiver[index] = value;\n  return value;\n }\n
visitWritePropExpr(expr:
o.WritePropExpr, ctx: _ExecutionContext): any {\n  const receiver = expr.receiver.visitExpression(this, ctx);\n
const value = expr.value.visitExpression(this, ctx);\n  receiver[expr.name] = value;\n  return value;\n }\n
visitInvokeMethodExpr(expr: o.InvokeMethodExpr, ctx: _ExecutionContext): any {\n  const receiver =
expr.receiver.visitExpression(this, ctx);\n  const args = this.visitAllExpressions(expr.args, ctx);\n  let result:
any;\n  if (expr.builtin != null) {\n    switch (expr.builtin) {\n      case o.BuiltinMethod.ConcatArray:\n
result = receiver.concat(...args);\n      break;\n      case o.BuiltinMethod.SubscribeObservable:\n      result =
receiver.subscribe({next: args[0]});\n      break;\n      case o.BuiltinMethod.Bind:\n      result =
receiver.bind(...args);\n      break;\n      default:\n      throw new Error(`Unknown builtin method
${expr.builtin}`);\n    }\n  } else {\n    result = receiver[expr.name!].apply(receiver, args);\n  }\n  return
result;\n }\n
visitInvokeFunctionExpr(stmt: o.InvokeFunctionExpr, ctx: _ExecutionContext): any {\n  const args =
this.visitAllExpressions(stmt.args, ctx);\n  const fnExpr = stmt.fn;\n  if (fnExpr instanceof o.ReadVarExpr &&
fnExpr.builtin === o.BuiltinVar.Super) {\n    ctx.instance!.constructor.prototype.constructor.apply(ctx.instance,
args);\n    return null;\n  } else {\n    const fn = stmt.fn.visitExpression(this, ctx);\n    return fn.apply(null,
args);\n  }\n }\n
visitReturnStmt(stmt: o.ReturnStatement, ctx: _ExecutionContext): any {\n  return new
ReturnValue(stmt.value.visitExpression(this, ctx));\n }\n
visitDeclareClassStmt(stmt: o.ClassStmt, ctx:
_ExecutionContext): any {\n  const clazz = createDynamicClass(stmt, ctx, this);\n  ctx.vars.set(stmt.name,
clazz);\n  if (stmt.hasModifier(o.StmtModifier.Exported)) {\n    ctx.exports.push(stmt.name);\n  }\n  return
null;\n }\n
visitExpressionStmt(stmt: o.ExpressionStatement, ctx: _ExecutionContext): any {\n  return
stmt.expr.visitExpression(this, ctx);\n }\n
visitIfStmt(stmt: o.IfStmt, ctx: _ExecutionContext): any {\n  const
condition = stmt.condition.visitExpression(this, ctx);\n  if (condition) {\n    return
this.visitAllStatements(stmt.trueCase, ctx);\n  } else if (stmt.falseCase != null) {\n    return
this.visitAllStatements(stmt.falseCase, ctx);\n  }\n  return null;\n }\n
visitTryCatchStmt(stmt: o.TryCatchStmt,
ctx: _ExecutionContext): any {\n  try {\n    return this.visitAllStatements(stmt.bodyStmts, ctx);\n  } catch (e) {\n
const childCtx = ctx.createChildWithLocalVars();\n    childCtx.vars.set(CATCH_ERROR_VAR, e);\n    childCtx.vars.set(CATCH_STACK_VAR, e.stack);\n    return this.visitAllStatements(stmt.catchStmts, childCtx);\n  }\n }\n
visitThrowStmt(stmt: o.ThrowStmt, ctx: _ExecutionContext): any {\n  throw
stmt.error.visitExpression(this, ctx);\n }\n
visitInstantiateExpr(ast: o.InstantiateExpr, ctx: _ExecutionContext): any
{\n  const args = this.visitAllExpressions(ast.args, ctx);\n  const clazz = ast.classExpr.visitExpression(this, ctx);\n
}

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return new clazz(...args);\n }\n visitLiteralExpr(ast: o.LiteralExpr, ctx: _ExecutionContext): any {\n return
ast.value;\n }\n visitLocalizedString(ast: o.LocalizedString, context: any): any {\n return null;\n }\n
visitExternalExpr(ast: o.ExternalExpr, ctx: _ExecutionContext): any {\n return
this.reflector.resolveExternalReference(ast.value);\n }\n visitConditionalExpr(ast: o.ConditionalExpr, ctx:
_ExecutionContext): any {\n if (ast.condition.visitExpression(this, ctx)) {\n return
ast.trueCase.visitExpression(this, ctx);\n } else if (ast.falseCase != null) {\n return
ast.falseCase.visitExpression(this, ctx);\n }\n return null;\n }\n visitNotExpr(ast: o.NotExpr, ctx:
_ExecutionContext): any {\n return !ast.condition.visitExpression(this, ctx);\n }\n visitAssertNotNullExpr(ast:
o.AssertNotNull, ctx: _ExecutionContext): any {\n return ast.condition.visitExpression(this, ctx);\n }\n
visitCastExpr(ast: o.CastExpr, ctx: _ExecutionContext): any {\n return ast.value.visitExpression(this, ctx);\n }\n
visitFunctionExpr(ast: o.FunctionExpr, ctx: _ExecutionContext): any {\n const paramNames =
ast.params.map((param) => param.name);\n return _declareFn(paramNames, ast.statements, ctx, this);\n }\n
visitDeclareFunctionStmt(stmt: o.DeclareFunctionStmt, ctx: _ExecutionContext): any {\n const paramNames =
stmt.params.map((param) => param.name);\n ctx.vars.set(stmt.name, _declareFn(paramNames, stmt.statements,
ctx, this));\n if (stmt.hasModifier(o.StmtModifier.Exported)) {\n ctx.exports.push(stmt.name);\n }\n return
null;\n }\n visitUnaryOperatorExpr(ast: o.UnaryOperatorExpr, ctx: _ExecutionContext): any {\n const rhs = () =>
ast.expr.visitExpression(this, ctx);\n\n switch (ast.operator) {\n case o.UnaryOperator.Plus:\n return
+rhs();\n case o.UnaryOperator.Minus:\n return -rhs();\n default:\n throw new Error(`Unknown
operator ${ast.operator}`);\n }\n }\n visitBinaryOperatorExpr(ast: o.BinaryOperatorExpr, ctx:
_ExecutionContext): any {\n const lhs = () => ast.lhs.visitExpression(this, ctx);\n const rhs = () =>
ast.rhs.visitExpression(this, ctx);\n\n switch (ast.operator) {\n case o.BinaryOperator.Equals:\n return lhs()
== rhs();\n case o.BinaryOperator.Identical:\n return lhs() === rhs();\n case
o.BinaryOperator.NotEquals:\n return lhs() != rhs();\n case o.BinaryOperator.NotIdentical:\n return lhs()
!== rhs();\n case o.BinaryOperator.And:\n return lhs() && rhs();\n case o.BinaryOperator.Or:\n
return lhs() || rhs();\n case o.BinaryOperator.Plus:\n return lhs() + rhs();\n case o.BinaryOperator.Minus:\n
return lhs() - rhs();\n case o.BinaryOperator.Divide:\n return lhs() / rhs();\n case
o.BinaryOperator.Multiply:\n return lhs() * rhs();\n case o.BinaryOperator.Modulo:\n return lhs() %
rhs();\n case o.BinaryOperator.Lower:\n return lhs() < rhs();\n case o.BinaryOperator.LowerEquals:\n
return lhs() <= rhs();\n case o.BinaryOperator.Bigger:\n return lhs() > rhs();\n case
o.BinaryOperator.BiggerEquals:\n return lhs() >= rhs();\n default:\n throw new Error(`Unknown
operator ${ast.operator}`);\n }\n }\n visitReadPropExpr(ast: o.ReadPropExpr, ctx: _ExecutionContext): any {\n
let result: any;\n const receiver = ast.receiver.visitExpression(this, ctx);\n result = receiver[ast.name];\n return
result;\n }\n visitReadKeyExpr(ast: o.ReadKeyExpr, ctx: _ExecutionContext): any {\n const receiver =
ast.receiver.visitExpression(this, ctx);\n const prop = ast.index.visitExpression(this, ctx);\n return
receiver[prop];\n }\n visitLiteralArrayExpr(ast: o.LiteralArrayExpr, ctx: _ExecutionContext): any {\n return
this.visitAllExpressions(ast.entries, ctx);\n }\n visitLiteralMapExpr(ast: o.LiteralMapExpr, ctx:
_ExecutionContext): any {\n const result: {[k: string]: any} = {};\n ast.entries.forEach(entry => result[entry.key]
= entry.value.visitExpression(this, ctx));\n return result;\n }\n visitCommaExpr(ast: o.CommaExpr, context: any):
any {\n const values = this.visitAllExpressions(ast.parts, context);\n return values[values.length - 1];\n }\n
visitAllExpressions(expressions: o.Expression[], ctx: _ExecutionContext): any {\n return expressions.map((expr)
=> expr.visitExpression(this, ctx));\n }\n\n visitAllStatements(statements: o.Statement[], ctx: _ExecutionContext):
ReturnValue|null {\n for (let i = 0; i < statements.length; i++) {\n const stmt = statements[i];\n const val =
stmt.visitStatement(this, ctx);\n if (val instanceof ReturnValue) {\n return val;\n }\n }\n return null;\n
}\n\nfunction _declareFn(\n varNames: string[], statements: o.Statement[], ctx: _ExecutionContext,\n visitor:
StatementInterpreter): Function {\n return (...args: any[]) => _executeFunctionStatements(varNames, args,
statements, ctx, visitor);\n }\n\nconst CATCH_ERROR_VAR = 'error';\nconst CATCH_STACK_VAR =
'stack';\n"/**\n * @license\n * Copyright Google LLC All Rights Reserved.\n *\n * Use of this source code is
governed by an MIT-style license that can be\n * found in the LICENSE file at https://angular.io/license\n

```

```

*\n\nimport { CompileDirectiveMetadata, CompileIdentifierMetadata, CompileNgModuleMetadata,
CompilePipeSummary, CompileProviderMetadata, CompileStylesheetMetadata, CompileTypeSummary,
identifierName, NgModuleJitUrl, ProviderMeta, ProxyClass, sharedStylesheetJitUrl, templateJitUrl,
templateSourceUrl} from './compile_metadata';\nimport { CompileReflector} from './compile_reflector';\nimport
{ CompilerConfig} from './config';\nimport { ConstantPool} from './constant_pool';\nimport { Type} from
'./core';\nimport { CompileMetadataResolver} from './metadata_resolver';\nimport { NgModuleCompiler} from
'./ng_module_compiler';\nimport * as ir from './output/output_ast';\nimport { interpretStatements} from
'./output/output_interpreter';\nimport { JitEvaluator} from './output/output_jit';\nimport { CompiledStylesheet,
StyleCompiler} from './style_compiler';\nimport { SummaryResolver} from './summary_resolver';\nimport
{ TemplateAst} from './template_parser/template_ast';\nimport { TemplateParser} from
'./template_parser/template_parser';\nimport { Console, OutputContext, stringify, SyncAsync} from './util';\nimport
{ ViewCompiler} from './view_compiler/view_compiler';\n\nexport interface ModuleWithComponentFactories {\n
ngModuleFactory: object;\n componentFactories: object[];\n}\n\n**\n * An internal module of the Angular
compiler that begins with component types,\n * extracts templates, and eventually produces a compiled version of
the component\n * ready for linking into an application.\n *\n * @security When compiling templates at runtime,
you must ensure that the entire template comes\n * from a trusted source. Attacker-controlled data introduced by a
template could expose your\n * application to XSS risks. For more detail, see the [Security
Guide](http://g.co/ng/security).\n *\nexport class JitCompiler {\n private _compiledTemplateCache = new
Map<Type, CompiledTemplate>();\n private _compiledHostTemplateCache = new Map<Type,
CompiledTemplate>();\n private _compiledDirectiveWrapperCache = new Map<Type, Type>();\n private
_compiledNgModuleCache = new Map<Type, object>();\n private _sharedStylesheetCount = 0;\n private
_addedAotSummaries = new Set<() => any[]>();\n\n constructor(\n private _metadataResolver:
CompileMetadataResolver, private _templateParser: TemplateParser,\n private _styleCompiler: StyleCompiler,
private _viewCompiler: ViewCompiler,\n private _ngModuleCompiler: NgModuleCompiler, private
_summaryResolver: SummaryResolver<Type>,\n private _reflector: CompileReflector, private _jitEvaluator:
JitEvaluator,\n private _compilerConfig: CompilerConfig, private _console: Console,\n private
getExtraNgModuleProviders: (ngModule: any) => CompileProviderMetadata[]) {\n\n
compileModuleSync(moduleType: Type): object {\n return
SyncAsync.assertSync(this._compileModuleAndComponents(moduleType, true));\n }\n\n
compileModuleAsync(moduleType: Type): Promise<object> {\n return
Promise.resolve(this._compileModuleAndComponents(moduleType, false));\n }\n\n
compileModuleAndAllComponentsSync(moduleType: Type): ModuleWithComponentFactories {\n return
SyncAsync.assertSync(this._compileModuleAndAllComponents(moduleType, true));\n }\n\n
compileModuleAndAllComponentsAsync(moduleType: Type): Promise<ModuleWithComponentFactories> {\n
return Promise.resolve(this._compileModuleAndAllComponents(moduleType, false));\n }\n\n
getComponentFactory(component: Type): object {\n const summary =
this._metadataResolver.getDirectiveSummary(component);\n return summary.componentFactory as object;\n
}\n\n loadAotSummaries(summaries: () => any[]) {\n this.clearCache();\n
this._addAotSummaries(summaries);\n }\n\n private _addAotSummaries(fn: () => any[]) {\n if
(this._addedAotSummaries.has(fn)) {\n return;\n }\n this._addedAotSummaries.add(fn);\n const summaries
= fn();\n for (let i = 0; i < summaries.length; i++) {\n const entry = summaries[i];\n if (typeof entry ===
'function') {\n this._addAotSummaries(entry);\n } else {\n const summary = entry as
CompileTypeSummary;\n this._summaryResolver.addSummary(\n {symbol: summary.type.reference,
metadata: null, type: summary});\n }\n }\n }\n\n hasAotSummary(ref: Type) {\n return
!!this._summaryResolver.resolveSummary(ref);\n }\n\n private _filterJitIdentifiers(ids:
CompileIdentifierMetadata[]): any[] {\n return ids.map(mod => mod.reference).filter(ref =>
!this.hasAotSummary(ref));\n }\n\n private _compileModuleAndComponents(moduleType: Type, isSync:
boolean): SyncAsync<object> {\n return SyncAsync.then(this._loadModules(moduleType, isSync), () => {\n

```

```

this._compileComponents(moduleType, null);\n    return this._compileModule(moduleType);\n  });\n }\n\n private _compileModuleAndAllComponents(moduleType: Type, isSync: boolean):\n SyncAsync<ModuleWithComponentFactories> {\n   return SyncAsync.then(this._loadModules(moduleType,\n isSync), () => {\n     const componentFactories: object[] = [];\n     this._compileComponents(moduleType,\n componentFactories);\n     return {\n       ngModuleFactory: this._compileModule(moduleType),\n componentFactories: componentFactories\n     };\n   });\n }\n\n private _loadModules(mainModule: any, isSync:\n boolean): SyncAsync<any> {\n   const loading: Promise<any>[] = [];\n   const mainNgModule =\n this._metadataResolver.getNgModuleMetadata(mainModule!);\n   // Note: for runtime compilation, we want to\n transitively compile all modules,\n   // so we also need to load the declared directives / pipes for all nested\n modules.\n   this._filterJitIdentifiers(mainNgModule.transitiveModule.modules).forEach((nestedNgModule) => {\n     // getNgModuleMetadata only returns null if the value passed in is not an NgModule\n     const moduleMeta =\n this._metadataResolver.getNgModuleMetadata(nestedNgModule!);\n\n     this._filterJitIdentifiers(moduleMeta.declaredDirectives).forEach((ref) => {\n       const promise =\n this._metadataResolver.loadDirectiveMetadata(moduleMeta.type.reference, ref, isSync);\n       if (promise) {\n         loading.push(promise);\n       }\n     });\n     this._filterJitIdentifiers(moduleMeta.declaredPipes)\n .forEach((ref) => this._metadataResolver.getOrLoadPipeMetadata(ref));\n   });\n   return SyncAsync.all(loading);\n }\n\n private _compileModule(moduleType: Type): object {\n   let ngModuleFactory =\n this._compiledNgModuleCache.get(moduleType!);\n   if (!ngModuleFactory) {\n     const moduleMeta =\n this._metadataResolver.getNgModuleMetadata(moduleType!);\n     // Always provide a bound Compiler\n     const\n extraProviders = this.getExtraNgModuleProviders(moduleMeta.type.reference);\n     const outputCtx =\n createOutputContext();\n     const compileResult = this._ngModuleCompiler.compile(outputCtx, moduleMeta,\n extraProviders);\n     ngModuleFactory = this._interpretOrJit(\n       ngModuleJitUrl(moduleMeta),\n outputCtx.statements)[compileResult.ngModuleFactoryVar];\n\n     this._compiledNgModuleCache.set(moduleMeta.type.reference, ngModuleFactory);\n   }\n   return\n ngModuleFactory;\n }\n\n /**\n  * @internal\n  */\n private _compileComponents(mainModule: Type,\n allComponentFactories: object[]|null) {\n   const ngModule =\n this._metadataResolver.getNgModuleMetadata(mainModule!);\n   const moduleByJitDirective = new Map<any,\n CompileNgModuleMetadata>();\n   const templates = new Set<CompiledTemplate>();\n\n   const transJitModules\n = this._filterJitIdentifiers(ngModule.transitiveModule.modules);\n   transJitModules.forEach((localMod) => {\n     const localModuleMeta = this._metadataResolver.getNgModuleMetadata(localMod!);\n\n     this._filterJitIdentifiers(localModuleMeta.declaredDirectives).forEach((dirRef) => {\n       moduleByJitDirective.set(dirRef, localModuleMeta);\n       const dirMeta =\n this._metadataResolver.getDirectiveMetadata(dirRef);\n       if (dirMeta.isComponent) {\n         templates.add(this._createCompiledTemplate(dirMeta, localModuleMeta));\n         if (allComponentFactories) {\n           const template =\n this._createCompiledHostTemplate(dirMeta.type.reference, localModuleMeta);\n           templates.add(template);\n           allComponentFactories.push(dirMeta.componentFactory as object);\n         }\n       }\n     });\n   });\n   transJitModules.forEach((localMod) => {\n     const localModuleMeta =\n this._metadataResolver.getNgModuleMetadata(localMod!);\n\n     this._filterJitIdentifiers(localModuleMeta.declaredDirectives).forEach((dirRef) => {\n       const dirMeta =\n this._metadataResolver.getDirectiveMetadata(dirRef);\n       if (dirMeta.isComponent) {\n         dirMeta.entryComponents.forEach((entryComponentType) => {\n           const moduleMeta =\n moduleByJitDirective.get(entryComponentType.componentType!);\n           templates.add(\n this._createCompiledHostTemplate(entryComponentType.componentType, moduleMeta));\n         });\n       }\n     });\n     localModuleMeta.entryComponents.forEach((entryComponentType) => {\n       if\n (!this.hasAotSummary(entryComponentType.componentType)) {\n         const moduleMeta =\n moduleByJitDirective.get(entryComponentType.componentType!);\n         templates.add(\n this._createCompiledHostTemplate(entryComponentType.componentType, moduleMeta));\n       }\n     });\n     templates.forEach((template) => this._compileTemplate(template));\n   });\n   clearCacheFor(type: Type) {\n

```



```

this._compiledNgModuleCache.delete(type);\n this._metadataResolver.clearCacheFor(type);\n
this._compiledHostTemplateCache.delete(type);\n const compiledTemplate =
this._compiledTemplateCache.get(type);\n if (compiledTemplate) {\n
this._compiledTemplateCache.delete(type);\n }\n\n clearCache(): void {\n // Note: don't clear the
_addedAotSummaries, as they don't change!\n this._metadataResolver.clearCache();\n
this._compiledTemplateCache.clear();\n this._compiledHostTemplateCache.clear();\n
this._compiledNgModuleCache.clear();\n }\n\n private _createCompiledHostTemplate(compType: Type,
ngModule: CompileNgModuleMetadata):\n CompiledTemplate {\n if (!ngModule) {\n throw new
Error(`Component ${\n stringify(\n compType)} is not part of any NgModule or the module has not
been imported into your module.`);\n }\n let compiledTemplate =
this._compiledHostTemplateCache.get(compType);\n if (!compiledTemplate) {\n const compMeta =
this._metadataResolver.getDirectiveMetadata(compType);\n assertComponent(compMeta);\n\n const
hostMeta = this._metadataResolver.getHostComponentMetadata(\n compMeta, (compMeta.componentFactory
as any).viewDefFactory);\n compiledTemplate =\n new CompiledTemplate(true, compMeta.type,
hostMeta, ngModule, [compMeta.type]);\n this._compiledHostTemplateCache.set(compType,
compiledTemplate);\n }\n return compiledTemplate;\n }\n\n private _createCompiledTemplate(\n
compMeta: CompileDirectiveMetadata, ngModule: CompileNgModuleMetadata): CompiledTemplate {\n let
compiledTemplate = this._compiledTemplateCache.get(compMeta.type.reference);\n if (!compiledTemplate) {\n
assertComponent(compMeta);\n compiledTemplate = new CompiledTemplate(\n false, compMeta.type,
compMeta, ngModule, ngModule.transitiveModule.directives);\n
this._compiledTemplateCache.set(compMeta.type.reference, compiledTemplate);\n }\n return
compiledTemplate;\n }\n\n private _compileTemplate(template: CompiledTemplate) {\n if
(template.isCompiled) {\n return;\n }\n const compMeta = template.compMeta;\n const
externalStylesheetsByModuleUrl = new Map<string, CompiledStylesheet>();\n const outputContext =
createOutputContext();\n const componentStylesheet = this._styleCompiler.compileComponent(outputContext,
compMeta);\n compMeta.template!.externalStylesheets.forEach((stylesheetMeta) => {\n const
compiledStylesheet =\n this._styleCompiler.compileStyles(createOutputContext(), compMeta,
stylesheetMeta);\n externalStylesheetsByModuleUrl.set(stylesheetMeta.moduleUrl!, compiledStylesheet);\n
});\n this._resolveStylesCompileResult(componentStylesheet, externalStylesheetsByModuleUrl);\n const pipes =
template.ngModule.transitiveModule.pipes.map(\n pipe =>
this._metadataResolver.getPipeSummary(pipe.reference));\n const { template: parsedTemplate, pipes: usedPipes }
=\n this._parseTemplate(compMeta, template.ngModule, template.directives);\n const compileResult =
this._viewCompiler.compileComponent(\n outputContext, compMeta, parsedTemplate,
ir.variable(componentStylesheet.stylesVar),\n usedPipes);\n const evalResult = this._interpretOrJit(\n
template.jitUrl(template.ngModule.type, template.compMeta), outputContext.statements);\n const viewClass =
evalResult[compileResult.viewClassVar];\n const rendererType = evalResult[compileResult.rendererTypeVar];\n
template.compiled(viewClass, rendererType);\n }\n\n private _parseTemplate(\n compMeta:
CompileDirectiveMetadata, ngModule: CompileNgModuleMetadata,\n directiveIdentifiers:
CompileIdentifierMetadata[]):\n { template: TemplateAst[], pipes: CompilePipeSummary[] } {\n // Note: ! is ok
here as components always have a template.\n const preserveWhitespaces = compMeta.template
!.preserveWhitespaces;\n const directives =\n directiveIdentifiers.map(dir =>
this._metadataResolver.getDirectiveSummary(dir.reference));\n const pipes =
ngModule.transitiveModule.pipes.map(\n pipe => this._metadataResolver.getPipeSummary(pipe.reference));\n
return this._templateParser.parse(\n compMeta, compMeta.template!.htmlAst!, directives, pipes,
ngModule.schemas,\n templateUrl(ngModule.type, compMeta, compMeta.template!),
preserveWhitespaces);\n }\n\n private _resolveStylesCompileResult(\n result: CompiledStylesheet,
externalStylesheetsByModuleUrl: Map<string, CompiledStylesheet>) {\n result.dependencies.forEach((dep, i) =>
{\n const nestedCompileResult = externalStylesheetsByModuleUrl.get(dep.moduleUrl!);\n const

```

```

nestedStylesArr = this._resolveAndEvalStylesCompileResult(\n      nestedCompileResult,
externalStylesheetsByModuleUrl);\n      dep.setValue(nestedStylesArr);\n    });\n  }\n  private
_resolveAndEvalStylesCompileResult(\n    result: CompiledStylesheet,\n    externalStylesheetsByModuleUrl:
Map<string, CompiledStylesheet>): string[] {\n    this._resolveStylesCompileResult(result,
externalStylesheetsByModuleUrl);\n    return this._interpretOrJit(\n      sharedStylesheetJitUrl(result.meta,
this._sharedStylesheetCount++),\n      result.outputCtx.statements)[result.stylesVar];\n  }\n  private
_interpretOrJit(sourceUrl: string, statements: ir.Statement[]): any {\n    if (!this._compilerConfig.useJit) {\n      return interpretStatements(statements, this._reflector);\n    } else {\n      return
this._jitEvaluator.evaluateStatements(\n        sourceUrl, statements, this._reflector,
this._compilerConfig.jitDevMode);\n    }\n  }\n}\n\nclass CompiledTemplate {\n  private _viewClass: Function =
null!;\n  isCompiled = false;\n  constructor(\n    public isHost: boolean, public compType:
CompileIdentifierMetadata,\n    public compMeta: CompileDirectiveMetadata, public ngModule:
CompileNgModuleMetadata,\n    public directives: CompileIdentifierMetadata[]) {\n    compiled(viewClass:
Function, rendererType: any) {\n      this._viewClass = viewClass;\n      (<ProxyClass>this.compMeta.componentViewType).setDelegate(viewClass);\n      for (let prop in rendererType) {\n
        (<any>this.compMeta.rendererType)[prop] = rendererType[prop];\n      }\n      this.isCompiled = true;\n    }\n  }\n  function assertComponent(meta: CompileDirectiveMetadata) {\n    if (!meta.isComponent) {\n      throw new
Error(\n        `Could not compile '${identifierName(meta.type)}' because it is not a component.`);\n    }\n  }\n  function createOutputContext(): OutputContext {\n    const importExpr = (symbol: any) =>\n      ir.importExpr({name: identifierName(symbol), moduleName: null, runtime: symbol});\n    return {statements: [],
genFilePath: "", importExpr, constantPool: new ConstantPool()};\n  }\n}\n\n"/**\n * @license\n * Copyright Google LLC
All Rights Reserved.\n * Use of this source code is governed by an MIT-style license that can be\n * found in
the LICENSE file at https://angular.io/license\n */\n\nimport {Component} from './core';\nimport * as o from
'/output/output_ast';\n\n/**\n * Provides access to reflection data about symbols that the compiler needs.\n
*/\nexport abstract class CompileReflector {\n  abstract parameters(typeOrFunc: /*Type*/ any): any[][];\n  abstract
annotations(typeOrFunc: /*Type*/ any): any[];\n  abstract shallowAnnotations(typeOrFunc: /*Type*/ any): any[];\n
  abstract tryAnnotations(typeOrFunc: /*Type*/ any): any[];\n  abstract propMetadata(typeOrFunc: /*Type*/ any):
{[key: string]: any};\n  abstract hasLifecycleHook(type: any, lcProperty: string): boolean;\n  abstract
guards(typeOrFunc: /*Type*/ any): {[key: string]: any};\n  abstract componentModuleUrl(type: /*Type*/ any,
cmpMetadata: Component): string;\n  abstract resolveExternalReference(ref: o.ExternalReference):
any;\n}\n\n"/**\n * @license\n * Copyright Google LLC All Rights Reserved.\n * Use of this source code is
governed by an MIT-style license that can be\n * found in the LICENSE file at https://angular.io/license\n
*/\n\n/**\n * Create a {@link UrlResolver} with no package prefix.\n */\nexport function
createUrlResolverWithoutPackagePrefix(): UrlResolver {\n  return new UrlResolver();\n}\n\nexport function
createOfflineCompileUrlResolver(): UrlResolver {\n  return new UrlResolver('.');\n}\n\n"/**\n * Used by the {@link
Compiler} when resolving HTML and CSS template URLs.\n * This class can be overridden by the application
developer to create custom behavior.\n * See {@link Compiler}\n * ## Example\n * {\n *   @example
compiler/ts/url_resolver/url_resolver.ts region='url_resolver'\n * }\n * @security When compiling templates at
runtime, you must\n * ensure that the entire template comes from a trusted source.\n * Attacker-controlled data
introduced by a template could expose your\n * application to XSS risks. For more detail, see the [Security
Guide](http://g.co/ng/security).\n */\nexport interface UrlResolver {\n  resolve(baseUrl: string, url: string):
string;\n}\n\nexport interface UrlResolverCtor {\n  new(packagePrefix?: string|null): UrlResolver;\n}\n\nexport
const UrlResolver: UrlResolverCtor = class UrlResolverImpl {\n  constructor(private _packagePrefix: string|null =
null) {\n    /**\n     * Resolves the `url` given the `baseUrl`:\n     * - when the `url` is null, the `baseUrl` is returned,\n
     * - if `url` is relative ('path/to/here', './path/to/here'), the resolved url is a combination of\n     * `baseUrl` and `url`,\n
     * - if `url` is absolute (it has a scheme: 'http://', 'https://' or start with '/'), the `url` is\n     * returned as is (ignoring the
`baseUrl`)\n     */\n    resolve(baseUrl: string, url: string): string {\n      let resolvedUrl = url;\n      if (baseUrl != null &&
baseUrl.length > 0) {\n        resolvedUrl = _resolveUrl(baseUrl, resolvedUrl);\n      }\n      const resolvedParts =

```

```

_split(resolvedUrl);\n let prefix = this._packagePrefix;\n if (prefix != null && resolvedParts != null &&\n
resolvedParts[_ComponentIndex.Scheme] == 'package') {\n let path = resolvedParts[_ComponentIndex.Path];\n
prefix = prefix.replace(/\\/+$/, "");\n path = path.replace(/\\/+/, "");\n return `${prefix}/${path}`;\n }\n
return resolvedUrl;\n };\n\n/**\n * Extract the scheme of a URL.\n *^\nexport function getUrlScheme(url:\n
string): string {\n const match = _split(url);\n return (match && match[_ComponentIndex.Scheme]) || "";\n}\n\n//\n
The code below is adapted from Traceur:\n// https://github.com/google/traceur-\n
compiler/blob/9511c1dafa972bf0de1202a8a863bad02f0f95a8/src/runtime/url.js\n\n/**\n * Builds a URI string from\n
already-encoded parts.\n *^\n * No encoding is performed. Any component may be omitted as either null or\n
* undefined.\n *^\n * @param opt_scheme The scheme such as 'http'.\n * @param opt_userInfo The user name before\n
the '@'.\n * @param opt_domain The domain such as 'www.google.com', already\n * URI-encoded.\n * @param\n
opt_port The port number.\n * @param opt_path The path, already URI-encoded. If it is not\n * empty, it must\n
begin with a slash.\n * @param opt_queryData The URI-encoded query data.\n * @param opt_fragment The URI-\n
encoded fragment identifier.\n * @return The fully combined URI.\n *^\nfunction _buildFromEncodedParts(\n
opt_scheme?: string, opt_userInfo?: string, opt_domain?: string, opt_port?: string,\n
opt_path?: string,\n
opt_queryData?: string, opt_fragment?: string): string {\n const out: string[] = [];\n\n if (opt_scheme != null) {\n
out.push(opt_scheme + ':');\n }\n\n if (opt_domain != null) {\n out.push("//");\n\n if (opt_userInfo != null) {\n
out.push(opt_userInfo + '@');\n }\n\n out.push(opt_domain);\n\n if (opt_port != null) {\n out.push(':'+\n
opt_port);\n }\n }\n\n if (opt_path != null) {\n out.push(opt_path);\n }\n\n if (opt_queryData != null) {\n
out.push('?'+opt_queryData);\n }\n\n if (opt_fragment != null) {\n out.push('#'+opt_fragment);\n }\n\n return\n
out.join("");\n}\n\n/**\n * A regular expression for breaking a URI into its component parts.\n *^\n * {\n @link\n
http://www.gbiv.com/protocols/uri/rfc/rfc3986.html#RFC2234} says\n * As the "first-match-wins" algorithm is\n
identical to the "greedy"\n * disambiguation method used by POSIX regular expressions, it is natural and\n
* commonplace to use a regular expression for parsing the potential five\n * components of a URI reference.\n
*^\n * The following line is the regular expression for breaking-down a\n * well-formed URI reference into its\n
components.\n *^\n * <pre>\n * ^([\^/?#]+):?([\^/?#]*)?([\^/?#]*)(\|?([\^#]*)?)?(#(?:.)*)?\n * 12 3 4 5\n
6 7 8 9\n * </pre>\n *^\n * The numbers in the second line above are only to assist readability; they\n
* indicate the reference points for each subexpression (i.e., each paired\n * parenthesis). We refer to the value matched for\n
subexpression <n> as $<n>.\n * For example, matching the above expression to\n * <pre>\n * http://www.ics.uci.edu/pub/ietf/uri/#Related\n * </pre>\n * results in the following subexpression matches:\n *^\n * <pre>\n * $1 = http\n * $2 = http\n * $3 = //www.ics.uci.edu\n * $4 = www.ics.uci.edu\n * $5 =\n
/pub/ietf/uri/\n * $6 = <undefined>\n * $7 = <undefined>\n * $8 = #Related\n * $9 = Related\n * </pre>\n *^\n
* where <undefined> indicates that the component is not present, as is the\n * case for the query component in the\n
above example. Therefore, we can\n * determine the value of the five components as\n * <pre>\n * scheme =\n
$2\n * authority = $4\n * path = $5\n * query = $7\n * fragment = $9\n * </pre>\n *^\n * The regular\n
expression has been modified slightly to expose the\n * userInfo, domain, and port separately from the authority.\n
*^\n * The modified version yields\n * <pre>\n * $1 = http scheme\n * $2 = <undefined> userInfo -\\\n * $3 = www.ics.uci.edu domain | authority\n * $4 = <undefined> port -/\n * $5 = /pub/ietf/uri/ path\n * $6 = <undefined> query without ?\n * $7 = Related fragment without #\n * </pre>\n *^\n * @internal\n
*^\nconst _splitRe = new RegExp(\n
'^'+\n
'(?'+\n
'([\^/?#.]+)' + // scheme - ignore special characters\n
// used by other URL parts such as :,\n
// userInfo\n
'([\|w|d|_|u0100-|uffff.%]*)' + // domain - restrict to letters,\n
// digits, dashes, dots, percent\n
// escapes, and unicode characters.\n
'(?::([0-9]+))?' +\n
// port\n
')?'+\n
'([\^?#]+)?' + // path\n
'(?::\|?([\^#]*)?)?'+ // query\n
'(?:(#(?:.)*))?' + //\n
fragment\n
'$');\n\n/**\n * The index of each URI component in the return value of goog.uri.utils.split.\n *^\n * @enum\n
{number}\n *^\nenum _ComponentIndex {\n
Scheme = 1,\n
UserInfo,\n
Domain,\n
Port,\n
Path,\n
QueryData,\n
Fragment\n
}\n\n/**\n * Splits a URI into its component parts.\n *^\n * Each component can be accessed via the\n
component indices; for example:\n *^\n * <pre>\n *^\n * goog.uri.utils.split(someStr)[goog.uri.utils.ComponentIndex.QUERY_DATA];\n * </pre>\n *^\n * @param uri The

```

URI string to examine.
 @return Each component still URI-encoded.
 Each component that is present will contain the encoded value, whereas components that are not present will be undefined or empty, depending on the browser's regular expression implementation. Never null, since arbitrary strings may still look like path names.

```

function _split(uri: string): Array<string|any> {
  return uri.match(_splitRe!);
}

```

Removes dot segments in given path component, as described in RFC 3986, section 5.2.4.

```

@param path A non-empty path component.
@return Path component with removed dot segments.
function
_removeDotSegments(path: string): string {
  if (path === '/') return '/';
  const leadingSlash = path[0] === '/' ? '/' : '';
  const trailingSlash = path[path.length - 1] === '/' ? '/' : '';
  const segments = path.split('/');
  const out: string[] = [];
  let up = 0;
  for (let pos = 0; pos < segments.length; pos++) {
    const segment = segments[pos];
    switch (segment) {
      case '':
      case '.':
        break;
      case '..':
        if (out.length > 0) {
          out.pop();
        } else {
          up++;
        }
        break;
      default:
        out.push(segment);
    }
  }
  if (leadingSlash === '') {
    while (up-- > 0) {
      out.unshift('.');
    }
  }
  if (out.length === 0) out.push('.');
  return leadingSlash + out.join('/') + trailingSlash;
}

```

Takes an array of the parts from split and canonicalizes the path part and then joins all the parts.

```

function _joinAndCanonicalizePath(parts: any[]): string {
  let path = parts[_ComponentIndex.Path];
  path = path === null ? '' : _removeDotSegments(path);
  parts[_ComponentIndex.Path] = path;
  return _buildFromEncodedParts(
    parts[_ComponentIndex.Scheme],
    parts[_ComponentIndex.UserInfo],
    parts[_ComponentIndex.Domain],
    parts[_ComponentIndex.Port],
    path,
    parts[_ComponentIndex.QueryData],
    parts[_ComponentIndex.Fragment]);
}

```

Resolves a URL.

```

@param base The URL acting as the base URL.
@param to The URL to resolve.
function
_resolveUrl(base: string, url: string): string {
  const parts = _split(encodeURI(url));
  const baseParts = _split(base);
  if (parts[_ComponentIndex.Scheme] != null) {
    return _joinAndCanonicalizePath(parts);
  } else {
    parts[_ComponentIndex.Scheme] = baseParts[_ComponentIndex.Scheme];
  }
  for (let i = _ComponentIndex.Scheme; i <= _ComponentIndex.Port; i++) {
    if (parts[i] == null) {
      parts[i] = baseParts[i];
    }
  }
  if (parts[_ComponentIndex.Path][0] === '/') {
    return _joinAndCanonicalizePath(parts);
  }
  let path = baseParts[_ComponentIndex.Path];
  if (path == null) path = '/';
  const index = path.lastIndexOf('/');
  path = path.substring(0, index + 1) + parts[_ComponentIndex.Path];
  parts[_ComponentIndex.Path] = path;
  return _joinAndCanonicalizePath(parts);
}

```

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```

import {analyzeAndValidateNgModules} from '../aot/compiler';
import {createAotUrlResolver} from '../aot/compiler_factory';
import {StaticReflector} from '../aot/static_reflector';
import {StaticSymbolCache} from '../aot/static_symbol';
import {StaticSymbolResolver, StaticSymbolResolverHost} from '../aot/static_symbol_resolver';
import {AotSummaryResolver, AotSummaryResolverHost} from '../aot/summary_resolver';
import {CompileDirectiveMetadata} from '../compile_metadata';
import {CompilerConfig} from '../config';
import {ViewEncapsulation} from '../core';
import {DirectiveNormalizer} from '../directive_normalizer';
import {DirectiveResolver} from '../directive_resolver';
import {CompileMetadataResolver} from '../metadata_resolver';
import {HtmlParser} from '../ml_parser/html_parser';
import {InterpolationConfig} from '../ml_parser/interpolation_config';
import {NgModuleResolver} from '../ng_module_resolver';
import {ParseError} from '../parse_util';
import {PipeResolver} from '../pipe_resolver';
import {DomElementSchemaRegistry} from '../schema/dom_element_schema_registry';
import {syntaxError} from '../util';
import {MessageBundle} from '../message_bundle';

```

The host of the Extractor disconnects the implementation from TypeScript / other language services and from underlying file systems.

```

export interface ExtractorHost extends
  StaticSymbolResolverHost,
  AotSummaryResolverHost {
  /**
   * Converts a path that refers to a resource into an absolute filePath that can be later on used for loading the resource via `loadResource`.
   */
  resourceNameToFileName(path: string, containingFile: string): string|null;
  /**
   * Loads a resource (e.g. html / css)
   */
  loadResource(path: string): Promise<string>|string;
}
export class Extractor {
  constructor(
    public host: ExtractorHost,
    private staticSymbolResolver: StaticSymbolResolver,
    private messageBundle:

```

```

MessageBundle, private metadataResolver: CompileMetadataResolver) {}
extract(rootFiles: string[]):
Promise<MessageBundle> {
  const {files, ngModules} = analyzeAndValidateNgModules(
    rootFiles,
    this.host, this.staticSymbolResolver, this.metadataResolver);
  return Promise.all(ngModules.map(
    ngModule => this.metadataResolver.loadNgModuleDirectiveAndPipeMetadata(
      ngModule.type.reference, false)))
    .then(() => {
      const errors: ParseError[] = [];
      files.forEach(file => {
        const compMetas: CompileDirectiveMetadata[] = [];
        file.directives.forEach(directiveType => {
          const dirMeta =
            this.metadataResolver.getDirectiveMetadata(directiveType);
          if (dirMeta && dirMeta.isComponent) {
            compMetas.push(dirMeta);
          }
        });
        compMetas.forEach(compMeta => {
          const html = compMeta.template !.template !;
          // Template URL points to either an HTML or TS file
          // depending on whether the file is used with `templateUrl:` or `template:`,
          // respectively.
          const templateUrl = compMeta.template !.templateUrl!;
          const interpolationConfig =
            InterpolationConfig.fromArray(compMeta.template !.interpolation);
          errors.push(...this.messageBundle.updateFromTemplate(
            html, templateUrl, interpolationConfig!));
        });
        if (errors.length) {
          throw new Error(errors.map(e => e.toString()).join('\n'));
        }
        return this.messageBundle;
      });
    });
  static create(host: ExtractorHost, locale: string|null):
    {extractor: Extractor, staticReflector: StaticReflector} {
    const htmlParser = new HtmlParser();
    const urlResolver = createAotUrlResolver(host);
    const symbolCache = new StaticSymbolCache();
    const summaryResolver = new AotSummaryResolver(host, symbolCache);
    const staticSymbolResolver = new
      StaticSymbolResolver(host, symbolCache, summaryResolver);
    const staticReflector = new
      StaticReflector(summaryResolver, staticSymbolResolver);
    const config = new
      CompilerConfig({defaultEncapsulation: ViewEncapsulation.Emulated, useJit: false});
    const normalizer = new
      DirectiveNormalizer({get: (url: string) => host.loadResource(url)}, urlResolver, htmlParser, config);
    const elementSchemaRegistry = new DomElementSchemaRegistry();
    const resolver = new
      CompileMetadataResolver(
        config, htmlParser, new NgModuleResolver(staticReflector),
        new DirectiveResolver(staticReflector), new PipeResolver(staticReflector),
        summaryResolver, elementSchemaRegistry, normalizer, console, symbolCache, staticReflector);
    // TODO(vic): implicit tags & attributes
    const messageBundle = new MessageBundle(htmlParser, [], {}, locale);
    const extractor = new
      Extractor(host, staticSymbolResolver, messageBundle, resolver);
    return {extractor, staticReflector};
  }
}
/**
 * @license
 * Copyright Google LLC All Rights Reserved.
 * Use of this source code is governed by an MIT-style license that can be
 * found in the LICENSE file at https://angular.io/license
 */
export {computeMsgId} from './digest';
export {Extractor, ExtractorHost} from './extractor';
export {I18NHtmlParser} from './i18n_html_parser';
export {MessageBundle} from './message_bundle';
export {Serializer} from './serializers/serializer';
export {Xliff} from './serializers/xliff';
export {Xliff2} from './serializers/xliff2';
export {Xmb} from './serializers/xmb';
export {Xtb} from './serializers/xtb';
/**
 * @license
 * Copyright Google LLC All Rights Reserved.
 * Use of this source code is governed by an MIT-style license that can be
 * found in the LICENSE file at https://angular.io/license
 */
import {ChangeDetectionStrategy, ViewEncapsulation} from '../core';
import {InterpolationConfig} from '../ml_parser/interpolation_config';
import * as o from '../output/output_ast';
import {ParseSourceSpan} from '../parse_util';
import * as t from './r3_ast';
import {R3DependencyMetadata} from './r3_factory';
import {R3Reference} from './util';
/**
 * Information needed to compile a directive for the render3 runtime.
 */
export interface R3DirectiveMetadata {
  /**
   * Name of the directive type.
   */
  name: string;
  /**
   * An expression representing a reference to the directive itself.
   */
  type: R3Reference;
  /**
   * An expression representing a reference to the directive being compiled, intended for use within
   * a class definition itself.
   */
  type: R3Reference;
  /**
   * This can differ from the outer `type` if the class is being compiled by ngcc and is inside
   * an IIFE structure that uses a different name internally.
   */
  internalType: o.Expression;
  /**
   * Number of generic type parameters of the type itself.
   */
  typeArgumentCount: number;
  /**
   * A source span for the directive type.
   */
  typeSourceSpan: ParseSourceSpan;
  /**
   * Dependencies of the directive's

```

constructor.
 deps: R3DependencyMetadata[]
 invalid|null
 * Unparsed selector of the directive, or `null` if there was no selector.
 selector: string|null
 * Information about the content queries made by the directive.
 queries: R3QueryMetadata[]
 * Information about the view queries made by the directive.
 viewQueries: R3QueryMetadata[]
 * Mappings indicating how the directive interacts with its host element (host bindings, listeners, etc).
 host: R3HostMetadata
 * Information about usage of specific lifecycle events which require special treatment in the code generator.
 lifecycle: {
 * Whether the directive uses NgOnChanges.
 usesOnChanges: boolean
 }
 * A mapping of input field names to the property names.
 inputs: {[field: string]: string|[string, string]}
 * A mapping of output field names to the property names.
 outputs: {[field: string]: string}
 * Whether or not the component or directive inherits from another class
 usesInheritance: boolean
 * Whether or not the component or directive inherits its entire decorator from its base class.
 fullInheritance: boolean
 * Reference name under which to export the directive's type in a template, if any.
 exportAs: string[]|null
 * The list of providers defined in the directive.
 providers: o.Expression[]
 * Information needed to compile a component for the render3 runtime.
 export interface R3ComponentMetadata extends R3DirectiveMetadata {
 * Information about the component's template.
 template: {
 * Parsed nodes of the template.
 nodes: t.Node[]
 * Any ng-content selectors extracted from the template. Contains `null` when an ng-content element without selector is present.
 ngContentSelectors: string[]
 }
 * A map of pipe names to an expression referencing the pipe type which are in the scope of the compilation.
 pipes: Map<string, o.Expression>
 * A list of directive selectors and an expression referencing the directive type which are in the scope of the compilation.
 directives: {selector: string, expression: o.Expression}[]
 * Whether to wrap the 'directives' and/or 'pipes' array, if one is generated, in a closure.
 * This is done when the directives or pipes contain forward references.
 wrapDirectivesAndPipesInClosure: boolean
 * A collection of styling data that will be applied and scoped to the component.
 styles: string[]
 * An encapsulation policy for the template and CSS styles. One of:
 - `ViewEncapsulation.Emulated`: Use shimmed CSS that emulates the native behavior.
 - `ViewEncapsulation.None`: Use global CSS without any encapsulation.
 - `ViewEncapsulation.ShadowDom`: Use the latest ShadowDOM API to natively encapsulate styles into a shadow root.
 encapsulation: ViewEncapsulation
 * A collection of animation triggers that will be used in the component template.
 animations: o.Expression[]
 * The list of view providers defined in the component.
 viewProviders: o.Expression[]
 * Path to the .ts file in which this template's generated code will be included, relative to the compilation root. This will be used to generate identifiers that need to be globally unique in certain contexts (such as g3).
 relativeContextFilePath: string
 * Whether translation variable name should contain external message id (used by Closure Compiler's output of `goog.getMsg` for transition period).
 i18nUseExternalIds: boolean
 * Overrides the default interpolation start and end delimiters ({{ and }}).
 interpolation: InterpolationConfig
 * Strategy used for detecting changes in the component.
 changeDetection?: ChangeDetectionStrategy
 * Information needed to compile a query (view or content).
 export interface R3QueryMetadata {
 * Name of the property on the class to update with query results.
 propertyName: string
 * Whether to read only the first matching result, or an array of results.
 first: boolean
 * Either an expression representing a type or `InjectionToken` for the query predicate, or a set of string selectors.
 predicate: o.Expression|string[]
 * Whether to include only direct children or all descendants.
 descendants: boolean
 * An expression representing a type to read from each matched node, or null if the default value for a given node is to be returned.
 read: o.Expression|null
 * Whether or not this query should collect only static results.
 * If static is true, the query's results will be set on the component after nodes are created, but before change detection runs. This means that any results that relied upon change detection to run (e.g. results inside *ngIf or *ngFor views) will not be collected. Query results are available in the ngOnInit hook.
 * If static is false, the query's results will be set on the component after

change detection\n * runs. This means that the query results can contain nodes inside *ngIf or *ngFor views, but\n * the results will not be available in the ngOnInit hook (only in the ngAfterContentInit for\n * content hooks and ngAfterViewInit for view hooks).\n */\n static: boolean;\n}\n\n/**\n * Output of render3 directive compilation.\n */\nexport interface R3DirectiveDef {\n expression: o.Expression;\n type: o.Type;\n}\n\n/**\n * Output of render3 component compilation.\n */\nexport interface R3ComponentDef {\n expression: o.Expression;\n type: o.Type;\n}\n\n/**\n * Mappings indicating how the class interacts with its\n * host element (host bindings, listeners, etc).\n */\nexport interface R3HostMetadata {\n /**\n * A mapping of attribute binding keys to `o.Expression`s.\n */\n attributes: {[key: string]: o.Expression};\n /**\n * A mapping of event binding keys to unparsed expressions.\n */\n listeners: {[key: string]: string};\n /**\n * A mapping of property binding keys to unparsed expressions.\n */\n properties: {[key: string]: string};\n /**\n * specialAttributes: {styleAttr?: string; classAttr?: string;};\n}\n",\n\n/**\n * @license\n * Copyright Google LLC All Rights Reserved.\n * Use of this source code is governed by an MIT-style license that can be\n * found in the LICENSE file at https://angular.io/license\n */\n\nimport {AST} from '../expression_parser/ast';\nimport {BoundAttribute, BoundEvent, Element, Node, Reference, Template, TextAttribute, Variable} from './r3_ast';\n\n/**\n * t2 is the replacement for the `TemplateDefinitionBuilder`. It handles the operations of\n * analyzing Angular templates, extracting semantic info, and ultimately producing a template\n * definition function which renders the template using Ivy instructions.\n */\n/**\n * t2 data is also utilized by the template type-checking facilities to understand a template enough\n * to generate type-checking code for it.\n */\n\n/**\n * A logical target for analysis, which could contain a template or other types of bindings.\n */\nexport interface Target {\n template?: Node[];\n}\n\n/**\n * A data structure which can indicate whether a given property name is present or not.\n */\n/**\n * This is used to represent the set of inputs or outputs present on a directive, and allows the\n * binder to query for the presence of a mapping for property names.\n */\nexport interface InputOutputPropertySet {\n hasBindingPropertyName(propertyName: string): boolean;\n}\n\n/**\n * Metadata regarding a directive that's needed to match it against template elements. This is\n * provided by a consumer of the t2 APIs.\n */\nexport interface DirectiveMeta {\n /**\n * Name of the directive class (used for debugging).\n */\n name: string;\n /**\n * The selector for the directive or `null` if there isn't one.\n */\n selector: string|null;\n /**\n * Whether the directive is a component.\n */\n isComponent: boolean;\n /**\n * Set of inputs which this directive claims.\n */\n inputs: InputOutputPropertySet;\n /**\n * Set of outputs which this directive claims.\n */\n outputs: InputOutputPropertySet;\n /**\n * Name under which the directive is exported, if any (exportAs in Angular).\n */\n exportAs: string[]|null;\n}\n\n/**\n * Interface to the binding API, which processes a template and returns an object similar to the\n * `ts.TypeChecker`.\n */\n/**\n * The returned `BoundTarget` has an API for extracting information about the processed target.\n */\nexport interface TargetBinder<D extends DirectiveMeta> {\n bind(target: Target): BoundTarget<D>;\n}\n\n/**\n * Result of performing the binding operation against a `Target`.\n */\n/**\n * The original `Target` is accessible, as well as a suite of methods for extracting binding\n * information regarding the `Target`.\n */\n/**\n * @param DirectiveT directive metadata type\n */\nexport interface BoundTarget<DirectiveT extends DirectiveMeta> {\n /**\n * Get the original `Target` that was bound.\n */\n readonly target: Target;\n /**\n * For a given template node (either an `Element` or a `Template`), get the set of directives\n * which matched the node, if any.\n */\n getDirectivesOfNode(node: Element|Template): DirectiveT[]|null;\n /**\n * For a given `Reference`, get the reference's target - either an `Element`, a `Template`, or\n * a directive on a particular node.\n */\n getReferenceTarget(ref: Reference): {directive: DirectiveT, node: Element|Template}|Element|Template|null;\n /**\n * For a given binding, get the entity to which the binding is being made.\n */\n * This will either be a directive or the node itself.\n */\n getConsumerOfBinding(binding: BoundAttribute|BoundEvent|TextAttribute): DirectiveT|Element|Template|null;\n /**\n * If the given `AST` expression refers to a `Reference` or `Variable` within the `Target`, then\n * return that.\n */\n * Otherwise, returns `null`.\n */\n * This is only defined for `AST` expressions that read or write to a property of an\n * `ImplicitReceiver`.\n */\n getExpressionTarget(expr: AST): Reference|Variable|null;\n /**\n * Given a particular `Reference` or `Variable`, get the `Template` which created it.\n */\n * All `Variable`s are defined on

templates, so this will always return a value for a `Variable` from the `Target`. For `Reference`s this only returns a value if the `Reference` points to a `Template`. Returns `null` otherwise.

`getTemplateOfSymbol(symbol: Reference|Variable): Template|null`

`getNestingLevel(template: Template): number` Get the nesting level of a particular `Template`. This starts at 1 for top-level `Template`s within the `Target` and increases for `Template`s nested at deeper levels.

`getEntitiesInTemplateScope(template: Template|null): ReadonlySet<Reference|Variable>` Get all `Reference`s and `Variables` visible within the given `Template` (or at the top level, if `null` is passed).

`getUsedDirectives(): DirectiveT[]` Get a list of all the directives used by the target.

`getUsedPipes(): string[]` Get a list of all the pipes used by the target.

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```

import {AST, BindingPipe, ImplicitReceiver, MethodCall, PropertyRead, PropertyWrite, RecursiveAstVisitor, SafeMethodCall, SafePropertyRead} from
'../expression_parser/ast';
import {SelectorMatcher} from '../selector';
import {BoundAttribute, BoundEvent, BoundText, Content, Element, Icu, Node, Reference, Template, Text, TextAttribute, Variable, Visitor} from
'../r3_ast';
import {BoundTarget, DirectiveMeta, Target, TargetBinder} from './t2_api';
import {createCssSelector} from './template';
import {getAttrsForDirectiveMatching} from './util';

Processes
`Target`s with a given set of directives and performs a binding operation, which returns an object similar to
TypeScript's `ts.TypeChecker` that contains knowledge about the target.

export class
R3TargetBinder<DirectiveT extends DirectiveMeta> implements TargetBinder<DirectiveT> {
  constructor(private directiveMatcher: SelectorMatcher<DirectiveT>) {}

  Perform a binding operation
  on the given `Target` and return a `BoundTarget` which contains metadata about the types referenced in the
  template.

  bind(target: Target): BoundTarget<DirectiveT> {
    if (!target.template) {
      //
      TODO(alxhub): handle targets which contain things like HostBindings, etc.
      throw new Error('Binding without
      a template not yet supported');
    }

    // First, parse the template into a `Scope` structure. This operation
    captures the syntactic scopes in the template and makes them available for later use.
    const scope =
    Scope.apply(target.template);

    // Use the `Scope` to extract the entities present at every level of the
    template.
    const templateEntities = extractTemplateEntities(scope);

    // Next, perform directive matching on
    the template using the `DirectiveBinder`. This returns:
    // - directives: Map of nodes (elements & ng-templates)
    to the directives on them.
    // - bindings: Map of inputs, outputs, and attributes to the directive/element that
    claims them.
    // - references:
    Map of #references to their targets.
    const {directives, bindings, references} =
    DirectiveBinder.apply(target.template, this.directiveMatcher);

    // Finally, run the TemplateBinder to bind
    references, variables, and other entities within the template. This extracts all the metadata that doesn't depend
    on directive matching.
    const {expressions, symbols, nestingLevel, usedPipes} =
    TemplateBinder.apply(target.template, scope);

    return new R3BoundTarget(target, directives, bindings,
    references, expressions, symbols, nestingLevel,
    templateEntities, usedPipes);
  }

  Represents a
  binding scope within a template.

  Any variables, references, or other named entities declared within the
  template will be captured and available by name in `namedEntities`. Additionally, child templates will be
  analyzed and have their child `Scope`s available in `childScopes`.

  class Scope implements Visitor {
    Named members of the `Scope`, such as `Reference`s or `Variable`s.
    readonly namedEntities = new
    Map<string, Reference|Variable>();

    Child `Scope`s for immediately nested `Template`s.
    readonly childScopes = new Map<Template, Scope>();

    private constructor(readonly parentScope: Scope|null,
    readonly template: Template|null) {}

    static newRootScope(): Scope {
      return new Scope(null, null);
    }

    Process a template (either as a `Template` sub-template with variables, or a plain array of
    `Node`s) and construct its `Scope`.
    static apply(template: Node[]): Scope {
      const scope =
      Scope.newRootScope();
      scope.ingest(template);
      return scope;
    }

    Internal method to process
    the template and populate the `Scope`.
    private ingest(template: Template|Node[]): void {
      if (template
      instanceof Template) {
        // Variables on an <ng-template> are defined in the inner scope.

```



```

template.variables.forEach(node => this.visitVariable(node));\n\n // Process the nodes of the template.\n
template.children.forEach(node => node.visit(this));\n } else {\n // No overarching `Template` instance, so
process the nodes directly.\n template.forEach(node => node.visit(this));\n }\n\n visitElement(element:
Element) {\n // `Element`s in the template may have `Reference`s which are captured in the scope.\n
element.references.forEach(node => this.visitReference(node));\n\n // Recurse into the `Element`s children.\n
element.children.forEach(node => node.visit(this));\n }\n\n visitTemplate(template: Template) {\n // References
on a <ng-template> are defined in the outer scope, so capture them before\n // processing the template's child
scope.\n template.references.forEach(node => this.visitReference(node));\n\n // Next, create an inner scope and
process the template within it.\n const scope = new Scope(this, template);\n scope.ingest(template);\n
this.childScopes.set(template, scope);\n }\n\n visitVariable(variable: Variable) {\n // Declare the variable if it's
not already.\n this.maybeDeclare(variable);\n }\n\n visitReference(reference: Reference) {\n // Declare the
variable if it's not already.\n this.maybeDeclare(reference);\n }\n\n // Unused visitors.\n visitContent(content:
Content) {}\n visitBoundAttribute(attr: BoundAttribute) {}\n visitBoundEvent(event: BoundEvent) {}\n
visitBoundText(text: BoundText) {}\n visitText(text: Text) {}\n visitTextAttribute(attr: TextAttribute) {}\n
visitIcu(icu: Icu) {}\n\n private maybeDeclare(thing: Reference|Variable) {\n // Declare something with a name,
as long as that name isn't taken.\n if (!this.namedEntities.has(thing.name)) {\n
this.namedEntities.set(thing.name, thing);\n }\n }\n\n /**\n * Look up a variable within this `Scope`.\n *
This can recurse into a parent `Scope` if it's available.\n *
lookup(name: string): Reference|Variable|null {\n if
(this.namedEntities.has(name)) {\n // Found in the local scope.\n return this.namedEntities.get(name)!;\n }
else if (this.parentScope !== null) {\n // Not in the local scope, but there's a parent scope so check there.\n
return this.parentScope.lookup(name);\n } else {\n // At the top level and it wasn't found.\n return null;\n
}\n }\n\n /**\n * Get the child scope for a `Template`.\n *
This should always be defined.\n *
getChildScope(template: Template): Scope {\n const res = this.childScopes.get(template);\n if (res ===
undefined) {\n throw new Error(`Assertion error: child scope for ${template} not found`);\n }\n return res;\n
}\n}\n\n/**\n * Processes a template and matches directives on nodes (elements and templates).\n *
Usually used via the static `apply()` method.\n */\n\nclass DirectiveBinder<DirectiveT extends DirectiveMeta> implements
Visitor {\n constructor(\n private matcher: SelectorMatcher<DirectiveT>,\n private directives:
Map<Element|Template, DirectiveT[]>,\n private bindings: Map<BoundAttribute|BoundEvent|TextAttribute,
DirectiveT|Element|Template>,\n private references: Map<Reference, {directive: DirectiveT, node:
Element|Template}|Element|Template>) {\n\n /**\n * Process a template (list of `Node`s) and perform directive
matching against each node.\n *
@param template the list of template `Node`s to match (recursively).\n *
@param selectorMatcher a `SelectorMatcher` containing the directives that are in scope for\n * this template.\n
*
@returns three maps which contain information about directives in the template: the\n * `directives` map which
lists directives matched on each node, the `bindings` map which\n * indicates which directives claimed which
bindings (inputs, outputs, etc), and the `references`\n * map which resolves #references (`Reference`s) within the
template to the named directive or\n * template node.\n */\n static apply<DirectiveT extends DirectiveMeta>(\n
template: Node[], selectorMatcher: SelectorMatcher<DirectiveT>): {\n directives: Map<Element|Template,
DirectiveT[]>,\n bindings: Map<BoundAttribute|BoundEvent|TextAttribute, DirectiveT|Element|Template>,\n
references: Map<Reference, {directive: DirectiveT, node: Element|Template}|Element|Template>,\n } {\n const
directives = new Map<Element|Template, DirectiveT[]>();\n const bindings =\n new
Map<BoundAttribute|BoundEvent|TextAttribute, DirectiveT|Element|Template>();\n const references =\n
new Map<Reference, {directive: DirectiveT, node: Element|Template}|Element|Template>();\n const matcher =
new DirectiveBinder(selectorMatcher, directives, bindings, references);\n matcher.ingest(template);\n return
{directives, bindings, references};\n }\n\n private ingest(template: Node[]): void {\n template.forEach(node =>
node.visit(this));\n }\n\n visitElement(element: Element): void {\n this.visitElementOrTemplate(element.name,
element);\n }\n\n visitTemplate(template: Template): void {\n this.visitElementOrTemplate('ng-template',
template);\n }\n\n visitElementOrTemplate(elementName: string, node: Element|Template): void {\n // First,
determine the HTML shape of the node for the purpose of directive matching.\n // Do this by building up a

```

```

`CssSelector` for the node.\n  const cssSelector = createCssSelector(elementName,
getAttrsForDirectiveMatching(node));\n\n  // Next, use the `SelectorMatcher` to get the list of directives on the
node.\n  const directives: DirectiveT[] = [];\n  this.matcher.match(cssSelector, (_, directive) =>
directives.push(directive));\n  if (directives.length > 0) {\n    this.directives.set(node, directives);\n  }\n\n  //
Resolve any references that are created on this node.\n  node.references.forEach(ref => {\n    let dirTarget:
DirectiveT|null = null;\n\n    // If the reference expression is empty, then it matches the `"primary"` directive on the
node\n    // (if there is one). Otherwise it matches the host node itself (either an element or\n    // <ng-template>
node).\n    if (ref.value.trim() === "") {\n      // This could be a reference to a component if there is one.\n      dirTarget = directives.find(dir => dir.isComponent) || null;\n    } else {\n      // This should be a reference to a
directive exported via exportAs.\n      dirTarget =\n        directives.find(\n          dir => dir.exportAs !== null
&& dir.exportAs.some(value => value === ref.value)) ||\n        null;\n      // Check if a matching directive was
found.\n      if (dirTarget === null) {\n        // No matching directive was found - this reference points to an
unknown target. Leave it\n        // unmapped.\n        return;\n      }\n    }\n\n    if (dirTarget !== null) {\n      //
This reference points to a directive.\n      this.references.set(ref, {directive: dirTarget, node});\n    } else {\n      //
This reference points to the node itself.\n      this.references.set(ref, node);\n    }\n  });\n\n  // Associate
attributes/bindings on the node with directives or with the node itself.\n  type BoundNode =
BoundAttribute|BoundEvent|TextAttribute;\n  const setAttributeBinding =\n    (attribute: BoundNode, ioType:
keyof Pick<DirectiveMeta, 'inputs'|'outputs'>) => {\n    const dir = directives.find(dir =>
dir[ioType].hasBindingPropertyName(attribute.name));\n    const binding = dir !== undefined ? dir : node;\n    this.bindings.set(attribute, binding);\n  };\n\n  // Node inputs (bound attributes) and text attributes can be bound
to an\n  // input on a directive.\n  node.inputs.forEach(input => setAttributeBinding(input, 'inputs'));\n  node.attributes.forEach(attr => setAttributeBinding(attr, 'inputs'));\n  if (node instanceof Template) {\n    node.templateAttrs.forEach(attr => setAttributeBinding(attr, 'inputs'));\n  }\n\n  // Node outputs (bound events) can
be bound to an output on a directive.\n  node.outputs.forEach(output => setAttributeBinding(output, 'outputs'));\n\n  // Recurse into the node's children.\n  node.children.forEach(child => child.visit(this));\n}\n\n// Unused
visitors.\nvisitContent(content: Content): void {}\nvisitVariable(variable: Variable): void {}\nvisitReference(reference: Reference): void {}\nvisitTextAttribute(attribute: TextAttribute): void {}\nvisitBoundAttribute(attribute: BoundAttribute): void {}\nvisitBoundEvent(attribute: BoundEvent): void {}\nvisitBoundAttributeOrEvent(node: BoundAttribute|BoundEvent) {}\nvisitText(text: Text): void {}\nvisitBoundText(text: BoundText): void {}\nvisitIcu(icu: Icu): void {}}\n\n/**\n * Processes a template and
extract metadata about expressions and symbols within.\n * This is a companion to the `DirectiveBinder` that
doesn't require knowledge of directives matched\n * within the template in order to operate.\n * Expressions are
visited by the superclass `RecursiveAstVisitor`, with custom logic provided\n * by overridden methods from that
visitor.\n */\n\n@class TemplateBinder extends RecursiveAstVisitor implements Visitor {\n  private visitNode: (node:
Node) => void;\n  private pipesUsed: string[] = [];\n  private constructor(\n    private bindings: Map<AST,
Reference|Variable>,\n    private symbols: Map<Reference|Variable, Template>,\n    private usedPipes: Set<string>,\n    private nestingLevel: Map<Template, number>,\n    private scope: Scope,\n    private template: Template|null,\n    private level: number) {\n    super();\n  }\n\n  // Save a bit of processing time by constructing this closure in advance.\n  this.visitNode = (node: Node) => node.visit(this);\n}\n\n// This method is defined to reconcile the type of
TemplateBinder since both\n// RecursiveAstVisitor and Visitor define the visit() method in their\n// interfaces.\nvisit(node: AST|Node, context?: any) {\n  if (node instanceof AST) {\n    node.visit(this, context);\n  } else {\n    node.visit(this);\n  }\n}\n\n/**\n * Process a template and extract metadata about expressions and symbols
within.\n * @param template the nodes of the template to process\n * @param scope the `Scope` of the
template being processed.\n * @returns three maps which contain metadata about the template: `expressions`
which interprets\n * special `AST` nodes in expressions as pointing to references or variables declared within the\n
* template, `symbols` which maps those variables and references to the nested `Template` which\n * declares them,
if any, and `nestingLevel` which associates each `Template` with a integer\n * nesting level (how many levels deep
within the template structure the `Template` is), starting\n * at 1.\n */\nstatic apply(template: Node[], scope:

```

```

Scope): {\n  expressions: Map<AST, Reference|Variable>,\n  symbols: Map<Variable|Reference, Template>,\n  nestingLevel: Map<Template, number>,\n  usedPipes: Set<string>,\n } {\n  const expressions = new Map<AST,\n  Reference|Variable>();\n  const symbols = new Map<Variable|Reference, Template>();\n  const nestingLevel =\n  new Map<Template, number>();\n  const usedPipes = new Set<string>();\n  // The top-level template has nesting\n  level 0.\n  const binder = new TemplateBinder(\n    expressions, symbols, usedPipes, nestingLevel, scope,\n  template instanceof Template ? template : null, 0);\n  binder.ingest(template);\n  return {expressions, symbols,\n  nestingLevel, usedPipes};\n }\n\n private ingest(template: Template|Node[]): void {\n  if (template instanceof\n  Template) {\n    // For <ng-template>s, process only variables and child nodes. Inputs, outputs, templateAttrs,\n  // and references were all processed in the scope of the containing template.\n  template.variables.forEach(this.visitNode);\n  template.children.forEach(this.visitNode);\n  // Set the nesting\n  level.\n  this.nestingLevel.set(template, this.level);\n  } else {\n    // Visit each node from the top-level\n  template.\n  template.forEach(this.visitNode);\n  }\n }\n\n visitElement(element: Element) {\n  // Visit the\n  inputs, outputs, and children of the element.\n  element.inputs.forEach(this.visitNode);\n  element.outputs.forEach(this.visitNode);\n  element.children.forEach(this.visitNode);\n }\n\n visitTemplate(template: Template) {\n  // First, visit inputs, outputs and template attributes of the template node.\n  template.inputs.forEach(this.visitNode);\n  template.outputs.forEach(this.visitNode);\n  template.templateAttrs.forEach(this.visitNode);\n  // References are also evaluated in the outer context.\n  template.references.forEach(this.visitNode);\n  // Next, recurse into the template using its scope, and bumping the\n  nesting level up by one.\n  const childScope = this.scope.getChildScope(template);\n  const binder = new\n  TemplateBinder(\n    this.bindings, this.symbols, this.usedPipes, this.nestingLevel, childScope, template,\n  this.level + 1);\n  binder.ingest(template);\n }\n\n visitVariable(variable: Variable) {\n  // Register the `Variable`\n  as a symbol in the current `Template`.\n  if (this.template !== null) {\n    this.symbols.set(variable,\n  this.template);\n  }\n }\n\n visitReference(reference: Reference) {\n  // Register the `Reference`\n  as a symbol in\n  the current `Template`.\n  if (this.template !== null) {\n    this.symbols.set(reference, this.template);\n  }\n }\n\n // Unused template visitors\n  visitText(text: Text) {\n  }\n  visitContent(content: Content) {\n  }\n  visitTextAttribute(attribute: TextAttribute) {\n  }\n  visitIcu(icu: Icu): void {\n    Object.keys(icu.vars).forEach(key =>\n  icu.vars[key].visit(this);\n    Object.keys(icu.placeholders).forEach(key => icu.placeholders[key].visit(this);\n  }\n }\n\n // The remaining visitors are concerned with processing AST expressions within template bindings\n  visitBoundAttribute(attribute: BoundAttribute) {\n    attribute.value.visit(this);\n  }\n  visitBoundEvent(event:\n  BoundEvent) {\n    event.handler.visit(this);\n  }\n  visitBoundText(text: BoundText) {\n    text.value.visit(this);\n  }\n  visitPipe(ast: BindingPipe, context: any): any {\n    this.usedPipes.add(ast.name);\n    return super.visitPipe(ast,\n  context);\n  }\n }\n\n // These five types of AST expressions can refer to expression roots, which could be variables\n  // or references in the current scope.\n  visitPropertyRead(ast: PropertyRead, context: any): any {\n    this.maybeMap(context, ast, ast.name);\n    return super.visitPropertyRead(ast, context);\n  }\n  visitSafePropertyRead(ast: SafePropertyRead, context: any): any {\n    this.maybeMap(context, ast, ast.name);\n    return super.visitSafePropertyRead(ast, context);\n  }\n  visitPropertyWrite(ast: PropertyWrite, context: any): any\n  {\n    this.maybeMap(context, ast, ast.name);\n    return super.visitPropertyWrite(ast, context);\n  }\n  visitMethodCall(ast: MethodCall, context: any): any {\n    this.maybeMap(context, ast, ast.name);\n    return\n  super.visitMethodCall(ast, context);\n  }\n  visitSafeMethodCall(ast: SafeMethodCall, context: any): any {\n    this.maybeMap(context, ast, ast.name);\n    return super.visitSafeMethodCall(ast, context);\n  }\n }\n\n private\n  maybeMap(\n    scope: Scope, ast: PropertyRead|SafePropertyRead|PropertyWrite|MethodCall|SafeMethodCall,\n  name: string): void {\n    // If the receiver of the expression isn't the `ImplicitReceiver`, this isn't the root of an\n  // `AST` expression that maps to a `Variable` or `Reference`.\n    if (!(ast.receiver instanceof ImplicitReceiver)) {\n      return;\n    }\n    // Check whether the name exists in the current scope. If so, map it. Otherwise, the name is\n  // probably a property on the top-level component context.\n    let target = this.scope.lookup(name);\n    if (target !==\n  null) {\n      this.bindings.set(ast, target);\n    }\n  }\n }\n\n /**\n  * Metadata container for a `Target` that allows\n  queries for specific bits of metadata.\n  * See `BoundTarget` for documentation on the individual methods.\n  */\n  export class R3BoundTarget<DirectiveT extends DirectiveMeta> implements BoundTarget<DirectiveT> {\n

```



```

./pipe_resolver';\nextport {NgModuleResolver} from './ng_module_resolver';\nextport
{DEFAULT_INTERPOLATION_CONFIG, InterpolationConfig} from './ml_parser/interpolation_config';\nextport *
from './schema/element_schema_registry';\nextport * from './i18n/index';\nextport * from
./directive_normalizer';\nextport * from './expression_parser/ast';\nextport * from './expression_parser/lexer';\nextport
* from './expression_parser/parser';\nextport * from './metadata_resolver';\nextport * from './ml_parser/ast';\nextport *
from './ml_parser/html_parser';\nextport * from './ml_parser/html_tags';\nextport * from
./ml_parser/interpolation_config';\nextport * from './ml_parser/tags';\nextport {LexerRange} from
./ml_parser/lexer';\nextport * from './ml_parser/xml_parser';\nextport {NgModuleCompiler} from
./ng_module_compiler';\nextport {ArrayType, AssertNotNull, DYNAMIC_TYPE, BinaryOperator,
BinaryOperatorExpr, BuiltinMethod, BuiltinType, BuiltinTypeName, BuiltinVar, CastExpr, ClassField,
ClassMethod, ClassStmt, CommaExpr, ConditionalExpr, DeclareFunctionStmt, DeclareVarStmt, Expression,
ExpressionStatement, ExpressionType, ExpressionVisitor, ExternalExpr, ExternalReference, literalMap,
FunctionExpr, IfStmt, InstantiateExpr, InvokeFunctionExpr, InvokeMethodExpr, LiteralArrayExpr, LiteralExpr,
LiteralMapExpr, MapType, NotExpr, NONE_TYPE, ReadKeyExpr, ReadPropExpr, ReadVarExpr,
ReturnStatement, StatementVisitor, ThrowStmt, TryCatchStmt, Type, TypeVisitor, WrappedNodeExpr,
WriteKeyExpr, WritePropExpr, WriteVarExpr, StmtModifier, Statement, STRING_TYPE, TypeofExpr,
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UnaryOperatorExpr, LocalizedString} from './output/output_ast';\nextport {EmitterVisitorContext} from
./output/abstract_emitter';\nextport {JitEvaluator} from './output/output_jit';\nextport * from
./output/ts_emitter';\nextport * from './parse_util';\nextport * from './schema/dom_element_schema_registry';\nextport
* from './selector';\nextport * from './style_compiler';\nextport * from './template_parser/template_parser';\nextport
{ViewCompiler} from './view_compiler/view_compiler';\nextport {getParseErrors, isSyntaxError, syntaxError,
Version} from './util';\nextport {SourceMap} from './output/source_map';\nextport * from
./injectable_compiler_2';\nextport * from './render3/view/api';\nextport {BoundAttribute as TmplAstBoundAttribute,
BoundEvent as TmplAstBoundEvent, BoundText as TmplAstBoundText, Content as TmplAstContent, Element as
TmplAstElement, Icu as TmplAstIcu, Node as TmplAstNode, RecursiveVisitor as TmplAstRecursiveVisitor,
Reference as TmplAstReference, Template as TmplAstTemplate, Text as TmplAstText, TextAttribute as
TmplAstTextAttribute, Variable as TmplAstVariable} from './render3/r3_ast';\nextport * from
./render3/view/t2_api';\nextport * from './render3/view/t2_binder';\nextport {Identifiers as R3Identifiers} from
./render3/r3_identifiers';\nextport {R3DependencyMetadata, R3ResolvedDependencyType,
compileFactoryFunction, R3FactoryMetadata, R3FactoryTarget} from './render3/r3_factory';\nextport
{compileInjector, compileNgModule, R3InjectorMetadata, R3NgModuleMetadata} from
./render3/r3_module_compiler';\nextport {compilePipeFromMetadata, R3PipeMetadata} from
./render3/r3_pipe_compiler';\nextport {makeBindingParser, ParsedTemplate, parseTemplate,
ParseTemplateOptions} from './render3/view/template';\nextport {R3Reference} from './render3/util';\nextport
{compileComponentFromMetadata, compileDirectiveFromMetadata, parseHostBindings, ParsedHostBindings,
verifyHostBindings} from './render3/view/compiler';\nextport {publishFacade} from './jit_compiler_facade';\n// This
file only reexports content of the `src` folder. Keep it that way.\n\n// This function call has a global side effects and
publishes the compiler into global namespace for\n// the late binding of the Compiler to the @angular/core for jit
compilation.\n\npublishFacade(global);\n", "/*\n * @license\n * Copyright Google LLC All Rights Reserved.\n *\n *
Use of this source code is governed by an MIT-style license that can be\n * found in the LICENSE file at
https://angular.io/license\n *\n\n\n * @module\n * @description\n * Entry point for all public APIs of this
package.\n *\n\n\n * \n\n\n// This file only reexports content of the `src` folder. Keep it that
way.\n", "/*\n * @license\n * Copyright Google LLC All Rights Reserved.\n *\n * Use of this source code is
governed by an MIT-style license that can be\n * found in the LICENSE file at https://angular.io/license\n *\n\n\n//
This file is not used to build this module. It is only used during editing\n// by the TypeScript language service and
during build for verification. `ngc`\n// replaces this file with production index.ts when it rewrites private symbol\n//
names.\n\n\n\n * \n\n\n * @license\n * Copyright Google LLC All Rights Reserved.\n *\n\n\n

```

* Use of this source code is governed by an MIT-style license that can be found in the LICENSE file at <https://angular.io/license>. This file is not used to build this module. It is only used during editing by the TypeScript language service and during build for verification. `ngc` replaces this file with production index.ts when it rewrites private symbol names.

```

export * from
'./compiler';
], "names": ["Type", "o.variable", "o.Expression", "o.LiteralExpr", "o.FunctionExpr", "o.ReturnStatement", "o.INFERRED_TYPE", "o.StmtModifier", "o.LiteralArrayExpr", "o.literalArr", "o.literalMap", "o.FnParam", "o.DYNAMIC_TYPE", "o.fn", "o.ReadVarExpr", "CORE", "Identifiers", "o.literal", "o.expressionType", "o.ExternalExpr", "o.BinaryOperatorExpr", "o.BinaryOperator", "o.TypeOfExpr", "o.WrappedNodeExpr", "Text", "Icu", "i18n.RecurseVisitor", "_Visitor", "xml.Tag", "xml.Text", "xml.CR", "xml.serialize", "xml.Declaration", "xml.Doctype", "digest", "i18n.Message", "i18n.Icu", "i18n.Container", "i18n.Placeholder", "o.DeclareVarStmt", "invalid", "o.isNull", "t.Template", "o.importExpr", "o.NONE_TYPE", "o.InstantiateExpr", "R3", "o.NULL_EXPR", "o.ifStmt", "o.InvokeFunctionExpr", "o.ExpressionType", "CATCH_ERROR_VAR", "CATCH_STACK_VAR", "o.JSDocComment", "o.BuiltinVar", "o.UnaryOperator", "o.BuiltinMethod", "o.LiteralMapExpr", "o.LiteralMapEntry", "chars.$LF", "o.ClassStmt", "o.ClassField", "o.ClassMethod", "o.ReadPropExpr", "o.typeofExpr", "RecursiveAstVisitor", "AstTransformer", "cdAst.Interpolation", "cdAst.AstTransformer", "o.UnaryOperatorExpr", "cdAst.ThisReceiver", "cdAst.ImplicitReceiver", "o.not", "o.assertNotNull", "cdAst.PropertyRead", "cdAst.SafeMethodCall", "cdAst.MethodCall", "o.ExpressionStatement", "cdAst.FunctionCall", "o.ArrayType", "o.TypeModifier", "Element", "visitAll", "RecursiveVisitor", "chars.$EOF", "chars.$LT", "chars.$BANG", "chars.$LBRACKET", "chars.$MINUS", "chars.$SLASH", "chars.$RBRACE", "chars.$AMPERSAND", "chars.$HASH", "chars.$x", "chars.$X", "chars.$SEMICOLON", "chars.$GT", "chars.$COLON", "chars.isAsciiLetter", "chars.$EQ", "chars.$SQ", "chars.$DQ", "chars.$LBRACE", "chars.$COMMA", "chars.isWhitespace", "chars.$a", "chars.$z", "chars.$A", "chars.$Z", "chars.$0", "chars.$9", "chars.isAsciiHexDigit", "chars.isNewLine", "chars.$BACKSLASH", "chars.$n", "chars.$r", "chars.$CR", "chars.$v", "chars.$VTAB", "chars.$t", "chars.$TAB", "chars.$b", "chars.$BSPACE", "chars.$f", "chars.$FF", "chars.$u", "chars.isOctalDigit", "lex.tokenize", "lex.TokenType", "html.Comment", "html.Expansion", "lex.Token", "html.ExpansionCase", "html.Text", "html.Element", "html.Attribute", "html.visitAll", "TEMPLATE_ATTR_PREFIX", "t.templateVisitAll", "t.BoundTextAst", "t.TextAst", "t.AttrAst", "t.VariableAst", "t.NgContentAst", "t.EmbeddedTemplateAst", "t.ElementAst", "t.BoundEventAst", "t.BoundElementPropertyAst", "t.ReferenceAst", "t.DirectiveAst", "t.BoundDirectivePropertyAst", "parseStyle", "TokenType", "Token", "chars.$SPACE", "chars.isDigit", "chars.$PERIOD", "chars.$LPAREN", "chars.$RPAREN", "chars.$RBRACKET", "chars.$PLUS", "chars.$STAR", "chars.$PERCENT", "chars.$CARET", "chars.$QUESTION", "chars.$BAR", "chars.$NBSP", "chars.$_", "chars.$$", "chars.$e", "chars.$E", "chars.$BT", "Parser", "BIND_NAME_REGEXP", "KW_BIND_IDX", "KW_LET_IDX", "KW_REF_IDX", "KW_ON_IDX", "KW_BINDON_IDX", "KW_AT_IDX", "IDENT_KW_IDX", "IDENT_BANANA_BOX_IDX", "IDENT_PROPERTY_IDX", "IDENT_EVENT_IDX", "t.Variable", "NON_BINDABLE_VISITOR", "t.Content", "t.Element", "t.TextAttribute", "t.BoundText", "t.Icu", "t.BoundAttribute", "t.Text", "t.Reference", "NonBindableVisitor", "t.BoundEvent", "ExpressionParser", "ExpressionLexer", "i18n.TagPlaceholder", "i18n.IcuPlaceholder", "i18n.Text", "html.NodeWithI18n", "o.jsDocComment", "variable", "serializerVisitor", "localizedString", "o.localizedString", "o.LiteralPiece", "o.PlaceholderPiece", "NG_CONTENT_SELECT_ATTR", "t.visitAll", "core.parseSelectorToR3Selector", "o.NUMBER_TYPE", "isNgContainer", "checkIsNgContainer", "o.TYPED_NULL_EXPR", "literal", "core.SecurityContext", "o.STRING_TYPE", "core.ViewEncapsulation", "core.ChangeDetectionStrategy", "HOST_REG_EXP", "wrapReference", "VERSION", "_PLACEHOLDER_TAG", "_SOURCE_TAG", "ml.visitAll", "_VERSION", "_XMLNS", "_DEFAULT_SOURCE_LANG", "_MARKER_TAG", "_TARGET_TAG", "_UNIT_TAG", "_WriteVisitor", "XmlToI18n", "mapEntry", "cpl.viewClassName", "cpl.hostViewClassName", "cpl.identifierName", "cpl.rendererTypeName", "cpl.componentFactoryName", "cpl.CompileDirectiveMetadata", "cpl.CompileTemplateMetadata", "cpl.CompileSummaryKind", "cpl.CompileNgModuleMetadata", "cpl.TransitiveCompileNgModuleMetadata", "cpl.tokenReference", "cpl.CompilePipeMetadata", "cpl.ProviderMeta", "o.importType", "o.Statement", "o.Type", "o.BuiltinTypeName", "o.applySourceSpanToStatementIfNeeded", "o.IfStmt", "o.DeclareFunctionStmt", "CLASS_ATTR", "ViewBuilder", "LOG_VAR", "o.findReadVarNames", "o.CommaExpr", "o.applySourceSpanToExpressionIfNeeded", "o.BOOL_TYPE", "i18n.CloneVisitor", "compileR3Module", "compileR3Component", "compileR3Directive", "compileR3Pipe", "importExpr", "o.ExternalReference", "USE_VALUE", "BindingScope", "ir.variable", "ir.importExpr", "global"], "mappings": ";;;;;;;;;AAAA;";

```

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EAAE,CAAC;AACIB,MAAM,MAAM,GAAG,EAAE,CAAC;AACIB,MAAM,UAAU,GAAG,EAAE,CAAC;AACtB,MAAM,GAAG,GAAG,EAAE,CAAC;AACf,MAAM,GAAG,GAAG,EAAE,CAAC;AACf,MAAM,GAAG,GAA G,EAAE,CAAC;AACf,MAAM,SAAS,GAAG,EAAE,CAAC;AAErB,MAAM,EAAE,GAAG,EAAE,CAAC;AACd, MAAM,EAAE,GAAG,EAAE,CAAC;AACd,MAAM,EAAE,GAAG,EAAE,CAAC;AAEd,MAAM,EAAE,GAAG,E AAE,CAAC;AACd,MAAM,EAAE,GAAG,EAAE,CAAC;AACd,MAAM,EAAE,GAAG,EAAE,CAAC;AACd,MA AM,EAAE,GAAG,EAAE,CAAC;AACd,MAAM,EAAE,GAAG,EAAE,CAAC;AAEd,MAAM,SAAS,GAAG,EAA E,CAAC;AACrB,MAAM,UAAU,GAAG,EAAE,CAAC;AACtB,MAAM,SAAS,GAAG,EAAE,CAAC;AACrB,MA AM,MAAM,GAAG,EAAE,CAAC;AACIB,MAAM,EAAE,GAAG,EAAE,CAAC;AAEd,MAAM,EAAE,GAAG,E AAE,CAAC;AACd,MAAM,EAAE,GAAG,EAAE,CAAC;AACd,MAAM,EAAE,GAAG,GAAG,CAAC;AACf,MA AM,EAAE,GAAG,GAAG,CAAC;AACf,MAAM,EAAE,GAAG,GAAG,CAAC;AACf,MAAM,EAAE,GAAG,GA AG,CAAC;AACf,MAAM,EAAE,GAAG,GAAG,CAAC;AACf,MAAM,EAAE,GAAG,GAAG,CAAC;AACf,MAA M,EAAE,GAAG,GAAG,CAAC;AACf,MAAM,EAAE,GAAG,GAAG,CAAC;AACf,MAAM,EAAE,GAAG,GAA G,CAAC;AAEf,MAAM,OAAO,GAAG,GAAG,CAAC;AACpB,MAAM,IAAI,GAAG,GAAG,CAAC;AACjB,MA AM,OAAO,GAAG,GAAG,CAAC;AACpB,MAAM,KAAK,GAAG,GAAG,CAAC;AAEIB,MAAM,KAAK,GAAG, GAAG,CAAC;AACIB,MAAM,MAAM,GAAG,GAAG,CAAC;AACnB,MAAM,GAAG,GAAG,EAAE,CAAC;AA Ef,MAAM,GAAG,GAAG,EAAE,CAAC;SAEN,YAAY,CAAC,IAAY;IACvC,OAAO,CAAC,IAAI,IAAI,IAAI,IA AI,IAAI,IAAI,MAAM,MAAM,IAAI,IAAI,KAAK,CAAC,CAAC;AAC7D,CAAC;SAEe,OAAO,CAAC,IAAY;IAC IC,OAAO,EAAE,IAAI,IAAI,IAAI,IAAI,IAAI,EAAE,CAAC;AACIC,CAAC;SAEe,aAAa,CAAC,IAAY;IACxC,O AAO,IAAI,IAAI,EAAE,IAAI,IAAI,IAAI,EAAE,IAAI,IAAI,IAAI,EAAE,IAAI,IAAI,IAAI,EAAE,CAAC;AAC9D, CAAC;SAEe,eAAe,CAAC,IAAY;IAC1C,OAAO,IAAI,IAAI,EAAE,IAAI,IAAI,IAAI,EAAE,IAAI,IAAI,IAAI,EA AE,IAAI,IAAI,IAAI,EAAE,IAAI,OAAO,CAAC,IAAI,CAAC,CAAC;AAC/E,CAAC;SAEe,SAAS,CAAC,IAAY;I ACpC,OAAO,IAAI,KAAK,GAAG,IAAI,IAAI,KAAK,GAAG,CAAC;AACtC,CAAC;SAEe,YAAY,CAAC,IAAY; IACvC,OAAO,EAAE,IAAI,IAAI,IAAI,IAAI,IAAI,EAAE,CAAC;AACIC;;ACnGA;;;;;MAUa,aAAa;IACxB,YAC W,IAAqB,EAAS,MAAc,EAAS,IAAY,EACjE,GAAW;QADX,SAAI,GAAJ,IAAI,CAAiB;QAAS,WAAM,GAAN, MAAM,CAAQ;QAAS,SAAI,GAAJ,IAAI,CAAQ;QACjE,QAAG,GAAG,CAAQ;KAAI;IAE1B,QAAQ;QA CN,OAAO,IAAI,CAAC,MAAM,IAAI,IAAI,GAAG,GAAG,IAAI,CAAC,IAAI,CAAC,GAAG,IAAI,IAAI,CAAC,I AAI,IAAI,IAAI,CAAC,GAAG,EAAE,GAAG,IAAI,CAAC,IAAI,CAAC,GAAG,CAAC;KAC1F;IAED,MAAM,C AAC,KAAa;QACIB,MAAM,MAAM,GAAG,IAAI,CAAC,IAAI,CAAC,OAAO,CAAC;QACjC,MAAM,GAAG,G AAG,MAAM,CAAC,MAAM,CAAC;QAC1B,IAAI,MAAM,GAAG,IAAI,CAAC,MAAM,CAAC;QACzB,IAAI,IA AI,GAAG,IAAI,CAAC,IAAI,CAAC;QACrB,IAAI,GAAG,GAAG,IAAI,CAAC,GAAG,CAAC;QACnB,OAAO,M AAM,GAAG,CAAC,IAAI,KAAK,GAAG,CAAC,EAAE;YAC9B,MAAM,EAAE,CAAC;YACT,KAAK,EAAE,CA AC;YACR,MAAM,EAAE,GAAG,MAAM,CAAC,UAAU,CAAC,MAAM,CAAC,CAAC;YACrC,IAAI,EAAE,IA AI0C,GAAS,EAAE;gBACnB,IAAI,EAAE,CAAC;gBACP,MAAM,SAAS,GAAG,MAAM,CAAC,MAAM,CAAC, CAAC,EAAE,MAAM,GAAG,CAAC,CAAC,CAAC,WAAW,CAAC,MAAM,CAAC,YAAY,CAACA,GAAS,CAA C,CAAC,CAAC;gBAC3F,GAAG,GAAG,SAAS,GAAG,CAAC,GAAG,MAAM,GAAG,SAAS,GAAG,MAAM,CA AC;aACnD;iBAAM;gBACL,GAAG,EAAE,CAAC;aACP;SACF;QACD,OAAO,MAAM,GAAG,GAAG,IAAI,KA AK,GAAG,CAAC,EAAE;YAChC,MAAM,EAAE,GAAG,MAAM,CAAC,UAAU,CAAC,MAAM,CAAC,CAAC; YACrC,MAAM,EAAE,CAAC;YACT,KAAK,EAAE,CAAC;YACR,IAAI,EAAE,IAAIA,GAAS,EAAE;gBACnB,I AAI,EAAE,CAAC;gBACP,GAAG,GAAG,CAAC,CAAC;aACT;iBAAM;gBACL,GAAG,EAAE,CAAC;aACP;SA CF;QACD,OAAO,IAAI,aAAa,CAAC,IAAI,CAAC,IAAI,EAAE,MAAM,EAAE,IAAI,EAAE,GAAG,CAAC,CAA C;KACxD;;;IAID,UAAU,CAAC,QAAgB,EAAE,QAAgB;QAC3C,MAAM,OAAO,GAAG,IAAI,CAAC,IAAI,CA AC,OAAO,CAAC;QACIC,IAAI,WAAW,GAAG,IAAI,CAAC,MAAM,CAAC;QAE9B,IAAI,WAAW,IAAI,IAAI, EAAE;YACvB,IAAI,WAAW,GAAG,OAAO,CAAC,MAAM,GAAG,CAAC,EAAE;gBACpC,WAAW,GAAG,OA AO,CAAC,MAAM,GAAG,CAAC,CAAC;aACIC;YACD,IAAI,SAAS,GAAG,WAAW,CAAC;YAC5B,IAAI,QAA Q,GAAG,CAAC,CAAC;YACjB,IAAI,QAAQ,GAAG,CAAC,CAAC;YAEjB,OAAO,QAAQ,GAAG,QAAQ,IAAI, WAAW,GAAG,CAAC,EAAE;gBAC7C,WAAW,EAAE,CAAC;gBACd,QAAQ,EAAE,CAAC;gBACX,IAAI,OAA O,CAAC,WAAW,CAAC,IAAI,IAAI,EAAE;oBAChC,IAAI,EAAE,QAAQ,IAAI,QAAQ,EAAE;wBAC1B,MAAM; qBACP;iBACF;aACF;YAED,QAAQ,GAAG,CAAC,CAAC;YACb,QAAQ,GAAG,CAAC,CAAC;YACb,OAAO,Q

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Found in path(s):

* /opt/cola/permits/1358260597_1657134837.1052659/0/compiler-11-0-2-tgz/package/fesm2015/compiler.js.map

1.44 postgres-sql 10.21

1.44.1 Available under license :

```
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* jQuery Color Animations v2.1.2  
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*  
* Date: Wed Jan 16 08:47:09 2013 -0600  
*/
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* http://jqueryui.com
* Includes: core.js, widget.js, mouse.js, position.js, draggable.js, droppable.js, resizable.js, selectable.js, sortable.js,
accordion.js, autocomplete.js, button.js, datepicker.js, dialog.js, menu.js, progressbar.js, selectmenu.js, slider.js,
spinner.js, tabs.js, tooltip.js, effect.js, effect-blind.js, effect-bounce.js, effect-clip.js, effect-drop.js, effect-explode.js,
effect-fade.js, effect-fold.js, effect-highlight.js, effect-puff.js, effect-pulsate.js, effect-scale.js, effect-shake.js, effect-
size.js, effect-slide.js, effect-transfer.js
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 * michael{dot}leibman{at}gmail{dot}com
 * http://github.com/mleibman/slickgrid
 *
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 *
 * SlickGrid v2.3
 *
 * NOTES:
 * Cell/row DOM manipulations are done directly bypassing jQuery's DOM manipulation methods.
 * This increases the speed dramatically, but can only be done safely because there are no event handlers
 * or data associated with any cell/row DOM nodes. Cell editors must make sure they implement .destroy()
 * and do proper cleanup.
 */
```

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A. HISTORY OF THE SOFTWARE

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Python was created in the early 1990s by Guido van Rossum at Stichting Mathematisch Centrum (CWI, see <http://www.cwi.nl>) in the Netherlands as a successor of a language called ABC. Guido remains Python's principal author, although it includes many contributions from others.

In 1995, Guido continued his work on Python at the Corporation for National Research Initiatives (CNRI, see <http://www.cnri.reston.va.us>) in Reston, Virginia where he released several versions of the software.

In May 2000, Guido and the Python core development team moved to BeOpen.com to form the BeOpen PythonLabs team. In October of the same year, the PythonLabs team moved to Digital Creations, which became Zope Corporation. In 2001, the Python Software Foundation (PSF, see <https://www.python.org/psf/>) was formed, a non-profit organization created specifically to own Python-related Intellectual Property. Zope Corporation was a sponsoring member of the PSF.

All Python releases are Open Source (see <http://www.opensource.org> for the Open Source Definition). Historically, most, but not all, Python releases have also been GPL-compatible; the table below summarizes the various releases.

Release	Derived from	Year	Owner	GPL-compatible? (1)
0.9.0 thru 1.2		1991-1995	CWI	yes
1.3 thru 1.5.2	1.2	1995-1999	CNRI	yes
1.6	1.5.2	2000	CNRI	no
2.0	1.6	2000	BeOpen.com	no
1.6.1	1.6	2001	CNRI	yes (2)

2.1	2.0+1.6.1	2001	PSF	no
2.0.1	2.0+1.6.1	2001	PSF	yes
2.1.1	2.1+2.0.1	2001	PSF	yes
2.1.2	2.1.1	2002	PSF	yes
2.1.3	2.1.2	2002	PSF	yes
2.2 and above	2.1.1	2001-now	PSF	yes

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/*! Parser: metric */

/*! tablesorter (FORK) - updated 2020-03-03 (v2.31.3)*/

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pyparser -- A C parser in Python

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docutils/utils/math/latex2mathml.py,
docutils/writers/xetex/__init__.py,
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* docutils/utis/math/math2html.py,
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* jQuery UI Position 1.12.1

* <http://jqueryui.com>

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* <http://api.jqueryui.com/position/>

```
*/

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*
* Date: 2019-04-08
*/

/*!
* Web Cabin Docker - Docking Layout Interface.
*
* Dependencies:
* JQuery 1.11.1
* JQuery-contextMenu 1.6.6
* font-awesome 4.2.0
*
* Author: Jeff Houde (lochemage@webcabin.org)
* Web: https://docker.webcabin.org/
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* https://jquery.com/
*
* Includes Sizzle.js
* https://sizzlejs.com/
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* Date: 2019-05-01T21:04Z
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*/

/*! jQuery UI - v1.12.1 - 2016-09-16

* <http://jqueryui.com>

* Includes: position.js

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/**

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* Build: `lodash exports="amd" -d -o ./main.js`

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/**!

* @fileOverview Kickass library to create and place poppers near their reference elements.

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```

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ca-bundle.crt -- Bundle of CA Root Certificates

Certificate data from Mozilla as of: Thu Nov 3 19:04:19 2011#
This is a bundle of X.509 certificates of public Certificate Authorities (CA). These were automatically extracted from Mozilla's root certificates file (certdata.txt). This file can be found in the mozilla source tree:
<http://mxr.mozilla.org/mozilla/source/security/nss/lib/ckfw/builtins/certdata.txt?raw=1#>
It contains the certificates in PEM format and therefore can be directly used with curl / libcurl / php_curl, or with an Apache+mod_ssl webserver for SSL client authentication.
Just configure this file as the SSLCACertificateFile.#

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1.47 spring-aop 5.3.18

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1.50 python-certifi 2019.9.11

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1.52 d-bus 1.12.2-1ubuntu1.3

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1.53 angular-core 11.0.2

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```



```

call the 'done' // function when asynchronous activity is finished.
if (_global.jasmine) {
  // Not using an arrow function to preserve context passed from call site
  return function(this: unknown, done: any) {
    if (!done) {
      // if we run beforeEach in @angular/core/testing/testing_internal then we get no done
      // fake it here and assume sync.
      done = function() {};
      done.fail = function(e: any) {
        throw e;
      };
    }
    runInTestZone(fn, this, done, (err: any) => {
      if (typeof err === 'string') {
        return done.fail(new Error(err));
      } else {
        done.fail(err);
      }
    });
  };
} // Otherwise, return a promise which will resolve when asynchronous activity
// is finished. This will be correctly consumed by the Mocha framework with
// it('...', async(myFn)); or can be used in a custom framework.
// Not using an arrow function to preserve context passed from call site
return function(this: unknown) {
  return new Promise<void>((finishCallback, failCallback) => {
    runInTestZone(fn, this, finishCallback, failCallback);
  });
}

function runInTestZone(
  fn: Function, context: any, finishCallback: Function, failCallback: Function
) {
  const currentZone = Zone.current;
  const AsyncTestZoneSpec = (Zone as any)['AsyncTestZoneSpec'];
  if (AsyncTestZoneSpec === undefined) {
    throw new Error(
      'AsyncTestZoneSpec is needed for the async() test helper but could not be found. ' +
      'Please make sure that your environment includes zone.js/dist/async-test.js');
  }
  const ProxyZoneSpec = (Zone as any)['ProxyZoneSpec'] as {
    get(): {setDelegate(spec: ZoneSpec): void; getDelegate(): ZoneSpec;};
    assertPresent(): void;
  };
  if (ProxyZoneSpec === undefined) {
    throw new Error(
      'ProxyZoneSpec is needed for the async() test helper but could not be found. ' +
      'Please make sure that your environment includes zone.js/dist/proxy.js');
  }
  const proxyZoneSpec = ProxyZoneSpec.get();
  ProxyZoneSpec.assertPresent();
  // We need to create the AsyncTestZoneSpec outside the ProxyZone.
  // If we do it in ProxyZone then we will get to infinite recursion.
  const proxyZone = Zone.current.getZoneWith('ProxyZoneSpec');
  const previousDelegate = proxyZoneSpec.getDelegate();
  proxyZone!.parent!.run(() => {
    const testZoneSpec: ZoneSpec = new AsyncTestZoneSpec(
      () => {
        // Need to restore the original zone.
        currentZone.run(() => {
          if (proxyZoneSpec.getDelegate() == testZoneSpec) {
            // Only reset the zone spec if it's still this one.
            Otherwise, assume it's OK.
            proxyZoneSpec.setDelegate(previousDelegate);
          }
          finishCallback();
        });
      },
      (error: any) => {
        // Need to restore the original zone.
        currentZone.run(() => {
          if (proxyZoneSpec.getDelegate() == testZoneSpec) {
            // Only reset the zone spec if it's still this one.
            Otherwise, assume it's OK.
            proxyZoneSpec.setDelegate(previousDelegate);
          }
          failCallback(error);
        });
      },
      'test');
    proxyZoneSpec.setDelegate(testZoneSpec);
  });
  return Zone.current.runGuarded(fn, context);
}

/**
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 * found in the LICENSE file at https://angular.io/license
 */
import { asyncFallback } from './async_fallback';
/**
 * Wraps a test function in an asynchronous test zone. The test will automatically
 * complete when all asynchronous calls within this zone are done. Can be used
 * to wrap an {@link inject} call.
 *
 * Example:
 * ```
 * it('...', waitForAsync(inject([AClass], (object) => {
 *   object.doSomething.then(() => {
 *     expect(...);
 *   }));
 * });
 * ```
 * @publicApi
 */
export function waitForAsync(fn: Function): (done: any) => any {
  const _Zone: any = typeof Zone !== 'undefined' ? Zone : null;
  if (!_Zone) {
    return function() {
      return Promise.reject(
        'Zone is needed for the waitForAsync() test helper but could not be found. ' +
        'Please make sure that your environment includes zone.js/dist/zone.js');
    };
  }
  const asyncTest = _Zone && _Zone[_Zone.__symbol__('asyncTest');]
  if (typeof asyncTest === 'function') {
    return asyncTest(fn);
  }
  // not using new version of zone.js
  // TODO @JiaLiPassion, remove this after all library updated to
  // newest version of zone.js(0.8.25)
  return asyncFallback(fn);
}

/**
 * @deprecated use `waitForAsync()`, (expected removal in v12)
 * @see {@link waitForAsync}
 * @publicApi
 */
export function async(fn: Function): (done: any) => any {
  return waitForAsync(fn);
}

/**
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 * found in the LICENSE file at https://angular.io/license
 */
import { ChangeDetectorRef, ComponentRef, DebugElement, ElementRef, getDebugNode, NgZone, RendererFactory2 } from '@angular/core';
/**
 * Fixture for debugging and testing a component.
 *
 * @publicApi
 */
export class

```



```

ComponentFixture<T> {\n /**\n * The DebugElement associated with the root element of this component.\n */\n
debugElement: DebugElement;\n /**\n * The instance of the root component class.\n */\n componentInstance:
T;\n /**\n * The native element at the root of the component.\n */\n nativeElement: any;\n /**\n * The
ElementRef for the element at the root of the component.\n */\n elementRef: ElementRef;\n\n /**\n * The
ChangeDetectorRef for the component.\n */\n changeDetectorRef: ChangeDetectorRef;\n\n private _renderer:
RendererFactory2|null|undefined;\n private _isStable: boolean = true;\n private _isDestroyed: boolean = false;\n
private _resolve: ((result: any) => void)|null = null;\n private _promise: Promise<any>|null = null;\n private
_onUnstableSubscription: any /** TODO #9100 */ = null;\n private _onStableSubscription: any /** TODO #9100
*/ = null;\n private _onMicrotaskEmptySubscription: any /** TODO #9100 */ = null;\n private
_onErrorSubscription: any /** TODO #9100 */ = null;\n\n constructor(\n   public componentRef:
ComponentRef<T>, public ngZone: NgZone|null,\n   private _autoDetect: boolean) {\n   this.changeDetectorRef
= componentRef.changeDetectorRef;\n   this.elementRef = componentRef.location;\n   this.debugElement =
<DebugElement>getDebugNode(this.elementRef.nativeElement);\n   this.componentInstance =
componentRef.instance;\n   this.nativeElement = this.elementRef.nativeElement;\n   this.componentRef =
componentRef;\n   this.ngZone = ngZone;\n\n   if (ngZone) {\n     // Create subscriptions outside the NgZone so
that the callbacks run outside\n     // of NgZone.\n     ngZone.runOutsideAngular(() => {\n
this._onUnstableSubscription = ngZone.onUnstable.subscribe({\n       next: () => {\n         this._isStable =
false;\n       }\n     });\n     this._onMicrotaskEmptySubscription = ngZone.onMicrotaskEmpty.subscribe({\n
       next: () => {\n         if (this._autoDetect) {\n           // Do a change detection run with checkNoChanges set to
true to check\n           // there are no changes on the second run.\n           this.detectChanges(true);\n         }\n
       }\n     });\n     this._onStableSubscription = ngZone.onStable.subscribe({\n       next: () => {\n
this._isStable = true;\n           // Check whether there is a pending whenStable() completer to resolve.\n           if
(this._promise !== null) {\n             // If so check whether there are no pending macrotasks before resolving.\n
             // Do this check in the next tick so that ngZone gets a chance to update the state of\n             // pending
macrotasks.\n             scheduleMicroTask(() => {\n               if (!ngZone.hasPendingMacrotasks) {\n                 if
(this._promise !== null) {\n                   this._resolve!(true);\n                   this._resolve = null;\n
this._promise = null;\n                 }\n               }\n             });\n           }\n         }\n     });\n     this._onErrorSubscription = ngZone.onError.subscribe({\n       next: (error: any) => {\n         throw error;\n
       }\n     });\n     this._tick(checkNoChanges: boolean) {\n
this.changeDetectorRef.detectChanges();\n     if (checkNoChanges) {\n       this.checkNoChanges();\n     }\n   }\n\n
/**\n * Trigger a change detection cycle for the component.\n */\n detectChanges(checkNoChanges: boolean =
true): void {\n   if (this.ngZone !== null) {\n     // Run the change detection inside the NgZone so that any async
tasks as part of the change\n     // detection are captured by the zone and can be waited for in isStable.\n
this.ngZone.run(() => {\n     this._tick(checkNoChanges);\n   });\n   } else {\n     // Running without zone. Just
do the change detection.\n     this._tick(checkNoChanges);\n   }\n }\n\n /**\n * Do a change detection run to
make sure there were no changes.\n */\n checkNoChanges(): void {\n
this.changeDetectorRef.checkNoChanges();\n }\n\n /**\n * Set whether the fixture should autodetect changes.\n
*/\n * Also runs detectChanges once so that any existing change is detected.\n */\n
autoDetectChanges(autoDetect: boolean = true) {\n   if (this.ngZone === null) {\n     throw new Error('Cannot call
autoDetectChanges when ComponentFixtureNoNgZone is set');\n   }\n   this._autoDetect = autoDetect;\n
this.detectChanges();\n }\n\n /**\n * Return whether the fixture is currently stable or has async tasks that have not
been completed\n * yet.\n */\n isStable(): boolean {\n   return this._isStable &&
!this.ngZone!.hasPendingMacrotasks;\n }\n\n /**\n * Get a promise that resolves when the fixture is stable.\n */\n
* This can be used to resume testing after events have triggered asynchronous activity or\n * asynchronous change
detection.\n */\n whenStable(): Promise<any> {\n   if (this.isStable()) {\n     return Promise.resolve(false);\n   }
else if (this._promise !== null) {\n     return this._promise;\n   } else {\n     this._promise = new Promise(res => {\n
       this._resolve = res;\n     });\n     return this._promise;\n   }\n }\n\n private _getRenderer() {\n   if
(this._renderer === undefined) {\n     this._renderer = this.componentRef.injector.get(RendererFactory2, null);\n

```

```

}\n  return this._renderer as RendererFactory2 | null;\n }\n\n /**\n  * Get a promise that resolves when the ui state
is stable following animations.\n  */\n whenRenderingDone(): Promise<any> {\n  const renderer =
this._getRenderer();\n  if (renderer && renderer.whenRenderingDone) {\n    return
renderer.whenRenderingDone();\n  }\n  return this.whenStable();\n }\n\n /**\n  * Trigger component
destruction.\n  */\n destroy(): void {\n  if (!this._isDestroyed) {\n    this.componentRef.destroy();\n    if
(this._onUnstableSubscription != null) {\n      this._onUnstableSubscription.unsubscribe();\n
this._onUnstableSubscription = null;\n    }\n    if (this._onStableSubscription != null) {\n
this._onStableSubscription.unsubscribe();\n    this._onStableSubscription = null;\n    }\n    if
(this._onMicrotaskEmptySubscription != null) {\n      this._onMicrotaskEmptySubscription.unsubscribe();\n
this._onMicrotaskEmptySubscription = null;\n    }\n    if (this._onErrorSubscription != null) {\n
this._onErrorSubscription.unsubscribe();\n    this._onErrorSubscription = null;\n    }\n    this._isDestroyed =
true;\n  }\n }\n}\n\nfunction scheduleMicroTask(fn: Function) {\n
Zone.current.scheduleMicroTask('scheduleMicrotask', fn);\n}\n\n", "/*\n * @license\n * Copyright Google LLC All
Rights Reserved.\n * Use of this source code is governed by an MIT-style license that can be\n * found in the
LICENSE file at https://angular.io/license\n */\n\n * fakeAsync has been moved to zone.js\n * this file is for
fallback in case old version of zone.js is used\n */\n\nconst _Zone: any = typeof Zone !== 'undefined' ? Zone :
null;\n\nconst FakeAsyncTestZoneSpec = _Zone && _Zone['FakeAsyncTestZoneSpec'];\n\ntype ProxyZoneSpec = {\n
setDelegate(delegateSpec: ZoneSpec): void; getDelegate(): ZoneSpec; resetDelegate(): void;\n};\n\nconst
ProxyZoneSpec: {get(): ProxyZoneSpec; assertPresent(): ProxyZoneSpec} =\n  _Zone &&
_Zone['ProxyZoneSpec'];\n\nlet _fakeAsyncTestZoneSpec: any = null;\n\n/**\n  * Clears out the shared fake async
zone for a test.\n  * To be called in a global `beforeEach`.\n  */\n * @publicApi\n */\n\nexport function
resetFakeAsyncZoneFallback() {\n  if (_fakeAsyncTestZoneSpec) {\n
    _fakeAsyncTestZoneSpec.unlockDatePatch();\n  }\n  _fakeAsyncTestZoneSpec = null;\n  // in node.js testing we
may not have ProxyZoneSpec in which case there is nothing to reset.\n  ProxyZoneSpec &&
ProxyZoneSpec.assertPresent().resetDelegate();\n}\n\nlet _inFakeAsyncCall = false;\n\n/**\n  * Wraps a function to
be executed in the fakeAsync zone:\n  * - microtasks are manually executed by calling `flushMicrotasks()`,\n  * -
timers are synchronous, `tick()` simulates the asynchronous passage of time.\n  * If there are any pending timers
at the end of the function, an exception will be thrown.\n  * Can be used to wrap inject() calls.\n  */\n\n *
@usageNotes\n * ### Example\n  */\n * @example core/testing/ts/fake_async.ts region='basic'\n  */\n * @param
fn\n  */\n * @returns The function wrapped to be executed in the fakeAsync zone\n  */\n * @publicApi\n */\n\nexport
function fakeAsyncFallback(fn: Function): (...args: any[]) => any {\n  // Not using an arrow function to preserve
context passed from call site\n  return function(this: unknown, ...args: any[]) {\n    const proxyZoneSpec =
ProxyZoneSpec.assertPresent();\n    if (_inFakeAsyncCall) {\n      throw new Error('fakeAsync() calls can not be
nested');\n    }\n    _inFakeAsyncCall = true;\n    try {\n      if (!_fakeAsyncTestZoneSpec) {\n        if
(proxyZoneSpec.getDelegate() instanceof FakeAsyncTestZoneSpec) {\n          throw new Error('fakeAsync() calls
can not be nested');\n        }\n        _fakeAsyncTestZoneSpec = new FakeAsyncTestZoneSpec();\n      }\n      let
res: any;\n      const lastProxyZoneSpec = proxyZoneSpec.getDelegate();\n      proxyZoneSpec.setDelegate(_fakeAsyncTestZoneSpec);\n      _fakeAsyncTestZoneSpec.lockDatePatch();\n      try
{\n        res = fn.apply(this, args);\n        flushMicrotasksFallback();\n      } finally {\n
        proxyZoneSpec.setDelegate(lastProxyZoneSpec);\n      }\n      if
(_fakeAsyncTestZoneSpec.pendingPeriodicTimers.length > 0) {\n        throw new Error(\n
`${_fakeAsyncTestZoneSpec.pendingPeriodicTimers.length}` +\n          ` periodic timer(s) still in the queue.`);\n
      }\n      if (_fakeAsyncTestZoneSpec.pendingTimers.length > 0) {\n        throw new Error(\n
`${_fakeAsyncTestZoneSpec.pendingTimers.length} timer(s) still in the queue.`);\n      }\n      return res;\n    }
finally {\n      _inFakeAsyncCall = false;\n      resetFakeAsyncZoneFallback();\n    }\n  };}\n}\n\nfunction
_getFakeAsyncZoneSpec(): any {\n  if (_fakeAsyncTestZoneSpec == null) {\n    throw new Error('The code should
be running in the fakeAsync zone to call this function');\n  }\n  return _fakeAsyncTestZoneSpec;\n}\n\n/**\n  *
Simulates the asynchronous passage of time for the timers in the fakeAsync zone.\n  * The microtasks queue is

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drained at the very start of this function and after any timer callback\n * has been executed.\n *\n * @usageNotes\n * ### Example\n *\n * { @example core/testing/ts/fake_async.ts region='basic'}\n *\n * @publicApi\n */\nexport\nfunction tickFallback(\n  millis: number = 0, tickOptions: {processNewMacroTasksSynchronously: boolean} = {\n    processNewMacroTasksSynchronously: true\n  }): void {\n  _getFakeAsyncZoneSpec().tick(millis, null,\n  tickOptions);\n}\n\n/**\n * Simulates the asynchronous passage of time for the timers in the fakeAsync zone by\n * draining the macrotask queue until it is empty. The returned value is the milliseconds\n * of time that would have been elapsed.\n *\n * @param maxTurns\n * @returns The simulated time elapsed, in millis.\n *\n * @publicApi\n */\nexport function flushFallback(maxTurns?: number): number {\n  return\n  _getFakeAsyncZoneSpec().flush(maxTurns);\n}\n\n/**\n * Discard all remaining periodic tasks.\n *\n * @publicApi\n */\nexport function discardPeriodicTasksFallback(): void {\n  const zoneSpec =\n  _getFakeAsyncZoneSpec();\n  zoneSpec.pendingPeriodicTimers.length = 0;\n}\n\n/**\n * Flush any pending\n * microtasks.\n *\n * @publicApi\n */\nexport function flushMicrotasksFallback(): void {\n  _getFakeAsyncZoneSpec().flushMicrotasks();\n}\n\n"/>**\n * @license\n * Copyright Google LLC All Rights\n * Reserved.\n *\n * Use of this source code is governed by an MIT-style license that can be\n * found in the\n * LICENSE file at https://angular.io/license\n */\nimport {discardPeriodicTasksFallback, fakeAsyncFallback,\n  flushFallback, flushMicrotasksFallback, resetFakeAsyncZoneFallback, tickFallback} from\n './fake_async_fallback';\n\nconst _Zone: any = typeof Zone !== 'undefined' ? Zone : null;\n\nconst\n  fakeAsyncTestModule = _Zone && _Zone[_Zone.__symbol__('fakeAsyncTest)];\n\n/**\n * Clears out the shared\n * fake async zone for a test.\n * To be called in a global `beforeEach`.\n *\n * @publicApi\n */\nexport function\n  resetFakeAsyncZone(): void {\n  if (fakeAsyncTestModule) {\n    return\n    fakeAsyncTestModule.resetFakeAsyncZone();\n  } else {\n    return resetFakeAsyncZoneFallback();\n  }\n}\n\n/**\n * Wraps a function to be executed in the fakeAsync zone:\n * - microtasks are manually executed by\n * calling `flushMicrotasks()`\n * - timers are synchronous, `tick()` simulates the asynchronous passage of time.\n *\n * If there are any pending timers at the end of the function, an exception will be thrown.\n *\n * Can be used to wrap\n * inject() calls.\n *\n * @usageNotes\n * ### Example\n *\n * { @example core/testing/ts/fake_async.ts\n * region='basic'}\n *\n * @param fn\n * @returns The function wrapped to be executed in the fakeAsync zone\n *\n * @publicApi\n */\nexport function fakeAsync(fn: Function): (...args: any[]) => any {\n  if (fakeAsyncTestModule)\n  {\n    return fakeAsyncTestModule.fakeAsync(fn);\n  } else {\n    return fakeAsyncFallback(fn);\n  }\n}\n\n/**\n * Simulates the asynchronous passage of time for the timers in the fakeAsync zone.\n * The microtasks queue is\n * drained at the very start of this function and after any timer callback\n * has been executed.\n *\n * @usageNotes\n * ### Example\n *\n * { @example core/testing/ts/fake_async.ts region='basic'}\n *\n * @param millis, the number\n * of millisecond to advance the virtual timer\n * @param tickOptions, the options of tick with a flag called\n * processNewMacroTasksSynchronously, whether to invoke the new macroTasks, by default is\n * false, means the\n * new macroTasks will be invoked\n * For example,\n *\n * it ('test with nested setTimeout', fakeAsync(() => {\n * let nestedTimeoutInvoked = false;\n * function funcWithNestedTimeout() {\n *   setTimeout(() => {\n *     nestedTimeoutInvoked = true;\n *   });\n * });\n * setTimeout(funcWithNestedTimeout);\n * tick();\n * expect(nestedTimeoutInvoked).toBe(true);\n * }));\n *\n * in this case, we have a nested timeout (new macroTask),\n * when we tick, both the\n * funcWithNestedTimeout and the nested timeout both will be invoked.\n *\n * it ('test\n * with nested setTimeout', fakeAsync(() => {\n * let nestedTimeoutInvoked = false;\n * function\n * funcWithNestedTimeout() {\n *   setTimeout(() => {\n *     nestedTimeoutInvoked = true;\n *   });\n * });\n * setTimeout(funcWithNestedTimeout);\n * tick(0, {processNewMacroTasksSynchronously: false});\n * expect(nestedTimeoutInvoked).toBe(false);\n * }));\n *\n * if we pass the tickOptions with\n * processNewMacroTasksSynchronously to be false, the nested timeout\n * will not be invoked.\n *\n * @publicApi\n */\nexport function tick(\n  millis: number = 0, tickOptions:\n  {processNewMacroTasksSynchronously: boolean} = {\n    processNewMacroTasksSynchronously: true\n  }):\n  void {\n  if (fakeAsyncTestModule) {\n    return fakeAsyncTestModule.tick(millis, tickOptions);\n  } else {\n    return tickFallback(millis, tickOptions);\n  }\n}\n\n/**\n * Simulates the asynchronous passage of time for the\n * timers in the fakeAsync zone by\n * draining the macrotask queue until it is empty. The returned value is the

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milliseconds\n * of time that would have been elapsed.\n *\n * @param maxTurns\n * @returns The simulated time
elapsed, in millis.\n *\n * @publicApi\n */\nexport function flush(maxTurns?: number): number {\n if
(fakeAsyncTestModule) {\n return fakeAsyncTestModule.flush(maxTurns);\n } else {\n return
flushFallback(maxTurns);\n }\n}\n\n/**\n * Discard all remaining periodic tasks.\n *\n * @publicApi\n */\nexport
function discardPeriodicTasks(): void {\n if (fakeAsyncTestModule) {\n return
fakeAsyncTestModule.discardPeriodicTasks();\n } else {\n discardPeriodicTasksFallback();\n }\n}\n\n/**\n *
Flush any pending microtasks.\n *\n * @publicApi\n */\nexport function flushMicrotasks(): void {\n if
(fakeAsyncTestModule) {\n return fakeAsyncTestModule.flushMicrotasks();\n } else {\n return
flushMicrotasksFallback();\n }\n}\n\n"/**\n * @license\n * Copyright Google LLC All Rights Reserved.\n *\n *
Use of this source code is governed by an MIT-style license that can be\n * found in the LICENSE file at
https://angular.io/license\n */\n\n/**\n * Injectable completer that allows signaling completion of an asynchronous
test. Used internally.\n */\nexport class AsyncTestCompleter {\n // TODO(issue/24571): remove '!.\n private
_resolve!: (result: any) => void;\n // TODO(issue/24571): remove '!.\n private _reject!: (err: any) => void;\n
private _promise: Promise<any> = new Promise((res, rej) => {\n this._resolve = res;\n this._reject = rej;\n });\n
done(value?: any) {\n this._resolve(value);\n }\n\n fail(error?: any, stackTrace?: string) {\n this._reject(error);\n
}\n\n get promise(): Promise<any> {\n return this._promise;\n }\n}\n\n"/**\n * @license\n * Copyright Google
LLC All Rights Reserved.\n *\n * Use of this source code is governed by an MIT-style license that can be\n * found
in the LICENSE file at https://angular.io/license\n */\n\nimport {Type} from './interface/type';\nimport
{Component} from './directives';\n\n/**\n * Used to resolve resource URLs on `@Component` when used with
JIT compilation.\n *\n * Example:\n * ```\n * @Component({\n * selector: 'my-comp',\n * templateUrl: 'my-
comp.html', // This requires asynchronous resolution\n * })\n * class MyComponent{\n * }\n *\n * // Calling
`renderComponent` will fail because `renderComponent` is a synchronous process\n * // and `MyComponent`s
`@Component.templateUrl` needs to be resolved asynchronously.\n *\n * // Calling `resolveComponentResources`\n *
will resolve `@Component.templateUrl` into\n * // `@Component.template`, which allows `renderComponent` to
proceed in a synchronous manner.\n *\n * // Use browser's `fetch()` function as the default resource resolution
strategy.\n * resolveComponentResources(fetch).then(() => {\n * // After resolution all URLs have been converted
into `template` strings.\n * renderComponent(MyComponent);\n * });\n *\n * NOTE: In AOT the
resolution happens during compilation, and so there should be no need\n * to call this method outside JIT mode.\n
*\n * @param resourceResolver a function which is responsible for returning a `Promise` to the\n * contents of the
resolved URL. Browser's `fetch()` method is a good default implementation.\n */\nexport function
resolveComponentResources(\n resourceResolver: (url: string) => (Promise<string|{text(): Promise<string>}>)):\n
Promise<void> {\n // Store all promises which are fetching the resources.\n const componentResolved:\n
Promise<void>[] = [];\n\n // Cache so that we don't fetch the same resource more than once.\n const urlMap = new
Map<string, Promise<string>>();\n function cachedResourceResolve(url: string): Promise<string> {\n let promise
= urlMap.get(url);\n if (!promise) {\n const resp = resourceResolver(url);\n urlMap.set(url, promise =
resp.then(unwrapResponse));\n }\n return promise;\n }\n\n componentResourceResolutionQueue.forEach((component: Component, type: Type<any>) => {\n const promises:\n
Promise<void>[] = [];\n if (component.templateUrl) {\n
promises.push(cachedResourceResolve(component.templateUrl).then((template) => {\n component.template =
template;\n }));\n }\n const styleUrls = component.styleUrls;\n const styles = component.styles ||
(component.styles = []);\n const styleOffset = component.styles.length;\n styleUrls &&\n
styleUrls.forEach((styleUrl, index) => {\n styles.push(""); // pre-allocate array.\n
promises.push(cachedResourceResolve(styleUrl).then((style) => {\n styles[styleOffset + index] = style;\n
styleUrls.splice(styleUrls.indexOf(styleUrl), 1);\n if (styleUrls.length == 0) {\n component.styleUrls =
undefined;\n }\n }));\n });\n const fullyResolved = Promise.all(promises).then(() =>
componentDefResolved(type));\n componentResolved.push(fullyResolved);\n });\n\n clearResolutionOfComponentResourcesQueue();\n return Promise.all(componentResolved).then(() =>
undefined);\n }\n\nlet componentResourceResolutionQueue = new Map<Type<any>, Component>();\n\n// Track

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when existing cmp for a Type is waiting on resources.\nconst componentDefPendingResolution = new
Set<Type<any>>();\n\nexport function maybeQueueResolutionOfComponentResources(type: Type<any>,
metadata: Component) {\n  if (componentNeedsResolution(metadata)) {\n
componentResourceResolutionQueue.set(type, metadata);\n  componentDefPendingResolution.add(type);\n
}\n}\n\nexport function isComponentDefPendingResolution(type: Type<any>): boolean {\n  return
componentDefPendingResolution.has(type);\n}\n\nexport function componentNeedsResolution(component:
Component): boolean {\n  return !!(\n    component.templateUrl && !component.hasOwnProperty('template')) ||\n
    component.styleUrls && component.styleUrls.length);\n}\n\nexport function
clearResolutionOfComponentResourcesQueue(): Map<Type<any>, Component> {\n  const old =
componentResourceResolutionQueue;\n  componentResourceResolutionQueue = new Map();\n  return
old;\n}\n\nexport function restoreComponentResolutionQueue(queue: Map<Type<any>, Component>): void {\n
componentDefPendingResolution.clear();\n  queue.forEach( (_, type) =>
componentDefPendingResolution.add(type));\n  componentResourceResolutionQueue = queue;\n}\n\nexport
function isComponentResourceResolutionQueueEmpty() {\n  return componentResourceResolutionQueue.size ===
0;\n}\n\nfunction unwrapResponse(response: string|Promise<string>): string|Promise<string> {\n  return
typeof response === 'string' ? response : response.text();\n}\n\nfunction componentDefResolved(type: Type<any>):
void {\n  componentDefPendingResolution.delete(type);\n}\n\n"/**\n * @license\n * Copyright Google LLC All
Rights Reserved.\n * Use of this source code is governed by an MIT-style license that can be\n * found in the
LICENSE file at https://angular.io/license\n */\nimport {stringify as stringify} from '@angular/core';\nimport
{MetadataOverride} from './metadata_override';\n\ninterface StringMap = {\n  [key: string]: any;\n};\n\nlet
_nextReferenceId = 0;\n\nexport class MetadataOverrider {\n  private _references = new Map<any, string>();\n
/**\n * Creates a new instance for the given metadata class\n * based on an old instance and overrides.\n */\n
overrideMetadata<C extends T, T>(\n  metadataClass: {new(options: T): C}, oldMetadata: C, override:
MetadataOverride<T>): C {\n  const props: StringMap = {};\n  if (oldMetadata) {\n
_valueProps(oldMetadata).forEach((prop) => props[prop] = (<any>oldMetadata)[prop]);\n  }\n  if (override.set)
{\n    if (override.remove || override.add) {\n      throw new Error(`Cannot set and add/remove
${stringify(metadataClass)} at the same time!`);\n    }\n    setMetadata(props, override.set);\n  }\n  if
(override.remove) {\n    removeMetadata(props, override.remove, this._references);\n  }\n  if (override.add) {\n
addMetadata(props, override.add);\n  }\n  return new metadataClass(<any>props);\n  }\n}\n\nfunction
removeMetadata(metadata: StringMap, remove: any, references: Map<any, string>) {\n  const removeObjects = new
Set<string>();\n  for (const prop in remove) {\n    const removeValue = remove[prop];\n    if
(Array.isArray(removeValue)) {\n      removeValue.forEach((value: any) => {\n
removeObjects.add(_propHashKey(prop, value, references));\n    });\n  } else {\n
removeObjects.add(_propHashKey(prop, removeValue, references));\n  }\n}\n\nfor (const prop in metadata) {\n
const propValue = metadata[prop];\n  if (Array.isArray(propValue)) {\n    metadata[prop] = propValue.filter(\n
(value: any) => !removeObjects.has(_propHashKey(prop, value, references)));\n  } else {\n    if
(removeObjects.has(_propHashKey(prop, propValue, references))) {\n    metadata[prop] = undefined;\n  }\n
}\n}\n}\n\nfunction addMetadata(metadata: StringMap, add: any) {\n  for (const prop in add) {\n    const addValue
= add[prop];\n    const propValue = metadata[prop];\n    if (propValue !== null && Array.isArray(propValue)) {\n
metadata[prop] = propValue.concat(addValue);\n  } else {\n    metadata[prop] = addValue;\n  }\n
}\n}\n\nfunction setMetadata(metadata: StringMap, set: any) {\n  for (const prop in set) {\n    metadata[prop] =
set[prop];\n  }\n}\n\nfunction _propHashKey(propName: any, propValue: any, references: Map<any, string>): string
{\n  const replacer = (key: any, value: any) => {\n    if (typeof value === 'function') {\n      value =
_serializeReference(value, references);\n    }\n    return value;\n  };\n\nreturn
`${propName}:${JSON.stringify(propValue, replacer)}`;\n}\n\nfunction _serializeReference(ref: any, references:
Map<any, string>): string {\n  let id = references.get(ref);\n  if (!id) {\n    id =
`${stringify(ref)}${_nextReferenceId++}`;\n    references.set(ref, id);\n  }\n  return id;\n}\n\nfunction
_valueProps(obj: any): string[] {\n  const props: string[] = [];\n  // regular public props\n

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NgModuleRef, setLocaleId as setLocaleId, transitiveScopesFor as transitiveScopesFor, InjectableDef as
InjectableDef} from '@angular/core';\n\nimport {clearResolutionOfComponentResourcesQueue,
isComponentDefPendingResolution, resolveComponentResources, restoreComponentResolutionQueue} from
'././src/metadata/resource_loading';\n\nimport {MetadataOverride} from './metadata_override';\nimport
{ComponentResolver, DirectiveResolver, NgModuleResolver, PipeResolver, Resolver} from './resolvers';\nimport
{TestModuleMetadata} from './test_bed_common';\n\nenum TestingModuleOverride {\n  DECLARATION,\n  OVERRIDE_TEMPLATE,\n}\n\nfunction isTestingModuleOverride(value: unknown): value is
TestingModuleOverride {\n  return value === TestingModuleOverride.DECLARATION ||\n    value ===
TestingModuleOverride.OVERRIDE_TEMPLATE;\n}\n\n// Resolvers for Angular decorators\ntype Resolvers =
{\n  module: Resolver<NgModule>,\n  component: Resolver<Directive>,\n  directive: Resolver<Component>,\n  pipe: Resolver<Pipe>,\n};\n\ninterface CleanupOperation {\n  fieldName: string;\n  object: any;\n  originalValue:
unknown;\n}\n\nexport class R3TestBedCompiler {\n  private originalComponentResolutionQueue:
Map<Type<any>, Component>|null = null;\n\n  // Testing module configuration\n  private declarations:
Type<any>[] = [];\n  private imports: Type<any>[] = [];\n  private providers: Provider[] = [];\n  private schemas:
any[] = [];\n\n  // Queues of components/directives/pipes that should be recompiled.\n  private pendingComponents
= new Set<Type<any>>();\n  private pendingDirectives = new Set<Type<any>>();\n  private pendingPipes = new
Set<Type<any>>();\n\n  // Keep track of all components and directives, so we can patch Providers onto defs later.\n
private seenComponents = new Set<Type<any>>();\n  private seenDirectives = new Set<Type<any>>();\n\n  //
Keep track of overridden modules, so that we can collect all affected ones in the module tree.\n  private
overriddenModules = new Set<NgModuleType<any>>();\n\n  // Store resolved styles for Components that have
template overrides present and `styleUrls`\n  // defined at the same time.\n  private existingComponentStyles = new
Map<Type<any>, string[]>();\n  private resolvers: Resolvers = initResolvers();\n  private
componentToModuleScope = new Map<Type<any>, Type<any>|TestingModuleOverride>();\n\n  // Map that keeps
initial version of component/directive/pipe defs in case\n  // we compile a Type again, thus overriding respective
static fields. This is\n  // required to make sure we restore defs to their initial states between test runs\n  // TODO: we
should support the case with multiple defs on a type\n  private initialNgDefs = new Map<Type<any>, [string,
PropertyDescriptor|undefined]>();\n\n  // Array that keeps cleanup operations for initial versions of
component/directive/pipe/module\n  // defs in case TestBed makes changes to the originals.\n  private
defCleanupOps: CleanupOperation[] = [];\n  private _injector: Injector|null = null;\n  private compilerProviders:
Provider[]|null = null;\n  private providerOverrides: Provider[] = [];\n  private rootProviderOverrides: Provider[] =
[];\n  // Overrides for injectables with `{providedIn: SomeModule}` need to be tracked and added to that\n  //
module's provider list.\n  private providerOverridesByModule = new Map<InjectorType<any>, Provider[]>();\n
private providerOverridesByToken = new Map<any, Provider>();\n  private moduleProvidersOverridden = new
Set<Type<any>>();\n  private testModuleType: NgModuleType<any>;\n  private testModuleRef:
NgModuleRef<any>|null = null;\n\n  constructor(private platform: PlatformRef, private additionalModuleTypes:
Type<any>|Type<any>[]) {\n    class DynamicTestModule {}\n    this.testModuleType = DynamicTestModule as
any;\n  }\n\n  setCompilerProviders(providers: Provider[]|null): void {\n    this.compilerProviders = providers;\n
this._injector = null;\n  }\n\n  configureTestingModule(moduleDef: TestModuleMetadata): void {\n    // Enqueue
any compilation tasks for the directly declared component.\n    if (moduleDef.declarations !== undefined) {\n
this.queueTypeArray(moduleDef.declarations, TestingModuleOverride.DECLARATION);\n
this.declarations.push(...moduleDef.declarations);\n    }\n\n    // Enqueue any compilation tasks for imported
modules.\n    if (moduleDef.imports !== undefined) {\n
this.queueTypesFromModulesArray(moduleDef.imports);\n    this.imports.push(...moduleDef.imports);\n    }\n\n
if (moduleDef.providers !== undefined) {\n    this.providers.push(...moduleDef.providers);\n    }\n\n    if
(moduleDef.schemas !== undefined) {\n    this.schemas.push(...moduleDef.schemas);\n    }\n  }\n\n  overrideModule(ngModule: Type<any>, override: MetadataOverride<NgModule>): void {\n
this.overriddenModules.add(ngModule as NgModuleType<any>);\n\n  // Compile the module right away.\n
this.resolvers.module.addOverride(ngModule, override);\n  const metadata =

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this.resolvers.module.resolve(ngModule);\n  if (metadata === null) {\n    throw
invalidTypeError(ngModule.name, 'NgModule');\n  }\n\n  this.recompileNgModule(ngModule, metadata);\n\n  //
At this point, the module has a valid module def (mod), but the override may have introduced\n  // new declarations
or imported modules. Ingest any possible new types and add them to the\n  // current queue.\n
this.queueTypesFromModulesArray([ngModule]);\n\n  overrideComponent(component: Type<any>, override:
MetadataOverride<Component>): void {\n    this.resolvers.component.addOverride(component, override);\n
this.pendingComponents.add(component);\n  }\n\n  overrideDirective(directive: Type<any>, override:
MetadataOverride<Directive>): void {\n    this.resolvers.directive.addOverride(directive, override);\n
this.pendingDirectives.add(directive);\n  }\n\n  overridePipe(pipe: Type<any>, override: MetadataOverride<Pipe>):
void {\n    this.resolvers.pipe.addOverride(pipe, override);\n    this.pendingPipes.add(pipe);\n  }\n\n
overrideProvider(\n  token: any,\n  provider: {useFactory?: Function, useValue?: any, deps?: any[], multi?:
boolean}): void {\n    let providerDef: Provider;\n    if (provider.useFactory !== undefined) {\n      providerDef = {\n
        provide: token,\n        useFactory: provider.useFactory,\n        deps: provider.deps || [],\n        multi:
provider.multi\n      };\n    } else if (provider.useValue !== undefined) {\n      providerDef = {provide: token,
useValue: provider.useValue, multi: provider.multi};\n    } else {\n      providerDef = {provide: token};\n    }\n\n
const injectableDef: InjectableDef<any>|null =\n      typeof token !== 'string' ? getInjectableDef(token) : null;\n
const isRoot = injectableDef !== null && injectableDef.providedIn === 'root';\n    const overridesBucket = isRoot ?
this.rootProviderOverrides : this.providerOverrides;\n    overridesBucket.push(providerDef);\n    // Keep overrides
grouped by token as well for fast lookups using token\n    this.providerOverridesByToken.set(token, providerDef);\n
    if (injectableDef !== null && injectableDef.providedIn !== null &&\n      typeof injectableDef.providedIn !==
'string') {\n      const existingOverrides = this.providerOverridesByModule.get(injectableDef.providedIn);\n      if
(existingOverrides !== undefined) {\n        existingOverrides.push(providerDef);\n      } else {\n
this.providerOverridesByModule.set(injectableDef.providedIn, [providerDef]);\n      }\n    }\n\n
overrideTemplateUsingTestingModule(type: Type<any>, template: string): void {\n    const def = (type as
any)[NG_COMP_DEF];\n    const hasStyleUrls = (): boolean => {\n      const metadata =
this.resolvers.component.resolve(type)! as Component;\n      return !!metadata.styleUrls &&
metadata.styleUrls.length > 0;\n    };\n    const overrideStyleUrls = !!def &&
!isComponentDefPendingResolution(type) && hasStyleUrls();\n    // In Ivy, compiling a component does not
require knowing the module providing the\n    // component's scope, so overrideTemplateUsingTestingModule can
be implemented purely via\n    // overrideComponent. Important: overriding template requires full Component re-
compilation,\n    // which may fail in case styleUrls are also present (thus Component is considered as required\n    //
resolution). In order to avoid this, we preemptively set styleUrls to an empty array,\n    // preserve current styles
available on Component def and restore styles back once compilation\n    // is complete.\n    const override =
overrideStyleUrls ? {template, styles: [], styleUrls: []} : {template};\n    this.overrideComponent(type, {set:
override});\n\n    if (overrideStyleUrls && def.styles && def.styles.length > 0) {\n
this.existingComponentStyles.set(type, def.styles);\n    }\n\n    // Set the component's scope to be the testing
module.\n    this.componentToModuleScope.set(type,TestingModuleOverride.OVERRIDE_TEMPLATE);\n\n  }\n\n
async compileComponents(): Promise<void> {\n    this.clearComponentResolutionQueue();\n    // Run compilers for
all queued types.\n    let needsAsyncResources = this.compileTypesSync();\n\n    // compileComponents() should
not be async unless it needs to be.\n    if (needsAsyncResources) {\n      let resourceLoader: ResourceLoader;\n
let resolver = (url: string): Promise<string> => {\n      if (!resourceLoader) {\n        resourceLoader =
this.injector.get(ResourceLoader);\n      }\n      return Promise.resolve(resourceLoader.get(url));\n    };\n    await
resolveComponentResources(resolver);\n  }\n\n  finalize(): NgModuleRef<any> {\n    // One last compile\n
this.compileTypesSync();\n\n    // Create the testing module itself.\n    this.compileTestingModule();\n\n
this.applyTransitiveScopes();\n\n    this.applyProviderOverrides();\n\n    // Patch previously stored `styles`
Component values (taken from cmp), in case these\n    // Components have `styleUrls` fields defined and template
override was requested.\n    this.patchComponentsWithExistingStyles();\n\n    // Clear the
componentToModuleScope map, so that future compilations don't reset the scope of\n    // every component.\n

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this.componentToModuleScope.clear();\n\n  const parentInjector = this.platform.injector;\n  this.testModuleRef =
new NgModuleRef(this.testModuleType, parentInjector);\n\n  // ApplicationInitStatus.runInitializers() is marked
@internal to core.\n  // Cast it to any before accessing it.\n  (this.testModuleRef.injector.get(ApplicationInitStatus) as any).runInitializers();\n\n  // Set locale ID after running
app initializers, since locale information might be updated while\n  // running initializers. This is also consistent
with the execution order while bootstrapping an\n  // app (see `packages/core/src/application_ref.ts` file).\n  const
localeId = this.testModuleRef.injector.get(LOCALE_ID, DEFAULT_LOCALE_ID);\n  setLocaleId(localeId);\n\n  return this.testModuleRef;\n } \n\n /**\n  * @internal\n  */\n  _compileNgModuleSync(moduleType:
Type<any>): void {\n  this.queueTypesFromModulesArray([moduleType]);\n  this.compileTypesSync();\n  this.applyProviderOverrides();\n  this.applyProviderOverridesToModule(moduleType);\n
this.applyTransitiveScopes();\n } \n\n /**\n  * @internal\n  */\n  _compileNgModuleAsync(moduleType:
Type<any>): Promise<void> {\n  this.queueTypesFromModulesArray([moduleType]);\n  await
this.compileComponents();\n  this.applyProviderOverrides();\n
this.applyProviderOverridesToModule(moduleType);\n  this.applyTransitiveScopes();\n } \n\n /**\n  *
@internal\n  */\n  _getModuleResolver(): Resolver<NgModule> {\n  return this.resolvers.module;\n } \n\n /**\n  *
@internal\n  */\n  _getComponentFactories(moduleType: NgModuleType): ComponentFactory<any>[] {\n
return maybeUnwrapFn(moduleType.mod.declarations).reduce((factories, declaration) => {\n  const
componentDef = (declaration as any).cmp;\n  componentDef && factories.push(new
ComponentFactory(componentDef, this.testModuleRef!));\n  return factories;\n }, [], as
ComponentFactory<any>[]);\n } \n\n private compileTypesSync(): boolean {\n  // Compile all queued
components, directives, pipes.\n  let needsAsyncResources = false;\n
this.pendingComponents.forEach(declaration => {\n  needsAsyncResources = needsAsyncResources ||
isComponentDefPendingResolution(declaration);\n  const metadata =
this.resolvers.component.resolve(declaration);\n  if (metadata === null) {\n  throw
invalidTypeError(declaration.name, 'Component');\n  }\n  this.maybeStoreNgDef(NG_COMP_DEF,
declaration);\n  compileComponent(declaration, metadata);\n });\n  this.pendingComponents.clear();\n
this.pendingDirectives.forEach(declaration => {\n  const metadata =
this.resolvers.directive.resolve(declaration);\n  if (metadata === null) {\n  throw
invalidTypeError(declaration.name, 'Directive');\n  }\n  this.maybeStoreNgDef(NG_DIR_DEF, declaration);\n
compileDirective(declaration, metadata);\n });\n  this.pendingDirectives.clear();\n
this.pendingPipes.forEach(declaration => {\n  const metadata = this.resolvers.pipe.resolve(declaration);\n  if
(metadata === null) {\n  throw invalidTypeError(declaration.name, 'Pipe');\n  }\n
this.maybeStoreNgDef(NG_PIPE_DEF, declaration);\n  compilePipe(declaration, metadata);\n });\n
this.pendingPipes.clear();\n\n  return needsAsyncResources;\n } \n\n private applyTransitiveScopes(): void {\n
if (this.overriddenModules.size > 0) {\n  // Module overrides (via `TestBed.overrideModule`) might affect scopes
that were previously\n  // calculated and stored in `transitiveCompileScopes`. If module overrides are present,\n
// collect all affected modules and reset scopes to force their re-calculation.\n  const testingModuleDef =
(this.testModuleType as any)[NG_MOD_DEF];\n  const affectedModules =
this.collectModulesAffectedByOverrides(testingModuleDef.imports);\n  if (affectedModules.size > 0) {\n
affectedModules.forEach(moduleType => {\n  this.storeFieldOfDefOnType(moduleType as any,
NG_MOD_DEF, 'transitiveCompileScopes');\n  (moduleType as
any)[NG_MOD_DEF].transitiveCompileScopes = null;\n  });\n } \n\n } \n\n const moduleToScope = new
Map<Type<any>|TestingModuleOverride, NgModuleTransitiveScopes>();\n  const getScopeOfModule = (\n
(moduleType: Type<any>|TestingModuleOverride): NgModuleTransitiveScopes => {\n  if
(!moduleToScope.has(moduleType)) {\n  const isTestingModule = isTestingModuleOverride(moduleType);\n
const realType = isTestingModule ? this.testModuleType : moduleType as Type<any>;\n
moduleToScope.set(moduleType, transitiveScopesFor(realType));\n  }\n  return
moduleToScope.get(moduleType)!;\n  });\n\n  this.componentToModuleScope.forEach((moduleType,

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componentType) => {\n  const moduleScope = getScopeOfModule(moduleType);\n  this.storeFieldOfDefOnType(componentType, NG_COMP_DEF, 'directiveDefs');\n  this.storeFieldOfDefOnType(componentType, NG_COMP_DEF, 'pipeDefs');\n  // `tView` that is stored on component def contains information about directives and pipes\n  // that are in the scope of this component. Patching component scope will cause `tView` to be\n  // changed. Store original `tView` before patching scope, so the `tView` (including scope\n  // information) is restored back to its previous/original state before running next test.\n  this.storeFieldOfDefOnType(componentType, NG_COMP_DEF, 'tView');\n  patchComponentDefWithScope((componentType as any).cmp, moduleScope);\n  }\n  this.componentToModuleScope.clear();\n  }\n  private applyProviderOverrides(): void {\n  const maybeApplyOverrides = (field: string) => (type: Type<any>) => {\n  const resolver = field === NG_COMP_DEF ? this.resolvers.component : this.resolvers.directive;\n  const metadata = resolver.resolve(type)!;\n  if (this.hasProviderOverrides(metadata.providers)) {\n  this.patchDefWithProviderOverrides(type, field);\n  }\n  }\n  this.seenComponents.forEach(maybeApplyOverrides(NG_COMP_DEF));\n  this.seenDirectives.forEach(maybeApplyOverrides(NG_DIR_DEF));\n  this.seenComponents.clear();\n  this.seenDirectives.clear();\n  }\n  private applyProviderOverridesToModule(moduleType: Type<any>): void {\n  if (this.moduleProvidersOverridden.has(moduleType)) {\n  return;\n  }\n  this.moduleProvidersOverridden.add(moduleType);\n  const injectorDef: any = (moduleType as any)[NG_INJ_DEF];\n  if (this.providerOverridesByToken.size > 0) {\n  const providers = [...injectorDef.providers,\n  ...(this.providerOverridesByModule.get(moduleType as InjectorType<any>) || [])\n  ];\n  if (this.hasProviderOverrides(providers)) {\n  this.maybeStoreNgDef(NG_INJ_DEF, moduleType);\n  this.storeFieldOfDefOnType(moduleType, NG_INJ_DEF, 'providers');\n  injectorDef.providers = this.getOverriddenProviders(providers);\n  }\n  // Apply provider overrides to imported modules recursively\n  const moduleDef = (moduleType as any)[NG_MOD_DEF];\n  const imports = maybeUnwrapFn(moduleDef.imports);\n  for (const importedModule of imports) {\n  this.applyProviderOverridesToModule(importedModule);\n  }\n  // Also override the providers on any ModuleWithProviders imports since those don't appear in\n  // the moduleDef.\n  for (const importedModule of flatten(injectorDef.imports)) {\n  if (isModuleWithProviders(importedModule)) {\n  this.defCleanupOps.push({\n  object: importedModule,\n  fieldName: 'providers',\n  originalValue: importedModule.providers\n  });\n  importedModule.providers = this.getOverriddenProviders(importedModule.providers);\n  }\n  }\n  }\n  private patchComponentsWithExistingStyles(): void {\n  this.existingComponentStyles.forEach((styles, type) => (type as any)[NG_COMP_DEF].styles = styles);\n  this.existingComponentStyles.clear();\n  }\n  private queueTypeArray(arr: any[], moduleType: Type<any>|TestingModuleOverride): void {\n  for (const value of arr) {\n  if (Array.isArray(value)) {\n  this.queueTypeArray(value, moduleType);\n  } else {\n  this.queueType(value, moduleType);\n  }\n  }\n  }\n  private recompileNgModule(ngModule: Type<any>, metadata: NgModule): void {\n  // Cache the initial ngModuleDef as it will be overwritten.\n  this.maybeStoreNgDef(NG_MOD_DEF, ngModule);\n  this.maybeStoreNgDef(NG_INJ_DEF, ngModule);\n  compileNgModuleDefs(ngModule as NgModuleType<any>, metadata);\n  }\n  private queueType(type: Type<any>, moduleType: Type<any>|TestingModuleOverride): void {\n  const component = this.resolvers.component.resolve(type);\n  if (component) {\n  // Check whether a give Type has respective NG def (cmp) and compile if def is\n  // missing. That might happen in case a class without any Angular decorators extends another\n  // class where Component/Directive/Pipe decorator is defined.\n  if (isComponentDefPendingResolution(type) || !type.hasOwnProperty(NG_COMP_DEF)) {\n  this.pendingComponents.add(type);\n  }\n  this.seenComponents.add(type);\n  // Keep track of the module which declares this component, so later the component's scope\n  // can be set correctly. If the component has already been recorded here, then one of several\n  // cases is true:\n  // * the module containing the component was imported multiple times (common).\n  // * the component is declared in multiple modules (which is an

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error).\n // * the component was in 'declarations' of the testing module, and also in an imported module\n // in
which case the module scope will be TestingModuleOverride.DECLARATION.\n // *
overrideTemplateUsingTestingModule was called for the component in which case the module\n // scope will
be TestingModuleOverride.OVERRIDE_TEMPLATE.\n //\n // If the component was previously in the testing
module's 'declarations' (meaning the\n // current value is TestingModuleOverride.DECLARATION), then
`moduleType` is the component's\n // real module, which was imported. This pattern is understood to mean that
the component\n // should use its original scope, but that the testing module should also contain the\n //
component in its scope.\n if (!this.componentToModuleScope.has(type) ||\n
this.componentToModuleScope.get(type) === TestingModuleOverride.DECLARATION) {\n
this.componentToModuleScope.set(type, moduleType);\n } return;\n }\n\n const directive =
this.resolvers.directive.resolve(type);\n if (directive) {\n if (!type.hasOwnProperty(NG_DIR_DEF)) {\n
this.pendingDirectives.add(type);\n }\n this.seenDirectives.add(type);\n return;\n }\n\n const pipe =
this.resolvers.pipe.resolve(type);\n if (pipe && !type.hasOwnProperty(NG_PIPE_DEF)) {\n
this.pendingPipes.add(type);\n return;\n }\n }\n\n private queueTypesFromModulesArray(arr: any[]): void {\n
// Because we may encounter the same NgModule while processing the imports and exports of an\n // NgModule
tree, we cache them in this set so we can skip ones that have already been seen\n // encountered. In some test
setups, this caching resulted in 10X runtime improvement.\n const processedNgModuleDefs = new Set();\n
const queueTypesFromModulesArrayRecur = (arr: any[]): void => {\n for (const value of arr) {\n if
(Array.isArray(value)) {\n queueTypesFromModulesArrayRecur(value);\n } else if
(hasNgModuleDef(value)) {\n const def = value.mod;\n if (processedNgModuleDefs.has(def)) {\n
continue;\n }\n processedNgModuleDefs.add(def);\n // Look through declarations, imports, and
exports, and queue\n // everything found there.\n
this.queueTypeArray(maybeUnwrapFn(def.declarations), value);\n
queueTypesFromModulesArrayRecur(maybeUnwrapFn(def.imports));\n
queueTypesFromModulesArrayRecur(maybeUnwrapFn(def.exports));\n }\n }\n }\n\n queueTypesFromModulesArrayRecur(arr);\n }\n\n // When module overrides (via `TestBed.overrideModule`) are
present, it might affect all modules\n // that import (even transitively) an overridden one. For all affected modules
we need to\n // recalculate their scopes for a given test run and restore original scopes at the end. The goal\n // of
this function is to collect all affected modules in a set for further processing. Example:\n // if we have the following
module hierarchy: A -> B -> C (where `->` means `imports`) and module\n // `C` is overridden, we consider `A`
and `B` as affected, since their scopes might become\n // invalidated with the override.\n private
collectModulesAffectedByOverrides(arr: any[]): Set<NgModuleType<any>> {\n const seenModules = new
Set<NgModuleType<any>>();\n const affectedModules = new Set<NgModuleType<any>>();\n const
calcAffectedModulesRecur = (arr: any[], path: NgModuleType<any>[]): void => {\n for (const value of arr) {\n
if (Array.isArray(value)) {\n // If the value is an array, just flatten it (by invoking this function
recursively),\n // keeping `path` the same.\n calcAffectedModulesRecur(value, path);\n } else if
(hasNgModuleDef(value)) {\n if (seenModules.has(value)) {\n // If we've seen this module before and
it's included into "affected modules" list, mark\n // the whole path that leads to that module as affected, but
do not descend into its\n // imports, since we already examined them before.\n if
(affectedModules.has(value)) {\n path.forEach(item => affectedModules.add(item));\n }\n
continue;\n }\n seenModules.add(value);\n if (this.overriddenModules.has(value)) {\n
path.forEach(item => affectedModules.add(item));\n }\n // Examine module imports recursively to look
for overridden modules.\n const moduleDef = (value as any)[NG_MOD_DEF];\n
calcAffectedModulesRecur(maybeUnwrapFn(moduleDef.imports), path.concat(value));\n }\n }\n }\n\n
calcAffectedModulesRecur(arr, []);\n return affectedModules;\n }\n\n private maybeStoreNgDef(prop: string,
type: Type<any>) {\n if (!this.initialNgDefs.has(type)) {\n const currentDef =
Object.getOwnPropertyDescriptor(type, prop);\n this.initialNgDefs.set(type, [prop, currentDef]);\n }\n }\n\n
private storeFieldOfDefOnType(type: Type<any>, defField: string, fieldName: string): void {\n const def: any =

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(type as any)[defField];\n  const originalValue: any = def[fieldName];\n  this.defCleanupOps.push({ object: def,
fieldName, originalValue});\n } \n\n /**\n  * Clears current components resolution queue, but stores the state of the
queue, so we can\n  * restore it later. Clearing the queue is required before we try to compile components (via\n  * `TestBed.compileComponents`), so that component defs are in sync with the resolution queue.\n  */\n private
clearComponentResolutionQueue() {\n  if (this.originalComponentResolutionQueue === null) {\n
this.originalComponentResolutionQueue = new Map();\n  }\n
clearResolutionOfComponentResourcesQueue().forEach(\n    (value, key) =>
this.originalComponentResolutionQueue!.set(key, value));\n } \n\n /**\n  * Restores component resolution queue to
the previously saved state. This operation is performed\n  * as a part of restoring the state after completion of the
current set of tests (that might\n  * potentially mutate the state).\n  */\n private
restoreComponentResolutionQueue() {\n  if (this.originalComponentResolutionQueue !== null) {\n
restoreComponentResolutionQueue(this.originalComponentResolutionQueue);\n
this.originalComponentResolutionQueue = null;\n  } \n\n restoreOriginalState(): void {\n  // Process cleanup
ops in reverse order so the field's original value is restored correctly (in\n  // case there were multiple overrides for
the same field).\n  forEachRight(this.defCleanupOps, (op: CleanupOperation) => {\n    op.object[op.fieldName] =
op.originalValue;\n  });\n  // Restore initial component/directive/pipe defs\n  this.initialNgDefs.forEach((value:
[string, PropertyDescriptor|undefined], type: Type<any>) => {\n    const [prop, descriptor] = value;\n    if
(!descriptor) {\n      // Delete operations are generally undesirable since they have performance implications\n
// on objects they were applied to. In this particular case, situations where this code\n      // is invoked should be
quite rare to cause any noticeable impact, since it's applied\n      // only to some test cases (for example when class
with no annotations extends some\n      // @Component) when we need to clear 'cmp' field on a given class to
restore\n      // its original state (before applying overrides and running tests).\n      delete (type as any)[prop];\n
} else {\n    Object.defineProperty(type, prop, descriptor);\n  } \n\n });\n  this.initialNgDefs.clear();\n
this.moduleProvidersOverridden.clear();\n  this.restoreComponentResolutionQueue();\n  // Restore the locale ID
to the default value, this shouldn't be necessary but we never know\n  setLocaleId(DEFAULT_LOCALE_ID);\n
}\n\n private compileTestModule(): void {\n  class RootScopeModule { }\n
compileNgModuleDefs(RootScopeModule as NgModuleType<any>, {\n  providers:
[...this.rootProviderOverrides],\n  });\n\n  const ngZone = new NgZone({enableLongStackTrace: true});\n  const
providers: Provider[] = [\n    {provide: NgZone, useValue: ngZone},\n    {provide: Compiler, useFactory: () =>
new R3TestCompiler(this)},\n    ...this.providers,\n    ...this.providerOverrides,\n  ];\n  const imports =
[RootScopeModule, this.additionalModuleTypes, this.imports || []];\n\n  // clang-format off\n
compileNgModuleDefs(this.testModuleType, {\n  declarations: this.declarations,\n  imports,\n  schemas:
this.schemas,\n  providers,\n  }, /* allowDuplicateDeclarationsInRoot */ true);\n  // clang-format on\n\n
this.applyProviderOverridesToModule(this.testModuleType);\n } \n\n get injector(): Injector {\n  if (this._injector
!== null) {\n    return this._injector;\n  } \n\n  const providers: Provider[] = [];\n  const compilerOptions =
this.platform.injector.get(COMPILER_OPTIONS);\n  compilerOptions.forEach(opts => {\n    if (opts.providers)
{\n      providers.push(opts.providers);\n    } \n\n });\n  if (this.compilerProviders !== null) {\n
providers.push(...this.compilerProviders);\n  } \n\n  // TODO(ocombe): make this work with an Injector directly
instead of creating a module for it\n  class CompilerModule { }\n  compileNgModuleDefs(CompilerModule as
NgModuleType<any>, {providers});\n\n  const CompilerModuleFactory = new
R3NgModuleFactory(CompilerModule);\n  this._injector =
CompilerModuleFactory.create(this.platform.injector).injector;\n  return this._injector;\n } \n\n // get overrides for
a specific provider (if any)\n private getSingleProviderOverrides(provider: Provider): Provider|null {\n  const
token = getProviderToken(provider);\n  return this.providerOverridesByToken.get(token) || null;\n } \n\n private
getProviderOverrides(providers?: Provider[]): Provider[] {\n  if (!providers || !providers.length ||
this.providerOverridesByToken.size === 0) return [];\n  // There are two flattening operations here. The inner
flatten() operates on the metadata's\n  // providers and applies a mapping function which retrieves overrides for
each incoming\n  // provider. The outer flatten() then flattens the produced overrides array. If this is not\n  // done,

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the array can contain other empty arrays (e.g. `[[], []]`) which leak into the\n // providers array and contaminate
any error messages that might be generated.\n return flatten(flatten(\n providers, (provider: Provider) =>
this.getSingleProviderOverrides(provider) || []));\n }\n\n private getOverriddenProviders(providers?: Provider[]):
Provider[] {\n if (!providers || !providers.length || this.providerOverridesByToken.size === 0) return [];\n\n const
flattenedProviders = flatten<Provider[]>(providers);\n const overrides =
this.getProviderOverrides(flattenedProviders);\n const overriddenProviders = [...flattenedProviders, ...overrides];\n
const final: Provider[] = [];\n const seenOverriddenProviders = new Set<Provider>();\n\n // We iterate through
the list of providers in reverse order to make sure provider overrides\n // take precedence over the values defined
in provider list. We also filter out all providers\n // that have overrides, keeping overridden values only. This is
needed, since presence of a\n // provider with `ngOnDestroy` hook will cause this hook to be registered and
invoked later.\n forEachRight(overriddenProviders, (provider: any) => {\n const token: any =
getProviderToken(provider);\n if (this.providerOverridesByToken.has(token)) {\n if
(!seenOverriddenProviders.has(token)) {\n seenOverriddenProviders.add(token);\n // Treat all overridden
providers as `{multi: false}` (even if it's a multi-provider) to\n // make sure that provided override takes
highest precedence and is not combined with\n // other instances of the same multi provider.\n
final.unshift({...provider, multi: false});\n }\n } else {\n final.unshift(provider);\n }\n });\n return
final;\n }\n\n private hasProviderOverrides(providers?: Provider[]): boolean {\n return
this.getProviderOverrides(providers).length > 0;\n }\n\n private patchDefWithProviderOverrides(declaration:
Type<any>, field: string): void {\n const def = (declaration as any)[field];\n if (def && def.providersResolver)
{\n this.maybeStoreNgDef(field, declaration);\n\n const resolver = def.providersResolver;\n const
processProvidersFn = (providers: Provider[]) => this.getOverriddenProviders(providers);\n
this.storeFieldOfDefOnType(declaration, field, 'providersResolver');\n def.providersResolver = (ngDef:
DirectiveDef<any>) => resolver(ngDef, processProvidersFn);\n }\n }\n\nfunction initResolvers(): Resolvers
{\n return {\n module: new NgModuleResolver(),\n component: new ComponentResolver(),\n directive: new
DirectiveResolver(),\n pipe: new PipeResolver()\n };\n }\n\nfunction hasNgModuleDef<T>(value: Type<T>):
value is NgModuleType<T> {\n return value.hasOwnProperty('mod');\n }\n\nfunction
maybeUnwrapFn<T>(maybeFn: (() => T)|T): T {\n return maybeFn instanceof Function ? maybeFn() :
maybeFn;\n }\n\nfunction flatten<T>(values: any[], mapFn?: (value: T) => any): T[] {\n const out: T[] = [];\n
values.forEach(value => {\n if (Array.isArray(value)) {\n out.push(...flatten<T>(value, mapFn));\n } else {\n
out.push(mapFn ? mapFn(value) : value);\n }\n });\n return out;\n }\n\nfunction getProviderField(provider:
Provider, field: string) {\n return provider && typeof provider === 'object' && (provider as
any)[field];\n }\n\nfunction getProviderToken(provider: Provider) {\n return getProviderField(provider, 'provide') ||
provider;\n }\n\nfunction isModuleWithProviders(value: any): value is ModuleWithProviders<any> {\n return
value.hasOwnProperty('ngModule');\n }\n\nfunction forEachRight<T>(values: T[], fn: (value: T, idx: number) =>
void): void {\n for (let idx = values.length - 1; idx >= 0; idx--) {\n fn(values[idx], idx);\n }\n }\n\nfunction
invalidTypeError(name: string, expectedType: string): Error {\n return new Error(`${name} class doesn't have
@${expectedType} decorator or is missing metadata.`);\n }\n\n\nclass R3TestCompiler implements Compiler {\n
constructor(private testBed: R3TestBedCompiler) {\n\n compileModuleSync<T>(moduleType: Type<T>):
NgModuleFactory<T> {\n this.testBed._compileNgModuleSync(moduleType);\n return new
R3NgModuleFactory(moduleType);\n }\n\n async compileModuleAsync<T>(moduleType: Type<T>):
Promise<NgModuleFactory<T>> {\n await this.testBed._compileNgModuleAsync(moduleType);\n return new
R3NgModuleFactory(moduleType);\n }\n\n compileModuleAndAllComponentsSync<T>(moduleType:
Type<T>): ModuleWithComponentFactories<T> {\n const ngModuleFactory =
this.compileModuleSync(moduleType);\n const componentFactories =
this.testBed._getComponentFactories(moduleType as NgModuleType<T>);\n return new
ModuleWithComponentFactories(ngModuleFactory, componentFactories);\n }\n\n async
compileModuleAndAllComponentsAsync<T>(moduleType: Type<T>):\n
Promise<ModuleWithComponentFactories<T>> {\n const ngModuleFactory = await

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this.compileModuleAsync(moduleType);\n  const componentFactories =
this.testBed._getComponentFactories(moduleType as NgModuleType<T>);\n  return new
ModuleWithComponentFactories(ngModuleFactory, componentFactories);\n } \n\n clearCache(): void { }\n\n clearCacheFor(type: Type<any>): void { }\n\n getModuleId(moduleType: Type<any>): string|undefined { \n  const
meta = this.testBed._getModuleResolver().resolve(moduleType);\n  return meta && meta.id || undefined;\n
}\n}\n", "/*\n * @license\n * Copyright Google LLC All Rights Reserved.\n * \n * Use of this source code is
governed by an MIT-style license that can be\n * found in the LICENSE file at https://angular.io/license\n
*/\n\nimport { AbstractType, Component, Directive, InjectFlags, InjectionToken, NgModule, Pipe, PlatformRef,
SchemaMetadata, Type } from '@angular/core';\n\nimport { ComponentFixture } from './component_fixture';\n\nimport
{ MetadataOverride } from './metadata_override';\n\nimport { TestBed } from './test_bed';\n\n/*\n * An abstract class
for inserting the root test component element in a platform independent way.\n * \n * @publicApi\n */\n\nexport class
TestComponentRenderer { \n  insertRootElement(rootElementId: string) { }\n}\n\n/*\n * @publicApi\n */\n\nexport
const ComponentFixtureAutoDetect =\n  new
InjectionToken<boolean[]>('ComponentFixtureAutoDetect');\n\n/*\n * @publicApi\n */\n\nexport const
ComponentFixtureNoNgZone = new InjectionToken<boolean[]>('ComponentFixtureNoNgZone');\n\n/*\n * \n *
@publicApi\n */\n\nexport type TestModuleMetadata = { \n  providers?: any[],\n  declarations?: any[],\n  imports?:
any[],\n  schemas?: Array<SchemaMetadata|any[]>,\n  aotSummaries?: () => any[],\n};\n\n/*\n * Static methods
implemented by the `TestBedViewEngine` and `TestBedRender3`\n * \n * @publicApi\n */\n\nexport interface
TestBedStatic { \n  new(...args: any[]): TestBed;\n\n  initTestEnvironment(\n    ngModule:
Type<any>|Type<any>[], platform: PlatformRef, aotSummaries?: () => any[]): TestBed;\n\n  /*\n * Reset the
providers for the test injector.\n * \n */\n  resetTestEnvironment(): void;\n\n  resetTestingModule():
TestBedStatic;\n\n  /*\n * Allows overriding default compiler providers and settings\n * which are defined in
test_injector.js\n * \n */\n  configureCompiler(config: { providers?: any[]; useJit?: boolean; }):
TestBedStatic;\n\n  /*\n * Allows overriding
default providers, directives, pipes, modules of the test injector,\n * which are defined in test_injector.js\n * \n
*/\n  configureTestingModule(moduleDef: TestModuleMetadata): TestBedStatic;\n\n  /*\n * Compile components with
a `templateUrl` for the test's NgModule.\n * It is necessary to call this function\n * as fetching urls is
asynchronous.\n * \n */\n  compileComponents(): Promise<any>;\n\n  overrideModule(ngModule: Type<any>,\n
  override: MetadataOverride<NgModule>): TestBedStatic;\n\n  overrideComponent(component: Type<any>,\n
  override: MetadataOverride<Component>): TestBedStatic;\n\n  overrideDirective(directive: Type<any>,\n
  override: MetadataOverride<Directive>): TestBedStatic;\n\n  overridePipe(pipe: Type<any>,\n
  override: MetadataOverride<Pipe>): TestBedStatic;\n\n  overrideTemplate(component: Type<any>,\n
  template: string):
TestBedStatic;\n\n  /*\n * Overrides the template of the given component, compiling the template\n * in the
context of the TestingModule.\n * \n * Note: This works for JIT and AOTed components as well.\n * \n */\n
  overrideTemplateUsingTestingModule(component: Type<any>,\n
  template: string): TestBedStatic;\n\n  /*\n *
Overwrites all providers for the given token with the given provider definition.\n * \n * Note: This works for JIT
and AOTed components as well.\n * \n */\n  overrideProvider(token: any, provider: { \n    useFactory: Function,\n
  deps: any[],\n  }): TestBedStatic;\n\n  overrideProvider(token: any, provider: { \n    useValue: any; }):
TestBedStatic;\n\n  overrideProvider(token: any, provider: { \n    useFactory?: Function,\n    useValue?: any,\n
  deps?: any[],\n  }):
TestBedStatic;\n\n  inject<T>(\n    token: Type<T>|InjectionToken<T>|AbstractType<T>, notFoundValue?: T,\n
  flags?: InjectFlags): T;\n\n  inject<T>(\n    token: Type<T>|InjectionToken<T>|AbstractType<T>, notFoundValue:
  null, flags?: InjectFlags): T\n  |null;\n\n  /*\n * @deprecated from v9.0.0 use TestBed.inject *\n */\n
  get<T>(token: Type<T>|InjectionToken<T>, notFoundValue?: T, flags?: InjectFlags): any;\n\n  /*\n * @deprecated
from v9.0.0 use TestBed.inject *\n */\n  get(token: any, notFoundValue?: any): any;\n\n  createComponent<T>(component:
  Type<T>):
ComponentFixture<T>;\n}\n", "/*\n * @license\n * Copyright Google LLC All Rights Reserved.\n * \n * Use of
this source code is governed by an MIT-style license that can be\n * found in the LICENSE file at
https://angular.io/license\n */\n\n// The formatter and CI disagree on how this import statement should be formatted.
Both try to keep\n// it on one line, too, which has gotten very hard to read & manage. So disable the formatter for\n//
this statement only.\n\n/*\n * clang-format off\n */\n\nimport { \n  AbstractType,\n  Component,\n  Directive,\n

```

```

InjectFlags,\n InjectionToken,\n Injector,\n NgModule,\n NgZone,\n Pipe,\n PlatformRef,\n Type,\n
flushModuleScopingQueueAsMuchAsPossible as flushModuleScopingQueueAsMuchAsPossible,\n
Render3ComponentFactory as ComponentFactory,\n Render3NgModuleRef as NgModuleRef,\n
resetCompiledComponents as resetCompiledComponents,\n stringify as stringify,\n} from '@angular/core';\n\n/*
clang-format on *\n\nimport {ComponentFixture} from './component_fixture';\nimport {MetadataOverride} from
 './metadata_override';\nimport {R3TestBedCompiler} from './r3_test_bed_compiler';\nimport {TestBed} from
 './test_bed';\nimport {ComponentFixtureAutoDetect, ComponentFixtureNoNgZone, TestBedStatic,
TestComponentRenderer, TestModuleMetadata} from './test_bed_common';\n\nlet _nextRootElementId =
0;\n\n/**\n * @description\n * Configures and initializes environment for unit testing and provides methods for\n
* creating components and services in unit tests.\n *\n * TestBed is the primary api for writing unit tests for Angular
applications and libraries.\n *\n * Note: Use `TestBed` in tests. It will be set to either `TestBedViewEngine` or
`TestBedRender3`\n * according to the compiler used.\n */\nexport class TestBedRender3 implements TestBed {\n
/**\n * Initialize the environment for testing with a compiler factory, a PlatformRef, and an\n * angular module.
These are common to every test in the suite.\n *\n * This may only be called once, to set up the common
providers for the current test\n * suite on the current platform. If you absolutely need to change the providers,\n *
first use `resetTestEnvironment`.\n *\n * Test modules and platforms for individual platforms are available from\n
* '@angular/<platform_name>/testing'.\n *\n * @publicApi\n */\n static initTestEnvironment(\n ngModule:
Type<any>|Type<any>[], platform: PlatformRef, aotSummaries?: () => any[]): TestBed {\n const testBed =
_getTestBedRender3();\n testBed.initTestEnvironment(ngModule, platform, aotSummaries);\n return testBed;\n
}\n\n /**\n * Reset the providers for the test injector.\n *\n * @publicApi\n */\n static
resetTestEnvironment(): void {\n _getTestBedRender3().resetTestEnvironment();\n }\n\n static
configureCompiler(config: {providers?: any[]; useJit?: boolean; }): TestBedStatic {\n
_getTestBedRender3().configureCompiler(config);\n return TestBedRender3 as any as TestBedStatic;\n }\n\n
/**\n * Allows overriding default providers, directives, pipes, modules of the test injector,\n * which are defined
in test_injector.js\n */\n static configureTestingModule(moduleDef: TestModuleMetadata): TestBedStatic {\n
_getTestBedRender3().configureTestingModule(moduleDef);\n return TestBedRender3 as any as TestBedStatic;\n
}\n\n /**\n * Compile components with a `templateUrl` for the test's NgModule.\n * It is necessary to call this
function\n * as fetching urls is asynchronous.\n */\n static compileComponents(): Promise<any> {\n return
_getTestBedRender3().compileComponents();\n }\n\n static overrideModule(ngModule: Type<any>, override:
MetadataOverride<NgModule>): TestBedStatic {\n _getTestBedRender3().overrideModule(ngModule,
override);\n return TestBedRender3 as any as TestBedStatic;\n }\n\n static overrideComponent(component:
Type<any>, override: MetadataOverride<Component>):\n TestBedStatic {\n
_getTestBedRender3().overrideComponent(component, override);\n return TestBedRender3 as any as
TestBedStatic;\n }\n\n static overrideDirective(directive: Type<any>, override: MetadataOverride<Directive>):\n
TestBedStatic {\n _getTestBedRender3().overrideDirective(directive, override);\n return TestBedRender3 as
any as TestBedStatic;\n }\n\n static overridePipe(pipe: Type<any>, override: MetadataOverride<Pipe>):\n
TestBedStatic {\n _getTestBedRender3().overridePipe(pipe, override);\n return TestBedRender3 as any as
TestBedStatic;\n }\n\n static overrideTemplate(component: Type<any>, template: string): TestBedStatic {\n
_getTestBedRender3().overrideComponent(component, {set: {template, templateUrl: null!}});\n return
TestBedRender3 as any as TestBedStatic;\n }\n\n /**\n * Overrides the template of the given component,
compiling the template\n * in the context of the TestingModule.\n *\n * Note: This works for JIT and AOTed
components as well.\n */\n static overrideTemplateUsingTestingModule(component: Type<any>, template:
string): TestBedStatic {\n _getTestBedRender3().overrideTemplateUsingTestingModule(component, template);\n
return TestBedRender3 as any as TestBedStatic;\n }\n\n static overrideProvider(token: any, provider: {\n
useFactory: Function,\n deps: any[],\n }): TestBedStatic;\n static overrideProvider(token: any, provider:
{\n useValue: any; }): TestBedStatic;\n static overrideProvider(token: any, provider: {\n useFactory?: Function,\n
useValue?: any,\n deps?: any[],\n }): TestBedStatic {\n _getTestBedRender3().overrideProvider(token,
provider);\n return TestBedRender3 as any as TestBedStatic;\n }\n\n static inject<T>(\n token:

```

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Type<T>|InjectionToken<T>|AbstractType<T>, notFoundValue?: T, flags?: InjectFlags): T;\n static inject<T>(\n
  token: Type<T>|InjectionToken<T>|AbstractType<T>, notFoundValue: null, flags?: InjectFlags): T\n |null;\n
static inject<T>(\n  token: Type<T>|InjectionToken<T>|AbstractType<T>, notFoundValue?: T|null,\n  flags?:
InjectFlags): T|null {\n  return _getTestBedRender3().inject(token, notFoundValue, flags);\n }\n\n /**
@deprecated from v9.0.0 use TestBed.inject *\n static get<T>(token: Type<T>|InjectionToken<T>,
notFoundValue?: T, flags?: InjectFlags): any;\n /** @deprecated from v9.0.0 use TestBed.inject *\n static
get(token: any, notFoundValue?: any): any;\n /** @deprecated from v9.0.0 use TestBed.inject *\n static get(\n
token: any, notFoundValue: any = Injector.THROW_IF_NOT_FOUND,\n  flags: InjectFlags =
InjectFlags.Default): any {\n  return _getTestBedRender3().inject(token, notFoundValue, flags);\n }\n\n static
createComponent<T>(component: Type<T>): ComponentFixture<T> {\n  return
_getTestBedRender3().createComponent(component);\n }\n\n static resetTestingModule(): TestBedStatic {\n
_getTestBedRender3().resetTestingModule();\n  return TestBedRender3 as any as TestBedStatic;\n }\n\n //
Properties\n\n platform: PlatformRef = null!;\n ngModule: Type<any>|Type<any>[] = null!;\n\n private
_compiler: R3TestBedCompiler|null = null;\n private _testModuleRef: NgModuleRef<any>|null = null;\n\n private
_activeFixtures: ComponentFixture<any>[] = [];\n private _globalCompilationChecked = false;\n\n /**\n *
Initialize the environment for testing with a compiler factory, a PlatformRef, and an\n * angular module. These are
common to every test in the suite.\n * This may only be called once, to set up the common providers for the
current test\n * suite on the current platform. If you absolutely need to change the providers,\n * first use
`resetTestEnvironment`.\n * Test modules and platforms for individual platforms are available from\n *
`@angular/<platform_name>/testing`.\n * @publicApi\n */\n initTestEnvironment(\n  ngModule:
Type<any>|Type<any>[], platform: PlatformRef, aotSummaries?: () => any[]): void {\n  if (this.platform ||
this.ngModule) {\n    throw new Error('Cannot set base providers because it has already been called');\n  }\n
this.platform = platform;\n  this.ngModule = ngModule;\n  this._compiler = new
R3TestBedCompiler(this.platform, this.ngModule);\n }\n\n /**\n * Reset the providers for the test injector.\n *
@publicApi\n */\n resetTestEnvironment(): void {\n  this.resetTestingModule();\n  this._compiler = null;\n
this.platform = null!;\n  this.ngModule = null!;\n }\n\n resetTestingModule(): void {\n
this.checkGlobalCompilationFinished();\n  resetCompiledComponents();\n  if (this._compiler !== null) {\n
this.compiler.restoreOriginalState();\n  }\n  this._compiler = new R3TestBedCompiler(this.platform,
this.ngModule);\n  this._testModuleRef = null;\n  this.destroyActiveFixtures();\n }\n\n
configureCompiler(config: {providers?: any[]; useJit?: boolean}): void {\n  if (config.useJit !== null) {\n  throw
new Error('the Render3 compiler JiT mode is not configurable !');\n  }\n\n  if (config.providers !== undefined) {\n
this.compiler.setCompilerProviders(config.providers);\n  }\n }\n\n configureTestingModule(moduleDef:
TestModuleMetadata): void {\n  this.assertNotInstantiated('R3TestBed.configureTestingModule', 'configure the
test module');\n  this.compiler.configureTestingModule(moduleDef);\n }\n\n compileComponents():
Promise<any> {\n  return this.compiler.compileComponents();\n }\n\n inject<T>(\n  token:
Type<T>|InjectionToken<T>|AbstractType<T>, notFoundValue?: T, flags?: InjectFlags): T;\n inject<T>(\n
token: Type<T>|InjectionToken<T>|AbstractType<T>, notFoundValue: null, flags?: InjectFlags): T\n |null;\n
inject<T>(\n  token: Type<T>|InjectionToken<T>|AbstractType<T>, notFoundValue?: T|null,\n  flags?:
InjectFlags): T|null {\n  if (token as unknown === TestBedRender3) {\n    return this as any;\n  }\n  const
UNDEFINED = {};\n  const result = this.testModuleRef.injector.get(token, UNDEFINED, flags);\n  return result
=== UNDEFINED ? this.compiler.injector.get(token, notFoundValue, flags) as any :\n    result;\n }\n\n /**
@deprecated from v9.0.0 use TestBed.inject *\n get<T>(token: Type<T>|InjectionToken<T>,
notFoundValue?: T, flags?: InjectFlags): any;\n /** @deprecated from v9.0.0 use TestBed.inject *\n get(token:
any, notFoundValue?: any): any;\n /** @deprecated from v9.0.0 use TestBed.inject *\n get(token: any,
notFoundValue: any = Injector.THROW_IF_NOT_FOUND,\n  flags: InjectFlags = InjectFlags.Default): any {\n
return this.inject(token, notFoundValue, flags);\n }\n\n execute(tokens: any[], fn: Function, context?: any): any {\n
const params = tokens.map(t => this.inject(t));\n  return fn.apply(context, params);\n }\n\n
overrideModule(ngModule: Type<any>, override: MetadataOverride<NgModule>): void {\n

```



```

this.assertNotInstantiated('overrideModule', 'override module metadata');\n
this.compiler.overrideModule(ngModule, override);\n } \n\n overrideComponent(component: Type<any>, override:
MetadataOverride<Component>): void {\n this.assertNotInstantiated('overrideComponent', 'override component
metadata');\n this.compiler.overrideComponent(component, override);\n } \n\n
overrideTemplateUsingTestingModule(component: Type<any>, template: string): void {\n
this.assertNotInstantiated(\n 'R3 TestBed.overrideTemplateUsingTestingModule',\n 'Cannot override
template when the test module has already been instantiated');\n
this.compiler.overrideTemplateUsingTestingModule(component, template);\n } \n\n overrideDirective(directive:
Type<any>, override: MetadataOverride<Directive>): void {\n this.assertNotInstantiated('overrideDirective',
'override directive metadata');\n this.compiler.overrideDirective(directive, override);\n } \n\n overridePipe(pipe:
Type<any>, override: MetadataOverride<Pipe>): void {\n this.assertNotInstantiated('overridePipe', 'override pipe
metadata');\n this.compiler.overridePipe(pipe, override);\n } \n\n /**\n * Overwrites all providers for the given
token with the given provider definition.\n *\n overrideProvider(token: any, provider: {useFactory?: Function,
useValue?: any, deps?: any[]}): void {\n this.assertNotInstantiated('overrideProvider', 'override provider');\n
this.compiler.overrideProvider(token, provider);\n } \n\n createComponent<T>(type: Type<T>):
ComponentFixture<T> {\n const testComponentRenderer = this.inject(TestComponentRenderer);\n const
rootElId = `root${_nextRootElementId++}`;\n testComponentRenderer.insertRootElement(rootElId);\n\n const
componentDef = (type as any).cmp;\n if (!componentDef) {\n throw new Error(\n `It looks like
'${stringify(type)}' has not been IVY compiled - it has no 'cmp' field`);\n } \n\n // TODO: Don't cast as
`InjectionToken<boolean>`, proper type is boolean[]\n const noNgZone =
this.inject(ComponentFixtureNoNgZone as InjectionToken<boolean>, false);\n // TODO: Don't cast as
`InjectionToken<boolean>`, proper type is boolean[]\n const autoDetect: boolean =\n
this.inject(ComponentFixtureAutoDetect as InjectionToken<boolean>, false);\n const ngZone: NgZone|null =
noNgZone ? null : this.inject(NgZone, null);\n const componentFactory = new
ComponentFactory(componentDef);\n const initComponents = () => {\n const componentRef =\n
componentFactory.create(Injector.NULL, [], `#${rootElId}`, this.testModuleRef);\n return new
ComponentFixture<any>(componentRef, ngZone, autoDetect);\n }; \n\n const fixture = ngZone ?
ngZone.run initComponents) : initComponents);\n this._activeFixtures.push(fixture);\n return fixture;\n } \n\n
/**\n * @internal strip this from published d.ts files due to\n *
https://github.com/microsoft/TypeScript/issues/36216\n *\n private get compiler(): R3TestBedCompiler {\n if
(this._compiler === null) {\n throw new Error(`Need to call TestBed.initTestEnvironment() first`);\n } \n\n
return this._compiler;\n } \n\n /**\n * @internal strip this from published d.ts files due to\n *
https://github.com/microsoft/TypeScript/issues/36216\n *\n private get testModuleRef(): NgModuleRef<any> {\n
if (this._testModuleRef === null) {\n this._testModuleRef = this.compiler.finalize();\n } \n\n return
this._testModuleRef;\n } \n\n private assertNotInstantiated(methodName: string, methodDescription: string) {\n if
(this._testModuleRef !== null) {\n throw new Error(\n `Cannot ${methodDescription} when the test
module has already been instantiated. ` +\n `Make sure you are not using `inject` before
`${methodName}``);\n } \n\n /**\n * Check whether the module scoping queue should be flushed, and
flush it if needed.\n *\n * When the TestBed is reset, it clears the JIT module compilation queue, cancelling any\n
* in-progress module compilation. This creates a potential hazard - the very first time the\n * TestBed is initialized
(or if it's reset without being initialized), there may be pending\n * compilations of modules declared in global
scope. These compilations should be finished.\n *\n * To ensure that globally declared modules have their
components scoped properly, this function\n * is called whenever TestBed is initialized or reset. The _first_time
that this happens, prior\n * to any other operations, the scoping queue is flushed.\n *\n private
checkGlobalCompilationFinished(): void {\n // Checking _testNgModuleRef is null should not be necessary, but is
left in as an additional\n // guard that compilations queued in tests (after instantiation) are never flushed
accidentally.\n if (!this._globalCompilationChecked && this._testModuleRef === null) {\n
flushModuleScopingQueueAsMuchAsPossible();\n } \n\n this._globalCompilationChecked = true;\n } \n\n private

```

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destroyActiveFixtures(): void {\n  this._activeFixtures.forEach((fixture) => {\n    try {\n      fixture.destroy();\n    } catch (e) {\n      console.error('Error during cleanup of component', {\n        component:
fixture.componentInstance,\n        stacktrace: e,\n      });\n    });\n  });\n  this._activeFixtures = [];\n}\n\nlet
testBed: TestBedRenderer3;\n\nexport function _getTestBedRenderer3(): TestBedRenderer3 {\n  return TestBed = TestBed
|| new TestBedRenderer3();\n}\n\n"/**\n * @license\n * Copyright Google LLC All Rights Reserved.\n *\n * Use of
this source code is governed by an MIT-style license that can be\n * found in the LICENSE file at
https://angular.io/license\n */\n\nimport { Compiler, CompilerOptions, Component, ComponentFactory, Directive,
Injectable, Injector, NgModule, Pipe, Type } from '@angular/core';\n\nimport { MetadataOverride } from
'./metadata_override';\n\nfunction unimplemented(): any {\n  throw Error('unimplemented');\n}\n\n/**\n * Special
interface to the compiler only used by testing\n *\n * @publicApi\n */\n\n@Injectable()\nexport class
TestingCompiler extends Compiler {\n  get injector(): Injector {\n    throw unimplemented();\n  }\n\n  overrideModule(module: Type<any>, overrides: MetadataOverride<NgModule>): void {\n    throw
unimplemented();\n  }\n\n  overrideDirective(directive: Type<any>, overrides: MetadataOverride<Directive>): void
{\n    throw unimplemented();\n  }\n\n  overrideComponent(component: Type<any>, overrides:
MetadataOverride<Component>): void {\n    throw unimplemented();\n  }\n\n  overridePipe(directive: Type<any>,
overrides: MetadataOverride<Pipe>): void {\n    throw unimplemented();\n  }\n\n  /**\n   * Allows to pass the compile
summary from AOT compilation to the JIT compiler,\n   * so that it can use the code generated by AOT.\n   */\n\n  loadAotSummaries(summaries: () => any[]) {\n    throw unimplemented();\n  }\n\n  /**\n   * Gets the component
factory for the given component.\n   * This assumes that the component has been compiled before calling this call
using\n   * `compileModuleAndAllComponents`.\n   */\n\n  getComponentFactory<T>(component: Type<T>):
ComponentFactory<T> {\n    throw unimplemented();\n  }\n\n  /**\n   * Returns the component type that is stored in
the given error.\n   * This can be used for errors created by compileModule...\n   */\n\n  getComponentFromError(error: Error): Type<any>|null {\n    throw unimplemented();\n  }\n}\n\n/**\n * A factory
for creating a Compiler\n *\n * @publicApi\n */\n\nexport abstract class TestingCompilerFactory {\n  abstract
createTestingCompiler(options?: CompilerOptions[]): TestingCompiler;\n}\n\n"/**\n * @license\n * Copyright
Google LLC All Rights Reserved.\n *\n * Use of this source code is governed by an MIT-style license that can be\n
* found in the LICENSE file at https://angular.io/license\n */\n\nimport { AbstractType, ApplicationInitStatus,
CompilerOptions, Component, Directive, InjectFlags, InjectionToken, Injector, NgModule, NgModuleFactory,
NgModuleRef, NgZone, Optional, Pipe, PlatformRef, Provider, SchemaMetadata, SkipSelf, StaticProvider, Type,
clearOverrides as clearOverrides, DepFlags as DepFlags, getInjectableDef as getInjectableDef, INJECTOR_SCOPE
as INJECTOR_SCOPE, ivyEnabled as ivyEnabled, NodeFlags as NodeFlags, overrideComponentView as
overrideComponentView, overrideProvider as overrideProvider, stringify as stringify, InjectableDef } from
'@angular/core';\n\nimport { AsyncTestCompleter } from './async_test_completer';\n\nimport { ComponentFixture }
from './component_fixture';\n\nimport { MetadataOverride } from './metadata_override';\n\nimport
{ _getTestBedRenderer3, TestBedRenderer3 } from './r3_test_bed';\n\nimport { ComponentFixtureAutoDetect,
ComponentFixtureNoNgZone, TestBedStatic, TestComponentRenderer, TestModuleMetadata } from
'./test_bed_common';\n\nimport { TestingCompiler, TestingCompilerFactory } from './test_compiler';\n\n\nlet
_nextRootElementId = 0;\n\n/**\n * @publicApi\n */\n\nexport interface TestBed {\n  platform: PlatformRef;\n\n  ngModule: Type<any>|Type<any>[];\n\n  /**\n   * Initialize the environment for testing with a compiler factory, a
PlatformRef, and an\n   * angular module. These are common to every test in the suite.\n   *\n   * This may only be
called once, to set up the common providers for the current test\n   * suite on the current platform. If you absolutely
need to change the providers,\n   * first use `resetTestEnvironment`.\n   *\n   * Test modules and platforms for
individual platforms are available from\n   * '@angular/<platform_name>/testing'.\n   */\n\n  initTestEnvironment(\n    ngModule: Type<any>|Type<any>[], platform: PlatformRef, aotSummaries?: () => any[]): void;\n\n  /**\n   * Reset
the providers for the test injector.\n   */\n\n  resetTestEnvironment(): void;\n\n  resetTestingModule(): void;\n\n  configureCompiler(config: { providers?: any[], useJit?: boolean }): void;\n\n  configureTestingModule(moduleDef:
TestModuleMetadata): void;\n\n  compileComponents(): Promise<any>;\n\n  inject<T>(\n    token:
Type<T>|InjectionToken<T>|AbstractType<T>, notFoundValue?: T, flags?: InjectFlags): T;\n  inject<T>(\n

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token: Type<T>|InjectionToken<T>|AbstractType<T>, notFoundValue: null, flags?: InjectFlags): T | null;
/** @deprecated from v9.0.0 use TestBed.inject */
get<T>(token: Type<T>|InjectionToken<T>, notFoundValue?: T, flags?: InjectFlags): any;
/** @deprecated from v9.0.0 use TestBed.inject */
get(token: any, notFoundValue?: any): any;
execute(tokens: any[], fn: Function, context?: any): any;
overrideModule(ngModule: Type<any>, override: MetadataOverride<NgModule>): void;
overrideComponent(component: Type<any>, override: MetadataOverride<Component>): void;
overrideDirective(directive: Type<any>, override: MetadataOverride<Directive>): void;
overridePipe(pipe: Type<any>, override: MetadataOverride<Pipe>): void;
/**
 * Overwrites all providers for the given token with the given provider definition.
 */
overrideProvider(token: any, provider: {
  useFactory: Function,
  deps: any[],
}): void;
overrideProvider(token: any, provider: {
  useValue: any;
}): void;
overrideProvider(token: any, provider: {
  useFactory?: Function,
  useValue?: any,
  deps?: any[];
}): void;
overrideTemplateUsingTestingModule(component: Type<any>, template: string): void;
createComponent<T>(component: Type<T>): ComponentFixture<T>;
/**
 * @description
 * Configures and initializes environment for unit testing and provides methods for
 * creating components and services in unit tests.
 * `TestBed` is the primary api for writing unit tests for Angular applications and libraries.
 * Note: Use `TestBed` in tests. It will be set to either `TestBedViewEngine` or `TestBedRender3`
 * according to the compiler used.
 */
export class TestBedViewEngine implements TestBed {
  /**
   * Initialize the environment for testing with a compiler factory, a PlatformRef, and an
   * angular module. These are common to every test in the suite.
   * This may only be called once, to set up the common providers for the current test
   * suite on the current platform. If you absolutely need to change the providers,
   * first use `resetTestEnvironment`.
   * Test modules and platforms for individual platforms are available from
   * '@angular/<platform_name>/testing'.
   */
  static initTestEnvironment(
    ngModule: Type<any>|Type<any>[],
    platform: PlatformRef,
    aotSummaries?: () => any[]): TestBedViewEngine {
    const testBed = _getTestBedViewEngine();
    testBed.initTestEnvironment(ngModule, platform, aotSummaries);
    return testBed;
  }
  /**
   * Reset the providers for the test injector.
   */
  static resetTestEnvironment(): void {
    _getTestBedViewEngine().resetTestEnvironment();
  }
  static resetTestingModule(): TestBedStatic {
    _getTestBedViewEngine().resetTestingModule();
    return TestBedViewEngine as any as TestBedStatic;
  }
  /**
   * Allows overriding default compiler providers and settings
   * which are defined in test_injector.js
   */
  static configureCompiler(config: {
    providers?: any[];
    useJit?: boolean;
}): TestBedStatic {
    _getTestBedViewEngine().configureCompiler(config);
    return TestBedViewEngine as any as TestBedStatic;
  }
  /**
   * Allows overriding default providers, directives, pipes, modules of the test injector,
   * which are defined in test_injector.js
   */
  static configureTestingModule(moduleDef: TestModuleMetadata): TestBedStatic {
    _getTestBedViewEngine().configureTestingModule(moduleDef);
    return TestBedViewEngine as any as TestBedStatic;
  }
  /**
   * Compile components with a `templateUrl` for the test's NgModule.
   * It is necessary to call this function
   * as fetching urls is asynchronous.
   */
  static compileComponents(): Promise<any> {
    return getTestBed().compileComponents();
  }
  static overrideModule(ngModule: Type<any>, override: MetadataOverride<NgModule>): TestBedStatic {
    _getTestBedViewEngine().overrideModule(ngModule, override);
    return TestBedViewEngine as any as TestBedStatic;
  }
  static overrideComponent(component: Type<any>, override: MetadataOverride<Component>): TestBedStatic {
    _getTestBedViewEngine().overrideComponent(component, override);
    return TestBedViewEngine as any as TestBedStatic;
  }
  static overrideDirective(directive: Type<any>, override: MetadataOverride<Directive>): TestBedStatic {
    _getTestBedViewEngine().overrideDirective(directive, override);
    return TestBedViewEngine as any as TestBedStatic;
  }
  static overridePipe(pipe: Type<any>, override: MetadataOverride<Pipe>): TestBedStatic {
    _getTestBedViewEngine().overridePipe(pipe, override);
    return TestBedViewEngine as any as TestBedStatic;
  }
  static overrideTemplate(component: Type<any>, template: string): TestBedStatic {
    _getTestBedViewEngine().overrideComponent(component, {
      set: {
        template,
        templateUrl: null!;
      });
    return TestBedViewEngine as any as TestBedStatic;
  }
  /**
   * Overrides the

```

```

template of the given component, compiling the template
 * in the context of the TestingModule.
 * Note:
This works for JIT and AOTed components as well.
 *
static
overrideTemplateUsingTestingModule(component: Type<any>, template: string): TestBedStatic {
  _getTestBedViewEngine().overrideTemplateUsingTestingModule(component, template);
  return
TestBedViewEngine as any as TestBedStatic;
}
/**
 * Overwrites all providers for the given token with the
given provider definition.
 * Note: This works for JIT and AOTed components as well.
 *
static
overrideProvider(token: any, provider: {
  useFactory: Function,
  deps: any[],
}): TestBedStatic;
static
overrideProvider(token: any, provider: {
  useValue: any;
}): TestBedStatic;
static overrideProvider(token: any,
provider: {
  useFactory?: Function,
  useValue?: any,
  deps?: any[],
}): TestBedStatic {
  _getTestBedViewEngine().overrideProvider(token, provider as any);
  return TestBedViewEngine as any as
TestBedStatic;
}
static inject<T>(
  token: Type<T>|InjectionToken<T>|AbstractType<T>,
  notFoundValue?: T, flags?: InjectFlags): T;
static inject<T>(
  token:
Type<T>|InjectionToken<T>|AbstractType<T>, notFoundValue: null, flags?: InjectFlags): T
  |null;
static
inject<T>(
  token: Type<T>|InjectionToken<T>|AbstractType<T>, notFoundValue?: T|null,
  flags?:
InjectFlags): T|null {
  return _getTestBedViewEngine().inject(token, notFoundValue, flags);
}
/**
@deprecated from v9.0.0 use TestBed.inject
 *
static get<T>(token: Type<T>|InjectionToken<T>,
notFoundValue?: T, flags?: InjectFlags): any;
/**
 * @deprecated from v9.0.0 use TestBed.inject
 *
@suppress {duplicate}
 *
static get(token: any, notFoundValue?: any): any;
/**
@deprecated from v9.0.0
use TestBed.inject
 *
static get(
  token: any, notFoundValue: any = Injector.THROW_IF_NOT_FOUND,
  flags: InjectFlags = InjectFlags.Default): any {
  return _getTestBedViewEngine().inject(token, notFoundValue,
flags);
}
static createComponent<T>(component: Type<T>): ComponentFixture<T> {
  return
_getTestBedViewEngine().createComponent(component);
}
private _instantiated: boolean = false;
private _compiler: TestingCompiler = null!;
private _moduleRef: NgModuleRef<any> = null!;
private
_moduleFactory: NgModuleFactory<any> = null!;
private _compilerOptions: CompilerOptions[] = [];
private
_moduleOverrides: [Type<any>, MetadataOverride<NgModule>][] = [];
private _componentOverrides:
[Type<any>, MetadataOverride<Component>][] = [];
private _directiveOverrides: [Type<any>,
MetadataOverride<Directive>][] = [];
private _pipeOverrides: [Type<any>, MetadataOverride<Pipe>][] = [];
private
_providers: Provider[] = [];
private _declarations: Array<Type<any>|any[]|any> = [];
private _imports:
Array<Type<any>|any[]|any> = [];
private _schemas: Array<SchemaMetadata|any[]> = [];
private
_activeFixtures: ComponentFixture<any>[] = [];
private _testEnvAotSummaries: () => any[] = () => [];
private
_aotSummaries: Array<() => any[]> = [];
private _templateOverrides: Array<{
  component: Type<any>,
  templateOf: Type<any>
}> = [];
private _isRoot: boolean = true;
private _rootProviderOverrides: Provider[] =
[];
private platform: PlatformRef = null!;
private ngModule: Type<any>|Type<any>[] = null!;
/**
 * Initialize the
environment for testing with a compiler factory, a PlatformRef, and an
 * angular module. These are common to
every test in the suite.
 * This may only be called once, to set up the common providers for the current test
 * suite on the current platform. If you absolutely need to change the providers,
 * first use
`resetTestEnvironment`.
 * Test modules and platforms for individual platforms are available from
 *
'@angular/<platform_name>/testing'.
 *
initTestEnvironment(
  ngModule: Type<any>|Type<any>[],
  platform: PlatformRef, aotSummaries?: () => any[]): void {
  if (this.platform || this.ngModule) {
    throw new
Error('Cannot set base providers because it has already been called');
  }
  this.platform = platform;
  this.ngModule = ngModule;
  if (aotSummaries) {
    this._testEnvAotSummaries = aotSummaries;
  }
}
/**
 * Reset the providers for the test injector.
 *
resetTestEnvironment(): void {
  this.resetTestingModule();
  this.platform = null!;
  this.ngModule = null!;
  this._testEnvAotSummaries = ()
=> [];
}
resetTestingModule(): void {
  clearOverrides();
  this._aotSummaries = [];
  this._templateOverrides = [];
  this._compiler = null!;
  this._moduleOverrides = [];
  this._componentOverrides = [];
  this._directiveOverrides = [];
  this._pipeOverrides = [];
  this._isRoot =
true;
  this._rootProviderOverrides = [];
  this._moduleRef = null!;
  this._moduleFactory = null!;
  this._compilerOptions = [];
  this._providers = [];
  this._declarations = [];
  this._imports = [];
}

```

```

this._schemas = [];\n this._instantiated = false;\n this._activeFixtures.forEach((fixture) => {\n try {\n
fixture.destroy();\n } catch (e) {\n console.error('Error during cleanup of component', {\n component:
fixture.componentInstance,\n stacktrace: e,\n });\n }\n });\n this._activeFixtures = [];\n }\n\n
configureCompiler(config: {providers?: any[], useJit?: boolean}): void {\n
this._assertNotInstantiated('TestBed.configureCompiler', 'configure the compiler');\n
this._compilerOptions.push(config);\n }\n\n
configureTestingModule(moduleDef: TestModuleMetadata): void {\n
this._assertNotInstantiated('TestBed.configureTestingModule', 'configure the test module');\n if
(moduleDef.providers) {\n this._providers.push(...moduleDef.providers);\n }\n if (moduleDef.declarations)
{\n this._declarations.push(...moduleDef.declarations);\n }\n if (moduleDef.imports) {\n
this._imports.push(...moduleDef.imports);\n }\n if (moduleDef.schemas) {\n
this._schemas.push(...moduleDef.schemas);\n }\n if (moduleDef.aotSummaries) {\n
this._aotSummaries.push(moduleDef.aotSummaries);\n }\n }\n\n
compileComponents(): Promise<any> {\n if
(this._moduleFactory || this._instantiated) {\n return Promise.resolve(null);\n }\n\n
const moduleType =
this._createCompilerAndModule();\n return
this._compiler.compileModuleAndAllComponentsAsync(moduleType)\n
.then((moduleAndComponentFactories) => {\n this._moduleFactory =
moduleAndComponentFactories.ngModuleFactory;\n });\n }\n\n
private _initIfNeeded(): void {\n if
(this._instantiated) {\n return;\n }\n if (!this._moduleFactory) {\n try {\n const moduleType =
this._createCompilerAndModule();\n this._moduleFactory =\n
this._compiler.compileModuleAndAllComponentsSync(moduleType).ngModuleFactory;\n } catch (e) {\n
const errorCompType = this._compiler.getComponentFromError(e);\n if (errorCompType) {\n throw new
Error(\n `This test module uses the component ${\n stringify(\n errorCompType)}
which is using a \"templateUrl\" or \"styleUrls\", but they were never compiled. ` +\n `Please call
\"TestBed.compileComponents\" before your test.`);\n } else {\n throw e;\n }\n }\n }\n\n
for
(const {component, templateOf} of this._templateOverrides) {\n const compFactory =
this._compiler.getComponentFactory(templateOf);\n overrideComponentView(component, compFactory);\n
}\n\n
const ngZone =\n new NgZone({enableLongStackTrace: true, shouldCoalesceEventChangeDetection:
false});\n const providers: StaticProvider[] = [{provide: NgZone, useValue: ngZone}];\n const ngZoneInjector =
Injector.create({\n providers: providers,\n parent: this.platform.injector,\n name:
this._moduleFactory.moduleType.name\n });\n this._moduleRef =
this._moduleFactory.create(ngZoneInjector);\n // ApplicationInitStatus.runInitializers() is marked @internal to
core. So casting to any\n // before accessing it.\n (this._moduleRef.injector.get(ApplicationInitStatus) as
any).runInitializers();\n this._instantiated = true;\n }\n\n
private _createCompilerAndModule(): Type<any> {\n
const providers = this._providers.concat([{\n provide: TestBed, useValue: this\n }]);\n const declarations =\n
[...this._declarations, ...this._templateOverrides.map(entry => entry.templateOf)];\n\n
const rootScopeImports =
[];\n const rootProviderOverrides = this._rootProviderOverrides;\n if (this._isRoot) {\n @NgModule({\n
providers: [\n ...rootProviderOverrides,\n ],\n jit: true,\n })\n class RootScopeModule {\n }\n
rootScopeImports.push(RootScopeModule);\n }\n providers.push({\n provide: INJECTOR_SCOPE, useValue:
this._isRoot ? 'root' : null\n });\n\n
const imports = [rootScopeImports, this.ngModule, this._imports];\n const
schemas = this._schemas;\n\n
@NgModule({\n providers, declarations, imports, schemas, jit: true\n })\n class
DynamicTestModule {\n }\n\n
const compilerFactory = this.platform.injector.get(TestingCompilerFactory);\n
this._compiler = compilerFactory.createTestingCompiler(this._compilerOptions);\n for (const summary of
[this._testEnvAotSummaries, ...this._aotSummaries]) {\n this._compiler.loadAotSummaries(summary);\n }\n
this._moduleOverrides.forEach((entry) => this._compiler.overrideModule(entry[0], entry[1]));\n
this._componentOverrides.forEach((entry) => this._compiler.overrideComponent(entry[0], entry[1]));\n
this._directiveOverrides.forEach((entry) => this._compiler.overrideDirective(entry[0], entry[1]));\n
this._pipeOverrides.forEach((entry) => this._compiler.overridePipe(entry[0], entry[1]));\n return
DynamicTestModule;\n }\n\n
private _assertNotInstantiated(methodName: string, methodDescription: string) {\n

```

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if (this._instantiated) {\n    throw new Error(\n        `Cannot ${methodDescription} when the test module has
already been instantiated. ` +\n        `Make sure you are not using `inject` before `>${methodName}`.`);\n    }\n
}\n\n inject<T>(\n    token: Type<T>|InjectionToken<T>|AbstractType<T>, notFoundValue?: T, flags?:
InjectFlags): T;\n inject<T>(\n    token: Type<T>|InjectionToken<T>|AbstractType<T>, notFoundValue: null,
flags?: InjectFlags): T|\n    null;\n inject<T>(\n    token: Type<T>|InjectionToken<T>|AbstractType<T>,
notFoundValue?: T|null,\n    flags?: InjectFlags): T|null {\n    this._initIfNeeded();\n    if (token as unknown ===
TestBed) {\n        return this as any;\n    }\n    // Tests can inject things from the ng module and from the compiler,\n    // but the ng module can't inject things from the compiler and vice versa.\n    const UNDEFINED = {};\n    const
result = this._moduleRef.injector.get(token, UNDEFINED, flags);\n    return result === UNDEFINED ?
this._compiler.injector.get(token, notFoundValue, flags) as any :\n        result;\n    }\n\n /**
@deprecated from v9.0.0 use TestBed.inject *\n get<T>(token: Type<T>|InjectionToken<T>, notFoundValue?: T,
flags?: InjectFlags): any;\n /** @deprecated from v9.0.0 use TestBed.inject *\n get(token: any, notFoundValue?:
any): any;\n /** @deprecated from v9.0.0 use TestBed.inject *\n get(token: any, notFoundValue: any =
Injector.THROW_IF_NOT_FOUND,\n    flags: InjectFlags = InjectFlags.Default): any {\n    return
this.inject(token, notFoundValue, flags);\n    }\n\n execute(tokens: any[], fn: Function, context?: any): any {\n
this._initIfNeeded();\n    const params = tokens.map(t => this.inject(t));\n    return fn.apply(context, params);\n
}\n\n overrideModule(ngModule: Type<any>, override: MetadataOverride<NgModule>): void {\n
this._assertNotInstantiated('overrideModule', 'override module metadata');\n
this._moduleOverrides.push([ngModule, override]);\n    }\n\n overrideComponent(component: Type<any>, override:
MetadataOverride<Component>): void {\n    this._assertNotInstantiated('overrideComponent', 'override component
metadata');\n    this._componentOverrides.push([component, override]);\n    }\n\n overrideDirective(directive:
Type<any>, override: MetadataOverride<Directive>): void {\n    this._assertNotInstantiated('overrideDirective',
'override directive metadata');\n    this._directiveOverrides.push([directive, override]);\n    }\n\n overridePipe(pipe:
Type<any>, override: MetadataOverride<Pipe>): void {\n    this._assertNotInstantiated('overridePipe', 'override pipe
metadata');\n    this._pipeOverrides.push([pipe, override]);\n    }\n\n /**\n * Overwrites all providers for the given
token with the given provider definition.\n * *\n overrideProvider(token: any, provider: {\n    useFactory:
Function,\n    deps: any[],\n }): void;\n overrideProvider(token: any, provider: {useValue: any;}): void;\n
overrideProvider(token: any, provider: {useFactory?: Function, useValue?: any, deps?: any[]}): void {\n
this._assertNotInstantiated('overrideProvider', 'override provider');\n    this.overrideProviderImpl(token, provider);\n
}\n\n private overrideProviderImpl(\n    token: any, provider: {\n    useFactory?: Function,\n    useValue?:
any,\n    deps?: any[],\n    },\n    deprecated = false): void {\n    let def: InjectableDef<any>|null = null;\n    if
(typeof token !== 'string' && (def = getInjectableDef(token)) && def.providedIn === 'root') {\n        if
(provider.useFactory) {\n            this._rootProviderOverrides.push(\n                {provide: token, useFactory:
provider.useFactory, deps: provider.deps || []});\n        } else {\n            this._rootProviderOverrides.push({provide:
token, useValue: provider.useValue});\n        }\n    }\n    let flags: NodeFlags = 0;\n    let value: any;\n    if
(provider.useFactory) {\n        flags |= NodeFlags.TypeFactoryProvider;\n        value = provider.useFactory;\n    } else
{\n        flags |= NodeFlags.TypeValueProvider;\n        value = provider.useValue;\n    }\n    const deps =
(provider.deps || []).map((dep) => {\n        let depFlags: DepFlags = DepFlags.None;\n        let depToken: any;\n        if
(Array.isArray(dep)) {\n            dep.forEach((entry: any) => {\n                if (entry instanceof Optional) {\n
depFlags |= DepFlags.Optional;\n                } else if (entry instanceof SkipSelf) {\n                    depFlags |=
DepFlags.SkipSelf;\n                } else {\n                    depToken = entry;\n                }\n            });\n        } else {\n            depToken =
dep;\n        }\n        return [depFlags, depToken];\n    });\n    overrideProvider({token, flags, deps, value,
deprecatedBehavior: deprecated});\n    }\n\n overrideTemplateUsingTestingModule(component: Type<any>,
template: string) {\n    this._assertNotInstantiated('overrideTemplateUsingTestingModule', 'override template');\n
}\n\n @Component({selector: 'empty', template, jit: true})\n class OverrideComponent {\n    }\n\n
this._templateOverrides.push({component, templateOf: OverrideComponent});\n    }\n\n
createComponent<T>(component: Type<T>): ComponentFixture<T> {\n    this._initIfNeeded();\n    const
componentFactory = this._compiler.getComponentFactory(component);\n    if (!componentFactory) {\n        throw

```

```

new Error(`Cannot create the component ${\n      stringify(component)} as it was not imported into the testing
module!`);\n  }\n\n  // TODO: Don't cast as `InjectionToken<boolean>`, declared type is boolean[]\n  const
noNgZone = this.inject(ComponentFixtureNoNgZone as InjectionToken<boolean>, false);\n  // TODO: Don't cast
as `InjectionToken<boolean>`, declared type is boolean[]\n  const autoDetect: boolean =\n  this.inject(ComponentFixtureAutoDetect as InjectionToken<boolean>, false);\n  const ngZone: NgZone|null =
noNgZone ? null : this.inject(NgZone, null);\n  const testComponentRenderer: TestComponentRenderer =
this.inject(TestComponentRenderer);\n  const rootElId = `root${_nextRootElementId++}`;\n  testComponentRenderer.insertRootElement(rootElId);\n\n  const initComponent = () => {\n    const
componentRef =\n      componentFactory.create(Injector.NULL, [], `#${rootElId}`, this._moduleRef);\n    return
new ComponentFixture<T>(componentRef, ngZone, autoDetect);\n  };\n\n  const fixture = !ngZone ?
initComponent() : ngZone.run(initComponent);\n  this._activeFixtures.push(fixture);\n  return fixture;\n
}\n}\n\n/**\n * @description\n * Configures and initializes environment for unit testing and provides methods for\n
* creating components and services in unit tests.\n *\n * `TestBed` is the primary api for writing unit tests for
Angular applications and libraries.\n *\n * Note: Use `TestBed` in tests. It will be set to either `TestBedViewEngine`
or `TestBedRender3`\n * according to the compiler used.\n *\n * @publicApi\n */\n\nexport const TestBed:
TestBedStatic =\n  ivyEnabled ? TestBedRender3 as any as TestBedStatic : TestBedViewEngine as any as
TestBedStatic;\n\n/**\n * Returns a singleton of the applicable `TestBed`.\n *\n * It will be either an instance of
`TestBedViewEngine` or `TestBedRender3`.\n *\n * @publicApi\n */\n\nexport const getTestBed: () => TestBed =
ivyEnabled ? _getTestBedRender3 : _getTestBedViewEngine;\n\nlet testBed: TestBedViewEngine;\n\nfunction
_getTestBedViewEngine(): TestBedViewEngine {\n  return testBed = testBed || new
TestBedViewEngine();\n}\n\n/**\n * Allows injecting dependencies in `beforeEach()` and `it()`.\n *\n * Example:\n
*\n * ```\n * beforeEach(inject([Dependency, AClass], (dep, object) => {\n *   // some code that uses `dep` and
`object`\n *   // ...n * }));\n * it(..., inject([AClass], (object) => {\n *   object.doSomething();\n *   expect(...);\n
* }));\n * ```\n *\n * Notes:\n * - inject is currently a function because of some Traceur limitation the syntax should\n
* eventually\n * become `it(..., @Inject (object: AClass, async: AsyncTestCompleter) => { ... });`\n *\n
* @publicApi\n */\n\nexport function inject(tokens: any[], fn: Function): () => any {\n  const testBed = getTestBed();\n
if (tokens.indexOf(AsyncTestCompleter) >= 0) {\n    // Not using an arrow function to preserve context passed from
call site\n    return function(this: unknown) {\n      // Return an async test method that returns a Promise if
AsyncTestCompleter is one of\n      // the injected tokens.\n      return testBed.compileComponents().then(() => {\n
        const completer = testBed.inject(AsyncTestCompleter);\n        testBed.execute(tokens, fn, this);\n        return
completer.promise;\n      });\n    }; \n  } else {\n    // Not using an arrow function to preserve context passed from call
site\n    return function(this: unknown) {\n      return testBed.execute(tokens, fn, this);\n    }; \n  }\n}\n\n/**\n
* @publicApi\n */\n\nexport class InjectSetupWrapper {\n  constructor(private _moduleDef: () =>
TestModuleMetadata) {} \n\n  private _addModule() {\n    const moduleDef = this._moduleDef();\n    if (moduleDef)
{\n      getTestBed().configureTestingModule(moduleDef);\n    }\n  }\n\n  inject(tokens: any[], fn: Function): () =>
any {\n    const self = this;\n    // Not using an arrow function to preserve context passed from call site\n    return
function(this: unknown) {\n      self._addModule();\n      return inject(tokens, fn).call(this);\n    }; \n  }\n}\n\n/**\n
* @publicApi\n */\n\nexport function withModule(moduleDef: TestModuleMetadata): InjectSetupWrapper;\n\nexport
function withModule(moduleDef: TestModuleMetadata, fn?: Function|null): (() => any)|\n  InjectSetupWrapper {\n  if (fn)
{\n    // Not using an arrow function to preserve context passed from call site\n    return function(this: unknown) {\n
      const testBed = getTestBed();\n      if (moduleDef) {\n        testBed.configureTestingModule(moduleDef);\n      }\n
      return fn.apply(this);\n    }; \n  }\n  return new InjectSetupWrapper(() => moduleDef);\n}\n\n"/**\n * @license\n
* Copyright Google LLC All Rights Reserved.\n *\n * Use of this source code is governed by an MIT-style license
that can be\n * found in the LICENSE file at https://angular.io/license\n
*\n */\n\n * Public Test Library for unit testing Angular applications. Assumes that you are running\n * with Jasmine,
Mocha, or a similar framework which exports a beforeEach function and\n * allows tests to be asynchronous by either
returning a promise or using a 'done' parameter.\n */\n\nimport {resetFakeAsyncZone} from './fake_async';\nimport {TestBed} from

```

```

./test_bed';\ndeclare var global: any;\n\nconst _global = <any>(typeof window === 'undefined' ? global :
window);\n\n// Reset the test providers and the fake async zone before each test.\n\nif (_global.beforeEach) {\n
_global.beforeEach(() => {\n  TestBed.resetTestingModule();\n  resetFakeAsyncZone();\n });\n}\n\n/**\n * This
API should be removed. But doing so seems to break `google3` and so it requires a bit of\n * investigation.\n *\n *
A work around is to mark it as `@codeGenApi` for now and investigate later.\n *\n * @codeGenApi\n */\n\n//
TODO(iminar): Remove this code in a safe way.\n\nexport const __core_private_testing_placeholder__ = ";\n","/**\n
* @license\n * Copyright Google LLC All Rights Reserved.\n *\n * Use of this source code is governed by an MIT-
style license that can be\n * found in the LICENSE file at https://angular.io/license\n */\n\n/**\n * Type used for
modifications to metadata\n *\n * @publicApi\n */\n\nexport type MetadataOverride<T> = {\n  add?: Partial<T>,\n
remove?: Partial<T>,\n  set?: Partial<T>};\n};\n","/**\n * @license\n * Copyright Google LLC All Rights
Reserved.\n *\n * Use of this source code is governed by an MIT-style license that can be\n * found in the
LICENSE file at https://angular.io/license\n */\n\nexport {TestingCompiler as TestingCompiler,\n
TestingCompilerFactory as TestingCompilerFactory} from './test_compiler';\n","/**\n * @license\n * Copyright
Google LLC All Rights Reserved.\n *\n * Use of this source code is governed by an MIT-style license that can be\n
* found in the LICENSE file at https://angular.io/license\n */\n\n/**\n * @module\n * @description\n * Entry point
for all public APIs of the core/testing package.\n */\n\nexport * from './async';\nexport * from
'/component_fixture';\nexport * from './fake_async';\nexport { TestBed, getTestBed, inject, InjectSetupWrapper,\n
withModule } from './test_bed';\nexport * from './test_bed_common';\nexport * from './before_each';\nexport * from
'/metadata_override';\nexport { MetadataOverrider as MetadataOverrider } from './metadata_overrider';\nexport *
from './private_export_testing';\n","/**\n * @license\n * Copyright Google LLC All Rights Reserved.\n *\n * Use of
this source code is governed by an MIT-style license that can be\n * found in the LICENSE file at
https://angular.io/license\n */\n\n// <reference types="jasmine" />\n\n/**\n * @module\n * @description\n * Entry
point for all public APIs of this package.\n */\n\nexport * from './src/testing';\n\n// This file only reexports content of
the `src` folder. Keep it that way.\n","/**\n * @license\n * Copyright Google LLC All Rights Reserved.\n *\n * Use
of this source code is governed by an MIT-style license that can be\n * found in the LICENSE file at
https://angular.io/license\n */\n\n// This file is not used to build this module. It is only used during editing\n// by the
TypeScript language service and during build for verification. `ngc` replaces this file with production index.ts
when it rewrites private symbol\n// names.\n\nexport * from './public_api';\n","/**\n * Generated bundle index. Do
not edit.\n */\n\nexport * from './index';\n\nexport { TestBedRender3 as
angular_packages_core_testing_testing_b_getTestBedRender3 as angular_packages_core_testing_testing_c } from
'/src/r3_test_bed';\nexport { TestBedViewEngine as angular_packages_core_testing_testing_a } from
'/src/test_bed';\n};\n\nnames:["_Zone","stringify","ReflectionCapabilities","getInjectableDef","NG_COMP_DEF","Ng
ModuleRef","DEFAULT_LOCALE_ID","setLocaleId","ComponentFactory","compileComponent","NG_DIR_DEF","compileDirective","NG_PIPE_DEF","compilePipe","NG_MOD_DEF","transitiveScopesFor","patchComponent
DefWithScope","NG_INJ_DEF","compileNgModuleDefs","R3NgModuleFactory","resetCompiledComponents","flushModuleScopingQueueAsMuchAsPossible","_nextRootElementId","clearOverrides","overrideComponentView","
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No license file was found, but licenses were detected in source scan.

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","inertBodyElement","templateEl","innerHTML","inertBody","documentMode","stripCustomNsAttrs","el","elAttr
s","attributes","attrName","removeAttribute","childNodes","nodeType","Node","ELEMENT_NODE","nextSibling",
"SAFE_URL_PATTERN","DATA_URL_PATTERN","_sanitizeUrl","match","console","warn","sanitizeSrcset","sr
cset","split","trim","tagSet","tags","e_1","_b","_c","e_1_1","return","merge","e_2","sets","sets_1","sets_1_1","e_2
_1","inertBodyHelper","SecurityContext","VOID_ELEMENTS","OPTIONAL_END_TAG_BLOCK_ELEMENTS",
"OPTIONAL_END_TAG_INLINE_ELEMENTS","OPTIONAL_END_TAG_ELEMENTS","BLOCK_ELEMENT
S","INLINE_ELEMENTS","VALID_ELEMENTS","URI_ATTRS","SRCSET_ATTRS","HTML_ATTRS","ARIA
_ATTRS","VALID_ATTRS","SKIP_TRAVERSING_CONTENT_IF_INVALID_ELEMENTS","SanitizingHtmlSe
rializer","sanitizedSomething","buf","sanitizeChildren","traverseContent","startElement","TEXT_NODE","chars",
nodeValue","endElement","checkClobberedElement","parentNode","element","tagName","nodeName","toLowerCa
se","elAttr","lower","encodeEntities","node","nextNode","compareDocumentPosition","DOCUMENT_POSITION_
CONTAINED_BY","outerHTML","SURROGATE_PAIR_REGEXP","NON_ALPHANUMERIC_REGEXP","char
CodeAt","_sanitizeHtml","unsafeHtmlInput","unsafeHtml","mXSSAttempts","parsedHtml","sanitizer","safeHtml",
getTemplateContent","isTemplateElement","content","sanitizeHtml","getSanitizer","sanitize","HTML","sanitizeStyl
e","unsafeStyle","STYLE","sanitizeUrl","unsafeUrl","URL","sanitizeResourceUrl","unsafeResourceUrl","RESOUR
CE_URL","sanitizeScript","unsafeScript","SCRIPT","trustConstantHtml","trustConstantScript","trustConstantReso
urceUrl","getUrlSanitizer","tag","sanitizeUrlOrResourceUrl","getFactoryDef","RuntimeError","code","_this","form
atRuntimeError","throwProviderNotFoundError","injectorName","injectorDetails","SimpleChange","previousValue
","currentValue","firstChange","isFirstChange","NgOnChangesFeature","NgOnChangesFeatureImpl","definition",
ngOnChanges","ngOnChangesSetInput","rememberChangeHistoryAndInvokeOnChangesHook","simpleChangesSt
ore","getSimpleChangesStore","instance","privateName","setSimpleChangesStore","store","previousChange","regis
terPostOrderHooks","directiveStart","directiveEnd","lifecycleHooks","ngAfterContentInit","ngAfterContentChecke
d","ngAfterViewInit","ngAfterViewChecked","contentHooks","contentCheckHooks","viewHooks","viewCheckHoo
ks","destroyHooks","executeCheckHooks","hooks","callHooks","executeInitAndCheckHooks","initPhase","increme
ntInitPhaseFlags","currentNodeIndex","nodeIndexLimit","lastNodeIndexFound","callHook","isInitHook","hook","d
irective","ngInherit","NodeInjectorFactory","isViewProvider","injectImplementation","resolving","canSeeViewPro
viders","injectImpl","toTNodeTypeAsString","tNodeType","setUpAttributes","native","attrs","isProc","namespace
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arker","mergeHostAttrs","src","srcMarker","mergeHostAttribute","key1","key2","markerInsertPosition","dstValue",

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sting","classRef_1","useClass","hasDeps","INJECTOR_IMPL","INJECTOR_IMPL__PRE_R3__","StaticInjector","Injector","NULL","IDENT","EMPTY","CIRCULAR\$1","MULTI_PROVIDER_FN","_records","useNew","recursivelyProcessProviders","staticError","resolvedProvider","resolveProvider","multiProvider","multiProviderMixError","lastInjector","tryResolveToken","resolveToken","NO_NEW_LINE\$1","depRecords","depRecord","childRecord","computeDeps","providerDeps","getComponent","assertDomElement","loadLContext","getComponentAtNodeIndex","getContext","getOwningComponent","elementOrDir","getRootComponents","getInjector","getDirectives","throwNotFound","getHostElement","componentOrDirective","getListeners","IContext","listeners","firstParam","secondParam","listenerElement","callback","useCaptureOrIndx","useCapture","sort","sortListeners","a","Element","applyChanges","_published","publishGlobalUtil","COMPILED","createRootComponentView","hostRenderer","viewRenderer","createRootComponent","componentDef","rootLView","hostFeatures","instantiateRootComponent","rootTreeNode","createRootContext","LifecycleHooksFeature","getSuperType","InheritDefinitionFeature","superType","shouldInheritFields","inheritanceChain","superDef","writeableDef","maybeUnwrapEmpty","superHostBindings","inheritHostBindings","superViewQuery","superContentQueries","inheritViewQuery","inheritContentQueries","animation","defData","mergeHostAttrsAcrossInheritance","prevViewQuery","ctx","prevContentQueries","prevHostBindings","COPY_DIRECTIVE_FIELDS","COPY_COMPONENT_FIELDS","CopyDefinitionFeature","defAny","COPY_DIRECTIVE_FIELDS_1","COPY_DIRECTIVE_FIELDS_1_1","COPY_COMPONENT_FIELDS_1","COPY_COMPONENT_FIELDS_1_1","_symbolIterator","getSymbolIterator","getOwnPropertyNames","devModeEqual","isListLikeIterableA","isListLikeIterable","isListLikeIterableB","areIterablesEqual","comparator","iterator1","iterator2","item1","item2","is","WrappedValue","wrapped","wrap","unwrap","isWrapped","isJsObject","updateBinding","getBinding","bindingUpdated","bindingUpdated2","exp1","exp2","different","bindingUpdated3","exp3","bindingUpdated4","exp4","attribute","interpolationV","isBindingUpdated","interpolation1","prefix","v0","suffix","interpolation2","i0","v1","interpolation3","i1","v2","interpolation4","i2","v3","interpolation5","i3","v4","interpolation6","i4","v5","interpolation7","i5","v6","interpolation8","i6","v7","attributeInterpolate1","interpolatedValue","attributeInterpolate2","attributeInterpolate3","attributeInterpolate4","attributeInterpolate5","attributeInterpolate6","attributeInterpolate7","attributeInterpolate8","attributeInterpolateV","interpolated","template","attrsIndex","localRefsIndex","adjustedIndex","templateFirstCreatePass","tViewConsts","comment","reference","getContextLView","angularCoreDiEnv","getFactoryOf","USE_VALUE\$1","isUseClassProvider","isUseFactoryProvider","getInjectableMetadata","srcMeta","compilerMeta","typeArgumentCount","userDeps","isUseValueProvider","isUseExistingProvider","USE_VALUES\$2","EMPTY_ARRAY\$2","convertInjectableProviderToFactory","deps_1","reflectionCapabilities","valueProvider_1","existingProvider_1","factoryProvider_1","classProvider_1","deps_2","deps_3","Injectable","SWITCH_COMPILE_INJECTABLE","render2CompileInjectable","injectableType","constructResolvingPath","findFirstClosedCycle","reverse","k","injectionError","constructResolvingMessage","errMsg","wrappedError","addKey","injectors","noAnnotationError","params","signature","ii","parameter","ReflectiveKey","displayName","_globalKeyRegistry","numberOfKeys","KeyRegistry","_allKeys","newKey","reflector","Reflector","updateCapabilities","caps","identifier","ReflectiveDependency","visibility","fromKey","_EMPTY_LIST","ResolvedReflectiveProvider_","resolvedFactories","resolvedFactory","ResolvedReflectiveFactory","dependencies","resolveReflectiveFactory","factoryFn","resolvedDeps","_dependenciesFor","aliasInstance","constructDependencies","params_1","_extractToken","resolveReflectiveProvider","resolveReflectiveProviders","resolvedProviderMap","mergeResolvedReflectiveProviders","normalizedProvidersMap","existing","_normalizeProviders","invalidProviderError","from","some","metadata","_createDependency","paramMetadata","UNDEFINED","ReflectiveInjector","resolveAndCreate","ResolvedReflectiveProviders","fromResolvedProviders","ReflectiveInjector_","_providers","_parent","_constructionCounter","len","keyIds","objs","_getByKey","resolveAndCreateChild","createChildFromResolved","inj","resolveAndInstantiate","instantiateResolved","_instantiateProvider","getProviderAtIndex","outOfBoundsError","_new","_getMaxNumberOfObjects","cyclicDependencyError","_instantiate","_getByReflectiveDependency","instantiationError","originalException","originalStack","INJECTOR_KEY","_getByKeySelf","_getByKeyDefault","_getObjByKeyId","keyId","_throwOrNull","noProviderError","inj_","_mapProviders","directiveInject","injectAttribute","invalidFactory","property","setDirectiveInputsWhichShadowsStyling","property","elementStart","getNamespace","elementStartFirstCreatePass","elementStart","getElementDepthCount","increaseElementDepthCount","elementEnd","decreaseElementDepthCount","elementEnd

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rIdx","applyMutableOpCodes","mutableOpCodes","rootRNode","rootIdx","textNodeIndex","parentIdx","insertInFrontOf","refIdx","elementNodeIndex","commentValue","commentNodeIndex","loadIcuContainerVisitor","_removes","_stack","_in

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W,KACdxD,QAAS,KACTyZ,MAAuB,IAAjBD,EAAQC,KACdC,UAAWF,EAAQhR,KAAKhH,UAAUmY,aAAe,MAQzD,SAASzB,GAAGB1P,GACrB,OAAOA,EAAKoM,KAAgB,KAehC,SAASuD,GAAGB3P,GACrB,OAAOA,EAAsM,KAAe,KAe/B,SAASsD,GAAW5P,GACHB,OAAOA,EAAKwM,KAAgB,KAehC,SAAS6D,GAAerQ,EAMoR,GAC1B,IAAIhB,EAACpQ,EAAK0M,KAAe,KACtC,IAAK0D,IAAiC,IAAIbG,B,EAChB,MAAM,IAAIpS,MAAM,QAAUnB,EAAUmC,GAAQ,mCAehD,OAAOoQ;;;;;;AAkBX,SAASiB,GAAGBzX,GACrB,MAAqB,iBAAVA,EACAA,EACE,MAATA,EACO,GACJ,GAACA,EAOhB,SAAS0X,GAAKB1X,GACvB,MAAqB,mBAAV,A,EACAA,EAAMoB,MAAQpB,EAAMe,WACV,iBAAVf,GAA+B,MAATA,GAAuC,mBAAfA,EAAMoG,KACpDpG,EAAMoG,KAAKhF,MAAQpB,EAAMoG,KAAKrF,WAEIC0W,GAAGBzX;;;;;;OA4C3B,SAAS2X,KACL,OAAOV,GAKX,SAASW,GAAwBC,GAC7B,IAAIC,EAAWb,GAef,OADAA,GAAwBY,EACjBC,EASX,SAASC,GAAmBvU,EAAOwU,EAACe,GAC9C,IAAIC,EAAGB/R,EAaiB3C,GACrC,GAAI0U,GAA6C,QAA5BA,EAActS,WAC/B,YAA+BC,IAAxBqS,EAAClY,MAAsBkY,EAAClY,MAAQkY,EAActa,UAC3Esa,EAAClY,MAEtB,GAAliY,EAQpa,EAQmZ,YAAytT,SAC5B,OAAO,KACX,QAAsBmC,IAAIbM,S,EACA,OAAOA,EACX,MAAM,IAAI5S,MAAM,wBAA0BnB,EAAUT,GAAS,MA9DtDwT,GAERnZ,EAQmZ,cAAgBnZ,EAQmZ,YAAc,KAZjCA,GAAqB,QAAI,GAAK,UAK1CA,GAAYA,GAakB,KAAI,GAAK,OAeVCA,GAAYA,GAakB,KAAI,GAAK,OAeVCA,GAAYA,GAAsB,SAAI,GAAK,WAE3CA,GAAYA,GAAsB,SAAI,GAAK;;;;;;AAqE/C,IACImB,GADsB,GAIhC,GAAW,OAIxC,GAAYhT,EAauB,CAAEiT,QAASC,OAAQC,SAD/CnT,IAQPOT,QAAmB5S,EACvB,SAAS6S,GAAmBC,GACxB,IAAIC,EAASH,GAEB,OADAA,GAAmBE,EACZC,EAEX,SAASC,GAAmBrV,EAAYoY,GAEB,QADc,IAAVA,IAAoBA,EAQpa,EAQmZ,YAAy8B,cAC3BjT,IAArB4S,GACA,MAAM,IAAIrT,MAAM,qDAEf,OAAYB,OAARbqT,GACEV,GAAmBvU,OAAOqC,EAAWoS,GAGrCQ,GAaiB9H,IAAIInN,EAAYoY,EAQpa,EAQmZ,YAAytT,SAAW,UAAOmC,EAAWoS,GAGpG,SAASc,GAASvV,EAAYoY,GAERB,YADc,IAAVA,IAAoBA,EAQpa,EAQmZ,YAAy8B,UAC5CnB,MAA6BkB,IAAoB1P,GAakB3F,GAAQyU,GAcfF,SAASe,GAAoBIW,GAIZB,MAAM,IAAIcS,MADN,WA2BR,IAAI6T,GAASF,GACb,SAASG,GAAWC,GAehB,IAADA,IAAIvX,EAao,GACFhC,EAai,EAAGA,EAAluZ,EAAMrZ,OAAQF,IAAK,CACnC,IAAIwZ,EAAMjQ,GAAkBgQ,EAAMvZ,IACIC,GAAId,MAAMoF,QAAQkv,GAAM,CACpB,GAAmB,IAAfA,EAAlz,OACJ,MAAM,IAAIcF,MAAM,wCAIpB,IAFA,IAAIgB,OAAOP,EACPoS,EAQpa,EAQmZ,YAAy8B,QACvBjJ,EAai,EAAGA,EAAluJ,EAAlz,OAAQ+P,IAAK,CACjC,IAAIxM,EAao+v,EAAlvJ,GACXxM,aAAgBK,GAAoC,aAAxBL,EAakjB,gBAaiCiB,IAASK,EAC3EuU,GAASpa,EAQmZ,YAAytT,SAExBL,aAAgBO,GAAoC,aAAxBP,EAakjB,gBAaiCiB,IAASO,EAChfqU,GAASpa,EAQmZ,YAAypT,SAExBP,aAAgBM,GAAgC,SAASBN,EAakjB,gBAa6BiB,IAASM,EACxESU,GAASpa,EAQmZ,YAAyrt,KAG7ByC,EADK/C,aAAgBI,GAAUJ,IAASI,EACjCJ,EAAKG,MAGLH,EAGfzB,EAakpB,KAAKuY,GAAS3S,EAAM6R,SAGzBrW,EAakpB,KAAKuY,GAASK,IAG3B,OAAOX,EAEX,SAASyX,GAAmB/Y,EAAGkD,EAao8V,EAAMb7T,GACrD,IAAI8T,EAAYjZ,EAaoB,gBAOPc,MANIKD,EAAY,UACZ+V,EAaujW,QAAQE,EAAY,UAEICID,EAAEKZ,QAAUC,GAAY,KAAOnZ,EAAEKZ,QAASD,EAawD,EAAMb7T,GACxEnF,EAae,YAAliZ,EACnBjZ,EAaoB,gBAAI,KACIBA,EAEV,SAASmZ,GAAYpH,EAAMqE,EAak4C,EAAMb7T,QACHC,IAAXA,IAAQBA,EAAS,MACIC4M,EAaoA,GAA2B,OAAnBA,EAakqH,OAao,IA3Hb,KA2H4BrH,EAakqH,OAao,GAAoBrH,EAakSH,OAao,GAakIH,EAC3F,IAAIuH,EAau3V,EAauYs,GACxB,GAAI5X,MAAMoF,QAAQwS,GACdkD,EAauID,EAAlvS,IAAIIF,GAAG,KAAK,aAEjC,GAAmB,iBAARsS,EAakB,CAC9B,IAAIImD,EAaq,GACZ,IAAK,IAAIuT,KAAOmR,EACZ,GAAIA,EAAlIX,eAAeuG,GAAM,CACzB,IAAIvF,EAaq0W,EAAlnR,GACHBsU,EAAMrZ,KAAK+E,EAAM,KAAwB,iBAAVvF,EAaqB8Z,KAAK7V,UAAUjE,GAASiE,EAaujE,KAG9F4Z,EAau,IAAMC,EAAMzV,KAAK,MAAQ,IAEvC,OAAYkv,GAAqB7T,EAAS,IAAMA,EAAS,IAAM,IAAM,IAAMmU,EAau,MAAQvH,EAak0H,QAAQ3B,GAAU;;;;;;OA0BxH,IAAI4B,QAAWnU,EAiBf,SAASoU,KACL,YAAiBpU,IAAbmU,GACOA,GAEB,OBAAABE,SACLA,cADN;;;;;;OAqBT,IAwQIC,GAvoAC,GAAoB,CACpB,OACA,YACA;;;;;;AAuDJ,SAASC,GAAQra,GACb,OAaOIB,MAAMoF,QAAQIE,IAAIc,iBAAhBA,EA7C/B,GAmDX,SAASsa,GAAata,GACIB,OAaOIB,MAAMoF,QAAQIE,KAA0B,IAAhBA,EApDxB,GAsDX,SAASua,GAAmBC,GACxB,OAAMd,IAA7B,EAAdA,EAAMvC,OAeIB,SAASyC,GAAGBF,GACrB,OAAMd,IAA7B,EAAdA,EAAMvC,OAeIB,SAAS0C,GAAeIH,GACpB,OAawB,OAajBA,EAAlrC,SA+A+Jf,SAASwJ,GAAqBC,GAC1B,QAAUA,EAae,QAN7B,SAAWV,GACPA,EAaoBA,EA+A,UAAI,GAAK,YAC5DA,EAaoBA,EAAS8B,SAAI,GAAK,WAF/D,CAGGA,KAAwBA,GAAsB,KAKjD,IAGIW,GAAsB,CACtBC,e

AJO, SAAUC, EAAaC, GAC9B, OAAOhB;,,,,,;AAoCX, SAASiB, GAAYIb, GACjB, KAAOIb, MAAMoF, QAAQIE, IACjBA, EAAQA, EAxTL, GA0TP, OAAOA, EAkCX, SAASmb, GAAiBrY, EAAOsY, GAG7B, OAAOF, GAAYE, EAA MtY, IAU7B, SAASuY, GAAiBb, EAAOY, GAK7B, OAFWF, GAAYE, EAAMZ, EAAM1X, QAUbVc, SAASwY, GAA SIG, EAAOtS, GAKrB, OAFYsS, EAAM3N, KAAK3E, GAK3B, SAASyY, GAAKC, EAAM1Y, GAehB, OAAO0Y, EA AK1Y, GAehB, SAAS2Y, GAAyBC, EAAWC, GAGzC, IAAIC, EAAYD, EAASD, GAEzB, OADYrB, GAAQuB, GAA aA, EAAyA, EAnZtC, GA0ZX, SAASC, GAAgBzY, GAERB, OAAOA, EAA4B, eAAK, KAE5C, SAAS0Y, GAAiB1Y, GACTb, IAAIpD, EAAQ6b, GAAgBzY, GAC5B, OAAIpD, EACOIB, MAAMoF, QAAQIE, GAASA, EAAQA, EAAMo b, MAEzC, KAGX, SAASW, GAAeP, GACpB, OAAgD, IAA1B, EAAdA, EAraA, IA6aZ, SAASQ, GAA6BR, GACIC, O AA8C, MAAXb, IAAdA, EA9aA, IAobZ, SAASS, GAAyPl, EAAQ/Q, GACzB, OAAIA, MAAAA, EACO, KAEJ+Q, EA AO/Q, GAMIB, SAASoZ, GAAuBd, GAC5BA, EA9asB, IA8aO, EASjC, SAASe, GAA4BC, EAAYC, GAC7CD, EAatcgC , IAscaC, EAG7C, IAFA, IAAIC, EAAkBF, EACIBG, EAASH, EA1cJ, GA2cS, OAAXG, IACU, IAAXF, GAAMe, IAAn DC, EA1cU, KA2cX, IAAZD, GAAoE, IAAnDC, EA3cM, KA4c5BC, EA5c4B, IA4caF, EACzCC, EAAkBC, EACIBA, E AASA, EAhdJ;,,,,,;OA2db, IAAIC, GAAMb, CACnBC, OAAQC, GAAa, MACrBC, iBAAiB, EACjBC, wBAAwB, GA mb5B, SAASC, KACL, OAAOL, GAAiBG, gBAqB5B, SAASG, KACLN, GAAiBG, iBAAkB, EAqBvC, SAASI, KACL P, GAAiBG, iBAAkB, EAKvC, SAASK, KACL, OAAOR, GAAiBC, OAAOrB, MAKnC, SAAS6B, KACL, OAAOT, GA AiBC, OAAOrH, MAAnC, SAAS8H, GAAcC, GACnBX, GAAiBC, OAAOW, aAAeD, EAE3C, SAASE, KAEL, IADA, I AAIC, EAAeC, KACK, OAAjBD, GAA+C, KAAtBA, EAAalX, MACzCkX, EAAeA, EAAaf, OAEhC, OAAOe, EAEX, S AASC, KACL, OAAOf, GAAiBC, OAAOa, aAEnC, SAASE, KACL, IAAIf, EAASD, GAAiBC, OAC1Ba, EAAeb, EAA Oa, aAC1B, OAAOb, EAAOgB, SAAWH, EAAeA, EAAaf, OAEzD, SAASmB, GAAgBID, EAAOiD, GAE5B, IAAIhB, EAASD, GAAiBC, OAC9BA, EAAOa, aAAe9C, EACTBiC, EAAOgB, SAAWA, EAETB, SAASE, KACL, OAAOnB, GA AiBC, OAAOgB, SAEnC, SAASG, KACLpB, GAAiBC, OAAOgB, UAAW, EAQvC, SAASb, KAEL, OAAOJ, GAAiBI, uBAE5B, SAASiB, GAA0BC, GAC/BtB, GAAiBI, uBAAYbKb, EAG9C, SAASC, KACL, IAAItB, EAASD, GAAiBC, O AC1B3Z, EAAQ2Z, EAAOuB, iBAInB, OAHe, IAAXIb, IACAA, EAAQ2Z, EAAOuB, iBAAmBvB, EAAOrH, MAAM 6I, mBAE5Cnb, EAEX, SAASob, KACL, OAAO1B, GAAiBC, OAAO0B, aAEnC, SAASC, GAAgBpe, GACrB, OAAOw c, GAAiBC, OAAO0B, aAAene, EAEID, SAASqe, KACL, OAAO7B, GAAiBC, OAAO0B, eAEnC, SAASG, GAAsBC, G AC3B, IAAI9B, EAASD, GAAiBC, OAC1B3Z, EAAQ2Z, EAAO0B, aAEnB, OADA1B, EAAO0B, aAAe1B, EAAO0B, aAAeI, EACrCzb, EAKX, SAAS0b, GAAeC, GACpBjC, GAAiBC, OAAOiC, OAASD, EA+BrC, SAASE, GAAYBC, GA C9BpC, GAAiBC, OAAOmC, sBAAwBA, EAQpD, SAASC, GAAuBC, GAC5B, IAAIF, EAAwBpC, GAAiBC, OAAO mC, sBACpD, OAAkC, IAA3BA, EAA+B, KAAOE, EAAMF, GAEvD, SAASG, KACL, OAAOvC, GAAiBC, OAAOuC , kBAEnC, SAASC, GAAqBjf, GAC1Bwc, GAAiBC, OAAOuC, kBAAoBhf, EAOhD, SAASkf, GAAoB9D, GACzB, IA AIhG, EAAQgG, EAxrBJ, GA0rBR, OAAmB, IAAfhG, EAAMhP, KAECgP, EAAM+J, UAKE, IAAf/J, EAAMhP, KAC CgV, EA7rBF, GAgSf, KAeX, SAASgE, GAAQhE, EAAOZ, EAAOvC, GAE3B, GAAIA, EAAQpa, EAAQmZ, YAAy pT, SAAU, CAItC, IAFA, IAAIyb, EAAc7E, EACd8E, EAAcIe, IAIM, QADpBiE, EAAcA, EAAY9C, SACItE, EAAQpa, EAAQmZ, YAAy nT, MAEIC, QADpBwb, EAAcH, GAAoBI, MAMICA, EAAcA, EAartBP, IAytBGB, GAAnBD, EAAY jZ, SAQxB, GAAoB, OAAhBiZ, EAEA, OAAO, EAGP7E, EAAQ6E, EACRjE, EAAQkE, EAIhB, IAAI7C, EAASD, GA AiBC, OAAS8C, KAGvC, OFA9C, EAAOa, aAAe9C, EACTBiC, EAAOrB, MAAQA, GACR, EAaX, SAASoE, GAAU C, GAGf, IAAIC, EAAYH, KAYZnK, EAAQqK, EAzxBJ, GA0xBRjD, GAAiBC, OAASiD, EAE1BA, EAAUpC, aAAeII , EAAMuK, WAC/BD, EAAUtE, MAAQqE, EACIBC, EAAUtK, MAAQA, EACIBsK, EAAUtC, aAAeqC, EACzBC, EA AUvB, aAAeI, EAAM6I, kBAC/ByB, EAAUhB, QAAS, EAKvB, SAASa, KACL, IAAIK, EAAgBpD, GAAiBC, OACjC oD, EAAgC, OAAIBD, EAAyB, KAAOA, EAAcE, MAEhE, OADgC, OAAhBD, EAAuBnD, GAAakD, GAAiBC, EAGz E, SAASnD, GAAaH, GACIB, IAAIE, EAAS, CACTa, aAAc, KACdG, UAAU, EACVrC, MAAO, KACPhG, MAAO, KA CP2K, eAAgB, EACb3C, aAAc, KACd4C, kBAAmB, EACnBC, iBAAkB, KACIBrB, uBAAwB, EACxBZ, kBAAmB, EACnBG, cAAe, EACfa, kBAAmB, EACnBzC, OAAQA, EACRuD, MAAO, KACpP, QAAQ, GAGZ, OADW, OAAX nC, IAAoBA, EAAOuD, MAAQRd, GAC5BA, EAWX, SAASyD, KACL, IAAIC, EAAY3D, GAAiBC, OAIjC, OAHAD, GAAiBC, OAAS0D, EAAU5D, OACpC4D, EAAU7C, aAAe, KACzB6C, EAAU/E, MAAQ, KACX+e, EAQX, IA4GIC, GA5GAC, GAAUH, GASd, SAASI, KACL, IAAIH, EAAYD, KACHBC, EAAU1C, UAAW, EACrB0C, EAAU/K, MAA Q, KACIB+K, EAAUJ, eAAiB, EAC3BI, EAAU/C, aAAe, KACzB+C, EAAUH, kBAAoB, EAC9BG, EAAUvB, uBAAY B, EACnCuB, EAAUF, iBAAmB, KAC7BE, EAAUnC, kBAAoB, EAC9BmC, EAAUhC, cAAgB, EAC1BgC, EAAUnB,

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/E,IAAIM,EAepY,EArsGX,GAssGJZ,EAAQgZ,EAAa/rB,KAakYpB,EAagB,GAsB1CuC,EAagBC,GAA0BIZ,EAAGz,EAachwB,EAnBrB,MAAjByvB,EAQxBxY,GAAgBD,IAAUkW,GAO1BuC,GAAiBO,GAAqD,IAAtB,EAAbhZ,EAAMpU,MAGrB6R,EAAQpa,EAAQmZ,YAAYnT,MAASqvB,IAAQB1Y,GAEnF,OAAsB,OAAiBiZ,EACOE,GAakBvY,EAAOoY,EAACc,EAaejZ,GAGtD8Y,GAaf,SAASI,GAA0BIZ,EAAOpF,EAAO5R,EAAOowB,EAawBC,GAU5E,IATA,IAAIC,EAAsBtZ,EAAMuZ,gBAC5BC,EAae5e,EAAM3N,KACrBwsB,EAAYC,QAAtBH,EACnBI,EAakB1Z,EAAMmS,eAExBwH,EAawBL,GAAuB,GAG/CM,EAAMP,EAaBI,EAAMBE,EAJnC3Z,EAAMoS,aAKhBhtB,EAHWg0B,EAAYBK,EAAMBA,EAAMBE,EAGvDv0B,EAaiw0B,EAUx0B,IAAK,CAc3C,IAAIy0B,EAaqBL,EAaap0B,GACtC,GAAIA,EAais0B,GAAmB1wB,IAAU6wB,GACjCz0B,GAaks0B,GAAmBG,EAAMBjuB,OAAS5C,EACpD,OAAO5D,EAGf,GAAli0B,EAAMB,CACnB,IAAIS,EAASN,EAaE,GAc1B,GAAII,GAAU3Z,GAae2Z,IAAWA,EAAOlUB,OAAS5C,EACpD,OAAO0wB,EAGf,OAAO,KASX,SAASP,GAakBvY,EAAOhG,EAAOtS,EAAO0X,GAC5C,IAAIxa,EAAQob,EAAMtY,GACdgc,EAAQ1J,EAAM3N,KACIB,GA12BJ,SAAS8sB,EAU7d,GACf,OAAOA,aAAe2X,GAY2BIBkG,CAAUv0B,GAAQ,CACIB,IAAIpC,EAUoC,EACVpC,EAQ4wB,WAr1CpB,SAASgG,EA2BhxB,EAaoixB,GACvC,IAAIC,EAAUD,EAao,sBAawBA,EAakrWB,KAak,OAAS,MAAQZ,EAQ,GACf,MAAM,IAAIynB,GAAa,MAAKC,0CAA4CznB,EAQkxB,Gao1CrGF,CAA2B9c,GAakBoH,EAAMhc,KAevD,IAAI6xB,EA+BhE,GAAwB/yB,EAQ6wB,qBACnE7wB,EAQ4wB,WAAy,EACpB,IAAIe,EA+B/0B,EAQ8wB,WAAa9W,GAAwBha,EAQ8wB,YAAc,KACxFtP,GAAQhE,EAaoZ,EAAO3c,EAAQmZ,YAAY8B,SAGxD,IACI9Y,EAAQob,EAAMtY,GAASIF,EAQA,aAAQi,EAAWiZ,EAAO1D,EAAOZ,GAO5DpF,EAAM6b,iBAAMbnuB,GAAS0X,EAAMmS,gBApsCxD,SAASiI,EAAsBC,EAagBC,EAac1f,GAezD,IAAIqM,EAakqT,EAa1uB,KAakH,UAAyC21B,EAawtT,EAAGsT,SAaUC,EAAYvT,EAAGuT,UAC3G,GADoDvT,EAAGuK,YACtC,CACb,IAAIj,EAAMbnJ,GAauBgJ,IAC7C1f,EAAM8f,gBAakB9f,EAAM8f,cAAgB,KAak10B,KAakq0B,EAagBI,IACxE7f,EAAM+f,qBAauB/f,EAAM+f,mBAaqB,KACpD30B,KAakq0B,EAagBI,GAe1BF,IACC3f,EAAM8f,gBAakB9f,EAAM8f,cAAgB,KAak10B,KAak,EAaiq0B,EAagBE,GAe7EC,KACC5f,EAAM8f,gBAakB9f,EAAM8f,cAAgB,KAak10B,KAakq0B,EAagBG,IACxE5f,EAAM+f,qBAauB/f,EAAM+f,mBAaqB,KAak30B,KAakq0B,EAagBG,IAwrC3EJ,CAAsB9xB,EAAGc,EAAMhc,GAAQsS,GAGnD,QACqC,OAAjCud,GACI/a,GAAwB+a,GAC5BhC,GAAwBgE,GACxB/2B,EAQ4wB,WAAy,EACpBnO,MAGR,OAAOrgB,EAqCX,SAASozB,GAAcP,EAaw3B,EAaeK,GAi7C,IAEIID,EAaiB,GAZW,EAclV,EAaiB,GAZU,EAeT,UajBqB,IAAZA,EAQGX,EAAMC,EAakID,EAaIE,EAagB,GAakKE,EAaIE,EAagB,GAC7EiB,EAakID,EAaIE,EAagB,GAakKE,EAaIE,EAagB,GAGjEgB,EAAMC,EAakID,EAaIE,EAagB,GAakKE,EAaIE,EAagB,GAC7EiB,EAakID,EAaIE,EAagB,GAakKE,EAaIE,IAID,GAak2B,GAqBpB,SAASM,GAAmBlb,EAaoD,GAC/B,QAASpd,EAQpa,EAAQmZ,YAAYrT,MAAWsU,EAQpa,EAAQmZ,YAAYnT,MAAQwxB,GAExF,IAAI9B,GAA8B,WAC9B,SAASA,EAa+B,EAQc,GAC1Bh3B,KAak+2B,OAASA,EACd/2B,KAakG3B,OAASA,EAKIB,OAHAhC,EAaan0B,UAAUuR,IAAM,SAAUuN,EAaoWU,GAC1C,OAAO4a,GAAsBr0B,KAak+2B,OAAQ/2B,KAakG3B,OAAQ/xB,OAAOqC,EAawmS,IAEtEub,EArsB,GAajC,SAASiC,GAAepvB,GACpB,IAAIqvB,EAUrvB,EACd,GAAIGD,GAAhD,GACb,OAAO,WACH,IAAIxI,EAU43B,GAAersB,GAakBssB,IAC/C,OAAO73B,EAUA,IAAY,MAGrC,IAAIA,EAUotB,GAacyK,GAC5B,GAagB,OAaz73B,EAakB,CACIB,IAAI83B,EAacjvB,EAaegvB,GACjC73B,EAU83B,GAaeA,EAAY93B,QAezC,OAAOA,GAaw,KAKtB,SAAS+3B,GAAsBvvB,GAC3B,OAAOVf,GAac,WAMjB,IALA,IAAI+0B,EAaiBxvB,EAakH,UAAUD,YACHC02B,EAaAD,EAae1iB,KAAMbsiB,GAaeI,GAC9DE,EAakBn3B,OAAOS,UACzBmd,EAAS5d,OAAOoQ,eAAe3I,EAakHh,WAAWD,YAE5Cod,GAAUA,IAAWuZ,GAaiB,CACzC,IAAI4B,EAU2e,EAaOrJ,KAAMbsiB,GAaejZ,GAMvD,GAAI3e,GAAWA,IAAYi4B,EACvB,OAAOj4B,EAEX2e,EAAS5d,OAAOoQ,eAAewN,GAMnC,OAAO,SAAUzQ,GAak,OAAO,IAAIA;;;;;;OAYBzC,SAASiqB,GAagBt1B,GACrB,OAAOA,EAAYb,eAepC,SAASu1B,GAaiBv1B,GACTB,OAAOA,EAa0B,gBAKrC,SAASw1B,GAAMb9Q,GAExB,IADA,IAAI5iB,EAAS,GACJV,EAak,EAAGA,EAakIB,UAAUb,OAAQ+B,IACpCU,EAaOV,EAak,GAakIB,UAAUkB,GAe/BsjB,EAQ1kB,MAAMqB,MAAMqjB,EAASzkB,EAAS6B;;;;;;OAmC1C,IAAI2zB,GAA8B,WAC9B,SAASA,IAIL33B,KAak43B,SAAWWhR,QAGcPb,OA9BA+Q,EAa92B,UAAUg3B,YAAc,SAAU31B,GAC3C,IAAI41B,EAagB93B,KAak+3B,mBAAMb71B,GACxCmZ,EAUrb,KAakG4B,aAAa91B,GAG5B+1B,EAvDZ,SAASC,EAeh2B,GACpB,OAAOA,EAakB,eAAkw1B,GASDRQ,CAAh2B,GACjC+1B,EAAYj4B,KAak43B,SAAU,QAAS11B,GAC41B,GACAG,EAAYj4B,KAak43B,SAAU,iBAakBE,GAe7

Czc,GACA4c,EAAyJ4B,KAAK43B,SAAU,gBAaIbvc,IAIpDsc,EAAa92B,UAAUm3B,aAAe,SAAU91B,GAC5C, OAAIA,EACOs1B,GAAgBt1B,GAASs1B,GAAgBt1B,GAC5CIC,KAAKg4B,aAAaP,GAAiBv1B,IAEpC,MAGXy 1B,EAAa92B,UAAUk3B,mBAAqB,SAAU71B,GAeID,IADA,IAAIH,EAAI01B,GAAiBv1B,GACIBH,GAAK01B ,GAAiB11B,IACzBA,EAAI01B,GAAiB11B,GAeZb,OAAOA,GAeJ41B,EArcsB,GAqH7BQ,GAAoB;;;;;;;OAUx B,SAASC,GAA2B32B,GACChC,IAEL,OAAgB,MAATA,EAAGbA,EAAMe,WAAW8I,MAAM,EAAG,IAAM7J,E AE3D,MAAOM,GACH,MAAO;;;;;;;OA+Bf,SAASs2B,GAAyXzB,GACjB,IAAIyzB,EAAUhb,GAAgBzY,GAC9B ,GAAIyzB,GAGA,GAAI/3B,MAAMoF,QAAQ2yB,GAAU,CACxB,IAAIzb,EAAQyb,EACRnb,OAAy,EACZzK, OAAyPL,EACZyP,OAAazP,EACjB,GA0HZ,SAASixB,EAAoBzK,GACzB,OAAOA,GAAYA,EAASltB,aAAektB ,EAASltB,YAAyST,KA3HpDqkB,CAAoB1zB,GAAS,CAE7B,IAAKB,IADIBsY,EAAyqb,GAAiB3b,EAAOhY,IA EhC,MAAM,IAAIgC,MAAM,2DAEpB6L,EAAy7N,OAEX,GAsHjB,SAAS4zB,EAAoB3K,GACzB,OAAOA,GA AYA,EAASltB,aAAektB,EAASltB,YAAyWt,KAvH/CqkB,CAAoB5zB,GAAS,CAEIC,IAAKB,IADIBsY,EAoLh B,SAASub,EAAiB7b,EAAO8b,GAO7B,IADA,IAAI1c,EAAQY,EA12HJ,Gak2HiBuE,WAClBnF,GAAO,CAGV,I AFA,IACI2c,EAAoB3c,EAAMoS,aACrBhtB,EAfiB4a,EAAMmS,eAEE/sB,EAAIu3B,EAAMbv3B,IACrD,GAAI wb,EAAMxb,KAAOs3B,EACb,OAAO1c,EAAMIX,MAGrB0X,EAAQ4c,GAAoB5c,GAehC,OAAQ,EArmgByc, CAAiB7b,EAAOhY,IAehC,MAAM,IAAIgC,MAAM,2DAEpBkQ,EAAa+hB,GAAyB3b,EAAWN,GAAO,QAIx D,IAAKB,IADIBM,EAAy4b,GAAqBlc,EAAOhY,IAEpC,OAAO,KAOf,IACIm0B,EAac1b,GADdiT,EAAS5T,GAA YE,EAAMM,KAE3B9B,EAAW2d,IAAgBz4B,MAAMoF,QAAQqzB,GACzCA,EACAC,GAAepc,EAAOM,EA Wot,GAOrC,GALI7d,QAAmCpL,IAAtB+T,EAAQ3I,YACrB2I,EAAQ3I,UAAyA,EACpBwmB,GAAgB7d,EAA Q3I,UAAW2I,IAGnctE,QAAqCzP,IAAvB+T,EAAQtE,WAA0B,CACHdSE,EAAQtE,WAAaA,EACrB,IAAK,IAA IIv,EAAl,EAAGA,EAAI0V,EAAWxV,OAAQF,IACnC63B,GAAgBniB,EAAW1V,GAAIga,GAGvC6d,GAAgB7 d,EAAQkV,OAAQIV,GACChCid,EAAUjd,QASd,IALA,IAAI8d,EAAWt0B,EAIXmZ,EAASmb,EACNnb,EAASA, EAAOyL,YAAy,CAC/B,IAAI2P,EAAgB9b,GAAgBU,GACpC,GAAIob,EAAe,CAUf,GATIvc,OAAQ,IAERA,EA DAtc,MAAMoF,QAAQyzB,GACNA,EAGAA,EAacvc,OAKtB,OAAO,KAEX,IAAIty,EAAQw0B,GAAqBlc,EA AOsc,GACxC,GAAI50B,GAAS,EAAG,CACZ,IAAIgsB,EAeJ2I,GAFI3I,EAAS5T,GAAyE,EAAMtY,IAC3B8W, EAAU4d,GAAepc,EAAOtY,EAAOgsB,IAE3C+H,EAAUjd,EACV,QAkhB,OAAOid,GAAW,KAKtB,SAASW,G AAepc,EAAOM,EAAWot,GACtC,MAAO,CACH1T,MAAOA,EACPM,UAAWA,EACXot,OAAQA,EACR7d,e AAWpL,EACXyP,gBAAYzP,EACZ+xB,eAAW/xB,GASnB,SAASgyB,GAA2BC,GACChC,IACItc,EADAJ,EAAQ S,GAAgBic,GAe5B,GAAIh5B,MAAMoF,QAAQkX,GAAQ,CACtB,IAAIM,EAAyqb,GAAiB3b,EAAO0c,IAEpC le,EAAU4d,GAAepc,EAAOM,GADpCF,EAAOC,GAAyBC,EAAWN,IAxwHxC,KA0wHKnK,UAAy6mB,EACp BL,GAAgBK,EAAMble,GACnC6d,GAAgB7d,EAAQkV,OAAQIV,OAEB/CACD,IAAIA,EACJ4B,EAAOC,IAD H7B,EAAUwB,GAC0BM,UAAW9B,EAAQwB,OAEB/OAAOI,EAMX,SAASic,GAAgBr0B,EAAQqE,GAC7Br E,EAA4B,cAAIqE,EAWPc,SAAS6vB,GAAqBlc,EAAOhY,GAejC,IADA,IAAIgsB,EAAQgG,EAPyHJ,GAqyHCx b,EA1wHO,GA0wHYA,EAAIwV,EAAM6I,kBAAMbre,IACrD,GAAIsb,GAAyE,EAAMxb,MAAQwD,EAC1B,O AAOxD,EAGf,OAAQ,EAKZ,SAASw3B,GAAoB5c,GACzB,GAAIA,EAAMsF,MACN,OAAOf,EAAMsF,MAE Z,GAAItF,EAAMza,KACX,OAAOya,EAAMza,KAMB,KAAOya,EAAM+B,SAAW/B,EAAM+B,OAAOxc,MACj Cya,EAAQA,EAAM+B,OAEB/OAAO/B,EAAM+B,QAAU/B,EAAM+B,OAAOxc,KAM5C,SAASg3B,GAAiB3b ,EAAO0c,GAC7B,IAAIC,EAAMb3c,EAp0Hf,GAo0H4B4c,WACpC,GAAID,EACA,IAAK,IAAI4B,EAAl,EA AGA,EAAlm4B,EAAlBj4B,OAAQF,IAAK,CAC9C,IAAIq4B,EAAWBF,EAAlBn4B,GAe7C,GADoB6b,GAAyBwc ,EAAuB7c,GAj0HIE,Kak0H6B0c,EAC3B,OAAOG,OAOf,GAfwBxc,GAPzHZ,GAozHoDL,Gax0H1D,KA00Hg B0c,EAGIB,OAzzHQ,GA4zHhB,OAAQ,EAgCZ,SAAST,GAAyB3b,EAAWN,EAAO8c,GACChD,IAAI1d,EAAQY, EAx3HJ,GAw3HiB3T,KAAKiU,GAC1Byc,EAASb3d,EAAMmS,eAchC,OAA2B,GAAvBwL,EACO5IB,KAEN2I B,GAAmC,EAAd1d,EAAMvC,OAC5BkgB,IACG/c,EAAMvR,MAAMsuB,EAHK3d,EAAMoS;;;;;;;AAmCIC,IAI IWwL,GAqBPC,GAjJAC,IAL8D,oBAA1BC,uBACpCA,uBACAC,YAECx2B,KAAK4G,IAMV,SAAS6vB,GAAg BxQ,GACrB,MAAO,CAAE7mB,KAAM,SAAUgC,OAAQ6kB,EAAQyQ,cAAAc,aAM3D,SAASC,GAakB3Q,GA CvB,MAAO,CAAE7mB,KAAM,WAAyGc,OAAQ6kB,EAAQyQ,eAM/C,SAASG,GAAC5Q,GACnB,MAAO,CA AE7mB,KAAM,OAAQgC,OAAQ6kB,EAAQyQ,cAAAcnV,MAoBzD,SAASuV,GAAC94B,GACnB,OAAIA,aAAiB sJ,SACvtJ,IAGAA,EAwGf,SAAS+4B,GAAoBC,EAAMb5d,GAC5C,OAAOid,GAAqBW,EAAMb5d;;;;;;;AAuCN D,SAAS6d,GAAe7d,GAEPB,IAAIImB,EAASnB,EAjmIJ,GakmIT,OAAOd,GAAaiC,GAAUA,EAImIrB,GakmIsC

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GAASH,EAAM,CAAElIB,MAAOqIB,GAC/B,QACI,IACQs1B,IAA8BA,EAA0Bn7C,OAASwhB,EAAK05B,EAAwBp1B,SAAStE,EAAG5hB,KAACKs7C,GAEvH,QAAU,GAAIx1B,EAAK,MAAMA,EAAIIB,OAEjC,GAAIka,GA AeO/B,GACf,IAEI,IAAK,IAAI5B,EAA0B/7C,EAAS07C,IAAwBM,EAA4BD,EAAwBt7C,QAASu7C,EAA0Br7C,KAAMq7C,EAA4BD,EAAwBt7C,OAAQ,CACzN,IAAIyG,EACJ00C,EADI10C,EAAQ80C,EAA0Bt7C,OACtB +5C,EAASvzC,IAGjC,MAAO6f,GAASJ,EAAM,CAAExIB,MAAO4IB,GAC/B,QACI,IACQ11B,IAA8BA,EAA0B r7C,OAAS2IB,EAAKy1B,EAAwBt1B,SAASH,EAAG/IB,KAACKw7C,GAEvH,QAAU,GAAIp1B,EAAK,MAAM A,EAAIx1B;;;;;;OAYzC,IAAI86C,GAACKB,KACtB,SAASC,KACL,IAAKD,GAAiB,CACIB,IAAI97C,EAASmJ,G AAAGB,OAC7B,GAAInJ,GAAUA,EAAOC,SACjB67C,GAACKB97C,EAAOC,cAKzB,IADA,IAAIgO,EAAO/O,OA AO88C,oBAAoBlrC,IAAIInR,WACjCQ,EAAI,EAAGA,EAAI8N,EAAK5N,SAAUF,EAAG,CACIC,IAAI2F,EAA MmI,EAAK9N,GACH,YAAR2F,GAA6B,SAARA,GACrBgL,IAAIInR,UAAUmG,KAAASgL,IAAIInR,UAAmB,UA C9Cm8C,GAACKBh2C,IAKIC,OAAOg2C;;;;;;OAUx,SAASG,GAAajD,EAAG/5C,GACrB,IAAIi9C,EAASBC,GA AmBnD,GACzCoD,EAASBD,GAAMBi9C,GAC7C,OAAIi9C,GAAuBE,EA+D/B,SAASC,EAACKBrD,EAAG/5C,E AAGq9C,GAG7B,IAFA,IAAIC,EAAYvD,EAAE+C,QACdS,EAAYv9C,EAAE88C,UACL,CACT,IAAIU,EAAQF ,EAAUj8C,OACIBo8C,EAAQF,EAAU18C,OACtB,GAAIm8C,EAAMj8C,MAAQk8C,EAAMI8C,KACpB,OAAO, EACX,GAAIi8C,EAAMj8C,MAAQk8C,EAAMI8C,KACpB,OAAO,EACX,IAAK87C,EAAWG,EAAMI8C,MAA Om8C,EAAMn8C,OAC/B,OAAO,GAzEJ87C,CAACKBrD,EAAG/5C,EAAGg9C,MAK1BC,IAFWID,GAAMb,iBA ANA,GAA+B,mBAANA,GAEZoD,IAD1Bn9C,GAAMb,iBAANA,GAA+B,mBAANA,IAK3CC,OAAOy9C,GAA G3D,EAAG/5C,GAYBhC,IAAI29C,GAA8B,WAC9B,SAASA,EAAar8C,GACIBzB,KAACK+9C,QAAUt8C,EAIbn B,OAdAq8C,EAAeE,KAAO,SAAUv8C,GAC1B,OAAO,IAAIq8C,EAAar8C,IAM5Bq8C,EAAAG,OAAS,SAAUx8 C,GAC5B,OAAOq8C,EAAaI,UAAUz8C,GAASA,EAAMs8C,QAAUt8C,GAG3Dq8C,EAAaI,UAAUy8C, GAC/B,OAAOA,aAAiBq8C,GAERBA,EAnBsB,GAqBjC,SAAST,GAAMbIIC,GACxB,QAACKgmC,GAAWmC,K AET5X,MAAMoF,QAAQwS,MACdA,aAAeNG,MACdirC,OAAuB9kC,GA8BnC,SAASgmC,GAAWn9C,GACHB ,OAAa,OAANA,IAA4B,mBAANA,GAAiC,iBAANA;;;;;;OAY5D,SAASo9C,GAACvhC,EAAO+C,EAACne,GAC xC,OAAOob,EAAM+C,GAAGBne,EAGjC,SAAS48C,GAAWxhC,EAAO+C,GAIvB,OAAO/C,EAAM+C,GAejB, SAAS0+B,GAAEzhC,EAAO+C,EAACne,GAKzC,OAAIrB,OAAOy9C,GADlhhC,EAAM+C,GACGne,KAKBpBob ,EAAM+C,GAAGBne,GACf,GAIf,SAAS88C,GAAGB1hC,EAAO+C,EAAC4+B,EAAMC,GACHd,IAAIC,EAAYJ, GAAEzhC,EAAO+C,EAAC4+B,GACpD,OAAOF,GAAEzhC,EAAO+C,EA Ae,EAAG6+B,IAASC,EAG5D,SAASC ,GAAGB9hC,EAAO+C,EAAC4+B,EAAMC,EAAMG,GACtD,IAAIF,EAAYH,GAAGB1hC,EAAO+C,EAAC4+B,E AAMC,GAC3D,OAAOH,GAAEzhC,EAAO+C,EA Ae,EAAGg/B,IAASF,EAG5D,SAASG,GAAGBhiC,EAAO+C,E AAc4+B,EAAMC,EAAMG,EAAME,GAC5D,IAAIJ,EAAYH,GAAGB1hC,EAAO+C,EAAC4+B,EAAMC,GAC3D ,OAAOF,GAAGB1hC,EAAO+C,EA Ae,EAAGg/B,EAAME,IAASJ;;;;;;OAUbnE,SAASK,GAAy18C,EAAMpB,E AAOqpB,EAAW2R,GACzC,IAAI5f,EAAQ4B,KAQZ,OANI6/B,GAAEzhC,EADaiD,KACqBre,KACxBid,KA EZ myB,GADYtuB,KACoB1F,EAAOha,EAAMpB,EAAOqpB,EAAW2R,IAG5DsiB;;;;;;OASBX,SAASC,GAAeniC, EAAO7Y,GAK3B,IAFA,IAAI7C,GAAmB,EACnBr/B,EAAdD,KACVte,EAAI,EAAGA,EAAI2C,EAAOzC,OAA QF,GAACK,EAEPc49C,EAAMBX,GAAEzhC,EAAO+C,IAAGB5b,EAAO3C,KAAO49C,EAG3E,GADAp/B,GAAG BD,IACXq/B,EACD,OAAOhc,GAGX,IAAI/X,EAAUlnB,EAAO,GACrB,IAAS3C,EAAI,EAAGA,EAAI2C,EAA OzC,OAAQF,GAACK,EACpC6pB,GAAWHs,GAAGBIV,EAAO3C,IAAM2C,EAAO3C,EAAI,GAEvD,OAAO6pB, EASX,SAASg0B,GAAeriC,EAAOsiC,EAAQC,EAAIC,GAEvC,OADgBf,GAAEzhC,EAAOiD,KAAoBs/B,GACv CD,EAASjmC,GAAGBkmC,GAAMC,EAASpc,GAK/D,SAASqc,GAAEziC,EAAOsiC,EAAQC,EAAIG,EAAIC,E AAIH,GAC/C,IACIX,EAAYH,GAAGB1hC,EADb8C,KACKCy/B,EAAII,GAEZD,OADAz/B,GAASB,GACf2+B,E AAYS,EAASjmC,GAAGBkmC,GAAMG,EAAKrmC,GAAGBsmC,GAAMH,EAASpc,GAK1F,SAASwc,GA Ae5iC ,EAAOsiC,EAAQC,EAAIG,EAAIC,EAAIE,EAAIC,EAAIN,GACvD,IACIX,EAAYC,GAAGB9hC,EADb8C,KAC kCy/B,EAAII,EAAIG,GAE7D,OADA5/B,GAASB,GACf2+B,EACHS,EAASjmC,GAAGBkmC,GAAMG,EAAKrm C,GAAGBsmC,GAAME,EAAKxmC,GAAGBymC,GAAMN,EACrFpc,GAKR,SAAS2c,GA Ae/iC,EAAOsiC,EAA QC,EAAIG,EAAIC,EAAIE,EAAIC,EAAIE,EAAIC,EAAIT,GAC/D,IACIX,EAAYG,GAAGBhiC,EADb8C,KACK Cy/B,EAAII,EAAIG,EAAIG,GAejE,OADA//B,GAASB,GACf2+B,EAYS,EAASjmC,GAAGBkmC,GAAMG,EA AKrmC,GAAGBsmC,GAAME,EACzExmC,GAAGBymC,GAAME,EAAK3mC,GAAGB4mC,GAAMT,EACjDpc, GAKR,SAAS8c,GA AEjC,EAAOsiC,EAAQC,EAAIG,EAAIC,EAAIE,EAAIC,EAAIE,EAAIC,EAAIE,EAAIC,EA

B,KACoB1F,EAAOoJ,EAAU26B,EAAmB91B,EAAW2R,GAI5E0kB,GA4BX,SAASC,GAAwBn7B,EAAUjiB,EAAQ8mB,EAAW2R,GAC1D,IAAI5f,EAAQ4B,KACR4iC,EAAerC,GAAeniC,EAAO7Y,GAYzC,OAXIq9C,IAAI Bpe,IAEjB4N,GADYtuB,KACoB1F,EAAOoJ,EAAUo7B,EAAcv2B,EAAW2R,GASvE2kB;;;;;;;OA4CX,SAASE, GAAW/8C,EAAOimC,EAAyp1B,EAAOC,EAAMsU,EAAS43B,EAAyC,EAAgB1U,GACrF,IAAIjwB,EAAQ4B, KACR5H,EAAQ6H,KACR+iC,EAAgB19C,EA3rVJ,GA4rVZ0X,EAAQpF,EAAM6b,gBAAtCtB,SAASgvB,EAAwB n9C,EAAOsS,EAAOGG,EAAO2tB,EAAyp1B,EAAOC,EAAMsU,EAAS43B,EAAyC,GAGhG,IAAIG,EAAc9qC, EAAMvB,OAEPB2G,EAAQ6tB,GAAiBjzB,EAAOtS,EAAO,EAAMbolB,GAAW,KAAMjM,GAAyikC,EAAaJ,I ACxG3S,GAAkB/3B,EAAOGG,EAAOZ,EAAOyB,GAAyikC,EAAaH,IACHErzB,GAAuBtX,EAAOoF,GAC9B,I AAImvB,EAAgBnvB,EAAM+rB,OAASiF,GAAy,EAakBhxB,EAAOuuB,EAAyp1B,EAAOC,EAAMwB,EAAM qwB,kBAAMBrwB,EAAMswB,aAAc,KAAMtwB,EAAMD,QAAS+qC,GAKnK,OAJSB,OAAlB9qC,EAAM+vB,U ACN/vB,EAAM+vB,QAAQ/zB,SAASgE,EAAOoF,GAC9BmvB,EAACxE,QAAU/vB,EAAM+vB,QAAQwE,cAA cnvB,IAEjDA,EAYB6BylC,CAAWBD,EAAe5qC,EAAOGG,EAAO2tB,EAAyp1B,EAAOC,EAAMsU,EAAS43B, EAAyC,GACnI3qC,EAAM3N,KAAKu4C,GACftiC,GAAgBID,GAAO,GACvB,IAAI2IC,EAAU/kC,EAhtVH,IAg tVmB0f,cAAwC,IACtEhX,GAAy1O,EAAOGG,EAAO+kC,EAAS3IC,GACnCID,GAAgB0oB,EAAS/kC,GACzB+ zB,GAAc/zB,EAAOA,EAAM4kC,GAAiBvQ,GAAiB0Q,EAAS/kC,EAAO+kC,EAAS3IC,IACIFE,GAAgBF,IACH BkwB,GAAOBT1B,EAAOGG,EAAOZ,GAETB,MAAlBulC,GACA5U,GAAyB/vB,EAAOZ,EAAO6wB;;;;;;;OAY/C ,SAAS7e,GAAMPX,EAAOGG,EAAOtY,EAAO9C,GAG5B8C,GAASsS,EAAM3N,KAAK3H,SACpBsV,EAAM3 N,KAAK3E,GAAS,KACpBsS,EAAMgc,UAAUtuB,GAAS,MAE7BsY,EAAMtY,GAAS9C,EAYnB,SAASogD,G AAYt9C,GAejB,OAAOyY,GAzqUX,SAAS8kC,IACL,OAAO7jC,GAAiBC,OAAOW,aAuqUZijC,GAvuVH,GAw uV0Bv9C;;;;;;;OAe9C,IAAIw9C,GAAmB,CACnB56C,qBAAsBA,EACtBK,mBAAoBA,EACpBgT,WAAyA,GA CZyc,iBAGJ,SAAS+qB,EAAan6C,GACIB,IAAIqvB,EAAUrvB,EACd,GAAIgD,GAAahD,GACb,OAAO,WACH,I AAIxI,EAAU2iD,EAAap3C,GAAkBssB,IAC7C,OAAO73B,EAAUA,IAAY,MAGrC,IAAI6V,EAAMtN,EAaiBsv B,IAAYhvB,EAAegvB,GACtD,OAAKhiB,QAAuB5N,IAAhB4N,EAai7V,QAGT6V,EAai7V,QAFa;;;;;;;QAZX ob,sBAAuBA,IAkEvBwnC,GAAcn7C,EAAuB,CAAEiT,QAASC,OAAQC,SADjDnT,IAEX,SAASo7C,GAAmBp9 C,GACxB,YAAyBwC,IAAIbxC,EAakgyC,SAKhB,SAASqL,GAAqBr9C,GAC1B,YAA2BwC,IAApBxC,EAak 4xC,WAKhB,SAAS0L,GAASBv6C,EAAMw6C,GAejC,IAAIv9C,EAAOu9C,GAAW,CAAEh7C,WAAy,MACHC i7C,EAAe,CACfz/C,KAAMgF,EAakhF,KACXgF,KAAMA,EACN06C,kBAAMb,EACnB17C,WAAyVc,EAaku C,WACjBm7C,cAAU17C,GAqBd,OAnBK46C,GAAmBp9C,IAASq9C,GAAqBr9C,UAAwBwC,IAAdxC,EAak8 L,OACjE0xC,EAAaE,SAAW7xC,GAAoB7L,EAak8L,OAejDsxC,GAAmBp9C,GAEnBw9C,EAAaxL,SAAWlsC ,GAakB9F,EAakgyC,UAXBvD,SAAS2L,EAAmB39C,GACxB,OAAOm9C,MAAen9C,EAYBb29C,CAAmB39C, GAExBw9C,EAAaroC,SAAWrP,GAakB9F,EAakmV,UAE1CkoC,GAAqBr9C,GAe1Bw9C,EAAa5L,WAAa5x C,EAak4xC,WAIbVc,SAASgM,EAASB59C,GAC3B,YAA4BwC,IAArBxC,EAak8xC,YA2BH8L,CAASB59C, KAE3Bw9C,EAAa1L,YAAchsC,GAakB9F,EAak8xC,cAE/C0L,EAGX,IACIK,GAAc77C,EAAuB,CAAEiT,QA ASC,OAAQC,SADjDnT,IAEP87C,GAAgB,GACpB,SAASC,GAAmCh7C,EAAMosC,GAC9C,IAAKA,EAAU,CA CX,IACI6O,GADAC,EAAYB,IAAI51C,IACG3I,WAAWqD,GAE/C,OAAO,WAAc,OAAO,IAAKA,EAakpE,KA AKF,MAAMsE,EAAM1F,EAAS,MAAC,GAASwY,GAAWmoC,OAeZf,GAAIH,MAAe1O,EAAU,CACzB,IAAI +O,EAakB/O,EACtB,OAAO,WAAc,OAAO+O,EAAGb/oC,UAE3C,GAAIg6B,EAAS2C,YAAa,CAC3B,IAAIqM, EAAqBhP,EACzB,OAAO,WAAc,OAAOz5B,GAAS5P,GAakBq4C,EAAMBrM,eAEzE,GAAI3C,EAASyC,WAA Y,CAC1B,IAAIwM,EAAoBjP,EACxB,OAAO,WAAc,OAAOiP,EAakBxM,WAAWnzC,MAAM2/C,EAAMb/gD, EAASwY,GAAWuoC,EAakBtyC,MAAQgyC,OAe/H,GAAI3O,EAAS6C,SAAU,CACxB,IAAIqM,EAakBIP,EA ClBmP,EAASnP,EAASrjC,KACtB,IAAKwyC,EAaq,CACT,IAAIL,EAAYB,IAAI51C,GACjCi2C,EAASL,EAAu Bv+C,WAAWqD,GAE/C,OAAO,WACH,IAAIqb,EACJ,OAAO,KAAMA,EAAMtY,GAakBu4C,EAAGBrM,WA AYrZC,KAAKF,MAAM2f,EAai/gB,EAAS,MAAC,GAASwY,GAAWyoC,OAIH,IAAIC,EAASpP,EAASrjC,KA KtB,OAJKyC,IACGN,EAAYB,IAAI51C,GACjCk2C,EAASN,EAAuBv+C,WAAWqD,IAEXC,WAAc,OAAO,IA AKA,EAakpE,KAAKF,MAAMsE,EAAM1F,EAAS,MAAC,GAASwY,GAAW0oC;;;;;;;OAW7F,IAOIC,GAAa1g D,EAAc,kBAAc0E,OAAWA,OAAWA,GAPxD,SAAUO,EAAM/C,GAAQ,OAAOy+C,GAA0B17C,EAAM/C,MA SbtEy+C,GAXJ,SAASC,GAAyBC,EAAGbh8C,GAC1CA,QAakCH,IAAvBG,EAAQJ,aAA6BO,EAaiB67C,KAC jEA,EAaej7C,MAAQrB,EAAMb,CACtCIC,MAAOw+C,EACPP8C,WAAyI,EAAQJ,WACpBhI,QAASwJD,GAA

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GAAK,UAbxD,CACGA,KAAqBA,GAAMb,KAG3C,IACII,GAjEoB,,,,,;OAYExB,SAASC,GAAYC,GACjB5yD,EAAc4yD,EAAU,mCACA,iBAAbA,IACPF,GAAYE,EAASzvC,cAAcRo,QAAQ,KAAM,,,,,;AA6BzD,SAAS6jB,GAAGcVe,EAAa/B,EAAClC,GACHE,IAAI08C,EAAYBx6C,EAAa2oB,kBACtCA,EAAoBnnC,MAAMoF,QAAQ4zD,GAA0BA,EAAuB,GAACA,EAC5F,OAA0B,OAAtB7xB,EACoxI,GAakCpe,EAAa/B,EAAClC,GAI7DF,GAA YE,EAAM6qB,IAQjC,SAASpI,GAawBhjB,EAAUkjB,EAAY3iB,EAAO0iB,EAAYzD,GACtE,IAAIy9B,EAAYB/5B,EAAWkI,kBACx C,GAAInnC,MAAMoF,QAAQ4zD,GAAYB,CAOVc,IAAIC,EAAaj6B,EACbk6B,EAAC,KA KIB,GAJwB,EAAlBj6B,EAAW33B,OACb4xD,EAACD,EACdA,EAAa19B,GAEE,OAAf09B,GAawE,IAA7B,EA AnBh6B,EAAW9IB,OACn C,IAAK,IAAIrY,EAAl,EAAGA,EAAIk4D,EAAuBh4D,OAAQF,IAI/Cq6B,GAAMbpf, EAAUk9C,EADb38C,EAAM08C,EAAuB14D,IAC0o4D,GAAa,,,,,;OA2CjF,SAASC,GAAMCC,EAAgBC,GAKx D,GADAD,EAAel3D,KAAK23D,GACbBD,EAAep4D,OAAS,EACxB,IAAK,IAAIF,EAAIs4D,EAAep4D,OAAS, EAAGF,GAAK,EAAGA,IAAK,CACjD,IAAIw4D,EAAGBF,EAAet4D,GAG9By4D,GAAWD,IACRE,GAawBF,EA AeD,IACC,QAGbPDr1D,EAhBiCs1D,EAGbNBnyB,kBACXnnC,MAAMoF,QAAQpB,GAASA,EAAM,GAACA ,IAdzBy1D,GAaqBH,EAAd,EAAsr1D,OAYjE,IACQA,EAPR,SAASu1D,GAAW79C,GACbB,QAAsB,GAAbA ,EAAMPu,MAEnB,SAASkyD,GAawBF,EAAd,GAC5C,OAAOE,GAAWF,IAAaC,EAAct1D,MAAQq1D,EAA Sr1D,MAMIE,SAASy1D,GAaqB/9C,EAAOxa,GACjC,IAAI8C,EAAQ0X,EAAMyrB,kBACdnnC,MAAMoF,QA AQPb,GAEdA,EAAM,GAAK9C,GAGX29B,GAAGBC,GAaICC,IACjDrjB,EAAMyrB,kBAaObjmC,,,,,;OAwBl C,SAASw4D,GAAPjD,EAAOtS,GACpB,IAAI9C,EAAQoV,EAAM3N,KAAK3E,GACvB,OAAC,OAAV9C,GA AmC,iBAAVA,EACIB,KASAA,EAAMhB,eAAe.yBAA2BgB,EACvDA,EAAMA,MAqDd,SAASy4D,GAauBrjD, EAAO8iD,EAAGbP1D,GACnD,IAAI0X,EAAQ8tB,GAAMBlzB,EAAOtS,EAAO,GAAsB,KAAM,MAEzE,OADAm1D,GAAMCC,EAAGB19C,GAC5CA,EAUX,SAASK+C,GAaUBC,EAAMv9C,GACIC,IAAIw9C,EAAcx9C,EA AMu9C,EAAKE,uBAC7B,OAauB,OAahBD,EAauBA,EAAeA,EAAC,GAACA,EAACa,EAKIF,SAASE,GAA0B C,GAC/B,OAaqB,OAAbA,KAAwC,,,,,;AA+BpD,IAAIC,GAaA,EAMbC,GAaOB,EAiMxB,SAASC,GAAMB9j D,EAAOGG,EAAO+9C,EAAeC,EAAoBJ,GACzE,IAAK,IAAIp5D,EAAl,EAAGA,EAAlu5D,EAACr5D,OAAQF,IA AK,CAE3C,IAAIy5D,EAAWF,EAAcv5D,GAEZB05D,EAAYH,IAAGbv5D,GACbC,GAAIy5D,EAAWL,EAGX ,IADA,IAAIh5D,EAAQ,GACH6P,EAAljQ,EAAl,EAAGiQ,GAAMjQ,EAAl05D,EAAYzpD,IAAK,CAC3C,IAAIg 6B,EACJ,GAaqB,iBADjBA,EAASsvB,EAActpD,IAEvB7P,GAAS6pC,OAER,GAaqB,iBAAVA,EACZ,GAAlA, EAAS,EAET7pC,GAASyX,GAAGB2D,EAAMg+C,EAAGbvB,QAEnD,CACD,IAAlnuB,EAAMuB,IAAW,EAC 5B,OAaiB,EAATA,GACJ,KAAK,EACD,IAAlrnC,EAAW22D,IAAGbtpD,GAC3B0pD,EAAaJ,IAAGbtpD,GAC7 B2pD,EAaiBpkD,EAAM3N,KAAKiU,GAEF,iBAAnB89C,EAlPnqB,GAaOBj0B,EAxmhBzC,IAwmhB0DA,EAAM MM,GAAY,KAAAM89C,EAAGbH3D,EAAUxC,EAAOu5D,GAG9F7sB,GAawBt3B,EAAOokD,EAAGbP+C,EAA O5Y,EAAUxC,EAAOob,EA3mhB5F,IA2mhB6Gm+C,GAAY,GAEXG,MACJ,KAAK,EACD,IAAlE,EAAQR+C,E AAMM,GACR,OAAV+9C,GAakB/+B,GAActf,EAhnhBID,IAghnBmEq+C,EAAOz5D,GACzD,MACJ,KAAK,E ACD05D,GAAMbtkD,EAAOojD,GAAPjD,EAAOsG,GAAYN,EAAOpb,GAC5D,MACJ,KAAK,EACD25D,GA AmBvkD,EAAOojD,GAAPjD,EAAOsG,GAAY09C,EAAOBh+C,UAS7F,IADiyuB,EAASsvB,EAAcv5D,EAAl,IA CIB,GAawC,IAAZB,EAATiqC,GAAGqD,CAKpE,IACI8uB,EAAOH,GAAPjD,EADfsG,EAAMuB,IAAW,GA ETzuB,EAAMu9C,EAAKE,uBACX,GACfc,GAAMbvkd,EAAOujD,EAAMS,EAAOBh+C,GAAlhExb,GAAK05D, GAWb,SAASK,GAAMbvkd,EAAOujD,EAAMS,EAAOBh+C,GAEZD,IAAIw+C,EAakBx+C,EAAMu9C,EAKE ,uBACjC,GAawB,OAAPBe,EAA0B,CAC1B,IAAI3nC,EAAO+mC,GACPY,EAakB,IAGIBA,EAakBx+C,EAA Mu9C,EAAKE,wBAA0Be,EAEvD3nC,GAAG,GAEZinC,GAAMb9jD,EAAOGG,EAAOu9C,EAakKB,OAaOD, GAakBR,EAAoBnnC,IAa3F,SAASynC,GAAMbtkD,EAAOujD,EAAMv9C,EAAOpb,GAE5C,IAAI85D,EAGDR, SAASC,EAAaC,EAAeC,GACjC,IAAln3D,EAAQk3D,EAAcE,MAAM11D,QAAQy1D,GACxC,IAAe,IAAXn3D, EACA,OAAQk3D,EAAc5zD,MACIB,KAAK,EACD,IAAI+zD,EA1tBpB,SAASC,EAACP6D,EAAO62D,GAC1B,IA AAIN,EAASW,GAaOB,EAAPBK,CAA4BmD,SAASr6D,EAAO,KACrDkM,EAASrD,GAACjB,GAC3B,YAAM B1wD,IAAXqG,EAawBA,EAAS,QAuBVkuD,CAAcH,EA9nBjD,SAASK,IACL,OAAO3C,GA6nBoD2C,KAeh C,KADfx3D,EAAQk3D,EAAcE,MAAM11D,QAAQ21D,KACC,UAajBA,IACbBr3D,EAAQk3D,EAAcE,MAAM 11D,QAAQ,UAExC,MAEJ,KAAK,EACD1B,EAAQk3D,EAAcE,MAAM11D,QAAQ,SAKhD,OAakB,IAAX1B,EA Ae,KAAOA,,,,,;OAIEbi3D,CAAapB,EAAM34D,GAEnC,GADsB04D,GAaUBC,EAAMv9C,KAC3B0+C,IAsB 5B,SAASS,EAAYbnID,EAAOujD,EAAMv9C,GAC3C,IAAIw+C,EAakBIB,GAaUBC,EAAMv9C,GACnD,GA

wB,OAApBw+C,EAEA,IADA,IAAIY,EAAc7B,EAAK9F,OAAO+G,GACrBh6D,EAAl,EAAGA,EAAl46D,EAA Y16D,OAAQF,IAAK,CACzC,IAAI66D,EAAlBD,EAAY56D,GACjC,GAAI66D,EAAlB,EAAG,CAEpB,IAAI1gC ,EAAQ5e,GAAiBs/C,EAAGBr/C,GACnC,OAAV2e,GAakBG,GAAiB9e,EAnthBpC,IAnthBqD2e,QAIpDwgC,EA AyBnlD,EAAOojD,GAAQpjD,GAAQqlD,GAAiBr/C,IAIcZEm/C,CAAYbnlD,EAAOujD,EAAMv9C,GACtCA,E AAMu9C,EAAKE,uBAAuC,OAAdiB,EAaqB,MAAQA,EAC/C,OAAdA,GAAoB,CAEpB,IAAI9B,EAAc58C,EA AMu9C,EAAK+B,WACzB1C,GAhPhB,SAAS2C,EAAoBv1D,EAAOw1D,EAAgBx/C,EAAO48C,GAWvD,IATA,I AQI6C,EARAhgD,EAAWO,EA58gBJ,IA88gBP0/C,EAAU,KAOLI7D,EAAl,EAAGA,EAAlg7D,EAAe96D,OAA QF,IAAK,CAC5C,IAAlIqC,EAAS+wB,EAAh7D,GAC5B,GAAqB,iBAAViqC,EAAoB,CAC3B,IAAlkxB,EAAG BH,IAAlBh7D,GACR,OAazBwb,EAAM2/C,KAGN3/C,EAAM2/C,GAAiBvgC,GAAe3f,EAAUgvB,SAGnD,GA AqB,iBAAVA,EACZ,OAAlB,EAATA,GACJ,KAAK,EACD,IAAlmxB,EAAYCnxB,IAAlvC,GAmIU,OAAZixB,IA IAA,EAAlUE,EACVH,EAAYv9B,GAAiBziB,EAAMu9C,IAE3C,IAAlID,OAakB,EACiBj9B,OAAc,EAUIB,GAT Ig9B,IAAcF,GACdG,EAakBjD,EACiBh6B,EAAc68B,IAgDI,EAakB,KACiBj9B,EAAc9iB,GAAYE,EAAM4/C, KAGhB,OAahBh9B,EAAsB,CAMtB,IAAlk9B,EAASpC,GAA0BjvB,GAMvC5P,GAAMbpf,EAAMujB,EAfjB5i B,EAAM8/C,GAE+BD,GAAiB,GACIE,IAAltC,EAAOH,GAAQpjD,EAAO8ID,GAC1B,GAAa,OAAATvC,GAAiC, iBAATA,EAAMb,CAI3C,IAAlmB,EAAYpB,GAAuBC,EAAMv9C,GAC3B,OAAd0+C,GACAa,EAAoBv1D,EAA OujD,EAAKt5D,OAAOy6D,GAAY1+C,EAAOA,EAAMu9C,EAAK+B,aAljF,MACJ,KAAK,EACD,IACII2C,EA AWo2C,IAAlBh7D,GAC5B2hC,EAAYq5B,IAAlBh7D,GAGjCyvC,GAAoBx0B,EAAMU,GAL1BggD,EAAMbtx B,IAAW,EAK+BzuB,GAAQ,KAAM,KAAMoJ,EAAMu+c,EAAM,MAC1G,MACJ,QACI,MAAM,IAAln8B,MAA M,yDAA4DykC,EAAS,UAI7F,OAAQA,GACJ,KAAK6tB,GACD,IAAlID,EAAeR,IAAlBh7D,GACHCy7D,EAA mBT,IAAlBh7D,GACR,OAASBwb,EAAMigD,IAQN5jC,GAHmBrc,EAAMigD,GACrBxgC,GAakBhgB,EAAMu uD,GAEFhgD,GAEIC,MACJ,KAAKq8C,GACD,IACI0D,EADAJzC,EAAMU0yC,IAAlBh7D,GAEC,OAA5Bwb,EA DA+/C,EAAMBP,IAAlBh7D,KASpC63B,GAHmBrc,EAAM+/C,GACrBpgC,GAakBlgB,EAAMUqN,EAAS,MAEX 9M,KAAluCu/C,CAAoBv1D,EAAOujD,EAAKt5D,OAAOy6D,GAAY1+C,EAAO48C,IAKe1E,SAASd,KACL,IA EI/C,EACAgmC,EAHAC,EAAS,GACTC,GAAU,EA2Bd,SAASC,EAAS/C,EAAMv9C,GACpBqgD,EAAS,EACT ,IAAI7C,EAACf,GAAuBC,EAAMv9C,GAG3CmgD,EAfG,OAahB3C,EAewD,EAAK9F,OAAO+F,GAGZrmD ,GAGnB,SAASopD,IACL,GAAIF,EAASF,EAASz7D,OAAQ,CAC1B,IAAI87D,EAAeL,EAASE,KAE5B,OAAIG, EAAe,EACHrmC,EAAOqmC,IAKnbJ,EAAOh7D,KAAKi7D,EAAQF,GAKpBG,EAfWnmC,EA7zhBf,GA6zhB6 B9tB,MADRm0D,GAGFrmC,GACRomC,KAIX,OAASB,IAAlBH,EAAO17D,OACA,MAGPy7D,EAAWC,EAAO nxD,MACIBoxD,EAASD,EAAOnxD,MACTsxD,KAlnB,OAjDA,SAASE,EAA0B7iC,EAAMb5d,GAElD,IADAm a,EAASna,EACFogD,EAAO17D,QACV07D,EAAOnxD,MAGX,OADAQxD,EAAS1iC,EAakBh5B,MAAOob,GA C3BugD;;;;;QAUmB,WAC9B,SAASG,EAAaC,GACiBx9D,KAAKqB,EAAl,EACTrB,KAAKw9D,MAAQA,E AEjBD,EAAa18D,UAAU48D,QAAU,WAC7B,OAAOz9D,KAAKqB,EAAlrB,KAAKw9D,MAAMj8D,QAE/Bg8 D,EAAa18D,UAAU68D,cAAgB,WACnC,IAAlj8D,EAAQzB,KAAKw9D,MAAMx9D,KAAKqB,KAE5B,OADAi F,EAAa7E,EAAO,8BACbA,GAEX87D,EAAa18D,UAAU88D,cAAgB,WACnC,IAAlI8D,EAAQzB,KAAKw9D, MAAMx9D,KAAKqB,KAE5B,OA3pmBR,SAASu8D,EAAar3D,EAAQC,GACF,iBAAXD,GACTE,EAAWD,EA AgB,OAAXD,EAakB,cAAgBA,EAAQ,SAAU,OAwpmBpEq3D,CAAan8D,EAAO,8BACbA,GAEX87D,EAAa18 D,UAAUg9D,gBAakB,WACrC,IAAlp8D,EAAQzB,KAAKw9D,MAAMx9D,KAAKqB,KAC5B,GAAC,OAAVI, GAAMC,mBAAVA,EACzB,OAAOA,EAEX,MAAM,IAAlIoF,MAAM,iCAEpB02D,EAAa18D,UAAUi9D,sBAAW B,WAC3C,IAAlr8D,EAAQzB,KAAKw9D,MAAMx9D,KAAKqB,KAC5B,MAAQb,iBAAVI,GAGX6E,EAAa7E, EAAO,wCAFTA,GAKf87D,EAAa18D,UAAUk9D,4BAA8B,WACjD,IAAlt8D,EAAQzB,KAAKw9D,MAAMx9D ,KAAKqB,KAC5B,MAAQb,iBAAVI,GAAuC,iBAAVA,GAASBA,GAAS03D,IACnE13D,GAASy3D,IAGb5yD,E AAa7E,EAAO,oEAFTA,GArCc,GAAjC,IAoDIu8D,GAAiB,iBACjBC,GAAa,6CACbC,GAAa,UACbC,GAAmB,6 CAEnBC,GAAqB,qBACrBC,GAAY,wBAQZC,GAASB;;;;;OAMG1B,SAASC,GAAWB1nD,EAAOmKc,EAAW wjB,EAAGB3hD,EAAO4hD,EAAe3qD,EAAM4qD,GAC3F,IAAlC,EAAcz0B,GAAarZB,EAAOGG,EAAO,EAAG, MAC5CyUB,EAASqzB,GAAe3F,GAAiB4F,MACzC99C,EAAc7B,KACd+7B,IAAl6B,IAIdA,EAAC,MAEE,OAA hBA,IAKAwqB,GAAU0tB,GAAiB6F,gBAE3BH,IACApzB,GAAU0tB,GAAiB8F,QA/manC,SAASC,EAAgCC,Q ACR13D,IAAZBwyB,KAGAA,GAAuBklC;;;;;OA4mavBD,CAAGChC,KAEPc0B,EAAcx8D,KAAKqpC,EAAlB ,OAAATx3B,EAAGB,GAAKA,GAGhD,IAAlmI,EAAQ8tB,GAAmBlzB,EAAO8nD,EAAaD,EAAQ,GAAe,EAAMuB,

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S,SAAUxsE,GAC1C,IAAIiwE,EAACx0E,KAAKy0E,aAAalwE,GAAGQ,GACxC0Y,EAaO+f,GAAWH9B,KAAKsz

E, YAAakB, GAExC, OADkV3D, GAA+E, MAAvEpR, GAAGB2pE, GAAoBx1E, KAAKszE, aAAckB, GAC5D, IAAI
IE, GAAQrzD, GAAQ, MAE7C81D, EAAiBlyE, UAAU4zE, aAAe, SAAUlwE, EAAOoI, GAEvD, YADc, IAAVA, IAAo
BA, EAAQ, GACnB, MAATpI, EACOvE, KAAKuB, OAASoL, EAOLBpI, GAElwuE, EAhK4B, CADbA, IAmK1B, SA
ASW, GAAAY71D, GACjB, OAAOA, EA7toBK, GA+toBhB, SAAS23D, GAAoB33D, GACzB, OAAQA, EAhuoBI, KA
guoBsBA, EAhuoBtB, GAguoB8C, IAW9D, SAASu1D, GAAMb7iC, EAAW5F, GAEnC, IAAI9sB, EACAR, EAAystB
, EAAU4F, EAAUhsC, OACpC, GAAIwX, GAAAsB, GAEBQ, EAAaR, MAEZ, CACD, IAAIu4D, OAAc, EAKIB, GAAq
B, EAAjBrIC, EAAU1oC, KACV+tE, EAAcj5D, GAAyU, OAEzB, CAID, IAAIf, EAAWquB, EAxzoBZ, IA0zoBHirC,
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OAASzZ, EACzBqzB, GAAiB7zB, EAAWstB, EAAWirC, EAAarIC, GACxDK, GAACjG, EAAW9sB, GAe7B, OAAO,
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AIwE, OACR, KAAK, EACD, OAAOo9D, GAAc75D, EAAM/H, EAAIiI, WAAWu8D, cAC9C, KAAK, EACD, OAAO7

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AOxB+8D,EAAa7/E,UAAU+xE,mBAAqB,SAAUv3D,GACID,OOAO,IAAIsjE,GAASxH,GAASvE,mBAAmB5y
E,KAAK2gF,YAAa3gF,KAAK68E,KAAM78E,KAAK68E,KAAKnzD,QAAQ7W,SAAUwI,KA E7Gjb,OOAOwD,
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ACF,SAAS2O,GA AiB3jE,EAAMiiE,GAC5B,OOAO,IAAIF,GA AU/hE,EAAMiiE,GA E/B,IAAIF,GAA2B,WAC3
B,SAASA,EA AU/hE,EAAMiiE,GACrBlE,KAAKid,KAAOA,EACZjd,KAAKk/E,MAAQA,EA OjB,OALAF,EA
Un+E,UAAUuR,IAAM,SAAUnN,EA AOwU,GAGvC,YAFsB,IAAIBA,IAA4BA,EAAGB09B,GAASv9B,oBAEID
u9D,GAASW,WAAW93E,KAAKid,KAAMjd,KAAKk/E,QADhBlE,KAAKk/E,OOA8D,IAAIC,SAAnBlE,KAA

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yE,IAAIy2D,GAakBtsD,IACzDuO,EAAYw5D,EAAiBlyE,IAAI22D,GAAW,MAC5CtuB,EAAe5Q,EAAgBrTB,e
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Ypc,EACZ/6B,GAakBmN,EAAc4tB,EAAoBroE,KAAK46C,aAAarkC,eACtEimB,GAakBqN,EAAGBrTB,eAAe,
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AQ,CACxB,IAAIwhC,EAAgB95B,EAAS5H,GAC7B,GAA6B,iBAAlB0hC,EACM,IAATxjB,EACsB,KAAIBwjB,
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C5Bo/B,GAAiB8Z,EAAcgqC,EAAW1wD,EAAQluB,KAAK,MAKnE,GADAw+E,EAaetnE,GAAS6nE,EArosBh
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E,YAAlYj/E,OAAQF,IACzC4b,EAAlKujE,YAAlYn/E,MAAlYp7B,SAASisG,EAAlOBrwF,GACzB,GAAMb,GAAbA,
EAAlKw5D,MAAX,CAGA,IAAlKj,EAAlBrG,GAAsBr8D,GAC3C,GAAlI0iE,EAAlgB,CACbB,IAAlC,EAAlBD,E
AAe9sE,SAASgtE,gBACzCD,IACA/zE,GAAlgB+zE,EAAlgBA,EAAlE35E,QAAQgX,IACvDk6D,GAASgB,mBAA
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2qC,EAAM3qC,EAAlK/H,IAAlg0B,MAAM3nC,OACbBF,EAAl,EAAGA,EAAlIumD,EAAlKvmD,IAAK,CAC1B,I
AAI6T,EAAM+H,EAAlK/H,IAAlg0B,MAAM7nC,GACT,EAAlZ6T,EAAlIwE,MACJuD,EAAlKX,SAASsf,YAAlYk
7C,GAAlc75D,EAAM5b,GAAlGq4E,eAEhC,EAAlZxkE,EAAlIwE,MACTuD,EAAlKX,SAASsf,YAAlYi7C,GAAlW5
5D,EAAM5b,GAAlGs4E,aAE7B,SAAlZzkE,EAAlIwE,OAAuD,UAAZxE,EAAlIwE,QACxDu9D,GAAlYh6D,EAAM
5b,GAAlGm9B,WAlBzB+uE,CAAlBtwF,GAAljB28D,GAAlgB38D,IACbBA,EAAlKX,SAAlSkIB,UAlElvhB,EAAlK
w5D,OAAS,KA0BlB,SAAlSg1B,GAAlYBxuf,EAAlMme,GACpC,IAAlImB,EAAM+H,EAAlK/H,IACf,GAAsB,SA
AhBA,EAAl6qE,UAGV,IAAK,IAAlI1+E,EAAl,EAAGA,EAAl6T,EAAlg0B,MAAM3nC,OAAQF,IAAK,CACvC,
IAAl65E,EAAlUhmE,EAAlg0B,MAAM7nC,GACJ,SAAlhB65E,EAAlQxhE,MAAlER8zF,GAAlE12B,GAAlc75D,EA
AM5b,GAAlGsvC,cAAEvV,GAAlEQ,IAAlC,SAAlrB8/C,EAAlQ8E,cAlD3+E,GAAK65E,EAAlQE,aAlzB,SAAlSywB,GA
AwB5uF,EAAlMme,GACnC,IAAlImB,EAAM+H,EAAlK/H,IACf,GAAsB,SAAlhBA,EAAl6qE,UAGV,IAAK,IAAl
1+E,EAAl,EAAGA,EAAl6T,EAAlg0B,MAAM3nC,OAAQF,IAAK,CACvC,IAAl65E,EAAlUhmE,EAAlg0B,MA
AM7nC,GACxB,GAAoB,SAAlhB65E,EAAlQxhE,MAGR,IADA,IAAlIoiE,EAAlgBhF,GAAlc75D,EAAM5b,GAAlG0
6E,cAAcC,eAlChDn4B,EAAl,EAAGA,EAAlI4B,EAAlcv6E,OAAQsiD,IACtC2pD,GAAlE1xB,EAAlcj4B,GAAlIzoB,
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1B,IAAlIqyE,EAAlYxwF,EAAlKw5D,MACrB,OAAQr7C,GACJ,KAAK6sE,GAAlW6D,eAC8B,IAAlzB,IAAlZ2B,K
AC+C,KAA/B,GAAlZA,GACD71B,GAAlmB36D,GAAlEF,GAAlZwwF,GACLC,GAAlYBzwF,EAAlMgrF,GAAlW0F,+
BAGID,MACJ,KAAK1F,GAAlW0F,6BAC8B,IAAlzB,IAAlZF,KACe,GAAlZA,EACA71B,GAAlmB36D,GAAlEF,GA
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AA/B,GAAZA,GACD91B,GAAMb16D,GAEF,GAAZwwF,GACLC,GAAyBzwF,EAAMgrF,GAAW2F,+BAGID,MACJ,KAAK3F,GAAW2F,6BAC8B,IAAZb,IAAZH,KACe,GAAZA,EACA91B,GAAMb16D,GAEF,GAAZwwF,GACLC,GAAyBzwF,EAAMme,IAGvC,MACJ,KAAK6sE,GAAWoF,QAGZx1B,GAAY56D,GACZ,MACJ,KAAKgrF,GAAWyD,gBACZP,GAAGBluF,IAI5B,SAASyWf,GAAyBzwF,EAAMme,GACpCywE,GAAwB5uF,EAAMme,GAC9BqwE,GAAyBxuF,EAAMme,GAEnC,SAASuWf,GAakB1uF,EAAM4wF,EAAYC,EAawBC,GACjE,GAAM9wF,EAak/H,IAAI6qE,UAAy8tB,GAaiB5wF,EAak/H,IAAI6qE,UAAy+tB,EAIjE,IADA,IAAIhD,EAAY7tF,EAak/H,IAAIg0B,MAAM3nC,OACtBF,EAai,EAAGA,EAaiYpG,EAAWzpG,IAAK,CAChC,IAAI65E,EAUj+D,EAak/H,IAAIg0B,MAAM7nC,GAC7B,GAak65E,EAQxhE,MAAQm0F,GAAGB3yB,EAQxhE,MAAQo0F,EAejD,OADA32B,GAASC,eAAen6D,EAAMi+D,EAQ/9D,WAC9B4wF,GACJ,KAAK,EACDpE,GAAoB1sF,EAAMi+D,GAC1B,MACJ,KAAK,EACDkyB,GAAoBnwF,EAAMi+D,GAihCA,EAQ8E,WAAa6tB,GAaiB3yB,EAQ8E,WAAa8tB,IAG7DzsG,GAak65E,EAQE,cAv8CrB8sB,GAEA,SAASA,GAakBz2B,MAIbljE,WAAa,CAC3B,CAAE1G,KAAMwsF,GAAUhxF,KAAM,CAAC,CAAEqE,UAAWygG,OAE1CD,GAakBh6F,eAAiB,WAAc,MAAO,CACpD,CAAErG,KAAMw4F,MA8zCZ,SAAW4H,GACPA,EAawa,EA4B,gBAAI,GAak,kBACHDA,EAawa,EA2B,eAAI,GAak,iBAC/CA,EAawa,EAayC,6BAAI,GAak,+BAC7DA,EAawa,EA2B,eAAI,GAak,iBAC/CA,EAawa,EAayC,6BAAI,GAak,+BAC7DA,EAawa,EAoB,QAAI,GAak,UAN5C,CAOGA,KAAeA,GAaA,KA6H/B,IAAIpT,IAAc,EACIB,SAASmZ,KACL,IAAIInZ,GAAJ,CAGAA,IAAc,EACd,IAAIoZ,EAAW1pF,KAsCnB,SAAS2pF,IACL,MAAO,CACH92B,eAagB+2B,GACHB92B,eAagB+2B,GACHbx7B,mBAAoBy7B,GACpB/2B,oBAAqBg3B,GACrB/2B,kBAAMBg3B,GACnB/2B,iBAakBg3B,GACIB/2B,sBAAuBg3B,GACvB/2B,eAagBg3B,GACHB/2B,mBAAoBg3B,GACpB/2B,mBAAoBg3B,GACpB/2B,YAAag3B,GACb92B,mBAAoB,SAAU96D,EAAME,GAaA,OAAO,IAAI2xF,GAac7xF,EAAME,IChF66D,YAAa+2B,GACb92B,iBAakB+2B,GACIB92B,eAagB+2B,IAtDSf,GAmBjC,SAASgB,IACL,MAAO,CACH93B,eAagB,aChBC,eAagB83B,GACHv8B,mBAAoBA,GACpB0E,oBAAqBA,GACrBC,kBAAMBA,GACnBC,iBAakBY,GACIBX,sBAAuBW,GACvBV,eAagBU,GACHBT,mBAAoBA,GACpBC,mBAAoBA,GACpBC,YAAaA,GACbE,mBAAoB,SAAU96D,EAAME,GAaA,OAAO,IAAI2xF,GAac7xF,EAAME,IChF66D,YAAa,SAAU/6D,EAAME,EAAWiuC,EAAWguB,GAAS,OAAOn8D,EAak/H,IAAI8iE,YAAy/6D,EAAME,EAAWiuC,EAAWguB,IACpHnB,iBAakB,SAAUh7D,EAAM8wF,GAaA,OAAO9wF,EAak/H,IAAI+iE,iBAA+B,IAAd81B,EAaUcQb,GAAyBC,GAawBpyF,IACxKi7D,eAagB,SAAUj7D,EAAM8wF,GAaA,OAAO9wF,EAak/H,IAAIgjE,eAA6B,IAAd61B,EAaUcQb,GAAyBC,GAawBpyF,KAnCnHiyF,GACrD/3B,GAASC,eAAiB62B,EAAS72B,eACnCD,GAASE,eAAiB42B,EAAS52B,eACnCF,GAASvE,mBAAqBq7B,EAASr7B,mBACvCuE,GAASG,oBAAAsB22B,EAAS32B,oBACxCH,GAASI,kBAAoB02B,EAAS12B,kBACtCJ,GAASK,iBAAMBy2B,EAASz2B,iBACrCL,GAASM,sBAAwBw2B,EAASx2B,sBAC1CN,GAASO,eAAiBu2B,EAASv2B,eACnCP,GAASQ,mBAAqBs2B,EAASt2B,mBACvCR,GAASS,mBAAqBq2B,EAASr2B,mBACvCT,GAASU,YAAco2B,EAASp2B,YAchCV,GAASW,WAAaA,GActBX,GAASY,mBAAqBk2B,EAASl2B,mBACvCZ,GAASa,YAAci2B,EAASj2B,YAchCb,GAASc,iBAAMBg2B,EAASh2B,iBACrCd,GAASe,eAAiB+1B,EAAS/1B,eACnCF,GAASgB,mBAAqBA,IAwCIC,SAASg3B,GAAMBG,EAAYlnC,EAakBC,EAaoBnzD,EAak+/B,EAU55B,GACzF,IAAIwuB,EAakBoL,EAAS76B,SAASHI,IAAIy2D,IAC5C,OAAOwO,GAAek4B,GAAeD,EAAYr6D,EAUpL,EAaiBu+B,EAakBC,GAAqBnzD,EAAKmG,GAES5H,SAAS+yF,GAaoBkB,EAAYlnC,EAakBC,EAaoBnzD,EAak+/B,EAU55B,GAC1F,IAAIwuB,EAakBoL,EAAS76B,SAASHI,IAAIy2D,IACxCWQ,EAOk2B,GAAeD,EAAYr6D,EAU,IAAIu6D,GAASB3IE,GAakBu+B,EAakBC,GAC1GonC,EAakBC,GAA6Bx6F,GACnD,OAAOy6F,GAAqBC,GAAY9uG,OAAQu2E,GAAgB,KAAM,CAACgC,EAAMo2B,EAaiBp0F,IAEIG,SAASK0F,GAAeD,EAAYr6D,EAUpL,EAaiBu+B,EAakBC,GAC7E,IAAIv9C,EAAYmqB,EAAS76B,SAASHI,IAAI22D,IACIC52B,EAae8C,EAAS76B,SAASHI,IAAIulB,IACrCrb,EAAWutB,EAAGBrTB,eAAe,KAAM,MACpD,MAAO,CACHy4B,SAAU,EAACV76B,SAAUk1F,EACVlnC,iBAakBA,EACIBkgC,eAagBjgC,EACHv9C,UAAWA,EACX+e,gBAaiBA,EACjvTB,SAAU,EAACV61B,aAAcA,GAGtB,SAASK8D,GAawBn8E,EAAY84E,EAAWzsB,EAASljE,GAC7D,IAAIo0F,EAakBC,GAA6BnxB,GACnD,OAAOoxB,GAAqBC,GAAY9uG,OAAQ8xE,GAAoB,KAAM,CAAC1gD,EAAY84E,EAAWyE,EAaiBp0F,IAEvH,SAASizF,GAAYBp8E,EAAYgpD,EAASqD,EAAS9hE,GAQ5D,OALI8hE,EAfwBsxB,GAaiBz9F,IAAI8oE,EAQxxD,QAAQ+0D,kBAakBxqC,SAAShvC,QAk9EygG,GAA6BnxB,GAEPcoxB,GAAqBC,GAAY9uG,OAAQw2E,GAAqB,KAAAM,CAACpID,EAAYgpD,EAASqD,EAAS9hE,IAE9G,SAAS8xF,GAAuB1tB,EAAY3M,EAAGB4M,EAaqB5rE,G

KAAM,CAAC/6D,EAAME,EAAWiuC,EAAWguB,IAEIH,SAAS41B,GAAsB/xF,EAAM8wF,GACjC,GAAiB,IAAb9wF,EAAKw5D,MACL,MAAMJ,GAAMBu5B,GAAYY,KAGzC,OADArC,GAAoBlxF,EAAMm0F,GAAYBn0F,EAAM,IACIDA,EAAC/H,IAAI+iE,kBACHb,SAASo5B,EAAuBp0F,EAAME,EAAW+uF,GAE7C,IADA,IAAIloG,EAAS,GACJV,EAAC,EAAGA,EAACIB,UAAUuB,OAAQ+B,IACpCU,EAAOV,EAAC,GAACIB,UAAUkB,GAEB,IAAI43E,EAAUj+D,EAAC/H,IAAIg0B,MAAM/rB,GAU7B,OATkB,IAAd4wF,EACAUd,GAAwBr0F,EAAMi+D,EAASgxB,EAAUloG,GAGjDutG,GAAwBt0F,EAAMi+D,EAASgxB,EAAUloG,GAEjC,MAAhBk3E,EAAXhE,OACRy0F,GAAoBlxF,EAAMm0F,GAAYBn0F,EAAME,IAErC,IAAhB+9D,EAAXhE,MACZs9D,GAAqB/5D,EAAMi+D,EAQ/9D,WAAW1b,WAC9C6F,IAIBiD2V,GAqB7D,SAASgyF,GAAoBhyF,EAAM8wF,GAC/B,GAAiB,IAAb9wF,EAAKw5D,MACL,MAAMJ,GAAMBu5B,GAAYY,KAGzC,OADArC,GAAoBlxF,EAAMu0F,GAA0Bv0F,EAAM,IACnDA,EAAC/H,IAAIgjE,gBACHb,SAASu5B,EAAuBx0F,EAAME,EAAW+uF,GAE7C,IADA,IAAIloG,EAAS,GACJV,EAAC,EAAGA,EAACIB,UAAUuB,OAAQ+B,IACpCU,EAAOV,EAAC,GAACIB,UAAUkB,GAE/B,IAAI43E,EAAUj+D,EAAC/H,IAAIg0B,MAAM/rB,GAU7B,OATkB,IAAd4wF,EACAUd,GAAwBr0F,EAAMi+D,EAASgxB,EAAUloG,GAGjDutG,GAAwBt0F,EAAMi+D,EAASgxB,EAAUloG,GAEjC,EAAhBk3E,EAAXhE,OACRy0F,GAAoBlxF,EAAMu0F,GAA0Bv0F,EAAME,IAEtC,IAAhB+9D,EAAXhE,MACZs9D,GAAqB/5D,EAAMi+D,EAQ/9D,WAAW1b,WAC9C6F,IAIB+C2V,GAqB3D,SAASq0F,GAAwBr0F,EAAMi+D,EAASgxB,EAAUwF,GAETD,GADczF,GAAMB1oG,WAAM,EAAQpB,EAAS,CAAC8a,EAAMi+D,EAASgxB,GAAWwF,IACtE,CACT,IAAI1tG,EAASB,IAAbkoG,EAA+BwF,EAAY,GAACA,EAC7D,GAAoB,MAAhBx2B,EAAXhE,MAAMc,CAE3C,IADA,IAAI4F,EAAGb,GACXtwG,EAAL,EAAGA,EAAL65E,EAQ/2C,SAAS5iC,OAAQF,IAAK,CAC9C,IAAI4/D,EAAUia,EAQ/2C,SAAS9iC,GAC3BI,EAQUC,EAAO3C,GACC,EAAhB4/D,EAAXvD,QACRi4F,GA9yzBe9uG,EA8yzByBo+D,EAAXwiB,gBA3yzBzD,cAGX,SAASmuB,EAAoBpmG,GACzB,OAAOA,EAAMgQ,QAAQ2c,IAAMb,WAEPc,IADA,IAAI/2B,EAAL,GACCKc,EAAC,EAAGA,EAACIB,UAAUuB,OAAQ+B,IACpCIC,EAEEKc,GAAMIB,UAAUkB,GAETB,MAAO,IAAMIC,EAAL,GAAGyoB,iBAVf+nF,CAAoB/uG,EAAK2Y,QAAQ,QAAS,QA6yzB7B4c,GAA2B32B,IAGvC,IAAIy9E,EAAXhE,EAQI9D,OACHB8H,EAAXgxD,GAAC75D,EAAMiiE,EAAM/hE,WAAWu8D,cAC9C,GAAKwF,EAAMx1D,QAAQ7mB,KAMf,IAAK,IAAIw/B,KAAQsvE,EAAL,OADTlwG,EAAXkwG,EAALctvE,IAETBplB,EAAXX,SAASu,aAAa9K,EAALuc,EAAM5gC,GAGrCwb,EAAXX,SAAS4J,gBAAGBJ,EAALuc,QAV1CplB,EAAXX,SAAS8f,SAASw,EAAL,YAAcvK,KAAK7V,UAAUisG,EAAL,KAAM;,,,,,;AAtzzB7F,IAAMC9uG,EAU0zBnC,SAAS0uG,GAAwBt0F,EAAMi+D,EAASgxB,EAAUloG,GACTDipG,GAAMB1pG,WAAM,EAAQpB,EAAS,CAAC8a,EAAMi+D,EAASgxB,GAAWloG,IAEZ,E,SAASotG,GAAYBn0F,EAAME,GACpC,IAAK,IAAI9b,EAAL8b,EAAW9b,EAAL4b,EAAC/H,IAAIg0B,MAAM3nC,OAAQF,IAAK,CACpD,IAAI65E,EAAUj+D,EAAC/H,IAAIg0B,MAAM7nC,GAC7B,GAAoB,MAAhB65E,EAAXhE,OAAqCwhE,EAQ/2C,UAAy+2C,EAQ/2C,SAAS5iC,OACIF,OAAOF,EAGf,OAAO,KAEX,SAASmwG,GAA0Bv0F,EAAME,GACrC,IAAK,IAAI9b,EAAL8b,EAAW9b,EAAL4b,EAAC/H,IAAIg0B,MAAM3nC,OAAQF,IAAK,CACpD,IAAI65E,EAAUj+D,EAAC/H,IAAIg0B,MAAM7nC,GAC7B,GAAqB,EAAhB65E,EAAXhE,OAAkCwhE,EAQ/2C,UAAy+2C,EAQ/2C,SAAS5iC,OACHF,OAAOF,EAGf,OAAO,MA5HX,SAAWuuG,GACPA,EAAYA,EAAL,OAAL,GAAC,SACzCA,EAAYA,EAAL2B,cAAL,GAAC,gBACHDA,EAAYA,EAAL4B,eAAL,GAAC,iBACjDA,EAAYA,EAALqB,QAAL,GAAC,UAC1CA,EAAYA,EAALyB,YAAL,GAAC,cALID,CAMGA,KAAgBA,GAAC,KAWHjC,IAALd,GAA+B,WAC/B,SAASA,EAALc7xF,EAAME,GACzBnd,KAAKid,KAAOA,EACZjd,KAAKmd,UAAyA,EACA,MAAbA,IACAnd,KAAKmd,UAAyA,EAAY,GAEjCnd,KAAKk7E,QAAUj+D,EAAC/H,IAAIg0B,MAAM/rB,GAG9B,IAFA,IAAI+hE,EAALQI/E,KAAKk7E,QACb22B,EAAS50F,EACNiiE,GAAiD,IAAZB,EAALda,EAAMxIE,QACnBwIE,EAALQA,EAAMlhE,OAELB,IAAKkhE,EACD,MAAQA,GAAS2yB,GACb3yB,EAALQIF,GAAaq4B,GACrBA,EAASA,EAAL07zF,OAGxBhe,KAAKk/E,MAAQA,EACbl/E,KAAK6xG,OAASA,EAALqHIB,OANHAzxG,OAAOwD,eAAekrG,EAALcjuG,UAAW,eAALgB,CAC3DuR,IAAK,WAED,OAAO0kE,GAAC92E,KAAK6xG,OAAQ7xG,KAAKk/E,MAAM/hE,WAAWwzB,eAALiB3wC,KAAKid,MAELFsqB,YAAY,EACZC,cAAL,IAELBpnC,OAAOwD,eAAekrG,EAALcjuG,UAAW,WAAY,CACvDuR,IAAK,WACD,OAAOwD,eAALiB5gF,KAAK6xG,OAAQ7xG,KAAKk/E,QAE9C33C,YAAY,EACZC,cAAL,IAELBpnC,OAAOwD,eAAekrG,EAALcjuG,UAAW,YAAa,CACxDuR,IAAK,WACD,OAAOpS,KAAK8xG,aAAap/F,WAE7B60B,YAAY,EACZC,cAAL,IAELBpnC,OAAOwD,eAAekrG,EAALcjuG,UAAW,UAAW,CACtDuR,IAAK,WACD,OAAOpS,KAAK8xG,aAAaz2F,SAE7BksB,YAAY,EACZC,cAAL,IAELBpnC,OAAOwD,eAAekrG,EAALcjuG,UAAW,iBAABK,C

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```

__assign = Object.assign || function __assign(t) {\n
  s = arguments[i];\n
  for (var p in s)\n
    t[p] = s[p];\n
  }\n
  return t;\n
};\n
return __assign.apply(this, arguments);\n
};\n
function __rest(s, e) {\n
  var t = {};\n
  for (var p in s)\n
    if (Object.prototype.hasOwnProperty.call(s, p))\n
      && e.indexOf(p) < 0)\n
    t[p] = s[p];\n
  if (s != null && typeof Object.getOwnPropertySymbols ===\n
  \"function\")\n
    for (var i = 0, p = Object.getOwnPropertySymbols(s); i < p.length; i++) {\n
      if\n
      (e.indexOf(p[i]) < 0 && Object.prototype.propertyIsEnumerable.call(s, p[i]))\n
      t[p[i]] = s[p[i]];\n
    }\n
  return t;\n
};\n
function __decorate(decorators, target, key, desc) {\n
  var c = arguments.length, r = c\n
  < 3 ? target : desc === null ? desc = Object.getOwnPropertyDescriptor(target, key) : desc, d;\n
  if (typeof Reflect\n
  === \"object\" && typeof Reflect.decorate === \"function\")\n
    r = Reflect.decorate(decorators, target, key,\n
  desc);\n
  else\n
    for (var i = decorators.length - 1; i >= 0; i--)\n
      if (d = decorators[i])\n
      r = (c < 3 ? d(r) : c > 3 ? d(target, key, r) : d(target, key)) || r;\n
  return c > 3 && r &&\n
  Object.defineProperty(target, key, r, r);\n
};\n
function __param(paramIndex, decorator) {\n
  return function\n
  (target, key) { decorator(target, key, paramIndex); }\n
};\n
function __metadata(metadataKey, metadataValue)\n
{\n
  if (typeof Reflect === \"object\" && typeof Reflect.metadata === \"function\")\n
    return\n
    Reflect.metadata(metadataKey, metadataValue);\n
};\n
function __awaiter(thisArg, _arguments, P, generator) {\n
  function adopt(value) { return value instanceof P ? value : new P(function (resolve) { resolve(value); }); }\n
  return new (P || (P = Promise))(function (resolve, reject) {\n
    function fulfilled(value) { try {\n
    step(generator.next(value));\n
    }\n
    catch (e) {\n
    reject(e);\n
    }\n
    }\n
    function\n
    rejected(value) { try {\n
    step(generator[\"throw\"](value));\n
    }\n
    catch (e) {\n
    reject(e);\n
    }\n
    }\n
    function step(result) { result.done ? resolve(result.value) :\n
    adopt(result.value).then(fulfilled, rejected); }\n
    step((generator = generator.apply(thisArg, _arguments ||\n
    [])).next());\n
  });\n
};\n
function __generator(thisArg, body) {\n
  var _ = { label: 0, sent: function () { if\n
  (t[0] & 1)\n
    throw t[1]; return t[1]; }, trys: [], ops: [] }, f, y, t, g;\n
  return g = { next: verb(0), \"throw\":\n
  verb(1), \"return\": verb(2) }, typeof Symbol === \"function\" && (g[Symbol.iterator] = function () { return this; }),\n
  g;\n
  function verb(n) { return function (v) { return step([n, v]); }\n
  }\n
  function step(op) {\n
    if (f)\n
    throw new TypeError(\"Generator is already executing.\");\n
    while (_)\n
    try {\n
    if\n
    (f = 1, y && (t = op[0] & 2 ? y[\"return\"] : op[0] ? y[\"throw\"] || ((t = y[\"return\"])\n
    && t.call(y, 0) : y.next) &&\n
    !(t = t.call(y, op[1])).done)\n
    return t;\n
    if (y = 0, t)\n
    op = [op[0] & 2,\n
    t.value];\n
    switch (op[0]) {\n
    case 0:\n
    case 1:\n
    t = op;\n
    break;\n
    case 4:\n
    _label++;\n
    return { value: op[1],\n
    done: false };\n
    case 5:\n
    _label++;\n
    y = op[1];\n
    op = [0];\n
    continue;\n
    case 7:\n
    op = _ops.pop();\n
    _trys.pop();\n
    continue;\n
    default:\n
    if (!(t = _trys, t = t.length > 0\n
    && t[t.length - 1]) && (op[0] === 6 || op[0] === 2)) {\n
    _ = 0;\n
    continue;\n
    }\n
    if (op[0] === 3 && (!t || (op[1] > t[0] && op[1] < t[3]))) {\n
    _label = op[1];\n
    break;\n
    }\n
    if (op[0] === 6 && _label <\n
    t[1]) {\n
    _label = t[1];\n
    t = op;\n
    break;\n
    }\n
    if (t && _label < t[2]) {\n
    _label = t[2];\n
    _ops.push(op);\n
    break;\n
    }\n
    if (t[2])\n
    _ops.pop();\n
    _trys.pop();\n
    continue;\n
    }\n
    op =\n
    body.call(thisArg, _);\n
  }\n
  catch (e) {\n
    op = [6, e];\n
    y = 0;\n
  }\n
  finally {\n
    f = t = 0;\n
    if (op[0] & 5)\n
    throw op[1];\n
  }\n
  return { value: op[0] ? op[1] : void 0, done: true };\n
};\n
var __createBinding = Object.create ? (function\n
(o, m, k, k2) {\n
  if (k2 === undefined)\n
    k2 = k;\n
  Object.defineProperty(o, k2, { enumerable: true,\n
  get: function () { return m[k]; } });\n
}) : (function (o, m, k, k2) {\n
  if (k2 === undefined)\n
    k2 = k;\n
  o[k2] = m[k];\n
});\n
function __exportStar(m, exports) {\n
  for (var p in m)\n
    if (p !== \"default\"\n
    && !exports.hasOwnProperty(p))\n
    __createBinding(exports, m, p);\n
};\n
function __values(o) {\n

```

```

var s = typeof Symbol === "function" && Symbol.iterator, m = s && o[s], i = 0;
if (m)
  return
m.call(o);
if (o && typeof o.length === "number")
  return {
    next: function () {
      if (o && i <= o.length)
        o = void 0;
      return {
        value: o && o[i++],
        done: !o
      };
    }
  };
throw new TypeError(s ? "Object is not iterable." : "Symbol.iterator is not defined.");
function __read(o, n) {
  var m = typeof Symbol === "function" && o[Symbol.iterator];
  if (!m)
    return o;
  var i = m.call(o), r, ar = [], e;
  try {
    while ((n === void 0 || n-- > 0) && !(r = i.next()).done)
      ar.push(r.value);
  } catch (error) {
    e = { error: error };
  } finally {
    try {
      if (r && !r.done && (m = i["return"]))
        m.call(i);
    } finally {
      if (e)
        throw e.error;
    }
  }
  return ar;
}
function __spread() {
  for (var ar = [], i = 0; i < arguments.length; i++)
    ar = ar.concat(__read(arguments[i]));
  return ar;
}
function __spreadArrays() {
  for (var s = 0, i = 0, il = arguments.length; i < il; i++)
    s += arguments[i].length;
  for (var r = Array(s), k = 0, i = 0; i < il; i++)
    for (var a = arguments[i], j = 0, jl = a.length; j < jl; j++, k++)
      r[k] = a[j];
  return r;
}
function __await(v) {
  return this instanceof __await ? (this.v = v, this) : new __await(v);
}
function __asyncGenerator(thisArg, _arguments, generator) {
  if (!Symbol.asyncIterator)
    throw new TypeError("Symbol.asyncIterator is not defined.");
  var g = generator.apply(thisArg, _arguments || []), i, q = [];
  return i = {
    verb("next"),
    verb("throw"),
    verb("return"),
    i[Symbol.asyncIterator] = function () {
      return this;
    },
    function verb(n) {
      if (g[n])
        i[n] = function (v) {
          return new Promise(function (a, b) {
            q.push([n, v, a, b]) > 1 || resume(n, v);
          });
        }
      function resume(n, v) {
        try {
          step(g[n](v));
        } catch (e) {
          settle(q[0][3], e);
        }
      }
      function step(r) {
        r.value instanceof __await ? Promise.resolve(r.value.v).then(fulfill, reject) :
        settle(q[0][2], r);
      }
      function fulfill(value) {
        resume("next", value);
      }
      function reject(value) {
        resume("throw", value);
      }
      function settle(f, v) {
        if (f(v), q.shift(), q.length)
          resume(q[0][0], q[0][1]);
      }
    }
  };
}
function __asyncDelegator(o) {
  var i, p;
  return i = {
    verb("next"),
    verb("throw"),
    function (e) {
      throw e;
    },
    verb("return"),
    i[Symbol.iterator] = function () {
      return this;
    },
    function verb(n, f) {
      i[n] = o[n] ? function (v) {
        return (p = !p) ? {
          value: __await(o[n](v)),
          done: n === "return"
        } : f ? f(v) : v;
      } : f;
    }
  };
}
function __asyncValues(o) {
  if (!Symbol.asyncIterator)
    throw new
  TypeError("Symbol.asyncIterator is not defined.");
  var m = o[Symbol.asyncIterator], i;
  return m ?
  m.call(o) : (o = typeof __values === "function" ? __values(o) : o[Symbol.iterator](), i = {},
  verb("next"),
  verb("throw"),
  verb("return"),
  i[Symbol.asyncIterator] = function () {
    return this;
  },
  i);
  function verb(n) {
    i[n] = o[n] && function (v) {
      return new Promise(function (resolve, reject) {
        v = o[n](v), settle(resolve, reject,
        v.done, v.value);
      });
    };
  }
  function settle(resolve, reject, d, v) {
    Promise.resolve(v).then(function (v) {
      resolve({
        value: v,
        done: d
      });
    }, reject);
  }
}
function __makeTemplateObject(cooked, raw) {
  if (Object.defineProperty)
    Object.defineProperty(cooked, "raw", {
      value: raw
    });
  else {
    cooked.raw = raw;
  }
  return cooked;
};
var __setModuleDefault = Object.create ?
(function (o, v) {
  Object.defineProperty(o, "default", {
    enumerable: true,
    value: v
  });
}) : function (o, v) {
  o["default"] = v;
};
function __importStar(mod) {
  if (mod && mod.__esModule)
    return mod;
  var result = {};
  if (mod != null)
    for (var k in mod)
      if (Object.hasOwnProperty.call(mod, k))
        __createBinding(result, mod, k);
  __setModuleDefault(result, mod);
  return result;
}
function __importDefault(mod) {
  return (mod && mod.__esModule) ? mod : {
    default: mod
  };
}
function __classPrivateFieldGet(receiver, privateMap) {
  if (!privateMap.has(receiver))
    throw new TypeError("attempted to get private field on non-instance");
  return privateMap.get(receiver);
}
function __classPrivateFieldSet(receiver, privateMap, value) {
  if (!privateMap.has(receiver))
    throw new TypeError("attempted to set private field on non-instance");
  privateMap.set(receiver, value);
  return value;
}
/**
 *
 * @license
 * Copyright Google LLC All Rights Reserved.
 * Use of this source code is governed by an
 * MIT-style license that can be
 * found in the LICENSE file at https://angular.io/license
 */

```

```

closure compiler mark the call as no-side-effects.\n    * It is important that the return value for the `noSideEffects`
function be assigned\n    * to something which is retained otherwise the call to `noSideEffects` will be removed by
closure\n    * compiler.\n    */\n    function noSideEffects(fn) {\n        return { toString: fn }.toString();\n    }\n\n    var ANNOTATIONS = '__annotations__';\n    var PARAMETERS = '__parameters__';\n    var
PROP_METADATA = '__prop__metadata__';\n    /*\n    * @suppress {globalThis}\n    */\n    function
makeDecorator(name, props, parentClass, additionalProcessing, typeFn) {\n        return noSideEffects(function ()
{\n            var metaCtor = makeMetadataCtor(props);\n            function DecoratorFactory() {\n                var args =
[];\n                for (var _i = 0; _i < arguments.length; _i++) {\n                    args[_i] = arguments[_i];\n                }\n                if (this instanceof DecoratorFactory) {\n                    metaCtor.call.apply(metaCtor, __spread([this], args));\n                    return this;\n                }\n                var annotationInstance = new
(DecoratorFactory.bind.apply(DecoratorFactory, __spread([void 0], args)))();\n                return function
TypeDecorator(cls) {\n                    if (typeFn)\n                        typeFn.apply(void 0, __spread([cls], args));\n                    // Use of Object.defineProperty is important since it creates non-enumerable property which\n                    // prevents the property is copied during subclassing.\n                    var annotations =
cls.hasOwnProperty(ANNOTATIONS) ?\n                        cls[ANNOTATIONS] :\n                        Object.defineProperty(cls, ANNOTATIONS, { value: [] })[ANNOTATIONS];\n                    annotations.push(annotationInstance);\n                    if (additionalProcessing)\n                        additionalProcessing(cls);\n                    return cls;\n                });\n                if (parentClass) {\n                    DecoratorFactory.prototype = Object.create(parentClass.prototype);\n                }\n                DecoratorFactory.prototype.ngMetadataName = name;\n                DecoratorFactory.annotationCls =
DecoratorFactory;\n                return DecoratorFactory;\n            });\n        }\n\n        function makeMetadataCtor(props) {\n            return function ctor() {\n                var args = [];\n                for (var _i = 0; _i < arguments.length; _i++) {\n                    args[_i] = arguments[_i];\n                }\n                if (props) {\n                    var values = props.apply(void 0,
__spread(args));\n                    for (var propName in values) {\n                        this[propName] = values[propName];\n                    }\n                }\n            };
        }\n\n        function makeParamDecorator(name, props, parentClass) {\n            return
noSideEffects(function () {\n                var metaCtor = makeMetadataCtor(props);\n                function
ParamDecoratorFactory() {\n                    var args = [];\n                    for (var _i = 0; _i < arguments.length; _i++) {\n                        args[_i] = arguments[_i];\n                    }\n                    if (this instanceof ParamDecoratorFactory) {\n                        metaCtor.apply(this, args);\n                        return this;\n                    }\n                    var annotationInstance = new
(ParamDecoratorFactory.bind.apply(ParamDecoratorFactory, __spread([void 0], args)))();\n                    ParamDecorator.annotation = annotationInstance;\n                    return ParamDecorator;\n                }\n                function
ParamDecorator(cls, unusedKey, index) {\n                    // Use of Object.defineProperty is important since it creates
non-enumerable property which\n                    // prevents the property is copied during subclassing.\n                    var
parameters = cls.hasOwnProperty(PARAMETERS) ?\n                        cls[PARAMETERS] :\n                        Object.defineProperty(cls, PARAMETERS, { value: [] })[PARAMETERS];\n                    // there might be gaps if
some in between parameters do not have annotations.\n                    // we pad with nulls.\n                    while
(parameters.length <= index) {\n                        parameters.push(null);\n                    }\n                    (parameters[index] = parameters[index] || []).push(annotationInstance);\n                    return cls;\n                }\n                if (parentClass) {\n                    ParamDecoratorFactory.prototype = Object.create(parentClass.prototype);\n                }\n                ParamDecoratorFactory.prototype.ngMetadataName = name;\n                ParamDecoratorFactory.annotationCls = ParamDecoratorFactory;\n                return ParamDecoratorFactory;\n            });\n        }\n\n        function makePropDecorator(name, props, parentClass, additionalProcessing) {\n            return
noSideEffects(function () {\n                var metaCtor = makeMetadataCtor(props);\n                function
PropDecoratorFactory() {\n                    var args = [];\n                    for (var _i = 0; _i < arguments.length; _i++) {\n                        args[_i] = arguments[_i];\n                    }\n                    if (this instanceof PropDecoratorFactory) {\n                        metaCtor.apply(this, args);\n                        return this;\n                    }\n                    var decoratorInstance = new
(PropDecoratorFactory.bind.apply(PropDecoratorFactory, __spread([void 0], args)))();\n                    function
PropDecorator(target, name) {\n                        var constructor = target.constructor;\n                        // Use of

```

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Object.defineProperty is important because it creates a non-enumerable property\n // which prevents the
property from being copied during subclassing.\n var meta =
constructor.hasOwnProperty(PROP_METADATA) ?\n constructor[PROP_METADATA] :\n
Object.defineProperty(constructor, PROP_METADATA, { value: {} })[PROP_METADATA];\n
meta[name] = meta.hasOwnProperty(name) && meta[name] || [];\n
meta[name].unshift(decoratorInstance);\n if (additionalProcessing)\n
additionalProcessing.apply(void 0, __spread([target, name], args));\n }\n return PropDecorator;\n
}\n if (parentClass) {\n PropDecoratorFactory.prototype =
Object.create(parentClass.prototype);\n }\n PropDecoratorFactory.prototype.ngMetadataName =
name;\n PropDecoratorFactory.annotationCls = PropDecoratorFactory;\n return
PropDecoratorFactory;\n });\n }\n\n /**\n * @license\n * Copyright Google LLC All Rights
Reserved.\n *\n * Use of this source code is governed by an MIT-style license that can be\n * found in the
LICENSE file at https://angular.io/license\n */\n var 0 = function (token) { return ({ token: token }); };\n /**\n
* Inject decorator and metadata.\n *\n * @Annotation\n * @publicApi\n */\n var Inject =
makeParamDecorator('Inject', 0);\n /**\n * Optional decorator and metadata.\n *\n * @Annotation\n *
@publicApi\n */\n var Optional = makeParamDecorator('Optional');\n /**\n * Self decorator and
metadata.\n *\n * @Annotation\n * @publicApi\n */\n var Self = makeParamDecorator('Self');\n /**\n
* `SkipSelf` decorator and metadata.\n *\n * @Annotation\n * @publicApi\n */\n var SkipSelf =
makeParamDecorator('SkipSelf');\n /**\n * Host decorator and metadata.\n *\n * @Annotation\n *
@publicApi\n */\n var Host = makeParamDecorator('Host');\n var 1 = function (attributeName) { return ({
attributeName: attributeName }); };\n /**\n * Attribute decorator and metadata.\n *\n * @Annotation\n
* @publicApi\n */\n var Attribute = makeParamDecorator('Attribute', 1);\n\n /**\n * @license\n *
Copyright Google LLC All Rights Reserved.\n *\n * Use of this source code is governed by an MIT-style
license that can be\n * found in the LICENSE file at https://angular.io/license\n */\n function stringify(token)
{\n if (typeof token === 'string') {\n return token;\n }\n if (Array.isArray(token)) {\n
return '[' + token.map(stringify).join(', ') + ']';\n }\n if (token == null) {\n return '' + token;\n }\n
if (token.overriddenName) {\n return '\\' + token.overriddenName;\n }\n if (token.name) {\n
return '\\' + token.name;\n }\n var res = token.toString();\n if (res == null) {\n return '' + res;\n
}\n var newLineIndex = res.indexOf('\\n');\n return newLineIndex === -1 ? res : res.substring(0,
newLineIndex);\n }\n\n /**\n * Concatenates two strings with separator, allocating new strings only when
necessary.\n *\n * @param before before string.\n * @param separator separator string.\n * @param after
after string.\n * @returns concatenated string.\n */\n function concatStringsWithSpace(before, after) {\n
return (before == null || before === '') ?\n (after === null ? '' : after) :\n ((after == null || after ===
'') ?\n before : before + ' ' + after);\n }\n\n /**\n * @license\n * Copyright Google LLC All Rights Reserved.\n
*\n * Use of this source code is governed by an MIT-style license that can be\n * found in the LICENSE file at
https://angular.io/license\n */\n function assertNumber(actual, msg) {\n if (!(typeof actual === 'number'))
{\n throwError(msg, typeof actual, 'number', '===');\n }\n }\n function assertNumberInRange(actual,
minInclusive, maxInclusive) {\n assertNumber(actual, 'Expected a number');\n
assertLessThanOrEqual(actual, maxInclusive, 'Expected number to be less than or equal to');\n
assertGreaterThanOrEqual(actual, minInclusive, 'Expected number to be greater than or equal to');\n }\n function
assertString(actual, msg) {\n if (!(typeof actual === 'string')) {\n throwError(msg, actual === null ? 'null'
: typeof actual, 'string', '===');\n }\n }\n function assertEquals(actual, expected, msg) {\n if (!(actual ==
expected)) {\n throwError(msg, actual, expected, '===');\n }\n }\n function assertNotEqual(actual,
expected, msg) {\n if (!(actual !== expected)) {\n throwError(msg, actual, expected, '!==');\n }\n }\n
function assertSame(actual, expected, msg) {\n if (!(actual === expected)) {\n throwError(msg, actual,
expected, '===');\n }\n }\n function assertNotSame(actual, expected, msg) {\n if (!(actual !==
expected)) {\n throwError(msg, actual, expected, '!==');\n }\n }\n function assertLessThan(actual,
expected, msg) {\n if (!(actual < expected)) {\n throwError(msg, actual, expected, '<');\n }\n }\n }\n

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function assertLessThanOrEqual(actual, expected, msg) {\n    if (!(actual <= expected)) {\n
throwError(msg, actual, expected, '<=');\n    }\n }\n function assertGreaterThan(actual, expected, msg) {\n
if (!(actual > expected)) {\n    throwError(msg, actual, expected, '>');\n    }\n }\n function
assertGreaterThanOrEqual(actual, expected, msg) {\n    if (!(actual >= expected)) {\n    throwError(msg,
actual, expected, '>=');\n    }\n }\n function assertNotDefined(actual, msg) {\n    if (actual != null) {\n
throwError(msg, actual, null, '!=');\n    }\n }\n function assertDefined(actual, msg) {\n    if (actual == null)
{\n    throwError(msg, actual, null, '!=');\n    }\n }\n function throwError(msg, actual, expected,
comparison) {\n    throw new Error(`ASSERTION ERROR: ` + msg +\n        (comparison == null ? " : `
[Expected=> ` + expected + ` ` + comparison + ` ` + actual + ` ` <=Actual]`));\n    }\n }\n function
assertDomNode(node) {\n    // If we're in a worker, `Node` will not be defined.\n    if (!(typeof Node !==
'undefined' && node instanceof Node) &&\n        !(typeof node === 'object' && node != null &&\n
node.constructor.name === 'WebWorkerRenderNode')) {\n        throwError(`The provided value must be an
instance of a DOM Node but got ` + stringify(node));\n    }\n }\n }\n function assertIndexInRange(arr, index) {\n
assertDefined(arr, 'Array must be defined.);\n    var maxLen = arr.length;\n    if (index < 0 || index >=
maxLen) {\n        throwError(`Index expected to be less than ` + maxLen + ` ` but got ` + index);\n    }\n
}\n function assertOneOf(value) {\n    var validValues = [];\n    for (var _i = 1; _i < arguments.length; _i++)
{\n        validValues[_i - 1] = arguments[_i];\n    }\n    if (validValues.indexOf(value) !== -1)\n        return
true;\n    throwError(`Expected value to be one of ` + JSON.stringify(validValues) + ` ` but was ` +
JSON.stringify(value) + `.`.);\n }\n\n /**\n  * @license\n  * Copyright Google LLC All Rights Reserved.\n
*\n  * Use of this source code is governed by an MIT-style license that can be\n  * found in the LICENSE file at
https://angular.io/license\n  *\n  function getClosureSafeProperty(objWithPropertyToExtract) {\n    for (var
key in objWithPropertyToExtract) {\n        if (objWithPropertyToExtract[key] === getClosureSafeProperty) {\n
return key;\n        }\n    }\n    throw Error(`Could not find renamed property on target object.);\n }\n
\n /**\n  * Sets properties on a target object from a source object, but only if\n  * the property doesn't already exist
on the target object.\n  * @param target The target to set properties on\n  * @param source The source of the
property keys and values to set\n  */\n  function fillProperties(target, source) {\n    for (var key in source) {\n
if (source.hasOwnProperty(key) && !target.hasOwnProperty(key)) {\n        target[key] = source[key];\n    }\n
}\n }\n\n /**\n  * @license\n  * Copyright Google LLC All Rights Reserved.\n  *\n  * Use of
this source code is governed by an MIT-style license that can be\n  * found in the LICENSE file at
https://angular.io/license\n  *\n  /**\n  * Construct an `InjectableDef` which defines how a token will be
constructed by the DI system, and\n  * in which injectors (if any) it will be available.\n  * This should be
assigned to a static `prov` field on a type, which will then be an\n  * `InjectableType`.\n  * Options:\n  *
`providedIn` determines which injectors will include the injectable, by either associating it\n  * with an
`@NgModule` or other `InjectorType`, or by specifying that this injectable should be\n  * provided in the `root`
injector, which will be the application-level injector in most apps.\n  * `factory` gives the zero argument function
which will create an instance of the injectable.\n  * The factory can call `inject` to access the `Injector` and
request injection of dependencies.\n  */\n  * @codeGenApi\n  * @publicApi This instruction has been emitted
by ViewEngine for some time and is deployed to npm.\n  */\n  function defineInjectable(opts) {\n    return {\n
token: opts.token,\n        providedIn: opts.providedIn || null,\n        factory: opts.factory,\n        value:
undefined,\n    };\n }\n\n /**\n  * @deprecated in v8, delete after v10. This API should be used only be
generated code, and that\n  * code should now use defineInjectable instead.\n  * @publicApi\n  */\n  var
defineInjectable = defineInjectable;\n\n /**\n  * Construct an `InjectorDef` which configures an injector.\n  *\n
* This should be assigned to a static injector def (`inj`) field on a type, which will then be an\n  *
`InjectorType`.\n  * Options:\n  * ** `factory`: an `InjectorType` is an instantiable type, so a zero argument
`factory`
function to\n  * create the type must be provided. If that factory function needs to inject arguments, it can\n
* use the `inject` function.\n  * ** `providers`: an optional array of providers to add to the injector. Each provider
must\n  * either have a factory or point to a type which has a `prov` static property (the\n  * type must be an
`InjectableType`).\n  * ** `imports`: an optional array of imports of other `InjectorType`s or

```

```

`InjectorTypeWithModule`s\n * whose providers will also be added to the injector. Locally provided types will
override\n * providers from imports.\n *\n * @codeGenApi\n */\n function defineInjector(options) {\n
  return {\n    factory: options.factory,\n    providers: options.providers || [],\n    imports:
options.imports || [],\n  }; \n } \n /**\n * Read the injectable def (`prov`) for `type` in a way which is
immune to accidentally reading\n * inherited value.\n *\n * @param type A type which may have its own
(non-inherited) `prov`.\n */\n function getInjectableDef(type) {\n  return getOwnDefinition(type,
NG_PROV_DEF) || getOwnDefinition(type, NG_INJECTABLE_DEF); \n } \n /**\n * Return definition only if
it is defined directly on `type` and is not inherited from a base\n * class of `type`.\n */\n function
getOwnDefinition(type, field) {\n  return type.hasOwnProperty(field) ? type[field] : null; \n } \n /**\n *
Read the injectable def (`prov`) for `type` or read the `prov` from one of its ancestors.\n *\n * @param type A
type which may have `prov`, via inheritance.\n *\n * @deprecated Will be removed in a future version of
Angular, where an error will occur in the\n * scenario if we find the `prov` on an ancestor only.\n */\n
function getInheritedInjectableDef(type) {\n  var def = type && (type[NG_PROV_DEF] ||
type[NG_INJECTABLE_DEF]); \n  if (def) {\n    var typeName = getTypeName(type); \n    //
TODO(FW-1307): Re-add ngDevMode when closure can handle it\n    // ngDevMode &&\n
console.warn("DEPRECATED: DI is instantiating a token \\\\" + typeName + "\\\" that inherits its @Injectable
decorator but does not provide one itself.\\n") + \n    ("This will become an error in a future version of
Angular. Please add @Injectable() to the \\\\" + typeName + "\\\" class."); \n    return def; \n  } \n  else
{\n    return null; \n  } \n } \n /** Gets the name of a type, accounting for some cross-browser differences.
*/\n function getTypeName(type) {\n  // `Function.prototype.name` behaves differently between IE and other
browsers. In most browsers\n  // it'll always return the name of the function itself, no matter how many other
functions it\n  // inherits from. On IE the function doesn't have its own `name` property, but it takes it from\n
// the lowest level in the prototype chain. E.g. if we have `class Foo extends Parent` most\n  // browsers will
evaluate `Foo.name` to `Foo` while IE will return `Parent`. We work around\n  // the issue by converting the
function to a string and parsing its name out that way via a regex.\n  if (type.hasOwnProperty('name')) {\n
return type.name; \n  } \n  var match = (" + type).match(/function\s*([\s(]+)/); \n  return match === null
? " : match[1]; \n } \n /**\n * Read the injector def type in a way which is immune to accidentally reading
inherited value.\n *\n * @param type type which may have an injector def (`inj`)\n */\n function
getInjectorDef(type) {\n  return type && (type.hasOwnProperty(NG_INJ_DEF) ||
type.hasOwnProperty(NG_INJECTOR_DEF)) ?\n    type[NG_INJ_DEF] :\n    null; \n } \n var
NG_PROV_DEF = getClosureSafeProperty({ prov: getClosureSafeProperty }); \n var NG_INJ_DEF =
getClosureSafeProperty({ inj: getClosureSafeProperty }); \n // We need to keep these around so we can read off
old defs if new defs are unavailable\n var NG_INJECTABLE_DEF = getClosureSafeProperty({ ngInjectableDef:
getClosureSafeProperty }); \n var NG_INJECTOR_DEF = getClosureSafeProperty({ ngInjectorDef:
getClosureSafeProperty }); \n /**\n * @license\n * Copyright Google LLC All Rights Reserved.\n *\n
* Use of this source code is governed by an MIT-style license that can be\n * found in the LICENSE file at
https://angular.io/license\n */\n /**\n * Creates a token that can be used in a DI Provider.\n *\n * Use an
`InjectionToken` whenever the type you are injecting is not reified (does not have a\n * runtime representation)
such as when injecting an interface, callable type, array or\n * parameterized type.\n *\n * `InjectionToken`
is parameterized on `T` which is the type of object which will be returned by\n * the `Injector`. This provides
additional level of type safety.\n *\n * ```\n * interface MyInterface {...}\n * var myInterface =
injector.get(new InjectionToken<MyInterface>('SomeToken')); \n * // myInterface is inferred to be MyInterface.\n
*\n * ```\n *\n * When creating an `InjectionToken`, you can optionally specify a factory function which
returns\n * (possibly by creating) a default value of the parameterized type `T`. This sets up the\n *
`InjectionToken` using this factory as a provider as if it was defined explicitly in the\n * application's root
injector. If the factory function, which takes zero arguments, needs to inject\n * dependencies, it can do so using
the `inject` function. See below for an example.\n *\n * Additionally, if a `factory` is specified you can also
specify the `providedIn` option, which\n * overrides the above behavior and marks the token as belonging to a

```

```

particular `@NgModule`. As mentioned above, `root` is the default value for `providedIn`.
 * @usageNotes
 * ### Basic Example
 * ### Plain InjectionToken
 * { @example
core/di/ts/injector_spec.ts region='InjectionToken'}
 * ### Tree-shakable InjectionToken
 * { @example core/di/ts/injector_spec.ts region='ShakableInjectionToken'}
 * @publicApi
 * /n
var InjectionToken = /** @class */ (function () {
    function InjectionToken(_desc, options) {
        this._desc = _desc;
        /** @internal */
        this.ngMetadataName = 'InjectionToken';
        this.prov =
undefined;
        if (typeof options === 'number') {
            (typeof ngDevMode === 'undefined' ||
ngDevMode) &&
            assertLessThan(options, 0, 'Only negative numbers are supported here');
        }
        // This is a special hack to assign __NG_ELEMENT_ID__ to this instance.
        // See `InjectorMarkers`
        this.__NG_ELEMENT_ID__ = options;
    }
    else if (options !== undefined) {
        this.prov = defineInjectable({
            token: this,
            providedIn: options.providedIn || 'root',
            factory: options.factory,
        });
    }
    InjectionToken.prototype.toString = function () {
        return `InjectionToken` + this._desc;
    };
    return InjectionToken;
})();
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MIT-style license that can be found in the LICENSE file at https://angular.io/license
 * A
DI token that you can use to create a virtual [provider](guide/glossary#provider) that will populate the
`entryComponents` field of components and NgModules based on its `useValue` property value. All
components that are referenced in the `useValue` value (either directly or in a nested array or map) are added
to the `entryComponents` property.
 * @usageNotes
 * The following example shows how the
router can populate the `entryComponents` field of an NgModule based on a router configuration that refers
to components.
 * ``typescript
 * // helper function inside the router
 * function
provideRoutes(routes) {
    return [
        { provide: ROUTES, useValue: routes },
        { provide:
ANALYZE_FOR_ENTRY_COMPONENTS, useValue: routes, multi: true }
    ];
}
 * // user
code
 * let routes = [
 *   { path: '/root', component: RootComp },
 *   { path: '/teams', component:
TeamsComp }
 * ];
 * @NgModule({
 *   providers: [provideRoutes(routes)]
 * })
 * class
ModuleWithRoutes {
 *   ``
 *   @publicApi
 *   @deprecated Since 9.0.0. With Ivy, this property is
no longer necessary.
 *   var ANALYZE_FOR_ENTRY_COMPONENTS = new
InjectionToken('AnalyzeForEntryComponents');
 *   /**
 *   Base class for query metadata.
 *   @see
`ContentChildren`
 *   @see `ContentChild`
 *   @see `ViewChildren`
 *   @see `ViewChild`
 *   @publicApi
 *   var Query = /** @class */ (function () {
        function Query() {}
        return
Query;
    }());
    var 0$1 = function (selector, data) {
        if (data === void 0) { data = {}; }
        return
(Object.assign({ selector: selector, first: false, isViewQuery: false, descendants: false }, data));
    };
 * ContentChildren decorator and metadata.
 * @Annotation
 * @publicApi
 * var
ContentChildren = makePropDecorator('ContentChildren', 0$1, Query);
    var 1$1 = function (selector, data) {
        if (data === void 0) { data = {}; }
        return (Object.assign({ selector: selector, first: true, isViewQuery: false,
descendants: true }, data));
    };
 * ContentChild decorator and metadata.
 * @Annotation
 * @publicApi
 * var
ContentChild = makePropDecorator('ContentChild', 1$1,
Query);
    var 2 = function (selector, data) {
        if (data === void 0) { data = {}; }
        return (Object.assign({
selector: selector, first: false, isViewQuery: true, descendants: true }, data));
    };
 * ViewChildren
decorator and metadata.
 * @Annotation
 * @publicApi
 * var
ViewChildren =
makePropDecorator('ViewChildren', 2, Query);
    var 3 = function (selector, data) {
        return (Object.assign({
selector: selector, first: true, isViewQuery: true, descendants: true }, data));
    };
 * ViewChild decorator
and metadata.
 * @Annotation
 * @publicApi
 * var
ViewChild =
makePropDecorator('ViewChild', 3, Query);
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Reserved.
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LICENSE file at https://angular.io/license
 * (function (ChangeDetectionStrategy) {
 *   /**
 *   Use
the `CheckOnce` strategy, meaning that automatic change detection is deactivated until reactivated by
setting the strategy to `Default` (`CheckAlways`.)
 *   Change detection can still be explicitly invoked.
 *

```

```

This strategy applies to all child directives and cannot be overridden.\n      */\n
ChangeDetectionStrategy[ChangeDetectionStrategy["OnPush"] = 0] = "OnPush";\n      /**\n      * Use the
default `CheckAlways` strategy, in which change detection is automatic until\n      * explicitly deactivated.\n
*/\n      ChangeDetectionStrategy[ChangeDetectionStrategy["Default"] = 1] = "Default";\n
})(exports.ChangeDetectionStrategy || (exports.ChangeDetectionStrategy = {}));\n      (function
(ChangeDetectorStatus) {\n      /**\n      * A state in which, after calling `detectChanges()`, the change detector\n
      * state becomes `Checked`, and must be explicitly invoked or reactivated.\n      */\n
ChangeDetectorStatus[ChangeDetectorStatus["CheckOnce"] = 0] = "CheckOnce";\n      /**\n      * A state in
which change detection is skipped until the change detector mode\n      * becomes `CheckOnce`.\n      */\n
ChangeDetectorStatus[ChangeDetectorStatus["Checked"] = 1] = "Checked";\n      /**\n      * A state in which
change detection continues automatically until explicitly\n      * deactivated.\n      */\n
ChangeDetectorStatus[ChangeDetectorStatus["CheckAlways"] = 2] = "CheckAlways";\n      /**\n      * A state
in which a change detector sub tree is not a part of the main tree and\n      * should be skipped.\n      */\n
ChangeDetectorStatus[ChangeDetectorStatus["Detached"] = 3] = "Detached";\n      /**\n      * Indicates that
the change detector encountered an error checking a binding\n      * or calling a directive lifecycle method and is
now in an inconsistent state. Change\n      * detectors in this state do not detect changes.\n      */\n
ChangeDetectorStatus[ChangeDetectorStatus["Errored"] = 4] = "Errored";\n      /**\n      * Indicates that the
change detector has been destroyed.\n      */\n      ChangeDetectorStatus[ChangeDetectorStatus["Destroyed"] =
5] = "Destroyed";\n      })(exports.ChangeDetectorStatus || (exports.ChangeDetectorStatus = {}));\n      /**\n      *
Reports whether a given strategy is currently the default for change detection.\n      * @param
changeDetectionStrategy The strategy to check.\n      * @returns True if the given strategy is the current default,
false otherwise.\n      * @see `ChangeDetectorStatus`\n      * @see `ChangeDetectorRef`\n      */\n      function
isDefaultChangeDetectionStrategy(changeDetectionStrategy) {\n      return changeDetectionStrategy == null ||\n
      changeDetectionStrategy === exports.ChangeDetectionStrategy.Default;\n      }\n      /**\n      * @license\n      *
Copyright Google LLC All Rights Reserved.\n      *\n      * Use of this source code is governed by an MIT-style
license that can be\n      * found in the LICENSE file at https://angular.io/license\n      */\n      var __globalThis =
typeof globalThis !== 'undefined' && globalThis;\n      var __window = typeof window !== 'undefined' &&
window;\n      var __self = typeof self !== 'undefined' && typeof WorkerGlobalScope !== 'undefined' &&\n
      self instanceof WorkerGlobalScope && self;\n      var __global = typeof global !== 'undefined' && global;\n      // Always
use __globalThis if available, which is the spec-defined global variable across all\n      // environments, then fallback
to __global first, because in Node tests both __global and\n      // __window may be defined and __global should be
__global in that case.\n      var _global = __globalThis || __global || __window || __self;\n      /**\n      * @license\n      *
Copyright Google LLC All Rights Reserved.\n      *\n      * Use of this source code is governed by an MIT-style
license that can be\n      * found in the LICENSE file at https://angular.io/license\n      */\n      var
R3ResolvedDependencyType;\n      (function (R3ResolvedDependencyType) {\n
R3ResolvedDependencyType[R3ResolvedDependencyType["Token"] = 0] = "Token";\n
R3ResolvedDependencyType[R3ResolvedDependencyType["Attribute"] = 1] = "Attribute";\n
R3ResolvedDependencyType[R3ResolvedDependencyType["ChangeDetectorRef"] = 2] =
"ChangeDetectorRef";\n      R3ResolvedDependencyType[R3ResolvedDependencyType["Invalid"] = 3] =
"Invalid";\n      })(R3ResolvedDependencyType || (R3ResolvedDependencyType = {}));\n      var R3FactoryTarget;\n
      (function (R3FactoryTarget) {\n      R3FactoryTarget[R3FactoryTarget["Directive"] = 0] = "Directive";\n
R3FactoryTarget[R3FactoryTarget["Component"] = 1] = "Component";\n
R3FactoryTarget[R3FactoryTarget["Injectable"] = 2] = "Injectable";\n
R3FactoryTarget[R3FactoryTarget["Pipe"] = 3] = "Pipe";\n
R3FactoryTarget[R3FactoryTarget["NgModule"] = 4] = "NgModule";\n      })(R3FactoryTarget ||
(R3FactoryTarget = {}));\n      var ViewEncapsulation;\n      (function (ViewEncapsulation) {\n
ViewEncapsulation[ViewEncapsulation["Emulated"] = 0] = "Emulated";\n      // Historically the 1 value was for
`Native` encapsulation which has been removed as of v11.\n      ViewEncapsulation[ViewEncapsulation["None"] =
1] = "None";\n

```



```

= 2] = \"None\";\n    ViewEncapsulation[ViewEncapsulation[\"ShadowDom\"] = 3] = \"ShadowDom\";\n
})(ViewEncapsulation || (ViewEncapsulation = {}));\n\n /**\n * @license\n * Copyright Google LLC All
Rights Reserved.\n * Use of this source code is governed by an MIT-style license that can be\n * found
in the LICENSE file at https://angular.io/license\n */\n function getCompilerFacade() {\n    var globalNg =
_global['ng'];\n    if (!globalNg || !globalNg.compilerFacade) {\n        throw new Error(\"Angular JIT
compilation failed: '@angular/compiler' not loaded!\n\") +\n        \" - JIT compilation is discouraged for
production use-cases! Consider AOT mode instead.\n\" +\n        \" - Did you bootstrap using
'@angular/platform-browser-dynamic' or '@angular/platform-server'?\"\n) +\n        \" - Alternatively provide
the compiler with 'import '\\@angular/compiler\\';' before bootstrapping.\";\n    }\n    return
globalNg.compilerFacade;\n }\n\n /**\n * @license\n * Copyright Google LLC All Rights Reserved.\n
*\n * Use of this source code is governed by an MIT-style license that can be\n * found in the LICENSE file at
https://angular.io/license\n */\n var __forward_ref__ = getClosureSafeProperty({ __forward_ref__ :
getClosureSafeProperty });\n\n /**\n * Allows to refer to references which are not yet defined.\n * For
instance, `forwardRef` is used when the `token` which we need to refer to for the purposes of\n * DI is declared,
but not yet defined. It is also used when the `token` which we use when creating\n * a query is not yet defined.\n
*\n * @usageNotes\n * ### Example\n * {@example core/di/ts/forward_ref/forward_ref_spec.ts
region='forward_ref'}\n * @publicApi\n */\n function forwardRef(forwardRefFn) {\n
forwardRefFn.__forward_ref__ = forwardRef;\n    forwardRefFn.toString = function () {\n        return
stringify(this);\n    };\n    return forwardRefFn;\n }\n\n /**\n * Lazily retrieves the reference value from a
forwardRef.\n * Acts as the identity function when given a non-forward-ref value.\n *\n * @usageNotes\n * ### Example\n * {\n *   {@example core/di/ts/forward_ref/forward_ref_spec.ts
region='resolve_forward_ref'}\n *   * @see `forwardRef`\n *   * @publicApi\n */\n function
resolveForwardRef(type) {\n    return isForwardRef(type) ? type() : type;\n }\n\n /** Checks whether a function
is wrapped by a `forwardRef`. *\n function isForwardRef(fn) {\n    return typeof fn === 'function' &&
fn.hasOwnProperty('__forward_ref__') && fn.__forward_ref__ === forwardRef;\n }\n\n /**\n *
@license\n * Copyright Google LLC All Rights Reserved.\n * Use of this source code is governed by an
MIT-style license that can be\n * found in the LICENSE file at https://angular.io/license\n */\n\n /**\n *
@description\n * Represents a type that a Component or other object is instances of.\n * An
example of a `Type` is `MyCustomComponent` class, which in JavaScript is represented by\n * the
`MyCustomComponent` constructor function.\n * @publicApi\n */\n var Type = Function;\n\n function isType(v) {\n
return typeof v === 'function';\n }\n\n /**\n * @license\n * Copyright Google
LLC All Rights Reserved.\n * Use of this source code is governed by an MIT-style license that can be\n
* found in the LICENSE file at https://angular.io/license\n */\n\n /**\n * Equivalent to ES6 spread, add each
item to an array.\n * @param items The items to add\n * @param arr The array to which you want to add
the items\n */\n function addAllToArray(items, arr) {\n    for (var i = 0; i < items.length; i++) {\n
arr.push(items[i]);\n    }\n }\n\n /**\n * Flattens an array.\n */\n function flatten(list, dst) {\n    if (dst
=== undefined)\n        dst = list;\n    for (var i = 0; i < list.length; i++) {\n        var item = list[i];\n        if
(Array.isArray(item)) {\n            // we need to inline it.\n            if (dst === list) {\n                // Our
assumption that the list was already flat was wrong and\n                // we need to clone flat since we need to write
to it.\n                dst = list.slice(0, i);\n            }\n            flatten(item, dst);\n        }\n        else if (dst !==
list) {\n            dst.push(item);\n        }\n    }\n    return dst;\n }\n\n function deepForEach(input, fn) {\n
input.forEach(function (value) { return Array.isArray(value) ? deepForEach(value, fn) : fn(value); });\n }\n\n
function addToArray(arr, index, value) {\n    // perf: array.push is faster than array.splice!\n    if (index >=
arr.length) {\n        arr.push(value);\n    }\n    else {\n        arr.splice(index, 0, value);\n    }\n }\n\n
function removeFromArray(arr, index) {\n    // perf: array.pop is faster than array.splice!\n    if (index >=
arr.length - 1) {\n        return arr.pop();\n    }\n    else {\n        return arr.splice(index, 1)[0];\n    }\n }\n\n
function newArray(size, value) {\n    var list = [];\n    for (var i = 0; i < size; i++) {\n        list.push(value);\n
    }\n    return list;\n }\n\n /**\n * Remove item from array (Same as `Array.splice()` but faster.)\n *
*\n *

```

```

`Array.splice()` is not as fast because it has to allocate an array for the elements which were
 * removed. This causes memory pressure and slows down code when most of the time we don't
 * care about the deleted items array.
 * https://jsperf.com/fast-array-splice (About 20x faster)
 * @param array Array to splice
 * @param index Index of element in array to remove.
 * @param count Number of items to remove.
 *
 * function arraySplice(array, index, count) {
 *   var length = array.length - count;
 *   while (index < length) {
 *     array[index] = array[index + count];
 *     index++;
 *   }
 *   while (count-- > 0) {
 *     array.pop(); // shrink the array
 *   }
 * }
 * /**
 * Same as `Array.splice(index, 0, value)` but faster.
 *
 * `Array.splice()` is not fast because it has to allocate an array for the elements which were
 * removed. This causes memory pressure and slows down code when most of the time we don't
 * care about the deleted items array.
 * @param array Array to splice.
 * @param index Index in array where the `value`
 * should be added.
 * @param value Value to add to array.
 *
 * function arrayInsert(array, index, value) {
 *   ngDevMode && assertLessThanOrEqual(index, array.length, 'Can\\'t insert past array end.');
```

```

 *   var end = array.length;
 *   while (end > index) {
 *     var previousEnd = end - 1;
 *     array[end] = array[previousEnd];
 *     end = previousEnd;
 *   }
 *   array[index] = value;
 * }
 * /**
 * Same as `Array.splice2(index, 0, value1, value2)` but faster.
 *
 * `Array.splice()` is not fast because it has to allocate an array for the elements which were
 * removed. This causes memory pressure and slows down code when most of the time we don't
 * care about the deleted items array.
 * @param array Array to splice.
 * @param index Index in array where the `value` should be added.
 * @param value1 Value to add to array.
 * @param value2 Value to add to array.
 *
 * function arrayInsert2(array, index, value1, value2) {
 *   ngDevMode && assertLessThanOrEqual(index, array.length, 'Can\\'t insert past array end.');
```

```

 *   var end = array.length;
 *   if (end == index) {
 *     // inserting at the end.
 *     array.push(value1, value2);
 *   }
 *   else if (end === 1) {
 *     // corner case when we have less items in array than we have items to insert.
 *     array.push(value2, array[0]);
 *     array[0] = value1;
 *   }
 *   else {
 *     end--;
 *     array.push(array[end - 1], array[end]);
 *     while (end > index) {
 *       var previousEnd = end - 2;
 *       array[end] = array[previousEnd];
 *       end--;
 *     }
 *     array[index] = value1;
 *     array[index + 1] = value2;
 *   }
 * }
 * /**
 * Insert a `value` into an `array` so that the array remains sorted.
 *
 * NOTE:
 * - Duplicates are not allowed, and are ignored.
 * - This uses binary search algorithm for fast inserts.
 *
 * @param array A sorted array to insert into.
 * @param value The value to insert.
 * @returns index of the inserted value.
 *
 * function arrayInsertSorted(array, value) {
 *   var index = arrayIndexOfSorted(array, value);
 *   if (index < 0) {
 *     // if we did not find it insert it.
 *     index = ~index;
 *     arrayInsert(array, index, value);
 *   }
 *   return index;
 * }
 * /**
 * Remove `value` from a sorted `array`.
 *
 * NOTE:
 * - This uses binary search algorithm for fast removals.
 *
 * @param array A sorted array to remove from.
 * @param value The value to remove.
 * @returns index of the removed value.
 * - positive index if value found and removed.
 * - negative index if value not found.
 * (~index` to get the value where it should have been
 * inserted)
 *
 * function arrayRemoveSorted(array, value) {
 *   var index = arrayIndexOfSorted(array, value);
 *   if (index >= 0) {
 *     arraySplice(array, index, 1);
 *   }
 *   return index;
 * }
 * /**
 * Get an index of an `value` in a sorted `array`.
 *
 * NOTE:
 * - This uses binary search algorithm for fast removals.
 *
 * @param array A sorted array to binary search.
 * @param value The value to look for.
 * @returns index of the value.
 * - positive index if value found.
 * - negative index if value not found.
 * (~index` to get the value where it should have been
 * located)
 *
 * function arrayIndexOfSorted(array, value) {
 *   return _arrayIndexOfSorted(array, value, 0);
 * }
 * /**
 * Set a `value` for a `key`.
 *
 * @param keyValuePairArray keyValuePairArray to modify.
 * @param key The key to locate or create.
 * @param value The value to set for a `key`.
 * @returns index (always even) of where the value was set.
 *
 * function keyValuePairArraySet(keyValuePairArray, key, value) {
 *   var index = keyValuePairArrayIndexOf(keyValuePairArray, key);
 *   if (index >= 0) {
 *     // if we found it set it.
 *     keyValuePairArray[index | 1] = value;
 *   }
 *   else {
 *     index = ~index;
 *     arrayInsert2(keyValuePairArray, index, key, value);
 *   }
 *   return index;
 * }
 * /**
 * Retrieve a `value` for a `key` (on `undefined` if not found.)
 *
 * @param keyValuePairArray to
```



```

ES2015_INHERITED_CLASS_WITH_DELEGATE_CTOR.test(typeStr) ||\n
(ES2015_INHERITED_CLASS.test(typeStr) && !ES2015_INHERITED_CLASS_WITH_CTOR.test(typeStr));\n
}\n
var ReflectionCapabilities = /** @class */ (function () {\n
    function ReflectionCapabilities(reflect) {\n
        this._reflect = reflect || _global['Reflect'];\n
    }\n
    ReflectionCapabilities.prototype.isReflectionEnabled =\n
function () {\n
    return true;\n
};\n
ReflectionCapabilities.prototype.factory = function (t) {\n
return function () {\n
    var args = [];\n
    for (var _i = 0; _i < arguments.length; _i++) {\n
args[_i] = arguments[_i];\n
    }\n
    return new (t.bind.apply(t, __spread([void 0], args)))(\n
);\n
};\n
};\n
/** @internal */\n
ReflectionCapabilities.prototype._zipTypesAndAnnotations = function\n
(paramTypes, paramAnnotations) {\n
    var result;\n
    if (typeof paramTypes === 'undefined') {\n
result = newArray(paramAnnotations.length);\n
    }\n
    else {\n
result =\n
newArray(paramTypes.length);\n
    }\n
    for (var i = 0; i < result.length; i++) {\n
// TS outputs\n
Object for parameters without types, while Traceur omits\n
// the annotations. For now we preserve the\n
Traceur behavior to aid\n
// migration, but this can be revisited.\n
if (typeof paramTypes ===\n
'undefined') {\n
result[i] = [];\n
    }\n
    else if (paramTypes[i] && paramTypes[i] !=\n
Object) {\n
result[i] = [paramTypes[i)];\n
    }\n
    else {\n
result[i] = [];\n
    }\n
    }\n
    if (paramAnnotations && paramAnnotations[i] != null) {\n
result[i] =\n
result[i].concat(paramAnnotations[i]);\n
    }\n
    }\n
    return result;\n
};\n
ReflectionCapabilities.prototype._ownParameters = function (type, parentCtor) {\n
    var typeStr =\n
type.toString();\n
// If we have no decorators, we only have function.length as metadata.\n
// In that\n
case, to detect whether a child class declared an own constructor or not,\n
// we need to look inside of that\n
constructor to check whether it is\n
// just calling the parent.\n
// This also helps to work around for\n
https://github.com/Microsoft/TypeScript/issues/12439\n
// that sets 'design:paramtypes' to []\n
// if a\n
class inherits from another class but has no ctor declared itself.\n
if (isDelegateCtor(typeStr)) {\n
return null;\n
    }\n
    // Prefer the direct API.\n
if (type.parameters && type.parameters !==\n
parentCtor.parameters) {\n
return type.parameters;\n
    }\n
    // API of tsickle for lowering\n
decorators to properties on the class.\n
var tsickleCtorParams = type.ctorParameters;\n
if\n
(tsickleCtorParams && tsickleCtorParams !== parentCtor.ctorParameters) {\n
// Newer tsickle uses a\n
function closure\n
// Retain the non-function case for compatibility with older tsickle\n
var\n
ctorParameters = typeof tsickleCtorParams === 'function' ? tsickleCtorParams() : tsickleCtorParams;\n
var\n
paramTypes_1 = ctorParameters.map(function (ctorParam) { return ctorParam && ctorParam.type; });\n
var\n
paramAnnotations_1 = ctorParameters.map(function (ctorParam) { return ctorParam &&\n
convertTsickleDecoratorIntoMetadata(ctorParam.decorators); });\n
return\n
this._zipTypesAndAnnotations(paramTypes_1, paramAnnotations_1);\n
    }\n
    // API for metadata\n
created by invoking the decorators.\n
var paramAnnotations = type.hasOwnProperty(PARAMETERS) &&\n
type[PARAMETERS];\n
var paramTypes = this._reflect && this._reflect.getOwnMetadata &&\n
this._reflect.getOwnMetadata('design:paramtypes', type);\n
if (paramTypes || paramAnnotations) {\n
return this._zipTypesAndAnnotations(paramTypes, paramAnnotations);\n
    }\n
    // If a class has no\n
decorators, at least create metadata\n
// based on function.length.\n
// Note: We know that this is a real\n
constructor as we checked\n
// the content of the constructor above.\n
return newArray(type.length);\n
    }\n
};\n
ReflectionCapabilities.prototype.parameters = function (type) {\n
// Note: only report metadata if\n
we have at least one class decorator\n
// to stay in sync with the static reflector.\n
if (!isType(type)) {\n
return [];\n
    }\n
    }\n
    var parentCtor = getParentCtor(type);\n
var parameters =\n
this._ownParameters(type, parentCtor);\n
if (!parameters && parentCtor !== Object) {\n
parameters\n
= this.parameters(parentCtor);\n
    }\n
    return parameters || [];\n
};\n
ReflectionCapabilities.prototype._ownAnnotations = function (typeOrFunc, parentCtor) {\n
// Prefer the\n
direct API.\n
if (typeOrFunc.annotations && typeOrFunc.annotations !== parentCtor.annotations) {\n
var annotations = typeOrFunc.annotations;\n
if (typeof annotations === 'function' &&\n
annotations.annotations) {\n
annotations = annotations.annotations;\n
    }\n
    return

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annotations;\n        }\n        // API of tsickle for lowering decorators to properties on the class.\n        if
(typeOrFunc.decorators && typeOrFunc.decorators !== parentCtor.decorators) {\n            return
convertTsickleDecoratorIntoMetadata(typeOrFunc.decorators);\n        }\n        // API for metadata created by
invoking the decorators.\n        if (typeOrFunc.hasOwnProperty(ANNOTATIONS)) {\n            return
typeOrFunc[ANNOTATIONS];\n        }\n        return null;\n    };\n
ReflectionCapabilities.prototype.annotations = function (typeOrFunc) {\n        if (!isType(typeOrFunc)) {\n
return [];\n        }\n        var parentCtor = getParentCtor(typeOrFunc);\n        var ownAnnotations =
this._ownAnnotations(typeOrFunc, parentCtor) || [];\n        var parentAnnotations = parentCtor !== Object ?
this.annotations(parentCtor) : [];\n        return parentAnnotations.concat(ownAnnotations);\n    };\n
ReflectionCapabilities.prototype._ownPropMetadata = function (typeOrFunc, parentCtor) {\n        // Prefer the
direct API.\n        if (typeOrFunc.propMetadata &&\n            typeOrFunc.propMetadata !==
parentCtor.propMetadata) {\n            var propMetadata = typeOrFunc.propMetadata;\n            if (typeof
propMetadata === 'function' && propMetadata.propMetadata) {\n                propMetadata =
propMetadata.propMetadata;\n            }\n            return propMetadata;\n        }\n        // API of tsickle for
lowering decorators to properties on the class.\n        if (typeOrFunc.propDecorators &&\n            typeOrFunc.propDecorators !== parentCtor.propDecorators) {\n            var propDecorators_1 =
typeOrFunc.propDecorators;\n            var propMetadata_1 = {};\n            Object.keys(propDecorators_1).forEach(function (prop) {\n                propMetadata_1[prop] =
convertTsickleDecoratorIntoMetadata(propDecorators_1[prop]);\n            });\n            return
propMetadata_1;\n        }\n        // API for metadata created by invoking the decorators.\n        if
(typeOrFunc.hasOwnProperty(PROP_METADATA)) {\n            return typeOrFunc[PROP_METADATA];\n        }\n        return null;\n    };\n    ReflectionCapabilities.prototype.propMetadata = function (typeOrFunc) {\n
if (!isType(typeOrFunc)) {\n        return {};\n    }\n    var parentCtor =
getParentCtor(typeOrFunc);\n    var propMetadata = {};\n    if (parentCtor !== Object) {\n        var
parentPropMetadata_1 = this.propMetadata(parentCtor);\n        Object.keys(parentPropMetadata_1).forEach(function (propName) {\n            propMetadata[propName] =
parentPropMetadata_1[propName];\n        });\n        }\n    var ownPropMetadata =
this._ownPropMetadata(typeOrFunc, parentCtor);\n    if (ownPropMetadata) {\n        Object.keys(ownPropMetadata).forEach(function (propName) {\n            var decorators = [];\n            if
(propMetadata.hasOwnProperty(propName)) {\n                decorators.push.apply(decorators,
__spread(propMetadata[propName]));\n            }\n            decorators.push.apply(decorators,
__spread(ownPropMetadata[propName]));\n            propMetadata[propName] = decorators;\n        });\n    }\n    return propMetadata;\n    };\n    ReflectionCapabilities.prototype.ownPropMetadata = function
(typeOrFunc) {\n        if (!isType(typeOrFunc)) {\n            return {};\n        }\n        return
this._ownPropMetadata(typeOrFunc, getParentCtor(typeOrFunc)) || {};\n    };\n
ReflectionCapabilities.prototype.hasLifecycleHook = function (type, lcProperty) {\n        return type instanceof
Type && lcProperty in type.prototype;\n    };\n    ReflectionCapabilities.prototype.guards = function (type) {\n
return {};\n    };\n    ReflectionCapabilities.prototype.getter = function (name) {\n        return new
Function('o', 'return o.' + name + ';');\n    };\n    ReflectionCapabilities.prototype.setter = function (name) {\n
return new Function('o', 'v', 'return o.' + name + ' = v;');\n    };\n    ReflectionCapabilities.prototype.method =
function (name) {\n        var functionBody = `if (!o.` + name + `) throw new Error("` + name + `") is
undefined`;\n        return o.` + name + `".apply(o, args);`;\n        return new Function('o', 'args',
functionBody);\n    };\n    // There is not a concept of import uri in Js, but this is useful in developing Dart
applications.\n    ReflectionCapabilities.prototype.importUri = function (type) {\n        // StaticSymbol\n        if (typeof type === 'object' && type['filePath']) {\n            return type['filePath'];\n        }\n        // Runtime
type\n        return `.` + stringify(type);\n    };\n    ReflectionCapabilities.prototype.resourceUri = function
(type) {\n        return `.` + stringify(type);\n    };\n    ReflectionCapabilities.prototype.resolveIdentifier =
function (name, moduleUrl, members, runtime) {\n        return runtime;\n    };\n

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ReflectionCapabilities.prototype.resolveEnum = function (enumIdentifier, name) {\n      return
enumIdentifier[name];\n    };\n    return ReflectionCapabilities;\n  }());\n  function
convertTsickleDecoratorIntoMetadata(decoratorInvocations) {\n    if (!decoratorInvocations) {\n      return
[];\n    }\n    return decoratorInvocations.map(function (decoratorInvocation) {\n      var decoratorType =
decoratorInvocation.type;\n      var annotationCls = decoratorType.annotationCls;\n      var annotationArgs =
decoratorInvocation.args ? decoratorInvocation.args : [];\n      return new
(annotationCls.bind.apply(annotationCls, __spread([void 0], annotationArgs)));\n    });\n  }\n  function
getParentCtor(ctor) {\n    var parentProto = ctor.prototype ? Object.getPrototypeOf(ctor.prototype) : null;\n    var parentCtor = parentProto ? parentProto.constructor : null;\n    // Note: We always use `Object` as the null
value\n    // to simplify checking later on.\n    return parentCtor || Object;\n  }\n  /**\n   * @license\n   *
Copyright Google LLC All Rights Reserved.\n   * Use of this source code is governed by an MIT-style
license that can be\n   * found in the LICENSE file at https://angular.io/license\n   */\n  var _reflect = null;\n  function getReflect() {\n    return (_reflect = _reflect || new ReflectionCapabilities());\n  }\n  function
reflectDependencies(type) {\n    return convertDependencies(getReflect().parameters(type));\n  }\n  function
convertDependencies(deps) {\n    var compiler = getCompilerFacade();\n    return deps.map(function (dep) {\n
return reflectDependency(compiler, dep); });\n  }\n  function reflectDependency(compiler, dep) {\n    var meta
= {\n      token: null,\n      host: false,\n      optional: false,\n      resolved:
compiler.R3ResolvedDependencyType.Token,\n      self: false,\n      skipSelf: false,\n    };
function
setTokenAndResolvedType(token) {\n      meta.resolved = compiler.R3ResolvedDependencyType.Token;\n      meta.token = token;\n    }\n    if (Array.isArray(dep) && dep.length > 0) {\n      for (var j = 0; j <
dep.length; j++) {\n        var param = dep[j];\n        if (param === undefined) {\n          // param may
be undefined if type of dep is not set by ngts\n          continue;\n        }\n        var proto =
Object.getPrototypeOf(param);\n        if (param instanceof Optional || proto.ngMetadataName === 'Optional')
{\n          meta.optional = true;\n        }\n        else if (param instanceof SkipSelf ||
proto.ngMetadataName === 'SkipSelf') {\n          meta.skipSelf = true;\n        }\n        else if (param
instanceof Self || proto.ngMetadataName === 'Self') {\n          meta.self = true;\n        }\n        else if (param
instanceof Host || proto.ngMetadataName === 'Host') {\n          meta.host = true;\n        }\n        else if (param instanceof Inject) {\n          meta.token = param.token;\n        }\n        else if (param
instanceof Attribute) {\n          if (param.attributeName === undefined) {\n            throw new
Error(`Attribute name must be defined.`);\n          }\n          meta.token = param.attributeName;\n          meta.resolved = compiler.R3ResolvedDependencyType.Attribute;\n        }\n        else if
(param.__ChangeDetectorRef__ === true) {\n          meta.token = param;\n          meta.resolved =
compiler.R3ResolvedDependencyType.ChangeDetectorRef;\n        }\n        else {\n          setTokenAndResolvedType(param);\n        }\n      }\n    }\n    else if (dep === undefined ||
(Array.isArray(dep) && dep.length === 0)) {\n      meta.token = undefined;\n      meta.resolved =
R3ResolvedDependencyType.Invalid;\n    }\n    else {\n      setTokenAndResolvedType(dep);\n    }\n    return meta;\n  }\n  /**\n   * @license\n   *
Copyright Google LLC All Rights Reserved.\n   * Use of this source code is governed by an MIT-style license that can be\n   * found in the LICENSE file at
https://angular.io/license\n   */\n  /**\n   * Used to resolve resource URLs on `@Component` when used with
JIT compilation.\n   * Example:\n   * ```\n   * @Component({\n   *   selector: 'my-comp',\n   *   templateUrl: 'my-comp.html', // This requires asynchronous resolution\n   * })\n   * class MyComponent{\n   * }\n   * // Calling `renderComponent` will fail because `renderComponent` is a synchronous process\n   * and `MyComponent`'s `@Component.templateUrl` needs to be resolved asynchronously.\n   * // Calling
`resolveComponentResources()` will resolve `@Component.templateUrl` into\n   * // `@Component.template`,
which allows `renderComponent` to proceed in a synchronous manner.\n   * // Use browser's `fetch()`
function as the default resource resolution strategy.\n   * resolveComponentResources(fetch).then(() => {\n   * //
After resolution all URLs have been converted into `template` strings.\n   * renderComponent(MyComponent);\n   * });\n   * // NOTE: In AOT the resolution happens during compilation, and so there should

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be no need\n    * to call this method outside JIT mode.\n    *\n    * @param resourceResolver a function which is
responsible for returning a `Promise` to the\n    * contents of the resolved URL. Browser's `fetch()` method is a
good default implementation.\n    */\n    function resolveComponentResources(resourceResolver) {\n        // Store
all promises which are fetching the resources.\n        var componentResolved = [];\n        // Cache so that we don't
fetch the same resource more than once.\n        var urlMap = new Map();\n        function
cachedResourceResolve(url) {\n            var promise = urlMap.get(url);\n            if (!promise) {\n                var resp =
resourceResolver(url);\n                urlMap.set(url, promise = resp.then(unwrapResponse));\n            }\n            return
promise;\n        }\n        componentResourceResolutionQueue.forEach(function (component, type) {\n            var
promises = [];\n            if (component.templateUrl) {\n                promises.push(cachedResourceResolve(component.templateUrl).then(function (template) {\n
component.template = template;\n                }));\n            }\n            var styleUrls = component.styleUrls;\n            var styles = component.styles || (component.styles = []);\n            var styleOffset = component.styles.length;\n            styleUrls && styleUrls.forEach(function (styleUrl, index) {\n                styles.push(""); // pre-allocate array.\n                promises.push(cachedResourceResolve(styleUrl).then(function (style) {\n                    styles[styleOffset + index] =
style;\n                    styleUrls.splice(styleUrls.indexOf(styleUrl), 1);\n                    if (styleUrls.length === 0) {\n
                        component.styleUrls = undefined;\n                    }\n                }));\n            });\n            var fullyResolved =
Promise.all(promises).then(function () { return componentDefResolved(type); });\n            componentResolved.push(fullyResolved);\n        });\n        clearResolutionOfComponentResourcesQueue();\n        return Promise.all(componentResolved).then(function () { return undefined; });\n    }\n    var
componentResourceResolutionQueue = new Map();\n    // Track when existing cmp for a Type is waiting on
resources.\n    var componentDefPendingResolution = new Set();\n    function
maybeQueueResolutionOfComponentResources(type, metadata) {\n        if (componentNeedsResolution(metadata))\n        {\n            componentResourceResolutionQueue.set(type, metadata);\n            componentDefPendingResolution.add(type);\n        }\n    }\n    function isComponentDefPendingResolution(type)\n    {\n        return componentDefPendingResolution.has(type);\n    }\n    function
componentNeedsResolution(component) {\n        return !!(component.templateUrl &&
!component.hasOwnProperty('template')) ||\n        component.styleUrls && component.styleUrls.length;\n    }\n    function clearResolutionOfComponentResourcesQueue() {\n        var old = componentResourceResolutionQueue;\n        componentResourceResolutionQueue = new Map();\n        return old;\n    }\n    function
restoreComponentResolutionQueue(queue) {\n        componentDefPendingResolution.clear();\n        queue.forEach(function (_, type) { return componentDefPendingResolution.add(type); });\n        componentResourceResolutionQueue = queue;\n    }\n    function isComponentResourceResolutionQueueEmpty()\n    {\n        return componentResourceResolutionQueue.size === 0;\n    }\n    function unwrapResponse(response) {\n        return typeof response === 'string' ? response : response.text();\n    }\n    function componentDefResolved(type) {\n        componentDefPendingResolution.delete(type);\n    }\n\n    /**\n     * @license\n     * Copyright Google LLC All
Rights Reserved.\n     * Use of this source code is governed by an MIT-style license that can be\n     * found
in the LICENSE file at https://angular.io/license\n     */\n    (function (ViewEncapsulation) {\n        /**\n         *
Emulate `Native` scoping of styles by adding an attribute containing surrogate id to the Host\n         * Element and
pre-processing the style rules provided via { @link Component#styles styles } or\n         * { @link
Component#styleUrls styleUrls }, and adding the new Host Element attribute to all\n         * selectors.\n         *\n         * This is the default option.\n         */\n        ViewEncapsulation[ViewEncapsulation["Emulated"] = 0] =
"Emulated";\n        // Historically the 1 value was for `Native` encapsulation which has been removed as of v11.\n        /**\n         * Don't provide any template or style encapsulation.\n         */\n        ViewEncapsulation[ViewEncapsulation["None"] = 2] = "None";\n        /**\n         * Use Shadow DOM to
encapsulate styles.\n         *\n         * For the DOM this means using modern [Shadow\n         *
DOM](https://w3c.github.io/webcomponents/spec/shadow/) and\n         * creating a ShadowRoot for Component's
Host Element.\n         */\n        ViewEncapsulation[ViewEncapsulation["ShadowDom"] = 3] = "ShadowDom";\n    })(exports.ViewEncapsulation || (exports.ViewEncapsulation = {}));\n\n    /**\n     * @license\n     * Copyright

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Google LLC All Rights Reserved.\n  *\n  * Use of this source code is governed by an MIT-style license that can
be\n  * found in the LICENSE file at https://angular.io/license\n  */\n  function
ngDevModeResetPerfCounters() {\n    var locationString = typeof location !== 'undefined' ? location.toString() :
";\n    var newCounters = {\n      namedConstructors:
locationString.indexOf('ngDevMode=namedConstructors') !== -1,\n      firstCreatePass: 0,\n      tNode: 0,\n      tView: 0,\n      rendererCreateTextNode: 0,\n      rendererSetText: 0,\n      rendererCreateElement: 0,\n      rendererAddEventListener: 0,\n      rendererSetAttribute: 0,\n      rendererRemoveAttribute: 0,\n      rendererSetProperty: 0,\n      rendererSetClassName: 0,\n      rendererAddClass: 0,\n      rendererRemoveClass: 0,\n      rendererSetStyle: 0,\n      rendererRemoveStyle: 0,\n      rendererDestroy:
0,\n      rendererDestroyNode: 0,\n      rendererMoveNode: 0,\n      rendererRemoveNode: 0,\n      rendererAppendChild: 0,\n      rendererInsertBefore: 0,\n      rendererCreateComment: 0,\n    };\n    //
Make sure to refer to ngDevMode as ['ngDevMode'] for closure.\n    var allowNgDevModeTrue =
locationString.indexOf('ngDevMode=false') === -1;\n    _global['ngDevMode'] = allowNgDevModeTrue &&
newCounters;\n    return newCounters;\n  } \n  /**\n   * This function checks to see if the `ngDevMode` has
been set. If yes,\n   * then we honor it, otherwise we default to dev mode with additional checks.\n   * \n   * The
idea is that unless we are doing production build where we explicitly\n   * set `ngDevMode === false` we should be
helping the developer by providing\n   * as much early warning and errors as possible.\n   * \n   *
`defineComponent` is guaranteed to have been called before any component template functions\n   * (and thus Ivy
instructions), so a single initialization there is sufficient to ensure ngDevMode\n   * is defined for the entire
instruction set.\n   * \n   * When checking `ngDevMode` on toplevel, always init it before referencing it\n   * (e.g.
`((typeof ngDevMode === 'undefined' || ngDevMode) && initNgDevMode())`), otherwise you can\n   * get a
`ReferenceError` like in https://github.com/angular/angular/issues/31595.\n   * \n   * Details on possible values for
`ngDevMode` can be found on its docstring.\n   * \n   * NOTE:\n   * - changes to the `ngDevMode` name must be
synced with `compiler-cli/src/tooling.ts`.\n   */\n  function initNgDevMode() {\n    // The below checks are to
ensure that calling `initNgDevMode` multiple times does not\n    // reset the counters.\n    // If the
`ngDevMode` is not an object, then it means we have not created the perf counters\n    // yet.\n    if (typeof
ngDevMode === 'undefined' || ngDevMode) {\n      if (typeof ngDevMode !== 'object') {\n        ngDevModeResetPerfCounters();\n      }\n      return typeof ngDevMode !== 'undefined' &&
!ngDevMode;\n    }\n    return false;\n  }\n  /**\n   * @license\n   * Copyright Google LLC All Rights
Reserved.\n   * \n   * Use of this source code is governed by an MIT-style license that can be\n   * found in the
LICENSE file at https://angular.io/license\n   */\n  /**\n   * This file contains reusable \"empty\" symbols that
can be used as default return values\n   * in different parts of the rendering code. Because the same symbols are
returned, this\n   * allows for identity checks against these values to be consistently used by the framework\n   *
code.\n   */\n  var EMPTY_OBJ = {};\n  var EMPTY_ARRAY = [];\n  // freezing the values prevents any code
from accidentally inserting new values in\n  if ((typeof ngDevMode === 'undefined' || ngDevMode) &&
initNgDevMode()) {\n    // These property accesses can be ignored because ngDevMode will be set to false\n
// when optimizing code and the whole if statement will be dropped.\n    // tslint:disable-next-line:no-toplevel-
property-access\n    Object.freeze(EMPTY_OBJ);\n    // tslint:disable-next-line:no-toplevel-property-access\n
Object.freeze(EMPTY_ARRAY);\n  }\n  /**\n   * @license\n   * Copyright Google LLC All Rights
Reserved.\n   * \n   * Use of this source code is governed by an MIT-style license that can be\n   * found in the
LICENSE file at https://angular.io/license\n   */\n  var NG_COMP_DEF = getClosureSafeProperty({ cmp:
getClosureSafeProperty });\n  var NG_DIR_DEF = getClosureSafeProperty({ dir: getClosureSafeProperty });\n  var
NG_PIPE_DEF = getClosureSafeProperty({ pipe: getClosureSafeProperty });\n  var NG_MOD_DEF =
getClosureSafeProperty({ mod: getClosureSafeProperty });\n  var NG_LOC_ID_DEF = getClosureSafeProperty({
loc: getClosureSafeProperty });\n  var NG_FACTORY_DEF = getClosureSafeProperty({ fac:
getClosureSafeProperty });\n  /**\n   * If a directive is diPublic, bloomAdd sets a property on the type with this
constant as\n   * the key and the directive's unique ID as the value. This allows us to map directives to their\n   *
bloom filter bit for DI.\n   */\n  // TODO(misko): This is wrong. The NG_ELEMENT_ID should never be

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minified.\n  var NG_ELEMENT_ID = getClosureSafeProperty({ __NG_ELEMENT_ID__:
getClosureSafeProperty });\n\n /**\n * @license\n * Copyright Google LLC All Rights Reserved.\n *\n * Use of this source code is governed by an MIT-style license that can be\n * found in the LICENSE file at
https://angular.io/license\n *\n var _renderCompCount = 0;\n /**\n * Create a component definition
object.\n *\n * # Example\n * ```\n * class MyDirective {\n * // Generated by Angular Template
Compiler\n * // [Symbol] syntax will not be supported by TypeScript until v2.7\n * static cmp =
defineComponent({\n * ... \n * });\n * }\n * ```\n * @codeGenApi\n */\n function
defineComponent(componentDefinition) {\n  return noSideEffects(function () {\n    // Initialize
ngDevMode. This must be the first statement in defineComponent.\n    // See the `initNgDevMode` docstring
for more information.\n    (typeof ngDevMode === 'undefined' || ngDevMode) && initNgDevMode();\n
var type = componentDefinition.type;\n    var typePrototype = type.prototype;\n    var declaredInputs =
{\n    var def = {\n      type: type,\n      providersResolver: null,\n      decls:
componentDefinition.decls,\n      vars: componentDefinition.vars,\n      factory: null,\n
template: componentDefinition.template || null,\n      consts: componentDefinition.consts || null,\n
ngContentSelectors: componentDefinition.ngContentSelectors,\n      hostBindings:
componentDefinition.hostBindings || null,\n      hostVars: componentDefinition.hostVars || 0,\n
hostAttrs: componentDefinition.hostAttrs || null,\n      contentQueries: componentDefinition.contentQueries ||
null,\n      declaredInputs: declaredInputs,\n      inputs: null,\n      outputs: null,\n
exportAs: componentDefinition.exportAs || null,\n      onPush: componentDefinition.changeDetection ===
exports.ChangeDetectionStrategy.OnPush,\n      directiveDefs: null,\n      pipeDefs: null,\n
selectors: componentDefinition.selectors || EMPTY_ARRAY,\n      viewQuery:
componentDefinition.viewQuery || null,\n      features: componentDefinition.features || null,\n      data:
componentDefinition.data || {},\n      // TODO(misko): convert ViewEncapsulation into const enum so that it
can be used\n      // directly in the next line. Also `None` should be 0 not 2.\n      encapsulation:
componentDefinition.encapsulation || exports.ViewEncapsulation.Emulated,\n      id: 'c',\n      styles:
componentDefinition.styles || EMPTY_ARRAY,\n      _: null,\n      setInput: null,\n      schemas:
componentDefinition.schemas || null,\n      tView: null,\n      });\n      var directiveTypes =
componentDefinition.directives;\n      var feature = componentDefinition.features;\n      var pipeTypes =
componentDefinition.pipes;\n      def.id += _renderCompCount++;\n      def.inputs =
invertObject(componentDefinition.inputs, declaredInputs),\n      def.outputs =
invertObject(componentDefinition.outputs),\n      feature && feature.forEach(function (fn) { return fn(def);
});\n      def.directiveDefs = directiveTypes ?\n      function () { return (typeof directiveTypes ===
'function' ? directiveTypes() : directiveTypes)\n      .map(extractDirectiveDef); } :\n      null;\n      def.pipeDefs = pipeTypes ?\n      function () { return (typeof pipeTypes === 'function' ? pipeTypes() :
pipeTypes).map(extractPipeDef); } :\n      null;\n      return def;\n    });\n  }\n} /**\n * Generated
next to NgModules to monkey-patch directive and pipe references onto a component's\n * definition, when
generating a direct reference in the component file would otherwise create an\n * import cycle.\n *\n * See
[this explanation](https://hackmd.io/Odw80D0pR6yfsOjg_7XCJg?view) for more details.\n *\n *
@codeGenApi\n */\n function setComponentScope(type, directives, pipes) {\n  var def = type.cmp;\n
def.directiveDefs = function () { return directives.map(extractDirectiveDef); }; \n  def.pipeDefs = function () {
return pipes.map(extractPipeDef); }; \n } \n function extractDirectiveDef(type) {\n  var def =
getComponentDef(type) || getDirectiveDef(type);\n  if (ngDevMode && !def) {\n    throw new Error("\n" +
type.name + "\n" is neither 'ComponentType' or 'DirectiveType'.");\n  }\n  return def;\n } \n function
extractPipeDef(type) {\n  var def = getPipeDef(type);\n  if (ngDevMode && !def) {\n    throw new
Error("\n" + type.name + "\n" is not a 'PipeType'.");\n  }\n  return def;\n } \n var autoRegisterModuleById
= {};\n /**\n * @codeGenApi\n */\n function defineNgModule(def) {\n  var res = {\n    type:
def.type,\n    bootstrap: def.bootstrap || EMPTY_ARRAY,\n    declarations: def.declarations ||
EMPTY_ARRAY,\n    imports: def.imports || EMPTY_ARRAY,\n    exports: def.exports ||

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EMPTY_ARRAY,\n      transitiveCompileScopes: null,\n      schemas: def.schemas || null,\n      id: def.id
|\n    |\n    };|\n    if (def.id != null) {\n      noSideEffects(function () {\n
autoRegisterModuleById[def.id] = def.type;\n      });|\n    }\n    return res;\n  }\n  /**\n   * Adds the
module metadata that is necessary to compute the module's transitive scope to an\n   * existing module definition.\n
*\n   * Scope metadata of modules is not used in production builds, so calls to this function can be\n   * marked
pure to tree-shake it from the bundle, allowing for all referenced declarations\n   * to become eligible for tree-
shaking as well.\n   *\n   * @codeGenApi\n   */\n   function setNgModuleScope(type, scope) {\n     return
noSideEffects(function () {\n       var ngModuleDef = getNgModuleDef(type, true);\n
ngModuleDef.declarations = scope.declarations || EMPTY_ARRAY;\n       ngModuleDef.imports =
scope.imports || EMPTY_ARRAY;\n       ngModuleDef.exports = scope.exports || EMPTY_ARRAY;\n     });|\n
  }\n  /**\n   * Inverts an inputs or outputs lookup such that the keys, which were the\n   * minified keys, are part
of the values, and the values are parsed so that\n   * the publicName of the property is the new key\n   *\n   * e.g.
for\n   *\n   * ```\n   * class Comp {\n   *   @Input()\n   *   propName1: string;\n   *   *
@Input('publicName2')\n   *   declaredPropName2: number;\n   * }\n   * ```\n   *\n   * will be serialized as\n
*\n   * ```\n   * {\n   *   propName1: 'propName1',\n   *   declaredPropName2: ['publicName2',
'declaredPropName2'],\n   * }\n   * ```\n   *\n   * which is then translated by the minifier as:\n   *\n   * ```\n
* {\n   *   minifiedPropName1: 'propName1',\n   *   minifiedPropName2: ['publicName2',
'declaredPropName2'],\n   * }\n   * ```\n   *\n   * becomes: (public name => minifiedName)\n   *\n   * ```\n
* {\n   *   'propName1': 'minifiedPropName1',\n   *   'publicName2': 'minifiedPropName2',\n   * }\n   * ```\n
*\n   * Optionally the function can take `secondary` which will result in: (public name => declared name)\n   *\n
*\n   * ```\n   * {\n   *   'propName1': 'propName1',\n   *   'publicName2': 'declaredPropName2',\n   * }\n   * ```\n
*\n   *\n   */\n   function invertObject(obj, secondary) {\n     if (obj == null)\n       return EMPTY_OBJ;\n
var newLookup = {};\n     for (var minifiedKey in obj) {\n       if (obj.hasOwnProperty(minifiedKey)) {\n
var publicName = obj[minifiedKey];\n         var declaredName = publicName;\n         if
(Array.isArray(publicName)) {\n           declaredName = publicName[1];\n           publicName =
publicName[0];\n         }\n         newLookup[publicName] = minifiedKey;\n         if (secondary) {\n
           (secondary[publicName] = declaredName);\n         }\n       }\n     }\n     return newLookup;\n   }\n
  /**\n   * Create a directive definition object.\n   *\n   * # Example\n   * ```ts\n   * class MyDirective {\n   *
// Generated by Angular Template Compiler\n   * // [Symbol] syntax will not be supported by TypeScript until
v2.7\n   *   static dir = defineDirective({\n   *     ...\n   * });\n   * }\n   * ```\n   *\n   * @codeGenApi\n
*\n   */\n   var defineDirective = defineComponent;\n  /**\n   * Create a pipe definition object.\n   *\n   * #
Example\n   * ```\n   * class MyPipe implements PipeTransform {\n   *   // Generated by Angular Template
Compiler\n   *   static pipe = definePipe({\n   *     ...\n   * });\n   * }\n   * ```\n   *\n   * @param pipeDef Pipe
definition generated by the compiler\n   *\n   * @codeGenApi\n   */\n   function definePipe(pipeDef) {\n
return {\n     type: pipeDef.type,\n     name: pipeDef.name,\n     factory: null,\n     pure:
pipeDef.pure !== false,\n     onDestroy: pipeDef.type.prototype.ngOnDestroy || null\n   };|\n  }\n  /**\n   *
The following getter methods retrieve the definition from the type. Currently the retrieval\n   * honors inheritance,
but in the future we may change the rule to require that definitions are\n   * explicit. This would require some sort
of migration strategy.\n   *\n   */\n   function getComponentDef(type) {\n     return type[NG_COMP_DEF] || null;\n
  }\n   function getDirectiveDef(type) {\n     return type[NG_DIR_DEF] || null;\n   }\n   function getPipeDef(type)
{\n     return type[NG_PIPE_DEF] || null;\n   }\n   function getNgModuleDef(type, throwNotFound) {\n     var
ngModuleDef = type[NG_MOD_DEF] || null;\n     if (!ngModuleDef && throwNotFound === true) {\n
throw new Error("Type \"" + stringify(type) + "\" does not have \"\u0275mod' property.\");\n     }\n     return
ngModuleDef;\n   }\n   function getNgLocaleIdDef(type) {\n     return type[NG_LOC_ID_DEF] || null;\n   }\n
  /**\n   * @license\n   * Copyright Google LLC All Rights Reserved.\n   * Use of this source code is
governed by an MIT-style license that can be\n   * found in the LICENSE file at https://angular.io/license\n
*\n   */\n   /**\n   * Used for stringify render output in Ivy.\n   * Important! This function is very performance-sensitive and
we should\n   * be extra careful not to introduce megamorphic reads in it.\n   */\n   function

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renderStringify(value) {\n    if (typeof value === 'string')\n        return value;\n    if (value === null)\n        return '';\n    return '' + value;\n } \n /**\n  * Used to stringify a value so that it can be displayed in an error\n  * message.\n  * Important! This function contains a megamorphic read and should only be\n  * used for error\n  * messages.\n  */\n function stringifyForError(value) {\n    if (typeof value === 'function')\n        return\n        value.name || value.toString();\n    if (typeof value === 'object' && value != null && typeof value.type ===\n        'function') {\n        return value.type.name || value.type.toString();\n    }\n    return renderStringify(value);\n }\n\n /**\n  * @license\n  * Copyright Google LLC All Rights Reserved.\n  * \n  * Use of this source code\n  * is governed by an MIT-style license that can be\n  * found in the LICENSE file at https://angular.io/license\n  */\n\n (function (InjectFlags) {\n    // TODO(alxhub): make this 'const' when ngc no longer writes exports of it\n    into ngfactory files.\n    /** Check self and check parent injector if needed */\n\n    InjectFlags[InjectFlags["Default"] = 0] = "Default";\n    /**\n     * Specifies that an injector should retrieve a\n     * dependency from any injector until reaching the\n     * host element of the current component. (Only used with\n     * Element Injector)\n     */\n    InjectFlags[InjectFlags["Host"] = 1] = "Host";\n    /** Don't ascend to\n     * ancestors of the node requesting injection. */\n    InjectFlags[InjectFlags["Self"] = 2] = "Self";\n    /** Skip\n     * the node that is requesting injection. */\n    InjectFlags[InjectFlags["SkipSelf"] = 4] = "SkipSelf";\n    /**\n     * Inject `defaultValue` instead if token not found. */\n    InjectFlags[InjectFlags["Optional"] = 8] = "Optional";\n\n    })(exports.InjectFlags || (exports.InjectFlags = {}));\n\n /**\n  * @license\n  * Copyright Google LLC All\n  * Rights Reserved.\n  * \n  * Use of this source code is governed by an MIT-style license that can be\n  * found\n  * in the LICENSE file at https://angular.io/license\n  */\n\n /**\n  * Current implementation of inject.\n  * \n  * By default, it is `injectInjectorOnly`, which makes it `Injector`-only aware. It can be changed\n  * to\n  * `directiveInject`, which brings in the `NodeInjector` system of ivy. It is designed this\n  * way for two reasons:\n  * \n  * 1. `Injector` should not depend on ivy logic.\n  * 2. To maintain tree shake-ability we don't want to bring in\n  * unnecessary code.\n  */\n var _injectImplementation;\n function getInjectImplementation() {\n    return\n    _injectImplementation;\n }\n /**\n  * Sets the current inject implementation.\n  */\n function\n    setInjectImplementation(impl) {\n    var previous = _injectImplementation;\n    _injectImplementation =\n    impl;\n    return previous;\n }\n /**\n  * Injects `root` tokens in limp mode.\n  * \n  * If no injector exists,\n  * we can still inject tree-shakable providers which have `providedIn` set to\n  * `\"root\"`. This is known as the limp\n  * mode injection. In such case the value is stored in the\n  * `InjectableDef`.\n  */\n function\n    injectRootLimpMode(token, notFoundValue, flags) {\n    var injectableDef = getInjectableDef(token);\n    if\n    (injectableDef && injectableDef.providedIn === 'root') {\n        return injectableDef.value === undefined ?\n        injectableDef.value = injectableDef.factory() : injectableDef.value;\n    }\n    if (flags &\n    exports.InjectFlags.Optional)\n        return null;\n    if (notFoundValue !== undefined)\n        return\n        notFoundValue;\n    throw new Error("Injector: NOT_FOUND [" + stringify(token) + "]);\n }\n /**\n  * \n  * Assert that `_injectImplementation` is not `fn`.\n  * \n  * This is useful, to prevent infinite recursion.\n  * \n  * @param fn Function which it should not equal to\n  */\n function assertInjectImplementationNotEqual(fn) {\n    ngDevMode &&\n    assertNotEqual(_injectImplementation, fn, 'Calling inject would cause infinite\n    recursion');\n }\n\n /**\n  * @license\n  * Copyright Google LLC All Rights Reserved.\n  * \n  * Use of\n  * this source code is governed by an MIT-style license that can be\n  * found\n  * in the LICENSE file at\n  * https://angular.io/license\n  */\n\n var _THROW_IF_NOT_FOUND = {};\n var THROW_IF_NOT_FOUND =\n    _THROW_IF_NOT_FOUND;\n var NG_TEMP_TOKEN_PATH = 'ngTempTokenPath';\n var\n    NG_TOKEN_PATH = 'ngTokenPath';\n var NEW_LINE = /\n/gm;\n var NO_NEW_LINE = '';\n var\n    SOURCE = '__source';\n var 0$2 = getClosureSafeProperty;\n var USE_VALUE = getClosureSafeProperty({\n    provide: String, useValue: 0$2 });\n /**\n  * Current injector value used by `inject`.\n  * \n  * - `undefined`: it is an\n  * error to call `inject`\n  * \n  * - `null`: `inject` can be called but there is no injector (limp-mode).\n  * \n  * - Injector\n  * instance: Use the injector for resolution.\n  */\n var _currentInjector = undefined;\n function\n    setCurrentInjector(injector) {\n    var former = _currentInjector;\n    _currentInjector = injector;\n    return\n    former;\n }\n\n function injectInjectorOnly(token, flags) {\n    if (flags === void 0) { flags =\n    exports.InjectFlags.Default; }\n    if (_currentInjector === undefined) {\n        throw new Error("inject() must

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be called from an injection context");\n    }\n    else if (_currentInjector === null) {\n        return
injectRootLimpMode(token, undefined, flags);\n    }\n    else {\n        return _currentInjector.get(token, flags
& exports.InjectFlags.Optional ? null : undefined, flags);\n    }\n}\nfunction inject(token, flags) {\n    if
(flags === void 0) { flags = exports.InjectFlags.Default; }\n    return (getInjectImplementation() ||
injectInjectorOnly)(resolveForwardRef(token), flags);\n}\n/**\n * Throws an error indicating that a factory
function could not be generated by the compiler for a\n * particular class.\n * This instruction allows the
actual error message to be optimized away when ngDevMode is turned\n * off, saving bytes of generated code
while still providing a good experience in dev mode.\n * The name of the class is not mentioned here, but
will be in the generated factory function name\n * and thus in the stack trace.\n * @codeGenApi\n */\nfunction invalidFactoryDep(index) {\n    var msg = ngDevMode ?\n        "This constructor is not compatible
with Angular Dependency Injection because its dependency at index '" + index + "' of the parameter list is
invalid.\nThis can happen if the dependency type is a primitive like a string or if an ancestor of this class is missing
an Angular decorator.\n\nPlease check that 1) the type for the parameter at index '" + index + "' is correct and 2)
the correct Angular decorators are defined for this class and its ancestors." :
        'invalid';\n    throw new
Error(msg);\n}\n/**\n * Injects a token from the currently active injector.\n * Must be used in the
context of a factory function such as one defined for an\n * `InjectionToken`. Throws an error if not called from
such a context.\n * Within such a factory function, using this function to request injection of a
dependency\n * is faster and more type-safe than providing an additional array of dependencies\n * (as has
been common with `useFactory` providers).\n * @param token The injection token for the dependency to
be injected.\n * @param flags Optional flags that control how injection is executed.\n * The flags correspond to
injection strategies that can be specified with\n * parameter decorators `@Host`, `@Self`, `@SkipSelf`, and
`@Optional`.\n * @returns True if injection is successful, null otherwise.\n * @usageNotes\n *\n * ### Example\n *\n * { @example core/di/ts/injector_spec.ts region='ShakableInjectionToken'}\n *\n * @publicApi\n */\nvar inject = inject;\nfunction injectArgs(types) {\n    var args = [];\n    for (var i = 0; i
< types.length; i++) {\n        var arg = resolveForwardRef(types[i]);\n        if (Array.isArray(arg)) {\n
if (arg.length === 0) {\n            throw new Error('Arguments array must have arguments.');

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LICENSE file at https://angular.io/license\n  *\n  /**\n  * Most of the use of `document` in Angular is from
within the DI system so it is possible to simply\n  * inject the `DOCUMENT` token and are done.\n  *\n  * Ivy
is special because it does not rely upon the DI and must get hold of the document some other\n  * way.\n  *\n  *
The solution is to define `getDocument()` and `setDocument()` top-level functions for ivy.\n  * Wherever ivy
needs the global document, it calls `getDocument()` instead.\n  *\n  * When running ivy outside of a browser
environment, it is necessary to call `setDocument()` to\n  * tell ivy what the global `document` is.\n  *\n  *
Angular does this for us in each of the standard platforms (`Browser`, `Server`, and `WebWorker`)\n  * by calling
`setDocument()` when providing the `DOCUMENT` token.\n  *\n  var DOCUMENT = undefined;\n  /**\n  *
Tell ivy what the `document` is for this platform.\n  *\n  * It is only necessary to call this if the current platform
is not a browser.\n  *\n  * @param document The object representing the global `document` in this
environment.\n  *\n  function setDocument(document) {\n    DOCUMENT = document;\n  }\n  /**\n  *
Access the object that represents the `document` for this platform.\n  *\n  * Ivy calls this whenever it needs to
access the `document` object.\n  * For example to create the renderer or to do sanitization.\n  *\n  function
getDocument() {\n    if (DOCUMENT !== undefined) {\n      return DOCUMENT;\n    }\n    else if
(typeof document !== 'undefined') {\n      return document;\n    }\n    // No `document` can be found. This
should only happen if we are running ivy outside Angular and\n    // the current platform is not a browser. Since
this is not a supported scenario at the moment\n    // this should not happen in Angular apps.\n    // Once we
support running ivy outside of Angular we will need to publish `setDocument()` as a\n    // public API.
Meanwhile we just return `undefined` and let the application fail.\n    return undefined;\n  }\n  /**\n  *
@license\n  * Copyright Google LLC All Rights Reserved.\n  *\n  * Use of this source code is governed by an
MIT-style license that can be\n  * found in the LICENSE file at https://angular.io/license\n  *\n  // Below are
constants for LView indices to help us look up LView members\n  // without having to remember the specific
indices.\n  // Uglify will inline these when minifying so there shouldn't be a cost.\n  var HOST = 0;\n  var
TVIEW = 1;\n  var FLAGS = 2;\n  var PARENT = 3;\n  var NEXT = 4;\n  var
TRANSPLANTED_VIEWS_TO_REFRESH = 5;\n  var T_HOST = 6;\n  var CLEANUP = 7;\n  var CONTEXT
= 8;\n  var INJECTOR = 9;\n  var RENDERER_FACTORY = 10;\n  var RENDERER = 11;\n  var
SANITIZER = 12;\n  var CHILD_HEAD = 13;\n  var CHILD_TAIL = 14;\n  // FIXME(misko): Investigate if
the three declarations aren't all same thing.\n  var DECLARATION_VIEW = 15;\n  var
DECLARATION_COMPONENT_VIEW = 16;\n  var DECLARATION_LCONTAINER = 17;\n  var
PREORDER_HOOK_FLAGS = 18;\n  var QUERIES = 19;\n  /**\n  * Size of LView's header. Necessary to
adjust for it when setting slots.\n  *\n  * IMPORTANT: `HEADER_OFFSET` should only be referred to the in
the `*` instructions to translate\n  * instruction index into `LView` index. All other indexes should be in the
`LView` index space and\n  * there should be no need to refer to `HEADER_OFFSET` anywhere else.\n  *\n  var
HEADER_OFFSET = 20;\n  /**\n  * Converts `TViewType` into human readable text.\n  * Make sure this
matches with `TViewType`\n  *\n  var TViewTypeAsString = [\n    'Root',\n    'Component',\n
'Embedded',\n  ];\n  // Note: This hack is necessary so we don't erroneously get a circular dependency\n  // failure
based on types.\n  var unusedValueExportToPlacateAjd = 1;\n  /**\n  * Special location which allows easy
identification of type. If we have an array which was\n  * retrieved from the `LView` and that array has `true` at
`TYPE` location, we know it is\n  * `LContainer`.\n  *\n  var TYPE = 1;\n  /**\n  * Below are constants for
LContainer indices to help us look up LContainer members\n  * without having to remember the specific
indices.\n  * Uglify will inline these when minifying so there shouldn't be a cost.\n  *\n  /**\n  * Flag to
signify that this `LContainer` may have transplanted views which need to be change\n  * detected. (see:
`LView[DECLARATION_COMPONENT_VIEW]`).\n  *\n  * This flag, once set, is never unset for the
`LContainer`. This means that when unset we can skip\n  * a lot of work in `refreshEmbeddedViews`. But when
set we still need to verify\n  * that the `MOVED_VIEWS` are transplanted and on-push.\n  *\n  var
HAS_TRANSPLANTED_VIEWS = 2;\n  // PARENT, NEXT, TRANSPLANTED_VIEWS_TO_REFRESH are
indices 3, 4, and 5\n  // As we already have these constants in LView, we don't need to re-create them.\n  //
T_HOST is index 6\n  // We already have this constants in LView, we don't need to re-create it.\n  var NATIVE =

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7;\n  var VIEW_REFS = 8;\n  var MOVED_VIEWS = 9;\n  /**\n   * Size of LContainer's header. Represents
the index after which all views in the\n   * container will be inserted. We need to keep a record of current views so
we know\n   * which views are already in the DOM (and don't need to be re-added) and so we can\n   * remove
views from the DOM when they are no longer required.\n   */\n  var CONTAINER_HEADER_OFFSET = 10;\n  // Note: This hack is necessary so we don't erroneously get a circular dependency\n  // failure based on types.\n  var unusedValueExportToPlacateAjd$1 = 1;\n  /**\n   * @license\n   * Copyright Google LLC All Rights
Reserved.\n   *\n   * Use of this source code is governed by an MIT-style license that can be\n   * found in the
LICENSE file at https://angular.io/license\n   */\n  /**\n   * True if `value` is `LView`.\n   * @param value
wrapped value of `RNode`, `LView`, `LContainer`\n   */\n  function isLView(value) {\n    return
Array.isArray(value) && typeof value[TYPE] === 'object';\n  }\n  /**\n   * True if `value` is `LContainer`.\n   * @param value wrapped value of `RNode`, `LView`, `LContainer`\n   */\n  function isLContainer(value) {\n
return Array.isArray(value) && value[TYPE] === true;\n  }\n  function isContentQueryHost(tNode) {\n
return (tNode.flags & 8 /* hasContentQuery */) !== 0;\n  }\n  function isComponentHost(tNode) {\n    return
(tNode.flags & 2 /* isComponentHost */) === 2 /* isComponentHost */;\n  }\n  function isDirectiveHost(tNode)
{\n    return (tNode.flags & 1 /* isDirectiveHost */) === 1 /* isDirectiveHost */;\n  }\n  function
isComponentDef(def) {\n    return def.template !== null;\n  }\n  function isRootView(target) {\n    return
(target[FLAGS] & 512 /* IsRoot */) !== 0;\n  }\n  /**\n   * @license\n   * Copyright Google LLC All Rights
Reserved.\n   *\n   * Use of this source code is governed by an MIT-style license that can be\n   * found in the
LICENSE file at https://angular.io/license\n   */\n  // [Assert functions do not constraint type when they are
guarded by a truthy\n  // expression.](https://github.com/microsoft/TypeScript/issues/37295)\n  function
assertTNodeForLView(tNode, lView) {\n    assertTNodeForTView(tNode, lView[TVIEW]);\n  }\n  function
assertTNodeForTView(tNode, tView) {\n    assertTNode(tNode);\n    tNode.hasOwnProperty('tView_') &&\n
    assertEqual(tNode.tView_, tView, 'This TNode does not belong to this TView.);\n  }\n  function
assertTNode(tNode) {\n    assertDefined(tNode, 'TNode must be defined');\n    if (!(tNode && typeof tNode
=== 'object' && tNode.hasOwnProperty('directiveStylingLast')))\n      throwError('Not of type TNode, got: ' +
tNode);\n  }\n  function assertTlCu(tlCu) {\n    assertDefined(tlCu, 'Expected TlCu to be defined');\n
if (!(typeof tlCu.currentCaseLViewIndex === 'number'))\n      throwError('Object is not of TlCu type.);\n
}\n  function assertComponentType(actual, msg) {\n    if (msg === void 0) { msg = 'Type passed in is not
ComponentType, it does not have `cmp` property.'; }\n    if (!getComponentDef(actual))\n      throwError(msg);\n  }\n  function assertNgModuleType(actual, msg) {\n    if (msg === void 0) { msg =
'Type passed in is not NgModuleType, it does not have `mod` property.'; }\n    if (!getNgModuleDef(actual))\n
      throwError(msg);\n  }\n  function assertCurrentTNodeIsParent(isParent) {\n
assertEqual(isParent, true, 'currentTNode should be a parent');\n  }\n  function assertHasParent(tNode) {\n
assertDefined(tNode, 'currentTNode should exist!');\n    assertDefined(tNode.parent, 'currentTNode should have a
parent');\n  }\n  function assertDataNext(lView, index, arr) {\n    if (arr == null)\n      arr = lView;\n
assertEqual(arr.length, index, `index ` + index + ` expected to be at the end of arr (length ` + arr.length + `)`);\n
}\n  function assertLContainer(value) {\n    assertDefined(value, 'LContainer must be defined');\n
assertEqual(isLContainer(value), true, 'Expecting LContainer');\n  }\n  function assertLViewOrUndefined(value)
{\n    value && assertEqual(isLView(value), true, 'Expecting LView or undefined or null');\n  }\n  function
assertLView(value) {\n    assertDefined(value, 'LView must be defined');\n    assertEqual(isLView(value), true,
'Expecting LView');\n  }\n  function assertFirstCreatePass(tView, errorMessage) {\n
assertEqual(tView.firstCreatePass, true, errorMessage || 'Should only be called in first create pass.);\n  }\n
function assertFirstUpdatePass(tView, errorMessage) {\n    assertEqual(tView.firstUpdatePass, true, errorMessage
|| 'Should only be called in first update pass.);\n  }\n  /**\n   * This is a basic sanity check that an object is probably a
directive def. DirectiveDef is\n   * an interface, so we can't do a direct instanceof check.\n   */\n  function
assertDirectiveDef(obj) {\n    if (obj.type === undefined || obj.selectors == undefined || obj.inputs === undefined)
{\n      throwError(`Expected a DirectiveDef/ComponentDef and this object does not seem to have the expected
shape.`);\n    }\n  }\n  function assertIndexInDeclRange(lView, index) {\n    var tView = lView[1];\n

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assertBetween(HEADER_OFFSET, tView.bindingStartIndex, index);\n } \n function
assertIndexInVarsRange(IView, index) {\n     var tView = IView[1];\n
assertBetween(tView.bindingStartIndex, tView.expandoStartIndex, index);\n } \n function
assertIndexInExpandoRange(IView, index) {\n     var tView = IView[1];\n
assertBetween(tView.expandoStartIndex, IView.length, index);\n } \n function assertBetween(lower, upper,
index) {\n     if (!(lower <= index && index < upper)) {\n         throwError("\nIndex out of range (expecting\n" +
lower + "\n<=" + index + "\n<" + upper + "\n)");\n     }\n     }\n     /**\n     * This is a basic sanity check that the
`injectorIndex` seems to point to what looks like a\n     * NodeInjector data structure.\n     *\n     * @param IView
`LView` which should be checked.\n     * @param injectorIndex index into the `LView` where the `NodeInjector` is
expected.\n     *\n     *\n     function assertNodeInjector(IView, injectorIndex) {\n         assertIndexInExpandoRange(IView,
injectorIndex);\n         assertIndexInExpandoRange(IView, injectorIndex + 8 /* PARENT */);\n
assertNumber(IView[injectorIndex + 0], 'injectorIndex should point to a bloom filter');\n
assertNumber(IView[injectorIndex + 1], 'injectorIndex should point to a bloom filter');\n
assertNumber(IView[injectorIndex + 2], 'injectorIndex should point to a bloom filter');\n
assertNumber(IView[injectorIndex + 3], 'injectorIndex should point to a bloom filter');\n
assertNumber(IView[injectorIndex + 4], 'injectorIndex should point to a bloom filter');\n
assertNumber(IView[injectorIndex + 5], 'injectorIndex should point to a bloom filter');\n
assertNumber(IView[injectorIndex + 6], 'injectorIndex should point to a bloom filter');\n
assertNumber(IView[injectorIndex + 7], 'injectorIndex should point to a bloom filter');\n
assertNumber(IView[injectorIndex + 8 /* PARENT */], 'injectorIndex should point to parent injector');\n     }\n\n
/**\n     * @license\n     * Copyright Google LLC All Rights Reserved.\n     *\n     * Use of this source code is
governed by an MIT-style license that can be\n     * found in the LICENSE file at https://angular.io/license\n     */\n
var SVG_NAMESPACE = 'http://www.w3.org/2000/svg';\n     var MATH_ML_NAMESPACE =
'http://www.w3.org/1998/MathML/';\n\n     /**\n     * @license\n     * Copyright Google LLC All Rights Reserved.\n
     *\n     * Use of this source code is governed by an MIT-style license that can be\n     * found in the LICENSE file
at https://angular.io/license\n     *\n     *\n     * This property will be monkey-patched on elements, components
and directives\n     *\n     var MONKEY_PATCH_KEY_NAME = '__ngContext__';\n\n     /**\n     * @license\n     *
Copyright Google LLC All Rights Reserved.\n     *\n     * Use of this source code is governed by an MIT-style
license that can be\n     * found in the LICENSE file at https://angular.io/license\n     *\n     * // TODO: cleanup once
the code is merged in angular/angular\n     var RendererStyleFlags3;\n     (function (RendererStyleFlags3) {\n
RendererStyleFlags3[RendererStyleFlags3["Important"] = 1] = "Important";\n
RendererStyleFlags3[RendererStyleFlags3["DashCase"] = 2] = "DashCase";\n     })(RendererStyleFlags3 ||
(RendererStyleFlags3 = {}));\n     /** Returns whether the `renderer` is a `ProceduralRenderer3` *\n     function
isProceduralRenderer(renderer) {\n         return !!renderer.listen;\n     }\n     var O$3 = function (hostElement,
rendererType) {\n         return getDocument();\n     }; \n     var domRendererFactory3 = {\n         createRenderer: O$3\n
};\n     // Note: This hack is necessary so we don't erroneously get a circular dependency\n     // failure based on
types.\n     var unusedValueExportToPlacateAjd$2 = 1;\n\n     /**\n     * @license\n     * Copyright Google LLC All
Rights Reserved.\n     *\n     * Use of this source code is governed by an MIT-style license that can be\n     * found
in the LICENSE file at https://angular.io/license\n     *\n     *\n     * For efficiency reasons we often put several
different data types (`RNode`, `LView`, `LContainer`)\n     * in same location in `LView`. This is because we don't
want to pre-allocate space for it\n     * because the storage is sparse. This file contains utilities for dealing with such
data types.\n     *\n     * How do we know what is stored at a given location in `LView`.\n     * -
`Array.isArray(value) === false` => `RNode` (The normal storage value)\n     * - `Array.isArray(value) === true`
=> then the `value[0]` represents the wrapped value.\n     * - `typeof value[TYPE] === 'object'` => `LView`\n     *
- This happens when we have a component at a given location\n     * - `typeof value[TYPE] === true` =>
`LContainer`\n     * - This happens when we have `LContainer` binding at a given location.\n     *\n     *\n     *
NOTE: it is assumed that `Array.isArray` and `typeof` operations are very efficient.\n     *\n     /**\n     * Returns
`RNode`.\n     * @param value wrapped value of `RNode`, `LView`, `LContainer`\n     *\n     function

```

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unwrapRNode(value) {\n    while (Array.isArray(value)) {\n        value = value[HOST];\n    }\n    return\n    value;\n}\n /**\n * Returns `LView` or `null` if not found.\n * @param value wrapped value of `RNode`,\n `LView`, `LContainer`\n */\n function unwrapLView(value) {\n    while (Array.isArray(value)) {\n        //\n        This check is same as `isLView()` but we don't call at as we don't want to call\n        // `Array.isArray()` twice and\n        give JITer more work for inlining.\n        if (typeof value[TYPE] === 'object')\n            return value;\n        value = value[HOST];\n    }\n    return null;\n}\n /**\n * Returns `LContainer` or `null` if not found.\n * @param value wrapped value of `RNode`, `LView`, `LContainer`\n */\n function unwrapLContainer(value)\n {\n    while (Array.isArray(value)) {\n        // This check is same as `isLContainer()` but we don't call at as we\n        don't want to call\n        // `Array.isArray()` twice and give JITer more work for inlining.\n        if (value[TYPE]\n        === true)\n            return value;\n        value = value[HOST];\n    }\n    return null;\n}\n /**\n * Retrieves an element value from the provided `viewData`, by unwrapping\n * from any containers, component\n views, or style contexts.\n */\n function getNativeByIndex(index, IView) {\n    ngDevMode &&\n    assertIndexInRange(IView, index);\n    ngDevMode && assertGreaterThanOrEqual(index, HEADER_OFFSET,\n    'Expected to be past HEADER_OFFSET');\n    return unwrapRNode(IView[index]);\n}\n /**\n * Retrieve\n an `RNode` for a given `TNode` and `LView`.\n * This function guarantees in dev mode to retrieve a non-\n null `RNode`.\n * @param tNode\n * @param IView\n */\n function getNativeByTNode(tNode,\n IView) {\n    ngDevMode && assertTNodeForLView(tNode, IView);\n    ngDevMode &&\n    assertIndexInRange(IView, tNode.index);\n    var node = unwrapRNode(IView[tNode.index]);\n    ngDevMode\n    && !isProceduralRenderer(IView[RENDERER]) && assertDomNode(node);\n    return node;\n}\n /**\n * Retrieve an `RNode` or `null` for a given `TNode` and `LView`.\n * Some `TNode`s don't have associated\n `RNode`s. For example `Projection`\n * @param tNode\n * @param IView\n */\n function\n getNativeByTNodeOrNull(tNode, IView) {\n    var index = tNode === null ? -1 : tNode.index;\n    if (index\n    !== -1) {\n        ngDevMode && assertTNodeForLView(tNode, IView);\n        var node =\n        unwrapRNode(IView[index]);\n        ngDevMode && node !== null &&\n        !isProceduralRenderer(IView[RENDERER]) && assertDomNode(node);\n        return node;\n    }\n    return\n    null;\n}\n // fixme(misko): The return Type should be `TNode|null`\n function getTNode(tView, index) {\n    ngDevMode && assertGreaterThanOrEqual(index, -1, 'wrong index for TNode');\n    ngDevMode &&\n    assertLessThan(index, tView.data.length, 'wrong index for TNode');\n    var tNode = tView.data[index];\n    ngDevMode && tNode !== null && assertTNode(tNode);\n    return tNode;\n}\n /** Retrieves a value from\n any `LView` or `TData`.\n */\n function load(view, index) {\n    ngDevMode && assertIndexInRange(view,\n    index);\n    return view[index];\n}\n function GetComponentLViewByIndex(nodeIndex, hostView) {\n    //\n    Could be an LView or an LContainer. If LContainer, unwrap to find LView.\n    ngDevMode &&\n    assertIndexInRange(hostView, nodeIndex);\n    var slotValue = hostView[nodeIndex];\n    var IView =\n    isLView(slotValue) ? slotValue : slotValue[HOST];\n    return IView;\n}\n /**\n * Returns the monkey-\n patch value data present on the target (which could be\n * a component, directive or a DOM node).\n * @param\n target\n */\n function readPatchedData(target) {\n    ngDevMode && assertDefined(target, 'Target expected');\n    return\n    target[MONKEY_PATCH_KEY_NAME] || null;\n}\n function readPatchedLView(target) {\n    var value =\n    readPatchedData(target);\n    if (value) {\n        return Array.isArray(value) ? value : value.IView;\n    }\n    return\n    null;\n}\n /** Checks whether a given view is in creation mode\n */\n function isCreationMode(view) {\n    return (view[FLAGS] & 4 /* CreationMode */) === 4 /* CreationMode */;\n}\n /**\n * Returns a\n boolean for whether the view is attached to the change detection tree.\n * Note: This determines whether a\n view should be checked, not whether it's inserted\n * into a container. For that, you'll want\n `viewAttachedToContainer` below.\n */\n function viewAttachedToChangeDetector(view) {\n    return\n    (view[FLAGS] & 128 /* Attached */) === 128 /* Attached */;\n}\n /** Returns a boolean for whether the view\n is attached to a container.\n */\n function viewAttachedToContainer(view) {\n    return\n    isLContainer(view[PARENT]);\n}\n function getConstant(consts, index) {\n    if (index === null || index ===\n    undefined)\n        return null;\n    ngDevMode && assertIndexInRange(consts, index);\n    return\n    consts[index];\n}\n /**\n * Resets the pre-order hook flags of the view.\n * @param IView the LView on

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which the flags are reset\n    */\n    function resetPreOrderHookFlags(IView) {\n
IView[PREORDER_HOOK_FLAGS] = 0;\n    }\n    /**\n     * Updates the
`TRANSPLANTED_VIEWS_TO_REFRESH` counter on the `LContainer` as well as the parents\n     * whose\n
* 1. counter goes from 0 to 1, indicating that there is a new child that has a view to refresh\n     * or\n
* 2. counter goes from 1 to 0, indicating there are no more descendant views to refresh\n     */\n    function
updateTransplantedViewCount(IContainer, amount) {\n
IContainer[TRANSPLANTED_VIEWS_TO_REFRESH] += amount;\n        var viewOrContainer = IContainer;\n
        var parent = IContainer[PARENT];\n        while (parent !== null &&\n            ((amount === 1 &&
viewOrContainer[TRANSPLANTED_VIEWS_TO_REFRESH] === 1) ||\n                (amount === -1 &&
viewOrContainer[TRANSPLANTED_VIEWS_TO_REFRESH] === 0))) {\n
parent[TRANSPLANTED_VIEWS_TO_REFRESH] += amount;\n            viewOrContainer = parent;\n
parent = parent[PARENT];\n        }\n    }\n\n    /**\n     * @license\n     * Copyright Google LLC All Rights
Reserved.\n     * Use of this source code is governed by an MIT-style license that can be\n     * found in the
LICENSE file at https://angular.io/license\n     */\n    var instructionState = {\n        IFrame: createLFrame(null),\n
bindingsEnabled: true,\n        isInCheckNoChangesMode: false,\n    }; \n    /**\n     * Returns true if the instruction
state stack is empty.\n     * Intended to be called from tests only (tree shaken otherwise).\n     */\n    function
specOnlyIsInstructionStateEmpty() {\n        return instructionState.IFrame.parent === null;\n    }\n    function
getElementDepthCount() {\n        return instructionState.IFrame.elementDepthCount;\n    }\n    function
increaseElementDepthCount() {\n        instructionState.IFrame.elementDepthCount++;\n    }\n    function
decreaseElementDepthCount() {\n        instructionState.IFrame.elementDepthCount--;\n    }\n    function
getBindingsEnabled() {\n        return instructionState.bindingsEnabled;\n    }\n    /**\n     * Enables directive
matching on elements.\n     * * Example:\n     * ```\n     * <my-comp my-directive>\n     * Should match
component / directive.\n     * </my-comp>\n     * <div ngNonBindable>\n     * <!-- disableBindings() -->\n     *
<my-comp my-directive>\n     * Should not match component / directive because we are in ngNonBindable.\n
     * </my-comp>\n     * <!-- enableBindings() -->\n     * </div>\n     * ```\n     */\n    @codeGenApi\n    function enableBindings() {\n        instructionState.bindingsEnabled = true;\n    }\n    /**\n     * Disables directive
matching on element.\n     * * Example:\n     * ```\n     * <my-comp my-directive>\n     * Should match
component / directive.\n     * </my-comp>\n     * <div ngNonBindable>\n     * <!-- disableBindings() -->\n     *
<my-comp my-directive>\n     * Should not match component / directive because we are in ngNonBindable.\n
     * </my-comp>\n     * <!-- enableBindings() -->\n     * </div>\n     * ```\n     */\n    @codeGenApi\n    function disableBindings() {\n        instructionState.bindingsEnabled = false;\n    }\n    /**\n     * Return the current
`LView`.\n     */\n    function getLView() {\n        return instructionState.IFrame.IView;\n    }\n    /**\n     * Return
the current `TView`.\n     */\n    function getTView() {\n        return instructionState.IFrame.tView;\n    }\n    /**\n     * Restores `contextViewData` to the given OpaqueViewState instance.\n     * Used in conjunction with the
getCurrentView() instruction to save a snapshot\n     * of the current view and restore it when listeners are invoked.
This allows\n     * walking the declaration view tree in listeners to get vars from parent views.\n     */\n    @param
viewToRestore The OpaqueViewState instance to restore.\n     * @codeGenApi\n    function
restoreView(viewToRestore) {\n        instructionState.IFrame.contextLView = viewToRestore;\n    }\n    function
getCurrentTNode() {\n        var currentTNode = getCurrentTNodePlaceholderOk();\n        while (currentTNode !==
null && currentTNode.type === 64 /* Placeholder */) {\n            currentTNode = currentTNode.parent;\n        }\n
        return currentTNode;\n    }\n    function getCurrentTNodePlaceholderOk() {\n        return
instructionState.IFrame.currentTNode;\n    }\n    function getCurrentParentTNode() {\n        var IFrame =
instructionState.IFrame;\n        var currentTNode = IFrame.currentTNode;\n        return IFrame.isParent ?
currentTNode : currentTNode.parent;\n    }\n    function setCurrentTNode(tNode, isParent) {\n        ngDevMode &&
tNode && assertTNodeForTView(tNode, instructionState.IFrame.tView);\n        var IFrame =
instructionState.IFrame;\n        IFrame.currentTNode = tNode;\n        IFrame.isParent = isParent;\n    }\n    function
isCurrentTNodeParent() {\n        return instructionState.IFrame.isParent;\n    }\n    function
setCurrentTNodeAsNotParent() {\n        instructionState.IFrame.isParent = false;\n    }\n    function

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setCurrentTNodeAsParent() {\n    instructionState.IFrame.isParent = true;\n } \n function getContextLView()
{\n    return instructionState.IFrame.contextLView;\n } \n function isInCheckNoChangesMode() {\n    //
TODO(misko): remove this from the LView since it is ngDevMode=true mode only.\n    return
instructionState.isInCheckNoChangesMode;\n } \n function setIsInCheckNoChangesMode(mode) {\n
instructionState.isInCheckNoChangesMode = mode;\n } \n // top level variables should not be exported for
performance reasons (PERF_NOTES.md)\n function getBindingRoot() {\n    var IFrame =
instructionState.IFrame;\n    var index = IFrame.bindingRootIndex;\n    if (index === -1) {\n        index =
IFrame.bindingRootIndex = IFrame.tView.bindingStartIndex;\n    } \n    return index;\n } \n function
getBindingIndex() {\n    return instructionState.IFrame.bindingIndex;\n } \n function setBindingIndex(value)
{\n    return instructionState.IFrame.bindingIndex = value;\n } \n function nextBindingIndex() {\n    return
instructionState.IFrame.bindingIndex++;\n } \n function incrementBindingIndex(count) {\n    var IFrame =
instructionState.IFrame;\n    var index = IFrame.bindingIndex;\n    IFrame.bindingIndex = IFrame.bindingIndex
+ count;\n    return index;\n } \n function isInI18nBlock() {\n    return instructionState.IFrame.inI18n;\n
} \n function setInI18nBlock(isInI18nBlock) {\n    instructionState.IFrame.inI18n = isInI18nBlock;\n } \n
/**\n * Set a new binding root index so that host template functions can execute.\n * \n * Bindings inside the
host template are 0 index. But because we don't know ahead of time\n * how many host bindings we have we
can't pre-compute them. For this reason they are all\n * 0 index and we just shift the root so that they match next
available location in the LView.\n * \n * @param bindingRootIndex Root index for `hostBindings`\n *
@param currentDirectiveIndex `TData[currentDirectiveIndex]` will point to the current directive\n * whose
`hostBindings` are being processed.\n * \n function setBindingRootForHostBindings(bindingRootIndex,
currentDirectiveIndex) {\n    var IFrame = instructionState.IFrame;\n    IFrame.bindingIndex =
IFrame.bindingRootIndex = bindingRootIndex;\n    setCurrentDirectiveIndex(currentDirectiveIndex);\n } \n
/**\n * When host binding is executing this points to the directive index.\n *
`TView.data[getCurrentDirectiveIndex()]` is `DirectiveDef`\n * `LView[getCurrentDirectiveIndex()]` is directive
instance.\n * \n function getCurrentDirectiveIndex() {\n    return
instructionState.IFrame.currentDirectiveIndex;\n } \n /**\n * Sets an index of a directive whose `hostBindings`
are being processed.\n * \n * @param currentDirectiveIndex `TData` index where current directive instance can
be found.\n * \n function setCurrentDirectiveIndex(currentDirectiveIndex) {\n
instructionState.IFrame.currentDirectiveIndex = currentDirectiveIndex;\n } \n /**\n * Retrieve the current
`DirectiveDef` which is active when `hostBindings` instruction is being\n * executed.\n * \n * @param tData
Current `TData` where the `DirectiveDef` will be looked up at.\n * \n function getCurrentDirectiveDef(tData)
{\n    var currentDirectiveIndex = instructionState.IFrame.currentDirectiveIndex;\n    return
currentDirectiveIndex === -1 ? null : tData[currentDirectiveIndex];\n } \n function getCurrentQueryIndex() {\n
return instructionState.IFrame.currentQueryIndex;\n } \n function setCurrentQueryIndex(value) {\n
instructionState.IFrame.currentQueryIndex = value;\n } \n /**\n * Returns a `TNode` of the location where the
current `LView` is declared at.\n * \n * @param IView an `LView` that we want to find parent `TNode` for.\n
*\n function getDeclarationTNode(IView) {\n    var tView = IView[TVIEW];\n    // Return the declaration
parent for embedded views\n    if (tView.type === 2 /* Embedded */) {\n        ngDevMode &&
assertDefined(tView.declTNode, 'Embedded TNodes should have declaration parents.);\n        return
tView.declTNode;\n    } \n    // Components don't have `TView.declTNode` because each instance of
component could be\n    // inserted in different location, hence `TView.declTNode` is meaningless.\n    //
Falling back to `T_HOST` in case we cross component boundary.\n    if (tView.type === 1 /* Component */) {\n
return IView[T_HOST];\n    } \n    // Remaining TNode type is `TViewType.Root` which doesn't have a
parent TNode.\n    return null;\n } \n /**\n * This is a light weight version of the `enterView` which is
needed by the DI system.\n * \n * @param IView `LView` location of the DI context.\n * @param tNode
`TNode` for DI context\n * @param flags DI context flags. if `SkipSelf` flag is set than we walk up the
declaration\n * tree from `tNode` until we find parent declared `TElementNode`.\n * @returns `true` if we
have successfully entered DI associated with `tNode` (or with declared\n * `TNode` if `flags` has `SkipSelf`).
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Failing to enter DI implies that no associated
 * `NodeInjector` can be found and we should instead use
`ModuleInjector`.
 * - If `true` than this call must be followed by `leaveDI`
 * - If `false` than this call
failed and we should NOT call `leaveDI`
 */
function enterDI(IView, tNode, flags) {
    ngDevMode &&
    assertLViewOrUndefined(IView);
    if (flags & exports.InjectFlags.SkipSelf) {
        ngDevMode &&
        assertTNodeForTView(tNode, IView[TVIEW]);
        var parentTNode = tNode;
        var parentLView =
        IView;
        while (true) {
            ngDevMode && assertDefined(parentTNode, 'Parent TNode should be
            defined');
            parentTNode = parentTNode.parent;
            if (parentTNode === null && !(flags &
            exports.InjectFlags.Host)) {
                parentTNode = getDeclarationTNode(parentLView);
                if
                (parentTNode === null)
                    break;
                // In this case, a parent exists and is definitely an
                element. So it will definitely
                // have an existing IView as the declaration view, which is why we can
                assume it's defined.
                ngDevMode && assertDefined(parentLView, 'Parent LView should be
                defined');
                parentLView = parentLView[DECLARATION_VIEW];
                // In Ivy there are
                Comment nodes that correspond to ngIf and NgFor embedded directives
                // We want to skip those and
                look only at Elements and ElementContainers to ensure
                // we're looking at true parent nodes, and not
                content or other types.
                if (parentTNode.type & (2 /* Element */ | 8 /* ElementContainer */) {
                    break;
                }
                else {
                    break;
                }
                if
                (parentTNode === null) {
                    // If we failed to find a parent TNode this means that we should use module
                    injector.
                    return false;
                }
                else {
                    tNode = parentTNode;
                    IView =
                    parentLView;
                }
                ngDevMode && assertTNodeForLView(tNode, IView);
                var IFrame =
                instructionState.IFrame = allocLFrame();
                IFrame.currentTNode = tNode;
                IFrame.IView = IView;
                return true;
            }
            /**
             * Swap the current IView with a new IView.
             * For performance reasons we
            store the IView in the top level of the module.
            * This way we minimize the number of properties to read.
            Whenever a new view
            * is entered we have to store the IView for later, and when the view is
            * exited the
            state has to be restored
            * @param newView New IView to become active
            * @returns the previously
            active IView.
            */
            function enterView(newView) {
                ngDevMode && assertNotEqual(newView[0],
                newView[1], '????');
                ngDevMode && assertLViewOrUndefined(newView);
                var newLFrame =
                allocLFrame();
                if (ngDevMode) {
                    assertEqual(newLFrame.isParent, true, 'Expected clean
                    LFrame');
                    assertEqual(newLFrame.IView, null, 'Expected clean LFrame');
                    assertEqual(newLFrame.tView, null, 'Expected clean LFrame');
                    assertEqual(newLFrame.selectedIndex, -1,
                    'Expected clean LFrame');
                    assertEqual(newLFrame.elementDepthCount, 0, 'Expected clean LFrame');
                    assertEqual(newLFrame.currentDirectiveIndex, -1, 'Expected clean LFrame');
                    assertEqual(newLFrame.currentNamespace, null, 'Expected clean LFrame');
                    assertEqual(newLFrame.bindingRootIndex, -1, 'Expected clean LFrame');
                    assertEqual(newLFrame.currentQueryIndex, 0, 'Expected clean LFrame');
                }
                var tView =
                newView[TVIEW];
                instructionState.IFrame = newLFrame;
                ngDevMode && tView.firstChild &&
                assertTNodeForTView(tView.firstChild, tView);
                newLFrame.currentTNode = tView.firstChild;
                newLFrame.IView = newView;
                newLFrame.tView = tView;
                newLFrame.contextLView = newView;
                newLFrame.bindingIndex = tView.bindingStartIndex;
                newLFrame.inI18n = false;
            }
            /**
             *
            Allocates next free LFrame. This function tries to reuse the `LFrame`s to lower memory pressure.
            */
            function allocLFrame() {
                var currentLFrame = instructionState.IFrame;
                var childLFrame =
                currentLFrame === null ? null : currentLFrame.child;
                var newLFrame = childLFrame === null ?
                createLFrame(currentLFrame) : childLFrame;
                return newLFrame;
            }
            function createLFrame(parent) {
                var IFrame = {
                    currentTNode: null,
                    isParent: true,
                    IView: null,
                    tView:
                    null,
                    selectedIndex: -1,
                    contextLView: null,
                    elementDepthCount: 0,
                    currentNamespace: null,
                    currentDirectiveIndex: -1,
                    bindingRootIndex: -1,
                    bindingIndex: -
                    1,
                    currentQueryIndex: 0,
                    parent: parent,
                    child: null,
                    inI18n: false,
                };
                parent !== null && (parent.child = IFrame); // link the new LFrame for reuse.
                return IFrame;
            }
            /**
             *
            A lightweight version of leave which is used with DI.
            * This function only resets `currentTNode` and

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`LView` as those are the only properties\n
 * used with DI (`enterDI()`).\n
 * NOTE: This function is reexported as `leaveDI`. However `leaveDI` has return type of `void` where\n
 * as `leaveViewLight` has `LFrame`. This is so that `leaveViewLight` can be used in `leaveView`.\n
 * function leaveViewLight() {\n
 var oldLFrame = instructionState.IFrame;\n
 instructionState.IFrame = oldLFrame.parent;\n
 oldLFrame.currentTNode = null;\n
 oldLFrame.IView = null;\n
 return oldLFrame;\n
 }\n
 /**\n
 * This is a lightweight version of the `leaveView` which is needed by the DI system.\n
 * NOTE: this function is an alias so that we can change the type of the function to have `void`\n
 * return type.\n
 * var leaveDI = leaveViewLight;\n
 /**\n
 * Leave the current `LView`\n
 * This pops the `LFrame` with the associated `LView` from the stack.\n
 * IMPORTANT: We must zero out the `LFrame` values here otherwise they will be retained. This is\n
 * because for performance reasons we don't release `LFrame` but rather keep it for next use.\n
 * function leaveView() {\n
 var oldLFrame = leaveViewLight();\n
 oldLFrame.isParent = true;\n
 oldLFrame.tView = null;\n
 oldLFrame.selectedIndex = -1;\n
 oldLFrame.contextLView = null;\n
 oldLFrame.elementDepthCount = 0;\n
 oldLFrame.currentDirectiveIndex = -1;\n
 oldLFrame.currentNamespace = null;\n
 oldLFrame.bindingRootIndex = -1;\n
 oldLFrame.bindingIndex = -1;\n
 oldLFrame.currentQueryIndex = 0;\n
 }\n
 function nextContextImpl(level) {\n
 var contextLView = instructionState.IFrame.contextLView =\n
 walkUpViews(level, instructionState.IFrame.contextLView);\n
 return contextLView[CONTEXT];\n
 }\n
 function walkUpViews(nestingLevel, currentView) {\n
 while (nestingLevel > 0) {\n
 ngDevMode &&\n
 assertDefined(currentView[DECLARATION_VIEW], 'Declaration view should be defined if nesting level is greater than 0.);\n
 currentView = currentView[DECLARATION_VIEW];\n
 nestingLevel--;\n
 }\n
 return currentView;\n
 }\n
 /**\n
 * Gets the currently selected element index.\n
 * Used with { @link property } instruction (and more in the future) to identify the index in the\n
 * current `LView` to act on.\n
 * function getSelectedIndex() {\n
 return instructionState.IFrame.selectedIndex;\n
 }\n
 /**\n
 * Sets the most recent index passed to { @link select}\n
 * Used with { @link property } instruction (and more in the future) to identify the index in the\n
 * current `LView` to act on.\n
 * (Note that if an `exit function` was set earlier (via `setElementExitFn()`) then that will be\n
 * run if and when the provided `index` value is different from the current selected index value.)\n
 * function setSelectedIndex(index) {\n
 ngDevMode && index !== -1 &&\n
 assertGreaterThanOrEqual(index, HEADER_OFFSET, 'Index must be past HEADER_OFFSET (or -1).);\n
 ngDevMode &&\n
 assertLessThan(index, instructionState.IFrame.IView.length, 'Can\\'t set index passed end of LView');\n
 instructionState.IFrame.selectedIndex = index;\n
 }\n
 /**\n
 * Gets the `tNode` that represents currently selected element.\n
 * function getSelectedTNode() {\n
 var IFrame = instructionState.IFrame;\n
 return getTNode(IFrame.tView, IFrame.selectedIndex);\n
 }\n
 /**\n
 * Sets the namespace used to create elements to `http://www.w3.org/2000/svg` in global state.\n
 * @codeGenApi\n
 * function namespaceSVG() {\n
 instructionState.IFrame.currentNamespace = SVG_NAMESPACE;\n
 }\n
 /**\n
 * Sets the namespace used to create elements to `http://www.w3.org/1998/MathML/` in global state.\n
 * @codeGenApi\n
 * function namespaceMathML() {\n
 instructionState.IFrame.currentNamespace = MATH_ML_NAMESPACE;\n
 }\n
 /**\n
 * Sets the namespace used to create elements to `null`, which forces element creation to use\n
 * `createElement` rather than `createElementNS`.\n
 * @codeGenApi\n
 * function namespaceHTML() {\n
 namespaceHTMLInternal();\n
 }\n
 /**\n
 * Sets the namespace used to create elements to `null`, which forces element creation to use\n
 * `createElement` rather than `createElementNS`.\n
 * function namespaceHTMLInternal() {\n
 instructionState.IFrame.currentNamespace = null;\n
 }\n
 function getNamespace() {\n
 return instructionState.IFrame.currentNamespace;\n
 }\n
 /**\n
 * The Trusted Types policy, or null if Trusted Types are not\n
 * enabled/supported, or undefined if the policy has not been created yet.\n
 * var policy;\n
 /**\n
 * Returns the Trusted Types policy, or null if Trusted Types are not\n
 * enabled/supported. The first call to this function will create the policy.\n
 * function getPolicy() {\n
 if (policy === undefined) {\n
 policy = null;\n
 if (_global.trustedTypes) {\n
 try {\n
 policy = _global.trustedTypes.createPolicy('angular', {\n
 createHTML: function (s) { return s; },\n

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createScript: function (s) { return s; },\n
});\n
}\n
catch (_a) {\n
is\n
// already registered, even in report-only mode. Until the API changes,\n
error not to break the applications functionally. In such\n
strings.\n
}\n
}\n
}\n
return policy;\n
}\n
/**\n
 * Unsafely promote a string to a TrustedHTML, falling back to strings when\n
 * Trusted Types are not available.\n
 * @security This is a security-sensitive function; any use of this function\n
 * must go through security review. In particular, it must be assured that the\n
 * provided string will never cause an XSS vulnerability if used in a context\n
 * that will be interpreted as HTML by a browser, e.g. when assigning to\n
 * element.innerHTML.\n
 * ^\n
function trustedHTMLFromString(html) {\n
var _a;\n
return ((_a = getPolicy()) === null || _a === void 0 ? void 0 :\n
_a.createHTML(html)) || html;\n
}\n
/**\n
 * Unsafely promote a string to a TrustedScript, falling back to strings when\n
 * Trusted Types are not available.\n
 * @security In particular, it must be assured that the provided string will\n
 * never cause an XSS vulnerability if used in a context that will be\n
 * interpreted and executed as a script by a browser, e.g. when calling eval.\n
 * ^\n
function trustedScriptFromString(script) {\n
var _a;\n
return ((_a = getPolicy()) === null || _a === void 0 ? void 0 : _a.createScript(script)) || script;\n
}\n
/**\n
 * Unsafely promote a string to a TrustedScriptURL, falling back to strings\n
 * when Trusted Types are not available.\n
 * @security This is a security-sensitive function; any use of this function\n
 * must go through security review. In particular, it must be assured that the\n
 * provided string will never cause an XSS vulnerability if used in a context\n
 * that will cause a browser to load and execute a resource, e.g. when\n
 * assigning to script.src.\n
 * ^\n
function trustedScriptURLFromString(url) {\n
var _a;\n
return ((_a = getPolicy()) === null || _a === void 0 ? void 0 : _a.createScriptURL(url)) || url;\n
}\n
/**\n
 * Unsafely call the Function constructor with the given string arguments. It\n
 * is only available in development mode, and should be stripped out of\n
 * production code.\n
 * @security This is a security-sensitive function; any use of this function\n
 * must go through security review. In particular, it must be assured that it\n
 * is only called from development code, as use in production code can lead to\n
 * XSS vulnerabilities.\n
 * ^\n
function newTrustedFunctionForDev(\n
{\n
var args = [];\n
for (var _i = 0; _i < arguments.length; _i++) {\n
args[_i] = arguments[_i];\n
}\n
if (typeof ngDevMode === 'undefined') {\n
throw new Error('newTrustedFunctionForDev should never be called in production');\n
}\n
if (!_global.trustedTypes) {\n
// In environments that don't support Trusted Types, fall back to the most\n
// straightforward implementation:\n
return new (Function.bind.apply(Function, __spread([void 0], args)))();\n
}\n
// Chrome currently does not support passing TrustedScript to the Function\n
// constructor. The following implements the workaround proposed on the page\n
// below, where the Chromium bug is also referenced:\n
// https://github.com/w3c/webappsec-trusted-types/wiki/Trusted-Types-for-function-constructor\n
var fnArgs = args.slice(0, -1).join(',');\n
var fnBody = args.pop().toString();\n
var body = `(function anonymous(\n + fnArgs + \n) {\n + fnBody + \n\n});\n
// Using eval directly confuses the compiler and prevents this module from\n
// being stripped out of JS binaries even if not used. The global['eval']\n
// indirection fixes that.\n
var fn = _global['eval'](trustedScriptFromString(body));\n
// To completely mimic the behavior of calling `new Function`, two more\n
// things need to happen:\n
// 1. Stringifying the resulting function should return its source code\n
fn.toString = function () { return body; }; \n
// 2. When calling the resulting function, `this` should refer to `global`\n
return fn.bind(_global);\n
// When Trusted Types support in Function constructors is widely available,\n
// the implementation of this function can be simplified to:\n
// return new Function(...args.map(a => trustedScriptFromString(a))); \n
}\n
}\n
/**\n
 * @license\n
 * Copyright Google LLC All Rights Reserved.\n
 * Use of this source code is governed by an MIT-style license that can be\n
 * found in the LICENSE file at https://angular.io/license\n
 * ^\n
var SafeValueImpl = /** @class */ (function () {\n
function SafeValueImpl(changingThisBreaksApplicationSecurity) {\n
this.changingThisBreaksApplicationSecurity = changingThisBreaksApplicationSecurity;\n
}\n
SafeValueImpl.prototype.toString = function () {\n
return `SafeValue must use [property]=binding: \n + this.changingThisBreaksApplicationSecurity + \n\n` (see http://g.co/ng/security#xss)`;\n
};\n
}

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return SafeValueImpl;\n  }());\n  var SafeHtmlImpl = /** @class */ (function (_super) {\n
__extends(SafeHtmlImpl, _super);\n  function SafeHtmlImpl() {\n    return _super !== null &&
__super.apply(this, arguments) || this;\n  }\n  SafeHtmlImpl.prototype.getTypeName = function () {\n
return \"HTML\" /* Html */;\n  };\n  return SafeHtmlImpl;\n }(SafeValueImpl));\n  var SafeStyleImpl =
/** @class */ (function (_super) {\n    __extends(SafeStyleImpl, _super);\n    function SafeStyleImpl() {\n
return _super !== null && __super.apply(this, arguments) || this;\n    }\n
SafeStyleImpl.prototype.getTypeName = function () {\n    return \"Style\" /* Style */;\n    };\n    return
SafeStyleImpl;\n }(SafeValueImpl));\n  var SafeScriptImpl = /** @class */ (function (_super) {\n
__extends(SafeScriptImpl, _super);\n  function SafeScriptImpl() {\n    return _super !== null &&
__super.apply(this, arguments) || this;\n  }\n  SafeScriptImpl.prototype.getTypeName = function () {\n
return \"Script\" /* Script */;\n  };\n  return SafeScriptImpl;\n }(SafeValueImpl));\n  var SafeUrlImpl =
/** @class */ (function (_super) {\n    __extends(SafeUrlImpl, _super);\n    function SafeUrlImpl() {\n
return _super !== null && __super.apply(this, arguments) || this;\n    }\n    SafeUrlImpl.prototype.getTypeName
= function () {\n    return \"URL\" /* Url */;\n    };\n    return SafeUrlImpl;\n }(SafeValueImpl));\n  var
SafeResourceUrlImpl = /** @class */ (function (_super) {\n    __extends(SafeResourceUrlImpl, _super);\n
function SafeResourceUrlImpl() {\n    return _super !== null && __super.apply(this, arguments) || this;\n
}\n    SafeResourceUrlImpl.prototype.getTypeName = function () {\n    return \"ResourceURL\" /*
ResourceUrl */;\n    };\n    return SafeResourceUrlImpl;\n }(SafeValueImpl));\n  function
unwrapSafeValue(value) {\n    return value instanceof SafeValueImpl ?
value.changingThisBreaksApplicationSecurity : value;\n  }\n  function
allowSanitizationBypassAndThrow(value, type) {\n    var actualType = getSanitizationBypassType(value);\n
if (actualType !== null && actualType !== type) {\n    // Allow ResourceURLs in URL contexts, they are
strictly more trusted.\n    if (actualType === \"ResourceURL\" /* ResourceUrl */ && type === \"URL\" /* Url
*/)\n      return true;\n    throw new Error(\"Required a safe \" + type + \", got a \" + actualType + \" (see
http://g.co/ng/security#xss\");\n    }\n    return actualType === type;\n  }\n  function
getSanitizationBypassType(value) {\n    return value instanceof SafeValueImpl && value.getTypeName() ||
null;\n  }\n  /**\n   * Mark `html` string as trusted.\n   * This function wraps the trusted string in `String`
and brands it in a way which makes it recognizable to {@link htmlSanitizer} to be trusted implicitly.\n   *
@param trustedHtml `html` string which needs to be implicitly trusted.\n   * @returns a `html` which has been
branded to be implicitly trusted.\n   */\n  function bypassSanitizationTrustHtml(trustedHtml) {\n    return new
SafeHtmlImpl(trustedHtml);\n  }\n  /**\n   * Mark `style` string as trusted.\n   * This function wraps the
trusted string in `String` and brands it in a way which makes it recognizable to {@link styleSanitizer} to be
trusted implicitly.\n   * @param trustedStyle `style` string which needs to be implicitly trusted.\n   *
@returns a `style` hich has been branded to be implicitly trusted.\n   */\n  function
bypassSanitizationTrustStyle(trustedStyle) {\n    return new SafeStyleImpl(trustedStyle);\n  }\n  /**\n   *
Mark `script` string as trusted.\n   * This function wraps the trusted string in `String` and brands it in a way
which makes it recognizable to {@link scriptSanitizer} to be trusted implicitly.\n   * @param
trustedScript `script` string which needs to be implicitly trusted.\n   * @returns a `script` which has been
branded to be implicitly trusted.\n   */\n  function bypassSanitizationTrustScript(trustedScript) {\n    return new
SafeScriptImpl(trustedScript);\n  }\n  /**\n   * Mark `url` string as trusted.\n   * This function wraps the
trusted string in `String` and brands it in a way which makes it recognizable to {@link urlSanitizer} to be
trusted implicitly.\n   * @param trustedUrl `url` string which needs to be implicitly trusted.\n   * @returns a
`url` which has been branded to be implicitly trusted.\n   */\n  function bypassSanitizationTrustUrl(trustedUrl)
{\n    return new SafeUrlImpl(trustedUrl);\n  }\n  /**\n   * Mark `url` string as trusted.\n   * This
function wraps the trusted string in `String` and brands it in a way which makes it recognizable to {@link
resourceUrlSanitizer} to be trusted implicitly.\n   * @param trustedResourceUrl `url` string which needs to
be implicitly trusted.\n   * @returns a `url` which has been branded to be implicitly trusted.\n   */\n  function
bypassSanitizationTrustResourceUrl(trustedResourceUrl) {\n    return new

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SafeResourceUrlImpl(trustedResourceUrl);\n } \n\n /**\n * @license\n * Copyright Google LLC All Rights Reserved.\n * Use of this source code is governed by an MIT-style license that can be\n * found in the LICENSE file at https://angular.io/license\n */\n\n /**\n * This file is used to control if the default rendering pipeline should be `ViewEngine` or `Ivy`.\n * For more information on how to run and debug tests with either Ivy or View Engine (legacy),\n * please see [BAZEL.md](./docs/BAZEL.md).\n */\n\n var _devMode = true;\n var _runModeLocked = false;\n /**\n * Returns whether Angular is in development mode. After called once,\n * the value is locked and won't change any more.\n * By default, this is true, unless a user calls `enableProdMode` before calling this.\n */\n\n @publicApi\n function isDevMode() {\n _runModeLocked = true;\n return _devMode;\n }\n\n /**\n * Disable Angular's development mode, which turns off assertions and other\n * checks within the framework.\n * One important assertion this disables verifies that a change detection pass\n * does not result in additional changes to any bindings (also known as\n * unidirectional data flow).\n */\n\n @publicApi\n function enableProdMode() {\n if (_runModeLocked) {\n throw new Error('Cannot enable prod mode after platform setup.);\n }\n _devMode = false;\n }\n\n /**\n * @license\n * Copyright Google LLC All Rights Reserved.\n * Use of this source code is governed by an MIT-style license that can be\n * found in the LICENSE file at https://angular.io/license\n */\n\n /**\n * This helper is used to get hold of an inert tree of DOM elements containing dirty HTML\n * that needs sanitizing.\n * Depending upon browser support we use one of two strategies for doing this.\n * Default: DOMParser strategy\n * Fallback: InertDocument strategy\n */\n\n function getInertBodyHelper(defaultDoc) {\n return isDOMParserAvailable() ? new DOMParserHelper() : new InertDocumentHelper(defaultDoc);\n }\n\n /**\n * Uses DOMParser to create and fill an inert body element.\n * This is the default strategy used in browsers that support it.\n */\n\n var DOMParserHelper = /** @class */ (function () {\n function DOMParserHelper() {\n }\n\n DOMParserHelper.prototype.getInertBodyElement = function (html) {\n // We add these extra elements to ensure that the rest of the content is parsed as expected\n // e.g. leading whitespace is maintained and tags like `` do not get hoisted to the\n // `` tag. Note that the `` tag is closed implicitly to prevent unclosed tags\n // in `html` from consuming the otherwise explicit `</body>` tag.\n html = '<body><remove></remove>' + html;\n try {\n var body = new window.DOMParser().body;\n .parseFromString(trustedHTMLFromString(html), 'text/html')\n .body;\n body.removeChild(body.firstChild);\n return body;\n } catch (_a) {\n return null;\n }\n }; \n return DOMParserHelper;\n }());\n\n /**\n * Use an HTML5 `template` element, if supported, or an inert body element created via\n * `createHTMLDocument` to create and fill an inert DOM element.\n * This is the fallback strategy if the browser does not support DOMParser.\n */\n\n var InertDocumentHelper = /** @class */ (function () {\n function InertDocumentHelper(defaultDoc) {\n this.defaultDoc = defaultDoc;\n this.inertDocument = this.defaultDoc.implementation.createHTMLDocument('sanitization-inert');\n if (this.inertDocument.body == null) {\n // usually there should be only one body element in the document, but IE doesn't have any, so\n // we need to create one.\n var inertHtml = this.inertDocument.createElement('html');\n this.inertDocument.appendChild(inertHtml);\n var inertBodyElement = this.inertDocument.createElement('body');\n inertHtml.appendChild(inertBodyElement);\n }\n\n InertDocumentHelper.prototype.getInertBodyElement = function (html) {\n // Prefer using <template> element if supported.\n var templateEl = this.inertDocument.createElement('template');\n if ('content' in templateEl) {\n templateEl.innerHTML = trustedHTMLFromString(html);\n return templateEl;\n }\n\n // Note that previously we used to do something like `this.inertDocument.body.innerHTML = html`\n // and we returned the inert `body` node. This was changed, because IE seems to treat setting\n // `innerHTML` on an inserted element differently, compared to one that hasn't been inserted\n // yet. In particular, IE appears to split some of the text into multiple text nodes rather\n // than keeping them in a single one which ends up messing with Ivy's i18n parsing further\n // down the line. This has been worked around by creating a new inert `body` and using it as\n // the root node in

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which we insert the HTML.\n      var inertBody = this.inertDocument.createElement('body');\n
inertBody.innerHTML = trustedHTMLFromString(html);\n      // Support: IE 11 only\n      // strip custom-
namespaced attributes on IE<=11\n      if (this.defaultDoc.documentMode) {\n
this.stripCustomNsAttrs(inertBody);\n      }\n      return inertBody;\n    };\n    /**\n     * When IE11
comes across an unknown namespaced attribute e.g. 'xlink:foo' it adds 'xmlns:ns1'\n     * attribute to declare ns1
namespace and prefixes the attribute with 'ns1' (e.g.\n     * 'ns1:xlink:foo').\n     * This is undesirable
since we don't want to allow any of these custom attributes. This method\n     * strips them all.\n     */\n
InertDocumentHelper.prototype.stripCustomNsAttrs = function (el) {\n      var elAttrs = el.attributes;\n      //
loop backwards so that we can support removals.\n      for (var i = elAttrs.length - 1; 0 < i; i--) {\n        var
attrib = elAttrs.item(i);\n        var attrName = attrib.name;\n        if (attrName === 'xmlns:ns1' ||
attrName.indexOf('ns1:') === 0) {\n          el.removeAttribute(attrName);\n        }\n      }\n      var
childNode = el.firstChild;\n      while (childNode) {\n        if (childNode.nodeType ===
Node.ELEMENT_NODE)\n          this.stripCustomNsAttrs(childNode);\n        childNode =
childNode.nextSibling;\n      }\n    };\n    return InertDocumentHelper;\n  }());\n  /**\n   * We need to
determine whether the DOMParser exists in the global context and\n   * supports parsing HTML; HTML parsing
support is not as wide as other formats, see\n   * https://developer.mozilla.org/en-
US/docs/Web/API/DOMParser#Browser_compatibility.\n   * @suppress {uselessCode}\n   */\n  function
isDOMParserAvailable() {\n    try {\n      return !!new
window.DOMParser().parseFromString(trustedHTMLFromString(""), 'text/html');\n    } catch (_a) {\n
return false;\n    }\n  }\n  /**\n   * @license\n   * Copyright Google LLC All Rights Reserved.\n   *
Use of this source code is governed by an MIT-style license that can be\n   * found in the LICENSE file at
https://angular.io/license\n   */\n  /**\n   * A pattern that recognizes a commonly useful subset of URLs that are
safe.\n   * This regular expression matches a subset of URLs that will not cause script\n   * execution if
used in URL context within a HTML document. Specifically, this\n   * regular expression matches if (comment
from here on and regex copied from\n   * Soy's EscapingConventions):\n   * (1) Either an allowed protocol (http,
https, mailto or ftp).\n   * (2) or no protocol. A protocol must be followed by a colon. The below\n   * allows
that by allowing colons only after one of the characters [/?#].\n   * A colon after a hash (#) must be in the
fragment.\n   * Otherwise, a colon after a (?) must be in a query.\n   * Otherwise, a colon after a single
solidus (/) must be in a path.\n   * Otherwise, a colon after a double solidus (//) must be in the authority\n   *
(before port).\n   * The pattern disallows &, used in HTML entity declarations before\n   * one of the
characters in [/?#]. This disallows HTML entities used in the\n   * protocol name, which should never happen, e.g.
\"h&#116;tp\" for \"http\".\n   * It also disallows HTML entities in the first path part of a relative path,\n   * e.g.
\"foo&lt;bar/baz\". Our existing escaping functions should not produce\n   * that. More importantly, it disallows
masking of a colon,\n   * e.g. \"javascript&#58;...\".\n   * This regular expression was taken from the
Closure sanitization library.\n   */\n  var SAFE_URL_PATTERN =
/^(?:(?:https?|mailto|ftp|tel|file|sms):|[^&:/?#]*(?:[/?#]|$))/gi;\n  /** A pattern that matches safe srcset values */\n
var SAFE_SRCSET_PATTERN = /^(?:(?:https?|file):|[^&:/?#]*(?:[/?#]|$))/gi;\n  /** A pattern that matches safe
data URLs. Only matches image, video and audio types. */\n  var DATA_URL_PATTERN =
/^(data:(?:image|(?:(?:bmp|gif|jpeg|jpg|png|tiff|webp)|video|(?:(?:mpeg|mp4|ogg|webm)|audio|(?:(?:mp3|oga|ogg|opus)|
ase64,[a-z0-9+\\|]+=*$/i));\n  function _sanitizeUrl(url) {\n    url = String(url);\n    if
(url.match(SAFE_URL_PATTERN) || url.match(DATA_URL_PATTERN))\n      return url;\n    if
(isDevMode()) {\n      console.warn(\"WARNING: sanitizing unsafe URL value '\" + url + '\" (see
http://g.co/ng/security#xss)\");\n    }\n    return 'unsafe:' + url;\n  }\n  function sanitizeSrcset(srcset) {\n
srcset = String(srcset);\n    return srcset.split(',').map(function (srcset) { return _sanitizeUrl(srcset.trim()); }).join(',');\n  }\n  function tagSet(tags) {\n    var e_1, _a;\n    var res = {};\n    try {\n      for (var _b =
__values(tags.split(',')), _c = _b.next(); !_c.done; _c = _b.next()) {\n        var t = _c.value;\n        res[t] =
true;\n      }\n    } catch (e_1_1) { e_1 = { error: e_1_1 }; }\n    finally {\n      try {\n        if
(_c && !_c.done && (_a = _b.return)) _a.call(_b);\n      } finally { if (e_1) throw e_1.error; }\n    }\n  }

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return res;\n  }\n  function merge() {\n    var e_2, _a;\n    var sets = [];\n    for (var _i = 0; _i <
arguments.length; _i++) {\n      sets[_i] = arguments[_i];\n    }\n    var res = {};\n    try {\n      for (var
sets_1 = __values(sets), sets_1_1 = sets_1.next(); !sets_1_1.done; sets_1_1 = sets_1.next()) {\n        var s =
sets_1_1.value;\n        for (var v in s) {\n          if (s.hasOwnProperty(v))\n            res[v] = true;\n        }\n      }\n    } catch (e_2_1) { e_2 = { error: e_2_1 }; }\n    finally {\n      try {\n
if (sets_1_1 && !sets_1_1.done && (_a = sets_1.return)) _a.call(sets_1);\n      }\n    } finally { if (e_2) throw
e_2.error; }\n  }\n  return res;\n  }\n  // Good source of info about elements and attributes\n  //
http://dev.w3.org/html5/spec/Overview.html#semantics\n  // http://simon.html5.org/html-elements\n  // Safe Void
Elements - HTML5\n  // http://dev.w3.org/html5/spec/Overview.html#void-elements\n  var VOID_ELEMENTS
= tagSet('area,br,col,hr,img,wbr');\n  // Elements that you can, intentionally, leave open (and which close
themselves)\n  // http://dev.w3.org/html5/spec/Overview.html#optional-tags\n  var
OPTIONAL_END_TAG_BLOCK_ELEMENTS = tagSet('colgroup,dd,dt,li,p,tbody,td,tfoot,th,thead,tr');\n  var
OPTIONAL_END_TAG_INLINE_ELEMENTS = tagSet('rp,rt');\n  var OPTIONAL_END_TAG_ELEMENTS =
merge(OPTIONAL_END_TAG_INLINE_ELEMENTS, OPTIONAL_END_TAG_BLOCK_ELEMENTS);\n  //
Safe Block Elements - HTML5\n  var BLOCK_ELEMENTS =
merge(OPTIONAL_END_TAG_BLOCK_ELEMENTS, tagSet('address,article,' +\n
'aside,blockquote,caption,center,del,details,dialog,dir,div,dl,figure,figcaption,footer,h1,h2,h3,h4,h5,' +\n
'h6,header,hgroup,hr,ins,main,map,menu,nav,ol,pre,section,summary,table,ul'));\n  // Inline Elements - HTML5\n
var INLINE_ELEMENTS = merge(OPTIONAL_END_TAG_INLINE_ELEMENTS,
tagSet('a,abbr,acronym,audio,b,' +\n
'bdi,bdo,big,br,cite,code,del,dfn,em,font,i,img,ins,kbd,label,map,mark,picture,q,ruby,rp,rt,s,' +\n
'samp,small,source,span,strike,strong,sub,sup,time,track,tt,u,var,video'));\n  var VALID_ELEMENTS =
merge(VOID_ELEMENTS, BLOCK_ELEMENTS, INLINE_ELEMENTS,
OPTIONAL_END_TAG_ELEMENTS);\n  // Attributes that have href and hence need to be sanitized\n  var
URI_ATTRS = tagSet('background,cite,href,itemtype,longdesc,poster,src,xlink:href');\n  // Attributes that have
special href set hence need to be sanitized\n  var SRCSET_ATTRS = tagSet('srcset');\n  var HTML_ATTRS =
tagSet('abbr,accesskey,align,alt,autoplay,axis,bgcolor,border,cellpadding,cellspacing,class,clear,color,cols,colspan,'
+\n
'compact,controls,coords,datetime,default,dir,download,face,headers,height,hidden,hreflang,hspace,' +\n
'ismap,itemscope,itemprop,kind,label,lang,language,loop,media,muted,nohref,nowrap,open,preload,rel,rev,role,rows
,rowspan,rules,' +\n
'scope,scrolling,shape,size,sizes,span,srclang,start,summary,tabindex,target,title,translate,type,usemap,' +\n
'valign,value,vspace,width');\n  // Accessibility attributes as per WAI-ARIA 1.1 (W3C Working Draft 14 December
2018)\n  var ARIA_ATTRS = tagSet('aria-activedescendant,aria-atomic,aria-autocomplete,aria-busy,aria-
checked,aria-colcount,aria-colindex,' +\n
'aria-colspan,aria-controls,aria-current,aria-describedby,aria-
details,aria-disabled,aria-dropeffect,' +\n
'aria-errormessage,aria-expanded,aria-flowto,aria-grabbed,aria-
haspopup,aria-hidden,aria-invalid,' +\n
'aria-keyshortcuts,aria-label,aria-labelledby,aria-level,aria-live,aria-
modal,aria-multiline,' +\n
'aria-multiselectable,aria-orientation,aria-owns,aria-placeholder,aria-posinset,aria-
pressed,aria-readonly,' +\n
'aria-relevant,aria-required,aria-roledescription,aria-rowcount,aria-rowindex,aria-
rowspan,aria-selected,' +\n
'aria-setsize,aria-sort,aria-valuemax,aria-valuemin,aria-valuenow,aria-valuetext');\n
// NB: This currently consciously doesn't support SVG. SVG sanitization has had several security\n  // issues in the
past, so it seems safer to leave it out if possible. If support for binding SVG via\n  // innerHTML is required, SVG
attributes should be added here.\n  // NB: Sanitization does not allow <form> elements or other active elements
(<button> etc). Those\n  // can be sanitized, but they increase security surface area without a legitimate use case, so
they\n  // are left out here.\n  var VALID_ATTRS = merge(URI_ATTRS, SRCSET_ATTRS, HTML_ATTRS,
ARIA_ATTRS);\n  // Elements whose content should not be traversed/preserved, if the elements themselves are
invalid.\n  // Typically, <invalid>Some content</invalid> would traverse (and in this case preserve)\n  //
`Some content`, but strip `invalid-element` opening/closing tags. For some elements, though, we\n  // don't want to
preserve the content, if the elements themselves are going to be removed.\n  var

```

```

SKIP_TRAVERSING_CONTENT_IF_INVALID_ELEMENTS = tagSet('script,style,template');\n /**\n *
SanitizingHtmlSerializer serializes a DOM fragment, stripping out any unsafe elements and unsafe\n *
attributes.\n *\n var SanitizingHtmlSerializer = /** @class */ (function () {\n function
SanitizingHtmlSerializer()\n // Explicitly track if something was stripped, to avoid accidentally warning of
sanitization just\n // because characters were re-encoded.\n this.sanitizedSomething = false;\n
this.buf = [];\n }\n SanitizingHtmlSerializer.prototype.sanitizeChildren = function (el) {\n // This
cannot use a TreeWalker, as it has to run on Angular's various DOM adapters.\n // However this code never
accesses properties off of `document` before deleting its contents\n // again, so it shouldn't be vulnerable to
DOM clobbering.\n var current = el.firstChild;\n var traverseContent = true;\n while (current)
{\n if (current.nodeType === Node.ELEMENT_NODE) {\n traverseContent =
this.startElement(current);\n }\n else if (current.nodeType === Node.TEXT_NODE) {\n
this.chars(current.nodeValue);\n }\n else {\n // Strip non-element, non-text nodes.\n
this.sanitizedSomething = true;\n }\n if (traverseContent && current.firstChild) {\n
current = current.firstChild;\n continue;\n }\n while (current) {\n //
Leaving the element. Walk up and to the right, closing tags as we go.\n if (current.nodeType ===
Node.ELEMENT_NODE) {\n this.endElement(current);\n }\n var next =
this.checkClobberedElement(current, current.nextSibling);\n if (next) {\n current = next;\n
break;\n }\n current = this.checkClobberedElement(current,
current.parentNode);\n }\n }\n return this.buf.join(");\n });\n /**\n * Sanitizes an
opening element tag (if valid) and returns whether the element's contents should\n * be traversed. Element
content must always be traversed (even if the element itself is not\n * valid/safe), unless the element is one of
`SKIP_TRAVERSING_CONTENT_IF_INVALID_ELEMENTS`.\n *\n * @param element The element
to sanitize.\n *\n * @return True if the element's contents should be traversed.\n *\n
SanitizingHtmlSerializer.prototype.startElement = function (element) {\n var tagName =
element.nodeName.toLowerCase();\n if (!VALID_ELEMENTS.hasOwnProperty(tagName)) {\n
this.sanitizedSomething = true;\n return
!SKIP_TRAVERSING_CONTENT_IF_INVALID_ELEMENTS.hasOwnProperty(tagName);\n }\n
this.buf.push('<');\n this.buf.push(tagName);\n var elAttrs = element.attributes;\n for (var i = 0; i
< elAttrs.length; i++) {\n var elAttr = elAttrs.item(i);\n var attrName = elAttr.name;\n
var lower = attrName.toLowerCase();\n if (!VALID_ATTRS.hasOwnProperty(lower)) {\n
this.sanitizedSomething = true;\n continue;\n }\n var value = elAttr.value;\n
// TODO(martinprobst): Special case image URIs for data:image/...\n if (URI_ATTRS[lower])\n
value = _sanitizeUrl(value);\n if (SRCSET_ATTRS[lower])\n value = sanitizeSrcset(value);\n
this.buf.push(' ', attrName, '=\n', encodeEntities(value), '\n');\n }\n this.buf.push('>');\n
return true;\n });\n SanitizingHtmlSerializer.prototype.endElement = function (current) {\n var
tagName = current.nodeName.toLowerCase();\n if (VALID_ELEMENTS.hasOwnProperty(tagName) &&
!VOID_ELEMENTS.hasOwnProperty(tagName)) {\n this.buf.push('<');\n
this.buf.push(tagName);\n this.buf.push('>');\n }\n });\n
SanitizingHtmlSerializer.prototype.chars = function (chars) {\n this.buf.push(encodeEntities(chars));\n
};\n SanitizingHtmlSerializer.prototype.checkClobberedElement = function (node, nextNode) {\n if
(nextNode &&\n (node.compareDocumentPosition(nextNode) &\n
Node.DOCUMENT_POSITION_CONTAINED_BY) === Node.DOCUMENT_POSITION_CONTAINED_BY)
{\n throw new Error("Failed to sanitize html because the element is clobbered: \n" + node.outerHTML);\n
}\n return nextNode;\n });\n return SanitizingHtmlSerializer;\n }());\n // Regular Expressions
for parsing tags and attributes\n var SURROGATE_PAIR_REGEXP = /[\\uD800-\\uDBFF][\\uDC00-
\\uDFFF]/g;\n // ! to ~ is the ASCII range.\n var NON_ALPHANUMERIC_REGEXP = /([^\n#~ |!])/g;\n /**\n *
Escapes all potentially dangerous characters, so that the\n * resulting string can be safely inserted into
attribute or\n * element text.\n *\n * @param value\n *\n function encodeEntities(value) {\n return

```

```

value.replace(/&/g, '&#x26;');\n      .replace(SURROGATE_PAIR_REGEXP, function (match) {\n        var hi =
match.charCodeAt(0);\n        var low = match.charCodeAt(1);\n        return '&#x' + (((hi - 0xD800) * 0x400) +
(low - 0xDC00) + 0x10000) + ';';\n      })\n      .replace(NON_ALPHANUMERIC_REGEXP, function (match)
{\n        return '&#x' + match.charCodeAt(0) + ';';\n      })\n      .replace(/</g, '&lt;');\n      .replace(/>/g,
'&gt;');\n    }\n    var inertBodyHelper;\n    /**\n     * Sanitizes the given unsafe, untrusted HTML fragment, and
returns HTML text that is safe to add to\n     * the DOM in a browser environment.\n     */\n    function
_sanitizeHtml(defaultDoc, unsafeHtmlInput) {\n      var inertBodyElement = null;\n      try {\n
inertBodyHelper = inertBodyHelper || getInertBodyHelper(defaultDoc);\n        // Make sure unsafeHtml is
actually a string (TypeScript types are not enforced at runtime).\n        var unsafeHtml = unsafeHtmlInput ?
String(unsafeHtmlInput) : '';\n        inertBodyElement = inertBodyHelper.getInertBodyElement(unsafeHtml);\n
// mXSS protection. Repeatedly parse the document to make sure it stabilizes, so that a browser\n        // trying
to auto-correct incorrect HTML cannot cause formerly inert HTML to become dangerous.\n        var
mXSSAttempts = 5;\n        var parsedHtml = unsafeHtml;\n        do {\n          if (mXSSAttempts === 0) {\n
throw new Error('Failed to sanitize html because the input is unstable');\n          }\n
mXSSAttempts--;\n          unsafeHtml = parsedHtml;\n          parsedHtml = inertBodyElement.innerHTML;\n
inertBodyElement = inertBodyHelper.getInertBodyElement(unsafeHtml);\n        } while (unsafeHtml !==
parsedHtml);\n        var sanitizer = new SanitizingHtmlSerializer();\n        var safeHtml =
sanitizer.sanitizeChildren(getTemplateContent(inertBodyElement) || inertBodyElement);\n        if (isDevMode()
&& sanitizer.sanitizedSomething) {\n          console.warn('WARNING: sanitizing HTML stripped some content,
see http://g.co/ng/security#xss');\n        }\n        return safeHtml;\n      }\n      finally {\n        // In case
anything goes wrong, clear out inertElement to reset the entire DOM structure.\n        if (inertBodyElement) {\n
var parent = getTemplateContent(inertBodyElement) || inertBodyElement;\n          while (parent.firstChild)
{\n            parent.removeChild(parent.firstChild);\n          }\n        }\n      }\n    }\n    function
getTemplateContent(el) {\n      return 'content' in el /** Microsoft/TypeScript#21517 */ && isTemplateElement(el)
?\n      el.content : \n      null;\n    }\n    function isTemplateElement(el) {\n      return el.nodeType ===
Node.ELEMENT_NODE && el.nodeName === 'TEMPLATE';\n    }\n\n    /**\n     * @license\n     * Copyright
Google LLC All Rights Reserved.\n     * Use of this source code is governed by an MIT-style license that can
be\n     * found in the LICENSE file at https://angular.io/license\n     */\n    (function (SecurityContext) {\n
SecurityContext[SecurityContext["NONE"] = 0] = "NONE";\n      SecurityContext[SecurityContext["HTML"]
= 1] = "HTML";\n      SecurityContext[SecurityContext["STYLE"] = 2] = "STYLE";\n
SecurityContext[SecurityContext["SCRIPT"] = 3] = "SCRIPT";\n
SecurityContext[SecurityContext["URL"] = 4] = "URL";\n
SecurityContext[SecurityContext["RESOURCE_URL"] = 5] = "RESOURCE_URL";\n
})(exports.SecurityContext || (exports.SecurityContext = {}));\n\n    /**\n     * @license\n     * Copyright Google
LLC All Rights Reserved.\n     * Use of this source code is governed by an MIT-style license that can be\n
* found in the LICENSE file at https://angular.io/license\n     */\n\n    /**\n     * An `html` sanitizer which converts
untrusted `html` **string** into trusted string by removing\n     * dangerous content.\n     * This method
parses the `html` and locates potentially dangerous content (such as urls and\n     * javascript) and removes it.\n
*\n     * It is possible to mark a string as trusted by calling { @link bypassSanitizationTrustHtml }.\n     *
*\n     * @param unsafeHtml untrusted `html`, typically from the user.\n     * @returns `html` string which is safe to display
to user, because all of the dangerous javascript\n     * and urls have been removed.\n     * @codeGenApi\n
*/\n    function sanitizeHtml(unsafeHtml) {\n      var sanitizer = getSanitizer();\n      if (sanitizer) {\n        return
sanitizer.sanitize(exports.SecurityContext.HTML, unsafeHtml) || '';\n      }\n      if
(allowSanitizationBypassAndThrow(unsafeHtml, 'HTML' /* Html */)) {\n        return
unwrapSafeValue(unsafeHtml);\n      }\n      return _sanitizeHtml(getDocument(), renderStringify(unsafeHtml));\n
}\n\n    /**\n     * A `style` sanitizer which converts untrusted `style` **string** into trusted string by removing\n
* dangerous content.\n     * It is possible to mark a string as trusted by calling { @link
bypassSanitizationTrustStyle }.\n     * @param unsafeStyle untrusted `style`, typically from the user.\n     *

```

```

@returns `style` string which is safe to bind to the `style` properties.
 *
 * @codeGenApi
 */
function
sanitizeStyle(unsafeStyle) {
    var sanitizer = getSanitizer();
    if (sanitizer) {
        return
        sanitizer.sanitize(exports.SecurityContext.STYLE, unsafeStyle) || ";
    }
    if
    (allowSanitizationBypassAndThrow(unsafeStyle, `Style` /* Style */) {
        return
        unwrapSafeValue(unsafeStyle);
    }
    return renderStringify(unsafeStyle);
}
/**
 * A `url`
 * sanitizer which converts untrusted `url` strings into trusted string by removing
 * dangerous content.
 *
 * This method parses the `url` and locates potentially dangerous content (such as javascript) and
 * removes it.
 *
 * It is possible to mark a string as trusted by calling {@link bypassSanitizationTrustUrl}.
 *
 * @param unsafeUrl untrusted `url`, typically from the user.
 * @returns `url` string which is safe to bind
 * to the `src` properties such as ``, because
 * all of the dangerous javascript has been removed.
 *
 * @codeGenApi
 */
function sanitizeUrl(unsafeUrl) {
    var sanitizer = getSanitizer();
    if
    (sanitizer) {
        return sanitizer.sanitize(exports.SecurityContext.URL, unsafeUrl) || ";
    }
    if
    (allowSanitizationBypassAndThrow(unsafeUrl, `URL` /* Url */) {
        return
        unwrapSafeValue(unsafeUrl);
    }
    return _sanitizeUrl(renderStringify(unsafeUrl));
}
/**
 * A
 * `url` sanitizer which only lets trusted `url`s through.
 *
 * This passes only `url`s marked trusted by calling
 * {@link bypassSanitizationTrustResourceUrl}.
 *
 * @param unsafeResourceUrl untrusted `url`, typically
 * from the user.
 * @returns `url` string which is safe to bind to the `src` properties such as ``, because
 * only trusted `url`s have been allowed to pass.
 *
 * @codeGenApi
 */
function
sanitizeResourceUrl(unsafeResourceUrl) {
    var sanitizer = getSanitizer();
    if (sanitizer) {
        return
        sanitizer.sanitize(exports.SecurityContext.RESOURCE_URL, unsafeResourceUrl) || ";
    }
    if
    (allowSanitizationBypassAndThrow(unsafeResourceUrl, `ResourceURL` /* ResourceUrl */) {
        return
        unwrapSafeValue(unsafeResourceUrl);
    }
    throw new Error('unsafe value used in a resource URL
    context (see http://g.co/ng/security#xss)');
}
/**
 * A `script` sanitizer which only lets trusted javascript
 * through.
 *
 * This passes only `script`s marked trusted by calling {@link
 * bypassSanitizationTrustScript}.
 *
 * @param unsafeScript untrusted `script`, typically from the user.
 * @returns `url` string which is safe to bind to the `
```

```

schema, use URL sanitizer.\n
 *^\n
function getUrlSanitizer(tag, prop) {\n
  if ((prop === 'src' &&\n
(tag === 'embed' || tag === 'frame' || tag === 'iframe' || tag === 'media' ||\n
tag === 'script')) ||\n
(prop === 'href' && (tag === 'base' || tag === 'link'))) {\n
  return sanitizeResourceUrl;\n
}\n
return\n
sanitizeUrl;\n
}\n
/**\n
 * Sanitizes URL, selecting sanitizer function based on tag and property names.\n
*\n
 * This function is used in case we can't define security context at compile time, when only prop\n
 * name is available. This happens when we generate host bindings for Directives/Components. The\n
 * host element is unknown at compile time, so we defer calculation of specific sanitizer to\n
 * runtime.\n
 * @param\n
unsafeUrl untrusted `url`, typically from the user.\n
 * @param tag target element tag name.\n
 * @param prop\n
name of the property that contains the value.\n
 * @returns `url` string which is safe to bind.\n
 * \n
 * @codeGenApi\n
 *^\n
function sanitizeUrlOrResourceUrl(unsafeUrl, tag, prop) {\n
  return\n
getUrlSanitizer(tag, prop)(unsafeUrl);\n
}\n
function validateAgainstEventProperties(name) {\n
  if\n
(name.toLowerCase().startsWith('on')) {\n
    var msg = "Binding to event property \"" + name + "\" is\n
disallowed for security reasons, \" +\n
(\\\"please use (\\\" + name.slice(2) + \\\")=...\\\") +\n
(\\\"\\nIf \\\" +\n
name + \\\" is a directive input, make sure the directive is imported by the\\\") +\n
\\\" current module.\\\";\n
    throw new Error(msg);\n
  }\n
}\n
function validateAgainstEventAttributes(name) {\n
  if\n
(name.toLowerCase().startsWith('on')) {\n
    var msg = "Binding to event attribute \"" + name + "\" is\n
disallowed for security reasons, \" +\n
(\\\"please use (\\\" + name.slice(2) + \\\")=...\\\");\n
    throw new\n
Error(msg);\n
  }\n
}\n
function getSanitizer() {\n
  var IView = getLView();\n
  return IView &&\n
IView[\"SANITIZER\"];\n
}\n
/**\n
 * @license\n
 * Copyright Google LLC All Rights Reserved.\n
 * \n
 * Use of this source code is governed by an MIT-style license that can be\n
 * found in the LICENSE file at\n
https://angular.io/license\n
 *^\n
function getFactoryDef(type, throwNotFound) {\n
  var hasFactoryDef =\n
type.hasOwnProperty(NG_FACTORY_DEF);\n
  if (!hasFactoryDef && throwNotFound === true &&\n
ngDevMode) {\n
    throw new Error(\\\"Type \\\" + stringify(type) + \\\" does not have \\\"u0275fac\\\" property.\\\");\n
  }\n
  return hasFactoryDef ? type[NG_FACTORY_DEF] : null;\n
}\n
/**\n
 * @license\n
 * Copyright\n
Google LLC All Rights Reserved.\n
 * \n
 * Use of this source code is governed by an MIT-style license that can be\n
 * found in the LICENSE file at\n
https://angular.io/license\n
 *^\n
var RuntimeError = /** @class */\n
(function (_super) {\n
  __extends(RuntimeError, _super);\n
  function RuntimeError(code, message) {\n
    var _this = _super.call(this, formatRuntimeError(code, message)) || this;\n
    _this.code = code;\n
    return\n
_this;\n
  }\n
  return RuntimeError;\n
})(Error);\n
/** Called to format a runtime error *\n
function\n
formatRuntimeError(code, message) {\n
  var fullCode = code ? \"NG0\" + code + \": \" : \"\";\n
  return \\\"\" +\n
fullCode + message;\n
}\n
/** Called when directives inject each other (creating a circular dependency) *\n
function\n
throwCyclicDependencyError(token, path) {\n
  var depPath = path ? \". Dependency path: \" +\n
path.join(' > ') + \" > \" + token : \"\";\n
  throw new RuntimeError(\\\"200\\\" /* CYCLIC_DI_DEPENDENCY */,\n
\\\"Circular dependency in DI detected for \\\" + token + depPath);\n
}\n
function\n
throwMixedMultiProviderError()\n
{\n
  throw new Error(\\\"Cannot mix multi providers and regular providers\\\");\n
}\n
function\n
throwInvalidProviderError(ngModuleType, providers, provider) {\n
  var ngModuleDetail = \"\";\n
  if\n
(ngModuleType && providers) {\n
    var providerDetail = providers.map(function (v) { return v === provider ?\n
'?' + provider + '? : ' : '...'; });\n
    ngModuleDetail =\n
\\\" - only instances of Provider and Type are\n
allowed, got: [\" + providerDetail.join(', ') + \\\"]\";\n
  }\n
  throw new Error(\\\"Invalid provider for the\n
NgModule \\\" + stringify(ngModuleType) + \\\"\" + ngModuleDetail);\n
}\n
/** Throws an error when a token is\n
not found in DI. *\n
function\n
throwProviderNotFoundError(token, injectorName) {\n
  var injectorDetails =\n
injectorName ? \" in \" + injectorName : \"\";\n
  throw new RuntimeError(\\\"201\\\" /* PROVIDER_NOT_FOUND\n
*/, \\\"No provider for \\\" + stringifyForError(token) + \\\" found\\\" + injectorDetails);\n
}\n
/**\n
 * @license\n
 * Copyright Google LLC All Rights Reserved.\n
 * \n
 * Use of this source code is governed by an MIT-style\n
license that can be\n
 * found in the LICENSE file at\n
https://angular.io/license\n
 *^\n
/**\n
 * Represents a\n
basic change from a previous to a new value for a single\n
 * property on a directive instance. Passed as a value in\n
a\n
 * { @link SimpleChanges } object to the `ngOnChanges` hook.\n
 * \n
 * @see `OnChanges`\n
 * \n
 * @publicApi\n
 *^\n
var SimpleChange = /** @class */ (function () {\n
  function

```

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SimpleChange(previousValue, currentValue, firstChange) {\n      this.previousValue = previousValue;\n      this.currentValue = currentValue;\n      this.firstChange = firstChange;\n    }\n    /**\n     * Check whether the new value is the first value assigned.\n     */\n    SimpleChange.prototype.isFirstChange = function () {\n      return this.firstChange;\n    };\n    return SimpleChange;\n  }());\n\n  /**\n   * @license\n   * Copyright Google LLC All Rights Reserved.\n   * Use of this source code is governed by an MIT-style license that can be\n   * found in the LICENSE file at https://angular.io/license\n   */\n  /**\n   * The NgOnChangesFeature decorates a component with support for the ngOnChanges\n   * lifecycle hook, so it should be included in any component that implements\n   * that hook.\n   * If the component or directive uses inheritance, the NgOnChangesFeature MUST\n   * be included as a feature AFTER {@link InheritDefinitionFeature}, otherwise\n   * inherited properties will not be propagated to the ngOnChanges lifecycle\n   * hook.\n   * Example usage:\n   * ```\n   * static cmp = defineComponent({\n   *   ...,\n   *   inputs: {name: 'publicName'},\n   *   features: [NgOnChangesFeature]\n   * });\n   * ```\n   */\n  @codeGenApi\n  function NgOnChangesFeature() {\n    return NgOnChangesFeatureImpl;\n  }\n  function NgOnChangesFeatureImpl(definition) {\n    if (definition.type.prototype.ngOnChanges) {\n      definition.setInput = ngOnChangesSetInput;\n    }\n    return rememberChangeHistoryAndInvokeOnChangesHook;\n  }\n  // This option ensures that the ngOnChanges lifecycle hook will be inherited\n  // from superclasses (in InheritDefinitionFeature).\n  /** @nocollapse */\n  // tslint:disable-next-line:no-toplevel-property-access\n  NgOnChangesFeature.ngInherit = true;\n  /**\n   * This is a synthetic lifecycle hook which gets inserted into `TVView.preOrderHooks`\n   * to simulate `ngOnChanges`.\n   * The hook reads the `NgSimpleChangesStore` data from the component instance and if changes are\n   * found it invokes `ngOnChanges` on the component instance.\n   * @param this Component instance. Because this function gets inserted into `TVView.preOrderHooks`,\n   * it is guaranteed to be called with component instance.\n   */\n  function rememberChangeHistoryAndInvokeOnChangesHook() {\n    var simpleChangesStore = getSimpleChangesStore(this);\n    var current = simpleChangesStore === null || simpleChangesStore === void 0 ? void 0 : simpleChangesStore.current;\n    if (current) {\n      var previous = simpleChangesStore.previous;\n      if (previous === EMPTY_OBJ) {\n        simpleChangesStore.previous = current;\n      } else {\n        // New changes are copied to the previous store, so that we don't lose history for inputs\n        // which were not changed this time\n        for (var key in current) {\n          previous[key] = current[key];\n        }\n        simpleChangesStore.current = null;\n      }\n      this.ngOnChanges(current);\n    }\n  }\n  function ngOnChangesSetInput(instance, value, publicName, privateName) {\n    var simpleChangesStore = getSimpleChangesStore(instance) ||\n    setSimpleChangesStore(instance, { previous: EMPTY_OBJ, current: null });\n    var current = simpleChangesStore.current || (simpleChangesStore.current = {});\n    var previous = simpleChangesStore.previous;\n    var declaredName = this.declaredInputs[publicName];\n    var previousChange = previous[declaredName];\n    current[declaredName] = new SimpleChange(previousChange && previousChange.currentValue, value, previous === EMPTY_OBJ);\n    instance[privateName] = value;\n  }\n  var SIMPLE_CHANGES_STORE = '__ngSimpleChanges__';\n  function getSimpleChangesStore(instance) {\n    return instance[SIMPLE_CHANGES_STORE] || null;\n  }\n  function setSimpleChangesStore(instance, store) {\n    return instance[SIMPLE_CHANGES_STORE] = store;\n  }\n\n  /**\n   * @license\n   * Copyright Google LLC All Rights Reserved.\n   * Use of this source code is governed by an MIT-style license that can be\n   * found in the LICENSE file at https://angular.io/license\n   */\n  /**\n   * Adds all directive lifecycle hooks from the given `DirectiveDef` to the given `TVView`.\n   * Must be run *only* on the first template pass.\n   * Sets up the pre-order hooks on the provided `tView`, see {@link HookData} for details about the data structure.\n   * @param directiveIndex The index of the directive in LView\n   * @param directiveDef The definition containing the hooks to setup in tView\n   * @param tView The current TVView\n   */\n  function registerPreOrderHooks(directiveIndex, directiveDef, tView) {\n    ngDevMode && assertFirstCreatePass(tView);\n    var _a = directiveDef.type.prototype, ngOnChanges = _a.ngOnChanges, ngOnInit = _a.ngOnInit, ngDoCheck = _a.ngDoCheck;\n    if (ngOnChanges) {\n      var wrappedOnChanges

```

```

= NgOnChangesFeatureImpl.directiveDef);
(tView.preOrderHooks || (tView.preOrderHooks =
[])).push(directiveIndex, wrappedOnChanges);
(tView.preOrderCheckHooks ||
(tView.preOrderCheckHooks = []))\n
.push(directiveIndex, wrappedOnChanges);\n
} \n
if
(ngOnInit) {\n
(tView.preOrderHooks || (tView.preOrderHooks = [])).push(0 - directiveIndex, ngOnInit);\n
}\n
if (ngDoCheck) {\n
(tView.preOrderHooks || (tView.preOrderHooks = [])).push(directiveIndex,
ngDoCheck);\n
(tView.preOrderCheckHooks || (tView.preOrderCheckHooks = [])).push(directiveIndex,
ngDoCheck);\n
}\n
} \n
/**\n
 * Loops through the directives on the provided `tNode` and queues
hooks to be\n
 * run that are not initialization hooks.\n
 * \n
 * Should be executed during `elementEnd()` and
similar to\n
 * preserve hook execution order. Content, view, and destroy hooks for projected\n
 * components
and directives must be called *before* their hosts.\n
 * \n
 * Sets up the content, view, and destroy hooks on the
provided `tView`,\n
 * see {@link HookData} for details about the data structure.\n
 * \n
 * NOTE: This does
not set up `onChanges`, `onInit` or `doCheck`, those are set up\n
 * separately at `elementStart`.\n
 * \n
 *
@param tView The current TView\n
 * @param tNode The TNode whose directives are to be searched for hooks
to queue\n
 */\n
function registerPostOrderHooks(tView, tNode) {\n
  ngDevMode &&
assertFirstCreatePass(tView);\n
  // It's necessary to loop through the directives at elementEnd() (rather than
processing in\n
  // directiveCreate) so we can preserve the current hook order. Content, view, and destroy\n
// hooks for projected components and directives must be called *before* their hosts.\n
  for (var i =
tNode.directiveStart, end = tNode.directiveEnd; i < end; i++) {\n
    var directiveDef = tView.data[i];\n
    ngDevMode && assertDefined(directiveDef, 'Expecting DirectiveDef');\n
    var lifecycleHooks =
directiveDef.type.prototype;\n
    var ngAfterContentInit = lifecycleHooks.ngAfterContentInit,
ngAfterContentChecked = lifecycleHooks.ngAfterContentChecked, ngAfterViewInit =
lifecycleHooks.ngAfterViewInit, ngAfterViewChecked = lifecycleHooks.ngAfterViewChecked, ngOnDestroy =
lifecycleHooks.ngOnDestroy;\n
    if (ngAfterContentInit) {\n
(tView.contentHooks ||
(tView.contentHooks = [])).push(-i, ngAfterContentInit);\n
}\n
    if (ngAfterContentChecked) {\n
(tView.contentHooks || (tView.contentHooks = [])).push(i, ngAfterContentChecked);\n
(tView.contentCheckHooks || (tView.contentCheckHooks = [])).push(i, ngAfterContentChecked);\n
}\n
    if (ngAfterViewInit) {\n
(tView.viewHooks || (tView.viewHooks = [])).push(-i, ngAfterViewInit);\n
}\n
    if (ngAfterViewChecked) {\n
(tView.viewHooks || (tView.viewHooks = [])).push(i,
ngAfterViewChecked);\n
(tView.viewCheckHooks || (tView.viewCheckHooks = [])).push(i,
ngAfterViewChecked);\n
}\n
    if (ngOnDestroy != null) {\n
(tView.destroyHooks ||
(tView.destroyHooks = [])).push(i, ngOnDestroy);\n
}\n
}\n
} \n
} \n
/**\n
 * Executing hooks requires
complex logic as we need to deal with 2 constraints.\n
 * \n
 * 1. Init hooks (ngOnInit, ngAfterContentInit,
ngAfterViewInit) must all be executed once and only\n
 * once, across many change detection cycles. This must
be true even if some hooks throw, or if\n
 * some recursively trigger a change detection cycle.\n
 * To solve that,
it is required to track the state of the execution of these init hooks.\n
 * This is done by storing and maintaining
flags in the view: the {@link InitPhaseState},\n
 * and the index within that phase. They can be seen as a cursor in
the following structure:\n
 * [[onInit1, onInit2], [afterContentInit1], [afterViewInit1, afterViewInit2,
afterViewInit3]]\n
 * They are are stored as flags in LView[FLAGS].\n
 * \n
 * 2. Pre-order hooks can be
executed in batches, because of the select instruction.\n
 * To be able to pause and resume their execution, we also
need some state about the hook's array\n
 * that is being processed:\n
 * - the index of the next hook to be
executed\n
 * - the number of init hooks already found in the processed part of the array\n
 * They are are stored
as flags in LView[PREORDER_HOOK_FLAGS].\n
 * \n
 * \n
 * Executes pre-order check hooks (
OnChanges, DoChanges) given a view where all the init hooks were\n
 * executed once. This is a light version of
executeInitAndCheckPreOrderHooks where we can skip read\n
 * / write of the init-hooks related flags.\n
 *
@param lView The LView where hooks are defined\n
 * @param hooks Hooks to be run\n
 * @param
nodeIndex 3 cases depending on the value:\n
 * - undefined: all hooks from the array should be executed (post-
order case)\n
 * - null: execute hooks only from the saved index until the end of the array (pre-order case, when\n
 * flushing the remaining hooks)\n
 * - number: execute hooks only from the saved index until that node index

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exclusive (pre-order\n    * case, when executing select(number))\n    */\n    function executeCheckHooks(IView,
hooks, nodeIndex) {\n        callHooks(IView, hooks, 3 /* InitPhaseCompleted */, nodeIndex);\n    }\n    /**\n    * Executes post-order init and check hooks (one of AfterContentInit, AfterContentChecked,\n    * AfterViewInit, AfterViewChecked) given a view where there are pending init hooks to be executed.\n    * @param IView The LView where hooks are defined\n    * @param hooks Hooks to be run\n    * @param initPhase A phase for which hooks should be run\n    * @param nodeIndex 3 cases depending on the value:\n    * - undefined: all hooks from the array should be executed (post-order case)\n    * - null: execute hooks only from the saved index until the end of the array (pre-order case, when\n    * flushing the remaining hooks)\n    * - number: execute hooks only from the saved index until that node index exclusive (pre-order\n    * case, when executing select(number))\n    */\n    function executeInitAndCheckHooks(IView, hooks, initPhase, nodeIndex) {\n        ngDevMode &&\n        assertNotEqual(initPhase, 3 /* InitPhaseCompleted */, 'Init pre-order hooks should not be called more than once');\n        if ((IView[FLAGS] & 3 /* InitPhaseStateMask */) === initPhase) {\n            callHooks(IView, hooks, initPhase, nodeIndex);\n        }\n    }\n    function incrementInitPhaseFlags(IView, initPhase) {\n        ngDevMode &&\n        assertNotEqual(initPhase, 3 /* InitPhaseCompleted */, 'Init hooks phase should not be incremented after all init hooks have been run.);\n        var flags = IView[FLAGS];\n        if ((flags & 3 /* InitPhaseStateMask */) === initPhase) {\n            flags &= 2047 /* IndexWithinInitPhaseReset */;\n            flags += 1 /* InitPhaseStateIncrementer */;\n            IView[FLAGS] = flags;\n        }\n    }\n    /**\n    * Calls lifecycle hooks with their contexts, skipping init hooks if it's not\n    * the first LView pass\n    * @param currentView The current view\n    * @param arr The array in which the hooks are found\n    * @param initPhaseState the current state of the init phase\n    * @param currentNodeIndex 3 cases depending on the value:\n    * - undefined: all hooks from the array should be executed (post-order case)\n    * - null: execute hooks only from the saved index until the end of the array (pre-order case, when\n    * flushing the remaining hooks)\n    * - number: execute hooks only from the saved index until that node index exclusive (pre-order\n    * case, when executing select(number))\n    */\n    function callHooks(currentView, arr, initPhase, currentNodeIndex) {\n        ngDevMode &&\n        assertEquals(isInCheckNoChangesMode(), false, 'Hooks should never be run when in check no changes mode.);\n        var startIndex = currentNodeIndex !== undefined ?\n            (currentView[PREORDER_HOOK_FLAGS] & 65535 /* IndexOfTheNextPreOrderHookMaskMask */) :\n            0;\n        var nodeIndexLimit = currentNodeIndex !== null ?\n            currentNodeIndex : -1;\n        var lastNodeIndexFound = 0;\n        for (var i = startIndex; i < arr.length; i++) {\n            var hook = arr[i + 1];\n            if (typeof hook === 'number') {\n                lastNodeIndexFound = arr[i];\n            }\n            if (currentNodeIndex !== null && lastNodeIndexFound >= currentNodeIndex) {\n                break;\n            }\n            else {\n                var isInitHook = arr[i] < 0;\n                if (isInitHook)\n                    currentView[PREORDER_HOOK_FLAGS] += 65536 /* NumberOfInitHooksCalledIncrementer */;\n                if (lastNodeIndexFound < nodeIndexLimit || nodeIndexLimit === -1) {\n                    callHook(currentView, initPhase, arr, i);\n                    currentView[PREORDER_HOOK_FLAGS] =\n                        (currentView[PREORDER_HOOK_FLAGS] & 4294901760 /* NumberOfInitHooksCalledMask */) + i +\n                        2;\n                }\n                i++;\n            }\n        }\n    }\n    /**\n    * Execute one hook against the current `LView`.\n    * @param currentView The current view\n    * @param initPhaseState the current state of the init phase\n    * @param arr The array in which the hooks are found\n    * @param i The current index within the hook data array\n    */\n    function callHook(currentView, initPhase, arr, i) {\n        var isInitHook = arr[i] < 0;\n        var hook = arr[i + 1];\n        var directiveIndex = isInitHook ? -arr[i] : arr[i];\n        var directive =\n            currentView[directiveIndex];\n        if (isInitHook) {\n            var indexWithinInitPhase = currentView[FLAGS] >> 11 /* IndexWithinInitPhaseShift */;\n            // The init phase state must be always checked here as it may have been recursively\n            // updated\n            if (indexWithinInitPhase < (\n                (currentView[PREORDER_HOOK_FLAGS] >> 16 /* NumberOfInitHooksCalledShift */) &&\n                (currentView[FLAGS] & 3 /* InitPhaseStateMask */) === initPhase) {\n                currentView[FLAGS] += 2048 /* IndexWithinInitPhaseIncrementer */;\n                hook.call(directive);\n            }\n            else {\n                hook.call(directive);\n            }\n        }\n    }\n    /**\n    * @license\n    * Copyright Google LLC All Rights Reserved.\n    *\n    * Use of this source code is governed by an MIT-style license that can be\n    * found in the LICENSE file at

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https://angular.io/license\n
 * \n
 var NO_PARENT_INJECTOR = -1;\n
 /**\n
 * Each injector is saved in 9
 contiguous slots in `LView` and 9 contiguous slots in\n
 * `TView.data`. This allows us to store information about
 the current node's tokens (which\n
 * can be shared in `TView`) as well as the tokens of its ancestor nodes (which
 cannot be\n
 * shared, so they live in `LView`).\n
 * \n
 * Each of these slots (aside from the last slot) contains a
 bloom filter. This bloom filter\n
 * determines whether a directive is available on the associated node or not. This
 prevents us\n
 * from searching the directives array at this level unless it's probable the directive is in it.\n
 * \n
 * See: https://en.wikipedia.org/wiki/Bloom_filter for more about bloom filters.\n
 * \n
 * Because all injectors
 have been flattened into `LView` and `TViewData`, they cannot typed\n
 * using interfaces as they were
 previously. The start index of each `LInjector` and `TInjector`\n
 * will differ based on where it is flattened into
 the main array, so it's not possible to know\n
 * the indices ahead of time and save their types here. The interfaces
 are still included here\n
 * for documentation purposes.\n
 * \n
 * export interface LInjector extends
 Array<any> {\n
 * \n
 * // Cumulative bloom for directive IDs 0-31 (IDs are % BLOOM_SIZE)\n
 * [0]:\n
 number;\n
 * \n
 * // Cumulative bloom for directive IDs 32-63\n
 * [1]: number;\n
 * \n
 * //\n
 Cumulative bloom for directive IDs 64-95\n
 * [2]: number;\n
 * \n
 * // Cumulative bloom for directive IDs
 96-127\n
 * [3]: number;\n
 * \n
 * // Cumulative bloom for directive IDs 128-159\n
 * [4]: number;\n
 * \n
 * // Cumulative bloom for directive IDs 160 - 191\n
 * [5]: number;\n
 * \n
 * // Cumulative bloom
 for directive IDs 192 - 223\n
 * [6]: number;\n
 * \n
 * // Cumulative bloom for directive IDs 224 - 255\n
 * [7]: number;\n
 * \n
 * // We need to store a reference to the injector's parent so DI can keep looking up\n
 * // the injector tree until it finds the dependency it's looking for.\n
 * [PARENT_INJECTOR]: number;\n
 *\n
 * }\n
 * \n
 * export interface TInjector extends Array<any> {\n
 * \n
 * // Shared node bloom for directive IDs
 0-31 (IDs are % BLOOM_SIZE)\n
 * [0]: number;\n
 * \n
 * // Shared node bloom for directive IDs 32-
 63\n
 * [1]: number;\n
 * \n
 * // Shared node bloom for directive IDs 64-95\n
 * [2]: number;\n
 * \n
 * // Shared node bloom for directive IDs 96-127\n
 * [3]: number;\n
 * \n
 * // Shared node bloom for
 directive IDs 128-159\n
 * [4]: number;\n
 * \n
 * // Shared node bloom for directive IDs 160 - 191\n
 * [5]: number;\n
 * \n
 * // Shared node bloom for directive IDs 192 - 223\n
 * [6]: number;\n
 * \n
 * //\n
 Shared node bloom for directive IDs 224 - 255\n
 * [7]: number;\n
 * \n
 * // Necessary to find directive
 indices for a particular node.\n
 * [TNODE]: TElementNode|TElementContainerNode|TContainerNode;\n
 *\n
 * }\n
 * \n
 /**\n
 * Factory for creating instances of injectors in the NodeInjector.\n
 * \n
 * This factory is
 complicated by the fact that it can resolve `multi` factories as well.\n
 * \n
 * NOTE: Some of the fields are
 optional which means that this class has two hidden classes.\n
 * - One without `multi` support (most common)\n
 * - One with `multi` values, (rare).\n
 * \n
 * Since VMs can cache up to 4 inline hidden classes this is OK.\n
 * \n
 * - Single factory: Only `resolving` and `factory` is defined.\n
 * - `providers` factory:\n
 `componentProviders` is a number and `index` = -1.\n
 * - `viewProviders` factory: `componentProviders` is a
 number and `index` points to `providers`.\n
 * \n
 var NodeInjectorFactory = /** @class */ (function () {\n
 function NodeInjectorFactory(\n
 /**\n
 * Factory to invoke in order to create a new instance.\n
 * \n
 */\n
 factory, \n
 /**\n
 * Set to `true` if the token is declared in `viewProviders` (or if it is component).\n
 * \n
 */\n
 isViewProvider, injectImplementation) {\n
 this.factory = factory;\n
 /**\n
 * Marker set
 to true during factory invocation to see if we get into recursive loop.\n
 * \n
 */\n
 this.resolving = false;\n
 ngDevMode && assertDefined(factory, 'Factory not
 specified');\n
 ngDevMode && assertEquals(typeof factory, 'function', 'Expected factory function.);\n
 this.canSeeViewProviders = isViewProvider;\n
 this.injectImpl = injectImplementation;\n
 }\n
 return
 NodeInjectorFactory;\n
 }());\n
 function isFactory(obj) {\n
 return obj instanceof NodeInjectorFactory;\n
 }\n
 // Note: This hack is necessary so we don't erroneously get a circular dependency\n
 // failure based on
 types.\n
 var unusedValueExportToPlacateAjd$3 = 1;\n
 /**\n
 * Converts `TNodeType` into human readable
 text.\n
 * \n
 * Make sure this matches with `TNodeType`\n
 * \n
 function toTNodeTypeAsString(tNodeType) {\n
 var text = ";\n
 (tNodeType & 1 /* Text */) && (text += 'Text');\n
 (tNodeType & 2 /* Element */) &&
 (text += 'Element');\n
 (tNodeType & 4 /* Container */) && (text += 'Container');\n
 (tNodeType & 8 /*\n
 ElementContainer */) && (text += 'ElementContainer');\n
 (tNodeType & 16 /* Projection */) && (text +=

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'|Projection');\n      (tNodeType & 32 /* Icu */) && (text += 'IcuContainer');\n      (tNodeType & 64 /*
Placeholder */) && (text += 'Placeholder');\n      return text.length > 0 ? text.substring(1) : text;\n    }\n    // Note:
This hack is necessary so we don't erroneously get a circular dependency\n    // failure based on types.\n    var
unusedValueExportToPlacateAjd$4 = 1;\n    /**\n     * Returns `true` if the `TNode` has a directive which has
`@Input()` for `class` binding.\n     *\n     * ```\n     * <div my-dir [class]="exp"></div>\n     * ```\n     * and\n     *
```\n     * @Directive({\n     *   })\n     * class MyDirective {\n     *   @Input()\n     *   class: string;\n     * }\n     * ```\n
 *\n * In the above case it is necessary to write the reconciled styling information into the\n * directive's
input.\n *\n * @param tNode\n */\n function hasClassInput(tNode) {\n return (tNode.flags & 16 /*
hasClassInput */) !== 0;\n }\n /**\n * Returns `true` if the `TNode` has a directive which has `@Input()` for
`style` binding.\n *\n * ```\n * <div my-dir [style]="exp"></div>\n * ```\n * and\n * ```\n *
@Directive({\n * })\n * class MyDirective {\n * @Input()\n * class: string;\n * }\n * ```\n
 *\n * In the above case it is necessary to write the reconciled styling information into the\n * directive's input.\n *\n
 * @param tNode\n */\n function hasStyleInput(tNode) {\n return (tNode.flags & 32 /* hasStyleInput */)
!== 0;\n }\n }\n /**\n * @license\n * Copyright Google LLC All Rights Reserved.\n *\n * Use of this
source code is governed by an MIT-style license that can be\n * found in the LICENSE file at
https://angular.io/license\n */\n function assertTNodeType(tNode, expectedTypes, message) {\n
assertDefined(tNode, 'should be called with a TNode');\n if ((tNode.type & expectedTypes) === 0) {\n
throwError(message ||\n '\nExpected [\n + toTNodeTypeAsString(expectedTypes) +\n] but got [\n +
toTNodeTypeAsString(tNode.type) +\n].');\n }\n }\n function assertPureTNodeType(type) {\n if
(! (type === 2 /* Element */ || /\n type === 1 /* Text */ || /\n type === 4 /* Container */ || /\n
type === 8 /* ElementContainer */ || /\n type === 32 /* Icu */ || /\n type === 16 /* Projection */ || /\n
type === 64 /* Placeholder */)) {\n throwError("Expected TNodeType to have only a single type
selected, but got [\n + toTNodeTypeAsString(type) +\n].");\n }\n }\n /**\n * Assigns all attribute values
to the provided element via the inferred renderer.\n *\n * This function accepts two forms of attribute entries:\n
 *\n * default: (key, value):\n * attrs = [key1, value1, key2, value2]\n * namespace:
(NAMESPACE_MARKER, uri, name, value)\n * attrs = [NAMESPACE_MARKER, uri, name, value,
NAMESPACE_MARKER, uri, name, value]\n * The `attrs` array can contain a mix of both the default and
namespaced entries.\n * The `default` values are set without a marker, but if the function comes across\n *
a marker value then it will attempt to set a namespaced value. If the marker is\n * not of a namespaced value then
the function will quit and return the index value\n * where it stopped during the iteration of the attrs array.\n *
 *\n * See [AttributeMarker] to understand what the namespace marker value is.\n *\n * Note that this instruction
does not support assigning style and class values to\n * an element. See `elementStart` and `elementHostAttrs` to
learn how styling values\n * are applied to an element.\n * @param renderer The renderer to be used\n *
@param native The element that the attributes will be assigned to\n * @param attrs The attribute array of values
that will be assigned to the element\n * @returns the index value that was last accessed in the attributes array\n
 */\n function setUpAttributes(renderer, native, attrs) {\n var isProc = isProceduralRenderer(renderer);\n
var i = 0;\n while (i < attrs.length) {\n var value = attrs[i];\n if (typeof value === 'number') {\n
// only namespaces are supported. Other value types (such as style/class\n // entries) are not supported
in this function.\n if (value !== 0 /* NamespaceURI */) {\n break;\n }\n //
we just landed on the marker value ... therefore\n // we should skip to the next entry\n i++;\n
 var namespaceURI = attrs[i++];\n var attrName = attrs[i++];\n var attrVal = attrs[i++];\n
 ngDevMode && ngDevMode.rendererSetAttribute++;\n isProc ?\n renderer.setAttribute(native, attrName, attrVal, namespaceURI) :\n
 native.setAttributeNS(namespaceURI, attrName, attrVal);\n }\n else {\n // attrName is
string;\n var attrName = value;\n var attrVal = attrs[++i];\n // Standard attributes\n
 ngDevMode && ngDevMode.rendererSetAttribute++;\n if (isAnimationProp(attrName)) {\n
 if (isProc) {\n renderer.setProperty(native, attrName, attrVal);\n }\n }\n
 else {\n isProc ?\n renderer.setAttribute(native, attrName, attrVal) :\n

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native.setAttribute(attrName, attrVal);\n }\n i++;\n }\n }\n // another piece of code
may iterate over the same attributes array. Therefore\n // it may be helpful to return the exact spot where the
attributes array exited\n // whether by running into an unsupported marker or if all the static values were\n //
iterated over.\n return i;\n }\n /**\n * Test whether the given value is a marker that indicates that the
following\n * attribute values in a `TAttributes` array are only the names of attributes,\n * and not name-value
pairs.\n * @param marker The attribute marker to test.\n * @returns true if the marker is a `\"name-only\"`
marker (e.g. `Bindings`, `Template` or `I18n`).\n */\n function isNameOnlyAttributeMarker(marker) {\n
return marker === 3 /* Bindings */ || marker === 4 /* Template */ ||\n marker === 6 /* I18n */;\n }\n
function isAnimationProp(name) {\n // Perf note: accessing charCodeAt to check for the first character of a
string is faster as\n // compared to accessing a character at index 0 (ex. name[0]). The main reason for this
is that\n // charCodeAt doesn't allocate memory to return a substring.\n return name.charCodeAt(0) === 64 /*
AT_SIGN */;\n }\n /**\n * Merges `src` `TAttributes` into `dst` `TAttributes` removing any
duplicates in the
process.\n * This merge function keeps the order of attrs same.\n * @param dst Location of where
the merged `TAttributes` should end up.\n * @param src `TAttributes` which should be appended to `dst`\n
*/\n function mergeHostAttrs(dst, src) {\n if (src === null || src.length === 0) {\n // do nothing\n
}\n else if (dst === null || dst.length === 0) {\n // We have source, but dst is empty, just
make a copy.\n dst = src.slice();\n }\n else {\n var srcMarker = -1 /* ImplicitAttributes */;\n for (var i = 0;\n
i < src.length; i++) {\n var item = src[i];\n if (typeof item === 'number') {\n
srcMarker = item;\n }\n else {\n if (srcMarker === 0 /* NamespaceURI */) {\n
// Case where we need to consume `key1`, `key2`, `value` items.\n }\n else if
(srcMarker === -1 /* ImplicitAttributes */ ||\n srcMarker === 2 /* Styles */) {\n // Case
where we have to consume `key1` and `value` only.\n mergeHostAttribute(dst, srcMarker, item, null,\n
src[++i]);\n }\n else {\n // Case where we have to consume `key1` only.\n
mergeHostAttribute(dst, srcMarker, item, null, null);\n }\n }\n }\n
return dst;\n }\n /**\n * Append `key`/`value` to existing `TAttributes` taking region
marker and duplicates
into account.\n * @param dst `TAttributes` to append to.\n * @param marker Region where the
`key`/`value` should be added.\n * @param key1 Key to add to `TAttributes`\n * @param key2 Key to add to
`TAttributes` (in case of `AttributeMarker.NamespaceURI`)\n * @param value Value to add or to overwrite to
`TAttributes` Only used if `marker` is not Class.\n */\n function mergeHostAttribute(dst, marker, key1, key2,\n
value) {\n var i = 0;\n // Assume that new markers will be inserted at the end.\n var
markerInsertPosition = dst.length;\n // scan until correct type.\n if (marker === -1 /* ImplicitAttributes */)
{\n markerInsertPosition = -1;\n }\n else {\n while (i < dst.length) {\n
var dstValue =\n dst[i++];\n if (typeof dstValue === 'number') {\n if (dstValue === marker) {\n
markerInsertPosition = -1;\n break;\n }\n else if (dstValue > marker) {\n
// We need to save this as we want the markers to be inserted in specific order.\n }\n else {\n
markerInsertPosition = i - 1;\n break;\n }\n }\n }\n }\n }\n // search
until you find place of insertion\n while (i < dst.length) {\n var item = dst[i];\n if (typeof item ===
'number') {\n // since `i` started as the index after the marker, we did not find it if we are at the next\n
// marker\n break;\n }\n else if (item === key1) {\n // We already have same
token\n if (key2 === null) {\n if (value !== null) {\n dst[i + 1] = value;\n
}\n }\n return;\n }\n else if (key2 === dst[i + 1]) {\n dst[i + 2] = value;\n
}\n return;\n }\n // Increment counter.\n i++; \n if (key2 !== null)\n i++;\n if (value !== null)\n i++; \n }\n // insert at location.\n if
(markerInsertPosition !== -1) {\n dst.splice(markerInsertPosition, 0, marker);\n i =\n markerInsertPosition + 1;\n }\n dst.splice(i++, 0, key1);\n if (key2 !== null) {\n dst.splice(i++,\n
0, key2);\n }\n if (value !== null) {\n dst.splice(i++, 0, value);\n }\n }\n }\n /**\n *
@license\n * Copyright Google LLC All Rights Reserved.\n * Use of this source code is governed by an
MIT-style license that can be\n * found in the LICENSE file at https://angular.io/license\n */\n // Parent

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Injector Utils //\n function hasParentInjector(parentLocation) {\n
return parentLocation !== NO_PARENT_INJECTOR;\n }\n function getParentInjectorIndex(parentLocation)
{\n ngDevMode && assertNumber(parentLocation, 'Number expected');\n ngDevMode &&
assertNotEqual(parentLocation, -1, 'Not a valid state.);\n var parentInjectorIndex = parentLocation & 32767 /*
InjectorIndexMask */;\n ngDevMode &&\n assertGreaterThan(parentInjectorIndex, HEADER_OFFSET,
'Parent injector must be pointing past HEADER_OFFSET.);\n return parentLocation & 32767 /*
InjectorIndexMask */;\n }\n function getParentInjectorViewOffset(parentLocation) {\n return
parentLocation >> 16 /* ViewOffsetShift */;\n }\n /**\n * Unwraps a parent injector location number to find
the view offset from the current injector,\n * then walks up the declaration view tree until the view is found that
contains the parent\n * injector.\n * @param location The location of the parent injector, which contains
the view offset\n * @param startView The LView instance from which to start walking up the view tree\n *
@return The LView instance that contains the parent injector\n */\n function getParentInjectorView(location,
startView) {\n var viewOffset = getParentInjectorViewOffset(location);\n var parentView = startView;\n // For most cases, the parent injector can be found on the host node (e.g. for component\n // or container), but
we must keep the loop here to support the rarer case of deeply nested\n // <ng-template> tags or inline views,
where the parent injector might live many views\n // above the child injector.\n while (viewOffset > 0) {\n
 parentView = parentView[DECLARATION_VIEW];\n viewOffset--;\n }\n return
parentView;\n }\n /**\n * @license\n * Copyright Google LLC All Rights Reserved.\n * Use of
this source code is governed by an MIT-style license that can be\n * found in the LICENSE file at
https://angular.io/license\n */\n /**\n * Defines if the call to `inject` should include `viewProviders` in its
resolution.\n * This is set to true when we try to instantiate a component. This value is reset in\n *
`getNodeInjectable` to a value which matches the declaration location of the token about to be\n * instantiated.
This is done so that if we are injecting a token which was declared outside of\n * `viewProviders` we don't
accidentally pull `viewProviders` in.\n * Example:\n * ```\n * @Injectable()\n * class
MyService {\n * constructor(public value: String) {}\n * }\n * @Component({\n * providers: [\n
 * MyService,\n * {provide: String, value: 'providers'}\n *]\n * viewProviders: [\n * {provide:
String, value: 'viewProviders'}\n *]\n * })\n * class MyComponent {\n * constructor(myService:
MyService, value: String) {\n * // We expect that Component can see into `viewProviders`.\n *
expect(value).toEqual('viewProviders');\n * // `MyService` was not declared in `viewProviders` hence it can't
see it.\n * expect(myService.value).toEqual('providers');\n * }\n * }\n * ```\n */\n var
includeViewProviders = true;\n function setIncludeViewProviders(v) {\n var oldValue =
includeViewProviders;\n includeViewProviders = v;\n return oldValue;\n }\n /**\n * The number of
slots in each bloom filter (used by DI). The larger this number, the fewer\n * directives that will share slots, and
thus, the fewer false positives when checking for\n * the existence of a directive.\n */\n var BLOOM_SIZE =
256;\n var BLOOM_MASK = BLOOM_SIZE - 1;\n /** Counter used to generate unique IDs for directives. */\n var
nextNgElementId = 0;\n /**\n * Registers this directive as present in its node's injector by flipping the
directive's\n * corresponding bit in the injector's bloom filter.\n * @param injectorIndex The index of the
node injector where this token should be registered\n * @param tView The TView for the injector's bloom
filters\n * @param type The directive token to register\n */\n function bloomAdd(injectorIndex, tView, type)
{\n ngDevMode && assertEquals(tView.firstCreatePass, true, 'expected firstCreatePass to be true');\n var
id;\n if (typeof type === 'string') {\n id = type.charCodeAt(0) || 0;\n } else if
(type.hasOwnProperty(NG_ELEMENT_ID)) {\n id = type[NG_ELEMENT_ID];\n } // Set a
unique ID on the directive type, so if something tries to inject the directive,\n // we can easily retrieve the ID
and hash it into the bloom bit that should be checked.\n if (id === null) {\n id = type[NG_ELEMENT_ID]
= nextNgElementId++;\n } // We only have BLOOM_SIZE (256) slots in our bloom filter (8 buckets * 32
bits each),\n // so all unique IDs must be modulo-ed into a number from 0 - 255 to fit into the filter.\n var
bloomBit = id & BLOOM_MASK;\n // Create a mask that targets the specific bit associated with the
directive.\n // JS bit operations are 32 bits, so this will be a number between 2^0 and 2^31, corresponding\n

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// to bit positions 0 - 31 in a 32 bit integer.\n var mask = 1 << bloomBit;\n // Use the raw bloomBit number
to determine which bloom filter bucket we should check\n // e.g: bf0 = [0 - 31], bf1 = [32 - 63], bf2 = [64 - 95],
bf3 = [96 - 127], etc\n var b7 = bloomBit & 0x80;\n var b6 = bloomBit & 0x40;\n var b5 = bloomBit &
0x20;\n var tData = tView.data;\n if (b7) {\n b6 ? (b5 ? (tData[injectorIndex + 7] |= mask) :\n(tData[injectorIndex + 6] |= mask)) :\n (b5 ? (tData[injectorIndex + 5] |= mask) : (tData[injectorIndex + 4]
|= mask));\n }\n else {\n b6 ? (b5 ? (tData[injectorIndex + 3] |= mask) : (tData[injectorIndex + 2] |=
mask)) :\n (b5 ? (tData[injectorIndex + 1] |= mask) : (tData[injectorIndex] |= mask));\n }\n}\n}\n
/**\n * Creates (or gets an existing) injector for a given element or container.\n * @param tNode for
which an injector should be retrieved / created.\n * @param IView View where the node is stored\n * @returns
Node injector\n */\n function getOrCreateNodeInjectorForNode(tNode, IView) {\n var
existingInjectorIndex = getInjectorIndex(tNode, IView);\n if (existingInjectorIndex !== -1) {\n return
existingInjectorIndex;\n }\n var tView = IView[TVIEW];\n if (tView.firstCreatePass) {\n
tNode.injectorIndex = IView.length;\n insertBloom(tView.data, tNode); // foundation for node bloom\n
insertBloom(IView, null); // foundation for cumulative bloom\n insertBloom(tView.blueprint, null);\n }\n
 var parentLoc = getParentInjectorLocation(tNode, IView);\n var injectorIndex = tNode.injectorIndex;\n
// If a parent injector can't be found, its location is set to -1.\n // In that case, we don't need to set up a
cumulative bloom\n if (hasParentInjector(parentLoc)) {\n var parentIndex =
getParentInjectorIndex(parentLoc);\n var parentLView = getParentInjectorView(parentLoc, IView);\n
var parentData = parentLView[TVIEW].data;\n // Creates a cumulative bloom filter that merges the parent's
bloom filter\n // and its own cumulative bloom (which contains tokens for all ancestors)\n for (var i =
0; i < 8 /* BLOOM_SIZE */; i++) {\n IView[injectorIndex + i] = parentLView[parentIndex + i] |
parentData[parentIndex + i];\n }\n }\n IView[injectorIndex + 8 /* PARENT */] = parentLoc;\n
return injectorIndex;\n}\n function insertBloom(arr, footer) {\n arr.push(0, 0, 0, 0, 0, 0, 0, 0, footer);\n}\n
function getInjectorIndex(tNode, IView) {\n if (tNode.injectorIndex === -1 ||\n // If the injector index is
the same as its parent's injector index, then the index has been\n // copied down from the parent node. No
injector has been created yet on this node.\n (tNode.parent && tNode.parent.injectorIndex ===
tNode.injectorIndex) ||\n // After the first template pass, the injector index might exist but the parent values\n
 // might not have been calculated yet for this instance\n IView[tNode.injectorIndex + 8 /* PARENT */]
=== null) {\n return -1;\n }\n else {\n ngDevMode && assertIndexInRange(IView,
tNode.injectorIndex);\n return tNode.injectorIndex;\n }\n}\n /**\n * Finds the index of the parent
injector, with a view offset if applicable. Used to set the\n * parent injector initially.\n * @returns
Returns a number that is the combination of the number of LViews that we have to go up\n * to find the LView
containing the parent inject AND the index of the injector within that LView.\n */\n function
getParentInjectorLocation(tNode, IView) {\n if (tNode.parent && tNode.parent.injectorIndex !== -1) {\n
// If we have a parent `TNode` and there is an injector associated with it we are done, because\n // the parent
injector is within the current `LView`.\n return tNode.parent.injectorIndex; // ViewOffset is 0\n }\n //
When parent injector location is computed it may be outside of the current view. (ie it could\n // be pointing to a
declared parent location). This variable stores number of declaration parents\n // we need to walk up in order to
find the parent injector location.\n var declarationViewOffset = 0;\n var parentTNode = null;\n var
IViewCursor = IView;\n // The parent injector is not in the current `LView`. We will have to walk the declared
parent\n // `LView` hierarchy and look for it. If we walk of the top, that means that there is no parent\n //
`NodeInjector`.\n while (IViewCursor !== null) {\n // First determine the `parentTNode` location. The
parent pointer differs based on `TView.type`.\n var tView = IViewCursor[TVIEW];\n var tViewType
= tView.type;\n if (tViewType === 2 /* Embedded */) {\n ngDevMode &&\n
assertDefined(tView.declTNode, 'Embedded TNodes should have declaration parents.);\n parentTNode =
tView.declTNode;\n }\n else if (tViewType === 1 /* Component */) {\n // Components don't
have `TView.declTNode` because each instance of component could be\n // inserted in different location,
hence `TView.declTNode` is meaningless.\n parentTNode = IViewCursor[T_HOST];\n }\n }\n}

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else {\n
 ngDevMode && assertEquals(tView.type, 0 /* Root */, 'Root type expected');\n
parentTNode = null;\n
 }\n
 if (parentTNode === null) {\n
 // If we have no parent, then we are done.\n
 return NO_PARENT_INJECTOR;\n
 }\n
 ngDevMode && parentTNode && assertTNodeForLView(parentTNode, IViewCursor[DECLARATION_VIEW]);\n
 // Every iteration of the loop requires that we go to the declared parent.\n
 declarationViewOffset++;\n
 IViewCursor = IViewCursor[DECLARATION_VIEW];\n
 if (parentTNode.injectorIndex !== -1) {\n
 // We found a NodeInjector which points to something.\n
 return (parentTNode.injectorIndex |\n
(declarationViewOffset << 16 /* ViewOffsetShift */));\n
 }\n
 }\n
 return NO_PARENT_INJECTOR;\n
}\n
/**\n
 * Makes a type or an injection token public to the DI system by adding it to an\n
 * injector's bloom filter.\n
 * @param di The node injector in which a directive will be added\n
 * @param token The type or the injection token to be made public\n
 */\n
function diPublicInInjector(injectorIndex, tView, token) {\n
 bloomAdd(injectorIndex, tView, token);\n
}\n
/**\n
 * Inject static attribute value into directive constructor.\n
 * This method is used with `factory` functions which are generated as part of\n
 * `defineDirective` or `defineComponent`. The method retrieves the static value\n
 * of an attribute. (Dynamic attributes are not supported since they are not resolved\n
 * at the time of injection and can change over time.)\n
 * # Example\n
 * Given:\n
 * ```\n
 * @Component(...)\n
 * class MyComponent {\n
 * constructor(@Attribute('title') title: string) { ... }\n
 * }\n
 * ```\n
 * When instantiated with\n
 * ```\n
 * <my-component title="Hello"></my-component>\n
 * ```\n
 * Then factory method generated is:\n
 * ```\n
 * MyComponent.cmp = defineComponent({\n
 * factory: () => new MyComponent(injectAttribute('title'))\n
 * ...,\n
 * })\n
 * ```\n
 * @publicApi\n
 */\n
function injectAttributeImpl(tNode, attrNameToInject) {\n
 ngDevMode && assertTNodeType(tNode, 12 /* AnyContainer */ | 3 /* AnyRNode */);\n
 ngDevMode && assertDefined(tNode, 'expecting tNode');\n
 if (attrNameToInject === 'class') {\n
 return tNode.classes;\n
 }\n
 if (attrNameToInject === 'style') {\n
 return tNode.styles;\n
 }\n
 var attrs = tNode.attrs;\n
 if (attrs) {\n
 var attrsLength = attrs.length;\n
 var i = 0;\n
 while (i < attrsLength) {\n
 var value = attrs[i];\n
 // If we hit a `Bindings` or `Template` marker then we are done.\n
 if (isNameOnlyAttributeMarker(value))\n
 break;\n
 // Skip namespaced attributes\n
 if (value === 0 /* NamespaceURI */) {\n
 // we skip the next two values\n
 // as namespaced attributes looks like\n
 // [...,\n
 AttributeMarker.NamespaceURI, 'http://someuri.com/test', 'test:exist',\n
 // 'existValue', ...]\n
 i = i + 2;\n
 }\n
 else if (typeof value === 'number') {\n
 // Skip to the first value of the marked attribute.\n
 i++;\n
 while (i < attrsLength && typeof attrs[i] === 'string') {\n
 i++;\n
 }\n
 }\n
 else if (value === attrNameToInject) {\n
 return attrs[i + 1];\n
 }\n
 else {\n
 i = i + 2;\n
 }\n
 }\n
 return null;\n
 }\n
}\n
function notFoundValueOrThrow(notFoundValue, token, flags) {\n
 if (flags & exports.InjectFlags.Optional) {\n
 return notFoundValue;\n
 }\n
 else {\n
 throw ProviderNotFoundError(token, 'NodeInjector');\n
 }\n
}\n
/**\n
 * Returns the value associated to the given token from the ModuleInjector or throws exception\n
 * @param IView The `LView` that contains the `tNode`\n
 * @param token The token to look for\n
 * @param flags Injection flags\n
 * @param notFoundValue The value to return when the injection flags is `InjectFlags.Optional`\n
 * @returns the value from the injector or throws an exception\n
 */\n
function lookupTokenUsingModuleInjector(IView, token, flags, notFoundValue) {\n
 if (flags & exports.InjectFlags.Optional && notFoundValue === undefined) {\n
 // This must be set or the NullInjector will throw for optional deps\n
 notFoundValue = null;\n
 }\n
 if ((flags & (exports.InjectFlags.Self | exports.InjectFlags.Host)) === 0) {\n
 var moduleInjector = IView[INJECTOR];\n
 // switch to `injectInjectorOnly` implementation for module injector, since module injector\n
 // should not have access to Component/Directive DI scope (that may happen through\n
 // `directiveInject` implementation)\n
 var previousInjectImplementation = setInjectImplementation(undefined);\n
 try {\n
 if (moduleInjector) {\n
 return moduleInjector.get(token, notFoundValue, flags & exports.InjectFlags.Optional);\n
 }\n
 }\n
 else {\n
 return injectRootLimpMode(token, notFoundValue, flags &

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exports.InjectFlags.Optional);\n }\n }\n finally {\n
setInjectImplementation(previousInjectImplementation);\n }\n }\n return
notFoundValueOrThrow(notFoundValue, token, flags);\n }\n /**\n * Returns the value associated to the given
token from the NodeInjectors => ModuleInjector.\n *\n * Look for the injector providing the token by walking
up the node injector tree and then\n * the module injector tree.\n *\n * This function patches `token` with
`__NG_ELEMENT_ID__` which contains the id for the bloom\n * filter. `-1` is reserved for injecting `Injector`
(implemented by `NodeInjector`)\n *\n * @param tNode The Node where the search for the injector should
start\n * @param IView The `LView` that contains the `tNode`\n * @param token The token to look for\n *
@param flags Injection flags\n * @param notFoundValue The value to return when the injection flags is
`InjectFlags.Optional`\n * @returns the value from the injector, `null` when not found, or `notFoundValue` if
provided\n */\n function getOrCreateInjectable(tNode, IView, token, flags, notFoundValue) {\n if (flags
=== void 0) { flags = exports.InjectFlags.Default; }\n if (tNode !== null) {\n var bloomHash =
bloomHashBitOrFactory(token);\n // If the ID stored here is a function, this is a special object like
ElementRef or TemplateRef\n // so just call the factory function to create it.\n if (typeof bloomHash
=== 'function') {\n if (!enterDI(IView, tNode, flags)) {\n // Failed to enter DI, try module
injector instead. If a token is injected with the @Host\n // flag, the module injector is not searched for
that token in Ivy.\n return (flags & exports.InjectFlags.Host) ?\n
notFoundValueOrThrow(notFoundValue, token, flags) :\n lookupTokenUsingModuleInjector(IView,
token, flags, notFoundValue);\n }\n try {\n var value = bloomHash();\n if
(value === null && !(flags & exports.InjectFlags.Optional)) {\n
throwProviderNotFoundError(token);\n }\n else {\n return value;\n
 }\n }\n finally {\n leaveDI();\n }\n else if (typeof
bloomHash === 'number') {\n // A reference to the previous injector TView that was found while climbing
the element\n // injector tree. This is used to know if viewProviders can be accessed on the current\n
// injector.\n var previousTView = null;\n var injectorIndex = getInjectorIndex(tNode, IView);\n
 var parentLocation = NO_PARENT_INJECTOR;\n var hostTElementNode = flags &
exports.InjectFlags.Host ? IView[DECLARATION_COMPONENT_VIEW][T_HOST] : null;\n // If we
should skip this injector, or if there is no injector on this node, start by\n // searching the parent injector.\n
 if (injectorIndex === -1 || flags & exports.InjectFlags.SkipSelf) {\n parentLocation =
injectorIndex === -1 ? getParentInjectorLocation(tNode, IView) :\n IView[injectorIndex + 8 /*
PARENT */];\n if (parentLocation === NO_PARENT_INJECTOR || !shouldSearchParent(flags, false))\n
{\n injectorIndex = -1;\n }\n else {\n previousTView =
IView[TVIEW];\n injectorIndex = getParentInjectorIndex(parentLocation);\n IView =
getParentInjectorView(parentLocation, IView);\n }\n }\n // Traverse up the injector
tree until we find a potential match or until we know there\n // isn't* a match.\n while
(injectorIndex !== -1) {\n ngDevMode && assertNodeInjector(IView, injectorIndex);\n //
Check the current injector. If it matches, see if it contains token.\n var tView = IView[TVIEW];\n
 ngDevMode &&\n assertTNodeForLView(tView.data[injectorIndex + 8 /* TNODE */],
IView);\n if (bloomHasToken(bloomHash, injectorIndex, tView.data)) {\n // At this point,
we have an injector which *may* contain the token, so we step through\n // the providers and
directives associated with the injector's corresponding node to get\n // the instance.\n
 var instance = searchTokensOnInjector(injectorIndex, IView, token, previousTView, flags, hostTElementNode);\n
 if (instance !== NOT_FOUND) {\n return instance;\n }\n }\n }\n parentLocation = IView[injectorIndex + 8 /* PARENT */];\n if (parentLocation !==
NO_PARENT_INJECTOR &&\n shouldSearchParent(flags, IView[TVIEW].data[injectorIndex + 8
/* TNODE */] === hostTElementNode) &&\n bloomHasToken(bloomHash, injectorIndex, IView))\n
{\n // The def wasn't found anywhere on this node, so it was a false positive.\n //
Traverse up the tree and continue searching.\n previousTView = tView;\n injectorIndex

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= getParentInjectorIndex(parentLocation);\n IView = getParentInjectorView(parentLocation,\nIView);\n }\n else {\n // If we should not search parent OR If the ancestor\nbloom filter value does not have the\n // bit corresponding to the directive we can give up on\ntraversing up to find the specific\n // injector.\n injectorIndex = -1;\n }\n }\n }\n return lookupTokenUsingModuleInjector(IView, token, flags, notFoundValue);\n}\n\nvar NOT_FOUND = {};\nfunction createNodeInjector() {\n return new\nNodeInjector(getCurrentTNode(), getLView());\n}\nfunction searchTokensOnInjector(injectorIndex, IView,\ntoken, previousTView, flags, hostTElementNode) {\n var currentTView = IView[TVIEW];\n var tNode =\ncurrentTView.data[injectorIndex + 8 /* TNODE */];\n // First, we need to determine if view providers can be\naccessed by the starting element.\n // There are two possibilities\n var canAccessViewProviders =\npreviousTView == null ?\n // 1) This is the first invocation `previousTView == null` which means that we are\nat the\n // `TNode` of where injector is starting to look. In such a case the only time we are allowed\n //\nto look into the ViewProviders is if:\n // - we are on a component\n // - AND the injector set\n`includeViewProviders` to true (implying that the token can see\n // ViewProviders because it is the\nComponent or a Service which itself was declared in\n // ViewProviders)\n (isComponentHost(tNode)\n&& includeViewProviders) :\n // 2) `previousTView != null` which means that we are now walking across\nthe parent nodes.\n // In such a case we are only allowed to look into the ViewProviders if:\n // - We\njust crossed from child View to Parent View `previousTView != currentTView`\n // - AND the parent TNode\nis an Element.\n // This means that we just came from the Component's View and therefore are allowed to\nsee\n // into the ViewProviders.\n (previousTView != currentTView && ((tNode.type & 3 /*\nAnyRNode */) !== 0));\n // This special case happens when there is a @host on the inject and when we are\nsearching\n // on the host element node.\n var isHostSpecialCase = (flags & exports.InjectFlags.Host) &&\nhostTElementNode === tNode;\n var injectableIdx = locateDirectiveOrProvider(tNode, currentTView, token,\ncanAccessViewProviders, isHostSpecialCase);\n if (injectableIdx !== null) {\n return\ngetNodeInjectable(IView, currentTView, injectableIdx, tNode);\n }\n else {\n return\nNOT_FOUND;\n }\n}\n\n/**\n * Searches for the given token among the node's directives and\nproviders.\n * @param tNode TNode on which directives are present.\n * @param tView The tView we\nare currently processing\n * @param token Provider token or type of a directive to look for.\n * @param\ncanAccessViewProviders Whether view providers should be considered.\n * @param isHostSpecialCase Whether\nthe host special case applies.\n * @returns Index of a found directive or provider, or null when none found.\n */\nfunction locateDirectiveOrProvider(tNode, tView, token, canAccessViewProviders, isHostSpecialCase) {\n var\nnodeProviderIndexes = tNode.providerIndexes;\n var tInjectables = tView.data;\n var injectablesStart\n= nodeProviderIndexes & 1048575 /* ProvidersStartIndexMask */;\n var directivesStart =\ntNode.directiveStart;\n var directiveEnd = tNode.directiveEnd;\n var cptViewProvidersCount =\nnodeProviderIndexes >> 20 /* CptViewProvidersCountShift */;\n var startingIndex = canAccessViewProviders\n? injectablesStart : injectablesStart + cptViewProvidersCount;\n // When the host special case applies, only the\nviewProviders and the component are visible\n var endIndex = isHostSpecialCase ? injectablesStart +\ncptViewProvidersCount : directiveEnd;\n for (var i = startingIndex; i < endIndex; i++) {\n var\nproviderTokenOrDef = tInjectables[i];\n if (i < directivesStart && token === providerTokenOrDef ||\n i >= directivesStart && providerTokenOrDef.type === token) {\n return i;\n }\n }\n if\n(isHostSpecialCase) {\n var dirDef = tInjectables[directivesStart];\n if (dirDef &&\nisComponentDef(dirDef) && dirDef.type === token) {\n return directivesStart;\n }\n }\n return null;\n}\n\n/**\n * Retrieve or instantiate the injectable from the `LView` at particular `index`.\n */\n * This function checks to see if the value has already been instantiated and if so returns the\n * cached\n`injectable`. Otherwise if it detects that the value is still a factory it\n * instantiates the `injectable` and caches the\nvalue.\n */\nfunction getNodeInjectable(IView, tView, index, tNode) {\n var value = IView[index];\n var tData = tView.data;\n if (isFactory(value)) {\n var factory = value;\n if (factory.resolving) {\n throwCyclicDependencyError(stringifyForError(tData[index]));\n }\n var

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previousIncludeViewProviders = setIncludeViewProviders(factory.canSeeViewProviders);\n
factory.resolving = true;\n var previousInjectImplementation = factory.injectImpl ?\n
setInjectImplementation(factory.injectImpl) : null;\n var success = enterDI(IView, tNode,\n
exports.InjectFlags.Default);\n ngDevMode &&\n assertEqual(success, true, 'Because flags do not\n
contain \\ SkipSelf\\ we expect this to always succeed.);\n try {\n value = IView[index] =\n
factory.factory(undefined, tData, IView, tNode);\n // This code path is hit for both directives and\n
providers.\n // For perf reasons, we want to avoid searching for hooks on providers.\n // It does no\n
harm to try (the hooks just won't exist), but the extra\n // checks are unnecessary and this is a hot path. So\n
we check to see\n // if the index of the dependency is in the directive range for this\n // tNode. If\n
it's not, we know it's a provider and skip hook registration.\n if (tView.firstCreatePass && index >=\n
tNode.directiveStart) {\n ngDevMode && assertDirectiveDef(tData[index]);\n
registerPreOrderHooks(index, tData[index], tView);\n }\n }\n finally {\n
previousInjectImplementation !== null &&\n setInjectImplementation(previousInjectImplementation);\n
setIncludeViewProviders(previousIncludeViewProviders);\n factory.resolving = false;\n
leaveDI();\n }\n }\n return value;\n }\n /**\n * Returns the bit in an injector's bloom filter that\n
should be used to determine whether or not\n * the directive might be provided by the injector.\n *\n * When\n
a directive is public, it is added to the bloom filter and given a unique ID that can be\n * retrieved on the Type.\n
When the directive isn't public or the token is not a directive `null`\n * is returned as the node injector can not\n
possibly provide that token.\n *\n * @param token the injection token\n * @returns the matching bit to\n
check in the bloom filter or `null` if the token is not known.\n * When the returned value is negative then it\n
represents special values such as `Injector`.\n */\n function bloomHashBitOrFactory(token) {\n
ngDevMode && assertDefined(token, 'token must be defined');\n if (typeof token === 'string') {\n return\n
token.charCodeAt(0) || 0;\n }\n var tokenId =\n // First check with `hasOwnProperty` so we don't get\n
an inherited ID.\n token.hasOwnProperty(NG_ELEMENT_ID) ? token[NG_ELEMENT_ID] : undefined;\n
// Negative token IDs are used for special objects such as `Injector`\n if (typeof tokenId === 'number') {\n
if (tokenId >= 0) {\n return tokenId & BLOOM_MASK;\n }\n else {\n ngDevMode\n
&&\n assertEqual(tokenId, -1 /* Injector */, 'Expecting to get Special Injector Id');\n return\n
createNodeInjector;\n }\n }\n else {\n return tokenId;\n }\n }\n function\n
bloomHasToken(bloomHash, injectorIndex, injectorView) {\n // Create a mask that targets the specific bit\n
associated with the directive we're looking for.\n // JS bit operations are 32 bits, so this will be a number\n
between 2^0 and 2^31, corresponding\n // to bit positions 0 - 31 in a 32 bit integer.\n var mask = 1 <<\n
bloomHash;\n var b7 = bloomHash & 0x80;\n var b6 = bloomHash & 0x40;\n var b5 = bloomHash &\n
0x20;\n // Our bloom filter size is 256 bits, which is eight 32-bit bloom filter buckets:\n // bf0 = [0 - 31], bf1\n
= [32 - 63], bf2 = [64 - 95], bf3 = [96 - 127], etc.\n // Get the bloom filter value from the appropriate bucket\n
based on the directive's bloomBit.\n var value;\n if (b7) {\n value = b6 ? (b5 ?\n
injectorView[injectorIndex + 7] : injectorView[injectorIndex + 6]) :\n (b5 ? injectorView[injectorIndex +\n
5] : injectorView[injectorIndex + 4]);\n }\n else {\n value = b6 ? (b5 ? injectorView[injectorIndex +\n
3] : injectorView[injectorIndex + 2]) :\n (b5 ? injectorView[injectorIndex + 1] :\n
injectorView[injectorIndex]);\n }\n // If the bloom filter value has the bit corresponding to the directive's\n
bloomBit flipped on,\n // this injector is a potential match.\n return !(value & mask);\n }\n /** Returns\n
true if flags prevent parent injector from being searched for tokens */\n function shouldSearchParent(flags,\n
isFirstHostTNode) {\n return !(flags & exports.InjectFlags.Self) && !(flags & exports.InjectFlags.Host &&\n
isFirstHostTNode);\n }\n var NodeInjector = /** @class */ (function () {\n function NodeInjector(_tNode,\n
_IView) {\n this._tNode = _tNode;\n this._IView = _IView;\n }\n NodeInjector.prototype.get\n
= function (token, notFoundValue) {\n return getOrCreateInjectable(this._tNode, this._IView, token,\n
undefined, notFoundValue);\n };\n return NodeInjector;\n }());\n /**\n * @codeGenApi\n */\n function getFactoryOf(type) {\n var typeAny = type;\n if (isForwardRef(type)) {\n return (function ()\n
{\n var factory = getFactoryOf(resolveForwardRef(typeAny));\n return factory ? factory() :

```

```

null;\n });\n }\n var factory = getFactoryDef(typeAny);\n if (factory === null) {\n var\ninjectorDef = getInjectorDef(typeAny);\n factory = injectorDef && injectorDef.factory;\n }\n return\nfactory || null;\n }\n /**\n * @codeGenApi\n */\n function getInheritedFactory(type) {\n return\nnoSideEffects(function () {\n var ownConstructor = type.prototype.constructor;\n var ownFactory =\n ownConstructor[NG_FACTORY_DEF] || getFactoryOf(ownConstructor);\n var objectPrototype =\n Object.prototype;\n var parent = Object.getPrototypeOf(type.prototype).constructor;\n // Go up the\n prototype until we hit `Object`.\n while (parent && parent !== objectPrototype) {\n var factory =\n parent[NG_FACTORY_DEF] || getFactoryOf(parent);\n // If we hit something that has a factory and the\n factory isn't the same as the type,\n // we've found the inherited factory. Note the check that the factory isn't\n the type's\n // own factory is redundant in most cases, but if the user has custom decorators on the\n // class, this lookup will start one level down in the prototype chain, causing us to\n // find the own\n factory first and potentially triggering an infinite loop downstream.\n if (factory && factory !==\n ownFactory) {\n return factory;\n }\n parent = Object.getPrototypeOf(parent);\n }\n // There is no factory defined. Either this was improper usage of inheritance\n // (no Angular\n decorator on the superclass) or there is no constructor at all\n // in the inheritance chain. Since the two cases\n cannot be distinguished, the\n // latter has to be assumed.\n return function (t) { return new t(); }; \n });\n }\n\n /**\n * @license\n * Copyright Google LLC All Rights Reserved.\n * \n * Use of this\n source code is governed by an MIT-style license that can be\n * found in the LICENSE file at\n https://angular.io/license\n */\n var ERROR_TYPE = 'ngType';\n var ERROR_DEBUG_CONTEXT =\n 'ngDebugContext';\n var ERROR_ORIGINAL_ERROR = 'ngOriginalError';\n var ERROR_LOGGER =\n 'ngErrorLogger';\n function wrappedError(message, originalError) {\n var msg = message + " caused by: " +\n (originalError instanceof Error ? originalError.message : originalError);\n var error = Error(msg);\n error[ERROR_ORIGINAL_ERROR] = originalError;\n return error;\n }\n\n function getType(error) {\n return error[ERROR_TYPE];\n }\n\n function getDebugContext(error) {\n return\n error[ERROR_DEBUG_CONTEXT];\n }\n\n function getOriginalError(error) {\n return\n error[ERROR_ORIGINAL_ERROR];\n }\n\n function getErrorLogger(error) {\n return\n error[ERROR_LOGGER] || defaultErrorLogger;\n }\n\n function defaultErrorLogger(console) {\n var values\n = [];\n for (var _i = 1; _i < arguments.length; _i++) {\n values[_i - 1] = arguments[_i];\n }\n console.error.apply(console, __spread(values));\n }\n\n /**\n * @license\n * Copyright Google LLC All\n Rights Reserved.\n * \n * Use of this source code is governed by an MIT-style license that can be\n * found\n in the LICENSE file at https://angular.io/license\n */\n /**\n * Provides a hook for centralized exception\n handling.\n * \n * The default implementation of `ErrorHandler` prints error messages to the `console`. To\n * intercept error handling, write a custom exception handler that replaces this default as\n * appropriate for your\n app.\n * \n * @usageNotes\n * ### Example\n * \n * ````\n * class MyErrorHandler implements\n ErrorHandler {\n * handleError(error) {\n * // do something with the exception\n * }\n * }\n * \n * @NgModule({\n * providers: [{provide: ErrorHandler, useClass: MyErrorHandler}]\n * })\n * class\n MyModule {\n * ````\n * \n * @publicApi\n */\n var ErrorHandler = /** @class */ (function () {\n function ErrorHandler() {\n /**\n * @internal\n */\n this._console = console;\n }\n\n ErrorHandler.prototype.handleError = function (error) {\n var originalError =\n this._findOriginalError(error);\n var context = this._findContext(error);\n // Note: Browser consoles\n show the place from where console.error was called.\n // We can use this to give users additional information\n about the error.\n var errorLogger = getErrorLogger(error);\n errorLogger(this._console, "ERROR",\n error);\n if (originalError) {\n errorLogger(this._console, "ORIGINAL ERROR", originalError);\n }\n if (context) {\n errorLogger(this._console, 'ERROR CONTEXT', context);\n }\n };\n /** @internal */\n ErrorHandler.prototype._findContext = function (error) {\n if (error) {\n return\n getDebugContext(error) ? getDebugContext(error) :\n this._findContext(getOriginalError(error));\n }\n return\n null;\n };\n /** @internal */\n ErrorHandler.prototype._findOriginalError = function (error) {\n var e = getOriginalError(error);\n
```

```

while (e && getOriginalError(e)) {
 e = getOriginalError(e);
}
return e;
};
return ErrorHandler();
}
/**
 * @license
 * Copyright Google LLC All Rights Reserved.
 * Use of this source code is governed by an MIT-style license that can be
 * found in the LICENSE file at
https://angular.io/license
 */
 * Defines a schema that allows an NgModule to contain the
following:
 * - Non-Angular elements named with dash case (`-`.)
 * - Element properties named with dash
case (`-`.)
 * Dash case is the naming convention for custom elements.
 */
 * @publicApi
 */
var
CUSTOM_ELEMENTS_SCHEMA = {
 name: 'custom-elements'
};
/**
 * Defines a schema that
allows any property on any element.
 */
 * @publicApi
 */
var NO_ERRORS_SCHEMA = {
name: 'no-errors-schema'
};
/**
 * @license
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 * found in the LICENSE file at
https://angular.io/license
 */
 * THIS FILE CONTAINS CODE WHICH SHOULD BE TREE
SHAKEN AND NEVER CALLED FROM PRODUCTION CODE!!!
 */
 * Creates an `Array`
construction with a given name. This is useful when
 * looking for memory consumption to see what time of
array it is.
 */
 * @param name Name to give to the constructor
 * @returns A subclass of `Array`
if possible. This can only be done in
 * environments which support `class` construct.
 */
function
createNamedArrayType(name) {
 // This should never be called in prod mode, so let's verify that is the case.
 if (ngDevMode) {
 try {
 // If this function were compromised the following could lead to
arbitrary
 // script execution. We bless it with Trusted Types anyway since this
 // function is
stripped out of production binaries.
 return (newTrustedFunctionForDev('Array', `return class ` + name
+ ` extends Array{}`))(Array);
 } catch (e) {
 // If it does not work just give up and fall
back to regular Array.
 return Array;
 } else {
 throw new Error('Looks like
we are in `prod mode`, but we are creating a named Array type, which is wrong! Check your code');
 }
}
}
/**
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is governed by an MIT-style license that can be
 * found in the LICENSE file at https://angular.io/license
 */
function normalizeDebugBindingName(name) {
 // Attribute names with `$` (eg `x-y$`) are valid per
spec, but unsupported by some browsers
 name = camelCaseToDashCase(name.replace(/[$@]/g, '_'));
return `ng-reflect-` + name;
}
var CAMEL_CASE_REGEXP = /[A-Z]/g;
function
camelCaseToDashCase(input) {
 return input.replace(CAMEL_CASE_REGEXP, function () {
 var m
= [];
 for (var _i = 0; _i < arguments.length; _i++) {
 m[_i] = arguments[_i];
 }
return '-' + m[1].toLowerCase();
});
}
function normalizeDebugBindingValue(value) {
 try {
 // Limit the size of the value as otherwise the DOM just gets polluted.
 return value != null ?
value.toString().slice(0, 30) : value;
 } catch (e) {
 return '[ERROR] Exception while trying to
serialize the value';
 }
}
/**
 * @license
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 * found in the LICENSE file at
https://angular.io/license
 */
 * Returns the matching `LContext` data for a given DOM node,
directive or component instance.
 */
 * This function will examine the provided DOM element, component, or
directive instance's
 * monkey-patched property to derive the `LContext` data. Once called then the monkey-
patched
 * value will be that of the newly created `LContext`.
 */
 * If the monkey-patched value is the
`LView` instance then the context value for that
 * target will be created and the monkey-patch reference will be
updated. Therefore when this
 * function is called it may mutate the provided element's, component's or any
of the associated
 * directive's monkey-patch values.
 */
 * If the monkey-patch value is not detected
then the code will walk up the DOM until an element
 * is found which contains a monkey-patch reference.
When that occurs then the provided element
 * will be updated with a new context (which is then returned). If
the monkey-patch value is not
 * detected for a component/directive instance then it will throw an error (all
components and
 * directives should be automatically monkey-patched by ivy).
 */
 * @param target
Component, Directive or DOM Node.
 */
function getLContext(target) {
 var mpValue =
readPatchedData(target);
 if (mpValue) {
 // only when it's an array is it considered an LView
instance
 // ... otherwise it's an already constructed LContext instance
 if (Array.isArray(mpValue))

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{\n var IView = mpValue;\n var directives = undefined;\n findViaComponent(IView, target);\n }\n else if (isDirectiveInstance(target)) {\n if (nodeIndex == -1) {\n application');\n }\n else {\n nodeIndex = findViaNativeElement(IView, target);\n == -1) {\n return null;\n }\n }\n // the goal is not to fill the entire\n context full of data because the lookups\n // are expensive. Instead, only the target data (the element,\n component, container, ICU\n // expression or directive details) are filled into the context. If called multiple\n times\n // with different target values then the missing target data will be filled in.\n var native =\n unwrapRNode(IView[nodeIndex]);\n var existingCtx = readPatchedData(native);\n var context =\n (existingCtx && !Array.isArray(existingCtx)) ?\n existingCtx :\n createLContext(IView,\n nodeIndex, native);\n // only when the component has been discovered then update the monkey-patch\n if (component && context.component === undefined) {\n context.component = component;\n attachPatchData(context.component, context);\n }\n // only when the directives have been\n discovered then update the monkey-patch\n if (directives && context.directives === undefined) {\n context.directives = directives;\n for (var i = 0; i < directives.length; i++) {\n attachPatchData(directives[i], context);\n }\n }\n attachPatchData(context.native,\n context);\n mpValue = context;\n }\n else {\n var rElement = target;\n ngDevMode && assertDomNode(rElement);\n // if the context is not found then we need to traverse upwards\n up the DOM\n // to find the nearest element that has already been monkey patched with data\n var\n parent = rElement;\n while (parent = parent.parentNode) {\n var parentContext =\n readPatchedData(parent);\n if (parentContext) {\n var IView = void 0;\n if\n (Array.isArray(parentContext)) {\n IView = parentContext;\n }\n else {\n IView = parentContext.IView;\n }\n // the edge of the app was also reached here\n through another means\n // (maybe because the DOM was changed manually).\n if (!IView)\n {\n return null;\n }\n var index = findViaNativeElement(IView, rElement);\n if (index >= 0) {\n var native = unwrapRNode(IView[index]);\n var context =\n createLContext(IView, index, native);\n attachPatchData(native, context);\n mpValue =\n context;\n break;\n }\n }\n }\n return mpValue || null;\n }\n }\n /**\n * Creates an empty instance of a `LContext` context\n */\n function createLContext(IView, nodeIndex,\n native) {\n return {\n IView: IView,\n nodeIndex: nodeIndex,\n native: native,\n component: undefined,\n directives: undefined,\n localRefs: undefined,\n }; \n }\n /**\n * Takes a component instance and returns the view for that component.\n */\n * @param componentInstance\n * @returns The component's view\n */\n function GetComponentViewByInstance(componentInstance) {\n var IView = readPatchedData(componentInstance);\n var view;\n if (Array.isArray(IView)) {\n var\n nodeIndex = findViaComponent(IView, componentInstance);\n view =\n GetComponentLViewByIndex(nodeIndex, IView);\n var context = createLContext(IView, nodeIndex,\n view[HOST]);\n context.component = componentInstance;\n attachPatchData(componentInstance,\n context);\n attachPatchData(context.native, context);\n }\n else {\n var context = IView;\n view = GetComponentLViewByIndex(context.nodeIndex, context.IView);\n return view;\n }\n }\n /**\n * Assigns the given data to the given target (which could be a component,\n * directive or DOM node\n instance) using monkey-patching.\n */\n function attachPatchData(target, data) {\n target[MONKEY_PATCH_KEY_NAME] = data;\n }\n function isComponentInstance(instance) {\n return\n instance && instance.constructor && instance.constructor.cmp;\n }\n function isDirectiveInstance(instance) {\n return\n instance && instance.constructor && instance.constructor.dir;\n }\n /**\n * Locates the element

```

```

within the given LView and returns the matching index\n
 */\n
function findViaNativeElement(IView, target) {\n
 var tView = IView[TVIEW];\n
 for (var i = HEADER_OFFSET; i < tView.bindingStartIndex; i++) {\n
if (unwrapRNode(IView[i]) === target) {\n
 return i;\n
}\n
}\n
return -1;\n
}\n
/**\n
 * Locates the next tNode (child, sibling or parent).\n
 */\n
function traverseNextElement(tNode) {\n
 if (tNode.child) {\n
 return tNode.child;\n
 }\n
 else if (tNode.next) {\n
 return tNode.next;\n
 }\n
 else {\n
 // Let's take the following template: <div>text</div><component/>\n
 // After checking the text node, we need to find the next parent that has a \"next\" TNode,\n
 // in this case the parent `div`, so that we can find the component.\n
 while (tNode.parent && !tNode.parent.next) {\n
 tNode = tNode.parent;\n
 }\n
 return tNode.parent && tNode.parent.next;\n
 }\n
}\n
/**\n
 * Locates the component within the given LView and returns the matching index\n
 */\n
function findViaComponent(IView, componentInstance) {\n
 var componentIndices = IView[TVIEW].components;\n
if (componentIndices) {\n
 for (var i = 0; i < componentIndices.length; i++) {\n
 var elementComponentIndex = componentIndices[i];\n
 var componentView = getComponentLViewByIndex(elementComponentIndex, IView);\n
 if (componentView[CONTEXT] === componentInstance) {\n
 return elementComponentIndex;\n
 }\n
 }\n
}\n
else {\n
 var rootComponentView = getComponentLViewByIndex(HEADER_OFFSET, IView);\n
 var rootComponent = rootComponentView[CONTEXT];\n
 if (rootComponent === componentInstance) {\n
 // we are dealing with the root element here therefore we know that the\n
 // element is the very first element after the HEADER data in the IView\n
 return HEADER_OFFSET;\n
 }\n
}\n
return -1;\n
}\n
/**\n
 * Locates the directive within the given LView and returns the matching index\n
 */\n
function findViaDirective(IView, directiveInstance) {\n
 // if a directive is monkey patched then it will (by default)\n
 // have a reference to the LView of the current view. The\n
 // element bound to the directive being search lives somewhere\n
 // in the view data. We loop through the nodes and check their\n
 // list of directives for the instance.\n
 var tNode = IView[TVIEW].firstChild;\n
 while (tNode) {\n
 var directiveIndexStart = tNode.directiveStart;\n
 var directiveIndexEnd = tNode.directiveEnd;\n
 for (var i = directiveIndexStart; i < directiveIndexEnd; i++) {\n
 if (IView[i] === directiveInstance) {\n
 return tNode.index;\n
 }\n
 }\n
 tNode = traverseNextElement(tNode);\n
 }\n
 return -1;\n
}\n
/**\n
 * Returns a list of directives extracted from the given view based on the\n
 * provided list of directive index values.\n
 */\n
@param nodeIndex The node index\n
@param IView The target view data\n
@param includeComponents Whether or not to include components in returned directives\n
 */\n
function getDirectivesAtNodeIndex(nodeIndex, IView, includeComponents) {\n
 var tNode = IView[TVIEW].data[nodeIndex];\n
 var directiveStartIndex = tNode.directiveStart;\n
 if (directiveStartIndex === 0)\n
 return EMPTY_ARRAY;\n
 var directiveEndIndex = tNode.directiveEnd;\n
 if (!includeComponents && tNode.flags & 2 /* isComponentHost */) directiveStartIndex++;\n
 return IView.slice(directiveStartIndex, directiveEndIndex);\n
}\n
function getComponentAtNodeIndex(nodeIndex, IView) {\n
 var tNode = IView[TVIEW].data[nodeIndex];\n
 var directiveStartIndex = tNode.directiveStart;\n
 return tNode.flags & 2 /* isComponentHost */ ? IView[directiveStartIndex] : null;\n
}\n
/**\n
 * Returns a map of local references (local reference name => element or directive instance) that\n
 * exist on a given element.\n
 */\n
function discoverLocalRefs(IView, nodeIndex) {\n
 var tNode = IView[TVIEW].data[nodeIndex];\n
 if (tNode && tNode.localNames) {\n
 var result = {};\n
 var localIndex = tNode.index + 1;\n
 for (var i = 0; i < tNode.localNames.length; i += 2) {\n
 result[tNode.localNames[i]] = IView[localIndex];\n
 localIndex++;\n
 }\n
 return result;\n
 }\n
 return null;\n
}\n
\n
/**\n
 * @license\n
 * Copyright Google LLC All Rights Reserved.\n
 * Use of this source code is governed by an MIT-style license that can be\n
 * found in the LICENSE file at https://angular.io/license\n
 */\n
var O$4 = function () { return (typeof requestAnimationFrame !== 'undefined' && requestAnimationFrame || // browser only\n setTimeout // everything else\n).bind(_global); }\n
var defaultScheduler = (O$4)();\n
\n
/**\n
 * @codeGenApi\n
 */\n
function resolveWindow(element) {\n
 return { name: 'window', target: element.ownerDocument.defaultView }; \n
}\n

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/**\n * \n * @codeGenApi\n */\n function resolveDocument(element) {\n return { name: 'document',\n target: element.ownerDocument };}\n }\n /**\n * \n * @codeGenApi\n */\n function\n resolveBody(element) {\n return { name: 'body', target: element.ownerDocument.body };}\n }\n /**\n *\n The special delimiter we use to separate property names, prefixes, and suffixes\n * in property binding metadata.\n See storeBindingMetadata().\n * \n * We intentionally use the Unicode \"REPLACEMENT CHARACTER\"\n (U+FFFD) as a delimiter\n * because it is a very uncommon character that is unlikely to be part of a user's\n * property names or interpolation strings. If it is in fact used in a property\n * binding, DebugElement.properties\n will not return the correct value for that\n * binding. However, there should be no runtime effect for real\n applications.\n * \n * This character is typically rendered as a question mark inside of a diamond.\n * See\n https://en.wikipedia.org/wiki/Specials_(Unicode_block)\n * \n * \n var INTERPOLATION_DELIMITER =\n \"\uFFFD\";\n /**\n * \n * Unwrap a value which might be behind a closure (for forward declaration reasons).\n */\n function maybeUnwrapFn(value) {\n if (value instanceof Function) {\n return value();\n }\n else {\n return value;\n }\n }\n /** Called when there are multiple component selectors that match\n a given node\n */\n function throwMultipleComponentError(tNode) {\n throw new RuntimeError(\"300\" /*\n MULTIPLE_COMPONENTS_MATCH */, \"Multiple components match node with tagname \" + tNode.value);\n }\n /** Throws an ExpressionChangedAfterChecked error if checkNoChanges mode is on.\n */\n function\n throwErrorIfNoChangesMode(creationMode, oldValue, currValue, propName) {\n var field = propName ? \"\n for \" + propName + \"\": \"\n var msg = \"ExpressionChangedAfterItHasBeenCheckedError: Expression has\n changed after it was checked. Previous value\" + field + \": \" + oldValue + \"\". Current value: \" + currValue +\n \"\";\n if (creationMode) {\n msg += \"\n \" It seems like the view has been created after its\n parent and its children have been dirty checked.\" + \"\n \" Has it been created in a change detection\n hook?\";\n }\n // TODO: include debug context, see `viewDebugError` function in\n //\n `packages/core/src/view/errors.ts` for reference.\n throw new RuntimeError(\"100\" /*\n EXPRESSION_CHANGED_AFTER_CHECKED */, msg);\n }\n function\n constructDetailsForInterpolation(IView, rootIndex, expressionIndex, meta, changedValue) {\n var _a =\n __read(meta.split(INTERPOLATION_DELIMITER)), propName = _a[0], prefix = _a[1], chunks = _a.slice(2);\n var oldValue = prefix, newValue = prefix;\n for (var i = 0; i < chunks.length; i++) {\n var slotIdx =\n rootIndex + i;\n oldValue += \"\" + IView[slotIdx] + chunks[i];\n newValue += \"\" + (slotIdx ===\n expressionIndex ? changedValue : IView[slotIdx]) + chunks[i];\n }\n return { propName: propName,\n oldValue: oldValue, newValue: newValue };}\n }\n /**\n * \n * Constructs an object that contains details for the\n ExpressionChangedAfterItHasBeenCheckedError:\n * - property name (for property bindings or interpolations)\n * - old and new values, enriched using information from metadata\n * \n * More information on the metadata\n storage format can be found in `storePropertyBindingMetadata`\n * function description.\n */\n function\n getExpressionChangedErrorDetails(IView, bindingIndex, oldValue, newValue) {\n var tData =\n IView[TVIEW].data;\n var metadata = tData[bindingIndex];\n if (typeof metadata === 'string') {\n //\n metadata for property interpolation\n if (metadata.indexOf(INTERPOLATION_DELIMITER) > -1) {\n return constructDetailsForInterpolation(IView, bindingIndex, bindingIndex, metadata, newValue);\n }\n // metadata for property binding\n return { propName: metadata, oldValue: oldValue, newValue:\n newValue };}\n }\n // metadata is not available for this expression, check if this expression is a part of the\n // property interpolation by going from the current binding index left and look for a string that\n // contains\n INTERPOLATION_DELIMITER, the layout in tView.data for this case will look like this:\n // [..., 'idPrefix\n and suffix', null, null, null, ...]\n if (metadata === null) {\n var idx = bindingIndex - 1;\n while\n (typeof tData[idx] !== 'string' && tData[idx + 1] === null) {\n idx--;\n }\n var meta =\n tData[idx];\n if (typeof meta === 'string') {\n var matches = meta.match(new\n RegExp(INTERPOLATION_DELIMITER, 'g'));\n // first interpolation delimiter separates property name\n from interpolation parts (in case of\n // property interpolations), so we subtract one from total number of\n found delimiters\n if (matches && (matches.length - 1) > bindingIndex - idx) {\n return\n constructDetailsForInterpolation(IView, idx, bindingIndex, meta, newValue);\n }\n }\n }\n }\n }

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return { propName: undefined, oldValue: oldValue, newValue: newValue };
}

/**
 * @license
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 * license that can be found in the LICENSE file at https://angular.io/license
 * (function
(RendererStyleFlags2) {
 // TODO(misko): This needs to be refactored into a separate file so that it can be
 imported from `node_manipulation.ts` Currently doing the import cause resolution order to change and
 fails the tests. The work around is to have hard coded value in `node_manipulation.ts` for now.
 /**
 * Marks a style as important.
 */
 RendererStyleFlags2[RendererStyleFlags2["Important"] = 1] =
 "Important";
 /**
 * Marks a style as using dash case naming (this-is-dash-case).
 */
 RendererStyleFlags2[RendererStyleFlags2["DashCase"] = 2] = "DashCase";
})(exports.RendererStyleFlags2
|| (exports.RendererStyleFlags2 = {}));
/**
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 LICENSE file at https://angular.io/license
 */
 var _IcuContainerIterate;
 /**
 * Iterator which provides
 ability to visit all of the `IcuContainerNode` root `RNode`s.
 */
 function
 icuContainerIterate(IcuContainerNode, IView) {
 return _IcuContainerIterate(IcuContainerNode, IView);
 }
 /**
 * Ensures that `IcuContainerVisitor`'s implementation is present.
 * This function is invoked
 when i18n instruction comes across an ICU. The purpose is to allow the bundler to tree shake ICU logic and
 only load it if ICU instruction is executed.
 */
 function ensureIcuContainerVisitorLoaded(loader) {
 if
 (_IcuContainerIterate === undefined) {
 // Do not inline this function. We want to keep
 `ensureIcuContainerVisitorLoaded` light, so it can be inlined into call-site.
 _IcuContainerIterate
 = loader();
 }
 }
 /**
 * @license
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 https://angular.io/license
 */
 // Note: This hack is necessary so we don't erroneously get a circular
 dependency based on types.
 var unusedValueExportToPlacateAjd$5 = 1;
 /**
 * @license
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 MIT-style license that can be found in the LICENSE file at https://angular.io/license
 */
 /**
 * Gets
 the parent LView of the passed LView, if the PARENT is an LContainer, will get the parent of that
 LContainer, which is an LView
 */
 @param IView the IView whose parent to get
 */
 function
 getLViewParent(IView) {
 ngDevMode && assertLView(IView);
 var parent = IView[PARENT];
 return isLContainer(parent) ? parent[PARENT] : parent;
 }
 /**
 * Retrieve the root view from any
 component or `LView` by walking the parent `LView` until reaching the root `LView`.
 */
 @param
 componentOrLView any component or `LView`
 */
 function getRootView(componentOrLView) {
 ngDevMode && assertDefined(componentOrLView, 'component');
 var IView =
 isLView(componentOrLView) ? componentOrLView : readPatchedLView(componentOrLView);
 while
 (IView && !(IView[FLAGS] & 512 /* IsRoot */)) {
 IView = getLViewParent(IView);
 }
 ngDevMode && assertLView(IView);
 return IView;
 }
 /**
 * Returns the `RootContext` instance
 that is associated with the application where the target is situated. It does this by walking the parent views
 until it gets to the root view, then getting the context off of that.
 */
 @param viewOrComponent the
 `LView` or component to get the root context for.
 */
 function getRootContext(viewOrComponent) {
 var rootView = getRootView(viewOrComponent);
 ngDevMode &&
 assertDefined(rootView[CONTEXT], 'RootView has no context. Perhaps it is disconnected?');
 return
 rootView[CONTEXT];
 }
 /**
 * Gets the first `LContainer` in the LView or `null` if none exists.
 */
 function getFirstLContainer(IView) {
 return getNearestLContainer(IView[CHILD_HEAD]);
 }
 /**
 * Gets the next `LContainer` that is a sibling of the given container.
 */
 function
 getNextLContainer(container) {
 return getNearestLContainer(container[NEXT]);
 }
 function
 getNearestLContainer(viewOrContainer) {
 while (viewOrContainer !== null &&
 !isLContainer(viewOrContainer)) {
 viewOrContainer = viewOrContainer[NEXT];
 }
 return
 viewOrContainer;
 }
 /**
 * @license
 * Copyright Google LLC All Rights Reserved.
 * Use of this source code is governed by an MIT-style license that can be found in the LICENSE file at

```

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https://angular.io/license\n
 *^\\n var unusedValueToPlacateAjd = unusedValueExportToPlacateAjd$1 +
 unusedValueExportToPlacateAjd$4 + unusedValueExportToPlacateAjd$5 + unusedValueExportToPlacateAjd$2 +
 unusedValueExportToPlacateAjd;\n
 /**\n
 * NOTE: for performance reasons, the possible actions are inlined
 within the function instead of\n
 * being passed as an argument.\n
 *^\\n function
 applyToElementOrContainer(action, renderer, parent, lNodeToHandle, beforeNode) {\n
 // If this slot was
 allocated for a text node dynamically created by i18n, the text node itself\n
 // won't be created until i18nApply()
 in the update block, so this node should be skipped.\n
 // For more info, see \"ICU expressions should work
 inside an ngTemplateOutlet inside an ngFor\"\n
 // in `i18n_spec.ts`.\n
 if (lNodeToHandle !== null) {\n
 var lContainer = void 0;\n
 var isComponent = false;\n
 // We are expecting an RNode, but in the case of
 a component or LContainer the `RNode` is\n
 // wrapped in an array which needs to be unwrapped. We need
 to know if it is a component and if\n
 // it has LContainer so that we can process all of those cases
 appropriately.\n
 if (isLContainer(lNodeToHandle)) {\n
 lContainer = lNodeToHandle;\n
 }\n
 else if (isLView(lNodeToHandle)) {\n
 isComponent = true;\n
 ngDevMode &&
 assertDefined(lNodeToHandle[HOST], 'HOST must be defined for a component LView');\n
 lNodeToHandle = lNodeToHandle[HOST];\n
 }\n
 var rNode = unwrapRNode(lNodeToHandle);\n
 ngDevMode && !isProceduralRenderer(renderer) && assertDomNode(rNode);\n
 if (action === 0 /* Create
 */ && parent !== null) {\n
 if (beforeNode === null) {\n
 nativeAppendChild(renderer, parent,
 rNode);\n
 }\n
 else {\n
 nativeInsertBefore(renderer, parent, rNode, beforeNode || null,
 true);\n
 }\n
 }\n
 else if (action === 1 /* Insert */ && parent !== null) {\n
 nativeInsertBefore(renderer, parent, rNode, beforeNode || null, true);\n
 }\n
 else if (action === 2 /*
 Detach */) {\n
 nativeRemoveNode(renderer, rNode, isComponent);\n
 }\n
 else if (action ===
 3 /* Destroy */) {\n
 ngDevMode && ngDevMode.rendererDestroyNode++;\n
 renderer.destroyNode(rNode);\n
 }\n
 if (lContainer !== null) {\n
 applyContainer(renderer,
 action, lContainer, parent, beforeNode);\n
 }\n
 }\n
 }\n
 function createTextNode(renderer, value) {\n
 ngDevMode && ngDevMode.rendererCreateTextNode++;\n
 ngDevMode &&
 ngDevMode.rendererSetText++;\n
 return isProceduralRenderer(renderer) ? renderer.createText(value) : \n
 renderer.createText(value);\n
 }\n
 function updateTextNode(renderer, rNode, value) {\n
 ngDevMode
 && ngDevMode.rendererSetText++;\n
 isProceduralRenderer(renderer) ? renderer.setValue(rNode, value) :
 rNode.textContent = value;\n
 }\n
 function createCommentNode(renderer, value) {\n
 ngDevMode &&
 ngDevMode.rendererCreateComment++;\n
 // isProceduralRenderer check is not needed because both
 `Renderer2` and `Renderer3` have the same\n
 // method name.\n
 return renderer.createComment(value);\n
 }\n
 /**\n
 * Creates a native element from a tag name, using a renderer.\n
 * @param renderer A renderer to
 use\n
 * @param name the tag name\n
 * @param namespace Optional namespace for element.\n
 * @returns
 the element created\n
 *^\\n function createElementNode(renderer, name, namespace) {\n
 ngDevMode &&
 ngDevMode.rendererCreateElement++;\n
 if (isProceduralRenderer(renderer)) {\n
 return
 renderer.createElement(name, namespace);\n
 }\n
 else {\n
 return namespace === null ?
 renderer.createElement(name) : \n
 renderer.createElementNS(namespace, name);\n
 }\n
 }\n
 /**\n
 * Removes all DOM elements associated with a view.\n
 *^\\n * Because some root nodes of the view may be
 containers, we sometimes need\n
 * to propagate deeply into the nested containers to remove all elements in the\n
 * views beneath it.\n
 *^\\n * @param tView The `TView` of the `LView` from which elements should be added
 or removed\n
 * @param lView The view from which elements should be added or removed\n
 *^\\n function
 removeViewFromContainer(tView, lView) {\n
 var renderer = lView[RENDERER];\n
 applyView(tView,
 lView, renderer, 2 /* Detach */, null, null);\n
 lView[HOST] = null;\n
 lView[T_HOST] = null;\n
 }\n
 /**\n
 * Adds all DOM elements associated with a view.\n
 *^\\n * Because some root nodes of the view may be
 containers, we sometimes need\n
 * to propagate deeply into the nested containers to add all elements in the\n
 * views beneath it.\n
 *^\\n * @param tView The `TView` of the `LView` from which elements should be added or
 removed\n
 * @param parentTNode The `TNode` where the `LView` should be attached to.\n
 * @param
 renderer Current renderer to use for DOM manipulations.\n
 * @param lView The view from which elements

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should be added or removed\n * @param parentNativeNode The parent `RElement` where it should be inserted
into.\n * @param beforeNode The node before which elements should be added, if insert mode\n */\n
function addViewToContainer(tView, parentTNode, renderer, IView, parentNativeNode, beforeNode) {\n
IView[HOST] = parentNativeNode;\n IView[T_HOST] = parentTNode;\n applyView(tView, IView,
renderer, 1 /* Insert */, parentNativeNode, beforeNode);\n }\n /**\n * Detach a `LView` from the DOM by
detaching its nodes.\n *\n * @param tView The `TView` of the `LView` to be detached\n * @param IView
the `LView` to be detached.\n */\n function renderDetachView(tView, IView) {\n applyView(tView,
IView, IView[RENDERER], 2 /* Detach */, null, null);\n }\n /**\n * Traverses down and up the tree of views
and containers to remove listeners and\n * call onDestroy callbacks.\n *\n * Notes:\n * - Because it's used
for onDestroy calls, it needs to be bottom-up.\n * - Must process containers instead of their views to avoid
splicing\n * when views are destroyed and re-added.\n * - Using a while loop because it's faster than
recursion\n * - Destroy only called on movement to sibling or movement to parent (laterally or up)\n *\n *
@param rootView The view to destroy\n */\n function destroyViewTree(rootView) {\n // If the view has no
children, we can clean it up and return early.\n var IViewOrLContainer = rootView[CHILD_HEAD];\n if
(!IViewOrLContainer) {\n return cleanUpView(rootView[TVIEW], rootView);\n }\n while
(IViewOrLContainer) {\n var next = null;\n if (isLView(IViewOrLContainer)) {\n // If
LView, traverse down to child.\n next = IViewOrLContainer[CHILD_HEAD];\n }\n else {\n
 ngDevMode && assertLContainer(IViewOrLContainer);\n // If container, traverse down to its first
LView.\n var firstView = IViewOrLContainer[CONTAINER_HEADER_OFFSET];\n if
(firstView)\n next = firstView;\n }\n if (!next) {\n // Only clean up view when
moving to the side or up, as destroy hooks\n // should be called in order from the bottom up.\n while (IViewOrLContainer && !IViewOrLContainer[NEXT] && IViewOrLContainer !== rootView) {\n
 if (isLView(IViewOrLContainer)) {\n cleanUpView(IViewOrLContainer[TVIEW],
IViewOrLContainer);\n }\n IViewOrLContainer = IViewOrLContainer[PARENT];\n }\n if (IViewOrLContainer === null)\n IViewOrLContainer = rootView;\n if
(isLView(IViewOrLContainer)) {\n cleanUpView(IViewOrLContainer[TVIEW],
IViewOrLContainer);\n }\n next = IViewOrLContainer && IViewOrLContainer[NEXT];\n }\n IViewOrLContainer = next;\n }\n }\n /**\n * Inserts a view into a container.\n *\n * This
adds the view to the container's array of active views in the correct\n * position. It also adds the view's elements to
the DOM if the container isn't a\n * root node of another view (in that case, the view's elements will be added
when\n * the container's parent view is added later).\n *\n * @param tView The `TView` of the `LView` to
insert\n * @param IView The view to insert\n * @param IContainer The container into which the view should
be inserted\n * @param index Which index in the container to insert the child view into\n */\n function
insertView(tView, IView, IContainer, index) {\n ngDevMode && assertLView(IView);\n ngDevMode &&
assertLContainer(IContainer);\n var indexInContainer = CONTAINER_HEADER_OFFSET + index;\n var
containerLength = IContainer.length;\n if (index > 0) {\n // This is a new view, we need to add it to the
children.\n IContainer[indexInContainer - 1][NEXT] = IView;\n }\n if (index < containerLength -
CONTAINER_HEADER_OFFSET) {\n IView[NEXT] = IContainer[indexInContainer];\n }\n addToArray(IContainer, CONTAINER_HEADER_OFFSET + index, IView);\n }\n else {\n
 IContainer.push(IView);\n IView[NEXT] = null;\n }\n IView[PARENT] = IContainer;\n // track
views where declaration and insertion points are different\n var declarationLContainer =
IView[DECLARATION_LCONTAINER];\n if (declarationLContainer !== null && IContainer !==
declarationLContainer) {\n trackMovedView(declarationLContainer, IView);\n }\n // notify query
that a new view has been added\n var IQueries = IView[QUERIES];\n if (IQueries !== null) {\n
 IQueries.insertView(tView);\n }\n // Sets the attached flag\n IView[FLAGS] |= 128 /* Attached */;\n }\n /**\n * Track views created from the declaration container (TemplateRef) and inserted into a\n * different
LContainer.\n */\n function trackMovedView(declarationContainer, IView) {\n ngDevMode &&
assertDefined(IView, 'LView required');\n ngDevMode && assertLContainer(declarationContainer);\n var

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movedViews = declarationContainer[MOVED_VIEWS];\n var insertedLContainer = IView[PARENT];\n
ngDevMode && assertLContainer(insertedLContainer);\n var insertedComponentLView =
insertedLContainer[PARENT][DECLARATION_COMPONENT_VIEW];\n ngDevMode &&
assertDefined(insertedComponentLView, 'Missing insertedComponentLView');\n var
declaredComponentLView = IView[DECLARATION_COMPONENT_VIEW];\n ngDevMode &&
assertDefined(declaredComponentLView, 'Missing declaredComponentLView');\n if
(declaredComponentLView !== insertedComponentLView) {\n // At this point the declaration-component is
not same as insertion-component; this means that\n // this is a transplanted view. Mark the declared IView as
having transplanted views so that\n // those views can participate in CD.\n
declarationContainer[HAS_TRANSPLANTED_VIEWS] = true;\n }\n if (movedViews === null) {\n
declarationContainer[MOVED_VIEWS] = [IView];\n }\n else {\n movedViews.push(IView);\n
 }\n }\n function detachMovedView(declarationContainer, IView) {\n ngDevMode &&
assertLContainer(declarationContainer);\n ngDevMode &&\n
assertDefined(declarationContainer[MOVED_VIEWS], 'A projected view should belong to a non-empty projected
views collection');\n var movedViews = declarationContainer[MOVED_VIEWS];\n var
declarationViewIndex = movedViews.indexOf(IView);\n var insertionLContainer = IView[PARENT];\n
ngDevMode && assertLContainer(insertionLContainer);\n // If the view was marked for refresh but then
detached before it was checked (where the flag\n // would be cleared and the counter decremented), we need to
decrement the view counter here\n // instead.\n if (IView[FLAGS] & 1024 /* RefreshTransplantedView */)
{\n IView[FLAGS] &= ~1024 /* RefreshTransplantedView */;\n
updateTransplantedViewCount(insertionLContainer, -1);\n }\n movedViews.splice(declarationViewIndex,
1);\n }\n /**\n * Detaches a view from a container.\n * This method removes the view from the
container's array of active views. It also\n * removes the view's elements from the DOM.\n * @param
IContainer The container from which to detach a view\n * @param removeIndex The index of the view to
detach\n * @returns Detached LView instance.\n */\n function detachView(IContainer, removeIndex) {\n
if (IContainer.length <= CONTAINER_HEADER_OFFSET)\n return;\n var indexInContainer =
CONTAINER_HEADER_OFFSET + removeIndex;\n var viewToDetach = IContainer[indexInContainer];\n
if (viewToDetach) {\n var declarationLContainer = viewToDetach[DECLARATION_LCONTAINER];\n
 if (declarationLContainer !== null && declarationLContainer !== IContainer) {\n
detachMovedView(declarationLContainer, viewToDetach);\n }\n if (removeIndex > 0) {\n
IContainer[indexInContainer - 1][NEXT] = viewToDetach[NEXT];\n }\n var removedLView =
removeFromArray(IContainer, CONTAINER_HEADER_OFFSET + removeIndex);\n
removeViewFromContainer(viewToDetach[TVIEW], viewToDetach);\n // notify query that a view has been
removed\n var IQueries = removedLView[QUERIES];\n if (IQueries !== null) {\n
IQueries.detachView(removedLView[TVIEW]);\n }\n viewToDetach[PARENT] = null;\n
viewToDetach[NEXT] = null;\n // Unsets the attached flag\n viewToDetach[FLAGS] &= ~128 /*
Attached */;\n }\n return viewToDetach;\n }\n /**\n * A standalone function which destroys an
LView,\n * conducting clean up (e.g. removing listeners, calling onDestroys).\n * @param tView The
`TView` of the `LView` to be destroyed\n * @param IView The view to be destroyed.\n */\n function
destroyLView(tView, IView) {\n if (!(IView[FLAGS] & 256 /* Destroyed */)) {\n var renderer =
IView[RENDERER];\n if (isProceduralRenderer(renderer) && renderer.destroyNode) {\n
applyView(tView, IView, renderer, 3 /* Destroy */, null, null);\n }\n destroyViewTree(IView);\n
 }\n }\n /**\n * Calls onDestroys hooks for all directives and pipes in a given view and then removes all\n
 * listeners. Listeners are removed as the last step so events delivered in the onDestroys hooks\n * can be propagated
to @Output listeners.\n * @param tView `TView` for the `LView` to clean up.\n * @param IView The
LView to clean up\n */\n function cleanUpView(tView, IView) {\n if (!(IView[FLAGS] & 256 /*
Destroyed */)) {\n // Usually the Attached flag is removed when the view is detached from its parent,
however\n // if it's a root view, the flag won't be unset hence why we're also removing on destroy.\n

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IView[FLAGS] &= ~128 /* Attached */;\n // Mark the LView as destroyed *before* executing the onDestroy
hooks. An onDestroy hook\n // runs arbitrary user code, which could include its own `viewRef.destroy()` (or
similar). If\n // We don't flag the view as destroyed before the hooks, this could lead to an infinite loop.\n
 // This also aligns with the ViewEngine behavior. It also means that the onDestroy hook is\n // really more
of an \"afterDestroy\" hook if you think about it.\n IView[FLAGS] |= 256 /* Destroyed */;\n
executeOnDestroys(tView, IView);\n removeListeners(tView, IView);\n // For component views only,
the local renderer is destroyed at clean up time.\n if (IView[TVIEW].type === 1 /* Component */ &&
isProceduralRenderer(IView[RENDERER])) {\n ngDevMode && ngDevMode.rendererDestroy++;\n
 IView[RENDERER].destroy();\n }\n var declarationContainer =
IView[DECLARATION_LCONTAINER];\n // we are dealing with an embedded view that is still inserted
into a container\n if (declarationContainer !== null && isLContainer(IView[PARENT])) {\n // and
this is a projected view\n if (declarationContainer !== IView[PARENT]) {\n
detachMovedView(declarationContainer, IView);\n }\n // For embedded views still attached to a
container: remove query result from this view.\n var IQueries = IView[QUERIES];\n if (IQueries
!== null) {\n IQueries.detachView(tView);\n }\n }\n }\n /** Removes
listeners and unsubscribes from output subscriptions *\n function removeListeners(tView, IView) {\n var
tCleanup = tView.cleanup;\n if (tCleanup !== null) {\n var ICleanup = IView[CLEANUP];\n for
(var i = 0; i < tCleanup.length - 1; i += 2) {\n if (typeof tCleanup[i] === 'string') {\n // This is a
native DOM listener\n var idxOrTargetGetter = tCleanup[i + 1];\n var target = typeof
idxOrTargetGetter === 'function' ?\n idxOrTargetGetter(IView) :
unwrapRNode(IView[idxOrTargetGetter]);\n var listener = ICleanup[tCleanup[i + 2]);\n var
useCaptureOrSubIdx = tCleanup[i + 3];\n if (typeof useCaptureOrSubIdx === 'boolean') {\n
// native DOM listener registered with Renderer3\n target.removeEventListener(tCleanup[i], listener,
useCaptureOrSubIdx);\n }\n else {\n if (useCaptureOrSubIdx >= 0) {\n
// unregister\n ICleanup[useCaptureOrSubIdx]();\n }\n }
else\n {\n // Subscription\n ICleanup[-useCaptureOrSubIdx].unsubscribe();\n
 }\n }\n i += 2;\n }\n else {\n // This is a cleanup function that
is grouped with the index of its context\n var context = ICleanup[tCleanup[i + 1]);\n
tCleanup[i].call(context);\n }\n }\n IView[CLEANUP] = null;\n }\n }\n /** Calls
onDestroy hooks for this view *\n function executeOnDestroys(tView, IView) {\n var destroyHooks;\n if
(tView != null && (destroyHooks = tView.destroyHooks) != null) {\n for (var i = 0; i < destroyHooks.length;
i += 2) {\n var context = IView[destroyHooks[i]);\n // Only call the destroy hook if the context
has been requested.\n if (!(context instanceof NodeInjectorFactory)) {\n var toCall =
destroyHooks[i + 1];\n if (Array.isArray(toCall)) {\n for (var j = 0; j < toCall.length; j +=
2) {\n toCall[j + 1].call(context[toCall[j]]);\n }\n }
else {\n toCall.call(context);\n }\n }\n }\n }\n }\n /**\n * Returns a native
element if a node can be inserted into the given parent.\n *\n * There are two reasons why we may not be able
to insert a element immediately.\n * - Projection: When creating a child content element of a component, we have
to skip the\n * insertion because the content of a component will be projected.\n *\n * - Parent container is
disconnected: This can happen when we are inserting a view into\n * parent container, which itself is
disconnected. For example the parent container is part\n * of a View which has not be inserted or is made for
projection but has not been inserted\n * into destination.\n *\n * @param tView: Current `TVIEW`.\n *\n * @param tNode: `TNode` for which we wish to retrieve render parent.\n *\n * @param IView: Current `LVIEW`.\n
*\n function getParentRElement(tView, tNode, IView) {\n return getClosestRElement(tView, tNode.parent,
IView);\n }\n /**\n * Get closest `RElement` or `null` if it can't be found.\n *\n * If `TNode` is
`TNodeType.Element` => return `RElement` at `LView[tNode.index]` location.\n *\n * If `TNode` is
`TNodeType.ElementContainer|IcuContain` => return the parent (recursively).\n *\n * If `TNode` is `null` then return

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host `RElement`:\n * - return `null` if projection\n * - return `null` if parent container is disconnected (we
have no parent.)\n *\n * @param tView: Current `TVIEW`.\n * @param tNode: `TNode` for which we wish
to retrieve `RElement` (or `null` if host element is\n * needed).\n * @param IView: Current `LVIEW`.\n *
@returns `null` if the `RElement` can't be determined at this time (no parent / projection)\n */\n function
getClosestRElement(tView, tNode, IView) {\n var parentTNode = tNode;\n // Skip over element and ICU
containers as those are represented by a comment node and\n // can't be used as a render parent.\n while
(parentTNode !== null &&\n (parentTNode.type & (8 /* ElementContainer */ | 32 /* Icu */))) {\n
tNode = parentTNode;\n parentTNode = tNode.parent;\n }\n // If the parent tNode is null, then we
are inserting across views: either into an embedded view\n // or a component view.\n if (parentTNode ===
null) {\n // We are inserting a root element of the component view into the component host element and\n
// it should always be eager.\n return IView[HOST];\n }\n else {\n ngDevMode &&
assertTNodeType(parentTNode, 3 /* AnyRNode */ | 4 /* Container */);\n if (parentTNode.flags & 2 /*
isComponentHost */) {\n ngDevMode && assertTNodeForLView(parentTNode, IView);\n var
encapsulation = tView.data[parentTNode.directiveStart].encapsulation;\n // We've got a parent which is an
element in the current view. We just need to verify if the\n // parent element is not a component.
Component's content nodes are not inserted immediately\n // because they will be projected, and so doing
insert at this point would be wasteful.\n // Since the projection would then move it to its final destination.
Note that we can't\n // make this assumption when using the Shadow DOM, because the native projection
placeholders\n // (<content> or <slot>) have to be in place as elements are being inserted.\n if
(encapsulation === exports.ViewEncapsulation.None ||\n encapsulation ===
exports.ViewEncapsulation.Emulated) {\n return null;\n }\n return
getNativeByTNode(parentTNode, IView);\n }\n }\n /**\n * Inserts a native node before another native
node for a given parent using { @link Renderer3 }.\n * This is a utility function that can be used when native nodes
were determined - it abstracts an\n * actual renderer being used.\n */\n function nativeInsertBefore(renderer,
parent, child, beforeNode, isMove) {\n ngDevMode && ngDevMode.rendererInsertBefore++;\n if
(isProceduralRenderer(renderer)) {\n renderer.insertBefore(parent, child, beforeNode, isMove);\n }\n
else {\n parent.insertBefore(child, beforeNode, isMove);\n }\n }\n function
nativeAppendChild(renderer, parent, child) {\n ngDevMode && ngDevMode.rendererAppendChild++;\n ngDevMode &&
assertDefined(parent, 'parent node must be defined');\n if (isProceduralRenderer(renderer)) {\n
 renderer.appendChild(parent, child);\n }\n else {\n parent.appendChild(child);\n }\n }\n
function nativeAppendOrInsertBefore(renderer, parent, child, beforeNode, isMove) {\n if (beforeNode !==
null) {\n nativeInsertBefore(renderer, parent, child, beforeNode, isMove);\n }\n else {\n
 nativeAppendChild(renderer, parent, child);\n }\n }\n /** Removes a node from the DOM given its native
parent. */\n function nativeRemoveChild(renderer, parent, child, isHostElement) {\n if
(isProceduralRenderer(renderer)) {\n renderer.removeChild(parent, child, isHostElement);\n }\n else
{\n parent.removeChild(child);\n }\n }\n /**\n * Returns a native parent of a given native node.\n
*/\n function nativeParentNode(renderer, node) {\n return (isProceduralRenderer(renderer) ?
renderer.parentNode(node) : node.parentNode);\n }\n /**\n * Returns a native sibling of a given native
node.\n */\n function nativeNextSibling(renderer, node) {\n return isProceduralRenderer(renderer) ?
renderer.nextSibling(node) : node.nextSibling;\n }\n /**\n * Find a node in front of which `currentTNode`
should be inserted.\n * This method determines the `RNode` in front of which we should insert the
`currentRNode`. This\n * takes `TNode.insertBeforeIndex` into account if i18n code has been invoked.\n */\n
* @param parentTNode parent `TNode`\n * @param currentTNode current `TNode` (The node which we would
like to insert into the DOM)\n * @param IView current `LVIEW`\n */\n function
getInsertInFrontOfRNode(parentTNode, currentTNode, IView) {\n return
_getInsertInFrontOfRNodeWithI18n(parentTNode, currentTNode, IView);\n }\n /**\n * Find a node in front
of which `currentTNode` should be inserted. (Does not take i18n into\n * account)\n */\n * This method
determines the `RNode` in front of which we should insert the `currentRNode`. This\n * does not take

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`TNode.insertBeforeIndex` into account.\n * \n * @param parentTNode parent `TNode`\n * @param
currentTNode current `TNode` (The node which we would like to insert into the DOM)\n * @param IView
current `LView`\n * \n function getInsertInFrontOfRNodeWithNoI18n(parentTNode, currentTNode, IView) {\n
 if (parentTNode.type & (8 /* ElementContainer */ | 32 /* Icu */)) {\n return
getNativeByTNode(parentTNode, IView);\n }\n return null;\n }\n /** \n * Tree shakable boundary for
`getInsertInFrontOfRNodeWithI18n` function.\n * \n * This function will only be set if i18n code runs.\n * \n
var _getInsertInFrontOfRNodeWithI18n = getInsertInFrontOfRNodeWithNoI18n;\n /** \n * Tree shakable
boundary for `processI18nInsertBefore` function.\n * \n * This function will only be set if i18n code runs.\n
* \n var _processI18nInsertBefore;\n function setI18nHandling(getInsertInFrontOfRNodeWithI18n,
processI18nInsertBefore) {\n _getInsertInFrontOfRNodeWithI18n = getInsertInFrontOfRNodeWithI18n;\n
 _processI18nInsertBefore = processI18nInsertBefore;\n }\n /** \n * Appends the `child` native node (or a
collection of nodes) to the `parent`.\n * \n * @param tView The `TView` to be appended\n * @param IView
The current LView\n * @param childRNode The native child (or children) that should be appended\n *
@param childTNode The TNode of the child element\n * \n function appendChild(tView, IView, childRNode,
childTNode) {\n var parentRNode = getParentRElement(tView, childTNode, IView);\n var renderer =
IView[RENDERER];\n var parentTNode = childTNode.parent || IView[T_HOST];\n var anchorNode =
getInsertInFrontOfRNode(parentTNode, childTNode, IView);\n if (parentRNode !== null) {\n if
(Array.isArray(childRNode)) {\n for (var i = 0; i < childRNode.length; i++) {\n
 nativeAppendOrInsertBefore(renderer, parentRNode, childRNode[i], anchorNode, false);\n }\n }\n else {\n nativeAppendOrInsertBefore(renderer, parentRNode, childRNode, anchorNode, false);\n }\n }\n _processI18nInsertBefore !== undefined &&\n _processI18nInsertBefore(renderer,
childTNode, IView, childRNode, parentRNode);\n }\n /** \n * Returns the first native node for a given LView,
starting from the provided TNode.\n * \n * Native nodes are returned in the order in which those appear in the
native tree (DOM).\n * \n function getFirstNativeNode(IView, tNode) {\n if (tNode !== null) {\n
 ngDevMode &&\n assertTNodeType(tNode, 3 /* AnyRNode */ | 12 /* AnyContainer */ | 32 /* Icu */ | 16
/* Projection */);\n var tNodeType = tNode.type;\n if (tNodeType & 3 /* AnyRNode */) {\n
 return getNativeByTNode(tNode, IView);\n }\n else if (tNodeType & 4 /* Container */) {\n
 return getBeforeNodeForView(-1, IView[tNode.index]);\n }\n else if (tNodeType & 8 /*
ElementContainer */) {\n var eIcuContainerChild = tNode.child;\n if (eIcuContainerChild !==
null) {\n return getFirstNativeNode(IView, eIcuContainerChild);\n }\n else {\n
 var rNodeOrLContainer = IView[tNode.index];\n if (isLContainer(rNodeOrLContainer)) {\n
 return getBeforeNodeForView(-1, rNodeOrLContainer);\n }\n else {\n
 return unwrapRNode(rNodeOrLContainer);\n }\n }\n else if (tNodeType &
32 /* Icu */) {\n var nextRNode = icuContainerIterate(tNode, IView);\n var rNode =
nextRNode();\n // If the ICU container has no nodes, than we use the ICU anchor as the node.\n
 return rNode || unwrapRNode(IView[tNode.index]);\n }\n else {\n var componentView =
IView[DECLARATION_COMPONENT_VIEW];\n var componentHost = componentView[T_HOST];\n var
parentView = getLViewParent(componentView);\n var firstProjectedTNode =
componentHost.projection[tNode.projection];\n if (firstProjectedTNode !== null) {\n return
getFirstNativeNode(parentView, firstProjectedTNode);\n }\n else {\n return
getFirstNativeNode(IView, tNode.next);\n }\n }\n return null;\n }\n }\n
function
getBeforeNodeForView(viewIndexInContainer, IContainer) {\n var nextViewIndex =
CONTAINER_HEADER_OFFSET + viewIndexInContainer + 1;\n if (nextViewIndex < IContainer.length) {\n
 var IView = IContainer[nextViewIndex];\n var firstTNodeOfView = IView[TVIEW].firstChild;\n
 if (firstTNodeOfView !== null) {\n return getFirstNativeNode(IView, firstTNodeOfView);\n }\n
 }\n return IContainer[NATIVE];\n }\n /** \n * Removes a native node itself using a given renderer. To
remove the node we are looking up its\n * parent from the native tree as not all platforms / browsers support the
equivalent of\n * node.remove().\n * \n * @param renderer A renderer to be used\n * @param rNode The

```



```

therefore it will not be a problem.\n // This should be refactored and cleaned up.\n for (var i = 0; i <
nodeToProjectOrRNodes.length; i++) {\n var rNode = nodeToProjectOrRNodes[i];\n
applyToElementOrContainer(action, renderer, parentRElement, rNode, beforeNode);\n }\n }\n else
{\n var nodeToProject = nodeToProjectOrRNodes;\n var projectedComponentLView =
componentLView[PARENT];\n applyNodes(renderer, action, nodeToProject, projectedComponentLView,
parentRElement, beforeNode, true);\n }\n }\n /**\n * `applyContainer` performs an operation on the
container and its views as specified by\n * `action` (insert, detach, destroy)\n * \n * Inserting a Container is
complicated by the fact that the container may have Views which\n * themselves have containers or projections.\n
*\n * @param renderer Renderer to use\n * @param action action to perform (insert, detach, destroy)\n *
@param IContainer The LContainer which needs to be inserted, detached, destroyed.\n * @param
parentRElement parent DOM element for insertion/removal.\n * @param beforeNode Before which node the
insertions should happen.\n */\n function applyContainer(renderer, action, IContainer, parentRElement,
beforeNode) {\n ngDevMode && assertLContainer(IContainer);\n var anchor = IContainer[NATIVE]; //
LContainer has its own before node.\n var native = unwrapRNode(IContainer);\n // An LContainer can be
created dynamically on any node by injecting ViewContainerRef.\n // Asking for a ViewContainerRef on an
element will result in a creation of a separate anchor\n // node (comment in the DOM) that will be different from
the LContainer's host node. In this\n // particular case we need to execute action on 2 nodes:\n // -
container's host node (this is done in the executeActionOnElementOrContainer)\n // - container's host node (this
is done here)\n if (anchor !== native) {\n // This is very strange to me (Misko). I would expect that the
native is same\n // as anchor. I\n // don't see a reason why they should be different, but they are.\n //\n // If they are we need to process the second anchor as well.\n applyToElementOrContainer(action, renderer,
parentRElement, anchor, beforeNode);\n }\n for (var i = CONTAINER_HEADER_OFFSET; i <
IContainer.length; i++) {\n var IView = IContainer[i];\n applyView(IView[TVIEW], IView, renderer,
action, parentRElement, anchor);\n }\n }\n /**\n * Writes class/style to element.\n * \n * @param
renderer Renderer to use.\n * @param isClassBased `true` if it should be written to `class` (`false` to write to
`style`)\n * @param rNode The Node to write to.\n * @param prop Property to write to. This would be the
class/style name.\n * @param value Value to write. If `null`/`undefined`/`false` this is considered a remove
(set/add\n * otherwise).\n */\n function applyStyling(renderer, isClassBased, rNode, prop, value) {\n
var isProcedural = isProceduralRenderer(renderer);\n if (isClassBased) {\n // We actually want JS
true/false here because any truthy value should add the class\n if (!value) {\n ngDevMode &&
ngDevMode.rendererRemoveClass++;\n if (isProcedural) {\n renderer.removeClass(rNode,
prop);\n }\n else {\n rNode.classList.remove(prop);\n }\n }\n else {\n ngDevMode && ngDevMode.rendererAddClass++;\n if (isProcedural) {\n
renderer.addClass(rNode, prop);\n }\n else {\n ngDevMode &&
assertDefined(rNode.classList, 'HTMLElement expected');\n rNode.classList.add(prop);\n }\n }\n else {\n var flags = prop.indexOf('-') === -1 ? undefined :
exports.RendererStyleFlags2.DashCase;\n if (value == null /** || value === undefined */) {\n
ngDevMode && ngDevMode.rendererRemoveStyle++;\n if (isProcedural) {\n
renderer.removeStyle(rNode, prop, flags);\n }\n else {\n
rNode.style.removeProperty(prop);\n }\n }\n else {\n // A value is important if it
ends with `!important`. The style\n // parser strips any semicolons at the end of the value.\n var
isImportant = typeof value === 'string' ? value.endsWith('!important') : false;\n if (isImportant) {\n
// !important has to be stripped from the value for it to be valid.\n value = value.slice(0, -10);\n
flags |= exports.RendererStyleFlags2.Important;\n }\n ngDevMode &&
ngDevMode.rendererSetStyle++;\n if (isProcedural) {\n renderer.setStyle(rNode, prop, value,
flags);\n }\n else {\n ngDevMode && assertDefined(rNode.style, 'HTMLElement
expected');\n rNode.style.setProperty(prop, value, isImportant ? 'important' : '');\n }\n }\n }\n }\n /**\n * Write `cssText` to `RElement`.\n * \n * This function does direct write without any

```

```

reconciliation. Used for writing initial values, so
 * that static styling values do not pull in the style parser.
 *
 * @param renderer Renderer to use
 * @param element The element which needs to be updated.
 * @param newValue The new class list to write.
 */
function writeDirectStyle(renderer, element, newValue)
{
 ngDevMode && assertString(newValue, '\`newValue\` should be a string');
 if (isProceduralRenderer(renderer)) {
 renderer.setAttribute(element, 'style', newValue);
 }
 else {
 element.style.cssText = newValue;
 }
 ngDevMode && ngDevMode.rendererSetStyle++;
}

/**
 * Write `className` to `RElement`.
 *
 * This function does direct write without any reconciliation.
Used for writing initial values, so
 * that static styling values do not pull in the style parser.
 *
 * @param renderer Renderer to use
 * @param element The element which needs to be updated.
 * @param newValue The new class list to write.
 */
function writeDirectClass(renderer, element, newValue) {
 ngDevMode && assertString(newValue, '\`newValue\` should be a string');
 if (isProceduralRenderer(renderer)) {
 if (newValue === "") {
 // There are tests in `google3` which expect `element.getAttribute('class')` to be
 `null`.
 renderer.removeAttribute(element, 'class');
 }
 else {
 renderer.setAttribute(element, 'class', newValue);
 }
 }
 else {
 element.className =
 newValue;
 }
 ngDevMode && ngDevMode.rendererSetClassName++;
}

/**
 * @license
 * Copyright Google LLC All Rights Reserved.
 *
 * Use of this source code is governed by an MIT-style
license that can be
 * found in the LICENSE file at https://angular.io/license
 */
/**
 * Returns an
index of `classToSearch` in `className` taking token boundaries into account.
 *
 * `classIndexof('AB A',
'A', 0)` will be 3 (not 0 since `AB!=='A`)
 *
 * @param className A string containing classes (whitespace
separated)
 * @param classToSearch A class name to locate
 * @param startIndex Starting location of
search
 * @returns an index of the located class (or -1 if not found)
 */
function classIndexof(className,
classToSearch, startIndex) {
 ngDevMode && assertNotEqual(classToSearch, "", 'can not look for \''
string.');
```

```

 var end = className.length;
 while (true) {
 var foundIndex =
 className.indexOf(classToSearch, startIndex);
 if (foundIndex === -1)
 return foundIndex;
 if (foundIndex === 0 || className.charCodeAt(foundIndex - 1) <= 32 /* SPACE */) {
 // Ensure
that it has leading whitespace
 var length = classToSearch.length;
 if (foundIndex + length ===
end ||
 className.charCodeAt(foundIndex + length) <= 32 /* SPACE */) {
 // Ensure that
it has trailing whitespace
 return foundIndex;
 }
 // False positive, keep
searching from where we left off.
 startIndex = foundIndex + 1;
 }
 }
}

/**
 * @license
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 *
 * Use of this source code is governed by an MIT-style
license that can be
 * found in the LICENSE file at https://angular.io/license
 */
var
unusedValueToPlacateAjd$1 = unusedValueExportToPlacateAjd$4 + unusedValueExportToPlacateAjd$5;
var
NG_TEMPLATE_SELECTOR = 'ng-template';
/**
 * Search the `TAttributes` to see if it contains
`cssClassToMatch` (case insensitive)
 *
 * @param attrs `TAttributes` to search through.
 * @param
cssClassToMatch class to match (lowercase)
 * @param isProjectionMode Whether or not class matching
should look into the attribute `class` in
 * addition to the `AttributeMarker.Classes`.
 */
function
isCssClassMatching(attrs, cssClassToMatch, isProjectionMode) {
 // TODO(misko): The fact that this function
needs to know about `isProjectionMode` seems suspect.
 // It is strange to me that sometimes the class
information comes in form of `class` attribute
 // and sometimes in form of `AttributeMarker.Classes`. Some
investigation is needed to determine
 // if that is the right behavior.
 ngDevMode &&
assertEqual(cssClassToMatch, cssClassToMatch.toLowerCase(), 'Class name expected to be lowercase.');
```

```

 var
i = 0;
 while (i < attrs.length) {
 var item = attrs[i++];
 if (isProjectionMode && item ===
'class') {
 item = attrs[i];
 if (classIndexof(item.toLowerCase(), cssClassToMatch, 0) !== -1)
 return true;
 }
 else if (item === 1 /* Classes */) {
 // We
found the classes section. Start searching for the class.
 while (i < attrs.length && typeof (item =
attrs[i++]) === 'string') {
 // while we have strings
 if (item.toLowerCase() ===
cssClassToMatch)
 return true;
 }
 return false;
 }
 }
 return
false;
}

/**
 * Checks whether the `tNode` represents an inline template (e.g. `*ngFor`).
 */

```



```

@param tNode current TNode\n */\n function isInlineTemplate(tNode) {\n return tNode.type === 4 /*\n Container */ && tNode.value !== NG_TEMPLATE_SELECTOR;\n }\n /**\n * Function that checks whether\n * a given tNode matches tag-based selector and has a valid type.\n * Matching can be performed in 2 modes:\n * projection mode (when we project nodes) and regular\n * directive matching mode:\n * - in the \"directive\n * matching\" mode we do _not_ take TContainer's tagName into account if it is\n * different from\n * NG_TEMPLATE_SELECTOR (value different from NG_TEMPLATE_SELECTOR indicates that a\n * tag\n * name was extracted from * syntax so we would match the same directive twice);\n * - in the \"projection\" mode,\n * we use a tag name potentially extracted from the * syntax processing\n * (applicable to TNodeType.Container\n * only).\n */\n function hasTagAndTypeMatch(tNode, currentSelector, isProjectionMode) {\n var\n tagNameToCompare = tNode.type === 4 /* Container */ && !isProjectionMode ? NG_TEMPLATE_SELECTOR :\n tNode.value;\n return currentSelector === tagNameToCompare;\n }\n /**\n * A utility function to match\n * an Ivy node static data against a simple CSS selector\n * @param node static data of the node to match\n * @param selector The selector to try matching against the node.\n * @param isProjectionMode if `true` we are\n * matching for content projection, otherwise we are doing\n * directive matching.\n * @returns true if node\n * matches the selector.\n */\n function isNodeMatchingSelector(tNode, selector, isProjectionMode) {\n ngDevMode && assertDefined(selector[0], 'Selector should have a tag name');\n var mode = 4 /* ELEMENT\n */;\n var nodeAttrs = tNode.attrs || [];\n // Find the index of first attribute that has no value, only a name.\n var nameOnlyMarkerIdx = getNameOnlyMarkerIndex(nodeAttrs);\n // When processing \":not\" selectors, we\n skip to the next \":not\" if the\n // current one doesn't match\n var skipToNextSelector = false;\n for\n (var i = 0; i < selector.length; i++) {\n var current = selector[i];\n if (typeof current === 'number') {\n // If we finish processing a :not selector and it hasn't failed, return false\n if (!skipToNextSelector\n && !isPositive(mode) && !isPositive(current)) {\n return false;\n }\n // If we are\n skipping to the next :not() and this mode flag is positive,\n // it's a part of the current :not() selector, and we\n should keep skipping\n if (skipToNextSelector && isPositive(current))\n continue;\n skipToNextSelector = false;\n mode = current | (mode & 1 /* NOT */);\n continue;\n }\n if (skipToNextSelector)\n continue;\n if (mode & 4 /* ELEMENT */) {\n mode = 2 /*\n ATTRIBUTE */ | mode & 1 /* NOT */;\n if (current !== \" && !hasTagAndTypeMatch(tNode, current,\n isProjectionMode) ||\n current === \" && selector.length === 1) {\n if (isPositive(mode))\n return false;\n skipToNextSelector = true;\n }\n else {\n var selectorAttrValue = mode & 8 /* CLASS */ ? current : selector[++i];\n // special case for matching\n against classes when a tNode has been instantiated with\n // class and style values as separate attribute\n values (e.g. ['title', CLASS, 'foo'])\n if ((mode & 8 /* CLASS */) && tNode.attrs !== null) {\n if (!isCssClassMatching(tNode.attrs, selectorAttrValue, isProjectionMode)) {\n if\n (isPositive(mode))\n return false;\n skipToNextSelector = true;\n }\n continue;\n }\n var attrName = (mode & 8 /* CLASS */) ? 'class' : current;\n var\n attrIndexInNode = findAttrIndexInNode(attrName, nodeAttrs, isInlineTemplate(tNode), isProjectionMode);\n if (attrIndexInNode === -1) {\n if (isPositive(mode))\n return false;\n skipToNextSelector = true;\n continue;\n }\n if (selectorAttrValue !== \"\") {\n var nodeAttrValue = void 0;\n if (attrIndexInNode > nameOnlyMarkerIdx) {\n nodeAttrValue = \"\";\n }\n else {\n ngDevMode &&\n assertNotEqual(nodeAttrs[attrIndexInNode], 0 /* NamespaceURI */, 'We do not match directives on namespaced\n attributes');\n // we lowercase the attribute value to be able to match\n // selectors\n without case-sensitivity\n // (selectors are already in lowercase when generated)\n nodeAttrValue = nodeAttrs[attrIndexInNode + 1].toLowerCase();\n }\n var\n compareAgainstClassName = mode & 8 /* CLASS */ ? nodeAttrValue : null;\n if\n (compareAgainstClassName &&\n classIndexOf(compareAgainstClassName, selectorAttrValue, 0)\n !== -1 ||\n mode & 2 /* ATTRIBUTE */ && selectorAttrValue !== nodeAttrValue) {\n if (isPositive(mode))\n return false;\n skipToNextSelector = true;\n }\n }\n }\n }\n }\n }\n}

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return -1;\n if (attr === name)\n return i;\n i++;\n }\n }\n return -1;\n
}\n /**\n * Checks whether a selector is inside a CssSelectorList\n * @param selector Selector to be
checked.\n * @param list List in which to look for the selector.\n */\n function
isSelectorInSelectorList(selector, list) {\n selectorListLoop: for (var i = 0; i < list.length; i++) {\n var
currentSelectorInList = list[i];\n if (selector.length !== currentSelectorInList.length) {\n continue;\n
 }\n for (var j = 0; j < selector.length; j++) {\n if (selector[j] !== currentSelectorInList[j]) {\n
 }\n continue selectorListLoop;\n }\n return true;\n }\n return false;\n }\n
function maybeWrapInNotSelector(isNegativeMode, chunk) {\n return isNegativeMode ? ':not(' + chunk.trim()
+ ')': chunk;\n }\n function stringifyCSSSelector(selector) {\n var result = selector[0];\n var i = 1;\n
var mode = 2 /* ATTRIBUTE */;\n var currentChunk = '';\n var isNegativeMode = false;\n while (i <
selector.length) {\n var valueOrMarker = selector[i];\n if (typeof valueOrMarker === 'string') {\n
 if (mode & 2 /* ATTRIBUTE */) {\n var attrValue = selector[++i];\n currentChunk +=\n
 '[' + valueOrMarker + (attrValue.length > 0 ? '=' + attrValue + '\" : ') + ''];\n }\n
 else if (mode & 8 /* CLASS */) {\n currentChunk += '.' + valueOrMarker;\n }\n else
if (mode & 4 /* ELEMENT */) {\n currentChunk += ' ' + valueOrMarker;\n }\n else {\n
 //\n // Append current chunk to the final result in case we come across SelectorFlag,\n
which\n // indicates that the previous section of a selector is over. We need to accumulate content\n
// between flags to make sure we wrap the chunk later in :not() selector if needed, e.g.\n // ```\n //
['', Flags.CLASS, '.classA', Flags.CLASS | Flags.NOT, '.classB', '.classC']\n // ```\n // should be
transformed to `.classA :not(.classB .classC)`.\n //\n // Note: for negative selector part, we
accumulate content between flags until we find the\n // next negative flag. This is needed to support a case
where `:not()` rule contains more than\n // one chunk, e.g. the following selector:\n // ```\n
// ['', Flags.ELEMENT | Flags.NOT, 'p', Flags.CLASS, 'foo', Flags.CLASS | Flags.NOT, 'bar']\n // ```\n
// should be stringified to `:not(p.foo) :not(.bar)`.\n //\n if (currentChunk !== '' &&
!isPositive(valueOrMarker)) {\n result += maybeWrapInNotSelector(isNegativeMode, currentChunk);\n
 currentChunk = '';\n }\n mode = valueOrMarker;\n // According to
CssSelector spec, once we come across `SelectorFlags.NOT` flag, the negative\n // mode is maintained for
remaining chunks of a selector.\n isNegativeMode = isNegativeMode || !isPositive(mode);\n }\n
 i++;\n }\n if (currentChunk !== '') {\n result += maybeWrapInNotSelector(isNegativeMode,
currentChunk);\n }\n return result;\n }\n /**\n * Generates string representation of CSS selector in
parsed form.\n * ComponentDef and DirectiveDef are generated with the selector in parsed form to avoid
doing\n * additional parsing at runtime (for example, for directive matching). However in some cases (for\n *
example, while bootstrapping a component), a string version of the selector is required to query\n * for the host
element on the page. This function takes the parsed form of a selector and returns\n * its string representation.\n
**\n * @param selectorList selector in parsed form\n * @returns string representation of a given selector\n
**\n function stringifyCSSSelectorList(selectorList) {\n return
selectorList.map(stringifyCSSSelector).join(',');\n }\n /**\n * Extracts attributes and classes information from
a given CSS selector.\n * This function is used while creating a component dynamically. In this case, the
host element\n * (that is created dynamically) should contain attributes and classes specified in component's
CSS\n * selector.\n * @param selector CSS selector in parsed form (in a form of array)\n * @returns
object with `attrs` and `classes` fields that contain extracted information\n */\n function
extractAttrsAndClassesFromSelector(selector) {\n var attrs = [];\n var classes = [];\n var i = 1;\n
var mode = 2 /* ATTRIBUTE */;\n while (i < selector.length) {\n var valueOrMarker = selector[i];\n
 if (typeof valueOrMarker === 'string') {\n if (mode === 2 /* ATTRIBUTE */) {\n if
(valueOrMarker !== '') {\n attrs.push(valueOrMarker, selector[++i]);\n }\n }\n
 else if (mode === 8 /* CLASS */) {\n classes.push(valueOrMarker);\n }\n }\n
 else {\n // According to CssSelector spec, once we come across `SelectorFlags.NOT` flag, the negative\n
// mode is maintained for remaining chunks of a selector. Since attributes and classes are\n //

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extracted only for \"positive\" part of the selector, we can stop here.\n if (!isPositive(mode))\nbreak;\n mode = valueOrMarker;\n }\n i++;\n }\n return { attrs: attrs, classes: classes\n};\n}\n\n/**\n * @license\n * Copyright Google LLC All Rights Reserved.\n * Use of this source\n code is governed by an MIT-style license that can be\n * found in the LICENSE file at https://angular.io/license\n *\n ** A special value which designates that a value has not changed. */\n var NO_CHANGE = (typeof\n ngDevMode === 'undefined' || ngDevMode) ? { __brand__: 'NO_CHANGE' } : {};\n\n /**\n * @license\n * Copyright Google LLC All Rights Reserved.\n * Use of this source code is governed by an MIT-style\n license that can be\n * found in the LICENSE file at https://angular.io/license\n *\n ** Advances to\n an element for later binding instructions.\n * Used in conjunction with instructions like {@link property} to\n act on elements with specified\n * indices, for example those created with {@link element} or {@link\n elementStart}.\n * ``ts\n * (rf: RenderFlags, ctx: any) => {\n * if (rf & 1) {\n * text(0,\n 'Hello');\n * text(1, 'Goodbye')\n * element(2, 'div');\n * }\n * if (rf & 2) {\n * advance(2); //\n Advance twice to the <div>.\n * property('title', 'test');\n * }\n * }\n * ``\n * @param delta Number\n of elements to advance forwards by.\n * @codeGenApi\n */\n function advance(delta) {\n ngDevMode && assertGreaterThan(delta, 0, 'Can only advance forward');\n selectIndexInternal(getTView(),\n getLView(), getSelectedIndex() + delta, isInCheckNoChangesMode());\n }\n function\n selectIndexInternal(tView, lView, index, checkNoChangesMode) {\n ngDevMode &&\n assertIndexInDeclRange(lView, index);\n // Flush the initial hooks for elements in the view that have been\n added up to this point.\n // PERF WARNING: do NOT extract this to a separate function without running\n benchmarks\n if (!checkNoChangesMode) {\n var hooksInitPhaseCompleted = (lView[FLAGS] & 3 /*\n InitPhaseStateMask */) === 3 /* InitPhaseCompleted */;\n if (hooksInitPhaseCompleted) {\n var\n preOrderCheckHooks = tView.preOrderCheckHooks;\n if (preOrderCheckHooks !== null) {\n executeCheckHooks(lView, preOrderCheckHooks, index);\n }\n }\n else {\n var\n preOrderHooks = tView.preOrderHooks;\n if (preOrderHooks !== null) {\n executeInitAndCheckHooks(lView, preOrderHooks, 0 /* OnInitHooksToBeRun */, index);\n }\n }\n }\n }\n // We must set the selected index *after* running the hooks, because hooks may have side-effects\n // that cause other template functions to run, thus updating the selected index, which is global\n // state. If we\n run `setSelectedIndex` *before* we run the hooks, in some cases the selected index\n // will be altered by the\n time we leave the `advance` instruction.\n setSelectedIndex(index);\n }\n\n /**\n * @license\n * Copyright Google LLC All Rights Reserved.\n * Use of this source code is governed by an MIT-style\n license that can be\n * found in the LICENSE file at https://angular.io/license\n */\n function\n toTStylingRange(prev, next) {\n ngDevMode && assertNumberInRange(prev, 0, 32767 /*\n UNSIGNED_MASK */);\n ngDevMode && assertNumberInRange(next, 0, 32767 /* UNSIGNED_MASK\n */);\n return (prev << 17 /* PREV_SHIFT */ | next << 2 /* NEXT_SHIFT */);\n }\n function\n getTStylingRangePrev(tStylingRange) {\n ngDevMode && assertNumber(tStylingRange, 'expected number');\n return (tStylingRange >> 17 /* PREV_SHIFT */) & 32767 /* UNSIGNED_MASK */;\n }\n function\n getTStylingRangePrevDuplicate(tStylingRange) {\n ngDevMode && assertNumber(tStylingRange, 'expected\n number');\n return (tStylingRange & 2 /* PREV_DUPLICATE */) ==\n 2 /* PREV_DUPLICATE */;\n }\n function setTStylingRangePrev(tStylingRange, previous) {\n ngDevMode &&\n assertNumber(tStylingRange, 'expected number');\n ngDevMode && assertNumberInRange(previous, 0, 32767\n /* UNSIGNED_MASK */);\n return ((tStylingRange & ~4294836224 /* PREV_MASK */) |\n (previous\n << 17 /* PREV_SHIFT */));\n }\n function setTStylingRangePrevDuplicate(tStylingRange) {\n ngDevMode && assertNumber(tStylingRange, 'expected number');\n return (tStylingRange | 2 /*\n PREV_DUPLICATE */);\n }\n function getTStylingRangeNext(tStylingRange) {\n ngDevMode &&\n assertNumber(tStylingRange, 'expected number');\n return (tStylingRange & 131068 /* NEXT_MASK */) >> 2\n /* NEXT_SHIFT */;\n }\n function setTStylingRangeNext(tStylingRange, next) {\n ngDevMode &&\n assertNumber(tStylingRange, 'expected number');\n ngDevMode && assertNumberInRange(next, 0, 32767 /*\n UNSIGNED_MASK */);\n return ((tStylingRange & ~131068 /* NEXT_MASK */) | /\n next << 2 /*

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NEXT_SHIFT */);\n } \n function getTStylingRangeNextDuplicate(tStylingRange) {\n ngDevMode &&
assertNumber(tStylingRange, 'expected number');\n return (tStylingRange & 1 /* NEXT_DUPLICATE */)
===\n 1 /* NEXT_DUPLICATE */;\n } \n function setTStylingRangeNextDuplicate(tStylingRange) {\n
ngDevMode && assertNumber(tStylingRange, 'expected number');\n return (tStylingRange | 1 /*
NEXT_DUPLICATE */);\n } \n function getTStylingRangeTail(tStylingRange) {\n ngDevMode &&
assertNumber(tStylingRange, 'expected number');\n var next = getTStylingRangeNext(tStylingRange);\n
return next === 0 ? getTStylingRangePrev(tStylingRange) : next;\n } \n\n /**\n * @license\n * Copyright
Google LLC All Rights Reserved.\n * \n * Use of this source code is governed by an MIT-style license that can
be\n * found in the LICENSE file at https://angular.io/license\n * \n */\n * Patch a `debug` property on
top of the existing object.\n * \n * NOTE: always call this method with `ngDevMode &&
attachDebugObject(...)`\n * \n * @param obj Object to patch\n * @param debug Value to patch\n * \n
function attachDebugObject(obj, debug) {\n if (ngDevMode) {\n Object.defineProperty(obj, 'debug', {
value: debug, enumerable: false });\n } \n else {\n throw new Error("This method should be guarded
with `ngDevMode` so that it can be tree shaken in production!");\n } \n } \n\n /**\n * Patch a `debug`
property getter on top of the existing object.\n * \n * NOTE: always call this method with `ngDevMode &&
attachDebugObject(...)`\n * \n * @param obj Object to patch\n * @param debugGetter Getter returning a
value to patch\n * \n function attachDebugGetter(obj, debugGetter) {\n if (ngDevMode) {\n
Object.defineProperty(obj, 'debug', { get: debugGetter, enumerable: false });\n } \n else {\n throw
new Error("This method should be guarded with `ngDevMode` so that it can be tree shaken in production!");\n
 } \n } \n\n /**\n * @license\n * Copyright Google LLC All Rights Reserved.\n * \n * Use of this source
code is governed by an MIT-style license that can be\n * found in the LICENSE file at https://angular.io/license\n
 * \n var NG_DEV_MODE = ((typeof ngDevMode === 'undefined' || !ngDevMode) && initNgDevMode());\n
 /*\n * This file contains conditionally attached classes which provide human readable (debug) level\n *
information for `LView`, `LContainer` and other internal data structures. These data structures\n * are stored
internally as array which makes it very difficult during debugging to reason about the\n * current state of the
system.\n * \n * Patching the array with extra property does change the array's hidden class' but it does not\n
 * change the cost of access, therefore this patching should not have significant if any impact in\n * `ngDevMode`
mode. (see: https://jstperf.com/array-vs-monkey-patch-array)\n * \n * So instead of seeing:\n * ```\n *
Array(30) [Object, 659, null, ...]\n * ```\n * \n * You get to see:\n * ```\n * LViewDebug {\n *
views: [...],\n * flags: {attached: true, ...}\n * nodes: [\n * {html: '<div id="123">', ..., nodes: [\n *
{html: '', ..., nodes: null}\n *]}\n *]\n * }\n * ```\n * \n var
LVIEW_COMPONENT_CACHE;\n var LVIEW_EMBEDDED_CACHE;\n var LVIEW_ROOT;\n /*\n * This function clones a blueprint and creates LView.\n * \n * Simple slice will keep the same type, and we need
it to be LView\n * \n function cloneToLViewFromTViewBlueprint(tView) {\n var debugTView = tView;\n
 var lView = getLViewToClone(debugTView.type, tView.template && tView.template.name);\n return
lView.concat(tView.blueprint);\n } \n\n function getLViewToClone(type, name) {\n switch (type) {\n
case 0 /* Root */:\n if (LVIEW_ROOT === undefined)\n LVIEW_ROOT = new
(createNamedArrayType('LRootView'))();\n return LVIEW_ROOT;\n case 1 /* Component */:\n
 if (LVIEW_COMPONENT_CACHE === undefined)\n LVIEW_COMPONENT_CACHE = new
Map();\n var componentArray = LVIEW_COMPONENT_CACHE.get(name);\n if
(componentArray === undefined) {\n componentArray = new
(createNamedArrayType('LComponentView' + nameSuffix(name)))();\n LVIEW_COMPONENT_CACHE.set(name, componentArray);\n } \n return componentArray;\n
 case 2 /* Embedded */:\n if (LVIEW_EMBEDDED_CACHE === undefined)\n LVIEW_EMBEDDED_CACHE = new Map();\n var embeddedArray =
LVIEW_EMBEDDED_CACHE.get(name);\n if (embeddedArray === undefined) {\n embeddedArray = new
(createNamedArrayType('LEmbeddedView' + nameSuffix(name)))();\n LVIEW_EMBEDDED_CACHE.set(name, embeddedArray);\n } \n return embeddedArray;\n
 } \n\n

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}\n throw new Error('unreachable code');\n }\n function nameSuffix(text) {\n if (text === null)\nreturn ";\n var index = text.lastIndexOf('_Template');\n return '_' + (index === -1 ? text : text.substr(0,\nindex));\n }\n /**\n * This class is a debug version of Object literal so that we can have constructor name\nshow up\n * in\n * debug tools in ngDevMode.\n */\n var TViewConstructor = /** @class */ (function ()\n{\n function TView(type, blueprint, template, queries, viewQuery, declTNode, data, bindingStartIndex,\nexpandoStartIndex, hostBindingOpCodes, firstCreatePass, firstUpdatePass, staticViewQueries,\nstaticContentQueries, preOrderHooks, preOrderCheckHooks, contentHooks, contentCheckHooks, viewHooks,\nviewCheckHooks, destroyHooks, cleanup, contentQueries, components, directiveRegistry, pipeRegistry, firstChild,\nschemas, consts, incompleteFirstPass, _decls, _vars) {\n this.type = type;\n this.blueprint =\nblueprint;\n this.template = template;\n this.queries = queries;\n this.viewQuery = viewQuery;\n this.declTNode = declTNode;\n this.data = data;\n this.bindingStartIndex = bindingStartIndex;\n this.expandoStartIndex = expandoStartIndex;\n this.hostBindingOpCodes = hostBindingOpCodes;\n this.firstCreatePass = firstCreatePass;\n this.firstUpdatePass = firstUpdatePass;\nthis.staticViewQueries = staticViewQueries;\n this.staticContentQueries = staticContentQueries;\nthis.preOrderHooks = preOrderHooks;\n this.preOrderCheckHooks = preOrderCheckHooks;\nthis.contentHooks = contentHooks;\n this.contentCheckHooks = contentCheckHooks;\nthis.viewHooks = viewHooks;\n this.viewCheckHooks = viewCheckHooks;\n this.destroyHooks =\ndestroyHooks;\n this.cleanup = cleanup;\n this.contentQueries = contentQueries;\nthis.components = components;\n this.directiveRegistry = directiveRegistry;\n this.pipeRegistry =\npipeRegistry;\n this.firstChild = firstChild;\n this.schemas = schemas;\n this.consts = consts;\n this.incompleteFirstPass = incompleteFirstPass;\n this._decls = _decls;\n this._vars = _vars;\n}\n Object.defineProperty(TView.prototype, 'template_', {\n get: function () {\n var buf =\n[];\n processTNodeChildren(this.firstChild, buf);\n return buf.join(");\n },\n enumerable: false,\n configurable: true\n });\n Object.defineProperty(TView.prototype, 'type_', {\n get: function () {\n return TViewTypeAsString[this.type] || "TViewType.?" + this.type + "?";\n },\n enumerable: false,\n configurable: true\n });\n return TView;\n }());\n var TNode =\n/** @class */ (function () {\n function TNode(tView_, /\n type, /\n index, /\n insertBeforeIndex,\n /\n injectorIndex, /\n directiveStart, /\n directiveEnd, /\n directiveStylingLast, /\n propertyBindings, /\n flags, /\n providerIndexes, /\n value, /\n attrs, /\n mergedAttrs, /\n localNames, /\n initialInputs, /\n inputs, /\n outputs, /\n tViews, /\n next, /\n projectionNext, /\n child, /\n parent, /\n projection, /\n styles, /\n stylesWithoutHost, /\n residualStyles, /\n classes, /\n classesWithoutHost, /\n residualClasses, /\n classBindings, /\n styleBindings) {\n this.tView_ = tView_;\n this.type = type;\n this.index = index;\nthis.insertBeforeIndex = insertBeforeIndex;\n this.injectorIndex = injectorIndex;\n this.directiveStart =\ndirectiveStart;\n this.directiveEnd = directiveEnd;\n this.directiveStylingLast = directiveStylingLast;\n this.propertyBindings = propertyBindings;\n this.flags = flags;\n this.providerIndexes =\nproviderIndexes;\n this.value = value;\n this.attrs = attrs;\n this.mergedAttrs = mergedAttrs;\n this.localNames = localNames;\n this.initialInputs = initialInputs;\n this.inputs = inputs;\nthis.outputs = outputs;\n this.tViews = tViews;\n this.next = next;\n this.projectionNext =\nprojectionNext;\n this.child = child;\n this.parent = parent;\n this.projection = projection;\n this.styles = styles;\n this.stylesWithoutHost = stylesWithoutHost;\n this.residualStyles =\nresidualStyles;\n this.classes = classes;\n this.classesWithoutHost = classesWithoutHost;\nthis.residualClasses = residualClasses;\n this.classBindings = classBindings;\n this.styleBindings =\nstyleBindings;\n }\n /**\n * Return a human debug version of the set of `NodeInjector`s which will be\nconsulted when\n * resolving tokens from this `TNode`. \n * \n * When debugging applications, it is\noften difficult to determine which `NodeInjector`s will be\n * consulted. This method shows a list of\n`DebugNode`s representing the `TNode`s which will be\n * consulted in order when resolving a token starting\nat this `TNode`. \n * \n * The original data is stored in `LView` and `TView` with a lot of offset indexes,\n
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and so it is\n * difficult to reason about.\n *\n * @param IView The `LView` instance for this
`TNode`.\n */\n TNode.prototype.debugNodeInjectorPath = function (IView) {\n var path = [];\n var injectorIndex = getInjectorIndex(this, IView);\n ngDevMode && assertNodeInjector(IView,\ninjectorIndex);\n while (injectorIndex !== -1) {\n var tNode = IView[TVIEW].data[injectorIndex +\n8 /* TNODE */];\n path.push(buildDebugNode(tNode, IView));\n var parentLocation =\nIView[injectorIndex + 8 /* PARENT */];\n if (parentLocation === NO_PARENT_INJECTOR) {\n injectorIndex = -1;\n }\n else {\n injectorIndex =\ngetParentInjectorIndex(parentLocation);\n IView = getParentInjectorView(parentLocation, IView);\n }\n }\n return path;\n };\n Object.defineProperty(TNode.prototype, \"type_\", {\nget: function () {\n return toTNodeTypeAsString(this.type) || \"TNodeType.?.\" + this.type + \"?.\";\n },\n enumerable: false,\n configurable: true\n });\n Object.defineProperty(TNode.prototype,\n\"flags_\", {\n get: function () {\n var flags = [];\n if (this.flags & 16 /* hasClassInput */) {\n flags.push('TNodeFlags.hasClassInput');\n }\n if (this.flags & 8 /* hasContentQuery */) {\n flags.push('TNodeFlags.hasContentQuery');\n }\n if (this.flags & 32 /* hasStyleInput */) {\n flags.push('TNodeFlags.hasStyleInput');\n }\n if (this.flags & 128 /* hasHostBindings */) {\n flags.push('TNodeFlags.hasHostBindings');\n }\n if (this.flags & 2 /* isComponentHost */) {\n flags.push('TNodeFlags.isComponentHost');\n }\n if (this.flags & 1 /* isDirectiveHost */) {\n flags.push('TNodeFlags.isDirectiveHost');\n }\n if (this.flags & 64 /* isDetached */) {\n flags.push('TNodeFlags.isDetached');\n }\n if (this.flags & 4 /* isProjected */) {\n flags.push('TNodeFlags.isProjected');\n }\n return flags.join('');\n },\n enumerable: false,\n configurable: true\n });\n Object.defineProperty(TNode.prototype, \"template_\", {\n get: function () {\n if (this.type & 1 /* Text */) {\n return this.value;\n }\n var buf = [];\n var\ntagName = typeof this.value === 'string' && this.value || this.type_;\n buf.push('<', tagName);\n if\n(this.flags) {\n buf.push(' ', this.flags_);\n }\n if (this.attrs) {\n for (var i =\n0; i < this.attrs.length; i++) {\n var attrName = this.attrs[i++];\n if (typeof attrName ===\n'number') {\n break;\n }\n var attrValue = this.attrs[i++];\n buf.push(' ', attrName, '=', attrValue, '\"');\n }\n buf.push('>');\n }\n processTNodeChildren(this.child, buf);\n buf.push('</', tagName, '>');\n return buf.join('');\n },\n enumerable: false,\n configurable: true\n });\n Object.defineProperty(TNode.prototype,\n\"styleBindings_\", {\n get: function () {\n return toDebugStyleBinding(this, false);\n },\n enumerable: false,\n configurable: true\n });\n Object.defineProperty(TNode.prototype,\n\"classBindings_\", {\n get: function () {\n return toDebugStyleBinding(this, true);\n },\n enumerable: false,\n configurable: true\n });\n Object.defineProperty(TNode.prototype,\n\"providerIndexStart_\", {\n get: function () {\n return this.providerIndexes & 1048575 /*\nProvidersStartIndexMask */;\n },\n enumerable: false,\n configurable: true\n });\n Object.defineProperty(TNode.prototype, \"providerIndexEnd_\", {\n get: function () {\n return\nthis.providerIndexStart_ +\n (this.providerIndexes >>> 20 /* CptViewProvidersCountShift */);\n },\n enumerable: false,\n configurable: true\n });\n return TNode;\n }());\n var\nTNodeDebug = TNode;\n function toDebugStyleBinding(tNode, isClassBased) {\n var tData =\ntNode.tView_.data;\n var bindings = [];\n var range = isClassBased ? tNode.classBindings :\ntNode.styleBindings;\n var prev = getTStylingRangePrev(range);\n var next =\ngetTStylingRangeNext(range);\n var isTemplate = next !== 0;\n var cursor = isTemplate ? next : prev;\n while (cursor !== 0) {\n var itemKey = tData[cursor];\n var itemRange = tData[cursor + 1];\n bindings.unshift({\n key: itemKey,\n index: cursor,\n isTemplate: isTemplate,\n prevDuplicate: getTStylingRangePrevDuplicate(itemRange),\n nextDuplicate:\ngetTStylingRangeNextDuplicate(itemRange),\n nextIndex: getTStylingRangeNext(itemRange),\n prevIndex: getTStylingRangePrev(itemRange),\n });\n if (cursor === prev) {\n isTemplate =\nfalse;\n cursor = getTStylingRangePrev(itemRange);\n }\n bindings.push((isClassBased ?

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tNode.residualClasses : tNode.residualStyles) || null);\n return bindings;\n }\n function
processTNodeChildren(tNode, buf) {\n while (tNode) {\n buf.push(tNode.template_);\n tNode =
tNode.next;\n }\n }\n var TViewData = NG_DEV_MODE && createNamedArrayType('TViewData') ||
null;\n var TVIEWDATA_EMPTY; // can't initialize here or it will not be tree shaken, because\n // `LView`
constructor could have side-effects.\n /**\n * This function clones a blueprint and creates TData.\n *\n * Simple slice will keep the same type, and we need it to be TData\n */\n function cloneToTViewData(list) {\n if (TVIEWDATA_EMPTY === undefined)\n TVIEWDATA_EMPTY = new TViewData();\n return
TVIEWDATA_EMPTY.concat(list);\n }\n var LViewBlueprint = NG_DEV_MODE &&
createNamedArrayType('LViewBlueprint') || null;\n var MatchesArray = NG_DEV_MODE &&
createNamedArrayType('MatchesArray') || null;\n var TViewComponents = NG_DEV_MODE &&
createNamedArrayType('TViewComponents') || null;\n var TNodeLocalNames = NG_DEV_MODE &&
createNamedArrayType('TNodeLocalNames') || null;\n var TNodeInitialInputs = NG_DEV_MODE &&
createNamedArrayType('TNodeInitialInputs') || null;\n var TNodeInitialData = NG_DEV_MODE &&
createNamedArrayType('TNodeInitialData') || null;\n var LCleanup = NG_DEV_MODE &&
createNamedArrayType('LCleanup') || null;\n var TCleanup = NG_DEV_MODE &&
createNamedArrayType('TCleanup') || null;\n function attachLViewDebug(LView) {\n
attachDebugObject(LView, new LViewDebug(LView));\n }\n function attachLContainerDebug(LContainer) {\n
attachDebugObject(LContainer, new LContainerDebug(LContainer));\n }\n function toDebug(obj) {\n if
(obj) {\n var debug = obj.debug;\n assertDefined(debug, 'Object does not have a debug
representation.);\n return debug;\n }\n else {\n return obj;\n }\n }\n /**\n * Use this
method to unwrap a native element in `LView` and convert it into HTML for easier\n * reading.\n *\n *
@param value possibly wrapped native DOM node.\n * @param includeChildren If `true` then the serialized
HTML form will include child elements\n * (same\n * as `outerHTML`). If `false` then the serialized HTML
form will only contain the element\n * itself\n * (will not serialize child elements).\n */\n function
toHtml(value, includeChildren) {\n if (includeChildren === void 0) { includeChildren = false; }\n var node
= unwrapRNode(value);\n if (node) {\n switch (node.nodeType) {\n case
Node.TEXT_NODE:\n return node.textContent;\n case Node.COMMENT_NODE:\n
return '<!--' + node.textContent + '-->';\n case Node.ELEMENT_NODE:\n var
outerHTML = node.outerHTML;\n if (includeChildren) {\n return outerHTML;\n }\n else {\n var innerHTML = '>' + node.innerHTML + '<';\n return
(outerHTML.split(innerHTML)[0]) + '>';\n }\n }\n }\n return null;\n }\n }\n var
LViewDebug = /** @class */ (function () {\n function LViewDebug(_raw_LView) {\n this._raw_LView
= _raw_LView;\n }\n Object.defineProperty(LViewDebug.prototype, 'flags', {\n /**\n *
Flags associated with the `LView` unpacked into a more readable state.\n */\n get: function () {\n
var flags = this._raw_LView[FLAGS];\n return {\n __raw__flags__: flags,\n
initPhaseState: flags & 3 /* InitPhaseStateMask */, \n creationMode: !(flags & 4 /* CreationMode */), \n
firstViewPass: !(flags & 8 /* FirstLViewPass */), \n checkAlways: !(flags & 16 /*
CheckAlways */), \n dirty: !(flags & 64 /* Dirty */), \n attached: !(flags & 128 /* Attached
/), \n destroyed: !(flags & 256 / Destroyed */), \n isRoot: !(flags & 512 /* IsRoot */), \n
indexWithinInitPhase: flags >> 11 /* IndexWithinInitPhaseShift */,\n };\n }, \n enumerable: false, \n configurable: true\n });\n Object.defineProperty(LViewDebug.prototype,
'parent', {\n get: function () {\n return toDebug(this._raw_LView[PARENT]);\n }, \n enumerable: false, \n configurable: true\n });\n Object.defineProperty(LViewDebug.prototype,
'hostHTML', {\n get: function () {\n return toHtml(this._raw_LView[HOST], true);\n }, \n enumerable: false, \n configurable: true\n });\n Object.defineProperty(LViewDebug.prototype,
'html', {\n get: function () {\n return (this.nodes || []).map(mapToHTML).join('');\n }, \n enumerable: false, \n configurable: true\n });\n Object.defineProperty(LViewDebug.prototype,
'context', {\n get: function () {\n return this._raw_LView[CONTEXT];\n }, \n

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enumerable: false,\n configurable: true\n });\n Object.defineProperty(LViewDebug.prototype,\n \"nodes\", {\n /**\n * The tree of nodes associated with the current `LView`. The nodes have been\n normalized into\n * a tree structure with relevant details pulled out for readability.\n */\n get:\n function () {\n var IView = this._raw_IView;\n var tNode = IView[TVIEW].firstChild;\n return toDebugNodes(tNode, IView);\n },\n enumerable: false,\n configurable: true\n });\n Object.defineProperty(LViewDebug.prototype, \"template\", {\n get: function () {\n return\n this.tView.template;\n },\n enumerable: false,\n configurable: true\n });\n Object.defineProperty(LViewDebug.prototype, \"tView\", {\n get: function () {\n return\n this._raw_IView[TVIEW];\n },\n enumerable: false,\n configurable: true\n });\n Object.defineProperty(LViewDebug.prototype, \"cleanup\", {\n get: function () {\n return\n this._raw_IView[CLEANUP];\n },\n enumerable: false,\n configurable: true\n });\n Object.defineProperty(LViewDebug.prototype, \"injector\", {\n get: function () {\n return\n this._raw_IView[INJECTOR];\n },\n enumerable: false,\n configurable: true\n });\n Object.defineProperty(LViewDebug.prototype, \"rendererFactory\", {\n get: function () {\n return\n this._raw_IView[RENDERER_FACTORY];\n },\n enumerable: false,\n configurable: true\n });\n Object.defineProperty(LViewDebug.prototype, \"renderer\", {\n get: function () {\n return\n this._raw_IView[RENDERER];\n },\n enumerable: false,\n configurable: true\n });\n Object.defineProperty(LViewDebug.prototype, \"sanitizer\", {\n get: function () {\n return\n this._raw_IView[SANITIZER];\n },\n enumerable: false,\n configurable: true\n });\n Object.defineProperty(LViewDebug.prototype, \"childHead\", {\n get: function () {\n return\n toDebug(this._raw_IView[CHILD_HEAD]);\n },\n enumerable: false,\n configurable: true\n });\n Object.defineProperty(LViewDebug.prototype, \"next\", {\n get: function () {\n return\n toDebug(this._raw_IView[NEXT]);\n },\n enumerable: false,\n configurable: true\n });\n Object.defineProperty(LViewDebug.prototype, \"childTail\", {\n get: function () {\n return\n toDebug(this._raw_IView[CHILD_TAIL]);\n },\n enumerable: false,\n configurable: true\n });\n Object.defineProperty(LViewDebug.prototype, \"declarationView\", {\n get: function () {\n return\n toDebug(this._raw_IView[DECLARATION_VIEW]);\n },\n enumerable: false,\n configurable: true\n });\n Object.defineProperty(LViewDebug.prototype, \"queries\", {\n get:\n function () {\n return this._raw_IView[QUERIES];\n },\n enumerable: false,\n configurable: true\n });\n Object.defineProperty(LViewDebug.prototype, \"tHost\", {\n get: function\n () {\n return this._raw_IView[T_HOST];\n },\n enumerable: false,\n configurable:\n true\n });\n Object.defineProperty(LViewDebug.prototype, \"decls\", {\n get: function () {\n return\n toLViewRange(this.tView, this._raw_IView, HEADER_OFFSET, this.tView.bindingStartIndex);\n },\n enumerable: false,\n configurable: true\n });\n Object.defineProperty(LViewDebug.prototype, \"vars\", {\n get: function () {\n return\n toLViewRange(this.tView, this._raw_IView, this.tView.bindingStartIndex, this.tView.expandoStartIndex);\n },\n enumerable: false,\n configurable: true\n });\n Object.defineProperty(LViewDebug.prototype, \"expando\", {\n get: function () {\n return\n toLViewRange(this.tView, this._raw_IView, this.tView.expandoStartIndex, this._raw_IView.length);\n },\n enumerable: false,\n configurable: true\n });\n Object.defineProperty(LViewDebug.prototype,\n \"childViews\", {\n /**\n * Normalized view of child views (and containers) attached at this\n location.\n */\n get: function () {\n var childViews = [];\n var child =\n this.childHead;\n while (child) {\n childViews.push(child);\n child = child.next;\n }\n return childViews;\n },\n enumerable: false,\n configurable: true\n });\n return LViewDebug;\n });\n function mapToHTML(node) {\n if (node.type === 'ElementContainer')\n {\n return (node.children || []).map(mapToHTML).join(\"\");\n }\n else if (node.type ===\n 'IcuContainer') {\n throw new Error('Not implemented');\n }\n else {\n return\n toHtml(node.native, true) || \"\";\n }\n }\n function toLViewRange(tView, IView, start, end) {\n var

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content = [];\n for (var index = start; index < end; index++) {\n content.push({ index: index, t:
tView.data[index], l: IView[index] });\n }\n return { start: start, end: end, length: end - start, content:
content };\n }\n /**\n * Turns a flat list of nodes into a tree by walking the associated `TNode` tree.\n *\n * @param tNode\n * @param IView\n */\n function toDebugNodes(tNode, IView) {\n if (tNode) {\n var debugNodes = [];\n var tNodeCursor = tNode;\n while (tNodeCursor) {\n debugNodes.push(buildDebugNode(tNodeCursor, IView));\n tNodeCursor = tNodeCursor.next;\n }\n return debugNodes;\n } else {\n return [];\n }\n }\n function
buildDebugNode(tNode, IView) {\n var rawValue = IView[tNode.index];\n var native =
unwrapRNode(rawValue);\n var factories = [];\n var instances = [];\n var tView = IView[TVIEW];\n for (var i = tNode.directiveStart; i < tNode.directiveEnd; i++) {\n var def = tView.data[i];\n factories.push(def.type);\n instances.push(IView[i]);\n }\n return {\n html: toHtml(native),\n type: toTNodeTypeAsString(tNode.type),\n native: native,\n children:
toDebugNodes(tNode.child, IView),\n factories: factories,\n instances: instances,\n injector:
buildNodeInjectorDebug(tNode, tView, IView)\n };\n }\n function buildNodeInjectorDebug(tNode, tView,
IView) {\n var viewProviders = [];\n for (var i = tNode.providerIndexStart_; i < tNode.providerIndexEnd_;\n i++) {\n viewProviders.push(tView.data[i]);\n }\n var providers = [];\n for (var i =
tNode.providerIndexEnd_; i < tNode.directiveEnd; i++) {\n providers.push(tView.data[i]);\n }\n var
nodeInjectorDebug = {\n bloom: toBloom(IView, tNode.injectorIndex),\n cumulativeBloom:
toBloom(tView.data, tNode.injectorIndex),\n providers: providers,\n viewProviders: viewProviders,\n parentInjectorIndex: IView[tNode.providerIndexStart_ - 1],\n };\n return nodeInjectorDebug;\n }\n
/**\n * Convert a number at `idx` location in `array` into binary representation.\n *\n * @param array\n *
@param idx\n */\n function binary(array, idx) {\n var value = array[idx];\n // If not a number we print 8
`?` to retain alignment but let user know that it was called on\n // wrong type.\n if (typeof value !==
'number')\n return '???????';\n // We prefix 0s so that we have constant length number\n var text =
'00000000' + value.toString(2);\n return text.substring(text.length - 8);\n }\n /**\n * Convert a bloom
filter at location `idx` in `array` into binary representation.\n *\n * @param array\n * @param idx\n */\n
function toBloom(array, idx) {\n return binary(array, idx + 7) + \"_\" + binary(array, idx + 6) + \"_\" +
binary(array, idx + 5) + \"_\" + binary(array, idx + 4) + \"_\" + binary(array, idx + 3) + \"_\" + binary(array, idx + 2)
+ \"_\" + binary(array, idx + 1) + \"_\" + binary(array, idx + 0);\n }\n var LContainerDebug = /** @class */
(function () {\n function LContainerDebug(_raw_IContainer) {\n this._raw_IContainer =
_raw_IContainer;\n }\n Object.defineProperty(LContainerDebug.prototype, \"hasTransplantedViews\", {\n
 get: function () {\n return this._raw_IContainer[HAS_TRANSPLANTED_VIEWS];\n },\n enumerable: false,\n configurable: true\n });\n Object.defineProperty(LContainerDebug.prototype,
\"views\", {\n get: function () {\n return
this._raw_IContainer.slice(CONTAINER_HEADER_OFFSET)\n .map(toDebug);\n },\n enumerable: false,\n configurable: true\n });\n Object.defineProperty(LContainerDebug.prototype,
\"parent\", {\n get: function () {\n return toDebug(this._raw_IContainer[PARENT]);\n },\n enumerable: false,\n configurable: true\n });\n Object.defineProperty(LContainerDebug.prototype, \"movedViews\", {\n get: function () {\n return
this._raw_IContainer[MOVED_VIEWS];\n },\n enumerable: false,\n configurable: true\n });\n Object.defineProperty(LContainerDebug.prototype, \"host\", {\n get: function () {\n return
this._raw_IContainer[HOST];\n },\n enumerable: false,\n configurable: true\n });\n Object.defineProperty(LContainerDebug.prototype, \"native\", {\n get: function () {\n return
this._raw_IContainer[NATIVE];\n },\n enumerable: false,\n configurable: true\n });\n Object.defineProperty(LContainerDebug.prototype, \"next\", {\n get: function () {\n return
toDebug(this._raw_IContainer[NEXT]);\n },\n enumerable: false,\n configurable: true\n });\n return LContainerDebug;\n })();\n var 0$5 = function () { return Promise.resolve(null); }; /**\n * A permanent marker promise which signifies that the current CD tree is\n * clean.\n */\n var

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_CLEAN_PROMISE = (0$5());\n /**\n * Invoke `HostBindingsFunction`s for view.\n *\n * This methods
executes `TView.hostBindingOpCodes`. It is used to execute the\n * `HostBindingsFunction`s associated with the
current `LView`.\n *\n * @param tView Current `TView`.\n * @param lView Current `LView`.\n */\n
function processHostBindingOpCodes(tView, lView) {\n var hostBindingOpCodes =
tView.hostBindingOpCodes;\n if (hostBindingOpCodes === null)\n return;\n try {\n for (var i
= 0; i < hostBindingOpCodes.length; i++) {\n var opCode = hostBindingOpCodes[i];\n if
(opCode < 0) {\n // Negative numbers are element indexes.\n setSelectedIndex(~opCode);\n
 }\n else {\n // Positive numbers are NumberTuple which store bindingRootIndex and
directiveIndex.\n var directiveIdx = opCode;\n var bindingRootIdx =
hostBindingOpCodes[directiveIdx];\n var hostBindingFn = hostBindingOpCodes[directiveIdx];\n
setBindingRootForHostBindings(bindingRootIdx, directiveIdx);\n var context = lView[directiveIdx];\n
hostBindingFn(2 /* Update */, context);\n }\n }\n }\n finally {\n
setSelectedIndex(-1);\n }\n /** Refreshes all content queries declared by directives in a given view */\n
function refreshContentQueries(tView, lView) {\n var contentQueries = tView.contentQueries;\n if
(contentQueries !== null) {\n for (var i = 0; i < contentQueries.length; i += 2) {\n var queryStartIdx
= contentQueries[i];\n var directiveDefIdx = contentQueries[i + 1];\n if (directiveDefIdx !== -1)
{\n var directiveDef = tView.data[directiveDefIdx];\n ngDevMode &&
assertDefined(directiveDef, 'DirectiveDef not found.);\n ngDevMode &&\n
assertDefined(directiveDef.contentQueries, 'contentQueries function should be defined');\n
setCurrentQueryIndex(queryStartIdx);\n directiveDef.contentQueries(2 /* Update */,
lView[directiveDefIdx], directiveDefIdx);\n }\n }\n }\n /** Refreshes child components
in the current view (update mode). */\n function refreshChildComponents(hostLView, components) {\n for
(var i = 0; i < components.length; i++) {\n refreshComponent(hostLView, components[i]);\n }\n }\n
/** Renders child components in the current view (creation mode). */\n function
renderChildComponents(hostLView, components) {\n for (var i = 0; i < components.length; i++) {\n
renderComponent(hostLView, components[i]);\n }\n }\n function createLView(parentLView, tView,
context, flags, host, tHostNode, rendererFactory, renderer, sanitizer, injector) {\n var lView = ngDevMode ?
cloneToLViewFromTViewBlueprint(tView) : tView.blueprint.slice();\n lView[HOST] = host;\n
lView[FLAGS] = flags | 4 /* CreationMode */ | 128 /* Attached */ | 8 /* FirstLViewPass */;\n
resetPreOrderHookFlags(lView);\n ngDevMode && tView.declTNode && parentLView &&
assertTNodeForLView(tView.declTNode, parentLView);\n lView[PARENT] =
lView[DECLARATION_VIEW] = parentLView;\n lView[CONTEXT] = context;\n
lView[RENDERER_FACTORY] = (rendererFactory || parentLView &&
parentLView[RENDERER_FACTORY]);\n ngDevMode && assertDefined(lView[RENDERER_FACTORY],
'RendererFactory is required');\n lView[RENDERER] = (renderer || parentLView &&
parentLView[RENDERER]);\n ngDevMode && assertDefined(lView[RENDERER], 'Renderer is required');\n
lView[SANITIZER] = sanitizer || parentLView && parentLView[SANITIZER] || null;\n lView[INJECTOR]
= injector || parentLView && parentLView[INJECTOR] || null;\n lView[T_HOST] = tHostNode;\n
ngDevMode &&\n assertEqual(tView.type == 2 /* Embedded */ ? parentLView !== null : true, true,
'Embedded views must have parentLView');\n lView[DECLARATION_COMPONENT_VIEW] =\n
tView.type == 2 /* Embedded */ ? parentLView[DECLARATION_COMPONENT_VIEW] : lView;\n
ngDevMode && attachLViewDebug(lView);\n return lView;\n }\n function getOrCreateTNode(tView,
index, type, name, attrs) {\n ngDevMode && index !== 0 && // 0 are bogus nodes and they are OK. See
`createContainerRef` in\n // `view_engine_compatibility` for additional context.\n
assertGreaterThanOrEqual(index, HEADER_OFFSET, 'TNodes can\\'t be in the LView header.);\n // Keep this
function short, so that the VM will inline it.\n ngDevMode && assertPureTNodeType(type);\n var tNode =
tView.data[index];\n if (tNode === null) {\n tNode = createTNodeAtIndex(tView, index, type, name,
attrs);\n if (isInI18nBlock()) {\n // If we are in i18n block then all elements should be pre declared

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through `Placeholder`\n // See `TNodeType.Placeholder` and `LFrame.inI18n` for more context.\n
// If the `TNode` was not pre-declared than it means it was not mentioned which means it was\n //
removed, so we mark it as detached.\n tNode.flags |= 64 /* isDetached */;\n }\n }\n else if
(tNode.type & 64 /* Placeholder */) {\n tNode.type = type;\n tNode.value = name;\n tNode.attrs
= attrs;\n var parent = getCurrentParentTNode();\n tNode.injectorIndex = parent === null ? -1 :
parent.injectorIndex;\n ngDevMode && assertTNodeForTView(tNode, tView);\n ngDevMode &&
assertEqual(index, tNode.index, 'Expecting same index');\n }\n setCurrentTNode(tNode, true);\n return
tNode;\n }\n function createTNodeAtIndex(tView, index, type, name, attrs) {\n var currentTNode =
getCurrentTNodePlaceholderOk();\n var isParent = isCurrentTNodeParent();\n var parent = isParent ?
currentTNode : currentTNode && currentTNode.parent;\n // Parents cannot cross component boundaries
because components will be used in multiple places.\n var tNode = tView.data[index] =\n createTNode(tView, parent, type, index, name, attrs);\n // Assign a pointer to the first child node of a given
view. The first node is not always the one\n // at index 0, in case of i18n, index 0 can be the instruction
`i18nStart` and the first node has\n // the index 1 or more, so we can't just check node index.\n if
(tView.firstChild === null) {\n tView.firstChild = tNode;\n }\n if (currentTNode !== null) {\n
if (isParent) {\n // FIXME(misko): This logic looks unnecessarily complicated. Could we simplify?\n
if (currentTNode.child === null && tNode.parent !== null) {\n // We are in the same view, which
means we are adding content node to the parent view.\n currentTNode.child = tNode;\n }\n
}\n else {\n if (currentTNode.next === null) {\n // In the case of i18n the
`currentTNode` may already be linked, in which case we don't want\n // to break the links which i18n
created.\n currentTNode.next = tNode;\n }\n }\n }\n return tNode;\n }\n
/**\n * When elements are created dynamically after a view blueprint is created (e.g. through\n * i18nApply()),
we need to adjust the blueprint for future\n * template passes.\n * @param tView `TView` associated
with `LView`\n * @param IView The `LView` containing the blueprint to adjust\n * @param
numSlotsToAlloc The number of slots to alloc in the LView, should be >0\n * @param initialValue Initial value
to store in blueprint\n *^\n function allocExpando(tView, IView, numSlotsToAlloc, initialValue) {\n if
(numSlotsToAlloc === 0)\n return -1;\n if (ngDevMode) {\n assertFirstCreatePass(tView);\n assertSame(tView, IView[TVIEW], `LView` must be associated with `TView`!);\n
assertEqual(tView.data.length, IView.length, 'Expecting LView to be same size as TView');\n
assertEqual(tView.data.length, tView.blueprint.length, 'Expecting Blueprint to be same size as TView');\n
assertFirstUpdatePass(tView);\n }\n var allocIdx = IView.length;\n for (var i = 0; i < numSlotsToAlloc;
i++) {\n IView.push(initialValue);\n tView.blueprint.push(initialValue);\n
tView.data.push(null);\n }\n return allocIdx;\n }\n //\n // Render\n
//\n /**\n * Processes a view in the creation mode. This includes a number of steps in a specific
order:\n * - creating view query functions (if any);\n * - executing a template function in the creation mode;\n
* - updating static queries (if any);\n * - creating child components defined in a given view.\n *^\n function
renderView(tView, IView, context) {\n ngDevMode && assertEqual(isCreationMode(IView), true, 'Should be
run in creation mode');\n enterView(IView);\n try {\n var viewQuery = tView.viewQuery;\n if
(viewQuery !== null) {\n executeViewQueryFn(1 /* Create */, viewQuery, context);\n }\n //
Execute a template associated with this view, if it exists. A template function might not be\n // defined for the
root component views.\n var templateFn = tView.template;\n if (templateFn !== null) {\n
executeTemplate(tView, IView, templateFn, 1 /* Create */, context);\n }\n // This needs to be set
before children are processed to support recursive components.\n // This must be set to false immediately
after the first creation run because in an\n // ngFor loop, all the views will be created together before update
mode runs and turns\n // off firstCreatePass. If we don't set it here, instances will perform directive\n //
matching, etc again and again.\n if (tView.firstCreatePass) {\n tView.firstCreatePass = false;\n
}\n // We resolve content queries specifically marked as `static` in creation mode. Dynamic\n //
content queries are resolved during change detection (i.e. update mode), after embedded\n // views are

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refreshed (see block above).\n if (tView.staticContentQueries) {\n refreshContentQueries(tView,\nIView);\n }\n // We must materialize query results before child components are processed\n // in case a child component has projected a container. The LContainer needs\n // to exist so the embedded views are properly attached by the container.\n if (tView.staticViewQueries) {\n executeViewQueryFn(2\n/* Update */, tView.viewQuery, context);\n }\n // Render child component views.\n var\ncomponents = tView.components;\n if (components !== null) {\n renderChildComponents(IView,\ncomponents);\n }\n }\n catch (error) {\n // If we didn't manage to get past the first template\npass due to\n // an error, mark the view as corrupted so we can try to recover.\n if\n(tView.firstCreatePass) {\n tView.incompleteFirstPass = true;\n }\n throw error;\n }\n finally {\n IView[FLAGS] &= ~4 /* CreationMode */;\n leaveView();\n }\n}\n\n/**\n * Processes a view in update mode. This includes a number of steps in a specific order:\n * - executing a template\nfunction in update mode;\n * - executing hooks;\n * - refreshing queries;\n * - setting host bindings;\n * -\nrefreshing child (embedded and component) views.\n */\nfunction refreshView(tView, IView, templateFn,\ncontext) {\n ngDevMode && assertEquals(isCreationMode(IView), false, 'Should be run in update mode');\n var flags = IView[FLAGS];\n if ((flags & 256 /* Destroyed */) === 256 /* Destroyed */)\n return;\n enterView(IView);\n // Check no changes mode is a dev only mode used to verify that bindings have not\nchanged\n // since they were assigned. We do not want to execute lifecycle hooks in that mode.\n var\nisInCheckNoChangesPass = isInCheckNoChangesMode();\n try {\n resetPreOrderHookFlags(IView);\n setBindingIndex(tView.bindingStartIndex);\n if (templateFn !== null) {\n executeTemplate(tView, IView, templateFn, 2 /* Update */, context);\n }\n var\nhooksInitPhaseCompleted = (flags & 3 /* InitPhaseStateMask */) === 3 /* InitPhaseCompleted */;\n //\nexecute pre-order hooks (OnInit, OnChanges, DoCheck)\n // PERF WARNING: do NOT extract this to a\nseparate function without running benchmarks\n if (!isInCheckNoChangesPass) {\n if\n(hooksInitPhaseCompleted) {\n var preOrderCheckHooks = tView.preOrderCheckHooks;\n }\n if (preOrderCheckHooks !== null) {\n executeCheckHooks(IView, preOrderCheckHooks, null);\n }\n else {\n var preOrderHooks = tView.preOrderHooks;\n if\n(preOrderHooks !== null) {\n executeInitAndCheckHooks(IView, preOrderHooks, 0 /*\nOnInitHooksToBeRun\n*/, null);\n }\n incrementInitPhaseFlags(IView, 0 /*\nOnInitHooksToBeRun\n*/);\n }\n }\n // First mark transplanted views that are declared in this\nIView as needing a refresh at their\n // insertion points. This is needed to avoid the situation where the\ntemplate is defined in this\n // `LView` but its declaration appears after the insertion component.\n markTransplantedViewsForRefresh(IView);\n refreshEmbeddedViews(IView);\n // Content query\nresults must be refreshed before content hooks are called.\n if (tView.contentQueries !== null) {\n refreshContentQueries(tView, IView);\n }\n // execute content hooks (AfterContentInit,\nAfterContentChecked)\n // PERF WARNING: do NOT extract this to a separate function without running\nbenchmarks\n if (!isInCheckNoChangesPass) {\n if (hooksInitPhaseCompleted) {\n var\ncontentCheckHooks = tView.contentCheckHooks;\n if (contentCheckHooks !== null) {\n executeCheckHooks(IView, contentCheckHooks);\n }\n }\n else {\n var\ncontentHooks = tView.contentHooks;\n if (contentHooks !== null) {\n executeInitAndCheckHooks(IView, contentHooks, 1 /* AfterContentInitHooksToBeRun\n*/);\n }\n incrementInitPhaseFlags(IView, 1 /* AfterContentInitHooksToBeRun\n*/);\n }\n }\n processHostBindingOpCodes(tView, IView);\n // Refresh child component views.\n var components =\ntView.components;\n if (components !== null) {\n refreshChildComponents(IView, components);\n }\n // View queries must execute after refreshing child components because a template in this view\n // could be inserted in a child component. If the view query executes before child component\n // refresh,\nthe template might not yet be inserted.\n var viewQuery = tView.viewQuery;\n if (viewQuery !==\nnull) {\n executeViewQueryFn(2 /* Update */, viewQuery, context);\n }\n // execute view\nhooks (AfterViewInit, AfterViewChecked)\n // PERF WARNING: do NOT extract this to a separate function

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without running benchmarks\n if (!isInCheckNoChangesPass) {\n if (hooksInitPhaseCompleted) {\n var viewCheckHooks = tView.viewCheckHooks;\n if (viewCheckHooks !== null) {\n executeCheckHooks(IView, viewCheckHooks);\n }\n } else {\n var viewHooks = tView.viewHooks;\n if (viewHooks !== null) {\n executeInitAndCheckHooks(IView, viewHooks, 2 /* AfterViewInitHooksToBeRun */);\n }\n incrementInitPhaseFlags(IView, 2 /* AfterViewInitHooksToBeRun */);\n } if\n (tView.firstUpdatePass === true) {\n // We need to make sure that we only flip the flag on successful\n `refreshView` only\n // Don't do this in `finally` block.\n // If we did this in `finally` block then an\n exception could block the execution of styling\n // instructions which in turn would be unable to insert\n themselves into the styling linked\n // list. The result of this would be that if the exception would not be\n throw on subsequent CD\n // the styling would be unable to process it data and reflect to the DOM.\n tView.firstUpdatePass = false;\n } // Do not reset the dirty state when running in check no changes\n mode. We don't want components\n // to behave differently depending on whether check no changes is\n enabled or not. For example:\n // Marking an OnPush component as dirty from within the `ngAfterViewInit`\n hook in order to\n // refresh a `NgClass` binding should work. If we would reset the dirty state in the check\n // no changes cycle, the component would be not be dirty for the next update pass. This would\n // be\n different in production mode where the component dirty state is not reset.\n if (!isInCheckNoChangesPass)\n {\n IView[FLAGS] &= ~(64 /* Dirty */ | 8 /* FirstLViewPass */);\n } if (IView[FLAGS] &\n 1024 /* RefreshTransplantedView */) {\n IView[FLAGS] &= ~1024 /* RefreshTransplantedView */;\n updateTransplantedViewCount(IView[PARENT], -1);\n } finally {\n leaveView();\n } }\n function renderComponentOrTemplate(tView, IView, templateFn, context) {\n var rendererFactory = IView[RENDERER_FACTORY];\n var normalExecutionPath =\n !isInCheckNoChangesMode();\n var creationModeIsActive = isCreationMode(IView);\n try {\n if\n (normalExecutionPath && !creationModeIsActive && rendererFactory.begin) {\n rendererFactory.begin();\n } if (creationModeIsActive) {\n renderView(tView, IView,\n context);\n } refreshView(tView, IView, templateFn, context);\n } finally {\n if\n (normalExecutionPath && !creationModeIsActive && rendererFactory.end) {\n rendererFactory.end();\n }\n } }\n function executeTemplate(tView, IView, templateFn, rf, context) {\n var\n prevSelectedIndex = getSelectedIndex();\n try {\n setSelectedIndex(-1);\n if (rf & 2 /* Update */\n && IView.length > HEADER_OFFSET) {\n // When we're updating, inherently select 0 so we don't\n // have to generate that instruction for most update blocks.\n selectIndexInternal(tView, IView,\n HEADER_OFFSET, isInCheckNoChangesMode());\n } templateFn(rf, context);\n } finally {\n setSelectedIndex(prevSelectedIndex);\n } }\n //\n // Element\n //\n function executeContentQueries(tView, tNode, IView) {\n if\n (isContentQueryHost(tNode)) {\n var start = tNode.directiveStart;\n var end = tNode.directiveEnd;\n for (var directiveIndex = start; directiveIndex < end; directiveIndex++) {\n var def =\n tView.data[directiveIndex];\n if (def.contentQueries) {\n def.contentQueries(1 /* Create */,\n IView[directiveIndex], directiveIndex);\n } }\n //**\n * Creates directive\n instances.\n *\n function createDirectivesInstances(tView, IView, tNode) {\n if (!getBindingsEnabled())\n return;\n instantiateAllDirectives(tView, IView, tNode, getNativeByTNode(tNode, IView));\n if\n ((tNode.flags & 128 /* hasHostBindings */) === 128 /* hasHostBindings */) {\n invokeDirectivesHostBindings(tView, IView, tNode);\n } }\n //**\n * Takes a list of local names and\n indices and pushes the resolved local variable values\n * to LView in the same order as they are loaded in the\n template with load().\n *\n function saveResolvedLocalsInData(viewData, tNode, localRefExtractor) {\n if\n (localRefExtractor === void 0) {\n localRefExtractor = getNativeByTNode;\n } var localNames =\n tNode.localNames;\n if (localNames !== null) {\n var localIndex = tNode.index + 1;\n for (var i =\n 0; i < localNames.length; i += 2) {\n var index = localNames[i + 1];\n var value = index === -1\n ?\n localRefExtractor(tNode, viewData) :\n viewData[index];\n }\n }\n }\n }\n }\n }\n }\n }\n}

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viewData[localIndex++] = value;\n }\n }\n }\n /*\n * Gets TView from a template function or
creates a new TView\n * if it doesn't already exist.\n *\n * @param def ComponentDef\n * @returns
TView\n */\n function getOrCreateTComponentView(def) {\n var tView = def.tView;\n // Create a
TView if there isn't one, or recreate it if the first create pass didn't\n // complete successfully since we can't
know for sure whether it's in a usable shape.\n if (tView === null || tView.incompleteFirstPass) {\n //
Declaration node here is null since this function is called when we dynamically create a\n // component and
hence there is no declaration.\n var declTNode = null;\n return def.tView = createTView(1 /*
Component */ , declTNode, def.template, def.decls, def.vars, def.directiveDefs, def.pipeDefs, def.viewQuery,
def.schemas, def.consts);\n }\n return tView;\n }\n /*\n * Creates a TView instance\n *\n *
@param type Type of `TView`\n * @param declTNode Declaration location of this `TView`\n * @param
templateFn Template function\n * @param decls The number of nodes, local refs, and pipes in this template\n
* @param directives Registry of directives for this view\n * @param pipes Registry of pipes for this view\n
* @param viewQuery View queries for this view\n * @param schemas Schemas for this view\n * @param
consts Constants for this view\n */\n function createTView(type, declTNode, templateFn, decls, vars, directives,
pipes, viewQuery, schemas, constsOrFactory) {\n ngDevMode && ngDevMode.tView++;\n var
bindingStartIndex = HEADER_OFFSET + decls;\n // This length does not yet contain host bindings from child
directives because at this point,\n // we don't know which directives are active on this template. As soon as a
directive is matched\n // that has a host binding, we will update the blueprint with that def's hostVars count.\n
var initialViewLength = bindingStartIndex + vars;\n var blueprint = createViewBlueprint(bindingStartIndex,
initialViewLength);\n var consts = typeof constsOrFactory === 'function' ? constsOrFactory() :
constsOrFactory;\n var tView = blueprint[TVIEW] = ngDevMode ?\n new TViewConstructor(type, //
type: TViewType,\n blueprint, // blueprint: LView,\n templateFn, // template:
ComponentTemplate<{}>|null,\n null, // queries: TQueries|null\n viewQuery, // viewQuery:
ViewQueriesFunction<{}>|null,\n declTNode, // declTNode: TNode|null,\n
cloneToTViewData(blueprint).fill(null, bindingStartIndex), // data: TData,\n bindingStartIndex, //
bindingStartIndex: number,\n initialViewLength, // expandoStartIndex: number,\n null, //
hostBindingOpCodes: HostBindingOpCodes,\n true, // firstCreatePass: boolean,\n true, //
firstUpdatePass: boolean,\n false, // staticViewQueries: boolean,\n false, // staticContentQueries:
boolean,\n null, // preOrderHooks: HookData|null,\n null, // preOrderCheckHooks: HookData|null,\n
null, // contentHooks: HookData|null,\n null, // contentCheckHooks: HookData|null,\n null, //
viewHooks: HookData|null,\n null, // viewCheckHooks: HookData|null,\n null, // destroyHooks:
DestroyHookData|null,\n null, // cleanup: any[]|null,\n null, // contentQueries: number[]|null,\n
null, // components: number[]|null,\n typeof directives === 'function' ? /\n directives() : /\n
directives, // directiveRegistry: DirectiveDefList|null,\n typeof pipes === 'function' ? pipes() : pipes, //
pipeRegistry: PipeDefList|null,\n null, // firstChild: TNode|null,\n schemas, // schemas:
SchemaMetadata[]|null,\n consts, // consts: TConstants|null\n false, // incompleteFirstPass: boolean\n
decls, // ngDevMode only: decls\n vars) : {\n type: type,\n blueprint:
blueprint,\n template: templateFn,\n queries: null,\n viewQuery: viewQuery,\n
declTNode: declTNode,\n data: blueprint.slice().fill(null, bindingStartIndex),\n
bindingStartIndex: bindingStartIndex,\n expandoStartIndex: initialViewLength,\n
hostBindingOpCodes: null,\n firstCreatePass: true,\n firstUpdatePass: true,\n
staticViewQueries: false,\n staticContentQueries: false,\n preOrderHooks: null,\n
preOrderCheckHooks: null,\n contentHooks: null,\n contentCheckHooks: null,\n
viewHooks: null,\n viewCheckHooks: null,\n destroyHooks: null,\n cleanup: null,\n
contentQueries: null,\n components: null,\n directiveRegistry: typeof directives === 'function'
? directives() : directives,\n pipeRegistry: typeof pipes === 'function' ? pipes() : pipes,\n
firstChild: null,\n schemas: schemas,\n consts: consts,\n incompleteFirstPass: false\n
};\n if (ngDevMode) {\n // For performance reasons it is important that the tView retains the same

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shape during runtime.\n // (To make sure that all of the code is monomorphic.) For this reason we seal the
object to\n // prevent class transitions.\n Object.seal(tView);\n }\n return tView;\n }\n function createViewBlueprint(bindingStartIndex, initialViewLength) {\n var blueprint = ngDevMode ? new
LViewBlueprint() : [];\n for (var i = 0; i < initialViewLength; i++) {\n blueprint.push(i <
bindingStartIndex ? null : NO_CHANGE);\n }\n return blueprint;\n }\n function createError(text, token)
{\n return new Error("\Renderer: \" + text + \" [\" + stringifyForError(token) + \"]");\n }\n function
assertHostNodeExists(rElement, elementOrSelector) {\n if (!rElement) {\n if (typeof elementOrSelector
=== 'string') {\n throw createError('Host node with selector not found:', elementOrSelector);\n }\n }
else {\n throw createError('Host node is required:', elementOrSelector);\n }\n }\n}\n
/**\n * Locates the host native element, used for bootstrapping existing nodes into rendering pipeline.\n */
* @param rendererFactory Factory function to create renderer instance.\n * @param elementOrSelector Render
element or CSS selector to locate the element.\n * @param encapsulation View Encapsulation defined for
component that requests host element.\n */\n function locateHostElement(renderer, elementOrSelector,
encapsulation) {\n if (isProceduralRenderer(renderer)) {\n // When using native Shadow DOM, do not
clear host element to allow native slot projection\n var preserveContent = encapsulation ===
exports.ViewEncapsulation.ShadowDom;\n return renderer.selectRootElement(elementOrSelector,
preserveContent);\n }\n var rElement = typeof elementOrSelector === 'string' ?\n renderer.querySelector(elementOrSelector) :\n elementOrSelector;\n ngDevMode &&
assertHostNodeExists(rElement, elementOrSelector);\n // Always clear host element's content when Renderer3
is in use. For procedural renderer case we\n // make it depend on whether ShadowDom encapsulation is used (in
which case the content should be\n // preserved to allow native slot projection). ShadowDom encapsulation
requires procedural\n // renderer, and procedural renderer case is handled above.\n rElement.textContent =
'';\n return rElement;\n}\n /**\n * Saves context for this cleanup function in LView.cleanupInstances.\n */
*\n * On the first template pass, saves in TView:\n * - Cleanup function\n * - Index of context we just saved
in LView.cleanupInstances\n */\n function storeCleanupWithContext(tView, IView, context, cleanupFn) {\n
var ICleanup = getLCleanup(IView);\n ICleanup.push(context);\n if (tView.firstCreatePass) {\n
getTViewCleanup(tView).push(cleanupFn, ICleanup.length - 1);\n }\n}\n function createTNode(tView,
tParent, type, index, value, attrs) {\n ngDevMode && index !== 0 && // 0 are bogus nodes and they are OK.
See `createContainerRef` in\n // `view_engine_compatibility` for additional context.\n assertGreaterThanOrEqual(index, HEADER_OFFSET, 'TNodes can\\'t be in the LView header.);\n
ngDevMode && assertNotSame(attrs, undefined, '\\undefined\\' is not valid value for '\\attrs\\');\n ngDevMode
&& ngDevMode.tNode++;\n ngDevMode && tParent && assertTNodeForTView(tParent, tView);\n var
injectorIndex = tParent ? tParent.injectorIndex : -1;\n var tNode = ngDevMode ?\n new
TNodeDebug(tView, // tView_: TView\n type, // type: TNodeType\n index, // index: number\n
null, // insertBeforeIndex: null|-1|number|number[]\n injectorIndex, // injectorIndex: number\n -1, //
directiveStart: number\n -1, // directiveEnd: number\n -1, // directiveStylingLast: number\n null,
// propertyBindings: number[]|null\n 0, // flags: TNodeFlags\n 0, // providerIndexes:
TNodeProviderIndexes\n value, // value: string|null\n attrs, // attrs:
(string|AttributeMarker|(string|SelectorFlags)[])[]|null\n null, // mergedAttrs\n null, // localNames:
(string|number)[]|null\n undefined, // initialInputs: (string[]|null)[]|null|undefined\n null, // inputs:
PropertyAliases|null\n null, // outputs: PropertyAliases|null\n null, // tViews: ITView|ITView[]|null\n
null, // next: ITNode|null\n null, // projectionNext: ITNode|null\n null, // child: ITNode|null\n
tParent, // parent: TElementNode|TContainerNode|null\n null, // projection:
number|(ITNode|RNode)[]|null\n null, // styles: string|null\n null, // stylesWithoutHost: string|null\n
undefined, // residualStyles: string|null\n null, // classes: string|null\n null, // classesWithoutHost:
string|null\n undefined, // residualClasses: string|null\n 0, // classBindings: TStylingRange;\n 0)
):\n {\n type: type,\n index: index,\n insertBeforeIndex: null,\n
injectorIndex: injectorIndex,\n directiveStart: -1,\n directiveEnd: -1,\n

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directiveStylingLast: -1,\n propertyBindings: null,\n flags: 0,\n providerIndexes: 0,\n value: value,\n attrs: attrs,\n mergedAttrs: null,\n localNames: null,\ninitialInputs: undefined,\n inputs: null,\n outputs: null,\n tViews: null,\n next:\n null,\n projectionNext: null,\n child: null,\n parent: tParent,\n projection:\n null,\n styles: null,\n stylesWithoutHost: null,\n residualStyles: undefined,\n classes: null,\n classesWithoutHost: null,\n residualClasses: undefined,\n classBindings:\n 0,\n styleBindings: 0,\n };\n if (ngDevMode) {\n // For performance reasons it is\n important that the tNode retains the same shape during runtime.\n // (To make sure that all of the code is\n monomorphic.) For this reason we seal the object to\n // prevent class transitions.\n Object.seal(tNode);\n }\n return tNode;\n }\n function generatePropertyAliases(inputAliasMap,\n directiveDefIdx, propStore) {\n for (var publicName in inputAliasMap) {\n if\n (inputAliasMap.hasOwnProperty(publicName)) {\n propStore = propStore === null ? {} : propStore;\n var internalName = inputAliasMap[publicName];\n if (propStore.hasOwnProperty(publicName)) {\n propStore[publicName].push(directiveDefIdx, internalName);\n }\n else {\n (propStore[publicName] = [directiveDefIdx, internalName]);\n }\n }\n }\n return\n propStore;\n }\n /**\n * Initializes data structures required to work with directive inputs and outputs.\n * Initialization is done for all directives matched on a given TNode.\n */\n function\n initializeInputAndOutputAliases(tView, tNode) {\n ngDevMode && assertFirstCreatePass(tView);\n var\n start = tNode.directiveStart;\n var end = tNode.directiveEnd;\n var tViewData = tView.data;\n var\n tNodeAttrs = tNode.attrs;\n var inputsFromAttrs = ngDevMode ? new TNodeInitialInputs() : [];\n var\n inputsStore = null;\n var outputsStore = null;\n for (var i = start; i < end; i++) {\n var directiveDef =\n tViewData[i];\n var directiveInputs = directiveDef.inputs;\n // Do not use unbound attributes as inputs\n to structural directives, since structural\n // directive inputs can only be set using microsyntax (e.g. <div\n *dir="exp">).\n // TODO(FW-1930): microsyntax expressions may also contain unbound/static attributes,\n which\n // should be set for inline templates.\n var initialInputs = (tNodeAttrs !== null &&\n !isInlineTemplate(tNode)) ?\n generateInitialInputs(directiveInputs, tNodeAttrs) :\n null;\n inputsFromAttrs.push(initialInputs);\n inputsStore = generatePropertyAliases(directiveInputs, i,\n inputsStore);\n outputsStore = generatePropertyAliases(directiveDef.outputs, i, outputsStore);\n }\n if (inputsStore !== null) {\n if (inputsStore.hasOwnProperty('class')) {\n tNode.flags |= 16 /*\n hasClassInput */;\n }\n if (inputsStore.hasOwnProperty('style')) {\n tNode.flags |= 32 /*\n hasStyleInput */;\n }\n }\n tNode.initialInputs = inputsFromAttrs;\n tNode.inputs =\n inputsStore;\n tNode.outputs = outputsStore;\n }\n /**\n * Mapping between attributes names that don't\n correspond to their element property names.\n */\n * Performance note: this function is written as a series of if\n checks (instead of, say, a property\n * object lookup) for performance reasons - the series of `if` checks seems to\n be the fastest way of\n * mapping property names. Do NOT change without benchmarking.\n */\n * Note:\n this mapping has to be kept in sync with the equally named mapping in the template\n * type-checking machinery\n of ngts.\n */\n function mapPropName(name) {\n if (name === 'class')\n return 'className';\n if (name === 'for')\n return 'htmlFor';\n if (name === 'formaction')\n return 'formAction';\n if\n (name === 'innerHTML')\n return 'innerHTML';\n if (name === 'readonly')\n return 'readOnly';\n if (name === 'tabindex')\n return 'tabIndex';\n return name;\n }\n function\n elementPropertyInternal(tView, tNode, IView, propName, value, renderer, sanitizer, nativeOnly) {\n ngDevMode && assertNotSame(value, NO_CHANGE, 'Incoming value should never be NO_CHANGE.);\n var element = getNativeByTNode(tNode, IView);\n var inputData = tNode.inputs;\n var dataValue;\n if\n (!nativeOnly && inputData != null && (dataValue = inputData[propName])) {\n setInputsForProperty(tView, IView, dataValue, propName, value);\n if (isComponentHost(tNode))\n markDirtyIfOnPush(IView, tNode.index);\n if (ngDevMode) {\n setNgReflectProperties(IView,\n element, tNode.type, dataValue, value);\n }\n }\n else if (tNode.type & 3 /* AnyRNode */) {\n propName = mapPropName(propName);\n if (ngDevMode) {\n

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validateAgainstEventProperties(propName);\n if (!validateProperty(tView, element, propName, tNode))\n{\n // Return here since we only log warnings for unknown properties.\n}\nlogUnknownPropertyError(propName, tNode);\n return;\n }\nngDevMode.rendererSetProperty++;\n }\n // It is assumed that the sanitizer is only added when the\n compiler determines that the\n // property is risky, so sanitization can be done without further checks.\n value = sanitizer != null ? sanitizer(value, tNode.value || "", propName) : value;\n if\n (isProceduralRenderer(renderer)) {\n renderer.setProperty(element, propName, value);\n }\n else if (!isAnimationProp(propName)) {\n element.setProperty ? element.setProperty(propName, value) :\n element[propName] = value;\n }\n }\n else if (tNode.type & 12 /* AnyContainer */) {\n // If the node is a container and the property didn't\n // match any of the inputs or schemas we should\n throw.\n if (ngDevMode && !matchingSchemas(tView, tNode.value)) {\n logUnknownPropertyError(propName, tNode);\n }\n }\n }\n /** If node is an OnPush component,\n marks its LView dirty. */\n function markDirtyIfOnPush(IView, viewIndex) {\n ngDevMode &&\n assertLView(IView);\n var childComponentLView = getComponentLViewByIndex(viewIndex, IView);\n if (!(childComponentLView[FLAGS] & 16 /* CheckAlways */)) {\n childComponentLView[FLAGS] |= 64\n /* Dirty */;\n }\n }\n function setNgReflectProperty(IView, element, type, attrName, value) {\n var\n _a;\n var renderer = IView[RENDERER];\n attrName = normalizeDebugBindingName(attrName);\n var debugValue = normalizeDebugBindingValue(value);\n if (type & 3 /* AnyRNode */) {\n if (value ===\n null) {\n isProceduralRenderer(renderer) ? renderer.removeAttribute(element, attrName) :\n element.removeAttribute(attrName);\n }\n else {\n isProceduralRenderer(renderer) ?\n renderer.setAttribute(element, attrName, debugValue) :\n element.setAttribute(attrName,\n debugValue);\n }\n }\n else {\n var textContent = `bindings=${\n JSON.stringify({\n _a: {\n _a[attrName] = debugValue, _a}, null, 2);\n if (isProceduralRenderer(renderer)) {\n renderer.setValue(element, textContent);\n }\n else {\n element.textContent = textContent;\n }\n }\n }\n function setNgReflectProperties(IView, element, type, dataValue, value) {\n if (type &\n (3 /* AnyRNode */ | 4 /* Container */)) {\n /**\n * dataValue is an array containing runtime input or\n output names for the directives:\n * i+0: directive instance index\n * i+1: privateName\n *\n * e.g. [0, 'change', 'change-minified']\n * we want to set the reflected property with the privateName:\n dataValue[i+1]\n */\n for (var i = 0; i < dataValue.length; i += 2) {\n setNgReflectProperty(IView, element, type, dataValue[i + 1], value);\n }\n }\n }\n function\n validateProperty(tView, element, propName, tNode) {\n // If `schemas` is set to `null`, that's an indication that\n this Component was compiled in AOT\n // mode where this check happens at compile time. In JIT mode,\n `schemas` is always present and\n // defined as an array (as an empty array in case `schemas` field is not\n defined) and we should\n // execute the check below.\n if (tView.schemas === null)\n return true;\n // The property is considered valid if the element matches the schema, it exists on the element\n // or it is\n synthetic, and we are in a browser context (web worker nodes should be skipped).\n if\n (matchingSchemas(tView, tNode.value) || propName in element || isAnimationProp(propName))\n return\n true;\n // Note: `typeof Node` returns 'function' in most browsers, but on IE it is 'object' so we\n // need to account for both here, while being careful for `typeof null` also returning 'object'.\n return typeof Node\n === 'undefined' || Node === null || !(element instanceof Node);\n }\n function matchingSchemas(tView,\n tagName) {\n var schemas = tView.schemas;\n if (schemas !== null) {\n for (var i = 0; i <\n schemas.length; i++) {\n var schema = schemas[i];\n if (schema === NO_ERRORS_SCHEMA\n ||\n schema === CUSTOM_ELEMENTS_SCHEMA && tagName && tagName.indexOf('-') > -1) {\n return true;\n }\n }\n }\n return false;\n }\n /**\n * Logs an error that a\n property is not supported on an element.\n * @param propName Name of the invalid property.\n * @param\n tNode Node on which we encountered the property.\n */\n function logUnknownPropertyError(propName,\n tNode) {\n var message = `Can't bind to ` + propName + ` since it isn't a known property of ` +\n tNode.value + `.`;\n console.error(formatRuntimeError(`303` /* UNKNOWN_BINDING */, message));\n }\n}

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}\n /**\n * Instantiate a root component.\n *\n function instantiateRootComponent(tView, IView, def) {\n
 var rootTNode = getCurrentTNode();\n if (tView.firstCreatePass) {\n if (def.providersResolver)\n def.providersResolver(def);\n var directiveIndex = allocExpando(tView, IView, 1, null);\n ngDevMode &&\n assertEquals(directiveIndex, rootTNode.directiveStart, 'Because this is a root component\nthe allocated expando should match the TNode component.);\n configureViewWithDirective(tView,\nrootTNode, IView, directiveIndex, def);\n }\n var directive = getNodeInjectable(IView, tView,\nrootTNode.directiveStart, rootTNode);\n attachPatchData(directive, IView);\n var native =\ngetNativeByTNode(rootTNode, IView);\n if (native) {\n attachPatchData(native, IView);\n }\n return directive;\n }\n /**\n * Resolve the matched directives on a node.\n *\n function\nresolveDirectives(tView, IView, tNode, localRefs) {\n // Please make sure to have explicit type for\n`exportsMap`. Inferred type triggers bug in\n // tsickle.\n ngDevMode && assertFirstCreatePass(tView);\n var hasDirectives = false;\n if (getBindingsEnabled()) {\n var directiveDefs =\nfindDirectiveDefMatches(tView, IView, tNode);\n var exportsMap = localRefs === null ? null : { ': -1 '};\n if (directiveDefs !== null) {\n hasDirectives = true;\n initTNodeFlags(tNode,\ntView.data.length, directiveDefs.length);\n // When the same token is provided by several directives on the\nsame node, some rules apply in\n // the viewEngine:\n // - viewProviders have priority over\nproviders\n // - the last directive in NgModule.declarations has priority over the previous one\n //\nSo to match these rules, the order in which providers are added in the arrays is very\n // important.\n for (var i = 0; i < directiveDefs.length; i++) {\n var def = directiveDefs[i];\n if\n(def.providersResolver)\n def.providersResolver(def);\n }\n var\npreOrderHooksFound = false;\n var preOrderCheckHooksFound = false;\n var directiveIdx =\nallocExpando(tView, IView, directiveDefs.length, null);\n ngDevMode &&\nassertSame(directiveIdx, tNode.directiveStart, 'TNode.directiveStart should point to just allocated space');\n for (var i = 0; i < directiveDefs.length; i++) {\n var def = directiveDefs[i];\n // Merge the\nattrs in the order of matches. This assumes that the first directive is the\n // component itself, so that the\ncomponent has the least priority.\n tNode.mergedAttrs = mergeHostAttrs(tNode.mergedAttrs,\ndef.hostAttrs);\n configureViewWithDirective(tView, tNode, IView, directiveIdx, def);\n saveNameToExportMap(directiveIdx, def, exportsMap);\n if (def.contentQueries !== null)\n tNode.flags |= 8 /* hasContentQuery */;\n if (def.hostBindings !== null || def.hostAttrs !== null ||\ndef.hostVars !== 0)\n tNode.flags |= 128 /* hasHostBindings */;\n var lifeCycleHooks =\ndef.type.prototype;\n // Only push a node index into the preOrderHooks array if this is the first\n // pre-order hook found on this node.\n if (!preOrderHooksFound &&\n(lifeCycleHooks.ngOnChanges || lifeCycleHooks.ngOnInit || lifeCycleHooks.ngDoCheck)) {\n // We\nwill push the actual hook function into this array later during dir instantiation.\n // We cannot do it\nnow because we must ensure hooks are registered in the same\n // order that directives are created (i.e.\n injection order).\n (tView.preOrderHooks || (tView.preOrderHooks = [])).push(tNode.index);\n preOrderHooksFound = true;\n }\n if (!preOrderCheckHooksFound &&\n(lifeCycleHooks.ngOnChanges || lifeCycleHooks.ngDoCheck)) {\n (tView.preOrderCheckHooks ||\n(tView.preOrderCheckHooks = [])).push(tNode.index);\n preOrderCheckHooksFound = true;\n }\n directiveIdx++;\n }\n initializeInputAndOutputAliases(tView, tNode);\n }\n if (exportsMap)\n cacheMatchingLocalNames(tNode, localRefs, exportsMap);\n }\n //\nMerge the template attrs last so that they have the highest priority.\n tNode.mergedAttrs =\nmergeHostAttrs(tNode.mergedAttrs, tNode.attrs);\n return hasDirectives;\n }\n /**\n * Add\n`hostBindings` to the `TView.hostBindingOpCodes`.\n *\n * @param tView `TView` to which the\n`hostBindings` should be added.\n * @param tNode `TNode` the element which contains the directive\n * @param IView `LView` current `LView`\n * @param directiveIdx Directive index in view.\n * @param\ndirectiveVarsIdx Where will the directive's vars be stored\n * @param def `ComponentDef`/`DirectiveDef`,\nwhich contains the `hostVars`/`hostBindings` to add.\n *\n function registerHostBindingOpCodes(tView,

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tNode, IView, directiveIdx, directiveVarsIdx, def) {\n ngDevMode && assertFirstCreatePass(tView);\n var\n hostBindings = def.hostBindings;\n if (hostBindings) {\n var hostBindingOpCodes =\n tView.hostBindingOpCodes;\n if (hostBindingOpCodes === null) {\n hostBindingOpCodes =\n tView.hostBindingOpCodes = [];\n }\n var elementIdx = ~tNode.index;\n if\n (lastSelectedElementIdx(hostBindingOpCodes) != elementIdx) {\n // Conditionally add select element so\n that we are more efficient in execution.\n // NOTE: this is strictly not necessary and it trades code size for\n runtime perf.\n // (We could just always add it.)\n hostBindingOpCodes.push(elementIdx);\n }\n hostBindingOpCodes.push(directiveIdx, directiveVarsIdx, hostBindings);\n }\n } /**\n * Returns the last selected element index in the `HostBindingOpCodes`\n * For perf reasons we don't need to\n * update the selected element index in `HostBindingOpCodes` only\n * if it changes. This method returns the last\n * index (or '0' if not found.)\n * Selected element index are only the ones which are negative.\n */\n function lastSelectedElementIdx(hostBindingOpCodes) {\n var i = hostBindingOpCodes.length;\n while (i\n > 0) {\n var value = hostBindingOpCodes[--i];\n if (typeof value === 'number' && value < 0) {\n return value;\n }\n }\n return 0;\n } /**\n * Instantiate all the directives that were\n * previously resolved on the current node.\n */\n function instantiateAllDirectives(tView, IView, tNode, native)\n {\n var start = tNode.directiveStart;\n var end = tNode.directiveEnd;\n if (!tView.firstCreatePass) {\n getOrCreateNodeInjectorForNode(tNode, IView);\n }\n attachPatchData(native, IView);\n var\n initialInputs = tNode.initialInputs;\n for (var i = start; i < end; i++) {\n var def = tView.data[i];\n var isComponent = isComponentDef(def);\n if (isComponent) {\n ngDevMode &&\n assertTNodeType(tNode, 3 /* AnyRNode */);\n addComponentLogic(IView, tNode, def);\n }\n var directive = getNodeInjectable(IView, tView, i, tNode);\n attachPatchData(directive, IView);\n if\n (initialInputs !== null) {\n setInputsFromAttrs(IView, i - start, directive, def, tNode, initialInputs);\n }\n if (isComponent) {\n var componentView = getComponentLViewByIndex(tNode.index,\n IView);\n componentView[CONTEXT] = directive;\n }\n }\n }\n function\n invokeDirectivesHostBindings(tView, IView, tNode) {\n var start = tNode.directiveStart;\n var end =\n tNode.directiveEnd;\n var firstCreatePass = tView.firstCreatePass;\n var elementIndex = tNode.index;\n var currentDirectiveIndex = getCurrentDirectiveIndex();\n try {\n setSelectedIndex(elementIndex);\n for (var dirIndex = start; dirIndex < end; dirIndex++) {\n var def = tView.data[dirIndex];\n var\n directive = IView[dirIndex];\n setCurrentDirectiveIndex(dirIndex);\n if (def.hostBindings !==\n null || def.hostVars !== 0 || def.hostAttrs !== null) {\n invokeHostBindingsInCreationMode(def,\n directive);\n }\n }\n finally {\n setSelectedIndex(-1);\n setCurrentDirectiveIndex(currentDirectiveIndex);\n }\n } /**\n * Invoke the host bindings in creation\n * mode.\n * @param def `DirectiveDef` which may contain the `hostBindings` function.\n * @param\n * directive Instance of directive.\n */\n function invokeHostBindingsInCreationMode(def, directive) {\n if\n (def.hostBindings !== null) {\n def.hostBindings(1 /* Create */, directive);\n }\n } /**\n * Matches the current node against all available selectors.\n * If a component is matched (at most one), it is returned\n * in first position in the array.\n */\n function findDirectiveDefMatches(tView, viewData, tNode) {\n ngDevMode && assertFirstCreatePass(tView);\n ngDevMode && assertTNodeType(tNode, 3 /* AnyRNode */\n | 12 /* AnyContainer */);\n var registry = tView.directiveRegistry;\n var matches = null;\n if (registry)\n {\n for (var i = 0; i < registry.length; i++) {\n var def = registry[i];\n if\n (isNodeMatchingSelectorList(tNode, def.selectors, /* isProjectionMode */ false)) {\n matches ||\n (matches = ngDevMode ? new MatchesArray() : []);\n }\n }\n }\n diPublicInInjector(getOrCreateNodeInjectorForNode(tNode, viewData), tView, def.type);\n if\n (isComponentDef(def)) {\n if (ngDevMode) {\n assertTNodeType(tNode, 2 /*\n Element */,\n '\\\\\\" + tNode.value + '\\\\\\" tags cannot be used as component hosts. \\\" +\n ("Please use a different tag to activate the \\\" + stringify(def.type) + \\\" component.\")');\n }\n if\n (tNode.flags & 2 /* isComponentHost */)\n throwMultipleComponentError(tNode);\n }\n markAsComponentHost(tView, tNode);\n // The component is always stored first

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with directives after.\n
 matches.unshift(def);\n
 }\n
 else {\n
matches.push(def);\n
 }\n
 }\n
 }\n
 }\n
 return matches;\n
 }\n
 /**\n
 * Marks
a given TNode as a component's host. This consists of:\n
 * - setting appropriate TNode flags;\n
 * - storing
index of component's host element so it will be queued for view refresh during CD.\n
 */\n
 function
markAsComponentHost(tView, hostTNode) {\n
 ngDevMode && assertFirstCreatePass(tView);\n
hostTNode.flags |= 2 /* isComponentHost */;\n
 (tView.components || (tView.components = ngDevMode ? new
TViewComponents() : []))\n
 .push(hostTNode.index);\n
 }\n
 /** Caches local names and their matching
directive indices for query and template lookups. */\n
 function cacheMatchingLocalNames(tNode, localRefs,
exportsMap) {\n
 if (localRefs) {\n
 var localNames = tNode.localNames = ngDevMode ? new
TNodeLocalNames() : [];\n
 // Local names must be stored in tNode in the same order that localRefs are
defined\n
 // in the template to ensure the data is loaded in the same slots as their refs\n
 // in the
template (for template queries).\n
 for (var i = 0; i < localRefs.length; i += 2) {\n
 var index =
exportsMap[localRefs[i + 1]];\n
 if (index === null)\n
 throw new RuntimeError("\u00301\u0027 /*
EXPORT_NOT_FOUND */, "Export of name \"" + localRefs[i + 1] + "\" not found!");\n
localNames.push(localRefs[i], index);\n
 }\n
 }\n
 }\n
 /**\n
 * Builds up an export map as directives
are created, so local refs can be quickly mapped\n
 * to their directive instances.\n
 */\n
 function
saveNameToExportMap(directiveIdx, def, exportsMap) {\n
 if (exportsMap) {\n
 if (def.exportAs) {\n
 for (var i = 0; i < def.exportAs.length; i++) {\n
 exportsMap[def.exportAs[i]] = directiveIdx;\n
 }\n
 }\n
 if (isComponentDef(def))\n
 exportsMap[""] = directiveIdx;\n
 }\n
 }\n
 /**\n
 * Initializes the flags on the current node, setting all indices to the initial index,\n
 * the directive count to 0, and
adding the isComponent flag.\n
 * @param index the initial index\n
 */\n
 function initTNodeFlags(tNode,
index, numberOfDirectives) {\n
 ngDevMode &&\n
 assertNotEqual(numberOfDirectives,
tNode.directiveEnd - tNode.directiveStart, 'Reached the max number of directives');\n
 tNode.flags |= 1 /*
isDirectiveHost */;\n
 // When the first directive is created on a node, save the index\n
 tNode.directiveStart =
index;\n
 tNode.directiveEnd = index + numberOfDirectives;\n
 tNode.providerIndexes = index;\n
 }\n
 /**\n
 * Setup directive for instantiation.\n
 */\n
 * We need to create a `NodeInjectorFactory` which is then
inserted in both the `Blueprint` as well\n
 * as `LView`. `TView` gets the `DirectiveDef`. \n
 * @param
tView `TView`\n
 * @param tNode `TNode`\n
 * @param IView `LView`\n
 * @param directiveIndex Index
where the directive will be stored in the Expando.\n
 * @param def `DirectiveDef`\n
 */\n
 function
configureViewWithDirective(tView, tNode, IView, directiveIndex, def) {\n
 ngDevMode &&\n
 assertGreaterThanOrEqual(directiveIndex, HEADER_OFFSET, 'Must be in Expando section');\n
tView.data[directiveIndex] = def;\n
 var directiveFactory = def.factory || (def.factory = getFactoryDef(def.type,
true));\n
 var nodeInjectorFactory = new NodeInjectorFactory(directiveFactory, isComponentDef(def), null);\n
 tView.blueprint[directiveIndex] = nodeInjectorFactory;\n
 IView[directiveIndex] = nodeInjectorFactory;\n
registerHostBindingOpCodes(tView, tNode, IView, directiveIndex, allocExpando(tView, IView, def.hostVars,
NO_CHANGE), def);\n
 }\n
 function addComponentLogic(IView, hostTNode, def) {\n
 var native =
getNativeByTNode(hostTNode, IView);\n
 var tView = getOrCreateTComponentView(def);\n
 // Only
component views should be added to the view tree directly. Embedded views are\n
 // accessed through their
containers because they may be removed / re-added later.\n
 var rendererFactory =
IView[RENDERER_FACTORY];\n
 var componentView = addToViewTree(IView, createLView(IView, tView,
null, def.onPush ? 64 /* Dirty */ : 16 /* CheckAlways */, native, hostTNode, rendererFactory,
rendererFactory.createRenderer(native, def), null, null));\n
 // Component view will always be created before any
injected LContainers,\n
 // so this is a regular element, wrap it with the component view\n
IView[hostTNode.index] = componentView;\n
 }\n
 function elementAttributeInternal(tNode, IView, name, value,
sanitizer, namespace) {\n
 if (ngDevMode) {\n
 assertNotSame(value, NO_CHANGE, 'Incoming value
should never be NO_CHANGE.);\n
 validateAgainstEventAttributes(name);\n
assertTNodeType(tNode, 2 /* Element */, "Attempted to set attribute \"" + name + "\" on a container node. \"" +\n
 "\u0027Host bindings are not valid on ng-container or ng-template.\u0027");\n
 }\n
 var element =

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getNativeByTNode(tNode, IView);\n setElementAttribute(IView[RENDERER], element, namespace,
tNode.value, name, value, sanitizer);\n } \n function setElementAttribute(renderer, element, namespace,
tagName, name, value, sanitizer) {\n if (value == null) {\n ngDevMode &&
ngDevMode.rendererRemoveAttribute++;\n isProceduralRenderer(renderer) ?
renderer.removeAttribute(element, name, namespace) :\n element.removeAttribute(name);\n } \n
else {\n ngDevMode && ngDevMode.rendererSetAttribute++;\n var strValue = sanitizer == null ?
renderStringify(value) : sanitizer(value, tagName || "", name);\n if (isProceduralRenderer(renderer)) {\n
renderer.setAttribute(element, name, strValue, namespace);\n } \n else {\n namespace ?
element.setAttributeNS(namespace, name, strValue) :\n element.setAttribute(name, strValue);\n } \n } \n } \n /** \n * Sets initial input properties on directive instances from attribute data \n * \n *
@param IView Current LView that is being processed. \n * @param directiveIndex Index of the directive in
directives array \n * @param instance Instance of the directive on which to set the initial inputs \n * @param def
The directive def that contains the list of inputs \n * @param tNode The static data for this node \n * \n
function setInputsFromAttrs(IView, directiveIndex, instance, def, tNode, initialInputData) {\n var initialInputs =
initialInputData[directiveIndex];\n if (initialInputs !== null) {\n var setInput = def.setInput;\n for
(var i = 0; i < initialInputs.length; i++) {\n var publicName = initialInputs[i++];\n var privateName =
initialInputs[i++];\n var value = initialInputs[i++];\n if (setInput !== null) {\n
def.setInput(instance, value, publicName, privateName);\n } \n else {\n
instance[privateName] = value;\n } \n if (ngDevMode) {\n var nativeElement =
getNativeByTNode(tNode, IView);\n setNgReflectProperty(IView, nativeElement, tNode.type,
privateName, value);\n } \n } \n } \n } \n /** \n * Generates initialInputData for a node and
stores it in the template's static storage \n * so subsequent template invocations don't have to recalculate it. \n * \n
* initialInputData is an array containing values that need to be set as input properties \n * for directives on this
node, but only once on creation. We need this array to support \n * the case where you set an @Input property of a
directive using attribute-like syntax. \n * e.g. if you have a `name` @Input, you can set it once like this: \n * \n
* <my-component name="Bess"></my-component> \n * \n * @param inputs The list of inputs from the
directive def \n * @param attrs The static attrs on this node \n * \n function generateInitialInputs(inputs, attrs)
{\n var inputsToStore = null;\n var i = 0;\n while (i < attrs.length) {\n var attrName = attrs[i];\n
if (attrName === 0 /* NamespaceURI */) {\n // We do not allow inputs on namespaced attributes. \n
i += 4;\n continue;\n } \n else if (attrName === 5 /* ProjectAs */) {\n // Skip
over the `ngProjectAs` value. \n i += 2;\n continue;\n } \n // If we hit any other
attribute markers, we're done anyway. None of those are valid inputs. \n if (typeof attrName === 'number') \n
break;\n if (inputs.hasOwnProperty(attrName)) {\n if (inputsToStore === null) \n
inputsToStore = [];\n inputsToStore.push(attrName, inputs[attrName], attrs[i + 1]);\n } \n i +=
2;\n } \n return inputsToStore;\n } \n // \n // ViewContainer & View \n
// \n // Not sure why I need to do `any` here but TS complains later. \n var LContainerArray =
((typeof ngDevMode === 'undefined' || ngDevMode) && initNgDevMode()) &&\n
createNamedArrayType('LContainer'); \n /** \n * Creates a LContainer, either from a container instruction, or for
a ViewContainerRef. \n * \n * @param hostNative The host element for the LContainer \n * @param
hostTNode The host TNode for the LContainer \n * @param currentView The parent view of the LContainer \n
* @param native The native comment element \n * @param isForViewContainerRef Optional a flag indicating the
ViewContainerRef case \n * @returns LContainer \n * \n function createLContainer(hostNative, currentView,
native, tNode) {\n ngDevMode && assertLView(currentView);\n ngDevMode &&
!isProceduralRenderer(currentView[RENDERER]) && assertDomNode(native);\n // https://jsperf.com/array-
literal-vs-new-array-really \n var IContainer = new (ngDevMode ? LContainerArray : Array)(hostNative, // host
native \n true, // Boolean `true` in this position signifies that this is an `LContainer` \n false, // has
transplanted views \n currentView, // parent \n null, // next \n 0, // transplanted views to refresh count \n
tNode, // t_host \n native, // native, \n null, // view refs \n null);\n ngDevMode &&\n

```

```

assertEqual(ICollection.length, CONTAINER_HEADER_OFFSET, 'Should allocate correct number of slots for
ICollection header.');
```

```

 ngDevMode && attachLContainerDebug(ICollection);
 return ICollection;
}

/**
 * Goes over embedded views (ones created through ViewContainerRef APIs) and refreshes
 * them by executing an associated template function.
 */
function refreshEmbeddedViews(IView) {
 for (var ICollection = getFirstLContainer(IView); ICollection !== null; ICollection = getNextLContainer(ICollection)) {
 for (var i = CONTAINER_HEADER_OFFSET; i < ICollection.length; i++) {
 var embeddedLView = ICollection[i];
 var embeddedTView = embeddedLView[TVIEW];
 ngDevMode &&
 assertDefined(embeddedTView, 'TView must be allocated');
 if
 (viewAttachedToChangeDetector(embeddedLView)) {
 refreshView(embeddedTView,
 embeddedLView, embeddedTView.template, embeddedLView[CONTEXT]);
 }
 }
 }

 /**
 * Mark transplanted views as needing to be refreshed at their insertion points.
 */
 @param
 IView The `LView` that may have transplanted views.
 function
 markTransplantedViewsForRefresh(IView) {
 for (var ICollection = getFirstLContainer(IView); ICollection !==
 null; ICollection = getNextLContainer(ICollection)) {
 if (!ICollection[HAS_TRANSPLANTED_VIEWS])
 continue;
 var movedViews = ICollection[MOVED_VIEWS];
 ngDevMode &&
 assertDefined(movedViews, 'Transplanted View flags set but missing MOVED_VIEWS');
 for (var i = 0; i <
 movedViews.length; i++) {
 var movedLView = movedViews[i];
 var insertionLContainer =
 movedLView[PARENT];
 ngDevMode && assertLContainer(insertionLContainer);
 // We
 don't want to increment the counter if the moved LView was already marked for
 refresh.
 if
 (((movedLView[FLAGS] & 1024 /* RefreshTransplantedView */) === 0) {
 updateTransplantedViewCount(insertionLContainer, 1);
 // Note, it is possible that the
 `movedViews` is tracking views that are transplanted
 // those that aren't (declaration component
 === insertion component). In the latter case,
 // it's fine to add the flag, as we will clear it immediately
 in
 // `refreshEmbeddedViews` for the view currently being refreshed.
 movedLView[FLAGS]
 |= 1024 /* RefreshTransplantedView */;
 }
 }
 // Refreshes components
 by entering the component view and processing its bindings, queries, etc.
 @param componentHostIdx
 Element index in LView[] (adjusted for HEADER_OFFSET)
 function refreshComponent(hostLView,
 componentHostIdx) {
 ngDevMode && assertEquals(isCreationMode(hostLView), false, 'Should be run in
 update mode');
 var componentView = getComponentLViewByIndex(componentHostIdx, hostLView);
 // Only attached components that are CheckAlways or OnPush and dirty should be refreshed
 if
 (viewAttachedToChangeDetector(componentView)) {
 var tView = componentView[TVIEW];
 if
 (componentView[FLAGS] & (16 /* CheckAlways */ | 64 /* Dirty */)) {
 refreshView(tView,
 componentView, tView.template, componentView[CONTEXT]);
 } else if
 (componentView[TRANSPLANTED_VIEWS_TO_REFRESH] > 0) {
 // Only attached components that
 are CheckAlways or OnPush and dirty should be refreshed
 refreshContainsDirtyView(componentView);
 }
 }
 }

 /**
 * Refreshes all transplanted views
 * marked with `LViewFlags.RefreshTransplantedView` that are
 * children or descendants of the given IView.
 */
 @param
 IView The IView which contains descendant transplanted views that need to be refreshed.
 function refreshContainsDirtyView(IView) {
 for (var ICollection = getFirstLContainer(IView); ICollection
 !== null; ICollection = getNextLContainer(ICollection)) {
 for (var i = CONTAINER_HEADER_OFFSET; i
 < ICollection.length; i++) {
 var embeddedLView = ICollection[i];
 if
 (embeddedLView[FLAGS] & 1024 /* RefreshTransplantedView */) {
 var embeddedTView =
 embeddedLView[TVIEW];
 ngDevMode && assertDefined(embeddedTView, 'TView must be
 allocated');
 refreshView(embeddedTView, embeddedLView, embeddedTView.template,
 embeddedLView[CONTEXT]);
 } else if
 (embeddedLView[TRANSPLANTED_VIEWS_TO_REFRESH] > 0) {
 refreshContainsDirtyView(embeddedLView);
 }
 }
 }
 var tView = IView[TVIEW];
 // Refresh child component views.
 var components = tView.components;
 if (components !== null)

```

```

{\n for (var i = 0; i < components.length; i++) {\n var componentView =
getComponentLViewByIndex(components[i], IView);\n // Only attached components that are
CheckAlways or OnPush and dirty should be refreshed\n if
(viewAttachedToChangeDetector(componentView) &&\n
componentView[TRANSPLANTED_VIEWS_TO_REFRESH] > 0) {\n
refreshContainsDirtyView(componentView);\n }\n }\n }\n }\n function
renderComponent(hostLView, componentHostIdx) {\n ngDevMode &&
assertEqual(isCreationMode(hostLView), true, 'Should be run in creation mode');\n var componentView =
getComponentLViewByIndex(componentHostIdx, hostLView);\n var componentTView =
componentView[TVIEW];\n syncViewWithBlueprint(componentTView, componentView);\n
renderView(componentTView, componentView, componentView[CONTEXT]);\n }\n /**\n * Syncs an
LView instance with its blueprint if they have gotten out of sync.\n * Typically, blueprints and their view
instances should always be in sync, so the loop here\n * will be skipped. However, consider this case of two
components side-by-side:\n * App template:\n * ``\n * <comp></comp>\n * <comp></comp>\n * ``\n * The following will happen:\n * 1. App template begins processing.\n * 2. First <comp> is
matched as a component and its LView is created.\n * 3. Second <comp> is matched as a component and its
LView is created.\n * 4. App template completes processing, so it's time to check child templates.\n * 5. First
<comp> template is checked. It has a directive, so its def is pushed to blueprint.\n * 6. Second <comp> template
is checked. Its blueprint has been updated by the first\n * <comp> template, but its LView was created before this
update, so it is out of sync.\n * Note that embedded views inside ngFor loops will never be out of sync
because these views\n * are processed as soon as they are created.\n * @param tView The `TView` that
contains the blueprint for syncing\n * @param IView The view to sync\n */\n function
syncViewWithBlueprint(tView, IView) {\n for (var i = IView.length; i < tView.blueprint.length; i++) {\n
IView.push(tView.blueprint[i]);\n }\n }\n /**\n * Adds LView or LContainer to the end of the current
view tree.\n * This structure will be used to traverse through nested views to remove listeners\n * and
call onDestroy callbacks.\n * @param IView The view where LView or LContainer should be added\n *
@param adjustedHostIndex Index of the view's host node in LView[], adjusted for header\n * @param
IViewOrLContainer The LView or LContainer to add to the view tree\n * @returns The state passed in\n */\n function
addToViewTree(IView, IViewOrLContainer) {\n // TODO(benlesh/misko): This implementation is
incorrect, because it always adds the LContainer\n // to the end of the queue, which means if the developer
retrieves the LContainers from RNodes out\n // of order, the change detection will run out of order, as the act of
retrieving the the\n // LContainer from the RNode is what adds it to the queue.\n if
(IView[CHILD_HEAD]) {\n IView[CHILD_TAIL][NEXT] = IViewOrLContainer;\n } else {\n
IView[CHILD_HEAD] = IViewOrLContainer;\n }\n IView[CHILD_TAIL] = IViewOrLContainer;\n
return IViewOrLContainer;\n }\n //\n // Change detection\n //\n
/**\n * Marks current view and all ancestors dirty.\n * Returns the root view because it is found as a
byproduct of marking the view tree\n * dirty, and can be used by methods that consume markViewDirty() to
easily schedule\n * change detection. Otherwise, such methods would need to traverse up the view tree\n * an
additional time to get the root view and schedule a tick on it.\n * @param IView The starting LView to
mark dirty\n * @returns the root LView\n */\n function markViewDirty(IView) {\n while (IView) {\n
IView[FLAGS] |= 64 /* Dirty */;\n var parent = getLViewParent(IView);\n // Stop traversing up as
soon as you find a root view that wasn't attached to any container\n if (isRootView(IView) && !parent) {\n
return IView;\n }\n // continue otherwise\n IView = parent;\n }\n return null;\n }\n /**\n * Used to schedule change detection on the whole application.\n * Unlike `tick`,
`scheduleTick` coalesces multiple calls into one change detection run.\n * It is usually called indirectly by calling
`markDirty` when the view needs to be\n * re-rendered.\n * Typically `scheduleTick` uses
`requestAnimationFrame` to coalesce multiple\n * `scheduleTick` requests. The scheduling function can be
overridden in\n * `renderComponent`'s `scheduler` option.\n */\n function scheduleTick(rootContext, flags)

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{\n var nothingScheduled = rootContext.flags === 0 /* Empty */;\n if (nothingScheduled &&
rootContext.clean == _CLEAN_PROMISE) {\n // https://github.com/angular/angular/issues/39296\n //
should only attach the flags when really scheduling a tick\n rootContext.flags |= flags;\n var res_1;\n rootContext.clean = new Promise(function (r) { return res_1 = r; });\n rootContext.scheduler(function ()
{\n if (rootContext.flags & 1 /* DetectChanges */) {\n rootContext.flags &= ~1 /*
DetectChanges */;\n tickRootContext(rootContext);\n }\n if (rootContext.flags & 2 /*
FlushPlayers */) {\n rootContext.flags &= ~2 /* FlushPlayers */;\n var playerHandler =
rootContext.playerHandler;\n if (playerHandler) {\n playerHandler.flushPlayers();\n }\n }\n rootContext.clean = _CLEAN_PROMISE;\n res_1(null);\n });\n }\n}
function tickRootContext(rootContext) {\n for (var i = 0; i < rootContext.components.length; i++)
{\n var rootComponent = rootContext.components[i];\n var IView =
readPatchedLView(rootComponent);\n var tView = IView[TVIEW];\n renderComponentOrTemplate(tView, IView, tView.template, rootComponent);\n }\n}
function
detectChangesInternal(tView, IView, context) {\n var rendererFactory = IView[RENDERER_FACTORY];\n if (rendererFactory.begin)\n rendererFactory.begin();\n try {\n refreshView(tView, IView,
tView.template, context);\n }\n catch (error) {\n handleError(IView, error);\n throw error;\n }\n finally {\n if (rendererFactory.end)\n rendererFactory.end();\n }\n}
/**\n * Synchronously perform change detection on a root view and its components.\n * @param IView The view
which the change detection should be performed on.\n */
function detectChangesInRootView(IView) {\n tickRootContext(IView[CONTEXT]);\n}
function checkNoChangesInternal(tView, view, context) {\n setIsInCheckNoChangesMode(true);\n try {\n detectChangesInternal(tView, view, context);\n }\n finally {\n setIsInCheckNoChangesMode(false);\n }\n}
/**\n * Checks the change detector on a
root view and its components, and throws if any changes are\n * detected.\n * This is used in
development mode to verify that running change detection doesn't\n * introduce other changes.\n */
@param IView The view which the change detection should be checked on.\n */
function
checkNoChangesInRootView(IView) {\n setIsInCheckNoChangesMode(true);\n try {\n detectChangesInRootView(IView);\n }\n finally {\n setIsInCheckNoChangesMode(false);\n }\n}
function executeViewQueryFn(flags, viewQueryFn, component) {\n ngDevMode &&
assertDefined(viewQueryFn, 'View queries function to execute must be defined.);\n setCurrentQueryIndex(0);\n viewQueryFn(flags, component);\n}
//////////\n //// Bindings
& interpolations\n //////////\n /**\n * Stores meta-data for a property binding to be used by
TestBed's `DebugElement.properties`.\n * In order to support TestBed's `DebugElement.properties` we
need to save, for each binding:\n * - a bound property name;\n * - a static parts of interpolated strings;\n *\n * A given property metadata is saved at the binding's index in the `TView.data` (in other words, a\n * property
binding metadata will be stored in `TView.data` at the same index as a bound value in\n * `LView`). Metadata are
represented as `INTERPOLATION_DELIMITER`-delimited string with the\n * following format:\n * -
`propertyName` for bound properties;\n * -
`propertyNameprefixinterpolation_static_part1..interpolation_static_partNsuffix` for\n * interpolated properties.\n
**\n * @param tData `TData` where meta-data will be saved;\n * @param tNode `TNode` that is a target of
the binding;\n * @param propertyName bound property name;\n * @param bindingIndex binding index in
`LView`\n * @param interpolationParts static interpolation parts (for property interpolations)\n */
function
storePropertyBindingMetadata(tData, tNode, propertyName, bindingIndex) {\n var interpolationParts = [];\n for (var _i = 4; _i < arguments.length; _i++) {\n interpolationParts[_i - 4] = arguments[_i];\n }\n //
Binding meta-data are stored only the first time a given property instruction is processed.\n // Since we don't
have a concept of the "first update pass" we need to check for presence of the\n // binding meta-data to decide
if one should be stored (or if was stored already).\n if (tData[bindingIndex] === null) {\n if (tNode.inputs
=== null || !tNode.inputs[propertyName]) {\n var propBindingIdxs = tNode.propertyBindings ||
(tNode.propertyBindings = []);\n propBindingIdxs.push(bindingIndex);\n var bindingMetadata =

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propertyName;\n if (interpolationParts.length > 0) {\n bindingMetadata +=\nINTERPOLATION_DELIMITER + interpolationParts.join(INTERPOLATION_DELIMITER);\n }\n tData[bindingIndex] = bindingMetadata;\n }\n }\n var CLEAN_PROMISE =\n _CLEAN_PROMISE;\n function getLCleanup(view) {\n // top level variables should not be exported for\nperformance reasons (PERF_NOTES.md)\n return view[CLEANUP] || (view[CLEANUP] = ngDevMode ? new\nLCleanup() : []);\n }\n function getTViewCleanup(tView) {\n return tView.cleanup || (tView.cleanup =\nngDevMode ? new TCleanup() : []);\n }\n /**\n * There are cases where the sub component's renderer needs\nto be included\n * instead of the current renderer (see the componentSyntheticHost* instructions).\n */\n function loadComponentRenderer(currentDef, tNode, IView) {\n // TODO(FW-2043): the `currentDef` is null\nwhen host bindings are invoked while creating root\n // component (see\npackages/core/src/render3/component.ts). This is not consistent with the process\n // of creating inner\ncomponents, when current directive index is available in the state. In order\n // to avoid relying on current def\nbeing `null` (thus special-casing root component creation), the\n // process of creating root component should be\nunified with the process of creating inner\n // components.\n if (currentDef === null ||\nisComponentDef(currentDef)) {\n IView = unwrapLView(IView[tNode.index]);\n }\n return\nIView[RENDERER];\n }\n /** Handles an error thrown in an LView. */\n function handleError(IView, error)\n{\n var injector = IView[INJECTOR];\n var errorHandler = injector ? injector.get(ErrorHandler, null) :\nnull;\n errorHandler && errorHandler.handleError(error);\n }\n /**\n * Set the inputs of directives at the\ncurrent node to corresponding value.\n * @param tView The current TView\n * @param IView the\n`LView` which contains the directives.\n * @param inputs mapping between the public `input` name and\nprivately-known,\n * possibly minified, property names to write to.\n * @param value Value to set.\n */\n function setInputsForProperty(tView, IView, inputs, publicName, value) {\n for (var i = 0; i <\ninputs.length;) {\n var index = inputs[i++];\n var privateName = inputs[i++];\n var instance =\nIView[index];\n ngDevMode && assertIndexInRange(IView, index);\n var def = tView.data[index];\n if (def.setInput !== null) {\n def.setInput(instance, value, publicName, privateName);\n }\n else {\n instance[privateName] = value;\n }\n }\n }\n /**\n * Updates a text binding at\na given index in a given LView.\n */\n function textBindingInternal(IView, index, value) {\n ngDevMode\n&& assertString(value, 'Value should be a string');\n ngDevMode && assertNotSame(value, NO_CHANGE,\n'value should not be NO_CHANGE');\n ngDevMode && assertIndexInRange(IView, index);\n var element\n= getNativeByIndex(index, IView);\n ngDevMode && assertDefined(element, 'native element should exist');\n updateTextNode(IView[RENDERER], element, value);\n }\n /**\n * @license\n * Copyright Google\nLLC All Rights Reserved.\n * Use of this source code is governed by an MIT-style license that can be\n* found in the LICENSE file at https://angular.io/license\n */\n /**\n * Compute the static styling (class/style)\nfrom `TAttributes`.\n * This function should be called during `firstCreatePass` only.\n * @param\ntNode The `TNode` into which the styling information should be loaded.\n * @param attrs `TAttributes`\ncontaining the styling information.\n * @param writeToHost Where should the resulting static styles be\nwritten?\n * - `false` Write to `TNode.stylesWithoutHost` / `TNode.classesWithoutHost`\n * - `true` Write to\n`TNode.styles` / `TNode.classes`\n */\n function computeStaticStyling(tNode, attrs, writeToHost) {\n ngDevMode &&\n assertFirstCreatePass(getTView(), 'Expecting to be called in first template pass only');\n var styles = writeToHost ? tNode.styles : null;\n var classes = writeToHost ? tNode.classes : null;\n var\nmode = 0;\n if (attrs !== null) {\n for (var i = 0; i < attrs.length; i++) {\n var value = attrs[i];\n if (typeof value === 'number') {\n mode = value;\n }\n else if (mode === 1 /*\nClasses */) {\n classes = concatStringsWithSpace(classes, value);\n }\n else if (mode\n=== 2 /* Styles */) {\n var style = value;\n var styleValue = attrs[++i];\n styles =\nconcatStringsWithSpace(styles, style + ':' + styleValue + ':');\n }\n }\n writeToHost ?\ntNode.styles = styles : tNode.stylesWithoutHost = styles;\n writeToHost ? tNode.classes = classes :\ntNode.classesWithoutHost = classes;\n }\n }\n /**\n * @license\n * Copyright Google LLC All Rights\nReserved.\n * Use of this source code is governed by an MIT-style license that can be\n* found in the

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LICENSE file at https://angular.io/license\n
 * Synchronously perform change detection on a component (and possibly its sub-components).\n
 * This function triggers change detection in a synchronous way on a component.\n
 * @param component The component which the change detection should be performed on.\n
 * function detectChanges(component) {\n
 var view = getComponentViewByInstance(component);\n
 detectChangesInternal(view[TVIEW], view, component);\n
 }\n
 * Marks the component as dirty (needing change detection). Marking a component dirty will\n
 * schedule a change detection on it at some point in the future.\n
 * Marking an already dirty component as dirty won't do anything. Only one outstanding change\n
 * detection can be scheduled per component tree.\n
 * @param component Component to mark as dirty.\n
 * function markDirty(component) {\n
 ngDevMode && assertDefined(component, 'component');\n
 var rootView = markViewDirty(getComponentViewByInstance(component));\n
 ngDevMode && assertDefined(rootView[CONTEXT], 'rootContext should be defined');\n
 scheduleTick(rootView[CONTEXT], 1 /* DetectChanges */);\n
 }\n
 * Used to perform change detection on the whole application.\n
 * This is equivalent to `detectChanges`, but invoked on root component. Additionally, `tick`\n
 * executes lifecycle hooks and conditionally checks components based on their\n
 * `ChangeDetectionStrategy` and dirtiness.\n
 * The preferred way to trigger change detection is to call `markDirty`. `markDirty`\n
 * internally schedules `tick` using a scheduler in order to coalesce multiple\n
 * `markDirty` calls into a single change detection run. By default, the scheduler is\n
 * `requestAnimationFrame`, but can be changed when calling `renderComponent` and\n
 * providing the `scheduler` option.\n
 * function tick(component) {\n
 var rootView = getRootView(component);\n
 var rootContext = rootView[CONTEXT];\n
 tickRootContext(rootContext);\n
 }\n
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 * found in the LICENSE file at https://angular.io/license\n
 * An InjectionToken that gets the current `Injector` for `createInjector`\n
 * -style injectors.\n
 * Requesting this token instead of `Injector` allows `StaticInjector` to be\n
 * tree-shaken from a project.\n
 * @publicApi\n
 * var INJECTOR$1 = new InjectionToken('INJECTOR',\n
 * // Dissable tslint because this is const enum which gets inlined\n
 * not top level prop access.\n
 * // tslint:disable-next-line: no-top-level-property-access\n
 * -1 /* Injector */);\n
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 * found in the LICENSE file at https://angular.io/license\n
 * var NullInjector = /** @class */ (function () {\n
 function NullInjector() {\n
 NullInjector.prototype.get = function (token, notFoundValue) {\n
 if (notFoundValue === void 0) {\n
 notFoundValue = THROW_IF_NOT_FOUND;\n
 }\n
 if (notFoundValue === THROW_IF_NOT_FOUND) {\n
 var error = new Error("NullInjectorError: No provider for '" +\n
 stringify(token) + "'!");\n
 error.name = 'NullInjectorError';\n
 throw error;\n
 }\n
 return notFoundValue;\n
 };\n
 return NullInjector;\n
 }());\n
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 * found in the LICENSE file at https://angular.io/license\n
 * An internal token whose presence in an injector indicates that the\n
 * injector should treat itself as a root scoped injector when processing\n
 * requests for unknown tokens which may indicate they are provided in\n
 * the root scope.\n
 * var INJECTOR_SCOPE = new InjectionToken('Set Injector scope.);\n
 * Marker which indicates that a value has not yet been created from the\n
 * factory function.\n
 * var NOT_YET = {};\n
 * Marker which indicates that the factory function for a token is in the\n
 * process of being called.\n
 * If the injector is asked to inject a token with its value set to\n
 * CIRCULAR, that indicates injection of a dependency has recursively\n
 * attempted to inject the original token, and there is a circular\n
 * dependency among the providers.\n
 * var CIRCULAR = {};\n
 * var EMPTY_ARRAY$1 = [];\n
 * A lazily initialized NullInjector.\n
 * var NULL_INJECTOR = undefined;\n
 * function getNullInjector() {\n
 if (NULL_INJECTOR === undefined) {\n
 NULL_INJECTOR = new NullInjector();\n
 }\n
 return NULL_INJECTOR;\n
 }\n
 * Create a new `Injector` which is configured using a `defType` of\n
 * `InjectorType<any>`s.\n
 * @publicApi\n
 * function createInjector(defType, parent, additionalProviders, name) {\n
 if (parent === void 0) {\n
 parent = null;\n
 }\n
 }

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 // If a record was found, get the instance for it and return it.\n if (record != null /* NOT null ||
undefined */) {\n return this.hydrate(token, record);\n }\n // Select
the next injector based on the Self flag - if self is set, the next injector is\n // the NullInjector, otherwise it's
the parent.\n var nextInjector = !(flags & exports.InjectFlags.Self) ? this.parent : getNullInjector();\n
 // Set the notFoundValue based on the Optional flag - if optional is set and notFoundValue\n // is
undefined, the value is null, otherwise it's the notFoundValue.\n notFoundValue = (flags &
exports.InjectFlags.Optional) && notFoundValue === THROW_IF_NOT_FOUND ?\n null :\n notFoundValue;\n return nextInjector.get(token, notFoundValue);\n }\n catch (e) {\n
if (e.name === 'NullInjectorError') {\n var path = e[NG_TEMP_TOKEN_PATH] =
e[NG_TEMP_TOKEN_PATH] || [];\n path.unshift(stringify(token));\n if (previousInjector)
{\n // We still have a parent injector, keep throwing\n throw e;\n }\n
 else {\n // Format & throw the final error message when we don't have any previous injector\n
 return catchInjectorError(e, token, 'R3InjectorError', this.source);\n }\n
 }\n else {\n throw e;\n }\n }\n finally {\n // Lastly, clean up the state by
restoring the previous injector.\n setCurrentInjector(previousInjector);\n }\n };\n /**
@internal */\n R3Injector.prototype._resolveInjectorDefTypes = function () {\n var _this = this;\n
this.injectorDefTypes.forEach(function (defType) { return _this.get(defType); });\n };\n
R3Injector.prototype.toString = function () {\n var tokens = [], records = this.records;\n
records.forEach(function (v, token) { return tokens.push(stringify(token)); });\n return "R3Injector[" +
tokens.join(', ') + "];\n };\n
R3Injector.prototype.assertNotDestroyed = function () {\n if
(this._destroyed) {\n throw new Error('Injector has already been destroyed.);\n }\n };\n
/**\n * Add an `InjectorType` or `InjectorTypeWithProviders` and all of its transitive providers\n * to this
injector.\n * \n * If an `InjectorTypeWithProviders` that declares providers besides the type is specified,\n
 * the function will return "true" to indicate that the providers of the type definition need\n * to be
processed. This allows us to process providers of injector types after all imports of\n * an injector definition are
processed. (following View Engine semantics: see FW-1349)\n */\n
R3Injector.prototype.processInjectorType = function (defOrWrappedDef, parents, dedupStack) {\n var _this
= this;\n defOrWrappedDef = resolveForwardRef(defOrWrappedDef);\n if (!defOrWrappedDef)\n return false;\n // Either the defOrWrappedDef is an InjectorType (with injector def) or an\n //
InjectorDefTypeWithProviders (aka ModuleWithProviders). Detecting either is a megamorphic\n // read, so
care is taken to only do the read once.\n // First attempt to read the injector def (`inj`).\n var def =
getInjectorDef(defOrWrappedDef);\n // If that's not present, then attempt to read ngModule from the
InjectorDefTypeWithProviders.\n var ngModule = (def === null) && defOrWrappedDef.ngModule ||
undefined;\n // Determine the InjectorType. In the case where `defOrWrappedDef` is an `InjectorType`,\n
 // then this is easy. In the case of an InjectorDefTypeWithProviders, then the definition type\n // is the
`ngModule`.\n var defType = (ngModule === undefined) ? defOrWrappedDef : ngModule;\n // Check
for circular dependencies.\n if (ngDevMode && parents.indexOf(defType) !== -1) {\n var defName
= stringify(defType);\n var path = parents.map(stringify);\n
 throwCyclicDependencyError(defName, path);\n }\n // Check for multiple imports of the same
module\n var isDuplicate = dedupStack.indexOf(defType) !== -1;\n // Finally, if defOrWrappedType
was an `InjectorDefTypeWithProviders`, then the actual\n // `InjectorDef` is on its `ngModule`.\n if
(ngModule !== undefined) {\n def = getInjectorDef(ngModule);\n }\n // If no definition was
found, it might be from exports. Remove it.\n if (def === null) {\n return false;\n }\n
 // Add providers in the same way that @NgModule resolution did:\n // First, include providers from any
imports.\n if (def.imports != null && !isDuplicate) {\n // Before processing defType's imports, add
it to the set of parents. This way, if it ends\n // up deeply importing itself, this can be detected.\n
ngDevMode && parents.push(defType);\n // Add it to the set of dedups. This way we can detect multiple
imports of the same module\n dedupStack.push(defType);\n var importTypesWithProviders_1;\n

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 try {\n
 deepForEach(def.imports, function (imported) {\n
 if\n
 (_this.processInjectorType(imported, parents, dedupStack)) {\n
 if (importTypesWithProviders_1\n
 === undefined)\n
 importTypesWithProviders_1 = [];\n
 // If the processed\n
 import is an injector type with providers, we store it in the\n
 // list of import types with providers,\n
 so that we can process those afterwards.\n
 importTypesWithProviders_1.push(imported);\n
 }\n
 });\n
 } finally {\n
 // Remove it from the parents set when\n
 finished.\n
 ngDevMode && parents.pop();\n
 }\n
 // Imports which are declared with\n
 providers (TypeWithProviders) need to be processed\n
 // after all imported modules are processed. This is\n
 similar to how View Engine\n
 // processes/merges module imports in the metadata resolver. See: FW-\n
 1349.\n
 if (importTypesWithProviders_1 !== undefined) {\n
 var _loop_1 = function (i) {\n
 var _a = importTypesWithProviders_1[i], ngModule_1 = _a.ngModule, providers = _a.providers;\n
 deepForEach(providers, function (provider) { return _this.processProvider(provider, ngModule_1, providers ||\n
 EMPTY_ARRAY$1); });\n
 for (var i = 0; i < importTypesWithProviders_1.length; i++)\n
 {\n
 _loop_1(i);\n
 }\n
 };\n
 // Track the InjectorType and add a\n
 provider for it. It's important that this is done after the\n
 // def's imports.\n
 this.injectorDefTypes.add(defType);\n
 this.records.set(defType, makeRecord(def.factory, NOT_YET));\n
 // Next, include providers listed on the definition itself.\n
 var defProviders = def.providers;\n
 if\n
 (defProviders != null && !isDuplicate) {\n
 var injectorType_1 = defOrWrappedDef;\n
 deepForEach(defProviders, function (provider) { return _this.processProvider(provider, injectorType_1,\n
 defProviders); });\n
 return (ngModule !== undefined &&\n
 defOrWrappedDef.providers\n
 !== undefined);\n
 };\n
 /**\n
 * Process a `SingleProvider` and add it.\n
 */\n
 R3Injector.prototype.processProvider = function (provider, ngModuleType, providers) {\n
 // Determine the\n
 token from the provider. Either it's its own token, or has a {provide: ...}\n
 // property.\n
 provider =\n
 resolveForwardRef(provider);\n
 var token = isTypeProvider(provider) ? provider :\n
 resolveForwardRef(provider && provider.provide);\n
 // Construct a `Record` for the provider.\n
 var\n
 record = providerToRecord(provider, ngModuleType, providers);\n
 if (!isTypeProvider(provider) &&\n
 provider.multi === true) {\n
 // If the provider indicates that it's a multi-provider, process it specially.\n
 // First check whether it's been defined already.\n
 var multiRecord_1 = this.records.get(token);\n
 if (multiRecord_1) {\n
 // It has. Throw a nice error if\n
 if (ngDevMode &&\n
 multiRecord_1.multi === undefined) {\n
 throwMixedMultiProviderError();\n
 }\n
 } else {\n
 multiRecord_1 = makeRecord(undefined, NOT_YET, true);\n
 multiRecord_1.factory = function () { return injectArgs(multiRecord_1.multi); };\n
 this.records.set(token, multiRecord_1);\n
 token = provider;\n
 multiRecord_1.multi.push(provider);\n
 } else {\n
 var existing = this.records.get(token);\n
 if (ngDevMode && existing && existing.multi !== undefined) {\n
 throwMixedMultiProviderError();\n
 }\n
 this.records.set(token, record);\n
 };\n
 R3Injector.prototype.hydrate = function (token, record) {\n
 if (ngDevMode && record.value ===\n
 CIRCULAR) {\n
 throwCyclicDependencyError(stringify(token));\n
 } else if (record.value\n
 === NOT_YET) {\n
 record.value = CIRCULAR;\n
 record.value = record.factory();\n
 }\n
 if (typeof record.value === 'object' && record.value && hasOnDestroy(record.value)) {\n
 this.onDestroy.add(record.value);\n
 }\n
 return record.value;\n
 };\n
 R3Injector.prototype.injectableDefInScope = function (def) {\n
 if (!def.providedIn) {\n
 return\n
 false;\n
 } else if (typeof def.providedIn === 'string') {\n
 return def.providedIn === 'any' ||\n
 (def.providedIn === this.scope);\n
 } else {\n
 return\n
 this.injectorDefTypes.has(def.providedIn);\n
 }\n
 };\n
 return R3Injector;\n
 }();\n
 function\n
 injectableDefOrInjectorDefFactory(token) {\n
 // Most tokens will have an injectable def directly on them, which\n
 specifies a factory directly.\n
 var injectableDef = getInjectableDef(token);\n
 var factory = injectableDef !==\n
 null ? injectableDef.factory : getFactoryDef(token);\n
 if (factory !== null) {\n
 return factory;\n
 }\n
 }\n

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// If the token is an NgModule, it's also injectable but the factory is on its injector def\n // (^inj)\n var
injectorDef = getInjectorDef(token);\n if (injectorDef !== null) {\n return injectorDef.factory;\n }\n // InjectionTokens should have an injectable def (prov) and thus should be handled above.\n // If it's missing
that, it's an error.\n if (token instanceof InjectionToken) {\n throw new Error("Token \"" +
stringify(token) + "\" is missing a \\u0275prov definition.");\n }\n // Undecorated types can sometimes be
created if they have no constructor arguments.\n if (token instanceof Function) {\n return
getUndecoratedInjectableFactory(token);\n }\n // There was no way to resolve a factory for this token.\n
throw new Error('unreachable');\n }\n function getUndecoratedInjectableFactory(token) {\n // If the token
has parameters then it has dependencies that we cannot resolve implicitly.\n var paramLength = token.length;\n
 if (paramLength > 0) {\n var args = newArray(paramLength, '?');\n throw new Error("Can't resolve
all parameters for \"" + stringify(token) + "\": (" + args.join(', ') + ").");\n }\n // The constructor function
appears to have no parameters.\n // This might be because it inherits from a super-class. In which case, use an
injectable\n // def from an ancestor if there is one.\n // Otherwise this really is a simple class with no
dependencies, so return a factory that\n // just instantiates the zero-arg constructor.\n var
inheritedInjectableDef = getInheritedInjectableDef(token);\n if (inheritedInjectableDef !== null) {\n
return function () { return inheritedInjectableDef.factory(token); };\n }\n else {\n return function () {\n
return new token();\n };\n }\n }\n function providerToRecord(provider, ngModuleType, providers) {\n if
(isValueProvider(provider)) {\n return makeRecord(undefined, provider.useValue);\n }\n else {\n
var factory = providerToFactory(provider, ngModuleType, providers);\n return makeRecord(factory,
NOT_YET);\n }\n }\n /**\n * Converts a `SingleProvider` into a factory function.\n * @param
provider provider to convert to factory\n */\n function providerToFactory(provider, ngModuleType, providers)\n {\n var factory = undefined;\n if (isTypeProvider(provider)) {\n var unwrappedProvider =
resolveForwardRef(provider);\n return getFactoryDef(unwrappedProvider) ||
injectableDefOrInjectorDefFactory(unwrappedProvider);\n }\n else {\n if
(isValueProvider(provider)) {\n factory = function () { return resolveForwardRef(provider.useValue); };\n }\n
 else if (isFactoryProvider(provider)) {\n factory = function () { return
provider.useFactory.apply(provider, __spread(injectArgs(provider.deps || []))); };\n }\n else if
(isExistingProvider(provider)) {\n factory = function () { return
inject(resolveForwardRef(provider.useExisting)); };\n }\n else {\n var classRef_1 =
resolveForwardRef(provider &&\n (provider.useClass || provider.provide));\n if (ngDevMode
&& !classRef_1) {\n throwInvalidProviderError(ngModuleType, providers, provider);\n }\n
 if (hasDeps(provider)) {\n factory = function () { return new
((classRef_1).bind.apply((classRef_1), __spread([void 0], injectArgs(provider.deps))))(); };\n }\n
 else {\n return getFactoryDef(classRef_1) || injectableDefOrInjectorDefFactory(classRef_1);\n }\n
 }\n }\n return factory;\n }\n function makeRecord(factory, value, multi) {\n if (multi ===
void 0) { multi = false; }\n return {\n factory: factory,\n value: value,\n multi: multi ? [] :
undefined,\n };\n }\n function isValueProvider(value) {\n return value !== null && typeof value ===
'object' && USE_VALUE in value;\n }\n function isExistingProvider(value) {\n return !(value &&
value.useExisting);\n }\n function isFactoryProvider(value) {\n return !(value && value.useFactory);\n }\n
 function isTypeProvider(value) {\n return typeof value === 'function';\n }\n function
isClassProvider(value) {\n return !!value.useClass;\n }\n function hasDeps(value) {\n return
!!value.deps;\n }\n function hasOnDestroy(value) {\n return value !== null && typeof value === 'object'
&&\n typeof value.ngOnDestroy === 'function';\n }\n function couldBeInjectableType(value) {\n
return (typeof value === 'function') ||\n (typeof value === 'object' && value instanceof InjectionToken);\n }\n\n
 function INJECTOR_IMPL__PRE_R3__(providers, parent, name) {\n return new
StaticInjector(providers, parent, name);\n }\n function INJECTOR_IMPL__POST_R3__(providers, parent,
name) {\n return createInjector({ name: name }, parent, providers, name);\n }\n var INJECTOR_IMPL =
INJECTOR_IMPL__PRE_R3__;\n /**\n * Concrete injectors implement this interface. Injectors are

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configured\n * with [providers](guide/glossary#provider) that associate\n * dependencies of various types with
[injection tokens](guide/glossary#di-token).\n *\n * @see ["DI Providers"]\n(guide/dependency-injection-
providers).\n * @see `StaticProvider`\n *\n * @usageNotes\n *\n * The following example creates a
service injector instance.\n *\n * {@example core/di/ts/provider_spec.ts region='ConstructorProvider'}\n *\n * ### Usage example\n *\n * {@example core/di/ts/injector_spec.ts region='Injector'}\n *\n * `Injector`
returns itself when given `Injector` as a token:\n *\n * {@example core/di/ts/injector_spec.ts
region='injectInjector'}\n *\n * @publicApi\n */\n var Injector = /** @class */ (function () {\n
function Injector() {\n }\n Injector.create = function (options, parent) {\n if (Array.isArray(options))
{\n return INJECTOR_IMPL(options, parent, "");\n }\n else {\n return
INJECTOR_IMPL(options.providers, options.parent, options.name || "");\n }\n };
return Injector;\n }());\n Injector.THROW_IF_NOT_FOUND = THROW_IF_NOT_FOUND;\n Injector.NULL = new
NullInjector();\n /** @nocollapse */\n Injector.prov = defineInjectable({\n token: Injector,\n
providedIn: 'any',\n factory: function () { return inject(INJECTOR$1); },\n });\n /**\n * @internal\n *
@nocollapse\n */\n Injector.__NG_ELEMENT_ID__ = -1 /* Injector */;\n var IDENT = function (value) {\n
return value;\n };
var 0$6 = IDENT;\n var EMPTY = [];\n var CIRCULAR$1 = IDENT;\n var
MULTI_PROVIDER_FN = function () {\n return Array.prototype.slice.call(arguments);\n };
var 1$2 =
MULTI_PROVIDER_FN;\n var NO_NEW_LINES$1 = ";\n var StaticInjector = /** @class */ (function () {\n
function StaticInjector(providers, parent, source) {\n if (parent === void 0) { parent = Injector.NULL; }\n
if (source === void 0) { source = null; }\n this.parent = parent;\n this.source = source;\n var
records = this._records = new Map();\n records.set(Injector, { token: Injector, fn: IDENT, deps: EMPTY,
value: this, useNew: false });\n records.set(INJECTOR$1, { token: INJECTOR$1, fn: IDENT, deps:
EMPTY, value: this, useNew: false });\n this.scope = recursivelyProcessProviders(records, providers);\n
}\n StaticInjector.prototype.get = function (token, notFoundValue, flags) {\n if (flags === void 0) { flags
= exports.InjectFlags.Default; }\n var records = this._records;\n var record = records.get(token);\n
if (record === undefined) {\n // This means we have never seen this record, see if it is tree shakable
provider.\n var injectableDef = getInjectableDef(token);\n if (injectableDef) {\n var
providedIn = injectableDef && injectableDef.providedIn;\n if (providedIn === 'any' || providedIn != null
&& providedIn === this.scope) {\n records.set(token, record = resolveProvider({ provide: token,
useFactory: injectableDef.factory, deps: EMPTY }));\n }\n }\n if (record ===
undefined) {\n // Set record to null to make sure that we don't go through expensive lookup above
again.\n records.set(token, null);\n }\n }\n var lastInjector =
setCurrentInjector(this);\n try {\n return tryResolveToken(token, record, records, this.parent,
notFoundValue, flags);\n }\n catch (e) {\n return catchInjectorError(e, token,
'StaticInjectorError', this.source);\n }\n finally {\n setCurrentInjector(lastInjector);\n
}\n }\n StaticInjector.prototype.toString = function () {\n var tokens = [], records = this._records;\n
records.forEach(function (v, token) { return tokens.push(stringify(token)); });\n return `StaticInjector[\"
+ tokens.join(', ') + \"]`;\n }\n return StaticInjector;\n }());\n function resolveProvider(provider) {\n
var deps = computeDeps(provider);\n var fn = IDENT;\n var value = EMPTY;\n var useNew = false;\n
var provide = resolveForwardRef(provider.provide);\n if (USE_VALUE in provider) {\n // We need
to use USE_VALUE in provider since provider.useValue could be defined as undefined.\n value =
provider.useValue;\n }\n else if (provider.useFactory) {\n fn = provider.useFactory;\n }\n
else if (provider.useExisting) {\n // Just use IDENT\n }\n else if (provider.useClass) {\n
useNew = true;\n fn = resolveForwardRef(provider.useClass);\n }\n else if (typeof provide ===
'function') {\n useNew = true;\n fn = provide;\n }\n else {\n throw
staticError('StaticProvider does not have [useValue|useFactory|useExisting|useClass] or [provide] is not newable',
provider);\n }\n return { deps: deps, fn: fn, useNew: useNew, value: value };
}\n function
multiProviderMixError(token) {\n return staticError('Cannot mix multi providers and regular providers',
token);\n }\n function recursivelyProcessProviders(records, provider) {\n var scope = null;\n if

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(provider) {\n provider = resolveForwardRef(provider);\n if (Array.isArray(provider)) {\n //\n if we have an array recurse into the array\n for (var i = 0; i < provider.length; i++) {\n scope =\n recursivelyProcessProviders(records, provider[i]) || scope;\n }\n else if (typeof provider\n === 'function') {\n // Functions were supported in ReflectiveInjector, but are not here. For safety give\n useful\n // error messages\n throw staticError('Function/Class not supported', provider);\n }\n else if (provider && typeof provider === 'object' && provider.provide) {\n // At this point we\n have what looks like a provider: {provide: ?, ...}\n var token = resolveForwardRef(provider.provide);\n var resolvedProvider = resolveProvider(provider);\n if (provider.multi === true) {\n //\n This is a multi provider.\n var multiProvider = records.get(token);\n if (multiProvider) {\n if (multiProvider.fn !== MULTI_PROVIDER_FN) {\n throw\n multiProviderMixError(token);\n }\n else {\n // Create a\n placeholder factory which will look up the constituents of the multi provider.\n records.set(token,\n multiProvider = {\n token: provider.provide,\n deps: [],\n useNew: false,\n fn: MULTI_PROVIDER_FN,\n value: EMPTY\n });\n // Treat the provider as the token.\n token = provider;\n multiProvider.deps.push({ token: token, options: 6 /* Default */ });\n var record =\n records.get(token);\n if (record && record.fn === MULTI_PROVIDER_FN) {\n throw\n multiProviderMixError(token);\n }\n if (token === INJECTOR_SCOPE) {\n scope =\n resolvedProvider.value;\n }\n records.set(token, resolvedProvider);\n else {\n throw staticError('Unexpected provider', provider);\n }\n return scope;\n }\n function\n tryResolveToken(token, record, records, parent, notFoundValue, flags) {\n try {\n return\n resolveToken(token, record, records, parent, notFoundValue, flags);\n }\n catch (e) {\n // ensure that\n 'e' is of type Error.\n if (!(e instanceof Error)) {\n e = new Error(e);\n }\n var path =\n e[NG_TEMP_TOKEN_PATH] = e[NG_TEMP_TOKEN_PATH] || [];\n path.unshift(token);\n if\n (record && record.value === CIRCULAR$1) {\n // Reset the Circular flag.\n record.value =\n EMPTY;\n }\n throw e;\n }\n }\n function resolveToken(token, record, records, parent,\n notFoundValue, flags) {\n var value;\n if (record && !(flags & exports.InjectFlags.SkipSelf)) {\n //\n If we don't have a record, this implies that we don't own the provider hence don't know how\n // to resolve\n it.\n value = record.value;\n if (value === CIRCULAR$1) {\n throw Error(NO_NEW_LINE$1\n + 'Circular dependency');\n }\n else if (value === EMPTY) {\n record.value =\n CIRCULAR$1;\n var obj = undefined;\n var useNew = record.useNew;\n var fn =\n record.fn;\n var depRecords = record.deps;\n var deps = EMPTY;\n if\n (depRecords.length) {\n deps = [];\n for (var i = 0; i < depRecords.length; i++) {\n var depRecord = depRecords[i];\n var options = depRecord.options;\n var\n childRecord = options & 2 /* CheckSelf */ ? records.get(depRecord.token) : undefined;\n deps.push(tryResolveToken(\n // Current Token to resolve\n depRecord.token, \n // A record which describes how to resolve the token.\n // If undefined, this means we don't\n have such a record\n childRecord, \n // Other records we know about.\n records, \n // If we don't know how to resolve dependency and we should not check parent for it,\n // than pass in Null injector.\n !childRecord && !(options & 4 /* CheckParent */) ?\n Injector.NULL : parent, options & 1 /* Optional */ ? null : Injector.THROW_IF_NOT_FOUND,\n exports.InjectFlags.Default));\n }\n }\n record.value = value = useNew ? new\n (fn.bind.apply(fn, __spread([void 0], deps))): fn.apply(obj, deps);\n }\n }\n else if (!(flags &\n exports.InjectFlags.Self)) {\n value = parent.get(token, notFoundValue, exports.InjectFlags.Default);\n }\n else if (!(flags & exports.InjectFlags.Optional)) {\n value = Injector.NULL.get(token,\n notFoundValue);\n }\n else {\n value = Injector.NULL.get(token, typeof notFoundValue !==\n 'undefined' ? notFoundValue : null);\n }\n return value;\n }\n function computeDeps(provider) {\n var deps = EMPTY;\n var providerDeps = provider.deps;\n if (providerDeps && providerDeps.length) {\n

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 deps = [];\n for (var i = 0; i < providerDeps.length; i++) {\n var options = 6 /* Default */;\n var token = resolveForwardRef(providerDeps[i]);\n if (Array.isArray(token)) {\n for (var j = 0, annotations = token; j < annotations.length; j++) {\n var annotation = annotations[j];\n if (annotation instanceof Optional || annotation === Optional) {\n options = options | 1 /* Optional */;\n }\n else if (annotation instanceof SkipSelf || annotation === SkipSelf) {\n options = options & ~2 /* CheckSelf */;\n }\n else if (annotation instanceof Self || annotation === Self) {\n options = options & ~4 /* CheckParent */;\n }\n else if (annotation instanceof Inject) {\n token = annotation.token;\n }\n else {\n token = resolveForwardRef(annotation);\n }\n }\n }\n deps.push({ token: token, options: options });\n }\n else if (provider.useExisting) {\n var token = resolveForwardRef(provider.useExisting);\n deps = [{ token: token, options: 6 /* Default */ }];\n }\n else if (!providerDeps && !(USE_VALUE in provider)) {\n // useValue & useExisting are the only ones which are exempt from deps all others need it.\n throw staticError('\\deps\\' required', provider);\n }\n return deps;\n }\n function staticError(text, obj) {\n return new Error(formatError(text, obj, 'StaticInjectorError'));\n }\n /**\n * Retrieves the component instance associated with a given DOM element.\n * @usageNotes\n * Given the following DOM structure:\n * ```html\n * <my-app>\n * <div>\n * <child-comp></child-comp>\n * </div>\n * </my-app>\n * ```\n * Calling `getComponent` on `<child-comp>` will return the instance of `ChildComponent` associated with this DOM element.\n * Calling the function on `<my-app>` will return the `MyApp` instance.\n * @param element DOM element from which the component should be retrieved.\n * @returns Component instance associated with the element or `null` if there is no component associated with it.\n * @publicApi\n * @globalApi ng\n */\n function getComponent(element) {\n assertDomElement(element);\n var context = loadLContext(element, false);\n if (context === null)\n return null;\n if (context.component === undefined) {\n context.component = getComponentAtNodeIndex(context.nodeIndex, context.IView);\n }\n return context.component;\n }\n /**\n * If inside an embedded view (e.g. `*ngIf` or `*ngFor`), retrieves the context of the embedded view that the element is part of. Otherwise retrieves the instance of the component whose view owns the element (in this case, the result is the same as calling `getOwningComponent`).\n * @param element Element for which to get the surrounding component instance.\n * @returns Instance of the component that is around the element or null if the element isn't inside any component.\n * @publicApi\n * @globalApi ng\n */\n function getContext(element) {\n assertDomElement(element);\n var context = loadLContext(element, false);\n return context === null ? null : context.IView[CONTEXT];\n }\n /**\n * Retrieves the component instance whose view contains the DOM element.\n * For example, if `<child-comp>` is used in the template of `<app-comp>` (i.e. a `ViewChild` of `<app-comp>`), calling `getOwningComponent` on `<child-comp>` would return `<app-comp>`.\n * @param elementOrDir DOM element, component or directive instance for which to retrieve the root components.\n * @returns Component instance whose view owns the DOM element or null if the element is not part of a component view.\n * @publicApi\n * @globalApi ng\n */\n function getOwningComponent(elementOrDir) {\n var context = loadLContext(elementOrDir, false);\n if (context === null)\n return null;\n var IView = context.IView;\n var parent;\n ngDevMode && assertLView(IView);\n while (IView[TVIEW].type === 2 /* Embedded */ && (parent = getLViewParent(IView))) {\n IView = parent;\n }\n return IView[FLAGS] & 512 /* IsRoot */ ? null : IView[CONTEXT];\n }\n /**\n * Retrieves all root components associated with a DOM element, directive or component instance.\n * Root components are those which have been bootstrapped by Angular.\n * @param elementOrDir DOM element, component or directive instance for which to retrieve the root components.\n * @returns Root components associated with the target object.\n * @publicApi\n * @globalApi ng\n */\n function getRootComponents(elementOrDir) {\n return __spread(getRootContext(elementOrDir).components);\n }\n /**\n * Retrieves an `Injector` associated with an element, component or directive instance.\n * @param

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elementOrDir DOM element, component or directive instance for which to
 * retrieve the injector.\n
 *
 * @returns Injector associated with the element, component or directive instance.\n
 * \n
 * @publicApi\n
 *
 * @globalApi ng\n
 * \n
 * function getInjector(elementOrDir) {\n
 var context = loadLContext(elementOrDir,
false);\n
 if (context === null)\n
 return Injector.NULL;\n
 var tNode =
context.IView[TVIEW].data[context.nodeIndex];\n
 return new NodeInjector(tNode, context.IView);\n
 }\n
/**\n
 * Retrieve a set of injection tokens at a given DOM node.\n
 * \n
 * @param element Element for which
the injection tokens should be retrieved.\n
 * \n
 * function getInjectionTokens(element) {\n
 var context =
loadLContext(element, false);\n
 if (context === null)\n
 return [];\n
 var IView = context.IView;\n
 var tView = IView[TVIEW];\n
 var tNode = tView.data[context.nodeIndex];\n
 var providerTokens = [];\n
 var startIndex = tNode.providerIndexes & 1048575 /* ProvidersStartIndexMask */;\n
 var endIndex =
tNode.directiveEnd;\n
 for (var i = startIndex; i < endIndex; i++) {\n
 var value = tView.data[i];\n
 if
(isDirectiveDefHack(value)) {\n
 // The fact that we sometimes store Type and sometimes DirectiveDef in
this location is a\n
 // design flaw. We should always store same type so that we can be monomorphic. The
issue\n
 // is that for Components/Directives we store the def instead the type. The correct behavior\n
 // is that we should always be storing injectable type in this location.\n
 value = value.type;\n
 }\n
 providerTokens.push(value);\n
 }\n
 return providerTokens;\n
 }\n
/**\n
 * Retrieves directive
instances associated with a given DOM element. Does not include\n
 * component instances.\n
 * \n
 *
 * @usageNotes\n
 * Given the following DOM structure:\n
 * ```\n
 * <my-app>\n
 * <button my-
button></button>\n
 * <my-comp></my-comp>\n
 * </my-app>\n
 * ```\n
 * Calling `getDirectives` on
`<button>` will return an array with an instance of the `MyButton`\n
 * directive that is associated with the DOM
element.\n
 * \n
 * Calling `getDirectives` on `<my-comp>` will return an empty array.\n
 * \n
 * @param
element DOM element for which to get the directives.\n
 * @returns Array of directives associated with the
element.\n
 * \n
 * @publicApi\n
 * @globalApi ng\n
 * \n
 * function getDirectives(element) {\n
 var
context = loadLContext(element);\n
 if (context.directives === undefined) {\n
 context.directives =
getDirectivesAtNodeIndex(context.nodeIndex, context.IView, false);\n
 }\n
 // The `directives` in this case
are a named array called `LComponentView`. Clone the\n
 // result so we don't expose an internal data structure
in the user's console.\n
 return context.directives === null ? [] : __spread(context.directives);\n
 }\n
function
loadLContext(target, throwOnNotFound) {\n
 if (throwOnNotFound === void 0) { throwOnNotFound = true;
}\n
 var context = getLContext(target);\n
 if (!context && throwOnNotFound) {\n
 throw new
Error(ngDevMode ? "Unable to find context associated with " + stringifyForError(target) : "Invalid ng
target");\n
 }\n
 return context;\n
 }\n
/**\n
 * Retrieve map of local references.\n
 * \n
 * The
references are retrieved as a map of local reference name to element or directive instance.\n
 * \n
 * @param
target DOM element, component or directive instance for which to retrieve\n
 * the local references.\n
 * \n
 * function getLocalRefs(target) {\n
 var context = loadLContext(target, false);\n
 if (context === null)\n
return {};\n
 if (context.localRefs === undefined) {\n
 context.localRefs =
discoverLocalRefs(context.IView, context.nodeIndex);\n
 }\n
 return context.localRefs || {};\n
 }\n
/**\n
 * Retrieves the host element of a component or directive instance.\n
 * The host element is the DOM element that
matched the selector of the directive.\n
 * \n
 * @param componentOrDirective Component or directive instance
for which the host\n
 * element should be retrieved.\n
 * @returns Host element of the target.\n
 * \n
 *
 * @publicApi\n
 * @globalApi ng\n
 * \n
 * function getHostElement(componentOrDirective) {\n
 return
getLContext(componentOrDirective).native;\n
 }\n
/**\n
 * Retrieves the rendered text for a given
component.\n
 * \n
 * This function retrieves the host element of a component and\n
 * and then returns the
`textContent` for that element. This implies\n
 * that the text returned will include re-projected content of\n
 * the component as well.\n
 * \n
 * @param component The component to return the content text for.\n
 * \n
 * function getRenderedText(component) {\n
 var hostElement = getHostElement(component);\n
 return
hostElement.textContent || "";\n
 }\n
function loadLContextFromNode(node) {\n
 if (!(node instanceof
Node))\n
 throw new Error('Expecting instance of DOM Element');\n
 return loadLContext(node);\n
 }\n
/**\n
 * Retrieves a list of event listeners associated with a DOM element. The list does include host\n
 *

```

```

listeners, but it does not include event listeners defined outside of the Angular context
 * (e.g. through
`addEventListener`),
 *
 * @usageNotes
 * Given the following DOM structure:
 *
 * <my-app>
 * <div (click)="doSomething()"></div>
 * </my-app>
 *
 * Calling `getListeners`
on `<div>` will return an object that looks as follows:
 *
 * {
 * name: 'click',
 * element:
<div>,
 * callback: () => doSomething(),
 * useCapture: false
 * }
 *
 * @param
element Element for which the DOM listeners should be retrieved.
 * @returns Array of event listeners on the
DOM element.
 *
 * @publicApi
 * @globalApi ng
 *
 * function getListeners(element) {
 assertDomElement(element);
 var IContext = loadLContext(element, false);
 if (IContext === null)
 return [];
 var IView = IContext.IView;
 var tView = IView[TVIEW];
 var ICleanup =
IView[CLEANUP];
 var tCleanup = tView.cleanup;
 var listeners = [];
 if (tCleanup && ICleanup)
 for (var i = 0; i < tCleanup.length;) {
 var firstParam = tCleanup[i++];
 var
secondParam = tCleanup[i++];
 if (typeof firstParam === 'string') {
 var name =
firstParam;
 var listenerElement = unwrapRNode(IView[secondParam]);
 var callback =
ICleanup[tCleanup[i++]];
 var useCaptureOrIndx = tCleanup[i++];
 // if useCaptureOrIndx
is boolean then report it as is.
 // if useCaptureOrIndx is positive number then it in unsubscribe
method
 // if useCaptureOrIndx is negative number then it is a Subscription
 var type =
(typeof useCaptureOrIndx === 'boolean' || useCaptureOrIndx >= 0) ? 'dom' : 'output';
 var useCapture =
typeof useCaptureOrIndx === 'boolean' ? useCaptureOrIndx : false;
 if (element === listenerElement)
 listeners.push({ element: element, name: name, callback: callback, useCapture: useCapture, type:
type });
 }
 }
 listeners.sort(sortListeners);
 return listeners;
 }
 function sortListeners(a, b) {
 if (a.name === b.name)
 return 0;
 return a.name < b.name ? -1
: 1;
 }
}
/**
 * This function should not exist because it is megamorphic and only mostly correct.
 *
 * See call site for more info.
 *
 * function isDirectiveDefHack(obj) {
 return obj.type !== undefined &&
obj.template !== undefined && obj.declaredInputs !== undefined;
}
/**
 * Returns the attached
`DebugNode` instance for an element in the DOM.
 *
 * @param element DOM element which is owned by
an existing component's view.
 *
 * function getDebugNode(element) {
 var debugNode = null;
 var
IContext = loadLContextFromNode(element);
 var IView = IContext.IView;
 var nodeIndex =
IContext.nodeIndex;
 if (nodeIndex !== -1) {
 var valueInLView = IView[nodeIndex];
 // this
means that value in the IView is a component with its own
 // data. In this situation the TNode is not
accessed at the same spot.
 var tNode = isLView(valueInLView) ? valueInLView[T_HOST] :
getTNode(IView[TVIEW], nodeIndex);
 ngDevMode &&
assertEqual(tNode.index, nodeIndex,
'Expecting that TNode at index is same as index');
 debugNode = buildDebugNode(tNode, IView);
 }
 return debugNode;
}
/**
 * Retrieve the component `LView` from component/element.
 *
 * NOTE: `LView` is a private and should not be leaked outside.
 *
 * Don't export this method to `ng.*` on
window.
 *
 * @param target DOM element or component instance for which to retrieve the LView.
 *
 * function getComponentLView(target) {
 var IContext = loadLContext(target);
 var nodeIndx =
IContext.nodeIndex;
 var IView = IContext.IView;
 var componentLView = IView[nodeIndx];
 ngDevMode && assertLView(componentLView);
 return componentLView;
}
/** Asserts that a value
is a DOM Element.
 *
 * function assertDomElement(value) {
 if (typeof Element !== 'undefined' && !(value
instanceof Element))
 throw new Error('Expecting instance of DOM Element');
}
}
/**
 * @license
 * Copyright Google LLC All Rights Reserved.
 *
 * Use of this source code is governed by
an MIT-style license that can be
 * found in the LICENSE file at https://angular.io/license
 *
 *
 * Marks a component for check (in case of OnPush components) and synchronously
 * performs change detection
on the application this component belongs to.
 *
 * @param component Component to { @link
ChangeDetectorRef#markForCheck mark for check}.
 *
 * @publicApi
 * @globalApi ng
 *
 * function applyChanges(component) {
 markDirty(component);
 getRootComponents(component).forEach(function (rootComponent) {
 return detectChanges(rootComponent);
 });
}
/**
 * @license
 * Copyright Google LLC All Rights Reserved.
 *
 * Use of this source code

```

```

is governed by an MIT-style license that can be
 * found in the LICENSE file at https://angular.io/license
 *
 * This file introduces series of globally accessible debug tools
 * to allow for the Angular
debugging story to function.
 *
 * To see this in action run the following command:
 *
 * bazel run --
config=ivy
 * //packages/core/test/bundling/todo:devserver
 *
 * Then load `localhost:5432` and start
using the console tools.
 *
 * This value reflects the property on the window where the dev
 *
 * tools are patched (window.ng).
 *
 * var GLOBAL_PUBLISH_EXPANDO_KEY = 'ng';
 * var _published
= false;
 *
 * Publishes a collection of default debug tools onto `window.ng`.
 *
 * These functions
are available globally when Angular is in development
 *
 * mode and are automatically stripped away from prod
mode is on.
 *
 * function publishDefaultGlobalUtils() {
 * if (!_published) {
 * _published = true;
 * publishGlobalUtil('getComponent', getComponent);
 * publishGlobalUtil('getContext', getContext);
 * publishGlobalUtil('getListeners', getListeners);
 * publishGlobalUtil('getOwningComponent',
getOwningComponent);
 * publishGlobalUtil('getHostElement', getHostElement);
 * publishGlobalUtil('getInjector', getInjector);
 * publishGlobalUtil('getRootComponents',
getRootComponents);
 * publishGlobalUtil('getDirectives', getDirectives);
 * publishGlobalUtil('applyChanges', applyChanges);
 * }
 * }
 *
 * Publishes the given function to
`window.ng` so that it can be
 *
 * used from the browser console when an application is not in production.
 *
 * function publishGlobalUtil(name, fn) {
 * if (typeof COMPILED === 'undefined' || !COMPILED) {
 * // Note: we can't export `ng` when using closure enhanced optimization as:
 * // - closure declares globals
 * // itself for minified names, which sometimes clobber our `ng` global
 * // - we can't declare a closure extern as
 * // the namespace `ng` is already used within Google
 * // for typings for AngularJS (via
 * `goog.provide('ng...')`);
 * var w = _global;
 * ngDevMode && assertDefined(fn, 'function not
defined');
 * if (w) {
 * var container = w[GLOBAL_PUBLISH_EXPANDO_KEY];
 * if
(!container) {
 * container = w[GLOBAL_PUBLISH_EXPANDO_KEY] = {};
 * }
 * container[name] = fn;
 * }
 * }
 * }
 *
 * @license
 * Copyright Google LLC All Rights
Reserved.
 *
 * Use of this source code is governed by an MIT-style license that can be
 * found in the
LICENSE file at https://angular.io/license
 *
 * var $7 = function (token, notFoundValue) {
 * throwProviderNotFoundError(token, 'NullInjector');
 * };
 * // TODO: A hack to not pull in the NullInjector from
@angular/core.
 * var NULL_INJECTOR$1 = {
 * get: $7;
 * };
 *
 * Bootstraps a Component into
an existing host element and returns an instance
 *
 * of the component.
 *
 * Use this function to bootstrap
a component into the DOM tree. Each invocation
 *
 * of this function will create a separate tree of components,
injectors and
 *
 * change detection cycles and lifetimes. To dynamically insert a new component
 *
 * into an
existing tree such that it shares the same injection, change detection
 *
 * and object lifetime, use { @link
ViewContainer#createComponent }.
 *
 * @param componentType Component to bootstrap
 *
 * @param
options Optional parameters which control bootstrapping
 *
 * function renderComponent$1(componentType
/* Type as workaround for: Microsoft/TypeScript/issues/4881 */, opts) {
 * if (opts === void 0) {
 * opts = {};
 * }
 * ngDevMode && publishDefaultGlobalUtils();
 * ngDevMode && assertComponentType(componentType);
 * var rendererFactory = opts.rendererFactory || domRendererFactory3;
 * var sanitizer = opts.sanitizer || null;
 * var componentDef = getComponentDef(componentType);
 * if (componentDef.type !== componentType)
 * componentDef.type = componentType;
 * // The first index of the first selector is the tag name.
 * var
componentTag = componentDef.selectors[0][0];
 * var hostRenderer = rendererFactory.createRenderer(null,
null);
 * var hostRNode = locateHostElement(hostRenderer, opts.host || componentTag,
componentDef.encapsulation);
 * var rootFlags = componentDef.onPush ? 64 /* Dirty */ | 512 /* IsRoot */ :
 * 16 /* CheckAlways */ | 512 /* IsRoot */;
 * var rootContext = createRootContext(opts.scheduler,
opts.playerHandler);
 * var renderer = rendererFactory.createRenderer(hostRNode, componentDef);
 * var
rootTView = createTView(0 /* Root */, null, null, 1, 0, null, null, null, null, null);
 * var rootView =
createLView(null, rootTView, rootContext, rootFlags, null, null, rendererFactory,
renderer, null, opts.injector ||
null);
 * enterView(rootView);
 * var component;
 * try {
 * if (rendererFactory.begin)
 * rendererFactory.begin();
 * var componentView = createRootComponentView(hostRNode, componentDef,

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rootView, rendererFactory, renderer, sanitizer);\n component = createRootComponent(componentView,
componentDef, rootView, rootContext, opts.hostFeatures || null);\n // create mode pass\n
renderView(rootTView, rootView, null);\n // update mode pass\n refreshView(rootTView, rootView,
null, null);\n }\n finally {\n leaveView();\n if (rendererFactory.end)\n
rendererFactory.end();\n }\n return component;\n }\n /**\n * Creates the root component view and
the root component node.\n * @param rNode Render host element.\n * @param def ComponentDef\n
* @param rootView The parent view where the host node is stored\n * @param rendererFactory Factory to be
used for creating child renderers.\n * @param hostRenderer The current renderer\n * @param sanitizer The
sanitizer, if provided\n * @returns Component view created\n */\n function
createRootComponentView(rNode, def, rootView, rendererFactory, hostRenderer, sanitizer) {\n var tView =
rootView[TVIEW];\n var index = HEADER_OFFSET;\n ngDevMode && assertIndexInRange(rootView,
index);\n rootView[index] = rNode;\n // '#host' is added here as we don't know the real host DOM name
(we don't want to read it) and at\n // the same time we want to communicate the the debug `TNode` that this is a
special `TNode`\n // representing a host element.\n var tNode = getOrCreateTNode(tView, index, 2 /*
Element */, '#host', null);\n var mergedAttrs = tNode.mergedAttrs = def.hostAttrs;\n if (mergedAttrs !==
null) {\n computeStaticStyling(tNode, mergedAttrs, true);\n if (rNode !== null) {\n
setUpAttributes(hostRenderer, rNode, mergedAttrs);\n if (tNode.classes !== null) {\n
writeDirectClass(hostRenderer, rNode, tNode.classes);\n }\n if (tNode.styles !== null) {\n
writeDirectStyle(hostRenderer, rNode, tNode.styles);\n }\n }\n }\n
var viewRenderer =
rendererFactory.createRenderer(rNode, def);\n var componentView = createLView(rootView,
getOrCreateTComponentView(def), null, def.onPush ? 64 /* Dirty */ : 16 /* CheckAlways */, rootView[index],
tNode, rendererFactory, viewRenderer, sanitizer || null, null);\n if (tView.firstCreatePass) {\n
diPublicInInjector(getOrCreateNodeInjectorForNode(tNode, rootView), tView, def.type);\n
markAsComponentHost(tView, tNode);\n initTNodeFlags(tNode, rootView.length, 1);\n }\n
addToViewTree(rootView, componentView);\n // Store component view at node index, with node as the
HOST\n return rootView[index] = componentView;\n }\n }\n /**\n * Creates a root component and sets it up
with features and host bindings. Shared by\n * renderComponent() and ViewContainerRef.createComponent().\n
*/\n function createRootComponent(componentView, componentDef, rootLView, rootContext, hostFeatures) {\n
 var tView = rootLView[TVIEW];\n // Create directive instance with factory() and store at next index in
viewData\n var component = instantiateRootComponent(tView, rootLView, componentDef);\n
rootContext.components.push(component);\n componentView[CONTEXT] = component;\n hostFeatures
&& hostFeatures.forEach(function (feature) { return feature(component, componentDef); });\n // We want to
generate an empty QueryList for root content queries for backwards\n // compatibility with ViewEngine.\n
if (componentDef.contentQueries) {\n var tNode = getCurrentTNode();\n ngDevMode &&
assertDefined(tNode, 'TNode expected');\n componentDef.contentQueries(1 /* Create */, component,
tNode.directiveStart);\n }\n var rootTNode = getCurrentTNode();\n ngDevMode &&
assertDefined(rootTNode, 'tNode should have been already created');\n if (tView.firstCreatePass &&\n
(componentDef.hostBindings !== null || componentDef.hostAttrs !== null)) {\n
setSelectedIndex(rootTNode.index);\n var rootTView = rootLView[TVIEW];\n
registerHostBindingOpCodes(rootTView, rootTNode, rootLView, rootTNode.directiveStart,
rootTNode.directiveEnd, componentDef);\n invokeHostBindingsInCreationMode(componentDef,
component);\n }\n return component;\n }\n function createRootContext(scheduler, playerHandler) {\n
 return {\n components: [],\n scheduler: scheduler || defaultScheduler,\n clean:
CLEAN_PROMISE,\n playerHandler: playerHandler || null,\n flags: 0 /* Empty */\n };\n }\n
/**\n * Used to enable lifecycle hooks on the root component.\n * @param include This feature when calling
`renderComponent` if the root component\n * you are rendering has lifecycle hooks defined. Otherwise, the hooks
won't\n * be called properly.\n * @param example\n * @param renderComponent(AppComponent,
{hostFeatures: [LifecycleHooksFeature]});\n */\n function LifecycleHooksFeature(component, def)

```

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{\n var IView = readPatchedLView(component);\n ngDevMode && assertDefined(IView, 'LView is
required');\n var tView = IView[TVIEW];\n var tNode = getCurrentTNode();\n ngDevMode &&
assertDefined(tNode, 'TNode is required');\n registerPostOrderHooks(tView, tNode);\n }\n /**\n * Wait
on component until it is rendered.\n *\n * This function returns a `Promise` which is resolved when the
component's\n * change detection is executed. This is determined by finding the scheduler\n * associated with
the `component`'s render tree and waiting until the scheduler\n * flushes. If nothing is scheduled, the function
returns a resolved promise.\n *\n * Example:\n * ```\n * await whenRendered(myComponent);\n * ```\n
 *\n * @param component Component to wait upon\n * @returns Promise which resolves when the
component is rendered.\n */\n function whenRendered(component) {\n return
getRootContext(component).clean;\n }\n /**\n * @license\n * Copyright Google LLC All Rights
Reserved.\n *\n * Use of this source code is governed by an MIT-style license that can be\n * found in the
LICENSE file at https://angular.io/license\n */\n function getSuperType(type) {\n return
Object.getPrototypeOf(type.prototype).constructor;\n }\n /**\n * Merges the definition from a super class to a
sub class.\n * @param definition The definition that is a SubClass of another directive of component\n * @codeGenApi\n */\n function InheritDefinitionFeature(definition) {\n var superType =
getSuperType(definition.type);\n var shouldInheritFields = true;\n var inheritanceChain = [definition];\n while (superType) {\n var superDef = undefined;\n if (isComponentDef(definition)) {\n //
Don't use getComponentDef/getDirectiveDef. This logic relies on inheritance.\n superDef =
superType.cmp || superType.dir;\n } else {\n if (superType.cmp) {\n throw new
Error('Directives cannot inherit Components');\n }\n // Don't use
getComponentDef/getDirectiveDef. This logic relies on inheritance.\n superDef = superType.dir;\n }\n if (superDef) {\n if (shouldInheritFields) {\n inheritanceChain.push(superDef);\n //
Some fields in the definition may be empty, if there were no values to put in them that\n //
would've justified object creation. Unwrap them if necessary.\n var writeableDef = definition;\n writeableDef.inputs = maybeUnwrapEmpty(definition.inputs);\n writeableDef.declaredInputs =
maybeUnwrapEmpty(definition.declaredInputs);\n writeableDef.outputs =
maybeUnwrapEmpty(definition.outputs);\n // Merge hostBindings\n var superHostBindings
= superDef.hostBindings;\n superHostBindings && inheritHostBindings(definition,
superHostBindings);\n // Merge queries\n var superViewQuery = superDef.viewQuery;\n var superContentQueries = superDef.contentQueries;\n superViewQuery &&
inheritViewQuery(definition, superViewQuery);\n superContentQueries &&
inheritContentQueries(definition, superContentQueries);\n // Merge inputs and outputs\n fillProperties(definition.inputs, superDef.inputs);\n fillProperties(definition.declaredInputs,
superDef.declaredInputs);\n fillProperties(definition.outputs, superDef.outputs);\n // Merge
animations metadata.\n // If `superDef` is a Component, the `data` field is present (defaults to an empty
object).\n if (isComponentDef(superDef) && superDef.data.animation) {\n // If super def
is a Component, the `definition` is also a Component, since Directives can\n // not inherit Components
(we throw an error above and cannot reach this code).\n var defData = definition.data;\n defData.animation = (defData.animation || []).concat(superDef.data.animation);\n }\n }\n // Run parent features\n var features = superDef.features;\n if (features) {\n for (var
i = 0; i < features.length; i++) {\n var feature = features[i];\n if (feature &&
feature.ngInherit) {\n feature(definition);\n }\n }\n // If
`InheritDefinitionFeature` is a part of the current `superDef`, it means that this\n // def already has all
the necessary information inherited from its super class(es), so we\n // can stop merging fields from
super classes. However we need to iterate through the\n // prototype chain to look for classes that
might contain other `features` (like\n // NgOnChanges), which we should invoke for the original
`definition`. We set the\n // `shouldInheritFields` flag to indicate that, essentially skipping fields
inheritance\n // logic and only invoking functions from the `features` list.\n if (feature

```





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!COPY_DIRECTIVE_FIELDS_1_1.done; COPY_DIRECTIVE_FIELDS_1_1 =
COPY_DIRECTIVE_FIELDS_1.next() {\n var field = COPY_DIRECTIVE_FIELDS_1_1.value;\n
 defAny[field] = superDef[field];\n }\n }\n catch (e_1_1) { e_1 = { error: e_1_1 }; }\n finally
{\n try {\n if (COPY_DIRECTIVE_FIELDS_1_1 && !COPY_DIRECTIVE_FIELDS_1_1.done
&& (_a = COPY_DIRECTIVE_FIELDS_1.return)) _a.call(COPY_DIRECTIVE_FIELDS_1);\n }\n
finally { if (e_1) throw e_1.error; }\n }\n if (isComponentDef(superDef)) {\n try {\n //
Copy over any component-specific fields.\n for (var COPY_COMPONENT_FIELDS_1 =
__values(COPY_COMPONENT_FIELDS), COPY_COMPONENT_FIELDS_1_1 =
COPY_COMPONENT_FIELDS_1.next(); !COPY_COMPONENT_FIELDS_1_1.done;
COPY_COMPONENT_FIELDS_1_1 = COPY_COMPONENT_FIELDS_1.next()) {\n var field =
COPY_COMPONENT_FIELDS_1_1.value;\n defAny[field] = superDef[field];\n }\n
}\n catch (e_2_1) { e_2 = { error: e_2_1 }; }\n finally {\n try {\n if
(COPY_COMPONENT_FIELDS_1_1 && !COPY_COMPONENT_FIELDS_1_1.done && (_b =
COPY_COMPONENT_FIELDS_1.return)) _b.call(COPY_COMPONENT_FIELDS_1);\n }\n
finally { if (e_2) throw e_2.error; }\n }\n }\n }\n }\n /**\n * @license\n * Copyright Google LLC
All Rights Reserved.\n *\n * Use of this source code is governed by an MIT-style license that can be\n *
found in the LICENSE file at https://angular.io/license\n *\n var _symbolIterator = null;\n function
getSymbolIterator() {\n if (!_symbolIterator) {\n var Symbol = _global['Symbol'];\n if (Symbol
&& Symbol.iterator) {\n _symbolIterator = Symbol.iterator;\n }\n else {\n // es6-
shim specific logic\n var keys = Object.getOwnPropertyNames(Map.prototype);\n for (var i = 0; i
< keys.length; ++i) {\n var key = keys[i];\n if (key !== 'entries' && key !== 'size' &&\n
Map.prototype[key] === Map.prototype['entries']) {\n _symbolIterator = key;\n
}\n }\n }\n }\n return _symbolIterator;\n }\n }\n /**\n * @license\n * Copyright
Google LLC All Rights Reserved.\n *\n * Use of this source code is governed by an MIT-style license that can
be\n * found in the LICENSE file at https://angular.io/license\n *\n function devModeEqual(a, b) {\n var
isListLikeIterableA = isListLikeIterable(a);\n var isListLikeIterableB = isListLikeIterable(b);\n if
(isListLikeIterableA && isListLikeIterableB) {\n return areIterablesEqual(a, b, devModeEqual);\n }\n
else {\n var isAObject = a && (typeof a === 'object' || typeof a === 'function');\n var isBObject = b
&& (typeof b === 'object' || typeof b === 'function');\n if (!isListLikeIterableA && isAObject &&
!isListLikeIterableB && isBObject) {\n return true;\n }\n else {\n return
Object.is(a, b);\n }\n }\n }\n }\n /**\n * Indicates that the result of a {@link Pipe} transformation has
changed even though the\n * reference has not changed.\n *\n * Wrapped values are unwrapped
automatically during the change detection, and the unwrapped value\n * is stored.\n *\n * Example:\n *\n * ```\n * if (this._latestValue === this._latestReturnedValue) {\n * return this._latestReturnedValue;\n * }
else {\n * this._latestReturnedValue = this._latestValue;\n * return WrappedValue.wrap(this._latestValue);\n
// this will force update\n * }\n * ```\n *\n * @publicApi\n * @deprecated from v10 stop using. (No
replacement, deemed unnecessary.)\n *\n var WrappedValue = /** @class */ (function () {\n function
WrappedValue(value) {\n this.wrapped = value;\n }\n /** Creates a wrapped value. */\n
WrappedValue.wrap = function (value) {\n return new WrappedValue(value);\n };\n /**\n *
Returns the underlying value of a wrapped value.\n * Returns the given `value` when it is not wrapped.\n
**/\n WrappedValue.unwrap = function (value) {\n return WrappedValue.isWrapped(value) ?
value.wrapped : value;\n };\n /** Returns true if `value` is a wrapped value. */\n
WrappedValue.isWrapped = function (value) {\n return value instanceof WrappedValue;\n };\n
return WrappedValue;\n }());\n function isListLikeIterable(obj) {\n if (!isJsObject(obj))\n return
false;\n return Array.isArray(obj) ||\n (!obj instanceof Map) && // JS Map are iterables but return entries
as [k, v]\n getSymbolIterator() in obj); // JS Iterable have a Symbol.iterator prop\n }\n function
areIterablesEqual(a, b, comparator) {\n var iterator1 = a[getSymbolIterator]();\n var iterator2 =
b[getSymbolIterator]();\n while (true) {\n var item1 = iterator1.next();\n var item2 =

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iterator2.next();\n if (item1.done && item2.done)\n return true;\n if (item1.done ||\n item2.done)\n return false;\n if (!comparator(item1.value, item2.value))\n return false;\n }\n }\n function iterateListLike(obj, fn) {\n if (Array.isArray(obj)) {\n for (var i = 0; i < obj.length;\n i++) {\n fn(obj[i]);\n }\n } else {\n var iterator = obj[getSymbolIterator()];\n var item = void 0;\n while (!(item = iterator.next()).done) {\n fn(item.value);\n }\n }\n }\n function isJsObject(o) {\n return o !== null && (typeof o === 'function' || typeof o === 'object');\n }\n\n /**\n * @license\n * Copyright Google LLC All Rights Reserved.\n * Use of this source code\n is governed by an MIT-style license that can be\n found in the LICENSE file at https://angular.io/license\n\n *\n // TODO(misko): consider inlining\n /** Updates binding and returns the value. *\n function\n updateBinding(IView, bindingIndex, value) {\n return IView[bindingIndex] = value;\n }\n /** Gets the\n current binding value. *\n function getBinding(IView, bindingIndex) {\n ngDevMode &&\n assertIndexInRange(IView, bindingIndex);\n ngDevMode &&\n assertNotSame(IView[bindingIndex],\n NO_CHANGE, 'Stored value should never be NO_CHANGE.);\n return IView[bindingIndex];\n }\n\n /**\n * Updates binding if changed, then returns whether it was updated.\n * This function also checks the\n `CheckNoChangesMode` and throws if changes are made.\n Some changes (Objects/iterables) during\n `CheckNoChangesMode` are exempt to comply with VE\n behavior.\n @param IView current\n `LView`\n @param bindingIndex The binding in the `LView` to check\n @param value New value to\n check against `IView[bindingIndex]`\n @returns `true` if the bindings has changed. (Throws if binding has\n changed during\n `CheckNoChangesMode`)\n\n function bindingUpdated(IView, bindingIndex,\n value) {\n ngDevMode && assertNotSame(value, NO_CHANGE, 'Incoming value should never be\n NO_CHANGE.);\n ngDevMode &&\n assertLessThan(bindingIndex, IView.length, `Slot should have\n been initialized to NO_CHANGE`);\n var oldValue = IView[bindingIndex];\n if (Object.is(oldValue,\n value)) {\n return false;\n } else {\n if (ngDevMode && isInCheckNoChangesMode()) {\n // View engine didn't report undefined values as changed on the first checkNoChanges pass\n //\n (before the change detection was run).\n var oldValueToCompare = oldValue !== NO_CHANGE ?\n oldValue : undefined;\n if (!devModeEqual(oldValueToCompare, value)) {\n var details =\n getExpressionChangedErrorDetails(IView, bindingIndex, oldValueToCompare, value);\n throwErrorIfNoChangesMode(oldValue === NO_CHANGE, details.oldValue, details.newValue,\n details.propName);\n }\n // There was a change, but the `devModeEqual` decided that the change\n is exempt from an error.\n // For this reason we exit as if no change. The early exit is needed to prevent the\n changed\n // value to be written into `LView` (If we would write the new value that we would not see it\n // as change on next CD.)\n return false;\n }\n IView[bindingIndex] = value;\n return true;\n }\n }\n\n /** Updates 2 bindings if changed, then returns whether either was updated. *\n function bindingUpdated2(IView, bindingIndex, exp1, exp2) {\n var different = bindingUpdated(IView,\n bindingIndex, exp1);\n return bindingUpdated(IView, bindingIndex + 1, exp2) || different;\n }\n\n /** Updates\n 3 bindings if changed, then returns whether any was updated. *\n function bindingUpdated3(IView, bindingIndex,\n exp1, exp2, exp3) {\n var different = bindingUpdated2(IView, bindingIndex, exp1, exp2);\n return\n bindingUpdated(IView, bindingIndex + 2, exp3) || different;\n }\n\n /** Updates 4 bindings if changed, then\n returns whether any was updated. *\n function bindingUpdated4(IView, bindingIndex, exp1, exp2, exp3, exp4)\n {\n var different = bindingUpdated2(IView, bindingIndex, exp1, exp2);\n return bindingUpdated2(IView,\n bindingIndex + 2, exp3, exp4) || different;\n }\n\n /**\n * @license\n * Copyright Google LLC All Rights\n Reserved.\n * Use of this source code is governed by an MIT-style license that can be\n found in the\n LICENSE file at https://angular.io/license\n\n *\n /** Updates the value of or removes a bound attribute on\n an Element.\n * Used in the case of `[attr.title]="value"`\n * @param name name The name of\n the attribute.\n * @param value value The attribute is removed when value is `null` or `undefined`.\n * Otherwise the attribute value is set to the stringified value.\n * @param sanitizer An optional function used to\n sanitize the value.\n * @param namespace Optional namespace to use when setting the attribute.\n\n *\n @codeGenApi\n function attribute(name, value, sanitizer, namespace) {\n var IView = getLView();\n
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 var bindingIndex = nextBindingIndex();\n if (bindingUpdated(IView, bindingIndex, value)) {\n var
tView = getTView();\n var tNode = getSelectedTNode();\n elementAttributeInternal(tNode, IView,
name, value, sanitizer, namespace);\n ngDevMode && storePropertyBindingMetadata(tView.data, tNode,
'attr.' + name, bindingIndex);\n }\n return attribute;\n }\n /**\n * @license\n * Copyright Google
LLC All Rights Reserved.\n * Use of this source code is governed by an MIT-style license that can be\n
* found in the LICENSE file at https://angular.io/license\n */\n /**\n * Create interpolation bindings with a
variable number of expressions.\n * If there are 1 to 8 expressions `interpolation1()` to `interpolation8()`
should be used instead.\n * Those are faster because there is no need to create an array of expressions and iterate
over it.\n * `values`:\n * - has static text at even indexes,\n * - has evaluated expressions at odd
indexes.\n * Returns the concatenated string when any of the arguments changes, `NO_CHANGE`
otherwise.\n */\n function interpolationV(IView, values) {\n ngDevMode && assertLessThan(2,
values.length, 'should have at least 3 values');\n ngDevMode && assertEqual(values.length % 2, 1, 'should have
an odd number of values');\n var isBindingUpdated = false;\n var bindingIndex = getBindingIndex();\n for (var i = 1; i < values.length; i += 2) {\n // Check if bindings (odd indexes) have changed\n
isBindingUpdated = bindingUpdated(IView, bindingIndex++, values[i]) || isBindingUpdated;\n }\n setBindingIndex(bindingIndex);\n if (!isBindingUpdated) {\n return NO_CHANGE;\n }\n //
Build the updated content\n var content = values[0];\n for (var i = 1; i < values.length; i += 2) {\n
content += renderStringify(values[i]) + values[i + 1];\n }\n return content;\n }\n /**\n * Creates an
interpolation binding with 1 expression.\n * @param prefix static value used for concatenation only.\n *
@param v0 value checked for change.\n * @param suffix static value used for concatenation only.\n */\n function interpolation1(IView, prefix, v0, suffix) {\n var different = bindingUpdated(IView,
nextBindingIndex(), v0);\n return different ? prefix + renderStringify(v0) + suffix : NO_CHANGE;\n }\n /**\n * Creates an interpolation binding with 2 expressions.\n */\n function interpolation2(IView, prefix, v0,
i0, v1, suffix) {\n var bindingIndex = getBindingIndex();\n var different = bindingUpdated2(IView,
bindingIndex, v0, v1);\n incrementBindingIndex(2);\n return different ? prefix + renderStringify(v0) + i0 +
renderStringify(v1) + suffix : NO_CHANGE;\n }\n /**\n * Creates an interpolation binding with 3
expressions.\n */\n function interpolation3(IView, prefix, v0, i0, v1, i1, v2, suffix) {\n var bindingIndex =
getBindingIndex();\n var different = bindingUpdated3(IView, bindingIndex, v0, v1, v2);\n incrementBindingIndex(3);\n return different ?\n prefix + renderStringify(v0) + i0 + renderStringify(v1)
+ i1 + renderStringify(v2) + suffix :\n NO_CHANGE;\n }\n /**\n * Create an interpolation binding
with 4 expressions.\n */\n function interpolation4(IView, prefix, v0, i0, v1, i1, v2, i2, v3, suffix) {\n var
bindingIndex = getBindingIndex();\n var different = bindingUpdated4(IView, bindingIndex, v0, v1, v2, v3);\n incrementBindingIndex(4);\n return different ? prefix + renderStringify(v0) + i0 + renderStringify(v1) + i1
+ renderStringify(v2) + i2 + renderStringify(v3) + suffix :\n NO_CHANGE;\n }\n /**\n *
Creates an interpolation binding with 5 expressions.\n */\n function interpolation5(IView, prefix, v0, i0, v1, i1,
v2, i2, v3, i3, v4, suffix) {\n var bindingIndex = getBindingIndex();\n var different =
bindingUpdated4(IView, bindingIndex, v0, v1, v2, v3);\n different = bindingUpdated(IView, bindingIndex + 4,
v4) || different;\n incrementBindingIndex(5);\n return different ? prefix + renderStringify(v0) + i0 +
renderStringify(v1) + i1 + renderStringify(v2) + i2 + renderStringify(v3) + i3 + renderStringify(v4) + suffix :\n
 NO_CHANGE;\n }\n /**\n * Creates an interpolation binding with 6 expressions.\n */\n function interpolation6(IView, prefix, v0, i0, v1, i1, v2, i2, v3, i3, v4, i4, v5, suffix) {\n var bindingIndex =
getBindingIndex();\n var different = bindingUpdated4(IView, bindingIndex, v0, v1, v2, v3);\n different =
bindingUpdated2(IView, bindingIndex + 4, v4, v5) || different;\n incrementBindingIndex(6);\n return
different ?\n prefix + renderStringify(v0) + i0 + renderStringify(v1) + i1 + renderStringify(v2) + i2 +\n
 renderStringify(v3) + i3 + renderStringify(v4) + i4 + renderStringify(v5) + suffix :\n NO_CHANGE;\n }\n /**\n * Creates an interpolation binding with 7 expressions.\n */\n function interpolation7(IView,
prefix, v0, i0, v1, i1, v2, i2, v3, i3, v4, i4, v5, i5, v6, suffix) {\n var bindingIndex = getBindingIndex();\n
var different = bindingUpdated4(IView, bindingIndex, v0, v1, v2, v3);\n different = bindingUpdated3(IView,

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&&\n storePropertyBindingMetadata(getTView().data, tNode, 'attr.' + attrName, getBindingIndex() - 3,
prefix, i0, i1, suffix);\n }\n return attributeInterpolate3;\n }\n /**\n *\n * Update an interpolated
attribute on an element with 4 bound values surrounded by text.\n *\n * Used when the value passed to a
property has 4 interpolated values in it:\n *\n * ``html\n * <div attr.title="prefix{{v0}}-{{v1}}-{{v2}}-
{{v3}}suffix"></div>\n * ``\n *\n * Its compiled representation is:\n *\n * ``ts\n *
attributeInterpolate4(\n * 'title', 'prefix', v0, '-', v1, '-', v2, '-', v3, 'suffix');\n * ``\n *\n * @param attrName
The name of the attribute to update\n * @param prefix Static value used for concatenation only.\n * @param
v0 Value checked for change.\n * @param i0 Static value used for concatenation only.\n * @param v1 Value
checked for change.\n * @param i1 Static value used for concatenation only.\n * @param v2 Value checked
for change.\n * @param i2 Static value used for concatenation only.\n * @param v3 Value checked for
change.\n * @param suffix Static value used for concatenation only.\n * @param sanitizer An optional
sanitizer function\n * @returns itself, so that it may be chained.\n * @codeGenApi\n */\n function
attributeInterpolate4(attrName, prefix, v0, i0, v1, i1, v2, i2, v3, suffix, sanitizer, namespace) {\n var IView =
getLView();\n var interpolatedValue = interpolation4(IView, prefix, v0, i0, v1, i1, v2, i2, v3, suffix);\n if
(interpolatedValue !== NO_CHANGE) {\n var tNode = getSelectedTNode();\n elementAttributeInternal(tNode, IView, attrName, interpolatedValue, sanitizer, namespace);\n ngDevMode
&&\n storePropertyBindingMetadata(getTView().data, tNode, 'attr.' + attrName, getBindingIndex() - 4,
prefix, i0, i1, i2, suffix);\n }\n return attributeInterpolate4;\n }\n /**\n *\n * Update an interpolated
attribute on an element with 5 bound values surrounded by text.\n *\n * Used when the value passed to a
property has 5 interpolated values in it:\n *\n * ``html\n * <div attr.title="prefix{{v0}}-{{v1}}-{{v2}}-
{{v3}}-{{v4}}suffix"></div>\n * ``\n *\n * Its compiled representation is:\n *\n * ``ts\n *
attributeInterpolate5(\n * 'title', 'prefix', v0, '-', v1, '-', v2, '-', v3, '-', v4, 'suffix');\n * ``\n *\n * @param
attrName The name of the attribute to update\n * @param prefix Static value used for concatenation only.\n *
@param v0 Value checked for change.\n * @param i0 Static value used for concatenation only.\n * @param v1
Value checked for change.\n * @param i1 Static value used for concatenation only.\n * @param v2 Value
checked for change.\n * @param i2 Static value used for concatenation only.\n * @param v3 Value checked
for change.\n * @param i3 Static value used for concatenation only.\n * @param v4 Value checked for
change.\n * @param suffix Static value used for concatenation only.\n * @param sanitizer An optional
sanitizer function\n * @returns itself, so that it may be chained.\n * @codeGenApi\n */\n function
attributeInterpolate5(attrName, prefix, v0, i0, v1, i1, v2, i2, v3, i3, v4, suffix, sanitizer, namespace) {\n var
IView = getLView();\n var interpolatedValue = interpolation5(IView, prefix, v0, i0, v1, i1, v2, i2, v3, i3, v4,
suffix);\n if (interpolatedValue !== NO_CHANGE) {\n var tNode = getSelectedTNode();\n elementAttributeInternal(tNode, IView, attrName, interpolatedValue, sanitizer, namespace);\n ngDevMode
&&\n storePropertyBindingMetadata(getTView().data, tNode, 'attr.' + attrName, getBindingIndex() - 5,
prefix, i0, i1, i2, i3, suffix);\n }\n return attributeInterpolate5;\n }\n /**\n *\n * Update an
interpolated attribute on an element with 6 bound values surrounded by text.\n *\n * Used when the value
passed to a property has 6 interpolated values in it:\n *\n * ``html\n * <div attr.title="prefix{{v0}}-{{v1}}-
{{v2}}-{{v3}}-{{v4}}-{{v5}}suffix"></div>\n * ``\n *\n * Its compiled representation is:\n *\n * ``ts\n *
attributeInterpolate6(\n * 'title', 'prefix', v0, '-', v1, '-', v2, '-', v3, '-', v4, '-', v5, 'suffix');\n * ``\n
*\n * @param attrName The name of the attribute to update\n * @param prefix Static value used for
concatenation only.\n * @param v0 Value checked for change.\n * @param i0 Static value used for
concatenation only.\n * @param v1 Value checked for change.\n * @param i1 Static value used for
concatenation only.\n * @param v2 Value checked for change.\n * @param i2 Static value used for
concatenation only.\n * @param v3 Value checked for change.\n * @param i3 Static value used for
concatenation only.\n * @param v4 Value checked for change.\n * @param i4 Static value used for
concatenation only.\n * @param v5 Value checked for change.\n * @param suffix Static value used for
concatenation only.\n * @param sanitizer An optional sanitizer function\n * @returns itself, so that it may be
chained.\n * @codeGenApi\n */\n function attributeInterpolate6(attrName, prefix, v0, i0, v1, i1, v2, i2, v3, i3,

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v4, i4, v5, suffix, sanitizer, namespace) {\n var IView = getLView();\n var interpolatedValue =
interpolation6(IView, prefix, v0, i0, v1, i1, v2, i2, v3, i3, v4, i4, v5, suffix);\n if (interpolatedValue !==
NO_CHANGE) {\n var tNode = getSelectedTNode();\n elementAttributeInternal(tNode, IView,
attrName, interpolatedValue, sanitizer, namespace);\n ngDevMode &&\n
storePropertyBindingMetadata(getTView().data, tNode, 'attr.' + attrName, getBindingIndex() - 6, prefix, i0, i1, i2,
i3, i4, suffix);\n }\n return attributeInterpolate6;\n } \n /**\n *\n * Update an interpolated attribute
on an element with 7 bound values surrounded by text.\n *\n * Used when the value passed to a property has 7
interpolated values in it:\n *\n * ```html\n * <div attr.title="prefix{{v0}}-{{v1}}-{{v2}}-{{v3}}-{{v4}}-
{{v5}}-{{v6}}suffix"></div>\n * ```\n *\n * Its compiled representation is:\n *\n * ```ts\n *
attributeInterpolate7(\n * 'title', 'prefix', v0, '-', v1, '-', v2, '-', v3, '-', v4, '-', v5, '-', v6, 'suffix');\n * ```\n *\n
* @param attrName The name of the attribute to update\n * @param prefix Static value used for concatenation
only.\n * @param v0 Value checked for change.\n * @param i0 Static value used for concatenation only.\n *
@param v1 Value checked for change.\n * @param i1 Static value used for concatenation only.\n * @param v2
Value checked for change.\n * @param i2 Static value used for concatenation only.\n * @param v3 Value
checked for change.\n * @param i3 Static value used for concatenation only.\n * @param v4 Value checked
for change.\n * @param i4 Static value used for concatenation only.\n * @param v5 Value checked for
change.\n * @param i5 Static value used for concatenation only.\n * @param v6 Value checked for change.\n
* @param suffix Static value used for concatenation only.\n * @param sanitizer An optional sanitizer function\n
* @returns itself, so that it may be chained.\n * @codeGenApi\n */\n function
attributeInterpolate7(attrName, prefix, v0, i0, v1, i1, v2, i2, v3, i3, v4, i4, v5, i5, v6, suffix, sanitizer, namespace) {\n
 var IView = getLView();\n var interpolatedValue = interpolation7(IView, prefix, v0, i0, v1, i1, v2, i2, v3, i3,
v4, i4, v5, i5, v6, suffix);\n if (interpolatedValue !== NO_CHANGE) {\n var tNode =
getSelectedTNode();\n elementAttributeInternal(tNode, IView, attrName, interpolatedValue, sanitizer,
namespace);\n ngDevMode &&\n
storePropertyBindingMetadata(getTView().data, tNode, 'attr.' +
attrName, getBindingIndex() - 7, prefix, i0, i1, i2, i3, i4, i5, suffix);\n }\n return attributeInterpolate7;\n
} \n /**\n *\n * Update an interpolated attribute on an element with 8 bound values surrounded by text.\n
*\n * Used when the value passed to a property has 8 interpolated values in it:\n *\n * ```html\n * <div
attr.title="prefix{{v0}}-{{v1}}-{{v2}}-{{v3}}-{{v4}}-{{v5}}-{{v6}}-{{v7}}suffix"></div>\n * ```\n *\n
* Its compiled representation is:\n *\n * ```ts\n * attributeInterpolate8(\n * 'title', 'prefix', v0, '-', v1, '-', v2,
-', v3, '-', v4, '-', v5, '-', v6, '-', v7, 'suffix');\n * ```\n *\n * @param attrName The name of the attribute to
update\n * @param prefix Static value used for concatenation only.\n * @param v0 Value checked for
change.\n * @param i0 Static value used for concatenation only.\n * @param v1 Value checked for change.\n
* @param i1 Static value used for concatenation only.\n * @param v2 Value checked for change.\n * @param
i2 Static value used for concatenation only.\n * @param v3 Value checked for change.\n * @param i3 Static
value used for concatenation only.\n * @param v4 Value checked for change.\n * @param i4 Static value used
for concatenation only.\n * @param v5 Value checked for change.\n * @param i5 Static value used for
concatenation only.\n * @param v6 Value checked for change.\n * @param i6 Static value used for
concatenation only.\n * @param v7 Value checked for change.\n * @param suffix Static value used for
concatenation only.\n * @param sanitizer An optional sanitizer function\n * @returns itself, so that it may be
chained.\n * @codeGenApi\n */\n function attributeInterpolate8(attrName, prefix, v0, i0, v1, i1, v2, i2, v3, i3,
v4, i4, v5, i5, v6, i6, v7, suffix, sanitizer, namespace) {\n var IView = getLView();\n var interpolatedValue
= interpolation8(IView, prefix, v0, i0, v1, i1, v2, i2, v3, i3, v4, i4, v5, i5, v6, i6, v7, suffix);\n if
(interpolatedValue !== NO_CHANGE) {\n var tNode = getSelectedTNode();\n
elementAttributeInternal(tNode, IView, attrName, interpolatedValue, sanitizer, namespace);\n ngDevMode
&&\n
storePropertyBindingMetadata(getTView().data, tNode, 'attr.' + attrName, getBindingIndex() - 8,
prefix, i0, i1, i2, i3, i4, i5, i6, suffix);\n }\n return attributeInterpolate8;\n } \n /**\n *\n * Update an
interpolated attribute on an element with 9 or more bound values surrounded by text.\n *\n * Used when the
number of interpolated values exceeds 8.\n *\n * ```html\n * <div\n * title="prefix{{v0}}-{{v1}}-

```

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{{v2}}-{{v3}}-{{v4}}-{{v5}}-{{v6}}-{{v7}}-{{v8}}-{{v9}}suffix"></div>\n * ``\n *\n * Its compiled
representation is:\n *\n * ``ts\n * attributeInterpolateV(\n * 'title', ['prefix', v0, '-', v1, '-', v2, '-', v3, '-', v4,
'-', v5, '-', v6, '-', v7, '-', v9,\n * 'suffix']);\n *\n * @param attrName The name of the attribute to
update.\n * @param values The collection of values and the strings in-between those values, beginning with\n
* a string prefix and ending with a string suffix.\n * (e.g. `[prefix', value0, '-', value1, '-', value2, ..., value99,
'suffix']`)\n * @param sanitizer An optional sanitizer function\n * @returns itself, so that it may be chained.\n
* @codeGenApi\n *\n function attributeInterpolateV(attrName, values, sanitizer, namespace) {\n var
IView = getLView();\n var interpolated = interpolationV(IView, values);\n if (interpolated !==
NO_CHANGE) {\n var tNode = getSelectedTNode();\n elementAttributeInternal(tNode, IView,
attrName, interpolated, sanitizer, namespace);\n if (ngDevMode) {\n var interpolationInBetween =
[values[0]]; // prefix\n for (var i = 2; i < values.length; i += 2) {\n
interpolationInBetween.push(values[i]);\n }\n storePropertyBindingMetadata.apply(void 0,
__spread([getTView().data, tNode, 'attr.' + attrName, getBindingIndex() - interpolationInBetween.length + 1],
interpolationInBetween));\n }\n }\n return attributeInterpolateV;\n }\n\n /**\n * @license\n
* Copyright Google LLC All Rights Reserved.\n *\n * Use of this source code is governed by an MIT-style
license that can be\n * found in the LICENSE file at https://angular.io/license\n */\n function
templateFirstCreatePass(index, tView, IView, templateFn, decls, vars, tagName, attrsIndex, localRefsIndex) {\n
ngDevMode && assertFirstCreatePass(tView);\n ngDevMode && ngDevMode.firstCreatePass++;\n var
tViewConsts = tView.consts;\n // TODO(pk): refactor getOrCreateTNode to have the "create" only version\n
var tNode = getOrCreateTNode(tView, index, 4 /* Container */, tagName || null, getConstant(tViewConsts,
attrsIndex));\n resolveDirectives(tView, IView, tNode, getConstant(tViewConsts, localRefsIndex));\n
registerPostOrderHooks(tView, tNode);\n var embeddedTView = tNode.tViews = createTView(2 /* Embedded
*/, tNode, templateFn, decls, vars, tView.directiveRegistry, tView.pipeRegistry, null, tView.schemas,
tViewConsts);\n if (tView.queries !== null) {\n tView.queries.template(tView, tNode);\n
embeddedTView.queries = tView.queries.embeddedTView(tNode);\n }\n return tNode;\n }\n\n /**\n *
Creates an LContainer for an ng-template (dynamically-inserted view), e.g.\n *\n * <ng-template #foo>\n *
<div></div>\n * </ng-template>\n *\n * @param index The index of the container in the data array\n *
@param templateFn Inline template\n * @param decls The number of nodes, local refs, and pipes for this
template\n * @param vars The number of bindings for this template\n * @param tagName The name of the
container element, if applicable\n * @param attrsIndex Index of template attributes in the `consts` array.\n *
@param localRefs Index of the local references in the `consts` array.\n * @param localRefExtractor A function
which extracts local-refs values from the template.\n * Defaults to the current element associated with the
local-ref.\n *\n * @codeGenApi\n *\n function template(index, templateFn, decls, vars, tagName,
attrsIndex, localRefsIndex, localRefExtractor) {\n var IView = getLView();\n var tView = getTView();\n
var adjustedIndex = index + HEADER_OFFSET;\n var tNode = tView.firstCreatePass ?
templateFirstCreatePass(adjustedIndex, tView, IView, templateFn, decls, vars, tagName, attrsIndex, localRefsIndex)
:\n tView.data[adjustedIndex];\n setCurrentTNode(tNode, false);\n var comment =
IView[RENDERER].createComment(ngDevMode ? 'container' : '');\n appendChild(tView, IView, comment,
tNode);\n attachPatchData(comment, IView);\n addToViewTree(IView, IView[adjustedIndex] =
createLContainer(comment, IView, comment, tNode));\n if (isDirectiveHost(tNode)) {\n
createDirectivesInstances(tView, IView, tNode);\n }\n if (localRefsIndex !== null) {\n
saveResolvedLocalsInData(IView, tNode, localRefExtractor);\n }\n }\n\n /**\n * @license\n
* Copyright Google LLC All Rights Reserved.\n *\n * Use of this source code is governed by an MIT-style
license that can be\n * found in the LICENSE file at https://angular.io/license\n */\n /** Store a value in the
`data` at a given `index`.\n *\n function store(tView, IView, index, value) {\n // We don't store any static data
for local variables, so the first time\n // we see the template, we should store as null to avoid a sparse array\n
if (index >= tView.data.length) {\n tView.data[index] = null;\n tView.blueprint[index] = null;\n
}\n IView[index] = value;\n }\n\n /**\n * Retrieves a local reference from the current contextViewData.\n

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*\n * If the reference to retrieve is in a parent view, this instruction is used in conjunction\n * with a
nextContext() call, which walks up the tree and updates the contextViewData instance.\n *\n * @param index
The index of the local ref in contextViewData.\n *\n * @codeGenApi\n */\n function reference(index) {\n
 var contextLView = getContextLView();\n return load(contextLView, HEADER_OFFSET + index);\n
}\n\n /**\n * @license\n * Copyright Google LLC All Rights Reserved.\n * Use of this source code
is governed by an MIT-style license that can be\n * found in the LICENSE file at https://angular.io/license\n
*/\n /**\n * A mapping of the @angular/core API surface used in generated expressions to the actual symbols.\n
*\n * This should be kept up to date with the public exports of @angular/core.\n */\n var angularCoreDiEnv
= {\n 'defineInjectable': defineInjectable,\n 'defineInjector': defineInjector,\n 'inject': inject,\n
 'getFactoryOf': getFactoryOf,\n 'invalidFactoryDep': invalidFactoryDep,\n }; \n function getFactoryOf(type)
{\n var typeAny = type;\n if (isForwardRef(type)) {\n return (function () {\n var factory =
getFactoryOf(resolveForwardRef(typeAny));\n return factory ? factory() : null;\n });\n }\n
 var def = getInjectableDef(typeAny) || getInjectorDef(typeAny);\n if (!def || def.factory === undefined) {\n
 return null;\n }\n return def.factory;\n }\n\n /**\n * @license\n * Copyright Google LLC All
Rights Reserved.\n * Use of this source code is governed by an MIT-style license that can be\n * found
in the LICENSE file at https://angular.io/license\n */\n /**\n * Compile an Angular injectable according to its
`Injectable` metadata, and patch the resulting\n * injectable def (`prov`) onto the injectable type.\n
*\n function compileInjectable(type, srcMeta) {\n var ngInjectableDef = null;\n var ngFactoryDef = null;\n
 // if NG_PROV_DEF is already defined on this class then don't overwrite it\n if
(!type.hasOwnProperty(NG_PROV_DEF)) {\n Object.defineProperty(type, NG_PROV_DEF, {\n
 get: function () {\n if (ngInjectableDef === null) {\n ngInjectableDef =
getCompilerFacade().compileInjectable(angularCoreDiEnv, `ng://^` + type.name + `^\u0275prov.js`,
getInjectableMetadata(type, srcMeta));\n }\n return ngInjectableDef;\n },\n
 });\n }\n // if NG_FACTORY_DEF is already defined on this class then don't overwrite it\n if
(!type.hasOwnProperty(NG_FACTORY_DEF)) {\n Object.defineProperty(type, NG_FACTORY_DEF, {\n
 get: function () {\n if (ngFactoryDef === null) {\n var metadata =
getInjectableMetadata(type, srcMeta);\n var compiler = getCompilerFacade();\n
ngFactoryDef = compiler.compileFactory(angularCoreDiEnv, `ng://^` + type.name + `^\u0275fac.js`, {\n
 name: metadata.name,\n type: metadata.type,\n typeArgumentCount:
metadata.typeArgumentCount,\n deps: reflectDependencies(type),\n injectFn:
'inject',\n target: compiler.R3FactoryTarget.Injectable\n });\n }\n
 return ngFactoryDef;\n },\n // Leave this configurable so that the factories from directives or
pipes can take precedence.\n configurable: true\n });\n }\n var 0$8 =
getClosureSafeProperty;\n var USE_VALUE$1 = getClosureSafeProperty({ provide: String, useValue: 0$8 });\n
 function isUseClassProvider(meta) {\n return meta.useClass !== undefined;\n }\n function
isUseValueProvider(meta) {\n return USE_VALUE$1 in meta;\n }\n function isUseFactoryProvider(meta)
{\n return meta.useFactory !== undefined;\n }\n function isUseExistingProvider(meta) {\n return
meta.useExisting !== undefined;\n }\n function getInjectableMetadata(type, srcMeta) {\n // Allow the
compilation of a class with a `@Injectable()` decorator without parameters\n var meta = srcMeta || { providedIn:
null };\n var compilerMeta = {\n name: type.name,\n type: type,\n typeArgumentCount:
0,\n providedIn: meta.providedIn,\n userDeps: undefined,\n }; \n if
((isUseClassProvider(meta) || isUseFactoryProvider(meta)) && meta.deps !== undefined) {\n
 compilerMeta.userDeps = convertDependencies(meta.deps);\n }\n if (isUseClassProvider(meta)) {\n
 // The user explicitly specified useClass, and may or may not have provided deps.\n compilerMeta.useClass =
resolveForwardRef(meta.useClass);\n }\n else if (isUseValueProvider(meta)) {\n // The user
explicitly specified useValue.\n compilerMeta.useValue = resolveForwardRef(meta.useValue);\n }\n
 else if (isUseFactoryProvider(meta)) {\n // The user explicitly specified useFactory.\n compilerMeta.useFactory = meta.useFactory;\n }\n else if (isUseExistingProvider(meta)) {\n // The

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user explicitly specified useExisting.\n compilerMeta.useExisting = resolveForwardRef(meta.useExisting);\n }\n return compilerMeta;\n }\n\n var 0$9 = getClosureSafeProperty;\n var USE_VALUE$2 =\n getClosureSafeProperty({ provide: String, useValue: 0$9 });\n var EMPTY_ARRAY$2 = [];\n function\n convertInjectableProviderToFactory(type, provider) {\n if (!provider) {\n var reflectionCapabilities =\n new ReflectionCapabilities();\n var deps_1 = reflectionCapabilities.parameters(type);\n // TODO -\n convert to flags.\n return function () { return new (type.bind.apply(type, __spread([void 0],\n injectArgs(deps_1))))(); }; }\n if (USE_VALUE$2 in provider) {\n var valueProvider_1 =\n provider;\n return function () { return valueProvider_1.useValue; }; }\n else if\n (provider.useExisting) {\n var existingProvider_1 = provider;\n return function () { return\n inject(resolveForwardRef(existingProvider_1.useExisting)); }; }\n else if (provider.useFactory) {\n var factoryProvider_1 = provider;\n return function () { return\n factoryProvider_1.useFactory.apply(factoryProvider_1, __spread(injectArgs(factoryProvider_1.deps ||\n EMPTY_ARRAY$2))); }; }\n else if (provider.useClass) {\n var classProvider_1 = provider;\n var deps_2 = provider.deps;\n if (!deps_2) {\n var reflectionCapabilities = new\n ReflectionCapabilities();\n deps_2 = reflectionCapabilities.parameters(type);\n }\n return\n function () {\n var _a;\n return new ((_a =\n (resolveForwardRef(classProvider_1.useClass)).bind.apply(_a, __spread([void 0], injectArgs(deps_2))))());\n };\n } else {\n var deps_3 = provider.deps;\n if (!deps_3) {\n var\n reflectionCapabilities = new ReflectionCapabilities();\n deps_3 =\n reflectionCapabilities.parameters(type);\n }\n return function () { return new (type.bind.apply(type,\n __spread([void 0], injectArgs(deps_3))))(); }; }\n }\n\n /**\n * @license\n * Copyright Google LLC\n * All Rights Reserved.\n * Use of this source code is governed by an MIT-style license that can be\n * found in the LICENSE file at https://angular.io/license\n *\n * ^\n * var 0$a = function (type, meta) { return\n * SWITCH_COMPILE_INJECTABLE(type, meta); };\n * /**\n * Injectable decorator and metadata.\n * @Annotation\n * @publicApi\n * ^\n * var Injectable = makeDecorator('Injectable', undefined, undefined,\n * undefined, 0$a);\n * /**\n * Supports @Injectable() in JIT mode for Render2.\n * ^\n * function\n * render2CompileInjectable(injectableType, options) {\n * if (options && options.providedIn !== undefined &&\n * !getInjectableDef(injectableType)) {\n * injectableType.prov = defineInjectable({\n * token:\n * injectableType,\n * providedIn: options.providedIn,\n * factory:\n * convertInjectableProviderToFactory(injectableType, options),\n * });\n * }\n * var\n * SWITCH_COMPILE_INJECTABLE__POST_R3__ = compileInjectable;\n * var\n * SWITCH_COMPILE_INJECTABLE__PRE_R3__ = render2CompileInjectable;\n * var\n * SWITCH_COMPILE_INJECTABLE = SWITCH_COMPILE_INJECTABLE__PRE_R3__;\n * /**\n * *\n * @license\n * * Copyright Google LLC All Rights Reserved.\n * * Use of this source code is governed by an\n * * MIT-style license that can be\n * * found in the LICENSE file at https://angular.io/license\n * * ^\n * * function\n * * findFirstClosedCycle(keys) {\n * var res = [];\n * for (var i = 0; i < keys.length; ++i) {\n * if\n * (res.indexOf(keys[i]) > -1) {\n * res.push(keys[i]);\n * return res;\n * }\n * res.push(keys[i]);\n * }\n * return res;\n * }\n * function constructResolvingPath(keys) {\n * if (keys.length\n * > 1) {\n * var reversed = findFirstClosedCycle(keys.slice().reverse());\n * var tokenStrs =\n * reversed.map(function (k) { return stringify(k.token); });\n * return '(' + tokenStrs.join(' -> ') + ');\n * }\n * return '';\n * }\n * function injectionError(injector, key, constructResolvingMessage, originalError) {\n * var keys\n * = [key];\n * var errMsg = constructResolvingMessage(keys);\n * var error = (originalError ?\n * wrappedError(errMsg, originalError) : Error(errMsg));\n * error.addKey = addKey;\n * error.keys = keys;\n * error.injectors = [injector];\n * error.constructResolvingMessage = constructResolvingMessage;\n * error[ERROR_ORIGINAL_ERROR] = originalError;\n * return error;\n * }\n * function addKey(injector, key)\n * {\n * this.injectors.push(injector);\n * this.keys.push(key);\n * // Note: This updated message won't be\n * reflected in the `stack` property\n * this.message = this.constructResolvingMessage(this.keys);\n * }\n * /**\n * *\n * * Thrown when trying to retrieve a dependency by key from { @link Injector}, but the\n * * { @link Injector} does

```

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not have a {@link Provider} for the given key.\n * \n * @usageNotes\n * ### Example\n * \n *
```typescript\n * class A {\n *   constructor(b:B) {}\n * }\n * \n * expect(() =>
Injector.resolveAndCreate([A])).toThrowError();\n * ```\n * \n * \n * function noProviderError(injector, key) {\n
return injectionError(injector, key, function (keys) {\n     var first = stringify(keys[0].token);\n     return
\"No provider for \" + first + \"!\" + constructResolvingPath(keys);\n   });\n } \n } \n /**\n * Thrown when
dependencies form a cycle.\n * \n * @usageNotes\n * ### Example\n * \n * ```typescript\n * var
injector = Injector.resolveAndCreate([\n *   {provide: \"one\", useFactory: (two) => \"two\", deps: [[new
Inject(\"two\")]]},\n *   {provide: \"two\", useFactory: (one) => \"one\", deps: [[new Inject(\"one\")]]}\n * ]);\n
*\n * expect(() => injector.get(\"one\")).toThrowError();\n * ```\n * \n * \n * Retrieving `A` or `B` throws a
`CyclicDependencyError` as the graph above cannot be constructed.\n * \n * \n * function
cyclicDependencyError(injector, key) {\n     return injectionError(injector, key, function (keys) {\n     return
\"Cannot instantiate cyclic dependency!\" + constructResolvingPath(keys);\n   });\n } \n } \n /**\n * Thrown
when a constructing type returns with an Error.\n * \n * The `InstantiationError` class contains the original error
plus the dependency graph which caused\n * this object to be instantiated.\n * \n * @usageNotes\n * ###
Example\n * \n * ```typescript\n * class A {\n *   constructor() {\n *     throw new Error('message');\n
*\n *   }\n * }\n * \n * var injector = Injector.resolveAndCreate([A]);\n * \n * try {\n *   injector.get(A);\n
*\n * } catch (e) {\n *   expect(e instanceof InstantiationError).toBe(true);\n *   *
expect(e.originalException.message).toEqual(\"message\");\n *   * expect(e.originalStack).toBeDefined();\n *   * }\n
*\n * ```\n * \n * \n * function instantiationError(injector, originalException, originalStack, key) {\n     return
injectionError(injector, key, function (keys) {\n     var first = stringify(keys[0].token);\n     return
originalException.message + \": Error during instantiation of \" + first + \"!\" + constructResolvingPath(keys) +
\". \";\n   }, originalException);\n } \n } \n /**\n * Thrown when an object other then {@link Provider} (or
`Type`) is passed to {@link Injector}\n * creation.\n * \n * @usageNotes\n * ### Example\n * \n *
```typescript\n * expect(() => Injector.resolveAndCreate([\"not a type\"]).toThrowError();\n * ```\n * \n * \n * \n * function invalidProviderError(provider) {\n     return Error(\"Invalid provider - only instances of Provider and
Type are allowed, got: \" + provider);\n } \n } \n /**\n * Thrown when the class has no annotation information.\n
*\n * Lack of annotation information prevents the {@link Injector} from determining which dependencies\n *
need to be injected into the constructor.\n * \n * @usageNotes\n * ### Example\n * \n * ```typescript\n
*\n * class A {\n * constructor(b) {}\n * }\n * \n * expect(() =>
Injector.resolveAndCreate([A])).toThrowError();\n * ```\n * \n * \n * This error is also thrown when the class not
marked with {@link Injectable} has parameter types.\n * \n * ```typescript\n * class B {}\n * \n * class A
{\n * constructor(b:B) {} // no information about the parameter types of A is available at runtime.\n * }\n
*\n * expect(() => Injector.resolveAndCreate([A,B])).toThrowError();\n * ```\n * \n * \n * \n * function
noAnnotationError(typeOrFunc, params) {\n var signature = [];\n for (var i = 0, ii = params.length; i < ii;
i++) {\n var parameter = params[i];\n if (!parameter || parameter.length == 0) {\n
signature.push('?');\n } \n else {\n signature.push(parameter.map(stringify).join(' '));\n
}\n }\n return Error('Cannot resolve all parameters for \'' + stringify(typeOrFunc) + '\\(' +\n
signature.join(', ') + ')'. ' +\n 'Make sure that all the parameters are decorated with Inject or have valid type
annotations and that \'' +\n stringify(typeOrFunc) + '\\ is decorated with Injectable.);\n } \n } \n /**\n *
Thrown when getting an object by index.\n * \n * @usageNotes\n * ### Example\n * \n * ```typescript\n
*\n * class A {}\n * \n * var injector = Injector.resolveAndCreate([A]);\n * \n * expect(() =>
injector.getAt(100)).toThrowError();\n * ```\n * \n * \n * \n * function outOfBoundsError(index) {\n return
Error(\"Index \" + index + \" is out-of-bounds.\");\n } \n } \n // TODO: add a working example after alpha38 is
released\n /**\n * Thrown when a multi provider and a regular provider are bound to the same token.\n * \n
*\n * @usageNotes\n * ### Example\n * \n * ```typescript\n * expect(() => Injector.resolveAndCreate([\n *
{ provide: \"Strings\", useValue: \"string1\", multi: true},\n * { provide: \"Strings\", useValue: \"string2\", multi:
false}\n *])).toThrowError();\n * ```\n * \n * \n * \n * function
mixingMultiProvidersWithRegularProvidersError(provider1, provider2) {\n return Error(\"Cannot mix multi

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providers and regular providers, got: \'' + provider1 + \'' + provider2);
}

/**
 * @license
 * Copyright Google LLC All Rights Reserved.
 * Use of this source code is governed by an MIT-style
 * license that can be found in the LICENSE file at https://angular.io/license
 */
 * A unique
 * object used for retrieving items from the {@link ReflectiveInjector}.
 * Keys have:
 * - a system-wide
 * unique `id`.
 * - a `token`.
 * `Key` is used internally by {@link ReflectiveInjector} because its
 * system-wide unique `id` allows the injector to store created objects in a more efficient way.
 * `Key` should not be created directly. {@link ReflectiveInjector} creates keys automatically when
 * resolving providers.
 * @deprecated No replacement
 * @publicApi
 */
var ReflectiveKey = /**
 * @class */ (function () {
 /**
 * Private
 */
 function ReflectiveKey(token, id) {
 this.token = token;
 this.id = id;
 if (!token) {
 throw new Error("Token must be defined!");
 }
 this.displayName = stringify(this.token);
 }
 /**
 * Retrieves a `Key`
 * for a token.
 */
 ReflectiveKey.get = function (token) {
 return
 _globalKeyRegistry.get(resolveForwardRef(token));
 };
 Object.defineProperty(ReflectiveKey,
 "numberOfKeys", {
 /**
 * @returns the number of keys registered in the system.
 */
 get: function () {
 return _globalKeyRegistry.numberOfKeys;
 },
 enumerable: false,
 configurable: true
 });
 return ReflectiveKey;
})();
var KeyRegistry = /** @class */
(function () {
 function KeyRegistry() {
 this._allKeys = new Map();
 }
 KeyRegistry.prototype.get = function (token) {
 if (token instanceof ReflectiveKey)
 return
 token;
 if (this._allKeys.has(token)) {
 return this._allKeys.get(token);
 }
 var
 newKey = new ReflectiveKey(token, ReflectiveKey.numberOfKeys);
 this._allKeys.set(token, newKey);
 return newKey;
 };
 Object.defineProperty(KeyRegistry.prototype, "numberOfKeys", {
 get: function () {
 return this._allKeys.size;
 },
 enumerable: false,
 configurable:
 true
 });
 return KeyRegistry;
})();
var _globalKeyRegistry = new KeyRegistry();
/**
 * @license
 * Copyright Google LLC All Rights Reserved.
 * Use of this source code is governed by an
 * MIT-style license that can be found in the LICENSE file at https://angular.io/license
 */
 * Provides access to reflection data about symbols. Used internally by Angular
 * to power dependency injection
 * and compilation.
 */
var Reflector = /** @class */ (function () {
 function
 Reflector(reflectionCapabilities) {
 this.reflectionCapabilities = reflectionCapabilities;
 }
 Reflector.prototype.updateCapabilities = function (caps) {
 this.reflectionCapabilities = caps;
 };
 Reflector.prototype.factory = function (type) {
 return this.reflectionCapabilities.factory(type);
 };
 Reflector.prototype.parameters = function (typeOrFunc) {
 return
 this.reflectionCapabilities.parameters(typeOrFunc);
 };
 Reflector.prototype.annotations = function
 (typeOrFunc) {
 return this.reflectionCapabilities.annotations(typeOrFunc);
 };
 Reflector.prototype.propMetadata = function (typeOrFunc) {
 return
 this.reflectionCapabilities.propMetadata(typeOrFunc);
 };
 Reflector.prototype.hasLifecycleHook =
 function (type, lcProperty) {
 return this.reflectionCapabilities.hasLifecycleHook(type, lcProperty);
 };
 Reflector.prototype.getter = function (name) {
 return this.reflectionCapabilities.getter(name);
 };
 Reflector.prototype.setter = function (name) {
 return this.reflectionCapabilities.setter(name);
 };
 Reflector.prototype.method = function (name) {
 return this.reflectionCapabilities.method(name);
 };
 Reflector.prototype.importUri = function (type) {
 return
 this.reflectionCapabilities.importUri(type);
 };
 Reflector.prototype.resourceUri = function (type) {
 return
 this.reflectionCapabilities.resourceUri(type);
 };
 Reflector.prototype.resolveIdentifier = function
 (name, moduleUrl, members, runtime) {
 return this.reflectionCapabilities.resolveIdentifier(name,
 moduleUrl, members, runtime);
 };
 Reflector.prototype.resolveEnum = function (identifier, name) {
 return
 this.reflectionCapabilities.resolveEnum(identifier, name);
 };
 return Reflector;
})();
/**
 * @license
 * Copyright Google LLC All Rights Reserved.
 * Use of this source code is
 * governed by an MIT-style license that can be found in the LICENSE file at https://angular.io/license
 */
 * The {@link Reflector} used internally in Angular to access metadata
 * about symbols.
 */
var

```

```

reflector = new Reflector(new ReflectionCapabilities());\n\n /**\n * @license\n * Copyright Google LLC All
Rights Reserved.\n * Use of this source code is governed by an MIT-style license that can be\n * found
in the LICENSE file at https://angular.io/license\n *\n /**\n * `Dependency` is used by the framework to
extend DI.\n * This is internal to Angular and should not be used directly.\n */\n var ReflectiveDependency =
/** @class */ (function () {\n function ReflectiveDependency(key, optional, visibility) {\n this.key =
key;\n this.optional = optional;\n this.visibility = visibility;\n }\n ReflectiveDependency.fromKey = function (key) {\n return new ReflectiveDependency(key, false, null);\n };\n return ReflectiveDependency;\n }());\n var _EMPTY_LIST = [];\n var ResolvedReflectiveProvider_
= /** @class */ (function () {\n function ResolvedReflectiveProvider_(key, resolvedFactories, multiProvider)
{\n this.key = key;\n this.resolvedFactories = resolvedFactories;\n this.multiProvider =
multiProvider;\n this.resolvedFactory = this.resolvedFactories[0];\n }\n return
ResolvedReflectiveProvider_;\n }());\n /**\n * An internal resolved representation of a factory function
created by resolving `Provider`.\n * @publicApi\n */\n var ResolvedReflectiveFactory = /** @class */
(function () {\n function ResolvedReflectiveFactory(\n /**\n * Factory function which can return an
instance of an object represented by a key.\n */\n factory, \n /**\n * Arguments (dependencies) to
the `factory` function.\n */\n dependencies) {\n this.factory = factory;\n this.dependencies =
dependencies;\n }\n return ResolvedReflectiveFactory;\n }());\n /**\n * Resolve a single provider.\n
*/\n function resolveReflectiveFactory(provider) {\n var factoryFn;\n var resolvedDeps;\n if
(provider.useClass) {\n var useClass = resolveForwardRef(provider.useClass);\n factoryFn =
reflector.factory(useClass);\n resolvedDeps = _dependenciesFor(useClass);\n } else if
(provider.useExisting) {\n factoryFn = function (aliasInstance) { return aliasInstance; };\n resolvedDeps = [ReflectiveDependency.fromKey(ReflectiveKey.get(provider.useExisting))];\n } else if
(provider.useFactory) {\n factoryFn = provider.useFactory;\n resolvedDeps =
constructDependencies(provider.useFactory, provider.deps);\n } else {\n factoryFn = function () {\n
return provider.useValue; };\n resolvedDeps = _EMPTY_LIST;\n }\n return new
ResolvedReflectiveFactory(factoryFn, resolvedDeps);\n }()\n /**\n * Converts the `Provider` into
`ResolvedProvider`.\n * \n * `Injector` internally only uses `ResolvedProvider`, `Provider` contains convenience
provider\n * syntax.\n */\n function resolveReflectiveProvider(provider) {\n return new
ResolvedReflectiveProvider_(ReflectiveKey.get(provider.provide), [resolveReflectiveFactory(provider)],
provider.multi || false);\n }()\n /**\n * Resolve a list of Providers.\n */\n function
resolveReflectiveProviders(providers) {\n var normalized = _normalizeProviders(providers, []);\n var
resolved = normalized.map(resolveReflectiveProvider);\n var resolvedProviderMap =
mergeResolvedReflectiveProviders(resolved, new Map());\n return
Array.from(resolvedProviderMap.values());\n }()\n /**\n * Merges a list of ResolvedProviders into a list where
each key is contained exactly once and\n * multi providers have been merged.\n */\n function
mergeResolvedReflectiveProviders(providers, normalizedProvidersMap) {\n for (var i = 0; i < providers.length;
i++) {\n var provider = providers[i];\n var existing = normalizedProvidersMap.get(provider.key.id);\n if (existing) {\n if (provider.multiProvider !== existing.multiProvider) {\n throw
mixingMultiProvidersWithRegularProvidersError(existing, provider);\n } if
(provider.multiProvider) {\n for (var j = 0; j < provider.resolvedFactories.length; j++) {\n
existing.resolvedFactories.push(provider.resolvedFactories[j]);\n }\n } else {\n
normalizedProvidersMap.set(provider.key.id, provider);\n }\n } else {\n var
resolvedProvider = void 0;\n if (provider.multiProvider) {\n resolvedProvider = new
ResolvedReflectiveProvider_(provider.key, provider.resolvedFactories.slice(), provider.multiProvider);\n }
else {\n resolvedProvider = provider;\n }\n normalizedProvidersMap.set(provider.key.id, resolvedProvider);\n }\n }\n return
normalizedProvidersMap;\n }()\n function _normalizeProviders(providers, res) {\n
providers.forEach(function (b) {\n if (b instanceof Type) {\n res.push({ provide: b, useClass: b });\n

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 }\n else if (b && typeof b == 'object' && b.provide !== undefined) {\n res.push(b);\n }\n else if (Array.isArray(b)) {\n _normalizeProviders(b, res);\n }\n else {\n throw invalidProviderError(b);\n }\n });\n return res;\n}\nfunction\nconstructDependencies(typeOrFunc, dependencies) {\n if (!dependencies) {\n return\n _dependenciesFor(typeOrFunc);\n }\n else {\n var params_1 = dependencies.map(function (t) {\n return [t];\n });\n return dependencies.map(function (t) {\n return _extractToken(typeOrFunc, t, params_1);\n });\n }\n}\nfunction _dependenciesFor(typeOrFunc) {\n var params = reflector.parameters(typeOrFunc);\n if (!params)\n return [];\n if (params.some(function (p) {\n return p == null;\n }))) {\n throw\n noAnnotationError(typeOrFunc, params);\n }\n return params.map(function (p) {\n return\n _extractToken(typeOrFunc, p, params);\n });\n}\nfunction _extractToken(typeOrFunc, metadata, params) {\n var token = null;\n var optional = false;\n if (!Array.isArray(metadata)) {\n if (metadata instanceof\n Inject) {\n return _createDependency(metadata.token, optional, null);\n }\n else {\n return\n _createDependency(metadata, optional, null);\n }\n }\n var visibility = null;\n for (var i =\n 0; i < metadata.length; ++i) {\n var paramMetadata = metadata[i];\n if (paramMetadata instanceof\n Type) {\n token = paramMetadata;\n }\n else if (paramMetadata instanceof Inject) {\n token =\n paramMetadata.token;\n }\n else if (paramMetadata instanceof Optional) {\n optional =\n true;\n }\n else if (paramMetadata instanceof Self || paramMetadata instanceof\n SkipSelf) {\n visibility =\n paramMetadata;\n }\n else if (paramMetadata instanceof InjectionToken) {\n token =\n paramMetadata;\n }\n }\n token = resolveForwardRef(token);\n if (token != null) {\n return\n _createDependency(token, optional, visibility);\n }\n else {\n throw\n noAnnotationError(typeOrFunc, params);\n }\n}\nfunction _createDependency(token, optional, visibility)\n{\n return new ReflectiveDependency(ReflectiveKey.get(token), optional, visibility);\n}\n}\n\n// Threshold\nfor the dynamic version\nvar UNDEFINED = {};\n/**\n * A ReflectiveDependency injection container used\nfor instantiating objects and resolving\n * dependencies.\n * An `Injector` is a replacement for a `new`\noperator, which can automatically resolve the\n * constructor dependencies.\n * In typical use,\napplication code asks for the dependencies in the constructor and they are\n * resolved by the `Injector`.\n *\n * @usageNotes\n * ### Example\n *\n * The following example creates an `Injector` configured to create\n`Engine` and `Car`.\n *\n * ```typescript\n * @Injectable()\n * class Engine {\n * }\n *\n * @Injectable()\n * class Car {\n * constructor(public engine:Engine) {}\n * }\n *\n * var injector =\nReflectiveInjector.resolveAndCreate([Car, Engine]);\n * var car = injector.get(Car);\n * expect(car instanceof\nCar).toBe(true);\n * expect(car.engine instanceof Engine).toBe(true);\n * ```\n *\n * Notice, we don't use\nthe `new` operator because we explicitly want to have the `Injector`\n * resolve all of the object's dependencies\nautomatically.\n *\n * @deprecated from v5 - slow and brings in a lot of code, Use `Injector.create` instead.\n *\n * @publicApi\n */\nvar ReflectiveInjector = /** @class */ (function () {\n function ReflectiveInjector()\n {\n /**\n * Turns an array of provider definitions into an array of resolved providers.\n *\n * A resolution is a process of flattening multiple nested arrays and converting individual\n * providers into an\narray of `ResolvedReflectiveProvider`s.\n *\n * @usageNotes\n * ### Example\n *\n * ```typescript\n * @Injectable()\n * class Engine {\n * }\n *\n * @Injectable()\n * class\nCar {\n * constructor(public engine:Engine) {}\n * }\n *\n * var providers =\nReflectiveInjector.resolve([Car, [[Engine]]]);\n *\n * expect(providers.length).toEqual(2);\n *\n * expect(providers[0] instanceof ResolvedReflectiveProvider).toBe(true);\n *\n * expect(providers[0].key.displayName).toBe(`Car`);\n *\n * expect(providers[0].dependencies.length).toEqual(1);\n *\n * expect(providers[0].factory).toBeDefined();\n *\n * expect(providers[1].key.displayName).toBe(`Engine`);\n * });\n * ```\n *\n */\n ReflectiveInjector.resolve = function (providers) {\n return resolveReflectiveProviders(providers);\n };\n /**\n * Resolves an array of providers and creates an injector from those providers.\n *\n * The\npassed-in providers can be an array of `Type`, `Provider`,\n * or a recursive array of more providers.\n *\n * @usageNotes\n * ### Example\n *\n * ```typescript\n * @Injectable()\n * class

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ReflectiveInjector_.prototype._getByKey = function (key, visibility, notFoundValue) {\n if (key ===
ReflectiveInjector_.INJECTOR_KEY) {\n return this;\n }\n if (visibility instanceof Self) {\n
 return this._getByKeySelf(key, notFoundValue);\n }\n else {\n return
this._getByKeyDefault(key, notFoundValue, visibility);\n }\n };\n
ReflectiveInjector_.prototype._getObjByKeyId = function (keyId) {\n for (var i = 0; i < this.keyIds.length;
i++) {\n if (this.keyIds[i] === keyId) {\n if (this.objs[i] === UNDEFINED) {\n
this.objs[i] = this._new(this._providers[i]);\n }\n return this.objs[i];\n }\n }\n return UNDEFINED;\n };\n /** @internal */\n ReflectiveInjector_.prototype._throwOrNull =
function (key, notFoundValue) {\n if (notFoundValue !== THROW_IF_NOT_FOUND) {\n return
notFoundValue;\n }\n else {\n throw noProviderError(this, key);\n }\n };\n
/** @internal */\n ReflectiveInjector_.prototype._getByKeySelf = function (key, notFoundValue) {\n var
obj = this._getObjByKeyId(key.id);\n return (obj !== UNDEFINED) ? obj : this._throwOrNull(key,
notFoundValue);\n };\n /** @internal */\n ReflectiveInjector_.prototype._getByKeyDefault = function
(key, notFoundValue, visibility) {\n var inj;\n if (visibility instanceof SkipSelf) {\n inj =
this.parent;\n }\n else {\n inj = this;\n }\n while (inj instanceof
ReflectiveInjector_) {\n var inj_ = inj;\n var obj = inj._getObjByKeyId(key.id);\n if
(obj !== UNDEFINED)\n return obj;\n inj = inj_.parent;\n }\n if (inj !== null) {\n
 return inj.get(key.token, notFoundValue);\n }\n else {\n return
this._throwOrNull(key, notFoundValue);\n }\n };\n
Object.defineProperty(ReflectiveInjector_.prototype, "displayName", {\n get: function () {\n var
providers = _mapProviders(this, function (b) { return '"' + b.key.displayName + '"'; })\n .join(', ');\n
 return "ReflectiveInjector(providers: [" + providers + "]);\n },\n enumerable: false,\n
configurable: true\n });\n ReflectiveInjector_.prototype.toString = function () {\n return
this.displayName;\n };\n return ReflectiveInjector_;\n }());\n ReflectiveInjector_.INJECTOR_KEY =
ReflectiveKey.get(Injector);\n function _mapProviders(injector, fn) {\n var res = [];\n for (var i = 0; i <
injector._providers.length; ++i) {\n res[i] = fn(injector.getProviderAtIndex(i));\n }\n return res;\n
 }\n /**\n * @license\n * Copyright Google LLC All Rights Reserved.\n * Use of this source code
is governed by an MIT-style license that can be\n * found in the LICENSE file at https://angular.io/license\n
 */\n /**\n * @license\n * Copyright Google LLC All Rights Reserved.\n * Use of this source code
is governed by an MIT-style license that can be\n * found in the LICENSE file at https://angular.io/license\n
 */\n /**\n * @license\n * Copyright Google LLC All Rights Reserved.\n * Use of this source code
is governed by an MIT-style license that can be\n * found in the LICENSE file at https://angular.io/license\n
 */\n function directiveInject(token, flags) {\n if (flags === void 0) { flags = exports.InjectFlags.Default; }\n
 var IView = getLView();\n // Fall back to inject() if view hasn't been created. This situation can happen in
tests\n // if inject utilities are used before bootstrapping.\n if (IView === null) {\n // Verify that we
will not get into infinite loop.\n ngDevMode && assertInjectImplementationNotEqual(directiveInject);\n
 return inject(token, flags);\n }\n var tNode = getCurrentTNode();\n return
getOrCreateInjectable(tNode, IView, resolveForwardRef(token), flags);\n }\n /**\n * Facade for the attribute
injection from DI.\n * @codeGenApi\n */\n function injectAttribute(attrNameToInject) {\n return
injectAttributeImpl(getCurrentTNode(), attrNameToInject);\n }\n /**\n * Throws an error indicating that a
factory function could not be generated by the compiler for a\n * particular class.\n * This instruction
allows the actual error message to be optimized away when ngDevMode is turned\n * off, saving bytes of
generated code while still providing a good experience in dev mode.\n * The name of the class is not
mentioned here, but will be in the generated factory function name\n * and thus in the stack trace.\n *
 */\n @codeGenApi\n function invalidFactory() {\n var msg = ngDevMode ? "This constructor was not
compatible with Dependency Injection." : 'invalid';\n throw new Error(msg);\n }\n /**\n * @license\n
 */\n * Copyright Google LLC All Rights Reserved.\n * Use of this source code is governed by an MIT-style
license that can be\n * found in the LICENSE file at https://angular.io/license\n */\n /**\n * Update a

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property on a selected element.\n * Operates on the element selected by index via the {@link select}
instruction.\n * If the property name also exists as an input property on one of the element's directives,\n
* the component property will be set instead of the element property. This check must\n * be conducted at
runtime so child components that add new `@Inputs` don't have to be re-compiled\n * @param propName
Name of property. Because it is going to DOM, this is not subject to\n * renaming as part of minification.\n
* @param value New value to write.\n * @param sanitizer An optional function used to sanitize the value.\n *
@returns This function returns itself so that it may be chained\n * (e.g. `property('name', ctx.name)('title',
ctx.title)`)\n * @codeGenApi\n */\n function property(propName, value, sanitizer) {\n var IView =
getLView();\n var bindingIndex = nextBindingIndex();\n if (bindingUpdated(IView, bindingIndex, value))\n {\n var tView = getTView();\n var tNode = getSelectedTNode();\n
elementPropertyInternal(tView, tNode, IView, propName, value, IView[RENDERER], sanitizer, false);\n
ngDevMode && storePropertyBindingMetadata(tView.data, tNode, propName, bindingIndex);\n }\n return
property;\n }\n /**\n * Given `

` and `MyDir` with `@Input('style')` we need to write
to\n * directive input.\n */\n function setDirectiveInputsWhichShadowsStyling(tView, tNode, IView, value,
isClassBased) {\n var inputs = tNode.inputs;\n var property = isClassBased ? 'class' : 'style';\n // We
support both 'class' and `className` hence the fallback.\n setInputsForProperty(tView, IView, inputs[property],
property, value);\n }\n\n /**\n * @license\n * Copyright Google LLC All Rights Reserved.\n *
Use of this source code is governed by an MIT-style license that can be\n * found in the LICENSE file at
https://angular.io/license\n */\n function elementStartFirstCreatePass(index, tView, IView, native, name,
attrsIndex, localRefsIndex) {\n ngDevMode && assertFirstCreatePass(tView);\n ngDevMode &&
ngDevMode.firstCreatePass++;\n var tViewConsts = tView.consts;\n var attrs = getConstant(tViewConsts,
attrsIndex);\n var tNode = getOrCreateTNode(tView, index, 2 /* Element */, name, attrs);\n var
hasDirectives = resolveDirectives(tView, IView, tNode, getConstant(tViewConsts, localRefsIndex));\n
ngDevMode && logUnknownElementError(tView, native, tNode, hasDirectives);\n if (tNode.attrs !== null) {\n
computeStaticStyling(tNode, tNode.attrs, false);\n }\n if (tNode.mergedAttrs !== null) {\n
computeStaticStyling(tNode, tNode.mergedAttrs, true);\n }\n if (tView.queries !== null) {\n
tView.queries.elementStart(tView, tNode);\n }\n return tNode;\n }\n /**\n * Create DOM element.
The instruction must later be followed by `elementEnd()` call.\n * @param index Index of the element in
the LView array\n * @param name Name of the DOM Node\n * @param attrsIndex Index of the element's
attributes in the `consts` array.\n * @param localRefsIndex Index of the element's local references in the `consts`
array.\n * @param Attributes and localRefs are passed as an array of strings where elements with an even index\n
* hold an attribute name and elements with an odd index hold an attribute value, ex.: `['id', 'warning5', 'class',
>alert']`\n * @codeGenApi\n */\n function elementStart(index, name, attrsIndex, localRefsIndex) {\n
var IView = getLView();\n var tView = getTView();\n var adjustedIndex = HEADER_OFFSET + index;\n
ngDevMode &&\n assertEqual(getBindingIndex(), tView.bindingStartIndex, 'elements should be created
before any bindings');\n ngDevMode && assertIndexInRange(IView, adjustedIndex);\n var renderer =
IView[RENDERER];\n var native = IView[adjustedIndex] = createElementNode(renderer, name,
getNamespace());\n var tNode = tView.firstCreatePass ?\n elementStartFirstCreatePass(adjustedIndex,
tView, IView, native, name, attrsIndex, localRefsIndex) :\n tView.data[adjustedIndex];\n
setCurrentTNode(tNode, true);\n var mergedAttrs = tNode.mergedAttrs;\n if (mergedAttrs !== null) {\n
setUpAttributes(renderer, native, mergedAttrs);\n }\n var classes = tNode.classes;\n if (classes !==
null) {\n writeDirectClass(renderer, native, classes);\n }\n var styles = tNode.styles;\n if (styles
!== null) {\n writeDirectStyle(renderer, native, styles);\n }\n if ((tNode.flags & 64 /* isDetached */)
!== 64 /* isDetached */) {\n // In the i18n case, the translation may have removed this element, so only add it
if it is not\n // detached. See `TNodeType.Placeholder` and `LFrame.inI18n` for more context.\n
appendChild(tView, IView, native, tNode);\n }\n // any immediate children of a component or template
container must be pre-emptively\n // monkey-patched with the component view data so that the element can be
inspected\n // later on using any element discovery utility methods (see `element_discovery.ts`)\n if


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(getElementDepthCount() === 0) {\n attachPatchData(native, IView);\n }\n increaseElementDepthCount();\n if (isDirectiveHost(tNode)) {\n createDirectivesInstances(tView,\n IView, tNode);\n executeContentQueries(tView, tNode, IView);\n }\n if (localRefsIndex !== null)\n {\n saveResolvedLocalsInData(IView, tNode);\n }\n }\n /**\n * Mark the end of the element.\n *\n * @codeGenApi\n */\n function elementEnd() {\n var currentTNode = getCurrentTNode();\n ngDevMode && assertDefined(currentTNode, 'No parent node to close.);\n if (isCurrentTNodeParent()) {\n setCurrentTNodeAsNotParent();\n }\n else {\n ngDevMode &&\n assertHasParent(getCurrentTNode());\n currentTNode = currentTNode.parent;\n }\n setCurrentTNode(currentTNode, false);\n var tNode = currentTNode;\n ngDevMode &&\n assertTNodeType(tNode, 3 /* AnyRNode */);\n decreaseElementDepthCount();\n var tView =\n getTView();\n if (tView.firstCreatePass) {\n registerPostOrderHooks(tView, currentTNode);\n }\n if (\n isContentQueryHost(currentTNode)) {\n tView.queries.elementEnd(currentTNode);\n }\n }\n if (tNode.classesWithoutHost !== null && hasClassInput(tNode)) {\n setDirectiveInputsWhichShadowsStyling(tView, tNode, getLView(),\n tNode.classesWithoutHost, true);\n }\n if (tNode.stylesWithoutHost !== null && hasStyleInput(tNode)) {\n setDirectiveInputsWhichShadowsStyling(tView, tNode, getLView(),\n tNode.stylesWithoutHost, false);\n }\n /**\n * Creates an empty element using {@link elementStart} and {@link elementEnd}\n *\n * @param index Index of the element in the data array\n * @param name Name of the DOM Node\n * @param\n attrsIndex Index of the element's attributes in the `const`s` array.\n * @param localRefsIndex Index of the\n element's local references in the `const`s` array.\n */\n function element(index,\n name, attrsIndex, localRefsIndex) {\n elementStart(index, name, attrsIndex, localRefsIndex);\n elementEnd();\n }\n function logUnknownElementError(tView, element, tNode, hasDirectives) {\n var\n schemas = tView.schemas;\n // If `schemas` is set to `null`, that's an indication that this Component was\n compiled in AOT\n // mode where this check happens at compile time. In JIT mode, `schemas` is always\n present and\n // defined as an array (as an empty array in case `schemas` field is not defined) and we should\n // execute the check below.\n if (schemas === null)\n return;\n var tagName = tNode.value;\n //\n If the element matches any directive, it's considered as valid.\n if (!hasDirectives && tagName !== null) {\n // The element is unknown if it's an instance of HTMLUnknownElement or it isn't registered\n // as a\n custom element. Note that unknown elements with a dash in their name won't be instances\n // of\n HTMLUnknownElement in browsers that support web components.\n var isUnknown = \n // Note that\n we can't check for `typeof HTMLUnknownElement === 'function',\n // because while most browsers return\n 'function', IE returns 'object'.\n (typeof HTMLUnknownElement !== 'undefined' &&\n HTMLUnknownElement &&\n element instanceof HTMLUnknownElement) ||\n (typeof\n customElements !== 'undefined' && tagName.indexOf('-') > -1 &&\n !customElements.get(tagName));\n if (isUnknown && !matchingSchemas(tView, tagName)) {\n var message = \"\" + tagName + \"\" is not a known element:\\n\";\n message += \"1. If \" + tagName + \"\" is\n an Angular component, then verify that it is part of this module.\\n\";\n if (tagName &&\n tagName.indexOf('-') > -1) {\n message += \"2. If \" + tagName + \"\" is a Web Component then add\n 'CUSTOM_ELEMENTS_SCHEMA' to the '@NgModule.schemas' of this component to suppress this message.\\n\";\n }\n else {\n message +=\n \"2. To allow any element add\n 'NO_ERRORS_SCHEMA' to the '@NgModule.schemas' of this component.\\n\";\n }\n console.error(formatRuntimeError(\"304\" /* UNKNOWN_ELEMENT */, message));\n }\n }\n }\n /**\n * @license\n * Copyright Google LLC All Rights Reserved.\n *\n * Use of this source code is\n governed by an MIT-style license that can be\n found in the LICENSE file at https://angular.io/license\n */\n function elementContainerStartFirstCreatePass(index, tView, IView, attrsIndex, localRefsIndex) {\n ngDevMode && ngDevMode.firstCreatePass++;\n var tViewConsts = tView.consts;\n var attrs =\n getConstant(tViewConsts, attrsIndex);\n var tNode = getOrCreateTNode(tView, index, 8 /* ElementContainer\n */, 'ng-container', attrs);\n // While ng-container doesn't necessarily support styling, we use the style context to

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identify\n // and execute directives on the ng-container.\n if (attrs !== null) {\n
computeStaticStyling(tNode, attrs, true);\n }\n var localRefs = getConstant(tViewConsts,\n
localRefsIndex);\n resolveDirectives(tView, IView, tNode, localRefs);\n if (tView.queries !== null) {\n
 tView.queries.elementStart(tView, tNode);\n }\n return tNode;\n }\n /**\n * Creates a logical\n
container for other nodes (<ng-container>) backed by a comment node in the DOM.\n * The instruction must later\n
be followed by `elementContainerEnd()` call.\n * @param index Index of the element in the LView array\n
 * @param attrsIndex Index of the container attributes in the `const`s` array.\n * @param localRefsIndex Index of\n
the container's local references in the `const`s` array.\n * @param Even if this instruction accepts a set of attributes no\n
actual attribute values are propagated to\n * the DOM (as a comment node can't have attributes). Attributes are\n
here only for directive\n * matching purposes and setting initial inputs of directives.\n * @codeGenApi\n
 */\n function elementContainerStart(index, attrsIndex, localRefsIndex) {\n var IView = getLView();\n
var tView = getTView();\n var adjustedIndex = index + HEADER_OFFSET;\n ngDevMode &&\n
assertIndexInRange(IView, adjustedIndex);\n ngDevMode &&\n assertEquals(getBindingIndex(),\n
tView.bindingStartIndex, 'element containers should be created before any bindings');\n var tNode =\n
tView.firstCreatePass ?\n elementContainerStartFirstCreatePass(adjustedIndex, tView, IView, attrsIndex,\n
localRefsIndex) :\n tView.data[adjustedIndex];\n setCurrentTNode(tNode, true);\n ngDevMode &&\n
ngDevMode.rendererCreateComment++;\n var native = IView[adjustedIndex] =\n
IView[RENDERER].createComment(ngDevMode ? 'ng-container' : '');\n appendChild(tView, IView, native,\n
tNode);\n attachPatchData(native, IView);\n if (isDirectiveHost(tNode)) {\n
createDirectivesInstances(tView, IView, tNode);\n executeContentQueries(tView, tNode, IView);\n }\n
if (localRefsIndex !== null) {\n saveResolvedLocalsInData(IView, tNode);\n }\n }\n /**\n * Mark\n
the end of the <ng-container>.\n * @codeGenApi\n */\n function elementContainerEnd() {\n var\n
currentTNode = getCurrentTNode();\n var tView = getTView();\n if (isCurrentTNodeParent()) {\n
setCurrentTNodeAsNotParent();\n }\n else {\n ngDevMode && assertHasParent(currentTNode);\n
currentTNode = currentTNode.parent;\n setCurrentTNode(currentTNode, false);\n }\n
ngDevMode && assertTNodeType(currentTNode, 8 /* ElementContainer */);\n if (tView.firstCreatePass) {\n
registerPostOrderHooks(tView, currentTNode);\n if (isContentQueryHost(currentTNode)) {\n
tView.queries.elementEnd(currentTNode);\n }\n }\n }\n /**\n * Creates an empty logical container\n
using { @link elementContainerStart}\n * and { @link elementContainerEnd}\n * @param index Index of the\n
element in the LView array\n * @param attrsIndex Index of the container attributes in the `const`s` array.\n
 * @param localRefsIndex Index of the container's local references in the `const`s` array.\n * @codeGenApi\n
 */\n function elementContainer(index, attrsIndex, localRefsIndex) {\n
elementContainerStart(index, attrsIndex, localRefsIndex);\n elementContainerEnd();\n }\n /**\n * Returns the current OpaqueViewState instance.\n
 * @param Used in conjunction with the restoreView() instruction\n
to save a snapshot\n * of the current view and restore it when listeners are invoked. This allows\n * walking the\n
declaration view tree in listeners to get vars from parent views.\n * @codeGenApi\n */\n function\n
getCurrentView() {\n return getLView();\n }\n /**\n * @license\n * Copyright Google LLC All\n
Rights Reserved.\n * Use of this source code is governed by an MIT-style license that can be\n * found\n
in the LICENSE file at https://angular.io/license\n * @param Determine if the argument is shaped like a\n
Promise\n */\n function isPromise(obj) {\n // allow any Promise/A+ compliant thenable.\n // It's up to\n
the caller to ensure that obj.then conforms to the spec\n return !!obj && typeof obj.then === 'function';\n }\n
 /**\n * Determine if the argument is an Observable\n * @param Strictly this tests that the `obj` is `Subscribable`,\n
since `Observable`\n * types need additional methods, such as `lift()`. But it is adequate for our\n * needs since\n
within the Angular framework code we only ever need to use the\n * `subscribe()` method, and RxJS has\n
mechanisms to wrap `Subscribable` objects\n * into `Observable` as needed.\n */\n function\n
isObservable(obj) {\n return !!obj && typeof obj.subscribe === 'function';\n }\n /**\n * @license\n * Copyright Google LLC All Rights Reserved.\n
 * Use of this source code is governed by an MIT-style\n
license that can be\n * found in the LICENSE file at https://angular.io/license\n * @param Adds an event

```

```

listener to the current node.\n * \n * If an output exists on one of the node's directives, it also subscribes to the
output\n * and saves the subscription for later cleanup.\n * \n * @param eventName Name of the event\n *
@param listenerFn The function to be called when event emits\n * @param useCapture Whether or not to use
capture in event listener\n * @param eventTargetResolver Function that returns global target information in case
this listener\n * should be attached to a global object like window, document or body\n * \n *
@codeGenApi\n * \n function listener(eventName, listenerFn, useCapture, eventTargetResolver) {\n if
(useCapture === void 0) { useCapture = false; }\n var IView = getLView();\n var tView = getTView();\n
var tNode = getCurrentTNode();\n listenerInternal(tView, IView, IView[RENDERER], tNode, eventName,
listenerFn, useCapture, eventTargetResolver);\n return listener;\n }\n /**\n * Registers a synthetic host
listener (e.g. `(@foo.start)`) on a component or directive.\n * \n * This instruction is for compatibility purposes
and is designed to ensure that a\n * synthetic host listener (e.g. `@HostListener('@foo.start')`) properly gets
rendered\n * in the component's renderer. Normally all host listeners are evaluated with the\n * parent
component's renderer, but, in the case of animation @triggers, they need\n * to be evaluated with the sub
component's renderer (because that's where the\n * animation triggers are defined).\n * \n * Do not use this
instruction as a replacement for `listener`. This instruction\n * only exists to ensure compatibility with the
ViewEngine's host binding behavior.\n * \n * @param eventName Name of the event\n * @param listenerFn
The function to be called when event emits\n * @param useCapture Whether or not to use capture in event
listener\n * @param eventTargetResolver Function that returns global target information in case this listener\n
* should be attached to a global object like window, document or body\n * \n * @codeGenApi\n * \n
function syntheticHostListener(eventName, listenerFn, useCapture, eventTargetResolver) {\n if (useCapture
=== void 0) { useCapture = false; }\n var tNode = getCurrentTNode();\n var IView = getLView();\n
var tView = getTView();\n var currentDef = getCurrentDirectiveDef(tView.data);\n var renderer =
loadComponentRenderer(currentDef, tNode, IView);\n listenerInternal(tView, IView, renderer, tNode,
eventName, listenerFn, useCapture, eventTargetResolver);\n return syntheticHostListener;\n }\n /**\n * A
utility function that checks if a given element has already an event handler registered for an\n * event with a
specified name. The TView.cleanup data structure is used to find out which events\n * are registered for a given
element.\n * \n * function findExistingListener(tView, IView, eventName, tNodeIdx) {\n var tCleanup =
tView.cleanup;\n if (tCleanup != null) {\n for (var i = 0; i < tCleanup.length - 1; i += 2) {\n var
cleanupEventName = tCleanup[i];\n if (cleanupEventName === eventName && tCleanup[i + 1] ===
tNodeIdx) {\n // We have found a matching event name on the same node but it might not have been\n
// registered yet, so we must explicitly verify entries in the LView cleanup data\n // structures.\n
var lCleanup = IView[CLEANUP];\n var listenerIdxInLCleanup = tCleanup[i + 2];\n
return lCleanup.length > listenerIdxInLCleanup ? lCleanup[listenerIdxInLCleanup] : null;\n }\n
// TView.cleanup can have a mix of 4-elements entries (for event handler cleanups) or\n // 2-element
entries (for directive and queries destroy hooks). As such we can encounter\n // blocks of 4 or 2 items in
the tView.cleanup and this is why we iterate over 2 elements\n // first and jump another 2 elements if we
detect listeners cleanup (4 elements). Also check\n // documentation of TView.cleanup for more details of
this data structure layout.\n if (typeof cleanupEventName === 'string') {\n i += 2;\n
}\n }\n }\n return null;\n }\n function listenerInternal(tView, IView, renderer, tNode, eventName,
listenerFn, useCapture, eventTargetResolver) {\n if (useCapture === void 0) { useCapture = false; }\n
var
isTNodeDirectiveHost = isDirectiveHost(tNode);\n var firstCreatePass = tView.firstCreatePass;\n var
tCleanup = firstCreatePass && (tView.cleanup || (tView.cleanup = []));\n // When the listener instruction was
generated and is executed we know that there is either a\n // native listener or a directive output on this element.
As such we we know that we will have to\n // register a listener and store its cleanup function on LView.\n
var lCleanup = getLCleanup(IView);\n ngDevMode && assertTNodeType(tNode, 3 /* AnyRNode */ | 12 /*
AnyContainer */);\n var processOutputs = true;\n // add native event listener - applicable to elements only\n
if (tNode.type & 3 /* AnyRNode */) {\n var native = getNativeByTNode(tNode, IView);\n var
resolved = eventTargetResolver ? eventTargetResolver(native) : EMPTY_OBJ;\n var target = resolved.target

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 | native;\n var lCleanupIndex = lCleanup.length;\n var idxOrTargetGetter = eventTargetResolver ?\n function (_lView) { return eventTargetResolver(unwrapRNode(_lView[tNode.index])).target; } :\n tNode.index;\n // In order to match current behavior, native DOM event listeners must be added for all\n // events (including outputs).\n if (isProceduralRenderer(renderer)) {\n // There might be cases\n where multiple directives on the same element try to register an event\n // handler function for the same\n event. In this situation we want to avoid registration of\n // several native listeners as each registration\n would be intercepted by NgZone and\n // trigger change detection. This would mean that a single user\n action would result in several\n // change detections being invoked. To avoid this situation we want to have\n only one call to\n // native handler registration (for the same element and same type of event).\n /\n // In order to have just one native event handler in presence of multiple handler functions,\n // we just register a first handler function as a native event listener and then chain\n // (coalesce) other\n handler functions on top of the first native handler function.\n var existingListener = null;\n // Please note that the coalescing described here doesn't happen for events specifying an\n // alternative target\n (ex. (document:click)) - this is to keep backward compatibility with the\n // view engine.\n // Also, we don't have to search for existing listeners is there are no directives\n // matching on a given node\n as we can't register multiple event handlers for the same event in\n // a template (this would mean having\n duplicate attributes).\n if (!eventTargetResolver && isTNodeDirectiveHost) {\n existingListener = findExistingListener(tView, lView, eventName, tNode.index);\n } if\n (existingListener !== null) {\n // Attach a new listener to coalesced listeners list, maintaining the order in\n which\n // listeners are registered. For performance reasons, we keep a reference to the last\n // listener in that list (in `__ngLastListenerFn` field), so we can avoid going through\n // the entire set\n each time we need to add a new listener.\n var lastListenerFn = existingListener.__ngLastListenerFn ||\n existingListener;\n lastListenerFn.__ngNextListenerFn__ = listenerFn;\n existingListener.__ngLastListenerFn__ = listenerFn;\n processOutputs = false;\n } else {\n // The first argument of `listen` function in Procedural Renderer is:\n // - either a\n target name (as a string) in case of global target (window, document, body)\n // - or element reference\n (in all other cases)\n listenerFn = wrapListener(tNode, lView, listenerFn, false /** preventDefault */);\n var cleanupFn = renderer.listen(resolved.name || target, eventName, listenerFn);\n ngDevMode\n && ngDevMode.rendererAddEventListener++;\n lCleanup.push(listenerFn, cleanupFn);\n tCleanup && tCleanup.push(eventName, idxOrTargetGetter, lCleanupIndex, lCleanupIndex + 1);\n } else {\n listenerFn = wrapListener(tNode, lView, listenerFn, true /** preventDefault */);\n target.addEventListener(eventName, listenerFn, useCapture);\n ngDevMode &&\n ngDevMode.rendererAddEventListener++;\n lCleanup.push(listenerFn);\n tCleanup &&\n tCleanup.push(eventName, idxOrTargetGetter, lCleanupIndex, useCapture);\n } } // subscribe to\n directive outputs\n var outputs = tNode.outputs;\n var props;\n if (processOutputs && outputs !== null\n && (props = outputs[eventName])) {\n var propsLength = props.length;\n if (propsLength) {\n for (var i = 0; i < propsLength; i += 2) {\n var index = props[i];\n ngDevMode &&\n assertIndexInRange(lView, index);\n var minifiedName = props[i + 1];\n var\n directiveInstance = lView[index];\n var output = directiveInstance[minifiedName];\n if\n (ngDevMode && !isObservable(output)) {\n throw new Error('@Output \'' + minifiedName + '\'' not\n initialized in \'' + directiveInstance.constructor.name + '\'.');\n } var subscription =\n output.subscribe(listenerFn);\n var idx = lCleanup.length;\n lCleanup.push(listenerFn,\n subscription);\n tCleanup && tCleanup.push(eventName, tNode.index, idx, -(idx + 1));\n } }\n } function executeListenerWithErrorHandling(lView, listenerFn, e) {\n try {\n // Only explicitly returning false from a listener should preventDefault\n return listenerFn(e) !== false;\n } catch (error) {\n handleError(lView, error);\n return false;\n } } /**\n * Wraps\n an event listener with a function that marks ancestors dirty and prevents default behavior,\n * if applicable.\n *\n * @param tNode The TNode associated with this listener\n * @param lView The lView that contains this

```

```

listener\n * @param listenerFn The listener function to call\n * @param wrapWithPreventDefault Whether or
not to prevent default behavior\n * (the procedural renderer does this already, so in those cases, we should skip)\n
*/\n function wrapListener(tNode, IView, listenerFn, wrapWithPreventDefault) {\n // Note: we are
performing most of the work in the listener function itself\n // to optimize listener registration.\n return
function wrapListenerIn_markDirtyAndPreventDefault(e) {\n // Ivy uses `Function` as a special token that
allows us to unwrap the function\n // so that it can be invoked programmatically by
`DebugNode.triggerEventHandler`.\n if (e === Function) {\n return listenerFn;\n }\n //
In order to be backwards compatible with View Engine, events on component host nodes\n // must also mark
the component view itself dirty (i.e. the view that it owns).\n var startView = tNode.flags & 2 /*
isComponentHost */ ?\n GetComponentLViewByIndex(tNode.index, IView) : IView;\n //
See interfaces/view.ts for more on LViewFlags.ManualOnPush\n if ((IView[FLAGS] & 32 /* ManualOnPush
*/) === 0) {\n markViewDirty(startView);\n }\n var result =
executeListenerWithErrorHandling(IView, listenerFn, e);\n // A just-invoked listener function might have
coalesced listeners so we need to check for\n // their presence and invoke as needed.\n var
nextListenerFn = wrapListenerIn_markDirtyAndPreventDefault.__ngNextListenerFn__;\n while
(nextListenerFn) {\n // We should prevent default if any of the listeners explicitly return false\n
result = executeListenerWithErrorHandling(IView, nextListenerFn, e) && result;\n nextListenerFn =
nextListenerFn.__ngNextListenerFn__;\n }\n if (wrapWithPreventDefault && result === false) {\n
 e.preventDefault();\n // Necessary for legacy browsers that don't support preventDefault (e.g. IE)\n
 e.returnValue = false;\n }\n return result;\n }; \n }\n /**\n * @license\n *
Copyright Google LLC All Rights Reserved.\n * Use of this source code is governed by an MIT-style
license that can be\n * found in the LICENSE file at https://angular.io/license\n */\n /**\n * @license\n *
Copyright Google LLC All Rights Reserved.\n * Use of this source code is governed by an MIT-style
license that can be\n * found in the LICENSE file at https://angular.io/license\n */\n /**\n * Retrieves a
context at the level specified and saves it as the global, contextViewData.\n * Will get the next level up if level is
not specified.\n * This is used to save contexts of parent views so they can be bound in embedded views,
or\n * in conjunction with reference() to bind a ref from a parent view.\n * @param level The relative
level of the view from which to grab context compared to contextVewData\n * @returns context\n */\n @codegenApi\n function nextContext(level) {\n if (level === void 0) { level = 1; }\n return
nextContextImpl(level);\n }\n /**\n * @license\n * Copyright Google LLC All Rights Reserved.\n * Use of this source code is governed by an MIT-style license that can be\n * found in the LICENSE file at
https://angular.io/license\n */\n /**\n * Checks a given node against matching projection slots and returns
the\n * determined slot index. Returns `null` if no slot matched the given node.\n * This function takes
into account the parsed ngProjectAs selector from the\n * node's attributes. If present, it will check whether the
ngProjectAs selector\n * matches any of the projection slot selectors.\n */\n function
matchingProjectionSlotIndex(tNode, projectionSlots) {\n var wildcardNgContentIndex = null;\n var
ngProjectAsAttrVal = getProjectAsAttrValue(tNode);\n for (var i = 0; i < projectionSlots.length; i++) {\n
 var slotValue = projectionSlots[i];\n // The last wildcard projection slot should match all nodes which aren't
matching\n // any selector. This is necessary to be backwards compatible with view engine.\n if
(slotValue === '*') {\n wildcardNgContentIndex = i;\n continue;\n }\n // If we ran
into an `ngProjectAs` attribute, we should match its parsed selector\n // to the list of selectors, otherwise we
fall back to matching against the node.\n if (ngProjectAsAttrVal === null ?\n isNodeMatchingSelectorList(tNode, slotValue, /* isProjectionMode */ true) :\n isSelectorInSelectorList(ngProjectAsAttrVal, slotValue)) {\n
 return i; // first matching selector\n }\n }\n return wildcardNgContentIndex;\n }\n /**\n * Instruction to distribute
projectable nodes among <ng-content> occurrences in a given template.\n * It takes all the selectors from the
entire component's template and decides where\n * each projected node belongs (it re-distributes nodes among
`buckets` where each `bucket` is\n * backed by a selector).\n * This function requires CSS selectors

```

to be provided in 2 forms: parsed (by a compiler) and text, un-parsed form. The parsed form is needed for efficient matching of a node against a given CSS selector. The un-parsed, textual form is needed for support of the ngProjectAs attribute. Having a CSS selector in 2 different formats is not ideal, but alternatives have even more drawbacks: - having only a textual form would require runtime parsing of CSS selectors; - we can't have only a parsed as we can't re-construct textual form from it (as entered by a template author).

@param projectionSlots? A collection of projection slots. A projection slot can be based on a parsed CSS selectors or set to the wildcard selector ("\*") in order to match all nodes which do not match any selector. If not specified, a single wildcard selector projection slot will be defined.

```

@codeGenApi
function projectionDef(projectionSlots) {
 var componentNode = getLView()[DECLARATION_COMPONENT_VIEW][T_HOST];
 if (!componentNode.projection) {
 // If no explicit projection slots are defined, fall back to a single // projection slot with the wildcard selector.
 var numProjectionSlots = projectionSlots ? projectionSlots.length : 1;
 var projectionHeads = componentNode.projection ?
 newArray(numProjectionSlots, null) :
 var tails = projectionHeads.slice();
 var componentChild = componentNode.child;
 while (componentChild !== null) {
 var slotIndex = projectionSlots ? matchingProjectionSlotIndex(componentChild, projectionSlots) : 0;
 if (slotIndex !== null) {
 if (tails[slotIndex]) {
 tails[slotIndex].projectionNext = componentChild;
 } else {
 projectionHeads[slotIndex] = componentChild;
 tails[slotIndex] = componentChild;
 }
 componentChild = componentChild.next;
 }
 }
 // Inserts previously re-distributed projected nodes. This instruction must be preceded by a call to the projectionDef instruction.
 @param nodeIndex @param selectorIndex: - 0 when the selector is `*` (or unspecified as this is the default value), - 1 based index of the selector from the {@link projectionDef}
 @codeGenApi
 function projection(nodeIndex, selectorIndex, attrs) {
 if (selectorIndex === void 0) { selectorIndex = 0; }
 var lView = getLView();
 var tView = getTView();
 var tProjectionNode = getOrCreateTNode(tView, HEADER_OFFSET + nodeIndex, 16 /* Projection */, null, attrs || null);
 // We can't use viewData[HOST_NODE] because projection nodes can be nested in embedded views.
 if (tProjectionNode.projection === null) {
 tProjectionNode.projection = selectorIndex;
 // `<ng-content>` has no content
 setCurrentTNodeAsNotParent();
 if (((tProjectionNode.flags & 64 /* isDetached */) !== 64 /* isDetached */) {
 // re-distribution of projectable nodes is stored on a component's view level
 applyProjection(tView, lView, tProjectionNode);
 }
 }
 }
 // Update an interpolated property on an element with a lone bound value
 @param v0 Used when the value passed to a property has 1 interpolated value in it, an no additional text surrounds that interpolated value:
 `html`
 <div title="{v0}"></div>
 Its compiled representation is:
 `ts`
 propertyInterpolate('title', v0);
 @param sanitizer If the property name also exists as an input property on one of the element's directives, the component property will be set instead of the element property. This check must be conducted at runtime so child components that add new `@Inputs` don't have to be re-compiled.
 @param propName The name of the property to update
 @param prefix Static value used for concatenation only.
 @param v0 Value checked for change.
 @param suffix Static value used for concatenation only.
 @param sanitizer An optional sanitizer function
 @returns itself, so that it may be chained.
 @codeGenApi
 function propertyInterpolate(propName, v0, sanitizer) {
 propertyInterpolate1(propName, "", v0, "", sanitizer);
 return propertyInterpolate;
 }
 // Update an interpolated property on an element with single bound value surrounded by text.
 @param v0 Used when the value passed to a property has 1 interpolated value in it:
 `html`
 <div title="prefix{v0}suffix"></div>
 Its compiled representation is:
 `ts`
 propertyInterpolate1('title', 'prefix', v0, 'suffix');
 @param sanitizer If the property name also exists as an input property on one of the element's directives, the component property will be set instead of the element property. This check must be conducted at runtime so child components that add new `@Inputs` don't have to be re-compiled.
 @param propName The name of the property to update
 @param prefix Static

```

```

value used for concatenation only.\n * @param v0 Value checked for change.\n * @param suffix Static value
used for concatenation only.\n * @param sanitizer An optional sanitizer function\n * @returns itself, so that it
may be chained.\n * @codeGenApi\n */\n function propertyInterpolate1(propName, prefix, v0, suffix,
sanitizer) {\n var IView = getLView();\n var interpolatedValue = interpolation1(IView, prefix, v0, suffix);\n
if (interpolatedValue !== NO_CHANGE) {\n var tView = getTView();\n var tNode =
getSelectedTNode();\n elementPropertyInternal(tView, tNode, IView, propName, interpolatedValue,
IView[RENDERER], sanitizer, false);\n ngDevMode &&\n
storePropertyBindingMetadata(tView.data, tNode, propName, getBindingIndex() - 1, prefix, suffix);\n }\n
return propertyInterpolate1;\n }\n /**\n *\n * Update an interpolated property on an element with 2 bound
values surrounded by text.\n *\n * Used when the value passed to a property has 2 interpolated values in it:\n
*\n * ```html\n * <div title="prefix{{v0}}-{{v1}}suffix"></div>\n * ```\n *\n * Its compiled
representation is:\n *\n * ```ts\n * propertyInterpolate2('title', 'prefix', v0, '-', v1, 'suffix');\n * ```\n
*\n * If the property name also exists as an input property on one of the element's directives,\n * the component
property will be set instead of the element property. This check must\n * be conducted at runtime so child
components that add new `@Inputs` don't have to be re-compiled.\n *\n * @param propName The name of the
property to update\n * @param prefix Static value used for concatenation only.\n * @param v0 Value checked
for change.\n * @param i0 Static value used for concatenation only.\n * @param v1 Value checked for
change.\n * @param suffix Static value used for concatenation only.\n * @param sanitizer An optional
sanitizer function\n * @returns itself, so that it may be chained.\n * @codeGenApi\n */\n function
propertyInterpolate2(propName, prefix, v0, i0, v1, suffix, sanitizer) {\n var IView = getLView();\n var
interpolatedValue = interpolation2(IView, prefix, v0, i0, v1, suffix);\n if (interpolatedValue !== NO_CHANGE)
{\n var tView = getTView();\n var tNode = getSelectedTNode();\n
elementPropertyInternal(tView, tNode, IView, propName, interpolatedValue, IView[RENDERER], sanitizer,
false);\n ngDevMode &&\n
storePropertyBindingMetadata(tView.data, tNode, propName,
getBindingIndex() - 2, prefix, i0, suffix);\n }\n return propertyInterpolate2;\n }\n /**\n *\n *
Update an interpolated property on an element with 3 bound values surrounded by text.\n *\n * Used when the
value passed to a property has 3 interpolated values in it:\n *\n * ```html\n * <div title="prefix{{v0}}-
{{v1}}-{{v2}}suffix"></div>\n * ```\n *\n * Its compiled representation is:\n *\n * ```ts\n *
propertyInterpolate3(\n * 'title', 'prefix', v0, '-', v1, '-', v2, 'suffix');\n * ```\n *\n * If the property name also
exists as an input property on one of the element's directives,\n * the component property will be set instead of the
element property. This check must\n * be conducted at runtime so child components that add new `@Inputs` don't
have to be re-compiled.\n *\n * @param propName The name of the property to update\n * @param prefix
Static value used for concatenation only.\n * @param v0 Value checked for change.\n * @param i0 Static
value used for concatenation only.\n * @param v1 Value checked for change.\n * @param i1 Static value used
for concatenation only.\n * @param v2 Value checked for change.\n * @param suffix Static value used for
concatenation only.\n * @param sanitizer An optional sanitizer function\n * @returns itself, so that it may be
chained.\n * @codeGenApi\n */\n function propertyInterpolate3(propName, prefix, v0, i0, v1, i1, v2, suffix,
sanitizer) {\n var IView = getLView();\n var interpolatedValue = interpolation3(IView, prefix, v0, i0, v1,
i1, v2, suffix);\n if (interpolatedValue !== NO_CHANGE) {\n var tView = getTView();\n var
tNode = getSelectedTNode();\n elementPropertyInternal(tView, tNode, IView, propName, interpolatedValue,
IView[RENDERER], sanitizer, false);\n ngDevMode &&\n
storePropertyBindingMetadata(tView.data, tNode, propName, getBindingIndex() - 3, prefix, i0, i1, suffix);\n
}\n return propertyInterpolate3;\n }\n /**\n *\n * Update an interpolated property on an element with 4
bound values surrounded by text.\n *\n * Used when the value passed to a property has 4 interpolated values in
it:\n *\n * ```html\n * <div title="prefix{{v0}}-{{v1}}-{{v2}}-{{v3}}suffix"></div>\n * ```\n *\n
* Its compiled representation is:\n *\n * ```ts\n * propertyInterpolate4(\n * 'title', 'prefix', v0, '-', v1, '-', v2,
'-', v3, 'suffix');\n * ```\n *\n * If the property name also exists as an input property on one of the element's
directives,\n * the component property will be set instead of the element property. This check must\n * be

```

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conducted at runtime so child components that add new `@Inputs` don't have to be re-compiled.\n * \n *
@param propName The name of the property to update\n * @param prefix Static value used for concatenation
only.\n * @param v0 Value checked for change.\n * @param i0 Static value used for concatenation only.\n *
@param v1 Value checked for change.\n * @param i1 Static value used for concatenation only.\n * @param v2
Value checked for change.\n * @param i2 Static value used for concatenation only.\n * @param v3 Value
checked for change.\n * @param suffix Static value used for concatenation only.\n * @param sanitizer An
optional sanitizer function\n * @returns itself, so that it may be chained.\n * @codeGenApi\n */\n function
propertyInterpolate4(propName, prefix, v0, i0, v1, i1, v2, i2, v3, suffix, sanitizer) {\n var IView =
getLView();\n var interpolatedValue = interpolation4(IView, prefix, v0, i0, v1, i1, v2, i2, v3, suffix);\n if
(interpolatedValue !== NO_CHANGE) {\n var tView = getTView();\n var tNode =
getSelectedTNode();\n elementPropertyInternal(tView, tNode, IView, propName, interpolatedValue,
IView[RENDERER], sanitizer, false);\n ngDevMode &&\n
storePropertyBindingMetadata(tView.data, tNode, propName, getBindingIndex() - 4, prefix, i0, i1, i2, suffix);\n
}\n return propertyInterpolate4;\n } \n /**\n * \n * Update an interpolated property on an element with 5
bound values surrounded by text.\n * \n * Used when the value passed to a property has 5 interpolated values in
it:\n * \n * ``html\n * <div title="prefix{{v0}}-{{v1}}-{{v2}}-{{v3}}-{{v4}}suffix"></div>\n * ``\n
*\n * Its compiled representation is:\n * \n * ``ts\n * propertyInterpolate5(\n * 'title', 'prefix', v0, '-', v1,
'-', v2, '-', v3, '-', v4, 'suffix');\n * ``\n * \n * If the property name also exists as an input property on one of the
element's directives,\n * the component property will be set instead of the element property. This check must\n
*\n * be conducted at runtime so child components that add new `@Inputs` don't have to be re-compiled.\n * \n *
@param propName The name of the property to update\n * @param prefix Static value used for concatenation
only.\n * @param v0 Value checked for change.\n * @param i0 Static value used for concatenation only.\n *
@param v1 Value checked for change.\n * @param i1 Static value used for concatenation only.\n * @param v2
Value checked for change.\n * @param i2 Static value used for concatenation only.\n * @param v3 Value
checked for change.\n * @param i3 Static value used for concatenation only.\n * @param v4 Value checked
for change.\n * @param suffix Static value used for concatenation only.\n * @param sanitizer An optional
sanitizer function\n * @returns itself, so that it may be chained.\n * @codeGenApi\n */\n function
propertyInterpolate5(propName, prefix, v0, i0, v1, i1, v2, i2, v3, i3, v4, suffix, sanitizer) {\n var IView =
getLView();\n var interpolatedValue = interpolation5(IView, prefix, v0, i0, v1, i1, v2, i2, v3, i3, v4, suffix);\n
if (interpolatedValue !== NO_CHANGE) {\n var tView = getTView();\n var tNode =
getSelectedTNode();\n elementPropertyInternal(tView, tNode, IView, propName, interpolatedValue,
IView[RENDERER], sanitizer, false);\n ngDevMode &&\n
storePropertyBindingMetadata(tView.data, tNode, propName, getBindingIndex() - 5, prefix, i0, i1, i2, i3, suffix);\n
}\n return propertyInterpolate5;\n } \n /**\n * \n * Update an interpolated property on an element with
6 bound values surrounded by text.\n * \n * Used when the value passed to a property has 6 interpolated values
in it:\n * \n * ``html\n * <div title="prefix{{v0}}-{{v1}}-{{v2}}-{{v3}}-{{v4}}-{{v5}}suffix"></div>\n
*\n * ``\n * \n * Its compiled representation is:\n * \n * ``ts\n * propertyInterpolate6(\n * 'title',
'prefix', v0, '-', v1, '-', v2, '-', v3, '-', v4, '-', v5, 'suffix');\n * ``\n * \n * If the property name also exists as an
input property on one of the element's directives,\n * the component property will be set instead of the element
property. This check must\n * be conducted at runtime so child components that add new `@Inputs` don't have to
be re-compiled.\n * \n * @param propName The name of the property to update\n * @param prefix Static
value used for concatenation only.\n * @param v0 Value checked for change.\n * @param i0 Static value used
for concatenation only.\n * @param v1 Value checked for change.\n * @param i1 Static value used for
concatenation only.\n * @param v2 Value checked for change.\n * @param i2 Static value used for
concatenation only.\n * @param v3 Value checked for change.\n * @param i3 Static value used for
concatenation only.\n * @param v4 Value checked for change.\n * @param i4 Static value used for
concatenation only.\n * @param v5 Value checked for change.\n * @param suffix Static value used for
concatenation only.\n * @param sanitizer An optional sanitizer function\n * @returns itself, so that it may be

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chained.\n * @codegenApi\n */\n function propertyInterpolate6(propName, prefix, v0, i0, v1, i1, v2, i2, v3,
i3, v4, i4, v5, suffix, sanitizer) {\n var IView = getLView();\n var interpolatedValue = interpolation6(IView,
prefix, v0, i0, v1, i1, v2, i2, v3, i3, v4, i4, v5, suffix);\n if (interpolatedValue !== NO_CHANGE) {\n var
tView = getTView();\n var tNode = getSelectedTNode();\n elementPropertyInternal(tView, tNode,
IView, propName, interpolatedValue, IView[RENDERER], sanitizer, false);\n ngDevMode &&\n
storePropertyBindingMetadata(tView.data, tNode, propName, getBindingIndex() - 6, prefix, i0, i1, i2, i3, i4,
suffix);\n }\n return propertyInterpolate6;\n }\n /**\n *\n * Update an interpolated property on an
element with 7 bound values surrounded by text.\n *\n * Used when the value passed to a property has 7
interpolated values in it:\n *\n * ```html\n * <div title="prefix{{v0}}-{{v1}}-{{v2}}-{{v3}}-{{v4}}-
{{v5}}-{{v6}}suffix"></div>\n * ```\n *\n * Its compiled representation is::\n *\n * ```ts\n *
propertyInterpolate7(\n * 'title', 'prefix', v0, '-', v1, '-', v2, '-', v3, '-', v4, '-', v5, '-', v6, 'suffix');\n * ```\n *\n
* If the property name also exists as an input property on one of the element's directives,\n * the component
property will be set instead of the element property. This check must\n * be conducted at runtime so child
components that add new `@Inputs` don't have to be re-compiled.\n *\n * @param propName The name of the
property to update\n * @param prefix Static value used for concatenation only.\n * @param v0 Value checked
for change.\n * @param i0 Static value used for concatenation only.\n * @param v1 Value checked for
change.\n * @param i1 Static value used for concatenation only.\n * @param v2 Value checked for change.\n
* @param i2 Static value used for concatenation only.\n * @param v3 Value checked for change.\n * @param
i3 Static value used for concatenation only.\n * @param v4 Value checked for change.\n * @param i4 Static
value used for concatenation only.\n * @param v5 Value checked for change.\n * @param i5 Static value used
for concatenation only.\n * @param v6 Value checked for change.\n * @param suffix Static value used for
concatenation only.\n * @param sanitizer An optional sanitizer function\n * @returns itself, so that it may be
chained.\n * @codegenApi\n */\n function propertyInterpolate7(propName, prefix, v0, i0, v1, i1, v2, i2, v3,
i3, v4, i4, v5, i5, v6, suffix, sanitizer) {\n var IView = getLView();\n var interpolatedValue =
interpolation7(IView, prefix, v0, i0, v1, i1, v2, i2, v3, i3, v4, i4, v5, i5, v6, suffix);\n if (interpolatedValue !==
NO_CHANGE) {\n var tView = getTView();\n var tNode = getSelectedTNode();\n
elementPropertyInternal(tView, tNode, IView, propName, interpolatedValue, IView[RENDERER], sanitizer,
false);\n ngDevMode &&\n storePropertyBindingMetadata(tView.data, tNode, propName,
getBindingIndex() - 7, prefix, i0, i1, i2, i3, i4, i5, suffix);\n }\n return propertyInterpolate7;\n }\n /**\n
*\n * Update an interpolated property on an element with 8 bound values surrounded by text.\n *\n * Used
when the value passed to a property has 8 interpolated values in it:\n *\n * ```html\n * <div
title="prefix{{v0}}-{{v1}}-{{v2}}-{{v3}}-{{v4}}-{{v5}}-{{v6}}-{{v7}}suffix"></div>\n * ```\n *\n
* Its compiled representation is::\n *\n * ```ts\n * propertyInterpolate8(\n * 'title', 'prefix', v0, '-', v1, '-', v2, '-',
v3, '-', v4, '-', v5, '-', v6, '-', v7, 'suffix');\n * ```\n *\n * If the property name also exists as an input property
on one of the element's directives,\n * the component property will be set instead of the element property. This
check must\n * be conducted at runtime so child components that add new `@Inputs` don't have to be re-
compiled.\n *\n * @param propName The name of the property to update\n * @param prefix Static value
used for concatenation only.\n * @param v0 Value checked for change.\n * @param i0 Static value used for
concatenation only.\n * @param v1 Value checked for change.\n * @param i1 Static value used for
concatenation only.\n * @param v2 Value checked for change.\n * @param i2 Static value used for
concatenation only.\n * @param v3 Value checked for change.\n * @param i3 Static value used for
concatenation only.\n * @param v4 Value checked for change.\n * @param i4 Static value used for
concatenation only.\n * @param v5 Value checked for change.\n * @param i5 Static value used for
concatenation only.\n * @param v6 Value checked for change.\n * @param i6 Static value used for
concatenation only.\n * @param v7 Value checked for change.\n * @param suffix Static value used for
concatenation only.\n * @param sanitizer An optional sanitizer function\n * @returns itself, so that it may be
chained.\n * @codegenApi\n */\n function propertyInterpolate8(propName, prefix, v0, i0, v1, i1, v2, i2, v3,
i3, v4, i4, v5, i5, v6, i6, v7, suffix, sanitizer) {\n var IView = getLView();\n var interpolatedValue =

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interpolation8(IView, prefix, v0, i0, v1, i1, v2, i2, v3, i3, v4, i4, v5, i5, v6, i6, v7, suffix);\n if
(interpolatedValue !== NO_CHANGE) {\n var tView = getTView();\n var tNode =
getSelectedTNode();\n elementPropertyInternal(tView, tNode, IView, propName, interpolatedValue,
IView[RENDERER], sanitizer, false);\n ngDevMode &&\n
storePropertyBindingMetadata(tView.data, tNode, propName, getBindingIndex() - 8, prefix, i0, i1, i2, i3, i4, i5, i6,
suffix);\n }\n return propertyInterpolate8;\n } \n /**\n * Update an interpolated property on an
element with 9 or more bound values surrounded by text.\n *\n * Used when the number of interpolated values
exceeds 8.\n *\n * ```html\n * <div\n * title="prefix{{v0}}-{{v1}}-{{v2}}-{{v3}}-{{v4}}-{{v5}}-
{{v6}}-{{v7}}-{{v8}}-{{v9}}suffix"></div>\n * ```\n *\n * Its compiled representation is:\n *\n *
```ts\n  * propertyInterpolateV(\n  *   'title', [prefix, v0, '-', v1, '-', v2, '-', v3, '-', v4, '-', v5, '-', v6, '-', v7, '-', v9,\n
*   'suffix']);\n  * ```\n  *\n  * If the property name also exists as an input property on one of the element's
directives,\n  * the component property will be set instead of the element property. This check must\n  * be
conducted at runtime so child components that add new `@Inputs` don't have to be re-compiled.\n  *\n  *
@param propName The name of the property to update.\n  * @param values The collection of values and the
strings inbetween those values, beginning with a\n  * string prefix and ending with a string suffix.\n  * (e.g.
`[prefix, value0, '-', value1, '-', value2, ..., value99, 'suffix']`)\n  * @param sanitizer An optional sanitizer
function\n  * @returns itself, so that it may be chained.\n  * @codeGenApi\n  */\n function
propertyInterpolateV(propName, values, sanitizer) {\n    var IView = getLView();\n    var interpolatedValue =
interpolationV(IView, values);\n    if (interpolatedValue !== NO_CHANGE) {\n        var tView =
getTView();\n        var tNode = getSelectedTNode();\n        elementPropertyInternal(tView, tNode, IView,
propName, interpolatedValue, IView[RENDERER], sanitizer, false);\n        if (ngDevMode) {\n            var
interpolationInBetween = [values[0]]; // prefix\n            for (var i = 2; i < values.length; i += 2) {\n
interpolationInBetween.push(values[i]);\n            }\n            storePropertyBindingMetadata.apply(void 0,
__spread([tView.data, tNode, propName, getBindingIndex() - interpolationInBetween.length + 1],
interpolationInBetween));\n        }\n    }\n    return propertyInterpolateV;\n } \n \n /**\n  * @license\n
* Copyright Google LLC All Rights Reserved.\n  *\n  * Use of this source code is governed by an MIT-style
license that can be\n  * found in the LICENSE file at https://angular.io/license\n  */\n /**\n  * This file
contains reuseable \"empty\" symbols that can be used as default return values\n  * in different parts of the
rendering code. Because the same symbols are returned, this\n  * allows for identity checks against these values to
be consistently used by the framework\n  * code.\n  */\n var EMPTY_OBJ$1 = {};\n var
EMPTY_ARRAY$3 = [];\n // freezing the values prevents any code from accidentally inserting new values in\n
if ((typeof ngDevMode === 'undefined' || ngDevMode) && initNgDevMode()) {\n    // These property accesses
can be ignored because ngDevMode will be set to false\n    // when optimizing code and the whole if statement
will be dropped.\n    // tslint:disable-next-line:no-toplevel-property-access\n
Object.freeze(EMPTY_OBJ$1);\n    // tslint:disable-next-line:no-toplevel-property-access\n
Object.freeze(EMPTY_ARRAY$3);\n } \n \n /**\n  * @license\n  * Copyright Google LLC All Rights
Reserved.\n  *\n  * Use of this source code is governed by an MIT-style license that can be\n  * found in the
LICENSE file at https://angular.io/license\n  */\n /**\n  * NOTE: The word `styling` is used interchangeably
as style or class styling.\n  *\n  * This file contains code to link styling instructions together so that they can be
replayed in\n  * priority order. The file exists because Ivy styling instruction execution order does not match\n
* that of the priority order. The purpose of this code is to create a linked list so that the\n  * instructions can be
traversed in priority order when computing the styles.\n  *\n  * Assume we are dealing with the following
code:\n  * ```\n  * @Component({\n  *   template: `\n  *     <my-cmp [style]=" {color: '#001'} \"\n  *
[style.color]=" #002 \"\n  *     dir-style-color-1\n  *     dir-style-color-2>\n  *   `)\n  *   class
ExampleComponent {\n  *     static ngComp = ... {\n  *       ...\n  *       // Compiler ensures that `styleProp` is after
`styleMap`\n  *       styleMap({color: '#001'});\n  *       styleProp('color', '#002');\n  *       ...\n  *     }\n  *   }\n
*\n  *   @Directive({\n  *     selector: `[dir-style-color-1]`,\n  *   })\n  *   class Style1Directive {\n  *
*\n  *     @HostBinding('style') style = {color: '#005'};\n  *     @HostBinding('style.color') color = '#006';\n  *     static

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ngDir = ... {\n * ... \n * // Compiler ensures that `styleProp` is after `styleMap`\n * styleMap({color:
'#005'});\n * styleProp('color', '#006');\n * ... \n * } \n * } \n * @Directive({\n * selector:
`[dir-style-color-2]', \n * }) \n * class Style2Directive {\n * @HostBinding('style') style = {color: '#007'};\n
* @HostBinding('style.color') color = '#008';\n * \n * static ngDir = ... {\n * ... \n * // Compiler
ensures that `styleProp` is after `styleMap`\n * styleMap({color: '#007'});\n * styleProp('color', '#008');\n
* ... \n * } \n * } \n * @Directive({\n * selector: `my-cmp', \n * }) \n * class MyComponent
{\n * @HostBinding('style') style = {color: '#003'};\n * @HostBinding('style.color') color = '#004';\n * \n
* static ngComp = ... {\n * ... \n * // Compiler ensures that `styleProp` is after `styleMap`\n *
styleMap({color: '#003'});\n * styleProp('color', '#004');\n * ... \n * } \n * } \n * ``\n * \n * The
Order of instruction execution is:\n * \n * NOTE: the comment binding location is for illustrative purposes
only.\n * \n * ``\n * // Template: (ExampleComponent)\n * styleMap({color: '#001'}); // Binding
index: 10\n * styleProp('color', '#002'); // Binding index: 12\n * // MyComponent\n * styleMap({color:
'#003'}); // Binding index: 20\n * styleProp('color', '#004'); // Binding index: 22\n * // Style1Directive\n
* styleMap({color: '#005'}); // Binding index: 24\n * styleProp('color', '#006'); // Binding index: 26\n * //
Style2Directive\n * styleMap({color: '#007'}); // Binding index: 28\n * styleProp('color', '#008'); //
Binding index: 30\n * ``\n * \n * The correct priority order of concatenation is:\n * \n * ``\n * //
MyComponent\n * styleMap({color: '#003'}); // Binding index: 20\n * styleProp('color', '#004'); //
Binding index: 22\n * // Style1Directive\n * styleMap({color: '#005'}); // Binding index: 24\n *
styleProp('color', '#006'); // Binding index: 26\n * // Style2Directive\n * styleMap({color: '#007'}); //
Binding index: 28\n * styleProp('color', '#008'); // Binding index: 30\n * // Template:
(ExampleComponent)\n * styleMap({color: '#001'}); // Binding index: 10\n * styleProp('color', '#002');
// Binding index: 12\n * ``\n * \n * What color should be rendered?\n * \n * Once the items are correctly
sorted in the list, the answer is simply the last item in the\n * concatenation list which is `#002`.\n * \n * To
do so we keep a linked list of all of the bindings which pertain to this element.\n * Notice that the bindings are
inserted in the order of execution, but the `TVIEW.data` allows\n * us to traverse them in the order of priority.\n
*\n * |Idx|TVIEW.data|LVIEW` |Notes\n * |---|-----|-----|-----|-----\n * |...| |
|\n * |10|`null` |`{color: '#001'}|`styleMap('color', {color: '#001'})`\n * |11|`30|12` |... |\n
*\n * |12|`color` |`'#002` |`styleProp('color', '#002')`\n * |13|`10|0` |... |\n * |...| |
|\n * |20|`null` |`{color: '#003'}|`styleMap('color', {color: '#003'})`\n * |21|`0|22` |... |\n * |22
|`color` |`'#004` |`styleProp('color', '#004')`\n * |23|`20|24` |... |\n * |24|`null` |`{color:
'#005'}|`styleMap('color', {color: '#005'})`\n * |25|`22|26` |... |\n * |26|`color` |`'#006` |
|\n * |styleProp('color', '#006')`\n * |27|`24|28` |... |\n * |28|`null` |`{color: '#007'}|`styleMap('color',
{color: '#007'})`\n * |29|`26|30` |... |\n * |30|`color` |`'#008` |`styleProp('color', '#008')`\n
*\n * |31|`28|10` |... |\n * \n * The above data structure allows us to re-concatenate the styling no matter
which data binding\n * changes.\n * \n * NOTE: in addition to keeping track of next/previous index the
`TVIEW.data` also stores prev/next\n * duplicate bit. The duplicate bit if true says there either is a binding with the
same name or\n * there is a map (which may contain the name). This information is useful in knowing if other\n
* styles with higher priority need to be searched for overwrites.\n * \n * NOTE: See `should support example in
'tnode_linked_list.ts` documentation` in\n * `tnode_linked_list_spec.ts` for working example.\n * \n * var
__unused_const_as_closure_does_not_like_standalone_comment_blocks__;\n * /**\n * Insert new `tStyleValue`
at `TData` and link existing style bindings such that we maintain linked\n * list of styles and compute the
duplicate flag.\n * \n * Note: this function is executed during `firstUpdatePass` only to populate the
`TVIEW.data`.\n * \n * The function works by keeping track of `tStylingRange` which contains two pointers
pointing to\n * the head/tail of the template portion of the styles.\n * - if `isHost === false` (we are template)
then insertion is at tail of `TStylingRange`\n * - if `isHost === true` (we are host binding) then insertion is at
head of `TStylingRange`\n * \n * @param tData The `TData` to insert into.\n * @param tNode `TNode`
associated with the styling element.\n * @param tStylingKey See `TStylingKey`.\n * @param index location of
where `tStyleValue` should be stored (and linked into list.)\n * @param isHostBinding `true` if the insertion is for

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a `hostBinding`. (insertion is in front of\n *      template.)\n * @param isClassBinding True if the
associated `tStylingKey` as a `class` styling.\n *      `tNode.classBindings` should be used (or
`tNode.styleBindings` otherwise.)\n */\n function insertTStylingBinding(tData, tNode, tStylingKeyWithStatic,
index, isHostBinding, isClassBinding) {\n    ngDevMode && assertFirstUpdatePass(getTView());\n    var
tBindings = isClassBinding ? tNode.classBindings : tNode.styleBindings;\n    var tmpHead =
getTStylingRangePrev(tBindings);\n    var tmpTail = getTStylingRangeNext(tBindings);\n    tData[index] =
tStylingKeyWithStatic;\n    var isKeyDuplicateOfStatic = false;\n    var tStylingKey;\n    if
(Array.isArray(tStylingKeyWithStatic)) {\n        // We are case when the `TStylingKey` contains static fields as
well.\n        var staticKeyValueArray = tStylingKeyWithStatic;\n        tStylingKey = staticKeyValueArray[1]; //
unwrap.\n        // We need to check if our key is present in the static so that we can mark it as duplicate.\n        if
(tStylingKey === null ||\n            keyValueArrayIndexOf(staticKeyValueArray, tStylingKey) > 0) {\n            //
tStylingKey is present in the statics, need to mark it as duplicate.\n            isKeyDuplicateOfStatic = true;\n        }\n    } else {\n        tStylingKey = tStylingKeyWithStatic;\n    } if (isHostBinding) {\n        //
We are inserting host bindings\n        // If we don't have template bindings then `tail` is 0.\n        var
hasTemplateBindings = tmpTail !== 0;\n        // This is important to know because that means that the `head`
can't point to the first\n        // template bindings (there are none.) Instead the head points to the tail of the
template.\n        if (hasTemplateBindings) {\n            // template head's `prev` will point to last host binding or
to 0 if no host bindings yet\n            var previousNode = getTStylingRangePrev(tData[tmpHead + 1]);\n            tData[index + 1] = toTStylingRange(previousNode, tmpHead);\n            // if a host binding has already been
registered, we need to update the next of that host\n            // binding to point to this one\n            if
(previousNode !== 0) {\n                // We need to update the template-tail value to point to us.\n                tData[previousNode + 1] =\n                    setTStylingRangeNext(tData[previousNode + 1], index);\n            }\n            // The `previous` of the template binding head should point to this host binding\n            tData[tmpHead
+ 1] = setTStylingRangePrev(tData[tmpHead + 1], index);\n        } else {\n            tData[index + 1] =
toTStylingRange(tmpHead, 0);\n            // if a host binding has already been registered, we need to update the
next of that host\n            // binding to point to this one\n            if (tmpHead !== 0) {\n                // We need
to update the template-tail value to point to us.\n                tData[tmpHead + 1] =
setTStylingRangeNext(tData[tmpHead + 1], index);\n            }\n            // if we don't have template, the head
points to template-tail, and needs to be advanced.\n            tmpHead = index;\n        } } else {\n        // We are inserting in template section.\n        // We need to set this binding's `previous` to the current
template tail\n        tData[index + 1] = toTStylingRange(tmpTail, 0);\n        ngDevMode &&\n        assertEqual(tmpHead !== 0 && tmpTail === 0, false, 'Adding template bindings after hostBindings is not
allowed.);\n        if (tmpHead === 0) {\n            tmpHead = index;\n        } else {\n            // We
need to update the previous value `next` to point to this binding\n            tData[tmpTail + 1] =
setTStylingRangeNext(tData[tmpTail + 1], index);\n        }\n        tmpTail = index;\n    } } // Now we
need to update / compute the duplicates.\n    // Starting with our location search towards head (least priority)\n    if (isKeyDuplicateOfStatic) {\n        tData[index + 1] = setTStylingRangePrevDuplicate(tData[index + 1]);\n    }\n    markDuplications(tData, tStylingKey, index, true, isClassBinding);\n    markDuplications(tData, tStylingKey,
index, false, isClassBinding);\n    markDuplicateOfResidualStyling(tNode, tStylingKey, tData, index,
isClassBinding);\n    tBindings = toTStylingRange(tmpHead, tmpTail);\n    if (isClassBinding) {\n        tNode.classBindings = tBindings;\n    } else {\n        tNode.styleBindings = tBindings;\n    } }\n\n/**\n * Look into the residual styling to see if the current `tStylingKey` is duplicate of residual.\n */\n *
@param tNode `TNode` where the residual is stored.\n * @param tStylingKey `TStylingKey` to store.\n *
@param tData `TData` associated with the current `LView`.\n * @param index location of where `tStyleValue`
should be stored (and linked into list.)\n * @param isClassBinding True if the associated `tStylingKey` as a
`class` styling.\n *      `tNode.classBindings` should be used (or `tNode.styleBindings` otherwise.)\n */\n function markDuplicateOfResidualStyling(tNode, tStylingKey, tData, index, isClassBinding) {\n    var
residual = isClassBinding ? tNode.residualClasses : tNode.residualStyles;\n    if (residual != null /* or undefined

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*/ && typeof tStylingKey === 'string' && \n      keyValueArrayIndexOf(residual, tStylingKey) >= 0) {\n      //
We have duplicate in the residual so mark ourselves as duplicate.\n      tData[index + 1] =
setTStylingRangeNextDuplicate(tData[index + 1]);\n    }\n  }\n  /**\n   * Marks `TStyleValue`s as duplicates
if another style binding in the list has the same\n   * `TStyleValue`.\n   * \n   * NOTE: this function is intended to
be called twice once with `isPrevDir` set to `true` and once\n   * with it set to `false` to search both the previous as
well as next items in the list.\n   * \n   * No duplicate case\n   * ```\n   * [style.color]\n   * [style.width.px]
<<<- index\n   * [style.height.px]\n   * ```\n   * \n   * In the above case adding `[style.width.px]` to the existing
`[style.color]` produces no\n   * duplicates because `width` is not found in any other part of the linked list.\n   * \n
* Duplicate case\n   * ```\n   * [style.color]\n   * [style.width.em]\n   * [style.width.px] <<<- index\n   *
```\n   * \n   * In the above case adding `[style.width.px]` will produce a duplicate with `[style.width.em]`\n   * because
`width` is found in the chain.\n * \n * Map case 1\n * ```\n * [style.width.px]\n * [style.color]\n *
[style] <<<- index\n * ```\n * \n * In the above case adding `[style]` will produce a duplicate with any other bindings
because\n * `[style]` is a Map and as such is fully dynamic and could produce `color` or `width`.\n * \n * Map
case 2\n * ```\n * [style]\n * [style.width.px]\n * [style.color] <<<- index\n * ```\n * \n * In the above
case adding `[style.color]` will produce a duplicate because there is already a\n * `[style]` binding which is a Map
and as such is fully dynamic and could produce `color` or\n * `width`.\n * \n * NOTE: Once `[style]` (Map) is
added into the system all things are mapped as duplicates.\n * NOTE: We use `style` as example, but same logic
is applied to `class`es as well.\n * \n * @param tData `TData` where the linked list is stored.\n * @param
tStylingKey `TStylingKeyPrimitive` which contains the value to compare to other keys in\n * the linked
list.\n * @param index Starting location in the linked list to search from\n * @param isPrevDir Direction.\n
* - `true` for previous (lower priority);\n * - `false` for next (higher priority).\n * \n * function
markDuplicates(tData, tStylingKey, index, isPrevDir, isClassBinding) {\n var tStylingAtIndex = tData[index +
1];\n var isMap = tStylingKey === null;\n var cursor = isPrevDir ? getTStylingRangePrev(tStylingAtIndex)
: getTStylingRangeNext(tStylingAtIndex);\n var foundDuplicate = false;\n // We keep iterating as long as
we have a cursor\n // AND either:\n // - we found what we are looking for, OR\n // - we are a map in
which case we have to continue searching even after we find what we were\n // looking for since we are a wild
card and everything needs to be flipped to duplicate.\n while (cursor !== 0 && (foundDuplicate === false ||
isMap)) {\n ngDevMode && assertIndexInRange(tData, cursor);\n var tStylingValueAtCursor =
tData[cursor];\n var tStyleRangeAtCursor = tData[cursor + 1];\n if
(isStylingMatch(tStylingValueAtCursor, tStylingKey)) {\n foundDuplicate = true;\n tData[cursor
+ 1] = isPrevDir ? setTStylingRangeNextDuplicate(tStyleRangeAtCursor) :\n setTStylingRangePrevDuplicate(tStyleRangeAtCursor);\n cursor = isPrevDir ?
getTStylingRangePrev(tStyleRangeAtCursor) :\n getTStylingRangeNext(tStyleRangeAtCursor);\n }\n if (foundDuplicate) {\n // if we found a duplicate, than mark ourselves.\n tData[index + 1] =
isPrevDir ? setTStylingRangePrevDuplicate(tStylingAtIndex) :\n setTStylingRangeNextDuplicate(tStylingAtIndex);\n }\n }\n }
/**\n * Determines if two `TStylingKey`s
are a match.\n * \n * When computing whether a binding contains a duplicate, we need to compare if the
instruction\n * `TStylingKey` has a match.\n * \n * Here are examples of `TStylingKey`s which match given
`TStylingKeyCursor` is:\n * - `color`\n * - `color` // Match another color\n * - `null` // That means
that `TStylingKey` is a `classMap`/`styleMap` instruction\n * - `[", 'color', 'other', true]` // wrapped `color` so
match\n * - `[", null, 'other', true]` // wrapped `null` so match\n * - `[", 'width', 'color', 'value']` //
wrapped static value contains a match on `color`\n * - `null` // `TStylingKeyCursor` always match as it is
`classMap`/`styleMap` instruction\n * \n * @param tStylingKeyCursor\n * @param tStylingKey\n * \n * function
isStylingMatch(tStylingKeyCursor, tStylingKey) {\n ngDevMode &&\n assertNotEqual(Array.isArray(tStylingKey), true, 'Expected that `\\tStylingKey` has been unwrapped');\n if
(tStylingKeyCursor === null || // If the cursor is `null` it means that we have map at that\n // location so we
must assume that we have a match.\n tStylingKey === null || // If `TStylingKey` is `null` then it is a map
therefor assume that it\n // contains a match.\n (Array.isArray(tStylingKeyCursor) ?

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tStylingKeyCursor[1] : tStylingKeyCursor) ===\n tStylingKey // If the keys match explicitly than we are a
match.\n) {\n return true;\n }\n else if (Array.isArray(tStylingKeyCursor) && typeof
tStylingKey === 'string') {\n // if we did not find a match, but `tStylingKeyCursor` is `KeyValueArray` that
means cursor has\n // statics and we need to check those as well.\n return
keyValueArrayIndexOf(tStylingKeyCursor, tStylingKey) >=\n 0; // see if we are matching the key\n }\n return false;\n }\n /**\n * @license\n * Copyright Google LLC All Rights Reserved.\n *\n * Use of this source code is governed by an MIT-style license that can be\n * found in the LICENSE file at
https://angular.io/license\n *\n * // Global state of the parser. (This makes parser non-reentrant, but that is not an
issue)\n * var parserState = {\n * textEnd: 0,\n * key: 0,\n * keyEnd: 0,\n * value: 0,\n * valueEnd: 0,\n *};\n * /**\n * Retrieves the last parsed `key` of style.\n * @param text the text to substring the key from.\n *\n * //\n * function getLastParsedKey(text) {\n * return text.substring(parserState.key, parserState.keyEnd);\n * }\n * /**\n * Retrieves the last parsed `value` of style.\n * @param text the text to substring the key from.\n *\n * //\n * function getLastParsedValue(text) {\n * return text.substring(parserState.value, parserState.valueEnd);\n * }\n * /**\n * Initializes `className` string for parsing and parses the first token.\n *\n * //\n * This function is intended
to be used in this format:\n * ```\n * for (let i = parseClassName(text); i >= 0; i = parseClassNameNext(text, i))\n * {\n * const key = getLastParsedKey();\n * ... \n * }\n * ```\n * @param text `className` to parse\n * @returns index where the next invocation of `parseClassNameNext` should resume.\n *\n * //\n * function
parseClassName(text) {\n * resetParserState(text);\n * return parseClassNameNext(text,\n * consumeWhitespace(text, 0, parserState.textEnd));\n * }\n * /**\n * Parses next `className` token.\n *\n * //\n * This function is intended to be used in this format:\n * ```\n * for (let i = parseClassName(text); i >= 0; i =
parseClassNameNext(text, i)) {\n * const key = getLastParsedKey();\n * ... \n * }\n * ```\n * @param text `className` to parse\n * @param index where the parsing should resume.\n * @returns index
where the next invocation of `parseClassNameNext` should resume.\n *\n * //\n * function parseClassNameNext(text,\n * index) {\n * var end = parserState.textEnd;\n * if (end === index) {\n * return -1;\n * }\n * index =
parserState.keyEnd = consumeClassToken(text, parserState.key = index, end);\n * return
consumeWhitespace(text, index, end);\n * }\n * /**\n * Initializes `cssText` string for parsing and parses the first
key/values.\n *\n * //\n * This function is intended to be used in this format:\n * ```\n * for (let i =
parseStyle(text); i >= 0; i = parseStyleNext(text, i)) {\n * const key = getLastParsedKey();\n * const value =
getLastParsedValue();\n * ... \n * }\n * ```\n * @param text `cssText` to parse\n * @returns index
where the next invocation of `parseStyleNext` should resume.\n *\n * //\n * function parseStyle(text) {\n * resetParserState(text);\n * return parseStyleNext(text, consumeWhitespace(text, 0, parserState.textEnd));\n * }\n * /**\n * Parses the next `cssText` key/values.\n *\n * //\n * This function is intended to be used in this format:\n * ```\n * for (let i = parseStyle(text); i >= 0; i = parseStyleNext(text, i)) {\n * const key =
getLastParsedKey();\n * const value = getLastParsedValue();\n * ... \n * }\n * ```\n * @param text
`cssText` to parse\n * @param index where the parsing should resume.\n * @returns index where the next
invocation of `parseStyleNext` should resume.\n *\n * //\n * function parseStyleNext(text, startIndex) {\n * var end
= parserState.textEnd;\n * var index = parserState.key = consumeWhitespace(text, startIndex, end);\n * if (end
=== index) {\n * // we reached an end so just quit\n * return -1;\n * }\n * index = parserState.keyEnd
= consumeStyleKey(text, index, end);\n * index = consumeSeparator(text, index, end, 58 /* COLON */);\n * index = parserState.value = consumeWhitespace(text, index, end);\n * index = parserState.valueEnd =
consumeStyleValue(text, index, end);\n * return consumeSeparator(text, index, end, 59 /* SEMI_COLON */);\n * }\n * /**\n * Reset the global state of the styling parser.\n * @param text The styling text to parse.\n *\n * //\n * function resetParserState(text) {\n * parserState.key = 0;\n * parserState.keyEnd = 0;\n * parserState.value =
0;\n * parserState.valueEnd = 0;\n * parserState.textEnd = text.length;\n * }\n * /**\n * Returns index of next
non-whitespace character.\n *\n * //\n * @param text Text to scan\n * @param startIndex Starting index of
character where the scan should start.\n * @param endIndex Ending index of character where the scan should
end.\n * @returns Index of next non-whitespace character (May be the same as `start` if no whitespace at\n * that location.)\n *\n * //\n * function consumeWhitespace(text, startIndex, endIndex) {\n * while (startIndex <

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endIndex && text.charCodeAtAt(startIndex) <= 32 /* SPACE */) {\n startIndex++; \n } \n return
startIndex; \n } \n /** \n * Returns index of last char in class token. \n * \n * @param text Text to scan \n *
@param startIndex Starting index of character where the scan should start. \n * @param endIndex Ending index of
character where the scan should end. \n * @returns Index after last char in class token. \n */ \n function
consumeClassToken(text, startIndex, endIndex) {\n while (startIndex < endIndex &&
text.charCodeAtAt(startIndex) > 32 /* SPACE */) {\n startIndex++; \n } \n return startIndex; \n } \n
/** \n * Consumes all of the characters belonging to style key and token. \n * \n * @param text Text to scan \n
@param startIndex Starting index of character where the scan should start. \n * @param endIndex Ending index
of character where the scan should end. \n * @returns Index after last style key character. \n */ \n function
consumeStyleKey(text, startIndex, endIndex) {\n var ch; \n while (startIndex < endIndex && \n ((ch =
text.charCodeAtAt(startIndex)) === 45 /* DASH */ || ch === 95 /* UNDERSCORE */ || \n ((ch & -33 /*
UPPER_CASE */) >= 65 /* A */ && (ch & -33 /* UPPER_CASE */) <= 90 /* Z */) || \n (ch >= 48 /*
ZERO */ && ch <= 57 /* NINE */))) {\n startIndex++; \n } \n return startIndex; \n } \n /** \n *
Consumes all whitespace and the separator `.` after the style key. \n * \n * @param text Text to scan \n *
@param startIndex Starting index of character where the scan should start. \n * @param endIndex Ending index of
character where the scan should end. \n * @returns Index after separator and surrounding whitespace. \n */ \n
function consumeSeparator(text, startIndex, endIndex, separator) {\n startIndex = consumeWhitespace(text,
startIndex, endIndex); \n if (startIndex < endIndex) {\n if (ngDevMode && text.charCodeAtAt(startIndex)
!== separator) {\n malformedStyleError(text, String.fromCharCode(separator), startIndex); \n } \n
 startIndex++; \n } \n return startIndex; \n } \n /** \n * Consumes style value honoring `url()` and `\"`
text. \n * \n * @param text Text to scan \n * @param startIndex Starting index of character where the scan
should start. \n * @param endIndex Ending index of character where the scan should end. \n * @returns Index
after last style value character. \n */ \n function consumeStyleValue(text, startIndex, endIndex) {\n var ch1 =
-1; // 1st previous character \n var ch2 = -1; // 2nd previous character \n var ch3 = -1; // 3rd previous
character \n var i = startIndex; \n var lastChIndex = i; \n while (i < endIndex) {\n var ch =
text.charCodeAtAt(i++); \n if (ch === 59 /* SEMI_COLON */) {\n return lastChIndex; \n } \n
 else if (ch === 34 /* DOUBLE_QUOTE */ || ch === 39 /* SINGLE_QUOTE */) {\n lastChIndex = i =
consumeQuotedText(text, ch, i, endIndex); \n } \n else if (startIndex === \n i - 4 && // We
have seen only 4 characters so far \"URL(\" (Ignore \"foo_URL()\") \n ch3 === 85 /* U */ && \n
 ch2 === 82 /* R */ && ch1 === 76 /* L */ && ch === 40 /* OPEN_PAREN */) {\n lastChIndex = i =
consumeQuotedText(text, 41 /* CLOSE_PAREN */, i, endIndex); \n } \n else if (ch > 32 /* SPACE */)
{\n // if we have a non-whitespace character then capture its location \n lastChIndex = i; \n
 } \n ch3 = ch2; \n ch2 = ch1; \n ch1 = ch & -33 /* UPPER_CASE */; \n } \n return
lastChIndex; \n } \n /** \n * Consumes all of the quoted characters. \n * \n * @param text Text to scan \n
@param quoteCharCode CharCode of either `\"` or `\"` quote or `)` for `url(...)` \n * @param startIndex Starting
index of character where the scan should start. \n * @param endIndex Ending index of character where the scan
should end. \n * @returns Index after quoted characters. \n */ \n function consumeQuotedText(text,
quoteCharCode, startIndex, endIndex) {\n var ch1 = -1; // 1st previous character \n var index = startIndex; \n
 while (index < endIndex) {\n var ch = text.charCodeAtAt(index++); \n if (ch == quoteCharCode &&
ch1 !== 92 /* BACK_SLASH */) {\n return index; \n } \n if (ch == 92 /* BACK_SLASH */
&& ch1 === 92 /* BACK_SLASH */) {\n // two back slashes cancel each other out. For example `\"\\\\\"`
should properly end the \n // quotation. (It should not assume that the last `\"` is escaped.) \n ch1 =
0; \n } \n else {\n ch1 = ch; \n } \n } \n throw ngDevMode ?
malformedStyleError(text, String.fromCharCode(quoteCharCode), endIndex) : \n new Error(); \n } \n
function malformedStyleError(text, expecting, index) {\n ngDevMode && assertEquals(typeof text === 'string',
true, 'String expected here'); \n throw throwError(\"Malformed style at location \" + index + \" in string \" +
text.substring(0, index) + '[>>' + \n text.substring(index, index + 1) + '<<]' + text.substr(index + 1) + \n
 (\". Expecting \" + expecting + \".\"); \n } \n \n /** \n * @license \n * Copyright Google LLC All Rights

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Reserved.

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 * Use of this source code is governed by an MIT-style license that can be
 * found in the LICENSE file at https://angular.io/license
 * Update a style binding on an element with the
 * provided value.
 * If the style value is falsy then it will be removed from the element
 * (or assigned a different value depending if there are any styles placed
 * on the element with `styleMap` or any static styles that
 * are present from when the element was created with `styling`.)
 * Note that the styling element is updated as part of `stylingApply`.
 * @param prop A valid CSS property.
 * @param value New value to write (`null` or an empty string to remove).
 * @param suffix Optional suffix. Used with scalar values to add
 * unit such as `px`.
 * Note that this will apply the provided style value to the host element if this function is
 * called within a host binding function.
 * @codeGenApi
 * function styleProp(prop, value, suffix) {
 * checkStylingProperty(prop, value, suffix, false);
 * return styleProp;
 * }
 /**
 * Update a class binding on an element with the provided value.
 * This instruction is meant to handle the
 * `[class.foo]="exp"` case and, therefore, the class binding itself must already be allocated using
 * `styling` within the creation block.
 * @param prop A valid CSS class (only one).
 * @param value A true/false value which will turn the class on or off.
 * Note that this will apply the provided class value to the host element if this function
 * is called within a host binding function.
 * @codeGenApi
 * function classProp(className, value) {
 * checkStylingProperty(className, value, null, true);
 * return classProp;
 * }
 /**
 * Update style bindings using an object literal on an element.
 * This instruction is meant to apply styling via the `[style]="exp"` template bindings.
 * When styles are applied to the element they will then be updated with respect to
 * any styles/classes set via `styleProp`. If any styles are set to falsy
 * then they will be removed from the element.
 * Note that the styling instruction will not be applied until `stylingApply` is called.
 * @param styles A key/value style map of the styles that will be applied to the given element.
 * Any missing styles (that have already been applied to the element beforehand) will be
 * removed (unset) from the element's styling.
 * Note that this will apply the provided styleMap value to the host element if this function
 * is called within a host binding.
 * @codeGenApi
 * function styleMap(styles) {
 * checkStylingMap(styleKeyValueArraySet, styleStringParser, styles, false);
 * }
 /**
 * Parse text as style and add values to KeyValueArray.
 * This code is pulled out to a separate function so that it can be tree shaken away if it is not
 * needed. It is only referenced from `styleMap`.
 * @param keyValuePair KeyValueArray to add parsed values to.
 * @param text text to parse.
 * function styleStringParser(keyValuePair, text) {
 * for (var i = parseStyle(text); i >= 0; i = parseStyleNext(text, i)) {
 * styleKeyValueArraySet(keyValuePair, getLastParsedKey(text), getLastParsedValue(text));
 * }
 * }
 /**
 * Update class bindings using an object literal or class-string on an element.
 * This instruction is meant to apply styling via the
 * `[class]="exp"` template bindings.
 * When classes are applied to the element they will then be updated with
 * respect to any styles/classes set via `classProp`. If any
 * classes are set to falsy then they will be removed from the element.
 * Note that the styling instruction will not be applied until `stylingApply` is called.
 * Note that this will the provided classMap value to the host element if this function is called
 * within a host binding.
 * @param classes A key/value map or string of CSS classes that will be added to the
 * given element. Any missing classes (that have already been applied to the element
 * beforehand) will be removed (unset) from the element's list of CSS classes.
 * @codeGenApi
 * function classMap(classes) {
 * checkStylingMap(keyValuePairSet, classStringParser, classes, true);
 * }
 /**
 * Parse text as class and add values to KeyValueArray.
 * This code is pulled out to a separate function so that it can be tree shaken away if it is not
 * needed. It is only referenced from `classMap`.
 * @param keyValuePair KeyValueArray to add parsed values to.
 * @param text text to parse.
 * function classStringParser(keyValuePair, text) {
 * for (var i = parseClassName(text); i >= 0; i = parseClassNameNext(text, i)) {
 * keyValueArraySet(keyValuePair, getLastParsedKey(text), true);
 * }
 * }
 /**
 * Common code between `classProp` and `styleProp`.
 * @param prop property name.
 * @param value binding value.
 * @param suffix suffix for the property (e.g. `em` or `px`)
 * @param isClassBased `true` if `class` change (`false` if `style`)
 * function checkStylingProperty(prop,

```



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value, suffix, isClassBased) {\n var IView = getLView();\n var tView = getTView();\n // Styling
instructions use 2 slots per binding.\n // 1. one for the value / TStylingKey\n // 2. one for the intermittent-
value / TStylingRange\n var bindingIndex = incrementBindingIndex(2);\n if (tView.firstUpdatePass) {\n
stylingFirstUpdatePass(tView, prop, bindingIndex, isClassBased);\n }\n if (value !== NO_CHANGE
&& bindingUpdated(IView, bindingIndex, value)) {\n var tNode = tView.data[getSelectedIndex()];\n
updateStyling(tView, tNode, IView, IView[RENDERER], prop, IView[bindingIndex + 1] = normalizeSuffix(value,
suffix), isClassBased, bindingIndex);\n }\n }\n /**\n * Common code between `classMap` and
`styleMap`.\n *\n * @param keyValueArraySet (See `keyValueArraySet` in `util/array_utils`) Gets passed in
as a\n * function so that `style` can be processed. This is done for tree shaking purposes.\n * @param
stringParser Parser used to parse `value` if `string`. (Passed in as `style` and `class`\n * have different
parsers.)\n * @param value bound value from application\n * @param isClassBased `true` if `class` change
(`false` if `style`)\n */\n function checkStylingMap(keyValueArraySet, stringParser, value, isClassBased) {\n
var tView = getTView();\n var bindingIndex = incrementBindingIndex(2);\n if (tView.firstUpdatePass) {\n
stylingFirstUpdatePass(tView, null, bindingIndex, isClassBased);\n }\n var IView = getLView();\n
if (value !== NO_CHANGE && bindingUpdated(IView, bindingIndex, value)) {\n // `getSelectedIndex()`
should be here (rather than in instruction) so that it is guarded by the\n // if so as not to read unnecessarily.\n
var tNode = tView.data[getSelectedIndex()];\n if (hasStylingInputShadow(tNode, isClassBased) &&
!isInHostBindings(tView, bindingIndex)) {\n if (ngDevMode) {\n // verify that if we are
shadowing then `TData` is appropriately marked so that we skip\n // processing this binding in styling
resolution.\n var tStylingKey = tView.data[bindingIndex];\n
assertEqual(Array.isArray(tStylingKey) ? tStylingKey[1] : tStylingKey, false, 'Styling linked list shadow input
should be marked as `false`');\n }\n // VE does not concatenate the static portion like we are
doing here.\n // Instead VE just ignores the static completely if dynamic binding is present.\n //
Because of locality we have already set the static portion because we don't know if there\n // is a dynamic
portion until later. If we would ignore the static portion it would look like\n // the binding has removed it.
This would confuse `[ngStyle]^[ngClass]` to do the wrong\n // thing as it would think that the static
portion was removed. For this reason we\n // concatenate it so that `[ngStyle]^[ngClass]` can continue to
work on changed.\n var staticPrefix = isClassBased ? tNode.classesWithoutHost :
tNode.stylesWithoutHost;\n ngDevMode && isClassBased === false && staticPrefix !== null &&\n
assertEqual(staticPrefix.endsWith(';'), true, 'Expecting static portion to end with `;`');\n if
(staticPrefix !== null) {\n // We want to make sure that falsy values of `value` become empty strings.\n
value = concatStringsWithSpace(staticPrefix, value ? value : '');\n }\n // Given `

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than in instruction) so that it is guarded by the\n // if so as not to read unnecessarily.\n var tNode =
tData[getSelectedIndex()];\n ngDevMode && assertDefined(tNode, 'TNode expected');\n var
isHostBindings = isInHostBindings(tView, bindingIndex);\n if (hasStylingInputShadow(tNode,
isClassBased) && tStylingKey === null && !isHostBindings) {\n // `tStylingKey === null` implies that
we are either `[style]` or `[class]` binding.\n // If there is a directive which uses `@Input('style')` or
`@Input('class')` than\n // we need to neutralize this binding since that directive is shadowing it.\n // We turn this into a noop by setting the key to `false`\n tStylingKey = false;\n }\n tStylingKey = wrapInStaticStylingKey(tData, tNode, tStylingKey, isClassBased);\n insertTStylingBinding(tData, tNode, tStylingKey, bindingIndex, isHostBindings, isClassBased);\n }\n }\n /**\n * Adds static styling information to the binding if applicable.\n *\n * The linked list of styles not only
stores the list and keys, but also stores static styling\n * information on some of the keys. This function
determines if the key should contain the styling\n * information and computes it.\n *\n * See `TStylingStatic`
for more details.\n *\n * @param tData `TData` where the linked list is stored.\n * @param tNode `TNode`
for which the styling is being computed.\n * @param stylingKey `TStylingKeyPrimitive` which may need to be
wrapped into `TStylingKey`\n * @param isClassBased `true` if `class` (`false` if `style`)\n */\n function
wrapInStaticStylingKey(tData, tNode, stylingKey, isClassBased) {\n var hostDirectiveDef =
getCurrentDirectiveDef(tData);\n var residual = isClassBased ? tNode.residualClasses : tNode.residualStyles;\n if (hostDirectiveDef === null) {\n // We are in template node.\n // If template node already had
styling instruction then it has already collected the static\n // styling and there is no need to collect them
again. We know that we are the first styling\n // instruction because the `TNode.*Bindings` points to 0
(nothing has been inserted yet).\n var isFirstStylingInstructionInTemplate = (isClassBased ?
tNode.classBindings : tNode.styleBindings) === 0;\n if (isFirstStylingInstructionInTemplate) {\n //
It would be nice to be able to get the statics from `mergeAttrs`, however, at this point\n // they are already
merged and it would not be possible to figure which property belongs where\n // in the priority.\n stylingKey = collectStylingFromDirectives(null, tData, tNode, stylingKey, isClassBased);\n stylingKey =
collectStylingFromTAttrs(stylingKey, tNode.attrs, isClassBased);\n // We know that if we have styling
binding in template we can't have residual.\n residual = null;\n }\n } else {\n // We
are in host binding node and there was no binding instruction in template node.\n // This means that we need
to compute the residual.\n var directiveStylingLast = tNode.directiveStylingLast;\n var
isFirstStylingInstructionInHostBinding = directiveStylingLast === -1 || tData[directiveStylingLast] !==
hostDirectiveDef;\n if (isFirstStylingInstructionInHostBinding) {\n stylingKey =\n collectStylingFromDirectives(hostDirectiveDef, tData, tNode, stylingKey, isClassBased);\n if (residual
=== null) {\n // - If `null` than either:\n // - Template styling instruction already ran and it
has consumed the static\n // styling into its `TStylingKey` and so there is no need to update residual.
Instead\n // we need to update the `TStylingKey` associated with the first template node\n //
instruction. OR\n // - Some other styling instruction ran and determined that there are no
residuals\n var templateStylingKey = getTemplateHeadTStylingKey(tData, tNode, isClassBased);\n if (templateStylingKey !== undefined && Array.isArray(templateStylingKey)) {\n // Only
recompute if `templateStylingKey` had static values. (If no static value found\n // then there is nothing
to do since this operation can only produce less static keys, not\n // more.)\n templateStylingKey = collectStylingFromDirectives(null, tData, tNode, templateStylingKey[1] /* unwrap previous
statics */, isClassBased);\n templateStylingKey =\n collectStylingFromTAttrs(templateStylingKey, tNode.attrs, isClassBased);\n setTemplateHeadTStylingKey(tData, tNode, isClassBased, templateStylingKey);\n }\n }\n else {\n // We only need to recompute residual if it is not `null`.\n // - If existing residual
(implies there was no template styling). This means that some of\n // the statics may have moved from
the residual to the `stylingKey` and so we have to\n // recompute.\n // - If `undefined` this is
the first time we are running.\n residual = collectResidual(tData, tNode, isClassBased);\n }\n }

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wrap.\n * @param isClassBased `true` if `class` (`false` if `style`)\n */\n function
collectStylingFromDirectives(hostDirectiveDef, tData, tNode, stylingKey, isClassBased) {\n // We need to loop
because there can be directives which have `hostAttrs` but don't have\n // `hostBindings` so this loop catches up
to the current directive.\n var currentDirective = null;\n var directiveEnd = tNode.directiveEnd;\n var
directiveStylingLast = tNode.directiveStylingLast;\n if (directiveStylingLast === -1) {\n
directiveStylingLast = tNode.directiveStart;\n }\n else {\n directiveStylingLast++;\n }\n
while (directiveStylingLast < directiveEnd) {\n currentDirective = tData[directiveStylingLast];\n
ngDevMode && assertDefined(currentDirective, 'expected to be defined');\n stylingKey =
collectStylingFromTAttrs(stylingKey, currentDirective.hostAttrs, isClassBased);\n if (currentDirective ===
hostDirectiveDef)\n break;\n directiveStylingLast++;\n }\n if (hostDirectiveDef !== null)
{\n // we only advance the styling cursor if we are collecting data from host bindings.\n // Template
executes before host bindings and so if we would update the index,\n // host bindings would not get their
statics.\n tNode.directiveStylingLast = directiveStylingLast;\n }\n return stylingKey;\n }\n /**\n * Convert `TAttrs` into `TStylingStatic`.\n *\n * @param stylingKey existing `TStylingKey` to update or
wrap.\n * @param attrs `TAttributes` to process.\n * @param isClassBased `true` if `class` (`false` if `style`)\n
*/\n function collectStylingFromTAttrs(stylingKey, attrs, isClassBased) {\n var desiredMarker =
isClassBased ? 1 /* Classes */ : 2 /* Styles */;\n var currentMarker = -1 /* ImplicitAttributes */;\n if (attrs
!== null) {\n for (var i = 0; i < attrs.length; i++) {\n var item = attrs[i];\n if (typeof item
=== 'number') {\n currentMarker = item;\n }\n else {\n if (currentMarker
=== desiredMarker) {\n if (!Array.isArray(stylingKey)) {\n stylingKey = stylingKey
=== undefined ? [] : [], stylingKey);\n }\n keyValueArraySet(stylingKey, item,
isClassBased ? true : attrs[++i]);\n }\n }\n }\n }\n return stylingKey ===
undefined ? null : stylingKey;\n }\n /**\n * Convert user input to `KeyValueArray`.\n *\n * This function
takes user input which could be `string`, Object literal, or iterable and converts\n * it into a consistent
representation. The output of this is `KeyValueArray` (which is an array\n * where\n * even indexes contain
keys and odd indexes contain values for those keys).\n *\n * The advantage of converting to `KeyValueArray`
is that we can perform diff in an input\n * independent\n * way.\n * (ie we can compare `foo bar` to `['bar',
'baz']` and determine a set of changes which need to be\n * applied)\n *\n * The fact that `KeyValueArray` is
sorted is very important because it allows us to compute the\n * difference in linear fashion without the need to
allocate any additional data.\n *\n * For example if we kept this as a `Map` we would have to iterate over
previous `Map` to determine\n * which values need to be deleted, over the new `Map` to determine additions, and
we would have to\n * keep additional `Map` to keep track of duplicates or items which have not yet been
visited.\n *\n * @param keyValueArraySet (See `keyValueArraySet` in `util/array_utils`) Gets passed in as
a\n * function so that `style` can be processed. This is done\n * for tree shaking purposes.\n *
@param stringParser The parser is passed in so that it will be tree shakable. See\n * `styleStringParser` and
`classStringParser`\n * @param value The value to parse/convert to `KeyValueArray`\n */\n function
toStylingKeyValueArray(keyValueArraySet, stringParser, value) {\n if (value === null /*|| value === undefined
*/ || value === "")\n return EMPTY_ARRAY$3;\n var styleKeyValueArray = [];\n var
unwrappedValue = unwrapSafeValue(value);\n if (Array.isArray(unwrappedValue)) {\n for (var i = 0; i <
unwrappedValue.length; i++) {\n keyValueArraySet(styleKeyValueArray, unwrappedValue[i], true);\n
}\n }\n else if (typeof unwrappedValue === 'object') {\n for (var key in unwrappedValue) {\n
if (unwrappedValue.hasOwnProperty(key)) {\n keyValueArraySet(styleKeyValueArray, key,
unwrappedValue[key]);\n }\n }\n }\n else if (typeof unwrappedValue === 'string') {\n
stringParser(styleKeyValueArray, unwrappedValue);\n }\n else {\n ngDevMode &&\n
throwError('Unsupported styling type ' + typeof unwrappedValue + ': ' + unwrappedValue);\n }\n return
styleKeyValueArray;\n }\n /**\n * Set a `value` for a `key`.\n *\n * See: `keyValueArraySet` for
details\n *\n * @param keyValueArray KeyValueArray to add to.\n * @param key Style key to add.\n *
@param value The value to set.\n */\n function styleKeyValueArraySet(keyValueArray, key, value) {\n

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keyValueArraySet(keyValueArray, key, unwrapSafeValue(value));\n }\n /**\n * Update map based styling.\n *\n * Map based styling could be anything which contains more than one binding. For example `string`,\n * or object literal. Dealing with all of these types would complicate the logic so\n * instead this function expects that the complex input is first converted into normalized\n * `KeyValueArray`. The advantage of normalization is that we get the values sorted, which makes it\n * very cheap to compute deltas between the previous and current value.\n *\n * @param tView Associated `TView.data` contains the linked list of binding priorities.\n * @param tNode `TNode` where the binding is located.\n * @param IView `LView` contains the values associated with other styling binding at this `TNode`.\n * @param renderer Renderer to use if any updates.\n * @param oldKeyValueArray Previous value represented as `KeyValueArray`\n * @param newKeyValueArray Current value represented as `KeyValueArray`\n * @param isClassBased `true` if `class` (`false` if `style`)\n * @param bindingIndex Binding index of the binding.\n */\n function updateStylingMap(tView, tNode, IView, renderer, oldKeyValueArray, newKeyValueArray, isClassBased, bindingIndex) {\n if (oldKeyValueArray === NO_CHANGE) {\n // On first execution the oldKeyValueArray is NO_CHANGE => treat it as empty\n KeyValueArray.\n oldKeyValueArray = EMPTY_ARRAY$3;\n }\n var oldIndex = 0;\n var newIndex = 0;\n var oldKey = 0 < oldKeyValueArray.length ? oldKeyValueArray[0] : null;\n var newKey = 0 < newKeyValueArray.length ? newKeyValueArray[0] : null;\n while (oldKey !== null || newKey !== null) {\n ngDevMode && assertLessThan(oldIndex, 999, 'Are we stuck in infinite loop?');\n ngDevMode && assertLessThan(newIndex, 999, 'Are we stuck in infinite loop?');\n var oldValue = oldIndex < oldKeyValueArray.length ? oldKeyValueArray[oldIndex + 1] : undefined;\n var newValue = newIndex < newKeyValueArray.length ? newKeyValueArray[newIndex + 1] : undefined;\n var setKey = null;\n var setValue = undefined;\n if (oldKey === newKey) {\n // UPDATE: Keys are equal => new value is overwriting old value.\n oldIndex += 2;\n newIndex += 2;\n if (oldValue !== newValue) {\n setKey = newKey;\n setValue = newValue;\n }\n }\n else if (newKey === null || oldKey !== null && oldKey < newKey) {\n // DELETE: oldKey key is missing or we did not find the oldKey in the newValue\n // (because the keyValueArray is sorted and `newKey` is found later alphabetically).\n // `\"background\"` < `\"color\"` so we need to delete `\"background\"` because it is not found in the\n // new array.\n oldIndex += 2;\n setKey = oldKey;\n }\n else {\n // CREATE: newKey's is earlier alphabetically than oldKey's (or no oldKey) => we have new key.\n // `\"color\"` > `\"background\"` so we need to add `color` because it is in new array but not in\n // old array.\n ngDevMode && assertDefined(newKey, 'Expecting to have a valid key');\n newIndex += 2;\n setKey = newKey;\n setValue = newValue;\n }\n if (setKey !== null) {\n updateStyling(tView, tNode, IView, renderer, setKey, setValue, isClassBased, bindingIndex);\n }\n oldKey = oldIndex < oldKeyValueArray.length ? oldKeyValueArray[oldIndex] : null;\n newKey = newIndex < newKeyValueArray.length ? newKeyValueArray[newIndex] : null;\n }\n }\n /**\n * Update a simple (property name) styling.\n *\n * This function takes `prop` and updates the DOM to that value. The function takes the binding\n * value as well as binding priority into consideration to determine which value should be written\n * to DOM. (For example it may be determined that there is a higher priority overwrite which blocks\n * the DOM write, or if the value goes to `undefined` a lower priority overwrite may be consulted.)\n *\n * @param tView Associated `TView.data` contains the linked list of binding priorities.\n * @param tNode `TNode` where the binding is located.\n * @param IView `LView` contains the values associated with other styling binding at this `TNode`.\n * @param renderer Renderer to use if any updates.\n * @param prop Either style property name or a class name.\n * @param value Either style value for `prop` or `true`/`false` if `prop` is class.\n * @param isClassBased `true` if `class` (`false` if `style`)\n * @param bindingIndex Binding index of the binding.\n */\n function updateStyling(tView, tNode, IView, renderer, prop, value, isClassBased, bindingIndex) {\n if (!(tNode.type & 3 /* AnyRNode */)) {\n // It is possible to have styling on non-elements (such as ng-container).\n // This is rare, but it does happen. In such a case, just ignore the binding.\n return;\n }\n var tData = tView.data;\n var tRange = tData[bindingIndex + 1];\n var higherPriorityValue = getTStylingRangeNextDuplicate(tRange) ?\n findStylingValue(tData, tNode, IView,

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prop, getTStylingRangeNext(tRange, isClassBased) : \n undefined; \n if
(!isStylingValuePresent(higherPriorityValue)) { \n // We don't have a next duplicate, or we did not find a
duplicate value. \n if (!isStylingValuePresent(value)) { \n // We should delete current value or restore
to lower priority value. \n if (getTStylingRangePrevDuplicate(tRange)) { \n // We have a
possible prev duplicate, let's retrieve it. \n value = findStylingValue(tData, null, IView, prop,
bindingIndex, isClassBased); \n } \n } \n var rNode = getNativeByIndex(getSelectedIndex(),
IView); \n applyStyling(renderer, isClassBased, rNode, prop, value); \n } \n } \n /** \n * Search for
styling value with higher priority which is overwriting current value, or a \n * value of lower priority to which we
should fall back if the value is `undefined`. \n * \n * When value is being applied at a location, related values
need to be consulted. \n * - If there is a higher priority binding, we should be using that one instead. \n * For
example `

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resolution should be used.}\n * \n * @param value Binding style value.\n * \n function
isStylingValuePresent(value) {\n // Currently only `undefined` value is considered non-binding. That is
`undefined` says I don't\n // have an opinion as to what this binding should be and you should consult other
bindings by\n // priority to determine the valid value.\n // This is extracted into a single function so that we
have a single place to control this.\n return value !== undefined;\n }\n /** \n * Normalizes and/or adds a
suffix to the value.\n * \n * If value is `null`/`undefined` no suffix is added\n * @param value\n * @param
suffix\n * \n function normalizeSuffix(value, suffix) {\n if (value == null /** || value === undefined */) {\n
// do nothing\n }\n else if (typeof suffix === 'string') {\n value = value + suffix;\n }\n
else if (typeof value === 'object') {\n value = stringify(unwrapSafeValue(value));\n }\n return
value;\n }\n /** \n * Tests if the `TNode` has input shadow.\n * \n * An input shadow is when a directive
steals (shadows) the input by using `@Input('style')` or\n * `@Input('class')` as input.\n * \n * @param tNode
`TNode` which we would like to see if it has shadow.\n * @param isClassBased `true` if `class` (`false` if
`style`)\n * \n function hasStylingInputShadow(tNode, isClassBased) {\n return (tNode.flags &
(isClassBased ? 16 /** hasClassInput */ : 32 /** hasStyleInput */)) !== 0;\n }\n\n /** \n * @license\n *
Copyright Google LLC All Rights Reserved.\n * \n * Use of this source code is governed by an MIT-style
license that can be\n * found in the LICENSE file at https://angular.io/license\n * \n\n /** \n * Create static
text node\n * \n * @param index Index of the node in the data array\n * @param value Static string value to
write.\n * \n * @codeGenApi\n * \n function text(index, value) {\n if (value === void 0) { value = "";
}\n var lView = getLView();\n var tView = getTView();\n var adjustedIndex = index +
HEADER_OFFSET;\n ngDevMode &&\n assertEquals(getBindingIndex(), tView.bindingStartIndex, 'text
nodes should be created before any bindings');\n ngDevMode && assertIndexInRange(lView, adjustedIndex);\n
var tNode = tView.firstCreatePass ?\n getOrCreateTNode(tView, adjustedIndex, 1 /** Text */, value, null)
:\n tView.data[adjustedIndex];\n var textNative = lView[adjustedIndex] =
createTextNode(lView[RENDERER], value);\n appendChild(tView, lView, textNative, tNode);\n // Text
nodes are self closing.\n setCurrentTNode(tNode, false);\n }\n\n /** \n * @license\n * Copyright
Google LLC All Rights Reserved.\n * \n * Use of this source code is governed by an MIT-style license that can
be\n * found in the LICENSE file at https://angular.io/license\n * \n\n /** \n * Update text content with
a lone bound value\n * \n * Used when a text node has 1 interpolated value in it, an no additional text\n *
surrounds that interpolated value:\n * \n * ```html\n * <div>{{v0}}</div>\n * ```\n * \n * Its compiled
representation is:\n * \n * ```ts\n * textInterpolate(v0);\n * ```\n * @returns itself, so that it may be
chained.\n * @see textInterpolateV\n * @codeGenApi\n * \n function textInterpolate(v0) {\n
textInterpolate1("", v0, "");\n return textInterpolate;\n }\n\n /** \n * Update text content with single
bound value surrounded by other text.\n * \n * Used when a text node has 1 interpolated value in it:\n * \n *
```html\n * <div>prefix{{v0}}suffix</div>\n * ```\n * \n * Its compiled representation is:\n * \n *
```ts\n * textInterpolate1('prefix', v0, 'suffix');\n * ```\n * @returns itself, so that it may be chained.\n *
@see textInterpolateV\n * @codeGenApi\n * \n function textInterpolate1(prefix, v0, suffix) {\n var
lView = getLView();\n var interpolated = interpolation1(lView, prefix, v0, suffix);\n if (interpolated !==
NO_CHANGE) {\n textBindingInternal(lView, getSelectedIndex(), interpolated);\n }\n return
textInterpolate1;\n }\n\n /** \n * Update text content with 2 bound values surrounded by other text.\n
* \n * Used when a text node has 2 interpolated values in it:\n * \n * ```html\n * <div>prefix{{v0}}-
{{v1}}suffix</div>\n * ```\n * \n * Its compiled representation is:\n * \n * ```ts\n *
textInterpolate2('prefix', v0, '-', v1, 'suffix');\n * ```\n * @returns itself, so that it may be chained.\n *
@see textInterpolateV\n * @codeGenApi\n * \n function textInterpolate2(prefix, v0, i0, v1, suffix) {\n var
lView = getLView();\n var interpolated = interpolation2(lView, prefix, v0, i0, v1, suffix);\n if (interpolated
!== NO_CHANGE) {\n textBindingInternal(lView, getSelectedIndex(), interpolated);\n }\n return
textInterpolate2;\n }\n\n /** \n * Update text content with 3 bound values surrounded by other text.\n
* \n * Used when a text node has 3 interpolated values in it:\n * \n * ```html\n * <div>prefix{{v0}}-
{{v1}}-{{v2}}suffix</div>\n * ```\n * \n * Its compiled representation is:\n * \n * ```ts\n *

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textInterpolate3(\n * 'prefix', v0, '-', v1, '-', v2, 'suffix');\n * ```\n * @returns itself, so that it may be
chained.\n * @see textInterpolateV\n * @codeGenApi\n * ^\n function textInterpolate3(prefix, v0, i0, v1,
i1, v2, suffix) {\n var IView = getLView();\n var interpolated = interpolation3(IView, prefix, v0, i0, v1, i1,
v2, suffix);\n if (interpolated !== NO_CHANGE) {\n textBindingInternal(IView, getSelectedIndex(),
interpolated);\n }\n return textInterpolate3;\n }\n /**\n *\n * Update text content with 4 bound
values surrounded by other text.\n *\n * Used when a text node has 4 interpolated values in it:\n *\n *
```\n * <div>prefix{{v0}}-{{v1}}-{{v2}}-{{v3}}suffix</div>\n * ```\n *\n * Its compiled
representation is:\n *\n * ```\n * textInterpolate4(\n * 'prefix', v0, '-', v1, '-', v2, '-', v3, 'suffix');\n * ```\n
*\n * @returns itself, so that it may be chained.\n * @see textInterpolateV\n * @codeGenApi\n * ^\n function
textInterpolate4(prefix, v0, i0, v1, i1, v2, i2, v3, suffix) {\n var IView = getLView();\n var interpolated =
interpolation4(IView, prefix, v0, i0, v1, i1, v2, i2, v3, suffix);\n if (interpolated !== NO_CHANGE) {\n
textBindingInternal(IView, getSelectedIndex(), interpolated);\n }\n return textInterpolate4;\n }\n /**\n
*\n * Update text content with 5 bound values surrounded by other text.\n *\n * Used when a text node has 5
interpolated values in it:\n *\n * ```\n * <div>prefix{{v0}}-{{v1}}-{{v2}}-{{v3}}-
{{v4}}suffix</div>\n * ```\n *\n * Its compiled representation is:\n *\n * ```\n * textInterpolate5(\n
* 'prefix', v0, '-', v1, '-', v2, '-', v3, '-', v4, 'suffix');\n * ```\n *\n * @returns itself, so that it may be chained.\n *
@see textInterpolateV\n * @codeGenApi\n * ^\n function textInterpolate5(prefix, v0, i0, v1, i1, v2, i2, v3, i3,
v4, suffix) {\n var IView = getLView();\n var interpolated = interpolation5(IView, prefix, v0, i0, v1, i1, v2,
i2, v3, i3, v4, suffix);\n if (interpolated !== NO_CHANGE) {\n textBindingInternal(IView,
getSelectedIndex(), interpolated);\n }\n return textInterpolate5;\n }\n /**\n *\n * Update text
content with 6 bound values surrounded by other text.\n *\n * Used when a text node has 6 interpolated values
in it:\n *\n * ```\n * <div>prefix{{v0}}-{{v1}}-{{v2}}-{{v3}}-{{v4}}-{{v5}}suffix</div>\n * ```\n
*\n * Its compiled representation is:\n *\n * ```\n * textInterpolate6(\n * 'prefix', v0, '-', v1, '-', v2, '-',
v3, '-', v4, '-', v5, 'suffix');\n * ```\n *\n * @param i4 Static value used for concatenation only.\n *
@param v5 Value checked for change. @returns itself, so that it may be chained.\n * @see textInterpolateV\n
* @codeGenApi\n * ^\n function textInterpolate6(prefix, v0, i0, v1, i1, v2, i2, v3, i3, v4, i4, v5, suffix) {\n
var IView = getLView();\n var interpolated = interpolation6(IView, prefix, v0, i0, v1, i1, v2, i2, v3, i3, v4, i4,
v5, suffix);\n if (interpolated !== NO_CHANGE) {\n textBindingInternal(IView, getSelectedIndex(),
interpolated);\n }\n return textInterpolate6;\n }\n /**\n *\n * Update text content with 7 bound
values surrounded by other text.\n *\n * Used when a text node has 7 interpolated values in it:\n *\n *
```\n * <div>prefix{{v0}}-{{v1}}-{{v2}}-{{v3}}-{{v4}}-{{v5}}-{{v6}}suffix</div>\n * ```\n *\n *
Its compiled representation is:\n *\n * ```\n * textInterpolate7(\n * 'prefix', v0, '-', v1, '-', v2, '-', v3, '-',
v4, '-', v5, '-', v6, 'suffix');\n * ```\n *\n * @returns itself, so that it may be chained.\n * @see textInterpolateV\n
* @codeGenApi\n * ^\n function textInterpolate7(prefix, v0, i0, v1, i1, v2, i2, v3, i3, v4, i4, v5, i5, v6, suffix) {\n
var IView = getLView();\n var interpolated = interpolation7(IView, prefix, v0, i0, v1, i1, v2, i2, v3, i3, v4,
i4, v5, i5, v6, suffix);\n if (interpolated !== NO_CHANGE) {\n textBindingInternal(IView,
getSelectedIndex(), interpolated);\n }\n return textInterpolate7;\n }\n /**\n *\n * Update text
content with 8 bound values surrounded by other text.\n *\n * Used when a text node has 8 interpolated values
in it:\n *\n * ```\n * <div>prefix{{v0}}-{{v1}}-{{v2}}-{{v3}}-{{v4}}-{{v5}}-{{v6}}-
{{v7}}suffix</div>\n * ```\n *\n * Its compiled representation is:\n *\n * ```\n * textInterpolate8(\n
* 'prefix', v0, '-', v1, '-', v2, '-', v3, '-', v4, '-', v5, '-', v6, '-', v7, 'suffix');\n * ```\n *\n *
@returns itself, so that it may be chained.\n * @see textInterpolateV\n * @codeGenApi\n * ^\n function
textInterpolate8(prefix, v0, i0, v1, i1, v2, i2, v3, i3, v4, i4, v5, i5, v6, i6, v7, suffix) {\n var IView = getLView();\n
var interpolated = interpolation8(IView, prefix, v0, i0, v1, i1, v2, i2, v3, i3, v4, i4, v5, i5, v6, i6, v7, suffix);\n
if (interpolated !== NO_CHANGE) {\n textBindingInternal(IView, getSelectedIndex(), interpolated);\n }\n return
textInterpolate8;\n }\n /**\n *\n * Update text content with 9 or more bound values other surrounded by text.\n
*\n * Used when the number of interpolated values exceeds 8.\n *\n * ```\n * <div>prefix{{v0}}-
{{v1}}-{{v2}}-{{v3}}-{{v4}}-{{v5}}-{{v6}}-{{v7}}-{{v8}}-{{v9}}suffix</div>\n * ```\n *\n * Its

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compiled representation is:\n * \n * ``ts\n * textInterpolateV(\n * ['prefix', v0, '-', v1, '-', v2, '-', v3, '-', v4,\n '-', v5, '-', v6, '-', v7, '-', v9,\n * 'suffix']);\n * ``\n * \n * @param values The collection of values and the\n strings in between those values, beginning with\n * a string prefix and ending with a string suffix.\n * (e.g.\n `['prefix', value0, '-', value1, '-', value2, ..., value99, 'suffix']`)\n * \n * @returns itself, so that it may be\n chained.\n * @codeGenApi\n * \n function textInterpolateV(values) {\n var IView = getLView();\n var interpolated = interpolationV(IView, values);\n if (interpolated !== NO_CHANGE) {\n textBindingInternal(IView, getSelectedIndex(), interpolated);\n }\n return textInterpolateV;\n }\n\n /**\n * @license\n * Copyright Google LLC All Rights Reserved.\n * \n * Use of this source code is\n governed by an MIT-style license that can be\n * found in the LICENSE file at https://angular.io/license\n * \n\n /**\n * \n * Update an interpolated class on an element with single bound value surrounded by text.\n * \n * Used when the value passed to a property has 1 interpolated value in it:\n * \n * ``html\n * <div\n class="prefix{{v0}}suffix"></div>\n * ``\n * \n * Its compiled representation is:\n * \n * ``ts\n * classMapInterpolate1('prefix', v0, 'suffix');\n * ``\n * \n * @param prefix Static value used for concatenation\n only.\n * @param v0 Value checked for change.\n * @param suffix Static value used for concatenation only.\n * \n * @codeGenApi\n * \n function classMapInterpolate1(prefix, v0, suffix) {\n var IView = getLView();\n var interpolatedValue = interpolation1(IView, prefix, v0, suffix);\n checkStylingMap(keyValueArraySet,\n classStringParser, interpolatedValue, true);\n }\n\n /**\n * \n * Update an interpolated class on an element\n with 2 bound values surrounded by text.\n * \n * Used when the value passed to a property has 2 interpolated\n values in it:\n * \n * ``html\n * <div class="prefix{{v0}}-{{v1}}suffix"></div>\n * ``\n * \n * Its\n compiled representation is:\n * \n * ``ts\n * classMapInterpolate2('prefix', v0, '-', v1, 'suffix');\n * ``\n * \n * @param prefix Static value used for concatenation only.\n * @param v0 Value checked for change.\n * \n * @param i0 Static value used for concatenation only.\n * @param v1 Value checked for change.\n * @param\n suffix Static value used for concatenation only.\n * \n * @codeGenApi\n * \n function\n classMapInterpolate2(prefix, v0, i0, v1, suffix) {\n var IView = getLView();\n var interpolatedValue =\n interpolation2(IView, prefix, v0, i0, v1, suffix);\n checkStylingMap(keyValueArraySet, classStringParser,\n interpolatedValue, true);\n }\n\n /**\n * \n * Update an interpolated class on an element with 3 bound values\n surrounded by text.\n * \n * Used when the value passed to a property has 3 interpolated values in it:\n * \n * ``html\n * <div class="prefix{{v0}}-{{v1}}-{{v2}}suffix"></div>\n * ``\n * \n * Its compiled\n representation is:\n * \n * ``ts\n * classMapInterpolate3(\n * 'prefix', v0, '-', v1, '-', v2, 'suffix');\n * ``\n * \n * @param prefix Static value used for concatenation only.\n * @param v0 Value checked for change.\n * \n * @param i0 Static value used for concatenation only.\n * @param v1 Value checked for change.\n * @param\n i1 Static value used for concatenation only.\n * @param v2 Value checked for change.\n * @param suffix\n Static value used for concatenation only.\n * \n * @codeGenApi\n * \n function classMapInterpolate3(prefix, v0,\n i0, v1, i1, v2, suffix) {\n var IView = getLView();\n var interpolatedValue = interpolation3(IView, prefix,\n v0, i0, v1, i1, v2, suffix);\n checkStylingMap(keyValueArraySet, classStringParser, interpolatedValue, true);\n }\n\n /**\n * \n * Update an interpolated class on an element with 4 bound values surrounded by text.\n * \n * Used when the value passed to a property has 4 interpolated values in it:\n * \n * ``html\n * <div\n class="prefix{{v0}}-{{v1}}-{{v2}}-{{v3}}suffix"></div>\n * ``\n * \n * Its compiled representation is:\n * \n * \n * ``ts\n * classMapInterpolate4(\n * 'prefix', v0, '-', v1, '-', v2, '-', v3, 'suffix');\n * ``\n * \n * \n * @param prefix Static value used for concatenation only.\n * @param v0 Value checked for change.\n * \n * @param i0 Static value used for concatenation only.\n * @param v1 Value checked for change.\n * @param i1\n Static value used for concatenation only.\n * @param v2 Value checked for change.\n * @param i2 Static\n value used for concatenation only.\n * @param v3 Value checked for change.\n * @param suffix Static value\n used for concatenation only.\n * \n * @codeGenApi\n * \n function classMapInterpolate4(prefix, v0, i0, v1, i1,\n v2, i2, v3, suffix) {\n var IView = getLView();\n var interpolatedValue = interpolation4(IView, prefix, v0,\n i0, v1, i1, v2, i2, v3, suffix);\n checkStylingMap(keyValueArraySet, classStringParser, interpolatedValue,\n true);\n }\n\n /**\n * \n * Update an interpolated class on an element with 5 bound values surrounded by\n text.\n * \n * Used when the value passed to a property has 5 interpolated values in it:\n * \n * ``html\n *

```

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<div class="prefix{{v0}}-{{v1}}-{{v2}}-{{v3}}-{{v4}}suffix"></div>\n * ```\n * \n * Its compiled
representation is:\n * \n * ```\n * classMapInterpolate5(\n * 'prefix', v0, '-', v1, '-', v2, '-', v3, '-', v4,
'suffix');\n * ```\n * \n * @param prefix Static value used for concatenation only.\n * @param v0 Value
checked for change.\n * @param i0 Static value used for concatenation only.\n * @param v1 Value checked
for change.\n * @param i1 Static value used for concatenation only.\n * @param v2 Value checked for
change.\n * @param i2 Static value used for concatenation only.\n * @param v3 Value checked for change.\n
* @param i3 Static value used for concatenation only.\n * @param v4 Value checked for change.\n * @param
suffix Static value used for concatenation only.\n * @codeGenApi\n */\n function
classMapInterpolate5(prefix, v0, i0, v1, i1, v2, i2, v3, i3, v4, suffix) {\n var IView = getLView();\n var
interpolatedValue = interpolation5(IView, prefix, v0, i0, v1, i1, v2, i2, v3, i3, v4, suffix);\n checkStylingMap(keyValueArraySet, classStringParser, interpolatedValue, true);\n }\n /**\n * \n * Update
an interpolated class on an element with 6 bound values surrounded by text.\n * \n * Used when the value
passed to a property has 6 interpolated values in it:\n * \n * ```\n * <div class="prefix{{v0}}-{{v1}}-
{{v2}}-{{v3}}-{{v4}}-{{v5}}suffix"></div>\n * ```\n * \n * Its compiled representation is:\n * \n *
```\n    * classMapInterpolate6(\n    * 'prefix', v0, '-', v1, '-', v2, '-', v3, '-', v4, '-', v5, 'suffix');\n    * ```\n    * \n    *
@param prefix Static value used for concatenation only.\n    * @param v0 Value checked for change.\n    *
@param i0 Static value used for concatenation only.\n    * @param v1 Value checked for change.\n    * @param i1
Static value used for concatenation only.\n    * @param v2 Value checked for change.\n    * @param i2 Static
value used for concatenation only.\n    * @param v3 Value checked for change.\n    * @param i3 Static value used
for concatenation only.\n    * @param v4 Value checked for change.\n    * @param i4 Static value used for
concatenation only.\n    * @param v5 Value checked for change.\n    * @param suffix Static value used for
concatenation only.\n    * @codeGenApi\n    */\n    function classMapInterpolate6(prefix, v0, i0, v1, i1, v2, i2, v3,
i3, v4, i4, v5, suffix) {\n        var IView = getLView();\n        var interpolatedValue = interpolation6(IView, prefix,
v0, i0, v1, i1, v2, i2, v3, i3, v4, i4, v5, suffix);\n        checkStylingMap(keyValueArraySet, classStringParser,
interpolatedValue, true);\n    }\n    /**\n    * \n    * Update an interpolated class on an element with 7 bound values
surrounded by text.\n    * \n    * Used when the value passed to a property has 7 interpolated values in it:\n    * \n
* ```\n    * <div class="prefix{{v0}}-{{v1}}-{{v2}}-{{v3}}-{{v4}}-{{v5}}-{{v6}}suffix"></div>\n    *
```\n    * \n    * Its compiled representation is:\n    * \n    * ```\n    * classMapInterpolate7(\n    * 'prefix', v0, '-',
v1, '-', v2, '-', v3, '-', v4, '-', v5, '-', v6, 'suffix');\n * ```\n * \n * @param prefix Static value used for
concatenation only.\n * @param v0 Value checked for change.\n * @param i0 Static value used for
concatenation only.\n * @param v1 Value checked for change.\n * @param i1 Static value used for
concatenation only.\n * @param v2 Value checked for change.\n * @param i2 Static value used for
concatenation only.\n * @param v3 Value checked for change.\n * @param i3 Static value used for
concatenation only.\n * @param v4 Value checked for change.\n * @param i4 Static value used for
concatenation only.\n * @param v5 Value checked for change.\n * @param i5 Static value used for
concatenation only.\n * @param v6 Value checked for change.\n * @param suffix Static value used for
concatenation only.\n * @codeGenApi\n */\n function classMapInterpolate7(prefix, v0, i0, v1, i1, v2, i2, v3,
i3, v4, i4, v5, i5, v6, suffix) {\n var IView = getLView();\n var interpolatedValue = interpolation7(IView,
prefix, v0, i0, v1, i1, v2, i2, v3, i3, v4, i4, v5, i5, v6, suffix);\n checkStylingMap(keyValueArraySet,
classStringParser, interpolatedValue, true);\n }\n /**\n * \n * Update an interpolated class on an element
with 8 bound values surrounded by text.\n * \n * Used when the value passed to a property has 8 interpolated
values in it:\n * \n * ```\n * <div class="prefix{{v0}}-{{v1}}-{{v2}}-{{v3}}-{{v4}}-{{v5}}-{{v6}}-
{{v7}}suffix"></div>\n * ```\n * \n * Its compiled representation is:\n * \n * ```\n *
classMapInterpolate8(\n * 'prefix', v0, '-', v1, '-', v2, '-', v3, '-', v4, '-', v5, '-', v6, '-', v7, 'suffix');\n * ```\n * \n *
@param prefix Static value used for concatenation only.\n * @param v0 Value checked for change.\n *
@param i0 Static value used for concatenation only.\n * @param v1 Value checked for change.\n * @param i1
Static value used for concatenation only.\n * @param v2 Value checked for change.\n * @param i2 Static
value used for concatenation only.\n * @param v3 Value checked for change.\n * @param i3 Static value used

```

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for concatenation only.\n * @param v4 Value checked for change.\n * @param i4 Static value used for
concatenation only.\n * @param v5 Value checked for change.\n * @param i5 Static value used for
concatenation only.\n * @param v6 Value checked for change.\n * @param i6 Static value used for
concatenation only.\n * @param v7 Value checked for change.\n * @param suffix Static value used for
concatenation only.\n * @codeGenApi\n */\n function classMapInterpolate8(prefix, v0, i0, v1, i1, v2, i2, v3,
i3, v4, i4, v5, i5, v6, i6, v7, suffix) {\n var IView = getLView();\n var interpolatedValue =
interpolation8(IView, prefix, v0, i0, v1, i1, v2, i2, v3, i3, v4, i4, v5, i5, v6, i6, v7, suffix);\n
checkStylingMap(keyValueArraySet, classStringParser, interpolatedValue, true);\n } \n /**\n * Update an
interpolated class on an element with 9 or more bound values surrounded by text.\n *\n * Used when the
number of interpolated values exceeds 8.\n *\n * ```html\n * <div\n * class="prefix{{v0}}-{{v1}}-
{{v2}}-{{v3}}-{{v4}}-{{v5}}-{{v6}}-{{v7}}-{{v8}}-{{v9}}suffix"></div>\n * ```\n *\n * Its compiled
representation is:\n *\n * ```ts\n * classMapInterpolateV(\n * ['prefix', v0, '-', v1, '-', v2, '-', v3, '-', v4, '-',
v5, '-', v6, '-', v7, '-', v9,\n * 'suffix']);\n * ```\n *\n * @param values The collection of values and the
strings in-between those values, beginning with\n * a string prefix and ending with a string suffix.\n * (e.g.
`['prefix', value0, '-', value1, '-', value2, ..., value99, 'suffix']`)\n * @codeGenApi\n */\n function
classMapInterpolateV(values) {\n var IView = getLView();\n var interpolatedValue =
interpolationV(IView, values);\n checkStylingMap(keyValueArraySet, classStringParser, interpolatedValue,
true);\n } \n \n /**\n * @license\n * Copyright Google LLC All Rights Reserved.\n *\n * Use of this
source code is governed by an MIT-style license that can be\n * found in the LICENSE file at
https://angular.io/license\n */\n /**\n *\n * Update an interpolated style on an element with single bound
value surrounded by text.\n *\n * Used when the value passed to a property has 1 interpolated value in it:\n
*\n * ```html\n * <div style="key: {{v0}}suffix"></div>\n * ```\n *\n * Its compiled representation
is:\n *\n * ```ts\n * styleMapInterpolate1('key: ', v0, 'suffix');\n * ```\n *\n * @param prefix Static
value used for concatenation only.\n * @param v0 Value checked for change.\n * @param suffix Static value
used for concatenation only.\n * @codeGenApi\n */\n function styleMapInterpolate1(prefix, v0, suffix) {\n
 var IView = getLView();\n var interpolatedValue = interpolation1(IView, prefix, v0, suffix);\n
styleMap(interpolatedValue);\n } \n /**\n *\n * Update an interpolated style on an element with 2 bound
values surrounded by text.\n *\n * Used when the value passed to a property has 2 interpolated values in it:\n
*\n * ```html\n * <div style="key: {{v0}}; key1: {{v1}}suffix"></div>\n * ```\n *\n * Its compiled
representation is:\n *\n * ```ts\n * styleMapInterpolate2('key: ', v0, ', key1: ', v1, 'suffix');\n * ```\n *\n
* @param prefix Static value used for concatenation only.\n * @param v0 Value checked for change.\n *
* @param i0 Static value used for concatenation only.\n * @param v1 Value checked for change.\n * @param
suffix Static value used for concatenation only.\n * @codeGenApi\n */\n function
styleMapInterpolate2(prefix, v0, i0, v1, suffix) {\n var IView = getLView();\n var interpolatedValue =
interpolation2(IView, prefix, v0, i0, v1, suffix);\n styleMap(interpolatedValue);\n } \n /**\n *\n *
Update an interpolated style on an element with 3 bound values surrounded by text.\n *\n * Used when the
value passed to a property has 3 interpolated values in it:\n *\n * ```html\n * <div style="key: {{v0}}; key2:
{{v1}}; key2: {{v2}}suffix"></div>\n * ```\n *\n * Its compiled representation is:\n *\n * ```ts\n *
styleMapInterpolate3(\n * 'key: ', v0, ', key1: ', v1, ', key2: ', v2, 'suffix');\n * ```\n *\n * @param prefix
Static value used for concatenation only.\n * @param v0 Value checked for change.\n * @param i0 Static
value used for concatenation only.\n * @param v1 Value checked for change.\n * @param i1 Static value used
for concatenation only.\n * @param v2 Value checked for change.\n * @param suffix Static value used for
concatenation only.\n * @codeGenApi\n */\n function styleMapInterpolate3(prefix, v0, i0, v1, i1, v2, suffix)
{\n var IView = getLView();\n var interpolatedValue = interpolation3(IView, prefix, v0, i0, v1, i1, v2,
suffix);\n styleMap(interpolatedValue);\n } \n /**\n *\n * Update an interpolated style on an element
with 4 bound values surrounded by text.\n *\n * Used when the value passed to a property has 4 interpolated
values in it:\n *\n * ```html\n * <div style="key: {{v0}}; key1: {{v1}}; key2: {{v2}}; key3:
{{v3}}suffix"></div>\n * ```\n *\n * Its compiled representation is:\n *\n * ```ts\n *

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styleMapInterpolate4(\n * 'key: ', v0, ', key1: ', v1, ', key2: ', v2, ', key3: ', v3, 'suffix');\n * ``\n *\n * @param prefix Static value used for concatenation only.\n * @param v0 Value checked for change.\n * @param i0 Static value used for concatenation only.\n * @param v1 Value checked for change.\n * @param i1 Static value used for concatenation only.\n * @param v2 Value checked for change.\n * @param i2 Static value used for concatenation only.\n * @param v3 Value checked for change.\n * @param suffix Static value used for concatenation only.\n * @codeGenApi\n */\n function styleMapInterpolate4(prefix, v0, i0, v1, i1, v2, i2, v3, suffix) {\n var IView = getLView();\n var interpolatedValue = interpolation4(IView, prefix, v0, i0, v1, i1, v2, i2, v3, suffix);\n styleMap(interpolatedValue);\n } \n /**\n *\n * Update an interpolated style on an element with 5 bound values surrounded by text.\n *\n * Used when the value passed to a property has 5 interpolated values in it:\n *\n * ``html\n * <div style=\n * "key: {{v0}}; key1: {{v1}}; key2: {{v2}}; key3: {{v3}}; key4: {{v4}}suffix\n * "></div>\n * ``\n *\n * Its compiled representation is:\n *\n * ``ts\n * styleMapInterpolate5(\n * 'key: ', v0, ', key1: ', v1, ', key2: ', v2, ', key3: ', v3, ', key4: ', v4, 'suffix');\n * ``\n *\n * @param prefix Static value used for concatenation only.\n * @param v0 Value checked for change.\n * @param i0 Static value used for concatenation only.\n * @param v1 Value checked for change.\n * @param i1 Static value used for concatenation only.\n * @param v2 Value checked for change.\n * @param i2 Static value used for concatenation only.\n * @param v3 Value checked for change.\n * @param i3 Static value used for concatenation only.\n * @param v4 Value checked for change.\n * @param suffix Static value used for concatenation only.\n * @codeGenApi\n */\n function styleMapInterpolate5(prefix, v0, i0, v1, i1, v2, i2, v3, i3, v4, suffix) {\n var IView = getLView();\n var interpolatedValue = interpolation5(IView, prefix, v0, i0, v1, i1, v2, i2, v3, i3, v4, suffix);\n styleMap(interpolatedValue);\n } \n /**\n *\n * Update an interpolated style on an element with 6 bound values surrounded by text.\n *\n * Used when the value passed to a property has 6 interpolated values in it:\n *\n * ``html\n * <div style=\n * "key: {{v0}}; key1: {{v1}}; key2: {{v2}}; key3: {{v3}}; key4: {{v4}};\n * key5: {{v5}}suffix\n * "></div>\n * ``\n *\n * Its compiled representation is:\n *\n * ``ts\n * styleMapInterpolate6(\n * 'key: ', v0, ', key1: ', v1, ', key2: ', v2, ', key3: ', v3, ', key4: ', v4, ', key5: ', v5,\n * 'suffix');\n * ``\n *\n * @param prefix Static value used for concatenation only.\n * @param v0 Value checked for change.\n * @param i0 Static value used for concatenation only.\n * @param v1 Value checked for change.\n * @param i1 Static value used for concatenation only.\n * @param v2 Value checked for change.\n * @param i2 Static value used for concatenation only.\n * @param v3 Value checked for change.\n * @param i3 Static value used for concatenation only.\n * @param v4 Value checked for change.\n * @param i4 Static value used for concatenation only.\n * @param v5 Value checked for change.\n * @param suffix Static value used for concatenation only.\n * @codeGenApi\n */\n function styleMapInterpolate6(prefix, v0, i0, v1, i1, v2, i2, v3, i3, v4, i4, v5, suffix) {\n var IView = getLView();\n var interpolatedValue = interpolation6(IView, prefix, v0, i0, v1, i1, v2, i2, v3, i3, v4, i4, v5, suffix);\n styleMap(interpolatedValue);\n } \n /**\n *\n * Update an interpolated style on an element with 7 bound values surrounded by text.\n *\n * Used when the value passed to a property has 7 interpolated values in it:\n *\n * ``html\n * <div style=\n * "key: {{v0}}; key1: {{v1}}; key2: {{v2}}; key3: {{v3}}; key4: {{v4}}; key5: {{v5}};\n * key6: {{v6}}suffix\n * "></div>\n * ``\n *\n * Its compiled representation is:\n *\n * ``ts\n * styleMapInterpolate7(\n * 'key: ', v0, ', key1: ', v1, ', key2: ', v2, ', key3: ', v3, ', key4: ', v4, ', key5: ', v5,\n * ', key6: ', v6, 'suffix');\n * ``\n *\n * @param prefix Static value used for concatenation only.\n * @param v0 Value checked for change.\n * @param i0 Static value used for concatenation only.\n * @param v1 Value checked for change.\n * @param i1 Static value used for concatenation only.\n * @param v2 Value checked for change.\n * @param i2 Static value used for concatenation only.\n * @param v3 Value checked for change.\n * @param i3 Static value used for concatenation only.\n * @param v4 Value checked for change.\n * @param i4 Static value used for concatenation only.\n * @param v5 Value checked for change.\n * @param i5 Static value used for concatenation only.\n * @param v6 Value checked for change.\n * @param suffix Static value used for concatenation only.\n * @codeGenApi\n */\n function styleMapInterpolate7(prefix, v0, i0, v1, i1, v2, i2, v3, i3, v4, i4, v5, i5, v6, suffix) {\n var IView = getLView();\n var interpolatedValue = interpolation7(IView,

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prefix, v0, i0, v1, i1, v2, i2, v3, i3, v4, i4, v5, i5, v6, suffix);\n styleMap(interpolatedValue);\n }\n /**\n *\n * Update an interpolated style on an element with 8 bound values surrounded by text.\n *\n * Used when the value passed to a property has 8 interpolated values in it:\n *\n * ```html\n * <div style=\"key: {{v0}};\n * key1: {{v1}}; key2: {{v2}}; key3: {{v3}}; key4: {{v4}}; key5: {{v5}};\n * key6: {{v6}}; key7:\n * {{v7}}suffix\"></div>\n * ```\n *\n * Its compiled representation is:\n *\n * ```ts\n * styleMapInterpolate8(\n * 'key: ', v0, '; key1: ', v1, '; key2: ', v2, '; key3: ', v3, '; key4: ', v4, '; key5: ', v5,\n * 'key6: ', v6, '; key7: ', v7, 'suffix');\n * ```\n *\n * @param prefix Static value used for concatenation only.\n * @param v0 Value checked for change.\n * @param i0 Static value used for concatenation only.\n * @param v1 Value checked for change.\n * @param i1 Static value used for concatenation only.\n * @param v2 Value checked for change.\n * @param i2 Static value used for concatenation only.\n * @param v3 Value checked for change.\n * @param i3 Static value used for concatenation only.\n * @param v4 Value checked for change.\n * @param i4 Static value used for concatenation only.\n * @param v5 Value checked for change.\n * @param i5 Static value used for concatenation only.\n * @param v6 Value checked for change.\n * @param i6 Static value used for concatenation only.\n * @param v7 Value checked for change.\n * @param suffix Static value used for concatenation only.\n */\n @codeGenApi\n *^/\n function styleMapInterpolate8(prefix, v0, i0, v1, i1, v2, i2, v3, i3, v4, i4, v5, i5, v6, i6, v7, suffix) {\n var IView = getLView();\n var interpolatedValue = interpolation8(IView, prefix, v0, i0, v1, i1, v2, i2, v3, i3, v4, i4, v5, i5, v6, i6, v7, suffix);\n styleMap(interpolatedValue);\n }\n /**\n *\n * Update an interpolated style on an element with 9 or more bound values surrounded by text.\n *\n * Used when the number of interpolated values exceeds 8.\n *\n * ```html\n * <div\n * class=\"key: {{v0}}; key1: {{v1}}; key2: {{v2}}; key3: {{v3}}; key4: {{v4}}; key5:\n * {{v5}};\n * key6: {{v6}}; key7: {{v7}}; key8: {{v8}}; key9: {{v9}}suffix\"></div>\n * ```\n *\n * Its compiled representation is:\n *\n * ```ts\n * styleMapInterpolateV(\n * ['key: ', v0, '; key1: ', v1, '\n * key2: ', v2, '; key3: ', v3, '; key4: ', v4, '; key5: ', v5,\n * 'key6: ', v6, '; key7: ', v7, '; key8: ', v8, '; key9: ', v9,\n * 'suffix'];\n * ```\n *\n * @param values The collection of values and the strings in-between those values, beginning with\n * a string prefix and ending with a string suffix.\n * (e.g. `['prefix', value0, '; key2: ', value1, '\n * key2: ', value2, ..., value99, 'suffix']`)\n */\n @codeGenApi\n *^/\n function styleMapInterpolateV(values) {\n var IView = getLView();\n var interpolatedValue = interpolationV(IView, values);\n styleMap(interpolatedValue);\n }\n /**\n *\n * @license\n * Copyright Google LLC All Rights Reserved.\n *\n * Use of this source code is governed by an MIT-style license that can be\n * found in the LICENSE file at\n * https://angular.io/license\n */\n /**\n *\n * Update an interpolated style property on an element with single bound value surrounded by text.\n *\n * Used when the value passed to a property has 1 interpolated value in it:\n *\n * ```html\n * <div style.color=\"prefix{{v0}}suffix\"></div>\n * ```\n *\n * Its compiled representation is:\n *\n * ```ts\n * stylePropInterpolate1(0, 'prefix', v0, 'suffix');\n * ```\n *\n * @param styleIndex Index of style to update. This index value refers to the\n * index of the style in the style bindings array that was passed into\n * `styling`.\n * @param prefix Static value used for concatenation only.\n * @param v0 Value checked for change.\n * @param suffix Static value used for concatenation only.\n * @param valueSuffix Optional suffix. Used with scalar values to add unit such as `px`.\n * @returns itself, so that it may be chained.\n */\n @codeGenApi\n *^/\n function stylePropInterpolate1(prop, prefix, v0, suffix, valueSuffix) {\n var IView = getLView();\n var interpolatedValue = interpolation1(IView, prefix, v0, suffix);\n checkStylingProperty(prop, interpolatedValue, valueSuffix, false);\n return stylePropInterpolate1;\n }\n /**\n *\n * Update an interpolated style property on an element with 2 bound values surrounded by text.\n *\n * Used when the value passed to a property has 2 interpolated values in it:\n *\n * ```html\n * <div style.color=\"prefix{{v0}}-{{v1}}suffix\"></div>\n * ```\n *\n * Its compiled representation is:\n *\n * ```ts\n * stylePropInterpolate2(0, 'prefix', v0, '-', v1, 'suffix');\n * ```\n *\n * @param styleIndex Index of style to update. This index value refers to the\n * index of the style in the style bindings array that was passed into\n * `styling`.\n * @param prefix Static value used for concatenation only.\n * @param v0 Value checked for change.\n * @param i0 Static value used for concatenation only.\n * @param v1 Value checked for change.\n * @param suffix Static value used for concatenation only.\n *

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@param valueSuffix Optional suffix. Used with scalar values to add unit such as `px`.
 * @returns itself, so that it may be chained.
 * @codeGenApi
 */
function stylePropInterpolate2(prop, prefix, v0, i0, v1, suffix, valueSuffix) {
 var IView = getLView();
 var interpolatedValue = interpolation2(IView, prefix, v0, i0, v1, suffix);
 checkStylingProperty(prop, interpolatedValue, valueSuffix, false);
 return stylePropInterpolate2;
}
/**
 * Update an interpolated style property on an element with 3 bound values surrounded by text.
 * Used when the value passed to a property has 3 interpolated values in it.
 * ```html
 * <div style.color="prefix{v0}-{v1}-{v2}suffix"></div>
 * ```
 * Its compiled representation is:
 * ```ts
 * stylePropInterpolate3(0, 'prefix', v0, '-', v1, '-', v2, 'suffix');
 * ```
 * @param styleIndex Index of style to update. This index value refers to the index of the style in the style bindings array that was passed into `styling`.
 * @param prefix Static value used for concatenation only.
 * @param v0 Value checked for change.
 * @param i0 Static value used for concatenation only.
 * @param v1 Value checked for change.
 * @param i1 Static value used for concatenation only.
 * @param v2 Value checked for change.
 * @param suffix Static value used for concatenation only.
 * @param valueSuffix Optional suffix. Used with scalar values to add unit such as `px`.
 * @returns itself, so that it may be chained.
 * @codeGenApi
 */
function stylePropInterpolate3(prop, prefix, v0, i0, v1, i1, v2, suffix, valueSuffix) {
 var IView = getLView();
 var interpolatedValue = interpolation3(IView, prefix, v0, i0, v1, i1, v2, suffix);
 checkStylingProperty(prop, interpolatedValue, valueSuffix, false);
 return stylePropInterpolate3;
}
/**
 * Update an interpolated style property on an element with 4 bound values surrounded by text.
 * Used when the value passed to a property has 4 interpolated values in it.
 * ```html
 * <div style.color="prefix{v0}-{v1}-{v2}-{v3}suffix"></div>
 * ```
 * Its compiled representation is:
 * ```ts
 * stylePropInterpolate4(0, 'prefix', v0, '-', v1, '-', v2, '-', v3, 'suffix');
 * ```
 * @param styleIndex Index of style to update. This index value refers to the index of the style in the style bindings array that was passed into `styling`.
 * @param prefix Static value used for concatenation only.
 * @param v0 Value checked for change.
 * @param i0 Static value used for concatenation only.
 * @param v1 Value checked for change.
 * @param i1 Static value used for concatenation only.
 * @param v2 Value checked for change.
 * @param i2 Static value used for concatenation only.
 * @param v3 Value checked for change.
 * @param suffix Static value used for concatenation only.
 * @param valueSuffix Optional suffix. Used with scalar values to add unit such as `px`.
 * @returns itself, so that it may be chained.
 * @codeGenApi
 */
function stylePropInterpolate4(prop, prefix, v0, i0, v1, i1, v2, i2, v3, suffix, valueSuffix) {
 var IView = getLView();
 var interpolatedValue = interpolation4(IView, prefix, v0, i0, v1, i1, v2, i2, v3, suffix);
 checkStylingProperty(prop, interpolatedValue, valueSuffix, false);
 return stylePropInterpolate4;
}
/**
 * Update an interpolated style property on an element with 5 bound values surrounded by text.
 * Used when the value passed to a property has 5 interpolated values in it.
 * ```html
 * <div style.color="prefix{v0}-{v1}-{v2}-{v3}-{v4}suffix"></div>
 * ```
 * Its compiled representation is:
 * ```ts
 * stylePropInterpolate5(0, 'prefix', v0, '-', v1, '-', v2, '-', v3, '-', v4, 'suffix');
 * ```
 * @param styleIndex Index of style to update. This index value refers to the index of the style in the style bindings array that was passed into `styling`.
 * @param prefix Static value used for concatenation only.
 * @param v0 Value checked for change.
 * @param i0 Static value used for concatenation only.
 * @param v1 Value checked for change.
 * @param i1 Static value used for concatenation only.
 * @param v2 Value checked for change.
 * @param i2 Static value used for concatenation only.
 * @param v3 Value checked for change.
 * @param i3 Static value used for concatenation only.
 * @param v4 Value checked for change.
 * @param suffix Static value used for concatenation only.
 * @param valueSuffix Optional suffix. Used with scalar values to add unit such as `px`.
 * @returns itself, so that it may be chained.
 * @codeGenApi
 */
function stylePropInterpolate5(prop, prefix, v0, i0, v1, i1, v2, i2, v3, i3, v4, suffix, valueSuffix) {
 var IView = getLView();
 var interpolatedValue = interpolation5(IView, prefix, v0, i0, v1, i1, v2, i2, v3, i3, v4, suffix);
 checkStylingProperty(prop, interpolatedValue, valueSuffix, false);
 return stylePropInterpolate5;
}

```

```

/**\n * \n * Update an interpolated style property on an element with 6 bound values surrounded by text.\n
*\n * Used when the value passed to a property has 6 interpolated values in it:\n * \n * ```html\n * <div\n
style.color=\`"prefix{{v0}}-{{v1}}-{{v2}}-{{v3}}-{{v4}}-{{v5}}suffix\`"></div>\n * ```\n * \n * Its\n
compiled representation is:\n * \n * ```ts\n * stylePropInterpolate6(0, 'prefix', v0, '-', v1, '-', v2, '-', v3, '-', v4, '-\n
', v5, 'suffix');\n * ```\n * \n * @param styleIndex Index of style to update. This index value refers to the\n
* index of the style in the style bindings array that was passed into\n * `styling`.\n * @param prefix\n
Static value used for concatenation only.\n * @param v0 Value checked for change.\n * @param i0 Static\n
value used for concatenation only.\n * @param v1 Value checked for change.\n * @param i1 Static value used\n
for concatenation only.\n * @param v2 Value checked for change.\n * @param i2 Static value used for\n
concatenation only.\n * @param v3 Value checked for change.\n * @param i3 Static value used for\n
concatenation only.\n * @param v4 Value checked for change.\n * @param i4 Static value used for\n
concatenation only.\n * @param v5 Value checked for change.\n * @param suffix Static value used for\n
concatenation only.\n * @param valueSuffix Optional suffix. Used with scalar values to add unit such as `px`.\n
* @returns itself, so that it may be chained.\n * @codeGenApi\n * ^\n function stylePropInterpolate6(prop,\n
prefix, v0, i0, v1, i1, v2, i2, v3, i3, v4, i4, v5, suffix, valueSuffix) {\n var IView = getLView();\n var\n
interpolatedValue = interpolation6(IView, prefix, v0, i0, v1, i1, v2, i2, v3, i3, v4, i4, v5, suffix);\n
checkStylingProperty(prop, interpolatedValue, valueSuffix, false);\n return stylePropInterpolate6;\n }\n
/>\n * \n * Update an interpolated style property on an element with 7 bound values surrounded by text.\n
*\n * Used when the value passed to a property has 7 interpolated values in it:\n * \n * ```html\n * <div\n
style.color=\`"prefix{{v0}}-{{v1}}-{{v2}}-{{v3}}-{{v4}}-{{v5}}-{{v6}}suffix\`"></div>\n * ```\n * \n * Its\n
compiled representation is:\n * \n * ```ts\n * stylePropInterpolate7(\n * 0, 'prefix', v0, '-', v1, '-', v2, '-', v3,\n
'-', v4, '-', v5, '-', v6, 'suffix');\n * ```\n * \n * @param styleIndex Index of style to update. This index value\n
refers to the\n * index of the style in the style bindings array that was passed into\n * `styling`.\n * \n
* @param prefix Static value used for concatenation only.\n * @param v0 Value checked for change.\n * \n
* @param i0 Static value used for concatenation only.\n * @param v1 Value checked for change.\n * @param i1\n
Static value used for concatenation only.\n * @param v2 Value checked for change.\n * @param i2 Static\n
value used for concatenation only.\n * @param v3 Value checked for change.\n * @param i3 Static value used\n
for concatenation only.\n * @param v4 Value checked for change.\n * @param i4 Static value used for\n
concatenation only.\n * @param v5 Value checked for change.\n * @param i5 Static value used for\n
concatenation only.\n * @param v6 Value checked for change.\n * @param suffix Static value used for\n
concatenation only.\n * @param valueSuffix Optional suffix. Used with scalar values to add unit such as `px`.\n
* @returns itself, so that it may be chained.\n * @codeGenApi\n * ^\n function stylePropInterpolate7(prop,\n
prefix, v0, i0, v1, i1, v2, i2, v3, i3, v4, i4, v5, i5, v6, suffix, valueSuffix) {\n var IView = getLView();\n var\n
interpolatedValue = interpolation7(IView, prefix, v0, i0, v1, i1, v2, i2, v3, i3, v4, i4, v5, i5, v6, suffix);\n
checkStylingProperty(prop, interpolatedValue, valueSuffix, false);\n return stylePropInterpolate7;\n }\n
/>\n * \n * Update an interpolated style property on an element with 8 bound values surrounded by text.\n
*\n * Used when the value passed to a property has 8 interpolated values in it:\n * \n * ```html\n * <div\n
style.color=\`"prefix{{v0}}-{{v1}}-{{v2}}-{{v3}}-{{v4}}-{{v5}}-{{v6}}-{{v7}}suffix\`"></div>\n * ```\n * \n
*\n * Its compiled representation is:\n * \n * ```ts\n * stylePropInterpolate8(0, 'prefix', v0, '-', v1, '-', v2, '-',\n
v3, '-', v4, '-', v5, '-', v6, '-', v7, 'suffix');\n * ```\n * \n * @param styleIndex Index of style to update.\n
This index value refers to the\n * index of the style in the style bindings array that was passed into\n * \n
`styling`.\n * @param prefix Static value used for concatenation only.\n * @param v0 Value checked for\n
change.\n * @param i0 Static value used for concatenation only.\n * @param v1 Value checked for change.\n
*\n * @param i1 Static value used for concatenation only.\n * @param v2 Value checked for change.\n * @param\n
i2 Static value used for concatenation only.\n * @param v3 Value checked for change.\n * @param i3 Static\n
value used for concatenation only.\n * @param v4 Value checked for change.\n * @param i4 Static value used\n
for concatenation only.\n * @param v5 Value checked for change.\n * @param i5 Static value used for\n
concatenation only.\n * @param v6 Value checked for change.\n * @param i6 Static value used for

```

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concatenation only.\n * @param v7 Value checked for change.\n * @param suffix Static value used for
concatenation only.\n * @param valueSuffix Optional suffix. Used with scalar values to add unit such as `px`.\n
* @returns itself, so that it may be chained.\n * @codeGenApi\n *^/n function stylePropInterpolate8(prop,
prefix, v0, i0, v1, i1, v2, i2, v3, i3, v4, i4, v5, i5, v6, i6, v7, suffix, valueSuffix) {\n var IView = getLView();\n
var interpolatedValue = interpolation8(IView, prefix, v0, i0, v1, i1, v2, i2, v3, i3, v4, i4, v5, i5, v6, i6, v7,
suffix);\n checkStylingProperty(prop, interpolatedValue, valueSuffix, false);\n return
stylePropInterpolate8;\n }\n /**\n * Update an interpolated style property on an element with 9 or more bound
values surrounded by\n * text.\n * \n * Used when the number of interpolated values exceeds 8.\n * \n *
```html\n * <div\n * style.color="prefix{{v0}}-{{v1}}-{{v2}}-{{v3}}-{{v4}}-{{v5}}-{{v6}}-{{v7}}-
{{v8}}-{{v9}}suffix">\n * </div>\n * ```\n * \n * Its compiled representation is:\n * \n * ```ts\n *
stylePropInterpolateV(\n * 0, ['prefix', v0, '-', v1, '-', v2, '-', v3, '-', v4, '-', v5, '-', v6, '-', v7, '-', v9,\n *
'suffix']);\n * ```\n * \n * @param styleIndex Index of style to update. This index value refers to the\n *
index of the style in the style bindings array that was passed into\n * `styling`.\n * @param values The
collection of values and the strings in-between those values, beginning with\n * a string prefix and ending with a
string suffix.\n * (e.g. `['prefix', value0, '-', value1, '-', value2, ..., value99, 'suffix']`)\n * @param valueSuffix
Optional suffix. Used with scalar values to add unit such as `px`.\n * @returns itself, so that it may be chained.\n
* @codeGenApi\n *^/n function stylePropInterpolateV(prop, values, valueSuffix) {\n var IView =
getLView();\n var interpolatedValue = interpolationV(IView, values);\n checkStylingProperty(prop,
interpolatedValue, valueSuffix, false);\n return stylePropInterpolateV;\n }\n /**\n * @license\n *
Copyright Google LLC All Rights Reserved.\n * \n * Use of this source code is governed by an MIT-style
license that can be\n * found in the LICENSE file at https://angular.io/license\n * \n * \n * Update a
property on a host element. Only applies to native node properties, not inputs.\n * \n * Operates on the element
selected by index via the { @link select } instruction.\n * \n * @param propName Name of property. Because it
is going to DOM, this is not subject to\n * renaming as part of minification.\n * @param value New value
to write.\n * @param sanitizer An optional function used to sanitize the value.\n * @returns This function
returns itself so that it may be chained\n * (e.g. `property('name', ctx.name)('title', ctx.title)`)\n * \n *
@codeGenApi\n *^/n function hostProperty(propName, value, sanitizer) {\n var IView = getLView();\n
var bindingIndex = nextBindingIndex();\n if (bindingUpdated(IView, bindingIndex, value)) {\n var
tView = getTView();\n var tNode = getSelectedTNode();\n elementPropertyInternal(tView, tNode,
IView, propName, value, IView[RENDERER], sanitizer, true);\n ngDevMode &&
storePropertyBindingMetadata(tView.data, tNode, propName, bindingIndex);\n }\n return hostProperty;\n
}\n /**\n * Updates a synthetic host binding (e.g. `[@foo]`) on a component or directive.\n * \n * This
instruction is for compatibility purposes and is designed to ensure that a\n * synthetic host binding (e.g.
`@HostBinding('@foo')`) properly gets rendered in\n * the component's renderer. Normally all host bindings are
evaluated with the parent\n * component's renderer, but, in the case of animation @triggers, they need to be\n *
evaluated with the sub component's renderer (because that's where the animation\n * triggers are defined).\n * \n *
Do not use this instruction as a replacement for `elementProperty`. This instruction\n * only exists to ensure
compatibility with the ViewEngine's host binding behavior.\n * \n * @param index The index of the element to
update in the data array\n * @param propName Name of property. Because it is going to DOM, this is not subject
to\n * renaming as part of minification.\n * @param value New value to write.\n * @param sanitizer An
optional function used to sanitize the value.\n * \n * @codeGenApi\n *^/n function
syntheticHostProperty(propName, value, sanitizer) {\n var IView = getLView();\n var bindingIndex =
nextBindingIndex();\n if (bindingUpdated(IView, bindingIndex, value)) {\n var tView = getTView();\n
var tNode = getSelectedTNode();\n var currentDef = getCurrentDirectiveDef(tView.data);\n var
renderer = loadComponentRenderer(currentDef, tNode, IView);\n elementPropertyInternal(tView, tNode,
IView, propName, value, renderer, sanitizer, true);\n ngDevMode &&
storePropertyBindingMetadata(tView.data, tNode, propName, bindingIndex);\n }\n return
syntheticHostProperty;\n }\n /**\n * @license\n * Copyright Google LLC All Rights Reserved.\n * \n

```



```

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 * found in the LICENSE file at
https://angular.io/license
 *
 /**
 * NOTE: changes to the `ngI18nClosureMode` name must be synced
with `compiler-cli/src/tooling.ts`.
 *
 if (typeof ngI18nClosureMode === 'undefined') {
 // These
property accesses can be ignored because ngI18nClosureMode will be set to false
 // when optimizing code and
the whole if statement will be dropped.
 // Make sure to refer to ngI18nClosureMode as ['ngI18nClosureMode']
for closure.
 // NOTE: we need to have it in IIFE so that the tree-shaker is happy.
(function () {
// tslint:disable-next-line:no-toplevel-property-access
  _global['ngI18nClosureMode'] =
//
TODO(FW-1250): validate that this actually, you know, works.
// tslint:disable-next-line:no-toplevel-
property-access
  typeof goog !== 'undefined' && typeof goog.getMsg === 'function';
})();
})
 /**
 * @license
 * Copyright Google LLC All Rights Reserved.
 *
 * Use of this source code
is governed by an MIT-style license that can be
 * found in the LICENSE file at https://angular.io/license
 *
 // THIS CODE IS GENERATED - DO NOT MODIFY
 // See angular/tools/gulp-tasks/cldr/extract.js
var u = undefined;
function plural(n) {
  var i = Math.floor(Math.abs(n)), v =
n.toString().replace(/^[^.*\?.?/, ").length;
  if (i === 1 && v === 0)
    return 1;
  return 5;
}
var localeEn = [
  'en',
  [['a', 'p'], ['AM', 'PM'], u],
  [['AM', 'PM'], u, u],
  ['S', 'M', 'T',
'W', 'T', 'F', 'S'],
  ['Sun', 'Mon', 'Tue', 'Wed', 'Thu', 'Fri', 'Sat'],
  ['Sunday', 'Monday', 'Tuesday', 'Wednesday',
'Thursday', 'Friday', 'Saturday'],
  ['Su', 'Mo', 'Tu', 'We', 'Th', 'Fr', 'Sa'],
  ],
  u,
  ['J',
'F', 'M', 'A', 'M', 'J', 'J', 'A', 'S', 'O', 'N', 'D'],
  ['Jan', 'Feb', 'Mar', 'Apr', 'May', 'Jun', 'Jul', 'Aug', 'Sep', 'Oct',
'Nov', 'Dec'],
  ['January', 'February', 'March', 'April', 'May', 'June', 'July', 'August', 'September',
'October', 'November', 'December'],
  ],
  u,
  [['B', 'A'], ['BC', 'AD'], ['Before Christ',
'Anno Domini']],
  0,
  [6, 0],
  ['M/d/yy', 'MMM d, y', 'MMMM d, y', 'EEEE, MMMM d, y'],
  ['h:mm a', 'h:mm:ss a', 'h:mm:ss a z', 'h:mm:ss a zzzz'],
  [{1}, {0}],
  u,
  ['{1} \\at\\ {0}', u],
  ['.', ',', ';', '%',
'+', '-', 'E', 'x', '%o', '', 'NaN', ':'],
  ['#', '##0.###', '#,##0%', 'x##0.00', '#E0'],
  'USD',
  '$',
  'US
Dollar',
  },
  'ltr',
  plural
];
 /**
 * @license
 * Copyright Google LLC All Rights
Reserved.
 *
 * Use of this source code is governed by an MIT-style license that can be
 * found in the
LICENSE file at https://angular.io/license
 *
 /**
 * This const is used to store the locale data registered
with `registerLocaleData`
 *
 var LOCALE_DATA = {};
 /**
 * Register locale data to be used
internally by Angular. See the
 * ["I18n guide"](guide/i18n#i18n-pipes) to know how to import additional
locale data.
 *
 * The signature `registerLocaleData(data: any, extraData?: any)` is deprecated since v5.1
 *
 function registerLocaleData(data, localeId, extraData) {
  if (typeof localeId !== 'string') {
extraData = localeId;
    localeId = data[exports.LocaleDataIndex.LocaleId];
  }
  localeId =
localeId.toLowerCase().replace(/_/g, '-');
  LOCALE_DATA[localeId] = data;
  if (extraData) {
LOCALE_DATA[localeId][exports.LocaleDataIndex.ExtraData] = extraData;
  }
}
 /**
 * Finds the
locale data for a given locale.
 *
 * @param locale The locale code.
 * @returns The locale data.
 *
 * @see [Internationalization (i18n) Guide](https://angular.io/guide/i18n)
 *
 function findLocaleData(locale)
{
  var normalizedLocale = normalizeLocale(locale);
  var match = getLocaleData(normalizedLocale);
  if (match) {
    return match;
  }
  // let's try to find a parent locale
  var parentLocale =
normalizedLocale.split('-')[0];
  match = getLocaleData(parentLocale);
  if (match) {
    return
match;
  }
  if (parentLocale === 'en') {
    return localeEn;
  }
  throw new
Error("Missing locale data for the locale \"" + locale + "\".");
}
 /**
 * Retrieves the default currency
code for the given locale.
 *
 * The default is defined as the first currency which is still in use.
 *
 * @param locale The code of the locale whose currency code we want.
 * @returns The code of the default
currency for the given locale.
 *
 *
 function getLocaleCurrencyCode(locale) {
  var data =
findLocaleData(locale);
  return data[exports.LocaleDataIndex.CurrencyCode] || null;
}
 /**
 *
Retrieves the plural function used by ICU expressions to determine the plural case to use
 * for a given locale.
 *
 * @param locale A locale code for the locale format rules to use.
 * @returns The plural function for the
locale.
 *
 * @see `NgPlural`
 *
 * @see [Internationalization (i18n) Guide](https://angular.io/guide/i18n)
 *
 function getLocalePluralCase(locale) {
  var data = findLocaleData(locale);
  return

```

```

data[exports.LocaleDataIndex.PluralCase];\n  }\n  /**\n   * Helper function to get the given `normalizedLocale`
from `LOCALE_DATA`\n   * or from the global `ng.common.locale`.\n   */\n  function
getLocaleData(normalizedLocale) {\n    if (!(normalizedLocale in LOCALE_DATA)) {\n
LOCALE_DATA[normalizedLocale] = _global.ng && _global.ng.common && _global.ng.common.locales &&\n
      _global.ng.common.locales[normalizedLocale];\n    }\n    return
LOCALE_DATA[normalizedLocale];\n  }\n  /**\n   * Helper function to remove all the locale data from
`LOCALE_DATA`.\n   */\n  function unregisterAllLocaleData() {\n    LOCALE_DATA = {};\n  }\n
(function (LocaleDataIndex) {\n    LocaleDataIndex[LocaleDataIndex["LocaleId"] = 0] = "LocaleId";\n
LocaleDataIndex[LocaleDataIndex["DayPeriodsFormat"] = 1] = "DayPeriodsFormat";\n
LocaleDataIndex[LocaleDataIndex["DayPeriodsStandalone"] = 2] = "DayPeriodsStandalone";\n
LocaleDataIndex[LocaleDataIndex["DaysFormat"] = 3] = "DaysFormat";\n
LocaleDataIndex[LocaleDataIndex["DaysStandalone"] = 4] = "DaysStandalone";\n
LocaleDataIndex[LocaleDataIndex["MonthsFormat"] = 5] = "MonthsFormat";\n
LocaleDataIndex[LocaleDataIndex["MonthsStandalone"] = 6] = "MonthsStandalone";\n
LocaleDataIndex[LocaleDataIndex["Eras"] = 7] = "Eras";\n
LocaleDataIndex[LocaleDataIndex["FirstDayOfWeek"] = 8] = "FirstDayOfWeek";\n
LocaleDataIndex[LocaleDataIndex["WeekendRange"] = 9] = "WeekendRange";\n
LocaleDataIndex[LocaleDataIndex["DateFormat"] = 10] = "DateFormat";\n
LocaleDataIndex[LocaleDataIndex["TimeFormat"] = 11] = "TimeFormat";\n
LocaleDataIndex[LocaleDataIndex["DateTimeFormat"] = 12] = "DateTimeFormat";\n
LocaleDataIndex[LocaleDataIndex["NumberSymbols"] = 13] = "NumberSymbols";\n
LocaleDataIndex[LocaleDataIndex["NumberFormats"] = 14] = "NumberFormats";\n
LocaleDataIndex[LocaleDataIndex["CurrencyCode"] = 15] = "CurrencyCode";\n
LocaleDataIndex[LocaleDataIndex["CurrencySymbol"] = 16] = "CurrencySymbol";\n
LocaleDataIndex[LocaleDataIndex["CurrencyName"] = 17] = "CurrencyName";\n
LocaleDataIndex[LocaleDataIndex["Currencies"] = 18] = "Currencies";\n
LocaleDataIndex[LocaleDataIndex["Directionality"] = 19] = "Directionality";\n
LocaleDataIndex[LocaleDataIndex["PluralCase"] = 20] = "PluralCase";\n
LocaleDataIndex[LocaleDataIndex["ExtraData"] = 21] = "ExtraData";\n  })(exports.LocaleDataIndex ||
(exports.LocaleDataIndex = {}));\n  /**\n   * Returns the canonical form of a locale name - lowercase with `_`
replaced with `.`.\n   */\n  function normalizeLocale(locale) {\n    return locale.toLowerCase().replace(/_/g,
'.');\n  }\n  /**\n   * @license\n   * Copyright Google LLC All Rights Reserved.\n   * Use of this source
code is governed by an MIT-style license that can be\n   * found in the LICENSE file at https://angular.io/license\n
   */\n  var pluralMapping = ['zero', 'one', 'two', 'few', 'many'];\n  /**\n   * Returns the plural case based on the
locale.\n   */\n  function getPluralCase(value, locale) {\n    var plural =
getLocalePluralCase(locale)(parseInt(value, 10));\n    var result = pluralMapping[plural];\n    return (result !==
undefined) ? result : 'other';\n  }\n  /**\n   * The locale id that the application is using by default (for translations
and ICU expressions).\n   */\n  var DEFAULT_LOCALE_ID = 'en-US';\n  /**\n   * USD currency code that the
application uses by default for CurrencyPipe when no\n   * DEFAULT_CURRENCY_CODE is provided.\n   */\n  var
USD_CURRENCY_CODE = 'USD';\n  /**\n   * @license\n   * Copyright Google LLC All Rights
Reserved.\n   * Use of this source code is governed by an MIT-style license that can be\n   * found in the
LICENSE file at https://angular.io/license\n   */\n  /**\n   * Marks that the next string is an element name.\n
   */\n  * See `I18nMutateOpCodes` documentation.\n   */\n  var ELEMENT_MARKER = {\n    marker:
'element'\n  }; \n  /**\n   * Marks that the next string is comment text need for ICU.\n   */\n  * See
`I18nMutateOpCodes` documentation.\n   */\n  var ICU_MARKER = {\n    marker: 'ICU'\n  }; \n  /**\n   *
See `I18nCreateOpCodes`\n   */\n  var I18nCreateOpCode;\n  (function (I18nCreateOpCode) {\n    /**\n
   * Number of bits to shift index so that it can be combined with the `APPEND_EAGERLY` and\n   *
`COMMENT`.\n   */\n    I18nCreateOpCode[I18nCreateOpCode["SHIFT"] = 2] = "SHIFT";\n  })\n  /**\n

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* Should the node be appended to parent immediately after creation.\n      */\n
I18nCreateOpCode[I18nCreateOpCode["APPEND_EAGERLY"] = 1] = "APPEND_EAGERLY";\n      /**\n
* If set the node should be comment (rather than a text) node.\n      */\n
I18nCreateOpCode[I18nCreateOpCode["COMMENT"] = 2] = "COMMENT";\n    })(I18nCreateOpCode ||
(I18nCreateOpCode = {}));\n    // Note: This hack is necessary so we don't erroneously get a circular dependency\n
// failure based on types.\n    var unusedValueExportToPlacateAjd$6 = 1;\n\n    /**\n     * @license\n     * Copyright
Google LLC All Rights Reserved.\n     * Use of this source code is governed by an MIT-style license that can be
found in the LICENSE file at https://angular.io/license\n     */\n     * The locale id that the
application is currently using (for translations and ICU expressions).\n     * This is the ivy version of `LOCALE_ID`
that was defined as an injection token for the view engine\n     * but is now defined as a global value.\n     */\n    var
LOCALE_ID = DEFAULT_LOCALE_ID;\n\n    /**\n     * Sets the locale id that will be used for translations and
ICU expressions.\n     * This is the ivy version of `LOCALE_ID` that was defined as an injection token for the view
engine\n     * but is now defined as a global value.\n     */\n     * @param localeId\n     */\n    function
setLocaleId(localeId) {\n      assertDefined(localeId, "Expected localeId to be defined");\n      if (typeof localeId
=== 'string') {\n        LOCALE_ID = localeId.toLowerCase().replace(/_/g, '-');\n      }\n    }\n\n    /**\n     * Gets
the locale id that will be used for translations and ICU expressions.\n     * This is the ivy version of `LOCALE_ID`
that was defined as an injection token for the view engine\n     * but is now defined as a global value.\n     */\n
function getLocaleId() {\n      return LOCALE_ID;\n    }\n\n    /**\n     * @license\n     * Copyright Google LLC
All Rights Reserved.\n     * Use of this source code is governed by an MIT-style license that can be
found in the LICENSE file at https://angular.io/license\n     */\n     * Find a node in front of which
`currentTNode` should be inserted (takes i18n into account).\n     * This method determines the `RNode` in
front of which we should insert the `currentRNode`. This\n     * takes `TNode.insertBeforeIndex` into account.\n
*/\n     * @param parentTNode parent `TNode`\n     * @param currentTNode current `TNode` (The node which we
would like to insert into the DOM)\n     * @param lView current `LView`\n     */\n    function
getInsertInFrontOfRNodeWithI18n(parentTNode, currentTNode, lView) {\n      var tNodeInsertBeforeIndex =
currentTNode.insertBeforeIndex;\n      var insertBeforeIndex = Array.isArray(tNodeInsertBeforeIndex) ?
tNodeInsertBeforeIndex[0] : tNodeInsertBeforeIndex;\n      if (insertBeforeIndex === null) {\n        return
getInsertInFrontOfRNodeWithNoI18n(parentTNode, currentTNode, lView);\n      } else {\n        ngDevMode &&
assertIndexInRange(lView, insertBeforeIndex);\n        return
unwrapRNode(lView[insertBeforeIndex]);\n      }\n    }\n\n    /**\n     * Process `TNode.insertBeforeIndex` by
adding i18n text nodes.\n     * See `TNode.insertBeforeIndex`\n     */\n    function
processI18nInsertBefore(renderer, childTNode, lView, childRNode, parentRElement) {\n      var
tNodeInsertBeforeIndex = childTNode.insertBeforeIndex;\n      if (Array.isArray(tNodeInsertBeforeIndex)) {\n
// An array indicates that there are i18n nodes that need to be added as children of this\n        // `childRNode`.
These i18n nodes were created before this `childRNode` was available and so\n        // only now can be added.
The first element of the array is the normal index where we should\n        // insert the `childRNode`. Additional
elements are the extra nodes to be added as children of\n        // `childRNode`.\n        ngDevMode &&
assertDomNode(childRNode);\n        var i18nParent = childRNode;\n        var anchorRNode = null;\n        if
(!childTNode.type & 3 /* AnyRNode */) {\n          anchorRNode = i18nParent;\n          i18nParent =
parentRElement;\n        }\n        if (i18nParent !== null && (childTNode.flags & 2 /* isComponentHost */) ===
0) {\n          for (var i = 1; i < tNodeInsertBeforeIndex.length; i++) {\n            // No need to `unwrapRNode`
because all of the indexes point to i18n text nodes.\n            // see `assertDomNode` below.\n            var
i18nChild = lView[tNodeInsertBeforeIndex[i]];\n            nativeInsertBefore(renderer, i18nParent, i18nChild,
anchorRNode, false);\n          }\n        }\n      }\n    }\n\n    /**\n     * @license\n     * Copyright Google LLC
All Rights Reserved.\n     * Use of this source code is governed by an MIT-style license that can be
found in the LICENSE file at https://angular.io/license\n     */\n     * Add `tNode` to `previousTNodes` list
and update relevant `TNode`s in `previousTNodes` list\n     * `tNode.insertBeforeIndex`.\n     * Things to keep
in mind:\n     * 1. All i18n text nodes are encoded as `TNodeType.Element` and are created eagerly by the\n     *

```

```

`i18nStart` instruction.\n * 2. All `TNodeType.Placeholder` `TNodes` are elements which will be created later
by\n * `elementStart` instruction.\n * 3. `elementStart` instruction will create `TNode`s in the ascending
`TNode.index` order. (So a\n * smaller index `TNode` is guaranteed to be created before a larger one)\n *\n * We use the above three invariants to determine `TNode.insertBeforeIndex`.\n *\n * In an ideal world
`TNode.insertBeforeIndex` would always be `TNode.next.index`. However,\n * this will not work because
`TNode.next.index` may be larger than `TNode.index` which means that\n * the next node is not yet created and
therefore we can't insert in front of it.\n *\n * Rule1: `TNode.insertBeforeIndex = null` if `TNode.next ===
null` (Initial condition, as we don't\n * know if there will be further `TNode`s inserted after.)\n * Rule2: If
`previousTNode` is created after the `tNode` being inserted, then\n * `previousTNode.insertBeforeIndex =
tNode.index` (So when a new `tNode` is added we check\n * previous to see if we can update its
`insertBeforeTNode`)\n *\n * See `TNode.insertBeforeIndex` for more context.\n *\n * @param
previousTNodes A list of previous TNodes so that we can easily traverse `TNode`s in\n * reverse order. (If
`TNode` would have `previous` this would not be necessary.)\n * @param newTNode A TNode to add to the
`previousTNodes` list.\n */\n function addTNodeAndUpdateInsertBeforeIndex(previousTNodes, newTNode)
{\n // Start with Rule1\n ngDevMode &&\n assertEqual(newTNode.insertBeforeIndex, null, 'We
expect that insertBeforeIndex is not set');\n previousTNodes.push(newTNode);\n if (previousTNodes.length
> 1) {\n for (var i = previousTNodes.length - 2; i >= 0; i--) {\n var existingTNode =
previousTNodes[i];\n // Text nodes are created eagerly and so they don't need their `indexBeforeIndex`
updated.\n // It is safe to ignore them.\n if (!isI18nText(existingTNode)) {\n if
(isNewTNodeCreatedBefore(existingTNode, newTNode) &&\n getInsertBeforeIndex(existingTNode)
=== null) {\n // If it was created before us in time, (and it does not yet have `insertBeforeIndex`)\n
// then add the `insertBeforeIndex`.\n setInsertBeforeIndex(existingTNode,
newTNode.index);\n }\n }\n }\n }\n function isI18nText(tNode) {\n
return !(tNode.type & 64 /* Placeholder */);\n }\n function isNewTNodeCreatedBefore(existingTNode,
newTNode) {\n return isI18nText(newTNode) || existingTNode.index > newTNode.index;\n }\n function
getInsertBeforeIndex(tNode) {\n var index = tNode.insertBeforeIndex;\n return Array.isArray(index) ?
index[0] : index;\n }\n function setInsertBeforeIndex(tNode, value) {\n var index =
tNode.insertBeforeIndex;\n if (Array.isArray(index)) {\n // Array is stored if we have to insert child
nodes. See `TNode.insertBeforeIndex`\n index[0] = value;\n }\n else {\n
setI18nHandling(getInsertInFrontOfRNodeWithI18n, processI18nInsertBefore);\n tNode.insertBeforeIndex =
value;\n }\n }\n }\n /**\n * @license\n * Copyright Google LLC All Rights Reserved.\n *\n * Use
of this source code is governed by an MIT-style license that can be\n * found in the LICENSE file at
https://angular.io/license\n */\n /**\n * Retrieve `Ticu` at a given `index`.\n *\n * The `Ticu` can be
stored either directly (if it is nested ICU) OR\n * it is stored inside the `TicuContainer` if it is top level ICU.\n
*\n * The reason for this is that the top level ICU need a `TNode` so that they are part of the render\n * tree, but
nested ICU's have no TNode, because we don't know ahead of time if the nested ICU is\n * expressed (parent ICU
may have selected a case which does not contain it.)\n *\n * @param tView Current `TView`.\n * @param
index Index where the value should be read from.\n */\n function getTicu(tView, index) {\n var value =
tView.data[index];\n if (value === null || typeof value === 'string')\n return null;\n if (ngDevMode
&&\n !(value.hasOwnProperty('tViews') || value.hasOwnProperty('currentCaseLViewIndex')))\n
throwError('We expect to get \\`null\\`/\\`Ticu\\`/\\`TicuContainer\\`, but got: ' + value);\n // Here the
`value.hasOwnProperty('currentCaseLViewIndex')` is a polymorphic read as it can be\n // either Ticu or
TicuContainerNode. This is not ideal, but we still think it is OK because it\n // will be just two cases which fits
into the browser inline cache (inline cache can take up to\n // 4)\n var ticu =
value.hasOwnProperty('currentCaseLViewIndex') ? value :\n value.value;\n ngDevMode &&
assertTicu(ticu);\n return ticu;\n }\n /**\n * Store `Ticu` at a give `index`.\n *\n * The `Ticu` can be
stored either directly (if it is nested ICU) OR\n * it is stored inside the `TicuContainer` if it is top level ICU.\n
*\n * The reason for this is that the top level ICU need a `TNode` so that they are part of the render\n * tree, but

```



```

changeMask);
    } // Reset changeMask & maskBit to default for the next update cycle
    changeMask = 0;
    changeMaskCounter = 0;
} /**
 * Apply `I18nCreateOpCodes` op-codes as stored in
`T118n.create`.
 *
 * Creates text (and comment) nodes which are internationalized.
 *
 * @param IView Current IView
 * @param createOpCodes Set of op-codes to apply
 * @param parentRNode Parent node (so that direct children can be added eagerly) or `null` if it is
 * a root node.
 * @param insertInFrontOf DOM node that should be used as an anchor.
 * ^ function applyCreateOpCodes(IView, createOpCodes, parentRNode, insertInFrontOf) {
    var renderer = IView[RENDERER];
    for (var i = 0; i < createOpCodes.length; i++) {
        var opCode = createOpCodes[i];
        var text = createOpCodes[i];
        var isComment = (opCode & I18nCreateOpCode.COMMENT) === I18nCreateOpCode.COMMENT;
        var appendNow = (opCode & I18nCreateOpCode.APPEND_EAGERLY) === I18nCreateOpCode.APPEND_EAGERLY;
        var index = opCode >>> I18nCreateOpCode.SHIFT;
        var rNode = IView[index];
        if (rNode === null) {
            // We only create new DOM nodes if they don't already exist: If ICU switches case back to a
            // case which was already instantiated, no need to create new DOM nodes.
            rNode = IView[index] = isComment ? renderer.createComment(text) : createTextNode(renderer, text);
        }
        if (appendNow && parentRNode !== null) {
            nativeInsertBefore(renderer, parentRNode, rNode, insertInFrontOf, false);
        }
} /**
 * Apply `I18nMutateOpCodes` OpCodes.
 *
 * @param tView Current `TView`
 * @param mutableOpCodes Mutable OpCodes to process
 * @param IView Current `LView`
 * @param anchorRNode place where the i18n node should be inserted.
 * ^ function applyMutableOpCodes(tView, mutableOpCodes, IView, anchorRNode) {
    ngDevMode && assertDomNode(anchorRNode);
    var renderer = IView[RENDERER];
    // `rootIdx` represents the node into which all inserts happen.
    var rootIdx = null;
    // `rootRNode` represents the real node into which we insert. This can be different from
    // `IView[rootIdx]` if we have projection.
    // - null we don't have a parent (as can be the case in when we are inserting into a root of
    // LView which has no parent.)
    // - `RElement` The element representing the root after taking projection into account.
    var rootRNode;
    for (var i = 0; i < mutableOpCodes.length; i++) {
        var opCode = mutableOpCodes[i];
        if (typeof opCode === 'string') {
            var textNodeIndex = mutableOpCodes[++i];
            if (IView[textNodeIndex] === null) {
                ngDevMode && ngDevMode.rendererCreateTextNode++;
                ngDevMode && assertIndexInRange(IView, textNodeIndex);
                IView[textNodeIndex] = createTextNode(renderer, opCode);
            }
            else if (typeof opCode === 'number') {
                switch (opCode & 1 /* MASK_INSTRUCTION */) {
                    case 0 /* AppendChild */:
                        var parentIdx = getParentFromIcuCreateOpCode(opCode);
                        if (rootIdx === null) {
                            // The first operation should save the `rootIdx` because the first operation
                            // must insert into the root. (Only subsequent operations can insert into a dynamic
                            // parent)
                            rootIdx = parentIdx;
                            rootRNode = nativeParentNode(renderer, anchorRNode);
                        }
                        var insertInFrontOf = void 0;
                        var parentRNode = void 0;
                        if (parentIdx === rootIdx) {
                            insertInFrontOf = anchorRNode;
                            parentRNode = rootRNode;
                        }
                        else {
                            insertInFrontOf = null;
                            parentRNode = unwrapRNode(IView[parentIdx]);
                        }
                        // FIXME(misko): Refactor with `processI18nText`
                        if (parentRNode !== null) {
                            // This can happen if the `LView` we are adding to is not attached to a parent `LView`.
                            // In such a case there is no `root` we can attach to. This is fine, as we still need to
                            // create the elements. When the `LView` gets later added to a parent these `root` nodes
                            // get picked up and added.
                            ngDevMode && assertDomNode(parentRNode);
                            var refIdx = getRefFromIcuCreateOpCode(opCode);
                            ngDevMode && assertGreaterThan(refIdx, HEADER_OFFSET, 'Missing ref');
                            // `unwrapRNode` is not needed here as all of these point to RNodes as part of the i18n
                            // which can't have components.
                            var child = IView[refIdx];
                            ngDevMode && assertDomNode(child);
                            nativeInsertBefore(renderer, parentRNode, child, insertInFrontOf,

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false);\n                var tIcu = getTICu(tView, refIdx);\n                if (tIcu !== null && typeof tIcu ===
'object') {\n                // If we just added a comment node which has ICU then that ICU may have already
been\n                // rendered and therefore we need to re-add it here.\n                ngDevMode &&
assertTICu(tIcu);\n                var caseIndex = getCurrentICUCaseIndex(tIcu, IView);\n
if (caseIndex !== null) {\n                applyMutableOpCodes(tView, tIcu.create[caseIndex], IView,
IView[tIcu.anchorIdx]);\n                }\n                }\n                }\n                break;\n
case 1 /* Attr */:\n                var elementNodeIndex = opCode >>> 1 /* SHIFT_REF */;\n
var attrName = mutableOpCodes[++i];\n                var attrValue = mutableOpCodes[++i];\n                //
This code is used for ICU expressions only, since we don't support\n                // directives/components in
ICUs, we don't need to worry about inputs here\n                setElementAttribute(renderer,
getNativeByIndex(elementNodeIndex, IView), null, null, attrName, attrValue, null);\n                break;\n
default:\n                throw new Error("Unable to determine the type of mutate operation for \"" + opCode
+ "\"");\n                }\n                }\n                else {\n                switch (opCode) {\n                case
ICU_MARKER:\n                var commentValue = mutableOpCodes[++i];\n                var
commentNodeIndex = mutableOpCodes[++i];\n                if (IView[commentNodeIndex] === null) {\n
ngDevMode &&\n                assertEquals(typeof commentValue, 'string', "Expected \"" +
commentValue + "\" to be a comment node value");\n                ngDevMode &&
ngDevMode.rendererCreateComment++;\n                ngDevMode && assertIndexInExpandoRange(IView,
commentNodeIndex);\n                var commentRNode = IView[commentNodeIndex] =\n
createCommentNode(renderer, commentValue);\n                // FIXME(misko): Attaching patch data is only
needed for the root (Also add tests)\n                attachPatchData(commentRNode, IView);\n
}\n                break;\n                case ELEMENT_MARKER:\n                var tagName =
mutableOpCodes[++i];\n                var elementNodeIndex = mutableOpCodes[++i];\n                if
(IView[elementNodeIndex] === null) {\n                ngDevMode &&\n                assertEquals(typeof
tagName, 'string', "Expected \"" + tagName + "\" to be an element node tag name");\n
ngDevMode && ngDevMode.rendererCreateElement++;\n                ngDevMode &&
assertIndexInExpandoRange(IView, elementNodeIndex);\n                var elementRNode =
IView[elementNodeIndex] =\n                createElementNode(renderer, tagName, null);\n
// FIXME(misko): Attaching patch data is only needed for the root (Also add tests)\n
attachPatchData(elementRNode, IView);\n                }\n                break;\n                default:\n
ngDevMode &&\n                throwError("Unable to determine the type of mutate operation for \"" +
opCode + "\"");\n                }\n                }\n                }\n                } /* Apply `I18nUpdateOpCodes` OpCodes\n
*\n * @param tView Current `TView`\n * @param IView Current `LView`\n * @param updateOpCodes
OpCodes to process\n * @param bindingsStartIndex Location of the first `i18nApply`\n * @param
changeMask Each bit corresponds to a `i18nExp` (Counting backwards from\n * `bindingsStartIndex`)\n *
function applyUpdateOpCodes(tView, IView, updateOpCodes, bindingsStartIndex, changeMask) {\n for (var i
= 0; i < updateOpCodes.length; i++) {\n // bit code to check if we should apply the next update\n var
checkBit = updateOpCodes[i];\n // Number of opCodes to skip until next set of update codes\n var
skipCodes = updateOpCodes[++i];\n if (checkBit & changeMask) {\n // The value has been updated
since last checked\n var value = "";\n for (var j = i + 1; j <= (i + skipCodes); j++) {\n
var opCode = updateOpCodes[j];\n if (typeof opCode === 'string') {\n value += opCode;\n
}\n else if (typeof opCode === 'number') {\n if (opCode < 0) {\n
// Negative opCode represent `i18nExp` values offset.\n value +=
renderStringify(IView[bindingsStartIndex - opCode]);\n }\n else {\n
var nodeIndex = (opCode >>> 2 /* SHIFT_REF */);\n switch (opCode & 3 /* MASK_OPCODE
*/) {\n case 1 /* Attr */:\n var propName = updateOpCodes[++j];\n
var sanitizeFn = updateOpCodes[++j];\n var tNodeOrTagName =
tView.data[nodeIndex];\n ngDevMode && assertDefined(tNodeOrTagName, 'Experting

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TNode or string');\n                if (typeof tNodeOrTagName === 'string') {\n\n                                // IF
we don't have a `TNode`, then we are an element in ICU (as ICU content does)\n\n                                // not have
TNode), in which case we know that there are no directives, and hence\n\n                                // we use attribute
setting.\n                setElementAttribute(IView[RENDERER], IView[nodeIndex], null,
tNodeOrTagName, propName, value, sanitizeFn);\n\n                                }\n                else {\n
                elementPropertyInternal(tView, tNodeOrTagName, IView, propName, value, IView[RENDERER],
sanitizeFn, false);\n\n                                }\n                break;\n                case 0 /* Text */:\n
                var rText = IView[nodeIndex];\n\n                                rText !== null &&
updateTextNode(IView[RENDERER], rText, value);\n\n                                break;\n                case 2 /*
IcuSwitch */:\n                applyIcuSwitchCase(tView, getTlcu(tView, nodeIndex), IView, value);\n\n
                break;\n                case 3 /* IcuUpdate */:\n
                applyIcuUpdateCase(tView, getTlcu(tView, nodeIndex), bindingsStartIndex, IView);\n
                break;\n                }\n                }\n                }\n                }\n                }\n                else {\n                var
                opCode = updateOpCodes[i + 1];\n                if (opCode > 0 && (opCode & 3 /* MASK_OPCODE */) === 3 /*
                IcuUpdate */) {\n                // Special case for the `icuUpdateCase`. It could be that the mask did not match, but\n
                // we still need to execute `icuUpdateCase` because the case has changed recently due to\n                //
                previous `icuSwitchCase` instruction. (`icuSwitchCase` and `icuUpdateCase` always come in\n                //
                pairs.)\n                var nodeIndex = (opCode >>> 2 /* SHIFT_REF */);\n                var tlcu = getTlcu(tView,
                nodeIndex);\n                var currentIndex = IView[tlcu.currentCaseLViewIndex];\n                if (currentIndex <
                0) {\n                applyIcuUpdateCase(tView, tlcu, bindingsStartIndex, IView);\n                }\n                }\n
                }\n                i += skipCodes;\n                }\n                }\n                /**\n                * Apply OpCodes associated with updating an existing
                ICU.\n                * @param tView Current `TView`\n                * @param tlcu Current `Tlcu`\n                * @param
                bindingsStartIndex Location of the first `i18nApply`\n                * @param lView Current `LView`\n                * ^\n                function
                applyIcuUpdateCase(tView, tlcu, bindingsStartIndex, IView) {\n                ngDevMode && assertIndexInRange(IView,
                tlcu.currentCaseLViewIndex);\n                var activeCaseIndex = IView[tlcu.currentCaseLViewIndex];\n                if
                (activeCaseIndex !== null) {\n                var mask = changeMask;\n                if (activeCaseIndex < 0) {\n                //
                Clear the flag.\n                // Negative number means that the ICU was freshly created and we need to force the
                update.\n                activeCaseIndex = IView[tlcu.currentCaseLViewIndex] = ~activeCaseIndex;\n                // -1 is
                same as all bits on, which simulates creation since it marks all bits dirty\n                mask = -1;\n                }\n
                applyUpdateOpCodes(tView, IView, tlcu.update[activeCaseIndex], bindingsStartIndex, mask);\n                }\n                }\n
                /**\n                * Apply OpCodes associated with switching a case on ICU.\n                * This involves tearing down
                existing case and then building up a new case.\n                * @param tView Current `TView`\n                * @param tlcu
                Current `Tlcu`\n                * @param lView Current `LView`\n                * @param value Value of the case to update to.\n                *\n                function applyIcuSwitchCase(tView, tlcu, IView, value) {\n                // Rebuild a new case for this ICU\n                var
                caseIndex = getCaseIndex(tlcu, value);\n                var activeCaseIndex = getCurrentICUCaseIndex(tlcu, IView);\n                if
                (activeCaseIndex !== caseIndex) {\n                applyIcuSwitchCaseRemove(tView, tlcu, IView);\n
                IView[tlcu.currentCaseLViewIndex] = caseIndex === null ? null : ~caseIndex;\n                if (caseIndex !== null) {\n
                // Add the nodes for the new case\n                var anchorRNode = IView[tlcu.anchorIdx];\n                if
                (anchorRNode) {\n                ngDevMode && assertDomNode(anchorRNode);\n
                applyMutableOpCodes(tView, tlcu.create[caseIndex], IView, anchorRNode);\n                }\n                }\n                }\n
                }\n                /**\n                * Apply OpCodes associated with tearing ICU case.\n                * This involves tearing down existing
                case and then building up a new case.\n                * @param tView Current `TView`\n                * @param tlcu Current
                `Tlcu`\n                * @param lView Current `LView`\n                * ^\n                function applyIcuSwitchCaseRemove(tView, tlcu, IView)
                {\n                var activeCaseIndex = getCurrentICUCaseIndex(tlcu, IView);\n                if (activeCaseIndex !== null) {\n
                var removeCodes = tlcu.remove[activeCaseIndex];\n                for (var i = 0; i < removeCodes.length; i++) {\n
                var nodeOrIcuIndex = removeCodes[i];\n                if (nodeOrIcuIndex > 0) {\n                // Positive numbers are
                `RNode`s.\n                var rNode = getNativeByIndex(nodeOrIcuIndex, IView);\n                rNode !== null &&
                nativeRemoveNode(IView[RENDERER], rNode);\n                }\n                else {\n                // Negative numbers

```



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are ICUs\n      applyIcuSwitchCaseRemove(tView, getTicu(tView, ~nodeOrIcuIndex), IView);\n
}\n      }\n      }\n      /**\n      * Returns the index of the current case of an ICU expression depending on the\n
main binding value\n      *\n      * @param icuExpression\n      * @param bindingValue The value of the main binding\n
used by this ICU expression\n      */\n      function getCaseIndex(icuExpression, bindingValue) {\n      var index =\n
icuExpression.cases.indexOf(bindingValue);\n      if (index === -1) {\n      switch (icuExpression.type) {\n
case 1 /* plural */: {\n      var resolvedCase = getPluralCase(bindingValue, getLocaleId());\n
index = icuExpression.cases.indexOf(resolvedCase);\n      if (index === -1 && resolvedCase !== 'other')\n
{\n      index = icuExpression.cases.indexOf('other');\n      }\n      break;\n      }\n
case 0 /* select */: {\n      index = icuExpression.cases.indexOf('other');\n      break;\n
}\n      }\n      }\n      return index === -1 ? null : index;\n      }\n      /**\n      * @license\n      * Copyright\n
Google LLC All Rights Reserved.\n      *\n      * Use of this source code is governed by an MIT-style license that can be\n
* found in the LICENSE file at https://angular.io/license\n      */\n      function loadIcuContainerVisitor() {\n
var _stack = [];\n      var _index = -1;\n      var _IView;\n      var _removes;\n      /**\n      * Retrieves a set of\n
root nodes from `Ticu.remove`. Used by `TNodeType.ICUContainer`\n      * to determine which root belong to the\n
ICU.\n      *\n      * Example of usage.\n      * ```\n      * const nextRNode =\n
icuContainerIteratorStart(tIcuContainerNode, IView);\n      * let rNode: RNode|null;\n      * while(rNode =\n
nextRNode()) {\n      *   console.log(rNode);\n      * }\n      * ```\n      * @param tIcuContainerNode\n
Current `TicuContainerNode`\n      * @param IView `LVView` where the `RNode`s should be looked up.\n
*/\n      function icuContainerIteratorStart(tIcuContainerNode, IView) {\n      _IView = IView;\n      while\n
(_stack.length)\n      _stack.pop();\n      ngDevMode && assertTNodeForLVView(tIcuContainerNode,\n
IView);\n      enterIcu(tIcuContainerNode.value, IView);\n      return icuContainerIteratorNext;\n      }\n
function enterIcu(tIcu, IView) {\n      _index = 0;\n      var currentCase = getCurrentICUCaseIndex(tIcu,\n
IView);\n      if (currentCase !== null) {\n      ngDevMode && assertNumberInRange(currentCase, 0,\n
tIcu.cases.length - 1);\n      _removes = tIcu.remove[currentCase];\n      }\n      else {\n
_removes = EMPTY_ARRAY;\n      }\n      }\n      function icuContainerIteratorNext() {\n      if (_index <\n
_removes.length) {\n      var removeOpCode = _removes[_index++];\n      ngDevMode &&\n
assertNumber(removeOpCode, 'Expecting OpCode number');\n      if (removeOpCode > 0) {\n      var\n
rNode = _IView[removeOpCode];\n      ngDevMode && assertDomNode(rNode);\n      return\n
rNode;\n      }\n      else {\n      _stack.push(_index, _removes);\n      // ICUs are\n
represented by negative indices\n      var tIcuIndex = ~removeOpCode;\n      var tIcu =\n
_IView[TVIEW].data[tIcuIndex];\n      ngDevMode && assertTicu(tIcu);\n      enterIcu(tIcu,\n
_IView);\n      return icuContainerIteratorNext();\n      }\n      }\n      else {\n      if\n
(_stack.length === 0) {\n      return null;\n      }\n      else {\n      _removes =\n
_stack.pop();\n      _index = _stack.pop();\n      return icuContainerIteratorNext();\n      }\n
}\n      }\n      return icuContainerIteratorStart;\n      }\n      /**\n      * @license\n      * Copyright Google LLC\n
All Rights Reserved.\n      *\n      * Use of this source code is governed by an MIT-style license that can be\n
* found in the LICENSE file at https://angular.io/license\n      */\n      /**\n      * Converts `I18nCreateOpCodes`\n
array\n      into a human readable format.\n      *\n      * This function is attached to the `I18nCreateOpCodes.debug`\n
property if\n
`ngDevMode` is enabled.\n      * This function provides a human readable view of the opcodes. This is useful when\n
debugging the\n
* application as well as writing more readable tests.\n      *\n      * @param this\n
`I18nCreateOpCodes` if attached as a method.\n      * @param opcodes `I18nCreateOpCodes` if invoked as a\n
function.\n      */\n      function i18nCreateOpCodesToString(opcodes) {\n      var createOpCodes = opcodes ||\n
(Array.isArray(this) ? this : []);\n      var lines = [];\n      for (var i = 0; i < createOpCodes.length; i++) {\n
var opCode = createOpCodes[i++];\n      var text = createOpCodes[i];\n      var isComment = (opCode &\n
I18nCreateOpCode.COMMENT) === I18nCreateOpCode.COMMENT;\n      var appendNow = (opCode &\n
I18nCreateOpCode.APPEND_EAGERLY) === I18nCreateOpCode.APPEND_EAGERLY;\n      var index =\n
opCode >>> I18nCreateOpCode.SHIFT;\n      lines.push(`IView[\" + index + \"] = document.\" + (isComment ?\n
'createComment' : 'createText') + \"(\" + JSON.stringify(text) + \");`);\n      if (appendNow) {\n

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lines.push(`parent.appendChild(IView[" + index +"]);`);
}
}
return lines;
}
/**
 * Converts `I18nUpdateOpCodes` array into a human readable format.
 * This function is attached to the `I18nUpdateOpCodes.debug` property if `ngDevMode` is enabled.
 * This function provides a human readable view of the opcodes. This is useful when debugging the
 * application as well as writing more readable tests.
 * @param this `I18nUpdateOpCodes` if attached as a method.
 * @param opcodes `I18nUpdateOpCodes` if invoked as a function.
 */
function i18nUpdateOpCodesToString(opcodes) {
  var parser = new OpCodeParser(opcodes || (Array.isArray(this) ? this : []));
  var lines = [];
  function consumeOpCode(value) {
    var ref = value >>> 2 /* SHIFT_REF */;
    var opCode = value & 3 /* MASK_OPCODE */;
    switch (opCode) {
      case 0 /* Text */:
        return `(IView[" + ref + "] as Text).textContent = $$$`;
      case 1 /* Attr */:
        var attrName = parser.consumeString();
        var sanitizationFn = parser.consumeFunction();
        var value_1 = sanitizationFn ? `("${ + sanitizationFn + ")($$$)": $$$`;
        return `(IView[" + ref + "] as Element).setAttribute("${ + attrName + }", "${ + value_1 + })";`;
      case 2 /* IcuSwitch */:
        return `icuSwitchCase("${ + ref + }", $$$)`;
      case 3 /* IcuUpdate */:
        return `icuUpdateCase("${ + ref + })";`;
    }
    throw new Error('unexpected OpCode');
  }
  while (parser.hasMore()) {
    var mask = parser.consumeNumber();
    var size = parser.consumeNumber();
    var end = parser.i + size;
    var statements = [];
    var statement = "";
    while (parser.i < end) {
      var value = parser.consumeNumberOrString();
      if (typeof value === 'string') {
        statement += value;
      } else if (value < 0) {
        // Negative numbers are ref indexes
        // Here `i` refers to current binding index. It is to signify that the value is relative,
        // rather than absolute.
        statement += `${IView[i + value + ]}`;
      } else {
        // Positive numbers are operations.
        var opCodeText = consumeOpCode(value);
        statements.push(opCodeText.replace('$$$', ` ` + statement + ` `) + `;`);
        statement = "";
      }
    }
    lines.push(`if (mask & 0b${mask.toString(2)} + ") { ` + statements.join(` `) + ` }`);
  }
  return lines;
}
/**
 * Converts `I18nCreateOpCodes` array into a human readable format.
 * This function is attached to the `I18nCreateOpCodes.debug` if `ngDevMode` is enabled.
 * This function provides a human readable view of the opcodes. This is useful when debugging the
 * application as well as writing more readable tests.
 * @param this `I18nCreateOpCodes` if attached as a method.
 * @param opcodes `I18nCreateOpCodes` if invoked as a function.
 */
function icuCreateOpCodesToString(opcodes) {
  var parser = new OpCodeParser(opcodes || (Array.isArray(this) ? this : []));
  var lines = [];
  function consumeOpCode(opCode) {
    var parent = getParentFromIcuCreateOpCode(opCode);
    var ref = getRefFromIcuCreateOpCode(opCode);
    switch (getInstructionFromIcuCreateOpCode(opCode)) {
      case 0 /* AppendChild */:
        return `(IView[" + parent + "] as Element).appendChild(IView[" + lastRef + ])`;
      case 1 /* Attr */:
        return `(IView[" + ref + "] as Element).setAttribute("${ + parser.consumeString() + }", "${ + parser.consumeString() + }")`;
    }
    throw new Error('Unexpected OpCode: ' + getInstructionFromIcuCreateOpCode(opCode));
  }
  var lastRef = -1;
  while (parser.hasMore()) {
    var value = parser.consumeNumberStringOrMarker();
    if (value === ICU_MARKER) {
      var text = parser.consumeString();
      lastRef = parser.consumeNumber();
      lines.push(`IView[" + lastRef + "] = document.createComment("${ + text + }")`);
    } else if (value === ELEMENT_MARKER) {
      var text = parser.consumeString();
      lastRef = parser.consumeNumber();
      lines.push(`IView[" + lastRef + "] = document.createElement("${ + text + }")`);
    } else if (typeof value === 'string') {
      lastRef = parser.consumeNumber();
      lines.push(`IView[" + lastRef + "] = document.createTextNode("${ + value + }")`);
    } else if (typeof value === 'number') {
      var line = consumeOpCode(value);
      line && lines.push(line);
    } else {
      throw new Error('Unexpected value');
    }
  }
  return lines;
}
/**
 * Converts `I18nRemoveOpCodes` array into a human readable format.
 * This function is attached to the `I18nRemoveOpCodes.debug` if `ngDevMode` is enabled.
 * This function provides a human readable view of

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the opcodes. This is useful when debugging the application as well as writing more readable tests.
@param this `I18nRemoveOpCodes` if attached as a method.
@param opcodes `I18nRemoveOpCodes` if invoked as a function.
function i18nRemoveOpCodesToString(opcodes) {
  var removeCodes = opcodes || (Array.isArray(this) ? this : []);
  var lines = [];
  for (var i = 0; i < removeCodes.length; i++) {
    var nodeOrIcuIndex = removeCodes[i];
    if (nodeOrIcuIndex > 0) {
      // Positive numbers are `RNode`s.
      lines.push("remove(IView[" + nodeOrIcuIndex + "])");
    } else {
      // Negative numbers are ICUs
      lines.push("removeNestedICU(" + ~nodeOrIcuIndex + ")");
    }
  }
  return lines;
}
var OpCodeParser = /** @class */ (function () {
  function OpCodeParser(codes) {
    this.i = 0;
    this.codes = codes;
  }
  OpCodeParser.prototype.hasMore = function () {
    return this.i < this.codes.length;
  };
  OpCodeParser.prototype.consumeNumber = function () {
    var value = this.codes[this.i++];
    assertNumber(value, 'expecting number in OpCode');
    return value;
  };
  OpCodeParser.prototype.consumeString = function () {
    var value = this.codes[this.i++];
    assertString(value, 'expecting string in OpCode');
    return value;
  };
  OpCodeParser.prototype.consumeFunction = function () {
    var value = this.codes[this.i++];
    if (value === null || typeof value === 'function') {
      return value;
    }
    throw new Error('expecting function in OpCode');
  };
  OpCodeParser.prototype.consumeNumberOrString = function () {
    var value = this.codes[this.i++];
    if (typeof value === 'string') {
      return value;
    }
    assertNumber(value, 'expecting number or string in OpCode');
    return value;
  };
  OpCodeParser.prototype.consumeNumberStringOrMarker = function () {
    var value = this.codes[this.i++];
    if (typeof value === 'string' || typeof value === 'number' || value === ICU_MARKER || value === ELEMENT_MARKER) {
      return value;
    }
    assertNumber(value, 'expecting number, string, ICU_MARKER or ELEMENT_MARKER in OpCode');
    return value;
  };
  return OpCodeParser;
})();
/**
 * @license
 * Copyright Google LLC All Rights Reserved.
 *
 * Use of this source code is governed by an MIT-style license that can be found in the LICENSE file at
 * https://angular.io/license
 */
var BINDING_REGEXP = /(\d+)?\d*/gi;
var ICU_REGEXP = /({s*\d+?:\d*s*,\s*\S{6}\s*,\[\s\S*\])/gi;
var NESTED_ICU = /(\d+);/;
var ICU_BLOCK_REGEXP = /^(\s*(\d+?:\d*s*,\s*(select|plural)\s*,;/;
var MARKER = "\uFFFFD";
var SUBTEMPLATE_REGEXP = /\|/?\|(\d+:\d+)/gi;
var PH_REGEXP = /(\|/?[#\]\d+)?\d*/gi;
/**
 * Angular Dart introduced &ngsp; as a placeholder for non-removable space, see:
 * https://github.com/dart-lang/angular/blob/0bb611387d29d65b5af7f9d2515ab571fd3fbee4/_tests/test/compiler/preserve_whitespace_test.dart#L25-L32
 * In Angular Dart &ngsp; is converted to the 0xE500 PUA (Private Use Areas) unicode character
 * and later on replaced by a space. We are re-implementing the same idea here, since translations
 * might contain this special character.
 */
var NGSP_UNICODE_REGEXP = /\uE500/g;
function replaceNgsp(value) {
  return value.replace(NGSP_UNICODE_REGEXP, ' ');
}
/**
 * Create dynamic nodes from i18n translation block.
 * - Text nodes are created synchronously
 * - TNodes are linked into tree lazily
 * @param tView Current `TView`
 * @param parentTNodeIndex index to the parent TNode of this i18n block
 * @param IView Current `LView`
 * @param index Index of `i18nStart` instruction.
 * @param message Message to translate.
 * @param subTemplateIndex Index into the sub template of message translation. (ie in case of `ngIf` (-1 otherwise))
 */
function i18nStartFirstCreatePass(tView, parentTNodeIndex, IView, index, message, subTemplateIndex) {
  var rootTNode = getCurrentParentTNode();
  var createOpCodes = [];
  var updateOpCodes = [];
  var existingTNodeStack = [];
  if (ngDevMode) {
    attachDebugger(createOpCodes, i18nCreateOpCodesToString);
    attachDebugger(updateOpCodes, i18nUpdateOpCodesToString);
  }
  message = getTranslationForTemplate(message, subTemplateIndex);
  var msgParts = replaceNgsp(message).split(PH_REGEXP);
  for (var i = 0; i < msgParts.length; i++) {
    var value = msgParts[i];
    if ((i & 1) === 0) {
      // Even indexes are text (including bindings & ICU expressions)
      var parts = i18nParseTextIntoPartsAndICU(value);
      for (var j = 0; j <

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parts.length; j++) {\n                var part = parts[j];\n                if ((j & 1) === 0) {\n                    // `j` is odd\n                    therefore `part` is string\n                    var text = part;\n                    ngDevMode && assertString(text, 'Parsed\n                    ICU part should be string');\n                    if (text !== '') {\n                        i18nStartFirstCreatePassProcessTextNode(tView, rootTNode, existingTNodeStack[0], createOpCodes,\n                        updateOpCodes, lView, text);\n                    }\n                    }\n                    else {\n                        // `j` is Even\n                        therefor `part` is an `ICUExpression`\n                        var icuExpression = part;\n                        // Verify that ICU\n                        expression has the right shape. Translations might contain invalid\n                        // constructions (while original\n                        messages were correct), so ICU parsing at runtime may\n                        // not succeed (thus `icuExpression` remains\n                        a string).\n                        // Note: we intentionally retain the error here by not using `ngDevMode`, because\n                        // the value can change based on the locale and users aren't guaranteed to hit\n                        // an invalid\n                        string while they're developing.\n                        if (typeof icuExpression !== 'object') {\n                            throw\n                            new Error("Unable to parse ICU expression in \\\"\\\" + message + "\\\"\\\" message.");\n                        }\n                        var icuContainerTNode = createTNodeAndAddOpCode(tView, rootTNode, existingTNodeStack[0], lView,\n                        createOpCodes, ngDevMode ? \"ICU \\\" + index + \":\" + icuExpression.mainBinding : \"\", true);\n                        var\n                        icuNodeIndex = icuContainerTNode.index;\n                        ngDevMode &&\n                        assertGreaterThanOrEqual(icuNodeIndex, HEADER_OFFSET, 'Index must be in absolute lView offset');\n                        icuStart(tView, lView, updateOpCodes, parentTNodeIndex, icuExpression, icuNodeIndex);\n                    }\n                    }\n                    else {\n                        // Odd indexes are placeholders (elements and sub-templates)\n                        // At this point value is something like: '#1:2' (originally coming from '#1:2')\n                        var isClosing =\n                        value.charCodeAt(0) === 47 /* SLASH */;\n                        var type = value.charCodeAt(isClosing ? 1 : 0);\n                        ngDevMode && assertOneOf(type, 42 /* STAR */, 35 /* HASH */);\n                        var index_1 = HEADER_OFFSET\n                        + Number.parseInt(value.substring((isClosing ? 2 : 1)));\n                        if (isClosing) {\n                            existingTNodeStack.shift();\n                            setCurrentTNode(getCurrentParentTNode(), false);\n                        }\n                        else {\n                            var tNode = createTNodePlaceholder(tView, existingTNodeStack[0], index_1);\n                            existingTNodeStack.unshift([]);\n                            setCurrentTNode(tNode, true);\n                        }\n                    }\n                    }\n                    tView.data[index] = {\n                        create: createOpCodes,\n                        update: updateOpCodes,\n                    }; /*\n                    * Allocate space in i18n Range add create OpCode instruction to crete a text or comment node.\n                    * @param tView Current `lView` needed to allocate space in i18n range.\n                    * @param rootTNode Root `TNode` of\n                    the i18n block. This node determines if the new TNode will be\n                    * added as part of the `i18nStart` instruction\n                    or as part of the `TNode.insertBeforeIndex`.\n                    * @param existingTNodes internal state for\n                    `addTNodeAndUpdateInsertBeforeIndex`.\n                    * @param lView Current `lView` needed to allocate space in i18n\n                    range.\n                    * @param createOpCodes Array storing `i18nCreateOpCodes` where new opCodes will be added.\n                    * @param text Text to be added when the `Text` or `Comment` node will be created.\n                    * @param isICU true if a\n                    `Comment` node for ICU (instead of `Text`) node should be created.\n                    */\n                    function\n                    createTNodeAndAddOpCode(tView, rootTNode, existingTNodes, lView, createOpCodes, text, isICU) {\n                        var\n                        i18nNodeIdx = allocExpando(tView, lView, 1, null);\n                        var opCode = i18nNodeIdx <<\n                        I18nCreateOpCode.SHIFT;\n                        var parentTNode = getCurrentParentTNode();\n                        if (rootTNode ===\n                        parentTNode) {\n                            // FIXME(misko): A null `parentTNode` should represent when we fall of the `lView`\n                            boundary.\n                            // (there is no parent), but in some circumstances (because we are inconsistent about how we\n                            set\n                            // `previousOrParentTNode`) it could point to `rootTNode` So this is a work around.\n                            parentTNode = null;\n                        }\n                        if (parentTNode === null) {\n                            // If we don't have a parent that means that\n                            we can eagerly add nodes.\n                            // If we have a parent than these nodes can't be added now (as the parent has not\n                            been created\n                            // yet) and instead the `parentTNode` is responsible for adding it. See\n                            //\n                            `TNode.insertBeforeIndex`\n                            opCode |= I18nCreateOpCode.APPEND_EAGERLY;\n                        }\n                        if (isICU)\n                        {\n                            opCode |= I18nCreateOpCode.COMMENT;\n                        }\n                        ensureIcuContainerVisitorLoaded(loadIcuContainerVisitor);\n                        createOpCodes.push(opCode, text ===\n                        null ? \"\": text);\n                        // We store `{}` so that when looking at debug `TNodeType.template` we can see where\n                        the\n                        // bindings are.\n                        var tNode = createTNodeAtIndex(tView, i18nNodeIdx, isICU ? 32 /* Icu */ : 1 /*

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Text */, text === null ? (ngDevMode ? '{?}': '') : text, null);\n
addTNodeAndUpdateInsertBeforeIndex(existingTNodes, tNode);\n    var tNodeIdx = tNode.index;\n
setCurrentTNode(tNode, false /* Text nodes are self closing */);\n    if (parentTNode !== null && rootTNode !==\n
parentTNode) {\n        // We are a child of deeper node (rather than a direct child of `i18nStart` instruction.)\n
        // We have to make sure to add ourselves to the parent.\n        setTNodeInsertBeforeIndex(parentTNode,\n
tNodeIdx);\n    }\n    return tNode;\n }\n /**\n  * Processes text node in i18n block.\n  *\n  * Text\n
nodes can have:\n  * - Create instruction in `createOpCodes` for creating the text node.\n  * - Allocate spec for\n
text node in i18n range of `LView`\n  * - If contains binding:\n  * - bindings => allocate space in i18n range of\n
`LView` to store the binding value.\n  * - populate `updateOpCodes` with update instructions.\n  *\n  *\n
@param tView Current `TView`\n  * @param rootTNode Root `TNode` of the i18n block. This node determines\n
if the new TNode will\n  * be added as part of the `i18nStart` instruction or as part of the\n  *\n
`TNode.insertBeforeIndex`.\n  * @param existingTNodes internal state for\n
`addTNodeAndUpdateInsertBeforeIndex`.\n  * @param createOpCodes Location where the creation OpCodes will\n
be stored.\n  * @param IView Current `LView`\n  * @param text The translated text (which may contain\n
binding)\n  */\n function i18nStartFirstCreatePassProcessTextNode(tView, rootTNode, existingTNodes,\n
createOpCodes, updateOpCodes, IView, text) {\n    var hasBinding = text.match(BINDING_REGEXP);\n    var\n
tNode = createTNodeAndAddOpCode(tView, rootTNode, existingTNodes, IView, createOpCodes, hasBinding ?\n
null : text, false);\n    if (hasBinding) {\n        generateBindingUpdateOpCodes(updateOpCodes, text,\n
tNode.index);\n    }\n }\n /**\n  * See `i18nAttributes` above.\n  */\n function\n
i18nAttributesFirstPass(tView, index, values) {\n    var previousElement = getCurrentTNode();\n    var\n
previousElementIndex = previousElement.index;\n    var updateOpCodes = [];\n    if (ngDevMode) {\n
attachDebugGetter(updateOpCodes, i18nUpdateOpCodesToString);\n    }\n    if (tView.firstCreatePass &&\n
tView.data[index] === null) {\n        for (var i = 0; i < values.length; i += 2) {\n            var attrName =\n
values[i];\n            var message = values[i + 1];\n            if (message !== "") {\n                // Check if attribute\n
value contains an ICU and throw an error if that's the case.\n                // ICUs in element attributes are not\n
supported.\n                // Note: we intentionally retain the error here by not using `ngDevMode`, because\n
// the `value` can change based on the locale and users aren't guaranteed to hit\n                // an invalid string\n
while they're developing.\n                if (ICU_REGEXP.test(message)) {\n                    throw new Error("ICU\n
expressions are not supported in attributes. Message: \\\\" + message + "\\");\n                }\n                //\n
i18n attributes that hit this code path are guaranteed to have bindings, because\n                // the compiler treats\n
static i18n attributes as regular attribute bindings.\n                generateBindingUpdateOpCodes(updateOpCodes,\n
message, previousElementIndex, attrName);\n            }\n        }\n        tView.data[index] =\n
updateOpCodes;\n    }\n }\n /**\n  * Generate the OpCodes to update the bindings of a string.\n  *\n  *\n
@param updateOpCodes Place where the update opcodes will be stored.\n  * @param str The string containing the\n
bindings.\n  * @param destinationNode Index of the destination node which will receive the binding.\n  *\n
@param attrName Name of the attribute, if the string belongs to an attribute.\n  * @param sanitizeFn Sanitization\n
function used to sanitize the string after update, if necessary.\n  */\n function\n
generateBindingUpdateOpCodes(updateOpCodes, str, destinationNode, attrName, sanitizeFn) {\n    if (sanitizeFn\n
=== void 0) { sanitizeFn = null; }\n    ngDevMode &&\n        assertGreaterThanOrEqualTo(destinationNode,\n
HEADER_OFFSET, 'Index must be in absolute LView offset');\n    var maskIndex = updateOpCodes.length; //\n
Location of mask\n    var sizeIndex = maskIndex + 1; // location of size for skipping\n
updateOpCodes.push(null, null); // Alloc space for mask and size\n    var startIndex = maskIndex + 2; // location\n
of first allocation.\n    if (ngDevMode) {\n        attachDebugGetter(updateOpCodes,\n
i18nUpdateOpCodesToString);\n    }\n    var textParts = str.split(BINDING_REGEXP);\n    var mask = 0;\n
for (var j = 0; j < textParts.length; j++) {\n        var textValue = textParts[j];\n        if (j & 1) {\n            //\n
Odd indexes are bindings\n            var bindingIndex = parseInt(textValue, 10);\n            updateOpCodes.push(-\n
1 - bindingIndex);\n            mask = mask | toMaskBit(bindingIndex);\n        }\n        else if (textValue !== "")\n
{\n            // Even indexes are text\n            updateOpCodes.push(textValue);\n        }\n    }\n
}

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function (str, binding, type) {\n      if (type === 'select') {\n          icuType = 0 /* select */;\n      }\n      else {\n          icuType = 1 /* plural */;\n      }\n      mainBinding = parseInt(binding.substr(1), 10);\n      return \";\n    });\n    var parts = i18nParseTextIntoPartsAndICU(pattern);\n    // Looking for (key block)+\n    sequence. One of the keys has to be \"other\".\n    for (var pos = 0; pos < parts.length;)\n    {\n        var key =\n        parts[pos++].trim();\n        if (icuType === 1 /* plural */) {\n            // Key can be \"=x\", we just want \"x\"\n            key = key.replace(/\\s*(?:=)?(\\w+)\\s*/, '$1');\n        }\n        if (key.length) {\n            cases.push(key);\n        }\n        var blocks = i18nParseTextIntoPartsAndICU(parts[pos++]);\n        if\n        (cases.length > values.length) {\n            values.push(blocks);\n        }\n        // TODO(ocombe):\n        support ICU expressions in attributes, see #21615\n        return { type: icuType, mainBinding: mainBinding, cases:\n        cases, values: values };\n    }\n    /**\n     * Breaks pattern into strings and top level { ... } blocks.\n     * Can be used\n     * to break a message into text and ICU expressions, or to break an ICU expression\n     * into keys and cases. Original\n     * code from closure library, modified for Angular.\n     * @param pattern (sub)Pattern to be broken.\n     * @returns An `Array<string|IcuExpression>` where:\n     * - odd positions: `string` => text between ICU\n     * expressions\n     * - even positions: `ICUExpression` => ICU expression parsed into `ICUExpression` record.\n     */\n    function i18nParseTextIntoPartsAndICU(pattern) {\n        if (!pattern) {\n            return [];\n        }\n        var\n        prevPos = 0;\n        var braceStack = [];\n        var results = [];\n        var braces = /{}/g;\n        // lastIndex doesn't\n        get set to 0 so we have to.\n        braces.lastIndex = 0;\n        var match;\n        while (match = braces.exec(pattern))\n        {\n            var pos = match.index;\n            if (match[0] === '{') {\n                braceStack.push(pos);\n            }\n            if\n            (braceStack.length === 0) {\n                // End of the block.\n                var block = pattern.substring(prevPos,\n                pos);\n                if (ICU_BLOCK_REGEXP.test(block)) {\n                    results.push(parseICUBlock(block));\n                }\n                else {\n                    results.push(block);\n                }\n                prevPos = pos + 1;\n            }\n            else {\n                if (braceStack.length ===\n                0) {\n                    var substring_1 = pattern.substring(prevPos, pos);\n                    results.push(substring_1);\n                }\n                prevPos = pos + 1;\n                braceStack.push(pos);\n            }\n        }\n        var substring =\n        pattern.substring(prevPos);\n        results.push(substring);\n        return results;\n    }\n    /**\n     * Parses a node, its\n     * children and its siblings, and generates the mutate & update OpCodes.\n     */\n    function\n    parseIcuCase(tView, tIcu, IView, updateOpCodes, parentIdx, caseName, unsafeCaseHtml, nestedIcus) {\n        var\n        create = [];\n        var remove = [];\n        var update = [];\n        if (ngDevMode) {\n            attachDebugger(create, icuCreateOpCodesToString);\n            attachDebugger(remove,\n            i18nRemoveOpCodesToString);\n            attachDebugger(update, i18nUpdateOpCodesToString);\n        }\n        tIcu.cases.push(caseName);\n        tIcu.create.push(create);\n        tIcu.remove.push(remove);\n        tIcu.update.push(update);\n        var inertBodyHelper = getInertBodyHelper(getDocument());\n        var\n        inertBodyElement = inertBodyHelper.getInertBodyElement(unsafeCaseHtml);\n        ngDevMode &&\n        assertDefined(inertBodyElement, 'Unable to generate inert body element');\n        var inertRootNode =\n        getTemplateContent(inertBodyElement) || inertBodyElement;\n        if (inertRootNode) {\n            return\n            walkIcuTree(tView, tIcu, IView, updateOpCodes, create, remove, update, inertRootNode, parentIdx, nestedIcus,\n            0);\n        }\n        else {\n            return 0;\n        }\n    }\n    function walkIcuTree(tView, tIcu, IView,\n    sharedUpdateOpCodes, create, remove, update, parentNode, parentIdx, nestedIcus, depth) {\n        var bindingMask\n        = 0;\n        var currentNode = parentNode.firstChild;\n        while (currentNode) {\n            var newIndex =\n            allocExpando(tView, IView, 1, null);\n            switch (currentNode.nodeType) {\n                case\n                Node.ELEMENT_NODE:\n                    var element = currentNode;\n                    var tagName =\n                    element.tagName.toLowerCase();\n                    if (VALID_ELEMENTS.hasOwnProperty(tagName)) {\n                        addCreateNodeAndAppend(create, ELEMENT_MARKER, tagName, parentIdx, newIndex);\n                        tView.data[newIndex] = tagName;\n                        var elAttrs = element.attributes;\n                        for (var i = 0; i\n                        < elAttrs.length; i++) {\n                            var attr = elAttrs.item(i);\n                            var lowerAttrName =\n                            attr.name.toLowerCase();\n                            var hasBinding_1 = !!attr.value.match(BINDING_REGEXP);\n                            // we assume the input string is safe, unless it's using a binding\n                            if (hasBinding_1) {\n                                if (VALID_ATTRS.hasOwnProperty(lowerAttrName)) {\n                                    if

```



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(like ICU_EXP_ICU_1)\n * in case multiple ICUs have the same placeholder name\n * \n * @param
message Raw translation string for post processing\n * @param replacements Set of replacements that should be
applied\n * \n * @returns Transformed string that can be consumed by i18nStart instruction\n * \n *
@codeGenApi\n * \n function i18nPostprocess(message, replacements) {\n if (replacements === void 0) {\n
replacements = {};\n } \n /**\n * Step 1: resolve all multi-value placeholders like [#5]*1:1#2:1|#4:1|\n
*\n * Note: due to the way we process nested templates (BFS), multi-value placeholders are typically\n *
grouped by templates, for example: [#5|#6|#1:1|#3:2] where #5 and #6 belong to root\n * template, #1:1 belong
to nested template with index 1 and #1:2 - nested template with index\n * 3. However in real templates the
order might be different: i.e. #1:1 and/or #3:2 may go in\n * front of #6. The post processing step restores the
right order by keeping track of the\n * template id stack and looks for placeholders that belong to the currently
active template.\n * \n var result = message;\n if
(PP_MULTI_VALUE_PLACEHOLDERS_REGEXP.test(message)) {\n var matches_1 = {};\n var
templateIdsStack_1 = [ROOT_TEMPLATE_ID];\n result = result.replace(PP_PLACEHOLDERS_REGEXP,
function (m, phs, tmpl) {\n var content = phs || tmpl;\n var placeholders = matches_1[content] ||
[];\n if (!placeholders.length) {\n content.split('|').forEach(function (placeholder) {\n
var match = placeholder.match(PP_TEMPLATE_ID_REGEXP);\n var templateId = match ?
parseInt(match[1], 10) : ROOT_TEMPLATE_ID;\n var isCloseTemplateTag =
PP_CLOSE_TEMPLATE_REGEXP.test(placeholder);\n placeholders.push([templateId,
isCloseTemplateTag, placeholder]);\n });\n matches_1[content] = placeholders;\n
}\n if (!placeholders.length) {\n throw new Error("i18n postprocess: unmatched placeholder -
\" + content);\n }\n var currentTemplateId = templateIdsStack_1[templateIdsStack_1.length -
1];\n var idx = 0;\n // find placeholder index that matches current template id\n for (var i
= 0; i < placeholders.length; i++) {\n if (placeholders[i][0] === currentTemplateId) {\n
idx = i;\n break;\n }\n }\n // update template id stack based on the
current tag extracted\n var _a = __read(placeholders[idx], 3), templateId = _a[0], isCloseTemplateTag =
_a[1], placeholder = _a[2];\n if (isCloseTemplateTag) {\n templateIdsStack_1.pop();\n
}\n else if (currentTemplateId !== templateId) {\n templateIdsStack_1.push(templateId);\n
}\n // remove processed tag from the list\n placeholders.splice(idx, 1);\n return
placeholder;\n });\n }\n // return current result if no replacements specified\n if
(!Object.keys(replacements).length) {\n return result;\n }\n /**\n * Step 2: replace all ICU vars
(like "VAR_PLURAL")\n * \n result = result.replace(PP_ICU_VARS_REGEXP, function (match, start,
key, _type, _idx, end) {\n return replacements.hasOwnProperty(key) ? "\" + start + replacements[key] + end
: match;\n });\n /**\n * Step 3: replace all placeholders used inside ICUs in a form of
{PLACEHOLDER}\n * \n result = result.replace(PP_ICU_PLACEHOLDERS_REGEXP, function
(match, key) {\n return replacements.hasOwnProperty(key) ? replacements[key] : match;\n });\n
/**\n * Step 4: replace all ICU references with corresponding values (like ICU_EXP_ICU_1) in case\n *
multiple ICUs have the same placeholder name\n * \n result = result.replace(PP_ICUS_REGEXP, function
(match, key) {\n if (replacements.hasOwnProperty(key)) {\n var list = replacements[key];\n
if (!list.length) {\n throw new Error("i18n postprocess: unmatched ICU - \" + match + \" with key: \" +
key);\n }\n return list.shift();\n }\n return match;\n });\n return result;\n
}\n\n /**\n * @license\n * Copyright Google LLC All Rights Reserved.\n * \n * Use of this source code
is governed by an MIT-style license that can be\n * found in the LICENSE file at https://angular.io/license\n
*\n /**\n * Marks a block of text as translatable.\n * \n * The instructions `i18nStart` and `i18nEnd` mark
the translation block in the template.\n * The translation `message` is the value which is locale specific. The
translation string may\n * contain placeholders which associate inner elements and sub-templates within the
translation.\n * \n * The translation `message` placeholders are:\n * - `{index}(:{block})`: *Binding
Placeholder*: Marks a location where an expression will be\n * interpolated into. The placeholder `index` points
to the expression binding index. An optional\n * `block` that matches the sub-template in which it was

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declared.\n * -`#{index}(:{block})`^/`#{index}(:{block})`: *Element Placeholder*: Marks the beginning\n *
and end of DOM element that were embedded in the original translation block. The placeholder\n * `index`
points to the element index in the template instructions set. An optional `block` that\n * matches the sub-
template in which it was declared.\n * -`*{index}(:{block})`^/`*{index}(:{block})`: *Sub-template Placeholder*:
Sub-templates must be\n * split up and translated separately in each angular template function. The `index`
points to the\n * `template` instruction index. A `block` that matches the sub-template in which it was
declared.\n * \n * @param index A unique index of the translation in the static block.\n * @param
messageIndex An index of the translation message from the `def.consts` array.\n * @param subTemplateIndex
Optional sub-template index in the `message`.\n * \n * @codeGenApi\n * \n function i18nStart(index,
messageIndex, subTemplateIndex) {\n if (subTemplateIndex === void 0) { subTemplateIndex = -1; }\n var
tView = getTView();\n var IView = getLView();\n var adjustedIndex = HEADER_OFFSET + index;\n
ngDevMode && assertDefined(tView, `tView should be defined`);\n var message =
getConstant(tView.consts, messageIndex);\n var parentTNode = getCurrentParentTNode();\n if
(tView.firstCreatePass) {\n i18nStartFirstCreatePass(tView, parentTNode === null ? 0 : parentTNode.index,
IView, adjustedIndex, message, subTemplateIndex);\n }\n var tI18n = tView.data[adjustedIndex];\n var
sameViewParentTNode = parentTNode === IView[T_HOST] ? null : parentTNode;\n var parentRNode =
getClosestRElement(tView, sameViewParentTNode, IView);\n // If `parentTNode` is an `ElementContainer`
than it has `<!--ng-container-->`.\n // When we do inserts we have to make sure to insert in front of `<!--ng-
container-->`.\n var insertInFrontOf = parentTNode && (parentTNode.type & 8 /* ElementContainer */) ?\n
IView[parentTNode.index] : null;\n applyCreateOpCodes(IView, tI18n.create, parentRNode,
insertInFrontOf);\n setInI18nBlock(true);\n }\n /**\n * Translates a translation block marked by
`i18nStart` and `i18nEnd`. It inserts the text/ICU nodes\n * into the render tree, moves the placeholder nodes and
removes the deleted nodes.\n * \n * @codeGenApi\n * \n function i18nEnd() {\n
setInI18nBlock(false);\n }\n /**\n * \n * Use this instruction to create a translation block that doesn't contain
any placeholder.\n * It calls both {@link i18nStart} and {@link i18nEnd} in one instruction.\n * \n * The
translation `message` is the value which is locale specific. The translation string may\n * contain placeholders
which associate inner elements and sub-templates within the translation.\n * \n * The translation `message`
placeholders are:\n * -`#{index}(:{block})`: *Binding Placeholder*: Marks a location where an expression will
be\n * interpolated into. The placeholder `index` points to the expression binding index. An optional\n *
`block` that matches the sub-template in which it was declared.\n * -`*{index}(:{block})`^/`*{index}(:{block})`:
*Element Placeholder*: Marks the beginning\n * and end of DOM element that were embedded in the original
translation block. The placeholder\n * `index` points to the element index in the template instructions set. An
optional `block` that\n * matches the sub-template in which it was declared.\n * -
`*{index}(:{block})`^/`*{index}(:{block})`: *Sub-template Placeholder*: Sub-templates must be\n * split up and
translated separately in each angular template function. The `index` points to the\n * `template` instruction
index. A `block` that matches the sub-template in which it was declared.\n * \n * @param index A unique index
of the translation in the static block.\n * @param messageIndex An index of the translation message from the
`def.consts` array.\n * @param subTemplateIndex Optional sub-template index in the `message`.\n * \n *
@codeGenApi\n * \n function i18n(index, messageIndex, subTemplateIndex) {\n i18nStart(index,
messageIndex, subTemplateIndex);\n i18nEnd();\n }\n /**\n * \n * Marks a list of attributes as translatable.\n
*\n * @param index A unique index in the static block\n * @param values\n * \n * @codeGenApi\n
*\n * \n function i18nAttributes(index, attrsIndex) {\n var tView = getTView();\n ngDevMode &&
assertDefined(tView, `tView should be defined`);\n var attrs = getConstant(tView.consts, attrsIndex);\n
i18nAttributesFirstPass(tView, index + HEADER_OFFSET, attrs);\n }\n /**\n * \n * Stores the values of the
bindings during each update cycle in order to determine if we need to\n * update the translated nodes.\n * \n *
@param value The binding's value\n * @returns This function returns itself so that it may be chained\n * (e.g.
`i18nExp(ctx.name)(ctx.title)`)\n * \n * @codeGenApi\n * \n function i18nExp(value) {\n var IView =
getLView();\n setMaskBit(bindingUpdated(IView, nextBindingIndex(), value));\n return i18nExp;\n }\n

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/**\n
 * Updates a translation block or an i18n attribute when the bindings have changed.\n
 * @param\n
 index Index of either { @link i18nStart } (translation block) or { @link i18nAttributes }\n
 * (i18n attribute) on\n
 which it should update the content.\n
 * @codeGenApi\n
 */\n
function i18nApply(index) {\n
 applyI18n(getTView(), getLView(), index + HEADER_OFFSET);\n
 }\n
 /**\n
 * Handles message string post-processing for internationalization.\n
 * @param\n
 * @param\n
 * Handles message string post-processing by transforming it from\n
 intermediate\n
 * format (that might contain some markers that we need to replace) to the final\n
 * form,\n
 consumable by i18nStart instruction. Post processing steps include:\n
 * 1. Resolve all multi-value cases\n
 (like [*1:1#2:1|#4:1|5])\n
 * 2. Replace all ICU vars (like \"VAR_PLURAL\")\n
 * 3. Replace all placeholders\n
 used inside ICUs in a form of {PLACEHOLDER}\n
 * 4. Replace all ICU references with corresponding values\n
 (like ICU_EXP_ICU_1)\n
 * in case multiple ICUs have the same placeholder name\n
 * @param\n
 message Raw translation string for post processing\n
 * @param\n
 replacements Set of replacements that should be\n
 applied\n
 * @returns\n
 Transformed string that can be consumed by i18nStart instruction\n
 * @codeGenApi\n
 */\n
function i18nPostprocess(message, replacements) {\n
 if (replacements === void 0) {\n
 replacements = {};\n
 }\n
 return i18nPostprocess(message, replacements);\n
 }\n
 /**\n
 * @license\n
 * Copyright Google LLC All Rights Reserved.\n
 * Use of this source code is governed by an MIT-style\n
 license that can be\n
 * found in the LICENSE file at https://angular.io/license\n
 */\n
 * @license\n
 * Copyright Google LLC All Rights Reserved.\n
 * Use of this source code is governed by an MIT-style\n
 license that can be\n
 * found in the LICENSE file at https://angular.io/license\n
 */\n
 * Resolves the\n
 providers which are defined in the DirectiveDef.\n
 * @param\n
 * When inserting the tokens and the factories in their\n
 respective arrays, we can assume that\n
 * this method is called first for the component (if any), and then for other\n
 directives on the same\n
 * node.\n
 * As a consequence, the providers are always processed in that order:\n
 * 1) The view providers of the component\n
 * 2) The providers of the component\n
 * 3) The providers of the\n
 other directives\n
 * This matches the structure of the injectables arrays of a view (for each node).\n
 * So the\n
 tokens and the factories can be pushed at the end of the arrays, except\n
 * in one case for multi providers.\n
 * @param\n
 def the directive definition\n
 * @param\n
 providers: Array of `providers`\n
 * @param\n
 viewProviders: Array of `viewProviders`\n
 */\n
function providersResolver(def, providers, viewProviders) {\n
 var tView = getTView();\n
 if (tView.firstCreatePass) {\n
 var isComponent = isComponentDef(def);\n
 // The list of view providers is processed first, and the flags are updated\n
 resolveProvider$(viewProviders, tView.data, tView.blueprint, isComponent, true);\n
 // Then, the list of\n
 providers is processed, and the flags are updated\n
 resolveProvider$(providers, tView.data, tView.blueprint,\n
 isComponent, false);\n
 }\n
 }\n
 /**\n
 * Resolves a provider and publishes it to the DI system.\n
 * @param\n
 function\n
 resolveProvider$(provider, tInjectables, IInjectablesBlueprint, isComponent, isViewProvider) {\n
 provider = resolveForwardRef(provider);\n
 if (Array.isArray(provider)) {\n
 // Recursively call\n
 `resolveProvider`\n
 // Recursion is OK in this case because this code will not be in hot-path once we\n
 implement\n
 // cloning of the initial state.\n
 for (var i = 0; i < provider.length; i++) {\n
 resolveProvider$(provider[i], tInjectables, IInjectablesBlueprint, isComponent, isViewProvider);\n
 }\n
 }\n
 else {\n
 var tView = getTView();\n
 var IView = getLView();\n
 var token =\n
 isTypeProvider(provider) ? provider : resolveForwardRef(provider.provider);\n
 var providerFactory =\n
 providerToFactory(provider);\n
 var tNode = getCurrentTNode();\n
 var beginIndex =\n
 tNode.providerIndexes & 1048575 /* ProvidersStartIndexMask */;\n
 var endIndex = tNode.directiveStart;\n
 var cptViewProvidersCount = tNode.providerIndexes >> 20 /* CptViewProvidersCountShift */;\n
 if\n
 (isTypeProvider(provider) || !provider.multi) {\n
 // Single provider case: the factory is created and pushed\n
 immediately\n
 var factory = new NodeInjectorFactory(providerFactory, isViewProvider, directiveInject);\n
 var existingFactoryIndex = indexOf(token, tInjectables, isViewProvider ? beginIndex : beginIndex +\n
 cptViewProvidersCount, endIndex);\n
 if (existingFactoryIndex === -1) {\n
 diPublicInInjector(getOrCreateNodeInjectorForNode(tNode, IView), tView, token);\n
 registerDestroyHooksIfSupported(tView, provider, tInjectables.length);\n
 tInjectables.push(token);\n
 tNode.directiveStart++;\n
 tNode.directiveEnd++;\n
 if (isViewProvider) {\n

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        tNode.providerIndexes += 1048576 /* CptViewProvidersCountShifter */;\n        }\n
InjectablesBlueprint.push(factory);\n        IView.push(factory);\n        }\n        else {\n
InjectablesBlueprint[existingFactoryIndex] = factory;\n        IView[existingFactoryIndex] = factory;\n
    }\n    }\n    else {\n        // Multi provider case:\n        // We create a multi factory which is
going to aggregate all the values.\n        // Since the output of such a factory depends on content or view
injection,\n        // we create two of them, which are linked together.\n        /\n        // The first one
(for view providers) is always in the first block of the injectables array,\n        // and the second one (for
providers) is always in the second block.\n        // This is important because view providers have higher priority.
When a multi token\n        // is being looked up, the view providers should be found first.\n        // Note
that it is not possible to have a multi factory in the third block (directive block).\n        /\n        // The
algorithm to process multi providers is as follows:\n        // 1) If the multi provider comes from the
`viewProviders` of the component:\n        // a) If the special view providers factory doesn't exist, it is created
and pushed.\n        // b) Else, the multi provider is added to the existing multi factory.\n        // 2) If the
multi provider comes from the `providers` of the component or of another\n        // directive:\n        // a) If
the multi factory doesn't exist, it is created and provider pushed into it.\n        // It is also linked to the multi
factory for view providers, if it exists.\n        // b) Else, the multi provider is added to the existing multi
factory.\n        var existingProvidersFactoryIndex = indexOf(token, tInjectables, beginIndex +
cptViewProvidersCount, endIndex);\n        var existingViewProvidersFactoryIndex = indexOf(token,
tInjectables, beginIndex, beginIndex + cptViewProvidersCount);\n        var doesProvidersFactoryExist =
existingProvidersFactoryIndex >= 0 &&\n        InjectablesBlueprint[existingProvidersFactoryIndex];\n
        var doesViewProvidersFactoryExist = existingViewProvidersFactoryIndex >= 0 &&\n
InjectablesBlueprint[existingViewProvidersFactoryIndex];\n        if (isViewProvider &&
!doesViewProvidersFactoryExist ||\n        !isViewProvider && !doesProvidersFactoryExist) {\n
// Cases 1.a and 2.a\n        diPublicInInjector(getOrCreateNodeInjectorForNode(tNode, IView), tView,
token);\n        var factory = multiFactory(isViewProvider ? multiViewProvidersFactoryResolver :
multiProvidersFactoryResolver, InjectablesBlueprint.length, isViewProvider, isComponent, providerFactory);\n
        if (!isViewProvider && doesViewProvidersFactoryExist) {\n
InjectablesBlueprint[existingViewProvidersFactoryIndex].providerFactory = factory;\n        }\n
registerDestroyHooksIfSupported(tView, provider, tInjectables.length, 0);\n        tInjectables.push(token);\n
        tNode.directiveStart++;\n        tNode.directiveEnd++;\n        if (isViewProvider) {\n
        tNode.providerIndexes += 1048576 /* CptViewProvidersCountShifter */;\n        }\n
InjectablesBlueprint.push(factory);\n        IView.push(factory);\n        }\n        else {\n
// Cases 1.b and 2.b\n        var indexInFactory = multiFactoryAdd(InjectablesBlueprint[isViewProvider ?
existingViewProvidersFactoryIndex :\n        existingProvidersFactoryIndex], providerFactory,
!isViewProvider && isComponent);\n        registerDestroyHooksIfSupported(tView, provider,
existingProvidersFactoryIndex > -1 ? existingProvidersFactoryIndex :\n
existingViewProvidersFactoryIndex, indexInFactory);\n        }\n        if (!isViewProvider &&
isComponent && doesViewProvidersFactoryExist) {\n
InjectablesBlueprint[existingViewProvidersFactoryIndex].componentProviders++;\n        }\n        }\n
}\n }\n /**\n * Registers the `ngOnDestroy` hook of a provider, if the provider supports destroy hooks.\n *
@param tView `TView` in which to register the hook.\n * @param provider Provider whose hook should be
registered.\n * @param contextIndex Index under which to find the context for the hook when it's being
invoked.\n * @param indexInFactory Only required for `multi` providers. Index of the provider in the multi\n *
provider factory.\n */\n function registerDestroyHooksIfSupported(tView, provider, contextIndex,
indexInFactory) {\n    var providerIsTypeProvider = isTypeProvider(provider);\n    if (providerIsTypeProvider
|| isClassProvider(provider)) {\n        var prototype = (provider.useClass || provider).prototype;\n        var
ngOnDestroy = prototype.ngOnDestroy;\n        if (ngOnDestroy) {\n            var hooks = tView.destroyHooks ||
(tView.destroyHooks = []);\n            if (!providerIsTypeProvider && provider.multi) {\n                ngDevMode

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```

&&\n      assertDefined(indexInFactory, 'indexInFactory when registering multi factory destroy hook');\n
      var existingCallbacksIndex = hooks.indexOf(contextIndex);\n      if (existingCallbacksIndex ===\n-1) {\n      hooks.push(contextIndex, [indexInFactory, ngOnDestroy]);\n      }\n      else\n{\n      hooks[existingCallbacksIndex + 1].push(indexInFactory, ngOnDestroy);\n      }\n      }\n      else {\n      hooks.push(contextIndex, ngOnDestroy);\n      }\n      }\n      }\n      }\n\n/**\n * Add a factory in a multi factory.\n * @returns Index at which the factory was inserted.\n */\nfunction multiFactoryAdd(multiFactory, factory, isComponentProvider) {\n  if (isComponentProvider) {\n    multiFactory.componentProviders++;\n  }\n  return multiFactory.multi.push(factory) - 1;\n}\n\n/**\n * Returns the index of item in the array, but only in the begin to end range.\n */\nfunction indexOf(item, arr,\nbegin, end) {\n  for (var i = begin; i < end; i++) {\n    if (arr[i] === item)\n      return i;\n  }\n  return -1;\n}\n\n/**\n * Use this with `multi` `providers`.\n */\nfunction\nmultiProvidersFactoryResolver(_, tData, lData, tNode) {\n  return multiResolve(this.multi, []);\n}\n\n/**\n * Use this with `multi` `viewProviders`.\n */\n * This factory knows how to concatenate itself with the existing\n`multi` `providers`.\n */\nfunction multiViewProvidersFactoryResolver(_, tData, lView, tNode) {\n  var\nfactories = this.multi;\n  var result;\n  if (this.providerFactory) {\n    var componentCount =\nthis.providerFactory.componentProviders;\n    var multiProviders = getNodeInjectable(lView, lView[TVIEW],\nthis.providerFactory.index, tNode);\n    // Copy the section of the array which contains `multi` `providers` from\nthe component\n    result = multiProviders.slice(0, componentCount);\n    // Insert the `viewProvider`\ninstances.\n    multiResolve(factories, result);\n    // Copy the section of the array which contains `multi`\n`providers` from other directives\n    for (var i = componentCount; i < multiProviders.length; i++) {\n      result.push(multiProviders[i]);\n    }\n  }\n  else {\n    result = [];\n    // Insert the\n`viewProvider` instances.\n    multiResolve(factories, result);\n  }\n  return result;\n}\n\n/**\n * Maps an array of factories into an array of values.\n */\nfunction multiResolve(factories, result) {\n  for\n(var i = 0; i < factories.length; i++) {\n    var factory = factories[i];\n    result.push(factory());\n  }\n  return result;\n}\n\n/**\n * Creates a multi factory.\n */\nfunction multiFactory(factoryFn, index,\nisViewProvider, isComponent, f) {\n  var factory = new NodeInjectorFactory(factoryFn, isViewProvider,\ndirectiveInject);\n  factory.multi = [];\n  factory.index = index;\n  factory.componentProviders = 0;\n  multiFactoryAdd(factory, f, isComponent && !isViewProvider);\n  return factory;\n}\n\n/**\n * This\nfeature resolves the providers of a directive (or component),\n * and publish them into the DI system, making it\nvisible to others for injection.\n */\n * For example:\n * ```ts\n * class ComponentWithProviders {\n *   constructor(private greeter: GreeterDE) {}\n *   * static cmp = defineComponent({\n *     type:\nComponentWithProviders,\n *     selectors: [['component-with-providers']],\n *     factory: () => new\nComponentWithProviders(directiveInject(GreeterDE as any)),\n *     decls: 1,\n *     vars: 1,\n *     template:\nfunction(fs: RenderFlags, ctx: ComponentWithProviders) {\n *       if (fs & RenderFlags.Create) {\n *         text(0);\n *       }\n *       if (fs & RenderFlags.Update) {\n *         textInterpolate(ctx.greeter.greet());\n *       }\n *     },\n *     features: [ProvidersFeature([GreeterDE])]\n *   });\n * }\n * ```\n */\n * @param\ndefinition\n */\n * @codeGenApi\n */\nfunction ProvidersFeature(providers, viewProviders) {\n  if\n(viewProviders === void 0) {\n    viewProviders = [];\n  }\n  return function (definition) {\n    definition.providersResolver =\nfunction (def, processProvidersFn) {\n      return\nprovidersResolver(def, /\n      processProvidersFn ? processProvidersFn(providers) : providers, /\n      viewProviders);\n    };\n  };\n}\n\n/**\n * @license\n * Copyright Google LLC All Rights\nReserved.\n */\n * Use of this source code is governed by an MIT-style license that can be\n * found in the\nLICENSE file at https://angular.io/license\n */\n\n/**\n * Represents a component created by a\n`ComponentFactory`.\n */\n * Provides access to the component instance and related objects,\n * and provides the\nmeans of destroying the instance.\n */\n * @publicApi\n */\nvar ComponentRef = /** @class */ (function\n()) {\n  function ComponentRef() {\n  }\n  return ComponentRef;\n}\n\n/**\n * Base class for a\nfactory that can create a component dynamically.\n */\n * Instantiate a factory for a given type of component with\n`resolveComponentFactory`.\n */\n * Use the resulting `ComponentFactory.create` method to create a component

```

```

of that type.\n
 * \n
 * @see [Dynamic Components](guide/dynamic-component-loader)\n
 * \n
 *
@publicApi\n
 * \n
 var ComponentFactory = /** @class */ (function () {\n
 function ComponentFactory()\n
 {\n
 } \n
 return ComponentFactory;\n
 }());\n
\n
 function noComponentFactoryError(component) {\n
 var error = Error("No component factory found for '" + stringify(component) + "'. Did you add it to\n
 @NgModule.entryComponents?");\n
 error[ERROR_COMPONENT] = component;\n
 return error;\n
 }\n
\n
 var ERROR_COMPONENT = 'ngComponent';\n
 function getComponent$(error) {\n
 return\n
 error[ERROR_COMPONENT];\n
 }\n
\n
 var _NullComponentFactoryResolver = /** @class */ (function () {\n
 function _NullComponentFactoryResolver() {\n
 }\n
\n
 _NullComponentFactoryResolver.prototype.resolveComponentFactory = function (component) {\n
 throw\n
 noComponentFactoryError(component);\n
 }; \n
 return _NullComponentFactoryResolver;\n
 }());\n
\n
 /**\n
 * A simple registry that maps `Components` to generated `ComponentFactory` classes\n
 * that can be used to\n
 create instances of components.\n
 * Use to obtain the factory for a given component type,\n
 * then use the\n
 factory's `create()` method to create a component of that type.\n
 * \n
 * @see [Dynamic\n
 Components](guide/dynamic-component-loader)\n
 * @publicApi\n
 * \n
 var ComponentFactoryResolver =\n
 /** @class */ (function () {\n
 function ComponentFactoryResolver() {\n
 }\n
 return\n
 ComponentFactoryResolver;\n
 }());\n
\n
 ComponentFactoryResolver.NULL = new\n
 _NullComponentFactoryResolver();\n
\n
 var CodegenComponentFactoryResolver = /** @class */ (function () {\n
 function CodegenComponentFactoryResolver(factories, _parent, _ngModule) {\n
 this._parent = _parent;\n
 this._ngModule = _ngModule;\n
 this._factories = new Map();\n
 for (var i = 0; i < factories.length;\n
 i++) {\n
 var factory = factories[i];\n
 this._factories.set(factory.componentType, factory);\n
 }\n
 }\n
\n
 CodegenComponentFactoryResolver.prototype.resolveComponentFactory = function (component)\n
 {\n
 var factory = this._factories.get(component);\n
 if (!factory && this._parent) {\n
 factory =\n
 this._parent.resolveComponentFactory(component);\n
 }\n
 if (!factory) {\n
 throw\n
 noComponentFactoryError(component);\n
 }\n
 return new\n
 ComponentFactoryBoundToModule(factory, this._ngModule);\n
 }; \n
 return\n
 CodegenComponentFactoryResolver;\n
 }());\n
\n
 var ComponentFactoryBoundToModule = /** @class */\n
 (function (_super) {\n
 __extends(ComponentFactoryBoundToModule, _super);\n
 function\n
 ComponentFactoryBoundToModule(factory, ngModule) {\n
 var _this = _super.call(this) || this;\n
 _this.factory = factory;\n
 _this.ngModule = ngModule;\n
 _this.selector = factory.selector;\n
 _this.componentType = factory.componentType;\n
 _this.ngContentSelectors = factory.ngContentSelectors;\n
 _this.inputs = factory.inputs;\n
 _this.outputs = factory.outputs;\n
 return _this;\n
 }\n
\n
 ComponentFactoryBoundToModule.prototype.create = function (injector, projectableNodes, rootSelectorOrNode,\n
 ngModule) {\n
 return this.factory.create(injector, projectableNodes, rootSelectorOrNode, ngModule ||\n
 this.ngModule);\n
 }; \n
 return ComponentFactoryBoundToModule;\n
 })(ComponentFactory);\n
\n
 /**\n
 * @license\n
 * Copyright Google LLC All Rights Reserved.\n
 * \n
 * Use of this source code is governed by\n
 an MIT-style license that can be\n
 found in the LICENSE file at https://angular.io/license\n
 * \n
\n
 function\n
 noop() {\n
 var args = [];\n
 for (var _i = 0; _i < arguments.length; _i++) {\n
 args[_i] =\n
 arguments[_i];\n
 }\n
 // Do nothing.\n
 }\n
\n
 /**\n
 * @license\n
 * Copyright Google LLC All Rights\n
 Reserved.\n
 * \n
 * Use of this source code is governed by an MIT-style license that can be\n
 found in the\n
 LICENSE file at https://angular.io/license\n
 * \n
\n
 /**\n
 * Creates an ElementRef from the most recent node.\n
 * \n
 * @returns The ElementRef instance to use\n
 * \n
 function injectElementRef() {\n
 return\n
 createElementRef(getCurrentTNode(), getLView());\n
 }\n
\n
 /**\n
 * Creates an ElementRef given a node.\n
 * \n
 * @param tNode The node for which you'd like an ElementRef\n
 * @param IView The view to which the\n
 node belongs\n
 * @returns The ElementRef instance to use\n
 * \n
 function createElementRef(tNode, IView)\n
 {\n
 return new ElementRef(getNativeByTNode(tNode, IView));\n
 }\n
\n
 var\n
 SWITCH_ELEMENT_REF_FACTORY__POST_R3__ = injectElementRef;\n
\n
 var\n
 SWITCH_ELEMENT_REF_FACTORY__PRE_R3__ = noop;\n
\n
 var SWITCH_ELEMENT_REF_FACTORY =\n
 SWITCH_ELEMENT_REF_FACTORY__PRE_R3__;\n
\n
 /**\n
 * A wrapper around a native element inside of a

```

```

View.\n * \n * An `ElementRef` is backed by a render-specific element. In the browser, this is usually a DOM\n
* element.\n * \n * @security Permitting direct access to the DOM can make your application more\n
vulnerable to\n * XSS attacks. Carefully review any use of `ElementRef` in your code. For more detail, see the\n
* [Security Guide](http://g.co/ng/security).\n * \n * @publicApi\n * \n // Note: We don't expose things like\n
`Injector`, `ViewContainer`, ... here,\n // i.e. users have to ask for what they need. With that, we can build better\n
analysis tools\n // and could do better codegen in the future.\n var ElementRef = /** @class */ (function () {\n
function ElementRef(nativeElement) {\n this.nativeElement = nativeElement;\n }\n return\n
ElementRef;\n }());\n /**\n * @internal\n * @nocollapse\n * \n ElementRef.__NG_ELEMENT_ID__\n
= SWITCH_ELEMENT_REF_FACTORY;\n\n /**\n * @license\n * Copyright Google LLC All Rights\n
Reserved.\n * \n * Use of this source code is governed by an MIT-style license that can be\n * found in the\n
LICENSE file at https://angular.io/license\n * \n var Renderer2Interceptor = new\n
InjectionToken('Renderer2Interceptor');\n /**\n * Creates and initializes a custom renderer that implements the\n
`Renderer2` base class.\n * \n * @publicApi\n * \n var RendererFactory2 = /** @class */ (function () {\n
function RendererFactory2() {\n }\n return RendererFactory2;\n }());\n /**\n * Extend this base\n
class to implement custom rendering. By default, Angular\n * renders a template into DOM. You can use custom\n
rendering to intercept\n * rendering calls, or to render to something other than DOM.\n * \n * Create your\n
custom renderer using `RendererFactory2`.\n * \n * Use a custom renderer to bypass Angular's templating and\n
* make custom UI changes that can't be expressed declaratively.\n * For example if you need to set a property\n
or an attribute whose name is\n * not statically known, use the `setProperty()` or\n * `setAttribute()` method.\n
\n * \n * @publicApi\n * \n var Renderer2 = /** @class */ (function () {\n function Renderer2() {\n }\n
return Renderer2;\n }());\n /**\n * @internal\n * @nocollapse\n * \n\n
Renderer2.__NG_ELEMENT_ID__ = function () { return SWITCH_RENDERER2_FACTORY(); }; \n var\n
SWITCH_RENDERER2_FACTORY__POST_R3__ = injectRenderer2;\n var\n
SWITCH_RENDERER2_FACTORY__PRE_R3__ = noop;\n var SWITCH_RENDERER2_FACTORY =\n
SWITCH_RENDERER2_FACTORY__PRE_R3__;\n /** Returns a Renderer2 (or throws when application was\n
bootstrapped with Renderer3) *\n function getOrCreateRenderer2(IView) {\n var renderer =\n
IView[RENDERER];\n if (ngDevMode && !isProceduralRenderer(renderer)) {\n throw new\n
Error('Cannot inject Renderer2 when the application uses Renderer3!');\n }\n return renderer;\n }\n /**\n
Injects a Renderer2 for the current component. *\n function injectRenderer2() {\n // We need the Renderer to\n
be based on the component that it's being injected into, however since\n // DI happens before we've entered its\n
view, `getLView` will return the parent view instead.\n var IView = getLView();\n var tNode =\n
getCurrentTNode();\n var nodeAtIndex = getComponentLViewByIndex(tNode.index, IView);\n return\n
getOrCreateRenderer2(isLView(nodeAtIndex) ? nodeAtIndex : IView); \n }\n\n /**\n * @license\n * \n\n
Copyright Google LLC All Rights Reserved.\n * \n * Use of this source code is governed by an MIT-style\n
license that can be\n * found in the LICENSE file at https://angular.io/license\n * \n\n /**\n * Sanitizer is\n
used by the views to sanitize potentially dangerous values.\n * \n * @publicApi\n * \n var Sanitizer = /**\n
@class */ (function () {\n function Sanitizer() {\n }\n return Sanitizer;\n }());\n /** @nocollapse\n
*\n Sanitizer.prototype = defineInjectable({\n token: Sanitizer,\n providedIn: 'root',\n factory: function ()\n
{ return null; },\n });\n\n /**\n * @license\n * Copyright Google LLC All Rights Reserved.\n * \n * \n\n
Use of this source code is governed by an MIT-style license that can be\n * found in the LICENSE file at\n
https://angular.io/license\n * \n\n /**\n * @description Represents the version of Angular\n * \n * \n\n
*\n * @publicApi\n * \n var Version = /** @class */ (function () {\n function Version(full) {\n this.full =\n
full;\n this.major = full.split('.')[0];\n this.minor = full.split('.')[1];\n this.patch =\n
full.split('.')[2].slice(0, 2);\n }\n return Version;\n }());\n /**\n * @publicApi\n * \n\n
var\n
VERSION = new Version('11.0.2');\n\n /**\n * @license\n * Copyright Google LLC All Rights Reserved.\n * \n * \n\n
Use of this source code is governed by an MIT-style license that can be\n * found in the LICENSE file at\n
https://angular.io/license\n * \n\n var DefaultIterableDifferFactory = /** @class */ (function () {\n function\n
DefaultIterableDifferFactory() {\n }\n DefaultIterableDifferFactory.prototype.supports = function (obj) {\n

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return isListLikeIterable(obj);\n    };\n    DefaultIterableDifferFactory.prototype.create = function
(trackByFn) {\n        return new DefaultIterableDiffer(trackByFn);\n    };\n    return
DefaultIterableDifferFactory;\n    }());\n    var trackByIdentity = function (index, item) { return item; };\n    var O$b
= trackByIdentity;\n    /**\n     * @deprecated v4.0.0 - Should not be part of public API.\n     * @publicApi\n     */\n    var DefaultIterableDiffer = /** @class */ (function () {\n        function DefaultIterableDiffer(trackByFn) {\n            this.length = 0;\n            // Keeps track of the used records at any point in time (during & across ` _check()` calls)\n            this._linkedRecords = null;\n            // Keeps track of the removed records at any point in time during ` _check()`
calls.\n            this._unlinkedRecords = null;\n            this._previousItHead = null;\n            this._itHead = null;\n            this._itTail = null;\n            this._additionsHead = null;\n            this._additionsTail = null;\n            this._movesHead = null;\n            this._movesTail = null;\n            this._removalsHead = null;\n            this._removalsTail = null;\n            // Keeps track of records where custom track by is the same, but item identity has
changed\n            this._identityChangesHead = null;\n            this._identityChangesTail = null;\n            this._trackByFn = trackByFn || trackByIdentity;\n        };\n        DefaultIterableDiffer.prototype.forEachItem =
function (fn) {\n            var record;\n            for (record = this._itHead; record !== null; record = record._next) {\n                fn(record);\n            }\n        };\n        DefaultIterableDiffer.prototype.forEachOperation = function (fn) {\n            var nextIt = this._itHead;\n            var nextRemove = this._removalsHead;\n            var addRemoveOffset = 0;\n            var moveOffsets = null;\n            while (nextIt || nextRemove) {\n                // Figure out which is the next record
to process\n                // Order: remove, add, move\n                var record = !nextRemove ||\n                    nextIt &&\n                    nextIt.currentIndex <\n                        getNextIndex(nextRemove, addRemoveOffset,\n                            moveOffsets) ?\n                            nextIt :\n                            nextRemove;\n                var adjPreviousIndex =
getNextIndex(record, addRemoveOffset, moveOffsets);\n                var currentIndex = record.currentIndex;\n                // consume the item, and adjust the addRemoveOffset and update moveDistance if necessary\n                if
(record === nextRemove) {\n                    addRemoveOffset--;\n                    nextRemove =
nextRemove._nextRemoved;\n                } else {\n                    nextIt = nextIt._next;\n                } if
(record.previousIndex == null) {\n                    addRemoveOffset++;\n                } else {\n                    // INVARIANT: currentIndex < previousIndex\n                    if (!moveOffsets)\n                        moveOffsets = [];\n                    var localMovePreviousIndex = adjPreviousIndex - addRemoveOffset;\n                    var localCurrentIndex = currentIndex - addRemoveOffset;\n                    if (localMovePreviousIndex !=
localCurrentIndex) {\n                        for (var i = 0; i < localMovePreviousIndex; i++) {\n                            var
offset = i < moveOffsets.length ? moveOffsets[i] : (moveOffsets[i] = 0);\n                            var index = offset +
i;\n                            if (localCurrentIndex <= index && index < localMovePreviousIndex) {\n                                moveOffsets[i] = offset + 1;\n                            }\n                        }\n                        var previousIndex =
record.previousIndex;\n                        moveOffsets[previousIndex] = localCurrentIndex -
localMovePreviousIndex;\n                    }\n                }\n                if (adjPreviousIndex !==
currentIndex) {\n                    fn(record, adjPreviousIndex, currentIndex);\n                }\n            }\n        };\n        DefaultIterableDiffer.prototype.forEachPreviousItem = function (fn) {\n            var record;\n            for (record =
this._previousItHead; record !== null; record = record._nextPrevious) {\n                fn(record);\n            }\n        };\n        DefaultIterableDiffer.prototype.forEachAddedItem = function (fn) {\n            var record;\n            for (record =
this._additionsHead; record !== null; record = record._nextAdded) {\n                fn(record);\n            }\n        };\n        DefaultIterableDiffer.prototype.forEachMovedItem = function (fn) {\n            var record;\n            for (record =
this._movesHead; record !== null; record = record._nextMoved) {\n                fn(record);\n            }\n        };\n        DefaultIterableDiffer.prototype.forEachRemovedItem = function (fn) {\n            var record;\n            for (record =
this._removalsHead; record !== null; record = record._nextRemoved) {\n                fn(record);\n            }\n        };\n        DefaultIterableDiffer.prototype.forEachIdentityChange = function (fn) {\n            var record;\n            for (record
= this._identityChangesHead; record !== null; record = record._nextIdentityChange) {\n                fn(record);\n            }\n        };\n        DefaultIterableDiffer.prototype.diff = function (collection) {\n            if (collection == null)\n                collection = [];\n            if (!isListLikeIterable(collection)) {\n                throw new Error("Error trying to diff "\n                + stringify(collection) + "'. Only arrays and iterables are allowed");\n            }\n            if (this.check(collection))

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    return this;\n    }\n    else {\n        return null;\n    }\n};\n
DefaultIterableDiffer.prototype.onDestroy = function () {\n    DefaultIterableDiffer.prototype.check = function
(collection) {\n        var _this = this;\n        this._reset();\n        var record = this._itHead;\n        var
mayBeDirty = false;\n        var index;\n        var item;\n        var itemTrackBy;\n        if
(Array.isArray(collection)) {\n            this.length = collection.length;\n            for (var index_1 = 0; index_1 <
this.length; index_1++) {\n                item = collection[index_1];\n                itemTrackBy =
this._trackByFn(index_1, item);\n                if (record === null || !Object.is(record.trackById, itemTrackBy)) {\n
                    record = this._mismatch(record, item, itemTrackBy, index_1);\n                    maybeDirty = true;\n
                }\n                else {\n                    if (maybeDirty) {\n                        // TODO(misko): can we limit
this to duplicates only?\n                        record = this._verifyReinsertion(record, item, itemTrackBy, index_1);\n
                    }\n                    if (!Object.is(record.item, item))\n                        this._addIdentityChange(record,
item);\n                    }\n                    record = record._next;\n                }\n            }\n            else {\n                index =
0;\n                iterateListLike(collection, function (item) {\n                    itemTrackBy = _this._trackByFn(index,
item);\n                    if (record === null || !Object.is(record.trackById, itemTrackBy)) {\n                        record =
_this._mismatch(record, item, itemTrackBy, index);\n                        maybeDirty = true;\n                    }\n
                }\n                else {\n                    if (maybeDirty) {\n                        // TODO(misko): can we limit this to duplicates only?\n
                        record = _this._verifyReinsertion(record, item, itemTrackBy, index);\n                    }\n
                    if (!Object.is(record.item, item))\n                        _this._addIdentityChange(record, item);\n                    }\n
                    record = record._next;\n                    index++;\n                });\n                this.length = index;\n            }\n
            this._truncate(record);\n            this.collection = collection;\n            return this.isDirty;\n        });\n
Object.defineProperty(DefaultIterableDiffer.prototype, "isDirty", {\n    /* CollectionChanges is considered
dirty if it has any additions, moves, removals, or identity\n    * changes.\n    */\n    get: function ()
{\n        return this._additionsHead !== null || this._movesHead !== null ||\n            this._removalsHead
!== null || this._identityChangesHead !== null;\n    },\n    enumerable: false,\n    configurable: true\n
});\n    /**\n     * Reset the state of the change objects to show no changes. This means set previousKey to\n
     * currentKey, and clear all of the queues (additions, moves, removals).\n     * Set the previousIndexes of
moved and added items to their currentIndexes\n     * Reset the list of additions, moves and removals\n     */\n
    * @internal\n    */\n    DefaultIterableDiffer.prototype._reset = function () {\n        if (this.isDirty) {\n
            var record = void 0;\n            for (record = this._previousItHead = this._itHead; record !== null; record =
record._next) {\n                record._nextPrevious = record._next;\n            }\n            for (record =
this._additionsHead; record !== null; record = record._nextAdded) {\n                record.previousIndex =
record.currentIndex;\n            }\n            this._additionsHead = this._additionsTail = null;\n            for (record
= this._movesHead; record !== null; record = record._nextMoved) {\n                record.previousIndex =
record.currentIndex;\n            }\n            this._movesHead = this._movesTail = null;\n
            this._removalsHead = this._removalsTail = null;\n            this._identityChangesHead = this._identityChangesTail
= null;\n            // TODO(vicb): when assert gets supported\n            // assert(!this.isDirty);\n        }\n
    }; \n    /**\n     * This is the core function which handles differences between collections.\n     */\n     * -
`record` is the record which we saw at this position last time. If null then it is a new\n     * item.\n     * - `item`
is the current item in the collection\n     * - `index` is the position of the item in the collection\n     */\n
    * @internal\n    */\n    DefaultIterableDiffer.prototype._mismatch = function (record, item, itemTrackBy, index)
{\n        // The previous record after which we will append the current one.\n        var previousRecord;\n
        if (record === null) {\n            previousRecord = this._itTail;\n        }\n        else {\n
            previousRecord = record._prev;\n            // Remove the record from the collection since we know it does not
match the item.\n            this._remove(record);\n        }\n        // Attempt to see if we have seen the item
before.\n        record = this._linkedRecords === null ? null : this._linkedRecords.get(itemTrackBy, index);\n
        if (record !== null) {\n            // We have seen this before, we need to move it forward in the collection.\n
            // But first we need to check if identity changed, so we can update in view if necessary\n            if
(!Object.is(record.item, item))\n                this._addIdentityChange(record, item);\n

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this._moveAfter(record, previousRecord, index);\n        }\n        else {\n            // Never seen it, check evicted
list.\n            record = this._unlinkedRecords === null ? null : this._unlinkedRecords.get(itemTrackBy, null);\n            if (record !== null) {\n                // It is an item which we have evicted earlier: reinsert it back into the list.\n                // But first we need to check if identity changed, so we can update in view if necessary\n                if
(!Object.is(record.item, item))\n                    this._addIdentityChange(record, item);\n                this._reinsertAfter(record, previousRecord, index);\n            }\n            else {\n                // It is a new item:
add it.\n                record =\n                    this._addAfter(new IterableChangeRecord_(item, itemTrackBy),
previousRecord, index);\n            }\n            }\n            return record;\n        };\n        /**\n         * This check is
only needed if an array contains duplicates. (Short circuit of nothing dirty)\n         *\n         * Use case: `[a, a] =>
`[b, a, a]`\n         *\n         * If we did not have this check then the insertion of `b` would:\n         * 1) evict first `a`\n
         * 2) insert `b` at `0` index.\n         * 3) leave `a` at index `1` as is. <-- this is wrong!\n         * 3) reinsert `a` at
index 2. <-- this is wrong!\n         *\n         * The correct behavior is:\n         * 1) evict first `a`\n         * 2) insert
`b` at `0` index.\n         * 3) reinsert `a` at index 1.\n         * 3) move `a` at from `1` to `2`.\n         *\n         *\n
         * Double check that we have not evicted a duplicate item. We need to check if the item type may\n         * have
already been removed:\n         * The insertion of b will evict the first 'a'. If we don't reinsert it now it will be
reinserted\n         * at the end. Which will show up as the two 'a's switching position. This is incorrect, since a\n
         * better way to think of it is as insert of 'b' rather than switch 'a' with 'b' and then add 'a'\n         * at the end.\n
         *\n         * @internal\n         *\n         DefaultIterableDiffer.prototype._verifyReinsertion = function (record, item,
itemTrackBy, index) {\n            var reinsertRecord = this._unlinkedRecords === null ? null :
this._unlinkedRecords.get(itemTrackBy, null);\n            if (reinsertRecord !== null) {\n                record =
this._reinsertAfter(reinsertRecord, record._prev, index);\n            }\n            else if (record.currentIndex !== index)
{\n                record.currentIndex = index;\n                this._addToMoves(record, index);\n            }\n            return
record;\n        };\n        /**\n         * Get rid of any excess {@link IterableChangeRecord_}s from the previous
collection\n         *\n         * - `record` The first excess {@link IterableChangeRecord_}.\n         *\n         *
         * @internal\n         *\n         DefaultIterableDiffer.prototype._truncate = function (record) {\n            // Anything after
that needs to be removed;\n            while (record !== null) {\n                var nextRecord = record._next;\n                this._addToRemovals(this._unlink(record));\n                record = nextRecord;\n            }\n            if
(this._unlinkedRecords !== null) {\n                this._unlinkedRecords.clear();\n            }\n            if
(this._additionsTail !== null) {\n                this._additionsTail._nextAdded = null;\n            }\n            if
(this._movesTail !== null) {\n                this._movesTail._nextMoved = null;\n            }\n            if (this._itTail !==
null) {\n                this._itTail._next = null;\n            }\n            if (this._removalsTail !== null) {\n                this._removalsTail._nextRemoved = null;\n            }\n            if (this._identityChangesTail !== null) {\n                this._identityChangesTail._nextIdentityChange = null;\n            }\n        };\n        /** @internal *\n
         DefaultIterableDiffer.prototype._reinsertAfter = function (record, prevRecord, index) {\n            if
(this._unlinkedRecords !== null) {\n                this._unlinkedRecords.remove(record);\n            }\n            var prev =
record._prevRemoved;\n            var next = record._nextRemoved;\n            if (prev === null) {\n                this._removalsHead = next;\n            }\n            else {\n                prev._nextRemoved = next;\n            }\n            if
(next === null) {\n                this._removalsTail = prev;\n            }\n            else {\n                next._prevRemoved =
prev;\n            }\n            this._insertAfter(record, prevRecord, index);\n            this._addToMoves(record, index);\n            return record;\n        };\n        /** @internal *\n
         DefaultIterableDiffer.prototype._moveAfter = function
(record, prevRecord, index) {\n            this._unlink(record);\n            this._insertAfter(record, prevRecord, index);\n            this._addToMoves(record, index);\n            return record;\n        };\n        /** @internal *\n
         DefaultIterableDiffer.prototype._addAfter = function (record, prevRecord, index) {\n            this._insertAfter(record, prevRecord, index);\n            if (this._additionsTail === null) {\n                //
TODO(vicb):\n                // assert(this._additionsHead === null);\n                this._additionsTail =
this._additionsHead = record;\n            }\n            else {\n                // TODO(vicb):\n                //
assert(_additionsTail._nextAdded === null);\n                // assert(record._nextAdded === null);\n                this._additionsTail = this._additionsTail._nextAdded = record;\n            }\n            return record;\n        };\n        /**

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@internal */\n    DefaultIterableDiffer.prototype._insertAfter = function (record, prevRecord, index) {\n        //
TODO(vicb):\n        // assert(record != prevRecord);\n        // assert(record._next === null);\n        //
assert(record._prev === null);\n        var next = prevRecord === null ? this._itHead : prevRecord._next;\n
// TODO(vicb):\n        // assert(next != record);\n        // assert(prevRecord != record);\n        record._next =
next;\n        record._prev = prevRecord;\n        if (next === null) {\n            this._itTail = record;\n        }\n
        else {\n            next._prev = record;\n        }\n        if (prevRecord === null) {\n            this._itHead =
record;\n        }\n        else {\n            prevRecord._next = record;\n        }\n        if (this._linkedRecords
=== null) {\n            this._linkedRecords = new _DuplicateMap();\n        }\n
this._linkedRecords.put(record);\n        record.currentIndex = index;\n        return record;\n    }; \n    /**
@internal */\n    DefaultIterableDiffer.prototype._remove = function (record) {\n        return
this._addToRemovals(this._unlink(record));\n    }; \n    /** @internal */\n
DefaultIterableDiffer.prototype._unlink = function (record) {\n        if (this._linkedRecords !== null) {\n
this._linkedRecords.remove(record);\n        }\n        var prev = record._prev;\n        var next = record._next;\n
        // TODO(vicb):\n        // assert((record._prev = null) === null);\n        // assert((record._next = null) ===
null);\n        if (prev === null) {\n            this._itHead = next;\n        }\n        else {\n            prev._next =
next;\n        }\n        if (next === null) {\n            this._itTail = prev;\n        }\n        else {\n
next._prev = prev;\n        }\n        return record;\n    }; \n    /** @internal */\n
DefaultIterableDiffer.prototype._addToMoves = function (record, toIndex) {\n        // TODO(vicb):\n        //
assert(record._nextMoved === null);\n        if (record.previousIndex === toIndex) {\n            return record;\n
        }\n        if (this._movesTail === null) {\n            // TODO(vicb):\n            // assert(_movesHead ===
null);\n            this._movesTail = this._movesHead = record;\n        }\n        else {\n            //
TODO(vicb):\n            // assert(_movesTail._nextMoved === null);\n            this._movesTail =
this._movesTail._nextMoved = record;\n        }\n        return record;\n    }; \n
DefaultIterableDiffer.prototype._addToRemovals = function (record) {\n        if (this._unlinkedRecords === null)
{\n            this._unlinkedRecords = new _DuplicateMap();\n        }\n
this._unlinkedRecords.put(record);\n        record.currentIndex = null;\n        record._nextRemoved = null;\n
        if (this._removalsTail === null) {\n            // TODO(vicb):\n            // assert(_removalsHead === null);\n
            this._removalsTail = this._removalsHead = record;\n            record._prevRemoved = null;\n        }\n
        else {\n            // TODO(vicb):\n            // assert(_removalsTail._nextRemoved === null);\n            //
assert(record._nextRemoved === null);\n            record._prevRemoved = this._removalsTail;\n
            this._removalsTail = this._removalsTail._nextRemoved = record;\n        }\n        return record;\n    }; \n
/** @internal */\n    DefaultIterableDiffer.prototype._addIdentityChange = function (record, item) {\n
record.item = item;\n        if (this._identityChangesTail === null) {\n            this._identityChangesTail =
this._identityChangesHead = record;\n        }\n        else {\n            this._identityChangesTail =
this._identityChangesTail._nextIdentityChange = record;\n        }\n        return record;\n    }; \n    return
DefaultIterableDiffer;\n    }());\n    var IterableChangeRecord_ = /** @class */ (function () {\n        function
IterableChangeRecord_(item, trackById) {\n            this.item = item;\n            this.trackById = trackById;\n
            this.currentIndex = null;\n            this.previousIndex = null;\n            /** @internal */\n            this._nextPrevious =
null;\n            /** @internal */\n            this._prev = null;\n            /** @internal */\n            this._next = null;\n
            /** @internal */\n            this._prevDup = null;\n            /** @internal */\n            this._nextDup = null;\n
            /** @internal */\n            this._prevRemoved = null;\n            /** @internal */\n            this._nextRemoved = null;\n
            /** @internal */\n            this._nextAdded = null;\n            /** @internal */\n            this._nextMoved = null;\n
            /** @internal */\n            this._nextIdentityChange = null;\n        }\n        return IterableChangeRecord_;\n
    }());\n    // A linked list of IterableChangeRecords with the same IterableChangeRecord_.item\n    var
_DuplicateItemRecordList = /** @class */ (function () {\n        function _DuplicateItemRecordList() {\n            /**
@internal */\n            this._head = null;\n            /** @internal */\n            this._tail = null;\n        }\n        /**\n
* Append the record to the list of duplicates.\n        *\n        * Note: by design all records in the list of duplicates
hold the same value in record.item.\n        */\n        _DuplicateItemRecordList.prototype.add = function (record) {\n

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    if (this._head === null) {\n        this._head = this._tail = record;\n        record._nextDup = null;\n        record._prevDup = null;\n    } else {\n        // TODO(vicb):\n        // assert(record.item\n        == _head.item ||\n        // record.item is num && record.item.isNaN && _head.item is num &&\n        _head.item.isNaN);\n        this._tail._nextDup = record;\n        record._prevDup = this._tail;\n        record._nextDup = null;\n        this._tail = record;\n    };\n    // Returns a IterableChangeRecord_\n    having IterableChangeRecord_.trackById == trackById and\n    // IterableChangeRecord_.currentIndex >=\n    atOrAfterIndex\n    _DuplicateItemRecordList.prototype.get = function (trackById, atOrAfterIndex) {\n    var record;\n    for (record = this._head; record !== null; record = record._nextDup) {\n    if\n    ((atOrAfterIndex === null || atOrAfterIndex <= record.currentIndex) &&\n    Object.is(record.trackById,\n    trackById)) {\n    return record;\n    }\n    }\n    return null;\n    };\n    /**\n    * Remove one {@link IterableChangeRecord_} from the list of duplicates.\n    *\n    * Returns whether the list\n    of duplicates is empty.\n    */\n    _DuplicateItemRecordList.prototype.remove = function (record) {\n    //\n    TODO(vicb):\n    // assert()\n    // // verify that the record being removed is in the list.\n    // for\n    (IterableChangeRecord_ cursor = _head; cursor != null; cursor = cursor._nextDup) {\n    // if\n    (identical(cursor, record)) return true;\n    // }\n    // return false;\n    //});\n    var prev =\n    record._prevDup;\n    var next = record._nextDup;\n    if (prev === null) {\n    this._head = next;\n    }\n    else {\n    prev._nextDup = next;\n    }\n    if (next === null) {\n    this._tail\n    = prev;\n    }\n    else {\n    next._prevDup = prev;\n    }\n    return this._head === null;\n    };\n    return _DuplicateItemRecordList;\n    }());\n    var _DuplicateMap = /** @class */ (function () {\n    function _DuplicateMap() {\n    this.map = new Map();\n    }\n    _DuplicateMap.prototype.put = function\n    (record) {\n    var key = record.trackById;\n    var duplicates = this.map.get(key);\n    if (!duplicates)\n    {\n    duplicates = new _DuplicateItemRecordList();\n    this.map.set(key, duplicates);\n    }\n    duplicates.add(record);\n    };\n    /**\n    * Retrieve the `value` using key. Because the\n    IterableChangeRecord_ value may be one which we\n    * have already iterated over, we use the\n    `atOrAfterIndex` to pretend it is not there.\n    *\n    * Use case: `[a, b, c, a, a]` if we are at index `3` which is\n    the second `a` then asking if we\n    * have any more `a`s needs to return the second `a`.\n    */\n    _DuplicateMap.prototype.get = function (trackById, atOrAfterIndex) {\n    var key = trackById;\n    var\n    recordList = this.map.get(key);\n    return recordList ? recordList.get(trackById, atOrAfterIndex) : null;\n    };\n    /**\n    * Removes a {@link IterableChangeRecord_} from the list of duplicates.\n    *\n    * The\n    list of duplicates also is removed from the map if it gets empty.\n    */\n    _DuplicateMap.prototype.remove =\n    function (record) {\n    var key = record.trackById;\n    var recordList = this.map.get(key);\n    //\n    Remove the list of duplicates when it gets empty\n    if (recordList.remove(record)) {\n    this.map.delete(key);\n    }\n    return record;\n    };\n    Object.defineProperty(_DuplicateMap.prototype, "isEmpty", {\n    get: function () {\n    return\n    this.map.size === 0;\n    },\n    enumerable: false,\n    configurable: true\n    });\n    _DuplicateMap.prototype.clear = function () {\n    this.map.clear();\n    };\n    return _DuplicateMap;\n    }());\n    function getPreviousIndex(item, addRemoveOffset, moveOffsets) {\n    var previousIndex =\n    item.previousIndex;\n    if (previousIndex === null)\n    return previousIndex;\n    var moveOffset = 0;\n    if (moveOffsets && previousIndex < moveOffsets.length) {\n    moveOffset =\n    moveOffsets[previousIndex];\n    }\n    return previousIndex + addRemoveOffset + moveOffset;\n    };\n    /**\n    * @license\n    * Copyright Google LLC All Rights Reserved.\n    *\n    * Use of this source code is\n    governed by an MIT-style license that can be\n    * found in the LICENSE file at https://angular.io/license\n    */\n    var DefaultKeyValueDifferFactory = /** @class */ (function () {\n    function DefaultKeyValueDifferFactory()\n    {\n    }\n    DefaultKeyValueDifferFactory.prototype.supports = function (obj) {\n    return obj instanceof\n    Map || isJsObject(obj);\n    };\n    DefaultKeyValueDifferFactory.prototype.create = function () {\n    return new DefaultKeyValueDiffer();\n    };\n    return DefaultKeyValueDifferFactory;\n    }());\n    var\n    DefaultKeyValueDiffer = /** @class */ (function () {\n    function DefaultKeyValueDiffer() {\n    this._records = new Map();\n    this._mapHead = null;\n    // _appendAfter is used in the check loop\n
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    this._appendAfter = null;\n        this._previousMapHead = null;\n        this._changesHead = null;\n
this._changesTail = null;\n        this._additionsHead = null;\n        this._additionsTail = null;\n
this._removalsHead = null;\n        this._removalsTail = null;\n    }\n
Object.defineProperty(DefaultKeyValueDiffer.prototype, "isDirty", {\n        get: function () {\n            return
this._additionsHead !== null || this._changesHead !== null ||\n            this._removalsHead !== null;\n
        },\n        enumerable: false,\n        configurable: true\n    });\n
DefaultKeyValueDiffer.prototype.forEachItem = function (fn) {\n        var record;\n        for (record =
this._mapHead; record !== null; record = record._next) {\n            fn(record);\n        }\n    };\n
DefaultKeyValueDiffer.prototype.forEachPreviousItem = function (fn) {\n        var record;\n        for (record =
this._previousMapHead; record !== null; record = record._nextPrevious) {\n            fn(record);\n        }\n    };\n
DefaultKeyValueDiffer.prototype.forEachChangedItem = function (fn) {\n        var record;\n        for
(record = this._changesHead; record !== null; record = record._nextChanged) {\n            fn(record);\n        }\n    };\n
DefaultKeyValueDiffer.prototype.forEachAddedItem = function (fn) {\n        var record;\n        for
(record = this._additionsHead; record !== null; record = record._nextAdded) {\n            fn(record);\n        }\n    };\n
DefaultKeyValueDiffer.prototype.forEachRemovedItem = function (fn) {\n        var record;\n        for
(record = this._removalsHead; record !== null; record = record._nextRemoved) {\n            fn(record);\n        }\n    };\n
DefaultKeyValueDiffer.prototype.diff = function (map) {\n        if (!map) {\n            map = new
Map();\n        }\n        else if (!(map instanceof Map || isJsObject(map))) {\n            throw new Error("Error
trying to diff " + stringify(map) + "). Only maps and objects are allowed");\n        }\n        return
this.check(map) ? this : null;\n    };\n
DefaultKeyValueDiffer.prototype.onDestroy = function () { };\n
/**\n     * Check the current state of the map vs the previous.\n     * The algorithm is optimised for when the
keys do no change.\n     */\n
DefaultKeyValueDiffer.prototype.check = function (map) {\n        var _this =
this;\n        this._reset();\n        var insertBefore = this._mapHead;\n        this._appendAfter = null;\n
this._forEach(map, function (value, key) {\n            if (insertBefore && insertBefore.key === key) {\n
_this._maybeAddToChanges(insertBefore, value);\n                _this._appendAfter = insertBefore;\n
insertBefore = insertBefore._next;\n            }\n            else {\n                var record =
_this._getOrCreateRecordForKey(key, value);\n                insertBefore =
_this._insertBeforeOrAppend(insertBefore, record);\n            }\n        });\n        // Items remaining at the end
of the list have been deleted\n        if (insertBefore) {\n            if (insertBefore._prev) {\n
insertBefore._prev._next = null;\n            }\n            this._removalsHead = insertBefore;\n            for (var
record = insertBefore; record !== null; record = record._nextRemoved) {\n                if (record ===
this._mapHead) {\n                    this._mapHead = null;\n                }\n            }\n
this._records.delete(record.key);\n            record._nextRemoved = record._next;\n
record.previousValue = record.currentValue;\n            record.currentValue = null;\n            record._prev =
null;\n            record._next = null;\n        }\n        // Make sure tails have no next records from
previous runs\n        if (this._changesTail)\n            this._changesTail._nextChanged = null;\n        if
(this._additionsTail)\n            this._additionsTail._nextAdded = null;\n        return this.isDirty;\n    };\n
/**\n     * Inserts a record before `before` or append at the end of the list when `before` is null.\n     */\n
Notes:\n     * - This method appends at `this._appendAfter`,\n     * - This method updates `this._appendAfter`,\n
     * - The return value is the new value for the insertion pointer.\n     */\n
DefaultKeyValueDiffer.prototype._insertBeforeOrAppend = function (before, record) {\n        if (before) {\n
var prev = before._prev;\n            record._next = before;\n            record._prev = prev;\n
before._prev = record;\n            if (prev) {\n                prev._next = record;\n            }\n            if (before
=== this._mapHead) {\n                this._mapHead = record;\n            }\n            this._appendAfter = before;\n
return before;\n        }\n        if (this._appendAfter) {\n            this._appendAfter._next = record;\n
record._prev = this._appendAfter;\n        }\n        else {\n            this._mapHead = record;\n        }\n
this._appendAfter = record;\n        return null;\n    };\n
DefaultKeyValueDiffer.prototype._getOrCreateRecordForKey = function (key, value) {\n        if

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(this._records.has(key)) {\n          var record_1 = this._records.get(key);\nthis._maybeAddToChanges(record_1, value);\n          var prev = record_1._prev;\n          var next =\nrecord_1._next;\n          if (prev) {\n              prev._next = next;\n          }\n          if (next) {\n              next._prev = prev;\n          }\n          record_1._next = null;\n          record_1._prev = null;\nreturn record_1;\n          }\n          var record = new KeyValueChangeRecord_(key);\n          this._records.set(key,\nrecord);\n          record.currentValue = value;\n          this._addToAdditions(record);\n          return record;\n};\n    /** @internal */\n    DefaultKeyValueDiffer.prototype._reset = function () {\n        if (this.isDirty) {\n            var record = void 0;\n            // let `previousMapHead` contain the state of the map before the changes\n            this._previousMapHead = this._mapHead;\n            for (record = this._previousMapHead; record !==\nnull; record = record._next) {\n                record._nextPrevious = record._next;\n            }\n            // Update\n`record.previousValue` with the value of the item before the changes\n            // We need to update all changed\nitems (that's those which have been added and changed)\n            for (record = this._changesHead; record !==\nnull; record = record._nextChanged) {\n                record.previousValue = record.currentValue;\n            }\n            for (record = this._additionsHead; record != null; record = record._nextAdded) {\n                record.previousValue = record.currentValue;\n            }\n            this._changesHead = this._changesTail =\nnull;\n            this._additionsHead = this._additionsTail = null;\n            this._removalsHead = null;\n        }\n    }; // Add the record or a given key to the list of changes only when the value has actually changed\n    DefaultKeyValueDiffer.prototype._maybeAddToChanges = function (record, newValue) {\n        if\n(!Object.is(newValue, record.currentValue)) {\n            record.previousValue = record.currentValue;\n            record.currentValue = newValue;\n            this._addToChanges(record);\n        }\n    };\n    DefaultKeyValueDiffer.prototype._addToAdditions = function (record) {\n        if (this._additionsHead === null)\n{\n            this._additionsHead = this._additionsTail = record;\n        }\n        else {\n            this._additionsTail._nextAdded = record;\n            this._additionsTail = record;\n        }\n    };\n    DefaultKeyValueDiffer.prototype._addToChanges = function (record) {\n        if (this._changesHead === null)\n{\n            this._changesHead = this._changesTail = record;\n        }\n        else {\n            this._changesTail._nextChanged = record;\n            this._changesTail = record;\n        }\n    };\n    /**\n    @internal */\n    DefaultKeyValueDiffer.prototype._forEach = function (obj, fn) {\n        if (obj instanceof\nMap) {\n            obj.forEach(fn);\n        }\n        else {\n            Object.keys(obj).forEach(function (k) {\n                return fn(obj[k], k); });\n        }\n    }; return DefaultKeyValueDiffer;\n    }());\n    var\nKeyValueChangeRecord_ = /** @class */ (function () {\n        function KeyValueChangeRecord_(key) {\n            this.key = key;\n            this.previousValue = null;\n            this.currentValue = null;\n            /** @internal */\n            this._nextPrevious = null;\n            /** @internal */\n            this._next = null;\n            /** @internal */\n            this._prev = null;\n            /** @internal */\n            this._nextAdded = null;\n            /** @internal */\n            this._nextRemoved = null;\n            /** @internal */\n            this._nextChanged = null;\n        }\n        return\nKeyValueChangeRecord_;\n    }());\n    /**\n    * @license\n    * Copyright Google LLC All Rights Reserved.\n    *\n    * Use of this source code is governed by an MIT-style license that can be\n    * found in the LICENSE file at\n    https://angular.io/license\n    */\n    /**\n    * A repository of different iterable diffing strategies used by NgFor,\n    NgClass, and others.\n    */\n    * @publicApi\n    */\n    var IterableDiffers = /** @class */ (function () {\n        function IterableDiffers(factories) {\n            this.factories = factories;\n        }\n        IterableDiffers.create =\nfunction (factories, parent) {\n            if (parent != null) {\n                var copied = parent.factories.slice();\n                factories = factories.concat(copied);\n            }\n            return new IterableDiffers(factories);\n        };\n        /**\n        * Takes an array of {@link IterableDifferFactory} and returns a provider used to extend the\n        * inherited\n        {@link IterableDiffers} instance with the provided factories and return a new\n        * {@link IterableDiffers}\ninstance.\n        *\n        * @usageNotes\n        * ### Example\n        *\n        * The following example shows\nhow to extend an existing list of factories,\n        * which will only be applied to the injector for this component and\nits children.\n        * This step is all that's required to make a new {@link IterableDiffer} available.\n        */\n        *```\n        * @Component({\n            * viewProviders: [\n                * IterableDiffers.extend([new\nImmutableListDiffer()])\n            * ]\n        * })\n        *```\n        */\n        * @internal\n        */\n        IterableDiffers.extend = function

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```

(factories) {\n      return {\n          provide: IterableDifferers,\n          useFactory: function (parent) {\n              if (!parent) {\n                  // Typically would occur when calling IterableDifferers.extend inside of\n                  dependencies passed\n                  // to\n                  // bootstrap(), which would override default pipes instead\n                  of extending them.\n                  throw new Error('Cannot extend IterableDifferers without a parent injector');\n              }\n              return IterableDifferers.create(factories, parent);\n          },\n          // Dependency\n          technically isn't optional, but we can provide a better error message this way.\n          deps: [[IterableDifferers, new\n          SkipSelf(), new Optional()]]\n          };\n          };\n          IterableDifferers.prototype.find = function (iterable) {\n          var factory = this.factories.find(function (f) { return f.supports(iterable); });\n          if (factory != null) {\n          return factory;\n          }\n          else {\n          throw new Error("Cannot find a differ supporting object \"" +\n          iterable + "\" of type \"" + getTypeNameForDebugging(iterable) + "\"");\n          }\n          };\n          return\n          IterableDifferers;\n          }());\n          /** @nocollapse */\n          IterableDifferers.prov = defineInjectable({\n          token:\n          IterableDifferers,\n          providedIn: 'root',\n          factory: function () { return new IterableDifferers([new\n          DefaultIterableDifferFactory()]); }\n          });\n          function getTypeNameForDebugging(type) {\n          return\n          type['name'] || typeof type;\n          }\n          /**\n          * @license\n          * Copyright Google LLC All Rights Reserved.\n          *\n          * Use of this source code is governed by an MIT-style license that can be\n          * found in the LICENSE file at\n          https://angular.io/license\n          */\n          /**\n          * A repository of different Map diffing strategies used by NgClass,\n          NgStyle, and others.\n          */\n          * @publicApi\n          */\n          var KeyValueDifferers = /** @class */ (function () {\n          function KeyValueDifferers(factories) {\n          this.factories = factories;\n          }\n          KeyValueDifferers.create =\n          function (factories, parent) {\n          if (parent) {\n          var copied = parent.factories.slice();\n          factories = factories.concat(copied);\n          }\n          return new KeyValueDifferers(factories);\n          };\n          /**\n          * Takes an array of { @link KeyValueDifferFactory } and returns a provider used to extend the\n          * inherited { @link KeyValueDifferers } instance with the provided factories and return a new\n          * { @link\n          KeyValueDifferers } instance.\n          */\n          * @usageNotes\n          * ### Example\n          *\n          * The following\n          example shows how to extend an existing list of factories,\n          * which will only be applied to the injector for this\n          component and its children.\n          * This step is all that's required to make a new { @link KeyValueDiffer }\n          available.\n          */\n          * ```\n          * @Component({\n          *   viewProviders: [\n          *    \n          KeyValueDifferers.extend([new ImmutableMapDiffer()])\n          *   ]\n          * })\n          * ```\n          */\n          KeyValueDifferers.extend = function (factories) {\n          return {\n          provide: KeyValueDifferers,\n          useFactory: function (parent) {\n          if (!parent) {\n          // Typically would occur when calling\n          KeyValueDifferers.extend inside of dependencies passed\n          // to bootstrap(), which would override\n          default pipes instead of extending them.\n          throw new Error('Cannot extend KeyValueDifferers without\n          a parent injector');\n          }\n          return KeyValueDifferers.create(factories, parent);\n          },\n          // Dependency\n          // technically isn't optional, but we can provide a better error message this way.\n          deps:\n          [[KeyValueDifferers, new SkipSelf(), new Optional()]]\n          };\n          };\n          KeyValueDifferers.prototype.find =\n          function (kv) {\n          var factory = this.factories.find(function (f) { return f.supports(kv); });\n          if (factory)\n          {\n          return factory;\n          }\n          throw new Error("Cannot find a differ supporting object \"" + kv +\n          "\"");\n          };\n          return KeyValueDifferers;\n          }());\n          /** @nocollapse */\n          KeyValueDifferers.prov =\n          defineInjectable({\n          token: KeyValueDifferers,\n          providedIn: 'root',\n          factory: function () { return new\n          KeyValueDifferers([new DefaultKeyValueDifferFactory()]); }\n          });\n          function collectNativeNodes(tView,\n          IView, tNode, result, isProjection) {\n          if (isProjection === void 0) { isProjection = false; }\n          while (tNode\n          !== null) {\n          ngDevMode &&\n          assertTNodeType(tNode, 3 /* AnyRNode */ | 12 /* AnyContainer\n          */ | 16 /* Projection */ | 32 /* Icu */);\n          var INode = IView[tNode.index];\n          if (INode !== null) {\n          result.push(unwrapRNode(INode));\n          }\n          // A given INode can represent either a native node or a\n          LContainer (when it is a host of a\n          // ViewContainerRef). When we find a LContainer we need to descend\n          into it to collect root nodes\n          // from the views in this container.\n          if (isLContainer(INode)) {\n          for (var i = CONTAINER_HEADER_OFFSET; i < INode.length; i++) {\n          var IViewInAContainer =\n          INode[i];\n          var IViewFirstChildTNode = IViewInAContainer[TVIEW].firstChild;\n          if\n          (IViewFirstChildTNode !== null) {\n          collectNativeNodes(IViewInAContainer[TVIEW],

```

```

    IViewInAContainer, IViewFirstChildTNode, result);\n        }\n        }\n        }\n        var tNodeType\n    = tNode.type);\n        if (tNodeType & 8 /* ElementContainer */) {\n            collectNativeNodes(tView, IView,\n            tNode.child, result);\n        }\n        else if (tNodeType & 32 /* Icu */) {\n            var nextRNode =\n            icuContainerIterate(tNode, IView);\n            var rNode = void 0;\n            while (rNode = nextRNode()) {\n                result.push(rNode);\n            }\n        }\n        else if (tNodeType & 16 /* Projection */) {\n            var componentView = IView[DECLARATION_COMPONENT_VIEW];\n            var componentHost =\n            componentView[T_HOST];\n            var slotIdx = tNode.projection;\n            ngDevMode &&\n            assertDefined(componentHost.projection, 'Components with projection nodes (<ng-content>) must have projection\n            slots defined.);\n            var nodesInSlot = componentHost.projection[slotIdx];\n            if\n            (Array.isArray(nodesInSlot)) {\n                result.push.apply(result, __spread(nodesInSlot));\n            }\n            else {\n                var parentView = getLViewParent(componentView);\n                ngDevMode &&\n                assertDefined(parentView, 'Component views should always have a parent view (component\\'s host view)');\n                collectNativeNodes(parentView[TVIEW], parentView, nodesInSlot, result, true);\n            }\n        }\n        tNode = isProjection ? tNode.projectionNext : tNode.next;\n    }\n    return result;\n}\n\nvar\nViewRef = /** @class */ (function () {\n    function ViewRef(\n        /**\n         * This represents `LView`\n         * associated with the component when ViewRef is a ChangeDetectorRef.\n         *\n         * When ViewRef is created\n         * for a dynamic component, this also represents the `LView` for the\n         * component.\n         *\n         * For a\n         * \"regular\" ViewRef created for an embedded view, this is the `LView` for the embedded\n         * view.\n         *\n         * @internal\n         * ^\n         * _IView, \n         * /**\n         * This represents the `LView` associated with the point\n         * where `ChangeDetectorRef` was\n         * requested.\n         *\n         * This may be different from `_IView` if the\n         * `_cdRefInjectingView` is an embedded view.\n         * ^\n         * _cdRefInjectingView) {\n            this._IView =\n            _IView;\n            this._cdRefInjectingView = _cdRefInjectingView;\n            this._appRef = null;\n            this._viewContainerRef = null;\n        }\n        Object.defineProperty(ViewRef.prototype, \"rootNodes\", {\n            get: function () {\n                var IView = this._IView;\n                var tView = IView[TVIEW];\n                return\n                collectNativeNodes(tView, IView, tView.firstChild, []);\n            },\n            enumerable: false,\n            configurable: true\n        });\n        Object.defineProperty(ViewRef.prototype, \"context\", {\n            get: function ()\n            {\n                return this._IView[CONTEXT];\n            },\n            enumerable: false,\n            configurable: true\n        });\n        Object.defineProperty(ViewRef.prototype, \"destroyed\", {\n            get: function () {\n                return\n                (this._IView[FLAGS] & 256 /* Destroyed */) === 256 /* Destroyed */;\n            },\n            enumerable: false,\n            configurable: true\n        });\n        ViewRef.prototype.destroy = function () {\n            if (this._appRef) {\n                this._appRef.detachView(this);\n            }\n            else if (this._viewContainerRef) {\n                var index =\n                this._viewContainerRef.indexOf(this);\n                if (index > -1) {\n                    this._viewContainerRef.detach(index);\n                }\n                this._viewContainerRef = null;\n            }\n            destroyLView(this._IView[TVIEW], this._IView);\n        };\n        ViewRef.prototype.onDestroy = function\n        (callback) {\n            storeCleanupWithContext(this._IView[TVIEW], this._IView, null, callback);\n        };\n        /**\n         * Marks a view and all of its ancestors dirty.\n         *\n         * It also triggers change detection by calling\n         * `scheduleTick` internally, which coalesces\n         * multiple `markForCheck` calls to into one change detection\n         * run.\n         *\n         * This can be used to ensure an {@link ChangeDetectionStrategy#OnPush OnPush} component\n         * is\n         * checked when it needs to be re-rendered but the two normal triggers haven't marked it\n         * dirty (i.e.\n         * inputs haven't changed and events haven't fired in the view).\n         *\n         * <!-- TODO: Add a link to a chapter\n         * on OnPush components -->\n         *\n         * @usageNotes\n         * ### Example\n         *\n         * ```typescript\n         * @Component({\n         *     selector: 'my-app',\n         *     template: `Number of ticks: {{ numberOfTicks }}`\n         *     changeDetection: ChangeDetectionStrategy.OnPush,\n         * })\n         * class AppComponent {\n         *     numberOfTicks = 0;\n         *     constructor(private ref: ChangeDetectorRef) {\n         *         setInterval(() =>\n         *         {\n         *             this.numberOfTicks++;\n         *             // the following is required, otherwise the view will not be\n         *             updated\n         *             this.ref.markForCheck();\n         *         }, 1000);\n         *     }\n         * }\n         * ```\n         * ^\n         * ViewRef.prototype.markForCheck = function () {\n            markViewDirty(this._cdRefInjectingView ||\n            this._IView);\n        };\n        /**\n         * Detaches the view from the change detection tree.\n         *\n         *

```


Detached views will not be checked during change detection runs until they are `re-attached`, even if they are dirty. `detach` can be used in combination with `{ @link ChangeDetectorRef#detectChanges detectChanges }` to implement local change detection checks.

`<!-- TODO: Add a link to a chapter on detach/reattach/local digest -->`

`<!-- TODO: Add a live demo once ref.detectChanges is merged into master -->`

`@usageNotes`

`### Example`

The following example defines a component with a large list of readonly data. Imagine the data changes constantly, many times per second. For performance reasons, we want to check and update the list every five seconds. We can do that by detaching the component's change detector and doing a local check every five seconds.

```

`typescript
class DataProvider {
  // in a real application the returned data will be different every
  time
  get data() {
    return [1,2,3,4,5];
  }
}
@Component({
  selector: 'giant-list',
  template: `
<li *ngFor="let d of dataProvider.data">Data
{{d}}</li>
`
})
class GiantList {
  constructor(private ref: ChangeDetectorRef,
    private dataProvider: DataProvider) {
    ref.detach();
    setInterval(() => {
      this.ref.detectChanges();
    }, 5000);
  }
}
@Component({
  selector: 'app',
  providers: [DataProvider],
  template: `
<giant-list><giant-list>
`
})
class App {
}
`
ViewRef.prototype.detach = function ()
{
  this._IView[FLAGS] &= ~128 /* Attached */;
};
/**
 * Re-attaches a view to the
change detection tree.
 * This can be used to re-attach views that were previously detached from the
tree
 * using { @link ChangeDetectorRef#detach detach }. Views are attached to the tree by default.
 *
 * <!-- TODO: Add a link to a chapter on detach/reattach/local digest -->
 *
 * @usageNotes
 *
 * ### Example
 *
 * The following example creates a component displaying `live` data. The component
will detach
 * its change detector from the main change detector tree when the component's live property
 * is set to false.
 *
`typescript
class DataProvider {
  data = 1;
  constructor() {
    setInterval(() => {
      this.data = this.data * 2;
    }, 500);
  }
}
@Component({
  selector: 'live-data',
  inputs: ['live'],
  template:
'Data: {{dataProvider.data}}
`
})
class LiveData {
  constructor(private ref:
ChangeDetectorRef, private dataProvider: DataProvider) {
    set live(value) {
      if (value)
        this.ref.reattach();
      } else {
        this.ref.detach();
      }
    }
}
@Component({
  selector: 'my-app',
  providers: [DataProvider],
  template: `
Live Update: <input type="checkbox" [(ngModel)]="live">
<live-data
[live]="live"><live-data>
`
})
class AppComponent {
  live = true;
}
`
ViewRef.prototype.reattach = function () {
  this._IView[FLAGS] |= 128 /*
Attached */;
};
/**
 * Checks the view and its children.
 * This can also be used in
combination with { @link ChangeDetectorRef#detach detach } to implement
 * local change detection
checks.
 *
 * <!-- TODO: Add a link to a chapter on detach/reattach/local digest -->
 *
 * <!--
TODO: Add a live demo once ref.detectChanges is merged into master -->
 *
 * @usageNotes
 *
 * ### Example
 *
 * The following example defines a component with a large list of readonly data.
 * Imagine, the data changes constantly, many times per second. For performance reasons,
 * we want to check
and update the list every five seconds.
 * We can do that by detaching the component's change
detector and doing a local change detection
 * check every five seconds.
 * See { @link
ChangeDetectorRef#detach detach } for more information.
 *
ViewRef.prototype.detectChanges =
function () {
  detectChangesInternal(this._IView[TVIEW], this._IView, this.context);
};
/**
 * Checks the change detector and its children, and throws if any changes are detected.
 * This is
used in development mode to verify that running change detection doesn't
 * introduce other changes.
 *
ViewRef.prototype.checkNoChanges = function () {
  checkNoChangesInternal(this._IView[TVIEW], this._IView, this.context);
};
ViewRef.prototype.attachToViewContainerRef = function (vcRef) {
  if (this._appRef) {
    throw
new Error("This view is already attached directly to the ApplicationRef!");
  }
}

```

```

this._viewControllerRef = vcRef;\n    });\n    ViewRef.prototype.detachFromAppRef = function () {\n
this._appRef = null;\n    renderDetachView(this._IView[TVIEW], this._IView);\n    });\n
ViewRef.prototype.attachToAppRef = function (appRef) {\n    if (this._viewControllerRef) {\n        throw
new Error("This view is already attached to a ViewContainer!");\n    }\n    this._appRef = appRef;\n
};\n    return ViewRef;\n    }());\n    /** @internal */\n    var RootViewRef = /** @class */ (function (_super) {\n
__extends(RootViewRef, _super);\n    function RootViewRef(_view) {\n        var _this = _super.call(this,
_view) || this;\n        _this._view = _view;\n        return _this;\n    }\n
RootViewRef.prototype.detectChanges = function () {\n    detectChangesInRootView(this._view);\n    });\n
RootViewRef.prototype.checkNoChanges = function () {\n    checkNoChangesInRootView(this._view);\n
};\n    Object.defineProperty(RootViewRef.prototype, "context", {\n        get: function () {\n            return
null;\n        },\n        enumerable: false,\n        configurable: true\n    });\n    return RootViewRef;\n
})(ViewRef);\n\n /**\n * @license\n * Copyright Google LLC All Rights Reserved.\n * Use of this
source code is governed by an MIT-style license that can be\n * found in the LICENSE file at
https://angular.io/license\n */\n var SWITCH_CHANGE_DETECTOR_REF_FACTORY__POST_R3__ =
injectChangeDetectorRef;\n var SWITCH_CHANGE_DETECTOR_REF_FACTORY__PRE_R3__ = noop;\n
var SWITCH_CHANGE_DETECTOR_REF_FACTORY =
SWITCH_CHANGE_DETECTOR_REF_FACTORY__PRE_R3__;\n /**\n * Base class that provides change
detection functionality.\n * A change-detection tree collects all views that are to be checked for changes.\n *
Use the methods to add and remove views from the tree, initiate change-detection,\n * and explicitly mark views
as _dirty_, meaning that they have changed and need to be re-rendered.\n * @see [Using change detection
hooks](guide/lifecycle-hooks#using-change-detection-hooks)\n * @see [Defining custom change
detection](guide/lifecycle-hooks#defining-custom-change-detection)\n * @usageNotes\n * The
following examples demonstrate how to modify default change-detection behavior\n * to perform explicit
detection when needed.\n * ### Use `markForCheck()` with `CheckOnce` strategy\n * The
following example sets the `OnPush` change-detection strategy for a component\n * (`CheckOnce`, rather than
the default `CheckAlways`), then forces a second check\n * after an interval. See [live
demo](http://plnkr.co/edit/GC512b?p=preview).\n * <code-example path="core/ts/change_detect/change-
detection.ts" region="mark-for-check"></code-example>\n * ### Detach change detector to limit
how often check occurs\n * The following example defines a component with a large list of read-only
data\n * that is expected to change constantly, many times per second.\n * To improve performance, we want to
check and update the list\n * less often than the changes actually occur. To do that, we detach\n * the
component's change detector and perform an explicit local check every five seconds.\n * <code-example
path="core/ts/change_detect/change-detection.ts" region="detach"></code-example>\n * \n * ###
Reattaching a detached component\n * The following example creates a component displaying live data.\n *
The component detaches its change detector from the main change detector tree\n * when the `live` property is
set to false, and reattaches it when the property\n * becomes true.\n * <code-example
path="core/ts/change_detect/change-detection.ts" region="reattach"></code-example>\n * \n
* @publicApi\n */\n var ChangeDetectorRef = /** @class */ (function () {\n    function ChangeDetectorRef()
{\n    }\n    return ChangeDetectorRef;\n    }());\n    /**\n * @internal\n * @nocollapse\n */\n
ChangeDetectorRef.__NG_ELEMENT_ID__ = SWITCH_CHANGE_DETECTOR_REF_FACTORY;\n /**\n * This marker is need so that the JIT compiler can correctly identify this class as special.\n * @internal\n
* @nocollapse\n */\n ChangeDetectorRef.__ChangeDetectorRef__ = true;\n /** Returns a
ChangeDetectorRef (a.k.a. a ViewRef) */\n function injectChangeDetectorRef(isPipe) {\n    if (isPipe === void
0) { isPipe = false; }\n    return createViewRef(getCurrentTNode(), getLView(), isPipe);\n    }\n    /**\n *
Creates a ViewRef and stores it on the injector as ChangeDetectorRef (public alias).\n * @param tNode
The node that is requesting a ChangeDetectorRef\n * @param IView The view to which the node belongs\n *
@param isPipe Whether the view is being injected into a pipe.\n * @returns The ChangeDetectorRef to use\n
*/\n function createViewRef(tNode, IView, isPipe) {\n    // `isComponentView` will be true for Component and

```

```

Directives (but not for Pipes).\n    // See https://github.com/angular/angular/pull/33072 for proper fix\n    var\n    isComponentView = !isPipe && isComponentHost(tNode);\n    if (isComponentView) {\n    // The LView\n    represents the location where the component is declared.\n    // Instead we want the LView for the component\n    View and so we need to look it up.\n    var componentView = getComponentLViewByIndex(tNode.index,\n    lView);\n    // look down\n    return new ViewRef(componentView, componentView);\n    }\n    else if\n    (tNode.type & (3 /* AnyRNode */ | 12 /* AnyContainer */ | 32 /* Icu */)) {\n    // The LView represents the\n    location where the injection is requested from.\n    // We need to locate the containing LView (in case where\n    the `lView` is an embedded view)\n    var hostComponentView =\n    lView[DECLARATION_COMPONENT_VIEW];\n    // look up\n    return new ViewRef(hostComponentView,\n    lView);\n    }\n    return null;\n    }\n    /**\n    * @license\n    * Copyright Google LLC All Rights\n    Reserved.\n    *\n    * Use of this source code is governed by an MIT-style license that can be\n    * found in the\n    LICENSE file at https://angular.io/license\n    *\n    *\n    * Structural diffing for `Object`s and `Map`s.\n    */\n    var keyValDiff = [new DefaultKeyValueDifferFactory()];\n    /**\n    * Structural diffing for `Iterable` types such\n    as `Array`s.\n    */\n    var iterableDiff = [new DefaultIterableDifferFactory()];\n    var defaultIterableDiffers = new\n    IterableDiffers(iterableDiff);\n    var defaultKeyValueDiffers = new KeyValueDiffers(keyValDiff);\n\n    var\n    SWITCH_TEMPLATE_REF_FACTORY__POST_R3__ = injectTemplateRef;\n    var\n    SWITCH_TEMPLATE_REF_FACTORY__PRE_R3__ = noop;\n    var SWITCH_TEMPLATE_REF_FACTORY\n    = SWITCH_TEMPLATE_REF_FACTORY__PRE_R3__;\n    /**\n    * Represents an embedded template that can\n    be used to instantiate embedded views.\n    * To instantiate embedded views based on a template, use the\n    `ViewContainerRef`\n    * method `createEmbeddedView()`.\n    *\n    * Access a `TemplateRef` instance by\n    placing a directive on an ``\n    * element (or directive prefixed with `*`). The `TemplateRef` for the\n    embedded view\n    * is injected into the constructor of the directive,\n    * using the `TemplateRef` token.\n    *\n    * You can also use a `Query` to find a `TemplateRef` associated with\n    * a component or a directive.\n    *\n    * @see `ViewContainerRef`\n    * @see [Navigate the Component Tree with DI](guide/dependency-injection-\n    navtree)\n    *\n    * @publicApi\n    */\n    var TemplateRef = /** @class */ (function () {\n    function\n    TemplateRef() {\n    }\n    return TemplateRef;\n    }());\n    /**\n    * @internal\n    * @nocollapse\n    */\n    TemplateRef.__NG_ELEMENT_ID__ = SWITCH_TEMPLATE_REF_FACTORY;\n    var\n    ViewEngineTemplateRef = TemplateRef;\n    var R3TemplateRef = /** @class */ (function (_super) {\n    __extends(TemplateRef, _super);\n    function TemplateRef(_declarationLView, _declarationTContainer,\n    elementRef) {\n    var _this = _super.call(this) || this;\n    _this._declarationLView = _declarationLView;\n    _this._declarationTContainer = _declarationTContainer;\n    _this.elementRef = elementRef;\n    return _this;\n    }\n    TemplateRef.prototype.createEmbeddedView = function (context) {\n    var\n    embeddedTView = this._declarationTContainer.tViews;\n    var embeddedLView =\n    createLView(this._declarationLView, embeddedTView, context, 16 /* CheckAlways */, null,\n    embeddedTView.declTNode, null, null, null, null);\n    var declarationLContainer =\n    this._declarationLView[this._declarationTContainer.index];\n    ngDevMode &&\n    assertLContainer(declarationLContainer);\n    embeddedLView[DECLARATION_LCONTAINER] =\n    declarationLContainer;\n    var declarationViewLQueries = this._declarationLView[QUERIES];\n    if\n    (declarationViewLQueries !== null) {\n    embeddedLView[QUERIES] =\n    declarationViewLQueries.createEmbeddedView(embeddedTView);\n    }\n    renderView(embeddedTView, embeddedLView, context);\n    return new ViewRef(embeddedLView);\n    };\n    return TemplateRef;\n    })(ViewEngineTemplateRef);\n    /**\n    * Creates a TemplateRef given a\n    node.\n    *\n    * @returns The TemplateRef instance to use\n    */\n    function injectTemplateRef() {\n    return\n    createTemplateRef(getCurrentTNode(), getLView());\n    }\n    /**\n    * Creates a TemplateRef and stores it on the\n    injector.\n    *\n    * @param hostTNode The node on which a TemplateRef is requested\n    * @param hostLView\n    The `LView` to which the node belongs\n    * @returns The TemplateRef instance or null if we can't create a\n    TemplateRef on a given node type\n    */\n    function createTemplateRef(hostTNode, hostLView) {\n    if\n    (hostTNode.type & 4 /* Container */) {\n    ngDevMode && assertDefined(hostTNode.tViews, "TView must

```

```

be allocated');\n      return new R3TemplateRef(hostLView, hostTNode, createElementRef(hostTNode,
hostLView));\n    }\n    return null;\n  }\n\n  /**\n   * @license\n   * Copyright Google LLC All Rights Reserved.\n   * Use of this source code is governed by an MIT-style license that can be\n   * found in the LICENSE file at https://angular.io/license\n   *\n   * Represents an instance of an `NgModule` created by an `NgModuleFactory`.\n   * Provides access to the `NgModule` instance and related objects.\n   *\n   * @publicApi\n   *\n   var NgModuleRef = /** @class */ (function () {\n    function NgModuleRef() {\n    }\n    return NgModuleRef;\n  }());\n\n  /**\n   * @publicApi\n   *\n   var NgModuleFactory = /** @class */ (function () {\n    function NgModuleFactory() {\n    }\n    return NgModuleFactory;\n  }());\n\n  var SWITCH_VIEW_CONTAINER_REF_FACTORY__POST_R3__ = injectViewContainerRef;\n  var SWITCH_VIEW_CONTAINER_REF_FACTORY__PRE_R3__ = noop;\n  var SWITCH_VIEW_CONTAINER_REF_FACTORY = SWITCH_VIEW_CONTAINER_REF_FACTORY__PRE_R3__;\n\n  /**\n   * Represents a container where one or more views can be attached to a component.\n   *\n   * Can contain *host views* (created by instantiating a\n   * component with the `createComponent()` method), and *embedded views*\n   * (created by instantiating a `TemplateRef` with the `createEmbeddedView()` method).\n   *\n   * A view container instance can contain other view containers,\n   * creating a [view hierarchy](guide/glossary#view-tree).\n   *\n   * @see `ComponentRef`\n   * @see `EmbeddedViewRef`\n   *\n   * @publicApi\n   *\n   var ViewContainerRef = /** @class */ (function () {\n    function ViewContainerRef() {\n    }\n    return ViewContainerRef;\n  }());\n\n  /**\n   * @internal\n   * @nocollapse\n   *\n   ViewContainerRef.__NG_ELEMENT_ID__ = SWITCH_VIEW_CONTAINER_REF_FACTORY;\n\n  /**\n   * Creates a ViewContainerRef and stores it on the injector. Or, if the ViewContainerRef\n   * already exists, retrieves the existing ViewContainerRef.\n   *\n   * @returns The ViewContainerRef instance to use\n   *\n   function injectViewContainerRef() {\n    var previousTNode = getCurrentTNode();\n    return createContainerRef(previousTNode, getLView());\n  }\n\n  var VE_ViewContainerRef = ViewContainerRef;\n  var R3ViewContainerRef = /** @class */ (function (_super) {\n    __extends(ViewContainerRef, _super);\n    function ViewContainerRef(_IContainer, _hostTNode, _hostLView) {\n      var _this = _super.call(this) || this;\n      _this._IContainer = _IContainer;\n      _this._hostTNode = _hostTNode;\n      _this._hostLView = _hostLView;\n      return _this;\n    }\n    Object.defineProperty(ViewContainerRef.prototype, "element", {\n      get: function () {\n        return createElementRef(this._hostTNode, this._hostLView);\n      },\n      enumerable: false,\n      configurable: true\n    });\n    Object.defineProperty(ViewContainerRef.prototype, "injector", {\n      get: function () {\n        return new NodeInjector(this._hostTNode, this._hostLView);\n      },\n      enumerable: false,\n      configurable: true\n    });\n    Object.defineProperty(ViewContainerRef.prototype, "parentInjector", {\n      /** @deprecated No replacement */\n      get: function () {\n        var parentLocation = getParentInjectorLocation(this._hostTNode, this._hostLView);\n        if (hasParentInjector(parentLocation)) {\n          var parentView = getParentInjectorView(parentLocation, this._hostLView);\n          var injectorIndex = getParentInjectorIndex(parentLocation);\n          ngDevMode && assertNodeInjector(parentView, injectorIndex);\n          var parentTNode = parentView[TVIEW].data[injectorIndex + 8 /* TNODE */];\n          return new NodeInjector(parentTNode, parentView);\n        }\n        else {\n          return new NodeInjector(null, this._hostLView);\n        }\n      },\n      enumerable: false,\n      configurable: true\n    });\n\n    ViewContainerRef.prototype.clear = function () {\n      while (this.length > 0) {\n        this.remove(this.length - 1);\n      }\n    }; \n\n    ViewContainerRef.prototype.get = function (index) {\n      var viewRefs = getViewRefs(this._IContainer);\n      return viewRefs !== null && viewRefs[index] || null;\n    }; \n\n    Object.defineProperty(ViewContainerRef.prototype, "length", {\n      get: function () {\n        return this._IContainer.length - CONTAINER_HEADER_OFFSET;\n      },\n      enumerable: false,\n      configurable: true\n    });\n\n    ViewContainerRef.prototype.createEmbeddedView = function (templateRef, context, index) {\n      var viewRef = templateRef.createEmbeddedView(context || {});\n      this.insert(viewRef, index);\n      return viewRef;\n    }; \n\n    ViewContainerRef.prototype.createComponent

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= function (componentFactory, index, injector, projectableNodes, ngModuleRef) {\n      var contextInjector =
injector || this.parentInjector;\n      if (!ngModuleRef && componentFactory.ngModule == null &&
contextInjector) {\n          // DO NOT REFACTOR. The code here used to have a `value || undefined`
expression\n          // which seems to cause internal google apps to fail. This is documented in the\n          // following internal bug issue: go/b/142967802\n          var result = contextInjector.get(ngModuleRef, null);\n          if (result) {\n              ngModuleRef = result;\n          }\n          var componentRef =
componentFactory.create(contextInjector, projectableNodes, undefined, ngModuleRef);\n          this.insert(componentRef.hostView, index);\n          return componentRef;\n      };\n
ViewContainerRef.prototype.insert = function (viewRef, index) {\n      var IView = viewRef._IView;\n      var tView = IView[TVIEW];\n      if (ngDevMode && viewRef.destroyed) {\n          throw new
Error('Cannot insert a destroyed View in a ViewContainer!');\n      }\n      if
(viewAttachedToContainer(IView)) {\n          // If view is already attached, detach it first so we clean up
references appropriately.\n          var prevIdx = this.indexOf(viewRef);\n          // A view might be attached
either to this or a different container. The `prevIdx` for\n          // those cases will be:\n          // equal to -1 for
views attached to this ViewContainerRef\n          // >= 0 for views attached to a different ViewContainerRef\n          if (prevIdx !== -1) {\n              this.detach(prevIdx);\n          }\n          else {\n              var
prevLContainer = IView[PARENT];\n              ngDevMode &&\n              assertEquals(isLContainer(prevLContainer), true, 'An attached view should have its PARENT point to a
container.);\n              // We need to re-create a R3ViewContainerRef instance since those are not stored on\n              // LView (nor anywhere else).\n              var prevVCRef = new R3ViewContainerRef(prevLContainer,
prevLContainer[T_HOST], prevLContainer[PARENT]);\n              prevVCRef.detach(prevVCRef.indexOf(viewRef));\n          }\n          }\n          // Logical operation of adding
`LView` to `LContainer`\n          var adjustedIdx = this._adjustIndex(index);\n          var IContainer =
this._IContainer;\n          insertView(tView, IView, IContainer, adjustedIdx);\n          // Physical operation of
adding the DOM nodes.\n          var beforeNode = getBeforeNodeForView(adjustedIdx, IContainer);\n          var
renderer = IView[RENDERER];\n          var parentRNode = nativeParentNode(renderer, IContainer[NATIVE]);\n          if (parentRNode !== null) {\n              addViewToContainer(tView, IContainer[T_HOST], renderer, IView,
parentRNode, beforeNode);\n          }\n          viewRef.attachToViewContainerRef(this);\n          addToArray(getOrCreateViewRefs(IContainer), adjustedIdx, viewRef);\n          return viewRef;\n      };\n
ViewContainerRef.prototype.move = function (viewRef, newIndex) {\n      if (ngDevMode &&
viewRef.destroyed) {\n          throw new Error('Cannot move a destroyed View in a ViewContainer!');\n      }\n      return this.insert(viewRef, newIndex);\n      };\n      ViewContainerRef.prototype.indexOf = function
(viewRef) {\n          var viewRefsArr = getViewRefs(this._IContainer);\n          return viewRefsArr !== null ?
viewRefsArr.indexOf(viewRef) : -1;\n      }; \n      ViewContainerRef.prototype.remove = function (index) {\n          var adjustedIdx = this._adjustIndex(index, -1);\n          var detachedView = detachView(this._IContainer,
adjustedIdx);\n          if (detachedView) {\n              // Before destroying the view, remove it from the container's
array of `ViewRef`s.\n              // This ensures the view container length is updated before calling\n              // `destroyLView`, which could recursively call view container methods that\n              // rely on an accurate
container length.\n              // (e.g. a method on this view container being called by a child directive's OnDestroy\n              // lifecycle hook)\n              removeFromArray(getOrCreateViewRefs(this._IContainer), adjustedIdx);\n              destroyLView(detachedView[TVIEW], detachedView);\n          }\n      };\n
ViewContainerRef.prototype.detach = function (index) {\n          var adjustedIdx = this._adjustIndex(index, -1);\n          var view = detachView(this._IContainer, adjustedIdx);\n          var wasDetached = view &&
removeFromArray(getOrCreateViewRefs(this._IContainer), adjustedIdx) != null;\n          return wasDetached ?
new ViewRef(view) : null;\n      }; \n      ViewContainerRef.prototype._adjustIndex = function (index, shift) {\n          if (shift === void 0) { shift = 0; }\n          if (index == null) {\n              return this.length + shift;\n          }\n          if (ngDevMode) {\n              assertGreaterThan(index, -1, 'ViewRef index must be positive, got \'' + index);\n              // +1 because it's legal to insert at the end.\n              assertLessThan(index, this.length + 1 + shift,

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'index');\n      }\n      return index;\n    });\n    return ViewContainerRef;\n  }\n  (VE_ViewContainerRef));\n  function getViewRefs(IContainer) {\n    return IContainer[VIEW_REFS];\n  }\n  function getOrCreateViewRefs(IContainer) {\n    return (IContainer[VIEW_REFS] || (IContainer[VIEW_REFS] = []));\n  }\n  /**\n   * Creates a ViewContainerRef and stores it on the injector.\n   * @param ViewContainerRefToken The ViewContainerRef type\n   * @param ElementRefToken The ElementRef type\n   * @param hostTNode The node that is requesting a ViewContainerRef\n   * @param hostLView The view to which the node belongs\n   * @returns The ViewContainerRef instance to use\n   */\n  function createContainerRef(hostTNode, hostLView) {\n    ngDevMode && assertTNodeType(hostTNode, 12 /* AnyContainer */ | 3 /* AnyRNode */);\n    var lContainer;\n    var slotValue = hostLView[hostTNode.index];\n    if (isLContainer(slotValue)) {\n      // If the host is a container, we don't need to create a new LContainer\n      lContainer = slotValue;\n    } else {\n      var commentNode = void 0;\n      // If the host is an element container, the native host element is guaranteed to be a\n      // comment and we can reuse that comment as anchor element for the new LContainer.\n      // The comment node in question is already part of the DOM structure so we don't need to append\n      // it again.\n      if (hostTNode.type & 8 /* ElementContainer */)\n        commentNode = unwrapRNode(slotValue);\n      else {\n        // If the host is a regular element, we have to insert a comment node manually which will\n        // be used as an anchor when inserting elements. In this specific case we use low-level DOM\n        // manipulation to insert it.\n        var renderer = hostLView[RENDERER];\n        ngDevMode && ngDevMode.rendererCreateComment++;\n        commentNode = renderer.createComment(ngDevMode ? 'container' : '');\n        var hostNative = getNativeByTNode(hostTNode, hostLView);\n        var parentOfHostNative = nativeParentNode(renderer, hostNative);\n        nativeInsertBefore(renderer, parentOfHostNative, commentNode, nativeNextSibling(renderer, hostNative), false);\n      }\n      hostLView[hostTNode.index] = lContainer =\n        createLContainer(slotValue, hostLView, commentNode, hostTNode);\n      addToViewTree(hostLView, lContainer);\n    }\n    return new R3ViewContainerRef(lContainer, hostTNode, hostLView);\n  }\n  /**\n   * @license\n   * Copyright Google LLC All Rights Reserved.\n   * Use of this source code is governed by an MIT-style license that can be\n   * found in the LICENSE file at https://angular.io/license\n   */\n  function expressionChangedAfterItHasBeenCheckedError(context, oldValue, currValue, isFirstCheck) {\n    var msg = \"ExpressionChangedAfterItHasBeenCheckedError: Expression has changed after it was checked. Previous value: \"\n    + oldValue + \". Current value: \" + currValue + \".\";\n    if (isFirstCheck) {\n      msg += \"\\n It seems like the view has been created after its parent and its children have been dirty checked.\\n + \"\n      Has it been created in a change detection hook?\";\n    }\n    return viewDebugError(msg, context);\n  }\n  function viewWrappedDebugError(err, context) {\n    if (!(err instanceof Error)) {\n      // errors that are not Error instances don't have a stack,\n      // so it is ok to wrap them into a new Error object...\n      err = new Error(err.toString());\n    }\n    _addDebugContext(err, context);\n    return err;\n  }\n  function viewDebugError(msg, context) {\n    var err = new Error(msg);\n    _addDebugContext(err, context);\n    return err;\n  }\n  function _addDebugContext(err, context) {\n    err[ERROR_DEBUG_CONTEXT] = context;\n    err[ERROR_LOGGER] = context.logError.bind(context);\n  }\n  function isViewDebugError(err) {\n    return !!getDebugContext(err);\n  }\n  function viewDestroyedError(action) {\n    return new Error(\"ViewDestroyedError: Attempt to use a destroyed view: \" + action);\n  }\n  /**\n   * @license\n   * Copyright Google LLC All Rights Reserved.\n   * Use of this source code is governed by an MIT-style license that can be\n   * found in the LICENSE file at https://angular.io/license\n   */\n  // Called before each cycle of a view's check to detect whether this is in the\n  // initState for which we need to call ngOnInit, ngAfterContentInit or ngAfterViewInit\n  // lifecycle methods. Returns true if this check cycle should call lifecycle\n  // methods.\n  function shiftInitState(view, priorInitState, newInitState) {\n    // Only update the InitState if we are currently in the prior state.\n    // For example, only move into CallingInit if we are in BeforeInit. Only\n    // move into CallingContentInit if we are in CallingInit. Normally this will\n    // always be true because of how checkCycle is called in checkAndUpdateView.\n    // However, if checkAndUpdateView is called recursively or if an exception is\n    // thrown while checkAndUpdateView is running,

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function checkBinding(view, def, bindingIdx, value) {\n    var oldValues = view.oldValues;\n    if ((view.state & 2 /* FirstCheck */) ||\n        !Object.is(oldValues[def.bindingIndex + bindingIdx], value)) {\n        return true;\n    }\n    return false;\n }\n function checkAndUpdateBinding(view, def, bindingIdx, value) {\n    if (checkBinding(view, def, bindingIdx, value)) {\n        view.oldValues[def.bindingIndex + bindingIdx] = value;\n        return true;\n    }\n    return false;\n }\n function checkBindingNoChanges(view, def, bindingIdx, value) {\n    var oldValue = view.oldValues[def.bindingIndex + bindingIdx];\n    if ((view.state & 1 /* BeforeFirstCheck */) || !devModeEqual(oldValue, value)) {\n        var bindingName = def.bindings[bindingIdx].name;\n        throw expressionChangedAfterItHasBeenCheckedError(Services.createDebugContext(view, def.nodeIndex), bindingName + \"\": \" + oldValue, bindingName + \"\": \" + value, (view.state & 1 /* BeforeFirstCheck */) !== 0);\n    }\n }\n function markParentViewsForCheck(view) {\n    var currView = view;\n    while (currView) {\n        if (currView.def.flags & 2 /* OnPush */) {\n            currView.state |= 8 /* ChecksEnabled */;\n        }\n        currView = currView.viewContainerParent || currView.parent;\n    }\n }\n function markParentViewsForCheckProjectedViews(view, endView) {\n    var currView = view;\n    while (currView && currView !== endView) {\n        currView.state |= 64 /* CheckProjectedViews */;\n        currView = currView.viewContainerParent || currView.parent;\n    }\n }\n function dispatchEvent(view, nodeIndex, eventName, event) {\n    try {\n        var nodeDef = view.def.nodes[nodeIndex];\n        var startView = nodeDef.flags & 33554432 /* ComponentView */ ?\n            asElementData(view, nodeIndex).componentView : view;\n        markParentViewsForCheck(startView);\n        return Services.handleEvent(view, nodeIndex, eventName, event);\n    } catch (e) {\n        // Attention: Don't rethrow, as it would cancel Observable subscriptions!\n        view.root.errorHandler.handleError(e);\n    }\n }\n function declaredViewContainer(view) {\n    if (view.parent) {\n        var parentView = view.parent;\n        return asElementData(parentView, view.parentNodeDef.nodeIndex);\n    }\n    return null;\n }\n /**\n  * for component views, this is the host element.\n  * for embedded views, this is the index of the parent node\n  * that contains the view container.\n  */\n function viewParentEl(view) {\n    var parentView = view.parent;\n    if (parentView) {\n        return view.parentNodeDef.parent;\n    }\n    else {\n        return null;\n    }\n }\n function renderNode(view, def) {\n    switch (def.flags & 201347067 /* Types */) {\n        case 1 /* TypeElement */:\n            return asElementData(view, def.nodeIndex).renderElement;\n        case 2 /* TypeText */:\n            return asTextData(view, def.nodeIndex).renderText;\n    }\n }\n function elementEventFullName(target, name) {\n    return target ? target + \"\": \" + name : name;\n }\n function isComponentView(view) {\n    return !!view.parent && !(view.parentNodeDef.flags & 32768 /* Component */);\n }\n function isEmbeddedView(view) {\n    return !!view.parent && !(view.parentNodeDef.flags & 32768 /* Component */);\n }\n function filterQueryId(queryId) {\n    return 1 << (queryId % 32);\n }\n function splitMatchedQueriesDsl(matchedQueriesDsl) {\n    var matchedQueries = {};\n    var matchedQueryIds = 0;\n    var references = {};\n    if (matchedQueriesDsl) {\n        matchedQueriesDsl.forEach(function (_a) {\n            var _b = __read(_a, 2), queryId = _b[0], valueType = _b[1];\n            if (typeof queryId === 'number') {\n                matchedQueries[queryId] = valueType;\n                matchedQueryIds |= filterQueryId(queryId);\n            }\n            else {\n                references[queryId] = valueType;\n            }\n        });\n    }\n    return { matchedQueries: matchedQueries, references: references, matchedQueryIds: matchedQueryIds };\n }\n function splitDepsDsl(deps, sourceName) {\n    return deps.map(function (value) {\n        var _a;\n        var token;\n        var flags;\n        if (Array.isArray(value)) {\n            _a = __read(value, 2), flags = _a[0], token = _a[1];\n        }\n        else {\n            flags = 0 /* None */;\n            token = value;\n        }\n        if (token && (typeof token === 'function' ||\n            typeof token === 'object') && sourceName) {\n            Object.defineProperty(token, SOURCE, { value: sourceName, configurable: true });\n        }\n        return { flags: flags, token: token, tokenKey: tokenKey(token) };\n    });\n }\n function getParentRenderElement(view, renderHost, def) {\n    var renderParent = def.renderParent;\n    if (renderParent) {\n        if ((renderParent.flags & 1 /* TypeElement */) === 0 ||\n            (renderParent.flags & 33554432 /* ComponentView */) === 0 ||\n
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(renderParent.element.componentRendererType &&\n
(renderParent.element.componentRendererType.encapsulation ===\n
exports.ViewEncapsulation.ShadowDom ||\n // TODO(FW-2290): remove the `encapsulation === 1`\n
fallback logic in v12.\n // renderParent.element.componentRendererType.encapsulation === 1)) {\n
// only children of non components, or children of components with native encapsulation should\n //\n
be attached.\n // return asElementData(view, def.renderParent.nodeType).renderElement;\n // }\n
}\n // else {\n // return renderHost;\n // }\n // var DEFINITION_CACHE = new WeakMap();\n //\n
function resolveDefinition(factory) {\n // var value = DEFINITION_CACHE.get(factory);\n // if (!value) {\n //\n
value = factory(function () { return NOOP; });\n // value.factory = factory;\n //\n
DEFINITION_CACHE.set(factory, value);\n // }\n // return value;\n // }\n // function rootRenderNodes(view)\n
{\n // var renderNodes = [];\n // visitRootRenderNodes(view, 0 /* Collect */, undefined, undefined,\n //\n
renderNodes);\n // return renderNodes;\n // }\n // function visitRootRenderNodes(view, action, parentNode,\n //\n
nextSibling, target) {\n // // We need to re-compute the parent node in case the nodes have been moved around\n //\n
manually\n // if (action === 3 /* RemoveChild */) {\n // parentNode =\n //\n
view.renderer.parentNode(renderNode(view, view.def.lastRenderRootNode));\n // }\n //\n
visitSiblingRenderNodes(view, action, 0, view.def.nodes.length - 1, parentNode, nextSibling, target);\n // }\n //\n
function visitSiblingRenderNodes(view, action, startIndex, endIndex, parentNode, nextSibling, target) {\n // for\n //\n
(var i = startIndex; i <= endIndex; i++) {\n // var nodeDef = view.def.nodes[i];\n // if (nodeDef.flags & (\n //\n
/* TypeElement */ | 2 /* TypeText */ | 8 /* TypeNgContent */)) {\n // visitRenderNode(view, nodeDef,\n //\n
action, parentNode, nextSibling, target);\n // }\n // // jump to next sibling\n // i +=\n //\n
nodeDef.childCount;\n // }\n // }\n // function visitProjectedRenderNodes(view, ngContentIndex, action,\n //\n
parentNode, nextSibling, target) {\n // var compView = view;\n // while (compView &&\n //\n
!isComponentView(compView)) {\n // compView = compView.parent;\n // }\n // var hostView =\n //\n
compView.parent;\n // var hostElDef = viewParentEl(compView);\n // var startIndex = hostElDef.nodeType +\n //\n
1;\n // var endIndex = hostElDef.nodeType + hostElDef.childCount;\n // for (var i = startIndex; i <= endIndex;\n //\n
i++) {\n // var nodeDef = hostView.def.nodes[i];\n // if (nodeDef.ngContentIndex === ngContentIndex)\n //\n
{\n // visitRenderNode(hostView, nodeDef, action, parentNode, nextSibling, target);\n // }\n // //\n //\n
jump to next sibling\n // i += nodeDef.childCount;\n // }\n // if (!hostView.parent) {\n // // a root\n //\n
view\n // var projectedNodes = view.root.projectableNodes[ngContentIndex];\n // if (projectedNodes) {\n //\n
for (var i = 0; i < projectedNodes.length; i++) {\n // execRenderNodeAction(view,\n //\n
projectedNodes[i], action, parentNode, nextSibling, target);\n // }\n // }\n // }\n // }\n // function\n //\n
visitRenderNode(view, nodeDef, action, parentNode, nextSibling, target) {\n // if (nodeDef.flags & 8 /*\n //\n
TypeNgContent */) {\n // visitProjectedRenderNodes(view, nodeDef.ngContent.index, action, parentNode,\n //\n
nextSibling, target);\n // }\n // else {\n // var rn = renderNode(view, nodeDef);\n // if (action === 3 /*\n //\n
RemoveChild */ && (nodeDef.flags & 33554432 /* ComponentView */) && (nodeDef.bindingFlags &\n //\n
48 /* CatSyntheticProperty */)) {\n // // Note: we might need to do both actions.\n // if\n //\n
(nodeDef.bindingFlags & (16 /* SyntheticProperty */)) {\n // execRenderNodeAction(view, rn, action,\n //\n
parentNode, nextSibling, target);\n // }\n // if (nodeDef.bindingFlags & (32 /* SyntheticHostProperty\n //\n
*/)) {\n // var compView = asElementData(view, nodeDef.nodeType).componentView;\n //\n
execRenderNodeAction(compView, rn, action, parentNode, nextSibling, target);\n // }\n // }\n //\n
else {\n // execRenderNodeAction(view, rn, action, parentNode, nextSibling, target);\n // }\n // if\n //\n
(nodeDef.flags & 16777216 /* EmbeddedViews */) {\n // var embeddedViews = asElementData(view,\n //\n
nodeDef.nodeType).viewContainer._embeddedViews;\n // for (var k = 0; k < embeddedViews.length; k++)\n //\n
{\n // visitRootRenderNodes(embeddedViews[k], action, parentNode, nextSibling, target);\n // }\n //\n
}\n // if (nodeDef.flags & 1 /* TypeElement */ && !nodeDef.element.name) {\n //\n
visitSiblingRenderNodes(view, action, nodeDef.nodeType + 1, nodeDef.nodeType + nodeDef.childCount,\n //\n
parentNode, nextSibling, target);\n // }\n // }\n // }\n // function execRenderNodeAction(view, renderNode,\n //\n
action, parentNode, nextSibling, target) {\n // var renderer = view.renderer;\n // switch (action) {\n // case 1

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/* AppendChild */:\n      renderer.appendChild(parentNode, renderNode);\n      break;\n      case 2 /*
InsertBefore */:\n      renderer.insertBefore(parentNode, renderNode, nextSibling);\n      break;\n
case 3 /* RemoveChild */:\n      renderer.removeChild(parentNode, renderNode);\n      break;\n
case 0 /* Collect */:\n      target.push(renderNode);\n      break;\n    }\n  }\n  var NS_PREFIX_RE =
/^:([\^:]+):(.+)$;\n  function splitNamespace(name) {\n    if (name[0] === ':') {\n      var match =
name.match(NS_PREFIX_RE);\n      return [match[1], match[2]];\n    }\n    return ['', name];\n  }\n
function calcBindingFlags(bindings) {\n  var flags = 0;\n  for (var i = 0; i < bindings.length; i++) {\n
flags |= bindings[i].flags;\n  }\n  return flags;\n }\n function interpolate(valueCount, constAndInterp) {\n
var result = '';\n  for (var i = 0; i < valueCount * 2; i = i + 2) {\n    result = result + constAndInterp[i] +
_toStringWithNull(constAndInterp[i + 1]);\n  }\n  return result + constAndInterp[valueCount * 2];\n }\n
function inlineInterpolate(valueCount, c0, a1, c1, a2, c2, a3, c3, a4, c4, a5, c5, a6, c6, a7, c7, a8, c8, a9, c9) {\n
switch (valueCount) {\n  case 1:\n    return c0 + _toStringWithNull(a1) + c1;\n  case 2:\n
return c0 + _toStringWithNull(a1) + c1 + _toStringWithNull(a2) + c2;\n  case 3:\n    return c0 +
_toStringWithNull(a1) + c1 + _toStringWithNull(a2) + c2 + _toStringWithNull(a3) +\n    c3;\n  case
4:\n    return c0 + _toStringWithNull(a1) + c1 + _toStringWithNull(a2) + c2 + _toStringWithNull(a3) +\n
c3 + _toStringWithNull(a4) + c4;\n  case 5:\n    return c0 + _toStringWithNull(a1) + c1 +
_toStringWithNull(a2) + c2 + _toStringWithNull(a3) +\n    c3 + _toStringWithNull(a4) + c4 +
_toStringWithNull(a5) + c5;\n  case 6:\n    return c0 + _toStringWithNull(a1) + c1 +
_toStringWithNull(a2) + c2 + _toStringWithNull(a3) +\n    c3 + _toStringWithNull(a4) + c4 +
_toStringWithNull(a5) + c5 + _toStringWithNull(a6) + c6;\n  case 7:\n    return c0 +
_toStringWithNull(a1) + c1 + _toStringWithNull(a2) + c2 + _toStringWithNull(a3) +\n    c3 +
_toStringWithNull(a4) + c4 + _toStringWithNull(a5) + c5 + _toStringWithNull(a6) +\n    c6 +
_toStringWithNull(a7) + c7;\n  case 8:\n    return c0 + _toStringWithNull(a1) + c1 +
_toStringWithNull(a2) + c2 + _toStringWithNull(a3) +\n    c3 + _toStringWithNull(a4) + c4 +
_toStringWithNull(a5) + c5 + _toStringWithNull(a6) +\n    c6 + _toStringWithNull(a7) + c7 +
_toStringWithNull(a8) + c8;\n  case 9:\n    return c0 + _toStringWithNull(a1) + c1 +
_toStringWithNull(a2) + c2 + _toStringWithNull(a3) +\n    c3 + _toStringWithNull(a4) + c4 +
_toStringWithNull(a5) + c5 + _toStringWithNull(a6) +\n    c6 + _toStringWithNull(a7) + c7 +
_toStringWithNull(a8) + c8 + _toStringWithNull(a9) + c9;\n  default:\n    throw new Error("\Does not
support more than 9 expressions");\n  }\n }\n function _toStringWithNull(v) {\n  return v != null ?
v.toString() : '';\n }\n var EMPTY_ARRAY$4 = [];\n var EMPTY_MAP = {};\n var
UNDEFINED_VALUE = {};\n var InjectorRefTokenKey = tokenKey(Injector);\n var INJECTORRefTokenKey
= tokenKey(INJECTOR$1);\n var NgModuleRefTokenKey = tokenKey(NgModuleRef);\n function
moduleProvideDef(flags, token, value, deps) {\n  // Need to resolve forwardRefs as e.g. for `useValue` we\n
// lowered the expression and then stopped evaluating it,\n  // i.e. also didn't unwrap it.\n  value =
resolveForwardRef(value);\n  var depDefs = splitDepsDsl(deps, stringify(token));\n  return {\n  // will
bet set by the module definition\n    index: -1,\n    deps: depDefs,\n    flags: flags,\n    token:
token,\n    value: value\n  };\n }\n function moduleDef(providers) {\n  var providersByKey = {};\n
var modules = [];\n  var scope = null;\n  for (var i = 0; i < providers.length; i++) {\n    var provider =
providers[i];\n    if (provider.token === INJECTOR_SCOPE) {\n      scope = provider.value;\n    }\n
if (provider.flags & 1073741824 /* TypeNgModule */) {\n      modules.push(provider.token);\n
}\n    provider.index = i;\n    providersByKey[tokenKey(provider.token)] = provider;\n  }\n  return
{\n  // Will be filled later...\n    factory: null,\n    providersByKey: providersByKey,\n
providers: providers,\n    modules: modules,\n    scope: scope,\n  };\n }\n function
initNgModule(data) {\n  var def = data._def;\n  var providers = data._providers =
newArray(def.providers.length);\n  for (var i = 0; i < def.providers.length; i++) {\n    var provDef =
def.providers[i];\n    if (!(provDef.flags & 4096 /* LazyProvider */) {\n      // Make sure the provider has
not been already initialized outside this loop.\n      if (providers[i] === undefined) {\n        providers[i]

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= _createProviderInstance(data, provDef);\n        }\n        }\n        }\n        }\n        function
resolveNgModuleDep(data, depDef, notFoundValue) {\n        if (notFoundValue === void 0) { notFoundValue =
Injector.THROW_IF_NOT_FOUND; }\n        var former = setCurrentInjector(data);\n        try {\n        if
(depDef.flags & 8 /* Value */) {\n        return depDef.token;\n        }\n        if (depDef.flags & 2 /*
Optional */) {\n        notFoundValue = null;\n        }\n        if (depDef.flags & 1 /* SkipSelf */) {\n
return data._parent.get(depDef.token, notFoundValue);\n        }\n        var tokenKey_1 = depDef.tokenKey;\n
switch (tokenKey_1) {\n        case InjectorRefTokenKey:\n        case INJECTORRefTokenKey:\n
case NgModuleRefTokenKey:\n        return data;\n        }\n        var providerDef =
data._def.providersByKey[tokenKey_1];\n        var injectableDef = void 0;\n        if (providerDef) {\n
var providerInstance = data._providers[providerDef.index];\n        if (providerInstance === undefined) {\n
providerInstance = data._providers[providerDef.index] =\n        _createProviderInstance(data,
providerDef);\n        }\n        return providerInstance === UNDEFINED_VALUE ? undefined :
providerInstance;\n        }\n        else if ((injectableDef = getInjectableDef(depDef.token)) &&
targetsModule(data, injectableDef)) {\n        var index = data._providers.length;\n
data._def.providers[index] = data._def.providersByKey[depDef.tokenKey] = {\n        flags: 1024 /*
TypeFactoryProvider */ | 4096 /* LazyProvider */,\n        value: injectableDef.factory,\n        deps:
[],\n        index: index,\n        token: depDef.token,\n        };\n        data._providers[index] =
UNDEFINED_VALUE;\n        return (data._providers[index] =\n        _createProviderInstance(data,
data._def.providersByKey[depDef.tokenKey]));\n        }\n        else if (depDef.flags & 4 /* Self */) {\n
return notFoundValue;\n        }\n        return data._parent.get(depDef.token, notFoundValue);\n        }\n
finally {\n        setCurrentInjector(former);\n        }\n        }\n        function moduleTransitivelyPresent(ngModule,
scope) {\n        return ngModule._def.modules.indexOf(scope) > -1;\n        }\n        function targetsModule(ngModule,
def) {\n        var providedIn = def.providedIn;\n        return providedIn != null &&\n        (providedIn === 'any' ||
providedIn === ngModule._def.scope ||\n        moduleTransitivelyPresent(ngModule, providedIn));\n        }\n
function _createProviderInstance(ngModule, providerDef) {\n        var injectable;\n        switch (providerDef.flags &
201347067 /* Types */) {\n        case 512 /* TypeClassProvider */:\n        injectable =
_createClass(ngModule, providerDef.value, providerDef.deps);\n        break;\n        case 1024 /*
TypeFactoryProvider */:\n        injectable = _callFactory(ngModule, providerDef.value, providerDef.deps);\n
break;\n        case 2048 /* TypeUseExistingProvider */:\n        injectable =
resolveNgModuleDep(ngModule, providerDef.deps[0]);\n        break;\n        case 256 /* TypeValueProvider
*/:\n        injectable = providerDef.value;\n        break;\n        }\n        // The read of `ngOnDestroy` here is
slightly expensive as it's megamorphic, so it should be\n        // avoided if possible. The sequence of checks here
determines whether ngOnDestroy needs to be\n        // checked. It might not if the `injectable` isn't an object or if
NodeFlags.OnDestroy is already\n        // set (ngOnDestroy was detected statically).\n        if (injectable !==
UNDEFINED_VALUE && injectable !== null && typeof injectable === 'object' &&\n        !(providerDef.flags
& 131072 /* OnDestroy */) && typeof injectable.ngOnDestroy === 'function') {\n        providerDef.flags |=
131072 /* OnDestroy */;\n        }\n        return injectable === undefined ? UNDEFINED_VALUE : injectable;\n
}\n        function _createClass(ngModule, ctor, deps) {\n        var len = deps.length;\n        switch (len) {\n        case
0:\n        return new ctor();\n        case 1:\n        return new ctor(resolveNgModuleDep(ngModule,
deps[0]));\n        case 2:\n        return new ctor(resolveNgModuleDep(ngModule, deps[0]),
resolveNgModuleDep(ngModule, deps[1]));\n        case 3:\n        return new
ctor(resolveNgModuleDep(ngModule, deps[0]), resolveNgModuleDep(ngModule, deps[1]),
resolveNgModuleDep(ngModule, deps[2]));\n        default:\n        var depValues = [];\n        for (var i =
0; i < len; i++) {\n        depValues[i] = resolveNgModuleDep(ngModule, deps[i]);\n        }\n        return new (ctor.bind.apply(ctor, __spread([void 0], depValues)))();\n        }\n        }\n        function
_callFactory(ngModule, factory, deps) {\n        var len = deps.length;\n        switch (len) {\n        case 0:\n
return factory();\n        case 1:\n        return factory(resolveNgModuleDep(ngModule, deps[0]));\n        case
2:\n        return factory(resolveNgModuleDep(ngModule, deps[0]), resolveNgModuleDep(ngModule,

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deps[1]));\n      case 3:\n        return factory(resolveNgModuleDep(ngModule, deps[0]),
resolveNgModuleDep(ngModule, deps[1]), resolveNgModuleDep(ngModule, deps[2]));\n      default:\n        var depValues = [];\n        for (var i = 0; i < len; i++) {\n          depValues[i] =
resolveNgModuleDep(ngModule, deps[i]);\n        }\n        return factory.apply(void 0,
__spread(depValues));\n      }\n    }\n    function callNgModuleLifecycle(ngModule, lifecycles) {\n      var def =
ngModule._def;\n      var destroyed = new Set();\n      for (var i = 0; i < def.providers.length; i++) {\n        var
provDef = def.providers[i];\n        if (provDef.flags & 131072 /* OnDestroy */) {\n          var instance =
ngModule._providers[i];\n          if (instance && instance !== UNDEFINED_VALUE) {\n            var
onDestroy = instance.ngOnDestroy;\n            if (typeof onDestroy === 'function' && !destroyed.has(instance))
{\n              onDestroy.apply(instance);\n              destroyed.add(instance);\n            }\n          }\n        }\n      }\n    }\n  }\n  /**\n   * @license\n   * Copyright Google LLC All Rights Reserved.\n   *\n   * Use of this source code is governed by an MIT-style license that can be\n   * found in the LICENSE file at
https://angular.io/license\n   *\n   function attachEmbeddedView(parentView, elementData, viewIndex, view) {\n     var embeddedViews = elementData.viewContainer._embeddedViews;\n     if (viewIndex === null || viewIndex
=== undefined) {\n       viewIndex = embeddedViews.length;\n     }\n     view.viewContainerParent =
parentView;\n     addToArray(embeddedViews, viewIndex, view);\n     attachProjectedView(elementData,
view);\n     Services.dirtyParentQueries(view);\n     var prevView = viewIndex > 0 ? embeddedViews[viewIndex
- 1] : null;\n     renderAttachEmbeddedView(elementData, prevView, view);\n   }\n   function
attachProjectedView(vcElementData, view) {\n     var dvcElementData = declaredViewContainer(view);\n     if
(!dvcElementData || dvcElementData === vcElementData ||\n       view.state & 16 /* IsProjectedView */) {\n       return;\n     }\n     // Note: For performance reasons, we\n     // - add a view to template._projectedViews only
1x throughout its lifetime,\n     // and remove it not until the view is destroyed.\n     // (hard, as when a parent
view is attached/detached we would need to attach/detach all\n     // nested projected views as well, even across
component boundaries).\n     // - don't track the insertion order of views in the projected views array\n     //
(hard, as when the views of the same template are inserted different view containers)\n     view.state |= 16 /*
IsProjectedView */;\n     var projectedViews = dvcElementData.template._projectedViews;\n     if
(!projectedViews) {\n       projectedViews = dvcElementData.template._projectedViews = [];\n     }\n     projectedViews.push(view);\n     // Note: we are changing the NodeDef here as we cannot calculate\n     // the
fact whether a template is used for projection during compilation.\n     markNodeAsProjectedTemplate(view.parent.def, view.parentNodeDef);\n   }\n   function
markNodeAsProjectedTemplate(viewDef, nodeDef) {\n     if (nodeDef.flags & 4 /* ProjectedTemplate */) {\n       return;\n     }\n     viewDef.nodeFlags |= 4 /* ProjectedTemplate */;\n     nodeDef.flags |= 4 /*
ProjectedTemplate */;\n     var parentNodeDef = nodeDef.parent;\n     while (parentNodeDef) {\n       parentNodeDef.childFlags |= 4 /* ProjectedTemplate */;\n       parentNodeDef = parentNodeDef.parent;\n     }\n   }\n   function detachEmbeddedView(elementData, viewIndex) {\n     var embeddedViews =
elementData.viewContainer._embeddedViews;\n     if (viewIndex === null || viewIndex >= embeddedViews.length)
{\n       viewIndex = embeddedViews.length - 1;\n     }\n     if (viewIndex < 0) {\n       return null;\n     }\n     var view = embeddedViews[viewIndex];\n     view.viewContainerParent = null;\n     removeFromArray(embeddedViews, viewIndex);\n     // See attachProjectedView for why we don't update
projectedViews here.\n     Services.dirtyParentQueries(view);\n     renderDetachView$1(view);\n     return
view;\n   }\n   function detachProjectedView(view) {\n     if (!(view.state & 16 /* IsProjectedView */) ) {\n       return;\n     }\n     var dvcElementData = declaredViewContainer(view);\n     if (dvcElementData) {\n       var projectedViews = dvcElementData.template._projectedViews;\n       if (projectedViews) {\n         removeFromArray(projectedViews, projectedViews.indexOf(view));\n       }\n     }\n     Services.dirtyParentQueries(view);\n   }\n   }\n   }\n   function moveEmbeddedView(elementData,
oldViewIndex, newViewIndex) {\n     var embeddedViews = elementData.viewContainer._embeddedViews;\n     var view = embeddedViews[oldViewIndex];\n     removeFromArray(embeddedViews, oldViewIndex);\n     if
(newViewIndex === null) {\n       newViewIndex = embeddedViews.length;\n     }\n   }\n }

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addToArray(embeddedViews, newViewIndex, view);\n    // Note: Don't need to change projectedViews as the
order in there\n    // as always invalid...\n    Services.dirtyParentQueries(view);\n
renderDetachView$(view);\n    var prevView = newViewIndex > 0 ? embeddedViews[newViewIndex - 1] :
null;\n    renderAttachEmbeddedView(elementData, prevView, view);\n    return view;\n } \n function
renderAttachEmbeddedView(elementData, prevView, view) {\n    var prevRenderNode = prevView ?
renderNode(prevView, prevView.def.lastRenderRootNode) : elementData.renderElement;\n    var parentNode =
view.renderer.parentNode(prevRenderNode);\n    var nextSibling =
view.renderer.nextSibling(prevRenderNode);\n    // Note: We can't check if `nextSibling` is present, as on
WebWorkers it will always be!\n    // However, browsers automatically do `appendChild` when there is no
`nextSibling`.\n    visitRootRenderNodes(view, 2 /* InsertBefore */, parentNode, nextSibling, undefined);\n } \n
function renderDetachView$(view) {\n    visitRootRenderNodes(view, 3 /* RemoveChild */, null, null,
undefined);\n } \n \n var EMPTY_CONTEXT = {};\n // Attention: this function is called as top level function.\n
// Putting any logic in here will destroy closure tree shaking!\n function createComponentFactory(selector,
componentType, viewDefFactory, inputs, outputs, ngContentSelectors) {\n    return new
ComponentFactory_(selector, componentType, viewDefFactory, inputs, outputs, ngContentSelectors);\n } \n
function GetComponentViewDefinitionFactory(componentFactory) {\n    return
componentFactory.viewDefFactory;\n } \n var ComponentFactory_ = /** @class */ (function (_super) {\n
__extends(ComponentFactory_, _super);\n    function ComponentFactory_(selector, componentType,
viewDefFactory, _inputs, _outputs, ngContentSelectors) {\n        var _this = \n            // Attention: this ctor is
called as top level function.\n            // Putting any logic in here will destroy closure tree shaking!\n
_super.call(this) || this;\n        _this.selector = selector;\n        _this.componentType = componentType;\n
        _this._inputs = _inputs;\n        _this._outputs = _outputs;\n        _this.ngContentSelectors =
ngContentSelectors;\n        _this.viewDefFactory = viewDefFactory;\n        return _this;\n    } \n
Object.defineProperty(ComponentFactory_.prototype, "inputs", {\n        get: function () {\n            var
inputsArr = [];\n            var inputs = this._inputs;\n            for (var propName in inputs) {\n                var
templateName = inputs[propName];\n                inputsArr.push({ propName: propName, templateName:
templateName });\n            }\n            return inputsArr;\n        },\n        enumerable: false,\n
configurable: true\n    });\n    Object.defineProperty(ComponentFactory_.prototype, "outputs", {\n        get:
function () {\n            var outputsArr = [];\n            for (var propName in this._outputs) {\n                var
templateName = this._outputs[propName];\n                outputsArr.push({ propName: propName, templateName:
templateName });\n            }\n            return outputsArr;\n        },\n        enumerable: false,\n
configurable: true\n    });\n    /**\n     * Creates a new component.\n     */\n
ComponentFactory_.prototype.create = function (injector, projectableNodes, rootSelectorOrNode, ngModule) {\n
    if (!ngModule) {\n        throw new Error('ngModule should be provided');\n    }\n    var viewDef =
resolveDefinition(this.viewDefFactory);\n    var componentNodeIndex =
viewDef.nodes[0].element.componentProvider.nodeIndex;\n    var view = Services.createRootView(injector,
projectableNodes || [], rootSelectorOrNode, viewDef, ngModule, EMPTY_CONTEXT);\n    var component =
asProviderData(view, componentNodeIndex).instance;\n    if (rootSelectorOrNode) {\n
view.renderer.setAttribute(asElementData(view, 0).renderElement, 'ng-version', VERSION.full);\n    }\n
return new ComponentRef_(view, new ViewRef_(view), component);\n };\n    return ComponentFactory_;\n
})(ComponentFactory_);\n var ComponentRef_ = /** @class */ (function (_super) {\n
__extends(ComponentRef_, _super);\n    function ComponentRef_(view, viewRef, component) {\n        var
_this = _super.call(this) || this;\n        _this.view = view;\n        _this.viewRef = viewRef;\n
        _this.component = component;\n        _this._elDef = _this.view.def.nodes[0];\n        _this.hostView =
viewRef;\n        _this.changeDetectorRef = viewRef;\n        _this.instance = component;\n        return
_this;\n    } \n    Object.defineProperty(ComponentRef_.prototype, "location", {\n        get: function () {\n
return new ElementRef(asElementData(this.view, this._elDef.nodeIndex).renderElement);\n        },\n
enumerable: false,\n        configurable: true\n    });\n    Object.defineProperty(ComponentRef_.prototype,

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"injector", {\n      get: function () {\n          return new Injector_(this._view, this._elDef);\n      },\n      enumerable: false,\n      configurable: true\n    });\n    Object.defineProperty(ComponentRef_.prototype,\n    "componentType", {\n      get: function () {\n          return this._component.constructor;\n      },\n      enumerable: false,\n      configurable: true\n    });\n    ComponentRef_.prototype.destroy = function () {\n      this._viewRef.destroy();\n    }; \n    ComponentRef_.prototype.onDestroy = function (callback) {\n      this._viewRef.onDestroy(callback);\n    }; \n    return ComponentRef_;\n  }(ComponentRef));\n  function\n  createViewContainerData(view, elDef, elData) {\n    return new ViewContainerRef_(view, elDef, elData);\n  }\n  var ViewContainerRef_ = /** @class */ (function () {\n    function ViewContainerRef_(view, elDef, data)\n    {\n      this._view = view;\n      this._elDef = elDef;\n      this._data = data;\n      /**\n      *\n      * @internal\n      */\n      this._embeddedViews = [];\n    }\n    Object.defineProperty(ViewContainerRef_.prototype, "element", {\n      get: function () {\n          return\n          new ElementRef(this._data.renderElement);\n      },\n      enumerable: false,\n      configurable: true\n    });\n    Object.defineProperty(ViewContainerRef_.prototype, "injector", {\n      get: function () {\n          return new Injector_(this._view, this._elDef);\n      },\n      enumerable: false,\n      configurable: true\n    });\n    Object.defineProperty(ViewContainerRef_.prototype, "parentInjector", {\n      /** @deprecated No\n      replacement */\n      get: function () {\n          var view = this._view;\n          var elDef =\n          this._elDef.parent;\n          while (!elDef && view) {\n              elDef = viewParentEl(view);\n              view = view.parent;\n          }\n          return view ? new Injector_(view, elDef) : new Injector_(this._view,\n          null);\n      },\n      enumerable: false,\n      configurable: true\n    });\n    ViewContainerRef_.prototype.clear = function () {\n      var len = this._embeddedViews.length;\n      for (var\n      i = len - 1; i >= 0; i--) {\n          var view = detachEmbeddedView(this._data, i);\n          Services.destroyView(view);\n      }\n    }; \n    ViewContainerRef_.prototype.get = function (index) {\n      var view = this._embeddedViews[index];\n      if (view) {\n          var ref = new ViewRef_(view);\n          ref.attachToViewContainerRef(this);\n          return ref;\n      }\n      return null;\n    }; \n    Object.defineProperty(ViewContainerRef_.prototype, "length", {\n      get: function () {\n          return\n          this._embeddedViews.length;\n      },\n      enumerable: false,\n      configurable: true\n    });\n    ViewContainerRef_.prototype.createEmbeddedView = function (templateRef, context, index) {\n      var\n      viewRef = templateRef.createEmbeddedView(context || {});\n      this.insert(viewRef, index);\n      return\n      viewRef;\n    }; \n    ViewContainerRef_.prototype.createComponent = function (componentFactory, index,\n    injector, projectableNodes, ngModuleRef) {\n      var contextInjector = injector || this.parentInjector;\n      if\n      (!ngModuleRef && !(componentFactory instanceof ComponentFactoryBoundToModule)) {\n          ngModuleRef = contextInjector.get(NgModuleRef);\n      }\n      var componentRef =\n      componentFactory.create(contextInjector, projectableNodes, undefined, ngModuleRef);\n      this.insert(componentRef.hostView, index);\n      return componentRef;\n    }; \n    ViewContainerRef_.prototype.insert = function (viewRef, index) {\n      if (viewRef.destroyed) {\n          throw new Error('Cannot insert a destroyed View in a ViewContainer!');\n      }\n      var viewRef_ =\n      viewRef;\n      var viewData = viewRef._view;\n      attachEmbeddedView(this._view, this._data, index,\n      viewData);\n      viewRef_.attachToViewContainerRef(this);\n      return viewRef;\n    }; \n    ViewContainerRef_.prototype.move = function (viewRef, currentIndex) {\n      if (viewRef.destroyed) {\n          throw new Error('Cannot move a destroyed View in a ViewContainer!');\n      }\n      var previousIndex =\n      this._embeddedViews.indexOf(viewRef._view);\n      moveEmbeddedView(this._data, previousIndex,\n      currentIndex);\n      return viewRef;\n    }; \n    ViewContainerRef_.prototype.indexOf = function (viewRef)\n    {\n      return this._embeddedViews.indexOf(viewRef._view);\n    }; \n    ViewContainerRef_.prototype.remove = function (index) {\n      var viewData =\n      detachEmbeddedView(this._data, index);\n      if (viewData) {\n          Services.destroyView(viewData);\n      }\n    }; \n    ViewContainerRef_.prototype.detach = function (index) {\n      var view =\n      detachEmbeddedView(this._data, index);\n      return view ? new ViewRef_(view) : null;\n    }; \n    return\n    ViewContainerRef_;\n  }());\n  function createChangeDetectorRef(view) {\n    return new ViewRef_(view);\n  }

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}\n  var ViewRef_ = /** @class */ (function () {\n    function ViewRef_(_view) {\n      this._view = _view;\n      this._viewContainerRef = null;\n      this._appRef = null;\n    }\n    Object.defineProperty(ViewRef_.prototype, \"rootNodes\", {\n      get: function () {\n        return\n        rootRenderNodes(this._view);\n      },\n      enumerable: false,\n      configurable: true\n    });\n    Object.defineProperty(ViewRef_.prototype, \"context\", {\n      get: function () {\n        return\n        this._view.context;\n      },\n      enumerable: false,\n      configurable: true\n    });\n    Object.defineProperty(ViewRef_.prototype, \"destroyed\", {\n      get: function () {\n        return\n        (this._view.state & 128 /* Destroyed */) !== 0;\n      },\n      enumerable: false,\n      configurable: true\n    });\n    ViewRef_.prototype.markForCheck = function () {\n      markParentViewsForCheck(this._view);\n    };\n    ViewRef_.prototype.detach = function () {\n      this._view.state &= ~4 /* Attached */;\n    };\n    ViewRef_.prototype.detectChanges = function () {\n      var fs = this._view.root.rendererFactory;\n      if\n      (fs.begin) {\n        fs.begin();\n      }\n      try {\n        Services.checkAndUpdateView(this._view);\n      }\n      finally {\n        if (fs.end) {\n          fs.end();\n        }\n      }\n    };\n    ViewRef_.prototype.checkNoChanges = function () {\n      Services.checkNoChangesView(this._view);\n    };\n    ViewRef_.prototype.reattach = function () {\n      this._view.state |= 4 /* Attached */;\n    };\n    ViewRef_.prototype.onDestroy = function (callback) {\n      if (!this._view.disposables) {\n        this._view.disposables = [];\n      }\n      this._view.disposables.push(callback);\n    };\n    ViewRef_.prototype.destroy = function () {\n      if (this._appRef) {\n        this._appRef.detachView(this);\n      }\n      else if (this._viewContainerRef) {\n        this._viewContainerRef.detach(this._viewContainerRef.indexOf(this));\n      }\n      Services.destroyView(this._view);\n    };\n    ViewRef_.prototype.detachFromAppRef = function () {\n      this._appRef = null;\n      renderDetachView$1(this._view);\n      Services.dirtyParentQueries(this._view);\n    };\n    ViewRef_.prototype.attachToAppRef = function (appRef) {\n      if (this._viewContainerRef) {\n        throw new Error(\"This view is already attached to a ViewContainer!\");\n      }\n      this._appRef =\n      appRef;\n    };\n    ViewRef_.prototype.attachToViewContainerRef = function (vcRef) {\n      if\n      (this._appRef) {\n        throw new Error(\"This view is already attached directly to the ApplicationRef!\");\n      }\n      this._viewContainerRef = vcRef;\n    };\n    return ViewRef_;\n  }());\n  function\n  createTemplateData(view, def) {\n    return new TemplateRef_(view, def);\n  }\n  var TemplateRef_ = /**\n  @class */ (function (_super) {\n    __extends(TemplateRef_, _super);\n    function TemplateRef_(_parentView,\n    _def) {\n      var _this = _super.call(this) || this;\n      _this._parentView = _parentView;\n      _this._def =\n      _def;\n      return _this;\n    }\n    TemplateRef_.prototype.createEmbeddedView = function (context) {\n      return new ViewRef_(Services.createEmbeddedView(this._parentView, this._def, this._def.element.template,\n      context));\n    };\n    Object.defineProperty(TemplateRef_.prototype, \"elementRef\", {\n      get: function ()\n      {\n        return new ElementRef(asElementData(this._parentView, this._def.nodeIndex).renderElement);\n      },\n      enumerable: false,\n      configurable: true\n    });\n    return TemplateRef_;\n  })(TemplateRef_);\n  function createInjector$1(view, elDef) {\n    return new Injector_(view, elDef);\n  }\n  var\n  Injector_ = /** @class */ (function () {\n    function Injector_(view, elDef) {\n      this.view = view;\n      this.elDef = elDef;\n    }\n    Injector_.prototype.get = function (token, notFoundValue) {\n      if\n      (notFoundValue === void 0) {\n        notFoundValue = Injector.THROW_IF_NOT_FOUND;\n      }\n      var\n      allowPrivateServices = this.elDef ? (this.elDef.flags & 33554432 /* ComponentView */) !== 0 : false;\n      return Services.resolveDep(this.view, this.elDef, allowPrivateServices, { flags: 0 /* None */, token: token,\n      tokenKey: tokenKey(token) }, notFoundValue);\n    };\n    return Injector_;\n  }());\n  function\n  nodeValue(view, index) {\n    var def = view.def.nodes[index];\n    if (def.flags & 1 /* TypeElement */) {\n      var elData = asElementData(view, def.nodeIndex);\n      return def.element.template ? elData.template :\n      elData.renderElement;\n    }\n    else if (def.flags & 2 /* TypeText */) {\n      return asTextData(view,\n      def.nodeIndex).renderText;\n    }\n    else if (def.flags & (20224 /* CatProvider */ | 16 /* TypePipe */)) {\n      return asProviderData(view, def.nodeIndex).instance;\n    }\n    throw new Error(\"Illegal state: read\n    nodeValue for node index \" + index);\n  }\n  function createNgModuleRef(moduleType, parent,

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bootstrapComponents, def) {\n    return new NgModuleRef_(moduleType, parent, bootstrapComponents, def);\n
}\n  var NgModuleRef_ = /** @class */ (function () {\n    function NgModuleRef_(_moduleType, _parent,\n    _bootstrapComponents, _def) {\n        this._moduleType = _moduleType;\n        this._parent = _parent;\n        this._bootstrapComponents = _bootstrapComponents;\n        this._def = _def;\n        this._destroyListeners =\n        [];\n        this._destroyed = false;\n        this.injector = this;\n        initNgModule(this);\n    }\n    NgModuleRef_.prototype.get = function (token, notFoundValue, injectFlags) {\n        if (notFoundValue ===\n        void 0) { notFoundValue = Injector.THROW_IF_NOT_FOUND; }\n        if (injectFlags === void 0) {\n        injectFlags = exports.InjectFlags.Default; }\n        var flags = 0 /* None */;\n        if (injectFlags &\n        exports.InjectFlags.SkipSelf) {\n            flags |= 1 /* SkipSelf */;\n        }\n        else if (injectFlags &\n        exports.InjectFlags.Self) {\n            flags |= 4 /* Self */;\n        }\n        return resolveNgModuleDep(this, {\n        token: token, tokenKey: tokenKey(token), flags: flags }, notFoundValue);\n    };\n    Object.defineProperty(NgModuleRef_.prototype, "instance", {\n        get: function () {\n            return\n            this.get(this._moduleType);\n        },\n        enumerable: false,\n        configurable: true\n    });\n    Object.defineProperty(NgModuleRef_.prototype, "componentFactoryResolver", {\n        get: function () {\n            return this.get(ComponentFactoryResolver);\n        },\n        enumerable: false,\n        configurable: true\n    });\n    NgModuleRef_.prototype.destroy = function () {\n        if (this._destroyed) {\n            throw new\n            Error("The ng module `" + stringify(this.instance.constructor) + "` has already been destroyed.");\n        }\n        this._destroyed = true;\n        callNgModuleLifecycle(this, 131072 /* OnDestroy */);\n        this._destroyListeners.forEach(function (listener) { return listener(); });\n    };\n    NgModuleRef_.prototype.onDestroy = function (callback) {\n        this._destroyListeners.push(callback);\n    };\n    return NgModuleRef_;\n  }());\n  var Renderer2TokenKey = tokenKey(Renderer2);\n  var\n  ElementRefTokenKey = tokenKey(ElementRef);\n  var ViewContainerRefTokenKey =\n  tokenKey(ViewContainerRef);\n  var TemplateRefTokenKey = tokenKey(TemplateRef);\n  var\n  ChangeDetectorRefTokenKey = tokenKey(ChangeDetectorRef);\n  var InjectorRefTokenKey$1 =\n  tokenKey(Injector);\n  var INJECTORRefTokenKey$1 = tokenKey(INJECTOR$1);\n  function\n  directiveDef(checkIndex, flags, matchedQueries, childCount, ctor, deps, props, outputs) {\n    var bindings = [];\n    if (props) {\n        for (var prop in props) {\n            var _a = __read(props[prop], 2), bindingIndex = _a[0],\n            nonMinifiedName = _a[1];\n            bindings[bindingIndex] = {\n                flags: 8 /* TypeProperty */,\n                name: prop,\n                nonMinifiedName: nonMinifiedName,\n                ns: null,\n                securityContext: null,\n                suffix: null\n            };\n        }\n    }\n    var outputDefs = [];\n    if\n    (outputs) {\n        for (var propName in outputs) {\n            outputDefs.push({ type: 1 /* DirectiveOutput */,\n            propName: propName, target: null, eventName: outputs[propName] });\n        }\n    }\n    flags |= 16384 /*\n    TypeDirective */;\n    return _def(checkIndex, flags, matchedQueries, childCount, ctor, ctor, deps, bindings,\n    outputDefs);\n  }\n  function pipeDef(flags, ctor, deps) {\n    flags |= 16 /* TypePipe */;\n    return _def(-1,\n    flags, null, 0, ctor, ctor, deps);\n  }\n  function providerDef(flags, matchedQueries, token, value, deps) {\n    return _def(-1, flags, matchedQueries, 0, token, value, deps);\n  }\n  function _def(checkIndex, flags,\n  matchedQueriesDsl, childCount, token, value, deps, bindings, outputs) {\n    var _a =\n    splitMatchedQueriesDsl(matchedQueriesDsl), matchedQueries = _a.matchedQueries, references = _a.references,\n    matchedQueryIds = _a.matchedQueryIds;\n    if (!outputs) {\n        outputs = [];\n    }\n    if (!bindings) {\n        bindings = [];\n    }\n    // Need to resolve forwardRefs as e.g. for `useValue` we\n    // lowered the\n    expression and then stopped evaluating it,\n    // i.e. also didn't unwrap it.\n    value =\n    resolveForwardRef(value);\n    var depDefs = splitDepsDsl(deps, stringify(token));\n    return {\n        // will\n        bet set by the view definition\n        nodeIndex: -1,\n        parent: null,\n        renderParent: null,\n        bindingIndex: -1,\n        outputIndex: -1,\n        // regular values\n        checkIndex: checkIndex,\n        flags: flags,\n        childFlags: 0,\n        directChildFlags: 0,\n        childMatchedQueries: 0,\n        matchedQueries: matchedQueries,\n        matchedQueryIds: matchedQueryIds,\n        references: references,\n        ngContentIndex: -1,\n        childCount: childCount,\n        bindings: bindings,\n        bindingFlags:\n        calcBindingFlags(bindings),\n        outputs: outputs,\n        element: null,\n        provider: { token: token,\n

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value: value, deps: depDefs },\n      text: null,\n      query: null,\n      ngContent: null\n    };\n  }\n  function createProviderInstance(view, def) {\n    return _createProviderInstance$1(view, def);\n  }\n  function\n  createPipeInstance(view, def) {\n    // deps are looked up from component.\n    var compView = view;\n    while (compView.parent && !isComponentView(compView)) {\n      compView = compView.parent;\n    }\n    // pipes can see the private services of the component\n    var allowPrivateServices = true;\n    // pipes are\n    always eager and classes!\n    return createClass(compView.parent, viewParentEl(compView),\n    allowPrivateServices, def.provider.value, def.provider.deps);\n  }\n  function createDirectiveInstance(view, def)\n  {\n    // components can see other private services, other directives can't.\n    var allowPrivateServices =\n    (def.flags & 32768 /* Component */) > 0;\n    // directives are always eager and classes!\n    var instance =\n    createClass(view, def.parent, allowPrivateServices, def.provider.value, def.provider.deps);\n    if\n    (def.outputs.length) {\n      for (var i = 0; i < def.outputs.length; i++) {\n        var output = def.outputs[i];\n        var outputObservable = instance[output.propName];\n        if (isObservable(outputObservable)) {\n          var subscription = outputObservable.subscribe(eventHandlerClosure(view, def.parent.nodeIndex,\n          output.eventName));\n          view.disposables[def.outputIndex + i] =\n          subscription.unsubscribe.bind(subscription);\n        } else {\n          throw new\n          Error("@Output '" + output.propName + "' not initialized in '" + instance.constructor.name + "'");\n        }\n      }\n    }\n    return instance;\n  }\n  function eventHandlerClosure(view, index, eventName) {\n    return function (event) {\n      return dispatchEvent(view, index, eventName, event);\n    };\n  }\n  function\n  checkAndUpdateDirectiveInline(view, def, v0, v1, v2, v3, v4, v5, v6, v7, v8, v9) {\n    var providerData =\n    asProviderData(view, def.nodeIndex);\n    var directive = providerData.instance;\n    var changed = false;\n    var changes = undefined;\n    var bindLen = def.bindings.length;\n    if (bindLen > 0 && checkBinding(view,\n    def, 0, v0)) {\n      changed = true;\n      changes = updateProp(view, providerData, def, 0, v0, changes);\n    }\n    if (bindLen > 1 && checkBinding(view, def, 1, v1)) {\n      changed = true;\n      changes =\n      updateProp(view, providerData, def, 1, v1, changes);\n    }\n    if (bindLen > 2 && checkBinding(view, def, 2,\n    v2)) {\n      changed = true;\n      changes = updateProp(view, providerData, def, 2, v2, changes);\n    }\n    if (bindLen > 3 && checkBinding(view, def, 3,\n    v3)) {\n      changed = true;\n      changes =\n      updateProp(view, providerData, def, 3, v3, changes);\n    }\n    if (bindLen > 4 && checkBinding(view, def, 4,\n    v4)) {\n      changed = true;\n      changes = updateProp(view, providerData, def, 4, v4, changes);\n    }\n    if (bindLen > 5 && checkBinding(view, def, 5,\n    v5)) {\n      changed = true;\n      changes =\n      updateProp(view, providerData, def, 5, v5, changes);\n    }\n    if (bindLen > 6 && checkBinding(view, def, 6,\n    v6)) {\n      changed = true;\n      changes = updateProp(view, providerData, def, 6, v6, changes);\n    }\n    if (bindLen > 7 && checkBinding(view, def, 7,\n    v7)) {\n      changed = true;\n      changes =\n      updateProp(view, providerData, def, 7, v7, changes);\n    }\n    if (bindLen > 8 && checkBinding(view, def, 8,\n    v8)) {\n      changed = true;\n      changes = updateProp(view, providerData, def, 8, v8, changes);\n    }\n    if (bindLen > 9 && checkBinding(view, def, 9,\n    v9)) {\n      changed = true;\n      changes =\n      updateProp(view, providerData, def, 9, v9, changes);\n    }\n    if (changes) {\n      directive.ngOnChanges(changes);\n    }\n    if ((def.flags & 65536 /* OnInit */) &&\n    shouldCallLifecycleInitHook(view, 256 /* InitState_CallingOnInit */, def.nodeIndex)) {\n      directive.ngOnInit();\n    }\n    if (def.flags & 262144 /* DoCheck */) {\n      directive.ngDoCheck();\n    }\n    return changed;\n  }\n  function checkAndUpdateDirectiveDynamic(view, def, values) {\n    var\n    providerData = asProviderData(view, def.nodeIndex);\n    var directive = providerData.instance;\n    var\n    changed = false;\n    var changes = undefined;\n    for (var i = 0; i < values.length; i++) {\n      if\n      (checkBinding(view, def, i, values[i])) {\n        changed = true;\n        changes = updateProp(view,\n        providerData, def, i, values[i], changes);\n      }\n    }\n    if (changes) {\n      directive.ngOnChanges(changes);\n    }\n    if ((def.flags & 65536 /* OnInit */) &&\n    shouldCallLifecycleInitHook(view, 256 /* InitState_CallingOnInit */, def.nodeIndex)) {\n      directive.ngOnInit();\n    }\n    if (def.flags & 262144 /* DoCheck */) {\n      directive.ngDoCheck();\n    }\n    return changed;\n  }\n  function _createProviderInstance$1(view, def) {\n    // private services can see

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other private services\n    var allowPrivateServices = (def.flags & 8192 /* PrivateProvider */) > 0;\n    var
providerDef = def.provider;\n    switch (def.flags & 201347067 /* Types */) {\n        case 512 /*
TypeClassProvider */:\n            return createClass(view, def.parent, allowPrivateServices, providerDef.value,
providerDef.deps);\n        case 1024 /* TypeFactoryProvider */:\n            return callFactory(view, def.parent,
allowPrivateServices, providerDef.value, providerDef.deps);\n        case 2048 /* TypeUseExistingProvider */:\n
            return resolveDep(view, def.parent, allowPrivateServices, providerDef.deps[0]);\n        case 256 /*
TypeValueProvider */:\n            return providerDef.value;\n    }\n    }\n    function createClass(view, elDef,
allowPrivateServices, ctor, deps) {\n        var len = deps.length;\n        switch (len) {\n            case 0:\n
return new ctor();\n            case 1:\n                return new ctor(resolveDep(view, elDef, allowPrivateServices,
deps[0]));\n            case 2:\n                return new ctor(resolveDep(view, elDef, allowPrivateServices, deps[0]),
resolveDep(view, elDef, allowPrivateServices, deps[1]));\n            case 3:\n                return new
ctor(resolveDep(view, elDef, allowPrivateServices, deps[0]), resolveDep(view, elDef, allowPrivateServices,
deps[1]), resolveDep(view, elDef, allowPrivateServices, deps[2]));\n            default:\n                var depValues =
[];\n                for (var i = 0; i < len; i++) {\n                    depValues.push(resolveDep(view, elDef,
allowPrivateServices, deps[i]));\n                }\n                return new (ctor.bind.apply(ctor, __spread([void 0],
depValues)))();\n        }\n    }\n    function callFactory(view, elDef, allowPrivateServices, factory, deps) {\n        var
len = deps.length;\n        switch (len) {\n            case 0:\n                return factory();\n            case 1:\n
return factory(resolveDep(view, elDef, allowPrivateServices, deps[0]));\n            case 2:\n                return
factory(resolveDep(view, elDef, allowPrivateServices, deps[0]), resolveDep(view, elDef, allowPrivateServices,
deps[1]));\n            case 3:\n                return factory(resolveDep(view, elDef, allowPrivateServices, deps[0]),
resolveDep(view, elDef, allowPrivateServices, deps[1]), resolveDep(view, elDef, allowPrivateServices, deps[2]));\n
            default:\n                var depValues = [];\n                for (var i = 0; i < len; i++) {\n
                    depValues.push(resolveDep(view, elDef, allowPrivateServices, deps[i]));\n                }\n                return
factory.apply(void 0, __spread(depValues));\n        }\n    }\n    // This default value is when checking the hierarchy
for a token.\n    // It means both:\n    // - the token is not provided by the current injector,\n    // - only the
element injectors should be checked (ie do not check module injectors\n    // mod1\n    // \n    //
el1 mod2\n    // \n    // \n    // el2\n    // When requesting el2.injector.get(token), we should check in the
following order and return the\n    // first found value:\n    // - el2.injector.get(token, default)\n    // -
el1.injector.get(token, NOT_FOUND_CHECK_ONLY_ELEMENT_INJECTOR) -> do not check the module\n    //
- mod2.injector.get(token, default)\n    var NOT_FOUND_CHECK_ONLY_ELEMENT_INJECTOR = {};\n    function resolveDep(view, elDef, allowPrivateServices, depDef, notFoundValue) {\n        if (notFoundValue ===
void 0) { notFoundValue = Injector.THROW_IF_NOT_FOUND; }\n        if (depDef.flags & 8 /* Value */) {\n
            return depDef.token;\n        }\n        var startView = view;\n        if (depDef.flags & 2 /* Optional */) {\n
            notFoundValue = null;\n        }\n        var tokenKey = depDef.tokenKey;\n        if (tokenKey ===
ChangeDetectorRefTokenKey) {\n            // directives on the same element as a component should be able to control
the change detector\n            // of that component as well.\n            allowPrivateServices = !(elDef &&
elDef.element.componentView);\n        }\n        if (elDef && (depDef.flags & 1 /* SkipSelf */) {\n
            allowPrivateServices = false;\n            elDef = elDef.parent;\n        }\n        var searchView = view;\n        while
(searchView) {\n            if (elDef) {\n                switch (tokenKey) {\n                    case Renderer2TokenKey: {\n
                        var compView = findCompView(searchView, elDef, allowPrivateServices);\n                        return
compView.renderer;\n                    }\n                    case ElementRefTokenKey:\n                        return new
ElementRef(asElementData(searchView, elDef.nodeIndex).renderElement);\n                    case
ViewContainerRefTokenKey:\n                        return asElementData(searchView,
elDef.nodeIndex).viewContainer;\n                    case TemplateRefTokenKey: {\n                        if
(elDef.element.template) {\n                            return asElementData(searchView, elDef.nodeIndex).template;\n
                        }\n                        break;\n                    }\n                    case ChangeDetectorRefTokenKey: {\n
                        var cdView = findCompView(searchView, elDef, allowPrivateServices);\n                        return
createChangeDetectorRef(cdView);\n                    }\n                    case InjectorRefTokenKey$1:\n                        case

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INJECTORRefTokenKey$: \n
    return createInjector$(searchView, elDef); \n
    default: \n
    var providerDef_1 = (allowPrivateServices ? elDef.element.allProviders : \n
elDef.element.publicProviders)[tokenKey]; \n
    if (providerDef_1) { \n
    var
providerData = asProviderData(searchView, providerDef_1.nodeIndex); \n
    if (!providerData) { \n
    providerData = { instance: _createProviderInstance$(searchView, providerDef_1) }; \n
    searchView.nodes[providerDef_1.nodeIndex] = providerData; \n
    } \n
    return
providerData.instance; \n
    } \n
    } \n
    } \n
    allowPrivateServices =
isComponentView(searchView); \n
    elDef = viewParentEl(searchView); \n
    searchView =
searchView.parent; \n
    if (depDef.flags & 4 /* Self */) { \n
    searchView = null; \n
    } \n
    } \n
    var value = startView.root.injector.get(depDef.token, NOT_FOUND_CHECK_ONLY_ELEMENT_INJECTOR); \n
    if (value !== NOT_FOUND_CHECK_ONLY_ELEMENT_INJECTOR || \n
    notFoundValue ===
NOT_FOUND_CHECK_ONLY_ELEMENT_INJECTOR) { \n
    // Return the value from the root element
injector when \n
    // - it provides it \n
    // (value !==
NOT_FOUND_CHECK_ONLY_ELEMENT_INJECTOR) \n
    // - the module injector should not be checked \n
    // (notFoundValue === NOT_FOUND_CHECK_ONLY_ELEMENT_INJECTOR) \n
    return value; \n
    } \n
    return startView.root.ngModule.injector.get(depDef.token, notFoundValue); \n
} \n
function
findCompView(view, elDef, allowPrivateServices) { \n
    var compView; \n
    if (allowPrivateServices) { \n
    compView = asElementData(view, elDef.nodeIndex).componentView; \n
    } \n
    else { \n
    compView =
view; \n
    while (compView.parent && !isComponentView(compView)) { \n
    compView =
compView.parent; \n
    } \n
    } \n
    return compView; \n
} \n
function updateProp(view, providerData,
def, bindingIdx, value, changes) { \n
    if (def.flags & 32768 /* Component */) { \n
    var compView =
asElementData(view, def.parent.nodeIndex).componentView; \n
    if (compView.def.flags & 2 /* OnPush */)
{ \n
    compView.state |= 8 /* ChecksEnabled */; \n
    } \n
    } \n
    var binding =
def.bindings[bindingIdx]; \n
    var propName = binding.name; \n
    // Note: This is still safe with Closure
Compiler as \n
    // the user passed in the property name as an object has to `providerDef`, \n
    // so Closure
Compiler will have renamed the property correctly already. \n
    providerData.instance[propName] = value; \n
    if (def.flags & 524288 /* OnChanges */) { \n
    changes = changes || {}; \n
    var oldValue =
WrappedValue.unwrap(view.oldValues[def.bindingIndex + bindingIdx]); \n
    var binding_1 =
def.bindings[bindingIdx]; \n
    changes[binding_1.nonMinifiedName] = \n
    new
SimpleChange(oldValue, value, (view.state & 2 /* FirstCheck */) !== 0); \n
    } \n
    view.oldValues[def.bindingIndex + bindingIdx] = value; \n
    return changes; \n
} \n
// This function calls the
ngAfterContentCheck, ngAfterContentInit, \n
// ngAfterViewCheck, and ngAfterViewInit lifecycle hooks
(depending on the node \n
// flags in lifecycle). Unlike ngDoCheck, ngOnChanges and ngOnInit, which are \n
//
called during a pre-order traversal of the view tree (that is calling the \n
// parent hooks before the child hooks)
these events are sent in using a \n
// post-order traversal of the tree (children before parents). This changes the \n
//
meaning of initIndex in the view state. For ngOnInit, initIndex tracks the \n
// expected nodeIndex which a
ngOnInit should be called. When sending \n
// ngAfterContentInit and ngAfterViewInit it is the expected count of \n
//
ngAfterContentInit or ngAfterViewInit methods that have been called. This \n
// ensure that despite being called
recursively or after picking up after an \n
// exception, the ngAfterContentInit or ngAfterViewInit will be called on
the \n
// correct nodes. Consider for example, the following (where E is an element \n
// and D is a directive) \n
//
Tree:  pre-order index  post-order index \n
//  E1  0      6 \n
//  E2  1      1 \n
//  D3
2      0 \n
//  E4  3      5 \n
//  E5  4      4 \n
//  E6  5      2 \n
//  E7  6
3 \n
// As can be seen, the post-order index has an unclear relationship to the \n
// pre-order index
(postOrderIndex === preOrderIndex - parentCount + \n
// childCount). Since number of calls to ngAfterContentInit
and ngAfterViewInit \n
// are stable (will be the same for the same view regardless of exceptions or \n
//
recursion) we just need to count them which will roughly correspond to the \n
// post-order index (it skips elements
and directives that do not have \n
// lifecycle hooks). \n
// \n
// For example, if an exception is raised in the
E6.onAfterViewInit() the \n
// initIndex is left at 3 (by shouldCallLifecycleInitHook() which set it to \n
//

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initIndex + 1). When checkAndUpdateView() is called again D3, E2 and E6 will
// not have their
ngAfterViewInit() called but, starting with E7, the rest of
// the view will begin getting ngAfterViewInit() called
until a check and
// pass is complete.
// This algorithm also handles recursion. Consider if E4's
ngAfterViewInit()
// indirectly calls E1's ChangeDetectorRef.detectChanges(). The expected
// initIndex is
set to 6, the recursive checkAndUpdateView() starts walk again.
// D3, E2, E6, E7, E5 and E4 are skipped,
ngAfterViewInit() is called on E1.
// When the recursion returns the initIndex will be 7 so E1 is skipped as it
// has already been called in the recursively called checkAnUpdateView().
function
callLifecycleHooksChildrenFirst(view, lifecycles) {
  if (!(view.def.nodeFlags & lifecycles)) {
    return;
  }
  var nodes = view.def.nodes;
  var initIndex = 0;
  for (var i = 0; i < nodes.length; i++) {
    var nodeDef = nodes[i];
    var parent = nodeDef.parent;
    if (!parent && nodeDef.flags & lifecycles) {
      // matching root node (e.g. a pipe)
      callProviderLifecycles(view, i, nodeDef.flags & lifecycles, initIndex++);
    }
    if ((nodeDef.childFlags & lifecycles) === 0) {
      // no child matches one of the lifecycles
      i += nodeDef.childCount;
    }
    while (parent && (parent.flags & 1 /* TypeElement */) && i === parent.nodeType + parent.childCount) {
      // last child of an element
      if (parent.directChildFlags & lifecycles) {
        initIndex = callElementProvidersLifecycles(view, parent, lifecycles, initIndex);
      }
      parent = parent.parent;
    }
  }
}
function callElementProvidersLifecycles(view, elDef, lifecycles, initIndex) {
  for (var i = elDef.nodeType + 1; i <= elDef.nodeType + elDef.childCount; i++) {
    var nodeDef = view.def.nodes[i];
    if (nodeDef.flags & lifecycles) {
      callProviderLifecycles(view, i, nodeDef.flags & lifecycles, initIndex++);
    }
    // only visit direct children
    i += nodeDef.childCount;
  }
  return initIndex;
}
function callProviderLifecycles(view, index, lifecycles, initIndex) {
  var providerData = asProviderData(view, index);
  if (!providerData) {
    return;
  }
  var provider = providerData.instance;
  if (!provider) {
    return;
  }
  Services.setCurrentNode(view, index);
  if (lifecycles & 1048576 /* AfterContentInit */ && shouldCallLifecycleInitHook(view, 512 /* InitState_CallingAfterContentInit */, initIndex)) {
    provider.ngAfterContentInit();
  }
  if (lifecycles & 2097152 /* AfterContentChecked */) {
    provider.ngAfterContentChecked();
  }
  if (lifecycles & 4194304 /* AfterViewInit */ && shouldCallLifecycleInitHook(view, 768 /* InitState_CallingAfterViewInit */, initIndex)) {
    provider.ngAfterViewInit();
  }
  if (lifecycles & 8388608 /* AfterViewChecked */) {
    provider.ngAfterViewChecked();
  }
  if (lifecycles & 131072 /* OnDestroy */) {
    provider.ngOnDestroy();
  }
}
var ComponentFactoryResolver$1 = /** @class */ (function (_super) {
  __extends(ComponentFactoryResolver, _super);
  /**
   * @param ngModule The NgModuleRef to which all resolved factories are bound.
   */
  function ComponentFactoryResolver(ngModule) {
    var _this = _super.call(this) || this;
    _this.ngModule = ngModule;
    return _this;
  }
  ComponentFactoryResolver.prototype.resolveComponentFactory = function (component) {
    ngDevMode && assertComponentType(component);
    var componentDef = getComponentDef(component);
    return new ComponentFactory$1(componentDef, this.ngModule);
  };
  return ComponentFactoryResolver;
})(ComponentFactoryResolver);
function toRefArray(map) {
  var array = [];
  for (var nonMinified in map) {
    if (map.hasOwnProperty(nonMinified)) {
      var minified = map[nonMinified];
      array.push({ propName: minified, templateName: nonMinified });
    }
  }
  return array;
}
function getNamespace$1(elementName) {
  var name = elementName.toLowerCase();
  return name === 'svg' ? SVG_NAMESPACE : (name === 'math' ? MATH_ML_NAMESPACE : null);
}
/**
 * A change detection scheduler token for {@link RootContext}. This token is the default value used
 * for the default `RootContext` found in the {@link ROOT_CONTEXT} token.
 */
var SCHEDULER = new InjectionToken('SCHEDULER_TOKEN', {
  providedIn: 'root',
  factory: function () { return defaultScheduler; },
});
function createChainedInjector(rootViewInjector, moduleInjector) {
  return {
    get: function (token, notFoundValue, flags) {
      var value = rootViewInjector.get(token,

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NOT_FOUND_CHECK_ONLY_ELEMENT_INJECTOR, flags);\n        if (value !==
NOT_FOUND_CHECK_ONLY_ELEMENT_INJECTOR ||\n        notFoundValue ===
NOT_FOUND_CHECK_ONLY_ELEMENT_INJECTOR) {\n        // Return the value from the root element
injector when\n        // - it provides it\n        // (value !==
NOT_FOUND_CHECK_ONLY_ELEMENT_INJECTOR)\n        // - the module injector should not be
checked\n        // (notFoundValue === NOT_FOUND_CHECK_ONLY_ELEMENT_INJECTOR)\n
return value;\n    }\n    return moduleInjector.get(token, notFoundValue, flags);\n    }\n
};\n }\n /**\n * Render3 implementation of {@link viewEngine_ComponentFactory}.\n */\n var
ComponentFactory$1 = /** @class */ (function (_super) {\n    __extends(ComponentFactory, _super);\n
/**\n     * @param componentDef The component definition.\n     * @param ngModule The NgModuleRef to
which the factory is bound.\n     */\n    function ComponentFactory(componentDef, ngModule) {\n        var
_this = _super.call(this) || this;\n        _this.componentDef = componentDef;\n        _this.ngModule =
ngModule;\n        _this.componentType = componentDef.type;\n        _this.selector =
stringifyCSSSelectorList(componentDef.selectors);\n        _this.ngContentSelectors =\ncomponentDef.ngContentSelectors ? componentDef.ngContentSelectors : [];\n        _this.isBoundToModule =
!!ngModule;\n        return _this;\n    }\n    Object.defineProperty(ComponentFactory.prototype, \"inputs\",
{\n        get: function () {\n            return toRefArray(this.componentDef.inputs);\n        },\n
enumerable: false,\n        configurable: true\n    });\n    Object.defineProperty(ComponentFactory.prototype,
\"outputs\", {\n        get: function () {\n            return toRefArray(this.componentDef.outputs);\n        },\n
enumerable: false,\n        configurable: true\n    });\n    ComponentFactory.prototype.create = function
(injector, projectableNodes, rootSelectorOrNode, ngModule) {\n        ngModule = ngModule || this.ngModule;\n
var rootViewInjector = ngModule ? createChainedInjector(injector, ngModule.injector) : injector;\n        var
rendererFactory = rootViewInjector.get(RendererFactory2, domRendererFactory3);\n        var sanitizer =
rootViewInjector.get(Sanitizer, null);\n        var hostRenderer = rendererFactory.createRenderer(null,
this.componentDef);\n        // Determine a tag name used for creating host elements when this component is
created\n        // dynamically. Default to 'div' if this component did not specify any tag name in its selector.\n
var elementName = this.componentDef.selectors[0][0] || 'div';\n        var hostRNode = rootSelectorOrNode ?\n        locateHostElement(hostRenderer, rootSelectorOrNode, this.componentDef.encapsulation) :\ncreateElementNode(rendererFactory.createRenderer(null, this.componentDef), elementName,
getNamespace$1(elementName));\n        var rootFlags = this.componentDef.onPush ? 64 /* Dirty */ | 512 /*
IsRoot */ :\n        16 /* CheckAlways */ | 512 /* IsRoot */;\n        var rootContext = createRootContext();\n
// Create the root view. Uses empty TView and ContentTemplate.\n        var rootTView = createTView(0 /*
Root */ , null, null, 1, 0, null, null, null, null);\n        var rootLView = createLView(null, rootTView,
rootContext, rootFlags, null, null, rendererFactory, hostRenderer, sanitizer, rootViewInjector);\n        // rootView
is the parent when bootstrapping\n        // TODO(misko): it looks like we are entering view here but we don't
really need to as\n        // `renderView` does that. However as the code is written it is needed because\n        //
`createRootComponentView` and `createRootComponent` both read global state. Fixing those\n        // issues
would allow us to drop this.\n        enterView(rootLView);\n        var component;\n        var tElementNode;\n
try {\n            var componentView = createRootComponentView(hostRNode, this.componentDef,
rootLView, rendererFactory, hostRenderer);\n            if (hostRNode) {\n                if (rootSelectorOrNode) {\n
                    setUpAttributes(hostRenderer, hostRNode, ['ng-version', VERSION.full]);\n                }\n
            }\n        } else {\n            // If host element is created as a part of this function call (i.e. `rootSelectorOrNode`\n
            // is not defined), also apply attributes and classes extracted from component selector.\n            // Extract
attributes and classes from the first selector only to match VE behavior.\n            var _a =
extractAttrsAndClassesFromSelector(this.componentDef.selectors[0]), attrs = _a.attrs, classes = _a.classes;\n
            if (attrs) {\n                setUpAttributes(hostRenderer, hostRNode, attrs);\n            }\n
            if (classes && classes.length > 0) {\n                writeDirectClass(hostRenderer, hostRNode, classes.join('
'));\n            }\n        }\n        tElementNode = getTNode(rootTView,

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HEADER_OFFSET);\n          if (projectableNodes !== undefined) {\n          var projection =
tElementNode.projection = [];\n          for (var i = 0; i < this.ngContentSelectors.length; i++) {\n
var nodesforSlot = projectableNodes[i];\n          // Projectable nodes can be passed as array of arrays or an
array of iterables (ngUpgrade\n          // case). Here we do normalize passed data structure to be an array of
arrays to avoid\n          // complex checks down the line.\n          // We also normalize the length of
the passed in projectable nodes (to match the number of\n          // <ng-container> slots defined by a
component).\n          projection.push(nodesforSlot != null ? Array.from(nodesforSlot) : null);\n
}\n          }\n          // TODO: should LifecycleHooksFeature and other host features be generated by the
compiler and\n          // executed here?\n          // Angular 5 reference: https://stackblitz.com/edit/lifecycle-
hooks-vcref\n          component = createRootComponent(componentView, this.componentDef, rootLView,
rootContext, [LifecycleHooksFeature]);\n          renderView(rootTView, rootLView, null);\n          }\n
finally {\n          leaveView();\n          }\n          return new ComponentRef$(this.componentType, component,
createElementRef(tElementNode, rootLView), rootLView, tElementNode);\n          };\n          return
ComponentFactory;\n          }(ComponentFactory));\n          var componentFactoryResolver = new
ComponentFactoryResolver$(1);\n          /**\n          * Creates a ComponentFactoryResolver and stores it on the injector.
Or, if the\n          * ComponentFactoryResolver\n          * already exists, retrieves the existing
ComponentFactoryResolver.\n          *\n          * @returns The ComponentFactoryResolver instance to use\n          */\n          function injectComponentFactoryResolver() {\n          return componentFactoryResolver;\n          }\n          /**\n          *
Represents an instance of a Component created via a {@link ComponentFactory}.\n          *\n          * `ComponentRef`
provides access to the Component Instance as well other objects related to this\n          * Component Instance and
allows you to destroy the Component Instance via the {@link #destroy}\n          * method.\n          *\n          */\n          var
ComponentRef$1 = /** @class */ (function (_super) {\n          __extends(ComponentRef, _super);\n          function
ComponentRef(componentType, instance, location, _rootLView, _tNode) {\n          var _this = _super.call(this) ||
this;\n          _this.location = location;\n          _this._rootLView = _rootLView;\n          _this._tNode = _tNode;\n
          _this.destroyCbs = [];\n          _this.instance = instance;\n          _this.hostView = _this.changeDetectorRef =
new RootViewRef(_rootLView);\n          _this.componentType = componentType;\n          return _this;\n          }\n
          Object.defineProperty(ComponentRef.prototype, "injector", {\n          get: function () {\n          return new
NodeInjector(this._tNode, this._rootLView);\n          },\n          enumerable: false,\n          configurable: true\n
          });\n          ComponentRef.prototype.destroy = function () {\n          if (this.destroyCbs) {\n
this.destroyCbs.forEach(function (fn) { return fn(); });\n          this.destroyCbs = null;\n
!this.hostView.destroyed && this.hostView.destroy();\n          }\n          };\n
ComponentRef.prototype.onDestroy = function (callback) {\n          if (this.destroyCbs) {\n
this.destroyCbs.push(callback);\n          }\n          };\n          return ComponentRef;\n          }(ComponentRef));\n          /**\n          *
Adds decorator, constructor, and property metadata to a given type via static metadata fields\n          * on the type.\n
          *\n          * These metadata fields can later be read with Angular's `ReflectionCapabilities` API.\n          *\n          * Calls to
`setClassMetadata` can be marked as pure, resulting in the metadata assignments being\n          * tree-shaken away
during production builds.\n          */\n          function setClassMetadata(type, decorators, ctorParameters, propDecorators)
{\n          return noSideEffects(function () {\n          var _a;\n          var clazz = type;\n          if (decorators !== null)
{\n          if (clazz.hasOwnProperty('decorators') && clazz.decorators !== undefined) {\n          (_a =
clazz.decorators).push.apply(_a, __spread(decorators));\n          }\n          else {\n
clazz.decorators = decorators;\n          }\n          }\n          if (ctorParameters !== null) {\n          // Rather
than merging, clobber the existing parameters. If other projects exist which\n          // use tsickle-style
annotations and reflect over them in the same way, this could\n          // cause issues, but that is vanishingly
unlikely.\n          clazz.ctorParameters = ctorParameters;\n          }\n          if (propDecorators !== null) {\n
// The property decorator objects are merged as it is possible different fields have\n          // different
decorator types. Decorators on individual fields are not merged, as it's\n          // also incredibly unlikely that a
field will be decorated both with an Angular\n          // decorator and a non-Angular decorator that's also been
downleveled.\n          if (clazz.hasOwnProperty('propDecorators') && clazz.propDecorators !== undefined) {\n

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    clazz.propDecorators = Object.assign(Object.assign({}, clazz.propDecorators), propDecorators);\n
  }\n    else {\n      clazz.propDecorators = propDecorators;\n    }\n  });\n}\n\n/**\n * Map of module-id to the corresponding NgModule.\n * - In pre Ivy we track NgModuleFactory,\n * - In post Ivy we track the NgModuleType\n */\n var modules = new Map();\n /**\n * Registers a loaded\n module. Should only be called from generated NgModuleFactory code.\n * @publicApi\n */\n function\n registerModuleFactory(id, factory) {\n   var existing = modules.get(id);\n   assertSameOrNotExisting(id,\n existing && existing.moduleType, factory.moduleType);\n   modules.set(id, factory);\n }\n function\n assertSameOrNotExisting(id, type, incoming) {\n   if (type && type !== incoming) {\n     throw new\n Error("Duplicate module registered for '" + id + "' - '" + stringify(type) + "' vs '" + stringify(type.name));\n   }\n }\n function registerNgModuleType(ngModuleType) {\n   var visited = new Set();\n   recurse(ngModuleType);\n   function recurse(ngModuleType) {\n     var e_1, _a;\n     // The imports\n array of an NgModule must refer to other NgModules,\n     // so an error is thrown if no module definition is\n available.\n     var def = getNgModuleDef(ngModuleType, /* throwNotFound */ true);\n     var id =\n def.id;\n     if (id !== null) {\n       var existing = modules.get(id);\n       assertSameOrNotExisting(id,\n existing, ngModuleType);\n       modules.set(id, ngModuleType);\n     }\n     var imports =\n maybeUnwrapFn(def.imports);\n     try {\n       for (var imports_1 = __values(imports), imports_1_1 =\n imports_1.next(); !imports_1_1.done; imports_1_1 = imports_1.next()) {\n         var i = imports_1_1.value;\n         if (!visited.has(i)) {\n           visited.add(i);\n           recurse(i);\n         }\n       }\n     }\n     catch (e_1_1) { e_1 = { error: e_1_1 }; }\n     finally {\n       try {\n         if\n (imports_1_1 && !imports_1_1.done && (_a = imports_1.return)) _a.call(imports_1);\n       }\n     }\n     finally { if (e_1) throw e_1.error; }\n   }\n }\n }\n function clearModulesForTest() {\n   modules.clear();\n }\n function getRegisteredNgModuleType(id) {\n   return modules.get(id) ||\n autoRegisterModuleById[id];\n }\n\n var NgModuleRef$1 = /** @class */ (function (_super) {\n   __extends(NgModuleRef$1, _super);\n   function NgModuleRef$1(ngModuleType, _parent) {\n     var _this\n = _super.call(this) || this;\n     _this._parent = _parent;\n     // tslint:disable-next-line:require-internal-with-\n underscore\n     _this._bootstrapComponents = [];\n     _this.injector = _this;\n     _this.destroyCbs =\n [];\n     // When bootstrapping a module we have a dependency graph that looks like this:\n     //\n ApplicationRef -> ComponentFactoryResolver -> NgModuleRef. The problem is that if the\n     // module being\n resolved tries to inject the ComponentFactoryResolver, it'll create a\n     // circular dependency which will result\n in a runtime error, because the injector doesn't\n     // exist yet. We work around the issue by creating the\n ComponentFactoryResolver ourselves\n     // and providing it, rather than letting the injector resolve it.\n     _this.componentFactoryResolver = new ComponentFactoryResolver$1(_this);\n     var ngModuleDef =\n getNgModuleDef(ngModuleType);\n     ngDevMode &&\n     assertDefined(ngModuleDef, "NgModule\n \" + stringify(ngModuleType) + \" is not a subtype of 'NgModuleType'.");\n     var ngLocaleIdDef =\n getNgLocaleIdDef(ngModuleType);\n     ngLocaleIdDef && setLocaleId(ngLocaleIdDef);\n     _this._bootstrapComponents = maybeUnwrapFn(ngModuleDef.bootstrap);\n     _this._r3Injector =\n createInjectorWithoutInjectorInstances(ngModuleType, _parent, [\n     { provide: NgModuleRef, useValue:\n _this }, {\n     provide: ComponentFactoryResolver,\n     useValue:\n _this.componentFactoryResolver\n     }], stringify(ngModuleType));\n     // We need to resolve\n the injector types separately from the injector creation, because\n     // the module might be trying to use this ref\n in its constructor for DI which will cause a\n     // circular error that will eventually error out, because the injector\n isn't created yet.\n     _this._r3Injector._resolveInjectorDefTypes();\n     _this.instance =\n _this.get(ngModuleType);\n     return _this;\n   }\n   NgModuleRef$1.prototype.get = function (token,\n notFoundValue, injectFlags) {\n     if (notFoundValue === void 0) { notFoundValue =\n Injector.THROW_IF_NOT_FOUND; }\n     if (injectFlags === void 0) { injectFlags =\n exports.InjectFlags.Default; }\n     if (token === Injector || token === NgModuleRef || token ===\n INJECTOR$1) {\n       return this;\n     }\n     return this._r3Injector.get(token, notFoundValue,\n injectFlags);\n   };\n   NgModuleRef$1.prototype.destroy = function () {\n     ngDevMode &&

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pureFunction1(slotOffset, pureFn, exp, thisArg) {\n    return pureFunction1Internal(getLView(),
getBindingRoot(), slotOffset, pureFn, exp, thisArg);\n } \n /**\n  * If the value of any provided exp has
changed, calls the pure function to return\n  * an updated value. Or if no values have changed, returns cached
value.\n  *\n  * @param slotOffset the offset from binding root to the reserved slot\n  * @param pureFn\n  *
@param exp1\n  * @param exp2\n  * @param thisArg Optional calling context of pureFn\n  * @returns
Updated or cached value\n  *\n  * @codeGenApi\n  */\n function pureFunction2(slotOffset, pureFn, exp1,
exp2, thisArg) {\n    return pureFunction2Internal(getLView(), getBindingRoot(), slotOffset, pureFn, exp1, exp2,
thisArg);\n } \n /**\n  * If the value of any provided exp has changed, calls the pure function to return\n  * an
updated value. Or if no values have changed, returns cached value.\n  *\n  * @param slotOffset the offset from
binding root to the reserved slot\n  * @param pureFn\n  * @param exp1\n  * @param exp2\n  * @param
exp3\n  * @param thisArg Optional calling context of pureFn\n  * @returns Updated or cached value\n  *\n
* @codeGenApi\n  */\n function pureFunction3(slotOffset, pureFn, exp1, exp2, exp3, thisArg) {\n    return
pureFunction3Internal(getLView(), getBindingRoot(), slotOffset, pureFn, exp1, exp2, exp3, thisArg);\n } \n
/**\n  * If the value of any provided exp has changed, calls the pure function to return\n  * an updated value. Or
if no values have changed, returns cached value.\n  *\n  * @param slotOffset the offset from binding root to the
reserved slot\n  * @param pureFn\n  * @param exp1\n  * @param exp2\n  * @param exp3\n  * @param
exp4\n  * @param thisArg Optional calling context of pureFn\n  * @returns Updated or cached value\n  *\n
* @codeGenApi\n  */\n function pureFunction4(slotOffset, pureFn, exp1, exp2, exp3, exp4, thisArg) {\n    return
pureFunction4Internal(getLView(), getBindingRoot(), slotOffset, pureFn, exp1, exp2, exp3, exp4, thisArg);\n } \n
/**\n  * If the value of any provided exp has changed, calls the pure function to return\n  * an updated
value. Or if no values have changed, returns cached value.\n  *\n  * @param slotOffset the offset from binding
root to the reserved slot\n  * @param pureFn\n  * @param exp1\n  * @param exp2\n  * @param exp3\n  *
@param exp4\n  * @param exp5\n  * @param thisArg Optional calling context of pureFn\n  * @returns
Updated or cached value\n  *\n  * @codeGenApi\n  */\n function pureFunction5(slotOffset, pureFn, exp1,
exp2, exp3, exp4, exp5, thisArg) {\n    var bindingIndex = getBindingRoot() + slotOffset;\n    var IView =
getLView();\n    var different = bindingUpdated4(IView, bindingIndex, exp1, exp2, exp3, exp4);\n    return
bindingUpdated(IView, bindingIndex + 4, exp5) || different ?\n        updateBinding(IView, bindingIndex + 5,
thisArg ? pureFn.call(thisArg, exp1, exp2, exp3, exp4, exp5) :\n            pureFn(exp1, exp2, exp3, exp4, exp5)) :\n
getBinding(IView, bindingIndex + 5);\n } \n /**\n  * If the value of any provided exp has changed, calls
the pure function to return\n  * an updated value. Or if no values have changed, returns cached value.\n  *\n
* @param slotOffset the offset from binding root to the reserved slot\n  * @param pureFn\n  * @param exp1\n
* @param exp2\n  * @param exp3\n  * @param exp4\n  * @param exp5\n  * @param exp6\n  * @param
thisArg Optional calling context of pureFn\n  * @returns Updated or cached value\n  *\n  * @codeGenApi\n
*/\n function pureFunction6(slotOffset, pureFn, exp1, exp2, exp3, exp4, exp5, exp6, thisArg) {\n    var
bindingIndex = getBindingRoot() + slotOffset;\n    var IView = getLView();\n    var different =
bindingUpdated4(IView, bindingIndex, exp1, exp2, exp3, exp4);\n    return bindingUpdated2(IView,
bindingIndex + 4, exp5, exp6) || different ?\n        updateBinding(IView, bindingIndex + 6, thisArg ?
pureFn.call(thisArg, exp1, exp2, exp3, exp4, exp5, exp6) :\n            pureFn(exp1, exp2, exp3, exp4, exp5, exp6))
:\n    getBinding(IView, bindingIndex + 6);\n } \n /**\n  * If the value of any provided exp has changed,
calls the pure function to return\n  * an updated value. Or if no values have changed, returns cached value.\n
*\n  * @param slotOffset the offset from binding root to the reserved slot\n  * @param pureFn\n  * @param exp1\n
* @param exp2\n  * @param exp3\n  * @param exp4\n  * @param exp5\n  * @param exp6\n  *
@param exp7\n  * @param thisArg Optional calling context of pureFn\n  * @returns Updated or cached value\n
*\n  * @codeGenApi\n  */\n function pureFunction7(slotOffset, pureFn, exp1, exp2, exp3, exp4, exp5, exp6,
exp7, thisArg) {\n    var bindingIndex = getBindingRoot() + slotOffset;\n    var IView = getLView();\n    var
different = bindingUpdated4(IView, bindingIndex, exp1, exp2, exp3, exp4);\n    return bindingUpdated3(IView,
bindingIndex + 4, exp5, exp6, exp7) || different ?\n        updateBinding(IView, bindingIndex + 7, thisArg ?
pureFn.call(thisArg, exp1, exp2, exp3, exp4, exp5, exp6, exp7) :\n            pureFn(exp1, exp2, exp3, exp4, exp5,

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exp6, exp7)) : \n      getBinding(IView, bindingIndex + 7); \n } \n /** \n * If the value of any provided exp
has changed, calls the pure function to return \n * an updated value. Or if no values have changed, returns cached
value. \n * \n * @param slotOffset the offset from binding root to the reserved slot \n * @param pureFn \n *
@param exp1 \n * @param exp2 \n * @param exp3 \n * @param exp4 \n * @param exp5 \n * @param
exp6 \n * @param exp7 \n * @param exp8 \n * @param thisArg Optional calling context of pureFn \n *
@returns Updated or cached value \n * \n * @codeGenApi \n * \n function pureFunction8(slotOffset,
pureFn, exp1, exp2, exp3, exp4, exp5, exp6, exp7, exp8, thisArg) { \n      var bindingIndex = getBindingRoot() +
slotOffset; \n      var IView = getLView(); \n      var different = bindingUpdated4(IView, bindingIndex, exp1, exp2,
exp3, exp4); \n      return bindingUpdated4(IView, bindingIndex + 4, exp5, exp6, exp7, exp8) || different ? \n
updateBinding(IView, bindingIndex + 8, thisArg ? pureFn.call(thisArg, exp1, exp2, exp3, exp4, exp5, exp6, exp7,
exp8) : \n      pureFn(exp1, exp2, exp3, exp4, exp5, exp6, exp7, exp8)) : \n      getBinding(IView,
bindingIndex + 8); \n } \n /** \n * pureFunction instruction that can support any number of bindings. \n * \n
* If the value of any provided exp has changed, calls the pure function to return \n * an updated value. Or if no
values have changed, returns cached value. \n * \n * @param slotOffset the offset from binding root to the
reserved slot \n * @param pureFn A pure function that takes binding values and builds an object or array \n *
containing those values. \n * @param exps An array of binding values \n * @param thisArg Optional calling
context of pureFn \n * @returns Updated or cached value \n * \n * @codeGenApi \n * \n function
pureFunctionV(slotOffset, pureFn, exps, thisArg) { \n      return pureFunctionVInternal(getLView(),
getBindingRoot(), slotOffset, pureFn, exps, thisArg); \n } \n /** \n * Results of a pure function invocation are
stored in LView in a dedicated slot that is initialized \n * to NO_CHANGE. In rare situations a pure pipe might
throw an exception on the very first \n * invocation and not produce any valid results. In this case LView would
keep holding the NO_CHANGE \n * value. The NO_CHANGE is not something that we can use in expressions /
bindings thus we convert \n * it to `undefined`. \n * \n function getPureFunctionReturnValue(IView,
returnValueIndex) { \n      ngDevMode && assertIndexInRange(IView, returnValueIndex); \n      var
lastReturnValue = IView[returnValueIndex]; \n      return lastReturnValue === NO_CHANGE ? undefined :
lastReturnValue; \n } \n /** \n * If the value of the provided exp has changed, calls the pure function to return \n
* an updated value. Or if the value has not changed, returns cached value. \n * \n * @param IView LView in
which the function is being executed. \n * @param bindingRoot Binding root index. \n * @param slotOffset the
offset from binding root to the reserved slot \n * @param pureFn Function that returns an updated value \n *
@param exp Updated expression value \n * @param thisArg Optional calling context of pureFn \n * @returns
Updated or cached value \n * \n function pureFunction1Internal(IView, bindingRoot, slotOffset, pureFn, exp,
thisArg) { \n      var bindingIndex = bindingRoot + slotOffset; \n      return bindingUpdated(IView, bindingIndex,
exp) ? \n      updateBinding(IView, bindingIndex + 1, thisArg ? pureFn.call(thisArg, exp) : pureFn(exp)) : \n
getPureFunctionReturnValue(IView, bindingIndex + 1); \n } \n /** \n * If the value of any provided exp has
changed, calls the pure function to return \n * an updated value. Or if no values have changed, returns cached
value. \n * \n * @param IView LView in which the function is being executed. \n * @param bindingRoot
Binding root index. \n * @param slotOffset the offset from binding root to the reserved slot \n * @param
pureFn \n * @param exp1 \n * @param exp2 \n * @param thisArg Optional calling context of pureFn \n *
@returns Updated or cached value \n * \n function pureFunction2Internal(IView, bindingRoot, slotOffset,
pureFn, exp1, exp2, thisArg) { \n      var bindingIndex = bindingRoot + slotOffset; \n      return
bindingUpdated2(IView, bindingIndex, exp1, exp2) ? \n      updateBinding(IView, bindingIndex + 2, thisArg ?
pureFn.call(thisArg, exp1, exp2) : pureFn(exp1, exp2)) : \n      getPureFunctionReturnValue(IView, bindingIndex
+ 2); \n } \n /** \n * If the value of any provided exp has changed, calls the pure function to return \n * an
updated value. Or if no values have changed, returns cached value. \n * \n * @param IView LView in which the
function is being executed. \n * @param bindingRoot Binding root index. \n * @param slotOffset the offset
from binding root to the reserved slot \n * @param pureFn \n * @param exp1 \n * @param exp2 \n *
@param exp3 \n * @param thisArg Optional calling context of pureFn \n * @returns Updated or cached value \n
* \n function pureFunction3Internal(IView, bindingRoot, slotOffset, pureFn, exp1, exp2, exp3, thisArg) { \n

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var bindingIndex = bindingRoot + slotOffset;\n    return bindingUpdated3(IView, bindingIndex, exp1, exp2,
exp3) ?\n        updateBinding(IView, bindingIndex + 3, thisArg ? pureFn.call(thisArg, exp1, exp2, exp3) :
pureFn(exp1, exp2, exp3)) :\n        getPureFunctionReturnValue(IView, bindingIndex + 3);\n    }\n    /**\n     * If
the value of any provided exp has changed, calls the pure function to return\n     * an updated value. Or if no values
have changed, returns cached value.\n     *\n     * @param IView LView in which the function is being executed.\n
     * @param bindingRoot Binding root index.\n     * @param slotOffset the offset from binding root to the reserved
slot\n     * @param pureFn\n     * @param exp1\n     * @param exp2\n     * @param exp3\n     * @param exp4\n
     * @param thisArg Optional calling context of pureFn\n     * @returns Updated or cached value\n     *\n     */\n
function pureFunction4Internal(IView, bindingRoot, slotOffset, pureFn, exp1, exp2, exp3, exp4, thisArg) {\n
var bindingIndex = bindingRoot + slotOffset;\n    return bindingUpdated4(IView, bindingIndex, exp1, exp2, exp3,
exp4) ?\n        updateBinding(IView, bindingIndex + 4, thisArg ? pureFn.call(thisArg, exp1, exp2, exp3, exp4) :
pureFn(exp1, exp2, exp3, exp4)) :\n        getPureFunctionReturnValue(IView, bindingIndex + 4);\n    }\n    /**\n
     * pureFunction instruction that can support any number of bindings.\n     *\n     * If the value of any provided exp
has changed, calls the pure function to return\n     * an updated value. Or if no values have changed, returns cached
value.\n     *\n     * @param IView LView in which the function is being executed.\n     * @param bindingRoot
Binding root index.\n     * @param slotOffset the offset from binding root to the reserved slot\n     * @param pureFn
A pure function that takes binding values and builds an object or array\n     * containing those values.\n     * @param
exps An array of binding values\n     * @param thisArg Optional calling context of pureFn\n     * @returns Updated
or cached value\n     */\n
function pureFunctionVInternal(IView, bindingRoot, slotOffset, pureFn, exps, thisArg)
{\n    var bindingIndex = bindingRoot + slotOffset;\n    var different = false;\n    for (var i = 0; i <
exps.length; i++) {\n        bindingUpdated(IView, bindingIndex++, exps[i]) && (different = true);\n    }\n
return different ? updateBinding(IView, bindingIndex, pureFn.apply(thisArg, exps)) :\n
getPureFunctionReturnValue(IView, bindingIndex);\n    }\n\n    /**\n     * @license\n     * Copyright Google LLC
All Rights Reserved.\n     * Use of this source code is governed by an MIT-style license that can be\n     *
found in the LICENSE file at https://angular.io/license\n     */\n
    /**\n     * Create a pipe.\n     *\n     * @param
index Pipe index where the pipe will be stored.\n     * @param pipeName The name of the pipe\n     * @returns T
the instance of the pipe.\n     *\n     * @codeGenApi\n     */\n
function pipe(index, pipeName) {\n    var tView =
getTView();\n    var pipeDef;\n    var adjustedIndex = index + HEADER_OFFSET;\n    if
(tView.firstCreatePass) {\n        pipeDef = getPipeDef$(1(pipeName, tView.pipeRegistry));\n
tView.data[adjustedIndex] = pipeDef;\n        if (pipeDef.onDestroy) {\n            (tView.destroyHooks ||
(tView.destroyHooks = [])).push(adjustedIndex, pipeDef.onDestroy);\n        }\n    } else {\n
pipeDef = tView.data[adjustedIndex];\n    }\n    var pipeFactory = pipeDef.factory || (pipeDef.factory =
getFactoryDef(pipeDef.type, true));\n    var previousInjectImplementation =
setInjectImplementation(pipeDef.directiveInject);\n    try {\n        // DI for pipes is supposed to behave like directives
when placed on a component\n        // host node, which means that we have to disable access to
`viewProviders`.\n        var previousIncludeViewProviders = setIncludeViewProviders(false);\n        var
pipeInstance = pipeFactory();\n        setIncludeViewProviders(previousIncludeViewProviders);\n
store(tView, getLView(), adjustedIndex, pipeInstance);\n        return pipeInstance;\n    } finally {\n
// we have to restore the injector implementation in finally, just in case the creation of the\n        // pipe throws an
error.\n        setInjectImplementation(previousInjectImplementation);\n    }\n    }\n    /**\n     * Searches the
pipe registry for a pipe with the given name. If one is found,\n     * returns the pipe. Otherwise, an error is thrown
because the pipe cannot be resolved.\n     *\n     * @param name Name of pipe to resolve\n     * @param registry
Full list of available pipes\n     * @returns Matching PipeDef\n     */\n
function getPipeDef$(1(name, registry) {\n    if (registry) {\n        for (var i = registry.length - 1; i >= 0; i--) {\n
var pipeDef = registry[i];\n        if (name === pipeDef.name) {\n            return pipeDef;\n        }\n    }\n    }\n    throw new
RuntimeError(`302` /* PIPE_NOT_FOUND */, `The pipe "` + name + `" could not be found!`);\n    }\n    /**\n
     * Invokes a pipe with 1 arguments.\n     *\n     * This instruction acts as a guard to {@link
PipeTransform#transform} invoking\n     * the pipe only when an input to the pipe changes.\n     *\n     * @param

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index Pipe index where the pipe was stored on creation.\n    * @param slotOffset the offset in the reserved slot
space\n    * @param v1 1st argument to {@link PipeTransform#transform}.\n    *\n    * @codeGenApi\n    *\nfunction pipeBind1(index, slotOffset, v1) {\n    var adjustedIndex = index + HEADER_OFFSET;\n    var IView
= getLView();\n    var pipeInstance = load(IView, adjustedIndex);\n    return unwrapValue$1(IView,
isPure(IView, adjustedIndex) ?\n        pureFunction1Internal(IView, getBindingRoot(), slotOffset,
pipeInstance.transform, v1, pipeInstance) :\n        pipeInstance.transform(v1));\n    }\n    /**\n    * Invokes a pipe
with 2 arguments.\n    *\n    * This instruction acts as a guard to {@link PipeTransform#transform} invoking\n    *
the pipe only when an input to the pipe changes.\n    *\n    * @param index Pipe index where the pipe was stored
on creation.\n    * @param slotOffset the offset in the reserved slot space\n    * @param v1 1st argument to {@link
PipeTransform#transform}.\n    * @param v2 2nd argument to {@link PipeTransform#transform}.\n    *\n    *
@codeGenApi\n    *\nfunction pipeBind2(index, slotOffset, v1, v2) {\n    var adjustedIndex = index +
HEADER_OFFSET;\n    var IView = getLView();\n    var pipeInstance = load(IView, adjustedIndex);\n
return unwrapValue$1(IView, isPure(IView, adjustedIndex) ?\n        pureFunction2Internal(IView,
getBindingRoot(), slotOffset, pipeInstance.transform, v1, v2, pipeInstance) :\n        pipeInstance.transform(v1,
v2));\n    }\n    /**\n    * Invokes a pipe with 3 arguments.\n    *\n    * This instruction acts as a guard to {@link
PipeTransform#transform} invoking\n    * the pipe only when an input to the pipe changes.\n    *\n    * @param
index Pipe index where the pipe was stored on creation.\n    * @param slotOffset the offset in the reserved slot
space\n    * @param v1 1st argument to {@link PipeTransform#transform}.\n    * @param v2 2nd argument to
{@link PipeTransform#transform}.\n    * @param v3 4rd argument to {@link PipeTransform#transform}.\n    *\n    *
@codeGenApi\n    *\nfunction pipeBind3(index, slotOffset, v1, v2, v3) {\n    var adjustedIndex = index +
HEADER_OFFSET;\n    var IView = getLView();\n    var pipeInstance = load(IView, adjustedIndex);\n
return unwrapValue$1(IView, isPure(IView, adjustedIndex) ? pureFunction3Internal(IView, getBindingRoot(),
slotOffset, pipeInstance.transform, v1, v2, v3, pipeInstance) :\n        pipeInstance.transform(v1, v2, v3));\n    }\n
/**\n    * Invokes a pipe with 4 arguments.\n    *\n    * This instruction acts as a guard to {@link
PipeTransform#transform} invoking\n    * the pipe only when an input to the pipe changes.\n    *\n    * @param
index Pipe index where the pipe was stored on creation.\n    * @param slotOffset the offset in the reserved slot
space\n    * @param v1 1st argument to {@link PipeTransform#transform}.\n    * @param v2 2nd argument to
{@link PipeTransform#transform}.\n    * @param v3 3rd argument to {@link PipeTransform#transform}.\n    *
@param v4 4th argument to {@link PipeTransform#transform}.\n    *\n    * @codeGenApi\n    *\nfunction
pipeBind4(index, slotOffset, v1, v2, v3, v4) {\n    var adjustedIndex = index + HEADER_OFFSET;\n    var
IView = getLView();\n    var pipeInstance = load(IView, adjustedIndex);\n    return unwrapValue$1(IView,
isPure(IView, adjustedIndex) ? pureFunction4Internal(IView, getBindingRoot(), slotOffset, pipeInstance.transform,
v1, v2, v3, v4, pipeInstance) :\n        pipeInstance.transform(v1, v2, v3, v4));\n    }\n    /**\n    * Invokes a pipe
with variable number of arguments.\n    *\n    * This instruction acts as a guard to {@link
PipeTransform#transform} invoking\n    * the pipe only when an input to the pipe changes.\n    *\n    * @param
index Pipe index where the pipe was stored on creation.\n    * @param slotOffset the offset in the reserved slot
space\n    * @param values Array of arguments to pass to {@link PipeTransform#transform} method.\n    *\n    *
@codeGenApi\n    *\nfunction pipeBindV(index, slotOffset, values) {\n    var adjustedIndex = index +
HEADER_OFFSET;\n    var IView = getLView();\n    var pipeInstance = load(IView, adjustedIndex);\n
return unwrapValue$1(IView, isPure(IView, adjustedIndex) ?\n        pureFunctionVInternal(IView,
getBindingRoot(), slotOffset, pipeInstance.transform, values, pipeInstance) :\n        pipeInstance.transform.apply(pipeInstance, values));\n    }\n    function isPure(IView, index) {\n    return
IView[TVIEW].data[index].pure;\n    }\n    /**\n    * Unwrap the output of a pipe transformation.\n    * In order to
trick change detection into considering that the new value is always different from\n    * the old one, the old value is
overwritten by NO_CHANGE.\n    *\n    * @param newValue the pipe transformation output.\n    *\n    function
unwrapValue$1(IView, newValue) {\n    if (WrappedValue.isWrapped(newValue)) {\n        newValue =
WrappedValue.unwrap(newValue);\n        // The NO_CHANGE value needs to be written at the index where the
impacted binding value is\n        // stored\n        var bindingToInvalidateIdx = getBindingIndex();\n

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IView[bindingToInvalidateIdx] = NO_CHANGE;\n    }\n    return newValue;\n  }\n\n  var EventEmitter_ =
/** @class */ (function (_super) {\n    __extends(EventEmitter_, _super);\n    function EventEmitter_(isAsync)
{\n      if (isAsync === void 0) { isAsync = false; }\n      var _this = _super.call(this) || this;\n      _this.__isAsync = isAsync;\n      return _this;\n    }\n    EventEmitter_.prototype.emit = function (value) {\n      _super.prototype.next.call(this, value);\n    };
EventEmitter_.prototype.subscribe = function
(generatorOrNext, error, complete) {\n      var schedulerFn;\n      var errorFn = function (err) { return null;
};\n      var completeFn = function () { return null; };
if (generatorOrNext && typeof generatorOrNext
=== 'object') {\n        schedulerFn = this.__isAsync ? function (value) {\n          setTimeout(function () {
return generatorOrNext.next(value); });\n        } : function (value) {\n          generatorOrNext.next(value);\n        };\n        if (generatorOrNext.error) {\n          errorFn =
this.__isAsync ? function (err) {\n            setTimeout(function () { return generatorOrNext.error(err); });\n          } : function (err) {\n            generatorOrNext.error(err);\n          };\n        }\n        if
(generatorOrNext.complete) {\n          completeFn = this.__isAsync ? function () {\n            setTimeout(function () { return generatorOrNext.complete(); });\n          } : function () {\n            generatorOrNext.complete();\n          };\n        }\n        else {\n          schedulerFn =
this.__isAsync ? function (value) {\n            setTimeout(function () { return generatorOrNext(value); });\n          } : function (value) {\n            generatorOrNext(value);\n          };\n          if (error) {\n            errorFn = this.__isAsync ? function (err) {\n              setTimeout(function () { return error(err); });\n            } : function (err) {\n              error(err);\n            };\n          }\n          if (complete) {\n            completeFn = this.__isAsync ? function () {\n              setTimeout(function () { return complete(); });\n            } : function () {\n              complete();\n            };\n          }\n          var sink =
_super.prototype.subscribe.call(this, schedulerFn, errorFn, completeFn);\n          if (generatorOrNext instanceof
rxjs.Subscription) {\n            generatorOrNext.add(sink);\n          }\n          return sink;\n        };\n        return
EventEmitter_;\n      }(rxjs.Subject));\n    /**\n     * @publicApi\n     */\n    var EventEmitter = EventEmitter_;\n  }\n\n  /**\n   * @license\n   * Copyright Google LLC All Rights Reserved.\n   * Use of this source code is
governed by an MIT-style license that can be\n   * found in the LICENSE file at https://angular.io/license\n   */\n\n  function symbolIterator() {\n    return this._results[getSymbolIterator()];\n  }\n  /**\n   * An unmodifiable
list of items that Angular keeps up to date when the state\n   * of the application changes.\n   *\n   * The type of
object that {@link ViewChildren}, {@link ContentChildren}, and {@link QueryList}\n   * provide.\n   *\n   * Implements an iterable interface, therefore it can be used in both ES6\n   * javascript `for (var i of items)` loops as
well as in Angular templates with\n   * `*ngFor="let i of myList"`.\n   *\n   * Changes can be observed by
subscribing to the changes `Observable`.\n   *\n   * NOTE: In the future this class will implement an `Observable`
interface.\n   *\n   * @usageNotes\n   * ### Example\n   * ```typescript\n   * @Component({...})\n   * class
Container {\n   *   @ViewChildren(Item) items: QueryList<Item>;\n   * }\n   * ```\n   *\n   * @publicApi\n   */\n  var QueryList = /** @class */ (function () {\n    function QueryList() {\n      this.dirty = true;\n      this._results = [];\n      this.changes = new EventEmitter();\n      this.length = 0;\n      // This function
should be declared on the prototype, but doing so there will cause the class\n      // declaration to have side-
effects and become not tree-shakable. For this reason we do it in\n      // the constructor.\n      //
[getSymbolIterator]()(): Iterator<T> { ... }\n      var symbol = getSymbolIterator();\n      var proto =
QueryList.prototype;\n      if (!proto[symbol])\n        proto[symbol] = symbolIterator;\n    }\n    /**\n     * See\n     * [Array.map](https://developer.mozilla.org/en-
US/docs/Web/JavaScript/Reference/Global_Objects/Array/map)\n     */\n    QueryList.prototype.map =
function (fn) {\n      return this._results.map(fn);\n    };\n    /**\n     * See\n     *
[Array.filter](https://developer.mozilla.org/en-US/docs/Web/JavaScript/Reference/Global_Objects/Array/filter)\n     */\n    QueryList.prototype.filter = function (fn) {\n      return this._results.filter(fn);\n    };\n    /**\n     * See\n     *
[Array.find](https://developer.mozilla.org/en-
US/docs/Web/JavaScript/Reference/Global_Objects/Array/find)\n     */\n    QueryList.prototype.find = function
(fn) {\n      return this._results.find(fn);\n    };\n    /**\n     * See\n     *

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[Array.reduce](https://developer.mozilla.org/en-US/docs/Web/JavaScript/Reference/Global_Objects/Array/reduce)\n    */\n    QueryList.prototype.reduce = function (fn, init) {\n        return this._results.reduce(fn, init);\n    }; \n    /**\n     * See\n     *
[Array.forEach](https://developer.mozilla.org/en-US/docs/Web/JavaScript/Reference/Global_Objects/Array/forEach)\n    */\n    QueryList.prototype.forEach = function (fn) {\n        this._results.forEach(fn);\n    }; \n    /**\n     * See\n     *
[Array.some](https://developer.mozilla.org/en-US/docs/Web/JavaScript/Reference/Global_Objects/Array/some)\n    */\n    QueryList.prototype.some = function (fn) {\n        return this._results.some(fn);\n    }; \n    /**\n     * Returns a copy of the internal results list as an Array.\n    */\n    QueryList.prototype.toArray = function () {\n        return this._results.slice();\n    }; \n    QueryList.prototype.toString = function () {\n        return this._results.toString();\n    }; \n    /**\n     * Updates the stored data of the query list, and resets the `dirty` flag to `false`, so that\n     * on change detection, it will not notify of changes to the queries, unless a new change\n     * occurs.\n     * \n     * @param resultsTree The query results to store\n     */\n    QueryList.prototype.reset = function (resultsTree) {\n        this._results = flatten(resultsTree);\n        this.dirty = false;\n        this.length = this._results.length;\n        this.last = this._results[this.length - 1];\n        this.first = this._results[0];\n    }; \n    /**\n     * Triggers a change event by emitting on the `changes` @link EventEmitter).\n    */\n    QueryList.prototype.notifyOnChanges = function () {\n        this.changes.emit(this);\n    }; \n    /** internal */\n    QueryList.prototype.setDirty = function () {\n        this.dirty = true;\n    }; \n    /** internal */\n    QueryList.prototype.destroy = function () {\n        this.changes.complete();\n        this.changes.unsubscribe();\n    }; \n    return QueryList;\n }());\n\n /**\n  * @license\n  * Copyright Google LLC All Rights Reserved.\n  * \n  * Use of this source code is governed by an MIT-style license that can be\n  * found in the LICENSE file at https://angular.io/license\n  */\n // Note: This hack is necessary so we don't erroneously get a circular dependency\n // failure based on types.\n var unusedValueExportToPlacateAjd$7 = 1;\n\n /**\n  * @license\n  * Copyright Google LLC All Rights Reserved.\n  * \n  * Use of this source code is governed by an MIT-style license that can be\n  * found in the LICENSE file at https://angular.io/license\n  */\n // Note: This hack is necessary so we don't erroneously get a circular dependency\n // failure based on types.\n var unusedValueExportToPlacateAjd$8 = 1;\n\n /**\n  * @license\n  * Copyright Google LLC All Rights Reserved.\n  * \n  * Use of this source code is governed by an MIT-style license that can be\n  * found in the LICENSE file at https://angular.io/license\n  */\n var unusedValueToPlacateAjd$2 = unusedValueExportToPlacateAjd$7 + unusedValueExportToPlacateAjd$3 + unusedValueExportToPlacateAjd$4 + unusedValueExportToPlacateAjd$8;\n var LQuery_ = /** @class */ (function () {\n    function LQuery_(queryList) {\n        this.queryList = queryList;\n        this.matches = null;\n    }\n    LQuery_.prototype.clone = function () {\n        return new LQuery_(this.queryList);\n    }; \n    LQuery_.prototype.setDirty = function () {\n        this.queryList.setDirty();\n    }; \n    return LQuery_;\n }());\n var LQueries_ = /** @class */ (function () {\n    function LQueries_(queries) {\n        if (queries === void 0) {\n            queries = [];\n        }\n        this.queries = queries;\n    }\n    LQueries_.prototype.createEmbeddedView = function (tView) {\n        var tQueries = tView.queries;\n        if (tQueries !== null) {\n            var noOfInheritedQueries = tView.contentQueries !== null ? tView.contentQueries[0] : tQueries.length;\n            var viewLQueries = [];\n            // An embedded view has queries propagated from a declaration view at the beginning of the\n            // TQueries collection and up until a first content query declared in the embedded view.\n            Only\n            // propagated LQueries are created at this point (LQuery corresponding to declared content\n            // queries will be instantiated from the content query instructions for each directive).\n            for (var i = 0; i < noOfInheritedQueries; i++) {\n                var tQuery = tQueries.getByIndex(i);\n                var parentLQuery = this.queries[tQuery.indexInDeclarationView];\n                viewLQueries.push(parentLQuery.clone());\n            }\n            return new LQueries_(viewLQueries);\n        }\n        return null;\n    }; \n    LQueries_.prototype.insertView = function (tView) {\n        this.dirtyQueriesWithMatches(tView);\n    }; \n    LQueries_.prototype.detachView = function (tView) {\n        this.dirtyQueriesWithMatches(tView);\n    }; \n    LQueries_.prototype.dirtyQueriesWithMatches = function (tView) {\n        for (var i = 0; i < this.queries.length;\n

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i++) {\n
    if (getTQuery(tView, i).matches !== null) {\n
        this.queries[i].setDirty();\n
    }\n
};\n
return LQueries_;\n
})();\n
var TQueryMetadata_ = /** @class */ (function () {\n
function TQueryMetadata_(predicate, descendants, isStatic, read) {\n
    if (read === void 0) { read = null; }\n
    this.predicate = predicate;\n
    this.descendants = descendants;\n
    this.isStatic = isStatic;\n
    this.read = read;\n
}\n
return TQueryMetadata_;\n
})();\n
var TQueries_ = /** @class */ (function () {\n
function TQueries_(queries) {\n
    if (queries === void 0) { queries = []; }\n
    this.queries = queries;\n
}\n
TQueries_.prototype.elementStart = function (tView, tNode) {\n
    ngDevMode &&\n
assertFirstCreatePass(tView, 'Queries should collect results on the first template pass only');\n
    for (var i = 0; i\n
< this.queries.length; i++) {\n
        this.queries[i].elementStart(tView, tNode);\n
    }\n
};\n
TQueries_.prototype.elementEnd = function (tNode) {\n
    for (var i = 0; i < this.queries.length; i++) {\n
        this.queries[i].elementEnd(tNode);\n
    }\n
};\n
TQueries_.prototype.embeddedTView = function\n
(tNode) {\n
    var queriesForTemplateRef = null;\n
    for (var i = 0; i < this.length; i++) {\n
        var\n
childQueryIndex = queriesForTemplateRef !== null ? queriesForTemplateRef.length : 0;\n
        var\n
tqueryClone = this.getByIndex(i).embeddedTView(tNode, childQueryIndex);\n
        if (tqueryClone) {\n
            tqueryClone.indexInDeclarationView = i;\n
            if (queriesForTemplateRef !== null) {\n
                queriesForTemplateRef.push(tqueryClone);\n
            }\n
            else {\n
                queriesForTemplateRef = [tqueryClone];\n
            }\n
        }\n
        return\n
queriesForTemplateRef !== null ? new TQueries_(queriesForTemplateRef) : null;\n
    }\n
};\n
TQueries_.prototype.template = function (tView, tNode) {\n
    ngDevMode &&\n
assertFirstCreatePass(tView, 'Queries should collect results on the first template pass only');\n
    for (var i = 0; i\n
< this.queries.length; i++) {\n
        this.queries[i].template(tView, tNode);\n
    }\n
};\n
TQueries_.prototype.getByIndex = function (index) {\n
    ngDevMode && assertIndexInRange(this.queries,\n
index);\n
    return this.queries[index];\n
};\n
Object.defineProperty(TQueries_.prototype, "length",\n
{\n
    get: function () {\n
        return this.queries.length;\n
    },\n
    enumerable: false,\n
    configurable: true\n
});\n
TQueries_.prototype.track = function (tquery) {\n
this.queries.push(tquery);\n
};\n
return TQueries_;\n
})();\n
var TQuery_ = /** @class */ (function ()\n
{\n
function TQuery_(metadata, nodeIndex) {\n
    if (nodeIndex === void 0) { nodeIndex = -1; }\n
    this.metadata = metadata;\n
    this.matches = null;\n
    this.indexInDeclarationView = -1;\n
    this.crossesNgTemplate = false;\n
    /**\n
     * A flag indicating if a given query still applies to nodes it is\n
crossing. We use this flag\n
     * (alongside with _declarationNodeIndex) to know when to stop applying\n
content queries to\n
     * elements in a template.\n
     */\n
    this._appliesToNextNode = true;\n
    this._declarationNodeIndex = nodeIndex;\n
}\n
TQuery_.prototype.elementStart = function (tView, tNode)\n
{\n
    if (this.isApplyingToNode(tNode)) {\n
        this.matchTNode(tView, tNode);\n
    }\n
};\n
TQuery_.prototype.elementEnd = function (tNode) {\n
    if (this._declarationNodeIndex === tNode.index) {\n
        this._appliesToNextNode = false;\n
    }\n
};\n
TQuery_.prototype.template = function (tView,\n
tNode) {\n
    this.elementStart(tView, tNode);\n
};\n
TQuery_.prototype.embeddedTView = function\n
(tNode, childQueryIndex) {\n
    if (this.isApplyingToNode(tNode)) {\n
        this.crossesNgTemplate =\n
true;\n
        // A marker indicating a <ng-template> element (a placeholder for query results from\n
//\n
embedded views created based on this <ng-template>).\n
        this.addMatch(-tNode.index,\n
childQueryIndex);\n
        return new TQuery_(this.metadata);\n
    }\n
    return null;\n
};\n
TQuery_.prototype.isApplyingToNode = function (tNode) {\n
    if (this._appliesToNextNode &&\n
this.metadata.descendants === false) {\n
        var declarationNodeIdx = this._declarationNodeIndex;\n
        var parent = tNode.parent;\n
        // Determine if a given TNode is a "direct" child of a node on which a\n
content query was\n
        // declared (only direct children of query's host node can match with the descendants:\n
false\n
        // option). There are 3 main use-case / conditions to consider here:\n
        // - <needs-target><i\n
#target></i></needs-target>: here <i #target> parent node is a query\n
        // host node;\n
        // - <needs-\n
target><ng-template [ngIf]="true"><i #target></i></ng-template></needs-target>:\n
        // here <i #target>\n
parent node is null;\n
        // - <needs-target><ng-container><i #target></i></ng-container></needs-target>:

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here we need\n          // to go past `<ng-container>` to determine <i #target> parent node (but we shouldn't
traverse\n          // up past the query's host node!);\n          while (parent !== null && (parent.type & 8 /*
ElementContainer */) &&\n          parent.index !== declarationNodeIdx) {\n          parent =
parent.parent;\n          }\n          return declarationNodeIdx === (parent !== null ? parent.index : -1);\n
}\n          return this._appliesToNextNode;\n          };\n          TQuery_.prototype.matchTNode = function (tView,
tNode) {\n          var predicate = this.metadata.predicate;\n          if (Array.isArray(predicate)) {\n          for (var
i = 0; i < predicate.length; i++) {\n          var name = predicate[i];\n
this.matchTNodeWithReadOption(tView, tNode, getIdxOfMatchingSelector(tNode, name));\n          // Also
try matching the name to a provider since strings can be used as DI tokens too.\n
this.matchTNodeWithReadOption(tView, tNode, locateDirectiveOrProvider(tNode, tView, name, false, false));\n
}\n          }\n          else {\n          if (predicate === TemplateRef) {\n          if (tNode.type & 4 /*
Container */) {\n          this.matchTNodeWithReadOption(tView, tNode, -1);\n          }\n          }\n
else {\n          this.matchTNodeWithReadOption(tView, tNode, locateDirectiveOrProvider(tNode,
tView, predicate, false, false));\n          }\n          }\n          };\n
TQuery_.prototype.matchTNodeWithReadOption = function (tView, tNode, nodeMatchIdx) {\n          if
(nodeMatchIdx !== null) {\n          var read = this.metadata.read;\n          if (read !== null) {\n          if
(read === ElementRef || read === ViewContainerRef ||\n          read === TemplateRef && (tNode.type & 4
/* Container */) {\n          this.addMatch(tNode.index, -2);\n          }\n          else {\n
var directiveOrProviderIdx = locateDirectiveOrProvider(tNode, tView, read, false, false);\n          if
(directiveOrProviderIdx !== null) {\n          this.addMatch(tNode.index, directiveOrProviderIdx);\n
}\n          }\n          }\n          else {\n          this.addMatch(tNode.index, nodeMatchIdx);\n
}\n          }\n          };\n          TQuery_.prototype.addMatch = function (tNodeIdx, matchIdx) {\n          if
(this.matches === null) {\n          this.matches = [tNodeIdx, matchIdx];\n          }\n          else {\n
this.matches.push(tNodeIdx, matchIdx);\n          }\n          };\n          return TQuery_;\n          }();\n          /**\n          * Iterates
over local names for a given node and returns directive index\n          * (or -1 if a local name points to an element).\n
*\n          * @param tNode static data of a node to check\n          * @param selector selector to match\n          * @returns
directive index, -1 or null if a selector didn't match any of the local names\n          */\n          function
getIdxOfMatchingSelector(tNode, selector) {\n          var localNames = tNode.localNames;\n          if (localNames !==
null) {\n          for (var i = 0; i < localNames.length; i += 2) {\n          if (localNames[i] === selector) {\n
return localNames[i + 1];\n          }\n          }\n          }\n          return null;\n          }\n          function
createResultByTNodeType(tNode, currentView) {\n          if (tNode.type & (3 /* AnyRNode */ | 8 /*
ElementContainer */) {\n          return createElementRef(tNode, currentView);\n          }\n          else if (tNode.type &
4 /* Container */) {\n          return createTemplateRef(tNode, currentView);\n          }\n          return null;\n          }\n
function createResultForNode(IView, tNode, matchingIdx, read) {\n          if (matchingIdx === -1) {\n          // if
read token and / or strategy is not specified, detect it using appropriate tNode type\n          return
createResultByTNodeType(tNode, IView);\n          }\n          else if (matchingIdx === -2) {\n          // read a special
token from a node injector\n          return createSpecialToken(IView, tNode, read);\n          }\n          else {\n          //
read a token\n          return getNodeInjectable(IView, IView[TVIEW], matchingIdx, tNode);\n          }\n          }\n
function createSpecialToken(IView, tNode, read) {\n          if (read === ElementRef) {\n          return
createElementRef(tNode, IView);\n          }\n          else if (read === TemplateRef) {\n          return
createTemplateRef(tNode, IView);\n          }\n          else if (read === ViewContainerRef) {\n          ngDevMode &&
assertTNodeType(tNode, 3 /* AnyRNode */ | 12 /* AnyContainer */);\n          return createContainerRef(tNode,
IView);\n          }\n          else {\n          ngDevMode &&\n          throwError(`Special token to read should be one
of ElementRef, TemplateRef or ViewContainerRef but got ` + stringify(read) + `.`);\n          }\n          }\n          /**\n          * A
helper function that creates query results for a given view. This function is meant to do the\n          * processing once
and only once for a given view instance (a set of results for a given view\n          * doesn't change).\n          */\n          function
materializeViewResults(tView, IView, tQuery, queryIndex) {\n          var IQuery =
IView[QUERIES].queries[queryIndex];\n          if (IQuery.matches === null) {\n          var tViewData =

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tView.data;\n        var tQueryMatches = tQuery.matches;\n        var result = [];\n        for (var i = 0; i <
tQueryMatches.length; i += 2) {\n            var matchedNodeIdx = tQueryMatches[i];\n            if
(matchedNodeIdx < 0) {\n                // we at the <ng-template> marker which might have results in views created
based on this\n                // <ng-template> - those results will be in separate views though, so here we just leave\n
                // null as a placeholder\n                result.push(null);\n            }\n            else {\n
ngDevMode && assertIndexInRange(tViewData, matchedNodeIdx);\n                var tNode =
tViewData[matchedNodeIdx];\n                result.push(createResultForNode(IView, tNode, tQueryMatches[i + 1],
tQuery.metadata.read));\n            }\n            IQuery.matches = result;\n        }\n        return
IQuery.matches;\n    }\n    /**\n     * A helper function that collects (already materialized) query results from a tree
of views,\n     * starting with a provided LView.\n     */\n    function collectQueryResults(tView, IView, queryIndex,
result) {\n        var tQuery = tView.queries.getByIndex(queryIndex);\n        var tQueryMatches = tQuery.matches;\n
        if (tQueryMatches !== null) {\n            var IViewResults = materializeViewResults(tView, IView, tQuery,
queryIndex);\n            for (var i = 0; i < tQueryMatches.length; i += 2) {\n                var tNodeIdx =
tQueryMatches[i];\n                if (tNodeIdx > 0) {\n                    result.push(IViewResults[i / 2]);\n                }\n
                else {\n                    var childQueryIndex = tQueryMatches[i + 1];\n                    var declarationLContainer =
IView[-tNodeIdx];\n                    ngDevMode && assertLContainer(declarationLContainer);\n                    // collect
matches for views inserted in this container\n                    for (var i_1 = CONTAINER_HEADER_OFFSET; i_1 <
declarationLContainer.length; i_1++) {\n                        var embeddedLView = declarationLContainer[i_1];\n
                        if (embeddedLView[DECLARATION_LCONTAINER] === embeddedLView[PARENT]) {\n                            collectQueryResults(embeddedLView[TVIEW], embeddedLView, childQueryIndex, result);\n                        }\n
                        // collect matches for views created from this declaration container and inserted into\n
                        // different containers\n                        if (declarationLContainer[MOVED_VIEWS] !== null) {\n
                            var embeddedLViews = declarationLContainer[MOVED_VIEWS];\n                            for (var i_2 = 0; i_2 <
embeddedLViews.length; i_2++) {\n                                var embeddedLView = embeddedLViews[i_2];\n
                                collectQueryResults(embeddedLView[TVIEW], embeddedLView, childQueryIndex, result);\n                            }\n
                        }\n                    }\n                }\n            }\n            return result;\n        }\n        /**\n     * Refreshes a query by combining
matches from all active views and removing matches from deleted\n     * views.\n     */\n     * @returns `true` if a
query got dirty during change detection or if this is a static query\n     * resolving in creation mode, `false`
otherwise.\n     */\n     * @codeGenApi\n     */\n     function queryRefresh(queryList) {\n        var IView =
getLView();\n        var tView = getTView();\n        var queryIndex = getCurrentQueryIndex();\n
        setCurrentQueryIndex(queryIndex + 1);\n        var tQuery = getTQuery(tView, queryIndex);\n        if
(queryList.dirty && (isCreationMode(IView) === tQuery.metadata.isStatic)) {\n            if (tQuery.matches ===
null) {\n                queryList.reset([]);\n            }\n            else {\n                var result = tQuery.crossesNgTemplate
?\n                collectQueryResults(tView, IView, queryIndex, []) : \n                materializeViewResults(tView,
IView, tQuery, queryIndex);\n                queryList.reset(result);\n                queryList.notifyOnChanges();\n
            }\n            return true;\n        }\n        return false;\n    }\n    /**\n     * Creates new QueryList for a static view
query.\n     */\n     * @param predicate The type for which the query will search\n     * @param descend Whether or
not to descend into children\n     * @param read What to save in the query\n     */\n     * @codeGenApi\n     */\n     function staticViewQuery(predicate, descend, read) {\n        viewQueryInternal(getTView(), getLView(), predicate,
descend, read, true);\n    }\n    /**\n     * Creates new QueryList, stores the reference in LView and returns
QueryList.\n     */\n     * @param predicate The type for which the query will search\n     * @param descend
Whether or not to descend into children\n     * @param read What to save in the query\n     */\n     * @codeGenApi\n     */\n     function viewQuery(predicate, descend, read) {\n        viewQueryInternal(getTView(), getLView(),
predicate, descend, read, false);\n    }\n     function viewQueryInternal(tView, IView, predicate, descend, read,
isStatic) {\n        if (tView.firstCreatePass) {\n            createTQuery(tView, new TQueryMetadata_(predicate,
descend, isStatic, read), -1);\n            if (isStatic) {\n                tView.staticViewQueries = true;\n            }\n        }\n        createLQuery(tView, IView);\n    }\n    /**\n     * Registers a QueryList, associated with a content query, for later
refresh (part of a view\n     * refresh).\n     */\n     * @param directiveIndex Current directive index\n     * @param

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predicate The type for which the query will search\n
 * @param descend Whether or not to descend into children\n
 * @param read What to save in the query\n
 * @returns QueryList<T>\n
 * @codeGenApi\n
 * ^\n
function contentQuery(directiveIndex, predicate, descend, read) {\n
  contentQueryInternal(getTView(),\n
  getLView(), predicate, descend, read, false, getCurrentTNode(), directiveIndex);\n
}\n
/**\n
 * Registers a\n
QueryList, associated with a static content query, for later refresh\n
 * (part of a view refresh).\n
 * @param directiveIndex Current directive index\n
 * @param predicate The type for which the query will search\n
 * @param descend Whether or not to descend into children\n
 * @param read What to save in the query\n
 * @returns QueryList<T>\n
 * @codeGenApi\n
 * ^\n
function staticContentQuery(directiveIndex,\n
predicate, descend, read) {\n
  contentQueryInternal(getTView(), getLView(), predicate, descend, read, true,\n
getCurrentTNode(), directiveIndex);\n
}\n
function contentQueryInternal(tView, IView, predicate, descend,\n
read, isStatic, tNode, directiveIndex) {\n
  if (tView.firstCreatePass) {\n
    createTQuery(tView, new\n
TQueryMetadata_(predicate, descend, isStatic, read), tNode.index);\n
saveContentQueryAndDirectiveIndex(tView, directiveIndex);\n
    if (isStatic) {\n
tView.staticContentQueries = true;\n
    }\n
  }\n
  createLQuery(tView, IView);\n
}\n
/**\n
 * Loads\n
a QueryList corresponding to the current view or content query.\n
 * @codeGenApi\n
 * ^\n
function\n
loadQuery() {\n
  return loadQueryInternal(getLView(), getCurrentQueryIndex());\n
}\n
function\n
loadQueryInternal(IView, queryIndex) {\n
  ngDevMode &&\n
  assertDefined(IView[QUERIES],\n
'LQueries should be defined when trying to load a query');\n
  ngDevMode &&\n
  assertIndexInRange(IView[QUERIES].queries, queryIndex);\n
  return\n
IView[QUERIES].queries[queryIndex].queryList;\n
}\n
function createLQuery(tView, IView) {\n
  var\n
queryList = new QueryList();\n
  storeCleanupWithContext(tView, IView, queryList, queryList.destroy);\n
  if\n
(IView[QUERIES] === null)\n
    IView[QUERIES] = new LQueries_();\n
IView[QUERIES].queries.push(new LQuery_(queryList));\n
}\n
function createTQuery(tView, metadata,\n
nodeIndex) {\n
  if (tView.queries === null)\n
    tView.queries = new TQueries_();\n
tView.queries.track(new TQuery_(metadata, nodeIndex));\n
}\n
function\n
saveContentQueryAndDirectiveIndex(tView, directiveIndex) {\n
  var tViewContentQueries =\n
tView.contentQueries || (tView.contentQueries = []);\n
  var lastSavedDirectiveIndex =\n
tViewContentQueries.length ? tViewContentQueries[tViewContentQueries.length - 1] : -1;\n
  if (directiveIndex\n
!== lastSavedDirectiveIndex) {\n
    tViewContentQueries.push(tView.queries.length - 1, directiveIndex);\n
  }\n
}\n
function getTQuery(tView, index) {\n
  ngDevMode && assertDefined(tView.queries, 'TQueries\n
must be defined to retrieve a TQuery');\n
  return tView.queries.getByIndex(index);\n
}\n
/**\n
 * @license\n
 * Copyright Google LLC All Rights Reserved.\n
 * Use of this source code is governed by an\n
MIT-style license that can be\n
 * found in the LICENSE file at https://angular.io/license\n
 * ^\n
/**\n
 * Retrieves `TemplateRef` instance from `Injector` when a local reference is placed on the\n
 * <ng-template>\n
element.\n
 * @codeGenApi\n
 * ^\n
function templateRefExtractor(tNode, IView) {\n
  return\n
createTemplateRef(tNode, IView);\n
}\n
/**\n
 * Returns the appropriate `ChangeDetectorRef` for a pipe.\n
 * @codeGenApi\n
 * ^\n
function injectPipeChangeDetectorRef(flags) {\n
  if (flags === void 0) {\n
flags\n
= exports.InjectFlags.Default;\n
  }\n
  var value = injectChangeDetectorRef(true);\n
  if (value == null &&\n
!(flags & exports.InjectFlags.Optional)) {\n
    throwProviderNotFoundError('ChangeDetectorRef');\n
  }\n
  else {\n
    return value;\n
  }\n
}\n
/**\n
 * @license\n
 * Copyright Google LLC All Rights\n
Reserved.\n
 * Use of this source code is governed by an MIT-style license that can be\n
 * found in the\n
LICENSE file at https://angular.io/license\n
 * ^\n
/**\n
 * @license\n
 * Copyright Google LLC All Rights\n
Reserved.\n
 * Use of this source code is governed by an MIT-style license that can be\n
 * found in the\n
LICENSE file at https://angular.io/license\n
 * ^\n
var 0$ = function () {\n
  return ({\n
'attribute': attribute,\n
'attributeInterpolate1': attributeInterpolate1,\n
'attributeInterpolate2': attributeInterpolate2,\n
'attributeInterpolate3': attributeInterpolate3,\n
'attributeInterpolate4': attributeInterpolate4,\n
'attributeInterpolate5': attributeInterpolate5,\n
'attributeInterpolate6': attributeInterpolate6,\n
'attributeInterpolate7': attributeInterpolate7,\n
'attributeInterpolate8': attributeInterpolate8,\n

```

'attributeInterpolateV': attributeInterpolateV,\n 'defineComponent': defineComponent,\n 'defineDirective': defineDirective,\n 'defineInjectable': defineInjectable,\n 'defineInjector': defineInjector,\n 'defineNgModule': defineNgModule,\n 'definePipe': definePipe,\n 'directiveInject': directiveInject,\n 'getFactoryOf': getFactoryOf,\n 'getInheritedFactory': getInheritedFactory,\n 'inject': inject,\n 'injectAttribute': injectAttribute,\n 'invalidFactory': invalidFactory,\n 'invalidFactoryDep': invalidFactoryDep,\n 'injectPipeChangeDetectorRef': injectPipeChangeDetectorRef,\n 'templateRefExtractor': templateRefExtractor,\n 'NgOnChangesFeature': NgOnChangesFeature,\n 'ProvidersFeature': ProvidersFeature,\n 'CopyDefinitionFeature': CopyDefinitionFeature,\n 'InheritDefinitionFeature': InheritDefinitionFeature,\n 'nextContext': nextContext,\n 'namespaceHTML': namespaceHTML,\n 'namespaceMathML': namespaceMathML,\n 'namespaceSVG': namespaceSVG,\n 'enableBindings': enableBindings,\n 'disableBindings': disableBindings,\n 'elementStart': elementStart,\n 'elementEnd': elementEnd,\n 'element': element,\n 'elementContainerStart': elementContainerStart,\n 'elementContainerEnd': elementContainerEnd,\n 'elementContainer': elementContainer,\n 'pureFunction0': pureFunction0,\n 'pureFunction1': pureFunction1,\n 'pureFunction2': pureFunction2,\n 'pureFunction3': pureFunction3,\n 'pureFunction4': pureFunction4,\n 'pureFunction5': pureFunction5,\n 'pureFunction6': pureFunction6,\n 'pureFunction7': pureFunction7,\n 'pureFunction8': pureFunction8,\n 'pureFunctionV': pureFunctionV,\n 'getCurrentView': getCurrentView,\n 'restoreView': restoreView,\n 'listener': listener,\n 'projection': projection,\n 'syntheticHostProperty': syntheticHostProperty,\n 'syntheticHostListener': syntheticHostListener,\n 'pipeBind1': pipeBind1,\n 'pipeBind2': pipeBind2,\n 'pipeBind3': pipeBind3,\n 'pipeBind4': pipeBind4,\n 'pipeBindV': pipeBindV,\n 'projectionDef': projectionDef,\n 'hostProperty': hostProperty,\n 'property': property,\n 'propertyInterpolate': propertyInterpolate,\n 'propertyInterpolate1': propertyInterpolate1,\n 'propertyInterpolate2': propertyInterpolate2,\n 'propertyInterpolate3': propertyInterpolate3,\n 'propertyInterpolate4': propertyInterpolate4,\n 'propertyInterpolate5': propertyInterpolate5,\n 'propertyInterpolate6': propertyInterpolate6,\n 'propertyInterpolate7': propertyInterpolate7,\n 'propertyInterpolate8': propertyInterpolate8,\n 'propertyInterpolateV': propertyInterpolateV,\n 'pipe': pipe,\n 'queryRefresh': queryRefresh,\n 'viewQuery': viewQuery,\n 'staticViewQuery': staticViewQuery,\n 'staticContentQuery': staticContentQuery,\n 'loadQuery': loadQuery,\n 'contentQuery': contentQuery,\n 'reference': reference,\n 'classMap': classMap,\n 'classMapInterpolate1': classMapInterpolate1,\n 'classMapInterpolate2': classMapInterpolate2,\n 'classMapInterpolate3': classMapInterpolate3,\n 'classMapInterpolate4': classMapInterpolate4,\n 'classMapInterpolate5': classMapInterpolate5,\n 'classMapInterpolate6': classMapInterpolate6,\n 'classMapInterpolate7': classMapInterpolate7,\n 'classMapInterpolate8': classMapInterpolate8,\n 'classMapInterpolateV': classMapInterpolateV,\n 'styleMap': styleMap,\n 'styleMapInterpolate1': styleMapInterpolate1,\n 'styleMapInterpolate2': styleMapInterpolate2,\n 'styleMapInterpolate3': styleMapInterpolate3,\n 'styleMapInterpolate4': styleMapInterpolate4,\n 'styleMapInterpolate5': styleMapInterpolate5,\n 'styleMapInterpolate6': styleMapInterpolate6,\n 'styleMapInterpolate7': styleMapInterpolate7,\n 'styleMapInterpolate8': styleMapInterpolate8,\n 'styleMapInterpolateV': styleMapInterpolateV,\n 'styleProp': styleProp,\n 'stylePropInterpolate1': stylePropInterpolate1,\n 'stylePropInterpolate2': stylePropInterpolate2,\n 'stylePropInterpolate3': stylePropInterpolate3,\n 'stylePropInterpolate4': stylePropInterpolate4,\n 'stylePropInterpolate5': stylePropInterpolate5,\n 'stylePropInterpolate6': stylePropInterpolate6,\n 'stylePropInterpolate7': stylePropInterpolate7,\n 'stylePropInterpolate8': stylePropInterpolate8,\n 'stylePropInterpolateV': stylePropInterpolateV,\n 'classProp': classProp,\n 'advance': advance,\n 'template': template,\n 'text': text,\n 'textInterpolate': textInterpolate,\n 'textInterpolate1': textInterpolate1,\n 'textInterpolate2': textInterpolate2,\n 'textInterpolate3': textInterpolate3,\n 'textInterpolate4': textInterpolate4,\n 'textInterpolate5': textInterpolate5,\n 'textInterpolate6': textInterpolate6,\n 'textInterpolate7': textInterpolate7,\n 'textInterpolate8': textInterpolate8,\n 'textInterpolateV': textInterpolateV,\n 'i18n': i18n,\n 'i18nAttributes': i18nAttributes,\n 'i18nExp':

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i18nExp,\n      'i18nStart': i18nStart,\n      'i18nEnd': i18nEnd,\n      'i18nApply': i18nApply,\n      'i18nPostprocess': i18nPostprocess,\n      'resolveWindow': resolveWindow,\n      'resolveDocument':\n      resolveDocument,\n      'resolveBody': resolveBody,\n      'setComponentScope': setComponentScope,\n      'setNgModuleScope': setNgModuleScope,\n      'sanitizeHtml': sanitizeHtml,\n      'sanitizeStyle': sanitizeStyle,\n      'sanitizeResourceUrl': sanitizeResourceUrl,\n      'sanitizeScript': sanitizeScript,\n      'sanitizeUrl': sanitizeUrl,\n      'sanitizeUrlOrResourceUrl': sanitizeUrlOrResourceUrl,\n      'trustConstantHtml': trustConstantHtml,\n      'trustConstantScript': trustConstantScript,\n      'trustConstantResourceUrl': trustConstantResourceUrl,\n    });\n  });\n  /**\n   * A mapping of the @angular/core API surface used in generated expressions to the actual symbols.\n   */\n  *\n  * This should be kept up to date with the public exports of @angular/core.\n  */\n  var angularCoreEnv =\n  (0$c());\n  var jitOptions = null;\n  function setJitOptions(options) {\n    if (jitOptions !== null) {\n      if\n      (options.defaultEncapsulation !== jitOptions.defaultEncapsulation) {\n        ngDevMode &&\n        console.error('Provided value for `defaultEncapsulation` can not be changed once it has been set.);\n      }\n      return;\n    }\n    if (options.preserveWhitespaces !== jitOptions.preserveWhitespaces) {\n      ngDevMode &&\n      console.error('Provided value for `preserveWhitespaces` can not be changed once it\n      has been set.);\n      return;\n    }\n    jitOptions = options;\n  }\n  function getJitOptions()\n  {\n    return jitOptions;\n  }\n  function resetJitOptions() {\n    jitOptions = null;\n  }\n  var\n  EMPTY_ARRAY$5 = [];\n  var moduleQueue = [];\n  /**\n   * Enqueues moduleDef to be checked later to see\n   if scope can be set on its\n   * component declarations.\n   */\n  function\n  enqueueModuleForDelayedScoping(moduleType, ngModule) {\n    moduleQueue.push({ moduleType:\n    moduleType, ngModule: ngModule });\n  }\n  var flushingModuleQueue = false;\n  /**\n   * Loops over\n  queued module definitions, if a given module definition has all of its\n   * declarations resolved, it dequeues that\n  module definition and sets the scope on\n   * its declarations.\n   */\n  function\n  flushModuleScopingQueueAsMuchAsPossible() {\n    if (!flushingModuleQueue) {\n      flushingModuleQueue = true;\n      try {\n        for (var i = moduleQueue.length - 1; i >= 0; i--) {\n          var _a = moduleQueue[i], moduleType = _a.moduleType, ngModule = _a.ngModule;\n          if\n          (ngModule.declarations && ngModule.declarations.every(isResolvedDeclaration)) {\n            // dequeue\n            moduleQueue.splice(i, 1);\n            setScopeOnDeclaredComponents(moduleType, ngModule);\n          }\n        }\n        finally {\n          flushingModuleQueue = false;\n        }\n      }\n    }\n  }\n  /**\n   * Returns truthy if a declaration has resolved. If the declaration happens to be\n   * an array of\n  declarations, it will recurse to check each declaration in that array\n   * (which may also be arrays).\n   */\n  function isResolvedDeclaration(declaration) {\n    if (Array.isArray(declaration)) {\n      return\n      declaration.every(isResolvedDeclaration);\n    }\n    return !!resolveForwardRef(declaration);\n  }\n  /**\n   *\n  * Compiles a module in JIT mode.\n   */\n  * This function automatically gets called when a class has a\n  `@NgModule` decorator.\n   */\n  function compileNgModule(moduleType, ngModule) {\n    if (ngModule\n    === void 0) {\n      ngModule = {};\n    }\n    compileNgModuleDefs(moduleType, ngModule);\n    // Because we don't\n    know if all declarations have resolved yet at the moment the\n    // NgModule decorator is executing, we're\n    enqueueing the setting of module scope\n    // on its declarations to be run at a later time when all declarations for\n    the module,\n    // including forward refs, have resolved.\n    enqueueModuleForDelayedScoping(moduleType,\n    ngModule);\n  }\n  /**\n   * Compiles and adds the `mod` and `inj` properties to the module class.\n   */\n  *\n  It's possible to compile a module via this API which will allow duplicate declarations in its\n   * root.\n   */\n  function compileNgModuleDefs(moduleType, ngModule, allowDuplicateDeclarationsInRoot) {\n    if\n    (allowDuplicateDeclarationsInRoot === void 0) {\n      allowDuplicateDeclarationsInRoot = false;\n    }\n    ngDevMode\n    && assertDefined(moduleType, 'Required value moduleType');\n    ngDevMode && assertDefined(ngModule,\n    'Required value ngModule');\n    var declarations = flatten(ngModule.declarations || EMPTY_ARRAY$5);\n    var ngModuleDef = null;\n    Object.defineProperty(moduleType, NG_MOD_DEF, {\n      configurable:\n      true,\n      get: function () {\n        if (ngModuleDef === null) {\n          if (ngDevMode &&\n          ngModule.imports && ngModule.imports.indexOf(moduleType) > -1) {\n            // We need to assert this\n            // immediately, because allowing it to continue will cause it to\n            // go into an infinite loop before we've

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reached the point where we throw all the errors.\n                throw new Error("\n" +
stringifyForError(moduleType) + "\n module can't import itself");\n                }\n                ngModuleDef =
getCompilerFacade().compileNgModule(angularCoreEnv, "\nng://\n" + moduleType.name + "\n^\n\u0275mod.js", {\n
    type: moduleType,\n                bootstrap: flatten(ngModule.bootstrap ||
EMPTY_ARRAY$5).map(resolveForwardRef),\n                declarations:
declarations.map(resolveForwardRef),\n                imports: flatten(ngModule.imports || EMPTY_ARRAY$5)\n
    .map(resolveForwardRef)\n                .map(expandModuleWithProviders),\n
exports: flatten(ngModule.exports || EMPTY_ARRAY$5)\n                .map(resolveForwardRef)\n
    .map(expandModuleWithProviders),\n                schemas: ngModule.schemas ?
flatten(ngModule.schemas) : null,\n                id: ngModule.id || null,\n                });\n                // Set
`schemas` on ngModuleDef to an empty array in JIT mode to indicate that runtime\n                // should verify that
there are no unknown elements in a template. In AOT mode, that check\n                // happens at compile time and
`schemas` information is not present on Component and Module\n                // defs after compilation (so the check
doesn't happen the second time at runtime).\n                if (!ngModuleDef.schemas) {\n
ngModuleDef.schemas = [];\n                }\n                }\n                return ngModuleDef;\n                });\n
var ngInjectorDef = null;\n    Object.defineProperty(moduleType, NG_INJ_DEF, {\n                get: function () {\n
    if (ngInjectorDef === null) {\n                ngDevMode &&\n
verifySemanticsOfNgModuleDef(moduleType, allowDuplicateDeclarationsInRoot);\n                var meta = {\n
    name: moduleType.name,\n                type: moduleType,\n                deps:
reflectDependencies(moduleType),\n                providers: ngModule.providers || EMPTY_ARRAY$5,\n
    imports: [\n                (ngModule.imports || EMPTY_ARRAY$5).map(resolveForwardRef),\n
    (ngModule.exports || EMPTY_ARRAY$5).map(resolveForwardRef),\n                ],\n                };\n
    ngInjectorDef = getCompilerFacade().compileInjector(angularCoreEnv, "\nng://\n" + moduleType.name +
"\n^\n\u0275inj.js", meta);\n                }\n                return ngInjectorDef;\n                },\n                // Make the property
configurable in dev mode to allow overriding in tests\n                configurable: !!ngDevMode,\n                });\n                }\n
function verifySemanticsOfNgModuleDef(moduleType, allowDuplicateDeclarationsInRoot, importingModule) {\n
    if (verifiedNgModule.get(moduleType))\n                return;\n                verifiedNgModule.set(moduleType, true);\n
moduleType = resolveForwardRef(moduleType);\n                var ngModuleDef;\n                if (importingModule) {\n
ngModuleDef = getNgModuleDef(moduleType);\n                if (!ngModuleDef) {\n                throw new
Error("\nUnexpected value \n" + moduleType.name + "\n imported by the module \n" + importingModule.name + "\n".
Please add an @NgModule annotation.\n");\n                }\n                }\n                else {\n                ngModuleDef =
getNgModuleDef(moduleType, true);\n                }\n                var errors = [];\n                var declarations =
maybeUnwrapFn(ngModuleDef.declarations);\n                var imports = maybeUnwrapFn(ngModuleDef.imports);\n
flatten(imports).map(unwrapModuleWithProvidersImports).forEach(function (mod) {\n
verifySemanticsOfNgModuleImport(mod, moduleType);\n                verifySemanticsOfNgModuleDef(mod, false,
moduleType);\n                });\n                var exports = maybeUnwrapFn(ngModuleDef.exports);\n
declarations.forEach(verifyDeclarationsHaveDefinitions);\n
declarations.forEach(verifyDirectivesHaveSelector);\n                var combinedDeclarations =
__spread(declarations.map(resolveForwardRef),
flatten(imports.map(computeCombinedExports)).map(resolveForwardRef));\n
exports.forEach(verifyExportsAreDeclaredOrReExported);\n                declarations.forEach(function (decl) { return
verifyDeclarationIsUnique(decl, allowDuplicateDeclarationsInRoot); });\n
declarations.forEach(verifyComponentEntryComponentsIsPartOfNgModule);\n                var ngModule =
getAnnotation(moduleType, 'NgModule');\n                if (ngModule) {\n                ngModule.imports &&\n
flatten(ngModule.imports).map(unwrapModuleWithProvidersImports).forEach(function (mod) {\n
verifySemanticsOfNgModuleImport(mod, moduleType);\n                verifySemanticsOfNgModuleDef(mod, false,
moduleType);\n                });\n                ngModule.bootstrap && deepForEach(ngModule.bootstrap,
verifyCorrectBootstrapType);\n                ngModule.bootstrap && deepForEach(ngModule.bootstrap,

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verifyComponentIsPartOfNgModule);\n      NgModule.entryComponents &&\n
deepForEach(NgModule.entryComponents, verifyComponentIsPartOfNgModule);\n    }\n    // Throw Error if
any errors were detected.\n    if (errors.length) {\n      throw new Error(errors.join('\n'));\n    }\n
////////////////////////////////////////\n    function
verifyDeclarationsHaveDefinitions(type) {\n      type = resolveForwardRef(type);\n      var def =
getComponentDef(type) || getDirectiveDef(type) || getPipeDef(type);\n      if (!def) {\n
errors.push("Unexpected value \"" + stringifyForError(type) + "\" declared by the module \"" +
stringifyForError(moduleType) + "\". Please add a @Pipe/@Directive/@Component annotation.");\n      }\n
}\n    function verifyDirectivesHaveSelector(type) {\n      type = resolveForwardRef(type);\n      var def =
getDirectiveDef(type);\n      if (!getComponentDef(type) && def && def.selectors.length == 0) {\n
errors.push("Directive \"" + stringifyForError(type) + "\" has no selector, please add it!");\n      }\n    }\n
function verifyExportsAreDeclaredOrReExported(type) {\n      type = resolveForwardRef(type);\n      var
kind = getComponentDef(type) && 'component' || getDirectiveDef(type) && 'directive' ||\n
getPipeDef(type) && 'pipe';\n      if (kind) {\n        // only checked if we are declared as Component,
Directive, or Pipe\n        // Modules don't need to be declared or imported.\n        if
(combinedDeclarations.lastIndexOf(type) === -1) {\n          // We are exporting something which we don't
explicitly declare or import.\n          errors.push("Can't export \"" + kind + "\" + \"" + stringifyForError(type) + "\"
from \"" + stringifyForError(moduleType) + "\" as it was neither declared nor imported!");\n        }\n      }\n
}\n    function verifyDeclarationIsUnique(type, suppressErrors) {\n      type = resolveForwardRef(type);\n
      var existingModule = ownerNgModule.get(type);\n      if (existingModule && existingModule !==
moduleType) {\n        if (!suppressErrors) {\n          var modules = [existingModule,
moduleType].map(stringifyForError).sort();\n          errors.push("Type \"" + stringifyForError(type) + "\" is part
of the declarations of 2 modules: \"" + modules[0] + "\" and \"" + modules[1] + "\"! "+\n          ("Please
consider moving \"" + stringifyForError(type) + "\" to a higher module that imports \"" + modules[0] + "\" and \"" +
modules[1] + "\". ") +\n          ("You can also create a new NgModule that exports and includes \"" +
stringifyForError(type) + "\" then import that NgModule in \"" + modules[0] + "\" and \"" + modules[1] + "\".");\n
        }\n      }\n    } else {\n      // Mark type as having owner.\n      ownerNgModule.set(type,
moduleType);\n    }\n  }\n  function verifyComponentIsPartOfNgModule(type) {\n      type =
resolveForwardRef(type);\n      var existingModule = ownerNgModule.get(type);\n      if (!existingModule)
{\n        errors.push("Component \"" + stringifyForError(type) + "\" is not part of any NgModule or the module
has not been imported into your module.");\n      }\n    }\n  }\n  function verifyCorrectBootstrapType(type) {\n
      type = resolveForwardRef(type);\n      if (!getComponentDef(type)) {\n
errors.push(stringifyForError(type) + "\" cannot be used as an entry component.");\n      }\n    }\n  }\n  function
verifyComponentEntryComponentsIsPartOfNgModule(type) {\n      type = resolveForwardRef(type);\n      if
(getComponentDef(type)) {\n        // We know we are component\n        var component =
getAnnotation(type, 'Component');\n        if (component && component.entryComponents) {\n
deepForEach(component.entryComponents, verifyComponentIsPartOfNgModule);\n        }\n      }\n    }\n  }\n  function verifySemanticsOfNgModuleImport(type, importingModule) {\n      type =
resolveForwardRef(type);\n      if (getComponentDef(type) || getDirectiveDef(type)) {\n        throw new
Error("Unexpected directive \"" + type.name + "\" imported by the module \"" + importingModule.name + "\". Please
add an @NgModule annotation.");\n      }\n      if (getPipeDef(type)) {\n        throw new
Error("Unexpected pipe \"" + type.name + "\" imported by the module \"" + importingModule.name + "\". Please add
an @NgModule annotation.");\n      }\n    }\n  }\n  function
unwrapModuleWithProvidersImports(typeOrWithProviders) {\n      typeOrWithProviders =
resolveForwardRef(typeOrWithProviders);\n      return typeOrWithProviders.ngModule || typeOrWithProviders;\n
}\n  }\n  function getAnnotation(type, name) {\n      var annotation = null;\n      collect(type.__annotations__);
collect(type.decorators);\n      return annotation;\n    }\n    function collect(annotations) {\n      if (annotations) {\n
annotations.forEach(readAnnotation);\n      }\n    }\n    function readAnnotation(decorator) {\n

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if (!annotation) {\n      var proto = Object.getPrototypeOf(decorator);\n      if (proto.ngMetadataName == name) {\n        annotation = decorator;\n      }\n      else if (decorator.type) {\n        var proto_1 = Object.getPrototypeOf(decorator.type);\n        if (proto_1.ngMetadataName == name) {\n          annotation = decorator.args[0];\n        }\n      }\n    }\n  }\n  /**\n   * Keep track of compiled components. This is needed because in tests we often want to compile the\n   * same component with more than one NgModule. This would cause an error unless we reset which\n   * NgModule the component belongs to. We keep the list of compiled components here so that the\n   * TestBed can reset it later.\n   */\n  var ownerNgModule = new Map();\n  var verifiedNgModule = new Map();\n  function resetCompiledComponents()\n  {\n    ownerNgModule = new Map();\n    verifiedNgModule = new Map();\n    moduleQueue.length = 0;\n  }\n  /**\n   * Computes the combined declarations of explicit declarations, as well as declarations inherited by\n   * traversing the exports of imported modules.\n   * @param type\n   */\n  function computeCombinedExports(type) {\n    type = resolveForwardRef(type);\n    var ngModuleDef = getNgModuleDef(type, true);\n    return __spread(flatten(maybeUnwrapFn(ngModuleDef.exports).map(function (type) {\n      var ngModuleDef = getNgModuleDef(type);\n      if (ngModuleDef) {\n        verifySemanticsOfNgModuleDef(type, false);\n        return computeCombinedExports(type);\n      }\n    } else {\n      return type;\n    } }));\n  }\n  /**\n   * Some declared components may be compiled asynchronously, and thus may not have their\n   * cmp set yet. If this is the case, then a reference to the module is written into\n   * the `ngSelectorScope` property of the declared type.\n   */\n  function setScopeOnDeclaredComponents(moduleType, ngModule) {\n    var declarations = flatten(ngModule.declarations || EMPTY_ARRAY$5);\n    var transitiveScopes = transitiveScopesFor(moduleType);\n    declarations.forEach(function (declaration) {\n      if (declaration.hasOwnProperty(NG_COMP_DEF)) {\n        // A `cmp` field exists - go ahead and patch the component directly.\n        var component = declaration;\n        var componentDef = getComponentDef(component);\n        patchComponentDefWithScope(componentDef, transitiveScopes);\n      }\n      else if (!declaration.hasOwnProperty(NG_DIR_DEF) && !declaration.hasOwnProperty(NG_PIPE_DEF)) {\n        // Set `ngSelectorScope` for future reference when the component compilation finishes.\n        declaration.ngSelectorScope = moduleType;\n      }\n    });\n  }\n  /**\n   * Patch the definition of a component with directives and pipes from the compilation scope of\n   * a given module.\n   */\n  function patchComponentDefWithScope(componentDef, transitiveScopes) {\n    componentDef.directiveDefs = function () {\n      return Array.from(transitiveScopes.compilation.directives).map(function (dir) {\n        return dir.hasOwnProperty(NG_COMP_DEF) ? getComponentDef(dir) : getDirectiveDef(dir);\n      });\n    }.filter(function (def) {\n      return !!def;\n    });\n    componentDef.pipeDefs = function () {\n      return Array.from(transitiveScopes.compilation.pipes).map(function (pipe) {\n        return getPipeDef(pipe);\n      });\n    }; \n    componentDef.schemas = transitiveScopes.schemas;\n    // Since we avoid Components/Directives/Pipes recompiling in case there are no overrides, we\n    // may face a problem where previously compiled defs available to a given Component/Directive\n    // are cached in TView and may become stale (in case any of these defs gets recompiled). In\n    // order to avoid this problem, we force fresh TView to be created.\n    componentDef.tView = null;\n  }\n  /**\n   * Compute the pair of transitive scopes (compilation scope and exported scope) for a given module.\n   * This operation is memoized and the result is cached on the module's definition. This function can\n   * be called on modules with components that have not fully compiled yet, but the result should not\n   * be used until they have.\n   * @param moduleType module that transitive scope should be calculated for.\n   */\n  function transitiveScopesFor(moduleType) {\n    if (!isNgModule(moduleType))\n      throw new Error(moduleType.name + \" does not have a module def (\\u0275mod property)\");\n    var def = getNgModuleDef(moduleType);\n    if (def.transitiveCompileScopes !== null) {\n      return def.transitiveCompileScopes;\n    }\n    var scopes = {\n      schemas: def.schemas || null,\n      compilation: {\n        directives: new Set(),\n        pipes: new Set(),\n      },\n      exported: {\n        directives: new Set(),\n        pipes: new Set(),\n      },\n    };\n    maybeUnwrapFn(def.imports).forEach(function (imported) {\n      var importedType =

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imported;\n      if (!isNgModule(importedType)) {\n          throw new Error("\u0027Importing \u0027 +
importedType.name + \u0027 which does not have a \u0027mod property\u0027);\n      }\n      // When this module
imports another, the imported module's exported directives and pipes are\n      // added to the compilation scope
of this module.\n      var importedScope = transitiveScopesFor(importedType);\n
importedScope.exported.directives.forEach(function (entry) { return scopes.compilation.directives.add(entry); });\n
importedScope.exported.pipes.forEach(function (entry) { return scopes.compilation.pipes.add(entry); });\n
});\n  maybeUnwrapFn(def.declarations).forEach(function (declared) {\n      var declaredWithDefs =
declared;\n      if (getPipeDef(declaredWithDefs)) {\n          scopes.compilation.pipes.add(declared);\n
}\n      else {\n          // Either declared has a cmp or dir, or it's a component which hasn't\n          // had its
template compiled yet. In either case, it gets added to the compilation's\n          // directives.\n
scopes.compilation.directives.add(declared);\n      }\n  });\n
maybeUnwrapFn(def.exports).forEach(function (exported) {\n      var exportedType = exported;\n      //
Either the type is a module, a pipe, or a component/directive (which may not have a\n      // cmp as it might be
compiled asynchronously).\n      if (isNgModule(exportedType)) {\n          // When this module exports
another, the exported module's exported directives and pipes are\n          // added to both the compilation and
exported scopes of this module.\n          var exportedScope = transitiveScopesFor(exportedType);\n
exportedScope.exported.directives.forEach(function (entry) {\n
scopes.compilation.directives.add(entry);\n          scopes.exported.directives.add(entry);\n      });\n
exportedScope.exported.pipes.forEach(function (entry) {\n          scopes.compilation.pipes.add(entry);\n
scopes.exported.pipes.add(entry);\n      });\n      }\n      else if (getPipeDef(exportedType)) {\n
scopes.exported.pipes.add(exportedType);\n      }\n      else {\n
scopes.exported.directives.add(exportedType);\n      });\n  });\n  def.transitiveCompileScopes = scopes;\n
return scopes;\n  }\n  function expandModuleWithProviders(value) {\n      if (isModuleWithProviders(value))\n  {\n      return value.ngModule;\n  }\n  return value;\n  }\n  function isModuleWithProviders(value) {\n
return value.ngModule !== undefined;\n  }\n  function isNgModule(value) {\n      return
!!getNgModuleDef(value);\n  }\n  /**\n   * @license\n   * Copyright Google LLC All Rights Reserved.\n
*\n   * Use of this source code is governed by an MIT-style license that can be\n   * found in the LICENSE file at
https://angular.io/license\n   *\n   * Keep track of the compilation depth to avoid reentrancy issues during
JIT compilation. This\n   * matters in the following scenario:\n   *\n   * Consider a component 'A' that extends
component 'B', both declared in module 'M'. During\n   * the compilation of 'A' the definition of 'B' is requested to
capture the inheritance chain,\n   * potentially triggering compilation of 'B'. If this nested compilation were to
trigger\n   * `flushModuleScopingQueueAsMuchAsPossible` it may happen that module 'M' is still pending in
the\n   * queue, resulting in 'A' and 'B' to be patched with the NgModule scope. As the compilation of\n   * 'A' is
still in progress, this would introduce a circular dependency on its compilation. To avoid\n   * this issue, the
module scope queue is only flushed for compilations at the depth 0, to ensure\n   * all compilations have finished.\n
*\n   * var compilationDepth = 0;\n   */\n   * Compile an Angular component according to its decorator
metadata, and patch the resulting\n   * component def (cmp) onto the component type.\n   *\n   * Compilation
may be asynchronous (due to the need to resolve URLs for the component template or\n   * other resources, for
example). In the event that compilation is not immediate, `compileComponent`\n   * will enqueue resource
resolution into a global queue and will fail to return the `cmp`\n   * until the global queue has been resolved with a
call to `resolveComponentResources`.\n   *\n   * function compileComponent(type, metadata) {\n      // Initialize
ngDevMode. This must be the first statement in compileComponent.\n      // See the `initNgDevMode` docstring
for more information.\n      (typeof ngDevMode === 'undefined' || ngDevMode) && initNgDevMode();\n      var
ngComponentDef = null;\n      // Metadata may have resources which need to be resolved.\n
maybeQueueResolutionOfComponentResources(type, metadata);\n      // Note that we're using the same function as
`Directive`, because that's only subset of metadata\n      // that we need to create the ngFactoryDef. We're avoiding
using the component metadata\n      // because we'd have to resolve the asynchronous templates.\n
addDirectiveFactoryDef(type, metadata);\n      Object.defineProperty(type, NG_COMP_DEF, {\n          get:

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function () {
  if (ngComponentDef === null) {
    var compiler = getCompilerFacade();
    if (componentNeedsResolution(metadata)) {
      var error = ["Component " + type.name + " is not resolved:"];
      if (metadata.templateUrl) {
        error.push(" - templateUrl: " + metadata.templateUrl);
      }
      if (metadata.styleUrls && metadata.styleUrls.length) {
        error.push(" - styleUrls: " + JSON.stringify(metadata.styleUrls));
      }
      error.push("Did you run and wait for 'resolveComponentResources()'?");
      throw new Error(error.join("\n"));
    }
    // This const was called `jitOptions` previously but had to be renamed to `options` because of a bug with Terser that caused optimized JIT builds to throw a `ReferenceError`.
    // This bug was investigated in https://github.com/angular/angular-cli/issues/17264.
    // We should not rename it back until https://github.com/terser/terser/issues/615 is fixed.
    var options = getJitOptions();
    var preserveWhitespaces = metadata.preserveWhitespaces;
    if (preserveWhitespaces === undefined) {
      if (options !== null && options.preserveWhitespaces !== undefined) {
        preserveWhitespaces = options.preserveWhitespaces;
      }
      else {
        preserveWhitespaces = false;
      }
    }
    var encapsulation = metadata.encapsulation;
    if (encapsulation === undefined) {
      if (options !== null && options.defaultEncapsulation !== undefined) {
        encapsulation = options.defaultEncapsulation;
      }
      else {
        encapsulation = exports.ViewEncapsulation.Emulated;
      }
    }
    var templateUrl = metadata.templateUrl || "ng://" + type.name + "/template.html";
    var meta = Object.assign(Object.assign({}, directiveMetadata(type, metadata)), { typeSourceSpan: compiler.createParseSourceSpan('Component', type.name, templateUrl), template: metadata.template || "", preserveWhitespaces: preserveWhitespaces, styles: metadata.styles || EMPTY_ARRAY, animations: metadata.animations, directives: [], changeDetection: metadata.changeDetection, pipes: new Map(), encapsulation: encapsulation, interpolation: metadata.interpolation, viewProviders: metadata.viewProviders || null });
    compilationDepth++;
    try {
      if (meta.usesInheritance) {
        addDirectiveDefToUndecoratedParents(type);
      }
      ngComponentDef = compiler.compileComponent(angularCoreEnv, templateUrl, meta);
    } finally {
      // Ensure that the compilation depth is decremented even when the compilation failed.
      compilationDepth--;
      if (compilationDepth === 0) {
        // When NgModule decorator executed, we enqueued the module definition such that it would only dequeue and add itself as module scope to all of its declarations, but only if all of its declarations had resolved. This call runs the check to see if any modules that are in the queue can be dequeued and add scope to their declarations.
        flushModuleScopingQueueAsMuchAsPossible();
        // If component compilation is async, then the @NgModule annotation which declares the component may execute and set an ngSelectorScope property on the component type. This allows the component to patch itself with directiveDefs from the module after it finishes compiling.
        if (hasSelectorScope(type)) {
          var scopes = transitiveScopesFor(type.ngSelectorScope);
          patchComponentDefWithScope(ngComponentDef, scopes);
        }
        return ngComponentDef;
      }
      // Make the property configurable in dev mode to allow overriding in tests
      configurable: !!ngDevMode,
    });
    function hasSelectorScope(component) {
      return component.ngSelectorScope !== undefined;
    }
    /**
     * Compile an Angular directive according to its decorator metadata, and patch the resulting directive def onto the component type.
     * In the event that compilation is not immediate, `compileDirective` will return a `Promise` which will resolve when compilation completes and the directive becomes usable.
     */
    function compileDirective(type, directive) {
      var ngDirectiveDef = null;
      addDirectiveFactoryDef(type, directive || {});
      Object.defineProperty(type, NG_DIR_DEF, {
        get: function () {
          if (ngDirectiveDef === null) {
            // `directive` can be null in the case of abstract directives as a base class that use `@Directive()` with no selector.
          }
        }
      });
    }
  }
}

```

```

In that case, pass empty object to the      // `directiveMetadata` function instead of null.\n      var
meta = getDirectiveMetadata(type, directive || {});\n      ngDirectiveDef =\ngetCompilerFacade().compileDirective(angularCoreEnv, meta.sourceMapUrl, meta.metadata);\n      }\n      return ngDirectiveDef;\n      },\n      // Make the property configurable in dev mode to allow overriding in
tests\n      configurable: !!ngDevMode,\n      });\n      }\n      function getDirectiveMetadata(type, metadata) {\n
var name = type && type.name;\n      var sourceMapUrl = \"ng://\" + name + \"\\u0275dir.js\";\n      var compiler
= getCompilerFacade();\n      var facade = directiveMetadata(type, metadata);\n      facade.typeSourceSpan =
compiler.createParseSourceSpan('Directive', name, sourceMapUrl);\n      if (facade.usesInheritance) {\n
addDirectiveDefToUndecoratedParents(type);\n      }\n      return { metadata: facade, sourceMapUrl:
sourceMapUrl };\n      }\n      function addDirectiveFactoryDef(type, metadata) {\n      var ngFactoryDef = null;\n
Object.defineProperty(type, NG_FACTORY_DEF, {\n      get: function () {\n      if (ngFactoryDef ===
null) {\n      var meta = getDirectiveMetadata(type, metadata);\n      var compiler =
getCompilerFacade();\n      ngFactoryDef = compiler.compileFactory(angularCoreEnv, \"ng://\" +
type.name + \"\\u0275fac.js\", Object.assign(Object.assign({}, meta.metadata), { injectFn: 'directiveInject', target:
compiler.R3FactoryTarget.Directive }));\n      }\n      return ngFactoryDef;\n      },\n      // Make
the property configurable in dev mode to allow overriding in tests\n      configurable: !!ngDevMode,\n      });\n
}\n      function extendsDirectlyFromObject(type) {\n      return Object.getPrototypeOf(type.prototype) ===
Object.prototype;\n      }\n      /**\n      * Extract the `R3DirectiveMetadata` for a particular directive (either a
`Directive` or a\n      * `Component`).\n      */\n      function directiveMetadata(type, metadata) {\n      // Reflect inputs
and outputs.\n      var reflect = getReflect();\n      var propMetadata = reflect.ownPropMetadata(type);\n      return
{\n      name: type.name,\n      type: type,\n      typeArgumentCount: 0,\n      selector:
metadata.selector !== undefined ? metadata.selector : null,\n      deps: reflectDependencies(type),\n      host:
metadata.host || EMPTY_OBJ,\n      propMetadata: propMetadata,\n      inputs: metadata.inputs ||
EMPTY_ARRAY,\n      outputs: metadata.outputs || EMPTY_ARRAY,\n      queries:
extractQueriesMetadata(type, propMetadata, isContentQuery),\n      lifecycle: { usesOnChanges:
reflect.hasLifecycleHook(type, 'ngOnChanges') },\n      typeSourceSpan: null,\n      usesInheritance:
!extendsDirectlyFromObject(type),\n      exportAs: extractExportAs(metadata.exportAs),\n      providers:
metadata.providers || null,\n      viewQueries: extractQueriesMetadata(type, propMetadata, isViewQuery)\n
};\n      }\n      /**\n      * Adds a directive definition to all parent classes of a type that don't have an Angular
decorator.\n      */\n      function addDirectiveDefToUndecoratedParents(type) {\n      var objPrototype =
Object.prototype;\n      var parent = Object.getPrototypeOf(type.prototype).constructor;\n      // Go up the
prototype until we hit `Object`\n      while (parent && parent !== objPrototype) {\n      // Since inheritance
works if the class was annotated already, we only need to add\n      // the def if there are no annotations and the
def hasn't been created already.\n      if (!getDirectiveDef(parent) && !getComponentDef(parent) &&\n
shouldAddAbstractDirective(parent)) {\n      compileDirective(parent, null);\n      }\n      parent =
Object.getPrototypeOf(parent);\n      }\n      }\n      function convertToR3QueryPredicate(selector) {\n      return
typeof selector === 'string' ? splitByComma(selector) : resolveForwardRef(selector);\n      }\n      function
convertToR3QueryMetadata(propertyName, ann) {\n      return {\n      propertyName: propertyName,\n
predicate: convertToR3QueryPredicate(ann.selector),\n      descendants: ann.descendants,\n      first:
ann.first,\n      read: ann.read ? ann.read : null,\n      static: !!ann.static\n      };\n      }\n      function
extractQueriesMetadata(type, propMetadata, isQueryAnn) {\n      var queriesMeta = [];\n      var _loop_1 =
function (field) {\n      if (propMetadata.hasOwnProperty(field)) {\n      var annotations_1 =
propMetadata[field];\n      annotations_1.forEach(function (ann) {\n      if (isQueryAnn(ann)) {\n
if (!ann.selector) {\n      throw new Error(\"Can't construct a query for the property \" +\n
field + \" of \" +\n      (\"\" + stringifyForError(type) + \"\" since the query selector wasn't
defined.\");\n      }\n      if (annotations_1.some(isInputAnnotation)) {\n
throw new Error(\"Cannot combine @Input decorators with query decorators\");\n      }\n
queriesMeta.push(convertToR3QueryMetadata(field, ann));\n      }\n      });\n      }\n      }\n
};\n      }\n      }\n      }\n      }\n      }\n      }\n      }\n      }\n      }\n      }\n      }\n      }\n

```

```

for (var field in propMetadata) {\n      _loop_1(field);\n    }\n    return queriesMeta;\n  }\n  function
extractExportAs(exportAs) {\n    return exportAs === undefined ? null : splitByComma(exportAs);\n  }\n
function isContentQuery(value) {\n    var name = value.ngMetadataName;\n    return name === 'ContentChild'
|| name === 'ContentChildren';\n  }\n  function isViewQuery(value) {\n    var name =
value.ngMetadataName;\n    return name === 'ViewChild' || name === 'ViewChildren';\n  }\n  function
isInputAnnotation(value) {\n    return value.ngMetadataName === 'Input';\n  }\n  function
splitByComma(value) {\n    return value.split(',').map(function (piece) { return piece.trim(); });\n  }\n  var
LIFECYCLE_HOOKS = [\n    'ngOnChanges', 'ngOnInit', 'ngOnDestroy', 'ngDoCheck', 'ngAfterViewInit',
'ngAfterViewChecked',\n    'ngAfterContentInit', 'ngAfterContentChecked'\n  ];\n  function
shouldAddAbstractDirective(type) {\n    var reflect = getReflect();\n    if
(LIFECYCLE_HOOKS.some(function (hookName) { return reflect.hasLifecycleHook(type, hookName); })) {\n
return true;\n    }\n    var propMetadata = reflect.propMetadata(type);\n    for (var field in propMetadata)
{\n      var annotations = propMetadata[field];\n      for (var i = 0; i < annotations.length; i++) {\n
var current = annotations[i];\n      var metadataName = current.ngMetadataName;\n      if
(isInputAnnotation(current) || isContentQuery(current) || isViewQuery(current) ||\n      metadataName ===
'Output' || metadataName === 'HostBinding' ||\n      metadataName === 'HostListener') {\n
return true;\n      }\n    }\n    return false;\n  }\n  /**\n   * @license\n   * Copyright
Google LLC All Rights Reserved.\n   * Use of this source code is governed by an MIT-style license that can
be\n   * found in the LICENSE file at https://angular.io/license\n   */\n  function compilePipe(type, meta) {\n
var ngPipeDef = null;\n    var ngFactoryDef = null;\n    Object.defineProperty(type, NG_FACTORY_DEF, {\n
get: function () {\n      if (ngFactoryDef === null) {\n        var metadata = getPipeMetadata(type,
meta);\n        var compiler = getCompilerFacade();\n        ngFactoryDef =
compiler.compileFactory(angularCoreEnv, \"ng://\" + metadata.name + \"\\u0275fac.js\",
Object.assign(Object.assign({}, metadata), { injectFn: 'directiveInject', target: compiler.R3FactoryTarget.Pipe }));\n
      }\n      return ngFactoryDef;\n    },\n    // Make the property configurable in dev mode to
allow overriding in tests\n    configurable: !!ngDevMode,\n  });\n  Object.defineProperty(type,
NG_PIPE_DEF, {\n    get: function () {\n      if (ngPipeDef === null) {\n        var metadata =
getPipeMetadata(type, meta);\n        ngPipeDef = getCompilerFacade().compilePipe(angularCoreEnv,
\"ng://\" + metadata.name + \"\\u0275pipe.js\", metadata);\n      }\n      return ngPipeDef;\n    },\n
// Make the property configurable in dev mode to allow overriding in tests\n    configurable:
!!ngDevMode,\n  });\n  }\n  function getPipeMetadata(type, meta) {\n    return {\n      type: type,\n
typeArgumentCount: 0,\n      name: type.name,\n      deps: reflectDependencies(type),\n      pipeName:
meta.name,\n      pure: meta.pure !== undefined ? meta.pure : true\n    }; \n  }\n  /**\n   * @license\n   *
Copyright Google LLC All Rights Reserved.\n   * Use of this source code is governed by an MIT-style
license that can be\n   * found in the LICENSE file at https://angular.io/license\n   */\n  var 0$d = function (dir)
{\n    if (dir === void 0) { dir = {}; }\n    return dir;\n  }, 1$3 = function (type, meta) { return
SWITCH_COMPILE_DIRECTIVE(type, meta); }\n  /**\n   * Type of the Directive metadata.\n   */\n  *
@publicApi\n  * ^\n  var Directive = makeDecorator('Directive', 0$d, undefined, undefined, 1$3);\n  var 2$1 =
function (c) {\n    if (c === void 0) { c = {}; }\n    return (Object.assign({ changeDetection:
exports.ChangeDetectionStrategy.Default }, c));\n  }, 3$1 = function (type, meta) { return
SWITCH_COMPILE_COMPONENT(type, meta); }\n  /**\n   * Component decorator and metadata.\n   */\n  *
@Annotation\n  * @publicApi\n  * ^\n  var Component = makeDecorator('Component', 2$1, Directive,
undefined, 3$1);\n  var 4 = function (p) { return (Object.assign({ pure: true }, p)); }, 5 = function (type, meta) {
return SWITCH_COMPILE_PIPE(type, meta); }\n  /**\n   * @Annotation\n   * @publicApi\n   */\n  var
Pipe = makeDecorator('Pipe', 4, undefined, undefined, 5);\n  var 6 = function (bindingPropertyName) { return ({
bindingPropertyName: bindingPropertyName }); }\n  /**\n   * @Annotation\n   * @publicApi\n   */\n  var
Input = makePropDecorator('Input', 6);\n  var 7 = function (bindingPropertyName) { return ({
bindingPropertyName: bindingPropertyName }); }\n  /**\n   * @Annotation\n   * @publicApi\n   */\n  var

```

```

Output = makePropDecorator('Output', 7);\n  var 8 = function (hostPropertyName) { return ({ hostPropertyName:
hostPropertyName }); }; \n  /**\n   * @Annotation\n   * @publicApi\n   */\n  var HostBinding =
makePropDecorator('HostBinding', 8);\n  var 9 = function (eventName, args) { return ({ eventName: eventName,
args: args }); }; \n  /**\n   * Decorator that binds a DOM event to a host listener and supplies configuration
metadata.\n   * Angular invokes the supplied handler method when the host element emits the specified event,\n   * and updates the bound element with the result.\n   * If the handler method returns false, applies
`preventDefault` on the bound element.\n   * @usageNotes\n   * The following example declares a
directive\n   * that attaches a click listener to a button and counts clicks.\n   * ```\n   *
@Directive({selector: 'button[counting]'})\n   * class CountClicks {\n   *   numberOfClicks = 0;\n   *
@HostListener('click', ['$event.target'])\n   *   onClick(btn) {\n   *     console.log('button', btn, 'number of clicks:',
this.numberOfClicks++);\n   *   }\n   * }\n   * @Component({\n   *   selector: 'app',\n   *   template:
'<button counting>Increment</button>',\n   * })\n   * class App {\n   *
The following
example registers another DOM event handler that listens for key-press events.\n   * ```\n   * import {
HostListener, Component } from '@angular/core';\n   * @Component({\n   *   selector: 'app',\n   *
template: `<h1>Hello, you have pressed keys {{counter}} number of times!</h1> Press any key to\n   * increment
the counter.\n   * <button (click)="resetCounter()">Reset Counter</button>`\n   * })\n   * class
AppComponent {\n   *   counter = 0;\n   *   @HostListener('window:keydown', ['$event'])\n   *
handleKeyDown(event: KeyboardEvent) {\n   *     this.counter++;\n   *   }\n   *   resetCounter() {\n   *
this.counter = 0;\n   *   }\n   * }\n   * ```\n   * @Annotation\n   * @publicApi\n   */\n  var
HostListener = makePropDecorator('HostListener', 9);\n  var SWITCH_COMPILE_COMPONENT__POST_R3__
= compileComponent;\n  var SWITCH_COMPILE_DIRECTIVE__POST_R3__ = compileDirective;\n  var
SWITCH_COMPILE_PIPE__POST_R3__ = compilePipe;\n  var
SWITCH_COMPILE_COMPONENT__PRE_R3__ = noop;\n  var
SWITCH_COMPILE_DIRECTIVE__PRE_R3__ = noop;\n  var SWITCH_COMPILE_PIPE__PRE_R3__ =
noop;\n  var SWITCH_COMPILE_COMPONENT = SWITCH_COMPILE_COMPONENT__PRE_R3__;\n  var
SWITCH_COMPILE_DIRECTIVE = SWITCH_COMPILE_DIRECTIVE__PRE_R3__;\n  var
SWITCH_COMPILE_PIPE = SWITCH_COMPILE_PIPE__PRE_R3__;\n\n  var 0$e = function (ngModule) {\n
return ngModule; }; 1$4 = \n  /**\n   * Decorator that marks the following class as an NgModule, and supplies\n
* configuration metadata for it.\n   * * The `declarations` and `entryComponents` options configure the
compiler\n   * with information about what belongs to the NgModule.\n   * * The `providers` options configures
the NgModule's injector to provide\n   * dependencies the NgModule members.\n   * * The `imports` and
`exports` options bring in members from other modules, and make\n   * this module's members available to
others.\n   */\n  function (type, meta) { return SWITCH_COMPILE_NGMODULE(type, meta); }; \n  /**\n   *
@Annotation\n   * @publicApi\n   */\n  var NgModule = makeDecorator('NgModule', 0$e, undefined,
undefined, 1$4);\n  function preR3NgModuleCompile(moduleType, metadata) {\n    var imports = (metadata
&& metadata.imports) || [];\n    if (metadata && metadata.exports) {\n      imports = __spread(imports,
[metadata.exports]);\n    }\n    moduleType.inj = defineInjector({\n      factory:
convertInjectableProviderToFactory(moduleType, { useClass: moduleType }),\n      providers: metadata &&
metadata.providers,\n      imports: imports,\n    });\n  }\n  var
SWITCH_COMPILE_NGMODULE__POST_R3__ = compileNgModule;\n  var
SWITCH_COMPILE_NGMODULE__PRE_R3__ = preR3NgModuleCompile;\n  var
SWITCH_COMPILE_NGMODULE = SWITCH_COMPILE_NGMODULE__PRE_R3__;\n\n  /**\n   *
@license\n   * Copyright Google LLC All Rights Reserved.\n   * Use of this source code is governed by an
MIT-style license that can be\n   * found in the LICENSE file at https://angular.io/license\n   */\n  /**\n   *
@license\n   * Copyright Google LLC All Rights Reserved.\n   * Use of this source code is governed by an
MIT-style license that can be\n   * found in the LICENSE file at https://angular.io/license\n   */\n  * A
[DI token](guide/glossary#di-token \"DI token definition\") that you can use to provide\n   * one or more
initialization functions.\n   * The provided functions are injected at application startup and executed during\n

```

```

* app initialization. If any of these functions returns a Promise, initialization
* does not complete until the Promise is resolved.
* You can, for example, create a factory function that loads language data
* or an external configuration, and provide that function to the `APP_INITIALIZER` token.
* The function is executed during the application bootstrap process,
* and the needed data is available on startup.
*
@see `ApplicationInitStatus`
* @publicApi
*/
var APP_INITIALIZER = new InjectionToken('Application Initializer');
/**
 * A class that reflects the state of running { @link
APP_INITIALIZER } functions.
* @publicApi
*/
var ApplicationInitStatus = /** @class */
(function () {
    function ApplicationInitStatus(appInits) {
        var _this = this;
        this.appInits = appInits;
        this.resolve = noop;
        this.reject = noop;
        this.initialized = false;
        this.done = false;
        this.donePromise = new Promise(function (res, rej) {
            _this.resolve = res;
            _this.reject = rej;
        });
        /** @internal */
        ApplicationInitStatus.prototype.runInitializers =
function () {
    var _this = this;
    if (this.initialized) {
        return;
    }
    var asyncInitPromises = [];
    var complete = function () {
        _this.done = true;
    };
    if (this.appInits) {
        for (var i = 0; i < this.appInits.length; i++) {
            var initResult = this.appInits[i]();
            if (isPromise(initResult)) {
                asyncInitPromises.push(initResult);
            }
        }
        Promise.all(asyncInitPromises).then(function () {
            complete();
        }).catch(function (e) {
            _this.reject(e);
        });
        if (asyncInitPromises.length === 0) {
            complete();
        }
        this.initialized = true;
    };
    return ApplicationInitStatus;
}());
ApplicationInitStatus.decorators = [
    { type: Injectable }
];
ApplicationInitStatus.ctorParameters =
function () {
    return [
        { type: Array, decorators: [{ type: Inject, args: [APP_INITIALIZER,] }, { type: Optional
} ] }
    ];
};
/**
 * @license
 * Copyright Google LLC All Rights Reserved.
 * Use of this source code is governed by an MIT-style license that can be
 * found in the LICENSE file at
https://angular.io/license
 *
 * A [DI token](guide/glossary#di-token "DI token definition")
representing a unique string ID, used
 * primarily for prefixing application attributes and CSS styles when
 * {@link ViewEncapsulation#Emulated ViewEncapsulation.Emulated} is being used.
 * BY default, the value is randomly generated and assigned to the application by Angular.
 * To provide a custom ID value, use a
DI provider <!-- TODO: provider --> to configure
 * the root { @link Injector } that uses this token.
* @publicApi
*/
var APP_ID = new InjectionToken('AppId');
function _appIdRandomProviderFactory() {
    return "" + _randomChar() + _randomChar() + _randomChar();
}
/**
 * Providers that generate
a random `APP_ID_TOKEN`.
* @publicApi
*/
var APP_ID_RANDOM_PROVIDER = {
provide: APP_ID,
useFactory: _appIdRandomProviderFactory,
deps: [],
};
function _randomChar() {
    return String.fromCharCode(97 + Math.floor(Math.random() * 25));
}
/**
 * A
function that is executed when a platform is initialized.
* @publicApi
*/
var
PLATFORM_INITIALIZER = new InjectionToken('Platform Initializer');
/**
 * A token that indicates an
opaque platform ID.
* @publicApi
*/
var PLATFORM_ID = new InjectionToken('Platform ID');
/**
 * A [DI token](guide/glossary#di-token "DI token definition") that provides a set of callbacks to
 * be called for every component that is bootstrapped.
 * Each callback must take a `ComponentRef` instance
and return nothing.
 * `(componentRef: ComponentRef) => void`
* @publicApi
*/
var
APP_BOOTSTRAP_LISTENER = new InjectionToken('appBootstrapListener');
/**
 * A [DI
token](guide/glossary#di-token "DI token definition") that indicates the root directory of
 * the application.
* @publicApi
*/
var PACKAGE_ROOT_URL = new InjectionToken('Application Packages Root
URL');
/**
 * @license
 * Copyright Google LLC All Rights Reserved.
 * Use of this source
code is governed by an MIT-style license that can be
 * found in the LICENSE file at https://angular.io/license
 *
 */
var Console = /** @class */ (function () {
    function Console() {}
    Console.prototype.log =
function (message) {
    // tslint:disable-next-line:no-console
    console.log(message);
};
//
Note: for reporting errors use `DOM.logError()` as it is platform specific
    Console.prototype.warn = function
(message) {
    // tslint:disable-next-line:no-console
    console.warn(message);
};
return

```

```

Console;
})();
Console.decorators = [
  { type: Injectable }
];
/**
 * @license
 * Copyright Google LLC All Rights Reserved.
 * Use of this source code is governed by an MIT-style
 * license that can be found in the LICENSE file at https://angular.io/license
 * Provide this token to set the locale of your application.
 * It is used for i18n extraction, by i18n pipes (DatePipe,
I18nPluralPipe, CurrencyPipe, DecimalPipe and PercentPipe) and by ICU expressions.
See the [i18n guide](guide/i18n#setting-up-locale) for more information.
@usageNotes
### Example
```typescript
import { LOCALE_ID } from '@angular/core';
import { platformBrowserDynamic } from '@angular/platform-browser-dynamic';
import { AppModule } from './app/app.module';
platformBrowserDynamic().bootstrapModule(AppModule, {
 providers: [{provide: LOCALE_ID, useValue: 'en-US'}]
});
@publicApi
var LOCALE_IDS1 = new
InjectionToken('LocaleId');
/**
 * Provide this token to set the default currency code your application uses
 * for CurrencyPipe when there is no currency code passed into it. This is only used by CurrencyPipe and
 * has no relation to locale currency. Defaults to USD if not configured.
 * See the [i18n
 * guide](guide/i18n#setting-up-locale) for more information.
 * <div class="alert is-helpful">
 * **Deprecation notice:**
 * The default currency code is currently always `USD` but this is deprecated
 * from v9.
 * **In v10 the default currency code will be taken from the current locale.**
 * If you
 * need the previous behavior then set it by creating a `DEFAULT_CURRENCY_CODE` provider in your
 * application `NgModule`:
 * ```ts
 * {provide: DEFAULT_CURRENCY_CODE, useValue: 'USD'}
 * ```
 * </div>
 * @usageNotes
 * ### Example
 * ```typescript
 * import {
 * platformBrowserDynamic } from '@angular/platform-browser-dynamic';
 * import { AppModule } from
 * './app/app.module';
 * platformBrowserDynamic().bootstrapModule(AppModule, {
 * providers:
 * [{provide: DEFAULT_CURRENCY_CODE, useValue: 'EUR'}]
 * });
 * ```
 * @publicApi
 * var DEFAULT_CURRENCY_CODE = new InjectionToken('DefaultCurrencyCode');
 * /**
 * Use this
 * token at bootstrap to provide the content of your translation file (`xtb`, `xlf` or `xlf2`) when you want to
 * translate your application in another language.
 * See the [i18n guide](guide/i18n#merge) for more
 * information.
 * @usageNotes
 * ### Example
 * ```typescript
 * import {
 * TRANSLATIONS } from '@angular/core';
 * import { platformBrowserDynamic } from '@angular/platform-
 * browser-dynamic';
 * import { AppModule } from './app/app.module';
 * // content of your translation
 * file
 * const translations = '...';
 * platformBrowserDynamic().bootstrapModule(AppModule, {
 * providers: [{provide: TRANSLATIONS, useValue: translations}]
 * });
 * ```
 * @publicApi
 * var TRANSLATIONS = new InjectionToken('Translations');
 * /**
 * Provide this token at bootstrap to
 * set the format of your {@link TRANSLATIONS}: `xtb`, `xlf` or `xlf2`.
 * See the [i18n
 * guide](guide/i18n#merge) for more information.
 * @usageNotes
 * ### Example
 * ```typescript
 * import { TRANSLATIONS_FORMAT } from '@angular/core';
 * import {
 * platformBrowserDynamic } from '@angular/platform-browser-dynamic';
 * import { AppModule } from
 * './app/app.module';
 * platformBrowserDynamic().bootstrapModule(AppModule, {
 * providers:
 * [{provide: TRANSLATIONS_FORMAT, useValue: 'xlf'}]
 * });
 * ```
 * @publicApi
 * var TRANSLATIONS_FORMAT = new InjectionToken('TranslationsFormat');
 * (function
 * (MissingTranslationStrategy) {
 * MissingTranslationStrategy[MissingTranslationStrategy["Error"] = 0] =
 * "Error";
 * MissingTranslationStrategy[MissingTranslationStrategy["Warning"] = 1] =
 * "Warning";
 * MissingTranslationStrategy[MissingTranslationStrategy["Ignore"] = 2] =
 * "Ignore";
 * })(exports.MissingTranslationStrategy || (exports.MissingTranslationStrategy = {}));
 * /**
 * @license
 * Copyright Google LLC All Rights Reserved.
 * Use of this source code is governed by an MIT-style
 * license that can be found in the LICENSE file at https://angular.io/license
 * var
 * SWITCH_IVY_ENABLED__POST_R3__ = true;
 * var SWITCH_IVY_ENABLED__PRE_R3__ = false;
 * var
 * ivyEnabled = SWITCH_IVY_ENABLED__PRE_R3__;
 * /**
 * @license
 * Copyright Google LLC All
 * Rights Reserved.
 * Use of this source code is governed by an MIT-style license that can be found
 * in the LICENSE file at https://angular.io/license
 * var
 * /**
 * Combination of NgModuleFactory and

```

```

ComponentFactory;
 * @publicApi
 * var ModuleWithComponentFactories = /** @class */
(function () {
 function ModuleWithComponentFactories(ngModuleFactory, componentFactories) {
 this.ngModuleFactory = ngModuleFactory;
 this.componentFactories = componentFactories;
 }
 return ModuleWithComponentFactories;
})();
function throwError() {
 throw new Error("Runtime
compiler is not loaded");
}
var Compiler_compileModuleSync__PRE_R3__ = throwError;
var
Compiler_compileModuleSync__POST_R3__ = function (moduleType) {
 return new
NgModuleFactory$1(moduleType);
};
var Compiler_compileModuleSync =
Compiler_compileModuleSync__PRE_R3__;
var Compiler_compileModuleAsync__PRE_R3__ =
throwError;
var Compiler_compileModuleAsync__POST_R3__ = function (moduleType) {
 return
Promise.resolve(Compiler_compileModuleSync__POST_R3__(moduleType));
};
var
Compiler_compileModuleAsync = Compiler_compileModuleAsync__PRE_R3__;
var
Compiler_compileModuleAndAllComponentsSync__PRE_R3__ = throwError;
var
Compiler_compileModuleAndAllComponentsSync__POST_R3__ = function (moduleType) {
 var
ngModuleFactory = Compiler_compileModuleSync__POST_R3__(moduleType);
 var moduleDef =
getNgModuleDef(moduleType);
 var componentFactories = maybeUnwrapFn(moduleDef.declarations)
.reduce(function (factories, declaration) {
 var componentDef = getComponentDef(declaration);
 componentDef && factories.push(new ComponentFactory$1(componentDef));
 return factories;
 },
[]);
 return new ModuleWithComponentFactories(ngModuleFactory, componentFactories);
};
var
Compiler_compileModuleAndAllComponentsSync =
Compiler_compileModuleAndAllComponentsSync__PRE_R3__;
var
Compiler_compileModuleAndAllComponentsAsync__PRE_R3__ = throwError;
var
Compiler_compileModuleAndAllComponentsAsync__POST_R3__ = function (moduleType) {
 return
Promise.resolve(Compiler_compileModuleAndAllComponentsSync__POST_R3__(moduleType));
};
var
Compiler_compileModuleAndAllComponentsAsync =
Compiler_compileModuleAndAllComponentsAsync__PRE_R3__;
/**
 * Low-level service for running the
angular compiler during runtime
 * to create {@link ComponentFactory}s, which
 * can later be used to
create and render a Component instance.
 * Each `@NgModule` provides an own `Compiler` to its
injector,
 * that will use the directives/pipes of the ng module for compilation
 * of components.
 *
 * @publicApi
 * var Compiler = /** @class */ (function () {
 function Compiler() {
 /**
 * Compiles the given NgModule and all of its components. All templates of the components listed
 * in
`entryComponents` have to be inlined.
 */
 this.compileModuleSync =
Compiler_compileModuleSync;
 /**
 * Compiles the given NgModule and all of its components
 */
 this.compileModuleAsync = Compiler_compileModuleAsync;
 /**
 * Same as
{@link #compileModuleSync} but also creates ComponentFactories for all components.
 */
 this.compileModuleAndAllComponentsSync = Compiler_compileModuleAndAllComponentsSync;
 /**
 * Same as {@link #compileModuleAsync} but also creates ComponentFactories for all components.
 */
 this.compileModuleAndAllComponentsAsync = Compiler_compileModuleAndAllComponentsAsync;
 }
 /**
 * Clears all caches.
 */
 Compiler.prototype.clearCache = function () {
};
 /**
 * Clears the cache for the given component/ngModule.
 */
 Compiler.prototype.clearCacheFor = function (type) {
};
 /**
 * Returns the id for a given NgModule, if
one is defined and known to the compiler.
 */
 Compiler.prototype.getModuleId = function
(moduleType) {
 return undefined;
 };
 return Compiler;
})();
Compiler.decorators = [
{ type: Injectable }
];
/**
 * Token to provide CompilerOptions in the platform injector.
 *
 * @publicApi
 * var COMPILER_OPTIONS = new InjectionToken('compilerOptions');
/**
 * A
factory for creating a Compiler
 *
 * @publicApi
 * var CompilerFactory = /** @class */ (function
() {
 function CompilerFactory() {
 }
 return CompilerFactory;
})();
/**
 * @license
 * Copyright Google LLC All Rights Reserved.
 * Use of this source code is governed by an MIT-style
license that can be
 * found in the LICENSE file at https://angular.io/license
 */
var promise = (function

```

```

() { return Promise.resolve(0); })();\n function scheduleMicroTask(fn) {\n if (typeof Zone === 'undefined')\n {\n // use promise to schedule microTask instead of use Zone\n promise.then(function () {\n fn && fn.apply(null, null);\n });\n } else {\n Zone.current.scheduleMicroTask('scheduleMicrotask', fn);\n }\n }\n /**\n * @license\n * Copyright\n * Google LLC All Rights Reserved.\n * Use of this source code is governed by an MIT-style license that can\n * be found in the LICENSE file at https://angular.io/license\n */\n function\n getNativeRequestAnimationFrame() {\n var nativeRequestAnimationFrame =\n _global['requestAnimationFrame'];\n var nativeCancelAnimationFrame = _global['cancelAnimationFrame'];\n if (typeof Zone !== 'undefined' && nativeRequestAnimationFrame && nativeCancelAnimationFrame) {\n // use unpatched version of requestAnimationFrame(native delegate) if possible\n // to avoid another Change\n detection\n var unpatchedRequestAnimationFrame =\n nativeRequestAnimationFrame[Zone.__symbol__('OriginalDelegate')];\n if\n (unpatchedRequestAnimationFrame) {\n nativeRequestAnimationFrame =\n unpatchedRequestAnimationFrame;\n }\n var unpatchedCancelAnimationFrame =\n nativeCancelAnimationFrame[Zone.__symbol__('OriginalDelegate')];\n if\n (unpatchedCancelAnimationFrame) {\n nativeCancelAnimationFrame =\n unpatchedCancelAnimationFrame;\n }\n }\n return { nativeRequestAnimationFrame:\n nativeRequestAnimationFrame, nativeCancelAnimationFrame: nativeCancelAnimationFrame }; \n }\n /**\n * @license\n * Copyright Google LLC All Rights Reserved.\n * Use of this source code is governed by\n * an MIT-style license that can be found in the LICENSE file at https://angular.io/license\n */\n * An injectable service for executing work inside or outside of the Angular zone.\n * The most common use\n * of this service is to optimize performance when starting a work consisting of\n * one or more asynchronous tasks\n * that don't require UI updates or error handling to be handled by\n * Angular. Such tasks can be kicked off via\n * {@link #runOutsideAngular} and if needed, these tasks\n * can reenter the Angular zone via {@link #run}.\n * <!-- TODO: add/fix links to:\n * - docs explaining zones and the use of zones in Angular and change-\n * detection\n * - link to runOutsideAngular/run (throughout this file!)\n * -->\n * @usageNotes\n * ### Example\n * ```\n * import {Component, NgZone} from '@angular/core';\n * import {NgIf} from\n * '@angular/common';\n * @Component({\n * selector: 'ng-zone-demo',\n * template: `\n * <h2>Demo: NgZone</h2>\n * <p>Progress: {{progress}}%</p>\n * <p *ngIf="progress >=\n * 100">Done processing {{label}} of Angular zone!</p>\n * <button\n * (click)="processWithinAngularZone()">Process within Angular zone</button>\n * <button\n * (click)="processOutsideOfAngularZone()">Process outside of Angular zone</button>\n * `,\n * })\n * export class NgZoneDemo {\n * progress: number = 0;\n * label: string;\n * constructor(private\n * _ngZone: NgZone) {\n * // Loop inside the Angular zone\n * // so the UI DOES refresh after each\n * setTimeout cycle\n * processWithinAngularZone() {\n * this.label = 'inside';\n * this.progress = 0;\n * this._increaseProgress(() => console.log('Inside Done!'));\n * }\n * // Loop outside of the Angular\n * zone\n * // so the UI DOES NOT refresh after each setTimeout cycle\n * processOutsideOfAngularZone()\n * {\n * this.label = 'outside';\n * this.progress = 0;\n * this._ngZone.runOutsideAngular(() => {\n * this._increaseProgress(() => {\n * // reenter the Angular zone and display done\n * this._ngZone.run(() => { console.log('Outside Done!'); });\n * });\n * });\n * _increaseProgress(doneCallback: () => void) {\n * this.progress += 1;\n * console.log(`Current progress:\n * ${this.progress}%`);\n * if (this.progress < 100) {\n * window.setTimeout(() =>\n * this._increaseProgress(doneCallback), 10);\n * } else {\n * doneCallback();\n * }\n * }\n * }\n * ```\n * @publicApi\n */\n * var NgZone = /** @class */ (function () {\n * function NgZone(_a)\n * {\n * var _b = _a.enableLongStackTrace, enableLongStackTrace = _b === void 0 ? false : _b, _c =\n * _a.shouldCoalesceEventChangeDetection, shouldCoalesceEventChangeDetection = _c === void 0 ? false : _c;\n * this.hasPendingMacrotasks = false;\n * this.hasPendingMicrotasks = false;\n * /**\n * * Whether\n * there are no outstanding microtasks or macrotasks.\n * */\n * this.isStable = true;\n * /**\n *

```



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Notifies when code enters Angular Zone. This gets fired first on VM Turn.\n *\n this.onUnstable =
new EventEmitter(false);\n /**\n * Notifies when there is no more microtasks enqueued in the current
VM Turn.\n * This is a hint for Angular to do change detection, which may enqueue more microtasks.\n
 * For this reason this event can fire multiple times per VM Turn.\n *\n this.onMicrotaskEmpty =
new EventEmitter(false);\n /**\n * Notifies when the last `onMicrotaskEmpty` has run and there are
no more microtasks, which\n * implies we are about to relinquish VM turn.\n * This event gets called
just once.\n *\n this.onStable = new EventEmitter(false);\n /**\n * Notifies that an
error has been delivered.\n *\n this.onError = new EventEmitter(false);\n if (typeof Zone ==
'undefined') {\n throw new Error(`In this configuration Angular requires Zone.js`);\n }\n
Zone.assertZonePatched();\n var self = this;\n self._nesting = 0;\n self._outer = self._inner =
Zone.current;\n if (Zone['TaskTrackingZoneSpec']) {\n self._inner = self._inner.fork(new
Zone['TaskTrackingZoneSpec']);\n }\n if (enableLongStackTrace &&
Zone['longStackTraceZoneSpec']) {\n self._inner = self._inner.fork(Zone['longStackTraceZoneSpec']);\n
 }\n self.shouldCoalesceEventChangeDetection = shouldCoalesceEventChangeDetection;\n
self.lastRequestAnimationFrameId = -1;\n self.nativeRequestAnimationFrame =
getNativeRequestAnimationFrame().nativeRequestAnimationFrame;\n
forkInnerZoneWithAngularBehavior(self);\n }\n NgZone.isInAngularZone = function () {\n return
Zone.current.get('isAngularZone') === true;\n };\n NgZone.assertInAngularZone = function () {\n if
(!NgZone.isInAngularZone()) {\n throw new Error('Expected to be in Angular Zone, but it is not!');\n
 }\n };\n NgZone.assertNotInAngularZone = function () {\n if (NgZone.isInAngularZone()) {\n
 throw new Error('Expected to not be in Angular Zone, but it is!');\n }\n };\n /**\n * Executes
the `fn` function synchronously within the Angular zone and returns value returned by\n * the function.\n
*\n * Running functions via `run` allows you to reenter Angular zone from a task that was executed\n *
outside of the Angular zone (typically started via {@link #runOutsideAngular}).\n *\n * Any future tasks
or microtasks scheduled from within this function will continue executing from\n * within the Angular zone.\n
*\n * If a synchronous error happens it will be rethrown and not reported via `onError`.\n *\n
NgZone.prototype.run = function (fn, applyThis, applyArgs) {\n return this._inner.run(fn, applyThis,
applyArgs);\n };\n /**\n * Executes the `fn` function synchronously within the Angular zone as a task
and returns value\n * returned by the function.\n *\n * Running functions via `run` allows you to
reenter Angular zone from a task that was executed\n * outside of the Angular zone (typically started via
{@link #runOutsideAngular}).\n *\n * Any future tasks or microtasks scheduled from within this function
will continue executing from\n * within the Angular zone.\n *\n * If a synchronous error happens it
will be rethrown and not reported via `onError`.\n *\n
NgZone.prototype.runTask = function (fn,
applyThis, applyArgs, name) {\n var zone = this._inner;\n var task =
zone.scheduleEventTask('NgZoneEvent: ' + name, fn, EMPTY_PAYLOAD, noop$1, noop$1);\n try {\n
 return zone.runTask(task, applyThis, applyArgs);\n }\n finally {\n
zone.cancelTask(task);\n }\n };\n /**\n * Same as `run`, except that synchronous errors are
caught and forwarded via `onError` and not\n * rethrown.\n *\n
NgZone.prototype.runGuarded =
function (fn, applyThis, applyArgs) {\n return this._inner.runGuarded(fn, applyThis, applyArgs);\n };\n
 /**\n * Executes the `fn` function synchronously in Angular's parent zone and returns value returned by\n
 * the function.\n *\n * Running functions via {@link #runOutsideAngular} allows you to escape
Angular's zone and do\n * work that\n * doesn't trigger Angular change-detection or is subject to
Angular's error handling.\n *\n * Any future tasks or microtasks scheduled from within this function will
continue executing from\n * outside of the Angular zone.\n *\n * Use {@link #run} to reenter the
Angular zone and do work that updates the application model.\n *\n
NgZone.prototype.runOutsideAngular
= function (fn) {\n return this._outer.run(fn);\n };\n return NgZone;\n }());\n function noop$1() {\n
}\n var EMPTY_PAYLOAD = {};\n function checkStable(zone) {\n if (zone._nesting == 0 &&
!zone.hasPendingMicrotasks && !zone.isStable) {\n try {\n zone._nesting++;\n

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zone.onMicrotaskEmpty.emit(null);\n }\n finally {\n zone._nesting--;\n if
(!zone.hasPendingMicrotasks) {\n try {\n zone.runOutsideAngular(function () { return
zone.onStable.emit(null); });\n }\n finally {\n zone.isStable = true;\n
}\n }\n }\n\n function delayChangeDetectionForEvents(zone) {\n if
(zone.lastRequestAnimationFrameId !== -1) {\n return;\n }\n zone.lastRequestAnimationFrameId =
zone.nativeRequestAnimationFrame.call(_global, function () {\n // This is a work around for
https://github.com/angular/angular/issues/36839.\n // The core issue is that when event coalescing is enabled
it is possible for microtasks\n // to get flushed too early (As is the case with `Promise.then`) between the\n
// coalescing eventTasks.\n //\n // To workaround this we schedule a \"fake\" eventTask before we
process the\n // coalescing eventTasks. The benefit of this is that the \"fake\" container eventTask\n // will prevent the microtasks queue from getting drained in between the coalescing\n // eventTask execution.\n if (!zone.fakeTopEventTask) {\n zone.fakeTopEventTask =
Zone.root.scheduleEventTask('fakeTopEventTask', function () {\n zone.lastRequestAnimationFrameId =
-1;\n updateMicroTaskStatus(zone);\n checkStable(zone);\n }, undefined, function
() { }, function () { });\n zone.fakeTopEventTask.invoke();\n });\n updateMicroTaskStatus(zone);\n }\n function forkInnerZoneWithAngularBehavior(zone) {\n var
delayChangeDetectionForEventsDelegate = function () {\n delayChangeDetectionForEvents(zone);\n
};\n var maybeDelayChangeDetection = !!zone.shouldCoalesceEventChangeDetection &&\n
zone.nativeRequestAnimationFrame && delayChangeDetectionForEventsDelegate;\n zone._inner =
zone._inner.fork({\n name: 'angular',\n properties: { 'isAngularZone': true,\n
'maybeDelayChangeDetection': maybeDelayChangeDetection },\n onInvokeTask: function (delegate, current,
target, task, applyThis, applyArgs) {\n try {\n onEnter(zone);\n return
delegate.invokeTask(target, task, applyThis, applyArgs);\n }\n finally {\n if
(maybeDelayChangeDetection && task.type === 'eventTask') {\n maybeDelayChangeDetection();\n
}\n onLeave(zone);\n }\n },\n onInvoke: function (delegate, current,
target, callback, applyThis, applyArgs, source) {\n try {\n onEnter(zone);\n return
delegate.invoke(target, callback, applyThis, applyArgs, source);\n }\n finally {\n
onLeave(zone);\n }\n },\n onHasTask: function (delegate, current, target, hasTaskState) {\n
 delegate.hasTask(target, hasTaskState);\n if (current === target) {\n // We are only
interested in hasTask events which originate from our zone\n // (A child hasTask event is not interesting
to us)\n if (hasTaskState.change === 'microTask') {\n zone._hasPendingMicrotasks =
hasTaskState.microTask;\n updateMicroTaskStatus(zone);\n checkStable(zone);\n
}\n else if (hasTaskState.change === 'macroTask') {\n zone.hasPendingMacrotasks =
hasTaskState.macroTask;\n }\n }\n },\n onHandleError: function (delegate,
current, target, error) {\n delegate.handleError(target, error);\n zone.runOutsideAngular(function
() { return zone.onError.emit(error); });\n return false;\n });\n }\n\n function
updateMicroTaskStatus(zone) {\n if (zone._hasPendingMicrotasks ||\n
(zone.shouldCoalesceEventChangeDetection && zone.lastRequestAnimationFrameId !== -1)) {\n zone.hasPendingMicrotasks = true;\n
}\n else {\n zone.hasPendingMicrotasks = false;\n }\n }\n\n function onEnter(zone) {\n zone._nesting++;\n if (zone.isStable) {\n zone.isStable = false;\n
zone.onUnstable.emit(null);\n }\n }\n\n function onLeave(zone) {\n zone._nesting--;\n
checkStable(zone);\n }\n\n /**\n * Provides a noop implementation of `NgZone` which does nothing. This zone
requires explicit calls\n * to framework to perform rendering.\n */\n var NoopNgZone = /** @class */
(function () {\n function NoopNgZone() {\n this.hasPendingMicrotasks = false;\n
this.hasPendingMacrotasks = false;\n this.isStable = true;\n this.onUnstable = new EventEmitter();\n
this.onMicrotaskEmpty = new EventEmitter();\n this.onStable = new EventEmitter();\n
this.onError = new EventEmitter();\n }\n NoopNgZone.prototype.run = function (fn, applyThis, applyArgs)
{\n return fn.apply(applyThis, applyArgs);\n };\n NoopNgZone.prototype.runGuarded = function (fn,

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applyThis, applyArgs) {\n return fn.apply(applyThis, applyArgs);\n };\n
NoopNgZone.prototype.runOutsideAngular = function (fn) {\n return fn();\n };\n
NoopNgZone.prototype.runTask = function (fn, applyThis, applyArgs, name) {\n return fn.apply(applyThis,\n applyArgs);\n };\n return NoopNgZone;\n }());\n\n /**\n * @license\n * Copyright Google LLC\n * All Rights Reserved.\n * Use of this source code is governed by an MIT-style license that can be\n * found in the LICENSE file at https://angular.io/license\n */\n\n /**\n * The Testability service provides testing\n * hooks that can be accessed from\n * the browser and by services such as Protractor. Each bootstrapped Angular\n * application on the page will have an instance of Testability.\n */\n\n /**\n * @publicApi\n */\n\n var Testability = /**\n * @class */ (function () {\n function Testability(_ngZone) {\n var _this = this;\n this._ngZone =\n _ngZone;\n this._pendingCount = 0;\n this._isZoneStable = true;\n /**\n * Whether any\n * work was done since the last 'whenStable' callback. This is\n * useful to detect if this could have potentially\n * destabilized another\n * component while it is stabilizing.\n */\n @internal\n this._didWork = false;\n this._callbacks = [];\n this.taskTrackingZone = null;\n this._watchAngularEvents();\n _ngZone.run(function () {\n _this.taskTrackingZone =\n typeof Zone == 'undefined' ? null : Zone.current.get('TaskTrackingZone');\n });\n }\n\n Testability.prototype._watchAngularEvents = function () {\n var _this = this;\n this._ngZone.onUnstable.subscribe({\n next: function () {\n _this._didWork = true;\n _this._isZoneStable = false;\n }\n });\n this._ngZone.runOutsideAngular(function () {\n _this._ngZone.onStable.subscribe({\n next: function () {\n NgZone.assertNotInAngularZone();\n scheduleMicroTask(function () {\n _this._isZoneStable = true;\n _this._runCallbacksIfReady();\n });\n }\n });\n });\n /**\n * Increases the number of pending request\n */\n @deprecated\n pending requests are now tracked with zones.\n Testability.prototype.increasePendingRequestCount =\n function () {\n this._pendingCount += 1;\n this._didWork = true;\n return this._pendingCount;\n };\n /**\n * Decreases the number of pending request\n */\n @deprecated\n pending requests are now\n tracked with zones.\n Testability.prototype.decreasePendingRequestCount = function () {\n this._pendingCount -= 1;\n if (this._pendingCount < 0) {\n throw new Error('pending async requests\n below zero');\n }\n this._runCallbacksIfReady();\n return this._pendingCount;\n };\n /**\n * Whether an associated application is stable\n */\n Testability.prototype.isStable = function ()\n {\n return this._isZoneStable && this._pendingCount === 0 && !this._ngZone.hasPendingMacrotasks;\n };\n Testability.prototype._runCallbacksIfReady = function () {\n var _this = this;\n if\n (this.isStable()) {\n // Schedules the call backs in a new frame so that it is always async.\n scheduleMicroTask(function () {\n while (_this._callbacks.length !== 0) {\n var cb =\n _this._callbacks.pop();\n clearTimeout(cb.timeoutId);\n cb.doneCb(_this._didWork);\n }\n _this._didWork = false;\n });\n } else {\n // Still not\n stable, send updates.\n var pending_1 = this.getPendingTasks();\n this._callbacks =\n this._callbacks.filter(function (cb) {\n if (cb.updateCb && cb.updateCb(pending_1)) {\n clearTimeout(cb.timeoutId);\n return false;\n }\n return true;\n });\n this._didWork = true;\n }\n };\n Testability.prototype.getPendingTasks = function () {\n if (!this.taskTrackingZone) {\n return [];\n }\n // Copy the tasks data so that we don't leak\n tasks.\n return this.taskTrackingZone.macroTasks.map(function (t) {\n return {\n source: t.source,\n // From TaskTrackingZone:\n //\n https://github.com/angular/zone.js/blob/master/lib/zone-spec/task-tracking.ts#L40\n creationLocation:\n t.creationLocation,\n data: t.data\n };\n });\n };\n Testability.prototype.addCallback = function (cb, timeout, updateCb) {\n var _this = this;\n var\n timeoutId = -1;\n if (timeout && timeout > 0) {\n timeoutId = setTimeout(function () {\n _this._callbacks = _this._callbacks.filter(function (cb) {\n return cb.timeoutId !== timeoutId;\n });\n cb(_this._didWork, _this.getPendingTasks());\n }, timeout);\n }\n this._callbacks.push({

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doneCb: cb, timeoutId: timeoutId, updateCb: updateCb });\n });\n /**\n * Wait for the application to be
stable with a timeout. If the timeout is reached before that\n * happens, the callback receives a list of the macro
tasks that were pending, otherwise null.\n * @param doneCb The callback to invoke when Angular is
stable or the timeout expires\n * whichever comes first.\n * @param timeout Optional. The maximum
time to wait for Angular to become stable. If not\n * specified, whenStable() will wait forever.\n *
@param updateCb Optional. If specified, this callback will be invoked whenever the set of\n * pending
macrotasks changes. If this callback returns true doneCb will not be invoked\n * and no further updates will
be issued.\n */\n Testability.prototype.whenStable = function (doneCb, timeout, updateCb) {\n if
(updateCb && !this.taskTrackingZone) {\n throw new Error("Task tracking zone is required when passing
an update callback to ' +\n 'whenStable(). Is \"zone.js/dist/task-tracking.js\" loaded?");\n }\n // These arguments are 'Function' above to keep the public API simple.\n this.addCallback(doneCb, timeout,
updateCb);\n this._runCallbacksIfReady();\n });\n /**\n * Get the number of pending requests\n *
@deprecated pending requests are now tracked with zones\n */\n Testability.prototype.getPendingRequestCount = function () {\n return this._pendingCount;\n };\n /**\n * Find providers by name\n * @param using The root element to search from\n * @param
provider The name of binding variable\n * @param exactMatch Whether using exactMatch\n */\n Testability.prototype.findProviders = function (using, provider, exactMatch) {\n // TODO(juliemr):
implement.\n return [];\n };\n return Testability;\n }());\n Testability.decorators = [\n { type:
Injectable }\n];\n Testability.ctorParameters = function () { return [\n { type: NgZone }\n]; };
/**\n * A global registry of {@link Testability} instances for specific elements.\n * @publicApi\n */\n var
TestabilityRegistry = /** @class */ (function () {\n function TestabilityRegistry() {\n /** @internal */\n this._applications = new Map();\n _testabilityGetter.addToWindow(this);\n }\n /**\n *
Registers an application with a testability hook so that it can be tracked\n * @param token token of application,
root element\n * @param testability Testability hook\n */\n TestabilityRegistry.prototype.registerApplication = function (token, testability) {\n this._applications.set(token, testability);\n };\n /**\n * Unregisters an application.\n * @param
token token of application, root element\n */\n TestabilityRegistry.prototype.unregisterApplication =
function (token) {\n this._applications.delete(token);\n };\n /**\n * Unregisters all
applications\n */\n TestabilityRegistry.prototype.unregisterAllApplications = function () {\n this._applications.clear();\n };\n /**\n * Get a testability hook associated with the application\n *
@param elem root element\n */\n TestabilityRegistry.prototype.getTestability = function (elem) {\n return this._applications.get(elem) || null;\n };\n /**\n * Get all registered testabilities\n */\n TestabilityRegistry.prototype.getAllTestabilities = function () {\n return
Array.from(this._applications.values());\n };\n /**\n * Get all registered applications(root elements)\n */\n TestabilityRegistry.prototype.getAllRootElements = function () {\n return
Array.from(this._applications.keys());\n };\n /**\n * Find testability of a node in the Tree\n *
@param elem node\n * @param findInAncestors whether finding testability in ancestors if testability was not
found in\n * current node\n */\n TestabilityRegistry.prototype.findTestabilityInTree = function (elem,
findInAncestors) {\n if (findInAncestors === void 0) { findInAncestors = true; }\n return
_testabilityGetter.findTestabilityInTree(this, elem, findInAncestors);\n };\n return TestabilityRegistry;\n }());\n TestabilityRegistry.decorators = [\n { type: Injectable }\n];\n TestabilityRegistry.ctorParameters =
function () { return []; };
var _NoopGetTestability = /** @class */ (function () {\n function
_NoopGetTestability() {\n }\n _NoopGetTestability.prototype.addToWindow = function (registry) { };
_NoopGetTestability.prototype.findTestabilityInTree = function (registry, elem, findInAncestors) {\n return
null;\n };\n return _NoopGetTestability;\n }());\n /**\n * Set the {@link GetTestability}
implementation used by the Angular testing framework.\n * @publicApi\n */\n function
setTestabilityGetter(getter) {\n _testabilityGetter = getter;\n }\n var _testabilityGetter = new
_NoopGetTestability();\n var _platform;\n var compileNgModuleFactory =

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compileNgModuleFactory__PRE_R3__;\n function compileNgModuleFactory__PRE_R3__(injector, options,
moduleType) {\n var compilerFactory = injector.get(CompilerFactory);\n var compiler =
compilerFactory.createCompiler([options]);\n return compiler.compileModuleAsync(moduleType);\n }\n function compileNgModuleFactory__POST_R3__(injector, options, moduleType) {\n ngDevMode &&
assertNgModuleType(moduleType);\n var moduleFactory = new NgModuleFactory$1(moduleType);\n //
All of the logic below is irrelevant for AOT-compiled code.\n if (typeof ngJitMode !== 'undefined' &&
!ngJitMode) {\n return Promise.resolve(moduleFactory);\n }\n var compilerOptions =
injector.get(COMPILER_OPTIONS, []).concat(options);\n // Configure the compiler to use the provided
options. This call may fail when multiple modules\n // are bootstrapped with incompatible options, as a
component can only be compiled according to\n // a single set of options.\n setJitOptions({\n defaultEncapsulation: _lastDefined(compilerOptions.map(function (opts) { return opts.defaultEncapsulation; })),\n
 preserveWhitespaces: _lastDefined(compilerOptions.map(function (opts) { return opts.preserveWhitespaces;
})),\n });\n if (isComponentResourceResolutionQueueEmpty()) {\n return
Promise.resolve(moduleFactory);\n }\n var compilerProviders =
_mergeArrays(compilerOptions.map(function (o) { return o.providers; }));\n // In case there are no compiler
providers, we just return the module factory as\n // there won't be any resource loader. This can happen with
Ivy, because AOT compiled\n // modules can be still passed through \"bootstrapModule\". In that case we
shouldn't\n // unnecessarily require the JIT compiler.\n if (compilerProviders.length === 0) {\n
return Promise.resolve(moduleFactory);\n }\n var compiler = getCompilerFacade();\n var
compilerInjector = Injector.create({ providers: compilerProviders });\n var resourceLoader =
compilerInjector.get(compiler.ResourceLoader);\n // The resource loader can also return a string while the
\"resolveComponentResources\"\n // always expects a promise. Therefore we need to wrap the returned value in
a promise.\n return resolveComponentResources(function (url) { return
Promise.resolve(resourceLoader.get(url)); });\n }.then(function () { return moduleFactory; });\n }\n // the
`window.ng` global utilities are only available in non-VE versions of\n // Angular. The function switch below will
make sure that the code is not\n // included into Angular when PRE mode is active.\n function
publishDefaultGlobalUtils__PRE_R3__() {\n function publishDefaultGlobalUtils__POST_R3__() {\n
ngDevMode && publishDefaultGlobalUtils();\n }\n var publishDefaultGlobalUtils$1 =
publishDefaultGlobalUtils__PRE_R3__;\n var isBoundToModule = isBoundToModule__PRE_R3__;\n function
isBoundToModule__PRE_R3__(cf) {\n return cf instanceof ComponentFactoryBoundToModule;\n }\n function
isBoundToModule__POST_R3__(cf) {\n return cf.isBoundToModule;\n }\n var
ALLOW_MULTIPLE_PLATFORMS = new InjectionToken('AllowMultipleToken');\n /**\n * A token for
third-party components that can register themselves with NgProbe.\n * \n * @publicApi\n */\n var
NgProbeToken = /** @class */ (function () {\n function NgProbeToken(name, token) {\n this.name =
name;\n this.token = token;\n }\n return NgProbeToken;\n }());\n /**\n * Creates a platform.\n *
Platforms must be created on launch using this function.\n * \n * @publicApi\n */\n function
createPlatform(injector) {\n if (_platform && !_platform.destroyed &&\n
!_platform.injector.get(ALLOW_MULTIPLE_PLATFORMS, false)) {\n throw new Error("There can be only
one platform. Destroy the previous one to create a new one.");\n }\n publishDefaultGlobalUtils$1();\n
_platform = injector.get(PlatformRef);\n var inits = injector.get(PLATFORM_INITIALIZER, null);\n if
(inits)\n inits.forEach(function (init) { return init(); });\n return _platform;\n }\n /**\n * Creates a
factory for a platform. Can be used to provide or override `Providers` specific to\n * your applciation's runtime
needs, such as `PLATFORM_INITIALIZER` and `PLATFORM_ID`.\n * \n * @param parentPlatformFactory
Another platform factory to modify. Allows you to compose factories\n * to build up configurations that might be
required by different libraries or parts of the\n * application.\n * \n * @param name Identifies the new platform
factory.\n * \n * @param providers A set of dependency providers for platforms created with the new factory.\n * \n
 * @publicApi\n */\n function createPlatformFactory(parentPlatformFactory, name, providers) {\n if
(providers === void 0) { providers = []; }\n var desc = \"Platform: \" + name;\n var marker = new

```

```

InjectionToken(desc);\n return function (extraProviders) {\n if (extraProviders === void 0) {\n extraProviders = [];\n }\n var platform = getPlatform();\n if (!platform ||\n platform.injector.get(ALLOW_MULTIPLE_PLATFORMS, false)) {\n if (parentPlatformFactory) {\n parentPlatformFactory(providers.concat(extraProviders).concat({ provide: marker, useValue: true }));\n }\n else {\n var injectedProviders = providers.concat(extraProviders).concat({ provide:\n marker, useValue: true }, {\n provide: INJECTOR_SCOPE,\n useValue: 'platform'\n });\n createPlatform(Injector.create({ providers: injectedProviders, name: desc }));\n }\n }\n return assertPlatform(marker);\n };\n}\n\n/**\n * Checks that there is currently a\n * platform that contains the given token as a provider.\n */\n * @publicApi\n */\n * ^\n * function\n * assertPlatform(requiredToken) {\n * var platform = getPlatform();\n * if (!platform) {\n * throw new\n * Error('No platform exists!');\n * }\n * if (!platform.injector.get(requiredToken, null)) {\n * throw new\n * Error('A platform with a different configuration has been created. Please destroy it first.);\n * }\n * return\n * platform;\n * }\n\n/**\n * Destroys the current Angular platform and all Angular applications on the page.\n * Destroys all modules and listeners registered with the platform.\n */\n * @publicApi\n */\n * ^\n * function\n * destroyPlatform() {\n * if (_platform && !_platform.destroyed) {\n * _platform.destroy();\n * }\n * }\n\n/**\n * Returns the current platform.\n */\n * @publicApi\n */\n * ^\n * function\n * getPlatform() {\n * return\n * _platform && !_platform.destroyed ? _platform : null;\n * }\n\n/**\n * The Angular platform is the entry point\n * for Angular on a web page.\n * Each page has exactly one platform. Services (such as reflection) which are\n * common\n * to every Angular application running on the page are bound in its scope.\n * A page's platform is\n * initialized implicitly when a platform is created using a platform\n * factory such as `PlatformBrowser`, or\n * explicitly by calling the `createPlatform()` function.\n */\n * @publicApi\n */\n * ^\n * var\n * PlatformRef = /**\n * @class */ (function () {\n * /** @internal */\n * function\n * PlatformRef(_injector) {\n * this._injector =\n * _injector;\n * this._modules = [];\n * this._destroyListeners = [];\n * this._destroyed = false;\n * }\n * /**\n * * Creates an instance of an `@NgModule` for the given platform for offline compilation.\n * *\n * * @usageNotes\n * * The following example creates the NgModule for a browser platform.\n * *\n * * ```\n * * typescript\n * * my_module.ts:\n * * @NgModule({\n * * imports:\n * * [BrowserModule]\n * * })\n * * class\n * * MyModule {\n * * }\n * * }\n * * main.ts:\n * * import\n * * {MyModuleNgFactory} from './my_module.ngfactory';\n * * import\n * * {platformBrowser} from\n * * '@angular/platform-browser';\n * * let\n * * moduleRef =\n * * platformBrowser().bootstrapModuleFactory(MyModuleNgFactory);\n * * ```\n * * ^\n * *\n * * PlatformRef.prototype.bootstrapModuleFactory = function (moduleFactory, options) {\n * * var\n * * _this = this;\n * * // Note: We need to create the NgZone _before_ we instantiate the module,\n * * // as instantiating the module\n * * creates some providers eagerly.\n * * // So we create a mini parent injector that just contains the new NgZone\n * * and\n * * // pass that as parent to the NgModuleFactory.\n * * var\n * * ngZoneOption = options ? options.ngZone :\n * * undefined;\n * * var\n * * ngZoneEventCoalescing = (options && options.ngZoneEventCoalescing) || false;\n * * var\n * * ngZone = getNgZone(ngZoneOption, ngZoneEventCoalescing);\n * * var\n * * providers = [{ provide: NgZone,\n * * useValue: ngZone }];\n * * // Attention: Don't use ApplicationRef.run here,\n * * // as we want to be sure that\n * * all possible constructor calls are inside `ngZone.run`!\n * * return\n * * ngZone.run(function () {\n * * var\n * * ngZoneInjector = Injector.create({ providers: providers, parent: _this.injector, name:\n * * moduleFactory.moduleType.name });\n * * var\n * * moduleRef = moduleFactory.create(ngZoneInjector);\n * * var\n * * exceptionHandler = moduleRef.injector.get(ErrorHandler, null);\n * * if\n * * (!exceptionHandler) {\n * * throw\n * * new\n * * Error('No ErrorHandler. Is platform module (BrowserModule) included?');\n * * }\n * * });\n * * moduleRef.onDestroy(function () {\n * * return\n * * remove(_this._modules, moduleRef);\n * * });\n * * ngZone.runOutsideAngular(function () {\n * * return\n * * ngZone.onError.subscribe({\n * * next: function (error) {\n * * exceptionHandler.handleError(error);\n * * },\n * * });\n * * });\n * * return\n * * _callAndReportToErrorHandler(exceptionHandler, ngZone, function () {\n * * var\n * * initStatus =\n * * moduleRef.injector.get(ApplicationInitStatus);\n * * initStatus.runInitializers();\n * * return\n * * initStatus.donePromise.then(function () {\n * * if\n * * (ivyEnabled) {\n * * // If the

```



task when the application starts (for example for a polling process, started with a `setInterval`, a `setTimeout` or using RxJS operators like `interval`) - the `isStable` Observable runs outside of the Angular zone.

Let's imagine that you start a recurrent task (here incrementing a counter, using RxJS `interval`), and at the same time subscribe to `isStable`.

```

constructor(appRef: ApplicationRef) {
 appRef.isStable.pipe(
 filter(stable => stable)
).subscribe(() =>
 console.log('App is stable now');
 interval(1000).subscribe(counter => console.log(counter));
)
}

```

In this example, `isStable` will never emit `true`, and the trace `"App is stable now"` will never get logged.

If you want to execute something when the app is stable, you have to wait for the application to be stable before starting your polling process.

```

constructor(appRef: ApplicationRef) {
 appRef.isStable.pipe(
 first(stable => stable),
 tap(stable => console.log('App is stable now')),
 switchMap(() => interval(1000))
).subscribe(counter => console.log(counter));
}

```

In this example, the trace `"App is stable now"` will be logged and then the counter starts incrementing every second.

Note also that this Observable runs outside of the Angular zone, which means that the code in the subscription to this Observable will not trigger the change detection.

Let's imagine that instead of logging the counter value, you update a field of your component and display it in its template.

```

constructor(appRef: ApplicationRef) {
 appRef.isStable.pipe(
 first(stable => stable),
 switchMap(() => interval(1000))
).subscribe(counter => this.value = counter);
}

```

As the `isStable` Observable runs outside the zone, the `value` field will be updated properly, but the template will not be refreshed! You'll have to manually trigger the change detection to update the template.

```

constructor(appRef: ApplicationRef, cd: ChangeDetectorRef) {
 appRef.isStable.pipe(
 first(stable => stable),
 switchMap(() => interval(1000))
).subscribe(counter => {
 this.value = counter;
 cd.detectChanges();
 });
}

```

Or make the subscription callback run inside the zone.

```

constructor(appRef: ApplicationRef, zone: NgZone) {
 appRef.isStable.pipe(
 first(stable => stable),
 switchMap(() => interval(1000))
).subscribe(counter => zone.run(() => this.value = counter));
}

```

```

@publicApi
var ApplicationRef = /** @class */
(function () {
 /** @internal */
 function ApplicationRef(_zone, _console, _injector, _exceptionHandler,
 _componentFactoryResolver, _initStatus) {
 var _this = this;
 this._zone = _zone;
 this._console = _console;
 this._injector = _injector;
 this._exceptionHandler =
 _exceptionHandler;
 this._componentFactoryResolver = _componentFactoryResolver;
 this._initStatus = _initStatus;
 /** @internal */
 this._bootstrapListeners = [];
 this._views =
 [];
 this._runningTick = false;
 this._enforceNoNewChanges = false;
 this._stable = true;
 /**
 * Get a list of component types registered to this application.
 * This list is populated even
 * before the component is created.
 */
 this.componentTypes = [];
 /**
 * Get a list of
 * components registered to this application.
 */
 this.components = [];
 this._enforceNoNewChanges = isDevMode();
 this._zone.onMicrotaskEmpty.subscribe({
 next:
 function () {
 _this._zone.run(function () {
 _this.tick();
 });
 }
 });
 var isCurrentlyStable = new rxjs.Observable(function (observer) {
 _this._stable =
 _this._zone.isStable && !_this._zone.hasPendingMacrotasks &&
 !_this._zone.hasPendingMicrotasks;
 _this._zone.runOutsideAngular(function () {
 observer.next(_this._stable);
 observer.complete();
 });
 });
 var isStable =
 new rxjs.Observable(function (observer) {
 // Create the subscription to onStable outside the Angular
 // Zone so that
 // the callback is run outside the Angular Zone.
 var stableSub;
 _this._zone.runOutsideAngular(function () {
 stableSub = _this._zone.onStable.subscribe(function () {
 NgZone.assertNotInAngularZone();
 // Check whether there are no pending
 // macro/micro tasks in the next tick
 // to allow for NgZone to update the state.
 scheduleMicroTask(function () {
 if (!_this._stable && !_this._zone.hasPendingMacrotasks &&
 !_this._zone.hasPendingMicrotasks) {
 _this._stable = true;
 }
 });
 });
 });
 });
 }
 }
}

```



```

 observer.next(true);\n
 });\n
 });\n
 var\n
 unstableSub = _this._zone.onUnstable.subscribe(function () {\n
 NgZone.assertInAngularZone();\n
 if (_this._stable) {\n
 _this._stable = false;\n
 _this._zone.runOutsideAngular(function () {\n
 observer.next(false);\n
 });\n
 });\n
 return function () {\n
 stableSub.unsubscribe();\n
 unstableSub.unsubscribe();\n
 });\n
 });\n
 this.isStable =\n
 rxjs.merge(isCurrentlyStable, isStable.pipe(operators.share()));\n
 });\n
 /**\n
 * Bootstrap a new\n
 component at the root level of the application.\n
 * @usageNotes\n
 * ### Bootstrap process\n
 *\n
 * When bootstrapping a new root component into an application, Angular mounts the\n
 * specified\n
 application component onto DOM elements identified by the componentType's\n
 * selector and kicks off\n
 automatic change detection to finish initializing the component.\n
 *\n
 * Optionally, a component can be\n
 mounted onto a DOM element that does not match the\n
 * componentType's selector.\n
 *\n
 * ###\n
 Example\n
 * {@example core/ts/platform/platform.ts region='longform'}\n
 */\n
 ApplicationRef.prototype.bootstrap = function (componentOrFactory, rootSelectorOrNode) {\n
 var _this =\n
 this;\n
 if (!this._initStatus.done) {\n
 throw new Error('Cannot bootstrap as there are still\n
 asynchronous initializers running. Bootstrap components in the `ngDoBootstrap` method of the root module.');

```

```

a view so that it will be dirty checked.\n * The view will be automatically detached when it is destroyed.\n
* This will throw if the view is already attached to a ViewContainer.\n */\n
ApplicationRef.prototype.attachView = function (viewRef) {\n var view = viewRef;\n
this._views.push(view);\n view.attachToAppRef(this);\n };\n /**\n * Detaches a view from
dirty checking again.\n */\n ApplicationRef.prototype.detachView = function (viewRef) {\n var
view = viewRef;\n remove(this._views, view);\n view.detachFromAppRef();\n };\n
ApplicationRef.prototype._loadComponent = function (componentRef) {\n
this.attachView(componentRef.hostView);\n this.tick();\n this.components.push(componentRef);\n
 // Get the listeners lazily to prevent DI cycles.\n var listeners =
this._injector.get(APP_BOOTSTRAP_LISTENER, []).concat(this._bootstrapListeners);\n
listeners.forEach(function (listener) { return listener(componentRef); });\n };\n
ApplicationRef.prototype._unloadComponent = function (componentRef) {\n
this.detachView(componentRef.hostView);\n remove(this.components, componentRef);\n };\n /**
@internal */\n ApplicationRef.prototype.ngOnDestroy = function () {\n // TODO(alxhub): Dispose of the
NgZone.\n this._views.slice().forEach(function (view) { return view.destroy(); });\n };\n
Object.defineProperty(ApplicationRef.prototype, "viewCount", {\n /**\n * Returns the number of
attached views.\n */\n get: function () {\n return this._views.length;\n },\n
enumerable: false,\n configurable: true\n });\n return ApplicationRef;\n }());\n
ApplicationRef.decorators = [\n { type: Injectable }\n];\n ApplicationRef.ctorParameters = function () {\n
return [\n { type: NgZone },\n { type: Console },\n { type: Injector },\n { type: ErrorHandler },\n
 { type: ComponentFactoryResolver },\n { type: ApplicationInitStatus }\n];\n };\n function remove(list, el)
{\n var index = list.indexOf(el);\n if (index > -1) {\n list.splice(index, 1);\n }\n }\n function
_lastDefined(args) {\n for (var i = args.length - 1; i >= 0; i--) {\n if (args[i] !== undefined) {\n
return args[i];\n }\n }\n return undefined;\n }\n function _mergeArrays(parts) {\n var result =
[];\n parts.forEach(function (part) { return part && result.push.apply(result, __spread(part)); });\n return
result;\n }\n /**\n * @license\n * Copyright Google LLC All Rights Reserved.\n *\n * Use of this
source code is governed by an MIT-style license that can be\n * found in the LICENSE file at
https://angular.io/license\n *\n * @license\n * Copyright Google LLC All Rights Reserved.\n
*\n * Use of this source code is governed by an MIT-style license that can be\n * found in the LICENSE file at
https://angular.io/license\n *\n * @license\n * Copyright Google LLC All Rights Reserved.\n
*\n * Use of this source code is governed by an MIT-style license that can be\n * found in the LICENSE file at
https://angular.io/license\n *\n * @license\n * Copyright Google LLC All Rights Reserved.\n
*\n * Used to load ng module factories.\n *\n * @publicApi\n *
@deprecated the `string` form of `loadChildren` is deprecated, and `NgModuleFactoryLoader` is\n * part of its
implementation. See `LoadChildren` for more details.\n */\n var NgModuleFactoryLoader = /** @class */
(function () {\n function NgModuleFactoryLoader() {\n }\n return NgModuleFactoryLoader;\n }());\n
 function getModuleFactory__PRE_R3__(id) {\n var factory = getRegisteredNgModuleType(id);\n if
(!factory)\n throw noModuleError(id);\n return factory;\n }\n function
getModuleFactory__POST_R3__(id) {\n var type = getRegisteredNgModuleType(id);\n if (!type)\n
throw noModuleError(id);\n return new NgModuleFactory$1(type);\n }\n /**\n * Returns the
NgModuleFactory with the given id, if it exists and has been loaded.\n * Factories for modules that do not specify
an `id` cannot be retrieved. Throws if the module\n * cannot be found.\n * @publicApi\n */\n var
getModuleFactory = getModuleFactory__PRE_R3__;\n function noModuleError(id) {\n return new
Error("No module with ID \" + id + \" loaded");\n }\n var _SEPARATOR = '#';\n var
FACTORY_CLASS_SUFFIX = 'NgFactory';\n /**\n * Configuration for SystemJsNgModuleLoader.\n *\n * token.\n *\n * @publicApi\n * @deprecated the `string` form of `loadChildren` is deprecated, and
`SystemJsNgModuleLoaderConfig`\n * is part of its implementation. See `LoadChildren` for more details.\n
*/\n var SystemJsNgModuleLoaderConfig = /** @class */ (function () {\n function
SystemJsNgModuleLoaderConfig() {\n }\n return SystemJsNgModuleLoaderConfig;\n }());\n var

```

```

DEFAULT_CONFIG = {\n factoryPathPrefix: '\n factoryPathSuffix: '.ngfactory',\n };\n /**\n *
NgModuleFactoryLoader that uses SystemJS to load NgModuleFactory\n * @publicApi\n * @deprecated the
`string` form of `loadChildren` is deprecated, and `SystemJsNgModuleLoader` is\n * part of its implementation.
See `LoadChildren` for more details.\n */\n var SystemJsNgModuleLoader = /** @class */ (function () {\n
function SystemJsNgModuleLoader(_compiler, config) {\n this._compiler = _compiler;\n this._config
= config || DEFAULT_CONFIG;\n }\n SystemJsNgModuleLoader.prototype.load = function (path) {\n
 var legacyOfflineMode = !livyEnabled && this._compiler instanceof Compiler;\n return legacyOfflineMode
? this.loadFactory(path) : this.loadAndCompile(path);\n };\n
SystemJsNgModuleLoader.prototype.loadAndCompile = function (path) {\n var _this = this;\n var _a
= __read(path.split(_SEPARATOR), 2), module = _a[0], exportName = _a[1];\n if (exportName ===
undefined) {\n exportName = 'default';\n }\n return System.import(module)\n
.then(function (module) { return module[exportName]; })\n .then(function (type) { return
checkNotEmpty(type, module, exportName); })\n .then(function (type) { return
_this._compiler.compileModuleAsync(type); });\n };\n SystemJsNgModuleLoader.prototype.loadFactory =
function (path) {\n var _a = __read(path.split(_SEPARATOR), 2), module = _a[0], exportName = _a[1];\n
 var factoryClassSuffix = FACTORY_CLASS_SUFFIX;\n if (exportName === undefined) {\n
exportName = 'default';\n factoryClassSuffix = '';\n }\n return
System.import(this._config.factoryPathPrefix + module + this._config.factoryPathSuffix)\n .then(function
(module) { return module[exportName + factoryClassSuffix]; })\n .then(function (factory) { return
checkNotEmpty(factory, module, exportName); });\n };\n return SystemJsNgModuleLoader;\n }());\n
SystemJsNgModuleLoader.decorators = [\n { type: Injectable }\n];\n
SystemJsNgModuleLoader.ctorParameters = function () { return [\n { type: Compiler },\n { type:
SystemJsNgModuleLoaderConfig, decorators: [{ type: Optional }] }\n];\n function checkNotEmpty(value,
modulePath, exportName) {\n if (!value) {\n throw new Error("Cannot find \"" + exportName + "\" in \""
+ modulePath + "\"");\n }\n return value;\n }\n\n /**\n * Represents an Angular
[view](guide/glossary#view "Definition").\n * @see {@link ChangeDetectorRef#usage-notes Change
detection usage}\n * @publicApi\n */\n var ViewRef$1 = /** @class */ (function (_super) {\n
__extends(ViewRef, _super);\n function ViewRef() {\n return _super !== null && _super.apply(this,
arguments) || this;\n }\n return ViewRef;\n })(ChangeDetectorRef);\n\n /**\n * Represents an Angular
[view](guide/glossary#view) in a view container.\n * An [embedded view](guide/glossary#view-tree) can be
referenced from a component\n * other than the hosting component whose template defines it, or it can be
defined\n * independently by a `TemplateRef`.\n * Properties of elements in a view can change, but the
structure (number and order) of elements in\n * a view cannot. Change the structure of elements by inserting,
moving, or\n * removing nested views in a view container.\n * @see `ViewContainerRef`\n * @usageNotes\n * The following template breaks down into two separate `TemplateRef` instances,\n * an
outer one and an inner one.\n * ```\n * Count: {{items.length}}\n * \n * <li *ngFor="let item
of items">{{item}}\n * \n * ```\n * This is the outer `TemplateRef`:\n * ```\n *
Count: {{items.length}}\n * \n * <ng-template ngFor let-item [ngForOf]="items"></ng-template>\n
 * \n * ```\n * This is the inner `TemplateRef`:\n * ```\n * {{item}}\n * ```\n
 * The outer and inner `TemplateRef` instances are assembled into views as follows:\n * ```\n *
<!-- ViewRef: outer-0 -->\n * Count: 2\n * \n * <ng-template view-container-ref></ng-template>\n
 * <!-- ViewRef: inner-1 -->first<!-- /ViewRef: inner-1 -->\n * <!-- ViewRef: inner-2 --
 * second<!-- /ViewRef: inner-2 -->\n * \n * <!-- /ViewRef: outer-0 -->\n * ```\n *
 * @publicApi\n */\n var EmbeddedViewRef = /** @class */ (function (_super) {\n
__extends(EmbeddedViewRef, _super);\n function EmbeddedViewRef() {\n return _super !== null &&
_super.apply(this, arguments) || this;\n }\n return EmbeddedViewRef;\n })(ViewRef$1);\n\n /**\n *
 * @license\n * Copyright Google LLC All Rights Reserved.\n * Use of this source code is governed by an
MIT-style license that can be\n * found in the LICENSE file at https://angular.io/license\n */\n }

```

```

@publicApi\n
 *^\n
 var DebugEventListener = /** @class */ (function () {\n
 function\n
 DebugEventListener(name, callback) {\n
 this.name = name;\n
 this.callback = callback;\n
 }\n
 return DebugEventListener;\n
 }());\n
 var DebugNode__PRE_R3__ = /** @class */ (function () {\n
 function\n
 DebugNode__PRE_R3__(nativeNode, parent, _debugContext) {\n
 this.listeners = [];\n
 this.parent =\n
 null;\n
 this._debugContext = _debugContext;\n
 this.nativeNode = nativeNode;\n
 if (parent &&\n
 parent instanceof DebugElement__PRE_R3__) {\n
 parent.addChild(this);\n
 }\n
 }\n
 Object.defineProperty(DebugNode__PRE_R3__.prototype, \"injector\", {\n
 get: function () {\n
 return this._debugContext.injector;\n
 },\n
 enumerable: false,\n
 configurable: true\n
 });\n
 Object.defineProperty(DebugNode__PRE_R3__.prototype, \"componentInstance\", {\n
 get: function () {\n
 return this._debugContext.component;\n
 },\n
 enumerable: false,\n
 configurable: true\n
 });\n
 Object.defineProperty(DebugNode__PRE_R3__.prototype, \"context\", {\n
 get: function () {\n
 return this._debugContext.context;\n
 },\n
 enumerable: false,\n
 configurable: true\n
 });\n
 Object.defineProperty(DebugNode__PRE_R3__.prototype, \"references\", {\n
 get: function () {\n
 return this._debugContext.references;\n
 },\n
 enumerable: false,\n
 configurable: true\n
 });\n
 Object.defineProperty(DebugNode__PRE_R3__.prototype, \"providerTokens\", {\n
 get: function () {\n
 return this._debugContext.providerTokens;\n
 },\n
 enumerable: false,\n
 configurable:\n
 true\n
 });\n
 return DebugNode__PRE_R3__;\n
 }());\n
 var DebugElement__PRE_R3__ = /** @class */\n
 (function (_super) {\n
 __extends(DebugElement__PRE_R3__, _super);\n
 function\n
 DebugElement__PRE_R3__(nativeNode, parent, _debugContext) {\n
 var _this = _super.call(this,\n
 nativeNode, parent, _debugContext) || this;\n
 _this.properties = {};\n
 _this.attributes = {};\n
 _this.classes = {};\n
 _this.styles = {};\n
 _this.childNodes = [];\n
 _this.nativeElement =\n
 nativeNode;\n
 return _this;\n
 }\n
 DebugElement__PRE_R3__.prototype.addChild = function (child)\n
 {\n
 if (child) {\n
 this.childNodes.push(child);\n
 child.parent = this;\n
 }\n
 };\n
 DebugElement__PRE_R3__.prototype.removeChild = function (child) {\n
 var childIndex =\n
 this.childNodes.indexOf(child);\n
 if (childIndex !== -1) {\n
 child.parent = null;\n
 this.childNodes.splice(childIndex, 1);\n
 }\n
 };\n
 DebugElement__PRE_R3__.prototype.insertChildrenAfter = function (child, newChildren) {\n
 var _a;\n
 var _this = this;\n
 var siblingIndex = this.childNodes.indexOf(child);\n
 if (siblingIndex !== -1) {\n
 (_a = this.childNodes).splice.apply(_a, __spread([siblingIndex + 1, 0], newChildren));\n
 newChildren.forEach(function (c) {\n
 if (c.parent) {\n
 c.parent.removeChild(c);\n
 }\n
 child.parent = _this;\n
 });\n
 }\n
 };\n
 DebugElement__PRE_R3__.prototype.insertBefore = function (refChild, newChild) {\n
 var refIndex =\n
 this.childNodes.indexOf(refChild);\n
 if (refIndex === -1) {\n
 this.addChild(newChild);\n
 }\n
 else {\n
 if (newChild.parent) {\n
 newChild.parent.removeChild(newChild);\n
 }\n
 newChild.parent = this;\n
 this.childNodes.splice(refIndex, 0, newChild);\n
 }\n
 };\n
 DebugElement__PRE_R3__.prototype.query = function (predicate) {\n
 var results =\n
 this.queryAll(predicate);\n
 return results[0] || null;\n
 };\n
 DebugElement__PRE_R3__.prototype.queryAll = function (predicate) {\n
 var matches = [];\n
 _queryElementChildren(this, predicate, matches);\n
 return matches;\n
 };\n
 DebugElement__PRE_R3__.prototype.queryAllNodes = function (predicate) {\n
 var matches = [];\n
 _queryNodeChildren(this, predicate, matches);\n
 return matches;\n
 };\n
 Object.defineProperty(DebugElement__PRE_R3__.prototype, \"children\", {\n
 get: function () {\n
 return this.childNodes //\n
 .filter(function (node) { return node instanceof DebugElement__PRE_R3__;\n
 });\n
 },\n
 enumerable: false,\n
 configurable: true\n
 });\n
 DebugElement__PRE_R3__.prototype.triggerEventHandler = function (eventName, eventObj) {\n
 this.listeners.forEach(function (listener) {\n
 if (listener.name === eventName) {\n
 listener.callback(eventObj);\n
 }\n
 });\n
 return DebugElement__PRE_R3__;\n
 } (DebugNode__PRE_R3__);\n
 /**\n
 * @publicApi\n
 *^\n
 function asNativeElements(debugEls) {\n

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return debugEls.map(function (el) { return el.nativeElement; });\n }\n function _queryElementChildren(element,
predicate, matches) {\n element.childNodes.forEach(function (node) {\n if (node instanceof
DebugElement__PRE_R3__) {\n if (predicate(node)) {\n matches.push(node);\n }\n _queryElementChildren(node, predicate, matches);\n }\n });\n }\n function
_queryNodeChildren(parentNode, predicate, matches) {\n if (parentNode instanceof
DebugElement__PRE_R3__) {\n parentNode.childNodes.forEach(function (node) {\n if
(predicate(node)) {\n matches.push(node);\n }\n })\n if (node instanceof
DebugElement__PRE_R3__) {\n _queryNodeChildren(node, predicate, matches);\n }\n }\n }\n var DebugNode__POST_R3__ = /** @class */ (function () {\n function
DebugNode__POST_R3__(nativeNode) {\n this.nativeElement = nativeNode;\n }\n Object.defineProperty(DebugNode__POST_R3__.prototype, \"parent\", {\n get: function () {\n var
parent = this.nativeElement.parentNode;\n return parent ? new DebugElement__POST_R3__(parent) : null;\n },\n enumerable: false,\n configurable: true\n });\n Object.defineProperty(DebugNode__POST_R3__.prototype, \"injector\", {\n get: function () {\n return
getInjector(this.nativeElement);\n },\n enumerable: false,\n configurable: true\n });\n Object.defineProperty(DebugNode__POST_R3__.prototype, \"componentInstance\", {\n get: function () {\n var
nativeElement = this.nativeElement;\n return nativeElement &&\n (getComponent(nativeElement) || getOwningComponent(nativeElement));\n },\n enumerable: false,\n configurable: true\n });\n Object.defineProperty(DebugNode__POST_R3__.prototype, \"context\", {\n get: function () {\n return
getComponent(this.nativeElement) || getContext(this.nativeElement);\n },\n enumerable: false,\n configurable: true\n });\n Object.defineProperty(DebugNode__POST_R3__.prototype, \"listeners\", {\n get: function () {\n return
getListeners(this.nativeElement).filter(function (listener) { return listener.type === 'dom'; });\n },\n enumerable: false,\n configurable: true\n });\n Object.defineProperty(DebugNode__POST_R3__.prototype, \"references\", {\n get: function () {\n return
getLocalRefs(this.nativeElement);\n },\n enumerable: false,\n configurable: true\n });\n Object.defineProperty(DebugNode__POST_R3__.prototype, \"providerTokens\", {\n get: function () {\n return
getInjectionTokens(this.nativeElement);\n },\n enumerable: false,\n configurable:
true\n });\n return DebugNode__POST_R3__(\n }());\n var DebugElement__POST_R3__ = /** @class
*/ (function (_super) {\n __extends(DebugElement__POST_R3__, _super);\n function
DebugElement__POST_R3__(nativeNode) {\n var _this = this;\n ngDevMode &&
assertDomNode(nativeNode);\n _this = _super.call(this, nativeNode) || this;\n return _this;\n }\n Object.defineProperty(DebugElement__POST_R3__.prototype, \"nativeElement\", {\n get: function () {\n return
this.nativeElement.nodeType == Node.ELEMENT_NODE ? this.nativeElement : null;\n },\n enumerable: false,\n configurable: true\n });\n Object.defineProperty(DebugElement__POST_R3__.prototype, \"name\", {\n get: function () {\n try
{\n var context = loadLContext(this.nativeElement);\n var IView = context.IView;\n var tData = IView[TVIEW].data;\n var tNode = tData[context.nodeIndex];\n return
tNode.value;\n }\n catch (e) {\n return this.nativeElement.nodeName;\n }\n },\n enumerable: false,\n configurable: true\n });\n Object.defineProperty(DebugElement__POST_R3__.prototype, \"properties\", {\n /**\n * Gets a
map of property names to property values for an element.\n *\n * This map includes:\n * -
Regular property bindings (e.g. `[id]='id'`)\n * - Host property bindings (e.g. `{[id]: 'id'}`)\n * -
Interpolated property bindings (e.g. `id='{{ value }}'`)\n *\n * It does not include:\n * -
input property bindings (e.g. `[myCustomInput]='value'`)\n * - attribute bindings (e.g.
`[attr.role]='menu'`)\n */\n get: function () {\n var context =
loadLContext(this.nativeElement, false);\n if (context == null) {\n return {};\n }\n var IView = context.IView;\n var tData = IView[TVIEW].data;\n var tNode =

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tData[context.nodeIndex];\n var properties = {};\n // Collect properties from the DOM.\n copyDomProperties(this.nativeElement, properties);\n // Collect properties from the bindings. This is\n // needed for animation renderer which has\n // synthetic properties which don't get reflected into the\n DOM.\n collectPropertyBindings(properties, tNode, IView, tData);\n return properties;\n },\n enumerable: false,\n configurable: true\n });\n Object.defineProperty(DebugElement__POST_R3__.prototype, \"attributes\", {\n get: function () {\n var attributes = {};\n var element = this.nativeElement;\n if (!element) {\n return\n attributes;\n }\n var context = loadLContext(element, false);\n if (context == null) {\n return {};\n }\n var IView = context.IView;\n var tNodeAttrs =\n IView[TVIEW].data[context.nodeIndex].attrs;\n var lowercaseTNodeAttrs = [];\n // For debug\n nodes we take the element's attribute directly from the DOM since it allows us\n // to account for ones that\n weren't set via bindings (e.g. ViewEngine keeps track of the ones\n // that are set through `Renderer2`).\n The problem is that the browser will lowercase all names,\n // however since we have the attributes already\n on the TNode, we can preserve the case by going\n // through them once, adding them to the `attributes`\n map and putting their lower-cased name\n // into an array. Afterwards when we're going through the native\n DOM attributes, we can check\n // whether we haven't run into an attribute already through the TNode.\n if (tNodeAttrs) {\n var i = 0;\n while (i < tNodeAttrs.length) {\n var\n attrName = tNodeAttrs[i];\n // Stop as soon as we hit a marker. We only care about the regular\n attributes. Everything\n // else will be handled below when we read the final attributes off the DOM.\n if (typeof attrName !== 'string')\n break;\n var attrValue = tNodeAttrs[i\n + 1];\n attributes[attrName] = attrValue;\n lowercaseTNodeAttrs.push(attrName.toLowerCase());\n i += 2;\n }\n }\n var eAttrs = element.attributes;\n for (var i = 0; i < eAttrs.length; i++) {\n var attr =\n eAttrs[i];\n var lowercaseName = attr.name.toLowerCase();\n // Make sure that we don't\n assign the same attribute both in its\n // case-sensitive form and the lower-cased one from the browser.\n if (lowercaseTNodeAttrs.indexOf(lowercaseName) === -1) {\n // Save the lowercase name\n to align the behavior between browsers.\n // IE preserves the case, while all other browser convert it to\n lower case.\n attributes[lowercaseName] = attr.value;\n }\n }\n return\n attributes;\n },\n enumerable: false,\n configurable: true\n });\n Object.defineProperty(DebugElement__POST_R3__.prototype, \"styles\", {\n get: function () {\n if\n (this.nativeElement && this.nativeElement.style) {\n return this.nativeElement.style;\n }\n return {};\n },\n enumerable: false,\n configurable: true\n });\n Object.defineProperty(DebugElement__POST_R3__.prototype, \"classes\", {\n get: function () {\n var result = {};\n var element = this.nativeElement;\n // SVG elements return an\n `SVGAnimatedString` instead of a plain string for the `className`.\n var className =\n element.className;\n var classes = className && typeof className !== 'string' ?\n className.baseVal.split(' '):\n className.split(' ');\n classes.forEach(function (value) {\n return\n result[value] = true;\n });\n return result;\n },\n enumerable: false,\n configurable: true\n });\n Object.defineProperty(DebugElement__POST_R3__.prototype, \"childNodes\", {\n get: function () {\n var\n childNodes = this.nativeElement.childNodes;\n var children = [];\n for (var i = 0;\n i < childNodes.length; i++) {\n var element = childNodes[i];\n children.push(getDebugNode__POST_R3__(element));\n }\n return children;\n },\n enumerable: false,\n configurable: true\n });\n Object.defineProperty(DebugElement__POST_R3__.prototype, \"children\", {\n get: function () {\n var\n nativeElement = this.nativeElement;\n if (!nativeElement)\n return [];\n var\n childNodes = nativeElement.childNodes;\n var children = [];\n for (var i = 0; i < childNodes.length;\n i++) {\n var element = childNodes[i];\n children.push(getDebugNode__POST_R3__(element));\n }\n return children;\n },\n }

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enumerable: false,\n configurable: true\n });\n DebugElement__POST_R3__.prototype.query =
function (predicate) {\n var results = this.queryAll(predicate);\n return results[0] || null;\n };\n DebugElement__POST_R3__.prototype.queryAll = function (predicate) {\n var matches = [];\n _queryAllR3(this, predicate, matches, true);\n return matches;\n };\n DebugElement__POST_R3__.prototype.queryAllNodes = function (predicate) {\n var matches = [];\n _queryAllR3(this, predicate, matches, false);\n return matches;\n };\n DebugElement__POST_R3__.prototype.triggerEventHandler = function (eventName, eventObj) {\n var node
= this.nativeNode;\n var invokedListeners = [];\n this.listeners.forEach(function (listener) {\n
if (listener.name === eventName) {\n var callback = listener.callback;\n callback.call(node,
eventObj);\n invokedListeners.push(callback);\n }\n });\n // We need to check
whether `eventListeners` exists, because it's something\n // that Zone.js only adds to `EventTarget` in browser
environments.\n if (typeof node.eventListeners === 'function') {\n // Note that in Ivy we wrap event
listeners with a call to `event.preventDefault` in some\n // cases. We use `__ngUnwrap__` as a special token
that gives us access to the actual event\n // listener.\n node.eventListeners(eventName).forEach(function (listener) {\n // In order to ensure that we can detect
the special __ngUnwrap__ token described above, we\n // use `toString` on the listener and see if it
contains the token. We use this approach to\n // ensure that it still worked with compiled code since it
cannot remove or rename string\n // literals. We also considered using a special function name (i.e.
if(listener.name ===\n // special)) but that was more cumbersome and we were also concerned the
compiled code could\n // strip the name, turning the condition in to (\"" === "\") and always returning
true.\n if (listener.toString().indexOf('__ngUnwrap__') !== -1) {\n var unwrappedListener
= listener('__ngUnwrap__');\n return invokedListeners.indexOf(unwrappedListener) === -1 &&\n
unwrappedListener.call(node, eventObj);\n }\n });\n }\n return
DebugElement__POST_R3__;\n } (DebugNode__POST_R3__);\n function copyDomProperties(element,
properties) {\n if (element) {\n // Skip own properties (as those are patched)\n var obj =
Object.getPrototypeOf(element);\n var NodePrototype = Node.prototype;\n while (obj !== null &&
obj !== NodePrototype) {\n var descriptors = Object.getOwnPropertyDescriptors(obj);\n for (var
key in descriptors) {\n if (!key.startsWith('__') && !key.startsWith('on')) {\n // don't
include properties starting with `__` and `on`.\n // `__` are patched values which should not be
included.\n // `on` are listeners which also should not be included.\n var value =
element[key];\n if (isPrimitiveValue(value)) {\n properties[key] = value;\n
 }\n }\n }\n obj = Object.getPrototypeOf(obj);\n }\n }\n function
isPrimitiveValue(value) {\n return typeof value === 'string' || typeof value === 'boolean' || typeof value ===
'number' ||\n value === null;\n }\n function _queryAllR3(parentElement, predicate, matches,
elementsOnly) {\n var context = loadLContext(parentElement.nativeNode, false);\n if (context !== null) {\n
 var parentTNode = context.IView[TVIEW].data[context.nodeIndex];\n _queryNodeChildrenR3(parentTNode, context.IView, predicate, matches, elementsOnly,
parentElement.nativeNode);\n }\n else {\n // If the context is null, then `parentElement` was either
created with Renderer2 or native DOM\n // APIs.\n _queryNativeNodeDescendants(parentElement.nativeNode, predicate, matches, elementsOnly);\n }\n }\n /**\n * Recursively match the current TNode against the predicate, and goes on with the next ones.\n *\n * @param tNode the current TNode\n * @param IView the LView of this TNode\n * @param predicate the
predicate to match\n * @param matches the list of positive matches\n * @param elementsOnly whether only
elements should be searched\n * @param rootNativeNode the root native node @ which predicate should not be
matched\n */\n function _queryNodeChildrenR3(tNode, IView, predicate, matches, elementsOnly,
rootNativeNode) {\n var e_1, _a;\n ngDevMode && assertTNodeForLView(tNode, IView);\n var
nativeNode = getNativeByTNodeOrNull(tNode, IView);\n // For each type of TNode, specific logic is
executed.\n if (tNode.type & (3 /* AnyRNode */ | 8 /* ElementContainer */)) {\n // Case 1: the TNode is

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an element\n // The native node has to be checked.\n _addQueryMatchR3(nativeNode, predicate,
matches, elementsOnly, rootNativeNode);\n if (isComponentHost(tNode)) {\n // If the element is the
host of a component, then all nodes in its view have to be processed.\n // Note: the component's content
(tNode.child) will be processed from the insertion points.\n var componentView =
getComponentLViewByIndex(tNode.index, lView);\n if (componentView &&
componentView[TVIEW].firstChild) {\n _queryNodeChildrenR3(componentView[TVIEW].firstChild,
componentView, predicate, matches, elementsOnly, rootNativeNode);\n }\n } else {\n
 if (tNode.child) {\n // Otherwise, its children have to be processed.\n
 _queryNodeChildrenR3(tNode.child, lView, predicate, matches, elementsOnly, rootNativeNode);\n }\n
 // We also have to query the DOM directly in order to catch elements inserted through\n // Renderer2.
Note that this is __not__ optimal, because we're walking similar trees multiple\n // times. ViewEngine
could do it more efficiently, because all the insertions go through\n // Renderer2, however that's not the
case in Ivy. This approach is being used because:\n // 1. Matching the ViewEngine behavior would mean
potentially introducing a dependency\n // from `Renderer2` to Ivy which could bring Ivy code into
ViewEngine.\n // 2. We would have to make `Renderer3` \"know\" about debug nodes.\n // 3. It
allows us to capture nodes that were inserted directly via the DOM.\n nativeNode &&
_queryNativeNodeDescendants(nativeNode, predicate, matches, elementsOnly);\n }\n // In all cases, if
a dynamic container exists for this node, each view inside it has to be\n // processed.\n var
nodeOrContainer = lView[tNode.index];\n if (isLContainer(nodeOrContainer)) {\n
 _queryNodeChildrenInContainerR3(nodeOrContainer, predicate, matches, elementsOnly, rootNativeNode);\n
 }\n } else if (tNode.type & 4 /* Container */) {\n // Case 2: the TNode is a container\n // The
native node has to be checked.\n var lContainer = lView[tNode.index];\n
 _addQueryMatchR3(lContainer[NATIVE], predicate, matches, elementsOnly, rootNativeNode);\n // Each
view inside the container has to be processed.\n _queryNodeChildrenInContainerR3(lContainer, predicate,
matches, elementsOnly, rootNativeNode);\n }\n } else if (tNode.type & 16 /* Projection */) {\n // Case
3: the TNode is a projection insertion point (i.e. a <ng-content>).\n // The nodes projected at this location all
need to be processed.\n var componentView = lView[DECLARATION_COMPONENT_VIEW];\n
 var componentHost = componentView[T_HOST];\n var head =
componentHost.projection[tNode.projection];\n if (Array.isArray(head)) {\n try {\n for
(var head_1 = __values(head), head_1_1 = head_1.next(); !head_1_1.done; head_1_1 = head_1.next()) {\n
 var nativeNode_1 = head_1_1.value;\n _addQueryMatchR3(nativeNode_1, predicate, matches,
elementsOnly, rootNativeNode);\n }\n } catch (e_1_1) { e_1 = { error: e_1_1 }; }\n
 finally {\n try {\n if (head_1_1 && !head_1_1.done && (_a = head_1.return))
_a.call(head_1);\n }\n } finally { if (e_1) throw e_1.error; }\n }\n }\n
 } else if (head) {\n var nextLView = componentView[PARENT];\n var nextTNode =
nextLView[TVIEW].data[head.index];\n _queryNodeChildrenR3(nextTNode, nextLView, predicate,
matches, elementsOnly, rootNativeNode);\n }\n } else if (tNode.child) {\n // Case 4: the
TNode is a view.\n _queryNodeChildrenR3(tNode.child, lView, predicate, matches, elementsOnly,
rootNativeNode);\n }\n // We don't want to go to the next sibling of the root node.\n if (rootNativeNode
!== nativeNode) {\n // To determine the next node to be processed, we need to use the next or the
projectionNext\n // link, depending on whether the current node has been projected.\n var nextTNode
= (tNode.flags & 4 /* isProjected */) ? tNode.projectionNext : tNode.next;\n if (nextTNode) {\n
 _queryNodeChildrenR3(nextTNode, lView, predicate, matches, elementsOnly, rootNativeNode);\n }\n
 }\n }\n /**\n * Process all TNodes in a given container.\n *\n * @param lContainer the container to be
processed\n * @param predicate the predicate to match\n * @param matches the list of positive matches\n *
@param elementsOnly whether only elements should be searched\n * @param rootNativeNode the root native
node on which predicate should not be matched\n */\n function _queryNodeChildrenInContainerR3(lContainer,
predicate, matches, elementsOnly, rootNativeNode) {\n for (var i = CONTAINER_HEADER_OFFSET; i <

```



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lContainer.length; i++) {\n var childView = lContainer[i];\n var firstChild =
childView[TVIEW].firstChild;\n if (firstChild) {\n _queryNodeChildrenR3(firstChild, childView,
predicate, matches, elementsOnly, rootNativeNode);\n }\n }\n }\n /**\n * Match the current native
node against the predicate.\n * @param nativeNode the current native node\n * @param predicate the
predicate to match\n * @param matches the list of positive matches\n * @param elementsOnly whether only
elements should be searched\n * @param rootNativeNode the root native node on which predicate should not be
matched\n */\n function _addQueryMatchR3(nativeNode, predicate, matches, elementsOnly, rootNativeNode)
{\n if (rootNativeNode !== nativeNode) {\n var debugNode = getDebugNode$1(nativeNode);\n if
(!debugNode) {\n return;\n }\n // Type of the \"predicate and \"matches\" array are set based
on the value of\n // the \"elementsOnly\" parameter. TypeScript is not able to properly infer these\n //
types with generics, so we manually cast the parameters accordingly.\n if (elementsOnly && debugNode
instanceof DebugElement__POST_R3__ && predicate(debugNode) &&\n matches.indexOf(debugNode)
=== -1) {\n matches.push(debugNode);\n }\n else if (!elementsOnly &&
predicate(debugNode) &&\n matches.indexOf(debugNode) === -1) {\n
matches.push(debugNode);\n }\n }\n }\n /**\n * Match all the descendants of a DOM node against
a predicate.\n * @param nativeNode the current native node\n * @param predicate the predicate to
match\n * @param matches the list where matches are stored\n * @param elementsOnly whether only
elements should be searched\n */\n function _queryNativeNodeDescendants(parentNode, predicate, matches,
elementsOnly) {\n var nodes = parentNode.childNodes;\n var length = nodes.length;\n for (var i = 0; i
< length; i++) {\n var node = nodes[i];\n var debugNode = getDebugNode$1(node);\n if
(debugNode) {\n if (elementsOnly && debugNode instanceof DebugElement__POST_R3__ &&
predicate(debugNode) &&\n matches.indexOf(debugNode) === -1) {\n
matches.push(debugNode);\n }\n else if (!elementsOnly && predicate(debugNode) &&\n
matches.indexOf(debugNode) === -1) {\n matches.push(debugNode);\n }\n }\n }\n }\n /**\n *
Iterates through the property bindings for a given node and generates\n * a map of property names to values. This
map only contains property bindings\n * defined in templates, not in host bindings.\n */\n function
collectPropertyBindings(properties, tNode, IView, tData) {\n var bindingIndexes = tNode.propertyBindings;\n
 if (bindingIndexes !== null) {\n for (var i = 0; i < bindingIndexes.length; i++) {\n var
bindingIndex = bindingIndexes[i];\n var propMetadata = tData[bindingIndex];\n var
metadataParts = propMetadata.split(INTERPOLATION_DELIMITER);\n var propertyName =
metadataParts[0];\n if (metadataParts.length > 1) {\n var value = metadataParts[1];\n for
(var j = 1; j < metadataParts.length - 1; j++) {\n value += renderStringify(IView[bindingIndex + j
- 1]) + metadataParts[j + 1];\n }\n properties[propertyName] = value;\n }\n }\n
 }\n else {\n properties[propertyName] = IView[bindingIndex];\n }\n }\n /**\n * Need to keep the
nodes in a global Map so that multiple angular apps are supported.\n */\n var
_nativeNodeToDebugNode = new Map();\n function getDebugNode__PRE_R3__(nativeNode) {\n return
_nativeNodeToDebugNode.get(nativeNode) || null;\n }\n var NG_DEBUG_PROPERTY = '__ng_debug__';\n function
getDebugNode__POST_R3__(nativeNode) {\n if (nativeNode instanceof Node) {\n if
(!(nativeNode.hasOwnProperty(NG_DEBUG_PROPERTY))) {\n nativeNode[NG_DEBUG_PROPERTY]
= nativeNode.nodeType === Node.ELEMENT_NODE ?\n new
DebugElement__POST_R3__(nativeNode) :\n new DebugNode__POST_R3__(nativeNode);\n }\n }\n return
nativeNode[NG_DEBUG_PROPERTY];\n }\n /**\n * @publicApi\n */\n var getDebugNode$1 = getDebugNode__PRE_R3__;\n function
getDebugNodeR2__PRE_R3__(nativeNode) {\n return getDebugNode__PRE_R3__(nativeNode);\n }\n function
getDebugNodeR2__POST_R3__(nativeNode) {\n return null;\n }\n var getDebugNodeR2 =
getDebugNodeR2__PRE_R3__;\n function getAllDebugNodes() {\n return
Array.from(_nativeNodeToDebugNode.values());\n }\n function indexDebugNode(node) {\n

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_nativeNodeToDebugNode.set(node.nativeNode, node);\n
}\n
function removeDebugNodeFromIndex(node) {\n
 _nativeNodeToDebugNode.delete(node.nativeNode);\n
}\n
/**\n
 * @publicApi\n
 */\n
var\n
DebugNode = DebugNode__PRE_R3__;\n
/**\n
 * @publicApi\n
 */\n
var DebugElement =\n
DebugElement__PRE_R3__;\n
\n
/**\n
 * @license\n
 * Copyright Google LLC All Rights Reserved.\n
 *\n
 * Use of this source code is governed by an MIT-style license that can be\n
 * found in the LICENSE file at\n
 * https://angular.io/license\n
 */\n
\n
/**\n
 * @license\n
 * Copyright Google LLC All Rights Reserved.\n
 *\n
 * Use of this source code is governed by an MIT-style license that can be\n
 * found in the LICENSE file at\n
 * https://angular.io/license\n
 */\n
var _CORE_PLATFORM_PROVIDERS = [\n
 // Set a default platform\n
 name for platforms that don't set it explicitly.\n
 {\n
 provide: PLATFORM_ID, useValue: 'unknown' },\n
 {\n
 provide: PlatformRef, deps: [Injector] },\n
 {\n
 provide: TestabilityRegistry, deps: [] },\n
 {\n
 provide: Console,\n
 deps: [] },\n
];\n
\n
/**\n
 * This platform has to be included in any other platform\n
 */\n
\n
/**\n
 * @publicApi\n
 */\n
var platformCore = createPlatformFactory(null, 'core', _CORE_PLATFORM_PROVIDERS);\n
\n
/**\n
 * @license\n
 * Copyright Google LLC All Rights Reserved.\n
 *\n
 * Use of this source code is governed by an\n
 * MIT-style license that can be\n
 * found in the LICENSE file at https://angular.io/license\n
 */\n
function\n
_iterableDiffersFactory() {\n
 return defaultIterableDiffers;\n
}\n
function _keyValueDiffersFactory() {\n
 return defaultKeyValueDiffers;\n
}\n
function _localeFactory(locale) {\n
 locale = locale ||\n
 getGlobalLocale();\n
 if (ivyEnabled) {\n
 setLocaleId(locale);\n
 }\n
 return locale;\n
}\n
\n
/**\n
 * Work out the locale from the potential global properties.\n
 */\n
\n
/**\n
 * Closure Compiler: use\n
`goog.LOCALE`\n
 * Ivy enabled: use `$localize.locale`\n
 */\n
function getGlobalLocale() {\n
 if\n
 (typeof ngI18nClosureMode !== 'undefined' && ngI18nClosureMode &&\n
 typeof goog !== 'undefined' &&\n
 goog.LOCALE !== 'en') {\n
 // * The default `goog.LOCALE` value is `en`, while Angular used `en-US`.\n
 // * In order to preserve backwards compatibility, we use Angular default value over\n
 // Closure\n
 Compiler's one.\n
 return goog.LOCALE;\n
 }\n
 else {\n
 // KEEP `typeof $localize !==\n
 'undefined' && $localize.locale` IN SYNC WITH THE LOCALIZE\n
 // COMPILER-TIME INLINER.\n
 /\n
 // * During compile time inlining of translations the expression will be replaced\n
 // with a string\n
 literal that is the current locale. Other forms of this expression are not\n
 // guaranteed to be replaced.\n
 /\n
 // * During runtime translation evaluation, the developer is required to set `$localize.locale`\n
 // if\n
 required, or just to provide their own `LOCALE_ID` provider.\n
 return (ivyEnabled && typeof $localize !==\n
 'undefined' && $localize.locale) ||\n
 DEFAULT_LOCALE_ID;\n
 }\n
}\n
var 0$f =\n
USD_CURRENCY_CODE;\n
\n
/**\n
 * A built-in [dependency injection token](guide/glossary#di-token)\n
 * that is used to configure the root injector for bootstrapping.\n
 */\n
var\n
APPLICATION_MODULE_PROVIDERS = [\n
 {\n
 provide: ApplicationRef,\n
 useClass:\n
 ApplicationRef,\n
 deps: [NgZone, Console, Injector, ErrorHandler, ComponentFactoryResolver,\n
 ApplicationInitStatus]\n
 },\n
 {\n
 provide: SCHEDULER, deps: [NgZone], useFactory: zoneSchedulerFactory\n
 },\n
 {\n
 provide: ApplicationInitStatus,\n
 useClass: ApplicationInitStatus,\n
 deps: [[new\n
 Optional(), APP_INITIALIZER]]\n
 },\n
 {\n
 provide: Compiler, useClass: Compiler, deps: [] },\n
 APP_ID_RANDOM_PROVIDER,\n
 {\n
 provide: IterableDiffers, useFactory: _iterableDiffersFactory, deps: []\n
 },\n
 {\n
 provide: KeyValueDiffers, useFactory: _keyValueDiffersFactory, deps: [] },\n
 {\n
 provide:\n
 LOCALE_ID$1,\n
 useFactory: _localeFactory,\n
 deps: [[new Inject(LOCALE_ID$1), new Optional(),\n
 new SkipSelf()]]\n
 },\n
 {\n
 provide: DEFAULT_CURRENCY_CODE, useValue: 0$f },\n
];\n
\n
/**\n
 * Schedule work at next available slot.\n
 */\n
\n
/**\n
 * In Ivy this is just `requestAnimationFrame`. For compatibility\n
reasons when bootstrapped\n
 * using `platformRef.bootstrap` we need to use `NgZone.onStable` as the scheduling\n
mechanism.\n
 * This overrides the scheduling mechanism in Ivy to `NgZone.onStable`.\n
 */\n
\n
/**\n
 * @param\n
ngZone NgZone to use for scheduling.\n
 */\n
function zoneSchedulerFactory(ngZone) {\n
 var queue = [];\n
 ngZone.onStable.subscribe(function () {\n
 while (queue.length) {\n
 queue.pop();\n
 }\n
 });\n
 return function (fn) {\n
 queue.push(fn);\n
 }; }\n
\n
/**\n
 * Configures the root injector\n
for an app with\n
 * providers of `@angular/core` dependencies that `ApplicationRef` needs\n
 * to bootstrap\n
components.\n
 */\n
\n
/**\n
 * Re-exported by `BrowserModule`, which is included automatically in the root\n
 */

```

```

`AppModule` when you create a new app with the CLI `new` command.\n
 * \n
 * @publicApi\n
 */\n
var
ApplicationModule = /** @class */ (function () {\n
 // Inject ApplicationRef to make it eager...\n
 function
ApplicationModule(appRef) {\n
 }\n
 return ApplicationModule;\n
})();\n
ApplicationModule.decorators
= [\n
 { type: NgModule, args: [{ providers: APPLICATION_MODULE_PROVIDERS },] }\n
];\n
ApplicationModule.ctorParameters = function () { return [\n
 { type: ApplicationRef }\n
]; }; \n
function
anchorDef(flags, matchedQueriesDsl, ngContentIndex, childCount, handleEvent, templateFactory) {\n
 flags |=
1 /* TypeElement */;\n
 var _a = splitMatchedQueriesDsl(matchedQueriesDsl), matchedQueries =
_a.matchedQueries, references = _a.references, matchedQueryIds = _a.matchedQueryIds;\n
 var template =
templateFactory ? resolveDefinition(templateFactory) : null;\n
 return {\n
 // will bet set by the view
definition\n
 nodeId: -1,\n
 parent: null,\n
 renderParent: null,\n
 bindingIndex: -1,\n
 outputIndex: -1,\n
 // regular values\n
 flags: flags,\n
 checkIndex: -1,\n
 childFlags: 0,\n
 directChildFlags: 0,\n
 childMatchedQueries: 0,\n
 matchedQueries: matchedQueries,\n
 matchedQueryIds: matchedQueryIds,\n
 references: references,\n
 ngContentIndex: ngContentIndex,\n
 childCount: childCount,\n
 bindings: [],\n
 bindingFlags: 0,\n
 outputs: [],\n
 element:
{\n
 ns: null,\n
 name: null,\n
 attrs: null,\n
 template: template,\n
 componentProvider: null,\n
 componentView: null,\n
 componentRendererType: null,\n
 publicProviders: null,\n
 allProviders: null,\n
 handleEvent: handleEvent || NOOP\n
 },\n
 provider: null,\n
 text: null,\n
 query: null,\n
 ngContent: null\n
 }; \n
} \n
function
elementDef(checkIndex, flags, matchedQueriesDsl, ngContentIndex, childCount, namespaceAndName, fixedAttrs,
bindings, outputs, handleEvent, componentView, componentRendererType) {\n
 var _a;\n
 if (fixedAttrs ===
void 0) { fixedAttrs = []; } \n
 if (!handleEvent) {\n
 handleEvent = NOOP;\n
 } \n
 var _b =
splitMatchedQueriesDsl(matchedQueriesDsl), matchedQueries = _b.matchedQueries, references = _b.references,
matchedQueryIds = _b.matchedQueryIds;\n
 var ns = null;\n
 var name = null;\n
 if
(namespaceAndName) {\n
 _a = __read(splitNamespace(namespaceAndName), 2), ns = _a[0], name =
_a[1];\n
 } \n
 bindings = bindings || [];\n
 var bindingDefs = [];\n
 for (var i = 0; i < bindings.length;
i++) {\n
 var _c = __read(bindings[i], 3), bindingFlags = _c[0], namespaceAndName_1 = _c[1],
suffixOrSecurityContext = _c[2];\n
 var _d = __read(splitNamespace(namespaceAndName_1), 2), ns_1 =
_d[0], name_1 = _d[1];\n
 var securityContext = undefined;\n
 var suffix = undefined;\n
 switch
(bindingFlags & 15 /* Types */) {\n
 case 4 /* TypeElementStyle */:\n
 suffix =
suffixOrSecurityContext;\n
 break;\n
 case 1 /* TypeElementAttribute */:\n
 case 8 /*
TypeProperty */:\n
 securityContext = suffixOrSecurityContext;\n
 break;\n
 } \n
 bindingDefs[i] =\n
 { flags: bindingFlags, ns: ns_1, name: name_1, nonMinifiedName: name_1,
securityContext: securityContext, suffix: suffix }; \n
 } \n
 outputs = outputs || [];\n
 var outputDefs = [];\n
 for (var i = 0; i < outputs.length; i++) {\n
 var _e = __read(outputs[i], 2), target = _e[0], eventName =
_e[1];\n
 outputDefs[i] =\n
 { type: 0 /* ElementOutput */, target: target, eventName: eventName,
propName: null }; \n
 } \n
 fixedAttrs = fixedAttrs || [];\n
 var attrs = fixedAttrs.map(function (_a) {\n
 var _b = __read(_a, 2), namespaceAndName = _b[0], value = _b[1];\n
 var _c =
__read(splitNamespace(namespaceAndName), 2), ns = _c[0], name = _c[1];\n
 return [ns, name, value];\n
 }); \n
 componentRendererType = resolveRendererType2(componentRendererType);\n
 if (componentView)
{\n
 flags |= 33554432 /* ComponentView */;\n
 } \n
 flags |= 1 /* TypeElement */;\n
 return {\n
 // will bet set by the view definition\n
 nodeId: -1,\n
 parent: null,\n
 renderParent: null,\n
 bindingIndex: -1,\n
 outputIndex: -1,\n
 // regular values\n
 checkIndex: checkIndex,\n
 flags: flags,\n
 childFlags: 0,\n
 directChildFlags: 0,\n
 childMatchedQueries: 0,\n
 matchedQueries: matchedQueries,\n
 matchedQueryIds: matchedQueryIds,\n
 references: references,\n
 ngContentIndex: ngContentIndex,\n
 childCount: childCount,\n
 bindings: bindingDefs,\n
 bindingFlags: calcBindingFlags(bindingDefs),\n
 outputs: outputDefs,\n
 element: {\n
 ns: ns,\n
 name: name,\n
 attrs: attrs,\n
 template: null,\n
 // will bet set by the view
definition\n
 componentProvider: null,\n
 componentView: componentView || null,\n

```

```

componentRendererType: componentRendererType,\n publicProviders: null,\n allProviders:
null,\n handleEvent: handleEvent || NOOP,\n },\n provider: null,\n text: null,\n
query: null,\n ngContent: null\n });\n }\n function createElement(view, renderHost, def) {\n var
elDef = def.element;\n var rootSelectorOrNode = view.root.selectorOrNode;\n var renderer =
view.renderer;\n var el;\n if (view.parent || !rootSelectorOrNode) {\n if (elDef.name) {\n el
= renderer.createElement(elDef.name, elDef.ns);\n }\n else {\n el =
renderer.createComment("");\n }\n var parentEl = getParentRenderElement(view, renderHost, def);\n if
(parentEl) {\n renderer.appendChild(parentEl, el);\n }\n else {\n // when
using native Shadow DOM, do not clear the root element contents to allow slot projection\n var
preserveContent = (!!elDef.componentRendererType &&\n elDef.componentRendererType.encapsulation
=== exports.ViewEncapsulation.ShadowDom);\n el = renderer.selectRootElement(rootSelectorOrNode,
preserveContent);\n }\n if (elDef.attrs) {\n for (var i = 0; i < elDef.attrs.length; i++) {\n var
_a = __read(elDef.attrs[i], 3), ns = _a[0], name = _a[1], value = _a[2];\n renderer.setAttribute(el, name,
value, ns);\n }\n }\n return el;\n }\n function listenToElementOutputs(view, compView, def, el)
{\n for (var i = 0; i < def.outputs.length; i++) {\n var output = def.outputs[i];\n var
handleEventClosure = renderEventHandlerClosure(view, def.nodeType, elementEventFullName(output.target,
output.eventName));\n var listenTarget = output.target;\n var listenerView = view;\n if
(output.target === 'component') {\n listenTarget = null;\n listenerView = compView;\n }\n var disposable = listenerView.renderer.listen(listenTarget || el, output.eventName, handleEventClosure);\n view.disposables[def.outputIndex + i] = disposable;\n }\n }\n function renderEventHandlerClosure(view,
index, eventName) {\n return function (event) { return dispatchEvent(view, index, eventName, event); }\n }\n function checkAndUpdateElementInline(view, def, v0, v1, v2, v3, v4, v5, v6, v7, v8, v9) {\n var bindLen
= def.bindings.length;\n var changed = false;\n if (bindLen > 0 && checkAndUpdateElementValue(view,
def, 0, v0))\n changed = true;\n if (bindLen > 1 && checkAndUpdateElementValue(view, def, 1, v1))\n changed = true;\n if (bindLen > 2 && checkAndUpdateElementValue(view, def, 2, v2))\n changed = true;\n if (bindLen > 3 && checkAndUpdateElementValue(view, def, 3, v3))\n changed = true;\n if (bindLen > 4 && checkAndUpdateElementValue(view, def, 4, v4))\n changed = true;\n if (bindLen > 5
&& checkAndUpdateElementValue(view, def, 5, v5))\n changed = true;\n if (bindLen > 6 &&
checkAndUpdateElementValue(view, def, 6, v6))\n changed = true;\n if (bindLen > 7 &&
checkAndUpdateElementValue(view, def, 7, v7))\n changed = true;\n if (bindLen > 8 &&
checkAndUpdateElementValue(view, def, 8, v8))\n changed = true;\n if (bindLen > 9 &&
checkAndUpdateElementValue(view, def, 9, v9))\n changed = true;\n return changed;\n }\n function
checkAndUpdateElementDynamic(view, def, values) {\n var changed = false;\n for (var i = 0; i <
values.length; i++) {\n if (checkAndUpdateElementValue(view, def, i, values[i]))\n changed =
true;\n }\n return changed;\n }\n function checkAndUpdateElementValue(view, def, bindingIdx, value)
{\n if (!checkAndUpdateBinding(view, def, bindingIdx, value)) {\n return false;\n }\n var
binding = def.bindings[bindingIdx];\n var elData = asElementData(view, def.nodeType);\n var renderNode
= elData.renderElement;\n var name = binding.name;\n switch (binding.flags & 15 /* Types */) {\n case 1 /* TypeElementAttribute */:\n setElementAttribute$1(view, binding, renderNode, binding.ns, name,
value);\n break;\n case 2 /* TypeElementClass */:\n setElementClass(view, renderNode,
name, value);\n break;\n case 4 /* TypeElementStyle */:\n setElementStyle(view, binding,
renderNode, name, value);\n break;\n case 8 /* TypeProperty */:\n var bindView =
(def.flags & 33554432 /* ComponentView */ &&\n binding.flags & 32 /* SyntheticHostProperty */) ?\n elData.componentView : view;\n setElementProperty(bindView, binding,
renderNode, name, value);\n break;\n }\n return true;\n }\n function
setElementAttribute$1(view, binding, renderNode, ns, name, value) {\n var securityContext =
binding.securityContext;\n var renderValue = securityContext ? view.root.sanitizer.sanitize(securityContext,
value) : value;\n renderValue = renderValue != null ? renderValue.toString() : null;\n var renderer =

```

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view.renderer;\n if (value != null) {\n renderer.setAttribute(renderNode, name, renderValue, ns);\n }\n else {\n renderer.removeAttribute(renderNode, name, ns);\n }\n }\n function\n setElementClass(view, renderNode, name, value) {\n var renderer = view.renderer;\n if (value) {\n renderer.addClass(renderNode, name);\n }\n else {\n renderer.removeClass(renderNode, name);\n }\n }\n function setElementStyle(view, binding, renderNode, name, value) {\n var renderValue =\n view.root.sanitizer.sanitize(exports.SecurityContext.STYLE, value);\n if (renderValue != null) {\n renderValue = renderValue.toString();\n var unit = binding.suffix;\n if (unit != null) {\n renderValue = renderValue + unit;\n }\n }\n else {\n renderValue = null;\n }\n var\n renderer = view.renderer;\n if (renderValue != null) {\n renderer.setStyle(renderNode, name,\n renderValue);\n }\n else {\n renderer.removeStyle(renderNode, name);\n }\n }\n function\n setElementProperty(view, binding, renderNode, name, value) {\n var securityContext =\n binding.securityContext;\n var renderValue = securityContext ? view.root.sanitizer.sanitize(securityContext,\n value) : value;\n view.renderer.setProperty(renderNode, name, renderValue);\n }\n /**\n * @license\n * Copyright Google LLC All Rights Reserved.\n * Use of this source code is governed by an MIT-style\n license that can be\n * found in the LICENSE file at https://angular.io/license\n */\n function queryDef(flags,\n id, bindings) {\n var bindingDefs = [];\n for (var propName in bindings) {\n var bindingType =\n bindings[propName];\n bindingDefs.push({ propName: propName, bindingType: bindingType });\n }\n return {\n // will bet set by the view definition\n nodeId: -1,\n parent: null,\n renderParent: null,\n bindingIndex: -1,\n outputIndex: -1,\n // regular values\n //\n TODO(vicb): check\n checkIndex: -1,\n flags: flags,\n childFlags: 0,\n directChildFlags:\n 0,\n childMatchedQueries: 0,\n ngContentIndex: -1,\n matchedQueries: {},\n matchedQueryIds: 0,\n references: {},\n childCount: 0,\n bindings: [],\n bindingFlags:\n 0,\n outputs: [],\n element: null,\n provider: null,\n text: null,\n query: { id: id,\n filterId: filterQueryId(id), bindings: bindingDefs },\n ngContent: null\n };}\n function\n createQuery() {\n return new QueryList();\n }\n function dirtyParentQueries(view) {\n var queryIds =\n view.def.nodeMatchedQueries;\n while (view.parent && isEmbeddedView(view)) {\n var tplDef =\n view.parentNodeDef;\n view = view.parent;\n // content queries\n var end = tplDef.nodeIndex +\n tplDef.childCount;\n for (var i = 0; i <= end; i++) {\n var nodeDef = view.def.nodes[i];\n if\n ((nodeDef.flags & 67108864 /* TypeContentQuery */) &&\n (nodeDef.flags & 536870912 /*\n DynamicQuery */) &&\n (nodeDef.query.filterId & queryIds) === nodeDef.query.filterId) {\n asQueryList(view, i).setDirty();\n }\n if ((nodeDef.flags & 1 /* TypeElement */ && i +\n nodeDef.childCount < tplDef.nodeIndex) ||\n !(nodeDef.childFlags & 67108864 /* TypeContentQuery\n */) ||\n !(nodeDef.childFlags & 536870912 /* DynamicQuery */)) {\n // skip elements that\n don't contain the template element or no query.\n i += nodeDef.childCount;\n }\n }\n }\n // view queries\n if (view.def.nodeFlags & 134217728 /* TypeViewQuery */) {\n for (var i = 0; i\n < view.def.nodes.length; i++) {\n var nodeDef = view.def.nodes[i];\n if ((nodeDef.flags &\n 134217728 /* TypeViewQuery */) && (nodeDef.flags & 536870912 /* DynamicQuery\n */)) {\n asQueryList(view, i).setDirty();\n }\n // only visit the root nodes\n i +=\n nodeDef.childCount;\n }\n }\n }\n function checkAndUpdateQuery(view, nodeDef) {\n var\n queryList = asQueryList(view, nodeDef.nodeIndex);\n if (!queryList.dirty) {\n return;\n }\n var\n directiveInstance;\n var newValues = undefined;\n if (nodeDef.flags & 67108864 /* TypeContentQuery */)\n {\n var elementDef = nodeDef.parent.parent;\n newValues = calcQueryValues(view,\n elementDef.nodeIndex, elementDef.nodeIndex + elementDef.childCount, nodeDef.query, []);\n }\n directiveInstance = asProviderData(view, nodeDef.parent.nodeIndex).instance;\n } else if (nodeDef.flags\n & 134217728 /* TypeViewQuery */) {\n newValues = calcQueryValues(view, 0, view.def.nodes.length - 1,\n nodeDef.query, []);\n directiveInstance = view.component;\n }\n queryList.reset(newValues);\n var bindings = nodeDef.query.bindings;\n var notify = false;\n for (var i = 0; i < bindings.length; i++) {\n var\n binding = bindings[i];\n var boundValue = void 0;\n switch (binding.bindingType) {\n }

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case 0 /* First */:\n boundValue = queryList.first;\n break;\n case 1 /* All */:\n boundValue = queryList;\n notify = true;\n break;\n }\n directiveInstance[binding.propName] = boundValue;\n }\n if (notify) {\n queryList.notifyOnChanges();\n }\n }\n function calcQueryValues(view, startIndex, endIndex, queryDef, values) {\n for (var i = startIndex; i <= endIndex; i++) {\n var nodeDef = view.def.nodes[i];\n var valueType = nodeDef.matchedQueries[queryDef.id];\n if (valueType != null) {\n values.push(getQueryValue(view, nodeDef, valueType));\n }\n if (nodeDef.flags & 1 /* TypeElement */ && nodeDef.element.template &&\n (nodeDef.element.template.nodeMatchedQueries & queryDef.filterId) ===\n queryDef.filterId) {\n var elementData = asElementData(view, i);\n // check embedded views that were attached at the place of their template,\n // but process child nodes first if some match the query (see issue #16568)\n if ((nodeDef.childMatchedQueries & queryDef.filterId) ===\n queryDef.filterId) {\n calcQueryValues(view, i + 1, i + nodeDef.childCount, queryDef, values);\n i += nodeDef.childCount;\n }\n if (nodeDef.flags & 16777216 /* EmbeddedViews */) {\n var embeddedViews = elementData.viewContainer._embeddedViews;\n for (var k = 0; k < embeddedViews.length; k++) {\n var embeddedView = embeddedViews[k];\n var dvc = declaredViewContainer(embeddedView);\n if (dvc && dvc === elementData) {\n calcQueryValues(embeddedView, 0, embeddedView.def.nodes.length - 1, queryDef, values);\n }\n }\n }\n var projectedViews = elementData.template._projectedViews;\n if (projectedViews) {\n for (var k = 0; k < projectedViews.length; k++) {\n var projectedView = projectedViews[k];\n calcQueryValues(projectedView, 0, projectedView.def.nodes.length - 1, queryDef, values);\n }\n }\n if ((nodeDef.childMatchedQueries & queryDef.filterId) !== queryDef.filterId) {\n // if no child matches the query, skip the children.\n i += nodeDef.childCount;\n }\n }\n return values;\n }\n function getQueryValue(view, nodeDef, queryValueType) {\n if (queryValueType != null) {\n // a match\n switch (queryValueType) {\n case 1 /* RenderElement */:\n return asElementData(view, nodeDef.nodeIndex).renderElement;\n case 0 /* ElementRef */:\n return new ElementRef(asElementData(view, nodeDef.nodeIndex).renderElement);\n case 2 /* TemplateRef */:\n return asElementData(view, nodeDef.nodeIndex).template;\n case 3 /* ViewContainerRef */:\n return asElementData(view, nodeDef.nodeIndex).viewContainer;\n case 4 /* Provider */:\n return asProviderData(view, nodeDef.nodeIndex).instance;\n }\n }\n }\n /**\n * @license\n * Copyright Google LLC All Rights Reserved.\n * Use of this source code is governed by an MIT-style license that can be\n * found in the LICENSE file at https://angular.io/license\n */\n function ngContentDef(ngContentIndex, index) {\n return {\n // will be set by the view definition\n nodeIndex: -1,\n parent: null,\n renderParent: null,\n bindingIndex: -1,\n outputIndex: -1,\n // regular values\n checkIndex: -1,\n flags: 8 /* TypeNgContent */,\n childFlags: 0,\n directChildFlags: 0,\n childMatchedQueries: 0,\n matchedQueries: {},\n matchedQueryIds: 0,\n references: {},\n ngContentIndex: ngContentIndex,\n childCount: 0,\n bindings: [],\n bindingFlags: 0,\n outputs: [],\n element: null,\n provider: null,\n text: null,\n query: null,\n ngContent: { index: index }\n };\n }\n function appendNgContent(view, renderHost, def) {\n var parentEl = getParentRenderElement(view, renderHost, def);\n if (!parentEl) {\n // Nothing to do if there is no parent element.\n return;\n }\n var ngContentIndex = def.ngContent.index;\n visitProjectedRenderNodes(view, ngContentIndex, 1 /* AppendChild */,\n parentEl, null, undefined);\n }\n function purePipeDef(checkIndex, argCount) {\n // argCount + 1 to include the pipe as first arg\n return _pureExpressionDef(128 /* TypePurePipe */, checkIndex, newArray(argCount + 1));\n }\n function pureArrayDef(checkIndex, argCount) {\n return _pureExpressionDef(32 /* TypePureArray */, checkIndex, newArray(argCount));\n }\n function pureObjectDef(checkIndex, propToIndex) {\n var keys = Object.keys(propToIndex);\n var nbKeys = keys.length;\n var propertyNames = [];\n for (var i = 0; i < nbKeys; i++) {\n var key = keys[i];\n
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var index = propToIndex[key];\n propertyNames.push(key);\n }\n return _pureExpressionDef(64
/* TypePureObject */, checkIndex, propertyNames);\n }\n function _pureExpressionDef(flags, checkIndex,
propertyNames) {\n var bindings = [];\n for (var i = 0; i < propertyNames.length; i++) {\n var prop =
propertyNames[i];\n bindings.push({\n flags: 8 /* TypeProperty */,\n name: prop,\n ns: null,\n nonMinifiedName: prop,\n securityContext: null,\n suffix: null\n });\n }\n return {\n // will bet set by the view definition\n nodeIndex: -1,\n parent: null,\n renderParent: null,\n bindingIndex: -1,\n outputIndex: -1,\n // regular values\n checkIndex: checkIndex,\n flags: flags,\n childFlags: 0,\n directChildFlags: 0,\n childMatchedQueries: 0,\n matchedQueries: {},\n matchedQueryIds: 0,\n references: {},\n ngContentIndex: -1,\n childCount: 0,\n bindings: bindings,\n bindingFlags:\n calcBindingFlags(bindings),\n outputs: [],\n element: null,\n provider: null,\n text: null,\n query: null,\n ngContent: null\n };\n }\n function createPureExpression(view, def) {\n return { value: undefined };\n }\n function checkAndUpdatePureExpressionInline(view, def, v0, v1, v2, v3, v4,
v5, v6, v7, v8, v9) {\n var bindings = def.bindings;\n var changed = false;\n var bindLen =
bindings.length;\n if (bindLen > 0 && checkAndUpdateBinding(view, def, 0, v0))\n changed = true;\n if (bindLen > 1 && checkAndUpdateBinding(view, def, 1, v1))\n changed = true;\n if (bindLen > 2 &&\n checkAndUpdateBinding(view, def, 2, v2))\n changed = true;\n if (bindLen > 3 &&\n checkAndUpdateBinding(view, def, 3, v3))\n changed = true;\n if (bindLen > 4 &&\n checkAndUpdateBinding(view, def, 4, v4))\n changed = true;\n if (bindLen > 5 &&\n checkAndUpdateBinding(view, def, 5, v5))\n changed = true;\n if (bindLen > 6 &&\n checkAndUpdateBinding(view, def, 6, v6))\n changed = true;\n if (bindLen > 7 &&\n checkAndUpdateBinding(view, def, 7, v7))\n changed = true;\n if (bindLen > 8 &&\n checkAndUpdateBinding(view, def, 8, v8))\n changed = true;\n if (bindLen > 9 &&\n checkAndUpdateBinding(view, def, 9, v9))\n changed = true;\n if (changed) {\n var data =
asPureExpressionData(view, def.nodeIndex);\n var value = void 0;\n switch (def.flags & 201347067 /*
Types */) {\n case 32 /* TypePureArray */:\n value = [];\n if (bindLen > 0)\n value.push(v0);\n if (bindLen > 1)\n value.push(v1);\n if (bindLen >
2)\n value.push(v2);\n if (bindLen > 3)\n value.push(v3);\n if
(bindLen > 4)\n value.push(v4);\n if (bindLen > 5)\n value.push(v5);\n if (bindLen > 6)\n value.push(v6);\n if (bindLen > 7)\n value.push(v7);\n if (bindLen > 8)\n value.push(v8);\n if (bindLen > 9)\n value.push(v9);\n break;\n case 64 /* TypePureObject */:\n value = {};\n if (bindLen > 0)\n value[bindings[0].name] = v0;\n if (bindLen > 1)\n value[bindings[1].name] = v1;\n if (bindLen > 2)\n value[bindings[2].name] = v2;\n if (bindLen > 3)\n value[bindings[3].name] = v3;\n if (bindLen > 4)\n value[bindings[4].name] = v4;\n if (bindLen > 5)\n value[bindings[5].name] = v5;\n if (bindLen > 6)\n value[bindings[6].name] = v6;\n if (bindLen > 7)\n value[bindings[7].name] = v7;\n if (bindLen > 8)\n value[bindings[8].name] = v8;\n if (bindLen > 9)\n value[bindings[9].name] = v9;\n break;\n case 128 /*
TypePurePipe */:\n var pipe = v0;\n switch (bindLen) {\n case 1:\n value = pipe.transform(v0);\n break;\n case 2:\n value =
pipe.transform(v1);\n break;\n case 3:\n value = pipe.transform(v1, v2, v3);\n break;\n case 4:\n value = pipe.transform(v1, v2, v3, v4);\n break;\n case 5:\n value = pipe.transform(v1, v2, v3, v4, v5);\n break;\n case 6:\n value = pipe.transform(v1, v2, v3, v4, v5, v6);\n break;\n case 7:\n value = pipe.transform(v1, v2, v3, v4, v5, v6, v7);\n break;\n case 8:\n value = pipe.transform(v1, v2, v3, v4, v5, v6, v7, v8);\n break;\n case 9:\n value = pipe.transform(v1, v2, v3, v4, v5, v6, v7, v8, v9);\n break;\n }\n }\n }\n }\n}

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 break;\n case 10:\n value = pipe.transform(v1, v2, v3, v4, v5, v6, v7, v8, v9);\n break;\n }\n break;\n }\n data.value = value;\n }\n return changed;\n }\n function checkAndUpdatePureExpressionDynamic(view, def, values) {\n var bindings\n = def.bindings;\n var changed = false;\n for (var i = 0; i < values.length; i++) {\n // Note: We need to\n loop over all values, so that\n // the old values are updates as well!\n if\n (checkAndUpdateBinding(view, def, i, values[i])) {\n changed = true;\n }\n }\n if\n (changed) {\n var data = asPureExpressionData(view, def.nodeIndex);\n var value = void 0;\n switch (def.flags & 201347067 /* Types */) {\n case 32 /* TypePureArray */:\n value =\n values;\n break;\n case 64 /* TypePureObject */:\n value = { };\n for\n (var i = 0; i < values.length; i++) {\n value[bindings[i].name] = values[i];\n }\n break;\n case 128 /* TypePurePipe */:\n var pipe = values[0];\n var params =\n values.slice(1);\n value = pipe.transform.apply(pipe, __spread(params));\n break;\n }\n data.value = value;\n }\n return changed;\n }\n /**\n * @license\n * Copyright Google\n LLC All Rights Reserved.\n *\n * Use of this source code is governed by an MIT-style license that can be\n * found in the LICENSE file at https://angular.io/license\n */\n function textDef(checkIndex, ngContentIndex,\n staticText) {\n var bindings = [];\n for (var i = 1; i < staticText.length; i++) {\n bindings[i - 1] = {\n flags: 8 /* TypeProperty */,\n name: null,\n ns: null,\n nonMinifiedName: null,\n securityContext: null,\n suffix: staticText[i],\n };\n }\n return {\n // will bet\n set by the view definition\n nodeIndex: -1,\n parent: null,\n renderParent: null,\n bindingIndex: -1,\n outputIndex: -1,\n // regular values\n checkIndex: checkIndex,\n flags: 2 /* TypeText */,\n childFlags: 0,\n directChildFlags: 0,\n childMatchedQueries: 0,\n matchedQueries: { },\n matchedQueryIds: 0,\n references: { },\n ngContentIndex:\n ngContentIndex,\n childCount: 0,\n bindings: bindings,\n bindingFlags: 8 /* TypeProperty */,\n outputs: [],\n element: null,\n provider: null,\n text: { prefix: staticText[0] },\n query: null,\n ngContent: null,\n };\n }\n function createText(view, renderHost, def) {\n var\n renderNode;\n var renderer = view.renderer;\n renderNode = renderer.createText(def.text.prefix);\n var\n parentEl = getParentRenderElement(view, renderHost, def);\n if (parentEl) {\n renderer.appendChild(parentEl, renderNode);\n }\n return { renderText: renderNode };\n }\n function\n checkAndUpdateTextInline(view, def, v0, v1, v2, v3, v4, v5, v6, v7, v8, v9) {\n var changed = false;\n var\n bindings = def.bindings;\n var bindLen = bindings.length;\n if (bindLen > 0 &&\n checkAndUpdateBinding(view, def, 0, v0))\n changed = true;\n if (bindLen > 1 &&\n checkAndUpdateBinding(view, def, 1, v1))\n changed = true;\n if (bindLen > 2 &&\n checkAndUpdateBinding(view, def, 2, v2))\n changed = true;\n if (bindLen > 3 &&\n checkAndUpdateBinding(view, def, 3, v3))\n changed = true;\n if (bindLen > 4 &&\n checkAndUpdateBinding(view, def, 4, v4))\n changed = true;\n if (bindLen > 5 &&\n checkAndUpdateBinding(view, def, 5, v5))\n changed = true;\n if (bindLen > 6 &&\n checkAndUpdateBinding(view, def, 6, v6))\n changed = true;\n if (bindLen > 7 &&\n checkAndUpdateBinding(view, def, 7, v7))\n changed = true;\n if (bindLen > 8 &&\n checkAndUpdateBinding(view, def, 8, v8))\n changed = true;\n if (bindLen > 9 &&\n checkAndUpdateBinding(view, def, 9, v9))\n changed = true;\n if (changed) {\n var value =\n def.text.prefix;\n if (bindLen > 0)\n value += _addInterpolationPart(v0, bindings[0]);\n if\n (bindLen > 1)\n value += _addInterpolationPart(v1, bindings[1]);\n if (bindLen > 2)\n value +=\n _addInterpolationPart(v2, bindings[2]);\n if (bindLen > 3)\n value +=\n _addInterpolationPart(v3, bindings[3]);\n if (bindLen > 4)\n value += _addInterpolationPart(v4,\n bindings[4]);\n if (bindLen > 5)\n value += _addInterpolationPart(v5, bindings[5]);\n if\n (bindLen > 6)\n value += _addInterpolationPart(v6, bindings[6]);\n if (bindLen > 7)\n value +=\n _addInterpolationPart(v7, bindings[7]);\n if (bindLen > 8)\n value +=\n _addInterpolationPart(v8, bindings[8]);\n if (bindLen > 9)\n value += _addInterpolationPart(v9,\n
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bindings[9]);\n var renderNode = asTextData(view, def.nodeIndex).renderText;\nview.rendererer.setValue(renderNode, value);\n }\n return changed;\n }\n function\ncheckAndUpdateTextDynamic(view, def, values) {\n var bindings = def.bindings;\n var changed = false;\n for (var i = 0; i < values.length; i++) {\n // Note: We need to loop over all values, so that\n // the old\nvalues are updates as well!\n if (checkAndUpdateBinding(view, def, i, values[i])) {\n changed =\ntrue;\n }\n }\n if (changed) {\n var value = ";\n for (var i = 0; i < values.length; i++) {\n value = value + _addInterpolationPart(values[i], bindings[i]);\n }\n value = def.text.prefix +\nvalue;\n var renderNode = asTextData(view, def.nodeIndex).renderText;\nview.rendererer.setValue(renderNode, value);\n }\n return changed;\n }\n function\n_addInterpolationPart(value, binding) {\n var valueStr = value != null ? value.toString() : ";\n return\nvalueStr + binding.suffix;\n }\n /**\n * @license\n * Copyright Google LLC All Rights Reserved.\n *\n * Use of this source code is governed by an MIT-style license that can be\n * found in the LICENSE file at\nhttps://angular.io/license\n */\n function viewDef(flags, nodes, updateDirectives, updateRenderer) {\n //\nclone nodes and set auto calculated values\n var viewBindingCount = 0;\n var viewDisposableCount = 0;\n var viewNodeFlags = 0;\n var viewRootNodeFlags = 0;\n var viewMatchedQueries = 0;\n var\ncurrentParent = null;\n var currentRenderParent = null;\n var currentElementHasPublicProviders = false;\n var\ncurrentElementHasPrivateProviders = false;\n var lastRenderRootNode = null;\n for (var i = 0; i <\nnodes.length; i++) {\n var node = nodes[i];\n node.nodeIndex = i;\n node.parent =\ncurrentParent;\n node.bindingIndex = viewBindingCount;\n node.outputIndex =\nviewDisposableCount;\n node.renderParent = currentRenderParent;\n viewNodeFlags |= node.flags;\n viewMatchedQueries |= node.matchedQueryIds;\n if (node.element) {\n var elDef =\nnode.element;\n elDef.publicProviders =\n currentParent ?\ncurrentParent.element.publicProviders : Object.create(null);\n elDef.allProviders =\nelDef.publicProviders;\n // Note: We assume that all providers of an element are before any child\nelement!\n currentElementHasPublicProviders = false;\n currentElementHasPrivateProviders =\nfalse;\n if (node.element.template) {\n viewMatchedQueries |=\nnode.element.template.nodeMatchedQueries;\n }\n validateNode(currentParent, node,\nnodes.length);\n viewBindingCount += node.bindings.length;\n viewDisposableCount +=\nnode.outputs.length;\n if (!currentRenderParent && (node.flags & 3 /* CatRenderNode */)) {\n lastRenderRootNode = node;\n }\n if (node.flags & 20224 /* CatProvider */) {\n if\n(!currentElementHasPublicProviders) {\n currentElementHasPublicProviders = true;\n // Use\nprototypical inheritance to not get O(n^2) complexity...\n currentParent.element.publicProviders =\n Object.create(currentParent.element.publicProviders);\n currentParent.element.allProviders =\ncurrentParent.element.publicProviders;\n }\n var isPrivateService = (node.flags & 8192 /*\nPrivateProvider */) !== 0;\n var isComponent = (node.flags & 32768 /* Component */) !== 0;\n if\n(!isPrivateService || isComponent) {\n currentParent.element.publicProviders[tokenKey(node.provider.token)] = node;\n }\n else {\n if (!currentElementHasPrivateProviders) {\n currentElementHasPrivateProviders = true;\n }\n // Use\nprototypical inheritance to not get O(n^2) complexity...\n currentParent.element.allProviders =\n Object.create(currentParent.element.publicProviders);\n currentParent.element.allProviders[tokenKey(node.provider.token)] = node;\n }\n if (isComponent) {\n currentParent.element.componentProvider = node;\n }\n }\n if (currentParent) {\n currentParent.childFlags |= node.flags;\n currentParent.directChildFlags |= node.flags;\n currentParent.childMatchedQueries |=\nnode.matchedQueryIds;\n if (node.element && node.element.template) {\n currentParent.childMatchedQueries |= node.element.template.nodeMatchedQueries;\n }\n }\n else {\n viewRootNodeFlags |= node.flags;\n }\n if (node.childCount > 0) {\n currentParent = node;\n if (!isNgContainer(node)) {\n currentRenderParent = node;\n }\n }\n }\n }\n }\n}

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}\n }\n else {\n // When the current node has no children, check if it is the last children of its
parent.\n // When it is, propagate the flags up.\n // The loop is required because an element could
be the last transitive children of several\n // elements. We loop to either the root or the highest opened
element (= with remaining\n // children)\n while (currentParent && i ===
currentParent.nodeIndex + currentParent.childCount) {\n var newParent = currentParent.parent;\n if (newParent) {\n newParent.childFlags |= currentParent.childFlags;\n newParent.childMatchedQueries |= currentParent.childMatchedQueries;\n }\n currentParent
= newParent;\n // We also need to update the render parent & account for ng-container\n if
(currentParent && isNgContainer(currentParent)) {\n currentRenderParent =
currentParent.renderParent;\n }\n else {\n currentRenderParent =
currentParent;\n }\n }\n }\n }\n }\n var handleEvent = function (view, nodeIndex,
event, eventName, event) { return nodes[nodeIndex].element.handleEvent(view, eventName, event); };\n return {\n
// Will be filled later...\n factory: null,\n nodeFlags: viewNodeFlags,\n rootNodeFlags:
viewRootNodeFlags,\n nodeMatchedQueries: viewMatchedQueries,\n flags: flags,\n nodes:
nodes,\n updateDirectives: updateDirectives || NOOP,\n updateRenderer: updateRenderer || NOOP,\n
 handleEvent: handleEvent,\n bindingCount: viewBindingCount,\n outputCount:
viewDisposableCount,\n lastRenderRootNode: lastRenderRootNode\n };\n }\n function
isNgContainer(node) {\n return (node.flags & 1 /* TypeElement */) !== 0 && node.element.name === null;\n
 }\n function validateNode(parent, node, nodeCount) {\n var template = node.element &&
node.element.template;\n if (template) {\n if (!template.lastRenderRootNode) {\n throw new
Error("\Illegal State: Embedded templates without nodes are not allowed!");\n }\n if
(template.lastRenderRootNode && !\n template.lastRenderRootNode.flags & 16777216 /* EmbeddedViews
*/) {\n throw new Error("\Illegal State: Last root node of a template can't have embedded views, at index \"
+ node.nodeIndex + \"!\");\n }\n }\n if (node.flags & 20224 /* CatProvider */) {\n var
parentFlags = parent ? parent.flags : 0;\n if ((parentFlags & 1 /* TypeElement */) === 0) {\n throw
new Error("\Illegal State: StaticProvider/Directive nodes need to be children of elements or anchors, at index \" +
node.nodeIndex + \"!\");\n }\n }\n if (node.query) {\n if (node.flags & 67108864 /*
TypeContentQuery */ && \n (!parent || (parent.flags & 16384 /* TypeDirective */) === 0)) {\n throw
new Error("\Illegal State: Content Query nodes need to be children of directives, at index \" + node.nodeIndex
+ \"!\");\n }\n }\n if (node.flags & 134217728 /* TypeViewQuery */ && parent) {\n throw
new Error("\Illegal State: View Query nodes have to be top level nodes, at index \" + node.nodeIndex + \"!\");\n }\n
 }\n }\n if (node.childCount) {\n var parentEnd = parent ? parent.nodeIndex + parent.childCount :
nodeCount - 1;\n if (node.nodeIndex <= parentEnd && node.nodeIndex + node.childCount > parentEnd) {\n throw
new Error("\Illegal State: childCount of node leads outside of parent, at index \" + node.nodeIndex +
\"!\");\n }\n }\n }\n }\n function createEmbeddedView(parent, anchorDef, viewDef, context) {\n //
embedded views are seen as siblings to the anchor, so we need\n // to get the parent of the anchor and use it as
parentIndex.\n var view = createView(parent.root, parent.renderer, parent, anchorDef, viewDef);\n initView(view, parent.component, context);\n createViewNodes(view);\n return view;\n }\n function
createRootView(root, def, context) {\n var view = createView(root, root.renderer, null, null, def);\n initView(view, context, context);\n createViewNodes(view);\n return view;\n }\n function
createComponentView(parentView, nodeDef, viewDef, hostElement) {\n var rendererType =
nodeDef.element.componentRendererType;\n var compRenderer;\n if (!rendererType) {\n compRenderer =
parentView.root.renderer;\n }\n else {\n compRenderer =
parentView.root.rendererFactory.createRenderer(hostElement, rendererType);\n }\n return
createView(parentView.root, compRenderer, parentView, nodeDef.element.componentProvider, viewDef);\n }\n }\n function createView(root, renderer, parent, parentNodeDef, def) {\n var nodes = new Array(def.nodes.length);\n var disposables = def.outputCount ? new Array(def.outputCount) : null;\n var view = {\n def: def,\n
 parent: parent,\n viewContainerParent: null,\n parentNodeDef: parentNodeDef,\n context:

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null,\n component: null,\n nodes: nodes,\n state: 13 /* CatInit */,\n root: root,\n renderer: renderer,\n oldValues: new Array(def.bindingCount),\n disposables: disposables,\n initIndex: -1\n };\n return view;\n }\n function initView(view, component, context) {\n view.component = component;\n view.context = context;\n }\n function createViewNodes(view) {\n var\n renderHost;\n if (isComponentView(view)) {\n var hostDef = view.parentNodeDef;\n renderHost\n = asElementData(view.parent, hostDef.parent.nodeType).renderElement;\n }\n var def = view.def;\n var nodes = view.nodes;\n for (var i = 0; i < def.nodes.length; i++) {\n var nodeDef = def.nodes[i];\n Services.setCurrentNode(view, i);\n var nodeData = void 0;\n switch (nodeDef.flags & 201347067 /*\nTypes */) {\n case 1 /* TypeElement */:\n var el = createElement(view, renderHost,\nnodeDef);\n var componentView = undefined;\n if (nodeDef.flags & 33554432 /*\nComponentView */) {\n var compViewDef = resolveDefinition(nodeDef.element.componentView);\n componentView = Services.createComponentView(view, nodeDef, compViewDef, el);\n }\n listenToElementOutputs(view, componentView, nodeDef, el);\n nodeData = {\n renderElement: el,\n componentView: componentView,\n viewContainer: null,\n template: nodeDef.element.template ? createTemplateData(view, nodeDef) : undefined\n };\n if (nodeDef.flags & 16777216 /* EmbeddedViews */) {\n nodeData.viewContainer =\ncreateViewContainerData(view, nodeDef, nodeData);\n }\n break;\n case 2 /*\nTypeText */:\n nodeData = createText(view, renderHost, nodeDef);\n break;\n case\n512 /* TypeClassProvider */:\n case 1024 /* TypeFactoryProvider */:\n case 2048 /*\nTypeUseExistingProvider */:\n case 256 /* TypeValueProvider */: {\n nodeData = nodes[i];\n var instance =\ncreateProviderInstance(view, nodeDef);\n nodeData = { instance: instance }; }\n break;\n }\n case 16 /* TypePipe */: {\n var instance = createPipeInstance(view,\nnodeDef);\n nodeData = { instance: instance }; }\n break;\n }\n case 16384\n/* TypeDirective */: {\n nodeData = nodes[i];\n if (!nodeData) {\n var\ninstance = createDirectiveInstance(view, nodeDef);\n nodeData = { instance: instance }; }\n }\n if (nodeDef.flags & 32768 /* Component */) {\n var compView =\nasElementData(view, nodeDef.parent.nodeType).componentView;\n initView(compView,\nnodeData.instance, nodeData.instance);\n }\n break;\n }\n case 32 /*\nTypePureArray */:\n case 64 /* TypePureObject */:\n case 128 /* TypePurePipe */:\n nodeData = createPureExpression(view, nodeDef);\n break;\n case 67108864 /*\nTypeContentQuery */:\n case 134217728 /* TypeViewQuery */:\n nodeData =\ncreateQuery();\n break;\n case 8 /* TypeNgContent */:\n appendNgContent(view,\nrenderHost, nodeDef);\n // no runtime data needed for NgContent...\n nodeData =\nundefined;\n break;\n }\n nodes[i] = nodeData;\n }\n // Create the\nViewData.nodes of component views after we created everything else,\n // so that e.g. ng-content works\nexecComponentViewsAction(view, ViewAction.CreateViewNodes);\n // fill static content and view queries\nexecQueriesAction(view, 67108864 /* TypeContentQuery */ | 134217728 /* TypeViewQuery */,\n268435456 /*\nStaticQuery */,\n0 /* CheckAndUpdate */);\n }\n function checkNoChangesView(view) {\n markProjectedViewsForCheck(view);\n Services.updateDirectives(view, 1 /* CheckNoChanges */);\n execEmbeddedViewsAction(view, ViewAction.CheckNoChanges);\n Services.updateRenderer(view, 1 /*\nCheckNoChanges */);\n execComponentViewsAction(view, ViewAction.CheckNoChanges);\n // Note: We\ndon't check queries for changes as we didn't do this in v2.x.\n // TODO(tbosch): investigate if we can enable the\ncheck again in v5.x with a nicer error message.\n view.state &= ~(64 /* CheckProjectedViews */ | 32 /*\nCheckProjectedView */);\n }\n function checkAndUpdateView(view) {\n if (view.state & 1 /*\nBeforeFirstCheck */) {\n view.state &= ~1 /* BeforeFirstCheck */;\n view.state |= 2 /* FirstCheck\n*/;\n }\n else {\n view.state &= ~2 /* FirstCheck */;\n }\n shiftInitState(view, 0 /*\nInitState_BeforeInit */,\n256 /* InitState_CallingOnInit */);\n markProjectedViewsForCheck(view);\n }

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Services.updateDirectives(view, 0 /* CheckAndUpdate */);\n execEmbeddedViewsAction(view,
ViewAction.CheckAndUpdate);\n execQueriesAction(view, 67108864 /* TypeContentQuery */, 536870912 /*
DynamicQuery */, 0 /* CheckAndUpdate */);\n var callInit = shiftInitState(view, 256 /* InitState_CallingOnInit
/, 512 / InitState_CallingAfterContentInit */);\n callLifecycleHooksChildrenFirst(view, 2097152 /*
AfterContentChecked */ | (callInit ? 1048576 /* AfterContentInit */ : 0));\n Services.updateRenderer(view, 0 /*
CheckAndUpdate */);\n execComponentViewsAction(view, ViewAction.CheckAndUpdate);\n execQueriesAction(view, 134217728 /* TypeViewQuery */, 536870912 /* DynamicQuery */, 0 /*
CheckAndUpdate */);\n callInit = shiftInitState(view, 512 /* InitState_CallingAfterContentInit */, 768 /*
InitState_CallingAfterViewInit */);\n callLifecycleHooksChildrenFirst(view, 8388608 /* AfterViewChecked */
| (callInit ? 4194304 /* AfterViewInit */ : 0));\n if (view.def.flags & 2 /* OnPush */) {\n view.state &=
~8 /* ChecksEnabled */;\n }\n view.state &= ~(64 /* CheckProjectedViews */ | 32 /* CheckProjectedView
/);\n shiftInitState(view, 768 / InitState_CallingAfterViewInit */, 1024 /* InitState_AfterInit */);\n }\n
function checkAndUpdateNode(view, nodeDef, argStyle, v0, v1, v2, v3, v4, v5, v6, v7, v8, v9) {\n if (argStyle
=== 0 /* Inline */) {\n return checkAndUpdateNodeInline(view, nodeDef, v0, v1, v2, v3, v4, v5, v6, v7, v8,
v9);\n }\n else {\n return checkAndUpdateNodeDynamic(view, nodeDef, v0);\n }\n }\n
function markProjectedViewsForCheck(view) {\n var def = view.def;\n if (!(def.nodeFlags & 4 /*
ProjectedTemplate */) {\n return;\n }\n for (var i = 0; i < def.nodes.length; i++) {\n var
nodeDef = def.nodes[i];\n if (nodeDef.flags & 4 /* ProjectedTemplate */) {\n var projectedViews =
asElementData(view, i).template._projectedViews;\n if (projectedViews) {\n for (var i_1 = 0;
i_1 < projectedViews.length; i_1++) {\n var projectedView = projectedViews[i_1];\n
projectedView.state |= 32 /* CheckProjectedView */;\n }\n }\n }\n }\n
markParentViewsForCheckProjectedViews(projectedView, view);\n }\n }\n }\n
else if ((nodeDef.childFlags & 4 /* ProjectedTemplate */) === 0) {\n // a parent with leafs\n // no
child is a component,\n // then skip the children\n i += nodeDef.childCount;\n }\n }\n
}\n function checkAndUpdateNodeInline(view, nodeDef, v0, v1, v2, v3, v4, v5, v6, v7, v8, v9) {\n switch
(nodeDef.flags & 201347067 /* Types */) {\n case 1 /* TypeElement */:\n return
checkAndUpdateElementInline(view, nodeDef, v0, v1, v2, v3, v4, v5, v6, v7, v8, v9);\n case 2 /* TypeText
*/:\n return checkAndUpdateTextInline(view, nodeDef, v0, v1, v2, v3, v4, v5, v6, v7, v8, v9);\n
 case 16384 /* TypeDirective */:\n return checkAndUpdateDirectiveInline(view, nodeDef, v0, v1, v2, v3,
v4, v5, v6, v7, v8, v9);\n case 32 /* TypePureArray */:\n case 64 /* TypePureObject */:\n case
128 /* TypePurePipe */:\n return checkAndUpdatePureExpressionInline(view, nodeDef, v0, v1, v2, v3, v4,
v5, v6, v7, v8, v9);\n default:\n throw 'unreachable';\n }\n }\n function
checkAndUpdateNodeDynamic(view, nodeDef, values) {\n switch (nodeDef.flags & 201347067 /* Types */)
{\n case 1 /* TypeElement */:\n return checkAndUpdateElementDynamic(view, nodeDef, values);\n
 case 2 /* TypeText */:\n return checkAndUpdateTextDynamic(view, nodeDef, values);\n case
16384 /* TypeDirective */:\n return checkAndUpdateDirectiveDynamic(view, nodeDef, values);\n
 case 32 /* TypePureArray */:\n case 64 /* TypePureObject */:\n case 128 /* TypePurePipe */:\n
 return checkAndUpdatePureExpressionDynamic(view, nodeDef, values);\n default:\n throw
'unreachable';\n }\n }\n function checkNoChangesNode(view, nodeDef, argStyle, v0, v1, v2, v3, v4, v5, v6,
v7, v8, v9) {\n if (argStyle === 0 /* Inline */) {\n checkNoChangesNodeInline(view, nodeDef, v0, v1,
v2, v3, v4, v5, v6, v7, v8, v9);\n }\n else {\n checkNoChangesNodeDynamic(view, nodeDef, v0);\n
 }\n // Returning false is ok here as we would have thrown in case of a change.\n return false;\n }\n
function checkNoChangesNodeInline(view, nodeDef, v0, v1, v2, v3, v4, v5, v6, v7, v8, v9) {\n var bindLen =
nodeDef.bindings.length;\n if (bindLen > 0)\n checkBindingNoChanges(view, nodeDef, 0, v0);\n if
(bindLen > 1)\n checkBindingNoChanges(view, nodeDef, 1, v1);\n if (bindLen > 2)\n
checkBindingNoChanges(view, nodeDef, 2, v2);\n if (bindLen > 3)\n checkBindingNoChanges(view,
nodeDef, 3, v3);\n if (bindLen > 4)\n checkBindingNoChanges(view, nodeDef, 4, v4);\n if (bindLen
> 5)\n checkBindingNoChanges(view, nodeDef, 5, v5);\n if (bindLen > 6)\n

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checkBindingNoChanges(view, nodeDef, 6, v6);\n if (bindLen > 7)\n checkBindingNoChanges(view,\nnodeDef, 7, v7);\n if (bindLen > 8)\n checkBindingNoChanges(view, nodeDef, 8, v8);\n if (bindLen\n> 9)\n checkBindingNoChanges(view, nodeDef, 9, v9);\n }\n function\ncheckNoChangesNodeDynamic(view, nodeDef, values) {\n for (var i = 0; i < values.length; i++) {\ncheckBindingNoChanges(view, nodeDef, i, values[i]);\n }\n }\n /**\n * Workaround\nhttps://github.com/angular/tsickle/issues/497\n * @suppress {misplacedTypeAnnotation}\n */\n function\ncheckNoChangesQuery(view, nodeDef) {\n var queryList = asQueryList(view, nodeDef.nodeIndex);\n if\n(queryList.dirty) {\n throw\nexpressionChangedAfterItHasBeenCheckedError(Services.createDebugContext(view, nodeDef.nodeIndex), \"Query\n\" + nodeDef.query.id + \" not dirty\", \"Query \" + nodeDef.query.id + \" dirty\", (view.state & 1 /*\nBeforeFirstCheck */) !== 0);\n }\n }\n function destroyView(view) {\n if (view.state & 128 /*\nDestroyed */) {\n return;\n }\n execEmbeddedViewsAction(view, ViewAction.Destroy);\n execComponentViewsAction(view, ViewAction.Destroy);\n callLifecycleHooksChildrenFirst(view, 131072 /*\nOnDestroy */);\n if (view.disposables) {\n for (var i = 0; i < view.disposables.length; i++) {\nview.disposables[i]();\n }\n }\n detachProjectedView(view);\n if (view.renderer.destroyNode)\n{\n destroyViewNodes(view);\n }\n if (isComponentView(view)) {\nview.renderer.destroy();\n }\n view.state |= 128 /* Destroyed */;\n }\n function\ndestroyViewNodes(view) {\n var len = view.def.nodes.length;\n for (var i = 0; i < len; i++) {\n var\ndef = view.def.nodes[i];\n if (def.flags & 1 /* TypeElement */) {\nview.renderer.destroyNode(asElementData(view, i).renderElement);\n }\n else if (def.flags & 2 /*\nTypeText */) {\n view.renderer.destroyNode(asTextData(view, i).renderText);\n }\n else if\n(def.flags & 67108864 /* TypeContentQuery */ || def.flags & 134217728 /* TypeViewQuery */) {\nasQueryList(view, i).destroy();\n }\n }\n }\n var ViewAction;\n (function (ViewAction) {\nViewAction[ViewAction[\"CreateViewNodes\"] = 0] = \"CreateViewNodes\";\nViewAction[ViewAction[\"CheckNoChanges\"] = 1] = \"CheckNoChanges\";\nViewAction[ViewAction[\"CheckNoChangesProjectedViews\"] = 2] = \"CheckNoChangesProjectedViews\";\nViewAction[ViewAction[\"CheckAndUpdate\"] = 3] = \"CheckAndUpdate\";\nViewAction[ViewAction[\"CheckAndUpdateProjectedViews\"] = 4] = \"CheckAndUpdateProjectedViews\";\nViewAction[ViewAction[\"Destroy\"] = 5] = \"Destroy\";\n })(ViewAction || (ViewAction = {}));\n function\nexecComponentViewsAction(view, action) {\n var def = view.def;\n if (!(def.nodeFlags & 33554432 /*\nComponentView */) {\n return;\n }\n for (var i = 0; i < def.nodes.length; i++) {\n var\nnodeDef = def.nodes[i];\n if (nodeDef.flags & 33554432 /* ComponentView */) {\n // a leaf\n callViewAction(asElementData(view, i).componentView, action);\n }\n else if ((nodeDef.childFlags\n& 33554432 /* ComponentView */) === 0) {\n // a parent with leaf\n // no child is a\ncomponent,\n // then skip the children\n i += nodeDef.childCount;\n }\n }\n }\n function execEmbeddedViewsAction(view, action) {\n var def = view.def;\n if (!(def.nodeFlags &\n16777216 /* EmbeddedViews */) {\n return;\n }\n for (var i = 0; i < def.nodes.length; i++) {\nvar nodeDef = def.nodes[i];\n if (nodeDef.flags & 16777216 /* EmbeddedViews */) {\n // a leaf\n var embeddedViews = asElementData(view, i).viewContainer._embeddedViews;\n for (var k = 0; k\n< embeddedViews.length; k++) {\n callViewAction(embeddedViews[k], action);\n }\n }\n else if ((nodeDef.childFlags & 16777216 /* EmbeddedViews */) === 0) {\n // a parent with\nleaf\n // no child is a component,\n // then skip the children\n i +=\nnodeDef.childCount;\n }\n }\n }\n function callViewAction(view, action) {\n var viewState =\nview.state;\n switch (action) {\n case ViewAction.CheckNoChanges:\n if ((viewState & 128 /*\nDestroyed */) === 0) {\n if ((viewState & 12 /* CatDetectChanges */) === 12 /* CatDetectChanges */)\n{\n checkNoChangesView(view);\n }\n }\n else if (viewState & 64 /*\nCheckProjectedViews */) {\n execProjectedViewsAction(view,\nViewAction.CheckNoChangesProjectedViews);\n }\n }\n }\n break;\n case

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ViewAction.CheckNoChangesProjectedViews:\n if ((viewState & 128 /* Destroyed */) === 0) {\n
 if (viewState & 32 /* CheckProjectedView */) {\n checkNoChangesView(view);\n }\n else if (viewState & 64 /* CheckProjectedViews */) {\n execProjectedViewsAction(view,\n
action);\n }\n }\n break;\n case ViewAction.CheckAndUpdate:\n if\n
((viewState & 128 /* Destroyed */) === 0) {\n if ((viewState & 12 /* CatDetectChanges */) === 12 /*\n
CatDetectChanges */) {\n checkAndUpdateView(view);\n }\n else if\n
(viewState & 64 /* CheckProjectedViews */) {\n execProjectedViewsAction(view,\n
ViewAction.CheckAndUpdateProjectedViews);\n }\n }\n break;\n case\n
ViewAction.CheckAndUpdateProjectedViews:\n if ((viewState & 128 /* Destroyed */) === 0) {\n
 if (viewState & 32 /* CheckProjectedView */) {\n checkAndUpdateView(view);\n }\n
 else if (viewState & 64 /* CheckProjectedViews */) {\n execProjectedViewsAction(view,\n
action);\n }\n }\n break;\n case ViewAction.Destroy:\n // Note:\n
destroyView recurses over all views,\n // so we don't need to special case projected views here.\n
destroyView(view);\n break;\n case ViewAction.CreateViewNodes:\n
createViewNodes(view);\n break;\n }\n }\n function execProjectedViewsAction(view, action) {\n
 execEmbeddedViewsAction(view, action);\n execComponentViewsAction(view, action);\n }\n function\n
execQueriesAction(view, queryFlags, staticDynamicQueryFlag, checkType) {\n if (!(view.def.nodeFlags &\n
queryFlags) || !(view.def.nodeFlags & staticDynamicQueryFlag)) {\n return;\n }\n var nodeCount =\n
view.def.nodes.length;\n for (var i = 0; i < nodeCount; i++) {\n var nodeDef = view.def.nodes[i];\n
if ((nodeDef.flags & queryFlags) && (nodeDef.flags & staticDynamicQueryFlag)) {\n
Services.setCurrentNode(view, nodeDef.nodeIndex);\n switch (checkType) {\n case 0 /*\n
CheckAndUpdate */:\n checkAndUpdateQuery(view, nodeDef);\n break;\n
case 1 /* CheckNoChanges */:\n checkNoChangesQuery(view, nodeDef);\n break;\n
 }\n }\n if (!(nodeDef.childFlags & queryFlags) || !(nodeDef.childFlags &\n
staticDynamicQueryFlag)) {\n // no child has a matching query\n // then skip the children\n
i += nodeDef.childCount;\n }\n }\n }\n var initialized = false;\n function\n
initServicesIfNeeded() {\n if (initialized) {\n return;\n }\n initialized = true;\n var services =\n
isDevMode() ? createDebugServices() : createProdServices();\n Services.setCurrentNode =\n
services.setCurrentNode;\n Services.createRootView = services.createRootView;\n
Services.createEmbeddedView = services.createEmbeddedView;\n Services.createComponentView =\n
services.createComponentView;\n Services.createNgModuleRef = services.createNgModuleRef;\n
Services.overrideProvider = services.overrideProvider;\n Services.overrideComponentView =\n
services.overrideComponentView;\n Services.clearOverrides = services.clearOverrides;\n
Services.checkAndUpdateView = services.checkAndUpdateView;\n Services.checkNoChangesView =\n
services.checkNoChangesView;\n Services.destroyView = services.destroyView;\n Services.resolveDep =\n
resolveDep;\n Services.createDebugContext = services.createDebugContext;\n Services.handleEvent =\n
services.handleEvent;\n Services.updateDirectives = services.updateDirectives;\n Services.updateRenderer =\n
services.updateRenderer;\n Services.dirtyParentQueries = dirtyParentQueries;\n }\n function\n
createProdServices() {\n return {\n setCurrentNode: function () { },\n createRootView:\n
createProdRootView,\n createEmbeddedView: createEmbeddedView,\n createComponentView:\n
createComponentView,\n createNgModuleRef: createNgModuleRef,\n overrideProvider: NOOP,\n
 overrideComponentView: NOOP,\n clearOverrides: NOOP,\n checkAndUpdateView:\n
checkAndUpdateView,\n checkNoChangesView: checkNoChangesView,\n destroyView:\n
destroyView,\n createDebugContext: function (view, nodeIndex) { return new DebugContext_(view,\n
nodeIndex); },\n handleEvent: function (view, nodeIndex, eventName, event) { return\n
view.def.handleEvent(view, nodeIndex, eventName, event); },\n updateDirectives: function (view,\n
checkType) { return view.def.updateDirectives(checkType === 0 /* CheckAndUpdate */ ?\n
prodCheckAndUpdateNode : prodCheckNoChangesNode, view); },\n updateRenderer: function (view,

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checkType) { return view.def.updateRenderer(checkType === 0 /* CheckAndUpdate */ ?
prodCheckAndUpdateNode : prodCheckNoChangesNode, view); },\n };\n }\n function
createDebugServices() {\n return {\n setCurrentNode: debugSetCurrentNode,\n createRootView:
debugCreateRootView,\n createEmbeddedView: debugCreateEmbeddedView,\n
createComponentView: debugCreateComponentView,\n createNgModuleRef: debugCreateNgModuleRef,\n
 overrideProvider: debugOverrideProvider,\n overrideComponentView:
debugOverrideComponentView,\n clearOverrides: debugClearOverrides,\n checkAndUpdateView:
debugCheckAndUpdateView,\n checkNoChangesView: debugCheckNoChangesView,\n destroyView:
debugDestroyView,\n createDebugContext: function (view, nodeId) { return new DebugContext_(view,
nodeId); },\n handleEvent: debugHandleEvent,\n updateDirectives: debugUpdateDirectives,\n
 updateRenderer: debugUpdateRenderer,\n };\n }\n function createProdRootView(elInjector,
projectableNodes, rootSelectorOrNode, def, ngModule, context) {\n var rendererFactory =
ngModule.injector.get(RendererFactory2);\n return createRootView(createRootData(elInjector, ngModule,
rendererFactory, projectableNodes, rootSelectorOrNode), def, context);\n }\n function
debugCreateRootView(elInjector, projectableNodes, rootSelectorOrNode, def, ngModule, context) {\n var
rendererFactory = ngModule.injector.get(RendererFactory2);\n var root = createRootData(elInjector, ngModule,
new DebugRendererFactory2(rendererFactory), projectableNodes, rootSelectorOrNode);\n var defWithOverride
= applyProviderOverridesToView(def);\n return callWithDebugContext(DebugAction.create, createRootView,
null, [root, defWithOverride, context]);\n }\n function createRootData(elInjector, ngModule, rendererFactory,
projectableNodes, rootSelectorOrNode) {\n var sanitizer = ngModule.injector.get(Sanitizer);\n var
errorHandler = ngModule.injector.get(ErrorHandler);\n var renderer = rendererFactory.createRenderer(null,
null);\n return {\n ngModule: ngModule,\n injector: elInjector,\n projectableNodes:
projectableNodes,\n selectorOrNode: rootSelectorOrNode,\n sanitizer: sanitizer,\n
rendererFactory: rendererFactory,\n renderer: renderer,\n errorHandler: errorHandler\n };\n }\n
function debugCreateEmbeddedView(parentView, anchorDef, viewDef, context) {\n var defWithOverride =
applyProviderOverridesToView(viewDef);\n return callWithDebugContext(DebugAction.create,
createEmbeddedView, null, [parentView, anchorDef, defWithOverride, context]);\n }\n function
debugCreateComponentView(parentView, nodeDef, viewDef, hostElement) {\n var overrideComponentView =
viewDefOverrides.get(nodeDef.element.componentProvider.provider.token);\n if (overrideComponentView)
{\n viewDef = overrideComponentView;\n }\n else {\n viewDef =
applyProviderOverridesToView(viewDef);\n }\n return callWithDebugContext(DebugAction.create,
createComponentView, null, [parentView, nodeDef, viewDef, hostElement]);\n }\n function
debugCreateNgModuleRef(moduleType, parentInjector, bootstrapComponents, def) {\n var defWithOverride =
applyProviderOverridesToNgModule(def);\n return createNgModuleRef(moduleType, parentInjector,
bootstrapComponents, defWithOverride);\n }\n var providerOverrides = new Map();\n var
providerOverridesWithScope = new Map();\n var viewDefOverrides = new Map();\n function
debugOverrideProvider(override) {\n providerOverrides.set(override.token, override);\n var
injectableDef;\n if (typeof override.token === 'function' && (injectableDef = getInjectableDef(override.token))
&&\n typeof injectableDef.providedIn === 'function') {\n
providerOverridesWithScope.set(override.token, override);\n }\n }\n function
debugOverrideComponentView(comp, compFactory) {\n var hostViewDef =
resolveDefinition(getComponentViewDefinitionFactory(compFactory));\n var compViewDef =
resolveDefinition(hostViewDef.nodes[0].element.componentView);\n viewDefOverrides.set(comp,
compViewDef);\n }\n function debugClearOverrides() {\n providerOverrides.clear();\n
providerOverridesWithScope.clear();\n viewDefOverrides.clear();\n }\n // Notes about the algorithm:\n //
1) Locate the providers of an element and check if one of them was overwritten\n // 2) Change the providers of
that element\n //\n // We only create new datastructures if we need to, to keep perf impact\n // reasonable.\n
function applyProviderOverridesToView(def) {\n if (providerOverrides.size === 0) {\n return def;\n

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}\n var elementIndicesWithOverwrittenProviders = findElementIndicesWithOverwrittenProviders(def);\n if
(elementIndicesWithOverwrittenProviders.length === 0) {\n return def;\n }\n // clone the whole
view definition,\n // as it maintains references between the nodes that are hard to update.\n def =
def.factory(function () { return NOOP; });\n for (var i = 0; i < elementIndicesWithOverwrittenProviders.length;
i++) {\n applyProviderOverridesToElement(def, elementIndicesWithOverwrittenProviders[i]);\n }\n
return def;\n function findElementIndicesWithOverwrittenProviders(def) {\n var
elIndicesWithOverwrittenProviders = [];\n var lastElementDef = null;\n for (var i = 0; i <
def.nodes.length; i++) {\n var nodeDef = def.nodes[i];\n if (nodeDef.flags & 1 /* TypeElement
*/) {\n lastElementDef = nodeDef;\n }\n if (lastElementDef && nodeDef.flags &
3840 /* CatProviderNoDirective */ &&\n providerOverrides.has(nodeDef.provider.token)) {\n
elIndicesWithOverwrittenProviders.push(lastElementDef.nodeIndex);\n lastElementDef = null;\n
 }\n }\n return elIndicesWithOverwrittenProviders;\n }\n function
applyProviderOverridesToElement(viewDef, elIndex) {\n for (var i = elIndex + 1; i < viewDef.nodes.length;
i++) {\n var nodeDef = viewDef.nodes[i];\n if (nodeDef.flags & 1 /* TypeElement */) {\n
 // stop at the next element\n return;\n }\n if (nodeDef.flags & 3840 /*
CatProviderNoDirective */) {\n var provider = nodeDef.provider;\n var override =
providerOverrides.get(provider.token);\n if (override) {\n nodeDef.flags = (nodeDef.flags
& ~3840 /* CatProviderNoDirective */) | override.flags;\n provider.deps =
splitDepsDsl(override.deps);\n provider.value = override.value;\n }\n }\n
 }\n }\n // Notes about the algorithm:\n // We only create new datastructures if we need to, to keep perf
impact\n // reasonable.\n function applyProviderOverridesToNgModule(def) {\n var _a =
calcHasOverrides(def), hasOverrides = _a.hasOverrides, hasDeprecatedOverrides = _a.hasDeprecatedOverrides;\n
 if (!hasOverrides) {\n return def;\n }\n // clone the whole view definition,\n // as it maintains
references between the nodes that are hard to update.\n def = def.factory(function () { return NOOP; });\n
 applyProviderOverrides(def);\n return def;\n function calcHasOverrides(def) {\n var hasOverrides =
false;\n var hasDeprecatedOverrides = false;\n if (providerOverrides.size === 0) {\n return {\n
hasOverrides: hasOverrides, hasDeprecatedOverrides: hasDeprecatedOverrides }\n }\n
 def.providers.forEach(function (node) {\n var override = providerOverrides.get(node.token);\n if
((node.flags & 3840 /* CatProviderNoDirective */) && override) {\n hasOverrides = true;\n
 hasDeprecatedOverrides = hasDeprecatedOverrides || override.deprecatedBehavior;\n }\n });\n
 def.modules.forEach(function (module) {\n providerOverridesWithScope.forEach(function (override,
token) {\n if (getInjectableDef(token).providedIn === module) {\n hasOverrides = true;\n
 hasDeprecatedOverrides = hasDeprecatedOverrides || override.deprecatedBehavior;\n }\n
 });\n });\n return { hasOverrides: hasOverrides, hasDeprecatedOverrides:
hasDeprecatedOverrides }\n }\n function applyProviderOverrides(def) {\n for (var i = 0; i <
def.providers.length; i++) {\n var provider = def.providers[i];\n if (hasDeprecatedOverrides) {\n
 // We had a bug where me made\n // all providers lazy. Keep this logic behind a flag\n
 // for migrating existing users.\n provider.flags |= 4096 /* LazyProvider */;\n }\n
 var\n override = providerOverrides.get(provider.token);\n if (override) {\n provider.flags =
(provider.flags & ~3840 /* CatProviderNoDirective */) | override.flags;\n provider.deps =
splitDepsDsl(override.deps);\n provider.value = override.value;\n }\n }\n if
(providerOverridesWithScope.size > 0) {\n var moduleSet_1 = new Set(def.modules);\n providerOverridesWithScope.forEach(function (override, token) {\n if
(moduleSet_1.has(getInjectableDef(token).providedIn)) {\n var provider = {\n token:
token,\n flags: override.flags | (hasDeprecatedOverrides ? 4096 /* LazyProvider */ : 0 /* None
*/),\n deps: splitDepsDsl(override.deps),\n value: override.value,\n
 index: def.providers.length,\n };\n def.providers.push(provider);\n
 def.providersByKey[tokenKey(token)] = provider;\n }\n });\n }\n }\n }\n }\n
}

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function prodCheckAndUpdateNode(view, checkIndex, argStyle, v0, v1, v2, v3, v4, v5, v6, v7, v8, v9) {\n var
nodeDef = view.def.nodes[checkIndex];\n checkAndUpdateNode(view, nodeDef, argStyle, v0, v1, v2, v3, v4,
v5, v6, v7, v8, v9);\n return (nodeDef.flags & 224 /* CatPureExpression */) ?\n asPureExpressionData(view, checkIndex).value :\n undefined;\n }\n function
prodCheckNoChangesNode(view, checkIndex, argStyle, v0, v1, v2, v3, v4, v5, v6, v7, v8, v9) {\n var nodeDef
= view.def.nodes[checkIndex];\n checkNoChangesNode(view, nodeDef, argStyle, v0, v1, v2, v3, v4, v5, v6, v7,
v8, v9);\n return (nodeDef.flags & 224 /* CatPureExpression */) ?\n asPureExpressionData(view,
checkIndex).value :\n undefined;\n }\n function debugCheckAndUpdateView(view) {\n return
callWithDebugContext(DebugAction.detectChanges, checkAndUpdateView, null, [view]);\n }\n function
debugCheckNoChangesView(view) {\n return callWithDebugContext(DebugAction.checkNoChanges,
checkNoChangesView, null, [view]);\n }\n function debugDestroyView(view) {\n return
callWithDebugContext(DebugAction.destroy, destroyView, null, [view]);\n }\n var DebugAction;\n (function
(DebugAction) {\n DebugAction[DebugAction[\"create\"] = 0] = \"create\";\n
DebugAction[DebugAction[\"detectChanges\"] = 1] = \"detectChanges\";\n
DebugAction[DebugAction[\"checkNoChanges\"] = 2] = \"checkNoChanges\";\n
DebugAction[DebugAction[\"destroy\"] = 3] = \"destroy\";\n DebugAction[DebugAction[\"handleEvent\"] = 4]
= \"handleEvent\";\n }) (DebugAction || (DebugAction = {}));\n var _currentAction;\n var _currentView;\n
var _currentNodeIndex;\n function debugSetCurrentNode(view, nodeIndex) {\n _currentView = view;\n
_currentNodeIndex = nodeIndex;\n }\n function debugHandleEvent(view, nodeIndex, eventName, event) {\n
debugSetCurrentNode(view, nodeIndex);\n return callWithDebugContext(DebugAction.handleEvent,
view.def.handleEvent, null, [view, nodeIndex, eventName, event]);\n }\n function debugUpdateDirectives(view,
checkType) {\n if (view.state & 128 /* Destroyed */) {\n throw
viewDestroyedError(DebugAction[_currentAction]);\n }\n debugSetCurrentNode(view,
nextDirectiveWithBinding(view, 0));\n return view.def.updateDirectives(debugCheckDirectivesFn, view);\n
function debugCheckDirectivesFn(view, nodeIndex, argStyle) {\n var values = [];\n for (var _i = 3; _i
< arguments.length; _i++) {\n values[_i - 3] = arguments[_i];\n }\n var nodeDef =
view.def.nodes[nodeIndex];\n if (checkType === 0 /* CheckAndUpdate */) {\n
debugCheckAndUpdateNode(view, nodeDef, argStyle, values);\n }\n else {\n
debugCheckNoChangesNode(view, nodeDef, argStyle, values);\n }\n if (nodeDef.flags & 16384 /*
TypeDirective */) {\n debugSetCurrentNode(view, nextDirectiveWithBinding(view, nodeIndex));\n
}\n return (nodeDef.flags & 224 /* CatPureExpression */) ?\n asPureExpressionData(view,
nodeDef.nodeIndex).value :\n undefined;\n }\n }\n function debugUpdateRenderer(view,
checkType) {\n if (view.state & 128 /* Destroyed */) {\n throw
viewDestroyedError(DebugAction[_currentAction]);\n }\n debugSetCurrentNode(view,
nextRenderNodeWithBinding(view, 0));\n return view.def.updateRenderer(debugCheckRenderNodeFn,
view);\n function debugCheckRenderNodeFn(view, nodeIndex, argStyle) {\n var values = [];\n for
(var _i = 3; _i < arguments.length; _i++) {\n values[_i - 3] = arguments[_i];\n }\n var
nodeDef = view.def.nodes[nodeIndex];\n if (checkType === 0 /* CheckAndUpdate */) {\n
debugCheckAndUpdateNode(view, nodeDef, argStyle, values);\n }\n else {\n
debugCheckNoChangesNode(view, nodeDef, argStyle, values);\n }\n if (nodeDef.flags & 3 /*
CatRenderNode */) {\n debugSetCurrentNode(view, nextRenderNodeWithBinding(view, nodeIndex));\n
}\n return (nodeDef.flags & 224 /* CatPureExpression */) ?\n asPureExpressionData(view,
nodeDef.nodeIndex).value :\n undefined;\n }\n }\n function debugCheckAndUpdateNode(view,
nodeDef, argStyle, givenValues) {\n var changed = checkAndUpdateNode.apply(void 0, __spread([view,
nodeDef, argStyle], givenValues));\n if (changed) {\n var values = argStyle === 1 /* Dynamic */ ?
givenValues[0] : givenValues;\n if (nodeDef.flags & 16384 /* TypeDirective */) {\n var
bindingValues = {};\n for (var i = 0; i < nodeDef.bindings.length; i++) {\n var binding =
nodeDef.bindings[i];\n var value = values[i];\n if (binding.flags & 8 /* TypeProperty */) {\n

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 bindingValues[normalizeDebugBindingName(binding.nonMinifiedName)] =\n
normalizeDebugBindingValue(value);\n }\n }\n var elDef = nodeDef.parent;\n
var el = asElementData(view, elDef.nodeIndex).renderElement;\n if (!elDef.element.name) {\n
// a comment.\n view.renderer.setValue(el, \"bindings=\" + JSON.stringify(bindingValues, null, 2));\n
}\n else {\n // a regular element.\n for (var attr in bindingValues) {\n
var value = bindingValues[attr];\n if (value !== null) {\n
view.renderer.setAttribute(el, attr, value);\n }\n else {\n
view.renderer.removeAttribute(el, attr);\n }\n }\n }\n }\n }\n }\n
function debugCheckNoChangesNode(view, nodeDef, argStyle, values) {\n checkNoChangesNode.apply(void
0, __spread([view, nodeDef, argStyle], values));\n }\n function nextDirectiveWithBinding(view, nodeIndex) {\n
for (var i = nodeIndex; i < view.def.nodes.length; i++) {\n var nodeDef = view.def.nodes[i];\n if
(nodeDef.flags & 16384 /* TypeDirective */ && nodeDef.bindings && nodeDef.bindings.length) {\n
return i;\n }\n }\n return null;\n }\n function nextRenderNodeWithBinding(view, nodeIndex) {\n
for (var i = nodeIndex; i < view.def.nodes.length; i++) {\n var nodeDef = view.def.nodes[i];\n if
((nodeDef.flags & 3 /* CatRenderNode */) && nodeDef.bindings && nodeDef.bindings.length) {\n return
i;\n }\n }\n return null;\n }\n var DebugContext_ = /** @class */ (function () {\n function
DebugContext_(view, nodeIndex) {\n this.view = view;\n this.nodeIndex = nodeIndex;\n if
(nodeIndex === null) {\n this.nodeIndex = nodeIndex = 0;\n }\n this.nodeDef =
view.def.nodes[nodeIndex];\n var elDef = this.nodeDef;\n var elView = view;\n while (elDef
&& (elDef.flags & 1 /* TypeElement */) === 0) {\n elDef = elDef.parent;\n }\n if (!elDef)
{\n while (!elDef && elView) {\n elDef = viewParentEl(elView);\n elView =
elView.parent;\n }\n }\n this.elDef = elDef;\n this.elView = elView;\n }\n
Object.defineProperty(DebugContext_.prototype, \"elOrCompView\", {\n get: function () {\n // Has
to be done lazily as we use the DebugContext also during creation of elements...\n return
asElementData(this.elView, this.elDef.nodeIndex).componentView || this.view;\n },\n enumerable:
false,\n configurable: true\n });\n Object.defineProperty(DebugContext_.prototype, \"injector\", {\n
get: function () {\n return createInjector$1(this.elView, this.elDef);\n },\n enumerable:
false,\n configurable: true\n });\n Object.defineProperty(DebugContext_.prototype, \"component\",
{\n get: function () {\n return this.elOrCompView.component;\n },\n enumerable:
false,\n configurable: true\n });\n Object.defineProperty(DebugContext_.prototype, \"context\", {\n
get: function () {\n return this.elOrCompView.context;\n },\n enumerable: false,\n
configurable: true\n });\n Object.defineProperty(DebugContext_.prototype, \"providerTokens\", {\n
get: function () {\n var tokens = [];\n if (this.elDef) {\n for (var i =
this.elDef.nodeIndex + 1; i <= this.elDef.nodeIndex + this.elDef.childCount; i++) {\n var childDef =
this.elView.def.nodes[i];\n if (childDef.flags & 20224 /* CatProvider */) {\n
tokens.push(childDef.provider.token);\n }\n i += childDef.childCount;\n }\n
}\n return tokens;\n },\n enumerable: false,\n configurable: true\n });\n
Object.defineProperty(DebugContext_.prototype, \"references\", {\n get: function () {\n var
references = {};\n if (this.elDef) {\n collectReferences(this.elView, this.elDef, references);\n
for (var i = this.elDef.nodeIndex + 1; i <= this.elDef.nodeIndex + this.elDef.childCount; i++) {\n
var childDef = this.elView.def.nodes[i];\n if (childDef.flags & 20224 /* CatProvider */) {\n
collectReferences(this.elView, childDef, references);\n }\n i +=
childDef.childCount;\n }\n }\n return references;\n },\n enumerable:
false,\n configurable: true\n });\n Object.defineProperty(DebugContext_.prototype,
\"componentRenderElement\", {\n get: function () {\n var elData =
findHostElement(this.elOrCompView);\n return elData ? elData.renderElement : undefined;\n },\n
enumerable: false,\n configurable: true\n });\n Object.defineProperty(DebugContext_.prototype,
\"renderNode\", {\n get: function () {\n return this.nodeDef.flags & 2 /* TypeText */ ?

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renderNode(this.view, this.nodeDef) :\n renderNode(this.elView, this.elDef);\n },\n enumerable: false,\n configurable: true\n });\n DebugContext_.prototype.logError = function\n (console) {\n var values = [];\n for (var _i = 1; _i < arguments.length; _i++) {\n values[_i - 1]\n } = arguments[_i];\n var logViewDef;\n var logNodeIndex;\n if (this.nodeDef.flags &\n 2 /* TypeText */) {\n logViewDef = this.view.def;\n logNodeIndex = this.nodeDef.nodeIndex;\n }\n else {\n logViewDef = this.elView.def;\n logNodeIndex = this.elDef.nodeIndex;\n }\n // Note: we only generate a log function for text and element nodes\n // to make the\n generated code as small as possible.\n var renderNodeIndex = getRenderNodeIndex(logViewDef,\n logNodeIndex);\n var currRenderNodeIndex = -1;\n var nodeLogger = function () {\n var\n _a;\n currRenderNodeIndex++;\n if (currRenderNodeIndex === renderNodeIndex) {\n return (_a = console.error).bind.apply(_a, __spread([console], values));\n }\n else {\n return NOOP;\n }\n };\n logViewDef.factory(nodeLogger);\n if\n (currRenderNodeIndex < renderNodeIndex) {\n console.error('Illegal state: the ViewDefinitionFactory did\n not call the logger!');\n console.error.apply(console, __spread(values));\n }\n return\n DebugContext_.\n }());\n function getRenderNodeIndex(viewDef, nodeIndex) {\n var renderNodeIndex = -\n 1;\n for (var i = 0; i <= nodeIndex; i++) {\n var nodeDef = viewDef.nodes[i];\n if (nodeDef.flags\n & 3 /* CatRenderNode */) {\n renderNodeIndex++;\n }\n }\n return renderNodeIndex;\n }\n function findHostElement(view) {\n while (view && !isComponentView(view)) {\n view =\n view.parent;\n }\n if (view.parent) {\n return asElementData(view.parent,\n viewParentEl(view).nodeIndex);\n }\n return null;\n }\n function collectReferences(view, nodeDef,\n references) {\n for (var refName in nodeDef.references) {\n references[refName] = getQueryValue(view,\n nodeDef, nodeDef.references[refName]);\n }\n }\n function callWithDebugContext(action, fn, self, args) {\n var oldAction = _currentAction;\n var oldView = _currentView;\n var oldNodeIndex =\n _currentNodeIndex;\n try {\n _currentAction = action;\n var result = fn.apply(self, args);\n _currentView = oldView;\n _currentNodeIndex = oldNodeIndex;\n _currentAction = oldAction;\n return result;\n }\n catch (e) {\n if (isViewDebugError(e) || !_currentView) {\n throw e;\n }\n throw viewWrappedDebugError(e, getCurrentDebugContext());\n }\n }\n function\n getCurrentDebugContext() {\n return _currentView ? new DebugContext(_currentView, _currentNodeIndex) :\n null;\n }\n var DebugRendererFactory2 = /** @class */ (function () {\n function\n DebugRendererFactory2(delegate) {\n this.delegate = delegate;\n }\n DebugRendererFactory2.prototype.createRenderer = function (element, renderData) {\n return new\n DebugRenderer2(this.delegate.createRenderer(element, renderData));\n }\n DebugRendererFactory2.prototype.begin = function () {\n if (this.delegate.begin) {\n this.delegate.begin();\n }\n }\n DebugRendererFactory2.prototype.end = function () {\n if\n (this.delegate.end) {\n this.delegate.end();\n }\n }\n DebugRendererFactory2.prototype.whenRenderingDone = function () {\n if\n (this.delegate.whenRenderingDone) {\n return this.delegate.whenRenderingDone();\n }\n }\n return Promise.resolve(null);\n }());\n var DebugRenderer2 = /**\n @class */ (function () {\n function DebugRenderer2(delegate) {\n this.delegate = delegate;\n }\n *\n * Factory function used to create a `DebugContext` when a node is created.\n *\n * The\n `DebugContext` allows to retrieve information about the nodes that are useful in tests.\n *\n * The\n factory is configurable so that the `DebugRenderer2` could instantiate either a View Engine\n * or a Render\n context.\n *\n this.debugContextFactory = getCurrentDebugContext;\n this.data =\n this.delegate.data;\n }\n DebugRenderer2.prototype.createDebugContext = function (nativeElement) {\n return this.debugContextFactory(nativeElement);\n }\n DebugRenderer2.prototype.destroyNode =\n function (node) {\n var debugNode = getDebugNode$1(node);\n removeDebugNodeFromIndex(debugNode);\n if (debugNode instanceof DebugNode__PRE_R3__) {\n debugNode.listeners.length = 0;\n }\n if (this.delegate.destroyNode) {\n
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this.delegate.destroyNode(node);\n }\n };\n DebugRenderer2.prototype.destroy = function () {\n
 this.delegate.destroy();\n };\n DebugRenderer2.prototype.createElement = function (name, namespace) {\n
 var el = this.delegate.createElement(name, namespace);\n var debugCtx =
this.createDebugContext(el);\n if (debugCtx) {\n var debugEl = new
DebugElement__PRE_R3__(el, null, debugCtx);\n debugEl.name = name;\n
indexDebugNode(debugEl);\n }\n return el;\n };\n
DebugRenderer2.prototype.createComment = function (value) {\n var comment =
this.delegate.createComment(value);\n var debugCtx = this.createDebugContext(comment);\n if
(debugCtx) {\n indexDebugNode(new DebugNode__PRE_R3__(comment, null, debugCtx));\n }\n
return comment;\n };\n DebugRenderer2.prototype.createText = function (value) {\n var text =
this.delegate.createText(value);\n var debugCtx = this.createDebugContext(text);\n if (debugCtx) {\n
indexDebugNode(new DebugNode__PRE_R3__(text, null, debugCtx));\n }\n return text;\n
};\n DebugRenderer2.prototype.appendChild = function (parent, newChild) {\n var debugEl =
getNode$1(parent);\n var debugChildEl = getNode$1(newChild);\n if (debugEl &&
debugChildEl && debugEl instanceof DebugElement__PRE_R3__) {\n
debugEl.addChild(debugChildEl);\n }\n this.delegate.appendChild(parent, newChild);\n };\n
DebugRenderer2.prototype.insertBefore = function (parent, newChild, refChild, isMove) {\n var debugEl =
getNode$1(parent);\n var debugChildEl = getNode$1(newChild);\n var debugRefEl =
getNode$1(refChild);\n if (debugEl && debugChildEl && debugEl instanceof
DebugElement__PRE_R3__) {\n debugEl.insertBefore(debugRefEl, debugChildEl);\n }\n
this.delegate.insertBefore(parent, newChild, refChild, isMove);\n };\n
DebugRenderer2.prototype.removeChild = function (parent, oldChild) {\n var debugEl =
getNode$1(parent);\n var debugChildEl = getNode$1(oldChild);\n if (debugEl &&
debugChildEl && debugEl instanceof DebugElement__PRE_R3__) {\n
debugEl.removeChild(debugChildEl);\n }\n this.delegate.removeChild(parent, oldChild);\n };\n
DebugRenderer2.prototype.selectRootElement = function (selectorOrNode, preserveContent) {\n var el =
this.delegate.selectRootElement(selectorOrNode, preserveContent);\n var debugCtx =
getCurrentDebugContext();\n if (debugCtx) {\n indexDebugNode(new
DebugElement__PRE_R3__(el, null, debugCtx));\n }\n return el;\n };\n
DebugRenderer2.prototype.setAttribute = function (el, name, value, namespace) {\n var debugEl =
getNode$1(el);\n if (debugEl && debugEl instanceof DebugElement__PRE_R3__) {\n var
fullName = namespace ? namespace + ':' + name : name;\n debugEl.attributes[fullName] = value;\n
}\n this.delegate.setAttribute(el, name, value, namespace);\n };\n
DebugRenderer2.prototype.removeAttribute = function (el, name, namespace) {\n var debugEl =
getNode$1(el);\n if (debugEl && debugEl instanceof DebugElement__PRE_R3__) {\n var
fullName = namespace ? namespace + ':' + name : name;\n debugEl.attributes[fullName] = null;\n
}\n this.delegate.removeAttribute(el, name, namespace);\n };\n
DebugRenderer2.prototype.addClass = function (el, name) {\n var debugEl = getNode$1(el);\n if (debugEl && debugEl instanceof
DebugElement__PRE_R3__) {\n debugEl.classes[name] = true;\n }\n
this.delegate.addClass(el, name);\n };\n
DebugRenderer2.prototype.removeClass = function (el, name) {\n
var debugEl = getNode$1(el);\n if (debugEl && debugEl instanceof DebugElement__PRE_R3__) {\n
debugEl.classes[name] = false;\n }\n this.delegate.removeClass(el, name);\n };\n
DebugRenderer2.prototype.setStyle = function (el, style, value, flags) {\n var debugEl =
getNode$1(el);\n if (debugEl && debugEl instanceof DebugElement__PRE_R3__) {\n
debugEl.styles[style] = value;\n }\n this.delegate.setStyle(el, style, value, flags);\n };\n
DebugRenderer2.prototype.removeStyle = function (el, style, flags) {\n var debugEl =
getNode$1(el);\n if (debugEl && debugEl instanceof DebugElement__PRE_R3__) {\n
debugEl.styles[style] = null;\n }\n this.delegate.removeStyle(el, style, flags);\n };\n

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`$localize()` function that needs to be loaded.\\n' +\\n 'Please run `ng add @angular/localize` from the
Angular CLI.\\n' +\\n '(For non-CLI projects, add `import `@angular/localize/init`;` to your `polyfills.ts`
file.\\n' +\\n 'For server-side rendering applications add the import to your `main.server.ts` file.);\\n };\\n
 }\\n\\n /**\\n * @license\\n * Copyright Google LLC All Rights Reserved.\\n *\\n * Use of this source code
is governed by an MIT-style license that can be\\n * found in the LICENSE file at https://angular.io/license\\n
 */\\n // This file only reexports content of the `src` folder. Keep it that way.\\n\\n /**\\n * @license\\n *
Copyright Google LLC All Rights Reserved.\\n *\\n * Use of this source code is governed by an MIT-style
license that can be\\n * found in the LICENSE file at https://angular.io/license\\n */\\n\\n /**\\n * Generated
bundle index. Do not edit.\\n */\\n\\n exports.ANALYZE_FOR_ENTRY_COMPONENTS =
ANALYZE_FOR_ENTRY_COMPONENTS;\\n exports.APP_BOOTSTRAP_LISTENER =
APP_BOOTSTRAP_LISTENER;\\n exports.APP_ID = APP_ID;\\n exports.APP_INITIALIZER =
APP_INITIALIZER;\\n exports.ApplicationInitStatus = ApplicationInitStatus;\\n exports.ApplicationModule =
ApplicationModule;\\n exports.ApplicationRef = ApplicationRef;\\n exports.Attribute = Attribute;\\n
exports.COMPILER_OPTIONS = COMPILER_OPTIONS;\\n exports.CUSTOM_ELEMENTS_SCHEMA =
CUSTOM_ELEMENTS_SCHEMA;\\n exports.ChangeDetectorRef = ChangeDetectorRef;\\n exports.Compiler =
Compiler;\\n exports.CompilerFactory = CompilerFactory;\\n exports.Component = Component;\\n
exports.ComponentFactory = ComponentFactory;\\n exports.ComponentFactoryResolver =
ComponentFactoryResolver;\\n exports.ComponentRef = ComponentRef;\\n exports.ContentChild =
ContentChild;\\n exports.ContentChildren = ContentChildren;\\n exports.DEFAULT_CURRENCY_CODE =
DEFAULT_CURRENCY_CODE;\\n exports.DebugElement = DebugElement;\\n exports.DebugEventListener =
DebugEventListener;\\n exports.DebugNode = DebugNode;\\n exports.DefaultIterableDiffer =
DefaultIterableDiffer;\\n exports.Directive = Directive;\\n exports.ElementRef = ElementRef;\\n
exports.EmbeddedViewRef = EmbeddedViewRef;\\n exports.ErrorHandler = ErrorHandler;\\n
exports.EventEmitter = EventEmitter;\\n exports.Host = Host;\\n exports.HostBinding = HostBinding;\\n
exports.HostListener = HostListener;\\n exports.INJECTOR = INJECTOR$1;\\n exports.Inject = Inject;\\n
exports.Injectable = Injectable;\\n exports.InjectionToken = InjectionToken;\\n exports.Injector = Injector;\\n
exports.Input = Input;\\n exports.IterableDiffers = IterableDiffers;\\n exports.KeyValueDiffers =
KeyValueDiffers;\\n exports.LOCALE_ID = LOCALE_ID$1;\\n exports.ModuleWithComponentFactories =
ModuleWithComponentFactories;\\n exports.NO_ERRORS_SCHEMA = NO_ERRORS_SCHEMA;\\n
exports.NgModule = NgModule;\\n exports.NgModuleFactory = NgModuleFactory;\\n
exports.NgModuleFactoryLoader = NgModuleFactoryLoader;\\n exports.NgModuleRef = NgModuleRef;\\n
exports.NgProbeToken = NgProbeToken;\\n exports.NgZone = NgZone;\\n exports.Optional = Optional;\\n
exports.Output = Output;\\n exports.PACKAGE_ROOT_URL = PACKAGE_ROOT_URL;\\n
exports.PLATFORM_ID = PLATFORM_ID;\\n exports.PLATFORM_INITIALIZER =
PLATFORM_INITIALIZER;\\n exports.Pipe = Pipe;\\n exports.PlatformRef = PlatformRef;\\n exports.Query =
Query;\\n exports.QueryList = QueryList;\\n exports.ReflectiveInjector = ReflectiveInjector;\\n
exports.ReflectiveKey = ReflectiveKey;\\n exports.Renderer2 = Renderer2;\\n exports.RendererFactory2 =
RendererFactory2;\\n exports.ResolvedReflectiveFactory = ResolvedReflectiveFactory;\\n exports.Sanitizer =
Sanitizer;\\n exports.Self = Self;\\n exports.SimpleChange = SimpleChange;\\n exports.SkipSelf = SkipSelf;\\n
exports.SystemJsNgModuleLoader = SystemJsNgModuleLoader;\\n exports.SystemJsNgModuleLoaderConfig =
SystemJsNgModuleLoaderConfig;\\n exports.TRANSLATIONS = TRANSLATIONS;\\n
exports.TRANSLATIONS_FORMAT = TRANSLATIONS_FORMAT;\\n exports.TemplateRef = TemplateRef;\\n
exports.Testability = Testability;\\n exports.TestabilityRegistry = TestabilityRegistry;\\n exports.Type = Type;\\n
exports.VERSION = VERSION;\\n exports.Version = Version;\\n exports.ViewChild = ViewChild;\\n
exports.ViewChildren = ViewChildren;\\n exports.ViewContainerRef = ViewContainerRef;\\n exports.ViewRef =
ViewRef$1;\\n exports.WrappedValue = WrappedValue;\\n exports.asNativeElements = asNativeElements;\\n
exports.assertPlatform = assertPlatform;\\n exports.createPlatform = createPlatform;\\n
exports.createPlatformFactory = createPlatformFactory;\\n exports.defineInjectable = defineInjectable;\\n

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exports.destroyPlatform = destroyPlatform;\n exports.enableProdMode = enableProdMode;\n
exports.forwardRef = forwardRef;\n exports.getDebugNode = getDebugNode$1;\n exports.getModuleFactory =
getModuleFactory;\n exports.getPlatform = getPlatform;\n exports.inject = inject;\n exports.isDevMode =
isDevMode;\n exports.platformCore = platformCore;\n exports.resolveForwardRef = resolveForwardRef;\n
exports.setTestabilityGetter = setTestabilityGetter;\n exports.0 = 0;\n exports.1 = 1;\n
exports.ALLOW_MULTIPLE_PLATFORMS = ALLOW_MULTIPLE_PLATFORMS;\n
exports.APP_ID_RANDOM_PROVIDER = APP_ID_RANDOM_PROVIDER;\n
exports.CodegenComponentFactoryResolver = CodegenComponentFactoryResolver;\n
exports.Compiler_compileModuleAndAllComponentsAsync__POST_R3__ =
Compiler_compileModuleAndAllComponentsAsync__POST_R3__;\n
exports.Compiler_compileModuleAndAllComponentsSync__POST_R3__ =
Compiler_compileModuleAndAllComponentsSync__POST_R3__;\n
exports.Compiler_compileModuleAsync__POST_R3__ = Compiler_compileModuleAsync__POST_R3__;\n
exports.Compiler_compileModuleSync__POST_R3__ = Compiler_compileModuleSync__POST_R3__;\n
exports.ComponentFactory = ComponentFactory;\n exports.Console = Console;\n
exports.DEFAULT_LOCALE_ID = DEFAULT_LOCALE_ID;\n exports.EMPTY_ARRAY =
EMPTY_ARRAY$4;\n exports.EMPTY_MAP = EMPTY_MAP;\n exports.INJECTOR_IMPL__POST_R3__ =
INJECTOR_IMPL__POST_R3__;\n exports.INJECTOR_SCOPE = INJECTOR_SCOPE;\n
exports.LifecycleHooksFeature = LifecycleHooksFeature;\n exports.NG_COMP_DEF = NG_COMP_DEF;\n
exports.NG_DIR_DEF = NG_DIR_DEF;\n exports.NG_ELEMENT_ID = NG_ELEMENT_ID;\n
exports.NG_INJ_DEF = NG_INJ_DEF;\n exports.NG_MOD_DEF = NG_MOD_DEF;\n
exports.NG_PIPE_DEF = NG_PIPE_DEF;\n exports.NG_PROV_DEF = NG_PROV_DEF;\n
exports.NOT_FOUND_CHECK_ONLY_ELEMENT_INJECTOR =
NOT_FOUND_CHECK_ONLY_ELEMENT_INJECTOR;\n exports.NO_CHANGE = NO_CHANGE;\n
exports.NgModuleFactory = NgModuleFactory$1;\n exports.NoopNgZone = NoopNgZone;\n
exports.ReflectionCapabilities = ReflectionCapabilities;\n exports.Render3ComponentFactory =
ComponentFactory$1;\n exports.Render3ComponentRef = ComponentRef$1;\n exports.Render3NgModuleRef
= NgModuleRef$1;\n exports.SWITCH_CHANGE_DETECTOR_REF_FACTORY__POST_R3__ =
SWITCH_CHANGE_DETECTOR_REF_FACTORY__POST_R3__;\n
exports.SWITCH_COMPILE_COMPONENT__POST_R3__ =
SWITCH_COMPILE_COMPONENT__POST_R3__;\n
exports.SWITCH_COMPILE_DIRECTIVE__POST_R3__ = SWITCH_COMPILE_DIRECTIVE__POST_R3__;\n
exports.SWITCH_COMPILE_INJECTABLE__POST_R3__ =
SWITCH_COMPILE_INJECTABLE__POST_R3__;\n
exports.SWITCH_COMPILE_NGMODULE__POST_R3__ =
SWITCH_COMPILE_NGMODULE__POST_R3__;\n exports.SWITCH_COMPILE_PIPE__POST_R3__ =
SWITCH_COMPILE_PIPE__POST_R3__;\n exports.SWITCH_ELEMENT_REF_FACTORY__POST_R3__ =
SWITCH_ELEMENT_REF_FACTORY__POST_R3__;\n exports.SWITCH_IVY_ENABLED__POST_R3__ =
SWITCH_IVY_ENABLED__POST_R3__;\n exports.SWITCH_RENDERER2_FACTORY__POST_R3__ =
SWITCH_RENDERER2_FACTORY__POST_R3__;\n
exports.SWITCH_TEMPLATE_REF_FACTORY__POST_R3__ =
SWITCH_TEMPLATE_REF_FACTORY__POST_R3__;\n
exports.SWITCH_VIEW_CONTAINER_REF_FACTORY__POST_R3__ =
SWITCH_VIEW_CONTAINER_REF_FACTORY__POST_R3__;\n exports._sanitizeHtml = _sanitizeHtml;\n
exports._sanitizeUrl = _sanitizeUrl;\n exports.allowSanitizationBypassAndThrow =
allowSanitizationBypassAndThrow;\n exports.and = anchorDef;\n exports.angular_packages_core_core_a =
isForwardRef;\n exports.angular_packages_core_core_b = injectInjectorOnly;\n
exports.angular_packages_core_core_ba = DebugContext;\n exports.angular_packages_core_core_bb =

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NgOnChangesFeatureImpl;\n exports.angular_packages_core_core_bc = SCHEDULER;\n
exports.angular_packages_core_core_bd = injectAttributeImpl;\n exports.angular_packages_core_core_be =
getLView;\n exports.angular_packages_core_core_bf = getBindingRoot;\n
exports.angular_packages_core_core_bg = nextContextImpl;\n exports.angular_packages_core_core_bi =
pureFunction1Internal;\n exports.angular_packages_core_core_bj = pureFunction2Internal;\n
exports.angular_packages_core_core_bk = pureFunction3Internal;\n exports.angular_packages_core_core_bl =
pureFunction4Internal;\n exports.angular_packages_core_core_bm = pureFunctionVInternal;\n
exports.angular_packages_core_core_bn = getUrlSanitizer;\n exports.angular_packages_core_core_bo =
makeParamDecorator;\n exports.angular_packages_core_core_bp = makePropDecorator;\n
exports.angular_packages_core_core_bq = getClosureSafeProperty;\n exports.angular_packages_core_core_br =
NullInjector;\n exports.angular_packages_core_core_bs = getInjectImplementation;\n
exports.angular_packages_core_core_bu = getNativeByTNode;\n exports.angular_packages_core_core_bw =
getRootContext;\n exports.angular_packages_core_core_bx = i18nPostprocess;\n
exports.angular_packages_core_core_by = trustedHTMLFromString;\n exports.angular_packages_core_core_bz =
trustedScriptURLFromString;\n exports.angular_packages_core_core_c = ReflectiveInjector_;\n
exports.angular_packages_core_core_ca = trustedScriptFromString;\n exports.angular_packages_core_core_d =
ReflectiveDependency;\n exports.angular_packages_core_core_e = resolveReflectiveProviders;\n
exports.angular_packages_core_core_f = _appIdRandomProviderFactory;\n
exports.angular_packages_core_core_g = injectRenderer2;\n exports.angular_packages_core_core_h =
injectElementRef;\n exports.angular_packages_core_core_i = createElementRef;\n
exports.angular_packages_core_core_j = getModuleFactory__PRE_R3__;\n
exports.angular_packages_core_core_k = injectTemplateRef;\n exports.angular_packages_core_core_l =
createTemplateRef;\n exports.angular_packages_core_core_m = injectViewContainerRef;\n
exports.angular_packages_core_core_n = DebugNode__PRE_R3__;\n exports.angular_packages_core_core_o =
DebugElement__PRE_R3__;\n exports.angular_packages_core_core_p = getDebugNodeR2__PRE_R3__;\n
exports.angular_packages_core_core_q = injectChangeDetectorRef;\n exports.angular_packages_core_core_r =
DefaultIterableDifferFactory;\n exports.angular_packages_core_core_s = DefaultKeyValueDifferFactory;\n
exports.angular_packages_core_core_t = _iterableDiffersFactory;\n exports.angular_packages_core_core_u =
_keyValueDiffersFactory;\n exports.angular_packages_core_core_v = _localeFactory;\n
exports.angular_packages_core_core_w = APPLICATION_MODULE_PROVIDERS;\n
exports.angular_packages_core_core_x = zoneSchedulerFactory;\n exports.angular_packages_core_core_y =
USD_CURRENCY_CODE;\n exports.angular_packages_core_core_z = _def;\n
exports.bypassSanitizationTrustHtml = bypassSanitizationTrustHtml;\n
exports.bypassSanitizationTrustResourceUrl = bypassSanitizationTrustResourceUrl;\n
exports.bypassSanitizationTrustScript = bypassSanitizationTrustScript;\n exports.bypassSanitizationTrustStyle =
bypassSanitizationTrustStyle;\n exports.bypassSanitizationTrustUrl = bypassSanitizationTrustUrl;\n
exports.ccf = createComponentFactory;\n exports.clearOverrides = clearOverrides;\n
exports.clearResolutionOfComponentResourcesQueue = clearResolutionOfComponentResourcesQueue;\n
exports.cmf = createNgModuleFactory;\n exports.compileComponent = compileComponent;\n
exports.compileDirective = compileDirective;\n exports.compileNgModule = compileNgModule;\n
exports.compileNgModuleDefs = compileNgModuleDefs;\n exports.compileNgModuleFactory__POST_R3__ =
compileNgModuleFactory__POST_R3__;\n exports.compilePipe = compilePipe;\n exports.createInjector =
createInjector;\n exports.crt = createRendererType2;\n exports.defaultIterableDiffers = defaultIterableDiffers;\n
exports.defaultKeyValueDiffers = defaultKeyValueDiffers;\n exports.detectChanges = detectChanges;\n
exports.devModeEqual = devModeEqual;\n exports.did = directiveDef;\n exports.eld = elementDef;\n
exports.findLocaleData = findLocaleData;\n exports.flushModuleScopingQueueAsMuchAsPossible =
flushModuleScopingQueueAsMuchAsPossible;\n exports.getComponentViewDefinitionFactory =
getComponentViewDefinitionFactory;\n exports.getDebugNodeR2 = getDebugNodeR2;\n

```



```
exports.getDebugNode__POST_R3__ = getDebugNode__POST_R3__;\n exports.getDirectives = getDirectives;\n exports.getHostElement = getHostElement;\n exports.getInjectableDef = getInjectableDef;\n exports.getLContext = getLContext;\n exports.getLocaleCurrencyCode = getLocaleCurrencyCode;\n exports.getLocalePluralCase = getLocalePluralCase;\n exports.getModuleFactory__POST_R3__ =\n getModuleFactory__POST_R3__;\n exports.getSanitizationBypassType = getSanitizationBypassType;\n exports.global = _global;\n exports.initServicesIfNeeded = initServicesIfNeeded;\n exports.inlineInterpolate =\n inlineInterpolate;\n exports.interpolate = interpolate;\n exports.isBoundToModule__POST_R3__ =\n isBoundToModule__POST_R3__;\n exports.isDefaultChangeDetectionStrategy =\n isDefaultChangeDetectionStrategy;\n exports.isListLikeIterable = isListLikeIterable;\n exports.isObservable =\n isObservable;\n exports.isPromise = isPromise;\n exports.ivyEnabled = ivyEnabled;\n exports.makeDecorator =\n makeDecorator;\n exports.markDirty = markDirty;\n exports.mod = moduleDef;\n exports.mpd =\n moduleProvideDef;\n exports.ncd = ngContentDef;\n exports.noSideEffects = noSideEffects;\n exports.nov =\n nodeValue;\n exports.overrideComponentView = overrideComponentView;\n exports.overrideProvider =\n overrideProvider;\n exports.pad = pureArrayDef;\n exports.patchComponentDefWithScope =\n patchComponentDefWithScope;\n exports.pid = pipeDef;\n exports.pod = pureObjectDef;\n exports.ppd =\n purePipeDef;\n exports.prd = providerDef;\n exports.publishDefaultGlobalUtils = publishDefaultGlobalUtils;\n exports.publishGlobalUtil = publishGlobalUtil;\n exports.qud = queryDef;\n exports.registerLocaleData =\n registerLocaleData;\n exports.registerModuleFactory = registerModuleFactory;\n exports.registerNgModuleType = registerNgModuleType;\n exports.renderComponent = renderComponent$1;\n exports.resetCompiledComponents = resetCompiledComponents;\n exports.resetJitOptions = resetJitOptions;\n exports.resolveComponentResources = resolveComponentResources;\n exports.setClassMetadata =\n setClassMetadata;\n exports.setCurrentInjector = setCurrentInjector;\n exports.setDocument = setDocument;\n exports.setLocaleId = setLocaleId;\n exports.store = store;\n exports.stringify = stringify;\n exports.ted =\n textDef;\n exports.transitiveScopesFor = transitiveScopesFor;\n exports.unregisterLocaleData =\n unregisterAllLocaleData;\n exports.unv = unwrapValue;\n exports.unwrapSafeValue = unwrapSafeValue;\n exports.vid = viewDef;\n exports.whenRendered = whenRendered;\n exports.CopyDefinitionFeature =\n CopyDefinitionFeature;\n exports.InheritDefinitionFeature = InheritDefinitionFeature;\n exports.NgOnChangesFeature = NgOnChangesFeature;\n exports.ProvidersFeature = ProvidersFeature;\n exports.advance = advance;\n exports.attribute = attribute;\n exports.attributeInterpolate1 =\n attributeInterpolate1;\n exports.attributeInterpolate2 = attributeInterpolate2;\n exports.attributeInterpolate3 =\n attributeInterpolate3;\n exports.attributeInterpolate4 = attributeInterpolate4;\n exports.attributeInterpolate5 =\n attributeInterpolate5;\n exports.attributeInterpolate6 = attributeInterpolate6;\n exports.attributeInterpolate7 =\n attributeInterpolate7;\n exports.attributeInterpolate8 = attributeInterpolate8;\n exports.attributeInterpolateV =\n attributeInterpolateV;\n exports.classMap = classMap;\n exports.classMapInterpolate1 =\n classMapInterpolate1;\n exports.classMapInterpolate2 = classMapInterpolate2;\n exports.classMapInterpolate3 =\n classMapInterpolate3;\n exports.classMapInterpolate4 = classMapInterpolate4;\n exports.classMapInterpolate5 = classMapInterpolate5;\n exports.classMapInterpolate6 = classMapInterpolate6;\n exports.classMapInterpolate7 = classMapInterpolate7;\n exports.classMapInterpolate8 = classMapInterpolate8;\n exports.classMapInterpolateV = classMapInterpolateV;\n exports.classProp = classProp;\n exports.contentQuery =\n contentQuery;\n exports.defineComponent = defineComponent;\n exports.defineDirective = defineDirective;\n exports.defineInjectable = defineInjectable;\n exports.defineInjector = defineInjector;\n exports.defineNgModule = defineNgModule;\n exports.definePipe = definePipe;\n exports.directiveInject =\n directiveInject;\n exports.disableBindings = disableBindings;\n exports.element = element;\n exports.elementContainer = elementContainer;\n exports.elementContainerEnd = elementContainerEnd;\n exports.elementContainerStart = elementContainerStart;\n exports.elementEnd = elementEnd;\n exports.elementStart = elementStart;\n exports.enableBindings = enableBindings;\n exports.getCurrentView =\n getCurrentView;\n exports.getFactoryOf = getFactoryOf;\n exports.getInheritedFactory = getInheritedFactory;\n exports.hostProperty = hostProperty;\n exports.i18n = i18n;\n exports.i18nApply = i18nApply;\n
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Found in path(s):

\* /opt/cola/permits/1358260587\_1657134851.1917841/0/core-11-0-2-tgz/package/bundles/core.umd.min.js.map

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Found in path(s):

\* /opt/cola/permits/1358260587\_1657134851.1917841/0/core-11-0-2-tgz/package/bundles/core-testing.umd.min.js

\* /opt/cola/permits/1358260587\_1657134851.1917841/0/core-11-0-2-tgz/package/bundles/core-testing.umd.js

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,EAAE,GAAL,OAAOA,EAAE,IAAOK,KAAM,GAAC,IAAK,IACnD,OAAOL,EAAI,CAAEnE,KAAMyE,EAAK,

GAAIC,MAASD,EAAK,GAAIE,OAAUF,EAAK,IAAwB,mBAAXG,SAA0BT,EAAES,OAAOC,UAA Y,WAAC,OAAO7I,OAAUmI,EACxJ,SAASM,EAAKK,GA AK,OAAO,SAAUC,GA AK,OACzC,SAASvB,EAAKwB,GACV,GA AIhB,EACA,MAAM,IAAIiB,UAAU,mCACxB,KAAOb,GACH,IACI,GA AIJ,EAAI,EAAGC,IAAMC,EAAY,E AARc,EAAG,GAASf,EAAU,OAAIe,EAAG,GA AKf,EAAS,SAAOC,EAAID,EAAU,SAAMC,EAAEgB,KAAKjB,GA AI,GA AK,A,EA AEjE,SAAWkE,EAAIA,EAAEgB,KAAKjB,EAAGe,EAAG,KAAK5G,KAC1I,OAAO8F,EAG X,OAFID,EAAI,EAAGC,IACPc,EAAK,CAAS,EAARA,EAAG,GAAQd,EAAEX,QACfyB,EAAG,IACP,KAAK,E ACL,KAAK,EACDd,EAAIc,EACJ,MACJ,KAAK,EAED,OADAZ,EAAEC,QACK,CAAE d,MAAOyB,EAAG,GA AI5G,MAAM,GACjC,KAAK,EACDgG,EAAEC,QACFJ,EAAIe,EAAG,GACPA,EAAK,CAAC,GACN,SACJ,KA AK,EACDA,EAAKZ,EAAEI,IAAIW,MACXf,EAAEG,KAAKY,MACP,SACJ,QACI,MAAkBjB,GAAZA,EAAIE, EAAEG,MAAYa,OAAS,GA AKIB,EAAEA,EAAEkB,OAAS,KAAkB,IAAVJ,EAAG,IAAsB,IAAVA,EAAG,IAA W,CACpFZ,EAAI,EACJ,SAEJ,GAAC,IAAVY,EAAG,MAAcD,GAAMc,EAAG,GA AKd,EAAE,IAAMc,EAAG,GA AKd,EAAE,IAAM,CACvDE,EAAEC,MAAQW,EAAG,GACb,MAEJ,GAAC,IAAVA,EAAG,IAAYZ,EAAEC,M AAQH,EAAE,GA AI,CAC/BE,EAAEC,MAAQH,EAAE,GACZA,EAAIc,EACJ,MAEJ,GA AI d,GA AK E,EA AE,MAAQH,EAAE,GA AI,CACrBE,EAAEC,MAAQH,EAAE,GACZE,EAAEI,IAAIa,KAAKL,GACX,MAEAd,EAA E,IACFE,EAAEI,IAAIW,MACVf,EAAEG,KAAKY,MACP,SAERH,EAAKjB,EAAKmB,KAAKhC,EAASKB,GA E5B,MAAO9F,GACH0G,EAAK,CAAC,EAAG1G,GACT2F,EAAI,EAER,QACID,EAAIE,EAAI,EA EhB,GAAY, EAARc,EAAG,GACH,MAAMA,EAAG,GACb,MAAO,CAAEzB,MAAOyB,EAAG,GA AK A,EAAG,QAAK,EA A Q5G,MAAM,GA9DFoF,CAAK,CAACsB,EAAGC,MA+E7D,SAASO,EAASC,GACd,IAAIC,EAAsB,mBAAXZ, QAAyBA,OAAOC,SAAUY,EAAID,GA AKD,EAAEC,GAAIE,EAAI,EAC5E,GA AID,EACA,OAAOA,EAAEP,K AAKK,GACIB,GA AIA,GAAYB,iBAAbA,EAAEH,OACd,MAAO,CACHpF,KAAM,WAGF,OAFIuF,GA AKG,GA AKH,EAAEH,SACZG,OAAI,GACD,CAAEhC,MAAOgC,GA AK A,EAAEG,KAAMtH,MAAOmH,KAGhD,MAA M,IAAIN,UAAUO,EAAI,0BAA4B,mCAExD,SAASG,EAAOJ,EAAGT,GACf,IAAIW,EAAsB,mBAAXb,QAAyB W,EAAEX,OAAOC,UACjD,IAAKY,EACD,OAAOF,EACX,IAAmBK,EAAYtH,EA A3BoH,EAAID,EAAEP,KA AKK,GAAOM,EAAK,GAC3B,IACI,WAAC,IAANf,GAAGBA,KAAM,MAAQc,EAAIF,EAAE1F,QAAQ5B,MAC hDyH,EAAGR,KAAKO,EA AErC,OAEIB,MAAO7F,GACHY,EAAI,CAAEZ,MAAOA,GA EJ B,QACI,IACQkI,IA AMA,EAAExH,OAASqH,EAAIC,EAAU,SAC/BD,EAAEP,KAAKQ,GA Ef,QACI,GA AIpH,EACA,MAAMA,EA AEZ,OAGpB,OAAOmI,EAEX,SAASC,IACL,IAAK,IAAID,EAAK,GA AIH,EAAI,EAAGA,EAAIK,UAAUX,OA AQM,IAC3CG,EAAKA,EAAGG,OAAOL,EAAOI,UAAUL,KACpC,OAAOG;;;;;;AAmGX,IAAII,EA AoC,WAC pC,SAASA,IACL,IAAIzH,EAAQx C,KACZA,KAAKgD,SAAW,IAAIIB,SAAQ,SAAUiD,EAAKmF,GACvC1H,E AAMO,SAAWgC,EACjBvC,EAAM2H,QAAUD,KAgBxB,OAbAD,EAAMB1F,UAAUnC,KAAO,SAAUmF,GAC 1CvH,KAAK+C,SAASwE,IAEIB0C,EAAMB1F,UAAUIC,KAAO,SAAUX,EAAO0I,GACjDpK,KAAKmK,QAA QzI,IAEjB6E,OAAO8D,eAAeJ,EAAMB1F,UAAW,UAAW,CAC3DvD,IAAK,WACD,OAAOhB,KAAKgD,UAEh BsH,YAA Y,EACZC,cAAc,IAEXN,EA rB4B;;;;;;OA+DvC,SAASO,EAA0BC,GAE/B,IAAIC,EA AoB,GA EpBC,E AAS,IAAIC,IACjB,SAASC,EAAsBC,GAC3B,IAAIC,EAAUJ,EA A03J,IAAI8J,GACzB,IAAKC,EAAS,CACV,IA AIC,EAAOP,EAAiBK,GAC5BH,EAAOM,IAAIH,EAAKC,EAAUC,EAAKpD,KAAKsD,IAExC,OAAOH,EA0B X,OAxBAl,EAAiCC,SAAQ,SAAUC,EAAWC,GAC1D,IAAIC,EA AW,GACXF,EAAUG,aACVD,EAASIC,KAA KwB,EAAsBQ,EAAUG,aAAa5D,MAAK,SAAU6D,GACtEJ,EAAUI,SAAWA,MAG7B,IAAIC,EAAYL,EAAUK, UACtBC,EAASN,EAAUM,SAAWN,EAAUM,OAAS,IACjDC,EAACp,EAAUM,OAAOvC,OACnCsC,GAAaA,E AAUN,SAAQ,SAAUS,EAAUC,GAC/CH,EAAOtC,KAAK,IACZkC,EAASIC,KAAKwB,EAAsBgB,GA AUjE,MA AK,SAAUmE,GACzDJ,EAAOC,EAAcE,GAASC,EAC9BL,EAAUM,OAAON,EAAUO,QAAQJ,GA AW,GACtB, GAAPBH,EAAUtC,SACViC,EAAUK,eAAY9K,UAIIC,IAAI sL,EAAgBpK,QAAQqK,IAAIZ,GA AU3D,MAAK, WAAC,OA sCrE,SAASwE,EAAqBd,GAC1Be,EAA8BC,OAAOhB;;;;;;OAvCmCc,CAAqBd,MACzFZ,EAAkBrB, KAAK6C,MAE3BK,IACozK,QAAQqK,IAAIzB,GAAMb9C,MAAK,eAE/C,IAAIuD,EAAMc,IAAIP,IAEvCyB,E AAAGC,IAAIG,IAOXc,SAASC,EAAgCnB,GACrC,OAAOe,EAA8BK,IAAIpB,GAM7C,SAASiB,IACL,IAAII,EA A MxB,EA EV,OADAA,EAAMc,IAAIP,IAC hC+B,EAUX,SAASzB,EA Ae0B,GACpB,MAA0B,iBAAZA,EA AuBA, EA AWA,EAASC,OAa7D,IAAIC,EAAMb,EACnBC,EAAMc,WACnC,SAASA,IACL/M,KAAKgN,YAAc,IAAIp C,IAyB3B,OAnBAmC,EAAkBXI,UAAU0I,iBAAMb,SAAUC,EAAeC,EAAaC,GACjF,IAAIC,EAAQ,GAIZ,GAH IF,GAoFZ,SAASG,EAAYC,GACjB,IAAIF,EAAQ,GA EZ9G,OAAOiH,KAAKD,GA AKnC,SAAQ,SAAUqC,GAC

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AO,WAEH,IADA,IAAI2jB,EAAO,GACF8B,EAak,EAAGA,EAak9b,UAAUX,OAAQyc,IACpC9B,EAak8B,G





```

 throw new Error('ProxyZoneSpec is needed for the async() test helper but could not be found. ' +\n
'Please make sure that your environment includes zone.js/dist/proxy.js');\n }\n var proxyZoneSpec =
ProxyZoneSpec.get();\n ProxyZoneSpec.assertPresent();\n // We need to create the AsyncTestZoneSpec
outside the ProxyZone.\n // If we do it in ProxyZone then we will get to infinite recursion.\n var proxyZone
= Zone.current.getZoneWith('ProxyZoneSpec');\n var previousDelegate = proxyZoneSpec.getDelegate();\n
proxyZone.parent.run(function () {\n var testZoneSpec = new AsyncTestZoneSpec(function () {\n //
Need to restore the original zone.\n currentZone.run(function () {\n if
(proxyZoneSpec.getDelegate() == testZoneSpec) {\n // Only reset the zone spec if it's still this one.
Otherwise, assume it's OK.\n proxyZoneSpec.setDelegate(previousDelegate);\n }\n
 finishCallback();\n });\n }, function (error) {\n // Need to restore the original zone.\n
currentZone.run(function () {\n if (proxyZoneSpec.getDelegate() == testZoneSpec) {\n
// Only reset the zone spec if it's still this one. Otherwise, assume it's OK.\n
proxyZoneSpec.setDelegate(previousDelegate);\n }\n failCallback(error);\n });\n
 }, 'test');\n proxyZoneSpec.setDelegate(testZoneSpec);\n });\n return
Zone.current.runGuarded(fn, context);\n }\n\n /**\n * @license\n * Copyright Google LLC All Rights
Reserved.\n * Use of this source code is governed by an MIT-style license that can be\n * found in the
LICENSE file at https://angular.io/license\n *\n /**\n * Wraps a test function in an asynchronous test zone.
The test will automatically\n * complete when all asynchronous calls within this zone are done. Can be used\n
* to wrap an {@link inject} call.\n * Example:\n * ```\n * it('...', waitForAsync(inject([AClass],
(object) => {\n * object.doSomething.then(() => {\n * expect(...);\n * })\n * });\n * ```\n *\n
* @publicApi\n *\n function waitForAsync(fn) {\n var _Zone = typeof Zone !== 'undefined' ? Zone : null;\n
 if (!_Zone) {\n return function () {\n return Promise.reject('Zone is needed for the
waitForAsync() test helper but could not be found. ' +\n 'Please make sure that your environment
includes zone.js/dist/zone.js');\n }\n }\n var asyncTest = _Zone &&
_Zone[_Zone.__symbol__('asyncTest)];\n if (typeof asyncTest === 'function') {\n return
asyncTest(fn);\n }\n // not using new version of zone.js\n // TODO @JiaLiPassion, remove this after all
library updated to\n // newest version of zone.js(0.8.25)\n return asyncFallback(fn);\n }\n\n /**\n
* @deprecated use `waitForAsync()`, (expected removal in v12)\n * @see {@link waitForAsync}\n *\n
* @publicApi\n *\n function async(fn) {\n return waitForAsync(fn);\n }\n\n /**\n * @license\n *
Copyright Google LLC All Rights Reserved.\n * Use of this source code is governed by an MIT-style
license that can be\n * found in the LICENSE file at https://angular.io/license\n *\n /**\n * Fixture for
debugging and testing a component.\n * @publicApi\n *\n var ComponentFixture = /** @class */
(function () {\n function ComponentFixture(componentRef, ngZone, _autoDetect) {\n var _this = this;\n
 this.componentRef = componentRef;\n this.ngZone = ngZone;\n this._autoDetect =
_autoDetect;\n this._isStable = true;\n this._isDestroyed = false;\n this._resolve = null;\n
this._promise = null;\n this._onUnstableSubscription = null;\n this._onStableSubscription = null;\n
this._onMicrotaskEmptySubscription = null;\n this._onErrorSubscription = null;\n
this.changeDetectorRef = componentRef.changeDetectorRef;\n this.elementRef = componentRef.location;\n
this.debugElement = core.getDebugNode(this.elementRef.nativeElement);\n this.componentInstance =
componentRef.instance;\n this.nativeElement = this.elementRef.nativeElement;\n this.componentRef =
componentRef;\n this.ngZone = ngZone;\n if (ngZone) {\n // Create subscriptions outside the
NgZone so that the callbacks run outside\n // of NgZone.\n ngZone.runOutsideAngular(function
() {\n _this._onUnstableSubscription = ngZone.onUnstable.subscribe({\n next: function ()
{\n _this._isStable = false;\n }\n });\n _this._onMicrotaskEmptySubscription = ngZone.onMicrotaskEmpty.subscribe({\n
next: function ()
{\n if (!_this._autoDetect) {\n // Do a change detection run with
checkNoChanges set to true to check\n // there are no changes on the second run.\n
_this.detectChanges(true);\n }\n }\n });\n });\n });\n });\n });\n });\n

```

```

_this._onStableSubscription = ngZone.onStable.subscribe({\n
 next: function () {\n
 _this._isStable = true;\n
 // Check whether there is a pending whenStable() completer to resolve.\n
 if (_this._promise !== null) {\n
 // If so check whether there are no pending\n
 // macrotasks before resolving.\n
 // Do this check in the next tick so that ngZone gets a chance to\n
 // update the state of\n
 // pending macrotasks.\n
 scheduleMicroTask(function () {\n
 if (!ngZone.hasPendingMacrotasks) {\n
 if (_this._promise !==\n
 null) {\n
 _this._resolve(true);\n
 _this._resolve = null;\n
 _this._promise = null;\n
 }\n
 }\n
 });\n
 }\n
 });\n
 _this._onErrorSubscription =\n
 ngZone.onError.subscribe({\n
 next: function (error) {\n
 throw error;\n
 }\n
 });\n
 });\n
 });\n
 });\n
 });\n
 ComponentFixture.prototype._tick = function\n
 (checkNoChanges) {\n
 this.changeDetectorRef.detectChanges();\n
 if (checkNoChanges) {\n
 this.checkNoChanges();\n
 }\n
 }; \n
 /**\n
 * Trigger a change detection cycle for the\n
 * component.\n
 */\n
 ComponentFixture.prototype.detectChanges = function (checkNoChanges) {\n
 var _this = this;\n
 if (checkNoChanges === void 0) { checkNoChanges = true; }\n
 if (this.ngZone !==\n
 null) {\n
 // Run the change detection inside the NgZone so that any async tasks as part of the change\n
 // detection are captured by the zone and can be waited for in isStable.\n
 this.ngZone.run(function () {\n
 _this._tick(checkNoChanges);\n
 });\n
 } else {\n
 // Running without\n
 zone. Just do the change detection.\n
 this._tick(checkNoChanges);\n
 }\n
 }; \n
 /**\n
 * Do a change detection run to make sure there were no changes.\n
 */\n
 ComponentFixture.prototype.checkNoChanges = function () {\n
 this.changeDetectorRef.checkNoChanges();\n
 }; \n
 /**\n
 * Set whether the fixture should autodetect\n
 * changes.\n
 */\n
 * Also runs detectChanges once so that any existing change is detected.\n
 */\n
 ComponentFixture.prototype.autoDetectChanges = function (autoDetect) {\n
 if (autoDetect === void 0) {\n
 autoDetect = true; }\n
 if (this.ngZone === null) {\n
 throw new Error('Cannot call autoDetectChanges\n
 when ComponentFixtureNoNgZone is set');\n
 }\n
 this._autoDetect = autoDetect;\n
 }\n
 this.detectChanges();\n
 }; \n
 /**\n
 * Return whether the fixture is currently stable or has async tasks\n
 * that have not been completed\n
 * yet.\n
 */\n
 */\n
 ComponentFixture.prototype.isStable = function () {\n
 return this._isStable && !this.ngZone.hasPendingMacrotasks;\n
 }; \n
 /**\n
 * Get a promise that\n
 * resolves when the fixture is stable.\n
 */\n
 * This can be used to resume testing after events have triggered\n
 * asynchronous activity or\n
 * asynchronous change detection.\n
 */\n
 ComponentFixture.prototype.whenStable = function () {\n
 var _this = this;\n
 if (this.isStable()) {\n
 return Promise.resolve(false);\n
 } else if (this._promise !== null) {\n
 return\n
 this._promise;\n
 } else {\n
 this._promise = new Promise(function (res) {\n
 _this._resolve = res;\n
 });\n
 return this._promise;\n
 }\n
 }; \n
 ComponentFixture.prototype._getRenderer = function () {\n
 if (this._renderer === undefined) {\n
 this._renderer = this.componentRef.injector.get(core.RendererFactory2, null);\n
 }\n
 return\n
 this._renderer;\n
 }; \n
 /**\n
 * Get a promise that resolves when the ui state is stable following\n
 * animations.\n
 */\n
 */\n
 ComponentFixture.prototype.whenRenderingDone = function () {\n
 var renderer\n
 = this._getRenderer();\n
 if (renderer && renderer.whenRenderingDone) {\n
 return\n
 renderer.whenRenderingDone();\n
 }\n
 return this.whenStable();\n
 }; \n
 /**\n
 * Trigger\n
 * component destruction.\n
 */\n
 */\n
 ComponentFixture.prototype.destroy = function () {\n
 if\n
 (!this._isDestroyed) {\n
 this.componentRef.destroy();\n
 if (this._onUnstableSubscription !== null)\n
 {\n
 this._onUnstableSubscription.unsubscribe();\n
 this._onUnstableSubscription = null;\n
 }\n
 if (this._onStableSubscription !== null) {\n
 this._onStableSubscription.unsubscribe();\n
 this._onStableSubscription = null;\n
 }\n
 if (this._onMicrotaskEmptySubscription !==\n
 null) {\n
 this._onMicrotaskEmptySubscription.unsubscribe();\n
 this._onMicrotaskEmptySubscription = null;\n
 }\n
 if (this._onErrorSubscription !== null) {\n

```

```

 this._onErrorSubscription.unsubscribe();\n this._onErrorSubscription = null;\n }\n this._isDestroyed = true;\n });\n return ComponentFixture;\n });\n function\n scheduleMicroTask(fn) {\n Zone.current.scheduleMicroTask('scheduleMicroTask', fn);\n }\n\n /**\n * @license\n * Copyright Google LLC All Rights Reserved.\n * Use of this source code is governed by an\n * MIT-style license that can be\n * found in the LICENSE file at https://angular.io/license\n */\n\n fakeAsync has been moved to zone.js\n * this file is for fallback in case old version of zone.js is used\n */\n\n var _Zone = typeof Zone !== 'undefined' ? Zone : null;\n var FakeAsyncTestZoneSpec = _Zone &&\n _Zone['FakeAsyncTestZoneSpec'];\n var ProxyZoneSpec = _Zone && _Zone['ProxyZoneSpec'];\n var\n _fakeAsyncTestZoneSpec = null;\n\n /**\n * Clears out the shared fake async zone for a test.\n * To be called\n * in a global `beforeEach`.\n */\n @publicApi\n function resetFakeAsyncZoneFallback() {\n if\n (_fakeAsyncTestZoneSpec) {\n _fakeAsyncTestZoneSpec.unlockDatePatch();\n }\n _fakeAsyncTestZoneSpec = null;\n // in node.js testing we may not have ProxyZoneSpec in which case there is\n nothing to reset.\n ProxyZoneSpec && ProxyZoneSpec.assertPresent().resetDelegate();\n }\n\n var\n _inFakeAsyncCall = false;\n\n /**\n * Wraps a function to be executed in the fakeAsync zone:\n * - microtasks\n * are manually executed by calling `flushMicrotasks`,\n * - timers are synchronous, `tick()` simulates the\n * asynchronous passage of time.\n * If there are any pending timers at the end of the function, an exception\n * will be thrown.\n * Can be used to wrap inject() calls.\n */\n @usageNotes\n ### Example\n\n * {\n * @example core/testing/ts/fake_async.ts region='basic'}\n * @param fn\n * @returns The\n * function wrapped to be executed in the fakeAsync zone\n * @publicApi\n function\n fakeAsyncFallback(fn) {\n // Not using an arrow function to preserve context passed from call site\n return\n function () {\n var args = [];\n for (var _i = 0; _i < arguments.length; _i++) {\n args[_i] =\n arguments[_i];\n }\n var proxyZoneSpec = ProxyZoneSpec.assertPresent();\n if\n (_inFakeAsyncCall) {\n throw new Error('fakeAsync() calls can not be nested');\n }\n _inFakeAsyncCall = true;\n try {\n if (!_fakeAsyncTestZoneSpec) {\n if\n (proxyZoneSpec.getDelegate() instanceof FakeAsyncTestZoneSpec) {\n throw new\n Error('fakeAsync() calls can not be nested');\n }\n _fakeAsyncTestZoneSpec = new\n FakeAsyncTestZoneSpec();\n }\n var res = void 0;\n var lastProxyZoneSpec =\n proxyZoneSpec.getDelegate();\n proxyZoneSpec.setDelegate(_fakeAsyncTestZoneSpec);\n _fakeAsyncTestZoneSpec.lockDatePatch();\n try {\n res = fn.apply(this, args);\n }\n finally {\n flushMicrotasksFallback();\n }\n proxyZoneSpec.setDelegate(lastProxyZoneSpec);\n }\n if\n (_fakeAsyncTestZoneSpec.pendingPeriodicTimers.length > 0) {\n throw new\n Error(_fakeAsyncTestZoneSpec.pendingPeriodicTimers.length + "\n "\n "periodic timer(s) still in\n the queue.");\n }\n if\n (_fakeAsyncTestZoneSpec.pendingTimers.length > 0) {\n throw new Error(_fakeAsyncTestZoneSpec.pendingTimers.length + "\n "\n "timer(s) still in the queue.");\n }\n return res;\n }\n finally {\n _inFakeAsyncCall = false;\n resetFakeAsyncZoneFallback();\n }\n }\n\n function _getFakeAsyncZoneSpec() {\n if\n (_fakeAsyncTestZoneSpec == null) {\n throw new Error("The code should be running in the fakeAsync zone\n to call this function");\n }\n return _fakeAsyncTestZoneSpec;\n }\n\n /**\n * Simulates the\n * asynchronous passage of time for the timers in the fakeAsync zone.\n * The microtasks queue is drained at\n * the very start of this function and after any timer callback\n * has been executed.\n */\n @usageNotes\n ### Example\n\n * {\n * @example core/testing/ts/fake_async.ts region='basic'}\n * @publicApi\n\n * function tickFallback(millis, tickOptions) {\n * if (millis === void 0) { millis = 0; }\n * if (tickOptions\n * === void 0) {\n * tickOptions = {\n * processNewMacroTasksSynchronously: true\n * }; }\n * _getFakeAsyncZoneSpec().tick(millis, null, tickOptions);\n * }\n\n /**\n * Simulates the asynchronous passage of\n * time for the timers in the fakeAsync zone by\n * draining the macrotask queue until it is empty. The returned\n * value is the milliseconds\n * of time that would have been elapsed.\n */\n @param maxTurns\n @returns The simulated time elapsed, in millis.\n @publicApi\n function

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```

flushFallback(maxTurns) {\n return _getFakeAsyncZoneSpec().flush(maxTurns);\n }\n /**\n * Discard
all remaining periodic tasks.\n *\n * @publicApi\n */\n function discardPeriodicTasksFallback() {\n
var zoneSpec = _getFakeAsyncZoneSpec();\n zoneSpec.pendingPeriodicTimers.length = 0;\n }\n /**\n *
Flush any pending microtasks.\n *\n * @publicApi\n */\n function flushMicrotasksFallback() {\n
_getFakeAsyncZoneSpec().flushMicrotasks();\n }\n\n /**\n * @license\n * Copyright Google LLC All
Rights Reserved.\n *\n * Use of this source code is governed by an MIT-style license that can be\n * found
in the LICENSE file at https://angular.io/license\n */\n var _Zone$1 = typeof Zone !== 'undefined' ? Zone :
null;\n var fakeAsyncTestModule = _Zone$1 && _Zone$1[_Zone$1.__symbol__('fakeAsyncTest)];\n /**\n *
Clears out the shared fake async zone for a test.\n * To be called in a global `beforeEach`.\n *\n *
@publicApi\n */\n function resetFakeAsyncZone() {\n if (fakeAsyncTestModule) {\n return
fakeAsyncTestModule.resetFakeAsyncZone();\n }\n else {\n return
resetFakeAsyncZoneFallback();\n }\n }\n /**\n * Wraps a function to be executed in the fakeAsync
zone:\n * - microtasks are manually executed by calling `flushMicrotasks`,\n * - timers are synchronous,
`tick` simulates the asynchronous passage of time.\n *\n * If there are any pending timers at the end of the
function, an exception will be thrown.\n *\n * Can be used to wrap inject() calls.\n *\n * @usageNotes\n
* ### Example\n *\n * {@example core/testing/ts/fake_async.ts region='basic'}\n *\n * @param fn\n *
@return The function wrapped to be executed in the fakeAsync zone\n *\n * @publicApi\n */\n function
fakeAsync(fn) {\n if (fakeAsyncTestModule) {\n return fakeAsyncTestModule.fakeAsync(fn);\n }\n
 else {\n return fakeAsyncFallback(fn);\n }\n }\n /**\n * Simulates the asynchronous passage of
time for the timers in the fakeAsync zone.\n *\n * The microtasks queue is drained at the very start of this
function and after any timer callback\n * has been executed.\n *\n * @usageNotes\n * ### Example\n
*\n * {@example core/testing/ts/fake_async.ts region='basic'}\n *\n * @param millis, the number of
millisecond to advance the virtual timer\n * @param tickOptions, the options of tick with a flag called\n *
processNewMacroTasksSynchronously, whether to invoke the new macroTasks, by default is\n * false, means the
new macroTasks will be invoked\n *\n * For example,\n *\n * it ('test with nested setTimeout',
fakeAsync(() => {\n * let nestedTimeoutInvoked = false;\n * function funcWithNestedTimeout() {\n *
setTimeout(() => {\n * nestedTimeoutInvoked = true;\n * });\n * });\n *
setTimeout(funcWithNestedTimeout);\n * tick();\n * expect(nestedTimeoutInvoked).toBe(true);\n * }));\n
*\n * in this case, we have a nested timeout (new macroTask), when we tick, both the\n *
funcWithNestedTimeout and the nested timeout both will be invoked.\n *\n * it ('test with nested setTimeout',
fakeAsync(() => {\n * let nestedTimeoutInvoked = false;\n * function funcWithNestedTimeout() {\n *
setTimeout(() => {\n * nestedTimeoutInvoked = true;\n * });\n * });\n *
setTimeout(funcWithNestedTimeout);\n * tick(0, {processNewMacroTasksSynchronously: false});\n *
expect(nestedTimeoutInvoked).toBe(false);\n * }));\n *\n * if we pass the tickOptions with
processNewMacroTasksSynchronously to be false, the nested timeout\n * will not be invoked.\n *\n *\n *
@publicApi\n */\n function tick(millis, tickOptions) {\n if (millis === void 0) { millis = 0; }\n if
(tickOptions === void 0) { tickOptions = {\n processNewMacroTasksSynchronously: true\n }; }\n if
(fakeAsyncTestModule) {\n return fakeAsyncTestModule.tick(millis, tickOptions);\n }\n else {\n
return tickFallback(millis, tickOptions);\n }\n }\n /**\n * Simulates the asynchronous passage of time
for the timers in the fakeAsync zone by\n * draining the macrotask queue until it is empty. The returned value is
the milliseconds\n * of time that would have been elapsed.\n *\n * @param maxTurns\n * @returns The
simulated time elapsed, in millis.\n *\n * @publicApi\n */\n function flush(maxTurns) {\n if
(fakeAsyncTestModule) {\n return fakeAsyncTestModule.flush(maxTurns);\n }\n else {\n
return flushFallback(maxTurns);\n }\n }\n /**\n * Discard all remaining periodic tasks.\n *\n *
@publicApi\n */\n function discardPeriodicTasks() {\n if (fakeAsyncTestModule) {\n return
fakeAsyncTestModule.discardPeriodicTasks();\n }\n else {\n discardPeriodicTasksFallback();\n }\n
 }\n /**\n * Flush any pending microtasks.\n *\n * @publicApi\n */\n function flushMicrotasks()\n {\n if (fakeAsyncTestModule) {\n return fakeAsyncTestModule.flushMicrotasks();\n }\n else

```

```

{\n return flushMicrotasksFallback();\n }\n }\n\n /*!
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Microsoft Corporation.\n\n Permission to use, copy, modify, and/or distribute this software for any\n purpose
with or without fee is hereby granted.\n\n THE SOFTWARE IS PROVIDED "AS IS" AND THE AUTHOR
DISCLAIMS ALL WARRANTIES WITH\n REGARD TO THIS SOFTWARE INCLUDING ALL IMPLIED
WARRANTIES OF MERCHANTABILITY\n AND FITNESS. IN NO EVENT SHALL THE AUTHOR BE
LIABLE FOR ANY SPECIAL, DIRECT,\n INDIRECT, OR CONSEQUENTIAL DAMAGES OR ANY
DAMAGES WHATSOEVER RESULTING FROM\n LOSS OF USE, DATA OR PROFITS, WHETHER IN AN
ACTION OF CONTRACT, NEGLIGENCE OR\n OTHER TORTIOUS ACTION, ARISING OUT OF OR IN
CONNECTION WITH THE USE OR\n PERFORMANCE OF THIS SOFTWARE.\n
*****\n /* global
Reflect, Promise *\n var extendStatics = function (d, b) {\n extendStatics = Object.setPrototypeOf ||\n ({ __proto__: [] } instanceof Array && function (d, b) { d.__proto__ = b; }) ||\n function (d, b) { for (var p in\n b)\n if (b.hasOwnProperty(p))\n d[p] = b[p]; }; return extendStatics(d, b);\n };\n function __extends(d, b) {\n extendStatics(d, b);\n function __() { this.constructor = d; }\n d.prototype\n = b === null ? Object.create(b) : (__proto__ = b.prototype, new __());\n }\n var __assign = function () {\n __assign = Object.assign || function __assign(t) {\n for (var s, i = 1, n = arguments.length; i < n; i++) {\n s = arguments[i];\n for (var p in s)\n if (Object.prototype.hasOwnProperty.call(s, p))\n t[p] = s[p];\n }\n return t;\n }; return __assign.apply(this, arguments);\n };\n function __rest(s, e) {\n var t = {};\n for (var p in s)\n if (Object.prototype.hasOwnProperty.call(s, p)\n && e.indexOf(p) < 0)\n t[p] = s[p];\n if (s != null && typeof Object.getOwnPropertySymbols ===\n \"function\")\n for (var i = 0, p = Object.getOwnPropertySymbols(s); i < p.length; i++) {\n if\n (e.indexOf(p[i]) < 0 && Object.prototype.propertyIsEnumerable.call(s, p[i]))\n t[p[i]] = s[p[i]];\n }\n return t;\n }\n function __decorate(decorators, target, key, desc) {\n var c = arguments.length, r = c\n < 3 ? target : desc === null ? desc = Object.getOwnPropertyDescriptor(target, key) : desc, d;\n if (typeof Reflect\n === \"object\" && typeof Reflect.decorate === \"function\")\n r = Reflect.decorate(decorators, target, key,\n desc);\n else\n for (var i = decorators.length - 1; i >= 0; i--)\n if (d = decorators[i])\n r = (c < 3 ? d(r) : c > 3 ? d(target, key, r) : d(target, key)) || r;\n return c > 3 && r &&\n Object.defineProperty(target, key, r, r);\n }\n function __param(paramIndex, decorator) {\n return function\n (target, key) { decorator(target, key, paramIndex); }; }\n function __metadata(metadataKey, metadataValue)\n {\n if (typeof Reflect === \"object\" && typeof Reflect.metadata === \"function\")\n return\n Reflect.metadata(metadataKey, metadataValue);\n }\n function __awaiter(thisArg, _arguments, P, generator) {\n function adopt(value) { return value instanceof P ? value : new P(function (resolve) { resolve(value); }); }\n return new (P || (P = Promise))(function (resolve, reject) {\n function fulfilled(value) { try {\n step(generator.next(value));\n }\n catch (e) {\n reject(e);\n }\n function\n rejected(value) { try {\n step(generator[\"throw\"](value));\n }\n catch (e) {\n reject(e);\n }\n function step(result) { result.done ? resolve(result.value) :\n adopt(result.value).then(fulfilled, rejected); }\n step((generator = generator.apply(thisArg, _arguments ||\n [])).next());\n });\n }\n function __generator(thisArg, body) {\n var _ = { label: 0, sent: function () { if\n (t[0] & 1)\n throw t[1]; return t[1]; }, trys: [], ops: [] }, f, y, t, g;\n return g = { next: verb(0), \"throw\":\n verb(1), \"return\": verb(2) }, typeof Symbol === \"function\" && (g[Symbol.iterator] = function () { return this; }),\n g;\n function verb(n) { return function (v) { return step([n, v]); }; }\n function step(op) {\n if (f)\n throw new TypeError(\"Generator is already executing.\");\n while (!_)\n try {\n if\n (f = 1, y && (t = op[0] & 2 ? y[\"return\"] : op[0] ? y[\"throw\"] || ((t = y[\"return\"])\n && t.call(y, 0) : y.next) &&\n !(t = t.call(y, op[1])).done)\n return t;\n if (y = 0, t)\n op = [op[0] & 2,\n t.value];\n switch (op[0]) {\n case 0:\n _label++;\n return { value: op[1],\n done: false };
 case 4:\n _label++;\n return { value: op[1],\n done: false };
 case 5:\n _label++;\n y = op[1];
 }\n }\n return { value: op[1], done: false };
 }\n }\n}

```

```

op = [0];\n
continue;\n
case 7:\n
op = __ops.pop();\n
__trys.pop();\n
continue;\n
default:\n
if (!(t = __trys, t = t.length > 0
&& t[t.length - 1]) && (op[0] === 6 || op[0] === 2)) {\n
__ = 0;\n
continue;\n
}\n
if (op[0] === 3 && (!t || (op[1] > t[0] && op[1] < t[3]))) {\n
__label = op[1];\n
break;\n
}\n
if (op[0] === 6 && __label <
t[1]) {\n
__label = t[1];\n
t = op;\n
break;\n
}\n
if (t && __label < t[2]) {\n
__label = t[2];\n
}\n
if (t[2])\n
__ops.push(op);\n
break;\n
}\n
if (t[2])\n
__ops.pop();\n
__trys.pop();\n
continue;\n
}\n
op =
body.call(thisArg, __);\n
}\n
catch (e) {\n
op = [6, e];\n
y = 0;\n
}\n
finally {\n
f = t = 0;\n
}\n
if (op[0] & 5)\n
throw op[1];\n
return { value: op[0] ? op[1] : void 0, done: true };}\n
}\n
}\n
var __createBinding = Object.create ? (function
(o, m, k, k2) {\n
if (k2 === undefined)\n
k2 = k;\n
Object.defineProperty(o, k2, { enumerable: true,
get: function () { return m[k]; } });\n
}) : (function (o, m, k, k2) {\n
if (k2 === undefined)\n
k2 = k;\n
o[k2] = m[k];\n
});\n
function __exportStar(m, exports) {\n
for (var p in m)\n
if (p !== \"default\"
&& !exports.hasOwnProperty(p))\n
__createBinding(exports, m, p);\n
}\n
function __values(o) {\n
var s = typeof Symbol === \"function\" && Symbol.iterator, m = s && o[s], i = 0;\n
if (m)\n
return
m.call(o);\n
if (o && typeof o.length === \"number\")\n
return {\n
next: function () {\n
if (o && i >= o.length)\n
o = void 0;\n
return { value: o && o[i++], done: !o };}\n
}\n
};\n
throw new TypeError(s ? \"Object is not iterable.\" : \"Symbol.iterator is not defined.\");\n
}\n
function __read(o, n) {\n
var m = typeof Symbol === \"function\" && o[Symbol.iterator];\n
if (!m)\n
return o;\n
var i = m.call(o), r, ar = [], e;\n
try {\n
while ((n === void 0 || n-- > 0) && !(r =
i.next()).done)\n
ar.push(r.value);\n
}\n
catch (error) {\n
e = { error: error };\n
}\n
finally {\n
try {\n
if (r && !r.done && (m = i[\"return\"])\n
m.call(i);\n
}\n
finally {\n
if (e)\n
throw e.error;\n
}\n
}\n
return ar;\n
}\n
function
__spread() {\n
for (var ar = [], i = 0; i < arguments.length; i++)\n
ar = ar.concat(__read(arguments[i]));\n
return ar;\n
}\n
function __spreadArrays() {\n
for (var s = 0, i = 0, il = arguments.length; i < il; i++)\n
s += arguments[i].length;\n
for (var r = Array(s), k = 0, i = 0; i < il; i++)\n
for (var a = arguments[i], j
= 0, jl = a.length; j < jl; j++, k++)\n
r[k] = a[j];\n
return r;\n
}\n
};\n
function __await(v) {\n
return this instanceof __await ? (this.v = v, this) : new __await(v);\n
}\n
function __asyncGenerator(thisArg,
_arguments, generator) {\n
if (!Symbol.asyncIterator)\n
throw new TypeError(\"Symbol.asyncIterator is
not defined.\");\n
var g = generator.apply(thisArg, _arguments || []), i, q = [];\n
return i = { }, verb(\"next\"),
verb(\"throw\"), verb(\"return\"), i[Symbol.asyncIterator] = function () { return this; }, i;\n
function verb(n) { if
(g[n])\n
i[n] = function (v) { return new Promise(function (a, b) { q.push([n, v, a, b]) > 1 || resume(n, v); }); };\n
}\n
function resume(n, v) { try {\n
step(g[n](v));\n
}\n
catch (e) {\n
settle(q[0][3], e);\n
} }\n
function step(r) { r.value instanceof __await ? Promise.resolve(r.value.v).then(fulfill, reject) :
settle(q[0][2], r); }\n
function fulfill(value) { resume(\"next\", value); }\n
function reject(value) {
resume(\"throw\", value); }\n
function settle(f, v) { if (f(v), q.shift(), q.length)\n
resume(q[0][0], q[0][1]);
}\n
}\n
function __asyncDelegator(o) {\n
var i, p;\n
return i = { }, verb(\"next\"), verb(\"throw\"),
function (e) { throw e; }, verb(\"return\"), i[Symbol.iterator] = function () { return this; }, i;\n
function verb(n,
f) { i[n] = o[n] ? function (v) { return (p = !p) ? { value: __await(o[n](v)), done: n === \"return\" } : f ? f(v) : v; } : f;
}\n
}\n
function __asyncValues(o) {\n
if (!Symbol.asyncIterator)\n
throw new
TypeError(\"Symbol.asyncIterator is not defined.\");\n
var m = o[Symbol.asyncIterator], i;\n
return m ?
m.call(o) : (o = typeof __values === \"function\" ? __values(o) : o[Symbol.iterator](), i = { }, verb(\"next\"),
verb(\"throw\"), verb(\"return\"), i[Symbol.asyncIterator] = function () { return this; }, i);\n
function verb(n) {
i[n] = o[n] && function (v) { return new Promise(function (resolve, reject) { v = o[n](v), settle(resolve, reject,
v.done, v.value); }); }; }\n
function settle(resolve, reject, d, v) { Promise.resolve(v).then(function (v) {
resolve({ value: v, done: d }); }, reject); }\n
}\n
}\n
function __makeTemplateObject(cooked, raw) {\n
if

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(Object.defineProperty) {\n Object.defineProperty(cooked, \"raw\", { value: raw });\n }\n else {\n cooked.raw = raw;\n }\n return cooked;\n }\n ;\n var __setModuleDefault = Object.create ?\n (function (o, v) {\n Object.defineProperty(o, \"default\", { enumerable: true, value: v });\n }): function (o, v)\n {\n o[\"default\"] = v;\n };\n function __importStar(mod) {\n if (mod && mod.__esModule)\n return mod;\n var result = {};\n if (mod != null)\n for (var k in mod)\n if\n (Object.hasOwnProperty.call(mod, k))\n __createBinding(result, mod, k);\n __setModuleDefault(result, mod);\n return result;\n }\n function __importDefault(mod) {\n return (mod\n && mod.__esModule) ? mod : { default: mod };\n }\n function __classPrivateFieldGet(receiver, privateMap)\n {\n if (!privateMap.has(receiver))\n throw new TypeError(\"attempted to get private field on non-\n instance\");\n return privateMap.get(receiver);\n }\n function __classPrivateFieldSet(receiver,\n privateMap, value) {\n if (!privateMap.has(receiver))\n throw new TypeError(\"attempted to set private\n field on non-instance\");\n privateMap.set(receiver, value);\n return value;\n }\n /**\n *\n * @license\n * Copyright Google LLC All Rights Reserved.\n * Use of this source code is governed by an\n * MIT-style license that can be\n * found in the LICENSE file at https://angular.io/license\n */\n /**\n *\n * Injectable completer that allows signaling completion of an asynchronous test. Used internally.\n */\n var\n AsyncTestCompleter = /** @class */ (function () {\n function AsyncTestCompleter() {\n var _this =\n this;\n this._promise = new Promise(function (res, rej) {\n _this._resolve = res;\n _this._reject = rej;\n });\n }\n AsyncTestCompleter.prototype.done = function (value) {\n this._resolve(value);\n };\n AsyncTestCompleter.prototype.fail = function (error, stackTrace) {\n this._reject(error);\n };\n Object.defineProperty(AsyncTestCompleter.prototype, \"promise\", {\n get:\n function () {\n return this._promise;\n },\n enumerable: false,\n configurable: true\n });\n return AsyncTestCompleter;\n })();\n /**\n *\n * @license\n * Copyright Google LLC All Rights\n * Reserved.\n * Use of this source code is governed by an MIT-style license that can be\n * found in the\n * LICENSE file at https://angular.io/license\n */\n /**\n *\n * Used to resolve resource URLs on `@Component`\n * when used with JIT compilation.\n * Example:\n * ```\n * @Component({\n * selector: 'my-\n * comp',\n * templateUrl: 'my-comp.html', // This requires asynchronous resolution\n * })\n * class\n * MyComponent{\n * }\n * // Calling `renderComponent` will fail because `renderComponent` is a\n * synchronous process\n * // and `MyComponent`'s `@Component.templateUrl` needs to be resolved\n * asynchronously.\n * // Calling `resolveComponentResources()` will resolve `@Component.templateUrl`\n * into\n * // `@Component.template`, which allows `renderComponent` to proceed in a synchronous manner.\n * // Use browser's `fetch()` function as the default resource resolution strategy.\n */\n resolveComponentResources(fetch).then(() => {\n // After resolution all URLs have been converted into\n `template` strings.\n renderComponent(MyComponent);\n });\n /**\n *\n * NOTE: In AOT\n * the resolution happens during compilation, and so there should be no need\n * to call this method outside JIT\n * mode.\n * @param resourceResolver a function which is responsible for returning a `Promise` to the\n * contents of the resolved URL. Browser's `fetch()` method is a good default implementation.\n */\n function\n resolveComponentResources(resourceResolver) {\n // Store all promises which are fetching the resources.\n var componentResolved = [];\n // Cache so that we don't fetch the same resource more than once.\n var\n urlMap = new Map();\n function cachedResourceResolve(url) {\n var promise = urlMap.get(url);\n if (!promise) {\n var resp = resourceResolver(url);\n urlMap.set(url, promise =\n resp.then(unwrapResponse));\n }\n return promise;\n }\n componentResourceResolutionQueue.forEach(function (component, type) {\n var promises = [];\n if\n (component.templateUrl) {\n promises.push(cachedResourceResolve(component.templateUrl).then(function (template) {\n component.template = template;\n }));\n }\n var styleUrls = component.styleUrls;\n var styles = component.styles || (component.styles = []);\n var styleOffset = component.styles.length;\n styleUrls && styleUrls.forEach(function (styleUrl, index) {\n styles.push(\""); // pre-allocate array.\n promises.push(cachedResourceResolve(styleUrl).then(function (style) {\n styles[styleOffset + index] =

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style;\n styleUrls.splice(styleUrls.indexOf(styleUrl), 1);\n if (styleUrls.length === 0) {\n component.styleUrls = undefined;\n }\n });\n });\n var fullyResolved =\n Promise.all(promises).then(function () { return componentDefResolved(type); });\n componentResolved.push(fullyResolved);\n });\n clearResolutionOfComponentResourcesQueue();\n return Promise.all(componentResolved).then(function () { return undefined; });\n }\n var\n componentResourceResolutionQueue = new Map();\n // Track when existing cmp for a Type is waiting on\n resources.\n var componentDefPendingResolution = new Set();\n function\n maybeQueueResolutionOfComponentResources(type, metadata) {\n if (componentNeedsResolution(metadata))\n {\n componentResourceResolutionQueue.set(type, metadata);\n componentDefPendingResolution.add(type);\n }\n }\n function isComponentDefPendingResolution(type)\n {\n return componentDefPendingResolution.has(type);\n }\n function\n componentNeedsResolution(component) {\n return !!(component.templateUrl &&\n !component.hasOwnProperty('template')) ||\n component.styleUrls && component.styleUrls.length;\n }\n function clearResolutionOfComponentResourcesQueue() {\n var old = componentResourceResolutionQueue;\n componentResourceResolutionQueue = new Map();\n return old;\n }\n function\n restoreComponentResolutionQueue(queue) {\n componentDefPendingResolution.clear();\n queue.forEach(function (_, type) { return componentDefPendingResolution.add(type); });\n componentResourceResolutionQueue = queue;\n }\n function isComponentResourceResolutionQueueEmpty()\n {\n return componentResourceResolutionQueue.size === 0;\n }\n function unwrapResponse(response) {\n return typeof response === 'string' ? response : response.text();\n }\n function componentDefResolved(type) {\n componentDefPendingResolution.delete(type);\n }\n /**\n * @license\n * Copyright Google LLC All\n Rights Reserved.\n * Use of this source code is governed by an MIT-style license that can be\n * found\n in the LICENSE file at https://angular.io/license\n *\n var _nextReferenceId = 0;\n var MetadataOverrider =\n /** @class */ (function () {\n function MetadataOverrider() {\n this._references = new Map();\n }\n /**\n * Creates a new instance for the given metadata class\n * based on an old instance and\n overrides.\n *\n MetadataOverrider.prototype.overrideMetadata = function (metadataClass, oldMetadata,\n override) {\n var props = {};\n if (oldMetadata) {\n _valueProps(oldMetadata).forEach(function (prop) { return props[prop] = oldMetadata[prop]; });\n }\n if (override.set) {\n if (override.remove || override.add) {\n throw new Error("Cannot set and\n add/remove \"" + core.stringify(metadataClass) + "\" at the same time!");\n }\n setMetadata(props,\n override.set);\n }\n if (override.remove) {\n removeMetadata(props, override.remove,\n this._references);\n }\n if (override.add) {\n addMetadata(props, override.add);\n }\n return new metadataClass(props);\n }; \n return MetadataOverrider;\n }());\n function\n removeMetadata(metadata, remove, references) {\n var removeObjects = new Set();\n var _loop_1 =\n function (prop) {\n var removeValue = remove[prop];\n if (Array.isArray(removeValue)) {\n removeValue.forEach(function (value) {\n removeObjects.add(_propHashKey(prop, value,\n references));\n });\n }\n else {\n removeObjects.add(_propHashKey(prop,\n removeValue, references));\n }\n }; \n for (var prop in remove) {\n _loop_1(prop);\n }\n var _loop_2 = function (prop) {\n var propValue = metadata[prop];\n if (Array.isArray(propValue))\n {\n metadata[prop] = propValue.filter(function (value) { return !removeObjects.has(_propHashKey(prop,\n value, references)); });\n }\n else {\n if (removeObjects.has(_propHashKey(prop, propValue,\n references))) {\n metadata[prop] = undefined;\n }\n }\n }; \n for (var prop in\n metadata) {\n _loop_2(prop);\n }\n }\n function addMetadata(metadata, add) {\n for (var prop in\n add) {\n var addValue = add[prop];\n var propValue = metadata[prop];\n if (propValue !== null\n && Array.isArray(propValue)) {\n metadata[prop] = propValue.concat(addValue);\n }\n else\n {\n metadata[prop] = addValue;\n }\n }\n }\n function setMetadata(metadata, set) {\n for (var prop in set) {\n metadata[prop] = set[prop];\n }\n }\n function _propHashKey(propName,\n propValue, references) {\n var replacer = function (key, value) {\n if (typeof value === 'function') {\n

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 value = _serializeReference(value, references);\n }\n return value;\n };\n return
propName + `:` + JSON.stringify(propValue, replacer);\n }\n function _serializeReference(ref, references) {\n
 var id = references.get(ref);\n if (!id) {\n id = `"` + core.stringify(ref) + `_nextReferenceId++`;\n
references.set(ref, id);\n }\n return id;\n }\n function _valueProps(obj) {\n var props = [];\n //
regular public props\n Object.keys(obj).forEach(function (prop) {\n if (!prop.startsWith('_')) {\n
props.push(prop);\n }\n });\n // getters\n var proto = obj;\n while (proto =
Object.getPrototypeOf(proto)) {\n Object.keys(proto).forEach(function (protoProp) {\n var desc =
Object.getOwnPropertyDescriptor(proto, protoProp);\n if (!protoProp.startsWith('_') && desc && 'get' in
desc) {\n props.push(protoProp);\n }\n });\n }\n return props;\n }\n var
reflection = new core.ReflectionCapabilities();\n /**\n * Allows to override ivy metadata for tests (via the
`TestBed`).\n */\n var OverrideResolver = /** @class */ (function () {\n function OverrideResolver() {\n
this.overrides = new Map();\n this.resolved = new Map();\n }\n
OverrideResolver.prototype.addOverride = function (type, override) {\n var overrides =
this.overrides.get(type) || [];\n overrides.push(override);\n this.overrides.set(type, overrides);\n
this.resolved.delete(type);\n }; \n OverrideResolver.prototype.setOverrides = function (overrides) {\n
var _this = this;\n this.overrides.clear();\n overrides.forEach(function (_a) {\n var _b =
__read(_a, 2), type = _b[0], override = _b[1];\n _this.addOverride(type, override);\n });\n }; \n
OverrideResolver.prototype.getAnnotation = function (type) {\n var annotations =
reflection.annotations(type);\n // Try to find the nearest known Type annotation and make sure that this
annotation is an\n // instance of the type we are looking for, so we can use it for resolution. Note: there
might\n // be multiple known annotations found due to the fact that Components can extend Directives (so\n
// both Directive and Component annotations would be present), so we always check if the known\n //
annotation has the right type.\n for (var i = annotations.length - 1; i >= 0; i--) {\n var annotation =
annotations[i];\n var isKnownType = annotation instanceof core.Directive || annotation instanceof
core.Component ||\n annotation instanceof core.Pipe || annotation instanceof core.NgModule;\n if (isKnownType) {\n return annotation instanceof this.type ? annotation : null;\n }\n }\n return null;\n }; \n OverrideResolver.prototype.resolve = function (type) {\n var _this = this;\n
var resolved = this.resolved.get(type) || null;\n if (!resolved) {\n resolved =
this.getAnnotation(type);\n if (resolved) {\n var overrides = this.overrides.get(type);\n if (overrides) {\n var overrider_1 = new MetadataOverrider();\n overrides.forEach(function (override) {\n resolved = overrider_1.overrideMetadata(_this.type,
resolved, override);\n });\n }\n }\n this.resolved.set(type, resolved);\n }\n return resolved;\n }; \n return OverrideResolver;\n }());\n var DirectiveResolver = /**
@class */ (function (_super) {\n __extends(DirectiveResolver, _super);\n function DirectiveResolver() {\n
return _super !== null && _super.apply(this, arguments) || this;\n }\n
Object.defineProperty(DirectiveResolver.prototype, `type`, {\n get: function () {\n return
core.Directive;\n },\n enumerable: false,\n configurable: true\n });\n return
DirectiveResolver;\n })(OverrideResolver));\n var ComponentResolver = /** @class */ (function (_super) {\n
__extends(ComponentResolver, _super);\n function ComponentResolver() {\n return _super !== null &&
_super.apply(this, arguments) || this;\n }\n Object.defineProperty(ComponentResolver.prototype, `type`,
{\n get: function () {\n return core.Component;\n },\n enumerable: false,\n configurable: true\n });\n return ComponentResolver;\n })(OverrideResolver));\n var PipeResolver = /**
@class */ (function (_super) {\n __extends(PipeResolver, _super);\n function PipeResolver() {\n
return _super !== null && _super.apply(this, arguments) || this;\n }\n
Object.defineProperty(PipeResolver.prototype, `type`, {\n get: function () {\n return core.Pipe;\n },\n enumerable: false,\n configurable: true\n });\n return PipeResolver;\n })(OverrideResolver));\n var NgModuleResolver = /** @class */ (function (_super) {\n
__extends(NgModuleResolver, _super);\n function NgModuleResolver() {\n return _super !== null &&

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_super.apply(this, arguments) || this;\n }\n Object.defineProperty(NgModuleResolver.prototype, \"type\",
{\n get: function () {\n return core.NgModule;\n },\n enumerable: false,\n configurable: true\n });\n return NgModuleResolver;\n }(OverrideResolver));\n\n var
TestingModuleOverride;\n (function (TestingModuleOverride) {\n
TestingModuleOverride[TestingModuleOverride[\"DECLARATION\"] = 0] = \"DECLARATION\";\n
TestingModuleOverride[TestingModuleOverride[\"OVERRIDE_TEMPLATE\"] = 1] =
\"OVERRIDE_TEMPLATE\";\n })(TestingModuleOverride || (TestingModuleOverride = {}));\n function
isTestingModuleOverride(value) {\n return value ===TestingModuleOverride.DECLARATION ||\n value ===TestingModuleOverride.OVERRIDE_TEMPLATE;\n }\n var R3TestBedCompiler = /** @class */
(function () {\n function R3TestBedCompiler(platform, additionalModuleTypes) {\n this.platform =
platform;\n this.additionalModuleTypes = additionalModuleTypes;\n
this.originalComponentResolutionQueue = null;\n // Testing module configuration\n this.declarations
= [];\n this.imports = [];\n this.providers = [];\n this.schemas = [];\n // Queues of
components/directives/pipes that should be recompiled.\n this.pendingComponents = new Set();\n
this.pendingDirectives = new Set();\n this.pendingPipes = new Set();\n // Keep track of all components
and directives, so we can patch Providers onto defs later.\n this.seenComponents = new Set();\n
this.seenDirectives = new Set();\n // Keep track of overridden modules, so that we can collect all affected
ones in the module tree.\n this.overriddenModules = new Set();\n // Store resolved styles for
Components that have template overrides present and `styleUrls`\n // defined at the same time.\n
this.existingComponentStyles = new Map();\n this.resolvers = initResolvers();\n
this.componentToModuleScope = new Map();\n // Map that keeps initial version of component/directive/pipe
defs in case\n // we compile a Type again, thus overriding respective static fields. This is\n // required
to make sure we restore defs to their initial states between test runs\n // TODO: we should support the case
with multiple defs on a type\n this.initialNgDefs = new Map();\n // Array that keeps cleanup
operations for initial versions of component/directive/pipe/module\n // defs in case TestBed makes changes to
the originals.\n this.defCleanupOps = [];\n this._injector = null;\n this.compilerProviders =
null;\n this.providerOverrides = [];\n this.rootProviderOverrides = [];\n // Overrides for
injectables with `{providedIn: SomeModule}` need to be tracked and added to that\n // module's provider
list.\n this.providerOverridesByModule = new Map();\n this.providerOverridesByToken = new
Map();\n this.moduleProvidersOverridden = new Set();\n this.testModuleRef = null;\n var
DynamicTestModule = /** @class */ (function () {\n function DynamicTestModule() {\n }\n
 return DynamicTestModule;\n }());\n this.testModuleType = DynamicTestModule;\n }\n
R3TestBedCompiler.prototype.setCompilerProviders = function (providers) {\n this.compilerProviders =
providers;\n this._injector = null;\n }; \n R3TestBedCompiler.prototype.configureTestingModule =
function (moduleDef) {\n var _a, _b, _c, _d;\n // Enqueue any compilation tasks for the directly
declared component.\n if (moduleDef.declarations !== undefined) {\n
this.queueTypeArray(moduleDef.declarations,TestingModuleOverride.DECLARATION);\n (_a =
this.declarations).push.apply(_a, __spread(moduleDef.declarations));\n }\n // Enqueue any compilation
tasks for imported modules.\n if (moduleDef.imports !== undefined) {\n
this.queueTypesFromModulesArray(moduleDef.imports);\n (_b = this.imports).push.apply(_b,
__spread(moduleDef.imports));\n }\n if (moduleDef.providers !== undefined) {\n (_c =
this.providers).push.apply(_c, __spread(moduleDef.providers));\n }\n if (moduleDef.schemas !==
undefined) {\n (_d = this.schemas).push.apply(_d, __spread(moduleDef.schemas));\n }\n }; \n
R3TestBedCompiler.prototype.overrideModule = function (ngModule, override) {\n
this.overriddenModules.add(ngModule);\n // Compile the module right away.\n
this.resolvers.module.addOverride(ngModule, override);\n var metadata =
this.resolvers.module.resolve(ngModule);\n if (metadata === null) {\n throw
invalidTypeError(ngModule.name, 'NgModule');\n }\n this.recompileNgModule(ngModule,

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metadata);\n // At this point, the module has a valid module def (mod), but the override may have
introduced\n // new declarations or imported modules. Ingest any possible new types and add them to the\n // current queue.\n this.queueTypesFromModulesArray([ngModule]);\n };\n R3TestBedCompiler.prototype.overrideComponent = function (component, override) {\n this.resolvers.component.addOverride(component, override);\n this.pendingComponents.add(component);\n };\n R3TestBedCompiler.prototype.overrideDirective = function (directive, override) {\n this.resolvers.directive.addOverride(directive, override);\n this.pendingDirectives.add(directive);\n };\n R3TestBedCompiler.prototype.overridePipe = function (pipe, override) {\n this.resolvers.pipe.addOverride(pipe, override);\n this.pendingPipes.add(pipe);\n };\n R3TestBedCompiler.prototype.overrideProvider = function (token, provider) {\n var providerDef;\n if\n (provider.useFactory !== undefined) {\n providerDef = {\n provide: token,\n useFactory: provider.useFactory,\n deps: provider.deps || [],\n multi: provider.multi\n };\n }\n else if (provider.useValue !== undefined) {\n providerDef = { provide: token,\n useValue: provider.useValue, multi: provider.multi };\n }\n else {\n providerDef = { provide:\n token };\n }\n var injectableDef = typeof token !== 'string' ? core.getInjectableDef(token) : null;\n var isRoot = injectableDef !== null && injectableDef.providedIn === 'root';\n var overridesBucket = isRoot\n ? this.rootProviderOverrides : this.providerOverrides;\n overridesBucket.push(providerDef);\n // Keep\n overrides grouped by token as well for fast lookups using token\n this.providerOverridesByToken.set(token,\n providerDef);\n if (injectableDef !== null && injectableDef.providedIn !== null &&\n typeof\n injectableDef.providedIn !== 'string') {\n var existingOverrides =\n this.providerOverridesByModule.get(injectableDef.providedIn);\n if (existingOverrides !== undefined) {\n existingOverrides.push(providerDef);\n }\n else {\n this.providerOverridesByModule.set(injectableDef.providedIn, [providerDef]);\n }\n }\n };\n R3TestBedCompiler.prototype.overrideTemplateUsingTestingModule = function (type, template) {\n var\n _this = this;\n var def = type[core.NG_COMP_DEF];\n var hasStyleUrls = function () {\n var\n metadata = _this.resolvers.component.resolve(type);\n return !!metadata.styleUrls &&\n metadata.styleUrls.length > 0;\n };\n var overrideStyleUrls = !!def &&\n !isComponentDefPendingResolution(type) && hasStyleUrls();\n // In Ivy, compiling a component does not\n require knowing the module providing the\n // component's scope, so overrideTemplateUsingTestingModule\n can be implemented purely via\n // overrideComponent. Important: overriding template requires full\n Component re-compilation,\n // which may fail in case styleUrls are also present (thus Component is\n considered as required\n // resolution). In order to avoid this, we preemptively set styleUrls to an empty\n array,\n // preserve current styles available on Component def and restore styles back once compilation\n // is complete.\n var override = overrideStyleUrls ? { template: template, styles: [], styleUrls: [] } : {\n template: template };\n this.overrideComponent(type, { set: override });\n if (overrideStyleUrls &&\n def.styles && def.styles.length > 0) {\n this.existingComponentStyles.set(type, def.styles);\n }\n // Set the component's scope to be the testing module.\n this.componentToModuleScope.set(type,\n TestingModuleOverride.OVERRIDE_TEMPLATE);\n };\n R3TestBedCompiler.prototype.compileComponents = function () {\n return __awaiter(this, void 0, void 0,\n function () {\n var needsAsyncResources, resourceLoader_1, resolver;\n var _this = this;\n return __generator(this, function (_a) {\n switch (_a.label) {\n case 0:\n this.clearComponentResolutionQueue();\n needsAsyncResources = this.compileTypesSync();\n if (!needsAsyncResources) return [3 /*break*/, 2];\n resolver = function (url) {\n if (!resourceLoader_1) {\n resourceLoader_1 =\n _this.injector.get(compiler.ResourceLoader);\n }\n Promise.resolve(resourceLoader_1.get(url));\n };\n return [4 /*yield*/,\n resolveComponentResources(resolver)];\n case 1:\n _a.sent();\n _a.label = 2;\n case 2: return [2 /*return*/];\n }\n });\n });\n };\n };\n}

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R3TestBedCompiler.prototype.finalize = function () {\n // One last compile\n
this.compileTypesSync();\n // Create the testing module itself.\n this.compileTestModule();\n
this.applyTransitiveScopes();\n this.applyProviderOverrides();\n // Patch previously stored `styles`\n
Component values (taken from cmp), in case these\n // Components have `styleUrls` fields defined and\n
template override was requested.\n this.patchComponentsWithExistingStyles();\n // Clear the\n
componentToModuleScope map, so that future compilations don't reset the scope of\n // every component.\n
 this.componentToModuleScope.clear();\n var parentInjector = this.platform.injector;\n
this.testModuleRef = new core.Render3NgModuleRef(this.testModuleType, parentInjector);\n //\n
ApplicationInitStatus.runInitializers() is marked @internal to core.\n // Cast it to any before accessing it.\n
 this.testModuleRef.injector.get(core.ApplicationInitStatus).runInitializers();\n // Set locale ID after\n
running app initializers, since locale information might be updated while\n // running initializers. This is also\n
consistent with the execution order while bootstrapping an\n // app (see `packages/core/src/application_ref.ts`\n
file).\n var localeId = this.testModuleRef.injector.get(core.LOCALE_ID, core.DEFAULT_LOCALE_ID);\n
 core.setLocaleId(localeId);\n return this.testModuleRef;\n };\n /**\n * @internal\n
*/\n R3TestBedCompiler.prototype._compileNgModuleSync = function (moduleType) {\n
this.queueTypesFromModulesArray([moduleType]);\n this.compileTypesSync();\n
this.applyProviderOverrides();\n this.applyProviderOverridesToModule(moduleType);\n
this.applyTransitiveScopes();\n };\n /**\n * @internal\n
*/\n R3TestBedCompiler.prototype._compileNgModuleAsync = function (moduleType) {\n return __awaiter(this,\n
void 0, void 0, function () {\n return __generator(this, function (_a) {\n switch (_a.label) {\n
case 0:\n this.queueTypesFromModulesArray([moduleType]);\n return\n
[4 /*yield*/, this.compileComponents()];\n case 1:\n _a.sent();\n
this.applyProviderOverrides();\n this.applyProviderOverridesToModule(moduleType);\n
 this.applyTransitiveScopes();\n return [2 /*return*/];\n }\n });\n
});\n };\n /**\n * @internal\n
*/\n R3TestBedCompiler.prototype._getModuleResolver =\n
function () {\n return this.resolvers.module;\n };\n /**\n * @internal\n
*/\n R3TestBedCompiler.prototype._getComponentFactories = function (moduleType) {\n var _this = this;\n
return maybeUnwrapFn(moduleType.mod.declarations).reduce(function (factories, declaration) {\n var\n
componentDef = declaration.cmp;\n componentDef && factories.push(new\n
core.Render3ComponentFactory(componentDef, _this.testModuleRef));\n return factories;\n },\n
[]);\n };\n R3TestBedCompiler.prototype.compileTypesSync = function () {\n var _this = this;\n
// Compile all queued components, directives, pipes.\n var needsAsyncResources = false;\n
this.pendingComponents.forEach(function (declaration) {\n needsAsyncResources =\n
needsAsyncResources || isComponentDefPendingResolution(declaration);\n var metadata =\n
_this.resolvers.component.resolve(declaration);\n if (metadata === null) {\n throw\n
invalidTypeError(declaration.name, 'Component');\n }\n
_this.maybeStoreNgDef(core.NG_COMP_DEF, declaration);\n core.compileComponent(declaration,\n
metadata);\n });\n this.pendingComponents.clear();\n this.pendingDirectives.forEach(function\n
(declaration) {\n var metadata = _this.resolvers.directive.resolve(declaration);\n if (metadata ===\n
null) {\n throw invalidTypeError(declaration.name, 'Directive');\n }\n
_this.maybeStoreNgDef(core.NG_DIR_DEF, declaration);\n core.compileDirective(declaration,\n
metadata);\n });\n this.pendingDirectives.clear();\n this.pendingPipes.forEach(function\n
(declaration) {\n var metadata = _this.resolvers.pipe.resolve(declaration);\n if (metadata === null)\n
{\n throw invalidTypeError(declaration.name, 'Pipe');\n }\n
_this.maybeStoreNgDef(core.NG_PIPE_DEF, declaration);\n core.compilePipe(declaration, metadata);\n
 });\n this.pendingPipes.clear();\n return needsAsyncResources;\n };\n
R3TestBedCompiler.prototype.applyTransitiveScopes = function () {\n var _this = this;\n if\n
(this.overriddenModules.size > 0) {\n // Module overrides (via `TestBed.overrideModule`) might affect

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scopes that were previously\n // calculated and stored in `transitiveCompileScopes`. If module overrides
are present,\n // collect all affected modules and reset scopes to force their re-calculation.\n var
testingModuleDef = this.testModuleType[core.NG_MOD_DEF];\n var affectedModules =
this.collectModulesAffectedByOverrides(testingModuleDef.imports);\n if (affectedModules.size > 0) {\n
 affectedModules.forEach(function (moduleType) {\n
 _this.storeFieldOfDefOnType(moduleType, core.NG_MOD_DEF, 'transitiveCompileScopes');\n
 moduleType[core.NG_MOD_DEF].transitiveCompileScopes = null;\n });\n }\n }\n
 var moduleToScope = new Map();\n var getScopeOfModule = function (moduleType) {\n if
(!moduleToScope.has(moduleType)) {\n var isTestingModule =
isTestingModuleOverride(moduleType);\n var realType = isTestingModule ? _this.testModuleType :
moduleType;\n moduleToScope.set(moduleType, core.transitiveScopesFor(realType));\n }\n
 return moduleToScope.get(moduleType);\n });\n
this.componentToModuleScope.forEach(function (moduleType, componentType) {\n var moduleScope =
getScopeOfModule(moduleType);\n _this.storeFieldOfDefOnType(componentType,
core.NG_COMP_DEF, 'directiveDefs');\n _this.storeFieldOfDefOnType(componentType,
core.NG_COMP_DEF, 'pipeDefs');\n // `tView` that is stored on component def contains information about
directives and pipes\n // that are in the scope of this component. Patching component scope will cause
`tView` to be\n // changed. Store original `tView` before patching scope, so the `tView` (including scope\n
 // information) is restored back to its previous/original state before running next test.\n
 _this.storeFieldOfDefOnType(componentType, core.NG_COMP_DEF, 'tView');\n
 core.patchComponentDefWithScope(componentType.cmp, moduleScope);\n });\n
this.componentToModuleScope.clear();\n });\n R3TestBedCompiler.prototype.applyProviderOverrides =
function () {\n var _this = this;\n var maybeApplyOverrides = function (field) { return function (type)
{\n var resolver = field === core.NG_COMP_DEF ? _this.resolvers.component :
_this.resolvers.directive;\n var metadata = resolver.resolve(type);\n if
(!_this.hasProviderOverrides(metadata.providers)) {\n _this.patchDefWithProviderOverrides(type,
field);\n }\n }; };
this.seenComponents.forEach(maybeApplyOverrides(core.NG_COMP_DEF));\n
this.seenDirectives.forEach(maybeApplyOverrides(core.NG_DIR_DEF));\n this.seenComponents.clear();\n
 this.seenDirectives.clear();\n });\n R3TestBedCompiler.prototype.applyProviderOverridesToModule =
function (moduleType) {\n var e_1, _a, e_2, _b;\n if
(this.moduleProvidersOverridden.has(moduleType)) {\n return;\n }\n
 this.moduleProvidersOverridden.add(moduleType);\n var injectorDef = moduleType[core.NG_INJ_DEF];\n
 if (this.providerOverridesByToken.size > 0) {\n var providers = __spread(injectorDef.providers,
(this.providerOverridesByModule.get(moduleType) || []));\n if (this.hasProviderOverrides(providers)) {\n
 this.maybeStoreNgDef(core.NG_INJ_DEF, moduleType);\n
 this.storeFieldOfDefOnType(moduleType, core.NG_INJ_DEF, 'providers');\n injectorDef.providers =
this.getOverriddenProviders(providers);\n }\n // Apply provider overrides to imported modules
recursively\n var moduleDef = moduleType[core.NG_MOD_DEF];\n var imports =
maybeUnwrapFn(moduleDef.imports);\n try {\n for (var imports_1 = __values(imports),
imports_1_1 = imports_1.next(); !imports_1_1.done; imports_1_1 = imports_1.next()) {\n var
importedModule = imports_1_1.value;\n this.applyProviderOverridesToModule(importedModule);\n
 }\n }\n catch (e_1_1) { e_1 = { error: e_1_1 }; }\n finally {\n try
{\n if (imports_1_1 && !imports_1_1.done && (_a = imports_1.return)) _a.call(imports_1);\n
 }\n finally { if (e_1) throw e_1.error; }\n }\n try {\n // Also override
the providers on any ModuleWithProviders imports since those don't appear in\n // the moduleDef.\n
 for (var _c = __values(flatten(injectorDef.imports)), _d = _c.next(); !_d.done; _d = _c.next()) {\n
 var importedModule = _d.value;\n if (isModuleWithProviders(importedModule)) {\n

```

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 this.defCleanupOps.push({\n
 object: importedModule,\n
 fieldName:\n
'providers',\n
 originalValue: importedModule.providers\n
 });\n
importedModule.providers = this.getOverriddenProviders(importedModule.providers);\n
 }\n
 }\n
 catch (e_2_1) { e_2 = { error: e_2_1 }; }\n
 finally {\n
 try {\n
 if (_d && !_d.done && (_b = _c.return)) _b.call(_c);\n
 }\n
 finally { if (e_2) throw\n
e_2.error; }\n
 }\n
 };\n
R3TestBedCompiler.prototype.patchComponentsWithExistingStyles = function () {\n
this.existingComponentStyles.forEach(function (styles, type) { return type[core.NG_COMP_DEF].styles = styles;\n
});\n
this.existingComponentStyles.clear();\n
};\n
R3TestBedCompiler.prototype.queueTypeArray =\n
function (arr, moduleType) {\n
 var e_3, _a;\n
 try {\n
 for (var arr_1 = __values(arr), arr_1_1 =\n
arr_1.next(); !arr_1_1.done; arr_1_1 = arr_1.next()) {\n
 var value = arr_1_1.value;\n
 if\n
(Array.isArray(value)) {\n
 this.queueTypeArray(value, moduleType);\n
 }\n
else {\n
 this.queueType(value, moduleType);\n
 }\n
 }\n
 } catch\n
(e_3_1) { e_3 = { error: e_3_1 }; }\n
 finally {\n
 try {\n
 if (arr_1_1 && !arr_1_1.done\n
&& (_a = arr_1.return)) _a.call(arr_1);\n
 }\n
 finally { if (e_3) throw e_3.error; }\n
 }\n
};\n
R3TestBedCompiler.prototype.recompileNgModule = function (ngModule, metadata) {\n
// Cache\n
the initial ngModuleDef as it will be overwritten.\n
this.maybeStoreNgDef(core.NG_MOD_DEF,\n
ngModule);\n
this.maybeStoreNgDef(core.NG_INJ_DEF, ngModule);\n
core.compileNgModuleDefs(ngModule, metadata);\n
};\n
R3TestBedCompiler.prototype.queueType =\n
function (type, moduleType) {\n
 var component = this.resolvers.component.resolve(type);\n
 if\n
(component) {\n
 // Check whether a give Type has respective NG def (cmp) and compile if def is\n
// missing. That might happen in case a class without any Angular decorators extends another\n
// class\n
where Component/Directive/Pipe decorator is defined.\n
 if (isComponentDefPendingResolution(type) ||\n
!type.hasOwnProperty(core.NG_COMP_DEF)) {\n
 this.pendingComponents.add(type);\n
 }\n
 this.seenComponents.add(type);\n
 // Keep track of the module which declares this component, so\n
later the component's scope\n
 // can be set correctly. If the component has already been recorded here, then\n
one of several\n
 // cases is true:\n
 // * the module containing the component was imported\n
multiple times (common).\n
 // * the component is declared in multiple modules (which is an error).\n
 // * the component was in 'declarations' of the testing module, and also in an imported module\n
 // in\n
which case the module scope will be TestingModuleOverride.DECLARATION.\n
 // *\n
overrideTemplateUsingTestingModule was called for the component in which case the module\n
 // scope\n
will be TestingModuleOverride.OVERRIDE_TEMPLATE.\n
 //\n
 // If the component was\n
previously in the testing module's 'declarations' (meaning the\n
 // current value is\n
TestingModuleOverride.DECLARATION), then `moduleType` is the component's\n
 // real module, which\n
was imported. This pattern is understood to mean that the component\n
 // should use its original scope, but\n
that the testing module should also contain the\n
 // component in its scope.\n
 if\n
(!this.componentToModuleScope.has(type) ||\n
this.componentToModuleScope.get(type) ===\n
TestingModuleOverride.DECLARATION) {\n
 this.componentToModuleScope.set(type,\n
moduleType);\n
 }\n
 return;\n
 }\n
 var directive =\n
this.resolvers.directive.resolve(type);\n
 if (directive) {\n
 if\n
(!type.hasOwnProperty(core.NG_DIR_DEF)) {\n
 this.pendingDirectives.add(type);\n
 }\n
 this.seenDirectives.add(type);\n
 return;\n
 }\n
 var pipe =\n
this.resolvers.pipe.resolve(type);\n
 if (pipe && !type.hasOwnProperty(core.NG_PIPE_DEF)) {\n
this.pendingPipes.add(type);\n
return;\n
 }\n
};\n
R3TestBedCompiler.prototype.queueTypesFromModulesArray = function (arr) {\n
 var _this = this;\n
// Because we may encounter the same NgModule while processing the imports and exports of an\n
//\n
NgModule tree, we cache them in this set so we can skip ones that have already been seen\n
// encountered.\n
In some test setups, this caching resulted in 10X runtime improvement.\n
 var processedNgModuleDefs = new

```

```

Set();\n var queueTypesFromModulesArrayRecur = function (arr) {\n var e_4, _a;\n try {\n for (var arr_2 = __values(arr), arr_2_1 = arr_2.next(); !arr_2_1.done; arr_2_1 = arr_2.next()) {\n var value = arr_2_1.value;\n if (Array.isArray(value)) {\n queueTypesFromModulesArrayRecur(value);\n }\n else if (hasNgModuleDef(value)) {\n var def = value.mod;\n if (processedNgModuleDefs.has(def)) {\n continue;\n }\n processedNgModuleDefs.add(def);\n // Look through declarations, imports, and exports, and queue\n // everything found there.\n _this.queueTypeArray(maybeUnwrapFn(def.declarations), value);\n queueTypesFromModulesArrayRecur(maybeUnwrapFn(def.imports));\n queueTypesFromModulesArrayRecur(maybeUnwrapFn(def.exports));\n }\n }\n }\n catch (e_4_1) { e_4 = { error: e_4_1 }; }\n finally {\n try {\n if (arr_2_1 && !arr_2_1.done && (_a = arr_2.return)) _a.call(arr_2);\n }\n finally { if (e_4) throw e_4.error; }\n }\n }\n queueTypesFromModulesArrayRecur(arr);\n }\n // When module overrides (via `TestBed.overrideModule`) are present, it might affect all modules\n // that import (even transitively) an overridden one. For all affected modules we need to\n // recalculate their scopes for a given test run and restore original scopes at the end. The goal\n // of this function is to collect all affected modules in a set for further processing. Example:\n // if we have the following module hierarchy: A -> B -> C (where `->` means `imports`) and module\n // `C` is overridden, we consider `A` and `B` as affected, since their scopes might become\n // invalidated with the override.\n R3TestBedCompiler.prototype.collectModulesAffectedByOverrides = function (arr) {\n var _this = this;\n var seenModules = new Set();\n var affectedModules = new Set();\n var calcAffectedModulesRecur = function (arr, path) {\n var e_5, _a;\n try {\n for (var arr_3 = __values(arr), arr_3_1 = arr_3.next(); !arr_3_1.done; arr_3_1 = arr_3.next()) {\n var value = arr_3_1.value;\n if (Array.isArray(value)) {\n // If the value is an array, just flatten it (by invoking this function recursively),\n // keeping `path` the same.\n calcAffectedModulesRecur(value, path);\n }\n else if (hasNgModuleDef(value)) {\n if (seenModules.has(value)) {\n // If we've seen this module before and it's included into `affected modules`\n // list, mark\n // the whole path that leads to that module as affected, but do not descend into its\n // imports, since we already examined them before.\n if (affectedModules.has(value)) {\n path.forEach(function (item) { return affectedModules.add(item); });\n }\n continue;\n }\n seenModules.add(value);\n if (_this.overriddenModules.has(value)) {\n path.forEach(function (item) { return affectedModules.add(item); });\n }\n // Examine module imports recursively to look for overridden modules.\n var moduleDef = value[core.NG_MOD_DEF];\n calcAffectedModulesRecur(maybeUnwrapFn(moduleDef.imports), path.concat(value));\n }\n }\n }\n catch (e_5_1) { e_5 = { error: e_5_1 }; }\n finally {\n try {\n if (arr_3_1 && !arr_3_1.done && (_a = arr_3.return)) _a.call(arr_3);\n }\n finally { if (e_5) throw e_5.error; }\n }\n }\n calcAffectedModulesRecur(arr, []);\n return affectedModules;\n }\n R3TestBedCompiler.prototype.maybeStoreNgDef = function (prop, type) {\n if (!this.initialNgDefs.has(type)) {\n var currentDef = Object.getOwnPropertyDescriptor(type, prop);\n this.initialNgDefs.set(type, [prop, currentDef]);\n }\n }\n R3TestBedCompiler.prototype.storeFieldOfDefOnType = function (type, defField, fieldName) {\n var def = type[defField];\n var originalValue = def[fieldName];\n this.defCleanupOps.push({ object: def, fieldName: fieldName, originalValue: originalValue });\n }\n /**\n * Clears current components resolution queue, but stores the state of the queue, so we can\n * restore it later. Clearing the queue is required before we try to compile components (via\n * `TestBed.compileComponents`), so that component defs are in sync with the resolution queue.\n */\n R3TestBedCompiler.prototype.clearComponentResolutionQueue =

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function () {\n var _this = this;\n if (this.originalComponentResolutionQueue === null) {\n this.originalComponentResolutionQueue = new Map();\n }\n clearResolutionOfComponentResourcesQueue().forEach(function (value, key) { return\n _this.originalComponentResolutionQueue.set(key, value); });\n };\n /*\n * Restores component\n resolution queue to the previously saved state. This operation is performed\n * as a part of restoring the state\n after completion of the current set of tests (that might\n * potentially mutate the state).\n */\n R3TestBedCompiler.prototype.restoreComponentResolutionQueue = function () {\n if\n (this.originalComponentResolutionQueue !== null) {\n restoreComponentResolutionQueue(this.originalComponentResolutionQueue);\n this.originalComponentResolutionQueue = null;\n }\n };\n R3TestBedCompiler.prototype.restoreOriginalState = function () {\n // Process cleanup ops in reverse order\n so the field's original value is restored correctly (in\n // case there were multiple overrides for the same\n field).\n forEachRight(this.defCleanupOps, function (op) {\n op.object[op.fieldName] =\n op.originalValue;\n });\n // Restore initial component/directive/pipe defs\n this.initialNgDefs.forEach(function (value, type) {\n var _a = __read(value, 2), prop = _a[0], descriptor =\n _a[1];\n if (!descriptor) {\n // Delete operations are generally undesirable since they have\n performance implications\n // on objects they were applied to. In this particular case, situations where\n this code\n // is invoked should be quite rare to cause any noticeable impact, since it's applied\n // only to some test cases (for example when class with no annotations extends some\n //\n @Component) when we need to clear 'cmp' field on a given class to restore\n // its original state (before\n applying overrides and running tests).\n delete type[prop];\n } else {\n Object.defineProperty(type, prop, descriptor);\n }\n });\n this.initialNgDefs.clear();\n this.moduleProvidersOverridden.clear();\n this.restoreComponentResolutionQueue();\n // Restore the\n locale ID to the default value, this shouldn't be necessary but we never know\n core.setLocaleId(core.DEFAULT_LOCALE_ID);\n };\n R3TestBedCompiler.prototype.compileTestModule = function () {\n var _this = this;\n var\n RootScopeModule = /** @class */ (function () {\n function RootScopeModule() {\n }\n return RootScopeModule;\n })();\n core.compileNgModuleDefs(RootScopeModule, {\n providers: __spread(this.rootProviderOverrides),\n });\n var ngZone = new core.NgZone({\n enableLongStackTrace: true\n });\n var providers = __spread([\n { provide: core.NgZone, useValue:\n ngZone },\n { provide: core.Compiler, useFactory: function () { return new R3TestCompiler(_this); }\n },\n], this.providers, this.providerOverrides);\n var imports = [RootScopeModule,\n this.additionalModuleTypes, this.imports || []];\n // clang-format off\n core.compileNgModuleDefs(this.testModuleType, {\n declarations: this.declarations,\n imports:\n imports,\n schemas: this.schemas,\n providers: providers,\n }, /*\n allowDuplicateDeclarationsInRoot */ true);\n // clang-format on\n this.applyProviderOverridesToModule(this.testModuleType);\n };\n Object.defineProperty(R3TestBedCompiler.prototype, 'injector', {\n get: function () {\n if\n (this._injector !== null) {\n return this._injector;\n }\n var providers = [];\n var compilerOptions = this.platform.injector.get(core.COMPILER_OPTIONS);\n compilerOptions.forEach(function (opts) {\n if (opts.providers) {\n providers.push(opts.providers);\n }\n });\n if (this.compilerProviders !== null) {\n providers.push.apply(providers, __spread(this.compilerProviders));\n }\n //\n TODO(ocombe): make this work with an Injector directly instead of creating a module for it\n var\n CompilerModule = /** @class */ (function () {\n function CompilerModule() {\n }\n return CompilerModule;\n })();\n core.compileNgModuleDefs(CompilerModule, {\n providers:\n providers\n });\n var CompilerModuleFactory = new core.NgModuleFactory(CompilerModule);\n this._injector = CompilerModuleFactory.create(this.platform.injector).injector;\n return this._injector;\n }\n });\n }

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 },\n enumerable: false,\n configurable: true\n });\n // get overrides for a specific provider
 (if any)\n R3TestBedCompiler.prototype.getSingleProviderOverrides = function (provider) {\n var token
 = getProviderToken(provider);\n return this.providerOverridesByToken.get(token) || null;\n };\n R3TestBedCompiler.prototype.getProviderOverrides = function (providers) {\n var _this = this;\n if
 (!providers || !providers.length || this.providerOverridesByToken.size === 0)\n return [];\n // There
 are two flattening operations here. The inner flatten() operates on the metadata's\n // providers and applies a
 mapping function which retrieves overrides for each incoming\n // provider. The outer flatten() then flattens
 the produced overrides array. If this is not\n // done, the array can contain other empty arrays (e.g. `[[], []]`)
 which leak into the\n // providers array and contaminate any error messages that might be generated.\n return flatten(flatten(providers, function (provider) { return _this.getSingleProviderOverrides(provider) || []; }));\n
 };\n R3TestBedCompiler.prototype.getOverriddenProviders = function (providers) {\n var _this =
 this;\n if (!providers || !providers.length || this.providerOverridesByToken.size === 0)\n return [];\n var flattenedProviders = flatten(providers);\n var overrides =
 this.getProviderOverrides(flattenedProviders);\n var overriddenProviders = __spread(flattenedProviders,
 overrides);\n var final = [];\n var seenOverriddenProviders = new Set();\n // We iterate through
 the list of providers in reverse order to make sure provider overrides\n // take precedence over the values
 defined in provider list. We also filter out all providers\n // that have overrides, keeping overridden values
 only. This is needed, since presence of a\n // provider with `ngOnDestroy` hook will cause this hook to be
 registered and invoked later.\n forEachRight(overriddenProviders, function (provider) {\n var token
 = getProviderToken(provider);\n if (_this.providerOverridesByToken.has(token)) {\n if
 (!seenOverriddenProviders.has(token)) {\n seenOverriddenProviders.add(token);\n //
 Treat all overridden providers as `{multi: false}` (even if it's a multi-provider) to\n // make sure that
 provided override takes highest precedence and is not combined with\n // other instances of the same
 multi provider.\n final.unshift(Object.assign(Object.assign({}, provider), { multi: false }));\n
 }\n }\n else {\n final.unshift(provider);\n }\n });\n return
 final;\n };\n R3TestBedCompiler.prototype.hasProviderOverrides = function (providers) {\n return
 this.getProviderOverrides(providers).length > 0;\n };\n R3TestBedCompiler.prototype.patchDefWithProviderOverrides = function (declaration, field) {\n var _this =
 this;\n var def = declaration[field];\n if (def && def.providersResolver) {\n
 this.maybeStoreNgDef(field, declaration);\n var resolver_1 = def.providersResolver;\n var
 processProvidersFn_1 = function (providers) { return _this.getOverriddenProviders(providers); };\n
 this.storeFieldOfDefOnType(declaration, field, 'providersResolver');\n def.providersResolver = function
 (ngDef) { return resolver_1(ngDef, processProvidersFn_1); };\n }\n });\n return
 R3TestBedCompiler;\n }());\n function initResolvers() {\n return {\n module: new
 NgModuleResolver(),\n component: new ComponentResolver(),\n directive: new
 DirectiveResolver(),\n pipe: new PipeResolver()\n };\n }\n function hasNgModuleDef(value) {\n
 return value.hasOwnProperty('mod');\n }\n function maybeUnwrapFn(maybeFn) {\n return maybeFn
 instanceof Function ? maybeFn() : maybeFn;\n }\n function flatten(values, mapFn) {\n var out = [];\n
 values.forEach(function (value) {\n if (Array.isArray(value)) {\n out.push.apply(out,
 __spread(flatten(value, mapFn)));\n }\n else {\n out.push(mapFn ? mapFn(value) : value);\n
 }\n });\n return out;\n }\n function getProviderField(provider, field) {\n return provider &&
 typeof provider === 'object' && provider[field];\n }\n function getProviderToken(provider) {\n return
 getProviderField(provider, 'provide') || provider;\n }\n function isModuleWithProviders(value) {\n return
 value.hasOwnProperty('ngModule');\n }\n function forEachRight(values, fn) {\n for (var idx = values.length
 - 1; idx >= 0; idx--) {\n fn(values[idx], idx);\n }\n }\n function invalidTypeError(name,
 expectedType) {\n return new Error(name + "\n class doesn't have @" + expectedType + "\n decorator or is
 missing metadata.");\n }\n var R3TestCompiler = /** @class */ (function () {\n function
 R3TestCompiler(testBed) {\n this.testBed = testBed;\n }\n })\n
```

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R3TestCompiler.prototype.compileModuleSync = function (moduleType) {\n
this.testBed._compileNgModuleSync(moduleType);\n return new core.NgModuleFactory(moduleType);\n
};\n R3TestCompiler.prototype.compileModuleAsync = function (moduleType) {\n return
__awaiter(this, void 0, void 0, function () {\n return __generator(this, function (_a) {\n switch
(_a.label) {\n case 0: return [4 /*yield*/, this.testBed._compileNgModuleAsync(moduleType)];\n
 case 1:\n _a.sent();\n return [2 /*return*/, new
core.NgModuleFactory(moduleType)];\n }\n });\n });\n });\n });\n
R3TestCompiler.prototype.compileModuleAndAllComponentsSync = function (moduleType) {\n var
ngModuleFactory = this.compileModuleSync(moduleType);\n var componentFactories =
this.testBed._getComponentFactories(moduleType);\n return new
core.ModuleWithComponentFactories(ngModuleFactory, componentFactories);\n });\n
R3TestCompiler.prototype.compileModuleAndAllComponentsAsync = function (moduleType) {\n return
__awaiter(this, void 0, void 0, function () {\n var ngModuleFactory, componentFactories;\n return
__generator(this, function (_a) {\n switch (_a.label) {\n case 0: return [4 /*yield*/,
this.compileModuleAsync(moduleType)];\n case 1:\n ngModuleFactory =
_a.sent();\n componentFactories = this.testBed._getComponentFactories(moduleType);\n
 return [2 /*return*/, new core.ModuleWithComponentFactories(ngModuleFactory, componentFactories)];\n
 }\n });\n });\n });\n });\n
R3TestCompiler.prototype.clearCache = function () { };\n
R3TestCompiler.prototype.clearCacheFor = function (type) { };\n R3TestCompiler.prototype.getModuleId =
function (moduleType) {\n var meta = this.testBed._getModuleResolver().resolve(moduleType);\n
return meta && meta.id || undefined;\n });\n return R3TestCompiler;\n }());\n /**\n * @license\n
 * Copyright Google LLC All Rights Reserved.\n * Use of this source code is governed by an MIT-style
license that can be\n * found in the LICENSE file at https://angular.io/license\n * An abstract
class for inserting the root test component element in a platform independent way.\n * @publicApi\n */\n
 var TestComponentRenderer = /** @class */ (function () {\n function TestComponentRenderer() {\n }\n
 TestComponentRenderer.prototype.insertRootElement = function (rootElementId) { };\n return
TestComponentRenderer;\n }());\n /**\n * @publicApi\n */\n var ComponentFixtureAutoDetect = new
core.InjectionToken('ComponentFixtureAutoDetect');\n /**\n * @publicApi\n */\n var
ComponentFixtureNoNgZone = new core.InjectionToken('ComponentFixtureNoNgZone');\n /**\n *
@license\n * Copyright Google LLC All Rights Reserved.\n * Use of this source code is governed by an
MIT-style license that can be\n * found in the LICENSE file at https://angular.io/license\n */\n
 var _nextRootElementId = 0;\n /**\n * @description\n * Configures and initializes environment for unit testing
and provides methods for\n * creating components and services in unit tests.\n * TestBed is the primary
api for writing unit tests for Angular applications and libraries.\n * Note: Use `TestBed` in tests. It will be
set to either `TestBedViewEngine` or `TestBedRenderer3`\n * according to the compiler used.\n */\n
 TestBedRenderer3 = /** @class */ (function () {\n function TestBedRenderer3() {\n // Properties\n
this.platform = null;\n this.ngModule = null;\n this._compiler = null;\n this._testModuleRef =
null;\n this._activeFixtures = [];\n this._globalCompilationChecked = false;\n }\n /**\n *
Initialize the environment for testing with a compiler factory, a PlatformRef, and an\n * angular module. These
are common to every test in the suite.\n * This may only be called once, to set up the common
providers for the current test\n * suite on the current platform. If you absolutely need to change the providers,\n
 * first use `resetTestEnvironment`.\n * Test modules and platforms for individual platforms are
available from\n * '@angular/<platform_name>/testing'.\n * @publicApi\n */\n
 TestBedRenderer3.prototype.initTestEnvironment = function (ngModule, platform, aotSummaries) {\n var testBed =
_getTestBedRenderer3();\n testBed.initTestEnvironment(ngModule, platform, aotSummaries);\n return
testBed;\n });\n /**\n * Reset the providers for the test injector.\n * @publicApi\n
 */\n TestBedRenderer3.prototype.resetTestEnvironment = function () {\n
_getTestBedRenderer3().resetTestEnvironment();\n });\n TestBedRenderer3.prototype.configureCompiler = function

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(config) {\n _getTestBedRender3().configureCompiler(config);\n return TestBedRender3;\n };\n /**\n * Allows overriding default providers, directives, pipes, modules of the test injector,\n * which are defined in test_injector.js\n */\n TestBedRender3.configureTestingModule = function (moduleDef) {\n _getTestBedRender3().configureTestingModule(moduleDef);\n return TestBedRender3;\n };\n /**\n * Compile components with a `templateUrl` for the test's NgModule.\n * It is necessary to call this function\n * as fetching urls is asynchronous.\n */\n TestBedRender3.compileComponents = function () {\n return _getTestBedRender3().compileComponents();\n }; \n TestBedRender3.overrideModule = function (ngModule, override) {\n _getTestBedRender3().overrideModule(ngModule, override);\n return TestBedRender3;\n }; \n TestBedRender3.overrideComponent = function (component, override) {\n _getTestBedRender3().overrideComponent(component, override);\n return TestBedRender3;\n }; \n TestBedRender3.overrideDirective = function (directive, override) {\n _getTestBedRender3().overrideDirective(directive, override);\n return TestBedRender3;\n }; \n TestBedRender3.overridePipe = function (pipe, override) {\n _getTestBedRender3().overridePipe(pipe, override);\n return TestBedRender3;\n }; \n TestBedRender3.overrideTemplate = function (component, template) {\n _getTestBedRender3().overrideComponent(component, { set: { template: template, templateUrl: null } });\n return TestBedRender3;\n }; \n /**\n * Overrides the template of the given component, compiling the template\n * in the context of theTestingModule.\n */\n Note: This works for JIT and AOTed components as well.\n TestBedRender3.overrideTemplateUsingTestingModule = function (component, template) {\n _getTestBedRender3().overrideTemplateUsingTestingModule(component, template);\n return TestBedRender3;\n }; \n TestBedRender3.overrideProvider = function (token, provider) {\n _getTestBedRender3().overrideProvider(token, provider);\n return TestBedRender3;\n }; \n TestBedRender3.inject = function (token, notFoundValue, flags) {\n return _getTestBedRender3().inject(token, notFoundValue, flags);\n }; \n /** @deprecated from v9.0.0 use TestBed.inject */\n TestBedRender3.get = function (token, notFoundValue, flags) {\n if (notFoundValue === void 0) { notFoundValue = core.Injector.THROW_IF_NOT_FOUND; }\n if (flags === void 0) { flags = core.InjectFlags.Default; }\n return _getTestBedRender3().inject(token, notFoundValue, flags);\n }; \n TestBedRender3.createComponent = function (component) {\n return _getTestBedRender3().createComponent(component);\n }; \n TestBedRender3.resetTestingModule = function () {\n _getTestBedRender3().resetTestingModule();\n return TestBedRender3;\n }; \n /**\n * Initialize the environment for testing with a compiler factory, a PlatformRef, and an\n * angular module. These are common to every test in the suite.\n */\n * This may only be called once, to set up the common providers for the current test\n * suite on the current platform. If you absolutely need to change the providers,\n * first use `resetTestEnvironment`.\n * Test modules and platforms for individual platforms are available from\n * '@angular/<platform_name>/testing'.\n * @publicApi\n */\n TestBedRender3.prototype.initTestEnvironment = function (ngModule, platform, aotSummaries) {\n if (this.platform || this.ngModule) {\n throw new Error('Cannot set base providers because it has already been called');\n }\n this.platform = platform;\n this.ngModule = ngModule;\n this._compiler = new R3TestBedCompiler(this.platform, this.ngModule);\n }; \n /**\n * Reset the providers for the test injector.\n */\n * @publicApi\n */\n TestBedRender3.prototype.resetTestEnvironment = function () {\n this.resetTestingModule();\n this._compiler = null;\n this.platform = null;\n this.ngModule = null;\n }; \n TestBedRender3.prototype.resetTestingModule = function () {\n this.checkGlobalCompilationFinished();\n core.resetCompiledComponents();\n if (this._compiler !== null) {\n this.compiler.restoreOriginalState();\n }\n this._compiler = new R3TestBedCompiler(this.platform, this.ngModule);\n this._testModuleRef = null;\n this.destroyActiveFixtures();\n }; \n TestBedRender3.prototype.configureCompiler = function (config) {\n if (config.useJit !== null) {\n throw new Error('the Render3 compiler JiT mode is not configurable !');\n }\n if (config.providers !==

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undefined) {\n
 this.compiler.setCompilerProviders(config.providers);\n
};\n
TestBedRender3.prototype.configureTestingModule = function (moduleDef) {\n
this.assertNotInstantiated('R3TestBed.configureTestingModule', 'configure the test module');\n
this.compiler.configureTestingModule(moduleDef);\n
};\n
TestBedRender3.prototype.compileComponents
= function () {\n
 return this.compiler.compileComponents();\n
};\n
TestBedRender3.prototype.inject
= function (token, notFoundValue, flags) {\n
 if (token === TestBedRender3) {\n
 return this;\n
 }\n
 var UNDEFINED = {};\n
 var result = this.testModuleRef.injector.get(token, UNDEFINED,\n
flags);\n
 return result === UNDEFINED ? this.compiler.injector.get(token, notFoundValue, flags) :\n
result;\n
};\n
/** @deprecated from v9.0.0 use TestBed.inject */\n
TestBedRender3.prototype.get =
function (token, notFoundValue, flags) {\n
 if (notFoundValue === void 0) { notFoundValue =
core.Injector.THROW_IF_NOT_FOUND; }\n
 if (flags === void 0) { flags = core.InjectFlags.Default; }\n
 return this.inject(token, notFoundValue, flags);\n
};\n
TestBedRender3.prototype.execute = function
(tokens, fn, context) {\n
 var _this = this;\n
 var params = tokens.map(function (t) { return _this.inject(t);\n
});\n
 return fn.apply(context, params);\n
};\n
TestBedRender3.prototype.overrideModule = function
(ngModule, override) {\n
 this.assertNotInstantiated('overrideModule', 'override module metadata');\n
this.compiler.overrideModule(ngModule, override);\n
};\n
TestBedRender3.prototype.overrideComponent
= function (component, override) {\n
 this.assertNotInstantiated('overrideComponent', 'override component
metadata');\n
 this.compiler.overrideComponent(component, override);\n
};\n
TestBedRender3.prototype.overrideTemplateUsingTestingModule = function (component, template) {\n
this.assertNotInstantiated('R3TestBed.overrideTemplateUsingTestingModule', 'Cannot override template when the
test module has already been instantiated');\n
this.compiler.overrideTemplateUsingTestingModule(component, template);\n
};\n
TestBedRender3.prototype.overrideDirective = function (directive, override) {\n
this.assertNotInstantiated('overrideDirective', 'override directive metadata');\n
this.compiler.overrideDirective(directive, override);\n
};\n
TestBedRender3.prototype.overridePipe =
function (pipe, override) {\n
 this.assertNotInstantiated('overridePipe', 'override pipe metadata');\n
this.compiler.overridePipe(pipe, override);\n
};\n
/**\n
 * Overwrites all providers for the given token
with the given provider definition.\n
 */\n
TestBedRender3.prototype.overrideProvider = function (token,\n
provider) {\n
 this.assertNotInstantiated('overrideProvider', 'override provider');\n
this.compiler.overrideProvider(token, provider);\n
};\n
TestBedRender3.prototype.createComponent =
function (type) {\n
 var _this = this;\n
 var testComponentRenderer =
this.inject(TestComponentRenderer);\n
 var rootElId = \"root\" + _nextRootElementId++;\n
testComponentRenderer.insertRootElement(rootElId);\n
 var componentDef = type.cmp;\n
 if
(!componentDef) {\n
 throw new Error(\"It looks like \" + core.stringify(type) + \" has not been IVY
compiled - it has no '\\u0275cmp' field\");\n
 }\n
 // TODO: Don't cast as `InjectionToken<boolean>`,
proper type is boolean[]\n
 var noNgZone = this.inject(ComponentFixtureNoNgZone, false);\n
 //
TODO: Don't cast as `InjectionToken<boolean>`, proper type is boolean[]\n
 var autoDetect =
this.inject(ComponentFixtureAutoDetect, false);\n
 var ngZone = noNgZone ? null : this.inject(core.NgZone,\n
null);\n
 var componentFactory = new core.Render3ComponentFactory(componentDef);\n
 var
initComponent = function () {\n
 var componentRef = componentFactory.create(core.Injector.NULL, [],\n
\"#\" + rootElId, _this.testModuleRef);\n
 return new ComponentFixture(componentRef, ngZone,\n
autoDetect);\n
 };\n
 var fixture = ngZone ? ngZone.run(initComponent) : initComponent();\n
this._activeFixtures.push(fixture);\n
 return fixture;\n
};\n
Object.defineProperty(TestBedRender3.prototype, \"compiler\", {\n
 /**\n
 * @internal strip this from
published d.ts files due to\n
 * https://github.com/microsoft/TypeScript/issues/36216\n
 */\n
 get:
function () {\n
 if (this._compiler === null) {\n
 throw new Error(\"Need to call
TestBed.initTestEnvironment() first\");\n
 }\n
 return this._compiler;\n
 },\n
 enumerable: false,\n
 configurable: true\n
});\n
Object.defineProperty(TestBedRender3.prototype,

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"testModuleRef", {\n /**\n * @internal strip this from published d.ts files due to\n * https://github.com/microsoft/TypeScript/issues/36216\n *^\n get: function () {\n if\n (this._testModuleRef === null) {\n this._testModuleRef = this.compiler.finalize();\n }\n return this._testModuleRef;\n },\n enumerable: false,\n configurable: true\n });\n TestBedRender3.prototype.assertNotInstantiated = function (methodName, methodDescription) {\n if\n (this._testModuleRef !== null) {\n throw new Error("Cannot \" + methodDescription + \" when the test\n module has already been instantiated. \" +\n (\"Make sure you are not using `inject` before `\" +\n methodName + \"`.\"));\n }\n };\n /**\n * Check whether the module scoping queue should be\n flushed, and flush it if needed.\n *^\n * When the TestBed is reset, it clears the JIT module compilation\n queue, cancelling any\n * in-progress module compilation. This creates a potential hazard - the very first time\n the\n * TestBed is initialized (or if it's reset without being initialized), there may be pending\n * compilations of modules declared in global scope. These compilations should be finished.\n *^\n * To\n ensure that globally declared modules have their components scoped properly, this function\n * is called\n whenever TestBed is initialized or reset. The _first_ time that this happens, prior\n * to any other operations,\n the scoping queue is flushed.\n *^\n TestBedRender3.prototype.checkGlobalCompilationFinished =\n function () {\n // Checking _testNgModuleRef is null should not be necessary, but is left in as an additional\n // guard that compilations queued in tests (after instantiation) are never flushed accidentally.\n if\n (!this._globalCompilationChecked && this._testModuleRef === null) {\n core.flushModuleScopingQueueAsMuchAsPossible();\n }\n this._globalCompilationChecked = true;\n };\n TestBedRender3.prototype.destroyActiveFixtures = function () {\n this._activeFixtures.forEach(function (fixture) {\n try {\n fixture.destroy();\n }\n catch (e) {\n console.error('Error during cleanup of component', {\n component:\n fixture.componentInstance,\n stacktrace: e,\n });\n }\n });\n this._activeFixtures = [];\n }; return TestBedRender3;\n }());\n var TestBed;\n function\n _getTestBedRender3() {\n return TestBed = TestBed || new TestBedRender3();\n }\n function\n unimplemented() {\n throw Error('unimplemented');\n }\n /**\n * Special interface to the compiler only\n used by testing\n *^\n * @publicApi\n *^\n var TestingCompiler = /** @class */ (function (_super) {\n __extends(TestingCompiler, _super);\n function TestingCompiler() {\n return _super !== null &&\n _super.apply(this, arguments) || this;\n }\n Object.defineProperty(TestingCompiler.prototype, "injector",\n {\n get: function () {\n throw unimplemented();\n },\n enumerable: false,\n configurable: true\n });\n TestingCompiler.prototype.overrideModule = function (module, overrides) {\n throw unimplemented();\n };\n TestingCompiler.prototype.overrideDirective = function (directive,\n overrides) {\n throw unimplemented();\n };\n TestingCompiler.prototype.overrideComponent =\n function (component, overrides) {\n throw unimplemented();\n };\n TestingCompiler.prototype.overridePipe = function (directive, overrides) {\n throw unimplemented();\n };\n /**\n * Allows to pass the compile summary from AOT compilation to the JIT compiler,\n * so\n that it can use the code generated by AOT.\n *^\n TestingCompiler.prototype.loadAotSummaries =\n function (summaries) {\n throw unimplemented();\n };\n /**\n * Gets the component factory for\n the given component.\n * This assumes that the component has been compiled before calling this call using\n * `compileModuleAndAllComponents`.\n *^\n TestingCompiler.prototype.getComponentFactory =\n function (component) {\n throw unimplemented();\n };\n /**\n * Returns the component type\n that is stored in the given error.\n * This can be used for errors created by compileModule...\n *^\n TestingCompiler.prototype.getComponentFromError = function (error) {\n throw unimplemented();\n };\n return TestingCompiler;\n }(core.Compiler));\n TestingCompiler.decorators = [\n { type:\n core.Injectable }\n];\n /**\n * A factory for creating a Compiler\n *^\n * @publicApi\n *^\n var\n TestingCompilerFactory = /** @class */ (function () {\n function TestingCompilerFactory() {\n }\n return TestingCompilerFactory;\n }());\n var _nextRootElementId$1 = 0;\n /**\n * @description\n * Configures and initializes environment for unit testing and provides methods for\n * creating components and

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services in unit tests.\n * \n * `TestBed` is the primary api for writing unit tests for Angular applications and
libraries.\n * \n * Note: Use `TestBed` in tests. It will be set to either `TestBedViewEngine` or
`TestBedRenderer3`\n * according to the compiler used.\n * \n var TestBedViewEngine = /** @class */
(function () {\n function TestBedViewEngine() {\n this._instantiated = false;\n this._compiler =
null;\n this._moduleRef = null;\n this._moduleFactory = null;\n this._compilerOptions = [];\n
this._moduleOverrides = [];\n this._componentOverrides = [];\n this._directiveOverrides = [];\n
this._pipeOverrides = [];\n this._providers = [];\n this._declarations = [];\n this._imports =
[];\n this._schemas = [];\n this._activeFixtures = [];\n this._testEnvAotSummaries = function ()
{ return []; }; \n this._aotSummaries = [];\n this._templateOverrides = [];\n this._isRoot = true;\n
this._rootProviderOverrides = [];\n this.platform = null;\n this.ngModule = null;\n } \n
/** \n * Initialize the environment for testing with a compiler factory, a PlatformRef, and an\n * angular
module. These are common to every test in the suite.\n * \n * This may only be called once, to set up the
common providers for the current test\n * suite on the current platform. If you absolutely need to change the
providers,\n * first use `resetTestEnvironment`.\n * \n * Test modules and platforms for individual
platforms are available from\n * '@angular/<platform_name>/testing'. \n * \n
TestBedViewEngine.initTestEnvironment = function (ngModule, platform, aotSummaries) {\n var testBed =
_getTestBedViewEngine(); \n testBed.initTestEnvironment(ngModule, platform, aotSummaries);\n
return testBed;\n }; \n /** \n * Reset the providers for the test injector.\n * \n
TestBedViewEngine.resetTestEnvironment = function () {\n
_getTestBedViewEngine().resetTestEnvironment(); \n }; \n TestBedViewEngine.resetTestingModule =
function () {\n _getTestBedViewEngine().resetTestingModule(); \n return TestBedViewEngine;\n
}; \n /** \n * Allows overriding default compiler providers and settings\n * which are defined in
test_injector.js \n * \n TestBedViewEngine.configureCompiler = function (config) {\n
_getTestBedViewEngine().configureCompiler(config);\n return TestBedViewEngine;\n }; \n /** \n
* Allows overriding default providers, directives, pipes, modules of the test injector,\n * which are defined in
test_injector.js \n * \n TestBedViewEngine.configureTestingModule = function (moduleDef) {\n
_getTestBedViewEngine().configureTestingModule(moduleDef);\n return TestBedViewEngine;\n }; \n
/** \n * Compile components with a `templateUrl` for the test's NgModule.\n * It is necessary to call this
function\n * as fetching urls is asynchronous.\n * \n TestBedViewEngine.compileComponents =
function () {\n return getTestBed().compileComponents(); \n }; \n
TestBedViewEngine.overrideModule = function (ngModule, override) {\n
_getTestBedViewEngine().overrideModule(ngModule, override);\n return TestBedViewEngine;\n }; \n
TestBedViewEngine.overrideComponent = function (component, override) {\n
_getTestBedViewEngine().overrideComponent(component, override);\n return TestBedViewEngine;\n
}; \n TestBedViewEngine.overrideDirective = function (directive, override) {\n
_getTestBedViewEngine().overrideDirective(directive, override);\n return TestBedViewEngine;\n
}; \n
TestBedViewEngine.overridePipe = function (pipe, override) {\n
_getTestBedViewEngine().overridePipe(pipe, override);\n return TestBedViewEngine;\n }; \n
TestBedViewEngine.overrideTemplate = function (component, template) {\n
_getTestBedViewEngine().overrideComponent(component, { set: { template: template, templateUrl: null } }); \n
return TestBedViewEngine;\n }; \n /** \n * Overrides the template of the given component, compiling
the template\n * in the context of theTestingModule.\n * \n * Note: This works for JIT and AOTed
components as well.\n * \n TestBedViewEngine.overrideTemplateUsingTestingModule = function
(component, template) {\n _getTestBedViewEngine().overrideTemplateUsingTestingModule(component,
template);\n return TestBedViewEngine;\n }; \n TestBedViewEngine.overrideProvider = function
(token, provider) {\n _getTestBedViewEngine().overrideProvider(token, provider);\n return
TestBedViewEngine;\n }; \n TestBedViewEngine.inject = function (token, notFoundValue, flags) {\n
return _getTestBedViewEngine().inject(token, notFoundValue, flags);\n }; \n /** @deprecated from v9.0.0

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use TestBed.inject *\n TestBedViewEngine.get = function (token, notFoundValue, flags) {\n if
(notFoundValue === void 0) { notFoundValue = core.Injector.THROW_IF_NOT_FOUND; }\n if (flags ===
void 0) { flags = core.InjectFlags.Default; }\n return _getTestBedViewEngine().inject(token, notFoundValue,
flags);\n };\n TestBedViewEngine.createComponent = function (component) {\n return
_getTestBedViewEngine().createComponent(component);\n };*\n /***\n * Initialize the environment for
testing with a compiler factory, a PlatformRef, and an*\n * angular module. These are common to every test in
the suite.\n **\n * This may only be called once, to set up the common providers for the current test*\n * suite on the current platform. If you absolutely need to change the providers,\n ** first use
`resetTestEnvironment`.\n **\n * Test modules and platforms for individual platforms are available from*\n * '@angular/<platform_name>/testing'.\n **\n TestBedViewEngine.prototype.initTestEnvironment =
function (ngModule, platform, aotSummaries) {\n if (this.platform || this.ngModule) {\n throw new
Error('Cannot set base providers because it has already been called');\n }\n this.platform = platform;\n this.ngModule = ngModule;\n if (aotSummaries) {\n this._testEnvAotSummaries =
aotSummaries;\n }\n };*\n /***\n * Reset the providers for the test injector.\n **\n TestBedViewEngine.prototype.resetTestEnvironment = function () {\n this.resetTestingModule();\n this.platform = null;\n this.ngModule = null;\n this._testEnvAotSummaries = function () { return [];
};\n };*\n TestBedViewEngine.prototype.resetTestingModule = function () {\n core.clearOverrides();\n this._aotSummaries = [];\n this._templateOverrides = [];\n this._compiler = null;\n this._moduleOverrides = [];\n this._componentOverrides = [];\n this._directiveOverrides = [];\n this._pipeOverrides = [];\n this._isRoot = true;\n this._rootProviderOverrides = [];\n this._moduleRef = null;\n this._moduleFactory = null;\n this._compilerOptions = [];\n this._providers = [];\n this._declarations = [];\n this._imports =
[];\n this._schemas = [];\n this._instantiated = false;\n this._activeFixtures.forEach(function
(fixture) {\n try {\n fixture.destroy();\n }\n catch (e) {\n console.error('Error during cleanup of component', {\n component: fixture.componentInstance,\n stacktrace: e,\n });\n }\n });\n this._activeFixtures = [];\n };*\n TestBedViewEngine.prototype.configureCompiler = function (config) {\n this._assertNotInstantiated('TestBed.configureCompiler', 'configure the compiler');\n this._compilerOptions.push(config);\n };*\n TestBedViewEngine.prototype.configureTestingModule =
function (moduleDef) {\n var _a, _b, _c, _d;\n this._assertNotInstantiated('TestBed.configureTestingModule', 'configure the test module');\n if
(moduleDef.providers) {\n (_a = this._providers).push.apply(_a, __spread(moduleDef.providers));\n }\n if (moduleDef.declarations) {\n (_b = this._declarations).push.apply(_b,
__spread(moduleDef.declarations));\n }\n if (moduleDef.imports) {\n (_c =
this._imports).push.apply(_c, __spread(moduleDef.imports));\n }\n if (moduleDef.schemas) {\n (_d = this._schemas).push.apply(_d, __spread(moduleDef.schemas));\n }\n if
(moduleDef.aotSummaries) {\n this._aotSummaries.push(moduleDef.aotSummaries);\n }\n };*\n TestBedViewEngine.prototype.compileComponents = function () {\n var _this = this;\n if
(this._moduleFactory || this._instantiated) {\n return Promise.resolve(null);\n }\n var
moduleType = this._createCompilerAndModule();\n return
this._compiler.compileModuleAndAllComponentsAsync(moduleType)\n .then(function
(moduleAndComponentFactories) {\n _this._moduleFactory =
moduleAndComponentFactories.ngModuleFactory;\n });\n };*\n TestBedViewEngine.prototype._initIfNeeded = function () {\n var e_1, _a;\n if (this._instantiated) {\n return;\n }\n if (!this._moduleFactory) {\n try {\n var moduleType =
this._createCompilerAndModule();\n this._moduleFactory =\n this._compiler.compileModuleAndAllComponentsSync(moduleType).ngModuleFactory;\n }\n catch (e) {\n var errorCompType = this._compiler.getComponentFromError(e);\n if

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result = this._moduleRef.injector.get(token, UNDEFINED, flags);\n return result === UNDEFINED ?
this._compiler.injector.get(token, notFoundValue, flags) :\n result;\n };\n /** @deprecated from
v9.0.0 use TestBed.inject */\n TestBedViewEngine.prototype.get = function (token, notFoundValue, flags) {\n
 if (notFoundValue === void 0) { notFoundValue = core.Injector.THROW_IF_NOT_FOUND; }\n if
(flags === void 0) { flags = core.InjectFlags.Default; }\n return this.inject(token, notFoundValue, flags);\n
};\n TestBedViewEngine.prototype.execute = function (tokens, fn, context) {\n var _this = this;\n
this._initIfNeeded();\n var params = tokens.map(function (t) { return _this.inject(t); });\n return
fn.apply(context, params);\n };\n TestBedViewEngine.prototype.overrideModule = function (ngModule,
override) {\n this._assertNotInstantiated('overrideModule', 'override module metadata');\n
this._moduleOverrides.push([ngModule, override]);\n };\n
TestBedViewEngine.prototype.overrideComponent = function (component, override) {\n
this._assertNotInstantiated('overrideComponent', 'override component metadata');\n
this._componentOverrides.push([component, override]);\n };\n
TestBedViewEngine.prototype.overrideDirective = function (directive, override) {\n
this._assertNotInstantiated('overrideDirective', 'override directive metadata');\n
this._directiveOverrides.push([directive, override]);\n };\n TestBedViewEngine.prototype.overridePipe =
function (pipe, override) {\n this._assertNotInstantiated('overridePipe', 'override pipe metadata');\n
this._pipeOverrides.push([pipe, override]);\n };\n TestBedViewEngine.prototype.overrideProvider =
function (token, provider) {\n this._assertNotInstantiated('overrideProvider', 'override provider');\n
this.overrideProviderImpl(token, provider);\n };\n TestBedViewEngine.prototype.overrideProviderImpl =
function (token, provider, deprecated) {\n if (deprecated === void 0) { deprecated = false; }\n var def
= null;\n if (typeof token !== 'string' && (def = core.getInjectableDef(token)) && def.providedIn === 'root')
{\n if (provider.useFactory) {\n this._rootProviderOverrides.push({ provide: token, useFactory:
provider.useFactory, deps: provider.deps || [] });\n }\n else {\n
this._rootProviderOverrides.push({ provide: token, useValue: provider.useValue });\n }\n }\n
var flags = 0;\n var value;\n if (provider.useFactory) {\n flags |= 1024 /*
TypeFactoryProvider */;\n value = provider.useFactory;\n }\n else {\n flags |= 256
/* TypeValueProvider */;\n value = provider.useValue;\n }\n var deps = (provider.deps ||
[])\n .map(function (dep) {\n var depFlags = 0 /* None */;\n var depToken;\n if
(Array.isArray(dep)) {\n dep.forEach(function (entry) {\n if (entry instanceof
core.Optional) {\n depFlags |= 2 /* Optional */;\n }\n else if (entry
instanceof core.SkipSelf) {\n depFlags |= 1 /* SkipSelf */;\n }\n else
{\n depToken = entry;\n }\n });\n }\n else {\n
 depToken = dep;\n }\n return [depFlags, depToken];\n });\n
core.overrideProvider({ token: token, flags: flags, deps: deps, value: value, deprecatedBehavior: deprecated });\n
};\n TestBedViewEngine.prototype.overrideTemplateUsingTestingModule = function (component, template)
{\n this._assertNotInstantiated('overrideTemplateUsingTestingModule', 'override template');\n var
OverrideComponent = /** @class */ (function () {\n function OverrideComponent() {\n }\n
 return OverrideComponent;\n })();\n OverrideComponent.decorators = [\n {\n type:
core.Component, args: [{ selector: 'empty', template: template, jit: true }]\n }]\n this._templateOverrides.push({ component: component, templateOf: OverrideComponent });\n
};\n TestBedViewEngine.prototype.createComponent = function (component) {\n var _this = this;\n
this._initIfNeeded();\n var componentFactory = this._compiler.getComponentFactory(component);\n if
(!componentFactory) {\n throw new Error("Cannot create the component \"" + core.stringify(component) +
\" as it was not imported into the testing module!\");\n }\n // TODO: Don't cast as
`InjectionToken<boolean>`, declared type is boolean[]\n var noNgZone =
this.inject(ComponentFixtureNoNgZone, false);\n // TODO: Don't cast as `InjectionToken<boolean>`,
declared type is boolean[]\n var autoDetect = this.inject(ComponentFixtureAutoDetect, false);\n var

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ngZone = noNgZone ? null : this.inject(core.NgZone, null);\n var testComponentRenderer =
this.inject(TestComponentRenderer);\n var rootElId = \"root\" + _nextRootElementId$1++;
testComponentRenderer.insertRootElement(rootElId);\n var initComponent = function () {\n var
componentRef = componentFactory.create(core.Injector.NULL, [], \"#\n\" + rootElId, _this._moduleRef);\n
return new ComponentFixture(componentRef, ngZone, autoDetect);\n };\n var fixture = !ngZone ?
initComponent() : ngZone.run(initComponent);\n this._activeFixtures.push(fixture);\n return fixture;\n
 };\n return TestBedViewEngine;\n }());\n /**\n * @description\n * Configures and initializes
environment for unit testing and provides methods for\n * creating components and services in unit tests.\n *
* `TestBed` is the primary api for writing unit tests for Angular applications and libraries.\n *\n * Note: Use
`TestBed` in tests. It will be set to either `TestBedViewEngine` or `TestBedRenderer3`\n * according to the
compiler used.\n *\n * @publicApi\n */\n var TestBed = core.ivyEnabled ? TestBedRenderer3 :
TestBedViewEngine;\n /**\n * Returns a singleton of the applicable `TestBed`.\n *\n * It will be either an
instance of `TestBedViewEngine` or `TestBedRenderer3`.\n *\n * @publicApi\n */\n var getTestBed =
core.ivyEnabled ? _getTestBedRenderer3 : _getTestBedViewEngine;\n var TestBed$1;\n function
_getTestBedViewEngine() {\n return TestBed$1 = TestBed$1 || new TestBedViewEngine();\n }\n /**\n *
Allows injecting dependencies in `beforeEach` and `it`.\n *\n * Example:\n *\n * ```\n *
beforeEach(inject([Dependency, AClass], (dep, object) => {\n * // some code that uses `dep` and `object`\n *
// ... \n * }));\n *\n * it('...', inject([AClass], (object) => {\n * object.doSomething();\n *
expect(...);\n * }));\n * ```\n *\n * Notes:\n * - inject is currently a function because of some Traceur limitation the syntax
should\n * eventually\n * become `it(..., @Inject (object: AClass, async: AsyncTestCompleter) => { ...
});`\n *\n * @publicApi\n */\n function inject(tokens, fn) {\n var testBed = getTestBed();\n if
(tokens.indexOf(AsyncTestCompleter) >= 0) {\n // Not using an arrow function to preserve context passed
from call site\n return function () {\n var _this = this;\n // Return an async test method that
returns a Promise if AsyncTestCompleter is one of\n // the injected tokens.\n return
testBed.compileComponents().then(function () {\n var completer =
testBed.inject(AsyncTestCompleter);\n testBed.execute(tokens, fn, _this);\n return
completer.promise;\n });\n };\n } else {\n // Not using an arrow function to
preserve context passed from call site\n return function () {\n return testBed.execute(tokens, fn,
this);\n };\n }\n }\n /**\n * @publicApi\n */\n var InjectSetupWrapper = /** @class */
(function () {\n function InjectSetupWrapper(_moduleDef) {\n this._moduleDef = _moduleDef;\n }\n InjectSetupWrapper.prototype._addModule = function () {\n var moduleDef = this._moduleDef();\n if (moduleDef) {\n getTestBed().configureTestingModule(moduleDef);\n }\n };\n InjectSetupWrapper.prototype.inject = function (tokens, fn) {\n var self = this;\n // Not using an arrow
function to preserve context passed from call site\n return function () {\n self._addModule();\n return inject(tokens, fn).call(this);\n };\n };\n return InjectSetupWrapper;\n }());\n function
withModule(moduleDef, fn) {\n if (fn) {\n // Not using an arrow function to preserve context passed
from call site\n return function () {\n var testBed = getTestBed();\n if (moduleDef) {\n testBed.configureTestingModule(moduleDef);\n }\n return fn.apply(this);\n };\n }\n return new InjectSetupWrapper(function () { return moduleDef; });\n }\n /**\n * @license\n *
Copyright Google LLC All Rights Reserved.\n *\n * Use of this source code is governed by an MIT-style
license that can be\n * found in the LICENSE file at https://angular.io/license\n */\n var _global$1 = (typeof
window === 'undefined' ? global : window);\n // Reset the test providers and the fake async zone before each
test.\n if (_global$1.beforeEach) {\n _global$1.beforeEach(function () {\n TestBed.resetTestingModule();\n resetFakeAsyncZone();\n });\n }\n /**\n * This API should be
removed. But doing so seems to break `google3` and so it requires a bit of\n * investigation.\n *\n * A work
around is to mark it as `@codeGenApi` for now and investigate later.\n *\n * @codeGenApi\n */\n //
TODO(iminar): Remove this code in a safe way.\n var __core_private_testing_placeholder__ = \";\n /**\n *
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```

```
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 * This file only reexports content of the `src` folder. Keep it that way.
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 * Generated bundle index. Do not edit.
 exports.ComponentFixture = ComponentFixture;
 exports.ComponentFixtureAutoDetect = ComponentFixtureAutoDetect;
 exports.ComponentFixtureNoNgZone = ComponentFixtureNoNgZone;
 exports.InjectSetupWrapper = InjectSetupWrapper;
 exports.TestBed = TestBed;
 exports.TestComponentRenderer = TestComponentRenderer;
 exports.__core_private_testing_placeholder__ = __core_private_testing_placeholder__;
 exports.async = async;
 exports.discardPeriodicTasks = discardPeriodicTasks;
 exports.fakeAsync = fakeAsync;
 exports.flush = flush;
 exports.flushMicrotasks = flushMicrotasks;
 exports.getTestBed = getTestBed;
 exports.inject = inject;
 exports.resetFakeAsyncZone = resetFakeAsyncZone;
 exports.tick = tick;
 exports.waitForAsync = waitForAsync;
 exports.withModule = withModule;
 exports.MetadataOverride = MetadataOverride;
 exports.TestingCompiler = TestingCompiler;
 exports.TestingCompilerFactory = TestingCompilerFactory;
 exports.angular_packages_core_testing_testing_a = TestBedViewEngine;
 exports.angular_packages_core_testing_testing_b = TestBedRender3;
 exports.angular_packages_core_testing_testing_c = _getTestBedRender3;
 Object.defineProperty(exports, '__esModule', { value: true });
 //# sourceMappingURL=core-testing.umd.js.map
```

Found in path(s):

```
* /opt/cola/permits/1358260587_1657134851.1917841/0/core-11-0-2-tgz/package/bundles/core-testing.umd.min.js.map
```

No license file was found, but licenses were detected in source scan.

```
{"version":3,"file":"core.umd.js","sources":["../../../../external/npm/node_modules/tslib/tslib.es6.js", "../../../../packages/core/src/util/closure.ts", "../../../../packages/core/src/util/decorators.ts", "../../../../packages/core/src/di/metadata.ts", "../../../../packages/core/src/util/stringify.ts", "../../../../packages/core/src/util/assert.ts", "../../../../packages/core/src/util/property.ts", "../../../../packages/core/src/di/interface/defs.ts", "../../../../packages/core/src/di/injection_token.ts", "../../../../packages/core/src/metadata/di.ts", "../../../../packages/core/src/change_detection/constants.ts", "../../../../packages/core/src/util/global.ts", "../../../../packages/core/src/compiler/compiler_facade_interface.ts", "../../../../packages/core/src/compiler/compiler_facade.ts", "../../../../packages/core/src/di/forward_ref.ts", "../../../../packages/core/src/interface/type.ts", "../../../../packages/core/src/util/array_utils.ts", "../../../../packages/core/src/reflection/reflection_capabilities.ts", "../../../../packages/core/src/di/jit/util.ts", "../../../../packages/core/src/metadata/resource_loading.ts", "../../../../packages/core/src/metadata/view.ts", "../../../../packages/core/src/util/ng_dev_mode.ts", "../../../../packages/core/src/render3/empty.ts", "../../../../packages/core/src/render3/fields.ts", "../../../../packages/core/src/render3/definition.ts", "../../../../packages/core/src/render3/util/stringify_utils.ts", "../../../../packages/core/src/di/interface/injector.ts", "../../../../packages/core/src/di/inject_switch.ts", "../../../../packages/core/src/di/injector_compatibility.ts", "../../../../packages/core/src/render3/interfaces/document.ts", "../../../../packages/core/src/render3/interfaces/view.ts", "../../../../packages/core/src/render3/interfaces/container.ts", "../../../../packages/core/src/render3/interfaces/type_checks.ts", "../../../../packages/core/src/render3/assert.ts", "../../../../packages/core/src/render3/namespaces.ts", "../../../../packages/core/src/render3/interfaces/context.ts", "../../../../packages/core/src/render3/interfaces/renderer.ts", "../../../../packages/core/src/render3/util/view_utils.ts", "../../../../packages/core/src/render3/state.ts", "../../../../packages/core/src/util/security/trusted_types.ts", "../../../../packages/core/src/sanitization/bypass.ts", "../../../../packages/core/src/util/is_dev_mode.ts", "../../../../packages/core/src/sanitization/inert_body.ts", "../../../../package
```

s/core/src/sanitization/url\_sanitizer.ts", "../..../packages/core/src/sanitization/html\_sanitizer.ts", "../..../packages/core/src/sanitization/security.ts", "../..../packages/core/src/sanitization/sanitization.ts", "../..../packages/core/src/render3/definition\_factory.ts", "../..../packages/core/src/render3/error\_code.ts", "../..../packages/core/src/render3/errors\_di.ts", "../..../packages/core/src/interface/simple\_change.ts", "../..../packages/core/src/render3/features/ng\_onchanges\_feature.ts", "../..../packages/core/src/render3/hooks.ts", "../..../packages/core/src/render3/interfaces/injector.ts", "../..../packages/core/src/render3/interfaces/node.ts", "../..../packages/core/src/render3/node\_assert.ts", "../..../packages/core/src/render3/util/attrs\_utils.ts", "../..../packages/core/src/render3/util/injector\_utils.ts", "../..../packages/core/src/render3/di.ts", "../..../packages/core/src/util/errors.ts", "../..../packages/core/src/errors.ts", "../..../packages/core/src/error\_handler.ts", "../..../packages/core/src/metadata/schema.ts", "../..../packages/core/src/util/named\_array\_type.ts", "../..../packages/core/src/util/ng\_reflect.ts", "../..../packages/core/src/render3/context\_discovery.ts", "../..../packages/core/src/render3/util/misc\_utils.ts", "../..../packages/core/src/render3/errors.ts", "../..../packages/core/src/render/api\_flags.ts", "../..../packages/core/src/render3/i18n/i18n\_tree\_shaking.ts", "../..../packages/core/src/render3/interfaces/projection.ts", "../..../packages/core/src/render3/util/view\_traversal\_utils.ts", "../..../packages/core/src/render3/node\_manipulation.ts", "../..../packages/core/src/render3/styling/class\_differ.ts", "../..../packages/core/src/render3/node\_selector\_matcher.ts", "../..../packages/core/src/render3/tokens.ts", "../..../packages/core/src/render3/instructions/advance.ts", "../..../packages/core/src/render3/interfaces/styling.ts", 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der3/i18n/i18n\_locale\_id.ts", "../..../packages/core/src/render3/node\_manipulation\_i18n.ts", "../..../packages/core/src/render3/i18n/i18n\_insert\_before\_index.ts", "../..../packages/core/src/render3/i18n/i18n\_util.ts", "../..../packages/core/src/render3/i18n/i18n\_apply.ts", "../..../packages/core/src/render3/instructions/i18n\_icu\_container\_visitor.ts", "../..../packages/core/src/render3/i18n/i18n\_debug.ts", "../..../packages/core/src/render3/i18n/i18n\_parse.ts", "../..../packages/core/src/render3/i18n/i18n\_postprocess.ts", "../..../packages/core/src/render3/instructions/i18n.ts", "../..../packages/core/src/render3/instructions/all.ts", "../..../packages/core/src/render3/di\_set\_up.ts", "../..../packages/core/src/render3/features/providers\_feature.ts", "../..../packages/core/src/linker/component\_factory.ts", "../..../packages/core/src/linker/component\_factory\_resolver.ts", "../..../packages/core/src/util/noop.ts", "../..../packages/core/src/linker/element\_ref.ts", 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"../..../packages/core/src/view/util.ts", "../..../packages/core/src/view/ng\_module.ts", "../..../packages/core/src/view/view\_attach.ts", "../..../packages/core/src/view/refs.ts", "../..../packages/core/src/view/provider.ts", "../..../packages/core/src/render3/component\_ref.ts", "../..../packages/core/src/render3/metadata.ts", "../..../packages/core/src/linker/ng\_module\_factory\_registration.ts", "../..../packages/core/src/render3/ng\_module\_ref.ts", "../..../packages/core/src/render3/pure\_function.ts", "../..../packages/core/src/render3/pipe.ts", "../..../packages/core/src/event\_emitter.ts", "../..../packages/core/src/linker/query\_list.ts", "../..../packages/core/src/render3/interfaces/definition.ts", "../..../packages/core/src/render3/interfaces/query.ts", "../..../packages/core/src/render3/query.ts", "../..../packages/core/src/render3/view\_engine\_compatibility\_prebound.ts", "../..../packages/core/src/render3/index.ts", 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"../..../packages/core/src/core\_render3\_private\_export.ts", "../..../packages/core/src/codegen\_private\_exports.ts", "../..../packages/core/src/core.ts", "../..../packages/core/public\_api.ts", "../..../packages/core/index.ts", "../..../packages/core/core.ts"], "sourcesContent": ["/!\*

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\* Parameter decorator to be used on constructor parameters, which tells the DI framework to start dependency resolution from the parent injector. Resolution works upward through the injector hierarchy, so the local injector is not checked for a provider.

`@usageNotes` In the following example, the dependency can be resolved when instantiating a child, but not when instantiating the class itself.

```

<code-example path="core/di/ts/metadata_spec.ts" region="SkipSelf">
@see [Dependency Injection guide](guide/dependency-injection-in-action#skip).
@see `Self`
@see `Optional`
() : any;
new(): SkipSelf;
}
Type of the `SkipSelf` metadata.
@publicApi
export interface SkipSelf {
 `SkipSelf` decorator and metadata.
 @Annotation
 @publicApi
 export const SkipSelf: SkipSelfDecorator = makeParamDecorator('SkipSelf');
 Type of the `Host` decorator / constructor function.
 @publicApi
 export interface HostDecorator {
 Parameter decorator on a view-provider parameter of a class constructor that tells the DI framework to resolve the view by checking injectors of child elements, and stop when reaching the host element of the current component.
 @usageNotes
 The following shows use with the `@Optional` decorator, and allows for a null result.
 <code-example path="core/di/ts/metadata_spec.ts" region="Host">
 </code-example>
 For an extended example, see ["Dependency Injection Guide"](guide/dependency-injection-in-action#optional).
 () : any;
 new(): Host;
 }
 Type of the Host metadata.
 @publicApi
 export interface Host {
 }
 Host decorator and metadata.
 @Annotation
 @publicApi
 export const Host: HostDecorator = makeParamDecorator('Host');
 Type of the Attribute decorator / constructor function.
 @publicApi
 export interface AttributeDecorator {
 Parameter decorator for a directive constructor that designates a host-element attribute whose value is injected as a constant string literal.
 @usageNotes
 Suppose we have an `<input>` element and want to know its `type`.
 <code><input type="text"></code>
 The following example uses the decorator to inject the string literal `text` in a directive.
 { @example core/ts/metadata/metadata.ts region='attributeMetadata' }
 The following example uses the decorator in a component constructor.
 { @example core/ts/metadata/metadata.ts region='attributeFactory' }
 (name: string): any;
 new(name: string): Attribute;
 }
 Type of the Attribute metadata.
 @publicApi
 export interface Attribute {
 The name of the attribute whose value can be injected.
 attributeName: string;
 }
 Attribute decorator and metadata.
 @Annotation
 @publicApi
 export const Attribute: AttributeDecorator =
 makeParamDecorator('Attribute', (attributeName?: string) =>
 ({ attributeName }));
 }
 @license
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 https://angular.io/license
 export function stringify(token: any): string {
 if (typeof token === 'string') {
 return token;
 }
 if (Array.isArray(token)) {
 return '[' + token.map(stringify).join(', ') + ']';
 }
 if (token === null) {
 return " + token;
 }
 if (token.overriddenName) {
 return `${token.overriddenName}`;
 }
 if (token.name) {
 return `${token.name}`;
 }
 const res = token.toString();
 if (res === null) {
 return " + res;
 }
 const newLineIndex = res.indexOf('\n');
 return newLineIndex === -1 ? res :
 res.substring(0, newLineIndex);
 }
 Concatenates two strings with separator, allocating new strings only when necessary.
 @param before before string.
 @param separator separator string.
 @param after after string.
 @returns concatenated string.
 export function concatStringsWithSpace(before: string|null, after: string|null): string {
 return (before === null || before === "") ? (after === null ? " : after) : ((after === null || after === "") ? before : before + ' ' + after);
 }
 @license
 Copyright Google LLC All Rights Reserved.
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 // The functions in this file verify that the assumptions we are making about state in an instruction are correct before implementing any logic. They are meant only to be called in dev mode as sanity checks.
 import { stringify } from './stringify';
 export function
 assertNumber(actual: any, msg: string): asserts actual is number {
 if (!(typeof actual === 'number')) {
 throwError(msg, typeof actual, 'number', '===');
 }
 }
 export function assertNumberInRange(
 actual: any,
 minInclusive: number,
 maxInclusive: number): asserts actual is number {
 assertNumber(actual, 'Expected a

```

```

number');\n assertLessThanOrEqual(actual, maxInclusive, 'Expected number to be less than or equal to');\n
assertGreaterThanOrEqual(actual, minInclusive, 'Expected number to be greater than or equal to');\n}\n\n\nexport
function assertString(actual: any, msg: string): asserts actual is string {\n if (!(typeof actual === 'string')) {\n
throwError(msg, actual === null ? 'null' : typeof actual, 'string', '===');\n }\n}\n\n\nexport function
assertEqual<T>(actual: T, expected: T, msg: string) {\n if (!(actual === expected)) {\n throwError(msg, actual,
expected, '===');\n }\n}\n\n\nexport function assertNotEqual<T>(actual: T, expected: T, msg: string): asserts actual is
T {\n if (!(actual !== expected)) {\n throwError(msg, actual, expected, '!==');\n }\n}\n\n\nexport function
assertSame<T>(actual: T, expected: T, msg: string): asserts actual is T {\n if (!(actual === expected)) {\n
throwError(msg, actual, expected, '===');\n }\n}\n\n\nexport function assertNotSame<T>(actual: T, expected: T, msg:
string) {\n if (!(actual !== expected)) {\n throwError(msg, actual, expected, '!==');\n }\n}\n\n\nexport function
assertLessThan<T>(actual: T, expected: T, msg: string): asserts actual is T {\n if (!(actual < expected)) {\n
throwError(msg, actual, expected, '<');\n }\n}\n\n\nexport function assertLessThanOrEqual<T>(actual: T, expected:
T, msg: string): asserts actual is T {\n if (!(actual <= expected)) {\n throwError(msg, actual, expected, '<=');\n
}\n}\n\n\nexport function assertGreaterThan<T>(actual: T, expected: T, msg: string): asserts actual is T {\n if
(!(actual > expected)) {\n throwError(msg, actual, expected, '>');\n }\n}\n\n\nexport function
assertGreaterThanOrEqual<T>(actual: T, expected: T, msg: string): asserts actual is T {\n if (!(actual >=
expected)) {\n throwError(msg, actual, expected, '>=');\n }\n}\n\n\nexport function assertNotDefined<T>(actual: T,
msg: string) {\n if (actual !== null) {\n throwError(msg, actual, null, '!==');\n }\n}\n\n\nexport function
assertDefined<T>(actual: T|null|undefined, msg: string): asserts actual is T {\n if (actual === null) {\n
throwError(msg, actual, null, '!==');\n }\n}\n\n\nexport function throwError(msg: string): never;\n\n\nexport function
throwError(msg: string, actual: any, expected: any, comparison: string): never;\n\n\nexport function throwError(msg:
string, actual?: any, expected?: any, comparison?: string): never {\n throw new Error(\n `ASSERTION ERROR:
${msg}` +\n (comparison === null ? '' : ` [Expected=> ${expected} ${comparison} ${actual}
<=Actual]`));\n }\n}\n\n\nexport function assertDomNode(node: any): asserts node is Node {\n // If we're in a worker,
`Node` will not be defined.\n if (!(typeof Node !== 'undefined' && node instanceof Node) &&\n !(typeof node
=== 'object' && node !== null &&\n node.constructor.name === 'WebWorkerRenderNode')) {\n
throwError(`The provided value must be an instance of a DOM Node but got ${stringify(node)}`);\n
}\n}\n\n\n\nexport function assertIndexInRange(arr: any[], index: number) {\n assertDefined(arr, 'Array must be
defined.);\n const maxLen = arr.length;\n if (index < 0 || index >= maxLen) {\n throwError(`Index expected to be
less than ${maxLen} but got ${index}`);\n }\n}\n}\n\n\n\nexport function assertOneOf(value: any, ...validValues: any[])
{\n if (validValues.indexOf(value) !== -1) return true;\n throwError(`Expected value to be one of
${JSON.stringify(validValues)} but was ${\n JSON.stringify(value)}.`);\n }\n}`, "/**\n * @license\n * Copyright
Google LLC All Rights Reserved.\n *\n * Use of this source code is governed by an MIT-style license that can be\n
* found in the LICENSE file at https://angular.io/license\n */\n\n\nexport function
getClosureSafeProperty<T>(objWithPropertyToExtract: T): string {\n for (let key in objWithPropertyToExtract)
{\n if (objWithPropertyToExtract[key] === getClosureSafeProperty as any) {\n return key;\n }\n }\n throw
Error('Could not find renamed property on target object.);\n }\n}\n\n\n\nexport function setProperties(target: any,
source: any) {\n for (let key in source) {\n if (source.hasOwnProperty(key) && !target.hasOwnProperty(key)) {\n
target[key] = source[key];\n }\n }\n }\n}\n\n\n\nexport function fillProperties(target: {[key: string]: string},
source: {[key: string]: string}) {\n for (const key in source) {\n if
(source.hasOwnProperty(key) && !target.hasOwnProperty(key)) {\n target[key] = source[key];\n }\n }\n }\n}\n}\n\n\n\nexport function
import {Type} from './../interface/type';\nimport {getClosureSafeProperty} from './../util/property';\nimport
{ClassProvider, ConstructorProvider, ExistingProvider, FactoryProvider, StaticClassProvider, ValueProvider} from
'./provider';\n}\n}\n\n\n\nexport function Information about how a type or `InjectionToken` interfaces with the DI system.\n *\n *
At a minimum, this includes a `factory` which defines how to create the given type `T`, possibly\n * requesting
injection of other types if necessary.\n *\n * Optionally, a `providedIn` parameter specifies that the given type

```

belongs to a particular `InjectorDef`, `NgModule`, or a special scope (e.g. `'root'`). A value of `'null'` indicates that the injectable does not belong to any scope.

`@codeGenApi` `@publicApi` The ViewEngine compiler emits code with this type for injectables. This code is deployed to npm, and should be treated as public api.

```

export interface InjectableDef<T> {
 /** Specifies that the given type belongs to a particular injector:
 * - `InjectorType` such as `NgModule`,
 * - `root` the root injector
 * - `any` all injectors.
 * - `null`, does not belong to any injector. Must be explicitly listed in the injector
 * `providers`.
 */
 providedIn:
 InjectorType<any> | 'root' | 'platform' | 'any' | null;
 /** The token to which this definition belongs.
 * Note that this may not be the same as the type that the `factory` will create.
 */
 token: unknown;
 /** Factory method to execute to create an instance of the injectable.
 */
 factory: (t?: Type<any>) => T;
 /** In a case of no explicit injector, a location where the instance of the injectable is stored.
 */
 value: T | undefined;
}

```

Information about the providers to be included in an `Injector` as well as how the given type which carries the information should be created by the DI system. An `InjectorDef` can import other types which have `InjectorDefs`, forming a deep nested structure of providers with a defined priority (identically to how `NgModule`'s also have an import/dependency structure).

**NOTE:** This is a private type and should not be exported.

`@codeGenApi` `@publicApi` `@next` export interface `InjectorDef<T>` {  
`factory: () => T;`  
 // TODO(alxhub): Narrow down the type here once decorators properly change the return type of the  
 // class they are decorating (to add the prov property for example).  
`providers:`  
`(Type<any> | ValueProvider | ExistingProvider | FactoryProvider | ConstructorProvider |`  
`StaticClassProvider | ClassProvider | any[])[];`  
`imports:`  
`(InjectorType<any> | InjectorTypeWithProviders<any>);`  
}

A `Type` which has an `InjectableDef` static field. `InjectableDefType`'s contain their own Dependency Injection metadata and are usable in an `InjectorDef`-based `StaticInjector`.

`@publicApi` `@next` export interface `InjectableType<T>` extends `Type<T>` {  
 /\*\* Opaque type whose structure is highly version dependent. Do not rely on any properties.
 \*/
 prov: never;
}

A type which has an `InjectorDef` static field. `InjectorDefTypes` can be used to configure a `StaticInjector`.

`@publicApi` `@next` export interface `InjectorType<T>` extends `Type<T>` {  
 /\*\* Opaque type whose structure is highly version dependent. Do not rely on any properties.
 \*/
 inj: never;
}

Describes the `InjectorDef` equivalent of a `ModuleWithProviders`, an `InjectorDefType` with an associated array of providers. Objects of this type can be listed in the imports section of an `InjectorDef`.

**NOTE:** This is a private type and should not be exported.

`@next` export interface `InjectorTypeWithProviders<T>` {  
`ngModule: InjectorType<T>;`  
`providers?:`  
`(Type<any> | ValueProvider | ExistingProvider | FactoryProvider | ConstructorProvider |`  
`StaticClassProvider | ClassProvider | any[])[];`  
}

Construct an `InjectableDef` which defines how a token will be constructed by the DI system, and in which injectors (if any) it will be available. This should be assigned to a static `prov` field on a type, which will then be an `InjectableType`.

**Options:**  
`providedIn` determines which injectors will include the injectable, by either associating it with an @NgModule or other InjectorType, or by specifying that this injectable should be provided in the 'root' injector, which will be the application-level injector in most apps.  
factory` gives the zero argument function which will create an instance of the injectable. The factory can call inject to access the Injector and request injection of dependencies.  
@codeGenApi @publicApi This instruction has been emitted by ViewEngine for some time and is deployed to npm.  
@next export function defineInjectable<T>(opts: { token: unknown, providedIn?: Type<any> | 'root' | 'platform' | 'any' | null, factory: () => T, }): never {  
 return ({  
 token: opts.token,  
 providedIn: opts.providedIn as any | null,  
 factory: opts.factory,  
 value: undefined,  
 }) as InjectableDef<T> as never;
}`

`@deprecated` in v8, delete after v10. This API should be used only be generated code, and that code should now use `defineInjectable` instead.

`@publicApi` `@next` export const `defineInjectable = defineInjectable;`

Construct an `InjectorDef` which configures an injector. This should be assigned to a static injector def (`'inj'`) field on a type, which will then be an `InjectorType`.

**Options:**  
`factory` : an InjectorType is an instantiable type, so a zero argument factory` function to create the type must be provided. If that factory function needs to inject arguments, it`

can use the `inject` function.

`providers`: an optional array of providers to add to the injector. Each provider must either have a factory or point to a type which has a `prov` static property (the type must be an InjectableType`).`

`imports`: an optional array of imports of other `InjectorType`s or InjectorTypeWithModule`s` whose providers will also be added to the injector. Locally provided types will override providers from imports.`

`@codeGenApi`export function defineInjector(options: {factory: () => any, providers?: any[], imports?: any[]}): never {return ({factory: options.factory, providers: options.providers || [], imports: options.imports || [], } as InjectorDef<any>) as never;}`

`Read the injectable def (prov`) for type` in a way which is immune to accidentally reading inherited value.`

`@param type A type which may have its own (non-inherited) prov`.`

`export function getInjectableDef<T>(type: any): InjectableDef<T>|null {return getOwnDefinition(type, NG_PROV_DEF) || getOwnDefinition(type, NG_INJECTABLE_DEF);}`

`Return definition only if it is defined directly on type` and is not inherited from a base class of type`.`

`function getOwnDefinition<T>(type: any, field: string): InjectableDef<T>|null {return type.hasOwnProperty(field) ? type[field] : null;}`

`Read the injectable def (prov`) for type` or read the prov` from one of its ancestors.`

`@param type A type which may have prov`, via inheritance.`

`@deprecated Will be removed in a future version of Angular, where an error will occur in the scenario if we find the prov` on an ancestor only.`

`export function getInheritedInjectableDef<T>(type: any): InjectableDef<T>|null {const def = type && (type[NG_PROV_DEF] || type[NG_INJECTABLE_DEF]);if (def) {const typeName = getTypeName(type); // TODO(FW-1307): Re-add ngDevMode when closure can handle it // ngDevMode && console.warn(`DEPRECATED: DI is instantiating a token "${typeName}" that inherits its @Injectable decorator but does not provide one itself.` + `This will become an error in a future version of Angular. Please add @Injectable() to the "${typeName} typeName}`" class.);return def;} else {return null;}}`

`Gets the name of a type, accounting for some cross-browser differences.`

`function getTypeName(type: any): string { // `Function.prototype.name` behaves differently between IE and other browsers. In most browsers // it'll always return the name of the function itself, no matter how many other functions it // inherits from. On IE the function doesn't have its own `name` property, but it takes it from // the lowest level in the prototype chain. E.g. if we have `class Foo extends Parent` most // browsers will evaluate `Foo.name` to `Foo` while IE will return `Parent`. We work around // the issue by converting the function to a string and parsing its name out that way via a regex. if (type.hasOwnProperty('name')) {return type.name;} \n const match = (" + type).match(/^function\s*(\s*\[.+])? : match[1];}`

`Read the injector def type in a way which is immune to accidentally reading inherited value.`

`@param type type which may have an injector def (inj`)`

`export function getInjectorDef<T>(type: any): InjectorDef<T>|null {return type && (type.hasOwnProperty(NG_INJ_DEF) || type.hasOwnProperty(NG_INJECTOR_DEF)) ? (type as any)[NG_INJ_DEF] : null;}`

`export const NG_PROV_DEF = getClosureSafeProperty({prov: getClosureSafeProperty});`

`export const NG_INJ_DEF = getClosureSafeProperty({inj: getClosureSafeProperty});`

`We need to keep these around so we can read off old defs if new defs are unavailable`

`export const NG_INJECTABLE_DEF = getClosureSafeProperty({ngInjectableDef: getClosureSafeProperty});`

`export const NG_INJECTOR_DEF = getClosureSafeProperty({ngInjectorDef: getClosureSafeProperty});`

`","`

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`import {Type} from './interface/type';`

`import {assertLessThan} from './util/assert';`

`import {defineInjectable} from './interface/defs';`

`Creates a token that can be used in a DI Provider.`

`Use an InjectionToken` whenever the type you are injecting is not reified (does not have a runtime representation) such as when injecting an interface, callable type, array or parameterized type.`

`InjectionToken` is parameterized on T` which is the type of object which will be returned by the Injector`. This provides additional level of type safety.`

`interface MyInterface {...}`

`var myInterface = injector.get(new InjectionToken<MyInterface>('SomeToken'));`

`// myInterface is inferred to be MyInterface.`

`When creating an InjectionToken`, you can optionally specify a factory function which returns`

(possibly by creating) a default value of the parameterized type `T`. This sets up the `InjectionToken` using this factory as a provider as if it was defined explicitly in the application's root injector. If the factory function, which takes zero arguments, needs to inject dependencies, it can do so using the `inject` function. See below for an example. Additionally, if a `factory` is specified you can also specify the `providedIn` option, which overrides the above behavior and marks the token as belonging to a particular `NgModule`. As mentioned above, `root` is the default value for `providedIn`.

```

@usageNotes
Basic Example
Plain InjectionToken
@{example core/di/ts/injector_spec.ts region='InjectionToken'}
Tree-shakable InjectionToken
@{example core/di/ts/injector_spec.ts region='ShakableInjectionToken'}

@publicApi
export class InjectionToken<T> {
 /** @internal */
 readonly ngMetadataName = 'InjectionToken';
 readonly prov: never|undefined;
 constructor(protected _desc: string, options?: {
 providedIn?: Type<any>|'root'|'platform'|any|null, factory: () => T
 }) {
 this.prov = undefined;
 if (typeof options == 'number') {
 (typeof ngDevMode === 'undefined' || ngDevMode) &&
 assertLessThan(options, 0, 'Only negative numbers are supported here');
 // This is a special hack to assign __NG_ELEMENT_ID__ to this instance.
 // See `InjectorMarkers` (this as any).__NG_ELEMENT_ID__ = options;
 } else if (options !== undefined) {
 this.prov = defineInjectable({
 token: this,
 providedIn: options.providedIn || 'root',
 factory: options.factory,
 });
 }
 }
 toString(): string {
 return `InjectionToken ${this._desc}`;
 }
}

export interface InjectableDefToken<T> extends InjectionToken<T> {
 prov: never;
}

"/**
 * @license
 * Copyright Google LLC All Rights Reserved.
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 * found in the LICENSE file at
 * https://angular.io/license
 */
import {InjectionToken} from './di/injection_token';
import {Type} from './interface/type';
import {makePropDecorator} from './util/decorators';

A DI token that you can use to create a virtual [provider](guide/glossary#provider) that will populate the `entryComponents` field of components and NgModules based on its `useValue` property value. All components that are referenced in the `useValue` value (either directly or in a nested array or map) are added to the `entryComponents` property.

@usageNotes
The following example shows how the router can populate the `entryComponents` field of an NgModule based on a router configuration that refers to components.

typescript
// helper function inside the router
function provideRoutes(routes) {
 return [
 {provide: ROUTES, useValue: routes},
 {provide: ANALYZE_FOR_ENTRY_COMPONENTS, useValue: routes, multi: true}
];
}

// user code
let routes = [
 {path: '/root', component: RootComp},
 {path: '/teams', component: TeamsComp}
];

@NgModule({
 providers: [provideRoutes(routes)]
})
class ModuleWithRoutes {
 /**
 * @publicApi
 * @deprecated Since 9.0.0. With Ivy, this property is no longer necessary.
 */
 export const ANALYZE_FOR_ENTRY_COMPONENTS = new InjectionToken<any>('AnalyzeForEntryComponents');
}

/**
 * Type of the `Attribute` decorator / constructor function.
 * @publicApi
 * export interface AttributeDecorator {
 /**
 * Specifies that a constant attribute value should be injected.
 * The directive can inject constant string literals of host element attributes.
 * @usageNotes
 * Suppose we have an <input> element and want to know its `type`.
 *
 * html
 * <input type="text">
 *
 * A decorator can inject string literal `text` as in the following example.
 *
 * @example core/ts/metadata/metadata.ts region='attributeMetadata'
 * @publicApi
 * (name: string): any;
 * new(name: string): Attribute;
 }

 /**
 * Type of the Attribute metadata.
 * @publicApi
 * export interface Attribute {
 /**
 * The name of the attribute to be injected into the constructor.
 * attribute?: string;
 }

 /**
 * Type of the Query metadata.
 * @publicApi
 * export interface Query {
 descendants: boolean;
 first: boolean;
 read: any;
 isViewQuery: boolean;
 selector: any;
 static?: boolean;
 }

 /**
 * Base class for query metadata.
 * @see `ContentChildren`.
 * @see `ContentChild`.
 * @see `ViewChildren`.
 * @see `ViewChild`.
 * @publicApi
 * export abstract class Query {}

 /**
 * Type of the ContentChildren decorator / constructor function.
 * @see `ContentChildren`.
 * @publicApi
 * export interface ContentChildrenDecorator {
 /**
 * Parameter decorator that configures a content query.
 * Use to get the `QueryList` of elements or directives from the content DOM.
 * Any time a child element is added, removed, or moved, the query list will

```

be updated, and the changes observable of the query list will emit a new value.

Content queries are set before the `ngAfterContentInit` callback is called.

Does not retrieve elements or directives that are in other components' templates, since a component's template is always a black box to its ancestors.

**Metadata Properties:**

- selector** - The directive type or the name used for querying.
- descendants** - True to include all descendants, otherwise include only direct children.
- read** - Used to read a different token from the queried elements.

**@usageNotes**

Here is a simple demonstration of how the `ContentChildren` decorator can be used.

**@example**

```
core/di/ts/contentChildren/content_children_howto.ts region='HowTo'
```

**### Tab-pane example**

Here is a slightly more realistic example that shows how `ContentChildren` decorators can be used to implement a tab pane component.

**@example**

```
core/di/ts/contentChildren/content_children_example.ts region='Component'
```

**@Annotation**

```
(selector: Type<any>|InjectionToken<unknown>|Function|string, opts?: { descendants?: boolean, read?: any }): any;
new(selector: Type<any>|InjectionToken<unknown>|Function|string, opts?: { descendants?: boolean, read?: any }): Query;
```

Type of the `ContentChildren` metadata.

**@Annotation**

**@publicApi**

```
export type ContentChildren = Query;
export ContentChildrenDecorator = makePropDecorator(
 'ContentChildren',
 (selector?: any, data: any = {}) => ({ selector, first: false, isViewQuery: false, descendants: false, ...data }),
 Query);
```

Type of the `ContentChild` decorator / constructor function.

**@publicApi**

```
export interface ContentChildDecorator {
 // Parameter decorator that configures a content query.
 // Use to get the first element or the directive matching the selector from the content DOM.
 // If the content DOM changes, and a new child matches the selector, the property will be updated.
 // Content queries are set before the `ngAfterContentInit` callback is called.
 // Does not retrieve elements or directives that are in other components' templates, since a component's template is always a black box to its ancestors.
 // Metadata Properties:
 // selector - The directive type or the name used for querying.
 // read - Used to read a different token from the queried element.
 // static - True to resolve query results before change detection runs, false to resolve after change detection. Defaults to false.
 // @usageNotes
 // @example
 core/di/ts/contentChild/content_child_howto.ts region='HowTo'
```

**### Example**

**@example**

```
core/di/ts/contentChild/content_child_example.ts region='Component'
```

**@Annotation**

```
(selector: Type<any>|InjectionToken<unknown>|Function|string, opts?: { read?: any, static?: boolean }): any;
new(selector: Type<any>|InjectionToken<unknown>|Function|string, opts?: { read?: any, static?: boolean }): ContentChild;
```

Type of the `ContentChild` metadata.

**@publicApi**

```
export type ContentChild = Query;
export ContentChildDecorator = makePropDecorator(
 'ContentChild',
 (selector?: any, data: any = {}) => ({ selector, first: true, isViewQuery: false, descendants: true, ...data }),
 Query);
```

Type of the `ViewChildren` decorator / constructor function.

**@see** `ViewChildren`.

**@publicApi**

```
export interface ViewChildrenDecorator {
 // Parameter decorator that configures a view query.
 // Use to get the `QueryList` of elements or directives from the view DOM.
 // Any time a child element is added, removed, or moved, the query list will be updated, and the changes observable of the query list will emit a new value.
 // View queries are set before the `ngAfterViewInit` callback is called.
 // Metadata Properties:
 // selector - The directive type or the name used for querying.
 // read - Used to read a different token from the queried elements.
 // @usageNotes
 // @example
 core/di/ts/viewChildren/view_children_howto.ts region='HowTo'
```

**### Another example**

**@example**

```
core/di/ts/viewChildren/view_children_example.ts region='Component'
```

**@Annotation**

```
(selector: Type<any>|InjectionToken<unknown>|Function|string, opts?: { read?: any }): any;
new(selector: Type<any>|InjectionToken<unknown>|Function|string, opts?: { read?: any }): ViewChildren;
```

Type of the `ViewChildren` metadata.

**@publicApi**

```
export type ViewChildren = Query;
export ViewChildrenDecorator =
```



```

ViewChildDecorator = makePropDecorator(\n 'ViewChild',\n (selector?: any, data: any = {}) =>\n
({selector, first: false, isViewQuery: true, descendants: true, ...data}),\n Query);\n\n/**\n * Type of the ViewChild decorator / constructor function.\n *\n * @see `ViewChild`\n *\n * @publicApi\n */\nexport interface\n\nViewChildDecorator {\n /**\n * @description\n * Property decorator that configures a view query.\n * The change detector looks for the first element or the directive matching the selector\n * in the view DOM. If the view DOM changes, and a new child matches the selector,\n * the property is updated.\n *\n * View queries are set before the `ngAfterViewInit` callback is called.\n *\n * **Metadata Properties**:\n *\n * **selector** - The directive type or the name used for querying.\n * **read** - Used to read a different token from the queried elements.\n * **static** - True to resolve query results before change detection runs,\n * false to resolve after change detection. Defaults to false.\n *\n *\n * The following selectors are supported.\n * * Any class with the `@Component` or `@Directive` decorator\n * * A template reference variable as a string (e.g. query `<my-component #cmp></my-component>`\n * with `@ViewChild('cmp')`\n * * Any provider defined in the child component tree of the current component (e.g.\n * `@ViewChild(SomeService) someService: SomeService`)\n * * Any provider defined through a string token (e.g. `@ViewChild('someToken') someTokenVal:\n * any`)\n * * A `TemplateRef` (e.g. query `<ng-template></ng-template>` with `@ViewChild(TemplateRef)\n * template;`)\n *\n * @usageNotes\n *\n * { @example core/di/ts/viewChild/view_child_example.ts region='Component'}\n *\n * ### Example 2\n *\n * { @example core/di/ts/viewChild/view_child_howto.ts region='HowTo'}\n *\n * @Annotation\n * ^\n * (selector: Type<any>|InjectionToken<unknown>|Function|string,\n * opts?: {read?: any, static?: boolean}): any;\n * new(selector: Type<any>|InjectionToken<unknown>|Function|string,\n * opts?: {read?: any, static?: boolean}): ViewChild;\n *}\n\n/**\n * Type of the ViewChild metadata.\n *\n * @publicApi\n */\nexport type\n\nViewChild = Query;\n\n/**\n * ViewChild decorator and metadata.\n *\n * @Annotation\n * @publicApi\n */\nexport const\n\nViewChild: ViewChildDecorator = makePropDecorator(\n 'ViewChild',\n (selector: any, data: any) =>\n ({selector, first: true, isViewQuery: true, descendants: true, ...data}),\n Query);\n\n"/**\n * @license\n * Copyright Google LLC All Rights Reserved.\n *\n * Use of this source code is governed by an MIT-style license that can be\n * found in the LICENSE file at https://angular.io/license\n */\n\n/**\n * The strategy that the default change detector uses to detect changes.\n * When set, takes effect the next time change detection is triggered.\n *\n * @see { @link ChangeDetectorRef#usage-notes Change detection usage}\n *\n * @publicApi\n */\nexport enum\n\nChangeDetectionStrategy {\n /**\n * Use the `CheckOnce` strategy, meaning that automatic change detection is deactivated\n * until reactivated by setting the strategy to `Default` (`CheckAlways`).\n * Change detection can still be explicitly invoked.\n * This strategy applies to all child directives and cannot be overridden.\n * ^\n * OnPush = 0,\n */\n /**\n * Use the default `CheckAlways` strategy, in which change detection is automatic until\n * explicitly deactivated.\n * ^\n * Default = 1,\n */\n /**\n * Defines the possible states of the default change detector.\n * @see `ChangeDetectorRef`\n */\n export enum\n\nChangeDetectorStatus {\n /**\n * A state in which, after calling `detectChanges()`, the change detector\n * state becomes `Checked`, and must be explicitly invoked or reactivated.\n * ^\n * CheckOnce,\n */\n /**\n * A state in which change detection is skipped until the change detector mode\n * becomes `CheckOnce`.\n * ^\n * Checked,\n */\n /**\n * A state in which change detection continues automatically until explicitly\n * deactivated.\n * ^\n * CheckAlways,\n */\n /**\n * A state in which a change detector sub tree is not a part of the main tree and\n * should be skipped.\n * ^\n * Detached,\n */\n /**\n * Indicates that the change detector encountered an error checking a binding\n * or calling a directive lifecycle method and is now in an inconsistent state. Change\n * detectors in this state do not detect changes.\n * ^\n * Errored,\n */\n /**\n * Indicates that the change detector has been destroyed.\n * ^\n * Destroyed,\n */\n }\n\n /**\n * Reports whether a given strategy is currently the default for change detection.\n * @param changeDetectionStrategy The strategy to check.\n * @returns True if the given strategy is the current default, false otherwise.\n * @see `ChangeDetectorStatus`\n * @see `ChangeDetectorRef`\n */\n export function\n\nisDefaultChangeDetectionStrategy(changeDetectionStrategy: ChangeDetectionStrategy):\n boolean {\n return\n changeDetectionStrategy == null ||\n changeDetectionStrategy ===\n ChangeDetectionStrategy.Default;\n }\n\n"/**\n * @license\n * Copyright Google LLC All Rights Reserved.\n *\n * Use of this source code is governed by an MIT-style license that can be\n */

```





```

by\n * the `MyCustomComponent` constructor function.\n *\n * @publicApi\n *\nexport const Type =
Function;\n\nexport function isType(v: any): v is Type<any> {\n return typeof v === 'function';\n}\n\n/**\n *
@description\n *\n * Represents an abstract class `T`, if applied to a concrete class it would stop being\n *
instantiable.\n *\n * @publicApi\n *\nexport interface AbstractType<T> extends Function {\n prototype:
T;\n}\n\nexport interface Type<T> extends Function {\n new(...args: any[]): T;\n}\n\nexport type Mutable<T
extends {[x: string]: any}, K extends string> = {\n [P in K]: T[P];\n};\n\n/**\n * Returns a writable type version of
type.\n *\n * USAGE:\n * Given:\n * ```\n * interface Person {readonly name: string}\n * ```\n *\n * We would like
to get a read/write version of `Person`.\n * ```\n * const WritablePerson = Writable<Person>;\n * ```\n *\n * The
result is that you can do:\n *\n * ```\n * const readonlyPerson: Person = {name: 'Marry'};\n * readonlyPerson.name
= 'John'; // TypeError\n * (readonlyPerson as WritablePerson).name = 'John'; // OK\n *\n * // Error: Correctly
detects that `Person` did not have `age` property.\n * (readonlyPerson as WritablePerson).age = 30;\n * ```\n
*\n * @license\n * Copyright Google
LLC All Rights Reserved.\n *\n * Use of this source code is governed by an MIT-style license that can be\n * found
in the LICENSE file at https://angular.io/license\n *\nimport {assertEqual, assertLessThanOrEqual} from
'./assert';\n\n/**\n * Equivalent to ES6 spread, add each item to an array.\n *\n * @param items The items to add\n *
@param arr The array to which you want to add the items\n *\nexport function addAllToArray(items: any[], arr:
any[]) {\n for (let i = 0; i < items.length; i++) {\n arr.push(items[i]);\n }\n}\n\n/**\n * Flattens an array.\n
*\nexport function flatten(list: any[], dst?: any[]): any[] {\n if (dst === undefined) dst = list;\n for (let i = 0; i <
list.length; i++) {\n let item = list[i];\n if (Array.isArray(item)) {\n // we need to inline it.\n if (dst === list)
{\n // Our assumption that the list was already flat was wrong and\n // we need to clone flat since we need
to write to it.\n dst = list.slice(0, i);\n }\n flatten(item, dst);\n } else if (dst !== list) {\n
dst.push(item);\n }\n }\n return dst;\n}\n\nexport function deepForEach<T>(input: (T|any[])[], fn: (value: T) =>
void): void {\n input.forEach(value => Array.isArray(value) ? deepForEach(value, fn) : fn(value));\n}\n\nexport
function addToArray(arr: any[], index: number, value: any): void {\n // perf: array.push is faster than array.splice!\n
if (index >= arr.length) {\n arr.push(value);\n } else {\n arr.splice(index, 0, value);\n }\n}\n\nexport function
removeFromArray(arr: any[], index: number): any {\n // perf: array.pop is faster than array.splice!\n if (index >=
arr.length - 1) {\n return arr.pop();\n } else {\n return arr.splice(index, 1)[0];\n }\n}\n\nexport function
newArray<T = any>(size: number): T[];\nexport function newArray<T>(size: number, value: T): T[];\nexport
function newArray<T>(size: number, value?: T): T[] {\n const list: T[] = [];\n for (let i = 0; i < size; i++) {\n
list.push(value!);\n }\n return list;\n}\n\n/**\n * Remove item from array (Same as `Array.splice()` but faster.)\n
*\n * `Array.splice()` is not as fast because it has to allocate an array for the elements which were\n * removed. This
causes memory pressure and slows down code when most of the time we don't\n * care about the deleted items
array.\n *\n * https://jsperf.com/fast-array-splice (About 20x faster)\n *\n * @param array Array to splice\n *
@param index Index of element in array to remove.\n * @param count Number of items to remove.\n *\nexport
function arraySplice(array: any[], index: number, count: number): void {\n const length = array.length - count;\n while
(index < length) {\n array[index] = array[index + count];\n index++;\n }\n while (count--> 0) {\n
array.pop(); // shrink the array\n }\n}\n\n/**\n * Same as `Array.splice(index, 0, value)` but faster.\n *\n * `Array.splice()` is not fast because it has to allocate an array for the elements which were\n * removed. This causes
memory pressure and slows down code when most of the time we don't\n * care about the deleted items array.\n *\n * @param array Array to splice.\n * @param index Index in array where the `value` should be added.\n * @param
value Value to add to array.\n *\nexport function arrayInsert(array: any[], index: number, value: any): void {\n if
(!ngDevMode && assertLessThanOrEqual(index, array.length, 'Can\\'t insert past array end.);\n let end =
array.length;\n while (end > index) {\n const previousEnd = end - 1;\n array[end] = array[previousEnd];\n end
= previousEnd;\n }\n array[index] = value;\n}\n\n/**\n * Same as `Array.splice2(index, 0, value1, value2)` but
faster.\n *\n * `Array.splice()` is not fast because it has to allocate an array for the elements which were\n * removed. This causes
memory pressure and slows down code when most of the time we don't\n * care about the deleted items array.\n *\n * @param array Array to splice.\n * @param index Index in array where the `value`
should be added.\n * @param value1 Value to add to array.\n * @param value2 Value to add to array.\n *\nexport

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function arrayInsert2(array: any[], index: number, value1: any, value2: any): void {\n ngDevMode &&
assertLessThanOrEqual(index, array.length, 'Can\\'t insert past array end.');
```

let end = array.length;\n if (end == index) {\n // inserting at the end.\n array.push(value1, value2);\n } else if (end === 1) {\n // corner case when we have less items in array than we have items to insert.\n array.push(value2, array[0]);\n array[0] = value1;\n } else {\n end--;\n array.push(array[end - 1], array[end]);\n while (end > index) {\n const previousEnd = end - 2;\n array[end] = array[previousEnd];\n end--;\n }\n array[index] = value1;\n array[index + 1] = value2;\n }\n}\n\n/\*\*\n \* Insert a `value` into an `array` so that the array remains sorted.\n \*\n \* NOTE:\n \* - Duplicates are not allowed, and are ignored.\n \* - This uses binary search algorithm for fast inserts.\n \* @param array A sorted array to insert into.\n \* @param value The value to insert.\n \* @returns index of the inserted value.\n \*/\n\nexport function arrayInsertSorted(array: string[], value: string): number {\n let index = arrayIndexOfSorted(array, value);\n if (index < 0) {\n // if we did not find it insert it.\n index = ~index;\n arrayInsert(array, index, value);\n }\n return index;\n }\n}\n\n/\*\*\n \* Remove `value` from a sorted `array`.\n \*\n \* NOTE:\n \* - This uses binary search algorithm for fast removals.\n \* @param array A sorted array to remove from.\n \* @param value The value to remove.\n \* @returns index of the removed value.\n \* - positive index if value found and removed.\n \* - negative index if value not found. (~index` to get the value where it should have been\n \* inserted)\n \*/\n\nexport function arrayRemoveSorted(array: string[], value: string): number {\n const index = arrayIndexOfSorted(array, value);\n if (index >= 0) {\n arraySplice(array, index, 1);\n }\n return index;\n }\n}\n\n/\*\*\n \* Get an index of an `value` in a sorted `array`.\n \*\n \* NOTE:\n \* - This uses binary search algorithm for fast removals.\n \* @param array A sorted array to binary search.\n \* @param value The value to look for.\n \* @returns index of the value.\n \* - positive index if value found.\n \* - negative index if value not found. (~index` to get the value where it should have been\n \* located)\n \*/\n\nexport function arrayIndexOfSorted(array: string[], value: string): number {\n return \_arrayIndexOfSorted(array, value, 0);\n }\n}\n\n/\*\*\n \* `KeyValueArray` is an array where even positions contain keys and odd positions contain values.\n \*\n \* `KeyValueArray` provides a very efficient way of iterating over its contents. For small\n \* sets (~10) the cost of binary searching an `KeyValueArray` has about the same performance\n \* characteristics that of a `Map` with significantly better memory footprint.\n \*\n \* If used as a `Map` the keys are stored in alphabetical order so that they can be binary searched\n \* for retrieval.\n \*\n \* See: `keyValueArraySet`, `keyValueArrayGet`, `keyValueArrayIndexOf`, `keyValueArrayDelete`.\n \*/\n\nexport interface KeyValueArray<VALUE> extends Array<VALUE|string> {\n \_\_brand\_\_: 'array-map';\n }\n}\n\n/\*\*\n \* Set a `value` for a `key`.\n \*\n \* @param keyValueArray to modify.\n \* @param key The key to locate or create.\n \* @param value The value to set for a `key`.\n \* @returns index (always even) of where the value was set.\n \*/\n\nexport function keyValueArraySet<V>(keyValueArray: KeyValueArray<V>, key: string, value: V): number {\n let index = keyValueArrayIndexOf(keyValueArray, key);\n if (index >= 0) {\n // if we found it set it.\n keyValueArray[index | 1] = value;\n } else {\n index = ~index;\n arrayInsert2(keyValueArray, index, key, value);\n }\n return index;\n }\n}\n\n/\*\*\n \* Retrieve a `value` for a `key` (on `undefined` if not found.)\n \*\n \* @param keyValueArray to search.\n \* @param key The key to locate.\n \* @return The `value` stored at the `key` location or `undefined` if not found.\n \*/\n\nexport function keyValueArrayGet<V>(keyValueArray: KeyValueArray<V>, key: string): V|undefined {\n const index = keyValueArrayIndexOf(keyValueArray, key);\n if (index >= 0) {\n // if we found it retrieve it.\n return keyValueArray[index | 1] as V;\n }\n return undefined;\n }\n}\n\n/\*\*\n \* Retrieve a `key` index value in the array or `-1` if not found.\n \*\n \* @param keyValueArray to search.\n \* @param key The key to locate.\n \* @returns index of where the key is (or should have been.)\n \* - positive (even) index if key found.\n \* - negative index if key not found. (~index` (even) to get the index where it should have\n \* been inserted.)\n \*/\n\nexport function keyValueArrayIndexOf<V>(keyValueArray: KeyValueArray<V>, key: string): number {\n return \_arrayIndexOfSorted(keyValueArray as string[], key, 1);\n }\n}\n\n/\*\*\n \* Delete a `key` (and `value`) from the `KeyValueArray`.\n \*\n \* @param keyValueArray to modify.\n \* @param key The key to locate or delete (if exist).\n \* @returns index of where the key was (or should have been.)\n \* - positive (even) index if key found and deleted.\n \* - negative index if key not found. (~index` (even) to get the index where it should have\n \* been.)\n \*/\n



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newArray(paramTypes.length);\n }\n\n for (let i = 0; i < result.length; i++) {\n // TS outputs Object for
parameters without types, while Traceur omits\n // the annotations. For now we preserve the Traceur behavior to
aid\n // migration, but this can be revisited.\n if (typeof paramTypes === 'undefined') {\n result[i] = [];\n } else if (paramTypes[i] && paramTypes[i] !== Object) {\n result[i] = [paramTypes[i)];\n } else {\n result[i] = [];\n }\n if (paramAnnotations && paramAnnotations[i] !== null) {\n result[i] =
result[i].concat(paramAnnotations[i]);\n }\n }\n return result;\n}\n\nprivate _ownParameters(type:
Type<any>, parentCtor: any): any[][]|null {\n const typeStr = type.toString();\n // If we have no decorators, we
only have function.length as metadata.\n // In that case, to detect whether a child class declared an own constructor
or not,\n // we need to look inside of that constructor to check whether it is\n // just calling the parent.\n // This
also helps to work around for https://github.com/Microsoft/TypeScript/issues/12439\n // that sets
'design:paramtypes' to []\n // if a class inherits from another class but has no ctor declared itself.\n if
(isDelegateCtor(typeStr)) {\n return null;\n }\n\n // Prefer the direct API.\n if ((<any>type).parameters &&
(<any>type).parameters !== parentCtor.parameters) {\n return (<any>type).parameters;\n }\n\n // API of
tsickle for lowering decorators to properties on the class.\n const tsickleCtorParams =
(<any>type).ctorParameters;\n if (tsickleCtorParams && tsickleCtorParams !== parentCtor.ctorParameters) {\n
\n // Newer tsickle uses a function closure\n // Retain the non-function case for compatibility with older tsickle\n
const ctorParameters =\n typeof tsickleCtorParams === 'function' ? tsickleCtorParams() : tsickleCtorParams;\n
 const paramTypes = ctorParameters.map((ctorParam: any) => ctorParam && ctorParam.type);\n const
paramAnnotations = ctorParameters.map(\n (ctorParam: any) =>\n ctorParam &&
convertTsickleDecoratorIntoMetadata(ctorParam.decorators));\n return
this._zipTypesAndAnnotations(paramTypes, paramAnnotations);\n }\n\n // API for metadata created by
invoking the decorators.\n const paramAnnotations = type.hasOwnProperty(PARAMETERS) && (type as
any)[PARAMETERS];\n const paramTypes = this._reflect && this._reflect.getOwnMetadata &&\n
this._reflect.getOwnMetadata('design:paramtypes', type);\n if (paramTypes || paramAnnotations) {\n return
this._zipTypesAndAnnotations(paramTypes, paramAnnotations);\n }\n\n // If a class has no decorators, at least
create metadata\n // based on function.length.\n // Note: We know that this is a real constructor as we checked\n
// the content of the constructor above.\n return newArray<any[]>(type.length);\n }\n\n parameters(type:
Type<any>): any[][] {\n // Note: only report metadata if we have at least one class decorator\n // to stay in sync
with the static reflector.\n if (!isType(type)) {\n return [];\n }\n const parentCtor = getParentCtor(type);\n
let parameters = this._ownParameters(type, parentCtor);\n if (!parameters && parentCtor !== Object) {\n
\n parameters = this.parameters(parentCtor);\n }\n return parameters || [];\n }\n\n private
_ownAnnotations(typeOrFunc: Type<any>, parentCtor: any): any[][]|null {\n // Prefer the direct API.\n if
((<any>typeOrFunc).annotations && (<any>typeOrFunc).annotations !== parentCtor.annotations) {\n let
annotations = (<any>typeOrFunc).annotations;\n if (typeof annotations === 'function' &&
annotations.annotations) {\n annotations = annotations.annotations;\n }\n return annotations;\n }\n\n //
API of tsickle for lowering decorators to properties on the class.\n if ((<any>typeOrFunc).decorators &&
(<any>typeOrFunc).decorators !== parentCtor.decorators) {\n return
convertTsickleDecoratorIntoMetadata((<any>typeOrFunc).decorators);\n }\n\n // API for metadata created by
invoking the decorators.\n if (typeOrFunc.hasOwnProperty(ANNOTATIONS)) {\n return (typeOrFunc as
any)[ANNOTATIONS];\n }\n return null;\n }\n\n annotations(typeOrFunc: Type<any>): any[] {\n if
(!isType(typeOrFunc)) {\n return [];\n }\n const parentCtor = getParentCtor(typeOrFunc);\n const
ownAnnotations = this._ownAnnotations(typeOrFunc, parentCtor) || [];\n const parentAnnotations = parentCtor
!== Object ? this.annotations(parentCtor) : [];\n return parentAnnotations.concat(ownAnnotations);\n }\n\n private
_ownPropMetadata(typeOrFunc: any, parentCtor: any): {[key: string]: any[]}|null {\n // Prefer the direct
API.\n if ((<any>typeOrFunc).propMetadata &&\n (<any>typeOrFunc).propMetadata !==
parentCtor.propMetadata) {\n let propMetadata = (<any>typeOrFunc).propMetadata;\n if (typeof
propMetadata === 'function' && propMetadata.propMetadata) {\n propMetadata =
propMetadata.propMetadata;\n }\n return propMetadata;\n }\n\n // API of tsickle for lowering decorators

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to properties on the class.\n if ((<any>typeOrFunc).propDecorators &&\n (<any>typeOrFunc).propDecorators\n !== parentCtor.propDecorators) {\n const propDecorators = (<any>typeOrFunc).propDecorators;\n const\n propMetadata = <{[key: string]: any[]}>{};\n Object.keys(propDecorators).forEach(prop => {\n propMetadata[prop] = convertTsickleDecoratorIntoMetadata(propDecorators[prop]);\n });\n return\n propMetadata;\n }\n // API for metadata created by invoking the decorators.\n if\n (typeOrFunc.hasOwnProperty(PROP_METADATA)) {\n return (typeOrFunc as any)[PROP_METADATA];\n }\n return null;\n }\n\n propMetadata(typeOrFunc: any): {[key: string]: any[]} {\n if (!isType(typeOrFunc)) {\n return {};\n }\n const parentCtor = getParentCtor(typeOrFunc);\n const propMetadata: {[key: string]: any[]}\n = {};\n if (parentCtor !== Object) {\n const parentPropMetadata = this.propMetadata(parentCtor);\n Object.keys(parentPropMetadata).forEach((propName) => {\n propMetadata[propName] =\n parentPropMetadata[propName];\n });\n }\n const ownPropMetadata = this._ownPropMetadata(typeOrFunc,\n parentCtor);\n if (ownPropMetadata) {\n Object.keys(ownPropMetadata).forEach((propName) => {\n const decorators: any[] = [];\n if (propMetadata.hasOwnProperty(propName)) {\n decorators.push(...propMetadata[propName]);\n }\n decorators.push(...ownPropMetadata[propName]);\n propMetadata[propName] = decorators;\n });\n }\n return propMetadata;\n }\n\n_ownPropMetadata(typeOrFunc: any): {[key: string]: any[]} {\n if (!isType(typeOrFunc)) {\n return {};\n }\n return this._ownPropMetadata(typeOrFunc, getParentCtor(typeOrFunc)) || {};\n }\n\n hasLifecycleHook(type: any,\n lcProperty: string): boolean {\n return type instanceof Type && lcProperty in type.prototype;\n }\n\n guards(type: any): {[key: string]: any} {\n return {};\n }\n\n getter(name: string): GetterFn {\n return\n <GetterFn>new Function('o', 'return o.' + name + ';');\n }\n\n setter(name: string): SetterFn {\n return\n <SetterFn>new Function('o', 'v', 'return o.' + name + ' = v;');\n }\n\n method(name: string): MethodFn {\n const\n functionBody = `if (!o.${name}) throw new Error("\`"${name}"\` is undefined");\n return o.${name}.apply(o,\n args);`; \n return <MethodFn>new Function('o', 'args', functionBody);\n }\n\n // There is not a concept of import\n uri in Js, but this is useful in developing Dart applications.\n importUri(type: any): string {\n // StaticSymbol\n if (typeof type === 'object' && type['filePath']) {\n return type['filePath'];\n }\n // Runtime type\n return\n `./${stringify(type)}`;\n }\n\n resourceUri(type: any): string {\n return `./${stringify(type)}`;\n }\n\n resolveIdentifier(name: string, moduleId: string, members: string[], runtime: any): any {\n return runtime;\n }\n\n resolveEnum(enumIdentifier: any, name: string): any {\n return enumIdentifier[name];\n }\n\n function\n convertTsickleDecoratorIntoMetadata(decoratorInvocations: any[]): any[] {\n if (!decoratorInvocations) {\n return [];\n }\n return decoratorInvocations.map(decoratorInvocation => {\n const decoratorType =\n decoratorInvocation.type;\n const annotationCls = decoratorType.annotationCls;\n const annotationArgs =\n decoratorInvocation.args ? decoratorInvocation.args : [];\n return new annotationCls(...annotationArgs);\n });\n }\n\n function getParentCtor(ctor: Function): Type<any> {\n const parentProto = ctor.prototype ?\n Object.getPrototypeOf(ctor.prototype) : null;\n const parentCtor = parentProto ? parentProto.constructor : null;\n //\n Note: We always use `Object` as the null value\n // to simplify checking later on.\n return parentCtor ||\n Object;\n }\n\n /**\n * @license\n * Copyright Google LLC All Rights Reserved.\n * Use of this source code is\n governed by an MIT-style license that can be\n * found in the LICENSE file at https://angular.io/license\n */\n import {CompilerFacade, getCompilerFacade, R3DependencyMetadataFacade,\n R3ResolvedDependencyType} from '../compiler/compiler_facade';\n import {Type} from\n '../interface/type';\n import {ReflectionCapabilities} from '../reflection/reflection_capabilities';\n import\n {Attribute, Host, Inject, Optional, Self, SkipSelf} from '../metadata';\n let _reflect: ReflectionCapabilities | null =\n null;\n export function getReflect(): ReflectionCapabilities {\n return (_reflect = _reflect || new\n ReflectionCapabilities());\n }\n export function reflectDependencies(type: Type<any>):\n R3DependencyMetadataFacade[] {\n return convertDependencies(getReflect().parameters(type));\n }\n export\n function convertDependencies(deps: any[]): R3DependencyMetadataFacade[] {\n const compiler =\n getCompilerFacade();\n return deps.map(dep => reflectDependency(compiler, dep));\n }\n function\n reflectDependency(compiler: CompilerFacade, dep: any|any[]): R3DependencyMetadataFacade {\n const meta:\n R3DependencyMetadataFacade = {\n token: null,\n host: false,\n optional: false,\n resolved:

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compiler.R3ResolvedDependencyType.Token,\n self: false,\n skipSelf: false,\n };\n\n function
setTokenAndResolvedType(token: any): void {\n meta.resolved =
compiler.R3ResolvedDependencyType.Token;\n meta.token = token;\n };\n\n if (Array.isArray(dep) &&
dep.length > 0) {\n for (let j = 0; j < dep.length; j++) {\n const param = dep[j];\n if (param === undefined)
{\n // param may be undefined if type of dep is not set by ngtscl\n continue;\n }\n const proto =
Object.getPrototypeOf(param);\n if (param instanceof Optional || proto.ngMetadataName === 'Optional') {\n
meta.optional = true;\n } else if (param instanceof SkipSelf || proto.ngMetadataName === 'SkipSelf') {\n
meta.skipSelf = true;\n } else if (param instanceof Self || proto.ngMetadataName === 'Self') {\n
meta.self = true;\n } else if (param instanceof Host || proto.ngMetadataName === 'Host') {\n
meta.host = true;\n }
else if (param instanceof Inject) {\n
meta.token = param.token;\n } else if (param instanceof Attribute) {\n
if (param.attributeName === undefined) {\n
throw new Error(`Attribute name must be defined.`);\n
}\n
meta.token = param.attributeName;\n
meta.resolved = compiler.R3ResolvedDependencyType.Attribute;\n
}
else if (param.__ChangeDetectorRef__ === true) {\n
meta.token = param;\n
meta.resolved =
compiler.R3ResolvedDependencyType.ChangeDetectorRef;\n
} else {\n
setTokenAndResolvedType(param);\n
}\n
} else if (dep === undefined || (Array.isArray(dep) &&
dep.length === 0)) {\n
meta.token = undefined;\n
meta.resolved = R3ResolvedDependencyType.Invalid;\n
}
else {\n
setTokenAndResolvedType(dep);\n
}\n
return meta;\n
}\n
}"/**\n * @license\n * Copyright Google LLC
All Rights Reserved.\n * Use of this source code is governed by an MIT-style license that can be\n * found in
the LICENSE file at https://angular.io/license\n */\n\nimport {Type} from './interface/type';\nimport {Component}
from './directives';\n\n/**\n * Used to resolve resource URLs on `@Component` when used with JIT
compilation.\n *\n * Example:\n * ```\n * @Component({\n * selector: 'my-comp',\n * templateUrl: 'my-
comp.html', // This requires asynchronous resolution\n * })\n * class MyComponent{\n * }\n *\n * // Calling
`renderComponent` will fail because `renderComponent` is a synchronous process\n * // and `MyComponent`'s
`@Component.templateUrl` needs to be resolved asynchronously.\n *\n * // Calling `resolveComponentResources`\n * will resolve `@Component.templateUrl` into\n * // `@Component.template`, which allows `renderComponent` to
proceed in a synchronous manner.\n *\n * // Use browser's `fetch()` function as the default resource resolution
strategy.\n * resolveComponentResources(fetch).then(() => {\n * // After resolution all URLs have been converted
into `template` strings.\n * renderComponent(MyComponent);\n * });\n *\n * NOTE: In AOT the
resolution happens during compilation, and so there should be no need\n * to call this method outside JIT mode.\n
*\n * @param resourceResolver a function which is responsible for returning a `Promise` to the\n * contents of the
resolved URL. Browser's `fetch()` method is a good default implementation.\n */\n\nexport function
resolveComponentResources(\n resourceResolver: (url: string) => (Promise<string>|{text(): Promise<string>}>)):\n
Promise<void> {\n // Store all promises which are fetching the resources.\n const componentResolved:\n
Promise<void>[] = [];\n // Cache so that we don't fetch the same resource more than once.\n const urlMap = new
Map<string, Promise<string>>();\n function cachedResourceResolve(url: string): Promise<string> {\n let promise
= urlMap.get(url);\n if (!promise) {\n const resp = resourceResolver(url);\n urlMap.set(url, promise =
resp.then(unwrapResponse));\n }\n return promise;\n }\n\n componentResourceResolutionQueue.forEach((component: Component, type: Type<any>) => {\n const promises:\n
Promise<void>[] = [];\n if (component.templateUrl) {\n
promises.push(cachedResourceResolve(component.templateUrl).then((template) => {\n component.template =
template;\n }));\n }\n const styleUrls = component.styleUrls;\n const styles = component.styles ||
(component.styles = []);\n const styleOffset = component.styles.length;\n styleUrls &&\n
styleUrls.forEach((styleUrl, index) => {\n styles.push(""); // pre-allocate array.\n
promises.push(cachedResourceResolve(styleUrl).then((style) => {\n styles[styleOffset + index] = style;\n
styleUrls.splice(styleUrls.indexOf(styleUrl), 1);\n if (styleUrls.length === 0) {\n component.styleUrls =
undefined;\n }\n }));\n });\n const fullyResolved = Promise.all(promises).then(() =>\n
componentDefResolved(type));\n componentResolved.push(fullyResolved);\n });\n clearResolutionOfComponentResourcesQueue();\n return Promise.all(componentResolved).then(() =>

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const newCounters: NgDevModePerfCounters = {\n namedConstructors:
locationString.indexOf('ngDevMode=namedConstructors') != -1,\n firstCreatePass: 0,\n tNode: 0,\n tView:
0,\n rendererCreateTextNode: 0,\n rendererSetText: 0,\n rendererCreateElement: 0,\n
rendererAddEventListener: 0,\n rendererSetAttribute: 0,\n rendererRemoveAttribute: 0,\n rendererSetProperty:
0,\n rendererSetClassName: 0,\n rendererAddClass: 0,\n rendererRemoveClass: 0,\n rendererSetStyle: 0,\n
rendererRemoveStyle: 0,\n rendererDestroy: 0,\n rendererDestroyNode: 0,\n rendererMoveNode: 0,\n
rendererRemoveNode: 0,\n rendererAppendChild: 0,\n rendererInsertBefore: 0,\n rendererCreateComment:
0,\n };\n\n // Make sure to refer to ngDevMode as ['ngDevMode'] for closure.\n const allowNgDevModeTrue =
locationString.indexOf('ngDevMode=false') === -1;\n global['ngDevMode'] = allowNgDevModeTrue &&
newCounters;\n return newCounters;\n}\n\n/**\n * This function checks to see if the `ngDevMode` has been set. If
yes,\n * then we honor it, otherwise we default to dev mode with additional checks.\n *\n * The idea is that unless
we are doing production build where we explicitly\n * set `ngDevMode == false` we should be helping the
developer by providing\n * as much early warning and errors as possible.\n *\n * `defineComponent` is guaranteed
to have been called before any component template functions\n * (and thus Ivy instructions), so a single
initialization there is sufficient to ensure ngDevMode\n * is defined for the entire instruction set.\n *\n * When
checking `ngDevMode` on toplevel, always init it before referencing it\n * (e.g. `(typeof ngDevMode ===
'undefined' || ngDevMode) && initNgDevMode()`), otherwise you can\n * get a `ReferenceError` like in
https://github.com/angular/angular/issues/31595.\n *\n * Details on possible values for `ngDevMode` can be found
on its docstring.\n *\n * NOTE:\n * - changes to the `ngDevMode` name must be synced with `compiler-
cli/src/tooling.ts`.\n *\n * ^\nexport function initNgDevMode(): boolean {\n // The below checks are to ensure that
calling `initNgDevMode` multiple times does not\n // reset the counters.\n // If the `ngDevMode` is not an object,
then it means we have not created the perf counters\n // yet.\n if (typeof ngDevMode === 'undefined' ||
ngDevMode) {\n if (typeof ngDevMode !== 'object') {\n ngDevModeResetPerfCounters();\n }\n return
typeof ngDevMode !== 'undefined' && !!ngDevMode;\n }\n return false;\n}\n\n"/**\n * @license\n * Copyright
Google LLC All Rights Reserved.\n *\n * Use of this source code is governed by an MIT-style license that can be\n
* found in the LICENSE file at https://angular.io/license\n *\nimport {initNgDevMode} from
'./util/ng_dev_mode';\n\n/**\n * This file contains reusable \"empty\" symbols that can be used as default return
values\n * in different parts of the rendering code. Because the same symbols are returned, this\n * allows for
identity checks against these values to be consistently used by the framework\n * code.\n *\nimport const
EMPTY_OBJ: {} = {};\nexport const EMPTY_ARRAY: any[] = [];\n\n// freezing the values prevents any code
from accidentally inserting new values in\nif ((typeof ngDevMode === 'undefined' || ngDevMode) &&
initNgDevMode()) {\n // These property accesses can be ignored because ngDevMode will be set to false\n // when
optimizing code and the whole if statement will be dropped.\n // tslint:disable-next-line:no-toplevel-property-
access\n Object.freeze(EMPTY_OBJ);\n // tslint:disable-next-line:no-toplevel-property-access\n
Object.freeze(EMPTY_ARRAY);\n}\n\n"/**\n * @license\n * Copyright Google LLC All Rights Reserved.\n *\n *
Use of this source code is governed by an MIT-style license that can be\n * found in the LICENSE file at
https://angular.io/license\n *\nimport {getClosureSafeProperty} from './util/property';\n\nexport const
NG_COMP_DEF = getClosureSafeProperty({cmp: getClosureSafeProperty});\nexport const NG_DIR_DEF =
getClosureSafeProperty({dir: getClosureSafeProperty});\nexport const NG_PIPE_DEF =
getClosureSafeProperty({pipe: getClosureSafeProperty});\nexport const NG_MOD_DEF =
getClosureSafeProperty({mod: getClosureSafeProperty});\nexport const NG_LOC_ID_DEF =
getClosureSafeProperty({loc: getClosureSafeProperty});\nexport const NG_FACTORY_DEF =
getClosureSafeProperty({fac: getClosureSafeProperty});\n\n/**\n * If a directive is diPublic, bloomAdd sets a
property on the type with this constant as\n * the key and the directive's unique ID as the value. This allows us to
map directives to their\n * bloom filter bit for DI.\n *\nimport // TODO(misko): This is wrong. The NG_ELEMENT_ID
should never be minified.\nexport const NG_ELEMENT_ID = getClosureSafeProperty({__NG_ELEMENT_ID__:
getClosureSafeProperty});\n\n"/**\n * @license\n * Copyright Google LLC All Rights Reserved.\n *\n * Use of this
source code is governed by an MIT-style license that can be\n * found in the LICENSE file at

```

```

https://angular.io/license\n */\n\nimport { ChangeDetectionStrategy } from './change_detection/constants';\nimport
{ Mutable, Type } from './interface/type';\nimport { NgModuleDef, NgModuleType } from
 './metadata/ng_module_def';\nimport { SchemaMetadata } from './metadata/schema';\nimport { ViewEncapsulation }
from './metadata/view';\nimport { noSideEffects } from './util/closure';\nimport { initNgDevMode } from
 './util/ng_dev_mode';\nimport { stringify } from './util/stringify';\nimport { EMPTY_ARRAY, EMPTY_OBJ } from
 './empty';\nimport { NG_COMP_DEF, NG_DIR_DEF, NG_LOC_ID_DEF, NG_MOD_DEF, NG_PIPE_DEF } from
 './fields';\nimport { ComponentDef, ComponentDefFeature, ComponentTemplate, ComponentType,
ContentQueriesFunction, DirectiveDef, DirectiveDefFeature, DirectiveTypesOrFactory, HostBindingsFunction,
PipeDef, PipeTypesOrFactory, ViewQueriesFunction } from './interfaces/definition';\nimport { AttributeMarker,
TAttributes, TConstantsOrFactory } from './interfaces/node';\nimport { CssSelectorList, SelectorFlags } from
 './interfaces/projection';\n\nlet _renderCompCount = 0;\n\n// While these types are unused here, they are required
so that types don't\n// get resolved lazily. see: https://github.com/Microsoft/web-build-tools/issues/1050\ntype
_web_build_tools_issue_1050_SelectorFlags = SelectorFlags;\ntype
_web_build_tools_issue_1050_AttributeMarker = AttributeMarker;\n\n/**\n * Create a component definition
object.\n * \n * # Example\n * ```\n * class MyDirective {\n * // Generated by Angular Template Compiler\n *
// [Symbol] syntax will not be supported by TypeScript until v2.7\n * static cmp = defineComponent({\n * ...
\n * });\n * }\n * ```\n * @codegenapi\n * ^\nexport function defineComponent<T>(componentDefinition: {\n /**\n *
Directive type, needed to configure the injector.\n * \n type: Type<T>;\n\n /**\n * The selectors that will be used to
match nodes to this component.\n * \n selectors?: CssSelectorList;\n\n /**\n * The number of nodes, local refs, and
pipes in this component template.\n * \n * Used to calculate the length of this component's LView array, so we\n
* can pre-fill the array and set the binding start index.\n * \n // TODO(kara): remove queries from this count\n
decls: number;\n\n /**\n * The number of bindings in this component template (including pure fn bindings).\n\n
* \n * Used to calculate the length of this component's LView array, so we\n * can pre-fill the array and set the
host binding start index.\n * \n vars: number;\n\n /**\n * A map of input names.\n * \n * The format is in:
`{[actualPropertyName: string]:(string|[string, string])}`.\n * \n * Given:\n * ```\n * class MyComponent {\n *
@Input()\n * publicInput1: string;\n * \n * @Input('publicInput2')\n * declaredInput2: string;\n * }\n *
```\n * \n * is described as:\n * ```\n * {\n * publicInput1: 'publicInput1',\n * declaredInput2:
['publicInput2', 'declaredInput2'],\n * }\n * ```\n * \n * Which the minifier may translate to:\n * ```\n * {\n
* minifiedPublicInput1: 'publicInput1',\n * minifiedDeclaredInput2: ['publicInput2', 'declaredInput2'],\n * }\n *
```\n * \n * This allows the render to re-construct the minified, public, and declared names\n * of properties.\n
* \n * NOTE:\n * - Because declared and public name are usually same we only generate the array\n *
`['public', 'declared']` format when they differ.\n * - The reason why this API and `outputs` API is not the same is
that `NgOnChanges` has\n * inconsistent behavior in that it uses declared names rather than minified or public.
For\n * this reason `NgOnChanges` will be deprecated and removed in future version and this\n * API will be
simplified to be consistent with `output`.\n * \n inputs?: {[P in keyof T]?: string | [string, string]};\n\n /**\n * A
map of output names.\n * \n * The format is in: `{[actualPropertyName: string]:string}`.\n * \n * Which the
minifier may translate to: `{[minifiedPropertyName: string]:string}`.\n * \n * This allows the render to re-construct
the minified and non-minified names\n * of properties.\n * \n outputs?: {[P in keyof T]?: string};\n\n /**\n *
Function executed by the parent template to allow child directive to apply host bindings.\n * \n hostBindings?:
HostBindingsFunction<T>;\n\n /**\n * The number of bindings in this directive `hostBindings` (including pure fn
bindings).\n * \n * Used to calculate the length of the component's LView array, so we\n * can pre-fill the array
and set the host binding start index.\n * \n hostVars?: number;\n\n /**\n * Assign static attribute values to a host
element.\n * \n * This property will assign static attribute values as well as class and style\n * values to a host
element. Since attribute values can consist of different types of values, the\n * `hostAttrs` array must include the
values in the following format:\n * \n attrs = [\n * // static attributes (like `title`, `name`, `id`...)\n * attr1,
value1, attr2, value,\n * \n * // a single namespace value (like `x:id`)\n * NAMESPACE_MARKER,
namespaceUri1, name1, value1,\n * \n * // another single namespace value (like `x:name`)\n *
NAMESPACE_MARKER, namespaceUri2, name2, value2,\n * \n * // a series of CSS classes that will be

```



```

componentDefinition.exportAs || null,\n onChange: componentDefinition.onChangeDetection ===
ChangeDetectionStrategy.OnPush,\n directiveDefs: null!, // assigned in noSideEffects\n pipeDefs:
null!, // assigned in noSideEffects\n selectors: componentDefinition.selectors || EMPTY_ARRAY,\n
viewQuery: componentDefinition.viewQuery || null,\n features: componentDefinition.features as
DirectiveDefFeature[] || null,\n data: componentDefinition.data || {},\n // TODO(misko): convert
ViewEncapsulation into const enum so that it can be used\n // directly in the next line. Also `None` should be
0 not 2.\n encapsulation: componentDefinition.encapsulation || ViewEncapsulation.Emulated,\n id:
'c',\n styles: componentDefinition.styles || EMPTY_ARRAY,\n _: null as never,\n setInput:
null,\n schemas: componentDefinition.schemas || null,\n tView: null,\n });\n const
directiveTypes = componentDefinition.directives!;\n const feature = componentDefinition.features;\n
const pipeTypes = componentDefinition.pipes!;\n def.id += _renderCompCount++;\n def.inputs =
invertObject(componentDefinition.inputs, declaredInputs),\n def.outputs =
invertObject(componentDefinition.outputs),\n feature && feature.forEach((fn) => fn(def));\n
def.directiveDefs = directiveTypes ?\n () => (typeof directiveTypes === 'function' ? directiveTypes() :
directiveTypes)\n .map(extractDirectiveDef) :\n null;\n def.pipeDefs = pipeTypes ?\n
() =>\n (typeof pipeTypes === 'function' ? pipeTypes() : pipeTypes).map(extractPipeDef) :\n
null;\n return def as never;\n }) as never;\n\n\n/**\n * Generated next to NgModules to monkey-
patch directive and pipe references onto a component's\n * definition, when generating a direct reference in the
component file would otherwise create an\n * import cycle.\n * See [this
explanation](https://hackmd.io/Odw80D0pR6yfsOjg_7XCJg?view) for more details.\n * @codeGenApi\n
*/\nexport function setComponentScope(\n type: ComponentType<any>, directives: Type<any>[], pipes:
Type<any>[]): void {\n const def = (type.cmp as ComponentDef<any>);\n def.directiveDefs = () =>
directives.map(extractDirectiveDef);\n def.pipeDefs = () => pipes.map(extractPipeDef);\n}\n\nexport function
extractDirectiveDef(type: Type<any>): DirectiveDef<any>|ComponentDef<any> {\n const def =
getComponentDef(type) || getDirectiveDef(type);\n if (ngDevMode && !def) {\n throw new
Error(`${type.name} is neither 'ComponentType' or 'DirectiveType'.`);\n }\n return def!;\n}\n\nexport function
extractPipeDef(type: Type<any>): PipeDef<any> {\n const def = getPipeDef(type);\n if (ngDevMode && !def) {\n
throw new Error(`${type.name} is not a 'PipeType'.`);\n }\n return def!;\n}\n\nexport const
autoRegisterModuleById: {[id: string]: NgModuleType} = {};\n\n/**\n * @codeGenApi\n */\nexport function
defineNgModule<T>(\n def: {\n /** Token representing the module. Used by DI. */\n type: T;\n /** List of
components to bootstrap. */\n bootstrap?: Type<any>[] | (() => Type<any>[]);\n /** List of components,
directives, and pipes declared by this module. */\n declarations?: Type<any>[] | (() => Type<any>[]);\n /** List
of modules or `ModuleWithProviders` imported by this module. */\n imports?: Type<any>[] | (() =>
Type<any>[]);\n /**\n * List of modules, `ModuleWithProviders`, components, directives, or pipes exported by
this\n * module.\n */\n exports?: Type<any>[] | (() => Type<any>[]);\n /** The set of schemas that declare
elements to be allowed in the NgModule. */\n schemas?: SchemaMetadata[] | null;\n /** Unique ID for the
module that is used with `getModuleFactory`. */\n id?: string | null;\n }): never {\n const res: NgModuleDef<T> =
{\n type: def.type,\n bootstrap: def.bootstrap || EMPTY_ARRAY,\n declarations: def.declarations ||
EMPTY_ARRAY,\n imports: def.imports || EMPTY_ARRAY,\n exports: def.exports || EMPTY_ARRAY,\n
transitiveCompileScopes: null,\n schemas: def.schemas || null,\n id: def.id || null,\n }; \n if (def.id != null) {\n
noSideEffects(() => {\n autoRegisterModuleById[def.id!] = def.type as unknown as NgModuleType;\n });\n
}\n return res as never;\n}\n\n/**\n * Adds the module metadata that is necessary to compute the module's transitive
scope to an\n * existing module definition.\n * Scope metadata of modules is not used in production builds, so
calls to this function can be\n * marked pure to tree-shake it from the bundle, allowing for all referenced
declarations\n * to become eligible for tree-shaking as well.\n * @codeGenApi\n */\nexport function
setNgModuleScope(\n type: any, scope: {\n /** List of components, directives, and pipes declared by this module.
*/\n declarations?: Type<any>[] | (() => Type<any>[]);\n /** List of modules or `ModuleWithProviders` imported
by this module. */\n imports?: Type<any>[] | (() => Type<any>[]);\n /**\n * List of modules,

```

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`ModuleWithProviders`, components, directives, or pipes exported by this module. exports?:
Type<any>[] | ((() => Type<any>[]);): void {
 return noSideEffects(() => {
 const ngModuleDef =
 getNgModuleDef(type, true);
 ngModuleDef.declarations = scope.declarations || EMPTY_ARRAY;
 ngModuleDef.imports = scope.imports || EMPTY_ARRAY;
 ngModuleDef.exports = scope.exports ||
 EMPTY_ARRAY;
 }) as never;
}
Inverts an inputs or outputs lookup such that the keys, which
were the minified keys, are part of the values, and the values are parsed so that
the publicName of the
property is the new key
e.g. for
class Comp {
 @Input() propName1: string;
 @Input('publicName2') declaredPropName2: number;
}
will be serialized as
{
 propName1: 'propName1',
 declaredPropName2: ['publicName2', 'declaredPropName2'],
}
which is then translated by the minifier as
{
 minifiedPropName1: 'propName1',
 minifiedPropName2: ['publicName2', 'declaredPropName2'],
}
becomes: (public name =>
minifiedName)
{
 'propName1': 'minifiedPropName1',
 'publicName2':
'minifiedPropName2',
}
Optionally the function can take `secondary` which will result in: (public
name => declared name)
{
 'propName1': 'propName1',
 'publicName2':
'declaredPropName2',
}
function invertObject<T>(obj?: {[P in keyof T]?: string|[string,
string]}, secondary?: {[key: string]: string}): {[P in keyof T]: string} {
 if (obj == null) return EMPTY_OBJ as any;
 const newLookup: any = {};
 for (const minifiedKey in obj) {
 if (obj.hasOwnProperty(minifiedKey)) {
 let publicName: string|[string, string] = obj[minifiedKey]!;
 let declaredName = publicName;
 if (Array.isArray(publicName)) {
 declaredName = publicName[1];
 publicName = publicName[0];
 }
 newLookup[publicName] = minifiedKey;
 if (secondary) {
 secondary[publicName] =
 declaredName as string;
 }
 }
 }
 return newLookup;
}
Create a directive definition object.
Example
class MyDirective {
 // Generated by Angular Template Compiler
 // [Symbol]
 syntax will not be supported by TypeScript until v2.7
 static dir = defineDirective({
 ...
 });
}
@codeGenApi
export const defineDirective =
 defineComponent as any
as<T>(directiveDefinition: {
 /** Directive type, needed to configure the injector. type:
 Type<T>;
 /** The selectors that will be used to match nodes to this directive. selectors?:
 CssSelectorList;
 /** A map of input names.
 /** The format is in: {[actualPropertyName:
 string]:(string|[string, string])}.
 /** Given:
 class MyComponent {
 @Input()
 publicInput1: string;
 @Input('publicInput2') declaredInput2: string;
 }
 is described as:
 {
 publicInput1: 'publicInput1',
 declaredInput2:
['declaredInput2', 'publicInput2'],
 }
 Which the minifier may translate to:
 {
 minifiedPublicInput1: 'publicInput1',
 minifiedDeclaredInput2: ['publicInput2',
'declaredInput2'],
 }
 This allows the render to re-construct the minified, public, and
declared names
of properties.
NOTE:
- Because declared and public name are usually
same we only generate the array
['declared', 'public'] format when they differ.
- The reason why
this API and `outputs` API is not the same is that `NgOnChanges` has
inconsistent behavior in that it uses
declared names rather than minified or public. For
this reason `NgOnChanges` will be deprecated and
removed in future version and this
API will be simplified to be consistent with `output`.
inputs?: {[P in keyof T]?: string | [string, string]};
/** A map of output names.
/** The
format is in: {[actualPropertyName: string]:string}.
/** Which the minifier may translate to:
{[minifiedPropertyName: string]:string}.
This allows the render to re-construct the minified and
non-minified names
of properties.
outputs?: {[P in keyof T]?: string};
/** A list
of optional features to apply.
/** See: { @link NgOnChangesFeature }, { @link ProvidersFeature },
{ @link InheritDefinitionFeature }
/** features?: DirectiveDefFeature[];
/** Function
executed by the parent template to allow child directive to apply host bindings.
hostBindings?:
HostBindingsFunction<T>;
/** The number of bindings in this directive `hostBindings` (including
pure fn bindings).
/** Used to calculate the length of the component's LView array, so we
can
pre-fill the array and set the host binding start index.
hostVars?: number;
/** Assign

```

```

static attribute values to a host element.\n *\n * This property will assign static attribute values as well as
class and style\n * values to a host element. Since attribute values can consist of different types of values,\n *
the `hostAttrs` array must include the values in the following format:\n *\n * attrs = [\n * // static
attributes (like `title`, `name`, `id`...)\n * attr1, value1, attr2, value,\n *\n * // a single namespace value
(like `x:id`)\n * NAMESPACE_MARKER, namespaceUri1, name1, value1,\n *\n * // another single
namespace value (like `x:name`)\n * NAMESPACE_MARKER, namespaceUri2, name2, value2,\n *\n * // a series of CSS classes that will be applied to the element (no spaces)\n * CLASSES_MARKER, class1,
class2, class3,\n *\n * // a series of CSS styles (property + value) that will be applied to the element\n *
STYLES_MARKER, prop1, value1, prop2, value2\n *]\n *\n * All non-class and non-style attributes
must be defined at the start of the list\n * first before all class and style values are set. When there is a change in
value\n * type (like when classes and styles are introduced) a marker must be used to separate\n * the entries.
The marker values themselves are set via entries found in the\n * [AttributeMarker] enum.\n *\n *
hostAttrs?: TAttributes;\n *\n /**\n * Function to create instances of content queries associated with a given
directive.\n *\n * contentQueries?: ContentQueriesFunction<T>;\n *\n /**\n * Additional set of
instructions specific to view query processing. This could be seen as a\n * set of instructions to be inserted into
the template function.\n *\n * viewQuery?: ViewQueriesFunction<T>| null;\n *\n /**\n * Defines the
name that can be used in the template to assign this directive to a variable.\n *\n * See: { @link
Directive.exportAs }\n *\n * exportAs?: string[];\n * }) => never;\n */\n /**\n * Create a pipe definition object.\n *
*\n * # Example\n * ```\n * class MyPipe implements PipeTransform {\n * // Generated by Angular Template
Compiler\n * static pipe = definePipe({\n * ...;\n * });\n * }\n * ```\n * @param pipeDef Pipe definition
generated by the compiler\n * @codeGenApi\n * @export function definePipe<T>(pipeDef: {\n * /** Name of
the pipe. Used for matching pipes in template to pipe defs. *\n * name: string,\n * /** Pipe class reference. Needed
to extract pipe lifecycle hooks. *\n * type: Type<T>,\n * /** Whether the pipe is pure. *\n * pure?: boolean\n * });
never {\n * return (<PipeDef<T>>{\n * type: pipeDef.type,\n * name: pipeDef.name,\n * factory: null,\n *
pure: pipeDef.pure !== false,\n * onDestroy: pipeDef.type.prototype.ngOnDestroy || null\n * }) as
never;\n * }\n */\n * The following getter methods retrieve the definition form the type. Currently the retrieval\n *
honors inheritance, but in the future we may change the rule to require that definitions are\n * explicit. This would
require some sort of migration strategy.\n * @export function GetComponentDef<T>(type: any):
ComponentDef<T>|null {\n * return type[NG_COMP_DEF] || null;\n * }\n * @export function getDirectiveDef<T>(type:
any): DirectiveDef<T>|null {\n * return type[NG_DIR_DEF] || null;\n * }\n * @export function getPipeDef<T>(type:
any): PipeDef<T>|null {\n * return type[NG_PIPE_DEF] || null;\n * }\n * @export function getNgModuleDef<T>(type:
any, throwNotFound: true): NgModuleDef<T>;\n * @export function getNgModuleDef<T>(type: any):
NgModuleDef<T>|null;\n * @export function getNgModuleDef<T>(type: any, throwNotFound?: boolean):
NgModuleDef<T>|null {\n * const ngModuleDef = type[NG_MOD_DEF] || null;\n * if (!ngModuleDef &&
throwNotFound === true) {\n * throw new Error(`Type ${stringify(type)} does not have 'mod' property.`);\n * }\n *
return ngModuleDef;\n * }\n * @export function getNgLocaleIdDef(type: any): string|null {\n * return (type as
any)[NG_LOC_ID_DEF] || null;\n * }\n * }\n * ,"/**\n * @license\n * Copyright Google LLC All Rights Reserved.\n * *\n *
Use of this source code is governed by an MIT-style license that can be\n * found in the LICENSE file at
https://angular.io/license\n * ^\n */\n * Used for stringify render output in Ivy.\n * Important! This function is very
performance-sensitive and we should\n * be extra careful not to introduce megamorphic reads in it.\n * @export
function renderStringify(value: any): string {\n * if (typeof value === 'string') return value;\n * if (value === null) return
";\n * return " + value;\n * }\n * }\n */\n * Used to stringify a value so that it can be displayed in an error message.\n *
Important! This function contains a megamorphic read and should only be\n * used for error messages.\n * @export
function stringifyForError(value: any): string {\n * if (typeof value === 'function') return value.name ||
value.toString();\n * if (typeof value === 'object' && value != null && typeof value.type === 'function') {\n * return
value.type.name || value.type.toString();\n * }\n * }\n * return renderStringify(value);\n * }\n * ,"/**\n * @license\n *
Copyright Google LLC All Rights Reserved.\n * *\n * Use of this source code is governed by an MIT-style license
that can be\n * found in the LICENSE file at https://angular.io/license\n * ^\n */\n * Injection flags for DI.\n *

```



```

* @publicApi\n *^nexport enum InjectFlags {\n // TODO(alxhub): make this 'const' when ngc no longer writes
exports of it into ngfactory files.\n\n /** Check self and check parent injector if needed *\n Default = 0b0000,\n /**\n * Specifies that an injector should retrieve a dependency from any injector until reaching the\n * host
element of the current component. (Only used with Element Injector)\n *\n Host = 0b0001,\n /** Don't ascend to
ancestors of the node requesting injection. *\n Self = 0b0010,\n /** Skip the node that is requesting injection. *\n
SkipSelf = 0b0100,\n /** Inject `defaultValue` instead if token not found. *\n Optional = 0b1000,\n}\n",/**\n *
@license\n * Copyright Google LLC All Rights Reserved.\n *\n * Use of this source code is governed by an MIT-
style license that can be\n * found in the LICENSE file at https://angular.io/license\n *\nimport {Type} from
'./interface/type';\nimport {assertNotEqual} from './util/assert';\nimport {stringify} from './util/stringify';\nimport
{InjectionToken} from './injection_token';\nimport {getInjectableDef, InjectableDef} from './interface/defs';\nimport
{InjectFlags} from './interface/injector';\n\n\n/**\n * Current implementation of inject.\n *\n * By default, it is
`injectInjectorOnly`, which makes it `Injector`-only aware. It can be changed\n * to `directiveInject`, which brings
in the `NodeInjector` system of ivy. It is designed this\n * way for two reasons:\n * 1. `Injector` should not depend
on ivy logic.\n * 2. To maintain tree shake-ability we don't want to bring in unnecessary code.\n *\nlet
_injectImplementation: (<T>(token: Type<T>|InjectionToken<T>, flags?: InjectFlags) => T | null)\n
undefined;\nexport function getInjectImplementation() {\n return _injectImplementation;\n}\n\n\n/**\n * Sets the
current inject implementation.\n *\nexport function setInjectImplementation(\n impl: (<T>(token:
Type<T>|InjectionToken<T>, flags?: InjectFlags) => T | null)\n undefined): (<T>(token:
Type<T>|InjectionToken<T>, flags?: InjectFlags) => T | null)|undefined {\n const previous =
_injectImplementation;\n _injectImplementation = impl;\n return previous;\n}\n\n\n/**\n * Injects `root` tokens in
limp mode.\n *\n * If no injector exists, we can still inject tree-shakable providers which have `providedIn` set to\n *
`"root"`. This is known as the limp mode injection. In such case the value is stored in the\n * `InjectableDef`.\n
*\nexport function injectRootLimpMode<T>(\n token: Type<T>|InjectionToken<T>, notFoundValue:
T|undefined, flags: InjectFlags): T|null {\n const injectableDef: InjectableDef<T>|null = getInjectableDef(token);\n
if (injectableDef && injectableDef.providedIn === 'root') {\n return injectableDef.value === undefined ?
injectableDef.value = injectableDef.factory():\n injectableDef.value;\n }\n if (flags &
InjectFlags.Optional) return null;\n if (notFoundValue !== undefined) return notFoundValue;\n throw new
Error(`Injector: NOT_FOUND [${stringify(token)}]`);\n}\n\n\n/**\n * Assert that `_injectImplementation` is not
`fn`.\n *\n * This is useful, to prevent infinite recursion.\n *\n * @param fn Function which it should not equal to\n
*\nexport function assertInjectImplementationNotEqual(\n fn: (<T>(token: Type<T>|InjectionToken<T>, flags?:
InjectFlags) => T | null)) {\n ngDevMode &&&\n assertNotEqual(_injectImplementation, fn, 'Calling inject would
cause infinite recursion');\n}\n\n",/**\n * @license\n * Copyright Google LLC All Rights Reserved.\n *\n * Use of
this source code is governed by an MIT-style license that can be\n * found in the LICENSE file at
https://angular.io/license\n *\nimport './util/ng_dev_mode';\nimport {Type} from './interface/type';\nimport
{getClosureSafeProperty} from './util/property';\nimport {stringify} from './util/stringify';\nimport
{resolveForwardRef} from './forward_ref';\nimport {getInjectImplementation, injectRootLimpMode} from
'./inject_switch';\nimport {InjectionToken} from './injection_token';\nimport {Injector} from './injector';\nimport
{InjectFlags} from './interface/injector';\nimport {ValueProvider} from './interface/provider';\nimport {Inject,
Optional, Self, SkipSelf} from './metadata';\n\n\nconst _THROW_IF_NOT_FOUND = {};\nexport const
THROW_IF_NOT_FOUND = _THROW_IF_NOT_FOUND;\n\nexport const NG_TEMP_TOKEN_PATH =
'ngTempTokenPath';\nconst NG_TOKEN_PATH = 'ngTokenPath';\nconst NEW_LINE = /\n/gm;\nconst
NO_NEW_LINE = "";\nexport const SOURCE = '__source';\nexport const USE_VALUE =\n
getClosureSafeProperty<ValueProvider>({provide: String, useValue: getClosureSafeProperty});\n\n\n/**\n * Current
injector value used by `inject`.\n * - `undefined`: it is an error to call `inject`\n * - `null`: `inject` can be called but
there is no injector (limp-mode).\n * - Injector instance: Use the injector for resolution.\n *\nlet _currentInjector:
Injector|undefined|null = undefined;\nexport function setCurrentInjector(injector: Injector|null|undefined):
Injector|undefined|null {\n const former = _currentInjector;\n _currentInjector = injector;\n return
former;\n}\n\n\nexport function injectInjectorOnly<T>(token: Type<T>|InjectionToken<T>): T;\nexport function

```



```

if (typeof obj === 'object') {\n let parts = <string[]>[];\n for (let key in obj) {\n if (obj.hasOwnProperty(key))\n {\n let value = obj[key];\n parts.push(\n key + ':' + (typeof value === 'string' ? JSON.stringify(value)\n : stringify(value));\n }\n }\n }\n context = `${parts.join(' ')}`;\n }\n return `${injectorErrorName}${source ?\n '(' + source + ')': ''}`;}\n context: ${\n text.replace(NEW_LINE, '\\n ')};\n }\n },"/**\n * @license\n * Copyright\n * Google LLC All Rights Reserved.\n *\n * Use of this source code is governed by an MIT-style license that can be\n * found in the LICENSE file at https://angular.io/license\n *\n *\n * Most of the use of `document` in Angular is\n * from within the DI system so it is possible to simply\n * inject the `DOCUMENT` token and are done.\n *\n * Ivy is\n * special because it does not rely upon the DI and must get hold of the document some other\n * way.\n *\n * The\n * solution is to define `getDocument()` and `setDocument()` top-level functions for ivy.\n * Wherever ivy needs the\n * global document, it calls `getDocument()` instead.\n *\n * When running ivy outside of a browser environment, it is\n * necessary to call `setDocument()` to\n * tell ivy what the global `document` is.\n *\n * Angular does this for us in\n * each of the standard platforms (`Browser`, `Server`, and `WebWorker`)\n * by calling `setDocument()` when\n * providing the `DOCUMENT` token.\n *\n *let DOCUMENT: Document|undefined = undefined;\n */\n * Tell ivy\n * what the `document` is for this platform.\n *\n * It is only necessary to call this if the current platform is not a\n * browser.\n *\n * @param document The object representing the global `document` in this environment.\n */\nexport\n * function setDocument(document: Document|undefined): void {\n * DOCUMENT = document;\n * }\n */\n * Access\n * the object that represents the `document` for this platform.\n *\n * Ivy calls this whenever it needs to access the\n * `document` object.\n *\n * For example to create the renderer or to do sanitization.\n */\nexport\n * function\n * getDocument(): Document {\n * if (DOCUMENT !== undefined) {\n * return DOCUMENT;\n * } else if (typeof\n * document !== 'undefined') {\n * return document;\n * }\n * // No "document" can be found. This should only happen\n * if we are running ivy outside Angular and\n * // the current platform is not a browser. Since this is not a supported\n * scenario at the moment\n * // this should not happen in Angular apps.\n * // Once we support running ivy outside of\n * Angular we will need to publish `setDocument()` as a\n * // public API. Meanwhile we just return `undefined` and let\n * the application fail.\n * return undefined!;\n * }\n */\n * @license\n * Copyright Google LLC All Rights Reserved.\n *\n * Use of this source code is governed by an MIT-style license that can be\n * found in the LICENSE file at\n * https://angular.io/license\n *\n *nimport {InjectionToken} from './di/injection_token';\n *nimport {Injector} from\n * './di/injector';\n *nimport {Type} from './interface/type';\n *nimport {SchemaMetadata} from\n * './metadata/schema';\n *nimport {Sanitizer} from './sanitization/sanitizer';\n *nimport {LContainer} from\n * './container';\n *nimport {ComponentDef, ComponentTemplate, DirectiveDef, DirectiveDefList,\n * HostBindingsFunction, PipeDef, PipeDefList, ViewQueriesFunction} from './definition';\n *nimport\n * {I18nUpdateOpCodes, T118n, T1cu} from './i18n';\n *nimport {TConstants, TNode} from './node';\n *nimport\n * {PlayerHandler} from './player';\n *nimport {LQueries, TQueries} from './query';\n *nimport {Renderer3,\n * RendererFactory3} from './renderer';\n *nimport {RComment, RElement} from './renderer_dom';\n *nimport\n * {TStylingKey, TStylingRange} from './styling';\n *\n *\n * Below are constants for LView indices to help us look up\n * LView members\n * without having to remember the specific indices.\n *\n * Uglify will inline these when minifying so\n * there shouldn't be a cost.\n *\n *export const HOST = 0;\n *export const TVIEW = 1;\n *export const FLAGS = 2;\n *export\n * const PARENT = 3;\n *export const NEXT = 4;\n *export const TRANSPLANTED_VIEWS_TO_REFRESH =\n * 5;\n *export const T_HOST = 6;\n *export const CLEANUP = 7;\n *export const CONTEXT = 8;\n *export const\n * INJECTOR = 9;\n *export const RENDERER_FACTORY = 10;\n *export const RENDERER = 11;\n *export const\n * SANITIZER = 12;\n *export const CHILD_HEAD = 13;\n *export const CHILD_TAIL = 14;\n *\n *// FIXME(misko):\n * Investigate if the three declarations aren't all same thing.\n *\n *export const DECLARATION_VIEW = 15;\n *export const\n * DECLARATION_COMPONENT_VIEW = 16;\n *export const DECLARATION_LCONTAINER = 17;\n *export\n * const PREORDER_HOOK_FLAGS = 18;\n *export const QUERIES = 19;\n */\n * Size of LView's header.\n * Necessary to adjust for it when setting slots.\n *\n * IMPORTANT: `HEADER_OFFSET` should only be referred to\n * the in the `*` instructions to translate\n * instruction index into `LView` index. All other indexes should be in the\n * `LView` index space and\n * there should be no need to refer to `HEADER_OFFSET` anywhere else.\n *\n *export\n * const HEADER_OFFSET = 20;\n *\n *\n *// This interface replaces the real LView interface if it is an arg or a\n *// return\n * value of a public instruction. This ensures we don't need to expose\n *// the actual interface, which should be kept

```

```

private.\nexport interface OpaqueViewState {\n ' __brand__': 'Brand for OpaqueViewState that nothing will
match';\n}\n\n\n/**\n * `LView` stores all of the information needed to process the instructions as\n * they are
invoked from the template. Each embedded view and component view has its\n * own `LView`. When processing a
particular view, we set the `viewData` to that\n * `LView`. When that view is done processing, the `viewData` is set
back to\n * whatever the original `viewData` was before (the parent `LView`).\n *\n * Keeping separate state for
each view facilities view insertion / deletion, so we\n * don't have to edit the data array based on which views are
present.\n */\nexport interface LView extends Array<any> {\n /**\n * Human readable representation of the
`LView`.\n *\n * NOTE: This property only exists if `ngDevMode` is set to `true` and it is not present in\n *
production. Its presence is purely to help debug issue in development, and should not be relied\n * on in production
application.\n */\n debug?: LViewDebug;\n\n /**\n * The node into which this `LView` is inserted.\n */\n [HOST]: RElement|null;\n\n /**\n * The static data for this view. We need a reference to this so we can easily
walk up the\n * node tree in DI and get the TView.data array associated with a node (where the\n * directive defs
are stored).\n */\n readonly[TVIEW]: TView;\n\n /**\n * Flags for this view. See LViewFlags for more info. *\n [FLAGS]: LViewFlags;\n\n /**\n * This may store an {@link LView} or {@link LContainer}.\n *\n * `LView`
- The parent view. This is needed when we exit the view and must restore the previous\n * LView. Without this,
the render method would have to keep a stack of\n * views as it is recursively rendering templates.\n *\n *
`LContainer` - The current view is part of a container, and is an embedded view.\n */\n [PARENT]:
LView|LContainer|null;\n\n /**\n * The next sibling LView or LContainer.\n *\n * Allows us to propagate
between sibling view states that aren't in the same\n * container. Embedded views already have a node.next, but it
is only set for\n * views in the same container. We need a way to link component views and views\n * across
containers as well.\n */\n [NEXT]: LView|LContainer|null;\n\n /**\n * Queries active for this view - nodes from a
view are reported to those queries. *\n [QUERIES]: LQueries|null;\n\n /**\n * Store the `TNode` of the location
where the current `LView` is inserted into.\n *\n * Given:\n * ``\n * <div>\n * <ng-
template></ng-template>\n * </div>\n * ``\n * \n * We end up with two `TView`s.\n * -
`parent` `TView` which contains `<div><!-- anchor --></div>`\n * - `child` `TView` which contains
``\n * \n * Typically the `child` is inserted into the declaration location of the `parent`, but it can
be\n * inserted anywhere. Because it can be inserted anywhere it is not possible to store the\n * insertion
information in the `TView` and instead we must store it in the `LView[T_HOST]`.\n *\n * So to determine where
is our insertion parent we would execute:\n * ``\n * const parentLView = IView[PARENT];\n * const
parentTNode = IView[T_HOST];\n * const insertionParent = parentLView[parentTNode.index];\n * ``\n * \n * If `null`, this is the root view of an application (root component is in this view) and it has\n * no parents.\n */\n [T_HOST]: TNode|null;\n\n /**\n * When a view is destroyed, listeners need to be released and outputs need
to be\n * unsubscribed. This context array stores both listener functions wrapped with\n * their context and output
subscription instances for a particular view.\n *\n * These change per LView instance, so they cannot be stored on
TView. Instead,\n * TView.cleanup saves an index to the necessary context in this array.\n */\n // TODO: flatten
into LView[]\n [CLEANUP]: any[]|null;\n\n /**\n * - For dynamic views, this is the context with which to render
the template (e.g.\n * `NgForContext`), or `{}` if not defined explicitly.\n * - For root view of the root
component the context contains change detection data.\n * - For non-root components, the context is the
component instance,\n * - For inline views, the context is null.\n */\n [CONTEXT]: {}|RootContext|null;\n\n /**\n An optional Module Injector to be used as fall back after Element Injectors are consulted. *\n
readonly[INJECTOR]: Injector|null;\n\n /**\n Factory to be used for creating Renderer. *\n [RENDERER_FACTORY]:
RendererFactory3;\n\n /**\n Renderer to be used for this view. *\n [RENDERER]:
Renderer3;\n\n /**\n An optional custom sanitizer. *\n [SANITIZER]: Sanitizer|null;\n\n /**\n * Reference to the
first LView or LContainer beneath this LView in\n * the hierarchy.\n *\n * Necessary to store this so views can
traverse through their nested views\n * to remove listeners and call onDestroy callbacks.\n */\n [CHILD_HEAD]:
LView|LContainer|null;\n\n /**\n * The last LView or LContainer beneath this LView in the hierarchy.\n *\n *
The tail allows us to quickly add a new state to the end of the view list\n * without having to propagate starting
from the first child.\n */\n [CHILD_TAIL]: LView|LContainer|null;\n\n /**\n * View where this view's template

```

was declared.

The template for a dynamically created view may be declared in a different view than it is inserted. We already track the "insertion view" (view where the template was inserted) in `LView[PARENT]`, but we also need access to the "declaration view" (view where the template was declared). Otherwise, we wouldn't be able to call the view's template function with the proper contexts. Context should be inherited from the declaration view tree, not the insertion view tree.

Example (AppComponent template):

```
<ng-template #foo></ng-template> <-- declared here -->
<some-comp [tpl]="foo"></some-comp> <-- inserted inside this component -->
```

The `<ng-template>` above is declared in the AppComponent template, but it will be passed into `SomeComp` and inserted there. In this case, the declaration view would be the AppComponent, but the insertion view would be `SomeComp`. When we are removing views, we would want to traverse through the insertion view to clean up listeners. When we are calling the template function during change detection, we need the declaration view to get inherited context.

`DECLARATION_VIEW`: `LView` or `null`; Points to the declaration component view, used to track transplanted `LView`'s. See: `DECLARATION_VIEW` which points to the actual `LView` where it was declared, whereas `DECLARATION_COMPONENT_VIEW` points to the component which may not be same as `DECLARATION_VIEW`.

Example:

```
<#VIEW #myComp>
<div *ngIf="true">
 <ng-template #myTpl>...</ng-template>
</div>
</#VIEW>
```

In the above case `DECLARATION_VIEW` for `myTpl` points to the `LView` of `ngIf` whereas `DECLARATION_COMPONENT_VIEW` points to `LView` of the `myComp` which owns the template.

The reason for this is that all embedded views are always check-always whereas the component view can be check-always or on-push. When we have a transplanted view it is important to determine if we have transplanted a view from check-always declaration to on-push insertion point. In such a case the transplanted view needs to be added to the `LContainer` in the declared `LView` and CD during the declared view CD (in addition to the CD at the insertion point.) (Any transplanted views which are intra Component are of no interest because the CD strategy of declaration and insertion will always be the same, because it is the same component.)

Queries already track moved views in `LView[DECLARATION_LCONTAINER]` and `LContainer[MOVED_VIEWS]`. However the queries also track `LView`'s which moved within the same component `LView`. Transplanted views are a subset of moved views, and we use `DECLARATION_COMPONENT_VIEW` to differentiate them. As in this example.

Example showing intra component `LView` movement.

```
<#VIEW #myComp>
<div *ngIf="condition; then thenBlock else elseBlock"></div>
<ng-template #thenBlock>Content to render when condition is true.</ng-template>
<ng-template #elseBlock>Content to render when condition is false.</ng-template>
</#VIEW>
```

The `thenBlock` and `elseBlock` is moved but not transplanted.

Example showing inter component `LView` movement (transplanted view).

```
<#VIEW #myComp>
<ng-template #myTpl>...</ng-template>
<insertion-component [template]="myTpl"></insertion-component>
```

In the above example `myTpl` is passed into a different component. If `insertion-component` instantiates `myTpl` and `insertion-component` is on-push then the `LContainer` needs to be marked as containing transplanted views and those views need to be CD as part of the declaration CD.

When change detection runs, it iterates over `[MOVED_VIEWS]` and CDs any child `LView`'s where the `DECLARATION_COMPONENT_VIEW` of the current component and the child `LView` does not match (it has been transplanted across components).

Note:

- `DECLARATION_COMPONENT_VIEW` points to itself if the `LView` is a component view (the simplest / most common case). see also: <https://hackmd.io/@mhevery/rJUjsvv9H> write up of the problem
- `LContainer[HAS_TRANSPLANTED_VIEWS]` which marks which `LContainer` has transplanted views.
- `LContainer[TRANSPLANT_HEAD]` and `LContainer[TRANSPLANT_TAIL]` storage for transplanted `LView[DECLARATION_LCONTAINER]` similar problem for queries
- `LContainer[MOVED_VIEWS]` similar problem for queries
- `DECLARATION_COMPONENT_VIEW`: `LView`; A declaration point of embedded views (ones instantiated based on the content of a `<ng-template>`), null for other types of views. We need to track all embedded views created from a given

```

declaration point so we can prepare
 * query matches in a proper order (query matches are ordered based on their
declaration point and
 * _not_ the insertion point).\n
 * [DECLARATION_LCONTAINER]:
LContainer|null;\n\n /**\n
 * More flags for this view. See PreOrderHookFlags for more info.\n
 * [PREORDER_HOOK_FLAGS]: PreOrderHookFlags;\n\n /**\n
 * The number of direct transplanted views which
need a refresh or have descendants themselves\n
 * that need a refresh but have not marked their ancestors as Dirty.
This tells us that during\n
 * change detection we should still descend to find those children to refresh, even if the
parents\n
 * are not `Dirty` ^CheckAlways`.\n
 * [TRANSPLANTED_VIEWS_TO_REFRESH]:
number;\n}\n\n /** Flags associated with an LView (saved in LView[FLAGS])
 * export const enum LViewFlags
{\n
 /** The state of the init phase on the first 2 bits
 * InitPhaseStateIncrementer = 0b000000000001,\n
InitPhaseStateMask = 0b00000000011,\n\n /**\n
 * Whether or not the view is in creationMode.\n
 * This
must be stored in the view rather than using `data` as a marker so that\n
 * we can properly support embedded
views. Otherwise, when exiting a child view\n
 * back into the parent view, `data` will be defined and
`creationMode` will be\n
 * improperly reported as false.\n
 * CreationMode = 0b00000000100,\n\n /**\n
 *
Whether or not this LView instance is on its first processing pass.\n
 * An LView instance is considered to be
on its `first pass` until it\n
 * has completed one creation mode run and one update mode run. At this\n
 * time,
the flag is turned off.\n
 * FirstLViewPass = 0b00000001000,\n\n /** Whether this view has default change
detection strategy (checks always) or onPush
 * CheckAlways = 0b00000010000,\n\n /**\n
 * Whether or not
manual change detection is turned on for onPush components.\n
 * This is a special mode that only marks
components dirty in two cases:\n
 * 1) There has been a change to an @Input property\n
 * 2) `markDirty()` has
been called manually by the user\n
 * Note that in this mode, the firing of events does NOT mark
components\n
 * dirty automatically.\n
 * Manual mode is turned off by default for backwards compatibility,
as events\n
 * automatically mark OnPush components dirty in View Engine.\n
 * TODO: Add a public API to
ChangeDetectionStrategy to turn this mode on\n
 * ManualOnPush = 0b00000100000,\n\n /** Whether or not
this view is currently dirty (needing check)
 * Dirty = 0b000001000000,\n\n /** Whether or not this view is
currently attached to change detection tree.
 * Attached = 0b000010000000,\n\n /** Whether or not this view is
destroyed.
 * Destroyed = 0b000100000000,\n\n /** Whether or not this view is the root view
 * IsRoot =
0b001000000000,\n\n /**\n
 * Whether this moved LView was needs to be refreshed at the insertion location
because the\n
 * declaration was dirty.\n
 * RefreshTransplantedView = 0b0010000000000,\n\n /**\n
 * Index
of the current init phase on last 21 bits\n
 * IndexWithinInitPhaseIncrementer = 0b0100000000000,\n
IndexWithinInitPhaseShift = 11,\n
IndexWithinInitPhaseReset = 0b00111111111111,\n}\n\n /**\n
 * Possible states
of the init phase:\n
 * - 00: OnInit hooks to be run.\n
 * - 01: AfterContentInit hooks to be run\n
 * - 10: AfterViewInit
hooks to be run\n
 * - 11: All init hooks have been run\n
 * export const enum InitPhaseState {\n
OnInitHooksToBeRun = 0b00,\n
AfterContentInitHooksToBeRun = 0b01,\n
AfterViewInitHooksToBeRun =
0b10,\n
InitPhaseCompleted = 0b11,\n}\n\n /** More flags associated with an LView (saved in
LView[PREORDER_HOOK_FLAGS])
 * export const enum PreOrderHookFlags {\n
 /**\n
 * The index of the
next pre-order hook to be called in the hooks array, on the first 16\n
 * bits\n
 * IndexOfTheNextPreOrderHookMaskMask = 0b0111111111111111,\n\n /**\n
 * The number of init hooks that
have already been called, on the last 16 bits\n
 * NumberOfInitHooksCalledIncrementer =
0b01000000000000000000,\n
NumberOfInitHooksCalledShift = 16,\n
NumberOfInitHooksCalledMask =
0b11111111111111110000000000000000,\n}\n\n /**\n
 * Stores a set of OpCodes to process
`HostBindingsFunction` associated with a current view.\n
 * In order to invoke `HostBindingsFunction` we
need:\n
 * 1. `elementIdx`: Index to the element associated with the `HostBindingsFunction`.\n
 * 2. `directiveIdx`:
Index to the directive associated with the `HostBindingsFunction`. (This will\n
 * become the context for the
`HostBindingsFunction` invocation.)\n
 * 3. `bindingRootIdx`: Location where the bindings for the
`HostBindingsFunction` start. Internally\n
 * `HostBindingsFunction` binding indexes start from `0` so we need to
add `bindingRootIdx` to\n
 * it.\n
 * 4. `HostBindingsFunction`: A host binding function to execute.\n
 * The
above information needs to be encoded into the `HostBindingOpCodes` in an efficient manner.\n
 * 1.
`elementIdx` is encoded into the `HostBindingOpCodes` as `~elementIdx` (so a negative number);\n
 * 2.

```

```

`directiveIdx`\n * 3. `bindingRootIdx`\n * 4. `HostBindingsFunction` is passed in as is.\n * The
`HostBindingOpCodes` array contains:\n * - negative number to select the element index.\n * - followed by 1 or
more of:\n * - a number to select the directive index\n * - a number to select the bindingRoot index\n * - and a
function to invoke.\n * ## Example\n * ```\n * const hostBindingOpCodes = [\n * ~30, //
Select element 30\n * 40, 45, MyDir.dir.hostBindings // Invoke host bindings on MyDir on element 30;\n *
// directiveIdx = 40; bindingRootIdx = 45;\n * 50, 55, OtherDir.dir.hostBindings // Invoke host
bindings on OtherDir on element 30\n * // directiveIdx = 50; bindingRootIdx = 55;\n *]\n *
```\n * ## Pseudocode\n * ```\n * const hostBindingOpCodes = tView.hostBindingOpCodes;\n * if
(hostBindingOpCodes === null) return;\n * for (let i = 0; i < hostBindingOpCodes.length; i++) {\n * const opCode
= hostBindingOpCodes[i] as number;\n * if (opCode < 0) {\n * // Negative numbers are element indexes.\n *
setSelectedIndex(~opCode);\n * } else {\n * // Positive numbers are NumberTuple which store
bindingRootIndex and directiveIndex.\n * const directiveIdx = opCode;\n * const bindingRootIdx =
hostBindingOpCodes[++i] as number;\n * const hostBindingFn = hostBindingOpCodes[++i] as
HostBindingsFunction<any>;\n * setBindingRootForHostBindings(bindingRootIdx, directiveIdx);\n * const
context = IView[directiveIdx];\n * hostBindingFn(RenderFlags.Update, context);\n * }}\n * ```\n *
`^`\n * export interface HostBindingOpCodes extends Array<number|HostBindingsFunction<any>> {\n * __brand__:
'HostBindingOpCodes';\n * debug?: string[];\n * }\n * Explicitly marks `TView` as a specific type in
`ngDevMode`\n * It is useful to know conceptually what time of `TView` we are dealing with when\n *
debugging an application (even if the runtime does not need it.) For this reason\n * we store this information in the
`ngDevMode` `TView` and then use it for\n * better debugging experience.\n * export const enum TViewType {\n *
// Root `TView` is the used to bootstrap components into. It is used in conjunction with\n * `LView` which
takes an existing DOM node not owned by Angular and wraps it in `TView`/`LView`\n * so that other components
can be loaded into it.\n * Root = 0,\n * // `TView` associated with a Component. This would be the
`TView` directly associated with the\n * component view (as opposed an `Embedded` `TView` which would be a
child of `Component` `TView`)\n * Component = 1,\n * // `TView` associated with a template. Such as
`ngIf`, `` etc... A `Component`\n * can have zero or more `Embedded` `TView`s.\n * Embedded = 2,\n * }\n * Converts `TViewType` into human readable text.\n * Make sure this matches with
`TViewType`\n * export const TViewTypeAsString = [\n * 'Root', // 0\n * 'Component', // 1\n * 'Embedded', //
2\n * ] as const;\n * The static data for an LView (shared between all templates of a\n * given type).\n * Stored on the `ComponentDef.tView`.\n * export interface TView {\n * // Type of `TView`
(`Root`|`Component`|`Embedded`).\n * type: TViewType;\n * // This is a blueprint used to generate
LView instances for this TView. Copying this\n * blueprint is faster than creating a new LView from scratch.\n *
blueprint: LView;\n * // The template function used to refresh the view of dynamically created views\n *
and components. Will be null for inline views.\n * template: ComponentTemplate<{}>|null;\n * // A
function containing query-related instructions.\n * viewQuery: ViewQueriesFunction<{}>|null;\n * // A
`TNode` representing the declaration location of this `TView` (not part of this TView).\n * declTNode:
TNode|null;\n * // FIXME(misko): Why does `TView` not have `declarationTView` property?\n * // Whether or
not this template has been processed in creation mode.\n * firstCreatePass: boolean;\n * // Whether or not
this template has been processed in update mode (e.g. change detected)\n * `firstUpdatePass` is used by
styling to set up `TData` to contain metadata about the styling\n * instructions. (Mainly to build up a linked list of
styling priority order.)\n * Typically this function gets cleared after first execution. If exception is thrown then
this\n * flag can remain turned un until there is first successful (no exception) pass. This means that\n * individual
styling instructions keep track of if they have already been added to the linked\n * list to prevent double adding.\n *
firstUpdatePass: boolean;\n * // Static data equivalent of LView.data[]. Contains TNodes, PipeDefInternal or
TI18n.\n * data: TData;\n * // The binding start index is the index at which the data array\n * starts to store
bindings only. Saving this value ensures that we\n * will begin reading bindings at the correct point in the array
when\n * we are in update mode.\n * -1 means that it has not been initialized.\n * bindingStartIndex:
number;\n * // The index where the `\"expando\"` section of `LView` begins. The expando\n * section

```

contains injectors, directive instances, and host binding values.

- Unlike the "decls" and "vars" sections of `LView``, the length of this section cannot be calculated at compile-time because directives are matched at runtime to preserve locality.
- We store this start index so we know where to start checking host bindings in `setHostBindings``.
- `expandoStartIndex: number;` Whether or not there are any static view queries tracked on this view.
- We store this so we know whether or not we should do a view query refresh after creation mode to collect static query results.
- `staticViewQueries: boolean;` Whether or not there are any static content queries tracked on this view.
- We store this so we know whether or not we should do a content query refresh after creation mode to collect static query results.
- `staticContentQueries: boolean;` A reference to the first child node located in the view.
- `firstChild: TNode|null;` Stores the OpCodes to be replayed during change-detection to process the `HostBindings``.
- See `HostBindingOpCodes`` for encoding details.
- `hostBindingOpCodes: HostBindingOpCodes|null;` Full registry of directives and components that may be found in this view.
- It's necessary to keep a copy of the full def list on the `TView`` so it's possible to render template functions without a host component.
- `directiveRegistry: DirectiveDefList|null;` Full registry of pipes that may be found in this view.
- The property is either an array of `PipeDefs`s`` or a function which returns the array of `PipeDefs`s``. The function is necessary to be able to support forward declarations.
- It's necessary to keep a copy of the full def list on the `TView`` so it's possible to render template functions without a host component.
- `pipeRegistry: PipeDefList|null;` Array of `ngOnInit, ngOnChanges` and `ngDoCheck` hooks that should be executed for this view in creation mode.
- This array has a flat structure and contains `TNode` indices, directive indices (where an instance can be found in `LView``) and hook functions. `TNode` index is followed by the directive index and a hook function. If there are multiple hooks for a given `TNode`, the `TNode` index is not repeated and the next lifecycle hook information is stored right after the previous hook function. This is done so that at runtime the system can efficiently iterate over all of the functions to invoke without having to make any decisions/lookups.
- `preOrderHooks: HookData|null;` Array of `ngOnChanges` and `ngDoCheck` hooks that should be executed for this view in update mode.
- This array has the same structure as the `preOrderHooks`` one.
- `preOrderCheckHooks: HookData|null;` Array of `ngAfterContentInit` and `ngAfterContentChecked` hooks that should be executed for this view in creation mode.
- Even indices: Directive index
- Odd indices: Hook function
- `contentHooks: HookData|null;` Array of `ngAfterContentChecked` hooks that should be executed for this view in update mode.
- Even indices: Directive index
- Odd indices: Hook function
- `contentCheckHooks: HookData|null;` Array of `ngAfterViewInit` and `ngAfterViewChecked` hooks that should be executed for this view in creation mode.
- Even indices: Directive index
- Odd indices: Hook function
- `viewHooks: HookData|null;` Array of `ngAfterViewChecked` hooks that should be executed for this view in update mode.
- Even indices: Directive index
- Odd indices: Hook function
- `viewCheckHooks: HookData|null;` Array of `ngOnDestroy` hooks that should be executed when this view is destroyed.
- Even indices: Directive index
- Odd indices: Hook function
- `destroyHooks: DestroyHookData|null;` When a view is destroyed, listeners need to be released and outputs need to be unsubscribed. This cleanup array stores both listener data (in chunks of 4) and output data (in chunks of 2) for a particular view. Combining the arrays saves on memory (70 bytes per array) and on a few bytes of code size (for two separate for loops).
- If it's a native DOM listener or output subscription being stored:
 - 1st index is: event name `name = tView.cleanup[i+0]`
 - 2nd index is: index of native element or a function that retrieves global target (window, document or body) reference based on the native element:
 - `typeof idxOrTargetGetter === 'function'`: global target getter function
 - `typeof idxOrTargetGetter === 'number'`: index of native element
 - 3rd index is: index of listener function `listener = LView[CLEANUP][tView.cleanup[i+2]]`
 - 4th index is: `useCaptureOrIndx = tView.cleanup[i+3]`
 - `typeof useCaptureOrIndx === 'boolean'`: useCapture boolean
 - `typeof useCaptureOrIndx === 'number'`:
 - `useCaptureOrIndx >= 0` `removeListener = LView[CLEANUP][useCaptureOrIndx]`
 - `useCaptureOrIndx < 0` `subscription = LView[CLEANUP][-useCaptureOrIndx]`
- If it's an output subscription or query list

destroy hook:\n * 1st index is: output unsubscribe function / query list destroy function\n * 2nd index is: index of function context in LView.cleanupInstances[]\n *

tView.cleanup[i+0].call(1View[CLEANUP][tView.cleanup[i+1]])\n * ^\n cleanup: any[]|null;\n\n /**\n * A list of element indices for child components that will need to be\n * refreshed when the current view has finished its check. These indices have\n * already been adjusted for the HEADER_OFFSET.\n * ^\n components: number[]|null;\n\n /**\n * A collection of queries tracked in a given view.\n * ^\n queries: TQueries|null;\n\n /**\n * An array of indices pointing to directives with content queries alongside with the\n * corresponding query index. Each entry in this array is a tuple of:\n * - index of the first content query index declared by a given directive;\n * - index of a directive.\n * ^\n We are storing those indexes so we can refresh content queries as part of a view refresh\n * process.\n * ^\n contentQueries: number[]|null;\n\n /**\n * Set of schemas that declare elements to be allowed inside the view.\n * ^\n schemas: SchemaMetadata[]|null;\n\n /**\n * Array of constants for the view. Includes attribute arrays, local definition arrays etc.\n * ^\n Used for directive matching, attribute bindings, local definitions and more.\n * ^\n consts: TConstants|null;\n\n /**\n * Indicates that there was an error before we managed to complete the first create pass of the\n * view. This means that the view is likely corrupted and we should try to recover it.\n * ^\n incompleteFirstPass: boolean;\n\n\nexport const enum RootContextFlags {\n Empty = 0b00,\n DetectChanges = 0b01,\n FlushPlayers = 0b10\n}\n\n/**\n * RootContext contains information which is shared for all components which\n * were bootstrapped with {@link renderComponent}.\n * ^\nexport interface RootContext {\n /**\n * A function used for scheduling change detection in the future. Usually\n * this is `requestAnimationFrame`.\n * ^\n scheduler: (workFn: () => void) => void;\n\n /**\n * A promise which is resolved when all components are considered clean (not dirty).\n * ^\n * This promise is overwritten every time a first call to {@link markDirty} is invoked.\n * ^\n clean: Promise<null>;\n\n /**\n * RootComponents - The components that were instantiated by the call to\n * {@link renderComponent}.\n * ^\n components: {}[];\n\n /**\n * The player flushing handler to kick off all animations\n * ^\n playerHandler: PlayerHandler|null;\n\n /**\n * What render-related operations to run once a scheduler has been set\n * ^\n flags: RootContextFlags;\n\n\n} Single hook callback function. ^\nexport type HookFn = () => void;\n\n/**\n * Information necessary to call a hook. E.g. the callback that\n * needs to be invoked and the index at which to find its context.\n * ^\nexport type HookEntry = number|HookFn;\n\n/**\n * Array of hooks that should be executed for a view and their directive indices.\n * ^\n * For each node of the view, the following data is stored:\n * 1) Node index (optional)\n * 2) A series of number/function pairs where:\n * - even indices are directive indices\n * - odd indices are hook functions\n * ^\n * Special cases:\n * - a negative directive index flags an init hook (ngOnInit, ngAfterContentInit, ngAfterViewInit)\n * ^\nexport type HookData = HookEntry[];\n\n/**\n * Array of destroy hooks that should be executed for a view and their directive indices.\n * ^\n * The array is set up as a series of number/function or number/(number|function)[]:\n * - Even indices represent the context with which hooks should be called.\n * - Odd indices are the hook functions themselves. If a value at an odd index is an array,\n * it represents the destroy hooks of a `multi` provider where:\n * - Even indices represent the index of the provider for which we've registered a destroy hook,\n * inside of the `multi` provider array.\n * - Odd indices are the destroy hook functions.\n * ^\n * For example:\n * LView: `[0, 1, 2, AService, 4, [BService, CService, DService]]`\n * destroyHooks: `[3, AService.ngOnDestroy, 5, [0, BService.ngOnDestroy, 2, DService.ngOnDestroy]]`\n * ^\n * In the example above `AService` is a type provider with an `ngOnDestroy`, whereas `BService`,\n * `CService` and `DService` are part of a `multi` provider where only `BService` and `DService`\n * have an `ngOnDestroy` hook.\n * ^\nexport type DestroyHookData = (HookEntry|HookData)[];\n\n/**\n * Static data that corresponds to the instance-specific data array on an LView.\n * ^\n * Each node's static data is stored in tData at the same index that it's stored\n * in the data array. Any nodes that do not have static data store a null value in\n * tData to avoid a sparse array.\n * ^\n * Each pipe's definition is stored here at the same index as its pipe instance in\n * the data array.\n * ^\n * Each host property's name is stored here at the same index as its value in the\n * data array.\n * ^\n * Each property binding name is stored here at the same index as its value in\n * the data array. If the binding is an interpolation, the static string values\n * are stored parallel to the dynamic values. Example:\n * id="prefix { { v0 } } a { { v1 } } b { { v2 } } suffix"\n * LView | TView.data\n *-----\n * v0 value | 'a'\n * v1 value | 'b'\n

```

* v2 value | id prefix suffix\n * \n * Injector bloom filters are also stored here.\n * \nexport type TData =\n
(TNode|PipeDef<any>|DirectiveDef<any>|ComponentDef<any>|number|TStylingRange|TStylingKey|\n
Type<any>|InjectionToken<any>|TI18n|I18nUpdateOpCodes|Ticu|null|string)[];\n\n// Note: This hack is necessary
so we don't erroneously get a circular dependency\n// failure based on types.\nexport const
unusedValueExportToPlacateAjd = 1;\n\n/**\n * Human readable version of the `LView`.\n * \n * `LView` is a data
structure used internally to keep track of views. The `LView` is designed for\n * efficiency and so at times it is
difficult to read or write tests which assert on its values. For\n * this reason when `ngDevMode` is true we patch a
`LView.debug` property which points to\n * `LViewDebug` for easier debugging and test writing. It is the intent of
`LViewDebug` to be used\n * in tests.\n * \nexport interface LViewDebug {\n /**\n * Flags associated with the
`LView` unpacked into a more readable state.\n * \n * See `LViewFlags` for the flag meanings.\n * \n readonly
flags: {\n initPhaseState: number,\n creationMode: boolean,\n firstViewPass: boolean,\n checkAlways:
boolean,\n dirty: boolean,\n attached: boolean,\n destroyed: boolean,\n isRoot: boolean,\n
indexWithinInitPhase: number,\n };\n /**\n * Associated TView\n * \n readonly tView: TView;\n /**\n *
Parent view (or container)\n * \n readonly parent: LViewDebug|LContainerDebug|null;\n /**\n * Next sibling
to the `LView`.\n * \n readonly next: LViewDebug|LContainerDebug|null;\n /**\n * The context used for
evaluation of the `LView`.\n * \n * (Usually the component)\n * \n readonly context: {}|null;\n /**\n *
Hierarchical tree of nodes.\n * \n readonly nodes: DebugNode[];\n /**\n * Template structure (no instance
data).\n * \n * (Shows how TNodes are connected)\n * \n readonly template: string;\n /**\n * HTML
representation of the `LView`.\n * \n * This is only approximate to actual HTML as child `LView`s are
removed.\n * \n readonly html: string;\n /**\n * The host element to which this `LView` is attached.\n * \n
readonly hostHTML: string|null;\n /**\n * Child `LView`s\n * \n readonly childViews:
Array<LViewDebug|LContainerDebug>;\n /**\n * Sub range of `LView` containing decls (DOM elements).\n
* \n * \n readonly decls: LViewDebugRange;\n /**\n * Sub range of `LView` containing vars (bindings).\n
* \n * \n readonly vars: LViewDebugRange;\n /**\n * Sub range of `LView` containing expando (used by DI).\n
* \n * \n readonly expando: LViewDebugRange;\n }\n\n/**\n * Human readable version of the `LContainer`.\n * \n
* `LContainer` is a data structure used internally to keep track of child views. The `LContainer`\n * is designed for
efficiency and so at times it is difficult to read or write tests which assert on\n * its values. For this reason when
`ngDevMode` is true we patch a `LContainer.debug` property which\n * points to `LContainerDebug` for easier
debugging and test writing. It is the intent of\n * `LContainerDebug` to be used in tests.\n * \nexport interface
LContainerDebug {\n readonly native: RComment;\n /**\n * Child `LView`s.\n * \n * \n readonly views:
LViewDebug[];\n readonly parent: LViewDebug|null;\n readonly movedViews: LView[]|null;\n readonly host:
RElement|RComment|LView;\n readonly next: LViewDebug|LContainerDebug|null;\n readonly
hasTransplantedViews: boolean;\n }\n\n\n\n/**\n * `LView` is subdivided to ranges where the actual data is stored.
Some of these ranges such as\n * `decls` and `vars` are known at compile time. Other such as `i18n` and `expando`
are runtime only\n * concepts.\n * \nexport interface LViewDebugRange {\n /**\n * The starting index in
`LView` where the range begins. (Inclusive)\n * \n start: number;\n /**\n * The ending index in `LView`
where the range ends. (Exclusive)\n * \n end: number;\n /**\n * The length of the range\n * \n length:
number;\n /**\n * The merged content of the range. `t` contains data from `TView.data` and `l` contains
`LView`\n * data at an index.\n * \n content: LViewDebugRangeContent[];\n }\n\n\n\n/**\n * For convenience the
static and instance portions of `TView` and `LView` are merged into a single\n * object in `LViewRange`.\n
* \nexport interface LViewDebugRangeContent {\n /**\n * Index into original `LView` or `TView.data`.\n * \n
index: number;\n /**\n * Value from the `TView.data[index]` location.\n * \n t: any;\n /**\n * Value from
the `LView[index]` location.\n * \n l: any;\n }\n\n\n\n/**\n * A logical node which comprise into `LView`s.\n
* \n * \nexport interface DebugNode {\n /**\n * HTML representation of the node.\n * \n html: string|null;\n
/**\n * Human readable node type.\n * \n type: string;\n /**\n * DOM native node.\n * \n native: Node;\n
/**\n * Child nodes\n * \n children: DebugNode[];\n /**\n * A list of Component/Directive types which need to be
instantiated an this location.\n * \n factories: Type<unknown>[];\n /**\n * A list of Component/Directive
instances which were instantiated an this location.\n * \n instances: unknown[];\n /**\n * NodeInjector

```

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information.\n */\n injector: NodeInjectorDebug;\n}\n\nexport interface NodeInjectorDebug {\n /**\n * Instance
bloom. Does the current injector have a provider with a given bloom mask.\n */\n bloom: string;\n\n /**\n *
Cumulative bloom. Do any of the above injectors have a provider with a given bloom mask.\n */\n
cumulativeBloom: string;\n\n /**\n * A list of providers associated with this injector.\n */\n providers:
(Type<unknown>|DirectiveDef<unknown>|ComponentDef<unknown>)[\n];\n\n /**\n * A list of providers
associated with this injector visible to the view of the component only.\n */\n viewProviders:
Type<unknown>[\n];\n\n /**\n * Location of the parent `TNode`.\n */\n parentInjectorIndex: number;\n\n }"/**\n
* @license\n * Copyright Google LLC All Rights Reserved.\n */\n * Use of this source code is governed by an MIT-
style license that can be\n * found in the LICENSE file at https://angular.io/license\n */\n\nimport {TNode} from
'./node';\nimport {RComment, RElement} from './renderer_dom';\nimport {HOST, LView, NEXT, PARENT,
T_HOST, TRANSPLANTED_VIEWS_TO_REFRESH} from './view';\n\n\n/**\n * Special location which allows
easy identification of type. If we have an array which was\n * retrieved from the `LView` and that array has `true` at
`TYPE` location, we know it is\n * `LContainer`.\n */\nexport const TYPE = 1;\n\n\n/**\n * Below are constants for
LContainer indices to help us look up LContainer members\n * without having to remember the specific indices.\n */
Uglify will inline these when minifying so there shouldn't be a cost.\n */\n\n\n/**\n * Flag to signify that this
`LContainer` may have transplanted views which need to be change\n * detected. (see:
`LView[DECLARATION_COMPONENT_VIEW]`).\n */\n * This flag, once set, is never unset for the
`LContainer`. This means that when unset we can skip\n * a lot of work in `refreshEmbeddedViews`. But when set
we still need to verify\n * that the `MOVED_VIEWS` are transplanted and on-push.\n */\nexport const
HAS_TRANSPLANTED_VIEWS = 2;\n\n\n// PARENT, NEXT, TRANSPLANTED_VIEWS_TO_REFRESH are
indices 3, 4, and 5\n// As we already have these constants in LView, we don't need to re-create them.\n\n\n// T_HOST
is index 6\n// We already have this constants in LView, we don't need to re-create it.\n\nexport const NATIVE =
7;\nexport const VIEW_REFS = 8;\nexport const MOVED_VIEWS = 9;\n\n\n\n/**\n * Size of LContainer's header.
Represents the index after which all views in the\n * container will be inserted. We need to keep a record of current
views so we know\n * which views are already in the DOM (and don't need to be re-added) and so we can\n *
remove views from the DOM when they are no longer required.\n */\nexport const
CONTAINER_HEADER_OFFSET = 10;\n\n\n\n/**\n * The state associated with a container.\n */\n * This is an array
so that its structure is closer to LView. This helps\n * when traversing the view tree (which is a mix of containers
and component\n * views), so we can jump to viewOrContainer[NEXT] in the same way regardless\n * of type.\n */
\nexport interface LContainer extends Array<any> {\n /**\n * The host element of this LContainer.\n */\n *
The host could be an LView if this container is on a component node.\n * In that case, the component LView is its
HOST.\n */\n * readonly[HOST]: RElement|RComment|LView;\n\n /**\n * This is a type field which allows us to
differentiate `LContainer` from `StylingContext` in an\n * efficient way. The value is always set to `true`\n */\n
[TYPE]: true;\n\n /**\n * Flag to signify that this `LContainer` may have transplanted views which need to be
change\n * detected. (see: `LView[DECLARATION_COMPONENT_VIEW]`).\n */\n * This flag, once set, is
never unset for the `LContainer`.\n */\n * [HAS_TRANSPLANTED_VIEWS]: boolean;\n\n /**\n * Access to the
parent view is necessary so we can propagate back\n * up from inside a container to parent[NEXT].\n */\n *
[PARENT]: LView;\n\n /**\n * This allows us to jump from a container to a sibling container or component\n *
view with the same parent, so we can remove listeners efficiently.\n */\n * [NEXT]: LView|LContainer|null;\n\n
/**\n * The number of direct transplanted views which need a refresh or have descendants themselves\n * that
need a refresh but have not marked their ancestors as Dirty. This tells us that during\n * change detection we
should still descend to find those children to refresh, even if the parents\n * are not `Dirty`/`CheckAlways`.\n */\n *
[TRANSPLANTED_VIEWS_TO_REFRESH]: number;\n\n /**\n * A collection of views created based on the
underlying `<ng-template>` element but inserted into\n * a different `LContainer`. We need to track views created
from a given declaration point since\n * queries collect matches from the embedded view declaration point and
_not_ the insertion point.\n */\n * [MOVED_VIEWS]: LView[]|null;\n\n /**\n * Pointer to the `TNode` which
represents the host of the container.\n */\n * [T_HOST]: TNode;\n\n /**\n * The comment element that serves as an
anchor for this LContainer.\n */\n * readonly[NATIVE]:\n * RComment; // TODO(misko): remove as this value can

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```

be gotten by unwrapping `[HOST]`
/**
 * Array of `ViewRef`s used by any `ViewContainerRef`s that point
 * to this container.
 * This is lazily initialized by `ViewContainerRef` when the first view is inserted.
 * NOTE: This is stored as `any[]` because render3 should really not be aware of `ViewRef` and
 * doing so creates circular dependency.
 * [VIEW_REFS]: unknown[]|null;
// Note: This hack is necessary so we don't
erroneously get a circular dependency failure based on types.
export const unusedValueExportToPlacateAjd =
1;
",
/**
 * @license
 * Copyright Google LLC All Rights Reserved.
 * Use of this source code is governed
 * by an MIT-style license that can be
 * found in the LICENSE file at https://angular.io/license
import
{LContainer, TYPE} from './container';
import {ComponentDef, DirectiveDef} from './definition';
import
{TNode, TNodeFlags} from './node';
import {RNode} from './renderer_dom';
import {FLAGS, LView,
LViewFlags} from './view';
/**
 * True if `value` is `LView`.
 * @param value wrapped value of `RNode`,
`LView`, `LContainer`
export function isLView(value: RNode|LView|LContainer|{}|null): value is LView {
return Array.isArray(value) && typeof value[TYPE] === 'object';
}
/**
 * True if `value` is `LContainer`.
 * @param value wrapped value of `RNode`, `LView`, `LContainer`
export function isLContainer(value:
RNode|LView|LContainer|{}|null): value is LContainer {
return Array.isArray(value) && value[TYPE] ===
true;
}
export function isContentQueryHost(tNode: TNode): boolean {
return (tNode.flags &
TNodeFlags.hasContentQuery) !== 0;
}
export function isComponentHost(tNode: TNode): boolean {
return
(tNode.flags & TNodeFlags.isComponentHost) === TNodeFlags.isComponentHost;
}
export function
isDirectiveHost(tNode: TNode): boolean {
return (tNode.flags & TNodeFlags.isDirectiveHost) ===
TNodeFlags.isDirectiveHost;
}
export function isComponentDef<T>(def: DirectiveDef<T>): def is
ComponentDef<T> {
return (def as ComponentDef<T>).template !== null;
}
export function
isRootView(target: LView): boolean {
return (target[FLAGS] & LViewFlags.IsRoot) !== 0;
}
",
/**
 * @license
 * Copyright Google LLC All Rights Reserved.
 * Use of this source code is governed by an MIT-
 * style license that can be
 * found in the LICENSE file at https://angular.io/license
import {assertDefined,
assertEqual, assertNumber, throwError} from './util/assert';
import {getComponentDef, getNgModuleDef} from
'./definition';
import {LContainer} from './interfaces/container';
import {DirectiveDef} from
'./interfaces/definition';
import {Tlcu} from './interfaces/i18n';
import {NodeInjectorOffset} from
'./interfaces/injector';
import {TNode} from './interfaces/node';
import {isLContainer, isLView} from
'./interfaces/type_checks';
import {HEADER_OFFSET, LView, TVIEW, TView} from './interfaces/view';
//
[Assert functions do not constraint type when they are guarded by a truthy
expression.](https://github.com/microsoft/TypeScript/issues/37295)
export function
assertTNodeForLView(tNode: TNode, lView: LView) {
assertTNodeForTView(tNode,
lView[TVIEW]);
}
export function assertTNodeForTView(tNode: TNode, tView: TView) {
assertTNode(tNode);
tNode.hasOwnProperty('tView_') &&
assertEqual(
tNode as any as {tView_:
TView}).tView_, tView,
'This TNode does not belong to this TView.');
}
export function
assertTNode(tNode: TNode) {
assertDefined(tNode, 'TNode must be defined');
if (!(tNode && typeof tNode
=== 'object' && tNode.hasOwnProperty('directiveStylingLast')))
throwError('Not of type TNode, got: ' +
tNode);
}
export function assertTlcu(tlcu: Tlcu) {
assertDefined(tlcu, 'Expected Tlcu to be defined');
if (!(typeof tlcu.currentCaseLViewIndex === 'number'))
throwError('Object is not of Tlcu type.');
}
export function assertComponentType(
actual: any,
msg: string = 'Type passed in is not
ComponentType, it does not have `cmp` property.')
if (!getComponentDef(actual))
throwError(msg);
}
export function assertNgModuleType(
actual: any,
msg: string = 'Type passed in is not
NgModuleType, it does not have `mod` property.')
if (!getNgModuleDef(actual))
throwError(msg);
}
export function assertCurrentTNodeIsParent(isParent: boolean) {
assertEqual(isParent, true,
'currentTNode should be a parent');
}
export function assertHasParent(tNode: TNode|null) {
assertDefined(tNode, 'currentTNode should exist!');
assertDefined(tNode!.parent, 'currentTNode should have a
parent');
}
export function assertDataNext(lView: LView, index: number, arr?: any[])
if (arr === null) arr =
lView;
assertEqual(
arr.length, index, `index ${index} expected to be at the end of arr (length
${arr.length} `);
}
export function assertLContainer(value: any): asserts value is LContainer {

```

```

assertDefined(value, 'LContainer must be defined');
assertEqual(isLContainer(value), true, 'Expecting LContainer');
export function assertLViewOrUndefined(value: any): asserts value is LView|null|undefined {
  value && assertEqual(isLView(value), true, 'Expecting LView or undefined or null');
}
export function assertLView(value: any): asserts value is LView {
  assertDefined(value, 'LView must be defined');
  assertEqual(isLView(value), true, 'Expecting LView');
}
export function assertFirstCreatePass(tView: TView,
  errMessage?: string) {
  assertEqual(tView.firstCreatePass, true, errMessage || 'Should only be called in first
  create pass.');
```

export function assertFirstUpdatePass(tView: TView, errMessage?: string) {
 assertEqual(tView.firstUpdatePass, true, errMessage || 'Should only be called in first update pass.');

export function assertDirectiveDef<T>(obj: any): asserts obj is DirectiveDef<T> {
 if (obj.type === undefined || obj.selectors === undefined || obj.inputs === undefined) {
 throwError(`Expected a DirectiveDef/ComponentDef and this object does not seem to have the expected shape.`);
 }

export function assertIndexInDeclRange(IView: LView, index: number) {
 const tView = IView[1];
 assertBetween(HEADER_OFFSET, tView.bindingStartIndex, index);

export function assertIndexInVarsRange(IView: LView, index: number) {
 const tView = IView[1];
 assertBetween(tView.bindingStartIndex, tView.expandoStartIndex, index);

export function assertIndexInExpandoRange(IView: LView, index: number) {
 const tView = IView[1];
 assertBetween(tView.expandoStartIndex, IView.length, index);

export function assertBetween(lower: number, upper: number, index: number) {
 if (!(lower <= index && index < upper)) {
 throwError(`Index out of range (expecting \${lower} <= \${index} < \${upper})`);
 }

export function assertNodeInjector(IView: LView, injectorIndex: number) {
 assertIndexInExpandoRange(IView, injectorIndex);
 assertIndexInExpandoRange(IView, injectorIndex + NodeInjectorOffset.PARENT);
 assertNumber(IView[injectorIndex + 0], 'injectorIndex should point to a bloom filter');
 assertNumber(IView[injectorIndex + 1], 'injectorIndex should point to a bloom filter');
 assertNumber(IView[injectorIndex + 2], 'injectorIndex should point to a bloom filter');
 assertNumber(IView[injectorIndex + 3], 'injectorIndex should point to a bloom filter');
 assertNumber(IView[injectorIndex + 4], 'injectorIndex should point to a bloom filter');
 assertNumber(IView[injectorIndex + 5], 'injectorIndex should point to a bloom filter');
 assertNumber(IView[injectorIndex + 6], 'injectorIndex should point to a bloom filter');
 assertNumber(IView[injectorIndex + 7], 'injectorIndex should point to a bloom filter');
 assertNumber(IView[injectorIndex + NodeInjectorOffset.PARENT], 'injectorIndex should point to parent injector');

export const SVG_NAMESPACE = 'http://www.w3.org/2000/svg';
export const MATH_ML_NAMESPACE = 'http://www.w3.org/1998/MathML/';

export interface LContext {
 parentView: LView;
 index: number;
 node: LNode;
}


```

function GetComponentLViewByIndex(nodeIndex: number, hostView: LView): LView {\n // Could be an LView
or an LContainer. If LContainer, unwrap to find LView.\n ngDevMode && assertIndexInRange(hostView,
nodeIndex);\n const slotValue = hostView[nodeIndex];\n const IView = isLView(slotValue) ? slotValue :
slotValue[HOST];\n return IView;\n}\n\n/**\n * Returns the monkey-patch value data present on the target
(which could be\n * a component, directive or a DOM node).\n */\nexport function readPatchedData(target: any):
LView|LContext|null {\n ngDevMode && assertDefined(target, 'Target expected');\n return
target[MONKEY_PATCH_KEY_NAME] || null;\n}\n\nexport function readPatchedLView(target: any): LView|null
{\n const value = readPatchedData(target);\n if (value) {\n return Array.isArray(value) ? value : (value as
LContext).IView;\n }\n return null;\n}\n\n/**\n * Checks whether a given view is in creation mode\n */\nexport function
isCreationMode(view: LView): boolean {\n return (view[FLAGS] & LViewFlags.CreationMode) ===
LViewFlags.CreationMode;\n}\n\n/**\n * Returns a boolean for whether the view is attached to the change
detection tree.\n */\n * Note: This determines whether a view should be checked, not whether it's inserted\n * into a
container. For that, you'll want `viewAttachedToContainer` below.\n */\nexport function
viewAttachedToChangeDetector(view: LView): boolean {\n return (view[FLAGS] & LViewFlags.Attached) ===
LViewFlags.Attached;\n}\n\n/**\n * Returns a boolean for whether the view is attached to a container.\n */\nexport
function viewAttachedToContainer(view: LView): boolean {\n return isLContainer(view[PARENT]);\n}\n\n/**\n *
Returns a constant from `TConstants` instance.\n */\nexport function getConstant<T>(consts: TConstants|null, index:
null|undefined): null;\nexport function getConstant<T>(consts: TConstants, index: number): T|null;\nexport function
getConstant<T>(consts: TConstants|null, index: number|null|undefined): T|null;\nexport function
getConstant<T>(consts: TConstants|null, index: number|null|undefined): T|null {\n if (index === null || index ===
undefined) return null;\n ngDevMode && assertIndexInRange(consts!, index);\n return consts![index] as unknown
as T;\n}\n\n/**\n * Resets the pre-order hook flags of the view.\n */\n @param IView the LView on which the flags
are reset\n */\nexport function resetPreOrderHookFlags(IView: LView) {\n IView[PREORDER_HOOK_FLAGS]
= 0;\n}\n\n/**\n * Updates the `TRANSPLANTED_VIEWS_TO_REFRESH` counter on the `LContainer` as well
as the parents\n * whose\n * 1. counter goes from 0 to 1, indicating that there is a new child that has a view to
refresh\n * or\n * 2. counter goes from 1 to 0, indicating there are no more descendant views to refresh\n */\nexport
function updateTransplantedViewCount(lContainer: LContainer, amount: 1|- 1) {\n
lContainer[TRANSPLANTED_VIEWS_TO_REFRESH] += amount;\n let viewOrContainer: LView|LContainer =
lContainer;\n let parent: LView|LContainer|null = lContainer[PARENT];\n while (parent !== null &&\n
((amount === 1 && viewOrContainer[TRANSPLANTED_VIEWS_TO_REFRESH] === 1) ||\n (amount ===
-1 && viewOrContainer[TRANSPLANTED_VIEWS_TO_REFRESH] === 0))) {\n
parent[TRANSPLANTED_VIEWS_TO_REFRESH] += amount;\n viewOrContainer = parent;\n parent =
parent[PARENT];\n }\n}\n\n"/**\n * @license\n * Copyright Google LLC All Rights Reserved.\n */\n * Use of this
source code is governed by an MIT-style license that can be\n * found in the LICENSE file at
https://angular.io/license\n */\nimport {InjectFlags} from './di/interface/injector';\nimport {assertDefined,
assertEqual, assertGreaterThanOrEqual, assertLessThan, assertNotEqual} from './util/assert';\nimport
{assertLViewOrUndefined, assertTNodeForLView, assertTNodeForTView} from './assert';\nimport {DirectiveDef}
from './interfaces/definition';\nimport {TNode, TNodeType} from './interfaces/node';\nimport {CONTEXT,
DECLARATION_VIEW, HEADER_OFFSET, LView, OpaqueViewState, T_HOST, TData, TVIEW, TView,
TViewType} from './interfaces/view';\nimport {MATH_ML_NAMESPACE, SVG_NAMESPACE} from
'/namespaces';\nimport {getTNode} from './util/view_utils';\n\n/**\n * Parent
LFrame.\n */\n * This is needed when `leaveView` is called to restore the previous state.\n */\n parent:
LFrame;\n\n /**\n * Child LFrame.\n */\n * This is used to cache existing LFrames to relieve the memory
pressure.\n */\n child: LFrame|null;\n\n /**\n * State of the current view being processed.\n */\n * An array of
nodes (text, element, container, etc), pipes, their bindings, and\n * any local variables that need to be stored
between invocations.\n */\n IView: LView;\n\n /**\n * Current `TView` associated with the `LFrame.IView`.\n
*/\n * One can get `TView` from `lFrame[TVIEW]` however because it is so common it makes sense to\n * store
it in `LFrame` for perf reasons.\n */\n tView: TView;\n\n /**\n * Used to set the parent property when nodes are

```


created and track query results.

- `isParent``: This is used in conjunction with `currentTNode``. If `isParent`` is `true``: then `currentTNode`` points to a parent node. If `false``: then `currentTNode`` points to previous node (sibling).
- `isParent: boolean``: Index of currently selected element in `LView``. Used by binding instructions. Updated as part of advance instruction.
- `selectedIndex: number``: Current pointer to the binding index.
- `bindingIndex: number``: The last `viewData` retrieved by `nextContext().`` Allows building `nextContext().`` and `reference().`` calls.
 - e.g. `const inner = x().$implicit; const outer = x().$implicit;``
 - `contextLView: LView``: Store the element depth count. This is used to identify the root elements of the template so that we can then attach patch data `LView`` to only those elements. We know that those are the only places where the patch data could change, this way we will save on number of places where the patching occurs.
 - `elementDepthCount: number``: Current namespace to be used when creating elements.
 - `currentNamespace: string|null``: The root index from which pure function instructions should calculate their binding indices. In component views, this is `TView.bindingStartIndex``. In a host binding context, this is the `TView.expandoStartIndex + any dirs/hostVars before the given dir.``
 - `bindingRootIndex: number``: Current index of a `View` or `Content Query` which needs to be processed next. We iterate over the list of `Queries` and increment current query index at every step.
 - `currentQueryIndex: number``: When host binding is executing this points to the directive index. `TView.data[currentDirectiveIndex]`` is `DirectiveDef``. `LView[currentDirectiveIndex]`` is directive instance.
 - `currentDirectiveIndex: number``: Are we currently in `i18n`` block as denoted by `elementStart`` and `elementEnd``. This information is needed because while we are in `i18n`` block all elements must be pre-declared in the translation. (i.e. `'Hello #2World/#2!`` pre-declares element at `#2`` location.) This allocates `TNodeType.Placeholder`` element at location `#2``. If translator removes `#2`` from translation than the runtime must also ensure the element at `#2`` does not get inserted into the DOM. The translation does not carry information about deleted elements. Therefore the only way to know that an element is deleted is that it was not pre-declared in the translation. This flag works by ensuring that elements which are created without pre-declaration (`TNodeType.Placeholder``) are not inserted into the DOM render tree. (It does mean that the element still gets instantiated along with all of its behavior [directives])
 - `inI18n: boolean``: All implicit instruction state is stored here. It is useful to have a single object where all of the state is stored as a mental model (rather it being spread across many different variables).
 - PERF NOTE:** Turns out that writing to a true global variable is slower than having an intermediate object with properties.
- `interface InstructionState {``
 - `current`LFrame``: `null`` if we have not called `enterView.``
 - `LFrame: LFrame``: Stores whether directives should be matched to elements.
 - When template contains `ngNonBindable`` then we need to prevent the runtime from matching directives on children of that element. Example:


```
<my-comp my-directive>
ngNonBindable>
<my-comp my-directive>
</my-comp>
<div
ngNonBindable>
</my-comp>
</div>
```

 - Should match component / directive.
 - Should not match component / directive because we are in `ngNonBindable.``
 - `bindingsEnabled: boolean``: In this mode, any changes in bindings will throw an `ExpressionChangedAfterChecked`` error. Necessary to support `ChangeDetectorRef.checkNoChanges().`` `checkNoChanges`` Runs only in `devmode=true`` and verifies that no unintended changes exist in the change detector or its children.
 - `isInCheckNoChangesMode: boolean``
- `const instructionState: InstructionState = {``
 - `LFrame``: `createLFrame(null,``
 - `bindingsEnabled: true,``
 - `isInCheckNoChangesMode: false,``
 - Returns true if the instruction state stack is empty. Intended to be called from tests only (tree shaken otherwise).
 - `next`` function `specOnlyIsInstructionStateEmpty(): boolean {`` return `instructionState.LFrame.parent === null;``
 - `next`` function `getElementDepthCount() {`` return `instructionState.LFrame.elementDepthCount;``
 - `next`` function `increaseElementDepthCount() {`` return `instructionState.LFrame.elementDepthCount++;``
 - `next`` function `decreaseElementDepthCount() {`` return `instructionState.LFrame.elementDepthCount--;``
 - `next`` function `getBindingsEnabled(): boolean {`` return `instructionState.bindingsEnabled;``
 - Enables directive matching on elements. Example:

```

```\n * <my-comp my-directive>\n * Should match component / directive.\n * </my-comp>\n * <div
ngNonBindable>\n * <!-- disableBindings() -->\n * <my-comp my-directive>\n * Should not match component
/ directive because we are in ngNonBindable.\n * </my-comp>\n * <!-- enableBindings() -->\n * </div>\n * ```\n
*\n * @codeGenApi\n * ^\nexport function enableBindings(): void {\n instructionState.bindingsEnabled =
true;\n}\n\n/**\n * Disables directive matching on element.\n * \n * Example:\n * ```\n * <my-comp my-
directive>\n * Should match component / directive.\n * </my-comp>\n * <div ngNonBindable>\n * <!--
disableBindings() -->\n * <my-comp my-directive>\n * Should not match component / directive because we are
in ngNonBindable.\n * </my-comp>\n * <!-- enableBindings() -->\n * </div>\n * ```\n * \n * @codeGenApi\n
*\nexport function disableBindings(): void {\n instructionState.bindingsEnabled = false;\n}\n\n/**\n * Return the
current `LView`.\n * ^\nexport function getLView(): LView {\n return instructionState.IFrame.IView;\n}\n\n/**\n *
Return the current `TView`.\n * ^\nexport function getTView(): TView {\n return
instructionState.IFrame.tView;\n}\n\n/**\n * Restores `contextViewData` to the given OpaqueViewState instance.\n
*\n * Used in conjunction with the getCurrentView() instruction to save a snapshot\n * of the current view and
restore it when listeners are invoked. This allows\n * walking the declaration view tree in listeners to get vars from
parent views.\n * \n * @param viewToRestore The OpaqueViewState instance to restore.\n * \n * @codeGenApi\n
*\nexport function restoreView(viewToRestore: OpaqueViewState) {\n instructionState.IFrame.contextLView =
viewToRestore as any as LView;\n}\n\nexport function getCurrentTNode(): TNode|null {\n let currentTNode =
getCurrentTNodePlaceholderOk();\n while (currentTNode !== null && currentTNode.type ===
TNodeType.Placeholder) {\n currentTNode = currentTNode.parent;\n }\n return currentTNode;\n}\n\nexport
function getCurrentTNodePlaceholderOk(): TNode|null {\n return
instructionState.IFrame.currentTNode;\n}\n\nexport function getCurrentParentTNode(): TNode|null {\n const
IFrame = instructionState.IFrame;\n const currentTNode = IFrame.currentTNode;\n return IFrame.isParent ?
currentTNode : currentTNode!.parent;\n}\n\nexport function setCurrentTNode(tNode: TNode|null, isParent:
boolean) {\n ngDevMode && tNode && assertTNodeForTView(tNode, instructionState.IFrame.tView);\n const
IFrame = instructionState.IFrame;\n IFrame.currentTNode = tNode;\n IFrame.isParent = isParent;\n}\n\nexport
function isCurrentTNodeParent(): boolean {\n return instructionState.IFrame.isParent;\n}\n\nexport function
setCurrentTNodeAsNotParent(): void {\n instructionState.IFrame.isParent = false;\n}\n\nexport function
setCurrentTNodeAsParent(): void {\n instructionState.IFrame.isParent = true;\n}\n\nexport function
getContextLView(): LView {\n return instructionState.IFrame.contextLView;\n}\n\nexport function
isInCheckNoChangesMode(): boolean {\n // TODO(misko): remove this from the LView since it is
ngDevMode=true mode only.\n return instructionState.isInCheckNoChangesMode;\n}\n\nexport function
setIsInCheckNoChangesMode(mode: boolean): void {\n instructionState.isInCheckNoChangesMode =
mode;\n}\n\n// top level variables should not be exported for performance reasons (PERF_NOTES.md)\nexport
function getBindingRoot() {\n const IFrame = instructionState.IFrame;\n let index = IFrame.bindingRootIndex;\n
if (index === -1) {\n index = IFrame.bindingRootIndex = IFrame.tView.bindingStartIndex;\n }\n return
index;\n}\n\nexport function getBindingIndex(): number {\n return
instructionState.IFrame.bindingIndex;\n}\n\nexport function setBindingIndex(value: number): number {\n return
instructionState.IFrame.bindingIndex = value;\n}\n\nexport function nextBindingIndex(): number {\n return
instructionState.IFrame.bindingIndex++;\n}\n\nexport function incrementBindingIndex(count: number): number {\n
const IFrame = instructionState.IFrame;\n const index = IFrame.bindingIndex;\n IFrame.bindingIndex =
IFrame.bindingIndex + count;\n return index;\n}\n\nexport function isInI18nBlock() {\n return
instructionState.IFrame.inI18n;\n}\n\nexport function setInI18nBlock(isInI18nBlock: boolean): void {\n
instructionState.IFrame.inI18n = isInI18nBlock;\n}\n\n/**\n * Set a new binding root index so that host template
functions can execute.\n * \n * Bindings inside the host template are 0 index. But because we don't know ahead of
time\n * how many host bindings we have we can't pre-compute them. For this reason they are all\n * 0 index and
we just shift the root so that they match next available location in the LView.\n * \n * @param bindingRootIndex
Root index for `hostBindings`\n * @param currentDirectiveIndex `TData[currentDirectiveIndex]` will point to the
current directive\n * whose `hostBindings` are being processed.\n * ^\nexport function

```

```

setBindingRootForHostBindings(\n bindingRootIndex: number, currentDirectiveIndex: number) {\n const lFrame
= instructionState.lFrame;\n lFrame.bindingIndex = lFrame.bindingRootIndex = bindingRootIndex;\n
setCurrentDirectiveIndex(currentDirectiveIndex);\n}\n\n/**\n * When host binding is executing this points to the
directive index.\n * `TVIEW.data[getCurrentDirectiveIndex()]` is `DirectiveDef`\n *
`LVIEW[getCurrentDirectiveIndex()]` is directive instance.\n */\nexport function getCurrentDirectiveIndex():
number {\n return instructionState.lFrame.currentDirectiveIndex;\n}\n\n/**\n * Sets an index of a directive whose
`hostBindings` are being processed.\n * @param currentDirectiveIndex `TData` index where current directive
instance can be found.\n */\nexport function setCurrentDirectiveIndex(currentDirectiveIndex: number): void {\n
instructionState.lFrame.currentDirectiveIndex = currentDirectiveIndex;\n}\n\n/**\n * Retrieve the current
`DirectiveDef` which is active when `hostBindings` instruction is being\n * executed.\n * @param tData Current
`TData` where the `DirectiveDef` will be looked up at.\n */\nexport function getCurrentDirectiveDef(tData: TData):
DirectiveDef<any>|null {\n const currentDirectiveIndex = instructionState.lFrame.currentDirectiveIndex;\n return
currentDirectiveIndex === -1 ? null : tData[currentDirectiveIndex] as DirectiveDef<any>;\n}\n\nexport function
getCurrentQueryIndex(): number {\n return instructionState.lFrame.currentQueryIndex;\n}\n\nexport function
setCurrentQueryIndex(value: number): void {\n instructionState.lFrame.currentQueryIndex = value;\n}\n\n/**\n *
Returns a `TNode` of the location where the current `LVIEW` is declared at.\n * @param lView an `LVIEW` that
we want to find parent `TNode` for.\n */\nfunction getDeclarationTNode(lView: LVIEW): TNode|null {\n const
tView = lView[TVIEW];\n // Return the declaration parent for embedded views\n if (tView.type ===
TVIEWType.Embedded) {\n ngDevMode && assertDefined(tView.declTNode, 'Embedded TNodes should have
declaration parents.);\n return tView.declTNode;\n }\n // Components don't have `TVIEW.declTNode` because
each instance of component could be\n // inserted in different location, hence `TVIEW.declTNode` is meaningless.\n
// Falling back to `T_HOST` in case we cross component boundary.\n if (tView.type === TVIEWType.Component)
{\n return lView[T_HOST];\n }\n // Remaining TNode type is `TVIEWType.Root` which doesn't have a parent
TNode.\n return null;\n}\n\n/**\n * This is a light weight version of the `enterView` which is needed by the DI
system.\n * @param lView `LVIEW` location of the DI context.\n * @param tNode `TNode` for DI context\n *
@param flags DI context flags. if `SkipSelf` flag is set then we walk up the declaration\n * tree from `tNode`
until we find parent declared `TElementNode`.\n * @returns `true` if we have successfully entered DI associated
with `tNode` (or with declared\n * `TNode` if `flags` has `SkipSelf`). Failing to enter DI implies that no
associated\n * `NodeInjector` can be found and we should instead use `ModuleInjector`.\n * - If `true` than this
call must be followed by `leaveDI`\n * - If `false` than this call failed and we should NOT call `leaveDI`\n
*/\nexport function enterDI(lView: LVIEW, tNode: TNode, flags: InjectFlags) {\n ngDevMode &&
assertLViewOrUndefined(lView);\n if (flags & InjectFlags.SkipSelf) {\n ngDevMode &&
assertTNodeForTVIEW(tNode, lView[TVIEW]);\n let parentTNode = tNode as TNode | null;\n let
parentLView = lView;\n while (true) {\n ngDevMode && assertDefined(parentTNode, 'Parent TNode should
be defined');\n parentTNode = parentTNode!.parent as TNode | null;\n if (parentTNode === null && !(flags &
InjectFlags.Host)) {\n parentTNode = getDeclarationTNode(parentLView);\n if (parentTNode === null)
break;\n // In this case, a parent exists and is definitely an element. So it will definitely\n // have an
existing lView as the declaration view, which is why we can assume it's defined.\n ngDevMode &&
assertDefined(parentLView, 'Parent LVIEW should be defined');\n parentLView =
parentLView[DECLARATION_VIEW]!;\n // In Ivy there are Comment nodes that correspond to ngIf and
NgFor embedded directives\n // We want to skip those and look only at Elements and ElementContainers to
ensure\n // we're looking at true parent nodes, and not content or other types.\n if (parentTNode.type &
(TNodeType.Element | TNodeType.ElementContainer)) {\n break;\n }\n } else {\n break;\n }\n }\n if (parentTNode === null) {\n // If we failed to find a parent TNode this means that we should use module
injector.\n return false;\n } else {\n tNode = parentTNode;\n lView = parentLView;\n }\n }\n ngDevMode && assertTNodeForLVIEW(tNode, lView);\n const lFrame = instructionState.lFrame =
allocLFrame();\n lFrame.currentTNode = tNode;\n lFrame.lView = lView;\n return true;\n}\n\n/**\n * Swap the
current lView with a new lView.\n * @param lView\n * For performance reasons we store the lView in the top level of the

```

```

module.\n * This way we minimize the number of properties to read. Whenever a new view\n * is entered we have
to store the IView for later, and when the view is\n * exited the state has to be restored\n * @param newView
New IView to become active\n * @returns the previously active IView;\n * \nexport function enterView(newView:
LView): void {\n ngDevMode && assertNotEqual(newView[0], newView[1] as any, '????');\n ngDevMode &&
assertLViewOrUndefined(newView);\n const newLFrame = allocLFrame();\n if (ngDevMode) {\n assertEqual(newLFrame.isParent, true, 'Expected clean LFrame');\n assertEqual(newLFrame.IView, null,
'Expected clean LFrame');\n assertEqual(newLFrame.tView, null, 'Expected clean LFrame');\n assertEqual(newLFrame.selectedIndex, -1, 'Expected clean LFrame');\n assertEqual(newLFrame.elementDepthCount, 0, 'Expected clean LFrame');\n assertEqual(newLFrame.currentDirectiveIndex, -1, 'Expected clean LFrame');\n assertEqual(newLFrame.currentNamespace, null, 'Expected clean LFrame');\n assertEqual(newLFrame.bindingRootIndex, -1, 'Expected clean LFrame');\n assertEqual(newLFrame.currentQueryIndex, 0, 'Expected clean LFrame');\n }\n const tView =
newView[TVIEW];\n instructionState.IFrame = newLFrame;\n ngDevMode && tView.firstChild &&
assertTNodeForTView(tView.firstChild, tView);\n newLFrame.currentTNode = tView.firstChild!;\n newLFrame.IView = newView;\n newLFrame.tView = tView;\n newLFrame.contextLView = newView!;\n newLFrame.bindingIndex = tView.bindingStartIndex;\n newLFrame.inI18n = false;\n}\n\n/**\n * Allocates next
free LFrame. This function tries to reuse the `LFrame`s to lower memory pressure.\n */\nfunction allocLFrame() {\n const currentLFrame = instructionState.IFrame;\n const childLFrame = currentLFrame === null ? null :
currentLFrame.child;\n const newLFrame = childLFrame === null ? createLFrame(currentLFrame) :
childLFrame;\n return newLFrame;\n}\n\nfunction createLFrame(parent: LFrame|null): LFrame {\n const IFrame:
LFrame = {\n currentTNode: null,\n isParent: true,\n IView: null!,\n tView: null!,\n selectedIndex: -1,\n contextLView: null!,\n elementDepthCount: 0,\n currentNamespace: null,\n currentDirectiveIndex: -1,\n bindingRootIndex: -1,\n bindingIndex: -1,\n currentQueryIndex: 0,\n parent: parent!,\n child: null,\n inI18n: false,\n };\n parent !== null && (parent.child = IFrame); // link the new LFrame for reuse.\n return
IFrame;\n}\n\n/**\n * A lightweight version of leave which is used with DI.\n */\n * This function only resets
`currentTNode` and `LView` as those are the only properties\n * used with DI (`enterDI`).\n * NOTE: This
function is reexported as `leaveDI`. However `leaveDI` has return type of `void` where\n * as `leaveViewLight` has
`LFrame`. This is so that `leaveViewLight` can be used in `leaveView`.\n */\nfunction leaveViewLight(): LFrame
{\n const oldLFrame = instructionState.IFrame;\n instructionState.IFrame = oldLFrame.parent;\n oldLFrame.currentTNode = null!;\n oldLFrame.IView = null!;\n return oldLFrame;\n}\n\n/**\n * This is a
lightweight version of the `leaveView` which is needed by the DI system.\n */\n * NOTE: this function is an alias so
that we can change the type of the function to have `void`\n * return type.\n */\nexport const leaveDI: () => void =
leaveViewLight;\n\n/**\n * Leave the current `LView`\n */\n * This pops the `LFrame` with the associated `LView`
from the stack.\n */\n * IMPORTANT: We must zero out the `LFrame` values here otherwise they will be retained.
This is\n * because for performance reasons we don't release `LFrame` but rather keep it for next use.\n */\nexport
function leaveView() {\n const oldLFrame = leaveViewLight();\n oldLFrame.isParent = true;\n oldLFrame.tView
= null!;\n oldLFrame.selectedIndex = -1;\n oldLFrame.contextLView = null!;\n oldLFrame.elementDepthCount =
0;\n oldLFrame.currentDirectiveIndex = -1;\n oldLFrame.currentNamespace = null;\n oldLFrame.bindingRootIndex = -1;\n oldLFrame.bindingIndex = -1;\n oldLFrame.currentQueryIndex =
0;\n}\n\nexport function nextContextImpl<T = any>(level: number): T {\n const contextLView =
instructionState.IFrame.contextLView =\n walkUpViews(level, instructionState.IFrame.contextLView!);\n return contextLView[CONTEXT] as T;\n}\n\nfunction walkUpViews(nestingLevel: number, currentView: LView):
LView {\n while (nestingLevel > 0) {\n ngDevMode &&\n assertDefined(\n currentView[DECLARATION_VIEW],\n 'Declaration view should be defined if nesting level is greater than
0.);\n currentView = currentView[DECLARATION_VIEW]!;\n nestingLevel--;\n }\n return
currentView;\n}\n\n/**\n * Gets the currently selected element index.\n */\n * Used with { @link property }
instruction (and more in the future) to identify the index in the\n * current `LView` to act on.\n */\nexport function

```

```

getSelectedIndex() {\n return instructionState.IFrame.selectedIndex;\n}\n\n/**\n * Sets the most recent index
passed to {@link select}\n *\n * Used with {@link property} instruction (and more in the future) to identify the
index in the\n * current `LView` to act on.\n *\n * (Note that if an "exit function" was set earlier (via
`setElementExitFn`) then that will be\n * run if and when the provided `index` value is different from the current
selected index value.)\n */\nexport function setSelectedIndex(index: number) {\n ngDevMode && index !== -1
&&\n assertGreaterThanOrEqual(index, HEADER_OFFSET, 'Index must be past HEADER_OFFSET (or -
1).');\n ngDevMode &&\n assertLessThan(\n index, instructionState.IFrame.IView.length, 'Can\\'t set index
passed end of LView');\n instructionState.IFrame.selectedIndex = index;\n}\n\n/**\n * Gets the `tNode` that
represents currently selected element.\n */\nexport function getSelectedTNode() {\n const IFrame =
instructionState.IFrame;\n return getTNode(IFrame.tView, IFrame.selectedIndex);\n}\n\n/**\n * Sets the namespace
used to create elements to `http://www.w3.org/2000/svg` in global state.\n *\n * @codeGenApi\n */\nexport
function namespaceSVG() {\n instructionState.IFrame.currentNamespace = SVG_NAMESPACE;\n}\n\n/**\n *
Sets the namespace used to create elements to `http://www.w3.org/1998/MathML/` in global state.\n *\n *
@codeGenApi\n */\nexport function namespaceMathML() {\n instructionState.IFrame.currentNamespace =
MATH_ML_NAMESPACE;\n}\n\n/**\n * Sets the namespace used to create elements to `null`, which forces
element creation to use\n * `createElement` rather than `createElementNS`.\n *\n * @codeGenApi\n */\nexport
function namespaceHTML() {\n namespaceHTMLInternal();\n}\n\n/**\n * Sets the namespace used to create
elements to `null`, which forces element creation to use\n * `createElement` rather than `createElementNS`.\n
*/\nexport function namespaceHTMLInternal() {\n instructionState.IFrame.currentNamespace = null;\n}\n\nexport
function getNamespace(): string|null {\n return instructionState.IFrame.currentNamespace;\n}\n\n",/**\n *
@license\n * Copyright Google LLC All Rights Reserved.\n *\n * Use of this source code is governed by an MIT-
style license that can be\n * found in the LICENSE file at https://angular.io/license\n */\n\n * @fileoverview\n
* A module to facilitate use of a Trusted Types policy internally within\n * Angular. It lazily constructs the Trusted
Types policy, providing helper\n * utilities for promoting strings to Trusted Types. When Trusted Types are not\n *
available, strings are used as a fallback.\n * @security All use of this module is security-sensitive and should go
through\n * security review.\n */\nimport {global} from './global';\nimport {TrustedHTML, TrustedScript,
TrustedScriptURL, TrustedTypePolicy, TrustedTypePolicyFactory} from './trusted_type_defs';\n\n * The
Trusted Types policy, or null if Trusted Types are not\n * enabled/supported, or undefined if the policy has not been
created yet.\n */\nlet policy: TrustedTypePolicy|null|undefined;\n\n * Returns the Trusted Types policy, or null
if Trusted Types are not\n * enabled/supported. The first call to this function will create the policy.\n */\nfunction
getPolicy(): TrustedTypePolicy|null {\n if (policy === undefined) {\n policy = null;\n if (global.trustedTypes)
{\n try {\n policy = (global.trustedTypes as TrustedTypePolicyFactory).createPolicy('angular', {\n
createHTML: (s: string) => s,\n createScript: (s: string) => s,\n createScriptURL: (s: string) => s,\n
});\n } catch {\n // trustedTypes.createPolicy throws if called with a name that is\n // already registered,
even in report-only mode. Until the API changes,\n // catch the error not to break the applications functionally.
In such\n // cases, the code will fall back to using strings.\n }\n }\n }\n return policy;\n}\n\n/**\n *
Unsafely promote a string to a TrustedHTML, falling back to strings when\n * Trusted Types are not available.\n *
@security This is a security-sensitive function; any use of this function\n * must go through security review. In
particular, it must be assured that the\n * provided string will never cause an XSS vulnerability if used in a context\n
* that will be interpreted as HTML by a browser, e.g. when assigning to\n * element.innerHTML.\n */\nexport
function trustedHTMLFromString(html: string): TrustedHTML|string {\n return getPolicy()?.createHTML(html) ||
html;\n}\n\n/**\n * Unsafely promote a string to a TrustedScript, falling back to strings when\n * Trusted Types are
not available.\n * @security In particular, it must be assured that the provided string will\n * never cause an XSS
vulnerability if used in a context that will be\n * interpreted and executed as a script by a browser, e.g. when calling
eval.\n */\nexport function trustedScriptFromString(script: string): TrustedScript|string {\n return
getPolicy()?.createScript(script) || script;\n}\n\n/**\n * Unsafely promote a string to a TrustedScriptURL, falling
back to strings\n * when Trusted Types are not available.\n * @security This is a security-sensitive function; any use
of this function\n * must go through security review. In particular, it must be assured that the\n * provided string

```

will never cause an XSS vulnerability if used in a context that will cause a browser to load and execute a resource, e.g. when assigning to `script.src`.

`export function trustedScriptURLFromString(url: string): TrustedScriptURL {`  
`return getPolicy()?.createScriptURL(url) || url;`  
`}`

Unsafely call the Function constructor with the given string arguments. It is only available in development mode, and should be stripped out of production code.

`@security` This is a security-sensitive function; any use of this function must go through security review. In particular, it must be assured that it is only called from development code, as use in production code can lead to XSS vulnerabilities.

`export function newTrustedFunctionForDev(...args: string[]): Function {`  
`if (typeof ngDevMode === 'undefined') {`  
`throw new Error('newTrustedFunctionForDev should never be called in production');`  
`}`  
`if (!global.trustedTypes) {`  
`// In environments that don't support Trusted Types, fall back to the most`  
`// straightforward implementation:`  
`return new Function(...args);`  
`}`  
`// Chrome currently does not support passing TrustedScript to the Function`  
`// constructor. The following implements the workaround proposed on the page`  
`// below, where the Chromium bug is also referenced:`  
`// https://github.com/w3c/webappsec-trusted-types/wiki/Trusted-Types-for-function-`  
`// constructor`  
`const fnArgs = args.slice(0, -1).join(',');`  
`const fnBody = args.pop()!.toString();`  
`const body =`  
``function anonymous(${fnArgs}) { ${fnBody} }`;`  
`// Using eval directly confuses the compiler and`  
`// prevents this module from`  
`// being stripped out of JS binaries even if not used. The global['eval']`  
`// indirection`  
`// fixes that.`  
`const fn = global['eval'](trustedScriptFromString(body) as string) as Function;`  
`// To completely`  
`// mimic the behavior of calling "new Function", two more`  
`// things need to happen:`  
`// 1. Stringifying the`  
`// resulting function should return its source code`  
`fn.toString = () => body;`  
`// 2. When calling the resulting`  
`// function, `this` should refer to `global``  
`return fn.bind(global);`  
`}`

When Trusted Types support in Function constructors is widely available, the implementation of this function can be simplified to:

`export function newTrustedFunctionForDev(...args: string[]): Function {`  
`return new Function(...args.map(a => trustedScriptFromString(a)));`  
`}`

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`export enum BypassType {`  
`Url = 'URL',`  
`Html = 'HTML',`  
`ResourceUrl = 'ResourceURL',`  
`Script = 'Script',`  
`Style = 'Style',`  
`}`

Marker interface for a value that's safe to use in a particular context.

`@publicApi` `export interface SafeValue {}`

Marker interface for a value that's safe to use as HTML.

`@publicApi` `export interface SafeHtml extends SafeValue {}`

Marker interface for a value that's safe to use as style (CSS).

`@publicApi` `export interface SafeStyle extends SafeValue {}`

Marker interface for a value that's safe to use as JavaScript.

`@publicApi` `export interface SafeScript extends SafeValue {}`

Marker interface for a value that's safe to use as a URL linking to a document.

`@publicApi` `export interface SafeUrl extends SafeValue {}`

Marker interface for a value that's safe to use as a URL to load executable code from.

`@publicApi` `export interface SafeResourceUrl extends SafeValue {}`

`abstract class SafeValueImpl implements SafeValue {`  
`constructor(public changingThisBreaksApplicationSecurity: string)`  
`abstract getTypeName(): string;`  
`toString() {`  
`return `SafeValue must use [property]=binding: ${this.changingThisBreaksApplicationSecurity}`;`  
`}`  
`}`

`class SafeHtmlImpl extends SafeValueImpl implements SafeHtml {`  
`getTypeName() {`  
`return BypassType.Html;`  
`}`  
`}`

`class SafeStyleImpl extends SafeValueImpl implements SafeStyle {`  
`getTypeName() {`  
`return BypassType.Style;`  
`}`  
`}`

`class SafeScriptImpl extends SafeValueImpl implements SafeScript {`  
`getTypeName() {`  
`return BypassType.Script;`  
`}`  
`}`

`class SafeUrlImpl extends SafeValueImpl implements SafeUrl {`  
`getTypeName() {`  
`return BypassType.Url;`  
`}`  
`}`

`class SafeResourceUrlImpl extends SafeValueImpl implements SafeResourceUrl {`  
`getTypeName() {`  
`return BypassType.ResourceUrl;`  
`}`  
`}`

`export function unwrapSafeValue(value: SafeValue): string;`  
`export function unwrapSafeValue<T>(value: T | SafeValue): T {`  
`return value instanceof SafeValueImpl ?`  
`value.changingThisBreaksApplicationSecurity as any as T :`  
`value as any as T;`  
`}`

`export function allowSanitizationBypassAndThrow(value: any, type: BypassType.Html): value is SafeHtml;`  
`export function allowSanitizationBypassAndThrow(value: any, type: BypassType.ResourceUrl): value is SafeResourceUrl;`  
`export function allowSanitizationBypassAndThrow(value: any, type:`

```

BypassType.Script): value is SafeScript;\nexport function allowSanitizationBypassAndThrow(\n value: any, type:
BypassType.Style): value is SafeStyle;\nexport function allowSanitizationBypassAndThrow(value: any, type:
BypassType.Url): value is SafeUrl;\nexport function allowSanitizationBypassAndThrow(value: any, type:
BypassType): boolean;\nexport function allowSanitizationBypassAndThrow(value: any, type: BypassType):
boolean {\n const actualType = getSanitizationBypassType(value);\n if (actualType != null && actualType !==
type) {\n // Allow ResourceURLs in URL contexts, they are strictly more trusted.\n if (actualType ===
BypassType.ResourceUrl && type === BypassType.Url) return true;\n throw new Error(\n `Required a safe
${type}, got a ${actualType} (see http://g.co/ng/security#xss)`);\n }\n return actualType === type;\n}\n\nexport
function getSanitizationBypassType(value: any): BypassType|null {\n return value instanceof SafeValueImpl &&
value.getTypeName() as BypassType || null;\n}\n\n/**\n * Mark `html` string as trusted.\n *\n * This function wraps
the trusted string in `String` and brands it in a way which makes it\n * recognizable to { @link htmlSanitizer } to be
trusted implicitly.\n *\n * @param trustedHtml `html` string which needs to be implicitly trusted.\n *\n * @returns a
`html` which has been branded to be implicitly trusted.\n */\nexport function
bypassSanitizationTrustHtml(trustedHtml: string): SafeHtml {\n return new SafeHtmlImpl(trustedHtml);\n}\n\n/**\n
 * Mark `style` string as trusted.\n *\n * This function wraps the trusted string in `String` and brands it in a way
which makes it\n * recognizable to { @link styleSanitizer } to be trusted implicitly.\n *\n * @param trustedStyle
`style` string which needs to be implicitly trusted.\n *\n * @returns a `style` hich has been branded to be implicitly
trusted.\n */\nexport function bypassSanitizationTrustStyle(trustedStyle: string): SafeStyle {\n return new
SafeStyleImpl(trustedStyle);\n}\n\n/**\n * Mark `script` string as trusted.\n *\n * This function wraps the trusted
string in `String` and brands it in a way which makes it\n * recognizable to { @link scriptSanitizer } to be trusted
implicitly.\n *\n * @param trustedScript `script` string which needs to be implicitly trusted.\n *\n * @returns a `script`
which has been branded to be implicitly trusted.\n */\nexport function bypassSanitizationTrustScript(trustedScript:
string): SafeScript {\n return new SafeScriptImpl(trustedScript);\n}\n\n/**\n * Mark `url` string as trusted.\n *\n
 * This function wraps the trusted string in `String` and brands it in a way which makes it\n * recognizable to { @link
urlSanitizer } to be trusted implicitly.\n *\n * @param trustedUrl `url` string which needs to be implicitly trusted.\n
 * @returns a `url` which has been branded to be implicitly trusted.\n */\nexport function
bypassSanitizationTrustUrl(trustedUrl: string): SafeUrl {\n return new SafeUrlImpl(trustedUrl);\n}\n\n/**\n * Mark
`url` string as trusted.\n *\n * This function wraps the trusted string in `String` and brands it in a way which makes
it\n * recognizable to { @link resourceUrlSanitizer } to be trusted implicitly.\n *\n * @param trustedResourceUrl
`url` string which needs to be implicitly trusted.\n *\n * @returns a `url` which has been branded to be implicitly
trusted.\n */\nexport function bypassSanitizationTrustResourceUrl(trustedResourceUrl: string): SafeResourceUrl {\n
return new SafeResourceUrlImpl(trustedResourceUrl);\n}\n\n", "/*\n * @license\n * Copyright Google LLC All
Rights Reserved.\n *\n * Use of this source code is governed by an MIT-style license that can be\n * found in the
LICENSE file at https://angular.io/license\n */\n\n/**\n * This file is used to control if the default rendering pipeline
should be `ViewEngine` or `Ivy`.\n *\n * For more information on how to run and debug tests with either Ivy or
View Engine (legacy),\n * please see [BAZEL.md](./docs/BAZEL.md).\n */\n\nlet _devMode: boolean = true;\nlet
_runModeLocked: boolean = false;\n\n/**\n * Returns whether Angular is in development mode. After called
once,\n * the value is locked and won't change any more.\n *\n * By default, this is true, unless a user calls
`enableProdMode` before calling this.\n *\n * @publicApi\n */\nexport function isDevMode(): boolean {\n if
(_runModeLocked = true;\n return _devMode;\n}\n\n/**\n * Disable Angular's development mode, which turns off
assertions and other\n * checks within the framework.\n *\n * One important assertion this disables verifies that a
change detection pass\n * does not result in additional changes to any bindings (also known as\n * unidirectional
data flow).\n *\n * @publicApi\n */\nexport function enableProdMode(): void {\n if (_runModeLocked) {\n
throw new Error('Cannot enable prod mode after platform setup.);\n }\n _devMode = false;\n}\n\n", "/*\n *
@license\n * Copyright Google LLC All Rights Reserved.\n *\n * Use of this source code is governed by an MIT-
style license that can be\n * found in the LICENSE file at https://angular.io/license\n */\n\nimport
{trustedHTMLFromString} from '../util/security/trusted_types';\n\n/**\n * This helper is used to get hold of an inert
tree of DOM elements containing dirty HTML\n * that needs sanitizing.\n * Depending upon browser support we

```

```

use one of two strategies for doing this.\n * Default: DOMParser strategy\n * Fallback: InertDocument strategy\n
*/\nexport function getInertBodyHelper(defaultDoc: Document): InertBodyHelper {\n return
isDOMParserAvailable() ? new DOMParserHelper() : new InertDocumentHelper(defaultDoc);\n}\n\nexport
interface InertBodyHelper {\n /**\n * Get an inert DOM element containing DOM created from the dirty HTML
string provided.\n */\n getInertBodyElement: (html: string) => HTMLElement | null;\n}\n\n/**\n * Uses
DOMParser to create and fill an inert body element.\n * This is the default strategy used in browsers that support
it.\n */\n\nclass DOMParserHelper implements InertBodyHelper {\n getInertBodyElement(html: string):
HTMLElement|null {\n // We add these extra elements to ensure that the rest of the content is parsed as expected\n
 // e.g. leading whitespace is maintained and tags like `` do not get hoisted to the\n // `` tag. Note
that the `` tag is closed implicitly to prevent unclosed tags\n // in `html` from consuming the otherwise
explicit `` tag.\n html = '<body><remove></remove>' + html;\n try {\n const body = new
window.DOMParser()\n .parseFromString(trustedHTMLFromString(html) as string, 'text/html')\n
 .body as HTMLBodyElement;\n body.removeChild(body.firstChild!);\n return body;\n } catch {\n
return null;\n }\n }\n}\n\n/**\n * Use an HTML5 `template` element, if supported, or an inert body element
created via\n * `createHtmlDocument` to create and fill an inert DOM element.\n * This is the fallback strategy if
the browser does not support DOMParser.\n */\n\nclass InertDocumentHelper implements InertBodyHelper {\n
 private inertDocument: Document;\n\n constructor(private defaultDoc: Document) {\n this.inertDocument =
this.defaultDoc.implementation.createHTMLDocument('sanitization-inert');\n\n if (this.inertDocument.body ==
null) {\n // usually there should be only one body element in the document, but IE doesn't have any, so\n // we
need to create one.\n const inertHtml = this.inertDocument.createElement('html');\n
this.inertDocument.appendChild(inertHtml);\n const inertBodyElement =
this.inertDocument.createElement('body');\n inertHtml.appendChild(inertBodyElement);\n }\n\n getInertBodyElement(html: string): HTMLElement|null {\n // Prefer using <template> element if supported.\n
const templateEl = this.inertDocument.createElement('template');\n if ('content' in templateEl) {\n
templateEl.innerHTML = trustedHTMLFromString(html) as string;\n return templateEl;\n }\n\n // Note that
previously we used to do something like `this.inertDocument.body.innerHTML = html`\n // and we returned the
inert `body` node. This was changed, because IE seems to treat setting\n // `innerHTML` on an inserted element
differently, compared to one that hasn't been inserted\n // yet. In particular, IE appears to split some of the text into
multiple text nodes rather\n // than keeping them in a single one which ends up messing with Ivy's i18n parsing
further\n // down the line. This has been worked around by creating a new inert `body` and using it as\n // the
root node in which we insert the HTML.\n const inertBody = this.inertDocument.createElement('body');\n
inertBody.innerHTML = trustedHTMLFromString(html) as string;\n\n // Support: IE 11 only\n // strip custom-
namespaced attributes on IE<=11\n if ((this.defaultDoc as any).documentMode) {\n
this.stripCustomNsAttrs(inertBody);\n }\n\n return inertBody;\n }\n\n /**\n * When IE11 comes across an
unknown namespaced attribute e.g. 'xlink:foo' it adds 'xmlns:ns1\n * attribute to declare ns1 namespace and
prefixes the attribute with 'ns1' (e.g.\n * 'ns1:xlink:foo').\n */\n * This is undesirable since we don't want to allow
any of these custom attributes. This method\n * strips them all.\n */\n private stripCustomNsAttrs(el: Element)
{\n const elAttrs = el.attributes;\n // loop backwards so that we can support removals.\n for (let i =
elAttrs.length - 1; 0 < i; i--) {\n const attrib = elAttrs.item(i);\n const attrName = attrib!.name;\n if
(attrName === 'xmlns:ns1' || attrName.indexOf('ns1:') === 0) {\n el.removeAttribute(attrName);\n }\n }\n
let childNode = el.firstChild as Node | null;\n while (childNode) {\n if (childNode.nodeType ===
Node.ELEMENT_NODE) this.stripCustomNsAttrs(childNode as Element);\n childNode =
childNode.nextSibling;\n }\n }\n}\n\n/**\n * We need to determine whether the DOMParser exists in the global
context and\n * supports parsing HTML; HTML parsing support is not as wide as other formats, see\n *
https://developer.mozilla.org/en-US/docs/Web/API/DOMParser#Browser_compatibility.\n */\n * @suppress
{uselessCode}\n */\nexport function isDOMParserAvailable() {\n try {\n return !!new
window.DOMParser().parseFromString(\n trustedHTMLFromString("") as string, 'text/html');\n } catch {\n
return false;\n }\n}\n\n"/**\n * @license\n * Copyright Google LLC All Rights Reserved.\n */\n * Use of this source

```



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```

import {isDevMode} from './util/is_dev_mode';
/**
 * A pattern that recognizes a commonly useful
 * subset of URLs that are safe.
 * This regular expression matches a subset of URLs that will not cause script
 * execution if used in URL context within a HTML document. Specifically, this
 * regular expression matches if
 * (comment from here on and regex copied from Soy's EscapingConventions):
 * (1) Either an allowed protocol (http, https, mailto or ftp).
 * (2) or no protocol. A protocol must be followed by a colon. The below
 * allows that by allowing colons only after one of the characters [/?#].
 * A colon after a hash (#) must be in the
 * fragment.
 * Otherwise, a colon after a (?) must be in a query.
 * Otherwise, a colon after a single solidus (/)
 * must be in a path.
 * Otherwise, a colon after a double solidus (//) must be in the authority
 * (before port).
 * The pattern disallows &, used in HTML entity declarations before
 * one of the characters in [/?#]. This
 * disallows HTML entities used in the
 * protocol name, which should never happen, e.g. "ttp" for
 * "http".
 * It also disallows HTML entities in the first path part of a relative path,
 * e.g. "foo<bar/baz". Our
 * existing escaping functions should not produce
 * that. More importantly, it disallows masking of a colon,
 * e.g.
 * "javascript::...".
 * This regular expression was taken from the Closure sanitization library.
const
SAFE_URL_PATTERN = /^(?:https?|mailto|ftp|tel|file|sms):[^\&:/?#]*(?:[/?#])$/gi;
A pattern that matches
safe srcset values
const SAFE_SRCSET_PATTERN = /^(?:https?|file):[^\&:/?#]*(?:[/?#])$/gi;
A
pattern that matches safe data URLs. Only matches image, video and audio types.
const
DATA_URL_PATTERN =
/^(data:(?:image\/(?:bmp|gif|jpeg|jpg|png|tiff|webp)|video\/(?:mpeg|mp4|ogg|webm)|audio\/(?:mp3|oga|ogg|opus));base64,[a-z0-9+\/]+=*\s*)$/i;
export function _sanitizeUrl(url: string): string {
 url = String(url);
 if (url.match(SAFE_URL_PATTERN) || url.match(DATA_URL_PATTERN)) return url;
 if (isDevMode()) {
 console.warn('WARNING: sanitizing unsafe URL value $ {url} (see http://g.co/ng/security#xss)');
 }
 return 'unsafe:' + url;
}
export function sanitizeSrcset(srcset: string): string {
 return srcset.split(',').map((srcset) => _sanitizeUrl(srcset.trim())).join(', ');
}
/**
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 * LLC All Rights Reserved.
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 * in the LICENSE file at https://angular.io/license
import {isDevMode} from './util/is_dev_mode';
import {getInertBodyHelper, InertBodyHelper} from './inert_body';
import {_sanitizeUrl, sanitizeSrcset} from './url_sanitizer';
function tagSet(tags: string): {[k: string]: boolean} {
 const res: {[k: string]: boolean} = {};
 for (const t of tags.split(',')) res[t] = true;
 return res;
}
function merge(...sets: {[k: string]: boolean}[]): {[k: string]: boolean} {
 const res: {[k: string]: boolean} = {};
 for (const s of sets) {
 for (const v in s) {
 if (s.hasOwnProperty(v)) res[v] = true;
 }
 }
 return res;
}
// Good source of info about elements and
// attributes
// http://dev.w3.org/html5/spec/Overview.html#semantics
// http://simon.html5.org/html-elements
// Safe Void Elements - HTML5
// http://dev.w3.org/html5/spec/Overview.html#void-elements
const
VOID_ELEMENTS = tagSet('area,br,col,hr,img,wbr');
// Elements that you can, intentionally, leave open (and
// which close themselves)
// http://dev.w3.org/html5/spec/Overview.html#optional-tags
const
OPTIONAL_END_TAG_BLOCK_ELEMENTS = tagSet('colgroup,dd,dt,li,p,tbody,td,tfoot,th,thead,tr');
const
OPTIONAL_END_TAG_INLINE_ELEMENTS = tagSet('rp,rt');
const
OPTIONAL_END_TAG_ELEMENTS =
merge(OPTIONAL_END_TAG_INLINE_ELEMENTS, OPTIONAL_END_TAG_BLOCK_ELEMENTS);
// Safe Block Elements - HTML5
const
BLOCK_ELEMENTS = merge(
OPTIONAL_END_TAG_BLOCK_ELEMENTS,
tagSet('address,article,' +
'aside,blockquote,caption,center,del,details,dialog,dir,div,dl,figure,figcaption,footer,h1,h2,h3,h4,h5,' +
'h6,header,hgroup,hr,ins,main,map,menu,nav,ol,pre,section,summary,table,ul');
// Inline Elements -
HTML5
const
INLINE_ELEMENTS = merge(
OPTIONAL_END_TAG_INLINE_ELEMENTS,
tagSet('a,abbr,acronym,audio,b,' +
'bdi,bdo,big,br,cite,code,del,dfn,em,font,i,img,ins,kbd,label,map,mark,picture,q,ruby,rp,rt,s,' +
'samp,small,source,span,strike,strong,sub,sup,time,track,tt,u,var,video');
export const VALID_ELEMENTS =
merge(VOID_ELEMENTS, BLOCK_ELEMENTS, INLINE_ELEMENTS,
OPTIONAL_END_TAG_ELEMENTS);
// Attributes that have href and hence need to be sanitized
export const

```

```

URI_ATTRS = tagSet('background,cite,href,itemtype,longdesc,poster,src,xlink:href');\n\n// Attributes that have
special href set hence need to be sanitized\nexport const SRCSET_ATTRS = tagSet('srcset');\n\nconst
HTML_ATTRS = tagSet(\n
'abbr,accesskey,align,alt,autoplay,axis,bgcolor,border,cellpadding,cellspacing,class,clear,color,cols,colspan,' +\n
'compact,controls,coords,datetime,default,dir,download,face,headers,height,hidden,hreflang,hspace,' +\n
'ismap,itemscope,itemprop,kind,label,lang,language,loop,media,muted,nohref,nowrap,open,preload,rel,rev,role,rows
,rowspan,rules,' +\n
'scope,scrolling,shape,size,sizes,span,srclang,start,summary,tabindex,target,title,translate,type,usemap,' +\n
'valign,value,vspace,width');\n\n// Accessibility attributes as per WAI-ARIA 1.1 (W3C Working Draft 14 December
2018)\nconst ARIA_ATTRS = tagSet(\n 'aria-activedescendant,aria-atomic,aria-autocomplete,aria-busy,aria-
checked,aria-colcount,aria-colindex,' +\n 'aria-colspan,aria-controls,aria-current,aria-describedby,aria-details,aria-
disabled,aria-dropeffect,' +\n 'aria-errormessage,aria-expanded,aria-flowto,aria-grabbed,aria-haspopup,aria-
hidden,aria-invalid,' +\n 'aria-keyshortcuts,aria-label,aria-labelledby,aria-level,aria-live,aria-modal,aria-multiline,'
+\n 'aria-multiselectable,aria-orientation,aria-owns,aria-placeholder,aria-posinset,aria-pressed,aria-readonly,' +\n
'aria-relevant,aria-required,aria-roledescription,aria-rowcount,aria-rowindex,aria-rowspan,aria-selected,' +\n 'aria-
setsize,aria-sort,aria-valuemax,aria-valuemin,aria-valuenow,aria-valuetext');\n\n// NB: This currently consciously
doesn't support SVG. SVG sanitization has had several security\n// issues in the past, so it seems safer to leave it out
if possible. If support for binding SVG via\n// innerHTML is required, SVG attributes should be added here.\n\n//
NB: Sanitization does not allow <form> elements or other active elements (<button> etc). Those\n// can be
sanitized, but they increase security surface area without a legitimate use case, so they\n// are left out here.\n\nexport
const VALID_ATTRS = merge(URI_ATTRS, SRCSET_ATTRS, HTML_ATTRS, ARIA_ATTRS);\n\n// Elements
whose content should not be traversed/preserved, if the elements themselves are invalid.\n\n// Typically,
`<invalid>Some content</invalid>` would traverse (and in this case preserve)\n// `Some content`, but strip `invalid-
element` opening/closing tags. For some elements, though, we\n// don't want to preserve the content, if the elements
themselves are going to be removed.\nconst SKIP_TRAVERSING_CONTENT_IF_INVALID_ELEMENTS =
tagSet('script,style,template');\n\n/**\n * SanitizingHtmlSerializer serializes a DOM fragment, stripping out any
unsafe elements and unsafe\n * attributes.\n *\n * @class SanitizingHtmlSerializer {\n // Explicitly track if something
was stripped, to avoid accidentally warning of sanitization just\n // because characters were re-encoded.\n public
sanitizedSomething = false;\n private buf: string[] = [];\n\n sanitizeChildren(el: Element): string {\n // This
cannot use a TreeWalker, as it has to run on Angular's various DOM adapters.\n // However this code never
accesses properties off of `document` before deleting its contents\n // again, so it shouldn't be vulnerable to DOM
clobbering.\n let current: Node = el.firstChild!;\n let traverseContent = true;\n while (current) {\n if
(current.nodeType === Node.ELEMENT_NODE) {\n traverseContent = this.startElement(current as
Element);\n } else if (current.nodeType === Node.TEXT_NODE) {\n this.chars(current.nodeValue!);\n }
else {\n // Strip non-element, non-text nodes.\n this.sanitizedSomething = true;\n } if
(traverseContent && current.firstChild) {\n current = current.firstChild!;\n continue;\n } while
(current) {\n // Leaving the element. Walk up and to the right, closing tags as we go.\n if (current.nodeType
=== Node.ELEMENT_NODE) {\n this.endElement(current as Element);\n } }\n let next =
this.checkClobberedElement(current, current.nextSibling!);\n if (next) {\n current = next;\n
break;\n }\n current = this.checkClobberedElement(current, current.parentNode!);\n } }\n return
this.buf.join('');\n }\n\n /**\n * Sanitizes an opening element tag (if valid) and returns whether the element's
contents should\n * be traversed. Element content must always be traversed (even if the element itself is not\n *
valid/safe), unless the element is one of `SKIP_TRAVERSING_CONTENT_IF_INVALID_ELEMENTS`.\n *\n * @param element The element to sanitize.\n * @return True if the element's contents should be traversed.\n *\n private startElement(element: Element): boolean {\n const tagName = element.nodeName.toLowerCase();\n if
(!VALID_ELEMENTS.hasOwnProperty(tagName)) {\n this.sanitizedSomething = true;\n return
!SKIP_TRAVERSING_CONTENT_IF_INVALID_ELEMENTS.hasOwnProperty(tagName);\n }\n this.buf.push('<');\n this.buf.push(tagName);\n const elAttrs = element.attributes;\n for (let i = 0; i <

```



```

= 1,\n STYLE = 2,\n SCRIPT = 3,\n URL = 4,\n RESOURCE_URL = 5,\n}\n","/**\n * @license\n * Copyright
Google LLC All Rights Reserved.\n *\n * Use of this source code is governed by an MIT-style license that can be\n
* found in the LICENSE file at https://angular.io/license\n */\n\nimport {getDocument} from
'./render3/interfaces/document';\nimport {SANITIZER} from './render3/interfaces/view';\nimport {getLView}
from './render3/state';\nimport {renderStringify} from './render3/util/stringify_utils';\nimport {TrustedHTML,
TrustedScript, TrustedScriptURL} from './util/security/trusted_type_defs';\nimport {trustedHTMLFromString,
trustedScriptFromString, trustedScriptURLFromString} from './util/security/trusted_types';\n\nimport
{allowSanitizationBypassAndThrow, BypassType, unwrapSafeValue} from './bypass';\nimport {_sanitizeHtml as
_sanitizeHtml} from './html_sanitizer';\nimport {Sanitizer} from './sanitizer';\nimport {SecurityContext} from
 './security';\nimport {_sanitizeUrl as _sanitizeUrl} from './url_sanitizer';\n\n\n/**\n * An `html` sanitizer which
converts untrusted `html` **string** into trusted string by removing\n * dangerous content.\n *\n * This method
parses the `html` and locates potentially dangerous content (such as urls and\n * javascript) and removes it.\n *\n * It
is possible to mark a string as trusted by calling { @link bypassSanitizationTrustHtml}.\n *\n * @param unsafeHtml
untrusted `html`, typically from the user.\n * @returns `html` string which is safe to display to user, because all of
the dangerous javascript\n * and urls have been removed.\n *\n * @codeGenApi\n */\n\nexport function
sanitizeHtml(unsafeHtml: any): string {\n const sanitizer = getSanitizer();\n if (sanitizer) {\n return
sanitizer.sanitize(SecurityContext.HTML, unsafeHtml) || ";\n }\n if
(allowSanitizationBypassAndThrow(unsafeHtml, BypassType.Html)) {\n return unwrapSafeValue(unsafeHtml);\n
 }\n return _sanitizeHtml(getDocument(), renderStringify(unsafeHtml));\n}\n\n\n/**\n * A `style` sanitizer which
converts untrusted `style` **string** into trusted string by removing\n * dangerous content.\n *\n * It is possible to
mark a string as trusted by calling { @link bypassSanitizationTrustStyle}.\n *\n * @param unsafeStyle untrusted
`style`, typically from the user.\n * @returns `style` string which is safe to bind to the `style` properties.\n *\n *
@codeGenApi\n */\n\nexport function sanitizeStyle(unsafeStyle: any): string {\n const sanitizer = getSanitizer();\n
 if (sanitizer) {\n return sanitizer.sanitize(SecurityContext.STYLE, unsafeStyle) || ";\n }\n if
(allowSanitizationBypassAndThrow(unsafeStyle, BypassType.Style)) {\n return unwrapSafeValue(unsafeStyle);\n
 }\n return renderStringify(unsafeStyle);\n}\n\n\n/**\n * A `url` sanitizer which converts untrusted `url` **string**
into trusted string by removing\n * dangerous\n * content.\n *\n * This method parses the `url` and locates
potentially dangerous content (such as javascript) and\n * removes it.\n *\n * It is possible to mark a string as trusted
by calling { @link bypassSanitizationTrustUrl}.\n *\n * @param unsafeUrl untrusted `url`, typically from the user.\n
* @returns `url` string which is safe to bind to the `src` properties such as `

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(allowSanitizationBypassAndThrow(unsafeScript, BypassType.Script)) {\n return
unwrapSafeValue(unsafeScript);\n } \n throw new Error('unsafe value used in a script context');\n}\n\n/**\n *
Promotes the given constant string to a TrustedHTML.\n * @param html constant string containing trusted
HTML.\n * @returns TrustedHTML wrapping `html`.\n *\n * @security This is a security-sensitive function and
should only be used to\n * convert constant values of attributes and properties found in\n * application-provided
Angular templates to TrustedHTML.\n *\n * @codeGenApi\n */\nexport function trustConstantHtml(html: string):
TrustedHTML|string {\n return trustedHTMLFromString(html);\n}\n\n/**\n * Promotes the given constant string to
a TrustedScript.\n * @param script constant string containing a trusted script.\n * @returns TrustedScript wrapping
`script`.\n *\n * @security This is a security-sensitive function and should only be used to\n * convert constant
values of attributes and properties found in\n * application-provided Angular templates to TrustedScript.\n *\n *
@codeGenApi\n */\nexport function trustConstantScript(script: string): TrustedScript|string {\n return
trustedScriptFromString(script);\n}\n\n/**\n * Promotes the given constant string to a TrustedScriptURL.\n *
@param url constant string containing a trusted script URL.\n * @returns TrustedScriptURL wrapping `url`.\n *\n *
@security This is a security-sensitive function and should only be used to\n * convert constant values of attributes
and properties found in\n * application-provided Angular templates to TrustedScriptURL.\n *\n * @codeGenApi\n */
\nexport function trustConstantResourceUrl(url: string): TrustedScriptURL|string {\n return
trustedScriptURLFromString(url);\n}\n\n/**\n * Detects which sanitizer to use for URL property, based on tag
name and prop name.\n *\n * The rules are based on the RESOURCE_URL context config from\n *
`packages/compiler/src/schema/dom_security_schema.ts`.\n * If tag and prop names don't match Resource URL
schema, use URL sanitizer.\n */\nexport function getUrlSanitizer(tag: string, prop: string) {\n if ((prop === 'src'
&&\n (tag === 'embed' || tag === 'frame' || tag === 'iframe' || tag === 'media' ||\n tag === 'script')) ||\n (prop === 'href' && (tag === 'base' || tag === 'link')))\n {\n return sanitizeResourceUrl;\n }\n return
sanitizeUrl;\n}\n\n/**\n * Sanitizes URL, selecting sanitizer function based on tag and property names.\n *\n * This
function is used in case we can't define security context at compile time, when only prop\n * name is available. This
happens when we generate host bindings for Directives/Components. The\n * host element is unknown at compile
time, so we defer calculation of specific sanitizer to\n * runtime.\n *\n * @param unsafeUrl untrusted `url`, typically
from the user.\n * @param tag target element tag name.\n * @param prop name of the property that contains the
value.\n * @returns `url` string which is safe to bind.\n *\n * @codeGenApi\n */\nexport function
sanitizeUrlOrResourceUrl(unsafeUrl: any, tag: string, prop: string): any {\n return getUrlSanitizer(tag,
prop)(unsafeUrl);\n}\n\nexport function validateAgainstEventProperties(name: string) {\n if
(name.toLowerCase().startsWith('on')) {\n const msg = `Binding to event property '${name}' is disallowed for
security reasons, ` +\n `please use (${name.slice(2)})=...` +\n `\\nIf '${name}' is a directive input, make
sure the directive is imported by the ` +\n `current module.`;\n throw new Error(msg);\n }\n}\n\nexport
function validateAgainstEventAttributes(name: string) {\n if (name.toLowerCase().startsWith('on')) {\n const msg
= `Binding to event attribute '${name}' is disallowed for security reasons, ` +\n `please use
(${name.slice(2)})=...`;\n throw new Error(msg);\n }\n}\n\nfunction getSanitizer(): Sanitizer|null {\n const IView
= getLView();\n return IView && IView[SANITIZER];\n}\n\n"/**\n * @license\n * Copyright Google LLC All
Rights Reserved.\n *\n * Use of this source code is governed by an MIT-style license that can be\n * found in the
LICENSE file at https://angular.io/license\n */\nimport {Type} from './interface/type';\nimport {stringify} from
'./util/stringify';\nimport {NG_FACTORY_DEF} from './fields';\n\n/**\n * Definition of what a factory function
should look like.\n */\nexport type FactoryFn<T> = {\n /**\n * Subclasses without an explicit constructor call
through to the factory of their base\n * definition, providing it with their own constructor to instantiate.\n */\n <U
extends T>(t: Type<U>): U;\n\n /**\n * If no constructor to instantiate is provided, an instance of type T itself is
created.\n */\n (t?: undefined): T;\n};\n\nexport function getFactoryDef<T>(type: any, throwNotFound: true):
FactoryFn<T>;\nexport function getFactoryDef<T>(type: any): FactoryFn<T>|null;\nexport function
getFactoryDef<T>(type: any, throwNotFound?: boolean): FactoryFn<T>|null {\n const hasFactoryDef =
type.hasOwnProperty(NG_FACTORY_DEF);\n if (!hasFactoryDef && throwNotFound === true &&
ngDevMode) {\n throw new Error(`Type ${stringify(type)} does not have 'fac' property.`);\n }\n return

```

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hasFactoryDef ? type[NG_FACTORY_DEF] : null;\n\n", "/*\n * @license\n * Copyright Google LLC All Rights
Reserved.\n *\n * Use of this source code is governed by an MIT-style license that can be\n * found in the
LICENSE file at https://angular.io/license\n *\n\nexport const enum RuntimeErrorCode {\n // Internal Errors\n\n //
Change Detection Errors\n EXPRESSION_CHANGED_AFTER_CHECKED = '100',\n\n // Dependency Injection
Errors\n CYCLIC_DI_DEPENDENCY = '200',\n PROVIDER_NOT_FOUND = '201',\n\n // Template Errors\n
MULTIPLE_COMPONENTS_MATCH = '300',\n EXPORT_NOT_FOUND = '301',\n PIPE_NOT_FOUND =
'302',\n UNKNOWN_BINDING = '303',\n UNKNOWN_ELEMENT = '304',\n\n // Styling Errors\n\n //
Declarations Errors\n\n // i18n Errors\n\n // Compilation Errors\n\n\nexport class RuntimeError extends Error {\n
constructor(public code: RuntimeErrorCode, message: string) {\n super(formatRuntimeError(code, message));\n
}\n}\n\n/** Called to format a runtime error *\n\nexport function formatRuntimeError(code: RuntimeErrorCode,
message: string): string {\n const fullCode = code ? `NG0${code}` : ` `;\n return
`${fullCode}${message}`;\n}\n\n", "/*\n * @license\n * Copyright Google LLC All Rights Reserved.\n *\n * Use of
this source code is governed by an MIT-style license that can be\n * found in the LICENSE file at
https://angular.io/license\n *\n\nimport {InjectorType} from './di/interface/defs';\nimport {stringify} from
'./util/stringify';\nimport {RuntimeError, RuntimeErrorCode} from './error_code';\nimport {stringifyForError} from
'./util/stringify_utils';\n\n\n/** Called when directives inject each other (creating a circular dependency) *\n\nexport
function throwCyclicDependencyError(token: string, path?: string[]): never {\n const depPath = path ? `
Dependency path: ${path.join(' > ')} > ${token}` : ` `;\n throw new RuntimeError(\n
RuntimeErrorCode.CYCLIC_DI_DEPENDENCY,\n `Circular dependency in DI detected for
${token}${depPath}`);\n}\n\n\nexport function throwMixedMultiProviderError() {\n throw new Error(`Cannot mix
multi providers and regular providers`);\n}\n\n\nexport function throwInvalidProviderError(\n ngModuleType?:
InjectorType<any>, providers?: any[], provider?: any) {\n let ngModuleDetail = ` `;\n if (ngModuleType &&
providers) {\n const providerDetail = providers.map(v => v == provider ? '?' + provider + '?' : '...');\n
ngModuleDetail = ` ` - only instances of Provider and Type are allowed, got: [${providerDetail.join(', ')}];\n
}\n\n throw new Error(\n `Invalid provider for the NgModule '${stringify(ngModuleType)}' +
ngModuleDetail);\n}\n}\n\n\n/** Throws an error when a token is not found in DI. *\n\nexport function
throwProviderNotFoundError(token: any, injectorName?: string): never {\n const injectorDetails = injectorName ? `
in ${injectorName}` : ` `;\n throw new RuntimeError(\n RuntimeErrorCode.PROVIDER_NOT_FOUND,\n
`No provider for ${stringifyForError(token)} found${injectorDetails}`);\n}\n\n", "/*\n * @license\n * Copyright
Google LLC All Rights Reserved.\n *\n * Use of this source code is governed by an MIT-style license that can be\n
* found in the LICENSE file at https://angular.io/license\n *\n\n\n/** Represents a basic change from a previous
to a new value for a single\n * property on a directive instance. Passed as a value in a\n * {@link SimpleChanges}
object to the `ngOnChanges` hook.\n *\n * @see `OnChanges`\n *\n * @publicApi\n *\n\nexport class
SimpleChange {\n constructor(public previousValue: any, public currentValue: any, public firstChange: boolean)
{\n }\n /**\n * Check whether the new value is the first value assigned.\n *\n isFirstChange(): boolean {\n return
this.firstChange;\n }\n}\n\n\n\n/** A hashtable of changes represented by {@link SimpleChange} objects stored\n
* at the declared property name they belong to on a Directive or Component. This is\n * the type passed to the
`ngOnChanges` hook.\n *\n * @see `OnChanges`\n *\n * @publicApi\n *\n\nexport interface SimpleChanges {\n
[propName: string]: SimpleChange;\n}\n\n", "/*\n * @license\n * Copyright Google LLC All Rights Reserved.\n *\n
* Use of this source code is governed by an MIT-style license that can be\n * found in the LICENSE file at
https://angular.io/license\n *\n\nimport {OnChanges} from './../interface/lifecycle_hooks';\nimport
{SimpleChange, SimpleChanges} from './../interface/simple_change';\nimport {EMPTY_OBJ} from
'./empty';\nimport {DirectiveDef, DirectiveDefFeature} from './interfaces/definition';\n\n\n\n/** The
NgOnChangesFeature decorates a component with support for the ngOnChanges\n * lifecycle hook, so it should be
included in any component that implements\n * that hook.\n *\n * If the component or directive uses inheritance, the
NgOnChangesFeature MUST\n * be included as a feature AFTER {@link InheritDefinitionFeature}, otherwise\n *
inherited properties will not be propagated to the ngOnChanges lifecycle\n * hook.\n *\n * Example usage:\n *\n
```\n * static cmp = defineComponent({\n *   ...,\n *   inputs: {name: 'publicName'},\n *   features:

```

```

[NgOnChangesFeature]\n * });\n * ``\n * \n * @codeGenApi\n * \nexport function NgOnChangesFeature<T>():
DirectiveDefFeature {\n return NgOnChangesFeatureImpl;\n}\n\nexport function
NgOnChangesFeatureImpl<T>(definition: DirectiveDef<T>) {\n if (definition.type.prototype.ngOnChanges) {\n
definition.setInput = ngOnChangesSetInput;\n }\n return
rememberChangeHistoryAndInvokeOnChangesHook;\n}\n\n// This option ensures that the ngOnChanges lifecycle
hook will be inherited\n// from superclasses (in InheritDefinitionFeature).\n/** @nocollapse */\n tslint:disable-
next-line:no-toplevel-property-access\n(NgOnChangesFeature as DirectiveDefFeature).ngInherit = true;\n\n/**\n *
This is a synthetic lifecycle hook which gets inserted into `TView.preOrderHooks` to simulate\n *
`ngOnChanges`.\n * \n * The hook reads the `NgSimpleChangesStore` data from the component instance and if
changes are\n * found it invokes `ngOnChanges` on the component instance.\n * \n * @param this Component
instance. Because this function gets inserted into `TView.preOrderHooks`,\n * it is guaranteed to be called with
component instance.\n * \nfunction rememberChangeHistoryAndInvokeOnChangesHook(this: OnChanges) {\n
const simpleChangesStore = getSimpleChangesStore(this);\n const current = simpleChangesStore?.current;\n\n if
(current) {\n const previous = simpleChangesStore!.previous;\n if (previous === EMPTY_OBJ) {\n
simpleChangesStore!.previous = current;\n } else {\n // New changes are copied to the previous store, so that
we don't lose history for inputs\n // which were not changed this time\n for (let key in current) {\n
previous[key] = current[key];\n }\n }\n simpleChangesStore!.current = null;\n
this.ngOnChanges(current);\n }\n}\n\nfunction ngOnChangesSetInput<T>(\n this: DirectiveDef<T>, instance:
T, value: any, publicName: string, privateName: string): void {\n const simpleChangesStore =
getSimpleChangesStore(instance) ||\n setSimpleChangesStore(instance, {previous: EMPTY_OBJ, current:
null});\n const current = simpleChangesStore.current || (simpleChangesStore.current = {});\n const previous =
simpleChangesStore.previous;\n\n const declaredName = (this.declaredInputs as {[key: string]:
string})[publicName];\n const previousChange = previous[declaredName];\n current[declaredName] = new
SimpleChange(\n previousChange && previousChange.currentValue, value, previous === EMPTY_OBJ);\n\n
(instance as any)[privateName] = value;\n}\n\nconst SIMPLE_CHANGES_STORE =
'__ngSimpleChanges__';\n\nfunction getSimpleChangesStore(instance: any): null|NgSimpleChangesStore {\n
return instance[SIMPLE_CHANGES_STORE] || null;\n}\n\nfunction setSimpleChangesStore(instance: any, store:
NgSimpleChangesStore): NgSimpleChangesStore {\n return instance[SIMPLE_CHANGES_STORE] =
store;\n}\n\n/**\n * Data structure which is monkey-patched on the component instance and used by
`ngOnChanges`\n * life-cycle hook to track previous input values.\n * \ninterface NgSimpleChangesStore {\n
previous: SimpleChanges;\n current: SimpleChanges|null;\n}\n\n"/**\n * @license\n * Copyright Google LLC All
Rights Reserved.\n * \n * Use of this source code is governed by an MIT-style license that can be\n * found in the
LICENSE file at https://angular.io/license\n * \n\nimport {AfterContentChecked, AfterContentInit,
AfterViewChecked, AfterViewInit, DoCheck, OnChanges, OnDestroy, OnInit} from
'./interface/lifecycle_hooks';\nimport {assertDefined, assertEqual, assertNotEqual} from './util/assert';\nimport
{assertFirstCreatePass} from './assert';\nimport {NgOnChangesFeatureImpl} from
'./features/ng_onchanges_feature';\nimport {DirectiveDef} from './interfaces/definition';\nimport {TNode} from
'./interfaces/node';\nimport {FLAGS, HookData, InitPhaseState, LView, LViewFlags,
PREORDER_HOOK_FLAGS, PreOrderHookFlags, TView} from './interfaces/view';\nimport
{isInCheckNoChangesMode} from './state';\n\n\n/**\n * Adds all directive lifecycle hooks from the given
`DirectiveDef` to the given `TView`.\n * \n * Must be run *only* on the first template pass.\n * \n * Sets up the pre-
order hooks on the provided `tView`.\n * \n * see {@link HookData} for details about the data structure.\n * \n *
@param directiveIndex The index of the directive in LView\n * \n * @param directiveDef The definition containing the
hooks to setup in tView\n * \n * @param tView The current TView\n * \nexport function registerPreOrderHooks(\n
directiveIndex: number, directiveDef: DirectiveDef<any>, tView: TView): void {\n ngDevMode &&
assertFirstCreatePass(tView);\n const {ngOnChanges, ngOnInit, ngDoCheck} =\n directiveDef.type.prototype as
OnChanges & OnInit & DoCheck;\n\n if (ngOnChanges as Function | undefined) {\n const wrappedOnChanges =
NgOnChangesFeatureImpl(directiveDef);\n (tView.preOrderHooks || (tView.preOrderHooks =

```

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    [])).push(directiveIndex, wrappedOnChanges);
    (tView.preOrderCheckHooks || (tView.preOrderCheckHooks =
    []))\n    .push(directiveIndex, wrappedOnChanges);
    }\n\n if (ngOnInit) {\n    (tView.preOrderHooks ||
    (tView.preOrderHooks = [])).push(0 - directiveIndex, ngOnInit);\n    }\n\n if (ngDoCheck) {\n
    (tView.preOrderHooks || (tView.preOrderHooks = [])).push(directiveIndex, ngDoCheck);\n
    (tView.preOrderCheckHooks || (tView.preOrderCheckHooks = [])).push(directiveIndex, ngDoCheck);\n
    }\n}\n\n/**\n * Loops through the directives on the provided `tNode` and queues hooks to be\n * run that are not
    initialization hooks.\n * Should be executed during `elementEnd()` and similar to\n * preserve hook execution
    order. Content, view, and destroy hooks for projected\n * components and directives must be called *before* their
    hosts.\n * Sets up the content, view, and destroy hooks on the provided `tView`,\n * see {@link HookData} for
    details about the data structure.\n * NOTE: This does not set up `onChanges`, `onInit` or `doCheck`, those are
    set up\n * separately at `elementStart`.\n * @param tView The current TView\n * @param tNode The TNode
    whose directives are to be searched for hooks to queue\n */\nexport function registerPostOrderHooks(tView:
    TView, tNode: TNode): void {\n    ngDevMode && assertFirstCreatePass(tView);\n    // It's necessary to loop through
    the directives at elementEnd() (rather than processing in\n // directiveCreate) so we can preserve the current hook
    order. Content, view, and destroy\n // hooks for projected components and directives must be called *before* their
    hosts.\n    for (let i = tNode.directiveStart, end = tNode.directiveEnd; i < end; i++) {\n        const directiveDef =
    tView.data[i] as DirectiveDef<any>;\n        ngDevMode && assertDefined(directiveDef, 'Expecting DirectiveDef');\n
    const lifecycleHooks: AfterContentInit&AfterContentChecked&AfterViewInit&AfterViewChecked&\n
    OnDestroy = directiveDef.type.prototype;\n        const {\n            ngAfterContentInit,\n            ngAfterContentChecked,\n
            ngAfterViewInit,\n            ngAfterViewChecked,\n            ngOnDestroy\n        } = lifecycleHooks;\n\n        if
    (ngAfterContentInit) {\n            (tView.contentHooks || (tView.contentHooks = [])).push(-i, ngAfterContentInit);\n
        }\n\n        if (ngAfterContentChecked) {\n            (tView.contentHooks || (tView.contentHooks = [])).push(i,
            ngAfterContentChecked);\n            (tView.contentCheckHooks || (tView.contentCheckHooks = [])).push(i,
            ngAfterContentChecked);\n        }\n\n        if (ngAfterViewInit) {\n            (tView.viewHooks || (tView.viewHooks =
            [])).push(-i, ngAfterViewInit);\n        }\n\n        if (ngAfterViewChecked) {\n            (tView.viewHooks || (tView.viewHooks =
            [])).push(i, ngAfterViewChecked);\n            (tView.viewCheckHooks || (tView.viewCheckHooks = [])).push(i,
            ngAfterViewChecked);\n        }\n\n        if (ngOnDestroy != null) {\n            (tView.destroyHooks || (tView.destroyHooks =
            [])).push(i, ngOnDestroy);\n        }\n    }\n}\n\n/**\n * Executing hooks requires complex logic as we need to deal with
    2 constraints.\n * 1. Init hooks (ngOnInit, ngAfterContentInit, ngAfterViewInit) must all be executed once and
    only\n * once, across many change detection cycles. This must be true even if some hooks throw, or if\n * some
    recursively trigger a change detection cycle.\n * To solve that, it is required to track the state of the execution of
    these init hooks.\n * This is done by storing and maintaining flags in the view: the {@link InitPhaseState},\n * and
    the index within that phase. They can be seen as a cursor in the following structure:\n * [[onInit1, onInit2],
    [afterContentInit1], [afterViewInit1, afterViewInit2, afterViewInit3]]\n * They are are stored as flags in
    LView[FLAGS].\n * 2. Pre-order hooks can be executed in batches, because of the select instruction.\n * To be
    able to pause and resume their execution, we also need some state about the hook's array\n * that is being
    processed:\n * - the index of the next hook to be executed\n * - the number of init hooks already found in the
    processed part of the array\n * They are are stored as flags in LView[PREORDER_HOOK_FLAGS].\n
    */\n\n/**\n * Executes pre-order check hooks ( OnChanges, DoChanges) given a view where all the init hooks
    were\n * executed once. This is a light version of executeInitAndCheckPreOrderHooks where we can skip read\n * /
    write of the init-hooks related flags.\n * @param lView The LView where hooks are defined\n * @param hooks
    Hooks to be run\n * @param nodeIndex 3 cases depending on the value:\n * - undefined: all hooks from the array
    should be executed (post-order case)\n * - null: execute hooks only from the saved index until the end of the array
    (pre-order case, when\n * flushing the remaining hooks)\n * - number: execute hooks only from the saved index
    until that node index exclusive (pre-order\n * case, when executing select(number))\n */\nexport function
    executeCheckHooks(lView: LView, hooks: HookData, nodeIndex?: number|null) {\n    callHooks(lView, hooks,
    InitPhaseState.InitPhaseCompleted, nodeIndex);\n}\n\n/**\n * Executes post-order init and check hooks (one of
    AfterContentInit, AfterContentChecked,\n * AfterViewInit, AfterViewChecked) given a view where there are
  
```



```

pending init hooks to be executed.\n * @param lView The lView where hooks are defined\n * @param hooks
Hooks to be run\n * @param initPhase A phase for which hooks should be run\n * @param nodeIndex 3 cases
depending on the value:\n * - undefined: all hooks from the array should be executed (post-order case)\n * - null:
execute hooks only from the saved index until the end of the array (pre-order case, when\n * flushing the remaining
hooks)\n * - number: execute hooks only from the saved index until that node index exclusive (pre-order\n * case,
when executing select(number))\n */\nexport function executeInitAndCheckHooks(\n  lView: lView, hooks:
HookData, initPhase: InitPhaseState, nodeIndex?: number|null) {\n  \n  ngDevMode &&\n    assertNotEqual(\n
initPhase, InitPhaseState.InitPhaseCompleted,\n    'Init pre-order hooks should not be called more than once');\n
if ((lView[FLAGS] & lViewFlags.InitPhaseStateMask) === initPhase) {\n  callHooks(lView, hooks, initPhase,
nodeIndex);\n  }\n}\n\nexport function incrementInitPhaseFlags(lView: lView, initPhase: InitPhaseState): void {\n
ngDevMode &&\n  assertNotEqual(\n    initPhase, InitPhaseState.InitPhaseCompleted,\n    'Init hooks
phase should not be incremented after all init hooks have been run.);\n  let flags = lView[FLAGS];\n  if ((flags &
lViewFlags.InitPhaseStateMask) === initPhase) {\n    flags &= lViewFlags.IndexWithinInitPhaseReset;\n    flags
+= lViewFlags.InitPhaseStateIncrementer;\n    lView[FLAGS] = flags;\n  }\n}\n\n/**\n * Calls lifecycle hooks with
their contexts, skipping init hooks if it's not\n * the first lView pass\n */\n * @param currentView The current
view\n * @param arr The array in which the hooks are found\n * @param initPhaseState the current state of the init
phase\n * @param currentNodeIndex 3 cases depending on the value:\n * - undefined: all hooks from the array
should be executed (post-order case)\n * - null: execute hooks only from the saved index until the end of the array
(pre-order case, when\n * flushing the remaining hooks)\n * - number: execute hooks only from the saved index
until that node index exclusive (pre-order\n * case, when executing select(number))\n */\nfunction callHooks(\n
currentView: lView, arr: HookData, initPhase: InitPhaseState,\n  currentNodeIndex: number|null|undefined): void
{\n  ngDevMode &&\n    assertEquals(\n      isInCheckNoChangesMode(), false,\n      'Hooks should never be
run when in check no changes mode.);\n  const startIndex = currentNodeIndex !== undefined ?\n
(currentView[PREORDER_HOOK_FLAGS] & PreOrderHookFlags.IndexOfTheNextPreOrderHookMaskMask) :\n
0;\n  const nodeIndexLimit = currentNodeIndex !== null ? currentNodeIndex : -1;\n  let lastNodeIndexFound = 0;\n
for (let i = startIndex; i < arr.length; i++) {\n  const hook = arr[i + 1] as () => void;\n  if (typeof hook ===
'number') {\n    lastNodeIndexFound = arr[i] as number;\n    if (currentNodeIndex !== null &&
lastNodeIndexFound >= currentNodeIndex) {\n      break;\n    }\n  } else {\n    const isInitHook = arr[i] < 0;\n
if (isInitHook)\n      currentView[PREORDER_HOOK_FLAGS] +=
PreOrderHookFlags.NumberOfInitHooksCalledIncrementer;\n    if (lastNodeIndexFound < nodeIndexLimit ||
nodeIndexLimit === -1) {\n      callHook(currentView, initPhase, arr, i);\n
currentView[PREORDER_HOOK_FLAGS] =\n      (currentView[PREORDER_HOOK_FLAGS] &
PreOrderHookFlags.NumberOfInitHooksCalledMask) + i +\n      2;\n    }\n    i++;\n  }\n}\n\n/**\n *
Execute one hook against the current `lView`.\n */\n * @param currentView The current view\n * @param
initPhaseState the current state of the init phase\n * @param arr The array in which the hooks are found\n * @param
i The current index within the hook data array\n */\nfunction callHook(currentView: lView, initPhase:
InitPhaseState, arr: HookData, i: number) {\n  const isInitHook = arr[i] < 0;\n  const hook = arr[i + 1] as () =>
void;\n  const directiveIndex = isInitHook ? -arr[i] : arr[i] as number;\n  const directive =
currentView[directiveIndex];\n  if (isInitHook) {\n    const indexWithinInitPhase = currentView[FLAGS] >>
lViewFlags.IndexWithinInitPhaseShift;\n    // The init phase state must be always checked here as it may have been
recursively\n    // updated\n    if (indexWithinInitPhase <\n      (currentView[PREORDER_HOOK_FLAGS] >>
PreOrderHookFlags.NumberOfInitHooksCalledShift) &&\n      (currentView[FLAGS] &
lViewFlags.InitPhaseStateMask) === initPhase) {\n      currentView[FLAGS] +=
lViewFlags.IndexWithinInitPhaseIncrementer;\n      hook.call(directive);\n    }\n  } else {\n    hook.call(directive);\n
}\n}\n\n", /**\n * @license\n * Copyright Google LLC All Rights Reserved.\n * Use of this source code is
governed by an MIT-style license that can be\n * found in the LICENSE file at https://angular.io/license\n
*/\n\nimport { InjectionToken } from '../di/injection_token';\nimport { InjectFlags } from
'../di/interface/injector';\nimport { Type } from '../di/interface/type';\nimport { assertDefined, assertEquals } from

```

```

'././util/assert';\n\nimport {TDirectiveHostNode} from './node';\nimport {LView, TData} from './view';\n\n**\n *
Offsets of the `NodeInjector` data structure in the expando.\n * `NodeInjector` is stored in both `LView` as well
as `TView.data`. All storage requires 9 words.\n * First 8 are reserved for bloom filter and the 9th is reserved for the
associated `TNode` as well\n * as parent `NodeInjector` pointer. All indexes are starting with `index` and have an
offset as\n * shown.\n * `LView` layout:\n * ``\n * index + 0: cumulative bloom filter\n * index + 1: cumulative
bloom filter\n * index + 2: cumulative bloom filter\n * index + 3: cumulative bloom filter\n * index + 4: cumulative
bloom filter\n * index + 5: cumulative bloom filter\n * index + 6: cumulative bloom filter\n * index + 7: cumulative
bloom filter\n * index + 8: cumulative bloom filter\n * index + PARENT: Index to the parent injector. See
`RelativeInjectorLocation`\n *
const parent = lView[index + NodeInjectorOffset.PARENT]\n * ``\n *\n * `TViewData` layout:\n * ``\n * index + 0: cumulative bloom filter\n * index + 1: cumulative bloom filter\n *
index + 2: cumulative bloom filter\n * index + 3: cumulative bloom filter\n * index + 4: cumulative bloom filter\n *
index + 5: cumulative bloom filter\n * index + 6: cumulative bloom filter\n * index + 7: cumulative bloom filter\n *
index + 8: cumulative bloom filter\n * index + TNode: TNode associated with this `NodeInjector`\n *
const tNode = tView.data[index + NodeInjectorOffset.TNode]\n * ``\n */\nexport const enum
NodeInjectorOffset {\n TNode = 8,\n PARENT = 8,\n BLOOM_SIZE = 8,\n SIZE = 9,\n}\n\n**\n * Represents
a relative location of parent injector.\n * The interfaces encodes number of parents `LView`s to traverse and
index in the `LView`\n * pointing to the parent injector.\n */\nexport interface RelativeInjectorLocation {\n
__brand__: 'RelativeInjectorLocationFlags';\n}\n\nexport const enum RelativeInjectorLocationFlags {\n
InjectorIndexMask = 0b1111111111111111,\n ViewOffsetShift = 16,\n NO_PARENT = -1,\n}\n\nexport const
NO_PARENT_INJECTOR: RelativeInjectorLocation = -1 as any;\n\n**\n * Each injector is saved in 9 contiguous
slots in `LView` and 9 contiguous slots in\n * `TView.data`. This allows us to store information about the current
node's tokens (which\n * can be shared in `TView`) as well as the tokens of its ancestor nodes (which cannot be\n *
shared, so they live in `LView`).\n * Each of these slots (aside from the last slot) contains a bloom filter. This
bloom filter\n * determines whether a directive is available on the associated node or not. This prevents us\n * from
searching the directives array at this level unless it's probable the directive is in it.\n * See:
https://en.wikipedia.org/wiki/Bloom\_filter for more about bloom filters.\n * Because all injectors have been
flattened into `LView` and `TViewData`, they cannot typed\n * using interfaces as they were previously. The start
index of each `LInjector` and `TInjector`\n * will differ based on where it is flattened into the main array, so it's not
possible to know\n * the indices ahead of time and save their types here. The interfaces are still included here\n * for
documentation purposes.\n * export interface LInjector extends Array<any> {\n *\n * // Cumulative bloom for
directive IDs 0-31 (IDs are % BLOOM_SIZE)\n * [0]: number;\n *\n * // Cumulative bloom for directive IDs
32-63\n * [1]: number;\n *\n * // Cumulative bloom for directive IDs 64-95\n * [2]: number;\n *\n * //
Cumulative bloom for directive IDs 96-127\n * [3]: number;\n *\n * // Cumulative bloom for directive IDs 128-
159\n * [4]: number;\n *\n * // Cumulative bloom for directive IDs 160 - 191\n * [5]: number;\n *\n * //
Cumulative bloom for directive IDs 192 - 223\n * [6]: number;\n *\n * // Cumulative bloom for directive IDs
224 - 255\n * [7]: number;\n *\n * // We need to store a reference to the injector's parent so DI can keep looking
up\n * // the injector tree until it finds the dependency it's looking for.\n * [PARENT_INJECTOR]: number;\n *
}\n *\n * export interface TInjector extends Array<any> {\n *\n * // Shared node bloom for directive IDs 0-31
(IDs are % BLOOM_SIZE)\n * [0]: number;\n *\n * // Shared node bloom for directive IDs 32-63\n * [1]:
number;\n *\n * // Shared node bloom for directive IDs 64-95\n * [2]: number;\n *\n * // Shared node bloom
for directive IDs 96-127\n * [3]: number;\n *\n * // Shared node bloom for directive IDs 128-159\n * [4]:
number;\n *\n * // Shared node bloom for directive IDs 160 - 191\n * [5]: number;\n *\n * // Shared node
bloom for directive IDs 192 - 223\n * [6]: number;\n *\n * // Shared node bloom for directive IDs 224 - 255\n *
[7]: number;\n *\n * // Necessary to find directive indices for a particular node.\n * [TNode]:
TElementNode|TElementContainerNode|TContainerNode;\n * }\n */\n\n**\n * Factory for creating instances of
injectors in the NodeInjector.\n * This factory is complicated by the fact that it can resolve `multi` factories as
well.\n * NOTE: Some of the fields are optional which means that this class has two hidden classes.\n * - One
without `multi` support (most common)\n * - One with `multi` values, (rare).\n * Since VMs can cache up to 4

```

inline hidden classes this is OK.

* - Single factory: Only `resolving` and `factory` is defined.

* - `providers` factory: `componentProviders` is a number and `index = -1`.

* - `viewProviders` factory: `componentProviders` is a number and `index` points to `providers`.

```

export class NodeInjectorFactory {
  /**
   * The inject implementation to be activated when using the factory.
   *
   * @param injectImpl: null | (<T>(token: Type<T>|InjectionToken<T>, flags?: InjectFlags) => T);
   *
   * Marker set to true during factory invocation to see if we get into recursive loop.
   *
   * Recursive loop causes an error to be displayed.
   *
   * resolving = false;
   *
   * Marks that the token can see other Tokens declared in `viewProviders` on the same node.
   *
   * canSeeViewProviders: boolean;
   *
   * An array of factories to use in case of `multi` provider.
   *
   * multi?: Array<() => any>;
   *
   * Number of `multi`-providers which belong to the component.
   *
   * This is needed because when multiple components and directives declare the `multi` provider they have to be concatenated in the correct order.
   *
   * Example:
   *
   * If we have a component and directive active on a single element as declared here
   *
   * component:
   *   provides: [ { provide: String, useValue: 'component', multi: true } ],
   *   viewProvides: [ { provide: String, useValue: 'componentView', multi: true } ],
   *   directive:
   *     provides: [ { provide: String, useValue: 'directive', multi: true } ],
   *
   * Then the expected results are:
   *
   * providers: ['component', 'directive']
   * viewProviders: ['component', 'componentView', 'directive']
   *
   * The way to think about it is that the `viewProviders` have been inserted after the component but before the directives, which is why we need to know how many `multi`s have been declared by the component.
   *
   * componentProviders?: number;
   *
   * Current index of the Factory in the `data`. Needed for `viewProviders` and `providers` merging.
   *
   * See `providerFactory`.
   *
   * index?: number;
   *
   * Because the same `multi` provider can be declared in `provides` and `viewProvides` it is possible for `viewProvides` to shadow the `provides`. For this reason we store the `provideFactory` of the `providers` so that `providers` can be extended with `viewProviders`.
   *
   * Example:
   *
   * Given:
   *
   * provides: [ { provide: String, useValue: 'all', multi: true } ],
   * viewProvides: [ { provide: String, useValue: 'viewOnly', multi: true } ],
   *
   * We have to return `['all']` in case of content injection, but `['all', 'viewOnly']` in case of view injection. We further have to make sure that the shared instances (in our case `all`) are the exact same instance in both the content as well as the view injection. (We have to make sure that we don't double instantiate.) For this reason the `viewProvides` `Factory` has a pointer to the shadowed `provides` factory so that it can instantiate the `providers` (['all']) and then extend it with `viewProviders` (['all'] + ['viewOnly'] = ['all', 'viewOnly']).
   *
   * providerFactory?: NodeInjectorFactory | null;
   *
   * constructor(
   *   /**
   *    * Factory to invoke in order to create a new instance.
   *    *
   *    * @param public factory: (this: NodeInjectorFactory, _: undefined,
   *    *   /**
   *    *    * array where injectables tokens are stored. This is used in
   *    *    * case of an error reporting to produce friendlier errors.
   *    *    *
   *    * @param tData: TData,
   *    *   /**
   *    *    * array where existing instances of injectables are stored. This is used in case
   *    *    * of multi shadow is needed. See `multi` field documentation.
   *    *    *
   *    * @param IView: LView,
   *    *   /**
   *    *    * The TNode of the same element injector.
   *    *    *
   *    * @param tNode: TDirectiveHostNode) => any,
   *    *   /**
   *    *    * Set to `true` if the token is declared in `viewProviders` (or if it is component).
   *    *    *
   *    * @param isViewProvider: boolean,
   *    *    * injectImplementation: null | (<T>(token: Type<T>|InjectionToken<T>, flags?: InjectFlags) => T)) {
   *    *      ngDevMode && assertDefined(factory, 'Factory not specified');
   *    *      ngDevMode && assertEqual(typeof factory, 'function', 'Expected factory function.');
```

this.canSeeViewProviders = isViewProvider; this.injectImpl = injectImplementation; }

export function isFactory(obj: any): obj is NodeInjectorFactory { return obj instanceof NodeInjectorFactory; }

// Note: This hack is necessary so we don't erroneously get a circular dependency // failure based on types.

```

export const unusedValueExportToPlacateAjd = 1;
import {KeyValueArray} from './util/array_utils';
import {TStylingRange} from './interfaces/styling';
import {TIcu} from './i18n';
import {CssSelector} from './projection';
import {RNode} from './renderer_dom';
import {LView, TView} from './view';
TNodeType corresponds to the {@link TNode} `type` property.
NOTE: type IDs are such that we use each bit to denote a type. This is done so that we can easily check if the `TNode` is of more

```

than one type.
`if (tNode.type === TNodeType.Text || tNode.type === TNodeType.Element)` can be written as:
`if (tNode.type & (TNodeType.Text | TNodeType.Element))`
However any given `TNode` can only be of one type.
`export const enum TNodeType {`
`Text = 0b1,` // The TNode contains information about a DOM element aka `{ @link RText}`.
`Element = 0b10,` // The TNode contains information about a DOM element aka `{ @link RElement}`.
`Container = 0b100,` // The TNode contains information about an `<ng-container>` element `{ @link RNode}`.
`ElementContainer = 0b1000,` // The TNode contains information about an `<ng-content>` projection.
`Projection = 0b10000,` // The TNode contains information about an ICU comment used in `i18n`.
`Icu = 0b100000,` // Special node type representing a placeholder for future `TNode` at this location.
`I18n = 0b1000000,` // I18n translation blocks are created before the element nodes which they contain. (I18n blocks can span over many elements.)
Because `i18n` `TNode`s (representing text) are created first they often may need to point to element `TNode`s which are not yet created. In such a case we create a `Placeholder` `TNode`. This allows the `i18n` to structurally link the `TNode`s together without knowing any information about the future nodes which will be at that location.
On `firstCreatePass` When element instruction executes it will try to create a `TNode` at that location. Seeing a `Placeholder` `TNode` already there tells the system that it should reuse existing `TNode` (rather than create a new one) and just update the missing information.
`Placeholder = 0b1000000,` // Combined Types These should never be used for `TNode.type` only as a useful way to check if `TNode.type` is one of several choices.
// See: <https://github.com/microsoft/TypeScript/issues/35875> why we can't refer to existing enum.
`AnyRNode = 0b11,` // Text | Element,
`AnyContainer = 0b1100,` // Container | ElementContainer,
// See:
`Converts TNodeType into human readable text.` Make sure this matches with
`TNodeType`
`export function toTNodeTypeAsString(tNode: TNodeType): string {`
`let text = "";`
`if (tNode & TNodeType.Text) text += "Text";`
`if (tNode & TNodeType.Element) text += "Element";`
`if (tNode & TNodeType.Container) text += "Container";`
`if (tNode & TNodeType.ElementContainer) text += "ElementContainer";`
`if (tNode & TNodeType.Projection) text += "Projection";`
`if (tNode & TNodeType.Icu) text += "Icu";`
`if (tNode & TNodeType.Placeholder) text += "Placeholder";`
`return text.length > 0 ? text.substring(1) : text;`
`}`
Corresponds to the `TNode.flags` property.
`export const enum TNodeFlags {`
`isDirectiveHost = 0x1,` // This bit is set if the node is a host for any directive (including a component).
`isComponentHost = 0x2,` // This bit is set if the node is a host for a component. Setting this bit implies that the `isDirectiveHost` bit is set as well.
`isProjected = 0x4,` // This bit is set if the node has been projected.
`hasContentQuery = 0x8,` // This bit is set if any directive on this node has content queries.
`hasClassInput = 0x10,` // This bit is set if the node has any `"class"` inputs.
`hasStyleInput = 0x20,` // This bit is set if the node has any `"style"` inputs.
`isDetached = 0x40,` // This bit is set if the node has been detached by `i18n`.
`hasHostBindings = 0x80,` // This bit is set if the node has directives with host bindings. This flag allows us to guard host-binding logic and invoke it only on nodes that actually have directives with host bindings.
Corresponds to the `TNode.providerIndexes` property.
`export const enum TNodeProviderIndexes {`
`ProvidersStartIndexMask = 0b00000000000000000000000000000000,` // The index of the first provider on this node is encoded on the least significant bits.
`CptViewProvidersCountShift = 20,` // The count of view providers from the component on this node is encoded on the 20 most significant bits.
`CptViewProvidersCountShifter = 0b00000000000000000000000000000000,` // A set of marker values to be used in the attributes arrays. These markers indicate that some items are not regular attributes and the processing should be adapted accordingly.
`AttributeMarker = 0,` // An implicit marker which indicates that the value in the array are of `attributeKey`, `attributeValue` format.
NOTE: This is implicit as it is the type when no marker is present in array. We indicate that it should not be present at runtime by the negative number.
`ImplicitAttributes = -1,` // Marker indicates that the following 3 values in the attributes array are: `namespaceUri`, `attributeName`, `attributeValue` in that order.

instruction can create `Hello`, `World` and `!` text nodes. It can also insert `Hello` and `!` text node as a child of `

`, but it can't insert `World` because the `` node has not yet been created. In such a case the `` `TNode` will have an array which will direct the `` to not only insert itself in front of `!` but also to insert the `World` (created by `!start`) into `` itself.

```

Pseudo code:
if (insertBeforeIndex === null) {
  // append as normal
} else if (Array.isArray(insertBeforeIndex)) {
  // First insert current `TNode` at correct location
  const currentNode = IView[this.index];
  parentNode.insertBefore(currentNode, IView[this.insertBeforeIndex[0]]);
  // Now append all of the children
  for(let i=1; i<this.insertBeforeIndex; i++) {
    currentNode.appendChild(IView[this.insertBeforeIndex[i]]);
  } else {
    parentNode.insertBefore(IView[this.index], IView[this.insertBeforeIndex]);
  }
}
- null: Append as normal using `parentNode.appendChild`
- number: Append using `parentNode.insertBefore(IView[this.index], IView[this.insertBeforeIndex])`

```

Because `!start` executes before nodes are created, on `TVIEW.firstCreatePass` it is not possible for `!start` to set the `insertBeforeIndex` value as the corresponding `TNode` has not yet been created. For this reason the `!start` creates a `TNodeType.Placeholder` `TNode` at that location. See `TNodeType.Placeholder` for more information.

`insertBeforeIndex`: InsertBeforeIndex; `injectorIndex`: number; The index of the closest injector in this node's LView. If the index === -1, there is no injector on this node or any ancestor node in this view. If the index !== -1, it is the index of this node's injector OR the index of a parent injector in the same view. We pass the parent injector index down the node tree of a view so it's possible to find the parent injector without walking a potentially deep node tree. Injector indices are not set across view boundaries because there could be multiple component hosts. If `tNode.injectorIndex` === `tNode.parent.injectorIndex`, then the index belongs to a parent injector. `injectorIndex`: number;

`directiveStart`: number; `directiveEnd`: number; NOTE: The first directive is always component (if present). `directiveStart`: number; `directiveEnd`: number; The area right behind the `directiveStart-directiveEnd` range is used to allocate the `HostBindingFunction` vars (or null if no bindings.) Therefore `directiveEnd` is used to set `LFrame.bindingRootIndex` before `HostBindingFunction` is executed. `directiveEnd`: number; `directiveStylingLast`: number; Stores the last directive which had a styling instruction. Initial value of this is -1 which means that no `hostBindings` styling instruction has executed. As `hostBindings` instructions execute they set the value to the index of the `DirectiveDef` which contained the last `hostBindings` styling instruction. Valid values are: -1 No `hostBindings` instruction has executed. `directiveStart <= directiveStylingLast < directiveEnd`: Points to the `DirectiveDef` of the last styling instruction which executed in the `hostBindings`. This data is needed so that styling instructions know which static styling data needs to be collected from the `DirectiveDef.hostAttrs`. A styling instruction needs to collect all data since last styling instruction. `directiveStylingLast`: number;

`propertyBindings`: number[]; Stores indexes of property bindings. This field is only set in the ngDevMode and holds indexes of property bindings so TestBed can get bound property metadata for a given node. `propertyBindings`: number[]; `isComponent`: boolean; `isProjected`: boolean; `hasContentQuery`: boolean; `hasClassInput`: boolean; `hasStyleInput`: boolean; etc. `flags`: TNodeFlags; This number stores two values using its bits: - the index of the first provider on that node (first 16 bits) - the count of view providers from the component on this node (last 16 bits) // TODO(misko): break this into actual vars. `providerIndexes`: TNodeProviderIndexes; The value name associated with this node. if type: `TNodeType.Text`: text value `TNodeType.Element`: tag name `TNodeType.ICUContainer`: `Ticu` value: any; Attributes associated with an element. We need to store attributes to support various use-cases (attribute injection, content projection with selectors, directives matching). Attributes are stored statically because reading them from the DOM would be way too slow for content projection and queries. Since attrs will always be calculated first, they will never need to be marked undefined by other instructions. For regular attributes a name of an attribute and its value alternate in the array. e.g. ['role', 'checkbox'] This array can contain flags that will indicate "special attributes" (attributes with

namespaces, attributes extracted from bindings and outputs).\n *^n attrs: TAttributes|null;\n\n /**\n * Same as `TNode.attrs` but contains merged data across all directive host bindings.\n *\n * We need to keep `attrs` as unmerged so that it can be used for attribute selectors.\n *\n * We merge attrs here so that it can be used in a performant way for initial rendering.\n *\n * The `attrs` are merged in first pass in following order:\n * - Component's `hostAttrs`\n * - Directives' `hostAttrs`\n * - Template `TNode.attrs` associated with the current `TNode`.\n */\n mergedAttrs: TAttributes|null;\n\n /**\n * A set of local names under which a given element is exported in a template and\n * visible to queries. An entry in this array can be created for different reasons:\n * - an element itself is referenced, ex.: `

`\n * - a component is referenced, ex.: ``\n * - a directive is referenced, ex.: `` => `["foo", -1]`\n * - `` => `["foo", myCmptIdx]`\n * - `

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projection setup. `projection` size is equal to the number of projections `<ng-content>`. The size of `c1` will be `1` because `<child>` has only one `<ng-content>`. We store `projection` with the host (`c1`, `c2`) rather than the `<ng-content>` (`cont1`) because the same component (`<child>`) can be used in multiple locations (`c1`, `c2`) and as a result have different set of nodes to project. Without `projection` it would be difficult to efficiently traverse nodes to be projected.

If `typeof projection === 'number'` then `TNode` is a `<ng-content>` element. `projection` is an index of the host's `projection` Nodes. This would return the first head node to project. `getHost(currentTNode).projection[currentTNode.projection]`. When projecting nodes the parent node retrieved may be a `<ng-content>` node, in which case the process is recursive in nature.

If `projection` is of type `RNode[][]` than we have a collection of native nodes passed as projectable nodes during dynamic component creation.

`projection`:

```
(TNode|RNode[])[number|null];
```

A collection of all `style` static values for an element (including from host). This field will be populated if and when:

- There are one or more initial `style`'s on an element (e.g. `<div style="width:200px;">`)
- There are one or more initial `style`'s on a directive/component host (e.g. `@Directive({host: {style: "width:200px;" } })`)

`styles`: `string|null`

A collection of all `style` static values for an element excluding host sources. Populated when there are one or more initial `style`'s on an element (e.g. `<div style="width:200px;">`). Must be stored separately from `tNode.styles` to facilitate setting directive inputs that shadow the `style` property. If we used `tNode.styles` as is for shadowed inputs, we would feed host styles back into directives as `"inputs"`. If we used `tNode.attrs`, we would have to concatenate the attributes on every template pass. Instead, we process once on first create pass and store here.

```
stylesWithoutHost: string|null;
```

A `KeyValueArray` version of residual `styles`.

When there are styling instructions than each instruction stores the static styling which is of lower priority than itself. This means that there may be a higher priority styling than the instruction.

Imagine:

```
<div style="color: highest;" my-dir>
@Directive({
  host: {
    style: 'color: lowest;',
    [styles.color]: 'exp' // styleProp('color', ctx.exp);
  })

```

In the above case: `color: lowest` is stored with `styleProp('color', ctx.exp)`; `color: highest` is the residual and is stored here.

`undefined`: not initialized. `null`: initialized but `styles` is `null`.

```
KeyValueArray<any>|undefined|null;
```

A `KeyValueArray` version of residual `styles`.

`residualStyles`:

```
KeyValueArray<any>|undefined|null;
```

A collection of all class static values for an element (including from host). This field will be populated if and when:

- There are one or more initial classes on an element (e.g. `<div class="one two three">`)
- There are one or more initial classes on a directive/component host (e.g. `@Directive({host: {class: "SOME_CLASS" } })`)

`classes`: `string|null`

A collection of all class static values for an element excluding host sources. Populated when there are one or more initial classes on an element (e.g. `<div class="SOME_CLASS">`). Must be stored separately from `tNode.classes` to facilitate setting directive inputs that shadow the `class` property. If we used `tNode.classes` as is for shadowed inputs, we would feed host classes back into directives as `"inputs"`. If we used `tNode.attrs`, we would have to concatenate the attributes on every template pass. Instead, we process once on first create pass and store here.

```
classesWithoutHost: string|null;
```

A `KeyValueArray` version of residual `classes`.

Same as `TNode.residualStyles` but for classes.

`undefined`: not initialized. `null`: initialized but `classes` is `null`.

```
KeyValueArray<any>|undefined|null;
```

Stores the head/tail index of the class bindings.

- If no bindings, the head and tail will both be `0`.
- If there are template bindings, stores the head/tail of the class bindings in the template.
- If no template bindings but there are host bindings, the head value will point to the last host binding for `"class"` (not the head of the linked list), tail will be `0`.

See: `style_binding_list.ts` for details.

This is used by `insertTStylingBinding` to know where the next styling binding should be inserted so that they can be sorted in priority order.

```
classBindings: TStylingRange;
```

Stores the head/tail index of the class bindings.

- If no bindings, the head and tail will both be `0`.
- If there are template bindings, stores the head/tail of the style bindings in the template.
- If no template bindings but there are host bindings, the head value will point to the


```

last * host binding for "style" (not the head of the linked list), tail will be 0. * See:
`style_binding_list.ts` for details. * This is used by `insertTStylingBinding` to know where the next styling
binding should be * inserted so that they can be sorted in priority order. * styleBindings:
TStylingRange; * See `TNode.insertBeforeIndex` * export type InsertBeforeIndex =
null|number|number[]; * Static data for an element * export interface TElementNode extends TNode { *
Index in the data[] array * index: number; * child:
TElementNode|TTextNode|TElementContainerNode|TContainerNode|TProjectionNode|null; * * Element
nodes will have parents unless they are the first node of a component or * embedded view (which means their
parent is in a different view and must be * retrieved using viewData[HOST_NODE]). * parent:
TElementNode|TElementContainerNode|null; * tViews: null; * * If this is a component TNode with
projection, this will be an array of projected * TNodes or native nodes (see TNode.projection for more info). If
it's a regular element node * or a component without projection, it will be null. * projection:
(TNode|RNode[]|null); * * Stores tagName * value: string; * } * Static data for a text node
* export interface TTextNode extends TNode { * * Index in the data[] array * index: number; * child:
null; * * Text nodes will have parents unless they are the first node of a component or * embedded view
(which means their parent is in a different view and must be * retrieved using LView.node). * parent:
TElementNode|TElementContainerNode|null; * tViews: null; * projection: null; * } * Static data for an
LContainer * export interface TContainerNode extends TNode { * * Index in the data[] array. * * If
it's -1, this is a dynamically created container node that isn't stored in * data[] (e.g. when you inject
ViewContainerRef) . * index: number; * child: null; * * Container nodes will have parents unless: *
* - They are the first node of a component or embedded view * - They are dynamically created * parent:
TElementNode|TElementContainerNode|null; * tViews: TView[TView[]|null; * projection: null; * value:
null; * } * Static data for an <ng-container> * export interface TElementContainerNode extends TNode { *
Index in the LView[] array. * index: number; * child:
TElementNode|TTextNode|TContainerNode|TElementContainerNode|TProjectionNode|null; * parent:
TElementNode|TElementContainerNode|null; * tViews: null; * projection: null; * } * Static data for an ICU
expression * export interface TIcuContainerNode extends TNode { * * Index in the LView[] array. * index:
number; * child: null; * parent: TElementNode|TElementContainerNode|null; * tViews: null; * projection:
null; * value: TIcu; * } * Static data for an LProjectionNode * export interface TProjectionNode extends
TNode { * * Index in the data[] array * child: null; * * Projection nodes will have parents unless they are the
first
node of a component * or embedded view (which means their parent is in a different view and must be *
retrieved using LView.node). * parent: TElementNode|TElementContainerNode|null; * tViews: null; *
Index of the projection node. (See TNode.projection for more info.) * projection: number; * value:
null; * } * A union type representing all TNode types that can host a directive. * export type
TDirectiveHostNode = TElementNode|TContainerNode|TElementContainerNode; * * This mapping is
necessary so we can set input properties and output listeners * properly at runtime when property names are
minified or aliased. * * Key: unminified / public input or output name * Value: array containing minified /
internal name and related directive index * * The value must be an array to support inputs and outputs with the
same name * on the same node. * export type PropertyAliases = { * // This uses an object map because using
the Map type would be too slow * [key: string]: PropertyAliasValue; * } * * Store the runtime input or
output names for all the directives. * * i+0: directive instance index * i+1: privateName * * e.g. [0,
'change-minified'] * export type PropertyAliasValue = (number|string)[]; * * This array contains
information about input properties that * need to be set once from attribute data. It's ordered by * directive
index
(relative to element) so it's simple to * look up a specific directive's initial input data. * * Within each
sub-
array: * i+0: attribute name * i+1: minified/internal input name * i+2: initial value * * If a directive on
a node does not have any input properties * that should be set from attributes, its index is set to null * to
avoid a
sparse array. * * e.g. [null, ['role-min', 'minified-input', 'button']] * export type InitialInputData =
(InitialInputs|null)[]; * * Used by InitialInputData to store input properties * that should be set once from

```



```

isProceduralRenderer(renderer);\n\n let i = 0;\n while (i < attrs.length) {\n  const value = attrs[i];\n  if (typeof\nvalue === 'number') {\n    // only namespaces are supported. Other value types (such as style/class\n    // entries)\n    are not supported in this function.\n    if (value !== AttributeMarker.NamespaceURI) {\n      break;\n    }\n    // we just landed on the marker value ... therefore\n    // we should skip to the next entry\n    i++;\n    const\nnamespaceURI = attrs[i++] as string;\n    const attrName = attrs[i++] as string;\n    const attrVal = attrs[i++] as\nstring;\n    ngDevMode && ngDevMode.rendererSetAttribute++;\n    isProc ?\n    (renderer as\nProceduralRenderer3).setAttribute(native, attrName, attrVal, namespaceURI) :\n    native.setAttributeNS(namespaceURI, attrName, attrVal);\n  } else {\n    // attrName is string;\n    const\nattrName = value as string;\n    const attrVal = attrs[+i];\n    // Standard attributes\n    ngDevMode &&\nngDevMode.rendererSetAttribute++;\n    if (isAnimationProp(attrName)) {\n      if (isProc) {\n        (renderer as\nProceduralRenderer3).setProperty(native, attrName, attrVal);\n      }\n    } else {\n      isProc ?\n      (renderer\nas ProceduralRenderer3).setAttribute(native, attrName, attrVal as string) :\n      native.setAttribute(attrName,\nattrVal as string);\n    }\n    i++;\n  }\n}\n\n // another piece of code may iterate over the same attributes array.\nTherefore\n // it may be helpful to return the exact spot where the attributes array exited\n // whether by running\ninto an unsupported marker or if all the static values were\n // iterated over.\n return i;\n}\n\n/**\n * Test whether\nthe given value is a marker that indicates that the following\n * attribute values in a `TAttributes` array are only the\nnames of attributes,\n * and not name-value pairs.\n * @param marker The attribute marker to test.\n * @returns\ntrue if the marker is a `name-only` marker (e.g. `Bindings`, `Template` or `I18n`).\n */\nexport function\nisNameOnlyAttributeMarker(marker: string|AttributeMarker|CssSelector) {\n  return marker ===\nAttributeMarker.Bindings || marker === AttributeMarker.Template ||\nmarker ===\nAttributeMarker.I18n;\n}\n\nexport function isAnimationProp(name: string): boolean {\n  // Perf note: accessing\ncharCodeAt to check for the first character of a string is faster as\n // compared to accessing a character at index 0\n(ex. name[0]). The main reason for this is that\n // charCodeAt doesn't allocate memory to return a substring.\n  return name.charCodeAt(0) === CharCode.AT_SIGN;\n}\n\n/**\n * Merges `src` `TAttributes` into `dst`\n`TAttributes` removing any duplicates in the process.\n * This merge function keeps the order of attrs same.\n * @param dst Location of where the merged `TAttributes` should end up.\n * @param src `TAttributes` which\nshould be appended to `dst`\n */\nexport function mergeHostAttrs(dst: TAttributes|null, src: TAttributes|null):\nTAttributes|null {\n  if (src === null || src.length === 0) {\n    // do nothing\n  } else if (dst === null || dst.length ===\n0) {\n    // We have source, but dst is empty, just make a copy.\n    dst = src.slice();\n  } else {\n    let srcMarker:\nAttributeMarker = AttributeMarker.ImplicitAttributes;\n    for (let i = 0; i < src.length; i++) {\n      const item =\nsrc[i];\n      if (typeof item === 'number') {\n        srcMarker = item;\n      } else {\n        if (srcMarker ===\nAttributeMarker.NamespaceURI) {\n          // Case where we need to consume `key1`, `key2`, `value` items.\n        }\n        else if (\nsrcMarker === AttributeMarker.ImplicitAttributes ||\nsrcMarker ===\nAttributeMarker.Styles) {\n          // Case where we have to consume `key1` and `value` only.\n        }\n        mergeHostAttribute(dst, srcMarker, item as string, null, src[+i] as string);\n      } else {\n        // Case where we\nhave to consume `key1` only.\n        mergeHostAttribute(dst, srcMarker, item as string, null, null);\n      }\n    }\n  }\n  return dst;\n}\n\n/**\n * Append `key`/`value` to existing `TAttributes` taking region marker and\nduplicates into account.\n * @param dst `TAttributes` to append to.\n * @param marker Region where the\n`key`/`value` should be added.\n * @param key1 Key to add to `TAttributes`\n * @param key2 Key to add to\n`TAttributes` (in case of `AttributeMarker.NamespaceURI`)\n * @param value Value to add or to overwrite to\n`TAttributes` Only used if `marker` is not Class.\n */\nexport function mergeHostAttribute(\n  dst: TAttributes,\n  marker: AttributeMarker, key1: string, key2: string|null,\n  value: string|null): void {\n  let i = 0;\n  // Assume that\nnew markers will be inserted at the end.\n  let markerInsertPosition = dst.length;\n  // scan until correct type.\n  if\n(marker === AttributeMarker.ImplicitAttributes) {\n    markerInsertPosition = -1;\n  } else {\n    while (i <\ndst.length) {\n      const dstValue = dst[i++];\n      if (typeof dstValue === 'number') {\n        if (dstValue ===\nmarker) {\n          markerInsertPosition = -1;\n          break;\n        } else if (dstValue > marker) {\n          // We need\nto save this as we want the markers to be inserted in specific order.\n          markerInsertPosition = i - 1;\n        }\n        break;\n      }\n    }\n  }\n  // search until you find place of insertion\n  while (i < dst.length) {\n    const

```



```

a parent injector can't be found, its location is set to -1.\n // In that case, we don't need to set up a cumulative
bloom\n if (hasParentInjector(parentLoc)) {\n  const parentIndex = getParentInjectorIndex(parentLoc);\n  const
parentLView = getParentInjectorView(parentLoc, lView);\n  const parentData = parentLView[TVIEW].data as
any;\n  // Creates a cumulative bloom filter that merges the parent's bloom filter\n  // and its own cumulative
bloom (which contains tokens for all ancestors)\n  for (let i = 0; i < NodeInjectorOffset.BLOOM_SIZE; i++) {\n
lView[injectorIndex + i] = parentLView[parentIndex + i] | parentData[parentIndex + i];\n  }\n }\n\n
lView[injectorIndex + NodeInjectorOffset.PARENT] = parentLoc;\n return injectorIndex;\n}\n\nfunction
insertBloom(arr: any[], footer: TNode|null): void {\n  arr.push(0, 0, 0, 0, 0, 0, 0, 0, footer);\n}\n\n\nexport function
getInjectorIndex(tNode: TNode, lView: LView): number {\n  if (tNode.injectorIndex === -1 ||\n  // If the injector
index is the same as its parent's injector index, then the index has been\n  // copied down from the parent node. No
injector has been created yet on this node.\n  (tNode.parent && tNode.parent.injectorIndex ===
tNode.injectorIndex)) ||\n  // After the first template pass, the injector index might exist but the parent values\n
// might not have been calculated yet for this instance\n  lView[tNode.injectorIndex +
NodeInjectorOffset.PARENT] === null) {\n  return -1;\n } else {\n  ngDevMode && assertIndexInRange(lView,
tNode.injectorIndex);\n  return tNode.injectorIndex;\n }\n}\n\n/**\n * Finds the index of the parent injector, with a
view offset if applicable. Used to set the\n * parent injector initially.\n * @returns Returns a number that is the
combination of the number of LViews that we have to go up\n * to find the LView containing the parent inject AND
the index of the injector within that LView.\n */\nexport function getParentInjectorLocation(tNode: TNode, lView:
LView): RelativeInjectorLocation {\n  if (tNode.parent && tNode.parent.injectorIndex !== -1) {\n  // If we have a
parent `TNode` and there is an injector associated with it we are done, because\n  // the parent injector is within the
current `LView`.\n  return tNode.parent.injectorIndex as any; // ViewOffset is 0\n }\n\n // When parent injector
location is computed it may be outside of the current view. (ie it could\n // be pointing to a declared parent
location). This variable stores number of declaration parents\n // we need to walk up in order to find the parent
injector location.\n let declarationViewOffset = 0;\n let parentTNode: TNode|null = null;\n let lViewCursor:
LView|null = lView;\n\n // The parent injector is not in the current `LView`. We will have to walk the declared
parent\n // `LView` hierarchy and look for it. If we walk of the top, that means that there is no parent\n //
`NodeInjector`.\n while (lViewCursor !== null) {\n  // First determine the `parentTNode` location. The parent
pointer differs based on `TView.type`.\n  const tView = lViewCursor[TVIEW];\n  const tViewType =
tView.type;\n  if (tViewType === TViewType.Embedded) {\n  ngDevMode &&\n
assertDefined(tView.declTNode, 'Embedded TNodes should have declaration parents.);\n  parentTNode =
tView.declTNode;\n  } else if (tViewType === TViewType.Component) {\n  // Components don't have
`TView.declTNode` because each instance of component could be\n  // inserted in different location, hence
`TView.declTNode` is meaningless.\n  parentTNode = lViewCursor[T_HOST];\n  } else {\n  ngDevMode
&& assertEquals(tView.type, TViewType.Root, 'Root type expected');\n  parentTNode = null;\n  }\n  if
(parentTNode === null) {\n  // If we have no parent, than we are done.\n  return NO_PARENT_INJECTOR;\n  }\n\n  ngDevMode && parentTNode && assertTNodeForLView(parentTNode!,
lViewCursor[DECLARATION_VIEW]);\n  // Every iteration of the loop requires that we go to the declared
parent.\n  declarationViewOffset++;\n  lViewCursor = lViewCursor[DECLARATION_VIEW];\n  if
(parentTNode.injectorIndex !== -1) {\n  // We found a NodeInjector which points to something.\n  return
(parentTNode.injectorIndex |\n  (declarationViewOffset << RelativeInjectorLocationFlags.ViewOffsetShift))
as any;\n  }\n }\n return NO_PARENT_INJECTOR;\n}\n\n/**\n * Makes a type or an injection token public to the
DI system by adding it to an\n * injector's bloom filter.\n * @param di The node injector in which a directive
will be added\n * @param token The type or the injection token to be made public\n */\nexport function
diPublicInInjector(\n  injectorIndex: number, tView: TView, token: InjectionToken<any>|Type<any>): void {\n
bloomAdd(injectorIndex, tView, token);\n}\n\n/**\n * Inject static attribute value into directive constructor.\n * @param
This method is used with `factory` functions which are generated as part of\n * `defineDirective` or
`defineComponent`. The method retrieves the static value\n * of an attribute. (Dynamic attributes are not supported
since they are not resolved\n * at the time of injection and can change over time.))\n * @param # Example\n * Given:\n *

```



```

:\n      lookupTokenUsingModuleInjector<T>(IView, token, flags, notFoundValue);\n    }\n    try {\n      const
value = bloomHash();\n      if (value == null && !(flags & InjectFlags.Optional)) {\n
throwProviderNotFoundError(token);\n      } else {\n        return value;\n      }\n    } finally {\n      leaveDI();\n
    }\n  } else if (typeof bloomHash === 'number') {\n    // A reference to the previous injector TView that was
found while climbing the element\n    // injector tree. This is used to know if viewProviders can be accessed on the
current\n    // injector.\n    let previousTView: TView|null = null;\n    let injectorIndex = getInjectorIndex(tNode,
IView);\n    let parentLocation: RelativeInjectorLocation = NO_PARENT_INJECTOR;\n    let
hostTElementNode: TNode|null =\n      flags & InjectFlags.Host ?
IView[DECLARATION_COMPONENT_VIEW][T_HOST] : null;\n    // If we should skip this injector, or if
there is no injector on this node, start by\n    // searching the parent injector.\n    if (injectorIndex === -1 || flags &
InjectFlags.SkipSelf) {\n      parentLocation = injectorIndex === -1 ? getParentInjectorLocation(tNode, IView) :\n
IView[injectorIndex + NodeInjectorOffset.PARENT];\n      if (parentLocation ===
NO_PARENT_INJECTOR || !shouldSearchParent(flags, false)) {\n        injectorIndex = -1;\n      } else {\n
previousTView = IView[TVIEW];\n        injectorIndex = getParentInjectorIndex(parentLocation);\n        IView =
getParentInjectorView(parentLocation, IView);\n      }\n    }\n    // Traverse up the injector tree until we find a
potential match or until we know there\n    // *isn't* a match.\n    while (injectorIndex !== -1) {\n
ngDevMode && assertNodeInjector(IView, injectorIndex);\n    // Check the current injector. If it matches, see if
it contains token.\n    const tView = IView[TVIEW];\n    ngDevMode &&\n      assertTNodeForLView(\n
tView.data[injectorIndex + NodeInjectorOffset.TNODE] as TNode, IView);\n    if
(bloomHasToken(bloomHash, injectorIndex, tView.data)) {\n      // At this point, we have an injector which
*may* contain the token, so we step through\n      // the providers and directives associated with the injector's
corresponding node to get\n      // the instance.\n      const instance: T|null = searchTokensOnInjector<T>(\n
injectorIndex, IView, token, previousTView, flags, hostTElementNode);\n      if (instance !== NOT_FOUND)
{\n        return instance;\n      }\n      parentLocation = IView[injectorIndex +
NodeInjectorOffset.PARENT];\n      if (parentLocation !== NO_PARENT_INJECTOR &&\n
shouldSearchParent(\n        flags,\n        IView[TVIEW].data[injectorIndex + NodeInjectorOffset.TNODE]
=== hostTElementNode) &&\n        bloomHasToken(bloomHash, injectorIndex, IView)) {\n        // The def
wasn't found anywhere on this node, so it was a false positive.\n        // Traverse up the tree and continue
searching.\n        previousTView = tView;\n        injectorIndex = getParentInjectorIndex(parentLocation);\n
IView = getParentInjectorView(parentLocation, IView);\n      } else {\n        // If we should not search parent OR
If the ancestor bloom filter value does not have the\n        // bit corresponding to the directive we can give up on
traversing up to find the specific\n        // injector.\n        injectorIndex = -1;\n      }\n    }\n    }\n    }\n    }\n    return
lookupTokenUsingModuleInjector<T>(IView, token, flags, notFoundValue);\n  }\n  \n  const NOT_FOUND =
{};\n  \n  export function createNodeInjector(): Injector {\n    return new NodeInjector(getCurrentTNode()! as
TDirectiveHostNode, getLView()) as any;\n  }\n  \n  function searchTokensOnInjector<T>(\n    injectorIndex: number,
IView: LView, token: Type<T>|InjectionToken<T>,\n    previousTView: TView|null, flags: InjectFlags,
hostTElementNode: TNode|null) {\n    const currentTView = IView[TVIEW];\n    const tNode =
currentTView.data[injectorIndex + NodeInjectorOffset.TNODE] as TNode;\n    // First, we need to determine if view
providers can be accessed by the starting element.\n    // There are two possibilities\n    const canAccessViewProviders
= previousTView == null ?\n      // 1) This is the first invocation `previousTView == null` which means that we are
at the\n      // `TNode` of where injector is starting to look. In such a case the only time we are allowed\n      // to
look into the ViewProviders is if:\n      // - we are on a component\n      // - AND the injector set
`includeViewProviders` to true (implying that the token can see\n      // ViewProviders because it is the Component
or a Service which itself was declared in\n      // ViewProviders)\n      (isComponentHost(tNode) &&
includeViewProviders) :\n      // 2) `previousTView != null` which means that we are now walking across the parent
nodes.\n      // In such a case we are only allowed to look into the ViewProviders if:\n      // - We just crossed from
child View to Parent View `previousTView != currentTView`\n      // - AND the parent TNode is an Element.\n      //
This means that we just came from the Component's View and therefore are allowed to see\n      // into the

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ViewProviders.\n    (previousTView != currentTView && ((tNode.type & TNodeType.AnyRNode) !== 0));\n\n //
This special case happens when there is a @host on the inject and when we are searching\n // on the host element
node.\n    const isHostSpecialCase = (flags & InjectFlags.Host) && hostTElementNode === tNode;\n\n    const
injectableIdx = locateDirectiveOrProvider(\n    tNode, currentTView, token, canAccessViewProviders,
isHostSpecialCase);\n    if (injectableIdx !== null) {\n        return getNodeInjectable(IView, currentTView,
injectableIdx, tNode as TElementNode);\n    } else {\n        return NOT_FOUND;\n    }\n}\n\n/**\n * Searches for the
given token among the node's directives and providers.\n * @param tNode TNode on which directives are
present.\n * @param tView The tView we are currently processing\n * @param token Provider token or type of a
directive to look for.\n * @param canAccessViewProviders Whether view providers should be considered.\n *
@param isHostSpecialCase Whether the host special case applies.\n * @returns Index of a found directive or
provider, or null when none found.\n */\nexport function locateDirectiveOrProvider<T>(\n    tNode: TNode, tView:
TView, token: Type<T>|InjectionToken<T>|string,\n    canAccessViewProviders: boolean, isHostSpecialCase:
boolean|number): number|null {\n    const nodeProviderIndexes = tNode.providerIndexes;\n    const tInjectables =
tView.data;\n\n    const injectablesStart = nodeProviderIndexes &
TNodeProviderIndexes.ProvidersStartIndexMask;\n    const directivesStart = tNode.directiveStart;\n    const
directiveEnd = tNode.directiveEnd;\n    const cptViewProvidersCount =\n    nodeProviderIndexes >>
TNodeProviderIndexes.CptViewProvidersCountShift;\n    const startingIndex =\n    canAccessViewProviders ?
injectablesStart : injectablesStart + cptViewProvidersCount;\n    // When the host special case applies, only the
viewProviders and the component are visible\n    const endIndex = isHostSpecialCase ? injectablesStart +
cptViewProvidersCount : directiveEnd;\n    for (let i = startingIndex; i < endIndex; i++) {\n        const
providerTokenOrDef =\n    tInjectables[i] as InjectionToken<any>| Type<any>| DirectiveDef<any>| string;\n        if
(i < directivesStart && token === providerTokenOrDef ||\n        i >= directivesStart && (providerTokenOrDef as
DirectiveDef<any>).type === token) {\n            return i;\n        }\n    }\n    if (isHostSpecialCase) {\n        const dirDef =
tInjectables[directivesStart] as DirectiveDef<any>;\n        if (dirDef && isComponentDef(dirDef) && dirDef.type ===
token) {\n            return directivesStart;\n        }\n    }\n    return null;\n}\n\n/**\n * Retrieve or instantiate the injectable from
the `LView` at particular `index`.\n * @param index\n * This function checks to see if the value has already been instantiated and
if so returns the\n * cached `injectable`. Otherwise if it detects that the value is still a factory it\n * instantiates the
`injectable` and caches the value.\n */\nexport function getNodeInjectable(\n    IView: LView, tView: TView, index:
number, tNode: TDirectiveHostNode): any {\n    let value = IView[index];\n    const tData = tView.data;\n    if
(isFactory(value)) {\n        const factory: NodeInjectorFactory = value;\n        if (factory.resolving) {\n
throwCyclicDependencyError(stringifyForError(tData[index]));\n        }\n        const previousIncludeViewProviders =
setIncludeViewProviders(factory.canSeeViewProviders);\n        factory.resolving = true;\n        const
previousInjectImplementation =\n        factory.injectImpl ? setInjectImplementation(factory.injectImpl) : null;\n        const success = enterDI(IView, tNode, InjectFlags.Default);\n        ngDevMode &&\n        assertEquals(\n
success, true,\n        'Because flags do not contain `SkipSelf` we expect this to always succeed.);\n        try {\n
value = IView[index] = factory.factory(undefined, tData, IView, tNode);\n        // This code path is hit for both
directives and providers.\n        // For perf reasons, we want to avoid searching for hooks on providers.\n        // It does
no harm to try (the hooks just won't exist), but the extra\n        // checks are unnecessary and this is a hot path. So we
check to see\n        // if the index of the dependency is in the directive range for this\n        // tNode. If it's not, we know
it's a provider and skip hook registration.\n        if (tView.firstCreatePass && index >= tNode.directiveStart) {\n
ngDevMode && assertDirectiveDef(tData[index]);\n            registerPreOrderHooks(index, tData[index] as
DirectiveDef<any>, tView);\n        }\n    } finally {\n        previousInjectImplementation !== null &&\n
setInjectImplementation(previousInjectImplementation);\n        setIncludeViewProviders(previousIncludeViewProviders);\n        factory.resolving = false;\n        leaveDI();\n    }\n}\n\n return value;\n}\n\n/**\n * Returns the bit in an injector's bloom filter that should be used to determine whether
or not\n * the directive might be provided by the injector.\n * @param token\n * When a directive is public, it is added to the bloom
filter and given a unique ID that can be\n * retrieved on the Type. When the directive isn't public or the token is not
a directive `null`\n * is returned as the node injector can not possibly provide that token.\n * @param token the

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injection token\n * @returns the matching bit to check in the bloom filter or `null` if the token is not known.\n *
When the returned value is negative then it represents special values such as `Injector`.\n */\nexport function
bloomHashBitOrFactory(token: Type<any>|InjectionToken<any>|string): number|Function\n  undefined {\n
  ngDevMode && assertDefined(token, 'token must be defined');\n  if (typeof token === 'string') {\n    return
  token.charCodeAt(0) || 0;\n  }\n  const tokenId: number|undefined =\n    // First check with `hasOwnProperty` so
  we don't get an inherited ID.\n    token.hasOwnProperty(NG_ELEMENT_ID) ? (token as
  any)[NG_ELEMENT_ID] : undefined;\n  // Negative token IDs are used for special objects such as `Injector`\n  if
  (typeof tokenId === 'number') {\n    if (tokenId >= 0) {\n      return tokenId & BLOOM_MASK;\n    } else {\n
  ngDevMode &&\n      assertEquals(tokenId, InjectorMarkers.Injector, 'Expecting to get Special Injector Id');\n
  return createNodeInjector;\n    }\n  } else {\n    return tokenId;\n  }\n}\n\nexport function
bloomHasToken(bloomHash: number, injectorIndex: number, injectorView: LView|TData) {\n // Create a mask
  that targets the specific bit associated with the directive we're looking for.\n // JS bit operations are 32 bits, so this
  will be a number between 2^0 and 2^31, corresponding\n // to bit positions 0 - 31 in a 32 bit integer.\n const mask
  = 1 << bloomHash;\n const b7 = bloomHash & 0x80;\n const b6 = bloomHash & 0x40;\n const b5 = bloomHash
  & 0x20;\n\n // Our bloom filter size is 256 bits, which is eight 32-bit bloom filter buckets:\n // bf0 = [0 - 31], bf1 =
  [32 - 63], bf2 = [64 - 95], bf3 = [96 - 127], etc.\n // Get the bloom filter value from the appropriate bucket based on
  the directive's bloomBit.\n let value: number;\n\n if (b7) {\n   value = b6 ? (b5 ? injectorView[injectorIndex + 7] :
  injectorView[injectorIndex + 6]) :\n     (b5 ? injectorView[injectorIndex + 5] : injectorView[injectorIndex +
  4]);\n } else {\n   value = b6 ? (b5 ? injectorView[injectorIndex + 3] : injectorView[injectorIndex + 2]) :\n
  (b5 ? injectorView[injectorIndex + 1] : injectorView[injectorIndex]);\n }\n\n // If the bloom filter value has the bit
  corresponding to the directive's bloomBit flipped on,\n // this injector is a potential match.\n return !!((value &
  mask));\n}\n\n/** Returns true if flags prevent parent injector from being searched for tokens */\nfunction
shouldSearchParent(flags: InjectFlags, isFirstHostTNode: boolean): boolean|number {\n return !(flags &
  InjectFlags.Self) && !(flags & InjectFlags.Host && isFirstHostTNode);\n}\n\nexport class NodeInjector
  implements Injector {\n  constructor(\n    private _tNode:
  TElementNode|TContainerNode|TElementContainerNode|null,\n    private _IView: LView) {}\n\n  get(token: any,
  notFoundValue?: any): any {\n    return getOrCreateInjectable(this._tNode, this._IView, token, undefined,
  notFoundValue);\n  }\n}\n\n/**\n * @codeGenApi\n */\nexport function getFactoryOf<T>(type: Type<any>):
  FactoryFn<T>|null {\n  const typeAny = type as any;\n\n  if (isForwardRef(type)) {\n    return (() => {\n
  const factory = getFactoryOf<T>(resolveForwardRef(typeAny));\n    return factory ? factory() : null;\n
  }) as any;\n  }\n\n  let factory = getFactoryDef<T>(typeAny);\n  if (factory === null) {\n    const injectorDef =
  getInjectorDef<T>(typeAny);\n    factory = injectorDef && injectorDef.factory;\n  }\n  return factory ||
  null;\n}\n\n/**\n * @codeGenApi\n */\nexport function getInheritedFactory<T>(type: Type<any>): (type:
  Type<T>) => T {\n  return noSideEffects(() => {\n    const ownConstructor = type.prototype.constructor;\n    const
  ownFactory = ownConstructor[NG_FACTORY_DEF] || getFactoryOf(ownConstructor);\n    const objectPrototype
  = Object.prototype;\n    let parent = Object.getPrototypeOf(type.prototype).constructor;\n\n    // Go up the prototype
  until we hit `Object`.\n    while (parent && parent !== objectPrototype) {\n      const factory =
  parent[NG_FACTORY_DEF] || getFactoryOf(parent);\n\n      // If we hit something that has a factory and the
  factory isn't the same as the type,\n      // we've found the inherited factory. Note the check that the factory isn't the
  type's\n      // own factory is redundant in most cases, but if the user has custom decorators on the\n      // class, this
  lookup will start one level down in the prototype chain, causing us to\n      // find the own factory first and
  potentially triggering an infinite loop downstream.\n      if (factory && factory !== ownFactory) {\n        return
  factory;\n      }\n      parent = Object.getPrototypeOf(parent);\n    }\n\n    // There is no factory defined. Either this
  was improper usage of inheritance\n    // (no Angular decorator on the superclass) or there is no constructor at all\n
  // in the inheritance chain. Since the two cases cannot be distinguished, the\n    // latter has to be assumed.\n    return
  t => new t();\n  });\n}\n\n"/**\n * @license\n * Copyright Google LLC All Rights Reserved.\n */\n * Use of this
  source code is governed by an MIT-style license that can be\n * found in the LICENSE file at
  https://angular.io/license\n */\n\nexport const ERROR_TYPE = 'ngType';\nexport const

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```

done in\n *      environments which support `class` construct.\n */\nexport function
createNamedArrayType(name: string): typeof Array {\n // This should never be called in prod mode, so let's verify
that is the case.\n if (ngDevMode) {\n try {\n // If this function were compromised the following could lead to
arbitrary\n // script execution. We bless it with Trusted Types anyway since this\n // function is stripped out of
production binaries.\n return (newTrustedFunctionForDev('Array', `return class ${name} extends
Array{}`))(Array);\n } catch (e) {\n // If it does not work just give up and fall back to regular Array.\n return
Array;\n }\n } else {\n throw new Error(\n 'Looks like we are in \\`prod mode\\`, but we are creating a named
Array type, which is wrong! Check your code');\n }\n}\n\n", /**\n * @license\n * Copyright Google LLC All Rights
Reserved.\n *\n * Use of this source code is governed by an MIT-style license that can be\n * found in the
LICENSE file at https://angular.io/license\n */\n\nexport function normalizeDebugBindingName(name: string) {\n
// Attribute names with `$` (eg `x-y$`) are valid per spec, but unsupported by some browsers\n name =
camelCaseToDashCase(name.replace(/[$@]/g, '_'));\n return `ng-reflect-${name}`;\n}\n\nconst
CAMEL_CASE_REGEXP = /[A-Z]/g;\n\nfunction camelCaseToDashCase(input: string): string {\n return
input.replace(CAMEL_CASE_REGEXP, (...m: any[]) => '-' + m[1].toLowerCase());\n}\n\nexport function
normalizeDebugBindingValue(value: any): string {\n try {\n // Limit the size of the value as otherwise the DOM
just gets polluted.\n return value != null ? value.toString().slice(0, 30) : value;\n } catch (e) {\n return '[ERROR]
Exception while trying to serialize the value';\n }\n}\n\n", /**\n * @license\n * Copyright Google LLC All Rights
Reserved.\n *\n * Use of this source code is governed by an MIT-style license that can be\n * found in the
LICENSE file at https://angular.io/license\n */\n\nimport './util/ng_dev_mode';\n\nimport {assertDomNode} from
'./util/assert';\n\nimport {EMPTY_ARRAY} from './empty';\n\nimport {LContext,
MONKEY_PATCH_KEY_NAME} from './interfaces/context';\n\nimport {TNode, TNodeFlags} from
'./interfaces/node';\n\nimport {RElement, RNode} from './interfaces/renderer_dom';\n\nimport {CONTEXT,
HEADER_OFFSET, HOST, LView, TVIEW} from './interfaces/view';\n\nimport {getComponentLViewByIndex,
readPatchedData, unwrapRNode} from './util/view_utils';\n\n\n\n/**\n * Returns the matching `LContext` data for a
given DOM node, directive or component instance.\n *\n * This function will examine the provided DOM element,
component, or directive instance\n * monkey-patched property to derive the `LContext` data. Once called then
the monkey-patched\n * value will be that of the newly created `LContext`.\n *\n * If the monkey-patched value is
the `LView` instance then the context value for that\n * target will be created and the monkey-patch reference will
be updated. Therefore when this\n * function is called it may mutate the provided element\n * component\n * or any
of the associated\n * directive\n * monkey-patch values.\n *\n * If the monkey-patch value is not detected then the
code will walk up the DOM until an element\n * is found which contains a monkey-patch reference. When that
occurs then the provided element\n * will be updated with a new context (which is then returned). If the monkey-
patch value is not\n * detected for a component/directive instance then it will throw an error (all components and\n *
directives should be automatically monkey-patched by ivy).\n *\n * @param target Component, Directive or DOM
Node.\n */\n\nexport function getLContext(target: any): LContext|null {\n let mpValue = readPatchedData(target);\n
if (mpValue) {\n // only when it's an array is it considered an LView instance\n // ... otherwise it's an already
constructed LContext instance\n if (Array.isArray(mpValue)) {\n const IView: LView = mpValue!;\n let
nodeIndex: number;\n let component: any = undefined;\n let directives: any[]|null|undefined = undefined;\n\n
if (isComponentInstance(target)) {\n nodeIndex = findViaComponent(IView, target);\n if (nodeIndex == -
1) {\n throw new Error("The provided component was not found in the application");\n }\n component
= target;\n } else if (isDirectiveInstance(target)) {\n nodeIndex = findViaDirective(IView, target);\n if
(nodeIndex == -1) {\n throw new Error("The provided directive was not found in the application");\n }\n
directives = getDirectivesAtNodeIndex(nodeIndex, IView, false);\n } else {\n nodeIndex =
findViaNativeElement(IView, target as RElement);\n if (nodeIndex == -1) {\n return null;\n }\n }\n\n
// the goal is not to fill the entire context full of data because the lookups\n // are expensive. Instead, only
the target data (the element, component, container, ICU\n // expression or directive details) are filled into the
context. If called multiple times\n // with different target values then the missing target data will be filled in.\n
const native = unwrapRNode(IView[nodeIndex]);\n const existingCtx = readPatchedData(native);\n const

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context: LContext = (existingCtx && !Array.isArray(existingCtx)) ?\n      existingCtx :\n      createLContext(IView, nodeIndex, native);\n      // only when the component has been discovered then update the\n      monkey-patch\n      if (component && context.component === undefined) {\n        context.component =\n        component;\n        attachPatchData(context.component, context);\n      }\n      // only when the directives have been\n      discovered then update the monkey-patch\n      if (directives && context.directives === undefined) {\n        context.directives = directives;\n        for (let i = 0; i < directives.length; i++) {\n          attachPatchData(directives[i],\n          context);\n        }\n      }\n      attachPatchData(context.native, context);\n      mpValue = context;\n    }\n  } else {\n    const rElement = target as RElement;\n    ngDevMode && assertDomNode(rElement);\n    // if the context is not\n    found then we need to traverse upwards up the DOM\n    // to find the nearest element that has already been monkey\n    patched with data\n    let parent = rElement as any;\n    while (parent = parent.parentNode) {\n      const\n      parentContext = readPatchedData(parent);\n      if (parentContext) {\n        let IView: LView|null;\n        if\n        (Array.isArray(parentContext)) {\n          IView = parentContext as LView;\n        } else {\n          IView =\n          parentContext.IView;\n        }\n        // the edge of the app was also reached here through another means\n        //\n        (maybe because the DOM was changed manually).\n        if (!IView) {\n          return null;\n        }\n        const\n        index = findViaNativeElement(IView, rElement);\n        if (index >= 0) {\n          const native =\n          unwrapRNode(IView[index]);\n          const context = createLContext(IView, index, native);\n          attachPatchData(native, context);\n          mpValue = context;\n          break;\n        }\n      }\n    }\n    return\n    (mpValue as LContext) || null;\n  }\n}\n\n/**\n * Creates an empty instance of a `LContext` context\n */\nfunction\ncreateLContext(IView: LView, nodeIndex: number, native: RNode): LContext {\n  return {\n    IView, \n    nodeIndex, \n    native, \n    component: undefined, \n    directives: undefined, \n    localRefs: undefined, \n  };\n}\n\n/**\n * Takes a component instance and returns the view for that component.\n */\n@param\ncomponentInstance\n * @returns The component's view\n */\nfunction\ngetComponentViewByInstance(componentInstance: {}): LView {\n  let IView =\n  readPatchedData(componentInstance);\n  let view: LView;\n  if (Array.isArray(IView)) {\n    const nodeIndex =\n    findViaComponent(IView, componentInstance);\n    view = getComponentLViewByIndex(nodeIndex, IView);\n    const context = createLContext(IView, nodeIndex, view[HOST] as RElement);\n    context.component =\n    componentInstance;\n    attachPatchData(componentInstance, context);\n    attachPatchData(context.native,\n    context);\n  } else {\n    const context = IView as any as LContext;\n    view =\n    getComponentLViewByIndex(context.nodeIndex, context.IView);\n  }\n  return view;\n}\n\n/**\n * Assigns the\n * given data to the given target (which could be a component, \n * directive or DOM node instance) using monkey-\n * patching.\n */\nfunction\nattachPatchData(target: any, data: LView|LContext) {\n  target[MONKEY_PATCH_KEY_NAME] = data;\n}\n\nfunction\nisComponentInstance(instance: any):\nboolean {\n  return instance && instance.constructor && instance.constructor.cmp;\n}\n\nfunction\nisDirectiveInstance(instance: any): boolean {\n  return instance && instance.constructor &&\n  instance.constructor.dir;\n}\n\n/**\n * Locates the element within the given LView and returns the matching index\n */\nfunction\nfindViaNativeElement(IView: LView, target: RElement): number {\n  const tView = IView[TVIEW];\n  for (let i = HEADER_OFFSET; i < tView.bindingStartIndex; i++) {\n    if (unwrapRNode(IView[i]) === target) {\n      return i;\n    }\n  }\n  return -1;\n}\n\n/**\n * Locates the next tNode (child, sibling or parent).\n */\nfunction\ntraverseNextElement(tNode: TNode): TNode|null {\n  if (tNode.child) {\n    return tNode.child;\n  } else if\n  (tNode.next) {\n    return tNode.next;\n  } else {\n    // Let's take the following template:\n    <div><span>text</span></div><component/>\n    // After checking the text node, we need to find the next parent\n    that has a `next` TNode,\n    // in this case the parent `div`, so that we can find the component.\n    while\n    (tNode.parent && !tNode.parent.next) {\n      tNode = tNode.parent;\n    }\n    return tNode.parent &&\n    tNode.parent.next;\n  }\n}\n\n/**\n * Locates the component within the given LView and returns the matching\n * index\n */\nfunction\nfindViaComponent(IView: LView, componentInstance: {}): number {\n  const\n  componentIndices = IView[TVIEW].components;\n  if (componentIndices) {\n    for (let i = 0; i <\n    componentIndices.length; i++) {\n      const elementComponentIndex = componentIndices[i];\n      const\n      componentView = getComponentLViewByIndex(elementComponentIndex, IView);\n      if

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(componentView[CONTEXT] === componentInstance) {\n    return elementComponentIndex;\n    }\n  }\n }
else {\n    const rootComponentView = getComponentLViewByIndex(HEADER_OFFSET, IView);\n    const
rootComponent = rootComponentView[CONTEXT];\n    if (rootComponent === componentInstance) {\n    // we
are dealing with the root element here therefore we know that the\n    // element is the very first element after the
HEADER data in the IView\n    return HEADER_OFFSET;\n    }\n  }\n  return -1;\n}\n\n/**\n * Locates the
directive within the given LView and returns the matching index\n */\nfunction findViaDirective(IView: LView,
directiveInstance: {}): number {\n // if a directive is monkey patched then it will (by default)\n // have a reference
to the LView of the current view. The\n // element bound to the directive being search lives somewhere\n // in the
view data. We loop through the nodes and check their\n // list of directives for the instance.\n let tNode =
IView[TVIEW].firstChild;\n while (tNode) {\n    const directiveIndexStart = tNode.directiveStart;\n    const
directiveIndexEnd = tNode.directiveEnd;\n    for (let i = directiveIndexStart; i < directiveIndexEnd; i++) {\n    if
(IView[i] === directiveInstance) {\n    return tNode.index;\n    }\n  }\n  tNode =
traverseNextElement(tNode);\n  }\n  return -1;\n}\n\n/**\n * Returns a list of directives extracted from the given
view based on the\n * provided list of directive index values.\n */\n * @param nodeIndex The node index\n *
@param IView The target view data\n * @param includeComponents Whether or not to include components in
returned directives\n */\nexport function getDirectivesAtNodeIndex(\n    nodeIndex: number, IView: LView,
includeComponents: boolean): any[]\nnull {\n    const tNode = IView[TVIEW].data[nodeIndex] as TNode;\n    let
directiveStartIndex = tNode.directiveStart;\n    if (directiveStartIndex == 0) return EMPTY_ARRAY;\n    const
directiveEndIndex = tNode.directiveEnd;\n    if (!includeComponents && tNode.flags &
TNodeFlags.isComponentHost) directiveStartIndex++;\n    return IView.slice(directiveStartIndex,
directiveEndIndex);\n}\n\nexport function getComponentAtNodeIndex(nodeIndex: number, IView: LView): {}|\nnull
{\n    const tNode = IView[TVIEW].data[nodeIndex] as TNode;\n    let directiveStartIndex = tNode.directiveStart;\n
return tNode.flags & TNodeFlags.isComponentHost ? IView[directiveStartIndex] : null;\n}\n\n/**\n * Returns a
map of local references (local reference name => element or directive instance) that\n * exist on a given element.\n
*/\nexport function discoverLocalRefs(IView: LView, nodeIndex: number): {[key: string]: any}|\nnull {\n    const
tNode = IView[TVIEW].data[nodeIndex] as TNode;\n    if (tNode && tNode.localNames) {\n    const result: {[key:
string]: any} = {};\n    let localIndex = tNode.index + 1;\n    for (let i = 0; i < tNode.localNames.length; i += 2) {\n
result[tNode.localNames[i]] = IView[localIndex];\n    localIndex++;\n    }\n    return result;\n  }\n  return
null;\n}\n\n",\n\n/**\n * @license\n * Copyright Google LLC All Rights Reserved.\n */\n * Use of this source code is
governed by an MIT-style license that can be\n * found in the LICENSE file at https://angular.io/license\n
*/\n\nimport {global} from '../util/global';\nimport {RElement} from '../interfaces/renderer_dom';\n\nexport
const defaultScheduler =\n    () => (\n        typeof requestAnimationFrame !== 'undefined' &&\n        requestAnimationFrame || // browser only\n        setTimeout // everything else\n    )\n    .bind(global);\n\n/**\n * @codeGenApi\n */\nexport function resolveWindow(element:
RElement & {ownerDocument: Document}) {\n    return {name: 'window', target:
element.ownerDocument.defaultView};\n}\n\n/**\n * @codeGenApi\n */\nexport function
resolveDocument(element: RElement & {ownerDocument: Document}) {\n    return {name: 'document', target:
element.ownerDocument};\n}\n\n/**\n * @codeGenApi\n */\nexport function resolveBody(element:
RElement & {ownerDocument: Document}) {\n    return {name: 'body', target:
element.ownerDocument.body};\n}\n\n/**\n * The special delimiter we use to separate property names, prefixes,
and suffixes\n * in property binding metadata. See storeBindingMetadata().\n */\n * We intentionally use the
Unicode "\u2013REPLACEMENT CHARACTER\u2013" (U+FFFD) as a delimiter\n * because it is a very uncommon
character that is unlikely to be part of a user's\n * property names or interpolation strings. If it is in fact used in a
property\n * binding, DebugElement.properties will not return the correct value for that\n * binding. However, there
should be no runtime effect for real applications.\n */\n * This character is typically rendered as a question mark
inside of a diamond.\n * See https://en.wikipedia.org/wiki/Specials\_\(Unicode\_block\)\n */\n\nexport const
INTERPOLATION_DELIMITER = `;\n\n/**\n * Unwrap a value which might be behind a closure (for forward
declaration reasons).\n */\nexport function maybeUnwrapFn<T>(value: T|(() => T)): T {\n    if (value instanceof

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```

Function) {\n  return value();\n } else {\n  return value;\n }\n}\n", "\n/**\n * @license\n * Copyright Google
LLC All Rights Reserved.\n *\n * Use of this source code is governed by an MIT-style license that can be\n * found
in the LICENSE file at https://angular.io/license\n *\nimport { RuntimeError, RuntimeErrorCode } from
'./error_code';\nimport { TNode } from './interfaces/node';\nimport { LView, TVIEW } from
'./interfaces/view';\nimport { INTERPOLATION_DELIMITER } from './util/misc_utils';\n\n\n/** Called when
there are multiple component selectors that match a given node *\n\nexport function
throwMultipleComponentError(tNode: TNode): never {\n  throw new RuntimeError(\n
RuntimeErrorCode.MULTIPLE_COMPONENTS_MATCH,\n    `Multiple components match node with tagname
${tNode.value}`);\n}\n\n/** Throws an ExpressionChangedAfterChecked error if checkNoChanges mode is on.
*\n\nexport function throwErrorIfNoChangesMode(\n  creationMode: boolean, oldValue: any, currValue: any,
propName?: string): never|void {\n  const field = propName ? ` for '${propName}'` : '';\n  let msg =\n
`ExpressionChangedAfterItHasBeenCheckedError: Expression has changed after it was checked. Previous
value${\n    field}: '${oldValue}'. Current value: '${currValue}'`;\n  if (creationMode) {\n    msg +=\n    ` It
seems like the view has been created after its parent and its children have been dirty checked.` +\n    ` Has it been
created in a change detection hook?`;\n  }\n  // TODO: include debug context, see `viewDebugError` function in\n //
`packages/core/src/view/errors.ts` for reference.\n  throw new
RuntimeError(RuntimeErrorCode.EXPRESSION_CHANGED_AFTER_CHECKED, msg);\n}\n\nfunction
constructDetailsForInterpolation(\n  lView: LView, rootIndex: number, expressionIndex: number, meta: string,
changedValue: any) {\n  const [propName, prefix, ...chunks] = meta.split(INTERPOLATION_DELIMITER);\n
  oldValue = prefix, newValue = prefix;\n  for (let i = 0; i < chunks.length; i++) {\n    const slotIdx = rootIndex + i;\n
  oldValue += `${lView[slotIdx]}${chunks[i]}`;\n    newValue += `${slotIdx === expressionIndex ? changedValue :
lView[slotIdx]}${chunks[i]}`;\n  }\n  return { propName, oldValue, newValue};\n}\n\n/**\n * Constructs an object
that contains details for the ExpressionChangedAfterItHasBeenCheckedError:\n * - property name (for property
bindings or interpolations)\n * - old and new values, enriched using information from metadata\n *\n * More
information on the metadata storage format can be found in `storePropertyBindingMetadata`\n *\n * function
description.\n *\n\nexport function getExpressionChangedErrorDetails(\n  lView: LView, bindingIndex: number,
oldValue: any, newValue: any): { propName?: string, oldValue: any, newValue: any } {\n  const tData =
lView[TVIEW].data;\n  const metadata = tData[bindingIndex];\n  if (typeof metadata === 'string') {\n    //
metadata for property interpolation\n    if (metadata.indexOf(INTERPOLATION_DELIMITER) > -1) {\n      return
constructDetailsForInterpolation(\n        lView, bindingIndex, bindingIndex, metadata, newValue);\n    }\n    //
metadata for property binding\n    return { propName: metadata, oldValue, newValue};\n  }\n  // metadata is not
available for this expression, check if this expression is a part of the\n // property interpolation by going from the
current binding index left and look for a string that\n // contains INTERPOLATION_DELIMITER, the layout in
tView.data for this case will look like this:\n // [..., 'idPrefix and suffix', null, null, null, ...]\n  if (metadata ===
null) {\n    let idx = bindingIndex - 1;\n    while (typeof tData[idx] !== 'string' && tData[idx + 1] === null) {\n
    idx--;\n  }\n  const meta = tData[idx];\n  if (typeof meta === 'string') {\n    const matches = meta.match(new
RegExp(INTERPOLATION_DELIMITER, 'g'));\n    // first interpolation delimiter separates property name from
interpolation parts (in case of\n // property interpolations), so we subtract one from total number of found
delimiters\n    if (matches && (matches.length - 1) > bindingIndex - idx) {\n      return
constructDetailsForInterpolation(lView, idx, bindingIndex, meta, newValue);\n    }\n  }\n  return { propName:
undefined, oldValue, newValue};\n}\n\n", "\n/**\n * @license\n * Copyright Google LLC All Rights Reserved.\n *\n *
Use of this source code is governed by an MIT-style license that can be\n * found in the LICENSE file at
https://angular.io/license\n *\nimport { ViewEncapsulation } from './metadata/view';\n\n\n/**\n * Used by
`RendererFactory2` to associate custom rendering data and styles\n * with a rendering implementation.\n *\n
@publicApi\n *\n\nexport interface RendererType2 {\n  /**\n   * A unique identifying string for the new renderer,
used when creating\n   * unique styles for encapsulation.\n   */\n  id: string;\n  /**\n   * The view encapsulation type,
which determines how styles are applied to\n   * DOM elements. One of\n   * - `Emulated` (default): Emulate native
scoping of styles.\n   * - `Native`: Use the native encapsulation mechanism of the renderer.\n   * - `ShadowDom`:
```

Use modern [Shadow DOM](https://w3c.github.io/webcomponents/spec/shadow/) and create a ShadowRoot for component's host element. Do not provide any template or style encapsulation. Encapsulation: ViewEncapsulation. Defines CSS styles to be stored on a renderer instance. Styles: (string|any[])[]; Defines arbitrary developer-defined data to be stored on a renderer instance. This is useful for renderers that delegate to other renderers. Data: {[kind: string]: any}; Flags for renderer-specific style modifiers. @publicApi. ^export enum RendererStyleFlags2 { // TODO(misko): This needs to be refactored into a separate file so that it can be imported from `node_manipulation.ts` Currently doing the import cause resolution order to change and fails the tests. The work around is to have hard coded value in `node_manipulation.ts` for now. Marks a style as important. Important = 1 << 0. Marks a style as using dash case naming (this-is-dash-case). DashCase = 1 << 1. } @license Copyright Google LLC All Rights Reserved. Use of this source code is governed by an MIT-style license that can be found in the LICENSE file at https://angular.io/license @fileoverview This file provides mechanism by which code relevant to the `TicuContainerNode` is only loaded if ICU is present in the template. import {TicuContainerNode} from '../interfaces/node'; import {RNode} from '../interfaces/renderer_dom'; import {LView} from '../interfaces/view'; let _icuContainerIterate: (TicuContainerNode: TicuContainerNode, IView: LView) => () => RNode | null; Iterator which provides ability to visit all of the `TicuContainerNode` root `RNode`s. ^export function icuContainerIterate(tIcuContainerNode: TicuContainerNode, IView: LView): () => RNode | null { return _icuContainerIterate(tIcuContainerNode, IView); } Ensures that `IcuContainerVisitor`'s implementation is present. This function is invoked when i18n instruction comes across an ICU. The purpose is to allow the bundler to tree shake ICU logic and only load it if ICU instruction is executed. ^export function ensureIcuContainerVisitorLoaded(loader: () => ((TicuContainerNode: TicuContainerNode, IView: LView) => () => RNode | null))) { if (_icuContainerIterate === undefined) { // Do not inline this function. We want to keep `ensureIcuContainerVisitorLoaded` light, so it can be inlined into call-site. _icuContainerIterate = loader; } } @license Copyright Google LLC All Rights Reserved. Use of this source code is governed by an MIT-style license that can be found in the LICENSE file at https://angular.io/license Expresses a single CSS Selector. Beginning of array - First index: element name - Subsequent odd indices: attr keys - Subsequent even indices: attr values. After SelectorFlags.CLASS flag - Class name values. SelectorFlags.NOT flag - Changes the mode to NOT. - Can be combined with other flags to set the element / attr / class mode. e.g. SelectorFlags.NOT | SelectorFlags.ELEMENT. Example: Original: `div.foo.bar[attr1=val1][attr2]` Parsed: ['div', 'attr1', 'val1', 'attr2', SelectorFlags.CLASS, 'foo', 'bar'] Original: `div[attr1]:not(.foo[attr2])` Parsed: ['div', 'attr1', SelectorFlags.NOT | SelectorFlags.ATTRIBUTE 'attr2', SelectorFlags.CLASS, 'foo'] See more examples in node_selector_matcher_spec.ts ^export type CssSelector = (string|SelectorFlags)[]; A list of CssSelectors. A directive or component can have multiple selectors. This type is used for directive defs so any of the selectors in the list will match that directive. Original: 'form, [ngForm]' Parsed: [['form'], ['ngForm']] ^export type CssSelectorList = CssSelector[]; List of slots for a projection. A slot can be either based on a parsed CSS selector which will be used to determine nodes which are projected into that slot. When set to `*`, the slot is reserved and can be used for multi-slot projection using {@link ViewContainerRef#createComponent}. The last slot that specifies the wildcard selector will retrieve all projectable nodes which do not match any selector. ^export type ProjectionSlots = (CssSelectorList|*)[]; Flags used to build up CssSelectors ^export const enum SelectorFlags { // Indicates this is the beginning of a new negative selector NOT = 0b0001, // Mode for matching attributes ATTRIBUTE = 0b0010, // Mode for matching tag names ELEMENT = 0b0100, // Mode for matching class names CLASS = 0b1000, } // Note: This hack is necessary so we don't erroneously get a circular dependency failure based on types. ^export const unusedValueExportToPlacateAjd = 1; @license Copyright Google LLC All Rights Reserved. Use of this source code is governed by an MIT-style license that can be found in the LICENSE file at https://angular.io/license import {assertDefined}


```

from './util/assert';\nimport {assertLView} from './assert';\nimport {LContainer} from
 './interfaces/container';\nimport {isLContainer, isLView} from './interfaces/type_checks';\nimport
 {CHILD_HEAD, CONTEXT, FLAGS, LView, LViewFlags, NEXT, PARENT, RootContext} from
 './interfaces/view';\n\nimport {readPatchedLView} from './view_utils';\n\n/**\n * Gets the parent LView of the
 passed LView, if the PARENT is an LContainer, will get the parent of\n * that LContainer, which is an LView\n *
 @param IView the IView whose parent to get\n * ^\nexport function getLViewParent(IView: LView): LView|null
 {\n  ngDevMode && assertLView(IView);\n  const parent = IView[PARENT];\n  return isLContainer(parent) ?
 parent[PARENT]! : parent;\n}\n\n/**\n * Retrieve the root view from any component or `LView` by walking the
 parent `LView` until\n * reaching the root `LView`.\n * @param componentOrLView any component or
 `LView`\n * ^\nexport function getRootView(componentOrLView: LView|{}): LView {\n  ngDevMode &&
 assertDefined(componentOrLView, 'component');\n  let IView = isLView(componentOrLView) ?
 componentOrLView : readPatchedLView(componentOrLView)!;\n  while (IView && !(IView[FLAGS] &
 LViewFlags.IsRoot)) {\n    IView = getLViewParent(IView)!;\n  }\n  ngDevMode && assertLView(IView);\n  return IView;\n}\n\n/**\n * Returns the `RootContext` instance that is associated with\n * the application where the
 target is situated. It does this by walking the parent views until it\n * gets to the root view, then getting the context
 off of that.\n * @param viewOrComponent the `LView` or component to get the root context for.\n * ^\nexport
 function getRootContext(viewOrComponent: LView|{}): RootContext {\n  const rootView =
 getRootView(viewOrComponent);\n  ngDevMode &&\n    assertDefined(rootView[CONTEXT], 'RootView has
 no context. Perhaps it is disconnected?');\n  return rootView[CONTEXT] as RootContext;\n}\n\n/**\n * Gets the
 first `LContainer` in the LView or `null` if none exists.\n * ^\nexport function getFirstLContainer(IView: LView):
 LContainer|null {\n  return getNearestLContainer(IView[CHILD_HEAD]);\n}\n\n/**\n * Gets the next `LContainer`
 that is a sibling of the given container.\n * ^\nexport function getNextLContainer(container: LContainer):
 LContainer|null {\n  return getNearestLContainer(container[NEXT]);\n}\n\nfunction
 getNearestLContainer(viewOrContainer: LContainer|LView|null) {\n  while (viewOrContainer !== null &&
 !isLContainer(viewOrContainer)) {\n    viewOrContainer = viewOrContainer[NEXT];\n  }\n  return
 viewOrContainer;\n}\n"/**\n * @license\n * Copyright Google LLC All Rights Reserved.\n * Use of this
 source code is governed by an MIT-style license that can be\n * found in the LICENSE file at
 https://angular.io/license\n */\nimport {ViewEncapsulation} from './metadata/view';\nimport {Renderer2} from
 './render/api';\nimport {RendererStyleFlags2} from './render/api_flags';\nimport {addToArray, removeFromArray}
 from './util/array_utils';\nimport {assertDefined, assertDomNode, assertEqual, assertString} from
 './util/assert';\nimport {assertLContainer, assertLView, assertTNodeForLView} from './assert';\nimport
 {attachPatchData} from './context_discovery';\nimport {icuContainerIterate} from
 './i18n/i18n_tree_shaking';\nimport {CONTAINER_HEADER_OFFSET, HAS_TRANSPLANTED_VIEWS,
 LContainer, MOVED_VIEWS, NATIVE, unusedValueExportToPlacateAjd as unused1} from
 './interfaces/container';\nimport {ComponentDef} from './interfaces/definition';\nimport {NodeInjectorFactory} from
 './interfaces/injector';\nimport {TElementNode, TIconContainerNode, TNode, TNodeFlags, TNodeType,
 TProjectionNode, unusedValueExportToPlacateAjd as unused2} from './interfaces/node';\nimport
 {unusedValueExportToPlacateAjd as unused3} from './interfaces/projection';\nimport {isProceduralRenderer,
 ProceduralRenderer3, Renderer3, unusedValueExportToPlacateAjd as unused4} from
 './interfaces/renderer';\nimport {RComment, RElement, RNode, RText} from './interfaces/renderer_dom';\nimport
 {isLContainer, isLView} from './interfaces/type_checks';\nimport {CHILD_HEAD, CLEANUP,
 DECLARATION_COMPONENT_VIEW, DECLARATION_LCONTAINER, DestroyHookData, FLAGS,
 HookData, HookFn, HOST, LView, LViewFlags, NEXT, PARENT, QUERIES, RENDERER, T_HOST, TVIEW,
 TView, TViewType, unusedValueExportToPlacateAjd as unused5} from './interfaces/view';\nimport
 {assertTNodeType} from './node_assert';\nimport {getLViewParent} from './util/view_traversal_utils';\nimport
 {getNativeByTNode, unwrapRNode, updateTransplantedViewCount} from './util/view_utils';\n\nconst
 unusedValueToPlacateAjd = unused1 + unused2 + unused3 + unused4 + unused5;\n\nconst enum
 WalkTNodeTreeAction {\n  /** node create in the native environment. Run on initial creation. *\n  Create = 0,\n

```



```

@param renderer Current renderer to use for DOM manipulations.\n * @param IView The view from which
elements should be added or removed\n * @param parentNode The parent `RElement` where it should be
inserted into.\n * @param beforeNode The node before which elements should be added, if insert mode\n */\nexport
function addViewToContainer(\n  tView: TView, parentNode: TNode, renderer: Renderer3, IView: LView,
parentNode: RElement,\n  beforeNode: RNode|null): void {\n  IView[HOST] = parentNode;\n
IView[T_HOST] = parentNode;\n  applyView(tView, IView, renderer, WalkTNodeTreeAction.Insert,
parentNode, beforeNode);\n}\n\n/**\n * Detach a `LView` from the DOM by detaching its nodes.\n */\n *
@param tView The `TView` of the `LView` to be detached\n * @param IView the `LView` to be detached.\n
*/\nexport function renderDetachView(tView: TView, IView: LView) {\n  applyView(tView, IView,
IView[RENDERER], WalkTNodeTreeAction.Detach, null, null);\n}\n\n/**\n * Traverses down and up the tree of
views and containers to remove listeners and\n * call onDestroy callbacks.\n */\n * Notes:\n * - Because it's used for
onDestroy calls, it needs to be bottom-up.\n * - Must process containers instead of their views to avoid splicing\n *
when views are destroyed and re-added.\n * - Using a while loop because it's faster than recursion\n * - Destroy
only called on movement to sibling or movement to parent (laterally or up)\n */\n * @param rootView The view to
destroy\n */\nexport function destroyViewTree(rootView: LView): void {\n  // If the view has no children, we can
clean it up and return early.\n  let IViewOrLContainer = rootView[CHILD_HEAD];\n  if (!IViewOrLContainer) {\n
return cleanUpView(rootView[TVIEW], rootView);\n  }\n  while (IViewOrLContainer) {\n    let next:
LView|LContainer|null = null;\n    if (isLView(IViewOrLContainer)) {\n      // If LView, traverse down to child.\n
      next = IViewOrLContainer[CHILD_HEAD];\n    } else {\n      ngDevMode &&
assertLContainer(IViewOrLContainer);\n      // If container, traverse down to its first LView.\n      const firstView:
LView|undefined = IViewOrLContainer[CONTAINER_HEADER_OFFSET];\n      if (firstView) next =
firstView;\n    }\n    if (!next) {\n      // Only clean up view when moving to the side or up, as destroy hooks\n
// should be called in order from the bottom up.\n      while (IViewOrLContainer && !IViewOrLContainer![NEXT]
&& IViewOrLContainer !== rootView) {\n        if (isLView(IViewOrLContainer)) {\n
cleanUpView(IViewOrLContainer[TVIEW], IViewOrLContainer);\n        }\n        IViewOrLContainer =
IViewOrLContainer[PARENT];\n      }\n      if (IViewOrLContainer === null) IViewOrLContainer = rootView;\n
if (isLView(IViewOrLContainer)) {\n        cleanUpView(IViewOrLContainer[TVIEW], IViewOrLContainer);\n
}\n      next = IViewOrLContainer && IViewOrLContainer![NEXT];\n    }\n    IViewOrLContainer = next;\n
}\n}\n\n/**\n * Inserts a view into a container.\n */\n * This adds the view to the container's array of active views in
the correct\n * position. It also adds the view's elements to the DOM if the container isn't a\n * root node of another
view (in that case, the view's elements will be added when\n * the container's parent view is added later).\n */\n *
@param tView The `TView` of the `LView` to insert\n * @param IView The view to insert\n * @param IContainer
The container into which the view should be inserted\n * @param index Which index in the container to insert the
child view into\n */\nexport function insertView(tView: TView, IView: LView, IContainer: LContainer, index:
number) {\n  ngDevMode && assertLView(IView);\n  ngDevMode && assertLContainer(IContainer);\n  const
indexInContainer = CONTAINER_HEADER_OFFSET + index;\n  const containerLength = IContainer.length;\n  if (index > 0) {\n
// This is a new view, we need to add it to the children.\n    IContainer[indexInContainer -
1][NEXT] = IView;\n  }\n  if (index < containerLength - CONTAINER_HEADER_OFFSET) {\n    IView[NEXT] =
IContainer[indexInContainer];\n    addToArray(IContainer, CONTAINER_HEADER_OFFSET + index, IView);\n
  } else {\n    IContainer.push(IView);\n    IView[NEXT] = null;\n  }\n  IView[PARENT] = IContainer;\n\n  // track
views where declaration and insertion points are different\n  const declarationLContainer =
IView[DECLARATION_LCONTAINER];\n  if (declarationLContainer !== null && IContainer !==
declarationLContainer) {\n    trackMovedView(declarationLContainer, IView);\n  }\n\n  // notify query that a new
view has been added\n  const IQueries = IView[QUERIES];\n  if (IQueries !== null) {\n
IQueries.insertView(tView);\n  }\n\n  // Sets the attached flag\n  IView[FLAGS] |=
LViewFlags.Attached;\n}\n\n/**\n * Track views created from the declaration container (TemplateRef) and inserted
into a\n * different LContainer.\n */\nfunction trackMovedView(declarationContainer: LContainer, IView: LView)
{\n  ngDevMode && assertDefined(IView, 'LView required');\n  ngDevMode &&

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assertLContainer(declarationContainer);\n const movedViews = declarationContainer[MOVED_VIEWS];\n const
insertedLContainer = IView[PARENT] as LContainer;\n ngDevMode && assertLContainer(insertedLContainer);\n
const insertedComponentLView = insertedLContainer[PARENT]![DECLARATION_COMPONENT_VIEW];\n
ngDevMode && assertDefined(insertedComponentLView, 'Missing insertedComponentLView');\n const
declaredComponentLView = IView[DECLARATION_COMPONENT_VIEW];\n ngDevMode &&
assertDefined(declaredComponentLView, 'Missing declaredComponentLView');\n if (declaredComponentLView
!== insertedComponentLView) {\n // At this point the declaration-component is not same as insertion-component;
this means that\n // this is a transplanted view. Mark the declared IView as having transplanted views so that\n //
those views can participate in CD.\n declarationContainer[HAS_TRANSPLANTED_VIEWS] = true;\n }\n if
(movedViews === null) {\n declarationContainer[MOVED_VIEWS] = [IView];\n } else {\n
movedViews.push(IView);\n }\n}\n\nfunction detachMovedView(declarationContainer: LContainer, IView:
LView) {\n ngDevMode && assertLContainer(declarationContainer);\n ngDevMode &&\n assertDefined(\n
declarationContainer[MOVED_VIEWS],\n 'A projected view should belong to a non-empty projected views
collection');\n const movedViews = declarationContainer[MOVED_VIEWS]!;\n const declarationViewIndex =
movedViews.indexOf(IView);\n const insertionLContainer = IView[PARENT] as LContainer;\n ngDevMode &&
assertLContainer(insertionLContainer);\n\n // If the view was marked for refresh but then detached before it was
checked (where the flag\n // would be cleared and the counter decremented), we need to decrement the view counter
here\n // instead.\n if (IView[FLAGS] & LViewFlags.RefreshTransplantedView) {\n IView[FLAGS] &=
~LViewFlags.RefreshTransplantedView;\n updateTransplantedViewCount(insertionLContainer, -1);\n }\n\n
movedViews.splice(declarationViewIndex, 1);\n}\n\n/**\n * Detaches a view from a container.\n *\n * This method
removes the view from the container's array of active views. It also\n * removes the view's elements from the
DOM.\n *\n * @param IContainer The container from which to detach a view\n * @param removeIndex The index
of the view to detach\n * @returns Detached LView instance.\n */\n\nexport function detachView(IContainer:
LContainer, removeIndex: number): LView|undefined {\n if (IContainer.length <=
CONTAINER_HEADER_OFFSET) return;\n\n const indexInContainer = CONTAINER_HEADER_OFFSET +
removeIndex;\n const viewToDetach = IContainer[indexInContainer];\n\n if (viewToDetach) {\n const
declarationLContainer = viewToDetach[DECLARATION_LCONTAINER];\n if (declarationLContainer !== null
&& declarationLContainer !== IContainer) {\n detachMovedView(declarationLContainer, viewToDetach);\n
}\n\n\n if (removeIndex > 0) {\n IContainer[indexInContainer - 1][NEXT] = viewToDetach[NEXT] as
LView;\n }\n\n const removedLView = removeFromArray(IContainer, CONTAINER_HEADER_OFFSET +
removeIndex);\n removeViewFromContainer(viewToDetach[TVIEW], viewToDetach);\n\n // notify query that a
view has been removed\n const IQueries = removedLView[QUERIES];\n if (IQueries !== null) {\n
IQueries.detachView(removedLView[TVIEW]);\n }\n\n viewToDetach[PARENT] = null;\n
viewToDetach[NEXT] = null;\n // Unsets the attached flag\n viewToDetach[FLAGS] &=
~LViewFlags.Attached;\n }\n\n return viewToDetach;\n}\n\n/**\n * A standalone function which destroys an
LView,\n * conducting clean up (e.g. removing listeners, calling onDestroys).\n *\n * @param tView The `TView`
of the `LView` to be destroyed\n * @param IView The view to be destroyed.\n */\n\nexport function
destroyLView(tView: TView, IView: LView) {\n if (!(IView[FLAGS] & LViewFlags.Destroyed)) {\n const
renderer = IView[RENDERER];\n if (isProceduralRenderer(renderer) && renderer.destroyNode) {\n
applyView(tView, IView, renderer, WalkTreeNodeTreeAction.Destroy, null, null);\n }\n\n
destroyViewTree(IView);\n }\n}\n\n/**\n * Calls onDestroys hooks for all directives and pipes in a given view and
then removes all\n * listeners. Listeners are removed as the last step so events delivered in the onDestroys hooks\n *
can be propagated to @Output listeners.\n *\n * @param tView `TView` for the `LView` to clean up.\n * @param
IView The LView to clean up\n */\n\nfunction cleanUpView(tView: TView, IView: LView): void {\n if
(!(IView[FLAGS] & LViewFlags.Destroyed)) {\n // Usually the Attached flag is removed when the view is
detached from its parent, however\n // if it's a root view, the flag won't be unset hence why we're also removing on
destroy.\n IView[FLAGS] &= ~LViewFlags.Attached;\n\n // Mark the LView as destroyed *before* executing
the onDestroy hooks. An onDestroy hook\n // runs arbitrary user code, which could include its own

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`viewRef.destroy()` (or similar). If\n // We don't flag the view as destroyed before the hooks, this could lead to an
infinite loop.\n // This also aligns with the ViewEngine behavior. It also means that the onDestroy hook is\n //
really more of an "afterDestroy" hook if you think about it.\n IView[FLAGS] |= LViewFlags.Destroyed;\n\n
executeOnDestroys(tView, IView);\n removeListeners(tView, IView);\n // For component views only, the local
renderer is destroyed at clean up time.\n if (IView[TVIEW].type === TViewType.Component &&
isProceduralRenderer(IView[RENDERER])) {\n ngDevMode && ngDevMode.rendererDestroy++;\n
(IView[RENDERER] as ProceduralRenderer3).destroy();\n }\n\n const declarationContainer =
IView[DECLARATION_LCONTAINER];\n // we are dealing with an embedded view that is still inserted into a
container\n if (declarationContainer !== null && isLContainer(IView[PARENT])) {\n // and this is a projected
view\n if (declarationContainer !== IView[PARENT]) {\n detachMovedView(declarationContainer,
IView);\n }\n }\n // For embedded views still attached to a container: remove query result from this view.\n
const IQueries = IView[QUERIES];\n if (IQueries !== null) {\n IQueries.detachView(tView);\n }\n }\n
}\n\n/** Removes listeners and unsubscribes from output subscriptions */\nfunction removeListeners(tView:
TView, IView: LView): void {\n const tCleanup = tView.cleanup;\n if (tCleanup !== null) {\n const ICleanup =
IView[CLEANUP];\n for (let i = 0; i < tCleanup.length - 1; i += 2) {\n if (typeof tCleanup[i] === 'string') {\n
// This is a native DOM listener\n const idxOrTargetGetter = tCleanup[i + 1];\n const target = typeof
idxOrTargetGetter === 'function' ?\n idxOrTargetGetter(IView) :\n
unwrapRNode(IView[idxOrTargetGetter]);\n const listener = ICleanup[tCleanup[i + 2]]; \n const
useCaptureOrSubIdx = tCleanup[i + 3];\n if (typeof useCaptureOrSubIdx === 'boolean') {\n // native
DOM listener registered with Renderer3\n target.removeEventListener(tCleanup[i], listener,
useCaptureOrSubIdx);\n } else {\n if (useCaptureOrSubIdx >= 0) {\n // unregister\n
ICleanup[useCaptureOrSubIdx]();\n } else {\n // Subscription\n ICleanup[useCaptureOrSubIdx].unsubscribe();\n
}\n }\n i += 2;\n } else {\n // This is a cleanup function
that is grouped with the index of its context\n const context = ICleanup[tCleanup[i + 1]];\n
tCleanup[i].call(context);\n }\n }\n IView[CLEANUP] = null;\n }\n\n/** Calls onDestroy hooks for this
view */\nfunction executeOnDestroys(tView: TView, IView: LView): void {\n let destroyHooks:
DestroyHookData|null;\n\n if (tView !== null && (destroyHooks = tView.destroyHooks) !== null) {\n for (let i = 0;
i < destroyHooks.length; i += 2) {\n const context = IView[destroyHooks[i] as number];\n\n // Only call the
destroy hook if the context has been requested.\n if (!(context instanceof NodeInjectorFactory)) {\n const
toCall = destroyHooks[i + 1] as HookFn | HookData;\n\n if (Array.isArray(toCall)) {\n for (let j = 0; j <
toCall.length; j += 2) {\n (toCall[j + 1] as HookFn).call(context[toCall[j] as number]);\n }\n } else
{\n toCall.call(context);\n }\n }\n }\n }\n\n/** Returns a native element if a node can be
inserted into the given parent.\n * There are two reasons why we may not be able to insert a element
immediately.\n * - Projection: When creating a child content element of a component, we have to skip the\n *
insertion because the content of a component will be projected.\n * `<component><content>delayed due to
projection</content></component>`\n * - Parent container is disconnected: This can happen when we are inserting a
view into\n * parent container, which itself is disconnected. For example the parent container is part\n * of a View
which has not be inserted or is made for projection but has not been inserted\n * into destination.\n * @param
tView: Current `TView`.\n * @param tNode: `TNode` for which we wish to retrieve render parent.\n * @param
IView: Current `LView`.\n */\nexport function getParentRElement(tView: TView, tNode: TNode, IView: LView):
RElement|null {\n return getClosestRElement(tView, tNode.parent, IView);\n }\n\n/** Get closest `RElement`
or `null` if it can't be found.\n * If `TNode` is `TNodeType.Element` => return `RElement` at
`LView[tNode.index]` location.\n * If `TNode` is `TNodeType.ElementContainer|IcuContain` => return the parent
(recursively).\n * If `TNode` is `null` then return host `RElement`:\n * - return `null` if projection\n * - return
`null` if parent container is disconnected (we have no parent.)\n * @param tView: Current `TView`.\n *
@param tNode: `TNode` for which we wish to retrieve `RElement` (or `null` if host element is\n * needed).\n *
@param IView: Current `LView`.\n * @returns `null` if the `RElement` can't be determined at this time (no parent /
projection)\n */\nexport function getClosestRElement(tView: TView, tNode: TNode|null, IView: LView):

```



```

(TNodeType.ElementContainer | TNodeType.Icu) {\n  return getNativeByTNode(parentTNode, IView);\n }\n\nreturn null;\n}\n\n/**\n * Tree shakable boundary for `getInsertInFrontOfRNodeWithI18n` function.\n *\n * This function will only be set if i18n code runs.\n */\nlet _getInsertInFrontOfRNodeWithI18n: (parentTNode: TNode, currentTNode: TNode, IView: LView) =>\n  RNode | null = getInsertInFrontOfRNodeWithNoI18n;\n\n/**\n * Tree shakable boundary for `processI18nInsertBefore` function.\n *\n * This function will only be set if i18n code runs.\n */\nlet _processI18nInsertBefore: (\n  renderer: Renderer3, childTNode: TNode, IView: LView, childRNode: RNode|RNode[],\n  parentRElement: RElement|null) => void;\n\nexport function setI18nHandling(\n  getInsertInFrontOfRNodeWithI18n: (parentTNode: TNode, currentTNode: TNode, IView: LView) =>\n  RNode | null,\n  processI18nInsertBefore: (\n    renderer: Renderer3, childTNode: TNode, IView: LView, childRNode: RNode|RNode[],\n    parentRElement: RElement|null) => void) {\n  _getInsertInFrontOfRNodeWithI18n = getInsertInFrontOfRNodeWithI18n;\n  _processI18nInsertBefore = processI18nInsertBefore;\n}\n\n/**\n * Appends the `child` native node (or a collection of nodes) to the `parent`.\n *\n * @param tView The `TView` to be appended\n * @param IView The current LView\n * @param childRNode The native child (or children) that should be appended\n * @param childTNode The TNode of the child element\n */\nexport function appendChild(\n  tView: TView, IView: LView, childRNode: RNode|RNode[], childTNode: TNode): void {\n  const parentRNode = getParentRElement(tView, childTNode, IView);\n  const renderer = IView[RENDERER];\n  const parentTNode: TNode = childTNode.parent || IView[T_HOST]!;\n  const anchorNode = getInsertInFrontOfRNode(parentTNode, childTNode, IView);\n  if (parentRNode != null) {\n    if (Array.isArray(childRNode)) {\n      for (let i = 0; i < childRNode.length; i++) {\n        nativeAppendOrInsertBefore(renderer, parentRNode, childRNode[i], anchorNode, false);\n      }\n    } else {\n      nativeAppendOrInsertBefore(renderer, parentRNode, childRNode, anchorNode, false);\n    }\n  }\n  _processI18nInsertBefore !== undefined &&\n    _processI18nInsertBefore(renderer, childTNode, IView, childRNode, parentRNode);\n}\n\n/**\n * Returns the first native node for a given LView, starting from the provided TNode.\n *\n * Native nodes are returned in the order in which those appear in the native tree (DOM).\n */\nfunction getFirstNativeNode(IView: LView, tNode: TNode|null): RNode|null {\n  if (tNode !== null) {\n    ngDevMode &&\n      assertTNodeType(\n        tNode,\n        TNodeType.AnyRNode | TNodeType.AnyContainer | TNodeType.Icu | TNodeType.Projection);\n\n    const tNodeType = tNode.type;\n    if (tNodeType & TNodeType.AnyRNode) {\n      return getNativeByTNode(tNode, IView);\n    } else if (tNodeType & TNodeType.Container) {\n      return getBeforeNodeForView(-1, IView[tNode.index]);\n    } else if (tNodeType & TNodeType.ElementContainer) {\n      const eIcuContainerChild = tNode.child;\n      if (eIcuContainerChild !== null) {\n        return getFirstNativeNode(IView, eIcuContainerChild);\n      } else {\n        const rNodeOrLContainer = IView[tNode.index];\n        if (isLContainer(rNodeOrLContainer)) {\n          return getBeforeNodeForView(-1, rNodeOrLContainer);\n        } else {\n          return unwrapRNode(rNodeOrLContainer);\n        }\n      }\n    } else if (tNodeType & TNodeType.Icu) {\n      let nextRNode = icuContainerIterate(tNode as TIcuContainerNode, IView);\n      let rNode: RNode|null = nextRNode();\n      // If the ICU container has no nodes, than we use the ICU anchor as the node.\n      return rNode || unwrapRNode(IView[tNode.index]);\n    } else {\n      const componentView = IView[DECLARATION_COMPONENT_VIEW];\n      const componentHost = componentView[T_HOST] as TElementNode;\n      const parentView = getLViewParent(componentView);\n      const firstProjectedTNode: TNode|null =\n        (componentHost.projection as (TNode | null)[])[tNode.projection as number];\n\n      if (firstProjectedTNode != null) {\n        return getFirstNativeNode(parentView!, firstProjectedTNode);\n      } else {\n        return getFirstNativeNode(IView, tNode.next);\n      }\n    }\n  }\n  return null;\n}\n\nexport function getBeforeNodeForView(viewIndexInContainer: number, lContainer: LContainer): RNode|null {\n  const nextViewIndex = CONTAINER_HEADER_OFFSET + viewIndexInContainer + 1;\n  if (nextViewIndex < lContainer.length) {\n    const IView = lContainer[nextViewIndex] as LView;\n    const firstTNodeOfView = IView[TVIEW].firstChild;\n    if (firstTNodeOfView !== null) {\n      return getFirstNativeNode(IView, firstTNodeOfView);\n    }\n  }\n  return lContainer[NATIVE];\n}\n\n/**\n * Removes a native node itself using a given renderer. To remove the node we are looking up its\n * parent from the native tree as not all platforms / browsers support the equivalent of\n * node.remove().\n *\n * @param renderer A renderer to

```

be used

```

 * @param rNode The native node that should be removed
 * @param isHostElement A flag indicating if
 a node to be removed is a host of a component.
 */
export function nativeRemoveNode(renderer: Renderer3,
rNode: RNode, isHostElement?: boolean): void {
  ngDevMode && ngDevMode.rendererRemoveNode++;
  const nativeParent = nativeParentNode(renderer, rNode);
  if (nativeParent) {
    nativeRemoveChild(renderer,
nativeParent, rNode, isHostElement);
  }
}

```

`nativeRemoveNode` Performs the operation of `action` on the node. Typically this involves inserting or removing nodes on the LView or projection boundary.

```

 */
function applyNodes(
renderer: Renderer3, action: WalkTreeNodeAction, tNode: TNode|null, IView: LView,
parentRElement: RElement|null, beforeNode: RNode|null, isProjection: boolean) {
  while (tNode != null) {
    ngDevMode &&
assertTNodeForLView(tNode, IView);
    ngDevMode &&
assertTNodeType(tNode,
TNodeType.AnyRNode | TNodeType.AnyContainer | TNodeType.Projection | TNodeType.Icu);
    const rawSlotValue = IView[tNode.index];
    const tNodeType = tNode.type;
    if (isProjection) {
      if (action === WalkTreeNodeAction.Create) {
        rawSlotValue && attachPatchData(unwrapRNode(rawSlotValue),
IView);
        tNode.flags |= TNodeFlags.isProjected;
      }
      if ((tNode.flags & TNodeFlags.isDetached)
!== TNodeFlags.isDetached) {
        if (tNodeType & TNodeType.ElementContainer) {
          applyNodes(renderer,
action, tNode.child, IView, parentRElement, beforeNode, false);
          applyToElementOrContainer(action,
renderer, parentRElement, rawSlotValue, beforeNode);
        } else if (tNodeType & TNodeType.Icu) {
          const nextRNode = icuContainerIterate(tNode as TIcuContainerNode, IView);
          let rNode: RNode|null;
          while (rNode = nextRNode()) {
            applyToElementOrContainer(action, renderer, parentRElement, rNode,
beforeNode);
          }
          applyToElementOrContainer(action, renderer, parentRElement, rawSlotValue,
beforeNode);
        } else if (tNodeType & TNodeType.Projection) {
          applyProjectionRecursive(
renderer, action, IView, tNode as TProjectionNode, parentRElement, beforeNode);
        } else {
          ngDevMode
&& assertTNodeType(tNode, TNodeType.AnyRNode | TNodeType.Container);
          applyToElementOrContainer(action, renderer, parentRElement, rawSlotValue, beforeNode);
        }
      }
      tNode = isProjection ? tNode.projectionNext : tNode.next;
    }
  }
}

```

`applyView` performs operation on the view as specified in `action` (insert, detach, destroy)

Inserting a view without projection or containers at top level is simple. Just iterate over the root nodes of the View, and for each node perform the `action`.

Things get more complicated with containers and projections. That is because coming across:

- Container: implies that we have to insert/remove/destroy the views of that container as well which in turn can have their own Containers at the View roots.
- Projection: implies that we have to insert/remove/destroy the nodes of the projection. The complication is that the nodes we are projecting can themselves have Containers or other Projections.

As you can see this is a very recursive problem. Yes recursion is not most efficient but the code is complicated enough that trying to implemented with recursion becomes unmaintainable.

```

 * @param tView The `TView` which needs to be inserted, detached, destroyed
 * @param IView The LView which needs to be inserted, detached, destroyed.
 * @param renderer Renderer to use
 * @param action action to perform (insert, detach, destroy)
 * @param parentRElement parent DOM element for insertion (Removal does not need it).
 * @param beforeNode Before which node the insertions should happen.
 */
function applyView(
tView: TView, IView: LView, renderer: Renderer3, action:
WalkTreeNodeAction.Destroy, parentRElement: null, beforeNode: null): void;
function applyView(
tView: TView, IView: LView, renderer: Renderer3, action: WalkTreeNodeAction,
parentRElement: RElement|null, beforeNode: RNode|null): void;
function applyView(
tView: TView, IView: LView, renderer:
Renderer3, action: WalkTreeNodeAction,
parentRElement: RElement|null, beforeNode: RNode|null): void {
  applyNodes(renderer, action, tView.firstChild, IView, parentRElement, beforeNode, false);
}

```

`applyProjection` performs operation on the projection.

Inserting a projection requires us to locate the projected nodes from the parent component. The complication is that those nodes themselves could be re-projected from their parent component.

```

 * @param tView The `TView` of `LView` which needs to be inserted,
 detached, destroyed
 * @param IView The `LView` which needs to be inserted, detached, destroyed.
 * @param tProjectionNode node to project
 */
export function applyProjection(tView: TView, IView: LView,
tProjectionNode: TProjectionNode) {
  const renderer = IView[RENDERER];
  const parentRNode =

```



```

assertEqual, assertNotEqual} from './util/assert';\n\nimport {AttributeMarker, TAttributes, TNode, TNodeType,
unusedValueExportToPlacateAjd as unused1} from './interfaces/node';\nimport {CssSelector, CssSelectorList,
SelectorFlags, unusedValueExportToPlacateAjd as unused2} from './interfaces/projection';\nimport {classIndexof}
from './styling/class_differ';\nimport {isNameOnlyAttributeMarker} from './util/attrs_utils';\n\nconst
unusedValueToPlacateAjd = unused1 + unused2;\n\nconst NG_TEMPLATE_SELECTOR = 'ng-template';\n\n/**\n * Search the `TAttributes` to see if it contains `cssClassToMatch` (case insensitive)\n * @param attrs
`TAttributes` to search through.\n * @param cssClassToMatch class to match (lowercase)\n * @param
isProjectionMode Whether or not class matching should look into the attribute `class` in\n * addition to the
`AttributeMarker.Classes`\n * ^\nfunction isCssClassMatching(\n  attrs: TAttributes, cssClassToMatch: string,
isProjectionMode: boolean): boolean {\n  // TODO(misko): The fact that this function needs to know about
`isProjectionMode` seems suspect.\n  // It is strange to me that sometimes the class information comes in form of
`class` attribute\n  // and sometimes in form of `AttributeMarker.Classes`. Some investigation is needed to
determine\n  // if that is the right behavior.\n  ngDevMode && assertEqual(\n    cssClassToMatch,
cssClassToMatch.toLowerCase(), 'Class name expected to be lowercase.);\n  let i = 0;\n  while (i < attrs.length) {\n
let item = attrs[i++];\n  if (isProjectionMode && item === 'class') {\n    item = attrs[i] as string;\n    if
(classIndexof(item.toLowerCase(), cssClassToMatch, 0) !== -1) {\n      return true;\n    }\n  } else if (item ===
AttributeMarker.Classes) {\n    // We found the classes section. Start searching for the class.\n    while (i <
attrs.length && typeof (item = attrs[i++]) === 'string') {\n      // while we have strings\n      if (item.toLowerCase()
=== cssClassToMatch) return true;\n    }\n    return false;\n  }\n  }\n  return false;\n}\n\n/**\n * Checks whether
the `tNode` represents an inline template (e.g. `*ngFor`).\n * @param tNode current TNode\n * ^\nexport
function isInlineTemplate(tNode: TNode): boolean {\n  return tNode.type === TNodeType.Container &&
tNode.value !== NG_TEMPLATE_SELECTOR;\n}\n\n/**\n * Function that checks whether a given tNode
matches tag-based selector and has a valid type.\n * Matching can be performed in 2 modes: projection mode
(when we project nodes) and regular\n * directive matching mode:\n * - in the `directive matching` mode we do
_not_ take TContainer's tagName into account if it is\n * different from NG_TEMPLATE_SELECTOR (value
different from NG_TEMPLATE_SELECTOR indicates that a\n * tag name was extracted from * syntax so we
would match the same directive twice);\n * - in the `projection` mode, we use a tag name potentially extracted
from the * syntax processing\n * (applicable to TNodeType.Container only).\n * ^\nfunction
hasTagAndTypeMatch(\n  tNode: TNode, currentSelector: string, isProjectionMode: boolean): boolean {\n  const
tagNameToCompare =\n    tNode.type === TNodeType.Container && !isProjectionMode ?
NG_TEMPLATE_SELECTOR : tNode.value;\n  return currentSelector === tagNameToCompare;\n}\n\n/**\n * A
utility function to match an Ivy node static data against a simple CSS selector\n * @param node static data of the
node to match\n * @param selector The selector to try matching against the node.\n * @param isProjectionMode if
`true` we are matching for content projection, otherwise we are doing\n * directive matching.\n * @returns true if
node matches the selector.\n * ^\nexport function isNodeMatchingSelector(\n  tNode: TNode, selector: CssSelector,
isProjectionMode: boolean): boolean {\n  ngDevMode && assertDefined(selector[0], 'Selector should have a tag
name');\n  let mode: SelectorFlags = SelectorFlags.ELEMENT;\n  const nodeAttrs = tNode.attrs || [];\n  // Find the
index of first attribute that has no value, only a name.\n  const nameOnlyMarkerIdx =
getNameOnlyMarkerIndex(nodeAttrs);\n  // When processing `:not` selectors, we skip to the next `:not` if the\n
// current one doesn't match\n  let skipToNextSelector = false;\n  for (let i = 0; i < selector.length; i++) {\n  const
current = selector[i];\n  if (typeof current === 'number') {\n    // If we finish processing a :not selector and it hasn't
failed, return false\n    if (!skipToNextSelector && !isPositive(mode) && !isPositive(current)) {\n      return
false;\n    }\n    // If we are skipping to the next :not() and this mode flag is positive,\n    // it's a part of the current
:not() selector, and we should keep skipping\n    if (skipToNextSelector && isPositive(current)) continue;\n
skipToNextSelector = false;\n    mode = (current as number) | (mode & SelectorFlags.NOT);\n    continue;\n  }\n  }\n  if (skipToNextSelector) continue;\n  if (mode & SelectorFlags.ELEMENT) {\n    mode =
SelectorFlags.ATTRIBUTE | mode & SelectorFlags.NOT;\n    if (current !== "&& !hasTagAndTypeMatch(tNode,
current, isProjectionMode) ||\n      current === "&& selector.length === 1) {\n      if (isPositive(mode)) return

```

```

false;\n    skipToNextSelector = true;\n    }\n  } else {\n    const selectorAttrValue = mode &
SelectorFlags.CLASS ? current : selector[++i];\n    // special case for matching against classes when a tNode has
been instantiated with\n    // class and style values as separate attribute values (e.g. ['title', CLASS, 'foo'])\n    if
((mode & SelectorFlags.CLASS) && tNode.attrs !== null) {\n      if (!isCssClassMatching(tNode.attrs,
selectorAttrValue as string, isProjectionMode)) {\n        if (isPositive(mode)) return false;\n        skipToNextSelector = true;\n      }\n      continue;\n    }\n    const attrName = (mode & SelectorFlags.CLASS)
? 'class' : current;\n    const attrIndexInNode =\n      findAttrIndexInNode(attrName, nodeAttrs,
isInlineTemplate(tNode), isProjectionMode);\n    if (attrIndexInNode === -1) {\n      if (isPositive(mode)) return
false;\n      skipToNextSelector = true;\n      continue;\n    }\n    if (selectorAttrValue !== "") {\n      let
nodeAttrValue: string;\n      if (attrIndexInNode > nameOnlyMarkerIdx) {\n        nodeAttrValue = ";\n      } else
{\n        ngDevMode &&\n          assertNotEqual(\n            nodeAttrs[attrIndexInNode],
AttributeMarker.NamespaceURI,\n            'We do not match directives on namespaced attributes');\n        // we
lowercase the attribute value to be able to match\n        // selectors without case-sensitivity\n        // (selectors are
already in lowercase when generated)\n        nodeAttrValue = (nodeAttrs[attrIndexInNode + 1] as
string).toLowerCase();\n      }\n      const compareAgainstClassName = mode & SelectorFlags.CLASS ?
nodeAttrValue : null;\n      if (compareAgainstClassName &&\n        classIndexOf(compareAgainstClassName, selectorAttrValue as string, 0) !== -1 ||\n        mode &
SelectorFlags.ATTRIBUTE && selectorAttrValue !== nodeAttrValue) {\n        if (isPositive(mode)) return false;\n        skipToNextSelector = true;\n      }\n    }\n  }\n  return isPositive(mode) ||
skipToNextSelector;\n}\n\nfunction isPositive(mode: SelectorFlags): boolean {\n  return (mode &
SelectorFlags.NOT) === 0;\n}\n\n/**\n * Examines the attribute's definition array for a node to find the index of
the\n * attribute that matches the given `name`.\n * NOTE: This will not match namespaced attributes.\n * Attribute matching depends upon `isInlineTemplate` and `isProjectionMode`.\n * The following table summarizes
which types of attributes we attempt to match:\n */

```

		Modes		Normal Attributes		Bindings Attributes		Template Attributes	
		YES	NO	YES	NO	YES	NO	YES	NO
Directive	YES	NO	NO	YES	NO	YES	NO	YES	NO
		Non-inline + Projection		Non-inline + Projection		Non-inline + Projection		Non-inline + Projection	
Directive	YES	YES	NO	YES	NO	YES	NO	YES	NO

```

=====
\n * @param name the name of the attribute to find\n * @param attrs the
attribute array to examine\n * @param isInlineTemplate true if the node being matched is an inline template (e.g.
`*ngFor`)\n * rather than a manually expanded template node (e.g. `<ng-template>`).\n * @param isProjectionMode
true if we are matching against content projection otherwise we are\n * matching against directives.\n */\nfunction
findAttrIndexInNode(\n  name: string, attrs: TAttributes|null, isInlineTemplate: boolean,\n  isProjectionMode:
boolean): number {\n  if (attrs === null) return -1;\n  let i = 0;\n  if (isProjectionMode || !isInlineTemplate) {\n
let bindingsMode = false;\n  while (i < attrs.length) {\n    const maybeAttrName = attrs[i];\n    if
(maybeAttrName === name) {\n      return i;\n    } else if (\n      maybeAttrName ===
AttributeMarker.Bindings || maybeAttrName === AttributeMarker.I18n) {\n      bindingsMode = true;\n    } else if
(\n      maybeAttrName === AttributeMarker.Classes || maybeAttrName === AttributeMarker.Styles) {\n      let
value = attrs[++i];\n      // We should skip classes here because we have a separate mechanism for\n      //
matching classes in projection mode.\n      while (typeof value === 'string') {\n        value = attrs[++i];\n      }\n      continue;\n    } else if (maybeAttrName === AttributeMarker.Template) {\n      // We do not care about

```

```

Template attributes in this scenario.\n    break;\n    } else if (maybeAttrName ===
AttributeMarker.NamespaceURI) {\n    // Skip the whole namespaced attribute and value. This is by design.\n
i += 4;\n    continue;\n    }\n    // In binding mode there are only names, rather than name-value pairs.\n    i +=
bindingsMode ? 1 : 2;\n    }\n    // We did not match the attribute\n    return -1;\n    } else {\n    return
matchTemplateAttribute(attrs, name);\n    }\n}\n\nexport function isNodeMatchingSelectorList(\n    tNode: TNode,
selector: CssSelectorList, isProjectionMode: boolean = false): boolean {\n    for (let i = 0; i < selector.length; i++) {\n
    if (isNodeMatchingSelector(tNode, selector[i], isProjectionMode)) {\n        return true;\n    }\n    }\n\n    return
false;\n}\n\nexport function getProjectAsAttrValue(tNode: TNode): CssSelector|null {\n    const nodeAttrs =
tNode.attrs;\n    if (nodeAttrs != null) {\n        const ngProjectAsAttrIdx =
nodeAttrs.indexOf(AttributeMarker.ProjectAs);\n        // only check for ngProjectAs in attribute names, don't
accidentally match attribute's value\n        // (attribute names are stored at even indexes)\n        if ((ngProjectAsAttrIdx &
1) === 0) {\n            return nodeAttrs[ngProjectAsAttrIdx + 1] as CssSelector;\n        }\n    }\n\n    return null;\n}\n\nfunction
getNameOnlyMarkerIndex(nodeAttrs: TAttributes) {\n    for (let i = 0; i < nodeAttrs.length; i++) {\n        const nodeAttr
= nodeAttrs[i];\n        if (isNameOnlyAttributeMarker(nodeAttr)) {\n            return i;\n        }\n    }\n\n    return
nodeAttrs.length;\n}\n\nfunction matchTemplateAttribute(attrs: TAttributes, name: string): number {\n    let i =
attrs.indexOf(AttributeMarker.Template);\n    if (i > -1) {\n        i++;\n        while (i < attrs.length) {\n            const attr =
attrs[i];\n            // Return in case we checked all template attrs and are switching to the next section in the\n            // attrs
array (that starts with a number that represents an attribute marker).\n            if (typeof attr === 'number') return -1;\n
            if (attr === name) return i;\n            i++;\n        }\n    }\n\n    return -1;\n}\n\n/**\n * Checks whether a selector is inside a
CssSelectorList\n * @param selector Selector to be checked.\n * @param list List in which to look for the
selector.\n */\nexport function isSelectorInSelectorList(selector: CssSelector, list: CssSelectorList): boolean {\n
    selectorListLoop: for (let i = 0; i < list.length; i++) {\n        const currentSelectorInList = list[i];\n        if (selector.length
!== currentSelectorInList.length) {\n            continue;\n        }\n        for (let j = 0; j < selector.length; j++) {\n            if
(selector[j] !== currentSelectorInList[j]) {\n                continue selectorListLoop;\n            }\n        }\n        return true;\n    }\n\n
    return false;\n}\n\nfunction maybeWrapInNotSelector(isNegativeMode: boolean, chunk: string): string {\n    return
isNegativeMode ? `not( + chunk.trim() + `) : chunk;\n}\n\nfunction stringifyCSSSelector(selector: CssSelector):
string {\n    let result = selector[0] as string;\n    let i = 1;\n    let mode = SelectorFlags.ATTRIBUTE;\n    let
currentChunk = ";\n    let isNegativeMode = false;\n    while (i < selector.length) {\n        let valueOrMarker =
selector[i];\n        if (typeof valueOrMarker === 'string') {\n            if (mode & SelectorFlags.ATTRIBUTE) {\n                const
attrValue = selector[++i] as string;\n                currentChunk += `[` + valueOrMarker + (attrValue.length > 0 ?
`=${` + attrValue + `"} : `) + `];\n            } else if (mode & SelectorFlags.CLASS) {\n                currentChunk += `.` +
valueOrMarker;\n            } else if (mode & SelectorFlags.ELEMENT) {\n                currentChunk += ` ` + valueOrMarker;\n
            }\n        } else {\n            // Append current chunk to the final result in case we come across SelectorFlag, which\n
            // indicates that the previous section of a selector is over. We need to accumulate content\n            // between flags to
make sure we wrap the chunk later in :not() selector if needed, e.g.\n            // ```\n            // [, Flags.CLASS, '.classA',
Flags.CLASS | Flags.NOT, '.classB', '.classC']\n            // ```\n            // should be transformed to `.classA :not(.classB
.classC)`.\n            // Note: for negative selector part, we accumulate content between flags until we find the\n
            // next negative flag. This is needed to support a case where `not()` rule contains more than\n            // one chunk, e.g.
the following selector:\n            // ```\n            // [, Flags.ELEMENT | Flags.NOT, 'p', Flags.CLASS, 'foo', Flags.CLASS |
Flags.NOT, 'bar']\n            // ```\n            // should be stringified to `:not(p.foo) :not(bar)`\n            // if (currentChunk !== `
&& !isPositive(valueOrMarker)) {\n                result += maybeWrapInNotSelector(isNegativeMode, currentChunk);\n
                currentChunk = ";\n            }\n            mode = valueOrMarker;\n            // According to CssSelector spec, once we come across
`SelectorFlags.NOT` flag, the negative\n            // mode is maintained for remaining chunks of a selector.\n            isNegativeMode = isNegativeMode || !isPositive(mode);\n        }\n        i++;\n    }\n\n    if (currentChunk !== `) {\n        result +=
maybeWrapInNotSelector(isNegativeMode, currentChunk);\n    }\n\n    return result;\n}\n\n/**\n * Generates string
representation of CSS selector in parsed form.\n * @param ComponentDef and DirectiveDef are generated with the
selector in parsed form to avoid doing\n * additional parsing at runtime (for example, for directive matching).
However in some cases (for\n * example, while bootstrapping a component), a string version of the selector is

```

required to query `selector` for the host element on the page. This function takes the parsed form of a selector and returns its string representation.

```

@param selectorList selector in parsed form
@returns string representation of a given selector
export function stringifyCSSSelectorList(selectorList: CssSelectorList): string {
  return selectorList.map(stringifyCSSSelector).join(',');
}

```

`stringifyCSSSelector` Extracts attributes and classes information from a given CSS selector. This function is used while creating a component dynamically. In this case, the host element (that is created dynamically) should contain attributes and classes specified in component's CSS selector.

```

@param selector CSS selector in parsed form (in a form of array)
@returns object with `attrs` and `classes` fields that contain extracted information
export function extractAttrsAndClassesFromSelector(selector: CssSelector): {
  attrs: string[], classes: string[]
} {
  const attrs: string[] = [];
  const classes: string[] = [];
  let i = 1;
  let mode = SelectorFlags.ATTRIBUTE;
  while (i < selector.length) {
    let valueOrMarker = selector[i];
    if (typeof valueOrMarker === 'string') {
      if (mode === SelectorFlags.ATTRIBUTE) {
        if (valueOrMarker !== '') {
          attrs.push(valueOrMarker, selector[++i] as string);
        }
      } else if (mode === SelectorFlags.CLASS) {
        classes.push(valueOrMarker);
      }
    } else {
      // According to CssSelector spec, once we come across `SelectorFlags.NOT` flag, the negative
      // mode is maintained for remaining chunks of a selector. Since
      // attributes and classes are
      // extracted only for "positive" part of the selector, we can stop here.
      if (!isPositive(mode)) break;
      mode = valueOrMarker;
    }
    i++;
  }
  return { attrs, classes };
}

```

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```

export interface NO_CHANGE {
  // This is a brand that ensures that this type can never match anything else
  __brand__: 'NO_CHANGE';
}

```

A special value which designates that a value has not changed.

```

const NO_CHANGE: NO_CHANGE = (typeof ngDevMode === 'undefined' || ngDevMode) ? { __brand__: 'NO_CHANGE' } : ({ as NO_CHANGE });

```

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```

import { assertGreaterThan } from '../util/assert';
import { assertIndexInDeclRange } from '../assert';
import { executeCheckHooks, executeInitAndCheckHooks } from '../hooks';
import { FLAGS, InitPhaseState, LView, LViewFlags, TView } from '../interfaces/view';
import { getLView, getSelectedIndex, getTView, isInCheckNoChangesMode, setSelectedIndex } from '../state';

```

Advances to an element for later binding instructions. Used in conjunction with instructions like `{@link property}` to act on elements with specified indices, for example those created with `{@link element}` or `{@link elementStart}`.

```

(rf: RenderFlags, ctx: any) => {
  if (rf & 1) {
    text(0, 'Hello');
    text(1, 'Goodbye');
    element(2, 'div');
  }
  if (rf & 2) {
    advance(2); // Advance twice to the <div>.
    property('title', 'test');
  }
}

```

`delta` Number of elements to advance forwards by.

```

@codeGenApi
export function advance(delta: number): void {
  ngDevMode && assertGreaterThan(delta, 0, 'Can only advance forward');
  selectIndexInternal(getTView(), getLView(), getSelectedIndex() + delta,
    isInCheckNoChangesMode());
}

```

Flush the initial hooks for elements in the view that have been added up to this point. **PERF WARNING: do NOT extract this to a separate function without running benchmarks**

```

if (!checkNoChangesMode) {
  const hooksInitPhaseCompleted = (IView[FLAGS] & LViewFlags.InitPhaseStateMask) ===
    InitPhaseState.InitPhaseCompleted;
  if (hooksInitPhaseCompleted) {
    const preOrderCheckHooks = tView.preOrderCheckHooks;
    if (preOrderCheckHooks !== null) {
      executeCheckHooks(IView, preOrderCheckHooks, index);
    }
  } else {
    const preOrderHooks = tView.preOrderHooks;
    if (preOrderHooks !== null) {
      executeInitAndCheckHooks(IView, preOrderHooks,
        InitPhaseState.OnInitHooksToBeRun, index);
    }
  }
}

```

We must set the selected index *after* running the hooks, because hooks may have side-effects that cause other template functions to run, thus updating the selected index, which is global state. If we run `setSelectedIndex` *before* we run the hooks, in some cases the selected index will be altered by the time we leave the `advance` instruction.

```

setSelectedIndex(index);\n}\n", "/*\n * @license\n * Copyright Google LLC All Rights Reserved.\n *\n * Use of
this source code is governed by an MIT-style license that can be\n * found in the LICENSE file at
https://angular.io/license\n */\n\nimport { KeyValueArray } from './util/array_utils';\nimport { assertNumber,
assertNumberInRange } from './util/assert';\n\n/**\n * Value stored in the `TData` which is needed to re-
concatenate the styling.\n *\n * See: `TStylingKeyPrimitive` and `TStylingStatic`\n */\nexport type TStylingKey =
TStylingKeyPrimitive|TStylingStatic;\n\n\n/**\n * The primitive portion (`TStylingStatic` removed) of the value
stored in the `TData` which is\n * needed to re-concatenate the styling.\n *\n * - `string`: Stores the property name.
Used with `styleProp`/^`classProp` instruction.\n * - `null`: Represents map, so there is no name. Used with
`styleMap`/^`classMap`\n * - `false`: Represents an ignore case. This happens when `styleProp`/^`classProp`
instruction\n * is combined with directive which shadows its input `@Input('class')`. That way the binding\n *
should not participate in the styling resolution.\n */\nexport type TStylingKeyPrimitive = string|null|false;\n\n\n/**\n * Store the static values for the styling binding.\n *\n * The `TStylingStatic` is just `KeyValueArray` where key `\"\"`
(stored at location 0) contains the\n * `TStylingKey` (stored at location 1). In other words this wraps the
`TStylingKey` such that the\n * `\"\"` contains the wrapped value.\n *\n * When instructions are resolving styling
they may need to look forward or backwards in the linked\n * list to resolve the value. For this reason we have to
make sure that the linked list also contains\n * the static values. However the list only has space for one item per
styling instruction. For this\n * reason we store the static values here as part of the `TStylingKey`. This means that
the\n * resolution function when looking for a value needs to first look at the binding value, and then\n * at
`TStylingKey` (if it exists).\n *\n * Imagine we have:\n *\n * <div class=\"TEMPLATE\" my-dir>\n *\n * @Directive({\n *   host: {\n *     class: 'DIR',\n *     '[class.dynamic]': 'exp' // classProp('dynamic', ctx.exp);\n *   })\n *\n * })\n *\n * In the above case the linked list will contain one item:\n *\n * // assume binding location:
10 for `classProp('dynamic', ctx.exp);\n * tData[10] = <TStylingStatic>[\n *   'dynamic', // This is the wrapped
value of `TStylingKey`\n *   'DIR': true, // This is the default static value of directive binding.\n * ];\n *
tData[10 + 1] = 0; // We don't have prev/next.\n *\n * IView[10] = undefined; // assume `ctx.exp` is
`undefined`\n * IView[10 + 1] = undefined; // Just normalized `IView[10]`\n *\n * So when the function is
resolving styling value, it first needs to look into the linked list\n * (there is none) and then into the static
`TStylingStatic` too see if there is a default value for\n * `dynamic` (there is not). Therefore it is safe to remove it.\n
*\n * If setting `true` case:\n *\n * IView[10] = true; // assume `ctx.exp` is `true`\n * IView[10 + 1] = true; //
Just normalized `IView[10]`\n *\n * So when the function is resolving styling value, it first needs to look into the
linked list\n * (there is none) and then into `TNode.residualClass` (`TNode.residualStyle`) which contains\n *
`TNode.residualClass = [\n *   'TEMPLATE': true,\n * ];\n *\n * This means that it is safe to add class.\n
*/\nexport interface TStylingStatic extends KeyValueArray<any> {} \n\n\n/**\n * This is a branded number which
contains previous and next index.\n *\n * When we come across styling instructions we need to store the
`TStylingKey` in the correct\n * order so that we can re-concatenate the styling value in the desired priority.\n
*\n * The insertion can happen either at the:\n * - end of template as in the case of coming across additional styling
instruction in the template\n * - in front of the template in the case of coming across additional instruction in the
`hostBindings`\n *\n * We use `TStylingRange` to store the previous and next index into the `TData` where the
template\n * bindings can be found.\n *\n * - bit 0 is used to mark that the previous index has a duplicate for current
value.\n * - bit 1 is used to mark that the next index has a duplicate for the current value.\n * - bits 2-16 are used to
encode the next/tail of the template.\n * - bits 17-32 are used to encode the previous/head of template.\n *\n *
NOTE: *duplicate* false implies that it is statically known that this binding will not collide\n * with other bindings
and therefore there is no need to check other bindings. For example the\n * bindings in `<div [style.color]=\"exp\"
[style.width]=\"exp\">` will never collide and will have\n * their bits set accordingly. Previous duplicate means that
we may need to check previous if the\n * current binding is `null`. Next duplicate means that we may need to check
next bindings if the\n * current binding is not `null`.\n *\n * NOTE: `0` has special significance and represents `null`
as in no additional pointer.\n */\nexport interface TStylingRange {\n  __brand__: 'TStylingRange';\n}\n\n\n/**\n * Shift and masks constants for encoding two numbers into and duplicate info into a single number.\n */\nexport const
enum StylingRange {\n  /// Number of bits to shift for the previous pointer\n  PREV_SHIFT = 17,\n  /// Previous

```

```

pointer mask.\n PREV_MASK = 0xFFFE0000,\n // Number of bits to shift for the next pointer\n NEXT_SHIFT
= 2,\n // Next pointer mask.\n NEXT_MASK = 0x001FFFC,\n // Mask to remove negative bit. (interpret
number as positive)\n UNSIGNED_MASK = 0x7FFF,\n // **\n * This bit is set if the previous bindings contains
a binding which could possibly cause a\n * duplicate. For example: `<div [style]=\"map\"
[style.width]=\"width\">`, the `width` binding will\n * have previous duplicate set. The implication is that if
`width` binding becomes `null`, it is\n * necessary to defer the value to `map.width`. (Because `width` overwrites
`map.width`.)\n *\n PREV_DUPLICATE = 0x02,\n // **\n * This bit is set to if the next binding contains a
binding which could possibly cause a\n * duplicate. For example: `<div [style]=\"map\" [style.width]=\"width\">`,
the `map` binding will\n * have next duplicate set. The implication is that if `map.width` binding becomes not
`null`, it\n * is necessary to defer the value to `width`. (Because `width` overwrites `map.width`.)\n *\n
NEXT_DUPLICATE = 0x01,\n }\n\n\nexport function toStylingRange(prev: number, next: number):
StylingRange {\n  ngDevMode && assertNumberInRange(prev, 0, StylingRange.UNSIGNED_MASK);\n  ngDevMode &&
assertNumberInRange(next, 0, StylingRange.UNSIGNED_MASK);\n  return (prev <<
StylingRange.PREV_SHIFT | next << StylingRange.NEXT_SHIFT) as any;\n}\n\nexport function
getStylingRangePrev(tStylingRange: TStylingRange): number {\n  ngDevMode && assertNumber(tStylingRange,
'expected number');\n  return ((tStylingRange as any as number) >> StylingRange.PREV_SHIFT) &
StylingRange.UNSIGNED_MASK;\n}\n\nexport function getStylingRangePrevDuplicate(tStylingRange:
TStylingRange): boolean {\n  ngDevMode && assertNumber(tStylingRange, 'expected number');\n  return
((tStylingRange as any as number) & StylingRange.PREV_DUPLICATE) ===\n  StylingRange.PREV_DUPLICATE;\n}\n\nexport function setStylingRangePrev(\n  tStylingRange:
TStylingRange, previous: number): TStylingRange {\n  ngDevMode && assertNumber(tStylingRange, 'expected
number');\n  ngDevMode && assertNumberInRange(previous, 0, StylingRange.UNSIGNED_MASK);\n  return
(((tStylingRange as any as number) & ~StylingRange.PREV_MASK) |\n    (previous <<
StylingRange.PREV_SHIFT)) as any;\n}\n\nexport function setStylingRangePrevDuplicate(tStylingRange:
TStylingRange): TStylingRange {\n  ngDevMode && assertNumber(tStylingRange, 'expected number');\n  return
((tStylingRange as any as number) | StylingRange.PREV_DUPLICATE) as any;\n}\n\nexport function
getStylingRangeNext(tStylingRange: TStylingRange): number {\n  ngDevMode && assertNumber(tStylingRange,
'expected number');\n  return ((tStylingRange as any as number) & StylingRange.NEXT_MASK) >>
StylingRange.NEXT_SHIFT;\n}\n\nexport function setStylingRangeNext(tStylingRange: TStylingRange, next:
number): TStylingRange {\n  ngDevMode && assertNumber(tStylingRange, 'expected number');\n  ngDevMode
&& assertNumberInRange(next, 0, StylingRange.UNSIGNED_MASK);\n  return (((tStylingRange as any as
number) & ~StylingRange.NEXT_MASK) | /\n    next << StylingRange.NEXT_SHIFT) as any;\n}\n\nexport
function getStylingRangeNextDuplicate(tStylingRange: TStylingRange): boolean {\n  ngDevMode &&
assertNumber(tStylingRange, 'expected number');\n  return ((tStylingRange as any as number) &
StylingRange.NEXT_DUPLICATE) ===\n  StylingRange.NEXT_DUPLICATE;\n}\n\nexport function
setStylingRangeNextDuplicate(tStylingRange: TStylingRange): TStylingRange {\n  ngDevMode &&
assertNumber(tStylingRange, 'expected number');\n  return ((tStylingRange as any as number) |
StylingRange.NEXT_DUPLICATE) as any;\n}\n\nexport function getStylingRangeTail(tStylingRange:
TStylingRange): number {\n  ngDevMode && assertNumber(tStylingRange, 'expected number');\n  const next =
getStylingRangeNext(tStylingRange);\n  return next === 0 ? getStylingRangePrev(tStylingRange) :
next;\n}\n\n", /**\n * @license\n * Copyright Google LLC All Rights Reserved.\n * Use of this source code is
governed by an MIT-style license that can be\n * found in the LICENSE file at https://angular.io/license\n
*\n\n\n * Patch a `debug` property on top of the existing object.\n *\n * NOTE: always call this method with
`ngDevMode && attachDebugObject(...)`\n *\n * @param obj Object to patch\n * @param debug Value to patch\n
*\n\nexport function attachDebugObject(obj: any, debug: any): void {\n  if (ngDevMode) {\n
Object.defineProperty(obj, 'debug', {value: debug, enumerable: false});\n  } else {\n    throw new Error(\n
'This method should be guarded with `ngDevMode` so that it can be tree shaken in production!');\n  }\n}\n\n\n\n **\n * Patch
a `debug` property getter on top of the existing object.\n *\n * NOTE: always call this method with `ngDevMode

```



```

&& attachDebugObject(...)\n * @param obj Object to patch\n * @param debugGetter Getter returning a value
to patch\n */\nexport function attachDebugGetter<T>(obj: T, debugGetter: (this: T) => any): void {\n if
(ngDevMode) {\n Object.defineProperty(obj, 'debug', {get: debugGetter, enumerable: false});\n } else {\n throw
new Error(\n This method should be guarded with `ngDevMode` so that it can be tree shaken in production!);\n
})\n }"/**\n * @license\n * Copyright Google LLC All Rights Reserved.\n * Use of this source code is
governed by an MIT-style license that can be\n * found in the LICENSE file at https://angular.io/license\n
*/\n\nimport {Injector} from './di/injector';\nimport {Type} from './interface/type';\nimport {SchemaMetadata}
from './metadata/schema';\nimport {Sanitizer} from './sanitization/sanitizer';\nimport {KeyValueArray} from
'./util/array_utils';\nimport {assertDefined} from './util/assert';\nimport {createNamedArrayType} from
'./util/named_array_type';\nimport {initNgDevMode} from './util/ng_dev_mode';\nimport {assertNodeInjector}
from './assert';\nimport {getInjectorIndex} from './di';\nimport {CONTAINER_HEADER_OFFSET,
HAS_TRANSPLANTED_VIEWS, LContainer, MOVED_VIEWS, NATIVE} from './interfaces/container';\nimport
{ComponentTemplate, DirectiveDef, DirectiveDefList, PipeDefList, ViewQueriesFunction} from
'./interfaces/definition';\nimport {NO_PARENT_INJECTOR, NodeInjectorOffset} from
'./interfaces/injector';\nimport {AttributeMarker, InsertBeforeIndex, PropertyAliases, TConstants, TContainerNode,
TElementNode, TNode as ITNode, TNodeFlags, TNodeProviderIndexes, TNodeType, toTNodeTypeAsString} from
'./interfaces/node';\nimport {SelectorFlags} from './interfaces/projection';\nimport {LQueries, TQueries} from
'./interfaces/query';\nimport {Renderer3, RendererFactory3} from './interfaces/renderer';\nimport {RComment,
RElement, RNode} from './interfaces/renderer_dom';\nimport {getTStylingRangeNext,
getTStylingRangeNextDuplicate, getTStylingRangePrev, getTStylingRangePrevDuplicate, TStylingKey,
TStylingRange} from './interfaces/styling';\nimport {CHILD_HEAD, CHILD_TAIL, CLEANUP, CONTEXT,
DebugNode, DECLARATION_VIEW, DestroyHookData, FLAGS, HEADER_OFFSET, HookData, HOST,
HostBindingOpCodes, INJECTOR, LContainerDebug as ILContainerDebug, LView, LViewDebug as
ILViewDebug, LViewDebugRange, LViewDebugRangeContent, LViewFlags, NEXT, PARENT, QUERIES,
RENDERER, RENDERER_FACTORY, SANITIZER, T_HOST, TData, TView as ITView, TVIEW, TView,
TViewType, TViewTypeAsString} from './interfaces/view';\nimport {attachDebugObject} from
'./util/debug_utils';\nimport {getParentInjectorIndex, getParentInjectorView} from './util/injector_utils';\nimport
{unwrapRNode} from './util/view_utils';\n\nconst NG_DEV_MODE = ((typeof ngDevMode === 'undefined' ||
!ngDevMode) && initNgDevMode());\n\n/*\n * This file contains conditionally attached classes which provide
human readable (debug) level\n * information for `LView`, `LContainer` and other internal data structures. These
data structures\n * are stored internally as array which makes it very difficult during debugging to reason about the\n
* current state of the system.\n * Patching the array with extra property does change the array's hidden class' but
it does not\n * change the cost of access, therefore this patching should not have significant if any impact in\n
* `ngDevMode` mode. (see: https://jsperf.com/array-vs-monkey-patch-array)\n * So instead of seeing:\n * ```\n * Array(30) [Object, 659, null, ...]\n * You get to see:\n * ```\n * LViewDebug {\n * views: [...],\n *
flags: {attached: true, ...}\n * nodes: [\n * {html: '<div id="123">', ..., nodes: [\n * {html: '<span>', ...,
nodes: null}\n * ]}\n * ]\n * }\n * }\n * ```\n */\n\nlet LVIEW_COMPONENT_CACHE!: Map<string,null,
Array<any>>;\nlet LVIEW_EMBEDDED_CACHE!: Map<string>null, Array<any>>;\nlet LVIEW_ROOT!:
Array<any>;\n\ninterface TViewDebug extends ITView {\n type: TViewType;\n}\n\n/**\n * This function clones a
blueprint and creates LView.\n * Simple slice will keep the same type, and we need it to be LView\n */\nexport
function cloneToLViewFromTViewBlueprint(tView: TView): LView {\n const debugTView = tView as
TViewDebug;\n const IView = getLViewToClone(debugTView.type, tView.template && tView.template.name);\n
return IView.concat(tView.blueprint) as any;\n}\n\nfunction getLViewToClone(type: TViewType, name:
string|null): Array<any> {\n switch (type) {\n case TViewType.Root:\n if (LVIEW_ROOT === undefined)\n LVIEW_ROOT = new (createNamedArrayType('LRootView'))();\n return LVIEW_ROOT;\n case
TViewType.Component:\n if (LVIEW_COMPONENT_CACHE === undefined)\n LVIEW_COMPONENT_CACHE = new Map();\n let componentArray =
LVIEW_COMPONENT_CACHE.get(name);\n if (componentArray === undefined) {\n componentArray =

```



```

representing the `TNode`s which will be
 * consulted in order when resolving a token starting at this `TNode`.
 *
 * The original data is stored in `LView` and `TView` with a lot of offset indexes, and so it is
 * difficult to reason about.
 *
 * @param IView The `LView` instance for this `TNode`.
 */
debugNodeInjectorPath(IView: LView): DebugNode[] {
  const path: DebugNode[] = [];
  let injectorIndex =
    getInjectorIndex(this, IView);
  ngDevMode && assertNodeInjector(IView, injectorIndex);
  while
    (injectorIndex !== -1) {
    const tNode = IView[TVIEW].data[injectorIndex + NodeInjectorOffset.TNODE] as
    TNode;
    path.push(buildDebugNode(tNode, IView));
    const parentLocation = IView[injectorIndex +
    NodeInjectorOffset.PARENT];
    if (parentLocation === NO_PARENT_INJECTOR) {
      injectorIndex = -
      1;
    } else {
      injectorIndex = getParentInjectorIndex(parentLocation);
      IView =
      getParentInjectorView(parentLocation, IView);
    }
  }
  return path;
}

get type_(): string {
  return
  toTNodeTypeAsString(this.type) || `TNodeType.${this.type}`;
}

get flags_(): string {
  const flags:
  string[] = [];
  if (this.flags & TNodeFlags.hasClassInput)
    flags.push('TNodeFlags.hasClassInput');
  if
    (this.flags & TNodeFlags.hasContentQuery)
    flags.push('TNodeFlags.hasContentQuery');
  if (this.flags &
  TNodeFlags.hasStyleInput)
    flags.push('TNodeFlags.hasStyleInput');
  if (this.flags &
  TNodeFlags.hasHostBindings)
    flags.push('TNodeFlags.hasHostBindings');
  if (this.flags &
  TNodeFlags.isComponentHost)
    flags.push('TNodeFlags.isComponentHost');
  if (this.flags &
  TNodeFlags.isDirectiveHost)
    flags.push('TNodeFlags.isDirectiveHost');
  if (this.flags &
  TNodeFlags.isDetached)
    flags.push('TNodeFlags.isDetached');
  if (this.flags &
  TNodeFlags.isProjected)
    flags.push('TNodeFlags.isProjected');
  return flags.join('|');
}

get template_(): string {
  if (this.type &
  TNodeType.Text)
    return this.value!;
  const buf: string[] = [];
  const tagName = typeof this.value === 'string'
  && this.value || this.type_;
  buf.push('<', tagName);
  if (this.flags)
    buf.push(' ', this.flags_);
  if
    (this.attrs)
    for (let i = 0; i < this.attrs.length;) {
      const attrName = this.attrs[i++];
      if (typeof
      attrName === 'number')
        break;
      const attrValue = this.attrs[i++];
      buf.push(' ', attrName
      as string, '=', attrValue as string, '"');
    }
  buf.push('>');
  processTNodeChildren(this.child, buf);
  buf.push('<', tagName, '>');
  return buf.join('');
}

get styleBindings_(): DebugStyleBindings {
  return
  toDebugStyleBinding(this, false);
}

get classBindings_(): DebugStyleBindings {
  return
  toDebugStyleBinding(this, true);
}

get providerIndexStart_(): number {
  return this.providerIndexes &
  TNodeProviderIndexes.ProvidersStartIndexMask;
}

get providerIndexEnd_(): number {
  return
  this.providerIndexStart_ +
  (this.providerIndexes >>>
  TNodeProviderIndexes.CptViewProvidersCountShift);
}

export const TNodeDebug = TNode;
export type
TNodeDebug = TNode;

export interface DebugStyleBindings extends
Array<KeyValueArray<any>|DebugStyleBinding|string|null> {}

export interface DebugStyleBinding {
  key:
  TStylingKey;
  index: number;
  isTemplate: boolean;
  prevDuplicate: boolean;
  nextDuplicate: boolean;
  prevIndex: number;
  nextIndex: number;
}

function toDebugStyleBinding(tNode: TNode, isClassBased:
boolean): DebugStyleBindings {
  const tData = tNode.tView_.data;
  const bindings: DebugStyleBindings = [] as
  any;
  const range = isClassBased ? tNode.classBindings :
  tNode.styleBindings;
  const prev =
  getTStylingRangePrev(range);
  const next =
  getTStylingRangeNext(range);
  let isTemplate = next !== 0;
  let
  cursor = isTemplate ? next : prev;
  while (cursor !== 0) {
    const itemKey = tData[cursor] as
    TStylingKey;
    const itemRange = tData[cursor + 1] as
    TStylingRange;
    bindings.unshift({
      key: itemKey,
      index:
      cursor,
      isTemplate: isTemplate,
      prevDuplicate:
      getTStylingRangePrevDuplicate(itemRange),
      nextDuplicate:
      getTStylingRangeNextDuplicate(itemRange),
      nextIndex:
      getTStylingRangeNext(itemRange),
      prevIndex:
      getTStylingRangePrev(itemRange),
    });
    if (cursor === prev)
      isTemplate = false;
    cursor =
    getTStylingRangePrev(itemRange);
  }
  bindings.push((isClassBased ? tNode.residualClasses :
  tNode.residualStyles) || null);
  return bindings;
}

function processTNodeChildren(tNode: ITNode|null, buf:
string[]) {
  while (tNode) {
    buf.push((tNode as any as {template_: string}).template_);
    tNode =
    tNode.next;
  }
}

const TVIEWDATA_EMPTY: unknown[]; // can't initialize here or it will not be tree shaken,
because
// `LView` constructor could have side-effects.
/** This function clones a

```



```

this._raw_IView[RENDERER];\n }\n get sanitizer(): Sanitizer|null {\n return this._raw_IView[SANITIZER];\n
}\n get childHead(): ILViewDebug|ILContainerDebug|null {\n return
toDebug(this._raw_IView[CHILD_HEAD]);\n }\n get next(): ILViewDebug|ILContainerDebug|null {\n return
toDebug(this._raw_IView[NEXT]);\n }\n get childTail(): ILViewDebug|ILContainerDebug|null {\n return
toDebug(this._raw_IView[CHILD_TAIL]);\n }\n get declarationView(): ILViewDebug|null {\n return
toDebug(this._raw_IView[DECLARATION_VIEW]);\n }\n get queries(): LQueries|null {\n return
this._raw_IView[QUERIES];\n }\n get tHost(): ITNode|null {\n return this._raw_IView[T_HOST];\n }\n get
decls(): LViewDebugRange {\n return toLViewRange(this.tView, this._raw_IView, HEADER_OFFSET,
this.tView.bindingStartIndex);\n }\n get vars(): LViewDebugRange {\n return toLViewRange(\n
this.tView, this._raw_IView, this.tView.bindingStartIndex, this.tView.expandoStartIndex);\n }\n get expando():
LViewDebugRange {\n return toLViewRange(\n this.tView, this._raw_IView, this.tView.expandoStartIndex,
this._raw_IView.length);\n }\n\n /**\n * Normalized view of child views (and containers) attached at this
location.\n *\n get childViews(): Array<ILViewDebug|ILContainerDebug> {\n const childViews:
Array<ILViewDebug|ILContainerDebug> = [];\n let child = this.childHead;\n while (child) {\n
childViews.push(child);\n child = child.next;\n }\n return childViews;\n }\n\n\nfunction
mapToHTML(node: DebugNode): string {\n if (node.type === 'ElementContainer') {\n return (node.children ||
[]).map(mapToHTML).join(");\n } else if (node.type === 'IcuContainer') {\n throw new Error('Not
implemented');\n } else {\n return toHtml(node.native, true) || ";\n }\n }\n\n\nfunction toLViewRange(tView:
TView, lView: LView, start: number, end: number): LViewDebugRange {\n let content:
LViewDebugRangeContent[] = [];\n for (let index = start; index < end; index++) {\n content.push({index: index,
t: tView.data[index], l: lView[index]});\n }\n return {start: start, end: end, length: end - start, content:
content};\n }\n\n\n/**\n * Turns a flat list of nodes into a tree by walking the associated `TNode` tree.\n *\n @param
tNode\n * @param lView\n */\nexport function toDebugNodes(tNode: ITNode|null, lView: LView): DebugNode[]
{\n if (tNode) {\n const debugNodes: DebugNode[] = [];\n let tNodeCursor: ITNode|null = tNode;\n while
(tNodeCursor) {\n debugNodes.push(buildDebugNode(tNodeCursor, lView));\n tNodeCursor =
tNodeCursor.next;\n }\n return debugNodes;\n } else {\n return [];\n }\n }\n\n\nexport function
buildDebugNode(tNode: ITNode, lView: LView): DebugNode {\n const rawValue = lView[tNode.index];\n const
native = unwrapRNode(rawValue);\n const factories: Type<any>[] = [];\n const instances: any[] = [];\n const
tView = lView[TVIEW];\n for (let i = tNode.directiveStart; i < tNode.directiveEnd; i++) {\n const def =
tView.data[i] as DirectiveDef<any>;\n factories.push(def.type);\n instances.push(lView[i]);\n }\n return {\n
html: toHtml(native),\n type: toTNodeTypeAsString(tNode.type),\n native: native as any,\n children:
toDebugNodes(tNode.child, lView),\n factories,\n instances,\n injector: buildNodeInjectorDebug(tNode,
tView, lView)\n };}\n\n\nfunction buildNodeInjectorDebug(tNode: ITNode, tView: ITView, lView: LView) {\n
const viewProviders: Type<any>[] = [];\n for (let i = (tNode as TNode).providerIndexStart_; i < (tNode as
TNode).providerIndexEnd_; i++) {\n viewProviders.push(tView.data[i] as Type<any>);\n }\n const providers:
Type<any>[] = [];\n for (let i = (tNode as TNode).providerIndexEnd_; i < (tNode as TNode).directiveEnd; i++) {\n
providers.push(tView.data[i] as Type<any>);\n }\n const nodeInjectorDebug = {\n bloom: toBloom(lView,
tNode.injectorIndex),\n cumulativeBloom: toBloom(tView.data, tNode.injectorIndex),\n providers,\n
viewProviders,\n parentInjectorIndex: lView[(tNode as TNode).providerIndexStart_ - 1],\n };}\n return
nodeInjectorDebug;\n }\n\n\n/**\n * Convert a number at `idx` location in `array` into binary representation.\n *\n @param
array\n * @param idx\n */\nfunction binary(array: any[], idx: number): string {\n const value =
array[idx];\n // If not a number we print 8 `?` to retain alignment but let user know that it was called on\n // wrong
type.\n if (typeof value !== 'number') return '????????';\n // We prefix 0s so that we have constant length number\n
const text = '00000000' + value.toString(2);\n return text.substring(text.length - 8);\n }\n\n\n/**\n * Convert a bloom
filter at location `idx` in `array` into binary representation.\n *\n @param array\n * @param idx\n */\nfunction
toBloom(array: any[], idx: number): string {\n return `${binary(array, idx + 7)}_${binary(array, idx +
6)}_${binary(array, idx + 5)}_${binary(array, idx + 4)}_${binary(array, idx + 3)}_${binary(array, idx +
2)}_${binary(array, idx + 1)}_${binary(array, idx + 0)}`;\n }\n\n\nexport class LContainerDebug implements

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ILContainerDebug {\n  constructor(private readonly _raw_LContainer: LContainer) {\n\n  get
hasTransplantedViews(): boolean {\n  return this._raw_LContainer[HAS_TRANSPLANTED_VIEWS];\n } \n  get
views(): ILViewDebug[] {\n  return this._raw_LContainer.slice(CONTAINER_HEADER_OFFSET)\n  .map(toDebug as (l: LView) => ILViewDebug);\n } \n  get parent(): ILViewDebug|null {\n  return
toDebug(this._raw_LContainer[PARENT]);\n } \n  get movedViews(): LView[]|null {\n  return
this._raw_LContainer[MOVED_VIEWS];\n } \n  get host(): RElement|RComment|LView {\n  return
this._raw_LContainer[HOST];\n } \n  get native(): RComment {\n  return this._raw_LContainer[NATIVE];\n } \n
get next() {\n  return toDebug(this._raw_LContainer[NEXT]);\n } \n} \n", "/*\n * @license\n * Copyright Google
LLC All Rights Reserved.\n *\n * Use of this source code is governed by an MIT-style license that can be\n * found
in the LICENSE file at https://angular.io/license\n */\n\nimport {Injector} from '../di';\nimport {ErrorHandler} from
'../error_handler';\nimport {DoCheck, OnChanges, OnInit} from '../interface/lifecycle_hooks';\nimport
{CUSTOM_ELEMENTS_SCHEMA, NO_ERRORS_SCHEMA, SchemaMetadata} from
'../metadata/schema';\nimport {ViewEncapsulation} from '../metadata/view';\nimport
{validateAgainstEventAttributes, validateAgainstEventProperties} from '../sanitization/sanitization';\nimport
{Sanitizer} from '../sanitization/sanitizer';\nimport {assertDefined, assertDomNode, assertEqual,
assertGreaterThanOrEqual, assertIndexInRange, assertNotEqual, assertNotSame, assertSame, assertString} from
'../util/assert';\nimport {createNamedArrayType} from '../util/named_array_type';\nimport {initNgDevMode}
from '../util/ng_dev_mode';\nimport {normalizeDebugBindingName, normalizeDebugBindingValue} from
'../util/ng_reflect';\nimport {stringify} from '../util/stringify';\nimport {assertFirstCreatePass,
assertFirstUpdatePass, assertLContainer, assertLView, assertTNodeForLView, assertTNodeForTView} from
'./assert';\nimport {attachPatchData} from './context_discovery';\nimport {getFactoryDef} from
'./definition_factory';\nimport {diPublicInInjector, getNodeInjectable, getOrCreateNodeInjectorForNode} from
'./di';\nimport {formatRuntimeError, RuntimeError, RuntimeErrorCode} from './error_code';\nimport
{throwMultipleComponentError} from './errors';\nimport {executeCheckHooks, executeInitAndCheckHooks,
incrementInitPhaseFlags} from './hooks';\nimport {CONTAINER_HEADER_OFFSET,
HAS_TRANSPLANTED_VIEWS, LContainer, MOVED_VIEWS} from './interfaces/container';\nimport
{ComponentDef, ComponentTemplate, DirectiveDef, DirectiveDefListOrFactory, HostBindingsFunction,
PipeDefListOrFactory, RenderFlags, ViewQueriesFunction} from './interfaces/definition';\nimport
{NodeInjectorFactory} from './interfaces/injector';\nimport {AttributeMarker, InitialInputData, InitialInputs,
LocalRefExtractor, PropertyAliases, PropertyAliasValue, TAttributes, TConstantsOrFactory, TContainerNode,
TDirectiveHostNode, TElementContainerNode, TElementNode, TIcuContainerNode, TNode, TNodeFlags,
TNodeType, TProjectionNode} from './interfaces/node';\nimport {isProceduralRenderer, Renderer3,
RendererFactory3} from './interfaces/renderer';\nimport {RComment, RElement, RNode, RText} from
'./interfaces/renderer_dom';\nimport {SanitizerFn} from './interfaces/sanitization';\nimport {isComponentDef,
isComponentHost, isContentQueryHost, isRootView} from './interfaces/type_checks';\nimport {CHILD_HEAD,
CHILD_TAIL, CLEANUP, CONTEXT, DECLARATION_COMPONENT_VIEW, DECLARATION_VIEW,
FLAGS, HEADER_OFFSET, HOST, HostBindingOpCodes, InitPhaseState, INJECTOR, LView, LViewFlags,
NEXT, PARENT, RENDERER, RENDERER_FACTORY, RootContext, RootContextFlags, SANITIZER,
T_HOST, TData, TRANSPLANTED_VIEWS_TO_REFRESH, TVIEW, TView, TViewType} from
'./interfaces/view';\nimport {assertPureTNodeType, assertTNodeType} from './node_assert';\nimport
{updateTextNode} from './node_manipulation';\nimport {isInlineTemplate, isNodeMatchingSelectorList} from
'./node_selector_matcher';\nimport {enterView, getBindingsEnabled, getCurrentDirectiveIndex,
getCurrentParentTNode, getCurrentTNode, getCurrentTNodePlaceholderOk, getSelectedIndex,
isCurrentTNodeParent, isInCheckNoChangesMode, isInI18nBlock, leaveView, setBindingIndex,
setBindingRootForHostBindings, setCurrentDirectiveIndex, setCurrentQueryIndex, setCurrentTNode,
setIsInCheckNoChangesMode, setSelectedIndex} from './state';\nimport {NO_CHANGE} from './tokens';\nimport
{isAnimationProp, mergeHostAttrs} from './util/attrs_utils';\nimport {INTERPOLATION_DELIMITER} from
'./util/misc_utils';\nimport {renderStringify, stringifyForError} from './util/stringify_utils';\nimport

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{getFirstLContainer, getLViewParent, getNextLContainer} from './util/view_traversal_utils';\nimport
{getComponentLViewByIndex, getNativeByIndex, getNativeByTNode, isCreationMode, readPatchedLView,
resetPreOrderHookFlags, unwrapLView, updateTransplantedViewCount, viewAttachedToChangeDetector} from
 './util/view_utils';\n\nimport {selectIndexInternal} from './advance';\nimport {attachLContainerDebug,
attachLViewDebug, cloneToLViewFromTViewBlueprint, cloneToTViewData, LCleanup, LViewBlueprint,
MatchesArray, TCleanup, TNodeDebug, TNodeInitialInputs, TNodeLocalNames, TViewComponents,
TViewConstructor} from './lview_debug';\n\n\n/**\n * A permanent marker promise which signifies that the
current CD tree is\n * clean.\n */\nconst _CLEAN_PROMISE = (() => Promise.resolve(null))();\n\n\n/**\n * Invoke
`HostBindingsFunction`s for view.\n */\n * This methods executes `TView.hostBindingOpCodes`. It is used to
execute the\n * `HostBindingsFunction`s associated with the current `LView`.\n */\n * @param tView Current
`TView`.\n */\n * @param lView Current `LView`.\n */\n\nexport function processHostBindingOpCodes(tView: TView,
lView: LView): void {\n  const hostBindingOpCodes = tView.hostBindingOpCodes;\n  if (hostBindingOpCodes
=== null) return;\n  try {\n    for (let i = 0; i < hostBindingOpCodes.length; i++) {\n      const opCode =
hostBindingOpCodes[i] as number;\n      if (opCode < 0) {\n        // Negative numbers are element indexes.\n
setSelectedIndex(~opCode);\n      } else {\n        // Positive numbers are NumberTuple which store
bindingRootIndex and directiveIndex.\n        const directiveIdx = opCode;\n        const bindingRootIdx =
hostBindingOpCodes[++i] as number;\n        const hostBindingFn = hostBindingOpCodes[++i] as
HostBindingsFunction<any>;\n        setBindingRootForHostBindings(bindingRootIdx, directiveIdx);\n        const
context = lView[directiveIdx];\n        hostBindingFn(RenderFlags.Update, context);\n      }\n    }\n  } finally {\n
setSelectedIndex(-1);\n  }\n}\n\n\n/**\n * Refreshes all content queries declared by directives in a given view
*/\n\nfunction refreshContentQueries(tView: TView, lView: LView): void {\n  const contentQueries =
tView.contentQueries;\n  if (contentQueries !== null) {\n    for (let i = 0; i < contentQueries.length; i += 2) {\n
const queryStartIdx = contentQueries[i];\n    const directiveDefIdx = contentQueries[i + 1];\n    if
(directiveDefIdx !== -1) {\n      const directiveDef = tView.data[directiveDefIdx] as DirectiveDef<any>;\n
ngDevMode && assertDefined(directiveDef, 'DirectiveDef not found.);\n      ngDevMode &&\n
assertDefined(directiveDef.contentQueries, 'contentQueries function should be defined');\n
setCurrentQueryIndex(queryStartIdx);\n      directiveDef.contentQueries!(RenderFlags.Update,
lView[directiveDefIdx], directiveDefIdx);\n    }\n  }\n}\n\n\n/**\n * Refreshes child components in the current
view (update mode). */\n\nfunction refreshChildComponents(hostLView: LView, components: number[]): void {\n
for (let i = 0; i < components.length; i++) {\n  refreshComponent(hostLView, components[i]);\n}\n}\n\n\n/**\n
 * Renders child components in the current view (creation mode). */\n\nfunction renderChildComponents(hostLView:
LView, components: number[]): void {\n  for (let i = 0; i < components.length; i++) {\n
renderComponent(hostLView, components[i]);\n  }\n}\n\n\nexport function createLView<T>(\n  parentLView:
LView|null, tView: TView, context: T|null, flags: LViewFlags, host: RElement|null,\n  tHostNode: TNode|null,
rendererFactory: RendererFactory3|null, renderer: Renderer3|null,\n  sanitizer: Sanitizer|null, injector:
Injector|null): LView {\n  const lView =\n    ngDevMode ? cloneToLViewFromTViewBlueprint(tView) :\n
tView.blueprint.slice() as LView;\n  lView[HOST] = host;\n  lView[FLAGS] = flags | LViewFlags.CreationMode |
LViewFlags.Attached | LViewFlags.FirstLViewPass;\n  resetPreOrderHookFlags(lView);\n  ngDevMode &&
tView.declTNode && parentLView && assertTNodeForLView(tView.declTNode, parentLView);\n
lView[PARENT] = lView[DECLARATION_VIEW] = parentLView;\n  lView[CONTEXT] = context;\n
lView[RENDERER_FACTORY] = (rendererFactory || parentLView &&
parentLView[RENDERER_FACTORY])!;\n  ngDevMode && assertDefined(lView[RENDERER_FACTORY],
'RendererFactory is required');\n  lView[RENDERER] = (renderer || parentLView &&
parentLView[RENDERER])!;\n  ngDevMode && assertDefined(lView[RENDERER], 'Renderer is required');\n
lView[SANITIZER] = sanitizer || parentLView && parentLView[SANITIZER] || null!;\n  lView[INJECTOR as
any] = injector || parentLView && parentLView[INJECTOR] || null!;\n  lView[T_HOST] = tHostNode;\n
ngDevMode &&\n  assertEqual(\n    tView.type == TViewType.Embedded ? parentLView !== null : true,\n
true,\n    'Embedded views must have parentLView');\n  lView[DECLARATION_COMPONENT_VIEW] =\n

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tView.type == TViewType.Embedded ? parentLView![DECLARATION_COMPONENT_VIEW] : IView;\n
ngDevMode && attachLViewDebug(IView);\n return IView;\n}\n\n/**\n * Create and stores the TNode, and hooks
it up to the tree.\n * @param tView The current `TView`.\n * @param index The index at which the TNode
should be saved (null if view, since they are not\n * saved).\n * @param type The type of TNode to create\n *
@param native The native element for this node, if applicable\n * @param name The tag name of the associated
native element, if applicable\n * @param attrs Any attrs for the native element, if applicable\n */\nexport function
getOrCreateTNode(\n  tView: TView, index: number, type: TNodeType.Element|TNodeType.Text, name:
string|null,\n  attrs: TAttributes|null): TElementNode;\nexport function getOrCreateTNode(\n  tView: TView,
index: number, type: TNodeType.Container, name: string|null,\n  attrs: TAttributes|null): TContainerNode;\nexport
function getOrCreateTNode(\n  tView: TView, index: number, type: TNodeType.Projection, name: null,\n  attrs:
TAttributes|null): TProjectionNode;\nexport function getOrCreateTNode(\n  tView: TView, index: number, type:
TNodeType.ElementContainer, name: string|null,\n  attrs: TAttributes|null): TElementContainerNode;\nexport
function getOrCreateTNode(\n  tView: TView, index: number, type: TNodeType.Icu, name: null,\n  attrs:
TAttributes|null): TElementContainerNode;\nexport function getOrCreateTNode(\n  tView: TView, index:
number, type: TNodeType, name: string|null, attrs: TAttributes|null):\n
TElementNode&TContainerNode&TElementContainerNode&TProjectionNode&TIcuContainerNode {\n
ngDevMode && index !== 0 && // 0 are bogus nodes and they are OK. See `createContainerRef` in\n
  // `view_engine_compatibility` for additional context.\n  assertGreaterThanOrEqual(index,
HEADER_OFFSET, `TNodes can't be in the LView header.`);\n  // Keep this function short, so that the VM will
inline it.\n  ngDevMode && assertPureTNodeType(type);\n  let tNode = tView.data[index] as TNode;\n  if (tNode
=== null) {\n    tNode = createTNodeAtIndex(tView, index, type, name, attrs);\n    if (isInI18nBlock()) {\n      // If
we are in i18n block then all elements should be pre declared through `Placeholder`\n      // See
`TNodeType.Placeholder` and `LFrame.inI18n` for more context.\n      // If the `TNode` was not pre-declared than it
means it was not mentioned which means it was\n      // removed, so we mark it as detached.\n      tNode.flags |=
TNodeFlags.isDetached;\n    }\n  } else if (tNode.type & TNodeType.Placeholder) {\n    tNode.type = type;\n
tNode.value = name;\n    tNode.attrs = attrs;\n    const parent = getCurrentParentTNode();\n    tNode.injectorIndex =
parent === null ? -1 : parent.injectorIndex;\n    ngDevMode && assertTNodeForTView(tNode, tView);\n
ngDevMode && assertEqual(index, tNode.index, `Expecting same index`);\n  }\n  setCurrentTNode(tNode, true);\n
return tNode as TElementNode & TContainerNode & TElementContainerNode & TProjectionNode &\n
TIcuContainerNode;\n}\n\nexport function createTNodeAtIndex(\n  tView: TView, index: number, type:
TNodeType, name: string|null, attrs: TAttributes|null) {\n  const currentTNode =
getCurrentTNodePlaceholderOk();\n  const isParent = isCurrentTNodeParent();\n  const parent = isParent ?
currentTNode : currentTNode && currentTNode.parent;\n  // Parents cannot cross component boundaries because
components will be used in multiple places.\n  const tNode = tView.data[index] =\n    createTNode(tView, parent
as TElementNode | TContainerNode, type, index, name, attrs);\n  // Assign a pointer to the first child node of a given
view. The first node is not always the one\n  // at index 0, in case of i18n, index 0 can be the instruction `i18nStart`
and the first node has\n  // the index 1 or more, so we can't just check node index.\n  if (tView.firstChild === null)
{\n    tView.firstChild = tNode;\n  }\n  if (currentTNode !== null) {\n    if (isParent) {\n      // FIXME(misko): This
logic looks unnecessarily complicated. Could we simplify?\n      if (currentTNode.child === null && tNode.parent
!== null) {\n        // We are in the same view, which means we are adding content node to the parent view.\n
currentTNode.child = tNode;\n      }\n    } else {\n      if (currentTNode.next === null) {\n        // In the case of i18n
the `currentTNode` may already be linked, in which case we don't want\n        // to break the links which i18n
created.\n        currentTNode.next = tNode;\n      }\n    }\n  }\n  return tNode;\n}\n\n/**\n * When elements are
created dynamically after a view blueprint is created (e.g. through\n * i18nApply()), we need to adjust the blueprint
for future\n * template passes.\n * @param tView `TView` associated with `LView`\n * @param IView The
`LView` containing the blueprint to adjust\n * @param numSlotsToAlloc The number of slots to alloc in the LView,
should be >0\n * @param initialValue Initial value to store in blueprint\n */\nexport function allocExpando(\n
tView: TView, IView: LView, numSlotsToAlloc: number, initialValue: any): number {\n  if (numSlotsToAlloc ===

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IView as needing a refresh at their\n // insertion points. This is needed to avoid the situation where the template is
defined in this\n // `LView` but its declaration appears after the insertion component.\n
markTransplantedViewsForRefresh(IView);\n refreshEmbeddedViews(IView);\n\n // Content query results must
be refreshed before content hooks are called.\n if (tView.contentQueries !== null) {\n
refreshContentQueries(tView, IView);\n }\n\n // execute content hooks (AfterContentInit,
AfterContentChecked)\n // PERF WARNING: do NOT extract this to a separate function without running
benchmarks\n if (!isInCheckNoChangesPass) {\n if (hooksInitPhaseCompleted) {\n const
contentCheckHooks = tView.contentCheckHooks;\n if (contentCheckHooks !== null) {\n
executeCheckHooks(IView, contentCheckHooks);\n }\n } else {\n const contentHooks =
tView.contentHooks;\n if (contentHooks !== null) {\n executeInitAndCheckHooks(\n IView,
contentHooks, InitPhaseState.AfterContentInitHooksToBeRun);\n }\n incrementInitPhaseFlags(IView,
InitPhaseState.AfterContentInitHooksToBeRun);\n }\n }\n\n processHostBindingOpCodes(tView,
IView);\n\n // Refresh child component views.\n const components = tView.components;\n if (components !==
null) {\n refreshChildComponents(IView, components);\n }\n\n // View queries must execute after refreshing
child components because a template in this view\n // could be inserted in a child component. If the view query
executes before child component\n // refresh, the template might not yet be inserted.\n const viewQuery =
tView.viewQuery;\n if (viewQuery !== null) {\n executeViewQueryFn(RenderFlags.Update, viewQuery,
context);\n }\n\n // execute view hooks (AfterViewInit, AfterViewChecked)\n // PERF WARNING: do NOT
extract this to a separate function without running benchmarks\n if (!isInCheckNoChangesPass) {\n if
(hooksInitPhaseCompleted) {\n const viewCheckHooks = tView.viewCheckHooks;\n if (viewCheckHooks
!== null) {\n executeCheckHooks(IView, viewCheckHooks);\n }\n } else {\n const viewHooks =
tView.viewHooks;\n if (viewHooks !== null) {\n executeInitAndCheckHooks(IView, viewHooks,
InitPhaseState.AfterViewInitHooksToBeRun);\n }\n incrementInitPhaseFlags(IView,
InitPhaseState.AfterViewInitHooksToBeRun);\n }\n }\n\n if (tView.firstUpdatePass === true) {\n // We
need to make sure that we only flip the flag on successful `refreshView` only\n // Don't do this in `finally`
block.\n // If we did this in `finally` block then an exception could block the execution of styling\n //
instructions which in turn would be unable to insert themselves into the styling linked\n // list. The result of this
would be that if the exception would not be throw on subsequent CD\n // the styling would be unable to process it
data and reflect to the DOM.\n tView.firstUpdatePass = false;\n }\n\n // Do not reset the dirty state when
running in check no changes mode. We don't want components\n // to behave differently depending on whether
check no changes is enabled or not. For example:\n // Marking an OnPush component as dirty from within the
`ngAfterViewInit` hook in order to\n // refresh a `NgClass` binding should work. If we would reset the dirty state
in the check\n // no changes cycle, the component would be not be dirty for the next update pass. This would\n //
be different in production mode where the component dirty state is not reset.\n if (!isInCheckNoChangesPass) {\n
IView[FLAGS] &= ~(LViewFlags.Dirty | LViewFlags.FirstLViewPass);\n }\n if (IView[FLAGS] &
LViewFlags.RefreshTransplantedView) {\n IView[FLAGS] &= ~LViewFlags.RefreshTransplantedView;\n
updateTransplantedViewCount(IView[PARENT] as LContainer, -1);\n }\n } finally {\n leaveView();\n
}\n}\n\nexport function renderComponentOrTemplate<T>(\n tView: TView, IView: LView, templateFn:
ComponentTemplate<{}>|null, context: T) {\n const rendererFactory = IView[RENDERER_FACTORY];\n const
normalExecutionPath = !isInCheckNoChangesMode();\n const creationModeIsActive = isCreationMode(IView);\n
try {\n if (normalExecutionPath && !creationModeIsActive && rendererFactory.begin) {\n
rendererFactory.begin();\n }\n if (creationModeIsActive) {\n renderView(tView, IView, context);\n }\n
refreshView(tView, IView, templateFn, context);\n } finally {\n if (normalExecutionPath &&
!creationModeIsActive && rendererFactory.end) {\n rendererFactory.end();\n }\n }\n}\n\nfunction
executeTemplate<T>(\n tView: TView, IView: LView, templateFn: ComponentTemplate<T>, rf: RenderFlags,
context: T) {\n const prevSelectedIndex = getSelectedIndex();\n try {\n setSelectedIndex(-1);\n if (rf &
RenderFlags.Update && IView.length > HEADER_OFFSET) {\n // When we're updating, inherently select 0 so
we don't\n // have to generate that instruction for most update blocks.\n selectIndexInternal(tView, IView,

```



```

    // preOrderHooks: HookData|null,\n    null, // preOrderCheckHooks:
HookData|null,\n    null, // contentHooks: HookData|null,\n    null, //
contentCheckHooks: HookData|null,\n    null, // viewHooks: HookData|null,\n    null,
    // viewCheckHooks: HookData|null,\n    null, // destroyHooks:
DestroyHookData|null,\n    null, // cleanup: any[]|null,\n    null, //
contentQueries: number[]|null,\n    null, // components: number[]|null,\n    typeof
directives === 'function' ? /\n    directives() : /\n    directives, //
directiveRegistry: DirectiveDefList|null,\n    typeof pipes === 'function' ? pipes() : pipes, // pipeRegistry:
PipeDefList|null,\n    null, // firstChild: TNode|null,\n    schemas,
    // schemas: SchemaMetadata[]|null,\n    consts, // consts: TConstants|null\n
false, // incompleteFirstPass: boolean\n    decls, //
ngDevMode only: decls\n    vars, // ngDevMode only: vars\n    ):\n    {\n
type: type,\n    blueprint: blueprint,\n    template: templateFn,\n    queries: null,\n    viewQuery:
viewQuery,\n    declTNode: declTNode,\n    data: blueprint.slice().fill(null, bindingStartIndex),\n
bindingStartIndex: bindingStartIndex,\n    expandoStartIndex: initialViewLength,\n    hostBindingOpCodes:
null,\n    firstCreatePass: true,\n    firstUpdatePass: true,\n    staticViewQueries: false,\n
staticContentQueries: false,\n    preOrderHooks: null,\n    preOrderCheckHooks: null,\n    contentHooks:
null,\n    contentCheckHooks: null,\n    viewHooks: null,\n    viewCheckHooks: null,\n    destroyHooks:
null,\n    cleanup: null,\n    contentQueries: null,\n    components: null,\n    directiveRegistry: typeof
directives === 'function' ? directives() : directives,\n    pipeRegistry: typeof pipes === 'function' ? pipes() :
pipes,\n    firstChild: null,\n    schemas: schemas,\n    consts: consts,\n    incompleteFirstPass: false\n
};\n if (ngDevMode) {\n // For performance reasons it is important that the tView retains the same shape during
runtime.\n // (To make sure that all of the code is monomorphic.) For this reason we seal the object to\n //
prevent class transitions.\n Object.seal(tView);\n }\n return tView;\n}\n\nfunction
createViewBlueprint(bindingStartIndex: number, initialViewLength: number): LView {\n const blueprint =
ngDevMode ? new LViewBlueprint() : [];\n for (let i = 0; i < initialViewLength; i++) {\n blueprint.push(i <
bindingStartIndex ? null : NO_CHANGE);\n }\n return blueprint as LView;\n}\n\nfunction createError(text:
string, token: any) {\n return new Error(`Renderer: ${text} [${stringifyForError(token)}]`);\n}\n\nfunction
assertHostNodeExists(rElement: RElement, elementOrSelector: RElement|string) {\n if (!rElement) {\n if (typeof
elementOrSelector === 'string') {\n throw createError('Host node with selector not found.', elementOrSelector);\n
} else {\n throw createError('Host node is required.', elementOrSelector);\n }\n }\n}\n\n/**\n * Locates the
host native element, used for bootstrapping existing nodes into rendering pipeline.\n *\n * @param rendererFactory
Factory function to create renderer instance.\n *\n * @param elementOrSelector Render element or CSS selector to
locate the element.\n *\n * @param encapsulation View Encapsulation defined for component that requests host
element.\n *\n * @export function locateHostElement(\n renderer: Renderer3, elementOrSelector: RElement|string,\n
encapsulation: ViewEncapsulation): RElement {\n if (isProceduralRenderer(renderer)) {\n // When using native
Shadow DOM, do not clear host element to allow native slot projection\n const preserveContent = encapsulation
=== ViewEncapsulation.ShadowDom;\n return renderer.selectRootElement(elementOrSelector,
preserveContent);\n }\n\n let rElement = typeof elementOrSelector === 'string' ?\n
renderer.querySelector(elementOrSelector)! : elementOrSelector;\n ngDevMode &&
assertHostNodeExists(rElement, elementOrSelector);\n\n // Always clear host element's content when Renderer3 is
in use. For procedural renderer case we\n // make it depend on whether ShadowDom encapsulation is used (in
which case the content should be\n // preserved to allow native slot projection). ShadowDom encapsulation requires
procedural\n // renderer, and procedural renderer case is handled above.\n rElement.textContent = '';\n return
rElement;\n}\n\n/**\n * Saves context for this cleanup function in LView.cleanupInstances.\n *\n * On the first
template pass, saves in TView:\n * - Cleanup function\n * - Index of context we just saved in
LView.cleanupInstances\n *\n * @export function storeCleanupWithContext(\n tView: TView, lView: LView,
context: any, cleanupFn: Function): void {\n const lCleanup = getLCleanup(lView);\n lCleanup.push(context);\n}

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transitions.\n  Object.seal(tNode);\n } \n return tNode;\n}\n\n\nfunction generatePropertyAliases(\n
inputAliasMap: {[publicName: string]: string}, directiveDefIdx: number,\n  propStore: PropertyAliases|null):
PropertyAliases|null {\n  for (let publicName in inputAliasMap) {\n    if
(inputAliasMap.hasOwnProperty(publicName)) {\n      propStore = propStore === null ? {} : propStore;\n      const
internalName = inputAliasMap[publicName];\n      if (propStore.hasOwnProperty(publicName)) {\n
propStore[publicName].push(directiveDefIdx, internalName);\n      } else {\n        (propStore[publicName] =
[directiveDefIdx, internalName]);\n      }\n    }\n  }\n  return propStore;\n}\n\n\n**\n * Initializes data structures
required to work with directive inputs and outputs.\n * Initialization is done for all directives matched on a given
TNode.\n */\nfunction initializeInputAndOutputAliases(tView: TView, tNode: TNode): void {\n  ngDevMode &&
assertFirstCreatePass(tView);\n  const start = tNode.directiveStart;\n  const end = tNode.directiveEnd;\n  const
tViewData = tView.data;\n  const tNodeAttrs = tNode.attrs;\n  const inputsFromAttrs: InitialInputData =
ngDevMode ? new TNodeInitialInputs() : [];\n  let inputsStore: PropertyAliases|null = null;\n  let outputsStore:
PropertyAliases|null = null;\n  for (let i = start; i < end; i++) {\n    const directiveDef = tViewData[i] as
DirectiveDef<any>;\n    const directiveInputs = directiveDef.inputs;\n    // Do not use unbound attributes as inputs to
structural directives, since structural\n    // directive inputs can only be set using microsyntax (e.g. `<div
*dir="exp">`).\n    // TODO(FW-1930): microsyntax expressions may also contain unbound/static attributes,
which\n    // should be set for inline templates.\n    const initialInputs = (tNodeAttrs !== null &&
!isInlineTemplate(tNode)) ?\n      generateInitialInputs(directiveInputs, tNodeAttrs) :\n      null;\n    inputsFromAttrs.push(initialInputs);\n    inputsStore = generatePropertyAliases(directiveInputs, i, inputsStore);\n
outputsStore = generatePropertyAliases(directiveDef.outputs, i, outputsStore);\n  }\n  if (inputsStore !== null) {\n
if (inputsStore.hasOwnProperty('class')) {\n    tNode.flags |= TNodeFlags.hasClassInput;\n  }\n  if
(inputsStore.hasOwnProperty('style')) {\n    tNode.flags |= TNodeFlags.hasStyleInput;\n  }\n  }\n  tNode.initialInputs = inputsFromAttrs;\n  tNode.inputs = inputsStore;\n  tNode.outputs = outputsStore;\n}\n\n\n**\n * Mapping between attributes names that don't correspond to their element property names.\n * \n * Performance note:
this function is written as a series of if checks (instead of, say, a property\n * object lookup) for performance reasons
- the series of `if` checks seems to be the fastest way of\n * mapping property names. Do NOT change without
benchmarking.\n * \n * Note: this mapping has to be kept in sync with the equally named mapping in the template\n *
type-checking machinery of ngtscc.\n */\nfunction mapPropName(name: string): string {\n  if (name === 'class')
return 'className';\n  if (name === 'for') return 'htmlFor';\n  if (name === 'formaction') return 'formAction';\n  if
(name === 'innerHTML') return 'innerHTML';\n  if (name === 'readonly') return 'readOnly';\n  if (name ===
'tabindex') return 'tabIndex';\n  return name;\n}\n\n\nexport function elementPropertyInternal<T>(\n  tView: TView,
tNode: TNode, IView: LView, propName: string, value: T, renderer: Renderer3,\n  sanitizer:
SanitizerFn|null|undefined, nativeOnly: boolean): void {\n  ngDevMode && assertNotSame(value, NO_CHANGE
as any, 'Incoming value should never be NO_CHANGE.);\n  const element = getNativeByTNode(tNode, IView) as
RElement | RComment;\n  let inputData = tNode.inputs;\n  let dataValue: PropertyAliasValue|undefined;\n  if
(!nativeOnly && inputData != null && (dataValue = inputData[propName])) {\n    setInputsForProperty(tView,
IView, dataValue, propName, value);\n    if (isComponentHost(tNode)) markDirtyIfOnPush(IView, tNode.index);\n
if (ngDevMode) {\n      setNgReflectProperties(IView, element, tNode.type, dataValue, value);\n    }\n  } else if
(tNode.type & TNodeType.AnyRNode) {\n    propName = mapPropName(propName);\n    if (ngDevMode) {\n
validateAgainstEventProperties(propName);\n    if (!validateProperty(tView, element, propName, tNode)) {\n
// Return here since we only log warnings for unknown properties.\n      logUnknownPropertyError(propName,
tNode);\n      return;\n    }\n    ngDevMode.rendererSetProperty++;\n  }\n  // It is assumed that the sanitizer
is only added when the compiler determines that the\n  // property is risky, so sanitization can be done without
further checks.\n  value = sanitizer != null ? (sanitizer(value, tNode.value || "", propName) as any) : value;\n  if
(isProceduralRenderer(renderer)) {\n    renderer.setProperty(element as RElement, propName, value);\n  } else if
(!isAnimationProp(propName)) {\n    (element as RElement).setProperty ? (element as
any).setProperty(propName, value) :\n      (element as any)[propName] = value;\n  }\n  if (tNode.type & TNodeType.AnyContainer) {\n    // If the node is a container and the property didn't\n    // match

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any of the inputs or schemas we should throw.\n  if (ngDevMode && !matchingSchemas(tView, tNode.value)) {\n
  logUnknownPropertyError(propName, tNode);\n  }\n }\n}\n\n/** If node is an OnPush component, marks its
LView dirty. */\nfunction markDirtyIfOnPush(IView: LView, viewIndex: number): void {\n  ngDevMode &&
assertLView(IView);\n  const childComponentLView = getComponentLViewByIndex(viewIndex, IView);\n  if
(!childComponentLView[FLAGS] & LViewFlags.CheckAlways)) {\n  childComponentLView[FLAGS] |=
LViewFlags.Dirty;\n  }\n }\n}\n\nfunction setNgReflectProperty(\n  IView: LView, element: RElement|RComment,
type: TNodeType, attrName: string, value: any) {\n  const renderer = IView[RENDERER];\n  attrName =
normalizeDebugBindingName(attrName);\n  const debugValue = normalizeDebugBindingValue(value);\n  if (type
& TNodeType.AnyRNode) {\n  if (value == null) {\n  isProceduralRenderer(renderer) ?
renderer.removeAttribute((element as RElement), attrName) : \n
(element as RElement).removeAttribute(attrName);\n  } else {\n  isProceduralRenderer(renderer) ?\n
renderer.setAttribute((element as RElement), attrName, debugValue) : \n
(element as RElement).setAttribute(attrName, debugValue);\n  }\n } else {\n  const textContent =
`bindings=${JSON.stringify({[attrName]: debugValue}, null, 2)}`;\n  if (isProceduralRenderer(renderer)) {\n
renderer.setValue((element as RComment), textContent);\n  } else {\n  (element as RComment).textContent =
textContent;\n  }\n }\n }\n}\n\nexport function setNgReflectProperties(\n  IView: LView, element:
RElement|RComment, type: TNodeType, dataValue: PropertyAliasValue,\n  value: any) {\n  if (type &
(TNodeType.AnyRNode | TNodeType.Container)) {\n  /**\n   * dataValue is an array containing runtime input or
output names for the directives:\n   * i+0: directive instance index\n   * i+1: privateName\n   * \n   * e.g. [0,
'change', 'change-minified']\n   * we want to set the reflected property with the privateName: dataValue[i+1]\n
*\n   * for (let i = 0; i < dataValue.length; i += 2) {\n   setNgReflectProperty(IView, element, type, dataValue[i + 1]
as string, value);\n   }\n }\n }\n}\n\nfunction validateProperty(\n  tView: TView, element: RElement|RComment,
propName: string, tNode: TNode): boolean {\n  // If `schemas` is set to `null`, that's an indication that this
Component was compiled in AOT\n  // mode where this check happens at compile time. In JIT mode, `schemas` is
always present and\n  // defined as an array (as an empty array in case `schemas` field is not defined) and we
should\n  // execute the check below.\n  if (tView.schemas === null) return true;\n  // The property is considered
valid if the element matches the schema, it exists on the element\n  // or it is synthetic, and we are in a browser
context (web worker nodes should be skipped).\n  if (matchingSchemas(tView, tNode.value) || propName in element
|| isAnimationProp(propName)) {\n  return true;\n  }\n  // Note: `typeof Node` returns 'function' in most browsers,
but on IE it is 'object' so we\n  // need to account for both here, while being careful for `typeof null` also returning
'object'.\n  return typeof Node === 'undefined' || Node === null || !(element instanceof Node);\n  }\n }\n}\n\nexport function
matchingSchemas(tView: TView, tagName: string|null): boolean {\n  const schemas = tView.schemas;\n  if
(schemas !== null) {\n  for (let i = 0; i < schemas.length; i++) {\n  const schema = schemas[i];\n  if (schema
=== NO_ERRORS_SCHEMA ||\n  schema === CUSTOM_ELEMENTS_SCHEMA && tagName &&
tagName.indexOf('-') > -1) {\n  return true;\n  }\n }\n }\n  return false;\n }\n }\n\n/**\n * Logs an error that a
property is not supported on an element.\n * @param propName Name of the invalid property.\n * @param tNode
Node on which we encountered the property.\n */\nfunction logUnknownPropertyError(propName: string, tNode:
TNode): void {\n  let message = `Can't bind to '${propName}' since it isn't a known property of
'${tNode.value}`;\n  console.error(formatRuntimeError(RuntimeErrorCode.UNKNOWN_BINDING,
message));\n }\n }\n\n/**\n * Instantiate a root component.\n */\nexport function instantiateRootComponent<T>(tView:
TView, lView: LView, def: ComponentDef<T>): T {\n  const rootTNode = getCurrentTNode();\n  if
(tView.firstCreatePass) {\n  if (def.providersResolver) def.providersResolver(def);\n  const directiveIndex =
allocExpando(tView, lView, 1, null);\n  ngDevMode &&\n  assertEqual(\n  directiveIndex,
rootTNode.directiveStart,\n  'Because this is a root component the allocated expando should match the TNode
component.);\n  configureViewWithDirective(tView, rootTNode, lView, directiveIndex, def);\n }\n  const
directive =\n  getNodeInjectable(lView, tView, rootTNode.directiveStart, rootTNode as TElementNode);\n  attachPatchData(directive, lView);\n  const native = getNativeByTNode(rootTNode, lView);\n  if (native) {\n
attachPatchData(native, lView);\n }\n  return directive;\n }\n }\n\n/**\n * Resolve the matched directives on a node.\n

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*/\nexport function resolveDirectives(\n  tView: TView, lView: LView, tNode:
TElementNode|TContainerNode|TElementContainerNode,\n  localRefs: string[]|null): boolean {\n // Please make
sure to have explicit type for `exportsMap`. Inferred type triggers bug in\n // tsickle.\n ngDevMode &&
assertFirstCreatePass(tView);\n\n let hasDirectives = false;\n if (getBindingsEnabled()) {\n  const directiveDefs:
DirectiveDef<any>[]|null = findDirectiveDefMatches(tView, lView, tNode);\n  const exportsMap: ({[key: string]:
number})|null = localRefs === null ? null : {": -1"};\n\n  if (directiveDefs !== null) {\n    hasDirectives = true;\n    initTNodeFlags(tNode, tView.data.length, directiveDefs.length);\n    // When the same token is provided by several
directives on the same node, some rules apply in\n    // the viewEngine:\n    // - viewProviders have priority over
providers\n    // - the last directive in NgModule.declarations has priority over the previous one\n    // So to match
these rules, the order in which providers are added in the arrays is very\n    // important.\n    for (let i = 0; i <
directiveDefs.length; i++) {\n      const def = directiveDefs[i];\n      if (def.providersResolver)
def.providersResolver(def);\n    }\n    let preOrderHooksFound = false;\n    let preOrderCheckHooksFound =
false;\n    let directiveIdx = allocExpando(tView, lView, directiveDefs.length, null);\n    ngDevMode &&\n    assertSame(\n      directiveIdx, tNode.directiveStart,\n      'TNode.directiveStart should point to just
allocated space');\n\n    for (let i = 0; i < directiveDefs.length; i++) {\n      const def = directiveDefs[i];\n      //
Merge the attrs in the order of matches. This assumes that the first directive is the\n      // component itself, so that
the component has the least priority.\n      tNode.mergedAttrs = mergeHostAttrs(tNode.mergedAttrs,
def.hostAttrs);\n\n      configureViewWithDirective(tView, tNode, lView, directiveIdx, def);\n\n      saveNameToExportMap(directiveIdx, def, exportsMap);\n\n      if (def.contentQueries !== null) tNode.flags |=
TNodeFlags.hasContentQuery;\n      if (def.hostBindings !== null || def.hostAttrs !== null || def.hostVars !== 0)\n        tNode.flags |= TNodeFlags.hasHostBindings;\n\n      const lifeCycleHooks: OnChanges&OnInit&DoCheck =
def.type.prototype;\n      // Only push a node index into the preOrderHooks array if this is the first\n      // pre-
order hook found on this node.\n      if (!preOrderHooksFound &&\n        (lifeCycleHooks.ngOnChanges ||
lifeCycleHooks.ngOnInit || lifeCycleHooks.ngDoCheck)) {\n        // We will push the actual hook function into this
array later during dir instantiation.\n        // We cannot do it now because we must ensure hooks are registered in
the same\n        // order that directives are created (i.e. injection order).\n        (tView.preOrderHooks ||
(tView.preOrderHooks = [])).push(tNode.index);\n        preOrderHooksFound = true;\n      }\n      if
(!preOrderCheckHooksFound && (lifeCycleHooks.ngOnChanges || lifeCycleHooks.ngDoCheck)) {\n        (tView.preOrderCheckHooks || (tView.preOrderCheckHooks = [])).push(tNode.index);\n        preOrderCheckHooksFound = true;\n      }\n      directiveIdx++;\n    }\n\n    initializeInputAndOutputAliases(tView, tNode);\n  }\n  if (exportsMap) cacheMatchingLocalNames(tNode,
localRefs, exportsMap);\n}\n // Merge the template attrs last so that they have the highest priority.\n
tNode.mergedAttrs = mergeHostAttrs(tNode.mergedAttrs, tNode.attrs);\n return hasDirectives;\n}\n\n/**\n * Add
`hostBindings` to the `TView.hostBindingOpCodes`. \n * @param tView `TView` to which the `hostBindings`
should be added.\n * @param tNode `TNode` the element which contains the directive\n * @param lView `LView`
current `LView`\n * @param directiveIdx Directive index in view.\n * @param directiveVarsIdx Where will the
directive's vars be stored\n * @param def `ComponentDef`/`DirectiveDef`, which contains the
`hostVars`/`hostBindings` to add.\n */\nexport function registerHostBindingOpCodes(\n  tView: TView, tNode:
TNode, lView: LView, directiveIdx: number, directiveVarsIdx: number,\n  def:
ComponentDef<any>|DirectiveDef<any>): void {\n ngDevMode && assertFirstCreatePass(tView);\n\n const
hostBindings = def.hostBindings;\n if (hostBindings) {\n  let hostBindingOpCodes =
tView.hostBindingOpCodes;\n  if (hostBindingOpCodes === null) {\n    hostBindingOpCodes =
tView.hostBindingOpCodes = [] as any as HostBindingOpCodes;\n  }\n  const elementIdx = ~tNode.index;\n  if (lastSelectedElementIdx(hostBindingOpCodes) != elementIdx) {\n    // Conditionally add select element so that
we are more efficient in execution.\n    // NOTE: this is strictly not necessary and it trades code size for runtime
perf.\n    // (We could just always add it.)\n    hostBindingOpCodes.push(elementIdx);\n  }\n  hostBindingOpCodes.push(directiveIdx, directiveVarsIdx, hostBindings);\n }\n}\n\n/**\n * Returns the last
selected element index in the `HostBindingOpCodes`\n * @param For perf reasons we don't need to update the selected

```



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{\n if (localRefs) {\n   const localNames: (string|number)[] = tNode.localNames = ngDevMode ? new
TNodeLocalNames() : [];\n   // Local names must be stored in tNode in the same order that localRefs are
defined\n   // in the template to ensure the data is loaded in the same slots as their refs\n   // in the template (for
template queries).\n   for (let i = 0; i < localRefs.length; i += 2) {\n     const index = exportsMap[localRefs[i +
1]];\n     if (index === null)\n       throw new RuntimeError(\n         RuntimeErrorCode.EXPORT_NOT_FOUND,
`Export of name '${localRefs[i + 1]}' not found!`);\n     localNames.push(localRefs[i], index);\n   }\n }\n}\n\n/**\n * Builds up an export map as directives are created, so local refs can be quickly mapped\n * to their directive
instances.\n */\nfunction saveNameToExportMap(\n  directiveIdx: number, def:
DirectiveDef<any>|ComponentDef<any>,\n  exportsMap: {[key: string]: number}|null) {\n  if (exportsMap) {\n    if (def.exportAs) {\n      for (let i = 0; i < def.exportAs.length; i++) {\n        exportsMap[def.exportAs[i]] =
directiveIdx;\n      }\n    }\n    if (isComponentDef(def)) exportsMap[""] = directiveIdx;\n  }\n}\n\n/**\n * Initializes
the flags on the current node, setting all indices to the initial index,\n * the directive count to 0, and adding the
isComponent flag.\n * @param index the initial index\n */\nexport function initTNodeFlags(tNode: TNode, index:
number, numberOfDirectives: number) {\n  ngDevMode &&\n    assertNotEqual(\n      numberOfDirectives,
tNode.directiveEnd - tNode.directiveStart,\n      `Reached the max number of directives`);\n  tNode.flags |=
TNodeFlags.isDirectiveHost;\n  // When the first directive is created on a node, save the index\n
tNode.directiveStart = index;\n  tNode.directiveEnd = index + numberOfDirectives;\n  tNode.providerIndexes =
index;\n}\n\n/**\n * Setup directive for instantiation.\n */\n * We need to create a `NodeInjectorFactory` which is
then inserted in both the `Blueprint` as well\n * as `LView`. `TView` gets the `DirectiveDef`. \n * @param
tView `TView`\n * @param tNode `TNode`\n * @param lView `LView`\n * @param directiveIndex Index where
the directive will be stored in the Expando.\n * @param def `DirectiveDef`\n */\nfunction
configureViewWithDirective<T>(\n  tView: TView, tNode: TNode, lView: LView, directiveIndex: number, def:
DirectiveDef<T>): void {\n  ngDevMode &&\n    assertGreaterThanOrEqual(directiveIndex, HEADER_OFFSET,
`Must be in Expando section`);\n  tView.data[directiveIndex] = def;\n  const directiveFactory =\n    def.factory ||
((def as {factory: Function}).factory = getFactoryDef(def.type, true));\n  const nodeInjectorFactory = new
NodeInjectorFactory(directiveFactory, isComponentDef(def), null);\n  tView.blueprint[directiveIndex] =
nodeInjectorFactory;\n  lView[directiveIndex] = nodeInjectorFactory;\n\n  registerHostBindingOpCodes(\n
tView, tNode, lView, directiveIndex, allocExpando(tView, lView, def.hostVars, NO_CHANGE),\n
def);\n}\n\nfunction addComponentLogic<T>(lView: LView, hostTNode: TElementNode, def:
ComponentDef<T>): void {\n  const native = getNativeByTNode(hostTNode, lView) as RElement;\n  const tView
= getOrCreateTComponentView(def);\n\n  // Only component views should be added to the view tree directly.
Embedded views are\n  // accessed through their containers because they may be removed / re-added later.\n  const
rendererFactory = lView[RENDERER_FACTORY];\n  const componentView = addToViewTree(\n    lView,\n
createLView(\n      lView, tView, null, def.onPush ? LViewFlags.Dirty : LViewFlags.CheckAlways, native,\n
hostTNode as TElementNode, rendererFactory, rendererFactory.createRenderer(native, def),\n      null, null));\n}\n\n// Component view will always be created before any injected LContainers,\n // so this is a regular element, wrap it
with the component view\n lView[hostTNode.index] = componentView;\n}\n\nexport function
elementAttributeInternal(\n  tNode: TNode, lView: LView, name: string, value: any, sanitizer:
SanitizerFn|null|undefined,\n  namespace: string|null|undefined) {\n  if (ngDevMode) {\n    assertNotSame(value,
NO_CHANGE as any, `Incoming value should never be NO_CHANGE.`);\n
validateAgainstEventAttributes(name);\n    assertTNodeType(\n      tNode, TNodeType.Element,\n      `Attempted
to set attribute ``${name}`` on a container node. ` +\n      `Host bindings are not valid on ng-container or ng-
template.`);\n  }\n  const element = getNativeByTNode(tNode, lView) as RElement;\n
setElementAttribute(lView[RENDERER], element, namespace, tNode.value, name, value, sanitizer);\n}\n\nexport
function setElementAttribute(\n  renderer: Renderer3, element: RElement, namespace: string|null|undefined,
tagName: string|null,\n  name: string, value: any, sanitizer: SanitizerFn|null|undefined) {\n  if (value === null) {\n
ngDevMode && ngDevMode.rendererRemoveAttribute++; \n  isProceduralRenderer(renderer) ?
renderer.removeAttribute(element, name, namespace) : \n    element.removeAttribute(name);\n}

```



```

hostLView);
const componentTView = componentView[TVIEW];
syncViewWithBlueprint(componentTView,
componentView);
renderView(componentTView, componentView, componentView[CONTEXT]);

```

Syncs an LView instance with its blueprint if they have gotten out of sync. Typically, blueprints and their view instances should always be in sync, so the loop here will be skipped. However, consider this case of two components side-by-side:

App template:

```

<comp>
<comp>

```

The following will happen:

- App template begins processing.
- First <comp> is matched as a component and its LView is created.
- Second <comp> is matched as a component and its LView is created.
- App template completes processing, so it's time to check child templates.
- First <comp> template is checked. It has a directive, so its def is pushed to blueprint.
- Second <comp> template is checked. Its blueprint has been updated by the first <comp> template, but its LView was created before this update, so it is out of sync.

Note that embedded views inside ngFor loops will never be out of sync because these views are processed as soon as they are created.

@param tView The `TView` that contains the blueprint for syncing

@param IView The view to sync

```

function syncViewWithBlueprint(tView: TView, IView: LView) {
  for (let i = IView.length; i < tView.blueprint.length; i++) {
    IView.push(tView.blueprint[i]);
  }
}

```

Adds LView or LContainer to the end of the current view tree. This structure will be used to traverse through nested views to remove listeners and call onDestroy callbacks.

@param IView The view where LView or LContainer should be added

@param adjustedHostIndex Index of the view's host node in LView[], adjusted for header

@param IViewOrLContainer The LView or LContainer to add to the view tree

@returns The state passed in

```

export function addToViewTree<T extends LView|LContainer>(IView: LView, IViewOrLContainer: T): T {
  // TODO(benlesh/misko): This implementation is incorrect, because it always adds the LContainer
  // to the end of the queue, which means if the developer retrieves the LContainers from RNodes out
  // of order, the change detection will run out of order, as the act of retrieving the the
  // LContainer from the RNode is what adds it to the queue.
  if (IView[CHILD_HEAD]) {
    IView[CHILD_TAIL]![NEXT] = IViewOrLContainer;
  } else {
    IView[CHILD_HEAD] = IViewOrLContainer;
  }
  IView[CHILD_TAIL] = IViewOrLContainer;
  return IViewOrLContainer;
}

```

Change detection

Marks current view and all ancestors dirty.

Returns the root view because it is found as a byproduct of marking the view tree dirty, and can be used by methods that consume markViewDirty() to easily schedule change detection. Otherwise, such methods would need to traverse up the view tree an additional time to get the root view and schedule a tick on it.

@param IView The starting LView to mark dirty

@returns the root LView

```

export function markViewDirty(IView: LView): LView|null {
  while (IView) {
    IView[FLAGS] |= LViewFlags.Dirty;
    const parent = getLViewParent(IView);
    // Stop traversing up as soon as you find a root view that wasn't attached to any container
    if (isRootView(IView) && !parent) {
      return IView;
    }
    // continue otherwise
    IView = parent!;
  }
  return null;
}

```

Used to schedule change detection on the whole application. Unlike `tick`, `scheduleTick` coalesces multiple calls into one change detection run. It is usually called indirectly by calling `markDirty` when the view needs to be re-rendered. Typically `scheduleTick` uses `requestAnimationFrame` to coalesce multiple `scheduleTick` requests. The scheduling function can be overridden in `renderComponent`'s `scheduler` option.

```

export function scheduleTick(rootContext: RootContext, flags: RootContextFlags) {
  const nothingScheduled = rootContext.flags === RootContextFlags.Empty;
  if (nothingScheduled && rootContext.clean === _CLEAN_PROMISE) {
    // https://github.com/angular/angular/issues/39296
    // should only attach the flags when really scheduling a tick
    rootContext.flags |= flags;
    let res: null|((val: null) => void);
    rootContext.clean = new Promise<null>((r) => res = r);
    rootContext.scheduler() => {
      if (rootContext.flags & RootContextFlags.DetectChanges) {
        rootContext.flags &= ~RootContextFlags.DetectChanges;
        tickRootContext(rootContext);
      }
      if (rootContext.flags & RootContextFlags.FlushPlayers) {
        rootContext.flags &= ~RootContextFlags.FlushPlayers;
        const playerHandler = rootContext.playerHandler;
        if (playerHandler) {
          playerHandler.flushPlayers();
        }
      }
      rootContext.clean = _CLEAN_PROMISE;
      res!(null);
    };
  }
}

```

export function tickRootContext(rootContext: RootContext) {
 for (let i = 0; i < rootContext.components.length; i++) {
 const rootComponent = rootContext.components[i];
 const IView =


```

future.\n *\n * Marking an already dirty component as dirty won't do anything. Only one outstanding change\n *
detection can be scheduled per component tree.\n *\n * @param component Component to mark as dirty.\n
*\nexport function markDirty(component: {}): void {\n  ngDevMode && assertDefined(component,\n  'component');\n  const rootView = markViewDirty(getComponentViewByInstance(component));\n  ngDevMode\n  && assertDefined(rootView[CONTEXT], 'rootContext should be defined');\n  scheduleTick(rootView[CONTEXT]
as RootContext, RootContextFlags.DetectChanges);\n}\n\n/**\n * Used to perform change detection on the whole
application.\n *\n * This is equivalent to `detectChanges`, but invoked on root component. Additionally, `tick`\n *
executes lifecycle hooks and conditionally checks components based on their\n * `ChangeDetectionStrategy` and
dirtiness.\n *\n * The preferred way to trigger change detection is to call `markDirty`. `markDirty` internally\n *
schedules `tick` using a scheduler in order to coalesce multiple `markDirty` calls into a\n * single change detection
run. By default, the scheduler is `requestAnimationFrame`, but can\n * be changed when calling `renderComponent`
and providing the `scheduler` option.\n */\nexport function tick<T>(component: T): void {\n  const rootView =
getRootView(component);\n  const rootContext = rootView[CONTEXT] as RootContext;\n  tickRootContext(rootContext);\n}\n\n"/**\n * @license\n * Copyright Google LLC All Rights Reserved.\n *\n * Use of this source code is governed by an MIT-style license that can be\n * found in the LICENSE file at
https://angular.io/license\n */\nimport {InjectionToken} from './injection_token';\nimport {Injector} from
 './injector';\nimport {InjectorMarkers} from './injector_marker';\n\n\n/**\n * An InjectionToken that gets the
current `Injector` for `createInjector()`-style injectors.\n *\n * Requesting this token instead of `Injector` allows
`StaticInjector` to be tree-shaken from a\n * project.\n *\n * @publicApi\n */\nexport const INJECTOR = new
InjectionToken<Injector>(\n  'INJECTOR',\n  // Dissable tslint because this is const enum which gets inlined not
top level prop access.\n  // tslint:disable-next-line: no-toplevel-property-access\n  InjectorMarkers.Injector as any,\n  // Special value used by Ivy to identify `Injector`.\n)\n);\n\n"/**\n * @license\n * Copyright Google LLC All Rights
Reserved.\n *\n * Use of this source code is governed by an MIT-style license that can be\n * found in the
LICENSE file at https://angular.io/license\n */\nimport {stringify} from './util/stringify';\nimport {Injector} from
 './injector';\nimport {THROW_IF_NOT_FOUND} from './injector_compatibility';\n\nexport class NullInjector
implements Injector {\n  get(token: any, notFoundValue: any = THROW_IF_NOT_FOUND): any {\n    if
(notFoundValue === THROW_IF_NOT_FOUND) {\n      const error = new Error(`NullInjectorError: No provider
for ${stringify(token)}!`);\n      error.name = 'NullInjectorError';\n      throw error;\n    }\n    return
notFoundValue;\n  }\n}\n\n"/**\n * @license\n * Copyright Google LLC All Rights Reserved.\n *\n * Use of this
source code is governed by an MIT-style license that can be\n * found in the LICENSE file at
https://angular.io/license\n */\nimport {InjectionToken} from './injection_token';\n\n\n/**\n * An internal token
whose presence in an injector indicates that the injector should treat itself\n * as a root scoped injector when
processing requests for unknown tokens which may indicate\n * they are provided in the root scope.\n */\nexport
const INJECTOR_SCOPE = new InjectionToken<'root'|'platform'|null>('Set Injector scope.);\n\n"/**\n * @license\n * Copyright Google LLC All Rights Reserved.\n *\n * Use of this source code is governed by an MIT-style license
that can be\n * found in the LICENSE file at https://angular.io/license\n */\nimport
 './util/ng_dev_mode';\nimport {OnDestroy} from './interface/lifecycle_hooks';\nimport {Type} from
 './interface/type';\nimport {FactoryFn, getFactoryDef} from './render3/definition_factory';\nimport
 {throwCyclicDependencyError, throwInvalidProviderError, throwMixedMultiProviderError} from
 './render3/errors_di';\nimport {deepForEach, newArray} from './util/array_utils';\nimport {stringify} from
 './util/stringify';\nimport {resolveForwardRef} from './forward_ref';\nimport {InjectionToken} from
 './injection_token';\nimport {Injector} from './injector';\nimport {catchInjectorError, injectArgs,\n  NG_TEMP_TOKEN_PATH, setCurrentInjector, THROW_IF_NOT_FOUND, USE_VALUE, inject} from
 './injector_compatibility';\nimport {INJECTOR} from './injection_token';\nimport {getInheritedInjectableDef,\n  getInjectableDef, getInjectorDef, InjectorType, InjectorTypeWithProviders, InjectableDef} from
 './interface/defs';\nimport {InjectFlags} from './interface/injector';\nimport {ClassProvider, ConstructorProvider,\n  ExistingProvider, FactoryProvider, StaticClassProvider, StaticProvider, TypeProvider, ValueProvider} from
 './interface/provider';\nimport {NullInjector} from './null_injector';\nimport {INJECTOR_SCOPE} from

```



```

'./scope';\n\n\n/**\n * Internal type for a single provider in a deep provider array.\n */\ntype SingleProvider =
TypeProvider|ValueProvider|ClassProvider|ConstructorProvider|ExistingProvider|\n
FactoryProvider|StaticClassProvider;\n\n/**\n * Marker which indicates that a value has not yet been created from
the factory function.\n */\nconst NOT_YET = {};\n\n/**\n * Marker which indicates that the factory function for a
token is in the process of being called.\n */\n * If the injector is asked to inject a token with its value set to
CIRCULAR, that indicates\n * injection of a dependency has recursively attempted to inject the original token, and
there is\n * a circular dependency among the providers.\n */\nconst CIRCULAR = {};\n\nconst EMPTY_ARRAY =
[] as any[];\n\n/**\n * A lazily initialized NullInjector.\n */\nlet NULL_INJECTOR: Injector|undefined =
undefined;\n\nfunction getNullInjector(): Injector {\n if (NULL_INJECTOR === undefined) {\n
NULL_INJECTOR = new NullInjector();\n } \n return NULL_INJECTOR;\n }\n\n/**\n * An entry in the injector
which tracks information about the given token, including a possible\n * current value.\n */\ninterface Record<T>
{\n factory: (() => T)|undefined;\n value: T|{};\n multi: any[]|undefined;\n }\n\n/**\n * Create a new `Injector`
which is configured using a `defType` of `InjectorType<any>`s.\n */\n * @publicApi\n */\nexport function
createInjector(\n defType: /* InjectorType<any> */ any, parent: Injector|null = null,\n additionalProviders:
StaticProvider[]|null = null, name?: string): Injector {\n const injector =\n
createInjectorWithoutInjectorInstances(defType, parent, additionalProviders, name);\n
injector._resolveInjectorDefTypes();\n return injector;\n }\n\n/**\n * Creates a new injector without eagerly
resolving its injector types. Can be used in places\n * where resolving the injector types immediately can lead to an
infinite loop. The injector types\n * should be resolved at a later point by calling `_resolveInjectorDefTypes`.\n
*/\nexport function createInjectorWithoutInjectorInstances(\n defType: /* InjectorType<any> */ any, parent:
Injector|null = null,\n additionalProviders: StaticProvider[]|null = null, name?: string): R3Injector {\n return new
R3Injector(defType, additionalProviders, parent || getNullInjector(), name);\n }\n\nexport class R3Injector {\n /**\n
* Map of tokens to records which contain the instances of those tokens.\n * - `null` value implies that we don't have
the record. Used by tree-shakable injectors\n * to prevent further searches.\n */\n private records = new
Map<Type<any>|InjectionToken<any>, Record<any>|null>();\n\n /**\n * The transitive set of `InjectorType`s
which define this injector.\n */\n private injectorDefTypes = new Set<InjectorType<any>>();\n\n /**\n * Set of
values instantiated by this injector which contain `ngOnDestroy` lifecycle hooks.\n */\n private onDestroy = new
Set<OnDestroy>();\n\n /**\n * Flag indicating this injector provides the APP_ROOT_SCOPE token, and thus
counts as the\n * root scope.\n */\n private readonly scope: 'root'|'platform'|null;\n\n readonly source:
string|null;\n\n /**\n * Flag indicating that this injector was previously destroyed.\n */\n get destroyed(): boolean
{\n return this._destroyed;\n }\n private _destroyed = false;\n\n constructor(\n def: InjectorType<any>,
additionalProviders: StaticProvider[]|null, readonly parent: Injector,\n source: string|null = null) {\n const
dedupStack: InjectorType<any>[] = [];\n // Start off by creating Records for every provider declared in every
InjectorType\n // included transitively in additional providers then do the same for `def`. This order is\n //
important because `def` may include providers that override ones in additionalProviders.\n additionalProviders
&&\n deepForEach(\n additionalProviders,\n provider => this.processProvider(provider, def,
additionalProviders));\n\n deepForEach([def], injectorDef => this.processInjectorType(injectorDef, [],
dedupStack));\n\n // Make sure the INJECTOR token provides this injector.\n this.records.set(INJECTOR,
makeRecord(undefined, this));\n\n // Detect whether this injector has the APP_ROOT_SCOPE token and thus
should provide\n // any injectable scoped to APP_ROOT_SCOPE.\n const record =
this.records.get(INJECTOR_SCOPE);\n this.scope = record != null ? record.value : null;\n\n // Source name,
used for debugging\n this.source = source || (typeof def === 'object' ? null : stringify(def));\n }\n\n /**\n
* Destroy the injector and release references to every instance or provider associated with it.\n */\n * Also calls the
`OnDestroy` lifecycle hooks of every instance that was created for which a\n * hook was found.\n */\n destroy():
void {\n this.assertNotDestroyed();\n\n // Set destroyed = true first, in case lifecycle hooks re-enter destroy().\n
this._destroyed = true;\n try {\n // Call all the lifecycle hooks.\n this.onDestroy.forEach(service =>
service.ngOnDestroy());\n } finally {\n // Release all references.\n this.records.clear();\n
this.onDestroy.clear();\n this.injectorDefTypes.clear();\n }\n }\n\n get<T>(\n token:

```

```

Type<T>|InjectionToken<T>, notFoundValue: any = THROW_IF_NOT_FOUND,\n  flags =
InjectFlags.Default): T {\n  this.assertNotDestroyed();\n  // Set the injection context.\n  const previousInjector =
setCurrentInjector(this);\n  try {\n  // Check for the SkipSelf flag.\n  if (!(flags & InjectFlags.SkipSelf)) {\n
// SkipSelf isn't set, check if the record belongs to this injector.\n  let record: Record<T>|undefined|null =
this.records.get(token);\n  if (record === undefined) {\n  // No record, but maybe the token is scoped to this
injector. Look for an injectable\n  // def with a scope matching this injector.\n  const def =
couldBeInjectableType(token) && getInjectableDef(token);\n  if (def && this.injectableDefInScope(def)) {\n
  // Found an injectable def and it's scoped to this injector. Pretend as if it was here\n  // all along.\n
record = makeRecord(injectableDefOrInjectorDefFactory(token), NOT_YET);\n  } else {\n  record =
null;\n  }\n  this.records.set(token, record);\n  }\n  // If a record was found, get the instance for it
and return it.\n  if (record != null /* NOT null || undefined */) {\n  return this.hydrate(token, record);\n
}\n  }\n  // Select the next injector based on the Self flag - if self is set, the next injector is\n  // the
NullInjector, otherwise it's the parent.\n  const nextInjector = !(flags & InjectFlags.Self) ? this.parent :
getNullInjector();\n  // Set the notFoundValue based on the Optional flag - if optional is set and notFoundValue\n
// is undefined, the value is null, otherwise it's the notFoundValue.\n  notFoundValue = (flags &
InjectFlags.Optional) && notFoundValue === THROW_IF_NOT_FOUND ?\n  null :\n  notFoundValue;\n  return nextInjector.get(token, notFoundValue);\n  } catch (e) {\n  if (e.name ===
'NullInjectorError') {\n  const path: any[] = e[NG_TEMP_TOKEN_PATH] = e[NG_TEMP_TOKEN_PATH] ||
[];\n  path.unshift(stringify(token));\n  if (previousInjector) {\n  // We still have a parent injector, keep
throwing\n  throw e;\n  } else {\n  // Format & throw the final error message when we don't have any
previous injector\n  return catchInjectorError(e, token, 'R3InjectorError', this.source);\n  }\n  } else {\n
throw e;\n  }\n  } finally {\n  // Lastly, clean up the state by restoring the previous injector.\n
setCurrentInjector(previousInjector);\n  }\n  }\n  /** @internal *\n  _resolveInjectorDefTypes() {\n
this.injectorDefTypes.forEach(defType => this.get(defType));\n  }\n  toString() {\n  const tokens = <string[]>[],
records = this.records;\n  records.forEach((v, token) => tokens.push(stringify(token)));\n  return
`R3Injector[${tokens.join(', ')}]`;}\n  private assertNotDestroyed(): void {\n  if (this._destroyed) {\n  throw
new Error('Injector has already been destroyed.);\n  }\n  }\n  /***\n  * Add an `InjectorType` or
`InjectorTypeWithProviders` and all of its transitive providers\n  * to this injector.\n  * If an
`InjectorTypeWithProviders` that declares providers besides the type is specified,\n  * the function will return
`true` to indicate that the providers of the type definition need\n  * to be processed. This allows us to process
providers of injector types after all imports of\n  * an injector definition are processed. (following View Engine
semantics: see FW-1349)\n  * private processInjectorType(\n  defOrWrappedDef:
InjectorType<any>|InjectorTypeWithProviders<any>,\n  parents: InjectorType<any>[],\n  dedupStack:
InjectorType<any>[]): defOrWrappedDef is InjectorTypeWithProviders<any> {\n  defOrWrappedDef =
resolveForwardRef(defOrWrappedDef);\n  if (!defOrWrappedDef) return false;\n  // Either the
defOrWrappedDef is an InjectorType (with injector def) or an\n  // InjectorDefTypeWithProviders (aka
ModuleWithProviders). Detecting either is a megamorphic\n  // read, so care is taken to only do the read once.\n
// First attempt to read the injector def (`inj`).\n  let def = getInjectorDef(defOrWrappedDef);\n  // If that's not
present, then attempt to read ngModule from the InjectorDefTypeWithProviders.\n  const ngModule =\n  (def
=== null) && (defOrWrappedDef as InjectorTypeWithProviders<any>).ngModule || undefined;\n  // Determine
the InjectorType. In the case where `defOrWrappedDef` is an `InjectorType`,\n  // then this is easy. In the case of
an InjectorDefTypeWithProviders, then the definition type\n  // is the `ngModule`.\n  const defType:
InjectorType<any> =\n  (ngModule === undefined) ? (defOrWrappedDef as InjectorType<any>):\n
ngModule;\n  // Check for circular dependencies.\n  if (ngDevMode && parents.indexOf(defType) !== -1) {\n
const defName = stringify(defType);\n  const path = parents.map(stringify);\n
throwCyclicDependencyError(defName, path);\n  }\n  // Check for multiple imports of the same module\n
const isDuplicate = dedupStack.indexOf(defType) !== -1;\n  // Finally, if defOrWrappedType was an
`InjectorDefTypeWithProviders`, then the actual\n  // `InjectorDef` is on its `ngModule`.\n  if (ngModule !==

```

```

undefined) {\n    def = getInjectorDef(ngModule);\n  }\n\n  // If no definition was found, it might be from
exports. Remove it.\n  if (def == null) {\n    return false;\n  }\n\n  // Add providers in the same way that
@NgModule resolution did:\n\n  // First, include providers from any imports.\n  if (def.imports != null &&
!isDuplicate) {\n    // Before processing defType's imports, add it to the set of parents. This way, if it ends\n
// up deeply importing itself, this can be detected.\n    ngDevMode && parents.push(defType);\n    // Add it to the
set of dedups. This way we can detect multiple imports of the same module\n    dedupStack.push(defType);\n\n  let importTypesWithProviders: (InjectorTypeWithProviders<any>[])|undefined;\n    try {\n
deepForEach(def.imports, imported => {\n      if (this.processInjectorType(imported, parents, dedupStack)) {\n
        if (importTypesWithProviders === undefined) importTypesWithProviders = [];\n          // If the processed
import is an injector type with providers, we store it in the\n          // list of import types with providers, so that we
can process those afterwards.\n          importTypesWithProviders.push(imported);\n        }\n      });\n    } finally
{\n      // Remove it from the parents set when finished.\n      ngDevMode && parents.pop();\n    }\n\n    //
Imports which are declared with providers (TypeWithProviders) need to be processed\n    // after all imported
modules are processed. This is similar to how View Engine\n    // processes/merges module imports in the metadata
resolver. See: FW-1349.\n    if (importTypesWithProviders !== undefined) {\n      for (let i = 0; i <
importTypesWithProviders.length; i++) {\n        const {ngModule, providers} = importTypesWithProviders[i];\n
        deepForEach(\n          providers!,\n          provider => this.processProvider(provider, ngModule, providers ||
EMPTY_ARRAY));\n      }\n    }\n\n    // Track the InjectorType and add a provider for it. It's important that
this is done after the\n    // def's imports.\n    this.injectorDefTypes.add(defType);\n    this.records.set(defType,
makeRecord(def.factory, NOT_YET));\n\n    // Next, include providers listed on the definition itself.\n    const
defProviders = def.providers;\n    if (defProviders != null && !isDuplicate) {\n      const injectorType =
defOrWrappedDef as InjectorType<any>;\n      deepForEach(\n        defProviders, provider =>
this.processProvider(provider, injectorType, defProviders));\n    }\n\n    return (\n      ngModule !== undefined
&&\n      (defOrWrappedDef as InjectorTypeWithProviders<any>).providers !== undefined);\n    }\n\n    /**\n
* Process a `SingleProvider` and add it.\n
*/\n    private processProvider(\n      provider: SingleProvider,\n      ngModuleType: InjectorType<any>, providers: any[]): void {\n
// Determine the token from the provider. Either
it's its own token, or has a {provide: ...}\n    // property.\n    provider = resolveForwardRef(provider);\n    let token:
any =\n      isTypeProvider(provider) ? provider : resolveForwardRef(provider && provider.provide);\n\n    //
Construct a `Record` for the provider.\n    const record = providerToRecord(provider, ngModuleType,
providers);\n\n    if (!isTypeProvider(provider) && provider.multi === true) {\n      // If the provider indicates that
it's a multi-provider, process it specially.\n      // First check whether it's been defined already.\n      let multiRecord =
this.records.get(token);\n      if (multiRecord) {\n        // It has. Throw a nice error if\n        if (ngDevMode &&
multiRecord.multi === undefined) {\n          throwMixedMultiProviderError();\n        }\n      } else {\n
multiRecord = makeRecord(undefined, NOT_YET, true);\n        multiRecord.factory = () =>
injectArgs(multiRecord!.multi!);\n        this.records.set(token, multiRecord);\n      }\n      token = provider;\n
multiRecord.multi!.push(provider);\n    } else {\n      const existing = this.records.get(token);\n      if (ngDevMode
&& existing && existing.multi !== undefined) {\n        throwMixedMultiProviderError();\n      }\n    }\n\n    this.records.set(token, record);\n  }\n\n  private hydrate<T>(token: Type<T>|InjectionToken<T>, record:
Record<T>): T {\n    if (ngDevMode && record.value === CIRCULAR) {\n
throwCyclicDependencyError(stringify(token));\n    } else if (record.value === NOT_YET) {\n      record.value =
CIRCULAR;\n      record.value = record.factory!();\n    }\n    if (typeof record.value === 'object' && record.value
&& hasOnDestroy(record.value)) {\n      this.onDestroy.add(record.value);\n    }\n    return record.value as T;\n
}\n\n  private injectableDefInScope(def: InjectableDef<any>): boolean {\n    if (!def.providedIn) {\n      return
false;\n    } else if (typeof def.providedIn === 'string') {\n      return def.providedIn === 'any' || (def.providedIn ===
this.scope);\n    } else {\n      return this.injectorDefTypes.has(def.providedIn);\n    }\n  }\n\n  function
injectableDefOrInjectorDefFactory(token: Type<any>|InjectionToken<any>): FactoryFn<any> {\n    // Most tokens
will have an injectable def directly on them, which specifies a factory directly.\n    const injectableDef =
getInjectableDef(token);\n    const factory = injectableDef !== null ? injectableDef.factory :

```

```

getFactoryDef(token);\n\n if (factory !== null) {\n  return factory;\n }\n\n // If the token is an NgModule, it's also
injectable but the factory is on its injector def\n // (^inj`)\n const injectorDef = getInjectorDef(token);\n if
(injectorDef !== null) {\n  return injectorDef.factory;\n }\n\n // InjectionTokens should have an injectable def
(prov) and thus should be handled above.\n // If it's missing that, it's an error.\n if (token instanceof InjectionToken)
{\n  throw new Error(`Token ${stringify(token)} is missing a prov definition.`);\n }\n\n // Undecorated types can
sometimes be created if they have no constructor arguments.\n if (token instanceof Function) {\n  return
getUndecoratedInjectableFactory(token);\n }\n\n // There was no way to resolve a factory for this token.\n throw
new Error('unreachable');\n}\n\nfunction getUndecoratedInjectableFactory(token: Function) {\n // If the token has
parameters then it has dependencies that we cannot resolve implicitly.\n const paramLength = token.length;\n if
(paramLength > 0) {\n  const args: string[] = newArray(paramLength, '?');\n  throw new Error(`Can't resolve all
parameters for ${stringify(token)}: (${args.join(', ')}).`);\n }\n\n // The constructor function appears to have no
parameters.\n // This might be because it inherits from a super-class. In which case, use an injectable\n // def from
an ancestor if there is one.\n // Otherwise this really is a simple class with no dependencies, so return a factory
that\n // just instantiates the zero-arg constructor.\n const inheritedInjectableDef =
getInheritedInjectableDef(token);\n if (inheritedInjectableDef !== null) {\n  return () =>
inheritedInjectableDef.factory(token as Type<any>);\n } else {\n  return () => new (token as Type<any>)();\n
}\n}\n\nfunction providerToRecord(\n  provider: SingleProvider, ngModuleType: InjectorType<any>, providers:
any[]): Record<any> {\n  if (isValueProvider(provider)) {\n    return makeRecord(undefined, provider.useValue);\n
} else {\n  const factory: (() => any)|undefined = providerToFactory(provider, ngModuleType, providers);\n
return makeRecord(factory, NOT_YET);\n }\n}\n\n/**\n * Converts a `SingleProvider` into a factory function.\n
*\n * @param provider provider to convert to factory\n */\nexport function providerToFactory(\n  provider:
SingleProvider, ngModuleType?: InjectorType<any>, providers?: any[]): () => any {\n  let factory: (() =>
any)|undefined = undefined;\n  if (isTypeProvider(provider)) {\n    const unwrappedProvider =
resolveForwardRef(provider);\n    return getFactoryDef(unwrappedProvider) ||
injectableDefOrInjectorDefFactory(unwrappedProvider);\n  } else {\n    if (isValueProvider(provider)) {\n
factory = () => resolveForwardRef(provider.useValue);\n    } else if (isFactoryProvider(provider)) {\n    factory =
() => provider.useFactory(...injectArgs(provider.deps || []));\n    } else if (isExistingProvider(provider)) {\n
factory = () => inject(resolveForwardRef(provider.useExisting));\n    } else {\n    const classRef =
resolveForwardRef(\n      provider &&\n      ((provider as StaticClassProvider | ClassProvider).useClass ||
provider.provide));\n    if (ngDevMode && !classRef) {\n      throwInvalidProviderError(ngModuleType,
providers, provider);\n    }\n    if (hasDeps(provider)) {\n      factory = () => new
(classRef)(...injectArgs(provider.deps));\n    } else {\n      return getFactoryDef(classRef) ||
injectableDefOrInjectorDefFactory(classRef);\n    }\n  }\n}\n\n return factory;\n}\n\nfunction makeRecord<T>(\n
factory: (() => T)|undefined, value: T|{}, multi: boolean = false): Record<T> {\n  return {\n    factory: factory,\n
value: value,\n    multi: multi ? [] : undefined,\n  };\n}\n\nfunction isValueProvider(value: SingleProvider): value is
ValueProvider {\n  return value !== null && typeof value === 'object' && USE_VALUE in value;\n}\n\nfunction
isExistingProvider(value: SingleProvider): value is ExistingProvider {\n  return !!(value && (value as
ExistingProvider).useExisting);\n}\n\nfunction isFactoryProvider(value: SingleProvider): value is FactoryProvider
{\n  return !!(value && (value as FactoryProvider).useFactory);\n}\n\nexport function isTypeProvider(value:
SingleProvider): value is TypeProvider {\n  return typeof value === 'function';\n}\n\nexport function
isClassProvider(value: SingleProvider): value is ClassProvider {\n  return !!(value as StaticClassProvider |
ClassProvider).useClass;\n}\n\nfunction hasDeps(value: ClassProvider|ConstructorProvider|\n
StaticClassProvider): value is ClassProvider&{deps: any[]} {\n  return !!(value as any).deps;\n}\n\nfunction
hasOnDestroy(value: any): value is OnDestroy {\n  return value !== null && typeof value === 'object' &&\n
typeof (value as OnDestroy).ngOnDestroy === 'function';\n}\n\nfunction couldBeInjectableType(value: any): value
is Type<any>|InjectionToken<any> {\n  return (typeof value === 'function') ||\n    (typeof value === 'object' &&
value instanceof InjectionToken);\n}\n\n"/**\n * @license\n * Copyright Google LLC All Rights Reserved.\n * \n *
Use of this source code is governed by an MIT-style license that can be\n * found in the LICENSE file at

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https://angular.io/license\n */\n\nimport { AbstractType, Type } from './interface/type';\nimport { stringify } from './util/stringify';\nimport { resolveForwardRef } from './forward_ref';\nimport { InjectionToken } from './injection_token';\nimport { catchInjectorError, formatError, NG_TEMP_TOKEN_PATH, setCurrentInjector, THROW_IF_NOT_FOUND, USE_VALUE, inject } from './injector_compatibility';\nimport { InjectorMarkers } from './injector_marker';\nimport { INJECTOR } from './injector_token';\nimport { getInjectableDef, defineInjectable } from './interface/defs';\nimport { InjectFlags } from './interface/injector';\nimport { ConstructorProvider, ExistingProvider, FactoryProvider, StaticClassProvider, StaticProvider, ValueProvider } from './interface/provider';\nimport { Inject, Optional, Self, SkipSelf } from './metadata';\nimport { NullInjector } from './null_injector';\nimport { createInjector } from './r3_injector';\nimport { INJECTOR_SCOPE } from './scope';\n\nexport function INJECTOR_IMPL__PRE_R3__(\n  providers: StaticProvider[], parent: Injector|undefined, name: string) {\n  return new StaticInjector(providers, parent, name);\n}\n\nexport function INJECTOR_IMPL__POST_R3__(\n  providers: StaticProvider[], parent: Injector|undefined, name: string) {\n  return createInjector({ name: name }, parent, providers, name);\n}\n\nexport const INJECTOR_IMPL = INJECTOR_IMPL__PRE_R3__;\n\n/**\n * Concrete injectors implement this interface. Injectors are configured\n * with [providers](guide/glossary#provider) that associate\n * dependencies of various types with [injection tokens](guide/glossary#di-token).\n *\n * @see ["DI Providers"](guide/dependency-injection-providers).\n *\n * @example core/di/ts/provider_spec.ts region='ConstructorProvider'\n *\n * ### Usage example\n *\n * @example core/di/ts/injector_spec.ts region='Injector'\n *\n * `Injector` returns itself when given `Injector` as a token:\n *\n * @example core/di/ts/injector_spec.ts region='injectInjector'\n *\n * @publicApi\n */\nexport abstract class Injector {\n  static THROW_IF_NOT_FOUND = THROW_IF_NOT_FOUND;\n  static NULL: Injector = new NullInjector();\n\n  /**\n   * Retrieves an instance from the injector based on the provided token.\n   *\n   * @returns The instance from the injector if defined, otherwise the `notFoundValue`.\n   *\n   * @throws When the `notFoundValue` is `undefined` or `Injector.THROW_IF_NOT_FOUND`.\n   */\n  abstract get<T>(token: Type<T>|InjectionToken<T>|AbstractType<T>, notFoundValue?: T, flags?: InjectFlags): T;\n\n  /**\n   * @deprecated from v4.0.0 use Type<T> or InjectionToken<T>\n   *\n   * @suppress {duplicate}\n   */\n  abstract get(token: any, notFoundValue?: any): any;\n\n  /**\n   * @deprecated from v5 use the new signature\n   */\n  create(options)\n\n  /**\n   * Creates a new injector instance that provides one or more dependencies,\n   * according to a given type or types of `StaticProvider`.\n   *\n   * @param options An object with the following properties:\n   * * `providers`: An array of providers of the [StaticProvider type](api/core/StaticProvider).\n   * * `parent`: (optional) A parent injector.\n   * * `name`: (optional) A developer-defined identifying name for the new injector.\n   *\n   * @returns The new injector instance.\n   */\n  static create(options: { providers: StaticProvider[], parent?: Injector, name?: string }): Injector;\n\n  /**\n   * Creates a new injector instance that provides one or more dependencies,\n   * according to a given type or types of `StaticProvider`.\n   *\n   * @param options An object with the following properties:\n   * * `providers`: An array of providers of the [StaticProvider type](api/core/StaticProvider).\n   * * `parent`: (optional) A parent injector.\n   * * `name`: (optional) A developer-defined identifying name for the new injector.\n   *\n   * @returns The new injector instance.\n   */\n  static create(\n    options: StaticProvider[] | {\n      providers: StaticProvider[],\n      parent?: Injector,\n      name?: string,\n    },\n    parent?: Injector): Injector {\n    if (Array.isArray(options)) {\n      return INJECTOR_IMPL(options, parent, "");\n    } else {\n      return INJECTOR_IMPL(options.providers, options.parent, options.name || "");\n    }\n  }\n\n  /**\n   * @nocollapse\n   */\n  static prov = defineInjectable({\n    token: Injector,\n    providedIn: 'any' as any,\n    factory: () => inject(INJECTOR),\n  });\n\n  /**\n   * @internal\n   *\n   * @nocollapse\n   */\n  static __NG_ELEMENT_ID__ = InjectorMarkers.Injector;\n\n  /**\n   * A unique identifier for this injector.\n   */\n  const IDENT = function<T>(value: T): T {\n    return value;\n  }; \n  const EMPTY = <any[]>[];\n  const CIRCULAR = IDENT;\n  const MULTI_PROVIDER_FN = function(): any[] {\n    return Array.prototype.slice.call(arguments);\n  }; \n  const enum OptionFlags {\n    Optional = 1 << 0,\n    CheckSelf = 1 << 1,\n    CheckParent = 1 << 2,\n    Default = CheckSelf | CheckParent\n  }\n  const NO_NEW_LINE = ";\n\n  export class StaticInjector implements Injector {\n    readonly parent: Injector;\n    readonly source: string|null;\n    readonly scope: string|null;\n\n    private _records: Map<any, Record|null>;\n\n    constructor(\n      providers: StaticProvider[], parent: Injector = Injector.NULL, source: string|null = null) {\n      this.parent = parent;\n      this.source = source;\n      const records = this._records = new Map<any, Record>();\n      records.set(\n        Injector, <Record>{\n          token: Injector,\n          fn: IDENT,\n          deps: EMPTY,\n          value: this,\n          useNew: false,\n        });\n      records.set(\n        INJECTOR, <Record>{\n          token: INJECTOR,\n          fn: IDENT,\n          deps: EMPTY,\n          value: this,\n          useNew: false,\n        });\n      this.scope =

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recursivelyProcessProviders(records, providers);\n }\n\n get<T>(token: Type<T>|InjectionToken<T>,\n notFoundValue?: T, flags?: InjectFlags): T;\n get(token: any, notFoundValue?: any): any;\n get(token: any,\n notFoundValue?: any, flags: InjectFlags = InjectFlags.Default): any {\n  const records = this._records;\n  let\n  record = records.get(token);\n  if (record === undefined) {\n    // This means we have never seen this record, see\n    if it is tree shakable provider.\n    const injectableDef = getInjectableDef(token);\n    if (injectableDef) {\n      const providedIn = injectableDef && injectableDef.providedIn;\n      if (providedIn === 'any' || providedIn != null\n      && providedIn === this.scope) {\n        records.set(\n          token,\n          record = resolveProvider(\n            {provide: token, useFactory: injectableDef.factory, deps: EMPTY});\n        }\n      }\n      if (record ===\n      undefined) {\n        // Set record to null to make sure that we don't go through expensive lookup above again.\n        records.set(token, null);\n      }\n    }\n    let lastInjector = setCurrentInjector(this);\n    try {\n      return\n      tryResolveToken(token, record, records, this.parent, notFoundValue, flags);\n    } catch (e) {\n      return\n      catchInjectorError(e, token, 'StaticInjectorError', this.source);\n    } finally {\n      setCurrentInjector(lastInjector);\n    }\n  }\n\n  toString() {\n    const tokens = <string[]>[], records = this._records;\n    records.forEach((v, token) =>\n    tokens.push(stringify(token)));\n    return `StaticInjector[${tokens.join(', ')}];\n  }\n}\n\nntype SupportedProvider\n=\n  ValueProvider|ExistingProvider|StaticClassProvider|ConstructorProvider|FactoryProvider;\n\nninterface Record\n{\n  fn: Function;\n  useNew: boolean;\n  deps: DependencyRecord[];\n  value: any;\n}\n\nninterface\nDependencyRecord {\n  token: any;\n  options: number;\n}\n\nnfunction resolveProvider(provider:\nSupportedProvider): Record {\n  const deps = computeDeps(provider);\n  let fn: Function = IDENT;\n  let value:\n  any = EMPTY;\n  let useNew: boolean = false;\n  let provide = resolveForwardRef(provider.provide);\n  if\n  (USE_VALUE in provider) {\n    // We need to use USE_VALUE in provider since provider.useValue could be\n    defined as undefined.\n    value = (provider as ValueProvider).useValue;\n  } else if ((provider as\n  FactoryProvider).useFactory) {\n    fn = (provider as FactoryProvider).useFactory;\n  } else if ((provider as\n  ExistingProvider).useExisting) {\n    // Just use IDENT\n  } else if ((provider as StaticClassProvider).useClass) {\n    useNew = true;\n    fn = resolveForwardRef((provider as StaticClassProvider).useClass);\n  } else if (typeof provide\n  === 'function') {\n    useNew = true;\n    fn = provide;\n  } else {\n    throw staticError(\n      'StaticProvider does not\n      have [useValue|useFactory|useExisting|useClass] or [provide] is not newable',\n      provider);\n  }\n  return {deps,\n  fn, useNew, value};\n}\n\nnfunction multiProviderMixError(token: any) {\n  return staticError('Cannot mix multi\n  providers and regular providers', token);\n}\n\nnfunction recursivelyProcessProviders(records: Map<any, Record>,\n  provider: StaticProvider): string|\n  null {\n  let scope: string|null = null;\n  if (provider) {\n    provider =\n    resolveForwardRef(provider);\n    if (Array.isArray(provider)) {\n      // if we have an array recurse into the array\n      for (let i = 0; i < provider.length; i++) {\n        scope = recursivelyProcessProviders(records, provider[i]) || scope;\n      }\n    } else if (typeof provider === 'function') {\n      // Functions were supported in ReflectiveInjector, but are not\n      here. For safety give useful\n      // error messages\n      throw staticError('Function/Class not supported', provider);\n    } else if (provider && typeof provider === 'object' && provider.provide) {\n      // At this point we have what\n      looks like a provider: {provide: ?, ...}\n      let token = resolveForwardRef(provider.provide);\n      const\n      resolvedProvider = resolveProvider(provider);\n      if (provider.multi === true) {\n        // This is a multi provider.\n        let multiProvider: Record|undefined = records.get(token);\n        if (multiProvider) {\n          if (multiProvider.fn\n          !== MULTI_PROVIDER_FN) {\n            throw multiProviderMixError(token);\n          }\n        } else {\n          //\n          Create a placeholder factory which will look up the constituents of the multi provider.\n          records.set(token,\n          multiProvider = <Record>{\n            token: provider.provide,\n            deps: [],\n            useNew: false,\n            fn:\n            MULTI_PROVIDER_FN,\n            value: EMPTY\n          });\n        }\n        // Treat the provider as the token.\n        token = provider;\n        multiProvider.deps.push({token, options: OptionFlags.Default});\n      }\n      const record =\n      records.get(token);\n      if (record && record.fn == MULTI_PROVIDER_FN) {\n        throw\n        multiProviderMixError(token);\n      }\n      if (token === INJECTOR_SCOPE) {\n        scope =\n        resolvedProvider.value;\n      }\n      records.set(token, resolvedProvider);\n    } else {\n      throw\n      staticError('Unexpected provider', provider);\n    }\n  }\n  return scope;\n}\n\nnfunction tryResolveToken(\n  token:\n  any, record: Record|undefined|null, records: Map<any, Record|null>, parent: Injector,\n  notFoundValue: any,\n  flags: InjectFlags): any {\n  try {\n    return resolveToken(token, record, records, parent, notFoundValue, flags);\n  }

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catch (e) {\n // ensure that 'e' is of type Error.\n if (!(e instanceof Error)) {\n e = new Error(e);\n }\n const
path: any[] = e[NG_TEMP_TOKEN_PATH] = e[NG_TEMP_TOKEN_PATH] || [];\n path.unshift(token);\n if
(record && record.value == CIRCULAR) {\n // Reset the Circular flag.\n record.value = EMPTY;\n }\n
throw e;\n }\n}\n\nfunction resolveToken(\n token: any, record: Record|undefined|null, records: Map<any,
Record|null>, parent: Injector,\n notFoundValue: any, flags: InjectFlags): any {\n let value;\n if (record &&
!(flags & InjectFlags.SkipSelf)) {\n // If we don't have a record, this implies that we don't own the provider hence
don't know how\n // to resolve it.\n value = record.value;\n if (value == CIRCULAR) {\n throw
Error(NO_NEW_LINE + 'Circular dependency');\n } else if (value === EMPTY) {\n record.value =
CIRCULAR;\n let obj = undefined;\n let useNew = record.useNew;\n let fn = record.fn;\n let
depRecords = record.deps;\n let deps = EMPTY;\n if (depRecords.length) {\n deps = [];\n for (let i =
0; i < depRecords.length; i++) {\n const depRecord: DependencyRecord = depRecords[i];\n const
options = depRecord.options;\n const childRecord =\n options & OptionFlags.CheckSelf ?
records.get(depRecord.token) : undefined;\n deps.push(tryResolveToken(\n // Current Token to
resolve\n depRecord.token,\n // A record which describes how to resolve the token.\n // If
undefined, this means we don't have such a record\n childRecord,\n // Other records we know
about.\n records,\n // If we don't know how to resolve dependency and we should not check parent
for it,\n // than pass in Null injector.\n !childRecord && !(options & OptionFlags.CheckParent) ?
Injector.NULL : parent,\n options & OptionFlags.Optional ? null : Injector.THROW_IF_NOT_FOUND,\n
InjectFlags.Default));\n }\n }\n record.value = value = useNew ? new (fn as any)(...deps) :
fn.apply(obj, deps);\n }\n } else if (!(flags & InjectFlags.Self)) {\n value = parent.get(token, notFoundValue,
InjectFlags.Default);\n } else if (!(flags & InjectFlags.Optional)) {\n value = Injector.NULL.get(token,
notFoundValue);\n } else {\n value = Injector.NULL.get(token, typeof notFoundValue !== 'undefined' ?
notFoundValue : null);\n }\n return value;\n }\n\nfunction computeDeps(provider: StaticProvider):
DependencyRecord[] {\n let deps: DependencyRecord[] = EMPTY;\n const providerDeps: any[] =\n (provider
as ExistingProvider & StaticClassProvider & ConstructorProvider).deps;\n if (providerDeps &&
providerDeps.length) {\n deps = [];\n for (let i = 0; i < providerDeps.length; i++) {\n let options =
OptionFlags.Default;\n let token = resolveForwardRef(providerDeps[i]);\n if (Array.isArray(token)) {\n
for (let j = 0, annotations = token; j < annotations.length; j++) {\n const annotation = annotations[j];\n if
(annotation instanceof Optional || annotation == Optional) {\n options = options | OptionFlags.Optional;\n
} else if (annotation instanceof SkipSelf || annotation == SkipSelf) {\n options = options &
~OptionFlags.CheckSelf;\n } else if (annotation instanceof Self || annotation == Self) {\n options =
options & ~OptionFlags.CheckParent;\n } else if (annotation instanceof Inject) {\n token = (annotation
as Inject).token;\n } else {\n token = resolveForwardRef(annotation);\n }\n }\n }\n
deps.push({token, options});\n }\n } else if ((provider as ExistingProvider).useExisting) {\n const token =
resolveForwardRef((provider as ExistingProvider).useExisting);\n deps = [{token, options:
OptionFlags.Default}];\n } else if (!providerDeps && !(USE_VALUE in provider)) {\n // useValue &
useExisting are the only ones which are exempt from deps all others need it.\n throw staticError('\`deps\`
required', provider);\n }\n return deps;\n }\n\nfunction staticError(text: string, obj: any): Error {\n return new
Error(formatError(text, obj, 'StaticInjectorError'));\n }\n\n"/**\n * @license\n * Copyright Google LLC All Rights
Reserved.\n * Use of this source code is governed by an MIT-style license that can be\n * found in the
LICENSE file at https://angular.io/license\n */\n\nimport {Injector} from '../di/injector';\nimport {assertEqual}
from '../util/assert';\nimport {assertLView} from '../assert';\nimport {discoverLocalRefs,
getComponentAtNodeIndex, getDirectivesAtNodeIndex, getLContext} from './context_discovery';\nimport
{NodeInjector} from './di';\nimport {buildDebugNode} from './instructions/lview_debug';\nimport {LContext}
from './interfaces/context';\nimport {DirectiveDef} from './interfaces/definition';\nimport {TElementNode, TNode,
TNodeProviderIndexes} from './interfaces/node';\nimport {isLView} from './interfaces/type_checks';\nimport
{CLEANUP, CONTEXT, DebugNode, FLAGS, LView, LViewFlags, T_HOST, TVIEW, TViewType} from
'./interfaces/view';\nimport {stringifyForError} from './stringify_utils';\nimport {getLViewParent, getRootContext}

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from './view_traversal_utils';
import { getTNode, unwrapRNode } from './view_utils';

/**
 * Retrieves the component instance associated with a given DOM element.
 * @usageNotes
 * Given the following DOM structure:
 * ```html
 * <my-app>
 *   <div>
 *     <child-comp></child-comp>
 *   </div>
 * </my-app>
 * ```
 * Calling `getComponent` on `<child-comp>` will return the instance of `ChildComponent`
 * associated with this DOM element.
 * Calling the function on `<my-app>` will return the `MyApp` instance.
 * @param element DOM element from which the component should be retrieved.
 * @returns Component instance associated with the element or `null` if there is no component associated with it.
 * @publicApi
 * @globalApi
 */
export function getComponent<T>(element: Element): T | null {
  assertDomElement(element);
  const context = loadLContext(element, false);
  if (context === null) return null;
  if (context.component === undefined) {
    context.component = getComponentAtNodeIndex(context.nodeIndex, context.IView);
  }
  return context.component as T;
}

/**
 * If inside an embedded view (e.g. `*ngIf` or `*ngFor`), retrieves the context of the embedded
 * view that the element is part of. Otherwise retrieves the instance of the component whose view
 * owns the element (in this case, the result is the same as calling `getOwningComponent`).
 * @param element Element for which to get the surrounding component instance.
 * @returns Instance of the component that is around the element or null if the element isn't
 * inside any component.
 * @publicApi
 * @globalApi
 */
export function getContext<T>(element: Element): T | null {
  assertDomElement(element);
  const context = loadLContext(element, false);
  return context === null ? null : context.IView[CONTEXT] as T;
}

/**
 * Retrieves the component instance whose view contains the DOM element.
 * For example, if `<child-comp>` is used in the template of `<app-comp>` (i.e. a `ViewChild` of `<app-comp>`),
 * calling `getOwningComponent` on `<child-comp>` would return `<app-comp>`.
 * @param elementOrDir DOM element, component or directive instance for which to retrieve the root components.
 * @returns Component instance whose view owns the DOM element or null if the element is not
 * part of a component view.
 * @publicApi
 * @globalApi
 */
export function getOwningComponent<T>(elementOrDir: Element | {}): T | null {
  const context = loadLContext(elementOrDir, false);
  if (context === null) return null;
  let IView = context.IView;
  let parent: LView | null;
  ngDevMode && assertLView(IView);
  while (IView[TVIEW].type === TViewType.Embedded && (parent = getLViewParent(IView!))) {
    IView = parent;
  }
  return IView[FLAGS] & LViewFlags.IsRoot ? null : IView[CONTEXT] as T;
}

/**
 * Retrieves all root components associated with a DOM element, directive or component instance.
 * Root components are those which have been bootstrapped by Angular.
 * @param elementOrDir DOM element, component or directive instance for which to retrieve the root components.
 * @returns Root components associated with the target object.
 * @publicApi
 * @globalApi
 */
export function getRootComponents(elementOrDir: Element | {}): {}[] {
  return [...getRootContext(elementOrDir).components];
}

/**
 * Retrieves an `Injector` associated with an element, component or directive instance.
 * @param elementOrDir DOM element, component or directive instance for which to retrieve the injector.
 * @returns Injector associated with the element, component or directive instance.
 * @publicApi
 * @globalApi
 */
export function getInjector(elementOrDir: Element | {}): Injector {
  const context = loadLContext(elementOrDir, false);
  if (context === null) return Injector.NULL;
  const tNode = context.IView[TVIEW].data[context.nodeIndex] as TElementNode;
  return new NodeInjector(tNode, context.IView);
}

/**
 * Retrieve a set of injection tokens at a given DOM node.
 * @param element Element for which the injection tokens should be retrieved.
 * @returns Injection tokens.
 */
export function getInjectionTokens(element: Element): any[] {
  const context = loadLContext(element, false);
  if (context === null) return [];
  const IView = context.IView;
  const tView = IView[TVIEW];
  const tNode = tView.data[context.nodeIndex] as TNode;
  const providerTokens: any[] = [];
  const startIndex = tNode.providerIndexes & TNodeProviderIndexes.ProvidersStartIndexMask;
  const endIndex = tNode.directiveEnd;
  for (let i = startIndex; i < endIndex; i++) {
    let value = tView.data[i];
    if (isDirectiveDefHack(value)) {
      // The fact that we sometimes store Type and sometimes DirectiveDef in this
      // location is a design flaw. We should always store same type so that we can be monomorphic.
      // The issue is that for Components/Directives we store the def instead the type.
      // The correct behavior is that we should
    }
  }
}

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always be storing injectable type in this location.\n    value = value.type;\n  }\n  providerTokens.push(value);\n}\n return providerTokens;\n}\n\n/**\n * Retrieves directive instances associated with a given DOM element. Does not include\n * component instances.\n *\n * @usageNotes\n * Given the following DOM structure:\n * <my-app>\n * <button my-button></button>\n * <my-comp></my-comp>\n * </my-app>\n * Calling `getDirectives` on `<button>` will return an array with an instance of the `MyButton` directive that is associated with the DOM element.\n *\n * Calling `getDirectives` on `<my-comp>` will return an empty array.\n *\n * @param element DOM element for which to get the directives.\n * @returns Array of directives associated with the element.\n *\n * @publicApi\n * @globalApi ng\n */\nexport function getDirectives(element: Element): {}[] {\n  const context = loadLContext(element!);\n  if (context.directives === undefined) {\n    context.directives = getDirectivesAtNodeIndex(context.nodeIndex, context.IView, false);\n  }\n  // The `directives` in this case are a named array called `LComponentView`. Clone the\n  // result so we don't expose an internal data structure in the user's console.\n  return context.directives === null ? [] : [...context.directives];\n}\n\n/**\n * Returns LContext associated with a target passed as an argument.\n * Throws if a given target doesn't have associated LContext.\n *\n * @next export function loadLContext(target: {}): LContext;\n * @next export function loadLContext(target: {}, throwOnNotFound: boolean = true): LContext|null\n * {\n  const context = getLContext(target);\n  if (!context && throwOnNotFound) {\n    throw new Error(\n      ngDevMode ? `Unable to find context associated with ${stringifyForError(target)}` :\n      'Invalid ng target');\n  }\n  return context;\n}\n\n/**\n * Retrieve map of local references.\n *\n * The references are retrieved as a map of local reference name to element or directive instance.\n *\n * @param target DOM element, component or directive instance for which to retrieve\n * the local references.\n *\n * @next export function\n  getLocalRefs(target: {}): {[key: string]: any} {\n  const context = loadLContext(target, false);\n  if (context === null) return {};\n  if (context.localRefs === undefined) {\n    context.localRefs = discoverLocalRefs(context.IView, context.nodeIndex);\n  }\n  return context.localRefs || {};\n}\n\n/**\n * Retrieves the host element of a component or directive instance.\n * The host element is the DOM element that matched the selector of the directive.\n *\n * @param componentOrDirective Component or directive instance for which the host\n * element should be retrieved.\n *\n * @returns Host element of the target.\n *\n * @publicApi\n * @globalApi ng\n */\nexport function getHostElement(componentOrDirective: {}): Element {\n  return getLContext(componentOrDirective!).native as never as Element;\n}\n\n/**\n * Retrieves the rendered text for a given component.\n *\n * This function retrieves the host element of a component and then returns the `textContent` for that element. This implies that the text returned will include re-projected content of the component as well.\n *\n * @param component The component to return the content text for.\n *\n * @next export function\n  getRenderedText(component: any): string {\n  const hostElement = getHostElement(component);\n  return hostElement.textContent || '';\n}\n\nexport function loadLContextFromNode(node: Node): LContext {\n  if (!(node instanceof Node)) throw new Error('Expecting instance of DOM Element');\n  return loadLContext(node!);\n}\n\n/**\n * Event listener configuration returned from `getListeners`.\n *\n * @publicApi\n * @next export interface Listener {\n  /** Name of the event listener. */\n  name: string;\n  /** Element that the listener is bound to. */\n  element: Element;\n  /** Callback that is invoked when the event is triggered. */\n  callback: (value: any) => any;\n  /** Whether the listener is using event capturing. */\n  useCapture: boolean;\n  /** Type of the listener (e.g. a native DOM event or a custom @Output). */\n  type: 'dom'|'output';\n}\n\n/**\n * Retrieves a list of event listeners associated with a DOM element. The list does include host\n * listeners, but it does not include event listeners defined outside of the Angular context\n * (e.g. through `addEventListener`).\n *\n * @usageNotes\n * Given the following DOM structure:\n * <my-app>\n * <div (click)="doSomething()"></div>\n * </my-app>\n * Calling `getListeners` on `<div>` will return an object that looks as follows:\n * {\n *   name: 'click',\n *   element: <div>,\n *   callback: () => doSomething(),\n *   useCapture: false\n * }\n *\n * @param element Element for which the DOM listeners should be retrieved.\n * @returns Array of event listeners on the DOM element.\n *\n * @publicApi\n * @globalApi ng\n */\nexport function getListeners(element: Element): Listener[] {\n  assertDomElement(element);\n  const IContext = loadLContext(element, false);\n  if (IContext === null) return [];\n  const IView = IContext.IView;\n  const tView = IView[TVIEW];\n  const Icleanup =

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IView[CLEANUP];\n const tCleanup = tView.cleanup;\n const listeners: Listener[] = [];\n if (tCleanup &&
ICleanup) {\n for (let i = 0; i < tCleanup.length; i++) {\n const firstParam = tCleanup[i];\n const secondParam
= tCleanup[i+1];\n if (typeof firstParam === 'string') {\n const name: string = firstParam;\n const
listenerElement = unwrapRNode(IView[secondParam]) as any as Element;\n const callback: (value: any) =>
any = ICleanup[tCleanup[i+1]];\n const useCaptureOrIndx = tCleanup[i+2];\n // if useCaptureOrIndx is
boolean then report it as is.\n // if useCaptureOrIndx is positive number then it is unsubscribe method\n // if
useCaptureOrIndx is negative number then it is a Subscription\n const type =\n (typeof
useCaptureOrIndx === 'boolean' || useCaptureOrIndx >= 0) ? 'dom' : 'output';\n const useCapture = typeof
useCaptureOrIndx === 'boolean' ? useCaptureOrIndx : false;\n if (element === listenerElement) {\n
listeners.push({element, name, callback, useCapture, type});\n }\n }\n }\n }\n }
listeners.sort(sortListeners);\n return listeners;\n }\n\nfunction sortListeners(a: Listener, b: Listener) {\n if (a.name
=== b.name) return 0;\n return a.name < b.name ? -1 : 1;\n }\n\n/**\n * This function should not exist because it is
megamorphic and only mostly correct.\n *\n * See call site for more info.\n *\nfunction isDirectiveDefHack(obj:
any): obj is DirectiveDef<any> {\n return obj.type !== undefined && obj.template !== undefined &&
obj.declaredInputs !== undefined;\n }\n\n/**\n * Returns the attached `DebugNode` instance for an element in the
DOM.\n *\n * @param element DOM element which is owned by an existing component's view.\n *\nexport
function getDebugNode(element: Element): DebugNode|null {\n let debugNode: DebugNode|null = null;\n\n const
IContext = loadLContextFromNode(element);\n const IView = IContext.IView;\n const nodeIndex =
IContext.nodeIndex;\n if (nodeIndex !== -1) {\n const valueInLView = IView[nodeIndex];\n // this means that
value in the IView is a component with its own\n // data. In this situation the TNode is not accessed at the same
spot.\n const tNode =\n isLView(valueInLView) ? (valueInLView[T_HOST] as TNode) :
getTNode(IView[TVIEW], nodeIndex);\n ngDevMode &&\n assertEqual(tNode.index, nodeIndex, 'Expecting
that TNode at index is same as index');\n debugNode = buildDebugNode(tNode, IView);\n }\n\n return
debugNode;\n }\n\n/**\n * Retrieve the component `LView` from component/element.\n *\n * NOTE: `LView` is a
private and should not be leaked outside.\n *\n * Don't export this method to `ng.*` on window.\n *\n * @param
target DOM element or component instance for which to retrieve the LView.\n *\nexport function
getComponentLView(target: any): LView {\n const IContext = loadLContext(target);\n const nodeIdx =
IContext.nodeIndex;\n const IView = IContext.IView;\n const componentLView = IView[nodeIdx];\n\n ngDevMode && assertLView(componentLView);\n return componentLView;\n }\n\n/** Asserts that a value is a
DOM Element.\n *\nfunction assertDomElement(value: any) {\n if (typeof Element !== 'undefined' && !(value
instanceof Element)) {\n throw new Error('Expecting instance of DOM Element');\n }\n }\n\n"/**\n *
Copyright Google LLC All Rights Reserved.\n *\n * Use of this source code is governed by an MIT-style license
that can be\n * found in the LICENSE file at https://angular.io/license\n *\nimport {detectChanges, markDirty}
from './instructions/change_detection';\nimport {getRootComponents} from './discovery_utils';\n\n/**\n * Marks a
component for check (in case of OnPush components) and synchronously\n * performs change detection on the
application this component belongs to.\n *\n * @param component Component to { @link
ChangeDetectorRef#markForCheck mark for check}.\n *\n * @publicApi\n *\n * @globalApi ng\n *\nexport function
applyChanges(component: {}): void {\n markDirty(component);\n\n getRootComponents(component).forEach(rootComponent => detectChanges(rootComponent));\n }\n\n"/**\n *
Copyright Google LLC All Rights Reserved.\n *\n * Use of this source code is governed by an MIT-
style license that can be\n * found in the LICENSE file at https://angular.io/license\n *\nimport {assertDefined}
from './../util/assert';\nimport {global} from './../util/global';\nimport {applyChanges} from
'./change_detection_utils';\nimport {getComponent, getContext, getDirectives, getHostElement, getInjector,
getListeners, getOwningComponent, getRootComponents} from './discovery_utils';\n\n\n/**\n * This file
introduces series of globally accessible debug tools\n * to allow for the Angular debugging story to function.\n *\n * To see this in action run the following command:\n *\n * bazel run --config=ivy\n *
//packages/core/test/bundling/todo:devserver\n *\n * Then load `localhost:5432` and start using the console tools.\n
*\n *\n * This value reflects the property on the window where the dev\n * tools are patched (window.ng).\n *

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mergedAttrs, true);\n  if (rNode !== null) {\n    setUpAttributes(hostRenderer, rNode, mergedAttrs);\n    if
(tNode.classes !== null) {\n      writeDirectClass(hostRenderer, rNode, tNode.classes);\n    }\n    if (tNode.styles
!== null) {\n      writeDirectStyle(hostRenderer, rNode, tNode.styles);\n    }\n  }\n}\n\n const viewRenderer =
rendererFactory.createRenderer(rNode, def);\n const componentView = createLView(\n  rootView,\n  getOrCreateTComponentView(def), null,\n  def.onPush ? LViewFlags.Dirty : LViewFlags.CheckAlways,\n  rootView[index], tNode,\n  rendererFactory, viewRenderer, sanitizer || null, null);\n\n if (tView.firstCreatePass)
{\n  diPublicInInjector(getOrCreateNodeInjectorForNode(tNode, rootView), tView, def.type);\n  markAsComponentHost(tView, tNode);\n  initTNodeFlags(tNode, rootView.length, 1);\n }\n\n
addToViewTree(rootView, componentView);\n\n // Store component view at node index, with node as the HOST\n
return rootView[index] = componentView;\n}\n\n/**\n * Creates a root component and sets it up with features and
host bindings. Shared by\n * renderComponent() and ViewContainerRef.createComponent().\n */\n\nexport function
createRootComponent<T>(\n  componentView: LView, componentDef: ComponentDef<T>, rootLView: LView,\n  rootContext: RootContext,\n  hostFeatures: HostFeature[]|null): any {\n  const tView = rootLView[TVIEW];\n  //
Create directive instance with factory() and store at next index in viewData\n  const component =
instantiateRootComponent(tView, rootLView, componentDef);\n\n  rootContext.components.push(component);\n  componentView[CONTEXT] = component;\n\n  hostFeatures && hostFeatures.forEach((feature) =>
feature(component, componentDef));\n\n  // We want to generate an empty QueryList for root content queries for
backwards\n  // compatibility with ViewEngine.\n  if (componentDef.contentQueries) {\n    const tNode =
getCurrentTNode()!;\n    ngDevMode && assertDefined(tNode, 'TNode expected');\n    componentDef.contentQueries(RenderFlags.Create, component, tNode.directiveStart);\n  }\n\n  const rootTNode =
getCurrentTNode()!;\n  ngDevMode && assertDefined(rootTNode, 'tNode should have been already created');\n  if
(tView.firstCreatePass &&\n    (componentDef.hostBindings !== null || componentDef.hostAttrs !== null)) {\n
setSelectedIndex(rootTNode.index);\n    const rootTView = rootLView[TVIEW];\n    registerHostBindingOpCodes(\n      rootTView, rootTNode, rootLView, rootTNode.directiveStart,\n      rootTNode.directiveEnd,\n      componentDef);\n\n    invokeHostBindingsInCreationMode(componentDef,\n      component);\n  }\n  return component;\n}\n\n\nexport function createRootContext(\n  scheduler?: (workFn: () =>
void) => void, playerHandler?: PlayerHandler|null): RootContext {\n  return {\n    components: [],\n    scheduler:
scheduler || defaultScheduler,\n    clean: CLEAN_PROMISE,\n    playerHandler: playerHandler || null,\n    flags:
RootContextFlags.Empty\n  };\n}\n\n/**\n * Used to enable lifecycle hooks on the root component.\n * Include
this feature when calling `renderComponent` if the root component\n * you are rendering has lifecycle hooks
defined. Otherwise, the hooks won't\n * be called properly.\n * Example:\n * ```\n *
renderComponent(AppComponent, {hostFeatures: [LifecycleHooksFeature]});\n * ```\n */\n\nexport function
LifecycleHooksFeature(component: any, def: ComponentDef<any>): void {\n  const IView =
readPatchedLView(component)!;\n  ngDevMode && assertDefined(IView, 'LView is required');\n  const tView =
IView[TVIEW];\n  const tNode = getCurrentTNode()!;\n  ngDevMode && assertDefined(tNode, 'TNode is
required');\n  registerPostOrderHooks(tView, tNode);\n}\n\n/**\n * Wait on component until it is rendered.\n * This
function returns a `Promise` which is resolved when the component's\n * change detection is executed. This is
determined\n * by finding the scheduler\n * associated with the `component`'s render tree and waiting until the
scheduler\n * flushes. If nothing is scheduled, the function returns a resolved promise.\n * Example:\n * ```\n *
await whenRendered(myComponent);\n * ```\n * @param component Component to wait upon\n * @returns
Promise which resolves when the component is rendered.\n */\n\nexport function whenRendered(component: any):
Promise<null> {\n  return getRootContext(component).clean;\n}\n\n", "/*\n * @license\n * Copyright Google LLC
All Rights Reserved.\n * Use of this source code is governed by an MIT-style license that can be\n * found in
the LICENSE file at https://angular.io/license\n */\n\nimport {Type, Writable} from './../interface/type';\nimport
{fillProperties} from './../util/property';\nimport {EMPTY_ARRAY, EMPTY_OBJ} from './empty';\nimport
{ComponentDef, ContentQueriesFunction, DirectiveDef, DirectiveDefFeature, HostBindingsFunction, RenderFlags,\n  ViewQueriesFunction} from './interfaces/definition';\nimport {TAttributes} from './interfaces/node';\nimport
{isComponentDef} from './interfaces/type_checks';\nimport {mergeHostAttrs} from './util/attrs_utils';\n\nexport

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function getSuperType(type: Type<any>): Type<any>&\n {cmp?: ComponentDef<any>, dir?:
DirectiveDef<any>} {\n return Object.getPrototypeOf(type.prototype).constructor;\n}\n\ntype WritableDef =
Writable<DirectiveDef<any>|ComponentDef<any>>;\n\n/**\n * Merges the definition from a super class to a sub
class.\n * @param definition The definition that is a SubClass of another directive of component\n *\n *
@codeGenApi\n */\nexport function InheritDefinitionFeature(definition:
DirectiveDef<any>|ComponentDef<any>): void {\n let superType = getSuperType(definition.type);\n let
shouldInheritFields = true;\n const inheritanceChain: WritableDef[] = [definition];\n\n while (superType) {\n let
superDef: DirectiveDef<any>|ComponentDef<any>|undefined = undefined;\n if (isComponentDef(definition)) {\n
// Don't use getComponentDef/getDirectiveDef. This logic relies on inheritance.\n superDef = superType.cmp
|| superType.dir;\n } else {\n if (superType.cmp) {\n throw new Error('Directives cannot inherit
Components');\n }\n // Don't use getComponentDef/getDirectiveDef. This logic relies on inheritance.\n
superDef = superType.dir;\n }\n\n if (superDef) {\n if (shouldInheritFields) {\n
inheritanceChain.push(superDef);\n // Some fields in the definition may be empty, if there were no values to put
in them that\n // would've justified object creation. Unwrap them if necessary.\n const writeableDef =
definition as WritableDef;\n writeableDef.inputs = maybeUnwrapEmpty(definition.inputs);\n
writeableDef.declaredInputs = maybeUnwrapEmpty(definition.declaredInputs);\n writeableDef.outputs =
maybeUnwrapEmpty(definition.outputs);\n\n // Merge hostBindings\n const superHostBindings =
superDef.hostBindings;\n superHostBindings && inheritHostBindings(definition, superHostBindings);\n\n
// Merge queries\n const superViewQuery = superDef.viewQuery;\n const superContentQueries =
superDef.contentQueries;\n superViewQuery && inheritViewQuery(definition, superViewQuery);\n
superContentQueries && inheritContentQueries(definition, superContentQueries);\n\n // Merge inputs and
outputs\n fillProperties(definition.inputs, superDef.inputs);\n fillProperties(definition.declaredInputs,
superDef.declaredInputs);\n fillProperties(definition.outputs, superDef.outputs);\n\n // Merge animations
metadata.\n // If `superDef` is a Component, the `data` field is present (defaults to an empty object).\n if
(isComponentDef(superDef) && superDef.data.animation) {\n // If super def is a Component, the `definition`
is also a Component, since Directives can\n // not inherit Components (we throw an error above and cannot
reach this code).\n const defData = (definition as ComponentDef<any>).data;\n defData.animation =
(defData.animation || []).concat(superDef.data.animation);\n }\n }\n\n // Run parent features\n const
features = superDef.features;\n if (features) {\n for (let i = 0; i < features.length; i++) {\n const feature
= features[i];\n if (feature && feature.ngInherit) {\n (feature as DirectiveDefFeature)(definition);\n
}\n // If `InheritDefinitionFeature` is a part of the current `superDef`, it means that this\n // def already
has all the necessary information inherited from its super class(es), so we\n // can stop merging fields from
super classes. However we need to iterate through the\n // prototype chain to look for classes that might
contain other `features` (like\n // NgOnChanges), which we should invoke for the original `definition`. We
set the\n // `shouldInheritFields` flag to indicate that, essentially skipping fields inheritance\n // logic and
only invoking functions from the `features` list.\n if (feature === InheritDefinitionFeature) {\n
shouldInheritFields = false;\n }\n }\n }\n\n superType = Object.getPrototypeOf(superType);\n
}\n\n mergeHostAttrsAcrossInheritance(inheritanceChain);\n}\n\n/**\n * Merge the `hostAttrs` and `hostVars` from
the inherited parent to the base class.\n *\n * @param inheritanceChain A list of `WritableDefs` starting at the top
most type and listing\n * sub-types in order. For each type take the `hostAttrs` and `hostVars` and merge it with the
child\n * type.\n */\nfunction mergeHostAttrsAcrossInheritance(inheritanceChain: WritableDef[]) {\n let hostVars:
number = 0;\n let hostAttrs: TAttributes|null = null;\n // We process the inheritance order from the base to the
leaves here.\n for (let i = inheritanceChain.length - 1; i >= 0; i--) {\n const def = inheritanceChain[i];\n // For
each `hostVars`, we need to add the superclass amount.\n def.hostVars = (hostVars += def.hostVars);\n // for
each `hostAttrs` we need to merge it with superclass.\n def.hostAttrs =\n mergeHostAttrs(def.hostAttrs,
hostAttrs = mergeHostAttrs(hostAttrs, def.hostAttrs));\n }\n}\n\nfunction maybeUnwrapEmpty<T>(value: T[]):
T[];\nfunction maybeUnwrapEmpty<T>(value: T): T;\nfunction maybeUnwrapEmpty(value: any): any {\n if (value
=== EMPTY_OBJ) {\n return {};\n } else if (value === EMPTY_ARRAY) {\n return [];\n } else {\n return

```



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Symbol.iterator) {\n  _symbolIterator = Symbol.iterator;\n } else {\n  // es6-shim specific logic\n  const
keys = Object.getOwnPropertyNames(Map.prototype);\n  for (let i = 0; i < keys.length; ++i) {\n    const key =
keys[i];\n    if (key !== 'entries' && key !== 'size' &&\n      (Map as any).prototype[key] ===
Map.prototype['entries']) {\n      _symbolIterator = key;\n    }\n  }\n }\n return
_symbolIterator;\n}\n"/**\n * @license\n * Copyright Google LLC All Rights Reserved.\n *\n * Use of this source
code is governed by an MIT-style license that can be\n * found in the LICENSE file at https://angular.io/license\n
*/\n\nimport {getSymbolIterator} from './util/symbol';\n\nexport function devModeEqual(a: any, b: any): boolean
{\n  const isListLikeIterableA = isListLikeIterable(a);\n  const isListLikeIterableB = isListLikeIterable(b);\n  if
(isListLikeIterableA && isListLikeIterableB) {\n    return areIterablesEqual(a, b, devModeEqual);\n  } else {\n
const isAObject = a && (typeof a === 'object' || typeof a === 'function');\n    const isBObject = b && (typeof b ===
'object' || typeof b === 'function');\n    if (!isListLikeIterableA && isAObject && !isListLikeIterableB &&
isBObject) {\n      return true;\n    } else {\n      return Object.is(a, b);\n    }\n  }\n}\n\n/**\n * Indicates that the result
of a {@link Pipe} transformation has changed even though the\n * reference has not changed.\n *\n * Wrapped
values are unwrapped automatically during the change detection, and the unwrapped value\n * is stored.\n *\n *
Example:\n *\n * ``\n * if (this._latestValue === this._latestReturnedValue) {\n *   return
this._latestReturnedValue;\n * } else {\n *   this._latestReturnedValue = this._latestValue;\n *   return
WrappedValue.wrap(this._latestValue); // this will force update\n * }\n * ``\n *\n * @publicApi\n * @deprecated
from v10 stop using. (No replacement, deemed unnecessary.)\n */\n\nexport class WrappedValue {\n  /**
@deprecated from 5.3, use `unwrap()` instead - will switch to protected\n  wrapped: any;\n\n  constructor(value:
any) {\n    this.wrapped = value;\n  }\n\n  /** Creates a wrapped value. *\n  static wrap(value: any): WrappedValue
{\n    return new WrappedValue(value);\n  }\n\n  /**\n   * Returns the underlying value of a wrapped value.\n   *
Returns the given `value` when it is not wrapped.\n   **\n  static unwrap(value: any): any {\n    return
WrappedValue.isWrapped(value) ? value.wrapped : value;\n  }\n\n  /** Returns true if `value` is a wrapped value.
*\n  static isWrapped(value: any): value is WrappedValue {\n    return value instanceof WrappedValue;\n  }\n}\n\n
export function isListLikeIterable(obj: any): boolean {\n  if (!isObject(obj)) return false;\n  return
Array.isArray(obj) ||\n    (!(obj instanceof Map) && // JS Map are iterables but return entries as [k, v]\n
getSymbolIterator() in obj); // JS Iterable have a Symbol.iterator prop\n}\n\nexport function areIterablesEqual(\n
a: any, b: any, comparator: (a: any, b: any) => boolean): boolean {\n  const iterator1 = a[getSymbolIterator()]();\n
const iterator2 = b[getSymbolIterator()]();\n\n  while (true) {\n    const item1 = iterator1.next();\n    const item2 =
iterator2.next();\n    if (item1.done && item2.done) return true;\n    if (item1.done || item2.done) return false;\n
if (!comparator(item1.value, item2.value)) return false;\n  }\n}\n\nexport function iterateListLike(obj: any, fn: (p: any)
=> any) {\n  if (Array.isArray(obj)) {\n    for (let i = 0; i < obj.length; i++) {\n      fn(obj[i]);\n    }\n  } else {\n
const iterator = obj[getSymbolIterator()]();\n    let item: any;\n    while (!((item = iterator.next()).done)) {\n
fn(item.value);\n    }\n  }\n}\n\nexport function isObject(o: any): boolean {\n  return o !== null && (typeof o ===
'function' || typeof o === 'object');\n}\n"/**\n * @license\n * Copyright Google LLC All Rights Reserved.\n *\n *
Use of this source code is governed by an MIT-style license that can be\n * found in the LICENSE file at
https://angular.io/license\n */\n\nimport {devModeEqual} from './change_detection/change_detection_util';\nimport
{assertIndexInRange, assertLessThan, assertNotSame} from './util/assert';\nimport
{getExpressionChangedErrorDetails, throwErrorIfNoChangesMode} from './errors';\nimport {LView} from
'./interfaces/view';\nimport {isInCheckNoChangesMode} from './state';\nimport {NO_CHANGE} from
'./tokens';\n\n// TODO(misko): consider inlining\n/** Updates binding and returns the value. *\nexport function
updateBinding(IView: LView, bindingIndex: number, value: any): any {\n  return IView[bindingIndex] =
value;\n}\n\n/** Gets the current binding value. *\nexport function getBinding(IView: LView, bindingIndex:
number): any {\n  ngDevMode && assertIndexInRange(IView, bindingIndex);\n  ngDevMode &&\n
assertNotSame(IView[bindingIndex], NO_CHANGE, 'Stored value should never be NO_CHANGE.);\n  return
IView[bindingIndex];\n}\n\n/**\n * Updates binding if changed, then returns whether it was updated.\n *\n * This
function also checks the `CheckNoChangesMode` and throws if changes are made.\n *\n * Some changes
(Objects/iterables) during `CheckNoChangesMode` are exempt to comply with VE\n * behavior.\n *\n * @param

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expressions at odd indexes.\n *\n * Returns the concatenated string when any of the arguments changes,
`NO_CHANGE` otherwise.\n */\nexport function interpolationV(IView: LView, values: any[]):
string|NO_CHANGE {\n  ngDevMode && assertLessThan(2, values.length, 'should have at least 3 values');\n
ngDevMode && assertEqual(values.length % 2, 1, 'should have an odd number of values');\n  let isBindingUpdated
= false;\n  let bindingIndex = getBindingIndex();\n\n  for (let i = 1; i < values.length; i += 2) {\n    // Check if
bindings (odd indexes) have changed\n    isBindingUpdated = bindingUpdated(IView, bindingIndex++, values[i]) ||
isBindingUpdated;\n  }\n  setBindingIndex(bindingIndex);\n\n  if (!isBindingUpdated) {\n    return
NO_CHANGE;\n  }\n\n  // Build the updated content\n  let content = values[0];\n  for (let i = 1; i < values.length; i
+= 2) {\n    content += renderStringify(values[i]) + values[i + 1];\n  }\n\n  return content;\n}\n\n/**\n * Creates an
interpolation binding with 1 expression.\n *\n * @param prefix static value used for concatenation only.\n *\n *
@param v0 value checked for change.\n *\n * @param suffix static value used for concatenation only.\n */\nexport
function interpolation1(IView: LView, prefix: string, v0: any, suffix: string): string|\n  NO_CHANGE {\n  const
different = bindingUpdated(IView, nextBindingIndex(), v0);\n  return different ? prefix + renderStringify(v0) +
suffix : NO_CHANGE;\n}\n\n/**\n * Creates an interpolation binding with 2 expressions.\n */\nexport function
interpolation2(\n  IView: LView, prefix: string, v0: any, i0: string, v1: any, suffix: string): string|\n  NO_CHANGE {\n
const bindingIndex = getBindingIndex();\n  const different = bindingUpdated2(IView, bindingIndex, v0, v1);\n
incrementBindingIndex(2);\n  return different ? prefix + renderStringify(v0) + i0 + renderStringify(v1) + suffix :
NO_CHANGE;\n}\n\n/**\n * Creates an interpolation binding with 3 expressions.\n */\nexport function
interpolation3(\n  IView: LView, prefix: string, v0: any, i0: string, v1: any, i1: string, v2: any,\n  suffix: string):
string|\n  NO_CHANGE {\n  const bindingIndex = getBindingIndex();\n  const different = bindingUpdated3(IView,
bindingIndex, v0, v1, v2);\n  incrementBindingIndex(3);\n  return different ?\n    prefix + renderStringify(v0) +
i0 + renderStringify(v1) + i1 + renderStringify(v2) + suffix :\n    NO_CHANGE;\n}\n\n/**\n * Create an
interpolation binding with 4 expressions.\n */\nexport function interpolation4(\n  IView: LView, prefix: string, v0:
any, i0: string, v1: any, i1: string, v2: any, i2: string,\n  v3: any, suffix: string): string|\n  NO_CHANGE {\n
const bindingIndex = getBindingIndex();\n  const different = bindingUpdated4(IView, bindingIndex, v0, v1, v2, v3);\n
incrementBindingIndex(4);\n  return different ? prefix + renderStringify(v0) + i0 + renderStringify(v1) + i1 +\n
renderStringify(v2) + i2 + renderStringify(v3) + suffix :\n    NO_CHANGE;\n}\n\n/**\n * Creates an
interpolation binding with 5 expressions.\n */\nexport function interpolation5(\n  IView: LView, prefix: string, v0:
any, i0: string, v1: any, i1: string, v2: any, i2: string,\n  v3: any, i3: string, v4: any, suffix: string):
string|\n  NO_CHANGE {\n  const bindingIndex = getBindingIndex();\n  let different = bindingUpdated4(IView,
bindingIndex, v0, v1, v2, v3);\n  different = bindingUpdated(IView, bindingIndex + 4, v4) || different;\n
incrementBindingIndex(5);\n  return different ? prefix + renderStringify(v0) + i0 + renderStringify(v1) + i1 +\n
renderStringify(v2) + i2 + renderStringify(v3) + i3 + renderStringify(v4) + suffix :\n    NO_CHANGE;\n}\n\n/**\n *
Creates an interpolation binding with 6 expressions.\n */\nexport function interpolation6(\n  IView: LView, prefix:
string, v0: any, i0: string, v1: any, i1: string, v2: any, i2: string,\n  v3: any, i3: string, v4: any, i4: string,
v5: any, suffix: string): string|\n  NO_CHANGE {\n  const bindingIndex =
getBindingIndex();\n  let different = bindingUpdated4(IView, bindingIndex, v0, v1, v2, v3);\n  different =
bindingUpdated2(IView, bindingIndex + 4, v4, v5) || different;\n  incrementBindingIndex(6);\n  return different
?\n    prefix + renderStringify(v0) + i0 + renderStringify(v1) + i1 + renderStringify(v2) + i2 +\n
renderStringify(v3) + i3 + renderStringify(v4) + i4 + renderStringify(v5) + suffix :\n    NO_CHANGE;\n}\n\n/**\n *
Creates an interpolation binding with 7 expressions.\n */\nexport function interpolation7(\n  IView: LView,
prefix: string, v0: any, i0: string, v1: any, i1: string, v2: any, i2: string,\n  v3: any, i3: string, v4: any, i4:
string, v5: any, i5: string, v6: any, suffix: string): string|\n  NO_CHANGE {\n  const bindingIndex =
getBindingIndex();\n  let different = bindingUpdated4(IView, bindingIndex, v0, v1, v2, v3);\n  different =
bindingUpdated3(IView, bindingIndex + 4, v4, v5, v6) || different;\n  incrementBindingIndex(7);\n  return different
?\n    prefix + renderStringify(v0) + i0 + renderStringify(v1) + i1 +\n
renderStringify(v2) + i2 + renderStringify(v3) + i3 + renderStringify(v4) + i4 +\n
renderStringify(v5) + i5 + renderStringify(v6) + suffix :\n    NO_CHANGE;\n}\n\n/**\n * Creates an interpolation
binding with 8 expressions.\n */\nexport function

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i0: string, v1: any, i1: string, v2: any,\n  suffix: string, sanitizer?: SanitizerFn, namespace?: string): typeof
attributeInterpolate3 {\n  const IView = getLView();\n  const interpolatedValue = interpolation3(IView, prefix, v0,
i0, v1, i1, v2, suffix);\n  if (interpolatedValue !== NO_CHANGE) {\n    const tNode = getSelectedTNode();\n    elementAttributeInternal(tNode, IView, attrName, interpolatedValue, sanitizer, namespace);\n    ngDevMode &&\n      storePropertyBindingMetadata(\n        getTView().data, tNode, 'attr.' + attrName, getBindingIndex() - 3, prefix,
i0, i1,\n        suffix);\n  }\n  return attributeInterpolate3;\n}\n\n/n/**\n * Update an interpolated attribute on an
element with 4 bound values surrounded by text.\n * Used when the value passed to a property has 4 interpolated
values in it:\n * \n * ``html\n * <div attr.title=\"prefix{{v0}}-{{v1}}-{{v2}}-{{v3}}suffix\"></div>\n * ``\n * \n * Its compiled representation is:\n * \n * ``ts\n * attributeInterpolate4(\n * 'title', 'prefix', v0, '-', v1, '-', v2, '-', v3,
'suffix');\n * ``\n * \n * @param attrName The name of the attribute to update\n * @param prefix Static value used
for concatenation only.\n * @param v0 Value checked for change.\n * @param i0 Static value used for
concatenation only.\n * @param v1 Value checked for change.\n * @param i1 Static value used for concatenation
only.\n * @param v2 Value checked for change.\n * @param i2 Static value used for concatenation only.\n *
@param v3 Value checked for change.\n * @param suffix Static value used for concatenation only.\n * @param
sanitizer An optional sanitizer function\n * @returns itself, so that it may be chained.\n * @codeGenApi\n
*/\n\nexport function attributeInterpolate4(\n  attrName: string, prefix: string, v0: any, i0: string, v1: any, i1: string,
v2: any, i2: string,\n  v3: any, suffix: string, sanitizer?: SanitizerFn,\n  namespace?: string): typeof
attributeInterpolate4 {\n  const IView = getLView();\n  const interpolatedValue = interpolation4(IView, prefix, v0,
i0, v1, i1, v2, i2, v3, suffix);\n  if (interpolatedValue !== NO_CHANGE) {\n    const tNode =
getSelectedTNode();\n    elementAttributeInternal(tNode, IView, attrName, interpolatedValue, sanitizer,
namespace);\n    ngDevMode &&\n      storePropertyBindingMetadata(\n        getTView().data, tNode, 'attr.' +
attrName, getBindingIndex() - 4, prefix, i0, i1, i2,\n        suffix);\n  }\n  return attributeInterpolate4;\n}\n\n/n/**\n * Update an interpolated attribute on an element with 5 bound values surrounded by text.\n * Used when the
value passed to a property has 5 interpolated values in it:\n * \n * ``html\n * <div attr.title=\"prefix{{v0}}-{{v1}}-
{{v2}}-{{v3}}-{{v4}}suffix\"></div>\n * ``\n * \n * Its compiled representation is:\n * \n * ``ts\n *
attributeInterpolate5(\n * 'title', 'prefix', v0, '-', v1, '-', v2, '-', v3, '-', v4, 'suffix');\n * ``\n * \n * @param attrName The
name of the attribute to update\n * @param prefix Static value used for concatenation only.\n * @param v0 Value
checked for change.\n * @param i0 Static value used for concatenation only.\n * @param v1 Value checked for
change.\n * @param i1 Static value used for concatenation only.\n * @param v2 Value checked for change.\n *
@param i2 Static value used for concatenation only.\n * @param v3 Value checked for change.\n * @param i3
Static value used for concatenation only.\n * @param v4 Value checked for change.\n * @param suffix Static value
used for concatenation only.\n * @param sanitizer An optional sanitizer function\n * @returns itself, so that it may
be chained.\n * @codeGenApi\n
*/\n\nexport function attributeInterpolate5(\n  attrName: string, prefix: string, v0:
any, i0: string, v1: any, i1: string, v2: any, i2: string,\n  v3: any, i3: string, v4: any, suffix: string, sanitizer?:
SanitizerFn,\n  namespace?: string): typeof attributeInterpolate5 {\n  const IView = getLView();\n  const
interpolatedValue =\n    interpolation5(IView, prefix, v0, i0, v1, i1, v2, i2, v3, i3, v4, suffix);\n  if
(interpolatedValue !== NO_CHANGE) {\n    const tNode = getSelectedTNode();\n    elementAttributeInternal(tNode, IView, attrName, interpolatedValue, sanitizer, namespace);\n    ngDevMode &&\n      storePropertyBindingMetadata(\n        getTView().data, tNode, 'attr.' + attrName, getBindingIndex() - 5, prefix,
i0, i1, i2,\n        i3, suffix);\n  }\n  return attributeInterpolate5;\n}\n\n/n/**\n * Update an interpolated attribute
on an element with 6 bound values surrounded by text.\n * Used when the value passed to a property has 6
interpolated values in it:\n * \n * ``html\n * <div attr.title=\"prefix{{v0}}-{{v1}}-{{v2}}-{{v3}}-{{v4}}-
{{v5}}suffix\"></div>\n * ``\n * \n * Its compiled representation is:\n * \n * ``ts\n * attributeInterpolate6(\n *
'title', 'prefix', v0, '-', v1, '-', v2, '-', v3, '-', v4, '-', v5, 'suffix');\n * ``\n * \n * @param attrName The name of the
attribute to update\n * @param prefix Static value used for concatenation only.\n * @param v0 Value checked for
change.\n * @param i0 Static value used for concatenation only.\n * @param v1 Value checked for change.\n *
@param i1 Static value used for concatenation only.\n * @param v2 Value checked for change.\n * @param i2
Static value used for concatenation only.\n * @param v3 Value checked for change.\n * @param i3 Static value

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used for concatenation only.\n * @param v4 Value checked for change.\n * @param i4 Static value used for concatenation only.\n * @param v5 Value checked for change.\n * @param suffix Static value used for concatenation only.\n * @param sanitizer An optional sanitizer function\n * @returns itself, so that it may be chained.\n * @codeGenApi\n */\nexport function attributeInterpolate6(\n attrName: string, prefix: string, v0: any, i0: string, v1: any, i1: string, v2: any, i2: string,\n v3: any, i3: string, v4: any, i4: string, v5: any, suffix: string, sanitizer?: SanitizerFn,\n namespace?: string): typeof attributeInterpolate6 {\n const IView = getLView();\n const interpolatedValue =\n interpolation6(IView, prefix, v0, i0, v1, i1, v2, i2, v3, i3, v4, i4, v5, suffix);\n if (interpolatedValue !== NO_CHANGE) {\n const tNode = getSelectedTNode();\n elementAttributeInternal(tNode, IView, attrName, interpolatedValue, sanitizer, namespace);\n ngDevMode &&\n storePropertyBindingMetadata(\n getTView().data, tNode, 'attr.' + attrName, getBindingIndex() - 6, prefix, i0, i1, i2,\n i3, i4, suffix);\n }\n return attributeInterpolate6;\n}\n\n/**\n * Update an interpolated attribute on an element with 7 bound values surrounded by text.\n * Used when the value passed to a property has 7 interpolated values in it:\n * ```html\n * <div attr.title=\"prefix{{v0}}-{{v1}}-{{v2}}-{{v3}}-{{v4}}-{{v5}}-{{v6}}suffix\"></div>\n * ```\n * Its compiled representation is:\n * ```ts\n * attributeInterpolate7(\n * 'title', 'prefix', v0, '-', v1, '-', v2, '-', v3, '-', v4, '-', v5, '-', v6, 'suffix');\n * ```\n * @param attrName The name of the attribute to update\n * @param prefix Static value used for concatenation only.\n * @param v0 Value checked for change.\n * @param i0 Static value used for concatenation only.\n * @param v1 Value checked for change.\n * @param i1 Static value used for concatenation only.\n * @param v2 Value checked for change.\n * @param i2 Static value used for concatenation only.\n * @param v3 Value checked for change.\n * @param i3 Static value used for concatenation only.\n * @param v4 Value checked for change.\n * @param i4 Static value used for concatenation only.\n * @param v5 Value checked for change.\n * @param i5 Static value used for concatenation only.\n * @param v6 Value checked for change.\n * @param suffix Static value used for concatenation only.\n * @param sanitizer An optional sanitizer function\n * @returns itself, so that it may be chained.\n * @codeGenApi\n */\nexport function attributeInterpolate7(\n attrName: string, prefix: string, v0: any, i0: string, v1: any, i1: string, v2: any, i2: string,\n v3: any, i3: string, v4: any, i4: string, v5: any, i5: string, v6: any, suffix: string,\n sanitizer?: SanitizerFn, namespace?: string): typeof attributeInterpolate7 {\n const IView = getLView();\n const interpolatedValue =\n interpolation7(IView, prefix, v0, i0, v1, i1, v2, i2, v3, i3, v4, i4, v5, i5, v6, suffix);\n if (interpolatedValue !== NO_CHANGE) {\n const tNode = getSelectedTNode();\n elementAttributeInternal(tNode, IView, attrName, interpolatedValue, sanitizer, namespace);\n ngDevMode &&\n storePropertyBindingMetadata(\n getTView().data, tNode, 'attr.' + attrName, getBindingIndex() - 7, prefix, i0, i1, i2,\n i3, i4, i5, suffix);\n }\n return attributeInterpolate7;\n}\n\n/**\n * Update an interpolated attribute on an element with 8 bound values surrounded by text.\n * Used when the value passed to a property has 8 interpolated values in it:\n * ```html\n * <div attr.title=\"prefix{{v0}}-{{v1}}-{{v2}}-{{v3}}-{{v4}}-{{v5}}-{{v6}}-{{v7}}suffix\"></div>\n * ```\n * Its compiled representation is:\n * ```ts\n * attributeInterpolate8(\n * 'title', 'prefix', v0, '-', v1, '-', v2, '-', v3, '-', v4, '-', v5, '-', v6, '-', v7, 'suffix');\n * ```\n * @param attrName The name of the attribute to update\n * @param prefix Static value used for concatenation only.\n * @param v0 Value checked for change.\n * @param i0 Static value used for concatenation only.\n * @param v1 Value checked for change.\n * @param i1 Static value used for concatenation only.\n * @param v2 Value checked for change.\n * @param i2 Static value used for concatenation only.\n * @param v3 Value checked for change.\n * @param i3 Static value used for concatenation only.\n * @param v4 Value checked for change.\n * @param i4 Static value used for concatenation only.\n * @param v5 Value checked for change.\n * @param i5 Static value used for concatenation only.\n * @param v6 Value checked for change.\n * @param i6 Static value used for concatenation only.\n * @param v7 Value checked for change.\n * @param suffix Static value used for concatenation only.\n * @param sanitizer An optional sanitizer function\n * @returns itself, so that it may be chained.\n * @codeGenApi\n */\nexport function attributeInterpolate8(\n attrName: string, prefix: string, v0: any, i0: string, v1: any, i1: string, v2: any, i2: string,\n v3: any, i3: string, v4: any, i4: string, v5: any, i5: string, v6: any, i6: string, v7: any,\n suffix: string, sanitizer?: SanitizerFn, namespace?: string): typeof attributeInterpolate8 {\n const IView = getLView();\n const interpolatedValue = interpolation8(\n IView, prefix, v0, i0, v1, i1, v2, i2, v3,


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tagName?: string|null, attrsIndex?: number|null, localRefsIndex?: number|null,\n  localRefExtractor?:
LocalRefExtractor) {\n  const lView = getLView();\n  const tView = getTView();\n  const adjustedIndex = index +
HEADER_OFFSET;\n  const tNode = tView.firstCreatePass ? templateFirstCreatePass(\n
  adjustedIndex, tView, lView, templateFn, decls, vars,\n
  tagName, attrsIndex,
localRefsIndex) :\n
  tView.data[adjustedIndex] as TContainerNode;\n
setCurrentTNode(tNode, false);\n  const comment = lView[RENDERER].createComment(ngDevMode ?
'container' : '');\n  appendChild(tView, lView, comment, tNode);\n  attachPatchData(comment, lView);\n  add
  addToViewTree(lView, lView[adjustedIndex] = createLContainer(comment, lView, comment, tNode));\n  if
(isDirectiveHost(tNode)) {\n    createDirectivesInstances(tView, lView, tNode);\n  }\n  if (localRefsIndex != null)
{\n    saveResolvedLocalsInData(lView, tNode, localRefExtractor);\n  }\n}\n"/**\n * Copyright
Google LLC All Rights Reserved.\n * Use of this source code is governed by an MIT-style license that can be\n
 * found in the LICENSE file at https://angular.io/license\n */\nimport {HEADER_OFFSET, LView, TView} from
'./interfaces/view';\nimport {getContextLView} from './state';\nimport {load} from './util/view_utils';\n\n/**
Store a value in the `data` at a given `index`. */\nexport function store<T>(tView: TView, lView: LView, index:
number, value: T): void {\n  // We don't store any static data for local variables, so the first time\n
  // we see the template, we should store as null to avoid a sparse array\n  if (index >= tView.data.length) {\n
    tView.data[index] =
null;\n    tView.blueprint[index] = null;\n  }\n  lView[index] = value;\n}\n\n/**\n * Retrieves a local reference from
the current contextViewData.\n * If the reference to retrieve is in a parent view, this instruction is used in
conjunction\n * with a nextContext() call, which walks up the tree and updates the contextViewData instance.\n
 * @param index The index of the local ref in contextViewData.\n * @codeGenApi\n */\nexport function
reference<T>(index: number) {\n  const contextLView = getContextLView();\n  return load<T>(contextLView,
HEADER_OFFSET + index);\n}\n"/**\n * Copyright Google LLC All Rights Reserved.\n * Use
of this source code is governed by an MIT-style license that can be\n * found in the LICENSE file at
https://angular.io/license\n */\nimport {Type} from './../interface/type';\nimport {isForwardRef,
resolveForwardRef} from './forward_ref';\nimport {inject, invalidFactoryDep} from
'./injector_compatibility';\nimport {getInjectableDef, getInjectorDef, defineInjectable, defineInjector} from
'./interface/defs';\n\n/**\n * A mapping of the @angular/core API surface used in generated expressions to the
actual symbols.\n * This should be kept up to date with the public exports of @angular/core.\n */\nexport const
angularCoreDiEnv: {[name: string]: Function} = {\n  'defineInjectable': defineInjectable,\n  'defineInjector':
defineInjector,\n  'inject': inject,\n  'getFactoryOf': getFactoryOf,\n  'invalidFactoryDep':
invalidFactoryDep,\n};\n\nfunction getFactoryOf<T>(type: Type<any>): ((type?: Type<T>) => T)|null {\n  const
typeAny = type as any;\n  if (isForwardRef(type)) {\n    return () => {\n      const factory =
getFactoryOf<T>(resolveForwardRef(typeAny));\n      return factory ? factory() : null;\n    }\n  } as any;\n
}\n\nconst def = getInjectableDef<T>(typeAny) || getInjectorDef<T>(typeAny);\n  if (!def || def.factory ===
undefined) {\n    return null;\n  }\n  return def.factory;\n}\n"/**\n * Copyright Google LLC All
Rights Reserved.\n * Use of this source code is governed by an MIT-style license that can be\n * found in the
LICENSE file at https://angular.io/license\n */\nimport {getCompilerFacade, R3InjectableMetadataFacade} from
'./../compiler/compiler_facade';\nimport {Type} from './../interface/type';\nimport {NG_FACTORY_DEF} from
'./../render3/fields';\nimport {getClosureSafeProperty} from './../util/property';\nimport {resolveForwardRef} from
'./forward_ref';\nimport {Injectable} from './injectable';\nimport {NG_PROV_DEF} from
'./interface/defs';\nimport {ClassSansProvider, ExistingSansProvider, FactorySansProvider, ValueProvider,
ValueSansProvider} from './interface/provider';\nimport {angularCoreDiEnv} from './environment';\nimport
{convertDependencies, reflectDependencies} from './util';\n\n/**\n * Compile an Angular injectable according
to its `Injectable` metadata, and patch the resulting\n * injectable def (`prov`) onto the injectable type.\n
 */\nexport function compileInjectable(type: Type<any>, srcMeta?: Injectable): void {\n  let ngInjectableDef: any =
null;\n  let ngFactoryDef: any = null;\n  // if NG_PROV_DEF is already defined on this class then don't overwrite it\n
  if (!type.hasOwnProperty(NG_PROV_DEF)) {\n    Object.defineProperty(type, NG_PROV_DEF, {\n      get: () =>
{\n        if (ngInjectableDef === null) {\n          ngInjectableDef = getCompilerFacade().compileInjectable(\n

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angularCoreDiEnv, `ng://${type.name}/prov.js`,\n      getInjectableMetadata(type, srcMeta);\n    }\n    return ngInjectableDef;\n  },\n  });\n}\n\n // if NG_FACTORY_DEF is already defined on this class then don't\n // overwrite it\n if (!type.hasOwnProperty(NG_FACTORY_DEF)) {\n   Object.defineProperty(type,\n     NG_FACTORY_DEF, {\n       get: () => {\n         if (ngFactoryDef === null) {\n           const metadata =\n             getInjectableMetadata(type, srcMeta);\n           const compiler = getCompilerFacade();\n           ngFactoryDef =\n             compiler.compileFactory(angularCoreDiEnv, `ng://${type.name}/fac.js`, {\n               name: metadata.name,\n               type: metadata.type,\n               typeArgumentCount: metadata.typeArgumentCount,\n               deps:\n                 reflectDependencies(type),\n               injectFn: 'inject',\n               target: compiler.R3FactoryTarget.Injectable\n             });\n         }\n         return ngFactoryDef;\n       },\n       // Leave this configurable so that the factories from directives or\n       // pipes can take precedence.\n       configurable: true\n     });\n  }\n}\n\ntype UseClassProvider =\n  Injectable&ClassSansProvider&{deps?: any[]};\n\nconst USE_VALUE =\n  getClosureSafeProperty<ValueProvider>({provide: String, useValue: getClosureSafeProperty});\n\nfunction\n  isUseClassProvider(meta: Injectable): meta is UseClassProvider {\n    return (meta as UseClassProvider).useClass\n      !== undefined;\n  }\n\nfunction isUseValueProvider(meta: Injectable): meta is Injectable&ValueSansProvider {\n    return USE_VALUE in meta;\n  }\n\nfunction isUseFactoryProvider(meta: Injectable): meta is\n  Injectable&FactorySansProvider {\n    return (meta as FactorySansProvider).useFactory !==\n      undefined;\n  }\n\nfunction isUseExistingProvider(meta: Injectable): meta is Injectable&ExistingSansProvider {\n    return (meta as ExistingSansProvider).useExisting !==\n      undefined;\n  }\n\nfunction getInjectableMetadata(type:\n  Type<any>, srcMeta?: Injectable): R3InjectableMetadataFacade {\n  // Allow the compilation of a class with a\n  // `@Injectable()` decorator without parameters\n  const meta: Injectable = srcMeta || {providedIn: null};\n  const\n    compilerMeta: R3InjectableMetadataFacade = {\n      name: type.name,\n      type: type,\n      typeArgumentCount: 0,\n      providedIn: meta.providedIn,\n      userDeps: undefined,\n    };\n  if ((isUseClassProvider(meta) ||\n    isUseFactoryProvider(meta)) && meta.deps !== undefined) {\n    compilerMeta.userDeps =\n      convertDependencies(meta.deps);\n  }\n  if (isUseClassProvider(meta)) {\n    // The user explicitly specified\n    // useClass, and may or may not have provided deps.\n    compilerMeta.useClass =\n      resolveForwardRef(meta.useClass);\n  } else if (isUseValueProvider(meta)) {\n    // The user explicitly specified\n    // useValue.\n    compilerMeta.useValue = resolveForwardRef(meta.useValue);\n  } else if\n    (isUseFactoryProvider(meta)) {\n    // The user explicitly specified useFactory.\n    compilerMeta.useFactory =\n      meta.useFactory;\n  } else if (isUseExistingProvider(meta)) {\n    // The user explicitly specified useExisting.\n    compilerMeta.useExisting = resolveForwardRef(meta.useExisting);\n  }\n  return compilerMeta;\n}\n\n"/**\n * @license\n * Copyright Google LLC All Rights Reserved.\n * Use of this source code is governed by an MIT-\n * style license that can be\n * found in the LICENSE file at https://angular.io/license\n */\n\nimport {Type} from\n  './interface/type';\nimport {ReflectionCapabilities} from\n  './reflection/reflection_capabilities';\nimport\n  {getClosureSafeProperty} from\n  './util/property';\nimport {resolveForwardRef} from\n  './forward_ref';\nimport\n  {injectArgs, inject} from\n  './injector_compatibility';\nimport {ClassSansProvider, ConstructorSansProvider,\n  ExistingSansProvider, FactorySansProvider, StaticClassSansProvider, ValueProvider, ValueSansProvider} from\n  './interface/provider';\n\nconst USE_VALUE =\n  getClosureSafeProperty<ValueProvider>({provide: String,\n    useValue: getClosureSafeProperty});\n\nconst EMPTY_ARRAY: any[] = [];\n\nexport function\n  convertInjectableProviderToFactory(\n    type: Type<any>,\n    provider?:\n      ValueSansProvider|ExistingSansProvider|StaticClassSansProvider|\n      ConstructorSansProvider|FactorySansProvider|ClassSansProvider): () => any {\n    if (!provider) {\n      const\n        reflectionCapabilities = new ReflectionCapabilities();\n      const\n        deps = reflectionCapabilities.parameters(type);\n      //\n      // TODO - convert to flags.\n      return () => new type(...injectArgs(deps as any[]));\n    }\n    if (USE_VALUE in\n      provider) {\n      const\n        valueProvider = (provider as ValueSansProvider);\n      return () => valueProvider.useValue;\n    }\n    else if ((provider as ExistingSansProvider).useExisting) {\n      const\n        existingProvider = (provider as\n          ExistingSansProvider);\n      return () => inject(resolveForwardRef(existingProvider.useExisting));\n    }\n    else if\n      ((provider as FactorySansProvider).useFactory) {\n      const\n        factoryProvider = (provider as FactorySansProvider);\n      return () => factoryProvider.useFactory(...injectArgs(factoryProvider.deps ||\n        EMPTY_ARRAY));\n    }\n    else if

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((provider as StaticClassSansProvider | ClassSansProvider).useClass) {\n  const classProvider = (provider as
StaticClassSansProvider | ClassSansProvider);\n  let deps = (provider as StaticClassSansProvider).deps;\n  if
(!deps) {\n    const reflectionCapabilities = new ReflectionCapabilities();\n    deps =
reflectionCapabilities.parameters(type);\n  }\n  return () => new
(resolveForwardRef(classProvider.useClass))(...injectArgs(deps));\n } else {\n  let deps = (provider as
ConstructorSansProvider).deps;\n  if (!deps) {\n    const reflectionCapabilities = new ReflectionCapabilities();\n
deps = reflectionCapabilities.parameters(type);\n  }\n  return () => new type(...injectArgs(deps!);\n
}\n}\n", "/*\n * @license\n * Copyright Google LLC All Rights Reserved.\n * \n * Use of this source code is
governed by an MIT-style license that can be\n * found in the LICENSE file at https://angular.io/license\n
*\n\nimport {Type} from './interface/type';\nimport {makeDecorator, TypeDecorator} from
'./util/decorators';\nimport {getInjectableDef, InjectableType, defineInjectable} from './interface/defs';\nimport
{ClassSansProvider, ConstructorSansProvider, ExistingSansProvider, FactorySansProvider,
StaticClassSansProvider, ValueSansProvider} from './interface/provider';\nimport {compileInjectable as
render3CompileInjectable} from './jit/injectable';\nimport {convertInjectableProviderToFactory} from
'./util';\n\n\n/**\n * Injectable providers used in `@Injectable` decorator.\n * \n * @publicApi\n * \n\nexport type
InjectableProvider = ValueSansProvider|ExistingSansProvider|StaticClassSansProvider|\n
ConstructorSansProvider|FactorySansProvider|ClassSansProvider;\n\n/**\n * Type of the Injectable decorator /
constructor function.\n * \n * @publicApi\n * \n\nexport interface InjectableDecorator {\n /**\n * Decorator that
marks a class as available to be\n * provided and injected as a dependency.\n * \n * @see [Introduction to
Services and DI](guide/architecture-services)\n * @see [Dependency Injection Guide](guide/dependency-
injection)\n * \n * @usageNotes\n * \n * Marking a class with `@Injectable` ensures that the compiler\n * will
generate the necessary metadata to create the class's\n * dependencies when the class is injected.\n * \n * The
following example shows how a service class is properly\n * marked so that a supporting service can be injected
upon creation.\n * \n * <code-example path="core/di/ts/metadata_spec.ts" region="Injectable"></code-
example>\n * \n * \n\n(): TypeDecorator;\n (options?: {providedIn: Type<any>|'root'|'platform'|'any'|null}&\n
InjectableProvider): TypeDecorator;\n new(): Injectable;\n new(options?: {providedIn:
Type<any>|'root'|'platform'|'any'|null}&\n  InjectableProvider): Injectable;\n}\n\n/**\n * Type of the Injectable
metadata.\n * \n * @publicApi\n * \n\nexport interface Injectable {\n /**\n * Determines which injectors will
provide the injectable,\n * by either associating it with an `@NgModule` or other `InjectorType`,\n * or by
specifying that this injectable should be provided in one of the following injectors:\n * - 'root': The application-
level injector in most apps.\n * - 'platform': A special singleton platform injector shared by all\n * applications on
the page.\n * - 'any': Provides a unique instance in each lazy loaded module while all eagerly loaded\n * modules
share one instance.\n * \n * \n\n providedIn?: Type<any>|'root'|'platform'|'any'|null;\n}\n\n/**\n * Injectable
decorator and metadata.\n * \n * @Annotation\n * @publicApi\n * \n\nexport const Injectable: InjectableDecorator =
makeDecorator(\n  'Injectable', undefined, undefined, undefined,\n  (type: Type<any>, meta: Injectable) =>
SWITCH_COMPILE_INJECTABLE(type as any, meta));\n\n\n/**\n * Supports @Injectable() in JIT mode for
Render2.\n * \n\nfunction render2CompileInjectable(\n  injectableType: Type<any>,\n  options?: {providedIn?:
Type<any>|'root'|'platform'|'any'|null}&InjectableProvider): void {\n  if (options && options.providedIn !==
undefined && !getInjectableDef(injectableType)) {\n    (injectableType as InjectableType<any>).prov =
defineInjectable({\n      token: injectableType,\n      providedIn: options.providedIn,\n      factory:
convertInjectableProviderToFactory(injectableType, options),\n    });\n  }\n}\n\n\nexport const
SWITCH_COMPILE_INJECTABLE__POST_R3__ = render3CompileInjectable;\nconst
SWITCH_COMPILE_INJECTABLE__PRE_R3__ = render2CompileInjectable;\nconst
SWITCH_COMPILE_INJECTABLE: typeof render3CompileInjectable =\n
SWITCH_COMPILE_INJECTABLE__PRE_R3__;\n", "/*\n * @license\n * Copyright Google LLC All Rights
Reserved.\n * \n * Use of this source code is governed by an MIT-style license that can be\n * found in the
LICENSE file at https://angular.io/license\n * \n\nimport {Type} from './interface/type';\nimport
{ERROR_ORIGINAL_ERROR, wrappedError} from './util/errors';\nimport {stringify} from

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runtime.\n * }\n *\n * expect() => Injector.resolveAndCreate([A,B])).toThrowError();\n * ```\n *\n *\n * ^\n * export
function noAnnotationError(typeOrFunc: Type<any>|Function, params: any[][]): Error {\n const signature: string[]
= [];\n for (let i = 0, ii = params.length; i < ii; i++) {\n const parameter = params[i];\n if (!parameter ||
parameter.length === 0) {\n signature.push('?');\n } else {\n signature.push(parameter.map(stringify).join('
'));\n }\n }\n return Error(\n 'Cannot resolve all parameters for \'' + stringify(typeOrFunc) + '\'' +\n
signature.join(', ') + ').'\n * Make sure that all the parameters are decorated with Inject or have valid type
annotations and that \'' +\n * stringify(typeOrFunc) + '\'' is decorated with Injectable.);\n *\n *\n * Thrown
when getting an object by index.\n *\n * @usageNotes\n * ### Example\n *\n * ```\n * typescript\n * class A {\n *\n *
var injector = Injector.resolveAndCreate([A]);\n *\n * expect(() => injector.getAt(100)).toThrowError();\n * ```\n *\n *
* ^\n * export function outOfBoundsError(index: number) {\n return Error(`Index ${index} is out-of-
bounds.`);\n *\n *\n * // TODO: add a working example after alpha38 is released\n *\n * Thrown when a multi provider
and a regular provider are bound to the same token.\n *\n * @usageNotes\n * ### Example\n *\n * ```\n * typescript\n *
expect(() => Injector.resolveAndCreate([\n * { provide: `Strings`, useValue: `string1`, multi: true },\n * {
provide: `Strings`, useValue: `string2`, multi: false }\n * ])).toThrowError();\n * ```\n *\n * ^\n * export function
mixingMultiProvidersWithRegularProvidersError(\n * provider1: any, provider2: any): Error {\n return
Error(`Cannot mix multi providers and regular providers, got: ${provider1} ${provider2}`);\n *\n *\n * `"/**\n *
@license\n * Copyright Google LLC All Rights Reserved.\n *\n * Use of this source code is governed by an MIT-
style license that can be\n * found in the LICENSE file at https://angular.io/license\n *\n * ^\n * \n * import {stringify} from
'./util/stringify';\n * import {resolveForwardRef} from './forward_ref';\n *\n * A unique object used for retrieving
items from the { @link ReflectiveInjector}.\n *\n * Keys have:\n * - a system-wide unique `id`.\n * - a `token`.\n *\n *
`Key` is used internally by { @link ReflectiveInjector} because its system-wide unique `id` allows\n * the\n *
injector to store created objects in a more efficient way.\n *\n * `Key` should not be created directly. { @link
ReflectiveInjector} creates keys automatically when\n * resolving\n * providers.\n *\n * @deprecated No
replacement\n * @publicApi\n * ^\n * export class ReflectiveKey {\n * public readonly displayName: string;\n * /**\n *
Private\n * ^\n * constructor(public token: Object, public id: number) {\n * if (!token) {\n * throw new Error(`Token
must be defined!`);\n * }\n * this.displayName = stringify(this.token);\n * }\n *\n * /**\n * Retrieves a `Key` for a
token.\n * ^\n * static get(token: Object): ReflectiveKey {\n * return
_globalKeyRegistry.get(resolveForwardRef(token));\n * }\n *\n * /**\n * @returns the number of keys registered in the
system.\n * ^\n * static get numberOfKeys(): number {\n * return _globalKeyRegistry.numberOfKeys;\n *
}\n *\n * ^\n * export class KeyRegistry {\n * private _allKeys = new Map<Object, ReflectiveKey>();\n *\n * get(token:
Object): ReflectiveKey {\n * if (token instanceof ReflectiveKey) return token;\n * if (this._allKeys.has(token)) {\n *
return this._allKeys.get(token)!;\n * }\n *\n * const newKey = new ReflectiveKey(token,
ReflectiveKey.numberOfKeys);\n * this._allKeys.set(token, newKey);\n * return newKey;\n * }\n *\n * get
numberOfKeys(): number {\n * return this._allKeys.size;\n * }\n *\n * const _globalKeyRegistry = new
KeyRegistry();\n * `"/**\n * @license\n * Copyright Google LLC All Rights Reserved.\n *\n * Use of this source
code is governed by an MIT-style license that can be\n * found in the LICENSE file at https://angular.io/license\n *
*\n * ^\n * \n * import {Type} from './interface/type';\n * import {PlatformReflectionCapabilities} from
'./platform_reflection_capabilities';\n * import {GetterFn, MethodFn, SetterFn} from './types';\n *\n * export
{PlatformReflectionCapabilities};\n * export {GetterFn, MethodFn, SetterFn};\n *\n * /**\n * Provides access to reflection
data about symbols. Used internally by Angular\n * to power dependency injection and compilation.\n * ^\n * export
class Reflector {\n * constructor(public reflectionCapabilities: PlatformReflectionCapabilities) {\n *\n *
updateCapabilities(caps: PlatformReflectionCapabilities) {\n * this.reflectionCapabilities = caps;\n * }\n *\n *
factory(type: Type<any>): Function {\n * return this.reflectionCapabilities.factory(type);\n * }\n *\n *
parameters(typeOrFunc: Type<any>): any[][] {\n * return this.reflectionCapabilities.parameters(typeOrFunc);\n *
}\n *\n * annotations(typeOrFunc: Type<any>): any[] {\n * return
this.reflectionCapabilities.annotations(typeOrFunc);\n * }\n *\n * propMetadata(typeOrFunc: Type<any>): {[key:
string]: any[]} {\n * return this.reflectionCapabilities.propMetadata(typeOrFunc);\n * }\n *\n * hasLifecycleHook(type:
any, lcProperty: string): boolean {\n * return this.reflectionCapabilities.hasLifecycleHook(type, lcProperty);\n *
}\n *\n *

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resolvedDeps = _EMPTY_LIST;\n }\n return new ResolvedReflectiveFactory(factoryFn,
resolvedDeps);\n}\n\n/**\n * Converts the `Provider` into `ResolvedProvider`.\n *\n * `Injector` internally only uses
`ResolvedProvider`, `Provider` contains convenience provider\n * syntax.\n */\nfunction
resolveReflectiveProvider(provider: NormalizedProvider): ResolvedReflectiveProvider {\n return new
ResolvedReflectiveProvider_(\n ReflectiveKey.get(provider.provide), [resolveReflectiveFactory(provider)],\n
provider.multi || false);\n}\n\n/**\n * Resolve a list of Providers.\n */\nexport function
resolveReflectiveProviders(providers: Provider[]): ResolvedReflectiveProvider[] {\n const normalized =
_normalizeProviders(providers, []);\n const resolved = normalized.map(resolveReflectiveProvider);\n const
resolvedProviderMap = mergeResolvedReflectiveProviders(resolved, new Map());\n return
Array.from(resolvedProviderMap.values());\n}\n\n/**\n * Merges a list of ResolvedProviders into a list where each
key is contained exactly once and\n * multi providers have been merged.\n */\nexport function
mergeResolvedReflectiveProviders(\n providers: ResolvedReflectiveProvider[],\n normalizedProvidersMap:
Map<number, ResolvedReflectiveProvider>):\n Map<number, ResolvedReflectiveProvider> {\n for (let i = 0; i <
providers.length; i++) {\n const provider = providers[i];\n const existing =
normalizedProvidersMap.get(provider.key.id);\n if (existing) {\n if (provider.multiProvider !==
existing.multiProvider) {\n throw mixingMultiProvidersWithRegularProvidersError(existing, provider);\n
}\n if (provider.multiProvider) {\n for (let j = 0; j < provider.resolvedFactories.length; j++) {\n
existing.resolvedFactories.push(provider.resolvedFactories[j]);\n }\n } else {\n
normalizedProvidersMap.set(provider.key.id, provider);\n }\n } else {\n let resolvedProvider:
ResolvedReflectiveProvider;\n if (provider.multiProvider) {\n resolvedProvider = new
ResolvedReflectiveProvider_(\n provider.key, provider.resolvedFactories.slice(), provider.multiProvider);\n
} else {\n resolvedProvider = provider;\n }\n normalizedProvidersMap.set(provider.key.id,
resolvedProvider);\n }\n }\n }\n return normalizedProvidersMap;\n}\n\nfunction _normalizeProviders(\n providers:
Provider[], res: NormalizedProvider[]): NormalizedProvider[] {\n providers.forEach(b => {\n if (b instanceof
Type) {\n res.push({provide: b, useClass: b} as NormalizedProvider);\n\n } else if (b && typeof b === 'object'
&& (b as any).provide !== undefined) {\n res.push(b as NormalizedProvider);\n\n } else if (Array.isArray(b))
{\n _normalizeProviders(b, res);\n\n } else {\n throw invalidProviderError(b);\n }\n });\n\n return
res;\n}\n\nexport function constructDependencies(\n typeOrFunc: any, dependencies?: any[]):
ReflectiveDependency[] {\n if (!dependencies) {\n return _dependenciesFor(typeOrFunc);\n } else {\n const
params: any[][] = dependencies.map(t => [t]);\n return dependencies.map(t => _extractToken(typeOrFunc, t,
params));\n }\n}\n\nfunction _dependenciesFor(typeOrFunc: any): ReflectiveDependency[] {\n const params =
reflector.parameters(typeOrFunc);\n\n if (!params) return [];\n if (params.some(p => p == null)) {\n throw
noAnnotationError(typeOrFunc, params);\n }\n\n return params.map(p => _extractToken(typeOrFunc, p,
params));\n}\n\nfunction _extractToken(\n typeOrFunc: any, metadata: any[]|any, params: any[][]):
ReflectiveDependency {\n let token: any = null;\n let optional = false;\n\n if (!Array.isArray(metadata)) {\n if
(metadata instanceof Inject) {\n return _createDependency(metadata.token, optional, null);\n } else {\n
return _createDependency(metadata, optional, null);\n }\n }\n\n let visibility: Self|SkipSelf|null = null;\n\n for
(let i = 0; i < metadata.length; ++i) {\n const paramMetadata = metadata[i];\n\n if (paramMetadata instanceof
Type) {\n token = paramMetadata;\n\n } else if (paramMetadata instanceof Inject) {\n token =
paramMetadata.token;\n\n } else if (paramMetadata instanceof Optional) {\n optional = true;\n\n } else if
(paramMetadata instanceof Self || paramMetadata instanceof SkipSelf) {\n visibility = paramMetadata;\n } else
if (paramMetadata instanceof InjectionToken) {\n token = paramMetadata;\n }\n }\n\n token =
resolveForwardRef(token);\n\n if (token != null) {\n return _createDependency(token, optional, visibility);\n }
else {\n throw noAnnotationError(typeOrFunc, params);\n }\n}\n\nfunction _createDependency(\n token: any,
optional: boolean, visibility: Self|SkipSelf|null): ReflectiveDependency {\n return new
ReflectiveDependency(ReflectiveKey.get(token), optional, visibility);\n}\n\n"/**\n * @license\n * Copyright
Google LLC All Rights Reserved.\n *\n * Use of this source code is governed by an MIT-style license that can be\n
* found in the LICENSE file at https://angular.io/license\n */\n\nimport {Injector} from './injector';\nimport

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{THROW_IF_NOT_FOUND} from './injector_compatibility';\nimport {Provider} from
 './interface/provider';\nimport {Self, SkipSelf} from './metadata';\nimport {cyclicDependencyError,
 instantiationError, noProviderError, outOfBoundsError} from './reflective_errors';\nimport {ReflectiveKey} from
 './reflective_key';\nimport {ReflectiveDependency, ResolvedReflectiveFactory, ResolvedReflectiveProvider,
 resolveReflectiveProviders} from './reflective_provider';\n\n// Threshold for the dynamic version\nconst
 UNDEFINED = {};\n\n/**\n * A ReflectiveDependency injection container used for instantiating objects and
 resolving\n * dependencies.\n *\n * An `Injector` is a replacement for a `new` operator, which can automatically
 resolve the\n * constructor dependencies.\n *\n * In typical use, application code asks for the dependencies in the
 constructor and they are\n * resolved by the `Injector`.\n *\n * @usageNotes\n * ### Example\n *\n * The following
 example creates an `Injector` configured to create `Engine` and `Car`.\n *\n * ```typescript\n * @Injectable()\n *
 class Engine {\n * }\n *\n * @Injectable()\n * class Car {\n *   constructor(public engine:Engine) {}\n * }\n *\n *
 var injector = ReflectiveInjector.resolveAndCreate([Car, Engine]);\n * var car = injector.get(Car);\n * expect(car
 instanceof Car).toBe(true);\n * expect(car.engine instanceof Engine).toBe(true);\n * ```\n *\n * Notice, we don't use
 the `new` operator because we explicitly want to have the `Injector` resolve all of the object's dependencies
 automatically.\n *\n * @deprecated from v5 - slow and brings in a lot of code, Use `Injector.create` instead.\n *
 @publicApi\n */\nexport abstract class ReflectiveInjector implements Injector {\n /**\n * Turns an array of
 provider definitions into an array of resolved providers.\n *\n * A resolution is a process of flattening multiple
 nested arrays and converting individual\n * providers into an array of `ResolvedReflectiveProvider`s.\n *\n *
 @usageNotes\n * ### Example\n *\n * ```typescript\n * @Injectable()\n * class Engine {\n * }\n *\n *
 @Injectable()\n * class Car {\n *   constructor(public engine:Engine) {}\n * }\n *\n * var providers =
 ReflectiveInjector.resolve([Car, [Engine]]);\n *\n * expect(providers.length).toEqual(2);\n *\n *
 expect(providers[0] instanceof ResolvedReflectiveProvider).toBe(true);\n *\n *
 expect(providers[0].key.displayName).toBe("Car");\n *\n * expect(providers[0].dependencies.length).toEqual(1);\n *
 expect(providers[0].factory).toBeDefined();\n *\n * expect(providers[1].key.displayName).toBe("Engine");\n *
 });\n * ```\n *\n * @n static resolve(providers: Provider[]): ResolvedReflectiveProvider[] {\n return
 resolveReflectiveProviders(providers);\n }\n /**\n * Resolves an array of providers and creates an injector from
 those providers.\n *\n * The passed-in providers can be an array of `Type`, `Provider`,\n * or a recursive array of
 more providers.\n *\n * @usageNotes\n * ### Example\n *\n * ```typescript\n * @Injectable()\n * class
 Engine {\n * }\n *\n * @Injectable()\n * class Car {\n *   constructor(public engine:Engine) {}\n * }\n *\n *
 var injector = ReflectiveInjector.resolveAndCreate([Car, Engine]);\n * expect(injector.get(Car) instanceof
 Car).toBe(true);\n * ```\n *\n * @n static resolveAndCreate(providers: Provider[], parent?: Injector): ReflectiveInjector
 {\n const ResolvedReflectiveProviders = ReflectiveInjector.resolve(providers);\n return
 ReflectiveInjector.fromResolvedProviders(ResolvedReflectiveProviders, parent);\n }\n /**\n * Creates an
 injector from previously resolved providers.\n *\n * This API is the recommended way to construct injectors in
 performance-sensitive parts.\n *\n * @usageNotes\n * ### Example\n *\n * ```typescript\n * @Injectable()\n *
 class Engine {\n * }\n *\n * @Injectable()\n * class Car {\n *   constructor(public engine:Engine) {}\n *
 }\n *\n * var providers = ReflectiveInjector.resolve([Car, Engine]);\n * var injector =
 ReflectiveInjector.fromResolvedProviders(providers);\n * expect(injector.get(Car) instanceof Car).toBe(true);\n *
 ```\n *\n * @n static fromResolvedProviders(providers: ResolvedReflectiveProvider[], parent?: Injector):\n
 ReflectiveInjector {\n return new ReflectiveInjector_(providers, parent);\n }\n\n /**\n * Parent of this
 injector.\n *\n * <!-- TODO: Add a link to the section of the user guide talking about hierarchical injection.\n * -
-->\n * @n abstract get parent(): Injector|null;\n\n /**\n * Resolves an array of providers and creates a child
 injector from those providers.\n *\n * <!-- TODO: Add a link to the section of the user guide talking about
 hierarchical injection.\n * -->\n *\n * The passed-in providers can be an array of `Type`, `Provider`,\n * or a
 recursive array of more providers.\n *\n * @usageNotes\n * ### Example\n *\n * ```typescript\n * class
 ParentProvider {}\n * class ChildProvider {\n * }\n *\n * var parent =
 ReflectiveInjector.resolveAndCreate([ParentProvider]);\n * var child =
 parent.resolveAndCreateChild([ChildProvider]);\n *\n * expect(child.get(ParentProvider) instanceof

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ParentProvider).toBe(true);\n * expect(child.get(ChildProvider) instanceof ChildProvider).toBe(true);\n *
expect(child.get(ParentProvider)).toBe(parent.get(ParentProvider));\n * ```\n * ^\n abstract
resolveAndCreateChild(providers: Provider[]): ReflectiveInjector;\n\n /**\n * Creates a child injector from
previously resolved providers.\n *\n * <!-- TODO: Add a link to the section of the user guide talking about
hierarchical injection.\n * -->\n *\n * This API is the recommended way to construct injectors in performance-
sensitive parts.\n *\n * @usageNotes\n * ### Example\n *\n * ```typescript\n * class ParentProvider {\n
class ChildProvider {\n *\n * var parentProviders = ReflectiveInjector.resolve([ParentProvider]);\n * var
childProviders = ReflectiveInjector.resolve([ChildProvider]);\n *\n * var parent =
ReflectiveInjector.fromResolvedProviders(parentProviders);\n * var child =
parent.createChildFromResolved(childProviders);\n *\n * expect(child.get(ParentProvider) instanceof
ParentProvider).toBe(true);\n * expect(child.get(ChildProvider) instanceof ChildProvider).toBe(true);\n *
expect(child.get(ParentProvider)).toBe(parent.get(ParentProvider));\n * ```\n * ^\n abstract
createChildFromResolved(providers: ResolvedReflectiveProvider[]): ReflectiveInjector;\n\n /**\n * Resolves a
provider and instantiates an object in the context of the injector.\n *\n * The created object does not get cached by
the injector.\n *\n * @usageNotes\n * ### Example\n *\n * ```typescript\n * @Injectable()\n * class Engine
{\n * }\n *\n * @Injectable()\n * class Car {\n * constructor(public engine:Engine) {\n * }\n *\n * var
injector = ReflectiveInjector.resolveAndCreate([Engine]);\n *\n * var car = injector.resolveAndInstantiate(Car);\n
* expect(car.engine).toBe(injector.get(Engine));\n * expect(car).not.toBe(injector.resolveAndInstantiate(Car));\n
* ```\n * ^\n abstract resolveAndInstantiate(provider: Provider): any;\n\n /**\n * Instantiates an object using a
resolved provider in the context of the injector.\n *\n * The created object does not get cached by the injector.\n
*\n * @usageNotes\n * ### Example\n *\n * ```typescript\n * @Injectable()\n * class Engine {\n * }\n *\n
* @Injectable()\n * class Car {\n * constructor(public engine:Engine) {\n * }\n *\n * var injector =
ReflectiveInjector.resolveAndCreate([Engine]);\n * var carProvider = ReflectiveInjector.resolve([Car])[0];\n * var
car = injector.instantiateResolved(carProvider);\n * expect(car.engine).toBe(injector.get(Engine));\n *
expect(car).not.toBe(injector.instantiateResolved(carProvider));\n * ```\n * ^\n abstract
instantiateResolved(provider: ResolvedReflectiveProvider): any;\n\n abstract get(token: any, notFoundValue?:
any): any;\n\n\nexport class ReflectiveInjector_ implements ReflectiveInjector {\n private static INJECTOR_KEY
= ReflectiveKey.get(Injector);\n /** @internal */\n _constructionCounter: number = 0;\n /** @internal */\n
public _providers: ResolvedReflectiveProvider[];\n public readonly parent: Injector|null;\n\n keyIds: number[];\n
objs: any[];\n /**\n * Private\n */\n constructor(_providers: ResolvedReflectiveProvider[], _parent?: Injector)
{\n this._providers = _providers;\n this.parent = _parent || null;\n\n const len = _providers.length;\n\n
this.keyIds = [];\n this.objs = [];\n\n for (let i = 0; i < len; i++) {\n this.keyIds[i] = _providers[i].key.id;\n
this.objs[i] = UNDEFINED;\n }\n\n get(token: any, notFoundValue: any = THROW_IF_NOT_FOUND):
any {\n return this._getByKey(ReflectiveKey.get(token), null, notFoundValue);\n }\n\n
resolveAndCreateChild(providers: Provider[]): ReflectiveInjector {\n const ResolvedReflectiveProviders =
ReflectiveInjector.resolve(providers);\n return this.createChildFromResolved(ResolvedReflectiveProviders);\n
}\n\n createChildFromResolved(providers: ResolvedReflectiveProvider[]): ReflectiveInjector {\n const inj = new
ReflectiveInjector_(providers);\n (inj as {parent: Injector | null}).parent = this;\n return inj;\n }\n\n
resolveAndInstantiate(provider: Provider): any {\n return
this.instantiateResolved(ReflectiveInjector.resolve([provider])[0]);\n }\n\n instantiateResolved(provider:
ResolvedReflectiveProvider): any {\n return this._instantiateProvider(provider);\n }\n\n
getProviderAtIndex(index: number): ResolvedReflectiveProvider {\n if (index < 0 || index >=
this._providers.length) {\n throw outOfBoundsError(index);\n }\n return this._providers[index];\n }\n\n /**
@internal */\n _new(provider: ResolvedReflectiveProvider): any {\n if (this._constructionCounter++ >
this._getMaxNumberOfObjects()) {\n throw cyclicDependencyError(this, provider.key);\n }\n return
this._instantiateProvider(provider);\n }\n\n private _getMaxNumberOfObjects(): number {\n return
this.objs.length;\n }\n\n private _instantiateProvider(provider: ResolvedReflectiveProvider): any {\n if
(provider.multiProvider) {\n const res = [];\n for (let i = 0; i < provider.resolvedFactories.length; ++i) {\n

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res[i] = this._instantiate(provider, provider.resolvedFactories[i]);\n }\n return res;\n } else {\n return
this._instantiate(provider, provider.resolvedFactories[0]);\n }\n}\n\n private _instantiate(\n provider:
ResolvedReflectiveProvider,\n ResolvedReflectiveFactory: ResolvedReflectiveFactory): any {\n const factory
= ResolvedReflectiveFactory.factory;\n\n let deps: any[];\n try {\n deps =\nResolvedReflectiveFactory.dependencies.map(dep => this._getByReflectiveDependency(dep));\n } catch (e) {\n
if (e.addKey) {\n e.addKey(this, provider.key);\n }\n throw e;\n }\n\n let obj: any;\n try {\n obj =
factory(...deps);\n } catch (e) {\n throw instantiationError(this, e, e.stack, provider.key);\n }\n\n return
obj;\n }\n\n private _getByReflectiveDependency(dep: ReflectiveDependency): any {\n return
this._getKey(dep.key, dep.visibility, dep.optional ? null : THROW_IF_NOT_FOUND);\n }\n\n private
_getByKey(key: ReflectiveKey, visibility: Self|SkipSelf|null, notFoundValue: any): any {\n if (key ===
ReflectiveInjector._INJECTOR_KEY) {\n return this;\n }\n\n if (visibility instanceof Self) {\n return
this._getKeySelf(key, notFoundValue);\n }\n } else {\n return this._getKeyDefault(key, notFoundValue,
visibility);\n }\n }\n\n private _getObjByKeyId(keyId: number): any {\n for (let i = 0; i < this.keyIds.length;
i++) {\n if (this.keyIds[i] === keyId) {\n if (this.objs[i] === UNDEFINED) {\n this.objs[i] =
this._new(this._providers[i]);\n }\n return this.objs[i];\n }\n }\n return UNDEFINED;\n }\n\n
/** @internal */\n _throwOrNull(key: ReflectiveKey, notFoundValue: any): any {\n if (notFoundValue !==
THROW_IF_NOT_FOUND) {\n return notFoundValue;\n } else {\n throw noProviderError(this, key);\n
}\n }\n\n /** @internal */\n _getKeySelf(key: ReflectiveKey, notFoundValue: any): any {\n const obj =
this._getObjByKeyId(key.id);\n return (obj !== UNDEFINED) ? obj : this._throwOrNull(key, notFoundValue);\n
}\n\n /** @internal */\n _getKeyDefault(key: ReflectiveKey, notFoundValue: any, visibility:
Self|SkipSelf|null): any {\n let inj: Injector|null;\n\n if (visibility instanceof SkipSelf) {\n inj = this.parent;\n
} else {\n inj = this;\n }\n\n while (inj instanceof ReflectiveInjector_) {\n const inj_ =
<ReflectiveInjector_>inj;\n const obj = inj_._getObjByKeyId(key.id);\n if (obj !== UNDEFINED) return
obj;\n inj = inj_._parent;\n }\n if (inj !== null) {\n return inj.get(key.token, notFoundValue);\n } else {\n
return this._throwOrNull(key, notFoundValue);\n }\n }\n\n get displayName(): string {\n const providers =\n _mapProviders(this, (b: ResolvedReflectiveProvider) => ` ` + b.key.displayName + ` `)\n .join(', ');\n return `ReflectiveInjector(providers: [${providers}]);`\n }\n\n toString(): string {\n return this.displayName;\n
}\n}\n\nfunction _mapProviders(injector: ReflectiveInjector_, fn: Function): any[] {\n const res: any[] = [];\n for
(let i = 0; i < injector._providers.length; ++i) {\n res[i] = fn(injector.getProviderAtIndex(i));\n }\n return
res;\n }\n\n"/**\n * @license\n * Copyright Google LLC All Rights Reserved.\n * Use of this source code is
governed by an MIT-style license that can be\n * found in the LICENSE file at https://angular.io/license\n
*\n */\n\n /** @module\n * @description\n * The `di` module provides dependency injection container services.\n
*\n */\n\nexport * from './metadata';\nexport { InjectFlags } from './interface/injector';\nexport { defineInjectable,
defineInjectable, defineInjector, InjectableType, InjectorType } from './interface/defs';\nexport { forwardRef,
resolveForwardRef, ForwardRefFn } from './forward_ref';\nexport { Injectable, InjectableDecorator,
InjectableProvider } from './injectable';\nexport { Injector } from './injector';\nexport { inject, inject,
invalidFactoryDep } from './injector_compatibility';\nexport { INJECTOR } from './injector_token';\nexport
{ ReflectiveInjector } from './reflective_injector';\nexport { ClassProvider, ClassSansProvider, ConstructorProvider,
ConstructorSansProvider, ExistingProvider, ExistingSansProvider, FactoryProvider, FactorySansProvider, Provider,
StaticClassProvider, StaticClassSansProvider, StaticProvider, TypeProvider, ValueProvider, ValueSansProvider }
from './interface/provider';\nexport { ResolvedReflectiveFactory, ResolvedReflectiveProvider } from
'./reflective_provider';\nexport { ReflectiveKey } from './reflective_key';\nexport { InjectionToken } from
'./injection_token';\n\n"/**\n * @license\n * Copyright Google LLC All Rights Reserved.\n * Use of this source
code is governed by an MIT-style license that can be\n * found in the LICENSE file at https://angular.io/license\n
*\n */\n\n /**\n * This file should not be necessary because node resolution should just default to `./di/index`\n *
However it does not seem to work and it breaks:\n * - //packages/animations/browser/test:test_web_chromium-
local\n * - //packages/compiler-cli/test:extract_i18n\n * - //packages/compiler-cli/test:ngc\n * -
//packages/compiler-cli/test:perform_watch\n * - //packages/compiler-cli/test/diagnostics:check_types\n * -

```



```

//packages/compiler-cli/test/transformers:test\n * - //packages/compiler/test:test\n * -
//tools/public_api_guard:core_api\n *\n * Remove this file once the above is solved or wait until `ngc` is deleted and
then it should be\n *\n * safe to delete this file.\n *\n *\nexport * from './di/index';\n", "/*\n *\n * @license\n *\n * Copyright
Google LLC All Rights Reserved.\n *\n *\n * Use of this source code is governed by an MIT-style license that can be\n
*\n * found in the LICENSE file at https://angular.io/license\n *\nimport {InjectFlags, InjectionToken,
resolveForwardRef} from './di';\nimport {assertInjectImplementationNotEqual} from
'./di/inject_switch';\nimport {inject} from './di/injector_compatibility';\nimport {Type} from
'./di/interface/type';\nimport {getOrCreateInjectable, injectAttributeImpl} from './di';\nimport
{TDirectiveHostNode} from './interfaces/node';\nimport {getCurrentTNode, getLView} from './state';\n\n/**\n *
Returns the value associated to the given token from the injectors.\n *\n *\n * `directiveInject` is intended to be used for
directive, component and pipe factories.\n *\n * All other injection use `inject` which does not walk the node injector
tree.\n *\n *\n * Usage example (in factory function):\n *\n *\n * ``\n * class SomeDirective {\n * constructor(directive:
DirectiveA) {\n *\n * static dir = defineDirective({\n *\n * type: SomeDirective,\n *\n * factory: () => new
SomeDirective(directiveInject(DirectiveA))\n *\n * });\n *\n * }\n *\n * @param token the type or token to inject\n *\n
*\n * @param flags Injection flags\n *\n * @returns the value from the injector or `null` when not found\n *\n *\n
*\n * @codeGenApi\n *\n *\nexport function directiveInject<T>(token: Type<T>|InjectionToken<T>): T;\nexport function
directiveInject<T>(token: Type<T>|InjectionToken<T>, flags: InjectFlags): T;\nexport function
directiveInject<T>(token: Type<T>|InjectionToken<T>, flags = InjectFlags.Default): T|null {\n const IView =
getLView();\n // Fall back to inject() if view hasn't been created. This situation can happen in tests\n // if inject
utilities are used before bootstrapping.\n if (IView === null) {\n // Verify that we will not get into infinite loop.\n
 ngDevMode && assertInjectImplementationNotEqual(directiveInject);\n return inject(token, flags);\n }\n const
tNode = getCurrentTNode();\n return getOrCreateInjectable<T>(\n tNode as TDirectiveHostNode, IView,\n
 resolveForwardRef(token), flags);\n }\n\n/**\n * Facade for the attribute injection from DI.\n *\n *\n * @codeGenApi\n
*\n *\nexport function injectAttribute(attrNameToInject: string): string|null {\n return
injectAttributeImpl(getCurrentTNode()!, attrNameToInject);\n}\n\n/**\n * Throws an error indicating that a factory
function could not be generated by the compiler for a\n *\n * particular class.\n *\n *\n * This instruction allows the actual
error message to be optimized away when ngDevMode is turned\n *\n * off, saving bytes of generated code while still
providing a good experience in dev mode.\n *\n *\n * The name of the class is not mentioned here, but will be in the
generated factory function name\n *\n * and thus in the stack trace.\n *\n *\n * @codeGenApi\n *\n *\nexport function
invalidFactory(): never {\n const msg =\n ngDevMode ? `This constructor was not compatible with Dependency
Injection.` : 'invalid';\n throw new Error(msg);\n}\n", "/*\n *\n * @license\n *\n * Copyright Google LLC All Rights
Reserved.\n *\n *\n * Use of this source code is governed by an MIT-style license that can be\n *\n * found in the
LICENSE file at https://angular.io/license\n *\nimport {bindingUpdated} from './bindings';\nimport {TNode} from
'./interfaces/node';\nimport {SanitizerFn} from './interfaces/sanitization';\nimport {LView, RENDERER, TView}
from './interfaces/view';\nimport {getLView, getSelectedTNode, getTView, nextBindingIndex} from
'./state';\n\nimport {elementPropertyInternal, setInputsForProperty, storePropertyBindingMetadata} from
'./shared';\n\n/**\n * Update a property on a selected element.\n *\n *\n * Operates on the element selected by index
via the {@link select} instruction.\n *\n *\n * If the property name also exists as an input property on one of the
element's directives,\n *\n * the component property will be set instead of the element property. This check must\n *\n * be
conducted at runtime so child components that add new `@Inputs` don't have to be re-compiled\n *\n *\n * @param
propName Name of property. Because it is going to DOM, this is not subject to\n *\n * renaming as part of
minification.\n *\n * @param value New value to write.\n *\n * @param sanitizer An optional function used to sanitize the
value.\n *\n * @returns This function returns itself so that it may be chained\n *\n * (e.g. `property('name', ctx.name)`('title',
ctx.title)`)\n *\n *\n * @codeGenApi\n *\n *\nexport function` property<T>(\n propName: string, value: T, sanitizer?:
SanitizerFn|null): typeof property {\n const IView = getLView();\n const bindingIndex = nextBindingIndex();\n if
(bindingUpdated(IView, bindingIndex, value)) {\n const tView = getTView();\n const tNode =
getSelectedTNode();\n elementPropertyInternal(\n tView, tNode, IView, propName, value,\n
 IView[RENDERER], sanitizer, false);\n ngDevMode && storePropertyBindingMetadata(tView.data, tNode,

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propName, bindingIndex);\n }\n return property;\n}\n\n/**\n * Given `

` and `MyDir` with

`@Input('style')` we need to write to\n * directive input.\n */\nexport function

setDirectiveInputsWhichShadowsStyling(\n tView: TView, tNode: TNode, IView: LView, value: any,

 isClassBased: boolean) {\n const inputs = tNode.inputs!;\n const property = isClassBased ? 'class': 'style';\n // We

 support both 'class' and `className` hence the fallback.\n setInputsForProperty(tView, IView, inputs[property],

 property, value);\n}\n\n"/**\n * @license\n * Copyright Google LLC All Rights Reserved.\n *\n * Use of this source

 code is governed by an MIT-style license that can be\n * found in the LICENSE file at https://angular.io/license\n */\n\nimport {assertDefined, assertEqual, assertIndexInRange} from '../util/assert';\nimport {assertFirstCreatePass,

 assertHasParent} from './assert';\nimport {attachPatchData} from './context_discovery';\nimport

 {formatRuntimeError, RuntimeErrorCode} from './error_code';\nimport {registerPostOrderHooks} from

 './hooks';\nimport {hasClassInput, hasStyleInput, TAttributes, TElementNode, TNode, TNodeFlags, TNodeType}

 from './interfaces/node';\nimport {RElement} from './interfaces/renderer_dom';\nimport {isContentQueryHost,

 isDirectiveHost} from './interfaces/type_checks';\nimport {HEADER_OFFSET, LView, RENDERER, TView}

 from './interfaces/view';\nimport {assertTNodeType} from './node_assert';\nimport {appendChild,

 createElementNode, writeDirectClass, writeDirectStyle} from './node_manipulation';\nimport

 {decreaseElementDepthCount, getBindingIndex, getCurrentTNode, getElementDepthCount, getLView,

 getNamespace, getTView, increaseElementDepthCount, isCurrentTNodeParent, setCurrentTNode,

 setCurrentTNodeAsNotParent} from './state';\nimport {computeStaticStyling} from

 './styling/static_styling';\nimport {setUpAttributes} from './util/attrs_utils';\nimport {getConstant} from

 './util/view_utils';\nimport {setDirectiveInputsWhichShadowsStyling} from './property';\nimport

 {createDirectivesInstances, executeContentQueries, getOrCreateTNode, matchingSchemas, resolveDirectives,

 saveResolvedLocalsInData} from './shared';\n\n\nfunction elementStartFirstCreatePass(\n index: number, tView:

 TView, IView: LView, native: RElement, name: string,\n attrsIndex?: number|null, localRefsIndex?: number):

 TElementNode {\n ngDevMode && assertFirstCreatePass(tView);\n ngDevMode &&

 ngDevMode.firstCreatePass++;\n\n const tViewConsts = tView.consts;\n const attrs =

 getConstant<TAttributes>(tViewConsts, attrsIndex);\n const tNode = getOrCreateTNode(tView, index,

 TNodeType.Element, name, attrs);\n\n const hasDirectives =\n resolveDirectives(tView, IView, tNode,

 getConstant<string[]>(tViewConsts, localRefsIndex));\n ngDevMode && logUnknownElementError(tView,

 native, tNode, hasDirectives);\n\n if (tNode.attrs !== null) {\n computeStaticStyling(tNode, tNode.attrs, false);\n }\n\n if (tNode.mergedAttrs !== null) {\n computeStaticStyling(tNode, tNode.mergedAttrs, true);\n }\n\n if

 (tView.queries !== null) {\n tView.queries.elementStart(tView, tNode);\n }\n\n return tNode;\n}\n\n/**\n *

 Create DOM element. The instruction must later be followed by `elementEnd()` call.\n *\n * @param index Index of

 the element in the LView array\n *\n * @param name Name of the DOM Node\n *\n * @param attrsIndex Index of the

 element's attributes in the `consts` array.\n *\n * @param localRefsIndex Index of the element's local references in the

 `consts` array.\n *\n * Attributes and localRefs are passed as an array of strings where elements with an even

 index\n * hold an attribute name and elements with an odd index hold an attribute value, ex.: ['id', 'warning5',

 'class', 'alert']\n *\n * @codeGenApi\n */\n\nexport function elementStart(\n index: number, name: string,

 attrsIndex?: number|null, localRefsIndex?: number): void {\n const IView = getLView();\n const tView =

 getTView();\n const adjustedIndex = HEADER_OFFSET + index;\n\n ngDevMode &&\n assertEqual(\n getBindingIndex(), tView.bindingStartIndex,\n 'elements should be created before any bindings');\n ngDevMode && assertIndexInRange(IView, adjustedIndex);\n\n const renderer = IView[RENDERER];\n const

 native = IView[adjustedIndex] = createElementNode(renderer, name, getNamespace());\n const tNode =

 tView.firstCreatePass ?\n elementStartFirstCreatePass(\n adjustedIndex, tView, IView, native, name,

 attrsIndex, localRefsIndex) :

 tView.data[adjustedIndex] as TElementNode;\n setCurrentTNode(tNode,

 true);\n\n const mergedAttrs = tNode.mergedAttrs;\n if (mergedAttrs !== null) {\n setUpAttributes(renderer,

 native, mergedAttrs);\n }\n\n const classes = tNode.classes;\n if (classes !== null) {\n writeDirectClass(renderer,

 native, classes);\n }\n\n const styles = tNode.styles;\n if (styles !== null) {\n writeDirectStyle(renderer, native,

 styles);\n }\n\n if ((tNode.flags & TNodeFlags.isDetached) !== TNodeFlags.isDetached) {\n // In the i18n case,


```



```

TElementContainerNode, TNodeType} from './interfaces/node';\nimport {isContentQueryHost, isDirectiveHost}
from './interfaces/type_checks';\nimport {HEADER_OFFSET, LView, RENDERER, T_HOST, TView} from
 './interfaces/view';\nimport {assertTNodeType} from './node_assert';\nimport {appendChild} from
 './node_manipulation';\nimport {getBindingIndex, getCurrentTNode, getLView, getTView, isCurrentTNodeParent,
setCurrentTNode, setCurrentTNodeAsNotParent} from './state';\nimport {computeStaticStyling} from
 './styling/static_styling';\nimport {getConstant} from './util/view_utils';\n\nimport {createDirectivesInstances,
executeContentQueries, getOrCreateTNode, resolveDirectives, saveResolvedLocalsInData} from
 './shared';\n\nfunction elementContainerStartFirstCreatePass(\n index: number, tView: TView, IView: LView,
attrsIndex?: number|null,\n localRefsIndex?: number): TElementContainerNode {\n ngDevMode &&
ngDevMode.firstCreatePass++;\n const tViewConsts = tView.consts;\n const attrs =
getConstant<TAttributes>(tViewConsts, attrsIndex);\n const tNode = getOrCreateTNode(tView, index,
TNodeType.ElementContainer, 'ng-container', attrs);\n \n // While ng-container doesn't necessarily support styling,
we use the style context to identify\n // and execute directives on the ng-container.\n if (attrs !== null) {\n computeStaticStyling(tNode, attrs, true);\n }\n const localRefs = getConstant<string[]>(tViewConsts,
localRefsIndex);\n resolveDirectives(tView, IView, tNode, localRefs);\n \n if (tView.queries !== null) {\n tView.queries.elementStart(tView, tNode);\n }\n return tNode;\n}\n\n/**\n * Creates a logical container for other
nodes (<ng-container>) backed by a comment node in the DOM.\n * The instruction must later be followed by
`elementContainerEnd()` call.\n * @param index Index of the element in the LView array\n * @param
attrsIndex Index of the container attributes in the `consts` array.\n * @param localRefsIndex Index of the container's
local references in the `consts` array.\n * @param Even if this instruction accepts a set of attributes no actual attribute
values are propagated to\n * the DOM (as a comment node can't have attributes). Attributes are here only for
directive\n * matching purposes and setting initial inputs of directives.\n * @codeGenApi\n */\n\nexport function
elementContainerStart(\n index: number, attrsIndex?: number|null, localRefsIndex?: number): void {\n const
IView = getLView();\n const tView = getTView();\n const adjustedIndex = index + HEADER_OFFSET;\n \n ngDevMode && assertIndexInRange(IView, adjustedIndex);\n ngDevMode &&\n assertEqual(\n
getBindingIndex(), tView.bindingStartIndex,\n 'element containers should be created before any
bindings');\n const tNode = tView.firstCreatePass ?\n elementContainerStartFirstCreatePass(\n
adjustedIndex, tView, IView, attrsIndex, localRefsIndex) :\n tView.data[adjustedIndex] as
TElementContainerNode;\n setCurrentTNode(tNode, true);\n \n ngDevMode &&
ngDevMode.rendererCreateComment++;\n const native = IView[adjustedIndex] =\n IView[RENDERER].createComment(ngDevMode ? 'ng-container' : '');\n appendChild(tView, IView, native,
tNode);\n attachPatchData(native, IView);\n \n if (isDirectiveHost(tNode)) {\n createDirectivesInstances(tView,
IView, tNode);\n executeContentQueries(tView, tNode, IView);\n }\n \n if (localRefsIndex !== null) {\n saveResolvedLocalsInData(IView, tNode);\n }\n}\n\n/**\n * Mark the end of the <ng-container>.\n * @codeGenApi\n */\n\nexport function elementContainerEnd(): void {\n let currentTNode = getCurrentTNode();\n const tView = getTView();\n if (isCurrentTNodeParent()) {\n setCurrentTNodeAsNotParent();\n } else {\n ngDevMode && assertHasParent(currentTNode);\n currentTNode = currentTNode.parent!;\n setCurrentTNode(currentTNode, false);\n }\n \n ngDevMode && assertTNodeType(currentTNode,
TNodeType.ElementContainer);\n \n if (tView.firstCreatePass) {\n registerPostOrderHooks(tView,
currentTNode);\n if (isContentQueryHost(currentTNode)) {\n tView.queries!.elementEnd(currentTNode);\n }\n }\n}\n\n/**\n * Creates an empty logical container using {@link elementContainerStart}\n * and {@link
elementContainerEnd}\n * @param index Index of the element in the LView array\n * @param attrsIndex Index
of the container attributes in the `consts` array.\n * @param localRefsIndex Index of the container's local references
in the `consts` array.\n * @codeGenApi\n */\n\nexport function elementContainer(\n index: number, attrsIndex?:
number|null, localRefsIndex?: number): void {\n elementContainerStart(index, attrsIndex, localRefsIndex);\n
elementContainerEnd();\n}\n\n"/**\n * @license\n * Copyright Google LLC All Rights Reserved.\n * Use of
this source code is governed by an MIT-style license that can be\n * found in the LICENSE file at
https://angular.io/license\n */\nimport {OpaqueViewState} from './interfaces/view';\nimport {getLView} from

```

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'./state';\n\n/**\n * Returns the current OpaqueViewState instance.\n *\n * Used in conjunction with the
restoreView() instruction to save a snapshot\n * of the current view and restore it when listeners are invoked. This
allows\n * walking the declaration view tree in listeners to get vars from parent views.\n *\n * @codeGenApi\n
*/\nexport function getCurrentView(): OpaqueViewState {\n return getLView() as any as
OpaqueViewState;\n}\n"/**\n * @license\n * Copyright Google LLC All Rights Reserved.\n *\n * Use of this
source code is governed by an MIT-style license that can be\n * found in the LICENSE file at
https://angular.io/license\n */\nimport { Observable } from 'rxjs';\n\n/**\n * Determine if the argument is shaped
like a Promise\n */\nexport function isPromise<T = any>(obj: any): obj is Promise<T> {\n // allow any Promise/A+
compliant thenable.\n // It's up to the caller to ensure that obj.then conforms to the spec\n return !!obj && typeof
obj.then === 'function';\n}\n\n/**\n * Determine if the argument is an Observable\n *\n * Strictly this tests that the
`obj` is `Subscribable`, since `Observable`\n * types need additional methods, such as `lift()`. But it is adequate for
our\n * needs since within the Angular framework code we only ever need to use the\n * `subscribe()` method, and
RxJS has mechanisms to wrap `Subscribable` objects\n * into `Observable` as needed.\n */\nexport function
isObservable(obj: any|Observable<any>): obj is Observable<any> {\n return !!obj && typeof obj.subscribe ===
'function';\n}\n"/**\n * @license\n * Copyright Google LLC All Rights Reserved.\n *\n * Use of this source code
is governed by an MIT-style license that can be\n * found in the LICENSE file at https://angular.io/license\n
*/\n\nimport { assertIndexInRange } from './util/assert';\nimport { isObservable } from './util/lang';\nimport
{ EMPTY_OBJ } from './empty';\nimport { PropertyAliasValue, TNode, TNodeFlags, TNodeType } from
'./interfaces/node';\nimport { GlobalTargetResolver, isProceduralRenderer, Renderer3 } from
'./interfaces/renderer';\nimport { RElement } from './interfaces/renderer_dom';\nimport { isDirectiveHost } from
'./interfaces/type_checks';\nimport { CLEANUP, FLAGS, LView, LViewFlags, RENDERER, TView } from
'./interfaces/view';\nimport { assertTNodeType } from './node_assert';\nimport { getCurrentDirectiveDef,
getCurrentTNode, getLView, getTView } from './state';\nimport { getComponentLViewByIndex,
getNativeByTNode, unwrapRNode } from './util/view_utils';\nimport { getLCleanup, handleError,
loadComponentRenderer, markViewDirty } from './shared';\n\n\n/**\n * Adds an event listener to the current
node.\n *\n * If an output exists on one of the node's directives, it also subscribes to the output\n * and saves the
subscription for later cleanup.\n *\n * @param eventName Name of the event\n * @param listenerFn The function
to be called when event emits\n * @param useCapture Whether or not to use capture in event listener\n * @param
eventTargetResolver Function that returns global target information in case this listener\n * should be attached to a
global object like window, document or body\n *\n * @codeGenApi\n */\nexport function listener(\n eventName:
string, listenerFn: (e?: any) => any, useCapture = false,\n eventTargetResolver?: GlobalTargetResolver): typeof
listener {\n const lView = getLView();\n const tView = getTView();\n const tNode = getCurrentTNode(!);\n
listenerInternal(\n tView, lView, lView[RENDERER], tNode, eventName, listenerFn, useCapture,
eventTargetResolver);\n return listener;\n}\n\n/**\n * Registers a synthetic host listener (e.g. `(@foo.start)`) on a
component or directive.\n *\n * This instruction is for compatibility purposes and is designed to ensure that a\n *
synthetic host listener (e.g. `@HostListener('@foo.start')`) properly gets rendered\n * in the component's renderer.
Normally all host listeners are evaluated with the\n * parent component's renderer, but, in the case of animation
@triggers, they need\n * to be evaluated with the sub component's renderer (because that's where the\n * animation
triggers are defined).\n *\n * Do not use this instruction as a replacement for `listener`. This instruction\n * only
exists to ensure compatibility with the ViewEngine's host binding behavior.\n *\n * @param eventName Name of
the event\n * @param listenerFn The function to be called when event emits\n * @param useCapture Whether or
not to use capture in event listener\n * @param eventTargetResolver Function that returns global target information
in case this listener\n * should be attached to a global object like window, document or body\n *\n *
@codeGenApi\n */\nexport function syntheticHostListener(\n eventName: string, listenerFn: (e?: any) => any,
useCapture = false,\n eventTargetResolver?: GlobalTargetResolver): typeof syntheticHostListener {\n const
tNode = getCurrentTNode(!);\n const lView = getLView();\n const tView = getTView();\n const currentDef =
getCurrentDirectiveDef(tView.data);\n const renderer = loadComponentRenderer(currentDef, tNode, lView);\n
listenerInternal(\n tView, lView, renderer, tNode, eventName, listenerFn, useCapture, eventTargetResolver);\n

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return syntheticHostListener;\n}\n\n/**\n * A utility function that checks if a given element has already an event
handler registered for an\n * event with a specified name. The TView.cleanup data structure is used to find out
which events\n * are registered for a given element.\n */\nfunction findExistingListener(\n tView: TView, IView:
LView, eventName: string, tNodeIdx: number): ((e?: any) => any)|null {\n const tCleanup = tView.cleanup;\n if
(tCleanup != null) {\n for (let i = 0; i < tCleanup.length - 1; i += 2) {\n const cleanupEventName =
tCleanup[i];\n if (cleanupEventName === eventName && tCleanup[i + 1] === tNodeIdx) {\n // We have
found a matching event name on the same node but it might not have been\n // registered yet, so we must
explicitly verify entries in the LView cleanup data\n // structures.\n const lCleanup = IView[CLEANUP]!;\n const listenerIdxInLCleanup = tCleanup[i + 2];\n return lCleanup.length > listenerIdxInLCleanup ?
lCleanup[listenerIdxInLCleanup] : null;\n }\n }\n // TView.cleanup can have a mix of 4-elements entries (for
event handler cleanups) or\n // 2-element entries (for directive and queries destroy hooks). As such we can
encounter\n // blocks of 4 or 2 items in the tView.cleanup and this is why we iterate over 2 elements\n // first
and jump another 2 elements if we detect listeners cleanup (4 elements). Also check\n // documentation of
TView.cleanup for more details of this data structure layout.\n if (typeof cleanupEventName === 'string') {\n i += 2;\n }\n }\n return null;\n}\n\nfunction listenerInternal(\n tView: TView, IView: LView, renderer:
Renderer3, tNode: TNode, eventName: string,\n listenerFn: (e?: any) => any, useCapture = false,\n eventTargetResolver?: GlobalTargetResolver): void {\n const isTNodeDirectiveHost = isDirectiveHost(tNode);\n const firstCreatePass = tView.firstCreatePass;\n const tCleanup: false|any[] = firstCreatePass && (tView.cleanup ||
(tView.cleanup = []));\n // When the listener instruction was generated and is executed we know that there is
either a\n // native listener or a directive output on this element. As such we we know that we will have to\n //
register a listener and store its cleanup function on LView.\n const lCleanup = getLCleanup(IView);\n ngDevMode && assertTNodeType(tNode, TNodeType.AnyRNode | TNodeType.AnyContainer);\n let
processOutputs = true;\n // add native event listener - applicable to elements only\n if (tNode.type &
TNodeType.AnyRNode) {\n const native = getNativeByTNode(tNode, IView) as RElement;\n const resolved =
eventTargetResolver ? eventTargetResolver(native) : EMPTY_OBJ as any;\n const target = resolved.target ||
native;\n const lCleanupIndex = lCleanup.length;\n const idxOrTargetGetter = eventTargetResolver ?\n (_IView: LView) => eventTargetResolver(unwrapRNode(_IView[tNode.index])).target :\n tNode.index;\n //
In order to match current behavior, native DOM event listeners must be added for all\n // events (including
outputs).\n if (isProceduralRenderer(renderer)) {\n // There might be cases where multiple directives on the
same element try to register an event\n // handler function for the same event. In this situation we want to avoid
registration of\n // several native listeners as each registration would be intercepted by NgZone and\n // trigger
change detection. This would mean that a single user action would result in several\n // change detections being
invoked. To avoid this situation we want to have only one call to\n // native handler registration (for the same
element and same type of event).\n //\n // In order to have just one native event handler in presence of multiple
handler functions,\n // we just register a first handler function as a native event listener and then chain\n //
(coalesce) other handler functions on top of the first native handler function.\n let existingListener = null;\n //
Please note that the coalescing described here doesn't happen for events specifying an\n // alternative target (ex.
(document:click)) - this is to keep backward compatibility with the\n // view engine.\n // Also, we don't have
to search for existing listeners is there are no directives\n // matching on a given node as we can't register
multiple event handlers for the same event in\n // a template (this would mean having duplicate attributes).\n if
(!eventTargetResolver && isTNodeDirectiveHost) {\n existingListener = findExistingListener(tView, IView,
eventName, tNode.index);\n }\n if (existingListener !== null) {\n // Attach a new listener to coalesced
listeners list, maintaining the order in which\n // listeners are registered. For performance reasons, we keep a
reference to the last\n // listener in that list (in `__ngLastListenerFn` field), so we can avoid going through\n
 // the entire set each time we need to add a new listener.\n const lastListenerFn =
(<any>existingListener).__ngLastListenerFn__ || existingListener;\n lastListenerFn.__ngNextListenerFn__ =
listenerFn;\n (<any>existingListener).__ngLastListenerFn__ = listenerFn;\n processOutputs = false;\n }
else {\n // The first argument of `listen` function in Procedural Renderer is:\n // - either a target name (as a

```







```

* @param selectorIndex:\n * - 0 when the selector is `*` (or unspecified as this is the default value),\n * - 1 based index of the selector from the { @link projectionDef }\n * * @codeGenApi\n * /\nexport function projection(\n nodeId: number, selectorIndex: number = 0, attrs?: TAttributes): void {\n const IView = getLView();\n const tView = getTView();\n const tProjectionNode =\n getOrCreateTNode(tView, HEADER_OFFSET + nodeId, TNodeType.Projection, null, attrs || null);\n \n // We can't use viewData[HOST_NODE] because projection nodes can be nested in embedded views.\n if (tProjectionNode.projection === null) tProjectionNode.projection = selectorIndex;\n \n // `<ng-content>` has no content\n setCurrentTNodeAsNotParent();\n \n if ((tProjectionNode.flags & TNodeFlags.isDetached) !== TNodeFlags.isDetached) {\n // re-distribution of projectable nodes is stored on a component's view level\n applyProjection(tView, IView, tProjectionNode);\n }\n}\n"/**\n * @license\n * Copyright Google LLC All Rights Reserved.\n * Use of this source code is governed by an MIT-style license that can be\n * found in the LICENSE file at https://angular.io/license\n */\nimport {SanitizerFn} from './interfaces/sanitization';\nimport {RENDERER} from './interfaces/view';\nimport {getBindingIndex, getLView, getSelectedTNode, getTView} from './state';\nimport {NO_CHANGE} from './tokens';\nimport {interpolation1, interpolation2, interpolation3, interpolation4, interpolation5, interpolation6, interpolation7, interpolation8, interpolationV} from './interpolation';\nimport {elementPropertyInternal, storePropertyBindingMetadata} from './shared';\n\n/**\n * Update an interpolated property on an element with a lone bound value\n * Used when the value passed to a property has 1 interpolated value in it, an no additional text\n * surrounds that interpolated value:\n * ```html\n * <div title="{v0}"></div>\n * Its compiled representation is:\n * ```ts\n * propertyInterpolate('title', v0);\n * ```\n * If the property name also exists as an input property on one of the element's directives,\n * the component property will be set instead of the element property. This check must\n * be conducted at runtime so child components that add new `@Inputs` don't have to be re-compiled.\n * @param propName The name of the property to update\n * @param prefix Static value used for concatenation only.\n * @param v0 Value checked for change.\n * @param suffix Static value used for concatenation only.\n * @param sanitizer An optional sanitizer function\n * @returns itself, so that it may be chained.\n * @codeGenApi\n */\nexport function propertyInterpolate(\n propName: string, v0: any, sanitizer?: SanitizerFn): typeof propertyInterpolate {\n return propertyInterpolate1(propName, "", v0, "", sanitizer);\n}\n\n/**\n * Update an interpolated property on an element with single bound value surrounded by text.\n * Used when the value passed to a property has 1 interpolated value in it:\n * ```html\n * <div title="prefix{v0}suffix"></div>\n * Its compiled representation is:\n * ```ts\n * propertyInterpolate1('title', 'prefix', v0, 'suffix');\n * ```\n * If the property name also exists as an input property on one of the element's directives,\n * the component property will be set instead of the element property. This check must\n * be conducted at runtime so child components that add new `@Inputs` don't have to be re-compiled.\n * @param propName The name of the property to update\n * @param prefix Static value used for concatenation only.\n * @param v0 Value checked for change.\n * @param suffix Static value used for concatenation only.\n * @param sanitizer An optional sanitizer function\n * @returns itself, so that it may be chained.\n * @codeGenApi\n */\nexport function propertyInterpolate1(\n propName: string, prefix: string, v0: any, suffix: string, sanitizer?: SanitizerFn): typeof propertyInterpolate1 {\n const IView = getLView();\n const interpolatedValue = interpolation1(IView, prefix, v0, suffix);\n if (interpolatedValue !== NO_CHANGE) {\n const tView = getTView();\n const tNode = getSelectedTNode();\n elementPropertyInternal(\n tView, tNode, IView, propName, interpolatedValue, IView[RENDERER], sanitizer, false);\n ngDevMode &&\n storePropertyBindingMetadata(\n tView.data, tNode, propName, getBindingIndex() - 1, prefix, suffix);\n }\n return propertyInterpolate1;\n}\n\n/**\n * Update an interpolated property on an element with 2 bound values surrounded by text.\n * Used when the value passed to a property has 2 interpolated values in it:\n * ```html\n * <div title="prefix{v0}-{v1}suffix"></div>\n * Its compiled representation is:\n * ```ts\n * propertyInterpolate2('title', 'prefix', v0, '-', v1, 'suffix');\n * ```\n * If the property name also exists as an input property on one of the element's directives,\n * the component property will be set instead of the element property. This check must\n * be conducted at runtime so child components that add new `@Inputs` don't have to be

```

re-compiled.\n \* @param propName The name of the property to update\n \* @param prefix Static value used for concatenation only.\n \* @param v0 Value checked for change.\n \* @param i0 Static value used for concatenation only.\n \* @param v1 Value checked for change.\n \* @param suffix Static value used for concatenation only.\n \* @param sanitizer An optional sanitizer function\n \* @returns itself, so that it may be chained.\n \* @codeGenApi\n \*/\nexport function propertyInterpolate2(\n propName: string, prefix: string, v0: any, i0: string, v1: any, suffix: string,\n sanitizer?: SanitizerFn): typeof propertyInterpolate2 {\n const IView = getLView();\n const interpolatedValue = interpolation2(IView, prefix, v0, i0, v1, suffix);\n if (interpolatedValue !== NO\_CHANGE) {\n const tView = getTView();\n const tNode = getSelectedTNode();\n elementPropertyInternal(\n tView, tNode, IView, propName, interpolatedValue, IView[RENDERER], sanitizer, false);\n ngDevMode &&\n storePropertyBindingMetadata(\n tView.data, tNode, propName, getBindingIndex() - 2, prefix, i0, suffix);\n }\n return propertyInterpolate2;\n}\n\n/\*\*\n \* Update an interpolated property on an element with 3 bound values surrounded by text.\n \* Used when the value passed to a property has 3 interpolated values in it.\n \* ```html\n \* <div title="prefix{{v0}}-{{v1}}-{{v2}}suffix"></div>\n \* ```\n \* Its compiled representation is:\n \* ```ts\n \* propertyInterpolate3(\n \* 'title', 'prefix', v0, '-', v1, '-', v2, 'suffix');\n \* ```\n \* If the property name also exists as an input property on one of the element's directives,\n \* the component property will be set instead of the element property. This check must\n \* be conducted at runtime so child components that add new `@Inputs` don't have to be re-compiled.\n \* @param propName The name of the property to update\n \* @param prefix Static value used for concatenation only.\n \* @param v0 Value checked for change.\n \* @param i0 Static value used for concatenation only.\n \* @param v1 Value checked for change.\n \* @param i1 Static value used for concatenation only.\n \* @param v2 Value checked for change.\n \* @param suffix Static value used for concatenation only.\n \* @param sanitizer An optional sanitizer function\n \* @returns itself, so that it may be chained.\n \* @codeGenApi\n \*/\nexport function propertyInterpolate3(\n propName: string, prefix: string, v0: any, i0: string, v1: any, i1: string, v2: any,\n suffix: string, sanitizer?: SanitizerFn): typeof propertyInterpolate3 {\n const IView = getLView();\n const interpolatedValue = interpolation3(IView, prefix, v0, i0, v1, i1, v2, suffix);\n if (interpolatedValue !== NO\_CHANGE) {\n const tView = getTView();\n const tNode = getSelectedTNode();\n elementPropertyInternal(\n tView, tNode, IView, propName, interpolatedValue, IView[RENDERER], sanitizer, false);\n ngDevMode &&\n storePropertyBindingMetadata(\n tView.data, tNode, propName, getBindingIndex() - 3, prefix, i0, i1, suffix);\n }\n return propertyInterpolate3;\n}\n\n/\*\*\n \* Update an interpolated property on an element with 4 bound values surrounded by text.\n \* Used when the value passed to a property has 4 interpolated values in it.\n \* ```html\n \* <div title="prefix{{v0}}-{{v1}}-{{v2}}-{{v3}}suffix"></div>\n \* ```\n \* Its compiled representation is:\n \* ```ts\n \* propertyInterpolate4(\n \* 'title', 'prefix', v0, '-', v1, '-', v2, '-', v3, 'suffix');\n \* ```\n \* If the property name also exists as an input property on one of the element's directives,\n \* the component property will be set instead of the element property. This check must\n \* be conducted at runtime so child components that add new `@Inputs` don't have to be re-compiled.\n \* @param propName The name of the property to update\n \* @param prefix Static value used for concatenation only.\n \* @param v0 Value checked for change.\n \* @param i0 Static value used for concatenation only.\n \* @param v1 Value checked for change.\n \* @param i1 Static value used for concatenation only.\n \* @param v2 Value checked for change.\n \* @param i2 Static value used for concatenation only.\n \* @param v3 Value checked for change.\n \* @param suffix Static value used for concatenation only.\n \* @param sanitizer An optional sanitizer function\n \* @returns itself, so that it may be chained.\n \* @codeGenApi\n \*/\nexport function propertyInterpolate4(\n propName: string, prefix: string, v0: any, i0: string, v1: any, i1: string, v2: any, i2: string,\n v3: any, suffix: string, sanitizer?: SanitizerFn): typeof propertyInterpolate4 {\n const IView = getLView();\n const interpolatedValue = interpolation4(IView, prefix, v0, i0, v1, i1, v2, i2, v3, suffix);\n if (interpolatedValue !== NO\_CHANGE) {\n const tView = getTView();\n const tNode = getSelectedTNode();\n elementPropertyInternal(\n tView, tNode, IView, propName, interpolatedValue, IView[RENDERER], sanitizer, false);\n ngDevMode &&\n storePropertyBindingMetadata(\n tView.data, tNode, propName, getBindingIndex() - 4, prefix, i0, i1, i2, suffix);\n }\n return propertyInterpolate4;\n}\n\n/\*\*\n \* Update an

interpolated property on an element with 5 bound values surrounded by text.  
 Used when the value passed to a property has 5 interpolated values in it:  
 Its compiled representation is:  
 If the property name also exists as an input property on one of the element's directives, the component property will be set instead of the element property. This check must be conducted at runtime so child components that add new `@Inputs` don't have to be re-compiled.  
 @param propName The name of the property to update  
 @param prefix Static value used for concatenation only.  
 @param v0 Value checked for change.  
 @param i0 Static value used for concatenation only.  
 @param v1 Value checked for change.  
 @param i1 Static value used for concatenation only.  
 @param v2 Value checked for change.  
 @param i2 Static value used for concatenation only.  
 @param v3 Value checked for change.  
 @param i3 Static value used for concatenation only.  
 @param v4 Value checked for change.  
 @param suffix Static value used for concatenation only.  
 @param sanitizer An optional sanitizer function  
 @returns itself, so that it may be chained.  
 @codeGenApi\n\nexport function propertyInterpolate5(\n propName: string, prefix: string, v0: any, i0: string, v1: any, i1: string, v2: any, i2: string,\n v3: any, i3: string, v4: any, suffix: string,\n sanitizer?: SanitizerFn): typeof propertyInterpolate5 {\n const IView = getLView();\n const interpolatedValue =\n interpolation5(IView, prefix, v0, i0, v1, i1, v2, i2, v3, i3, v4, suffix);\n if (interpolatedValue !== NO\_CHANGE) {\n const tView = getTView();\n const tNode = getSelectedTNode();\n elementPropertyInternal(\n tView, tNode, IView, propName, interpolatedValue, IView[RENDERER], sanitizer, false);\n ngDevMode &&\n storePropertyBindingMetadata(\n tView.data, tNode, propName, getBindingIndex() - 5, prefix, i0, i1, i2, i3, suffix);\n }\n return propertyInterpolate5;\n}\n\n/\*\*\n \* Update an interpolated property on an element with 6 bound values surrounded by text.  
 Used when the value passed to a property has 6 interpolated values in it:  
 Its compiled representation is:  
 If the property name also exists as an input property on one of the element's directives, the component property will be set instead of the element property. This check must be conducted at runtime so child components that add new `@Inputs` don't have to be re-compiled.  
 @param propName The name of the property to update  
 @param prefix Static value used for concatenation only.  
 @param v0 Value checked for change.  
 @param i0 Static value used for concatenation only.  
 @param v1 Value checked for change.  
 @param i1 Static value used for concatenation only.  
 @param v2 Value checked for change.  
 @param i2 Static value used for concatenation only.  
 @param v3 Value checked for change.  
 @param i3 Static value used for concatenation only.  
 @param v4 Value checked for change.  
 @param i4 Static value used for concatenation only.  
 @param v5 Value checked for change.  
 @param suffix Static value used for concatenation only.  
 @param sanitizer An optional sanitizer function  
 @returns itself, so that it may be chained.  
 @codeGenApi\n\nexport function propertyInterpolate6(\n propName: string, prefix: string, v0: any, i0: string, v1: any, i1: string, v2: any, i2: string,\n v3: any, i3: string, v4: any, i4: string, v5: any, suffix: string,\n sanitizer?: SanitizerFn): typeof propertyInterpolate6 {\n const IView = getLView();\n const interpolatedValue =\n interpolation6(IView, prefix, v0, i0, v1, i1, v2, i2, v3, i3, v4, i4, v5, suffix);\n if (interpolatedValue !== NO\_CHANGE) {\n const tView = getTView();\n const tNode = getSelectedTNode();\n elementPropertyInternal(\n tView, tNode, IView, propName, interpolatedValue, IView[RENDERER], sanitizer, false);\n ngDevMode &&\n storePropertyBindingMetadata(\n tView.data, tNode, propName, getBindingIndex() - 6, prefix, i0, i1, i2, i3, i4, suffix);\n }\n return propertyInterpolate6;\n}\n\n/\*\*\n \* Update an interpolated property on an element with 7 bound values surrounded by text.  
 Used when the value passed to a property has 7 interpolated values in it:  
 Its compiled representation is:  
 If the property name also exists as an input property on one of the element's directives, the component property will be set instead of the element property. This check must be conducted at runtime so child components that add new

`@Inputs` don't have to be re-compiled.

`@param propName` The name of the property to update

`@param prefix` Static value used for concatenation only.

`@param v0` Value checked for change.

`@param i0` Static value used for concatenation only.

`@param v1` Value checked for change.

`@param i1` Static value used for concatenation only.

`@param v2` Value checked for change.

`@param i2` Static value used for concatenation only.

`@param v3` Value checked for change.

`@param i3` Static value used for concatenation only.

`@param v4` Value checked for change.

`@param i4` Static value used for concatenation only.

`@param v5` Value checked for change.

`@param i5` Static value used for concatenation only.

`@param v6` Value checked for change.

`@param suffix` Static value used for concatenation only.

`@param sanitizer` An optional sanitizer function

`@returns` itself, so that it may be chained.

`@codeGenApi`

```

function propertyInterpolate7(\n propName: string, prefix: string, v0: any, i0: string, v1: any, i1: string, v2: any, i2: string,\n v3: any, i3: string, v4: any, i4: string, v5: any, i5: string, v6: any, suffix: string,\n sanitizer?: SanitizerFn): typeof propertyInterpolate7 {\n const IView = getLView();\n const interpolatedValue =\n interpolation7(IView, prefix, v0, i0, v1, i1, v2, i2, v3, i3, v4, i4, v5, i5, v6, suffix);\n if (interpolatedValue !== NO_CHANGE) {\n const tView = getTView();\n const tNode = getSelectedTNode();\n elementPropertyInternal(\n tView, tNode, IView, propName, interpolatedValue, IView[RENDERER], sanitizer, false);\n ngDevMode &&\n storePropertyBindingMetadata(\n tView.data, tNode, propName, getBindingIndex() - 7, prefix, i0, i1, i2, i3, i4, i5,\n suffix);\n }\n return propertyInterpolate7;\n}\n\n/**\n * Update an interpolated property on an element with 8 bound values surrounded by text.\n * Used when the value passed to a property has 8 interpolated values in it.\n * ``html\n * <div title="prefix{{v0}}-{{v1}}-{{v2}}-{{v3}}-{{v4}}-{{v5}}-{{v6}}-{{v7}}suffix"></div>\n * ``\n * Its compiled representation is:.\n * ``ts\n * propertyInterpolate8(\n * 'title', 'prefix', v0, '-', v1, '-', v2, '-', v3, '-', v4, '-', v5, '-', v6, '-', v7, 'suffix');\n * ``\n * If the property name also exists as an input property on one of the element's directives,\n * the component property will be set instead of the element property. This check must\n * be conducted at runtime so child components that add new `@Inputs` don't have to be re-compiled.\n * @param propName The name of the property to update\n * @param prefix Static value used for concatenation only.\n * @param v0 Value checked for change.\n * @param i0 Static value used for concatenation only.\n * @param v1 Value checked for change.\n * @param i1 Static value used for concatenation only.\n * @param v2 Value checked for change.\n * @param i2 Static value used for concatenation only.\n * @param v3 Value checked for change.\n * @param i3 Static value used for concatenation only.\n * @param v4 Value checked for change.\n * @param i4 Static value used for concatenation only.\n * @param v5 Value checked for change.\n * @param i5 Static value used for concatenation only.\n * @param v6 Value checked for change.\n * @param i6 Static value used for concatenation only.\n * @param v7 Value checked for change.\n * @param suffix Static value used for concatenation only.\n * @param sanitizer An optional sanitizer function\n * @returns itself, so that it may be chained.\n * @codeGenApi\n */\nexport function propertyInterpolate8(\n propName: string, prefix: string, v0: any, i0: string, v1: any, i1: string, v2: any, i2: string,\n v3: any, i3: string, v4: any, i4: string, v5: any, i5: string, v6: any, i6: string, v7: any,\n suffix: string, sanitizer?: SanitizerFn): typeof propertyInterpolate8 {\n const IView = getLView();\n const interpolatedValue = interpolation8(\n IView, prefix, v0, i0, v1, i1, v2, i2, v3, i3, v4, i4, v5, i5, v6, i6, v7, suffix);\n if (interpolatedValue !== NO_CHANGE) {\n const tView = getTView();\n const tNode = getSelectedTNode();\n elementPropertyInternal(\n tView, tNode, IView, propName, interpolatedValue, IView[RENDERER], sanitizer, false);\n ngDevMode &&\n storePropertyBindingMetadata(\n tView.data, tNode, propName, getBindingIndex() - 8, prefix, i0, i1, i2, i3, i4, i5, i6,\n suffix);\n }\n return propertyInterpolate8;\n}\n\n/**\n * Update an interpolated property on an element with 9 or more bound values surrounded by text.\n * Used when the number of interpolated values exceeds 8.\n * ``html\n * <div\n * title="prefix{{v0}}-{{v1}}-{{v2}}-{{v3}}-{{v4}}-{{v5}}-{{v6}}-{{v7}}-{{v8}}-{{v9}}suffix"></div>\n * ``\n * Its compiled representation is:.\n * ``ts\n * propertyInterpolateV(\n * 'title', ['prefix', v0, '-', v1, '-', v2, '-', v3, '-', v4, '-', v5, '-', v6, '-', v7, '-', v9,\n * 'suffix']);\n * ``\n * If the property name also exists as an input property on one of the element's directives,\n * the component property will be set instead of the element property. This check must\n * be conducted at runtime so child components that add new `@Inputs` don't have to be re-compiled.\n * @param propName The name of the

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property to update.

`@param values` The collection of values and the strings inbetween those values, beginning with a `\n` string prefix and ending with a string suffix. (e.g. ``['prefix', value0, '-', value1, '-', value2, ..., value99, 'suffix']``)

`@param sanitizer` An optional sanitizer function

`@returns` itself, so that it may be chained.

`@codeGenApi`

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\nexport function propertyInterpolateV(\n propName: string, values: any[], sanitizer?:
SanitizerFn): typeof propertyInterpolateV {\n const IView = getLView();\n const interpolatedValue =
interpolationV(IView, values);\n if (interpolatedValue !== NO_CHANGE) {\n const tView = getTView();\n const tNode = getSelectedTNode();\n elementPropertyInternal(\n tView, tNode, IView, propName,
interpolatedValue, IView[RENDERER], sanitizer, false);\n if (ngDevMode) {\n const interpolationInBetween
= [values[0]]; // prefix\n for (let i = 2; i < values.length; i += 2) {\n
interpolationInBetween.push(values[i]);\n }\n storePropertyBindingMetadata(\n tView.data, tNode,
propName, getBindingIndex() - interpolationInBetween.length + 1,\n ...interpolationInBetween);\n }\n }\n }\n return propertyInterpolateV;\n}\n\n",/**\n * @license\n * Copyright Google LLC All Rights Reserved.\n * Use
of this source code is governed by an MIT-style license that can be\n * found in the LICENSE file at
https://angular.io/license\n *\nimport {initNgDevMode} from './ng_dev_mode';\n\n/**\n * This file contains
reuseable \"empty\" symbols that can be used as default return values\n * in different parts of the rendering code.
Because the same symbols are returned, this\n * allows for identity checks against these values to be consistently
used by the framework\n * code.\n *\nexport const EMPTY_OBJ: {} = {};\nexport const EMPTY_ARRAY:
any[] = [];\n\n// freezing the values prevents any code from accidentally inserting new values in\nif ((typeof
ngDevMode === 'undefined' || ngDevMode) && initNgDevMode()) {\n // These property accesses can be ignored
because ngDevMode will be set to false\n // when optimizing code and the whole if statement will be dropped.\n //
tslint:disable-next-line:no-toplevel-property-access\n Object.freeze(EMPTY_OBJ);\n // tslint:disable-next-line:no-
toplevel-property-access\n Object.freeze(EMPTY_ARRAY);\n}\n\n",/**\n * @license\n * Copyright Google LLC
All Rights Reserved.\n *\n * Use of this source code is governed by an MIT-style license that can be\n * found in
the LICENSE file at https://angular.io/license\n *\nimport {KeyValueArray, keyValueArrayIndexOf} from
'../util/array_utils';\nimport {assertEqual, assertIndexInRange, assertNotEqual} from '../util/assert';\nimport
{assertFirstUpdatePass} from '../assert';\nimport {TNode} from '../interfaces/node';\nimport
{getTStylingRangeNext, getTStylingRangePrev, setTStylingRangeNext, setTStylingRangeNextDuplicate,
setTStylingRangePrev, setTStylingRangePrevDuplicate, toTStylingRange, TStylingKey, TStylingKeyPrimitive,
TStylingRange} from '../interfaces/styling';\nimport {TData} from '../interfaces/view';\nimport {getTView} from
'../state';\n\n/**\n * NOTE: The word `styling` is used interchangeably as style or class styling.\n *\n * This file
contains code to link styling instructions together so that they can be replayed in\n * priority order. The file exists
because Ivy styling instruction execution order does not match\n * that of the priority order. The purpose of this
code is to create a linked list so that the\n * instructions can be traversed in priority order when computing the
styles.\n *\n * Assume we are dealing with the following code:\n *\n`<my-cmp [style]=\" { color: '#001'} \"\n [style.color]=\" #002 \"\n dir-style-color-1\n dir-
style-color-2>\n`)\n * class ExampleComponent {\n * static ngComp = ... {\n * ... \n * // Compiler ensures
that `styleProp` is after `styleMap`\n * styleMap({color: '#001'});\n * styleProp('color', '#002');\n * ... \n *
}\n * }\n * @Directive({\n * selector: `[dir-style-color-1]`,\n * })\n * class Style1Directive {\n *
 @HostBinding('style') style = {color: '#005'};\n * @HostBinding('style.color') color = '#006';\n * }\n * static ngDir
= ... {\n * ... \n * // Compiler ensures that `styleProp` is after `styleMap`\n * styleMap({color: '#005'});\n *
 styleProp('color', '#006');\n * ... \n * }\n * }\n * @Directive({\n * selector: `[dir-style-color-2]`,\n * })\n *
class Style2Directive {\n * @HostBinding('style') style = {color: '#007'};\n * @HostBinding('style.color') color =
'#008';\n * }\n * static ngDir = ... {\n * ... \n * // Compiler ensures that `styleProp` is after `styleMap`\n *
 styleMap({color: '#007'});\n * styleProp('color', '#008');\n * ... \n * }\n * }\n * @Directive({\n * selector:
`my-cmp`,\n * })\n * class MyComponent {\n * @HostBinding('style') style = {color: '#003'};\n *
 @HostBinding('style.color') color = '#004';\n * }\n * static ngComp = ... {\n * ... \n * // Compiler ensures that
`styleProp` is after `styleMap`\n * styleMap({color: '#003'});\n * styleProp('color', '#004');\n * ... \n *
}\n * }\n *\n * The Order of instruction execution is:\n *\n * NOTE: the comment binding location is for

```



```

keyValueArrayIndexOf(staticKeyValueArray, tStylingKey as string) > 0) {\n // tStylingKey is present in the
statics, need to mark it as duplicate.\n isKeyDuplicateOfStatic = true;\n } } else {\n tStylingKey =
tStylingKeyWithStatic;\n } if (isHostBinding) {\n // We are inserting host bindings\n\n // If we don't have
template bindings then `tail` is 0.\n const hasTemplateBindings = tmplTail !== 0;\n // This is important to know
because that means that the `head` can't point to the first\n // template bindings (there are none.) Instead the head
points to the tail of the template.\n if (hasTemplateBindings) {\n // template head's `prev` will point to last
host binding or to 0 if no host bindings yet\n const previousNode = getTStylingRangePrev(tData[tmplHead + 1]
as TStylingRange);\n tData[index + 1] = toTStylingRange(previousNode, tmplHead);\n // if a host binding has
already been registered, we need to update the next of that host\n // binding to point to this one\n if
(previousNode !== 0) {\n // We need to update the template-tail value to point to us.\n tData[previousNode
+ 1] =\n setTStylingRangeNext(tData[previousNode + 1] as TStylingRange, index);\n }\n // The
`previous` of the template binding head should point to this host binding\n tData[tmplHead + 1] =
setTStylingRangePrev(tData[tmplHead + 1] as TStylingRange, index);\n } else {\n tData[index + 1] =
toTStylingRange(tmplHead, 0);\n // if a host binding has already been registered, we need to update the next of
that host\n // binding to point to this one\n if (tmplHead !== 0) {\n // We need to update the template-tail
value to point to us.\n tData[tmplHead + 1] = setTStylingRangeNext(tData[tmplHead + 1] as TStylingRange,
index);\n }\n // if we don't have template, the head points to template-tail, and needs to be advanced.\n
tmplHead = index;\n } } else {\n // We are inserting in template section.\n // We need to set this binding's
`previous` to the current template tail\n tData[index + 1] = toTStylingRange(tmplTail, 0);\n ngDevMode &&\n
 assertEqual(\n tmplHead !== 0 && tmplTail === 0, false,\n 'Adding template bindings after
host bindings is not allowed.);\n if (tmplHead === 0) {\n tmplHead = index;\n } else {\n // We need to
update the previous value `next` to point to this binding\n tData[tmplTail + 1] =
setTStylingRangeNext(tData[tmplTail + 1] as TStylingRange, index);\n }\n tmplTail = index;\n }\n\n // Now
we need to update / compute the duplicates.\n // Starting with our location search towards head (least priority)\n if
(isKeyDuplicateOfStatic) {\n tData[index + 1] = setTStylingRangePrevDuplicate(tData[index + 1] as
TStylingRange);\n }\n markDuplicates(tData, tStylingKey, index, true, isClassBinding);\n markDuplicates(tData,
tStylingKey, index, false, isClassBinding);\n markDuplicateOfResidualStyling(tNode, tStylingKey, tData, index,
isClassBinding);\n\n tBindings = toTStylingRange(tmplHead, tmplTail);\n if (isClassBinding) {\n
 tNode.classBindings = tBindings;\n } else {\n tNode.styleBindings = tBindings;\n }\n}\n\n/**\n * Look into the
residual styling to see if the current `tStylingKey` is duplicate of residual.\n *\n * @param tNode `TNode` where the
residual is stored.\n * @param tStylingKey `TStylingKey` to store.\n * @param tData `TData` associated with the
current `LView`.\n * @param index location of where `tStyleValue` should be stored (and linked into list.)\n *\n * @param isClassBinding True if the associated `tStylingKey` as a `class` styling.\n *\n * `tNode.classBindings` should be used (or `tNode.styleBindings` otherwise.)\n */\nfunction
markDuplicateOfResidualStyling(\n tNode: TNode, tStylingKey: TStylingKey, tData: TData, index: number,
isClassBinding: boolean) {\n const residual = isClassBinding ? tNode.residualClasses : tNode.residualStyles;\n if
(residual != null /* or undefined */ && typeof tStylingKey === 'string' &&\n keyValueArrayIndexOf(residual,
tStylingKey) >= 0) {\n // We have duplicate in the residual so mark ourselves as duplicate.\n tData[index + 1] =
setTStylingRangeNextDuplicate(tData[index + 1] as TStylingRange);\n }\n}\n\n/**\n * Marks `TStyleValue`s as
duplicates if another style binding in the list has the same\n * `TStyleValue`.\n *\n * NOTE: this function is
intended to be called twice once with `isPrevDir` set to `true` and once\n * with it set to `false` to search both the
previous as well as next items in the list.\n *\n * No duplicate case\n * ```\n * [style.color]\n * [style.width.px]
<<- index\n * [style.height.px]\n * ```\n *\n * In the above case adding `[style.width.px]` to the existing
`[style.color]` produces no\n * duplicates because `width` is not found in any other part of the linked list.\n *\n * Duplicate case\n * ```\n * [style.color]\n * [style.width.em]\n * [style.width.px] <<- index\n * ```\n *\n * In the
above case adding `[style.width.px]` will produce a duplicate with `[style.width.em]`\n * because `width` is found in
the chain.\n *\n * Map case 1\n * ```\n * [style.width.px]\n * [style.color]\n * [style] <<- index\n * ```\n *\n * In the
above case adding `[style]` will produce a duplicate with any other bindings because\n * `[style]` is a Map and as

```

such is fully dynamic and could produce `color` or `width`.  
 In the above case adding `[style.color]` will produce a duplicate because there is already a `[style]` binding which is a Map and as such is fully dynamic and could produce `color` or `width`.  
 NOTE: Once `[style]` (Map) is added into the system all things are mapped as duplicates.  
 NOTE: We use `style` as example, but same logic is applied to `classes` as well.  
 @param tData `TData` where the linked list is stored.  
 @param tStylingKey `TStylingKeyPrimitive` which contains the value to compare to other keys in the linked list.  
 @param index Starting location in the linked list to search from  
 @param isPrevDir Direction. - `true` for previous (lower priority); - `false` for next (higher priority).

```

function markDuplicates(tData: TData, tStylingKey: TStylingKeyPrimitive, index: number, isPrevDir: boolean, isClassBinding: boolean) {
 const tStylingAtIndex = tData[index + 1] as TStylingRange;
 const isMap = tStylingKey === null;
 let cursor = isPrevDir ?
 getTStylingRangePrev(tStylingAtIndex) : getTStylingRangeNext(tStylingAtIndex);
 let foundDuplicate = false;
 // We keep iterating as long as we have a cursor // AND either:
 // - we found what we are looking for, OR
 // - we are a map in which case we have to continue searching even after we find what we were looking for since we are a wild card and everything needs to be flipped to duplicate.
 while (cursor !== 0 && (foundDuplicate === false || isMap)) {
 ngDevMode && assertIndexInRange(tData, cursor);
 const tStylingValueAtCursor = tData[cursor] as TStylingKey;
 const tStyleRangeAtCursor = tData[cursor + 1] as TStylingRange;
 if (isStylingMatch(tStylingValueAtCursor, tStylingKey)) {
 foundDuplicate = true;
 tData[cursor + 1] = isPrevDir ? setTStylingRangeNextDuplicate(tStyleRangeAtCursor) :
 setTStylingRangePrevDuplicate(tStyleRangeAtCursor);
 }
 cursor = isPrevDir ?
 getTStylingRangePrev(tStyleRangeAtCursor) :
 getTStylingRangeNext(tStyleRangeAtCursor);
 }
 if (foundDuplicate) {
 // if we found a duplicate, than mark ourselves.
 tData[index + 1] = isPrevDir ?
 setTStylingRangePrevDuplicate(tStylingAtIndex) :
 setTStylingRangeNextDuplicate(tStylingAtIndex);
 }
}

```

\* Determines if two `TStylingKey`s are a match.  
 When computing whether a binding contains a duplicate, we need to compare if the instruction `TStylingKey` has a match.  
 Here are examples of `TStylingKey`s which match given `tStylingKeyCursor` is:  
 - `color` // Match another color  
 - `null` // That means that `tStylingKey` is a `classMap`/`styleMap` instruction wrapped `color` so match  
 - `["", 'color', 'other', true]` // wrapped `color` so match  
 - `["", null, 'other', true]` // wrapped `null` so match  
 - `["", 'width', 'color', 'value']` // wrapped static value contains a match on `color`  
 - `null` // `tStylingKeyCursor` always match as it is `classMap`/`styleMap` instruction

```

function isStylingMatch(tStylingKeyCursor: TStylingKey, tStylingKey: TStylingKeyPrimitive) {
 ngDevMode && assertNotEqual(Array.isArray(tStylingKey), true, 'Expected that `tStylingKey` has been unwrapped');
 if (tStylingKeyCursor === null || // If the cursor is `null` it means that we have map at that location so we must assume that we have a match.
 tStylingKey === null || // If `tStylingKey` is `null` then it is a map therefor assume that it contains a match.
 (Array.isArray(tStylingKeyCursor) ? tStylingKeyCursor[1] : tStylingKeyCursor) === tStylingKey // If the keys match explicitly than we are a match.
) {
 return true;
 } else if (Array.isArray(tStylingKeyCursor) && typeof tStylingKey === 'string') {
 // if we did not find a match, but `tStylingKeyCursor` is `KeyValueArray` that means cursor has statics and we need to check those as well.
 return keyValueArrayIndexOf(tStylingKeyCursor, tStylingKey) >= 0;
 } // see if we are matching the key
 return false;
}

```

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```

import {assertEqual, throwError} from '../util/assert';
import {CharCode} from '../util/char_code';

```

\* Stores the locations of key/value indexes while parsing styling.  
 In case of `cssText` parsing the indexes are like so:  
 key1: value1; key2: value2; key3: value3  
 ^ ^ ^ ^ ^ | | | +-- textEnd  
 valueEnd | | +----- value | +----- keyEnd  
 +----- key

\* In case of `className` parsing the indexes are like so:



```

"key1 key2 key3"\n * ^ ^ ^\n * | | +-- textEnd\n * | +----- keyEnd\n * +----- key\n * NOTE: `value` and `valueEnd` are used only for styles, not classes.\n
\ninterface ParserState {\n textEnd: number;\n key: number;\n keyEnd: number;\n value: number;\n valueEnd:\n number;\n}\n// Global state of the parser. (This makes parser non-reentrant, but that is not an issue)\nconst\n parserState: ParserState = {\n textEnd: 0,\n key: 0,\n keyEnd: 0,\n value: 0,\n valueEnd: 0,\n};\n\n\n * Retrieves the last parsed `key` of style.\n * @param text the text to substring the key from.\n *^\nexport function\n getLastParsedKey(text: string): string {\n return text.substring(parserState.key, parserState.keyEnd);\n}\n\n*\n * Retrieves the last parsed `value` of style.\n * @param text the text to substring the key from.\n *^\nexport function\n getLastParsedValue(text: string): string {\n return text.substring(parserState.value,\n parserState.valueEnd);\n}\n\n*\n * Initializes `className` string for parsing and parses the first token.\n *^\n * This function is intended to be used in this format:\n * ```\n * for (let i = parseClassName(text); i >= 0; i =\n * parseClassNameNext(text, i)) {\n * const key = getLastParsedKey();\n * ...}\n * }\n * @param text\n * `className` to parse\n * @returns index where the next invocation of `parseClassNameNext` should resume.\n *^\n *^\nexport function parseClassName(text: string): number {\n resetParserState(text);\n return\n parseClassNameNext(text, consumeWhitespace(text, 0, parserState.textEnd));\n}\n\n*\n * Parses next\n * `className` token.\n *^\n * This function is intended to be used in this format:\n * ```\n * for (let i =\n * parseClassName(text); i >= 0; i = parseClassNameNext(text, i)) {\n * const key = getLastParsedKey();\n * ...}\n * }\n * @param text `className` to parse\n * @param index where the parsing should resume.\n *^\n * @returns index where the next invocation of `parseClassNameNext` should resume.\n *^\nexport function\n parseClassNameNext(text: string, index: number): number {\n const end = parserState.textEnd;\n if (end ===\n index) {\n return -1;\n }\n index = parserState.keyEnd = consumeClassToken(text, parserState.key = index,\n end);\n return consumeWhitespace(text, index, end);\n}\n\n*\n * Initializes `cssText` string for parsing and parses\n the first key/values.\n *^\n * This function is intended to be used in this format:\n * ```\n * for (let i =\n * parseStyle(text); i >= 0; i = parseStyleNext(text, i)) {\n * const key = getLastParsedKey();\n * const value =\n * getLastParsedValue();\n * ...}\n * }\n * @param text `cssText` to parse\n * @returns index where the next\n invocation of `parseStyleNext` should resume.\n *^\n *^\nexport function parseStyle(text: string): number {\n\n resetParserState(text);\n return parseStyleNext(text, consumeWhitespace(text, 0, parserState.textEnd));\n}\n\n*\n * Parses the next `cssText` key/values.\n *^\n * This function is intended to be used in this format:\n * ```\n * for (let\n * i = parseStyle(text); i >= 0; i = parseStyleNext(text, i)) {\n * const key = getLastParsedKey();\n * const value =\n * getLastParsedValue();\n * ...}\n * }\n * @param text `cssText` to parse\n * @param index where the parsing\n should resume.\n *^\n * @returns index where the next invocation of `parseStyleNext` should resume.\n *^\n *^\nexport\n function parseStyleNext(text: string, startIndex: number): number {\n const end = parserState.textEnd;\n let index\n = parserState.key = consumeWhitespace(text, startIndex, end);\n if (end === index) {\n // we reached an end so\n just quit\n return -1;\n }\n index = parserState.keyEnd = consumeStyleKey(text, index, end);\n index =\n consumeSeparator(text, index, end, CharCode.COLON);\n index = parserState.value = consumeWhitespace(text,\n index, end);\n index = parserState.valueEnd = consumeStyleValue(text, index, end);\n return\n consumeSeparator(text, index, end, CharCode.SEMI_COLON);\n}\n\n*\n * Reset the global state of the styling\n parser.\n *^\n * @param text The styling text to parse.\n *^\n *^\nexport function resetParserState(text: string): void {\n\n parserState.key = 0;\n parserState.keyEnd = 0;\n parserState.value = 0;\n parserState.valueEnd = 0;\n\n parserState.textEnd = text.length;\n}\n\n*\n * Returns index of next non-whitespace character.\n *^\n * @param\n text Text to scan\n * @param startIndex Starting index of character where the scan should start.\n *^\n * @param\n endIndex Ending index of character where the scan should end.\n *^\n * @returns Index of next non-whitespace\n character (May be the same as `start` if no whitespace at\n * that location.)\n *^\n *^\nexport function\n consumeWhitespace(text: string, startIndex: number, endIndex: number): number {\n while (startIndex < endIndex\n && text.charCodeAt(startIndex) <= CharCode.SPACE) {\n startIndex++;\n }\n return startIndex;\n}\n\n*\n * Returns index of last char in class token.\n *^\n * @param text Text to scan\n *^\n * @param startIndex Starting index of\n character where the scan should start.\n *^\n * @param endIndex Ending index of character where the scan should end.\n *^\n * @returns Index after last char in class token.\n *^\n *^\nexport function consumeClassToken(text: string, startIndex:

```



```

from '../util/stringify';\nimport {assertFirstUpdatePass} from '../assert';\nimport {bindingUpdated} from
'../bindings';\nimport {DirectiveDef} from '../interfaces/definition';\nimport {AttributeMarker, TAttributes, TNode,
TNodeFlags, TNodeType} from '../interfaces/node';\nimport {Renderer3} from '../interfaces/renderer';\nimport
{RElement} from '../interfaces/renderer_dom';\nimport {getTStylingRangeNext, getTStylingRangeNextDuplicate,
getTStylingRangePrev, getTStylingRangePrevDuplicate, TStylingKey, TStylingRange} from
'../interfaces/styling';\nimport {LView, RENDERER, TData, TView} from '../interfaces/view';\nimport
{applyStyling} from '../node_manipulation';\nimport {getCurrentDirectiveDef, getLView, getSelectedIndex,
getTView, incrementBindingIndex} from '../state';\nimport {insertTStylingBinding} from
'../styling/style_binding_list';\nimport {getLastParsedKey, getLastParsedValue, parseClassName,
parseClassNameNext, parseStyle, parseStyleNext} from '../styling/styling_parser';\nimport {NO_CHANGE} from
'../tokens';\nimport {getNativeByIndex} from '../util/view_utils';\nimport
{setDirectiveInputsWhichShadowsStyling} from '../property';\n\n/**\n * Update a style binding on an element with
the provided value.\n * If the style value is falsy then it will be removed from the element\n * (or assigned a
different value depending if there are any styles placed\n * on the element with `styleMap` or any static styles that
are\n * present from when the element was created with `styling`).\n * Note that the styling element is updated
as part of `stylingApply`.\n * @param prop A valid CSS property.\n * @param value New value to write (`null`
or an empty string to remove).\n * @param suffix Optional suffix. Used with scalar values to add unit such as
`px`.\n * Note that this will apply the provided style value to the host element if this function is called\n * within
a host binding function.\n * @codeGenApi\n */\nexport function styleProp(\n prop: string, value:
string|number|SafeValue|undefined|null,\n suffix?: string|null): typeof styleProp {\n checkStylingProperty(prop,
value, suffix, false);\n return styleProp;\n}\n\n/**\n * Update a class binding on an element with the provided
value.\n * This instruction is meant to handle the `[class.foo]="exp"` case and,\n * therefore, the class binding
itself must already be allocated using\n * `styling` within the creation block.\n * @param prop A valid CSS class
(only one).\n * @param value A true/false value which will turn the class on or off.\n * Note that this will apply
the provided class value to the host element if this function\n * is called within a host binding function.\n *
@codeGenApi\n */\nexport function classProp(className: string, value: boolean|undefined|null): typeof classProp
{\n checkStylingProperty(className, value, null, true);\n return classProp;\n}\n\n/**\n * Update style bindings
using an object literal on an element.\n * This instruction is meant to apply styling via the `[style]="exp"`
template bindings.\n * When styles are applied to the element they will then be updated with respect to\n * any
styles/classes set via `styleProp`. If any styles are set to falsy\n * then they will be removed from the element.\n *
Note that the styling instruction will not be applied until `stylingApply` is called.\n * @param styles A
key/value style map of the styles that will be applied to the given element.\n * Any missing styles (that have
already been applied to the element beforehand) will be\n * removed (unset) from the element's styling.\n *
Note that this will apply the provided styleMap value to the host element if this function\n * is called within a host
binding.\n * @codeGenApi\n */\nexport function styleMap(styles: {[styleName: string]:
any}|string|undefined|null): void {\n checkStylingMap(styleKeyValueArraySet, styleStringParser, styles,
false);\n}\n\n/**\n * Parse text as style and add values to KeyValueArray.\n * This code is pulled out to a
separate function so that it can be tree shaken away if it is not\n * needed. It is only referenced from `styleMap`.\n *
@param keyValueArray KeyValueArray to add parsed values to.\n * @param text text to parse.\n */\nexport
function styleStringParser(keyValueArray: KeyValueArray<any>, text: string): void {\n for (let i =
parseStyle(text); i >= 0; i = parseStyleNext(text, i)) {\n styleKeyValueArraySet(keyValueArray,
getLastParsedKey(text), getLastParsedValue(text));\n }\n}\n\n/**\n * Update class bindings using an object literal
or class-string on an element.\n * This instruction is meant to apply styling via the `[class]="exp"` template
bindings.\n * When classes are applied to the element they will then be updated with\n * respect to any styles/classes
set via `classProp`. If any\n * classes are set to falsy then they will be removed from the element.\n * Note that
the styling instruction will not be applied until `stylingApply` is called.\n * Note that this will the provided classMap
value to the host element if this function is called\n * within a host binding.\n * @param classes A key/value
map or string of CSS classes that will be added to the\n * given element. Any missing classes (that have already

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been applied to the element\n * beforehand) will be removed (unset) from the element's list of CSS classes.\n
*\n * @codegenApi\n *^\nexport function classMap(classes: {[className: string]:\n
boolean|undefined|null}|string|undefined|\n null): void {\n checkStylingMap(keyValueArraySet,\n classStringParser, classes, true);\n}\n\n**\n * Parse text as class and add values to KeyValueArray.\n *\n * This\n code is pulled out to a separate function so that it can be tree shaken away if it is not\n * needed. It is only\n referenced from `classMap`.\n *\n * @param keyValueArray KeyValueArray to add parsed values to.\n *\n * @param\n text text to parse.\n *^\nexport function classStringParser(keyValueArray: KeyValueArray<any>, text: string): void\n {\n for (let i = parseClassName(text); i >= 0; i = parseClassNameNext(text, i)) {\n\n keyValueArraySet(keyValueArray, getLastParsedKey(text), true);\n }\n}\n\n**\n * Common code between\n `classProp` and `styleProp`.\n *\n * @param prop property name.\n *\n * @param value binding value.\n *\n * @param\n suffix suffix for the property (e.g. `em` or `px`)\n *\n * @param isClassBased `true` if `class` change (`false` if\n `style`)\n *^\nexport function checkStylingProperty(\n prop: string, value: any|NO_CHANGE, suffix:\n string|undefined|null,\n isClassBased: boolean): void {\n const lView = getLView();\n const tView =\n getTView();\n // Styling instructions use 2 slots per binding.\n // 1. one for the value / TStylingKey\n // 2. one for\n the intermittent-value / TStylingRange\n const bindingIndex = incrementBindingIndex(2);\n if\n (tView.firstUpdatePass) {\n stylingFirstUpdatePass(tView, prop, bindingIndex, isClassBased);\n }\n if (value\n !== NO_CHANGE && bindingUpdated(lView, bindingIndex, value)) {\n const tNode =\n tView.data[getSelectedIndex()] as TNode;\n updateStyling(\n tView, tNode, lView, lView[RENDERER],\n prop,\n lView[bindingIndex + 1] = normalizeSuffix(value, suffix), isClassBased, bindingIndex);\n }\n}\n\n**\n * Common code between `classMap` and `styleMap`.\n *\n * @param keyValueArraySet (See\n `keyValueArraySet` in `util/array_utils`) Gets passed in as a\n *\n function so that `style` can be processed. This\n is done for tree shaking purposes.\n *\n * @param stringParser Parser used to parse `value` if `string`. (Passed in as\n `style` and `class`\n *\n have different parsers.)\n *\n * @param value bound value from application\n *\n * @param\n isClassBased `true` if `class` change (`false` if `style`)\n *^\nexport function checkStylingMap(\n\n keyValueArraySet: (keyValueArray: KeyValueArray<any>, key: string, value: any) => void,\n stringParser:\n (styleKeyValueArray: KeyValueArray<any>, text: string) => void,\n value: any|NO_CHANGE, isClassBased:\n boolean): void {\n const tView = getTView();\n const bindingIndex = incrementBindingIndex(2);\n if\n (tView.firstUpdatePass) {\n stylingFirstUpdatePass(tView, null, bindingIndex, isClassBased);\n }\n const lView\n = getLView();\n if (value !== NO_CHANGE && bindingUpdated(lView, bindingIndex, value)) {\n //\n `getSelectedIndex()` should be here (rather than in instruction) so that it is guarded by the\n // if so as not to read\n unnecessarily.\n const tNode = tView.data[getSelectedIndex()] as TNode;\n if (hasStylingInputShadow(tNode,\n isClassBased) && !isInHostBindings(tView, bindingIndex)) {\n if (ngDevMode) {\n // verify that if we are\n shadowing then `TData` is appropriately marked so that we skip\n // processing this binding in styling\n resolution.\n const tStylingKey = tView.data[bindingIndex];\n assertEquals(\n Array.isArray(tStylingKey) ? tStylingKey[1] : tStylingKey, false,\n `Styling linked list shadow input should\n be marked as \\false`);\n }\n // VE does not concatenate the static portion like we are doing here.\n //\n Instead VE just ignores the static completely if dynamic binding is present.\n // Because of locality we have\n already set the static portion because we don't know if there\n // is a dynamic portion until later. If we would\n ignore the static portion it would look like\n // the binding has removed it. This would confuse\n `[ngStyle]` ^ `[ngClass]` to do the wrong\n // thing as it would think that the static portion was removed. For this\n reason we\n // concatenate it so that `[ngStyle]` ^ `[ngClass]` can continue to work on changed.\n let\n staticPrefix = isClassBased ? tNode.classesWithoutHost : tNode.stylesWithoutHost;\n ngDevMode &&\n isClassBased === false && staticPrefix !== null &&\n assertEquals(\n staticPrefix.endsWith(';'), true,\n `Expecting static portion to end with `;``);\n if (staticPrefix !== null) {\n // We want to make sure that falsy\n values of `value` become empty strings.\n value = concatStringsWhiteSpace(staticPrefix, value ? value : '');\n }\n // Given `

` such that `my-dir` has `@Input('style')`.\n // This takes over the `[style]`\n binding. (Same for `[class]`)\n setDirectiveInputsWhichShadowsStyling(tView, tNode, lView, value,\n isClassBased);\n } else {\n updateStylingMap(\n tView, tNode, lView, lView[RENDERER],


```

```

IView[bindingIndex + 1],\n IView[bindingIndex + 1] = toStylingKeyValueArray(keyValueArraySet,
stringParser, value),\n isClassBased, bindingIndex);\n }\n }\n}\n\n/**\n * Determines when the binding is in
`hostBindings` section\n * @param tView Current `TView`\n * @param bindingIndex index of binding which
we would like if it is in `hostBindings`\n */\nfunction isInHostBindings(tView: TView, bindingIndex: number):
boolean {\n // All host bindings are placed after the expando section.\n return bindingIndex >=
tView.expandoStartIndex;\n }\n\n/**\n * Collects the necessary information to insert the binding into a linked list of
style bindings\n * using `insertTStylingBinding`.\n * @param tView `TView` where the binding linked list will
be stored.\n * @param tStylingKey Property/key of the binding.\n * @param bindingIndex Index of binding
associated with the `prop`\n * @param isClassBased `true` if `class` change (`false` if `style`)\n */\nfunction
stylingFirstUpdatePass(\n tView: TView, tStylingKey: TStylingKey, bindingIndex: number, isClassBased:
boolean): void {\n ngDevMode && assertFirstUpdatePass(tView);\n const tData = tView.data;\n if
(tData[bindingIndex + 1] === null) {\n // The above check is necessary because we don't clear first update pass
until first successful\n // (no exception) template execution. This prevents the styling instruction from double
adding\n // itself to the list.\n // `getSelectedIndex()` should be here (rather than in instruction) so that it is
guarded by the\n // if so as not to read unnecessarily.\n const tNode = tData[getSelectedIndex()] as TNode;\n
ngDevMode && assertDefined(tNode, 'TNode expected');\n const isHostBindings = isInHostBindings(tView,
bindingIndex);\n if (hasStylingInputShadow(tNode, isClassBased) && tStylingKey === null &&
!isHostBindings) {\n // `tStylingKey === null` implies that we are either `[style]` or `[class]` binding.\n // If
there is a directive which uses `@Input('style')` or `@Input('class')` than\n // we need to neutralize this binding
since that directive is shadowing it.\n // We turn this into a noop by setting the key to `false`\n tStylingKey =
false;\n }\n tStylingKey = wrapInStaticStylingKey(tData, tNode, tStylingKey, isClassBased);\n
insertTStylingBinding(tData, tNode, tStylingKey, bindingIndex, isHostBindings, isClassBased);\n }\n }\n\n/**\n * Adds static styling information to the binding if applicable.\n * @param tData `TData` where the linked list is stored.\n * @param tNode `TNode` for which the styling is being
computed.\n * @param stylingKey `TStylingKeyPrimitive` which may need to be wrapped into `TStylingKey`\n *
@param isClassBased `true` if `class` (`false` if `style`)\n */\nexport function wrapInStaticStylingKey(\n tData:
TData, tNode: TNode, stylingKey: TStylingKey, isClassBased: boolean): TStylingKey {\n const hostDirectiveDef
= getCurrentDirectiveDef(tData);\n let residual = isClassBased ? tNode.residualClasses : tNode.residualStyles;\n
if (hostDirectiveDef === null) {\n // We are in template node.\n // If template node already had styling instruction
then it has already collected the static\n // styling and there is no need to collect them again. We know that we are
the first styling\n // instruction because the `TNode.*Bindings` points to 0 (nothing has been inserted yet).\n
const isFirstStylingInstructionInTemplate =\n (isClassBased ? tNode.classBindings : tNode.styleBindings) as
any as number === 0;\n if (isFirstStylingInstructionInTemplate) {\n // It would be nice to be able to get the
statics from `mergeAttrs`, however, at this point\n // they are already merged and it would not be possible to
figure which property belongs where\n // in the priority.\n stylingKey = collectStylingFromDirectives(null,
tData, tNode, stylingKey, isClassBased);\n stylingKey = collectStylingFromTAttrs(stylingKey, tNode.attrs,
isClassBased);\n // We know that if we have styling binding in template we can't have residual.\n residual =
null;\n }\n } else {\n // We are in host binding node and there was no binding instruction in template node.\n //
This means that we need to compute the residual.\n const directiveStylingLast = tNode.directiveStylingLast;\n
const isFirstStylingInstructionInHostBinding =\n directiveStylingLast === -1 || tData[directiveStylingLast] !==
hostDirectiveDef;\n if (isFirstStylingInstructionInHostBinding) {\n stylingKey =\n
collectStylingFromDirectives(hostDirectiveDef, tData, tNode, stylingKey, isClassBased);\n if (residual === null)
{\n // - If `null` than either:\n // - Template styling instruction already ran and it has consumed the static\n
// styling into its `TStylingKey` and so there is no need to update residual. Instead\n // we need to
update the `TStylingKey` associated with the first template node\n // instruction. OR\n // - Some other
styling instruction ran and determined that there are no residuals\n let templateStylingKey =

```

```

getTemplateHeadTStylingKey(tData, tNode, isClassBased);
 if (templateStylingKey !== undefined &&
 Array.isArray(templateStylingKey)) {
 // Only recompute if `templateStylingKey` had static values. (If no
 // static value found
 // then there is nothing to do since this operation can only produce less static keys, not
 // more.)
 templateStylingKey = collectStylingFromDirectives(
 null, tData, tNode,
 templateStylingKey[1] /* unwrap previous statics */,
 isClassBased);
 templateStylingKey =
 collectStylingFromTAttrs(templateStylingKey, tNode.attrs, isClassBased);
 }
 setTemplateHeadTStylingKey(tData, tNode, isClassBased, templateStylingKey);
} else {
 // We
 only need to recompute residual if it is not `null`.
 // - If existing residual (implies there was no template
 styling). This means that some of
 // the statics may have moved from the residual to the `stylingKey` and so
 we have to
 // recompute.
 // - If `undefined` this is the first time we are running.
 residual =
 collectResidual(tData, tNode, isClassBased);
}
if (residual !== undefined) {
 isClassBased ?
 (tNode.residualClasses = residual) :
 (tNode.residualStyles = residual);
}
return stylingKey;
}
}

Retrieve the `TStylingKey` for the template styling instruction.
This is needed since `hostBinding` styling
instructions are inserted after the template
instruction. While the template instruction needs to update the
residual in `TNode` the `hostBinding` instructions need to update the `TStylingKey` of the template instruction
because the template instruction is downstream from the `hostBindings` instructions.
@param tData `TData` where the linked list is stored.
@param tNode `TNode` for which the styling is being computed.
@param isClassBased `true` if `class` (`false` if `style`)
@return `TStylingKey` if found or `undefined` if not
found.
}

function getTemplateHeadTStylingKey(tData: TData, tNode: TNode, isClassBased: boolean):
TStylingKey {
 if (undefined) {
 const bindings = isClassBased ? tNode.classBindings : tNode.styleBindings;
 if (getTStylingRangeNext(bindings) === 0) {
 // There does not seem to be a styling instruction in the `template`.
 return undefined;
 }
 return tData[getTStylingRangePrev(bindings)] as TStylingKey;
 }
 // Update the
 `TStylingKey` of the first template instruction in `TNode`.
 // Logically `hostBindings` styling instructions are
 of lower priority than that of the template.
 // However, they execute after the template styling instructions. This
 means that they get inserted
 // in front of the template styling instructions.
 // If we have a template styling
 instruction and a new `hostBindings` styling instruction is
 // executed it means that it may need to steal static fields
 from the template instruction. This
 // method allows us to update the first template instruction `TStylingKey` with
 a new value.
 // Assume:
 <div my-dir style="color: red" [style.color]="tmplExp"></div>
 @Directive({
 host: {
 'style': 'width: 100px',
 [style.color]: 'dirExp',
 }
 })
 class MyDir
 {
 when [style.color]="tmplExp"
 executes it creates this data structure:
 ['color',
 'color', 'red', 'width', '100px'],
 // The reason for this is that the template instruction does not know if there
 are styling
 // instructions and must assume that there are none and must collect all of the static styling.
 // (both
 // `color` and `width`)
 // When `[style.color]: 'dirExp',` executes we need to insert a new data into the linked
 list.
 ['color', 'width', '100px'], // newly inserted
 ['color', 'color', 'red', 'width', '100px'], // this is
 wrong
 // Notice that the template statics is now wrong as it incorrectly contains `width` so we need to
 // update it like so:
 ['color', 'width', '100px'],
 ['color', 'color', 'red'], // UPDATE
 }
 @param tData `TData` where the linked list is stored.
 @param tNode `TNode` for which the styling is being
 computed.
 @param isClassBased `true` if `class` (`false` if `style`)
 @param tStylingKey New `TStylingKey`
 which is replacing the old one.
}

function setTemplateHeadTStylingKey(
 tData: TData, tNode: TNode,
 isClassBased: boolean, tStylingKey: TStylingKey): void {
 const bindings = isClassBased ? tNode.classBindings :
 tNode.styleBindings;
 ngDevMode && assertNotEqual(
 getTStylingRangeNext(bindings), 0,
 'Expecting to have at least one template styling binding.');
```

```

&&\n assertNotEqual(\n tNode.directiveStylingLast, -1,\n 'By the time this function gets called at
least one hostBindings-node styling instruction must have executed.');
```

// We add `1 + tNode.directiveStart` because we need to skip the current directive (as we are // collecting things after the last `hostBindings` directive which had a styling instruction.)\n for (let i = 1 + tNode.directiveStylingLast; i < directiveEnd; i++) {\n const attrs = (tData[i] as DirectiveDef<any>).hostAttrs;\n residual = collectStylingFromTAttrs(residual, attrs, isClassBased) as KeyValueArray<any>| null;\n } \n return collectStylingFromTAttrs(residual, tNode.attrs, isClassBased) as KeyValueArray<any>| null;\n}\n\n/\*\*\n \* Collect the static styling information with lower priority than `hostDirectiveDef`.\n \* (This is opposite of residual styling.)\n \* @param hostDirectiveDef `DirectiveDef` for which we want to collect lower priority static\n \* styling. (Or `null` if template styling)\n \* @param tData `TData` where the linked list is stored.\n \* @param tNode `TNode` for which the styling is being computed.\n \* @param stylingKey Existing `TStylingKey` to update or wrap.\n \* @param isClassBased `true` if `class` (`false` if `style`)\n \*/\nfunction collectStylingFromDirectives(\n hostDirectiveDef: DirectiveDef<any>|null, tData: TData, tNode: TNode, stylingKey: TStylingKey,\n isClassBased: boolean): TStylingKey {\n // We need to loop because there can be directives which have `hostAttrs` but don't have\n // `hostBindings` so this loop catches up to the current directive..\n let currentDirective: DirectiveDef<any>|null = null;\n const directiveEnd = tNode.directiveEnd;\n let directiveStylingLast = tNode.directiveStylingLast;\n if (directiveStylingLast === -1) {\n directiveStylingLast = tNode.directiveStart;\n } else {\n directiveStylingLast++;\n }\n while (directiveStylingLast < directiveEnd) {\n currentDirective = tData[directiveStylingLast] as DirectiveDef<any>;\n ngDevMode && assertDefined(currentDirective, 'expected to be defined');\n stylingKey = collectStylingFromTAttrs(stylingKey, currentDirective.hostAttrs, isClassBased);\n if (currentDirective === hostDirectiveDef) break;\n directiveStylingLast++;\n }\n if (hostDirectiveDef !== null) {\n // we only advance the styling cursor if we are collecting data from host bindings.\n // Template executes before host bindings and so if we would update the index,\n // host bindings would not get their statics.\n tNode.directiveStylingLast = directiveStylingLast;\n }\n return stylingKey;\n}\n\n/\*\*\n \* Convert `TAttrs` into `TStylingStatic`.\n \* @param stylingKey existing `TStylingKey` to update or wrap.\n \* @param attrs `TAttributes` to process.\n \* @param isClassBased `true` if `class` (`false` if `style`)\n \*/\nfunction collectStylingFromTAttrs(\n stylingKey: TStylingKey|undefined, attrs: TAttributes|null,\n isClassBased: boolean): TStylingKey {\n const desiredMarker = isClassBased ? AttributeMarker.Classes : AttributeMarker.Styles;\n let currentMarker = AttributeMarker.ImplicitAttributes;\n if (attrs !== null) {\n for (let i = 0; i < attrs.length; i++) {\n const item = attrs[i] as number | string;\n if (typeof item === 'number') {\n currentMarker = item;\n } else {\n if (currentMarker === desiredMarker) {\n if (!Array.isArray(stylingKey)) {\n stylingKey = stylingKey === undefined ? [] : [", stylingKey] as any;\n }\n keyValueArraySet(\n stylingKey as KeyValueArray<any>, item, isClassBased ? true : attrs[+i]);\n }\n }\n }\n }\n return stylingKey === undefined ? null : stylingKey;\n}\n\n/\*\*\n \* Convert user input to `KeyValueArray`.\n \* This function takes user input which could be `string`, Object literal, or iterable and converts\n \* it into a consistent representation. The output of this is `KeyValueArray` (which is an array\n \* where\n \* even indexes contain keys and odd indexes contain values for those keys).\n \* The advantage of converting to `KeyValueArray` is that we can perform diff in an input\n \* independent\n \* way.\n \* (ie we can compare `foo bar` to `[bar, baz]` and determine a set of changes which need to be\n \* applied)\n \* The fact that `KeyValueArray` is sorted is very important because it allows us to compute the\n \* difference in linear fashion without the need to allocate any additional data.\n \* For example if we kept this as a `Map` we would have to iterate over previous `Map` to determine\n \* which values need to be deleted, over the new `Map` to determine additions, and we would have to\n \* keep additional `Map` to keep track of duplicates or items which have not yet been visited.\n \* @param keyValueArraySet (See `keyValueArraySet` in `util/array\_utils`) Gets passed in as a\n \* function so that `style` can be processed. This is done\n \* for tree shaking purposes.\n \* @param stringParser The parser is passed in so that it will be tree shakable. See\n \* `styleStringParser` and `classStringParser`\n \* @param value The value to parse/convert to `KeyValueArray`\n \*/\nexport function toStylingKeyValueArray(\n keyValueArraySet: (keyValueArray: KeyValueArray<any>, key: string, value: any) => void,\n stringParser: (styleKeyValueArray: KeyValueArray<any>, text: string) => void,\n

```

value: string|string[]|{[key: string]: any}|SafeValue|null|undefined): KeyValueArray<any> {\n if (value === null /*||
value === undefined */ || value === "") return EMPTY_ARRAY as any;\n const styleKeyValueArray:
KeyValueArray<any> = [] as any;\n const unwrappedValue = unwrapSafeValue(value) as string | string[] | {[key:
string]: any};\n if (Array.isArray(unwrappedValue)) {\n for (let i = 0; i < unwrappedValue.length; i++) {\n
keyValueArraySet(styleKeyValueArray, unwrappedValue[i], true);\n } } else if (typeof unwrappedValue ===
'object') {\n for (const key in unwrappedValue) {\n if (unwrappedValue.hasOwnProperty(key)) {\n
keyValueArraySet(styleKeyValueArray, key, unwrappedValue[key]);\n } } } else if (typeof
unwrappedValue === 'string') {\n stringParser(styleKeyValueArray, unwrappedValue);\n } else {\n
ngDevMode &&\n throwError('Unsupported styling type ' + typeof unwrappedValue + ': ' +
unwrappedValue);\n }\n return styleKeyValueArray;\n}\n\n/**\n * Set a `value` for a `key`.\n *\n * See:
`keyValueArraySet` for details\n *\n * @param keyValueArray KeyValueArray to add to.\n *\n * @param key Style
key to add.\n *\n * @param value The value to set.\n */\nexport function styleKeyValueArraySet(keyValueArray:
KeyValueArray<any>, key: string, value: any) {\n keyValueArraySet(keyValueArray, key,
unwrapSafeValue(value));\n}\n\n/**\n * Update map based styling.\n *\n * Map based styling could be anything
which contains more than one binding. For example `string`,\n * or object literal. Dealing with all of these types
would complicate the logic so\n * instead this function expects that the complex input is first converted into
normalized\n * `KeyValueArray`. The advantage of normalization is that we get the values sorted, which makes it\n
* very cheap to compute deltas between the previous and current value.\n *\n * @param tView Associated
`TView.data` contains the linked list of binding priorities.\n *\n * @param tNode `TNode` where the binding is
located.\n *\n * @param lView `LView` contains the values associated with other styling binding at this `TNode`.\n
*\n * @param renderer Renderer to use if any updates.\n *\n * @param oldKeyValueArray Previous value represented as
`KeyValueArray`\n *\n * @param newKeyValueArray Current value represented as `KeyValueArray`\n *\n * @param
isClassBased `true` if `class` (`false` if `style`)\n *\n * @param bindingIndex Binding index of the binding.\n
*\n * @param updateStylingMap(\n tView: TView, tNode: TNode, lView: LView, renderer: Renderer3,\n
oldKeyValueArray: KeyValueArray<any>, newKeyValueArray: KeyValueArray<any>,\n isClassBased: boolean,\n
bindingIndex: number) {\n if (oldKeyValueArray as KeyValueArray<any>| NO_CHANGE === NO_CHANGE)\n
{\n // On first execution the oldKeyValueArray is NO_CHANGE => treat it as empty KeyValueArray.\n
oldKeyValueArray = EMPTY_ARRAY as any;\n }\n let oldIndex = 0;\n let newIndex = 0;\n let oldKey:
string|null = 0 < oldKeyValueArray.length ? oldKeyValueArray[0] : null;\n let newKey: string|null = 0 <
newKeyValueArray.length ? newKeyValueArray[0] : null;\n while (oldKey !== null || newKey !== null) {\n
ngDevMode && assertLessThan(oldIndex, 999, 'Are we stuck in infinite loop?');\n ngDevMode &&
assertLessThan(newIndex, 999, 'Are we stuck in infinite loop?');\n const oldValue =\n oldIndex <
oldKeyValueArray.length ? oldKeyValueArray[oldIndex + 1] : undefined;\n const newValue =\n newIndex <
newKeyValueArray.length ? newKeyValueArray[newIndex + 1] : undefined;\n let setKey: string|null = null;\n
let setValue: any = undefined;\n if (oldKey === newKey) {\n // UPDATE: Keys are equal => new value is
overwriting old value.\n oldIndex += 2;\n newIndex += 2;\n if (oldValue !== newValue) {\n setKey =
newKey;\n setValue = newValue;\n } } else if (newKey === null || oldKey !== null && oldKey <
newKey!) {\n // DELETE: oldKey key is missing or we did not find the oldKey in the newValue\n // (because
the keyValueArray is sorted and `newKey` is found later alphabetically).\n // `\"background\" < \"color\"` so we
need to delete `\"background\"` because it is not found in the\n // new array.\n oldIndex += 2;\n setKey =
oldKey;\n } else {\n // CREATE: newKey's is earlier alphabetically than oldKey's (or no oldKey) => we have
new key.\n // `\"color\" > \"background\"` so we need to add `color` because it is in new array but not in\n //
old array.\n ngDevMode && assertDefined(newKey, 'Expecting to have a valid key');\n newIndex += 2;\n
setKey = newKey;\n setValue = newValue;\n } } if (setKey !== null) {\n updateStyling(tView, tNode,
lView, renderer, setKey, setValue, isClassBased, bindingIndex);\n } } oldKey = oldIndex <
oldKeyValueArray.length ? oldKeyValueArray[oldIndex] : null;\n newKey = newIndex <
newKeyValueArray.length ? newKeyValueArray[newIndex] : null;\n }\n}\n\n/**\n * Update a simple (property
name) styling.\n *\n * This function takes `prop` and updates the DOM to that value. The function takes the

```



binding value as well as binding priority into consideration to determine which value should be written to DOM. (For example it may be determined that there is a higher priority overwrite which blocks the DOM write, or if the value goes to `undefined` a lower priority overwrite may be consulted.)

@param tView Associated `TVView.data` contains the linked list of binding priorities.

@param tNode `TNode` where the binding is located.

@param lView `LView` contains the values associated with other styling binding at this `TNode`.

@param renderer Renderer to use if any updates.

@param prop Either style property name or a class name.

@param value Either style value for `prop` or `true`/`false` if `prop` is class.

@param isClassBased `true` if `class` (`false` if `style`)

@param bindingIndex Binding index of the binding.

```

function updateStyling(tView: TVView, tNode: TNode, lView: LView, renderer: Renderer3, prop: string, value: string|undefined|null|boolean, isClassBased: boolean, bindingIndex: number) {
 if (!(tNode.type & TNodeType.AnyRNode)) {
 // It is possible to have styling on non-elements (such as ng-container).
 // This is rare, but it does happen. In such a case, just ignore the binding.
 return;
 }
 const tData = tView.data;
 const tRange = tData[bindingIndex + 1] as TStylingRange;
 const higherPriorityValue = getTStylingRangeNextDuplicate(tRange) ? findStylingValue(tData, tNode, lView, prop, getTStylingRangeNext(tRange), isClassBased) : undefined;
 if (!isStylingValuePresent(higherPriorityValue)) {
 // We don't have a next duplicate, or we did not find a duplicate value.
 if (!isStylingValuePresent(value)) {
 // We should delete current value or restore to lower priority value.
 if (getTStylingRangePrevDuplicate(tRange)) {
 // We have a possible prev duplicate, let's retrieve it.
 value = findStylingValue(tData, null, lView, prop, bindingIndex, isClassBased);
 }
 }
 const rNode = getNativeByIndex(getSelectedIndex(), lView) as RElement;
 applyStyling(renderer, isClassBased, rNode, prop, value);
 }
 // Search for styling value with higher priority which is overwriting current value, or a value of lower priority to which we should fall back if the value is `undefined`.
 // When value is being applied at a location, related values need to be consulted.
 // - If there is a higher priority binding, we should be using that one instead.
 // For example <div [style]="{color:exp1}" [style.color]="exp2"> change to `exp1` requires that we check `exp2` to see if it is set to value other than `undefined`.
 // - If there is a lower priority binding and we are changing to `undefined`
 // For example <div [style]="{color:exp1}" [style.color]="exp2"> change to `exp2` to `undefined` requires that we check `exp1` (and static values) and use that as new value.
 // NOTE: The styling stores two values.
 // 1. The raw value which came from the application is stored at `index + 0` location. (This value is used for dirty checking).
 // 2. The normalized value is stored at `index + 1`.
 @param tData `TData` used for traversing the priority.
 @param tNode `TNode` to use for resolving static styling. Also controls search direction.
 - `TNode` search next and quit as soon as `isStylingValuePresent(value)` is true.
 If no value found consult `tNode.residualStyle`/`tNode.residualClass` for default value.
 - `null` search prev and go all the way to end.
 Return last value where `isStylingValuePresent(value)` is true.
 @param lView `LView` used for retrieving the actual values.
 @param prop Property which we are interested in.
 @param index Starting index in the linked list of styling bindings where the search should start.
 @param isClassBased `true` if `class` (`false` if `style`)
 function findStylingValue(tData: TData, tNode: TNode|null, lView: LView, prop: string, index: number, isClassBased: boolean): any {
 // `TNode` to use for resolving static styling. Also controls search direction.
 // - `TNode` search next and quit as soon as `isStylingValuePresent(value)` is true.
 // If no value found consult `tNode.residualStyle`/`tNode.residualClass` for default value.
 // - `null` search prev and go all the way to end.
 Return last value where `isStylingValuePresent(value)` is true.
 const isPrevDirection = tNode === null;
 let value: any = undefined;
 while (index > 0) {
 const rawKey = tData[index] as TStylingKey;
 const containsStatics = Array.isArray(rawKey);
 // Unwrap the key if we contain static values.
 const key = containsStatics ? (rawKey as string[])[1] : rawKey;
 const isStylingMap = key === null;
 let valueAtLViewIndex = lView[index + 1];
 if (valueAtLViewIndex === NO_CHANGE) {
 // In firstUpdatePass the styling instructions create a linked list of styling.
 // On subsequent passes it is possible for a styling instruction to try to read a binding which has not yet executed.
 In that case we will find `NO_CHANGE` and we should assume that we have `undefined` (or empty array in case of styling-map

```



```

@codeGenApi\n * \nexport function textInterpolate(v0: any): typeof textInterpolate {\n textInterpolate1(", v0, ");\n return textInterpolate;\n}\n\n/**\n * \n * Update text content with single bound value surrounded by other text.\n * \n * Used when a text node has 1 interpolated value in it:\n * \n * ```html\n * <div>prefix{ {v0}}suffix</div>\n * ```\n * \n * Its compiled representation is:\n * \n * ```ts\n * textInterpolate1('prefix', v0, 'suffix');\n * ```\n * \n * @returns\n * itself, so that it may be chained.\n * @see textInterpolateV\n * @codeGenApi\n * \nexport function\n textInterpolate1(\n prefix: string, v0: any, suffix: string): typeof textInterpolate1 {\n const IView = getLView();\n const interpolated = interpolation1(IView, prefix, v0, suffix);\n if (interpolated !== NO_CHANGE) {\n textBindingInternal(IView, getSelectedIndex(), interpolated as string);\n }\n return textInterpolate1;\n }\n\n/**\n * \n * Update text content with 2 bound values surrounded by other text.\n * \n * Used when a text node has 2\n interpolated values in it:\n * \n * ```html\n * <div>prefix{ {v0}}-{{v1}}suffix</div>\n * ```\n * \n * Its compiled\n representation is:\n * \n * ```ts\n * textInterpolate2('prefix', v0, '-', v1, 'suffix');\n * ```\n * \n * @returns\n * itself, so that it\n may be chained.\n * @see textInterpolateV\n * @codeGenApi\n * \nexport function textInterpolate2(\n prefix:\n string, v0: any, i0: string, v1: any, suffix: string): typeof textInterpolate2 {\n const IView = getLView();\n const\n interpolated = interpolation2(IView, prefix, v0, i0, v1, suffix);\n if (interpolated !== NO_CHANGE) {\n \n textBindingInternal(IView, getSelectedIndex(), interpolated as string);\n }\n return textInterpolate2;\n}\n\n/**\n * \n * Update text content with 3 bound values surrounded by other text.\n * \n * Used when a text node has 3\n interpolated values in it:\n * \n * ```html\n * <div>prefix{ {v0}}-{{v1}}-{{v2}}suffix</div>\n * ```\n * \n * Its\n compiled representation is:\n * \n * ```ts\n * textInterpolate3(\n * 'prefix', v0, '-', v1, '-', v2, 'suffix');\n * ```\n * \n * @returns\n * itself, so that it\n may be chained.\n * @see textInterpolateV\n * @codeGenApi\n * \nexport function\n textInterpolate3(\n prefix: string, v0: any, i0: string, v1: any, i1: string, v2: any,\n suffix: string): typeof\n textInterpolate3 {\n const IView = getLView();\n const interpolated = interpolation3(IView, prefix, v0, i0, v1, i1,\n v2, suffix);\n if (interpolated !== NO_CHANGE) {\n \n textBindingInternal(IView, getSelectedIndex(), interpolated\n as string);\n }\n return textInterpolate3;\n }\n\n/**\n * \n * Update text content with 4 bound values surrounded by\n other text.\n * \n * Used when a text node has 4 interpolated values in it:\n * \n * ```html\n * <div>prefix{ {v0}}-\n {{v1}}-{{v2}}-{{v3}}suffix</div>\n * ```\n * \n * Its compiled representation is:\n * \n * ```ts\n * \n textInterpolate4(\n * 'prefix', v0, '-', v1, '-', v2, '-', v3, 'suffix');\n * ```\n * \n * @returns\n * itself, so that it\n may be chained.\n * @see textInterpolateV\n * @codeGenApi\n * \nexport function textInterpolate4(\n prefix: string, v0: any, i0:\n string, v1: any, i1: string, v2: any, i2: string, v3: any,\n suffix: string): typeof textInterpolate4 {\n const IView =\n getLView();\n const interpolated = interpolation4(IView, prefix, v0, i0, v1, i1, v2, i2, v3, suffix);\n if (interpolated\n !== NO_CHANGE) {\n \n textBindingInternal(IView, getSelectedIndex(), interpolated as\n string);\n }\n return\n textInterpolate4;\n}\n\n/**\n * \n * Update text content with 5 bound values surrounded by other text.\n * \n * Used\n when a text node has 5 interpolated values in it:\n * \n * ```html\n * <div>prefix{ {v0}}-{{v1}}-{{v2}}-{{v3}}-\n {{v4}}suffix</div>\n * ```\n * \n * Its compiled representation is:\n * \n * ```ts\n * \n textInterpolate5(\n * 'prefix', v0, '-\n ', v1, '-', v2, '-', v3, '-', v4, 'suffix');\n * ```\n * \n * @returns\n * itself, so that it\n may be chained.\n * @see textInterpolateV\n * @codeGenApi\n * \nexport function textInterpolate5(\n prefix: string, v0: any, i0: string, v1: any, i1: string, v2:\n any, i2: string, v3: any, i3: string, v4: any, suffix: string):\n typeof textInterpolate5 {\n const IView =\n getLView();\n const interpolated = interpolation5(IView, prefix, v0, i0, v1, i1, v2, i2, v3, i3, v4, suffix);\n if\n (interpolated !== NO_CHANGE) {\n \n textBindingInternal(IView, getSelectedIndex(), interpolated as\n string);\n }\n return\n textInterpolate5;\n }\n\n/**\n * \n * Update text content with 6 bound values surrounded by other text.\n * \n * \n Used when a text node has 6 interpolated values in it:\n * \n * ```html\n * <div>prefix{ {v0}}-{{v1}}-{{v2}}-\n {{v3}}-{{v4}}-{{v5}}suffix</div>\n * ```\n * \n * Its compiled representation is:\n * \n * ```ts\n * \n textInterpolate6(\n * 'prefix', v0, '-', v1, '-', v2, '-', v3, '-', v4, '-', v5, 'suffix');\n * ```\n * \n * @param i4\n Static value used for concatenation only.\n * @param v5\n Value checked for change. @returns\n itself, so that it may be chained.\n * @see textInterpolateV\n * @codeGenApi\n * \nexport function textInterpolate6(\n prefix: string, v0: any, i0:\n string, v1: any, i1: string, v2: any, i2: string, v3: any, i3: string, v4: any, i4: string, v5: any, suffix: string):\n typeof\n textInterpolate6 {\n const IView = getLView();\n const interpolated =\n interpolation6(IView, prefix, v0, i0, v1, i1, v2, i2, v3, i3, v4, i4, v5, suffix);\n if (interpolated !== NO_CHANGE) {\n \n textBindingInternal(IView,\n getSelectedIndex(), interpolated as string);\n }\n return\n textInterpolate6;\n }\n\n/**\n * \n * Update text content with

```



interpolatedValue, true);  
 Update an interpolated class on an element with 3 bound values surrounded by text.  
 Used when the value passed to a property has 3 interpolated values in it:  
`<div class="prefix{v0}-{v1}-{v2}suffix"></div>`  
 Its compiled representation is:  
`classMapInterpolate3(prefix, v0, '-', v1, '-', v2, 'suffix')`  
 @param prefix Static value used for concatenation only.  
 @param v0 Value checked for change.  
 @param i0 Static value used for concatenation only.  
 @param v1 Value checked for change.  
 @param i1 Static value used for concatenation only.  
 @param v2 Value checked for change.  
 @param suffix Static value used for concatenation only.  
 @codeGenApi  
 @nexport function classMapInterpolate3(prefix: string, v0: any, i0: string, v1: any, i1: string, v2: any, suffix: string): void {  
 const IView = getLView();  
 const interpolatedValue = interpolation3(IView, prefix, v0, i0, v1, i1, v2, suffix);  
 checkStylingMap(keyValueArraySet, classStringParser, interpolatedValue, true);  
 }  
 Update an interpolated class on an element with 4 bound values surrounded by text.  
 Used when the value passed to a property has 4 interpolated values in it:  
`<div class="prefix{v0}-{v1}-{v2}-{v3}suffix"></div>`  
 Its compiled representation is:  
`classMapInterpolate4(prefix, v0, '-', v1, '-', v2, '-', v3, 'suffix')`  
 @param prefix Static value used for concatenation only.  
 @param v0 Value checked for change.  
 @param i0 Static value used for concatenation only.  
 @param v1 Value checked for change.  
 @param i1 Static value used for concatenation only.  
 @param v2 Value checked for change.  
 @param i2 Static value used for concatenation only.  
 @param v3 Value checked for change.  
 @param suffix Static value used for concatenation only.  
 @codeGenApi  
 @nexport function classMapInterpolate4(prefix: string, v0: any, i0: string, v1: any, i1: string, v2: any, i2: string, v3: any, suffix: string): void {  
 const IView = getLView();  
 const interpolatedValue = interpolation4(IView, prefix, v0, i0, v1, i1, v2, i2, v3, suffix);  
 checkStylingMap(keyValueArraySet, classStringParser, interpolatedValue, true);  
 }  
 Update an interpolated class on an element with 5 bound values surrounded by text.  
 Used when the value passed to a property has 5 interpolated values in it:  
`<div class="prefix{v0}-{v1}-{v2}-{v3}-{v4}suffix"></div>`  
 Its compiled representation is:  
`classMapInterpolate5(prefix, v0, '-', v1, '-', v2, '-', v3, '-', v4, 'suffix')`  
 @param prefix Static value used for concatenation only.  
 @param v0 Value checked for change.  
 @param i0 Static value used for concatenation only.  
 @param v1 Value checked for change.  
 @param i1 Static value used for concatenation only.  
 @param v2 Value checked for change.  
 @param i2 Static value used for concatenation only.  
 @param v3 Value checked for change.  
 @param i3 Static value used for concatenation only.  
 @param v4 Value checked for change.  
 @param suffix Static value used for concatenation only.  
 @codeGenApi  
 @nexport function classMapInterpolate5(prefix: string, v0: any, i0: string, v1: any, i1: string, v2: any, i2: string, v3: any, i3: string, v4: any, suffix: string): void {  
 const IView = getLView();  
 const interpolatedValue = interpolation5(IView, prefix, v0, i0, v1, i1, v2, i2, v3, i3, v4, suffix);  
 checkStylingMap(keyValueArraySet, classStringParser, interpolatedValue, true);  
 }  
 Update an interpolated class on an element with 6 bound values surrounded by text.  
 Used when the value passed to a property has 6 interpolated values in it:  
`<div class="prefix{v0}-{v1}-{v2}-{v3}-{v4}-{v5}suffix"></div>`  
 Its compiled representation is:  
`classMapInterpolate6(prefix, v0, '-', v1, '-', v2, '-', v3, '-', v4, '-', v5, 'suffix')`  
 @param prefix Static value used for concatenation only.  
 @param v0 Value checked for change.  
 @param i0 Static value used for concatenation only.  
 @param v1 Value checked for change.  
 @param i1 Static value used for concatenation only.  
 @param v2 Value checked for change.  
 @param i2 Static value used for concatenation only.  
 @param v3 Value checked for change.  
 @param i3 Static value used for concatenation only.  
 @param v4 Value checked for change.  
 @param i4 Static value used for concatenation only.  
 @param v5 Value checked for change.  
 @param suffix Static value used for concatenation only.  
 @codeGenApi  
 @nexport function classMapInterpolate6(prefix: string, v0: any, i0: string, v1: any, i1: string, v2: any, i2: string, v3: any, i3: string, v4: any, i4: string, v5: any, suffix: string): void {  
 const IView = getLView();  
 const interpolatedValue = interpolation6(IView, prefix, v0, i0, v1, i1, v2, i2, v3, i3, v4, i4, v5, suffix);  
 checkStylingMap(keyValueArraySet, classStringParser, interpolatedValue, true);  
 }  
 Update an

interpolated class on an element with 7 bound values surrounded by text.  
 \* Used when the value passed to a property has 7 interpolated values in it:  
 \* `<div class="prefix{v0}-{v1}-{v2}-{v3}-{v4}-{v5}-{v6}suffix"></div>`  
 \* Its compiled representation is:  
 \* `classMapInterpolate7(prefix, v0, '-', v1, '-', v2, '-', v3, '-', v4, '-', v5, '-', v6, 'suffix');`  
 \* @param prefix Static value used for concatenation only.  
 \* @param v0 Value checked for change.  
 \* @param i0 Static value used for concatenation only.  
 \* @param v1 Value checked for change.  
 \* @param i1 Static value used for concatenation only.  
 \* @param v2 Value checked for change.  
 \* @param i2 Static value used for concatenation only.  
 \* @param v3 Value checked for change.  
 \* @param i3 Static value used for concatenation only.  
 \* @param v4 Value checked for change.  
 \* @param i4 Static value used for concatenation only.  
 \* @param v5 Value checked for change.  
 \* @param i5 Static value used for concatenation only.  
 \* @param v6 Value checked for change.  
 \* @param suffix Static value used for concatenation only.  
 \* @codeGenApi\n \* \nexport function classMapInterpolate7(prefix: string, v0: any, i0: string, v1: any, i1: string, v2: any, i2: string, v3: any, i3: string, v4: any, i4: string, v5: any, i5: string, v6: any, suffix: string): void {\n const IView = getLView();\n const interpolatedValue = interpolation7(IView, prefix, v0, i0, v1, i1, v2, i2, v3, i3, v4, i4, v5, i5, v6, suffix);\n checkStylingMap(keyValueArraySet, classStringParser, interpolatedValue, true);\n}\n\n/\*\*\n \* Update an interpolated class on an element with 8 bound values surrounded by text.  
 \* Used when the value passed to a property has 8 interpolated values in it:  
 \* `<div class="prefix{v0}-{v1}-{v2}-{v3}-{v4}-{v5}-{v6}-{v7}suffix"></div>`  
 \* Its compiled representation is:  
 \* `classMapInterpolate8(prefix, v0, '-', v1, '-', v2, '-', v3, '-', v4, '-', v5, '-', v6, '-', v7, 'suffix');`  
 \* @param prefix Static value used for concatenation only.  
 \* @param v0 Value checked for change.  
 \* @param i0 Static value used for concatenation only.  
 \* @param v1 Value checked for change.  
 \* @param i1 Static value used for concatenation only.  
 \* @param v2 Value checked for change.  
 \* @param i2 Static value used for concatenation only.  
 \* @param v3 Value checked for change.  
 \* @param i3 Static value used for concatenation only.  
 \* @param v4 Value checked for change.  
 \* @param i4 Static value used for concatenation only.  
 \* @param v5 Value checked for change.  
 \* @param i5 Static value used for concatenation only.  
 \* @param v6 Value checked for change.  
 \* @param i6 Static value used for concatenation only.  
 \* @param v7 Value checked for change.  
 \* @param suffix Static value used for concatenation only.  
 \* @codeGenApi\n \* \nexport function classMapInterpolate8(prefix: string, v0: any, i0: string, v1: any, i1: string, v2: any, i2: string, v3: any, i3: string, v4: any, i4: string, v5: any, i5: string, v6: any, i6: string, v7: any, suffix: string): void {\n const IView = getLView();\n const interpolatedValue = interpolation8(IView, prefix, v0, i0, v1, i1, v2, i2, v3, i3, v4, i4, v5, i5, v6, i6, v7, suffix);\n checkStylingMap(keyValueArraySet, classStringParser, interpolatedValue, true);\n}\n\n/\*\*\n \* Update an interpolated class on an element with 9 or more bound values surrounded by text.  
 \* Used when the number of interpolated values exceeds 8:  
 \* `<div class="prefix{v0}-{v1}-{v2}-{v3}-{v4}-{v5}-{v6}-{v7}-{v8}-{v9}suffix"></div>`  
 \* Its compiled representation is:  
 \* `classMapInterpolateV(['prefix', v0, '-', v1, '-', v2, '-', v3, '-', v4, '-', v5, '-', v6, '-', v7, '-', v9, 'suffix']);`  
 \* @param values The collection of values and the strings in-between those values, beginning with a string prefix and ending with a string suffix.  
 \* (e.g. `['prefix', value0, '-', value1, '-', value2, ..., value99, 'suffix']`)  
 \* @codeGenApi\n \* \nexport function classMapInterpolateV(values: any[]): void {\n const IView = getLView();\n const interpolatedValue = interpolationV(IView, values);\n checkStylingMap(keyValueArraySet, classStringParser, interpolatedValue, true);\n}\n\n"/\*\*\n \* @license\n \* Copyright Google LLC All Rights Reserved.\n \* Use of this source code is governed by an MIT-style license that can be found in the LICENSE file at https://angular.io/license\n \*/\nimport {getLView} from './state';\nimport {interpolation1, interpolation2, interpolation3, interpolation4, interpolation5, interpolation6, interpolation7, interpolation8, interpolationV} from './interpolation';\nimport {styleMap} from './styling';\n\n/\*\*\n \* Update an interpolated style on an element with single bound value surrounded by text.  
 \* Used when the value passed to a property has 1 interpolated value in it:  
 \* `<div style="key:{v0}suffix"></div>`  
 \* Its compiled representation is:  
 \* `styleMapInterpolate1('key:', v0, 'suffix');`  
 \* @param prefix Static value used for concatenation only.  
 \* @param v0 Value checked

for change.\n \* @param suffix Static value used for concatenation only.\n \* @codeGenApi\n \* ^\nexport function styleMapInterpolate1(prefix: string, v0: any, suffix: string): void {\n const IView = getLView();\n const interpolatedValue = interpolation1(IView, prefix, v0, suffix);\n styleMap(interpolatedValue);\n}\n\n/\*\*\n \* Update an interpolated style on an element with 2 bound values surrounded by text.\n \* Used when the value passed to a property has 2 interpolated values in it:\n \* ``html\n \* <div style=\"key: {{v0}}; key1: {{v1}}suffix\"></div>\n \* ``\n \* Its compiled representation is:\n \* ``ts\n \* styleMapInterpolate2('key: ', v0, ', key1: ', v1, 'suffix');\n \* ``\n \* @param prefix Static value used for concatenation only.\n \* @param v0 Value checked for change.\n \* @param i0 Static value used for concatenation only.\n \* @param v1 Value checked for change.\n \* @param suffix Static value used for concatenation only.\n \* @codeGenApi\n \* ^\nexport function styleMapInterpolate2(\n prefix: string, v0: any, i0: string, v1: any, suffix: string): void {\n const IView = getLView();\n const interpolatedValue = interpolation2(IView, prefix, v0, i0, v1, suffix);\n styleMap(interpolatedValue);\n}\n\n/\*\*\n \* Update an interpolated style on an element with 3 bound values surrounded by text.\n \* Used when the value passed to a property has 3 interpolated values in it:\n \* ``html\n \* <div style=\"key: {{v0}}; key2: {{v1}}; key2: {{v2}}suffix\"></div>\n \* ``\n \* Its compiled representation is:\n \* ``ts\n \* styleMapInterpolate3(\n \* 'key: ', v0, ', key1: ', v1, ', key2: ', v2, 'suffix');\n \* ``\n \* @param prefix Static value used for concatenation only.\n \* @param v0 Value checked for change.\n \* @param i0 Static value used for concatenation only.\n \* @param v1 Value checked for change.\n \* @param i1 Static value used for concatenation only.\n \* @param v2 Value checked for change.\n \* @param suffix Static value used for concatenation only.\n \* @codeGenApi\n \* ^\nexport function styleMapInterpolate3(\n prefix: string, v0: any, i0: string, v1: any, i1: string, v2: any, suffix: string): void {\n const IView = getLView();\n const interpolatedValue = interpolation3(IView, prefix, v0, i0, v1, i1, v2, suffix);\n styleMap(interpolatedValue);\n}\n\n/\*\*\n \* Update an interpolated style on an element with 4 bound values surrounded by text.\n \* Used when the value passed to a property has 4 interpolated values in it:\n \* ``html\n \* <div style=\"key: {{v0}}; key1: {{v1}}; key2: {{v2}}; key3: {{v3}}suffix\"></div>\n \* ``\n \* Its compiled representation is:\n \* ``ts\n \* styleMapInterpolate4(\n \* 'key: ', v0, ', key1: ', v1, ', key2: ', v2, ', key3: ', v3, 'suffix');\n \* ``\n \* @param prefix Static value used for concatenation only.\n \* @param v0 Value checked for change.\n \* @param i0 Static value used for concatenation only.\n \* @param v1 Value checked for change.\n \* @param i1 Static value used for concatenation only.\n \* @param v2 Value checked for change.\n \* @param i2 Static value used for concatenation only.\n \* @param v3 Value checked for change.\n \* @param suffix Static value used for concatenation only.\n \* @codeGenApi\n \* ^\nexport function styleMapInterpolate4(\n prefix: string, v0: any, i0: string, v1: any, i1: string, v2: any, i2: string, v3: any,\n suffix: string): void {\n const IView = getLView();\n const interpolatedValue = interpolation4(IView, prefix, v0, i0, v1, i1, v2, i2, v3, suffix);\n styleMap(interpolatedValue);\n}\n\n/\*\*\n \* Update an interpolated style on an element with 5 bound values surrounded by text.\n \* Used when the value passed to a property has 5 interpolated values in it:\n \* ``html\n \* <div style=\"key: {{v0}}; key1: {{v1}}; key2: {{v2}}; key3: {{v3}}; key4: {{v4}}suffix\"></div>\n \* ``\n \* Its compiled representation is:\n \* ``ts\n \* styleMapInterpolate5(\n \* 'key: ', v0, ', key1: ', v1, ', key2: ', v2, ', key3: ', v3, ', key4: ', v4, 'suffix');\n \* ``\n \* @param prefix Static value used for concatenation only.\n \* @param v0 Value checked for change.\n \* @param i0 Static value used for concatenation only.\n \* @param v1 Value checked for change.\n \* @param i1 Static value used for concatenation only.\n \* @param v2 Value checked for change.\n \* @param i2 Static value used for concatenation only.\n \* @param v3 Value checked for change.\n \* @param i3 Static value used for concatenation only.\n \* @param v4 Value checked for change.\n \* @param suffix Static value used for concatenation only.\n \* @codeGenApi\n \* ^\nexport function styleMapInterpolate5(\n prefix: string, v0: any, i0: string, v1: any, i1: string, v2: any, i2: string, v3: any,\n i3: string, v4: any, suffix: string): void {\n const IView = getLView();\n const interpolatedValue = interpolation5(IView, prefix, v0, i0, v1, i1, v2, i2, v3, i3, v4, suffix);\n styleMap(interpolatedValue);\n}\n\n/\*\*\n \* Update an interpolated style on an element with 6 bound values surrounded by text.\n \* Used when the value passed to a property has 6 interpolated values in it:\n \* ``html\n \* <div style=\"key: {{v0}}; key1: {{v1}}; key2: {{v2}}; key3: {{v3}}; key4: {{v4}}; key5: {{v5}}suffix\"></div>\n \* ``\n \* Its

compiled representation is:\n \* \n \* ``ts\n \* styleMapInterpolate6(\n \* 'key: ', v0, ', ' ; key1: ', v1, ', ' ; key2: ', v2, ', ' ; key3: ', v3, ', ' ; key4: ', v4, ', ' ; key5: ', v5, \n \* 'suffix');\n \* ``\n \* \n \* @param prefix Static value used for concatenation only.\n \* @param v0 Value checked for change.\n \* @param i0 Static value used for concatenation only.\n \* @param v1 Value checked for change.\n \* @param i1 Static value used for concatenation only.\n \* @param v2 Value checked for change.\n \* @param i2 Static value used for concatenation only.\n \* @param v3 Value checked for change.\n \* @param i3 Static value used for concatenation only.\n \* @param v4 Value checked for change.\n \* @param i4 Static value used for concatenation only.\n \* @param v5 Value checked for change.\n \* @param suffix Static value used for concatenation only.\n \* @codeGenApi\n \* ^\n \* export function styleMapInterpolate6(\n \* prefix: string, v0: any, i0: string, v1: any, i1: string, v2: any, i2: string, v3: any, i3: string, v4: any, i4: string, v5: any, suffix: string): void {\n \* const IView = getLView();\n \* const interpolatedValue =\n \* interpolation6(IView, prefix, v0, i0, v1, i1, v2, i2, v3, i3, v4, i4, v5, suffix);\n \* styleMap(interpolatedValue);\n \* }\n \* \n \* \n \* Update an interpolated style on an element with 7 bound values surrounded by text.\n \* \n \* \n \* Used when the value passed to a property has 7 interpolated values in it:\n \* \n \* \n \* ``html\n \* <div style=\"key: {{v0}}; key1: {{v1}}; key2: {{v2}}; key3: {{v3}}; key4: {{v4}}; key5: {{v5}};\n \* key6: {{v6}}suffix\"></div>\n \* ``\n \* \n \* \n \* Its compiled representation is:\n \* \n \* \n \* ``ts\n \* styleMapInterpolate7(\n \* 'key: ', v0, ', ' ; key1: ', v1, ', ' ; key2: ', v2, ', ' ; key3: ', v3, ', ' ; key4: ', v4, ', ' ; key5: ', v5, \n \* ' ; key6: ', v6, 'suffix');\n \* ``\n \* \n \* \n \* @param prefix Static value used for concatenation only.\n \* @param v0 Value checked for change.\n \* @param i0 Static value used for concatenation only.\n \* @param v1 Value checked for change.\n \* @param i1 Static value used for concatenation only.\n \* @param v2 Value checked for change.\n \* @param i2 Static value used for concatenation only.\n \* @param v3 Value checked for change.\n \* @param i3 Static value used for concatenation only.\n \* @param v4 Value checked for change.\n \* @param i4 Static value used for concatenation only.\n \* @param v5 Value checked for change.\n \* @param i5 Static value used for concatenation only.\n \* @param v6 Value checked for change.\n \* @param suffix Static value used for concatenation only.\n \* @codeGenApi\n \* ^\n \* export function styleMapInterpolate7(\n \* prefix: string, v0: any, i0: string, v1: any, i1: string, v2: any, i2: string, v3: any, i3: string, v4: any, i4: string, v5: any, i5: string, v6: any, suffix: string): void {\n \* const IView = getLView();\n \* const interpolatedValue =\n \* interpolation7(IView, prefix, v0, i0, v1, i1, v2, i2, v3, i3, v4, i4, v5, i5, v6, suffix);\n \* styleMap(interpolatedValue);\n \* }\n \* \n \* \n \* Update an interpolated style on an element with 8 bound values surrounded by text.\n \* \n \* \n \* Used when the value passed to a property has 8 interpolated values in it:\n \* \n \* \n \* ``html\n \* <div style=\"key: {{v0}}; key1: {{v1}}; key2: {{v2}}; key3: {{v3}}; key4: {{v4}}; key5: {{v5}};\n \* key6: {{v6}}; key7: {{v7}}suffix\"></div>\n \* ``\n \* \n \* \n \* Its compiled representation is:\n \* \n \* \n \* ``ts\n \* styleMapInterpolate8(\n \* 'key: ', v0, ', ' ; key1: ', v1, ', ' ; key2: ', v2, ', ' ; key3: ', v3, ', ' ; key4: ', v4, ', ' ; key5: ', v5, \n \* ' ; key6: ', v6, ', ' ; key7: ', v7, 'suffix');\n \* ``\n \* \n \* \n \* @param prefix Static value used for concatenation only.\n \* @param v0 Value checked for change.\n \* @param i0 Static value used for concatenation only.\n \* @param v1 Value checked for change.\n \* @param i1 Static value used for concatenation only.\n \* @param v2 Value checked for change.\n \* @param i2 Static value used for concatenation only.\n \* @param v3 Value checked for change.\n \* @param i3 Static value used for concatenation only.\n \* @param v4 Value checked for change.\n \* @param i4 Static value used for concatenation only.\n \* @param v5 Value checked for change.\n \* @param i5 Static value used for concatenation only.\n \* @param v6 Value checked for change.\n \* @param i6 Static value used for concatenation only.\n \* @param v7 Value checked for change.\n \* @param suffix Static value used for concatenation only.\n \* @codeGenApi\n \* ^\n \* export function styleMapInterpolate8(\n \* prefix: string, v0: any, i0: string, v1: any, i1: string, v2: any, i2: string, v3: any, i3: string, v4: any, i4: string, v5: any, i5: string, v6: any, i6: string, v7: any, suffix: string): void {\n \* const IView = getLView();\n \* const interpolatedValue =\n \* interpolation8(\n \* IView, prefix, v0, i0, v1, i1, v2, i2, v3, i3, v4, i4, v5, i5, v6, i6, v7, suffix);\n \* }\n \* \n \* \n \* Update an interpolated style on an element with 9 or more bound values surrounded by text.\n \* \n \* \n \* Used when the number of interpolated values exceeds 8.\n \* \n \* \n \* ``html\n \* <div\n \* class=\"key: {{v0}}; key1: {{v1}}; key2: {{v2}}; key3: {{v3}}; key4: {{v4}}; key5: {{v5}};\n \* key6: {{v6}}; key7: {{v7}}; key8: {{v8}}; key9: {{v9}}suffix\"></div>\n \* ``\n \* \n \* \n \* Its compiled representation is:\n \* \n \* \n \* ``ts\n \* styleMapInterpolateV(\n \* ['key: ', v0, ', ' ; key1: ', v1, ', ' ; key2: ', v2, ', ' ; key3: ', v3, ', ' ; key4: ', v4, ', ' ; key5:



' , v5, \n \* ' ; key6: ' , v6, ' ; key7: ' , v7, ' ; key8: ' , v8, ' ; key9: ' , v9, 'suffix'); \n \* ``\n \* . \n \* @param values The collection of values and the strings in-between those values, beginning with \n \* a string prefix and ending with a string suffix. \n \* (e.g. `[ 'prefix', value0, ' ; key2: ' , value1, ' ; key2: ' , value2, ..., value99, 'suffix']`) \n \*

@codeGenApi \n \* \nexport function styleMapInterpolateV(values: any[]): void { \n const IView = getLView(); \n const interpolatedValue = interpolationV(IView, values); \n styleMap(interpolatedValue); \n } \n } \n \* @license \n \* Copyright Google LLC All Rights Reserved. \n \* \n \* Use of this source code is governed by an MIT-style license that can be \n \* found in the LICENSE file at <https://angular.io/license> \n \* \n \* \nimport { getLView, } from './state'; \nimport { interpolation1, interpolation2, interpolation3, interpolation4, interpolation5, interpolation6, interpolation7, interpolation8, interpolationV } from './interpolation'; \nimport { checkStylingProperty } from './styling'; \n \n \* \n \* Update an interpolated style property on an element with single bound value surrounded by text. \n \* \n \* Used when the value passed to a property has 1 interpolated value in it: \n \* \n \* ``html \n \* <div style.color="prefix{ {v0} }suffix"></div> \n \* `` \n \* \n \* Its compiled representation is: \n \* \n \* ``ts \n \* stylePropInterpolate1(0, 'prefix', v0, 'suffix'); \n \* `` \n \* \n \* @param styleIndex Index of style to update. This index value refers to the \n \* index of the style in the style bindings array that was passed into \n \* `styling`. \n \* @param prefix Static value used for concatenation only. \n \* @param v0 Value checked for change. \n \* @param suffix Static value used for concatenation only. \n \* @param valueSuffix Optional suffix. Used with scalar values to add unit such as `px`. \n \* @returns itself, so that it may be chained. \n \* @codeGenApi \n \* \nexport function stylePropInterpolate1(\n prop: string, prefix: string, v0: any, suffix: string, \n valueSuffix?: string|null): typeof stylePropInterpolate1 { \n const IView = getLView(); \n const interpolatedValue = interpolation1(IView, prefix, v0, suffix); \n checkStylingProperty(prop, interpolatedValue, valueSuffix, false); \n return stylePropInterpolate1; \n } \n \n \* \n \* Update an interpolated style property on an element with 2 bound values surrounded by text. \n \* \n \* Used when the value passed to a property has 2 interpolated values in it: \n \* \n \* ``html \n \* <div style.color="prefix{ {v0} }-{ {v1} }suffix"></div> \n \* `` \n \* \n \* Its compiled representation is: \n \* \n \* ``ts \n \* stylePropInterpolate2(0, 'prefix', v0, '-', v1, 'suffix'); \n \* `` \n \* \n \* @param styleIndex Index of style to update. This index value refers to the \n \* index of the style in the style bindings array that was passed into \n \* `styling`. \n \* @param prefix Static value used for concatenation only. \n \* @param v0 Value checked for change. \n \* @param i0 Static value used for concatenation only. \n \* @param v1 Value checked for change. \n \* @param suffix Static value used for concatenation only. \n \* @param valueSuffix Optional suffix. Used with scalar values to add unit such as `px`. \n \* @returns itself, so that it may be chained. \n \* @codeGenApi \n \* \nexport function stylePropInterpolate2(\n prop: string, prefix: string, v0: any, i0: string, v1: any, suffix: string, \n valueSuffix?: string|null): typeof stylePropInterpolate2 { \n const IView = getLView(); \n const interpolatedValue = interpolation2(IView, prefix, v0, i0, v1, suffix); \n checkStylingProperty(prop, interpolatedValue, valueSuffix, false); \n return stylePropInterpolate2; \n } \n \n \* \n \* Update an interpolated style property on an element with 3 bound values surrounded by text. \n \* \n \* Used when the value passed to a property has 3 interpolated values in it: \n \* \n \* ``html \n \* <div style.color="prefix{ {v0} }-{ {v1} }-{ {v2} }suffix"></div> \n \* `` \n \* \n \* Its compiled representation is: \n \* \n \* ``ts \n \* stylePropInterpolate3(0, 'prefix', v0, '-', v1, '-', v2, 'suffix'); \n \* `` \n \* \n \* @param styleIndex Index of style to update. This index value refers to the \n \* index of the style in the style bindings array that was passed into \n \* `styling`. \n \* @param prefix Static value used for concatenation only. \n \* @param v0 Value checked for change. \n \* @param i0 Static value used for concatenation only. \n \* @param v1 Value checked for change. \n \* @param i1 Static value used for concatenation only. \n \* @param v2 Value checked for change. \n \* @param suffix Static value used for concatenation only. \n \* @param valueSuffix Optional suffix. Used with scalar values to add unit such as `px`. \n \* @returns itself, so that it may be chained. \n \* @codeGenApi \n \* \nexport function stylePropInterpolate3(\n prop: string, prefix: string, v0: any, i0: string, v1: any, i1: string, v2: any, suffix: string, \n valueSuffix?: string|null): typeof stylePropInterpolate3 { \n const IView = getLView(); \n const interpolatedValue = interpolation3(IView, prefix, v0, i0, v1, i1, v2, suffix); \n checkStylingProperty(prop, interpolatedValue, valueSuffix, false); \n return stylePropInterpolate3; \n } \n \n \* \n \* Update an interpolated style property on an element with 4 bound values surrounded by text. \n \* \n \* Used when the value passed to a property has 4 interpolated values in it: \n \* \n \* ``html \n \* <div style.color="prefix{ {v0} }-{ {v1} }-{ {v2} }-

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{{v3}}suffix\`></div>\n * ```\n *\n * Its compiled representation is:\n *\n * ```\n * stylePropInterpolate4(0,
'prefix', v0, '-', v1, '-', v2, '-', v3, 'suffix');\n * ```\n *\n * @param styleIndex Index of style to update. This index
value refers to the\n * index of the style in the style bindings array that was passed into\n * `styling`.\n *
@param prefix Static value used for concatenation only.\n * @param v0 Value checked for change.\n * @param i0
Static value used for concatenation only.\n * @param v1 Value checked for change.\n * @param i1 Static value
used for concatenation only.\n * @param v2 Value checked for change.\n * @param i2 Static value used for
concatenation only.\n * @param v3 Value checked for change.\n * @param suffix Static value used for
concatenation only.\n * @param valueSuffix Optional suffix. Used with scalar values to add unit such as `px`.\n *
@returns itself, so that it may be chained.\n * @codeGenApi\n */\nexport function stylePropInterpolate4(\n prop:
string, prefix: string, v0: any, i0: string, v1: any, i1: string, v2: any, i2: string,\n v3: any, suffix: string,
valueSuffix?: string|null): typeof stylePropInterpolate4 {\n const IView = getLView();\n const interpolatedValue =
interpolation4(IView, prefix, v0, i0, v1, i1, v2, i2, v3, suffix);\n checkStylingProperty(prop, interpolatedValue,
valueSuffix, false);\n return stylePropInterpolate4;\n}\n\n/**\n *\n * Update an interpolated style property on an
element with 5 bound values surrounded by text.\n *\n * Used when the value passed to a property has 5 interpolated
values in it:\n *\n * ```\n * <div style.color="prefix{{v0}}-{{v1}}-{{v2}}-{{v3}}-{{v4}}suffix\`></div>\n *
```\n *\n * Its compiled representation is:\n *\n * ```\n * stylePropInterpolate5(0, 'prefix', v0, '-', v1, '-', v2, '-', v3, '-
', v4, 'suffix');\n * ```\n *\n * @param styleIndex Index of style to update. This index value refers to the\n *
index of the style in the style bindings array that was passed into\n *      `styling`.\n *
@param prefix Static value used for concatenation only.\n * @param v0 Value checked for change.\n * @param i0 Static value used for
concatenation only.\n * @param v1 Value checked for change.\n * @param i1 Static value used for concatenation
only.\n * @param v2 Value checked for change.\n * @param i2 Static value used for concatenation only.\n *
@param v3 Value checked for change.\n * @param i3 Static value used for concatenation only.\n * @param v4
Value checked for change.\n * @param suffix Static value used for concatenation only.\n * @param valueSuffix
Optional suffix. Used with scalar values to add unit such as `px`.\n *
@returns itself, so that it may be chained.\n * @codeGenApi\n */\nexport function stylePropInterpolate5(\n  prop: string, prefix: string, v0: any, i0: string, v1:
any, i1: string, v2: any, i2: string,\n  v3: any, i3: string, v4: any, suffix: string,\n  valueSuffix?: string|null): typeof stylePropInterpolate5 {\n  const IView = getLView();\n  const interpolatedValue =\n    interpolation5(IView,
prefix, v0, i0, v1, i1, v2, i2, v3, i3, v4, suffix);\n  checkStylingProperty(prop, interpolatedValue, valueSuffix,
false);\n  return stylePropInterpolate5;\n}\n\n/**\n *\n * Update an interpolated style property on an element with 6
bound values surrounded by text.\n *\n * Used when the value passed to a property has 6 interpolated values in it:\n
*\n * ```\n * <div style.color="prefix{{v0}}-{{v1}}-{{v2}}-{{v3}}-{{v4}}-{{v5}}suffix\`></div>\n *
```\n *\n * Its compiled representation is:\n *\n * ```\n * stylePropInterpolate6(0, 'prefix', v0, '-', v1, '-', v2, '-', v3, '-', v4,
-', v5, 'suffix');\n * ```\n *\n * @param styleIndex Index of style to update. This index value refers to the\n *
index of the style in the style bindings array that was passed into\n * `styling`.\n *
@param prefix Static value used for concatenation only.\n * @param v0 Value checked for change.\n * @param i0 Static value used for
concatenation only.\n * @param v1 Value checked for change.\n * @param i1 Static value used for concatenation
only.\n * @param v2 Value checked for change.\n * @param i2 Static value used for concatenation only.\n *
@param v3 Value checked for change.\n * @param i3 Static value used for concatenation only.\n * @param v4
Value checked for change.\n * @param i4 Static value used for concatenation only.\n * @param v5 Value checked
for change.\n * @param suffix Static value used for concatenation only.\n * @param valueSuffix Optional suffix.
Used with scalar values to add unit such as `px`.\n *
@returns itself, so that it may be chained.\n * @codeGenApi\n */\nexport function stylePropInterpolate6(\n prop: string, prefix: string, v0: any, i0: string, v1: any, i1: string, v2:
any, i2: string,\n v3: any, i3: string, v4: any, i4: string, v5: any, suffix: string,\n valueSuffix?: string|null): typeof stylePropInterpolate6 {\n const IView = getLView();\n const interpolatedValue =\n interpolation6(IView,
prefix, v0, i0, v1, i1, v2, i2, v3, i3, v4, i4, v5, suffix);\n checkStylingProperty(prop, interpolatedValue, valueSuffix,
false);\n return stylePropInterpolate6;\n}\n\n/**\n *\n * Update an interpolated style property on an element with 7
bound values surrounded by text.\n *\n * Used when the value passed to a property has 7 interpolated values in it:\n
*\n * ```\n * <div style.color="prefix{{v0}}-{{v1}}-{{v2}}-{{v3}}-{{v4}}-{{v5}}-{{v6}}suffix\`></div>\n *
```\n

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* ```\n *\n * Its compiled representation is:\n *\n * ```\ts\n * stylePropInterpolate7(\n * 0, 'prefix', v0, '-', v1, '-', v2,
'-', v3, '-', v4, '-', v5, '-', v6, 'suffix');\n * ```\n *\n * @param styleIndex Index of style to update. This index value
refers to the\n *      index of the style in the style bindings array that was passed into\n *      `styling`.\n * @param prefix Static value used for concatenation only.\n * @param v0 Value checked for change.\n * @param i0 Static
value used for concatenation only.\n * @param v1 Value checked for change.\n * @param i1 Static value used for
concatenation only.\n * @param v2 Value checked for change.\n * @param i2 Static value used for concatenation
only.\n * @param v3 Value checked for change.\n * @param i3 Static value used for concatenation only.\n *
@param v4 Value checked for change.\n * @param i4 Static value used for concatenation only.\n * @param v5
Value checked for change.\n * @param i5 Static value used for concatenation only.\n * @param v6 Value checked
for change.\n * @param suffix Static value used for concatenation only.\n * @param valueSuffix Optional suffix.
Used with scalar values to add unit such as `px`.\n * @returns itself, so that it may be chained.\n * @codeGenApi\n
*/\n\nexport function stylePropInterpolate7(\n  prop: string, prefix: string, v0: any, i0: string, v1: any, i1: string, v2:
any, i2: string,\n  v3: any, i3: string, v4: any, i4: string, v5: any, i5: string, v6: any, suffix: string,\n  valueSuffix?:
string|null): typeof stylePropInterpolate7 {\n  const IView = getLView();\n  const interpolatedValue =\n
interpolation7(IView, prefix, v0, i0, v1, i1, v2, i2, v3, i3, v4, i4, v5, i5, v6, suffix);\n  checkStylingProperty(prop,
interpolatedValue, valueSuffix, false);\n  return stylePropInterpolate7;\n}\n\n/**\n *\n * Update an interpolated style
property on an element with 8 bound values surrounded by text.\n *\n * Used when the value passed to a property
has 8 interpolated values in it:\n *\n * ```\html\n * <div style.color="\n * prefix{{v0}}-{{v1}}-{{v2}}-{{v3}}-{{v4}}-
{{v5}}-{{v6}}-{{v7}}\n * suffix"\n * ></div>\n * ```\n *\n * Its compiled representation is:\n *\n * ```\ts\n *
stylePropInterpolate8(0, 'prefix', v0, '-', v1, '-', v2, '-', v3, '-', v4, '-', v5, '-', v6,\n * '-', v7, 'suffix');\n *
```\n *\n * @param styleIndex Index of style to update. This index value refers to the\n *      index of the style in the style
bindings array that was passed into\n * `styling`.\n * @param prefix Static value used for concatenation only.\n
* @param v0 Value checked for change.\n * @param i0 Static value used for concatenation only.\n * @param v1
Value checked for change.\n * @param i1 Static value used for concatenation only.\n * @param v2 Value checked
for change.\n * @param i2 Static value used for concatenation only.\n * @param v3 Value checked for change.\n *
@param i3 Static value used for concatenation only.\n * @param v4 Value checked for change.\n * @param i4
Static value used for concatenation only.\n * @param v5 Value checked for change.\n * @param i5 Static value
used for concatenation only.\n * @param v6 Value checked for change.\n * @param i6 Static value used for
concatenation only.\n * @param v7 Value checked for change.\n * @param suffix Static value used for
concatenation only.\n * @param valueSuffix Optional suffix. Used with scalar values to add unit such as `px`.\n *
@returns itself, so that it may be chained.\n * @codeGenApi\n
*/\n\nexport function stylePropInterpolate8(\n prop:
string, prefix: string, v0: any, i0: string, v1: any, i1: string, v2: any, i2: string,\n v3: any, i3: string, v4: any, i4:
string, v5: any, i5: string, v6: any, i6: string, v7: any,\n suffix: string, valueSuffix?: string|null): typeof
stylePropInterpolate8 {\n const IView = getLView();\n const interpolatedValue = interpolation8(\n IView,
prefix, v0, i0, v1, i1, v2, i2, v3, i3, v4, i4, v5, i5, v6, i6, v7, suffix);\n checkStylingProperty(prop,
interpolatedValue, valueSuffix, false);\n return stylePropInterpolate8;\n}\n\n/**\n *\n * Update an interpolated style
property on an element with 9 or more bound values surrounded by\n * text.\n *\n * Used when the number of
interpolated values exceeds 8.\n *\n * ```\html\n * <div\n * style.color="\n * prefix{{v0}}-{{v1}}-{{v2}}-{{v3}}-
{{v4}}-{{v5}}-{{v6}}-{{v7}}-{{v8}}-{{v9}}\n * suffix"\n * >\n * ```\n *\n * Its compiled representation is:\n *\n *
```\ts\n * stylePropInterpolateV(\n * 0, ['prefix', v0, '-', v1, '-', v2, '-', v3, '-', v4, '-', v5, '-', v6, '-', v7, '-', v9,\n *
'suffix']);\n * ```\n *\n * @param styleIndex Index of style to update. This index value refers to the\n *      index of
the style in the style bindings array that was passed into\n *      `styling`.\n * @param values The collection of
values and the strings in-between those values, beginning with\n * a string prefix and ending with a string suffix.\n *
(e.g. `[ 'prefix', value0, '-', value1, '-', value2, ..., value99, 'suffix' ]`)\n * @param valueSuffix Optional suffix. Used
with scalar values to add unit such as `px`.\n * @returns itself, so that it may be chained.\n * @codeGenApi\n
*/\n\nexport function stylePropInterpolateV(\n  prop: string, values: any[], valueSuffix?: string|null): typeof
stylePropInterpolateV {\n  const IView = getLView();\n  const interpolatedValue = interpolationV(IView, values);\n
checkStylingProperty(prop, interpolatedValue, valueSuffix, false);\n  return stylePropInterpolateV;\n}\n\n"/**\n *\n

```

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@license\n * Copyright Google LLC All Rights Reserved.\n *\n * Use of this source code is governed by an MIT-
style license that can be\n * found in the LICENSE file at https://angular.io/license\n *\nimport {bindingUpdated}
from './bindings';\nimport {SanitizerFn} from './interfaces/sanitization';\nimport {RENDERER} from
 './interfaces/view';\nimport {getCurrentDirectiveDef, getLView, getSelectedTNode, getTView, nextBindingIndex}
from './state';\nimport {NO_CHANGE} from './tokens';\n\nimport {elementPropertyInternal,
loadComponentRenderer, storePropertyBindingMetadata} from './shared';\n\n/**\n * Update a property on a host
element. Only applies to native node properties, not inputs.\n *\n * Operates on the element selected by index via the
{@link select} instruction.\n *\n * @param propName Name of property. Because it is going to DOM, this is not
subject to\n *      renaming as part of minification.\n *\n * @param value New value to write.\n *\n * @param sanitizer An
optional function used to sanitize the value.\n *\n * @returns This function returns itself so that it may be chained\n *
(e.g. `property('name', ctx.name)('title', ctx.title)`)\n *\n * @codeGenApi\n *\n * @nextexport function hostProperty<T>(\n
propName: string, value: T, sanitizer?: SanitizerFn|null): typeof hostProperty {\n  const IView = getLView();\n
const bindingIndex = nextBindingIndex();\n  if (bindingUpdated(IView, bindingIndex, value)) {\n    const tView =
getTView();\n    const tNode = getSelectedTNode();\n    elementPropertyInternal(tView, tNode, IView, propName,
value, IView[RENDERER], sanitizer, true);\n    ngDevMode && storePropertyBindingMetadata(tView.data, tNode,
propName, bindingIndex);\n  }\n  return hostProperty;\n}\n\n\n/**\n * Updates a synthetic host binding (e.g.
`[@foo]`) on a component or directive.\n *\n * This instruction is for compatibility purposes and is designed to
ensure that a\n * synthetic host binding (e.g. `@HostBinding('@foo')`) properly gets rendered in\n * the component's
renderer. Normally all host bindings are evaluated with the parent\n * component's renderer, but, in the case of
animation @triggers, they need to be\n * evaluated with the sub component's renderer (because that's where the
animation\n * triggers are defined).\n *\n * Do not use this instruction as a replacement for `elementProperty`. This
instruction\n * only exists to ensure compatibility with the ViewEngine's host binding behavior.\n *\n * @param
index The index of the element to update in the data array\n *\n * @param propName Name of property. Because it is
going to DOM, this is not subject to\n *      renaming as part of minification.\n *\n * @param value New value to
write.\n *\n * @param sanitizer An optional function used to sanitize the value.\n *\n * @codeGenApi\n *\n * @nextexport
function syntheticHostProperty<T>(\n  propName: string, value: T|NO_CHANGE,\n  sanitizer?:
SanitizerFn|null): typeof syntheticHostProperty {\n  const IView = getLView();\n  const bindingIndex =
nextBindingIndex();\n  if (bindingUpdated(IView, bindingIndex, value)) {\n    const tView = getTView();\n    const
tNode = getSelectedTNode();\n    const currentDef = getCurrentDirectiveDef(tView.data);\n    const renderer =
loadComponentRenderer(currentDef, tNode, IView);\n    elementPropertyInternal(tView, tNode, IView, propName,
value, renderer, sanitizer, true);\n    ngDevMode && storePropertyBindingMetadata(tView.data, tNode, propName,
bindingIndex);\n  }\n  return syntheticHostProperty;\n}\n\n", "/*\n * @license\n * Copyright Google LLC All Rights
Reserved.\n *\n * Use of this source code is governed by an MIT-style license that can be\n * found in the
LICENSE file at https://angular.io/license\n *\n * \nimport {global} from './global';\nndeclare global {\n  const
ngI18nClosureMode: boolean;\n}\n\n\n/**\n * NOTE: changes to the `ngI18nClosureMode` name must be synced
with `compiler-cli/src/tooling.ts`.\n *\n * \nif (typeof ngI18nClosureMode === 'undefined') {\n  // These property
accesses can be ignored because ngI18nClosureMode will be set to false\n  // when optimizing code and the whole if
statement will be dropped.\n  // Make sure to refer to ngI18nClosureMode as ['ngI18nClosureMode'] for closure.\n
// NOTE: we need to have it in IIFE so that the tree-shaker is happy.\n  (function() {\n    // tslint:disable-next-
line:no-toplevel-property-access\n    global['ngI18nClosureMode'] =\n    // TODO(FW-1250): validate that this
actually, you know, works.\n    // tslint:disable-next-line:no-toplevel-property-access\n    typeof goog !==
'undefined' && typeof goog.getMsg === 'function';\n  })();\n}\n\n", "/*\n * @license\n * Copyright Google LLC All
Rights Reserved.\n *\n * Use of this source code is governed by an MIT-style license that can be\n * found in the
LICENSE file at https://angular.io/license\n *\n * \n// THIS CODE IS GENERATED - DO NOT MODIFY\n// See
angular/tools/gulp-tasks/cldr/extract.js\n\nconst u = undefined;\n\nfunction plural(n: number): number {\n  let i =
Math.floor(Math.abs(n)), v = n.toString().replace(/^[^]*\./, "").length;\n  if (i === 1 && v === 0) return 1;\n  return
5;\n}\n\n\nexport default [\n  'en',\n  ['a', 'p'], ['AM', 'PM'], u,\n  ['AM', 'PM'], u, u,\n  ['S', 'M', 'T', 'W', 'T', 'F',
'S'],\n  ['Sun', 'Mon', 'Tue', 'Wed', 'Thu', 'Fri', 'Sat'],\n  ['Sunday', 'Monday', 'Tuesday', 'Wednesday', 'Thursday',

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'Friday', 'Saturday'],\n ['Su', 'Mo', 'Tu', 'We', 'Th', 'Fr', 'Sa']\n ],\n u,\n [\n ['J', 'F', 'M', 'A', 'M', 'J', 'J', 'A', 'S', 'O',
'N', 'D'],\n ['Jan', 'Feb', 'Mar', 'Apr', 'May', 'Jun', 'Jul', 'Aug', 'Sep', 'Oct', 'Nov', 'Dec'],\n [\n 'January', 'February',
'March', 'April', 'May', 'June', 'July', 'August', 'September',\n 'October', 'November', 'December'\n ]\n ],\n u,\n
[['B', 'A'], ['BC', 'AD'], ['Before Christ', 'Anno Domini']],\n 0,\n [6, 0],\n ['M/d/yy', 'MMM d, y', 'MMMM d, y',
'EEEE, MMMM d, y'],\n ['h:mm a', 'h:mm:ss a', 'h:mm:ss a z', 'h:mm:ss a zzzz'],\n [{'1}, {0}], u, {'1'} \\ 'at' \\ {0}',
u],\n [',', ',', ';', '%', '+', '-', 'E', 'x', '%o', '"', 'NaN', ':'],\n ['#',##0.###', '#,##0%', '¤#,##0.00', '#E0'],\n 'USD',\n '$',\n 'US
Dollar',\n {}],\n 'ltr',\n plural\n];\n"/**\n * @license\n * Copyright Google LLC All Rights Reserved.\n *\n * Use
of this source code is governed by an MIT-style license that can be\n * found in the LICENSE file at
https://angular.io/license\n */\nimport {global} from '../util/global';\n\nimport localeEn from './locale_en';\n\n/**\n *
This const is used to store the locale data registered with `registerLocaleData`\n */\nlet LOCALE_DATA:
{[localeId: string]: any} = {};\n\n/**\n * Register locale data to be used internally by Angular. See the\n * ["I18n
guide"](https://angular.io/guide/i18n#i18n-pipes) to know how to import additional locale data.\n *\n * The signature
`registerLocaleData(data: any, extraData?: any)` is deprecated since v5.1.\n */\nexport function
registerLocaleData(data: any, localeId?: string|any, extraData?: any): void {\n if (typeof localeId !== 'string') {\n
extraData = localeId;\n localeId = data[LocaleDataIndex.LocaleId];\n }\n\n localeId =
localeId.toLowerCase().replace(/_/g, '-');\n\n LOCALE_DATA[localeId] = data;\n\n if (extraData) {\n
LOCALE_DATA[localeId][LocaleDataIndex.ExtraData] = extraData;\n }\n}\n\n/**\n * Finds the locale data for a
given locale.\n *\n * @param locale The locale code.\n *\n * @returns The locale data.\n *\n * @see [Internationalization
(i18n) Guide](https://angular.io/guide/i18n)\n */\nexport function findLocaleData(locale: string): any {\n const
normalizedLocale = normalizeLocale(locale);\n\n let match = getLocaleData(normalizedLocale);\n\n if (match) {\n
return match;\n }\n\n // let's try to find a parent locale\n const parentLocale = normalizedLocale.split('-')[0];\n
match = getLocaleData(parentLocale);\n\n if (match) {\n return match;\n }\n\n if (parentLocale === 'en') {\n
return localeEn;\n }\n\n throw new Error(`Missing locale data for the locale \"${locale}\"`);\n}\n\n/**\n *
Retrieves the default currency code for the given locale.\n *\n * The default is defined as the first currency which is
still in use.\n *\n * @param locale The code of the locale whose currency code we want.\n *\n * @returns The code of
the default currency for the given locale.\n *\n */\nexport function getLocaleCurrencyCode(locale: string):
string|null {\n const data = findLocaleData(locale);\n return data[LocaleDataIndex.CurrencyCode] ||
null;\n}\n\n/**\n * Retrieves the plural function used by ICU expressions to determine the plural case to use\n *
for a given locale.\n *\n * @param locale A locale code for the locale format rules to use.\n *\n * @returns The plural function
for the locale.\n *\n * @see `NgPlural`\n *\n * @see [Internationalization (i18n) Guide](https://angular.io/guide/i18n)\n
*/\nexport function getLocalePluralCase(locale: string): (value: number) => number {\n const data =
findLocaleData(locale);\n return data[LocaleDataIndex.PluralCase];\n}\n\n\n/**\n * Helper function to get the
given `normalizedLocale` from `LOCALE_DATA`\n * or from the global `ng.common.locale`\n */\nexport
function getLocaleData(normalizedLocale: string): any {\n if (!(normalizedLocale in LOCALE_DATA)) {\n
LOCALE_DATA[normalizedLocale] = global.ng && global.ng.common && global.ng.common.locales &&\n
global.ng.common.locales[normalizedLocale];\n }\n return LOCALE_DATA[normalizedLocale];\n}\n\n/**\n *
Helper function to remove all the locale data from `LOCALE_DATA`\n */\nexport function
unregisterAllLocaleData() {\n LOCALE_DATA = {};\n}\n\n/**\n * Index of each type of locale data from the
locale data array\n */\nexport enum LocaleDataIndex {\n LocaleId = 0,\n DayPeriodsFormat,\n
DayPeriodsStandalone,\n DaysFormat,\n DaysStandalone,\n MonthsFormat,\n MonthsStandalone,\n Eras,\n
FirstDayOfWeek,\n WeekendRange,\n DateFormat,\n TimeFormat,\n DateTimeFormat,\n NumberSymbols,\n
NumberFormats,\n CurrencyCode,\n CurrencySymbol,\n CurrencyName,\n Currencies,\n Directionality,\n
PluralCase,\n ExtraData\n}\n\n/**\n * Index of each type of locale data from the extra locale data array\n */\nexport
const enum ExtraLocaleDataIndex {\n ExtraDayPeriodFormats = 0,\n ExtraDayPeriodStandalone,\n
ExtraDayPeriodsRules\n}\n\n/**\n * Index of each value in currency data (used to describe CURRENCIES_EN in
currencies.ts)\n */\nexport const enum CurrencyIndex {\n Symbol = 0,\n SymbolNarrow,\n
NbOfDigits\n}\n\n/**\n * Returns the canonical form of a locale name - lowercase with `_` replaced with `.`.\n
*/\nfunction normalizeLocale(locale: string): string {\n return locale.toLowerCase().replace(/_/g, '-');\n}\n\n"/**\n *

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@license\n * Copyright Google LLC All Rights Reserved.\n *\n * Use of this source code is governed by an MIT-
style license that can be\n * found in the LICENSE file at https://angular.io/license\n *\n\nimport
{getLocalePluralCase} from './locale_data_api';\n\nconst pluralMapping = ['zero', 'one', 'two', 'few', 'many'];\n\n/**\n * Returns the plural case based on the locale\n *\nexport function getPluralCase(value: string, locale: string): string
{\n  const plural = getLocalePluralCase(locale)(parseInt(value, 10));\n  const result = pluralMapping[plural];\n  return (result !== undefined) ? result : 'other';\n}\n\n/**\n * The locale id that the application is using by default (for
translations and ICU expressions).\n *\nexport const DEFAULT_LOCALE_ID = 'en-US';\n\n/**\n * USD currency
code that the application uses by default for CurrencyPipe when no\n * DEFAULT_CURRENCY_CODE is
provided.\n *\nexport const USD_CURRENCY_CODE = 'USD';\n\n","/**\n * @license\n * Copyright Google LLC
All Rights Reserved.\n *\n * Use of this source code is governed by an MIT-style license that can be\n * found in
the LICENSE file at https://angular.io/license\n *\n\nimport {SanitizerFn} from './sanitization';\n\n\n/**\n * Stores
a list of nodes which need to be removed.\n *\n * Numbers are indexes into the `LView`\n * - index > 0:
`removeRNode(IView[0])`\n * - index < 0: `removeICU(~IView[0])`\n *\nexport interface I18nRemoveOpCodes
extends Array<number> {\n  __brand__: 'I18nRemoveOpCodes';\n}\n\n/**\n * `I18nMutateOpCode` defines
OpCodes for `I18nMutateOpCodes` array.\n *\n * OpCodes are efficient operations which can be applied to the
DOM to update it. (For example to\n * update to a new ICU case requires that we clean up previous elements and
create new ones.)\n *\n * OpCodes contain three parts:\n * 1) Parent node index offset. (p)\n * 2) Reference node
index offset. (r)\n * 3) The instruction to execute. (i)\n *\n * pppp pppp pppp pppp rrrr rrrr rrrr riii\n * 3322 2222
2222 1111 1111 1110 0000 0000\n * 1098 7654 3210 9876 5432 1098 7654 3210\n *\n * ```\n * var parent =
IView[opCode >>> SHIFT_PARENT];\n * var refNode = IView[(opCode & MASK_REF) >>> SHIFT_REF];\n *
var instruction = opCode & MASK_OPCODE;\n * ```\n *\n * See: `I18nCreateOpCodes` for example of usage.\n
*\nexport const enum IcuCreateOpCode {\n  /**\n   * Stores shift amount for bits 17-3 that contain reference
index.\n   *\n   SHIFT_REF = 1,\n   /**\n   * Stores shift amount for bits 31-17 that contain parent index.\n   *\n   SHIFT_PARENT = 17,\n   /**\n   * Mask for OpCode\n   *\n   MASK_INSTRUCTION = 0b1,\n   /**\n   * Mask
for the Reference node (bits 16-3)\n   *\n   MASK_REF = 0b1111111111111110,\n   //
11111110000000000\n   //      65432109876543210\n   /**\n   * Instruction to append the current node to
`PARENT`.\n   *\n   AppendChild = 0b0,\n   /**\n   * Instruction to set the attribute of a node.\n   *\n   Attr =
0b1,\n   }\n\n\n/**\n * Array storing OpCode for dynamically creating `i18n` blocks.\n *\n * Example:\n * ```\n *
<I18nCreateOpCode>[\n * // For adding text nodes\n * // -----\n * // Equivalent to:\n * //
IView[1].appendChild(IView[0] = document.createTextNode('xyz'));\n * // 'xyz', 0, 1 << SHIFT_PARENT | 0 <<
SHIFT_REF | AppendChild,\n * // For adding element nodes\n * // -----\n * // Equivalent to:\n * //
IView[1].appendChild(IView[0] = document.createElement('div'));\n * // ELEMENT_MARKER, 'div', 0, 1 <<
SHIFT_PARENT | 0 << SHIFT_REF | AppendChild,\n * // For adding comment nodes\n * // -----
\n * // Equivalent to:\n * // IView[1].appendChild(IView[0] = document.createComment(''));\n *
ICU_MARKER, "\n * // For moving existing
nodes to a different location\n * // -----\n * // Equivalent to:\n * // const
node = IView[1];\n * // IView[2].appendChild(node);\n * // 1 << SHIFT_REF | Select, 2 << SHIFT_PARENT | 0
<< SHIFT_REF | AppendChild,\n * // For removing existing nodes\n * // -----
\n * // const node = IView[1];\n * // removeChild(tView.data(1), node, IView);\n * // 1 << SHIFT_REF |
Remove,\n * // For writing attributes\n * // -----\n * // const node =
IView[1];\n * // node.setAttribute('attr', 'value');\n * // 1 << SHIFT_REF | Attr, 'attr', 'value'\n * ];\n * ```\n
*\nexport interface IcuCreateOpCodes extends
Array<number|string|ELEMENT_MARKER|ICU_MARKER|null>,\n
I18nDebug {\n  __brand__: 'I18nCreateOpCodes';\n}\n\nexport const enum I18nUpdateOpCode {\n  /**\n   * Stores shift amount
for bits 17-2 that contain reference index.\n   *\n   SHIFT_REF = 2,\n   /**\n   * Mask for OpCode\n   *\n   MASK_OPCODE = 0b11,\n   /**\n   * Instruction to update a text node.\n   *\n   Text = 0b00,\n   /**\n   *
Instruction to update an attribute of a node.\n   *\n   Attr = 0b01,\n   /**\n   * Instruction to switch the current ICU
case.\n   *\n   IcuSwitch = 0b10,\n   /**\n   * Instruction to update the current ICU case.\n   *\n   IcuUpdate =

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0b11,\n}\n\n/**\n * Marks that the next string is an element name.\n *\n * See `I18nMutateOpCodes`
documentation.\n */\nexport const ELEMENT_MARKER: ELEMENT_MARKER = {\n marker:
'element'\n};\nexport interface ELEMENT_MARKER {\n marker: 'element';\n}\n\n/**\n * Marks that the next
string is comment text need for ICU.\n *\n * See `I18nMutateOpCodes` documentation.\n */\nexport const
ICU_MARKER: ICU_MARKER = {\n marker: 'ICU'\n};\nexport interface ICU_MARKER {\n marker:
'ICU';\n}\n\nexport interface I18nDebug {\n /**\n * Human readable representation of the OpCode arrays.\n *\n
* NOTE: This property only exists if `ngDevMode` is set to `true` and it is not present in\n * production. Its
presence is purely to help debug issue in development, and should not be relied\n * on in production application.\n
*/\n debug?: string[];\n}\n\n/**\n * Array storing OpCode for dynamically creating `i18n` translation DOM
elements.\n *\n * This array creates a sequence of `Text` and `Comment` (as ICU anchor) DOM elements. It
consists\n * of a pair of `number` and `string` pairs which encode the operations for the creation of the\n * translated
block.\n *\n * The number is shifted and encoded according to `I18nCreateOpCode`\n *\n * Pseudocode:\n * ```\n *
const i18nCreateOpCodes = [\n * 10 << I18nCreateOpCode.SHIFT, \"Text Node add to DOM\", \n * 11 <<
I18nCreateOpCode.SHIFT | I18nCreateOpCode.COMMENT, \"Comment Node add to DOM\", \n * 12 <<
I18nCreateOpCode.SHIFT | I18nCreateOpCode.APPEND_LATER, \"Text Node added later\" \n * ];\n *\n * for(var
i=0; i<i18nCreateOpCodes.length; i++) {\n *  const opcode = i18nCreateOpCodes[i++];\n *  const index = opcode
>> I18nCreateOpCode.SHIFT;\n *  const text = i18nCreateOpCodes[i];\n *  let node: Text|Comment;\n *  if
(opcode & I18nCreateOpCode.COMMENT === I18nCreateOpCode.COMMENT) {\n *  node = IView[~index] =
document.createComment(text);\n *  } else {\n *  node = IView[index] = document.createText(text);\n *  }\n *\n
if (opcode & I18nCreateOpCode.APPEND_EAGERLY !== I18nCreateOpCode.APPEND_EAGERLY) {\n *
parentNode.appendChild(node);\n *  }\n * }\n * ```\n */\nexport interface I18nCreateOpCodes extends
Array<number|string>, I18nDebug {\n __brand__: 'I18nCreateOpCodes';\n}\n\n/**\n * See `I18nCreateOpCodes`\n */\nexport
enum I18nCreateOpCode {\n /**\n * Number of bits to shift index so that it can be combined with the
`APPEND_EAGERLY` and\n * `COMMENT`.\n */\n SHIFT = 2,\n /**\n * Should the node be appended to
parent imeditatly after creation.\n */\n APPEND_EAGERLY = 0b01,\n /**\n * If set the node should be
comment (rather than a text) node.\n */\n COMMENT = 0b10,\n}\n\n/**\n * Stores DOM operations which
need to be applied to update DOM render tree due to changes in\n * expressions.\n *\n * The basic idea is that
`i18nExp` OpCodes capture expression changes and update a change\n * mask bit. (Bit 1 for expression 1, bit 2 for
expression 2 etc..., bit 32 for expression 32 and\n * higher.) The OpCodes then compare its own change mask
against the expression change mask to\n * determine if the OpCodes should execute.\n *\n * NOTE: 32nd bit is
special as it says 32nd or higher. This way if we have more than 32 bindings\n * the code still works, but with lower
efficiency. (it is unlikely that a translation would have\n * more than 32 bindings.)\n *\n * These OpCodes can be
used by both the i18n block as well as ICU sub-block.\n *\n * ## Example\n *\n * Assume\n * ```ts\n * if (rf &
RenderFlags.Update) {\n *  i18nExp(ctx.exp1); // If changed set mask bit 1\n *  i18nExp(ctx.exp2); // If changed
set mask bit 2\n *  i18nExp(ctx.exp3); // If changed set mask bit 3\n *  i18nExp(ctx.exp4); // If changed set mask
bit 4\n *  i18nApply(0); // Apply all changes by executing the OpCodes.\n * }\n * ```\n *\n * We can assume
that each call to `i18nExp` sets an internal `changeMask` bit depending on the\n * index of `i18nExp`.\n *\n * ###
OpCodes\n * ```ts\n * <I18nUpdateOpCodes>[\n * // The following OpCodes represent: <div i18n-
title=\"pre { {exp1} } in { {exp2} } post\">\n * // If `changeMask & 0b11`\n * // has changed then execute update
OpCodes.\n * // has NOT changed then skip `8` values and start processing next OpCodes.\n * 0b11, 8,\n * //
Concatenate `newValue = 'pre'+IView[bindIndex-4]+'in'+IView[bindIndex-3]+'post';`. \n * 'pre', -4, 'in', -3,
'post', \n * // Update attribute: `elementAttribute(1, 'title', sanitizerFn(newValue));`\n * 1 << SHIFT_REF | Attr,
'title', sanitizerFn, \n * // The following OpCodes represent: <div i18n>Hello { {exp3} }!`\n * // If
`changeMask & 0b100`\n * // has changed then execute update OpCodes.\n * // has NOT changed then
skip `4` values and start processing next OpCodes.\n * 0b100, 4,\n * // Concatenate `newValue = 'Hello ' +
IView[bindIndex -2] + '!`;`. \n * 'Hello ', -2, '!', \n * // Update text: `IView[1].textContent = newValue;`\n * 1 <<
SHIFT_REF | Text, \n * // The following OpCodes represent: <div i18n>{exp4, plural, ...}`\n * // If
`changeMask & 0b1000`\n * // has changed then execute update OpCodes.\n * // has NOT changed then

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into the DOM)\n * @param IView current `LView`\n * ^\nexport function getInsertInFrontOfRNodeWithI18n(\n
parentTNode: TNode, currentTNode: TNode, IView: LView): RNode|null {\n  const tNodeInsertBeforeIndex =\n
currentTNode.insertBeforeIndex;\n  const insertBeforeIndex =\n  Array.isArray(tNodeInsertBeforeIndex) ?\n
tNodeInsertBeforeIndex[0] : tNodeInsertBeforeIndex;\n  if (insertBeforeIndex === null) {\n    return\n
getInsertInFrontOfRNodeWithNoI18n(parentTNode, currentTNode, IView);\n  } else {\n    ngDevMode &&\n
assertIndexInRange(IView, insertBeforeIndex);\n    return unwrapRNode(IView[insertBeforeIndex]);\n
}\n}\n\n\n/**\n * Process `TNode.insertBeforeIndex` by adding i18n text nodes.\n * See\n
`TNode.insertBeforeIndex`\n * ^\nexport function processI18nInsertBefore(\n  renderer: Renderer3, childTNode:\n
TNode, IView: LView, childRNode: RNode|RNode[],\n  parentRElement: RElement|null): void {\n  const\n
tNodeInsertBeforeIndex = childTNode.insertBeforeIndex;\n  if (Array.isArray(tNodeInsertBeforeIndex)) {\n    // An\n
array indicates that there are i18n nodes that need to be added as children of this\n    // `childRNode`. These i18n\n
nodes were created before this `childRNode` was available and so\n    // only now can be added. The first element of\n
the array is the normal index where we should\n    // insert the `childRNode`. Additional elements are the extra\n
nodes to be added as children of\n    // `childRNode`.\n    ngDevMode && assertDomNode(childRNode);\n    let\n
i18nParent: RElement|null = childRNode as RElement;\n    let anchorRNode: RNode|null = null;\n    if\n
(!childTNode.type & TNodeType.AnyRNode) {\n      anchorRNode = i18nParent;\n      i18nParent =\n
parentRElement;\n    }\n    if (i18nParent !== null && (childTNode.flags & TNodeFlags.isComponentHost) === 0)\n
{\n      for (let i = 1; i < tNodeInsertBeforeIndex.length; i++) {\n        // No need to `unwrapRNode` because all of\n
the indexes point to i18n text nodes.\n        // see `assertDomNode` below.\n        const i18nChild =\n
IView[tNodeInsertBeforeIndex[i]];\n        nativeInsertBefore(renderer, i18nParent, i18nChild, anchorRNode,\n
false);\n      }\n    }\n  }\n}\n\n\n",/**\n * @license\n * Copyright Google LLC All Rights Reserved.\n * Use of this\n
source code is governed by an MIT-style license that can be\n * found in the LICENSE file at\n
https://angular.io/license\n * ^\n\nimport {assertEqual} from '../util/assert';\nimport {TNode, TNodeType} from\n
'./interfaces/node';\nimport {setI18nHandling} from './node_manipulation';\nimport\n
{getInsertInFrontOfRNodeWithI18n, processI18nInsertBefore} from './node_manipulation_i18n';\n\n\n/**\n * Add\n
`tNode` to `previousTNodes` list and update relevant `TNode`s in `previousTNodes` list\n *  

`TNode.insertBeforeIndex`.\n * See\n * Things to keep in mind:\n * 1. All i18n text nodes are encoded as\n
`TNodeType.Element` and are created eagerly by the\n * `i18nStart` instruction.\n * 2. All\n
`TNodeType.Placeholder` `TNodes` are elements which will be created later by\n * `elementStart` instruction.\n *  

3. `elementStart` instruction will create `TNode`s in the ascending `TNode.index` order. (So a\n * smaller index\n
`TNode` is guaranteed to be created before a larger one)\n * We use the above three invariants to determine\n
`TNode.insertBeforeIndex`.\n * In an ideal world `TNode.insertBeforeIndex` would always be\n
`TNode.next.index`. However,\n * this will not work because `TNode.next.index` may be larger than `TNode.index`\n
which means that\n * the next node is not yet created and therefore we can't insert in front of it.\n * Rule1:\n
`TNode.insertBeforeIndex = null` if `TNode.next === null` (Initial condition, as we don't\n * know if there will\n
be further `TNode`s inserted after.)\n * Rule2: If `previousTNode` is created after the `tNode` being inserted, then\n
*\n * `previousTNode.insertBeforeIndex = tNode.index` (So when a new `tNode` is added we check\n *  

previous to see if we can update its `insertBeforeIndex`)\n * See `TNode.insertBeforeIndex` for more\n
context.\n * @param previousTNodes A list of previous TNodes so that we can easily traverse `TNode`s in\n *  

reverse order. (If `TNode` would have `previous` this would not be necessary.)\n * @param newTNode A TNode to\n
add to the `previousTNodes` list.\n * ^\nexport function addTNodeAndUpdateInsertBeforeIndex(previousTNodes:\n
TNode[], newTNode: TNode) {\n  // Start with Rule1\n  ngDevMode &&\n
assertEqual(newTNode.insertBeforeIndex, null, 'We expect that insertBeforeIndex is not set');\n  previousTNodes.push(newTNode);\n
if (previousTNodes.length > 1) {\n    for (let i = previousTNodes.length - 2; i\n
>= 0; i--) {\n      const existingTNode = previousTNodes[i];\n      // Text nodes are created eagerly and so they don't\n
need their `indexBeforeIndex` updated.\n      // It is safe to ignore them.\n      if (!isI18nText(existingTNode)) {\n\n
if (isNewTNodeCreatedBefore(existingTNode, newTNode) &&\n          getInsertBeforeIndex(existingTNode) ===\n
null) {\n        // If it was created before us in time, (and it does not yet have `insertBeforeIndex`)\n        // then add

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`TNodeType.Placeholder` for more information.\n *\nexport function createTNodePlaceholder(\n  tView: TView,\n  previousTNodes: TNode[], index: number): TNode {\n  const tNode = createTNodeAtIndex(tView, index,\n  TNodeType.Placeholder, null, null);\n  addTNodeAndUpdateInsertBeforeIndex(previousTNodes, tNode);\n  return\n  tNode;\n}\n\n/**\n * Returns current ICU case.\n *\n * ICU cases are stored as index into the `Ticu.cases`.\n *\n * At\n * times it is necessary to communicate that the ICU case just switched and that next ICU update\n * should update all\n * bindings regardless of the mask. In such a case the we store negative numbers\n * for cases which have just been\n * switched. This function removes the negative flag.\n *\nexport function getCurrentICUCaseIndex(tIcu: TIcu,\n  IView: LView) {\n  const currentCase: number|null = IView[tIcu.currentCaseLViewIndex];\n  return currentCase\n  === null ? currentCase : (currentCase < 0 ? ~currentCase : currentCase);\n}\n\nexport function\n  getParentFromIcuCreateOpCode(mergedCode: number): number {\n  return mergedCode >>>\n  IcuCreateOpCode.SHIFT_PARENT;\n}\n\nexport function getRefFromIcuCreateOpCode(mergedCode: number):\n  number {\n  return (mergedCode & IcuCreateOpCode.MASK_REF) >>>\n  IcuCreateOpCode.SHIFT_REF;\n}\n\nexport function getInstructionFromIcuCreateOpCode(mergedCode: number):\n  number {\n  return mergedCode & IcuCreateOpCode.MASK_INSTRUCTION;\n}\n\nexport function\n  icuCreateOpCode(opCode: IcuCreateOpCode, parentIdx: number, refIdx: number) {\n  ngDevMode &&\n  assertGreaterThanOrEqual(parentIdx, 0, 'Missing parent index');\n  ngDevMode && assertGreaterThan(refIdx, 0,\n  'Missing ref index');\n  return opCode | parentIdx << IcuCreateOpCode.SHIFT_PARENT | refIdx <<\n  IcuCreateOpCode.SHIFT_REF;\n}\n\n", "*/\n * @license\n * Copyright Google LLC All Rights Reserved.\n *\n * Use of this source code is governed by an MIT-style license that can be\n * found in the LICENSE file at\n * https://angular.io/license\n *\nimport {getPluralCase} from './../i18n/localization';\nimport {assertDefined,\n  assertDomNode, assertEqual, assertGreaterThan, assertIndexInRange, throwError} from './../util/assert';\nimport\n  {assertIndexInExpandoRange, assertTIcu} from './assert';\nimport {attachPatchData} from\n  './context_discovery';\nimport {elementPropertyInternal, setElementAttribute} from './instructions/shared';\nimport\n  {ELEMENT_MARKER, I18nCreateOpCode, I18nCreateOpCodes, I18nUpdateOpCode, I18nUpdateOpCodes,\n  ICU_MARKER, IcuCreateOpCode, IcuCreateOpCodes, IcuType, TI18n, TIcu} from './interfaces/i18n';\nimport\n  {TNode} from './interfaces/node';\nimport {RElement, RNode, RText} from './interfaces/renderer_dom';\nimport\n  {SanitizerFn} from './interfaces/sanitization';\nimport {HEADER_OFFSET, LView, RENDERER, TView} from\n  './interfaces/view';\nimport {createCommentNode, createElementNode, createTextNode, nativeInsertBefore,\n  nativeParentNode, nativeRemoveNode, updateTextNode} from './node_manipulation';\nimport {getBindingIndex}\n  from './state';\nimport {renderStringify} from './util/stringify_utils';\nimport {getNativeByIndex, unwrapRNode}\n  from './util/view_utils';\nimport {getLocaleId} from './i18n_locale_id';\nimport {getCurrentICUCaseIndex,\n  getParentFromIcuCreateOpCode, getRefFromIcuCreateOpCode, getTIcu} from './i18n_util';\n\n\n/**\n * Keep\n * track of which input bindings in `i18nExp` have changed.\n *\n * This is used to efficiently update expressions in\n * i18n only when the corresponding input has\n * changed.\n *\n * 1) Each bit represents which of the `i18nExp` has\n * changed.\n *\n * 2) There are 32 bits allowed in JS.\n *\n * 3) Bit 32 is special as it is shared for all changes past 32. (In\n * other words if you have more\n * than 32 `i18nExp` then all changes past 32nd `i18nExp` will be mapped to same\n * bit. This means\n * that we may end up changing more than we need to. But i18n expressions with 32 bindings is\n * rare\n * so in practice it should not be an issue.)\n *\nlet changeMask = 0b0;\n\n/**\n * Keeps track of which bit\n * needs to be updated in `changeMask`\n *\n * This value gets incremented on every call to `i18nExp`\n *\nlet\n  changeMaskCounter = 0;\n\n/**\n * Keep track of which input bindings in `i18nExp` have changed.\n *\n * `setMaskBit` gets invoked by each call to `i18nExp`.\n *\n * @param hasChange did `i18nExp` detect a change.\n *\nexport function setMaskBit(hasChange: boolean) {\n  if (hasChange) {\n    changeMask = changeMask | (1 <<\n    Math.min(changeMaskCounter, 31));\n  }\n  changeMaskCounter++;\n}\n\nexport function applyI18n(tView:\n  TView, IView: LView, index: number) {\n  if (changeMaskCounter > 0) {\n    ngDevMode &&\n    assertDefined(tView, `tView should be defined`);\n    const tI18n = tView.data[index] as TI18n |\n    I18nUpdateOpCodes;\n    // When `index` points to an `i18nAttributes` then we have an array otherwise `TI18n`\n    const updateOpCodes: I18nUpdateOpCodes =\n      Array.isArray(tI18n) ? tI18n as I18nUpdateOpCodes : (tI18n\n      as TI18n).update;\n    const bindingsStartIndex = getBindingIndex() - changeMaskCounter - 1;\n
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applyUpdateOpCodes(tView, IView, updateOpCodes, bindingsStartIndex, changeMask);\n } \n // Reset
changeMask & maskBit to default for the next update cycle\n changeMask = 0b0;\n changeMaskCounter =
0;\n}\n\n/n/**\n * Apply `I18nCreateOpCodes` op-codes as stored in `T118n.create`.\n *\n * Creates text (and
comment) nodes which are internationalized.\n *\n * @param IView Current IView\n * @param createOpCodes Set
of op-codes to apply\n * @param parentRNode Parent node (so that direct children can be added eagerly) or `null` if
it is\n * a root node.\n * @param insertInFrontOf DOM node that should be used as an anchor.\n */\nexport
function applyCreateOpCodes(\n  IView: LView, createOpCodes: I18nCreateOpCodes, parentRNode:
RElement|null,\n  insertInFrontOf: RElement|null): void {\n  const renderer = IView[RENDERER];\n  for (let i =
0; i < createOpCodes.length; i++) {\n    const opCode = createOpCodes[i++] as any;\n    const text =
createOpCodes[i] as string;\n    const isComment = (opCode & I18nCreateOpCode.COMMENT) ===
I18nCreateOpCode.COMMENT;\n    const appendNow =\n      (opCode &
I18nCreateOpCode.APPEND_EAGERLY) === I18nCreateOpCode.APPEND_EAGERLY;\n    const index =
opCode >>> I18nCreateOpCode.SHIFT;\n    let rNode = IView[index];\n    if (rNode === null) {\n      // We only
create new DOM nodes if they don't already exist: If ICU switches case back to a\n      // case which was already
instantiated, no need to create new DOM nodes.\n      rNode = IView[index] =\n        isComment ?
renderer.createComment(text) : createTextNode(renderer, text);\n    }\n    if (appendNow && parentRNode !==
null) {\n      nativeInsertBefore(renderer, parentRNode, rNode, insertInFrontOf, false);\n    }\n  }\n}\n\n/n/**\n *
Apply `I18nMutateOpCodes` OpCodes.\n *\n * @param tView Current `TView`\n * @param mutableOpCodes
Mutable OpCodes to process\n * @param IView Current `LView`\n * @param anchorRNode place where the i18n
node should be inserted.\n */\nexport function applyMutableOpCodes(\n  tView: TView, mutableOpCodes:
IcuCreateOpCodes, IView: LView, anchorRNode: RNode): void {\n  ngDevMode &&
assertDomNode(anchorRNode);\n  const renderer = IView[RENDERER];\n  // `rootIdx` represents the node into
which all inserts happen.\n  let rootIdx: number|null = null;\n  // `rootRNode` represents the real node into which we
insert. This can be different from\n  // `IView[rootIdx]` if we have projection.\n  // - null we don't have a parent (as
can be the case in when we are inserting into a root of\n  // `LView` which has no parent.)\n  // - `RElement` The
element representing the root after taking projection into account.\n  let rootRNode!: RElement|null;\n  for (let i = 0;
i < mutableOpCodes.length; i++) {\n    const opCode = mutableOpCodes[i];\n    if (typeof opCode === 'string') {\n
const textNodeIndex = mutableOpCodes[++] as number;\n    if (IView[textNodeIndex] === null) {\n
ngDevMode && ngDevMode.rendererCreateTextNode++;\n    ngDevMode && assertIndexInRange(IView,
textNodeIndex);\n    IView[textNodeIndex] = createTextNode(renderer, opCode);\n    }\n    } else if (typeof
opCode === 'number') {\n    switch (opCode & IcuCreateOpCode.MASK_INSTRUCTION) {\n      case
IcuCreateOpCode.AppendChild:\n        const parentIdx = getParentFromIcuCreateOpCode(opCode);\n        if
(rootIdx === null) {\n          // The first operation should save the `rootIdx` because the first operation\n          //
must insert into the root. (Only subsequent operations can insert into a dynamic\n          // parent)\n          rootIdx =
parentIdx;\n          rootRNode = nativeParentNode(renderer, anchorRNode);\n        }\n        let insertInFrontOf:
RNode|null;\n        let parentRNode: RElement|null;\n        if (parentIdx === rootIdx) {\n          insertInFrontOf =
anchorRNode;\n          parentRNode = rootRNode;\n        } else {\n          insertInFrontOf = null;\n
parentRNode = unwrapRNode(IView[parentIdx]) as RElement;\n        }\n        // FIXME(misko): Refactor with
`processI18nText`\n        if (parentRNode !== null) {\n          // This can happen if the `LView` we are adding to is
not attached to a parent `LView`.\n          // In such a case there is no `\"root\"` we can attach to. This is fine, as we
still need to\n          // create the elements. When the `LView` gets later added to a parent these `\"root\"` nodes\n
// get picked up and added.\n          ngDevMode && assertDomNode(parentRNode);\n          const refIdx =
getRefFromIcuCreateOpCode(opCode);\n          ngDevMode && assertGreaterThan(refIdx, HEADER_OFFSET,
'Missing ref');\n          // `unwrapRNode` is not needed here as all of these point to RNodes as part of the i18n\n
// which can't have components.\n          const child = IView[refIdx] as RElement;\n          ngDevMode &&
assertDomNode(child);\n          nativeInsertBefore(renderer, parentRNode, child, insertInFrontOf, false);\n        }\n
const tIcu = getTICU(tView, refIdx);\n        if (tIcu !== null && typeof tIcu === 'object') {\n          // If we just
added a comment node which has ICU then that ICU may have already been\n          // rendered and therefore we

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need to re-add it here.\n      ngDevMode && assertTICu(tIcu);\n      const caseIndex =\n      getCurrentICUCaseIndex(tIcu, IView);\n      if (caseIndex !== null) {\n        applyMutableOpCodes(tView,\n        tIcu.create[caseIndex], IView, IView[tIcu.anchorIdx]);\n      }\n    }\n    break;\n    case\n    IcuCreateOpCode.Attr:\n      const elementNodeIndex = opCode >>> IcuCreateOpCode.SHIFT_REF;\n      const attrName = mutableOpCodes[++i] as string;\n      const attrValue = mutableOpCodes[++i] as string;\n      // This code is used for ICU expressions only, since we don't support\n      // directives/components in ICUs, we\n      don't need to worry about inputs here\n      setElementAttribute(\n        renderer,\n        getNativeByIndex(elementNodeIndex, IView) as RElement, null, null, attrName,\n        attrValue, null);\n      break;\n    default:\n      throw new Error(`Unable to determine the type of mutate operation for\n      \"\${opCode}\"`);\n    }\n  } else {\n    switch (opCode) {\n      case ICU_MARKER:\n        const\n        commentValue = mutableOpCodes[++i] as string;\n        const commentNodeIndex = mutableOpCodes[++i] as\n        number;\n        if (IView[commentNodeIndex] === null) {\n          ngDevMode &&\n          assertEquals(\n            typeof commentValue, 'string',\n            `Expected \"\${commentValue}\" to be a comment node\n            value`);\n          ngDevMode && ngDevMode.rendererCreateComment++;\n          ngDevMode &&\n          assertIndexInExpandoRange(IView, commentNodeIndex);\n          const commentRNode =\n          IView[commentNodeIndex] =\n            createCommentNode(renderer, commentValue);\n          //\n          FIXME(misko): Attaching patch data is only needed for the root (Also add tests)\n          attachPatchData(commentRNode, IView);\n        }\n        break;\n      case ELEMENT_MARKER:\n        const\n        tagName = mutableOpCodes[++i] as string;\n        const elementNodeIndex = mutableOpCodes[++i] as number;\n        if (IView[elementNodeIndex] === null) {\n          ngDevMode &&\n          assertEquals(\n            typeof tagName, 'string',\n            `Expected \"\${tagName}\" to be an element node tag name`);\n          ngDevMode && ngDevMode.rendererCreateElement++;\n          ngDevMode &&\n          assertIndexInExpandoRange(IView, elementNodeIndex);\n          const elementRNode =\n          IView[elementNodeIndex] =\n            createElementNode(renderer, tagName, null);\n          // FIXME(misko):\n          Attaching patch data is only needed for the root (Also add tests)\n          attachPatchData(elementRNode, IView);\n        }\n        break;\n      default:\n        ngDevMode &&\n        throwError(`Unable to determine the type of\n        mutate operation for \"\${opCode}\"`);\n    }\n  }\n}\n\n/**\n * Apply `I18nUpdateOpCodes` OpCodes\n * @param tView Current `TView`\n * @param IView Current `LView`\n * @param updateOpCodes OpCodes\n * @param bindingsStartIndex Location of the first `i18nApply`\n * @param changeMask Each bit\n * corresponds to a `i18nExp` (Counting backwards from\n * `bindingsStartIndex`)\n */\nexport function\napplyUpdateOpCodes(\n  tView: TView, IView: LView, updateOpCodes: I18nUpdateOpCodes,\n  bindingsStartIndex: number,\n  changeMask: number) {\n  for (let i = 0; i < updateOpCodes.length; i++) {\n    // bit\n    code to check if we should apply the next update\n    const checkBit = updateOpCodes[i] as number;\n    // Number\n    of opCodes to skip until next set of update codes\n    const skipCodes = updateOpCodes[++i] as number;\n    if\n    (checkBit & changeMask) {\n      // The value has been updated since last checked\n      let value = \"\";\n      for (let j =\n      i + 1; j <= (i + skipCodes); j++) {\n        const opCode = updateOpCodes[j];\n        if (typeof opCode === 'string') {\n          value += opCode;\n        } else if (typeof opCode === 'number') {\n          if (opCode < 0) {\n            // Negative\n            opCode represent `i18nExp` values offset.\n            value += renderStringify(IView[bindingsStartIndex -\n            opCode]);\n          } else {\n            const nodeIndex = (opCode >>> I18nUpdateOpCode.SHIFT_REF);\n            switch (opCode & I18nUpdateOpCode.MASK_OPCODE) {\n              case I18nUpdateOpCode.Attr:\n                const propName = updateOpCodes[++j] as string;\n                const sanitizeFn = updateOpCodes[++j] as SanitizerFn\n                | null;\n                const tNodeOrTagName = tView.data[nodeIndex] as TNode | string;\n                ngDevMode &&\n                assertDefined(tNodeOrTagName, 'Expecting TNode or string');\n                if (typeof tNodeOrTagName === 'string')\n                {\n                  // IF we don't have a `TNode`, then we are an element in ICU (as ICU content does\n                  // not\n                  have TNode), in which case we know that there are no directives, and hence\n                  // we use attribute\n                  setting.\n                  setElementAttribute(\n                    IView[RENDERER], IView[nodeIndex], null,\n                    tNodeOrTagName, propName, value,\n                    sanitizeFn);\n                } else {\n                  elementPropertyInternal(\n                    tView, tNodeOrTagName, IView, propName, value, IView[RENDERER],

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sanitizeFn,\n                false);\n                }\n                break;\n                case I18nUpdateOpCode.Text:\nconst rText = IView[nodeIndex] as RText | null;\n                rText !== null &&\nupdateTextNode(IView[RENDERER], rText, value);\n                break;\n                case\nI18nUpdateOpCode.IcuSwitch:\n                applyIcuSwitchCase(tView, getTlCu(tView, nodeIndex)!, IView,\nvalue);\n                break;\n                case I18nUpdateOpCode.IcuUpdate:\n                applyIcuUpdateCase(tView,\ngetTlCu(tView, nodeIndex)!, bindingsStartIndex, IView);\n                break;\n                }\n                }\n                }\n                }\nelse {\n    const opCode = updateOpCodes[i + 1] as number;\n    if (opCode > 0 && (opCode &\nI18nUpdateOpCode.MASK_OPCODE) === I18nUpdateOpCode.IcuUpdate) {\n        // Special case for the\n`icuUpdateCase`. It could be that the mask did not match, but\n        // we still need to execute `icuUpdateCase`\nbecause the case has changed recently due to\n        // previous `icuSwitchCase` instruction. (`icuSwitchCase` and\n`icuUpdateCase` always come in\n        // pairs.)\n        const nodeIndex = (opCode >>>\nI18nUpdateOpCode.SHIFT_REF);\n        const tlCu = getTlCu(tView, nodeIndex)!;\n        const currentIndex =\nIView[tlCu.currentCaseLViewIndex];\n        if (currentIndex < 0) {\n            applyIcuUpdateCase(tView, tlCu,\nbindingsStartIndex, IView);\n        }\n        }\n        }\n        i += skipCodes;\n    }\n}\n\n/**\n * Apply OpCodes associated\nwith updating an existing ICU.\n * @param tView Current `TVView`\n * @param tlCu Current `TlCu`\n * @param bindingsStartIndex Location of the first `I18nApply`\n * @param IView Current `LView`\n */\nfunction\napplyIcuUpdateCase(tView: TVView, tlCu: TlCu, bindingsStartIndex: number, IView: LView) {\n    ngDevMode &&\nassertIndexInRange(IView, tlCu.currentCaseLViewIndex);\n    let activeCaseIndex =\nIView[tlCu.currentCaseLViewIndex];\n    if (activeCaseIndex !== null) {\n        let mask = changeMask;\n        if\n(activeCaseIndex < 0) {\n            // Clear the flag.\n            // Negative number means that the ICU was freshly created and\nwe need to force the update.\n            activeCaseIndex = IView[tlCu.currentCaseLViewIndex] = ~activeCaseIndex;\n            // -1 is same as all bits on, which simulates creation since it marks all bits dirty\n            mask = -1;\n        }\n        applyUpdateOpCodes(tView, IView, tlCu.update[activeCaseIndex], bindingsStartIndex, mask);\n    }\n}\n\n/**\n * Apply OpCodes associated with switching a case on ICU.\n * This involves tearing down existing case and than\nbuilding up a new case.\n * @param tView Current `TVView`\n * @param tlCu Current `TlCu`\n * @param\nIView Current `LView`\n * @param value Value of the case to update to.\n */\nfunction\napplyIcuSwitchCase(tView: TVView, tlCu: TlCu, IView: LView, value: string) {\n    // Rebuild a new case for this\nICU\n    const caseIndex = getCaseIndex(tlCu, value);\n    let activeCaseIndex = getCurrentICUCaseIndex(tlCu,\nIView);\n    if (activeCaseIndex !== caseIndex) {\n        applyIcuSwitchCaseRemove(tView, tlCu, IView);\n        IView[tlCu.currentCaseLViewIndex] = caseIndex === null ? null : ~caseIndex;\n        if (caseIndex !== null) {\n            //\nAdd the nodes for the new case\n            const anchorRNode = IView[tlCu.anchorIdx];\n            if (anchorRNode) {\n                ngDevMode && assertDomNode(anchorRNode);\n                applyMutableOpCodes(tView, tlCu.create[caseIndex],\nIView, anchorRNode);\n            }\n        }\n    }\n}\n\n/**\n * Apply OpCodes associated with tearing ICU case.\n * This involves tearing down existing case and than building up a new case.\n * @param tView Current\n`TVView`\n * @param tlCu Current `TlCu`\n * @param IView Current `LView`\n */\nfunction\napplyIcuSwitchCaseRemove(tView: TVView, tlCu: TlCu, IView: LView) {\n    let activeCaseIndex =\ngetCurrentICUCaseIndex(tlCu, IView);\n    if (activeCaseIndex !== null) {\n        const removeCodes =\ntlCu.remove[activeCaseIndex];\n        for (let i = 0; i < removeCodes.length; i++) {\n            const nodeOrIcuIndex =\nremoveCodes[i] as number;\n            if (nodeOrIcuIndex > 0) {\n                // Positive numbers are `RNode`s.\n                const\nrNode = getNativeByIndex(nodeOrIcuIndex, IView);\n                rNode !== null &&\n                nativeRemoveNode(IView[RENDERER], rNode);\n            } else {\n                // Negative numbers are ICUs\n                applyIcuSwitchCaseRemove(tView, getTlCu(tView, ~nodeOrIcuIndex)!, IView);\n            }\n        }\n    }\n}\n\n/**\n * Returns the index of the current case of an ICU expression depending on the main binding value\n * @param\nicuExpression\n * @param bindingValue The value of the main binding used by this ICU expression\n */\nfunction\ngetCaseIndex(icuExpression: TlCu, bindingValue: string): number|null {\n    let index =\nicuExpression.cases.indexOf(bindingValue);\n    if (index === -1) {\n        switch (icuExpression.type) {\n            case\nIcuType.plural: {\n                const resolvedCase = getPluralCase(bindingValue, getLocaleId());\n                index =\nicuExpression.cases.indexOf(resolvedCase);\n                if (index === -1 && resolvedCase !== 'other') {\n                    index =

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icuExpression.cases.indexOf('other');\n    }\n    break;\n  }\n  case IcuType.select: {\n    index =
icuExpression.cases.indexOf('other');\n    break;\n  }\n  }\n  }\n  }\n  return index === -1 ? null :
index;\n}\n\n"/**\n * @license\n * Copyright Google LLC All Rights Reserved.\n *\n * Use of this source code is
governed by an MIT-style license that can be\n * found in the LICENSE file at https://angular.io/license\n
*/\n\nimport {assertDomNode, assertNumber, assertNumberInRange} from '../util/assert';\nimport {assertTlCu,
assertTNodeForLView} from '../assert';\nimport {EMPTY_ARRAY} from '../empty';\nimport
{getCurrentICUCaseIndex} from './i18n/i18n_util';\nimport {I18nRemoveOpCodes, TlCu} from
'./interfaces/i18n';\nimport {TlCuContainerNode} from './interfaces/node';\nimport {RNode} from
'./interfaces/renderer_dom';\nimport {LView, TVIEW} from './interfaces/view';\n\nexport function
loadIcuContainerVisitor() {\n  const _stack: any[] = [];\n  let _index: number = -1;\n  let _lView: LView;\n  let
_removeOpCodes: I18nRemoveOpCodes;\n\n  /**\n   * Retrieves a set of root nodes from `TlCu.remove`. Used by
`TNodeType.ICUContainer`\n   * to determine which root belong to the ICU.\n   *\n   * Example of usage.\n   * ```\n   * const nextRNode = icuContainerIteratorStart(tlCuContainerNode, lView);\n   * let rNode: RNode|null;\n   *
while(rNode = nextRNode()) {\n   *   console.log(rNode);\n   * }\n   * ```\n   *\n   * @param tlCuContainerNode
Current `TlCuContainerNode`\n   * @param lView `LView` where the `RNode`s should be looked up.\n   */\n  function icuContainerIteratorStart(tlCuContainerNode: TlCuContainerNode, lView: LView): () => RNode | null
{\n    _lView = lView;\n    while (_stack.length) _stack.pop();\n\n    ngDevMode &&
assertTNodeForLView(tlCuContainerNode, lView);\n    enterIcu(tlCuContainerNode.value, lView);\n    return
icuContainerIteratorNext();\n  }\n\n  function enterIcu(tlCu: TlCu, lView: LView) {\n    _index = 0;\n    const
currentCase = getCurrentICUCaseIndex(tlCu, lView);\n    if (currentCase !== null) {\n      ngDevMode &&
assertNumberInRange(currentCase, 0, tlCu.cases.length - 1);\n      _removeOpCodes = tlCu.remove[currentCase];\n    } else
{\n      _removeOpCodes = EMPTY_ARRAY as any;\n    }\n  }\n\n  function icuContainerIteratorNext(): RNode|null {\n    if (_index < _removeOpCodes.length) {\n      const removeOpCode = _removeOpCodes[_index++] as number;\n      ngDevMode
&& assertNumber(removeOpCode, 'Expecting OpCode number');\n      if (removeOpCode > 0) {\n        const rNode
= _lView[removeOpCode];\n        ngDevMode && assertDomNode(rNode);\n        return rNode;\n      } else {\n        _stack.push(_index, _removeOpCodes);\n        // ICUs are represented by negative indices\n        const tlCuIndex =
~removeOpCode;\n        const tlCu = _lView[TVIEW].data[tlCuIndex] as TlCu;\n        ngDevMode &&
assertTlCu(tlCu);\n        enterIcu(tlCu, _lView);\n        return icuContainerIteratorNext();\n      }\n    } else {\n      if
(_stack.length === 0) {\n        return null;\n      } else {\n        _removeOpCodes = _stack.pop();\n        _index =
_stack.pop();\n        return icuContainerIteratorNext();\n      }\n    }\n  }\n\n  return
icuContainerIteratorStart;\n}\n\n"/**\n * @license\n * Copyright Google LLC All Rights Reserved.\n *\n * Use of
this source code is governed by an MIT-style license that can be\n * found in the LICENSE file at
https://angular.io/license\n */\n\nimport {assertNumber, assertString} from '../util/assert';\nimport
{ELEMENT_MARKER, I18nCreateOpCode, I18nCreateOpCodes, I18nRemoveOpCodes, I18nUpdateOpCode,
I18nUpdateOpCodes, ICU_MARKER, IcuCreateOpCode, IcuCreateOpCodes} from './interfaces/i18n';\nimport
{getInstructionFromIcuCreateOpCode, getParentFromIcuCreateOpCode, getRefFromIcuCreateOpCode} from
'./i18n_util';\n\n/**\n * Converts `I18nCreateOpCodes` array into a human readable format.\n *\n * This function
is attached to the `I18nCreateOpCodes.debug` property if `ngDevMode` is enabled.\n *\n * This function provides a
human readable view of the opcodes. This is useful when debugging the\n * application as well as writing more
readable tests.\n *\n * @param this `I18nCreateOpCodes` if attached as a method.\n * @param opcodes
`I18nCreateOpCodes` if invoked as a function.\n */\nexport function i18nCreateOpCodesToString(this:
I18nCreateOpCodes|void, opcodes?: I18nCreateOpCodes): string[] {\n  const createOpCodes: I18nCreateOpCodes
= opcodes || (Array.isArray(this) ? this : [] as any);\n  let lines: string[] = [];\n  for (let i = 0; i <
createOpCodes.length; i++) {\n    const opCode = createOpCodes[i++] as any;\n    const text = createOpCodes[i] as
string;\n    const isComment = (opCode & I18nCreateOpCode.COMMENT) ===
I18nCreateOpCode.COMMENT;\n    const appendNow =\n      (opCode &
I18nCreateOpCode.APPEND_EAGERLY) === I18nCreateOpCode.APPEND_EAGERLY;\n    const index =
opCode >>> I18nCreateOpCode.SHIFT;\n    lines.push(`lView[${index}] = document.${isComment ?

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'createComment' : 'createText' }({\n    JSON.stringify(text)});;\n if (appendNow) {\n
lines.push('parent.appendChild(IView[${index}]);');;\n };\n return lines;\n}\n\n/**\n * Converts
`I18nUpdateOpCodes` array into a human readable format.\n *\n * This function is attached to the
`I18nUpdateOpCodes.debug` property if `ngDevMode` is enabled.\n *\n * This function provides a human readable
view of the opcodes. This is useful when debugging the\n * application as well as writing more readable tests.\n *\n
* @param this `I18nUpdateOpCodes` if attached as a method.\n * @param opcodes `I18nUpdateOpCodes` if
invoked as a function.\n */\nexport function i18nUpdateOpCodesToString(\n this: I18nUpdateOpCodes|void,
opcodes?: I18nUpdateOpCodes): string[] {\n    const parser = new OpCodeParser(opcodes || (Array.isArray(this) ?
this : []));\n    let lines: string[] = [];\n\n    function consumeOpCode(value: number): string {\n        const ref = value >>>
I18nUpdateOpCode.SHIFT_REF;\n        const opCode = value & I18nUpdateOpCode.MASK_OPCODE;\n        switch
(opCode) {\n            case I18nUpdateOpCode.Text:\n                return `(IView[${ref}] as Text).textContent = $$$`;\n            case
I18nUpdateOpCode.Attr:\n                const attrName = parser.consumeString();\n                const sanitizationFn =
parser.consumeFunction();\n                const value = sanitizationFn ? `(${sanitizationFn})($$$)` : '$$$';\n                return
`(IView[${ref}] as Element).setAttribute('${attrName}', ${value})`;\n            case I18nUpdateOpCode.IcuSwitch:\n                return `icuSwitchCase(${ref}, $$$)`;\n            case I18nUpdateOpCode.IcuUpdate:\n                return
`icuUpdateCase(${ref})`;\n        }\n        throw new Error('unexpected OpCode');\n    }\n\n    while (parser.hasMore()) {\n
let mask = parser.consumeNumber();\n        let size = parser.consumeNumber();\n        const end = parser.i + size;\n        const statements: string[] = [];\n        let statement = '';\n        while (parser.i < end) {\n            let value =
parser.consumeNumberOrString();\n            if (typeof value === 'string') {\n                statement += value;\n            } else if
(value < 0) {\n                // Negative numbers are ref indexes\n                // Here `i` refers to current binding index. It is to
signify that the value is relative,\n                // rather than absolute.\n                statement += `${IView[i + value + ]}`;\n            }
else {\n                // Positive numbers are operations.\n                const opCodeText = consumeOpCode(value);\n                statements.push(opCodeText.replace('$$$', ` ` + statement + ` `) + `;`);\n                statement = '';\n            }\n        }\n        lines.push(`if (mask & 0b${mask.toString(2)}) { ${statements.join(' ')} }`);\n    }\n    return lines;\n}\n\n/**\n * Converts `I18nCreateOpCodes` array into a human readable format.\n *\n * This function is attached to the
`I18nCreateOpCodes.debug` if `ngDevMode` is enabled. This\n * function provides a human readable view of the
opcodes. This is useful when debugging the\n * application as well as writing more readable tests.\n *\n * @param
this `I18nCreateOpCodes` if attached as a method.\n * @param opcodes `I18nCreateOpCodes` if invoked as a
function.\n */\nexport function icuCreateOpCodesToString(\n this: IcuCreateOpCodes|void, opcodes?:
IcuCreateOpCodes): string[] {\n    const parser = new OpCodeParser(opcodes || (Array.isArray(this) ? this : []));\n    let
lines: string[] = [];\n\n    function consumeOpCode(opCode: number): string {\n        const parent =
getParentFromIcuCreateOpCode(opCode);\n        const ref = getRefFromIcuCreateOpCode(opCode);\n        switch
(getInstructionFromIcuCreateOpCode(opCode)) {\n            case IcuCreateOpCode.AppendChild:\n                return
`(IView[${parent}] as Element).appendChild(IView[${lastRef}])`;\n            case IcuCreateOpCode.Attr:\n                return
`(IView[${ref}] as Element).setAttribute('${parser.consumeString()}', '${\n
parser.consumeString()})'`;\n        }\n        throw new Error('Unexpected OpCode: ' +
getInstructionFromIcuCreateOpCode(opCode));\n    }\n\n    let lastRef = -1;\n    while (parser.hasMore()) {\n        let value
= parser.consumeNumberStringOrMarker();\n        if (value === ICU_MARKER) {\n            const text =
parser.consumeString();\n            lastRef = parser.consumeNumber();\n            lines.push(`IView[${lastRef}] =
document.createComment('${text}')`);\n        } else if (value === ELEMENT_MARKER) {\n            const text =
parser.consumeString();\n            lastRef = parser.consumeNumber();\n            lines.push(`IView[${lastRef}] =
document.createElement('${text}')`);\n        } else if (typeof value === 'string') {\n            lastRef =
parser.consumeNumber();\n            lines.push(`IView[${lastRef}] = document.createTextNode('${value}')`);\n        }
else if (typeof value === 'number') {\n            const line = consumeOpCode(value);\n            line && lines.push(line);\n        }
else {\n            throw new Error('Unexpected value');\n        }\n    }\n    return lines;\n}\n\n/**\n * Converts
`I18nRemoveOpCodes` array into a human readable format.\n *\n * This function is attached to the
`I18nRemoveOpCodes.debug` if `ngDevMode` is enabled. This\n * function provides a human readable view of the
opcodes. This is useful when debugging the\n * application as well as writing more readable tests.\n *\n * @param

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this `I18nRemoveOpCodes` if attached as a method.\n * @param opcodes `I18nRemoveOpCodes` if invoked as a
function.\n */\nexport function i18nRemoveOpCodesToString(\n  this: I18nRemoveOpCodes|void, opcodes?:
I18nRemoveOpCodes): string[] {\n  const removeCodes = opcodes || (Array.isArray(this) ? this : []);\n  let lines:
string[] = [];\n  for (let i = 0; i < removeCodes.length; i++) {\n    const nodeOrIcuIndex = removeCodes[i] as
number;\n    if (nodeOrIcuIndex > 0) {\n      // Positive numbers are `RNode`s.\n      lines.push(`remove(IView[${nodeOrIcuIndex}])`);\n    } else {\n      // Negative numbers are ICUs\n      lines.push(`removeNestedICU(${~nodeOrIcuIndex})`);\n    } }\n  }\n  return lines;\n}\n\n\nclass OpCodeParser {\n
i: number = 0;\n  codes: any[];\n  constructor(codes: any[]) {\n    this.codes = codes;\n  }\n  hasMore() {\n
return this.i < this.codes.length;\n  }\n  consumeNumber(): number {\n    let value = this.codes[this.i++];\n
assertNumber(value, 'expecting number in OpCode');\n    return value;\n  }\n  consumeString(): string {\n
let value = this.codes[this.i++];\n    assertString(value, 'expecting string in OpCode');\n    return value;\n  }\n
consumeFunction(): Function|null {\n    let value = this.codes[this.i++];\n    if (value === null || typeof value ===
'function') {\n      return value;\n    } \n    throw new Error('expecting function in OpCode');\n  }\n  consumeNumberOrString(): number|string {\n
let value = this.codes[this.i++];\n    if (typeof value === 'string') {\n      return value;\n    } \n    assertNumber(value, 'expecting number or string in OpCode');\n    return value;\n  }\n  consumeNumberStringOrMarker(): number|string|ICU_MARKER|ELEMENT_MARKER {\n
let value =
this.codes[this.i++];\n    if (typeof value === 'string' || typeof value === 'number' || value === ICU_MARKER ||\n
value === ELEMENT_MARKER) {\n      return value;\n    } \n    assertNumber(value, 'expecting number, string,
ICU_MARKER or ELEMENT_MARKER in OpCode');\n    return value;\n  }\n}\n\n"/**\n * @license\n *
Copyright Google LLC All Rights Reserved.\n * Use of this source code is governed by an MIT-style license
that can be\n * found in the LICENSE file at https://angular.io/license\n */\nimport './../util/ng_dev_mode';\nimport
'./../util/ng_i18n_closure_mode';\nimport {getTemplateContent, SRCSET_ATTRS, URI_ATTRS,
VALID_ATTRS, VALID_ELEMENTS} from './../sanitization/html_sanitizer';\nimport {getInertBodyHelper} from
'./../sanitization/inert_body';\nimport {_sanitizeUrl, sanitizeSrcset} from './../sanitization/url_sanitizer';\nimport
{assertDefined, assertEqual, assertGreaterThanOrEqual, assertOneOf, assertString} from './../util/assert';\nimport
{CharCode} from './../util/char_code';\nimport {loadIcuContainerVisitor} from
'./instructions/i18n_icu_container_visitor';\nimport {allocExpando, createTNodeAtIndex} from
'./instructions/shared';\nimport {getDocument} from './interfaces/document';\nimport {ELEMENT_MARKER,
I18nCreateOpCode, I18nCreateOpCodes, I18nRemoveOpCodes, I18nUpdateOpCode, I18nUpdateOpCodes,
ICU_MARKER, IcuCreateOpCode, IcuCreateOpCodes, IcuExpression, IcuType, T118n, TIcu} from
'./interfaces/i18n';\nimport {TNode, TNodeType} from './interfaces/node';\nimport {SanitizerFn} from
'./interfaces/sanitization';\nimport {HEADER_OFFSET, LView, TView} from './interfaces/view';\nimport
{getCurrentParentTNode, getCurrentTNode, setCurrentTNode} from './state';\nimport {attachDebugGetter} from
'./util/debug_utils';\nimport {i18nCreateOpCodesToString, i18nRemoveOpCodesToString,
i18nUpdateOpCodesToString, icuCreateOpCodesToString} from './i18n_debug';\nimport
{addTNodeAndUpdateInsertBeforeIndex} from './i18n_insert_before_index';\nimport
{ensureIcuContainerVisitorLoaded} from './i18n_tree_shaking';\nimport {createTNodePlaceholder,
icuCreateOpCode, setTIcu, setTNodeInsertBeforeIndex} from './i18n_util';\n\n\nconst BINDING_REGEXP =
/((d+):?\\d*/gi;\nconst ICU_REGEXP = /(\\{\\s*\\d+:?\\d*\\s*,\\s*\\S{6}\\s*,[\\s\\S]*\\})/gi;\nconst NESTED_ICU =
/((d+);/;\nconst ICU_BLOCK_REGEXP = /^(\\s*(\\d+:?\\d*)\\s*,\\s*(select|plural)\\s*,/;\n\nconst MARKER =
``;\nconst SUBTEMPLATE_REGEXP = ^/?.*(\\d+:\\d+)/gi;\nconst PH_REGEXP =
/((\\/?[#*]\\d+):?\\d*/gi;\n\n\n/**\n * Angular Dart introduced &nbsp; as a placeholder for non-removable space, see:\n
* https://github.com/dart-
lang/angular/blob/0bb611387d29d65b5af7f9d2515ab571fd3fbee4/_tests/test/compiler/preserve_whitespace_test.dart
#L25-L32\n * In Angular Dart &nbsp; is converted to the 0xE500 PUA (Private Use Areas) unicode character\n
* and later on replaced by a space. We are re-implementing the same idea here, since translations\n
* might contain this special character.\n */\nconst NGSP_UNICODE_REGEXP = ^\\uE500/g;\nfunction replaceNgsp(value: string):
string {\n  return value.replace(NGSP_UNICODE_REGEXP, ' ');\n}\n\n\n/**\n * Create dynamic nodes from i18n

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translation block.\n * - Text nodes are created synchronously\n * - TNodes are linked into tree lazily\n *
@param tView Current `TVView`\n * @parentTNodeIndex index to the parent TNode of this i18n block\n * @param
IView Current `LView`\n * @param index Index of `i18nStart` instruction.\n * @param message Message to
translate.\n * @param subTemplateIndex Index into the sub template of message translation. (ie in case of\n *
`ngIf`) (-1 otherwise)\n */\nexport function i18nStartFirstCreatePass(\n  tView: TVView, parentTNodeIndex:
number, IView: LView, index: number, message: string,\n  subTemplateIndex: number) {\n  const rootTNode =
getCurrentParentTNode();\n  const createOpCodes: I18nCreateOpCodes = [] as any;\n  const updateOpCodes:
I18nUpdateOpCodes = [] as any;\n  const existingTNodeStack: TNode[][] = [];\n  if (ngDevMode) {\n
attachDebugger(createOpCodes, i18nCreateOpCodesToString);\n  attachDebugger(updateOpCodes,
i18nUpdateOpCodesToString);\n  }\n  message = getTranslationForTemplate(message, subTemplateIndex);\n
const msgParts = replaceNgsp(message).split(PH_REGEXP);\n  for (let i = 0; i < msgParts.length; i++) {\n
let value = msgParts[i];\n  if ((i & 1) === 0) {\n    // Even indexes are text (including bindings & ICU expressions)\n
const parts = i18nParseTextIntoPartsAndICU(value);\n    for (let j = 0; j < parts.length; j++) {\n    let part =
parts[j];\n    if ((j & 1) === 0) {\n      // `j` is odd therefore `part` is string\n      const text = part as string;\n
ngDevMode && assertString(text, 'Parsed ICU part should be string');\n      if (text !== '') {\n
i18nStartFirstCreatePassProcessTextNode(\n        tView, rootTNode, existingTNodeStack[0], createOpCodes,
updateOpCodes, IView, text);\n      } else {\n        // `j` is Even therefor `part` is an `ICUExpression`\n
const icuExpression: IcuExpression = part as IcuExpression;\n        // Verify that ICU expression has the right
shape. Translations might contain invalid\n        // constructions (while original messages were correct), so ICU
parsing at runtime may\n        // not succeed (thus `icuExpression` remains a string).\n        // Note: we
intentionally retain the error here by not using `ngDevMode`, because\n        // the value can change based on the
locale and users aren't guaranteed to hit\n        // an invalid string while they're developing.\n        if (typeof
icuExpression !== 'object') {\n          throw new Error(`Unable to parse ICU expression in "${message}"
message.`);\n        }\n        const icuContainerTNode = createTNodeAndAddOpCode(\n          tView,
rootTNode, existingTNodeStack[0], IView, createOpCodes,\n          ngDevMode ? `ICU
${index}:${icuExpression.mainBinding}` : '', true);\n        const icuNodeIndex = icuContainerTNode.index;\n
ngDevMode && \n          assertGreaterThanOrEqual(\n            icuNodeIndex, HEADER_OFFSET, 'Index
must be in absolute LView offset');\n          icuStart(tView, IView, updateOpCodes, parentTNodeIndex,
icuExpression, icuNodeIndex);\n        }\n      } else {\n        // Odd indexes are placeholders (elements and sub-
templates)\n        // At this point value is something like: `/#1:2` (originally coming from `/#1:2`)\n        const isClosing
= value.charCodeAt(0) === CharCode.SLASH;\n        const type = value.charCodeAt(isClosing ? 1 : 0);\n
ngDevMode && assertOneOf(type, CharCode.STAR, CharCode.HASH);\n        const index = HEADER_OFFSET +
Number.parseInt(value.substring((isClosing ? 2 : 1)));\n        if (isClosing) {\n          existingTNodeStack.shift();\n
setCurrentTNode(getCurrentParentTNode()!, false);\n        } else {\n          const tNode =
createTNodePlaceholder(tView, existingTNodeStack[0], index);\n          existingTNodeStack.unshift([]);\n
setCurrentTNode(tNode, true);\n        }\n      }\n    }\n  }\n  tView.data[index] = <TNode>{\n    create: createOpCodes,\n
update: updateOpCodes,\n  };\n}\n\n/**\n * Allocate space in i18n Range add create OpCode instruction to crete a
text or comment node.\n * @param tView Current `TVView` needed to allocate space in i18n range.\n * @param
rootTNode Root `TNode` of the i18n block. This node determines if the new TNode will be\n * added as part of
the `i18nStart` instruction or as part of the `TNode.insertBeforeIndex`.\n * @param existingTNodes internal state
for `addTNodeAndUpdateInsertBeforeIndex`.\n * @param IView Current `LView` needed to allocate space in i18n
range.\n * @param createOpCodes Array storing `I18nCreateOpCodes` where new opCodes will be added.\n *
@param text Text to be added when the `Text` or `Comment` node will be created.\n * @param isICU true if a
`Comment` node for ICU (instead of `Text`) node should be created.\n */\nfunction createTNodeAndAddOpCode(\n
  tView: TVView, rootTNode: TNode|null, existingTNodes: TNode[], IView: LView,\n  createOpCodes:
I18nCreateOpCodes, text: string|null, isICU: boolean): TNode {\n  const i18nNodeIdx = allocExpando(tView,
IView, 1, null);\n  let opCode = i18nNodeIdx << I18nCreateOpCode.SHIFT;\n  let parentTNode =
getCurrentParentTNode();\n  if (rootTNode === parentTNode) {\n    // FIXME(misko): A null `parentTNode`

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should represent when we fall of the `LView` boundary.\n // (there is no parent), but in some circumstances
(because we are inconsistent about how we set\n // `previousOrParentTNode`) it could point to `rootTNode` So
this is a work around.\n parentTNode = null;\n } \n if (parentTNode === null) {\n // If we don't have a parent
that means that we can eagerly add nodes.\n // If we have a parent than these nodes can't be added now (as the
parent has not been created\n // yet) and instead the `parentTNode` is responsible for adding it. See\n //
`TNode.insertBeforeIndex`\n opCode |= I18nCreateOpCode.APPEND_EAGERLY;\n } \n if (isICU) {\n
opCode |= I18nCreateOpCode.COMMENT;\n ensureIcuContainerVisitorLoaded(loadIcuContainerVisitor);\n } \n
createOpCodes.push(opCode, text === null ? " : text);\n // We store `{{?}}` so that when looking at debug
`TNodeType.template` we can see where the\n // bindings are.\n const tNode = createTNodeAtIndex(\n tView,
i18nNodeIdx, isICU ? TNodeType.Icu : TNodeType.Text,\n text === null ? (ngDevMode ? '{{?}}' : "") : text,
null);\n addTNodeAndUpdateInsertBeforeIndex(existingTNodes, tNode);\n const tNodeIdx = tNode.index;\n
setCurrentTNode(tNode, false /* Text nodes are self closing */);\n if (parentTNode !== null && rootTNode !==
parentTNode) {\n // We are a child of deeper node (rather than a direct child of `i18nStart` instruction.)\n // We
have to make sure to add ourselves to the parent.\n setTNodeInsertBeforeIndex(parentTNode, tNodeIdx);\n } \n
return tNode;\n}\n\n/**\n * Processes text node in i18n block.\n * \n * Text nodes can have:\n * - Create instruction
in `createOpCodes` for creating the text node.\n * - Allocate spec for text node in i18n range of `LView`\n * - If
contains binding:\n * - bindings => allocate space in i18n range of `LView` to store the binding value.\n * -
populate `updateOpCodes` with update instructions.\n * \n * @param tView Current `TVIEW`\n * @param
rootTNode Root `TNode` of the i18n block. This node determines if the new TNode will\n * be added as part of
the `i18nStart` instruction or as part of the\n * `TNode.insertBeforeIndex`.\n * @param existingTNodes internal
state for `addTNodeAndUpdateInsertBeforeIndex`.\n * @param createOpCodes Location where the creation
OpCodes will be stored.\n * @param IView Current `LVIEW`\n * @param text The translated text (which may
contain binding)\n */\nfunction i18nStartFirstCreatePassProcessTextNode(\n tView: TVIEW, rootTNode:
TNode|null, existingTNodes: TNode[], createOpCodes: I18nCreateOpCodes,\n updateOpCodes:
I18nUpdateOpCodes, IView: LVIEW, text: string): void {\n const hasBinding = text.match(BINDING_REGEXP);\n
const tNode = createTNodeAndAddOpCode(\n tView, rootTNode, existingTNodes, IView, createOpCodes,
hasBinding ? null : text, false);\n if (hasBinding) {\n generateBindingUpdateOpCodes(updateOpCodes, text,
tNode.index);\n } \n}\n\n/**\n * See `i18nAttributes` above.\n */\nexport function i18nAttributesFirstPass(tView:
TVIEW, index: number, values: string[]) {\n const previousElement = getCurrentTNode();\n const
previousElementIndex = previousElement.index;\n const updateOpCodes: I18nUpdateOpCodes = [] as any;\n if
(ngDevMode) {\n attachDebugGetter(updateOpCodes, i18nUpdateOpCodesToString);\n } \n if
(tView.firstCreatePass && tView.data[index] === null) {\n for (let i = 0; i < values.length; i += 2) {\n const
attrName = values[i];\n const message = values[i + 1];\n\n if (message !== "") {\n // Check if attribute
value contains an ICU and throw an error if that's the case.\n // ICUs in element attributes are not supported.\n
// Note: we intentionally retain the error here by not using `ngDevMode`, because\n // the `value` can change
based on the locale and users aren't guaranteed to hit\n // an invalid string while they're developing.\n if
(ICU_REGEXP.test(message)) {\n throw new Error(\n `ICU expressions are not supported in
attributes. Message: "${message}`);\n } \n\n // i18n attributes that hit this code path are guaranteed to
have bindings, because\n // the compiler treats static i18n attributes as regular attribute bindings.\n
generateBindingUpdateOpCodes(updateOpCodes, message, previousElementIndex, attrName);\n } \n } \n
tView.data[index] = updateOpCodes;\n } \n}\n\n/**\n * Generate the OpCodes to update the bindings of a
string.\n * \n * @param updateOpCodes Place where the update opcodes will be stored.\n * @param str The string
containing the bindings.\n * @param destinationNode Index of the destination node which will receive the
binding.\n * @param attrName Name of the attribute, if the string belongs to an attribute.\n * @param sanitizeFn
Sanitization function used to sanitize the string after update, if necessary.\n */\nexport function
generateBindingUpdateOpCodes(\n updateOpCodes: I18nUpdateOpCodes, str: string, destinationNode: number,
attrName?: string,\n sanitizeFn: SanitizerFn|null = null): number {\n ngDevMode &&\n
assertGreaterThanOrEqual(\n destinationNode, HEADER_OFFSET, 'Index must be in absolute LView

```



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newIndex = allocExpando(tView, IView, 1, null);\n  switch (currentNode.nodeType) {\n    case
Node.ELEMENT_NODE:\n      const element = currentNode as Element;\n      const tagName =
element.tagName.toLowerCase();\n      if (VALID_ELEMENTS.hasOwnProperty(tagName)) {\n        addCreateNodeAndAppend(create, ELEMENT_MARKER, tagName, parentIdx, newIndex);\n      }\n      tView.data[newIndex] = tagName;\n      const elAttrs = element.attributes;\n      for (let i = 0; i < elAttrs.length;\n        i++) {\n        const attr = elAttrs.item(i);\n        const lowerAttrName = attr.name.toLowerCase();\n        const hasBinding = !!attr.value.match(BINDING_REGEXP);\n        // we assume the input string is safe, unless
it's using a binding\n        if (hasBinding) {\n          if (VALID_ATTRS.hasOwnProperty(lowerAttrName)) {\n            if (URI_ATTRS[lowerAttrName]) {\n              generateBindingUpdateOpCodes(\n                update,\n                attr.value, newIndex, attr.name, _sanitizeUrl);\n            } else if (SRCSET_ATTRS[lowerAttrName]) {\n              generateBindingUpdateOpCodes(\n                update, attr.value, newIndex, attr.name, sanitizeSrcset);\n            }\n          } else {\n            generateBindingUpdateOpCodes(update, attr.value, newIndex, attr.name);\n          }\n        } else {\n          ngDevMode &&\n            console.warn(\n              `WARNING: ignoring unsafe
attribute value ` +\n                `${lowerAttrName} on element ${tagName} (see http://g.co/ng/security#xss)`);\n        }\n      }\n    } else {\n      addCreateAttribute(create, newIndex, attr);\n    }\n  }\n  // Parse
the children of this node (if any)\n  bindingMask = walkIcuTree(\n    tView, tIcu, IView,\n    sharedUpdateOpCodes, create, remove, update,\n    currentNode as Element, newIndex, nestedIcus,\n    depth + 1) |\n    bindingMask;\n  addRemoveNode(remove, newIndex, depth);\n}\nbreak;\n
case Node.TEXT_NODE:\n  const value = currentNode.textContent || ";\n  const hasBinding =
value.match(BINDING_REGEXP);\n  addCreateNodeAndAppend(create, null, hasBinding ? " : value,\n    parentIdx, newIndex);\n  addRemoveNode(remove, newIndex, depth);\n  if (hasBinding) {\n    bindingMask = generateBindingUpdateOpCodes(update, value, newIndex) | bindingMask;\n  }\n  break;\n
case Node.COMMENT_NODE:\n  // Check if the comment node is a placeholder for a nested ICU\n  const
isNestedIcu = NESTED_ICU.exec(currentNode.textContent || ");\n  if (isNestedIcu) {\n    const
nestedIcuIndex = parseInt(isNestedIcu[1], 10);\n    const icuExpression: IcuExpression =
nestedIcus[nestedIcuIndex];\n    // Create the comment node that will anchor the ICU expression\n
addCreateNodeAndAppend(\n      create, ICU_MARKER, ngDevMode ? `nested ICU ${nestedIcuIndex}` : "\n",\n      parentIdx,\n      newIndex);\n    icuStart(tView, IView, sharedUpdateOpCodes, parentIdx, icuExpression,\n      newIndex);\n    addRemoveNestedIcu(remove, newIndex, depth);\n  }\n  break;\n}\ncurrentNode =
currentNode.nextSibling;\n}\nreturn bindingMask;\n}\n\nfunction addRemoveNode(remove:\n  I18nRemoveOpCodes, index: number, depth: number) {\n  if (depth === 0) {\n    remove.push(index);\n  }\n}\n\nfunction addRemoveNestedIcu(remove: I18nRemoveOpCodes, index: number, depth: number) {\n  if
(depth === 0) {\n    remove.push(~index); // remove ICU at `index`\n    remove.push(index); // remove ICU
comment at `index`\n  }\n}\n\nfunction addUpdateIcuSwitch(\n  update: I18nUpdateOpCodes, icuExpression:\n  IcuExpression, index: number) {\n  update.push(\n    toMaskBit(icuExpression.mainBinding), 2, -1 -
icuExpression.mainBinding,\n    index << I18nUpdateOpCode.SHIFT_REF |
I18nUpdateOpCode.IcuSwitch);\n}\n\nfunction addUpdateIcuUpdate(update: I18nUpdateOpCodes, bindingMask:\n  number, index: number) {\n  update.push(bindingMask, 1, index << I18nUpdateOpCode.SHIFT_REF |
I18nUpdateOpCode.IcuUpdate);\n}\n\nfunction addCreateNodeAndAppend(\n  create: IcuCreateOpCodes,\n  marker: null|ICU_MARKER|ELEMENT_MARKER, text: string,\n  appendToParentIdx: number, createAtIdx:\n  number) {\n  if (marker !== null) {\n    create.push(marker);\n  }\n  create.push(\n    text, createAtIdx,\n    icuCreateOpCode(IcuCreateOpCode.AppendChild, appendToParentIdx, createAtIdx));\n}\n\nfunction
addCreateAttribute(create: IcuCreateOpCodes, newIndex: number, attr: Attr) {\n  create.push(newIndex <<
IcuCreateOpCode.SHIFT_REF | IcuCreateOpCode.Attr, attr.name, attr.value);\n}\n\n"/**\n * @license\n *
Copyright Google LLC All Rights Reserved.\n * Use of this source code is governed by an MIT-style license
that can be\n * found in the LICENSE file at https://angular.io/license\n */\n\n// i18nPostprocess consts\nconst
ROOT_TEMPLATE_ID = 0;\nconst PP_MULTI_VALUE_PLACEHOLDERS_REGEXP = /\{\{([+?])\}\}/;\nconst
PP_PLACEHOLDERS_REGEXP = /\{\{([+?])\}\}(\{\{?\}\}\d+:\d+)/g;\nconst PP_ICU_VARS_REGEXP =

```


Reserved.

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```

import './util/ng_dev_mode';
import './util/ng_i18n_closure_mode';
import {assertDefined} from './util/assert';
import {bindingUpdated} from './bindings';
import {applyCreateOpCodes, applyI18n, setMaskBit} from './i18n/i18n_apply';
import {i18nAttributesFirstPass, i18nStartFirstCreatePass} from './i18n/i18n_parse';
import {i18nPostprocess} from './i18n/i18n_postprocess';
import {T18n} from './interfaces/i18n';
import {TElementNode, TNodeType} from './interfaces/node';
import {HEADER_OFFSET, T_HOST} from './interfaces/view';
import {getClosestRElement} from './node_manipulation';
import {getCurrentParentTNode, getLView, getTView, nextBindingIndex, setInI18nBlock} from './state';
import {getConstant} from './util/view_utils';

```

* Marks a block of text as translatable.

* The instructions `i18nStart` and `i18nEnd` mark the translation block in the template.

* The translation `message` is the value which is locale specific. The translation string may contain placeholders which associate inner elements and sub-templates within the translation.

* The translation `message` placeholders are:

- `{index}({block})`: **Binding Placeholder**: Marks a location where an expression will be interpolated into. The placeholder `index` points to the expression binding index. An optional `block` that matches the sub-template in which it was declared.
- `#{index}({block})^/#{index}({block})`: **Element Placeholder**: Marks the beginning and end of DOM element that were embedded in the original translation block. The placeholder `index` points to the element index in the template instructions set. An optional `block` that matches the sub-template in which it was declared.
- `*{index}({block})^/*{index}({block})`: **Sub-template Placeholder**: Sub-templates must be split up and translated separately in each angular template function. The `index` points to the `template` instruction index. A `block` that matches the sub-template in which it was declared.

* `@param index` A unique index of the translation in the static block.

* `@param messageIndex` An index of the translation message from the `def.consts` array.

* `@param subTemplateIndex` Optional sub-template index in the `message`.

```

@codeGenApi
export function i18nStart(index: number, messageIndex: number, subTemplateIndex: number = -1): void {
  const tView = getTView();
  const lView = getLView();
  const adjustedIndex = HEADER_OFFSET + index;
  const ngDevMode = true;
  const assertDefined = (tView, `tView should be defined`);
  const message = getConstant<string>(tView.consts, messageIndex);
  const parentTNode = getCurrentParentTNode() as TElementNode | null;
  if (tView.firstCreatePass) {
    i18nStartFirstCreatePass(tView, parentTNode === null ? 0 : parentTNode.index, lView, adjustedIndex, message, subTemplateIndex);
  }
  const t18n = tView.data[adjustedIndex] as T18n;
  const sameViewParentTNode = parentTNode === lView[T_HOST] ? null : parentTNode;
  const parentRNode = getClosestRElement(tView, sameViewParentTNode, lView);
  // If `parentTNode` is an `ElementContainer` then it has `<!--ng-container-->`.
  // When we do inserts we have to make sure to insert in front of `<!--ng-container-->`.
  const insertInFrontOf = parentTNode && (parentTNode.type & TNodeType.ElementContainer) ? lView[parentTNode.index] : null;
  applyCreateOpCodes(lView, t18n.create, parentRNode, insertInFrontOf);
  setInI18nBlock(true);
}

```

* Translates a translation block marked by `i18nStart` and `i18nEnd`. It inserts the text/ICU nodes into the render tree, moves the placeholder nodes and removes the deleted nodes.

* `@codeGenApi`

```

export function i18nEnd(): void {
  setInI18nBlock(false);
}

```

* Use this instruction to create a translation block that doesn't contain any placeholder.

* It calls both `{@link i18nStart}` and `{@link i18nEnd}` in one instruction.

* The translation `message` is the value which is locale specific. The translation string may contain placeholders which associate inner elements and sub-templates within the translation.

* The translation `message` placeholders are:

- `{index}({block})`: **Binding Placeholder**: Marks a location where an expression will be interpolated into. The placeholder `index` points to the expression binding index. An optional `block` that matches the sub-template in which it was declared.
- `#{index}({block})^/#{index}({block})`: **Element Placeholder**: Marks the beginning and end of DOM element that were embedded in the original translation block. The placeholder `index` points to the element index in the template instructions set. An optional `block` that matches the sub-template in which it was declared.
- `*{index}({block})^/*{index}({block})`: **Sub-template Placeholder**: Sub-templates must be

split up and translated separately in each angular template function. The `index` points to the `template` instruction index. A `block` that matches the sub-template in which it was declared.

`@param index` A unique index of the translation in the static block.

`@param messageIndex` An index of the translation message from the `def.consts` array.

`@param subTemplateIndex` Optional sub-template index in the `message`.

`@codeGenApi` `export function i18n(index: number, messageIndex: number, subTemplateIndex?: number): void {`

`i18nStart(index, messageIndex, subTemplateIndex);`

`i18nEnd();`

`}`

`/**` Marks a list of attributes as translatable.

`@param index` A unique index in the static block

`@param values`

`@codeGenApi` `export function i18nAttributes(index: number, attrsIndex: number): void {`

`const tView = getTView();`

`ngDevMode && assertDefined(tView, `tView should be defined`);`

`const attrs = getConstant<string[]>(tView.consts, attrsIndex!);`

`i18nAttributesFirstPass(tView, index + HEADER_OFFSET, attrs);`

`}`

`/**` Stores the values of the bindings during each update cycle in order to determine if we need to update the translated nodes.

`@param value` The binding's value

`@returns` This function returns itself so that it may be chained (e.g. `i18nExp(ctx.name)(ctx.title)`)

`@codeGenApi` `export function i18nExp<T>(value: T): typeof i18nExp {`

`const IView = getLView();`

`setMaskBit(bindingUpdated(IView, nextBindingIndex(), value));`

`return i18nExp;`

`}`

`/**` Updates a translation block or an i18n attribute when the bindings have changed.

`@param index` Index of either { @link i18nStart } (translation block) or { @link i18nAttributes } (i18n attribute) on which it should update the content.

`@codeGenApi` `export function i18nApply(index: number) {`

`applyI18n(getTView(), getLView(), index + HEADER_OFFSET);`

`}`

`/**` Handles message string post-processing for internationalization.

`Handles message string post-processing by transforming it from intermediate format (that might contain some markers that we need to replace) to the final form, consumable by i18nStart instruction. Post processing steps include:`

1. Resolve all multi-value cases (like `[*1:#2:1|#4:1|5]`)
2. Replace all ICU vars (like `"VAR_PLURAL"`)
3. Replace all placeholders used inside ICUs in a form of `{PLACEHOLDER}`
4. Replace all ICU references with corresponding values (like `ICU_EXP_ICU_1`) in case multiple ICUs have the same placeholder name

`@param message` Raw translation string for post processing

`@param replacements` Set of replacements that should be applied

`@returns` Transformed string that can be consumed by i18nStart instruction

`@codeGenApi` `export function i18nPostprocess(message: string, replacements: {[key: string]: (string|string[])} = {}): string {`

`return i18nPostprocess(message, replacements);`

`}`

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`/**` This file re-exports all symbols contained in this directory.

`Why is this file not `index.ts`?`

`There seems to be an inconsistent path resolution of an `index.ts` file when only the parent directory is referenced. This could be due to the node module resolution configuration differing from rollup and/or typescript.`

`With commit https://github.com/angular/angular/commit/d5e3f2c64bd13ce83e7c70788b7fc514ca4a9918 the `instructions.ts` file was moved to `instructions/instructions.ts` and an `index.ts` file was used to re-export everything. Having had file names that were importing from `instructions` directly (not the from the sub file or the `index.ts` file) caused strange CI issues. `index.ts` had to be renamed to `all.ts` for this to work.`

`Jira Issue = FW-1184`

`export * from './attribute';`

`export * from './attribute_interpolation';`

`export * from './change_detection';`

`export * from './template';`

`export * from './storage';`

`export * from './di';`

`export * from './element';`

`export * from './element_container';`

`export * from './get_current_view';`

`export * from './listener';`

`export * from './namespace';`

`export * from './next_context';`

`export * from './projection';`

`export * from './property';`

`export * from './property_interpolation';`

`export * from './advance';`

`export * from './styling';`

`export * from './text';`

`export * from './text_interpolation';`

`export * from './class_map_interpolation';`

`export * from './style_map_interpolation';`

`export * from './style_prop_interpolation';`

`export * from './host_property';`

`export * from './i18n';`

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`import {resolveForwardRef} from './di/forward_ref';`

`import {ClassProvider, Provider} from`

```

./di/interface/provider';\nimport {isClassProvider, isTypeProvider, providerToFactory} from
./di/tr3_injector';\nimport {assertDefined} from './util/assert';\n\nimport {diPublicInInjector, getNodeInjectable,
getOrCreateNodeInjectorForNode} from './di';\nimport {directiveInject} from './instructions/all';\nimport
{DirectiveDef} from './interfaces/definition';\nimport {NodeInjectorFactory} from './interfaces/injector';\nimport
{TContainerNode, TDirectiveHostNode, TElementContainerNode, TElementNode, TNodeProviderIndexes} from
./interfaces/node';\nimport {isComponentDef} from './interfaces/type_checks';\nimport {DestroyHookData, LView,
TData, TVIEW, TView} from './interfaces/view';\nimport {getCurrentTNode, getLView, getTView} from
./state';\n\n\n/**\n * Resolves the providers which are defined in the DirectiveDef.\n * When inserting the
tokens and the factories in their respective arrays, we can assume that\n * this method is called first for the
component (if any), and then for other directives on the same\n * node.\n * As a consequence, the providers are
always processed in that order:\n * 1) The view providers of the component\n * 2) The providers of the component\n * 3) The providers of the other directives\n * This matches the structure of the injectables arrays of a view (for each
node).\n * So the tokens and the factories can be pushed at the end of the arrays, except\n * in one case for multi
providers.\n * @param def the directive definition\n * @param providers: Array of `providers`\n * @param
viewProviders: Array of `viewProviders`\n * ^\nexport function providersResolver<T>(\n  def: DirectiveDef<T>,\n  providers: Provider[], viewProviders: Provider[]): void {\n  const tView = getTView();\n  if (tView.firstCreatePass)
{\n  const isComponent = isComponentDef(def);\n\n  // The list of view providers is processed first, and the flags
are updated\n  resolveProvider(viewProviders, tView.data, tView.blueprint, isComponent, true);\n\n  // Then, the
list of providers is processed, and the flags are updated\n  resolveProvider(providers, tView.data, tView.blueprint,
isComponent, false);\n  }\n}\n\n/**\n * Resolves a provider and publishes it to the DI system.\n */\nfunction
resolveProvider(\n  provider: Provider, tInjectables: TData, IInjectablesBlueprint: NodeInjectorFactory[],\n  isComponent: boolean, isViewProvider: boolean): void {\n  provider = resolveForwardRef(provider);\n  if
(Array.isArray(provider)) {\n  // Recursively call `resolveProvider`\n  // Recursion is OK in this case because this
code will not be in hot-path once we implement\n  // cloning of the initial state.\n  for (let i = 0; i <
provider.length; i++) {\n  resolveProvider(\n    provider[i], tInjectables, IInjectablesBlueprint, isComponent,
isViewProvider);\n  }\n  } else {\n  const tView = getTView();\n  const IView = getLView();\n  let token: any =
isTypeProvider(provider) ? provider : resolveForwardRef(provider.provide);\n  let providerFactory: () => any =
providerToFactory(provider);\n\n  const tNode = getCurrentTNode(!);\n  const beginIndex =
tNode.providerIndexes & TNodeProviderIndexes.ProvidersStartIndexMask;\n  const endIndex =
tNode.directiveStart;\n  const cptViewProvidersCount =\n    tNode.providerIndexes >>
TNodeProviderIndexes.CptViewProvidersCountShift;\n\n  if (isTypeProvider(provider) || !provider.multi) {\n  //
Single provider case: the factory is created and pushed immediately\n  const factory = new
NodeInjectorFactory(providerFactory, isViewProvider, directiveInject);\n  const existingFactoryIndex =
indexOf(\n    token, tInjectables, isViewProvider ? beginIndex : beginIndex + cptViewProvidersCount,\n    endIndex);\n  if (existingFactoryIndex === -1) {\n  diPublicInInjector(\n
getOrCreateNodeInjectorForNode(\n    tNode as TElementNode | TContainerNode |
TElementContainerNode, IView),\n    tView, token);\n    registerDestroyHooksIfSupported(tView, provider,
tInjectables.length);\n    tInjectables.push(token);\n    tNode.directiveStart++;\n    tNode.directiveEnd++;\n
if (isViewProvider) {\n    tNode.providerIndexes += TNodeProviderIndexes.CptViewProvidersCountShifter;\n
}\n    IInjectablesBlueprint.push(factory);\n    IView.push(factory);\n  } else {\n  IInjectablesBlueprint[existingFactoryIndex] = factory;\n  IView[existingFactoryIndex] = factory;\n  }\n  }
else {\n  // Multi provider case:\n  // We create a multi factory which is going to aggregate all the values.\n  //
Since the output of such a factory depends on content or view injection,\n  // we create two of them, which are
linked together.\n  // The first one (for view providers) is always in the first block of the injectables array,\n
// and the second one (for providers) is always in the second block.\n  // This is important because view
providers have higher priority. When a multi token\n  // is being looked up, the view providers should be found
first.\n  // Note that it is not possible to have a multi factory in the third block (directive block).\n  // The
algorithm to process multi providers is as follows:\n  // 1) If the multi provider comes from the `viewProviders` of

```

```

the component:\n // a) If the special view providers factory doesn't exist, it is created and pushed.\n // b)
Else, the multi provider is added to the existing multi factory.\n // 2) If the multi provider comes from the
`providers` of the component or of another\n // directive:\n // a) If the multi factory doesn't exist, it is created
and provider pushed into it.\n // It is also linked to the multi factory for view providers, if it exists.\n // b)
Else, the multi provider is added to the existing multi factory.\n\n const existingProvidersFactoryIndex =\n
indexOf(token, tInjectables, beginIndex + cptViewProvidersCount, endIndex);\n const
existingViewProvidersFactoryIndex =\n indexOf(token, tInjectables, beginIndex, beginIndex +
cptViewProvidersCount);\n const doesProvidersFactoryExist = existingProvidersFactoryIndex >= 0 &&\n
InjectablesBlueprint[existingProvidersFactoryIndex];\n const doesViewProvidersFactoryExist =
existingViewProvidersFactoryIndex >= 0 &&\n
InjectablesBlueprint[existingViewProvidersFactoryIndex];\n\n if (isViewProvider &&
!doesViewProvidersFactoryExist ||\n !isViewProvider && !doesProvidersFactoryExist) {\n // Cases 1.a
and 2.a\n diPublicInInjector(\n getOrCreateNodeInjectorForNode(\n tNode as TElementNode |
TContainerNode | TElementContainerNode, IView),\n tView, token);\n const factory = multiFactory(\n
isViewProvider ? multiViewProvidersFactoryResolver : multiProvidersFactoryResolver,\n
InjectablesBlueprint.length, isViewProvider, isComponent, providerFactory);\n if (!isViewProvider &&
doesViewProvidersFactoryExist) {\n
InjectablesBlueprint[existingViewProvidersFactoryIndex].providerFactory = factory;\n }\n
registerDestroyHooksIfSupported(tView, provider, tInjectables.length, 0);\n tInjectables.push(token);\n
tNode.directiveStart++;\n tNode.directiveEnd++;\n if (isViewProvider) {\n tNode.providerIndexes +=
TNodeProviderIndexes.CptViewProvidersCountShifter;\n }\n InjectablesBlueprint.push(factory);\n
IView.push(factory);\n } else {\n // Cases 1.b and 2.b\n const indexInFactory = multiFactoryAdd(\n
InjectablesBlueprint!\n [isViewProvider ? existingViewProvidersFactoryIndex :\n
existingProvidersFactoryIndex],\n providerFactory, !isViewProvider && isComponent);\n
registerDestroyHooksIfSupported(\n tView, provider,\n existingProvidersFactoryIndex > -1 ?
existingProvidersFactoryIndex :\n existingViewProvidersFactoryIndex,\n
indexInFactory);\n }\n if (!isViewProvider && isComponent && doesViewProvidersFactoryExist) {\n
InjectablesBlueprint[existingViewProvidersFactoryIndex].componentProviders!++;\n }\n }\n }\n}\n\n**\n *
Registers the `ngOnDestroy` hook of a provider, if the provider supports destroy hooks.\n * @param tView `TView`
in which to register the hook.\n * @param provider Provider whose hook should be registered.\n * @param
contextIndex Index under which to find the context for the hook when it's being invoked.\n * @param
indexInFactory Only required for `multi` providers. Index of the provider in the multi\n * provider factory.\n
*/\nfunction registerDestroyHooksIfSupported(\n tView: TView, provider: Exclude<Provider, any[]>,\n
contextIndex: number,\n indexInFactory?: number) {\n const providerIsTypeProvider =
isTypeProvider(provider);\n if (providerIsTypeProvider || isClassProvider(provider)) {\n const prototype =
((provider as ClassProvider).useClass || provider).prototype;\n const ngOnDestroy = prototype.ngOnDestroy;\n if
(ngOnDestroy) {\n const hooks = tView.destroyHooks || (tView.destroyHooks = []);\n\n if
(!providerIsTypeProvider && ((provider as ClassProvider).multi) {\n ngDevMode &&\n
assertDefined(\n indexInFactory, 'indexInFactory when registering multi factory destroy hook');\n
const existingCallbacksIndex = hooks.indexOf(contextIndex);\n\n if (existingCallbacksIndex === -1) {\n
hooks.push(contextIndex, [indexInFactory, ngOnDestroy]);\n } else {\n (hooks[existingCallbacksIndex +
1] as DestroyHookData).push(indexInFactory!, ngOnDestroy);\n }\n } else {\n
hooks.push(contextIndex, ngOnDestroy);\n }\n }\n }\n}\n\n**\n * Add a factory in a multi factory.\n *
@returns Index at which the factory was inserted.\n */\nfunction multiFactoryAdd(\n multiFactory:
NodeInjectorFactory, factory: () => any, isComponentProvider: boolean): number {\n if (isComponentProvider) {\n
multiFactory.componentProviders!++;\n }\n return multiFactory.multi!.push(factory) - 1;\n}\n\n**\n * Returns
the index of item in the array, but only in the begin to end range.\n */\nfunction indexOf(item: any, arr: any[], begin:
number, end: number) {\n for (let i = begin; i < end; i++) {\n if (arr[i] === item) return i;\n }\n return -

```

```

1;\n}\n\n/**\n * Use this with `multi` providers.\n */\nfunction multiProvidersFactoryResolver(\n  this:\n  NodeInjectorFactory, _: undefined, tData: TData, lData: LView,\n  tNode: TDirectiveHostNode): any[] {\n  return\n  multiResolve(this.multi!, []);\n}\n\n/**\n * Use this with `multi` viewProviders.\n */\n * This factory knows how to\n  concatenate itself with the existing `multi` providers.\n */\nfunction multiViewProvidersFactoryResolver(\n  this:\n  NodeInjectorFactory, _: undefined, tData: TData, lView: LView,\n  tNode: TDirectiveHostNode): any[] {\n  const\n  factories = this.multi!;\n  let result: any[];\n  if (this.providerFactory) {\n    const componentCount =\n    this.providerFactory.componentProviders!;\n    const multiProviders =\n    getNodeInjectable(lView,\n    lView[TVIEW], this.providerFactory!.index!, tNode);\n    // Copy the section of the array which contains `multi`\n    `providers` from the component\n    result = multiProviders.slice(0, componentCount);\n    // Insert the\n    `viewProvider` instances.\n    multiResolve(factories, result);\n    // Copy the section of the array which contains\n    `multi` `providers` from other directives\n    for (let i = componentCount; i < multiProviders.length; i++) {\n    result.push(multiProviders[i]);\n    }\n  } else {\n    result = [];\n    // Insert the `viewProvider` instances.\n    multiResolve(factories, result);\n  }\n  return result;\n}\n\n/**\n * Maps an array of factories into an array of\n  values.\n */\nfunction multiResolve(factories: Array<() => any>, result: any[]): any[] {\n  for (let i = 0; i <\n  factories.length; i++) {\n    const factory = factories[i] as () => null;\n    result.push(factory());\n  }\n  return\n  result;\n}\n\n/**\n * Creates a multi factory.\n */\nfunction multiFactory(\n  factoryFn: (\n    this:\n    NodeInjectorFactory, _: undefined, tData: TData, lData: LView,\n    tNode: TDirectiveHostNode) => any,\n  index: number, isViewProvider: boolean, isComponent: boolean,\n  f: () => any): NodeInjectorFactory {\n  const\n  factory = new NodeInjectorFactory(factoryFn, isViewProvider, directiveInject);\n  factory.multi = [];\n  factory.index = index;\n  factory.componentProviders = 0;\n  multiFactoryAdd(factory, f, isComponent &&\n  !isViewProvider);\n  return factory;\n}\n\n"/**\n * @license\n * Copyright Google LLC All Rights Reserved.\n */\n * Use of this source code is governed by an MIT-style license that can be\n * found in the LICENSE file at\n  https://angular.io/license\n */\nimport {ProcessProvidersFunction, Provider} from\n'./di/interface/provider';\nimport {providersResolver} from './di_setup';\nimport {DirectiveDef} from\n'./interfaces/definition';\n\n/**\n * This feature resolves the providers of a directive (or component),\n * and publish\n  them into the DI system, making it visible to others for injection.\n */\n * For example:\n * ```\n * class\n  ComponentWithProviders {\n *   constructor(private greeter: GreeterDE) {}\n *   static cmp =\n  defineComponent({\n *     type: ComponentWithProviders,\n *     selectors: [['component-with-providers']],\n *     factory: () => new ComponentWithProviders(directiveInject(GreeterDE as any)),\n *     decls: 1,\n *     vars: 1,\n *     template: function(fs: RenderFlags, ctx: ComponentWithProviders) {\n *       if (fs & RenderFlags.Create) {\n *         text(0);\n *       }\n *       if (fs & RenderFlags.Update) {\n *         textInterpolate(ctx.greeter.greet());\n *       }\n *     },\n *     features: [ProvidersFeature([GreeterDE])]\n *   });\n * }\n * ```\n */\n * @param definition\n */\n * @codeGenApi\n */\nexport function ProvidersFeature<T>(providers: Provider[], viewProviders: Provider[] = []) {\n  return (definition: DirectiveDef<T>) => {\n    definition.providersResolver =\n    (def: DirectiveDef<T>,\n    processProvidersFn?: ProcessProvidersFunction) => {\n      return providersResolver(\n        def,\n        //\n        processProvidersFn ? processProvidersFn(providers) : providers, //\n        viewProviders);\n    };\n  };\n}\n\n"/**\n * @license\n * Copyright Google LLC All Rights Reserved.\n */\n * Use\n  of this source code is governed by an MIT-style license that can be\n * found in the LICENSE file at\n  https://angular.io/license\n */\nimport {ChangeDetectorRef} from './change_detection/change_detection';\nimport\n{Injector} from './di/injector';\nimport {Type} from './interface/type';\nimport {ElementRef} from\n'./element_ref';\nimport {NgModuleRef} from './ng_module_factory';\nimport {ViewRef} from\n'./view_ref';\n\n/**\n * Represents a component created by a `ComponentFactory`.\n */\n * Provides access to the\n  component instance and related objects,\n * and provides the means of destroying the instance.\n */\n * @publicApi\n */\nexport abstract class ComponentRef<C> {\n  /**\n   * The host or anchor\n  [element](guide/glossary#element) for this component instance.\n   */\n  abstract get location(): ElementRef;\n\n  /**\n   * The [dependency injector](guide/glossary#injector) for this component instance.\n   */\n  abstract get\n  injector(): Injector;\n\n  /**\n   * This component instance.\n   */\n  abstract get instance(): C;\n\n  /**\n   * The [host\n  view](guide/glossary#view-tree) defined by the template\n   */\n  abstract get

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hostView(): ViewRef;\n\n /**\n * The change detector for this component instance.\n */\n abstract get
changeDetectorRef(): ChangeDetectorRef;\n\n /**\n * The type of this component (as created by a
`ComponentFactory` class).\n */\n abstract get componentType(): Type<any>;\n\n /**\n * Destroys the
component instance and all of the data structures associated with it.\n */\n abstract destroy(): void;\n\n /**\n * A
lifecycle hook that provides additional developer-defined cleanup\n * functionality for the component.\n *
@param callback A handler function that cleans up developer-defined data\n * associated with this component.
Called when the `destroy()` method is invoked.\n */\n abstract onDestroy(callback: Function): void;\n}\n\n/**\n *
Base class for a factory that can create a component dynamically.\n * Instantiate a factory for a given type of
component with `resolveComponentFactory()`.\n * Use the resulting `ComponentFactory.create()` method to create
a component of that type.\n */\n * @see [Dynamic Components](guide/dynamic-component-loader)\n */\n *
@publicApi\n */\nexport abstract class ComponentFactory<C> {\n /**\n * The component's HTML selector.\n */\n
abstract get selector(): string;\n /**\n * The type of component the factory will create.\n */\n abstract get
componentType(): Type<any>;\n /**\n * Selector for all <ng-content> elements in the component.\n */\n
abstract get ngContentSelectors(): string[];\n /**\n * The inputs of the component.\n */\n abstract get inputs():
{propName: string, templateName: string}[];\n /**\n * The outputs of the component.\n */\n abstract get
outputs(): {propName: string, templateName: string}[];\n /**\n * Creates a new component.\n */\n abstract
create(\n injector: Injector, projectableNodes?: any[][], rootSelectorOrNode?: string|any,\n ngModule?:
NgModuleRef<any>): ComponentRef<C>;\n}\n\n"/**\n * @license\n * Copyright Google LLC All Rights
Reserved.\n */\n * Use of this source code is governed by an MIT-style license that can be\n * found in the
LICENSE file at https://angular.io/license\n */\n\nimport {Injector} from './di/injector';\nimport {Type} from
'./interface/type';\nimport {stringify} from './util/stringify';\nimport {ComponentFactory, ComponentRef} from
'./component_factory';\nimport {NgModuleRef} from './ng_module_factory';\n\nexport function
noComponentFactoryError(component: Function) {\n const error = Error(`No component factory found for ${\n
stringify(component)}. Did you add it to @NgModule.entryComponents?`);\n (error as
any)[ERROR_COMPONENT] = component;\n return error;\n}\n\nconst ERROR_COMPONENT =
'ngComponent';\n\nexport function getComponent(error: Error): Type<any> {\n return (error as
any)[ERROR_COMPONENT];\n}\n\n\nclass _NullComponentFactoryResolver implements
ComponentFactoryResolver {\n resolveComponentFactory<T>(component: {new(...args: any[]): T}):
ComponentFactory<T> {\n throw noComponentFactoryError(component);\n }}\n\n/**\n * A simple registry
that maps `Components` to generated `ComponentFactory` classes\n * that can be used to create instances of
components.\n * Use to obtain the factory for a given component type,\n * then use the factory's `create()`
method to create a component of that type.\n */\n * @see [Dynamic Components](guide/dynamic-component-loader)\n *
@publicApi\n */\nexport abstract class ComponentFactoryResolver {\n static NULL: ComponentFactoryResolver =
new _NullComponentFactoryResolver();\n /**\n * Retrieves the factory object that creates a component of the
given type.\n * @param component The component type.\n */\n abstract
resolveComponentFactory<T>(component: Type<T>): ComponentFactory<T>;\n}\n\nexport class
CodegenComponentFactoryResolver implements ComponentFactoryResolver {\n private _factories = new
Map<any, ComponentFactory<any>>();\n\n constructor(\n factories: ComponentFactory<any>[], private
_parent: ComponentFactoryResolver,\n private _ngModule: NgModuleRef<any>) {\n for (let i = 0; i <
factories.length; i++) {\n const factory = factories[i];\n this._factories.set(factory.componentType, factory);\n
}\n }\n\n resolveComponentFactory<T>(component: {new(...args: any[]): T}): ComponentFactory<T> {\n let
factory = this._factories.get(component);\n if (!factory && this._parent) {\n factory =
this._parent.resolveComponentFactory(component);\n }\n if (!factory) {\n throw
noComponentFactoryError(component);\n }\n return new ComponentFactoryBoundToModule(factory,
this._ngModule);\n }}\n\nexport class ComponentFactoryBoundToModule<C> extends ComponentFactory<C>
{\n readonly selector: string;\n readonly componentType: Type<any>;\n readonly ngContentSelectors: string[];\n
readonly inputs: {propName: string, templateName: string}[];\n readonly outputs: {propName: string,
templateName: string}[];\n\n constructor(private factory: ComponentFactory<C>, private ngModule:

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NgModuleRef<any>) {\n  super();\n  this.selector = factory.selector;\n  this.componentType =
factory.componentType;\n  this.ngContentSelectors = factory.ngContentSelectors;\n  this.inputs =
factory.inputs;\n  this.outputs = factory.outputs;\n } \n\n create(\n  injector: Injector, projectableNodes?: any[],\n  rootSelectorOrNode?: string|any,\n  ngModule?: NgModuleRef<any>): ComponentRef<C> {\n  return
this.factory.create(\n    injector, projectableNodes, rootSelectorOrNode, ngModule || this.ngModule);\n
}\n}\n", "/*\n * @license\n * Copyright Google LLC All Rights Reserved.\n * \n * Use of this source code is
governed by an MIT-style license that can be\n * found in the LICENSE file at https://angular.io/license\n
*/\n\nexport function noop(...args: any[]): any {\n  // Do nothing.\n}\n", "/*\n * @license\n * Copyright Google
LLC All Rights Reserved.\n * \n * Use of this source code is governed by an MIT-style license that can be\n * found
in the LICENSE file at https://angular.io/license\n */\n\nimport {TNode} from './render3/interfaces/node';\nimport
{RElement} from './render3/interfaces/renderer_dom';\nimport {LView} from './render3/interfaces/view';\nimport
{getCurrentTNode, getLView} from './render3/state';\nimport {getNativeByTNode} from
 './render3/util/view_utils';\nimport {noop} from './util/noop';\n\n/**\n * Creates an ElementRef from the most
recent node.\n * \n * @returns The ElementRef instance to use\n */\nexport function injectElementRef():
ElementRef {\n  return createElementRef(getCurrentTNode()!, getLView());\n}\n\n/**\n * Creates an ElementRef
given a node.\n * \n * @param tNode The node for which you'd like an ElementRef\n * @param IView The view to
which the node belongs\n * @returns The ElementRef instance to use\n */\nexport function
createElementRef(tNode: TNode, IView: LView): ElementRef {\n  return new
ElementRef(getNativeByTNode(tNode, IView) as RElement);\n}\n\nexport const
SWITCH_ELEMENT_REF_FACTORY__POST_R3__ = injectElementRef;\n\nconst
SWITCH_ELEMENT_REF_FACTORY__PRE_R3__ = noop;\n\nconst SWITCH_ELEMENT_REF_FACTORY:
typeof injectElementRef = SWITCH_ELEMENT_REF_FACTORY__PRE_R3__;\n\n/**\n * A wrapper around a
native element inside of a View.\n * \n * An `ElementRef` is backed by a render-specific element. In the browser,
this is usually a DOM\n * element.\n * \n * @security Permitting direct access to the DOM can make your
application more vulnerable to\n * XSS attacks. Carefully review any use of `ElementRef` in your code. For more
detail, see the\n * [Security Guide](http://g.co/ng/security).\n * \n * @publicApi\n */\n\n// Note: We don't expose
things like `Injector`, `ViewContainer`, ... here,\n // i.e. users have to ask for what they need. With that, we can build
better analysis tools\n // and could do better codegen in the future.\n\nexport class ElementRef<T = any> {\n  /**\n
 * The underlying native element or `null` if direct access to native elements is not supported\n * (e.g. when the
application runs in a web worker).\n * \n * <div class="callout is-critical">\n * <header>Use with
caution</header>\n * <p>\n * Use this API as the last resort when direct access to DOM is needed. Use
templating and\n * data-binding provided by Angular instead. Alternatively you can take a look at {@link\n *
Renderer2}\n * which provides API that can safely be used even when direct access to native elements is not\n
 * supported.\n * </p>\n * <p>\n * Relying on direct DOM access creates tight coupling between your
application and rendering\n * layers which will make it impossible to separate the two and deploy your
application into a\n * web worker.\n * </p>\n * </div>\n * \n */\n  public nativeElement: T;\n\n  constructor(nativeElement: T) {\n    this.nativeElement = nativeElement;\n  }\n\n  /**\n
 * @internal\n * \n * @nocollapse\n */\n  static __NG_ELEMENT_ID__: () => ElementRef =
SWITCH_ELEMENT_REF_FACTORY;\n}\n", "/*\n * @license\n * Copyright Google LLC All Rights
Reserved.\n * \n * Use of this source code is governed by an MIT-style license that can be\n * found in the
LICENSE file at https://angular.io/license\n */\n\nimport {InjectionToken} from './di/injection_token';\nimport
{isProceduralRenderer} from './render3/interfaces/renderer';\nimport {isLView} from
 './render3/interfaces/type_checks';\nimport {LView, RENDERER} from './render3/interfaces/view';\nimport
{getCurrentTNode, getLView} from './render3/state';\nimport {getComponentLViewByIndex} from
 './render3/util/view_utils';\nimport {noop} from './util/noop';\nimport {RendererStyleFlags2, RendererType2} from
 './api_flags';\n\nexport const Renderer2Interceptor = new
InjectionToken<Renderer2[]>('Renderer2Interceptor');\n\n/**\n * Creates and initializes a custom renderer that
implements the `Renderer2` base class.\n * \n * @publicApi\n */\nexport abstract class RendererFactory2 {\n  /**\n

```

* Creates and initializes a custom renderer for a host DOM element. \n * @param hostElement The element to render. \n * @param type The base class to implement. \n * @returns The new custom renderer instance. \n */ \n abstract createRenderer(hostElement: any, type: RendererType2|null): Renderer2; \n /** \n * A callback invoked when rendering has begun. \n */ \n abstract begin?(): void; \n /** \n * A callback invoked when rendering has completed. \n */ \n abstract end?(): void; \n /** \n * Use with animations test-only mode. Notifies the test when rendering has completed. \n */ \n abstract whenRenderingDone?(): Promise<any>; \n} \n \n /** \n * Extend this base class to implement custom rendering. By default, Angular \n * renders a template into DOM. You can use custom rendering to intercept \n * rendering calls, or to render to something other than DOM. \n * \n * Create your custom renderer using `RendererFactory2`. \n * \n * Use a custom renderer to bypass Angular's templating and \n * make custom UI changes that can't be expressed declaratively. \n * For example if you need to set a property or an attribute whose name is \n * not statically known, use the `setProperty()` or \n * `setAttribute()` method. \n * \n * @publicApi \n */ \n export abstract class Renderer2 { \n /** \n * Use to store arbitrary developer-defined data on a renderer instance, \n * as an object containing key-value pairs. \n * This is useful for renderers that delegate to other renderers. \n */ \n abstract get data(): {[key: string]: any}; \n /** \n * Implement this callback to destroy the renderer or the host element. \n */ \n abstract destroy(): void; \n /** \n * Implement this callback to create an instance of the host element. \n * @param name An identifying name for the new element, unique within the namespace. \n * @param namespace The namespace for the new element. \n * @returns The new element. \n */ \n abstract createElement(name: string, namespace?: string|null): any; \n /** \n * Implement this callback to add a comment to the DOM of the host element. \n * @param value The comment text. \n * @returns The modified element. \n */ \n abstract createComment(value: string): any; \n /** \n * Implement this callback to add text to the DOM of the host element. \n * @param value The text string. \n * @returns The modified element. \n */ \n abstract createText(value: string): any; \n /** \n * If null or undefined, the view engine won't call it. \n * This is used as a performance optimization for production mode. \n * \n * // TODO(issue/24571): remove '!'. \n */ \n destroyNode!: ((node: any) => void)|null; \n /** \n * Appends a child to a given parent node in the host element DOM. \n * @param parent The parent node. \n * @param newChild The new child node. \n */ \n abstract appendChild(parent: any, newChild: any): void; \n /** \n * Implement this callback to insert a child node at a given position in a parent node \n * in the host element DOM. \n * @param parent The parent node. \n * @param newChild The new child nodes. \n * @param refChild The existing child node before which `newChild` is inserted. \n * @param isMove Optional argument which signifies if the current `insertBefore` is a result of a \n * move. Animation uses this information to trigger move animations. In the past the Animation \n * would always assume that any `insertBefore` is a move. This is not strictly true because \n * with runtime i18n it is possible to invoke `insertBefore` as a result of i18n and it should \n * not trigger an animation move. \n */ \n abstract insertBefore(parent: any, newChild: any, refChild: any, isMove?: boolean): void; \n /** \n * Implement this callback to remove a child node from the host element's DOM. \n * @param parent The parent node. \n * @param oldChild The child node to remove. \n * @param isHostElement Optionally signal to the renderer whether this element is a host element \n * or not. \n */ \n abstract removeChild(parent: any, oldChild: any, isHostElement?: boolean): void; \n /** \n * Implement this callback to prepare an element to be bootstrapped \n * as a root element, and return the element instance. \n * @param selectorOrNode The DOM element. \n * @param preserveContent Whether the contents of the root element \n * should be preserved, or cleared upon bootstrap (default behavior). \n * Use with `ViewEncapsulation.ShadowDom` to allow simple native \n * content projection via `` elements. \n * @returns The root element. \n */ \n abstract selectRootElement(selectorOrNode: string|any, preserveContent?: boolean): any; \n /** \n * Implement this callback to get the parent of a given node \n * in the host element's DOM. \n * @param node The child node to query. \n * @returns The parent node, or null if there is no parent. \n * For WebWorkers, always returns true. \n * This is because the check is synchronous, \n * and the caller can't rely on checking for null. \n */ \n abstract parentNode(node: any): any; \n /** \n * Implement this callback to get the next sibling node of a given node \n * in the host element's DOM. \n * @returns The sibling node, or null if there is no sibling. \n * For WebWorkers, always returns a value. \n * This is because the check is synchronous, \n * and the caller can't rely on checking for

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null.\n *^/n abstract nextSibling(node: any): any;\n /**\n * Implement this callback to set an attribute value for
an element in the DOM.\n * @param el The element.\n * @param name The attribute name.\n * @param value
The new value.\n * @param namespace The namespace.\n */\n abstract setAttribute(el: any, name: string, value:
string, namespace?: string|null): void;\n\n /**\n * Implement this callback to remove an attribute from an element
in the DOM.\n * @param el The element.\n * @param name The attribute name.\n * @param namespace The
namespace.\n */\n abstract removeAttribute(el: any, name: string, namespace?: string|null): void;\n\n /**\n *
Implement this callback to add a class to an element in the DOM.\n * @param el The element.\n * @param name
The class name.\n */\n abstract addClass(el: any, name: string): void;\n\n /**\n * Implement this callback to
remove a class from an element in the DOM.\n * @param el The element.\n * @param name The class name.\n
*/\n abstract removeClass(el: any, name: string): void;\n\n /**\n * Implement this callback to set a CSS style for
an element in the DOM.\n * @param el The element.\n * @param style The name of the style.\n * @param
value The new value.\n * @param flags Flags for style variations. No flags are set by default.\n */\n abstract
setStyle(el: any, style: string, value: any, flags?: RendererStyleFlags2): void;\n\n /**\n * Implement this callback
to remove the value from a CSS style for an element in the DOM.\n * @param el The element.\n * @param style
The name of the style.\n * @param flags Flags for style variations to remove, if set. ???\n */\n abstract
removeStyle(el: any, style: string, flags?: RendererStyleFlags2): void;\n\n /**\n * Implement this callback to set
the value of a property of an element in the DOM.\n * @param el The element.\n * @param name The property
name.\n * @param value The new value.\n */\n abstract setProperty(el: any, name: string, value: any): void;\n\n
/**\n * Implement this callback to set the value of a node in the host element.\n * @param node The node.\n *
@param value The new value.\n */\n abstract setValue(node: any, value: string): void;\n\n /**\n * Implement
this callback to start an event listener.\n * @param target The context in which to listen for events. Can be\n * the
entire window or document, the body of the document, or a specific\n * DOM element.\n * @param eventName
The event to listen for.\n * @param callback A handler function to invoke when the event occurs.\n * @returns
An \"unlisten\" function for disposing of this handler.\n */\n abstract listen(\n target:
'window'|'document'|'body'|any, eventName: string,\n callback: (event: any) => boolean | void): () => void;\n\n
/**\n * @internal\n * @nocollapse\n */\n static __NG_ELEMENT_ID__: () => Renderer2 = () =>
SWITCH_RENDERER2_FACTORY();\n}\n\nexport const SWITCH_RENDERER2_FACTORY__POST_R3__
= injectRenderer2;\nconst SWITCH_RENDERER2_FACTORY__PRE_R3__ = noop;\nconst
SWITCH_RENDERER2_FACTORY: typeof injectRenderer2 =
SWITCH_RENDERER2_FACTORY__PRE_R3__;\n\n/** Returns a Renderer2 (or throws when application was
bootstrapped with Renderer3) */\nfunction getOrCreateRenderer2(IView: LView): Renderer2 {\n const renderer =
IView[RENDERER];\n if (ngDevMode && !isProceduralRenderer(renderer)) {\n throw new Error('Cannot inject
Renderer2 when the application uses Renderer3!');\n }\n return renderer as Renderer2;\n}\n\n/** Injects a
Renderer2 for the current component. */\nexport function injectRenderer2(): Renderer2 {\n // We need the Renderer
to be based on the component that it's being injected into, however since\n // DI happens before we've entered its
view, `getLView` will return the parent view instead.\n const IView = getLView();\n const tNode =
getCurrentTNode()!;\n const nodeAtIndex = getComponentLViewByIndex(tNode.index, IView);\n return
getOrCreateRenderer2(isLView(nodeAtIndex) ? nodeAtIndex : IView);\n}\n\n/**\n * @license\n * Copyright
Google LLC All Rights Reserved.\n * Use of this source code is governed by an MIT-style license that can be\n
* found in the LICENSE file at https://angular.io/license\n */\nimport {defineInjectable} from
'./di/interface/defs';\nimport {SecurityContext} from './security';\n\n/**\n * Sanitizer is used by the views to sanitize
potentially dangerous values.\n * @publicApi\n */\nexport abstract class Sanitizer {\n abstract sanitize(context:
SecurityContext, value: {}|string|null): string|null;\n\n /**\n * @nocollapse\n */\n static prov = defineInjectable({\n
token: Sanitizer,\n providedIn: 'root',\n factory: () => null,\n });\n}\n\n/**\n * @license\n * Copyright
Google LLC All Rights Reserved.\n * Use of this source code is governed by an MIT-style license that can be\n
* found in the LICENSE file at https://angular.io/license\n */\n\n * @description Represents the version of Angular\n
* @publicApi\n */\nexport class Version {\n public readonly major: string;\n public readonly minor: string;\n
public readonly patch: string;\n\n constructor(public full: string) {\n this.major = full.split('.')[0];\n this.minor =

```



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full.split('.')[1];\n  this.patch = full.split('.').slice(2).join('.);\n  }\n}\n\n/**\n * @publicApi\n * ^\nexport const
VERSION = new Version('11.0.2');\n", "/*\n * @license\n * Copyright Google LLC All Rights Reserved.\n *\n *
Use of this source code is governed by an MIT-style license that can be\n * found in the LICENSE file at
https://angular.io/license\n *\n\nimport {stringify} from './../util/stringify';\nimport {isListLikeIterable,
iterateListLike} from './change_detection_util';\nimport {IterableChangeRecord, IterableChanges, IterableDiffer,
IterableDifferFactory, NgIterable, TrackByFunction} from './iterable_differs';\n\n\nexport class
DefaultIterableDifferFactory implements IterableDifferFactory {\n  constructor() {\n  supports(obj:
Object|null|undefined): boolean {\n    return isListLikeIterable(obj);\n  }\n\n  create<V>(trackByFn?:
TrackByFunction<V>): DefaultIterableDiffer<V> {\n    return new DefaultIterableDiffer<V>(trackByFn);\n  }\n}\n\nconst trackByIdentity = (index: number, item: any) => item;\n\n/**\n * @deprecated v4.0.0 - Should not be
part of public API.\n * @publicApi\n * ^\nexport class DefaultIterableDiffer<V> implements IterableDiffer<V>,
IterableChanges<V> {\n  public readonly length: number = 0;\n  // TODO(issue/24571): remove '!.\n  public
readonly collection!: V[]|Iterable<V>|null;\n  // Keeps track of the used records at any point in time (during & across
`_check()` calls)\n  private _linkedRecords: _DuplicateMap<V>|null = null;\n  // Keeps track of the removed records
at any point in time during `_check()` calls.\n  private _unlinkedRecords: _DuplicateMap<V>|null = null;\n  private
_previousItHead: IterableChangeRecord_<V>|null = null;\n  private _itHead: IterableChangeRecord_<V>|null =
null;\n  private _itTail: IterableChangeRecord_<V>|null = null;\n  private _additionsHead:
IterableChangeRecord_<V>|null = null;\n  private _additionsTail: IterableChangeRecord_<V>|null = null;\n  private
_movesHead: IterableChangeRecord_<V>|null = null;\n  private _movesTail: IterableChangeRecord_<V>|null =
null;\n  private _removalsHead: IterableChangeRecord_<V>|null = null;\n  private _removalsTail:
IterableChangeRecord_<V>|null = null;\n  // Keeps track of records where custom track by is the same, but item
identity has changed\n  private _identityChangesHead: IterableChangeRecord_<V>|null = null;\n  private
_identityChangesTail: IterableChangeRecord_<V>|null = null;\n  private _trackByFn: TrackByFunction<V>;\n\n  constructor(trackByFn?: TrackByFunction<V>) {\n    this._trackByFn = trackByFn || trackByIdentity;\n  }\n\n  forEachItem(fn: (record: IterableChangeRecord_<V>) => void) {\n    let record: IterableChangeRecord_<V>|null;\n    for (record = this._itHead; record !== null; record = record._next) {\n      fn(record);\n    }\n  }\n\n  forEachOperation(\n    fn: (item: IterableChangeRecord<V>, previousIndex: number|null, currentIndex:
number|null) =>\n      void) {\n    let nextIt = this._itHead;\n    let nextRemove = this._removalsHead;\n    let
addRemoveOffset = 0;\n    let moveOffsets: number[]|null = null;\n    while (nextIt || nextRemove) {\n      // Figure
out which is the next record to process\n      // Order: remove, add, move\n      const record:
IterableChangeRecord<V> = !nextRemove ||\n        nextIt &&\n        nextIt.currentIndex! <\n
getPreviousIndex(nextRemove, addRemoveOffset, moveOffsets) ?\n        nextIt! :\n        nextRemove;\n      const
adjPreviousIndex = getPreviousIndex(record, addRemoveOffset, moveOffsets);\n      const currentIndex =
record.currentIndex;\n      // consume the item, and adjust the addRemoveOffset and update moveDistance if
necessary\n      if (record === nextRemove) {\n        addRemoveOffset--;\n        nextRemove =
nextRemove._nextRemoved;\n      } else {\n        nextIt = nextIt!._next;\n        if (record.previousIndex === null) {\n
addRemoveOffset++;\n        } else {\n          // INVARIANT: currentIndex < previousIndex\n          if
(!moveOffsets) moveOffsets = [];\n          const localMovePreviousIndex = adjPreviousIndex - addRemoveOffset;\n
const localCurrentIndex = currentIndex! - addRemoveOffset;\n          if (localMovePreviousIndex !=
localCurrentIndex) {\n            for (let i = 0; i < localMovePreviousIndex; i++) {\n              const offset = i <
moveOffsets.length ? moveOffsets[i] : (moveOffsets[i] = 0);\n              const index = offset + i;\n              if
(localCurrentIndex <= index && index < localMovePreviousIndex) {\n                moveOffsets[i] = offset + 1;\n              }\n            }\n            const previousIndex = record.previousIndex;\n            moveOffsets[previousIndex] =
localCurrentIndex - localMovePreviousIndex;\n          }\n        }\n      }\n      if (adjPreviousIndex !==
currentIndex) {\n        fn(record, adjPreviousIndex, currentIndex);\n      }\n    }\n  }\n\n  forEachPreviousItem(fn:
(record: IterableChangeRecord_<V>) => void) {\n    let record: IterableChangeRecord_<V>|null;\n    for (record =
this._previousItHead; record !== null; record = record._nextPrevious) {\n      fn(record);\n    }\n  }\n\n  forEachAddedItem(fn: (record: IterableChangeRecord_<V>) => void) {\n    let record:

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IterableChangeRecord_<V>|null;\n  for (record = this._additionsHead; record !== null; record =
record._nextAdded) {\n  fn(record);\n  }\n }\n\n forEachMovedItem(fn: (record: IterableChangeRecord_<V>)
=> void) {\n  let record: IterableChangeRecord_<V>|null;\n  for (record = this._movesHead; record !== null;
record = record._nextMoved) {\n  fn(record);\n  }\n }\n\n forEachRemovedItem(fn: (record:
IterableChangeRecord_<V>) => void) {\n  let record: IterableChangeRecord_<V>|null;\n  for (record =
this._removalsHead; record !== null; record = record._nextRemoved) {\n  fn(record);\n  }\n }\n\n
forEachIdentityChange(fn: (record: IterableChangeRecord_<V>) => void) {\n  let record:
IterableChangeRecord_<V>|null;\n  for (record = this._identityChangesHead; record !== null; record =
record._nextIdentityChange) {\n  fn(record);\n  }\n }\n\n diff(collection: NgIterable<V>|null|undefined):
DefaultIterableDiffer<V>|null {\n  if (collection == null) collection = [];\n  if (!isListLikeIterable(collection)) {\n
throw new Error(\n    `Error trying to diff '${stringify(collection)}'. Only arrays and iterables are allowed`);\n
}\n\n  if (this.check(collection)) {\n  return this;\n  } else {\n  return null;\n  }\n }\n\n onDestroy() {\n\n
check(collection: NgIterable<V>): boolean {\n  this._reset();\n\n  let record: IterableChangeRecord_<V>|null =
this._itHead;\n  let maybeDirty: boolean = false;\n  let index: number;\n  let item: V;\n  let itemTrackBy:
any;\n  if (Array.isArray(collection)) {\n  (this as {length: number}).length = collection.length;\n\n  for (let
index = 0; index < this.length; index++) {\n  item = collection[index];\n  itemTrackBy =
this._trackByFn(index, item);\n  if (record === null || !Object.is(record.trackById, itemTrackBy)) {\n
record = this._mismatch(record, item, itemTrackBy, index);\n  maybeDirty = true;\n  } else {\n  if
(maybeDirty) {\n  // TODO(misko): can we limit this to duplicates only?\n  record =
this._verifyReinsertion(record, item, itemTrackBy, index);\n  }\n  if (!Object.is(record.item, item))
this._addIdentityChange(record, item);\n  }\n\n  record = record._next;\n  }\n  } else {\n  index = 0;\n
iterateListLike(collection, (item: V) => {\n  itemTrackBy = this._trackByFn(index, item);\n  if (record ===
null || !Object.is(record.trackById, itemTrackBy)) {\n  record = this._mismatch(record, item, itemTrackBy,
index);\n  maybeDirty = true;\n  } else {\n  if (maybeDirty) {\n  // TODO(misko): can we limit
this to duplicates only?\n  record = this._verifyReinsertion(record, item, itemTrackBy, index);\n  }\n
if (!Object.is(record.item, item)) this._addIdentityChange(record, item);\n  }\n\n  record = record._next;\n
index++;\n  });\n  (this as {length: number}).length = index;\n  }\n\n  this._truncate(record);\n  (this as
{collection: V[] | Iterable<V>}).collection = collection;\n  return this.isDirty;\n  }\n\n /* CollectionChanges is
considered dirty if it has any additions, moves, removals, or identity\n * changes.\n */\n get isDirty(): boolean {\n
return this._additionsHead !== null || this._movesHead !== null ||\n  this._removalsHead !== null ||
this._identityChangesHead !== null;\n  }\n\n /**\n * Reset the state of the change objects to show no changes.
This means set previousKey to\n * currentKey, and clear all of the queues (additions, moves, removals).\n * Set
the previousIndexes of moved and added items to their currentIndexes\n * Reset the list of additions, moves and
removals\n */\n * @internal\n */\n _reset() {\n  if (this.isDirty) {\n  let record:
IterableChangeRecord_<V>|null;\n  for (record = this._previousItHead = this._itHead; record !== null; record =
record._next) {\n  record._nextPrevious = record._next;\n  }\n\n  for (record = this._additionsHead; record
!== null; record = record._nextAdded) {\n  record.previousIndex = record.currentIndex;\n  }\n\n  this._additionsHead = this._additionsTail = null;\n  for (record = this._movesHead; record !== null; record =
record._nextMoved) {\n  record.previousIndex = record.currentIndex;\n  }\n  this._movesHead =
this._movesTail = null;\n  this._removalsHead = this._removalsTail = null;\n  this._identityChangesHead =
this._identityChangesTail = null;\n\n  // TODO(vicb): when assert gets supported\n  // assert(!this.isDirty);\n
}\n }\n\n /**\n * This is the core function which handles differences between collections.\n */\n * - `record` is
the record which we saw at this position last time. If null then it is a new\n * item.\n * - `item` is the current item
in the collection\n * - `index` is the position of the item in the collection\n */\n * @internal\n */\n
_mismatch(record: IterableChangeRecord_<V>|null, item: V, itemTrackBy: any, index: number):\n
IterableChangeRecord_<V> {\n  // The previous record after which we will append the current one.\n  let
previousRecord: IterableChangeRecord_<V>|null;\n\n  if (record === null) {\n  previousRecord = this._itTail;\n
} else {\n  previousRecord = record._prev;\n  // Remove the record from the collection since we know it does

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not match the item.\n    this._remove(record);\n  }\n\n  // Attempt to see if we have seen the item before.\n  record = this._linkedRecords === null ? null : this._linkedRecords.get(itemTrackBy, index);\n  if (record !== null)\n  {\n    // We have seen this before, we need to move it forward in the collection.\n    // But first we need to check if\n    identity changed, so we can update in view if necessary\n    if (!Object.is(record.item, item))\n    this._addIdentityChange(record, item);\n\n    this._moveAfter(record, previousRecord, index);\n  } else {\n    //\n    Never seen it, check evicted list.\n    record = this._unlinkedRecords === null ? null :\n    this._unlinkedRecords.get(itemTrackBy, null);\n    if (record !== null) {\n      // It is an item which we have\n      evicted earlier: reinsert it back into the list.\n      // But first we need to check if identity changed, so we can update\n      in view if necessary\n      if (!Object.is(record.item, item)) this._addIdentityChange(record, item);\n\n      this._reinsertAfter(record, previousRecord, index);\n    } else {\n      // It is a new item: add it.\n      record =\n      this._addAfter(new IterableChangeRecord_<V>(item, itemTrackBy), previousRecord, index);\n    }\n  }\n\n  return record;\n}\n\n/**\n * This check is only needed if an array contains duplicates. (Short circuit of nothing\n dirty)\n *\n * Use case: `[a, a] => [b, a, a]`\n *\n * If we did not have this check then the insertion of `b`\n would:\n * 1) evict first `a`\n * 2) insert `b` at `0` index.\n * 3) leave `a` at index `1` as is. <-- this is\n wrong!\n * 3) reinsert `a` at index 2. <-- this is wrong!\n *\n * The correct behavior is:\n * 1) evict first `a`\n * 2) insert `b` at `0` index.\n * 3) reinsert `a` at index 1.\n * 3) move `a` at from `1` to `2`.\n *\n *\n * Double check that we have not evicted a duplicate item. We need to check if the item type may\n * have already\n been removed.\n * The insertion of b will evict the first 'a'. If we don't reinsert it now it will be reinserted\n * at\n the end. Which will show up as the two 'a's switching position. This is incorrect, since a\n * better way to think of\n it is as insert of 'b' rather than switch 'a' with 'b' and then add 'a'\n * at the end.\n *\n * @internal\n */\n _verifyReinsertion(record: IterableChangeRecord_<V>, item: V, itemTrackBy: any, index: number):\n IterableChangeRecord_<V> {\n  let reinsertRecord: IterableChangeRecord_<V>|null =\n  this._unlinkedRecords === null ? null : this._unlinkedRecords.get(itemTrackBy, null);\n  if (reinsertRecord !==\n  null) {\n    record = this._reinsertAfter(reinsertRecord, record._prev!, index);\n  } else if (record.currentIndex !==\n  index) {\n    record.currentIndex = index;\n    this._addToMoves(record, index);\n  }\n  return record;\n}\n\n/**\n * Get rid of any excess {@link IterableChangeRecord_}s from the previous collection\n *\n * - `record`\n The first excess {@link IterableChangeRecord_}.\n *\n * @internal\n */\n _truncate(record:\n IterableChangeRecord_<V>|null) {\n  // Anything after that needs to be removed;\n  while (record !== null) {\n    const nextRecord: IterableChangeRecord_<V>|null = record._next;\n    this._addToRemovals(this._unlink(record));\n    record = nextRecord;\n  }\n  if (this._unlinkedRecords !== null)\n  {\n    this._unlinkedRecords.clear();\n  }\n\n  if (this._additionsTail !== null) {\n    this._additionsTail._nextAdded = null;\n  }\n  if (this._movesTail !== null) {\n    this._movesTail._nextMoved =\n    null;\n  }\n  if (this._itTail !== null) {\n    this._itTail._next = null;\n  }\n  if (this._removalsTail !== null) {\n    this._removalsTail._nextRemoved = null;\n  }\n  if (this._identityChangesTail !== null) {\n    this._identityChangesTail._nextIdentityChange = null;\n  }\n}\n\n/** @internal */\n _reinsertAfter(\n  record:\n  IterableChangeRecord_<V>, prevRecord: IterableChangeRecord_<V>|null,\n  index: number):\n  IterableChangeRecord_<V> {\n  if (this._unlinkedRecords !== null) {\n    this._unlinkedRecords.remove(record);\n  }\n  const prev = record._prevRemoved;\n  const next =\n  record._nextRemoved;\n  if (prev === null) {\n    this._removalsHead = next;\n  } else {\n    prev._nextRemoved = next;\n  }\n  if (next === null) {\n    this._removalsTail = prev;\n  } else {\n    next._prevRemoved = prev;\n  }\n\n  this._insertAfter(record, prevRecord, index);\n  this._addToMoves(record,\n  index);\n  return record;\n}\n\n/** @internal */\n _moveAfter(\n  record: IterableChangeRecord_<V>,\n  prevRecord: IterableChangeRecord_<V>|null,\n  index: number): IterableChangeRecord_<V> {\n  this._unlink(record);\n  this._insertAfter(record, prevRecord, index);\n  this._addToMoves(record, index);\n  return record;\n}\n\n/** @internal */\n _addAfter(\n  record: IterableChangeRecord_<V>, prevRecord:\n  IterableChangeRecord_<V>|null,\n  index: number): IterableChangeRecord_<V> {\n  this._insertAfter(record,\n  prevRecord, index);\n  if (this._additionsTail === null) {\n    // TODO(vicb):\n    // assert(this._additionsHead\n    === null);\n    this._additionsTail = this._additionsHead = record;\n  } else {\n    // TODO(vicb):\n    //

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assert(_additionsTail._nextAdded === null);\n // assert(record._nextAdded === null);\n this._additionsTail =
this._additionsTail._nextAdded = record;\n }\n return record;\n }\n\n /** @internal *\n _insertAfter(\n
record: IterableChangeRecord_<V>, prevRecord: IterableChangeRecord_<V>|null,\n index: number):
IterableChangeRecord_<V> {\n // TODO(vicb):\n // assert(record != prevRecord);\n // assert(record._next ===
null);\n // assert(record._prev === null);\n\n const next: IterableChangeRecord_<V>|null =\n prevRecord
=== null ? this._itHead : prevRecord._next;\n // TODO(vicb):\n // assert(next != record);\n //
assert(prevRecord != record);\n record._next = next;\n record._prev = prevRecord;\n if (next === null) {\n
this._itTail = record;\n } else {\n next._prev = record;\n }\n if (prevRecord === null) {\n this._itHead =
record;\n } else {\n prevRecord._next = record;\n }\n\n if (this._linkedRecords === null) {\n
this._linkedRecords = new _DuplicateMap<V>();\n }\n this._linkedRecords.put(record);\n\n
record.currentIndex = index;\n return record;\n }\n\n /** @internal *\n _remove(record:
IterableChangeRecord_<V>): IterableChangeRecord_<V> {\n return
this._addToRemovals(this._unlink(record));\n }\n\n /** @internal *\n _unlink(record:
IterableChangeRecord_<V>): IterableChangeRecord_<V> {\n if (this._linkedRecords !== null) {\n
this._linkedRecords.remove(record);\n }\n\n const prev = record._prev;\n const next = record._next;\n\n //
TODO(vicb):\n // assert((record._prev = null) === null);\n // assert((record._next = null) === null);\n\n if (prev
=== null) {\n this._itHead = next;\n } else {\n prev._next = next;\n }\n if (next === null) {\n
this._itTail = prev;\n } else {\n next._prev = prev;\n }\n\n return record;\n }\n\n /** @internal *\n
_addToMoves(record: IterableChangeRecord_<V>, toIndex: number): IterableChangeRecord_<V> {\n //
TODO(vicb):\n // assert(record._nextMoved === null);\n\n if (record.previousIndex === toIndex) {\n return
record;\n }\n\n if (this._movesTail === null) {\n // TODO(vicb):\n // assert(_movesHead === null);\n
this._movesTail = this._movesHead = record;\n } else {\n // TODO(vicb):\n //
assert(_movesTail._nextMoved === null);\n this._movesTail = this._movesTail._nextMoved = record;\n }\n\n
return record;\n }\n\n private _addToRemovals(record: IterableChangeRecord_<V>): IterableChangeRecord_<V>
{\n if (this._unlinkedRecords === null) {\n this._unlinkedRecords = new _DuplicateMap<V>();\n }\n
this._unlinkedRecords.put(record);\n record.currentIndex = null;\n record._nextRemoved = null;\n\n if
(this._removalsTail === null) {\n // TODO(vicb):\n // assert(_removalsHead === null);\n
this._removalsTail = this._removalsHead = record;\n record._prevRemoved = null;\n } else {\n //
TODO(vicb):\n // assert(_removalsTail._nextRemoved === null);\n // assert(record._nextRemoved ===
null);\n record._prevRemoved = this._removalsTail;\n this._removalsTail = this._removalsTail._nextRemoved
= record;\n }\n return record;\n }\n\n /** @internal *\n _addIdentityChange(record:
IterableChangeRecord_<V>, item: V) {\n record.item = item;\n if (this._identityChangesTail === null) {\n
this._identityChangesTail = this._identityChangesHead = record;\n } else {\n this._identityChangesTail =
this._identityChangesTail._nextIdentityChange = record;\n }\n return record;\n }\n\n\nexport class
IterableChangeRecord_<V> implements IterableChangeRecord<V> {\n currentIndex: number|null = null;\n
previousIndex: number|null = null;\n\n /** @internal *\n _nextPrevious: IterableChangeRecord_<V>|null =
null;\n /** @internal *\n _prev: IterableChangeRecord_<V>|null = null;\n /** @internal *\n _next:
IterableChangeRecord_<V>|null = null;\n /** @internal *\n _prevDup: IterableChangeRecord_<V>|null = null;\n
/** @internal *\n _nextDup: IterableChangeRecord_<V>|null = null;\n /** @internal *\n _prevRemoved:
IterableChangeRecord_<V>|null = null;\n /** @internal *\n _nextRemoved: IterableChangeRecord_<V>|null =
null;\n /** @internal *\n _nextAdded: IterableChangeRecord_<V>|null = null;\n /** @internal *\n _nextMoved:
IterableChangeRecord_<V>|null = null;\n /** @internal *\n _nextIdentityChange:
IterableChangeRecord_<V>|null = null;\n\n\n constructor(public item: V, public trackById: any) {} }\n\n\n A
linked list of IterableChangeRecords with the same IterableChangeRecord._item\n\nclass
_DuplicateItemRecordList<V> {\n /** @internal *\n _head: IterableChangeRecord_<V>|null = null;\n /**
@internal *\n _tail: IterableChangeRecord_<V>|null = null;\n\n /**\n * Append the record to the list of
duplicates.\n *\n * Note: by design all records in the list of duplicates hold the same value in record.item.\n *\n
add(record: IterableChangeRecord_<V>): void {\n if (this._head === null) {\n this._head = this._tail =

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record;\n    record._nextDup = null;\n    record._prevDup = null;\n  } else {\n    // TODO(vicb);\n    //
assert(record.item == _head.item ||\n    //    record.item is num && record.item.isNaN && _head.item is num
&& _head.item.isNaN);\n    this._tail!._nextDup = record;\n    record._prevDup = this._tail;\n    record._nextDup
= null;\n    this._tail = record;\n  }\n }\n\n // Returns a IterableChangeRecord_ having
IterableChangeRecord_.trackById == trackById and\n // IterableChangeRecord_.currentIndex >= atOrAfterIndex\n
get(trackById: any, atOrAfterIndex: number|null): IterableChangeRecord_<V>|null {\n  let record:
IterableChangeRecord_<V>|null;\n  for (record = this._head; record !== null; record = record._nextDup) {\n    if
((atOrAfterIndex === null || atOrAfterIndex <= record.currentIndex!) &&\n    Object.is(record.trackById,
trackById)) {\n      return record;\n    }\n  }\n  return null;\n }\n\n /**\n * Remove one {@link
IterableChangeRecord_} from the list of duplicates.\n *\n * Returns whether the list of duplicates is empty.\n
*\n * remove(record: IterableChangeRecord_<V>): boolean {\n  // TODO(vicb);\n  // assert() {\n  // // verify
that the record being removed is in the list.\n  // for (IterableChangeRecord_ cursor = _head; cursor != null; cursor
= cursor._nextDup) {\n  //   if (identical(cursor, record)) return true;\n  //   }\n  // return false;\n  //});\n\n
const prev: IterableChangeRecord_<V>|null = record._prevDup;\n  const next: IterableChangeRecord_<V>|null =
record._nextDup;\n  if (prev === null) {\n    this._head = next;\n  } else {\n    prev._nextDup = next;\n  }\n  if
(next === null) {\n    this._tail = prev;\n  } else {\n    next._prevDup = prev;\n  }\n  return this._head ===
null;\n }\n}\n\nclass _DuplicateMap<V> {\n  map = new Map<any, _DuplicateItemRecordList<V>>();\n\n  put(record: IterableChangeRecord_<V>) {\n    const key = record.trackById;\n\n    let duplicates =
this.map.get(key);\n    if (!duplicates) {\n      duplicates = new _DuplicateItemRecordList<V>();\n      this.map.set(key, duplicates);\n    }\n    duplicates.add(record);\n  }\n\n  /**\n * Retrieve the `value` using key.
Because the IterableChangeRecord_ value may be one which we\n * have already iterated over, we use the
`atOrAfterIndex` to pretend it is not there.\n *\n * Use case: `[a, b, c, a, a]` if we are at index `3` which is the
second `a` then asking if we\n * have any more `a`s needs to return the second `a`.\n *\n * get(trackById: any,
atOrAfterIndex: number|null): IterableChangeRecord_<V>|null {\n  const key = trackById;\n  const recordList =
this.map.get(key);\n  return recordList ? recordList.get(trackById, atOrAfterIndex) : null;\n }\n\n /**\n *
Removes a {@link IterableChangeRecord_} from the list of duplicates.\n *\n * The list of duplicates also is
removed from the map if it gets empty.\n *\n * remove(record: IterableChangeRecord_<V>):
IterableChangeRecord_<V> {\n  const key = record.trackById;\n  const recordList:
_DuplicateItemRecordList<V> = this.map.get(key)!;\n  // Remove the list of duplicates when it gets empty\n  if
(recordList.remove(record)) {\n    this.map.delete(key);\n  }\n  return record;\n }\n\n  get isEmpty(): boolean {\n
return this.map.size === 0;\n }\n\n  clear() {\n    this.map.clear();\n  }\n}\n\nfunction getPreviousIndex(item: any,
addRemoveOffset: number, moveOffsets: number[]|null): number {\n  const previousIndex = item.previousIndex;\n  if
(previousIndex === null) return previousIndex;\n  let moveOffset = 0;\n  if (moveOffsets && previousIndex <
moveOffsets.length) {\n    moveOffset = moveOffsets[previousIndex];\n  }\n  return previousIndex +
addRemoveOffset + moveOffset;\n }\n\n"/**\n * @license\n * Copyright Google LLC All Rights Reserved.\n *\n *
Use of this source code is governed by an MIT-style license that can be\n * found in the LICENSE file at
https://angular.io/license\n *\n\nimport {stringify} from '../util/stringify';\nimport {isObject} from
'../change_detection_util';\nimport {KeyValueChangeRecord, KeyValueChanges, KeyValueDiffer,
KeyValueDifferFactory} from './keyvalue_differs';\n\nexport class DefaultKeyValueDifferFactory<K, V>
implements KeyValueDifferFactory {\n  constructor() {\n  }\n  supports(obj: any): boolean {\n    return obj instanceof
Map || isObject(obj);\n  }\n  create<K, V>(): KeyValueDiffer<K, V> {\n    return new
DefaultKeyValueDiffer<K, V>();\n  }\n}\n\nexport class DefaultKeyValueDiffer<K, V> implements
KeyValueDiffer<K, V>, KeyValueChanges<K, V> {\n  private _records = new Map<K,
KeyValueChangeRecord_<K, V>>();\n  private _mapHead: KeyValueChangeRecord_<K, V>|null = null;\n  //
_appendAfter is used in the check loop\n  private _appendAfter: KeyValueChangeRecord_<K, V>|null = null;\n  private
_previousMapHead: KeyValueChangeRecord_<K, V>|null = null;\n  private _changesHead:
KeyValueChangeRecord_<K, V>|null = null;\n  private _changesTail: KeyValueChangeRecord_<K, V>|null =
null;\n  private _additionsHead: KeyValueChangeRecord_<K, V>|null = null;\n  private _additionsTail:

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KeyValueChangeRecord_<K, V>|null = null;\n private _removalsHead: KeyValueChangeRecord_<K, V>|null =
null;\n private _removalsTail: KeyValueChangeRecord_<K, V>|null = null;\n\n get isDirty(): boolean {\n return
this._additionsHead !== null || this._changesHead !== null ||\n this._removalsHead !== null;\n }\n\n
forEachItem(fn: (r: KeyValueChangeRecord<K, V>) => void) {\n let record: KeyValueChangeRecord_<K,
V>|null;\n for (record = this._mapHead; record !== null; record = record._next) {\n fn(record);\n }\n }\n\n
forEachPreviousItem(fn: (r: KeyValueChangeRecord<K, V>) => void) {\n let record:
KeyValueChangeRecord_<K, V>|null;\n for (record = this._previousMapHead; record !== null; record =
record._nextPrevious) {\n fn(record);\n }\n }\n\n forEachChangedItem(fn: (r: KeyValueChangeRecord<K,
V>) => void) {\n let record: KeyValueChangeRecord_<K, V>|null;\n for (record = this._changesHead; record
!== null; record = record._nextChanged) {\n fn(record);\n }\n }\n\n forEachAddedItem(fn: (r:
KeyValueChangeRecord<K, V>) => void) {\n let record: KeyValueChangeRecord_<K, V>|null;\n for (record =
this._additionsHead; record !== null; record = record._nextAdded) {\n fn(record);\n }\n }\n\n
forEachRemovedItem(fn: (r: KeyValueChangeRecord<K, V>) => void) {\n let record:
KeyValueChangeRecord_<K, V>|null;\n for (record = this._removalsHead; record !== null; record =
record._nextRemoved) {\n fn(record);\n }\n }\n\n diff(map?: Map<any, any>|{[k: string]: any}|null): any {\n
if (!map) {\n map = new Map();\n } else if (!(map instanceof Map || isJsObject(map))) {\n throw new
Error(\n `Error trying to diff '${stringify(map)}'. Only maps and objects are allowed`);\n }\n\n return
this.check(map) ? this : null;\n }\n\n onDestroy() {\n\n /**\n * Check the current state of the map vs the
previous.\n * The algorithm is optimised for when the keys do no change.\n */\n check(map: Map<any, any>|{[k:
string]: any}): boolean {\n this._reset();\n let insertBefore = this._mapHead;\n this._appendAfter = null;\n\n
this._forEach(map, (value: any, key: any) => {\n if (insertBefore && insertBefore.key === key) {\n
this._maybeAddToChanges(insertBefore, value);\n this._appendAfter = insertBefore;\n insertBefore =
insertBefore._next;\n } else {\n const record = this._getOrCreateRecordForKey(key, value);\n
insertBefore = this._insertBeforeOrAppend(insertBefore, record);\n }\n });\n\n // Items remaining at the end
of the list have been deleted\n if (insertBefore) {\n if (insertBefore._prev) {\n insertBefore._prev._next =
null;\n }\n }\n\n this._removalsHead = insertBefore;\n\n for (let record: KeyValueChangeRecord_<K, V>|null
= insertBefore; record !== null;\n record = record._nextRemoved) {\n if (record === this._mapHead) {\n
this._mapHead = null;\n }\n this._records.delete(record.key);\n record._nextRemoved =
record._next;\n record.previousValue = record.currentValue;\n record.currentValue = null;\n
record._prev = null;\n record._next = null;\n }\n }\n\n // Make sure tails have no next records from
previous runs\n if (this._changesTail) this._changesTail._nextChanged = null;\n if (this._additionsTail)
this._additionsTail._nextAdded = null;\n\n return this.isDirty;\n }\n\n /**\n * Inserts a record before `before` or
append at the end of the list when `before` is null.\n *\n * Notes:\n * - This method appends at
`this._appendAfter`,\n * - This method updates `this._appendAfter`,\n * - The return value is the new value for the
insertion pointer.\n */\n private _insertBeforeOrAppend(\n before: KeyValueChangeRecord_<K, V>|null,\n
record: KeyValueChangeRecord_<K, V>): KeyValueChangeRecord_<K, V>|null {\n if (before) {\n const prev
= before._prev;\n record._next = before;\n record._prev = prev;\n before._prev = record;\n if (prev) {\n
prev._next = record;\n }\n if (before === this._mapHead) {\n this._mapHead = record;\n }\n\n
this._appendAfter = before;\n return before;\n }\n\n if (this._appendAfter) {\n this._appendAfter._next =
record;\n record._prev = this._appendAfter;\n } else {\n this._mapHead = record;\n }\n\n
this._appendAfter = record;\n return null;\n }\n\n private _getOrCreateRecordForKey(key: K, value: V):
KeyValueChangeRecord_<K, V> {\n if (this._records.has(key)) {\n const record = this._records.get(key)!;\n
this._maybeAddToChanges(record, value);\n const prev = record._prev;\n const next = record._next;\n if
(prev) {\n prev._next = next;\n }\n if (next) {\n next._prev = prev;\n }\n record._next = null;\n
record._prev = null;\n\n return record;\n }\n\n const record = new KeyValueChangeRecord_<K, V>(key);\n
this._records.set(key, record);\n record.currentValue = value;\n this._addToAdditions(record);\n return
record;\n }\n\n /** @internal */\n _reset() {\n if (this.isDirty) {\n let record: KeyValueChangeRecord_<K,
V>|null;\n // let `_previousMapHead` contain the state of the map before the changes\n

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new value.\n * @returns an object describing the difference. The return value is only valid until the next\n *
`diff()` invocation.\n */\n diff(object: {[key: string]: V}): KeyValueChanges<string, V>|null;\n // TODO(TS.2.1):
diff<KP extends string>(this: KeyValueDiffer<KP, V>, object: Record<KP, V>):\n // KeyValueDiffer<KP,
V>;\n\n/**\n * An object describing the changes in the `Map` or `{[k:string]: string}` since last time\n *
`KeyValueDiffer#diff()` was invoked.\n *\n * @publicApi\n */\nexport interface KeyValueChanges<K, V> {\n
/**\n * Iterate over all changes. `KeyValueChangeRecord` will contain information about changes\n * to each
item.\n *\n * forEachItem(fn: (r: KeyValueChangeRecord<K, V>) => void): void;\n\n /**\n * Iterate over
changes in the order of original Map showing where the original items\n * have moved.\n *\n
forEachPreviousItem(fn: (r: KeyValueChangeRecord<K, V>) => void): void;\n\n /**\n * Iterate over all keys for
which values have changed.\n *\n forEachChangedItem(fn: (r: KeyValueChangeRecord<K, V>) => void):
void;\n\n /**\n * Iterate over all added items.\n *\n forEachAddedItem(fn: (r: KeyValueChangeRecord<K, V>)
=> void): void;\n\n /**\n * Iterate over all removed items.\n *\n forEachRemovedItem(fn: (r:
KeyValueChangeRecord<K, V>) => void): void;\n\n\n/**\n * Record representing the item change information.\n
*\n * @publicApi\n */\nexport interface KeyValueChangeRecord<K, V> {\n /**\n * Current key in the Map.\n
*\n * readonly key: K;\n\n /**\n * Current value for the key or `null` if removed.\n *\n * readonly currentValue:
V|null;\n\n /**\n * Previous value for the key or `null` if added.\n *\n * readonly previousValue:
V|null;\n\n\n/**\n * Provides a factory for {@link KeyValueDiffer}.\n *\n * @publicApi\n */\nexport interface
KeyValueDifferFactory {\n /**\n * Test to see if the differ knows how to diff this kind of object.\n *\n
supports(objects: any): boolean;\n\n /**\n * Create a `KeyValueDiffer`.\n *\n * create<K, V>():
KeyValueDiffer<K, V>;\n\n\n/**\n * A repository of different Map diffing strategies used by NgClass, NgStyle,
and others.\n *\n * @publicApi\n */\nexport class KeyValueDifferers {\n /** @nocollapse *\n * static prov =
defineInjectable({\n * token: KeyValueDifferers,\n * providedIn: 'root',\n * factory: () => new KeyValueDifferers((new
DefaultKeyValueDifferFactory())\n * ));\n\n /**\n * @deprecated v4.0.0 - Should be private.\n *\n * factories:
KeyValueDifferFactory[];\n\n * constructor(factories: KeyValueDifferFactory[]) {\n * this.factories = factories;\n
}\n\n * static create<S>(factories: KeyValueDifferFactory[], parent?: KeyValueDifferers): KeyValueDifferers {\n * if
(parent) {\n * const copied = parent.factories.slice();\n * factories = factories.concat(copied);\n * }\n * return new
KeyValueDifferers(factories);\n * }\n\n /**\n * Takes an array of {@link KeyValueDifferFactory} and returns a
provider used to extend the\n * inherited {@link KeyValueDifferers} instance with the provided factories and return
a new\n * {@link KeyValueDifferers} instance.\n *\n * @usageNotes\n * ### Example\n *\n * The following
example shows how to extend an existing list of factories,\n * which will only be applied to the injector for this
component and its children.\n *\n * This step is all that's required to make a new {@link KeyValueDiffer} available.\n
*\n * ```\n * @Component({\n * viewProviders: [\n * KeyValueDifferers.extend([new
ImmutableMapDiffer()])\n * ]\n * })\n * ```\n *\n * static extend<S>(factories: KeyValueDifferFactory[]):
StaticProvider {\n * return {\n * provide: KeyValueDifferers,\n * useFactory: (parent: KeyValueDifferers) => {\n
if (!parent) {\n * // Typically would occur when calling KeyValueDifferers.extend inside of dependencies passed\n
// to bootstrap(), which would override default pipes instead of extending them.\n * throw new
Error('Cannot extend KeyValueDifferers without a parent injector');\n * }\n * return
KeyValueDifferers.create(factories, parent);\n * },\n * // Dependency technically isn't optional, but we can provide
a better error message this way.\n * deps: [[KeyValueDifferers, new SkipSelf(), new Optional()]]\n * });\n * }\n\n
find(kv: any): KeyValueDifferFactory {\n * const factory = this.factories.find(f => f.supports(kv));\n * if (factory)
{\n * return factory;\n * }\n * throw new Error(`Cannot find a differ supporting object '${kv}'`);\n * }\n * }\n\n
*/\n * @license\n * Copyright Google LLC All Rights Reserved.\n *\n * Use of this source code is governed by an MIT-
style license that can be\n * found in the LICENSE file at https://angular.io/license\n *\n\nimport {assertDefined}
from './util/assert';\nimport {icuContainerIterate} from './i18n/i18n_tree_shaking';\nimport
{CONTAINER_HEADER_OFFSET} from './interfaces/container';\nimport {TElementNode, TIconContainerNode,
TNode, TNodeType} from './interfaces/node';\nimport {RNode} from './interfaces/renderer_dom';\nimport
{isLContainer} from './interfaces/type_checks';\nimport {DECLARATION_COMPONENT_VIEW, LView,
T_HOST, TVIEW, TView} from './interfaces/view';\nimport {assertTNodeType} from './node_assert';\nimport

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{getLViewParent} from './util/view_traversal_utils';\nimport {unwrapRNode} from './util/view_utils';\n\n\n\nexport
function collectNativeNodes(\n  tView: TView, IView: LView, tNode: TNode|null, result: any[],\n  isProjection:
boolean = false): any[] {\n  while (tNode !== null) {\n    ngDevMode &&\n      assertTNodeType(\n
tNode,\n      TNodeType.AnyRNode | TNodeType.AnyContainer | TNodeType.Projection | TNodeType.Icu);\n\n
const INode = IView[tNode.index];\n    if (INode !== null) {\n      result.push(unwrapRNode(INode));\n    }\n\n //
A given INode can represent either a native node or a LContainer (when it is a host of a\n // ViewContainerRef).
When we find a LContainer we need to descend into it to collect root nodes\n // from the views in this container.\n
if (isLContainer(INode)) {\n    for (let i = CONTAINER_HEADER_OFFSET; i < INode.length; i++) {\n
const IViewInAContainer = INode[i];\n      const IViewFirstChildTNode =
IViewInAContainer[TVIEW].firstChild;\n      if (IViewFirstChildTNode !== null) {\n        collectNativeNodes(\n
          IViewInAContainer[TVIEW], IViewInAContainer, IViewFirstChildTNode, result);\n        }\n      }\n    }\n\n
const tNodeType = tNode.type;\n    if (tNodeType & TNodeType.ElementContainer) {\n
collectNativeNodes(tView, IView, tNode.child, result);\n    } else if (tNodeType & TNodeType.Icu) {\n    const
nextRNode = icuContainerIterate(tNode as TIcuContainerNode, IView);\n    let rNode: RNode|null;\n    while
(rNode = nextRNode()) {\n      result.push(rNode);\n    }\n    } else if (tNodeType & TNodeType.Projection) {\n
const componentView = IView[DECLARATION_COMPONENT_VIEW];\n    const componentHost =
componentView[T_HOST] as TElementNode;\n    const slotIdx = tNode.projection as number;\n    ngDevMode
&&\n      assertDefined(\n        componentHost.projection,\n        'Components with projection nodes (<ng-
content>) must have projection slots defined.);\n\n    const nodesInSlot = componentHost.projection![slotIdx];\n
if (Array.isArray(nodesInSlot)) {\n      result.push(...nodesInSlot);\n    } else {\n      const parentView =
getLViewParent(componentView);\n      ngDevMode &&\n        assertDefined(\n          parentView,\n
          'Component views should always have a parent view (component\\'s host view));\n
collectNativeNodes(parentView[TVIEW], parentView, nodesInSlot, result, true);\n    }\n  }\n  tNode =
isProjection ? tNode.projectionNext : tNode.next;\n  }\n\n  return result;\n}\n"/**\n * @license\n * Copyright
Google LLC All Rights Reserved.\n * Use of this source code is governed by an MIT-style license that can be\n
* found in the LICENSE file at https://angular.io/license\n */\n\nimport {ChangeDetectorRef as
viewEngine_ChangeDetectorRef} from './change_detection/change_detector_ref';\nimport {ViewContainerRef as
viewEngine_ViewContainerRef} from './linker/view_container_ref';\nimport {EmbeddedViewRef as
viewEngine_EmbeddedViewRef, InternalViewRef as viewEngine_InternalViewRef, ViewRefTracker} from
 './linker/view_ref';\nimport {collectNativeNodes} from './collect_native_nodes';\nimport
{checkNoChangesInRootView, checkNoChangesInternal, detectChangesInRootView, detectChangesInternal,
markViewDirty, storeCleanupWithContext} from './instructions/shared';\nimport {CONTEXT, FLAGS, LView,
LViewFlags, TVIEW} from './interfaces/view';\nimport {destroyLView, renderDetachView} from
 './node_manipulation';\n\n\n// Needed due to tsickle downleveling where multiple `implements` with classes
creates\n// multiple @extends in Closure annotations, which is illegal. This workaround fixes\n// the multiple
@extends by making the annotation @implements instead\n\nexport interface
viewEngine_ChangeDetectorRef_interface extends viewEngine_ChangeDetectorRef {}\n\nexport class
ViewRef<T> implements viewEngine_EmbeddedViewRef<T>, viewEngine_InternalViewRef,\n
viewEngine_ChangeDetectorRef_interface {\n  private _appRef: ViewRefTracker|null = null;\n  private
_viewContainerRef: viewEngine_ViewContainerRef|null = null;\n\n  get rootNodes(): any[] {\n    const IView =
this._IView;\n    const tView = IView[TVIEW];\n    return collectNativeNodes(tView, IView, tView.firstChild, []);\n
}\n\n  constructor(\n    /**\n     * This represents `LView` associated with the component when ViewRef is a
ChangeDetectorRef.\n     *\n     * When ViewRef is created for a dynamic component, this also represents the
`LView` for the\n     * component.\n     *\n     * For a "regular" ViewRef created for an embedded view, this is
the `LView` for the embedded\n     * view.\n     *\n     * @internal\n     */\n    public _IView: LView,\n\n
/**\n     * This represents the `LView` associated with the point where `ChangeDetectorRef` was\n     *
requested.\n     *\n     * This may be different from `_IView` if the `_cdRefInjectingView` is an embedded view.\n
     */\n    private _cdRefInjectingView?: LView) {\n    get context(): T {\n      return this._IView[CONTEXT] as

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T;\n };\n\n get destroyed(): boolean {\n  return (this._IView[FLAGS] & LViewFlags.Destroyed) ===
LViewFlags.Destroyed;\n }\n\n destroy(): void {\n  if (this._appRef) {\n    this._appRef.detachView(this);\n  }\n  else if (this._viewContainerRef) {\n    const index = this._viewContainerRef.indexOf(this);\n    if (index > -1)\n    {\n      this._viewContainerRef.detach(index);\n    }\n    this._viewContainerRef = null;\n  }\n}\n\n destroyLView(this._IView[TVIEW], this._IView);\n }\n\n onDestroy(callback: Function) {\n  storeCleanupWithContext(this._IView[TVIEW], this._IView, null, callback);\n }\n\n /**\n  * Marks a view and all
of its ancestors dirty.\n  * It also triggers change detection by calling `scheduleTick` internally, which
coalesces\n  * multiple `markForCheck` calls to into one change detection run.\n  * This can be used to ensure
an { @link ChangeDetectionStrategy#OnPush OnPush} component is\n  * checked when it needs to be re-rendered
but the two normal triggers haven't marked it\n  * dirty (i.e. inputs haven't changed and events haven't fired in the
view).\n  * <!-- TODO: Add a link to a chapter on OnPush components -->\n  * @usageNotes\n  * ###
Example\n  * ```typescript\n  * @Component({\n  *   selector: 'my-app',\n  *   template: `Number of ticks:
{{numberOfTicks}}`\n  *   changeDetection: ChangeDetectionStrategy.OnPush,\n  * })\n  * class AppComponent
{\n  *   numberOfTicks = 0;\n  *   constructor(private ref: ChangeDetectorRef) {\n  *     setInterval(() => {\n
*     this.numberOfTicks++;\n  *     // the following is required, otherwise the view will not be updated\n  *
this.ref.markForCheck();\n  *     }, 1000);\n  *   }\n  * }\n  * ```\n  * \n  * markForCheck(): void {\n
markViewDirty(this._cdRefInjectingView || this._IView);\n  }\n}\n\n /**\n  * Detaches the view from the change
detection tree.\n  * Detached views will not be checked during change detection runs until they are\n  * re-
attached, even if they are dirty. `detach` can be used in combination with\n  * { @link
ChangeDetectorRef#detectChanges detectChanges} to implement local change\n  * detection checks.\n  * <!--
TODO: Add a link to a chapter on detach/reattach/local digest -->\n  * <!-- TODO: Add a live demo once
ref.detectChanges is merged into master -->\n  * @usageNotes\n  * ### Example\n  * \n  * The following
example defines a component with a large list of readonly data.\n  * Imagine the data changes constantly, many
times per second. For performance reasons,\n  * we want to check and update the list every five seconds. We can do
that by detaching\n  * the component's change detector and doing a local check every five seconds.\n  * \n  *
```typescript\n  * class DataProvider {\n  *   // in a real application the returned data will be different every time\n
* get data() {\n * return [1,2,3,4,5];\n * }\n * }\n * \n * @Component({\n * selector: 'giant-list',\n *
template: `\n * <li *ngFor="let d of dataProvider.data">Data {{d}}\n * `,\n * })\n * class GiantList
{\n * constructor(private ref: ChangeDetectorRef, private dataProvider: DataProvider) {\n * ref.detach();\n *
setInterval(() => {\n * this.ref.detectChanges();\n * }, 5000);\n * }\n * }\n * \n * @Component({\n
* selector: 'app',\n * providers: [DataProvider],\n * template: `\n * <giant-list><giant-list>\n * `,\n *
})\n * class App {\n * }\n * }\n * \n * \n * detach(): void {\n * this._IView[FLAGS] &= ~LViewFlags.Attached;\n
}\n}\n\n /**\n * Re-attaches a view to the change detection tree.\n * This can be used to re-attach views that
were previously detached from the tree\n * using { @link ChangeDetectorRef#detach detach}. Views are attached
to the tree by default.\n * <!-- TODO: Add a link to a chapter on detach/reattach/local digest -->\n * \n *
@usageNotes\n * ### Example\n * \n * The following example creates a component displaying `live` data. The
component will detach\n * its change detector from the main change detector tree when the component's live
property\n * is set to false.\n * \n * ```typescript\n * class DataProvider {\n * data = 1;\n * \n *
constructor() {\n * setInterval(() => {\n * this.data = this.data * 2;\n * }, 500);\n * }\n * }\n * \n *
@Component({\n * selector: 'live-data',\n * inputs: ['live'],\n * template: 'Data: {{dataProvider.data}}'\n *
})\n * class LiveData {\n * constructor(private ref: ChangeDetectorRef, private dataProvider: DataProvider) {\n *
*\n * set live(value) {\n * if (value) {\n * this.ref.reattach();\n * } else {\n * this.ref.detach();\n
*\n * }\n * }\n * }\n * \n * @Component({\n * selector: 'my-app',\n * providers: [DataProvider],\n *
template: `\n * Live Update: <input type="checkbox" [(ngModel)]="live">\n * <live-data
[live]="live"><live-data>\n * `,\n * })\n * class AppComponent {\n * live = true;\n * }\n * }\n * \n * \n *
reattach(): void {\n * this._IView[FLAGS] |= LViewFlags.Attached;\n * }\n}\n\n /**\n * Checks the view and its
children.\n * This can also be used in combination with { @link ChangeDetectorRef#detach detach} to
implement\n * local change detection checks.\n * <!-- TODO: Add a link to a chapter on

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ChangeDetectionStrategy#OnPush OnPush} (checkOnce)\n * change detection strategy, explicitly marks the view
as changed so that\n * it can be checked again.\n *\n * Components are normally marked as dirty (in need of
rerendering) when inputs\n * have changed or events have fired in the view. Call this method to ensure that\n * a
component is checked even if these triggers have not occurred.\n *\n * <!-- TODO: Add a link to a chapter on
OnPush components -->\n *\n */\n abstract markForCheck(): void;\n /**\n * Detaches this view from the
change-detection tree.\n * A detached view is not checked until it is reattached.\n * Use in combination with
`detectChanges()` to implement local change detection checks.\n *\n * Detached views are not checked during
change detection runs until they are\n * re-attached, even if they are marked as dirty.\n *\n * <!-- TODO: Add a
link to a chapter on detach/reattach/local digest -->\n * <!-- TODO: Add a live demo once ref.detectChanges is
merged into master -->\n *\n */\n abstract detach(): void;\n /**\n * Checks this view and its children. Use in
combination with {@link ChangeDetectorRef#detach\n * detach}\n * to implement local change detection
checks.\n *\n * <!-- TODO: Add a link to a chapter on detach/reattach/local digest -->\n * <!-- TODO: Add a
live demo once ref.detectChanges is merged into master -->\n *\n */\n abstract detectChanges(): void;\n /**\n * Checks the change detector and its children, and throws if any changes are detected.\n *\n * Use in development
mode to verify that running change detection doesn't introduce\n * other changes.\n */\n abstract
checkNoChanges(): void;\n /**\n * Re-attaches the previously detached view to the change detection tree.\n *
Views are attached to the tree by default.\n *\n * <!-- TODO: Add a link to a chapter on detach/reattach/local
digest -->\n *\n */\n abstract reattach(): void;\n /**\n * @internal\n * @nocollapse\n */\n static
__NG_ELEMENT_ID__: () => ChangeDetectorRef = SWITCH_CHANGE_DETECTOR_REF_FACTORY;\n /**\n * This marker is need so that the JIT compiler can correctly identify this class as special.\n *\n *
@internal\n * @nocollapse\n */\n static __ChangeDetectorRef__ = true;\n\n\n\n/** Returns a
ChangeDetectorRef (a.k.a. a ViewRef) */\nexport function injectChangeDetectorRef(isPipe = false):
ChangeDetectorRef {\n return createViewRef(getCurrentTNode()!, getLView(), isPipe);\n}\n\n/**\n * Creates a
ViewRef and stores it on the injector as ChangeDetectorRef (public alias).\n *\n * @param tNode The node that is
requesting a ChangeDetectorRef\n * @param lView The view to which the node belongs\n * @param isPipe
Whether the view is being injected into a pipe.\n * @returns The ChangeDetectorRef to use\n */\nfunction
createViewRef(tNode: TNode, lView: LView, isPipe: boolean): ChangeDetectorRef {\n // `isComponentView` will
be true for Component and Directives (but not for Pipes).\n // See https://github.com/angular/angular/pull/33072 for
proper fix\n const isComponentView = !isPipe && isComponentHost(tNode);\n if (isComponentView) {\n // The
LView represents the location where the component is declared.\n // Instead we want the LView for the
component View and so we need to look it up.\n const componentView =
getComponentLViewByIndex(tNode.index, lView); // look down\n return new R3_ViewRef(componentView,
componentView);\n } else if (tNode.type & (TNodeType.AnyRNode | TNodeType.AnyContainer |
TNodeType.Icu)) {\n // The LView represents the location where the injection is requested from.\n // We need to
locate the containing LView (in case where the `lView` is an embedded view)\n const hostComponentView =
lView[DECLARATION_COMPONENT_VIEW]; // look up\n return new R3_ViewRef(hostComponentView,
lView);\n }\n return null!;\n},"**\n * @license\n * Copyright Google LLC All Rights Reserved.\n *\n * Use of
this source code is governed by an MIT-style license that can be\n * found in the LICENSE file at
https://angular.io/license\n */\nimport {DefaultIterableDifferFactory} from
'./differs/default_iterable_differ';\nimport {DefaultKeyValueDifferFactory} from
'./differs/default_keyvalue_differ';\nimport {IterableDifferFactory, IterableDiffers} from
'./differs/iterable_differs';\nimport {KeyValueDifferFactory, KeyValueDiffers} from
'./differs/keyvalue_differs';\nexport {SimpleChange, SimpleChanges} from './interface/simple_change';\nexport
{devModeEqual, WrappedValue} from './change_detection_util';\nexport {ChangeDetectorRef} from
'./change_detector_ref';\nexport {ChangeDetectionStrategy, ChangeDetectorStatus,
isDefaultChangeDetectionStrategy} from './constants';\nexport {DefaultIterableDifferFactory} from
'./differs/default_iterable_differ';\nexport {DefaultIterableDiffer} from './differs/default_iterable_differ';\nexport
{DefaultKeyValueDifferFactory} from './differs/default_keyvalue_differ';\nexport {IterableChangeRecord,

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IterableChanges, IterableDiffer, IterableDifferFactory, IterableDiffers, NgIterable, TrackByFunction} from
'./differs/iterable_differs';\nexport {KeyValueChangeRecord, KeyValueChanges, KeyValueDiffer,
KeyValueDifferFactory, KeyValueDiffers} from './differs/keyvalue_differs';\nexport {PipeTransform} from
'./pipe_transform';\n\n\n/**\n * Structural diffing for `Object`'s and `Map`'s.\n */\nconst keyValDiff:
KeyValueDifferFactory[] = [new DefaultKeyValueDifferFactory()];\n\n/**\n * Structural diffing for `Iterable` types
such as `Array`'s.\n */\nconst iterableDiff: IterableDifferFactory[] = [new DefaultIterableDifferFactory()];\n\nexport
const defaultIterableDiffers = new IterableDiffers(iterableDiff);\n\nexport const defaultKeyValueDiffers = new
KeyValueDiffers(keyValDiff);\n", "/*\n * @license\n * Copyright Google LLC All Rights Reserved.\n */\n * Use of
this source code is governed by an MIT-style license that can be\n * found in the LICENSE file at
https://angular.io/license\n */\n\nimport {assertLContainer} from './render3/assert';\nimport {createLView,
renderView} from './render3/instructions/shared';\nimport {TContainerNode, TNode, TNodeType} from
'./render3/interfaces/node';\nimport {DECLARATION_LCONTAINER, LView, LViewFlags, QUERIES, TView}
from './render3/interfaces/view';\nimport {getCurrentTNode, getLView} from './render3/state';\nimport {ViewRef
as R3_ViewRef} from './render3/view_ref';\nimport {assertDefined} from './util/assert';\nimport {noop} from
'./util/noop';\nimport {createElementRef, ElementRef} from './element_ref';\nimport {EmbeddedViewRef} from
'./view_ref';\n\n\nexport const SWITCH_TEMPLATE_REF_FACTORY__POST_R3__ =
injectTemplateRef;\nconst SWITCH_TEMPLATE_REF_FACTORY__PRE_R3__ = noop;\nconst
SWITCH_TEMPLATE_REF_FACTORY: typeof injectTemplateRef =
SWITCH_TEMPLATE_REF_FACTORY__PRE_R3__;\n\n/**\n * Represents an embedded template that can be
used to instantiate embedded views.\n * To instantiate embedded views based on a template, use the
`ViewContainerRef`\n * method `createEmbeddedView()`. \n * Access a `TemplateRef` instance by placing a
directive on an ``\n * element (or directive prefixed with `*`). The `TemplateRef` for the embedded
view\n * is injected into the constructor of the directive,\n * using the `TemplateRef` token.\n * You can also use
a `Query` to find a `TemplateRef` associated with\n * a component or a directive.\n * @see
`ViewContainerRef`\n * @see [Navigate the Component Tree with DI](guide/dependency-injection-navtree)\n */\n *
@publicApi\n */\nexport abstract class TemplateRef<C> {\n /**\n * The anchor element in the parent view for
this embedded view.\n * The data-binding and injection contexts of embedded views created from this
`TemplateRef`\n * inherit from the contexts of this location.\n * Typically new embedded views are attached
to the view container of this location, but in\n * advanced use-cases, the view can be attached to a different
container while keeping the\n * data-binding and injection context from the original location.\n * \n * \n //
TODO(i): rename to anchor or location\n abstract getElementRef(): ElementRef;\n /**\n * Instantiates an
embedded view based on this template,\n * and attaches it to the view container.\n * @param context The data-
binding context of the embedded view, as declared\n * in the `` usage.\n * @returns The new
embedded view object.\n */\n abstract createEmbeddedView(context: C): EmbeddedViewRef<C>;\n\n /**\n *
@internal\n * @nocollapse\n */\n static __NG_ELEMENT_ID__: () => TemplateRef<any> | null =
SWITCH_TEMPLATE_REF_FACTORY;\n}\n\nconst ViewEngineTemplateRef = TemplateRef;\nconst
R3TemplateRef = class TemplateRef<T> extends ViewEngineTemplateRef<T> {\n constructor(\n private
_declarationLView: LView, private _declarationTContainer: TContainerNode,\n public elementRef:
ElementRef) {\n super();\n }\n\n createEmbeddedView(context: T): EmbeddedViewRef<T> {\n const
embeddedTView = this._declarationTContainer.tViews as TView;\n const embeddedLView = createLView(\n
this._declarationLView, embeddedTView, context, LViewFlags.CheckAlways, null,\n
embeddedTView.declTNode, null, null, null, null);\n const declarationLContainer =
this._declarationLView[this._declarationTContainer.index];\n ngDevMode &&
assertLContainer(declarationLContainer);\n embeddedLView[DECLARATION_LCONTAINER] =
declarationLContainer;\n\n const declarationViewLQueries = this._declarationLView[QUERIES];\n if
(declarationViewLQueries !== null) {\n embeddedLView[QUERIES] =
declarationViewLQueries.createEmbeddedView(embeddedTView);\n }\n\n renderView(embeddedTView,
embeddedLView, context);\n\n return new R3_ViewRef<T>(embeddedLView);\n }\n};\n\n/**\n * Creates a

```

```

TemplateRef given a node.\n *\n * @returns The TemplateRef instance to use\n */\nexport function
injectTemplateRef<T>(): TemplateRef<T>|null {\n return createTemplateRef<T>(getCurrentTNode(),
getLView());\n}\n\n/**\n * Creates a TemplateRef and stores it on the injector.\n *\n * @param hostTNode The
node on which a TemplateRef is requested\n * @param hostLView The `LView` to which the node belongs\n *
@return The TemplateRef instance or null if we can't create a TemplateRef on a given node type\n */\nexport
function createTemplateRef<T>(hostTNode: TNode, hostLView: LView): TemplateRef<T>|null {\n if
(hostTNode.type & TNodeType.Container) {\n ngDevMode && assertDefined(hostTNode.tViews, 'TVIEW must
be allocated');\n return new R3TemplateRef(\n hostLView, hostTNode as TContainerNode,
createElementRef(hostTNode, hostLView));\n }\n return null;\n}\n\n"/**\n * @license\n * Copyright Google LLC
All Rights Reserved.\n *\n * Use of this source code is governed by an MIT-style license that can be\n * found in
the LICENSE file at https://angular.io/license\n */\n\nimport {Injector} from './di/injector';\nimport {Type} from
'./interface/type';\nimport {ComponentFactoryResolver} from './component_factory_resolver';\n\n\n/**\n *
Represents an instance of an `NgModule` created by an `NgModuleFactory`.\n * Provides access to the `NgModule`
instance and related objects.\n *\n * @publicApi\n */\nexport abstract class NgModuleRef<T> {\n /**\n * The
injector that contains all of the providers of the `NgModule`.\n */\n abstract get injector(): Injector;\n\n /**\n *
The resolver that can retrieve the component factories\n * declared in the `entryComponents` property of the
module.\n */\n abstract get componentFactoryResolver(): ComponentFactoryResolver;\n\n /**\n * The
`NgModule` instance.\n */\n abstract get instance(): T;\n\n /**\n * Destroys the module instance and all of the
data structures associated with it.\n */\n abstract destroy(): void;\n\n /**\n * Registers a callback to be
executed when the module is destroyed.\n */\n abstract onDestroy(callback: () => void): void;\n}\n\nexport interface
InternalNgModuleRef<T> extends NgModuleRef<T> {\n // Note: we are using the prefix _ as NgModuleData is an
NgModuleRef and therefore directly\n // exposed to the user.\n _bootstrapComponents: Type<any>[];\n}\n\n\n/**\n *
@publicApi\n */\nexport abstract class NgModuleFactory<T> {\n abstract get moduleType(): Type<T>;\n abstract
create(parentInjector: Injector|null): NgModuleRef<T>;\n}\n\n"/**\n * @license\n * Copyright Google LLC
All Rights Reserved.\n *\n * Use of this source code is governed by an MIT-style license that can be\n * found in
the LICENSE file at https://angular.io/license\n */\n\nimport {Injector} from './di/injector';\nimport
{assertNodeInjector} from './render3/assert';\nimport {getParentInjectorLocation, NodeInjector} from
'./render3/di';\nimport {addToViewTree, createLContainer} from './render3/instructions/shared';\nimport
{CONTAINER_HEADER_OFFSET, LContainer, NATIVE, VIEW_REFS} from
'./render3/interfaces/container';\nimport {NodeInjectorOffset} from './render3/interfaces/injector';\nimport
{TContainerNode, TDirectiveHostNode, TElementContainerNode, TElementNode, TNodeType} from
'./render3/interfaces/node';\nimport {RComment, RElement} from './render3/interfaces/renderer_dom';\nimport
{isLContainer} from './render3/interfaces/type_checks';\nimport {LView, PARENT, RENDERER, T_HOST,
TVIEW} from './render3/interfaces/view';\nimport {assertTNodeType} from './render3/node_assert';\nimport
{addViewToContainer, destroyLView, detachView, getBeforeNodeForView, insertView, nativeInsertBefore,
nativeNextSibling, nativeParentNode} from './render3/node_manipulation';\nimport {getCurrentTNode, getLView}
from './render3/state';\nimport {getParentInjectorIndex, getParentInjectorView, hasParentInjector} from
'./render3/util/injector_utils';\nimport {getNativeByTNode, unwrapRNode, viewAttachedToContainer} from
'./render3/util/view_utils';\nimport {ViewRef as R3ViewRef} from './render3/view_ref';\nimport {addToArray,
removeFromArray} from './util/array_utils';\nimport {assertEqual, assertGreaterThan, assertLessThan} from
'./util/assert';\nimport {noop} from './util/noop';\nimport {ComponentFactory, ComponentRef} from
'./component_factory';\nimport {createElementRef, ElementRef} from './element_ref';\nimport {NgModuleRef}
from './ng_module_factory';\nimport {TemplateRef} from './template_ref';\nimport {EmbeddedViewRef, ViewRef}
from './view_ref';\n\nexport const SWITCH_VIEW_CONTAINER_REF_FACTORY__POST_R3__ =
injectViewContainerRef;\nconst SWITCH_VIEW_CONTAINER_REF_FACTORY__PRE_R3__ = noop as typeof
injectViewContainerRef;\nconst SWITCH_VIEW_CONTAINER_REF_FACTORY: typeof
injectViewContainerRef =\n SWITCH_VIEW_CONTAINER_REF_FACTORY__PRE_R3__;\n\n\n/**\n *
Represents a container where one or more views can be attached to a component.\n *\n * Can contain *host views*

```

```

(created by instantiating a Component with the createComponent() method), and embedded views
(created by instantiating a TemplateRef with the createEmbeddedView() method).
A ViewContainerRef instance can contain other ViewContainerRef instances, creating a [view hierarchy](guide/glossary#view-tree).
@see ComponentRef
@see EmbeddedViewRef
@publicApi
export abstract class ViewContainerRef {
 /** Anchor element that specifies the location of this container in the containing view.
 * Each view container can have only one anchor element, and each anchor element
 * can have only a single view container.
 * Root elements of views attached to this container become siblings of the anchor element in
 * the rendered view.
 * Access the ViewContainerRef of an element by placing a Directive injected
 * with ViewContainerRef on the element, or use a ViewChild query.
 * <!-- TODO: rename to anchorElement -->
 abstract getElement(): ElementRef;
 /** The [dependency injector](guide/glossary#injector) for this view container.
 abstract getInjector(): Injector;
 /** @deprecated No replacement
 abstract getParentInjector(): Injector;
 /** Destroys all views in this container.
 abstract clear(): void;
 /** Retrieves a view from this container.
 * @param index The 0-based index of the view to retrieve.
 * @returns The ViewRef instance, or null if the index is out of range.
 abstract get(index: number): ViewRef | null;
 /** Reports how many views are currently attached to this container.
 * @returns The number of views.
 abstract getLength(): number;
 /** Instantiates an embedded view and inserts it into this container.
 * @param templateRef The HTML template that defines the view.
 * @param index The 0-based index at which to insert the new view into this container.
 * If not specified, appends the new view as the last entry.
 * @returns The ViewRef instance for the newly created view.
 abstract createEmbeddedView<C>(templateRef: TemplateRef<C>, context?: C, index?: number):
 EmbeddedViewRef<C>;
 /** Instantiates a single component and inserts its host view into this container.
 * @param componentFactory The factory to use.
 * @param index The index at which to insert the new component's host view into this container.
 * If not specified, appends the new view as the last entry.
 * @param injector The injector to use as the parent for the new component.
 * @param projectableNodes
 * @param ngModule
 * @returns The new component instance, containing the host view.
 abstract createComponent<C>(componentFactory: ComponentFactory<C>, index?: number, injector?:
 Injector, projectableNodes?: any[][], ngModule?: NgModuleRef<any>): ComponentRef<C>;
 /** Inserts a view into this container.
 * @param viewRef The view to insert.
 * @param index The 0-based index at which to insert the view.
 * If not specified, appends the new view as the last entry.
 * @returns The inserted ViewRef instance.
 abstract insert(viewRef: ViewRef, index?: number): ViewRef;
 /** Moves a view to a new location in this container.
 * @param viewRef The view to move.
 * @param index The 0-based index of the new location.
 * @returns The moved ViewRef instance.
 abstract move(viewRef: ViewRef, currentIndex: number): ViewRef;
 /** Returns the index of a view within the current container.
 * @param viewRef The view to query.
 * @returns The 0-based index of the view's position in this container,
 * or -1 if this container doesn't contain the view.
 abstract indexOf(viewRef: ViewRef): number;
 /** Destroys a view attached to this container.
 * @param index The 0-based index of the view to destroy.
 * If not specified, the last view in the container is removed.
 abstract remove(index?: number): void;
 /** Detaches a view from this container without destroying it.
 * Use along with insert() to move a view within the current container.
 * @param index The 0-based index of the view to detach.
 * If not specified, the last view in the container is detached.
 abstract detach(index?: number): ViewRef | null;
 /** @internal
 * @nocollapse
 static __NG_ELEMENT_ID__: () => ViewContainerRef =
 SWITCH_VIEW_CONTAINER_REF_FACTORY;
}
/** Creates a ViewContainerRef and stores it on the injector. Or, if the ViewContainerRef
already exists, retrieves the existing ViewContainerRef.
@returns The ViewContainerRef instance to use.
export function injectViewContainerRef(): ViewContainerRef {
 const previousTNode = getCurrentTNode() as TElementNode | TElementContainerNode | TContainerNode;
 return createContainerRef(previousTNode, getLView());
}
const VE_ViewContainerRef =
ViewContainerRef;
const R3ViewContainerRef = class ViewContainerRef extends VE_ViewContainerRef {
 constructor(private _lContainer: LContainer, private _hostTNode:

```



```

TElementNode|TContainerNode|TElementContainerNode,\n private _hostLView: LView) {\n super();\n }\n\n get element(): ElementRef {\n return createElementRef(this._hostTNode, this._hostLView);\n }\n\n get injector(): Injector {\n return new NodeInjector(this._hostTNode, this._hostLView);\n }\n\n /** @deprecated No replacement */\n get parentInjector(): Injector {\n const parentLocation =\n getParentInjectorLocation(this._hostTNode, this._hostLView);\n if (hasParentInjector(parentLocation)) {\n const parentView = getParentInjectorView(parentLocation, this._hostLView);\n const injectorIndex =\n getParentInjectorIndex(parentLocation);\n ngDevMode && assertNodeInjector(parentView, injectorIndex);\n const parentTNode =\n parentView[TVIEW].data[injectorIndex + NodeInjectorOffset.TNODE] as\n TElementNode;\n return new NodeInjector(parentTNode, parentView);\n } else {\n return new\n NodeInjector(null, this._hostLView);\n }\n }\n\n clear(): void {\n while (this.length > 0) {\n this.remove(this.length - 1);\n }\n }\n\n get(index: number): ViewRef|null {\n const viewRefs =\n getViewRefs(this._IContainer);\n return viewRefs !== null && viewRefs[index] || null;\n }\n\n get length():\n number {\n return this._IContainer.length - CONTAINER_HEADER_OFFSET;\n }\n\n createEmbeddedView<C>(templateRef: TemplateRef<C>, context?: C, index?: number):\n EmbeddedViewRef<C> {\n const viewRef = templateRef.createEmbeddedView(context || <any>{});\n this.insert(viewRef, index);\n return viewRef;\n }\n\n createComponent<C>(\n componentFactory:\n ComponentFactory<C>, index?: number|undefined,\n injector?: Injector|undefined, projectableNodes?:\n any[][]|undefined,\n ngModuleRef?: NgModuleRef<any>|undefined): ComponentRef<C> {\n const\n contextInjector = injector || this.parentInjector;\n if (!ngModuleRef && (componentFactory as any).ngModule ==\n null && contextInjector) {\n // DO NOT REFACTOR. The code here used to have a `value || undefined`\n expression\n // which seems to cause internal google apps to fail. This is documented in the\n // following\n internal bug issue: go/b/142967802\n const result = contextInjector.get(NgModuleRef, null);\n if (result) {\n ngModuleRef = result;\n }\n }\n const componentRef =\n componentFactory.create(contextInjector,\n projectableNodes, undefined, ngModuleRef);\n this.insert(componentRef.hostView, index);\n return\n componentRef;\n }\n\n insert(viewRef: ViewRef, index?: number): ViewRef {\n const IView = (viewRef as\n R3ViewRef<any>)._IView!;\n const tView = IView[TVIEW];\n if (ngDevMode && viewRef.destroyed) {\n throw new Error('Cannot insert a destroyed View in a ViewContainer!');\n }\n if\n (viewAttachedToContainer(IView)) {\n // If view is already attached, detach it first so we clean up references\n appropriately.\n const prevIdx = this.indexOf(viewRef);\n // A view might be attached either to this or a\n different container. The `prevIdx` for\n // those cases will be:\n // equal to -1 for views attached to this\n ViewContainerRef\n // >= 0 for views attached to a different ViewContainerRef\n if (prevIdx !== -1) {\n this.detach(prevIdx);\n } else {\n const prevLContainer = IView[PARENT] as LContainer;\n ngDevMode &&\n assertEquals(\n isLContainer(prevLContainer), true,\n 'An attached view\n should have its PARENT point to a container.);\n // We need to re-create a R3ViewContainerRef instance\n since those are not stored on\n // LView (nor anywhere else).\n const prevVContainerRef = new\n R3ViewContainerRef(\n prevLContainer, prevLContainer[T_HOST] as TDirectiveHostNode,\n prevLContainer[PARENT]);\n prevVContainerRef.detach(prevVContainerRef.indexOf(viewRef));\n }\n }\n //\n Logical operation of adding `LView` to `LContainer`\n const adjustedIdx = this._adjustIndex(index);\n const\n IContainer = this._IContainer;\n insertView(tView, IView, IContainer, adjustedIdx);\n // Physical operation of\n adding the DOM nodes.\n const beforeNode = getBeforeNodeForView(adjustedIdx, IContainer);\n const\n renderer = IView[RENDERER];\n const parentRNode = nativeParentNode(renderer, IContainer[NATIVE] as\n RElement | RComment);\n if (parentRNode !== null) {\n addViewToContainer(tView, IContainer[T_HOST],\n renderer, IView, parentRNode, beforeNode);\n }\n (viewRef as\n R3ViewRef<any>).attachToViewContainerRef(this);\n addToArray(getOrCreateViewRefs(IContainer),\n adjustedIdx, viewRef);\n return viewRef;\n }\n\n move(viewRef: ViewRef, newIndex: number): ViewRef {\n if (ngDevMode && viewRef.destroyed) {\n throw new Error('Cannot move a destroyed View in a\n ViewContainer!');\n }\n return this.insert(viewRef, newIndex);\n }\n\n indexOf(viewRef: ViewRef): number\n {\n const viewRefsArr = getViewRefs(this._IContainer);\n return viewRefsArr !== null ?

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viewRefsArr.indexOf(viewRef) : -1;\n }
remove(index?: number): void {\n const adjustedIdx =
this._adjustIndex(index, -1);\n const detachedView = detachView(this._lContainer, adjustedIdx);\n if
(detachedView) {\n // Before destroying the view, remove it from the container's array of `ViewRef`s.\n //
This ensures the view container length is updated before calling\n // `destroyLView`, which could recursively call
view container methods that\n // rely on an accurate container length.\n // (e.g. a method on this view
container being called by a child directive's OnDestroy\n // lifecycle hook)\n }
removeFromArray(getOrCreateViewRefs(this._lContainer), adjustedIdx);\n
destroyLView(detachedView[TVIEW], detachedView);\n }
detach(index?: number): ViewRef|null {\n
const adjustedIdx = this._adjustIndex(index, -1);\n const view = detachView(this._lContainer, adjustedIdx);\n const
wasDetached =\n view && removeFromArray(getOrCreateViewRefs(this._lContainer), adjustedIdx) !=
null;\n return wasDetached ? new R3ViewRef(view!) : null;\n }
private _adjustIndex(index?: number, shift:
number = 0) {\n if (index == null) {\n return this.length + shift;\n }
if (ngDevMode) {\n assertGreaterThan(index, -1, `ViewRef index must be positive, got ${index}`);\n // +1 because it's legal to insert
at the end.\n assertLessThan(index, this.length + 1 + shift, 'index');\n }
return index;\n }
function
getViewRefs(lContainer: LContainer): ViewRef[]|null {\n return lContainer[VIEW_REFS] as
ViewRef[];\n }
function getOrCreateViewRefs(lContainer: LContainer): ViewRef[] {\n return
(lContainer[VIEW_REFS] || (lContainer[VIEW_REFS] = [])) as ViewRef[];\n }
/**
 * Creates a
ViewContainerRef and stores it on the injector.\n * @param ViewContainerRefToken The ViewContainerRef
type\n * @param ElementRefToken The ElementRef type\n * @param hostTNode The node that is requesting a
ViewContainerRef\n * @param hostLView The view to which the node belongs\n * @returns The
ViewContainerRef instance to use\n */
export function createContainerRef(\n hostTNode:
TElementNode|TContainerNode|TElementContainerNode,\n hostLView: LView): ViewContainerRef {\n
ngDevMode && assertTNodeType(hostTNode, TNodeType.AnyContainer | TNodeType.AnyRNode);\n
let
lContainer: LContainer;\n const slotValue = hostLView[hostTNode.index];\n if (isLContainer(slotValue)) {\n //
If the host is a container, we don't need to create a new LContainer\n lContainer = slotValue;\n } else {\n let
commentNode: RComment;\n // If the host is an element container, the native host element is guaranteed to be a\n
// comment and we can reuse that comment as anchor element for the new LContainer.\n // The comment node in
question is already part of the DOM structure so we don't need to append\n // it again.\n if (hostTNode.type &
TNodeType.ElementContainer) {\n commentNode = unwrapRNode(slotValue) as RComment;\n } else {\n //
If the host is a regular element, we have to insert a comment node manually which will\n // be used as an
anchor when inserting elements. In this specific case we use low-level DOM\n // manipulation to insert it.\n const renderer = hostLView[RENDERER];\n ngDevMode && ngDevMode.rendererCreateComment++;\n commentNode = renderer.createComment(ngDevMode ? 'container' : '');\n const hostNative =
getNativeByTNode(hostTNode, hostLView!);\n const parentOfHostNative = nativeParentNode(renderer,
hostNative);\n nativeInsertBefore(\n renderer, parentOfHostNative!, commentNode,
nativeNextSibling(renderer, hostNative),\n false);\n }\n hostLView[hostTNode.index] = lContainer =\n createLContainer(slotValue, hostLView, commentNode, hostTNode);\n addToViewTree(hostLView,
lContainer);\n }\n return new R3ViewContainerRef(lContainer, hostTNode, hostLView);\n }
/**
 *
@license
 * Copyright Google LLC All Rights Reserved.\n * Use of this source code is governed by an MIT-
style license that can be\n * found in the LICENSE file at https://angular.io/license\n */
import
{getDebugContext} from './errors';\nimport {ERROR_DEBUG_CONTEXT, ERROR_LOGGER} from
'./util/errors';\nimport {DebugContext} from './types';\nexport function
expressionChangedAfterItHasBeenCheckedError(\n context: DebugContext, oldValue: any, currValue: any,
isFirstCheck: boolean): Error {\n let msg =\n `ExpressionChangedAfterItHasBeenCheckedError: Expression has
changed after it was checked. Previous value: '${\n oldValue}'. Current value: '${currValue}'.`;
if
(isFirstCheck) {\n msg +=\n ` It seems like the view has been created after its parent and its children have
been dirty checked.`\n ` Has it been created in a change detection hook ?`;\n }\n return
viewDebugError(msg, context);\n }
export function viewWrappedDebugError(err: any, context: DebugContext):

```



```

children (does not include self) **/\n directChildFlags: NodeFlags;\n\n bindingIndex: number;\n bindings:
BindingDef[];\n bindingFlags: BindingFlags;\n outputIndex: number;\n outputs: OutputDef[];\n /**\n *
references that the user placed on the element\n */\n references: {[refId: string]: QueryValueType};\n /**\n * ids
and value types of all queries that are matched by this node.\n */\n matchedQueries: {[queryId: number]:
QueryValueType};\n /** Binary or of all matched query ids of this node. */\n matchedQueryIds: number;\n /**\n * Binary or of all query ids that are matched by one of the children.\n * This includes query ids from templates as
well.\n * Used as a bloom filter.\n */\n childMatchedQueries: number;\n element: ElementDef|null;\n provider:
ProviderDef|null;\n text: TextDef|null;\n query: QueryDef|null;\n ngContent: NgContentDef|null;\n}\n\n/**\n *
Bitmask for NodeDef.flags.\n * Naming convention:\n * - `Type...`: flags that are mutually exclusive\n * - `Cat...`:
union of multiple `Type...` (short for category).\n */\nexport const enum NodeFlags {\n None = 0,\n TypeElement
= 1 << 0,\n TypeText = 1 << 1,\n ProjectedTemplate = 1 << 2,\n CatRenderNode = TypeElement | TypeText,\n
TypeNgContent = 1 << 3,\n TypePipe = 1 << 4,\n TypePureArray = 1 << 5,\n TypePureObject = 1 << 6,\n
TypePurePipe = 1 << 7,\n CatPureExpression = TypePureArray | TypePureObject | TypePurePipe,\n
TypeValueProvider = 1 << 8,\n TypeClassProvider = 1 << 9,\n TypeFactoryProvider = 1 << 10,\n
TypeUseExistingProvider = 1 << 11,\n LazyProvider = 1 << 12,\n PrivateProvider = 1 << 13,\n TypeDirective = 1
<< 14,\n Component = 1 << 15,\n CatProviderNoDirective =\n TypeValueProvider | TypeClassProvider |
TypeFactoryProvider | TypeUseExistingProvider,\n CatProvider = CatProviderNoDirective | TypeDirective,\n
OnInit = 1 << 16,\n OnDestroy = 1 << 17,\n DoCheck = 1 << 18,\n OnChanges = 1 << 19,\n AfterContentInit = 1
<< 20,\n AfterContentChecked = 1 << 21,\n AfterViewInit = 1 << 22,\n AfterViewChecked = 1 << 23,\n
EmbeddedViews = 1 << 24,\n ComponentView = 1 << 25,\n TypeContentQuery = 1 << 26,\n TypeViewQuery =
1 << 27,\n StaticQuery = 1 << 28,\n DynamicQuery = 1 << 29,\n TypeNgModule = 1 << 30,\n CatQuery =
TypeContentQuery | TypeViewQuery,\n\n // mutually exclusive values...\n Types = CatRenderNode |
TypeNgContent | TypePipe | CatPureExpression | CatProvider | CatQuery\n}\n\nexport interface BindingDef {\n
flags: BindingFlags;\n ns: string|null;\n name: string|null;\n nonMinifiedName: string|null;\n securityContext:
SecurityContext|null;\n suffix: string|null;\n}\n\nexport const enum BindingFlags {\n TypeElementAttribute = 1 <<
0,\n TypeElementClass = 1 << 1,\n TypeElementStyle = 1 << 2,\n TypeProperty = 1 << 3,\n SyntheticProperty =
1 << 4,\n SyntheticHostProperty = 1 << 5,\n CatSyntheticProperty = SyntheticProperty |
SyntheticHostProperty,\n\n // mutually exclusive values...\n Types = TypeElementAttribute | TypeElementClass |
TypeElementStyle | TypeProperty\n}\n\nexport interface OutputDef {\n type: OutputType;\n target:
'window'|'document'|'body'|'component'|null;\n eventName: string;\n propName: string|null;\n}\n\nexport const
enum OutputType {\n ElementOutput,\n DirectiveOutput\n}\n\nexport const enum QueryValueType {\n
ElementRef = 0,\n RenderElement = 1,\n TemplateRef = 2,\n ViewContainerRef = 3,\n Provider = 4\n}\n\nexport
interface ElementDef {\n // set to null for <ng-container>\n name: string|null;\n ns: string|null;\n /** ns, name,
value */\n attrs: [string, string, string][]|null;\n template: ViewDefinition|null;\n componentProvider:
NodeDef|null;\n componentRendererType: RendererType2|null;\n // closure to allow recursive components\n
componentView: ViewDefinitionFactory|null;\n /**\n * visible public providers for DI in the view,\n * as see
from this element. This does not include private providers.\n */\n publicProviders: {[tokenKey: string]:
NodeDef}|null;\n /**\n * same as visiblePublicProviders, but also includes private providers\n * that are located
on this element.\n */\n allProviders: {[tokenKey: string]: NodeDef}|null;\n handleEvent:
ElementHandleEventFn|null;\n}\n\nexport interface ElementHandleEventFn {\n (view: ViewData, eventName:
string, event: any): boolean;\n}\n\nexport interface ProviderDef {\n token: any;\n value: any;\n deps:
DepDef[];\n}\n\nexport interface NgModuleProviderDef {\n flags: NodeFlags;\n index: number;\n token: any;\n
value: any;\n deps: DepDef[];\n}\n\nexport interface DepDef {\n flags: DepFlags;\n token: any;\n tokenKey:
string;\n}\n\n/**\n * Bitmask for DI flags\n */\nexport const enum DepFlags {\n None = 0,\n SkipSelf = 1 << 0,\n
Optional = 1 << 1,\n Self = 1 << 2,\n Value = 1 << 3,\n}\n\nexport interface TextDef {\n prefix:
string;\n}\n\nexport interface QueryDef {\n id: number;\n // variant of the id that can be used to check against
NodeDef.matchedQueryIds, ...\n filterId: number;\n bindings: QueryBindingDef[];\n}\n\nexport interface
QueryBindingDef {\n propName: string;\n bindingType: QueryBindingType;\n}\n\nexport const enum

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QueryBindingType {\n First = 0,\n All = 1\n}\n\nexport interface NgContentDef {\n /**\n * this index is checked
against NodeDef.ngContentIndex to find the nodes\n * that are matched by this ng-content.\n * Note that a
NodeDef with an ng-content can be reprojected, i.e.\n * have a ngContentIndex on its own.\n */\n index:
number;\n}\n\n// -----\n\n// Data\n\n// -----\n\nexport interface
NgModuleData extends Injector, NgModuleRef<any> {\n // Note: we are using the prefix _ as NgModuleData is an
NgModuleRef and therefore directly\n // exposed to the user.\n _def: NgModuleDefinition;\n _parent: Injector;\n
_providers: any[];\n}\n\n/**\n * View instance data.\n * Attention: Adding fields to this is performance sensitive!\n */\nexport interface ViewData {\n def: ViewDefinition;\n root: RootData;\n renderer: Renderer2;\n // index of
component provider / anchor.\n parentNodeDef: NodeDef|null;\n parent: ViewData|null;\n viewContainerParent:
ViewData|null;\n component: any;\n context: any;\n // Attention: Never loop over this, as this will\n // create a
polymorphic usage site.\n // Instead: Always loop over ViewDefinition.nodes,\n // and call the right accessor (e.g.
`elementData`) based on\n // the NodeType.\n nodes: {[key: number]: NodeData};\n state: ViewState;\n
oldValues: any[];\n disposables: DisposableFn[]|null;\n initIndex: number;\n}\n\n/**\n * Bitmask of states\n */\nexport const enum ViewState {\n BeforeFirstCheck = 1 << 0,\n FirstCheck = 1 << 1,\n Attached = 1 << 2,\n
ChecksEnabled = 1 << 3,\n IsProjectedView = 1 << 4,\n CheckProjectedView = 1 << 5,\n CheckProjectedViews =
1 << 6,\n Destroyed = 1 << 7,\n}\n\n // initState Uses 3 bits\n initState_Mask = 7 << 8,\n initState_BeforeInit = 0 <<
8,\n initState_CallingOnInit = 1 << 8,\n initState_CallingAfterContentInit = 2 << 8,\n
initState_CallingAfterViewInit = 3 << 8,\n initState_AfterInit = 4 << 8,\n}\n\n CatDetectChanges = Attached |
ChecksEnabled,\n CatInit = BeforeFirstCheck | CatDetectChanges | initState_BeforeInit\n}\n\n// Called before each
cycle of a view's check to detect whether this is in the\n// initState for which we need to call ngOnInit,
ngAfterContentInit or ngAfterViewInit\n// lifecycle methods. Returns true if this check cycle should call
lifecycle\n// methods.\nexport function shiftInitState(\n view: ViewData, priorInitState: ViewState, newInitState:
ViewState): boolean {\n // Only update the initState if we are currently in the prior state.\n // For example, only
move into CallingInit if we are in BeforeInit. Only\n // move into CallingContentInit if we are in CallingInit.
Normally this will\n // always be true because of how checkCycle is called in checkAndUpdateView.\n // However,
if checkAndUpdateView is called recursively or if an exception is\n // thrown while checkAndUpdateView is
running, checkAndUpdateView starts over\n // from the beginning. This ensures the state is monotonically
increasing,\n // terminating in the AfterInit state, which ensures the Init methods are called\n // at least once and
only once.\n const state = view.state;\n const initState = state & ViewState.initState_Mask;\n if (initState ===
priorInitState) {\n view.state = (state & ~ViewState.initState_Mask) | newInitState;\n view.initIndex = -1;\n
return true;\n }\n return initState === newInitState;\n}\n\n// Returns true if the lifecycle init method should be
called for the node with\n// the given init index.\nexport function shouldCallLifecycleInitHook(\n view:
ViewData, initState: ViewState, index: number): boolean {\n if ((view.state & ViewState.initState_Mask) ===
initState && view.initIndex <= index) {\n view.initIndex = index + 1;\n return true;\n }\n return
false;\n}\n\nexport interface DisposableFn {\n (): void;\n}\n\n/**\n * Node instance data.\n */\n * We have a
separate type per NodeType to save memory\n * (TextData | ElementData | ProviderData | PureExpressionData |
QueryList<any>)\n * To keep our code monomorphic,\n * we prohibit using `NodeData` directly but enforce the
use of accessors (`asElementData`, ...).\n * This way, no usage site can get a `NodeData` from view.nodes and then
use it for different\n * purposes.\n */\nexport class NodeData {\n private __brand: any;\n}\n\n/**\n * Data for an
instantiated NodeType.Text.\n */\n * Attention: Adding fields to this is performance sensitive!\n */\nexport interface
TextData {\n renderText: any;\n}\n\n/**\n * Accessor for view.nodes, enforcing that every usage site stays
monomorphic.\n */\nexport function asTextData(view: ViewData, index: number): TextData {\n return
<any>view.nodes[index];\n}\n\n/**\n * Data for an instantiated NodeType.Element.\n */\n * Attention: Adding
fields to this is performance sensitive!\n */\nexport interface ElementData {\n renderElement: any;\n
componentView: ViewData;\n viewContainer: ViewContainerData|null;\n template: TemplateData;\n}\n\nexport
interface ViewContainerData extends ViewContainerRef {\n // Note: we are using the prefix _ as
ViewContainerData is a ViewContainerRef and therefore\n // directly\n // exposed to the user.\n
_embeddedViews: ViewData[];\n}\n\nexport interface TemplateData extends TemplateRef<any> {\n // views that

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have been created from the template\n // of this element,\n // but inserted into the embeddedViews of another
element.\n // By default, this is undefined.\n // Note: we are using the prefix _ as TemplateData is a TemplateRef
and therefore directly\n // exposed to the user.\n _projectedViews: ViewData[];\n\n/**\n * Accessor for
view.nodes, enforcing that every usage site stays monomorphic.\n */\nexport function asElementData(view:
ViewData, index: number): ElementData {\n return <any>view.nodes[index];\n}\n\n/**\n * Data for an instantiated
NodeType.Provider.\n */\n * Attention: Adding fields to this is performance sensitive!\n */\nexport interface
ProviderData {\n instance: any;\n}\n\n/**\n * Accessor for view.nodes, enforcing that every usage site stays
monomorphic.\n */\nexport function asProviderData(view: ViewData, index: number): ProviderData {\n return
<any>view.nodes[index];\n}\n\n/**\n * Data for an instantiated NodeType.PureExpression.\n */\n * Attention:
Adding fields to this is performance sensitive!\n */\nexport interface PureExpressionData {\n value:
any;\n}\n\n/**\n * Accessor for view.nodes, enforcing that every usage site stays monomorphic.\n */\nexport
function asPureExpressionData(view: ViewData, index: number): PureExpressionData {\n return
<any>view.nodes[index];\n}\n\n/**\n * Accessor for view.nodes, enforcing that every usage site stays
monomorphic.\n */\nexport function asQueryList(view: ViewData, index: number): QueryList<any> {\n return
<any>view.nodes[index];\n}\n\nexport interface RootData {\n injector: Injector;\n ngModule:
NgModuleRef<any>;\n projectableNodes: any[][];\n selectorOrNode: any;\n renderer: Renderer2;\n
rendererFactory: RendererFactory2;\n errorHandler: ErrorHandler;\n sanitizer: Sanitizer;\n}\n\nexport abstract
class DebugContext {\n abstract get view(): ViewData;\n abstract get nodeIndex(): number|null;\n abstract get
injector(): Injector;\n abstract get component(): any;\n abstract get providerTokens(): any[];\n abstract get
references(): {[key: string]: any};\n abstract get context(): any;\n abstract get componentRenderElement(): any;\n
abstract get renderNode(): any;\n abstract logError(console: Console, ...values: any[]): void;\n}\n\n// -----
-----\n\n// Other\n// -----\n\nexport const enum CheckType {\n
CheckAndUpdate,\n CheckNoChanges}\n\nexport interface ProviderOverride {\n token: any;\n flags:
NodeFlags;\n value: any;\n deps: ([DepFlags, any][]any)[];\n deprecatedBehavior: boolean;\n}\n\nexport interface
Services {\n setCurrentNode(view: ViewData, nodeIndex: number): void;\n createRootView(\n injector:
Injector, projectableNodes: any[][][], rootSelectorOrNode: string|any,\n def: ViewDefinition, ngModule:
NgModuleRef<any>, context?: any): ViewData;\n createEmbeddedView(parent: ViewData, anchorDef: NodeDef,
viewDef: ViewDefinition, context?: any):\n ViewData;\n createComponentView(\n parentView: ViewData,
nodeDef: NodeDef, viewDef: ViewDefinition, hostElement: any): ViewData;\n createNgModuleRef(\n
moduleType: Type<any>, parent: Injector, bootstrapComponents: Type<any>[],\n def: NgModuleDefinition):
NgModuleRef<any>;\n overrideProvider(override: ProviderOverride): void;\n
overrideComponentView(compType: Type<any>, compFactory: ComponentFactory<any>): void;\n
clearOverrides(): void;\n checkAndUpdateView(view: ViewData): void;\n checkNoChangesView(view:
ViewData): void;\n destroyView(view: ViewData): void;\n resolveDep(\n view: ViewData, elDef:
NodeDef|null, allowPrivateServices: boolean, depDef: DepDef,\n notFoundValue?: any): any;\n
createDebugContext(view: ViewData, nodeIndex: number): DebugContext;\n handleEvent: ViewHandleEventFn;\n
updateDirectives: (view: ViewData, checkType: CheckType) => void;\n updateRenderer: (view: ViewData,
checkType: CheckType) => void;\n dirtyParentQueries: (view: ViewData) => void;\n}\n\n/**\n * This object is
used to prevent cycles in the source files and to have a place where\n * debug mode can hook it. It is lazily filled
when `isDevMode` is known.\n */\nexport const Services: Services = {\n setCurrentNode: undefined!,\n
createRootView: undefined!,\n createEmbeddedView: undefined!,\n createComponentView: undefined!,\n
createNgModuleRef: undefined!,\n overrideProvider: undefined!,\n overrideComponentView: undefined!,\n
clearOverrides: undefined!,\n checkAndUpdateView: undefined!,\n checkNoChangesView: undefined!,\n
destroyView: undefined!,\n resolveDep: undefined!,\n createDebugContext: undefined!,\n handleEvent:
undefined!,\n updateDirectives: undefined!,\n updateRenderer: undefined!,\n dirtyParentQueries:
undefined!,\n};\n\n"/**\n * @license\n * Copyright Google LLC All Rights Reserved.\n */\n * Use of this source
code is governed by an MIT-style license that can be\n * found in the LICENSE file at https://angular.io/license\n
*/\n\nimport { devModeEqual, WrappedValue } from './change_detection/change_detection';\nimport { SOURCE}

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from './di/injector_compatibility';\nimport {ViewEncapsulation} from './metadata/view';\nimport {RendererType2}
from './render/api_flags';\nimport {stringify} from './util/stringify';\n\nimport
{expressionChangedAfterItHasBeenCheckedError} from './errors';\nimport {asElementData, asTextData,
BindingDef, BindingFlags, Definition, DefinitionFactory, DepDef, DepFlags, ElementData, NodeDef, NodeFlags,
QueryValueType, Services, ViewData, ViewDefinition, ViewDefinitionFactory, ViewFlags, ViewState} from
./types';\n\nexport const NOOP: any = () => {};\n\nconst _tokenKeyCache = new Map<any, string>();\n\nexport
function tokenKey(token: any): string {\n let key = _tokenKeyCache.get(token);\n if (!key) {\n key =
stringify(token) + '_' + _tokenKeyCache.size;\n _tokenKeyCache.set(token, key);\n }\n return key;\n}\n\nexport
function unwrapValue(view: ViewData, nodeId: number, bindingIdx: number, value: any): any {\n if
(WrappedValue.isWrapped(value)) {\n value = WrappedValue.unwrap(value);\n const globalBindingIdx =
view.def.nodes[nodeId].bindingIndex + bindingIdx;\n const oldValue =
WrappedValue.unwrap(view.oldValues[globalBindingIdx]);\n view.oldValues[globalBindingIdx] = new
WrappedValue(oldValue);\n }\n return value;\n}\n\nconst UNDEFINED_RENDERER_TYPE_ID =
'$$_undefined';\nconst EMPTY_RENDERER_TYPE_ID = '$$_empty';\n\n// Attention: this function is called as top
level function.\n// Putting any logic in here will destroy closure tree shaking!\n\nexport function
createRendererType2(values: {\n styles: (string|any[])[],\n encapsulation: ViewEncapsulation,\n data: {[kind:
string]: any[]};\n}): RendererType2 {\n return {\n id: UNDEFINED_RENDERER_TYPE_ID,\n styles:
values.styles,\n encapsulation: values.encapsulation,\n data: values.data\n };\n}\n\nlet _renderCompCount =
0;\n\nexport function resolveRendererType2(type?: RendererType2|null): RendererType2|null {\n if (type &&
type.id === UNDEFINED_RENDERER_TYPE_ID) {\n // first time we see this RendererType2. Initialize it...\n
const isFilled =\n ((type.encapsulation !== null && type.encapsulation !== ViewEncapsulation.None) ||\n
type.styles.length || Object.keys(type.data).length);\n if (isFilled) {\n type.id = `c$_{renderCompCount++}`;\n
 } else {\n type.id = EMPTY_RENDERER_TYPE_ID;\n }\n }\n if (type && type.id ===
EMPTY_RENDERER_TYPE_ID) {\n type = null;\n }\n return type || null;\n}\n\nexport function
checkBinding(\n view: ViewData, def: NodeDef, bindingIdx: number, value: any): boolean {\n const oldValues =
view.oldValues;\n if ((view.state & ViewState.FirstCheck) ||\n !Object.is(oldValues[def.bindingIndex +
bindingIdx], value)) {\n return true;\n }\n return false;\n}\n\nexport function checkAndUpdateBinding(\n
view: ViewData, def: NodeDef, bindingIdx: number, value: any): boolean {\n if (checkBinding(view, def, bindingIdx,
value)) {\n view.oldValues[def.bindingIndex + bindingIdx] = value;\n return true;\n }\n return
false;\n}\n\nexport function checkBindingNoChanges(\n view: ViewData, def: NodeDef, bindingIdx: number,
value: any) {\n const oldValue = view.oldValues[def.bindingIndex + bindingIdx];\n if ((view.state &
ViewState.BeforeFirstCheck) || !devModeEqual(oldValue, value)) {\n const bindingName =
def.bindings[bindingIdx].name;\n throw expressionChangedAfterItHasBeenCheckedError(\n
Services.createDebugContext(view, def.nodeIndex), `${bindingName}: ${oldValue}`,\n `${bindingName}:
${value}`,\n (view.state & ViewState.BeforeFirstCheck) !== 0);\n }\n}\n\nexport function
markParentViewsForCheck(view: ViewData) {\n let currView: ViewData|null = view;\n while (currView) {\n if
(currView.def.flags & ViewFlags.OnPush) {\n currView.state |= ViewState.ChecksEnabled;\n }\n currView
= currView.viewContainerParent || currView.parent;\n }\n}\n\nexport function
markParentViewsForCheckProjectedViews(view: ViewData, endView: ViewData) {\n let currView: ViewData|null
= view;\n while (currView && currView !== endView) {\n currView.state |= ViewState.CheckProjectedViews;\n
currView = currView.viewContainerParent || currView.parent;\n }\n}\n\nexport function dispatchEvent(\n
view: ViewData, nodeId: number, eventName: string, event: any): boolean|undefined {\n try {\n const nodeDef =
view.def.nodes[nodeId];\n const startView = nodeDef.flags & NodeFlags.ComponentView ?\n
asElementData(view, nodeId).componentView :\n view;\n markParentViewsForCheck(startView);\n
return Services.handleEvent(view, nodeId, eventName, event);\n } catch (e) {\n // Attention: Don't rethrow, as
it would cancel Observable subscriptions!\n view.root.errorHandler.handleError(e);\n }\n}\n\nexport function
declaredViewContainer(view: ViewData): ElementData|null {\n if (view.parent) {\n const parentView =
view.parent;\n return asElementData(parentView, view.parentNodeDef!.nodeIndex);\n }\n return

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null;\n}\n\n/**\n * for component views, this is the host element.\n * for embedded views, this is the index of the
parent node\n * that contains the view container.\n */\nexport function viewParentEl(view: ViewData):
NodeDef|null {\n const parentView = view.parent;\n if (parentView) {\n return view.parentNodeDef!.parent;\n }
else {\n return null;\n }\n}\n\nexport function renderNode(view: ViewData, def: NodeDef): any {\n switch
(def.flags & NodeFlags.Types) {\n case NodeFlags.TypeElement:\n return asElementData(view,
def.nodeIndex).renderElement;\n case NodeFlags.TypeText:\n return asTextData(view,
def.nodeIndex).renderText;\n }\n}\n\nexport function elementEventFullName(target: string|null, name: string):
string {\n return target ? `${target}:${name}` : name;\n}\n\nexport function isComponentView(view: ViewData):
boolean {\n return !!view.parent && !(view.parentNodeDef!.flags & NodeFlags.Component);\n}\n\nexport
function isEmbeddedView(view: ViewData): boolean {\n return !!view.parent && !(view.parentNodeDef!.flags &
NodeFlags.Component);\n}\n\nexport function filterQueryId(queryId: number): number {\n return 1 << (queryId %
32);\n}\n\nexport function splitMatchedQueriesDsl(matchedQueriesDsl: [string|number, QueryValueType][]|null):
{\n matchedQueries: {[queryId: string]: QueryValueType},\n references: {[refId: string]: QueryValueType},\n
matchedQueryIds: number\n} {\n const matchedQueries: {[queryId: string]: QueryValueType} = {};\n let
matchedQueryIds = 0;\n const references: {[refId: string]: QueryValueType} = {};\n if (matchedQueriesDsl) {\n
matchedQueriesDsl.forEach(([queryId, valueType]) => {\n if (typeof queryId === 'number') {\n
matchedQueries[queryId] = valueType;\n matchedQueryIds |= filterQueryId(queryId);\n } else {\n
references[queryId] = valueType;\n }\n });\n}\n return {matchedQueries, references,
matchedQueryIds};\n}\n\nexport function splitDepsDsl(deps: ([DepFlags, any]|any)[], sourceName?: string):
DepDef[] {\n return deps.map(value => {\n let token: any;\n let flags: DepFlags;\n if (Array.isArray(value))
{\n [flags, token] = value;\n } else {\n flags = DepFlags.None;\n token = value;\n }\n if (token &&
(typeof token === 'function' || typeof token === 'object') && sourceName) {\n Object.defineProperty(token,
SOURCE, {value: sourceName, configurable: true});\n }\n return {flags, token, tokenKey: tokenKey(token)};\n
});\n}\n\nexport function getParentRenderElement(view: ViewData, renderHost: any, def: NodeDef): any {\n let
renderParent = def.renderParent;\n if (renderParent) {\n if ((renderParent.flags & NodeFlags.TypeElement) === 0
||\n (renderParent.flags & NodeFlags.ComponentView) === 0 ||\n
(renderParent.element!.componentRendererType &&\n
(renderParent.element!.componentRendererType!.encapsulation ===\n
ViewEncapsulation.ShadowDom ||\n
// TODO(FW-2290): remove the `encapsulation === 1` fallback logic in v12.\n
renderParent.element!.componentRendererType!.encapsulation === 1))) {\n // only children of non components,
or children of components with native encapsulation should\n // be attached.\n return asElementData(view,
def.renderParent!.nodeIndex).renderElement;\n }\n } else {\n return renderHost;\n }\n}\n\nconst
DEFINITION_CACHE = new WeakMap<any, Definition<any>>();\n\nexport function resolveDefinition<D
extends Definition<any>>(factory: DefinitionFactory<D>): D {\n let value = DEFINITION_CACHE.get(factory)!
as D;\n if (!value) {\n value = factory() => NOOP;\n value.factory = factory;\n
DEFINITION_CACHE.set(factory, value);\n }\n return value;\n}\n\nexport function rootRenderNodes(view:
ViewData): any[] {\n const renderNodes: any[] = [];\n visitRootRenderNodes(view, RenderNodeAction.Collect,
undefined, undefined, renderNodes);\n return renderNodes;\n}\n\nexport const enum RenderNodeAction {\n
Collect,\n AppendChild,\n InsertBefore,\n RemoveChild\n}\n\nexport function visitRootRenderNodes(\n view:
ViewData, action: RenderNodeAction, parentNode: any, nextSibling: any, target?: any[]) {\n // We need to re-
compute the parent node in case the nodes have been moved around manually\n if (action ===
RenderNodeAction.RemoveChild) {\n parentNode = view.renderer.parentNode(renderNode(view,
view.def.lastRenderRootNode!));\n }\n visitSiblingRenderNodes(\n view, action, 0, view.def.nodes.length - 1,
parentNode, nextSibling, target);\n}\n\nexport function visitSiblingRenderNodes(\n view: ViewData, action:
RenderNodeAction, startIndex: number, endIndex: number, parentNode: any,\n nextSibling: any, target?: any[])
{\n for (let i = startIndex; i <= endIndex; i++) {\n const nodeDef = view.def.nodes[i];\n if (nodeDef.flags &
(NodeFlags.TypeElement | NodeFlags.TypeText | NodeFlags.TypeNgContent)) {\n visitRenderNode(view,
nodeDef, action, parentNode, nextSibling, target);\n }\n // jump to next sibling\n i += nodeDef.childCount;\n

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}\n}\n\nexport function visitProjectedRenderNodes(\n view: ViewData, ngContentIndex: number, action:
RenderNodeAction, parentNode: any,\n nextSibling: any, target?: any[]) {\n let compView: ViewData|null =
view;\n while (compView && !isComponentView(compView)) {\n compView = compView.parent;\n }\n const
hostView = compView!.parent;\n const hostElDef = viewParentEl(compView!);\n const startIndex =
hostElDef!.nodeIndex + 1;\n const endIndex = hostElDef!.nodeIndex + hostElDef!.childCount;\n for (let i =
startIndex; i <= endIndex; i++) {\n const nodeDef = hostView!.def.nodes[i];\n if (nodeDef.ngContentIndex ===
ngContentIndex) {\n visitRenderNode(hostView!, nodeDef, action, parentNode, nextSibling, target);\n }\n //
jump to next sibling\n i += nodeDef.childCount;\n }\n if (!hostView!.parent) {\n // a root view\n const
projectedNodes = view.root.projectableNodes[ngContentIndex];\n if (projectedNodes) {\n for (let i = 0; i <
projectedNodes.length; i++) {\n execRenderNodeAction(view, projectedNodes[i], action, parentNode,
nextSibling, target);\n }\n }\n }\n}\n}\n\nfunction visitRenderNode(\n view: ViewData, nodeDef: NodeDef,
action: RenderNodeAction, parentNode: any, nextSibling: any,\n target?: any[]) {\n if (nodeDef.flags &
NodeFlags.TypeNgContent) {\n visitProjectedRenderNodes(\n view, nodeDef.ngContent!.index, action,
parentNode, nextSibling, target);\n } else {\n const rn = renderNode(view, nodeDef);\n if (action ===
RenderNodeAction.RemoveChild && (nodeDef.flags & NodeFlags.ComponentView) &&\n
(nodeDef.bindingFlags & BindingFlags.CatSyntheticProperty)) {\n // Note: we might need to do both actions.\n
if (nodeDef.bindingFlags & (BindingFlags.SyntheticProperty)) {\n execRenderNodeAction(view, rn, action,
parentNode, nextSibling, target);\n }\n if (nodeDef.bindingFlags & (BindingFlags.SyntheticHostProperty))
{\n const compView = asElementData(view, nodeDef.nodeIndex).componentView;\n
execRenderNodeAction(compView, rn, action, parentNode, nextSibling, target);\n }\n } else {\n
execRenderNodeAction(view, rn, action, parentNode, nextSibling, target);\n }\n if (nodeDef.flags &
NodeFlags.EmbeddedViews) {\n const embeddedViews = asElementData(view,
nodeDef.nodeIndex).viewContainer!._embeddedViews;\n for (let k = 0; k < embeddedViews.length; k++) {\n
visitRootRenderNodes(embeddedViews[k], action, parentNode, nextSibling, target);\n }\n }\n if
(nodeDef.flags & NodeFlags.TypeElement && !nodeDef.element!.name) {\n visitSiblingRenderNodes(\n
view, action, nodeDef.nodeIndex + 1, nodeDef.nodeIndex + nodeDef.childCount, parentNode,\n nextSibling,
target);\n }\n }\n}\n}\n\nfunction execRenderNodeAction(\n view: ViewData, renderNode: any, action:
RenderNodeAction, parentNode: any, nextSibling: any,\n target?: any[]) {\n const renderer = view.renderer;\n
switch (action) {\n case RenderNodeAction.AppendChild:\n renderer.appendChild(parentNode, renderNode);\n
break;\n case RenderNodeAction.InsertBefore:\n renderer.insertBefore(parentNode, renderNode,
nextSibling);\n break;\n case RenderNodeAction.RemoveChild:\n renderer.removeChild(parentNode,
renderNode);\n break;\n case RenderNodeAction.Collect:\n target!.push(renderNode);\n break;\n
}\n}\n}\n\nconst NS_PREFIX_RE = /^(^:)+(:)$/>\n\nexport function splitNamespace(name: string): string[] {\n if
(name[0] === ':') {\n const match = name.match(NS_PREFIX_RE);\n return [match[1], match[2]];\n }\n return ['',
name];\n}\n}\n\nexport function calcBindingFlags(bindings: BindingDef[]): BindingFlags {\n let flags = 0;\n
for (let i = 0; i < bindings.length; i++) {\n flags |= bindings[i].flags;\n }\n return flags;\n}\n}\n\nexport function
interpolate(valueCount: number, constAndInterp: string[]): string {\n let result = '';\n for (let i = 0; i < valueCount *
2; i = i + 2) {\n result = result + constAndInterp[i] + _toStringWithNull(constAndInterp[i + 1]);\n }\n return
result + constAndInterp[valueCount * 2];\n}\n}\n\nexport function inlineInterpolate(\n valueCount: number, c0:
string, a1: any, c1: string, a2?: any, c2?: string, a3?: any, c3?: string, a4?: any, c4?: string, a5?: any, c5?: string,
a6?: any, c6?: string, a7?: any, c7?: string, a8?: any, c8?: string, a9?: any, c9?: string): string {\n switch
(valueCount) {\n case 1:\n return c0 + _toStringWithNull(a1) + c1;\n case 2:\n return c0 +
_toStringWithNull(a1) + c1 + _toStringWithNull(a2) + c2;\n case 3:\n return c0 + _toStringWithNull(a1) + c1
+ _toStringWithNull(a2) + c2 + _toStringWithNull(a3) +\n c3;\n case 4:\n return c0 +
_toStringWithNull(a1) + c1 + _toStringWithNull(a2) + c2 + _toStringWithNull(a3) +\n c3 +
_toStringWithNull(a4) + c4;\n case 5:\n return c0 + _toStringWithNull(a1) + c1 + _toStringWithNull(a2) + c2
+ _toStringWithNull(a3) +\n c3 + _toStringWithNull(a4) + c4 + _toStringWithNull(a5) + c5;\n case 6:\n
return c0 + _toStringWithNull(a1) + c1 + _toStringWithNull(a2) + c2 + _toStringWithNull(a3) +\n c3 +

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_toStringWithNull(a4) + c4 + _toStringWithNull(a5) + c5 + _toStringWithNull(a6) + c6;\n case 7:\n return c0
+ _toStringWithNull(a1) + c1 + _toStringWithNull(a2) + c2 + _toStringWithNull(a3) +\n c3 +
_toStringWithNull(a4) + c4 + _toStringWithNull(a5) + c5 + _toStringWithNull(a6) +\n c6 +
_toStringWithNull(a7) + c7;\n case 8:\n return c0 + _toStringWithNull(a1) + c1 + _toStringWithNull(a2) + c2
+ _toStringWithNull(a3) +\n c3 + _toStringWithNull(a4) + c4 + _toStringWithNull(a5) + c5 +
_toStringWithNull(a6) +\n c6 + _toStringWithNull(a7) + c7 + _toStringWithNull(a8) + c8;\n case 9:\n
return c0 + _toStringWithNull(a1) + c1 + _toStringWithNull(a2) + c2 + _toStringWithNull(a3) +\n c3 +
_toStringWithNull(a4) + c4 + _toStringWithNull(a5) + c5 + _toStringWithNull(a6) +\n c6 +
_toStringWithNull(a7) + c7 + _toStringWithNull(a8) + c8 + _toStringWithNull(a9) + c9;\n default:\n throw
new Error('Does not support more than 9 expressions');\n }\n}\n\nfunction _toStringWithNull(v: any): string {\n
return v != null ? v.toString() : '';\n}\n\nexport const EMPTY_ARRAY: any[] = [];\nexport const EMPTY_MAP:
{[key: string]: any} = {};\n"/**\n * @license\n * Copyright Google LLC All Rights Reserved.\n *\n * Use of this
source code is governed by an MIT-style license that can be\n * found in the LICENSE file at
https://angular.io/license\n */\n\nimport {resolveForwardRef} from './di/forward_ref';\nimport {Injector} from
'./di/injector';\nimport {setCurrentInjector} from './di/injector_compatibility';\nimport {INJECTOR} from
'./di/injector_token';\nimport {getInjectableDef, InjectableDef} from './di/interface/defs';\nimport
{INJECTOR_SCOPE} from './di/scope';\nimport {NgModuleRef} from './linker/ng_module_factory';\nimport
{newArray} from './util/array_utils';\nimport {stringify} from './util/stringify';\n\nimport {DepDef, DepFlags,
NgModuleData, NgModuleDefinition, NgModuleProviderDef, NodeFlags} from './types';\nimport {splitDepsDsl,
tokenKey} from './util';\n\nconst UNDEFINED_VALUE = {};\nconst InjectorRefTokenKey =
tokenKey(Injector);\nconst INJECTORRefTokenKey = tokenKey(INJECTOR);\nconst NgModuleRefTokenKey =
tokenKey(NgModuleRef);\n\nexport function moduleProvideDef(\n flags: NodeFlags, token: any, value: any,
deps: ([DepFlags, any]|any)[]): NgModuleProviderDef {\n // Need to resolve forwardRefs as e.g. for `useValue`
we\n // lowered the expression and then stopped evaluating it,\n // i.e. also didn't unwrap it.\n value =
resolveForwardRef(value);\n const depDefs = splitDepsDsl(deps, stringify(token));\n return {\n // will bet set by
the module definition\n index: -1,\n deps: depDefs,\n flags,\n token,\n value\n };\n}\n\nexport function
moduleDef(providers: NgModuleProviderDef[]): NgModuleDefinition {\n const providersByKey: {[key: string]:
NgModuleProviderDef} = {};\n const modules = [];\n let scope: 'root'|'platform'|null = null;\n for (let i = 0; i <
providers.length; i++) {\n const provider = providers[i];\n if (provider.token === INJECTOR_SCOPE) {\n
scope = provider.value;\n }\n if (provider.flags & NodeFlags.TypeNgModule) {\n
modules.push(provider.token);\n }\n provider.index = i;\n providersByKey[tokenKey(provider.token)] =
provider;\n }\n return {\n // Will be filled later...\n factory: null,\n providersByKey,\n providers,\n
modules,\n scope: scope,\n };\n}\n\nexport function initNgModule(data: NgModuleData) {\n const def =
data._def;\n const providers = data._providers = newArray(def.providers.length);\n for (let i = 0; i <
def.providers.length; i++) {\n const provDef = def.providers[i];\n if (!(provDef.flags &
NodeFlags.LazyProvider)) {\n // Make sure the provider has not been already initialized outside this loop.\n if
(providers[i] === undefined) {\n providers[i] = _createProviderInstance(data, provDef);\n }\n }\n }\n}\n\nexport function resolveNgModuleDep(\n data: NgModuleData, depDef: DepDef, notFoundValue: any =
Injector.THROW_IF_NOT_FOUND): any {\n const former = setCurrentInjector(data);\n try {\n if (depDef.flags
& DepFlags.Value) {\n return depDef.token;\n }\n if (depDef.flags & DepFlags.Optional) {\n
notFoundValue = null;\n }\n if (depDef.flags & DepFlags.SkipSelf) {\n return data._parent.get(depDef.token,
notFoundValue);\n }\n const tokenKey = depDef.tokenKey;\n switch (tokenKey) {\n case
InjectorRefTokenKey:\n case INJECTORRefTokenKey:\n case NgModuleRefTokenKey:\n return data;\n }\n const providerDef = data._def.providersByKey[tokenKey];\n let injectableDef: InjectableDef<any>|null;\n if (providerDef) {\n let providerInstance = data._providers[providerDef.index];\n if (providerInstance ===
undefined) {\n providerInstance = data._providers[providerDef.index] =\n _createProviderInstance(data,
providerDef);\n }\n return providerInstance === UNDEFINED_VALUE ? undefined : providerInstance;\n }
else if (\n (injectableDef = getInjectableDef(depDef.token)) && targetsModule(data, injectableDef)) {\n

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const index = data._providers.length;\n data._def.providers[index] =
data._def.providersByKey[depDef.tokenKey] = {\n flags: NodeFlags.TypeFactoryProvider |
NodeFlags.LazyProvider,\n value: injectableDef.factory,\n deps: [],\n index,\n token:
depDef.token,\n };\n data._providers[index] = UNDEFINED_VALUE;\n return (\n
data._providers[index] =\n _createProviderInstance(data, data._def.providersByKey[depDef.tokenKey]);\n
) else if (depDef.flags & DepFlags.Self) {\n return notFoundValue;\n }\n return
data._parent.get(depDef.token, notFoundValue);\n } finally {\n setCurrentInjector(former);\n } }\n\nfunction
moduleTransitivelyPresent(ngModule: NgModuleData, scope: any): boolean {\n return
ngModule._def.modules.indexOf(scope) > -1;\n}\n\nfunction targetsModule(ngModule: NgModuleData, def:
InjectableDef<any>): boolean {\n const providedIn = def.providedIn;\n return providedIn != null &&\n
(providedIn === 'any' || providedIn === ngModule._def.scope ||\n moduleTransitivelyPresent(ngModule,
providedIn));\n}\n\nfunction _createProviderInstance(ngModule: NgModuleData, providerDef:
NgModuleProviderDef): any {\n let injectable: any;\n switch (providerDef.flags & NodeFlags.Types) {\n case
NodeFlags.TypeClassProvider:\n injectable = _createClass(ngModule, providerDef.value, providerDef.deps);\n
 break;\n case NodeFlags.TypeFactoryProvider:\n injectable = _callFactory(ngModule, providerDef.value,
providerDef.deps);\n break;\n case NodeFlags.TypeUseExistingProvider:\n injectable =
resolveNgModuleDep(ngModule, providerDef.deps[0]);\n break;\n case NodeFlags.TypeValueProvider:\n
 injectable = providerDef.value;\n break;\n }\n // The read of `ngOnDestroy` here is slightly expensive as it's
megamorphic, so it should be\n // avoided if possible. The sequence of checks here determines whether
ngOnDestroy needs to be\n // checked. It might not if the `injectable` isn't an object or if NodeFlags.OnDestroy is
already\n // set (ngOnDestroy was detected statically).\n if (injectable !== UNDEFINED_VALUE && injectable
!== null && typeof injectable === 'object' && \n !(providerDef.flags & NodeFlags.OnDestroy) && typeof
injectable.ngOnDestroy === 'function') {\n providerDef.flags |= NodeFlags.OnDestroy;\n }\n return injectable
=== undefined ? UNDEFINED_VALUE : injectable;\n}\n\nfunction _createClass(ngModule: NgModuleData, ctor:
any, deps: DepDef[]): any {\n const len = deps.length;\n switch (len) {\n case 0:\n return new ctor();\n case
1:\n return new ctor(resolveNgModuleDep(ngModule, deps[0]));\n case 2:\n return new
ctor(resolveNgModuleDep(ngModule, deps[0]), resolveNgModuleDep(ngModule, deps[1]));\n case 3:\n return
new ctor(\n resolveNgModuleDep(ngModule, deps[0]), resolveNgModuleDep(ngModule, deps[1]),\n \n
resolveNgModuleDep(ngModule, deps[2]));\n default:\n const depValues = [];\n for (let i = 0; i < len; i++)
{\n depValues[i] = resolveNgModuleDep(ngModule, deps[i]);\n }\n return new ctor(...depValues);\n
 }\n}\n\nfunction _callFactory(ngModule: NgModuleData, factory: any, deps: DepDef[]): any {\n const len =
deps.length;\n switch (len) {\n case 0:\n return factory();\n case 1:\n return
factory(resolveNgModuleDep(ngModule, deps[0]));\n case 2:\n return
factory(resolveNgModuleDep(ngModule, deps[0]), resolveNgModuleDep(ngModule, deps[1]));\n case 3:\n
return factory(\n resolveNgModuleDep(ngModule, deps[0]), resolveNgModuleDep(ngModule, deps[1]),\n \n
resolveNgModuleDep(ngModule, deps[2]));\n default:\n const depValues = [];\n for (let i = 0; i < len; i++)
{\n depValues[i] = resolveNgModuleDep(ngModule, deps[i]);\n }\n return factory(...depValues);\n
 }\n}\n\nexport function callNgModuleLifecycle(ngModule: NgModuleData, lifecycles: NodeFlags) {\n const def =
ngModule._def;\n const destroyed = new Set<any>();\n for (let i = 0; i < def.providers.length; i++) {\n const
provDef = def.providers[i];\n if (provDef.flags & NodeFlags.OnDestroy) {\n const instance =
ngModule._providers[i];\n if (instance && instance !== UNDEFINED_VALUE) {\n const onDestroy:
Function|undefined = instance.ngOnDestroy;\n if (typeof onDestroy === 'function' &&
!destroyed.has(instance)) {\n onDestroy.apply(instance);\n destroyed.add(instance);\n }\n }\n
}\n}\n\n", "/*\n * @license\n * Copyright Google LLC All Rights Reserved.\n * Use of this source code is
governed by an MIT-style license that can be\n * found in the LICENSE file at https://angular.io/license\n
*/\n\nimport {addToArray, removeFromArray} from './util/array_utils';\nimport {ElementData, NodeDef,
NodeFlags, Services, ViewData, ViewDefinition, ViewState} from './types';\nimport {declaredViewContainer,
renderNode, RenderNodeAction, visitRootRenderNodes} from './util';\n\nexport function attachEmbeddedView(\n

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parentView: ViewData, elementData: ElementData, viewIndex: number|undefined|null, view: ViewData) {\n let
embeddedViews = elementData.viewContainer!._embeddedViews;\n if (viewIndex === null || viewIndex ===
undefined) {\n viewIndex = embeddedViews.length;\n }\n view.viewContainerParent = parentView;\n
addToArray(embeddedViews, viewIndex!, view);\n attachProjectedView(elementData, view);\n\n
Services.dirtyParentQueries(view);\n\n const prevView = viewIndex! > 0 ? embeddedViews[viewIndex! - 1] :
null;\n renderAttachEmbeddedView(elementData, prevView, view);\n}\n\nfunction
attachProjectedView(vcElementData: ElementData, view: ViewData) {\n const dvcElementData =
declaredViewContainer(view);\n if (!dvcElementData || dvcElementData === vcElementData ||\n view.state &
ViewState.IsProjectedView) {\n return;\n }\n // Note: For performance reasons, we\n // - add a view to
template._projectedViews only 1x throughout its lifetime,\n // and remove it not until the view is destroyed.\n //
(hard, as when a parent view is attached/detached we would need to attach/detach all\n // nested projected views
as well, even across component boundaries).\n // - don't track the insertion order of views in the projected views
array\n // (hard, as when the views of the same template are inserted different view containers)\n view.state |=
ViewState.IsProjectedView;\n let projectedViews = dvcElementData.template._projectedViews;\n if
(!projectedViews) {\n projectedViews = dvcElementData.template._projectedViews = [];\n }\n
projectedViews.push(view);\n // Note: we are changing the NodeDef here as we cannot calculate\n // the fact
whether a template is used for projection during compilation.\n markNodeAsProjectedTemplate(view.parent!.def,
view.parentNodeDef!);\n}\n\nfunction markNodeAsProjectedTemplate(viewDef: ViewDefinition, nodeDef:
NodeDef) {\n if (nodeDef.flags & NodeFlags.ProjectingTemplate) {\n return;\n }\n viewDef.nodeFlags |=
NodeFlags.ProjectingTemplate;\n nodeDef.flags |= NodeFlags.ProjectingTemplate;\n let parentNodeDef =
nodeDef.parent;\n while (parentNodeDef) {\n parentNodeDef.childFlags |= NodeFlags.ProjectingTemplate;\n
parentNodeDef = parentNodeDef.parent;\n }\n}\n\nexport function detachEmbeddedView(elementData:
ElementData, viewIndex?: number): ViewData|null {\n const embeddedViews =
elementData.viewContainer!._embeddedViews;\n if (viewIndex === null || viewIndex >= embeddedViews.length)
{\n viewIndex = embeddedViews.length - 1;\n }\n if (viewIndex < 0) {\n return null;\n }\n const view =
embeddedViews[viewIndex];\n view.viewContainerParent = null;\n removeFromArray(embeddedViews,
viewIndex);\n\n // See attachProjectedView for why we don't update projectedViews here.\n
Services.dirtyParentQueries(view);\n\n renderDetachView(view);\n\n return view;\n}\n\nexport function
detachProjectedView(view: ViewData) {\n if (!(view.state & ViewState.IsProjectedView)) {\n return;\n }\n
const dvcElementData = declaredViewContainer(view);\n if (dvcElementData) {\n const projectedViews =
dvcElementData.template._projectedViews;\n if (projectedViews) {\n removeFromArray(projectedViews,
projectedViews.indexOf(view));\n Services.dirtyParentQueries(view);\n }\n }\n}\n\nexport function
moveEmbeddedView(\n elementData: ElementData, oldViewIndex: number, newViewIndex: number): ViewData
{\n const embeddedViews = elementData.viewContainer!._embeddedViews;\n const view =
embeddedViews[oldViewIndex];\n removeFromArray(embeddedViews, oldViewIndex);\n if (newViewIndex ===
null) {\n newViewIndex = embeddedViews.length;\n }\n addToArray(embeddedViews, newViewIndex,
view);\n\n // Note: Don't need to change projectedViews as the order in there\n // as always invalid...\n
Services.dirtyParentQueries(view);\n\n renderDetachView(view);\n const prevView = newViewIndex > 0 ?
embeddedViews[newViewIndex - 1] : null;\n renderAttachEmbeddedView(elementData, prevView, view);\n\n
return view;\n}\n\nfunction renderAttachEmbeddedView(\n elementData: ElementData, prevView:
ViewData|null, view: ViewData) {\n const prevRenderNode =\n prevView ? renderNode(prevView,
prevView.def.lastRenderRootNode!) : elementData.renderElement;\n const parentNode =
view.renderer.parentNode(prevRenderNode);\n const nextSibling = view.renderer.nextSibling(prevRenderNode);\n
// Note: We can't check if `nextSibling` is present, as on WebWorkers it will always be\n // However, browsers
automatically do `appendChild` when there is no `nextSibling`.\n visitRootRenderNodes(view,
RenderNodeAction.InsertBefore, parentNode, nextSibling, undefined);\n}\n\nexport function
renderDetachView(view: ViewData) {\n visitRootRenderNodes(view, RenderNodeAction.RemoveChild, null, null,
undefined);\n}\n\n", "/*\n * @license\n * Copyright Google LLC All Rights Reserved.\n * Use of this source

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code is governed by an MIT-style license that can be
 * found in the LICENSE file at https://angular.io/license
 *
import { ChangeDetectorRef } from './change_detection/change_detection';
import { Injector } from './di/injector';
import { InjectFlags } from './di/interface/injector';
import { Type } from './interface/type';
import { ComponentFactory, ComponentRef } from './linker/component_factory';
import { ComponentFactoryBoundToModule, ComponentFactoryResolver } from './linker/component_factory_resolver';
import { ElementRef } from './linker/element_ref';
import { InternalNgModuleRef, NgModuleRef } from './linker/ng_module_factory';
import { TemplateRef } from './linker/template_ref';
import { ViewContainerRef } from './linker/view_container_ref';
import { EmbeddedViewRef, InternalViewRef, ViewRef, ViewRefTracker } from './linker/view_ref';
import { stringify } from './util/stringify';
import { VERSION } from './version';
import { callNgModuleLifecycle, initNgModule, resolveNgModuleDep } from './ng_module';
import { asElementData, asProviderData, asTextData, DepFlags, ElementData, NgModuleData, NgModuleDefinition, NodeDef, NodeFlags, Services, TemplateData, ViewContainerData, ViewData, ViewDefinitionFactory, ViewState } from './types';
import { markParentViewsForCheck, resolveDefinition, rootRenderNodes, tokenKey, viewParentEl } from './util';
import { attachEmbeddedView, detachEmbeddedView, moveEmbeddedView, renderDetachView } from './view_attach';
const EMPTY_CONTEXT = {};
// Attention: this function is called as top level function.
// Putting any logic in here will destroy closure tree shaking!
export function createComponentFactory(selector: string, componentType: Type<any>, viewDefFactory: ViewDefinitionFactory, inputs: {[propName: string]: string}|null, outputs: {[propName: string]: string}, ngContentSelectors: string[]): ComponentFactory<any> {
return new ComponentFactory(selector, componentType, viewDefFactory, inputs, outputs, ngContentSelectors);
}
export function getComponentViewDefinitionFactory(componentFactory: ComponentFactory<any>): ViewDefinitionFactory {
return (componentFactory as ComponentFactory_).viewDefFactory;
}
class ComponentFactory_ extends ComponentFactory<any> {
 * @internal
 * viewDefFactory: ViewDefinitionFactory;
constructor(selector: string, public componentType: Type<any>, viewDefFactory: ViewDefinitionFactory, private _inputs: {[propName: string]: string}|null, private _outputs: {[propName: string]: string}, public ngContentSelectors: string[]) {
// Attention: this ctor is called as top level function.
// Putting any logic in here will destroy closure tree shaking!
super();
this.viewDefFactory = viewDefFactory;
}
get inputs() {
const inputsArr: {propName: string, templateName: string}[] = [];
const inputs = this._inputs;
for (let propName in inputs) {
const templateName = inputs[propName];
inputsArr.push({propName, templateName});
}
return inputsArr;
}
get outputs() {
const outputsArr: {propName: string, templateName: string}[] = [];
for (let propName in this._outputs) {
const templateName = this._outputs[propName];
outputsArr.push({propName, templateName});
}
return outputsArr;
}
/**
 * Creates a new component.
 */
create(injector: Injector, projectableNodes?: any[][], rootSelectorOrNode?: string|any, ngModule?: NgModuleRef<any>): ComponentRef<any> {
if (!ngModule) {
throw new Error('ngModule should be provided');
}
const viewDef = resolveDefinition(this.viewDefFactory);
const componentNodeIndex = viewDef.nodes[0].element!.componentProvider!.nodeIndex;
const view = Services.createRootView(injector, projectableNodes || [], rootSelectorOrNode, viewDef, ngModule, EMPTY_CONTEXT);
const component = asProviderData(view, componentNodeIndex).instance;
if (rootSelectorOrNode) {
view.renderer.setAttribute(asElementData(view, 0).renderElement, 'ng-version', VERSION.full);
}
return new ComponentRef_(view, new ViewRef_(view), component);
}
}
class ComponentRef_ extends ComponentRef<any> {
public readonly hostView: ViewRef;
public readonly instance: any;
public readonly changeDetectorRef: ChangeDetectorRef;
private _elDef: NodeDef;
constructor(private _view: ViewData, private _viewRef: ViewRef, private _component: any) {
super();
this._elDef = this._view.def.nodes[0];
this.hostView = _viewRef;
this.changeDetectorRef = _viewRef;
this.instance = _component;
}
get location(): ElementRef {
return new ElementRef(asElementData(this._view, this._elDef.nodeIndex).renderElement);
}
get injector(): Injector {
return new Injector_(this._view, this._elDef);
}
get componentType(): Type<any> {
return <any>this._component.constructor;
}
}

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destroy(): void {\n this._viewRef.destroy();\n }\n onDestroy(callback: Function): void {\n
this._viewRef.onDestroy(callback);\n }\n\nexport function createViewContainerData(\n view: ViewData,
elDef: NodeDef, elData: ElementData): ViewContainerData {\n return new ViewContainerRef_(view, elDef,
elData);\n}\n\nclass ViewContainerRef_ implements ViewContainerData {\n /**\n * @internal\n */\n _embeddedViews: ViewData[] = [];\n constructor(private _view: ViewData, private _elDef: NodeDef, private
_data: ElementData) {\n\n get element(): ElementRef {\n return new ElementRef(this._data.renderElement);\n }\n\n get injector(): Injector {\n return new Injector_(this._view, this._elDef);\n }\n\n /** @deprecated No
replacement */\n get parentInjector(): Injector {\n let view = this._view;\n let elDef = this._elDef.parent;\n while (!elDef && view) {\n elDef = viewParentEl(view);\n view = view.parent!;\n }\n return view ?
new Injector_(view, elDef) : new Injector_(this._view, null);\n }\n\n clear(): void {\n const len =
this._embeddedViews.length;\n for (let i = len - 1; i >= 0; i--) {\n const view =
detachEmbeddedView(this._data, i);\n Services.destroyView(view);\n }\n }\n\n get(index: number):
ViewRef|null {\n const view = this._embeddedViews[index];\n if (view) {\n const ref = new
ViewRef_(view);\n ref.attachToViewContainerRef(this);\n return ref;\n }\n return null;\n }\n\n get
length(): number {\n return this._embeddedViews.length;\n }\n\n createEmbeddedView<C>(templateRef:
TemplateRef<C>, context?: C, index?: number):\n EmbeddedViewRef<C> {\n const viewRef =
templateRef.createEmbeddedView(context || <any>{});\n this.insert(viewRef, index);\n return viewRef;\n }\n\n
createComponent<C>(\n componentFactory: ComponentFactory<C>, index?: number, injector?: Injector,\n projectableNodes?: any[][], ngModuleRef?: NgModuleRef<any>): ComponentRef<C> {\n const contextInjector =
injector || this.parentInjector;\n if (!ngModuleRef && !(componentFactory instanceof
ComponentFactoryBoundToModule)) {\n ngModuleRef = contextInjector.get(NgModuleRef);\n }\n const
componentRef =\n componentFactory.create(contextInjector, projectableNodes, undefined, ngModuleRef);\n this.insert(componentRef.hostView, index);\n return componentRef;\n }\n\n insert(viewRef: ViewRef, index?:
number): ViewRef {\n if (viewRef.destroyed) {\n throw new Error('Cannot insert a destroyed View in a
ViewContainer!');\n }\n const viewRef_ = <ViewRef_>viewRef;\n const viewData = viewRef._.view;\n attachEmbeddedView(this._view, this._data, index, viewData);\n viewRef_.attachToViewContainerRef(this);\n return viewRef;\n }\n\n move(viewRef: ViewRef_, currentIndex: number): ViewRef {\n if (viewRef.destroyed)
{\n throw new Error('Cannot move a destroyed View in a ViewContainer!');\n }\n const previousIndex =
this._embeddedViews.indexOf(viewRef_.view);\n moveEmbeddedView(this._data, previousIndex,
currentIndex);\n return viewRef;\n }\n\n indexOf(viewRef: ViewRef): number {\n return
this._embeddedViews.indexOf((<ViewRef_>viewRef)._view);\n }\n\n remove(index?: number): void {\n const
viewData = detachEmbeddedView(this._data, index);\n if (viewData) {\n Services.destroyView(viewData);\n }\n }\n\n detach(index?: number): ViewRef|null {\n const view = detachEmbeddedView(this._data, index);\n return view ? new ViewRef_(view) : null;\n }\n}\n\nexport function createChangeDetectorRef(view: ViewData):
ChangeDetectorRef {\n return new ViewRef_(view);\n}\n\nexport class ViewRef_ implements
EmbeddedViewRef<any>, InternalViewRef {\n /** @internal */\n _view: ViewData;\n private
_viewContainerRef: ViewContainerRef|null;\n private _appRef: ViewRefTracker|null;\n\n constructor(_view:
ViewData) {\n this._view = _view;\n this._viewContainerRef = null;\n this._appRef = null;\n }\n\n get
rootNodes(): any[] {\n return rootRenderNodes(this._view);\n }\n\n get context() {\n return
this._view.context;\n }\n\n get destroyed(): boolean {\n return (this._view.state & ViewState.Destroyed) !== 0;\n }\n\n markForCheck(): void {\n markParentViewsForCheck(this._view);\n }\n\n detach(): void {\n this._view.state &= ~ViewState.Attached;\n }\n\n detectChanges(): void {\n const fs =
this._view.root.rendererFactory;\n if (fs.begin) {\n fs.begin();\n }\n try {\n Services.checkAndUpdateView(this._view);\n } finally {\n if (fs.end) {\n fs.end();\n }\n }\n }\n\n checkNoChanges(): void {\n Services.checkNoChangesView(this._view);\n }\n\n reattach(): void {\n this._view.state |= ViewState.Attached;\n }\n\n onDestroy(callback: Function) {\n if (!this._view.disposables) {\n this._view.disposables = [];\n }\n this._view.disposables.push(<any>callback);\n }\n\n destroy() {\n if
(this._appRef) {\n this._appRef.detachView(this);\n } else if (this._viewContainerRef) {\n

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this._viewContainerRef.detach(this._viewContainerRef.indexOf(this));\n }\n
Services.destroyView(this._view);\n }\n\n detachFromAppRef() {\n this._appRef = null;\n
renderDetachView(this._view);\n Services.dirtyParentQueries(this._view);\n }\n\n attachToAppRef(appRef:
ViewRefTracker) {\n if (this._viewContainerRef) {\n throw new Error("This view is already attached to a
ViewContainer!");\n }\n this._appRef = appRef;\n }\n\n attachToViewContainerRef(vcRef: ViewContainerRef)
{\n if (this._appRef) {\n throw new Error("This view is already attached directly to the ApplicationRef!");\n
}\n this._viewContainerRef = vcRef;\n }\n}\n\nexport function createTemplateData(view: ViewData, def:
NodeDef): TemplateData {\n return new TemplateRef_(view, def);\n}\n\n\nclass TemplateRef_ extends
TemplateRef<any> implements TemplateData {\n /**\n * @internal\n *\n // TODO(issue/24571): remove '!'.\n
_projectedViews!: ViewData[];\n\n constructor(private _parentView: ViewData, private _def: NodeDef) {\n
super();\n }\n\n createEmbeddedView(context: any): EmbeddedViewRef<any> {\n return new
ViewRef_(Services.createEmbeddedView(\n this._parentView, this._def, this._def.element!.template !,
context));\n }\n\n get elementRef(): ElementRef {\n return new ElementRef(asElementData(this._parentView,
this._def.nodeIndex).renderElement);\n }\n}\n\nexport function createInjector(view: ViewData, elDef: NodeDef):
Injector {\n return new Injector_(view, elDef);\n}\n\n\nclass Injector_ implements Injector {\n constructor(private
view: ViewData, private elDef: NodeDef|null) {\n get(token: any, notFoundValue: any =
Injector.THROW_IF_NOT_FOUND): any {\n const allowPrivateServices =\n this.elDef ? (this.elDef.flags &
NodeFlags.ComponentView) !== 0 : false;\n return Services.resolveDep(\n this.view, this.elDef,
allowPrivateServices,\n {flags: DepFlags.None, token, tokenKey: tokenKey(token)}, notFoundValue);\n
}\n}\n\nexport function nodeValue(view: ViewData, index: number): any {\n const def = view.def.nodes[index];\n
if (def.flags & NodeFlags.TypeElement) {\n const elData = asElementData(view, def.nodeIndex);\n return
def.element!.template ? elData.template : elData.renderElement;\n } else if (def.flags & NodeFlags.TypeText) {\n
return asTextData(view, def.nodeIndex).renderText;\n } else if (def.flags & (NodeFlags.CatProvider |
NodeFlags.TypePipe)) {\n return asProviderData(view, def.nodeIndex).instance;\n }\n throw new Error("Illegal
state: read nodeValue for node index ${index}");\n}\n\nexport function createNgModuleRef(\n moduleType:
Type<any>, parent: Injector, bootstrapComponents: Type<any>[],\n def: NgModuleDefinition):
NgModuleRef<any> {\n return new NgModuleRef_(moduleType, parent, bootstrapComponents, def);\n}\n\n\nclass
NgModuleRef_ implements NgModuleData, InternalNgModuleRef<any> {\n private _destroyListeners: (() =>
void)[] = [];\n private _destroyed: boolean = false;\n /** @internal *\n // TODO(issue/24571): remove '!'.\n
_providers!: any[];\n /** @internal *\n // TODO(issue/24571): remove '!'.\n _modules!: any[];\n\n readonly
injector: Injector = this;\n\n constructor(\n private _moduleType: Type<any>, public _parent: Injector,\n
public _bootstrapComponents: Type<any>[], public _def: NgModuleDefinition) {\n initNgModule(this);\n }\n\n
get(token: any, notFoundValue: any = Injector.THROW_IF_NOT_FOUND,\n injectFlags: InjectFlags =
InjectFlags.Default): any {\n let flags = DepFlags.None;\n if (injectFlags & InjectFlags.SkipSelf) {\n
flags |= DepFlags.SkipSelf;\n } else if (injectFlags & InjectFlags.Self) {\n flags |= DepFlags.Self;\n }\n
return resolveNgModuleDep(\n this, {token: token, tokenKey: tokenKey(token), flags: flags}, notFoundValue);\n
}\n\n get instance() {\n return this.get(this._moduleType);\n }\n\n get componentFactoryResolver() {\n return
this.get(ComponentFactoryResolver);\n }\n\n destroy(): void {\n if (this._destroyed) {\n throw new Error(\n
`The ng module ${stringify(this.instance.constructor)} has already been destroyed.`);\n }\n this._destroyed =
true;\n callNgModuleLifecycle(this, NodeFlags.OnDestroy);\n this._destroyListeners.forEach((listener) =>
listener());\n }\n\n onDestroy(callback: () => void): void {\n this._destroyListeners.push(callback);\n
}\n}\n\n"/**\n * @license\n * Copyright Google LLC All Rights Reserved.\n *\n * Use of this source code is
governed by an MIT-style license that can be\n * found in the LICENSE file at https://angular.io/license\n
*\n\nimport {ChangeDetectorRef, SimpleChange, SimpleChanges, WrappedValue} from
'./change_detection/change_detection';\nimport {INJECTOR, Injector, resolveForwardRef} from './di';\nimport
{ElementRef} from './linker/element_ref';\nimport {TemplateRef} from './linker/template_ref';\nimport
{ViewContainerRef} from './linker/view_container_ref';\nimport {Renderer2} from './render/api';\nimport
{isObservable} from './util/lang';\nimport {stringify} from './util/stringify';\nimport {createChangeDetectorRef,

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createInjector } from './refs';\nimport { asElementData, asProviderData, BindingDef, BindingFlags, DepDef,
DepFlags, NodeDef, NodeFlags, OutputDef, OutputType, ProviderData, QueryValueType, Services,
shouldCallLifecycleInitHook, ViewData, ViewFlags, ViewState } from './types';\nimport { calcBindingFlags,
checkBinding, dispatchEvent, isComponentView, splitDepsDsl, splitMatchedQueriesDsl, tokenKey, viewParentEl }
from './util';\n\nconst Renderer2TokenKey = tokenKey(Renderer2);\nconst ElementRefTokenKey =
tokenKey(ElementRef);\nconst ViewContainerRefTokenKey = tokenKey(ViewContainerRef);\nconst
TemplateRefTokenKey = tokenKey(TemplateRef);\nconst ChangeDetectorRefTokenKey =
tokenKey(ChangeDetectorRef);\nconst InjectorRefTokenKey = tokenKey(Injector);\nconst
INJECTORRefTokenKey = tokenKey(INJECTOR);\n\nexport function directiveDef(\n checkIndex: number,
flags: NodeFlags, matchedQueries: null|[string | number, QueryValueType][],\n childCount: number, ctor: any,
deps: ([DepFlags, any]|any)[],\n props?: null|{[name: string]: [number, string]},\n outputs?: null|{[name: string]:
string}): NodeDef {\n const bindings: BindingDef[] = [];\n if (props) {\n for (let prop in props) {\n const
[bindingIndex, nonMinifiedName] = props[prop];\n bindings[bindingIndex] = {\n flags:
BindingFlags.TypeProperty,\n name: prop,\n nonMinifiedName,\n ns: null,\n securityContext:
null,\n suffix: null\n };\n }\n }\n const outputDefs: OutputDef[] = [];\n if (outputs) {\n for (let
propName in outputs) {\n outputDefs.push(\n {type: OutputType.DirectiveOutput, propName, target: null,
eventName: outputs[propName]});\n }\n }\n flags |= NodeFlags.TypeDirective;\n return _def(\n checkIndex,
flags, matchedQueries, childCount, ctor, ctor, deps, bindings, outputDefs);\n}\n\nexport function pipeDef(flags:
NodeFlags, ctor: any, deps: ([DepFlags, any]|any)[]): NodeDef {\n flags |= NodeFlags.TypePipe;\n return _def(-1,
flags, null, 0, ctor, ctor, deps);\n}\n\nexport function providerDef(\n flags: NodeFlags, matchedQueries:
null|[string | number, QueryValueType][], token: any,\n value: any, deps: ([DepFlags, any]|any)[]): NodeDef {\n
return _def(-1, flags, matchedQueries, 0, token, value, deps);\n}\n\nexport function _def(\n checkIndex: number,
flags: NodeFlags, matchedQueriesDsl: [string|number, QueryValueType][]|null,\n childCount: number, token: any,
value: any, deps: ([DepFlags, any]|any)[],\n bindings?: BindingDef[], outputs?: OutputDef[]): NodeDef {\n const
{matchedQueries, references, matchedQueryIds} = splitMatchedQueriesDsl(matchedQueriesDsl);\n if (!outputs)
{\n outputs = [];\n }\n if (!bindings) {\n bindings = [];\n }\n // Need to resolve forwardRefs as e.g. for
`useValue` we\n // lowered the expression and then stopped evaluating it,\n // i.e. also didn't unwrap it.\n value =
resolveForwardRef(value);\n const depDefs = splitDepsDsl(deps, stringify(token));\n return {\n // will bet set
by the view definition\n nodeIndex: -1,\n parent: null,\n renderParent: null,\n bindingIndex: -1,\n
outputIndex: -1,\n // regular values\n checkIndex,\n flags,\n childFlags: 0,\n directChildFlags: 0,\n
childMatchedQueries: 0,\n matchedQueries,\n matchedQueryIds,\n references,\n ngContentIndex: -1,\n
childCount,\n bindings,\n bindingFlags: calcBindingFlags(bindings),\n outputs,\n element: null,\n provider:
{token, value, deps: depDefs},\n text: null,\n query: null,\n ngContent: null\n };\n}\n\nexport function
createProviderInstance(view: ViewData, def: NodeDef): any {\n return _createProviderInstance(view,
def);\n}\n\nexport function createPipeInstance(view: ViewData, def: NodeDef): any {\n // deps are looked up from
component.\n let compView = view;\n while (compView.parent && !isComponentView(compView)) {\n
compView = compView.parent;\n }\n // pipes can see the private services of the component\n const
allowPrivateServices = true;\n // pipes are always eager and classes!\n return createClass(\n compView.parent!,
viewParentEl(compView)!, allowPrivateServices, def.provider!.value,\n def.provider!.deps);\n}\n\nexport
function createDirectiveInstance(view: ViewData, def: NodeDef): any {\n // components can see other private
services, other directives can't.\n const allowPrivateServices = (def.flags & NodeFlags.Component) > 0;\n //
directives are always eager and classes!\n const instance =\n createClass(view, def.parent!, allowPrivateServices,
def.provider!.value, def.provider!.deps);\n if (def.outputs.length) {\n for (let i = 0; i < def.outputs.length; i++) {\n
const output = def.outputs[i];\n const outputObservable = instance[output.propName!];\n if
(isObservable(outputObservable)) {\n const subscription = outputObservable.subscribe(\n eventHandlerClosure(view, def.parent!.nodeIndex, output.eventName));\n view.disposables![def.outputIndex +
i] = subscription.unsubscribe.bind(subscription);\n } else {\n throw new Error(\n `@Output
${output.propName} not initialized in '${instance.constructor.name}'.`);\n }\n }\n return

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instance;\n}\n\nfunction eventHandlerClosure(view: ViewData, index: number, eventName: string) {\n return
(event: any) => dispatchEvent(view, index, eventName, event);\n}\n\nexport function
checkAndUpdateDirectiveInline(\n view: ViewData, def: NodeDef, v0: any, v1: any, v2: any, v3: any, v4: any, v5:
any, v6: any,\n v7: any, v8: any, v9: any): boolean {\n const providerData = asProviderData(view,
def.nodeIndex);\n const directive = providerData.instance;\n let changed = false;\n let changes: SimpleChanges =
undefined!;\n const bindLen = def.bindings.length;\n if (bindLen > 0 && checkBinding(view, def, 0, v0)) {\n
changed = true;\n changes = updateProp(view, providerData, def, 0, v0, changes);\n }\n if (bindLen > 1 &&
checkBinding(view, def, 1, v1)) {\n changed = true;\n changes = updateProp(view, providerData, def, 1, v1,
changes);\n }\n if (bindLen > 2 && checkBinding(view, def, 2, v2)) {\n changed = true;\n changes =
updateProp(view, providerData, def, 2, v2, changes);\n }\n if (bindLen > 3 && checkBinding(view, def, 3, v3)) {\n
changed = true;\n changes = updateProp(view, providerData, def, 3, v3, changes);\n }\n if (bindLen > 4 &&
checkBinding(view, def, 4, v4)) {\n changed = true;\n changes = updateProp(view, providerData, def, 4, v4,
changes);\n }\n if (bindLen > 5 && checkBinding(view, def, 5, v5)) {\n changed = true;\n changes =
updateProp(view, providerData, def, 5, v5, changes);\n }\n if (bindLen > 6 && checkBinding(view, def, 6, v6)) {\n
changed = true;\n changes = updateProp(view, providerData, def, 6, v6, changes);\n }\n if (bindLen > 7 &&
checkBinding(view, def, 7, v7)) {\n changed = true;\n changes = updateProp(view, providerData, def, 7, v7,
changes);\n }\n if (bindLen > 8 && checkBinding(view, def, 8, v8)) {\n changed = true;\n changes =
updateProp(view, providerData, def, 8, v8, changes);\n }\n if (bindLen > 9 && checkBinding(view, def, 9, v9)) {\n
changed = true;\n changes = updateProp(view, providerData, def, 9, v9, changes);\n }\n if (changes) {\n
directive.ngOnChanges(changes);\n }\n if ((def.flags & NodeFlags.OnInit) &&\n
shouldCallLifecycleInitHook(view, ViewState.InitState_CallingOnInit, def.nodeIndex)) {\n
directive.ngOnInit();\n }\n if (def.flags & NodeFlags.DoCheck) {\n directive.ngDoCheck();\n }\n return
changed;\n}\n\nexport function checkAndUpdateDirectiveDynamic(\n view: ViewData, def: NodeDef, values:
any[]): boolean {\n const providerData = asProviderData(view, def.nodeIndex);\n const directive =
providerData.instance;\n let changed = false;\n let changes: SimpleChanges = undefined!;\n for (let i = 0; i <
values.length; i++) {\n if (checkBinding(view, def, i, values[i])) {\n changed = true;\n changes =
updateProp(view, providerData, def, i, values[i], changes);\n }\n }\n if (changes) {\n
directive.ngOnChanges(changes);\n }\n if ((def.flags & NodeFlags.OnInit) &&\n
shouldCallLifecycleInitHook(view, ViewState.InitState_CallingOnInit, def.nodeIndex)) {\n
directive.ngOnInit();\n }\n if (def.flags & NodeFlags.DoCheck) {\n directive.ngDoCheck();\n }\n return
changed;\n}\n\nfunction _createProviderInstance(view: ViewData, def: NodeDef): any {\n // private services can
see other private services\n const allowPrivateServices = (def.flags & NodeFlags.PrivateProvider) > 0;\n const
providerDef = def.provider;\n switch (def.flags & NodeFlags.Types) {\n case NodeFlags.TypeClassProvider:\n
return createClass(\n view, def.parent!, allowPrivateServices, providerDef!.value, providerDef!.deps);\n case
NodeFlags.TypeFactoryProvider:\n return callFactory(\n view, def.parent!, allowPrivateServices,
providerDef!.value, providerDef!.deps);\n case NodeFlags.TypeUseExistingProvider:\n return
resolveDep(view, def.parent!, allowPrivateServices, providerDef!.deps[0]);\n case
NodeFlags.TypeValueProvider:\n return providerDef!.value;\n }\n}\n\nfunction createClass(\n view:
ViewData, elDef: NodeDef, allowPrivateServices: boolean, ctor: any, deps: DepDef[]): any {\n const len =
deps.length;\n switch (len) {\n case 0:\n return new ctor();\n case 1:\n return new ctor(resolveDep(view,
elDef, allowPrivateServices, deps[0]));\n case 2:\n return new ctor(\n resolveDep(view, elDef,
allowPrivateServices, deps[0]),\n resolveDep(view, elDef, allowPrivateServices, deps[1]));\n case 3:\n
return new ctor(\n resolveDep(view, elDef, allowPrivateServices, deps[0]),\n resolveDep(view, elDef,
allowPrivateServices, deps[1]),\n resolveDep(view, elDef, allowPrivateServices, deps[2]));\n default:\n
const depValues = [];\n for (let i = 0; i < len; i++) {\n depValues.push(resolveDep(view, elDef,
allowPrivateServices, deps[i]));\n }\n return new ctor(...depValues);\n }\n}\n\nfunction callFactory(\n view:
ViewData, elDef: NodeDef, allowPrivateServices: boolean, factory: any,\n deps: DepDef[]): any {\n const len =
deps.length;\n switch (len) {\n case 0:\n return factory();\n case 1:\n return factory(resolveDep(view,

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elDef, allowPrivateServices, deps[0]));\n case 2:\n return factory(\n resolveDep(view, elDef,
allowPrivateServices, deps[0]),\n resolveDep(view, elDef, allowPrivateServices, deps[1]));\n case 3:\n
return factory(\n resolveDep(view, elDef, allowPrivateServices, deps[0]),\n resolveDep(view, elDef,
allowPrivateServices, deps[1]),\n resolveDep(view, elDef, allowPrivateServices, deps[2]));\n default:\n
const depValues = [];\n for (let i = 0; i < len; i++) {\n depValues.push(resolveDep(view, elDef,
allowPrivateServices, deps[i]));\n }\n return factory(...depValues);\n }\n}\n\n// This default value is when
checking the hierarchy for a token.\n\n// It means both:\n\n// - the token is not provided by the current injector,\n\n// -
only the element injectors should be checked (ie do not check module injectors\n\n//\n\n// mod1\n\n// \n\n//
el1 mod2\n\n// \n\n// el2\n\n// When requesting el2.injector.get(token), we should check in the following
order and return the\n\n// first found value:\n\n// - el2.injector.get(token, default)\n\n// - el1.injector.get(token,
NOT_FOUND_CHECK_ONLY_ELEMENT_INJECTOR) -> do not check the module\n\n// -
mod2.injector.get(token, default)\n\nexport const NOT_FOUND_CHECK_ONLY_ELEMENT_INJECTOR =
{\n}\n\nexport function resolveDep(\n view: ViewData, elDef: NodeDef, allowPrivateServices: boolean, depDef:
DepDef,\n notFoundValue: any = Injector.THROW_IF_NOT_FOUND): any {\n if (depDef.flags &
DepFlags.Value) {\n return depDef.token;\n }\n const startView = view;\n if (depDef.flags &
DepFlags.Optional) {\n notFoundValue = null;\n }\n const tokenKey = depDef.tokenKey;\n\n if (tokenKey ===
ChangeDetectorRefTokenKey) {\n // directives on the same element as a component should be able to control the
change detector\n // of that component as well.\n allowPrivateServices = !(elDef &&
elDef.element!.componentView);\n }\n\n if (elDef && (depDef.flags & DepFlags.SkipSelf)) {\n
allowPrivateServices = false;\n elDef = elDef.parent!;\n }\n\n let searchView: ViewData|null = view;\n while
(searchView) {\n if (elDef) {\n switch (tokenKey) {\n case Renderer2TokenKey: {\n const
compView = findCompView(searchView, elDef, allowPrivateServices);\n return compView.renderer;\n
}\n case ElementRefTokenKey:\n return new ElementRef(asElementData(searchView,
elDef.nodeIndex).renderElement);\n case ViewContainerRefTokenKey:\n return
asElementData(searchView, elDef.nodeIndex).viewContainer;\n case TemplateRefTokenKey: {\n if
(elDef.element!.template) {\n return asElementData(searchView, elDef.nodeIndex).template;\n }\n
}\n break;\n }\n case ChangeDetectorRefTokenKey: {\n let cdView = findCompView(searchView, elDef,
allowPrivateServices);\n return createChangeDetectorRef(cdView);\n }\n case
InjectorRefTokenKey:\n case INJECTORRefTokenKey:\n return createInjector(searchView, elDef);\n
default:\n const providerDef =\n (allowPrivateServices ? elDef.element!.allProviders :\n
elDef.element!.publicProviders)![tokenKey];\n if (providerDef) {\n let providerData =
asProviderData(searchView, providerDef.nodeIndex);\n if (!providerData) {\n providerData =
{instance: _createProviderInstance(searchView, providerDef)};\n
searchView.nodes[providerDef.nodeIndex] = providerData as any;\n }\n return
providerData.instance;\n }\n }\n }\n\n allowPrivateServices = isComponentView(searchView);\n
elDef = viewParentEl(searchView)!;\n searchView = searchView.parent!;\n\n if (depDef.flags & DepFlags.Self)
{\n searchView = null;\n }\n }\n\n const value = startView.root.injector.get(depDef.token,
NOT_FOUND_CHECK_ONLY_ELEMENT_INJECTOR);\n\n if (value !==
NOT_FOUND_CHECK_ONLY_ELEMENT_INJECTOR ||\n notFoundValue ===
NOT_FOUND_CHECK_ONLY_ELEMENT_INJECTOR) {\n // Return the value from the root element injector
when\n // - it provides it\n // (value !== NOT_FOUND_CHECK_ONLY_ELEMENT_INJECTOR)\n // - the
module injector should not be checked\n // (notFoundValue ===
NOT_FOUND_CHECK_ONLY_ELEMENT_INJECTOR)\n return value;\n }\n\n return
startView.root.ngModule.injector.get(depDef.token, notFoundValue);\n}\n\nfunction findCompView(view:
ViewData, elDef: NodeDef, allowPrivateServices: boolean) {\n let compView: ViewData;\n if
(allowPrivateServices) {\n compView = asElementData(view, elDef.nodeIndex).componentView;\n } else {\n
compView = view;\n while (compView.parent && !isComponentView(compView)) {\n compView =
compView.parent;\n }\n }\n return compView;\n}\n\nfunction updateProp(\n view: ViewData, providerData:

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ProviderData, def: NodeDef, bindingIdx: number, value: any, changes: SimpleChanges): SimpleChanges {
 (def.flags & NodeFlags.Component) {
 const compView = asElementData(view,
 def.parent!.nodeIndex).componentView;
 if (compView.def.flags & ViewFlags.OnPush) {
 compView.state
 |= ViewState.ChecksEnabled;
 }
 const binding = def.bindings[bindingIdx];
 const propName =
 binding.name!;
 // Note: This is still safe with Closure Compiler as
 // the user passed in the property name as an
 object has to `providerDef`,
 // so Closure Compiler will have renamed the property correctly already.
 providerData.instance[propName] = value;
 if (def.flags & NodeFlags.OnChanges) {
 changes = changes ||
 {};
 const oldValue = WrappedValue.unwrap(view.oldValues[def.bindingIndex + bindingIdx]);
 const binding =
 def.bindings[bindingIdx];
 changes[binding.nonMinifiedName!] =
 new SimpleChange(oldValue, value,
 (view.state & ViewState.FirstCheck) !== 0);
 view.oldValues[def.bindingIndex + bindingIdx] = value;
 }
 return changes;
 }
 // This function calls the ngAfterContentCheck, ngAfterContentInit,
 ngAfterViewCheck,
 and ngAfterViewInit lifecycle hooks (depending on the node
 flags in lifecycle). Unlike ngDoCheck,
 ngOnChanges and ngOnInit, which are
 called during a pre-order traversal of the view tree (that is calling the
 parent hooks before the child hooks) these events are sent in using a
 post-order traversal of the tree (children
 before parents). This changes the
 meaning of initIndex in the view state. For ngOnInit, initIndex tracks the
 expected nodeIndex which a ngOnInit should be called. When sending
 ngAfterContentInit and ngAfterViewInit
 it is the expected count of
 ngAfterContentInit or ngAfterViewInit methods that have been called. This
 ensure
 that despite being called recursively or after picking up after an
 exception, the ngAfterContentInit or
 ngAfterViewInit will be called on the
 correct nodes. Consider for example, the following (where E is an
 element
 and D is a directive)
 Tree:
 pre-order index post-order index
 E1 0 6 E2
 1 1 D3 2 0 E4 3 5 E5 4 4 E6 5
 2 E7 6 3
 As can be seen, the post-order index has an unclear relationship to the
 pre-order
 index (postOrderIndex === preOrderIndex - parentCount + childCount).
 Since number of calls to
 ngAfterContentInit and ngAfterViewInit
 are stable (will be the same for the same view regardless of exceptions
 or
 recursion) we just need to count them which will roughly correspond to the
 post-order
 index (it skips
 elements and directives that do not have
 lifecycle hooks).
 For example, if an exception is raised in the
 E6.onAfterViewInit() the
 initIndex is left at 3 (by shouldCallLifecycleInitHook() which set it to
 initIndex +
 1). When checkAndUpdateView() is called again D3, E2 and E6 will
 not have their ngAfterViewInit() called but,
 starting with E7, the rest of
 the view will begin getting ngAfterViewInit() called until a check and
 pass is
 complete.
 This algorithm also handles recursion. Consider if E4's ngAfterViewInit()
 indirectly calls E1's
 ChangeDetectorRef.detectChanges(). The expected
 initIndex is set to 6, the recursive checkAndUpdateView()
 starts walk again.
 D3, E2, E6, E7, E5 and E4 are skipped, ngAfterViewInit() is called on E1.
 When the
 recursion returns the initIndex will be 7 so E1 is skipped as it
 has already been called in the recursively called
 checkAnUpdateView().
 export function callLifecycleHooksChildrenFirst(view: ViewData, lifecycles: NodeFlags)
 {
 if (!(view.def.nodeFlags & lifecycles)) {
 return;
 }
 const nodes = view.def.nodes;
 let initIndex = 0;
 for (let i = 0; i < nodes.length; i++) {
 const nodeDef = nodes[i];
 let parent = nodeDef.parent;
 if (!parent
 && nodeDef.flags & lifecycles) {
 // matching root node (e.g. a pipe)
 callProviderLifecycles(view, i,
 nodeDef.flags & lifecycles, initIndex++);
 }
 if ((nodeDef.childFlags & lifecycles) === 0) {
 // no child
 matches one of the lifecycles
 i += nodeDef.childCount;
 }
 while (parent && (parent.flags &
 NodeFlags.TypeElement) &&
 i === parent.nodeIndex + parent.childCount) {
 // last child of an
 element
 if (parent.directChildFlags & lifecycles) {
 initIndex = callElementProvidersLifecycles(view,
 parent, lifecycles, initIndex);
 }
 parent = parent.parent;
 }
 }
 }
 function
 callElementProvidersLifecycles(
 view: ViewData, elDef: NodeDef, lifecycles: NodeFlags, initIndex: number):
 number {
 for (let i = elDef.nodeIndex + 1; i <= elDef.nodeIndex + elDef.childCount; i++) {
 const nodeDef =
 view.def.nodes[i];
 if (nodeDef.flags & lifecycles) {
 callProviderLifecycles(view, i, nodeDef.flags &
 lifecycles, initIndex++);
 }
 // only visit direct children
 i += nodeDef.childCount;
 }
 return
 initIndex;
 }
 function callProviderLifecycles(
 view: ViewData, index: number, lifecycles: NodeFlags,
 initIndex: number) {
 const providerData = asProviderData(view, index);
 if (!providerData) {
 return;
 }
 }

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const provider = providerData.instance;\n if (!provider) {\n return;\n }\n Services.setCurrentNode(view,
index);\n if (lifecycles & NodeFlags.AfterContentInit &&\n shouldCallLifecycleInitHook(view,
ViewState.InitState_CallingAfterContentInit, initIndex)) {\n provider.ngAfterContentInit();\n }\n if (lifecycles &
NodeFlags.AfterContentChecked) {\n provider.ngAfterContentChecked();\n }\n if (lifecycles &
NodeFlags.AfterViewInit &&\n shouldCallLifecycleInitHook(view, ViewState.InitState_CallingAfterViewInit,
initIndex)) {\n provider.ngAfterViewInit();\n }\n if (lifecycles & NodeFlags.AfterViewChecked) {\n
provider.ngAfterViewChecked();\n }\n if (lifecycles & NodeFlags.OnDestroy) {\n provider.ngOnDestroy();\n
}\n}\n", "/*\n * @license\n * Copyright Google LLC All Rights Reserved.\n *\n * Use of this source code is
governed by an MIT-style license that can be\n * found in the LICENSE file at https://angular.io/license\n
*/\n\nimport { ChangeDetectorRef as ViewEngine_ChangeDetectorRef } from
'./change_detection/change_detector_ref';\nimport { InjectionToken } from './di/injection_token';\nimport { Injector }
from './di/injector';\nimport { InjectFlags } from './di/interface/injector';\nimport { Type } from
'./interface/type';\nimport { ComponentFactory as viewEngine_ComponentFactory, ComponentRef as
viewEngine_ComponentRef } from './linker/component_factory';\nimport { ComponentFactoryResolver as
viewEngine_ComponentFactoryResolver } from './linker/component_factory_resolver';\nimport { createElementRef,
ElementRef as viewEngine_ElementRef } from './linker/element_ref';\nimport { NgModuleRef as
viewEngine_NgModuleRef } from './linker/ng_module_factory';\nimport { RendererFactory2 } from
'./render/api';\nimport { Sanitizer } from './sanitization/sanitizer';\nimport { VERSION } from './version';\nimport
{ NOT_FOUND_CHECK_ONLY_ELEMENT_INJECTOR } from './view/provider';\nimport
{ assertComponentType } from './assert';\nimport { createRootComponent, createRootComponentView,
createRootContext, LifecycleHooksFeature } from './component';\nimport { getComponentDef } from
'./definition';\nimport { NodeInjector } from './di';\nimport { createLView, createTVView, locateHostElement,
renderView } from './instructions/shared';\nimport { ComponentDef } from './interfaces/definition';\nimport
{ TContainerNode, TElementContainerNode, TElementNode, TNode } from './interfaces/node';\nimport
{ domRendererFactory3, RendererFactory3 } from './interfaces/renderer';\nimport { RNode } from
'./interfaces/renderer_dom';\nimport { HEADER_OFFSET, LView, LViewFlags, TViewType } from
'./interfaces/view';\nimport { MATH_ML_NAMESPACE, SVG_NAMESPACE } from './namespaces';\nimport
{ createElementNode, writeDirectClass } from './node_manipulation';\nimport { extractAttrsAndClassesFromSelector,
stringifyCSSSelectorList } from './node_selector_matcher';\nimport { enterView, leaveView } from './state';\nimport
{ setUpAttributes } from './util/attrs_utils';\nimport { defaultScheduler } from './util/misc_utils';\nimport { getTNode }
from './util/view_utils';\nimport { RootViewRef, ViewRef } from './view_ref';\n\nexport class
ComponentFactoryResolver extends viewEngine_ComponentFactoryResolver {\n /**\n * @param ngModule The
NgModuleRef to which all resolved factories are bound.\n *\n * constructor(private ngModule?:
viewEngine_NgModuleRef<any>) {\n super();\n }\n\n resolveComponentFactory<T>(component: Type<T>):
viewEngine_ComponentFactory<T> {\n ngDevMode && assertComponentType(component);\n const
componentDef = getComponentDef(component)!;\n return new ComponentFactory(componentDef,
this.ngModule);\n }\n\n function toRefArray(map: {[key: string]: string}): { propName: string; templateName:
string; }[] {\n const array: { propName: string; templateName: string; }[] = [];\n for (let nonMinified in map) {\n if
(map.hasOwnProperty(nonMinified)) {\n const minified = map[nonMinified];\n array.push({ propName:
minified, templateName: nonMinified});\n }\n }\n return array;\n }\n\n function getNamespace(elementName:
string): string|null {\n const name = elementName.toLowerCase();\n return name === 'svg' ? SVG_NAMESPACE
: (name === 'math' ? MATH_ML_NAMESPACE : null);\n }\n\n /**\n * A change detection scheduler token for
{@link RootContext}. This token is the default value used\n * for the default `RootContext` found in the {@link
ROOT_CONTEXT} token.\n *\n * export const SCHEDULER = new InjectionToken<<(fn: () => void) =>
void>>('SCHEDULER_TOKEN', {\n providedIn: 'root',\n factory: () => defaultScheduler,\n });\n\n function
createChainedInjector(rootViewInjector: Injector, moduleInjector: Injector): Injector {\n return {\n get:
<T>(token: Type<T>|InjectionToken<T>, notFoundValue?: T, flags?: InjectFlags): T => {\n const value =
rootViewInjector.get(token, NOT_FOUND_CHECK_ONLY_ELEMENT_INJECTOR as T, flags);\n if (value

```





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}) as never;\n}\n", "/*\n * @license\n * Copyright Google LLC All Rights Reserved.\n *\n * Use of this source
code is governed by an MIT-style license that can be\n * found in the LICENSE file at https://angular.io/license\n
*\n\nimport {Type} from './interface/type';\nimport {NgModuleType} from
 './metadata/ng_module_def';\nimport {autoRegisterModuleById, getNgModuleDef} from
 './render3/definition';\nimport {maybeUnwrapFn} from './render3/util/misc_utils';\nimport {stringify} from
 './util/stringify';\n\nimport {NgModuleFactory} from './ng_module_factory';\n\n\n/**\n * Map of module-id to the
corresponding NgModule.\n * - In pre Ivy we track NgModuleFactory,\n * - In post Ivy we track the
NgModuleType\n */\nconst modules = new Map<string, NgModuleFactory<any>|NgModuleType>();\n\n/**\n *
Registers a loaded module. Should only be called from generated NgModuleFactory code.\n * @publicApi\n
*/\nexport function registerModuleFactory(id: string, factory: NgModuleFactory<any>) {\n const existing =
modules.get(id) as NgModuleFactory<any>;\n assertSameOrNotExisting(id, existing && existing.moduleType,
factory.moduleType);\n modules.set(id, factory);\n}\n\nfunction assertSameOrNotExisting(id: string, type:
Type<any>|null, incoming: Type<any>): void {\n if (type && type !== incoming) {\n throw new Error(\n
`Duplicate module registered for ${id} - ${stringify(type)} vs ${stringify(type.name)}`);\n }\n}\n\nexport function
registerNgModuleType(ngModuleType: NgModuleType): void {\n const visited = new Set<NgModuleType>();\n
recurse(ngModuleType);\n function recurse(ngModuleType: NgModuleType): void {\n // The imports array of an
NgModule must refer to other NgModules,\n // so an error is thrown if no module definition is available.\n const
def = getNgModuleDef(ngModuleType, /* throwNotFound */ true);\n const id = def.id;\n if (id !== null) {\n
const existing = modules.get(id) as NgModuleType | null;\n assertSameOrNotExisting(id, existing,
ngModuleType);\n modules.set(id, ngModuleType);\n }\n}\n\n const imports = maybeUnwrapFn(def.imports) as
NgModuleType[];\n for (const i of imports) {\n if (!visited.has(i)) {\n visited.add(i);\n recurse(i);\n
}\n }\n}\n}\n\nexport function clearModulesForTest(): void {\n modules.clear();\n}\n\nexport function
getRegisteredNgModuleType(id: string) {\n return modules.get(id) || autoRegisterModuleById[id];\n}\n}\n", "/*\n
*\n * @license\n * Copyright Google LLC All Rights Reserved.\n *\n * Use of this source code is governed by an MIT-
style license that can be\n * found in the LICENSE file at https://angular.io/license\n */\n\nimport {Injector} from
 './di/injector';\nimport {INJECTOR} from './di/injector_token';\nimport {InjectFlags} from
 './di/interface/injector';\nimport {createInjectorWithoutInjectorInstances, R3Injector} from
 './di/r3_injector';\nimport {Type} from './interface/type';\nimport {ComponentFactoryResolver as
viewEngine_ComponentFactoryResolver} from './linker/component_factory_resolver';\nimport
 {InternalNgModuleRef, NgModuleFactory as viewEngine_NgModuleFactory, NgModuleRef as
viewEngine_NgModuleRef} from './linker/ng_module_factory';\nimport {registerNgModuleType} from
 './linker/ng_module_factory_registration';\nimport {NgModuleType} from './metadata/ng_module_def';\nimport
 {assertDefined} from './util/assert';\nimport {stringify} from './util/stringify';\n\nimport
 {ComponentFactoryResolver} from './component_ref';\nimport {getNgLocaleIdDef, getNgModuleDef} from
 './definition';\nimport {setLocaleId} from './i18n/i18n_locale_id';\nimport {maybeUnwrapFn} from
 './util/misc_utils';\n\nexport class NgModuleRef<T> extends viewEngine_NgModuleRef<T> implements
InternalNgModuleRef<T> {\n // tslint:disable-next-line:require-internal-with-underscore\n _bootstrapComponents:
Type<any>[] = [];\n // tslint:disable-next-line:require-internal-with-underscore\n _r3Injector: R3Injector;\n
injector: Injector = this;\n instance: T;\n destroyCbs: (() => void)[]|null = [];\n\n // When bootstrapping a module
we have a dependency graph that looks like this:\n // ApplicationRef -> ComponentFactoryResolver ->
NgModuleRef. The problem is that if the\n // module being resolved tries to inject the ComponentFactoryResolver,
it'll create a\n // circular dependency which will result in a runtime error, because the injector doesn't\n // exist yet.
We work around the issue by creating the ComponentFactoryResolver ourselves\n // and providing it, rather than
letting the injector resolve it.\n readonly componentFactoryResolver: ComponentFactoryResolver = new
ComponentFactoryResolver(this);\n\n constructor(ngModuleType: Type<T>, public _parent: Injector|null) {\n
super();\n const ngModuleDef = getNgModuleDef(ngModuleType);\n ngDevMode &&\n assertDefined(\n
ngModuleDef,\n `NgModule '${stringify(ngModuleType)}' is not a subtype of 'NgModuleType'.`);\n\n const ngLocaleIdDef = getNgLocaleIdDef(ngModuleType);\n ngLocaleIdDef && setLocaleId(ngLocaleIdDef);\n
}

```

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 this._bootstrapComponents = maybeUnwrapFn(ngModuleDef!.bootstrap);\n this._r3Injector =
createInjectorWithoutInjectorInstances(\n ngModuleType, _parent,\n [
 {provide: viewEngine_NgModuleRef, useValue: this}, {\n provide:
viewEngine_ComponentFactoryResolver,\n useValue: this.componentFactoryResolver\n }],\n stringify(ngModuleType)) as R3Injector;\n\n // We need to
resolve the injector types separately from the injector creation, because\n // the module might be trying to use this
ref in its constructor for DI which will cause a\n // circular error that will eventually error out, because the injector
isn't created yet.\n this._r3Injector._resolveInjectorDefTypes();\n this.instance = this.get(ngModuleType);\n}\n\nget(token: any, notFoundValue: any = Injector.THROW_IF_NOT_FOUND,\n injectFlags: InjectFlags =
InjectFlags.Default): any {\n if (token === Injector || token === viewEngine_NgModuleRef || token ===
INJECTOR) {\n return this;\n }\n return this._r3Injector.get(token, notFoundValue, injectFlags);\n}\n\ndestroy(): void {\n ngDevMode && assertDefined(this.destroyCbs, 'NgModule already destroyed');\n const
injector = this._r3Injector;\n !injector.destroyed && injector.destroy();\n this.destroyCbs!.forEach(fn => fn());\n this.destroyCbs = null;\n}\n\nonDestroy(callback: () => void): void {\n ngDevMode &&
assertDefined(this.destroyCbs, 'NgModule already destroyed');\n this.destroyCbs!.push(callback);\n}\n\n}\n\nexport class NgModuleFactory<T> extends viewEngine_NgModuleFactory<T> {\n constructor(public
moduleType: Type<T>) {\n super();\n\n const ngModuleDef = getNgModuleDef(moduleType);\n if
(ngModuleDef !== null) {\n // Register the NgModule with Angular's module registry. The location (and hence
timing) of\n // this call is critical to ensure this works correctly (modules get registered when expected)\n // without bloating bundles (modules are registered when otherwise not referenced).\n //\n // In View Engine,
registration occurs in the .ngfactory.js file as a side effect. This has\n // several practical consequences:\n //\n // - If an .ngfactory file is not imported from, the module won't be registered (and can be\n // tree shaken).\n // - If an .ngfactory file is imported from, the module will be registered even if an instance\n // is not actually
created (via `create` below).\n // - Since an .ngfactory file in View Engine references the .ngfactory files of the
NgModule's\n // imports,\n //\n // In Ivy, things are a bit different. .ngfactory files still exist for
compatibility, but are\n // not a required API to use - there are other ways to obtain an NgModuleFactory for a
given\n // NgModule. Thus, relying on a side effect in the .ngfactory file is not sufficient. Instead,\n // the side
effect of registration is added here, in the constructor of NgModuleFactory,\n // ensuring no matter how a factory
is created, the module is registered correctly.\n //\n // An alternative would be to include the registration side
effect inline following the actual\n // NgModule definition. This also has the correct timing, but breaks tree-
shaking - modules\n // will be registered and retained even if they're otherwise never referenced.\n }\n registerNgModuleType(moduleType as NgModuleType);\n }\n\n create(parentInjector: Injector|null):
viewEngine_NgModuleRef<T> {\n return new NgModuleRef(this.moduleType, parentInjector);\n }\n}\n\n"/**\n * @license\n * Copyright Google LLC All Rights Reserved.\n * Use of this source code is governed by an MIT-
style license that can be\n * found in the LICENSE file at https://angular.io/license\n */\nimport
{assertIndexInRange} from './util/assert';\nimport {bindingUpdated, bindingUpdated2, bindingUpdated3,
bindingUpdated4, getBinding, updateBinding} from './bindings';\nimport {LView} from './interfaces/view';\nimport
{getBindingRoot, getLView} from './state';\nimport {NO_CHANGE} from './tokens';\n\n/**\n * Bindings for pure
functions are stored after regular bindings.\n * |-----decls-----|-----vars-----| |----- hostVars
(dir1) -----|\n * |-----\n * | bindings | fn slots | injector | dir1 | host bindings | host slots |\n * |-----\n * |-----\n * | ^\n * | TView.bindingStartIndex\n * | TView.expandoStartIndex\n * | Pure function instructions are given an offset from the binding root. Adding the
offset to the\n * | binding root gives the first index where the bindings are stored. In component views, the binding\n * | root is the bindingStartIndex. In host bindings, the binding root is the expandoStartIndex +\n * | any directive
instances + any hostVars in directives evaluated before it.\n * | See VIEW_DATA.md for more information about
host binding resolution.\n * | If the value hasn't been saved, calls the pure function to store and return
the\n * | value. If it has been saved, returns the saved value.\n * | @param slotOffset the offset from binding root to

```



the reserved slot\n \* @param pureFn Function that returns a value\n \* @param thisArg Optional calling context of pureFn\n \* @returns value\n \* \n \* @codeGenApi\n \* ^\nexport function pureFunction0<T>(slotOffset: number, pureFn: () => T, thisArg?: any): T {\n const bindingIndex = getBindingRoot() + slotOffset;\n const IView = getLView();\n return IView[bindingIndex] === NO\_CHANGE ?\n updateBinding(IView, bindingIndex, thisArg ? pureFn.call(thisArg) : pureFn()) :\n getBinding(IView, bindingIndex);\n}\n\n/\*\*\n \* If the value of the provided exp has changed, calls the pure function to return\n \* an updated value. Or if the value has not changed, returns cached value.\n \* \n \* @param slotOffset the offset from binding root to the reserved slot\n \* @param pureFn Function that returns an updated value\n \* @param exp Updated expression value\n \* @param thisArg Optional calling context of pureFn\n \* @returns Updated or cached value\n \* \n \* @codeGenApi\n \* ^\nexport function pureFunction1(\n slotOffset: number, pureFn: (v: any) => any, exp: any, thisArg?: any): any {\n return pureFunction1Internal(getLView(), getBindingRoot(), slotOffset, pureFn, exp, thisArg);\n}\n\n/\*\*\n \* If the value of any provided exp has changed, calls the pure function to return\n \* an updated value. Or if no values have changed, returns cached value.\n \* \n \* @param slotOffset the offset from binding root to the reserved slot\n \* @param pureFn\n \* @param exp1\n \* @param exp2\n \* @param thisArg Optional calling context of pureFn\n \* @returns Updated or cached value\n \* \n \* @codeGenApi\n \* ^\nexport function pureFunction2(\n slotOffset: number, pureFn: (v1: any, v2: any) => any, exp1: any, exp2: any,\n thisArg?: any): any {\n return pureFunction2Internal(\n getLView(), getBindingRoot(), slotOffset, pureFn, exp1, exp2, thisArg);\n}\n\n/\*\*\n \* If the value of any provided exp has changed, calls the pure function to return\n \* an updated value. Or if no values have changed, returns cached value.\n \* \n \* @param slotOffset the offset from binding root to the reserved slot\n \* @param pureFn\n \* @param exp1\n \* @param exp2\n \* @param exp3\n \* @param thisArg Optional calling context of pureFn\n \* @returns Updated or cached value\n \* \n \* @codeGenApi\n \* ^\nexport function pureFunction3(\n slotOffset: number, pureFn: (v1: any, v2: any, v3: any) => any, exp1: any, exp2: any, exp3: any,\n thisArg?: any): any {\n return pureFunction3Internal(\n getLView(), getBindingRoot(), slotOffset, pureFn, exp1, exp2, exp3, thisArg);\n}\n\n/\*\*\n \* If the value of any provided exp has changed, calls the pure function to return\n \* an updated value. Or if no values have changed, returns cached value.\n \* \n \* @param slotOffset the offset from binding root to the reserved slot\n \* @param pureFn\n \* @param exp1\n \* @param exp2\n \* @param exp3\n \* @param exp4\n \* @param thisArg Optional calling context of pureFn\n \* @returns Updated or cached value\n \* \n \* @codeGenApi\n \* ^\nexport function pureFunction4(\n slotOffset: number, pureFn: (v1: any, v2: any, v3: any, v4: any) => any, exp1: any, exp2: any,\n exp3: any, exp4: any, thisArg?: any): any {\n return pureFunction4Internal(\n getLView(), getBindingRoot(), slotOffset, pureFn, exp1, exp2, exp3, exp4, thisArg);\n}\n\n/\*\*\n \* If the value of any provided exp has changed, calls the pure function to return\n \* an updated value. Or if no values have changed, returns cached value.\n \* \n \* @param slotOffset the offset from binding root to the reserved slot\n \* @param pureFn\n \* @param exp1\n \* @param exp2\n \* @param exp3\n \* @param exp4\n \* @param exp5\n \* @param thisArg Optional calling context of pureFn\n \* @returns Updated or cached value\n \* \n \* @codeGenApi\n \* ^\nexport function pureFunction5(\n slotOffset: number, pureFn: (v1: any, v2: any, v3: any, v4: any, v5: any) => any, exp1: any,\n exp2: any, exp3: any, exp4: any, exp5: any, thisArg?: any): any {\n const bindingIndex = getBindingRoot() + slotOffset;\n const IView = getLView();\n const different = bindingUpdated4(IView, bindingIndex, exp1, exp2, exp3, exp4);\n return bindingUpdated(IView, bindingIndex + 4, exp5) || different ?\n updateBinding(\n IView, bindingIndex + 5,\n thisArg ? pureFn.call(thisArg, exp1, exp2, exp3, exp4, exp5) :\n pureFn(exp1, exp2, exp3, exp4, exp5)) :\n getBinding(IView, bindingIndex + 5);\n}\n\n/\*\*\n \* If the value of any provided exp has changed, calls the pure function to return\n \* an updated value. Or if no values have changed, returns cached value.\n \* \n \* @param slotOffset the offset from binding root to the reserved slot\n \* @param pureFn\n \* @param exp1\n \* @param exp2\n \* @param exp3\n \* @param exp4\n \* @param exp5\n \* @param exp6\n \* @param thisArg Optional calling context of pureFn\n \* @returns Updated or cached value\n \* \n \* @codeGenApi\n \* ^\nexport function pureFunction6(\n slotOffset: number, pureFn: (v1: any, v2: any, v3: any, v4: any, v5: any, v6: any) => any,\n exp1: any, exp2: any, exp3: any, exp4: any, exp5: any, exp6: any, thisArg?: any): any {\n const bindingIndex = getBindingRoot() + slotOffset;\n const IView = getLView();\n const different = bindingUpdated4(IView, bindingIndex, exp1, exp2, exp3, exp4);\n

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return bindingUpdated2(IView, bindingIndex + 4, exp5, exp6) || different ?\n updateBinding(\n IView,
bindingIndex + 6,\n thisArg ? pureFn.call(thisArg, exp1, exp2, exp3, exp4, exp5, exp6) :\n pureFn(exp1, exp2, exp3, exp4, exp5, exp6)) :\n getBinding(IView, bindingIndex + 6);\n}\n\n/**\n * If the value
of any provided exp has changed, calls the pure function to return\n * an updated value. Or if no values have
changed, returns cached value.\n *\n * @param slotOffset the offset from binding root to the reserved slot\n *
@param pureFn\n * @param exp1\n * @param exp2\n * @param exp3\n * @param exp4\n * @param exp5\n *
@param exp6\n * @param exp7\n * @param thisArg Optional calling context of pureFn\n * @returns Updated or
cached value\n *\n * @codeGenApi\n */\n\nexport function pureFunction7(\n slotOffset: number,\n pureFn: (v1:
any, v2: any, v3: any, v4: any, v5: any, v6: any, v7: any) => any, exp1: any,\n exp2: any, exp3: any, exp4: any,
exp5: any, exp6: any, exp7: any, thisArg?: any): any {\n const bindingIndex = getBindingRoot() + slotOffset;\n
const IView = getLView();\n let different = bindingUpdated4(IView, bindingIndex, exp1, exp2, exp3, exp4);\n
return bindingUpdated3(IView, bindingIndex + 4, exp5, exp6, exp7) || different ?\n updateBinding(\n
IView, bindingIndex + 7,\n thisArg ? pureFn.call(thisArg, exp1, exp2, exp3, exp4, exp5, exp6, exp7) :\n
 pureFn(exp1, exp2, exp3, exp4, exp5, exp6, exp7)) :\n getBinding(IView, bindingIndex + 7);\n}\n\n/**\n * If
the value of any provided exp has changed, calls the pure function to return\n * an updated value. Or if no values
have changed, returns cached value.\n *\n * @param slotOffset the offset from binding root to the reserved slot\n *
@param pureFn\n * @param exp1\n * @param exp2\n * @param exp3\n * @param exp4\n * @param exp5\n *
@param exp6\n * @param exp7\n * @param exp8\n * @param thisArg Optional calling context of pureFn\n *
@param pureFn\n * @returns Updated or cached value\n *\n * @codeGenApi\n */\n\nexport function pureFunction8(\n slotOffset:
number,\n pureFn: (v1: any, v2: any, v3: any, v4: any, v5: any, v6: any, v7: any, v8: any) => any,\n exp1: any,
exp2: any, exp3: any, exp4: any, exp5: any, exp6: any, exp7: any, exp8: any,\n thisArg?: any): any {\n const
bindingIndex = getBindingRoot() + slotOffset;\n const IView = getLView();\n const different =
bindingUpdated4(IView, bindingIndex, exp1, exp2, exp3, exp4);\n return bindingUpdated4(IView, bindingIndex +
4, exp5, exp6, exp7, exp8) || different ?\n updateBinding(\n IView, bindingIndex + 8,\n thisArg ?
pureFn.call(thisArg, exp1, exp2, exp3, exp4, exp5, exp6, exp7, exp8) :\n pureFn(exp1, exp2, exp3, exp4,
exp5, exp6, exp7, exp8)) :\n getBinding(IView, bindingIndex + 8);\n}\n\n/**\n * pureFunction instruction that
can support any number of bindings.\n *\n * If the value of any provided exp has changed, calls the pure function to
return\n * an updated value. Or if no values have changed, returns cached value.\n *\n * @param slotOffset the
offset from binding root to the reserved slot\n * @param pureFn A pure function that takes binding values and
builds an object or array\n * containing those values.\n * @param exps An array of binding values\n * @param
thisArg Optional calling context of pureFn\n * @returns Updated or cached value\n *\n * @codeGenApi\n */\n\nexport
function pureFunctionV(\n slotOffset: number, pureFn: (...v: any[]) => any, exps: any[], thisArg?: any):
any {\n return pureFunctionVInternal(getLView(), getBindingRoot(), slotOffset, pureFn, exps,
thisArg);\n}\n\n/**\n * Results of a pure function invocation are stored in LView in a dedicated slot that is
initialized\n * to NO_CHANGE. In rare situations a pure pipe might throw an exception on the very first\n *
invocation and not produce any valid results. In this case LView would keep holding the NO_CHANGE\n * value.
The NO_CHANGE is not something that we can use in expressions / bindings thus we convert\n * it to
`undefined`.\n *\n * @function getPureFunctionReturnValue(IView: LView, returnValueIndex: number) {\n
ngDevMode && assertIndexInRange(IView, returnValueIndex);\n const lastReturnValue =
IView[returnValueIndex];\n return lastReturnValue === NO_CHANGE ? undefined : lastReturnValue;\n}\n\n/**\n * If
the value of the provided exp has changed, calls the pure function to return\n * an updated value. Or if the value
has not changed, returns cached value.\n *\n * @param IView LView in which the function is being executed.\n *
@param bindingRoot Binding root index.\n * @param slotOffset the offset from binding root to the reserved slot\n *
@param pureFn Function that returns an updated value\n * @param exp Updated expression value\n * @param
thisArg Optional calling context of pureFn\n * @returns Updated or cached value\n *\n * @codeGenApi\n */\n\nexport
function pureFunction1Internal(\n IView: LView, bindingRoot: number, slotOffset: number, pureFn: (v: any) => any, exp:
any,\n thisArg?: any): any {\n const bindingIndex = bindingRoot + slotOffset;\n return bindingUpdated(IView,
bindingIndex, exp) ?\n updateBinding(IView, bindingIndex + 1, thisArg ? pureFn.call(thisArg, exp) :

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pureFn(exp)) :\n getPureFunctionReturnValue(IView, bindingIndex + 1);\n}\n\n/**\n * If the value of any
provided exp has changed, calls the pure function to return\n * an updated value. Or if no values have changed,
returns cached value.\n *\n * @param IView LView in which the function is being executed.\n * @param
bindingRoot Binding root index.\n * @param slotOffset the offset from binding root to the reserved slot\n *
@param pureFn\n * @param exp1\n * @param exp2\n * @param thisArg Optional calling context of pureFn\n *
@returns Updated or cached value\n */\nexport function pureFunction2Internal(\n IView: LView, bindingRoot:
number, slotOffset: number, pureFn: (v1: any, v2: any) => any,\n exp1: any, exp2: any, thisArg?: any): any {\n
const bindingIndex = bindingRoot + slotOffset;\n return bindingUpdated2(IView, bindingIndex, exp1, exp2) ?\n
updateBinding(\n IView, bindingIndex + 2,\n thisArg ? pureFn.call(thisArg, exp1, exp2) : pureFn(exp1,
exp2)) :\n getPureFunctionReturnValue(IView, bindingIndex + 2);\n}\n\n/**\n * If the value of any provided exp
has changed, calls the pure function to return\n * an updated value. Or if no values have changed, returns cached
value.\n *\n * @param IView LView in which the function is being executed.\n * @param bindingRoot Binding
root index.\n * @param slotOffset the offset from binding root to the reserved slot\n * @param pureFn\n * @param
exp1\n * @param exp2\n * @param exp3\n * @param thisArg Optional calling context of pureFn\n * @returns
Updated or cached value\n */\nexport function pureFunction3Internal(\n IView: LView, bindingRoot: number,
slotOffset: number,\n pureFn: (v1: any, v2: any, v3: any) => any, exp1: any, exp2: any, exp3: any,\n thisArg?:
any): any {\n const bindingIndex = bindingRoot + slotOffset;\n return bindingUpdated3(IView, bindingIndex,
exp1, exp2, exp3) ?\n updateBinding(\n IView, bindingIndex + 3,\n thisArg ? pureFn.call(thisArg,
exp1, exp2, exp3) : pureFn(exp1, exp2, exp3)) :\n getPureFunctionReturnValue(IView, bindingIndex +
3);\n}\n\n/**\n * If the value of any provided exp has changed, calls the pure function to return\n * an updated
value. Or if no values have changed, returns cached value.\n *\n * @param IView LView in which the function is
being executed.\n * @param bindingRoot Binding root index.\n * @param slotOffset the offset from binding root to
the reserved slot\n * @param pureFn\n * @param exp1\n * @param exp2\n * @param exp3\n * @param exp4\n *
@param thisArg Optional calling context of pureFn\n * @returns Updated or cached value\n */\nexport function
pureFunction4Internal(\n IView: LView, bindingRoot: number, slotOffset: number,\n pureFn: (v1: any, v2: any,
v3: any, v4: any) => any, exp1: any, exp2: any, exp3: any, exp4: any,\n thisArg?: any): any {\n const
bindingIndex = bindingRoot + slotOffset;\n return bindingUpdated4(IView, bindingIndex, exp1, exp2, exp3, exp4)
?\n updateBinding(\n IView, bindingIndex + 4,\n thisArg ? pureFn.call(thisArg, exp1, exp2, exp3,
exp4) : pureFn(exp1, exp2, exp3, exp4)) :\n getPureFunctionReturnValue(IView, bindingIndex + 4);\n}\n\n/**\n
* pureFunction instruction that can support any number of bindings.\n *\n * If the value of any provided exp has
changed, calls the pure function to return\n * an updated value. Or if no values have changed, returns cached
value.\n *\n * @param IView LView in which the function is being executed.\n * @param bindingRoot Binding
root index.\n * @param slotOffset the offset from binding root to the reserved slot\n * @param pureFn A pure
function that takes binding values and builds an object or array\n * containing those values.\n * @param exps An
array of binding values\n * @param thisArg Optional calling context of pureFn\n * @returns Updated or cached
value\n */\nexport function pureFunctionVInternal(\n IView: LView, bindingRoot: number, slotOffset: number,
pureFn: (...v: any[]) => any,\n exps: any[], thisArg?: any): any {\n let bindingIndex = bindingRoot +
slotOffset;\n let different = false;\n for (let i = 0; i < exps.length; i++) {\n bindingUpdated(IView,
bindingIndex++, exps[i])
&& (different = true);\n }\n return different ? updateBinding(IView, bindingIndex, pureFn.apply(thisArg, exps))
:\n getPureFunctionReturnValue(IView, bindingIndex);\n}\n\n", "/*\n * @license\n * Copyright Google
LLC All Rights Reserved.\n *\n * Use of this source code is governed by an MIT-style license that can be\n * found
in the LICENSE file at https://angular.io/license\n */\nimport { WrappedValue } from
'./change_detection/change_detection_util';\nimport { PipeTransform } from
'./change_detection/pipe_transform';\nimport { setInjectImplementation } from './di/inject_switch';\nimport
{ getFactoryDef } from './definition_factory';\nimport { setIncludeViewProviders } from './di';\nimport { RuntimeError,
RuntimeErrorCode } from './error_code';\nimport { store, directiveInject } from './instructions/all';\nimport { PipeDef,
PipeDefList } from './interfaces/definition';\nimport { HEADER_OFFSET, LView, TVIEW } from
'./interfaces/view';\nimport { pureFunction1Internal, pureFunction2Internal, pureFunction3Internal,

```





```

new(isAsync?: boolean): EventEmitter<T>;\n\n /**\n * Emits an event containing a given value.\n * @param
value The value to emit.\n */\n emit(value?: T): void;\n /**\n * Registers handlers for events emitted by this
instance.\n * @param generatorOrNext When supplied, a custom handler for emitted events.\n * @param error
When supplied, a custom handler for an error notification\n * from this emitter.\n * @param complete When
supplied, a custom handler for a completion\n * notification from this emitter.\n */\n
subscribe(generatorOrNext?: any, error?: any, complete?: any): Subscription;\n}\n\nclass EventEmitter_ extends
Subject<any> {\n __isAsync: boolean; // tslint:disable-line\n\n constructor(isAsync: boolean = false) {\n
super();\n this.__isAsync = isAsync;\n }\n\n emit(value?: any) {\n super.next(value);\n }\n\n
subscribe(generatorOrNext?: any, error?: any, complete?: any): Subscription {\n let schedulerFn: (t: any) =>
any;\n let errorFn = (err: any): any => null;\n let completeFn = () => null;\n\n if (generatorOrNext &&
typeof generatorOrNext === 'object') {\n schedulerFn = this.__isAsync ? (value: any) => {\n setTimeout(()
=> generatorOrNext.next(value));\n } : (value: any) => {\n generatorOrNext.next(value);\n };\n\n if
(generatorOrNext.error) {\n errorFn = this.__isAsync ? (err) => {\n setTimeout(() =>
generatorOrNext.error(err));\n } : (err) => {\n generatorOrNext.error(err);\n };\n }\n\n if
(generatorOrNext.complete) {\n completeFn = this.__isAsync ? () => {\n setTimeout(() =>
generatorOrNext.complete());\n } : () => {\n generatorOrNext.complete();\n };\n }\n } else {\n
schedulerFn = this.__isAsync ? (value: any) => {\n setTimeout(() => generatorOrNext(value));\n } : (value:
any) => {\n generatorOrNext(value);\n };\n\n if (error) {\n errorFn = this.__isAsync ? (err) => {\n
 setTimeout(() => error(err));\n } : (err) => {\n error(err);\n };\n }\n\n if (complete) {\n
completeFn = this.__isAsync ? () => {\n setTimeout(() => complete());\n } : () => {\n complete();\n
 };\n }\n\n const sink = super.subscribe(schedulerFn, errorFn, completeFn);\n\n if (generatorOrNext
instanceof Subscription) {\n generatorOrNext.add(sink);\n }\n\n return sink;\n }\n}\n\n/**\n * @publicApi\n
*/\nexport const EventEmitter: {\n new (isAsync?: boolean): EventEmitter<any>;\n new<T>(isAsync?: boolean):
EventEmitter<T>;\n readonly prototype: EventEmitter<any>;\n} = EventEmitter_ as any;\n", "/*\n * @license\n
*\n * Copyright Google LLC All Rights Reserved.\n *\n * Use of this source code is governed by an MIT-style license
that can be\n * found in the LICENSE file at https://angular.io/license\n */\n\nimport { Observable } from
'rxjs';\nimport { EventEmitter } from './event_emitter';\nimport { flatten } from './util/array_utils';\nimport
{ getSymbolIterator } from './util/symbol';\n\nfunction symbolIterator<T>(this: QueryList<T>): Iterator<T> {\n
return ((this as any as { _results: Array<T> })._results as any)[getSymbolIterator()];\n}\n\n/**\n * An unmodifiable
list of items that Angular keeps up to date when the state\n * of the application changes.\n *\n * The type of object
that {@link ViewChildren}, {@link ContentChildren}, and {@link QueryList}\n * provide.\n *\n * Implements an
iterable interface, therefore it can be used in both ES6\n * javascript `for (var i of items)` loops as well as in Angular
templates with\n * `*ngFor`="let i of myList".\n *\n * Changes can be observed by subscribing to the changes\n
`Observable`.\n *\n * NOTE: In the future this class will implement an `Observable` interface.\n *\n
* @usageNotes\n * ### Example\n * ```typescript\n * @Component({...})\n * class Container {\n *\n
* @ViewChildren(Item) items: QueryList<Item>;\n * }\n * ```\n *\n * @publicApi\n */\nexport class QueryList<T>
implements Iterable<T> {\n public readonly dirty = true;\n private _results: Array<T> = [];\n public readonly
changes: Observable<any> = new EventEmitter();\n\n readonly length: number = 0; // TODO(issue/24571):
remove '!\n readonly first!: T; // TODO(issue/24571): remove '!\n readonly last!: T;\n\n constructor() {\n //
This function should be declared on the prototype, but doing so there will cause the class\n // declaration to have
side-effects and become not tree-shakable. For this reason we do it in\n // the constructor.\n //\n
[getSymbolIterator()]: Iterator<T> { ... }\n const symbol = getSymbolIterator();\n const proto =
QueryList.prototype as any;\n if (!proto[symbol]) proto[symbol] = symbolIterator;\n }\n\n /**\n * See\n *
[Array.map](https://developer.mozilla.org/en-US/docs/Web/JavaScript/Reference/Global_Objects/Array/map)\n
*\n * map<U>(fn: (item: T, index: number, array: T[]) => U): U[] {\n return this._results.map(fn);\n }\n\n /**\n
*\n * See\n * [Array.filter](https://developer.mozilla.org/en-
US/docs/Web/JavaScript/Reference/Global_Objects/Array/filter)\n *\n * filter(fn: (item: T, index: number, array:
T[]) => boolean): T[] {\n return this._results.filter(fn);\n }\n\n /**\n * See\n *

```

```

[Array.find](https://developer.mozilla.org/en-US/docs/Web/JavaScript/Reference/Global_Objects/Array/find)\n
*\n find(fn: (item: T, index: number, array: T[]) => boolean): T|undefined {\n return this._results.find(fn);\n
}\n\n /**\n * See\n * [Array.reduce](https://developer.mozilla.org/en-
US/docs/Web/JavaScript/Reference/Global_Objects/Array/reduce)\n
*\n reduce<U>(fn: (prevValue: U, curValue:
T, curIndex: number, array: T[]) => U, init: U): U {\n return this._results.reduce(fn, init);\n
}\n\n /**\n * See\n * [Array.forEach](https://developer.mozilla.org/en-
US/docs/Web/JavaScript/Reference/Global_Objects/Array/forEach)\n
*\n forEach(fn: (item: T, index: number,
array: T[]) => void): void {\n this._results.forEach(fn);\n
}\n\n /**\n * See\n *
[Array.some](https://developer.mozilla.org/en-US/docs/Web/JavaScript/Reference/Global_Objects/Array/some)\n
*\n some(fn: (value: T, index: number, array: T[]) => boolean): boolean {\n return this._results.some(fn);\n
}\n\n /**\n * Returns a copy of the internal results list as an Array.\n
*\n toArray(): T[] {\n return
this._results.slice();\n
}\n\n toString(): string {\n return this._results.toString();\n
}\n\n /**\n * Updates the
stored data of the query list, and resets the `dirty` flag to `false`, so that\n
* on change detection, it will not notify
of changes to the queries, unless a new change\n
* occurs.\n
* @param resultsTree The query results to
store\n
*\n reset(resultsTree: Array<T|any[]>): void {\n this._results = flatten(resultsTree);\n
 (this as {dirty:
boolean}).dirty = false;\n
 (this as {length: number}).length = this._results.length;\n
 (this as {last: T}).last =
this._results[this.length - 1];\n
 (this as {first: T}).first = this._results[0];\n
}\n\n /**\n * Triggers a change event
by emitting on the `changes` {@link EventEmitter}.\n
*\n notifyOnChanges(): void {\n (this.changes as
EventEmitter<any>).emit(this);\n
}\n\n /** internal *\n
setDirty() {\n (this as {dirty: boolean}).dirty = true;\n
}\n\n /** internal *\n
destroy(): void {\n (this.changes as EventEmitter<any>).complete();\n
 (this.changes as
EventEmitter<any>).unsubscribe();\n
}\n\n // The implementation of `Symbol.iterator` should be declared here, but
this would cause\n
// tree-shaking issues with `QueryList`. So instead, it's added in the constructor (see comments\n
// there) and this declaration is left here to ensure that TypeScript considers QueryList to\n
// implement the Iterable
interface. This is required for template type-checking of NgFor loops\n
// over QueryLists to work correctly, since
QueryList must be assignable to NgIterable.\n
[Symbol.iterator]!: () => Iterator<T>;\n
}\n\n",/**\n * @license\n
* Copyright Google LLC All Rights Reserved.\n
*\n * Use of this source code is governed by an MIT-style license
that can be\n
* found in the LICENSE file at https://angular.io/license\n
*\n\nimport {ProcessProvidersFunction}
from './../di/interface/provider';\n
import {Type} from './../interface/type';\n
import {SchemaMetadata} from
'./../metadata/schema';\n
import {ViewEncapsulation} from './../metadata/view';\n
import {FactoryFn} from
'./definition_factory';\n
import {TAttributes, TConstantsOrFactory} from './node';\n
import {CssSelectorList} from
'./projection';\n
import {TView} from './view';\n
}\n\n/**\n * Definition of what a template rendering function should
look like for a component.\n
*\n export type ComponentTemplate<T> = {\n // Note: the ctx parameter is typed as
T|U, as using only U would prevent a template with\n
// e.g. ctx: {} from being assigned to
ComponentTemplate<any> as TypeScript won't infer U = any\n
// in that scenario. By including T this
incompatibility is resolved.\n
 <U extends T>(rf: RenderFlags, ctx: T|U): void;\n
};\n\n/**\n * Definition of what a
view queries function should look like.\n
*\n export type ViewQueriesFunction<T> = <U extends T>(rf:
RenderFlags, ctx: U) => void;\n\n /**\n * Definition of what a content queries function should look like.\n
*\n export
type ContentQueriesFunction<T> =\n
 <U extends T>(rf: RenderFlags, ctx: U, directiveIndex: number) =>
void;\n\n /**\n * Flags passed into template functions to determine which blocks (i.e. creation, update)\n
* should be
executed.\n
*\n * Typically, a template runs both the creation block and the update block on initialization and\n
*
subsequent runs only execute the update block. However, dynamically created views require that\n
* the creation
block be executed separately from the update block (for backwards compat).\n
*\n export const enum RenderFlags
{\n /* Whether to run the creation block (e.g. create elements and directives) *\n
 Create = 0b01,\n
 /* Whether to
run the update block (e.g. refresh bindings) *\n
 Update = 0b10\n
}\n\n /**\n * A subclass of `Type` which has a
static `cmp`: `ComponentDef` field making it\n
* consumable for rendering.\n
*\n export interface
ComponentType<T> extends Type<T> {\n cmp: never;\n
}\n\n /**\n * A subclass of `Type` which has a static
`dir`: `DirectiveDef` field making it\n
* consumable for rendering.\n
*\n export interface DirectiveType<T> extends
Type<T> {\n dir: never;\n
 fac: () => T;\n
}\n\n /**\n * A subclass of `Type` which has a static `pipe`: `PipeDef` field

```

making it consumable for rendering.

```

export interface PipeType<T> extends Type<T> {
 pipe: never;
}

```

An object literal of this type is used to represent the metadata of a constructor dependency. The type itself is never referred to from generated code.

```

export type CtorDependency = {
 /** If an `@Attribute` decorator is used, this represents the injected attribute's name. If the attribute name is a dynamic expression instead of a string literal, this will be the unknown type.
 * @attribute?: string|unknown;
 * If `@Optional()` is used, this key is set to true.
 * @optional?: true;
 * If `@Host` is used, this key is set to true.
 * @host?: true;
 * If `@Self` is used, this key is set to true.
 * @self?: true;
 * If `@SkipSelf` is used, this key is set to true.
 * @skipSelf?: true;
} | null;

```

```

export type DirectiveDefWithMeta<T, Selector> extends string, ExportAs extends string[], InputMap extends {[key: string]: string}, OutputMap extends {[key: string]: string}, QueryFields extends string[] => DirectiveDef<T>;

```

Runtime link information for Directives.

This is an internal data structure used by the render to link directives into templates.

NOTE: Always use `defineDirective` function to create this object, never create the object directly since the shape of this object can change between versions.

`@param Selector` type metadata specifying the selector of the directive or component. See: `{ @link defineDirective }`

```

export interface DirectiveDef<T> {
 /** A dictionary mapping the inputs' minified property names to their public API names, which are their aliases if any, or their original unminified property names (as in `@Input('alias') propertyName: any;`).

```





```

*\nexport type PipeDefWithMeta<T, Name extends string> = PipeDef<T>;\n\nexport interface
DirectiveDefFeature {\n <T>(directiveDef: DirectiveDef<T>): void;\n /**\n * Marks a feature as something that
{@link InheritDefinitionFeature} will execute\n * during inheritance.\n *\n * NOTE: DO NOT SET IN ROOT
OF MODULE! Doing so will result in tree-shakers/bundlers\n * identifying the change as a side effect, and the
feature will be included in\n * every bundle.\n *\n ngInherit?: true;\n}\n\nexport interface
ComponentDefFeature {\n <T>(componentDef: ComponentDef<T>): void;\n /**\n * Marks a feature as
something that {@link InheritDefinitionFeature} will execute\n * during inheritance.\n *\n * NOTE: DO NOT
SET IN ROOT OF MODULE! Doing so will result in tree-shakers/bundlers\n * identifying the change as a side
effect, and the feature will be included in\n * every bundle.\n *\n ngInherit?: true;\n}\n\n\n/**\n * Type used for
directiveDefs on component definition.\n */\n * The function is necessary to be able to support forward
declarations.\n */\nexport type DirectiveDefListOrFactory = (() => DirectiveDefList)|DirectiveDefList;\n\nexport
type DirectiveDefList = (DirectiveDef<any>|ComponentDef<any>)[];\n\nexport type DirectiveTypesOrFactory =
(() => DirectiveTypeList)|DirectiveTypeList;\n\nexport type DirectiveTypeList =\n(DirectiveType<any>|ComponentType<any>)\n Type<any>/* Type as workaround for:
Microsoft/TypeScript/issues/4881 */[];\n\nexport type HostBindingsFunction<T> = <U extends T>(rf:
RenderFlags, ctx: U) => void;\n\n/**\n * Type used for PipeDefs on component definition.\n */\n * The function is
necessary to be able to support forward declarations.\n */\nexport type PipeDefListOrFactory = (() =>
PipeDefList)|PipeDefList;\n\nexport type PipeDefList = PipeDef<any>[];\n\nexport type PipeTypesOrFactory = (()
=> PipeTypeList)|PipeTypeList;\n\nexport type PipeTypeList =\n (PipeType<any>|Type<any>)* Type as
workaround for: Microsoft/TypeScript/issues/4881 */[];\n\n\n// Note: This hack is necessary so we don't
erroneously get a circular dependency\n// failure based on types.\nexport const unusedValueExportToPlacateAjd =
1;\n","/**\n * @license\n * Copyright Google LLC All Rights Reserved.\n */\n * Use of this source code is governed
by an MIT-style license that can be\n * found in the LICENSE file at https://angular.io/license\n */\n\nimport
{InjectionToken} from '././di/injection_token';\nimport {Type} from '././interface/type';\nimport {QueryList} from
'././linker/query_list';\nimport {TNode} from './node';\nimport {TView} from './view';\n\n/**\n * An object
representing query metadata extracted from query annotations.\n */\nexport interface TQueryMetadata {\n predicate:
Type<any>|InjectionToken<unknown>|string[];\n descendants: boolean;\n read: any;\n isStatic:
boolean;\n}\n\n/**\n * TQuery objects represent all the query-related data that remain the same from one view
instance\n * to another and can be determined on the very first template pass. Most notably TQuery holds all\n * the
matches for a given view.\n */\nexport interface TQuery {\n /**\n * Query metadata extracted from query
annotations.\n *\n metadata: TQueryMetadata;\n *\n /**\n * Index of a query in a declaration view in case of
queries propagated to an embedded view, -1\n * for queries declared in a given view. We are storing this index so
we can find a parent query\n * to clone for an embedded view (when an embedded view is created).\n *\n indexInDeclarationView: number;\n *\n /**\n * Matches collected on the first template pass. Each match is a pair
of:\n * - TNode index;\n * - match index;\n *\n * A TNode index can be either:\n * - a positive number (the
most common case) to indicate a matching TNode;\n * - a negative number to indicate that a given query is
crossing a <ng-template> element and\n * results from views created based on TemplateRef should be inserted at
this place.\n *\n * A match index is a number used to find an actual value (for a given node) when query results\n
* are materialized. This index can have one of the following values:\n * - -2 - indicates that we need to read a
special token (TemplateRef, ViewContainerRef etc.); \n * - -1 - indicates that we need to read a default value based
on the node type (TemplateRef for\n * ng-template and ElementRef for other elements); \n * - a positive number -
index of an injectable to be read from the element injector.\n *\n matches: number[]|null;\n *\n /**\n * A flag
indicating if a given query crosses an <ng-template> element. This flag exists for\n * performance reasons: we can
notice that queries not crossing any <ng-template> elements will\n * have matches from a given view only (and
adapt processing accordingly).\n *\n crossesNgTemplate: boolean;\n *\n /**\n * A method call when a given
query is crossing an element (or element container). This is where a\n * given TNode is matched against a query
predicate.\n * @param tView\n * @param tNode\n *\n elementStart(tView: TView, tNode: TNode): void;\n *\n /**\n * A method called when processing the elementEnd instruction - this is mostly useful to determine\n
* if a

```

```

given content query should match any nodes past this point.\n * @param tNode\n * ^\n elementEnd(tNode:
TNode): void;\n\n /**\n * A method called when processing the template instruction. This is where a\n * given
TContainerNode is matched against a query predicate.\n * @param tView\n * @param tNode\n * ^\n
template(tView: TView, tNode: TNode): void;\n\n /**\n * A query-related method called when an embedded
TView is created based on the content of a\n * <ng-template> element. We call this method to determine if a given
query should be propagated\n * to the embedded view and if so - return a cloned TQuery for this embedded view.\n
* @param tNode\n * @param childQueryIndex\n * ^\n embeddedTView(tNode: TNode, childQueryIndex:
number): TQuery|null;\n}\n\n/**\n * TQueries represent a collection of individual TQuery objects tracked in a given
view. Most of the\n * methods on this interface are simple proxy methods to the corresponding functionality on
TQuery.\n * ^\nexport interface TQueries {\n /**\n * Adds a new TQuery to a collection of queries tracked in a
given view.\n * @param tQuery\n * ^\n track(tQuery: TQuery): void;\n\n /**\n * Returns a TQuery instance for
at the given index in the queries array.\n * @param index\n * ^\n getByIndex(index: number): TQuery;\n\n /**\n
* Returns the number of queries tracked in a given view.\n * ^\n length: number;\n\n /**\n * A proxy method that
iterates over all the TQueries in a given TView and calls the corresponding\n * `elementStart` on each and every
TQuery.\n * @param tView\n * @param tNode\n * ^\n elementStart(tView: TView, tNode: TNode): void;\n\n
/**\n * A proxy method that iterates over all the TQueries in a given TView and calls the corresponding\n *
`elementEnd` on each and every TQuery.\n * @param tNode\n * ^\n elementEnd(tNode: TNode): void;\n\n /**\n
* A proxy method that iterates over all the TQueries in a given TView and calls the corresponding\n * `template`
on each and every TQuery.\n * @param tView\n * @param tNode\n * ^\n template(tView: TView, tNode:
TNode): void;\n\n /**\n * A proxy method that iterates over all the TQueries in a given TView and calls the
corresponding\n * `embeddedTView` on each and every TQuery.\n * @param tNode\n * ^\n
embeddedTView(tNode: TNode): TQueries|null;\n}\n\n/**\n * An interface that represents query-related
information specific to a view instance. Most notably\n * it contains:\n * - materialized query matches;\n * - a
pointer to a QueryList where materialized query results should be reported.\n * ^\nexport interface LQuery<T> {\n
/**\n * Materialized query matches for a given view only (!). Results are initialized lazily so the\n * array of
matches is set to `null` initially.\n * ^\n matches: (T|null)[]|null;\n\n /**\n * A QueryList where materialized
query results should be reported.\n * ^\n queryList: QueryList<T>;\n\n /**\n * Clones an LQuery for an
embedded view. A cloned query shares the same `QueryList` but has a\n * separate collection of materialized
matches.\n * ^\n clone(): LQuery<T>;\n\n /**\n * Called when an embedded view, impacting results of this
query, is inserted or removed.\n * ^\n setDirty(): void;\n}\n\n/**\n * LQueries represent a collection of individual
LQuery objects tracked in a given view.\n * ^\nexport interface LQueries {\n /**\n * A collection of queries tracked
in a given view.\n * ^\n queries: LQuery<any>[];\n\n /**\n * A method called when a new embedded view is
created. As a result a set of LQueries applicable\n * for a new embedded view is instantiated (cloned) from the
declaration view.\n * @param tView\n * ^\n createEmbeddedView(tView: TView): LQueries|null;\n\n /**\n * A
method called when an embedded view is inserted into a container. As a result all impacted\n * `LQuery` objects
(and associated `QueryList`) are marked as dirty.\n * @param tView\n * ^\n insertView(tView: TView): void;\n\n
/**\n * A method called when an embedded view is detached from a container. As a result all impacted\n *
`LQuery` objects (and associated `QueryList`) are marked as dirty.\n * @param tView\n * ^\n detachView(tView:
TView): void;\n}\n\n\n// Note: This hack is necessary so we don't erroneously get a circular dependency\n// failure
based on types.\nexport const unusedValueExportToPlacateAjd = 1;\n\n", /**\n * @license\n * Copyright Google
LLC All Rights Reserved.\n *\n * Use of this source code is governed by an MIT-style license that can be\n * found
in the LICENSE file at https://angular.io/license\n * ^\n\n// We are temporarily importing the existing
viewEngine_from core so we can be sure we are\n// correctly implementing its interfaces for backwards
compatibility.\n\nimport { InjectionToken } from './di/injection_token';\nimport { Type } from
'./interface/type';\nimport { createElementRef, ElementRef as ViewEngine_ElementRef } from
'./linker/element_ref';\nimport { QueryList } from './linker/query_list';\nimport { createTemplateRef, TemplateRef as
ViewEngine_TemplateRef } from './linker/template_ref';\nimport { createContainerRef, ViewContainerRef } from
'./linker/view_container_ref';\nimport { assertDefined, assertIndexInRange, throwError } from './util/assert';\nimport

```

```

{stringify} from './util/stringify';\nimport {assertFirstCreatePass, assertLContainer} from './assert';\nimport
{getNodeInjectable, locateDirectiveOrProvider} from './di';\nimport {storeCleanupWithContext} from
 './instructions/shared';\nimport {CONTAINER_HEADER_OFFSET, LContainer, MOVED_VIEWS} from
 './interfaces/container';\nimport {unusedValueExportToPlacateAjd as unused1} from
 './interfaces/definition';\nimport {unusedValueExportToPlacateAjd as unused2} from './interfaces/injector';\nimport
{TContainerNode, TElementContainerNode, TElementNode, TNode, TNodeType,
unusedValueExportToPlacateAjd as unused3} from './interfaces/node';\nimport {LQueries, LQuery, TQueries,
TQuery, TQueryMetadata, unusedValueExportToPlacateAjd as unused4} from './interfaces/query';\nimport
{DECLARATION_LCONTAINER, LView, PARENT, QUERIES, TVIEW, TView} from
 './interfaces/view';\nimport {assertTNodeType} from './node_assert';\nimport {getCurrentQueryIndex,
getCurrentTNode, getLView, getTView, setCurrentQueryIndex} from './state';\nimport {isCreationMode} from
 './util/view_utils';\n\nconst unusedValueToPlacateAjd = unused1 + unused2 + unused3 + unused4;\n\nclass
LQuery_<T> implements LQuery<T> {\n matches: (T|null)[]|null = null;\n constructor(public queryList:
QueryList<T>) {}\n clone(): LQuery<T> {\n return new LQuery_(this.queryList);\n }\n setDirty(): void {\n
this.queryList.setDirty();\n }\n}\n\nclass LQueries_ implements LQueries {\n constructor(public queries:
LQuery<any>[] = []) {}\n createEmbeddedView(tView: TView): LQueries|null {\n const tQueries =
tView.queries;\n if (tQueries !== null) {\n const noOfInheritedQueries =\n tView.contentQueries !== null
? tView.contentQueries[0] : tQueries.length;\n const viewLQueries: LQuery<any>[] = [];\n // An embedded
view has queries propagated from a declaration view at the beginning of the\n // TQueries collection and up until
a first content query declared in the embedded view. Only\n // propagated LQueries are created at this point
(LQuery corresponding to declared content\n // queries will be instantiated from the content query instructions
for each directive).\n for (let i = 0; i < noOfInheritedQueries; i++) {\n const tQuery =
tQueries.getByIndex(i);\n const parentLQuery = this.queries[tQuery.indexInDeclarationView];\n
viewLQueries.push(parentLQuery.clone());\n }\n return new LQueries_(viewLQueries);\n }\n return
null;\n }\n insertView(tView: TView): void {\n this.dirtyQueriesWithMatches(tView);\n }\n detachView(tView: TView): void {\n
this.dirtyQueriesWithMatches(tView);\n }\n private
dirtyQueriesWithMatches(tView: TView) {\n for (let i = 0; i < this.queries.length; i++) {\n if
(getTQuery(tView, i).matches !== null) {\n this.queries[i].setDirty();\n }\n }\n }\n}\n\nclass
TQueryMetadata_ implements TQueryMetadata {\n constructor(\n public predicate:
Type<any>|InjectionToken<unknown>|string[],\n public descendants: boolean,\n public isStatic: boolean,\n public
read: any = null) {}\n}\n\nclass TQueries_ implements TQueries {\n constructor(private queries: TQuery[] = [])
{}\n elementStart(tView: TView, tNode: TNode): void {\n ngDevMode &&\n assertFirstCreatePass(\n
tView, 'Queries should collect results on the first template pass only');\n for (let i = 0; i < this.queries.length; i++)
{\n this.queries[i].elementStart(tView, tNode);\n }\n }\n elementEnd(tNode: TNode): void {\n for (let i = 0;
i < this.queries.length; i++) {\n this.queries[i].elementEnd(tNode);\n }\n }\n embeddedTView(tNode: TNode):
TQueries|null {\n let queriesForTemplateRef: TQuery[]|null = null;\n for (let i = 0; i < this.length; i++) {\n
const childQueryIndex = queriesForTemplateRef !== null ? queriesForTemplateRef.length : 0;\n const
tqueryClone = this.getByIndex(i).embeddedTView(tNode, childQueryIndex);\n if (tqueryClone) {\n
tqueryClone.indexInDeclarationView = i;\n if (queriesForTemplateRef !== null) {\n
queriesForTemplateRef.push(tqueryClone);\n } else {\n queriesForTemplateRef = [tqueryClone];\n }\n
 }\n return queriesForTemplateRef !== null ? new TQueries_(queriesForTemplateRef) : null;\n }\n template(tView: TView, tNode: TNode): void {\n
ngDevMode &&\n assertFirstCreatePass(\n
tView, 'Queries should collect results on the first template pass only');\n for (let i = 0; i < this.queries.length; i++)
{\n this.queries[i].template(tView, tNode);\n }\n }\n getByIndex(index: number): TQuery {\n ngDevMode
&& assertIndexInRange(this.queries, index);\n return this.queries[index];\n }\n get length(): number {\n
return this.queries.length;\n }\n track(tquery: TQuery): void {\n this.queries.push(tquery);\n }\n}\n\nclass
TQuery_ implements TQuery {\n matches: number[]|null = null;\n indexInDeclarationView = -1;\n crossesNgTemplate =
false;\n /**\n * A node index on which a query was declared (-1 for view queries and ones

```



```

null;\n}\n\nfunction createResultByTNodeType(tNode: TNode, currentView: LView): any {\n if (tNode.type &
(TNodeType.AnyRNode | TNodeType.ElementContainer)) {\n return createElementRef(tNode, currentView);\n }
else if (tNode.type & TNodeType.Container) {\n return createTemplateRef(tNode, currentView);\n }\n return
null;\n}\n\nfunction createResultForNode(IView: LView, tNode: TNode, matchingIdx: number, read: any): any
{\n if (matchingIdx === -1) {\n // if read token and / or strategy is not specified, detect it using appropriate tNode
type\n return createResultByTNodeType(tNode, IView);\n } else if (matchingIdx === -2) {\n // read a special
token from a node injector\n return createSpecialToken(IView, tNode, read);\n } else {\n // read a token\n
return getNodeInjectable(IView, IView[TVIEW], matchingIdx, tNode as TElementNode);\n }\n}\n\nfunction
createSpecialToken(IView: LView, tNode: TNode, read: any): any {\n if (read === ViewEngine_ElementRef) {\n
return createElementRef(tNode, IView);\n } else if (read === ViewEngine_TemplateRef) {\n return
createTemplateRef(tNode, IView);\n } else if (read === ViewContainerRef) {\n ngDevMode &&
assertTNodeType(tNode, TNodeType.AnyRNode | TNodeType.AnyContainer);\n return createContainerRef(\n
tNode as TElementNode | TContainerNode | TElementContainerNode, IView);\n } else {\n ngDevMode &&\n
throwError(\n `Special token to read should be one of ElementRef, TemplateRef or ViewContainerRef but
got ${\n stringify(read)}.`);\n }\n}\n\n/**\n * A helper function that creates query results for a given view.
This function is meant to do the\n * processing once and only once for a given view instance (a set of results for a
given view\n * doesn't change).\n */\nfunction materializeViewResults<T>(\n tView: TView, IView: LView,
tQuery: TQuery, queryIndex: number): (T|null)[] {\n const IQuery = IView[QUERIES]!.queries![queryIndex];\n if
(IQuery.matches === null) {\n const tViewData = tView.data;\n const tQueryMatches = tQuery.matches!;\n
const result: T|null[] = [];\n for (let i = 0; i < tQueryMatches.length; i += 2) {\n const matchedNodeIdx =
tQueryMatches[i];\n if (matchedNodeIdx < 0) {\n // we at the <ng-template> marker which might have
results in views created based on this\n // <ng-template> - those results will be in separate views though, so here
we just leave\n // null as a placeholder\n result.push(null);\n } else {\n ngDevMode &&
assertIndexInRange(tViewData, matchedNodeIdx);\n const tNode = tViewData[matchedNodeIdx] as TNode;\n
 result.push(createResultForNode(IView, tNode, tQueryMatches[i + 1], tQuery.metadata.read));\n }\n }\n
IQuery.matches = result;\n }\n return IQuery.matches;\n}\n\n/**\n * A helper function that collects (already
materialized) query results from a tree of views,\n * starting with a provided LView.\n */\nfunction
collectQueryResults<T>(\n tView: TView, IView: LView, queryIndex: number, result: T[]): T[] {\n const tQuery =
tView.queries!.getByIndex(queryIndex);\n const tQueryMatches = tQuery.matches;\n if (tQueryMatches !== null)
{\n const IViewResults = materializeViewResults<T>(tView, IView, tQuery, queryIndex);\n for (let i = 0; i <
tQueryMatches.length; i += 2) {\n const tNodeIdx = tQueryMatches[i];\n if (tNodeIdx > 0) {\n
result.push(IViewResults[i / 2] as T);\n } else {\n const childQueryIndex = tQueryMatches[i + 1];\n
const declarationLContainer = IView[-tNodeIdx] as LContainer;\n ngDevMode &&
assertLContainer(declarationLContainer);\n // collect matches for views inserted in this container\n for
(let i = CONTAINER_HEADER_OFFSET; i < declarationLContainer.length; i++) {\n const embeddedLView
= declarationLContainer[i];\n if (embeddedLView[DECLARATION_LCONTAINER] ===
embeddedLView[PARENT]) {\n collectQueryResults(embeddedLView[TVIEW], embeddedLView,
childQueryIndex, result);\n }\n }\n // collect matches for views created from this declaration
container and inserted into\n // different containers\n if (declarationLContainer[MOVED_VIEWS] !==
null) {\n const embeddedLViews = declarationLContainer[MOVED_VIEWS]!;\n for (let i = 0; i <
embeddedLViews.length; i++) {\n const embeddedLView = embeddedLViews[i];\n
collectQueryResults(embeddedLView[TVIEW], embeddedLView, childQueryIndex, result);\n }\n }\n
 }\n }\n }\n return result;\n}\n\n/**\n * Refreshes a query by combining matches from all active views and
removing matches from deleted\n * views.\n */\n * @returns `true` if a query got dirty during change detection or if
this is a static query\n * resolving in creation mode, `false` otherwise.\n */\n * @codeGenApi\n */\nexport function
queryRefresh(queryList: QueryList<any>): boolean {\n const IView = getLView();\n const tView = getTView();\n
const queryIndex = getCurrentQueryIndex();\n setCurrentQueryIndex(queryIndex + 1);\n const tQuery =
getTQuery(tView, queryIndex);\n if (queryList.dirty && (isCreationMode(IView) === tQuery.metadata.isStatic))

```



```

lastSavedDirectiveIndex) {\n tViewContentQueries.push(tView.queries!.length - 1, directiveIndex);\n
}\n}\n\nfunction getTQuery(tView: TView, index: number): TQuery {\n ngDevMode &&
assertDefined(tView.queries, 'TQueries must be defined to retrieve a TQuery');\n return
tView.queries!.getByIndex(index);\n}\n\n",/**\n * @license\n * Copyright Google LLC All Rights Reserved.\n *\n *
Use of this source code is governed by an MIT-style license that can be\n * found in the LICENSE file at
https://angular.io/license\n *\n\nimport { ChangeDetectorRef, injectChangeDetectorRef } from
'./change_detection/change_detector_ref';\nimport { InjectFlags } from './di/interface/injector';\nimport
{ createTemplateRef, TemplateRef } from './linker/template_ref';\nimport { throwProviderNotFoundError } from
'./errors_di';\nimport { TNode } from './interfaces/node';\nimport { LView } from './interfaces/view';\n\n/**\n *
Retrieves `TemplateRef` instance from `Injector` when a local reference is placed on the\n * <ng-template>`
element.\n *\n * @codeGenApi\n */\nexport function templateRefExtractor(tNode: TNode, lView: LView):
TemplateRef<any>|null {\n return createTemplateRef(tNode, lView);\n}\n\n/**\n * Returns the appropriate
`ChangeDetectorRef` for a pipe.\n *\n * @codeGenApi\n */\nexport function injectPipeChangeDetectorRef(flags =
InjectFlags.Default): ChangeDetectorRef|null {\n const value = injectChangeDetectorRef(true);\n if (value == null
&& !(flags & InjectFlags.Optional)) {\n throwProviderNotFoundError('ChangeDetectorRef');\n } else {\n return
value;\n }\n}\n\n",/**\n * @license\n * Copyright Google LLC All Rights Reserved.\n *\n * Use of this source code
is governed by an MIT-style license that can be\n * found in the LICENSE file at https://angular.io/license\n
*\n\nimport { LifecycleHooksFeature, renderComponent, whenRendered } from './component';\nimport
{ defineComponent, defineDirective, defineNgModule, definePipe, setComponentScope, setNgModuleScope } from
'./definition';\nimport { CopyDefinitionFeature } from './features/copy_definition_feature';\nimport
{ InheritDefinitionFeature } from './features/inherit_definition_feature';\nimport { NgOnChangesFeature } from
'./features/ng_onchanges_feature';\nimport { ProvidersFeature } from './features/providers_feature';\nimport
{ ComponentDef, ComponentTemplate, ComponentType, DirectiveDef, DirectiveType, PipeDef,
ComponentDefWithMeta, DirectiveDefWithMeta, FactoryDef, PipeDefWithMeta } from
'./interfaces/definition';\nimport { getComponent, getDirectives, getHostElement, getRenderedText } from
'./util/discovery_utils';\n\nexport { NgModuleType } from './metadata/ng_module_def';\nexport { ComponentFactory,
ComponentFactoryResolver, ComponentRef, injectComponentFactoryResolver } from './component_ref';\nexport
{ getFactoryOf, getInheritedFactory } from './di';\nexport { getLocaleId, setLocaleId } from './i18n/i18n_locale_id';\n//
clang-format off\nexport {\n detectChanges,\n markDirty,\n store,\n tick,\n advance,\n\n attribute,\n
attributeInterpolate1,\n attributeInterpolate2,\n attributeInterpolate3,\n attributeInterpolate4,\n
attributeInterpolate5,\n attributeInterpolate6,\n attributeInterpolate7,\n attributeInterpolate8,\n
attributeInterpolateV,\n\n classMap,\n classMapInterpolate1,\n classMapInterpolate2,\n classMapInterpolate3,\n
classMapInterpolate4,\n classMapInterpolate5,\n classMapInterpolate6,\n classMapInterpolate7,\n
classMapInterpolate8,\n classMapInterpolateV,\n\n classProp,\n\n directiveInject,\n\n element,\n\n
elementContainer,\n elementContainerEnd,\n elementContainerStart,\n elementEnd,\n elementStart,\n\n
getCurrentView,\n hostProperty,\n injectAttribute,\n invalidFactory,\n\n listener,\n\n namespaceHTML,\n
namespaceMathML,\n namespaceSVG,\n\n nextContext,\n\n projection,\n projectionDef,\n property,\n
propertyInterpolate,\n propertyInterpolate1,\n propertyInterpolate2,\n propertyInterpolate3,\n
propertyInterpolate4,\n propertyInterpolate5,\n propertyInterpolate6,\n propertyInterpolate7,\n
propertyInterpolate8,\n propertyInterpolateV,\n\n reference,\n\n styleMap,\n styleMapInterpolate1,\n
styleMapInterpolate2,\n styleMapInterpolate3,\n styleMapInterpolate4,\n styleMapInterpolate5,\n
styleMapInterpolate6,\n styleMapInterpolate7,\n styleMapInterpolate8,\n styleMapInterpolateV,\n\n styleProp,\n
stylePropInterpolate1,\n stylePropInterpolate2,\n stylePropInterpolate3,\n stylePropInterpolate4,\n
stylePropInterpolate5,\n stylePropInterpolate6,\n stylePropInterpolate7,\n stylePropInterpolate8,\n
stylePropInterpolateV,\n\n syntheticHostListener,\n syntheticHostProperty,\n\n template,\n\n text,\n
textInterpolate,\n textInterpolate1,\n textInterpolate2,\n textInterpolate3,\n textInterpolate4,\n
textInterpolate5,\n textInterpolate6,\n textInterpolate7,\n textInterpolate8,\n textInterpolateV,\n} from './instructions/all';\nexport
{i18n, i18nApply, i18nAttributes, i18nEnd, i18nExp, i18nPostprocess, i18nStart} from './instructions/i18n';\nexport

```





```

r3.projectionDef,\n 'hostProperty': r3.hostProperty,\n 'property': r3.property,\n 'propertyInterpolate':
r3.propertyInterpolate,\n 'propertyInterpolate1': r3.propertyInterpolate1,\n 'propertyInterpolate2':
r3.propertyInterpolate2,\n 'propertyInterpolate3': r3.propertyInterpolate3,\n 'propertyInterpolate4':
r3.propertyInterpolate4,\n 'propertyInterpolate5': r3.propertyInterpolate5,\n 'propertyInterpolate6':
r3.propertyInterpolate6,\n 'propertyInterpolate7': r3.propertyInterpolate7,\n 'propertyInterpolate8':
r3.propertyInterpolate8,\n 'propertyInterpolateV': r3.propertyInterpolateV,\n 'pipe': r3.pipe,\n
'queryRefresh': r3.queryRefresh,\n 'viewQuery': r3.viewQuery,\n 'staticViewQuery': r3.staticViewQuery,\n
'staticContentQuery': r3.staticContentQuery,\n 'loadQuery': r3.loadQuery,\n 'contentQuery':
r3.contentQuery,\n 'reference': r3.reference,\n 'classMap': r3.classMap,\n 'classMapInterpolate1':
r3.classMapInterpolate1,\n 'classMapInterpolate2': r3.classMapInterpolate2,\n 'classMapInterpolate3':
r3.classMapInterpolate3,\n 'classMapInterpolate4': r3.classMapInterpolate4,\n 'classMapInterpolate5':
r3.classMapInterpolate5,\n 'classMapInterpolate6': r3.classMapInterpolate6,\n 'classMapInterpolate7':
r3.classMapInterpolate7,\n 'classMapInterpolate8': r3.classMapInterpolate8,\n 'classMapInterpolateV':
r3.classMapInterpolateV,\n 'styleMap': r3.styleMap,\n 'styleMapInterpolate1': r3.styleMapInterpolate1,\n
'styleMapInterpolate2': r3.styleMapInterpolate2,\n 'styleMapInterpolate3': r3.styleMapInterpolate3,\n
'styleMapInterpolate4': r3.styleMapInterpolate4,\n 'styleMapInterpolate5': r3.styleMapInterpolate5,\n
'styleMapInterpolate6': r3.styleMapInterpolate6,\n 'styleMapInterpolate7': r3.styleMapInterpolate7,\n
'styleMapInterpolate8': r3.styleMapInterpolate8,\n 'styleMapInterpolateV': r3.styleMapInterpolateV,\n
'styleProp': r3.styleProp,\n 'stylePropInterpolate1': r3.stylePropInterpolate1,\n 'stylePropInterpolate2':
r3.stylePropInterpolate2,\n 'stylePropInterpolate3': r3.stylePropInterpolate3,\n 'stylePropInterpolate4':
r3.stylePropInterpolate4,\n 'stylePropInterpolate5': r3.stylePropInterpolate5,\n 'stylePropInterpolate6':
r3.stylePropInterpolate6,\n 'stylePropInterpolate7': r3.stylePropInterpolate7,\n 'stylePropInterpolate8':
r3.stylePropInterpolate8,\n 'stylePropInterpolateV': r3.stylePropInterpolateV,\n 'classProp': r3.classProp,\n
'advance': r3.advance,\n 'template': r3.template,\n 'text': r3.text,\n 'textInterpolate': r3.textInterpolate,\n
'textInterpolate1': r3.textInterpolate1,\n 'textInterpolate2': r3.textInterpolate2,\n 'textInterpolate3':
r3.textInterpolate3,\n 'textInterpolate4': r3.textInterpolate4,\n 'textInterpolate5': r3.textInterpolate5,\n
'textInterpolate6': r3.textInterpolate6,\n 'textInterpolate7': r3.textInterpolate7,\n 'textInterpolate8':
r3.textInterpolate8,\n 'textInterpolateV': r3.textInterpolateV,\n 'i18n': r3.i18n,\n 'i18nAttributes':
r3.i18nAttributes,\n 'i18nExp': r3.i18nExp,\n 'i18nStart': r3.i18nStart,\n 'i18nEnd': r3.i18nEnd,\n
'i18nApply': r3.i18nApply,\n 'i18nPostprocess': r3.i18nPostprocess,\n 'resolveWindow': r3.resolveWindow,\n
 'resolveDocument': r3.resolveDocument,\n 'resolveBody': r3.resolveBody,\n 'setComponentScope':
r3.setComponentScope,\n 'setNgModuleScope': r3.setNgModuleScope,\n\n 'sanitizeHtml':
sanitization.sanitizeHtml,\n 'sanitizeStyle': sanitization.sanitizeStyle,\n 'sanitizeResourceUrl':
sanitization.sanitizeResourceUrl,\n 'sanitizeScript': sanitization.sanitizeScript,\n 'sanitizeUrl':
sanitization.sanitizeUrl,\n 'sanitizeUrlOrResourceUrl': sanitization.sanitizeUrlOrResourceUrl,\n
'trustConstantHtml': sanitization.trustConstantHtml,\n 'trustConstantScript': sanitization.trustConstantScript,\n
'trustConstantResourceUrl': sanitization.trustConstantResourceUrl,\n })());\n", "/**\n * @license\n * Copyright
Google LLC All Rights Reserved.\n *\n * Use of this source code is governed by an MIT-style license that can be\n
* found in the LICENSE file at https://angular.io/license\n *\nimport {ViewEncapsulation} from
'./../metadata/view';\n\nexport interface JitCompilerOptions {\n defaultEncapsulation?: ViewEncapsulation;\n
 preserveWhitespaces?: boolean;\n}\n\nlet jitOptions: JitCompilerOptions|null = null;\n\nexport function
setJitOptions(options: JitCompilerOptions): void {\n if (jitOptions !== null) {\n if (options.defaultEncapsulation
!== jitOptions.defaultEncapsulation) {\n ngDevMode &&\n console.error(\n 'Provided value for
`defaultEncapsulation` can not be changed once it has been set.);\n return;\n }\n if
(options.preserveWhitespaces !== jitOptions.preserveWhitespaces) {\n ngDevMode &&\n console.error(\n
 'Provided value for `preserveWhitespaces` can not be changed once it has been set.);\n return;\n }\n }\n
jitOptions = options;\n}\n\nexport function getJitOptions(): JitCompilerOptions|null {\n return
jitOptions;\n}\n\nexport function resetJitOptions(): void {\n jitOptions = null;\n}\n", "/**\n * @license\n *

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Copyright Google LLC All Rights Reserved.\n *\n * Use of this source code is governed by an MIT-style license
that can be\n * found in the LICENSE file at https://angular.io/license\n *\n\nimport {getCompilerFacade,
R3InjectorMetadataFacade} from './././compiler/compiler_facade';\nimport {resolveForwardRef} from
 './././di/forward_ref';\nimport {NG_INJ_DEF} from './././di/interface/defs';\nimport {reflectDependencies} from
 './././di/jit/util';\nimport {Type} from './././interface/type';\nimport {Component} from
 './././metadata/directives';\nimport {ModuleWithProviders, NgModule} from './././metadata/ng_module';\nimport
 {NgModuleDef, NgModuleTransitiveScopes, NgModuleType} from './././metadata/ng_module_def';\nimport
 {deepForEach, flatten} from './././util/array_utils';\nimport {assertDefined} from './././util/assert';\nimport
 {getComponentDef, getDirectiveDef, getNgModuleDef, getPipeDef} from './././definition';\nimport
 {NG_COMP_DEF, NG_DIR_DEF, NG_MOD_DEF, NG_PIPE_DEF} from './././fields';\nimport {ComponentDef}
 from './././interfaces/definition';\nimport {maybeUnwrapFn} from './././util/misc_utils';\nimport {stringifyForError} from
 './././util/stringify_utils';\n\nimport {angularCoreEnv} from './././environment';\n\nconst EMPTY_ARRAY: Type<any>[]
 = [];\n\ninterface ModuleQueueItem {\n moduleType: Type<any>;\n ngModule: NgModule;\n}\n\nconst
 moduleQueue: ModuleQueueItem[] = [];\n\n/**\n * Enqueues moduleDef to be checked later to see if scope can be
set on its\n * component declarations.\n */\nfunction enqueueModuleForDelayedScoping(moduleType: Type<any>,
 ngModule: NgModule) {\n moduleQueue.push({moduleType, ngModule});\n}\n\nlet flushingModuleQueue =
false;\n\n/**\n * Loops over queued module definitions, if a given module definition has all of its\n * declarations
resolved, it dequeues that module definition and sets the scope on\n * its declarations.\n */\nexport function
flushModuleScopingQueueAsMuchAsPossible() {\n if (!flushingModuleQueue) {\n flushingModuleQueue =
true;\n try {\n for (let i = moduleQueue.length - 1; i >= 0; i--) {\n const {moduleType, ngModule} =
moduleQueue[i];\n\n if (ngModule.declarations && ngModule.declarations.every(isResolvedDeclaration)) {\n
 // dequeue\n moduleQueue.splice(i, 1);\n setScopeOnDeclaredComponents(moduleType,
ngModule);\n }\n }\n } finally {\n flushingModuleQueue = false;\n }\n }\n\n /**\n * Returns truthy
if a declaration has resolved. If the declaration happens to be\n * an array of declarations, it will recurse to check
each declaration in that array\n * (which may also be arrays).\n */\nfunction isResolvedDeclaration(declaration:
any[] | Type<any>): boolean {\n if (Array.isArray(declaration)) {\n return
declaration.every(isResolvedDeclaration);\n }\n return !!resolveForwardRef(declaration);\n}\n\n/**\n * Compiles a
module in JIT mode.\n */\n * This function automatically gets called when a class has a `@NgModule` decorator.\n
*/\nexport function compileNgModule(moduleType: Type<any>, ngModule: NgModule = {}): void {\n
 compileNgModuleDefs(moduleType as NgModuleType, ngModule);\n // Because we don't know if all
declarations have resolved yet at the moment the\n // NgModule decorator is executing, we're enqueueing the
setting of module scope\n // on its declarations to be run at a later time when all declarations for the module,\n
 // including forward refs, have resolved.\n enqueueModuleForDelayedScoping(moduleType, ngModule);\n}\n\n/**\n
 * Compiles and adds the `mod` and `inj` properties to the module class.\n */\n * It's possible to compile a module via
this API which will allow duplicate declarations in its\n * root.\n */\nexport function compileNgModuleDefs(\n
 moduleType: NgModuleType, ngModule: NgModule, \n allowDuplicateDeclarationsInRoot: boolean = false): void
{\n ngDevMode && assertDefined(moduleType, 'Required value moduleType');\n ngDevMode &&
assertDefined(ngModule, 'Required value ngModule');\n const declarations: Type<any>[] =
flatten(ngModule.declarations || EMPTY_ARRAY);\n let ngModuleDef: any = null;\n Object.defineProperty(moduleType,
NG_MOD_DEF, {\n configurable: true,\n get: () => {\n if
(ngModuleDef === null) {\n if (ngDevMode && ngModule.imports &&
ngModule.imports.indexOf(moduleType) > -1) {\n // We need to assert this immediately, because allowing it
to continue will cause it to\n // go into an infinite loop before we've reached the point where we throw all the
errors.\n throw new Error(`${stringifyForError(moduleType)}' module can't import itself');\n }\n }\n
 ngModuleDef = getCompilerFacade().compileNgModule(\n angularCoreEnv,\n `ng:///${moduleType.name}/mod.js`, {\n
 type: moduleType,\n bootstrap:
flatten(ngModule.bootstrap || EMPTY_ARRAY).map(resolveForwardRef),\n declarations:
declarations.map(resolveForwardRef),\n imports: flatten(ngModule.imports || EMPTY_ARRAY)\n }\n);\n }\n });\n}

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 .map(resolveForwardRef)\n .map(expandModuleWithProviders),\n exports:\n flatten(ngModule.exports || EMPTY_ARRAY)\n .map(resolveForwardRef)\n .map(expandModuleWithProviders),\n schemas: ngModule.schemas ? flatten(ngModule.schemas) : null,\n id: ngModule.id || null,\n });\n // Set `schemas` on ngModuleDef to an empty array in JIT mode to\n indicate that runtime\n // should verify that there are no unknown elements in a template. In AOT mode, that\n check\n // happens at compile time and `schemas` information is not present on Component and Module\n //\n defs after compilation (so the check doesn't happen the second time at runtime).\n if (!ngModuleDef.schemas)\n {\n ngModuleDef.schemas = [];\n }\n return ngModuleDef;\n });\n\n let ngInjectorDef:\n any = null;\n Object.defineProperty(moduleType, NG_INJ_DEF, {\n get: () => {\n if (ngInjectorDef === null)\n {\n ngDevMode &&\n verifySemanticsOfNgModuleDef(\n moduleType as any as\n NgModuleType, allowDuplicateDeclarationsInRoot);\n const meta: R3InjectorMetadataFacade = {\n name: moduleType.name,\n type: moduleType,\n deps: reflectDependencies(moduleType),\n providers: ngModule.providers || EMPTY_ARRAY,\n imports: [\n (ngModule.imports ||\n EMPTY_ARRAY).map(resolveForwardRef),\n (ngModule.exports ||\n EMPTY_ARRAY).map(resolveForwardRef),\n],\n };\n ngInjectorDef =\n getCompilerFacade().compileInjector(\n angularCoreEnv, `ng://${moduleType.name}/inj.js`, meta);\n }\n return ngInjectorDef;\n },\n // Make the property configurable in dev mode to allow overriding in tests\n configurable: !!ngDevMode,\n });\n\n function verifySemanticsOfNgModuleDef(\n moduleType:\n NgModuleType, allowDuplicateDeclarationsInRoot: boolean,\n importingModule?: NgModuleType): void {\n if\n (verifiedNgModule.get(moduleType)) return;\n verifiedNgModule.set(moduleType, true);\n moduleType =\n resolveForwardRef(moduleType);\n let ngModuleDef: NgModuleDef<any>;\n if (importingModule) {\n ngModuleDef = getNgModuleDef(moduleType);\n if (!ngModuleDef) {\n throw new Error(`Unexpected value\n '${moduleType.name}' imported by the module '${\n importingModule.name}'. Please add an @NgModule\n annotation.`);\n }\n } else {\n ngModuleDef = getNgModuleDef(moduleType, true);\n }\n const errors: string[]\n = [];\n const declarations = maybeUnwrapFn(ngModuleDef.declarations);\n const imports =\n maybeUnwrapFn(ngModuleDef.imports);\n flatten(imports).map(unwrapModuleWithProvidersImports).forEach(mod => {\n verifySemanticsOfNgModuleImport(mod, moduleType);\n verifySemanticsOfNgModuleDef(mod, false,\n moduleType);\n });\n const exports = maybeUnwrapFn(ngModuleDef.exports);\n declarations.forEach(verifyDeclarationsHaveDefinitions);\n declarations.forEach(verifyDirectivesHaveSelector);\n const combinedDeclarations: Type<any>[] = [\n ...declarations.map(resolveForwardRef),\n ...flatten(imports.map(computeCombinedExports)).map(resolveForwardRef),\n];\n exports.forEach(verifyExportsAreDeclaredOrReExported);\n declarations.forEach(decl =>\n verifyDeclarationIsUnique(decl, allowDuplicateDeclarationsInRoot));\n declarations.forEach(verifyComponentEntryComponentsIsPartOfNgModule);\n const ngModule =\n getAnnotation<NgModule>(moduleType, 'NgModule');\n if (ngModule) {\n ngModule.imports &&\n flatten(ngModule.imports).map(unwrapModuleWithProvidersImports).forEach(mod => {\n verifySemanticsOfNgModuleImport(mod, moduleType);\n verifySemanticsOfNgModuleDef(mod, false,\n moduleType);\n });\n ngModule.bootstrap && deepForEach(ngModule.bootstrap,\n verifyCorrectBootstrapType);\n ngModule.bootstrap && deepForEach(ngModule.bootstrap,\n verifyComponentIsPartOfNgModule);\n ngModule.entryComponents &&\n deepForEach(ngModule.entryComponents, verifyComponentIsPartOfNgModule);\n }\n // Throw Error if any\n errors were detected.\n if (errors.length) {\n throw new Error(errors.join('\\n'));\n }\n //\n function\n verifyDeclarationsHaveDefinitions(type: Type<any>): void {\n type = resolveForwardRef(type);\n const def =\n getComponentDef(type) || getDirectiveDef(type) || getPipeDef(type);\n if (!def) {\n errors.push(`Unexpected\n value '${stringifyForError(type)}' declared by the module '${\n stringifyForError(moduleType)}'. Please add a\n @Pipe/@Directive/@Component annotation.`);\n }\n }\n function verifyDirectivesHaveSelector(type:

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Type<any>): void {\n type = resolveForwardRef(type);\n const def = getDirectiveDef(type);\n if (!getComponentDef(type) && def && def.selectors.length == 0) {\n errors.push(`Directive ${stringifyForError(type)} has no selector, please add it!`);\n }\n}\n\nfunction verifyExportsAreDeclaredOrReExported(type: Type<any>) {\n type = resolveForwardRef(type);\n const kind = getComponentDef(type) && 'component' || getDirectiveDef(type) && 'directive' || getPipeDef(type) && 'pipe';\n if (kind) {\n // only checked if we are declared as Component, Directive, or Pipe\n // Modules don't need to be declared or imported.\n if (combinedDeclarations.lastIndexOf(type) === -1) {\n // We are exporting something which we don't explicitly declare or import.\n errors.push(`Can't export ${kind} ${stringifyForError(type)} from ${stringifyForError(moduleType)} as it was neither declared nor imported!`);\n }\n }\n}\n\nfunction verifyDeclarationIsUnique(type: Type<any>, suppressErrors: boolean) {\n type = resolveForwardRef(type);\n const existingModule = ownerNgModule.get(type);\n if (existingModule && existingModule !== moduleType) {\n if (!suppressErrors) {\n const modules = [existingModule, moduleType].map(stringifyForError).sort();\n errors.push(`Type ${stringifyForError(type)} is part of the declarations of 2 modules: ${modules[0]} and ${modules[1]}!`);\n `Please consider moving ${stringifyForError(type)} to a higher module that imports ${modules[0]} and ${modules[1]}.`;\n `You can also create a new NgModule that exports and includes ${stringifyForError(type)} then import that NgModule in ${modules[0]} and ${modules[1]}.`;\n }\n } else {\n // Mark type as having owner.\n ownerNgModule.set(type, moduleType);\n }\n}\n\nfunction verifyComponentIsPartOfNgModule(type: Type<any>) {\n type = resolveForwardRef(type);\n const existingModule = ownerNgModule.get(type);\n if (!existingModule) {\n errors.push(`Component ${stringifyForError(type)} is not part of any NgModule or the module has not been imported into your module.`);\n }\n}\n\nfunction verifyCorrectBootstrapType(type: Type<any>) {\n type = resolveForwardRef(type);\n if (!getComponentDef(type)) {\n errors.push(`${stringifyForError(type)} cannot be used as an entry component.`);\n }\n}\n\nfunction verifyComponentEntryComponentsIsPartOfNgModule(type: Type<any>) {\n type = resolveForwardRef(type);\n if (getComponentDef(type)) {\n // We know we are component\n const component = getAnnotation<Component>(type, 'Component');\n if (component && component.entryComponents) {\n deepForEach(component.entryComponents, verifyComponentIsPartOfNgModule);\n }\n }\n}\n\nfunction verifySemanticsOfNgModuleImport(type: Type<any>, importingModule: Type<any>) {\n type = resolveForwardRef(type);\n if (getComponentDef(type) || getDirectiveDef(type)) {\n throw new Error(`Unexpected directive '${type.name}' imported by the module '${importingModule.name}'. Please add an @NgModule annotation.`);\n }\n if (getPipeDef(type)) {\n throw new Error(`Unexpected pipe '${type.name}' imported by the module '${importingModule.name}'. Please add an @NgModule annotation.`);\n }\n}\n\nfunction unwrapModuleWithProvidersImports(typeOrWithProviders: NgModuleType<any> | {\n ngModule: NgModuleType<any>;\n}): NgModuleType<any> {\n typeOrWithProviders = resolveForwardRef(typeOrWithProviders);\n return (typeOrWithProviders as any).ngModule || typeOrWithProviders;\n}\n\nfunction getAnnotation<T>(type: any, name: string): T | null {\n let annotation: T | null = null;\n collect(type.__annotations__); \n collect(type.decorators);\n return annotation;\n}\n\nfunction collect(annotations: any[] | null) {\n if (annotations) {\n annotations.forEach(readAnnotation);\n }\n}\n\nfunction readAnnotation(decorator: {type: {prototype: {ngMetadataName: string}}, args: any[], args: any}): void {\n if (!annotation) {\n const proto = Object.getPrototypeOf(decorator);\n if (proto.ngMetadataName === name) {\n annotation = decorator as any;\n } else if (decorator.type) {\n const proto = Object.getPrototypeOf(decorator.type);\n if (proto.ngMetadataName === name) {\n annotation = decorator.args[0];\n }\n }\n }\n}\n\nlet ownerNgModule = new Map<Type<any>, NgModuleType<any>>();\nlet verifiedNgModule = new Map<NgModuleType<any>, boolean>();\nexport

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function resetCompiledComponents(): void {\n ownerNgModule = new Map<Type<any>,\n NgModuleType<any>>();\n verifiedNgModule = new Map<NgModuleType<any>, boolean>();\n moduleQueue.length = 0;\n}\n\n/**\n * Computes the combined declarations of explicit declarations, as well as\n * declarations inherited by\n * traversing the exports of imported modules.\n * @param type\n */\nfunction\n computeCombinedExports(type: Type<any>): Type<any>[] {\n type = resolveForwardRef(type);\n const\n ngModuleDef = getNgModuleDef(type, true);\n return\n [...flatten(maybeUnwrapFn(ngModuleDef.exports).map((type) => {\n const ngModuleDef =\n getNgModuleDef(type);\n if (ngModuleDef) {\n verifySemanticsOfNgModuleDef(type as any as\n NgModuleType, false);\n return computeCombinedExports(type);\n } else {\n return type;\n }\n })]);\n}\n\n/**\n * Some declared components may be compiled asynchronously, and thus may not have their\n * cmp set yet. If this is the case, then a reference to the module is written into\n * the `ngSelectorScope` property of\n * the declared type.\n */\nfunction setScopeOnDeclaredComponents(moduleType: Type<any>, NgModule:\n NgModule) {\n const declarations: Type<any>[] = flatten(ngModule.declarations || EMPTY_ARRAY);\n const\n transitiveScopes = transitiveScopesFor(moduleType);\n declarations.forEach(declaration => {\n if\n (declaration.hasOwnProperty(NG_COMP_DEF)) {\n // A `cmp` field exists - go ahead and patch the component\n directly.\n const component = declaration as Type<any>& {cmp: ComponentDef<any>};\n const\n componentDef = getComponentDef(component)!;\n patchComponentDefWithScope(componentDef,\n transitiveScopes);\n } else if (!declaration.hasOwnProperty(NG_DIR_DEF) &&\n !declaration.hasOwnProperty(NG_PIPE_DEF)) {\n // Set `ngSelectorScope` for future reference when the\n component compilation finishes.\n (declaration as Type<any>& {ngSelectorScope?: any}).ngSelectorScope =\n moduleType;\n }\n });\n}\n\n/**\n * Patch the definition of a component with directives and pipes from the\n * compilation scope of\n * a given module.\n */\nexport function patchComponentDefWithScope<C>(\n componentDef: ComponentDef<C>, transitiveScopes: NgModuleTransitiveScopes) {\n componentDef.directiveDefs = () =>\n Array.from(transitiveScopes.compilation.directives)\n .map(\n dir => dir.hasOwnProperty(NG_COMP_DEF) ? getComponentDef(dir)! : getDirectiveDef(dir)!)\n .\n filter(def => !!def);\n componentDef.pipeDefs = () =>\n Array.from(transitiveScopes.compilation.pipes).map(pipe => getPipeDef(pipe)!);\n componentDef.schemas =\n transitiveScopes.schemas;\n}\n\n// Since we avoid Components/Directives/Pipes recompiling in case there are no\n// overrides, we\n// may face a problem where previously compiled defs available to a given Component/Directive\n// are cached in TView and may become stale (in case any of these defs gets recompiled). In\n// order to avoid this\n// problem, we force fresh TView to be created.\n componentDef.tView = null;\n}\n\n/**\n * Compute the pair of\n * transitive scopes (compilation scope and exported scope) for a given module.\n */\n * This operation is memoized\n * and the result is cached on the module's definition. This function can\n * be called on modules with components that\n * have not fully compiled yet, but the result should not\n * be used until they have.\n */\n * @param moduleType\n * module that transitive scope should be calculated for.\n */\nexport function transitiveScopesFor<T>(moduleType:\n Type<T>): NgModuleTransitiveScopes {\n if (!isNgModule(moduleType)) {\n throw new\n Error(`${moduleType.name} does not have a module def (mod property)`);\n }\n const def =\n getNgModuleDef(moduleType);\n if (def.transitiveCompileScopes !== null) {\n return\n def.transitiveCompileScopes;\n }\n const scopes: NgModuleTransitiveScopes = {\n schemas: def.schemas ||\n null,\n compilation: {\n directives: new Set<any>(),\n pipes: new Set<any>(),\n },\n exported: {\n directives: new Set<any>(),\n pipes: new Set<any>(),\n },\n };\n\n maybeUnwrapFn(def.imports).forEach(<I>(imported: Type<I>) => {\n const importedType = imported as\n Type<I>& {\n // If imported is an @NgModule:\n mod?: NgModuleDef<I>;\n };\n if\n (!isNgModule<I>(importedType)) {\n throw new Error(`Importing ${importedType.name} which does not have\n a mod property`);\n }\n // When this module imports another, the imported module's exported directives and\n pipes are\n // added to the compilation scope of this module.\n const importedScope =\n transitiveScopesFor(importedType);\n importedScope.exported.directives.forEach(entry =>\n scopes.compilation.directives.add(entry));\n importedScope.exported.pipes.forEach(entry =>

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scopes.compilation.pipes.add(entry));\n });\n\n maybeUnwrapFn(def.declarations).forEach(declared => {\n const
declaredWithDefs = declared as Type<any>& {\n pipe?: any;\n });\n\n if (getPipeDef(declaredWithDefs)) {\n
scopes.compilation.pipes.add(declared);\n } else {\n // Either declared has a cmp or dir, or it's a component
which hasn't\n // had its template compiled yet. In either case, it gets added to the compilation's\n //
directives.\n scopes.compilation.directives.add(declared);\n });\n\n
maybeUnwrapFn(def.exports).forEach(<E>(exported: Type<E>) => {\n const exportedType = exported as
Type<E>& {\n // Components, Directives, NgModules, and Pipes can all be exported.\n cmp?: any;\n dir?:
any;\n mod?: NgModuleDef<E>;\n pipe?: any;\n });\n\n // Either the type is a module, a pipe, or a
component/directive (which may not have a\n // cmp as it might be compiled asynchronously).\n if
(isNgModule(exportedType)) {\n // When this module exports another, the exported module's exported directives
and pipes are\n // added to both the compilation and exported scopes of this module.\n const exportedScope =
transitiveScopesFor(exportedType);\n exportedScope.exported.directives.forEach(entry => {\n
scopes.compilation.directives.add(entry);\n scopes.exported.directives.add(entry);\n });\n
exportedScope.exported.pipes.forEach(entry => {\n scopes.compilation.pipes.add(entry);\n
scopes.exported.pipes.add(entry);\n });\n } else if (getPipeDef(exportedType)) {\n
scopes.exported.pipes.add(exportedType);\n } else {\n scopes.exported.directives.add(exportedType);\n }\n
});\n\n def.transitiveCompileScopes = scopes;\n return scopes;\n}\n\nfunction expandModuleWithProviders(value:
Type<any>|ModuleWithProviders<{}>): Type<any> {\n if (isModuleWithProviders(value)) {\n return
value.ngModule;\n }\n return value;\n}\n\nfunction isModuleWithProviders(value: any): value is
ModuleWithProviders<{}> {\n return (value as {ngModule?: any}).ngModule !== undefined;\n}\n\nfunction
isNgModule<T>(value: Type<T>): value is Type<T>&{mod: NgModuleDef<T>} {\n return
!!getNgModuleDef(value);\n}\n\n", "/*\n * @license\n * Copyright Google LLC All Rights Reserved.\n * Use of
this source code is governed by an MIT-style license that can be\n * found in the LICENSE file at
https://angular.io/license\n */\n\nimport {getCompilerFacade, R3DirectiveMetadataFacade} from
'./../compiler/compiler_facade';\nimport {R3ComponentMetadataFacade, R3QueryMetadataFacade} from
'./../compiler/compiler_facade_interface';\nimport {resolveForwardRef} from './../di/forward_ref';\nimport
{getReflect, reflectDependencies} from './../di/jit/util';\nimport {Type} from './../interface/type';\nimport {Query}
from './../metadata/di';\nimport {Component, Directive, Input} from './../metadata/directives';\nimport
{componentNeedsResolution, maybeQueueResolutionOfComponentResources} from
'./../metadata/resource_loading';\nimport {ViewEncapsulation} from './../metadata/view';\nimport
{initNgDevMode} from './../util/ng_dev_mode';\nimport {getComponentDef, getDirectiveDef} from
'./definition';\nimport {EMPTY_ARRAY, EMPTY_OBJ} from './empty';\nimport {NG_COMP_DEF,
NG_DIR_DEF, NG_FACTORY_DEF} from './fields';\nimport {ComponentType} from
'./interfaces/definition';\nimport {stringifyForError} from './util/stringify_utils';\nimport {angularCoreEnv} from
'./environment';\nimport {getJitOptions} from './jit_options';\nimport
{flushModuleScopingQueueAsMuchAsPossible, patchComponentDefWithScope, transitiveScopesFor} from
'./module';\n\n/**\n * Keep track of the compilation depth to avoid reentrancy issues during JIT compilation. This\n
* matters in the following scenario:\n * Consider a component 'A' that extends component 'B', both declared in
module 'M'. During\n * the compilation of 'A' the definition of 'B' is requested to capture the inheritance chain,\n
* potentially triggering compilation of 'B'. If this nested compilation were to trigger\n *
`flushModuleScopingQueueAsMuchAsPossible` it may happen that module 'M' is still pending in the\n * queue,
resulting in 'A' and 'B' to be patched with the NgModule scope. As the compilation of\n * 'A' is still in progress, this
would introduce a circular dependency on its compilation. To avoid\n * this issue, the module scope queue is only
flushed for compilations at the depth 0, to ensure\n * all compilations have finished.\n */\n\nlet compilationDepth =
0;\n\n/**\n * Compile an Angular component according to its decorator metadata, and patch the resulting\n *
component def (cmp) onto the component type.\n * Compilation may be asynchronous (due to the need to
resolve URLs for the component template or\n * other resources, for example). In the event that compilation is not
immediate, `compileComponent`\n * will enqueue resource resolution into a global queue and will fail to return the

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`cmp`\n * until the global queue has been resolved with a call to `resolveComponentResources`.\n */\nexport
function compileComponent(type: Type<any>, metadata: Component): void {\n // Initialize ngDevMode. This must
be the first statement in compileComponent.\n // See the `initNgDevMode` docstring for more information.\n
(typeof ngDevMode === 'undefined' || ngDevMode) && initNgDevMode();\n\n let ngComponentDef: any =
null;\n\n // Metadata may have resources which need to be resolved.\n
maybeQueueResolutionOfComponentResources(type, metadata);\n\n // Note that we're using the same function as
`Directive`, because that's only subset of metadata\n // that we need to create the ngFactoryDef. We're avoiding
using the component metadata\n // because we'd have to resolve the asynchronous templates.\n
addDirectiveFactoryDef(type, metadata);\n\n Object.defineProperty(type, NG_COMP_DEF, {\n get: () => {\n
if (ngComponentDef === null) {\n const compiler = getCompilerFacade();\n if
(componentNeedsResolution(metadata)) {\n const error = [`Component '${type.name}' is not resolved:`];\n
if (metadata.templateUrl) {\n error.push(` - templateUrl: ${metadata.templateUrl}`);\n } \n if
(metadata.styleUrls && metadata.styleUrls.length) {\n error.push(` - styleUrls:
${JSON.stringify(metadata.styleUrls)}`);\n } \n error.push(`Did you run and wait for
'resolveComponentResources()'?`);\n throw new Error(error.join("\n")); \n } \n\n // This const was
called `jitOptions` previously but had to be renamed to `options` because\n // of a bug with Terser that caused
optimized JIT builds to throw a `ReferenceError`.\n // This bug was investigated in
https://github.com/angular/angular-cli/issues/17264.\n // We should not rename it back until
https://github.com/terser/terser/issues/615 is fixed.\n const options = getJitOptions();\n let
preserveWhitespaces = metadata.preserveWhitespaces;\n if (preserveWhitespaces === undefined) {\n if
(options !== null && options.preserveWhitespaces !== undefined) {\n preserveWhitespaces =
options.preserveWhitespaces;\n } else {\n preserveWhitespaces = false;\n } \n } \n let
encapsulation = metadata.encapsulation;\n if (encapsulation === undefined) {\n if (options !== null &&
options.defaultEncapsulation !== undefined) {\n encapsulation = options.defaultEncapsulation;\n } else
{\n encapsulation = ViewEncapsulation.Emulated;\n } \n } \n\n const templateUrl =
metadata.templateUrl || `ng://${type.name}/template.html`;\n const meta: R3ComponentMetadataFacade = {\n
...directiveMetadata(type, metadata),\n typeSourceSpan: compiler.createParseSourceSpan('Component',
type.name, templateUrl),\n template: metadata.template || "",\n preserveWhitespaces,\n styles:
metadata.styles || EMPTY_ARRAY,\n animations: metadata.animations,\n directives: [],\n
changeDetection: metadata.changeDetection,\n pipes: new Map(),\n encapsulation,\n interpolation:
metadata.interpolation,\n viewProviders: metadata.viewProviders || null,\n }; \n\n
compilationDepth++;\n try {\n if (meta.usesInheritance) {\n
addDirectiveDefToUndecoratedParents(type);\n } \n\n ngComponentDef =
compiler.compileComponent(angularCoreEnv, templateUrl, meta);\n } finally {\n // Ensure that the
compilation depth is decremented even when the compilation failed.\n compilationDepth--;\n } \n\n if
(compilationDepth === 0) {\n // When NgModule decorator executed, we enqueued the module definition
such that\n // it would only dequeue and add itself as module scope to all of its declarations,\n // but only
if if all of its declarations had resolved. This call runs the check\n // to see if any modules that are in the queue
can be dequeued and add scope to\n // their declarations.\n
flushModuleScopingQueueAsMuchAsPossible(); \n } \n\n // If component compilation is async, then the
@NgModule annotation which declares the\n // component may execute and set an ngSelectorScope property
on the component type. This\n // allows the component to patch itself with directiveDefs from the module after
it\n // finishes compiling.\n if (hasSelectorScope(type)) {\n const scopes =
transitiveScopesFor(type.ngSelectorScope);\n patchComponentDefWithScope(ngComponentDef, scopes);\n
} \n } \n\n return ngComponentDef;\n }, \n\n // Make the property configurable in dev mode to allow
overriding in tests\n configurable: !!ngDevMode,\n }); \n\n\nfunction hasSelectorScope<T>(component:
Type<T>): component is Type<T>&\n {ngSelectorScope: Type<any>} {\n return (component as
{ngSelectorScope?: any}).ngSelectorScope !== undefined;\n } \n\n\n/**\n * Compile an Angular directive according to

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its decorator metadata, and patch the resulting
 * directive def onto the component type.
 * In the event that
compilation is not immediate, `compileDirective` will return a `Promise` which
 * will resolve when compilation
completes and the directive becomes usable.
 *
export function compileDirective(type: Type<any>, directive:
Directive|null): void {
 let ngDirectiveDef: any = null;
 addDirectiveFactoryDef(type, directive || {});
 Object.defineProperty(type, NG_DIR_DEF, {
 get: () => {
 if (ngDirectiveDef === null) {
 //
`directive` can be null in the case of abstract directives as a base class
 // that use `@Directive()` with no
selector. In that case, pass empty object to the
 // `directiveMetadata` function instead of null.
 const meta
= getDirectiveMetadata(type, directive || {});
 ngDirectiveDef =
getCompilerFacade().compileDirective(angularCoreEnv, meta.sourceMapUrl, meta.metadata);
 }
 return
ngDirectiveDef;
 },
 });
 // Make the property configurable in dev mode to allow overriding in tests
configurable: !!ngDevMode,
});
}
function getDirectiveMetadata(type: Type<any>, metadata: Directive) {
const name = type && type.name;
const sourceMapUrl = `ng://${name}/dir.js`;
const compiler =
getCompilerFacade();
const facade = directiveMetadata(type as ComponentType<any>, metadata);
facade.typeSourceSpan = compiler.createParseSourceSpan('Directive', name, sourceMapUrl);
if
(facade.usesInheritance) {
 addDirectiveDefToUndecoratedParents(type);
}
return {metadata: facade,
sourceMapUrl};
}
function addDirectiveFactoryDef(type: Type<any>, metadata: Directive|Component) {
let
ngFactoryDef: any = null;
 Object.defineProperty(type, NG_FACTORY_DEF, {
 get: () => {
 if
(ngFactoryDef === null) {
 const meta = getDirectiveMetadata(type, metadata);
 const compiler =
getCompilerFacade();
 ngFactoryDef = compiler.compileFactory(angularCoreEnv, `ng://${type.name}/fac.js`,
{
 ...meta.metadata,
 injectFn: 'directiveInject',
 target: compiler.R3FactoryTarget.Directive
});
 }
 return ngFactoryDef;
 },
 });
 // Make the property configurable in dev mode to allow overriding in
tests
 configurable: !!ngDevMode,
});
}
export function extendsDirectlyFromObject(type: Type<any>):
boolean {
 return Object.getPrototypeOf(type.prototype) === Object.prototype;
}
/**
 * Extract the
`R3DirectiveMetadata` for a particular directive (either a `Directive` or a
`Component`.)
 *
export function
directiveMetadata(type: Type<any>, metadata: Directive): R3DirectiveMetadataFacade {
 // Reflect inputs and
outputs.
 const reflect = getReflect();
 const propMetadata = reflect.ownPropMetadata(type);
 return {
name: type.name,
type: type,
typeArgumentCount: 0,
selector: metadata.selector !== undefined ?
metadata.selector : null,
deps: reflectDependencies(type),
host: metadata.host || EMPTY_OBJ,
propMetadata: propMetadata,
inputs: metadata.inputs || EMPTY_ARRAY,
outputs: metadata.outputs ||
EMPTY_ARRAY,
queries: extractQueriesMetadata(type, propMetadata, isContentQuery),
lifecycle:
{usesOnChanges: reflect.hasLifecycleHook(type, 'ngOnChanges')},
typeSourceSpan: null!,
usesInheritance:
!extendsDirectlyFromObject(type),
exportAs: extractExportAs(metadata.exportAs),
providers:
metadata.providers || null,
viewQueries: extractQueriesMetadata(type, propMetadata, isViewQuery)
};
}
/**
 * Adds a directive definition to all parent classes of a type that don't have an Angular decorator.
 *
function addDirectiveDefToUndecoratedParents(type: Type<any>) {
 const objPrototype =
Object.prototype;
 let parent = Object.getPrototypeOf(type.prototype).constructor;
 // Go up the prototype until
we hit `Object`.
 while (parent && parent !== objPrototype) {
 // Since inheritance works if the class was
annotated already, we only need to add
 // the def if there are no annotations and the def hasn't been created
already.
 if (!getDirectiveDef(parent) && !getComponentDef(parent) &&
shouldAddAbstractDirective(parent)) {
 compileDirective(parent, null);
 }
 parent =
Object.getPrototypeOf(parent);
 }
}
function convertToR3QueryPredicate(selector: any): any|string[] {
 return typeof selector === 'string' ? splitByComma(selector) : resolveForwardRef(selector);
}
export function
convertToR3QueryMetadata(propertyName: string, ann: Query): R3QueryMetadataFacade {
 return {
propertyName: propertyName,
predicate: convertToR3QueryPredicate(ann.selector),
descendants:
ann.descendants,
first: ann.first,
read: ann.read ? ann.read : null,
static: !!ann.static
};
}
function
extractQueriesMetadata(
 type: Type<any>, propMetadata: {[key: string]: any[]},
 isQueryAnn: (ann: any) =>
ann is Query): R3QueryMetadataFacade[] {
 const queriesMeta: R3QueryMetadataFacade[] = [];
 for (const
field in propMetadata) {
 if (propMetadata.hasOwnProperty(field)) {
 const annotations =

```

```

propMetadata[field];\n annotations.forEach(ann => {\n if (isQueryAnn(ann)) {\n if (!ann.selector) {\n throw new Error(\n `Can't construct a query for the property \"${field}\" of ` +\n `\"${stringifyForError(type)}\" since the query selector wasn't defined.`);\n }\n if\n (annotations.some(isInputAnnotation)) {\n throw new Error(`Cannot combine @Input decorators with query\n decorators`);\n }\n queriesMeta.push(convertToR3QueryMetadata(field, ann));\n }\n });\n}\n\nreturn queriesMeta;\n}\n\nfunction extractExportAs(exportAs: string|undefined): string[]|null {\n return\n exportAs === undefined ? null : splitByComma(exportAs);\n}\n\nfunction isContentQuery(value: any): value is\n Query {\n const name = value.ngMetadataName;\n return name === 'ContentChild' || name ===\n 'ContentChildren';\n}\n\nfunction isViewQuery(value: any): value is Query {\n const name =\n value.ngMetadataName;\n return name === 'ViewChild' || name === 'ViewChildren';\n}\n\nfunction\n isInputAnnotation(value: any): value is Input {\n return value.ngMetadataName === 'Input';\n}\n\nfunction\n splitByComma(value: string): string[] {\n return value.split(',').map(piece => piece.trim());\n}\n\nconst\n LIFECYCLE_HOOKS = [\n 'ngOnChanges', 'ngOnInit', 'ngOnDestroy', 'ngDoCheck', 'ngAfterViewInit',\n 'ngAfterViewChecked', 'ngAfterContentInit', 'ngAfterContentChecked'];\n\nfunction\n shouldAddAbstractDirective(type: Type<any>): boolean {\n const reflect = getReflect();\n if\n (LIFECYCLE_HOOKS.some(hookName => reflect.hasLifecycleHook(type, hookName))) {\n return true;\n }\n}\n\nconst propMetadata = reflect.propMetadata(type);\n\nfor (const field in propMetadata) {\n const annotations =\n propMetadata[field];\n for (let i = 0; i < annotations.length; i++) {\n const current = annotations[i];\n const\n metadataName = current.ngMetadataName;\n\n if (isInputAnnotation(current) || isContentQuery(current) ||\n isViewQuery(current) ||\n metadataName === 'Output' || metadataName === 'HostBinding' ||\n metadataName === 'HostListener') {\n return true;\n }\n }\n return false;\n}\n\n\"**\n * @license\n * Copyright Google LLC All Rights Reserved.\n * Use of this source code is governed by an MIT-style license\n * that can be\n * found in the LICENSE file at https://angular.io/license\n */\n\nimport {getCompilerFacade,\n R3PipeMetadataFacade} from '../compiler/compiler_facade';\nimport {reflectDependencies} from\n '../di/jit/util';\nimport {Type} from '../interface/type';\nimport {Pipe} from '../metadata/directives';\nimport\n {NG_FACTORY_DEF, NG_PIPE_DEF} from '../fields';\nimport {angularCoreEnv} from\n './environment';\n\nexport function compilePipe(type: Type<any>, meta: Pipe): void {\n let ngPipeDef: any =\n null;\n let ngFactoryDef: any = null;\n\n Object.defineProperty(type, NG_FACTORY_DEF, {\n get: () => {\n if (ngFactoryDef === null) {\n const metadata = getPipeMetadata(type, meta);\n const compiler =\n getCompilerFacade();\n ngFactoryDef = compiler.compileFactory(\n angularCoreEnv,\n `ng://${metadata.name}/fac.js`,\n {...metadata, injectFn: 'directiveInject', target:\n compiler.R3FactoryTarget.Pipe});\n }\n return ngFactoryDef;\n },\n });\n // Make the property configurable in\n dev mode to allow overriding in tests\n configurable: !!ngDevMode,\n});\n\nObject.defineProperty(type,\n NG_PIPE_DEF, {\n get: () => {\n if (ngPipeDef === null) {\n const metadata = getPipeMetadata(type,\n meta);\n ngPipeDef = getCompilerFacade().compilePipe(\n angularCoreEnv,\n `ng://${metadata.name}/pipe.js`,\n metadata);\n }\n return ngPipeDef;\n },\n });\n // Make the property\n configurable in dev mode to allow overriding in tests\n configurable: !!ngDevMode,\n});\n\nfunction\n getPipeMetadata(type: Type<any>, meta: Pipe): R3PipeMetadataFacade {\n return {\n type: type,\n typeArgumentCount: 0,\n name: type.name,\n deps: reflectDependencies(type),\n pipeName: meta.name,\n pure: meta.pure !== undefined ? meta.pure : true\n };\n}\n\n\"**\n * @license\n * Copyright Google LLC All\n * Rights Reserved.\n * Use of this source code is governed by an MIT-style license that can be\n * found in the\n * LICENSE file at https://angular.io/license\n */\n\nimport {ChangeDetectionStrategy} from\n '../change_detection/constants';\nimport {Provider} from '../di/interface/provider';\nimport {Type} from\n '../interface/type';\nimport {compileComponent as render3CompileComponent, compileDirective as\n render3CompileDirective} from './render3/jit/directive';\nimport {compilePipe as render3CompilePipe} from\n './render3/jit/pipe';\nimport {makeDecorator, makePropDecorator, TypeDecorator} from './util/decorators';\nimport\n {noop} from './util/noop';\nimport {ViewEncapsulation} from './view';\n\n\"**\n * Type of the Directive\n * decorator / constructor function.\n * @publicApi\n */\n\nexport interface DirectiveDecorator {\n /**\n * Decorator

```

that marks a class as an Angular directive.

- You can define your own directives to attach custom behavior to elements in the DOM.
- The options provide configuration metadata that determines how the directive should be processed, instantiated and used at runtime.
- Directive classes, like component classes, can implement [life-cycle hooks](guide/lifecycle-hooks) to influence their configuration and behavior.

`@usageNotes`

To define a directive, mark the class with the decorator and provide metadata.

```
import {Directive} from '@angular/core';
@Directive({
 selector: 'my-directive',
})
export class MyDirective {
 ...
}
Declaring directives
Directives are [declarables](guide/glossary#declarable). They must be declared by an NgModule in order to be usable in an app. A directive must belong to exactly one NgModule. Do not re-declare a directive imported from another module. List the directive class in the `declarations` field of an NgModule.
```

```
declarations: [AppComponent, MyDirective],
@Annotation
(obj?: Directive): TypeDecorator;
/** See the `Directive` decorator.
 new(obj?: Directive):
 Directive;
}
Directive decorator and metadata.
@Annotation
@publicApi
export interface Directive {
 /** The CSS selector that identifies this directive in a template and triggers instantiation of the directive.
 Declare as one of the following:
 * - `element-name`: Select by element name.
 * - `.class`: Select by class name.
 * - `[attribute]`: Select by attribute name.
 * - `[attribute=value]`: Select by attribute name and value.
 * - `:not(sub_selector)`: Select only if the element does not match the `sub_selector`.
 * - `selector1, selector2`: Select if either `selector1` or `selector2` matches.
 Angular only allows directives to apply on CSS selectors that do not cross element boundaries.
 For the following template HTML, a directive with an `input[type=text]` selector, would be instantiated only on the
 <input type="text"> element.
 html
 <form>
 <input type="text">
 <input type="radio">
 <form>
 selector?: string;
 /** Enumerates the set of data-bound input properties for a directive
 Angular automatically updates input properties during change detection.
 The `inputs` property defines a set of `directiveProperty` to `bindingProperty` configuration:
 - `directiveProperty` specifies the component property where the value is written.
 - `bindingProperty` specifies the DOM property where the value is read from.
 When `bindingProperty` is not provided, it is assumed to be equal to `directiveProperty`.
 @usageNotes
 The following example creates a component with two data-bound properties.
 typescript
 @Component({
 selector: 'bank-account',
 inputs: ['bankName', 'id: account-id'],
 template: `
 Bank Name: {{bankName}}
 Account Id: {{id}}
 `
 })
 class BankAccount {
 bankName: string;
 id: string;
 }
 /** Enumerates the set of event-bound output properties.
 When an output property emits an event, an event handler attached to that event in the template is invoked.
 The `outputs` property defines a set of `directiveProperty` to `bindingProperty` configuration:
 - `directiveProperty` specifies the component property that emits events.
 - `bindingProperty` specifies the DOM property the event handler is attached to.
 @usageNotes
 typescript
 @Component({
 selector: 'child-dir',
 outputs: ['bankNameChange']
 })
 class ChildDir {
 bankNameChange: EventEmitter<string> = new EventEmitter<string>();
 }
 @Component({
 selector: 'main',
 template: `
 {{bankName}} <child-dir (bankNameChange)="onBankNameChange($event)"></child-dir>
 `
 })
 class MainComponent {
 bankName: string;
 onBankNameChange(bankName: string) {
 this.bankName = bankName;
 }
 }
 /** Configures the [injector](guide/glossary#injector) of this directive or component with a [token](guide/glossary#di-token) that maps to a [provider](guide/glossary#provider) of a dependency.
 providers?: Provider[];
 /** Defines the name that can be used in the template to assign this directive to a variable.
 @usageNotes
 ts
 @Directive({
 selector: 'child-dir',
 exportAs: 'child'
 })
 class ChildDir {
 }
 @Component({
 selector: 'main',
 template: `<child-dir #c="child"></child-dir>`
 })
 class MainComponent {
 }
 /** Configures the queries that will be injected into the directive.
 Content
```

queries are set before the `ngAfterContentInit` callback is called.

View queries are set before the `ngAfterViewInit` callback is called.

`@usageNotes`

The following example shows how queries are defined and when their results are available in lifecycle hooks:

```

@Component({
 selector: 'someDir',
 queries: {
 contentChildren: new ContentChildren(ChildDirective),
 viewChildren: new ViewChildren(ChildDirective)
 },
 template: '<child-directive></child-directive>'
})
class SomeDir {
 contentChildren: QueryList<ChildDirective>;
 viewChildren: QueryList<ChildDirective>;

 ngAfterContentInit() {
 // contentChildren is set
 }

 ngAfterViewInit() {
 // viewChildren is set
 }
}

```

`@Annotation`

`queries?:` `{[key: string]: any};`

Maps class properties to host element bindings for properties, attributes, and events, using a set of key-value pairs.

Angular automatically checks host property bindings during change detection.

If a binding changes, Angular updates the directive's host element.

When the key is a property of the host element, the property value is propagated to the specified DOM property.

When the key is a static attribute in the DOM, the attribute value is propagated to the specified property in the host element.

For event handling:

- The key is the DOM event that the directive listens to.
- To listen to global events, add the target to the event name.
- The target can be `'window'`, `'document'` or `'body'`.
- The value is the statement to execute when the event occurs. If the statement evaluates to `'false'`, then `preventDefault` is applied on the DOM event. A handler method can refer to the `$event` local variable.

`host?:` `{[key: string]: string};`

When present, this directive/component is ignored by the AOT compiler. It remains in distributed code, and the JIT compiler attempts to compile it at run time, in the browser.

To ensure the correct behavior, the app must import `@angular/compiler`.

`jit?:` `true;`

Type of the Directive metadata.

`@publicApi`

`export const Directive:`

```

DirectiveDecorator = makeDecorator(
 'Directive', (dir: Directive = {}) => dir, undefined, undefined,
 (type: Type<any>, meta: Directive) => SWITCH_COMPILE_DIRECTIVE(type, meta));

```

Component decorator interface

`@publicApi`

`export interface ComponentDecorator` {

Decorator that marks a class as an Angular component and provides configuration metadata that determines how the component should be processed, instantiated, and used at runtime.

Components are the most basic UI building block of an Angular app.

An Angular app contains a tree of Angular components.

Angular components are a subset of directives, always associated with a template.

Unlike other directives, only one component can be instantiated for a given element in a template.

A component must belong to an `NgModule` in order for it to be available to another component or application. To make it a member of an `NgModule`, list it in the `declarations` field of the `NgModule` metadata.

Note that, in addition to these options for configuring a directive, you can control a component's runtime behavior by implementing life-cycle hooks. For more information, see the [\[Lifecycle Hooks\]\(guide/lifecycle-hooks\) guide](#).

`@usageNotes`

### Setting component inputs

The following example creates a component with two data-bound properties, specified by the `inputs` value.

```

<code-example path="core/ts/metadata/directives.ts"
region="component-input"></code-example>

```

### Setting component outputs

The following example shows two event emitters that emit on an interval. One emits an output every second, while the other emits every five seconds.

```

{
 @example core/ts/metadata/directives.ts region="component-output-interval"
}

```

### Injecting a class with a view provider

The following simple example injects a class into a component using the view provider specified in component metadata:

```

class Greeter {
 greet(name:string) {
 return 'Hello ' + name + '!';
 }
}

@Directive({
 selector: 'needs-greeter'
})
class NeedsGreeter {
 greeter:Greeter;

 constructor(greeter:Greeter) {
 this.greeter = greeter;
 }
}

@Component({
 selector: 'greet',
 viewProviders: [
 Greeter
],
 template: '<needs-greeter></needs-greeter>'
})
class HelloWorld {
}

```

### Preserving whitespace

Removing whitespace can greatly reduce AOT-generated code size and speed up view creation.

As of Angular 6, the default for `preserveWhitespaces` is `false` (whitespace is removed).

To change the default setting for all components in your application, set the `preserveWhitespaces` option of the AOT compiler.

By default, the AOT



superfluous whitespace characters from the compiled template. Whitespace characters are those matching the `\s` character class in JavaScript regular expressions. Default is false, unless overridden in compiler options.

`preserveWhitespaces?: boolean;`

`Component decorator and metadata.`

```

@Annotation
@publicApi
export const Component: ComponentDecorator = makeDecorator(
 'Component', (c: Component = {}) => ({changeDetection: ChangeDetectionStrategy.Default, ...c}),
 Directive,
 undefined,
 (type: Type<any>, meta: Component) => SWITCH_COMPILE_COMPONENT(type, meta));

```

`Type of the Pipe decorator / constructor function.`

```

@publicApi
export interface PipeDecorator {
 /**
 * Decorator that marks a class as pipe and supplies configuration metadata.
 *
 * A pipe class must implement the `PipeTransform` interface.
 * For example, if the name is `myPipe`, use a template binding expression such as the following:
 * ```
 * {{ exp | myPipe }}
 * ```
 * The result of the expression is passed to the pipe's `transform()` method.
 * A pipe must belong to an NgModule in order for it to be available to a template. To make it a member of an NgModule, list it in the `declarations` field of the `NgModule` metadata.
 * @see [Style Guide: Pipe Names](guide/styleguide#02-09)
 *
 * (obj: Pipe): TypeDecorator;
 */
 /**
 * See the `Pipe` decorator.
 */
 new(obj: Pipe): Pipe;
}

```

`Type of the Pipe metadata.`

```

@publicApi
export interface Pipe {
 /**
 * The pipe name to use in template bindings.
 * Typically uses [lowerCamelCase](guide/glossary#case-types) because the name cannot contain hyphens.
 */
 name: string;
 /**
 * When true, the pipe is pure, meaning that the `transform()` method is invoked only when its input arguments change. Pipes are pure by default.
 * If the pipe has internal state (that is, the result depends on state other than its arguments), set `pure` to false.
 * In this case, the pipe is invoked on each change-detection cycle, even if the arguments have not changed.
 */
 pure?: boolean;
}

```

`Component decorator and metadata.`

```

@Annotation
@publicApi
export const Pipe: PipeDecorator = makeDecorator(
 'Pipe', (p: Pipe) => ({pure: true, ...p}),
 undefined,
 undefined,
 (type: Type<any>, meta: Pipe) => SWITCH_COMPILE_PIPE(type, meta));

```

`Component decorator and metadata.`

```

@publicApi
export interface InputDecorator {
 /**
 * Decorator that marks a class field as an input property and supplies configuration metadata.
 * The input property is bound to a DOM property in the template. During change detection, Angular automatically updates the data property with the DOM property's value.
 *
 * @usageNotes
 * You can supply an optional name to use in templates when the component is instantiated, that maps to the name of the bound property. By default, the original name of the bound property is used for input binding.
 * The following example creates a component with two input properties, one of which is given a special binding name.
 * ```typescript
 * @Component({
 * selector: 'bank-account',
 * template: `
 * Bank Name: {{ bankName }}
 * Account Id: {{ id }}
 * `
 * })
 * class BankAccount {
 * // This property is bound using its original name.
 * @Input() bankName: string;
 * // this property value is bound to a different property name
 * // when this component is instantiated in a template.
 * @Input('account-id') id: string;
 * // this property is not bound, and is not automatically updated by Angular
 * normalizedBankName: string;
 * }
 * @Component({
 * selector: 'app',
 * template: `
 * <bank-account bankName="RBC" account-id="4747"></bank-account>
 * `
 * })
 * class App {
 * ```
 * @see [Input and Output properties](guide/inputs-outputs)
 */
 (bindingPropertyName?: string): any;
 new(bindingPropertyName?: string): any;
}

```

`Type of metadata for an `Input` property.`

```

@publicApi
export interface Input {
 /**
 * The name of the DOM property to which the input property is bound.
 */
 bindingPropertyName?: string;
}

```

`Component decorator and metadata.`

```

@Annotation
@publicApi
export const Input: InputDecorator = makePropDecorator('Input', (bindingPropertyName?: string) => ({bindingPropertyName}));

```

`Type of the Output decorator / constructor function.`

```

@publicApi
export interface OutputDecorator {
 /**
 * Decorator that marks a class field as an output property and supplies configuration metadata.
 * The DOM property bound to the output property is automatically updated during change detection.
 *
 * @usageNotes
 * You can supply an optional name to use in templates when the component is instantiated, that maps to the name of the bound property. By default, the original name of the bound property is used for output binding.
 * See `Input` decorator for an example of providing a binding name.
 * @see [Input and Output properties](guide/inputs-outputs)
 */
}

```

```

*\n (bindingPropertyName?: string): any;\n new(bindingPropertyName?: string): any;\n\n/**\n * Type of the
Output metadata.\n *\n * @publicApi\n */\nexport interface Output {\n /**\n * The name of the DOM property to
which the output property is bound.\n */\n bindingPropertyName?: string;\n\n\n/**\n * @Annotation\n *
@publicApi\n */\nexport const Output: OutputDecorator =\n makePropDecorator('Output',
(bindingPropertyName?: string) => ({bindingPropertyName}));\n\n\n/**\n * Type of the HostBinding decorator /
constructor function.\n *\n * @publicApi\n */\nexport interface HostBindingDecorator {\n /**\n * Decorator that
marks a DOM property as a host-binding property and supplies configuration\n * metadata.\n * Angular
automatically checks host property bindings during change detection, and\n * if a binding changes it updates the
host element of the directive.\n *\n * @usageNotes\n *\n * The following example creates a directive that sets
the `valid` and `invalid`\n * properties on the DOM element that has an `ngModel` directive on it.\n *\n *
```\n * @Directive({selector: '[ngModel]'})\n * class NgModelStatus {\n * constructor(public control:
NgModel) {\n * @HostBinding('class.valid') get valid() { return this.control.valid; }\n *
@HostBinding('class.invalid') get invalid() { return this.control.invalid; }\n * }\n * }\n * @Component({\n *
selector: 'app',\n * template: `<input [(ngModel)]="prop">`,\n * })\n * class App {\n * prop;\n * }\n *
```\n *\n */\n (hostPropertyName?: string): any;\n new(hostPropertyName?: string): any;\n\n\n/**\n * Type of
the HostBinding metadata.\n *\n * @publicApi\n */\nexport interface HostBinding {\n /**\n * The DOM property
that is bound to a data property.\n */\n hostPropertyName?: string;\n\n\n/**\n * @Annotation\n *
@publicApi\n */\nexport const HostBinding: HostBindingDecorator =\n makePropDecorator('HostBinding',
(hostPropertyName?: string) => ({hostPropertyName}));\n\n\n/**\n * Type of the HostListener decorator /
constructor function.\n *\n * @publicApi\n */\nexport interface HostListenerDecorator {\n /**\n * Decorator that
declares a DOM event to listen for,\n * and provides a handler method to run when that event occurs.\n */\n
(eventName: string, args?: string[]): any;\n new(eventName: string, args?: string[]): any;\n\n\n/**\n * Type of the
HostListener metadata.\n *\n * @publicApi\n */\nexport interface HostListener {\n /**\n * The DOM event to
listen for.\n */\n eventName?: string;\n /**\n * A set of arguments to pass to the handler method when the event
occurs.\n */\n args?: string[];\n\n\n/**\n * Decorator that binds a DOM event to a host listener and supplies
configuration metadata.\n * Angular invokes the supplied handler method when the host element emits the specified
event,\n * and updates the bound element with the result.\n * If the handler method returns false, applies
`preventDefault` on the bound element.\n *\n * @usageNotes\n *\n * The following example declares a directive\n *
that attaches a click listener to a button and counts clicks.\n *\n * ```\n * @Directive({selector:
'button[counting]'})\n * class CountClicks {\n * numberOfClicks = 0;\n * @HostListener('click',
['$event.target'])\n * onClick(btn) {\n * console.log('button', btn, 'number of clicks:', this.numberOfClicks++);\n *
}\n * }\n * @Component({\n * selector: 'app',\n * template: '<button counting>Increment</button>',\n *
})\n * class App {\n * }\n * ```\n *\n * The following example registers another DOM event handler that listens for
key-press events.\n *\n * ```\n * import { HostListener, Component } from '@angular/core';\n *\n *
@Component({\n * selector: 'app',\n * template: `<h1>Hello, you have pressed keys {{counter}} number of
times!</h1> Press any key to\n * increment the counter.\n * <button (click)="resetCounter()">Reset
Counter</button>`\n * })\n * class AppComponent {\n * counter = 0;\n * @HostListener('window:keydown',
['$event'])\n * handleKeyDown(event: KeyboardEvent) {\n * this.counter++; \n * }\n * resetCounter() {\n *
this.counter = 0;\n * }\n * }\n * ```\n *\n * @Annotation\n * @publicApi\n */\nexport const HostListener:
HostListenerDecorator =\n makePropDecorator('HostListener', (eventName?: string, args?: string[]) =>
({eventName, args}));\n\n\nexport const SWITCH_COMPILE_COMPONENT__POST_R3__ =
render3CompileComponent;\nexport const SWITCH_COMPILE_DIRECTIVE__POST_R3__ =
render3CompileDirective;\nexport const SWITCH_COMPILE_PIPE__POST_R3__ =
render3CompilePipe;\n\nconst SWITCH_COMPILE_COMPONENT__PRE_R3__ = noop;\nconst
SWITCH_COMPILE_DIRECTIVE__PRE_R3__ = noop;\nconst SWITCH_COMPILE_PIPE__PRE_R3__ =
noop;\n\nconst SWITCH_COMPILE_COMPONENT: typeof render3CompileComponent =
SWITCH_COMPILE_COMPONENT__PRE_R3__;\nconst SWITCH_COMPILE_DIRECTIVE: typeof
render3CompileDirective = SWITCH_COMPILE_DIRECTIVE__PRE_R3__;\nconst SWITCH_COMPILE_PIPE:

```

```

typeof render3CompilePipe = SWITCH_COMPILE_PIPE__PRE_R3__;\n", "/*\n * @license\n * Copyright
Google LLC All Rights Reserved.\n * \n * Use of this source code is governed by an MIT-style license that can be\n
* found in the LICENSE file at https://angular.io/license\n * \n\nimport { InjectorType, defineInjector } from
'./di/interface/defs';\nimport { Provider } from './di/interface/provider';\nimport
{ convertInjectableProviderToFactory } from './di/util';\nimport { Type } from './interface/type';\nimport
{ SchemaMetadata } from './metadata/schema';\nimport { compileNgModule as render3CompileNgModule } from
'./render3/jit/module';\nimport { makeDecorator, TypeDecorator } from './util/decorators';\nimport { NgModuleDef
from './ng_module_def';\n\n/**\n * @publicApi\n * \nexport type NgModuleDefWithMeta<T, Declarations,
Imports, Exports> = NgModuleDef<T>;\n\n/**\n * A wrapper around an NgModule that associates it with
[providers](guide/glossary#provider\n * \"Definition\"). Usage without a generic type is deprecated.\n * \n * @see
[Deprecations](guide/deprecations#modulewithproviders-type-without-a-generic)\n * \n * @publicApi\n * \nexport
interface ModuleWithProviders<T> {\n ngModule: Type<T>;\n providers?: Provider[];\n}\n\n/**\n * Type of
the NgModule decorator / constructor function.\n * \n * @publicApi\n * \nexport interface NgModuleDecorator {\n
/**\n * Decorator that marks a class as an NgModule and supplies configuration metadata.\n * \n (obj?:
NgModule): TypeDecorator;\n new(obj?: NgModule): NgModule;\n}\n\n/**\n * Type of the NgModule
metadata.\n * \n * @publicApi\n * \nexport interface NgModule {\n /**\n * The set of injectable objects that are
available in the injector\n * of this module.\n * \n * @see [Dependency Injection guide](guide/dependency-
injection)\n * @see [NgModule guide](guide/providers)\n * \n * @usageNotes\n * \n * Dependencies whose
providers are listed here become available for injection\n * into any component, directive, pipe or service that is a
child of this injector.\n * \n * The NgModule used for bootstrapping uses the root injector, and can provide
dependencies\n * to any part of the app.\n * \n * A lazy-loaded module has its own injector, typically a child of
the app root injector.\n * \n * Lazy-loaded services are scoped to the lazy-loaded module's injector.\n * \n * If a lazy-
loaded module also provides the `UserService`, any component created\n * within that module's context (such as
by router navigation) gets the local instance\n * of the service, not the instance in the root injector.\n * \n
Components in external modules continue to receive the instance provided by their injectors.\n * \n * ###
Example\n * \n * The following example defines a class that is injected in\n * the HelloWorld NgModule:\n * \n
* ``\n * class Greeter {\n * greet(name:string) {\n * return 'Hello ' + name + '!';\n * }\n * }\n * \n *
@NgModule({\n * providers: [\n * Greeter\n *]\n * })\n * class HelloWorld {\n * greeter:Greeter;\n
* \n * constructor(greeter:Greeter) {\n * this.greeter = greeter;\n * }\n * }\n * ``\n * \n\n providers?:
Provider[];\n\n/**\n * The set of components, directives, and pipes ([declarables](guide/glossary#declarable))\n
* that belong to this module.\n * \n * @usageNotes\n * \n * The set of selectors that are available to a template
include those declared here, and\n * those that are exported from imported NgModules.\n * \n * Declarables must
belong to exactly one module.\n * \n * The compiler emits an error if you try to declare the same class in more than one
module.\n * \n * Be careful not to declare a class that is imported from another module.\n * \n * ### Example\n * \n
* The following example allows the CommonModule to use the `NgFor`\n * directive.\n * \n * ``javascript\n *
@NgModule({\n * declarations: [NgFor]\n * })\n * class CommonModule {\n * }\n * ``\n * \n\n declarations?: Array<Type<any>|any[]>;\n\n /**\n * The set of NgModules whose exported
[declarables](guide/glossary#declarable)\n * are available to templates in this module.\n * \n * @usageNotes\n
* \n * A template can use exported declarables from any\n * imported module, including those from modules that
are imported indirectly\n * and re-exported.\n * \n * For example, `ModuleA` imports `ModuleB`, and also exports\n
* it, which makes the declarables from `ModuleB` available\n * wherever `ModuleA` is imported.\n * \n * ###
Example\n * \n * The following example allows MainModule to use anything exported by\n *
`CommonModule`:\n * \n * ``javascript\n * @NgModule({\n * imports: [CommonModule]\n * })\n * class
MainModule {\n * }\n * ``\n * \n\n imports?: Array<Type<any>|ModuleWithProviders<{}>|any[]>;\n\n
/**\n * The set of components, directives, and pipes declared in this\n * NgModule that can be used in the
template of any component that is part of an\n * NgModule that imports this NgModule. Exported declarations are
the module's public API.\n * \n * A declarable belongs to one and only one NgModule.\n * \n * A module can list
another module among its exports, in which case all of that module's\n * public declaration are exported.\n * \n *

```





```

HostBindingDecorator, HostListener, HostListenerDecorator, Input, InputDecorator, Output, OutputDecorator, Pipe,
PipeDecorator} from './metadata/directives';\nexport {DoBootstrap} from './metadata/do_bootstrap';\nexport
{ModuleWithProviders, NgModule, NgModuleDecorator} from './metadata/ng_module';\nexport
{CUSTOM_ELEMENTS_SCHEMA, NO_ERRORS_SCHEMA, SchemaMetadata} from
'/metadata/schema';\nexport {ViewEncapsulation} from './metadata/view';\n"/**\n * @license\n * Copyright
Google LLC All Rights Reserved.\n *\n * Use of this source code is governed by an MIT-style license that can be\n
* found in the LICENSE file at https://angular.io/license\n *\n\nimport {Inject, Injectable, InjectionToken,
Optional} from './di';\nimport {isPromise} from './util/lang';\nimport {noop} from './util/noop';\n\n/**\n * A [DI
token](guide/glossary#di-token \"DI token definition\") that you can use to provide\n * one or more initialization
functions.\n *\n * The provided functions are injected at application startup and executed during\n * app
initialization. If any of these functions returns a Promise, initialization\n * does not complete until the Promise is
resolved.\n *\n * You can, for example, create a factory function that loads language data\n * or an external
configuration, and provide that function to the `APP_INITIALIZER` token.\n * The function is executed during the
application bootstrap process,\n * and the needed data is available on startup.\n *\n * @see `ApplicationInitStatus`\n
*\n * @publicApi\n */\nexport const APP_INITIALIZER = new InjectionToken<Array<() => void>>('Application
Initializer');\n\n/**\n * A class that reflects the state of running {@link APP_INITIALIZER} functions.\n *\n *
@publicApi\n */\n@Injectable()\nexport class ApplicationInitStatus {\n private resolve = noop;\n private reject =
noop;\n private initialized = false;\n public readonly donePromise: Promise<any>;\n public readonly done =
false;\n\n constructor(@Inject(APP_INITIALIZER) @Optional() private appInits: (() => any)[]) {\n
this.donePromise = new Promise((res, rej) => {\n this.resolve = res;\n this.reject = rej;\n });\n }\n\n /**
@internal\n */\n runInitializers() {\n if (this.initialized) {\n return;\n }\n\n const asyncInitPromises:
Promise<any>[] = [];\n\n const complete = () => {\n (this as {done: boolean}).done = true;\n
this.resolve();\n };\n\n if (this.appInits) {\n for (let i = 0; i < this.appInits.length; i++) {\n const initResult
= this.appInits[i];\n if (isPromise(initResult)) {\n asyncInitPromises.push(initResult);\n }\n }\n\n
Promise.all(asyncInitPromises)\n .then(() => {\n complete();\n })\n .catch(e => {\n
this.reject(e);\n });\n\n if (asyncInitPromises.length === 0) {\n complete();\n }\n\n this.initialized =
true;\n }\n}\n"/**\n * @license\n * Copyright Google LLC All Rights Reserved.\n *\n * Use of this source code is
governed by an MIT-style license that can be\n * found in the LICENSE file at https://angular.io/license\n
*\n\nimport {InjectionToken} from './di';\nimport {ComponentRef} from './linker/component_factory';\n\n/**\n *
A [DI token](guide/glossary#di-token \"DI token definition\") representing a unique string ID, used\n * primarily for
prefixing application attributes and CSS styles when\n * {@link ViewEncapsulation#Emulated
ViewEncapsulation.Emulated} is being used.\n *\n * BY default, the value is randomly generated and assigned to
the application by Angular.\n * To provide a custom ID value, use a DI provider <!-- TODO: provider --> to
configure\n * the root {@link Injector} that uses this token.\n *\n * @publicApi\n */\nexport const APP_ID = new
InjectionToken<string>('AppId');\n\nexport function _appIdRandomProviderFactory() {\n return
`_${_randomChar()}${_randomChar()}${_randomChar()}`;\n}\n\n/**\n * Providers that generate a random
`APP_ID_TOKEN`\n *\n * @publicApi\n */\nexport const APP_ID_RANDOM_PROVIDER = {\n provide:
APP_ID,\n useFactory: _appIdRandomProviderFactory,\n deps: <any[]>[],\n};\n\nfunction _randomChar(): string
{\n return String.fromCharCode(97 + Math.floor(Math.random() * 25));\n}\n\n/**\n * A function that is executed
when a platform is initialized.\n *\n * @publicApi\n */\nexport const PLATFORM_INITIALIZER = new
InjectionToken<Array<() => void>>('Platform Initializer');\n\n/**\n * A token that indicates an opaque platform
ID.\n *\n * @publicApi\n */\nexport const PLATFORM_ID = new InjectionToken<Object>('Platform ID');\n\n/**\n *
A [DI token](guide/glossary#di-token \"DI token definition\") that provides a set of callbacks to\n * be called for
every component that is bootstrapped.\n *\n * Each callback must take a `ComponentRef` instance and return
nothing.\n *\n * `(componentRef: ComponentRef) => void`\n *\n * @publicApi\n */\nexport const
APP_BOOTSTRAP_LISTENER =\n new InjectionToken<Array<(compRef: ComponentRef<any>) =>
void>>('appBootstrapListener');\n\n/**\n * A [DI token](guide/glossary#di-token \"DI token definition\") that
indicates the root directory of\n * the application\n *\n * @publicApi\n */\nexport const PACKAGE_ROOT_URL =

```

```

new InjectionToken<string>('Application Packages Root URL');\n","/**\n * @license\n * Copyright Google LLC
All Rights Reserved.\n *\n * Use of this source code is governed by an MIT-style license that can be\n * found in
the LICENSE file at https://angular.io/license\n */\n\nimport { Injectable } from './di';\n\n@Injectable()\nexport class
Console {\n log(message: string): void {\n // tslint:disable-next-line:no-console\n console.log(message);\n }\n}
// Note: for reporting errors use `DOM.logError()` as it is platform specific\n warn(message: string): void {\n //
tslint:disable-next-line:no-console\n console.warn(message);\n }\n}\n","/**\n * @license\n * Copyright Google
LLC All Rights Reserved.\n *\n * Use of this source code is governed by an MIT-style license that can be\n * found
in the LICENSE file at https://angular.io/license\n */\n\nimport { InjectionToken } from
'./di/injection_token';\n\n/**\n * Provide this token to set the locale of your application.\n * It is used for i18n
extraction, by i18n pipes (DatePipe, I18nPluralPipe, CurrencyPipe,\n * DecimalPipe and PercentPipe) and by ICU
expressions.\n *\n * See the [i18n guide](guide/i18n#setting-up-locale) for more information.\n *\n *
@usageNotes\n * ### Example\n *\n * ```typescript\n * import { LOCALE_ID } from '@angular/core';\n * import {
platformBrowserDynamic } from '@angular/platform-browser-dynamic';\n * import { AppModule } from
'./app/app.module';\n *\n * platformBrowserDynamic().bootstrapModule(AppModule, {\n * providers: [{provide:
LOCALE_ID, useValue: 'en-US' }]\n * });\n * ```\n *\n * @publicApi\n */\n\nexport const LOCALE_ID = new
InjectionToken<string>('LocaleId');\n\n/**\n * Provide this token to set the default currency code your application
uses for\n * CurrencyPipe when there is no currency code passed into it. This is only used by\n * CurrencyPipe and
has no relation to locale currency. Defaults to USD if not configured.\n *\n * See the [i18n
guide](guide/i18n#setting-up-locale) for more information.\n *\n * <div class="alert is-helpful">\n *\n *
Deprecation notice:\n *\n * The default currency code is currently always `USD` but this is deprecated from
v9.\n *\n * **In v10 the default currency code will be taken from the current locale.**\n *\n * If you need the
previous behavior then set it by creating a `DEFAULT_CURRENCY_CODE` provider in\n * your application
`NgModule`:\n *\n * ```ts\n * {provide: DEFAULT_CURRENCY_CODE, useValue: 'USD'}\n * ```\n *\n *
</div>\n *\n * @usageNotes\n * ### Example\n *\n * ```typescript\n * import { platformBrowserDynamic } from
'@angular/platform-browser-dynamic';\n * import { AppModule } from './app/app.module';\n *\n *
platformBrowserDynamic().bootstrapModule(AppModule, {\n * providers: [{provide:
DEFAULT_CURRENCY_CODE, useValue: 'EUR' }]\n * });\n * ```\n *\n * @publicApi\n */\n\nexport const
DEFAULT_CURRENCY_CODE = new InjectionToken<string>('DefaultCurrencyCode');\n\n/**\n * Use this token
at bootstrap to provide the content of your translation file (`xtb`,\n * `xlf` or `xlf2`) when you want to translate your
application in another language.\n *\n * See the [i18n guide](guide/i18n#merge) for more information.\n *\n *
@usageNotes\n * ### Example\n *\n * ```typescript\n * import { TRANSLATIONS } from '@angular/core';\n *
import { platformBrowserDynamic } from '@angular/platform-browser-dynamic';\n * import { AppModule } from
'./app/app.module';\n *\n * // content of your translation file\n * const translations = '...';\n *\n *
platformBrowserDynamic().bootstrapModule(AppModule, {\n * providers: [{provide: TRANSLATIONS,
useValue: translations }]\n * });\n * ```\n *\n * @publicApi\n */\n\nexport const TRANSLATIONS = new
InjectionToken<string>('Translations');\n\n/**\n * Provide this token at bootstrap to set the format of your { @link
TRANSLATIONS}: `xtb`,\n * `xlf` or `xlf2`.\n *\n * See the [i18n guide](guide/i18n#merge) for more
information.\n *\n * @usageNotes\n * ### Example\n *\n * ```typescript\n * import { TRANSLATIONS_FORMAT
} from '@angular/core';\n * import { platformBrowserDynamic } from '@angular/platform-browser-dynamic';\n *
import { AppModule } from './app/app.module';\n *\n * platformBrowserDynamic().bootstrapModule(AppModule,
{\n * providers: [{provide: TRANSLATIONS_FORMAT, useValue: 'xlf' }]\n * });\n * ```\n *\n * @publicApi\n
*/\n\nexport const TRANSLATIONS_FORMAT = new InjectionToken<string>('TranslationsFormat');\n\n/**\n * Use
this enum at bootstrap as an option of `bootstrapModule` to define the strategy\n * that the compiler should use in
case of missing translations:\n * - Error: throw if you have missing translations.\n * - Warning (default): show a
warning in the console and/or shell.\n * - Ignore: do nothing.\n *\n * See the [i18n guide](guide/i18n#missing-
translation) for more information.\n *\n * @usageNotes\n * ### Example\n *\n * ```typescript\n * import {
MissingTranslationStrategy } from '@angular/core';\n * import { platformBrowserDynamic } from
'@angular/platform-browser-dynamic';\n * import { AppModule } from './app/app.module';\n *\n *

```

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platformBrowserDynamic().bootstrapModule(AppModule, {\n * missingTranslation:
MissingTranslationStrategy.Error\n * });\n * ``\n * @publicApi\n * ^\nexport enum MissingTranslationStrategy
{\n Error = 0,\n Warning = 1,\n Ignore = 2,\n}\n * "/**\n * @license\n * Copyright Google LLC All Rights
Reserved.\n * Use of this source code is governed by an MIT-style license that can be\n * found in the
LICENSE file at https://angular.io/license\n * ^\n\nexport const SWITCH_IVY_ENABLED__POST_R3__ =
true;\nconst SWITCH_IVY_ENABLED__PRE_R3__ = false;\nexport const ivyEnabled =
SWITCH_IVY_ENABLED__PRE_R3__;\n * "/**\n * @license\n * Copyright Google LLC All Rights Reserved.\n
*\n * Use of this source code is governed by an MIT-style license that can be\n * found in the LICENSE file at
https://angular.io/license\n * ^\n\nimport {Injectable} from './di/injectable';\nimport {InjectionToken} from
'./di/injection_token';\nimport {StaticProvider} from './di/interface/provider';\nimport
{MissingTranslationStrategy} from './i18n/tokens';\nimport {Type} from './interface/type';\nimport
{ViewEncapsulation} from './metadata/view';\nimport {ComponentFactory as ComponentFactoryR3} from
'./render3/component_ref';\nimport {getComponentDef, getNgModuleDef} from './render3/definition';\nimport
{NgModuleFactory as NgModuleFactoryR3} from './render3/ng_module_ref';\nimport {maybeUnwrapFn} from
'./render3/util/misc_utils';\n\nimport {ComponentFactory} from './component_factory';\nimport
{NgModuleFactory} from './ng_module_factory';\n\n\n/**\n * Combination of NgModuleFactory and
ComponentFactory.\n * @publicApi\n * ^\nexport class ModuleWithComponentFactories<T> {\n
constructor(\n public ngModuleFactory: NgModuleFactory<T>,\n public componentFactories:
ComponentFactory<any>[]) {\n\n\nfunction _throwError() {\n throw new Error(`Runtime compiler is not
loaded`);\n}\n\nconst Compiler_compileModuleSync__PRE_R3__: <T>(moduleType: Type<T>) =>
NgModuleFactory<T> =\n _throwError as any;\nexport const Compiler_compileModuleSync__POST_R3__:
<T>(moduleType: Type<T>) =>\n NgModuleFactory<T> = function<T>(moduleType: Type<T>):
NgModuleFactory<T> {\n return new NgModuleFactoryR3(moduleType);\n};\nconst
Compiler_compileModuleSync = Compiler_compileModuleSync__PRE_R3__;\n\nconst
Compiler_compileModuleAsync__PRE_R3__: <T>(moduleType: Type<T>) =>\n
Promise<NgModuleFactory<T>> = _throwError as any;\nexport const
Compiler_compileModuleAsync__POST_R3__: <T>(moduleType: Type<T>) =>\n
Promise<NgModuleFactory<T>> = function<T>(moduleType: Type<T>): Promise<NgModuleFactory<T>> {\n
return Promise.resolve(Compiler_compileModuleSync__POST_R3__(moduleType));\n};\nconst
Compiler_compileModuleAsync = Compiler_compileModuleAsync__PRE_R3__;\n\nconst
Compiler_compileModuleAndAllComponentsSync__PRE_R3__: <T>(moduleType: Type<T>) =>\n
ModuleWithComponentFactories<T> = _throwError as any;\nexport const
Compiler_compileModuleAndAllComponentsSync__POST_R3__: <T>(moduleType: Type<T>) =>\n
ModuleWithComponentFactories<T> = function<T>(moduleType: Type<T>):\n
ModuleWithComponentFactories<T> {\n const ngModuleFactory =
Compiler_compileModuleSync__POST_R3__(moduleType);\n const moduleDef =
getNgModuleDef(moduleType);\n const componentFactories =\n maybeUnwrapFn(moduleDef.declarations)\n .reduce((factories: ComponentFactory<any>[], declaration: Type<any>) => {\n const componentDef =
getComponentDef(declaration);\n componentDef && factories.push(new
ComponentFactoryR3(componentDef));\n return factories;\n }, [] as ComponentFactory<any>[]);\n
return new ModuleWithComponentFactories(ngModuleFactory, componentFactories);\n};\n\nconst
Compiler_compileModuleAndAllComponentsSync =\n Compiler_compileModuleAndAllComponentsSync__PRE_R3__;\n\nconst
Compiler_compileModuleAndAllComponentsAsync__PRE_R3__: <T>(moduleType: Type<T>) =>\n
Promise<ModuleWithComponentFactories<T>> = _throwError as any;\nexport const
Compiler_compileModuleAndAllComponentsAsync__POST_R3__: <T>(moduleType: Type<T>) =>\n
Promise<ModuleWithComponentFactories<T>> = function<T>(moduleType: Type<T>):\n
Promise<ModuleWithComponentFactories<T>> {\n return

```

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Promise.resolve(Compiler_compileModuleAndAllComponentsSync__POST_R3__(moduleType));\n};\nconst
Compiler_compileModuleAndAllComponentsAsync =\n
Compiler_compileModuleAndAllComponentsAsync__PRE_R3__;\n\n/**\n * Low-level service for running the
angular compiler during runtime\n * to create {@link ComponentFactory}s, which\n * can later be used to create
and render a Component instance.\n *\n * Each `@NgModule` provides an own `Compiler` to its injector,\n * that
will use the directives/pipes of the ng module for compilation\n * of components.\n *\n * @publicApi\n
*/\n\n@Injectable()\nexport class Compiler {\n /**\n * Compiles the given NgModule and all of its components. All
templates of the components listed\n * in `entryComponents` have to be inlined.\n */\n compileModuleSync:
<T>(moduleType: Type<T>) => NgModuleFactory<T> = Compiler_compileModuleSync;\n\n /**\n * Compiles
the given NgModule and all of its components\n */\n compileModuleAsync:\n <T>(moduleType: Type<T>) =>
Promise<NgModuleFactory<T>> = Compiler_compileModuleAsync;\n\n /**\n * Same as {@link
#compileModuleSync} but also creates ComponentFactories for all components.\n */\n
compileModuleAndAllComponentsSync: <T>(moduleType: Type<T>) => ModuleWithComponentFactories<T>
=>\n Compiler_compileModuleAndAllComponentsSync;\n\n /**\n * Same as {@link #compileModuleAsync}
but also creates ComponentFactories for all components.\n */\n compileModuleAndAllComponentsAsync:
<T>(moduleType: Type<T>) =>\n Promise<ModuleWithComponentFactories<T>> =
Compiler_compileModuleAndAllComponentsAsync;\n\n /**\n * Clears all caches.\n */\n clearCache(): void
{\n\n /**\n * Clears the cache for the given component/ngModule.\n */\n clearCacheFor(type: Type<any>)
{\n\n /**\n * Returns the id for a given NgModule, if one is defined and known to the compiler.\n */\n
getModuleId(moduleType: Type<any>): string|undefined {\n return undefined;\n }\n}\n\n/**\n * Options for
creating a compiler\n *\n * @publicApi\n */\nexport type CompilerOptions = {\n useJit?: boolean,\n
defaultEncapsulation?: ViewEncapsulation,\n providers?: StaticProvider[],\n missingTranslation?:
MissingTranslationStrategy,\n preserveWhitespaces?: boolean,\n};\n\n/**\n * Token to provide CompilerOptions in
the platform injector.\n *\n * @publicApi\n */\nexport const COMPILER_OPTIONS = new
InjectionToken<CompilerOptions[]>('compilerOptions');\n\n/**\n * A factory for creating a Compiler\n *\n
*/\n\n @publicApi\n */\nexport abstract class CompilerFactory {\n abstract createCompiler(options?: CompilerOptions[]):
Compiler;\n}\n\n"/**\n * @license\n * Copyright Google LLC All Rights Reserved.\n *\n * Use of this source code
is governed by an MIT-style license that can be\n * found in the LICENSE file at https://angular.io/license\n
*/\n\nconst promise: Promise<any> = (() => Promise.resolve(0))();\ndeclare const Zone: any;\nexport function
scheduleMicroTask(fn: Function) {\n if (typeof Zone === 'undefined') {\n // use promise to schedule microTask
instead of use Zone\n promise.then(() => {\n fn && fn.apply(null, null);\n });\n } else {\n
Zone.current.scheduleMicroTask('scheduleMicrotask', fn);\n }\n}\n\n"/**\n * @license\n * Copyright Google LLC
All Rights Reserved.\n *\n * Use of this source code is governed by an MIT-style license that can be\n * found in
the LICENSE file at https://angular.io/license\n */\n\nimport {global} from './global';\nexport function
getNativeRequestAnimationFrame() {\n let nativeRequestAnimationFrame: (callback: FrameRequestCallback) =>
number =\n global['requestAnimationFrame'];\n let nativeCancelAnimationFrame: (handle: number) => void =
global['cancelAnimationFrame'];\n if (typeof Zone !== 'undefined' && nativeRequestAnimationFrame &&
nativeCancelAnimationFrame) {\n // use unpatched version of requestAnimationFrame(native delegate) if
possible\n // to avoid another Change detection\n const unpatchedRequestAnimationFrame =\n
(nativeRequestAnimationFrame as any)[(Zone as any).__symbol__('OriginalDelegate')];\n if
(unpatchedRequestAnimationFrame) {\n nativeRequestAnimationFrame = unpatchedRequestAnimationFrame;\n
}\n const unpatchedCancelAnimationFrame =\n (nativeCancelAnimationFrame as any)[(Zone as
any).__symbol__('OriginalDelegate')];\n if (unpatchedCancelAnimationFrame) {\n
nativeCancelAnimationFrame = unpatchedCancelAnimationFrame;\n }\n }\n return
{nativeRequestAnimationFrame, nativeCancelAnimationFrame};\n}\n\n"/**\n * @license\n * Copyright Google
LLC All Rights Reserved.\n *\n * Use of this source code is governed by an MIT-style license that can be\n * found
in the LICENSE file at https://angular.io/license\n */\n\nimport {EventEmitter} from './event_emitter';\nimport
{global} from './util/global';\nimport {getNativeRequestAnimationFrame} from './util/raf';\n\n/**\n * An

```

injectable service for executing work inside or outside of the Angular zone.  
 The most common use of this service is to optimize performance when starting a work consisting of one or more asynchronous tasks that don't require UI updates or error handling to be handled by Angular. Such tasks can be kicked off via `{ @link #runOutsideAngular}` and if needed, these tasks can reenter the Angular zone via `{ @link #run}`.  
 TODO: add/fix links to - docs explaining zones and the use of zones in Angular and change-detection - link to runOutsideAngular/run (throughout this file!)  
 --  
 @usageNotes  
 #### Example  
 ```  
 import { Component, NgZone } from '@angular/core';
 import { NgIf } from '@angular/common';
 @Component({
 selector: 'ng-zone-demo',
 template: `<h2>Demo: NgZone</h2>
 <p>Progress: {{progress}}</p>
 <p *ngIf="progress >= 100">Done processing {{label}} of Angular zone!</p>
 <button (click)="processWithinAngularZone()">Process within Angular zone</button>
 <button (click)="processOutsideOfAngularZone()">Process outside of Angular zone</button>
 `,
 export class NgZoneDemo {
 progress: number = 0;
 label: string;
 constructor(private _ngZone: NgZone) {}
 // Loop inside the Angular zone // so the UI DOES refresh after each setTimeout cycle
 processWithinAngularZone() {
 this.label = 'inside';
 this.progress = 0;
 this._increaseProgress(() => console.log('Inside Done!'));
 }
 // Loop outside of the Angular zone // so the UI DOES NOT refresh after each setTimeout cycle
 processOutsideOfAngularZone() {
 this.label = 'outside';
 this.progress = 0;
 this._ngZone.runOutsideAngular(() => {
 this._increaseProgress(() => {
 // reenter the Angular zone and display done
 this._ngZone.run(() => { console.log('Outside Done!'); });
 });
 });
 }
 _increaseProgress(doneCallback: () => void) {
 this.progress += 1;
 console.log(`Current progress: \${this.progress}%`);
 if (this.progress < 100) {
 window.setTimeout(() => this._increaseProgress(doneCallback), 10);
 } else {
 doneCallback();
 }
 }
 }
 }
 @publicApi
 export class NgZone {
 readonly hasPendingMacrotasks: boolean = false;
 readonly hasPendingMicrotasks: boolean = false;
 /**
 * Whether there are no outstanding microtasks or macrotasks.
 */
 readonly isStable: boolean = true;
 /**
 * Notifies when code enters Angular Zone. This gets fired first on VM Turn.
 */
 readonly onUnstable: EventEmitter<any> = new EventEmitter(false);
 /**
 * Notifies when there is no more microtasks enqueued in the current VM Turn.
 * This is a hint for Angular to do change detection, which may enqueue more microtasks.
 * For this reason this event can fire multiple times per VM Turn.
 */
 readonly onMicrotaskEmpty: EventEmitter<any> = new EventEmitter(false);
 /**
 * Notifies when the last `onMicrotaskEmpty` has run and there are no more microtasks, which
 * implies we are about to relinquish VM turn.
 * This event gets called just once.
 */
 readonly onStable: EventEmitter<any> = new EventEmitter(false);
 /**
 * Notifies that an error has been delivered.
 */
 readonly onError: EventEmitter<any> = new EventEmitter(false);
 constructor({enableLongStackTrace = false, shouldCoalesceEventChangeDetection = false}) {
 if (typeof Zone === 'undefined') {
 throw new Error('In this configuration Angular requires Zone.js');
 }
 Zone.assertZonePatched();
 const self = this as any as NgZonePrivate;
 self._nesting = 0;
 self._outer = self._inner = Zone.current;
 if ((Zone as any)['TaskTrackingZoneSpec']) {
 self._inner = self._inner.fork(new ((Zone as any)['TaskTrackingZoneSpec'] as any));
 }
 if (enableLongStackTrace && (Zone as any)['longStackTraceZoneSpec']) {
 self._inner = self._inner.fork((Zone as any)['longStackTraceZoneSpec']);
 }
 self.shouldCoalesceEventChangeDetection = shouldCoalesceEventChangeDetection;
 self.lastRequestAnimationFrameId = -1;
 self.nativeRequestAnimationFrame = getNativeRequestAnimationFrame().nativeRequestAnimationFrame;
 forkInnerZoneWithAngularBehavior(self);
 }
 static isInAngularZone(): boolean {
 return Zone.current.get('isAngularZone') === true;
 }
 static assertInAngularZone(): void {
 if (!NgZone.isInAngularZone()) {
 throw new Error('Expected to be in Angular Zone, but it is not!');
 }
 }
 static assertNotInAngularZone(): void {
 if (NgZone.isInAngularZone()) {
 throw new Error('Expected to not be in Angular Zone, but it is!');
 }
 }
 /**
 * Executes the `fn` function synchronously within the Angular zone and returns value returned by the function.
 */
 run(fn: () => any): any {
 // Running functions via `run` allows you to reenter Angular zone from a task that was executed outside of the Angular zone (typically started via { @link
 ```

```

#runOutsideAngular}).\n *\n * Any future tasks or microtasks scheduled from within this function will continue
executing from\n * within the Angular zone.\n *\n * If a synchronous error happens it will be rethrown and not
reported via `onError`.\n *\n run<T>(fn: (...args: any[]) => T, applyThis?: any, applyArgs?: any[]): T {\n return
(this as any as NgZonePrivate)._inner.run(fn, applyThis, applyArgs);\n }\n\n /**\n * Executes the `fn` function
synchronously within the Angular zone as a task and returns value\n * returned by the function.\n *\n * Running
functions via `run` allows you to reenter Angular zone from a task that was executed\n * outside of the Angular
zone (typically started via {@link #runOutsideAngular}).\n *\n * Any future tasks or microtasks scheduled from
within this function will continue executing from\n * within the Angular zone.\n *\n * If a synchronous error
happens it will be rethrown and not reported via `onError`.\n *\n runTask<T>(fn: (...args: any[]) => T,
applyThis?: any, applyArgs?: any[], name?: string): T {\n const zone = (this as any as NgZonePrivate)._inner;\n
const task = zone.scheduleEventTask('NgZoneEvent: ' + name, fn, EMPTY_PAYLOAD, noop, noop);\n try {\n
return zone.runTask(task, applyThis, applyArgs);\n } finally {\n zone.cancelTask(task);\n }\n}\n\n /**\n *
Same as `run`, except that synchronous errors are caught and forwarded via `onError` and not\n * rethrown.\n *\n
runGuarded<T>(fn: (...args: any[]) => T, applyThis?: any, applyArgs?: any[]): T {\n return (this as any as
NgZonePrivate)._inner.runGuarded(fn, applyThis, applyArgs);\n }\n\n /**\n * Executes the `fn` function
synchronously in Angular's parent zone and returns value returned by\n * the function.\n *\n * Running
functions via {@link #runOutsideAngular} allows you to escape Angular's zone and do\n * work that\n * doesn't
trigger Angular change-detection or is subject to Angular's error handling.\n *\n * Any future tasks or microtasks
scheduled from within this function will continue executing from\n * outside of the Angular zone.\n *\n * Use
{@link #run} to reenter the Angular zone and do work that updates the application model.\n *\n
runOutsideAngular<T>(fn: (...args: any[]) => T): T {\n return (this as any as NgZonePrivate)._outer.run(fn);\n
}\n}\n\nfunction noop() {}\nconst EMPTY_PAYLOAD = {};\n\ninterface NgZonePrivate extends NgZone {\n
 _outer: Zone;\n _inner: Zone;\n _nesting: number;\n _hasPendingMicrotasks: boolean;\n\n hasPendingMacrotasks: boolean;\n hasPendingMicrotasks: boolean;\n lastRequestAnimationFrameId: number;\n
 isStable: boolean;\n shouldCoalesceEventChangeDetection: boolean;\n nativeRequestAnimationFrame: (callback:
FrameRequestCallback) => number;\n\n // Cache of `fake` top eventTask. This is done so that we don't need to
schedule a new task every\n // time we want to run a `checkStable`.\n fakeTopEventTask: Task;\n}\n\nfunction
checkStable(zone: NgZonePrivate) {\n if (zone._nesting == 0 && !zone.hasPendingMicrotasks && !zone.isStable)
{\n try {\n zone._nesting++;\n zone.onMicrotaskEmpty.emit(null);\n } finally {\n zone._nesting--;\n
if (!zone.hasPendingMicrotasks) {\n try {\n zone.runOutsideAngular(() => zone.onStable.emit(null));\n
 } finally {\n zone.isStable = true;\n }\n }\n }\n }\n}\n\nfunction
delayChangeDetectionForEvents(zone: NgZonePrivate) {\n if (zone.lastRequestAnimationFrameId !== -1) {\n
return;\n }\n zone.lastRequestAnimationFrameId = zone.nativeRequestAnimationFrame.call(global, () => {\n //
This is a work around for https://github.com/angular/angular/issues/36839.

// The core issue is that when event coalescing is enabled it is possible for microtasks

// to get flushed too early (As is the case with `Promise.then`)

between the

// coalescing eventTasks.

//\n // To workaround this we schedule a `fake` eventTask before

we process the

// coalescing eventTasks. The benefit of this is that the `fake` container eventTask

// will

prevent the microtasks queue from getting drained in between the coalescing

// eventTask execution.

if

(!zone.fakeTopEventTask) {\n zone.fakeTopEventTask = Zone.root.scheduleEventTask('fakeTopEventTask', ()
=> {\n zone.lastRequestAnimationFrameId = -1;\n updateMicroTaskStatus(zone);\n
checkStable(zone);\n }, undefined, () => {}, () => {});\n zone.fakeTopEventTask.invoke();\n });\n
updateMicroTaskStatus(zone);\n}\n\nfunction forkInnerZoneWithAngularBehavior(zone: NgZonePrivate) {\n
const delayChangeDetectionForEventsDelegate = () => {\n delayChangeDetectionForEvents(zone);\n};\nconst
maybeDelayChangeDetection = !zone.shouldCoalesceEventChangeDetection &&\n
zone.nativeRequestAnimationFrame && delayChangeDetectionForEventsDelegate;\n zone._inner =
zone._inner.fork({\n name: 'angular',\n properties: {\n <any>{ 'isAngularZone': true,\n
'maybeDelayChangeDetection': maybeDelayChangeDetection },\n onInvokeTask: (\n (delegate: ZoneDelegate,\n
current: Zone, target: Zone, task: Task, applyThis: any,\n applyArgs: any): any => {\n try {\n

```





```

_callbacks: WaitCallback[] = [];
private taskTrackingZone: {macroTasks: Task[]}null = null;
constructor(private ngZone: NgZone) {
 this._watchAngularEvents();
 ngZone.run(() => {
 this.taskTrackingZone =
 typeof Zone === 'undefined' ? null : Zone.current.get('TaskTrackingZone');
 });
 private _watchAngularEvents(): void {
 this._ngZone.onUnstable.subscribe({
 next: () => {
 this._didWork = true;
 this._isZoneStable = false;
 }
 });
 this._ngZone.runOutsideAngular(() => {
 this._ngZone.onStable.subscribe({
 next: () => NgZone.assertNotInAngularZone();
 scheduleMicroTask(() => {
 this._isZoneStable = true;
 this._runCallbacksIfReady();
 });
 });
 });
 }
 /**
 * Increases the number of pending request
 * @deprecated pending requests are now tracked with zones.
 */
 increasePendingRequestCount(): number {
 this._pendingCount += 1;
 this._didWork = true;
 return this._pendingCount;
 }
 /**
 * Decreases the number of pending request
 * @deprecated pending requests are now tracked with zones
 */
 decreasePendingRequestCount(): number {
 this._pendingCount -= 1;
 if (this._pendingCount < 0) {
 throw new Error('pending async requests below zero');
 }
 this._runCallbacksIfReady();
 return this._pendingCount;
 }
 /**
 * Whether an associated application is stable
 */
 isStable(): boolean {
 return this._isZoneStable && this._pendingCount === 0 && !this._ngZone.hasPendingMacrotasks;
 }
 private _runCallbacksIfReady(): void {
 if (this.isStable()) {
 // Schedules the call backs in a new frame so that it is always async.
 scheduleMicroTask(() => {
 while (this._callbacks.length !== 0) {
 let cb = this._callbacks.pop()!;
 clearTimeout(cb.timeoutId);
 cb.doneCb(this._didWork);
 }
 this._didWork = false;
 });
 } else {
 // Still not stable, send updates.
 let pending = this.getPendingTasks();
 this._callbacks = this._callbacks.filter((cb) => {
 if (cb.updateCb && cb.updateCb(pending)) {
 clearTimeout(cb.timeoutId);
 return false;
 }
 return true;
 });
 this._didWork = true;
 }
 }
 private getPendingTasks(): PendingMacrotask[] {
 if (!this.taskTrackingZone) {
 return [];
 }
 // Copy the tasks data so that we don't leak tasks.
 return this.taskTrackingZone.macroTasks.map((t: Task) => {
 return {
 source: t.source,
 // From TaskTrackingZone:
 // https://github.com/angular/zone.js/blob/master/lib/zone-spec/task-tracking.ts#L40
 creationLocation: (t as any).creationLocation as Error,
 data: t.data
 };
 });
 }
 private addCallback(cb: DoneCallback, timeout?: number, updateCb?: UpdateCallback) {
 let timeoutId: any = -1;
 if (timeout && timeout > 0) {
 timeoutId = setTimeout(() => {
 this._callbacks = this._callbacks.filter((cb) => cb.timeoutId !== timeoutId);
 cb(this._didWork, this.getPendingTasks());
 }, timeout);
 }
 this._callbacks.push(<WaitCallback>{doneCb: cb, timeoutId: timeoutId, updateCb: updateCb});
 }
 /**
 * Wait for the application to be stable with a timeout. If the timeout is reached before that
 * happens, the callback receives a list of the macro tasks that were pending, otherwise null.
 * @param doneCb The callback to invoke when Angular is stable or the timeout expires
 * @param timeout Optional. The maximum time to wait for Angular to become stable. If not
 * specified, whenStable() will wait forever.
 * @param updateCb Optional. If specified, this callback will be invoked whenever the set of
 * pending macrotasks changes. If this callback returns true doneCb will not be invoked
 * and no further updates will be issued.
 */
 whenStable(doneCb: Function, timeout?: number, updateCb?: Function): void {
 if (updateCb && !this.taskTrackingZone) {
 throw new Error(`Task tracking zone is required when passing an update callback to 'whenStable(). Is "zone.js/dist/task-tracking.js" loaded?`);
 }
 // These arguments are 'Function' above to keep the public API simple.
 this.addCallback(doneCb as DoneCallback, timeout, updateCb as UpdateCallback);
 this._runCallbacksIfReady();
 }
 /**
 * Get the number of pending requests
 * @deprecated pending requests are now tracked with zones
 */
 getPendingRequestCount(): number {
 return this._pendingCount;
 }
 /**
 * Find providers by name
 * @param using The root element to search from
 * @param provider The name of binding variable
 * @param exactMatch Whether using exactMatch
 */
 findProviders(using: any, provider: string, exactMatch: boolean): any[] {
 // TODO(juliemr): implement.
 return [];
 }
 /**
 * A global registry of {@link Testability} instances for specific elements.
 */
 @publicApi
 @Injectable()
 export class TestabilityRegistry {
 /** @internal */
 _applications = new Map<any, Testability>();
 constructor() {
 _testabilityGetter.addToWindow(this);
 }
 /**
 * Registers

```

```

an application with a testability hook so that it can be tracked\n
 * @param token token of application, root
element\n
 * @param testability Testability hook\n
 * ^\n registerApplication(token: any, testability: Testability) {\n
 this._applications.set(token, testability);\n
}\n\n /**\n
 * Unregisters an application.\n
 * @param token token of
application, root element\n
 * ^\n unregisterApplication(token: any) {\n
 this._applications.delete(token);\n
}\n\n
/**\n
 * Unregisters all applications\n
 * ^\n unregisterAllApplications() {\n
 this._applications.clear();\n
}\n\n
/**\n
 * Get a testability hook associated with the application\n
 * @param elem root element\n
 * ^\n
getTestability(elem: any): Testability|null {\n
 return this._applications.get(elem) || null;\n
}\n\n /**\n
 * Get all
registered testabilities\n
 * ^\n getAllTestabilities(): Testability[] {\n
 return
Array.from(this._applications.values());\n
}\n\n /**\n
 * Get all registered applications(root elements)\n
 * ^\n
getAllRootElement(): any[] {\n
 return Array.from(this._applications.keys());\n
}\n\n /**\n
 * Find testability of
a node in the Tree\n
 * @param elem node\n
 * @param findInAncestors whether finding testability in ancestors if
testability was not found in\n
 * current node\n
 * ^\n findTestabilityInTree(elem: Node, findInAncestors: boolean =
true): Testability|null {\n
 return _testabilityGetter.findTestabilityInTree(this, elem, findInAncestors);\n
}\n}\n\n/**\n
 * Adapter interface for retrieving the `Testability` service associated for a\n
 * particular context.\n
 * ^\n
 * @publicApi\n
 * ^\nexport interface GetTestability {\n
 addToWindow(registry: TestabilityRegistry): void;\n
 findTestabilityInTree(registry: TestabilityRegistry, elem: any, findInAncestors: boolean):\n
 Testability|null;\n
}\n\nclass _NoopGetTestability implements GetTestability {\n
 addToWindow(registry:
 TestabilityRegistry): void {\n
 findTestabilityInTree(registry: TestabilityRegistry, elem: any, findInAncestors:
 boolean):\n
 Testability|null {\n
 return null;\n
}\n}\n\n/**\n
 * Set the {@link GetTestability} implementation
used by the Angular testing framework.\n
 * @publicApi\n
 * ^\nexport function setTestabilityGetter(getter:
 GetTestability): void {\n
 _testabilityGetter = getter;\n
}\n\nlet _testabilityGetter: GetTestability = new
 _NoopGetTestability();\n
", /**\n
 * @license\n
 * Copyright Google LLC All Rights Reserved.\n
 * ^\n
 * Use of this
source code is governed by an MIT-style license that can be\n
 * found in the LICENSE file at
https://angular.io/license\n
 * ^\n\nimport './util/ng_jit_mode';\n\nimport {merge, Observable, Observer, Subscription}
from 'rxjs';\n\nimport {share} from 'rxjs/operators';\n\nimport {ApplicationInitStatus} from
 './application_init';\n\nimport {APP_BOOTSTRAP_LISTENER, PLATFORM_INITIALIZER} from
 './application_tokens';\n\nimport {getCompilerFacade} from './compiler/compiler_facade';\n\nimport {Console} from
 './console';\n\nimport {Injectable} from './di/injectable';\n\nimport {InjectionToken} from './di/injection_token';\n\nimport
 {Injector} from './di/injector';\n\nimport {StaticProvider} from './di/interface/provider';\n\nimport
 {INJECTOR_SCOPE} from './di/scope';\n\nimport {ErrorHandler} from './error_handler';\n\nimport
 {DEFAULT_LOCALE_ID} from './i18n/localization';\n\nimport {LOCALE_ID} from './i18n/tokens';\n\nimport
 {Type} from './interface/type';\n\nimport {ivyEnabled} from './ivy_switch';\n\nimport {COMPILER_OPTIONS,
 CompilerFactory, CompilerOptions} from './linker/compiler';\n\nimport {ComponentFactory, ComponentRef} from
 './linker/component_factory';\n\nimport {ComponentFactoryBoundToModule, ComponentFactoryResolver} from
 './linker/component_factory_resolver';\n\nimport {InternalNgModuleRef, NgModuleFactory, NgModuleRef} from
 './linker/ng_module_factory';\n\nimport {InternalViewRef, ViewRef} from './linker/view_ref';\n\nimport
 {isComponentResourceResolutionQueueEmpty, resolveComponentResources} from
 './metadata/resource_loading';\n\nimport {assertNgModuleType} from './render3/assert';\n\nimport {ComponentFactory
 as R3ComponentFactory} from './render3/component_ref';\n\nimport {setLocaleId} from
 './render3/i18n/i18n_locale_id';\n\nimport {setJitOptions} from './render3/jit/jit_options';\n\nimport {NgModuleFactory
 as R3NgModuleFactory} from './render3/ng_module_ref';\n\nimport {publishDefaultGlobalUtils as
 _publishDefaultGlobalUtils} from './render3/util/global_utils';\n\nimport {Testability, TestabilityRegistry} from
 './testability/testability';\n\nimport {isDevMode} from './util/is_dev_mode';\n\nimport {isPromise} from
 './util/lang';\n\nimport {scheduleMicroTask} from './util/microtask';\n\nimport {stringify} from './util/stringify';\n\nimport
 {NgZone, NoopNgZone} from './zone/ng_zone';\n\nlet _platform: PlatformRef;\n\nlet compileNgModuleFactory:\n
<M>(injector: Injector, options: CompilerOptions, moduleType: Type<M>) =>\n
 Promise<NgModuleFactory<M>> = compileNgModuleFactory__PRE_R3__;\n\nfunction
 compileNgModuleFactory__PRE_R3__<M>(\n
 injector: Injector, options: CompilerOptions,\n
 moduleType:

```

```

Type<M>): Promise<NgModuleFactory<M>> {\n const compilerFactory: CompilerFactory =
injector.get(CompilerFactory);\n const compiler = compilerFactory.createCompiler([options]);\n return
compiler.compileModuleAsync(moduleType);\n}\n\nexport function
compileNgModuleFactory__POST_R3__<M>(\n injector: Injector, options: CompilerOptions,\n moduleType:
Type<M>): Promise<NgModuleFactory<M>> {\n ngDevMode && assertNgModuleType(moduleType);\n\n const
moduleFactory = new R3NgModuleFactory(moduleType);\n\n // All of the logic below is irrelevant for AOT-
compiled code.\n if (typeof ngJitMode !== 'undefined' && !ngJitMode) {\n return
Promise.resolve(moduleFactory);\n }\n\n const compilerOptions = injector.get(COMPILER_OPTIONS,
[]).concat(options);\n\n // Configure the compiler to use the provided options. This call may fail when multiple
modules\n // are bootstrapped with incompatible options, as a component can only be compiled according to\n // a
single set of options.\n setJitOptions({\n defaultEncapsulation: _lastDefined(compilerOptions.map(opts =>
opts.defaultEncapsulation)),\n preserveWhitespaces: _lastDefined(compilerOptions.map(opts =>
opts.preserveWhitespaces)),\n });\n\n if (isComponentResourceResolutionQueueEmpty()) {\n return
Promise.resolve(moduleFactory);\n }\n\n const compilerProviders = _mergeArrays(compilerOptions.map(o =>
o.providers!));\n\n // In case there are no compiler providers, we just return the module factory as\n // there won't
be any resource loader. This can happen with Ivy, because AOT compiled\n // modules can be still passed through
`bootstrapModule`. In that case we shouldn't\n // unnecessarily require the JIT compiler.\n if
(compilerProviders.length === 0) {\n return Promise.resolve(moduleFactory);\n }\n\n const compiler =
getCompilerFacade();\n const compilerInjector = Injector.create({providers: compilerProviders});\n const
resourceLoader = compilerInjector.get(compiler.ResourceLoader);\n // The resource loader can also return a string
while the `resolveComponentResources`\n // always expects a promise. Therefore we need to wrap the returned
value in a promise.\n return resolveComponentResources(url => Promise.resolve(resourceLoader.get(url)))\n
.then(() => moduleFactory);\n}\n\n// the `window.ng` global utilities are only available in non-VE versions of\n//
Angular. The function switch below will make sure that the code is not\n// included into Angular when PRE mode is
active.\n\nexport function publishDefaultGlobalUtils__PRE_R3__() {\n}\n\nexport function
publishDefaultGlobalUtils__POST_R3__() {\n ngDevMode && _publishDefaultGlobalUtils();\n}\n\n//let
publishDefaultGlobalUtils: () => any = publishDefaultGlobalUtils__PRE_R3__;\n\n//let isBoundToModule: <C>(cf:
ComponentFactory<C>) => boolean = isBoundToModule__PRE_R3__;\n\n//export function
isBoundToModule__PRE_R3__<C>(cf: ComponentFactory<C>): boolean {\n return cf instanceof
ComponentFactoryBoundToModule;\n}\n\n//export function isBoundToModule__POST_R3__<C>(cf:
ComponentFactory<C>): boolean {\n return (cf as R3ComponentFactory<C>).isBoundToModule;\n}\n\n//export
const ALLOW_MULTIPLE_PLATFORMS = new InjectionToken<boolean>('AllowMultipleToken');\n\n//\n\n//**\n
* A token for third-party components that can register themselves with NgProbe.\n * \n * @publicApi\n * \n\n//export
class NgProbeToken {\n constructor(public name: string, public token: any) {\n}\n}\n\n//**\n
* Creates a platform.\n * Platforms must be created on launch using this function.\n * \n * @publicApi\n * \n\n//export function
createPlatform(injector: Injector): PlatformRef {\n if (!_platform && !_platform.destroyed && \n
!_platform.injector.get(ALLOW_MULTIPLE_PLATFORMS, false)) {\n throw new Error(\n 'There can be
only one platform. Destroy the previous one to create a new one.);\n }\n publishDefaultGlobalUtils();\n _platform
= injector.get(PlatformRef);\n const inits = injector.get(PLATFORM_INITIALIZER, null);\n if (inits)
inits.forEach((init: any) => init());\n return _platform;\n}\n\n//**\n
* Creates a factory for a platform. Can be used to
provide or override `Providers` specific to\n * your application's runtime needs, such as
`PLATFORM_INITIALIZER` and `PLATFORM_ID`.\n * \n * @param parentPlatformFactory Another platform
factory to modify. Allows you to compose factories\n * to build up configurations that might be required by
different libraries or parts of the\n * application.\n * \n * @param name Identifies the new platform factory.\n *
\n * @param providers A set of dependency providers for platforms created with the new factory.\n * \n * @publicApi\n
* \n\n//export function createPlatformFactory(\n parentPlatformFactory: ((extraProviders?: StaticProvider[]) =>
PlatformRef)|null, name: string,\n providers: StaticProvider[] = []): (extraProviders?: StaticProvider[]) =>
PlatformRef {\n const desc = `Platform: ${name}`;\n const marker = new InjectionToken(desc);\n return

```





asynchronous task when the application starts (for example for a polling process, started with a `setInterval`, a `setTimeout` or using RxJS operators like `interval`); - the `isStable` Observable runs outside of the Angular zone.

Let's imagine that you start a recurrent task (here incrementing a counter, using RxJS `interval`), and at the same time subscribe to `isStable`.

```

constructor(appRef: ApplicationRef) {
 appRef.isStable.pipe(
 filter(stable => stable)
).subscribe(() => console.log('App is stable now'));
 interval(1000).subscribe(counter => console.log(counter));
}

```

In this example, `isStable` will never emit `true` and the trace `"App is stable now"` will never get logged. If you want to execute something when the app is stable, you have to wait for the application to be stable before starting your polling process.

```

constructor(appRef: ApplicationRef) {
 appRef.isStable.pipe(
 first(stable => stable),
 tap(stable => console.log('App is stable now')),
 switchMap(() => interval(1000))
).subscribe(counter => console.log(counter));
}

```

In this example, the trace `"App is stable now"` will be logged and then the counter starts incrementing every second. Note also that this Observable runs outside of the Angular zone, which means that the code in the subscription to this Observable will not trigger the change detection.

Let's imagine that instead of logging the counter value, you update a field of your component and display it in its template.

```

constructor(appRef: ApplicationRef) {
 appRef.isStable.pipe(
 first(stable => stable),
 switchMap(() => interval(1000))
).subscribe(counter => this.value = counter);
}

```

As the `isStable` Observable runs outside the zone, the `value` field will be updated properly, but the template will not be refreshed! You'll have to manually trigger the change detection to update the template.

```

constructor(appRef: ApplicationRef, cd:
ChangeDetectorRef) {
 appRef.isStable.pipe(
 first(stable => stable),
 switchMap(() =>
interval(1000))
).subscribe(counter => {
 this.value = counter;
 cd.detectChanges();
 });
}

```

Or make the subscription callback run inside the zone.

```

constructor(appRef:
ApplicationRef, zone: NgZone) {
 appRef.isStable.pipe(
 first(stable => stable),
 switchMap(() =>
interval(1000))
).subscribe(counter => zone.run(() => this.value = counter));
}

```

```

@publicApi
@Injectable()
export class ApplicationRef {
 /** @internal */
 private _bootstrapListeners: ((compRef:
ComponentRef<any>) => void)[] = [];
 private _views: InternalViewRef[] = [];
 private _runningTick: boolean =
false;
 private _enforceNoNewChanges: boolean =
false;
 private _stable = true;
 /**
 * Get a list of
 component types registered to this application.
 This list is populated even before the component is created.
 public readonly componentTypes: Type<any>[] = [];
 /**
 * Get a list of components registered to this
 application.
 public readonly components: ComponentRef<any>[] = [];
 /**
 * Returns an Observable
 that indicates when the application is stable or unstable.
 @see [Usage notes](#is-stable-examples) for
 examples and caveats when using this API.
 // TODO(issue/24571): remove '!'.
 public readonly isStable!:
Observable<boolean>;
 /** @internal */
 constructor(
 private _zone: NgZone,
 private _console: Console,
 private _injector: Injector,
 private _exceptionHandler: ErrorHandler,
 private _componentFactoryResolver:
ComponentFactoryResolver,
 private _initStatus: ApplicationInitStatus) {
 this._enforceNoNewChanges =
isDevMode();
 this._zone.onMicrotaskEmpty.subscribe({
 next: () => {
 this._zone.run(() => {
 this.tick();
 });
 }
 });
 const isCurrentlyStable = new Observable<boolean>((observer:
Observer<boolean>) => {
 this._stable = this._zone.isStable && !this._zone.hasPendingMacrotasks &&
!this._zone.hasPendingMicrotasks;
 this._zone.runOutsideAngular(() => {
 observer.next(this._stable);
 observer.complete();
 });
 });
 const isStable = new Observable<boolean>((observer:
Observer<boolean>) => {
 // Create the subscription to onStable outside the Angular Zone so that
 // the
 // callback is run outside the Angular Zone.
 let stableSub: Subscription;
 this._zone.runOutsideAngular(() => {
 stableSub = this._zone.onStable.subscribe(() => {
 NgZone.assertNotInAngularZone();
 //
 // Check whether there are no pending macro/micro tasks in the next tick
 // to allow for NgZone to update the
 // state.
 scheduleMicroTask(() => {
 if (!this._stable && !this._zone.hasPendingMacrotasks &&
!this._zone.hasPendingMicrotasks) {
 this._stable = true;
 observer.next(true);
 }
 });
 });
 });
 const unstableSub: Subscription = this._zone.onUnstable.subscribe(() => {
 NgZone.assertInAngularZone();
 if (this._stable) {
 this._stable = false;

```

```

this._zone.runOutsideAngular(() => {\n observer.next(false);\n });\n });\n\n return () =>
{\n stableSub.unsubscribe();\n unstableSub.unsubscribe();\n });\n});\n\n (this as {isStable:
Observable<boolean>}).isStable =\n merge(isCurrentlyStable, isStable.pipe(share()));\n }\n\n /**\n *
Bootstrap a new component at the root level of the application.\n * @usageNotes\n * ### Bootstrap
process\n * \n * When bootstrapping a new root component into an application, Angular mounts the\n * specified
application component onto DOM elements identified by the componentType's\n * selector and kicks off automatic
change detection to finish initializing the component.\n * \n * Optionally, a component can be mounted onto a
DOM element that does not match the\n * componentType's selector.\n * \n * ### Example\n * {@example
core/ts/platform/platform.ts region='longform'}\n * ^\n bootstrap<C>(componentOrFactory:
ComponentFactory<C>|Type<C>, rootSelectorOrNode?: string|any):\n ComponentRef<C> {\n if
(!this._initStatus.done) {\n throw new Error(\n 'Cannot bootstrap as there are still asynchronous initializers
running. Bootstrap components in the `ngDoBootstrap` method of the root module.');

```







```

{getModuleFactory, NgModuleFactoryLoader} from './linker/ng_module_factory_loader';\nexport {QueryList}
from './linker/query_list';\nexport {SystemJsNgModuleLoader, SystemJsNgModuleLoaderConfig} from
 './linker/system_js_ng_module_factory_loader';\nexport {TemplateRef} from './linker/template_ref';\nexport
{ViewContainerRef} from './linker/view_container_ref';\nexport {EmbeddedViewRef, ViewRef} from
 './linker/view_ref';\n", "/*\n * @license\n * Copyright Google LLC All Rights Reserved.\n * \n * Use of this source
code is governed by an MIT-style license that can be\n * found in the LICENSE file at https://angular.io/license\n
*\n\nimport {Injector} from './di/injector';\nimport {assertTNodeForLView} from './render3/assert';\nimport
{CONTAINER_HEADER_OFFSET, LContainer, NATIVE} from './render3/interfaces/container';\nimport
{TElementNode, TNode, TNodeFlags, TNodeType} from './render3/interfaces/node';\nimport {isComponentHost,
isLContainer} from './render3/interfaces/type_checks';\nimport {DECLARATION_COMPONENT_VIEW, LView,
PARENT, T_HOST, TData, TVIEW} from './render3/interfaces/view';\nimport {getComponent, getContext,
getInjectionTokens, getInjector, getListeners, getLocalRefs, getOwningComponent, loadLContext} from
 './render3/util/discovery_utils';\nimport {INTERPOLATION_DELIMITER} from
 './render3/util/misc_utils';\nimport {renderStringify} from './render3/util/stringify_utils';\nimport
{getComponentLViewByIndex, getNativeByTNodeOrNull} from './render3/util/view_utils';\nimport
{assertDomNode} from './util/assert';\nimport {DebugContext} from './view/types';\n\n\n/**\n * @publicApi\n
*\nexport class DebugEventListener {\n constructor(public name: string, public callback: Function) {}\n\n\n/**\n
* @publicApi\n */\nexport interface DebugNode {\n readonly listeners: DebugEventListener[];\n readonly parent:
DebugElement|null;\n readonly nativeNode: any;\n readonly injector: Injector;\n readonly componentInstance:
any;\n readonly context: any;\n readonly references: {[key: string]: any};\n readonly providerTokens:
any[];\n}\n\nexport class DebugNode__PRE_R3__ {\n readonly listeners: DebugEventListener[] = [];\n readonly
parent: DebugElement|null = null;\n readonly nativeNode: any;\n private readonly _debugContext:
DebugContext;\n\n constructor(nativeNode: any, parent: DebugNode|null, _debugContext: DebugContext) {\n
 this._debugContext = _debugContext;\n this.nativeNode = nativeNode;\n if (parent && parent instanceof
DebugElement__PRE_R3__) {\n parent.addChild(this);\n }\n}\n\n get injector(): Injector {\n return
this._debugContext.injector;\n}\n\n get componentInstance(): any {\n return this._debugContext.component;\n}\n\n
 get context(): any {\n return this._debugContext.context;\n}\n\n get references(): {[key: string]: any} {\n
 return this._debugContext.references;\n}\n\n get providerTokens(): any[] {\n return
this._debugContext.providerTokens;\n}\n}\n\n\n/**\n * @publicApi\n */\nexport interface DebugElement extends
DebugNode {\n readonly name: string;\n readonly properties: {[key: string]: any};\n readonly attributes: {[key:
string]: string|null};\n readonly classes: {[key: string]: boolean};\n readonly styles: {[key: string]:
string|null};\n readonly childNodes: DebugNode[];\n readonly nativeElement: any;\n readonly children:
DebugElement[];\n\n query(predicate: Predicate<DebugElement>): DebugElement;\n queryAll(predicate:
Predicate<DebugElement>): DebugElement[];\n queryAllNodes(predicate: Predicate<DebugNode>):
DebugNode[];\n\n triggerEventHandler(eventName: string, eventObj: any): void;\n}\n\nexport class DebugElement__PRE_R3__
extends DebugNode__PRE_R3__ implements DebugElement {\n readonly name!: string;\n readonly properties:
{[key: string]: any} = {};\n readonly attributes: {[key: string]: string|null} = {};\n readonly classes:
{[key: string]: boolean} = {};\n readonly styles: {[key: string]: string|null} = {};\n readonly childNodes:
DebugNode[] = [];\n readonly nativeElement: any;\n\n constructor(nativeNode: any, parent: any, _debugContext:
DebugContext) {\n super(nativeNode, parent, _debugContext);\n this.nativeElement = nativeNode;\n}\n\n addChild(child:
DebugNode) {\n if (child) {\n this.childNodes.push(child);\n (child as {parent: DebugNode}).parent =
this;\n }\n}\n\n removeChild(child: DebugNode) {\n const childIndex = this.childNodes.indexOf(child);\n if
(childIndex !== -1) {\n (child as {parent: DebugNode | null}).parent = null;\n this.childNodes.splice(childIndex, 1);\n }\n}\n\n insertChildrenAfter(child: DebugNode, newChildren:
DebugNode[]) {\n const siblingIndex = this.childNodes.indexOf(child);\n if (siblingIndex !== -1) {\n
this.childNodes.splice(siblingIndex + 1, 0, ...newChildren);\n newChildren.forEach(c => {\n if (c.parent) {\n
(c.parent as DebugElement__PRE_R3__).removeChild(c);\n }\n (child as {parent:
DebugNode}).parent = this;\n });\n }\n}\n\n insertBefore(refChild: DebugNode, newChild: DebugNode):

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void {
 const refIndex = this.childNodes.indexOf(refChild);
 if (refIndex === -1) {
 this.addChild(newChild);
 } else {
 if (newChild.parent) {
 (newChild.parent as DebugElement__PRE_R3__).removeChild(newChild);
 }
 (newChild as {parent: DebugNode}).parent = this;
 this.childNodes.splice(refIndex, 0, newChild);
 }
}

query(predicate: Predicate<DebugElement>): DebugElement[] {
 const results = this.queryAll(predicate);
 return results[0] || null;
}

queryAll(predicate: Predicate<DebugElement>): DebugElement[] {
 const matches: DebugElement[] = [];
 _queryElementChildren(this, predicate, matches);
 return matches;
}

_queryElementChildren(this: DebugElement, predicate: Predicate<DebugElement>, matches: DebugElement[]): void {
 this.childNodes.forEach((node) => {
 if (predicate(node)) {
 matches.push(node);
 }
 _queryElementChildren(node, predicate, matches);
 });
}

_queryNodeChildren(this: DebugNode, predicate: Predicate<DebugNode>, matches: DebugNode[]): void {
 if (this instanceof DebugElement__PRE_R3__) {
 parentNode.childNodes.forEach((node) => {
 if (predicate(node)) {
 matches.push(node);
 }
 if (node instanceof DebugElement__PRE_R3__) {
 _queryNodeChildren(node, predicate, matches);
 }
 });
 }
}

class DebugNode__POST_R3__ implements DebugNode {
 readonly nativeNode: Node;

 constructor(nativeNode: Node) {
 this.nativeNode = nativeNode;
 }

 get parent(): DebugElement | null {
 const parent = this.nativeNode.parentNode as Element;
 return parent ? new DebugElement__POST_R3__(parent) : null;
 }

 get injector(): Injector {
 return getInjector(this.nativeNode);
 }

 get componentInstance(): any {
 const nativeElement = this.nativeNode;
 return nativeElement && (getComponent(nativeElement as Element) || getOwningComponent(nativeElement));
 }

 get context(): any {
 return getComponent(this.nativeNode as Element) || getContext(this.nativeNode as Element);
 }

 get listeners(): DebugEventListener[] {
 return getListeners(this.nativeNode as Element).filter(listener => listener.type === 'dom');
 }

 get references(): {[key: string]: any;} {
 return getLocalRefs(this.nativeNode);
 }

 get providerTokens(): any[] {
 return getInjectionTokens(this.nativeNode as Element);
 }
}

class DebugElement__POST_R3__ extends DebugNode__POST_R3__ implements DebugElement {
 constructor(nativeNode: Element) {
 ngDevMode && assertDomNode(nativeNode);
 super(nativeNode);
 }

 get nativeElement(): Element | null {
 return this.nativeNode.nodeType === Node.ELEMENT_NODE ? this.nativeNode as Element : null;
 }

 get name(): string {
 try {
 const context = loadLContext(this.nativeNode!);
 const IView = context.IView;
 const tData = IView[TVIEW].data;
 const tNode = tData[context.nodeIndex] as TNode;
 return tNode.value!;
 } catch (e) {
 return this.nativeNode.nodeName;
 }
 }

 /**
 * Gets a map of property names to property values for an element.
 * This map includes:
 * - Regular property bindings (e.g. `[id]="id"`)
 * - Host property bindings (e.g. `host: { [id]: "id" }`)
 * - Interpolated property bindings (e.g. `id="{ { value } }"`)
 * - It does not include:
 * - input property bindings (e.g. `[myCustomInput]="value"`)
 * - attribute bindings (e.g. `[attr.role]="menu"`)
 */
 get properties(): {[key: string]: any;} {
 const context = loadLContext(this.nativeNode, false);
 if (context === null) {
 return {};
 }
 const IView = context.IView;
 const tData = IView[TVIEW].data;
 const tNode = tData[context.nodeIndex] as TNode;
 const properties: {[key: string]: string} = {};
 // Collect properties from the DOM.
 copyDomProperties(this.nativeElement, properties);
 // Collect properties from the bindings.
 This is needed for animation renderer which has // synthetic properties which don't get reflected into the DOM.
 collectPropertyBindings(properties, tNode, IView, tData);
 return properties;
 }

 get attributes(): {[key:

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string]: string|null; } {
 const attributes: {[key: string]: string|null;} = {};
 const element = this.nativeElement;
 if (!element) {
 return attributes;
 }
 const context = loadLContext(element, false);
 if (context === null) {
 return {};
 }
 const IView = context.IView;
 const tNodeAttrs = (IView[TVIEW].data[context.nodeIndex] as TNode).attrs;
 const lowercaseTNodeAttrs: string[] = [];
 // For debug nodes we take the element's attribute directly from the DOM since it allows us
 // to account for ones that weren't set via bindings (e.g. ViewEngine keeps track of the ones
 // that are set through `Renderer2`). The problem is that the browser will lowercase all names,
 // however since we have the attributes already on the TNode, we can preserve the case by going
 // through them once, adding them to the `attributes` map and putting their lower-cased name
 // into an array. Afterwards when we're going through the native DOM attributes, we can check
 // whether we haven't run into an attribute already through the TNode.
 if (tNodeAttrs) {
 let i = 0;
 while (i < tNodeAttrs.length) {
 const attrName = tNodeAttrs[i];
 // Stop as soon as we hit a marker. We only care about the regular attributes. Everything
 // else will be handled below when we read the final attributes off the DOM.
 if (typeof attrName !== 'string') break;
 const attrValue = tNodeAttrs[i + 1];
 attributes[attrName] = attrValue as string;
 lowercaseTNodeAttrs.push(attrName.toLowerCase());
 i += 2;
 }
 }
 const eAttrs = element.attributes;
 for (let i = 0; i < eAttrs.length; i++) {
 const attr = eAttrs[i];
 const lowercaseName = attr.name.toLowerCase();
 // Make sure that we don't assign the same attribute both in its
 // case-sensitive form and the lower-cased one from the browser.
 if (lowercaseTNodeAttrs.indexOf(lowercaseName) === -1) {
 // Save the lowercase name to align the behavior between browsers.
 // IE preserves the case, while all other browser convert it to lower case.
 attributes[lowercaseName] = attr.value;
 }
 }
 return attributes;
}
get styles(): {[key: string]: string|null} {
 if (this.nativeElement && (this.nativeElement as HTMLElement).style) {
 return (this.nativeElement as HTMLElement).style as {[key: string]: any};
 }
 return {};
}
get classes(): {[key: string]: boolean;} {
 const result: {[key: string]: boolean;} = {};
 const element = this.nativeElement as HTMLElement | SVGElement;
 // SVG elements return an `SVGAnimatedString` instead of a plain string for the `className`.
 const className = element.className as string | SVGAnimatedString;
 const classes = className && typeof className !== 'string' ?
 className.baseVal.split(' ') :
 className.split(' ');
 classes.forEach((value: string) => result[value] = true);
 return result;
}
get childNodes(): DebugNode[] {
 const childNodes = this.nativeNode.childNodes;
 const children: DebugNode[] = [];
 for (let i = 0; i < childNodes.length; i++) {
 const element = childNodes[i];
 children.push(getDebugNode__POST_R3__(element));
 }
 return children;
}
get children(): DebugElement[] {
 const nativeElement = this.nativeElement;
 if (!nativeElement) return [];
 const childNodes = nativeElement.childNodes;
 const children: DebugElement[] = [];
 for (let i = 0; i < childNodes.length; i++) {
 const element = childNodes[i];
 children.push(getDebugNode__POST_R3__(element));
 }
 return children;
}
query(predicate: Predicate<DebugElement>): DebugElement {
 const results = this.queryAll(predicate);
 return results[0] || null;
}
queryAll(predicate: Predicate<DebugElement>): DebugElement[] {
 const matches: DebugElement[] = [];
 _queryAllR3(this, predicate, matches, true);
 return matches;
}
queryAllNodes(predicate: Predicate<DebugNode>): DebugNode[] {
 const matches: DebugNode[] = [];
 _queryAllR3(this, predicate, matches, false);
 return matches;
}
triggerEventHandler(eventName: string, eventObj: any): void {
 const node = this.nativeNode as any;
 const invokedListeners: Function[] = [];
 this.listeners.forEach(listener => {
 if (listener.name === eventName) {
 const callback = listener.callback;
 callback.call(node, eventObj);
 invokedListeners.push(callback);
 }
 });
 // We need to check whether `eventListeners` exists, because it's something
 // that Zone.js only adds to `EventTarget` in browser environments.
 if (typeof node.eventListeners === 'function') {
 // Note that in Ivy we wrap event listeners with a call to `event.preventDefault` in some
 // cases. We use `__ngUnwrap__` as a special token that gives us access to the actual event
 // listener.
 node.eventListeners(eventName).forEach((listener: Function) => {
 // In order to ensure that we can detect the

```

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special __ngUnwrap__ token described above, we\n // use `toString` on the listener and see if it contains the
token. We use this approach to\n // ensure that it still worked with compiled code since it cannot remove or
rename string\n // literals. We also considered using a special function name (i.e. if(listener.name ===\n //
special)) but that was more cumbersome and we were also concerned the compiled code could\n // strip the
name, turning the condition in to (\"\" === \"\") and always returning true.\n if
(listener.toString().indexOf('__ngUnwrap__') !== -1) {\n const unwrappedListener =
listener('__ngUnwrap__');\n return invokedListeners.indexOf(unwrappedListener) === -1 &&\n
unwrappedListener.call(node, eventObj);\n }\n }\n }\n }\n\nfunction copyDomProperties(element:
Element|null, properties: {[name: string]: string}): void {\n if (element) {\n // Skip own properties (as those are
patched)\n let obj = Object.getPrototypeOf(element);\n const NodePrototype: any = Node.prototype;\n while
(obj !== null && obj !== NodePrototype) {\n const descriptors = Object.getOwnPropertyDescriptors(obj);\n
for (let key in descriptors) {\n if (!key.startsWith('__') && !key.startsWith('on')) {\n // don't include
properties starting with `__` and `on`.\n // `__` are patched values which should not be included.\n // `on`
are listeners which also should not be included.\n const value = (element as any)[key];\n if
(isPrimitiveValue(value)) {\n properties[key] = value;\n }\n }\n }\n obj =
Object.getPrototypeOf(obj);\n }\n }\n }\n\nfunction isPrimitiveValue(value: any): boolean {\n return typeof value
=== 'string' || typeof value === 'boolean' || typeof value === 'number' ||\n value === null;\n }\n\n/**\n * Walk the
TNode tree to find matches for the predicate.\n * @param parentElement the element from which the walk is
started\n * @param predicate the predicate to match\n * @param matches the list of positive matches\n * @param
elementsOnly whether only elements should be searched\n */\nfunction _queryAllR3(\n parentElement:
DebugElement, predicate: Predicate<DebugElement>, matches: DebugElement[],\n elementsOnly: true):
void;\nfunction _queryAllR3(\n parentElement: DebugElement, predicate: Predicate<DebugNode>, matches:
DebugNode[],\n elementsOnly: false): void;\nfunction _queryAllR3(\n parentElement: DebugElement,
predicate: Predicate<DebugElement>|Predicate<DebugNode>,\n matches: DebugElement[]|DebugNode[],
elementsOnly: boolean) {\n const context = loadLContext(parentElement.nativeElement, false);\n if (context !== null)
{\n const parentTNode = context.IView[TVIEW].data[context.nodeIndex] as TNode;\n
_queryNodeChildrenR3(\n parentTNode, context.IView, predicate, matches, elementsOnly,\n
parentElement.nativeElement);\n } else {\n // If the context is null, then `parentElement` was either created with
Renderer2 or native DOM\n // APIs.\n _queryNativeNodeDescendants(parentElement.nativeElement, predicate,
matches, elementsOnly);\n }\n }\n\n/**\n * Recursively match the current TNode against the predicate, and goes on
with the next ones.\n * @param tNode the current TNode\n * @param lView the LView of this TNode\n *
@param predicate the predicate to match\n * @param matches the list of positive matches\n * @param
elementsOnly whether only elements should be searched\n * @param rootNativeNode the root native node on which
predicate should not be matched\n */\nfunction _queryNodeChildrenR3(\n tNode: TNode, lView: LView,
predicate: Predicate<DebugElement>|Predicate<DebugNode>,\n matches: DebugElement[]|DebugNode[],
elementsOnly: boolean, rootNativeNode: any) {\n ngDevMode && assertTNodeForLView(tNode, lView);\n const
nativeNode = getNativeByTNodeOrNull(tNode, lView);\n // For each type of TNode, specific logic is executed.\n
if (tNode.type & (TNodeType.AnyRNode | TNodeType.ElementContainer)) {\n // Case 1: the TNode is an
element\n // The native node has to be checked.\n _addQueryMatchR3(nativeNode, predicate, matches,
elementsOnly, rootNativeNode);\n if (isComponentHost(tNode)) {\n // If the element is the host of a
component, then all nodes in its view have to be processed.\n // Note: the component's content (tNode.child) will
be processed from the insertion points.\n const componentView = getComponentLViewByIndex(tNode.index,
lView);\n if (componentView && componentView[TVIEW].firstChild) {\n _queryNodeChildrenR3(\n
componentView[TVIEW].firstChild!, componentView, predicate, matches, elementsOnly,\n
rootNativeNode);\n }\n } else {\n if (tNode.child) {\n // Otherwise, its children have to be processed.\n
_queryNodeChildrenR3(tNode.child, lView, predicate, matches, elementsOnly, rootNativeNode);\n }\n }\n }\n\n//
We also have to query the DOM directly in order to catch elements inserted through\n // Renderer2. Note that this
is __not__ optimal, because we're walking similar trees multiple\n // times. ViewEngine could do it more

```





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DefaultIterableDiffer, IterableChangeRecord, IterableChanges, IterableDiffer, IterableDifferFactory, IterableDiffers,
KeyValueChangeRecord, KeyValueChanges, KeyValueDiffer, KeyValueDifferFactory, KeyValueDiffers,
NgIterable, PipeTransform, SimpleChange, SimpleChanges, TrackByFunction, WrappedValue} from
'./change_detection/change_detection';\n", "/*\n * @license\n * Copyright Google LLC All Rights Reserved.\n *\n * Use of this source code is governed by an MIT-style license that can be\n * found in the LICENSE file at
https://angular.io/license\n *\n\nimport {createPlatformFactory, PlatformRef} from './application_ref';\nimport
{PLATFORM_ID} from './application_tokens';\nimport {Console} from './console';\nimport {Injector,
StaticProvider} from './di';\nimport {TestabilityRegistry} from './testability/testability';\n\nconst
_CORE_PLATFORM_PROVIDERS: StaticProvider[] = [\n // Set a default platform name for platforms that don't
set it explicitly.\n {provide: PLATFORM_ID, useValue: 'unknown'},\n {provide: PlatformRef, deps: [Injector]},\n
{provide: TestabilityRegistry, deps: []},\n {provide: Console, deps: []},\n];\n\n/*\n * This platform has to be
included in any other platform\n *\n * @publicApi\n */\nexport const platformCore = createPlatformFactory(null,
'core', _CORE_PLATFORM_PROVIDERS);\n", "/*\n * @license\n * Copyright Google LLC All Rights
Reserved.\n *\n * Use of this source code is governed by an MIT-style license that can be\n * found in the
LICENSE file at https://angular.io/license\n *\n\nimport {APP_INITIALIZER, ApplicationInitStatus} from
'./application_init';\nimport {ApplicationRef} from './application_ref';\nimport {APP_ID_RANDOM_PROVIDER}
from './application_tokens';\nimport {defaultIterableDiffers, defaultKeyValueDiffers, IterableDiffers,
KeyValueDiffers} from './change_detection/change_detection';\nimport {Console} from './console';\nimport
{Injector, StaticProvider} from './di';\nimport {Inject, Optional, SkipSelf} from './di/metadata';\nimport
{ErrorHandler} from './error_handler';\nimport {DEFAULT_LOCALE_ID, USD_CURRENCY_CODE} from
'/i18n/localization';\nimport {DEFAULT_CURRENCY_CODE, LOCALE_ID} from '/i18n/tokens';\nimport
{ivyEnabled} from './ivy_switch';\nimport {ComponentFactoryResolver} from './linker';\nimport {Compiler} from
'./linker/compiler';\nimport {NgModule} from './metadata';\nimport {SCHEDULER} from
'./render3/component_ref';\nimport {setLocaleId} from './render3/i18n/i18n_locale_id';\nimport {NgZone} from
'./zone';\n\ndeclare const $localize: {locale?: string};\n\nexport function _iterableDiffersFactory() {\n return
defaultIterableDiffers;\n}\n\nexport function _keyValueDiffersFactory() {\n return
defaultKeyValueDiffers;\n}\n\nexport function _localeFactory(locale?: string): string {\n locale = locale ||
getGlobalLocale();\n if (ivyEnabled) {\n setLocaleId(locale);\n }\n return locale;\n}\n\n/*\n * Work out the
locale from the potential global properties.\n *\n * * Closure Compiler: use `goog.LOCALE`.\n * * Ivy enabled: use
`$localize.locale`\n */\nexport function getGlobalLocale(): string {\n if (typeof ngI18nClosureMode !== 'undefined'
&& ngI18nClosureMode && \n typeof goog !== 'undefined' && goog.LOCALE !== 'en') {\n // * The default
`goog.LOCALE` value is `en`, while Angular used `en-US`.\n // * In order to preserve backwards compatibility,
we use Angular default value over\n // Closure Compiler's one.\n return goog.LOCALE;\n } else {\n // KEEP
`typeof $localize !== 'undefined' && $localize.locale` IN SYNC WITH THE LOCALIZE\n // COMPILE-TIME
INLINER.\n //\n // * During compile time inlining of translations the expression will be replaced\n // with a
string literal that is the current locale. Other forms of this expression are not\n // guaranteed to be replaced.\n
//\n // * During runtime translation evaluation, the developer is required to set `$localize.locale`\n // if required,
or just to provide their own `LOCALE_ID` provider.\n return (ivyEnabled && typeof $localize !== 'undefined'
&& $localize.locale) ||\n DEFAULT_LOCALE_ID;\n }\n}\n\n/*\n * A built-in [dependency injection
token](guide/glossary#di-token)\n * that is used to configure the root injector for bootstrapping.\n */\nexport const
APPLICATION_MODULE_PROVIDERS: StaticProvider[] = [\n {\n provide: ApplicationRef,\n useClass:
ApplicationRef,\n deps: [NgZone, Console, Injector, ErrorHandler, ComponentFactoryResolver,
ApplicationInitStatus]\n },\n {\n provide: SCHEDULER, deps: [NgZone], useFactory: zoneSchedulerFactory},\n {\n
provide: ApplicationInitStatus,\n useClass: ApplicationInitStatus,\n deps: [[new Optional(),
APP_INITIALIZER]]\n },\n {\n provide: Compiler, useClass: Compiler, deps: []},\n
APP_ID_RANDOM_PROVIDER,\n {\n provide: IterableDiffers, useFactory: _iterableDiffersFactory, deps: []},\n
{\n provide: KeyValueDiffers, useFactory: _keyValueDiffersFactory, deps: []},\n {\n provide: LOCALE_ID,\n
useFactory: _localeFactory,\n deps: [[new Inject(LOCALE_ID), new Optional(), new SkipSelf()]]\n },\n

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{provide: DEFAULT_CURRENCY_CODE, useValue: USD_CURRENCY_CODE},\n};\n\n/**\n * Schedule work
at next available slot.\n *\n * In Ivy this is just `requestAnimationFrame`. For compatibility reasons when
bootstrapped\n * using `platformRef.bootstrap` we need to use `NgZone.onStable` as the scheduling mechanism.\n *\n
This overrides the scheduling mechanism in Ivy to `NgZone.onStable`.\n *\n * @param ngZone NgZone to use for
scheduling.\n */\nexport function zoneSchedulerFactory(ngZone: NgZone): (fn: () => void) => void {\n let queue:
(() => void)[] = [];\n ngZone.onStable.subscribe(() => {\n while (queue.length) {\n queue.pop()!();\n }\n
});\n return function(fn: () => void) {\n queue.push(fn);\n };\n}\n\n/**\n * Configures the root injector for an app
with\n * providers of `@angular/core` dependencies that `ApplicationRef` needs\n * to bootstrap components.\n *\n
* Re-exported by `BrowserModule`, which is included automatically in the root\n * `AppModule` when you create a
new app with the CLI `new` command.\n *\n * @publicApi\n */\n@NgModule({providers:
APPLICATION_MODULE_PROVIDERS})\nexport class AppModule {\n // Inject ApplicationRef to make
it eager...\n constructor(appRef: ApplicationRef) {\n }\n}\n\n"/**\n * @license\n * Copyright Google LLC All Rights
Reserved.\n *\n * Use of this source code is governed by an MIT-style license that can be\n * found in the
LICENSE file at https://angular.io/license\n */\n\nimport {ViewEncapsulation} from './metadata/view';\nimport
{RendererType2} from './render/api_flags';\nimport {SecurityContext} from './sanitization/security';\nimport
{asElementData, BindingDef, BindingFlags, ElementData, ElementHandleEventFn, NodeDef, NodeFlags,
OutputDef, OutputType, QueryValueType, ViewData, ViewDefinitionFactory} from './types';\nimport
{calcBindingFlags, checkAndUpdateBinding, dispatchEvent, elementEventFullName, getParentRenderElement,
NOOP, resolveDefinition, resolveRendererType2, splitMatchedQueriesDsl, splitNamespace} from './util';\n\nexport
function anchorDef(\n flags: NodeFlags, matchedQueriesDsl: null|[string | number, QueryValueType][],\n
ngContentIndex: null|number, childCount: number, handleEvent?: null|ElementHandleEventFn,\n
templateFactory?: ViewDefinitionFactory): NodeDef {\n flags |= NodeFlags.TypeElement;\n const
{matchedQueries, references, matchedQueryIds} = splitMatchedQueriesDsl(matchedQueriesDsl);\n const template
= templateFactory ? resolveDefinition(templateFactory) : null;\n\n return {\n // will be set by the view
definition\n nodeIndex: -1,\n parent: null,\n renderParent: null,\n bindingIndex: -1,\n outputIndex: -1,\n //
regular values\n flags,\n checkIndex: -1,\n childFlags: 0,\n directChildFlags: 0,\n childMatchedQueries:
0,\n matchedQueries,\n matchedQueryIds,\n references,\n ngContentIndex,\n childCount,\n bindings:
[],\n bindingFlags: 0,\n outputs: [],\n element: {\n ns: null,\n name: null,\n attrs: null,\n template,\n
componentProvider: null,\n componentView: null,\n componentRendererType: null,\n publicProviders:
null,\n allProviders: null,\n handleEvent: handleEvent || NOOP\n },\n provider: null,\n text: null,\n
query: null,\n ngContent: null\n };\n}\n\nexport function elementDef(\n checkIndex: number, flags:
NodeFlags,\n matchedQueriesDsl: null|[string | number, QueryValueType][], ngContentIndex: null|number,\n
childCount: number, namespaceAndName: string|null, fixedAttrs: null|[string, string][] = [],\n bindings?:
null|[BindingFlags, string, string | SecurityContext | null][],\n outputs?: null|([string, string])[], handleEvent?:
null|ElementHandleEventFn,\n componentView?: null|ViewDefinitionFactory,\n componentRendererType?:
RendererType2|null): NodeDef {\n if (!handleEvent) {\n handleEvent = NOOP;\n }\n const {matchedQueries,
references, matchedQueryIds} = splitMatchedQueriesDsl(matchedQueriesDsl);\n let ns: string = null!;\n let name:
string = null!;\n if (namespaceAndName) {\n [ns, name] = splitNamespace(namespaceAndName);\n }\n bindings =
bindings || [];\n const bindingDefs: BindingDef[] = [];\n for (let i = 0; i < bindings.length; i++) {\n
const [bindingFlags, namespaceAndName, suffixOrSecurityContext] = bindings[i];\n const [ns, name] =
splitNamespace(namespaceAndName);\n let securityContext: SecurityContext = undefined!;\n let suffix: string
= undefined!;\n switch (bindingFlags & BindingFlags.Types) {\n case BindingFlags.TypeElementStyle:\n
suffix = <string>suffixOrSecurityContext;\n break;\n case BindingFlags.TypeElementAttribute:\n case
BindingFlags.TypeProperty:\n securityContext = <SecurityContext>suffixOrSecurityContext;\n break;\n
}\n bindingDefs[i] =\n {flags: bindingFlags, ns, name, nonMinifiedName: name, securityContext, suffix};\n
}\n outputs = outputs || [];\n const outputDefs: OutputDef[] = [];\n for (let i = 0; i < outputs.length; i++) {\n
const [target, eventName] = outputs[i];\n outputDefs[i] =\n {type: OutputType.ElementOutput, target: <any>target,
eventName, propName: null};\n }\n fixedAttrs = fixedAttrs || [];\n const attrs = <[string, string,

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def.nodeIndex);\n const renderNode = elData.renderElement);\n const name = binding.name!);\n switch
(binding.flags & BindingFlags.Types) {\n case BindingFlags.TypeElementAttribute:\n
setElementAttribute(view, binding, renderNode, binding.ns, name, value);\n break;\n case
BindingFlags.TypeElementClass:\n setElementClass(view, renderNode, name, value);\n break;\n case
BindingFlags.TypeElementStyle:\n setElementStyle(view, binding, renderNode, name, value);\n break;\n
case BindingFlags.TypeProperty:\n const bindView = (def.flags & NodeFlags.ComponentView &&\n
binding.flags & BindingFlags.SyntheticHostProperty) ?\n elData.componentView :\n view);\n
setElementProperty(bindView, binding, renderNode, name, value);\n break;\n }\n return true;\n}\n\nfunction
setElementAttribute(\n view: ViewData, binding: BindingDef, renderNode: any, ns: string|null, name: string,\n
value: any) {\n const securityContext = binding.securityContext;\n let renderValue = securityContext ?
view.root.sanitizer.sanitize(securityContext, value) : value;\n renderValue = renderValue != null ?
renderValue.toString() : null;\n const renderer = view.renderer;\n if (value != null) {\n
renderer.setAttribute(renderNode, name, renderValue, ns);\n } else {\n renderer.removeAttribute(renderNode,
name, ns);\n }\n}\n\nfunction setElementClass(view: ViewData, renderNode: any, name: string, value: boolean) {\n
const renderer = view.renderer;\n if (value) {\n renderer.addClass(renderNode, name);\n } else {\n
renderer.removeClass(renderNode, name);\n }\n}\n\nfunction setElementStyle(\n view: ViewData, binding:
BindingDef, renderNode: any, name: string, value: any) {\n let renderValue: string|null =\n
view.root.sanitizer.sanitize(SecurityContext.STYLE, value as {} | string);\n if (renderValue != null) {\n
renderValue = renderValue.toString();\n const unit = binding.suffix;\n if (unit != null) {\n renderValue =
renderValue + unit;\n }\n } else {\n renderValue = null;\n }\n const renderer = view.renderer;\n if
(renderValue != null) {\n renderer.setStyle(renderNode, name, renderValue);\n } else {\n
renderer.removeStyle(renderNode, name);\n }\n}\n\nfunction setElementProperty(\n view: ViewData, binding:
BindingDef, renderNode: any, name: string, value: any) {\n const securityContext = binding.securityContext;\n
let renderValue = securityContext ? view.root.sanitizer.sanitize(securityContext, value) : value;\n
view.renderer.setProperty(renderNode, name, renderValue);\n}\n\n"/**\n * @license\n * Copyright Google LLC All
Rights Reserved.\n * Use of this source code is governed by an MIT-style license that can be\n * found in the
LICENSE file at https://angular.io/license\n */\n\nimport {ElementRef} from './linker/element_ref';\nimport
{QueryList} from './linker/query_list';\nimport {asElementData, asProviderData, asQueryList, NodeDef,
NodeFlags, QueryBindingDef, QueryBindingType, QueryDef, QueryValueType, ViewData} from './types';\nimport
{declaredViewContainer, filterQueryId, isEmbeddedView} from './util';\n\nexport function queryDef(\n flags:
NodeFlags, id: number, bindings: {[propName: string]: QueryBindingType}): NodeDef {\n let bindingDefs:
QueryBindingDef[] = [];\n for (let propName in bindings) {\n const bindingType = bindings[propName];\n
bindingDefs.push({propName, bindingType});\n }\n\n return {\n // will be set by the view definition\n
nodeIndex: -1,\n parent: null,\n renderParent: null,\n bindingIndex: -1,\n outputIndex: -1,\n // regular
values\n // TODO(vicb): check\n checkIndex: -1,\n flags,\n childFlags: 0,\n directChildFlags: 0,\n
childMatchedQueries: 0,\n ngContentIndex: -1,\n matchedQueries: {},\n matchedQueryIds: 0,\n references:
{},\n childCount: 0,\n bindings: [],\n bindingFlags: 0,\n outputs: [],\n element: null,\n provider: null,\n
text: null,\n query: {id, filterId: filterQueryId(id), bindings: bindingDefs},\n ngContent: null\n };\n}\n\nexport
function createQuery(): QueryList<any> {\n return new QueryList();\n}\n\nexport function
dirtyParentQueries(view: ViewData) {\n const queryIds = view.def.nodeMatchedQueries;\n while (view.parent
&& isEmbeddedView(view)) {\n let tplDef = view.parentNodeDef!;\n view = view.parent;\n // content
queries\n const end = tplDef.nodeIndex + tplDef.childCount;\n for (let i = 0; i <= end; i++) {\n const nodeDef
= view.def.nodes[i];\n if ((nodeDef.flags & NodeFlags.TypeContentQuery) &&\n (nodeDef.flags &
NodeFlags.DynamicQuery) &&\n (nodeDef.query!.filterId & queryIds) === nodeDef.query!.filterId) {\n
asQueryList(view, i).setDirty();\n }\n if ((nodeDef.flags & NodeFlags.TypeElement && i +
nodeDef.childCount < tplDef.nodeIndex) ||\n !(nodeDef.childFlags & NodeFlags.TypeContentQuery) ||\n
!(nodeDef.childFlags & NodeFlags.DynamicQuery)) {\n // skip elements that don't contain the template element
or no query.\n i += nodeDef.childCount;\n }\n }\n }\n}\n\n // view queries\n if (view.def.nodeFlags &

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NodeFlags.TypeViewQuery) {\n for (let i = 0; i < view.def.nodes.length; i++) {\n const nodeDef =
view.def.nodes[i];\n if ((nodeDef.flags & NodeFlags.TypeViewQuery) && (nodeDef.flags &
NodeFlags.DynamicQuery)) {\n asQueryList(view, i).setDirty();\n }\n // only visit the root nodes\n i
+= nodeDef.childCount;\n }\n}\n\nexport function checkAndUpdateQuery(view: ViewData, nodeDef:
NodeDef) {\n const queryList = asQueryList(view, nodeDef.nodeIndex);\n if (!queryList.dirty) {\n return;\n }\n let directiveInstance: any;\n let newValues: any[] = undefined!;\n if (nodeDef.flags &
NodeFlags.TypeContentQuery) {\n const elementDef = nodeDef.parent!.parent!;\n newValues =
calcQueryValues(\n view, elementDef.nodeIndex, elementDef.nodeIndex + elementDef.childCount,
nodeDef.query!,\n []);\n directiveInstance = asProviderData(view, nodeDef.parent!.nodeIndex).instance;\n }
else if (nodeDef.flags & NodeFlags.TypeViewQuery) {\n newValues = calcQueryValues(view, 0,
view.def.nodes.length - 1, nodeDef.query!, []);\n directiveInstance = view.component;\n }\n queryList.reset(newValues);\n const bindings = nodeDef.query!.bindings;\n let notify = false;\n for (let i = 0; i <
bindings.length; i++) {\n const binding = bindings[i];\n let boundValue: any;\n switch (binding.bindingType)
{\n case QueryBindingType.First:\n boundValue = queryList.first;\n break;\n case
QueryBindingType.All:\n boundValue = queryList;\n notify = true;\n break;\n }\n directiveInstance[binding.propName] = boundValue;\n }\n if (notify) {\n queryList.notifyOnChanges();\n }\n}\n\nfunction calcQueryValues(\n view: ViewData, startIndex: number, endIndex: number, queryDef:
QueryDef,\n values: any[]): any[] {\n for (let i = startIndex; i <= endIndex; i++) {\n const nodeDef =
view.def.nodes[i];\n const valueType = nodeDef.matchedQueries[queryDef.id];\n if (valueType != null) {\n values.push(getQueryValue(view, nodeDef, valueType));\n }\n if (nodeDef.flags & NodeFlags.TypeElement
&& nodeDef.element!.template &&\n (nodeDef.element!.template!.nodeMatchedQueries & queryDef.filterId
===\n queryDef.filterId) {\n const elementData = asElementData(view, i);\n // check embedded views
that were attached at the place of their template,\n // but process child nodes first if some match the query (see
issue #16568)\n if ((nodeDef.childMatchedQueries & queryDef.filterId) === queryDef.filterId) {\n
calcQueryValues(view, i + 1, i + nodeDef.childCount, queryDef, values);\n i += nodeDef.childCount;\n }\n if (nodeDef.flags & NodeFlags.EmbeddedViews) {\n const embeddedViews =
elementData.viewContainer!._embeddedViews;\n for (let k = 0; k < embeddedViews.length; k++) {\n
const embeddedView = embeddedViews[k];\n const dvc = declaredViewContainer(embeddedView);\n if
(dvc && dvc === elementData) {\n calcQueryValues(embeddedView, 0, embeddedView.def.nodes.length -
1, queryDef, values);\n }\n }\n const projectedViews =
elementData.template._projectedViews;\n if (projectedViews) {\n for (let k = 0; k < projectedViews.length;
k++) {\n const projectedView = projectedViews[k];\n calcQueryValues(projectedView, 0,
projectedView.def.nodes.length - 1, queryDef, values);\n }\n }\n if ((nodeDef.childMatchedQueries
& queryDef.filterId) !== queryDef.filterId) {\n // if no child matches the query, skip the children.\n i +=
nodeDef.childCount;\n }\n }\n return values;\n}\n\nexport function getQueryValue(\n view: ViewData,
nodeDef: NodeDef, queryValueType: QueryValueType): any {\n if (queryValueType != null) {\n // a match\n switch (queryValueType) {\n case QueryValueType.RenderElement:\n return asElementData(view,
nodeDef.nodeIndex).renderElement;\n case QueryValueType.ElementRef:\n return new
ElementRef(asElementData(view, nodeDef.nodeIndex).renderElement);\n case QueryValueType.TemplateRef:\n
return asElementData(view, nodeDef.nodeIndex).template;\n case QueryValueType.ViewContainerRef:\n
return asElementData(view, nodeDef.nodeIndex).viewContainer;\n case QueryValueType.Provider:\n return
asProviderData(view, nodeDef.nodeIndex).instance;\n }\n }\n}\n\n"/**\n * @license\n * Copyright Google LLC
All Rights Reserved.\n * Use of this source code is governed by an MIT-style license that can be\n * found in
the LICENSE file at https://angular.io/license\n */\n\nimport {NodeDef, NodeFlags, ViewData} from
'/types';\nimport {getParentRenderElement, RenderNodeAction, visitProjectedRenderNodes} from './util';\n\nexport
function ngContentDef(ngContentIndex: null|number, index: number): NodeDef {\n return {\n // will bet set by
the view definition\n nodeIndex: -1,\n parent: null,\n renderParent: null,\n bindingIndex: -1,\n outputIndex:
-1,\n // regular values\n checkIndex: -1,\n flags: NodeFlags.TypeNgContent,\n childFlags: 0,\n

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(bindLen > 6) value[bindings[6].name!] = v6;\n if (bindLen > 7) value[bindings[7].name!] = v7;\n if
(bindLen > 8) value[bindings[8].name!] = v8;\n if (bindLen > 9) value[bindings[9].name!] = v9;\n break;\n
 case NodeFlags.TypePurePipe:\n const pipe = v0;\n switch (bindLen) {\n case 1:\n value =
pipe.transform(v0);\n break;\n case 2:\n value = pipe.transform(v1);\n break;\n case
3:\n value = pipe.transform(v1, v2);\n break;\n case 4:\n value = pipe.transform(v1, v2,
v3);\n break;\n case 5:\n value = pipe.transform(v1, v2, v3, v4);\n break;\n case 6:\n
value = pipe.transform(v1, v2, v3, v4, v5);\n break;\n case 7:\n value = pipe.transform(v1,
v2, v3, v4, v5, v6);\n break;\n case 8:\n value = pipe.transform(v1, v2, v3, v4, v5, v6, v7);\n
break;\n case 9:\n value = pipe.transform(v1, v2, v3, v4, v5, v6, v7, v8);\n break;\n case
10:\n value = pipe.transform(v1, v2, v3, v4, v5, v6, v7, v8, v9);\n break;\n }\n break;\n }\n
data.value = value;\n } \n return changed;\n } \n\nexport function checkAndUpdatePureExpressionDynamic(\n
view: ViewData, def: NodeDef, values: any[]): boolean {\n const bindings = def.bindings;\n let changed = false;\n
for (let i = 0; i < values.length; i++) {\n // Note: We need to loop over all values, so that\n // the old values are
updates as well!\n if (checkAndUpdateBinding(view, def, i, values[i])) {\n changed = true;\n } \n } \n if
(changed) {\n const data = asPureExpressionData(view, def.nodeIndex);\n let value: any;\n switch (def.flags &
NodeFlags.Types) {\n case NodeFlags.TypePureArray:\n value = values;\n break;\n case
NodeFlags.TypePureObject:\n value = {};\n for (let i = 0; i < values.length; i++) {\n
value[bindings[i].name!] = values[i];\n } \n break;\n case NodeFlags.TypePurePipe:\n const pipe =
values[0];\n const params = values.slice(1);\n value = (<any>pipe.transform)(...params);\n break;\n
} \n data.value = value;\n } \n return changed;\n } \n\n"/**\n * @license\n * Copyright Google LLC All Rights
Reserved.\n * \n * Use of this source code is governed by an MIT-style license that can be\n * found in the
LICENSE file at https://angular.io/license\n * \n\nimport {asTextData, BindingDef, BindingFlags, NodeDef,
NodeFlags, TextData, ViewData} from './types';\nimport {checkAndUpdateBinding, getParentRenderElement}
from './util';\n\nexport function textDef(\n checkIndex: number, ngContentIndex: number|null, staticText: string[]):
NodeDef {\n const bindings: BindingDef[] = [];\n for (let i = 1; i < staticText.length; i++) {\n bindings[i - 1] =
{\n flags: BindingFlags.TypeProperty,\n name: null,\n ns: null,\n nonMinifiedName: null,\n
securityContext: null,\n suffix: staticText[i],\n };\n } \n\n return {\n // will bet set by the view definition\n
nodeIndex: -1,\n parent: null,\n renderParent: null,\n bindingIndex: -1,\n outputIndex: -1,\n // regular
values\n checkIndex,\n flags: NodeFlags.TypeText,\n childFlags: 0,\n directChildFlags: 0,\n
childMatchedQueries: 0,\n matchedQueries: {},\n matchedQueryIds: 0,\n references: {},\n
ngContentIndex,\n childCount: 0,\n bindings,\n bindingFlags: BindingFlags.TypeProperty,\n outputs: [],\n
element: null,\n provider: null,\n text: {prefix: staticText[0]},\n query: null,\n ngContent: null,\n
};\n } \n\nexport function createText(view: ViewData, renderHost: any, def: NodeDef): TextData {\n let renderNode:
any;\n const renderer = view.renderer;\n renderNode = renderer.createText(def.text!.prefix);\n const parentEl =
getParentRenderElement(view, renderHost, def);\n if (parentEl) {\n renderer.appendChild(parentEl,
renderNode);\n } \n return {renderText: renderNode};\n } \n\nexport function checkAndUpdateTextInline(\n view:
ViewData, def: NodeDef, v0: any, v1: any, v2: any, v3: any, v4: any, v5: any, v6: any,\n v7: any, v8: any, v9:
any): boolean {\n let changed = false;\n const bindings = def.bindings;\n const bindLen = bindings.length;\n if
(bindLen > 0 && checkAndUpdateBinding(view, def, 0, v0)) changed = true;\n if (bindLen > 1 &&
checkAndUpdateBinding(view, def, 1, v1)) changed = true;\n if (bindLen > 2 && checkAndUpdateBinding(view,
def, 2, v2)) changed = true;\n if (bindLen > 3 && checkAndUpdateBinding(view, def, 3, v3)) changed = true;\n if
(bindLen > 4 && checkAndUpdateBinding(view, def, 4, v4)) changed = true;\n if (bindLen > 5 &&
checkAndUpdateBinding(view, def, 5, v5)) changed = true;\n if (bindLen > 6 && checkAndUpdateBinding(view,
def, 6, v6)) changed = true;\n if (bindLen > 7 && checkAndUpdateBinding(view, def, 7, v7)) changed = true;\n if
(bindLen > 8 && checkAndUpdateBinding(view, def, 8, v8)) changed = true;\n if (bindLen > 9 &&
checkAndUpdateBinding(view, def, 9, v9)) changed = true;\n \n if (changed) {\n let value = def.text!.prefix;\n if
(bindLen > 0) value += _addInterpolationPart(v0, bindings[0]);\n if (bindLen > 1) value +=
_addInterpolationPart(v1, bindings[1]);\n if (bindLen > 2) value += _addInterpolationPart(v2, bindings[2]);\n if

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(bindLen > 3) value += _addInterpolationPart(v3, bindings[3]);\n if (bindLen > 4) value +=
_addInterpolationPart(v4, bindings[4]);\n if (bindLen > 5) value += _addInterpolationPart(v5, bindings[5]);\n if
(bindLen > 6) value += _addInterpolationPart(v6, bindings[6]);\n if (bindLen > 7) value +=
_addInterpolationPart(v7, bindings[7]);\n if (bindLen > 8) value += _addInterpolationPart(v8, bindings[8]);\n if
(bindLen > 9) value += _addInterpolationPart(v9, bindings[9]);\n const renderNode = asTextData(view,
def.nodeIndex).renderText;\n view.rendererer.setValue(renderNode, value);\n }\n return changed;\n}\n\nexport
function checkAndUpdateTextDynamic(view: ViewData, def: NodeDef, values: any[]): boolean {\n const bindings
= def.bindings;\n let changed = false;\n for (let i = 0; i < values.length; i++) {\n // Note: We need to loop over all
values, so that\n // the old values are updates as well!\n if (checkAndUpdateBinding(view, def, i, values[i])) {\n
changed = true;\n }\n }\n if (changed) {\n let value = ";\n for (let i = 0; i < values.length; i++) {\n value =
value + _addInterpolationPart(values[i], bindings[i]);\n }\n value = def.text!.prefix + value;\n const
renderNode = asTextData(view, def.nodeIndex).renderText;\n view.rendererer.setValue(renderNode, value);\n }\n
return changed;\n}\n\nfunction _addInterpolationPart(value: any, binding: BindingDef): string {\n const valueStr =
value != null ? value.toString() : ";\n return valueStr + binding.suffix;\n}\n\n"/**\n * @license\n * Copyright
Google LLC All Rights Reserved.\n * Use of this source code is governed by an MIT-style license that can be\n
* found in the LICENSE file at https://angular.io/license\n */\n\nimport {Renderer2} from './render/api';\n\nimport
{checkAndUpdateElementDynamic, checkAndUpdateElementInline, createElement, listenToElementOutputs} from
'./element';\n\nimport {expressionChangedAfterItHasBeenCheckedError} from './errors';\n\nimport {appendNgContent}
from './ng_content';\n\nimport {callLifecycleHooksChildrenFirst, checkAndUpdateDirectiveDynamic,
checkAndUpdateDirectiveInline, createDirectiveInstance, createPipeInstance, createProviderInstance} from
'./provider';\n\nimport {checkAndUpdatePureExpressionDynamic, checkAndUpdatePureExpressionInline,
createPureExpression} from './pure_expression';\n\nimport {checkAndUpdateQuery, createQuery} from
'./query';\n\nimport {createTemplateData, createViewContainerData} from './refs';\n\nimport
{checkAndUpdateTextDynamic, checkAndUpdateTextInline, createText} from './text';\n\nimport {ArgumentType,
asElementData, asQueryList, asTextData, CheckType, ElementData, NodeData, NodeDef, NodeFlags,
ProviderData, RootData, Services, shiftInitState, ViewData, ViewDefinition, ViewFlags, ViewHandleEventFn,
ViewState, ViewUpdateFn} from './types';\n\nimport {checkBindingNoChanges, isComponentView,
markParentViewsForCheckProjectedViews, NOOP, resolveDefinition, tokenKey} from './util';\n\nimport
{detachProjectedView} from './view_attach';\n\nexport function viewDef(\n flags: ViewFlags, nodes: NodeDef[],
updateDirectives?: null|ViewUpdateFn,\n updateRenderer?: null|ViewUpdateFn): ViewDefinition {\n // clone
nodes and set auto calculated values\n let viewBindingCount = 0;\n let viewDisposableCount = 0;\n let
viewNodeFlags = 0;\n let viewRootNodeFlags = 0;\n let viewMatchedQueries = 0;\n let currentParent:
NodeDef|null = null;\n let currentRenderParent: NodeDef|null = null;\n let currentElementHasPublicProviders =
false;\n let currentElementHasPrivateProviders = false;\n let lastRenderRootNode: NodeDef|null = null;\n for (let
i = 0; i < nodes.length; i++) {\n const node = nodes[i];\n node.nodeIndex = i;\n node.parent = currentParent;\n
node.bindingIndex = viewBindingCount;\n node.outputIndex = viewDisposableCount;\n node.renderParent =
currentRenderParent;\n\n viewNodeFlags |= node.flags;\n viewMatchedQueries |= node.matchedQueryIds;\n\n if
(node.element) {\n const elDef = node.element;\n elDef.publicProviders =\n currentParent ?
currentParent.element!.publicProviders : Object.create(null);\n elDef.allProviders = elDef.publicProviders;\n
\n // Note: We assume that all providers of an element are before any child element!\n\n currentElementHasPublicProviders = false;\n currentElementHasPrivateProviders = false;\n\n if
(node.element.template) {\n viewMatchedQueries |= node.element.template.nodeMatchedQueries;\n }\n }\n
validateNode(currentParent, node, nodes.length);\n\n viewBindingCount += node.bindings.length;\n viewDisposableCount += node.outputs.length;\n\n if (!currentRenderParent && (node.flags &
NodeFlags.CatRenderNode)) {\n lastRenderRootNode = node;\n }\n\n if (node.flags &
NodeFlags.CatProvider) {\n if (!currentElementHasPublicProviders) {\n currentElementHasPublicProviders
= true;\n // Use prototypical inheritance to not get O(n^2) complexity...\n currentParent!.element!.publicProviders =\n Object.create(currentParent!.element!.publicProviders);\n }\n }\n }\n return {\n flags,\n nodes,\n updateDirectives,\n updateRenderer,\n lastRenderRootNode,\n currentElementHasPublicProviders,\n currentElementHasPrivateProviders,\n viewBindingCount,\n viewDisposableCount,\n viewNodeFlags,\n viewRootNodeFlags,\n viewMatchedQueries\n };\n}

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currentParent!.element!.allProviders = currentParent!.element!.publicProviders;\n }\n const isPrivateService =
(node.flags & NodeFlags.PrivateProvider) !== 0;\n const isComponent = (node.flags & NodeFlags.Component)
!== 0;\n if (!isPrivateService || isComponent) {\n
currentParent!.element!.publicProviders![tokenKey(node.provider!.token)] = node;\n } else {\n if
(!currentElementHasPrivateProviders) {\n currentElementHasPrivateProviders = true;\n // Use
prototypical inheritance to not get O(n^2) complexity...\n currentParent!.element!.allProviders =\nObject.create(currentParent!.element!.publicProviders);\n }\n
currentParent!.element!.allProviders![tokenKey(node.provider!.token)] = node;\n }\n if (isComponent) {\n
currentParent!.element!.componentProvider = node;\n }\n }\n if (currentParent) {\n
currentParent.childFlags |= node.flags;\n currentParent.directChildFlags |= node.flags;\n
currentParent.childMatchedQueries |= node.matchedQueryIds;\n if (node.element && node.element.template)
{\n currentParent.childMatchedQueries |= node.element.template.nodeMatchedQueries;\n }\n } else {\n
viewRootNodeFlags |= node.flags;\n }\n if (node.childCount > 0) {\n currentParent = node;\n if
(!isNgContainer(node)) {\n currentRenderParent = node;\n }\n } else {\n // When the current node has
no children, check if it is the last children of its parent.\n // When it is, propagate the flags up.\n // The loop is
required because an element could be the last transitive children of several\n // elements. We loop to either the
root or the highest opened element (= with remaining\n // children)\n while (currentParent && i ===
currentParent.nodeIndex + currentParent.childCount) {\n const newParent: NodeDef|null =
currentParent.parent;\n if (newParent) {\n newParent.childFlags |= currentParent.childFlags;\n
newParent.childMatchedQueries |= currentParent.childMatchedQueries;\n }\n currentParent = newParent;\n
 // We also need to update the render parent & account for ng-container\n if (currentParent &&
isNgContainer(currentParent)) {\n currentRenderParent = currentParent.renderParent;\n } else {\n
currentRenderParent = currentParent;\n }\n }\n }\n }\n }\n }\n }\n const handleEvent: ViewHandleEventFn =
(view, nodeIndex, eventName, event) =>{\n nodes[nodeIndex].element!.handleEvent!(view, eventName,
event);\n }\n return {\n // Will be filled later...\n factory: null,\n nodeFlags: viewNodeFlags,\n rootNodeFlags:
viewRootNodeFlags,\n nodeMatchedQueries: viewMatchedQueries,\n flags,\n nodes: nodes,\n
updateDirectives: updateDirectives || NOOP,\n updateRenderer: updateRenderer || NOOP,\n handleEvent,\n
bindingCount: viewBindingCount,\n outputCount: viewDisposableCount,\n lastRenderRootNode\n
};\n }\n }\n function isNgContainer(node: NodeDef): boolean {\n return (node.flags & NodeFlags.TypeElement) !== 0
&& node.element!.name === null;\n }\n }\n function validateNode(parent: NodeDef|null, node: NodeDef, nodeCount:
number) {\n const template = node.element && node.element.template;\n if (template) {\n if
(!template.lastRenderRootNode) {\n throw new Error(`Illegal State: Embedded templates without nodes are not
allowed!`);\n }\n if (template.lastRenderRootNode && !\n template.lastRenderRootNode.flags &
NodeFlags.EmbeddedViews) {\n throw new Error(`\n `Illegal State: Last root node of a template can't have
embedded views, at index ${\n node.nodeIndex!}`);\n }\n }\n if (node.flags & NodeFlags.CatProvider)
{\n const parentFlags = parent ? parent.flags : 0;\n if (((parentFlags & NodeFlags.TypeElement) === 0) {\n
throw new Error(`\n `Illegal State: StaticProvider/Directive nodes need to be children of elements or anchors, at
index ${\n node.nodeIndex!}`);\n }\n }\n }\n if (node.query) {\n if (node.flags &
NodeFlags.TypeContentQuery && !\n (!parent || (parent.flags & NodeFlags.TypeDirective) === 0)) {\n throw
new Error(`\n `Illegal State: Content Query nodes need to be children of directives, at index ${\n
 node.nodeIndex!}`);\n }\n }\n if (node.flags & NodeFlags.TypeViewQuery && parent) {\n throw new
Error(`\n `Illegal State: View Query nodes have to be top level nodes, at index ${\n node.nodeIndex!}`);\n }\n }\n }\n if (node.childCount) {\n const parentEnd = parent ? parent.nodeIndex + parent.childCount : nodeCount - 1;\n if (node.nodeIndex <= parentEnd && node.nodeIndex + node.childCount > parentEnd) {\n throw new Error(`\n `Illegal State: childCount of node leads outside of parent, at index ${\n node.nodeIndex!}`);\n }\n }\n }\n }\n }\n }\n }\n }\n export
function createEmbeddedView(\n parent: ViewData, anchorDef: NodeDef, viewDef: ViewDefinition, context?:
any): ViewData {\n // embedded views are seen as siblings to the anchor, so we need\n // to get the parent of the
anchor and use it as parentIndex.\n const view = createView(parent.root, parent.renderer, parent, anchorDef,

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viewDef);\n initView(view, parent.component, context);\n createViewNodes(view);\n return view;\n}\n\nexport
function createRootView(root: RootData, def: ViewDefinition, context?: any): ViewData {\n const view =
createView(root, root.renderer, null, null, def);\n initView(view, context, context);\n createViewNodes(view);\n
return view;\n}\n\nexport function createComponentView(\n parentView: ViewData, nodeDef: NodeDef,
viewDef: ViewDefinition, hostElement: any): ViewData {\n const rendererType =
nodeDef.element!.componentRendererType;\n let compRenderer: Renderer2;\n if (!rendererType) {\n
compRenderer = parentView.root.renderer;\n } else {\n compRenderer =
parentView.root.rendererFactory.createRenderer(hostElement, rendererType);\n }\n return createView(\n
parentView.root, compRenderer, parentView, nodeDef.element!.componentProvider, viewDef);\n}\n\nfunction
createView(\n root: RootData, renderer: Renderer2, parent: ViewData|null, parentNodeDef: NodeDef|null,\n def:
ViewDefinition): ViewData {\n const nodes: NodeData[] = new Array(def.nodes.length);\n const disposables =
def.outputCount ? new Array(def.outputCount) : null;\n const view: ViewData = {\n def,\n parent,\n
viewControllerParent: null,\n parentNodeDef,\n context: null,\n component: null,\n nodes,\n state:
ViewState.CatInit,\n root,\n renderer,\n oldValues: new Array(def.bindingCount),\n disposables,\n
initIndex: -1\n };\n return view;\n}\n\nfunction initView(view: ViewData, component: any, context: any) {\n
view.component = component;\n view.context = context;\n}\n\nfunction createViewNodes(view: ViewData) {\n
let renderHost: any;\n if (isComponentView(view)) {\n const hostDef = view.parentNodeDef;\n renderHost =
asElementData(view.parent!, hostDef!.parent!.nodeIndex).renderElement;\n }\n const def = view.def;\n const
nodes = view.nodes;\n for (let i = 0; i < def.nodes.length; i++) {\n const nodeDef = def.nodes[i];\n
Services.setCurrentNode(view, i);\n let nodeData: any;\n switch (nodeDef.flags & NodeFlags.Types) {\n case
NodeFlags.TypeElement:\n const el = createElement(view, renderHost, nodeDef) as any;\n let
componentView: ViewData = undefined;\n if (nodeDef.flags & NodeFlags.ComponentView) {\n const
compViewDef = resolveDefinition(nodeDef.element!.componentView!);\n componentView =
Services.createComponentView(view, nodeDef, compViewDef, el);\n }\n listenToElementOutputs(view,
componentView, nodeDef, el);\n nodeData = <ElementData>{\n renderElement: el,\n
componentView,\n viewController: null,\n template: nodeDef.element!.template ?
createTemplateData(view, nodeDef) : undefined\n };\n if (nodeDef.flags & NodeFlags.EmbeddedViews)
{\n nodeData.viewController = createViewContainerData(view, nodeDef, nodeData);\n }\n break;\n case
NodeFlags.TypeText:\n nodeData = createText(view, renderHost, nodeDef) as any;\n break;\n case
NodeFlags.TypeClassProvider:\n case NodeFlags.TypeFactoryProvider:\n case
NodeFlags.TypeUseExistingProvider:\n case NodeFlags.TypeValueProvider: {\n nodeData = nodes[i];\n
if (!nodeData && !(nodeDef.flags & NodeFlags.LazyProvider)) {\n const instance =
createProviderInstance(view, nodeDef);\n nodeData = <ProviderData>{instance};\n }\n break;\n
}\n case NodeFlags.TypePipe: {\n const instance = createPipeInstance(view, nodeDef);\n nodeData =
<ProviderData>{instance};\n break;\n }\n case NodeFlags.TypeDirective: {\n nodeData = nodes[i];\n
if (!nodeData) {\n const instance = createDirectiveInstance(view, nodeDef);\n nodeData =
<ProviderData>{instance};\n }\n if (nodeDef.flags & NodeFlags.Component) {\n const compView =
asElementData(view, nodeDef.parent!.nodeIndex).componentView;\n initView(compView,
nodeData.instance, nodeData.instance);\n }\n break;\n }\n case NodeFlags.TypePureArray:\n case
NodeFlags.TypePureObject:\n case NodeFlags.TypePurePipe:\n nodeData = createPureExpression(view,
nodeDef) as any;\n break;\n case NodeFlags.TypeContentQuery:\n case NodeFlags.TypeViewQuery:\n
nodeData = createQuery() as any;\n break;\n case NodeFlags.TypeNgContent:\n
appendNgContent(view, renderHost, nodeDef);\n // no runtime data needed for NgContent...\n nodeData =
undefined;\n break;\n }\n nodes[i] = nodeData;\n }\n }\n // Create the ViewData.nodes of component views
after we created everything else,\n // so that e.g. ng-content works\n execComponentViewsAction(view,
ViewAction.CreateViewNodes);\n // fill static content and view queries\n execQueriesAction(\n view,
NodeFlags.TypeContentQuery | NodeFlags.TypeViewQuery, NodeFlags.StaticQuery,\n
CheckType.CheckAndUpdate);\n}\n\nexport function checkNoChangesView(view: ViewData) {\n

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markProjectedViewsForCheck(view);\n Services.updateDirectives(view, CheckType.CheckNoChanges);\n
execEmbeddedViewsAction(view, ViewAction.CheckNoChanges);\n Services.updateRenderer(view,
CheckType.CheckNoChanges);\n execComponentViewsAction(view, ViewAction.CheckNoChanges);\n // Note:
We don't check queries for changes as we didn't do this in v2.x.\n // TODO(tbosch): investigate if we can enable the
check again in v5.x with a nicer error message.\n view.state &= ~(ViewState.CheckProjectedViews |
ViewState.CheckProjectedView);\n}\n\nexport function checkAndUpdateView(view: ViewData) {\n if (view.state
& ViewState.BeforeFirstCheck) {\n view.state &= ~ViewState.BeforeFirstCheck;\n view.state |=
ViewState.FirstCheck;\n } else {\n view.state &= ~ViewState.FirstCheck;\n }\n shiftInitState(view,
ViewState.InitState_BeforeInit, ViewState.InitState_CallingOnInit);\n markProjectedViewsForCheck(view);\n
Services.updateDirectives(view, CheckType.CheckAndUpdate);\n execEmbeddedViewsAction(view,
ViewAction.CheckAndUpdate);\n execQueriesAction(\n view, NodeFlags.TypeContentQuery,
NodeFlags.DynamicQuery, CheckType.CheckAndUpdate);\n let callInit = shiftInitState(\n view,
ViewState.InitState_CallingOnInit, ViewState.InitState_CallingAfterContentInit);\n
callLifecycleHooksChildrenFirst(\n view, NodeFlags.AfterContentChecked | (callInit ?
NodeFlags.AfterContentInit : 0));\n\n Services.updateRenderer(view, CheckType.CheckAndUpdate);\n\n
execComponentViewsAction(view, ViewAction.CheckAndUpdate);\n execQueriesAction(\n view,
NodeFlags.TypeViewQuery, NodeFlags.DynamicQuery, CheckType.CheckAndUpdate);\n callInit =
shiftInitState(\n view, ViewState.InitState_CallingAfterContentInit,
ViewState.InitState_CallingAfterViewInit);\n callLifecycleHooksChildrenFirst(\n view,
NodeFlags.AfterViewChecked | (callInit ? NodeFlags.AfterViewInit : 0));\n\n if (view.def.flags &
ViewFlags.OnPush) {\n view.state &= ~ViewState.ChecksEnabled;\n }\n view.state &=
~(ViewState.CheckProjectedViews | ViewState.CheckProjectedView);\n shiftInitState(view,
ViewState.InitState_CallingAfterViewInit, ViewState.InitState_AfterInit);\n}\n\nexport function
checkAndUpdateNode(\n view: ViewData, nodeDef: NodeDef, argStyle: ArgumentType, v0?: any, v1?: any, v2?:
any,\n v3?: any, v4?: any, v5?: any, v6?: any, v7?: any, v8?: any, v9?: any): boolean {\n if (argStyle ===
ArgumentType.Inline) {\n return checkAndUpdateNodeInline(view, nodeDef, v0, v1, v2, v3, v4, v5, v6, v7, v8,
v9);\n } else {\n return checkAndUpdateNodeDynamic(view, nodeDef, v0);\n }\n}\n\nfunction
markProjectedViewsForCheck(view: ViewData) {\n const def = view.def;\n if (!(def.nodeFlags &
NodeFlags.ProjectTemplate)) {\n return;\n }\n for (let i = 0; i < def.nodes.length; i++) {\n const nodeDef =
def.nodes[i];\n if (nodeDef.flags & NodeFlags.ProjectTemplate) {\n const projectedViews =
asElementData(view, i).template._projectedViews;\n if (projectedViews) {\n for (let i = 0; i <
projectedViews.length; i++) {\n const projectedView = projectedViews[i];\n projectedView.state |=
ViewState.CheckProjectedView;\n markParentViewsForCheckProjectedViews(projectedView, view);\n
}\n }\n } else if (((nodeDef.childFlags & NodeFlags.ProjectTemplate) === 0) {\n // a parent with leafs\n
// no child is a component,\n // then skip the children\n i += nodeDef.childCount;\n }\n }\n}\n\nfunction
checkAndUpdateNodeInline(\n view: ViewData, nodeDef: NodeDef, v0?: any, v1?: any, v2?: any, v3?: any, v4?:
any, v5?: any,\n v6?: any, v7?: any, v8?: any, v9?: any): boolean {\n switch (nodeDef.flags & NodeFlags.Types)
{\n case NodeFlags.TypeElement:\n return checkAndUpdateElementInline(view, nodeDef, v0, v1, v2, v3, v4,
v5, v6, v7, v8, v9);\n case NodeFlags.TypeText:\n return checkAndUpdateTextInline(view, nodeDef, v0, v1,
v2, v3, v4, v5, v6, v7, v8, v9);\n case NodeFlags.TypeDirective:\n return
checkAndUpdateDirectiveInline(view, nodeDef, v0, v1, v2, v3, v4, v5, v6, v7, v8, v9);\n case
NodeFlags.TypePureArray:\n case NodeFlags.TypePureObject:\n case NodeFlags.TypePurePipe:\n return
checkAndUpdatePureExpressionInline(\n view, nodeDef, v0, v1, v2, v3, v4, v5, v6, v7, v8, v9);\n default:\n
throw 'unreachable';\n }\n}\n\nfunction checkAndUpdateNodeDynamic(view: ViewData, nodeDef: NodeDef,
values: any[]): boolean {\n switch (nodeDef.flags & NodeFlags.Types) {\n case NodeFlags.TypeElement:\n
return checkAndUpdateElementDynamic(view, nodeDef, values);\n case NodeFlags.TypeText:\n return
checkAndUpdateTextDynamic(view, nodeDef, values);\n case NodeFlags.TypeDirective:\n return
checkAndUpdateDirectiveDynamic(view, nodeDef, values);\n case NodeFlags.TypePureArray:\n case

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NodeFlags.TypePureObject;\n case NodeFlags.TypePurePipe;\n return
checkAndUpdatePureExpressionDynamic(view, nodeDef, values);\n default;\n throw 'unreachable';\n
}\n}\n\nexport function checkNoChangesNode(\n view: ViewData, nodeDef: NodeDef, argStyle: ArgumentType,
v0?: any, v1?: any, v2?: any,\n v3?: any, v4?: any, v5?: any, v6?: any, v7?: any, v8?: any, v9?: any): any {\n if
(argStyle === ArgumentType.Inline) {\n checkNoChangesNodeInline(view, nodeDef, v0, v1, v2, v3, v4, v5, v6,
v7, v8, v9);\n } else {\n checkNoChangesNodeDynamic(view, nodeDef, v0);\n }\n // Returning false is ok here
as we would have thrown in case of a change.\n return false;\n}\n\nfunction checkNoChangesNodeInline(\n view:
ViewData, nodeDef: NodeDef, v0: any, v1: any, v2: any, v3: any, v4: any, v5: any, v6: any,\n v7: any, v8: any, v9:
any): void {\n const bindLen = nodeDef.bindings.length;\n if (bindLen > 0) checkBindingNoChanges(view,
nodeDef, 0, v0);\n if (bindLen > 1) checkBindingNoChanges(view, nodeDef, 1, v1);\n if (bindLen > 2)
checkBindingNoChanges(view, nodeDef, 2, v2);\n if (bindLen > 3) checkBindingNoChanges(view, nodeDef, 3,
v3);\n if (bindLen > 4) checkBindingNoChanges(view, nodeDef, 4, v4);\n if (bindLen > 5)
checkBindingNoChanges(view, nodeDef, 5, v5);\n if (bindLen > 6) checkBindingNoChanges(view, nodeDef, 6,
v6);\n if (bindLen > 7) checkBindingNoChanges(view, nodeDef, 7, v7);\n if (bindLen > 8)
checkBindingNoChanges(view, nodeDef, 8, v8);\n if (bindLen > 9) checkBindingNoChanges(view, nodeDef, 9,
v9);\n}\n\nfunction checkNoChangesNodeDynamic(view: ViewData, nodeDef: NodeDef, values: any[]): void {\n
for (let i = 0; i < values.length; i++) {\n checkBindingNoChanges(view, nodeDef, i, values[i]);\n }\n}\n\n/**\n *
Workaround https://github.com/angular/tsickle/issues/497\n * @suppress {misplacedTypeAnnotation}\n
*\nfunction checkNoChangesQuery(view: ViewData, nodeDef: NodeDef) {\n const queryList = asQueryList(view,
nodeDef.nodeIndex);\n if (queryList.dirty) {\n throw expressionChangedAfterItHasBeenCheckedError(\n
Services.createDebugContext(view, nodeDef.nodeIndex),\n `Query ${nodeDef.query!.id} not dirty`, `Query
${nodeDef.query!.id} dirty`,\n (view.state & ViewState.BeforeFirstCheck) !== 0);\n }\n}\n\nexport function
destroyView(view: ViewData) {\n if (view.state & ViewState.Destroyed) {\n return;\n }\n
execEmbeddedViewsAction(view, ViewAction.Destroy);\n execComponentViewsAction(view,
ViewAction.Destroy);\n callLifecycleHooksChildrenFirst(view, NodeFlags.OnDestroy);\n if (view.disposables)
{\n for (let i = 0; i < view.disposables.length; i++) {\n view.disposables[i]();\n }\n }\n
detachProjectedView(view);\n if (view.renderer.destroyNode) {\n destroyViewNodes(view);\n }\n if
(isComponentView(view)) {\n view.renderer.destroy();\n }\n view.state |= ViewState.Destroyed;\n}\n\nfunction
destroyViewNodes(view: ViewData) {\n const len = view.def.nodes.length;\n for (let i = 0; i < len; i++) {\n const
def = view.def.nodes[i];\n if (def.flags & NodeFlags.TypeElement) {\n
view.renderer.destroyNode!(asElementData(view, i).renderElement);\n } else if (def.flags &
NodeFlags.TypeText) {\n view.renderer.destroyNode!(asTextData(view, i).renderText);\n } else if (def.flags &
NodeFlags.TypeContentQuery || def.flags & NodeFlags.TypeViewQuery) {\n asQueryList(view, i).destroy();\n
}\n }\n}\n\nenum ViewAction {\n CreateViewNodes,\n CheckNoChanges,\n CheckNoChangesProjectedViews,\n
CheckAndUpdate,\n CheckAndUpdateProjectedViews,\n Destroy\n}\n\nfunction
execComponentViewsAction(view: ViewData, action: ViewAction) {\n const def = view.def;\n if (!(def.nodeFlags
& NodeFlags.ComponentView)) {\n return;\n }\n for (let i = 0; i < def.nodes.length; i++) {\n const nodeDef =
def.nodes[i];\n if (nodeDef.flags & NodeFlags.ComponentView) {\n // a leaf\n
callViewAction(asElementData(view, i).componentView, action);\n } else if ((nodeDef.childFlags &
NodeFlags.ComponentView) === 0) {\n // a parent with leafs\n // no child is a component,\n // then skip
the children\n i += nodeDef.childCount;\n }\n }\n}\n\nfunction execEmbeddedViewsAction(view: ViewData,
action: ViewAction) {\n const def = view.def;\n if (!(def.nodeFlags & NodeFlags.EmbeddedViews)) {\n return;\n
}\n for (let i = 0; i < def.nodes.length; i++) {\n const nodeDef = def.nodes[i];\n if (nodeDef.flags &
NodeFlags.EmbeddedViews) {\n // a leaf\n const embeddedViews = asElementData(view,
i).viewContainer!._embeddedViews;\n for (let k = 0; k < embeddedViews.length; k++) {\n
callViewAction(embeddedViews[k], action);\n }\n } else if ((nodeDef.childFlags &
NodeFlags.EmbeddedViews) === 0) {\n // a parent with leafs\n // no child is a component,\n // then skip
the children\n i += nodeDef.childCount;\n }\n }\n}\n\nfunction callViewAction(view: ViewData, action:

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ViewAction) {\n const viewState = view.state;\n switch (action) {\n case ViewAction.CheckNoChanges:\n if ((viewState & ViewState.Destroyed) === 0) {\n if ((viewState & ViewState.CatDetectChanges) ===\n ViewState.CatDetectChanges) {\n checkNoChangesView(view);\n } else if (viewState &\n ViewState.CheckProjectedViews) {\n execProjectedViewsAction(view,\n ViewAction.CheckNoChangesProjectedViews);\n }\n }\n break;\n case\n ViewAction.CheckNoChangesProjectedViews:\n if ((viewState & ViewState.Destroyed) === 0) {\n if\n (viewState & ViewState.CheckProjectedView) {\n checkNoChangesView(view);\n } else if (viewState &\n ViewState.CheckProjectedViews) {\n execProjectedViewsAction(view, action);\n }\n }\n break;\n case ViewAction.CheckAndUpdate:\n if ((viewState & ViewState.Destroyed) === 0) {\n if ((viewState &\n ViewState.CatDetectChanges) === ViewState.CatDetectChanges) {\n checkAndUpdateView(view);\n }\n } else if (viewState & ViewState.CheckProjectedViews) {\n execProjectedViewsAction(view,\n ViewAction.CheckAndUpdateProjectedViews);\n }\n break;\n case\n ViewAction.CheckAndUpdateProjectedViews:\n if ((viewState & ViewState.Destroyed) === 0) {\n if\n (viewState & ViewState.CheckProjectedView) {\n checkAndUpdateView(view);\n } else if (viewState &\n ViewState.CheckProjectedViews) {\n execProjectedViewsAction(view, action);\n }\n }\n break;\n case ViewAction.Destroy:\n // Note: destroyView recurses over all views,\n // so we don't need to special case\n projected views here.\n destroyView(view);\n break;\n case ViewAction.CreateViewNodes:\n createViewNodes(view);\n break;\n }\n}\n\nfunction execProjectedViewsAction(view: ViewData, action:\nViewAction) {\n execEmbeddedViewsAction(view, action);\n execComponentViewsAction(view,\n action);\n}\n\nfunction execQueriesAction(\n view: ViewData, queryFlags: NodeFlags, staticDynamicQueryFlag:\n NodeFlags,\n checkType: CheckType) {\n if (!(view.def.nodeFlags & queryFlags) || !(view.def.nodeFlags &\n staticDynamicQueryFlag)) {\n return;\n }\n const nodeCount = view.def.nodes.length;\n for (let i = 0; i <\n nodeCount; i++) {\n const nodeDef = view.def.nodes[i];\n if ((nodeDef.flags & queryFlags) && (nodeDef.flags\n & staticDynamicQueryFlag)) {\n Services.setCurrentNode(view, nodeDef.nodeIndex);\n switch (checkType)\n {\n case CheckType.CheckAndUpdate:\n checkAndUpdateQuery(view, nodeDef);\n break;\n case CheckType.CheckNoChanges:\n checkNoChangesQuery(view, nodeDef);\n break;\n }\n }\n if (!(nodeDef.childFlags & queryFlags) || !(nodeDef.childFlags & staticDynamicQueryFlag)) {\n // no child has a\n matching query\n // then skip the children\n i += nodeDef.childCount;\n }\n }\n}\n\n"/**\n * @license\n * Copyright Google LLC All Rights Reserved.\n * Use of this source code is governed by an MIT-style license\n that can be\n * found in the LICENSE file at https://angular.io/license\n */\n\nimport { DebugElement__PRE_R3__,\n DebugEventListener, DebugNode__PRE_R3__, getDebugNode, indexDebugNode, removeDebugNodeFromIndex }\n from './debug/debug_node';\nimport { Injector } from './di';\nimport { getInjectableDef, InjectableType,\n InjectableDef } from './di/interface/defs';\nimport { ErrorHandler } from './error_handler';\nimport { Type } from\n './interface/type';\nimport { ComponentFactory } from './linker/component_factory';\nimport { NgModuleRef } from\n './linker/ng_module_factory';\nimport { Renderer2, RendererFactory2 } from './render/api';\nimport\n { RendererStyleFlags2, RendererType2 } from './render/api_flags';\nimport { Sanitizer } from\n './sanitization/sanitizer';\nimport { isDevMode } from './util/is_dev_mode';\nimport { normalizeDebugBindingName,\n normalizeDebugBindingValue } from './util/ng_reflect';\nimport { isViewDebugError, viewDestroyedError,\n viewWrappedDebugError } from './errors';\nimport { resolveDep } from './provider';\nimport { dirtyParentQueries,\n getQueryValue } from './query';\nimport { createInjector, createNgModuleRef,\n getComponentViewDefinitionFactory } from './refs';\nimport { ArgumentType, asElementData,\n asPureExpressionData, BindingFlags, CheckType, DebugContext, ElementData, NgModuleDefinition, NodeDef,\n NodeFlags, NodeLogger, ProviderOverride, RootData, Services, ViewData, ViewDefinition, ViewState } from\n './types';\nimport { isComponentView, NOOP, renderNode, resolveDefinition, splitDepsDsl, tokenKey,\n viewParentEl } from './util';\nimport { checkAndUpdateNode, checkAndUpdateView, checkNoChangesNode,\n checkNoChangesView, createComponentView, createEmbeddedView, createRootView, destroyView } from\n './view';\n\nlet initialized = false;\n\nexport function initServicesIfNeeded() {\n if (initialized) {\n return;\n }\n initialized = true;\n const services = isDevMode() ? createDebugServices() : createProdServices();\n}

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Services.setCurrentNode = services.setCurrentNode;\n Services.createRootView = services.createRootView;\n
Services.createEmbeddedView = services.createEmbeddedView;\n Services.createComponentView =
services.createComponentView;\n Services.createNgModuleRef = services.createNgModuleRef;\n
Services.overrideProvider = services.overrideProvider;\n Services.overrideComponentView =
services.overrideComponentView;\n Services.clearOverrides = services.clearOverrides;\n
Services.checkAndUpdateView = services.checkAndUpdateView;\n Services.checkNoChangesView =
services.checkNoChangesView;\n Services.destroyView = services.destroyView;\n Services.resolveDep =
resolveDep;\n Services.createDebugContext = services.createDebugContext;\n Services.handleEvent =
services.handleEvent;\n Services.updateDirectives = services.updateDirectives;\n Services.updateRenderer =
services.updateRenderer;\n Services.dirtyParentQueries = dirtyParentQueries;\n}\n\nfunction createProdServices()
{\n return {\n setCurrentNode: () => {},\n createRootView: createProdRootView,\n createEmbeddedView:
createEmbeddedView,\n createComponentView: createComponentView,\n createNgModuleRef:
createNgModuleRef,\n overrideProvider: NOOP,\n overrideComponentView: NOOP,\n clearOverrides:
NOOP,\n checkAndUpdateView: checkAndUpdateView,\n checkNoChangesView: checkNoChangesView,\n
destroyView: destroyView,\n createDebugContext: (view: ViewData, nodeIndex: number) => new
DebugContext_(view, nodeIndex),\n handleEvent: (view: ViewData, nodeIndex: number, eventName: string,
event: any) =>{\n view.def.handleEvent(view, nodeIndex, eventName, event),\n updateDirectives: (view:
ViewData, checkType: CheckType) => view.def.updateDirectives(\n checkType ===
CheckType.CheckAndUpdate ? prodCheckAndUpdateNode : prodCheckNoChangesNode,\n view),\n
updateRenderer: (view: ViewData, checkType: CheckType) => view.def.updateRenderer(\n checkType ===
CheckType.CheckAndUpdate ? prodCheckAndUpdateNode : prodCheckNoChangesNode,\n view),\n
};\n}\n\nfunction createDebugServices() {\n return {\n setCurrentNode: debugSetCurrentNode,\n
createRootView: debugCreateRootView,\n createEmbeddedView: debugCreateEmbeddedView,\n
createComponentView: debugCreateComponentView,\n createNgModuleRef: debugCreateNgModuleRef,\n
overrideProvider: debugOverrideProvider,\n overrideComponentView: debugOverrideComponentView,\n
clearOverrides: debugClearOverrides,\n checkAndUpdateView: debugCheckAndUpdateView,\n
checkNoChangesView: debugCheckNoChangesView,\n destroyView: debugDestroyView,\n
createDebugContext: (view: ViewData, nodeIndex: number) => new DebugContext_(view, nodeIndex),\n
handleEvent: debugHandleEvent,\n updateDirectives: debugUpdateDirectives,\n updateRenderer:
debugUpdateRenderer,\n };\n}\n\nfunction createProdRootView(\n eInjector: Injector, projectableNodes: any[][],
rootSelectorOrNode: string|any,\n def: ViewDefinition, ngModule: NgModuleRef<any>, context?: any):
ViewData {\n const rendererFactory: RendererFactory2 = ngModule.injector.get(RendererFactory2);\n return
createRootView(\n createRootData(eInjector, ngModule, rendererFactory, projectableNodes,
rootSelectorOrNode),\n def, context);\n}\n\nfunction debugCreateRootView(\n eInjector: Injector,
projectableNodes: any[][], rootSelectorOrNode: string|any,\n def: ViewDefinition, ngModule:
NgModuleRef<any>, context?: any): ViewData {\n const rendererFactory: RendererFactory2 =
ngModule.injector.get(RendererFactory2);\n const root = createRootData(\n eInjector, ngModule, new
DebugRendererFactory2(rendererFactory), projectableNodes,\n rootSelectorOrNode);\n const defWithOverride
= applyProviderOverridesToView(def);\n return callWithDebugContext(\n DebugAction.create,
createRootView, null, [root, defWithOverride, context]);\n}\n\nfunction createRootData(\n eInjector: Injector,
ngModule: NgModuleRef<any>, rendererFactory: RendererFactory2,\n projectableNodes: any[][],
rootSelectorOrNode: any): RootData {\n const sanitizer = ngModule.injector.get(Sanitizer);\n const errorHandler =
ngModule.injector.get(ErrorHandler);\n const renderer = rendererFactory.createRenderer(null, null);\n return {\n
ngModule,\n injector: eInjector,\n projectableNodes,\n selectorOrNode: rootSelectorOrNode,\n sanitizer,\n
rendererFactory,\n renderer,\n errorHandler\n };\n}\n\nfunction debugCreateEmbeddedView(\n parentView:
ViewData, anchorDef: NodeDef, viewDef: ViewDefinition, context?: any): ViewData {\n const defWithOverride =
applyProviderOverridesToView(viewDef);\n return callWithDebugContext(\n DebugAction.create,
createEmbeddedView, null,\n [parentView, anchorDef, defWithOverride, context]);\n}\n\nfunction

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debugCreateComponentView(\n parentView: ViewData, nodeDef: NodeDef, viewDef: ViewDefinition,
hostElement: any): ViewData {\n const overrideComponentView =\n
viewDefOverrides.get(nodeDef.element!.componentProvider!.provider!.token);\n if (overrideComponentView) {\n
 viewDef = overrideComponentView;\n } else {\n viewDef = applyProviderOverridesToView(viewDef);\n }\n
return callWithDebugContext(\n DebugAction.create, createComponentView, null, [parentView, nodeDef,
viewDef, hostElement]);\n}\n\nfunction debugCreateNgModuleRef(\n moduleType: Type<any>, parentInjector:
Injector, bootstrapComponents: Type<any>[],\n def: NgModuleDefinition): NgModuleRef<any> {\n const
defWithOverride = applyProviderOverridesToNgModule(def);\n return createNgModuleRef(moduleType,
parentInjector, bootstrapComponents, defWithOverride);\n}\n\nconst providerOverrides = new Map<any,
ProviderOverride>();\nconst providerOverridesWithScope = new Map<InjectableType<any>,
ProviderOverride>();\nconst viewDefOverrides = new Map<any, ViewDefinition>();\n\nfunction
debugOverrideProvider(override: ProviderOverride) {\n providerOverrides.set(override.token, override);\n let
injectableDef: InjectableDef<any>|null;\n if (typeof override.token === 'function' && (injectableDef =
getInjectableDef(override.token)) && typeof injectableDef.providedIn === 'function') {\n
 providerOverridesWithScope.set(override.token as InjectableType<any>, override);\n }\n}\n\nfunction
debugOverrideComponentView(comp: any, compFactory: ComponentFactory<any>) {\n const hostViewDef =
resolveDefinition(getComponentViewDefinitionFactory(compFactory));\n const compViewDef =
resolveDefinition(hostViewDef.nodes[0].element!.componentView!);\n viewDefOverrides.set(comp,
compViewDef);\n}\n\nfunction debugClearOverrides() {\n providerOverrides.clear();\n
providerOverridesWithScope.clear();\n viewDefOverrides.clear();\n}\n\n// Notes about the algorithm:\n// 1) Locate
the providers of an element and check if one of them was overwritten\n// 2) Change the providers of that
element\n\n// We only create new datastructures if we need to, to keep perf impact\n// reasonable.\nfunction
applyProviderOverridesToView(def: ViewDefinition): ViewDefinition {\n if (providerOverrides.size === 0) {\n
return def;\n }\n const elementIndicesWithOverwrittenProviders =
findElementIndicesWithOverwrittenProviders(def);\n if (elementIndicesWithOverwrittenProviders.length === 0)
{\n return def;\n }\n // clone the whole view definition,\n // as it maintains references between the nodes that are
hard to update.\n def = def.factory!(() => NOOP);\n for (let i = 0; i <
elementIndicesWithOverwrittenProviders.length; i++) {\n applyProviderOverridesToElement(def,
elementIndicesWithOverwrittenProviders[i]);\n }\n return def;\n}\n\nfunction
findElementIndicesWithOverwrittenProviders(def: ViewDefinition): number[] {\n const
eIndicesWithOverwrittenProviders: number[] = [];\n let lastElementDef: NodeDef|null = null;\n for (let i = 0; i
< def.nodes.length; i++) {\n const nodeDef = def.nodes[i];\n if (nodeDef.flags & NodeFlags.TypeElement)
{\n lastElementDef = nodeDef;\n }\n if (lastElementDef && nodeDef.flags &
NodeFlags.CatProviderNoDirective && providerOverrides.has(nodeDef.provider!.token)) {\n
eIndicesWithOverwrittenProviders.push(lastElementDef!.nodeIndex);\n lastElementDef = null;\n }\n }\n
return eIndicesWithOverwrittenProviders;\n}\n\nfunction applyProviderOverridesToElement(viewDef:
ViewDefinition, eIndex: number) {\n for (let i = eIndex + 1; i < viewDef.nodes.length; i++) {\n const
nodeDef = viewDef.nodes[i];\n if (nodeDef.flags & NodeFlags.TypeElement) {\n // stop at the next
element\n return;\n }\n if (nodeDef.flags & NodeFlags.CatProviderNoDirective) {\n const provider =
nodeDef.provider!;\n const override = providerOverrides.get(provider.token);\n if (override) {\n
nodeDef.flags = (nodeDef.flags & ~NodeFlags.CatProviderNoDirective) | override.flags;\n provider.deps =
splitDepsDsl(override.deps);\n provider.value = override.value;\n }\n }\n }\n}\n}\n\n// Notes about
the algorithm:\n// We only create new datastructures if we need to, to keep perf impact\n// reasonable.\nfunction
applyProviderOverridesToNgModule(def: NgModuleDefinition): NgModuleDefinition {\n const {hasOverrides,
hasDeprecatedOverrides} = calcHasOverrides(def);\n if (!hasOverrides) {\n return def;\n }\n // clone the whole
view definition,\n // as it maintains references between the nodes that are hard to update.\n def = def.factory!(() =>
NOOP);\n applyProviderOverrides(def);\n return def;\n}\n\nfunction calcHasOverrides(def: NgModuleDefinition):\n {hasOverrides: boolean, hasDeprecatedOverrides: boolean} {\n let hasOverrides = false;\n let

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hasDeprecatedOverrides = false;\n if (providerOverrides.size === 0) {\n return {hasOverrides,\n hasDeprecatedOverrides};\n }\n def.providers.forEach(node => {\n const override =\n providerOverrides.get(node.token);\n if ((node.flags & NodeFlags.CatProviderNoDirective) && override) {\n hasOverrides = true;\n hasDeprecatedOverrides = hasDeprecatedOverrides || override.deprecatedBehavior;\n }\n });\n def.modules.forEach(module => {\n providerOverridesWithScope.forEach((override, token) => {\n if (getInjectableDef(token)!.providedIn === module) {\n hasOverrides = true;\n hasDeprecatedOverrides = hasDeprecatedOverrides || override.deprecatedBehavior;\n }\n });\n });\n return {hasOverrides, hasDeprecatedOverrides};\n}\n\nfunction applyProviderOverrides(def:\nNgModuleDefinition) {\n for (let i = 0; i < def.providers.length; i++) {\n const provider = def.providers[i];\n if (hasDeprecatedOverrides) {\n // We had a bug where we made\n // all providers lazy. Keep this logic\n behind a flag\n // for migrating existing users.\n provider.flags |= NodeFlags.LazyProvider;\n }\n const override = providerOverrides.get(provider.token);\n if (override) {\n provider.flags = (provider.flags &\n ~NodeFlags.CatProviderNoDirective) | override.flags;\n provider.deps = splitDepsDsl(override.deps);\n provider.value = override.value;\n }\n }\n if (providerOverridesWithScope.size > 0) {\n let moduleSet =\n new Set<any>(def.modules);\n providerOverridesWithScope.forEach((override, token) => {\n if\n (moduleSet.has(getInjectableDef(token)!.providedIn)) {\n let provider = {\n token: token,\n flags:\n override.flags | (hasDeprecatedOverrides ? NodeFlags.LazyProvider : NodeFlags.None),\n deps: splitDepsDsl(override.deps),\n value: override.value,\n index: def.providers.length,\n };\n def.providers.push(provider);\n def.providersByKey[tokenKey(token)] = provider;\n }\n });\n }\n}\n\nfunction prodCheckAndUpdateNode(\n view: ViewData, checkIndex: number, argStyle: ArgumentType,\n v0?: any, v1?: any, v2?: any, v3?: any, v4?: any, v5?: any, v6?: any, v7?: any, v8?: any, v9?: any): any {\n const\n nodeDef = view.def.nodes[checkIndex];\n checkAndUpdateNode(view, nodeDef, argStyle, v0, v1, v2, v3, v4, v5,\n v6, v7, v8, v9);\n return (nodeDef.flags & NodeFlags.CatPureExpression) ?\n asPureExpressionData(view,\n checkIndex).value :\n undefined;\n}\n\nfunction prodCheckNoChangesNode(\n view: ViewData, checkIndex:\n number, argStyle: ArgumentType, v0?: any, v1?: any, v2?: any, v3?: any, v4?: any, v5?: any, v6?: any, v7?: any,\n v8?: any, v9?: any): any {\n const nodeDef = view.def.nodes[checkIndex];\n checkNoChangesNode(view,\n nodeDef, argStyle, v0, v1, v2, v3, v4, v5, v6, v7, v8, v9);\n return (nodeDef.flags & NodeFlags.CatPureExpression)\n ?\n asPureExpressionData(view, checkIndex).value :\n undefined;\n}\n\nfunction\n debugCheckAndUpdateView(view: ViewData) {\n return callWithDebugContext(DebugAction.detectChanges,\n checkAndUpdateView, null, [view]);\n }\n\nfunction debugCheckNoChangesView(view: ViewData) {\n return\n callWithDebugContext(DebugAction.checkNoChanges, checkNoChangesView, null, [view]);\n }\n\nfunction\n debugDestroyView(view: ViewData) {\n return callWithDebugContext(DebugAction.destroy, destroyView, null,\n [view]);\n }\n\nenum DebugAction {\n create,\n detectChanges,\n checkNoChanges,\n destroy,\n handleEvent\n}\n\nlet _currentAction: DebugAction;\nlet _currentView: ViewData;\nlet _currentNodeIndex:\n number|null;\n\nfunction debugSetCurrentNode(view: ViewData, nodeIndex: number|null) {\n _currentView =\n view;\n _currentNodeIndex = nodeIndex;\n}\n\nfunction debugHandleEvent(view: ViewData, nodeIndex: number,\n eventName: string, event: any) {\n debugSetCurrentNode(view, nodeIndex);\n return callWithDebugContext(\n DebugAction.handleEvent, view.def.handleEvent, null, [view, nodeIndex, eventName, event]);\n}\n\nfunction\n debugUpdateDirectives(view: ViewData, checkType: CheckType) {\n if (view.state & ViewState.Destroyed) {\n throw viewDestroyedError(DebugAction[_currentAction]);\n }\n debugSetCurrentNode(view,\n nextDirectiveWithBinding(view, 0));\n return view.def.updateDirectives(debugCheckDirectivesFn, view);\n }\n\nfunction debugCheckDirectivesFn(\n view: ViewData, nodeIndex: number, argStyle: ArgumentType, ...values:\n any[]) {\n const nodeDef = view.def.nodes[nodeIndex];\n if (checkType === CheckType.CheckAndUpdate) {\n debugCheckAndUpdateNode(view, nodeDef, argStyle, values);\n } else {\n debugCheckNoChangesNode(view, nodeDef, argStyle, values);\n }\n if (nodeDef.flags &\n NodeFlags.TypeDirective) {\n debugSetCurrentNode(view, nextDirectiveWithBinding(view, nodeIndex));\n }\n return (nodeDef.flags & NodeFlags.CatPureExpression) ?\n asPureExpressionData(view,\n nodeDef.nodeIndex).value :\n undefined;\n }\n}\n\nfunction debugUpdateRenderer(view: ViewData,

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checkType: CheckType) {\n if (view.state & ViewState.Destroyed) {\n throw
viewDestroyedError(DebugAction[_currentAction]);\n }\n debugSetCurrentNode(view,
nextRenderNodeWithBinding(view, 0));\n return view.def.updateRenderer(debugCheckRenderNodeFn, view);\n\n
function debugCheckRenderNodeFn(\n view: ViewData, nodeIndex: number, argStyle: ArgumentType, ...values:
any[]) {\n const nodeDef = view.def.nodes[nodeIndex];\n if (checkType === CheckType.CheckAndUpdate) {\n
debugCheckAndUpdateNode(view, nodeDef, argStyle, values);\n } else {\n
debugCheckNoChangesNode(view, nodeDef, argStyle, values);\n }\n if (nodeDef.flags &
NodeFlags.CatRenderNode) {\n debugSetCurrentNode(view, nextRenderNodeWithBinding(view,
nodeIndex));\n }\n return (nodeDef.flags & NodeFlags.CatPureExpression) ?\n asPureExpressionData(view,
nodeDef.nodeIndex).value :\n undefined;\n }\n}\n\nfunction debugCheckAndUpdateNode(\n view:
ViewData, nodeDef: NodeDef, argStyle: ArgumentType, givenValues: any[]): void {\n const changed =
(<any>checkAndUpdateNode)(view, nodeDef, argStyle, ...givenValues);\n if (changed) {\n const values =
argStyle === ArgumentType.Dynamic ? givenValues[0] : givenValues;\n if (nodeDef.flags &
NodeFlags.TypeDirective) {\n const bindingValues: {[key: string]: string} = {};\n for (let i = 0; i <
nodeDef.bindings.length; i++) {\n const binding = nodeDef.bindings[i];\n const value = values[i];\n if
(binding.flags & BindingFlags.TypeProperty) {\n
bindingValues[normalizeDebugBindingName(binding.nonMinifiedName!)] =\n
normalizeDebugBindingValue(value);\n }\n }\n const elDef = nodeDef.parent!;\n const el =
asElementData(view, elDef.nodeIndex).renderElement;\n if (!elDef.element!.name) {\n // a comment.\n
view.renderer.setValue(el, `bindings=${JSON.stringify(bindingValues, null, 2)}`);\n } else {\n // a regular
element.\n for (let attr in bindingValues) {\n const value = bindingValues[attr];\n if (value != null)
{\n view.renderer.setAttribute(el, attr, value);\n } else {\n view.renderer.removeAttribute(el,
attr);\n }\n }\n }\n }\n }\n}\n\nfunction debugCheckNoChangesNode(\n view: ViewData,
nodeDef: NodeDef, argStyle: ArgumentType, values: any[]): void {\n (<any>checkNoChangesNode)(view,
nodeDef, argStyle, ...values);\n}\n\nfunction nextDirectiveWithBinding(view: ViewData, nodeIndex: number):
number|null {\n for (let i = nodeIndex; i < view.def.nodes.length; i++) {\n const nodeDef = view.def.nodes[i];\n
if (nodeDef.flags & NodeFlags.TypeDirective && nodeDef.bindings && nodeDef.bindings.length) {\n return
i;\n }\n }\n return null;\n }\n\nfunction nextRenderNodeWithBinding(view: ViewData, nodeIndex: number):
number|null {\n for (let i = nodeIndex; i < view.def.nodes.length; i++) {\n const nodeDef = view.def.nodes[i];\n
if ((nodeDef.flags & NodeFlags.CatRenderNode) && nodeDef.bindings && nodeDef.bindings.length) {\n return
i;\n }\n }\n return null;\n }\n\n\nclass DebugContext_ implements DebugContext {\n private nodeDef: NodeDef;\n private elView: ViewData;\n private elDef: NodeDef;\n\n constructor(public view: ViewData, public nodeIndex:
number|null) {\n if (nodeIndex == null) {\n this.nodeIndex = nodeIndex = 0;\n }\n this.nodeDef =
view.def.nodes[nodeIndex];\n let elDef = this.nodeDef;\n let elView = view;\n while (elDef && (elDef.flags &
NodeFlags.TypeElement) === 0) {\n elDef = elDef.parent!;\n }\n if (!elDef) {\n while (!elDef &&
elView) {\n elDef = viewParentEl(elView!);\n elView = elView.parent!;\n }\n }\n this.elDef =
elDef;\n this.elView = elView;\n }\n\n private get elOrCompView() {\n // Has to be done lazily as we use the
DebugContext also during creation of elements...\n return asElementData(this.elView,
this.elDef.nodeIndex).componentView || this.view;\n }\n\n get injector(): Injector {\n return
createInjector(this.elView, this.elDef);\n }\n\n get component(): any {\n return this.elOrCompView.component;\n
}\n\n get context(): any {\n return this.elOrCompView.context;\n }\n\n get providerTokens(): any[] {\n const
tokens: any[] = [];\n if (this.elDef) {\n for (let i = this.elDef.nodeIndex + 1; i <= this.elDef.nodeIndex +
this.elDef.childCount;\n i++) {\n const childDef = this.elView.def.nodes[i];\n if (childDef.flags &
NodeFlags.CatProvider) {\n tokens.push(childDef.provider!.token);\n }\n i += childDef.childCount;\n
}\n }\n return tokens;\n }\n\n get references(): {[key: string]: any} {\n const references: {[key: string]:
any} = {};\n if (this.elDef) {\n collectReferences(this.elView, this.elDef, references);\n for (let i =
this.elDef.nodeIndex + 1; i <= this.elDef.nodeIndex + this.elDef.childCount;\n i++) {\n const childDef =
this.elView.def.nodes[i];\n if (childDef.flags & NodeFlags.CatProvider) {\n

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collectReferences(this.elView, childDef, references);\n }\n i += childDef.childCount;\n }\n}\n
return references;\n}\n\n get componentRenderElement() {\n const elData =
findHostElement(this.elOrCompView);\n return elData ? elData.renderElement : undefined;\n}\n\n get
renderNode(): any {\n return this.nodeDef.flags & NodeFlags.TypeText ? renderNode(this.view, this.nodeDef) :\n renderNode(this.elView, this.elDef);\n}\n\n logError(console: Console, ...values:
any[]) {\n let logViewDef: ViewDefinition;\n let logNodeIndex: number;\n if (this.nodeDef.flags &
NodeFlags.TypeText) {\n logViewDef = this.view.def;\n logNodeIndex = this.nodeDef.nodeIndex;\n } else
{\n logViewDef = this.elView.def;\n logNodeIndex = this.elDef.nodeIndex;\n }\n // Note: we only
generate a log function for text and element nodes\n // to make the generated code as small as possible.\n const
renderNodeIndex = getRenderNodeIndex(logViewDef, logNodeIndex);\n let currRenderNodeIndex = -1;\n let
nodeLogger: NodeLogger = () => {\n currRenderNodeIndex++;\n if (currRenderNodeIndex ===
renderNodeIndex) {\n return console.error.bind(console, ...values);\n } else {\n return NOOP;\n }
};\n logViewDef.factory!(nodeLogger);\n if (currRenderNodeIndex < renderNodeIndex) {\n
console.error('Illegal state: the ViewDefinitionFactory did not call the logger!');\n
(<any>console.error)(...values);\n }\n}\n\nfunction getRenderNodeIndex(viewDef: ViewDefinition,
nodeIndex: number): number {\n let renderNodeIndex = -1;\n for (let i = 0; i <= nodeIndex; i++) {\n const
nodeDef = viewDef.nodes[i];\n if (nodeDef.flags & NodeFlags.CatRenderNode) {\n renderNodeIndex++;\n
}\n }\n return renderNodeIndex;\n}\n\nfunction findHostElement(view: ViewData): ElementData|null {\n while
(view && !isComponentView(view)) {\n view = view.parent!;\n }\n if (view.parent) {\n return
asElementData(view.parent, viewParentEl(view)!.nodeIndex);\n }\n return null;\n}\n\nfunction
collectReferences(view: ViewData, nodeDef: NodeDef, references: {[key: string]: any}) {\n for (let refName in
nodeDef.references) {\n references[refName] = getQueryValue(view, nodeDef, nodeDef.references[refName]);\n
}\n}\n\nfunction callWithDebugContext(action: DebugAction, fn: any, self: any, args: any[]) {\n const oldAction =
_currentAction;\n const oldView = _currentView;\n const oldNodeIndex = _currentNodeIndex;\n try {\n
_currentAction = action;\n const result = fn.apply(self, args);\n _currentView = oldView;\n _currentNodeIndex
= oldNodeIndex;\n _currentAction = oldAction;\n return result;\n } catch (e) {\n if (isViewDebugError(e) ||
!_currentView) {\n throw e;\n }\n throw viewWrappedDebugError(e, getCurrentDebugContext());\n }\n}\n\nexport function getCurrentDebugContext(): DebugContext|null {\n return _currentView ? new
DebugContext(_currentView, _currentNodeIndex) : null;\n}\n\nexport class DebugRendererFactory2 implements
RendererFactory2 {\n constructor(private delegate: RendererFactory2) {}\n\n createRenderer(element: any,
renderData: RendererType2|null): Renderer2 {\n return new
DebugRenderer2(this.delegate.createRenderer(element, renderData));\n }\n\n begin() {\n if (this.delegate.begin)
{\n this.delegate.begin();\n }\n }\n end() {\n if (this.delegate.end) {\n this.delegate.end();\n }\n
}\n\n whenRenderingDone(): Promise<any> {\n if (this.delegate.whenRenderingDone) {\n return
this.delegate.whenRenderingDone();\n }\n return Promise.resolve(null);\n }\n}\n\nexport class DebugRenderer2
implements Renderer2 {\n readonly data: {[key: string]: any};\n private createDebugContext(nativeElement:
any) {\n return this.debugContextFactory(nativeElement);\n }\n\n /**\n * Factory function used to create a
`DebugContext` when a node is created.\n *\n * The `DebugContext` allows to retrieve information about the
nodes that are useful in tests.\n *\n * The factory is configurable so that the `DebugRenderer2` could instantiate
either a View Engine\n * or a Render context.\n */\n debugContextFactory: (nativeElement?: any) =>
DebugContext | null = getCurrentDebugContext;\n\n constructor(private delegate: Renderer2) {\n this.data =
this.delegate.data;\n }\n\n destroyNode(node: any) {\n const debugNode = getDebugNode(node)!;\n
removeDebugNodeFromIndex(debugNode);\n if (debugNode instanceof DebugNode__PRE_R3__) {\n
debugNode.listeners.length = 0;\n }\n if (this.delegate.destroyNode) {\n this.delegate.destroyNode(node);\n
}\n }\n\n destroy() {\n this.delegate.destroy();\n }\n\n createElement(name: string, namespace?: string): any {\n
const el = this.delegate.createElement(name, namespace);\n const debugCtx = this.createDebugContext(el);\n if
(debugCtx) {\n const debugEl = new DebugElement__PRE_R3__(el, null, debugCtx);\n (debugEl as {name:
string}).name = name;\n indexDebugNode(debugEl);\n }\n return el;\n }\n\n createComment(value: string):

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any {\n const comment = this.delegate.createComment(value);\n const debugCtx =
this.createDebugContext(comment);\n if (debugCtx) {\n indexDebugNode(new
DebugNode__PRE_R3__(comment, null, debugCtx));\n }\n return comment;\n }\n\n createText(value: string):
any {\n const text = this.delegate.createText(value);\n const debugCtx = this.createDebugContext(text);\n if
(debugCtx) {\n indexDebugNode(new DebugNode__PRE_R3__(text, null, debugCtx));\n }\n return text;\n
}\n\n appendChild(parent: any, newChild: any): void {\n const debugEl = getDebugNode(parent);\n const
debugChildEl = getDebugNode(newChild);\n if (debugEl && debugChildEl && debugEl instanceof
DebugElement__PRE_R3__) {\n debugEl.addChild(debugChildEl);\n }\n this.delegate.appendChild(parent,
newChild);\n }\n\n insertBefore(parent: any, newChild: any, refChild: any, isMove?: boolean): void {\n const
debugEl = getDebugNode(parent);\n const debugChildEl = getDebugNode(newChild);\n const debugRefEl =
getDebugNode(refChild);\n if (debugEl && debugChildEl && debugEl instanceof DebugElement__PRE_R3__)
{\n debugEl.insertBefore(debugRefEl, debugChildEl);\n }\n\n this.delegate.insertBefore(parent, newChild,
refChild, isMove);\n }\n\n removeChild(parent: any, oldChild: any): void {\n const debugEl =
getDebugNode(parent);\n const debugChildEl = getDebugNode(oldChild);\n if (debugEl && debugChildEl &&
debugEl instanceof DebugElement__PRE_R3__) {\n debugEl.removeChild(debugChildEl);\n }\n\n this.delegate.removeChild(parent, oldChild);\n }\n\n selectRootElement(selectorOrNode: string|any,
preserveContent?: boolean): any {\n const el = this.delegate.selectRootElement(selectorOrNode,
preserveContent);\n const debugCtx = getCurrentDebugContext();\n if (debugCtx) {\n indexDebugNode(new
DebugElement__PRE_R3__(el, null, debugCtx));\n }\n return el;\n }\n\n setAttribute(el: any, name: string,
value: string, namespace?: string): void {\n const debugEl = getDebugNode(el);\n if (debugEl && debugEl
instanceof DebugElement__PRE_R3__) {\n const fullName = namespace ? namespace + ':' + name : name;\n
debugEl.attributes[fullName] = value;\n }\n this.delegate.setAttribute(el, name, value, namespace);\n }\n\n
removeAttribute(el: any, name: string, namespace?: string): void {\n const debugEl = getDebugNode(el);\n if
(debugEl && debugEl instanceof DebugElement__PRE_R3__) {\n const fullName = namespace ? namespace +
':' + name : name;\n debugEl.attributes[fullName] = null;\n }\n this.delegate.removeAttribute(el, name,
namespace);\n }\n\n addClass(el: any, name: string): void {\n const debugEl = getDebugNode(el);\n if
(debugEl && debugEl instanceof DebugElement__PRE_R3__) {\n debugEl.classes[name] = true;\n }\n\n this.delegate.addClass(el, name);\n }\n\n removeClass(el: any, name: string): void {\n const debugEl =
getDebugNode(el);\n if (debugEl && debugEl instanceof DebugElement__PRE_R3__) {\n
debugEl.classes[name] = false;\n }\n this.delegate.removeClass(el, name);\n }\n\n setStyle(el: any, style: string,
value: any, flags: RendererStyleFlags2): void {\n const debugEl = getDebugNode(el);\n if (debugEl &&
debugEl instanceof DebugElement__PRE_R3__) {\n debugEl.styles[style] = value;\n }\n\n this.delegate.setStyle(el, style, value, flags);\n }\n\n removeStyle(el: any, style: string, flags: RendererStyleFlags2):
void {\n const debugEl = getDebugNode(el);\n if (debugEl && debugEl instanceof
DebugElement__PRE_R3__) {\n debugEl.styles[style] = null;\n }\n this.delegate.removeStyle(el, style,
flags);\n }\n\n setProperty(el: any, name: string, value: any): void {\n const debugEl = getDebugNode(el);\n if
(debugEl && debugEl instanceof DebugElement__PRE_R3__) {\n debugEl.properties[name] = value;\n }\n\n this.delegate.setProperty(el, name, value);\n }\n\n listen(\n target: 'document'|'windows'|'body'|any, eventName:
string,\n callback: (event: any) => boolean): () => void {\n if (typeof target !== 'string') {\n const debugEl =
getDebugNode(target);\n if (debugEl) {\n debugEl.listeners.push(new DebugEventListener(eventName,
callback));\n }\n }\n\n return this.delegate.listen(target, eventName, callback);\n }\n\n parentNode(node:
any): any {\n return this.delegate.parentNode(node);\n }\n\n nextSibling(node: any): any {\n return
this.delegate.nextSibling(node);\n }\n\n setValue(node: any, value: string): void {\n return
this.delegate.setValue(node, value);\n }\n}\n\n"/**\n * @license\n * Copyright Google LLC All Rights Reserved.\n
*\n * Use of this source code is governed by an MIT-style license that can be\n * found in the LICENSE file at
https://angular.io/license\n */\n\nimport {Injector} from './di/injector';\nimport {Type} from
'./interface/type';\nimport {ComponentFactory} from './linker/component_factory';\nimport {NgModuleFactory,
NgModuleRef} from './linker/ng_module_factory';\nimport {initServicesIfNeeded} from './services';\nimport

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{NgModuleDefinition, NgModuleDefinitionFactory, NgModuleProviderDef, ProviderOverride, Services,
ViewDefinition} from './types';\nimport {resolveDefinition} from './util';\n\nexport function
overrideProvider(override: ProviderOverride) {\n initServicesIfNeeded();\n return
Services.overrideProvider(override);\n}\n\nexport function overrideComponentView(comp: Type<any>,
componentFactory: ComponentFactory<any>) {\n initServicesIfNeeded();\n return
Services.overrideComponentView(comp, componentFactory);\n}\n\nexport function clearOverrides() {\n
 initServicesIfNeeded();\n return Services.clearOverrides();\n}\n\n// Attention: this function is called as top level
function.\n// Putting any logic in here will destroy closure tree shaking!\n\nexport function createNgModuleFactory(\n
 ngModuleType: Type<any>, bootstrapComponents: Type<any>[],\n defFactory: NgModuleDefinitionFactory):
NgModuleFactory<any> {\n return new NgModuleFactory_(ngModuleType, bootstrapComponents,
defFactory);\n}\n\nfunction cloneNgModuleDefinition(def: NgModuleDefinition): NgModuleDefinition {\n const
providers = Array.from(def.providers);\n const modules = Array.from(def.modules);\n const providersByKey:
{[tokenKey: string]: NgModuleProviderDef} = {};\n for (const key in def.providersByKey) {\n
 providersByKey[key] = def.providersByKey[key];\n }\n\n return {\n factory: def.factory,\n scope: def.scope,\n
 providers,\n modules,\n providersByKey,\n };\n}\n\nclass NgModuleFactory_ extends NgModuleFactory<any>
{\n constructor(\n public readonly moduleType: Type<any>, private _bootstrapComponents: Type<any>[],\n
 private _ngModuleDefFactory: NgModuleDefinitionFactory) {\n // Attention: this ctor is called as top level
function.\n // Putting any logic in here will destroy closure tree shaking!\n super();\n }\n\n create(parentInjector: Injector|null): NgModuleRef<any> {\n initServicesIfNeeded();\n // Clone the
NgModuleDefinition so that any tree shakeable provider definition\n // added to this instance of the NgModuleRef
doesn't affect the cached copy.\n // See https://github.com/angular/angular/issues/25018.\n const def =
cloneNgModuleDefinition(resolveDefinition(this._ngModuleDefFactory));\n return
Services.createNgModuleRef(\n this.moduleType, parentInjector || Injector.NULL, this._bootstrapComponents,
def);\n }\n}\n\n"/**\n * @license\n * Copyright Google LLC All Rights Reserved.\n * Use of this source code
is governed by an MIT-style license that can be\n * found in the LICENSE file at https://angular.io/license\n
*/\n\nexport {anchorDef, elementDef} from './element';\nexport {clearOverrides, createNgModuleFactory,
overrideComponentView, overrideProvider} from './entrypoint';\nexport {ngContentDef} from
'/ng_content';\nexport {moduleDef, moduleProvideDef} from './ng_module';\nexport {directiveDef, pipeDef,
providerDef} from './provider';\nexport {pureArrayDef, pureObjectDef, purePipeDef} from
'/pure_expression';\nexport {queryDef} from './query';\nexport {createComponentFactory,
getComponentViewDefinitionFactory, nodeValue, ViewRef_} from './refs';\nexport {initServicesIfNeeded} from
'/services';\nexport {textDef} from './text';\nexport {createRendererType2, elementEventFullName,
EMPTY_ARRAY, EMPTY_MAP, inlineInterpolate, interpolate, rootRenderNodes, tokenKey, unwrapValue} from
'/util';\nexport {viewDef} from './view';\nexport {attachEmbeddedView, detachEmbeddedView,
moveEmbeddedView} from './view_attach';\n\nexport * from './types';\n\n"/**\n * @license\n * Copyright Google
LLC All Rights Reserved.\n * Use of this source code is governed by an MIT-style license that can be\n * found
in the LICENSE file at https://angular.io/license\n */\n\nexport {ALLOW_MULTIPLE_PLATFORMS as
ALLOW_MULTIPLE_PLATFORMS} from './application_ref';\nexport {APP_ID_RANDOM_PROVIDER as
APP_ID_RANDOM_PROVIDER} from './application_tokens';\nexport {defaultIterableDiffers as
defaultIterableDiffers, defaultKeyValueDiffers as defaultKeyValueDiffers} from
'/change_detection/change_detection';\nexport {devModeEqual as devModeEqual, isListLikeIterable as
isListLikeIterable} from './change_detection/change_detection_util';\nexport {ChangeDetectorStatus as
ChangeDetectorStatus, isDefaultChangeDetectionStrategy as isDefaultChangeDetectionStrategy} from
'/change_detection/constants';\nexport {Console as Console} from './console';\nexport {getDebugNodeR2 as
getDebugNodeR2} from './debug/debug_node';\nexport {inject, setCurrentInjector as setCurrentInjector, inject}
from './di/injector_compatibility';\nexport {getInjectableDef as getInjectableDef, InjectableDef, InjectorDef}
from './di/interface/defs';\nexport {INJECTOR_SCOPE as INJECTOR_SCOPE} from './di/scope';\nexport
{CurrencyIndex as CurrencyIndex, ExtraLocaleDataIndex as ExtraLocaleDataIndex, findLocaleData as

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findLocaleData, getLocaleCurrencyCode as getLocaleCurrencyCode, getLocalePluralCase as getLocalePluralCase,
LocaleDataIndex as LocaleDataIndex, registerLocaleData as registerLocaleData, unregisterAllLocaleData as
unregisterLocaleData } from './i18n/locale_data_api';\nextport {DEFAULT_LOCALE_ID as
DEFAULT_LOCALE_ID } from './i18n/localization';\nextport {ivyEnabled as ivyEnabled} from
'/ivy_switch';\nextport {ComponentFactory as ComponentFactory} from './linker/component_factory';\nextport
{CodegenComponentFactoryResolver as CodegenComponentFactoryResolver} from
'/linker/component_factory_resolver';\nextport {clearResolutionOfComponentResourcesQueue as
clearResolutionOfComponentResourcesQueue, resolveComponentResources as resolveComponentResources} from
'/metadata/resource_loading';\nextport {ReflectionCapabilities as ReflectionCapabilities} from
'/reflection/reflection_capabilities';\nextport {GetterFn as GetterFn, MethodFn as MethodFn, SetterFn as SetterFn}
from './reflection/types';\nextport {allowSanitizationBypassAndThrow as allowSanitizationBypassAndThrow,
BypassType as BypassType, getSanitizationBypassType as getSanitizationBypassType, SafeHtml as SafeHtml,
SafeResourceUrl as SafeResourceUrl, SafeScript as SafeScript, SafeStyle as SafeStyle, SafeUrl as SafeUrl,
SafeValue as SafeValue, unwrapSafeValue as unwrapSafeValue} from './sanitization/bypass';\nextport
{ _sanitizeHtml as _sanitizeHtml } from './sanitization/html_sanitizer';\nextport { _sanitizeUrl as _sanitizeUrl } from
'/sanitization/url_sanitizer';\nextport {makeDecorator as makeDecorator} from './util/decorators';\nextport {global as
global} from './util/global';\nextport {isObservable as isObservable, isPromise as isPromise} from
'/util/lang';\nextport {stringify as stringify} from './util/stringify';\nextport {clearOverrides as clearOverrides,
initServicesIfNeeded as initServicesIfNeeded, overrideComponentView as overrideComponentView,
overrideProvider as overrideProvider} from './view/index';\nextport
{NOT_FOUND_CHECK_ONLY_ELEMENT_INJECTOR as
NOT_FOUND_CHECK_ONLY_ELEMENT_INJECTOR} from './view/provider';\n", "/*\n * @license\n *
Copyright Google LLC All Rights Reserved.\n * Use of this source code is governed by an MIT-style license
that can be\n * found in the LICENSE file at https://angular.io/license\n */\n\n// clang-format off\n// we reexport
these symbols just so that they are retained during the dead code elimination\n// performed by rollup while it's
creating fesm files.\n\n// no code actually imports these symbols from the @angular/core entry point\n\nexport {
 compileNgModuleFactory__POST_R3__ as compileNgModuleFactory__POST_R3__,\n
 isBoundToModule__POST_R3__ as isBoundToModule__POST_R3__,\n
 SWITCH_CHANGE_DETECTOR_REF_FACTORY__POST_R3__ as
 SWITCH_CHANGE_DETECTOR_REF_FACTORY__POST_R3__,\n
} from
'/change_detection/change_detector_ref';\n\nexport {\n
 getDebugNode__POST_R3__ as
 getDebugNode__POST_R3__,\n
} from './debug/debug_node';\n\nexport {\n
 SWITCH_COMPILE_INJECTABLE__POST_R3__ as SWITCH_COMPILE_INJECTABLE__POST_R3__,\n
} from './di/injectable';\n\nexport {INJECTOR_IMPL__POST_R3__ as INJECTOR_IMPL__POST_R3__} from
'/di/injector';\n\nexport {\n
 NG_INJ_DEF as NG_INJ_DEF,\n
 NG_PROV_DEF as NG_PROV_DEF,\n
} from
'/di/interface/defs';\n\nexport {createInjector as createInjector} from './di/r3_injector';\n\nexport {\n
 SWITCH_IVY_ENABLED__POST_R3__ as SWITCH_IVY_ENABLED__POST_R3__,\n
} from
'/ivy_switch';\n\nexport {\n
 Compiler_compileModuleAndAllComponentsAsync__POST_R3__ as
 Compiler_compileModuleAndAllComponentsAsync__POST_R3__,\n
 Compiler_compileModuleAndAllComponentsSync__POST_R3__ as
 Compiler_compileModuleAndAllComponentsSync__POST_R3__,\n
 Compiler_compileModuleAsync__POST_R3__ as Compiler_compileModuleAsync__POST_R3__,\n
 Compiler_compileModuleSync__POST_R3__ as Compiler_compileModuleSync__POST_R3__,\n
} from
'/linker/compiler';\n\nexport {\n
 SWITCH_ELEMENT_REF_FACTORY__POST_R3__ as
 SWITCH_ELEMENT_REF_FACTORY__POST_R3__,\n
} from './linker/element_ref';\n\nexport {
 getModuleFactory__POST_R3__ as getModuleFactory__POST_R3__ } from
'/linker/ng_module_factory_loader';\n\nexport { registerNgModuleType as registerNgModuleType } from
'/linker/ng_module_factory_registration';\n\nexport {\n
 SWITCH_TEMPLATE_REF_FACTORY__POST_R3__ as

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SWITCH_TEMPLATE_REF_FACTORY__POST_R3__,\n} from './linker/template_ref';\nexport {\n
SWITCH_VIEW_CONTAINER_REF_FACTORY__POST_R3__ as
SWITCH_VIEW_CONTAINER_REF_FACTORY__POST_R3__,\n} from './linker/view_container_ref';\nexport
{\n SWITCH_COMPILE_COMPONENT__POST_R3__ as
SWITCH_COMPILE_COMPONENT__POST_R3__,\n SWITCH_COMPILE_DIRECTIVE__POST_R3__ as
SWITCH_COMPILE_DIRECTIVE__POST_R3__,\n SWITCH_COMPILE_PIPE__POST_R3__ as
SWITCH_COMPILE_PIPE__POST_R3__,\n} from './metadata/directives';\nexport {\n
NgModuleDefWithMeta,\n} from './metadata/ng_module';\nexport {\n
SWITCH_COMPILE_NGMODULE__POST_R3__ as SWITCH_COMPILE_NGMODULE__POST_R3__,\n}
from './metadata/ng_module';\nexport {\n NgModuleDef as NgModuleDef,\n NgModuleTransitiveScopes as
NgModuleTransitiveScopes,\n} from './metadata/ng_module_def';\nexport {\n
SWITCH_RENDERER2_FACTORY__POST_R3__ as SWITCH_RENDERER2_FACTORY__POST_R3__,\n}
from './render/api';\nexport {\n getLContext as getLContext\n} from './render3/context_discovery';\nexport {\n
NG_COMP_DEF as NG_COMP_DEF,\n NG_DIR_DEF as NG_DIR_DEF,\n NG_ELEMENT_ID as
NG_ELEMENT_ID,\n NG_MOD_DEF as NG_MOD_DEF,\n NG_PIPE_DEF as NG_PIPE_DEF,\n} from
 './render3/fields';\nexport {\n AttributeMarker as AttributeMarker,\n ComponentDef as ComponentDef,\n
ComponentFactory as Render3ComponentFactory,\n ComponentRef as Render3ComponentRef,\n
ComponentType as ComponentType,\n CssSelectorList as CssSelectorList,\n detectChanges as detectChanges,\n
DirectiveDef as DirectiveDef,\n DirectiveType as DirectiveType,\n getDirectives as getDirectives,\n
getHostElement as getHostElement,\n LifecycleHooksFeature as LifecycleHooksFeature,\n markDirty as
markDirty,\n NgModuleFactory as NgModuleFactory,\n NgModuleRef as Render3NgModuleRef,\n
NgModuleType as NgModuleType,\n NO_CHANGE as NO_CHANGE,\n PipeDef as PipeDef,\n
renderComponent as renderComponent,\n RenderFlags as RenderFlags,\n setClassMetadata as setClassMetadata,\n
setLocaleId as setLocaleId,\n store as store,\n whenRendered as whenRendered,\n advance,\n attribute,\n
attributeInterpolate1,\n attributeInterpolate2,\n attributeInterpolate3,\n attributeInterpolate4,\n
attributeInterpolate5,\n attributeInterpolate6,\n attributeInterpolate7,\n attributeInterpolate8,\n
attributeInterpolateV,\n classMap,\n classMapInterpolate1,\n classMapInterpolate2,\n classMapInterpolate3,\n
classMapInterpolate4,\n classMapInterpolate5,\n classMapInterpolate6,\n classMapInterpolate7,\n
classMapInterpolate8,\n classMapInterpolateV,\n classProp,\n ComponentDefWithMeta,\n contentQuery,\n
CopyDefinitionFeature,\n defineComponent,\n defineDirective,\n defineNgModule,\n definePipe,\n
DirectiveDefWithMeta,\n directiveInject,\n disableBindings,\n element,\n elementContainer,\n
elementContainerEnd,\n elementContainerStart,\n elementEnd,\n elementStart,\n enableBindings,\n
FactoryDef,\n getCurrentView,\n getFactoryOf,\n getInheritedFactory,\n hostProperty,\n i18n,\n i18nApply,\n
i18nAttributes,\n i18nEnd,\n i18nExp,\n i18nPostprocess,\n i18nStart,\n InheritDefinitionFeature,\n
injectAttribute,\n injectPipeChangeDetectorRef,\n invalidFactory,\n listener,\n loadQuery,\n namespaceHTML,\n
namespaceMathML,\n namespaceSVG,\n nextContext,\n NgOnChangesFeature,\n pipe,\n pipeBind1,\n
pipeBind2,\n pipeBind3,\n pipeBind4,\n pipeBindV,\n PipeDefWithMeta,\n projection,\n projectionDef,\n
property,\n propertyInterpolate,\n propertyInterpolate1,\n propertyInterpolate2,\n propertyInterpolate3,\n
propertyInterpolate4,\n propertyInterpolate5,\n propertyInterpolate6,\n propertyInterpolate7,\n
propertyInterpolate8,\n propertyInterpolateV,\n ProvidersFeature,\n pureFunction0,\n pureFunction1,\n
pureFunction2,\n pureFunction3,\n pureFunction4,\n pureFunction5,\n pureFunction6,\n pureFunction7,\n
pureFunction8,\n pureFunctionV,\n queryRefresh,\n reference,\n resolveBody,\n resolveDocument,\n
resolveWindow,\n restoreView,\n\n setComponentScope,\n setNgModuleScope,\n staticContentQuery,\n
staticViewQuery,\n styleMap,\n styleMapInterpolate1,\n styleMapInterpolate2,\n styleMapInterpolate3,\n
styleMapInterpolate4,\n styleMapInterpolate5,\n styleMapInterpolate6,\n styleMapInterpolate7,\n
styleMapInterpolate8,\n styleMapInterpolateV,\n styleProp,\n stylePropInterpolate1,\n stylePropInterpolate2,\n
stylePropInterpolate3,\n stylePropInterpolate4,\n stylePropInterpolate5,\n stylePropInterpolate6,\n
stylePropInterpolate7,\n stylePropInterpolate8,\n stylePropInterpolateV,\n syntheticHostListener,\n

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syntheticHostProperty,\n template,\n templateRefExtractor,\n text,\n textInterpolate,\n textInterpolate1,\n
textInterpolate2,\n textInterpolate3,\n textInterpolate4,\n textInterpolate5,\n textInterpolate6,\n textInterpolate7,\n
textInterpolate8,\n textInterpolateV,\n viewQuery,\n } from './render3/index';\nexport {\n LContext as LContext,\n }
from './render3/interfaces/context';\nexport {\n setDocument as setDocument\n } from
 './render3/interfaces/document';\nexport {\n Player as Player,\n PlayerFactory as PlayerFactory,\n PlayerHandler
as PlayerHandler,\n PlayState as PlayState,\n } from './render3/interfaces/player';\nexport {\n compileComponent as
compileComponent,\n compileDirective as compileDirective,\n } from './render3/jit/directive';\nexport {\n
resetJitOptions as resetJitOptions,\n } from './render3/jit/jit_options';\nexport {\n compileNgModule as
compileNgModule,\n compileNgModuleDefs as compileNgModuleDefs,\n
flushModuleScopingQueueAsMuchAsPossible as flushModuleScopingQueueAsMuchAsPossible,\n
patchComponentDefWithScope as patchComponentDefWithScope,\n resetCompiledComponents as
resetCompiledComponents,\n transitiveScopesFor as transitiveScopesFor,\n } from './render3/jit/module';\nexport
{\n compilePipe as compilePipe,\n } from './render3/jit/pipe';\nexport {\n publishDefaultGlobalUtils as
publishDefaultGlobalUtils,\n publishGlobalUtil as publishGlobalUtil\n } from './render3/util/global_utils';\nexport
{\n bypassSanitizationTrustHtml as bypassSanitizationTrustHtml,\n bypassSanitizationTrustResourceUrl as
bypassSanitizationTrustResourceUrl,\n bypassSanitizationTrustScript as bypassSanitizationTrustScript,\n
bypassSanitizationTrustStyle as bypassSanitizationTrustStyle,\n bypassSanitizationTrustUrl as
bypassSanitizationTrustUrl,\n } from './sanitization/bypass';\nexport {\n sanitizeHtml,\n sanitizeResourceUrl,\n
sanitizeScript,\n sanitizeStyle,\n sanitizeUrl,\n sanitizeUrlOrResourceUrl,\n trustConstantHtml,\n
trustConstantResourceUrl,\n trustConstantScript,\n } from './sanitization/sanitization';\nexport {\n noSideEffects as
noSideEffects,\n } from './util/closure';\n\n// clang-format on\n"/>**\n * @license\n * Copyright Google LLC All
Rights Reserved.\n *\n * Use of this source code is governed by an MIT-style license that can be\n * found in the
LICENSE file at https://angular.io/license\n */\n\nexport {CodegenComponentFactoryResolver as
CodegenComponentFactoryResolver} from './linker/component_factory_resolver';\nexport {registerModuleFactory
as registerModuleFactory} from './linker/ng_module_factory_registration';\nexport {anchorDef as and,\n ArgumentType
as ArgumentType, BindingFlags as BindingFlags, createComponentFactory as ccf,\n createNgModuleFactory as cmf,
createRendererType2 as crt, DepFlags as DepFlags, directiveDef as did,\n elementDef as eld, EMPTY_ARRAY as
EMPTY_ARRAY, EMPTY_MAP as EMPTY_MAP,\n getComponentViewDefinitionFactory as getComponentViewDefinitionFactory,\n
inlineInterpolate as inlineInterpolate,\n interpolate as interpolate,\n moduleDef as mod,\n moduleProvideDef as mpd,\n
ngContentDef as ncd,\n NodeFlags as NodeFlags,\n nodeValue as nov,\n pipeDef as pid,\n providerDef as prd,\n
pureArrayDef as pad,\n pureObjectDef as pod,\n purePipeDef as ppd,\n QueryBindingType as QueryBindingType,\n
queryDef as qud,\n QueryValueType as QueryValueType,\n textDef as ted,\n unwrapValue as unv,\n viewDef as vid,\n
ViewDefinition as ViewDefinition,\n ViewFlags as ViewFlags\n } from './view/index';\n"/>**\n * @license\n * Copyright
Google LLC All Rights Reserved.\n *\n * Use of this source code is governed by an MIT-style license that can be\n *
found in the LICENSE file at https://angular.io/license\n */\n\n/**\n * @module\n * @description\n * Entry point from
which you should import all public core APIs.\n */\nexport * from './metadata';\nexport * from './version';\nexport
{TypeDecorator} from './util/decorators';\nexport * from './di';\nexport {createPlatform, assertPlatform,\n destroyPlatform,\n getPlatform,\n PlatformRef,\n ApplicationRef,\n createPlatformFactory,\n NgProbeToken\n } from
 './application_ref';\nexport {enableProdMode, isDevMode} from './util/is_dev_mode';\nexport {APP_ID,\n PACKAGE_ROOT_URL,\n PLATFORM_INITIALIZER,\n PLATFORM_ID,\n APP_BOOTSTRAP_LISTENER\n } from
 './application_tokens';\nexport {APP_INITIALIZER,\n ApplicationInitStatus\n } from './application_init';\nexport * from
 './zone';\nexport * from './render';\nexport * from './linker';\nexport {DebugElement,\n DebugEventListener,\n
DebugNode,\n asNativeElements,\n getDebugNode,\n Predicate\n } from './debug/debug_node';\nexport {GetTestability,\n
Testability,\n TestabilityRegistry,\n setTestabilityGetter\n } from './testability/testability';\nexport * from
 './change_detection';\nexport * from './platform_core_providers';\nexport {TRANSLATIONS,\n TRANSLATIONS_FORMAT,\n
LOCALE_ID,\n DEFAULT_CURRENCY_CODE,\n MissingTranslationStrategy\n } from
 './i18n/tokens';\nexport {ApplicationModule} from './application_module';\nexport {AbstractType,\n Type\n } from

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./interface/type';\nextport {EventEmitter} from './event_emitter';\nextport {ErrorHandler} from
./error_handler';\nextport * from './core_private_export';\nextport * from './core_render3_private_export';\nextport
{SecurityContext} from './sanitization/security';\nextport {Sanitizer} from './sanitization/sanitizer';\nextport * from
./codegen_private_exports';\n\nimport {global} from './util/global';\nif (typeof ngDevMode !== 'undefined' &&
ngDevMode) {\n // This helper is to give a reasonable error message to people upgrading to v9 that have not yet\n
// installed `@angular/localize` in their app.\n // tslint:disable-next-line: no-toplevel-property-access\n
global.$localize = global.$localize || function() {\n throw new Error(\n It looks like your application or one of
its dependencies is using i18n.\n' +\n 'Angular 9 introduced a global `$localize()` function that needs to be
loaded.\n' +\n 'Please run `ng add @angular/localize` from the Angular CLI.\n' +\n '(For non-CLI projects,
add `import `@angular/localize/init`` to your `polyfills.ts` file.\n' +\n 'For server-side rendering applications
add the import to your `main.server.ts` file.));\n };}\n"/**\n * @license\n * Copyright Google LLC All Rights
Reserved.\n *\n * Use of this source code is governed by an MIT-style license that can be\n * found in the
LICENSE file at https://angular.io/license\n *\n\n**\n * @module\n * @description\n * Entry point for all public
APIs of this package.\n *\n\nexport * from './src/core';\n\n// This file only reexports content of the `src` folder. Keep
it that way.\n"/**\n * @license\n * Copyright Google LLC All Rights Reserved.\n *\n * Use of this source code is
governed by an MIT-style license that can be\n * found in the LICENSE file at https://angular.io/license\n *\n\n//
This file is not used to build this module. It is only used during editing\n// by the TypeScript language service and
during build for verification. `ngc`\n// replaces this file with production index.ts when it rewrites private symbol\n//
names.\n\nexport * from './public_api';\n"/**\n * Generated bundle index. Do not edit.\n *\n\nexport * from
./index';\n\nexport {APPLICATION_MODULE_PROVIDERS as
angular_packages_core_core_w_iterableDiffersFactory as angular_packages_core_core_t_keyValueDiffersFactory
as angular_packages_core_core_u_localeFactory as angular_packages_core_core_v_zoneSchedulerFactory as
angular_packages_core_core_x} from './src/application_module';\nextport {_appIdRandomProviderFactory as
angular_packages_core_core_f} from './src/application_tokens';\nextport {injectChangeDetectorRef as
angular_packages_core_core_q} from './src/change_detection/change_detector_ref';\nextport
{DefaultIterableDifferFactory as angular_packages_core_core_r} from
./src/change_detection/differs/default_iterable_differ';\nextport {DefaultKeyValueDifferFactory as
angular_packages_core_core_s} from './src/change_detection/differs/default_keyvalue_differ';\nextport
{DebugElement__PRE_R3__ as angular_packages_core_core_o,DebugNode__PRE_R3__ as
angular_packages_core_core_n,getDebugNodeR2__PRE_R3__ as angular_packages_core_core_p} from
./src/debug/debug_node';\nextport {isForwardRef as angular_packages_core_core_a} from
./src/di/forward_ref';\nextport {getInjectImplementation as angular_packages_core_core_bs} from
./src/di/inject_switch';\nextport {injectInjectorOnly as angular_packages_core_core_b} from
./src/di/injector_compatibility';\nextport {InjectorMarkers as angular_packages_core_core_bt} from
./src/di/injector_marker';\nextport {NullInjector as angular_packages_core_core_br} from
./src/di/null_injector';\nextport {ReflectiveInjector_ as angular_packages_core_core_c} from
./src/di/reflective_injector';\nextport {ReflectiveDependency as
angular_packages_core_core_d,resolveReflectiveProviders as angular_packages_core_core_e} from
./src/di/reflective_provider';\nextport {USD_CURRENCY_CODE as angular_packages_core_core_y} from
./src/i18n/localization';\nextport {createElementRef as angular_packages_core_core_i,injectElementRef as
angular_packages_core_core_h} from './src/linker/element_ref';\nextport {getModuleFactory__PRE_R3__ as
angular_packages_core_core_j} from './src/linker/ng_module_factory_loader';\nextport {createTemplateRef as
angular_packages_core_core_l,injectTemplateRef as angular_packages_core_core_k} from
./src/linker/template_ref';\nextport {injectViewContainerRef as angular_packages_core_core_m} from
./src/linker/view_container_ref';\nextport {injectRenderer2 as angular_packages_core_core_g} from
./src/render/api';\nextport {SCHEDULER as angular_packages_core_core_bc} from
./src/render3/component_ref';\nextport {injectAttributeImpl as angular_packages_core_core_bd} from
./src/render3/di';\nextport {NgOnChangesFeatureImpl as angular_packages_core_core_bb} from

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./src/render3/features/ng\_onchanges\_feature';\nextport {i18nPostprocess as angular\_packages\_core\_core\_bx} from  
./src/render3/i18n/i18n\_postprocess';\nextport {TElementNode as angular\_packages\_core\_core\_bh} from  
./src/render3/interfaces/node';\nextport {LView as angular\_packages\_core\_core\_bv} from  
./src/render3/interfaces/view';\nextport {pureFunction1Internal as  
angular\_packages\_core\_core\_bi,pureFunction2Internal as angular\_packages\_core\_core\_bj,pureFunction3Internal as  
angular\_packages\_core\_core\_bk,pureFunction4Internal as angular\_packages\_core\_core\_bl,pureFunctionVInternal  
as angular\_packages\_core\_core\_bm} from './src/render3/pure\_function';\nextport {getBindingRoot as  
angular\_packages\_core\_core\_bf,getLView as angular\_packages\_core\_core\_be,nextContextImpl as  
angular\_packages\_core\_core\_bg} from './src/render3/state';\nextport {getRootContext as  
angular\_packages\_core\_core\_bw} from './src/render3/util/view\_traversal\_utils';\nextport {getNativeByTNode as  
angular\_packages\_core\_core\_bu} from './src/render3/util/view\_utils';\nextport {getUrlSanitizer as  
angular\_packages\_core\_core\_bn} from './src/sanitization/sanitization';\nextport {makeParamDecorator as  
angular\_packages\_core\_core\_bo,makePropDecorator as angular\_packages\_core\_core\_bp} from  
./src/util/decorators';\nextport {getClosureSafeProperty as angular\_packages\_core\_core\_bq} from  
./src/util/property';\nextport {trustedHTMLFromString as angular\_packages\_core\_core\_by,trustedScriptFromString  
as angular\_packages\_core\_core\_ca,trustedScriptURLFromString as angular\_packages\_core\_core\_bz} from  
./src/util/security/trusted\_types';\nextport {\_def as angular\_packages\_core\_core\_z} from  
./src/view/provider';\nextport {DebugContext as angular\_packages\_core\_core\_ba} from  
./src/view/types';}], "names":["ChangeDetectionStrategy","ChangeDetectorStatus","global","ViewEncapsulation","I  
njectFlags","unusedValueExportToPlacateAjd","SecurityContext","RendererStyleFlags2","unused1","unused2","un  
used3","unused4","unused5","unusedValueToPlacateAjd","INJECTOR","EMPTY\_ARRAY","CIRCULAR","NO\_  
NEW\_LINE","NULL\_INJECTOR","renderComponent","USE\_VALUE","render3CompileInjectable","EMPTY\_O  
BJ","LocaleDataIndex","resolveProvider","getComponent","R3\_ViewRef","R3ViewRef","\_renderCompCount","re  
nderDetachView","createInjector","InjectorRefTokenKey","INJECTORRefTokenKey","\_createProviderInstance","  
ComponentFactory","viewEngine\_ComponentFactoryResolver","getNamespace","ComponentRef","viewEngine\_C  
omponentFactory","ComponentFactoryResolver","viewEngine\_ComponentRef","viewEngine\_NgModuleRef","Ng  
ModuleRef","viewEngine\_NgModuleFactory","getPipeDef","unwrapValue","Subscription","Subject","ViewEngine  
\_TemplateRef","ViewEngine\_ElementRef","r3.attribute","r3.attributeInterpolate1","r3.attributeInterpolate2","r3.attr  
ibuteInterpolate3","r3.attributeInterpolate4","r3.attributeInterpolate5","r3.attributeInterpolate6","r3.attributeInterpol  
ate7","r3.attributeInterpolate8","r3.attributeInterpolateV","r3.defineComponent","r3.defineDirective","r3.defineNg  
Module","r3.definePipe","r3.directiveInject","r3.getFactoryOf","r3.getInheritedFactory","r3.injectAttribute","r3.inv  
alidFactory","r3.injectPipeChangeDetectorRef","r3.templateRefExtractor","r3.NgOnChangesFeature","r3.Providers  
Feature","r3.CopyDefinitionFeature","r3.InheritDefinitionFeature","r3.nextContext","r3.namespaceHTML","r3.nam  
espaceMathML","r3.namespaceSVG","r3.enableBindings","r3.disableBindings","r3.elementStart","r3.elementEnd",  
"r3.element","r3.elementContainerStart","r3.elementContainerEnd","r3.elementContainer","r3.pureFunction0","r3.p  
ureFunction1","r3.pureFunction2","r3.pureFunction3","r3.pureFunction4","r3.pureFunction5","r3.pureFunction6","r  
3.pureFunction7","r3.pureFunction8","r3.pureFunctionV","r3.getCurrentView","r3.restoreView","r3.listener","r3.pr  
ojection","r3.syntheticHostProperty","r3.syntheticHostListener","r3.pipeBind1","r3.pipeBind2","r3.pipeBind3","r3.  
pipeBind4","r3.pipeBindV","r3.projectionDef","r3.hostProperty","r3.property","r3.propertyInterpolate","r3.property  
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r3.reference","r3.classMap","r3.classMapInterpolate1","r3.classMapInterpolate2","r3.classMapInterpolate3","r3.clas  
sMapInterpolate4","r3.classMapInterpolate5","r3.classMapInterpolate6","r3.classMapInterpolate7","r3.classMapInt  
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GAAG,UAAU,CAAC;oBAC3C,gBAAiB,CAAC,oBAAoB,GAAG,UAAU,CAAC;oBAC1D,cAAc,GAAG,KAAK,CAAC;iBACxB;qBAAM;;;oBAIL,UAAU,GAAG,YAAY,CAAC,KAAK,EAAE,KAAK,EAAE,UAAU,EAAE,KAAK,uBAAuB,CAAC;oBACjF,IAAM,SAAS,GAAG,QAAQ,CAAC,MAAM,CAAC,QAAQ,CAAC,IAAI,IAAI,MAAM,EAAE,SAAS,EAAE,UAAU,CAAC,CAAC;oBACIF,SAAS,IAAI,SAAS,CAAC,wBAAwB,EAAE,CAAC;oBAEID,QAAQ,CAAC,IAAI,CAAC,UAAU,EAAE,SAAS,CAAC,CAAC;oBACrC,QAAQ,IAAI,QAAQ,CAAC,IAAI,CAAC,SAAS,EAAE,iBAAiB,EAAE,aAAa,EAAE,aAAa,GAAG,CAAC,CAAC,CAAC;iBAC3F;aAEF;iBAAM;gBACL,UAAU,GAAG,YAAY,CAAC,KAAK,EAAE,KAAK,EAAE,UAAU,EAAE,IAAI,uBAAuB,CAAC;gBACHf,MAAM,CAAC,gBAAgB,CAAC,SAAS,EAAE,UAAU,EAAE,UAAU,CAAC,CAAC;gBAC3D,SAAS,IAAI,SAAS,CAAC,wBAAwB,EAAE,CAAC;gBAEID,QAAQ,CAAC,IAAI,CAAC,UAAU,CAAC,CAAC;gBAC1B,QAAQ,IAAI,QAAQ,CAAC,IAAI,CAAC,SAAS,EAAE,iBAAiB,EAAE,aAAa,EAAE,UAAU,CAAC,CAAC;aACpF;SACF;;QAGD,IAAM,OAAO,GAAG,KAAK,CAAC,OAAO,CAAC;QAC9B,IAAI,KAAmC,CAAC;QACxC,IAAI,cAAc,IAAI,OAAO,KAAK,IAAI,KAAK,KAAK,GAAG,OAAO,CAAC,SAAS,CAAC,CAAC,EAAE;YACtE,IAAM,WAAW,GAAG,KAAK,CAAC,MAAM,CAAC;YACjC,IAAI,WAAW,EAAE;gBACf,KAAK,IAAI,CAAC,GAAG,CAAC,EAAE,CAAC,GAAG,WAAW,EAAE,CAAC,IAAI,CAAC,EAAE;oBACvC,IAAM,KAAK,GAAG,KAAK,CAAC,CAAC,CAAW,CAAC;oBACjC,SAAS,IAAI,kBAakB,CAAC,KAAK,EAAE,KAAK,CAAC,CAAC;oBAC9C,IAAM,YAAY,GAAG,KAAK,CAAC,CAAC,GAAG,CAAC,CAAC,CAAC;oBACiC,IAAM,iBAAiB,GAAG,KAAK,CAAC,KAAK,CAAC,CAAC;oBACvC,IAAM,MAAM,GAAG,iBAAiB,CAAC,YAAY,CAAC,CAAC;oBAE/C,IAAI,SAAS,IAAI,CAAC,YAAY,CAAC,MAAM,CAAC,EAAE;wBACtC,MAAM,IAAI,KAAK,CAAC,aAAW,YAAY,6BACnC,iBAAiB,CAAC,WAAW,CAAC,IAAI,OAAI,CAAC,CAAC;qBAC7C;oBAED,IAAM,YAAY,GAAG,MAAM,CAAC,SAAS,CAAC,UAAU,CAAC,CAAC;oBACiD,IAAM,GAAG,GAAG,QAAQ,CAAC,MAAM,CAAC;oBAC5B,QAAQ,CAAC,IAAI,CAAC,UAAU,EAAE,YAAY,CAAC,CAAC;oBACxC,QAAQ,IAAI,QAAQ,CAAC,IAAI,CAAC,SAAS,EAAE,KAAK,CAAC,KAAK,EAAE,GAAG,EAAE,EAAE,GAAG,GAAG,CAAC,CAAC,CAAC,CAAC;iBACpE;aACF;SACF;IACH,CAAC;IAED,SAAS,gCAAgC,CACrC,KAAY,EAAE,UAA4B,EAAE,CAAM;QACpD,IAAI;YAED,OAAO,UAAU,CAAC,CAAC,CAAC,KAAK,KAAK,CAAC;SACc;QAAC,OAAO,KAAK,EAAE;YACd,WAAW,CAAC,KAAK,EAAE,KAAK,CAAC,CAAC;YAC1B,OAAO,KAAK,CAAC;SACd;IACH,CAAC;IAED;;;;;;;;;IAUA,SAAS,YAAY,CACjB,KAAY,EAAE,KAAY,EAAE,UAA4B,EACxD,sBAA+B;;;QAGjC,OAAO,SAAS,yCAAyC,CAAC,CAAM;;;YAG9D,IAAI,CAAC,KAAK,QAAQ,EAAE;gBACiB,OAAO,UAAU,CAAC;aACnB;;;YAID,IAAM,SAAS,GAAG,KAAK,CAAC,KAAK;gBACzB,wBAAwB,CAAC,KAAK,CAAC,KAAK,EAAE,KAAK,CAAC;gBAC5C,KAAK,CAAC;;YAGV,IAAI,CAAC,KAAK,CAAC,KAAK,CAAC,8BAAgC,CAAC,EAAE;gBACiD,aAAa,CAAC,SAAS,CAAC,CAAC;aAC1B;YAED,IAAI,MAAM,GAAG,gCAAgC,CAAC,KAAK,EAAE,UAAU,EAAE,CAAC,CAAC,CAAC;;;YAGpE,IAAI,cAAc,GAAS,yCAA0C,CAAC,oBAAoB,CAAC;YAC3F,OAAO,cAAc,EAAE;;gBAErB,MAAM,GAAG,gCAAgC,CAAC,KAAK,EAAE,cAAc,EAAE,CAAC,CAAC,IAAI,MAAM,CAAC;gBAC9E,cAAc,GAAS,cAAe,CAAC,oBAAoB,CAAC;aAC7D;YAED,IAAI,sBAAsB,IAAI,MAAM,KAAK,KAAK,EAAE;gBAC9C,CAAC,CAAC,cAAc,EAAE,CAAC;;gBAEnB,CAAC,CAAC,WAAW,GAAG,KAAK,CAAC;aACvB;YAED,OAAO,MAAM,CAAC;SACf,CAAC;IACJ;;IC9RA;;;;;;;;;ICAA;;;;;;;;;IASA;;;;;;;;;aAYgB,aAAa,CAAU,KAAiB;QAAjB,sBAAA,EAAA,SAAiB;QACtD,OAAO,eAAe,CAAC,KAAK,CAAC,C AAC;IACc;;ICvBA;;;;;;;;;IAkBA;;;;;;;;;aAQgB,2BAA2B,CAAC,KAAY,EAAE,eAAgC;QAExF,IAAI,sBAAsB,GAAG,IAAI,CAAC;QACiC,IAAM,kBAakB,GAAG,qBAAqB,CAAC,KAAK,CAAC,CAAC;QACxD,KAAK,IAAI,CAAC,GAAG,CAAC,EAAE,CAAC,GAAG,eAAe,CAAC,MAAM,EAAE,CAAC,EAAE,EAAE;YAC/C,IAAM,SAAS,GAAG,eAAe,CAAC,CAAC,CAAC,CAAC;;YAGrC,IAAI,SAAS,KAAK,GAAG,EAAE;gBACrB,sBAAsB,GAAG,CAAC,CAAC;gBAC3B,SAAS;aACV;;;YAGD,IAAI,kBAakB,KAAK,IAAI;gBACvB,0BAA0B,CAAC,KAAK,EAAE,SAAS,yBAAyB,IAAI,CAAC;gBACzE,wBAAwB,CAAC,kBAakB,EAAE,SAAS,CAAC,EAAE;gBAC/D,OAAO,CAAC,CAAC;aACV;SACF;QACD,OAAO,sBAAsB,CAAC;IACc,CAAC;IAED;;;;;;;;;aAyBgB,eAAe,CAAC,eAAiC;QAC/D,IAAM,aAAa,GAAG,QAAQ,EAAE,CAAC,0BAA0B,CAAC,CAAC,MAAM,CAAI B,CAAC;QAErF,IAAI,CAAC,aAAa,CAAC,UAAU,EAAE;;;YAG7B,IAAM,kBAakB,GAAG,eAAe,GAAG,eAAe,CAAC,MAAM,GAAG,CAAC,CAAC;YACxE,IAAM,eAAe,GAAMb,aAAa,CAAC,UAAU;gBAC5D,QAAQ,CAAC,kBAakB,EAAE,IAAc,CAAC,CAAC;YACjD,IAAM,KAAK,GAAMb,eAAe,CAAC,KAAK,EAAE,CAAC;YAEtD,IAAI,cAAc,GAAG,aAAa,CAAC,KAAK,CAAC;YAErD,OAAO,cAAc,KAAK,IAAI,EAAE;gBAC9B,IAAM,SA

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AE,CAAC,GAAG,MAAM,CAAC,MAAM,EAAE,CAAC,IAAI,CAAC,EAAE;oBACzC,sBAAsB,CAAC,IAAI,CAAC,MAAM,CAAC,CAAC,CAAC,CAAC,CAAC,CAAC;iBACxC;gBACD,4BAA4B,yBACxB,KAAK,CAAC,IAAI,EAAE,KAAK,EAAE,QAAQ,EAAE,eAAe,EAAE,GAAG,sBAAsB,CAAC,MAAM,GAAG,CAAC,GAC/E,sBAAsB,GAAE;aAchC;SACF;QACD,OAAO,sBAAsB,CAAC;IACHC;ICthBA;;;;;IASA;;;;;IAOO,IAAMkB,WAAS,GAAO,EAAE,CAAC;IACzB,IAAMP,aAAW,GAAU,EAAE,CAAC;IAErC;IACA,IAAI,CAAC,OAAO,SAAS,KAAK,WAAW,IAAI,SAAS,KAAK,aAAa,EAAE,EAAE;;;QAIhE,MAAM,CAAC,MAAM,CAACO,WAAS,CAAC,CAAC;;QAEzB,MAAM,CAAC,MAAM,CAACP,aAAW,CAAC,CAAC;;IC1B7B;;;;;IAiBA;;;;;IAyJA,IAAI,mEAA8E,CAAC;IAEnF;;;;;aAoBgB,qBAAqB,CACjC,KAAy,EAAE,KAAy,EAAE,qBAAkC,EAAE,KAAa,EAC7E,aAAsB,EAAE,cAAuB;QACjD,SAAS,IAAI,qBAAqB,CAAC,QAAQ,EAAE,CAAC,CAAC;QAC/C,IAAI,SAAS,GAAG,cAAc,GAG,KAAK,CAAC,aAAa,GAAG,KAAK,CAAC,aAAa,CAAC;QAC3E,IAAI,QAAQ,GAAG,oBAAoB,CAAC,SAAS,CAAC,CAAC;QAC/C,IAAI,QAAQ,GAAG,oBAAoB,CAAC,SAAS,CAAC,CAAC;QAE/C,KAAK,CAAC,KAAK,CAAC,GAAG,qBAAqB,CAAC;QACrC,IAAI,sBAAsB,GAAG,KAAK,CAAC;QACnC,IAAI,WAAiC,CAAC;QACtC,IAAI,KAAK,CAAC,OAAO,CAAC,qBAAqB,CAAC,EAAE;;YAExC,IAAM,mBAAmB,GAAG,qBAA2C,CAAC;YACxE,WAAW,GAAG,mBAAmB,CAAC,CAAC,CAAC,CAAC;;YAErC,IAAI,WAAW,KAAK,IAAI;gBACpB,oBAAoB,CAAC,mBAAmB,EAAE,WAAqB,CAAC,GAAG,CAAC,EAAE;;gBAExE,sBAAsB,GAAG,IAAI,CAAC;aAC/B;SACF;aAAM;YAACL,WAAW,GAAG,qBAAqB,CAAC;SACrC;QACD,IAAI,aAAa,EAAE;;;YAIjB,IAAM,mBAAmB,GAAG,QAAQ,KAAK,CAAC,CAAC;;YAG3C,IAAI,mBAAmB,EAAE;;gBAEvB,IAAM,YAAy,GAAG,oBAAoB,CAAC,KAAK,CAAC,QAAQ,GAAG,CAAC,CAAKB,CAAC,CAAC;gBAChF,KAAK,CAAC,KAAK,GAAG,CAAC,CAAC,GAAG,eAAe,CAAC,YAAy,EAAE,QAAQ,CAAC,CAAC;;gBAG3D,IAAI,YAAy,KAAK,CAAC,EAAE;;oBAEtB,KAAK,CAAC,YAAy,GAAG,CAAC,CAAC;wBACnB,oBAAoB,CAAC,KAAK,CAAC,YAAy,GAAG,CAAC,CAAKB,EAAE,KAAK,CAAC,CAAC;iBAC3E;;gBAED,KAAK,CAAC,QAAQ,GAAG,CAAC,CAAC,GAAG,oBAAoB,CAAC,KAAK,CAAC,QAAQ,GAAG,CAAC,CAAKB,EAAE,KAAK,CAAC,CAAC;aACzF;iBAAM;gBACL,KAAK,CAAC,KAAK,GAAG,CAAC,CAAC,GAAG,eAAe,CAAC,QAAQ,EAAE,CAAC,CAAC,CAAC;;gBAGhD,IAAI,QAAQ,KAAK,CAAC,EAAE;;oBAEiB,KAAK,CAAC,QAAQ,GAAG,CAAC,CAAC,GAAG,oBAAoB,CAAC,KAAK,CAAC,QAAQ,GAAG,CAAC,CAAKB,EAAE,KAAK,CAAC,CAAC;iBACzF;;gBAED,QAAQ,GAAG,KAAK,CAAC;aACiB;SACF;aAAM;;YAGL,KAAK,CAAC,KAAK,GAAG,CAAC,CAAC,GAAG,eAAe,CAAC,QAAQ,EAAE,CAAC,CAAC,CAAC;YACHD,SAAS;gBACL,WAAW,CACP,QAAQ,KAAK,CAAC,IAAI,QAAQ,KAAK,CAAC,EAAE,KAAK,EACvC,6DAA6D,CAAC,CAAC;YACvE,IAAI,QAAQ,KAAK,CAAC,EAAE;gBACiB,QAAQ,GAAG,KAAK,CAAC;aACiB;iBAAM;;gBAEL,KAAK,CAAC,QAAQ,GAAG,CAAC,CAAC,GAAG,oBAAoB,CAAC,KAAK,CAAC,QAAQ,GAAG,CAAC,CAAKB,EAAE,KAAK,CAAC,CAAC;aACzF;YACD,QAAQ,GAAG,KAAK,CAAC;SACiB;;QAID,IAAI,sBAAsB,EAAE;YACiB,KAAK,CAAC,KAAK,GAAG,CAAC,CAAC,GAAG,6BAA6B,CAAC,KAAK,CAAC,KAAK,GAAG,CAAC,CAAKB,CAAC,CAAC;SACrF;QACD,cAAc,CAAC,KAAK,EAAE,WAAW,EAAE,KAAK,EAAE,IAAI,EAAE,cAAc,CAAC,CAAC;QACHc,cAAc,CAAC,KAAK,EAAE,WAAW,EAAE,KAAK,EAAE,KAAK,EAAE,cAAc,CAAC,CAAC;QACjE,8BAA8B,CAAC,KAAK,EAAE,WAAW,EAAE,KAAK,EAAE,KAAK,EAAE,cAAc,CAAC,CAAC;QAEjF,SAAS,GAAG,eAAe,CAAC,QAAQ,EAAE,QAAQ,CAAC,CAAC;QACHD,IAAI,cAAc,EAAE;YACiB,KAAK,CAAC,aAAa,GAAG,SAAS,CAAC;SACjC;aAAM;YAACL,KAAK,CAAC,aAAa,GAAG,SAAS,CAAC;SACjC;IACH,CAAC;IAED;;;;;IAUA,SAAS,8BAA8B,CACnC,KAAy,EAAE,WAAwB,EAAE,KAAy,EAAE,KAAa,EAAE,cAAuB;QAC9F,IAAM,QAAQ,GAAG,cAAc,GAAG,KAAK,CAAC,eAAe,GAAG,KAAK,CAAC,cAAc,CAAC;QAC/E,IAAI,QAAQ,IAAI,IAAI,uBAAuB,OAAO,WAAW,IAAI,QAAQ;YACrE,oBAAoB,CAAC,QAAQ,EAAE,WAAW,CAAC,IAAI,CAAC,EAAE;;YAEpD,KAAK,CAAC,KAAK,GAAG,CAAC,CAAC,GAAG,6BAA6B,CAAC,KAAK,CAAC,KAAK,GAAG,CAAC,CAAKB,CAAC,CAAC;SACrF;IACH,CAAC;IAGD;;;;;IAwDA,SAAS,cAAc,CACnB,KAAy,EAAE,WAAiC,EAAE,KAAa,EAAE,SAAKB,EACiF,cAAuB;QACzB,IAAM,eAAe,GAAG,KAAK,CAAC,KAAK,GAAG,CAAC,CAAKB,CAAC;QACiD,IAAM,KAAK,GAAG,WAAW,KAAK,IAAI,CAAC;QACnC,IAAI,MAAM,GACN,SAAS,GAAG,oBAAoB,CAAC,eAAe,CAAC,GAAG,oBAAoB,CAAC,eAAe,CAAC,CAAC;QAC9F,IAAI,cAAc,GAAG,KAAK,CAAC;;;;;QAM3B,OAAO,MAAM,KAAK,CAAC,KAAK,cAAc,KAAK,KAAK,IAAI,KAAK,CAAC,EAAE;YACiD,SAAS,IAAI,kBAAKB,CAAC,KAAK,EAAE,MAAM,CAA

C,CAAC;YAC/C,IAAM,qBAAqB,GAAG,KAAK,CAAC,MAAM,CAAgB,CAAC;YAC3D,IAAM,mBAAmB,GAAG,KAAK,CAAC,MAAM,GAAG,CAAC,CAAKB,CAAC;YAC/D,IAAI,cAAc,CAAC,qBAAqB,EAAE,WAAW,CAAC,EAAE;gBACtD,cAAc,GAAG,IAAI,CAAC;gBACtB,KAAK,CAAC,MAAM,GAAG,CAAC,CAAC,GAAG,SAAS,GAAG,6BAA6B,CAAC,mBAAmB,CAAC;oBACID,6BAA6B,CAAC,mBAAmB,CAAC,CAAC;aACpF;YACD,MAAM,GAAG,SAAS,GAAG,oBAAoB,CAAC,mBAAmB,CAAC;gBACzC,oBAAoB,CAAC,mBAAmB,CAAC,CAAC;SACHE;QACD,IAAI,cAAc,EAAE;;YAEIB,KAAK,CAAC,KAAK,GAAG,CAAC,CAAC,GAAG,SAAS,GAAG,6BAA6B,CAAC,eAAe,CAAC;gBAC9C,6BAA6B,CAAC,eAAe,CAAC,CAAC;SAC/E;IACH,CAAC;IAED;;;;;;;;;;;;;IAkBA,SAAS,cAAc,CAAC,iBAA8B,EAAE,WAAiC;QACvF,SAAS;YACL,cAAc,CACV,KAAK,CAAC,OAAO,CAAC,WAAW,CAAC,EAAE,IAAI,EAAE,kDAAkD,CAAC,CAAC;QAC9F,IACI,iBAAiB,KAAK,IAAI;;YAEIB,WAAW,IAAI,IAAI;;YAEEnB,CAAC,KAAK,CAAC,OAAO,CAAC,iBAAiB,CAAC,GAAG,iBAAiB,CAAC,CAAC,CAAC,GAAG,iBAAiB;gBACxE,WAAW;UACjB;YACA,OAAO,IAAI,CAAC;SACb;aAAM,IAAI,KAAK,CAAC,OAAO,CAAC,iBAAiB,CAAC,IAAI,OAAO,WAAW,KAAK,QAAQ,EAAE;;YAG9E,OAAO,oBAAoB,CAAC,iBAAiB,EAAE,WAAW,CAAC;gBACvD,CAAC,CAAC;SACP;QACD,OAAO,KAAK,CAAC;IACf;;IC5aA;;;;;;;;;IA0CA;IACA,IAAM,WAAW,GAAGB;QAC/B,OAAO,EAAE,CAAC;QACV,GAAG,EAAE,CAAC;QACN,MAAM,EAAE,CAAC;QACT,KAAK,EAAE,CAAC;QACR,QAAQ,EAAE,CAAC;KACZ,CAAC;IAEF;;aAIgB,gBAAgB,CAAC,IAAY;QAC3C,OAAO,IAAI,CAAC,SAAS,CAAC,WAAW,CAAC,GAAG,EAAE,WAAW,CAAC,MAAM,CAAC,CAAC;IAC7D,CAAC;IAED;;aAIgB,kBAAkB,CAAC,IAAY;QAC7C,OAAO,IAAI,CAAC,SAAS,CAAC,WAAW,CAAC,KAAK,EAAE,WAAW,CAAC,QAAQ,CAAC,CAAC;IACjE,CAAC;IAED;;;;;;;;;;;;;aAagB,cAAc,CAAC,IAAY;QACzC,gBAAgB,CAAC,IAAI,CAAC,CAAC;QACvB,OAAO,kBAAkB,CAAC,IAAI,EAAE,iBAAiB,CAAC,IAAI,EAAE,CAAC,EAAE,WAAW,CAAC,OAAO,CAAC,CAAC,CAAC;IACnF,CAAC;IAED;;;;;;;;;;;;;aAegB,kBAAkB,CAAC,IAAY,EAAE,KAAa;QAC5D,IAAM,GAAG,GAAG,WAAW,CAAC,OAAO,CAAC;QACChC,IAAI,GAAG,KAAK,KAAK,EAAE;YACjB,OAAO,CAAC,CAAC,CAAC;SACX;QACD,KAAK,GAAG,WAAW,CAAC,MAAM,GAAG,iBAAiB,CAAC,IAAI,EAAE,WAAW,CAAC,GAAG,GAAG,KAAK,EAAE,GAAG,CAAC,CAAC;QACnF,OAAO,iBAAiB,CAAC,IAAI,EAAE,KAAK,EAAE,GAAG,CAAC,CAAC;IAC7C,CAAC;IAED;;;;;;;;;;;;;aAcgB,UAAU,CAAC,IAAY;QACrC,gBAAgB,CAAC,IAAI,CAAC,CAAC;QACvB,OAAO,cAAc,CAAC,IAAI,EAAE,iBAAiB,CAAC,IAAI,EAAE,CAAC,EAAE,WAAW,CAAC,OAAO,CAAC,CAAC,CAAC;IAC/E,CAAC;IAED;;;;;;;;;;;;;aAegB,cAAc,CAAC,IAAY,EAAE,UAAkB;QAC7D,IAAM,GAAG,GAAG,WAAW,CAAC,OAAO,CAAC;QACChC,IAAI,KAAK,GAAG,WAAW,CAAC,GAAG,GAAG,iBAAiB,CAAC,IAAI,EAAE,UAAU,EAAE,GAAG,CAAC,CAAC;QACvE,IAAI,GAAG,KAAK,KAAK,EAAE;;YAEjB,OAAO,CAAC,CAAC,CAAC;SACX;QACD,KAAK,GAAG,WAAW,CAAC,MAAM,GAAG,eAAe,CAAC,IAAI,EAAE,KAAK,EAAE,GAAG,CAAC,CAAC;QAC/D,KAAK,GAAG,gBAAgB,CAAC,IAAI,EAAE,KAAK,EAAE,GAAG,iBAAiB,CAAC;QAC3D,KAAK,GAAG,WAAW,CAAC,KAAK,GAAG,iBAAiB,CAAC,IAAI,EAAE,KAAK,EAAE,GAAG,CAAC,CAAC;QACHe,KAAK,GAAG,WAAW,CAAC,QAAQ,GAAG,iBAAiB,CAAC,IAAI,EAAE,KAAK,EAAE,GAAG,CAAC,CAAC;QACnE,OAAO,gBAAgB,CAAC,IAAI,EAAE,KAAK,EAAE,GAAG,sBAAsB,CAAC;IACjE,CAAC;IAED;;aAIgB,gBAAgB,CAAC,IAAY;QAC3C,WAAW,CAAC,GAAG,GAAG,CAAC,CAAC;QACpB,WAAW,CAAC,MAAM,GAAG,CAAC,CAAC;QACvB,WAAW,CAAC,KAAK,GAAG,CAAC,CAAC;QACtB,WAAW,CAAC,QAAQ,GAAG,CAAC,CAAC;QACzB,WAAW,CAAC,OAAO,GAAG,IAAI,CAAC,MAAM,CAAC;IACpC,CAAC;IAED;;;;;;;;;aASgB,iBAAiB,CAAC,IAAY,EAAE,UAAkB,EAAE,QAAgB;QACIF,OAAO,UAAU,GAAG,QAAQ,IAAI,IAAI,CAAC,UAAU,CAAC,UAAU,CAAC,oBAAoB;YAC7E,UAAU,EAAE,CAAC;SACd;QACD,OAAO,UAAU,CAAC;IACpB,CAAC;IAED;;;;;;;;;aAQgB,iBAAiB,CAAC,IAAY,EAAE,UAAkB,EAAE,QAAgB;QACIF,OAAO,UAAU,GAAG,QAAQ,IAAI,IAAI,CAAC,UAAU,CAAC,UAAU,CAAC,mBAAmB;YAC5E,UAAU,EAAE,CAAC;SACd;QACD,OAAO,UAAU,CAAC;IACpB,CAAC;IAED;;;;;;;;;aAQgB,eAAe,CAAC,IAAY,EAAE,UAAkB,EAAE,QAAgB;QACHe,IAAI,EAAU,CAAC;QACf,OAAO,UAAU,GAAG,QAAQ;aACpB,CAAC,EAAE,GAAG,IAAI,CAAC,UAAU,CAAC,UAAU,CAAC,uBAAuB,EAAE;iBACzD,CAAC,EAAE,0CAAyC,CAAC,EAAE,uCAAsC;iBACrF,EAAE,qBAAqB,EAAE,kBAAkB,CAAC,EAAE;YACrD,UAAU,EAAE,CAAC;SACd;QACD,OAAO,UAAU,CAAC;IACpB,CAAC;IAED;;;;;;;;;aAQgB,gBAAgB,CAC5B,IAAY,EAAE,UAAkB,EAAE,QAAgB,EAAE,SAAiB;QACvE,UAAU,GAAG,iBAAiB,CAAC,IAAI,EAAE,UAAU,EAAE,QAAQ,CAAC,CAAC;QAC3D,IAAI,UAAU,GAAG,QAAQ,EAAE;YACzB,IAAI,SAAS,IAAI,IAAI,CAAC,UAAU,CAAC,UAAU,CAAC,KAAK,SA



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AQ,EAAE;YAC7C,YAAY,CAAC,kBAAkB,EAAE,cAAc,CAAC,CAAC;SACID;aAAM;YACL,SAAS;gBACL,U  
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No license file was found, but licenses were detected in source scan.

```
/**
 * @license
 * Copyright Google LLC All Rights Reserved.
 *
 * Use of this source code is governed by an MIT-style license that can be
 * found in the LICENSE file at https://angular.io/license
 */
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\* /opt/cola/permits/1358260587\_1657134851.1917841/0/core-11-0-2-tgz/package/schematics/migrations/static-queries/strategies/template\_strategy/template\_strategy.js

\* /opt/cola/permits/1358260587\_1657134851.1917841/0/core-11-0-2-tgz/package/schematics/migrations/initial-navigation/util.d.ts

\* /opt/cola/permits/1358260587\_1657134851.1917841/0/core-11-0-2-tgz/package/schematics/migrations/missing-injectable/index.d.ts

\* /opt/cola/permits/1358260587\_1657134851.1917841/0/core-11-0-2-tgz/package/schematics/migrations/undecorated-classes-with-decorated-fields/update\_recorder.d.ts

\* /opt/cola/permits/1358260587\_1657134851.1917841/0/core-11-0-2-tgz/package/esm2015/src/render3/features/inherit\_definition\_feature.js

\* /opt/cola/permits/1358260587\_1657134851.1917841/0/core-11-0-2-tgz/package/esm2015/src/render3/context\_discovery.js

\* /opt/cola/permits/1358260587\_1657134851.1917841/0/core-11-0-2-tgz/package/esm2015/src/di/injector\_compatibility.js

\* /opt/cola/permits/1358260587\_1657134851.1917841/0/core-11-0-2-tgz/package/schematics/migrations/missing-injectable/providers\_evaluator.d.ts

\* /opt/cola/permits/1358260587\_1657134851.1917841/0/core-11-0-2-tgz/package/esm2015/index.js

\* /opt/cola/permits/1358260587\_1657134851.1917841/0/core-11-0-2-tgz/package/schematics/migrations/template-var-assignment/angular/html\_variable\_assignment\_visitor.d.ts

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\* /opt/cola/permits/1358260587\_1657134851.1917841/0/core-11-0-2-tgz/package/esm2015/src/render3/styling/class\_differ.js

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\* /opt/cola/permits/1358260587\_1657134851.1917841/0/core-11-0-2-tgz/package/esm2015/src/linker/ng\_module\_factory\_loader.js

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\* /opt/cola/permits/1358260587\_1657134851.1917841/0/core-11-0-2-tgz/package/schematics/utils/typescript/nodes.js

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\* /opt/cola/permits/1358260587\_1657134851.1917841/0/core-11-0-2-tgz/package/schematics/migrations/undecorated-classes-with-di/ng\_declaration\_collector.js

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\* /opt/cola/permits/1358260587\_1657134851.1917841/0/core-11-0-2-tgz/package/esm2015/src/render3/collect\_native\_nodes.js

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\* /opt/cola/permits/1358260587\_1657134851.1917841/0/core-11-0-2-tgz/package/schematics/migrations/relative-link-resolution/index.d.ts

\* /opt/cola/permits/1358260587\_1657134851.1917841/0/core-11-0-2-tgz/package/esm2015/src/di/injector\_token.js

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\* /opt/cola/permits/1358260587\_1657134851.1917841/0/core-11-0-2-tgz/package/esm2015/src/metadata/ng\_module.js

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to-renderer2/index.js  
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- \* /opt/cola/permits/1358260587\_1657134851.1917841/0/core-11-0-2-tgz/package/esm2015/src/application\_init.js
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- \* /opt/cola/permits/1358260587\_1657134851.1917841/0/core-11-0-2-tgz/package/schematics/migrations/static-queries/angular/super\_class.d.ts
- \* /opt/cola/permits/1358260587\_1657134851.1917841/0/core-11-0-2-tgz/package/schematics/migrations/dynamic-queries/index.js
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var-assignment/index.d.ts  
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return function(this: unknown, done: any) {\n if (!done) {\n // if we run beforeEach in
@angular/core/testing/testing_internal then we get no done\n // fake it here and assume sync.\n done =
function() {};\n done.fail = function(e: any) {\n throw e;\n };;\n }\n runInTestZone(fn, this,
done, (err: any) => {\n if (typeof err === 'string') {\n return done.fail(new Error(err));\n } else {\n
done.fail(err);\n }\n });;\n }\n // Otherwise, return a promise which will resolve when asynchronous
activity\n // is finished. This will be correctly consumed by the Mocha framework with\n // it('...', async(myFn)); or
can be used in a custom framework.\n // Not using an arrow function to preserve context passed from call site\n
return function(this: unknown) {\n return new Promise<void>((finishCallback, failCallback) => {\n
runInTestZone(fn, this, finishCallback, failCallback);\n });;\n });;\n }\n \nfunction runInTestZone(\n fn: Function,
context: any, finishCallback: Function, failCallback: Function) {\n const currentZone = Zone.current;\n const
AsyncTestZoneSpec = (Zone as any)['AsyncTestZoneSpec'];\n if (AsyncTestZoneSpec === undefined) {\n throw
new Error(\n 'AsyncTestZoneSpec is needed for the async() test helper but could not be found. ' +\n 'Please
make sure that your environment includes zone.js/dist/async-test.js');\n }\n const ProxyZoneSpec = (Zone as
any)['ProxyZoneSpec'] as {\n get(): {\n setDelegate(spec: ZoneSpec): void; getDelegate(): ZoneSpec;\n };\n
assertPresent(): void;\n };\n if (ProxyZoneSpec === undefined) {\n throw new Error(\n 'ProxyZoneSpec
is needed for the async() test helper but could not be found. ' +\n 'Please make sure that your environment
includes zone.js/dist/proxy.js');\n }\n const proxyZoneSpec = ProxyZoneSpec.get();\n
ProxyZoneSpec.assertPresent();\n // We need to create the AsyncTestZoneSpec outside the ProxyZone.\n // If we
do it in ProxyZone then we will get to infinite recursion.\n const proxyZone =
Zone.current.getZoneWith('ProxyZoneSpec');\n const previousDelegate = proxyZoneSpec.getDelegate();\n
proxyZone!.parent!.run(() => {\n const testZoneSpec: ZoneSpec = new AsyncTestZoneSpec(\n () => {\n
// Need to restore the original zone.\n currentZone.run(() => {\n if (proxyZoneSpec.getDelegate() ==
testZoneSpec) {\n // Only reset the zone spec if it's sill this one. Otherwise, assume it's OK.\n
proxyZoneSpec.setDelegate(previousDelegate);\n }\n finishCallback();\n });;\n },\n (error: any) => {\n // Need to restore the original zone.\n currentZone.run(() => {\n if
(proxyZoneSpec.getDelegate() == testZoneSpec) {\n // Only reset the zone spec if it's sill this one.
Otherwise, assume it's OK.\n proxyZoneSpec.setDelegate(previousDelegate);\n }\n failCallback(error);\n });;\n },\n 'test');\n proxyZoneSpec.setDelegate(testZoneSpec);\n });;\n return
Zone.current.runGuarded(fn, context);\n }\n \n",/**\n * @license\n * Copyright Google LLC All Rights Reserved.\n
*\n * Use of this source code is governed by an MIT-style license that can be\n * found in the LICENSE file at
https://angular.io/license\n *\nimport { asyncFallback } from './async_fallback';\n\n/**\n * Wraps a test function in
an asynchronous test zone. The test will automatically\n * complete when all asynchronous calls within this zone are
done. Can be used\n * to wrap an { @link inject } call.\n * Example:\n * ```\n * it('...',
waitForAsync(inject([AClass], (object) => {\n * object.doSomething.then(() => {\n * expect(...);\n * })\n *
});;\n * ```\n * @publicApi\n * ^\nexport function waitForAsync(fn: Function): (done: any) => any {\n const
_Zone: any = typeof Zone !== 'undefined' ? Zone : null;\n if (!_Zone) {\n return function() {\n return
Promise.reject(\n 'Zone is needed for the waitForAsync() test helper but could not be found. ' +\n 'Please
make sure that your environment includes zone.js/dist/zone.js');\n };\n }\n const asyncTest = _Zone &&
_Zone[_Zone.__symbol__('asyncTest)];\n if (typeof asyncTest === 'function') {\n return asyncTest(fn);\n }\n //
not using new version of zone.js\n // TODO @JiaLiPassion, remove this after all library updated to\n // newest
version of zone.js(0.8.25)\n return asyncFallback(fn);\n }\n \n",/**\n * @deprecated use `waitForAsync()`, (expected
removal in v12)\n * @see { @link waitForAsync }\n * @publicApi\n * ^\nexport function async(fn: Function):
(done: any) => any {\n return waitForAsync(fn);\n }\n \n",/**\n * @license\n * Copyright Google LLC All Rights
Reserved.\n * Use of this source code is governed by an MIT-style license that can be\n * found in the
LICENSE file at https://angular.io/license\n *\nimport { ChangeDetectorRef, ComponentRef, DebugElement,
ElementRef, getDebugNode, NgZone, RendererFactory2 } from '@angular/core';\n\n\n/**\n * Fixture for debugging
and testing a component.\n * @publicApi\n * ^\nexport class ComponentFixture<T> {\n /**\n * The
DebugElement associated with the root element of this component.\n * ^\n debugElement: DebugElement;\n \n

```

```

/**\n * The instance of the root component class.\n */\n componentInstance: T;\n\n /**\n * The native element
at the root of the component.\n */\n nativeElement: any;\n\n /**\n * The ElementRef for the element at the root
of the component.\n */\n elementRef: ElementRef;\n\n /**\n * The ChangeDetectorRef for the component\n
*/\n changeDetectorRef: ChangeDetectorRef;\n\n private _renderer: RendererFactory2|null|undefined;\n private
_isStable: boolean = true;\n private _isDestroyed: boolean = false;\n private _resolve: ((result: any) => void)|null =
null;\n private _promise: Promise<any>|null = null;\n private _onUnstableSubscription: any /** TODO #9100 */ =
null;\n private _onStableSubscription: any /** TODO #9100 */ = null;\n private _onMicrotaskEmptySubscription:
any /** TODO #9100 */ = null;\n private _onErrorSubscription: any /** TODO #9100 */ = null;\n\n constructor(\n
 public componentRef: ComponentRef<T>, public ngZone: NgZone|null,\n private _autoDetect: boolean) {\n
 this.changeDetectorRef = componentRef.changeDetectorRef;\n this.elementRef = componentRef.location;\n
 this.debugElement = <DebugElement>getDebugNode(this.elementRef.nativeElement);\n this.componentInstance
= componentRef.instance;\n this.nativeElement = this.elementRef.nativeElement;\n this.componentRef =
componentRef;\n this.ngZone = ngZone;\n if (ngZone) {\n // Create subscriptions outside the NgZone so
that the callbacks run outside\n // of NgZone.\n ngZone.runOutsideAngular(() => {\n
this._onUnstableSubscription = ngZone.onUnstable.subscribe({\n next: () => {\n this._isStable =
false;\n }\n });\n this._onMicrotaskEmptySubscription = ngZone.onMicrotaskEmpty.subscribe({\n
 next: () => {\n if (this._autoDetect) {\n // Do a change detection run with checkNoChanges set to
true to check\n // there are no changes on the second run.\n this.detectChanges(true);\n }\n
 }\n });\n this._onStableSubscription = ngZone.onStable.subscribe({\n next: () => {\n
this._isStable = true;\n // Check whether there is a pending whenStable() completer to resolve.\n if
(this._promise !== null) {\n // If so check whether there are no pending macrotasks before resolving.\n
 // Do this check in the next tick so that ngZone gets a chance to update the state of\n // pending
macrotasks.\n scheduleMicroTask(() => {\n if (!ngZone.hasPendingMacrotasks) {\n if
(this._promise !== null) {\n this._resolve!(true);\n this._resolve = null;\n
 this._promise = null;\n }\n }\n });\n }\n });\n this._onErrorSubscription = ngZone.onError.subscribe({\n
 next: (error: any) => {\n throw error;\n }\n });\n });\n }\n }\n\n private _tick(checkNoChanges: boolean) {\n
 this.changeDetectorRef.detectChanges();\n if (checkNoChanges) {\n this.checkNoChanges();\n }\n }\n\n
/**\n * Trigger a change detection cycle for the component.\n */\n detectChanges(checkNoChanges: boolean =
true): void {\n if (this.ngZone !== null) {\n // Run the change detection inside the NgZone so that any async
tasks as part of the change\n // detection are captured by the zone and can be waited for in isStable.\n
this.ngZone.run(() => {\n this._tick(checkNoChanges);\n });\n } else {\n // Running without zone. Just
do the change detection.\n this._tick(checkNoChanges);\n }\n }\n\n /**\n * Do a change detection run to
make sure there were no changes.\n */\n checkNoChanges(): void {\n
 this.changeDetectorRef.checkNoChanges();\n }\n\n /**\n * Set whether the fixture should autodetect changes.\n
*/\n autoDetectChanges(autoDetect: boolean = true) {\n if (this.ngZone === null) {\n throw new Error('Cannot call
autoDetectChanges when ComponentFixtureNoNgZone is set');\n }\n this._autoDetect = autoDetect;\n
 this.detectChanges();\n }\n\n /**\n * Return whether the fixture is currently stable or has async tasks that have not
been completed\n * yet.\n */\n isStable(): boolean {\n return this._isStable &&
!this.ngZone!.hasPendingMacrotasks;\n }\n\n /**\n * Get a promise that resolves when the fixture is stable.\n */\n
whenStable(): Promise<any> {\n if (this.isStable()) {\n return Promise.resolve(false);\n }\n else if
(this._promise !== null) {\n return this._promise;\n }\n else {\n this._promise = new Promise(res => {\n
 this._resolve = res;\n });\n return this._promise;\n }\n }\n\n private _getRenderer() {\n if
(this._renderer === undefined) {\n this._renderer = this.componentRef.injector.get(RendererFactory2, null);\n
 }\n return this._renderer as RendererFactory2 | null;\n }\n\n /**\n * Get a promise that resolves when the ui state
is stable following animations.\n */\n whenRenderingDone(): Promise<any> {\n const renderer =

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this._getRenderer();\n if (renderer && renderer.whenRenderingDone) {\n return
renderer.whenRenderingDone();\n }\n return this.whenStable();\n }\n\n /**\n * Trigger component
destruction.\n */\n destroy(): void {\n if (!this._isDestroyed) {\n this.componentRef.destroy();\n if
(this._onUnstableSubscription != null) {\n this._onUnstableSubscription.unsubscribe();\n
this._onUnstableSubscription = null;\n }\n if (this._onStableSubscription != null) {\n
this._onStableSubscription.unsubscribe();\n this._onStableSubscription = null;\n }\n if
(this._onMicrotaskEmptySubscription != null) {\n this._onMicrotaskEmptySubscription.unsubscribe();\n
this._onMicrotaskEmptySubscription = null;\n }\n if (this._onErrorSubscription != null) {\n
this._onErrorSubscription.unsubscribe();\n this._onErrorSubscription = null;\n }\n this._isDestroyed =
true;\n }\n }\n}\n\nfunction scheduleMicroTask(fn: Function) {\n
Zone.current.scheduleMicroTask('scheduleMicrotask', fn);\n}\n\n", "/*\n * @license\n * Copyright Google LLC All
Rights Reserved.\n * Use of this source code is governed by an MIT-style license that can be\n * found in the
LICENSE file at https://angular.io/license\n */\n\n * fakeAsync has been moved to zone.js\n * this file is for
fallback in case old version of zone.js is used\n */\n\nconst _Zone: any = typeof Zone !== 'undefined' ? Zone :
null;\n\nconst FakeAsyncTestZoneSpec = _Zone && _Zone['FakeAsyncTestZoneSpec'];\n\ntype ProxyZoneSpec = {\n
setDelegate(delegateSpec: ZoneSpec): void; getDelegate(): ZoneSpec; resetDelegate(): void;\n};\n\nconst
ProxyZoneSpec: {get(): ProxyZoneSpec; assertPresent: () => ProxyZoneSpec} =\n _Zone &&
_Zone['ProxyZoneSpec'];\n\nlet _fakeAsyncTestZoneSpec: any = null;\n\n/**\n * Clears out the shared fake async
zone for a test.\n * To be called in a global `beforeEach`.\n */\n * @publicApi\n */\n\nexport function
resetFakeAsyncZoneFallback() {\n if (_fakeAsyncTestZoneSpec) {\n
_fakeAsyncTestZoneSpec.unlockDatePatch();\n }\n _fakeAsyncTestZoneSpec = null;\n // in node.js testing we
may not have ProxyZoneSpec in which case there is nothing to reset.\n ProxyZoneSpec &&
ProxyZoneSpec.assertPresent().resetDelegate();\n}\n\nlet _inFakeAsyncCall = false;\n\n/**\n * Wraps a function to
be executed in the fakeAsync zone:\n * - microtasks are manually executed by calling `flushMicrotasks()`,\n * -
timers are synchronous, `tick()` simulates the asynchronous passage of time.\n * \n * If there are any pending timers
at the end of the function, an exception will be thrown.\n * \n * Can be used to wrap inject() calls.\n * \n *
@usageNotes\n * ### Example\n * \n * {@example core/testing/ts/fake_async.ts region='basic'}\n * \n * @param
fn\n * @returns The function wrapped to be executed in the fakeAsync zone\n * \n * @publicApi\n */\n\nexport
function fakeAsyncFallback(fn: Function): (...args: any[]) => any {\n // Not using an arrow function to preserve
context passed from call site\n return function(this: unknown, ...args: any[]) {\n const proxyZoneSpec =
ProxyZoneSpec.assertPresent();\n if (_inFakeAsyncCall) {\n throw new Error('fakeAsync() calls can not be
nested');\n }\n _inFakeAsyncCall = true;\n try {\n if (!_fakeAsyncTestZoneSpec) {\n if
(proxyZoneSpec.getDelegate() instanceof FakeAsyncTestZoneSpec) {\n throw new Error('fakeAsync() calls
can not be nested');\n }\n _fakeAsyncTestZoneSpec = new FakeAsyncTestZoneSpec();\n }\n let
res: any;\n const lastProxyZoneSpec = proxyZoneSpec.getDelegate();\n proxyZoneSpec.setDelegate(_fakeAsyncTestZoneSpec);\n _fakeAsyncTestZoneSpec.lockDatePatch();\n try
{\n res = fn.apply(this, args);\n flushMicrotasksFallback();\n } finally {\n
proxyZoneSpec.setDelegate(lastProxyZoneSpec);\n }\n if
(_fakeAsyncTestZoneSpec.pendingPeriodicTimers.length > 0) {\n throw new Error(\n
`${_fakeAsyncTestZoneSpec.pendingPeriodicTimers.length}` +\n ` periodic timer(s) still in the queue.`);\n
 }\n if (_fakeAsyncTestZoneSpec.pendingTimers.length > 0) {\n throw new Error(\n
`${_fakeAsyncTestZoneSpec.pendingTimers.length} timer(s) still in the queue.`);\n }\n return res;\n }
finally {\n _inFakeAsyncCall = false;\n resetFakeAsyncZoneFallback();\n }\n }; \n}\n\nfunction
_getFakeAsyncZoneSpec(): any {\n if (_fakeAsyncTestZoneSpec == null) {\n throw new Error('The code should
be running in the fakeAsync zone to call this function');\n }\n return _fakeAsyncTestZoneSpec;\n}\n\n/**\n *
Simulates the asynchronous passage of time for the timers in the fakeAsync zone.\n * The microtasks queue is
drained at the very start of this function and after any timer callback\n * has been executed.\n * \n * @usageNotes\n *
Example\n * \n * {@example core/testing/ts/fake_async.ts region='basic'}\n * \n * @publicApi\n */\n\nexport

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function tickFallback(\n millis: number = 0, tickOptions: {processNewMacroTasksSynchronously: boolean} = {\n
 processNewMacroTasksSynchronously: true\n }): void {\n _getFakeAsyncZoneSpec().tick(millis, null,
 tickOptions);\n}\n\n/**\n * Simulates the asynchronous passage of time for the timers in the fakeAsync zone by\n * draining the macrotask queue until it is empty. The returned value is the milliseconds\n * of time that would have been elapsed.\n *\n * @param maxTurns\n * @returns The simulated time elapsed, in millis.\n *\n * @publicApi\n */\nexport function flushFallback(maxTurns?: number): number {\n return
_getFakeAsyncZoneSpec().flush(maxTurns);\n}\n\n/**\n * Discard all remaining periodic tasks.\n *\n * @publicApi\n */\nexport function discardPeriodicTasksFallback(): void {\n const zoneSpec =
_getFakeAsyncZoneSpec();\n zoneSpec.pendingPeriodicTimers.length = 0;\n}\n\n/**\n * Flush any pending
microtasks.\n *\n * @publicApi\n */\nexport function flushMicrotasksFallback(): void {\n
_getFakeAsyncZoneSpec().flushMicrotasks();\n}\n\n"/**\n * @license\n * Copyright Google LLC All Rights
Reserved.\n *\n * Use of this source code is governed by an MIT-style license that can be\n * found in the
LICENSE file at https://angular.io/license\n */\nimport {discardPeriodicTasksFallback, fakeAsyncFallback,
flushFallback, flushMicrotasksFallback, resetFakeAsyncZoneFallback, tickFallback} from
'./fake_async_fallback';\n\nconst _Zone: any = typeof Zone !== 'undefined' ? Zone : null;\n\nconst
fakeAsyncTestModule = _Zone && _Zone[_Zone.__symbol__('fakeAsyncTest)];\n\n/**\n * Clears out the shared
fake async zone for a test.\n * To be called in a global `beforeEach`.\n *\n * @publicApi\n */\nexport function
resetFakeAsyncZone(): void {\n if (fakeAsyncTestModule) {\n return
fakeAsyncTestModule.resetFakeAsyncZone();\n } else {\n return resetFakeAsyncZoneFallback();\n }\n}\n\n/**\n * Wraps a function to be executed in the fakeAsync zone:\n * - microtasks are manually executed by
calling `flushMicrotasks()`\n * - timers are synchronous, `tick()` simulates the asynchronous passage of time.\n *\n * If there are any pending timers at the end of the function, an exception will be thrown.\n *\n * Can be used to wrap
inject() calls.\n *\n * @usageNotes\n * ### Example\n *\n * { @example core/testing/ts/fake_async.ts
region='basic'}\n *\n * @param fn\n * @returns The function wrapped to be executed in the fakeAsync zone\n *\n * @publicApi\n */\nexport function fakeAsync(fn: Function): (...args: any[]) => any {\n if (fakeAsyncTestModule)
{\n return fakeAsyncTestModule.fakeAsync(fn);\n } else {\n return fakeAsyncFallback(fn);\n }\n}\n\n/**\n * Simulates the asynchronous passage of time for the timers in the fakeAsync zone.\n *\n * The microtasks queue is
drained at the very start of this function and after any timer callback\n * has been executed.\n *\n * @usageNotes\n * ### Example\n *\n * { @example core/testing/ts/fake_async.ts region='basic'}\n *\n * @param millis, the number
of millisecond to advance the virtual timer\n * @param tickOptions, the options of tick with a flag called\n *
processNewMacroTasksSynchronously, whether to invoke the new macroTasks, by default is\n * false, means the
new macroTasks will be invoked\n *\n * For example,\n *\n * it ('test with nested setTimeout', fakeAsync(() => {\n
* let nestedTimeoutInvoked = false;\n * function funcWithNestedTimeout() {\n * setTimeout(() => {\n *
nestedTimeoutInvoked = true;\n * });\n * },\n *);\n * setTimeout(funcWithNestedTimeout);\n * tick();\n *
expect(nestedTimeoutInvoked).toBe(true);\n * }));\n *\n * in this case, we have a nested timeout (new macroTask),
when we tick, both the\n * funcWithNestedTimeout and the nested timeout both will be invoked.\n *\n * it ('test
with nested setTimeout', fakeAsync(() => {\n * let nestedTimeoutInvoked = false;\n * function
funcWithNestedTimeout() {\n * setTimeout(() => {\n * nestedTimeoutInvoked = true;\n * });\n * },\n *);\n *
setTimeout(funcWithNestedTimeout);\n * tick(0, {processNewMacroTasksSynchronously: false});\n *
expect(nestedTimeoutInvoked).toBe(false);\n * }));\n *\n * if we pass the tickOptions with
processNewMacroTasksSynchronously to be false, the nested timeout\n * will not be invoked.\n *\n *\n * @publicApi\n */\nexport function tick(\n millis: number = 0, tickOptions:
{processNewMacroTasksSynchronously: boolean} = {\n processNewMacroTasksSynchronously: true\n }):
void {\n if (fakeAsyncTestModule) {\n return fakeAsyncTestModule.tick(millis, tickOptions);\n } else {\n
return tickFallback(millis, tickOptions);\n }\n}\n\n/**\n * Simulates the asynchronous passage of time for the
timers in the fakeAsync zone by\n * draining the macrotask queue until it is empty. The returned value is the
milliseconds\n * of time that would have been elapsed.\n *\n * @param maxTurns\n * @returns The simulated time
elapsed, in millis.\n *\n * @publicApi\n */\nexport function flush(maxTurns?: number): number {\n if

```



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() try {
 if (f = 1, y && (t = op[0] & 2 ? y["return"] : op[0] ? y["throw"] || ((t = y["return"]) &&
t.call(y, 0) : y.next) && !(t = t.call(y, op[1])).done) return t;
 if (y = 0, t) op = [op[0] & 2, t.value];
 switch (op[0]) {
 case 0: case 1: t = op; break;
 case 4: _label++; return { value: op[1],
done: false };
 case 5: _label++; y = op[1]; op = [0]; continue;
 case 7: op = _ops.pop();
_ops.pop(); continue;
 default:
 if (!(t = _trys, t = t.length > 0 && t[t.length - 1]) &&
(op[0] === 6 || op[0] === 2)) { _ = 0; continue; }
 if (op[0] === 3 && (!t || (op[1] > t[0] && op[1] <
t[3]))) { _label = op[1]; break; }
 if (op[0] === 6 && _label < t[1]) { _label = t[1]; t = op; break; }
 if (t && _label < t[2]) { _label = t[2]; _ops.push(op); break; }
 if (t[2])
_ops.pop();
 _trys.pop(); continue;
 }
 op = body.call(thisArg, _);
 } catch (e) {
 op = [6, e]; y = 0;
 } finally {
 f = t = 0;
 }
 if (op[0] & 5) throw op[1]; return { value: op[0] ? op[1] : void
0, done: true };
}
export var __createBinding = Object.create ? (function(o, m, k, k2) {
 if (k2
=== undefined) k2 = k;
 Object.defineProperty(o, k2, { enumerable: true, get: function() {
return m[k];
}});
}) : (function(o, m, k, k2) {
 if (k2
=== undefined) k2 = k;
 o[k2] = m[k];
});
export function __exportStar(m, exports) {
 for (var p in m) if (p !== "default" && !exports.hasOwnProperty(p))
__createBinding(exports, m, p);
}
export function __values(o) {
 var s = typeof Symbol ===
"function" && Symbol.iterator, m = s && o[s], i = 0;
 if (m) return m.call(o);
 if (o && typeof o.length
=== "number") return {
 next: function () {
 if (o && i >= o.length) o = void 0;
 return {
value: o && o[i++], done: !o };
 }
 };
 throw new TypeError(s ? "Object is not iterable." :
"Symbol.iterator is not defined.");
}
export function __read(o, n) {
 var m = typeof Symbol ===
"function" && o[Symbol.iterator];
 if (!m) return o;
 var i = m.call(o), r, ar = [], e;
 try {
 while ((n === void 0 || n-- > 0) && !(r = i.next()).done) ar.push(r.value);
 } catch (error) {
 e = { error:
error };
 } finally {
 try {
 if (r && !r.done && (m = i["return"])) m.call(i);
 } finally {
 if (e) throw e.error;
 }
 }
 return ar;
}
export function __spread() {
 for (var ar = [], i =
0; i < arguments.length; i++)
 ar = ar.concat(__read(arguments[i]));
 return ar;
}
export function __spreadArrays() {
 for (var s = 0, i = 0, il = arguments.length; i < il; i++) s += arguments[i].length;
 for (var r = Array(s), k = 0, i = 0; i < il; i++)
 for (var a = arguments[i], j = 0, jl = a.length; j < jl; j++, k++)
 r[k] = a[j];
 return r;
}
export function __await(v) {
 return this instanceof __await ? (this.v =
v, this) : new __await(v);
}
export function __asyncGenerator(thisArg, _arguments, generator) {
 if (!Symbol.asyncIterator) throw new TypeError("Symbol.asyncIterator is not defined.");
 var g =
generator.apply(thisArg, _arguments || []), i, q = [];
 return i = {
 verb("next"), verb("throw"),
verb("return"),
i[Symbol.asyncIterator] = function () {
return this;
},
i;
 function verb(n) {
 if (g[n]) i[n] =
function (v) {
return new Promise(function (a, b) {
q.push([n, v, a, b]) > 1 || resume(n, v);
});
});
 }
 function resume(n, v) {
 try {
 step(g[n](v));
 } catch (e) {
 settle(q[0][3], e);
 }
 }
 function step(r) {
 r.value instanceof
__await ? Promise.resolve(r.value.v).then(fulfill, reject) : settle(q[0][2], r);
 }
 function fulfill(value) {
 resume("next", value);
 }
 function reject(value) {
 resume("throw", value);
 }
 function settle(f, v) {
 if (f(v), q.shift(), q.length) resume(q[0][0], q[0][1]);
 }
}
export function __asyncDelegator(o) {
 var i,
p;
 return i = {
 verb("next"), verb("throw"),
function (e) {
throw e;
},
verb("return"),
i[Symbol.iterator] =
function () {
return this;
},
i;
 function verb(n, f) {
 i[n] = o[n] ? function (v) {
return (p = !p) ? {
value:
__await(o[n](v)), done: n === "return" } : f ? f(v) : v;
} : f;
 }
}
export function __asyncValues(o) {
 if (!Symbol.asyncIterator) throw new TypeError("Symbol.asyncIterator is not defined.");
 var m =
o[Symbol.asyncIterator], i;
 return m ? m.call(o) : (o = typeof __values === "function" ? __values(o) :
o[Symbol.iterator], i = {
 verb("next"), verb("throw"),
verb("return"),
i[Symbol.asyncIterator] =
function () {
return this;
},
i;
 function verb(n) {
 i[n] = o[n] && function (v) {
return new Promise(function (resolve, reject) {
v = o[n](v), settle(resolve, reject, v.done, v.value);
});
});
 }
 function settle(resolve, reject, d, v) {
 Promise.resolve(v).then(function(v) {
resolve({ value: v, done: d });
}, reject);
 }
}
export function __makeTemplateObject(cooked, raw) {
 if (Object.defineProperty) {
 Object.defineProperty(cooked, "raw", {
value: raw
});
 } else {
 cooked.raw = raw;
 }
 return cooked;
}
var __setModuleDefault = Object.create
? (function(o, v) {
 Object.defineProperty(o, "default", { enumerable: true, value: v });
}) : function(o, v)

```





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undefined);\n\nlet componentResourceResolutionQueue = new Map<Type<any>, Component>();\n\n// Track
when existing cmp for a Type is waiting on resources.\nconst componentDefPendingResolution = new
Set<Type<any>>();\n\nexport function maybeQueueResolutionOfComponentResources(type: Type<any>,
metadata: Component) {\n if (componentNeedsResolution(metadata)) {\n
componentResourceResolutionQueue.set(type, metadata);\n componentDefPendingResolution.add(type);\n
}\n}\n\nexport function isComponentDefPendingResolution(type: Type<any>): boolean {\n return
componentDefPendingResolution.has(type);\n}\n\nexport function componentNeedsResolution(component:
Component): boolean {\n return !!(\n (component.templateUrl && !component.hasOwnProperty('template')) ||\n
component.styleUrls && component.styleUrls.length);\n}\n\nexport function
clearResolutionOfComponentResourcesQueue(): Map<Type<any>, Component> {\n const old =
componentResourceResolutionQueue;\n componentResourceResolutionQueue = new Map();\n return
old;\n}\n\nexport function restoreComponentResolutionQueue(queue: Map<Type<any>, Component>): void {\n
componentDefPendingResolution.clear();\n queue.forEach((_, type) =>
componentDefPendingResolution.add(type));\n componentResourceResolutionQueue = queue;\n}\n\nexport
function isComponentResourceResolutionQueueEmpty() {\n return componentResourceResolutionQueue.size ===
0;\n}\n\nfunction unwrapResponse(response: string|Promise<string>): string|Promise<string> {\n return
typeof response === 'string' ? response : response.text();\n}\n\nfunction componentDefResolved(type: Type<any>):
void {\n componentDefPendingResolution.delete(type);\n}\n\n"/**\n * @license\n * Copyright Google LLC All
Rights Reserved.\n * Use of this source code is governed by an MIT-style license that can be\n * found in the
LICENSE file at https://angular.io/license\n */\nimport {stringify as stringify} from '@angular/core';\nimport
{MetadataOverride} from './metadata_override';\n\ntype StringMap = {\n [key: string]: any\n};\n\nlet
_nextReferenceId = 0;\n\nexport class MetadataOverride {\n private _references = new Map<any, string>();\n
/**\n * Creates a new instance for the given metadata class\n * based on an old instance and overrides.\n */\n
overrideMetadata<C extends T, T>(metadataClass: {new(options: T): C}, oldMetadata: C, override:
MetadataOverride<T>): C {\n const props: StringMap = {};\n if (oldMetadata) {\n
_valueProps(oldMetadata).forEach((prop) => props[prop] = (<any>oldMetadata)[prop]);\n }\n\n if (override.set)
{\n if (override.remove || override.add) {\n throw new Error(`Cannot set and add/remove
${stringify(metadataClass)} at the same time!`);\n }\n setMetadata(props, override.set);\n }\n if
(override.remove) {\n removeMetadata(props, override.remove, this._references);\n }\n if (override.add) {\n
addMetadata(props, override.add);\n }\n return new metadataClass(<any>props);\n}\n}\n\nfunction
removeMetadata(metadata: StringMap, remove: any, references: Map<any, string>) {\n const removeObjects = new
Set<string>();\n for (const prop in remove) {\n const removeValue = remove[prop];\n if
(Array.isArray(removeValue)) {\n removeValue.forEach((value: any) => {\n
removeObjects.add(_propHashKey(prop, value, references));\n });\n } else {\n
removeObjects.add(_propHashKey(prop, removeValue, references));\n }\n }\n\n for (const prop in metadata) {\n
const propValue = metadata[prop];\n if (Array.isArray(propValue)) {\n metadata[prop] = propValue.filter(\n
(value: any) => !removeObjects.has(_propHashKey(prop, value, references));\n) else {\n if
(removeObjects.has(_propHashKey(prop, propValue, references))) {\n metadata[prop] = undefined;\n }\n
}\n}\n}\n\nfunction addMetadata(metadata: StringMap, add: any) {\n for (const prop in add) {\n const addValue
= add[prop];\n const propValue = metadata[prop];\n if (propValue !== null && Array.isArray(propValue)) {\n
metadata[prop] = propValue.concat(addValue);\n } else {\n metadata[prop] = addValue;\n }\n
}\n}\n\nfunction setMetadata(metadata: StringMap, set: any) {\n for (const prop in set) {\n metadata[prop] =
set[prop];\n }\n}\n\nfunction _propHashKey(propName: any, propValue: any, references: Map<any, string>): string
{\n const replacer = (key: any, value: any) => {\n if (typeof value === 'function') {\n value =
_serializeReference(value, references);\n }\n return value;\n };\n\n return
`${propName}:${JSON.stringify(propValue, replacer)}`;\n}\n\nfunction _serializeReference(ref: any, references:
Map<any, string>): string {\n let id = references.get(ref);\n if (!id) {\n id =
`${stringify(ref)}${_nextReferenceId++}`;\n references.set(ref, id);\n }\n return id;\n}\n}\n\nfunction

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valueProps(obj: any): string[] {\n const props: string[] = [];\n // regular public props\n Object.keys(obj).forEach((prop) => {\n if (!prop.startsWith('')) {\n props.push(prop);\n }\n });\n // getters\n let proto = obj;\n while (proto = Object.getPrototypeOf(proto)) {\n Object.keys(proto).forEach((protoProp) => {\n const desc = Object.getOwnPropertyDescriptor(proto, protoProp);\n if (!protoProp.startsWith('_') && desc && 'get' in desc) {\n props.push(protoProp);\n }\n });\n }\n return props;\n}\n\n"/**\n * @license\n * Copyright Google LLC All Rights Reserved.\n * Use of this source code is governed by an MIT-style license that can be\n * found in the LICENSE file at\n * https://angular.io/license\n */\n\nimport {Component, Directive, NgModule, Pipe, Type, ReflectionCapabilities as ReflectionCapabilities} from '@angular/core';\nimport {MetadataOverride} from './metadata_override';\nimport {MetadataOverride} from './metadata_overrides';\n\nconst reflection = new ReflectionCapabilities();\n\n/**\n * Base interface to resolve `@Component`, `@Directive`, `@Pipe` and `@NgModule`\n */\nexport interface Resolver<T> {\n addOverride(type: Type<any>, override: MetadataOverride<T>): void;\n setOverrides(overrides: Array<[Type<any>, MetadataOverride<T>]>): void;\n resolve(type: Type<any>): T|null;\n}\n\n/**\n * Allows to override ivy metadata for tests (via the `TestBed`).\n */\nabstract class OverrideResolver<T> implements Resolver<T> {\n private overrides = new Map<Type<any>, MetadataOverride<T>[]>();\n private resolved = new Map<Type<any>, T|null>();\n\n abstract get type(): any;\n\n addOverride(type: Type<any>, override: MetadataOverride<T>) {\n const overrides = this.overrides.get(type) || [];\n overrides.push(override);\n this.overrides.set(type, overrides);\n this.resolved.delete(type);\n }\n\n setOverrides(overrides: Array<[Type<any>, MetadataOverride<T>]>) {\n this.overrides.clear();\n overrides.forEach(([type, override]) => {\n this.addOverride(type, override);\n });\n }\n\n getAnnotation(type: Type<any>): T|null {\n const annotations = reflection.annotations(type);\n // Try to find the nearest known Type annotation and make sure that this annotation is an\n // instance of the type we are looking for, so we can use it for resolution. Note: there might\n // be multiple known annotations found due to the fact that Components can extend Directives (so\n // both Directive and Component annotations would be present), so we always check if the known\n // annotation has the right type.\n for (let i = annotations.length - 1; i >= 0; i--) {\n const annotation = annotations[i];\n const isKnownType = annotation instanceof Directive || annotation instanceof Component ||\n annotation instanceof Pipe || annotation instanceof NgModule;\n if (isKnownType) {\n return annotation instanceof this.type ? annotation : null;\n }\n }\n return null;\n }\n\n resolve(type: Type<any>): T|null {\n let resolved = this.resolved.get(type) || null;\n if (!resolved) {\n resolved = this.getAnnotation(type);\n if (resolved) {\n const overrides = this.overrides.get(type);\n if (overrides) {\n const overrider = new MetadataOverride();\n overrides.forEach(override => {\n resolved = overrider.overrideMetadata(this.type, resolved!, override);\n });\n }\n this.resolved.set(type, resolved);\n }\n }\n return resolved;\n }\n}\n\nexport class DirectiveResolver extends OverrideResolver<Directive> {\n get type() {\n return Directive;\n }\n}\n\nexport class ComponentResolver extends OverrideResolver<Component> {\n get type() {\n return Component;\n }\n}\n\nexport class PipeResolver extends OverrideResolver<Pipe> {\n get type() {\n return Pipe;\n }\n}\n\nexport class NgModuleResolver extends OverrideResolver<NgModule> {\n get type() {\n return NgModule;\n }\n}\n\n"/**\n * @license\n * Copyright Google LLC All Rights Reserved.\n * Use of this source code is governed by an MIT-style license that can be\n * found in the LICENSE file at https://angular.io/license\n */\n\nimport {ResourceLoader} from '@angular/compiler';\nimport {ApplicationInitStatus, Compiler, COMPILER_OPTIONS, Component, Directive, Injector, InjectorType, LOCALE_ID, ModuleWithComponentFactories, ModuleWithProviders, NgModule, NgModuleFactory, NgZone, Pipe, PlatformRef, Provider, Type, compileComponent as compileComponent, compileDirective as compileDirective, compileNgModuleDefs as compileNgModuleDefs, compilePipe as compilePipe, DEFAULT_LOCALE_ID as DEFAULT_LOCALE_ID, DirectiveDef as DirectiveDef, getInjectableDef as getInjectableDef, NG_COMP_DEF as NG_COMP_DEF, NG_DIR_DEF as NG_DIR_DEF, NG_INJ_DEF as NG_INJ_DEF, NG_MOD_DEF as NG_MOD_DEF, NG_PIPE_DEF as NG_PIPE_DEF, NgModuleFactory as R3NgModuleFactory, NgModuleTransitiveScopes as NgModuleTransitiveScopes, NgModuleType as NgModuleType, patchComponentDefWithScope as

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patchComponentDefWithScope, Render3ComponentFactory as ComponentFactory, Render3NgModuleRef as
NgModuleRef, setLocaleId as setLocaleId, transitiveScopesFor as transitiveScopesFor, InjectableDef as
InjectableDef} from '@angular/core';\n\nimport {clearResolutionOfComponentResourcesQueue,
isComponentDefPendingResolution, resolveComponentResources, restoreComponentResolutionQueue} from
'././src/metadata/resource_loading';\n\nimport {MetadataOverride} from './metadata_override';\n\nimport
{ComponentResolver, DirectiveResolver, NgModuleResolver, PipeResolver, Resolver} from './resolvers';\n\nimport
{TestModuleMetadata} from './test_bed_common';\n\nenum TestingModuleOverride {\n DECLARATION,\n OVERRIDE_TEMPLATE,\n}\n\nfunction isTestingModuleOverride(value: unknown): value is
TestingModuleOverride {\n return value === TestingModuleOverride.DECLARATION ||\n value ===
TestingModuleOverride.OVERRIDE_TEMPLATE;\n}\n\n// Resolvers for Angular decorators\ntype Resolvers =
{\n module: Resolver<NgModule>,\n component: Resolver<Directive>,\n directive: Resolver<Component>,\n pipe: Resolver<Pipe>,\n};\n\ninterface CleanupOperation {\n fieldName: string;\n object: any;\n originalValue:
unknown;\n}\n\nexport class R3TestBedCompiler {\n private originalComponentResolutionQueue:
Map<Type<any>, Component>|null = null;\n\n // Testing module configuration\n private declarations:
Type<any>[] = [];\n private imports: Type<any>[] = [];\n private providers: Provider[] = [];\n private schemas:
any[] = [];\n\n // Queues of components/directives/pipes that should be recompiled.\n private pendingComponents
= new Set<Type<any>>();\n private pendingDirectives = new Set<Type<any>>();\n private pendingPipes = new
Set<Type<any>>();\n\n // Keep track of all components and directives, so we can patch Providers onto defs later.\n
private seenComponents = new Set<Type<any>>();\n private seenDirectives = new Set<Type<any>>();\n\n //
Keep track of overridden modules, so that we can collect all affected ones in the module tree.\n private
overriddenModules = new Set<NgModuleType<any>>();\n\n // Store resolved styles for Components that have
template overrides present and `styleUrls`\n // defined at the same time.\n private existingComponentStyles = new
Map<Type<any>, string[]>();\n\n private resolvers: Resolvers = initResolvers();\n\n private
componentToModuleScope = new Map<Type<any>, Type<any>|TestingModuleOverride>();\n\n // Map that keeps
initial version of component/directive/pipe defs in case\n // we compile a Type again, thus overriding respective
static fields. This is\n // required to make sure we restore defs to their initial states between test runs\n // TODO: we
should support the case with multiple defs on a type\n private initialNgDefs = new Map<Type<any>, [string,
PropertyDescriptor|undefined]>();\n\n // Array that keeps cleanup operations for initial versions of
component/directive/pipe/module\n // defs in case TestBed makes changes to the originals.\n private
defCleanupOps: CleanupOperation[] = [];\n\n private _injector: Injector|null = null;\n private compilerProviders:
Provider[]|null = null;\n\n private providerOverrides: Provider[] = [];\n private rootProviderOverrides: Provider[] =
[];\n\n // Overrides for injectables with `{providedIn: SomeModule}` need to be tracked and added to that\n //
module's provider list.\n private providerOverridesByModule = new Map<InjectorType<any>, Provider[]>();\n
private providerOverridesByToken = new Map<any, Provider>();\n private moduleProvidersOverridden = new
Set<Type<any>>();\n\n private testModuleType: NgModuleType<any>;\n private testModuleRef:
NgModuleRef<any>|null = null;\n\n constructor(private platform: PlatformRef, private additionalModuleTypes:
Type<any>|Type<any>[]) {\n class DynamicTestModule {\n this.testModuleType = DynamicTestModule as
any;\n }\n\n setCompilerProviders(providers: Provider[]|null): void {\n this.compilerProviders = providers;\n
 this._injector = null;\n }\n\n configureTestingModule(moduleDef: TestModuleMetadata): void {\n // Enqueue
any compilation tasks for the directly declared component.\n if (moduleDef.declarations !== undefined) {\n
 this.queueTypeArray(moduleDef.declarations, TestingModuleOverride.DECLARATION);\n
 this.declarations.push(...moduleDef.declarations);\n }\n\n // Enqueue any compilation tasks for imported
modules.\n if (moduleDef.imports !== undefined) {\n
 this.queueTypesFromModulesArray(moduleDef.imports);\n this.imports.push(...moduleDef.imports);\n }\n\n
 if (moduleDef.providers !== undefined) {\n this.providers.push(...moduleDef.providers);\n }\n\n if
(moduleDef.schemas !== undefined) {\n this.schemas.push(...moduleDef.schemas);\n }\n }\n\n
overrideModule(ngModule: Type<any>, override: MetadataOverride<NgModule>): void {\n
 this.overriddenModules.add(ngModule as NgModuleType<any>);\n\n // Compile the module right away.\n

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this.resolvers.module.addOverride(ngModule, override);\n const metadata =
this.resolvers.module.resolve(ngModule);\n if (metadata === null) {\n throw
invalidTypeError(ngModule.name, 'NgModule');\n }\n this.recompileNgModule(ngModule, metadata);\n //
At this point, the module has a valid module def (mod), but the override may have introduced\n // new declarations
or imported modules. Ingest any possible new types and add them to the\n // current queue.\n
this.queueTypesFromModulesArray([ngModule]);\n overrideComponent(component: Type<any>, override:
MetadataOverride<Component>): void {\n this.resolvers.component.addOverride(component, override);\n
this.pendingComponents.add(component);\n }\n overrideDirective(directive: Type<any>, override:
MetadataOverride<Directive>): void {\n this.resolvers.directive.addOverride(directive, override);\n
this.pendingDirectives.add(directive);\n }\n overridePipe(pipe: Type<any>, override: MetadataOverride<Pipe>):
void {\n this.resolvers.pipe.addOverride(pipe, override);\n this.pendingPipes.add(pipe);\n }\n
 overrideProvider(\n token: any,\n provider: {useFactory?: Function, useValue?: any, deps?: any[], multi?:
boolean}): void {\n let providerDef: Provider;\n if (provider.useFactory !== undefined) {\n providerDef = {\n
 provide: token,\n useFactory: provider.useFactory,\n deps: provider.deps || [],\n multi:
provider.multi\n };\n } else if (provider.useValue !== undefined) {\n providerDef = {provide: token,
useValue: provider.useValue, multi: provider.multi};\n } else {\n providerDef = {provide: token};\n }\n
 const injectableDef: InjectableDef<any>|null =\n typeof token !== 'string' ? getInjectableDef(token) : null;\n
 const isRoot = injectableDef !== null && injectableDef.providedIn === 'root';\n const overridesBucket = isRoot ?
this.rootProviderOverrides : this.providerOverrides;\n overridesBucket.push(providerDef);\n // Keep overrides
grouped by token as well for fast lookups using token\n this.providerOverridesByToken.set(token, providerDef);\n
 if (injectableDef !== null && injectableDef.providedIn !== null &&\n typeof injectableDef.providedIn !==
'string') {\n const existingOverrides = this.providerOverridesByModule.get(injectableDef.providedIn);\n if
(existingOverrides !== undefined) {\n existingOverrides.push(providerDef);\n } else {\n
this.providerOverridesByModule.set(injectableDef.providedIn, [providerDef]);\n }\n }\n }\n
 overrideTemplateUsingTestingModule(type: Type<any>, template: string): void {\n const def = (type as
any)[NG_COMP_DEF];\n const hasStyleUrls = (): boolean => {\n const metadata =
this.resolvers.component.resolve(type)! as Component;\n return !!metadata.styleUrls &&
metadata.styleUrls.length > 0;\n };\n const overrideStyleUrls = !!def &&
!isComponentDefPendingResolution(type) && hasStyleUrls();\n // In Ivy, compiling a component does not
require knowing the module providing the\n // component's scope, so overrideTemplateUsingTestingModule can
be implemented purely via\n // overrideComponent. Important: overriding template requires full Component re-
compilation,\n // which may fail in case styleUrls are also present (thus Component is considered as required\n //
resolution). In order to avoid this, we preemptively set styleUrls to an empty array,\n // preserve current styles
available on Component def and restore styles back once compilation\n // is complete.\n const override =
overrideStyleUrls ? {template, styles: [], styleUrls: []} : {template};\n this.overrideComponent(type, {set:
override});\n if (overrideStyleUrls && def.styles && def.styles.length > 0) {\n
this.existingComponentStyles.set(type, def.styles);\n }\n // Set the component's scope to be the testing
module.\n this.componentToModuleScope.set(type,TestingModuleOverride.OVERRIDE_TEMPLATE);\n }\n
 async compileComponents(): Promise<void> {\n this.clearComponentResolutionQueue();\n // Run compilers for
all queued types.\n let needsAsyncResources = this.compileTypesSync();\n // compileComponents() should
not be async unless it needs to be.\n if (needsAsyncResources) {\n let resourceLoader: ResourceLoader;\n
let resolver = (url: string): Promise<string> => {\n if (!resourceLoader) {\n resourceLoader =
this.injector.get(ResourceLoader);\n }\n return Promise.resolve(resourceLoader.get(url));\n };\n await
resolveComponentResources(resolver);\n }\n }\n finalize(): NgModuleRef<any> {\n // One last compile\n
this.compileTypesSync();\n // Create the testing module itself.\n this.compileTestModule();\n this.applyTransitiveScopes();\n this.applyProviderOverrides();\n // Patch previously stored `styles`
Component values (taken from cmp), in case these\n // Components have `styleUrls` fields defined and template
override was requested.\n this.patchComponentsWithExistingStyles();\n // Clear the

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componentToModuleScope map, so that future compilations don't reset the scope of\n // every component.\n
this.componentToModuleScope.clear();\n\n const parentInjector = this.platform.injector;\n this.testModuleRef =
new NgModuleRef(this.testModuleType, parentInjector);\n\n // ApplicationInitStatus.runInitializers() is marked
@internal to core.\n // Cast it to any before accessing it.\n
(this.testModuleRef.injector.get(ApplicationInitStatus) as any).runInitializers();\n\n // Set locale ID after running
app initializers, since locale information might be updated while\n // running initializers. This is also consistent
with the execution order while bootstrapping an\n // app (see `packages/core/src/application_ref.ts` file).\n const
localeId = this.testModuleRef.injector.get(LOCALE_ID, DEFAULT_LOCALE_ID);\n setLocaleId(localeId);\n\n
return this.testModuleRef;\n }\n\n /**\n * @internal\n */\n _compileNgModuleSync(moduleType:
Type<any>): void {\n this.queueTypesFromModulesArray([moduleType]);\n this.compileTypesSync();\n
this.applyProviderOverrides();\n this.applyProviderOverridesToModule(moduleType);\n
this.applyTransitiveScopes();\n }\n\n /**\n * @internal\n */\n async _compileNgModuleAsync(moduleType:
Type<any>): Promise<void> {\n this.queueTypesFromModulesArray([moduleType]);\n await
this.compileComponents();\n this.applyProviderOverrides();\n
this.applyProviderOverridesToModule(moduleType);\n this.applyTransitiveScopes();\n }\n\n /**\n *
@internal\n */\n _getModuleResolver(): Resolver<NgModule> {\n return this.resolvers.module;\n }\n\n /**\n
* @internal\n */\n _getComponentFactories(moduleType: NgModuleType): ComponentFactory<any>[] {\n
return maybeUnwrapFn(moduleType.mod.declarations).reduce((factories, declaration) => {\n const
componentDef = (declaration as any).cmp;\n componentDef && factories.push(new
ComponentFactory(componentDef, this.testModuleRef!));\n return factories;\n }, [] as
ComponentFactory<any>[]);\n }\n\n private compileTypesSync(): boolean {\n // Compile all queued
components, directives, pipes.\n let needsAsyncResources = false;\n
this.pendingComponents.forEach(declaration => {\n needsAsyncResources = needsAsyncResources ||
isComponentDefPendingResolution(declaration);\n const metadata =
this.resolvers.component.resolve(declaration);\n if (metadata === null) {\n throw
invalidTypeError(declaration.name, 'Component');\n }\n this.maybeStoreNgDef(NG_COMP_DEF,
declaration);\n compileComponent(declaration, metadata);\n });\n this.pendingComponents.clear();\n\n
this.pendingDirectives.forEach(declaration => {\n const metadata =
this.resolvers.directive.resolve(declaration);\n if (metadata === null) {\n throw
invalidTypeError(declaration.name, 'Directive');\n }\n this.maybeStoreNgDef(NG_DIR_DEF, declaration);\n
compileDirective(declaration, metadata);\n });\n this.pendingDirectives.clear();\n\n
this.pendingPipes.forEach(declaration => {\n const metadata = this.resolvers.pipe.resolve(declaration);\n if
(metadata === null) {\n throw invalidTypeError(declaration.name, 'Pipe');\n }\n
this.maybeStoreNgDef(NG_PIPE_DEF, declaration);\n compilePipe(declaration, metadata);\n });\n\n
this.pendingPipes.clear();\n\n return needsAsyncResources;\n }\n\n private applyTransitiveScopes(): void {\n if
(this.overriddenModules.size > 0) {\n // Module overrides (via `TestBed.overrideModule`) might affect scopes
that were previously\n // calculated and stored in `transitiveCompileScopes`. If module overrides are present,\n
// collect all affected modules and reset scopes to force their re-calculation.\n const testingModuleDef =
(this.testModuleType as any)[NG_MOD_DEF];\n const affectedModules =
this.collectModulesAffectedByOverrides(testingModuleDef.imports);\n if (affectedModules.size > 0) {\n
affectedModules.forEach(moduleType => {\n this.storeFieldOfDefOnType(moduleType as any,
NG_MOD_DEF, 'transitiveCompileScopes');\n (moduleType as
any)[NG_MOD_DEF].transitiveCompileScopes = null;\n });\n }\n }\n\n const moduleToScope = new
Map<Type<any>|TestingModuleOverride, NgModuleTransitiveScopes>();\n const getScopeOfModule =\n (moduleType: Type<any>|TestingModuleOverride): NgModuleTransitiveScopes => {\n if
(!moduleToScope.has(moduleType)) {\n const isTestingModule = isTestingModuleOverride(moduleType);\n
const realType = isTestingModule ? this.testModuleType : moduleType as Type<any>;\n
moduleToScope.set(moduleType, transitiveScopesFor(realType));\n }\n return

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moduleToScope.get(moduleType)!;\n };\n\n this.componentToModuleScope.forEach((moduleType,
componentType) => {\n const moduleScope = getScopeOfModule(moduleType);\n this.storeFieldOfDefOnType(componentType, NG_COMP_DEF, 'directiveDefs');\n this.storeFieldOfDefOnType(componentType, NG_COMP_DEF, 'pipeDefs');\n // `tView` that is stored on
component def contains information about directives and pipes\n // that are in the scope of this component.
Patching component scope will cause `tView` to be\n // changed. Store original `tView` before patching scope, so
the `tView` (including scope\n // information) is restored back to its previous/original state before running next
test.\n this.storeFieldOfDefOnType(componentType, NG_COMP_DEF, 'tView');\n patchComponentDefWithScope((componentType as any).cmp, moduleScope);\n });\n\n this.componentToModuleScope.clear();\n }\n\n private applyProviderOverrides(): void {\n const
maybeApplyOverrides = (field: string) => (type: Type<any>) => {\n const resolver = field ===
NG_COMP_DEF ? this.resolvers.component : this.resolvers.directive;\n const metadata =
resolver.resolve(type)!;\n if (this.hasProviderOverrides(metadata.providers)) {\n
this.patchDefWithProviderOverrides(type, field);\n }\n };\n\n this.seenComponents.forEach(maybeApplyOverrides(NG_COMP_DEF));\n
this.seenDirectives.forEach(maybeApplyOverrides(NG_DIR_DEF));\n\n this.seenComponents.clear();\n
this.seenDirectives.clear();\n }\n\n private applyProviderOverridesToModule(moduleType: Type<any>): void {\n
if (this.moduleProvidersOverridden.has(moduleType)) {\n return;\n }\n\n this.moduleProvidersOverridden.add(moduleType);\n\n const injectorDef: any = (moduleType as
any)[NG_INJ_DEF];\n if (this.providerOverridesByToken.size > 0) {\n const providers = [\n
...injectorDef.providers,\n ...(this.providerOverridesByModule.get(moduleType as InjectorType<any>) || [])\n
];\n if (this.hasProviderOverrides(providers)) {\n this.maybeStoreNgDef(NG_INJ_DEF, moduleType);\n\n
this.storeFieldOfDefOnType(moduleType, NG_INJ_DEF, 'providers');\n injectorDef.providers =
this.getOverriddenProviders(providers);\n }\n\n // Apply provider overrides to imported modules recursively\n
const moduleDef = (moduleType as any)[NG_MOD_DEF];\n const imports =
maybeUnwrapFn(moduleDef.imports);\n for (const importedModule of imports) {\n
this.applyProviderOverridesToModule(importedModule);\n }\n // Also override the providers on any
ModuleWithProviders imports since those don't appear in\n // the moduleDef.\n for (const importedModule of
flatten(injectorDef.imports)) {\n if (isModuleWithProviders(importedModule)) {\n
this.defCleanupOps.push({\n object: importedModule,\n fieldName: 'providers',\n
originalValue: importedModule.providers\n });\n importedModule.providers =
this.getOverriddenProviders(importedModule.providers);\n }\n }\n\n private
patchComponentsWithExistingStyles(): void {\n this.existingComponentStyles.forEach(\n (styles, type) =>
(type as any)[NG_COMP_DEF].styles = styles);\n this.existingComponentStyles.clear();\n }\n\n private
queueTypeArray(arr: any[], moduleType: Type<any>|TestingModuleOverride): void {\n for (const value of arr)
{\n if (Array.isArray(value)) {\n this.queueTypeArray(value, moduleType);\n } else {\n
this.queueType(value, moduleType);\n }\n }\n\n private recompileNgModule(ngModule: Type<any>,
metadata: NgModule): void {\n // Cache the initial ngModuleDef as it will be overwritten.\n
this.maybeStoreNgDef(NG_MOD_DEF, ngModule);\n this.maybeStoreNgDef(NG_INJ_DEF, ngModule);\n\n
compileNgModuleDefs(ngModule as NgModuleType<any>, metadata);\n }\n\n private queueType(type:
Type<any>, moduleType: Type<any>|TestingModuleOverride): void {\n const component =
this.resolvers.component.resolve(type);\n if (component) {\n // Check whether a give Type has respective NG
def (cmp) and compile if def is\n // missing. That might happen in case a class without any Angular decorators
extends another\n // class where Component/Directive/Pipe decorator is defined.\n if
(isComponentDefPendingResolution(type) || !type.hasOwnProperty(NG_COMP_DEF)) {\n
this.pendingComponents.add(type);\n }\n this.seenComponents.add(type);\n\n // Keep track of the module
which declares this component, so later the component's scope\n // can be set correctly. If the component has
already been recorded here, then one of several\n // cases is true:\n // * the module containing the component

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was imported multiple times (common).\n // * the component is declared in multiple modules (which is an
error).\n // * the component was in 'declarations' of the testing module, and also in an imported module\n // in
which case the module scope will be TestingModuleOverride.DECLARATION.\n // *
overrideTemplateUsingTestingModule was called for the component in which case the module\n // scope will
be TestingModuleOverride.OVERRIDE_TEMPLATE.\n //\n // If the component was previously in the testing
module's 'declarations' (meaning the\n // current value is TestingModuleOverride.DECLARATION), then
`moduleType` is the component's\n // real module, which was imported. This pattern is understood to mean that
the component\n // should use its original scope, but that the testing module should also contain the\n //
component in its scope.\n if (!this.componentToModuleScope.has(type) ||\n
this.componentToModuleScope.get(type) === TestingModuleOverride.DECLARATION) {\n
this.componentToModuleScope.set(type, moduleType);\n }\n return;\n }\n\n const directive =
this.resolvers.directive.resolve(type);\n if (directive) {\n if (!type.hasOwnProperty(NG_DIR_DEF)) {\n
this.pendingDirectives.add(type);\n }\n this.seenDirectives.add(type);\n return;\n }\n\n const pipe =
this.resolvers.pipe.resolve(type);\n if (pipe && !type.hasOwnProperty(NG_PIPE_DEF)) {\n
this.pendingPipes.add(type);\n return;\n }\n }\n\n private queueTypesFromModulesArray(arr: any[]): void {\n
// Because we may encounter the same NgModule while processing the imports and exports of an\n // NgModule
tree, we cache them in this set so we can skip ones that have already been seen\n // encountered. In some test
setups, this caching resulted in 10X runtime improvement.\n const processedNgModuleDefs = new Set();\n
const queueTypesFromModulesArrayRecur = (arr: any[]): void => {\n for (const value of arr) {\n if
(Array.isArray(value)) {\n queueTypesFromModulesArrayRecur(value);\n } else if
(hasNgModuleDef(value)) {\n const def = value.mod;\n if (processedNgModuleDefs.has(def)) {\n
continue;\n }\n processedNgModuleDefs.add(def);\n // Look through declarations, imports, and
exports, and queue\n // everything found there.\n this.queueTypeArray(maybeUnwrapFn(def.declarations), value);\n
queueTypesFromModulesArrayRecur(maybeUnwrapFn(def.imports));\n
queueTypesFromModulesArrayRecur(maybeUnwrapFn(def.exports));\n }\n }\n }\n\n queueTypesFromModulesArrayRecur(arr);\n }\n\n // When module overrides (via `TestBed.overrideModule`) are
present, it might affect all modules\n // that import (even transitively) an overridden one. For all affected modules
we need to\n // recalculate their scopes for a given test run and restore original scopes at the end. The goal\n // of
this function is to collect all affected modules in a set for further processing. Example:\n // if we have the following
module hierarchy: A -> B -> C (where `->` means `imports`) and module\n // `C` is overridden, we consider `A`
and `B` as affected, since their scopes might become\n // invalidated with the override.\n private
collectModulesAffectedByOverrides(arr: any[]): Set<NgModuleType<any>> {\n const seenModules = new
Set<NgModuleType<any>>();\n const affectedModules = new Set<NgModuleType<any>>();\n const
calcAffectedModulesRecur = (arr: any[], path: NgModuleType<any>[]): void => {\n for (const value of arr) {\n
if (Array.isArray(value)) {\n // If the value is an array, just flatten it (by invoking this function
recursively),\n // keeping `"path"` the same.\n calcAffectedModulesRecur(value, path);\n } else if
(hasNgModuleDef(value)) {\n if (seenModules.has(value)) {\n // If we've seen this module before and
it's included into `"affected modules"` list, mark\n // the whole path that leads to that module as affected, but
do not descend into its\n // imports, since we already examined them before.\n if
(affectedModules.has(value)) {\n path.forEach(item => affectedModules.add(item));\n }\n continue;\n }\n seenModules.add(value);\n if (this.overriddenModules.has(value)) {\n
path.forEach(item => affectedModules.add(item));\n }\n // Examine module imports recursively to look
for overridden modules.\n const moduleDef = (value as any)[NG_MOD_DEF];\n
calcAffectedModulesRecur(maybeUnwrapFn(moduleDef.imports), path.concat(value));\n }\n }\n }\n\n
calcAffectedModulesRecur(arr, []);\n return affectedModules;\n }\n\n private maybeStoreNgDef(prop: string,
type: Type<any>) {\n if (!this.initialNgDefs.has(type)) {\n const currentDef =
Object.getOwnPropertyDescriptor(type, prop);\n this.initialNgDefs.set(type, [prop, currentDef]);\n }\n }\n

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private storeFieldOfDefOnType(type: Type<any>, defField: string, fieldName: string): void {\n const def: any =
(type as any)[defField];\n const originalValue: any = def[fieldName];\n this.defCleanupOps.push({object: def,
fieldName, originalValue});\n }\n\n /**\n * Clears current components resolution queue, but stores the state of the
queue, so we can\n * restore it later. Clearing the queue is required before we try to compile components (via\n *
`TestBed.compileComponents`), so that component defs are in sync with the resolution queue.\n */\n private
clearComponentResolutionQueue() {\n if (this.originalComponentResolutionQueue === null) {\n
this.originalComponentResolutionQueue = new Map();\n }\n
clearResolutionOfComponentResourcesQueue().forEach(\n (value, key) =>
this.originalComponentResolutionQueue!.set(key, value));\n }\n\n /**\n * Restores component resolution queue to
the previously saved state. This operation is performed\n * as a part of restoring the state after completion of the
current set of tests (that might\n * potentially mutate the state).\n */\n private
restoreComponentResolutionQueue() {\n if (this.originalComponentResolutionQueue !== null) {\n
restoreComponentResolutionQueue(this.originalComponentResolutionQueue);\n
this.originalComponentResolutionQueue = null;\n }\n }\n\n restoreOriginalState(): void {\n // Process cleanup
ops in reverse order so the field's original value is restored correctly (in\n // case there were multiple overrides for
the same field).\n forEachRight(this.defCleanupOps, (op: CleanupOperation) => {\n op.object[op.fieldName] =
op.originalValue;\n });\n // Restore initial component/directive/pipe defs\n this.initialNgDefs.forEach((value:
[string, PropertyDescriptor|undefined], type: Type<any>) => {\n const [prop, descriptor] = value;\n if
(!descriptor) {\n // Delete operations are generally undesirable since they have performance implications\n
// on objects they were applied to. In this particular case, situations where this code\n // is invoked should be
quite rare to cause any noticeable impact, since it's applied\n // only to some test cases (for example when class
with no annotations extends some\n // @Component) when we need to clear 'cmp' field on a given class to
restore\n // its original state (before applying overrides and running tests).\n delete (type as any)[prop];\n
 } else {\n Object.defineProperty(type, prop, descriptor);\n }\n });\n this.initialNgDefs.clear();\n
this.moduleProvidersOverridden.clear();\n this.restoreComponentResolutionQueue();\n // Restore the locale ID
to the default value, this shouldn't be necessary but we never know\n setLocaleId(DEFAULT_LOCALE_ID);\n
}\n\n private compileTestModule(): void {\n class RootScopeModule {}\n
compileNgModuleDefs(RootScopeModule as NgModuleType<any>, {\n providers:
[...this.rootProviderOverrides],\n });\n\n const ngZone = new NgZone({enableLongStackTrace: true});\n const
providers: Provider[] = [\n {provide: NgZone, useValue: ngZone},\n {provide: Compiler, useFactory: () =>
new R3TestCompiler(this)},\n ...this.providers,\n ...this.providerOverrides,\n];\n const imports =
[RootScopeModule, this.additionalModuleTypes, this.imports || []];\n\n // clang-format off\n
compileNgModuleDefs(this.testModuleType, {\n declarations: this.declarations,\n imports,\n schemas:
this.schemas,\n providers,\n }, /* allowDuplicateDeclarationsInRoot */ true);\n // clang-format on\n\n
this.applyProviderOverridesToModule(this.testModuleType);\n }\n\n get injector(): Injector {\n if (this._injector
!== null) {\n return this._injector;\n }\n\n const providers: Provider[] = [];\n const compilerOptions =
this.platform.injector.get(COMPILER_OPTIONS);\n compilerOptions.forEach(opts => {\n if (opts.providers)
{\n providers.push(opts.providers);\n }\n });\n if (this.compilerProviders !== null) {\n
providers.push(...this.compilerProviders);\n }\n\n // TODO(ocombe): make this work with an Injector directly
instead of creating a module for it\n class CompilerModule {}\n compileNgModuleDefs(CompilerModule as
NgModuleType<any>, {providers});\n\n const CompilerModuleFactory = new
R3NgModuleFactory(CompilerModule);\n this._injector =
CompilerModuleFactory.create(this.platform.injector).injector;\n return this._injector;\n }\n\n // get overrides for
a specific provider (if any)\n private getSingleProviderOverrides(provider: Provider): Provider|null {\n const
token = getProviderToken(provider);\n return this.providerOverridesByToken.get(token) || null;\n }\n\n private
getProviderOverrides(providers?: Provider[]): Provider[] {\n if (!providers || !providers.length ||
this.providerOverridesByToken.size === 0) return [];\n // There are two flattening operations here. The inner
flatten() operates on the metadata's\n // providers and applies a mapping function which retrieves overrides for

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each incoming\n // provider. The outer flatten() then flattens the produced overrides array. If this is not\n // done,
the array can contain other empty arrays (e.g. `[[], []]`) which leak into the\n // providers array and contaminate
any error messages that might be generated.\n return flatten(flatten(\n providers, (provider: Provider) =>
this.getSingleProviderOverrides(provider) || []));\n }\n\n private getOverriddenProviders(providers?: Provider[]):
Provider[] {\n if (!providers || !providers.length || this.providerOverridesByToken.size === 0) return [];\n const
flattenedProviders = flatten<Provider[]>(providers);\n const overrides =
this.getProviderOverrides(flattenedProviders);\n const overriddenProviders = [...flattenedProviders, ...overrides];\n
const final: Provider[] = [];\n const seenOverriddenProviders = new Set<Provider>();\n\n // We iterate through
the list of providers in reverse order to make sure provider overrides\n // take precedence over the values defined
in provider list. We also filter out all providers\n // that have overrides, keeping overridden values only. This is
needed, since presence of a\n // provider with `ngOnDestroy` hook will cause this hook to be registered and
invoked later.\n forEachRight(overriddenProviders, (provider: any) => {\n const token: any =
getProviderToken(provider);\n if (this.providerOverridesByToken.has(token)) {\n if
(!seenOverriddenProviders.has(token)) {\n seenOverriddenProviders.add(token);\n // Treat all overridden
providers as `{multi: false}` (even if it's a multi-provider) to\n // make sure that provided override takes
highest precedence and is not combined with\n // other instances of the same multi provider.\n
final.unshift({...provider, multi: false});\n }\n } else {\n final.unshift(provider);\n }\n });\n return
final;\n }\n\n private hasProviderOverrides(providers?: Provider[]): boolean {\n return
this.getProviderOverrides(providers).length > 0;\n }\n\n private patchDefWithProviderOverrides(declaration:
Type<any>, field: string): void {\n const def = (declaration as any)[field];\n if (def && def.providersResolver)
{\n this.maybeStoreNgDef(field, declaration);\n\n const resolver = def.providersResolver;\n const
processProvidersFn = (providers: Provider[]) => this.getOverriddenProviders(providers);\n
this.storeFieldOfDefOnType(declaration, field, 'providersResolver');\n def.providersResolver = (ngDef:
DirectiveDef<any>) => resolver(ngDef, processProvidersFn);\n }\n }\n\nfunction initResolvers(): Resolvers
{\n return {\n module: new NgModuleResolver(),\n component: new ComponentResolver(),\n directive: new
DirectiveResolver(),\n pipe: new PipeResolver()\n };\n }\n\nfunction hasNgModuleDef<T>(value: Type<T>):
value is NgModuleType<T> {\n return value.hasOwnProperty('mod');\n }\n\nfunction
maybeUnwrapFn<T>(maybeFn: (() => T)|T): T {\n return maybeFn instanceof Function ? maybeFn() :
maybeFn;\n }\n\nfunction flatten<T>(values: any[], mapFn?: (value: T) => any): T[] {\n const out: T[] = [];\n
values.forEach(value => {\n if (Array.isArray(value)) {\n out.push(...flatten<T>(value, mapFn));\n } else {\n
out.push(mapFn ? mapFn(value) : value);\n }\n });\n return out;\n }\n\nfunction getProviderField(provider:
Provider, field: string) {\n return provider && typeof provider === 'object' && (provider as
any)[field];\n }\n\nfunction getProviderToken(provider: Provider) {\n return getProviderField(provider, 'provide') ||
provider;\n }\n\nfunction isModuleWithProviders(value: any): value is ModuleWithProviders<any> {\n return
value.hasOwnProperty('ngModule');\n }\n\nfunction forEachRight<T>(values: T[], fn: (value: T, idx: number) =>
void): void {\n for (let idx = values.length - 1; idx >= 0; idx--) {\n fn(values[idx], idx);\n }\n }\n\nfunction
invalidTypeError(name: string, expectedType: string): Error {\n return new Error(`${name} class doesn't have
@${expectedType} decorator or is missing metadata.`);\n }\n\nclass R3TestCompiler implements Compiler {\n
constructor(private testBed: R3TestBedCompiler) {\n\n compileModuleSync<T>(moduleType: Type<T>):
NgModuleFactory<T> {\n this.testBed._compileNgModuleSync(moduleType);\n return new
R3NgModuleFactory(moduleType);\n }\n\n async compileModuleAsync<T>(moduleType: Type<T>):
Promise<NgModuleFactory<T>> {\n await this.testBed._compileNgModuleAsync(moduleType);\n return new
R3NgModuleFactory(moduleType);\n }\n\n compileModuleAndAllComponentsSync<T>(moduleType:
Type<T>): ModuleWithComponentFactories<T> {\n const ngModuleFactory =
this.compileModuleSync(moduleType);\n const componentFactories =
this.testBed._getComponentFactories(moduleType as NgModuleType<T>);\n return new
ModuleWithComponentFactories(ngModuleFactory, componentFactories);\n }\n\n async
compileModuleAndAllComponentsAsync<T>(moduleType: Type<T>):\n

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Promise<ModuleWithComponentFactories<T>> {\n const ngModuleFactory = await
this.compileModuleAsync(moduleType);\n const componentFactories =
this.testBed._getComponentFactories(moduleType as NgModuleType<T>);\n return new
ModuleWithComponentFactories(ngModuleFactory, componentFactories);\n }\n\n clearCache(): void {\n}\n\n clearCacheFor(type: Type<any>): void {\n}\n\n getModuleId(moduleType: Type<any>): string\nundefined {\n const meta = this.testBed._getModuleResolver().resolve(moduleType);\n return meta && meta.id || undefined;\n }\n}\n\n", "/*\n * @license\n * Copyright Google LLC All Rights Reserved.\n *\n * Use of this source code is governed by an MIT-style license that can be\n * found in the LICENSE file at https://angular.io/license\n *\n\nimport { AbstractType, Component, Directive, InjectFlags, InjectionToken, NgModule, Pipe, PlatformRef, SchemaMetadata, Type } from '@angular/core';\nimport { ComponentFixture } from './component_fixture';\nimport { MetadataOverride } from './metadata_override';\nimport { TestBed } from './test_bed';\n\n/**\n * An abstract class for inserting the root test component element in a platform independent way.\n *\n * @publicApi\n */\nexport class TestComponentRenderer {\n insertRootElement(rootElementId: string) {\n}\n}\n\n/**\n * @publicApi\n */\nexport const ComponentFixtureAutoDetect =\n new InjectionToken<boolean[]>('ComponentFixtureAutoDetect');\n\n/**\n * @publicApi\n */\nexport const ComponentFixtureNoNgZone = new InjectionToken<boolean[]>('ComponentFixtureNoNgZone');\n\n/**\n * @publicApi\n */\nexport type TestModuleMetadata = {\n providers?: any[],\n declarations?: any[],\n imports?: any[],\n schemas?: Array<SchemaMetadata|any[]>,\n aotSummaries?: () => any[],\n};\n\n/**\n * Static methods implemented by the `TestBedViewEngine` and `TestBedRender3`\n *\n * @publicApi\n */\nexport interface TestBedStatic {\n new(...args: any[]): TestBed;\n initTestEnvironment(\n ngModule: Type<any>|Type<any>[], platform: PlatformRef, aotSummaries?: () => any[]): TestBed;\n\n /**\n * Reset the providers for the test injector.\n *\n * @publicApi\n */\n resetTestEnvironment(): void;\n\n resetTestingModule(): TestBedStatic;\n\n /**\n * Allows overriding default compiler providers and settings\n * which are defined in test_injector.js\n *\n * @publicApi\n */\n configureCompiler(config: { providers?: any[]; useJit?: boolean; }): TestBedStatic;\n\n /**\n * Allows overriding default providers, directives, pipes, modules of the test injector,\n * which are defined in test_injector.js\n *\n * @publicApi\n */\n configureTestingModule(moduleDef: TestModuleMetadata): TestBedStatic;\n\n /**\n * Compile components with a `templateUrl` for the test's NgModule.\n * It is necessary to call this function\n * as fetching urls is asynchronous.\n *\n * @publicApi\n */\n compileComponents(): Promise<any>;\n\n overrideModule(ngModule: Type<any>, override: MetadataOverride<NgModule>): TestBedStatic;\n\n overrideComponent(component: Type<any>, override: MetadataOverride<Component>): TestBedStatic;\n\n overrideDirective(directive: Type<any>, override: MetadataOverride<Directive>): TestBedStatic;\n\n overridePipe(pipe: Type<any>, override: MetadataOverride<Pipe>): TestBedStatic;\n\n overrideTemplate(component: Type<any>, template: string): TestBedStatic;\n\n /**\n * Overrides the template of the given component, compiling the template\n * in the context of the TestingModule.\n *\n * Note: This works for JIT and AOTed components as well.\n *\n * @publicApi\n */\n overrideTemplateUsingTestingModule(component: Type<any>, template: string): TestBedStatic;\n\n /**\n * Overwrites all providers for the given token with the given provider definition.\n *\n * Note: This works for JIT and AOTed components as well.\n *\n * @publicApi\n */\n overrideProvider(token: any, provider: {\n useFactory: Function,\n deps: any[],\n }): TestBedStatic;\n\n overrideProvider(token: any, provider: {\n useValue: any;\n }): TestBedStatic;\n\n overrideProvider(token: any, provider: {\n useFactory?: Function,\n useValue?: any,\n deps?: any[],\n }): TestBedStatic;\n\n inject<T>(\n token: Type<T>|InjectionToken<T>|AbstractType<T>, notFoundValue?: T, flags?: InjectFlags): T;\n\n inject<T>(\n token: Type<T>|InjectionToken<T>|AbstractType<T>, notFoundValue: null, flags?: InjectFlags): T\n |null;\n\n /** @deprecated from v9.0.0 use TestBed.inject */\n get<T>(token: Type<T>|InjectionToken<T>, notFoundValue?: T, flags?: InjectFlags): any;\n\n /** @deprecated from v9.0.0 use TestBed.inject */\n get(token: any, notFoundValue?: any): any;\n\n createComponent<T>(component: Type<T>): ComponentFixture<T>;\n}\n\n", "/*\n * @license\n * Copyright Google LLC All Rights Reserved.\n *\n * Use of this source code is governed by an MIT-style license that can be\n * found in the LICENSE file at https://angular.io/license\n *\n\n// The formatter and CI disagree on how this import statement should be formatted. Both try to keep\n// it on one line, too, which has gotten very hard to read & manage. So disable the formatter for\n//

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this statement only.\n\n/* clang-format off */\nimport {\n AbstractType,\n Component,\n Directive,\n InjectFlags,\n InjectionToken,\n Injector,\n NgModule,\n NgZone,\n Pipe,\n PlatformRef,\n Type,\n flushModuleScopingQueueAsMuchAsPossible as flushModuleScopingQueueAsMuchAsPossible,\n Render3ComponentFactory as ComponentFactory,\n Render3NgModuleRef as NgModuleRef,\n resetCompiledComponents as resetCompiledComponents,\n stringify as stringify,\n} from '@angular/core';\n\n/* clang-format on */\nimport {ComponentFixture} from './component_fixture';\nimport {MetadataOverride} from './metadata_override';\nimport {R3TestBedCompiler} from './r3_test_bed_compiler';\nimport {TestBed} from './test_bed';\nimport {ComponentFixtureAutoDetect, ComponentFixtureNoNgZone, TestBedStatic, TestComponentRenderer, TestModuleMetadata} from './test_bed_common';\n\nlet _nextRootElementId = 0;\n\n/**\n * @description\n * Configures and initializes environment for unit testing and provides methods for\n * creating components and services in unit tests.\n * \n * TestBed is the primary api for writing unit tests for Angular applications and libraries.\n * \n * Note: Use `TestBed` in tests. It will be set to either `TestBedViewEngine` or `TestBedRender3`\n * according to the compiler used.\n */\nexport class TestBedRender3 implements TestBed {\n /**\n * Initialize the environment for testing with a compiler factory, a PlatformRef, and an\n * angular module. These are common to every test in the suite.\n * \n * This may only be called once, to set up the common providers for the current test\n * suite on the current platform. If you absolutely need to change the providers,\n * first use `resetTestEnvironment`.\n * \n * Test modules and platforms for individual platforms are available from\n * '@angular/<platform_name>/testing'.\n * \n * @publicApi\n */\n static initTestEnvironment(\n ngModule: Type<any> | Type<any>[],\n platform: PlatformRef,\n aotSummaries?: () => any[]): TestBed {\n const testBed = _getTestBedRender3();\n testBed.initTestEnvironment(ngModule, platform, aotSummaries);\n return testBed;\n }\n\n /**\n * Reset the providers for the test injector.\n * \n * @publicApi\n */\n static resetTestEnvironment(): void {\n _getTestBedRender3().resetTestEnvironment();\n }\n\n static\n configureCompiler(\n config: { providers?: any[]; useJit?: boolean; }): TestBedStatic {\n _getTestBedRender3().configureCompiler(config);\n return TestBedRender3 as any as TestBedStatic;\n }\n\n /**\n * Allows overriding default providers, directives, pipes, modules of the test injector,\n * which are defined in test_injector.js\n * \n * @publicApi\n */\n static configureTestingModule(\n moduleDef: TestModuleMetadata): TestBedStatic {\n _getTestBedRender3().configureTestingModule(moduleDef);\n return TestBedRender3 as any as TestBedStatic;\n }\n\n /**\n * Compile components with a `templateUrl` for the test's NgModule.\n * \n * It is necessary to call this function\n * as fetching urls is asynchronous.\n * \n * @publicApi\n */\n static compileComponents(): Promise<any> {\n return _getTestBedRender3().compileComponents();\n }\n\n static overrideModule(\n ngModule: Type<any>,\n override: MetadataOverride<NgModule>): TestBedStatic {\n _getTestBedRender3().overrideModule(ngModule, override);\n return TestBedRender3 as any as TestBedStatic;\n }\n\n static overrideComponent(\n component: Type<any>,\n override: MetadataOverride<Component>):\n TestBedStatic {\n _getTestBedRender3().overrideComponent(component, override);\n return TestBedRender3 as any as\n TestBedStatic;\n }\n\n static overrideDirective(\n directive: Type<any>,\n override: MetadataOverride<Directive>):\n TestBedStatic {\n _getTestBedRender3().overrideDirective(directive, override);\n return TestBedRender3 as\n any as TestBedStatic;\n }\n\n static overridePipe(\n pipe: Type<any>,\n override: MetadataOverride<Pipe>):\n TestBedStatic {\n _getTestBedRender3().overridePipe(pipe, override);\n return TestBedRender3 as any as\n TestBedStatic;\n }\n\n static overrideTemplate(\n component: Type<any>,\n template: string): TestBedStatic {\n _getTestBedRender3().overrideComponent(component, {\n set: { template, templateUrl: null! } });\n return TestBedRender3 as any as\n TestBedStatic;\n }\n\n /**\n * Overrides the template of the given component, compiling the template\n * in the context of theTestingModule.\n * \n * Note: This works for JIT and AOTed components as well.\n * \n * @publicApi\n */\n static overrideTemplateUsingTestingModule(\n component: Type<any>,\n template: string): TestBedStatic {\n _getTestBedRender3().overrideTemplateUsingTestingModule(component, template);\n return TestBedRender3 as any as\n TestBedStatic;\n }\n\n static overrideProvider(\n token: any,\n provider: {\n useFactory: Function,\n deps: any[],\n }): TestBedStatic;\n static overrideProvider(\n token: any,\n provider: {\n useValue: any;\n }): TestBedStatic;\n static overrideProvider(\n token: any,\n provider: {\n useFactory?: Function,\n useValue?: any,\n deps?: any[],\n }): TestBedStatic {\n _getTestBedRender3().overrideProvider(token,

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provider);\n return TestBedRender3 as any as TestBedStatic;\n }\n\n static inject<T>(\n token:
Type<T>|InjectionToken<T>|AbstractType<T>, notFoundValue?: T, flags?: InjectFlags): T;\n static inject<T>(\n
token: Type<T>|InjectionToken<T>|AbstractType<T>, notFoundValue: null, flags?: InjectFlags): T\n |null;\n
static inject<T>(\n token: Type<T>|InjectionToken<T>|AbstractType<T>, notFoundValue?: T|null,\n flags?:
InjectFlags): T|null {\n return _getTestBedRender3().inject(token, notFoundValue, flags);\n }\n\n /**
@deprecated from v9.0.0 use TestBed.inject */\n static get<T>(token: Type<T>|InjectionToken<T>,
notFoundValue?: T, flags?: InjectFlags): any;\n /** @deprecated from v9.0.0 use TestBed.inject */\n static
get(token: any, notFoundValue?: any): any;\n /** @deprecated from v9.0.0 use TestBed.inject */\n static get(\n
token: any, notFoundValue: any = Injector.THROW_IF_NOT_FOUND,\n flags: InjectFlags =
InjectFlags.Default): any {\n return _getTestBedRender3().inject(token, notFoundValue, flags);\n }\n\n static
createComponent<T>(component: Type<T>): ComponentFixture<T> {\n return
_getTestBedRender3().createComponent(component);\n }\n\n static resetTestingModule(): TestBedStatic {\n
_getTestBedRender3().resetTestingModule();\n return TestBedRender3 as any as TestBedStatic;\n }\n\n //
Properties\n\n platform: PlatformRef = null!;\n ngModule: Type<any>|Type<any>[] = null!;\n\n private
_compiler: R3TestBedCompiler|null = null;\n private _testModuleRef: NgModuleRef<any>|null = null;\n\n private
_activeFixtures: ComponentFixture<any>[] = [];\n private _globalCompilationChecked = false;\n\n /**\n *
Initialize the environment for testing with a compiler factory, a PlatformRef, and an\n * angular module. These are
common to every test in the suite.\n * This may only be called once, to set up the common providers for the
current test\n * suite on the current platform. If you absolutely need to change the providers,\n * first use
`resetTestEnvironment`.\n * Test modules and platforms for individual platforms are available from\n *
`@angular/<platform_name>/testing`.\n * @publicApi\n */\n initTestEnvironment(\n ngModule:
Type<any>|Type<any>[], platform: PlatformRef, aotSummaries?: () => any[]): void {\n if (this.platform ||
this.ngModule) {\n throw new Error('Cannot set base providers because it has already been called');\n }\n
this.platform = platform;\n this.ngModule = ngModule;\n this._compiler = new
R3TestBedCompiler(this.platform, this.ngModule);\n }\n\n /**\n * Reset the providers for the test injector.\n */\n
* @publicApi\n */\n resetTestEnvironment(): void {\n this.resetTestingModule();\n this._compiler = null;\n
this.platform = null!;\n this.ngModule = null!;\n }\n\n resetTestingModule(): void {\n
this.checkGlobalCompilationFinished();\n resetCompiledComponents();\n if (this._compiler !== null) {\n
this.compiler.restoreOriginalState();\n }\n this._compiler = new R3TestBedCompiler(this.platform,
this.ngModule);\n this._testModuleRef = null;\n this.destroyActiveFixtures();\n }\n\n
configureCompiler(config: { providers?: any[]; useJit?: boolean; }): void {\n if (config.useJit !== null) {\n
throw new Error('the Render3 compiler JiT mode is not configurable !');\n }\n\n if (config.providers !== undefined) {\n
this.compiler.setCompilerProviders(config.providers);\n }\n }\n\n configureTestingModule(moduleDef:
TestModuleMetadata): void {\n this.assertNotInstantiated('R3TestBed.configureTestingModule', 'configure the
test module');\n this.compiler.configureTestingModule(moduleDef);\n }\n\n compileComponents():
Promise<any> {\n return this.compiler.compileComponents();\n }\n\n inject<T>(\n token:
Type<T>|InjectionToken<T>|AbstractType<T>, notFoundValue?: T, flags?: InjectFlags): T;\n inject<T>(\n
token: Type<T>|InjectionToken<T>|AbstractType<T>, notFoundValue: null, flags?: InjectFlags): T\n |null;\n
inject<T>(\n token: Type<T>|InjectionToken<T>|AbstractType<T>, notFoundValue?: T|null,\n flags?:
InjectFlags): T|null {\n if (token as unknown === TestBedRender3) {\n return this as any;\n }\n const
UNDEFINED = {};\n const result = this.testModuleRef.injector.get(token, UNDEFINED, flags);\n return result
=== UNDEFINED ? this.compiler.injector.get(token, notFoundValue, flags) as any : result;\n
}\n\n /** @deprecated from v9.0.0 use TestBed.inject */\n get<T>(token: Type<T>|InjectionToken<T>,
notFoundValue?: T, flags?: InjectFlags): any;\n /** @deprecated from v9.0.0 use TestBed.inject */\n get(token:
any, notFoundValue?: any): any;\n /** @deprecated from v9.0.0 use TestBed.inject */\n get(token: any,
notFoundValue: any = Injector.THROW_IF_NOT_FOUND,\n flags: InjectFlags = InjectFlags.Default): any {\n
return this.inject(token, notFoundValue, flags);\n }\n\n execute(tokens: any[], fn: Function, context?: any): any {\n
const params = tokens.map(t => this.inject(t));\n return fn.apply(context, params);\n }\n\n

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overrideModule(ngModule: Type<any>, override: MetadataOverride<NgModule>): void {\n
this.assertNotInstantiated('overrideModule', 'override module metadata');\n
this.compiler.overrideModule(ngModule, override);\n }\n\n overrideComponent(component: Type<any>, override:
MetadataOverride<Component>): void {\n this.assertNotInstantiated('overrideComponent', 'override component
metadata');\n this.compiler.overrideComponent(component, override);\n }\n\n
overrideTemplateUsingTestingModule(component: Type<any>, template: string): void {\n
this.assertNotInstantiated(\n 'R3TestBed.overrideTemplateUsingTestingModule',\n 'Cannot override
template when the test module has already been instantiated');\n
this.compiler.overrideTemplateUsingTestingModule(component, template);\n }\n\n overrideDirective(directive:
Type<any>, override: MetadataOverride<Directive>): void {\n this.assertNotInstantiated('overrideDirective',
'override directive metadata');\n this.compiler.overrideDirective(directive, override);\n }\n\n overridePipe(pipe:
Type<any>, override: MetadataOverride<Pipe>): void {\n this.assertNotInstantiated('overridePipe', 'override pipe
metadata');\n this.compiler.overridePipe(pipe, override);\n }\n\n /**\n * Overwrites all providers for the given
token with the given provider definition.\n */\n overrideProvider(token: any, provider: {useFactory?: Function,
useValue?: any, deps?: any[]}): void {\n this.assertNotInstantiated('overrideProvider', 'override provider');\n
this.compiler.overrideProvider(token, provider);\n }\n\n createComponent<T>(type: Type<T>):
ComponentFixture<T> {\n const testComponentRenderer = this.inject(TestComponentRenderer);\n const
rootElId = `root${_nextRootElementId++}`;\n testComponentRenderer.insertRootElement(rootElId);\n\n const
componentDef = (type as any).cmp;\n if (!componentDef) {\n throw new Error(\n `It looks like
'${stringify(type)}' has not been IVY compiled - it has no 'cmp' field`);\n }\n\n // TODO: Don't cast as
`InjectionToken<boolean>`, proper type is boolean[]\n const noNgZone =
this.inject(ComponentFixtureNoNgZone as InjectionToken<boolean>, false);\n // TODO: Don't cast as
`InjectionToken<boolean>`, proper type is boolean[]\n const autoDetect: boolean =\n
this.inject(ComponentFixtureAutoDetect as InjectionToken<boolean>, false);\n const ngZone: NgZone|null =
noNgZone ? null : this.inject(NgZone, null);\n const componentFactory = new
ComponentFactory(componentDef);\n const initComponent = () => {\n const componentRef =\n
componentFactory.create(Injector.NULL, [], `#${rootElId}`, this.testModuleRef);\n return new
ComponentFixture<any>(componentRef, ngZone, autoDetect);\n };\n const fixture = ngZone ?
ngZone.run(initComponent) : initComponent();\n this._activeFixtures.push(fixture);\n return fixture;\n }\n\n
/**\n * @internal strip this from published d.ts files due to\n */
https://github.com/microsoft/TypeScript/issues/36216\n */\n private get compiler(): R3TestBedCompiler {\n if
(this._compiler === null) {\n throw new Error(`Need to call TestBed.initTestEnvironment() first`);\n }\n
return this._compiler;\n }\n\n /**\n * @internal strip this from published d.ts files due to\n */
https://github.com/microsoft/TypeScript/issues/36216\n */\n private get testModuleRef(): NgModuleRef<any> {\n
if (this._testModuleRef === null) {\n this._testModuleRef = this.compiler.finalize();\n }\n return
this._testModuleRef;\n }\n\n private assertNotInstantiated(methodName: string, methodDescription: string) {\n if
(this._testModuleRef !== null) {\n throw new Error(\n `Cannot ${methodDescription} when the test
module has already been instantiated.` +\n `Make sure you are not using `inject` before
`${methodName}``);\n }\n }\n\n /**\n * Check whether the module scoping queue should be flushed, and
flush it if needed.\n */\n * When the TestBed is reset, it clears the JIT module compilation queue, cancelling any\n
* in-progress module compilation. This creates a potential hazard - the very first time the\n * TestBed is initialized
(or if it's reset without being initialized), there may be pending\n * compilations of modules declared in global
scope. These compilations should be finished.\n */\n * To ensure that globally declared modules have their
components scoped properly, this function\n * is called whenever TestBed is initialized or reset. The _first_ time
that this happens, prior\n * to any other operations, the scoping queue is flushed.\n */\n private
checkGlobalCompilationFinished(): void {\n // Checking _testNgModuleRef is null should not be necessary, but is
left in as an additional\n // guard that compilations queued in tests (after instantiation) are never flushed
accidentally.\n if (!this._globalCompilationChecked && this._testModuleRef === null) {\n

```



```

Type<T>|InjectionToken<T>|AbstractType<T>, notFoundValue?: T, flags?: InjectFlags): T;\n inject<T>(\n
token: Type<T>|InjectionToken<T>|AbstractType<T>, notFoundValue: null, flags?: InjectFlags): T\n |null;\n\n
/** @deprecated from v9.0.0 use TestBed.inject */\n get<T>(token: Type<T>|InjectionToken<T>,\n
notFoundValue?: T, flags?: InjectFlags): any;\n /** @deprecated from v9.0.0 use TestBed.inject */\n get(token:\n
any, notFoundValue?: any): any;\n\n execute(tokens: any[], fn: Function, context?: any): any;\n\n
overrideModule(ngModule: Type<any>, override: MetadataOverride<NgModule>): void;\n\n
overrideComponent(component: Type<any>, override: MetadataOverride<Component>): void;\n\n
overrideDirective(directive: Type<any>, override: MetadataOverride<Directive>): void;\n\n
overridePipe(pipe: Type<any>, override: MetadataOverride<Pipe>): void;\n\n
/**\n * Overwrites all providers for the given token\n
with the given provider definition.\n *^\n overrideProvider(token: any, provider: {\n useFactory: Function,\n
deps: any[],\n }) : void;\n overrideProvider(token: any, provider: {useValue: any;}) : void;\n
overrideProvider(token: any, provider: {useFactory?: Function, useValue?: any, deps?: any[]}):\n void;\n\n
overrideTemplateUsingTestingModule(component: Type<any>, template: string): void;\n\n
createComponent<T>(component: Type<T>): ComponentFixture<T>;\n}\n\n/**\n * @description\n * Configures\n
and initializes environment for unit testing and provides methods for\n * creating components and services in unit\n
tests.\n *^\n * `TestBed` is the primary api for writing unit tests for Angular applications and libraries.\n *^\n * Note:\n
Use `TestBed` in tests. It will be set to either `TestBedViewEngine` or `TestBedRender3`\n * according to the\n
compiler used.\n *^\n * export class TestBedViewEngine implements TestBed {\n /**\n * Initialize the environment\n
for testing with a compiler factory, a PlatformRef, and an\n * angular module. These are common to every test in\n
the suite.\n *^\n * This may only be called once, to set up the common providers for the current test\n * suite on\n
the current platform. If you absolutely need to change the providers,\n * first use `resetTestEnvironment`.\n *^\n * Test\n
modules and platforms for individual platforms are available from\n * '@angular/<platform_name>/testing'\n *^\n
static initTestEnvironment(\n ngModule: Type<any>|Type<any>[], platform: PlatformRef,\n
aotSummaries?: () => any[]): TestBedViewEngine {\n const testBed = _getTestBedViewEngine();\n
testBed.initTestEnvironment(ngModule, platform, aotSummaries);\n return testBed;\n }\n\n /**\n * Reset the\n
providers for the test injector.\n *^\n static resetTestEnvironment(): void {\n
_getTestBedViewEngine().resetTestEnvironment();\n }\n\n static resetTestingModule(): TestBedStatic {\n
_getTestBedViewEngine().resetTestingModule();\n return TestBedViewEngine as any as TestBedStatic;\n }\n\n
/**\n * Allows overriding default compiler providers and settings\n * which are defined in test_injector.js\n *^\n
static configureCompiler(config: {providers?: any[]; useJit?: boolean;}): TestBedStatic {\n
_getTestBedViewEngine().configureCompiler(config);\n return TestBedViewEngine as any as TestBedStatic;\n
}\n\n /**\n * Allows overriding default providers, directives, pipes, modules of the test injector,\n * which are\n
defined in test_injector.js\n *^\n static configureTestingModule(moduleDef: TestModuleMetadata): TestBedStatic\n
{\n _getTestBedViewEngine().configureTestingModule(moduleDef);\n return TestBedViewEngine as any as\n
TestBedStatic;\n }\n\n /**\n * Compile components with a `templateUrl` for the test's NgModule.\n * It is\n
necessary to call this function\n * as fetching urls is asynchronous.\n *^\n static compileComponents():\n
Promise<any> {\n return getTestBed().compileComponents();\n }\n\n static overrideModule(ngModule:\n
Type<any>, override: MetadataOverride<NgModule>): TestBedStatic {\n
_getTestBedViewEngine().overrideModule(ngModule, override);\n return TestBedViewEngine as any as\n
TestBedStatic;\n }\n\n static overrideComponent(component: Type<any>, override:\n
MetadataOverride<Component>):\n TestBedStatic {\n
_getTestBedViewEngine().overrideComponent(component, override);\n return TestBedViewEngine as any as\n
TestBedStatic;\n }\n\n static overrideDirective(directive: Type<any>, override: MetadataOverride<Directive>):\n
TestBedStatic {\n _getTestBedViewEngine().overrideDirective(directive, override);\n return\n
TestBedViewEngine as any as TestBedStatic;\n }\n\n static overridePipe(pipe: Type<any>, override:\n
MetadataOverride<Pipe>): TestBedStatic {\n _getTestBedViewEngine().overridePipe(pipe, override);\n return\n
TestBedViewEngine as any as TestBedStatic;\n }\n\n static overrideTemplate(component: Type<any>, template:\n
string): TestBedStatic {\n _getTestBedViewEngine().overrideComponent(component, {set: {template,

```

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templateUrl: null!}));\n return TestBedViewEngine as any as TestBedStatic;\n }\n\n /**\n * Overrides the
template of the given component, compiling the template\n * in the context of the TestingModule.\n *\n * Note:
This works for JIT and AOTed components as well.\n */\n static
overrideTemplateUsingTestingModule(component: Type<any>, template: string): TestBedStatic {\n
_getTestBedViewEngine().overrideTemplateUsingTestingModule(component, template);\n return
TestBedViewEngine as any as TestBedStatic;\n }\n\n /**\n * Overwrites all providers for the given token with the
given provider definition.\n *\n * Note: This works for JIT and AOTed components as well.\n */\n static
overrideProvider(token: any, provider: {\n useFactory: Function,\n deps: any[],\n }): TestBedStatic;\n static
overrideProvider(token: any, provider: {useValue: any;}): TestBedStatic;\n static overrideProvider(token: any,
provider: {\n useFactory?: Function,\n useValue?: any,\n deps?: any[],\n }): TestBedStatic {\n
_getTestBedViewEngine().overrideProvider(token, provider as any);\n return TestBedViewEngine as any as
TestBedStatic;\n }\n\n static inject<T>(\n token: Type<T>|InjectionToken<T>|AbstractType<T>,
notFoundValue?: T, flags?: InjectFlags): T;\n static inject<T>(\n token:
Type<T>|InjectionToken<T>|AbstractType<T>, notFoundValue: null, flags?: InjectFlags): T\n |null;\n static
inject<T>(\n token: Type<T>|InjectionToken<T>|AbstractType<T>, notFoundValue?: T|null,\n flags?:
InjectFlags): T|null {\n return _getTestBedViewEngine().inject(token, notFoundValue, flags);\n }\n\n /**
@deprecated from v9.0.0 use TestBed.inject *\n static get<T>(token: Type<T>|InjectionToken<T>,
notFoundValue?: T, flags?: InjectFlags): any;\n /**\n * @deprecated from v9.0.0 use TestBed.inject\n *
@suppress {duplicate}\n *\n static get(token: any, notFoundValue?: any): any;\n /** @deprecated from v9.0.0
use TestBed.inject *\n static get(\n token: any, notFoundValue: any = Injector.THROW_IF_NOT_FOUND,\n
flags: InjectFlags = InjectFlags.Default): any {\n return _getTestBedViewEngine().inject(token, notFoundValue,
flags);\n }\n\n static createComponent<T>(component: Type<T>): ComponentFixture<T> {\n return
_getTestBedViewEngine().createComponent(component);\n }\n\n private _instantiated: boolean = false;\n private
_compiler: TestingCompiler = null!;\n private _moduleRef: NgModuleRef<any> = null!;\n private
_moduleFactory: NgModuleFactory<any> = null!;\n private _compilerOptions: CompilerOptions[] = [];\n private
_moduleOverrides: [Type<any>, MetadataOverride<NgModule>][] = [];\n private _componentOverrides:
[Type<any>, MetadataOverride<Component>][] = [];\n private _directiveOverrides: [Type<any>,
MetadataOverride<Directive>][] = [];\n private _pipeOverrides: [Type<any>, MetadataOverride<Pipe>][] = [];\n
private _providers: Provider[] = [];\n private _declarations: Array<Type<any>|any[]|any> = [];\n private _imports:
Array<Type<any>|any[]|any> = [];\n private _schemas: Array<SchemaMetadata|any[]> = [];\n private
_activeFixtures: ComponentFixture<any>[] = [];\n\n private _testEnvAotSummaries: () => any[] = () => [];\n
private _aotSummaries: Array<() => any[]> = [];\n private _templateOverrides: Array<{ component: Type<any>,
templateOf: Type<any>}> = [];\n\n private _isRoot: boolean = true;\n private _rootProviderOverrides: Provider[] =
[];\n\n platform: PlatformRef = null!;\n\n ngModule: Type<any>|Type<any>[] = null!;\n\n /**\n * Initialize the
environment for testing with a compiler factory, a PlatformRef, and an\n * angular module. These are common to
every test in the suite.\n *\n * This may only be called once, to set up the common providers for the current test\n
* suite on the current platform. If you absolutely need to change the providers,\n * first use
`resetTestEnvironment`.\n *\n * Test modules and platforms for individual platforms are available from\n *
`@angular/<platform_name>/testing`.\n *\n initTestEnvironment(\n ngModule: Type<any>|Type<any>[],
platform: PlatformRef, aotSummaries?: () => any[]): void {\n if (this.platform || this.ngModule) {\n throw new
Error('Cannot set base providers because it has already been called');\n }\n this.platform = platform;\n
this.ngModule = ngModule;\n if (aotSummaries) {\n this._testEnvAotSummaries = aotSummaries;\n }\n
}\n\n /**\n * Reset the providers for the test injector.\n *\n resetTestEnvironment(): void {\n
this.resetTestingModule();\n this.platform = null!;\n this.ngModule = null!;\n this._testEnvAotSummaries = ()
=> [];\n }\n\n resetTestingModule(): void {\n clearOverrides();\n this._aotSummaries = [];\n
this._templateOverrides = [];\n this._compiler = null!;\n this._moduleOverrides = [];\n
this._componentOverrides = [];\n this._directiveOverrides = [];\n this._pipeOverrides = [];\n\n this._isRoot =
true;\n this._rootProviderOverrides = [];\n\n this._moduleRef = null!;\n this._moduleFactory = null!;\n

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this._compilerOptions = [];\n this._providers = [];\n this._declarations = [];\n this._imports = [];\n
this._schemas = [];\n this._instantiated = false;\n this._activeFixtures.forEach((fixture) => {\n try {\n
fixture.destroy();\n } catch (e) {\n console.error('Error during cleanup of component', {\n component:
fixture.componentInstance,\n stacktrace: e,\n });\n }\n });\n this._activeFixtures = [];\n\n
configureCompiler(config: {providers?: any[], useJit?: boolean}): void {\n
this._assertNotInstantiated('TestBed.configureCompiler', 'configure the compiler');\n
this._compilerOptions.push(config);\n }\n\n configureTestingModule(moduleDef: TestModuleMetadata): void {\n
this._assertNotInstantiated('TestBed.configureTestingModule', 'configure the test module');\n if
(moduleDef.providers) {\n this._providers.push(...moduleDef.providers);\n }\n if (moduleDef.declarations)
{\n this._declarations.push(...moduleDef.declarations);\n }\n if (moduleDef.imports) {\n
this._imports.push(...moduleDef.imports);\n }\n if (moduleDef.schemas) {\n
this._schemas.push(...moduleDef.schemas);\n }\n if (moduleDef.aotSummaries) {\n
this._aotSummaries.push(moduleDef.aotSummaries);\n }\n }\n\n compileComponents(): Promise<any> {\n if
(this._moduleFactory || this._instantiated) {\n return Promise.resolve(null);\n }\n\n const moduleType =
this._createCompilerAndModule();\n return
this._compiler.compileModuleAndAllComponentsAsync(moduleType)\n
.then((moduleAndComponentFactories) => {\n this._moduleFactory =
moduleAndComponentFactories.ngModuleFactory;\n });\n }\n\n private _initIfNeeded(): void {\n if
(this._instantiated) {\n return;\n }\n if (!this._moduleFactory) {\n try {\n const moduleType =
this._createCompilerAndModule();\n this._moduleFactory =\n
this._compiler.compileModuleAndAllComponentsSync(moduleType).ngModuleFactory;\n } catch (e) {\n
const errorCompType = this._compiler.getComponentFromError(e);\n if (errorCompType) {\n throw new
Error(\n `This test module uses the component ${\n stringify(\n errorCompType)}
which is using a \"templateUrl\" or \"styleUrls\", but they were never compiled. ` +\n `Please call
\"TestBed.compileComponents\" before your test.`);\n } else {\n throw e;\n }\n }\n }\n for
(const {component, templateOf} of this._templateOverrides) {\n const compFactory =
this._compiler.getComponentFactory(templateOf);\n overrideComponentView(component, compFactory);\n
}\n\n const ngZone =\n new NgZone({enableLongStackTrace: true, shouldCoalesceEventChangeDetection:
false});\n const providers: StaticProvider[] = [{provide: NgZone, useValue: ngZone}];\n const ngZoneInjector =
Injector.create({\n providers: providers,\n parent: this.platform.injector,\n name:
this._moduleFactory.moduleType.name\n });\n this._moduleRef =
this._moduleFactory.create(ngZoneInjector);\n // ApplicationInitStatus.runInitializers() is marked @internal to
core. So casting to any\n // before accessing it.\n (this._moduleRef.injector.get(ApplicationInitStatus) as
any).runInitializers();\n this._instantiated = true;\n }\n\n private _createCompilerAndModule(): Type<any> {\n
const providers = this._providers.concat([{provide: TestBed, useValue: this}]);\n const declarations =\n
[...this._declarations, ...this._templateOverrides.map(entry => entry.templateOf)];\n\n const rootScopeImports =
[];\n const rootProviderOverrides = this._rootProviderOverrides;\n if (this._isRoot) {\n @NgModule({\n
providers: [\n ...rootProviderOverrides,\n],\n jit: true,\n })\n class RootScopeModule {\n }\n
rootScopeImports.push(RootScopeModule);\n }\n providers.push({provide: INJECTOR_SCOPE, useValue:
this._isRoot ? 'root' : null});\n\n const imports = [rootScopeImports, this.ngModule, this._imports];\n const
schemas = this._schemas;\n\n @NgModule({providers, declarations, imports, schemas, jit: true})\n class
DynamicTestModule {\n }\n\n const compilerFactory = this.platform.injector.get(TestingCompilerFactory);\n
this._compiler = compilerFactory.createTestingCompiler(this._compilerOptions);\n for (const summary of
[this._testEnvAotSummaries, ...this._aotSummaries]) {\n this._compiler.loadAotSummaries(summary);\n }\n
this._moduleOverrides.forEach((entry) => this._compiler.overrideModule(entry[0], entry[1]));\n
this._componentOverrides.forEach(\n (entry) => this._compiler.overrideComponent(entry[0], entry[1]));\n
this._directiveOverrides.forEach(\n (entry) => this._compiler.overrideDirective(entry[0], entry[1]));\n
this._pipeOverrides.forEach((entry) => this._compiler.overridePipe(entry[0], entry[1]));\n return

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DynamicTestModule;
}

private _assertNotInstantiated(methodName: string, methodDescription: string) {
 if (this._instantiated) {
 throw new Error(`Cannot ${methodDescription} when the test module has
 already been instantiated. `);
 }
 `Make sure you are not using `inject` before `_${methodName}`;
}

inject<T>(
 token: Type<T>|InjectionToken<T>|AbstractType<T>, notFoundValue?: T, flags?:
 InjectFlags): T;
inject<T>(
 token: Type<T>|InjectionToken<T>|AbstractType<T>, notFoundValue: null,
 flags?: InjectFlags): T|
 null;
inject<T>(
 token: Type<T>|InjectionToken<T>|AbstractType<T>,
 notFoundValue?: T|
 null, flags?: InjectFlags): T|
 null {
 this._initIfNeeded();
 if (token as unknown ===
 TestBed) {
 return this as any;
 }
 // Tests can inject things from the ng module and from the compiler,
 // but the ng module can't inject things from the compiler and vice versa.
 const UNDEFINED = {};
 const result = this._moduleRef.injector.get(token, UNDEFINED, flags);
 return result === UNDEFINED ?
 this._compiler.injector.get(token, notFoundValue, flags) as any :
 result;
}

/**
 * @deprecated from v9.0.0 use TestBed.inject
 */
get<T>(token: Type<T>|InjectionToken<T>, notFoundValue?: T,
 flags?: InjectFlags): any;
/**
 * @deprecated from v9.0.0 use TestBed.inject
 */
get(token: any, notFoundValue?:
 any): any;
/**
 * @deprecated from v9.0.0 use TestBed.inject
 */
get(token: any, notFoundValue: any =
 Injector.THROW_IF_NOT_FOUND, flags: InjectFlags = InjectFlags.Default): any {
 return
 this.inject(token, notFoundValue, flags);
}

execute(tokens: any[], fn: Function, context?: any): any {
 this._initIfNeeded();
 const params = tokens.map(t => this.inject(t));
 return fn.apply(context, params);
}

overrideModule(ngModule: Type<any>, override: MetadataOverride<NgModule>): void {
 this._assertNotInstantiated('overrideModule', 'override module metadata');
 this._moduleOverrides.push([ngModule, override]);
}

overrideComponent(component: Type<any>, override:
 MetadataOverride<Component>): void {
 this._assertNotInstantiated('overrideComponent', 'override component
 metadata');
 this._componentOverrides.push([component, override]);
}

overrideDirective(directive:
 Type<any>, override: MetadataOverride<Directive>): void {
 this._assertNotInstantiated('overrideDirective',
 'override directive metadata');
 this._directiveOverrides.push([directive, override]);
}

overridePipe(pipe:
 Type<any>, override: MetadataOverride<Pipe>): void {
 this._assertNotInstantiated('overridePipe', 'override pipe
 metadata');
 this._pipeOverrides.push([pipe, override]);
}

/**
 * * Overwrites all providers for the given
 token with the given provider definition.
 */
overrideProvider(token: any, provider: {
 useFactory:
 Function,
 deps: any[],
 }): void;
overrideProvider(token: any, provider: {
 useValue: any;
}): void;
overrideProvider(token: any, provider: {
 useFactory?: Function,
 useValue?: any,
 deps?: any[];
}): void {
 this._assertNotInstantiated('overrideProvider', 'override provider');
 this.overrideProviderImpl(token, provider);
}

private overrideProviderImpl(
 token: any, provider: {
 useFactory?: Function,
 useValue?:
 any,
 deps?: any[],
 },
 deprecated = false): void {
 let def: InjectableDef<any>|
 null = null;
 if
 (typeof token !== 'string' && (def = getInjectableDef(token)) &&
 def.providedIn === 'root') {
 if
 (provider.useFactory) {
 this._rootProviderOverrides.push({
 provide: token,
 useFactory:
 provider.useFactory,
 deps: provider.deps ||
 [];
 });
 } else {
 this._rootProviderOverrides.push({
 provide:
 token,
 useValue: provider.useValue;
 });
 }
 }
 let flags: NodeFlags = 0;
 let value: any;
 if
 (provider.useFactory) {
 flags |= NodeFlags.TypeFactoryProvider;
 value = provider.useFactory;
 } else
 {
 flags |= NodeFlags.TypeValueProvider;
 value = provider.useValue;
 }
 const deps =
 (provider.deps || []).map((dep) => {
 let depFlags: DepFlags = DepFlags.None;
 let depToken: any;
 if
 (Array.isArray(dep)) {
 dep.forEach((entry: any) => {
 if
 (entry instanceof Optional) {
 depFlags |= DepFlags.Optional;
 } else if
 (entry instanceof SkipSelf) {
 depFlags |=
 DepFlags.SkipSelf;
 } else {
 depToken = entry;
 }
 });
 } else {
 depToken =
 dep;
 }
 return [depFlags, depToken];
 });
 }
 overrideProvider({token, flags, deps, value,
 deprecatedBehavior: deprecated});
}

overrideTemplateUsingTestingModule(component: Type<any>,
 template: string) {
 this._assertNotInstantiated('overrideTemplateUsingTestingModule',
 'override template');
 @Component({selector: 'empty', template, jit: true})
 class OverrideComponent {}
 this._templateOverrides.push({component, templateOf:
 OverrideComponent});
}

createComponent<T>(component: Type<T>): ComponentFixture<T> {
 this._initIfNeeded();
 const

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componentFactory = this._compiler.getComponentFactory(component);\n\n if (!componentFactory) {\n throw
new Error(`Cannot create the component ${\n stringify(component)} as it was not imported into the testing
module!`);\n }\n\n // TODO: Don't cast as `InjectionToken<boolean>`, declared type is boolean[]\n const
noNgZone = this.inject(ComponentFixtureNoNgZone as InjectionToken<boolean>, false);\n // TODO: Don't cast
as `InjectionToken<boolean>`, declared type is boolean[]\n const autoDetect: boolean =\n this.inject(ComponentFixtureAutoDetect as InjectionToken<boolean>, false);\n const ngZone: NgZone|null =
noNgZone ? null : this.inject(NgZone, null);\n const testComponentRenderer: TestComponentRenderer =
this.inject(TestComponentRenderer);\n const rootElId = `root${_nextRootElementId++}`;\n\n testComponentRenderer.insertRootElement(rootElId);\n\n const initComponent = () => {\n const
componentRef =\n componentFactory.create(Injector.NULL, [], `#${rootElId}`, this._moduleRef);\n return
new ComponentFixture<T>(componentRef, ngZone, autoDetect);\n };\n\n const fixture = !ngZone ?
initComponent() : ngZone.run(initComponent);\n this._activeFixtures.push(fixture);\n return fixture;\n
}\n}\n\n/**\n * @description\n * Configures and initializes environment for unit testing and provides methods for\n
* creating components and services in unit tests.\n *\n * `TestBed` is the primary api for writing unit tests for
Angular applications and libraries.\n *\n * Note: Use `TestBed` in tests. It will be set to either `TestBedViewEngine`
or `TestBedRender3`\n * according to the compiler used.\n *\n * @publicApi\n */\n\nexport const TestBed:
TestBedStatic =\n ivyEnabled ? TestBedRender3 as any as TestBedStatic : TestBedViewEngine as any as
TestBedStatic;\n\n/**\n * Returns a singleton of the applicable `TestBed`.\n *\n * It will be either an instance of
`TestBedViewEngine` or `TestBedRender3`.\n *\n * @publicApi\n */\n\nexport const getTestBed: () => TestBed =
ivyEnabled ? _getTestBedRender3 : _getTestBedViewEngine;\n\nlet testBed: TestBedViewEngine;\n\nfunction
_getTestBedViewEngine(): TestBedViewEngine {\n return testBed = testBed || new
TestBedViewEngine();\n}\n\n/**\n * Allows injecting dependencies in `beforeEach()` and `it()`.\n *\n * Example:\n
*\n * ```\n * beforeEach(inject([Dependency, AClass], (dep, object) => {\n * // some code that uses `dep` and
`object`\n * // ...\n * }));\n * it('...', inject([AClass], (object) => {\n * object.doSomething();\n * expect(...);\n
* }));\n * ```\n *\n * Notes:\n * - inject is currently a function because of some Traceur limitation the syntax should\n
* eventually\n * become `it('...', @Inject (object: AClass, async: AsyncTestCompleter) => { ... });`\n *\n *
@publicApi\n */\n\nexport function inject(tokens: any[], fn: Function): () => any {\n const testBed = getTestBed();\n
if (tokens.indexOf(AsyncTestCompleter) >= 0) {\n // Not using an arrow function to preserve context passed from
call site\n return function(this: unknown) {\n // Return an async test method that returns a Promise if
AsyncTestCompleter is one of\n // the injected tokens.\n return testBed.compileComponents().then(() => {\n
 const completer = testBed.inject(AsyncTestCompleter);\n testBed.execute(tokens, fn, this);\n return
completer.promise;\n });\n }; \n } else {\n // Not using an arrow function to preserve context passed from call
site\n return function(this: unknown) {\n return testBed.execute(tokens, fn, this);\n }; \n }\n}\n\n/**\n *
@publicApi\n */\n\nexport class InjectSetupWrapper {\n constructor(private _moduleDef: () =>
TestModuleMetadata) {}\n\n private _addModule() {\n const moduleDef = this._moduleDef();\n if (moduleDef)
{\n getTestBed().configureTestingModule(moduleDef);\n }\n }\n\n inject(tokens: any[], fn: Function): () =>
any {\n const self = this;\n // Not using an arrow function to preserve context passed from call site\n return
function(this: unknown) {\n self._addModule();\n return inject(tokens, fn).call(this);\n }; \n }\n}\n\n/**\n *
@publicApi\n */\n\nexport function withModule(moduleDef: TestModuleMetadata): InjectSetupWrapper;\n\nexport
function withModule(moduleDef: TestModuleMetadata, fn: Function): () => any;\n\nexport function
withModule(moduleDef: TestModuleMetadata, fn?: Function|null): (() => any)|\n InjectSetupWrapper {\n if (fn)
{\n // Not using an arrow function to preserve context passed from call site\n return function(this: unknown) {\n
 const testBed = getTestBed();\n if (moduleDef) {\n testBed.configureTestingModule(moduleDef);\n }\n
 return fn.apply(this);\n }; \n }\n return new InjectSetupWrapper(() => moduleDef);\n}\n\n", "/*\n * @license\n *
Copyright Google LLC All Rights Reserved.\n *\n * Use of this source code is governed by an MIT-style license
that can be\n * found in the LICENSE file at https://angular.io/license\n */\n\n * Public Test Library for unit
testing Angular applications. Assumes that you are running\n * with Jasmine, Mocha, or a similar framework which
exports a beforeEach function and\n * allows tests to be asynchronous by either returning a promise or using a 'done'

```

```
parameter.\n *\n\nimport {resetFakeAsyncZone} from './fake_async';\nimport { TestBed } from
 './test_bed';\n\ndeclare var global: any;\n\nconst _global = <any>(typeof window === 'undefined' ? global :
 window);\n\n// Reset the test providers and the fake async zone before each test.\nif (_global.beforeEach) {\n
_global.beforeEach() => {\n TestBed.resetTestingModule();\n resetFakeAsyncZone();\n });\n}\n\n/**\n * This
 API should be removed. But doing so seems to break `google3` and so it requires a bit of\n * investigation.\n *\n *
 A work around is to mark it as `@codeGenApi` for now and investigate later.\n *\n * @codeGenApi\n */\n\n//
 TODO(iminar): Remove this code in a safe way.\n\nexport const __core_private_testing_placeholder__ = ";\n","/**\n
 * @license\n * Copyright Google LLC All Rights Reserved.\n *\n * Use of this source code is governed by an MIT-
 style license that can be\n * found in the LICENSE file at https://angular.io/license\n */\n\nexport {TestingCompiler
 as TestingCompiler, TestingCompilerFactory as TestingCompilerFactory} from './test_compiler';\n","/**\n *
 @license\n * Copyright Google LLC All Rights Reserved.\n *\n * Use of this source code is governed by an MIT-
 style license that can be\n * found in the LICENSE file at https://angular.io/license\n */\n\n * @module\n *
 @description\n * Entry point for all public APIs of the core/testing package.\n */\n\nexport * from './async';\nexport
 * from './component_fixture';\nexport * from './fake_async';\nexport {TestBed, getTestBed, inject,
 InjectSetupWrapper, withModule} from './test_bed';\nexport * from './test_bed_common';\nexport * from
 './before_each';\nexport * from './metadata_override';\nexport {MetadataOverrider as MetadataOverrider} from
 './metadata_overrider';\nexport * from './private_export_testing';\n","/**\n * @license\n * Copyright Google LLC
 All Rights Reserved.\n *\n * Use of this source code is governed by an MIT-style license that can be\n * found in
 the LICENSE file at https://angular.io/license\n */\n\n * @module\n *
 @description\n * Entry point for all public APIs of this package.\n */\n\nexport * from './src/testing';\n\n// This file
 only reexports content of the `src` folder. Keep it that way.\n","/**\n * @license\n * Copyright Google LLC All
 Rights Reserved.\n *\n * Use of this source code is governed by an MIT-style license that can be\n * found in the
 LICENSE file at https://angular.io/license\n */\n\n// This file is not used to build this module. It is only used during
 editing\n// by the TypeScript language service and during build for verification. `ngc` replaces this file with
 production index.ts when it rewrites private symbol\n// names.\n\nexport * from './public_api';\n","/**\n * Generated
 bundle index. Do not edit.\n */\n\nexport * from './index';\n\nexport {TestBedRender3 as
 angular_packages_core_testing_testing_b_getTestBedRender3 as angular_packages_core_testing_testing_c} from
 './src/r3_test_bed';\nexport {TestBedViewEngine as angular_packages_core_testing_testing_a} from
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/public_api.ts", "../..../..../packages/core/index.ts", "../..../..../packages/core/core.ts"], "sourcesContent": ["/**\n *
 @license\n * Copyright Google LLC All Rights Reserved.\n * \n * Use of this source code is governed by an MIT-
style license that can be\n * found in the LICENSE file at https://angular.io/license\n * \n * Convince closure
compiler that the wrapped function has no side-effects.\n * \n * Closure compiler always assumes that `toString` has
no side-effects. We use this quirk to\n * allow us to execute a function but have closure compiler mark the call as
no-side-effects.\n * It is important that the return value for the `noSideEffects` function be assigned\n * to something
which is retained otherwise the call to `noSideEffects` will be removed by closure\n * compiler.\n */\nexport
function noSideEffects<T>(fn: () => T): T {\n return { toString: fn }.toString() as unknown as T;\n}\n\n", /**\n *
 @license\n * Copyright Google LLC All Rights Reserved.\n * \n * Use of this source code is governed by an MIT-
style license that can be\n * found in the LICENSE file at https://angular.io/license\n * \n * \nimport {Type} from
'./interface/type';\n\nimport {noSideEffects} from './closure';\n\n\n/**\n * An interface implemented by all
Angular type decorators, which allows them to be used as\n * decorators as well as Angular syntax.\n * \n * ```\n *
 @ng.Component({...})\n * class MyClass {...}\n * ```\n * \n * @publicApi\n * \nexport interface TypeDecorator {\n
/**\n * Invoke as decorator.\n * \n <T extends Type<any>>(type: T): T;\n\n // Make TypeDecorator assignable
to built-in ParameterDecorator type.\n // ParameterDecorator is declared in lib.d.ts as a `declare type`\n // so we
cannot declare this interface as a subtype.\n // see https://github.com/angular/angular/issues/3379#issuecomment-
126169417\n (target: Object, propertyKey?: string|symbol, parameterIndex?: number): void;\n}\n\n\nexport const
ANNOTATIONS = '__annotations__';\n\nexport const PARAMETERS = '__parameters__';\n\nexport const
PROP_METADATA = '__prop__metadata__';\n\n\n/**\n * @suppress {globalThis}\n * \nexport function
makeDecorator<T>(\n name: string, props?: (...args: any[]) => any, parentClass?: any,\n additionalProcessing?:
(type: Type<T>) => void,\n typeFn?: (type: Type<T>, ...args: any[]) => void);\n { new (...args: any[]): any;
(...args: any[]): any; (...args: any[]): (cls: any) => any; }\n return noSideEffects(() => {\n const metaCtor =
makeMetadataCtor(props);\n\n function DecoratorFactory(\n this: unknown|typeof DecoratorFactory, ...args:
any[]): (cls: Type<T>) => any {\n if (this instanceof DecoratorFactory) {\n metaCtor.call(this, ...args);\n
return this as typeof DecoratorFactory;\n }\n\n const annotationInstance = new (DecoratorFactory as
any)(...args);\n return function TypeDecorator(cls: Type<T>) {\n if (typeFn) typeFn(cls, ...args);\n // Use
of Object.defineProperty is important since it creates non-enumerable property which\n // prevents the property
is copied during subclassing.\n const annotations = cls.hasOwnProperty(ANNOTATIONS) ?\n (cls as
any)[ANNOTATIONS] :\n Object.defineProperty(cls, ANNOTATIONS, { value: [] })[ANNOTATIONS];\n annotations.push(annotationInstance);\n\n if (additionalProcessing) additionalProcessing(cls);\n\n return
cls;\n };\n }\n\n if (parentClass) {\n DecoratorFactory.prototype = Object.create(parentClass.prototype);\n }\n\n DecoratorFactory.prototype.ngMetadataName = name;\n (DecoratorFactory as any).annotationCls =
DecoratorFactory;\n return DecoratorFactory as any;\n });\n\n\nfunction makeMetadataCtor(props?: (...args:
any[]) => any): any {\n return function ctor(this: any, ...args: any[]) {\n if (props) {\n const values =
props(...args);\n for (const propName in values) {\n this[propName] = values[propName];\n }\n }\n };\n}\n\n\nexport function makeParamDecorator(\n name: string, props?: (...args: any[]) => any, parentClass?: any):

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any {\n return noSideEffects() => {\n const metaCtor = makeMetadataCtor(props);\n function
ParamDecoratorFactory(\n this: unknown|typeof ParamDecoratorFactory, ...args: any[]): any {\n if (this
instanceof ParamDecoratorFactory) {\n metaCtor.apply(this, args);\n return this;\n }\n const
annotationInstance = new (<any>ParamDecoratorFactory)(...args);\n\n (<any>ParamDecorator).annotation =
annotationInstance;\n return ParamDecorator;\n\n function ParamDecorator(cls: any, unusedKey: any, index:
number): any {\n // Use of Object.defineProperty is important since it creates non-enumerable property which\n
// prevents the property is copied during subclassing.\n const parameters =
cls.hasOwnProperty(PARAMETERS) ?\n (cls as any)[PARAMETERS] :\n Object.defineProperty(cls,
PARAMETERS, {value: []})[PARAMETERS];\n // there might be gaps if some in between parameters do not
have annotations.\n // we pad with nulls.\n while (parameters.length <= index) {\n
parameters.push(null);\n }\n\n (parameters[index] = parameters[index] || []).push(annotationInstance);\n
return cls;\n }\n }\n if (parentClass) {\n ParamDecoratorFactory.prototype =
Object.create(parentClass.prototype);\n }\n ParamDecoratorFactory.prototype.ngMetadataName = name;\n
(<any>ParamDecoratorFactory).annotationCls = ParamDecoratorFactory;\n return ParamDecoratorFactory;\n
});\n\n\nexport function makePropDecorator(\n name: string, props?: (...args: any[]) => any, parentClass?: any,\n additionalProcessing?: (target: any, name: string, ...args: any[]) => void): any {\n return noSideEffects() => {\n
const metaCtor = makeMetadataCtor(props);\n function PropDecoratorFactory(this: unknown|typeof
PropDecoratorFactory, ...args: any[]): any {\n if (this instanceof PropDecoratorFactory) {\n
metaCtor.apply(this, args);\n return this;\n }\n\n const decoratorInstance = new
(<any>PropDecoratorFactory)(...args);\n function PropDecorator(target: any, name: string) {\n const
constructor = target.constructor;\n // Use of Object.defineProperty is important because it creates a non-
enumerable property\n // which prevents the property from being copied during subclassing.\n const meta =
constructor.hasOwnProperty(PROP_METADATA) ?\n (constructor as any)[PROP_METADATA] :\n Object.defineProperty(constructor, PROP_METADATA, {value: {}})[PROP_METADATA];\n meta[name] =
meta.hasOwnProperty(name) && meta[name] || [];\n meta[name].unshift(decoratorInstance);\n\n if
(additionalProcessing) additionalProcessing(target, name, ...args);\n }\n\n return PropDecorator;\n }\n\n
if (parentClass) {\n PropDecoratorFactory.prototype = Object.create(parentClass.prototype);\n }\n\n
PropDecoratorFactory.prototype.ngMetadataName = name;\n (<any>PropDecoratorFactory).annotationCls =
PropDecoratorFactory;\n return PropDecoratorFactory;\n });\n}\n"/**\n * @license\n * Copyright Google LLC
All Rights Reserved.\n * Use of this source code is governed by an MIT-style license that can be\n * found in
the LICENSE file at https://angular.io/license\n */\n\nimport {makeParamDecorator} from
'./util/decorators';\n\n\n/**\n * Type of the Inject decorator / constructor function.\n */\n * @publicApi\n
*\n\nexport interface InjectDecorator {\n /**\n * Parameter decorator on a dependency parameter of a class
constructor\n * that specifies a custom provider of the dependency.\n */\n * @usageNotes\n * The following
example shows a class constructor that specifies a\n * custom provider of a dependency using the parameter
decorator.\n */\n * When `@Inject()` is not present, the injector uses the type annotation of the\n * parameter as
the provider.\n */\n * <code-example path="core/di/ts/metadata_spec.ts" region="InjectWithoutDecorator">\n
* </code-example>\n */\n * @see ["Dependency Injection Guide"](guide/dependency-injection)\n */\n * \n
(token: any): any;\n new(token: any): Inject;\n}\n\n\n/**\n * Type of the Inject metadata.\n */\n * @publicApi\n
*\n\nexport interface Inject {\n /**\n * A [DI token](guide/glossary#di-token) that maps to the dependency to be
injected.\n */\n * token: any;\n}\n\n\n/**\n * Inject decorator and metadata.\n */\n * @Annotation\n * @publicApi\n
*\n\nexport const Inject: InjectDecorator = makeParamDecorator('Inject', (token: any) => ({token}));\n\n\n\n/**\n *
Type of the Optional decorator / constructor function.\n */\n * @publicApi\n *\n\nexport interface OptionalDecorator
{\n /**\n * Parameter decorator to be used on constructor parameters,\n * which marks the parameter as being an
optional dependency.\n * The DI framework provides null if the dependency is not found.\n */\n * Can be used
together with other parameter decorators\n * that modify how dependency injection operates.\n */\n *
@usageNotes\n */\n * The following code allows the possibility of a null result:\n */\n * <code-example
path="core/di/ts/metadata_spec.ts" region="Optional">\n * </code-example>\n */\n * @see ["Dependency

```



```

}\n\n if (token.name) {\n return `${token.name}`;\n }\n\n const res = token.toString();\n\n if (res === null) {\n return " + res;\n }\n\n const newLineIndex = res.indexOf("\n");\n\n return newLineIndex === -1 ? res :
res.substring(0, newLineIndex);\n}\n\n/**\n * Concatenates two strings with separator, allocating new strings only
when necessary.\n * @param before before string.\n * @param separator separator string.\n * @param after
after string.\n * @returns concatenated string.\n */\nexport function concatStringsWithSpace(before: string|null,
after: string|null): string {\n return (before === null || before === "") ?\n (after === null ? " : after) :\n ((after ===
null || after === "") ? before : before + ' ' + after);\n}\n\n"/**\n * @license\n * Copyright Google LLC All Rights
Reserved.\n * Use of this source code is governed by an MIT-style license that can be\n * found in the
LICENSE file at https://angular.io/license\n */\n\n// The functions in this file verify that the assumptions we are
making\n// about state in an instruction are correct before implementing any logic.\n// They are meant only to be
called in dev mode as sanity checks.\n\nimport {stringify} from './stringify';\n\nexport function
assertNumber(actual: any, msg: string): asserts actual is number {\n if (!(typeof actual === 'number')) {\n
 throwError(msg, typeof actual, 'number', '===');\n }\n}\n\nexport function assertNumberInRange(\n actual: any,
minInclusive: number, maxInclusive: number): asserts actual is number {\n assertNumber(actual, 'Expected a
number');\n assertLessThanOrEqual(actual, maxInclusive, 'Expected number to be less than or equal to');\n
 assertGreaterThanOrEqual(actual, minInclusive, 'Expected number to be greater than or equal to');\n}\n\nexport
function assertString(actual: any, msg: string): asserts actual is string {\n if (!(typeof actual === 'string')) {\n
 throwError(msg, actual === null ? 'null' : typeof actual, 'string', '===');\n }\n}\n\nexport function
assertEqual<T>(actual: T, expected: T, msg: string) {\n if (!(actual === expected)) {\n throwError(msg, actual,
expected, '===');\n }\n}\n\nexport function assertNotEqual<T>(actual: T, expected: T, msg: string): asserts actual is
T {\n if (!(actual !== expected)) {\n throwError(msg, actual, expected, '!==');\n }\n}\n\nexport function
assertSame<T>(actual: T, expected: T, msg: string): asserts actual is T {\n if (!(actual === expected)) {\n
 throwError(msg, actual, expected, '===');\n }\n}\n\nexport function assertNotSame<T>(actual: T, expected: T, msg:
string) {\n if (!(actual !== expected)) {\n throwError(msg, actual, expected, '!==');\n }\n}\n\nexport function
assertLessThan<T>(actual: T, expected: T, msg: string): asserts actual is T {\n if (!(actual < expected)) {\n
 throwError(msg, actual, expected, '<');\n }\n}\n\nexport function assertLessThanOrEqual<T>(actual: T, expected:
T, msg: string): asserts actual is T {\n if (!(actual <= expected)) {\n throwError(msg, actual, expected, '<=');\n
}\n}\n\nexport function assertGreaterThan<T>(actual: T, expected: T, msg: string): asserts actual is T {\n if
(!(actual > expected)) {\n throwError(msg, actual, expected, '>');\n }\n}\n\nexport function
assertGreaterThanOrEqual<T>(actual: T, expected: T, msg: string): asserts actual is T {\n if (!(actual >=
expected)) {\n throwError(msg, actual, expected, '>=');\n }\n}\n\nexport function assertNotDefined<T>(actual: T,
msg: string) {\n if (actual !== null) {\n throwError(msg, actual, null, '===');\n }\n}\n\nexport function
assertDefined<T>(actual: T|null|undefined, msg: string): asserts actual is T {\n if (actual === null) {\n
 throwError(msg, actual, null, '!==');\n }\n}\n\nexport function throwError(msg: string): never;\nexport function
throwError(msg: string, actual: any, expected: any, comparison: string): never;\nexport function throwError(msg:
string, actual?: any, expected?: any, comparison?: string): never {\n throw new Error(\n `ASSERTION ERROR:
${msg}` +\n (comparison === null ? " : ` [Expected=> ${expected} ${comparison} ${actual}
<=Actual]`);\n)\n}\n\nexport function assertDomNode(node: any): asserts node is Node {\n // If we're in a worker,
`Node` will not be defined.\n if (!(typeof Node !== 'undefined' && node instanceof Node) &&\n !(typeof node
=== 'object' && node !== null &&\n node.constructor.name === 'WebWorkerRenderNode')) {\n
 throwError(`The provided value must be an instance of a DOM Node but got ${stringify(node)}`);\n
}\n}\n\nexport function assertIndexInRange(arr: any[], index: number) {\n assertDefined(arr, 'Array must be
defined.);\n const maxLen = arr.length;\n if (index < 0 || index >= maxLen) {\n throwError(`Index expected to be
less than ${maxLen} but got ${index}`);\n }\n}\n\nexport function assertOneOf(value: any, ...validValues: any[])
{\n if (validValues.indexOf(value) !== -1) return true;\n throwError(`Expected value to be one of
${JSON.stringify(validValues)} but was ${\n JSON.stringify(value)}.`);\n }\n\n"/**\n * @license\n * Copyright
Google LLC All Rights Reserved.\n * Use of this source code is governed by an MIT-style license that can be\n
* found in the LICENSE file at https://angular.io/license\n */\n\nexport function

```

```

getClosureSafeProperty<T>(objWithPropertyToExtract: T): string {\n for (let key in objWithPropertyToExtract)
{\n if (objWithPropertyToExtract[key] === getClosureSafeProperty as any) {\n return key;\n }\n }\n throw
Error('Could not find renamed property on target object.);\n}\n\n/**\n * Sets properties on a target object from a
source object, but only if\n * the property doesn't already exist on the target object.\n * @param target The target to
set properties on\n * @param source The source of the property keys and values to set\n */\nexport function
fillProperties(target: {[key: string]: string}, source: {[key: string]: string}) {\n for (const key in source) {\n if
(source.hasOwnProperty(key) && !target.hasOwnProperty(key)) {\n target[key] = source[key];\n }\n }\n}\n\n"/**\n * @license\n * Copyright Google LLC All Rights Reserved.\n *\n * Use of this source code is
governed by an MIT-style license that can be\n * found in the LICENSE file at https://angular.io/license\n
*/\n\nimport {Type} from '../interface/type';\nimport {getClosureSafeProperty} from '../util/property';\nimport
{ClassProvider, ConstructorProvider, ExistingProvider, FactoryProvider, StaticClassProvider, ValueProvider} from
'./provider';\n\n\n/**\n * Information about how a type or `InjectionToken` interfaces with the DI system.\n *\n *
At a minimum, this includes a `factory` which defines how to create the given type `T`, possibly\n * requesting
injection of other types if necessary.\n *\n * Optionally, a `providedIn` parameter specifies that the given type
belongs to a particular\n * `InjectorDef`, `NgModule`, or a special scope (e.g. `root`). A value of `null` indicates\n
* that the injectable does not belong to any scope.\n *\n * @codeGenApi\n * @publicApi The ViewEngine compiler
emits code with this type for injectables. This code is\n * deployed to npm, and should be treated as public api.\n\n
*/\n\nexport interface InjectableDef<T> {\n /**\n * Specifies that the given type belongs to a particular injector:\n
* - `InjectorType` such as `NgModule`,\n * - `root` the root injector\n * - `any` all injectors.\n * - `null`, does
not belong to any injector. Must be explicitly listed in the injector\n * `providers`.\n */\n providedIn:
InjectorType<any>|'root'|'platform'|'any'|null;\n\n /**\n * The token to which this definition belongs.\n *\n *
Note that this may not be the same as the type that the `factory` will create.\n */\n token: unknown;\n\n /**\n *
Factory method to execute to create an instance of the injectable.\n */\n factory: (t?: Type<any>) => T;\n\n /**\n *
In a case of no explicit injector, a location where the instance of the injectable is stored.\n */\n value:
T|undefined;\n}\n\n\n/**\n * Information about the providers to be included in an `Injector` as well as how the given
type\n * which carries the information should be created by the DI system.\n *\n * An `InjectorDef` can import other
types which have `InjectorDefs`, forming a deep nested\n * structure of providers with a defined priority (identically
to how `NgModule`s also have\n * an import/dependency structure).\n *\n * NOTE: This is a private type and
should not be exported\n *\n * @codeGenApi\n */\n\nexport interface InjectorDef<T> {\n factory: () => T;\n\n //
TODO(alxhub): Narrow down the type here once decorators properly change the return type of the\n // class they
are decorating (to add the prov property for example).\n providers:
(Type<any>|ValueProvider|ExistingProvider|FactoryProvider|ConstructorProvider|\n
StaticClassProvider|ClassProvider|any[])[];\n\n imports:
(InjectorType<any>|InjectorTypeWithProviders<any>)[];\n}\n\n\n/**\n * A `Type` which has an `InjectableDef`
static field.\n *\n * `InjectableDefType`s contain their own Dependency Injection metadata and are usable in an\n *
`InjectorDef`-based `StaticInjector`.\n *\n * @publicApi\n */\n\nexport interface InjectableType<T> extends Type<T>
{\n /**\n * Opaque type whose structure is highly version dependent. Do not rely on any properties.\n */\n prov:
never;\n}\n\n\n/**\n * A type which has an `InjectorDef` static field.\n *\n * `InjectorDefTypes` can be used to
configure a `StaticInjector`.\n *\n * @publicApi\n */\n\nexport interface InjectorType<T> extends Type<T> {\n /**\n
* Opaque type whose structure is highly version dependent. Do not rely on any properties.\n */\n inj:
never;\n}\n\n\n/**\n * Describes the `InjectorDef` equivalent of a `ModuleWithProviders`, an `InjectorDefType` with
an\n * associated array of providers.\n *\n * Objects of this type can be listed in the imports section of an
`InjectorDef`.\n *\n * NOTE: This is a private type and should not be exported\n */\n\nexport interface
InjectorTypeWithProviders<T> {\n ngModule: InjectorType<T>;\n providers?:
(Type<any>|ValueProvider|ExistingProvider|FactoryProvider|ConstructorProvider|\n
StaticClassProvider|ClassProvider|any[])[];\n}\n\n\n/**\n * Construct an `InjectableDef` which defines how a token
will be constructed by the DI system, and\n * in which injectors (if any) it will be available.\n *\n * This should be
assigned to a static `prov` field on a type, which will then be an\n * `InjectableType`.\n *\n * Options:\n * *

```



`providedIn` determines which injectors will include the injectable, by either associating it with an @NgModule or other InjectorType, or by specifying that this injectable should be provided in the 'root' injector, which will be the application-level injector in most apps. factory` gives the zero argument function which will create an instance of the injectable. The factory can call inject` to access the Injector` and request injection of dependencies.`

```

@codeGenApi @publicApi This instruction has been emitted by ViewEngine for some time and is deployed to npm.
export function defineInjectable<T>(opts: { token: unknown, providedIn?: Type<any> | 'root' | 'platform' | 'any' | null, factory: () => T, }): never {
 return ({ token: opts.token, providedIn: opts.providedIn as any || null, factory: opts.factory, value: undefined }) as InjectableDef<T> as never;
}


```

`@deprecated in v8, delete after v10. This API should be used only by generated code, and that code should now use defineInjectable instead. @publicApi`

```

export const defineInjectable = defineInjectable;


```

`Construct an InjectorDef` which configures an injector. This should be assigned to a static injector def (inj` field on a type, which will then be an InjectorType`. Options: factory` : an InjectorType` is an instantiable type, so a zero argument factory` function to create the type must be provided. If that factory function needs to inject arguments, it can use the inject` function. providers` : an optional array of providers to add to the injector. Each provider must either have a factory or point to a type which has a prov` static property (the type must be an InjectableType`. imports` : an optional array of imports of other InjectorType`s or InjectorTypeWithModule`s whose providers will also be added to the injector. Locally provided types will override providers from imports.`

```

@codeGenApi export function defineInjector(options: { factory: () => any, providers?: any[], imports?: any[] }): never {
 return ({ factory: options.factory, providers: options.providers || [], imports: options.imports || [], } as InjectorDef<any>) as never;
}


```

`Read the injectable def (prov` for type` in a way which is immune to accidentally reading inherited value. @param type A type which may have its own (non-inherited) prov`. export function getInjectableDef<T>(type: any): InjectableDef<T> | null {
 return getOwnDefinition(type, NG_PROV_DEF) || getOwnDefinition(type, NG_INJECTABLE_DEF);
}

Return definition only if it is defined directly on type` and is not inherited from a base class of type`. function getOwnDefinition<T>(type: any, field: string): InjectableDef<T> | null {
 return type.hasOwnProperty(field) ? type[field] : null;
}

Read the injectable def (prov` for type` or read the prov` from one of its ancestors. @param type A type which may have prov`, via inheritance. @deprecated Will be removed in a future version of Angular, where an error will occur in the scenario if we find the prov` on an ancestor only. export function getInheritedInjectableDef<T>(type: any): InjectableDef<T> | null {
 const def = type && (type[NG_PROV_DEF] || type[NG_INJECTABLE_DEF]);
 if (def) {
 const typeName = getTypeName(type);
 // TODO(FW-1307): Re-add ngDevMode when closure can handle it
 // ngDevMode && console.warn(`DEPRECATED: DI is instantiating a token "${typeName}" that inherits its @Injectable decorator but does not provide one itself.`);
 // This will become an error in a future version of Angular. Please add @Injectable() to the "${typeName}" class.
 }
 return def;
} else {
 return null;
}
}

Gets the name of a type, accounting for some cross-browser differences. function getTypeName(type: any): string {
 // Function.prototype.name behaves differently between IE and other browsers. In most browsers // it'll always return the name of the function itself, no matter how many other functions it // inherits from. On IE the function doesn't have its own name` property, but it takes it from // the lowest level in the prototype chain. E.g. if we have class Foo extends Parent` most // browsers will evaluate Foo.name` to Foo` while IE will return Parent`. We work around // the issue by converting the function to a string and parsing its name out that way via a regex.
 if (type.hasOwnProperty('name')) {
 return type.name;
 }
 const match = (" + type).match(/function\s*(\s*\w+)/);
 return match === null ? " : match[1];
}

Read the injector def type in a way which is immune to accidentally reading inherited value. @param type type which may have an injector def (inj` export function getInjectorDef<T>(type: any): InjectorDef<T> | null {
 return type && (type.hasOwnProperty(NG_INJ_DEF) || type.hasOwnProperty(NG_INJECTOR_DEF)) ? (type as any)[NG_INJ_DEF] : null;
}

export const NG_PROV_DEF = getClosureSafeProperty({ prov:`



attribute value should be injected.

- \* The directive can inject constant string literals of host element attributes.
- \* @usageNotes
- \* Suppose we have an `<input>` element and want to know its `type`.
- \* `html`
- \* `<input type="text">`
- \* A decorator can inject string literal `text` as in the following example.
- \* { @example core/ts/metadata/metadata.ts region='attributeMetadata' }
- \* @publicApi
- (name: string): any;
- new(name: string): Attribute;
- Type of the Attribute metadata.
- \* @publicApi
- export interface Attribute {
- /\*\* The name of the attribute to be injected into the constructor.
- attributeName?: string;
- Type of the Query metadata.
- \* @publicApi
- export interface Query {
- descendants: boolean;
- first: boolean;
- read: any;
- isViewQuery: boolean;
- selector: any;
- static?: boolean;
- Type of the query metadata.
- \* @see ContentChildren
- \* @see ContentChild
- \* @see ViewChildren
- \* @see ViewChild
- \* @publicApi
- export abstract class Query {}
- Type of the ContentChildren decorator / constructor function.
- \* @see ContentChildren
- \* @publicApi
- export interface ContentChildrenDecorator {
- /\*\* Parameter decorator that configures a content query.
- \* Use to get the `QueryList` of elements or directives from the content DOM.
- \* Any time a child element is added, removed, or moved, the query list will be updated, and the changes observable of the query list will emit a new value.
- \* Content queries are set before the `ngAfterContentInit` callback is called.
- \* Does not retrieve elements or directives that are in other components' templates,
- \* since a component's template is always a black box to its ancestors.
- \*\*\*Metadata Properties\*\*\*
- \*\*\*selector\*\*\* - The directive type or the name used for querying.
- \*\*\*descendants\*\*\* - True to include all descendants, otherwise include only direct children.
- \*\*\*read\*\*\* - Used to read a different token from the queried elements.
- \* @usageNotes
- \* Here is a simple demonstration of how the `ContentChildren` decorator can be used.
- \* { @example core/di/ts/contentChildren/content\_children\_howto.ts region='HowTo' }
- ### Tab-pane example
- Here is a slightly more realistic example that shows how `ContentChildren` decorators can be used to implement a tab pane component.
- \* { @example core/di/ts/contentChildren/content\_children\_example.ts region='Component' }
- \* @Annotation
- (selector: Type<any>|InjectionToken<unknown>|Function|string, opts?: { descendants?: boolean, read?: any }): any;
- new(selector: Type<any>|InjectionToken<unknown>|Function|string, opts?: { descendants?: boolean, read?: any }): Query;
- Type of the ContentChildren metadata.
- \* @Annotation
- \* @publicApi
- export type ContentChildren = Query;
- Type of the ContentChildren decorator and metadata.
- \* @Annotation
- \* @publicApi
- export const ContentChildren: ContentChildrenDecorator = makePropDecorator(
- 'ContentChildren',
- (selector?: any, data: any = {}) => ({ selector, first: false, isViewQuery: false, descendants: false, ...data }),
- Query);
- Type of the ContentChild decorator / constructor function.
- \* @publicApi
- export interface ContentChildDecorator {
- /\*\* Parameter decorator that configures a content query.
- \* Use to get the first element or the directive matching the selector from the content DOM.
- \* If the content DOM changes, and a new child matches the selector, the property will be updated.
- \* Content queries are set before the `ngAfterContentInit` callback is called.
- \* Does not retrieve elements or directives that are in other components' templates,
- \* since a component's template is always a black box to its ancestors.
- \*\*\*Metadata Properties\*\*\*
- \*\*\*selector\*\*\* - The directive type or the name used for querying.
- \*\*\*read\*\*\* - Used to read a different token from the queried element.
- \*\*\*static\*\*\* - True to resolve query results before change detection runs, false to resolve after change detection. Defaults to false.
- \* @usageNotes
- \* { @example core/di/ts/contentChild/content\_child\_howto.ts region='HowTo' }
- ### Example
- \* { @example core/di/ts/contentChild/content\_child\_example.ts region='Component' }
- \* @Annotation
- (selector: Type<any>|InjectionToken<unknown>|Function|string, opts?: { read?: any, static?: boolean }): any;
- new(selector: Type<any>|InjectionToken<unknown>|Function|string, opts?: { read?: any, static?: boolean }): ContentChild;
- Type of the ContentChild metadata.
- \* @publicApi
- export type ContentChild = Query;
- Type of the ContentChild decorator and metadata.
- \* @Annotation
- \* @publicApi
- export const ContentChild: ContentChildDecorator = makePropDecorator(
- 'ContentChild',

```

(selector?: any, data: any = {}) =>({selector, first: true, isViewQuery: false, descendants: true, ...data}),
Query);
Type of the ViewChildren decorator / constructor function.
@see `ViewChildren`.
@publicApi
export interface ViewChildrenDecorator {
 /** Parameter decorator that configures a view query.
 * Use to get the `QueryList` of elements or directives from the view DOM.
 * Any time a child element is added, removed, or moved, the query list will be updated,
 * and the changes observable of the query list will emit a new value.
 * View queries are set before the `ngAfterViewInit` callback is called.
 *
 * **Metadata Properties**
 *
 * * * * *selector* - The directive type or the name used for querying.
 * * * * *read* - Used to read a different token from the queried elements.
 *
 * @usageNotes
 *
 * { @example core/di/ts/viewChildren/view_children_howto.ts region='HowTo'}
 *
 * ### Another example
 *
 * { @example core/di/ts/viewChildren/view_children_example.ts region='Component'}
 *
 * @Annotation
 *
 * (selector: Type<any>|InjectionToken<unknown>|Function|string, opts?: {read?: any}): any;
 new(selector: Type<any>|InjectionToken<unknown>|Function|string, opts?: {read?: any}): ViewChildren;
}
Type of the ViewChildren metadata.
@publicApi
export type ViewChildren = Query;
ViewChildren decorator and metadata.
@Annotation
@publicApi
export const ViewChildren: ViewChildrenDecorator = makePropDecorator(
 'ViewChildren',
 (selector?: any, data: any = {}) =>({selector, first: false, isViewQuery: true, descendants: true, ...data}),
 Query);
Type of the ViewChild decorator / constructor function.
@see `ViewChild`.
@publicApi
export interface ViewChildDecorator {
 /**
 * @description
 * Property decorator that configures a view query.
 * The change detector looks for the first element or the directive matching the selector
 * in the view DOM. If the view DOM changes, and a new child matches the selector,
 * the property is updated.
 * View queries are set before the `ngAfterViewInit` callback is called.
 *
 * **Metadata Properties**
 *
 * * * *selector* - The directive type or the name used for querying.
 * * * * *read* - Used to read a different token from the queried elements.
 * * * * *static* - True to resolve query results before change detection runs,
 * false to resolve after change detection. Defaults to false.
 *
 * The following selectors are supported.
 *
 * * Any class with the `@Component` or `@Directive` decorator
 *
 * * A template reference variable as a string (e.g. query `<my-component #cmp></my-component>`
 * with `@ViewChild('cmp')`)
 *
 * * Any provider defined in the child component tree of the current component (e.g.
 * `@ViewChild(SomeService) someService: SomeService`)
 *
 * * Any provider defined through a string token (e.g.
 * `@ViewChild('someToken') someTokenVal: any`)
 *
 * * A `TemplateRef` (e.g. query `<ng-template></ng-template>` with
 * `@ViewChild(TemplateRef) template;`)
 *
 * @usageNotes
 *
 * { @example core/di/ts/viewChild/view_child_example.ts region='Component'}
 *
 * ### Example 2
 *
 * { @example core/di/ts/viewChild/view_child_howto.ts region='HowTo'}
 *
 * @Annotation
 *
 * (selector: Type<any>|InjectionToken<unknown>|Function|string, opts?: {read?: any,
 static?: boolean}): any;
 new(selector: Type<any>|InjectionToken<unknown>|Function|string, opts?: {read?: any,
 static?: boolean}): ViewChild;
}
Type of the ViewChild metadata.
@publicApi
export type ViewChild = Query;
ViewChild decorator and metadata.
@Annotation
@publicApi
export const ViewChild: ViewChildDecorator = makePropDecorator(
 'ViewChild',
 (selector: any, data: any) =>({selector, first: true, isViewQuery: true, descendants: true, ...data}),
 Query);
"/**
 * @license
 * Copyright Google LLC All Rights Reserved.
 * Use of this source code is governed by an MIT-style license that can be
 * found in the LICENSE file at https://angular.io/license
 */
The strategy that the default change detector uses to detect changes.
When set, takes effect the next time change detection is triggered.
@see { @link ChangeDetectorRef#usage-notes Change detection usage}
@publicApi
export enum ChangeDetectionStrategy {
 /** Use the `CheckOnce` strategy, meaning that automatic change detection is deactivated
 * until reactivated by setting the strategy to `Default` (`CheckAlways`.)
 * Change detection can still be explicitly invoked.
 * This strategy applies to all child directives and cannot be overridden.
 */
 OnPush = 0,
 /** Use the default `CheckAlways` strategy, in which change detection is automatic until
 * explicitly deactivated.
 */
 Default = 1,
}
Defines the possible states of the default change detector.
@see `ChangeDetectorRef`
export enum ChangeDetectorStatus {
 /** A state in which, after calling `detectChanges()`, the change detector
 * state becomes `Checked`, and must be

```



```

Promise<string>|string;\n};\n\nexport type StringMap = {\n [key: string]: string;\n};\n\nexport type
StringMapWithRename = {\n [key: string]: string|[string, string];\n};\n\nexport type Provider = any;\n\nexport
enum R3ResolvedDependencyType {\n Token = 0,\n Attribute = 1,\n ChangeDetectorRef = 2,\n Invalid =
3,\n}\n\nexport enum R3FactoryTarget {\n Directive = 0,\n Component = 1,\n Injectable = 2,\n Pipe = 3,\n
NgModule = 4,\n}\n\nexport interface R3DependencyMetadataFacade {\n token: any;\n resolved:
R3ResolvedDependencyType;\n host: boolean;\n optional: boolean;\n self: boolean;\n skipSelf:
boolean;\n}\n\nexport interface R3PipeMetadataFacade {\n name: string;\n type: any;\n typeArgumentCount:
number;\n pipeName: string;\n deps: R3DependencyMetadataFacade[]|null;\n pure: boolean;\n}\n\nexport
interface R3InjectableMetadataFacade {\n name: string;\n type: any;\n typeArgumentCount: number;\n
providedIn: any;\n useClass?: any;\n useFactory?: any;\n useExisting?: any;\n useValue?: any;\n userDeps?:
R3DependencyMetadataFacade[];\n}\n\nexport interface R3NgModuleMetadataFacade {\n type: any;\n bootstrap:
Function[];\n declarations: Function[];\n imports: Function[];\n exports: Function[];\n schemas: {name:
string}[]|null;\n id: string|null;\n}\n\nexport interface R3InjectorMetadataFacade {\n name: string;\n type: any;\n
deps: R3DependencyMetadataFacade[]|null;\n providers: any[];\n imports: any[];\n}\n\nexport interface
R3DirectiveMetadataFacade {\n name: string;\n type: any;\n typeArgumentCount: number;\n typeSourceSpan:
ParseSourceSpan;\n deps: R3DependencyMetadataFacade[]|null;\n selector: string|null;\n queries:
R3QueryMetadataFacade[];\n host: {[key: string]: string};\n propMetadata: {[key: string]: any[]};\n lifecycle:
{usesOnChanges: boolean};\n inputs: string[];\n outputs: string[];\n usesInheritance: boolean;\n exportAs:
string[]|null;\n providers: Provider[]|null;\n viewQueries: R3QueryMetadataFacade[];\n}\n\nexport interface
R3ComponentMetadataFacade extends R3DirectiveMetadataFacade {\n template: string;\n preserveWhitespaces:
boolean;\n animations: any[]|undefined;\n pipes: Map<string, any>;\n directives: {selector: string, expression:
any}[];\n styles: string[];\n encapsulation: ViewEncapsulation;\n viewProviders: Provider[]|null;\n interpolation?:
[string, string];\n changeDetection?: ChangeDetectionStrategy;\n}\n\nexport interface
R3FactoryDefMetadataFacade {\n name: string;\n type: any;\n typeArgumentCount: number;\n deps:
R3DependencyMetadataFacade[]|null;\n injectFn: 'directiveInject'|'inject';\n target: R3FactoryTarget;\n}\n\nexport
enum ViewEncapsulation {\n Emulated = 0,\n // Historically the 1 value was for `Native` encapsulation which has
been removed as of v11.\n None = 2,\n ShadowDom = 3\n}\n\nexport type ChangeDetectionStrategy =
number;\n\nexport interface R3QueryMetadataFacade {\n propertyName: string;\n first: boolean;\n predicate:
any|string[];\n descendants: boolean;\n read: any|null;\n static: boolean;\n}\n\nexport interface ParseSourceSpan
{\n start: any;\n end: any;\n details: any;\n fullStart: any;\n}\n\n"/**\n * @license\n * Copyright Google LLC All
Rights Reserved.\n * \n * Use of this source code is governed by an MIT-style license that can be\n * found in the
LICENSE file at https://angular.io/license\n */\nimport {global} from './util/global';\nimport {CompilerFacade,
ExportedCompilerFacade} from './compiler_facade_interface';\nexport * from
'./compiler_facade_interface';\n\nexport function getCompilerFacade(): CompilerFacade {\n const globalNg:
ExportedCompilerFacade = global['ng'];\n if (!globalNg || !globalNg.compilerFacade) {\n throw new Error(\n
`Angular JIT compilation failed: '@angular/compiler' not loaded!`\n) +\n
` - JIT compilation is discouraged for
production use-cases! Consider AOT mode instead.\n` +\n
` - Did you bootstrap using '@angular/platform-browser-dynamic' or '@angular/platform-server'?\n` +\n
` - Alternatively provide the compiler with 'import
"@angular/compiler";' before bootstrapping.`);\n }\n return globalNg.compilerFacade;\n}\n\n"/**\n * @license\n * Copyright Google LLC All Rights Reserved.\n * \n * Use of this source code is governed by an MIT-style license
that can be\n * found in the LICENSE file at https://angular.io/license\n */\nimport {Type} from
'./interface/type';\nimport {getClosureSafeProperty} from './util/property';\nimport {stringify} from
'./util/stringify';\n\n\n/**\n * An interface that a function passed into { @link forwardRef } has to implement.\n *
@usageNotes\n * ### Example\n * \n * { @example core/di/ts/forward_ref/forward_ref_spec.ts
region='forward_ref_fn'}\n * @publicApi\n */\nexport interface ForwardRefFn {\n (): any;\n}\n\nconst
__forward_ref__ = getClosureSafeProperty({__forward_ref__: getClosureSafeProperty});\n\n\n/**\n * Allows to
refer to references which are not yet defined.\n * \n * For instance, `forwardRef` is used when the `token` which we
need to refer to for the purposes of\n * DI is declared, but not yet defined. It is also used when the `token` which we

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use when creating\n * a query is not yet defined.\n *\n * @usageNotes\n * ### Example\n * { @example
core/di/ts/forward_ref/forward_ref_spec.ts region='forward_ref'\n * @publicApi\n * ^\nexport function
forwardRef(forwardRefFn: ForwardRefFn): Type<any> {\n (<any>forwardRefFn).__forward_ref__ =
forwardRef;\n (<any>forwardRefFn).toString = function() {\n return stringify(this());\n };
return
(<Type<any>><any>forwardRefFn);\n}\n\n/**\n * Lazily retrieves the reference value from a forwardRef.\n *\n * Acts as the identity function when given a non-forward-ref value.\n *\n * @usageNotes\n * ### Example\n *\n * { @example core/di/ts/forward_ref/forward_ref_spec.ts region='resolve_forward_ref'\n *\n * @see `forwardRef`\n *\n * @publicApi\n * ^\nexport function resolveForwardRef<T>(type: T): T {\n return isForwardRef(type) ? type() :
type;\n}\n\n/** Checks whether a function is wrapped by a `forwardRef`. *\nexport function isForwardRef(fn:
any): fn is() => any {\n return typeof fn === 'function' && fn.hasOwnProperty('__forward_ref__') &&\n
fn.__forward_ref__ === forwardRef;\n}\n\n",/**\n * @license\n * Copyright Google LLC All Rights Reserved.\n
*\n * Use of this source code is governed by an MIT-style license that can be\n * found in the LICENSE file at
https://angular.io/license\n * ^\n\n/**\n * @description\n *\n * Represents a type that a Component or other object is
instances of.\n *\n * An example of a `Type` is `MyCustomComponent` class, which in JavaScript is represented
by\n * the `MyCustomComponent` constructor function.\n *\n * @publicApi\n * ^\nexport const Type =
Function;\n\nexport function isType(v: any): v is Type<any> {\n return typeof v === 'function';\n}\n\n/**\n *
@description\n *\n * Represents an abstract class `T`, if applied to a concrete class it would stop being\n *
instantiable.\n *\n * @publicApi\n * ^\nexport interface AbstractType<T> extends Function {\n prototype:
T;\n}\n\nexport interface Type<T> extends Function {\n new(...args: any[]): T;\n}\n\nexport type Mutable<T
extends {[x: string]: any}, K extends string> = {\n [P in K]: T[P];\n};\n\n/**\n * Returns a writable type version of
type.\n *\n * USAGE:\n * Given:\n * ```\n * interface Person {readonly name: string}\n * ```\n *\n * We would like
to get a read/write version of `Person`.\n * ```\n * const WritablePerson = Writable<Person>;\n * ```\n *\n * The
result is that you can do:\n * ```\n * const readonlyPerson: Person = {name: 'Marry'};\n * readonlyPerson.name
= 'John'; // TypeError\n * (readonlyPerson as WritablePerson).name = 'John'; // OK\n * // Error: Correctly
detects that `Person` did not have `age` property.\n * (readonlyPerson as WritablePerson).age = 30;\n * ```\n
*\n * ^\nexport type Writable<T> = {\n -readonly[K in keyof T]: T[K];\n};\n\n",/**\n * @license\n * Copyright Google
LLC All Rights Reserved.\n *\n * Use of this source code is governed by an MIT-style license that can be\n * found
in the LICENSE file at https://angular.io/license\n * ^\n\nimport {assertEqual, assertLessThanOrEqual} from
'./assert';\n\n/**\n * Equivalent to ES6 spread, add each item to an array.\n *\n * @param items The items to add\n
*\n * @param arr The array to which you want to add the items\n * ^\nexport function addAllToArray(items: any[], arr:
any[]) {\n for (let i = 0; i < items.length; i++) {\n arr.push(items[i]);\n }\n}\n\n/**\n * Flattens an array.\n
*\n * ^\nexport function flatten(list: any[], dst?: any[]): any[] {\n if (dst === undefined) dst = list;\n for (let i = 0; i <
list.length; i++) {\n let item = list[i];\n if (Array.isArray(item)) {\n // we need to inline it.\n if (dst === list)
{\n // Our assumption that the list was already flat was wrong and\n // we need to clone flat since we need
to write to it.\n dst = list.slice(0, i);\n } \n flatten(item, dst);\n } else if (dst !== list) {\n
dst.push(item);\n } \n }\n return dst;\n}\n\nexport function deepForEach<T>(input: (T|any[])[], fn: (value: T) =>
void): void {\n input.forEach(value => Array.isArray(value) ? deepForEach(value, fn) : fn(value));\n}\n\nexport
function addToArray(arr: any[], index: number, value: any): void {\n // perf: array.push is faster than array.splice!\n
if (index >= arr.length) {\n arr.push(value);\n } else {\n arr.splice(index, 0, value);\n }\n}\n\nexport function
removeFromArray(arr: any[], index: number): any {\n // perf: array.pop is faster than array.splice!\n if (index >=
arr.length - 1) {\n return arr.pop();\n } else {\n return arr.splice(index, 1)[0];\n }\n}\n\nexport function
newArray<T = any>(size: number): T[];\nexport function newArray<T>(size: number, value: T): T[];\nexport
function newArray<T>(size: number, value?: T): T[] {\n const list: T[] = [];\n for (let i = 0; i < size; i++) {\n
list.push(value!);\n }\n return list;\n}\n\n/**\n * Remove item from array (Same as `Array.splice()` but faster.)\n
*\n * `Array.splice()` is not as fast because it has to allocate an array for the elements which were\n * removed. This
causes memory pressure and slows down code when most of the time we don't\n * care about the deleted items
array.\n *\n * https://jsperf.com/fast-array-splice (About 20x faster)\n *\n * @param array Array to splice\n *
@param index Index of element in array to remove.\n * @param count Number of items to remove.\n * ^\nexport

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function arraySplice(array: any[], index: number, count: number): void {
 const length = array.length - count;
 while (index < length) {
 array[index] = array[index + count];
 index++;
 }
 while (count-- > 0) {
 array.pop(); // shrink the array
 }
}
// Same as `Array.splice(index, 0, value)` but faster.
// `Array.splice()` is not fast because it has to allocate an array for the elements which were removed. This causes memory pressure and slows down code when most of the time we don't care about the deleted items array.
// @param array Array to splice.
// @param index Index in array where the `value` should be added.
// @param value Value to add to array.
// @returns void
export function arrayInsert(array: any[], index: number, value: any): void {
 const ngDevMode = true;
 const assertLessThanOrEqual = (index, array.length, 'Can't insert past array end.');
```

let end = array.length;

```

 while (end > index) {
 const previousEnd = end - 1;
 array[end] = array[previousEnd];
 end = previousEnd;
 }
 array[index] = value;
}
// Same as `Array.splice2(index, 0, value1, value2)` but faster.
// `Array.splice()` is not fast because it has to allocate an array for the elements which were removed. This causes memory pressure and slows down code when most of the time we don't care about the deleted items array.
// @param array Array to splice.
// @param index Index in array where the `value` should be added.
// @param value1 Value to add to array.
// @param value2 Value to add to array.
// @returns void
export function arrayInsert2(array: any[], index: number, value1: any, value2: any): void {
 const ngDevMode = true;
 const assertLessThanOrEqual = (index, array.length, 'Can't insert past array end.');
```

let end = array.length;

```

 if (end === index) {
 // inserting at the end.
 array.push(value1, value2);
 } else if (end === 1) {
 // corner case when we have less items in array than we have items to insert.
 array.push(value2, array[0]);
 array[0] = value1;
 } else {
 end--;
 array.push(array[end - 1], array[end]);
 while (end > index) {
 const previousEnd = end - 2;
 array[end] = array[previousEnd];
 end--;
 }
 array[index] = value1;
 array[index + 1] = value2;
 }
}
// Insert a `value` into an `array` so that the array remains sorted.
// NOTE: - Duplicates are not allowed, and are ignored.
// - This uses binary search algorithm for fast inserts.
// @param array A sorted array to insert into.
// @param value The value to insert.
// @returns index of the inserted value.
export function arrayInsertSorted(array: string[], value: string): number {
 let index = arrayIndexofSorted(array, value);
 if (index < 0) {
 // if we did not find it insert it.
 index = ~index;
 arrayInsert(array, index, value);
 }
 return index;
}
// Remove `value` from a sorted `array`.
// NOTE: - This uses binary search algorithm for fast removals.
// @param array A sorted array to remove from.
// @param value The value to remove.
// @returns index of the removed value.
// - positive index if value found and removed.
// - negative index if value not found. (~index` to get the value where it should have been inserted)
export function arrayRemoveSorted(array: string[], value: string): number {
 const index = arrayIndexofSorted(array, value);
 if (index >= 0) {
 arraySplice(array, index, 1);
 }
 return index;
}
// Get an index of an `value` in a sorted `array`.
// NOTE: - This uses binary search algorithm for fast removals.
// @param array A sorted array to binary search.
// @param value The value to look for.
// @returns index of the value.
// - positive index if value found.
// - negative index if value not found. (~index` to get the value where it should have been located)
export function arrayIndexofSorted(array: string[], value: string): number {
 return _arrayIndexofSorted(array, value, 0);
}
// `KeyValueArray` is an array where even positions contain keys and odd positions contain values.
// `KeyValueArray` provides a very efficient way of iterating over its contents. For small sets (~10) the cost of binary searching an `KeyValueArray` has about the same performance characteristics that of a `Map` with significantly better memory footprint.
// If used as a `Map` the keys are stored in alphabetical order so that they can be binary searched for retrieval.
// See: `keyValueArraySet`, `keyValueArrayGet`, `keyValueArrayIndexof`, `keyValueArrayDelete`.
export interface KeyValueArray<VALUE> extends Array<VALUE|string> {
 __brand__: 'array-map';
}
// Set a `value` for a `key`.
// @param keyValueArray to modify.
// @param key The key to locate or create.
// @param value The value to set for a `key`.
// @returns index (always even) of where the value was set.
export function keyValueArraySet<V>(keyValueArray: KeyValueArray<V>, key: string, value: V): number {
 let index = keyValueArrayIndexof(keyValueArray, key);
 if (index >= 0) {
 // if we found it set it.
 keyValueArray[index | 1] = value;
 } else {
 index = ~index;
 arrayInsert2(keyValueArray, index, key,

```





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ES2015_INHERITED_CLASS_WITH_DELEGATE_CTOR =\n /^class\s+[A-Za-
z\\d$_]*\s*\s*extends\s+[\^]{+}{[\s\S]*constructor\s*\(\)\s*\{\s*super\(\(\.|\.\.|\.\.arguments\)\)\};\n\n/**\n * Determine
whether a stringified type is a class which delegates its constructor\n * to its parent.\n *\n * This is not trivial since
compiled code can actually contain a constructor function\n * even if the original source code did not. For instance,
when the child class contains\n * an initialized instance property.\n */\nexport function isDelegateCtor(typeStr:
string): boolean {\n return ES5_DELEGATE_CTOR.test(typeStr) ||\n ES2015_INHERITED_CLASS_WITH_DELEGATE_CTOR.test(typeStr) ||\n (ES2015_INHERITED_CLASS.test(typeStr) &&
!ES2015_INHERITED_CLASS_WITH_CTOR.test(typeStr));\n}\n\nexport class ReflectionCapabilities implements
PlatformReflectionCapabilities {\n private _reflect: any;\n\n constructor(reflect?: any) {\n this._reflect = reflect ||
global['Reflect'];\n }\n\n isReflectionEnabled(): boolean {\n return true;\n }\n\n factory<T>(t: Type<T>): (args:
any[]) => T {\n return (...args: any[]) => new t(...args);\n }\n\n /** @internal */\n _zipTypesAndAnnotations(paramTypes: any[], paramAnnotations: any[]): any[][] {\n let result: any[][];\n\n if
(typeof paramTypes === 'undefined') {\n result = newArray(paramAnnotations.length);\n } else {\n result =
newArray(paramTypes.length);\n }\n\n for (let i = 0; i < result.length; i++) {\n // TS outputs Object for
parameters without types, while Traceur omits\n // the annotations. For now we preserve the Traceur behavior to
aid\n // migration, but this can be revisited.\n if (typeof paramTypes === 'undefined') {\n result[i] = [];\n
 } else if (paramTypes[i] && paramTypes[i] !== Object) {\n result[i] = [paramTypes[i)];\n } else {\n
result[i] = [];\n }\n if (paramAnnotations && paramAnnotations[i] !== null) {\n result[i] =
result[i].concat(paramAnnotations[i]);\n }\n }\n\n return result;\n }\n\n private _ownParameters(type:
Type<any>, parentCtor: any): any[][]|null {\n const typeStr = type.toString();\n // If we have no decorators, we
only have function.length as metadata.\n // In that case, to detect whether a child class declared an own constructor
or not,\n // we need to look inside of that constructor to check whether it is\n // just calling the parent.\n // This
also helps to work around for https://github.com/Microsoft/TypeScript/issues/12439\n // that sets
'design:paramtypes' to []\n // if a class inherits from another class but has no ctor declared itself.\n if
(isDelegateCtor(typeStr)) {\n return null;\n }\n\n // Prefer the direct API.\n if ((<any>type).parameters &&
(<any>type).parameters !== parentCtor.parameters) {\n return (<any>type).parameters;\n }\n\n // API of
tsickle for lowering decorators to properties on the class.\n const tsickleCtorParams =
(<any>type).ctorParameters;\n if (tsickleCtorParams && tsickleCtorParams !== parentCtor.ctorParameters) {\n
// Newer tsickle uses a function closure\n // Retain the non-function case for compatibility with older tsickle\n
const ctorParameters =\n typeof tsickleCtorParams === 'function' ? tsickleCtorParams() : tsickleCtorParams;\n
 const paramTypes = ctorParameters.map((ctorParam: any) => ctorParam && ctorParam.type);\n const
paramAnnotations = ctorParameters.map(\n (ctorParam: any) =>\n ctorParam &&
convertTsickleDecoratorIntoMetadata(ctorParam.decorators));\n return
this._zipTypesAndAnnotations(paramTypes, paramAnnotations);\n }\n\n // API for metadata created by
invoking the decorators.\n const paramAnnotations = type.hasOwnProperty(PARAMETERS) && (type as
any)[PARAMETERS];\n const paramTypes = this._reflect && this._reflect.getOwnMetadata &&\n
this._reflect.getOwnMetadata('design:paramtypes', type);\n if (paramTypes || paramAnnotations) {\n return
this._zipTypesAndAnnotations(paramTypes, paramAnnotations);\n }\n\n // If a class has no decorators, at least
create metadata\n // based on function.length.\n // Note: We know that this is a real constructor as we checked\n
// the content of the constructor above.\n return newArray<any[]>(type.length);\n}\n\n parameters(type:
Type<any>): any[][] {\n // Note: only report metadata if we have at least one class decorator\n // to stay in sync
with the static reflector.\n if (!isType(type)) {\n return [];\n }\n const parentCtor = getParentCtor(type);\n
let parameters = this._ownParameters(type, parentCtor);\n if (!parameters && parentCtor !== Object) {\n
parameters = this.parameters(parentCtor);\n }\n return parameters || [];\n }\n\n private
_ownAnnotations(typeOrFunc: Type<any>, parentCtor: any): any[][]|null {\n // Prefer the direct API.\n if
((<any>typeOrFunc).annotations && (<any>typeOrFunc).annotations !== parentCtor.annotations) {\n let
annotations = (<any>typeOrFunc).annotations;\n if (typeof annotations === 'function' &&

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annotations.annotations) {\n annotations = annotations.annotations;\n }\n return annotations;\n }\n\n //
API of tsickle for lowering decorators to properties on the class.\n if ((<any>typeOrFunc).decorators &&
(<any>typeOrFunc).decorators !== parentCtor.decorators) {\n return
convertTsickleDecoratorIntoMetadata((<any>typeOrFunc).decorators);\n }\n\n // API for metadata created by
invoking the decorators.\n if (typeOrFunc.hasOwnProperty(ANNOTATIONS)) {\n return (typeOrFunc as
any)[ANNOTATIONS];\n }\n return null;\n }\n\n annotations(typeOrFunc: Type<any>): any[] {\n if
(!isType(typeOrFunc)) {\n return [];\n }\n const parentCtor = getParentCtor(typeOrFunc);\n const
ownAnnotations = this._ownAnnotations(typeOrFunc, parentCtor) || [];\n const parentAnnotations = parentCtor
!== Object ? this.annotations(parentCtor) : [];\n return parentAnnotations.concat(ownAnnotations);\n }\n\n
private _ownPropMetadata(typeOrFunc: any, parentCtor: any): {[key: string]: any[]}|null {\n // Prefer the direct
API.\n if ((<any>typeOrFunc).propMetadata &&\n (<any>typeOrFunc).propMetadata !==
parentCtor.propMetadata) {\n let propMetadata = (<any>typeOrFunc).propMetadata;\n if (typeof
propMetadata === 'function' && propMetadata.propMetadata) {\n propMetadata =
propMetadata.propMetadata;\n }\n return propMetadata;\n }\n\n // API of tsickle for lowering decorators
to properties on the class.\n if ((<any>typeOrFunc).propDecorators &&\n (<any>typeOrFunc).propDecorators
!== parentCtor.propDecorators) {\n const propDecorators = (<any>typeOrFunc).propDecorators;\n const
propMetadata = <{[key: string]: any[]}>{};\n Object.keys(propDecorators).forEach(prop => {\n
propMetadata[prop] = convertTsickleDecoratorIntoMetadata(propDecorators[prop]);\n });\n return
propMetadata;\n }\n\n // API for metadata created by invoking the decorators.\n if
(typeOrFunc.hasOwnProperty(PROP_METADATA)) {\n return (typeOrFunc as any)[PROP_METADATA];\n }\n
return null;\n }\n\n propMetadata(typeOrFunc: any): {[key: string]: any[]} {\n if (!isType(typeOrFunc)) {\n
return {};\n }\n const parentCtor = getParentCtor(typeOrFunc);\n const propMetadata: {[key: string]: any[]}
= {};\n if (parentCtor !== Object) {\n const parentPropMetadata = this.propMetadata(parentCtor);\n
Object.keys(parentPropMetadata).forEach((propName) => {\n propMetadata[propName] =
parentPropMetadata[propName];\n });\n }\n const ownPropMetadata = this._ownPropMetadata(typeOrFunc,
parentCtor);\n if (ownPropMetadata) {\n Object.keys(ownPropMetadata).forEach((propName) => {\n
const decorators: any[] = [];\n if (propMetadata.hasOwnProperty(propName)) {\n
decorators.push(...propMetadata[propName]);\n }\n decorators.push(...ownPropMetadata[propName]);\n
propMetadata[propName] = decorators;\n });\n }\n return propMetadata;\n }\n\n
ownPropMetadata(typeOrFunc: any): {[key: string]: any[]} {\n if (!isType(typeOrFunc)) {\n return {};\n }\n
return this._ownPropMetadata(typeOrFunc, getParentCtor(typeOrFunc)) || {};\n }\n\n hasLifecycleHook(type: any,
lcProperty: string): boolean {\n return type instanceof Type && lcProperty in type.prototype;\n }\n\n
guards(type: any): {[key: string]: any} {\n return {};\n }\n\n getter(name: string): GetterFn {\n return
<GetterFn>new Function('o', 'return o.' + name + ';');\n }\n\n setter(name: string): SetterFn {\n return
<SetterFn>new Function('o', 'v', 'return o.' + name + ' = v;');\n }\n\n method(name: string): MethodFn {\n const
functionBody = `if (!o.${name}) throw new Error(`"${name}" is undefined`);\n return o.${name}.apply(o,
args);`\n return <MethodFn>new Function('o', 'args', functionBody);\n }\n\n // There is not a concept of import
uri in Js, but this is useful in developing Dart applications.\n importUri(type: any): string {\n // StaticSymbol\n
if (typeof type === 'object' && type['filePath']) {\n return type['filePath'];\n }\n // Runtime type\n
return `.${stringify(type)}`;\n }\n\n resourceUri(type: any): string {\n return `.${stringify(type)}`;\n }\n\n
resolveIdentifier(name: string, moduleUrl: string, members: string[], runtime: any): any {\n return runtime;\n }\n
resolveEnum(enumIdentifier: any, name: string): any {\n return enumIdentifier[name];\n }\n\n\nfunction
convertTsickleDecoratorIntoMetadata(decoratorInvocations: any[]): any[] {\n if (!decoratorInvocations) {\n
return [];\n }\n return decoratorInvocations.map(decoratorInvocation => {\n const decoratorType =
decoratorInvocation.type;\n const annotationCls = decoratorType.annotationCls;\n const annotationArgs =
decoratorInvocation.args ? decoratorInvocation.args : [];\n return new annotationCls(...annotationArgs);\n
});\n }\n\n\nfunction getParentCtor(ctor: Function): Type<any> {\n const parentProto = ctor.prototype ?
Object.getPrototypeOf(ctor.prototype) : null;\n const parentCtor = parentProto ? parentProto.constructor : null;\n //

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Note: We always use `Object` as the null value\n // to simplify checking later on.\n return parentCtor ||
Object;\n}\n", "/**\n * @license\n * Copyright Google LLC All Rights Reserved.\n *\n * Use of this source code is
governed by an MIT-style license that can be\n * found in the LICENSE file at https://angular.io/license\n
*/\n\nimport { CompilerFacade, getCompilerFacade, R3DependencyMetadataFacade,
R3ResolvedDependencyType } from '../compiler/compiler_facade';\nimport { Type } from
'../interface/type';\nimport { ReflectionCapabilities } from '../reflection/reflection_capabilities';\nimport
{ Attribute, Host, Inject, Optional, Self, SkipSelf } from '../metadata';\n\nlet _reflect: ReflectionCapabilities|null =
null;\n\nexport function getReflect(): ReflectionCapabilities {\n return (_reflect = _reflect || new
ReflectionCapabilities());\n}\n\nexport function reflectDependencies(type: Type<any>):
R3DependencyMetadataFacade[] {\n return convertDependencies(getReflect().parameters(type));\n}\n\nexport
function convertDependencies(deps: any[]): R3DependencyMetadataFacade[] {\n const compiler =
getCompilerFacade();\n return deps.map(dep => reflectDependency(compiler, dep));\n}\n\nfunction
reflectDependency(compiler: CompilerFacade, dep: any|any[]): R3DependencyMetadataFacade {\n const meta:
R3DependencyMetadataFacade = {\n token: null,\n host: false,\n optional: false,\n resolved:
compiler.R3ResolvedDependencyType.Token,\n self: false,\n skipSelf: false,\n };\n\n function
setTokenAndResolvedType(token: any): void {\n meta.resolved =
compiler.R3ResolvedDependencyType.Token;\n meta.token = token;\n }\n\n if (Array.isArray(dep) &&
dep.length > 0) {\n for (let j = 0; j < dep.length; j++) {\n const param = dep[j];\n if (param === undefined)
{\n // param may be undefined if type of dep is not set by ngts\n continue;\n }\n\n const proto =
Object.getPrototypeOf(param);\n\n if (param instanceof Optional || proto.ngMetadataName === 'Optional') {\n
meta.optional = true;\n } else if (param instanceof SkipSelf || proto.ngMetadataName === 'SkipSelf') {\n
meta.skipSelf = true;\n } else if (param instanceof Self || proto.ngMetadataName === 'Self') {\n meta.self =
true;\n } else if (param instanceof Host || proto.ngMetadataName === 'Host') {\n meta.host = true;\n }
else if (param instanceof Inject) {\n meta.token = param.token;\n } else if (param instanceof Attribute) {\n
if (param.attributeName === undefined) {\n throw new Error(`Attribute name must be defined.`);\n }\n
meta.token = param.attributeName;\n meta.resolved = compiler.R3ResolvedDependencyType.Attribute;\n }
else if (param.__ChangeDetectorRef__ === true) {\n meta.token = param;\n meta.resolved =
compiler.R3ResolvedDependencyType.ChangeDetectorRef;\n } else {\n
setTokenAndResolvedType(param);\n }\n }\n } else if (dep === undefined || (Array.isArray(dep) &&
dep.length === 0)) {\n meta.token = undefined;\n meta.resolved = R3ResolvedDependencyType.Invalid;\n }
else {\n setTokenAndResolvedType(dep);\n }\n return meta;\n}\n\n", "/**\n * @license\n * Copyright Google LLC
All Rights Reserved.\n *\n * Use of this source code is governed by an MIT-style license that can be\n * found in
the LICENSE file at https://angular.io/license\n */\n\nimport { Type } from '../interface/type';\nimport { Component }
from './directives';\n\n/**\n * Used to resolve resource URLs on `@Component` when used with JIT
compilation.\n *\n * Example:\n *\n * @Component({\n * selector: 'my-comp',\n * templateUrl: 'my-comp.html', // This requires asynchronous resolution\n * })\n * class MyComponent {\n * }\n *\n * // Calling
`renderComponent` will fail because `renderComponent` is a synchronous process\n * // and `MyComponent`'s
`@Component.templateUrl` needs to be resolved asynchronously.\n *\n * // Calling `resolveComponentResources`
will resolve `@Component.templateUrl` into\n * // `@Component.template`, which allows `renderComponent` to
proceed in a synchronous manner.\n *\n * // Use browser's `fetch()` function as the default resource resolution
strategy.\n * resolveComponentResources(fetch).then(() => {\n * // After resolution all URLs have been converted
into `template` strings.\n * renderComponent(MyComponent);\n * });\n *\n * NOTE: In AOT the
resolution happens during compilation, and so there should be no need\n * to call this method outside JIT mode.\n
*\n * @param resourceResolver a function which is responsible for returning a `Promise` to the\n * contents of the
resolved URL. Browser's `fetch()` method is a good default implementation.\n */\n\nexport function
resolveComponentResources(\n resourceResolver: (url: string) => (Promise<string|{text(): Promise<string>}>)):
Promise<void> {\n // Store all promises which are fetching the resources.\n const componentResolved:
Promise<void>[] = [];\n\n // Cache so that we don't fetch the same resource more than once.\n const urlMap = new

```

```

Map<string, Promise<string>>());
function cachedResourceResolve(url: string): Promise<string> {
 let promise = urlMap.get(url);
 if (!promise) {
 const resp = resourceResolver(url);
 urlMap.set(url, promise = resp.then(unwrapResponse));
 }
 return promise;
}

componentResourceResolutionQueue.forEach((component: Component, type: Type<any>) => {
 const promises: Promise<void>[] = [];
 if (component.templateUrl) {
 promises.push(cachedResourceResolve(component.templateUrl).then((template) => {
 component.template = template;
 }));
 }
 const styleUrls = component.styleUrls;
 const styles = component.styles || (component.styles = []);
 const styleOffset = component.styles.length;
 styleUrls && styleUrls.forEach((styleUrl, index) => {
 styles.push(""); // pre-allocate array.
 promises.push(cachedResourceResolve(styleUrl).then((style) => {
 styles[styleOffset + index] = style;
 styleUrls.splice(styleUrls.indexOf(styleUrl), 1);
 if (styleUrls.length == 0) {
 component.styleUrls = undefined;
 }
 }));
 });
 const fullyResolved = Promise.all(promises).then(() => componentDefResolved(type));
 componentResolved.push(fullyResolved);
});
clearResolutionOfComponentResourcesQueue();
return Promise.all(componentResolved).then(() => undefined);
}

let componentResourceResolutionQueue = new Map<Type<any>, Component>();
// Track when existing cmp for a Type is waiting on resources.
const componentDefPendingResolution = new Set<Type<any>>();
export function maybeQueueResolutionOfComponentResources(type: Type<any>, metadata: Component) {
 if (componentNeedsResolution(metadata)) {
 componentResourceResolutionQueue.set(type, metadata);
 componentDefPendingResolution.add(type);
 }
}
export function isComponentDefPendingResolution(type: Type<any>): boolean {
 return componentDefPendingResolution.has(type);
}
export function componentNeedsResolution(component: Component): boolean {
 return !!(component.templateUrl && !component.hasOwnProperty('template')) || component.styleUrls && component.styleUrls.length;
}
export function clearResolutionOfComponentResourcesQueue(): Map<Type<any>, Component> {
 const old = componentResourceResolutionQueue;
 componentResourceResolutionQueue = new Map();
 return old;
}
export function restoreComponentResolutionQueue(queue: Map<Type<any>, Component>): void {
 componentDefPendingResolution.clear();
 queue.forEach((_, type) => componentDefPendingResolution.add(type));
 componentResourceResolutionQueue = queue;
}
export function isComponentResourceResolutionQueueEmpty(): boolean {
 return componentResourceResolutionQueue.size === 0;
}
function unwrapResponse(response: string | {text(): Promise<string>}): string | Promise<string> {
 return typeof response == 'string' ? response : response.text();
}
function componentDefResolved(type: Type<any>): void {
 componentDefPendingResolution.delete(type);
}
"/**
 * @license
 * Copyright Google LLC All Rights Reserved.
 * Use of this source code is governed by an MIT-style license that can be found in the LICENSE file at https://angular.io/license
 */
Defines template and style encapsulation options available for Component's { @link Component}.
See { @link Component#encapsulation encapsulation}.
@usageNotes
Example
{ @example core/ts/metadata/encapsulation.ts region='longform'}
@publicApi
export enum ViewEncapsulation {
 /** Emulate `Native` scoping of styles by adding an attribute containing surrogate id to the Host Element and pre-processing the style rules provided via { @link Component#styles styles} or { @link Component#styleUrls styleUrls}, and adding the new Host Element attribute to all selectors.
 * This is the default option.
 * Emulated = 0,
 * Historically the 1 value was for `Native` encapsulation which has been removed as of v11.
 * Don't provide any template or style encapsulation.
 * None = 2,
 * Use Shadow DOM to encapsulate styles.
 * For the DOM this means using modern [Shadow DOM](https://w3c.github.io/webcomponents/spec/shadow/) and creating a ShadowRoot for Component's Host Element.
 * ShadowDom = 3
 */
 None = 0,
 Emulated = 1,
 ShadowDom = 2,
}
"/**
 * @license
 * Copyright Google LLC All Rights Reserved.
 * Use of this source code is governed by an MIT-style license that can be found in the LICENSE file at https://angular.io/license
 */
import { global } from './global';
declare global {
 /** Values of ngDevMode
 * Depending on the current state of the application, ngDevMode may have one of several values.
 * For convenience, the "truthy" value which

```



```

Object.freeze(EMPTY_ARRAY);\n\n", "/*\n * @license\n * Copyright Google LLC All Rights Reserved.\n *\n *
Use of this source code is governed by an MIT-style license that can be\n * found in the LICENSE file at
https://angular.io/license\n */\n\nimport { getClosureSafeProperty } from './util/property';\n\nexport const
NG_COMP_DEF = getClosureSafeProperty({ cmp: getClosureSafeProperty });\n\nexport const NG_DIR_DEF =
getClosureSafeProperty({ dir: getClosureSafeProperty });\n\nexport const NG_PIPE_DEF =
getClosureSafeProperty({ pipe: getClosureSafeProperty });\n\nexport const NG_MOD_DEF =
getClosureSafeProperty({ mod: getClosureSafeProperty });\n\nexport const NG_LOC_ID_DEF =
getClosureSafeProperty({ loc: getClosureSafeProperty });\n\nexport const NG_FACTORY_DEF =
getClosureSafeProperty({ fac: getClosureSafeProperty });\n\n/*\n * If a directive is diPublic, bloomAdd sets a
property on the type with this constant as\n * the key and the directive's unique ID as the value. This allows us to
map directives to their\n * bloom filter bit for DI.\n */\n// TODO(misko): This is wrong. The NG_ELEMENT_ID
should never be minified.\n\nexport const NG_ELEMENT_ID = getClosureSafeProperty({ __NG_ELEMENT_ID__ :
getClosureSafeProperty });\n\n", "/*\n * @license\n * Copyright Google LLC All Rights Reserved.\n *\n * Use of this
source code is governed by an MIT-style license that can be\n * found in the LICENSE file at
https://angular.io/license\n */\n\nimport { ChangeDetectionStrategy } from './change_detection/constants';\n\nimport
{ Mutable, Type } from './interface/type';\n\nimport { NgModuleDef, NgModuleType } from
'./metadata/ng_module_def';\n\nimport { SchemaMetadata } from './metadata/schema';\n\nimport { ViewEncapsulation }
from './metadata/view';\n\nimport { noSideEffects } from './util/closure';\n\nimport { initNgDevMode } from
'./util/ng_dev_mode';\n\nimport { stringify } from './util/stringify';\n\nimport { EMPTY_ARRAY, EMPTY_OBJ } from
'./empty';\n\nimport { NG_COMP_DEF, NG_DIR_DEF, NG_LOC_ID_DEF, NG_MOD_DEF, NG_PIPE_DEF } from
'./fields';\n\nimport { ComponentDef, ComponentDefFeature, ComponentTemplate, ComponentType,
ContentQueriesFunction, DirectiveDef, DirectiveDefFeature, DirectiveTypesOrFactory, HostBindingsFunction,
PipeDef, PipeTypesOrFactory, ViewQueriesFunction } from './interfaces/definition';\n\nimport { AttributeMarker,
TAttributes, TConstantsOrFactory } from './interfaces/node';\n\nimport { CssSelectorList, SelectorFlags } from
'./interfaces/projection';\n\n\nlet _renderCompCount = 0;\n\n// While these types are unused here, they are required
so that types don't\n// get resolved lazily. see: https://github.com/Microsoft/web-build-tools/issues/1050\ntype
_web_build_tools_issue_1050_SelectorFlags = SelectorFlags;\ntype
_web_build_tools_issue_1050_AttributeMarker = AttributeMarker;\n\n/*\n * Create a component definition
object.\n *\n * # Example\n * ```\n * class MyDirective {\n * // Generated by Angular Template Compiler\n *
// [Symbol] syntax will not be supported by TypeScript until v2.7\n * static cmp = defineComponent({\n * ...
\n * });\n * }\n * ```\n * @codegenapi\n *\n\nexport function defineComponent<T>(componentDefinition: {\n /*\n *
Directive type, needed to configure the injector.\n *\n type: Type<T>;\n\n /*\n * The selectors that will be used to
match nodes to this component.\n *\n selectors?: CssSelectorList;\n\n /*\n * The number of nodes, local refs, and
pipes in this component template.\n *\n * Used to calculate the length of this component's LView array, so we\n
*\n * can pre-fill the array and set the binding start index.\n *\n // TODO(kara): remove queries from this count\n
decls: number;\n\n /*\n * The number of bindings in this component template (including pure fn bindings).\n\n
*\n * Used to calculate the length of this component's LView array, so we\n * can pre-fill the array and set the
host binding start index.\n *\n vars: number;\n\n /*\n * A map of input names.\n *\n * The format is in:
`{actualPropertyName: string}:(string|[string, string])`. \n *\n * Given:\n * ```\n * class MyComponent {\n *
@Input()\n * publicInput1: string;\n *\n * @Input('publicInput2')\n * declaredInput2: string;\n * }\n *
```\n *\n * is described as:\n * ```\n * {\n * publicInput1: 'publicInput1',\n * declaredInput2:
['publicInput2', 'declaredInput2'],\n * }\n * ```\n *\n * Which the minifier may translate to:\n * ```\n * {\n
* minifiedPublicInput1: 'publicInput1',\n * minifiedDeclaredInput2: ['publicInput2', 'declaredInput2'],\n * }\n *
```\n *\n * This allows the render to re-construct the minified, public, and declared names\n * of properties.\n
*\n * NOTE:\n * - Because declared and public name are usually same we only generate the array\n *
`['public', 'declared']` format when they differ.\n * - The reason why this API and `outputs` API is not the same is
that `NgOnChanges` has\n * inconsistent behavior in that it uses declared names rather than minified or public.
For\n * this reason `NgOnChanges` will be deprecated and removed in future version and this\n * API will be

```

simplified to be consistent with `output``.  
`inputs?: {[P in keyof T]?: string | [string, string]}`  
 A map of output names.  
 The format is in: `{[actualPropertyName: string]: string}`.  
 Which the minifier may translate to: `{[minifiedPropertyName: string]: string}`.  
 This allows the render to re-construct the minified and non-minified names of properties.  
`outputs?: {[P in keyof T]?: string}`  
 Function executed by the parent template to allow child directive to apply host bindings.  
`hostBindings?: HostBindingsFunction<T>`  
 The number of bindings in this directive `hostBindings`` (including pure fn bindings).  
 Used to calculate the length of the component's LView array, so we can pre-fill the array and set the host binding start index.  
`hostVars?: number`  
 Assign static attribute values to a host element.  
 This property will assign static attribute values as well as class and style values to a host element. Since attribute values can consist of different types of values, the `hostAttrs`` array must include the values in the following format:  
`attrs = [ // static attributes (like `title`, `name`, `id`...)  
 attr1, value1, attr2, value, // a single namespace value (like `x:id`)  
 NAMESPACE_MARKER, namespaceUri1, name1, value1, // another single namespace value (like `x:name`)  
 NAMESPACE_MARKER, namespaceUri2, name2, value2, // a series of CSS classes that will be applied to the element (no spaces)  
 CLASSES_MARKER, class1, class2, class3, // a series of CSS styles (property + value) that will be applied to the element  
 STYLES_MARKER, prop1, value1, prop2, value2 ]`  
 All non-class and non-style attributes must be defined at the start of the list first before all class and style values are set. When there is a change in value type (like when classes and styles are introduced) a marker must be used to separate the entries. The marker values themselves are set via entries found in the `[AttributeMarker]` enum.  
`hostAttrs?: TAttributes`  
 Function to create instances of content queries associated with a given directive.  
`contentQueries?: ContentQueriesFunction<T>`  
 Defines the name that can be used in the template to assign this directive to a variable.  
 See: `{@link Directive.exportAs}`  
`exportAs?: string[]`  
 Template function use for rendering DOM.  
 This function has following structure.  
`function Template<T>(ctx:T, creationMode: boolean) {  
 if (creationMode) {  
 // Contains creation mode instructions.  
 }  
 // Contains binding update instructions  
}`  
 Common instructions are:  
 Creation mode instructions:  
`elementStart``, `elementEnd``  
`text``  
`container``  
`listener``  
 Binding update instructions:  
`bind``  
`elementAttribute``  
`elementProperty``  
`elementClass``  
`elementStyle``  
 template: `ComponentTemplate<T>`  
 Constants for the nodes in the component's view.  
 Includes attribute arrays, local definition arrays etc.  
`consts?: TConstantsOrFactory`  
 An array of `NgContent[selector]` values that were found in the template.  
`ngContentSelectors?: string[]`  
 Additional set of instructions specific to view query processing. This could be seen as a set of instruction to be inserted into the template function.  
 Query-related instructions need to be pulled out to a specific function as a timing of execution is different as compared to all other instructions (after change detection hooks but before view hooks).  
`viewQuery?: ViewQueriesFunction<T> | null`  
 A list of optional features to apply.  
 See: `{@link NgOnChangesFeature}`, `{@link ProvidersFeature}`  
`features?: ComponentDefFeature[]`  
 Defines template and style encapsulation options available for Component's `{@link Component}`.  
`encapsulation?: ViewEncapsulation`  
 Defines arbitrary developer-defined data to be stored on a renderer instance.  
 This is useful for renderers that delegate to other renderers.  
 see: `animation`  
`data?: {[kind: string]: any}`  
 A set of styles that the component needs to be present for component to render correctly.  
`styles?: string[]`  
 The strategy that the default change detector uses to detect changes.  
 When set, takes effect the next time change detection is triggered.  
`changeDetection?: ChangeDetectionStrategy`  
 Registry of directives and components that may be found in this component's view.  
 The property is either an array of `DirectiveDef`s` or a function which returns the array of `DirectiveDef`s`. The function is necessary to be able to support forward declarations.  
`directives?: DirectiveTypesOrFactory | null`  
 Registry of pipes that may be found in this component's view.  
 The property is either an array of `PipeDef`s` or a function which returns the array of `PipeDef`s`. The



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function is necessary to be able to support forward declarations.\n *^n pipes?: PipeTypesOrFactory | null;\n\n
/**\n * The set of schemas that declare elements to be allowed in the component's template.\n *^n schemas?:
SchemaMetadata[] | null;\n}): never {\n return noSideEffects() => {\n // Initialize ngDevMode. This must be
the first statement in defineComponent.\n // See the `initNgDevMode` docstring for more information.\n
(typeof ngDevMode === 'undefined' || ngDevMode) && initNgDevMode();\n const type =
componentDefinition.type;\n const typePrototype = type.prototype;\n const declaredInputs: {[key:
string]: string} = {} as any;\n const def: Mutable<ComponentDef<any>, keyof ComponentDef<any>> = {\n
 type: type,\n providersResolver: null,\n decls: componentDefinition.decls,\n vars:
componentDefinition.vars,\n factory: null,\n template: componentDefinition.template || null!,\n
const: componentDefinition.consts || null,\n ngContentSelectors:
componentDefinition.ngContentSelectors,\n hostBindings: componentDefinition.hostBindings || null,\n
hostVars: componentDefinition.hostVars || 0,\n hostAttrs: componentDefinition.hostAttrs || null,\n
contentQueries: componentDefinition.contentQueries || null,\n declaredInputs: declaredInputs,\n
inputs: null!, // assigned in noSideEffects\n outputs: null!, // assigned in noSideEffects\n exportAs:
componentDefinition.exportAs || null,\n onChange: componentDefinition.onChange ===
ChangeDetectionStrategy.OnPush,\n directiveDefs: null!, // assigned in noSideEffects\n pipeDefs:
null!, // assigned in noSideEffects\n selectors: componentDefinition.selectors || EMPTY_ARRAY,\n
viewQuery: componentDefinition.viewQuery || null,\n features: componentDefinition.features as
DirectiveDefFeature[] || null,\n data: componentDefinition.data || {},\n // TODO(misko): convert
ViewEncapsulation into const enum so that it can be used\n // directly in the next line. Also `None` should be
0 not 2.\n encapsulation: componentDefinition.encapsulation || ViewEncapsulation.Emulated,\n id:
'c',\n styles: componentDefinition.styles || EMPTY_ARRAY,\n _: null as never,\n setInput:
null,\n schemas: componentDefinition.schemas || null,\n tView: null,\n });\n const
directiveTypes = componentDefinition.directives!;\n const feature = componentDefinition.features;\n
const pipeTypes = componentDefinition.pipes!;\n def.id += _renderCompCount++;\n def.inputs =
invertObject(componentDefinition.inputs, declaredInputs),\n def.outputs =
invertObject(componentDefinition.outputs),\n feature && feature.forEach((fn) => fn(def));\n
def.directiveDefs = directiveTypes ?\n () => (typeof directiveTypes === 'function' ? directiveTypes() :
directiveTypes)\n .map(extractDirectiveDef) :\n null;\n def.pipeDefs = pipeTypes ?\n () =>\n (typeof pipeTypes === 'function' ? pipeTypes() : pipeTypes).map(extractPipeDef) :\n null;\n\n
return def as never;\n }) as never;\n }\n\n
/**\n * Generated next to NgModules to monkey-
patch directive and pipe references onto a component's\n * definition, when generating a direct reference in the
component file would otherwise create an\n * import cycle.\n *^n * See [this
explanation](https://hackmd.io/Odw80D0pR6yfsOjg_7XCJg?view) for more details.\n *^n * @codeGenApi\n
*^nexport function setComponentScope(\n type: ComponentType<any>, directives: Type<any>[], pipes:
Type<any>[]): void {\n const def = (type.cmp as ComponentDef<any>);\n def.directiveDefs = () =>
directives.map(extractDirectiveDef);\n def.pipeDefs = () => pipes.map(extractPipeDef);\n}\n\n
export function
extractDirectiveDef(type: Type<any>): DirectiveDef<any>|ComponentDef<any> {\n const def =
getComponentDef(type) || getDirectiveDef(type);\n if (ngDevMode && !def) {\n throw new
Error(`${type.name} is neither 'ComponentType' or 'DirectiveType'.`);\n }\n return def!;\n}\n\n
export function
extractPipeDef(type: Type<any>): PipeDef<any> {\n const def = getPipeDef(type);\n if (ngDevMode && !def) {\n
throw new Error(`${type.name} is not a 'PipeType'.`);\n }\n return def!;\n}\n\n
export const
autoRegisterModuleById: {[id: string]: NgModuleType} = {};\n\n
/**\n * @codeGenApi\n *^nexport function
defineNgModule<T>(def: {\n /** Token representing the module. Used by DI. *\n type: T;\n /** List of
components to bootstrap. *\n bootstrap?: Type<any>[] | (() => Type<any>[]);\n /** List of components,
directives, and pipes declared by this module. *\n declarations?: Type<any>[] | (() => Type<any>[]);\n /** List
of modules or `ModuleWithProviders` imported by this module. *\n imports?: Type<any>[] | (() =>
Type<any>[]);\n /** *\n * List of modules, `ModuleWithProviders`, components, directives, or pipes exported by

```

```

this\n * module.\n * /\n exports?: Type<any>[] | ((=> Type<any>[]);\n\n /** The set of schemas that declare
elements to be allowed in the NgModule. */\n schemas?: SchemaMetadata[] | null;\n\n /** Unique ID for the
module that is used with `getModuleFactory`. */\n id?: string | null;\n}): never {\n const res: NgModuleDef<T> =
{\n type: def.type,\n bootstrap: def.bootstrap || EMPTY_ARRAY,\n declarations: def.declarations ||
EMPTY_ARRAY,\n imports: def.imports || EMPTY_ARRAY,\n exports: def.exports || EMPTY_ARRAY,\n
transitiveCompileScopes: null,\n schemas: def.schemas || null,\n id: def.id || null,\n }; \n if (def.id != null) {\n
noSideEffects() => {\n autoRegisterModuleById[def.id!] = def.type as unknown as NgModuleType;\n });\n
}\n return res as never;\n}\n\n/**\n * Adds the module metadata that is necessary to compute the module's transitive
scope to an\n * existing module definition.\n *\n * Scope metadata of modules is not used in production builds, so
calls to this function can be\n * marked pure to tree-shake it from the bundle, allowing for all referenced
declarations\n * to become eligible for tree-shaking as well.\n *\n * @codeGenApi\n */\nexport function
setNgModuleScope(type: any, scope: {\n /** List of components, directives, and pipes declared by this module.
*/\n declarations?: Type<any>[] | ((=> Type<any>[]);\n\n /** List of modules or `ModuleWithProviders` imported
by this module. */\n imports?: Type<any>[] | ((=> Type<any>[]);\n\n /**\n * List of modules,
`ModuleWithProviders`, components, directives, or pipes exported by this\n * module.\n */\n exports?:
Type<any>[] | ((=> Type<any>[]);\n}): void {\n return noSideEffects() => {\n const ngModuleDef =
getNgModuleDef(type, true);\n ngModuleDef.declarations = scope.declarations || EMPTY_ARRAY;\n
ngModuleDef.imports = scope.imports || EMPTY_ARRAY;\n ngModuleDef.exports = scope.exports ||
EMPTY_ARRAY;\n }) as never;\n}\n\n/**\n * Inverts an inputs or outputs lookup such that the keys, which
were the\n * minified keys, are part of the values, and the values are parsed so that\n * the publicName of the
property is the new key\n *\n * e.g. for\n *\n * ```\n * class Comp {\n * @Input()\n * propName1: string;\n *\n *
@Input('publicName2')\n * declaredPropName2: number;\n * }\n * ```\n *\n * will be serialized as\n *\n * ```\n *
{\n * propName1: 'propName1',\n * declaredPropName2: ['publicName2', 'declaredPropName2'],\n * }\n * ```\n
*\n *\n * which is then translated by the minifier as:\n *\n * ```\n * {\n * minifiedPropName1: 'propName1',\n *
minifiedPropName2: ['publicName2', 'declaredPropName2'],\n * }\n * ```\n *\n *\n * becomes: (public name =>
minifiedName)\n *\n * ```\n * {\n * 'propName1': 'minifiedPropName1',\n * 'publicName2':
'minifiedPropName2',\n * }\n * ```\n *\n *\n * Optionally the function can take `secondary` which will result in: (public
name => declared name)\n *\n * ```\n * {\n * 'propName1': 'propName1',\n * 'publicName2':
'declaredPropName2',\n * }\n * ```\n *\n *\n */\nfunction invertObject<T>(\n obj?: {[P in keyof T]?: string|[string,
string]},\n secondary?: {[key: string]: string}): {[P in keyof T]: string} {\n if (obj == null) return EMPTY_OBJ
as any;\n const newLookup: any = {};\n for (const minifiedKey in obj) {\n if (obj.hasOwnProperty(minifiedKey))\n
{\n let publicName: string|[string, string] = obj[minifiedKey]!;\n let declaredName = publicName;\n if
(Array.isArray(publicName)) {\n declaredName = publicName[1];\n publicName = publicName[0];\n
}\n newLookup[publicName] = minifiedKey;\n if (secondary) {\n (secondary[publicName] =
declaredName as string);\n }\n }\n }\n return newLookup;\n}\n\n/**\n * Create a directive definition object.\n\n
*\n * # Example\n * ```ts\n * class MyDirective {\n * // Generated by Angular Template Compiler\n * // [Symbol]
syntax will not be supported by TypeScript until v2.7\n * static dir = defineDirective({\n * ... \n * });\n * }\n *
```\n *\n * @codeGenApi\n */\nexport const defineDirective =\n defineComponent as any
as<T>(\n directiveDefinition: {\n /**\n * Directive type, needed to configure the injector.\n */\n type:
Type<T>;\n\n /** The selectors that will be used to match nodes to this directive. */\n selectors?:
CssSelectorList;\n\n /**\n * A map of input names.\n */\n inputs?: {\n /** The format is in: `{actualPropertyName:
string}:(string|[string, string])`. */\n /** Given:\n * ```\n * class MyComponent {\n * @Input()\n *
publicInput1: string;\n * @Input('publicInput2')\n * declaredInput2: string;\n * }\n *
```\n *\n * is described as:\n * ```\n * {\n * publicInput1: 'publicInput1',\n * declaredInput2:
['declaredInput2', 'publicInput2'],\n * }\n * ```\n *\n * Which the minifier may translate to:\n *
```\n * {\n * minifiedPublicInput1: 'publicInput1',\n * minifiedDeclaredInput2: ['publicInput2',
'declaredInput2'],\n * }\n * ```\n *\n * This allows the render to re-construct the minified, public, and
declared names\n * of properties.\n */\n /**\n * NOTE:\n * - Because declared and public name are usually

```

same we only generate the array\n * `[declared', 'public']` format when they differ.\n * - The reason why this API and `outputs` API is not the same is that `NgOnChanges` has\n * inconsistent behavior in that it uses declared names rather than minified or public. For\n * this reason `NgOnChanges` will be deprecated and removed in future version and this\n * API will be simplified to be consistent with `output`.\n *
inputs?: {[P in keyof T]?: string | [string, string]};\n *
/**\n * A map of output names.\n *
The format is in: {[actualPropertyName: string]:string}`.\n *
Which the minifier may translate to: `{[minifiedPropertyName: string]:string}`.\n *
This allows the render to re-construct the minified and non-minified names\n * of properties.\n *
outputs?: {[P in keyof T]?: string};\n *
/**\n * A list of optional features to apply.\n *
See: {@link NgOnChangesFeature}, {@link ProvidersFeature}, {@link InheritDefinitionFeature}\n *
features?: DirectiveDefFeature[];\n *
/**\n * Function executed by the parent template to allow child directive to apply host bindings.\n *
hostBindings?: HostBindingsFunction<T>;\n *
/**\n * The number of bindings in this directive `hostBindings` (including pure fn bindings).\n *
Used to calculate the length of the component's LView array, so we\n * can pre-fill the array and set the host binding start index.\n *
hostVars?: number;\n *
/**\n * Assign static attribute values to a host element.\n *
This property will assign static attribute values as well as class and style\n * values to a host element. Since attribute values can consist of different types of values,\n * the `hostAttrs` array must include the values in the following format:\n *
attrs = [\n * // static attributes (like `title`, `name`, `id`...)\n * attr1, value1, attr2, value,\n * // a single namespace value (like `x:id`)\n * NAMESPACE_MARKER, namespaceUri1, name1, value1,\n * // another single namespace value (like `x:name`)\n * NAMESPACE_MARKER, namespaceUri2, name2, value2,\n *
// a series of CSS classes that will be applied to the element (no spaces)\n * CLASSES_MARKER, class1, class2, class3,\n *
// a series of CSS styles (property + value) that will be applied to the element\n *
STYLES_MARKER, prop1, value1, prop2, value2\n *]\n *
All non-class and non-style attributes must be defined at the start of the list\n * first before all class and style values are set. When there is a change in value\n * type (like when classes and styles are introduced) a marker must be used to separate\n * the entries. The marker values themselves are set via entries found in the\n * [AttributeMarker] enum.\n *
hostAttrs?: TAttributes;\n *
/**\n * Function to create instances of content queries associated with a given directive.\n *
contentQueries?: ContentQueriesFunction<T>;\n *
/**\n * Additional set of instructions specific to view query processing. This could be seen as a\n * set of instructions to be inserted into the template function.\n *
viewQuery?: ViewQueriesFunction<T>| null;\n *
/**\n * Defines the name that can be used in the template to assign this directive to a variable.\n *
See: {@link Directive.exportAs}\n *
exportAs?: string[];\n *
}) => never;\n *
/**\n * Create a pipe definition object.\n *
Example\n *
class MyPipe implements PipeTransform {\n * // Generated by Angular Template Compiler\n * static pipe = definePipe({\n * ... \n * });\n * }\n *
@param pipeDef Pipe definition generated by the compiler\n *
@codeGenApi\n *
export function definePipe<T>(pipeDef: {\n *
/** Name of the pipe. Used for matching pipes in template to pipe defs. *\n * name: string,\n *
/** Pipe class reference. Needed to extract pipe lifecycle hooks. *\n * type: Type<T>,\n *
/** Whether the pipe is pure. *\n * pure?: boolean\n * }): never {\n *
return (<PipeDef<T>>{\n *
type: pipeDef.type,\n *
name: pipeDef.name,\n *
factory: null,\n *
pure: pipeDef.pure !== false,\n *
onDestroy: pipeDef.type.prototype.ngOnDestroy || null\n * }) as never;\n *}\n *
/**\n * The following getter methods retrieve the definition form the type. Currently the retrieval\n * honors inheritance, but in the future we may change the rule to require that definitions are\n * explicit. This would require some sort of migration strategy.\n *
export function getComponentDef<T>(type: any): ComponentDef<T>|null {\n *
return type[NG_COMP_DEF] || null;\n *}\n *
export function getDirectiveDef<T>(type: any): DirectiveDef<T>|null {\n *
return type[NG_DIR_DEF] || null;\n *}\n *
export function getPipeDef<T>(type: any): PipeDef<T>|null {\n *
return type[NG_PIPE_DEF] || null;\n *}\n *
export function getNgModuleDef<T>(type: any, throwNotFound: true): NgModuleDef<T>;\n *
export function getNgModuleDef<T>(type: any): NgModuleDef<T>|null;\n *
export function getNgModuleDef<T>(type: any, throwNotFound?: boolean): NgModuleDef<T>|null {\n *
const ngModuleDef = type[NG_MOD_DEF] || null;\n *
if (!ngModuleDef &&


```

{getClosureSafeProperty} from './util/property';\nimport {stringify} from './util/stringify';\nimport
{resolveForwardRef} from './forward_ref';\nimport {getInjectImplementation, injectRootLimpMode} from
'./inject_switch';\nimport {InjectionToken} from './injection_token';\nimport {Injector} from './injector';\nimport
{InjectFlags} from './interface/injector';\nimport {ValueProvider} from './interface/provider';\nimport {Inject,
Optional, Self, SkipSelf} from './metadata';\n\nconst _THROW_IF_NOT_FOUND = {};\nexport const
THROW_IF_NOT_FOUND = _THROW_IF_NOT_FOUND;\n\nexport const NG_TEMP_TOKEN_PATH =
'ngTempTokenPath';\nconst NG_TOKEN_PATH = 'ngTokenPath';\nconst NEW_LINE = \\n/gm;\nconst
NO_NEW_LINE = '';\nexport const SOURCE = '__source';\nexport const USE_VALUE =\n
getClosureSafeProperty<ValueProvider>({provide: String, useValue: getClosureSafeProperty});\n\n/**\n * Current
injector value used by `inject`.\n * - `undefined`: it is an error to call `inject`\n * - `null`: `inject` can be called but
there is no injector (limp-mode).\n * - Injector instance: Use the injector for resolution.\n */\nlet _currentInjector:
Injector|undefined|null = undefined;\n\nexport function setCurrentInjector(injector: Injector|null|undefined):
Injector|undefined|null {\n  const former = _currentInjector;\n  _currentInjector = injector;\n  return
former;\n}\n\nexport function injectInjectorOnly<T>(token: Type<T>|InjectionToken<T>): T;\nexport function
injectInjectorOnly<T>(token: Type<T>|InjectionToken<T>, flags?: InjectFlags): T|\n  null;\nexport function
injectInjectorOnly<T>(token: Type<T>|InjectionToken<T>, flags = InjectFlags.Default): T|null {\n  if
(_currentInjector === undefined) {\n    throw new Error(`inject() must be called from an injection context`);\n  }
else if (_currentInjector === null) {\n    return injectRootLimpMode(token, undefined, flags);\n  } else {\n    return
_currentInjector.get(token, flags & InjectFlags.Optional ? null : undefined, flags);\n  }\n}\n\n/**\n * Generated
instruction: Injects a token from the currently active injector.\n * Must be used in the context of a factory
function such as one defined for an\n * `InjectionToken`. Throws an error if not called from such a context.\n *
(Additional documentation moved to `inject`, as it is the public API, and an alias for this)\n *
@see inject\n * @codeGenApi\n * @publicApi This instruction has been emitted by ViewEngine for some time and
is deployed to npm.\n */\nexport function inject<T>(token: Type<T>|InjectionToken<T>): T;\nexport function
inject<T>(token: Type<T>|InjectionToken<T>, flags?: InjectFlags): T|null;\nexport function inject<T>(token:
Type<T>|InjectionToken<T>, flags = InjectFlags.Default): T|null {\n  return (getInjectImplementation() ||
injectInjectorOnly)(resolveForwardRef(token), flags);\n}\n\n/**\n * Throws an error indicating that a factory
function could not be generated by the compiler for a\n * particular class.\n * This instruction allows the actual
error message to be optimized away when ngDevMode is turned\n * off, saving bytes of generated code while still
providing a good experience in dev mode.\n * The name of the class is not mentioned here, but will be in the
generated factory function name\n * and thus in the stack trace.\n * @codeGenApi\n */\nexport function
invalidFactoryDep(index: number): never {\n  const msg = ngDevMode ? `This constructor is not compatible
with Angular Dependency Injection because its dependency at index ${\n    index} of the parameter list is
invalid.\nThis can happen if the dependency type is a primitive like a string or if an ancestor of this class is missing
an Angular decorator.\n\nPlease check that 1) the type for the parameter at index ${\n    index} is correct and 2)
the correct Angular decorators are defined for this class and its ancestors.` : `invalid`;\n  throw new
Error(msg);\n}\n\n/**\n * Injects a token from the currently active injector.\n * Must be used in the context of a
factory function such as one defined for an\n * `InjectionToken`. Throws an error if not called from such a
context.\n * Within such a factory function, using this function to request injection of a dependency\n * is faster
and more type-safe than providing an additional array of dependencies\n * (as has been common with `useFactory`
providers).\n * @param token The injection token for the dependency to be injected.\n * @param flags Optional
flags that control how injection is executed.\n * The flags correspond to injection strategies that can be specified
with\n * parameter decorators `@Host`, `@Self`, `@SkipSelf`, and `@Optional`.\n * @returns True if injection is
successful, null otherwise.\n * @usageNotes\n * ### Example\n * {\n *   @example core/di/ts/injector_spec.ts
region='ShakableInjectionToken'}\n * @publicApi\n */\nexport const inject = inject;\n\nexport function
injectArgs(types: (Type<any>|InjectionToken<any>|any[])[]): any[] {\n  const args: any[] = [];\n  for (let i = 0; i <
types.length; i++) {\n    const arg = resolveForwardRef(types[i]);\n    if (Array.isArray(arg)) {\n      if (arg.length
=== 0) {\n        throw new Error('Arguments array must have arguments.');

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Type<any>|undefined = undefined;\n    let flags: InjectFlags = InjectFlags.Default;\n\n    for (let j = 0; j <
arg.length; j++) {\n        const meta = arg[j];\n        if (meta instanceof Optional || meta.ngMetadataName ===
'Optional' || meta === Optional) {\n            flags |= InjectFlags.Optional;\n        } else if (\n            meta instanceof
SkipSelf || meta.ngMetadataName === 'SkipSelf' || meta === SkipSelf) {\n            flags |= InjectFlags.SkipSelf;\n
        } else if (meta instanceof Self || meta.ngMetadataName === 'Self' || meta === Self) {\n            flags |=
InjectFlags.Self;\n        } else if (meta instanceof Inject || meta === Inject) {\n            type = meta.token;\n        } else
{\n            type = meta;\n        }\n        args.push(inject(type!, flags));\n    } else {\n        args.push(inject(arg));\n
    }\n    return args;\n}\n\nexport function catchInjectorError(\n    e: any, token: any, injectorErrorName: string,
source: string|null): never {\n    const tokenPath: any[] = e[NG_TEMP_TOKEN_PATH];\n    if (token[SOURCE]) {\n        tokenPath.unshift(token[SOURCE]);\n    }\n    e.message = formatError("\n' + e.message, tokenPath,
injectorErrorName, source);\n    e[NG_TOKEN_PATH] = tokenPath;\n    e[NG_TEMP_TOKEN_PATH] = null;\n    throw e;\n}\n\nexport function formatError(\n    text: string, obj: any, injectorErrorName: string, source: string|null =
null): string {\n    text = text && text.charAt(0) === '\n' && text.charAt(1) === NO_NEW_LINE ? text.substr(2) :
text;\n    let context = stringify(obj);\n    if (Array.isArray(obj)) {\n        context = obj.map(stringify).join(' ->');\n    } else
if (typeof obj === 'object') {\n        let parts = <string[]>[];\n        for (let key in obj) {\n            if (obj.hasOwnProperty(key))
{\n                let value = obj[key];\n                parts.push(\n                    key + ': ' + (typeof value === 'string' ? JSON.stringify(value)
: stringify(value));\n            }\n        }\n        context = `${parts.join(', ')}`;\n    }\n    return `${injectorErrorName}${source ?
'(' + source + ')' : ''} ${context}: ${\n        text.replace(NEW_LINE, '\n ')};\n}\n\n"/**\n * @license\n * Copyright
Google LLC All Rights Reserved.\n * \n * Use of this source code is governed by an MIT-style license that can be\n *
found in the LICENSE file at https://angular.io/license\n * \n */\n * Most of the use of `document` in Angular is
from within the DI system so it is possible to simply\n * inject the `DOCUMENT` token and are done.\n * \n * Ivy is
special because it does not rely upon the DI and must get hold of the document some other\n * way.\n * \n * The
solution is to define `getDocument()` and `setDocument()` top-level functions for ivy.\n * Wherever ivy needs the
global document, it calls `getDocument()` instead.\n * \n * When running ivy outside of a browser environment, it is
necessary to call `setDocument()` to\n * tell ivy what the global `document` is.\n * \n * Angular does this for us in
each of the standard platforms (`Browser`, `Server`, and `WebWorker`)\n * by calling `setDocument()` when
providing the `DOCUMENT` token.\n */\nlet DOCUMENT: Document|undefined = undefined;\n\n/**\n * Tell ivy
what the `document` is for this platform.\n * \n * It is only necessary to call this if the current platform is not a
browser.\n * \n * @param document The object representing the global `document` in this environment.\n */\nexport
function setDocument(document: Document|undefined): void {\n    DOCUMENT = document;\n}\n\n/**\n * Access
the object that represents the `document` for this platform.\n * \n * Ivy calls this whenever it needs to access the
`document` object.\n * \n * For example to create the renderer or to do sanitization.\n */\nexport function
getDocument(): Document {\n    if (DOCUMENT !== undefined) {\n        return DOCUMENT;\n    } else if (typeof
document !== 'undefined') {\n        return document;\n    }\n    // No "document" can be found. This should only happen
if we are running ivy outside Angular and\n    // the current platform is not a browser. Since this is not a supported
scenario at the moment\n    // this should not happen in Angular apps.\n    // Once we support running ivy outside of
Angular we will need to publish `setDocument()` as a\n    // public API. Meanwhile we just return `undefined` and let
the application fail.\n    return undefined!;\n}\n\n"/**\n * @license\n * Copyright Google LLC All Rights Reserved.\n *
\n * Use of this source code is governed by an MIT-style license that can be\n * found in the LICENSE file at
https://angular.io/license\n * \n */\nimport {InjectionToken} from './di/injection_token';\nimport {Injector} from
'./di/injector';\nimport {Type} from './interface/type';\nimport {SchemaMetadata} from
'./di/metadata/schema';\nimport {Sanitizer} from './di/sanitization/sanitizer';\nimport {LContainer} from
'./di/container';\nimport {ComponentDef, ComponentTemplate, DirectiveDef, DirectiveDefList,
HostBindingsFunction, PipeDef, PipeDefList, ViewQueriesFunction} from './di/definition';\nimport
{I18nUpdateOpCodes, T18n, T1cu} from './di/i18n';\nimport {TConstants, TNode} from './di/node';\nimport
{PlayerHandler} from './di/player';\nimport {LQueries, TQueries} from './di/query';\nimport {Renderer3,
RendererFactory3} from './di/renderer';\nimport {RComment, RElement} from './di/renderer_dom';\nimport
{TStylingKey, TStylingRange} from './di/styling';\n\n// Below are constants for LView indices to help us look up

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LView members\n// without having to remember the specific indices.\n// Uglify will inline these when minifying so there shouldn't be a cost.\nexport const HOST = 0;\nexport const TVIEW = 1;\nexport const FLAGS = 2;\nexport const PARENT = 3;\nexport const NEXT = 4;\nexport const TRANSPLANTED_VIEWS_TO_REFRESH = 5;\nexport const T_HOST = 6;\nexport const CLEANUP = 7;\nexport const CONTEXT = 8;\nexport const INJECTOR = 9;\nexport const RENDERER_FACTORY = 10;\nexport const RENDERER = 11;\nexport const SANITIZER = 12;\nexport const CHILD_HEAD = 13;\nexport const CHILD_TAIL = 14;\n// FIXME(misko): Investigate if the three declarations aren't all same thing.\nexport const DECLARATION_VIEW = 15;\nexport const DECLARATION_COMPONENT_VIEW = 16;\nexport const DECLARATION_LCONTAINER = 17;\nexport const PREORDER_HOOK_FLAGS = 18;\nexport const QUERIES = 19;\n/**\n * Size of LView's header. Necessary to adjust for it when setting slots.\n * IMPORTANT: `HEADER_OFFSET` should only be referred to in the `*` instructions to translate\n * instruction index into `LView` index. All other indexes should be in the `LView` index space and\n * there should be no need to refer to `HEADER_OFFSET` anywhere else.\n */\nexport const HEADER_OFFSET = 20;\n\n\n// This interface replaces the real LView interface if it is an arg or a\n// return value of a public instruction. This ensures we don't need to expose\n// the actual interface, which should be kept private.\nexport interface OpaqueViewState {\n ' __brand__': 'Brand for OpaqueViewState that nothing will match';\n}\n\n\n/**\n * `LView` stores all of the information needed to process the instructions as\n * they are invoked from the template. Each embedded view and component view has its\n * own `LView`. When processing a particular view, we set the `viewData` to that\n * `LView`. When that view is done processing, the `viewData` is set back to\n * whatever the original `viewData` was before (the parent `LView`).\n * Keeping separate state for each view facilities view insertion / deletion, so we\n * don't have to edit the data array based on which views are present.\n */\nexport interface LView extends Array<any> {\n /**\n * Human readable representation of the `LView`.\n *\n * NOTE: This property only exists if `ngDevMode` is set to `true` and it is not present in\n * production. Its presence is purely to help debug issue in development, and should not be relied\n * on in production application.\n */\n debug?: LViewDebug;\n\n /**\n * The node into which this `LView` is inserted.\n */\n [HOST]: RElement|null;\n\n /**\n * The static data for this view. We need a reference to this so we can easily walk up the\n * node tree in DI and get the TView.data array associated with a node (where the\n * directive defs are stored).\n */\n readonly [TVIEW]: TView;\n\n /**\n * Flags for this view. See LViewFlags for more info.\n */\n [FLAGS]: LViewFlags;\n\n /**\n * This may store an {@link LView} or {@link LContainer}.\n *\n * `LView` - The parent view. This is needed when we exit the view and must restore the previous\n * LView. Without this, the render method would have to keep a stack of\n * views as it is recursively rendering templates.\n *\n * `LContainer` - The current view is part of a container, and is an embedded view.\n */\n [PARENT]: LView|LContainer|null;\n\n /**\n * The next sibling LView or LContainer.\n *\n * Allows us to propagate between sibling view states that aren't in the same\n * container. Embedded views already have a node.next, but it is only set for\n * views in the same container. We need a way to link component views and views\n * across containers as well.\n */\n [NEXT]: LView|LContainer|null;\n\n /**\n * Queries active for this view - nodes from a view are reported to those queries.\n */\n [QUERIES]: LQueries|null;\n\n /**\n * Store the `TNode` of the location where the current `LView` is inserted into.\n *\n * Given:\n * ```\n * <div>\n * <ng-template></ng-template>\n * </div>\n * ```\n * We end up with two `TView`s.\n * - `parent` `TView` which contains `<div><!-- anchor --></div>`\n * - `child` `TView` which contains ``\n * Typically the `child` is inserted into the declaration location of the `parent`, but it can be\n * inserted anywhere. Because it can be inserted anywhere it is not possible to store the\n * insertion information in the `TView` and instead we must store it in the `LView[T_HOST]`.\n *\n * So to determine where is our insertion parent we would execute:\n * ```\n * const parentLView = IView[PARENT];\n * const parentTNode = IView[T_HOST];\n * const insertionParent = parentLView[parentTNode.index];\n * ```\n *\n * If `null`, this is the root view of an application (root component is in this view) and it has\n * no parents.\n */\n [T_HOST]: TNode|null;\n\n /**\n * When a view is destroyed, listeners need to be released and outputs need to be\n * unsubscribed. This context array stores both listener functions wrapped with\n * their context and output subscription instances for a particular view.\n *\n * These change per LView instance, so they cannot be stored on

TView. Instead, `TView.cleanup` saves an index to the necessary context in this array. `// TODO: flatten into LView[] [CLEANUP]: any[]|null;` `/** - For dynamic views, this is the context with which to render the template (e.g. `NgForContext`), or `{}` if not defined explicitly. - For root view of the root component the context contains change detection data. - For non-root components, the context is the component instance, - For inline views, the context is null. [CONTEXT]: {}|RootContext|null;` `/** An optional Module Injector to be used as fall back after Element Injectors are consulted. readonly [INJECTOR]: Injector|null;` `/** Factory to be used for creating Renderer. [RENDERER_FACTORY]: RendererFactory3;` `/** Renderer to be used for this view. [RENDERER]: Renderer3;` `/** An optional custom sanitizer. [SANITIZER]: Sanitizer|null;` `/** Reference to the first LView or LContainer beneath this LView in the hierarchy. * Necessary to store this so views can traverse through their nested views to remove listeners and call onDestroy callbacks. [CHILD_HEAD]: LView|LContainer|null;` `/** The last LView or LContainer beneath this LView in the hierarchy. * The tail allows us to quickly add a new state to the end of the view list without having to propagate starting from the first child. [CHILD_TAIL]: LView|LContainer|null;` `/** View where this view's template was declared. * The template for a dynamically created view may be declared in a different view than it is inserted. We already track the "insertion view" (view where the template was inserted) in LView[PARENT], but we also need access to the "declaration view" (view where the template was declared). Otherwise, we wouldn't be able to call the view's template function with the proper contexts. Context should be inherited from the declaration view tree, not the insertion view tree. * Example (AppComponent template): <ng-template #foo></ng-template> <!-- declared here --> <some-comp [tpl]="foo"></some-comp> <!-- inserted inside this component --> The <ng-template> above is declared in the AppComponent template, but it will be passed into SomeComp and inserted there. In this case, the declaration view would be the AppComponent, but the insertion view would be SomeComp. When we are removing views, we would want to traverse through the insertion view to clean up listeners. When we are calling the template function during change detection, we need the declaration view to get inherited context. [DECLARATION_VIEW]: LView|null; /** Points to the declaration component view, used to track transplanted `LView`s. * See: `DECLARATION_VIEW` which points to the actual `LView` where it was declared, whereas `DECLARATION_COMPONENT_VIEW` points to the component which may not be same as `DECLARATION_VIEW`. * Example: <#VIEW #myComp> <div *ngIf="true"> <ng-template #myTpl>...</ng-template> </div> </#VIEW> In the above case `DECLARATION_VIEW` for `myTpl` points to the `LView` of `ngIf` whereas `DECLARATION_COMPONENT_VIEW` points to `LView` of the `myComp` which owns the template. * The reason for this is that all embedded views are always check-always whereas the component view can be check-always or on-push. When we have a transplanted view it is important to determine if we have transplanted a view from check-always declaration to on-push insertion point. In such a case the transplanted view needs to be added to the `LContainer` in the declared `LView` and CD during the declared view CD (in addition to the CD at the insertion point.) (Any transplanted views which are intra Component are of no interest because the CD strategy of declaration and insertion will always be the same, because it is the same component.) * Queries already track moved views in `LView[DECLARATION_LCONTAINER]` and `LContainer[MOVED_VIEWS]`. However the queries also track `LView`s which moved within the same component `LView`. Transplanted views are a subset of moved views, and we use `DECLARATION_COMPONENT_VIEW` to differentiate them. As in this example. * Example showing intra component `LView` movement. <#VIEW #myComp> <div *ngIf="condition; then thenBlock else elseBlock"></div> <ng-template #thenBlock>Content to render when condition is true.</ng-template> <ng-template #elseBlock>Content to render when condition is false.</ng-template> The `thenBlock` and `elseBlock` is moved but not transplanted. * Example showing inter component `LView` movement (transplanted view). <#VIEW #myComp> <ng-template #myTpl>...</ng-template> <insertion-component [template]="myTpl"></insertion-`


```

LView[PREORDER_HOOK_FLAGS]) *^next export const enum PreOrderHookFlags {
  /**
   * The index of the next pre-order hook to be called in the hooks array, on the first 16 bits
   */
  IndexOfTheNextPreOrderHookMaskMask = 0b0111111111111111,
  /**
   * The number of init hooks that have already been called, on the last 16 bits
   */
  NumberOfInitHooksCalledIncrementer = 0b0100000000000000,
  NumberOfInitHooksCalledShift = 16,
  NumberOfInitHooksCalledMask = 0b11111111111111110000000000000000,
}
/**
 * Stores a set of OpCodes to process
 */
HostBindingsFunction associated with a current view.
In order to invoke HostBindingsFunction we need:
1. 'elementIdx': Index to the element associated with the HostBindingsFunction.
2. 'directiveIdx': Index to the directive associated with the HostBindingsFunction. (This will become the context for the HostBindingsFunction invocation.)
3. 'bindingRootIdx': Location where the bindings for the HostBindingsFunction start. Internally HostBindingsFunction binding indexes start from `0` so we need to add `bindingRootIdx` to it.
4. 'HostBindingsFunction': A host binding function to execute.
The above information needs to be encoded into the HostBindingOpCodes in an efficient manner.
1. 'elementIdx' is encoded into the HostBindingOpCodes as ~elementIdx (so a negative number).
2. 'directiveIdx'
3. 'bindingRootIdx'
4. 'HostBindingsFunction' is passed in as is.
The HostBindingOpCodes array contains:
- negative number to select the element index.
- followed by 1 or more of:
  - a number to select the directive index
  - a number to select the bindingRoot index
  - and a function to invoke.
## Example
const hostBindingOpCodes = [
  ~30, // Select element 30
  40, 45, MyDir.dir.hostBindings // Invoke host bindings on MyDir on element 30
  // directiveIdx = 40; bindingRootIdx = 45;
  50, 55, OtherDir.dir.hostBindings // Invoke host bindings on OtherDir on element 30
  // directiveIdx = 50; bindingRootIdx = 55;
];
/**
 * Pseudocode
 */
const hostBindingOpCodes = tView.hostBindingOpCodes;
if (hostBindingOpCodes === null) return;
for (let i = 0; i < hostBindingOpCodes.length; i++) {
  const opCode = hostBindingOpCodes[i] as number;
  if (opCode < 0) {
    // Negative numbers are element indexes.
    setSelectedIndex(~opCode);
  } else {
    // Positive numbers are NumberTuple which store bindingRootIndex and directiveIndex.
    const directiveIdx = opCode;
    const bindingRootIdx = hostBindingOpCodes[++i] as number;
    const hostBindingFn = hostBindingOpCodes[++i] as HostBindingsFunction<any>;
    setBindingRootForHostBindings(bindingRootIdx, directiveIdx);
    const context = IView[directiveIdx];
    hostBindingFn(RenderFlags.Update, context);
  }
}
}
/**
 * Explicitly marks `TView` as a specific type in `ngDevMode`
 */
It is useful to know conceptually what time of `TView` we are dealing with when debugging an application (even if the runtime does not need it.) For this reason we store this information in the `ngDevMode` `TView` and then use it for better debugging experience.
export const enum TViewType {
  /**
   * Root `TView` is the used to bootstrap components into. It is used in conjunction with `LView` which takes an existing DOM node not owned by Angular and wraps it in `TView`/`LView` so that other components can be loaded into it.
   */
  Root = 0,
  /**
   * `TView` associated with a Component. This would be the `TView` directly associated with the component view (as opposed an `Embedded` `TView` which would be a child of `Component` `TView`)
   */
  Component = 1,
  /**
   * `TView` associated with a template. Such as `*ngIf`, `` etc... A `Component` can have zero or more `Embedded` `TView`s.
   */
  Embedded = 2,
}
/**
 * Converts `TViewType` into human readable text. Make sure this matches with `TViewType`
 */
export const TViewTypeAsString = [
  'Root', // 0
  'Component', // 1
  'Embedded', // 2
] as const;
/**
 * The static data for an LView (shared between all templates of a given type).
 */
Stored on the `ComponentDef.tView`.
export interface TView {
  /**
   * Type of `TView` ('Root'|'Component'|'Embedded').
   */
  type: TViewType;
  /**
   * This is a blueprint used to generate LView instances for this TView. Copying this blueprint is faster than creating a new LView from scratch.
   */
  blueprint: LView;
  /**
   * The template function used to refresh the view of dynamically created views and components. Will be null for inline views.
   */
  template: ComponentTemplate<{}>|null;
  /**
   * A

```

function containing query-related instructions.

- `viewQuery: ViewQueriesFunction<{}>|null;`
- `declTNode: TNode` representing the declaration location of this `TView`` (not part of this `TView``).
- `declTNode: TNode|null;`
- // FIXME(misko): Why does `TView`` not have `declarationTView`` property?
- Whether or not this template has been processed in creation mode.
- `firstCreatePass: boolean;`
- Whether or not this template has been processed in update mode (e.g. change detected)
- `firstUpdatePass`` is used by styling to set up `TData`` to contain metadata about the styling instructions. (Mainly to build up a linked list of styling priority order.)
- Typically this function gets cleared after first execution. If exception is thrown then this flag can remain turned un until there is first successful (no exception) pass. This means that individual styling instructions keep track of if they have already been added to the linked list to prevent double adding.
- `firstUpdatePass: boolean;`
- Static data equivalent of `LView.data[]`. Contains `TNodes`, `PipeDefInternal` or `TI18n`.
- `data: TData;`
- The binding start index is the index at which the data array starts to store bindings only. Saving this value ensures that we will begin reading bindings at the correct point in the array when we are in update mode.
- `bindingStartIndex: number;`
- The index where the "expando" section of `LView`` begins. The expando section contains injectors, directive instances, and host binding values. Unlike the "decls" and "vars" sections of `LView``, the length of this section cannot be calculated at compile-time because directives are matched at runtime to preserve locality.
- We store this start index so we know where to start checking host bindings in `setHostBindings``.
- `expandoStartIndex: number;`
- Whether or not there are any static view queries tracked on this view.
- We store this so we know whether or not we should do a view query refresh after creation mode to collect static query results.
- `staticViewQueries: boolean;`
- Whether or not there are any static content queries tracked on this view.
- We store this so we know whether or not we should do a content query refresh after creation mode to collect static query results.
- `staticContentQueries: boolean;`
- A reference to the first child node located in the view.
- `firstChild: TNode|null;`
- Stores the OpCodes to be replayed during change-detection to process the `HostBindings``
- See `HostBindingOpCodes`` for encoding details.
- `hostBindingOpCodes: HostBindingOpCodes|null;`
- Full registry of directives and components that may be found in this view.
- It's necessary to keep a copy of the full def list on the `TView`` so it's possible to render template functions without a host component.
- `directiveRegistry: DirectiveDefList|null;`
- Full registry of pipes that may be found in this view.
- The property is either an array of `PipeDefs`s` or a function which returns the array of `PipeDefs`s`. The function is necessary to be able to support forward declarations.
- It's necessary to keep a copy of the full def list on the `TView`` so it's possible to render template functions without a host component.
- `pipeRegistry: PipeDefList|null;`
- Array of `ngOnInit`, `ngOnChanges` and `ngDoCheck` hooks that should be executed for this view in creation mode.
- This array has a flat structure and contains `TNode` indices, directive indices (where an instance can be found in `LView``) and hook functions. `TNode` index is followed by the directive index and a hook function. If there are multiple hooks for a given `TNode`, the `TNode` index is not repeated and the next lifecycle hook information is stored right after the previous hook function. This is done so that at runtime the system can efficiently iterate over all of the functions to invoke without having to make any decisions/lookups.
- `preOrderHooks: HookData|null;`
- Array of `ngOnChanges` and `ngDoCheck` hooks that should be executed for this view in update mode.
- This array has the same structure as the `preOrderHooks`` one.
- `preOrderCheckHooks: HookData|null;`
- Array of `ngAfterContentInit` and `ngAfterContentChecked` hooks that should be executed for this view in creation mode.
- Even indices: Directive index
- Odd indices: Hook function
- `contentHooks: HookData|null;`
- Array of `ngAfterContentChecked` hooks that should be executed for this view in update mode.
- Even indices: Directive index
- Odd indices: Hook function
- `contentCheckHooks: HookData|null;`
- Array of `ngAfterViewInit` and `ngAfterViewChecked` hooks that should be executed for this view in creation mode.
- Even indices: Directive index
- Odd indices: Hook function
- `viewHooks: HookData|null;`
- Array of `ngAfterViewChecked` hooks that should be executed for this view in update mode.
- Even indices: Directive index
- Odd indices: Hook

```

function\n */\n viewCheckHooks: HookData|null;\n\n /**\n * Array of ngOnDestroy hooks that should be
executed when this view is destroyed.\n *\n * Even indices: Directive index\n * Odd indices: Hook function\n
*/\n destroyHooks: DestroyHookData|null;\n\n /**\n * When a view is destroyed, listeners need to be released
and outputs need to be\n * unsubscribed. This cleanup array stores both listener data (in chunks of 4)\n * and
output data (in chunks of 2) for a particular view. Combining the arrays\n * saves on memory (70 bytes per array)
and on a few bytes of code size (for two\n * separate for loops).\n *\n * If it's a native DOM listener or output
subscription being stored:\n * 1st index is: event name `name = tView.cleanup[i+0]`\n * 2nd index is: index of
native element or a function that retrieves global target (window,\n * document or body) reference based
on the native element:\n * `typeof idxOrTargetGetter === 'function': global target getter function\n * `typeof
idxOrTargetGetter === 'number': index of native element\n *\n * 3rd index is: index of listener function `listener
= LView[CLEANUP][tView.cleanup[i+2]`\n * 4th index is: `useCaptureOrIdx = tView.cleanup[i+3]`\n *
`typeof useCaptureOrIdx === 'boolean': useCapture boolean\n * `typeof useCaptureOrIdx === 'number':\n *
`useCaptureOrIdx >= 0` `removeListener = LView[CLEANUP][useCaptureOrIdx]`\n * `useCaptureOrIdx
< 0` `subscription = LView[CLEANUP][-useCaptureOrIdx]`\n *\n * If it's an output subscription or query list
destroy hook:\n * 1st index is: output unsubscribe function / query list destroy function\n * 2nd index is: index of
function context in LView.cleanupInstances[]\n *
`tView.cleanup[i+0].call(LView[CLEANUP][tView.cleanup[i+1]`\n */\n cleanup: any[]|null;\n\n /**\n * A list
of element indices for child components that will need to be\n * refreshed when the current view has finished its
check. These indices have\n * already been adjusted for the HEADER_OFFSET.\n *\n */\n components:
number[]|null;\n\n /**\n * A collection of queries tracked in a given view.\n */\n queries: TQueries|null;\n\n
/**\n * An array of indices pointing to directives with content queries alongside with the\n * corresponding query
index. Each entry in this array is a tuple of:\n * - index of the first content query index declared by a given
directive;\n * - index of a directive.\n *\n * We are storing those indexes so we can refresh content queries as
part of a view refresh\n * process.\n */\n contentQueries: number[]|null;\n\n /**\n * Set of schemas that declare
elements to be allowed inside the view.\n */\n schemas: SchemaMetadata[]|null;\n\n /**\n * Array of constants
for the view. Includes attribute arrays, local definition arrays etc.\n * Used for directive matching, attribute
bindings, local definitions and more.\n */\n consts: TConstants|null;\n\n /**\n * Indicates that there was an error
before we managed to complete the first create pass of the\n * view. This means that the view is likely corrupted
and we should try to recover it.\n */\n incompleteFirstPass: boolean;\n}\n\nexport const enum RootContextFlags
{\n Empty = 0b00,\n DetectChanges = 0b01,\n FlushPlayers = 0b10\n}\n\n/**\n * RootContext contains
information which is shared for all components which\n * were bootstrapped with {@link renderComponent}.\n
*/\nexport interface RootContext {\n /**\n * A function used for scheduling change detection in the future.
Usually\n * this is `requestAnimationFrame`.\n */\n scheduler: (workFn: () => void) => void;\n\n /**\n * A
promise which is resolved when all components are considered clean (not dirty).\n *\n * This promise is
overwritten every time a first call to {@link markDirty} is invoked.\n */\n clean: Promise<null>;\n\n /**\n *
RootComponents - The components that were instantiated by the call to\n * {@link renderComponent}.\n */\n
components: {}[];\n\n /**\n * The player flushing handler to kick off all animations\n */\n playerHandler:
PlayerHandler|null;\n\n /**\n * What render-related operations to run once a scheduler has been set\n */\n flags:
RootContextFlags;\n}\n\n/**\n * Single hook callback function.\n */\nexport type HookFn = () => void;\n\n /**\n *
Information necessary to call a hook. E.g. the callback that\n * needs to be invoked and the index at which to find its
context.\n */\nexport type HookEntry = number|HookFn;\n\n /**\n * Array of hooks that should be executed for a
view and their directive indices.\n *\n * For each node of the view, the following data is stored:\n * 1) Node index
(optional)\n * 2) A series of number/function pairs where:\n * - even indices are directive indices\n * - odd indices
are hook functions\n *\n * Special cases:\n * - a negative directive index flags an init hook (ngOnInit,
ngAfterContentInit, ngAfterViewInit)\n */\nexport type HookData = HookEntry[];\n\n /**\n * Array of destroy
hooks that should be executed for a view and their directive indices.\n *\n * The array is set up as a series of
number/function or number/(number|function)[]:\n * - Even indices represent the context with which hooks should
be called.\n * - Odd indices are the hook functions themselves. If a value at an odd index is an array,\n * it

```

represents the destroy hooks of a `multi` provider where:

- Even indices represent the index of the provider for which we've registered a destroy hook,
- Odd indices are the destroy hook functions.

For example: `LView: [0, 1, 2, AService, 4, [BService, CService, DService]]`
`destroyHooks: [3, AService.ngOnDestroy, 5, [0, BService.ngOnDestroy, 2, DService.ngOnDestroy]]`

In the example above `AService` is a type provider with an `ngOnDestroy`, whereas `BService`, `CService` and `DService` are part of a `multi` provider where only `BService` and `DService` have an `ngOnDestroy` hook.

`export type DestroyHookData = (HookEntry|HookData)[];`
 Static data that corresponds to the instance-specific data array on an LView.

Each node's static data is stored in `tData` at the same index that it's stored in the data array. Any nodes that do not have static data store a null value in `tData` to avoid a sparse array.

Each pipe's definition is stored here at the same index as its pipe instance in the data array.

Each host property's name is stored here at the same index as its value in the data array.

Each property binding name is stored here at the same index as its value in the data array. If the binding is an interpolation, the static string values are stored parallel to the dynamic values. Example: `id="prefix {{ v0 }} a {{ v1 }} b {{ v2 }} suffix"`

`LView | TView.data` -----
 v0 value | 'a'
 v1 value | 'b'
 v2 value | id prefix suffix

Injector bloom filters are also stored here.

`export type TData = (TNode|PipeDef<any>|DirectiveDef<any>|ComponentDef<any>|number|TStylingRange|TStylingKey|Type<any>|InjectionToken<any>|T18n|I18nUpdateOpCodes|Ticu|null|string)[];`
 Note: This hack is necessary so we don't erroneously get a circular dependency failure based on types.

`const unusedValueExportToPlacateAjd = 1;`

Human readable version of the `LView`.

`LView` is a data structure used internally to keep track of views. The `LView` is designed for efficiency and so at times it is difficult to read or write tests which assert on its values. For this reason when `ngDevMode` is true we patch a `LView.debug` property which points to `LViewDebug` for easier debugging and test writing. It is the intent of `LViewDebug` to be used in tests.`

`export interface LViewDebug {`
 Flags associated with the `LView` unpacked into a more readable state.
 See `LViewFlags` for the flag meanings.

readonly flags: {
 initPhaseState: number,
 creationMode: boolean,
 firstViewPass: boolean,
 checkAlways: boolean,
 dirty: boolean,
 attached: boolean,
 destroyed: boolean,
 isRoot: boolean,
 indexWithinInitPhase: number,
 };

Associated TView
 readonly tView: TView;

Parent view (or container)
 readonly parent: LViewDebug|LContainerDebug|null;

Next sibling to the `LView`
 readonly next: LViewDebug|LContainerDebug|null;

The context used for evaluation of the `LView`
 (Usually the component)
 readonly context: {}|null;

Hierarchical tree of nodes
 readonly nodes: DebugNode[];

Template structure (no instance data).
 (Shows how TNodes are connected)
 readonly template: string;

HTML representation of the `LView`
 This is only approximate to actual HTML as child `LView`s are removed.
 readonly html: string;

The host element to which this `LView` is attached.
 readonly hostHTML: string|null;

Child `LView`s
 readonly childViews: Array<LViewDebug|LContainerDebug>;

Sub range of `LView` containing decls (DOM elements).
 readonly decls: LViewDebugRange;

Sub range of `LView` containing vars (bindings).
 readonly vars: LViewDebugRange;

Sub range of `LView` containing expando (used by DI).
 readonly expando: LViewDebugRange;

Human readable version of the `LContainer`.

`LContainer` is a data structure used internally to keep track of child views. The `LContainer` is designed for efficiency and so at times it is difficult to read or write tests which assert on its values. For this reason when `ngDevMode` is true we patch a `LContainer.debug` property which points to `LContainerDebug` for easier debugging and test writing. It is the intent of `LContainerDebug` to be used in tests.`

`export interface LContainerDebug {`
 readonly native: RComment;

Child `LView`s
 readonly views: LViewDebug[];

Parent
 readonly parent: LViewDebug|null;

Moved views
 readonly movedViews: LView[]|null;

Host
 readonly host: RElement|RComment|LView;

Next
 readonly next: LViewDebug|LContainerDebug|null;

Has transplanted views
 hasTransplantedViews: boolean;

`LView` is subdivided to ranges where the actual data is stored. Some of these ranges such as `decls` and `vars` are known at compile time. Other such as `i18n` and `expando``

are runtime only concepts.

```

export interface LViewDebugRange {
  start: number; // The starting index in `LView` where the range begins. (Inclusive)
  end: number; // The ending index in `LView` where the range ends. (Exclusive)
  length: number; // The length of the range
  content: LViewDebugRangeContent[]; // The merged content of the range. `t` contains data from `TView.data` and `l` contains `LView` data at an index.
  content: LViewDebugRangeContent[]; // For convenience the static and instance portions of `TView` and `LView` are merged into a single object in `LViewRange`.
}

export interface LViewDebugRangeContent {
  index: number; // Index into original `LView` or `TView.data`.
  value: any; // Value from the `TView.data[index]` location.
  l: any; // Value from the `LView[index]` location.
  node: LogicalNode; // A logical node which comprise into `LView`s.
}

export interface DebugNode {
  html: string | null; // HTML representation of the node.
  type: string; // Human readable node type.
  native: Node; // DOM native node.
  children: DebugNode[]; // Child nodes
  factories: Type<unknown>[]; // A list of Component/Directive types which need to be instantiated an this location.
  instances: unknown[]; // A list of Component/Directive instances which were instantiated an this location.
  injector: NodeInjectorDebug; // NodeInjector information.
}

export interface NodeInjectorDebug {
  bloom: string; // Does the current injector have a provider with a given bloom mask.
  cumulativeBloom: string; // Cumulative bloom. Do any of the above injectors have a provider with a given bloom mask.
  providers: (Type<unknown> | DirectiveDef<unknown> | ComponentDef<unknown>); // A list of providers associated with this injector.
  viewProviders: Type<unknown>[]; // A list of providers associated with this injector visible to the view of the component only.
  parentInjectorIndex: number; // Location of the parent `TNode`.
}

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import { TNode } from './node';
import { RComment, RElement } from './renderer_dom';
import { HOST, LView, NEXT, PARENT, T_HOST, TRANSPLANTED_VIEWS_TO_REFRESH } from './view';

// Special location which allows easy identification of type. If we have an array which was retrieved from the `LView` and that array has `true` at `TYPE` location, we know it is `LContainer`.
export const TYPE = 1;

// Below are constants for LContainer indices to help us look up LContainer members without having to remember the specific indices.
Uglify will inline these when minifying so there shouldn't be a cost.
// Flag to signify that this `LContainer` may have transplanted views which need to be change detected. (see: `LView[DECLARATION_COMPONENT_VIEW]`)
// This flag, once set, is never unset for the `LContainer`. This means that when unset we can skip a lot of work in `refreshEmbeddedViews`. But when set we still need to verify that the `MOVED_VIEWS` are transplanted and on-push.
export const HAS_TRANSPLANTED_VIEWS = 2;

// PARENT, NEXT, TRANSPLANTED_VIEWS_TO_REFRESH are indices 3, 4, and 5
// As we already have these constants in LView, we don't need to re-create them.
// T_HOST is index 6
// We already have this constants in LView, we don't need to re-create it.
export const NATIVE = 7;
export const VIEW_REFS = 8;
export const MOVED_VIEWS = 9;

// Size of LContainer's header. Represents the index after which all views in the container will be inserted. We need to keep a record of current views so we know which views are already in the DOM (and don't need to be re-added) and so we can remove views from the DOM when they are no longer required.
export const CONTAINER_HEADER_OFFSET = 10;

// The state associated with a container. This is an array so that its structure is closer to LView. This helps when traversing the view tree (which is a mix of containers and component views), so we can jump to viewOrContainer[NEXT] in the same way regardless of type.
export interface LContainer extends Array<any> {
  host: any; // The host element of this LContainer. The host could be an LView if this container is on a component node. In that case, the component LView is its HOST.
  readonly[HOST]: RElement | RComment | LView; // This is a type field which allows us to differentiate `LContainer` from `StylingContext` in an efficient way. The value is always set to `true`
  [TYPE]: true; // Flag to signify that this `LContainer` may have transplanted views which need to be

```

change\n * detected. (see: `LView[DECLARATION_COMPONENT_VIEW]`)\n * This flag, once set, is never unset for the `LContainer`\n * [HAS_TRANSPLANTED_VIEWS]: boolean;\n * Access to the parent view is necessary so we can propagate back\n * up from inside a container to parent[NEXT].\n * [PARENT]: LView;\n * This allows us to jump from a container to a sibling container or component\n * view with the same parent, so we can remove listeners efficiently.\n * [NEXT]: LView|LContainer|null;\n * The number of direct transplanted views which need a refresh or have descendants themselves\n * that need a refresh but have not marked their ancestors as Dirty. This tells us that during\n * change detection we should still descend to find those children to refresh, even if the parents\n * are not `Dirty`/`CheckAlways`.\n * [TRANSPLANTED_VIEWS_TO_REFRESH]: number;\n * A collection of views created based on the underlying `` element but inserted into\n * a different `LContainer`. We need to track views created from a given declaration point since\n * queries collect matches from the embedded view declaration point and\n * _not_ the insertion point.\n * [MOVED_VIEWS]: LView[]|null;\n * Pointer to the `TNode` which represents the host of the container.\n * [T_HOST]: TNode;\n * The comment element that serves as an anchor for this LContainer.\n * readonly[NATIVE]:\n * RComment; // TODO(misko): remove as this value can be gotten by unwrapping `[HOST]`\n * Array of `ViewRef`s used by any `ViewContainerRef`s that point to this container.\n * This is lazily initialized by `ViewContainerRef` when the first view is inserted.\n * NOTE: This is stored as `any[]` because render3 should really not be aware of `ViewRef` and\n * doing so creates circular dependency.\n * [VIEW_REFS]: unknown[]|null;\n * Note: This hack is necessary so we don't erroneously get a circular dependency\n * failure based on types.\n * export const unusedValueExportToPlacateAjd = 1;\n * @license\n * Copyright Google LLC All Rights Reserved.\n * Use of this source code is governed by an MIT-style license that can be\n * found in the LICENSE file at <https://angular.io/license>\n * import {LContainer, TYPE} from './container';\n * import {ComponentDef, DirectiveDef} from './definition';\n * import {TNode, TNodeFlags} from './node';\n * import {RNode} from './renderer_dom';\n * import {FLAGS, LView, LViewFlags} from './view';\n * True if `value` is `LView`\n * @param value wrapped value of `RNode`, `LView`, `LContainer`\n * export function isLView(value: RNode|LView|LContainer|{}|null): value is LView {\n * return Array.isArray(value) && typeof value[TYPE] === 'object';\n * }\n * True if `value` is `LContainer`\n * @param value wrapped value of `RNode`, `LView`, `LContainer`\n * export function isLContainer(value: RNode|LView|LContainer|{}|null): value is LContainer {\n * return Array.isArray(value) && value[TYPE] === true;\n * }\n * export function isContentQueryHost(tNode: TNode): boolean {\n * return (tNode.flags & TNodeFlags.hasContentQuery) !== 0;\n * }\n * export function isComponentHost(tNode: TNode): boolean {\n * return (tNode.flags & TNodeFlags.isComponentHost) === TNodeFlags.isComponentHost;\n * }\n * export function isDirectiveHost(tNode: TNode): boolean {\n * return (tNode.flags & TNodeFlags.isDirectiveHost) === TNodeFlags.isDirectiveHost;\n * }\n * export function isComponentDef<T>(def: DirectiveDef<T>): def is ComponentDef<T> {\n * return (def as ComponentDef<T>).template !== null;\n * }\n * export function isRootView(target: LView): boolean {\n * return (target[FLAGS] & LViewFlags.IsRoot) !== 0;\n * }\n * @license\n * Copyright Google LLC All Rights Reserved.\n * Use of this source code is governed by an MIT-style license that can be\n * found in the LICENSE file at <https://angular.io/license>\n * import {assertDefined, assertEqual, assertNumber, throwError} from './util/assert';\n * import {getComponentDef, getNgModuleDef} from './definition';\n * import {LContainer} from './interfaces/container';\n * import {DirectiveDef} from './interfaces/definition';\n * import {Ticu} from './interfaces/i18n';\n * import {NodeInjectorOffset} from './interfaces/injector';\n * import {TNode} from './interfaces/node';\n * import {isLContainer, isLView} from './interfaces/type_checks';\n * import {HEADER_OFFSET, LView, TVIEW, TView} from './interfaces/view';\n * [Assert functions do not constraint type when they are guarded by a truthy\n * expression.](<https://github.com/microsoft/TypeScript/issues/37295>)\n * export function assertTNodeForLView(tNode: TNode, lView: LView) {\n * assertTNodeForTView(tNode, lView[TVIEW]);\n * }\n * export function assertTNodeForTView(tNode: TNode, tView: TView) {\n * assertTNode(tNode);\n * tNode.hasOwnProperty('tView_') &&\n * assertEqual(\n * (tNode as any as {tView_: TView}).tView_, tView,\n * 'This TNode does not belong to this TView.);\n * }\n * export function

```

assertTNode(tNode: TNode) {\n  assertDefined(tNode, 'TNode must be defined');\n  if (!(tNode && typeof tNode
=== 'object' && tNode.hasOwnProperty('directiveStylingLast')))\n    throwError('Not of type TNode, got: ' +
tNode);\n  }\n}\n\n\nexport function assertTICu(tIcu: TICu) {\n  assertDefined(tIcu, 'Expected TICu to be defined');\n
if (!(typeof tIcu.currentCaseLViewIndex === 'number')) {\n    throwError('Object is not of TICu type.);\n
}\n}\n\n\nexport function assertComponentType(\n  actual: any,\n  msg: string = 'Type passed in is not
ComponentType, it does not have `cmp` property.);\n  if (!getComponentDef(actual)) {\n    throwError(msg);\n
}\n}\n\n\nexport function assertNgModuleType(\n  actual: any,\n  msg: string = 'Type passed in is not
NgModuleType, it does not have `mod` property.);\n  if (!getNgModuleDef(actual)) {\n    throwError(msg);\n
}\n}\n\n\nexport function assertCurrentTNodeIsParent(isParent: boolean) {\n  assertEquals(isParent, true,
'currentTNode should be a parent');\n}\n\n\nexport function assertHasParent(tNode: TNode|null) {\n
  assertDefined(tNode, 'currentTNode should exist!);\n  assertDefined(tNode!.parent, 'currentTNode should have a
parent');\n}\n}\n\n\nexport function assertDataNext(IView: LView, index: number, arr?: any[]) {\n  if (arr == null) arr =
IView;\n  assertEquals(\n    arr.length, index, `index ${index} expected to be at the end of arr (length
${arr.length}`);\n}\n}\n\n\nexport function assertLContainer(value: any): asserts value is LContainer {\n
  assertDefined(value, 'LContainer must be defined');\n  assertEquals(isLContainer(value), true, 'Expecting
LContainer');\n}\n}\n\n\nexport function assertLViewOrUndefined(value: any): asserts value is LView|null|undefined {\n
  value && assertEquals(isLView(value), true, 'Expecting LView or undefined or null');\n}\n}\n\n\nexport function
assertLView(value: any): asserts value is LView {\n  assertDefined(value, 'LView must be defined');\n
  assertEquals(isLView(value), true, 'Expecting LView');\n}\n}\n\n\nexport function assertFirstCreatePass(tView: TView,
errMessage?: string) {\n  assertEquals(\n    tView.firstCreatePass, true, errMessage || 'Should only be called in first
create pass.);\n}\n}\n\n\nexport function assertFirstUpdatePass(tView: TView, errMessage?: string) {\n  assertEquals(\n
  tView.firstUpdatePass, true, errMessage || 'Should only be called in first update pass.);\n}\n}\n\n\n\n * This is a basic
sanity check that an object is probably a directive def. DirectiveDef is\n * an interface, so we can't do a direct
instanceof check.\n * ^\n\n\nexport function assertDirectiveDef<T>(obj: any): asserts obj is DirectiveDef<T> {\n  if
(obj.type === undefined || obj.selectors == undefined || obj.inputs === undefined) {\n    throwError(\n
  `Expected a DirectiveDef/ComponentDef and this object does not seem to have the expected shape.);\n
}\n}\n}\n\n\nexport function assertIndexInDeclRange(IView: LView, index: number) {\n  const tView = IView[1];\n
  assertBetween(HEADER_OFFSET, tView.bindingStartIndex, index);\n}\n}\n\n\nexport function
assertIndexInVarsRange(IView: LView, index: number) {\n  const tView = IView[1];\n
  assertBetween(tView.bindingStartIndex, tView.expandoStartIndex, index);\n}\n}\n\n\nexport function
assertIndexInExpandoRange(IView: LView, index: number) {\n  const tView = IView[1];\n
  assertBetween(tView.expandoStartIndex, IView.length, index);\n}\n}\n\n\nexport function assertBetween(lower:
number, upper: number, index: number) {\n  if (!(lower <= index && index < upper)) {\n    throwError(`Index out
of range (expecting ${lower} <= ${index} < ${upper}`);\n  }\n}\n}\n\n\n\n * This is a basic sanity check that the
`injectorIndex` seems to point to what looks like a\n * NodeInjector data structure.\n * @param IView `LView`
which should be checked.\n * @param injectorIndex index into the `LView` where the `NodeInjector` is expected.\n
*\n\n\nexport function assertNodeInjector(IView: LView, injectorIndex: number) {\n
  assertIndexInExpandoRange(IView, injectorIndex);\n  assertIndexInExpandoRange(IView, injectorIndex +
NodeInjectorOffset.PARENT);\n  assertNumber(IView[injectorIndex + 0], 'injectorIndex should point to a bloom
filter');\n  assertNumber(IView[injectorIndex + 1], 'injectorIndex should point to a bloom filter');\n
  assertNumber(IView[injectorIndex + 2], 'injectorIndex should point to a bloom filter');\n
  assertNumber(IView[injectorIndex + 3], 'injectorIndex should point to a bloom filter');\n
  assertNumber(IView[injectorIndex + 4], 'injectorIndex should point to a bloom filter');\n
  assertNumber(IView[injectorIndex + 5], 'injectorIndex should point to a bloom filter');\n
  assertNumber(IView[injectorIndex + 6], 'injectorIndex should point to a bloom filter');\n
  assertNumber(IView[injectorIndex + 7], 'injectorIndex should point to a bloom filter');\n  assertNumber(\n
  IView[injectorIndex + NodeInjectorOffset.PARENT],\n    'injectorIndex should point to parent
injector');\n}\n}\n\n\n\n * @license\n * Copyright Google LLC All Rights Reserved.\n * Use of this source code

```


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```

export const SVG_NAMESPACE = 'http://www.w3.org/2000/svg';
export const MATHML_NAMESPACE = 'http://www.w3.org/1998/MathML/';

```

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```

import { RNode } from './renderer_dom';
import { LView } from './view';

```

This property will be monkey-patched on elements, components and directives

```

export const MONKEY_PATCH_KEY_NAME = '__ngContext__';

```

The internal view context which is specific to a given DOM element, directive or component instance. Each value in here (besides the LView and element node details) can be present, null or undefined. If undefined then it implies the value has not been looked up yet, otherwise, if null, then a lookup was executed and nothing was found. Each value will get filled when the respective value is examined within the getContext function. The component, element and each directive instance will share the same instance of the context.

```

export interface LContext {
  // The component's parent view data.
  IVIEW: LView;
  // The index instance of the node.
  INDEX: number;
  // The instance of the DOM node that is attached to the LNode.
  NATIVE: RNode;
  // The instance of the Component node.
  COMPONENT: {} | null | undefined;
  // The list of active directives that exist on this element.
  DIRECTIVES: any[] | null | undefined;
  // The map of local references (local reference name => element or directive instance) that exist on this element.
  LOCAL_REFS: {[key: string]: any} | null | undefined;
}

```

The goal here is to make sure that the browser DOM API is the Renderer. We do this by defining a subset of DOM API to be the renderer and then use that at runtime for rendering. At runtime we can then use the DOM api directly, in server or web-worker it will be easy to implement such API.

```

import { RendererStyleFlags2, RendererType2 } from '../render/api_flags';
import { getDocument } from './document';
import { RComment, RElement, RNode, RText } from './renderer_dom';

```

TODO: cleanup once the code is merged in angular/angular

```

export enum RendererStyleFlags3 {
  Important = 1 << 0,
  DashCase = 1 << 1
}
export type Renderer3 = ObjectOrientedRenderer3 | ProceduralRenderer3;
export type GlobalTargetName = 'document' | 'window' | 'body';
export type GlobalTargetResolver = (element: any) => GlobalTargetName;

```

Object Oriented style of API needed to create elements and text nodes. This is the native browser API style, e.g. operations are methods on individual objects like HTML element. With this style, no additional code is needed as a facade (reducing payload size).

```

export interface ObjectOrientedRenderer3 {
  createComment(data: string): RComment;
  createElement(tagName: string): RElement;
  createElementNS(namespace: string, tagName: string): RElement;
  createTextNode(data: string): RText;
  querySelector(selectors: string): RElement | null;
}

```

Returns whether the `renderer` is a `ProceduralRenderer3`

```

function isProceduralRenderer(renderer: ProceduralRenderer3 | ObjectOrientedRenderer3): boolean {
  return !!(renderer as any).listen;
}

```

Procedural style of API needed to create elements and text nodes. In non-native browser environments (e.g. platforms such as web-workers), this is the facade that enables element manipulation. This also facilitates backwards compatibility with Renderer2.

```

export interface ProceduralRenderer3 {
  destroy(): void;
  createComment(value: string): RComment;
  createElement(name: string, namespace?: string | null): RElement;
  createText(value: string): RText;
  // This property is allowed to be null / undefined, in which case the view engine won't call it.
  // This is used as a performance optimization for production mode.
  destroyNode?: ((node: RNode) => void) | null;
  appendChild(parent: RElement, newChild: RNode): void;
  insertBefore(parent: RNode, newChild: RNode, refChild: RNode | null, isMove?: boolean): void;
  removeChild(parent: RElement, oldChild: RNode, isHostElement?: boolean): void;
  selectRootElement(selectorOrNode: string | any, preserveContent?: boolean): RElement;
  parentNode(node: RNode): RElement | null;
  nextSibling(node: RNode): RNode | null;
  setAttribute(el: RElement, name: string, value: string, namespace?: string | null): void;
  removeAttribute(el: RElement, name: string, namespace?:

```

```

string|null): void;\n addClass(el: RElement, name: string): void;\n removeClass(el: RElement, name: string):
void;\n setStyle(\n   el: RElement, style: string, value: any,\n   flags?:
RendererStyleFlags2|RendererStyleFlags3): void;\n removeStyle(el: RElement, style: string, flags?:
RendererStyleFlags2|RendererStyleFlags3): void;\n setProperty(el: RElement, name: string, value: any): void;\n
setValue(node: RText|RComment, value: string): void;\n\n // TODO(misko): Deprecate in favor of
addEventListener/removeEventListener\n listen(\n   target: GlobalTargetName|RNode, eventName: string,\n   callback: (event: any) => boolean | void): () => void;\n}\n\n\nexport interface RendererFactory3 {\n
createRenderer(hostElement: RElement|null, rendererType: RendererType2|null): Renderer3;\n begin?(): void;\n
end?(): void;\n}\n\n\nexport const domRendererFactory3: RendererFactory3 = {\n   createRenderer: (hostElement:
RElement|null, rendererType: RendererType2|null): Renderer3 => {\n     return getDocument();\n   }\n};\n\n\n// Note:
This hack is necessary so we don't erroneously get a circular dependency\n// failure based on types.\n\nexport const
unusedValueExportToPlacateAjd = 1;\n\n", "/*\n * @license\n * Copyright Google LLC All Rights Reserved.\n * \n *
Use of this source code is governed by an MIT-style license that can be\n * found in the LICENSE file at
https://angular.io/license\n *\n\nimport {assertDefined, assertDomNode, assertGreaterThan,
assertGreaterThanOrEqual, assertIndexInRange, assertLessThan} from '../util/assert';\nimport {assertTNode,
assertTNodeForLView} from '../assert';\nimport {LContainer, TYPE} from '../interfaces/container';\nimport
{LContext, MONKEY_PATCH_KEY_NAME} from '../interfaces/context';\nimport {TConstants, TNode} from
 '../interfaces/node';\nimport {isProceduralRenderer} from '../interfaces/renderer';\nimport {RNode} from
 '../interfaces/renderer_dom';\nimport {isLContainer, isLView} from '../interfaces/type_checks';\nimport {FLAGS,
HEADER_OFFSET, HOST, LView, LViewFlags, PARENT, PREORDER_HOOK_FLAGS, RENDERER, TData,
TRANSPLANTED_VIEWS_TO_REFRESH, TView} from '../interfaces/view';\n\n\n\n/**\n * For efficiency
reasons we often put several different data types (`RNode`, `LView`, `LContainer`)\n * in same location in `LView`.
This is because we don't want to pre-allocate space for it\n * because the storage is sparse. This file contains utilities
for dealing with such data types.\n * \n * How do we know what is stored at a given location in `LView`.\n * -
`Array.isArray(value) === false` => `RNode` (The normal storage value)\n * - `Array.isArray(value) === true` =>
then the `value[0]` represents the wrapped value.\n * - `typeof value[TYPE] === 'object'` => `LView`\n * - This
happens when we have a component at a given location\n * - `typeof value[TYPE] === true` => `LContainer`\n *
- This happens when we have `LContainer` binding at a given location.\n * \n * \n * NOTE: it is assumed that
`Array.isArray` and `typeof` operations are very efficient.\n * \n\n/**\n * Returns `RNode`.\n * @param value
wrapped value of `RNode`, `LView`, `LContainer`\n *\nexport function unwrapRNode(value:
RNode|LView|LContainer): RNode {\n   while (Array.isArray(value)) {\n     value = value[HOST] as any;\n   }\n   return value as RNode;\n}\n\n\n/**\n * Returns `LView` or `null` if not found.\n * @param value wrapped value of
`RNode`, `LView`, `LContainer`\n *\nexport function unwrapLView(value: RNode|LView|LContainer):
LView|null {\n   while (Array.isArray(value)) {\n     // This check is same as `isLView()` but we don't call at as we
don't want to call\n     // `Array.isArray()` twice and give JITer more work for inlining.\n     if (typeof value[TYPE]
=== 'object') return value as LView;\n     value = value[HOST] as any;\n   }\n   return null;\n}\n\n\n/**\n * Returns
`LContainer` or `null` if not found.\n * @param value wrapped value of `RNode`, `LView`, `LContainer`\n *\nexport function unwrapLContainer(value: RNode|LView|LContainer): LContainer|null {\n   while
(Array.isArray(value)) {\n     // This check is same as `isLContainer()` but we don't call at as we don't want to call\n
// `Array.isArray()` twice and give JITer more work for inlining.\n     if (value[TYPE] === true) return value as
LContainer;\n     value = value[HOST] as any;\n   }\n   return null;\n}\n\n\n/**\n * Retrieves an element value from the
provided `viewData`, by unwrapping\n * from any containers, component views, or style contexts.\n *\nexport
function getNativeByIndex(index: number, lView: LView): RNode {\n   ngDevMode &&
assertIndexInRange(lView, index);\n   ngDevMode && assertGreaterThanOrEqual(index, HEADER_OFFSET,
'Expected to be past HEADER_OFFSET');\n   return unwrapRNode(lView[index]);\n}\n\n\n/**\n * Retrieve an
`RNode` for a given `TNode` and `LView`.\n * \n * This function guarantees in dev mode to retrieve a non-null
`RNode`.\n * \n * @param tNode\n * @param lView\n *\nexport function getNativeByTNode(tNode: TNode,
lView: LView): RNode {\n   ngDevMode && assertTNodeForLView(tNode, lView);\n   ngDevMode &&

```



```

https://angular.io/license\n */\n\nimport {InjectFlags} from './di/interface/injector';\nimport {assertDefined,\nassertEqual, assertGreaterThanOrEqual, assertLessThan, assertNotEqual} from './util/assert';\nimport\n{assertLViewOrUndefined, assertTNodeForLView, assertTNodeForTView} from './assert';\nimport {DirectiveDef}\nfrom './interfaces/definition';\nimport {TNode, TNodeType} from './interfaces/node';\nimport {CONTEXT,\nDECLARATION_VIEW, HEADER_OFFSET, LView, OpaqueViewState, T_HOST, TData, TVIEW, TView,\nTViewType} from './interfaces/view';\nimport {MATH_ML_NAMESPACE, SVG_NAMESPACE} from\n './namespaces';\nimport {getTNode} from './util/view_utils';\n\n\n/**\n *\n */\n\ninterface LFrame {\n  /**\n   *\n   */\n  Parent\n  LFrame.\n  /**\n   *\n   */\n  * This is needed when `leaveView` is called to restore the previous state.\n  /**\n   *\n   */\n  parent:\n  LFrame;\n\n  /**\n   *\n   */\n  * Child LFrame.\n  /**\n   *\n   */\n  * This is used to cache existing LFrames to relieve the memory\n  pressure.\n  /**\n   *\n   */\n  * ^\n  child: LFrame|null;\n\n  /**\n   *\n   */\n  * State of the current view being processed.\n  /**\n   *\n   */\n  * An array of\n  nodes (text, element, container, etc), pipes, their bindings, and\n  /**\n   *\n   */\n  * any local variables that need to be stored\n  between invocations.\n  /**\n   *\n   */\n  * IView: LView;\n\n  /**\n   *\n   */\n  * Current `TView` associated with the `LFrame.IView`.\n  /**\n   *\n   */\n  * One can get `TView` from `lFrame[TVIEW]` however because it is so common it makes sense to\n  /**\n   *\n   */\n  * store\n  it in `LFrame` for perf reasons.\n  /**\n   *\n   */\n  * tView: TView;\n\n  /**\n   *\n   */\n  * Used to set the parent property when nodes are\n  created and track query results.\n  /**\n   *\n   */\n  * This is used in conjunction with `isParent`.\n  /**\n   *\n   */\n  * ^\n  currentTNode:\n  TNode|null;\n\n  /**\n   *\n   */\n  * If `isParent` is:\n  /**\n   *\n   */\n  * - `true`: then `currentTNode` points to a parent node.\n  /**\n   *\n   */\n  * - `false`:\n  then `currentTNode` points to previous node (sibling).\n  /**\n   *\n   */\n  * ^\n  isParent: boolean;\n\n  /**\n   *\n   */\n  * Index of currently\n  selected element in LView.\n  /**\n   *\n   */\n  * Used by binding instructions. Updated as part of advance instruction.\n  /**\n   *\n   */\n  * ^\n  selectedIndex: number;\n\n  /**\n   *\n   */\n  * Current pointer to the binding index.\n  /**\n   *\n   */\n  * ^\n  bindingIndex: number;\n\n  /**\n   *\n   */\n  * The last viewData retrieved by nextContext().\n  /**\n   *\n   */\n  * Allows building nextContext() and reference() calls.\n  /**\n   *\n   */\n  * e.g. const inner = x().$implicit; const outer = x().$implicit;\n  /**\n   *\n   */\n  * ^\n  contextLView: LView;\n\n  /**\n   *\n   */\n  * Store the\n  element depth count. This is used to identify the root elements of the template\n  /**\n   *\n   */\n  * so that we can then attach patch\n  data `LView` to only those elements. We know that those\n  /**\n   *\n   */\n  * are the only places where the patch data could\n  change, this way we will save on number\n  /**\n   *\n   */\n  * of places where the patching occurs.\n  /**\n   *\n   */\n  * ^\n  elementDepthCount:\n  number;\n\n  /**\n   *\n   */\n  * Current namespace to be used when creating elements\n  /**\n   *\n   */\n  * ^\n  currentNamespace:\n  string|null;\n\n  /**\n   *\n   */\n  * The root index from which pure function instructions should calculate their binding\n  /**\n   *\n   */\n  * indices. In component views, this is TView.bindingStartIndex. In a host binding\n  /**\n   *\n   */\n  * context, this is the\n  TView.expandoStartIndex + any dirs/hostVars before the given dir.\n  /**\n   *\n   */\n  * ^\n  bindingRootIndex: number;\n\n  /**\n   *\n   */\n  * Current index of a View or Content Query which needs to be processed next.\n  /**\n   *\n   */\n  * We iterate over the list of\n  Queries and increment current query index at every step.\n  /**\n   *\n   */\n  * ^\n  currentQueryIndex: number;\n\n  /**\n   *\n   */\n  * When\n  host binding is executing this points to the directive index.\n  /**\n   *\n   */\n  * `TView.data[currentDirectiveIndex]` is\n  `DirectiveDef`\n  /**\n   *\n   */\n  * `LView[currentDirectiveIndex]` is directive instance.\n  /**\n   *\n   */\n  * ^\n  currentDirectiveIndex:\n  number;\n\n  /**\n   *\n   */\n  * Are we currently in i18n block as denoted by `elementStart` and `elementEnd`.\n  /**\n   *\n   */\n  * This\n  information is needed because while we are in i18n block all elements must be pre-declared\n  /**\n   *\n   */\n  * in the translation.\n  (i.e. `Hello #2World/#2!` pre-declares element at `#2` location.)\n  /**\n   *\n   */\n  * This allocates `TNodeType.Placeholder`\n  element at location `2`. If translator removes `#2`\n  /**\n   *\n   */\n  * from translation than the runtime must also ensure the\n  element at `2` does not get inserted\n  /**\n   *\n   */\n  * into the DOM. The translation does not carry information about deleted\n  elements. Therefore the\n  /**\n   *\n   */\n  * only way to know that an element is deleted is that it was not pre-declared in the\n  translation.\n  /**\n   *\n   */\n  * This flag works by ensuring that elements which are created without pre-declaration\n  /**\n   *\n   */\n  * (^TNodeType.Placeholder`)\n  are not inserted into the DOM render tree. (It does mean that the\n  /**\n   *\n   */\n  * element still gets\n  instantiated along with all of its behavior [directives])\n  /**\n   *\n   */\n  * ^\n  inI18n: boolean;\n\n  /**\n   *\n   */\n  * All implicit instruction\n  state is stored here.\n  /**\n   *\n   */\n  * It is useful to have a single object where all of the state is stored as a mental model\n  /**\n   *\n   */\n  * (rather it being spread across many different variables.)\n  /**\n   *\n   */\n  * PERF NOTE: Turns out that writing to a true global\n  variable is slower than\n  /**\n   *\n   */\n  * having an intermediate object with properties.\n  /**\n   *\n   */\n  * ^\n  interface InstructionState {\n  /**\n   *\n   */\n  * Current `LFrame`\n  /**\n   *\n   */\n  * ^\n  * null` if we have not called `enterView`\n  /**\n   *\n   */\n  * ^\n  lFrame: LFrame;\n\n  /**\n   *\n   */\n  * Stores\n  whether directives should be matched to elements.\n  /**\n   *\n   */\n  * When template contains `ngNonBindable` then we\n  need to prevent the runtime from matching\n  /**\n   *\n   */\n  * directives on children of that element.\n  /**\n   *\n   */\n  * Example:\n  /**\n   *\n   */\n  * ```\n  /**\n   *\n   */\n  * <my-comp my-directive>\n  /**\n   *\n   */\n  * Should match component / directive.\n  /**\n   *\n   */\n  * </my-comp>\n  /**\n   *\n   */\n  * <div

```

```

ngNonBindable>\n * <my-comp my-directive>\n * Should not match component / directive because we are in
ngNonBindable.\n * </my-comp>\n * </div>\n * ```\n * ^\n bindingsEnabled: boolean;\n\n /**\n * In this
mode, any changes in bindings will throw an ExpressionChangedAfterChecked error.\n *\n * Necessary to
support ChangeDetectorRef.checkNoChanges().\n *\n * checkNoChanges Runs only in devmode=true and
verifies that no unintended changes exist in\n * the change detector or its children.\n *\n
isInCheckNoChangesMode: boolean;\n}\n\nconst instructionState: InstructionState = {\n IFrame:
createLFrame(null),\n bindingsEnabled: true,\n isInCheckNoChangesMode: false,\n};\n\n/**\n * Returns true if the
instruction state stack is empty.\n *\n * Intended to be called from tests only (tree shaken otherwise).\n *\n
function specOnlyIsInstructionStateEmpty(): boolean {\n return instructionState.IFrame.parent ===
null;\n}\n\n\nexport function getElementDepthCount() {\n return
instructionState.IFrame.elementDepthCount;\n}\n\nexport function increaseElementDepthCount() {\n
instructionState.IFrame.elementDepthCount++;\n}\n\nexport function decreaseElementDepthCount() {\n
instructionState.IFrame.elementDepthCount--;\n}\n\nexport function getBindingsEnabled(): boolean {\n return
instructionState.bindingsEnabled;\n}\n\n\n/**\n * Enables directive matching on elements.\n *\n * * Example:\n *
```\n * <my-comp my-directive>\n * Should match component / directive.\n * </my-comp>\n * <div
ngNonBindable>\n * <!-- disableBindings() -->\n * <my-comp my-directive>\n * Should not match component
/ directive because we are in ngNonBindable.\n * </my-comp>\n * <!-- enableBindings() -->\n * </div>\n * ```\n
*\n * @codeGenApi\n * ^\nexport function enableBindings(): void {\n instructionState.bindingsEnabled =
true;\n}\n\n\n/**\n * Disables directive matching on element.\n *\n * * Example:\n * ```\n * <my-comp my-
directive>\n * Should match component / directive.\n * </my-comp>\n * <div ngNonBindable>\n * <!--
disableBindings() -->\n * <my-comp my-directive>\n * Should not match component / directive because we are
in ngNonBindable.\n * </my-comp>\n * <!-- enableBindings() -->\n * </div>\n * ```\n *\n * @codeGenApi\n
*\nexport function disableBindings(): void {\n instructionState.bindingsEnabled = false;\n}\n\n\n/**\n * Return the
current `LView`.\n *\nexport function getLView(): LView {\n return instructionState.IFrame.LView;\n}\n\n\n/**\n *
Return the current `TView`.\n *\nexport function getTView(): TView {\n return
instructionState.IFrame.tView;\n}\n\n\n/**\n * Restores `contextViewState` to the given OpaqueViewState instance.\n
*\n * Used in conjunction with the getCurrentView() instruction to save a snapshot\n * of the current view and
restore it when listeners are invoked. This allows\n * walking the declaration view tree in listeners to get vars from
parent views.\n *\n * @param viewToRestore The OpaqueViewState instance to restore.\n *\n * @codeGenApi\n
*\nexport function restoreView(viewToRestore: OpaqueViewState) {\n instructionState.IFrame.contextLView =
viewToRestore as any as LView;\n}\n\n\nexport function getCurrentTNode(): TNode|null {\n let currentTNode =
getCurrentTNodePlaceholderOk();\n while (currentTNode !== null && currentTNode.type ===
TNodeType.Placeholder) {\n currentTNode = currentTNode.parent;\n }\n return currentTNode;\n}\n\n\nexport
function getCurrentTNodePlaceholderOk(): TNode|null {\n return
instructionState.IFrame.currentTNode;\n}\n\n\nexport function getCurrentParentTNode(): TNode|null {\n const
IFrame = instructionState.IFrame;\n const currentTNode = IFrame.currentTNode;\n return IFrame.isParent ?
currentTNode : currentTNode!.parent;\n}\n\n\nexport function setCurrentTNode(tNode: TNode|null, isParent:
boolean) {\n ngDevMode && tNode && assertTNodeForTView(tNode, instructionState.IFrame.tView);\n const
IFrame = instructionState.IFrame;\n IFrame.currentTNode = tNode;\n IFrame.isParent = isParent;\n}\n\n\nexport
function isCurrentTNodeParent(): boolean {\n return instructionState.IFrame.isParent;\n}\n\n\nexport function
setCurrentTNodeAsNotParent(): void {\n instructionState.IFrame.isParent = false;\n}\n\n\nexport function
setCurrentTNodeAsParent(): void {\n instructionState.IFrame.isParent = true;\n}\n\n\nexport function
getContextLView(): LView {\n return instructionState.IFrame.contextLView;\n}\n\n\nexport function
isInCheckNoChangesMode(): boolean {\n // TODO(misko): remove this from the LView since it is
ngDevMode=true mode only.\n return instructionState.isInCheckNoChangesMode;\n}\n\n\nexport function
setIsInCheckNoChangesMode(mode: boolean): void {\n instructionState.isInCheckNoChangesMode =
mode;\n}\n\n\n// top level variables should not be exported for performance reasons (PERF_NOTES.md)\nexport
function getBindingRoot() {\n const IFrame = instructionState.IFrame;\n let index = IFrame.bindingRootIndex;\n

```

```

if (index === -1) {\n index = IFrame.bindingRootIndex = IFrame.tView.bindingStartIndex;\n } \n return
index;\n}\n\nexport function getBindingIndex(): number {\n return
instructionState.IFrame.bindingIndex;\n}\n\nexport function setBindingIndex(value: number): number {\n return
instructionState.IFrame.bindingIndex = value;\n}\n\nexport function nextBindingIndex(): number {\n return
instructionState.IFrame.bindingIndex++;\n}\n\nexport function incrementBindingIndex(count: number): number {\n
const IFrame = instructionState.IFrame;\n const index = IFrame.bindingIndex;\n IFrame.bindingIndex =
IFrame.bindingIndex + count;\n return index;\n}\n\nexport function isInI18nBlock() {\n return
instructionState.IFrame.inI18n;\n}\n\nexport function setInI18nBlock(isInI18nBlock: boolean): void {\n
instructionState.IFrame.inI18n = isInI18nBlock;\n}\n\n/**\n * Set a new binding root index so that host template
functions can execute.\n *\n * Bindings inside the host template are 0 index. But because we don't know ahead of
time\n * how many host bindings we have we can't pre-compute them. For this reason they are all\n * 0 index and
we just shift the root so that they match next available location in the LView.\n *\n * @param bindingRootIndex
Root index for `hostBindings`\n * @param currentDirectiveIndex `TData[currentDirectiveIndex]` will point to the
current directive\n * whose `hostBindings` are being processed.\n */\nexport function
setBindingRootForHostBindings(\n bindingRootIndex: number, currentDirectiveIndex: number) {\n const IFrame
= instructionState.IFrame;\n IFrame.bindingIndex = IFrame.bindingRootIndex = bindingRootIndex;\n
setCurrentDirectiveIndex(currentDirectiveIndex);\n}\n\n/**\n * When host binding is executing this points to the
directive index.\n *\n * `TView.data[getCurrentDirectiveIndex()]` is `DirectiveDef`\n *\n * `LView[getCurrentDirectiveIndex()]` is directive instance.\n */\nexport function getCurrentDirectiveIndex():
number {\n return instructionState.IFrame.currentDirectiveIndex;\n}\n\n/**\n * Sets an index of a directive whose
`hostBindings` are being processed.\n *\n * @param currentDirectiveIndex `TData` index where current directive
instance can be found.\n */\nexport function setCurrentDirectiveIndex(currentDirectiveIndex: number): void {\n
instructionState.IFrame.currentDirectiveIndex = currentDirectiveIndex;\n}\n\n/**\n * Retrieve the current
`DirectiveDef` which is active when `hostBindings` instruction is being\n * executed.\n *\n * @param tData Current
`TData` where the `DirectiveDef` will be looked up at.\n */\nexport function getCurrentDirectiveDef(tData: TData):
DirectiveDef<any>|null {\n const currentDirectiveIndex = instructionState.IFrame.currentDirectiveIndex;\n return
currentDirectiveIndex === -1 ? null : tData[currentDirectiveIndex] as DirectiveDef<any>;\n}\n\nexport function
getCurrentQueryIndex(): number {\n return instructionState.IFrame.currentQueryIndex;\n}\n\nexport function
setCurrentQueryIndex(value: number): void {\n instructionState.IFrame.currentQueryIndex = value;\n}\n\n/**\n *
Returns a `TNode` of the location where the current `LView` is declared at.\n *\n * @param IView an `LView` that
we want to find parent `TNode` for.\n */\nexport function getDeclarationTNode(IView: LView): TNode|null {\n const
tView = IView[TVIEW];\n\n // Return the declaration parent for embedded views\n if (tView.type ===
TViewType.Embedded) {\n ngDevMode && assertDefined(tView.declTNode, 'Embedded TNodes should have
declaration parents.);\n return tView.declTNode;\n }\n\n // Components don't have `TView.declTNode` because
each instance of component could be\n // inserted in different location, hence `TView.declTNode` is meaningless.\n
// Falling back to `T_HOST` in case we cross component boundary.\n if (tView.type === TViewType.Component)
{\n return IView[T_HOST];\n }\n\n // Remaining TNode type is `TViewType.Root` which doesn't have a parent
TNode.\n return null;\n}\n\n/**\n * This is a light weight version of the `enterView` which is needed by the DI
system.\n *\n * @param IView `LView` location of the DI context.\n * @param tNode `TNode` for DI context\n *
@param flags DI context flags. if `SkipSelf` flag is set than we walk up the declaration\n * tree from `tNode`
until we find parent declared `TElementNode`.\n * @returns `true` if we have successfully entered DI associated
with `tNode` (or with declared\n * `TNode` if `flags` has `SkipSelf`). Failing to enter DI implies that no
associated\n * `NodeInjector` can be found and we should instead use `ModuleInjector`.\n * - If `true` than this
call must be followed by `leaveDI`\n * - If `false` than this call failed and we should NOT call `leaveDI`\n
*/\nexport function enterDI(IView: LView, tNode: TNode, flags: InjectFlags) {\n ngDevMode &&
assertLViewOrUndefined(IView);\n\n if (flags & InjectFlags.SkipSelf) {\n ngDevMode &&
assertTNodeForTView(tNode, IView[TVIEW]);\n\n let parentTNode = tNode as TNode | null;\n let
parentLView = IView;\n\n while (true) {\n ngDevMode && assertDefined(parentTNode, 'Parent TNode should

```

```

be defined');\n parentTNode = parentTNode!.parent as TNode | null;\n if (parentTNode === null && !(flags &
InjectFlags.Host)) {\n parentTNode = getDeclarationTNode(parentLView);\n if (parentTNode === null)
break;\n\n // In this case, a parent exists and is definitely an element. So it will definitely\n // have an
existing IView as the declaration view, which is why we can assume it's defined.\n ngDevMode &&
assertDefined(parentLView, 'Parent LView should be defined');\n parentLView =
parentLView[DECLARATION_VIEW]!;\n\n // In Ivy there are Comment nodes that correspond to ngIf and
NgFor embedded directives\n // We want to skip those and look only at Elements and ElementContainers to
ensure\n // we're looking at true parent nodes, and not content or other types.\n if (parentTNode.type &
(TNodeType.Element | TNodeType.ElementContainer)) {\n break;\n } else {\n break;\n }\n }\n if (parentTNode === null) {\n // If we failed to find a parent TNode this means that we should use module
injector.\n return false;\n } else {\n tNode = parentTNode;\n IView = parentLView;\n }\n}\n\nngDevMode && assertTNodeForLView(tNode, IView);\nconst lFrame = instructionState.lFrame =
allocLFrame();\n lFrame.currentTNode = tNode;\n lFrame.IView = IView;\n\n return true;\n}\n\n/**\n * Swap the
current IView with a new IView.\n * For performance reasons we store the IView in the top level of the
module.\n * This way we minimize the number of properties to read. Whenever a new view\n * is entered we have
to store the IView for later, and when the view is\n * exited the state has to be restored\n * \n * @param newView
New IView to become active\n * @returns the previously active IView;\n */\nexport function enterView(newView:
LView): void {\n ngDevMode && assertNotEqual(newView[0], newView[1] as any, '????');\n ngDevMode &&
assertLViewOrUndefined(newView);\n const newLFrame = allocLFrame();\n if (ngDevMode) {\n assertEqual(newLFrame.isParent, true, 'Expected clean LFrame');\n assertEqual(newLFrame.IView, null,
'Expected clean LFrame');\n assertEqual(newLFrame.tView, null, 'Expected clean LFrame');\n assertEqual(newLFrame.selectedIndex, -1, 'Expected clean LFrame');\n assertEqual(newLFrame.elementDepthCount, 0, 'Expected clean LFrame');\n assertEqual(newLFrame.currentDirectiveIndex, -1, 'Expected clean LFrame');\n assertEqual(newLFrame.currentNamespace, null, 'Expected clean LFrame');\n assertEqual(newLFrame.bindingRootIndex, -1, 'Expected clean LFrame');\n assertEqual(newLFrame.currentQueryIndex, 0, 'Expected clean LFrame');\n }\n const tView =
newView[TVIEW];\n instructionState.lFrame = newLFrame;\n ngDevMode && tView.firstChild &&
assertTNodeForTView(tView.firstChild, tView);\n newLFrame.currentTNode = tView.firstChild!;\n newLFrame.IView = newView;\n newLFrame.tView = tView;\n newLFrame.contextLView = newView!;\n newLFrame.bindingIndex = tView.bindingStartIndex;\n newLFrame.inI18n = false;\n}\n\n/**\n * Allocates next
free LFrame. This function tries to reuse the `LFrame`s to lower memory pressure.\n */\nfunction allocLFrame() {\n const currentLFrame = instructionState.lFrame;\n const childLFrame = currentLFrame === null ? null :
currentLFrame.child;\n const newLFrame = childLFrame === null ? createLFrame(currentLFrame) :
childLFrame;\n return newLFrame;\n}\n\nfunction createLFrame(parent: LFrame|null): LFrame {\n const lFrame:
LFrame = {\n currentTNode: null,\n isParent: true,\n IView: null!,\n tView: null!,\n selectedIndex: -1,\n contextLView: null!,\n elementDepthCount: 0,\n currentNamespace: null,\n currentDirectiveIndex: -1,\n bindingRootIndex: -1,\n bindingIndex: -1,\n currentQueryIndex: 0,\n parent: parent!,\n child: null,\n inI18n: false,\n };\n parent !== null && (parent.child = lFrame); // link the new LFrame for reuse.\n return
lFrame;\n}\n\n/**\n * A lightweight version of leave which is used with DI.\n * This function only resets
`currentTNode` and `LView` as those are the only properties\n * used with DI (`enterDI()`).\n * NOTE: This
function is reexported as `leaveDI`. However `leaveDI` has return type of `void` where\n * as `leaveViewLight` has
`LFrame`. This is so that `leaveViewLight` can be used in `leaveView`.\n */\nfunction leaveViewLight(): LFrame
{\n const oldLFrame = instructionState.lFrame;\n instructionState.lFrame = oldLFrame.parent;\n oldLFrame.currentTNode = null!;\n oldLFrame.IView = null!;\n return oldLFrame;\n}\n\n/**\n * This is a
lightweight version of the `leaveView` which is needed by the DI system.\n * NOTE: this function is an alias so
that we can change the type of the function to have `void`\n * return type.\n */\nexport const leaveDI: () => void =
leaveViewLight;\n\n/**\n * Leave the current `LView`\n * This pops the `LFrame` with the associated `LView`

```





```

even in report-only mode. Until the API changes, // catch the error not to break the applications functionally.
In such // cases, the code will fall back to using strings. } } return policy; } }
Unsafely promote a string to a TrustedHTML, falling back to strings when Trusted Types are not available.
@security This is a security-sensitive function; any use of this function must go through security review. In
particular, it must be assured that the provided string will never cause an XSS vulnerability if used in a context
that will be interpreted as HTML by a browser, e.g. when assigning to element.innerHTML.
function trustedHTMLFromString(html: string): TrustedHTML|string { return getPolicy()?.createHTML(html) ||
html; }
Unsafely promote a string to a TrustedScript, falling back to strings when Trusted Types are
not available. @security In particular, it must be assured that the provided string will never cause an XSS
vulnerability if used in a context that will be interpreted and executed as a script by a browser, e.g. when calling
eval.
function trustedScriptFromString(script: string): TrustedScript|string { return
getPolicy()?.createScript(script) || script; }
Unsafely promote a string to a TrustedScriptURL, falling
back to strings when Trusted Types are not available. @security This is a security-sensitive function; any use
of this function must go through security review. In particular, it must be assured that the provided string
will never cause an XSS vulnerability if used in a context that will cause a browser to load and execute a
resource, e.g. when assigning to script.src.
function trustedScriptURLFromString(url: string):
TrustedScriptURL|string { return getPolicy()?.createScriptURL(url) || url; }
Unsafely call the
Function constructor with the given string arguments. It is only available in development mode, and should be
stripped out of production code. @security This is a security-sensitive function; any use of this function
must go through security review. In particular, it must be assured that it is only called from development code,
as use in production code can lead to XSS vulnerabilities.
function
newTrustedFunctionForDev(...args: string[]): Function { if (typeof ngDevMode === 'undefined') { throw new
Error('newTrustedFunctionForDev should never be called in production'); } if (!global.trustedTypes) { // In
environments that don't support Trusted Types, fall back to the most // straightforward implementation:
return new Function(...args); } // Chrome currently does not support passing TrustedScript to the Function
// constructor. The following implements the workaround proposed on the page // below, where the Chromium
bug is also referenced: // https://github.com/w3c/webappsec-trusted-types/wiki/Trusted-Types-for-function-
constructor
const fnArgs = args.slice(0, -1).join(',');
const fnBody = args.pop()!.toString();
const body =
`(function anonymous(${fnArgs}) { ${fnBody} })`;
// Using eval directly confuses the compiler and
prevents this module from // being stripped out of JS binaries even if not used. The global['eval'] // indirection
fixes that.
const fn = global['eval'](trustedScriptFromString(body) as string) as Function;
// To completely
mimic the behavior of calling "new Function", two more // things need to happen: // 1. Stringifying the
resulting function should return its source code
fn.toString = () => body;
// 2. When calling the resulting
function, `this` should refer to `global`
return fn.bind(global);
// When Trusted Types support in Function
constructors is widely available, // the implementation of this function can be simplified to:
// return new
Function(...args.map(a => trustedScriptFromString(a)));
}
}
/** @license
 * Copyright Google LLC All
Rights Reserved.
 * Use of this source code is governed by an MIT-style license that can be found in the
LICENSE file at https://angular.io/license
 */
export const enum BypassType { Url = 'URL', Html =
'HTML',
ResourceUrl = 'ResourceURL',
Script = 'Script',
Style = 'Style',
}
/** Marker interface for a
value that's safe to use in a particular context.
 */
@publicApi
export interface SafeValue {}
/** Marker interface for a value that's safe to use as HTML.
 */
@publicApi
export interface SafeHtml
extends SafeValue {}
/** Marker interface for a value that's safe to use as style (CSS).
 */
@publicApi
export interface SafeStyle extends SafeValue {}
/** Marker interface for a value that's safe to use as
JavaScript.
 */
@publicApi
export interface SafeScript extends SafeValue {}
/** Marker interface
for a value that's safe to use as a URL linking to a document.
 */
@publicApi
export interface SafeUrl
extends SafeValue {}
/** Marker interface for a value that's safe to use as a URL to load executable code
from.
 */
@publicApi
export interface SafeResourceUrl extends SafeValue {}
abstract class
SafeValueImpl implements SafeValue {
constructor(public changingThisBreaksApplicationSecurity: string)

```

```

}
abstract getTypeName(): string;
toString() {
 return `SafeValue must use [property]=binding:
 ${this.changingThisBreaksApplicationSecurity}` +
 ` (see http://g.co/ng/security#xss)`;
}
class SafeHtmlImpl extends SafeValueImpl implements SafeHtml {
 getTypeName() {
 return BypassType.Html;
 }
}
class SafeStyleImpl extends SafeValueImpl implements SafeStyle {
 getTypeName() {
 return BypassType.Style;
 }
}
class SafeScriptImpl extends SafeValueImpl implements SafeScript {
 getTypeName() {
 return BypassType.Script;
 }
}
class SafeUrlImpl extends SafeValueImpl implements SafeUrl {
 getTypeName() {
 return BypassType.Url;
 }
}
class SafeResourceUrlImpl extends SafeValueImpl implements SafeResourceUrl {
 getTypeName() {
 return BypassType.ResourceUrl;
 }
}
export function unwrapSafeValue(value: SafeValue): string;
export function unwrapSafeValue<T>(value: T): T;
export function unwrapSafeValue<T>(value: T|SafeValue): T {
 return value instanceof SafeValueImpl ?
 value.changingThisBreaksApplicationSecurity as any as T :
 value as any as T;
}
export function allowSanitizationBypassAndThrow(
 value: any, type: BypassType.Html): value is SafeHtml;
export function allowSanitizationBypassAndThrow(
 value: any, type: BypassType.ResourceUrl): value is SafeResourceUrl;
export function allowSanitizationBypassAndThrow(
 value: any, type: BypassType.Script): value is SafeScript;
export function allowSanitizationBypassAndThrow(
 value: any, type: BypassType.Style): value is SafeStyle;
export function allowSanitizationBypassAndThrow(
 value: any, type: BypassType.Url): value is SafeUrl;
export function allowSanitizationBypassAndThrow(
 value: any, type: BypassType): boolean;
export function allowSanitizationBypassAndThrow(
 value: any, type: BypassType): boolean {
 const actualType = getSanitizationBypassType(value);
 if (actualType != null && actualType !== type) {
 // Allow ResourceURLs in URL contexts, they are strictly more trusted.
 if (actualType === BypassType.ResourceUrl && type === BypassType.Url)
 return true;
 throw new Error(`Required a safe ${type}, got a ${actualType} (see http://g.co/ng/security#xss)`);
 }
 return actualType === type;
}
export function getSanitizationBypassType(value: any): BypassType|null {
 return value instanceof SafeValueImpl &&
 value.getTypeName() as BypassType || null;
}
/**
 * Mark `html` string as trusted.
 * This function wraps the trusted string in `String` and brands it
 * recognizable to {@link htmlSanitizer} to be trusted implicitly.
 * @param trustedHtml `html` string which needs to be implicitly trusted.
 * @returns a `html` which has been branded to be implicitly trusted.
 */
export function bypassSanitizationTrustHtml(trustedHtml: string): SafeHtml {
 return new SafeHtmlImpl(trustedHtml);
}
/**
 * Mark `style` string as trusted.
 * This function wraps the trusted string in `String` and brands it in a way
 * which makes it recognizable to {@link styleSanitizer} to be trusted implicitly.
 * @param trustedStyle `style` string which needs to be implicitly trusted.
 * @returns a `style` which has been branded to be implicitly trusted.
 */
export function bypassSanitizationTrustStyle(trustedStyle: string): SafeStyle {
 return new SafeStyleImpl(trustedStyle);
}
/**
 * Mark `script` string as trusted.
 * This function wraps the trusted string in `String` and brands it
 * recognizable to {@link scriptSanitizer} to be trusted implicitly.
 * @param trustedScript `script` string which needs to be implicitly trusted.
 * @returns a `script` which has been branded to be implicitly trusted.
 */
export function bypassSanitizationTrustScript(trustedScript: string): SafeScript {
 return new SafeScriptImpl(trustedScript);
}
/**
 * Mark `url` string as trusted.
 * This function wraps the trusted string in `String` and brands it
 * recognizable to {@link urlSanitizer} to be trusted implicitly.
 * @param trustedUrl `url` string which needs to be implicitly trusted.
 * @returns a `url` which has been branded to be implicitly trusted.
 */
export function bypassSanitizationTrustUrl(trustedUrl: string): SafeUrl {
 return new SafeUrlImpl(trustedUrl);
}
/**
 * Mark `url` string as trusted.
 * This function wraps the trusted string in `String` and brands it
 * recognizable to {@link resourceUrlSanitizer} to be trusted implicitly.
 * @param trustedResourceUrl `url` string which needs to be implicitly trusted.
 * @returns a `url` which has been branded to be implicitly trusted.
 */
export function bypassSanitizationTrustResourceUrl(trustedResourceUrl: string): SafeResourceUrl {
 return new SafeResourceUrlImpl(trustedResourceUrl);
}
}
"/**
 * @license
 * Copyright Google LLC All Rights Reserved.
 * Use of this source code is governed by an MIT-style license that can be
 * found in the LICENSE file at https://angular.io/license
 */
This file is used to control if the default rendering pipeline

```

should be `ViewEngine` or `Ivy`. For more information on how to run and debug tests with either Ivy or View Engine (legacy), please see [BAZEL.md](./docs/BAZEL.md).

```

let _devMode: boolean = true;
let _runModeLocked: boolean = false;

Returns whether Angular is in development mode. After called once, the value is locked and won't change any more. By default, this is true, unless a user calls `enableProdMode` before calling this.

@publicApi
export function isDevMode(): boolean {
 _runModeLocked = true;
 return _devMode;
}

Disable Angular's development mode, which turns off assertions and other checks within the framework. One important assertion this disables verifies that a change detection pass does not result in additional changes to any bindings (also known as unidirectional data flow).

@publicApi
export function enableProdMode(): void {
 if (_runModeLocked) {
 throw new Error('Cannot enable prod mode after platform setup.');
```

}
 \_devMode = false;
 }
}

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```

import {trustedHTMLFromString} from './util/security/trusted_types';

This helper is used to get hold of an inert tree of DOM elements containing dirty HTML that needs sanitizing. Depending upon browser support we use one of two strategies for doing this. Default: DOMParser strategy Fallback: InertDocument strategy

export function getInertBodyHelper(defaultDoc: Document): InertBodyHelper {
 return isDOMParserAvailable() ? new DOMParserHelper() : new InertDocumentHelper(defaultDoc);
}

export interface InertBodyHelper {
 /** Get an inert DOM element containing DOM created from the dirty HTML string provided.
 *
 * getInertBodyElement: (html: string) => HTMLElement | null;
 */
 /** Uses DOMParser to create and fill an inert body element. This is the default strategy used in browsers that support it.
 *
 * class DOMParserHelper implements InertBodyHelper {
 * getInertBodyElement(html: string):
 * HTMLElement|null {
 * // We add these extra elements to ensure that the rest of the content is parsed as expected
 * // e.g. leading whitespace is maintained and tags like <meta> do not get hoisted to the <head> tag. Note that the <body> tag is closed implicitly to prevent unclosed tags
 * // in `html` from consuming the otherwise explicit </body> tag.
 * html = '<body><remove></remove>' + html;
 * try {
 * const body = new window.DOMParser().parseFromString(trustedHTMLFromString(html) as string, 'text/html');
 * .body as HTMLBodyElement;
 * body.removeChild(body.firstChild!);
 * return body;
 * } catch {
 * return null;
 * }
 * }
 * }

 * Use an HTML5 `template` element, if supported, or an inert body element created via `createHtmlDocument` to create and fill an inert DOM element. This is the fallback strategy if the browser does not support DOMParser.

 * class InertDocumentHelper implements InertBodyHelper {
 * private inertDocument: Document;
 * constructor(private defaultDoc: Document) {
 * this.inertDocument = this.defaultDoc.implementation.createHTMLDocument('sanitization-inert');
 * if (this.inertDocument.body == null) {
 * // usually there should be only one body element in the document, but IE doesn't have any, so we need to create one.
 * const inertHtml = this.inertDocument.createElement('html');
 * this.inertDocument.appendChild(inertHtml);
 * const inertBodyElement = this.inertDocument.createElement('body');
 * inertHtml.appendChild(inertBodyElement);
 * }
 * }

 * getInertBodyElement(html: string): HTMLElement|null {
 * // Prefer using <template> element if supported.
 * const templateEl = this.inertDocument.createElement('template');
 * if ('content' in templateEl) {
 * templateEl.innerHTML = trustedHTMLFromString(html) as string;
 * return templateEl;
 * }
 * // Note that previously we used to do something like `this.inertDocument.body.innerHTML = html` and we returned the inert `body` node. This was changed, because IE seems to treat setting `innerHTML` on an inserted element differently, compared to one that hasn't been inserted yet. In particular, IE appears to split some of the text into multiple text nodes rather than keeping them in a single one which ends up messing with Ivy's i18n parsing further down the line. This has been worked around by creating a new inert `body` and using it as the root node in which we insert the HTML.
 * const inertBody = this.inertDocument.createElement('body');
 * inertBody.innerHTML = trustedHTMLFromString(html) as string;
 * // Support: IE 11 only
 * // strip custom-namespaced attributes on IE<=11
 * if ((this.defaultDoc as any).documentMode) {
 * this.stripCustomNsAttrs(inertBody);
 * }
 * return inertBody;
 * }
 * }

 * When IE11 comes across an

```

unknown namespaced attribute e.g. 'xlink:foo' it adds 'xmlns:ns1' attribute to declare ns1 namespace and prefixes the attribute with 'ns1' (e.g. 'ns1:xlink:foo'). This is undesirable since we don't want to allow any of these custom attributes. This method strips them all.

```

private stripCustomNsAttrs(el: Element) {
 const elAttrs = el.attributes;
 // loop backwards so that we can support removals.
 for (let i = elAttrs.length - 1; 0 < i; i--) {
 const attrib = elAttrs.item(i);
 const attrName = attrib!.name;
 if (attrName === 'xmlns:ns1' || attrName.indexOf('ns1:') === 0) {
 el.removeAttribute(attrName);
 }
 }
 let childNode = el.firstChild as Node | null;
 while (childNode) {
 if (childNode.nodeType === Node.ELEMENT_NODE) this.stripCustomNsAttrs(childNode as Element);
 childNode = childNode.nextSibling;
 }
}

```

We need to determine whether the DOMParser exists in the global context and supports parsing HTML; HTML parsing support is not as wide as other formats, see [https://developer.mozilla.org/en-US/docs/Web/API/DOMParser#Browser\\_compatibility](https://developer.mozilla.org/en-US/docs/Web/API/DOMParser#Browser_compatibility).

```

@suppress {uselessCode}
export function isDOMParserAvailable() {
 try {
 return !!new window.DOMParser().parseFromString(
 trustedHTMLFromString("") as string, 'text/html');
 } catch {}
 return false;
}

```

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A pattern that recognizes a commonly useful subset of URLs that are safe. This regular expression matches a subset of URLs that will not cause script execution if used in URL context within a HTML document. Specifically, this regular expression matches if (comment from here on and regex copied from Soy's EscapingConventions):

- (1) Either an allowed protocol (http, https, mailto or ftp).
- (2) or no protocol. A protocol must be followed by a colon. The below allows that by allowing colons only after one of the characters [/?#]. A colon after a hash (#) must be in the fragment. Otherwise, a colon after a (?) must be in a query. Otherwise, a colon after a single solidus (/) must be in a path. Otherwise, a colon after a double solidus (//) must be in the authority (before port).

The pattern disallows &, used in HTML entity declarations before one of the characters in [/?#]. This disallows HTML entities used in the protocol name, which should never happen, e.g. "h&#116;tp" for "http". It also disallows HTML entities in the first path part of a relative path, e.g. "foo&lt;bar/baz". Our existing escaping functions should not produce that. More importantly, it disallows masking of a colon, e.g. "javascript&#58;...".

This regular expression was taken from the Closure sanitization library.

```

const SAFE_URL_PATTERN = /^(?:(?:https?|mailto|ftp|tel|file|sms):|[^&:/?#]*(?:/?.#)?)$/gi;
const SAFE_SRCSET_PATTERN = /^(?:(?:https?|file):|[^&:/?#]*(?:/?.#)?)$/gi;
const DATA_URL_PATTERN = /^data:(?:image\/(?:bmp|gif|jpeg|jpg|png|tiff|webp)|video\/(?:mpeg|mp4|ogg|webm)|audio\/(?:mp3|oga|ogg|opus));base64,[a-z0-9+\\\/]+=*$/i;

```

```

export function _sanitizeUrl(url: string): string {
 url = String(url);
 if (url.match(SAFE_URL_PATTERN) || url.match(DATA_URL_PATTERN)) return url;
 if (isDevMode()) {
 console.warn(`WARNING: sanitizing unsafe URL value ${url} (see http://g.co/ng/security#xss)`);
 }
 return 'unsafe:' + url;
}
export function sanitizeSrcset(srcset: string): string {
 srcset = String(srcset);
 return srcset.split(',').map(srcset => _sanitizeUrl(srcset.trim())).join(', ');
}

```

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```

import {getInertBodyHelper, InertBodyHelper} from './inert_body';
import {_sanitizeUrl, sanitizeSrcset} from './url_sanitizer';
function tagSet(tags: string): {[k: string]: boolean} {
 const res: {[k: string]: boolean} = {};
 for (const t of tags.split(',')) res[t] = true;
 return res;
}
function merge(...sets: {[k: string]: boolean}[]): {[k: string]: boolean} {
 const res: {[k: string]: boolean} = {};
 for (const s of sets) {
 for (const v in s) {
 if (s.hasOwnProperty(v)) res[v] = true;
 }
 }
 return res;
}

```

Good source of info about elements and attributes <http://dev.w3.org/html5/spec/Overview.html#semantics> <http://simon.html5.org/html-elements>

Safe Void Elements - HTML5 <http://dev.w3.org/html5/spec/Overview.html#void-elements>

```

const VOID_ELEMENTS = tagSet('area,br,col,hr,img,wbr');

```

Elements that you can, intentionally, leave open (and

```

which close themselves)\n// http://dev.w3.org/html5/spec/Overview.html#optional-tags\nconst
OPTIONAL_END_TAG_BLOCK_ELEMENTS = tagSet('colgroup,dd,dt,li,p,tbody,td,tfoot,th,thead,tr');\nconst
OPTIONAL_END_TAG_INLINE_ELEMENTS = tagSet('rp,rt');\nconst OPTIONAL_END_TAG_ELEMENTS =\n merge(OPTIONAL_END_TAG_INLINE_ELEMENTS, OPTIONAL_END_TAG_BLOCK_ELEMENTS);\n\n//
Safe Block Elements - HTML5\nconst BLOCK_ELEMENTS = merge(\n
OPTIONAL_END_TAG_BLOCK_ELEMENTS,\n tagSet(\n 'address,article,' +\n
'aside,blockquote,caption,center,del,details,dialog,dir,div,dl,figure,figcaption,footer,h1,h2,h3,h4,h5,' +\n
'h6,header,hgroup,hr,ins,main,map,menu,nav,ol,pre,section,summary,table,ul');\n\n// Inline Elements -
HTML5\nconst INLINE_ELEMENTS = merge(\n OPTIONAL_END_TAG_INLINE_ELEMENTS,\n tagSet(\n
 'a,abbr,acronym,audio,b,' +\n
'bdi,bdo,big,br,cite,code,del,dfn,em,font,i,img,ins,kbd,label,map,mark,picture,q,ruby,rp,rt,s,' +\n
'samp,small,source,span,strike,strong,sub,sup,time,track,tt,u,var,video');\n\nexport const VALID_ELEMENTS =\n merge(VOID_ELEMENTS, BLOCK_ELEMENTS, INLINE_ELEMENTS,
OPTIONAL_END_TAG_ELEMENTS);\n\n// Attributes that have href and hence need to be sanitized\nexport const
URI_ATTRS = tagSet('background,cite,href,itemtype,longdesc,poster,src,xlink:href');\n\n// Attributes that have
special href set hence need to be sanitized\nexport const SRCSET_ATTRS = tagSet('srcset');\n\nconst
HTML_ATTRS = tagSet(\n
'abbr,accesskey,align,alt,autoplay,axis,bgcolor,border,cellpadding,cellspacing,class,clear,color,cols,colspan,' +\n
'compact,controls,coords,datetime,default,dir,download,face,headers,height,hidden,hreflang,hspace,' +\n
'ismap,itemscope,itemprop,kind,label,lang,language,loop,media,muted,nohref,nowrap,open,preload,rel,rev,role,rows
,rowspan,rules,' +\n
'scope,scrolling,shape,size,sizes,span,srelang,start,summary,tabindex,target,title,translate,type,usemap,' +\n
'valign,value,vspace,width');\n\n// Accessibility attributes as per WAI-ARIA 1.1 (W3C Working Draft 14 December
2018)\nconst ARIA_ATTRS = tagSet(\n 'aria-activedescendant,aria-atomic,aria-autocomplete,aria-busy,aria-
checked,aria-colcount,aria-colindex,' +\n 'aria-colspan,aria-controls,aria-current,aria-describedby,aria-details,aria-
disabled,aria-dropeffect,' +\n 'aria-errormessage,aria-expanded,aria-flowto,aria-grabbed,aria-haspopup,aria-
hidden,aria-invalid,' +\n 'aria-keyshortcuts,aria-label,aria-labelledby,aria-level,aria-live,aria-modal,aria-multiline,'
+\n 'aria-multiselectable,aria-orientation,aria-owns,aria-placeholder,aria-posinset,aria-pressed,aria-readonly,' +\n
'aria-relevant,aria-required,aria-roledescription,aria-rowcount,aria-rowindex,aria-rowspan,aria-selected,' +\n 'aria-
setsize,aria-sort,aria-valuemax,aria-valuemin,aria-valuenow,aria-valuetext');\n\n// NB: This currently consciously
doesn't support SVG. SVG sanitization has had several security\n// issues in the past, so it seems safer to leave it out
if possible. If support for binding SVG via\n// innerHTML is required, SVG attributes should be added here.\n\n//
NB: Sanitization does not allow <form> elements or other active elements (<button> etc). Those\n// can be
sanitized, but they increase security surface area without a legitimate use case, so they\n// are left out here.\n\nexport
const VALID_ATTRS = merge(URI_ATTRS, SRCSET_ATTRS, HTML_ATTRS, ARIA_ATTRS);\n\n// Elements
whose content should not be traversed/preserved, if the elements themselves are invalid.\n\n// Typically,
`<invalid>Some content</invalid>` would traverse (and in this case preserve)\n// `Some content`, but strip `invalid-
element` opening/closing tags. For some elements, though, we\n// don't want to preserve the content, if the elements
themselves are going to be removed.\n\nconst SKIP_TRAVERSING_CONTENT_IF_INVALID_ELEMENTS =
tagSet('script,style,template');\n\n/**\n * SanitizingHtmlSerializer serializes a DOM fragment, stripping out any
unsafe elements and unsafe\n * attributes.\n */\n\nexport class SanitizingHtmlSerializer {\n // Explicitly track if something
was stripped, to avoid accidentally warning of sanitization just\n // because characters were re-encoded.\n public
sanitizedSomething = false;\n private buf: string[] = [];\n\n sanitizeChildren(el: Element): string {\n // This
cannot use a TreeWalker, as it has to run on Angular's various DOM adapters.\n // However this code never
accesses properties off of `document` before deleting its contents\n // again, so it shouldn't be vulnerable to DOM
clobbering.\n let current: Node = el.firstChild!;\n let traverseContent = true;\n while (current) {\n if
(current.nodeType === Node.ELEMENT_NODE) {\n traverseContent = this.startElement(current as
Element);\n } else if (current.nodeType === Node.TEXT_NODE) {\n this.chars(current.nodeValue!);\n }

```



```

sanitizer.sanitizeChildren(\n getTemplateContent(inertBodyElement!) as Element || inertBodyElement);\n if
(isDevMode() && sanitizer.sanitizedSomething) {\n console.warn(\n 'WARNING: sanitizing HTML
stripped some content, see http://g.co/ng/security#xss');\n }\n return safeHtml;\n } finally {\n // In case
anything goes wrong, clear out inertElement to reset the entire DOM structure.\n if (inertBodyElement) {\n
const parent = getTemplateContent(inertBodyElement) || inertBodyElement;\n while (parent.firstChild) {\n
parent.removeChild(parent.firstChild);\n }\n }\n}\n\nexport function getTemplateContent(el: Node):
Node|null {\n return 'content' in (el as any /** Microsoft/TypeScript#21517 */) && isTemplateElement(el) ?\n
el.content :\n null;\n}\n\nfunction isTemplateElement(el: Node): el is HTMLTemplateElement {\n return
el.nodeType === Node.ELEMENT_NODE && el.nodeName === 'TEMPLATE';\n}\n\n"/**\n * @license\n *
Copyright Google LLC All Rights Reserved.\n * \n * Use of this source code is governed by an MIT-style license
that can be\n * found in the LICENSE file at https://angular.io/license\n * \n\n/**\n * A SecurityContext marks a
location that has dangerous security implications, e.g. a DOM property\n * like `innerHTML` that could cause Cross
Site Scripting (XSS) security bugs when improperly\n * handled.\n * \n * See DomSanitizer for more details on
security in Angular applications.\n * \n * @publicApi\n * \n\nexport enum SecurityContext {\n NONE = 0,\n HTML
= 1,\n STYLE = 2,\n SCRIPT = 3,\n URL = 4,\n RESOURCE_URL = 5,\n}\n\n"/**\n * @license\n * Copyright
Google LLC All Rights Reserved.\n * \n * Use of this source code is governed by an MIT-style license that can be\n
* found in the LICENSE file at https://angular.io/license\n * \n\nimport {getDocument} from
'./render3/interfaces/document';\nimport {SANITIZER} from './render3/interfaces/view';\nimport {getLView}
from './render3/state';\nimport {renderStringify} from './render3/util/stringify_utils';\nimport {TrustedHTML,
TrustedScript, TrustedScriptURL} from './util/security/trusted_type_defs';\nimport {trustedHTMLFromString,
trustedScriptFromString, trustedScriptURLFromString} from './util/security/trusted_types';\nimport
{allowSanitizationBypassAndThrow, BypassType, unwrapSafeValue} from './bypass';\nimport {_sanitizeHtml as
_sanitizeHtml} from './html_sanitizer';\nimport {Sanitizer} from './sanitizer';\nimport {SecurityContext} from
 './security';\nimport {_sanitizeUrl as _sanitizeUrl} from './url_sanitizer';\n\n\n/**\n * An `html` sanitizer which
converts untrusted `html` **string** into trusted string by removing\n * dangerous content.\n * \n * This method
parses the `html` and locates potentially dangerous content (such as urls and\n * javascript) and removes it.\n * \n * It
is possible to mark a string as trusted by calling { @link bypassSanitizationTrustHtml }.\n * \n * @param unsafeHtml
untrusted `html`, typically from the user.\n * @returns `html` string which is safe to display to user, because all of
the dangerous javascript\n * and urls have been removed.\n * \n * @codeGenApi\n * \n\nexport function
sanitizeHtml(unsafeHtml: any): string {\n const sanitizer = getSanitizer();\n if (sanitizer) {\n return
sanitizer.sanitize(SecurityContext.HTML, unsafeHtml) || '';\n }\n if
(allowSanitizationBypassAndThrow(unsafeHtml, BypassType.Html)) {\n return unwrapSafeValue(unsafeHtml);\n }\n
return _sanitizeHtml(getDocument(), renderStringify(unsafeHtml));\n}\n\n\n/**\n * A `style` sanitizer which
converts untrusted `style` **string** into trusted string by removing\n * dangerous content.\n * \n * It is possible to
mark a string as trusted by calling { @link bypassSanitizationTrustStyle }.\n * \n * @param unsafeStyle untrusted
`style`, typically from the user.\n * @returns `style` string which is safe to bind to the `style` properties.\n * \n *
@codeGenApi\n * \n\nexport function sanitizeStyle(unsafeStyle: any): string {\n const sanitizer = getSanitizer();\n if
(sanitizer) {\n return sanitizer.sanitize(SecurityContext.STYLE, unsafeStyle) || '';\n }\n if
(allowSanitizationBypassAndThrow(unsafeStyle, BypassType.Style)) {\n return unwrapSafeValue(unsafeStyle);\n }\n
return renderStringify(unsafeStyle);\n}\n\n\n/**\n * A `url` sanitizer which converts untrusted `url` **string**
into trusted string by removing\n * dangerous\n * content.\n * \n * This method parses the `url` and locates
potentially dangerous content (such as javascript) and\n * removes it.\n * \n * It is possible to mark a string as trusted
by calling { @link bypassSanitizationTrustUrl }.\n * \n * @param unsafeUrl untrusted `url`, typically from the user.\n
* @returns `url` string which is safe to bind to the `src` properties such as `

```

which only lets trusted `url`'s through. This passes only `url`'s marked trusted by calling { @link bypassSanitizationTrustResourceUrl}. @param unsafeResourceUrl untrusted `url`, typically from the user. @returns `url` string which is safe to bind to the `src` properties such as `

```

sanitizeResourceUrl(unsafeResourceUrl: any): string {
 const sanitizer = getSanitizer();
 if (sanitizer) {
 return sanitizer.sanitize(SecurityContext.RESOURCE_URL, unsafeResourceUrl) || "";
 }
 if (allowSanitizationBypassAndThrow(unsafeResourceUrl, BypassType.ResourceUrl)) {
 return unwrapSafeValue(unsafeResourceUrl);
 }
 throw new Error('unsafe value used in a resource URL context (see http://g.co/ng/security#xss)');
}

```

A `script` sanitizer which only lets trusted javascript through. This passes only `script`'s marked trusted by calling { @link bypassSanitizationTrustScript}. @param unsafeScript untrusted `script`, typically from the user. @returns `url` string which is safe to bind to the `



```

= `Binding to event attribute '${name}' is disallowed for security reasons, ` +\n
`please use
(${name.slice(2)})=...`;
\n throw new Error(msg);
\n }
\n\nfunction getSanitizer(): Sanitizer|null {
\n const IView
= getLView();
\n return IView && IView[SANITIZER];
\n }
\n", "/*\n * @license\n * Copyright Google LLC All
Rights Reserved.\n *\n * Use of this source code is governed by an MIT-style license that can be\n * found in the
LICENSE file at https://angular.io/license\n *\n\nimport {Type} from './interface/type';
\nimport {stringify} from
'./util/stringify';
\nimport {NG_FACTORY_DEF} from './fields';
\n\n/**\n * Definition of what a factory function
should look like.\n */
\nexport type FactoryFn<T> = {
\n /**\n * Subclasses without an explicit constructor call
through to the factory of their base\n * definition, providing it with their own constructor to instantiate.\n */
\n <U
extends T>(t: Type<U>): U;
\n /**\n * If no constructor to instantiate is provided, an instance of type T itself is
created.\n */
\n (t?: undefined): T;
\n};
\n\nexport function getFactoryDef<T>(type: any, throwNotFound: true):
FactoryFn<T>;
\nexport function getFactoryDef<T>(type: any): FactoryFn<T>|null;
\nexport function
getFactoryDef<T>(type: any, throwNotFound?: boolean): FactoryFn<T>|null {
\n const hasFactoryDef =
type.hasOwnProperty(NG_FACTORY_DEF);
\n if (!hasFactoryDef && throwNotFound === true &&
ngDevMode) {
\n throw new Error(`Type ${stringify(type)} does not have 'fac' property.`);
\n }
\n return
hasFactoryDef ? type[NG_FACTORY_DEF] : null;
\n }
\n", "/*\n * @license\n * Copyright Google LLC All Rights
Reserved.\n *\n * Use of this source code is governed by an MIT-style license that can be\n * found in the
LICENSE file at https://angular.io/license\n *\n\nexport const enum RuntimeErrorCode {
\n // Internal Errors\n\n //
Change Detection Errors\n EXPRESSION_CHANGED_AFTER_CHECKED = '100',
\n // Dependency Injection
Errors\n CYCLIC_DI_DEPENDENCY = '200',
\n PROVIDER_NOT_FOUND = '201',
\n\n // Template Errors\n
MULTIPLE_COMPONENTS_MATCH = '300',
\n EXPORT_NOT_FOUND = '301',
\n PIPE_NOT_FOUND =
'302',
\n UNKNOWN_BINDING = '303',
\n UNKNOWN_ELEMENT = '304',
\n\n // Styling Errors\n\n //
Declarations Errors\n\n // i18n Errors\n\n // Compilation Errors\n }
\n\nexport class RuntimeError extends Error {
\n constructor(public code: RuntimeErrorCode, message: string) {
\n super(formatRuntimeError(code, message));
\n }
\n }
\n\n/** Called to format a runtime error */
\nexport function formatRuntimeError(code: RuntimeErrorCode,
message: string): string {
\n const fullCode = code ? `NG0${code}` : ` `;
\n return
`${fullCode}${message}`;
\n }
\n", "/*\n * @license\n * Copyright Google LLC All Rights Reserved.\n *\n * Use of
this source code is governed by an MIT-style license that can be\n * found in the LICENSE file at
https://angular.io/license\n */
\nimport {InjectorType} from './di/interface/defs';
\nimport {stringify} from
'./util/stringify';
\nimport {RuntimeError, RuntimeErrorCode} from './error_code';
\nimport {stringifyForError} from
'./util/stringify_utils';
\n\n/** Called when directives inject each other (creating a circular dependency) */
\nexport
function throwCyclicDependencyError(token: string, path?: string[]): never {
\n const depPath = path ? `
Dependency path: ${path.join(' > ')} > ${token}` : ` `;
\n throw new RuntimeError(\n
RuntimeErrorCode.CYCLIC_DI_DEPENDENCY,
\n `Circular dependency in DI detected for
${token}${depPath}`);
\n }
\n\nexport function throwMixedMultiProviderError() {
\n throw new Error(`Cannot mix
multi providers and regular providers`);
\n }
\n\nexport function throwInvalidProviderError(\n ngModuleType?:
InjectorType<any>, providers?: any[], provider?: any) {
\n let ngModuleDetail = ` `;
\n if (ngModuleType &&
providers) {
\n const providerDetail = providers.map(v => v === provider ? '?' + provider + '?' : ` `);
\n ngModuleDetail = ` ` - only instances of Provider and Type are allowed, got: [${providerDetail.join(', ')}];
\n }
\n\n throw new Error(\n `Invalid provider for the NgModule '${stringify(ngModuleType)}' +
ngModuleDetail`);
\n }
\n\n/** Throws an error when a token is not found in DI. */
\nexport function
throwProviderNotFoundError(token: any, injectorName?: string): never {
\n const injectorDetails = injectorName ? `
in ${injectorName}` : ` `;
\n throw new RuntimeError(\n
RuntimeErrorCode.PROVIDER_NOT_FOUND,
\n `No provider for ${stringifyForError(token)} found${injectorDetails}`);
\n }
\n", "/*\n * @license\n * Copyright
Google LLC All Rights Reserved.\n *\n * Use of this source code is governed by an MIT-style license that can be\n
* found in the LICENSE file at https://angular.io/license\n *\n\n/**\n * Represents a basic change from a previous
to a new value for a single\n * property on a directive instance. Passed as a value in a\n * {@link SimpleChanges}
object to the `ngOnChanges` hook.\n */
\n * @see `OnChanges`\n */
\n * @publicApi\n */
\nexport class
SimpleChange {
\n constructor(public previousValue: any, public currentValue: any, public firstChange: boolean)

```

```

} } \n /*\n * Check whether the new value is the first value assigned.\n * \n isFirstChange(): boolean {\n return
this.firstChange;\n } }\n\n/*\n * A hashtable of changes represented by { @link SimpleChange } objects stored\n
* at the declared property name they belong to on a Directive or Component. This is\n * the type passed to the
`ngOnChanges` hook.\n *\n * @see `OnChanges`\n *\n * @publicApi\n */\nexport interface SimpleChanges {\n
[propName: string]: SimpleChange;\n}\n", "/*\n * @license\n * Copyright Google LLC All Rights Reserved.\n *\n
* Use of this source code is governed by an MIT-style license that can be\n * found in the LICENSE file at
https://angular.io/license\n */\n\nimport { OnChanges } from '../interface/lifecycle_hooks';\nimport
{ SimpleChange, SimpleChanges } from '../interface/simple_change';\nimport { EMPTY_OBJ } from
'./empty';\nimport { DirectiveDef, DirectiveDefFeature } from '../interfaces/definition';\n\n/*\n * The
NgOnChangesFeature decorates a component with support for the ngOnChanges\n * lifecycle hook, so it should be
included in any component that implements\n * that hook.\n *\n * If the component or directive uses inheritance, the
NgOnChangesFeature MUST\n * be included as a feature AFTER { @link InheritDefinitionFeature }, otherwise\n *
inherited properties will not be propagated to the ngOnChanges lifecycle\n * hook.\n *\n * Example usage:\n *\n
```\n * static cmp = defineComponent({\n * ... \n * inputs: { name: 'publicName' },\n * features:
[NgOnChangesFeature]\n * });\n * ```\n *\n * @codeGenApi\n */\nexport function NgOnChangesFeature<T>():
DirectiveDefFeature {\n return NgOnChangesFeatureImpl;\n }\n\nexport function
NgOnChangesFeatureImpl<T>(definition: DirectiveDef<T>) {\n if (definition.type.prototype.ngOnChanges) {\n
definition.setInput = ngOnChangesSetInput;\n } }\n return
rememberChangeHistoryAndInvokeOnChangesHook;\n }\n\n// This option ensures that the ngOnChanges lifecycle
hook will be inherited\n// from superclasses (in InheritDefinitionFeature).\n\n/* @nocollapse */\n// tslint:disable-
next-line:no-toplevel-property-access\n(NgOnChangesFeature as DirectiveDefFeature).ngInherit = true;\n\n/*\n *
This is a synthetic lifecycle hook which gets inserted into `TVIEW.preOrderHooks` to simulate\n *
`ngOnChanges`.\n *\n * The hook reads the `NgSimpleChangesStore` data from the component instance and if
changes are\n * found it invokes `ngOnChanges` on the component instance.\n *\n * @param this Component
instance. Because this function gets inserted into `TVIEW.preOrderHooks`,\n * it is guaranteed to be called with
component instance.\n */\nfunction rememberChangeHistoryAndInvokeOnChangesHook(this: OnChanges) {\n
const simpleChangesStore = getSimpleChangesStore(this);\n const current = simpleChangesStore?.current;\n\n if
(current) {\n const previous = simpleChangesStore!.previous;\n if (previous === EMPTY_OBJ) {\n
simpleChangesStore!.previous = current;\n } else {\n // New changes are copied to the previous store, so that
we don't lose history for inputs\n // which were not changed this time\n for (let key in current) {\n
previous[key] = current[key];\n } }\n simpleChangesStore!.current = null;\n
this.ngOnChanges(current);\n } }\n\nfunction ngOnChangesSetInput<T>(\n this: DirectiveDef<T>, instance:
T, value: any, publicName: string, privateName: string): void {\n const simpleChangesStore =
getSimpleChangesStore(instance) ||\n setSimpleChangesStore(instance, { previous: EMPTY_OBJ, current:
null });\n const current = simpleChangesStore.current || (simpleChangesStore.current = {});\n const previous =
simpleChangesStore.previous;\n\n const declaredName = (this.declaredInputs as [{ key: string}:
string])[publicName];\n const previousChange = previous[declaredName];\n current[declaredName] = new
SimpleChange(\n previousChange && previousChange.currentValue, value, previous === EMPTY_OBJ);\n\n
(instance as any)[privateName] = value;\n }\n\nconst SIMPLE_CHANGES_STORE =
'__ngSimpleChanges__';\n\nfunction getSimpleChangesStore(instance: any): null | NgSimpleChangesStore {\n
return instance[SIMPLE_CHANGES_STORE] || null;\n }\n\nfunction setSimpleChangesStore(instance: any, store:
NgSimpleChangesStore): NgSimpleChangesStore {\n return instance[SIMPLE_CHANGES_STORE] =
store;\n }\n\n/*\n * Data structure which is monkey-patched on the component instance and used by
`ngOnChanges`\n * life-cycle hook to track previous input values.\n */\ninterface NgSimpleChangesStore {\n
previous: SimpleChanges;\n current: SimpleChanges | null;\n }\n", "/*\n * @license\n * Copyright Google LLC All
Rights Reserved.\n *\n
* Use of this source code is governed by an MIT-style license that can be\n * found in the
LICENSE file at https://angular.io/license\n */\n\nimport { AfterContentChecked, AfterContentInit,
AfterViewChecked, AfterViewInit, DoCheck, OnChanges, OnDestroy, OnInit } from

```

```

'./interface/lifecycle_hooks';\nimport {assertDefined, assertEquals, assertNotEqual} from './util/assert';\nimport
{assertFirstCreatePass} from './assert';\nimport {NgOnChangesFeatureImpl} from
'./features/ng_onchanges_feature';\nimport {DirectiveDef} from './interfaces/definition';\nimport {TNode} from
'./interfaces/node';\nimport {FLAGS, HookData, InitPhaseState, LView, LViewFlags,
PREORDER_HOOK_FLAGS, PreOrderHookFlags, TView} from './interfaces/view';\nimport
{isInCheckNoChangesMode} from './state';\n\n\n/**\n * Adds all directive lifecycle hooks from the given
`DirectiveDef` to the given `TView`.\n * Must be run *only* on the first template pass.\n * Sets up the pre-
order hooks on the provided `tView`,\n * see {@link HookData} for details about the data structure.\n *\n *
@param directiveIndex The index of the directive in LView\n * @param directiveDef The definition containing the
hooks to setup in tView\n * @param tView The current TView\n */\nexport function registerPreOrderHooks(\n
directiveIndex: number, directiveDef: DirectiveDef<any>, tView: TView): void {\n  ngDevMode &&
assertFirstCreatePass(tView);\n  const {ngOnChanges, ngOnInit, ngDoCheck} =\n    directiveDef.type.prototype as
OnChanges & OnInit & DoCheck;\n\n  if (ngOnChanges as Function | undefined) {\n    const wrappedOnChanges =
NgOnChangesFeatureImpl(directiveDef);\n    (tView.preOrderHooks || (tView.preOrderHooks =
[])).push(directiveIndex, wrappedOnChanges);\n    (tView.preOrderCheckHooks || (tView.preOrderCheckHooks =
[])).push(directiveIndex, wrappedOnChanges);\n  }\n\n  if (ngOnInit) {\n    (tView.preOrderHooks ||
(tView.preOrderHooks = [])).push(0 - directiveIndex, ngOnInit);\n  }\n\n  if (ngDoCheck) {\n    (tView.preOrderHooks || (tView.preOrderHooks = [])).push(directiveIndex, ngDoCheck);\n    (tView.preOrderCheckHooks || (tView.preOrderCheckHooks = [])).push(directiveIndex, ngDoCheck);\n  }\n}\n\n\n/**\n * Loops through the directives on the provided `tNode` and queues hooks to be\n * run that are not
initialization hooks.\n * Should be executed during `elementEnd()` and similar to\n * preserve hook execution
order. Content, view, and destroy hooks for projected\n * components and directives must be called *before* their
hosts.\n * Sets up the content, view, and destroy hooks on the provided `tView`,\n * see {@link HookData} for
details about the data structure.\n * NOTE: This does not set up `onChanges`, `onInit` or `doCheck`, those are
set up\n * separately at `elementStart`.\n * @param tView The current TView\n * @param tNode The TNode
whose directives are to be searched for hooks to queue\n */\nexport function registerPostOrderHooks(tView:
TView, tNode: TNode): void {\n  ngDevMode && assertFirstCreatePass(tView);\n  // It's necessary to loop through
the directives at elementEnd() (rather than processing in\n // directiveCreate) so we can preserve the current hook
order. Content, view, and destroy\n // hooks for projected components and directives must be called *before* their
hosts.\n  for (let i = tNode.directiveStart, end = tNode.directiveEnd; i < end; i++) {\n    const directiveDef =
tView.data[i] as DirectiveDef<any>;\n    ngDevMode && assertDefined(directiveDef, 'Expecting DirectiveDef');\n    const lifecycleHooks: AfterContentInit&AfterContentChecked&AfterViewInit&AfterViewChecked&\n    OnDestroy = directiveDef.type.prototype;\n    const {\n      ngAfterContentInit,\n      ngAfterContentChecked,\n      ngAfterViewInit,\n      ngAfterViewChecked,\n      ngOnDestroy\n    } = lifecycleHooks;\n\n    if
(ngAfterContentInit) {\n      (tView.contentHooks || (tView.contentHooks = [])).push(-i, ngAfterContentInit);\n    }\n\n    if (ngAfterContentChecked) {\n      (tView.contentHooks || (tView.contentHooks = [])).push(i,
ngAfterContentChecked);\n      (tView.contentCheckHooks || (tView.contentCheckHooks = [])).push(i,
ngAfterContentChecked);\n    }\n\n    if (ngAfterViewInit) {\n      (tView.viewHooks || (tView.viewHooks =
[])).push(-i, ngAfterViewInit);\n    }\n\n    if (ngAfterViewChecked) {\n      (tView.viewHooks || (tView.viewHooks =
[])).push(i, ngAfterViewChecked);\n      (tView.viewCheckHooks || (tView.viewCheckHooks = [])).push(i,
ngAfterViewChecked);\n    }\n\n    if (ngOnDestroy != null) {\n      (tView.destroyHooks || (tView.destroyHooks =
[])).push(i, ngOnDestroy);\n    }\n  }\n}\n\n\n/**\n * Executing hooks requires complex logic as we need to deal with
2 constraints.\n * 1. Init hooks (ngOnInit, ngAfterContentInit, ngAfterViewInit) must all be executed once and
only\n * once, across many change detection cycles. This must be true even if some hooks throw, or if\n * some
recursively trigger a change detection cycle.\n * To solve that, it is required to track the state of the execution of
these init hooks.\n * This is done by storing and maintaining flags in the view: the {@link InitPhaseState},\n * and
the index within that phase. They can be seen as a cursor in the following structure:\n * [[onInit1, onInit2],
[afterContentInit1], [afterViewInit1, afterViewInit2, afterViewInit3]]\n * They are stored as flags in

```

LView[FLAGS].\n *\n * 2. Pre-order hooks can be executed in batches, because of the select instruction.\n * To be able to pause and resume their execution, we also need some state about the hook's array\n * that is being processed:\n * - the index of the next hook to be executed\n * - the number of init hooks already found in the processed part of the array\n * They are stored as flags in LView[PREORDER_HOOK_FLAGS].\n *\n *\n *\n * Executes pre-order check hooks (OnChanges, DoChanges) given a view where all the init hooks were\n * executed once. This is a light version of executeInitAndCheckPreOrderHooks where we can skip read\n * / write of the init-hooks related flags.\n * @param lView The LView where hooks are defined\n * @param hooks Hooks to be run\n * @param nodeIndex 3 cases depending on the value:\n * - undefined: all hooks from the array should be executed (post-order case)\n * - null: execute hooks only from the saved index until the end of the array (pre-order case, when\n * flushing the remaining hooks)\n * - number: execute hooks only from the saved index until that node index exclusive (pre-order\n * case, when executing select(number))\n */\n export function executeCheckHooks(lView: LView, hooks: HookData, nodeIndex?: number|null) {\n callHooks(lView, hooks, InitPhaseState.InitPhaseCompleted, nodeIndex);\n }\n *\n *\n * Executes post-order init and check hooks (one of AfterContentInit, AfterContentChecked,\n * AfterViewInit, AfterViewChecked) given a view where there are pending init hooks to be executed.\n * @param lView The LView where hooks are defined\n * @param hooks Hooks to be run\n * @param initPhase A phase for which hooks should be run\n * @param nodeIndex 3 cases depending on the value:\n * - undefined: all hooks from the array should be executed (post-order case)\n * - null: execute hooks only from the saved index until the end of the array (pre-order case, when\n * flushing the remaining hooks)\n * - number: execute hooks only from the saved index until that node index exclusive (pre-order\n * case, when executing select(number))\n */\n export function executeInitAndCheckHooks(lView: LView, hooks: HookData, initPhase: InitPhaseState, nodeIndex?: number|null) {\n ngDevMode &&\n assertNotEqual(lView.initPhase, InitPhaseState.InitPhaseCompleted,\n 'Init pre-order hooks should not be called more than once');\n if ((lView[FLAGS] & LViewFlags.InitPhaseStateMask) === initPhase) {\n callHooks(lView, hooks, initPhase, nodeIndex);\n }\n }\n *\n *\n export function incrementInitPhaseFlags(lView: LView, initPhase: InitPhaseState): void {\n ngDevMode &&\n assertNotEqual(lView.initPhase, InitPhaseState.InitPhaseCompleted,\n 'Init hooks phase should not be incremented after all init hooks have been run.);\n let flags = lView[FLAGS];\n if ((flags & LViewFlags.InitPhaseStateMask) === initPhase) {\n flags &= LViewFlags.IndexWithinInitPhaseReset;\n flags += LViewFlags.InitPhaseStateIncrementer;\n lView[FLAGS] = flags;\n }\n }\n *\n *\n * Calls lifecycle hooks with their contexts, skipping init hooks if it's not\n * the first LView pass\n *\n * @param currentView The current view\n * @param arr The array in which the hooks are found\n * @param initPhaseState the current state of the init phase\n * @param currentNodeIndex 3 cases depending on the value:\n * - undefined: all hooks from the array should be executed (post-order case)\n * - null: execute hooks only from the saved index until the end of the array (pre-order case, when\n * flushing the remaining hooks)\n * - number: execute hooks only from the saved index until that node index exclusive (pre-order\n * case, when executing select(number))\n */\n function callHooks(lView: LView, arr: HookData, initPhase: InitPhaseState, currentNodeIndex: number|null|undefined): void {\n ngDevMode &&\n assertEqual(lView.isInCheckNoChangesMode(), false,\n 'Hooks should never be run when in check no changes mode.);\n const startIndex = currentNodeIndex !== undefined ?\n (currentView[PREORDER_HOOK_FLAGS] & PreOrderHookFlags.IndexOfTheNextPreOrderHookMaskMask) :\n 0;\n const nodeIndexLimit = currentNodeIndex !== null ? currentNodeIndex : -1;\n let lastNodeIndexFound = 0;\n for (let i = startIndex; i < arr.length; i++) {\n const hook = arr[i + 1] as () => void;\n if (typeof hook === 'number') {\n lastNodeIndexFound = arr[i] as number;\n if (currentNodeIndex !== null && lastNodeIndexFound >= currentNodeIndex) {\n break;\n }\n } else {\n const isInitHook = arr[i] < 0;\n if (isInitHook)\n currentView[PREORDER_HOOK_FLAGS] += PreOrderHookFlags.NumberOfInitHooksCalledIncrementer;\n if (lastNodeIndexFound < nodeIndexLimit || nodeIndexLimit === -1) {\n callHook(currentView, initPhase, arr, i);\n currentView[PREORDER_HOOK_FLAGS] =\n (currentView[PREORDER_HOOK_FLAGS] & PreOrderHookFlags.NumberOfInitHooksCalledMask) + i +\n 2;\n }\n i++;\n }\n }\n }\n *\n *\n * Execute one hook against the current `LView`.\n *\n * @param currentView The current view\n * @param

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initPhaseState the current state of the init phase\n * @param arr The array in which the hooks are found\n * @param
i The current index within the hook data array\n *^\nfunction callHook(currentView: LView, initPhase:
InitPhaseState, arr: HookData, i: number) {\n  const isInitHook = arr[i] < 0;\n  const hook = arr[i + 1] as () =>
void;\n  const directiveIndex = isInitHook ? -arr[i] : arr[i] as number;\n  const directive =
currentView[directiveIndex];\n  if (isInitHook) {\n    const indexWithinInitPhase = currentView[FLAGS] >>
LViewFlags.IndexWithinInitPhaseShift;\n    // The init phase state must be always checked here as it may have been
recursively\n    // updated\n    if (indexWithinInitPhase < \n      (currentView[PREORDER_HOOK_FLAGS] >>
PreOrderHookFlags.NumberOfInitHooksCalledShift) &&\n      (currentView[FLAGS] &
LViewFlags.InitPhaseStateMask) === initPhase) {\n      currentView[FLAGS] +=
LViewFlags.IndexWithinInitPhaseIncrementer;\n      hook.call(directive);\n    } else {\n      hook.call(directive);\n
}\n}\n\n"/**\n * @license\n * Copyright Google LLC All Rights Reserved.\n * \n * Use of this source code is
governed by an MIT-style license that can be\n * found in the LICENSE file at https://angular.io/license\n
*/\n\nimport { InjectionToken } from '././di/injection_token';\nimport { InjectFlags } from
 '././di/interface/injector';\nimport { Type } from '././interface/type';\nimport { assertDefined, assertEqual } from
 '././util/assert';\nimport { TDirectiveHostNode } from './node';\nimport { LView, TData } from './view';\n\n/**\n *
Offsets of the `NodeInjector` data structure in the expando.\n * \n * `NodeInjector` is stored in both `LView` as well
as `TView.data`. All storage requires 9 words.\n * First 8 are reserved for bloom filter and the 9th is reserved for the
associated `TNode` as well\n * as parent `NodeInjector` pointer. All indexes are starting with `index` and have an
offset as\n * shown.\n * \n * `LView` layout:\n * ```\n * index + 0: cumulative bloom filter\n * index + 1: cumulative
bloom filter\n * index + 2: cumulative bloom filter\n * index + 3: cumulative bloom filter\n * index + 4: cumulative
bloom filter\n * index + 5: cumulative bloom filter\n * index + 6: cumulative bloom filter\n * index + 7: cumulative
bloom filter\n * index + 8: cumulative bloom filter\n * index + PARENT: Index to the parent injector. See
`RelativeInjectorLocation`\n *
`const parent = lView[index + NodeInjectorOffset.PARENT]`\n * ```\n * \n * `TViewData` layout:\n * ```\n * index + 0: cumulative bloom filter\n * index + 1: cumulative bloom filter\n *
index + 2: cumulative bloom filter\n * index + 3: cumulative bloom filter\n * index + 4: cumulative bloom filter\n *
index + 5: cumulative bloom filter\n * index + 6: cumulative bloom filter\n * index + 7: cumulative bloom filter\n *
index + 8: cumulative bloom filter\n * index + TNode: TNode associated with this `NodeInjector`\n *
`const tNode = tView.data[index + NodeInjectorOffset.TNODE]`\n * ```\n *^\nexport const enum
NodeInjectorOffset {\n  TNode = 8,\n  PARENT = 8,\n  BLOOM_SIZE = 8,\n  SIZE = 9,\n}\n\n/**\n * Represents
a relative location of parent injector.\n * \n * The interfaces encodes number of parents `LView`s to traverse and
index in the `LView`\n * pointing to the parent injector.\n *^\nexport interface RelativeInjectorLocation {\n
  __brand__: 'RelativeInjectorLocationFlags';\n}\n\nexport const enum RelativeInjectorLocationFlags {\n
  InjectorIndexMask = 0b1111111111111111,\n  ViewOffsetShift = 16,\n  NO_PARENT = -1,\n}\n\nexport const
NO_PARENT_INJECTOR: RelativeInjectorLocation = -1 as any;\n\n/**\n * Each injector is saved in 9 contiguous
slots in `LView` and 9 contiguous slots in\n * `TView.data`. This allows us to store information about the current
node's tokens (which\n * can be shared in `TView`) as well as the tokens of its ancestor nodes (which cannot be\n *
shared, so they live in `LView`).\n * \n * Each of these slots (aside from the last slot) contains a bloom filter. This
bloom filter\n * determines whether a directive is available on the associated node or not. This prevents us\n * from
searching the directives array at this level unless it's probable the directive is in it.\n * \n * See:
https://en.wikipedia.org/wiki/Bloom\_filter for more about bloom filters.\n * \n * Because all injectors have been
flattened into `LView` and `TViewData`, they cannot typed\n * using interfaces as they were previously. The start
index of each `LInjector` and `TInjector`\n * will differ based on where it is flattened into the main array, so it's not
possible to know\n * the indices ahead of time and save their types here. The interfaces are still included here\n * for
documentation purposes.\n * \n * export interface LInjector extends Array<any> {\n * \n * // Cumulative bloom for
directive IDs 0-31 (IDs are % BLOOM_SIZE)\n * [0]: number;\n * \n * // Cumulative bloom for directive IDs
32-63\n * [1]: number;\n * \n * // Cumulative bloom for directive IDs 64-95\n * [2]: number;\n * \n * //
Cumulative bloom for directive IDs 96-127\n * [3]: number;\n * \n * // Cumulative bloom for directive IDs 128-
159\n * [4]: number;\n * \n * // Cumulative bloom for directive IDs 160 - 191\n * [5]: number;\n * \n * //

```

Cumulative bloom for directive IDs 192 - 223\n * [6]: number;\n *\n * // Cumulative bloom for directive IDs 224 - 255\n * [7]: number;\n *\n * // We need to store a reference to the injector's parent so DI can keep looking up\n * // the injector tree until it finds the dependency it's looking for.\n * [PARENT_INJECTOR]: number;\n * }\n *\n * export interface TInjector extends Array<any> {\n *\n * // Shared node bloom for directive IDs 0-31 (IDs are % BLOOM_SIZE)\n * [0]: number;\n *\n * // Shared node bloom for directive IDs 32-63\n * [1]: number;\n *\n * // Shared node bloom for directive IDs 64-95\n * [2]: number;\n *\n * // Shared node bloom for directive IDs 96-127\n * [3]: number;\n *\n * // Shared node bloom for directive IDs 128-159\n * [4]: number;\n *\n * // Shared node bloom for directive IDs 160 - 191\n * [5]: number;\n *\n * // Shared node bloom for directive IDs 192 - 223\n * [6]: number;\n *\n * // Shared node bloom for directive IDs 224 - 255\n * [7]: number;\n *\n * // Necessary to find directive indices for a particular node.\n * [TNODE]: TElementNode|TElementContainerNode|TContainerNode;\n * }\n *\n * Factory for creating instances of injectors in the NodeInjector.\n *\n * This factory is complicated by the fact that it can resolve `multi` factories as well.\n *\n * NOTE: Some of the fields are optional which means that this class has two hidden classes.\n * - One without `multi` support (most common)\n * - One with `multi` values, (rare).\n *\n * Since VMs can cache up to 4 inline hidden classes this is OK.\n *\n * - Single factory: Only `resolving` and `factory` is defined.\n * - `providers` factory: `componentProviders` is a number and `index = -1`.\n * - `viewProviders` factory: `componentProviders` is a number and `index` points to `providers`.\n *\n * export class NodeInjectorFactory {\n * // **\n * The inject implementation to be activated when using the factory.\n * // **\n * injectImpl: null|(<T>(token: Type<T>|InjectionToken<T>, flags?: InjectFlags) => T);\n * // **\n * Marker set to true during factory invocation to see if we get into recursive loop.\n * // **\n * Recursive loop causes an error to be displayed.\n * // **\n * resolving = false;\n * // **\n * Marks that the token can see other Tokens declared in `viewProviders` on the same node.\n * // **\n * canSeeViewProviders: boolean;\n * // **\n * An array of factories to use in case of `multi` provider.\n * // **\n * multi?: Array<() => any>;\n * // **\n * Number of `multi`-providers which belong to the component.\n * // **\n * This is needed because when multiple components and directives declare the `multi` provider\n * // **\n * they have to be concatenated in the correct order.\n * // **\n * Example:\n * // **\n * If we have a component and directive active an a single element as declared here\n * // **\n * component:\n * // **\n * provides: [{provide: String, useValue: 'component', multi: true}],\n * // **\n * viewProvides: [{provide: String, useValue: 'componentView', multi: true}],\n * // **\n * directive:\n * // **\n * provides: [{provide: String, useValue: 'directive', multi: true}],\n * // **\n * Then the expected results are:\n * // **\n * providers: ['component', 'directive']\n * // **\n * viewProviders: ['component', 'componentView', 'directive']\n * // **\n * The way to think about it is that the `viewProviders` have been inserted after the component\n * // **\n * but before the directives, which is why we need to know how many `multi`s have been declared by\n * // **\n * the component.\n * // **\n * componentProviders?: number;\n * // **\n * Current index of the Factory in the `data`. Needed for `viewProviders` and `providers` merging.\n * // **\n * See `providerFactory`.\n * // **\n * index?: number;\n * // **\n * Because the same `multi` provider can be declared in `provides` and `viewProvides` it is\n * // **\n * possible for `viewProvides` to shadow the `provides`. For this reason we store the\n * // **\n * `provideFactory` of the `providers` so that `providers` can be extended with `viewProviders`.\n * // **\n * Example:\n * // **\n * Given:\n * // **\n * provides: [{provide: String, useValue: 'all', multi: true}],\n * // **\n * viewProvides: [{provide: String, useValue: 'viewOnly', multi: true}],\n * // **\n * We have to return `[all]` in case of content injection, but `[all, 'viewOnly']` in case\n * // **\n * of view injection. We further have to make sure that the shared instances (in our case\n * // **\n * `all`) are the exact same instance in both the content as well as the view injection. (We\n * // **\n * have to make sure that we don't double instantiate.) For this reason the `viewProvides`\n * // **\n * `Factory` has a pointer to the shadowed `provides` factory so that it can instantiate the\n * // **\n * `providers` (`[all]`) and then extend it with `viewProviders` (`[all] + ['viewOnly']`).\n * // **\n * providerFactory?: NodeInjectorFactory|null;\n * // **\n * constructor(\n * // **\n * Factory to invoke in order to create a new instance.\n * // **\n * public factory:\n * // **\n * (this: NodeInjectorFactory, _: undefined,\n * // **\n * * array where injectables tokens are stored. This is used in\n * // **\n * * case of an error reporting to produce friendlier errors.\n * // **\n * tData: TData,\n * // **\n * * array where existing instances of injectables are stored. This is used in case\n * // **\n * * of multi shadow is needed. See `multi` field documentation.\n * // **\n * IView: LView,\n * // **\n * * The

This bit is set if the node has been detached by `i18n.isDetached = 0x40`. Bit #8 - This bit is set if the node has directives with host bindings. This flag allows us to guard host-binding logic and invoke it only on nodes that actually have directives with host bindings. `hasHostBindings = 0x80`. Corresponds to the `TNode.providerIndexes` property. `export const enum TNodeProviderIndexes` The index of the first provider on this node is encoded on the least significant bits. `ProvidersStartIndexMask = 0b00000000000011111111111111111111`. The count of view providers from the component on this node is encoded on the 20 most significant bits. `CptViewProvidersCountShift = 20`, `CptViewProvidersCountShifter = 0b00000000000100000000000000000000`. A set of marker values to be used in the attributes arrays. These markers indicate that some items are not regular attributes and the processing should be adapted accordingly. `export const enum AttributeMarker` An implicit marker which indicates that the value in the array are of ``attributeKey`, `attributeValue`` format. NOTE: This is implicit as it is the type when no marker is present in array. We indicate that it should not be present at runtime by the negative number. `ImplicitAttributes = -1`. Marker indicates that the following 3 values in the attributes array are: `namespaceUri, attributeName, attributeValue` in that order. `NamespaceURI = 0`. Signals class declaration. Each value following ``Classes`` designates a class name to include on the element. ## Example: Given: `<div class="foo bar baz">...</div>` the generated code is: `var _c1 = [AttributeMarker.Classes, 'foo', 'bar', 'baz'];` `Classes = 1`. Signals style declaration. Each pair of values following ``Styles`` designates a style name and value to include on the element. ## Example: Given: `<div style="width:100px; height:200px; color:red">...</div>` the generated code is: `var _c1 = [AttributeMarker.Styles, 'width', '100px', 'height', '200px', 'color', 'red'];` `Styles = 2`. Signals that the following attribute names were extracted from input or output bindings. For example, given the following HTML: `<div moo="car" [foo]="exp" (bar)="doSth()">` the generated code is: `var _c1 = ['moo', 'car', AttributeMarker.Bindings, 'foo', 'bar'];` `Bindings = 3`. Signals that the following attribute names were hoisted from an inline-template declaration. For example, given the following HTML: `<div *ngFor="let value of values; trackBy:trackBy" dirA [dirB]="value">` the generated code for the ``template()`` instruction would include: `['dirA', "", AttributeMarker.Bindings, 'dirB', AttributeMarker.Template, 'ngFor', 'ngForOf', 'ngForTrackBy', 'let-value']` while the generated code for the ``element()`` instruction inside the template function would include: `['dirA', "", AttributeMarker.Bindings, 'dirB']` `Template = 4`. Signals that the following attribute is ``ngProjectAs`` and its value is a parsed ``CssSelector``. For example, given the following HTML: `<h1 attr="value" ngProjectAs="[title]">` the generated code for the ``element()`` instruction would include: `['attr', 'value', AttributeMarker.ProjectAs, '[', 'title', '']` `ProjectAs = 5`. Signals that the following attribute will be translated by runtime `i18n`. For example, given the following HTML: `<div moo="car" foo="value" i18n-foo [bar]="binding" i18n-bar>` the generated code is: `var _c1 = ['moo', 'car', AttributeMarker.I18n, 'foo', 'bar'];` `I18n = 6`. A combination of: `- Attribute names and values`, `- Special markers acting as flags to alter attributes processing`, `- Parsed ngProjectAs selectors`. `export type TAttributes = (string|AttributeMarker|CssSelector)[];` Constants that are associated with a view. Includes: `- Attribute arrays`, `- Local definition arrays`, `- Translated messages (i18n)`. `export type TConstants = (TAttributes|string)[];` Factory function that returns an array of consts. Consts can be represented as a function in case any additional statements are required to define consts in the list. An example is `i18n` where additional `i18n` calls are generated, which should be executed when consts are requested for the first time. `export type TConstantsFactory = () => TConstants;` `TConstants` type that describes how the ``consts`` field is generated on `ComponentDef`: it can be either an array or a factory function that returns that array. `export type TConstantsOrFactory = TConstants|TConstantsFactory;` Binding data (flyweight) for a

particular node that is shared between all templates of a specific type. If a property is:

- PropertyAliases: that property's data was generated and this is it
- Null: that property's data was already generated and nothing was found
- Undefined: that property's data has not yet been generated

see: https://en.wikipedia.org/wiki/Flyweight_pattern for more on the Flyweight pattern

```

export interface TNode {
  /** The type of the TNode. See TNodeType. */
  type: TNodeType;
  /** Index of the TNode in TView.data and corresponding native element in LView. This is necessary to get from any TNode to its corresponding native element when traversing the node tree. If index is -1, this is a dynamically created container node or embedded view node. */
  index: number;
  /** Insert before existing DOM node index. When DOM nodes are being inserted, normally they are being appended as they are created. Under i18n case, the translated text nodes are created ahead of time as part of the `i18nStart` instruction which means that this `TNode` can't just be appended and instead needs to be inserted using `insertBeforeIndex` semantics. Additionally sometimes it is necessary to insert new text nodes as a child of this `TNode`. In such a case the value stores an array of text nodes to insert. Example:
  * <div i18n> Hello <span>World</span>! </div>
  * In the above example the `i18nStart` instruction can create `Hello`, `World` and `!` text nodes. It can also insert `Hello` and `!` text node as a child of `<div>`, but it can't insert `World` because the `<span>` node has not yet been created. In such a case the `<span>` `TNode` will have an array which will direct the `<span>` to not only insert itself in front of `!` but also to insert the `World` (created by `i18nStart`) into `<span>` itself.
  * Pseudo code:
  * if (insertBeforeIndex === null) {
  *   // append as normal
  * } else if (Array.isArray(insertBeforeIndex)) {
  *   // First insert current `TNode` at correct location
  *   const currentNode = IView[this.index];
  *   parentNode.insertBefore(currentNode, IView[this.insertBeforeIndex[0]]);
  *   // Now append all of the children
  *   for(let i=1; i<this.insertBeforeIndex; i++) {
  *     currentNode.appendChild(IView[this.insertBeforeIndex[i]]);
  *   } else {
  *     parentNode.insertBefore(IView[this.index], IView[this.insertBeforeIndex])
  *   }
  * }
  * - null: Append as normal using `parentNode.appendChild`
  * - `number`: Append using `parentNode.insertBefore(IView[this.index], IView[this.insertBeforeIndex])`
  * *Initialization*
  * Because `i18nStart` executes before nodes are created, on `TView.firstCreatePass` it is not possible for `i18nStart` to set the `insertBeforeIndex` value as the corresponding `TNode` has not yet been created. For this reason the `i18nStart` creates a `TNodeType.Placeholder` `TNode` at that location. See `TNodeType.Placeholder` for more information.
  * insertBeforeIndex: InsertBeforeIndex;
  * The index of the closest injector in this node's LView.
  * If the index === -1, there is no injector on this node or any ancestor node in this view.
  * If the index !== -1, it is the index of this node's injector OR the index of a parent injector in the same view. We pass the parent injector index down the node tree of a view so it's possible to find the parent injector without walking a potentially deep node tree.
  * Injector indices are not set across view boundaries because there could be multiple component hosts.
  * If tNode.injectorIndex === tNode.parent.injectorIndex, then the index belongs to a parent injector.
  * injectorIndex: number;
  /** Stores starting index of the directives.
  * NOTE: The first directive is always component (if present).
  * directiveStart: number;
  /** Stores final exclusive index of the directives.
  * The area right behind the `directiveStart-directiveEnd` range is used to allocate the `HostBindingFunction` `vars` (or null if no bindings.) Therefore `directiveEnd` is used to set `LFrame.bindingRootIndex` before `HostBindingFunction` is executed.
  * directiveEnd: number;
  /** Stores the last directive which had a styling instruction.
  * Initial value of this is -1 which means that no `hostBindings` styling instruction has executed. As `hostBindings` instructions execute they set the value to the index of the `DirectiveDef` which contained the last `hostBindings` styling instruction.
  * Valid values are:
  * - -1: No `hostBindings` instruction has executed.
  * - `directiveStart <= directiveStylingLast < directiveEnd`: Points to the `DirectiveDef` of the last styling instruction which executed in the `hostBindings`.
  * This data is needed so that styling instructions know which static styling data needs to be collected from the `DirectiveDef.hostAttrs`. A styling instruction needs to collect all data since last styling instruction.
  * directiveStylingLast: number;
  */
}

```

```

/**\n * Stores indexes of property bindings. This field is only set in the ngDevMode and holds\n * indexes of
property bindings so TestBed can get bound property metadata for a given node.\n */\n propertyBindings:
number[]|null;\n\n /**\n * Stores if Node isComponent, isProjected, hasContentQuery, hasClassInput and
hasStyleInput\n * etc.\n */\n flags: TNodeFlags;\n\n /**\n * This number stores two values using its bits:\n *\n * - the index of the first provider on that node (first 16 bits)\n * - the count of view providers from the component
on this node (last 16 bits)\n */\n // TODO(misko): break this into actual vars.\n providerIndexes:
TNodeProviderIndexes;\n\n /**\n * The value name associated with this node.\n * if type:\n *
`TNodeType.Text`: text value\n * `TNodeType.Element`: tag name\n * `TNodeType.ICUContainer`: `Ticu`\n
*/\n value: any;\n\n /**\n * Attributes associated with an element. We need to store attributes to support various\n
* use-cases (attribute injection, content projection with selectors, directives matching).\n * Attributes are stored
statically because reading them from the DOM would be way too slow for\n * content projection and queries.\n
*\n * Since attrs will always be calculated first, they will never need to be marked undefined by\n * other
instructions.\n *\n * For regular attributes a name of an attribute and its value alternate in the array.\n * e.g.
[role, 'checkbox']\n * This array can contain flags that will indicate "special attributes" (attributes with\n *
namespaces, attributes extracted from bindings and outputs).\n */\n attrs: TAttributes|null;\n\n /**\n * Same as
`TNode.attrs` but contains merged data across all directive host bindings.\n *\n * We need to keep `attrs` as
unmerged so that it can be used for attribute selectors.\n * We merge attrs here so that it can be used in a
performant way for initial rendering.\n *\n * The `attrs` are merged in first pass in following order:\n * -
Component's `hostAttrs`\n * - Directives' `hostAttrs`\n * - Template `TNode.attrs` associated with the current
`TNode`.\n */\n mergedAttrs: TAttributes|null;\n\n /**\n * A set of local names under which a given element is
exported in a template and\n * visible to queries. An entry in this array can be created for different reasons:\n * -
an element itself is referenced, ex.: `<div #foo>`\n * - a component is referenced, ex.: `<my-cmpt #foo>`\n * - a
directive is referenced, ex.: `<my-cmpt #foo="directiveExportAs">`.\n *\n * A given element might have
different local names and those names can be associated\n * with a directive. We store local names at even indexes
while odd indexes are reserved\n * for directive index in a view (or -1 if there is no associated directive).\n
*\n * Some examples:\n * - `<div #foo>` => `["foo", -1]`\n * - `<my-cmpt #foo>` => `["foo", myCmptIdx]`\n * -
`<my-cmpt #foo #bar="directiveExportAs">` => `["foo", myCmptIdx, "bar", directiveIdx]`\n * - `<div #foo
#bar="directiveExportAs">` => `["foo", -1, "bar", directiveIdx]`\n */\n localNames: (string|number)[]|null;\n\n
/**\n Information about input properties that need to be set once from attribute data. */\n initialInputs:
InitialInputData|null|undefined;\n\n /**\n * Input data for all directives on this node. `null` means that there are no
directives with\n * inputs on this node.\n */\n inputs: PropertyAliases|null;\n\n /**\n * Output data for all
directives on this node. `null` means that there are no directives with\n * outputs on this node.\n */\n outputs:
PropertyAliases|null;\n\n /**\n * The TView or TViews attached to this node.\n *\n * If this TNode corresponds
to an LContainer with inline views, the container will\n * need to store separate static data for each of its view
blocks (TView[]). Otherwise,\n * nodes in inline views with the same index as nodes in their parent views will
overwrite\n * each other, as they are in the same template.\n *\n * Each index in this array corresponds to the
static data for a certain\n * view. So if you had V(0) and V(1) in a container, you might have:\n *\n * [\n *
[{tagName: 'div', attrs: ...}, null], // V(0) TView\n * [{tagName: 'button', attrs ...}, null] // V(1) TView\n
*\n * If this TNode corresponds to an LContainer with a template (e.g. structural\n * directive), the template's TView
will be stored here.\n *\n * If this TNode corresponds to an element, tViews will be null.\n */\n tViews:
TView|TView[]|null;\n\n /**\n * The next sibling node. Necessary so we can propagate through the root nodes of
a view\n * to insert them or remove them from the DOM.\n */\n next: TNode|null;\n\n /**\n * The next
projected sibling. Since in Angular content projection works on the node-by-node\n * basis the act of projecting
nodes might change nodes relationship at the insertion point\n * (target view). At the same time we need to keep
initial relationship between nodes as\n * expressed in content view.\n */\n projectionNext: TNode|null;\n\n /**\n
* First child of the current node.\n *\n * For component nodes, the child will always be a ContentChild (in same
view).\n * For embedded view nodes, the child will be in their child view.\n */\n child: TNode|null;\n\n /**\n
* Parent node (in the same view only).\n *\n * We need a reference to a node's parent so we can append the node to

```

its parent's native element at the appropriate time. If the parent would be in a different view (e.g. component host), this property will be null. It's important that we don't try to cross component boundaries when retrieving the parent because the parent will change (e.g. index, attrs) depending on where the component was used (and thus shouldn't be stored on TNode). In these cases, we retrieve the parent through LView.node instead (which will be instance-specific). If this is an inline view node (V), the parent will be its container. parent: TElementNode|TContainerNode|null; List of projected TNodes for a given component host element OR index into the said nodes. For easier discussion assume this example: <parent>'s view definition: <child id="c1">content1</child> <child id="c2">content2</child> <child>'s view definition: <ng-content id="cont1"></ng-content> If Array.isArray(projection) then TNode is a host element: projection stores the content nodes which are to be projected. The nodes represent categories defined by the selector: For example: <ng-content/><ng-content select="abc"/> would represent the heads for <ng-content/> and <ng-content select="abc"/> respectively. The nodes we store in projection are heads only, we used .next to get their siblings. The nodes .next is sorted/rewritten as part of the projection setup. projection size is equal to the number of projections <ng-content>. The size of c1 will be 1 because <child> has only one <ng-content>. we store projection with the host (c1, c2) rather than the <ng-content> (cont1) because the same component (<child>) can be used in multiple locations (c1, c2) and as a result have different set of nodes to project. without projection it would be difficult to efficiently traverse nodes to be projected. If typeof projection == 'number' then TNode is a <ng-content> element: projection is an index of the host's projection.Nodes. This would return the first head node to project: getHost(currentTNode).projection[currentTNode.projection]. When projecting nodes the parent node retrieved may be a <ng-content> node, in which case the process is recursive in nature. If projection is of type RNode[][] then we have a collection of native nodes passed as projectable nodes during dynamic component creation. projection: (TNode|RNode[]|number|null); A collection of all style static values for an element (including from host). This field will be populated if and when: There are one or more initial style's on an element (e.g. <div style="width:200px;">) There are one or more initial style's on a directive/component host (e.g. @Directive({host: {style: "width:200px;" } })); styles: string|null; A collection of all style static values for an element excluding host sources. Populated when there are one or more initial style's on an element (e.g. <div style="width:200px;">) Must be stored separately from tNode.styles to facilitate setting directive inputs that shadow the style property. If we used tNode.styles as is for shadowed inputs, we would feed host styles back into directives as "inputs". If we used tNode.attrs, we would have to concatenate the attributes on every template pass. Instead, we process once on first create pass and store here. stylesWithoutHost: string|null; A KeyValueArray version of residual styles. When there are styling instructions than each instruction stores the static styling which is of lower priority than itself. This means that there may be a higher priority styling than the instruction. Imagine: <div style="color: highest;" my-dir> @Directive({host: {style: 'color: lowest;', [styles.color]: 'exp' // styleProp('color', ctx.exp); }}) In the above case: color: lowest is stored with styleProp('color', ctx.exp); instruction color: highest is the residual and is stored here. undefined: not initialized. null: initialized but styles is null - KeyValueArray: parsed version of styles residualStyles: KeyValueArray<any>|undefined|null; A collection of all class static values for an element (including from host). This field will be populated if and when: There are one or more initial classes on an element (e.g. <div class="one two three">) There are one or more initial classes on a directive/component host (e.g. @Directive({host: {class: "SOME_CLASS" } })); classes: string|null; A collection of all class static values for an element excluding host sources. Populated when there are one or more initial classes on an element (e.g. <div class="SOME_CLASS">) Must be stored separately from tNode.classes to facilitate setting directive inputs that shadow the class

property. If we used `tNode.classes` as is for shadowed inputs, we would feed host classes back into directives as `inputs`. If we used `tNode.attrs`, we would have to concatenate the attributes on every template pass. Instead, we process once on first create pass and store here.

```

classWithoutHost: string|null;
A `KeyValueArray` version of residual `classes`. Same as `TNode.residualStyles` but for classes.
- `undefined`: not initialized.
- `null`: initialized but `classes` is `null`
- `KeyValueArray`: parsed version of `classes`
residualClasses: KeyValueArray<any>|undefined|null;
Stores the head/tail index of the class bindings.
- If no bindings, the head and tail will both be 0.
- If there are template bindings, stores the head/tail of the class bindings in the template.
- If no template bindings but there are host bindings, the head value will point to the last host binding for `class` (not the head of the linked list), tail will be 0.
See: `style_binding_list.ts` for details.
This is used by `insertTStylingBinding` to know where the next styling binding should be inserted so that they can be sorted in priority order.
classBindings: TStylingRange;
Stores the head/tail index of the class bindings.
- If no bindings, the head and tail will both be 0.
- If there are template bindings, stores the head/tail of the style bindings in the template.
- If no template bindings but there are host bindings, the head value will point to the last host binding for `style` (not the head of the linked list), tail will be 0.
See: `style_binding_list.ts` for details.
This is used by `insertTStylingBinding` to know where the next styling binding should be inserted so that they can be sorted in priority order.
styleBindings: TStylingRange;
See `TNode.insertBeforeIndex`
export type InsertBeforeIndex = null|number|number[];
Static data for an element
export interface TElementNode extends TNode {
  Index in the data[] array
  index: number;
  child: TElementNode|TTextNode|TElementContainerNode|TContainerNode|TProjectionNode|null;
  Element nodes will have parents unless they are the first node of a component or embedded view (which means their parent is in a different view and must be retrieved using viewData[HOST_NODE]).
  parent: TElementNode|TElementContainerNode|null;
  tViews: null;
  If this is a component TNode with projection, this will be an array of projected TNodes or native nodes (see TNode.projection for more info). If it's a regular element node or a component without projection, it will be null.
  projection: (TNode|RNode[]|null);
  Stores tagName
  value: string;
  Static data for a text node
  export interface TTextNode extends TNode {
    Index in the data[] array
    index: number;
    child: null;
    Text nodes will have parents unless they are the first node of a component or embedded view (which means their parent is in a different view and must be retrieved using LView.node).
    parent: TElementNode|TElementContainerNode|null;
    tViews: null;
    projection: null;
  }
  Static data for an LContainer
  export interface TContainerNode extends TNode {
    Index in the data[] array.
    If it's -1, this is a dynamically created container node that isn't stored in data[] (e.g. when you inject ViewContainerRef).
    index: number;
    child: null;
    Container nodes will have parents unless:
    - They are the first node of a component or embedded view
    - They are dynamically created
    parent: TElementNode|TElementContainerNode|null;
    tViews: TView|TView[]|null;
    projection: null;
    value: null;
  }
  Static data for an <ng-container>
  export interface TElementContainerNode extends TNode {
    Index in the LView[] array.
    index: number;
    child: TElementNode|TTextNode|TContainerNode|TElementContainerNode|TProjectionNode|null;
    parent: TElementNode|TElementContainerNode|null;
    tViews: null;
    projection: null;
  }
  Static data for an ICU expression
  export interface TIcuContainerNode extends TNode {
    Index in the LView[] array.
    index: number;
    child: null;
    parent: TElementNode|TElementContainerNode|null;
    tViews: null;
    projection: null;
    value: TIcon;
  }
  Static data for an LProjectionNode
  export interface TProjectionNode extends TNode {
    Index in the data[] array
    child: null;
    Projection nodes will have parents unless they are the first node of a component or embedded view (which means their parent is in a different view and must be retrieved using LView.node).
    parent: TElementNode|TElementContainerNode|null;
    tViews: null;
    Index of the projection node. (See TNode.projection for more info.)
    projection: number;
    value: null;
  }
  A union type representing all TNode types that can host a directive.
  export type

```

```

TDirectiveHostNode = TElementNode|TContainerNode|TElementContainerNode;

// This mapping is necessary so we can set input properties and output listeners properly at runtime when property names are minified or aliased.
// Key: unminified / public input or output name
// Value: array containing minified / internal name and related directive index
// The value must be an array to support inputs and outputs with the same name on the same node.
export type PropertyAliases = {
  // This uses an object map because using the Map type would be too slow
  [key: string]: PropertyAliasValue;
};

// Store the runtime input or output names for all the directives.
// i+0: directive instance index
// i+1: privateName
// e.g. [0, 'change-minified']
export type PropertyAliasValue = (number|string)[];

// This array contains information about input properties that need to be set once from attribute data. It's ordered by directive index (relative to element) so it's simple to look up a specific directive's initial input data.
// Within each sub-array:
// i+0: attribute name
// i+1: minified/internal input name
// i+2: initial value
// If a directive on a node does not have any input properties that should be set from attributes, its index is set to null to avoid a sparse array.
// e.g. [null, ['role-min', 'minified-input', 'button']]
export type InitialInputData = (InitialInputs|null)[];

// Used by InitialInputData to store input properties that should be set once from attributes.
// i+0: attribute name
// i+1: minified/internal input name
// i+2: initial value
// e.g. ['role-min', 'minified-input', 'button']
export type InitialInputs = string[];

// Note: This hack is necessary so we don't erroneously get a circular dependency failure based on types.
export const unusedValueExportToPlacateAjd = 1;

// Type representing a set of TNodes that can have local refs (#foo) placed on them.
export type TNodeWithLocalRefs = TContainerNode|TElementNode|TElementContainerNode;

// Type for a function that extracts a value for a local refs.
// Example:
// - `<div #nativeDivEl` - `nativeDivEl` should point to the native `<div>` element;
// - `<ng-template #tplRef` - `tplRef` should point to the `TemplateRef` instance;
export type LocalRefExtractor = (tNode: TNodeWithLocalRefs, currentView: LView) => any;

// Returns `true` if the `TNode` has a directive which has `@Input()` for `class` binding.
// `<div my-dir [class]="exp"></div>`
// and `@Directive({})`
// class MyDirective {
//   @Input() class: string;
// }
// In the above case it is necessary to write the reconciled styling information into the directive's input.
// @param tNode
// export function hasClassInput(tNode: TNode) {
//   return (tNode.flags & TNodeFlags.hasClassInput) !== 0;
// }

// Returns `true` if the `TNode` has a directive which has `@Input()` for `style` binding.
// `<div my-dir [style]="exp"></div>`
// and `@Directive({})`
// class MyDirective {
//   @Input() class: string;
// }
// In the above case it is necessary to write the reconciled styling information into the directive's input.
// @param tNode
// export function hasStyleInput(tNode: TNode) {
//   return (tNode.flags & TNodeFlags.hasStyleInput) !== 0;
// }

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import {assertDefined, throwError} from '../util/assert';
import {TNode, TNodeType, toTNodeTypeAsString} from './interfaces/node';
export function assertTNodeType(tNode: TNode|null, expectedTypes: TNodeType, message?: string): void {
  assertDefined(tNode, 'should be called with a TNode');
  if ((tNode.type & expectedTypes) === 0) {
    throwError(`Expected [${toTNodeTypeAsString(expectedTypes)}] but got [${toTNodeTypeAsString(tNode.type)}]`);
  }
}

export function assertPureTNodeType(type: TNodeType) {
  if (!(type === TNodeType.Element ||
    // type === TNodeType.Text ||
    // type === TNodeType.Container ||
    // type === TNodeType.ElementContainer ||
    // type === TNodeType.Icu ||
    // type === TNodeType.Projection ||
    // type === TNodeType.Placeholder))
    throwError(`Expected TNodeType to have only a single type selected, but got [${toTNodeTypeAsString(type)}].`);
}

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import {CharCode} from '../util/char_code';
import {AttributeMarker, TAttributes} from './interfaces/node';
import {CssSelector} from './interfaces/projection';
import {isProceduralRenderer, ProceduralRenderer3, Renderer3} from

```



```

*\n\nimport {isForwardRef, resolveForwardRef} from './di/forward_ref';\nimport {injectRootLimpMode,
setInjectImplementation} from './di/inject_switch';\nimport {InjectionToken} from './di/injection_token';\nimport
{Injector} from './di/injector';\nimport {InjectorMarkers} from './di/injector_marker';\nimport {getInjectorDef}
from './di/interface/defs';\nimport {InjectFlags} from './di/interface/injector';\nimport {Type} from
'./interface/type';\nimport {assertDefined, assertEquals, assertIndexInRange} from './util/assert';\nimport
{noSideEffects} from './util/closure';\n\nimport {assertDirectiveDef, assertNodeInjector, assertTNodeForLView}
from './assert';\nimport {FactoryFn, getFactoryDef} from './definition_factory';\nimport
{throwCyclicDependencyError, throwProviderNotFoundError} from './errors_di';\nimport {NG_ELEMENT_ID,
NG_FACTORY_DEF} from './fields';\nimport {registerPreOrderHooks} from './hooks';\nimport {DirectiveDef}
from './interfaces/definition';\nimport {isFactory, NO_PARENT_INJECTOR, NodeInjectorFactory,
NodeInjectorOffset, RelativeInjectorLocation, RelativeInjectorLocationFlags} from './interfaces/injector';\nimport
{AttributeMarker, TContainerNode, TDirectiveHostNode, TElementContainerNode, TElementNode, TNode,
TNodeProviderIndexes, TNodeType} from './interfaces/node';\nimport {isComponentDef, isComponentHost} from
'./interfaces/type_checks';\nimport {DECLARATION_COMPONENT_VIEW, DECLARATION_VIEW,
INJECTOR, LView, T_HOST, TData, TVIEW, TView, TViewType} from './interfaces/view';\nimport
{assertTNodeType} from './node_assert';\nimport {enterDI, getCurrentTNode, getLView, leaveDI} from
'./state';\nimport {isNameOnlyAttributeMarker} from './util/attrs_utils';\nimport {getParentInjectorIndex,
getParentInjectorView, hasParentInjector} from './util/injector_utils';\nimport {stringifyForError} from
'./util/stringify_utils';\n\n\n**\n * Defines if the call to `inject` should include `viewProviders` in its resolution.\n
*\n * This is set to true when we try to instantiate a component. This value is reset in\n * `getNodeInjectable` to a
value which matches the declaration location of the token about to be\n * instantiated. This is done so that if we are
injecting a token which was declared outside of\n * `viewProviders` we don't accidentally pull `viewProviders` in.\n
*\n * Example:\n *\n * ```\n * @Injectable()\n * class MyService {\n *   constructor(public value: String) {}\n * }\n
*\n * @Component({\n *   providers: [\n *     MyService,\n *     {provide: String, value: 'providers'}\n *   ]\n *
viewProviders: [\n *     {provide: String, value: 'viewProviders'}\n *   ]\n * })\n * class MyComponent {\n *
constructor(myService: MyService, value: String) {\n *   // We expect that Component can see into
`viewProviders`.\n *   expect(value).toEqual('viewProviders');\n *   // `MyService` was not declared in
`viewProviders` hence it can't see it.\n *   expect(myService.value).toEqual('providers');\n *   }\n * }\n *
```\n
*\n\nlet includeViewProviders = true;\n\nexport function setIncludeViewProviders(v: boolean): boolean {\n const
oldValue = includeViewProviders;\n includeViewProviders = v;\n return oldValue;\n}\n\n**\n * The number of
slots in each bloom filter (used by DI). The larger this number, the fewer\n * directives that will share slots, and
thus, the fewer false positives when checking for\n * the existence of a directive.\n *\n\nconst BLOOM_SIZE =
256;\nconst BLOOM_MASK = BLOOM_SIZE - 1;\n\n**\n * Counter used to generate unique IDs for directives.\n
*\n\nlet nextNgElementId = 0;\n\n**\n * Registers this directive as present in its node's injector by flipping the
directive's\n * corresponding bit in the injector's bloom filter.\n *\n * @param injectorIndex The index of the node
injector where this token should be registered\n * @param tView The TView for the injector's bloom filters\n *
@param type The directive token to register\n *\n\nexport function bloomAdd(\n injectorIndex: number, tView:
TView, type: Type<any>|InjectionToken<any>|string): void {\n ngDevMode &&
assertEquals(tView.firstCreatePass, true, 'expected firstCreatePass to be true');\n let id: number|undefined;\n if
(typeof type === 'string') {\n id = type.charCodeAt(0) || 0;\n } else if
(type.hasOwnProperty(NG_ELEMENT_ID)) {\n id = (type as any)[NG_ELEMENT_ID];\n }\n\n // Set a unique
ID on the directive type, so if something tries to inject the directive,\n // we can easily retrieve the ID and hash it
into the bloom bit that should be checked.\n if (id == null) {\n id = (type as any)[NG_ELEMENT_ID] =
nextNgElementId++;\n }\n\n // We only have BLOOM_SIZE (256) slots in our bloom filter (8 buckets * 32 bits
each),\n // so all unique IDs must be modulo-ed into a number from 0 - 255 to fit into the filter.\n const bloomBit =
id & BLOOM_MASK;\n\n // Create a mask that targets the specific bit associated with the directive.\n // JS bit
operations are 32 bits, so this will be a number between 2^0 and 2^31, corresponding\n // to bit positions 0 - 31 in a
32 bit integer.\n const mask = 1 << bloomBit;\n\n // Use the raw bloomBit number to determine which bloom filter

```





```

(parentTNode === null) {\n // If we have no parent, than we are done.\n return NO_PARENT_INJECTOR;\n
}\n\n ngDevMode && parentTNode && assertTNodeForLView(parentTNode!,
 IViewCursor[DECLARATION_VIEW]);\n // Every iteration of the loop requires that we go to the declared
parent.\n declarationViewOffset++;\n IViewCursor = IViewCursor[DECLARATION_VIEW];\n\n if
(parentTNode.injectorIndex !== -1) {\n // We found a NodeInjector which points to something.\n return
(parentTNode.injectorIndex |\n (declarationViewOffset << RelativeInjectorLocationFlags.ViewOffsetShift))
as any;\n } }\n return NO_PARENT_INJECTOR;\n}\n\n/**\n * Makes a type or an injection token public to the
DI system by adding it to an\n * injector's bloom filter.\n * @param di The node injector in which a directive
will be added\n * @param token The type or the injection token to be made public\n */\nexport function
diPublicInInjector(\n injectorIndex: number, tView: TView, token: InjectionToken<any>|Type<any>): void {\n
 bloomAdd(injectorIndex, tView, token);\n}\n\n/**\n * Inject static attribute value into directive constructor.\n *
This method is used with `factory` functions which are generated as part of\n * `defineDirective` or
`defineComponent`. The method retrieves the static value\n * of an attribute. (Dynamic attributes are not supported
since they are not resolved\n * at the time of injection and can change over time.)\n * # Example\n * Given:\n *
```\n * @Component(...)\n * class MyComponent {\n *     constructor(@Attribute('title') title: string) { ... }\n * }\n *
```\n * When instantiated with\n * ```\n * <my-component title="Hello"></my-component>\n * ```\n * Then
factory method generated is:\n * ```\n * MyComponent.cmp = defineComponent({\n * factory: () => new
MyComponent(injectAttribute('title'))\n * ...)\n * })\n * ```\n * @publicApi\n */\nexport function
injectAttributeImpl(tNode: TNode, attrNameToInject: string): string|null {\n ngDevMode &&
assertTNodeType(tNode, TNodeType.AnyContainer | TNodeType.AnyRNode);\n ngDevMode &&
assertDefined(tNode, 'expecting tNode');\n if (attrNameToInject === 'class') {\n return tNode.classes;\n }\n if
(attrNameToInject === 'style') {\n return tNode.styles;\n }\n\n const attrs = tNode.attrs;\n if (attrs) {\n const
attrsLength = attrs.length;\n let i = 0;\n while (i < attrsLength) {\n const value = attrs[i];\n\n // If we hit a
`Bindings` or `Template` marker then we are done.\n if (isNameOnlyAttributeMarker(value)) break;\n\n //
Skip namespaced attributes\n if (value === AttributeMarker.NamespaceURI) {\n // we skip the next two
values\n // as namespaced attributes looks like\n // [..., AttributeMarker.NamespaceURI,
'http://someuri.com/test', 'test:exist',\n // 'existValue', ...]\n i = i + 2;\n } else if (typeof value ===
'number') {\n // Skip to the first value of the marked attribute.\n i++;\n while (i < attrsLength &&
typeof attrs[i] === 'string') {\n i++;\n }\n } else if (value === attrNameToInject) {\n return attrs[i +
1] as string;\n } else {\n i = i + 2;\n }\n }\n return null;\n }\n\n function
notFoundValueOrThrow<T>(\n notFoundValue: T|null, token: Type<T>|InjectionToken<T>, flags: InjectFlags):
T|null {\n if (flags & InjectFlags.Optional) {\n return notFoundValue;\n } else {\n throwProviderNotFoundError(token, 'NodeInjector');\n }\n }\n\n /**\n * Returns the value associated to the given
token from the ModuleInjector or throws exception\n * @param IView The `LView` that contains the `tNode`\n *
@param token The token to look for\n * @param flags Injection flags\n * @param notFoundValue The value to
return when the injection flags is `InjectFlags.Optional`\n * @returns the value from the injector or throws an
exception\n */\n function lookupTokenUsingModuleInjector<T>(\n IView: LView, token:
Type<T>|InjectionToken<T>, flags: InjectFlags, notFoundValue?: any): T|null {\n if (flags &
InjectFlags.Optional && notFoundValue === undefined) {\n // This must be set or the NullInjector will throw for
optional deps\n notFoundValue = null;\n }\n if ((flags & (InjectFlags.Self | InjectFlags.Host)) === 0) {\n const moduleInjector = IView[INJECTOR];\n // switch to `injectInjectorOnly` implementation for module
injector, since module injector\n // should not have access to Component/Directive DI scope (that may happen
through\n // `directiveInject` implementation)\n const previousInjectImplementation =
setInjectImplementation(undefined);\n try {\n if (moduleInjector) {\n return moduleInjector.get(token,
notFoundValue, flags & InjectFlags.Optional);\n } else {\n return injectRootLimpMode(token,
notFoundValue, flags & InjectFlags.Optional);\n }\n } finally {\n setInjectImplementation(previousInjectImplementation);\n }\n }\n return
notFoundValueOrThrow<T>(notFoundValue, token, flags);\n }\n\n /**\n * Returns the value associated to the given

```

```

token from the NodeInjectors => ModuleInjector.\n *\n * Look for the injector providing the token by walking up
the node injector tree and then\n * the module injector tree.\n *\n * This function patches `token` with
`__NG_ELEMENT_ID__` which contains the id for the bloom\n * filter. `-1` is reserved for injecting `Injector`
(implemented by `NodeInjector`)\n *\n * @param tNode The Node where the search for the injector should start\n *
@param IView The `LView` that contains the `tNode`\n * @param token The token to look for\n * @param flags
Injection flags\n * @param notFoundValue The value to return when the injection flags is `InjectFlags.Optional`\n *
@return the value from the injector, `null` when not found, or `notFoundValue` if provided\n */\nexport function
getOrCreateInjectable<T>(\n tNode: TDirectiveHostNode|null, IView: LView, token:
Type<T>|InjectionToken<T>,\n flags: InjectFlags = InjectFlags.Default, notFoundValue?: any): T|null {\n if
(tNode !== null) {\n const bloomHash = bloomHashBitOrFactory(token);\n // If the ID stored here is a function,
this is a special object like ElementRef or TemplateRef\n // so just call the factory function to create it.\n if
(typeof bloomHash === 'function') {\n if (!enterDI(IView, tNode, flags)) {\n // Failed to enter DI, try module
injector instead. If a token is injected with the @Host\n // flag, the module injector is not searched for that token
in Ivy.\n return (flags & InjectFlags.Host) ?\n notFoundValueOrThrow<T>(notFoundValue, token, flags)\n :\n lookupTokenUsingModuleInjector<T>(IView, token, flags, notFoundValue);\n }\n try {\n const
value = bloomHash();\n if (value == null && !(flags & InjectFlags.Optional)) {\n throwProviderNotFoundError(token);\n } else {\n return value;\n }\n } finally {\n leaveDI();\n }\n } else if (typeof bloomHash === 'number') {\n // A reference to the previous injector TView that was
found while climbing the element\n // injector tree. This is used to know if viewProviders can be accessed on the
current\n // injector.\n let previousTView: TView|null = null;\n let injectorIndex = getInjectorIndex(tNode,
IView);\n let parentLocation: RelativeInjectorLocation = NO_PARENT_INJECTOR;\n let
hostTElementNode: TNode|null =\n flags & InjectFlags.Host ?\n IView[DECLARATION_COMPONENT_VIEW][T_HOST] : null;\n // If we should skip this injector, or if
there is no injector on this node, start by\n // searching the parent injector.\n if (injectorIndex === -1 || flags &
InjectFlags.SkipSelf) {\n parentLocation = injectorIndex === -1 ? getParentInjectorLocation(tNode, IView) :\n IView[injectorIndex + NodeInjectorOffset.PARENT];\n if (parentLocation ===
NO_PARENT_INJECTOR || !shouldSearchParent(flags, false)) {\n injectorIndex = -1;\n } else {\n previousTView = IView[TVIEW];\n injectorIndex = getParentInjectorIndex(parentLocation);\n IView =
getParentInjectorView(parentLocation, IView);\n }\n }\n // Traverse up the injector tree until we find a
potential match or until we know there\n // isn't* a match.\n while (injectorIndex !== -1) {\n ngDevMode && assertNodeInjector(IView, injectorIndex);\n // Check the current injector. If it matches, see if
it contains token.\n const tView = IView[TVIEW];\n ngDevMode &&\n assertTNodeForLView(\n tView.data[injectorIndex + NodeInjectorOffset.TNODE] as TNode, IView);\n if
(bloomHasToken(bloomHash, injectorIndex, tView.data)) {\n // At this point, we have an injector which
may contain the token, so we step through\n // the providers and directives associated with the injector's
corresponding node to get\n // the instance.\n const instance: T|null = searchTokensOnInjector<T>(\n injectorIndex, IView, token, previousTView, flags, hostTElementNode);\n if (instance !== NOT_FOUND)\n {\n return instance;\n }\n parentLocation = IView[injectorIndex +
NodeInjectorOffset.PARENT];\n if (parentLocation !== NO_PARENT_INJECTOR &&\n shouldSearchParent(\n flags,\n IView[TVIEW].data[injectorIndex + NodeInjectorOffset.TNODE]\n === hostTElementNode) &&\n bloomHasToken(bloomHash, injectorIndex, IView)) {\n // The def
wasn't found anywhere on this node, so it was a false positive.\n // Traverse up the tree and continue
searching.\n previousTView = tView;\n injectorIndex = getParentInjectorIndex(parentLocation);\n IView = getParentInjectorView(parentLocation, IView);\n } else {\n // If we should not search parent OR
If the ancestor bloom filter value does not have the\n // bit corresponding to the directive we can give up on
traversing up to find the specific\n // injector.\n injectorIndex = -1;\n }\n }\n }\n return
lookupTokenUsingModuleInjector<T>(IView, token, flags, notFoundValue);\n }\n const NOT_FOUND =
{};\n export function createNodeInjector(): Injector {\n return new NodeInjector(getCurrentTNode()! as

```

```

TDirectiveHostNode, getLView()) as any;\n\nfunction searchTokensOnInjector<T>(\n injectorIndex: number,\n IView: LView, token: Type<T>|InjectionToken<T>,\n previousTView: TView|null, flags: InjectFlags,\n hostTElementNode: TNode|null) {\n const currentTView = IView[TVIEW];\n const tNode =\n currentTView.data[injectorIndex + NodeInjectorOffset.TNODE] as TNode;\n // First, we need to determine if view\n providers can be accessed by the starting element.\n // There are two possibilities\n const canAccessViewProviders\n = previousTView == null ?\n // 1) This is the first invocation `previousTView == null` which means that we are\n at the\n // `TNode` of where injector is starting to look. In such a case the only time we are allowed\n // to\n look into the ViewProviders is if:\n // - we are on a component\n // - AND the injector set\n `includeViewProviders` to true (implying that the token can see\n // ViewProviders because it is the Component\n or a Service which itself was declared in\n // ViewProviders)\n (isComponentHost(tNode) &&\n includeViewProviders) :\n // 2) `previousTView != null` which means that we are now walking across the parent\n nodes.\n // In such a case we are only allowed to look into the ViewProviders if:\n // - We just crossed from\n child View to Parent View `previousTView != currentTView`\n // - AND the parent TNode is an Element.\n // This means that we just came from the Component's View and therefore are allowed to see\n // into the\n ViewProviders.\n (previousTView != currentTView && ((tNode.type & TNodeType.AnyRNode) !== 0));\n\n // This special case happens when there is a @host on the inject and when we are searching\n // on the host element\n node.\n const isHostSpecialCase = (flags & InjectFlags.Host) && hostTElementNode === tNode;\n\n const\n injectableIdx = locateDirectiveOrProvider(\n tNode, currentTView, token, canAccessViewProviders,\n isHostSpecialCase);\n if (injectableIdx !== null) {\n return getNodeInjectable(IView, currentTView,\n injectableIdx, tNode as TElementNode);\n } else {\n return NOT_FOUND;\n }\n}\n\n/**\n * Searches for the\n given token among the node's directives and providers.\n *\n @param tNode TNode on which directives are\n present.\n *\n @param tView The tView we are currently processing\n *\n @param token Provider token or type of a\n directive to look for.\n *\n @param canAccessViewProviders Whether view providers should be considered.\n *\n @param isHostSpecialCase Whether the host special case applies.\n *\n @returns Index of a found directive or\n provider, or null when none found.\n */\nexport function locateDirectiveOrProvider<T>(\n tNode: TNode, tView:\n TView, token: Type<T>|InjectionToken<T>|string,\n canAccessViewProviders: boolean, isHostSpecialCase:\n boolean|number): number|null {\n const nodeProviderIndexes = tNode.providerIndexes;\n const tInjectables =\n tView.data;\n\n const injectablesStart = nodeProviderIndexes &\n TNodeProviderIndexes.ProvidersStartIndexMask;\n const directivesStart = tNode.directiveStart;\n const\n directiveEnd = tNode.directiveEnd;\n const cptViewProvidersCount =\n nodeProviderIndexes >>\n TNodeProviderIndexes.CptViewProvidersCountShift;\n const startingIndex =\n canAccessViewProviders ?\n injectablesStart : injectablesStart + cptViewProvidersCount;\n // When the host special case applies, only the\n viewProviders and the component are visible\n const endIndex = isHostSpecialCase ? injectablesStart +\n cptViewProvidersCount : directiveEnd;\n for (let i = startingIndex; i < endIndex; i++) {\n const\n providerTokenOrDef =\n tInjectables[i] as InjectionToken<any>| Type<any>| DirectiveDef<any>| string;\n if\n (i < directivesStart && token === providerTokenOrDef ||\n i >= directivesStart && (providerTokenOrDef as\n DirectiveDef<any>).type === token) {\n return i;\n }\n }\n if (isHostSpecialCase) {\n const dirDef =\n tInjectables[directivesStart] as DirectiveDef<any>;\n if (dirDef && isComponentDef(dirDef) && dirDef.type ===\n token) {\n return directivesStart;\n }\n }\n return null;\n}\n\n/**\n * Retrieve or instantiate the injectable from\n the `LView` at particular `index`.\n *\n This function checks to see if the value has already been instantiated and if\n so returns the\n * cached `injectable`. Otherwise if it detects that the value is still a factory it\n * instantiates the\n `injectable` and caches the value.\n */\nexport function getNodeInjectable(\n IView: LView, tView: TView, index:\n number, tNode: TDirectiveHostNode): any {\n let value = IView[index];\n const tData = tView.data;\n if\n (isFactory(value)) {\n const factory: NodeInjectorFactory = value;\n if (factory.resolving) {\n throwCyclicDependencyError(stringifyForError(tData[index]));\n }\n const previousIncludeViewProviders =\n setIncludeViewProviders(factory.canSeeViewProviders);\n factory.resolving = true;\n const\n previousInjectImplementation =\n factory.injectImpl ? setInjectImplementation(factory.injectImpl) : null;\n const success = enterDI(IView, tNode, InjectFlags.Default);\n ngDevMode &&\n assertEquals(\n

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success, true,\n 'Because flags do not contain \\`SkipSelf\\` we expect this to always succeed.);\n try {\n value = IView[index] = factory.factory(undefined, tData, IView, tNode);\n // This code path is hit for both directives and providers.\n // For perf reasons, we want to avoid searching for hooks on providers.\n // It does no harm to try (the hooks just won't exist), but the extra\n // checks are unnecessary and this is a hot path. So we check to see\n // if the index of the dependency is in the directive range for this\n // tNode. If it's not, we know it's a provider and skip hook registration.\n if (tView.firstCreatePass && index >= tNode.directiveStart) {\n ngDevMode && assertDirectiveDef(tData[index]);\n registerPreOrderHooks(index, tData[index] as DirectiveDef<any>, tView);\n }\n } finally {\n previousInjectImplementation !== null &&\n setInjectImplementation(previousInjectImplementation);\n setIncludeViewProviders(previousIncludeViewProviders);\n factory.resolving = false;\n leaveDI();\n }\n }\n return value;\n}\n\n/**\n * Returns the bit in an injector's bloom filter that should be used to determine whether or not\n * the directive might be provided by the injector.\n * When a directive is public, it is added to the bloom filter and given a unique ID that can be\n * retrieved on the Type. When the directive isn't public or the token is not a directive\n * `null`\n * is returned as the node injector can not possibly provide that token.\n * @param token the injection token\n * @returns the matching bit to check in the bloom filter or `null` if the token is not known.\n * When the returned value is negative then it represents special values such as `Injector`.\n */\nexport function bloomHashBitOrFactory(token: Type<any>|InjectionToken<any>|string): number|Function|\n undefined {\n ngDevMode && assertDefined(token, 'token must be defined');\n if (typeof token === 'string') {\n return token.charCodeAt(0) || 0;\n }\n const tokenId: number|undefined =\n // First check with `hasOwnProperty` so we don't get an inherited ID.\n token.hasOwnProperty(NG_ELEMENT_ID) ? (token as any)[NG_ELEMENT_ID] : undefined;\n // Negative token IDs are used for special objects such as `Injector`\n if (typeof tokenId === 'number') {\n if (tokenId >= 0) {\n return tokenId & BLOOM_MASK;\n } else {\n ngDevMode &&\n assertEqual(tokenId, InjectorMarkers.Injector, 'Expecting to get Special Injector Id');\n return createNodeInjector;\n }\n } else {\n return tokenId;\n }\n}\n\nexport function bloomHasToken(bloomHash: number, injectorIndex: number, injectorView: LView|TData) {\n // Create a mask that targets the specific bit associated with the directive we're looking for.\n // JS bit operations are 32 bits, so this will be a number between 2^0 and 2^31, corresponding\n // to bit positions 0 - 31 in a 32 bit integer.\n const mask = 1 << bloomHash;\n const b7 = bloomHash & 0x80;\n const b6 = bloomHash & 0x40;\n const b5 = bloomHash & 0x20;\n\n // Our bloom filter size is 256 bits, which is eight 32-bit bloom filter buckets:\n // bf0 = [0 - 31], bf1 = [32 - 63], bf2 = [64 - 95], bf3 = [96 - 127], etc.\n // Get the bloom filter value from the appropriate bucket based on the directive's bloomBit.\n let value: number;\n\n if (b7) {\n value = b6 ? (b5 ? injectorView[injectorIndex + 7] : injectorView[injectorIndex + 6]) :\n (b5 ? injectorView[injectorIndex + 5] : injectorView[injectorIndex + 4]);\n } else {\n value = b6 ? (b5 ? injectorView[injectorIndex + 3] : injectorView[injectorIndex + 2]) :\n (b5 ? injectorView[injectorIndex + 1] : injectorView[injectorIndex]);\n }\n\n // If the bloom filter value has the bit corresponding to the directive's bloomBit flipped on,\n // this injector is a potential match.\n return !!((value & mask));\n}\n\n/**\n * Returns true if flags prevent parent injector from being searched for tokens\n */\nexport function shouldSearchParent(flags: InjectFlags, isFirstHostTNode: boolean): boolean|number {\n return !(flags & InjectFlags.Self) && !(flags & InjectFlags.Host && isFirstHostTNode);\n}\n\nexport class NodeInjector implements Injector {\n constructor(\n private _tNode: TElementNode|TContainerNode|TElementContainerNode|null,\n private _IView: LView) {}\n\n get(token: any, notFoundValue?: any): any {\n return getOrCreateInjectable(this._tNode, this._IView, token, undefined, notFoundValue);\n }\n\n /**\n * @codeGenApi\n */\n export function getFactoryOf<T>(type: Type<any>): FactoryFn<T>|null {\n const typeAny = type as any;\n\n if (isForwardRef(type)) {\n return (() => {\n const factory = getFactoryOf<T>(resolveForwardRef(typeAny));\n return factory ? factory() : null;\n }) as any;\n }\n\n let factory = getFactoryDef<T>(typeAny);\n if (factory === null) {\n const injectorDef = getInjectorDef<T>(typeAny);\n factory = injectorDef && injectorDef.factory;\n }\n\n return factory || null;\n }\n\n /**\n * @codeGenApi\n */\n export function getInheritedFactory<T>(type: Type<any>): (type: Type<T>) => T {\n return noSideEffects(() => {\n const ownConstructor = type.prototype.constructor;\n const

```

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ownFactory = ownConstructor[NG_FACTORY_DEF] || getFactoryOf(ownConstructor);
const objectPrototype = Object.prototype;
let parent = Object.getPrototypeOf(type.prototype).constructor;
// Go up the prototype until we hit `Object`.
while (parent && parent !== objectPrototype) {
 const factory = parent[NG_FACTORY_DEF] || getFactoryOf(parent);
 // If we hit something that has a factory and the factory isn't the same as the type,
 // we've found the inherited factory. Note the check that the factory isn't the type's
 // own factory is redundant in most cases, but if the user has custom decorators on the
 // class, this lookup will start one level down in the prototype chain, causing us to
 // find the own factory first and potentially triggering an infinite loop downstream.
 if (factory && factory !== ownFactory) {
 return factory;
 }
 parent = Object.getPrototypeOf(parent);
}
// There is no factory defined. Either this was improper usage of inheritance
// (no Angular decorator on the superclass) or there is no constructor at all
// in the inheritance chain. Since the two cases cannot be distinguished, the
// latter has to be assumed.
return t => new t();
});
"/**
 * @license
 * Copyright Google LLC All Rights Reserved.
 * Use of this source code is governed by an MIT-style license that can be
 * found in the LICENSE file at
 * https://angular.io/license
 */
export const ERROR_TYPE = 'ngType';
export const ERROR_DEBUG_CONTEXT = 'ngDebugContext';
export const ERROR_ORIGINAL_ERROR = 'ngOriginalError';
export const ERROR_LOGGER = 'ngErrorLogger';
export function wrappedError(message: string, originalError: any): Error {
 const msg = `${message} caused by: ${originalError instanceof Error ? originalError.message : originalError}`;
 const error = Error(msg);
 (error as any)[ERROR_ORIGINAL_ERROR] = originalError;
 return error;
}
"/**
 * @license
 * Copyright Google LLC All Rights Reserved.
 * Use of this source code is governed by an MIT-style license that can be
 * found in the LICENSE file at
 * https://angular.io/license
 */
import {ERROR_DEBUG_CONTEXT, ERROR_LOGGER, ERROR_ORIGINAL_ERROR, ERROR_TYPE} from './util/errors';
import {DebugContext} from './view/types';
export function getType(error: Error): Function {
 return (error as any)[ERROR_TYPE];
}
export function getDebugContext(error: Error): DebugContext {
 return (error as any)[ERROR_DEBUG_CONTEXT];
}
export function getOriginalError(error: Error): Error {
 return (error as any)[ERROR_ORIGINAL_ERROR];
}
export function getErrorLogger(error: Error): (console: Console, ...values: any[]) => void {
 return (error as any)[ERROR_LOGGER] || defaultErrorLogger;
}
export function defaultErrorLogger(console: Console, ...values: any[]) {
 console.error(<any>console.error(...values));
}
"/**
 * @license
 * Copyright Google LLC All Rights Reserved.
 * Use of this source code is governed by an MIT-style license that can be
 * found in the LICENSE file at
 * https://angular.io/license
 */
import {getDebugContext, getErrorLogger, getOriginalError} from './errors';
/**
 * Provides a hook for centralized exception handling.
 * The default implementation of `ErrorHandler` prints error messages to the `console`.
 * To intercept error handling, write a custom exception handler that replaces this default as
 * appropriate for your app.
 * @usageNotes
 * ### Example
 * ```
 * class MyErrorHandler implements ErrorHandler {
 * handleError(error) {
 * // do something with the exception
 * }
 * }
 * @NgModule({
 * providers: [
 * {provide: ErrorHandler, useClass: MyErrorHandler}]
 * })
 * class MyModule {
 * ...
 * }
 * @publicApi
 * export class ErrorHandler {
 * /** @internal */
 * _console: Console = console;
 * handleError(error: any): void {
 * const originalError = this._findOriginalError(error);
 * const context = this._findContext(error);
 * // Note: Browser consoles show the place from where console.error was called.
 * // We can use this to give users additional information about the error.
 * const errorLogger = getErrorLogger(error);
 * errorLogger(this._console, `ERROR`, error);
 * if (originalError) {
 * errorLogger(this._console, `ORIGINAL ERROR`, originalError);
 * }
 * if (context) {
 * errorLogger(this._console, `ERROR CONTEXT`, context);
 * }
 * }
 * /** @internal */
 * _findContext(error: any): any {
 * if (error) {
 * return getDebugContext(error) ? getDebugContext(error) : this._findContext(getOriginalError(error));
 * }
 * return null;
 * }
 * /** @internal */
 * _findOriginalError(error: Error): any {
 * let e = getOriginalError(error);
 * while (e && getOriginalError(e)) {
 * e = getOriginalError(e);
 * }
 * return e;
 * }
 * }
"/**
 * @license
 * Copyright Google LLC All Rights Reserved.
 * Use of this source code is governed by an MIT-style license that can be
 * found in the LICENSE file at
 * https://angular.io/license
 */
/**
 * A schema definition

```

```

associated with an NgModule.\n *\n * @see `@NgModule`, `CUSTOM_ELEMENTS_SCHEMA`,
`NO_ERRORS_SCHEMA`\n *\n * @param name The name of a defined schema.\n *\n * @publicApi\n */\nexport
interface SchemaMetadata {\n name: string;\n}\n\n/**\n * Defines a schema that allows an NgModule to contain
the following:\n * - Non-Angular elements named with dash case (`-`).\n * - Element properties named with dash
case (`-`).\n * Dash case is the naming convention for custom elements.\n *\n * @publicApi\n */\nexport const
CUSTOM_ELEMENTS_SCHEMA: SchemaMetadata = {\n name: 'custom-elements'\n};\n\n/**\n * Defines a
schema that allows any property on any element.\n *\n * @publicApi\n */\nexport const NO_ERRORS_SCHEMA:
SchemaMetadata = {\n name: 'no-errors-schema'\n};\n\n"/**\n * @license\n * Copyright Google LLC All Rights
Reserved.\n *\n * Use of this source code is governed by an MIT-style license that can be\n * found in the
LICENSE file at https://angular.io/license\n */\n\nimport './ng_dev_mode';\nimport {newTrustedFunctionForDev}
from './security/trusted_types';\n\n/**\n * THIS FILE CONTAINS CODE WHICH SHOULD BE TREE SHAKEN
AND NEVER CALLED FROM PRODUCTION CODE!!!\n */\n\n\n/**\n * Creates an `Array` construction with a
given name. This is useful when\n * looking for memory consumption to see what time of array it is.\n *\n *\n *
@param name Name to give to the constructor\n * @returns A subclass of `Array` if possible. This can only be
done in\n * environments which support `class` construct.\n */\nexport function
createNamedArrayType(name: string): typeof Array {\n // This should never be called in prod mode, so let's verify
that is the case.\n if (ngDevMode) {\n try {\n // If this function were compromised the following could lead to
arbitrary\n // script execution. We bless it with Trusted Types anyway since this\n // function is stripped out of
production binaries.\n return (newTrustedFunctionForDev('Array', `return class ${name} extends
Array{}`))(Array);\n } catch (e) {\n // If it does not work just give up and fall back to regular Array.\n return
Array;\n }\n } else {\n throw new Error(`Looks like we are in \\`prod mode\\`, but we are creating a named
Array type, which is wrong! Check your code!`);\n }\n}\n\n"/**\n * @license\n * Copyright Google LLC All Rights
Reserved.\n *\n * Use of this source code is governed by an MIT-style license that can be\n * found in the
LICENSE file at https://angular.io/license\n */\n\nexport function normalizeDebugBindingName(name: string) {\n
// Attribute names with `$` (eg `x-y$`) are valid per spec, but unsupported by some browsers\n name =
camelCaseToDashCase(name.replace(/[$@]/g, '_'));\n return `ng-reflect-${name}`;\n}\n\nconst
CAMEL_CASE_REGEXP = /[A-Z]/g;\n\nfunction camelCaseToDashCase(input: string): string {\n return
input.replace(CAMEL_CASE_REGEXP, (...m: any[]) => '-' + m[1].toLowerCase());\n}\n\nexport function
normalizeDebugBindingValue(value: any): string {\n try {\n // Limit the size of the value as otherwise the DOM
just gets polluted.\n return value != null ? value.toString().slice(0, 30) : value;\n } catch (e) {\n return '[ERROR]
Exception while trying to serialize the value';\n }\n}\n\n"/**\n * @license\n * Copyright Google LLC All Rights
Reserved.\n *\n * Use of this source code is governed by an MIT-style license that can be\n * found in the
LICENSE file at https://angular.io/license\n */\n\nimport './util/ng_dev_mode';\nimport {assertDomNode} from
'./util/assert';\nimport {EMPTY_ARRAY} from './empty';\nimport {LContext,
MONKEY_PATCH_KEY_NAME} from './interfaces/context';\nimport {TNode, TNodeFlags} from
'./interfaces/node';\nimport {RElement, RNode} from './interfaces/renderer_dom';\nimport {CONTEXT,
HEADER_OFFSET, HOST, LView, TVIEW} from './interfaces/view';\nimport {getComponentLViewByIndex,
readPatchedData, unwrapRNode} from './util/view_utils';\n\n\n/**\n * Returns the matching `LContext` data for a
given DOM node, directive or component instance.\n *\n * This function will examine the provided DOM element,
component, or directive instance\n * monkey-patched property to derive the `LContext` data. Once called then
the monkey-patched\n * value will be that of the newly created `LContext`.\n *\n * If the monkey-patched value is
the `LView` instance then the context value for that\n * target will be created and the monkey-patch reference will
be updated. Therefore when this\n * function is called it may mutate the provided element\n * , component\n * or any
of the associated\n * directive\n * monkey-patch values.\n *\n * If the monkey-patch value is not detected then the
code will walk up the DOM until an element\n * is found which contains a monkey-patch reference. When that
occurs then the provided element\n * will be updated with a new context (which is then returned). If the monkey-
patch value is not\n * detected for a component/directive instance then it will throw an error (all components and\n *
directives should be automatically monkey-patched by ivy).\n *\n * @param target Component, Directive or DOM

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Node.\n *\nexport function getLContext(target: any): LContext|null {\n let mpValue = readPatchedData(target);\n if (mpValue) {\n // only when it's an array is it considered an LView instance\n // ... otherwise it's an already\n constructed LContext instance\n if (Array.isArray(mpValue)) {\n const IView: LView = mpValue!;\n let\n nodeIndex: number;\n let component: any = undefined;\n let directives: any[]|null|undefined = undefined;\n if (isComponentInstance(target)) {\n nodeIndex = findViaComponent(IView, target);\n if (nodeIndex === -\n 1) {\n throw new Error("The provided component was not found in the application");\n }\n component\n = target;\n } else if (isDirectiveInstance(target)) {\n nodeIndex = findViaDirective(IView, target);\n if\n (nodeIndex === -1) {\n throw new Error("The provided directive was not found in the application");\n }\n directives = getDirectivesAtNodeIndex(nodeIndex, IView, false);\n } else {\n nodeIndex =\n findViaNativeElement(IView, target as RElement);\n if (nodeIndex === -1) {\n return null;\n }\n }\n\n // the goal is not to fill the entire context full of data because the lookups\n // are expensive. Instead, only\n the target data (the element, component, container, ICU\n // expression or directive details) are filled into the\n context. If called multiple times\n // with different target values then the missing target data will be filled in.\n const native = unwrapRNode(IView[nodeIndex]);\n const existingCtx = readPatchedData(native);\n const\n context: LContext = (existingCtx && !Array.isArray(existingCtx)) ?\n existingCtx :\n createLContext(IView, nodeIndex, native);\n\n // only when the component has been discovered then update the\n monkey-patch\n if (component && context.component === undefined) {\n context.component =\n component;\n attachPatchData(context.component, context);\n }\n\n // only when the directives have been\n discovered then update the monkey-patch\n if (directives && context.directives === undefined) {\n\n context.directives = directives;\n for (let i = 0; i < directives.length; i++) {\n attachPatchData(directives[i],\n context);\n }\n }\n attachPatchData(context.native, context);\n mpValue = context;\n }\n } else {\n const rElement = target as RElement;\n ngDevMode && assertDomNode(rElement);\n\n // if the context is not\n found then we need to traverse upwards up the DOM\n // to find the nearest element that has already been monkey\n patched with data\n let parent = rElement as any;\n while (parent = parent.parentNode) {\n const\n parentContext = readPatchedData(parent);\n if (parentContext) {\n let IView: LView|null;\n if\n (Array.isArray(parentContext)) {\n IView = parentContext as LView;\n } else {\n IView =\n parentContext.IView;\n }\n\n // the edge of the app was also reached here through another means\n //\n (maybe because the DOM was changed manually).\n if (!IView) {\n return null;\n }\n\n const\n index = findViaNativeElement(IView, rElement);\n if (index >= 0) {\n const native =\n unwrapRNode(IView[index]);\n const context = createLContext(IView, index, native);\n attachPatchData(native, context);\n mpValue = context;\n break;\n }\n }\n }\n }\n return\n (mpValue as LContext) || null;\n }\n\n/**\n * Creates an empty instance of a `LContext`\n context\n *\nexport function\n createLContext(IView: LView, nodeIndex: number, native: RNode): LContext {\n return {\n IView,\n nodeIndex,\n native,\n component: undefined,\n directives: undefined,\n localRefs: undefined,\n\n };\n }\n\n/**\n * Takes a component instance and returns the view for that component.\n *\n * @param\n componentInstance\n *\n * @returns The component's view\n *\nexport function\n getComponentViewByInstance(componentInstance: {}): LView {\n let IView =\n readPatchedData(componentInstance);\n let view: LView;\n\n if (Array.isArray(IView)) {\n const nodeIndex =\n findViaComponent(IView, componentInstance);\n view = getComponentLViewByIndex(nodeIndex, IView);\n\n const context = createLContext(IView, nodeIndex, view[HOST] as RElement);\n context.component =\n componentInstance;\n attachPatchData(componentInstance, context);\n attachPatchData(context.native,\n context);\n } else {\n const context = IView as any as LContext;\n view =\n getComponentLViewByIndex(context.nodeIndex, context.IView);\n }\n return view;\n }\n\n/**\n * Assigns the\n given data to the given target (which could be a component,\n * directive or DOM node instance) using monkey-\n patching.\n *\nexport function attachPatchData(target: any, data: LView|LContext) {\n\n target[MONKEY_PATCH_KEY_NAME] = data;\n }\n\nexport function isComponentInstance(instance: any):\n boolean {\n return instance && instance.constructor && instance.constructor.cmp;\n }\n\nexport function\n isDirectiveInstance(instance: any): boolean {\n return instance && instance.constructor &&

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instance.constructor.dir;\n}\n\n/**\n * Locates the element within the given LView and returns the matching index\n
*\nfunction findViaNativeElement(IView: LView, target: RElement): number {\n const tView = IView[TVIEW];\n
for (let i = HEADER_OFFSET; i < tView.bindingStartIndex; i++) {\n if (unwrapRNode(IView[i]) === target) {\n
 return i;\n }\n}\n return -1;\n}\n\n/**\n * Locates the next tNode (child, sibling or parent).\n
*\nfunction traverseNextElement(tNode: TNode): TNode|null {\n if (tNode.child) {\n return tNode.child;\n } else if
(tNode.next) {\n return tNode.next;\n } else {\n // Let's take the following template:
<div>text</div><component/>\n // After checking the text node, we need to find the next parent
that has a \"next\" TNode,\n // in this case the parent `div`, so that we can find the component.\n while
(tNode.parent && !tNode.parent.next) {\n tNode = tNode.parent;\n }\n return tNode.parent &&
tNode.parent.next;\n }\n}\n\n/**\n * Locates the component within the given LView and returns the matching
index\n
*\nfunction findViaComponent(IView: LView, componentInstance: {}): number {\n const
componentIndices = IView[TVIEW].components;\n if (componentIndices) {\n for (let i = 0; i <
componentIndices.length; i++) {\n const elementComponentIndex = componentIndices[i];\n const
componentView = getComponentLViewByIndex(elementComponentIndex, IView);\n if
(componentView[CONTEXT] === componentInstance) {\n return elementComponentIndex;\n }\n }\n }
else {\n const rootComponentView = getComponentLViewByIndex(HEADER_OFFSET, IView);\n const
rootComponent = rootComponentView[CONTEXT];\n if (rootComponent === componentInstance) {\n // we
are dealing with the root element here therefore we know that the\n // element is the very first element after the
HEADER data in the IView\n return HEADER_OFFSET;\n }\n }\n return -1;\n}\n\n/**\n * Locates the
directive within the given LView and returns the matching index\n
*\nfunction findViaDirective(IView: LView, directiveInstance: {}): number {\n // if a directive is monkey patched then it will (by default)\n // have a reference
to the LView of the current view. The\n // element bound to the directive being search lives somewhere\n // in the
view data. We loop through the nodes and check their\n // list of directives for the instance.\n let tNode =
IView[TVIEW].firstChild;\n while (tNode) {\n const directiveIndexStart = tNode.directiveStart;\n const
directiveIndexEnd = tNode.directiveEnd;\n for (let i = directiveIndexStart; i < directiveIndexEnd; i++) {\n if
(IView[i] === directiveInstance) {\n return tNode.index;\n }\n }\n tNode =
traverseNextElement(tNode);\n }\n return -1;\n}\n\n/**\n * Returns a list of directives extracted from the given
view based on the\n
*\n * provided list of directive index values.\n
*\n * @param nodeIndex The node index\n
*\n * @param IView The target view data\n
*\n * @param includeComponents Whether or not to include components in
returned directives\n
*\nexport function getDirectivesAtNodeIndex(\n nodeIndex: number, IView: LView,
includeComponents: boolean): any[]|null {\n const tNode = IView[TVIEW].data[nodeIndex] as TNode;\n let
directiveStartIndex = tNode.directiveStart;\n if (directiveStartIndex === 0) return EMPTY_ARRAY;\n const
directiveEndIndex = tNode.directiveEnd;\n if (!includeComponents && tNode.flags &
TNodeFlags.isComponentHost) directiveStartIndex++;\n return IView.slice(directiveStartIndex,
directiveEndIndex);\n}\n\nexport function getComponentAtNodeIndex(nodeIndex: number, IView: LView): {}|null
{\n const tNode = IView[TVIEW].data[nodeIndex] as TNode;\n let directiveStartIndex = tNode.directiveStart;\n
return tNode.flags & TNodeFlags.isComponentHost ? IView[directiveStartIndex] : null;\n}\n\n/**\n * Returns a
map of local references (local reference name => element or directive instance) that\n
*\n * exist on a given element.\n
*\nexport function discoverLocalRefs(IView: LView, nodeIndex: number): {[key: string]: any}|null {\n const
tNode = IView[TVIEW].data[nodeIndex] as TNode;\n if (tNode && tNode.localNames) {\n const result: {[key:
string]: any} = {};\n let localIndex = tNode.index + 1;\n for (let i = 0; i < tNode.localNames.length; i += 2) {\n
result[tNode.localNames[i]] = IView[localIndex];\n localIndex++;\n }\n return result;\n}\n\nreturn
null;\n}\n\n", /**\n * @license\n
*\n * Copyright Google LLC All Rights Reserved.\n
*\n * Use of this source code is
governed by an MIT-style license that can be\n
*\n * found in the LICENSE file at https://angular.io/license\n
*\n\nimport { global } from '../util/global';\nimport { RElement } from '../interfaces/renderer_dom';\n\nexport
const defaultScheduler =\n () => (\n typeof requestAnimationFrame !== 'undefined' &&\n requestAnimationFrame || // browser only\n setTimeout // everything else\n)\n .bind(global));\n\n/**\n * @codeGenApi\n
*\nexport function resolveWindow(element:

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RElement&{ownerDocument: Document}) {\n return {name: 'window', target:
element.ownerDocument.defaultView};\n}\n\n/**\n * \n * @codeGenApi\n */\nexport function
resolveDocument(element: RElement&{ownerDocument: Document}) {\n return {name: 'document', target:
element.ownerDocument};\n}\n\n/**\n * \n * @codeGenApi\n */\nexport function resolveBody(element:
RElement&{ownerDocument: Document}) {\n return {name: 'body', target:
element.ownerDocument.body};\n}\n\n/**\n * \n * The special delimiter we use to separate property names, prefixes,
and suffixes\n * in property binding metadata. See storeBindingMetadata().\n * \n * We intentionally use the
Unicode \"REPLACEMENT CHARACTER\" (U+FFFD) as a delimiter\n * because it is a very uncommon
character that is unlikely to be part of a user's\n * property names or interpolation strings. If it is in fact used in a
property\n * binding, DebugElement.properties will not return the correct value for that\n * binding. However, there
should be no runtime effect for real applications.\n * \n * This character is typically rendered as a question mark
inside of a diamond.\n * See https://en.wikipedia.org/wiki/Specials_(Unicode_block)\n * \n */\nexport const
INTERPOLATION_DELIMITER = `;\n\n/**\n * \n * Unwrap a value which might be behind a closure (for forward
declaration reasons).\n * \n */\nexport function maybeUnwrapFn<T>(value: T|(() => T)): T {\n if (value instanceof
Function) {\n return value();\n } else {\n return value;\n }\n}\n\n\"/>\n * \n * @license\n * Copyright Google
LLC All Rights Reserved.\n * \n * Use of this source code is governed by an MIT-style license that can be\n * found
in the LICENSE file at https://angular.io/license\n */\nimport {RuntimeError, RuntimeErrorCode} from
'./error_code';\nimport {TNode} from './interfaces/node';\nimport {LView, TVIEW} from
'./interfaces/view';\nimport {INTERPOLATION_DELIMITER} from './util/misc_utils';\n\n\n/**\n * \n * Called when
there are multiple component selectors that match a given node\n */\nexport function
throwMultipleComponentError(tNode: TNode): never {\n throw new RuntimeError(\n
RuntimeErrorCode.MULTIPLE_COMPONENTS_MATCH,\n `Multiple components match node with tagname
${tNode.value}`);\n}\n\n/**\n * \n * Throws an ExpressionChangedAfterChecked error if checkNoChanges mode is on.\n
*/\nexport function throwErrorIfNoChangesMode(\n creationMode: boolean, oldValue: any, currValue: any,
propName?: string): never|void {\n const field = propName ? ` for '${propName}` : `";\n let msg =\n
`ExpressionChangedAfterItHasBeenCheckedError: Expression has changed after it was checked. Previous
value${\n field}: '${oldValue}'. Current value: '${currValue}`;\n if (creationMode) {\n msg +=\n ` It
seems like the view has been created after its parent and its children have been dirty checked.`\n +\n ` Has it been
created in a change detection hook?`; \n } \n // TODO: include debug context, see `viewDebugError` function in\n //
`packages/core/src/view/errors.ts` for reference.\n throw new
RuntimeError(RuntimeErrorCode.EXPRESSION_CHANGED_AFTER_CHECKED, msg);\n}\n\nfunction
constructDetailsForInterpolation(\n lView: LView, rootIndex: number, expressionIndex: number, meta: string,
changedValue: any) {\n const [propName, prefix, ...chunks] = meta.split(INTERPOLATION_DELIMITER);\n let
oldValue = prefix, newValue = prefix;\n for (let i = 0; i < chunks.length; i++) {\n const slotIdx = rootIndex + i;\n
oldValue += `${lView[slotIdx]}${chunks[i]}`;\n newValue += `${slotIdx === expressionIndex ? changedValue :
lView[slotIdx]}${chunks[i]}`;\n }\n return {propName, oldValue, newValue};\n}\n\n/**\n * \n * Constructs an object
that contains details for the ExpressionChangedAfterItHasBeenCheckedError:\n * - property name (for property
bindings or interpolations)\n * - old and new values, enriched using information from metadata\n * \n * More
information on the metadata storage format can be found in `storePropertyBindingMetadata`\n * function
description.\n * \n */\nexport function getExpressionChangedErrorDetails(\n lView: LView, bindingIndex: number,
oldValue: any, newValue: any): {propName?: string, oldValue: any, newValue: any} {\n const tData =
lView[TVIEW].data;\n const metadata = tData[bindingIndex];\n if (typeof metadata === 'string') {\n //
metadata for property interpolation\n if (metadata.indexOf(INTERPOLATION_DELIMITER) > -1) {\n return
constructDetailsForInterpolation(\n lView, bindingIndex, bindingIndex, metadata, newValue);\n }\n //
metadata for property binding\n return {propName: metadata, oldValue, newValue};\n }\n\n // metadata is not
available for this expression, check if this expression is a part of the\n // property interpolation by going from the
current binding index left and look for a string that\n // contains INTERPOLATION_DELIMITER, the layout in
tView.data for this case will look like this:\n // [..., 'idPrefix and suffix', null, null, null, ...]\n if (metadata ===

```



list of `CssSelectors`.  
 A directive or component can have multiple selectors. This type is used for directive defs so any of the selectors in the list will match that directive.  
 Original: 'form, [ngForm]'  
 Parsed: ['form'], ['ngForm', '']  
 export type `CssSelectorList` = `CssSelector`[];  
 List of slots for a projection. A slot can be either based on a parsed CSS selector which will be used to determine nodes which are projected into that slot.  
 When set to `'*'`, the slot is reserved and can be used for multi-slot projection using `{ @link ViewContainerRef#createComponent }`. The last slot that specifies the wildcard selector will retrieve all projectable nodes which do not match any selector.  
 export type `ProjectionSlots` = (`CssSelectorList` | '\*')[];  
 Flags used to build up `CssSelectors`  
 export const enum `SelectorFlags` {  
 /\*\* Indicates this is the beginning of a new negative selector \*/  
 NOT = 0b0001,  
 /\*\* Mode for matching attributes \*/  
 ATTRIBUTE = 0b0010,  
 /\*\* Mode for matching tag names \*/  
 ELEMENT = 0b0100,  
 /\*\* Mode for matching class names \*/  
 CLASS = 0b1000,  
 }  
 Note: This hack is necessary so we don't erroneously get a circular dependency failure based on types.  
 export const `unusedValueExportToPlacateAjd` = 1;  
 @license  
 Copyright Google LLC All Rights Reserved.  
 Use of this source code is governed by an MIT-style license that can be found in the LICENSE file at <https://angular.io/license>  
 import { `assertDefined` } from './util/assert';  
 import { `assertLView` } from './assert';  
 import { `LContainer` } from './interfaces/container';  
 import { `isLContainer`, `isLView` } from './interfaces/type\_checks';  
 import { `CHILD_HEAD`, `CONTEXT`, `FLAGS`, `LView`, `LViewFlags`, `NEXT`, `PARENT`, `RootContext` } from './interfaces/view';  
 import { `readPatchedLView` } from './view\_utils';  
 Gets the parent `LView` of the passed `LView`, if the `PARENT` is an `LContainer`, will get the parent of that `LContainer`, which is an `LView`  
 @param `IView` the `IView` whose parent to get  
 export function `getLViewParent`(`IView`: `LView`): `LView` | null {  
 if (ngDevMode && `assertLView`(`IView`)) {  
 const parent = `IView`[`PARENT`];  
 return `isLContainer`(parent) ? parent[`PARENT`]! : parent;  
 }  
 Retrieve the root view from any component or `LView` by walking the parent `LView` until reaching the root `LView`.  
 @param `componentOrLView` any component or `LView`  
 export function `getRootView`(`componentOrLView`: `LView` | {}): `LView` {  
 if (ngDevMode && `assertDefined`(`componentOrLView`, 'component')) {  
 let `IView` = `isLView`(`componentOrLView`) ? `componentOrLView` : `readPatchedLView`(`componentOrLView`)!;  
 while (`IView` && !(`IView`[`FLAGS`] & `LViewFlags`.`IsRoot`)) {  
`IView` = `getLViewParent`(`IView`)!;  
 }  
 if (ngDevMode && `assertLView`(`IView`)) {  
 return `IView`;  
 }  
 }  
 Returns the `RootContext` instance that is associated with the application where the target is situated. It does this by walking the parent views until it gets to the root view, then getting the context off of that.  
 @param `viewOrComponent` the `LView` or component to get the root context for.  
 export function `getRootContext`(`viewOrComponent`: `LView` | {}): `RootContext` {  
 const rootView = `getRootView`(`viewOrComponent`);  
 if (ngDevMode && `assertDefined`(rootView[`CONTEXT`], 'RootView has no context. Perhaps it is disconnected?')) {  
 return rootView[`CONTEXT`] as `RootContext`;  
 }  
 Gets the first `LContainer` in the `LView` or `null` if none exists.  
 export function `getFirstLContainer`(`IView`: `LView`): `LContainer` | null {  
 return `getNearestLContainer`(`IView`[`CHILD_HEAD`]);  
 }  
 Gets the next `LContainer` that is a sibling of the given container.  
 export function `getNextLContainer`(`container`: `LContainer`): `LContainer` | null {  
 return `getNearestLContainer`(`container`[`NEXT`]);  
 }  
 function `getNearestLContainer`(`viewOrContainer`: `LContainer` | `LView` | null) {  
 while (`viewOrContainer` !== null && !`isLContainer`(`viewOrContainer`)) {  
`viewOrContainer` = `viewOrContainer`[`NEXT`];  
 }  
 return `viewOrContainer`;  
 }  
 @license  
 Copyright Google LLC All Rights Reserved.  
 Use of this source code is governed by an MIT-style license that can be found in the LICENSE file at <https://angular.io/license>  
 import { `ViewEncapsulation` } from './metadata/view';  
 import { `Renderer2` } from './render/api';  
 import { `RendererStyleFlags2` } from './render/api\_flags';  
 import { `addToArray`, `removeFromArray` } from './util/array\_utils';  
 import { `assertDefined`, `assertDomNode`, `assertEqual`, `assertString` } from './util/assert';  
 import { `assertLContainer`, `assertLView`, `assertTNodeForLView` } from './assert';  
 import { `attachPatchData` } from './context\_discovery';  
 import { `icuContainerIterate` } from './i18n/i18n\_tree\_shaking';  
 import { `CONTAINER_HEADER_OFFSET`, `HAS_TRANSPLANTED_VIEWS`, `LContainer`, `MOVED_VIEWS`, `NATIVE`, `unusedValueExportToPlacateAjd` as `unused1` } from





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number) {\n ngDevMode && assertLView(IView);\n ngDevMode && assertLContainer(LContainer);\n const
indexInContainer = CONTAINER_HEADER_OFFSET + index;\n const containerLength = LContainer.length;\n\n
if (index > 0) {\n // This is a new view, we need to add it to the children.\n LContainer[indexInContainer -
1][NEXT] = IView;\n }\n if (index < containerLength - CONTAINER_HEADER_OFFSET) {\n LView[NEXT] =
LContainer[indexInContainer];\n addToArray(LContainer, CONTAINER_HEADER_OFFSET + index, IView);\n
} else {\n LContainer.push(IView);\n LView[NEXT] = null;\n }\n\n LView[PARENT] = LContainer;\n\n // track
views where declaration and insertion points are different\n const declarationLContainer =
LView[DECLARATION_LCONTAINER];\n if (declarationLContainer !== null && LContainer !==
declarationLContainer) {\n trackMovedView(declarationLContainer, LView);\n }\n\n // notify query that a new
view has been added\n const IQueries = LView[QUERIES];\n if (IQueries !== null) {\n
IQueries.insertView(tView);\n }\n\n // Sets the attached flag\n LView[FLAGS] |=
LViewFlags.Attached;\n}\n\n/**\n * Track views created from the declaration container (TemplateRef) and inserted
into a\n * different LContainer.\n */\nfunction trackMovedView(declarationContainer: LContainer, LView: LView)
{\n ngDevMode && assertDefined(LView, 'LView required');\n ngDevMode &&
assertLContainer(declarationContainer);\n const movedViews = declarationContainer[MOVED_VIEWS];\n const
insertedLContainer = LView[PARENT] as LContainer;\n ngDevMode && assertLContainer(insertedLContainer);\n
const insertedComponentLView = insertedLContainer[PARENT]![DECLARATION_COMPONENT_VIEW];\n
ngDevMode && assertDefined(insertedComponentLView, 'Missing insertedComponentLView');\n const
declaredComponentLView = LView[DECLARATION_COMPONENT_VIEW];\n ngDevMode &&
assertDefined(declaredComponentLView, 'Missing declaredComponentLView');\n if (declaredComponentLView
!== insertedComponentLView) {\n // At this point the declaration-component is not same as insertion-component;
this means that\n // this is a transplanted view. Mark the declared LView as having transplanted views so that\n //
those views can participate in CD.\n declarationContainer[HAS_TRANSPLANTED_VIEWS] = true;\n }\n if
(movedViews === null) {\n declarationContainer[MOVED_VIEWS] = [LView];\n } else {\n
movedViews.push(LView);\n }\n}\n\nfunction detachMovedView(declarationContainer: LContainer, LView:
LView) {\n ngDevMode && assertLContainer(declarationContainer);\n ngDevMode &&\n
assertDefined(\n
declarationContainer[MOVED_VIEWS],\n 'A projected view should belong to a non-empty projected views
collection');\n const movedViews = declarationContainer[MOVED_VIEWS]!;\n const declarationViewIndex =
movedViews.indexOf(LView);\n const insertionLContainer = LView[PARENT] as LContainer;\n ngDevMode &&
assertLContainer(insertionLContainer);\n\n // If the view was marked for refresh but then detached before it was
checked (where the flag\n // would be cleared and the counter decremented), we need to decrement the view counter
here\n // instead.\n if (LView[FLAGS] & LViewFlags.RefreshTransplantedView) {\n LView[FLAGS] &=
~LViewFlags.RefreshTransplantedView;\n updateTransplantedViewCount(insertionLContainer, -1);\n }\n\n
movedViews.splice(declarationViewIndex, 1);\n}\n\n/**\n * Detaches a view from a container.\n */\n * This method
removes the view from the container's array of active views. It also\n * removes the view's elements from the
DOM.\n * @param LContainer The container from which to detach a view\n * @param removeIndex The index
of the view to detach\n * @returns Detached LView instance.\n */\nexport function detachView(LContainer:
LContainer, removeIndex: number): LView|undefined {\n if (LContainer.length <=
CONTAINER_HEADER_OFFSET) return;\n\n const indexInContainer = CONTAINER_HEADER_OFFSET +
removeIndex;\n const viewToDetach = LContainer[indexInContainer];\n\n if (viewToDetach) {\n const
declarationLContainer = viewToDetach[DECLARATION_LCONTAINER];\n if (declarationLContainer !== null
&& declarationLContainer !== LContainer) {\n detachMovedView(declarationLContainer, viewToDetach);\n
}\n\n if (removeIndex > 0) {\n LContainer[indexInContainer - 1][NEXT] = viewToDetach[NEXT] as
LView;\n }\n const removedLView = removeFromArray(LContainer, CONTAINER_HEADER_OFFSET +
removeIndex);\n removeViewFromContainer(viewToDetach[TVIEW], viewToDetach);\n\n // notify query that a
view has been removed\n const IQueries = removedLView[QUERIES];\n if (IQueries !== null) {\n
IQueries.detachView(removedLView[TVIEW]);\n }\n\n viewToDetach[PARENT] = null;\n
viewToDetach[NEXT] = null;\n // Unsets the attached flag\n viewToDetach[FLAGS] &=

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~LViewFlags.Attached;\n } \n return viewToDetach;\n}\n\n/**\n * A standalone function which destroys an
LView,\n * conducting clean up (e.g. removing listeners, calling onDestroys).\n *\n * @param tView The `TVIEW`
of the `LView` to be destroyed\n * @param lView The view to be destroyed.\n */\nexport function
destroyLView(tView: TVIEW, lView: LView) {\n if (!(lView[FLAGS] & LViewFlags.Destroyed)) {\n const
renderer = lView[RENDERER];\n if (isProceduralRenderer(renderer) && renderer.destroyNode) {\n
applyView(tView, lView, renderer, WalkTreeNodeTreeAction.Destroy, null, null);\n }\n\n
destroyViewTree(lView);\n }\n}\n\n/**\n * Calls onDestroys hooks for all directives and pipes in a given view and
then removes all\n * listeners. Listeners are removed as the last step so events delivered in the onDestroys hooks\n *
can be propagated to @Output listeners.\n *\n * @param tView `TVIEW` for the `LView` to clean up.\n * @param
lView The LView to clean up\n */\nfunction cleanupView(tView: TVIEW, lView: LView): void {\n if
(!(lView[FLAGS] & LViewFlags.Destroyed)) {\n // Usually the Attached flag is removed when the view is
detached from its parent, however\n // if it's a root view, the flag won't be unset hence why we're also removing on
destroy.\n lView[FLAGS] &= ~LViewFlags.Attached;\n // Mark the LView as destroyed *before* executing
the onDestroy hooks. An onDestroy hook\n // runs arbitrary user code, which could include its own
`viewRef.destroy()` (or similar). If\n // We don't flag the view as destroyed before the hooks, this could lead to an
infinite loop.\n // This also aligns with the ViewEngine behavior. It also means that the onDestroy hook is\n //
really more of an "afterDestroy" hook if you think about it.\n lView[FLAGS] |= LViewFlags.Destroyed;\n\n
executeOnDestroys(tView, lView);\n removeListeners(tView, lView);\n // For component views only, the local
renderer is destroyed at clean up time.\n if (lView[TVIEW].type === TVIEWType.Component &&
isProceduralRenderer(lView[RENDERER])) {\n ngDevMode && ngDevMode.rendererDestroy++;\n
(lView[RENDERER] as ProceduralRenderer3).destroy();\n }\n\n const declarationContainer =
lView[DECLARATION_LCONTAINER];\n // we are dealing with an embedded view that is still inserted into a
container\n if (declarationContainer !== null && isLContainer(lView[PARENT])) {\n // and this is a projected
view\n if (declarationContainer !== lView[PARENT]) {\n detachMovedView(declarationContainer,
lView);\n }\n\n // For embedded views still attached to a container: remove query result from this view.\n
const lQueries = lView[QUERIES];\n if (lQueries !== null) {\n lQueries.detachView(tView);\n }\n }\n
}\n\n/**\n * Removes listeners and unsubscribes from output subscriptions\n */\nfunction removeListeners(tView:
TVIEW, lView: LView): void {\n const tCleanup = tView.cleanup;\n if (tCleanup !== null) {\n const lCleanup =
lView[CLEANUP];\n for (let i = 0; i < tCleanup.length - 1; i += 2) {\n if (typeof tCleanup[i] === 'string') {\n
// This is a native DOM listener\n const idxOrTargetGetter = tCleanup[i + 1];\n const target = typeof
idxOrTargetGetter === 'function' ?\n idxOrTargetGetter(lView) :\n
unwrapRNode(lView[idxOrTargetGetter]);\n const listener = lCleanup[tCleanup[i + 2]];\n const
useCaptureOrSubIdx = tCleanup[i + 3];\n if (typeof useCaptureOrSubIdx === 'boolean') {\n // native
DOM listener registered with Renderer3\n target.removeEventListener(tCleanup[i], listener,
useCaptureOrSubIdx);\n } else {\n if (useCaptureOrSubIdx >= 0) {\n // unregister\n
lCleanup[useCaptureOrSubIdx]();\n } else {\n // Subscription\n lCleanup[-
useCaptureOrSubIdx].unsubscribe();\n }\n }\n i += 2;\n } else {\n // This is a cleanup function
that is grouped with the index of its context\n const context = lCleanup[tCleanup[i + 1]];\n
tCleanup[i].call(context);\n }\n }\n lView[CLEANUP] = null;\n }\n}\n\n/**\n * Calls onDestroy hooks for this
view\n */\nfunction executeOnDestroys(tView: TVIEW, lView: LView): void {\n let destroyHooks:
DestroyHookData|null;\n\n if (tView !== null && (destroyHooks = tView.destroyHooks) !== null) {\n for (let i = 0;
i < destroyHooks.length; i += 2) {\n const context = lView[destroyHooks[i] as number];\n\n // Only call the
destroy hook if the context has been requested.\n if (!(context instanceof NodeInjectorFactory)) {\n const
toCall = destroyHooks[i + 1] as HookFn | HookData;\n\n if (Array.isArray(toCall)) {\n for (let j = 0; j <
toCall.length; j += 2) {\n (toCall[j + 1] as HookFn).call(context[toCall[j] as number]);\n }\n } else
{\n toCall.call(context);\n }\n }\n }\n }\n}\n\n/**\n * Returns a native element if a node can be
inserted into the given parent.\n *\n * There are two reasons why we may not be able to insert a element
immediately.\n * - Projection: When creating a child content element of a component, we have to skip the\n *

```



```

insertion because the content of a component will be projected.\n * `<component><content>delayed due to
projection</content></component>`\n * - Parent container is disconnected: This can happen when we are inserting a
view into\n * parent container, which itself is disconnected. For example the parent container is part\n * of a View
which has not be inserted or is made for projection but has not been inserted\n * into destination.\n *\n * @param
tView: Current `TView`.\n * @param tNode: `TNode` for which we wish to retrieve render parent.\n * @param
IView: Current `LView`.\n */\nexport function getParentRElement(tView: TView, tNode: TNode, IView: LView):
RElement|null {\n return getClosestRElement(tView, tNode.parent, IView);\n}\n\n/**\n * Get closest `RElement`
or `null` if it can't be found.\n *\n * If `TNode` is `TNodeType.Element` => return `RElement` at
`LView[tNode.index]` location.\n *\n * If `TNode` is `TNodeType.ElementContainer|IcuContain` => return the parent
(recursively).\n *\n * If `TNode` is `null` then return host `RElement`:\n * - return `null` if projection\n * - return
`null` if parent container is disconnected (we have no parent.)\n *\n * @param tView: Current `TView`.\n *
@param tNode: `TNode` for which we wish to retrieve `RElement` (or `null` if host element is\n * needed).\n *
@param IView: Current `LView`.\n * @returns `null` if the `RElement` can't be determined at this time (no parent /
projection)\n */\nexport function getClosestRElement(tView: TView, tNode: TNode|null, IView: LView):
RElement|null {\n let parentTNode: TNode|null = tNode;\n // Skip over element and ICU containers as those are
represented by a comment node and\n // can't be used as a render parent.\n while (parentTNode !== null &&\n
(parentTNode.type & (TNodeType.ElementContainer | TNodeType.Icu))) {\n tNode = parentTNode;\n
parentTNode = tNode.parent;\n }\n // If the parent tNode is null, then we are inserting across views: either into an
embedded view\n // or a component view.\n if (parentTNode === null) {\n // We are inserting a root element of
the component view into the component host element and\n // it should always be eager.\n return
IView[HOST];\n } else {\n ngDevMode && assertTNodeType(parentTNode, TNodeType.AnyRNode |
TNodeType.Container);\n if (parentTNode.flags & TNodeFlags.isComponentHost) {\n ngDevMode &&
assertTNodeForLView(parentTNode, IView);\n const encapsulation =\n
(tView.data[parentTNode.directiveStart] as ComponentDef<unknown>).encapsulation;\n // We've got a parent
which is an element in the current view. We just need to verify if the\n // parent element is not a component.
Component's content nodes are not inserted immediately\n // because they will be projected, and so doing insert
at this point would be wasteful.\n // Since the projection would then move it to its final destination. Note that we
can't\n // make this assumption when using the Shadow DOM, because the native projection placeholders\n //
(<content> or <slot>) have to be in place as elements are being inserted.\n if (encapsulation ===
ViewEncapsulation.None ||\n encapsulation === ViewEncapsulation.Emulated) {\n return null;\n }\n
}\n }\n return getNativeByTNode(parentTNode, IView) as RElement;\n}\n\n/**\n * Inserts a native node before
another native node for a given parent using {@link Renderer3}.\n * This is a utility function that can be used when
native nodes were determined - it abstracts an\n * actual renderer being used.\n */\nexport function
nativeInsertBefore(\n renderer: Renderer3, parent: RElement, child: RNode, beforeNode: RNode|null,\n isMove:
boolean): void {\n ngDevMode && ngDevMode.rendererInsertBefore++;\n if (isProceduralRenderer(renderer))
{\n renderer.insertBefore(parent, child, beforeNode, isMove);\n } else {\n parent.insertBefore(child,
beforeNode, isMove);\n }\n}\n\nfunction nativeAppendChild(renderer: Renderer3, parent: RElement, child:
RNode): void {\n ngDevMode && ngDevMode.rendererAppendChild++;\n ngDevMode &&
assertDefined(parent, 'parent node must be defined');\n if (isProceduralRenderer(renderer)) {\n
renderer.appendChild(parent, child);\n } else {\n parent.appendChild(child);\n }\n}\n\nfunction
nativeAppendOrInsertBefore(\n renderer: Renderer3, parent: RElement, child: RNode, beforeNode: RNode|null,
isMove: boolean) {\n if (beforeNode !== null) {\n nativeInsertBefore(renderer, parent, child, beforeNode,
isMove);\n } else {\n nativeAppendChild(renderer, parent, child);\n }\n}\n\n/**\n * Removes a node from the DOM
given its native parent. *\n */\nfunction nativeRemoveChild(\n renderer: Renderer3, parent: RElement, child: RNode,
isHostElement?: boolean): void {\n if (isProceduralRenderer(renderer)) {\n renderer.removeChild(parent, child,
isHostElement);\n } else {\n parent.removeChild(child);\n }\n}\n\n/**\n * Returns a native parent of a given
native node.\n */\nexport function nativeParentNode(renderer: Renderer3, node: RNode): RElement|null {\n return
(isProceduralRenderer(renderer) ? renderer.parentNode(node) : node.parentNode) as RElement;\n}\n\n/**\n *

```

```

Returns a native sibling of a given native node.
export function nativeNextSibling(renderer: Renderer3, node:
RNode): RNode|null {
 return isProceduralRenderer(renderer) ? renderer.nextSibling(node) :
 node.nextSibling();
}
/**
 * Find a node in front of which `currentTNode` should be inserted.
 * This method determines the `RNode` in front of which we should insert the `currentRNode`. This takes
 * `TNode.insertBeforeIndex` into account if i18n code has been invoked.
 * @param parentTNode parent
 * `TNode`
 * @param currentTNode current `TNode` (The node which we would like to insert into the DOM)
 * @param IView current `LView`
 */
export function getInsertInFrontOfRNode(parentTNode: TNode, currentTNode:
TNode, IView: LView): RNode|null {
 return _getInsertInFrontOfRNodeWithI18n(parentTNode,
 currentTNode, IView);
}
/**
 * Find a node in front of which `currentTNode` should be inserted. (Does not
 * take i18n into account)
 * This method determines the `RNode` in front of which we should insert the
 * `currentRNode`. This does not take `TNode.insertBeforeIndex` into account.
 * @param parentTNode
 * parent `TNode`
 * @param currentTNode current `TNode` (The node which we would like to insert into the
 * DOM)
 * @param IView current `LView`
 */
export function getInsertInFrontOfRNodeWithNoI18n(
parentTNode: TNode, currentTNode: TNode, IView: LView): RNode|null {
 if (parentTNode.type &
 (TNodeType.ElementContainer | TNodeType.Icu)) {
 return getNativeByTNode(parentTNode, IView);
 }
 return null;
}
/**
 * Tree shakable boundary for `getInsertInFrontOfRNodeWithI18n` function.
 * This function will only be set if i18n code runs.
 */
let _getInsertInFrontOfRNodeWithI18n: (parentTNode: TNode,
currentTNode: TNode, IView: LView) => RNode | null = getInsertInFrontOfRNodeWithNoI18n;
/**
 * Tree shakable boundary for `processI18nInsertBefore` function.
 * This function will only be set if i18n code
 * runs.
 */
let _processI18nInsertBefore: (
 renderer: Renderer3, childTNode: TNode, IView: LView,
 childRNode: RNode|RNode[], parentRElement: RElement|null) => void;
export function setI18nHandling(
 getInsertInFrontOfRNodeWithI18n: (parentTNode: TNode, currentTNode: TNode, IView: LView) => RNode | null,
 processI18nInsertBefore: (
 renderer: Renderer3, childTNode: TNode, IView: LView,
 childRNode: RNode|RNode[], parentRElement: RElement|null) => void) {
 _getInsertInFrontOfRNodeWithI18n = getInsertInFrontOfRNodeWithI18n;
 _processI18nInsertBefore =
 processI18nInsertBefore;
}
/**
 * Appends the `child` native node (or a collection of nodes) to the `parent`.
 * @param tView The `TView` to be appended
 * @param IView The current LView
 * @param childRNode
 * The native child (or children) that should be appended
 * @param childTNode The TNode of the child element
 */
export function appendChild(
 tView: TView, IView: LView, childRNode: RNode|RNode[], childTNode:
 TNode): void {
 const parentRNode = getParentRElement(tView, childTNode, IView);
 const renderer =
 IView[RENDERER];
 const parentTNode: TNode = childTNode.parent || IView[T_HOST];
 const anchorNode
 = getInsertInFrontOfRNode(parentTNode, childTNode, IView);
 if (parentRNode != null) {
 if
 (Array.isArray(childRNode)) {
 for (let i = 0; i < childRNode.length; i++) {
 nativeAppendOrInsertBefore(renderer, parentRNode, childRNode[i], anchorNode, false);
 }
 } else {
 nativeAppendOrInsertBefore(renderer, parentRNode, childRNode, anchorNode, false);
 }
 }
 _processI18nInsertBefore !== undefined &&
 _processI18nInsertBefore(renderer, childTNode, IView,
 childRNode, parentRNode);
}
/**
 * Returns the first native node for a given LView, starting from the
 * provided TNode.
 * Native nodes are returned in the order in which those appear in the native tree (DOM).
 */
export function getFirstNativeNode(IView: LView, tNode: TNode|null): RNode|null {
 if (tNode !== null) {
 ngDevMode &&
 assertTNodeType(
 tNode,
 TNodeType.AnyRNode |
 TNodeType.AnyContainer | TNodeType.Icu | TNodeType.Projection);
 const tNodeType = tNode.type;
 if
 (tNodeType & TNodeType.AnyRNode) {
 return getNativeByTNode(tNode, IView);
 } else if (tNodeType
 & TNodeType.Container) {
 return getBeforeNodeForView(-1, IView[tNode.index]);
 } else if (tNodeType
 & TNodeType.ElementContainer) {
 const eIcuContainerChild = tNode.child;
 if (eIcuContainerChild !==
 null) {
 return getFirstNativeNode(IView, eIcuContainerChild);
 } else {
 const rNodeOrLContainer
 = IView[tNode.index];
 if (isLContainer(rNodeOrLContainer)) {
 return getBeforeNodeForView(-1,
 rNodeOrLContainer);
 } else {
 return unwrapRNode(rNodeOrLContainer);
 }
 }
 } else if
 (tNodeType & TNodeType.Icu) {
 let nextRNode = icuContainerIterate(tNode as TIcuContainerNode,

```



```

@param action action to perform (insert, detach, destroy)\n * @param parentRElement parent DOM element for
insertion (Removal does not need it).\n * @param beforeNode Before which node the insertions should happen.\n
*\nfunction applyView(\n tView: TView, lView: LView, renderer: Renderer3, action:
WalkTreeNodeTreeAction.Destroy,\n parentRElement: null, beforeNode: null): void;\nfunction applyView(\n
tView: TView, lView: LView, renderer: Renderer3, action: WalkTreeNodeTreeAction,\n parentRElement:
RElement|null, beforeNode: RNode|null): void;\nfunction applyView(\n tView: TView, lView: LView, renderer:
Renderer3, action: WalkTreeNodeTreeAction,\n parentRElement: RElement|null, beforeNode: RNode|null): void {\n
 applyNodes(renderer, action, tView.firstChild, lView, parentRElement, beforeNode, false);\n}\n\n/**\n *
`applyProjection` performs operation on the projection.\n *\n * Inserting a projection requires us to locate the
projected nodes from the parent component. The\n * complication is that those nodes themselves could be re-
projected from their parent component.\n *\n * @param tView The `TView` of `LView` which needs to be inserted,
detached, destroyed\n * @param lView The `LView` which needs to be inserted, detached, destroyed.\n * @param
tProjectionNode node to project\n *\nexport function applyProjection(tView: TView, lView: LView,
tProjectionNode: TProjectionNode) {\n const renderer = lView[RENDERER];\n const parentRNode =
getParentRElement(tView, tProjectionNode, lView);\n const parentTNode = tProjectionNode.parent ||
lView[T_HOST]!;\n let beforeNode = getInsertInFrontOfRNode(parentTNode, tProjectionNode, lView);\n
 applyProjectionRecursive(\n renderer, WalkTreeNodeTreeAction.Create, lView, tProjectionNode, parentRNode,
beforeNode);\n}\n\n/**\n * `applyProjectionRecursive` performs operation on the projection specified by `action`
(insert,\n * detach, destroy)\n *\n * Inserting a projection requires us to locate the projected nodes from the parent
component. The\n * complication is that those nodes themselves could be re-projected from their parent
component.\n *\n * @param renderer Render to use\n * @param action action to perform (insert, detach, destroy)\n
* @param lView The LView which needs to be inserted, detached, destroyed.\n * @param tProjectionNode node to
project\n * @param parentRElement parent DOM element for insertion/removal.\n * @param beforeNode Before
which node the insertions should happen.\n *\nfunction applyProjectionRecursive(\n renderer: Renderer3, action:
WalkTreeNodeTreeAction, lView: LView,\n tProjectionNode: TProjectionNode, parentRElement: RElement|null,
beforeNode: RNode|null) {\n const componentLView = lView[DECLARATION_COMPONENT_VIEW];\n const
componentNode = componentLView[T_HOST] as TElementNode;\n ngDevMode &&\n assertEquals(typeof
tProjectionNode.projection, 'number', 'expecting projection index');\n const nodeToProjectOrRNodes =
componentNode.projection![tProjectionNode.projection]!;\n if (Array.isArray(nodeToProjectOrRNodes)) {\n //
This should not exist, it is a bit of a hack. When we bootstrap a top level node and we\n // need to support passing
projectable nodes, so we cheat and put them in the TNode\n // of the Host TView. (Yes we put instance info at the
T Level). We can get away with it\n // because we know that that TView is not shared and therefore it will not be a
problem.\n // This should be refactored and cleaned up.\n for (let i = 0; i < nodeToProjectOrRNodes.length; i++)
{\n const rNode = nodeToProjectOrRNodes[i];\n applyToElementOrContainer(action, renderer,
parentRElement, rNode, beforeNode);\n } } else {\n let nodeToProject: TNode|null =
nodeToProjectOrRNodes;\n const projectedComponentLView = componentLView[PARENT] as LView;\n
 applyNodes(\n renderer, action, nodeToProject, projectedComponentLView, parentRElement, beforeNode,
true);\n }\n}\n\n/**\n * `applyContainer` performs an operation on the container and its views as specified by\n
* `action` (insert, detach, destroy)\n *\n * Inserting a Container is complicated by the fact that the container may have
Views which\n * themselves have containers or projections.\n *\n * @param renderer Renderer to use\n * @param
action action to perform (insert, detach, destroy)\n * @param lContainer The LContainer which needs to be inserted,
detached, destroyed.\n * @param parentRElement parent DOM element for insertion/removal.\n * @param
beforeNode Before which node the insertions should happen.\n *\nfunction applyContainer(\n renderer:
Renderer3, action: WalkTreeNodeTreeAction, lContainer: LContainer,\n parentRElement: RElement|null,
beforeNode: RNode|null|undefined) {\n ngDevMode && assertLContainer(lContainer);\n const anchor =
lContainer[NATIVE]; // LContainer has its own before node.\n const native = unwrapRNode(lContainer);\n // An
LContainer can be created dynamically on any node by injecting ViewContainerRef.\n // Asking for a
ViewContainerRef on an element will result in a creation of a separate anchor\n // node (comment in the DOM) that

```



```

'././util/char_code';\n\n/**\n * Returns an index of `classToSearch` in `className` taking token boundaries into
account.\n *\n * `classIndexOf('AB A', 'A', 0)` will be 3 (not 0 since `AB!==A`)\n *\n * @param className A
string containing classes (whitespace separated)\n *\n * @param classToSearch A class name to locate\n *\n * @param
startingIndex Starting location of search\n *\n * @returns an index of the located class (or -1 if not found)\n */\nexport
function classIndexOf(\n className: string, classToSearch: string, startingIndex: number): number {\n
 ngDevMode && assertNotEqual(classToSearch, "", 'can not look for "" string.);\n let end = className.length;\n
 while (true) {\n const foundIndex = className.indexOf(classToSearch, startingIndex);\n if (foundIndex === -1)
return foundIndex;\n if (foundIndex === 0 || className.charCodeAt(foundIndex - 1) <= CharCode.SPACE) {\n
// Ensure that it has leading whitespace\n const length = classToSearch.length;\n if (foundIndex + length ===
end ||\n className.charCodeAt(foundIndex + length) <= CharCode.SPACE) {\n // Ensure that it has
trailing whitespace\n return foundIndex;\n }\n }\n // False positive, keep searching from where we left
off.\n startingIndex = foundIndex + 1;\n }\n}\n"/**\n * @license\n * Copyright Google LLC All Rights
Reserved.\n *\n * Use of this source code is governed by an MIT-style license that can be\n * found in the
LICENSE file at https://angular.io/license\n */\n\nimport './util/ng_dev_mode';\n\nimport {assertDefined,
assertEqual, assertNotEqual} from './util/assert';\n\nimport {AttributeMarker, TAttributes, TNode, TNodeType,
unusedValueExportToPlacateAjd as unused1} from './interfaces/node';\n\nimport {CssSelector, CssSelectorList,
SelectorFlags, unusedValueExportToPlacateAjd as unused2} from './interfaces/projection';\n\nimport {classIndexOf}
from './styling/class_differ';\n\nimport {isNameOnlyAttributeMarker} from './util/attrs_utils';\n\nconst
unusedValueToPlacateAjd = unused1 + unused2;\n\nconst NG_TEMPLATE_SELECTOR = 'ng-template';\n\n/**\n
 * Search the `TAttributes` to see if it contains `cssClassToMatch` (case insensitive)\n *\n * @param attrs
`TAttributes` to search through.\n *\n * @param cssClassToMatch class to match (lowercase)\n *\n * @param
isProjectionMode Whether or not class matching should look into the attribute `class` in\n * addition to the
`AttributeMarker.Classes`.\n *\n * @function isCssClassMatching(\n attrs: TAttributes, cssClassToMatch: string,
isProjectionMode: boolean): boolean {\n // TODO(misko): The fact that this function {needs to know about
`isProjectionMode` seems suspect.\n // It is strange to me that sometimes the class information comes in form of
`class` attribute\n // and sometimes in form of `AttributeMarker.Classes`. Some investigation is needed to
determine\n // if that is the right behavior.\n ngDevMode &&\n assertEquals(\n cssClassToMatch,
cssClassToMatch.toLowerCase(), 'Class name expected to be lowercase.);\n let i = 0;\n while (i < attrs.length) {\n
let item = attrs[i++];\n if (isProjectionMode && item === 'class') {\n item = attrs[i] as string;\n if
(classIndexOf(item.toLowerCase(), cssClassToMatch, 0) !== -1) {\n return true;\n }\n } else if (item ===
AttributeMarker.Classes) {\n // We found the classes section. Start searching for the class.\n while (i <
attrs.length && typeof (item = attrs[i++]) === 'string') {\n // while we have strings\n if (item.toLowerCase()
=== cssClassToMatch) return true;\n }\n return false;\n }\n}\n}\n\nreturn false;\n}\n\n/**\n * Checks whether
the `tNode` represents an inline template (e.g. `*ngFor`).\n *\n * @param tNode current TNode\n */\nexport
function isInlineTemplate(tNode: TNode): boolean {\n return tNode.type === TNodeType.Container &&
tNode.value !== NG_TEMPLATE_SELECTOR;\n}\n\n/**\n * Function that checks whether a given tNode
matches tag-based selector and has a valid type.\n *\n * Matching can be performed in 2 modes: projection mode
(when we project nodes) and regular\n * directive matching mode:\n * - in the `directive matching` mode we do
`not` take TContainer's tagName into account if it is\n * different from NG_TEMPLATE_SELECTOR (value
different from NG_TEMPLATE_SELECTOR indicates that a\n * tag name was extracted from * syntax so we
would match the same directive twice);\n * - in the `projection` mode, we use a tag name potentially extracted
from the * syntax processing\n * (applicable to TNodeType.Container only).\n */\nfunction
hasTagAndTypeMatch(\n tNode: TNode, currentSelector: string, isProjectionMode: boolean): boolean {\n const
tagNameToCompare =\n tNode.type === TNodeType.Container && !isProjectionMode ?
NG_TEMPLATE_SELECTOR : tNode.value;\n return currentSelector === tagNameToCompare;\n}\n\n/**\n * A
utility function to match an Ivy node static data against a simple CSS selector\n *\n * @param node static data of the
node to match\n *\n * @param selector The selector to try matching against the node.\n *\n * @param isProjectionMode if
`true` we are matching for content projection, otherwise we are doing\n * directive matching.\n *\n * @returns true if

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```

forward');\n selectIndexInternal(getTView(), getLView(), getSelectedIndex() + delta,
isInCheckNoChangesMode());\n}\n\nexport function selectIndexInternal(\n tView: TView, lView: LView, index:
number, checkNoChangesMode: boolean) {\n ngDevMode && assertIndexInDeclRange(lView, index);\n //
Flush the initial hooks for elements in the view that have been added up to this point.\n // PERF WARNING: do
NOT extract this to a separate function without running benchmarks\n if (!checkNoChangesMode) {\n const
hooksInitPhaseCompleted =\n (lView[FLAGS] & LViewFlags.InitPhaseStateMask) ===
InitPhaseState.InitPhaseCompleted;\n if (hooksInitPhaseCompleted) {\n const preOrderCheckHooks =
tView.preOrderCheckHooks;\n if (preOrderCheckHooks !== null) {\n executeCheckHooks(lView,
preOrderCheckHooks, index);\n }\n } else {\n const preOrderHooks = tView.preOrderHooks;\n if
(preOrderHooks !== null) {\n executeInitAndCheckHooks(lView, preOrderHooks,
InitPhaseState.OnInitHooksToBeRun, index);\n }\n }\n }\n // We must set the selected index *after*
running the hooks, because hooks may have side-effects\n // that cause other template functions to run, thus
updating the selected index, which is global\n // state. If we run `setSelectedIndex` *before* we run the hooks, in
some cases the selected index\n // will be altered by the time we leave the `advance` instruction.\n setSelectedIndex(index);\n}\n\n"/**\n * @license\n * Copyright Google LLC All Rights Reserved.\n *\n * Use of
this source code is governed by an MIT-style license that can be\n * found in the LICENSE file at
https://angular.io/license\n *\nimport { KeyValueArray } from '../util/array_utils';\nimport { assertNumber,
assertNumberInRange } from '../util/assert';\n\n/**\n * Value stored in the `TData` which is needed to re-
concatenate the styling.\n *\n * See: `TStylingKeyPrimitive` and `TStylingStatic`\n *\nexport type TStylingKey =
TStylingKeyPrimitive|TStylingStatic;\n\n\n/**\n * The primitive portion (`TStylingStatic` removed) of the value
stored in the `TData` which is\n * needed to re-concatenate the styling.\n *\n * - `string`: Stores the property name.
Used with `styleProp`/`classProp` instruction.\n * - `null`: Represents map, so there is no name. Used with
`styleMap`/`classMap`\n * - `false`: Represents an ignore case. This happens when `styleProp`/`classProp`
instruction\n * is combined with directive which shadows its input `@Input('class')`. That way the binding\n *
should not participate in the styling resolution.\n *\nexport type TStylingKeyPrimitive = string|null|false;\n\n\n/**\n * Store the static values for the styling binding.\n *\n * The `TStylingStatic` is just `KeyValueArray` where key `""`
(stored at location 0) contains the\n * `TStylingKey` (stored at location 1). In other words this wraps the
`TStylingKey` such that the\n * `""` contains the wrapped value.\n *\n * When instructions are resolving styling
they may need to look forward or backwards in the linked\n * list to resolve the value. For this reason we have to
make sure that the linked list also contains\n * the static values. However the list only has space for one item per
styling instruction. For this\n * reason we store the static values here as part of the `TStylingKey`. This means that
the\n * resolution function when looking for a value needs to first look at the binding value, and then\n * at
`TStylingKey` (if it exists).\n *\n * Imagine we have:\n *\n * ``\n * <div class="TEMPLATE" my-dir>\n *\n * @Directive({\n * host: {\n * class: 'DIR',\n * [class.dynamic]: 'exp' // classProp('dynamic', ctx.exp);\n * }\n * })\n *\n * In the above case the linked list will contain one item:\n *\n * ``\n * // assume binding location:
10 for `classProp('dynamic', ctx.exp)`;\n * tData[10] = <TStylingStatic>[\n * "": 'dynamic', // This is the wrapped
value of `TStylingKey`\n * 'DIR': true, // This is the default static value of directive binding.\n *];\n *
tData[10 + 1] = 0; // We don't have prev/next.\n *\n * lView[10] = undefined; // assume `ctx.exp` is
`undefined`\n *\n * lView[10 + 1] = undefined; // Just normalized `lView[10]`\n *\n * So when the function is
resolving styling value, it first needs to look into the linked list\n * (there is none) and then into the static
`TStylingStatic` too see if there is a default value for\n * `dynamic` (there is not). Therefore it is safe to remove it.\n
*\n * If setting `true` case:\n *\n * ``\n * lView[10] = true; // assume `ctx.exp` is `true`\n * lView[10 + 1] = true; //
Just normalized `lView[10]`\n *\n * So when the function is resolving styling value, it first needs to look into the
linked list\n * (there is none) and then into `TNode.residualClass` (TNode.residualStyle) which contains\n *\n * ``\n *
tNode.residualClass = [\n * 'TEMPLATE': true,\n *];\n *\n * This means that it is safe to add class.\n
*\nexport interface TStylingStatic extends KeyValueArray<any> {} \n\n\n/**\n * This is a branded number which
contains previous and next index.\n *\n * When we come across styling instructions we need to store the
`TStylingKey` in the correct\n * order so that we can re-concatenate the styling value in the desired priority.\n
*\n

```

The insertion can happen either at the end of template as in the case of coming across additional styling instruction in the template or in front of the template in the case of coming across additional instruction in the hostBindings. We use TStylingRange to store the previous and next index into the TData where the template bindings can be found. bit 0 is used to mark that the previous index has a duplicate for current value. bit 1 is used to mark that the next index has a duplicate for the current value. bits 2-16 are used to encode the next/tail of the template. bits 17-32 are used to encode the previous/head of template.

NOTE: \*duplicate\* false implies that it is statically known that this binding will not collide with other bindings and therefore there is no need to check other bindings. For example the bindings in `<div [style.color]=\"exp\" [style.width]=\"exp\">` will never collide and will have their bits set accordingly. Previous duplicate means that we may need to check previous if the current binding is `null`. Next duplicate means that we may need to check next bindings if the current binding is not `null`.

NOTE: `0` has special significance and represents `null` as in no additional pointer.

```

export interface TStylingRange {
 __brand__: 'TStylingRange';
 Shift and masks constants for encoding two numbers into and duplicate info into a single number.
 enum StylingRange {
 // Number of bits to shift for the previous pointer
 PREV_SHIFT = 17,
 // Previous pointer mask
 PREV_MASK = 0xFFFE0000,
 // Number of bits to shift for the next pointer
 NEXT_SHIFT = 2,
 // Next pointer mask
 NEXT_MASK = 0x001FFFC,
 // Mask to remove negative bit. (interpret number as positive)
 UNSIGNED_MASK = 0x7FFF,
 // This bit is set if the previous bindings contains a binding which could possibly cause a duplicate. For example: <div [style]=\"map\" [style.width]=\"width\">, the `width` binding will have previous duplicate set. The implication is that if `width` binding becomes `null`, it is necessary to defer the value to `map.width`. (Because `width` overwrites `map.width`.)
 PREV_DUPLICATE = 0x02,
 // This bit is set to if the next binding contains a binding which could possibly cause a duplicate. For example: <div [style]=\"map\" [style.width]=\"width\">, the `map` binding will have next duplicate set. The implication is that if `map.width` binding becomes not `null`, it is necessary to defer the value to `width`. (Because `width` overwrites `map.width`.)
 NEXT_DUPLICATE = 0x01,
 }
 export function toTStylingRange(prev: number, next: number): TStylingRange {
 ngDevMode && assertNumberInRange(prev, 0, StylingRange.UNSIGNED_MASK);
 ngDevMode && assertNumberInRange(next, 0, StylingRange.UNSIGNED_MASK);
 return (prev << StylingRange.PREV_SHIFT | next << StylingRange.NEXT_SHIFT) as any;
 }
 export function getTStylingRangePrev(tStylingRange: TStylingRange): number {
 ngDevMode && assertNumber(tStylingRange, 'expected number');
 return ((tStylingRange as any as number) >> StylingRange.PREV_SHIFT) & StylingRange.UNSIGNED_MASK;
 }
 export function getTStylingRangePrevDuplicate(tStylingRange: TStylingRange): boolean {
 ngDevMode && assertNumber(tStylingRange, 'expected number');
 return ((tStylingRange as any as number) & StylingRange.PREV_DUPLICATE) == StylingRange.PREV_DUPLICATE;
 }
 export function setTStylingRangePrev(
 tStylingRange: TStylingRange,
 previous: number): TStylingRange {
 ngDevMode && assertNumber(tStylingRange, 'expected number');
 ngDevMode && assertNumberInRange(previous, 0, StylingRange.UNSIGNED_MASK);
 return (((tStylingRange as any as number) & ~StylingRange.PREV_MASK) | (previous << StylingRange.PREV_SHIFT)) as any;
 }
 export function setTStylingRangePrevDuplicate(tStylingRange: TStylingRange): TStylingRange {
 ngDevMode && assertNumber(tStylingRange, 'expected number');
 return ((tStylingRange as any as number) | StylingRange.PREV_DUPLICATE) as any;
 }
 export function getTStylingRangeNext(tStylingRange: TStylingRange): number {
 ngDevMode && assertNumber(tStylingRange, 'expected number');
 return ((tStylingRange as any as number) & StylingRange.NEXT_MASK) >> StylingRange.NEXT_SHIFT;
 }
 export function setTStylingRangeNext(
 tStylingRange: TStylingRange,
 next: number): TStylingRange {
 ngDevMode && assertNumber(tStylingRange, 'expected number');
 ngDevMode && assertNumberInRange(next, 0, StylingRange.UNSIGNED_MASK);
 return (((tStylingRange as any as number) & ~StylingRange.NEXT_MASK) | (next << StylingRange.NEXT_SHIFT)) as any;
 }
 export function getTStylingRangeNextDuplicate(tStylingRange: TStylingRange): boolean {
 ngDevMode && assertNumber(tStylingRange, 'expected number');
 return ((tStylingRange as any as number) &

```

```

StylingRange.NEXT_DUPLICATE) ===\n StylingRange.NEXT_DUPLICATE;\n}\n\nexport function
setTStylingRangeNextDuplicate(tStylingRange: TStylingRange): TStylingRange {\n ngDevMode &&
assertNumber(tStylingRange, 'expected number');\n return ((tStylingRange as any as number) |
StylingRange.NEXT_DUPLICATE) as any;\n}\n\nexport function getTStylingRangeTail(tStylingRange:
TStylingRange): number {\n ngDevMode && assertNumber(tStylingRange, 'expected number');\n const next =
getTStylingRangeNext(tStylingRange);\n return next === 0 ? getTStylingRangePrev(tStylingRange) :
next;\n}\n\n", "/*\n * @license\n * Copyright Google LLC All Rights Reserved.\n * \n * Use of this source code is
governed by an MIT-style license that can be\n * found in the LICENSE file at https://angular.io/license\n
\n\n/\n * Patch a `debug` property on top of the existing object.\n * \n * NOTE: always call this method with
`ngDevMode && attachDebugObject(...)`\n * \n * @param obj Object to patch\n * @param debug Value to patch\n
*\nexport function attachDebugObject(obj: any, debug: any): void {\n if (ngDevMode) {\n
Object.defineProperty(obj, 'debug', {value: debug, enumerable: false});\n } else {\n throw new Error(\n 'This
method should be guarded with `ngDevMode` so that it can be tree shaken in production!');\n }\n}\n\n/*\n * Patch
a `debug` property getter on top of the existing object.\n * \n * NOTE: always call this method with `ngDevMode
&& attachDebugObject(...)`\n * \n * @param obj Object to patch\n * @param debugGetter Getter returning a value
to patch\n *\nexport function attachDebugGetter<T>(obj: T, debugGetter: (this: T) => any): void {\n if
(ngDevMode) {\n Object.defineProperty(obj, 'debug', {get: debugGetter, enumerable: false});\n } else {\n throw
new Error(\n 'This method should be guarded with `ngDevMode` so that it can be tree shaken in production!');\n }\n}\n\n", "/*\n * @license\n * Copyright Google LLC All Rights Reserved.\n * \n * Use of this source code is
governed by an MIT-style license that can be\n * found in the LICENSE file at https://angular.io/license\n
*\n\nimport {Injector} from '../di/injector';\nimport {Type} from '../interface/type';\nimport {SchemaMetadata}
from '../metadata/schema';\nimport {Sanitizer} from '../sanitization/sanitizer';\nimport {KeyValueArray} from
'../util/array_utils';\nimport {assertDefined} from '../util/assert';\nimport {createNamedArrayType} from
'../util/named_array_type';\nimport {initNgDevMode} from '../util/ng_dev_mode';\nimport {assertNodeInjector}
from '../assert';\nimport {getInjectorIndex} from '../di';\nimport {CONTAINER_HEADER_OFFSET,
HAS_TRANSPLANTED_VIEWS, LContainer, MOVED_VIEWS, NATIVE} from '../interfaces/container';\nimport {ComponentTemplate, DirectiveDef, DirectiveDefList, PipeDefList, ViewQueriesFunction} from
'../interfaces/definition';\nimport {NO_PARENT_INJECTOR, NodeInjectorOffset} from
'../interfaces/injector';\nimport {AttributeMarker, InsertBeforeIndex, PropertyAliases, TConstants, TContainerNode,
TElementNode, TNode as ITNode, TNodeFlags, TNodeProviderIndexes, TNodeType, toTNodeTypeAsString} from
'../interfaces/node';\nimport {SelectorFlags} from '../interfaces/projection';\nimport {LQueries, TQueries} from
'../interfaces/query';\nimport {Renderer3, RendererFactory3} from '../interfaces/renderer';\nimport {RComment,
RElement, RNode} from '../interfaces/renderer_dom';\nimport {getTStylingRangeNext,
getTStylingRangeNextDuplicate, getTStylingRangePrev, getTStylingRangePrevDuplicate, TStylingKey,
TStylingRange} from '../interfaces/styling';\nimport {CHILD_HEAD, CHILD_TAIL, CLEANUP, CONTEXT,
DebugNode, DECLARATION_VIEW, DestroyHookData, FLAGS, HEADER_OFFSET, HookData, HOST,
HostBindingOpCodes, INJECTOR, LContainerDebug as ILContainerDebug, LView, LViewDebug as
ILViewDebug, LViewDebugRange, LViewDebugRangeContent, LViewFlags, NEXT, PARENT, QUERIES,
RENDERER, RENDERER_FACTORY, SANITIZER, T_HOST, TData, TView as ITView, TVIEW, TView,
TViewType, TViewTypeAsString} from '../interfaces/view';\nimport {attachDebugObject} from
'../util/debug_utils';\nimport {getParentInjectorIndex, getParentInjectorView} from '../util/injector_utils';\nimport
{unwrapRNode} from '../util/view_utils';\n\nconst NG_DEV_MODE = ((typeof ngDevMode === 'undefined' ||
!!ngDevMode) && initNgDevMode());\n\n*\n * This file contains conditionally attached classes which provide
human readable (debug) level\n * information for `LView`, `LContainer` and other internal data structures. These
data structures\n * are stored internally as array which makes it very difficult during debugging to reason about the\n
* current state of the system.\n * \n * Patching the array with extra property does change the array's hidden class' but
it does not\n * change the cost of access, therefore this patching should not have significant if any impact in\n *
`ngDevMode` mode. (see: https://jsperf.com/array-vs-monkey-patch-array)\n * \n * So instead of seeing:\n * ```\n *

```

```

Array(30) [Object, 659, null, ...]\n * ```\n *\n * You get to see:\n * ```\n * LViewDebug {\n * views: [...],\n * flags: {attached: true, ...}\n * nodes: [\n * {html: '<div id="123">', ..., nodes: [\n * {html: '', ..., nodes: null}\n *]}\n *]\n * }\n * ```\n *^\n\nlet LVIEW_COMPONENT_CACHE!: Map<string|null, Array<any>>;\nlet LVIEW_EMBEDDED_CACHE!: Map<string|null, Array<any>>;\nlet LVIEW_ROOT!: Array<any>;\n\ninterface TViewDebug extends ITView {\n type: TViewType;\n}\n\n/**\n * This function clones a blueprint and creates LView.\n * Simple slice will keep the same type, and we need it to be LView\n *^\n\nexport function cloneToLViewFromTViewBlueprint(tView: TView): LView {\n const debugTView = tView as TViewDebug;\n const IView = getLViewToClone(debugTView.type, tView.template && tView.template.name);\n return IView.concat(tView.blueprint) as any;\n}\n\nfunction getLViewToClone(type: TViewType, name: string|null): Array<any> {\n switch (type) {\n case TViewType.Root:\n if (LVIEW_ROOT === undefined) LVIEW_ROOT = new (createNamedArrayType('LRootView'))();\n return LVIEW_ROOT;\n case TViewType.Component:\n if (LVIEW_COMPONENT_CACHE === undefined) LVIEW_COMPONENT_CACHE = new Map();\n let componentArray = LVIEW_COMPONENT_CACHE.get(name);\n if (componentArray === undefined) {\n componentArray = new (createNamedArrayType('LComponentView' + nameSuffix(name)))();\n LVIEW_COMPONENT_CACHE.set(name, componentArray);\n }\n return componentArray;\n case TViewType.Embedded:\n if (LVIEW_EMBEDDED_CACHE === undefined) LVIEW_EMBEDDED_CACHE = new Map();\n let embeddedArray = LVIEW_EMBEDDED_CACHE.get(name);\n if (embeddedArray === undefined) {\n embeddedArray = new (createNamedArrayType('LEmbeddedView' + nameSuffix(name)))();\n LVIEW_EMBEDDED_CACHE.set(name, embeddedArray);\n }\n return embeddedArray;\n }\n throw new Error('unreachable code');\n}\n\nfunction nameSuffix(text: string|null|undefined): string {\n if (text === null) return '';\n const index = text.lastIndexOf('_Template');\n return '_' + (index === -1 ? text : text.substr(0, index));\n}\n\n/**\n * This class is a debug version of Object literal so that we can have constructor name show up\n * in\n * debug tools in ngDevMode.\n *^\n\nexport const TViewConstructor = class TView implements ITView {\n constructor(\n public type: TViewType,\n public blueprint: LView,\n public template: ComponentTemplate<{}>|null,\n public queries: TQueries|null,\n public viewQuery: ViewQueriesFunction<{}>|null,\n public declTNode: ITNode|null,\n public data: TData,\n public bindingStartIndex: number,\n public expandoStartIndex: number,\n public hostBindingOpCodes: HostBindingOpCodes|null,\n public firstCreatePass: boolean,\n public firstUpdatePass: boolean,\n public staticViewQueries: boolean,\n public staticContentQueries: boolean,\n public preOrderHooks: HookData|null,\n public preOrderCheckHooks: HookData|null,\n public contentHooks: HookData|null,\n public contentCheckHooks: HookData|null,\n public viewHooks: HookData|null,\n public viewCheckHooks: HookData|null,\n public destroyHooks: DestroyHookData|null,\n public cleanup: any[]|null,\n public contentQueries: number[]|null,\n public components: number[]|null,\n public directiveRegistry: DirectiveDefList|null,\n public pipeRegistry: PipeDefList|null,\n public firstChild: ITNode|null,\n public schemas: SchemaMetadata[]|null,\n public consts: TConstants|null,\n public incompleteFirstPass: boolean,\n public _decls: number,\n public _vars: number,\n) {} \n\n get template_(): string {\n const buf: string[] = [];\n processTNodeChildren(this.firstChild, buf);\n return buf.join('');\n }\n\n get type_(): string {\n return TViewTypeAsString[this.type] || `TViewType.?$${this.type}?:`;\n }\n}\n\n\nclass TNode implements ITNode {\n constructor(\n public tView_: TView,\n //^\n public type: TNodeType,\n //^\n public index: number,\n //^\n public insertBeforeIndex: InsertBeforeIndex,\n //^\n public injectorIndex: number,\n //^\n public directiveStart: number,\n //^\n public directiveEnd: number,\n //^\n public directiveStylingLast: number,\n //^\n public propertyBindings: number[]|null,\n //^\n public flags: TNodeFlags,\n //^\n public providerIndexes: TNodeProviderIndexes,\n //^\n public value: string|null,\n //^\n public attrs: (string|AttributeMarker|(string|SelectorFlags)[])[]|null,\n //^\n public mergedAttrs: (string|AttributeMarker|(string|SelectorFlags)[])[]|null,\n //^\n public localNames:

```

```

(string|number)[]|null, //\n public initialInputs: (string[]|null)[]|null|undefined,
//\n public inputs: PropertyAliases|null, //\n public outputs: PropertyAliases|null,
//\n public tViews: ITView|ITView[]|null, //\n public next:
ITNode|null, //\n public projectionNext: ITNode|null,
//\n public child: ITNode|null, //\n public parent:
TElementNode|TContainerNode|null, //\n public projection: number|(ITNode|RNode[])[]|null,
//\n public styles: string|null, //\n public stylesWithoutHost:
string|null, //\n public residualStyles: KeyValueArray<any>|undefined|null,
//\n public classes: string|null, //\n public classesWithoutHost: string|null,
//\n public residualClasses: KeyValueArray<any>|undefined|null, //\n public
classBindings: TStylingRange, //\n public styleBindings: TStylingRange,
//\n) {} \n \n /** \n * Return a human debug version of the set of `NodeInjector`s which will be
consulted when \n * resolving tokens from this `TNode`. \n * \n * When debugging applications, it is often
difficult to determine which `NodeInjector`s will be \n * consulted. This method shows a list of `DebugNode`s
representing the `TNode`s which will be \n * consulted in order when resolving a token starting at this `TNode`. \n
* \n * The original data is stored in `LView` and `TView` with a lot of offset indexes, and so it is \n * difficult to
reason about. \n * \n * @param IView The `LView` instance for this `TNode`. \n * \n
debugNodeInjectorPath(IView: LView): DebugNode[] { \n const path: DebugNode[] = []; \n let injectorIndex =
getInjectorIndex(this, IView); \n ngDevMode && assertNodeInjector(IView, injectorIndex); \n while
(injectorIndex !== -1) { \n const tNode = IView[TVIEW].data[injectorIndex + NodeInjectorOffset.TNODE] as
TNode; \n path.push(buildDebugNode(tNode, IView)); \n const parentLocation = IView[injectorIndex +
NodeInjectorOffset.PARENT]; \n if (parentLocation === NO_PARENT_INJECTOR) { \n injectorIndex = -
1; \n } else { \n injectorIndex = getParentInjectorIndex(parentLocation); \n IView =
getParentInjectorView(parentLocation, IView); \n } \n } \n return path; \n } \n \n get type_(): string { \n return
toTNodeTypeAsString(this.type) || `TNodeType.${this.type}`; \n } \n \n get flags_(): string { \n const flags:
string[] = []; \n if (this.flags & TNodeFlags.hasClassInput) flags.push('TNodeFlags.hasClassInput'); \n if
(this.flags & TNodeFlags.hasContentQuery) flags.push('TNodeFlags.hasContentQuery'); \n if (this.flags &
TNodeFlags.hasStyleInput) flags.push('TNodeFlags.hasStyleInput'); \n if (this.flags &
TNodeFlags.hasHostBindings) flags.push('TNodeFlags.hasHostBindings'); \n if (this.flags &
TNodeFlags.isComponentHost) flags.push('TNodeFlags.isComponentHost'); \n if (this.flags &
TNodeFlags.isDirectiveHost) flags.push('TNodeFlags.isDirectiveHost'); \n if (this.flags & TNodeFlags.isDetached)
flags.push('TNodeFlags.isDetached'); \n if (this.flags & TNodeFlags.isProjected)
flags.push('TNodeFlags.isProjected'); \n return flags.join('|'); \n } \n \n get template_(): string { \n if (this.type &
TNodeType.Text) return this.value!; \n const buf: string[] = []; \n const tagName = typeof this.value === 'string'
&& this.value || this.type_; \n buf.push('<', tagName); \n if (this.flags) { \n buf.push(' ', this.flags_); \n } \n
if (this.attrs) { \n for (let i = 0; i < this.attrs.length; i++) { \n const attrName = this.attrs[i++]; \n if (typeof
attrName === 'number') { \n break; \n } \n const attrValue = this.attrs[i++]; \n buf.push(' ', attrName
as string, '=', attrValue as string, '"'); \n } \n } \n buf.push('>'); \n processTNodeChildren(this.child, buf); \n
buf.push('<', tagName, '>'); \n return buf.join(""); \n } \n \n get styleBindings_(): DebugStyleBindings { \n return
toDebugStyleBinding(this, false); \n } \n \n get classBindings_(): DebugStyleBindings { \n return
toDebugStyleBinding(this, true); \n } \n \n get providerIndexStart_(): number { \n return this.providerIndexes &
TNodeProviderIndexes.ProvidersStartIndexMask; \n } \n \n get providerIndexEnd_(): number { \n return
this.providerIndexStart_ + \n (this.providerIndexes >>>
TNodeProviderIndexes.CptViewProvidersCountShift); \n } \n } \n \n export const TNodeDebug = TNode; \n export type
TNodeDebug = TNode; \n \n export interface DebugStyleBindings extends \n
Array<KeyValueArray<any>|DebugStyleBinding|string|null> {} \n \n export interface DebugStyleBinding { \n key:
TStylingKey; \n index: number; \n isTemplate: boolean; \n prevDuplicate: boolean; \n nextDuplicate: boolean; \n
prevIndex: number; \n nextIndex: number; \n } \n \n function toDebugStyleBinding(tNode: TNode, isClassBased:

```

```

boolean): DebugStyleBindings {\n const tData = tNode.tView_.data;\n const bindings: DebugStyleBindings = [] as
any;\n const range = isClassBased ? tNode.classBindings : tNode.styleBindings;\n const prev =
getTStylingRangePrev(range);\n const next = getTStylingRangeNext(range);\n let isTemplate = next !== 0;\n let
cursor = isTemplate ? next : prev;\n while (cursor !== 0) {\n const itemKey = tData[cursor] as TStylingKey;\n
const itemRange = tData[cursor + 1] as TStylingRange;\n bindings.unshift({\n key: itemKey,\n index:
cursor,\n isTemplate: isTemplate,\n prevDuplicate: getTStylingRangePrevDuplicate(itemRange),\n
nextDuplicate: getTStylingRangeNextDuplicate(itemRange),\n nextIndex: getTStylingRangeNext(itemRange),\n
 prevIndex: getTStylingRangePrev(itemRange),\n });\n if (cursor === prev) isTemplate = false;\n cursor =
getTStylingRangePrev(itemRange);\n }\n bindings.push((isClassBased ? tNode.residualClasses :
tNode.residualStyles) || null);\n return bindings;\n}\n\nfunction processTNodeChildren(tNode: ITNode|null, buf:
string[]) {\n while (tNode) {\n buf.push((tNode as any as {template_: string}).template_);\n tNode =
tNode.next;\n }\n}\n\nconst TViewData = NG_DEV_MODE && createNamedArrayType('TViewData') || null! as
ArrayConstructor;\nlet TVIEWDATA_EMPTY: unknown[]; // can't initialize here or it will not be tree shaken,
because\n // `LView` constructor could have side-effects.\n/**\n * This function clones a
blueprint and creates TData.\n * Simple slice will keep the same type, and we need it to be TData\n */\nexport
function cloneToTViewData(list: any[]): TData {\n if (TVIEWDATA_EMPTY === undefined)\n TVIEWDATA_EMPTY = new TViewData();\n return TVIEWDATA_EMPTY.concat(list) as any;\n}\n\nexport
const LViewBlueprint =\n NG_DEV_MODE && createNamedArrayType('LViewBlueprint') || null! as
ArrayConstructor;\nexport const MatchesArray =\n NG_DEV_MODE &&
createNamedArrayType('MatchesArray') || null! as ArrayConstructor;\nexport const TViewComponents =\n NG_DEV_MODE && createNamedArrayType('TViewComponents') || null! as ArrayConstructor;\nexport const
TNodeLocalNames =\n NG_DEV_MODE && createNamedArrayType('TNodeLocalNames') || null! as
ArrayConstructor;\nexport const TNodeInitialInputs =\n NG_DEV_MODE &&
createNamedArrayType('TNodeInitialInputs') || null! as ArrayConstructor;\nexport const TNodeInitialData =\n NG_DEV_MODE && createNamedArrayType('TNodeInitialData') || null! as ArrayConstructor;\nexport const
LCleanup =\n NG_DEV_MODE && createNamedArrayType('LCleanup') || null! as ArrayConstructor;\nexport
const TCleanup =\n NG_DEV_MODE && createNamedArrayType('TCleanup') || null! as
ArrayConstructor;\n\n\nexport function attachLViewDebug(IView: LView) {\n attachDebugObject(IView, new
LViewDebug(IView));\n}\n\nexport function attachLContainerDebug(IContainer: LContainer) {\n
attachDebugObject(IContainer, new LContainerDebug(IContainer));\n}\n\nexport function toDebug(obj: LView):
ILViewDebug;\nexport function toDebug(obj: LView|null): ILViewDebug|null;\nexport function toDebug(obj:
LView|LContainer|null): ILViewDebug|ILContainerDebug|null;\nexport function toDebug(obj: any): any {\n if
(obj) {\n const debug = (obj as any).debug;\n assertDefined(debug, 'Object does not have a debug
representation.);\n return debug;\n } else {\n return obj;\n }\n}\n\n/**\n * Use this method to unwrap a native
element in `LView` and convert it into HTML for easier\n * reading.\n * @param value possibly wrapped native
DOM node.\n * @param includeChildren If `true` then the serialized HTML form will include child elements\n *
(same\n * as `outerHTML`). If `false` then the serialized HTML form will only contain the element\n * itself\n *
(will not serialize child elements).\n */\nfunction toHtml(value: any, includeChildren: boolean = false): string|null
{\n const node: Node|null = unwrapRNode(value) as any;\n if (node) {\n switch (node.nodeType) {\n case
Node.TEXT_NODE:\n return node.textContent;\n case Node.COMMENT_NODE:\n return `<!--
${(node as Comment).textContent}-->`;\n case Node.ELEMENT_NODE:\n const outerHTML = (node as
Element).outerHTML;\n if (includeChildren) {\n return outerHTML;\n } else {\n const
innerHTML = '>' + (node as Element).innerHTML + '<';\n return (outerHTML.split(innerHTML)[0] + '>');\n
 }\n }\n }\n }\n return null;\n}\n\nexport class LViewDebug implements ILViewDebug {\n constructor(private
readonly _raw_IView: LView) {\n }\n\n /**\n * Flags associated with the `LView` unpacked into a more readable
state.\n */\n get flags() {\n const flags = this._raw_IView[FLAGS];\n return {\n __raw__flags__: flags,\n
 initPhaseState: flags & LViewFlags.InitPhaseStateMask,\n creationMode: !(flags &
LViewFlags.CreationMode),\n firstViewPass: !(flags & LViewFlags.FirstLViewPass),\n checkAlways:

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!!(flags & LViewFlags.CheckAlways),\n dirty: !(flags & LViewFlags.Dirty),\n attached: !(flags &
LViewFlags.Attached),\n destroyed: !(flags & LViewFlags.Destroyed),\n isRoot: !(flags &
LViewFlags.IsRoot),\n indexWithinInitPhase: flags >> LViewFlags.IndexWithinInitPhaseShift,\n };\n }\n get
parent(): ILViewDebug|ILContainerDebug|null {\n return toDebug(this._raw_IView[PARENT]);\n }\n get
hostHTML(): string|null {\n return toHtml(this._raw_IView[HOST], true);\n }\n get html(): string {\n return
(this.nodes || []).map(mapToHTML).join("");\n }\n get context(): {}|null {\n return
this._raw_IView[CONTEXT];\n }\n /**\n * The tree of nodes associated with the current `LView`. The nodes
have been normalized into\n * a tree structure with relevant details pulled out for readability.\n */\n get nodes():
DebugNode[] {\n const IView = this._raw_IView;\n const tNode = IView[TVIEW].firstChild;\n return
toDebugNodes(tNode, IView);\n }\n get template(): string {\n return (this.tView as any as {template_:
string}).template_;\n }\n get tView(): ITView {\n return this._raw_IView[TVIEW];\n }\n get cleanup():
any[]|null {\n return this._raw_IView[CLEANUP];\n }\n get injector(): Injector|null {\n return
this._raw_IView[INJECTOR];\n }\n get rendererFactory(): RendererFactory3 {\n return
this._raw_IView[RENDERER_FACTORY];\n }\n get renderer(): Renderer3 {\n return
this._raw_IView[RENDERER];\n }\n get sanitizer(): Sanitizer|null {\n return this._raw_IView[SANITIZER];\n
}\n get childHead(): ILViewDebug|ILContainerDebug|null {\n return
toDebug(this._raw_IView[CHILD_HEAD]);\n }\n get next(): ILViewDebug|ILContainerDebug|null {\n return
toDebug(this._raw_IView[NEXT]);\n }\n get childTail(): ILViewDebug|ILContainerDebug|null {\n return
toDebug(this._raw_IView[CHILD_TAIL]);\n }\n get declarationView(): ILViewDebug|null {\n return
toDebug(this._raw_IView[DECLARATION_VIEW]);\n }\n get queries(): LQueries|null {\n return
this._raw_IView[QUERIES];\n }\n get tHost(): ITNode|null {\n return this._raw_IView[T_HOST];\n }\n\n get
decls(): LViewDebugRange {\n return toLViewRange(this.tView, this._raw_IView, HEADER_OFFSET,
this.tView.bindingStartIndex);\n }\n\n get vars(): LViewDebugRange {\n return toLViewRange(\n
this.tView, this._raw_IView, this.tView.bindingStartIndex, this.tView.expandoStartIndex);\n }\n\n get expando():
LViewDebugRange {\n return toLViewRange(\n this.tView, this._raw_IView, this.tView.expandoStartIndex,
this._raw_IView.length);\n }\n\n /**\n * Normalized view of child views (and containers) attached at this
location.\n */\n get childViews(): Array<ILViewDebug|ILContainerDebug> {\n const childViews:
Array<ILViewDebug|ILContainerDebug> = [];\n let child = this.childHead;\n while (child) {\n
childViews.push(child);\n child = child.next;\n }\n return childViews;\n }\n\n\nfunction
mapToHTML(node: DebugNode): string {\n if (node.type === 'ElementContainer') {\n return (node.children ||
[])>.map(mapToHTML).join("");\n } else if (node.type === 'IcuContainer') {\n throw new Error('Not
implemented');\n } else {\n return toHtml(node.native, true) || ";\n }\n }\n\n\nfunction toLViewRange(tView:
TView, IView: LView, start: number, end: number): LViewDebugRange {\n let content:
LViewDebugRangeContent[] = [];\n for (let index = start; index < end; index++) {\n content.push({index: index,
t: tView.data[index], l: IView[index]});\n }\n return {start: start, end: end, length: end - start, content:
content};\n }\n\n\n/**\n * Turns a flat list of nodes into a tree by walking the associated `TNode` tree.\n */\n * @param
tNode\n * @param IView\n */\n\nexport function toDebugNodes(tNode: ITNode|null, IView: LView): DebugNode[]
{\n if (tNode) {\n const debugNodes: DebugNode[] = [];\n let tNodeCursor: ITNode|null = tNode;\n while
(tNodeCursor) {\n debugNodes.push(buildDebugNode(tNodeCursor, IView));\n tNodeCursor =
tNodeCursor.next;\n }\n return debugNodes;\n } else {\n return [];\n }\n }\n\n\nexport function
buildDebugNode(tNode: ITNode, IView: LView): DebugNode {\n const rawValue = IView[tNode.index];\n const
native = unwrapRNode(rawValue);\n const factories: Type<any>[] = [];\n const instances: any[] = [];\n const
tView = IView[TVIEW];\n for (let i = tNode.directiveStart; i < tNode.directiveEnd; i++) {\n const def =
tView.data[i] as DirectiveDef<any>;\n factories.push(def.type);\n instances.push(IView[i]);\n }\n return {\n
html: toHtml(native),\n type: toTNodeTypeAsString(tNode.type),\n native: native as any,\n children:
toDebugNodes(tNode.child, IView),\n factories,\n instances,\n injector: buildNodeInjectorDebug(tNode,
tView, IView)\n };\n }\n\n\nfunction buildNodeInjectorDebug(tNode: ITNode, tView: ITView, IView: LView) {\n
const viewProviders: Type<any>[] = [];\n for (let i = (tNode as TNode).providerIndexStart_; i < (tNode as

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TNode).providerIndexEnd_; i++) {\n viewProviders.push(tView.data[i] as Type<any>);\n } \n const providers:
Type<any>[] = [];\n for (let i = (tNode as TNode).providerIndexEnd_; i < (tNode as TNode).directiveEnd; i++) {\n
 providers.push(tView.data[i] as Type<any>);\n } \n const nodeInjectorDebug = {\n bloom: toBloom(IView,
tNode.injectorIndex),\n cumulativeBloom: toBloom(tView.data, tNode.injectorIndex),\n providers,\n
viewProviders,\n parentInjectorIndex: IView[(tNode as TNode).providerIndexStart_ - 1],\n }; \n return
nodeInjectorDebug;\n }\n\n/**\n * Convert a number at `idx` location in `array` into binary representation.\n *\n *
@param array\n * @param idx\n */\nfunction binary(array: any[], idx: number): string {\n const value =
array[idx];\n // If not a number we print 8 ` ` to retain alignment but let user know that it was called on\n // wrong
type.\n if (typeof value !== 'number') return '???????';\n // We prefix 0s so that we have constant length number\n
const text = '00000000' + value.toString(2);\n return text.substring(text.length - 8);\n }\n\n/**\n * Convert a bloom
filter at location `idx` in `array` into binary representation.\n *\n * @param array\n * @param idx\n */\nfunction
toBloom(array: any[], idx: number): string {\n return `${binary(array, idx + 7)}_${binary(array, idx +
6)}_${binary(array, idx + 5)}_${binary(array, idx + 4)}_${binary(array, idx + 3)}_${binary(array, idx +
2)}_${binary(array, idx + 1)}_${binary(array, idx + 0)}`;\n }\n\nexport class LContainerDebug implements
ILContainerDebug {\n constructor(private readonly _raw_LContainer: LContainer) {} \n\n get
hasTransplantedViews(): boolean {\n return this._raw_LContainer[HAS_TRANSPLANTED_VIEWS];\n }\n get
views(): ILViewDebug[] {\n return this._raw_LContainer.slice(CONTAINER_HEADER_OFFSET)\n
.map(toDebug as (l: LView) => ILViewDebug);\n }\n get parent(): ILViewDebug|null {\n return
toDebug(this._raw_LContainer[PARENT]);\n }\n get movedViews(): LView[]|null {\n return
this._raw_LContainer[MOVED_VIEWS];\n }\n get host(): RElement|RComment|LView {\n return
this._raw_LContainer[HOST];\n }\n get native(): RComment {\n return this._raw_LContainer[NATIVE];\n }\n
get next() {\n return toDebug(this._raw_LContainer[NEXT]);\n }\n }\n\n"/**\n * @license\n * Copyright Google
LLC All Rights Reserved.\n *\n * Use of this source code is governed by an MIT-style license that can be\n * found
in the LICENSE file at https://angular.io/license\n */\nimport {Injector} from '././di';\nimport {ErrorHandler} from
'././error_handler';\nimport {DoCheck, OnChanges, OnInit} from '././interface/lifecycle_hooks';\nimport
{CUSTOM_ELEMENTS_SCHEMA, NO_ERRORS_SCHEMA, SchemaMetadata} from
'././metadata/schema';\nimport {ViewEncapsulation} from '././metadata/view';\nimport
{validateAgainstEventAttributes, validateAgainstEventProperties} from '././sanitization/sanitization';\nimport
{Sanitizer} from '././sanitization/sanitizer';\nimport {assertDefined, assertDomNode, assertEqual,
assertGreaterThanOrEqual, assertIndexInRange, assertNotEqual, assertNotSame, assertSame, assertString} from
'././util/assert';\nimport {createNamedArrayType} from '././util/named_array_type';\nimport {initNgDevMode}
from '././util/ng_dev_mode';\nimport {normalizeDebugBindingName, normalizeDebugBindingValue} from
'././util/ng_reflect';\nimport {stringify} from '././util/stringify';\nimport {assertFirstCreatePass,
assertFirstUpdatePass, assertLContainer, assertLView, assertTNodeForLView, assertTNodeForTView} from
'./assert';\nimport {attachPatchData} from './context_discovery';\nimport {getFactoryDef} from
'./definition_factory';\nimport {diPublicInInjector, getNodeInjectable, getOrCreateNodeInjectorForNode} from
'./di';\nimport {formatRuntimeError, RuntimeError, RuntimeErrorCode} from './error_code';\nimport
{throwMultipleComponentError} from './errors';\nimport {executeCheckHooks, executeInitAndCheckHooks,
incrementInitPhaseFlags} from './hooks';\nimport {CONTAINER_HEADER_OFFSET,
HAS_TRANSPLANTED_VIEWS, LContainer, MOVED_VIEWS} from './interfaces/container';\nimport
{ComponentDef, ComponentTemplate, DirectiveDef, DirectiveDefListOrFactory, HostBindingsFunction,
PipeDefListOrFactory, RenderFlags, ViewQueriesFunction} from './interfaces/definition';\nimport
{NodeInjectorFactory} from './interfaces/injector';\nimport {AttributeMarker, InitialInputData, InitialInputs,
LocalRefExtractor, PropertyAliases, PropertyAliasValue, TAttributes, TConstantsOrFactory, TContainerNode,
TDirectiveHostNode, TElementContainerNode, TElementNode, TIcuContainerNode, TNode, TNodeFlags,
TNodeType, TProjectionNode} from './interfaces/node';\nimport {isProceduralRenderer, Renderer3,
RendererFactory3} from './interfaces/renderer';\nimport {RComment, RElement, RNode, RText} from
'./interfaces/renderer_dom';\nimport {SanitizerFn} from './interfaces/sanitization';\nimport {isComponentDef,

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isComponentHost, isContentQueryHost, isRootView } from './interfaces/type_checks';\nimport { CHILD_HEAD,
CHILD_TAIL, CLEANUP, CONTEXT, DECLARATION_COMPONENT_VIEW, DECLARATION_VIEW,
FLAGS, HEADER_OFFSET, HOST, HostBindingOpCodes, InitPhaseState, INJECTOR, LView, LViewFlags,
NEXT, PARENT, RENDERER, RENDERER_FACTORY, RootContext, RootContextFlags, SANITIZER,
T_HOST, TData, TRANSPLANTED_VIEWS_TO_REFRESH, TVIEW, TView, TViewType } from
'./interfaces/view';\nimport { assertPureTNodeType, assertTNodeType } from './node_assert';\nimport
{ updateTextNode } from './node_manipulation';\nimport { isInlineTemplate, isNodeMatchingSelectorList } from
'./node_selector_matcher';\nimport { enterView, getBindingsEnabled, getCurrentDirectiveIndex,
getCurrentParentTNode, getCurrentTNode, getCurrentTNodePlaceholderOk, getSelectedIndex,
isCurrentTNodeParent, isInCheckNoChangesMode, isInI18nBlock, leaveView, setBindingIndex,
setBindingRootForHostBindings, setCurrentDirectiveIndex, setCurrentQueryIndex, setCurrentTNode,
setIsInCheckNoChangesMode, setSelectedIndex } from './state';\nimport { NO_CHANGE } from './tokens';\nimport
{ isAnimationProp, mergeHostAttrs } from './util/attrs_utils';\nimport { INTERPOLATION_DELIMITER } from
'./util/misc_utils';\nimport { renderStringify, stringifyForError } from './util/stringify_utils';\nimport
{ getFirstLContainer, getLViewParent, getNextLContainer } from './util/view_traversal_utils';\nimport
{ getComponentLViewByIndex, getNativeByIndex, getNativeByTNode, isCreationMode, readPatchedLView,
resetPreOrderHookFlags, unwrapLView, updateTransplantedViewCount, viewAttachedToChangeDetector } from
'./util/view_utils';\n\nimport { selectIndexInternal } from './advance';\nimport { attachLContainerDebug,
attachLViewDebug, cloneToLViewFromTViewBlueprint, cloneToTViewData, LCleanup, LViewBlueprint,
MatchesArray, TCleanup, TNodeDebug, TNodeInitialInputs, TNodeLocalNames, TViewComponents,
TViewConstructor } from './lview_debug';\n\n\n/**\n * A permanent marker promise which signifies that the
current CD tree is\n * clean.\n * ^\nconst _CLEAN_PROMISE = (() => Promise.resolve(null))();\n\n\n/**\n * Invoke
`HostBindingsFunction`s for view.\n * ^\n * This methods executes `TView.hostBindingOpCodes`. It is used to
execute the\n * `HostBindingsFunction`s associated with the current `LView`.\n * ^\n * @param tView Current
`TView`.\n * @param lView Current `LView`.\n * ^\nexport function processHostBindingOpCodes(tView: TView,
lView: LView): void {\n const hostBindingOpCodes = tView.hostBindingOpCodes;\n if (hostBindingOpCodes
=== null) return;\n try {\n for (let i = 0; i < hostBindingOpCodes.length; i++) {\n const opCode =
hostBindingOpCodes[i] as number;\n if (opCode < 0) {\n // Negative numbers are element indexes.\n
setSelectedIndex(~opCode);\n } else {\n // Positive numbers are NumberTuple which store
bindingRootIndex and directiveIndex.\n const directiveIdx = opCode;\n const bindingRootIdx =
hostBindingOpCodes[++i] as number;\n const hostBindingFn = hostBindingOpCodes[++i] as
HostBindingsFunction<any>;\n setBindingRootForHostBindings(bindingRootIdx, directiveIdx);\n const
context = lView[directiveIdx];\n hostBindingFn(RenderFlags.Update, context);\n }\n }\n } finally {\n
setSelectedIndex(-1);\n }\n}\n\n\n/**\n * Refreshes all content queries declared by directives in a given view
*\nfunction refreshContentQueries(tView: TView, lView: LView): void {\n const contentQueries =
tView.contentQueries;\n if (contentQueries !== null) {\n for (let i = 0; i < contentQueries.length; i += 2) {\n
const queryStartIdx = contentQueries[i];\n const directiveDefIdx = contentQueries[i + 1];\n if
(directiveDefIdx !== -1) {\n const directiveDef = tView.data[directiveDefIdx] as DirectiveDef<any>;\n
ngDevMode && assertDefined(directiveDef, 'DirectiveDef not found.);\n ngDevMode &&\n
assertDefined(directiveDef.contentQueries, 'contentQueries function should be defined');\n
setCurrentQueryIndex(queryStartIdx);\n directiveDef.contentQueries!(RenderFlags.Update,
lView[directiveDefIdx], directiveDefIdx);\n }\n }\n}\n\n\n/**\n * Refreshes child components in the current
view (update mode). *\nfunction refreshChildComponents(hostLView: LView, components: number[]): void {\n
for (let i = 0; i < components.length; i++) {\n refreshComponent(hostLView, components[i]);\n}\n}\n\n\n/**\n *
Renders child components in the current view (creation mode). *\nfunction renderChildComponents(hostLView:
LView, components: number[]): void {\n for (let i = 0; i < components.length; i++) {\n
renderComponent(hostLView, components[i]);\n}\n}\n\n\nexport function createLView<T>(\n parentLView:
LView|null, tView: TView, context: T|null, flags: LViewFlags, host: RElement|null,\n tHostNode: TNode|null,

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rendererFactory: RendererFactory3|null, renderer: Renderer3|null,\n sanitizer: Sanitizer|null, injector:
Injector|null): LView {\n const IView =\n ngDevMode ? cloneToLViewFromTViewBlueprint(tView) :
tView.blueprint.slice() as LView;\n IView[HOST] = host;\n IView[FLAGS] = flags | LViewFlags.CreationMode |
LViewFlags.Attached | LViewFlags.FirstLViewPass;\n resetPreOrderHookFlags(IView);\n ngDevMode &&
tView.declTNode && parentLView && assertTNodeForLView(tView.declTNode, parentLView);\n
IView[PARENT] = IView[DECLARATION_VIEW] = parentLView;\n IView[CONTEXT] = context;\n
IView[RENDERER_FACTORY] = (rendererFactory || parentLView &&
parentLView[RENDERER_FACTORY])!;\n ngDevMode && assertDefined(IView[RENDERER_FACTORY],
'RendererFactory is required');\n IView[RENDERER] = (renderer || parentLView &&
parentLView[RENDERER])!;\n ngDevMode && assertDefined(IView[RENDERER], 'Renderer is required');\n
IView[SANITIZER] = sanitizer || parentLView && parentLView[SANITIZER] || null!;\n IView[INJECTOR as
any] = injector || parentLView && parentLView[INJECTOR] || null!;\n IView[T_HOST] = tHostNode;\n
ngDevMode &&\n assertEqual(\n tView.type == TViewType.Embedded ? parentLView !== null : true,
true,\n 'Embedded views must have parentLView');\n IView[DECLARATION_COMPONENT_VIEW] =\n tView.type == TViewType.Embedded ? parentLView![DECLARATION_COMPONENT_VIEW] : IView;\n
ngDevMode && attachLViewDebug(IView);\n return IView;\n}\n\n/**\n * Create and stores the TNode, and hooks
it up to the tree.\n *\n * @param tView The current `TView`.\n * @param index The index at which the TNode
should be saved (null if view, since they are not\n * saved).\n * @param type The type of TNode to create\n *
@param native The native element for this node, if applicable\n * @param name The tag name of the associated
native element, if applicable\n * @param attrs Any attrs for the native element, if applicable\n */\nexport
function getOrCreateTNode(\n tView: TView, index: number, type: TNodeType.Element|TNodeType.Text, name:
string|null,\n attrs: TAttributes|null): TElementNode;\nexport function getOrCreateTNode(\n tView: TView,
index: number, type: TNodeType.Container, name: string|null,\n attrs: TAttributes|null): TContainerNode;\nexport
function getOrCreateTNode(\n tView: TView, index: number, type: TNodeType.Projection, name: null,\n attrs:
TAttributes|null): TProjectionNode;\nexport function getOrCreateTNode(\n tView: TView, index: number, type:
TNodeType.ElementContainer, name: string|null,\n attrs: TAttributes|null): TElementContainerNode;\nexport
function getOrCreateTNode(\n tView: TView, index: number, type: TNodeType.Icu, name: null,\n attrs:
TAttributes|null): TElementContainerNode;\nexport function getOrCreateTNode(\n tView: TView, index:
number, type: TNodeType, name: string|null, attrs: TAttributes|null):\n
TElementNode&TContainerNode&TElementContainerNode&TProjectionNode&TIcuContainerNode {\n
ngDevMode && index !== 0 && // 0 are bogus nodes and they are OK. See `createContainerRef` in\n
 // `view_engine_compatibility` for additional context.\n assertGreaterThanOrEqual(index,
HEADER_OFFSET, 'TNodes can\\'t be in the LView header.);\n // Keep this function short, so that the VM will
inline it.\n ngDevMode && assertPureTNodeType(type);\n let tNode = tView.data[index] as TNode;\n if (tNode
=== null) {\n tNode = createTNodeAtIndex(tView, index, type, name, attrs);\n if (isInI18nBlock()) {\n // If
we are in i18n block then all elements should be pre declared through `Placeholder`\n // See
`TNodeType.Placeholder` and `LFrame.inI18n` for more context.\n // If the `TNode` was not pre-declared than it
means it was not mentioned which means it was\n // removed, so we mark it as detached.\n tNode.flags |=
TNodeFlags.isDetached;\n }\n } else if (tNode.type & TNodeType.Placeholder) {\n tNode.type = type;\n
tNode.value = name;\n tNode.attrs = attrs;\n const parent = getCurrentParentTNode();\n tNode.injectorIndex =
parent === null ? -1 : parent.injectorIndex;\n ngDevMode && assertTNodeForTView(tNode, tView);\n
ngDevMode && assertEqual(index, tNode.index, 'Expecting same index');\n } \n setTNode(tNode, true);\n
return tNode as TElementNode & TContainerNode & TElementContainerNode & TProjectionNode &\n
TIcuContainerNode;\n}\n\nexport function createTNodeAtIndex(\n tView: TView, index: number, type:
TNodeType, name: string|null, attrs: TAttributes|null) {\n const currentTNode =
getCurrentTNodePlaceholderOk();\n const isParent = isCurrentTNodeParent();\n const parent = isParent ?
currentTNode : currentTNode.parent;\n // Parents cannot cross component boundaries because
components will be used in multiple places.\n const tNode = tView.data[index] =\n createTNode(tView, parent

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LViewFlags.Destroyed) return;\n enterView(IView);\n // Check no changes mode is a dev only mode used to verify
that bindings have not changed\n // since they were assigned. We do not want to execute lifecycle hooks in that
mode.\n const isInCheckNoChangesPass = isInCheckNoChangesMode();\n try {\n
resetPreOrderHookFlags(IView);\n\n setBindingIndex(tView.bindingStartIndex);\n if (templateFn !== null) {\n
 executeTemplate(tView, IView, templateFn, RenderFlags.Update, context);\n }\n\n const
hooksInitPhaseCompleted =\n (flags & LViewFlags.InitPhaseStateMask) ===
InitPhaseState.InitPhaseCompleted;\n\n // execute pre-order hooks (OnInit, OnChanges, DoCheck)\n // PERF
WARNING: do NOT extract this to a separate function without running benchmarks\n if
(!isInCheckNoChangesPass) {\n if (hooksInitPhaseCompleted) {\n const preOrderCheckHooks =
tView.preOrderCheckHooks;\n if (preOrderCheckHooks !== null) {\n executeCheckHooks(IView,
preOrderCheckHooks, null);\n }\n } else {\n const preOrderHooks = tView.preOrderHooks;\n if
(preOrderHooks !== null) {\n executeInitAndCheckHooks(IView, preOrderHooks,
InitPhaseState.OnInitHooksToBeRun, null);\n }\n incrementInitPhaseFlags(IView,
InitPhaseState.OnInitHooksToBeRun);\n }\n }\n\n // First mark transplanted views that are declared in this
IView as needing a refresh at their\n // insertion points. This is needed to avoid the situation where the template is
defined in this\n // `LView` but its declaration appears after the insertion component.\n
markTransplantedViewsForRefresh(IView);\n refreshEmbeddedViews(IView);\n\n // Content query results must
be refreshed before content hooks are called.\n if (tView.contentQueries !== null) {\n
refreshContentQueries(tView, IView);\n }\n\n // execute content hooks (AfterContentInit,
AfterContentChecked)\n // PERF WARNING: do NOT extract this to a separate function without running
benchmarks\n if (!isInCheckNoChangesPass) {\n if (hooksInitPhaseCompleted) {\n const
contentCheckHooks = tView.contentCheckHooks;\n if (contentCheckHooks !== null) {\n
executeCheckHooks(IView, contentCheckHooks);\n }\n } else {\n const contentHooks =
tView.contentHooks;\n if (contentHooks !== null) {\n executeInitAndCheckHooks(\n IView,
contentHooks, InitPhaseState.AfterContentInitHooksToBeRun);\n }\n incrementInitPhaseFlags(IView,
InitPhaseState.AfterContentInitHooksToBeRun);\n }\n }\n\n processHostBindingOpCodes(tView,
IView);\n\n // Refresh child component views.\n const components = tView.components;\n if (components !==
null) {\n refreshChildComponents(IView, components);\n }\n\n // View queries must execute after refreshing
child components because a template in this view\n // could be inserted in a child component. If the view query
executes before child component\n // refresh, the template might not yet be inserted.\n const viewQuery =
tView.viewQuery;\n if (viewQuery !== null) {\n executeViewQueryFn(RenderFlags.Update, viewQuery,
context);\n }\n\n // execute view hooks (AfterViewInit, AfterViewChecked)\n // PERF WARNING: do NOT
extract this to a separate function without running benchmarks\n if (!isInCheckNoChangesPass) {\n if
(hooksInitPhaseCompleted) {\n const viewCheckHooks = tView.viewCheckHooks;\n if (viewCheckHooks
!== null) {\n executeCheckHooks(IView, viewCheckHooks);\n }\n } else {\n const viewHooks =
tView.viewHooks;\n if (viewHooks !== null) {\n executeInitAndCheckHooks(IView, viewHooks,
InitPhaseState.AfterViewInitHooksToBeRun);\n }\n incrementInitPhaseFlags(IView,
InitPhaseState.AfterViewInitHooksToBeRun);\n }\n }\n\n if (tView.firstUpdatePass === true) {\n // We
need to make sure that we only flip the flag on successful `refreshView` only\n // Don't do this in `finally`
block.\n // If we did this in `finally` block then an exception could block the execution of styling\n //
instructions which in turn would be unable to insert themselves into the styling linked\n // list. The result of this
would be that if the exception would not be throw on subsequent CD\n // the styling would be unable to process it
data and reflect to the DOM.\n tView.firstUpdatePass = false;\n }\n\n // Do not reset the dirty state when
running in check no changes mode. We don't want components\n // to behave differently depending on whether
check no changes is enabled or not. For example:\n // Marking an OnPush component as dirty from within the
`ngAfterViewInit` hook in order to\n // refresh a `NgClass` binding should work. If we would reset the dirty state
in the check\n // no changes cycle, the component would be not be dirty for the next update pass. This would\n //
be different in production mode where the component dirty state is not reset.\n if (!isInCheckNoChangesPass) {\n

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bindingStartIndex = HEADER_OFFSET + decls;\n // This length does not yet contain host bindings from child
directives because at this point,\n // we don't know which directives are active on this template. As soon as a
directive is matched\n // that has a host binding, we will update the blueprint with that def's hostVars count.\n const
initialViewLength = bindingStartIndex + vars;\n const blueprint = createViewBlueprint(bindingStartIndex,
initialViewLength);\n const consts = typeof constsOrFactory === 'function' ? constsOrFactory() :
constsOrFactory;\n const tView = blueprint[TVIEW as any] = ngDevMode ?\n new TViewConstructor(\n
type, // type: TViewType,\n blueprint, // blueprint: LView,\n templateFn, // template:
ComponentTemplate<{}>|null,\n null, // queries: TQueries|null\n viewQuery, // viewQuery:
ViewQueriesFunction<{}>|null,\n declTNode, // declTNode: TNode|null,\n cloneToTViewData(blueprint).fill(null, bindingStartIndex), // data: TData,\n bindingStartIndex,
// bindingStartIndex: number,\n initialViewLength, // expandoStartIndex:
number,\n null, // hostBindingOpCodes: HostBindingOpCodes,\n true,
// firstCreatePass: boolean,\n true, // firstUpdatePass: boolean,\n false,
// staticViewQueries: boolean,\n false, // staticContentQueries: boolean,\n null,
// preOrderHooks: HookData|null,\n null, // preOrderCheckHooks:
HookData|null,\n null, // contentHooks: HookData|null,\n null, //
contentCheckHooks: HookData|null,\n null, // viewHooks: HookData|null,\n null,
// viewCheckHooks: HookData|null,\n null, // destroyHooks:
DestroyHookData|null,\n null, // cleanup: any[]|null,\n null, //
contentQueries: number[]|null,\n null, // components: number[]|null,\n typeof
directives === 'function' ? /\n directives() : /\n directives, //
directiveRegistry: DirectiveDefList|null,\n typeof pipes === 'function' ? pipes() : pipes, // pipeRegistry:
PipeDefList|null,\n null, // firstChild: TNode|null,\n schemas,
// schemas: SchemaMetadata[]|null,\n consts, // consts: TConstants|null\n
false, // incompleteFirstPass: boolean\n decls, //
ngDevMode only: decls\n vars, // ngDevMode only: vars\n):\n {\n
type: type,\n blueprint: blueprint,\n template: templateFn,\n queries: null,\n viewQuery:
viewQuery,\n declTNode: declTNode,\n data: blueprint.slice().fill(null, bindingStartIndex),\n
bindingStartIndex: bindingStartIndex,\n expandoStartIndex: initialViewLength,\n hostBindingOpCodes:
null,\n firstCreatePass: true,\n firstUpdatePass: true,\n staticViewQueries: false,\n
staticContentQueries: false,\n preOrderHooks: null,\n preOrderCheckHooks: null,\n contentHooks:
null,\n contentCheckHooks: null,\n viewHooks: null,\n viewCheckHooks: null,\n destroyHooks:
null,\n cleanup: null,\n contentQueries: null,\n components: null,\n directiveRegistry: typeof
directives === 'function' ? directives() : directives,\n pipeRegistry: typeof pipes === 'function' ? pipes() :
pipes,\n firstChild: null,\n schemas: schemas,\n consts: consts,\n incompleteFirstPass: false\n
};\n if (ngDevMode) {\n // For performance reasons it is important that the tView retains the same shape during
runtime.\n // (To make sure that all of the code is monomorphic.) For this reason we seal the object to\n //
prevent class transitions.\n Object.seal(tView);\n }\n return tView;\n}\n\nfunction
createViewBlueprint(bindingStartIndex: number, initialViewLength: number): LView {\n const blueprint =
ngDevMode ? new LViewBlueprint() : [];\n for (let i = 0; i < initialViewLength; i++) {\n blueprint.push(i <
bindingStartIndex ? null : NO_CHANGE);\n }\n return blueprint as LView;\n}\n\nfunction createError(text:
string, token: any) {\n return new Error('Renderer: ${text} [${stringifyForError(token)}]');\n}\n\nfunction
assertHostNodeExists(rElement: RElement, elementOrSelector: RElement|string) {\n if (!rElement) {\n if (typeof
elementOrSelector === 'string') {\n throw createError('Host node with selector not found:', elementOrSelector);\n
} else {\n throw createError('Host node is required:', elementOrSelector);\n }\n }\n}\n\n/**\n * Locates the
host native element, used for bootstrapping existing nodes into rendering pipeline.\n * @param rendererFactory
Factory function to create renderer instance.\n * @param elementOrSelector Render element or CSS selector to
locate the element.\n * @param encapsulation View Encapsulation defined for component that requests host

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element.\n */\nexport function locateHostElement(\n renderer: Renderer3, elementOrSelector: RElement|string,\n encapsulation: ViewEncapsulation): RElement {\n if (isProceduralRenderer(renderer)) {\n // When using native\n Shadow DOM, do not clear host element to allow native slot projection\n const preserveContent = encapsulation\n === ViewEncapsulation.ShadowDom;\n return renderer.selectRootElement(elementOrSelector,\n preserveContent);\n }\n let rElement = typeof elementOrSelector === 'string' ?\n renderer.querySelector(elementOrSelector)! :\n elementOrSelector;\n ngDevMode &&\n assertHostNodeExists(rElement, elementOrSelector);\n // Always clear host element's content when Renderer3 is\n in use. For procedural renderer case we\n // make it depend on whether ShadowDom encapsulation is used (in\n which case the content should be\n // preserved to allow native slot projection). ShadowDom encapsulation requires\n procedural\n // renderer, and procedural renderer case is handled above.\n rElement.textContent = "";\n return\n rElement;\n}\n\n/**\n * Saves context for this cleanup function in LView.cleanupInstances.\n * *\n * On the first\n template pass, saves in TView:\n * - Cleanup function\n * - Index of context we just saved in\n LView.cleanupInstances\n */\nexport function storeCleanupWithContext(\n tView: TView, lView: LView,\n context: any, cleanupFn: Function): void {\n const lCleanup = getLCleanup(lView);\n lCleanup.push(context);\n if (tView.firstCreatePass) {\n getTViewCleanup(tView).push(cleanupFn, lCleanup.length - 1);\n }\n}\n\n/**\n * Constructs a TNode object from the arguments.\n * *\n * @param tView `TView` to which this `TNode` belongs\n (used only in `ngDevMode`)\n * @param tParent Parent `TNode`\n * @param type The type of the node\n * @param index The index of the TNode in TView.data, adjusted for HEADER_OFFSET\n * @param tagName The\n tag name of the node\n * @param attrs The attributes defined on this node\n * @param tViews Any TViews\n attached to this node\n * @returns the TNode object\n */\nexport function createTNode(\n tView: TView, tParent:\n TElementNode|TContainerNode|null, type: TNodeType.Container,\n index: number, tagName: string|null, attrs:\n TAttributes|null): TContainerNode;\nexport function createTNode(\n tView: TView, tParent:\n TElementNode|TContainerNode|null, type: TNodeType.Element|TNodeType.Text,\n index: number, tagName:\n string|null, attrs: TAttributes|null): TElementNode;\nexport function createTNode(\n tView: TView, tParent:\n TElementNode|TContainerNode|null, type: TNodeType.ElementContainer,\n index: number, tagName: string|null,\n attrs: TAttributes|null): TElementContainerNode;\nexport function createTNode(\n tView: TView, tParent:\n TElementNode|TContainerNode|null, type: TNodeType.Icu, index: number,\n tagName: string|null, attrs:\n TAttributes|null): TIcuContainerNode;\nexport function createTNode(\n tView: TView, tParent:\n TElementNode|TContainerNode|null, type: TNodeType.Projection,\n index: number, tagName: string|null, attrs:\n TAttributes|null): TProjectionNode;\nexport function createTNode(\n tView: TView, tParent:\n TElementNode|TContainerNode|null, type: TNodeType, index: number,\n tagName: string|null, attrs:\n TAttributes|null): TNode;\nexport function createTNode(\n tView: TView, tParent:\n TElementNode|TContainerNode|null, type: TNodeType, index: number,\n value: string|null, attrs:\n TAttributes|null): TNode {\n ngDevMode && index !== 0 && // 0 are bogus nodes and they are OK. See\n `createContainerRef` in\n // `view_engine_compatibility` for additional context.\n assertGreaterThanOrEqual(index, HEADER_OFFSET, 'TNodes can\\'t be in the LView header.);\n ngDevMode\n && assertNotSame(attrs, undefined, '\\`undefined\\` is not valid value for \\`attrs\\`');\n ngDevMode &&\n ngDevMode.tNode++;\n ngDevMode && tParent && assertTNodeForTView(tParent, tView);\n let injectorIndex\n = tParent ? tParent.injectorIndex : -1;\n const tNode = ngDevMode ?\n new TNodeDebug(\n tView, //\n tView_: TView\n type, // type: TNodeType\n index, // index: number\n null, //\n insertBeforeIndex: null|-1|number|number[]\n injectorIndex, // injectorIndex: number\n -1, //\n directiveStart: number\n -1, // directiveEnd: number\n -1, // directiveStylingLast:\n number\n null, // propertyBindings: number[]\n null\n 0, // flags: TNodeFlags\n 0,\n // providerIndexes: TNodeProviderIndexes\n value, // value: string\n null\n attrs, // attrs:\n (string|AttributeMarker|(string|SelectorFlags)[])[]\n null\n null, // mergedAttrs\n null, //\n localNames: (string|number)[]\n null\n undefined, // initialInputs: (string[])[]\n null\n null, //\n // inputs: PropertyAliases\n null\n null, // outputs: PropertyAliases\n null\n null, // tViews:\n ITView|ITView[]\n null\n null, // next: ITNode\n null\n null, // projectionNext: ITNode\n null\n)

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 null, // child: ITNode|null\n tParent, // parent: TElementNode|TContainerNode|null\n null,
 // projection: number|(ITNode|RNode[]|[])|null\n null, // styles: string|null\n null, //
stylesWithoutHost: string|null\n undefined, // residualStyles: string|null\n null, // classes:
string|null\n null, // classesWithoutHost: string|null\n undefined, // residualClasses: string|null\n
 0 as any, // classBindings: TStylingRange;\n 0 as any, // styleBindings: TStylingRange;\n)
:\n {\n type,\n index,\n insertBeforeIndex: null,\n injectorIndex,\n directiveStart: -1,\n
directiveEnd: -1,\n directiveStylingLast: -1,\n propertyBindings: null,\n flags: 0,\n
providerIndexes: 0,\n value: value,\n attrs: attrs,\n mergedAttrs: null,\n localNames: null,\n
initialInputs: undefined,\n inputs: null,\n outputs: null,\n tViews: null,\n next: null,\n
projectionNext: null,\n child: null,\n parent: tParent,\n projection: null,\n styles: null,\n
stylesWithoutHost: null,\n residualStyles: undefined,\n classes: null,\n classesWithoutHost: null,\n
residualClasses: undefined,\n classBindings: 0 as any,\n styleBindings: 0 as any,\n };\n if (ngDevMode)
{\n // For performance reasons it is important that the tNode retains the same shape during runtime.\n // (To
make sure that all of the code is monomorphic.) For this reason we seal the object to\n // prevent class
transitions.\n Object.seal(tNode);\n }\n return tNode;\n }\n\nfunction generatePropertyAliases(\n
inputAliasMap: {[publicName: string]: string}, directiveDefIdx: number,\n propStore: PropertyAliases|null):
PropertyAliases|null {\n for (let publicName in inputAliasMap) {\n if
(inputAliasMap.hasOwnProperty(publicName)) {\n propStore = propStore === null ? {} : propStore;\n const
internalName = inputAliasMap[publicName];\n if (propStore.hasOwnProperty(publicName)) {\n
propStore[publicName].push(directiveDefIdx, internalName);\n } else {\n (propStore[publicName] =
[directiveDefIdx, internalName]);\n }\n }\n }\n return propStore;\n }\n\n/**\n * Initializes data structures
required to work with directive inputs and outputs.\n * Initialization is done for all directives matched on a given
TNode.\n */\nfunction initializeInputAndOutputAliases(tView: TView, tNode: TNode): void {\n ngDevMode &&
assertFirstCreatePass(tView);\n const start = tNode.directiveStart;\n const end = tNode.directiveEnd;\n const
tViewData = tView.data;\n const tNodeAttrs = tNode.attrs;\n const inputsFromAttrs: InitialInputData =
ngDevMode ? new TNodeInitialInputs() : [];\n let inputsStore: PropertyAliases|null = null;\n let outputsStore:
PropertyAliases|null = null;\n for (let i = start; i < end; i++) {\n const directiveDef = tViewData[i] as
DirectiveDef<any>;\n const directiveInputs = directiveDef.inputs;\n // Do not use unbound attributes as inputs to
structural directives, since structural\n // directive inputs can only be set using microsyntax (e.g. `<div
*dir="exp">`).\n // TODO(FW-1930): microsyntax expressions may also contain unbound/static attributes,
which\n // should be set for inline templates.\n const initialInputs = (tNodeAttrs !== null &&
!isInlineTemplate(tNode)) ?\n generateInitialInputs(directiveInputs, tNodeAttrs) :\n null;\n inputsFromAttrs.push(initialInputs);\n inputsStore = generatePropertyAliases(directiveInputs, i, inputsStore);\n
outputsStore = generatePropertyAliases(directiveDef.outputs, i, outputsStore);\n }\n if (inputsStore !== null) {\n
if (inputsStore.hasOwnProperty('class')) {\n tNode.flags |= TNodeFlags.hasClassInput;\n }\n if
(inputsStore.hasOwnProperty('style')) {\n tNode.flags |= TNodeFlags.hasStyleInput;\n }\n }\n tNode.initialInputs = inputsFromAttrs;\n tNode.inputs = inputsStore;\n tNode.outputs = outputsStore;\n }\n\n/**\n * Mapping between attributes names that don't correspond to their element property names.\n * Performance note:
this function is written as a series of if checks (instead of, say, a property\n * object lookup) for performance reasons
- the series of `if` checks seems to be the fastest way of\n * mapping property names. Do NOT change without
benchmarking.\n * Note: this mapping has to be kept in sync with the equally named mapping in the template\n *
type-checking machinery of ngtscc.\n */\nfunction mapPropName(name: string): string {\n if (name === 'class')
return 'className';\n if (name === 'for') return 'htmlFor';\n if (name === 'formaction') return 'formAction';\n if
(name === 'innerHTML') return 'innerHTML';\n if (name === 'readonly') return 'readOnly';\n if (name ===
'tabindex') return 'tabIndex';\n return name;\n }\n\nexport function elementPropertyInternal<T>(\n tView: TView,
tNode: TNode, IView: LView, propName: string, value: T, renderer: Renderer3,\n sanitizer:
SanitizerFn|null|undefined, nativeOnly: boolean): void {\n ngDevMode && assertNotSame(value, NO_CHANGE
as any, 'Incoming value should never be NO_CHANGE.);\n const element = getNativeByTNode(tNode, IView) as

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RElement | RComment;\n let inputData = tNode.inputs;\n let dataValue: PropertyAliasValue|undefined;\n if
('!nativeOnly && inputData != null && (dataValue = inputData[propName])) {\n setInputsForProperty(tView,
IView, dataValue, propName, value);\n if (isComponentHost(tNode)) markDirtyIfOnPush(IView, tNode.index);\n
if (ngDevMode) {\n setNgReflectProperties(IView, element, tNode.type, dataValue, value);\n }\n } else if
(tNode.type & TNodeType.AnyRNode) {\n propName = mapPropName(propName);\n if (ngDevMode) {\n
validateAgainstEventProperties(propName);\n if (!validateProperty(tView, element, propName, tNode)) {\n
// Return here since we only log warnings for unknown properties.\n logUnknownPropertyError(propName,
tNode);\n return;\n }\n ngDevMode.rendererSetProperty++;\n }\n\n // It is assumed that the sanitizer
is only added when the compiler determines that the\n // property is risky, so sanitization can be done without
further checks.\n value = sanitizer != null ? (sanitizer(value, tNode.value || "", propName) as any) : value;\n if
(isProceduralRenderer(renderer)) {\n renderer.setProperty(element as RElement, propName, value);\n } else if
(!isAnimationProp(propName)) {\n (element as RElement).setProperty ? (element as
any).setProperty(propName, value) :\n (element as any)[propName] = value;\n }\n } else
if (tNode.type & TNodeType.AnyContainer) {\n // If the node is a container and the property didn't\n // match
any of the inputs or schemas we should throw.\n if (ngDevMode && !matchingSchemas(tView, tNode.value)) {\n
logUnknownPropertyError(propName, tNode);\n }\n }\n\n/** If node is an OnPush component, marks its
LView dirty. */\nfunction markDirtyIfOnPush(IView: LView, viewIndex: number): void {\n ngDevMode &&
assertLView(IView);\n const childComponentLView = getComponentLViewByIndex(viewIndex, IView);\n if
(!!(childComponentLView[FLAGS] & LViewFlags.CheckAlways)) {\n childComponentLView[FLAGS] |=
LViewFlags.Dirty;\n }\n }\n\nfunction setNgReflectProperty(\n IView: LView, element: RElement|RComment,
type: TNodeType, attrName: string, value: any) {\n const renderer = IView[RENDERER];\n attrName =
normalizeDebugBindingName(attrName);\n const debugValue = normalizeDebugBindingValue(value);\n if (type
& TNodeType.AnyRNode) {\n if (value == null) {\n isProceduralRenderer(renderer) ?
renderer.removeAttribute((element as RElement), attrName) : (element as
RElement).removeAttribute(attrName);\n } else {\n isProceduralRenderer(renderer) ?\n
renderer.setAttribute((element as RElement), attrName, debugValue) : (element as
RElement).setAttribute(attrName, debugValue);\n }\n } else {\n const textContent =
`bindings=${JSON.stringify({[attrName]: debugValue}, null, 2)}`;\n if (isProceduralRenderer(renderer)) {\n
renderer.setValue((element as RComment), textContent);\n } else {\n (element as RComment).textContent =
textContent;\n }\n }\n }\n\nexport function setNgReflectProperties(\n IView: LView, element:
RElement|RComment, type: TNodeType, dataValue: PropertyAliasValue,\n value: any) {\n if (type &
(TNodeType.AnyRNode | TNodeType.Container)) {\n /**\n * dataValue is an array containing runtime input or
output names for the directives:\n * i+0: directive instance index\n * i+1: privateName\n * \n * e.g. [0,
'change', 'change-minified']\n * we want to set the reflected property with the privateName: dataValue[i+1]\n
*/\n for (let i = 0; i < dataValue.length; i += 2) {\n setNgReflectProperty(IView, element, type, dataValue[i + 1]
as string, value);\n }\n }\n }\n\nfunction validateProperty(\n tView: TView, element: RElement|RComment,
propName: string, tNode: TNode): boolean {\n // If `schemas` is set to `null`, that's an indication that this
Component was compiled in AOT\n // mode where this check happens at compile time. In JIT mode, `schemas` is
always present and\n // defined as an array (as an empty array in case `schemas` field is not defined) and we
should\n // execute the check below.\n if (tView.schemas === null) return true;\n\n // The property is considered
valid if the element matches the schema, it exists on the element\n // or it is synthetic, and we are in a browser
context (web worker nodes should be skipped).\n if (matchingSchemas(tView, tNode.value) || propName in element
|| isAnimationProp(propName)) {\n return true;\n }\n\n // Note: `typeof Node` returns 'function' in most browsers,
but on IE it is 'object' so we\n // need to account for both here, while being careful for `typeof null` also returning
'object'.\n return typeof Node === 'undefined' || Node === null || !(element instanceof Node);\n }\n\nexport function
matchingSchemas(tView: TView, tagName: string|null): boolean {\n const schemas = tView.schemas;\n\n if
(schemas !== null) {\n for (let i = 0; i < schemas.length; i++) {\n const schema = schemas[i];\n if (schema
=== NO_ERRORS_SCHEMA ||\n schema === CUSTOM_ELEMENTS_SCHEMA && tagName &&

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tagName.indexOf('.') > -1) {\n return true;\n }\n }\n }\n }\n return false;\n}\n\n/**\n * Logs an error that a
property is not supported on an element.\n * @param propName Name of the invalid property.\n * @param tNode
Node on which we encountered the property.\n */\nfunction logUnknownPropertyError(propName: string, tNode:
TNode): void {\n let message = `Can't bind to '${propName}' since it isn't a known property of
'${tNode.value}`;\n console.error(formatRuntimeError(RuntimeErrorCode.UNKNOWN_BINDING,
message));\n}\n\n/**\n * Instantiate a root component.\n */\nexport function instantiateRootComponent<T>(tView:
TView, lView: LView, def: ComponentDef<T>): T {\n const rootTNode = getCurrentTNode();\n if
(tView.firstCreatePass) {\n if (def.providersResolver) def.providersResolver(def);\n const directiveIndex =
allocExpando(tView, lView, 1, null);\n ngDevMode &&\n assertEquals(\n directiveIndex,
rootTNode.directiveStart,\n 'Because this is a root component the allocated expando should match the TNode
component.);\n configureViewWithDirective(tView, rootTNode, lView, directiveIndex, def);\n }\n const
directive =\n getNodeInjectable(lView, tView, rootTNode.directiveStart, rootTNode as TElementNode);\n attachPatchData(directive, lView);\n const native = getNativeByTNode(rootTNode, lView);\n if (native) {\n attachPatchData(native, lView);\n }\n return directive;\n}\n\n/**\n * Resolve the matched directives on a node.\n
*/\nexport function resolveDirectives(\n tView: TView, lView: LView, tNode:
TElementNode|TContainerNode|TElementContainerNode,\n localRefs: string[]|null): boolean {\n // Please make
sure to have explicit type for `exportsMap`. Inferred type triggers bug in\n // tslint.\n ngDevMode &&
assertFirstCreatePass(tView);\n let hasDirectives = false;\n if (getBindingsEnabled()) {\n const directiveDefs:
DirectiveDef<any>[]|null = findDirectiveDefMatches(tView, lView, tNode);\n const exportsMap: ({[key: string]:
number})|null = localRefs === null ? null : {'': -1};\n if (directiveDefs !== null) {\n hasDirectives = true;\n initTNodeFlags(tNode, tView.data.length, directiveDefs.length);\n // When the same token is provided by several
directives on the same node, some rules apply in\n // the viewEngine:\n // - viewProviders have priority over
providers\n // - the last directive in NgModule.declarations has priority over the previous one\n // So to match
these rules, the order in which providers are added in the arrays is very\n // important.\n for (let i = 0; i <
directiveDefs.length; i++) {\n const def = directiveDefs[i];\n if (def.providersResolver)
def.providersResolver(def);\n }\n let preOrderHooksFound = false;\n let preOrderCheckHooksFound =
false;\n let directiveIdx = allocExpando(tView, lView, directiveDefs.length, null);\n ngDevMode &&\n assertSame(\n directiveIdx, tNode.directiveStart,\n 'TNode.directiveStart should point to just
allocated space');\n for (let i = 0; i < directiveDefs.length; i++) {\n const def = directiveDefs[i];\n //
Merge the attrs in the order of matches. This assumes that the first directive is the\n // component itself, so that
the component has the least priority.\n tNode.mergedAttrs = mergeHostAttrs(tNode.mergedAttrs,
def.hostAttrs);\n configureViewWithDirective(tView, tNode, lView, directiveIdx, def);\n saveNameToExportMap(directiveIdx, def, exportsMap);\n if (def.contentQueries !== null) tNode.flags |=
TNodeFlags.hasContentQuery;\n if (def.hostBindings !== null || def.hostAttrs !== null || def.hostVars !== 0)\n tNode.flags |= TNodeFlags.hasHostBindings;\n const lifeCycleHooks: OnChanges&OnInit&DoCheck =
def.type.prototype;\n // Only push a node index into the preOrderHooks array if this is the first\n // pre-
order hook found on this node.\n if (!preOrderHooksFound &&\n (lifeCycleHooks.ngOnChanges ||
lifeCycleHooks.ngOnInit || lifeCycleHooks.ngDoCheck)) {\n // We will push the actual hook function into this
array later during dir instantiation.\n // We cannot do it now because we must ensure hooks are registered in
the same\n // order that directives are created (i.e. injection order).\n (tView.preOrderHooks ||
(tView.preOrderHooks = [])).push(tNode.index);\n preOrderHooksFound = true;\n }\n if
(!preOrderCheckHooksFound && (lifeCycleHooks.ngOnChanges || lifeCycleHooks.ngDoCheck)) {\n (tView.preOrderCheckHooks || (tView.preOrderCheckHooks = [])).push(tNode.index);\n preOrderCheckHooksFound = true;\n }\n directiveIdx++;\n }\n initializeInputAndOutputAliases(tView, tNode);\n }\n if (exportsMap) cacheMatchingLocalNames(tNode,
localRefs, exportsMap);\n }\n // Merge the template attrs last so that they have the highest priority.\n tNode.mergedAttrs = mergeHostAttrs(tNode.mergedAttrs, tNode.attrs);\n return hasDirectives;\n}\n\n/**\n * Add
`hostBindings` to the `TView.hostBindingOpCodes`. \n */\n * @param tView `TView` to which the `hostBindings`

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should be added.\n * @param tNode `TNode` the element which contains the directive\n * @param lView `LView`
current `LView`\n * @param directiveIdx Directive index in view.\n * @param directiveVarsIdx Where will the
directive's vars be stored\n * @param def `ComponentDef`/`DirectiveDef`, which contains the
`hostVars`/`hostBindings` to add.\n */\nexport function registerHostBindingOpCodes(\n tView: TView, tNode:
TNode, lView: LView, directiveIdx: number, directiveVarsIdx: number,\n def:
ComponentDef<any>|DirectiveDef<any>): void {\n ngDevMode && assertFirstCreatePass(tView);\n\n const
hostBindings = def.hostBindings;\n if (hostBindings) {\n let hostBindingOpCodes =
tView.hostBindingOpCodes;\n if (hostBindingOpCodes === null) {\n hostBindingOpCodes =
tView.hostBindingOpCodes = [] as any as HostBindingOpCodes;\n }\n const elementIdx = ~tNode.index;\n if (lastSelectedElementIdx(hostBindingOpCodes) != elementIdx) {\n // Conditionally add select element so that
we are more efficient in execution.\n // NOTE: this is strictly not necessary and it trades code size for runtime
perf.\n // (We could just always add it.)\n hostBindingOpCodes.push(elementIdx);\n }\n hostBindingOpCodes.push(directiveIdx, directiveVarsIdx, hostBindings);\n }\n}\n\n/**\n * Returns the last
selected element index in the `HostBindingOpCodes`\n * For perf reasons we don't need to update the selected
element index in `HostBindingOpCodes` only\n * if it changes. This method returns the last index (or '0' if not
found.)\n * Selected element index are only the ones which are negative.\n */\nfunction
lastSelectedElementIdx(hostBindingOpCodes: HostBindingOpCodes): number {\n let i =
hostBindingOpCodes.length;\n while (i > 0) {\n const value = hostBindingOpCodes[--i];\n if (typeof value ===
'number' && value < 0) {\n return value;\n }\n }\n return 0;\n}\n\n/**\n * Instantiate all the directives that
were previously resolved on the current node.\n */\nfunction instantiateAllDirectives(\n tView: TView, lView:
LView, tNode: TDirectiveHostNode, native: RNode) {\n const start = tNode.directiveStart;\n const end =
tNode.directiveEnd;\n if (!tView.firstCreatePass) {\n getOrCreateNodeInjectorForNode(tNode, lView);\n }\n\n attachPatchData(native, lView);\n\n const initialInputs = tNode.initialInputs;\n for (let i = start; i < end; i++) {\n const def = tView.data[i] as DirectiveDef<any>;\n const isComponent = isComponentDef(def);\n\n if
(isComponent) {\n ngDevMode && assertTNodeType(tNode, TNodeType.AnyRNode);\n addComponentLogic(lView, tNode as TElementNode, def as ComponentDef<any>);\n }\n\n const directive =
getNodeInjectable(lView, tView, i, tNode);\n attachPatchData(directive, lView);\n\n if (initialInputs !== null)
{\n setInputsFromAttrs(lView, i - start, directive, def, tNode, initialInputs!);\n }\n\n if (isComponent) {\n const componentView = getComponentLViewByIndex(tNode.index, lView);\n componentView[CONTEXT] =
directive;\n }\n }\n}\n\nfunction invokeDirectivesHostBindings(tView: TView, lView: LView, tNode: TNode)
{\n const start = tNode.directiveStart;\n const end = tNode.directiveEnd;\n const firstCreatePass =
tView.firstCreatePass;\n const elementIndex = tNode.index;\n const currentDirectiveIndex =
getCurrentDirectiveIndex();\n try {\n setSelectedIndex(elementIndex);\n for (let dirIndex = start; dirIndex <
end; dirIndex++) {\n const def = tView.data[dirIndex] as DirectiveDef<unknown>;\n const directive =
lView[dirIndex];\n setCurrentDirectiveIndex(dirIndex);\n if (def.hostBindings !== null || def.hostVars !== 0 ||
def.hostAttrs !== null) {\n invokeHostBindingsInCreationMode(def, directive);\n }\n }\n } finally {\n setSelectedIndex(-1);\n setCurrentDirectiveIndex(currentDirectiveIndex);\n }\n}\n\n/**\n * Invoke the host
bindings in creation mode.\n * @param def `DirectiveDef` which may contain the `hostBindings` function.\n *
@param directive Instance of directive.\n */\nexport function invokeHostBindingsInCreationMode(def:
DirectiveDef<any>, directive: any) {\n if (def.hostBindings !== null) {\n def.hostBindings!(RenderFlags.Create,
directive);\n }\n}\n\n/**\n * Matches the current node against all available selectors.\n * If a component is matched
(at most one), it is returned in first position in the array.\n */\nfunction findDirectiveDefMatches(\n tView: TView,
viewData: LView,\n tNode: TElementNode|TContainerNode|TElementContainerNode): DirectiveDef<any>[]|null
{\n ngDevMode && assertFirstCreatePass(tView);\n ngDevMode && assertTNodeType(tNode,
TNodeType.AnyRNode | TNodeType.AnyContainer);\n\n const registry = tView.directiveRegistry;\n let matches:
any[]|null = null;\n if (registry) {\n for (let i = 0; i < registry.length; i++) {\n const def = registry[i] as
ComponentDef<any>|DirectiveDef<any>;\n if (isNodeMatchingSelectorList(tNode, def.selectors!, /*
isProjectionMode */ false)) {\n matches || (matches = ngDevMode ? new MatchesArray() : []);\n

```

```

diPublicInInjector(getOrCreateNodeInjectorForNode(tNode, viewData), tView, def.type);\n\n if
(isComponentDef(def)) {\n if (ngDevMode) {\n assertTNodeType(\n tNode,
TNodeType.Element,\n `\"${tNode.value}\" tags cannot be used as component hosts. ` +\n
`Please use a different tag to activate the ${stringify(def.type)} component.`);\n if (tNode.flags &
TNodeFlags.isComponentHost) throwMultipleComponentError(tNode);\n }\n
markAsComponentHost(tView, tNode);\n // The component is always stored first with directives after.\n
matches.unshift(def);\n } else {\n matches.push(def);\n }\n }\n }\n }\n }\n return
matches;\n}\n\n/**\n * Marks a given TNode as a component's host. This consists of:\n * - setting appropriate
TNode flags;\n * - storing index of component's host element so it will be queued for view refresh during CD.\n
*/\n\nexport function markAsComponentHost(tView: TView, hostTNode: TNode): void {\n ngDevMode &&
assertFirstCreatePass(tView);\n hostTNode.flags |= TNodeFlags.isComponentHost;\n (tView.components ||
(tView.components = ngDevMode ? new TViewComponents() : []))\n .push(hostTNode.index);\n}\n\n\n/**
Caches local names and their matching directive indices for query and template lookups. */\n\nfunction
cacheMatchingLocalNames(\n tNode: TNode, localRefs: string[]|null, exportsMap: {[key: string]: number}): void
{\n if (localRefs) {\n const localNames: (string|number)[] = tNode.localNames = ngDevMode ? new
TNodeLocalNames() : [];\n // Local names must be stored in tNode in the same order that localRefs are
defined\n // in the template to ensure the data is loaded in the same slots as their refs\n // in the template (for
template queries).\n for (let i = 0; i < localRefs.length; i += 2) {\n const index = exportsMap[localRefs[i +
1]];\n if (index == null)\n throw new RuntimeError(\n RuntimeErrorCode.EXPORT_NOT_FOUND,
`Export of name '${localRefs[i + 1]}' not found!`);\n localNames.push(localRefs[i], index);\n }\n }\n}\n\n\n/**
 * Builds up an export map as directives are created, so local refs can be quickly mapped\n * to their directive
instances.\n */\n\nfunction saveNameToExportMap(\n directiveIdx: number, def:
DirectiveDef<any>|ComponentDef<any>,\n exportsMap: {[key: string]: number}|null) {\n if (exportsMap) {\n
if (def.exportAs) {\n for (let i = 0; i < def.exportAs.length; i++) {\n exportsMap[def.exportAs[i]] =
directiveIdx;\n }\n }\n if (isComponentDef(def)) exportsMap[""] = directiveIdx;\n }\n}\n\n\n/**\n * Initializes
the flags on the current node, setting all indices to the initial index,\n * the directive count to 0, and adding the
isComponent flag.\n * @param index the initial index\n */\n\nexport function initTNodeFlags(tNode: TNode, index:
number, numberOfDirectives: number) {\n ngDevMode &&\n assertNotEqual(\n numberOfDirectives,
tNode.directiveEnd - tNode.directiveStart,\n 'Reached the max number of directives');\n tNode.flags |=
TNodeFlags.isDirectiveHost;\n // When the first directive is created on a node, save the index\n
tNode.directiveStart = index;\n tNode.directiveEnd = index + numberOfDirectives;\n tNode.providerIndexes =
index;\n}\n\n\n/**\n * Setup directive for instantiation.\n * We need to create a `NodeInjectorFactory` which is
then inserted in both the `Blueprint` as well\n * as `LView`. `TVIEW` gets the `DirectiveDef`.\n * @param
tView `TVIEW`\n * @param tNode `TNode`\n * @param IView `LView`\n * @param directiveIndex Index where
the directive will be stored in the Expando.\n * @param def `DirectiveDef`\n */\n\nfunction
configureViewWithDirective<T>(\n tView: TView, tNode: TNode, IView: LView, directiveIndex: number, def:
DirectiveDef<T>): void {\n ngDevMode &&\n assertGreaterThanOrEqual(directiveIndex, HEADER_OFFSET,
'Must be in Expando section');\n tView.data[directiveIndex] = def;\n const directiveFactory =\n def.factory ||
((def as {factory: Function}).factory = getFactoryDef(def.type, true));\n const nodeInjectorFactory = new
NodeInjectorFactory(directiveFactory, isComponentDef(def), null);\n tView.blueprint[directiveIndex] =
nodeInjectorFactory;\n IView[directiveIndex] = nodeInjectorFactory;\n\n registerHostBindingOpCodes(\n
tView, tNode, IView, directiveIndex, allocExpando(tView, IView, def.hostVars, NO_CHANGE),\n
def);\n}\n\n\nfunction addComponentLogic<T>(\n IView: LView, hostTNode: TELEMENTNode, def:
ComponentDef<T>): void {\n const native = getNativeByTNode(hostTNode, IView) as RELEMENT;\n const tView
= getOrCreateTComponentView(def);\n\n // Only component views should be added to the view tree directly.
Embedded views are\n // accessed through their containers because they may be removed / re-added later.\n
const rendererFactory = IView[RENDERER_FACTORY];\n const componentView = addToViewTree(\n IView,\n
createLView(\n IView, tView, null, def.onPush ? LViewFlags.Dirty : LViewFlags.CheckAlways, native,\n

```

```

hostTNode as TElementNode, rendererFactory, rendererFactory.createRenderer(native, def),\n null, null));\n\n// Component view will always be created before any injected LContainers,\n// so this is a regular element, wrap it with the component view\n IView[hostTNode.index] = componentView;\n}\n\nexport function elementAttributeInternal(\n tNode: TNode, IView: LView, name: string, value: any, sanitizer: SanitizerFn|null|undefined,\n namespace: string|null|undefined) {\n if (ngDevMode) {\n assertNotSame(value, NO_CHANGE as any, 'Incoming value should never be NO_CHANGE.);\n validateAgainstEventAttributes(name);\n assertTNodeType(\n tNode, TNodeType.Element,\n `Attempted to set attribute \\`$${name}\\` on a container node. ` +\n `Host bindings are not valid on ng-container or ng-template. `);\n }\n const element = getNativeByTNode(tNode, IView) as RElement;\n setElementAttribute(IView[RENDERER], element, namespace, tNode.value, name, value, sanitizer);\n}\n\nexport function setElementAttribute(\n renderer: Renderer3, element: RElement, namespace: string|null|undefined, tagName: string|null,\n name: string, value: any, sanitizer: SanitizerFn|null|undefined) {\n if (value == null) {\n ngDevMode && ngDevMode.rendererRemoveAttribute++;\n isProceduralRenderer(renderer) ?\n renderer.removeAttribute(element, name, namespace) :\n element.removeAttribute(name);\n } else {\n ngDevMode && ngDevMode.rendererSetAttribute++;\n const strValue =\n sanitizer == null ?\n renderStringify(value) : sanitizer(value, tagName || "", name);\n if (isProceduralRenderer(renderer)) {\n renderer.setAttribute(element, name, strValue, namespace);\n } else {\n namespace ?\n element.setAttributeNS(namespace, name, strValue) :\n element.setAttribute(name, strValue);\n }\n }\n}\n\n/**\n * Sets initial input properties on directive instances from attribute data\n * @param IView Current LView that is being processed.\n * @param directiveIndex Index of the directive in directives array\n * @param instance Instance of the directive on which to set the initial inputs\n * @param def The directive def that contains the list of inputs\n * @param tNode The static data for this node\n */\nfunction setInputsFromAttrs<T>(\n IView: LView, directiveIndex: number, instance: T, def: DirectiveDef<T>, tNode: TNode,\n initialInputData: InitialInputData): void {\n const initialInputs: InitialInputs|null = initialInputData![directiveIndex];\n if (initialInputs !== null) {\n const setInput = def.setInput;\n for (let i = 0; i < initialInputs.length;) {\n const publicName = initialInputs[i++];\n const privateName = initialInputs[i++];\n const value = initialInputs[i++];\n if (setInput !== null) {\n setInput!(instance, value, publicName, privateName);\n } else {\n (instance as any)[privateName] = value;\n }\n if (ngDevMode) {\n const nativeElement = getNativeByTNode(tNode, IView) as RElement;\n setNgReflectProperty(IView, nativeElement, tNode.type, privateName, value);\n }\n }\n }\n}\n\n/**\n * Generates initialInputData for a node and stores it in the template's static storage\n * so subsequent template invocations don't have to recalculate it.\n * @param initialInputData is an array containing values that need to be set as input properties\n * for directives on this node, but only once on creation. We need this array to support\n * the case where you set an @Input property of a directive using attribute-like syntax.\n * e.g. if you have a `name` @Input, you can set it once like this:\n * <my-component name="Bess"></my-component>\n * @param inputs The list of inputs from the directive def\n * @param attrs The static attrs on this node\n */\nfunction generateInitialInputs(inputs: {[key: string]: string}, attrs: TAttributes): InitialInputs|null {\n let inputsToStore: InitialInputs|null = null;\n let i = 0;\n while (i < attrs.length) {\n const attrName = attrs[i];\n if (attrName === AttributeMarker.NamespaceURI) {\n // We do not allow inputs on namespaced attributes.\n i += 4;\n continue;\n } else if (attrName === AttributeMarker.ProjectAs) {\n // Skip over the `ngProjectAs` value.\n i += 2;\n continue;\n }\n // If we hit any other attribute markers, we're done anyway. None of those are valid inputs.\n if (typeof attrName === 'number') break;\n if (inputs.hasOwnProperty(attrName as string)) {\n if (inputsToStore === null) inputsToStore = [];\n inputsToStore.push(attrName as string, inputs[attrName as string], attrs[i + 1] as string);\n }\n i += 2;\n }\n return inputsToStore;\n}\n\n// ViewContainer & View\n// Not sure why I need to do `any` here but TS complains later.\nconst LContainerArray: any = ((typeof ngDevMode === 'undefined' || ngDevMode) && initNgDevMode()) &&\n createNamedArrayType('LContainer');\n\n/**\n * Creates a LContainer, either from a container instruction, or for a ViewContainerRef.\n * @param hostNative The host element for the LContainer\n * @param hostTNode The host TNode for the LContainer\n * @param currentView

```



```

{\n for (let i = CONTAINER_HEADER_OFFSET; i < lContainer.length; i++) {\n const embeddedLView =
lContainer[i];\n if (embeddedLView[FLAGS] & LViewFlags.RefreshTransplantedView) {\n const
embeddedTView = embeddedLView[TVIEW];\n ngDevMode && assertDefined(embeddedTView, 'TView
must be allocated');\n refreshView(embeddedTView, embeddedLView, embeddedTView.template,
embeddedLView[CONTEXT]!);\n } else if (embeddedLView[TRANSPLANTED_VIEWS_TO_REFRESH] >
0) {\n refreshContainsDirtyView(embeddedLView);\n }\n }\n}\n\nconst tView = lView[TVIEW];\n//
Refresh child component views.\nconst components = tView.components;\nif (components !== null) {\n for (let
i = 0; i < components.length; i++) {\n const componentView = getComponentLViewByIndex(components[i],
lView);\n // Only attached components that are CheckAlways or OnPush and dirty should be refreshed\n if
(viewAttachedToChangeDetector(componentView) &&\ncomponentView[TRANSPLANTED_VIEWS_TO_REFRESH] > 0) {\n refreshContainsDirtyView(componentView);\n }\n }\n}\n\nfunction renderComponent(hostLView:
LView, componentHostIdx: number) {\n ngDevMode && assertEqual(isCreationMode(hostLView), true, 'Should
be run in creation mode');\n const componentView = getComponentLViewByIndex(componentHostIdx,
hostLView);\n const componentTView = componentView[TVIEW];\n syncViewWithBlueprint(componentTView,
componentView);\n renderView(componentTView, componentView, componentView[CONTEXT]);\n}\n\n/**\n *
Syncs an LView instance with its blueprint if they have gotten out of sync.\n * Typically, blueprints and their
view instances should always be in sync, so the loop here\n * will be skipped. However, consider this case of two
components side-by-side:\n * App template:\n * ``\n * <comp></comp>\n * <comp></comp>\n * ``\n * \n *
The following will happen:\n * 1. App template begins processing.\n * 2. First <comp> is matched as a component
and its LView is created.\n * 3. Second <comp> is matched as a component and its LView is created.\n * 4. App
template completes processing, so it's time to check child templates.\n * 5. First <comp> template is checked. It
has a directive, so its def is pushed to blueprint.\n * 6. Second <comp> template is checked. Its blueprint has
been updated by the first\n * <comp> template, but its LView was created before this update, so it is out of sync.\n * \n *
Note that embedded views inside ngFor loops will never be out of sync because these views\n * are processed as
soon as they are created.\n * \n * @param tView The `TView` that contains the blueprint for syncing\n * @param
lView The view to sync\n * \nfunction syncViewWithBlueprint(tView: TView, lView: LView) {\n for (let i =
lView.length; i < tView.blueprint.length; i++) {\n lView.push(tView.blueprint[i]);\n }\n}\n\n/**\n * Adds LView
or LContainer to the end of the current view tree.\n * \n * This structure will be used to traverse through nested views
to remove listeners\n * and call onDestroy callbacks.\n * \n * @param lView The view where LView or LContainer
should be added\n * @param adjustedHostIndex Index of the view's host node in lView[], adjusted for header\n *
@param lViewOrLContainer The LView or LContainer to add to the view tree\n * @returns The state passed in\n * \nexport
function addToViewTree<T extends LView|LContainer>(lView: LView, lViewOrLContainer: T): T {\n //
TODO(benlesh/misko): This implementation is incorrect, because it always adds the LContainer\n // to the end of
the queue, which means if the developer retrieves the LContainers from RNodes out\n // of order, the change
detection will run out of order, as the act of retrieving the the\n // LContainer from the RNode is what adds it to
the queue.\n if (lView[CHILD_HEAD]) {\n lView[CHILD_TAIL]![NEXT] = lViewOrLContainer;\n } else {\n lView[CHILD_HEAD] = lViewOrLContainer;\n }\n lView[CHILD_TAIL] = lViewOrLContainer;\n return
lViewOrLContainer;\n}\n\n//////////\n\n/// Change detection\n//////////\n\n/**\n * Marks
current view and all ancestors dirty.\n * \n * Returns the root view because it is found as a byproduct of marking the
view tree\n * dirty, and can be used by methods that consume markViewDirty() to easily schedule\n * change
detection. Otherwise, such methods would need to traverse up the view tree\n * an additional time to get the root
view and schedule a tick on it.\n * \n * @param lView The starting LView to mark dirty\n * @returns the root
LView\n * \nexport function markViewDirty(lView: LView): LView|null {\n while (lView) {\n lView[FLAGS]
|= LViewFlags.Dirty;\n const parent = getLViewParent(lView);\n // Stop traversing up as soon as you find a root
view that wasn't attached to any container\n if (isRootView(lView) && !parent) {\n return lView;\n }\n //
continue otherwise\n lView = parent!;\n }\n return null;\n}\n\n\n/**\n * Used to schedule change detection on the
whole application.\n * \n * Unlike `tick`, `scheduleTick` coalesces multiple calls into one change detection run.\n * It

```



is usually called indirectly by calling `markDirty` when the view needs to be re-rendered. Typically `scheduleTick` uses `requestAnimationFrame` to coalesce multiple `scheduleTick` requests. The scheduling function can be overridden in `renderComponent`'s `scheduler` option.

```

export function
scheduleTick(rootContext: RootContext, flags: RootContextFlags) {
 const nothingScheduled = rootContext.flags
 === RootContextFlags.Empty;
 if (nothingScheduled && rootContext.clean === _CLEAN_PROMISE) {
 // https://github.com/angular/angular/issues/39296
 // should only attach the flags when really scheduling a tick
 rootContext.flags |= flags;
 let res: null | ((val: null) => void);
 rootContext.clean = new Promise<null>((r) =>
 res = r);
 rootContext.scheduler() => {
 if (rootContext.flags & RootContextFlags.DetectChanges) {
 rootContext.flags &= ~RootContextFlags.DetectChanges;
 tickRootContext(rootContext);
 }
 if (rootContext.flags & RootContextFlags.FlushPlayers) {
 rootContext.flags &=
 ~RootContextFlags.FlushPlayers;
 const playerHandler = rootContext.playerHandler;
 if (playerHandler) {
 playerHandler.flushPlayers();
 }
 }
 rootContext.clean = _CLEAN_PROMISE;
 res!(null);
 };
 }
}

export function tickRootContext(rootContext: RootContext) {
 for (let i = 0; i <
 rootContext.components.length; i++) {
 const rootComponent = rootContext.components[i];
 const IView =
 readPatchedLView(rootComponent!);
 const tView = IView[TVIEW];
 renderComponentOrTemplate(tView,
 IView, tView.template, rootComponent);
 }
}

export function detectChangesInternal<T>(tView: TView,
IView: LView, context: T) {
 const rendererFactory = IView[RENDERER_FACTORY];
 if (rendererFactory.begin)
 rendererFactory.begin();
 try {
 refreshView(tView, IView, tView.template, context);
 } catch (error) {
 handleError(IView, error);
 throw error;
 } finally {
 if (rendererFactory.end)
 rendererFactory.end();
 }
}

/**
 * Synchronously perform change detection on a root view and its
 * components.
 * @param IView The view which the change detection should be performed on.
 */
export function detectChangesInRootView(IView: LView): void {
 tickRootContext(IView[CONTEXT] as
 RootContext);
}

export function checkNoChangesInternal<T>(tView: TView, view: LView, context: T) {
 setIsInCheckNoChangesMode(true);
 try {
 detectChangesInternal(tView, view, context);
 } finally {
 setIsInCheckNoChangesMode(false);
 }
}

/**
 * Checks the change detector on a root view and its
 * components, and throws if any changes are detected.
 * This is used in development mode to verify that
 * running change detection doesn't introduce other changes.
 * @param IView The view which the change
 * detection should be checked on.
 */
export function checkNoChangesInRootView(IView: LView): void {
 setIsInCheckNoChangesMode(true);
 try {
 detectChangesInRootView(IView);
 } finally {
 setIsInCheckNoChangesMode(false);
 }
}

function executeViewQueryFn<T>(
 flags: RenderFlags,
 viewQueryFn: ViewQueriesFunction<{}>,
 component: T): void {
 ngDevMode && assertDefined(viewQueryFn,
 'View queries function to execute must be defined. ');
 setCurrentQueryIndex(0);
 viewQueryFn(flags,
 component);
}

//////// Bindings & interpolations //////////
/**
 * Stores meta-data for a property binding to be used by TestBed's `DebugElement.properties`.
 * In order to support
 * TestBed's `DebugElement.properties` we need to save, for each binding:
 * - a bound property name;
 * - a static parts of interpolated strings;
 * A given property metadata is saved at the binding's index in the `TView.data`
 * (in other words, a property binding metadata will be stored in `TView.data` at the same index as a bound value
 * in `LView`). Metadata are represented as `INTERPOLATION_DELIMITER`-delimited string with the
 * following format:
 * - `propertyName` for bound properties;
 * -
 * `propertyNameprefixinterpolation_static_part1..interpolation_static_partNsuffix` for interpolated properties.
 * @param tData `TData` where meta-data will be saved;
 * @param tNode `TNode` that is a target of the
 * binding;
 * @param propertyName bound property name;
 * @param bindingIndex binding index in `LView`
 * @param interpolationParts static interpolation parts (for property interpolations)
 */
export function
storePropertyBindingMetadata(
 tData: TData, tNode: TNode, propertyName: string, bindingIndex: number,
 ..interpolationParts: string[]) {
 // Binding meta-data are stored only the first time a given property instruction is
 // processed.
 // Since we don't have a concept of the "first update pass" we need to check for presence of the
 // binding meta-data to decide if one should be stored (or if was stored already).
 if (tData[bindingIndex] === null)
 if (tNode.inputs == null || !tNode.inputs[propertyName])
 const propBindingIdxs =

```

```

tNode.propertyBindings || (tNode.propertyBindings = []);\n propBindingIdxs.push(bindingIndex);\n let\n bindingMetadata = propertyName;\n if (interpolationParts.length > 0) {\n bindingMetadata +=\n INTERPOLATION_DELIMITER + interpolationParts.join(INTERPOLATION_DELIMITER);\n }\n tData[bindingIndex] = bindingMetadata;\n }\n}\n\nexport const CLEAN_PROMISE =\n_CLEAN_PROMISE;\n\nexport function getLCleanup(view: LView): any[] {\n // top level variables should not be\n exported for performance reasons (PERF_NOTES.md)\n return view[CLEANUP] || (view[CLEANUP] =\n ngDevMode ? new LCleanup() : []);\n}\n\nfunction getTViewCleanup(tView: TView): any[] {\n return\n tView.cleanup || (tView.cleanup = ngDevMode ? new TCleanup() : []);\n}\n\n/**\n * There are cases where the sub\n component's renderer needs to be included\n * instead of the current renderer (see the componentSyntheticHost*\n instructions).\n */\nexport function loadComponentRenderer(\n currentDef: DirectiveDef<any>|null, tNode:\n TNode, lView: LView): Renderer3 {\n // TODO(FW-2043): the `currentDef` is null when host bindings are\n invoked while creating root\n // component (see packages/core/src/render3/component.ts). This is not consistent\n with the process\n // of creating inner components, when current directive index is available in the state. In order\n // to avoid relying on current def being `null` (thus special-casing root component creation), the\n // process of\n creating root component should be unified with the process of creating inner\n // components.\n if (currentDef ===\n null || isComponentDef(currentDef)) {\n lView = unwrapLView(lView[tNode.index]);\n }\n return\n lView[RENDERER];\n}\n\n/**\n * Handles an error thrown in an LView.\n */\nexport function handleError(lView:\n LView, error: any): void {\n const injector = lView[INJECTOR];\n const errorHandler = injector ?\n injector.get(ErrorHandler, null) : null;\n errorHandler && errorHandler.handleError(error);\n}\n\n/**\n * Set the\n inputs of directives at the current node to corresponding value.\n */\nexport function setInputsForProperty(\n tView: TView, lView: LView, inputs: PropertyAliasValue,\n publicName: string, value: any): void {\n for (let i = 0; i < inputs.length;) {\n const index = inputs[i++] as\n number;\n const privateName = inputs[i++] as string;\n const instance = lView[index];\n ngDevMode &&\n assertIndexInRange(lView, index);\n const def = tView.data[index] as DirectiveDef<any>;\n if (def.setInput !==\n null) {\n def.setInput!(instance, value, publicName, privateName);\n } else {\n instance[privateName] =\n value;\n }\n }\n}\n\n/**\n * Updates a text binding at a given index in a given LView.\n */\nexport function\n textBindingInternal(lView: LView, index: number, value: string): void {\n ngDevMode && assertString(value,\n 'Value should be a string');\n ngDevMode && assertNotSame(value, NO_CHANGE as any, 'value should not be\n NO_CHANGE');\n ngDevMode && assertIndexInRange(lView, index);\n const element =\n getNativeByIndex(index, lView) as any as RText;\n ngDevMode && assertDefined(element, 'native element\n should exist');\n updateTextNode(lView[RENDERER], element, value);\n}\n\n/**\n * @license\n * Copyright\n Google LLC All Rights Reserved.\n * Use of this source code is governed by an MIT-style license that can be\n * found in the LICENSE file at https://angular.io/license\n */\nimport {concatStringsWithSpace} from\n './util/stringify';\nimport {assertFirstCreatePass} from './assert';\nimport {AttributeMarker, TAttributes, TNode}\n from './interfaces/node';\nimport {getTView} from './state';\n\n/**\n * Compute the static styling (class/style) from\n `TAttributes`.\n */\nexport function computeStaticStyling(\n tNode: TNode, attrs: TAttributes|null, writeToHost: boolean): void {\n ngDevMode &&\n assertFirstCreatePass(getTView(), 'Expecting to be called in first template pass only');\n let styles: string|null = writeToHost ? tNode.styles : null;\n let classes: string|null = writeToHost ? tNode.classes :\n null;\n let mode: AttributeMarker|0 = 0;\n if (attrs !== null) {\n for (let i = 0; i < attrs.length; i++) {\n const\n value = attrs[i];\n if (typeof value === 'number') {\n mode = value;\n } else if (mode ===\n AttributeMarker.Classes) {\n classes = concatStringsWithSpace(classes, value as string);\n } else if (mode\n === AttributeMarker.Styles) {\n const style = value as string;\n const styleValue = attrs[++i] as string;\n

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* Copyright Google LLC All Rights Reserved.\n *\n * Use of this source code is governed by an MIT-style license
that can be\n * found in the LICENSE file at https://angular.io/license\n *\n\nimport
'./util/ng_dev_mode';\n\nimport { OnDestroy } from './interface/lifecycle_hooks';\nimport { Type } from
'./interface/type';\nimport { FactoryFn, getFactoryDef } from './render3/definition_factory';\nimport
{ throwCyclicDependencyError, throwInvalidProviderError, throwMixedMultiProviderError } from
'./render3/errors_di';\nimport { deepForEach, newArray } from './util/array_utils';\nimport { stringify } from
'./util/stringify';\n\nimport { resolveForwardRef } from './forward_ref';\nimport { InjectionToken } from
'./injection_token';\nimport { Injector } from './injector';\nimport { catchInjectorError, injectArgs,
NG_TEMP_TOKEN_PATH, setCurrentInjector, THROW_IF_NOT_FOUND, USE_VALUE, inject } from
'./injector_compatibility';\nimport { INJECTOR } from './injector_token';\nimport { getInheritedInjectableDef,
getInjectableDef, getInjectorDef, InjectorType, InjectorTypeWithProviders, InjectableDef } from
'./interface/defs';\nimport { InjectFlags } from './interface/injector';\nimport { ClassProvider, ConstructorProvider,
ExistingProvider, FactoryProvider, StaticClassProvider, StaticProvider, TypeProvider, ValueProvider } from
'./interface/provider';\nimport { NullInjector } from './null_injector';\nimport { INJECTOR_SCOPE } from
'./scope';\n\n\n/**\n * Internal type for a single provider in a deep provider array.\n * ^\n * type SingleProvider =
TypeProvider|ValueProvider|ClassProvider|ConstructorProvider|ExistingProvider|\n
FactoryProvider|StaticClassProvider;\n\n\n/**\n * Marker which indicates that a value has not yet been created from
the factory function.\n * ^\n * const NOT_YET = {};\n\n\n/**\n * Marker which indicates that the factory function for a
token is in the process of being called.\n * ^\n * If the injector is asked to inject a token with its value set to
CIRCULAR, that indicates\n * injection of a dependency has recursively attempted to inject the original token, and
there is\n * a circular dependency among the providers.\n * ^\n * const CIRCULAR = {};\n\n * const EMPTY_ARRAY =
[] as any[];\n\n\n/**\n * A lazily initialized NullInjector.\n * ^\n * let NULL_INJECTOR: Injector|undefined =
undefined;\n\n * function getNullInjector(): Injector {\n * if (NULL_INJECTOR === undefined) {\n *
NULL_INJECTOR = new NullInjector();\n * }\n * return NULL_INJECTOR;\n * }\n\n\n/**\n * An entry in the injector
which tracks information about the given token, including a possible\n * current value.\n * ^\n * interface Record<T>
{\n * factory: (() => T)|undefined;\n * value: T|{};\n * multi: any[]|undefined;\n * }\n\n\n/**\n * Create a new `Injector`
which is configured using a `defType` of `InjectorType<any>`s.\n * ^\n * @publicApi\n * ^\n * export function
createInjector(\n * defType: /* InjectorType<any> */ any, parent: Injector|null = null,\n * additionalProviders:
StaticProvider[]|null = null, name?: string): Injector {\n * const injector =\n
createInjectorWithoutInjectorInstances(defType, parent, additionalProviders, name);\n
injector._resolveInjectorDefTypes();\n * return injector;\n * }\n\n\n/**\n * Creates a new injector without eagerly
resolving its injector types. Can be used in places\n * where resolving the injector types immediately can lead to an
infinite loop. The injector types\n * should be resolved at a later point by calling `_resolveInjectorDefTypes`.\n * ^\n * export function createInjectorWithoutInjectorInstances(\n * defType: /* InjectorType<any> */ any, parent:
Injector|null = null,\n * additionalProviders: StaticProvider[]|null = null, name?: string): R3Injector {\n * return new
R3Injector(defType, additionalProviders, parent || getNullInjector(), name);\n * }\n\n * export class R3Injector {\n * /**\n
 * Map of tokens to records which contain the instances of those tokens.\n * * - `null` value implies that we don't have
the record. Used by tree-shakable injectors\n * * to prevent further searches.\n * * ^\n * private records = new
Map<Type<any>|InjectionToken<any>, Record<any>|null>();\n * /**\n
 * The transitive set of `InjectorType`s\n * which define this injector.\n * * ^\n * private injectorDefTypes = new Set<InjectorType<any>>();\n * /**\n
 * Set of values instantiated by this injector which contain `ngOnDestroy` lifecycle hooks.\n * * ^\n * private onDestroy = new
Set<OnDestroy>();\n * /**\n
 * Flag indicating this injector provides the APP_ROOT_SCOPE token, and thus
counts as the\n * * root scope.\n * * ^\n * private readonly scope: 'root'|'platform'|null;\n * private readonly source:
string|null;\n * /**\n
 * Flag indicating that this injector was previously destroyed.\n * * ^\n * get destroyed(): boolean
{\n * return this._destroyed;\n * }\n * private _destroyed = false;\n * constructor(\n * def: InjectorType<any>,\n
 * additionalProviders: StaticProvider[]|null, readonly parent: Injector,\n * source: string|null = null) {\n * const
dedupStack: InjectorType<any>[] = [];\n * // Start off by creating Records for every provider declared in every
InjectorType\n * // included transitively in additional providers then do the same for `def`. This order is\n * //

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important because `def` may include providers that override ones in additionalProviders.
additionalProviders
&&
deepForEach(
 additionalProviders,
 provider => this.processProvider(provider, def,
 additionalProviders));
deepForEach([def], injectorDef => this.processInjectorType(injectorDef, [],
dedupStack));
// Make sure the INJECTOR token provides this injector.
this.records.set(INJECTOR,
makeRecord(undefined, this));
// Detect whether this injector has the APP_ROOT_SCOPE token and thus
should provide
// any injectable scoped to APP_ROOT_SCOPE.
const record =
this.records.get(INJECTOR_SCOPE);
this.scope = record != null ? record.value : null;
// Source name,
used for debugging
this.source = source || (typeof def === 'object' ? null : stringify(def));
}
/**
 * Destroy the injector and release references to every instance or provider associated with it.
 * Also calls the
 * `OnDestroy` lifecycle hooks of every instance that was created for which a
 * hook was found.
 * ^ destroy():
void {
 this.assertNotDestroyed();
 // Set destroyed = true first, in case lifecycle hooks re-enter destroy().
 this._destroyed = true;
 try {
 // Call all the lifecycle hooks.
 this.onDestroy.forEach(service =>
service.ngOnDestroy());
 } finally {
 // Release all references.
 this.records.clear();
 this.onDestroy.clear();
 this.injectorDefTypes.clear();
 }
}
get<T>(token:
Type<T>|InjectionToken<T>, notFoundValue: any = THROW_IF_NOT_FOUND, flags =
InjectFlags.Default): T {
 this.assertNotDestroyed();
 // Set the injection context.
 const previousInjector =
setCurrentInjector(this);
 try {
 // Check for the SkipSelf flag.
 if (!(flags & InjectFlags.SkipSelf)) {
 // SkipSelf isn't set, check if the record belongs to this injector.
 let record: Record<T>|undefined|null =
this.records.get(token);
 if (record === undefined) {
 // No record, but maybe the token is scoped to this
injector. Look for an injectable
 // def with a scope matching this injector.
 const def =
couldBeInjectableType(token) && getInjectableDef(token);
 if (def && this.injectableDefInScope(def)) {
 // Found an injectable def and it's scoped to this injector. Pretend as if it was here
 // all along.
 record = makeRecord(injectableDefOrInjectorDefFactory(token), NOT_YET);
 } else {
 record =
null;
 }
 this.records.set(token, record);
 }
 // If a record was found, get the instance for it
and return it.
 if (record != null /* NOT null || undefined */) {
 return this.hydrate(token, record);
 }
 }
 // Select the next injector based on the Self flag - if self is set, the next injector is
 // the
 NullInjector, otherwise it's the parent.
 const nextInjector = !(flags & InjectFlags.Self) ? this.parent :
getNullInjector();
 // Set the notFoundValue based on the Optional flag - if optional is set and notFoundValue
 // is undefined, the value is null, otherwise it's the notFoundValue.
 notFoundValue = (flags &
InjectFlags.Optional) && notFoundValue === THROW_IF_NOT_FOUND ? null :
notFoundValue;
 return nextInjector.get(token, notFoundValue);
 } catch (e) {
 if (e.name ===
'NullInjectorError') {
 const path: any[] = e[NG_TEMP_TOKEN_PATH] = e[NG_TEMP_TOKEN_PATH] ||
[];
 path.unshift(stringify(token));
 if (previousInjector) {
 // We still have a parent injector, keep
throwing
 throw e;
 } else {
 // Format & throw the final error message when we don't have any
previous injector
 return catchInjectorError(e, token, 'R3InjectorError', this.source);
 }
 } else {
 throw e;
 }
 } finally {
 // Lastly, clean up the state by restoring the previous injector.
 setCurrentInjector(previousInjector);
 }
}
/** @internal */
_resolveInjectorDefTypes() {
 this.injectorDefTypes.forEach(defType => this.get(defType));
}
toString() {
 const tokens = <string[]>[],
records = this.records;
records.forEach((v, token) => tokens.push(stringify(token)));
return
`R3Injector[${tokens.join(', ')}]`;
}
private assertNotDestroyed(): void {
 if (this._destroyed) {
 throw
new Error('Injector has already been destroyed.');
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resolveForwardRef(defOrWrappedDef);\n if (!defOrWrappedDef) return false;\n\n // Either the
defOrWrappedDef is an InjectorType (with injector def) or an\n // InjectorDefTypeWithProviders (aka
ModuleWithProviders). Detecting either is a megamorphic\n // read, so care is taken to only do the read once.\n\n\n // First attempt to read the injector def (`inj`).\n let def = getInjectorDef(defOrWrappedDef);\n\n // If that's not
present, then attempt to read ngModule from the InjectorDefTypeWithProviders.\n const ngModule =\n (def
== null) && (defOrWrappedDef as InjectorTypeWithProviders<any>).ngModule || undefined;\n\n // Determine
the InjectorType. In the case where `defOrWrappedDef` is an `InjectorType`,\n // then this is easy. In the case of
an InjectorDefTypeWithProviders, then the definition type\n // is the `ngModule`.\n const defType:
InjectorType<any> =\n (ngModule === undefined) ? (defOrWrappedDef as InjectorType<any>) :
ngModule;\n\n // Check for circular dependencies.\n if (ngDevMode && parents.indexOf(defType) !== -1) {\n
 const defName = stringify(defType);\n const path = parents.map(stringify);\n
 throwCyclicDependencyError(defName, path);\n }\n\n // Check for multiple imports of the same module\n
const isDuplicate = dedupStack.indexOf(defType) !== -1;\n\n // Finally, if defOrWrappedType was an
`InjectorDefTypeWithProviders`, then the actual\n // `InjectorDef` is on its `ngModule`.\n if (ngModule !==
undefined) {\n def = getInjectorDef(ngModule);\n }\n\n // If no definition was found, it might be from
exports. Remove it.\n if (def == null) {\n return false;\n }\n\n // Add providers in the same way that
@NgModule resolution did:\n\n // First, include providers from any imports.\n if (def.imports != null &&
!isDuplicate) {\n // Before processing defType's imports, add it to the set of parents. This way, if it ends\n
 // up deeply importing itself, this can be detected.\n ngDevMode && parents.push(defType);\n // Add it to the
set of dedups. This way we can detect multiple imports of the same module\n dedupStack.push(defType);\n\n
let importTypesWithProviders: (InjectorTypeWithProviders<any>[])|undefined;\n try {\n
 deepForEach(def.imports, imported => {\n if (this.processInjectorType(imported, parents, dedupStack)) {\n
 if (importTypesWithProviders === undefined) importTypesWithProviders = [];\n // If the processed
import is an injector type with providers, we store it in the\n // list of import types with providers, so that we
can process those afterwards.\n importTypesWithProviders.push(imported);\n }\n });\n } finally
{\n // Remove it from the parents set when finished.\n ngDevMode && parents.pop();\n }\n\n //
Imports which are declared with providers (TypeWithProviders) need to be processed\n // after all imported
modules are processed. This is similar to how View Engine\n // processes/merges module imports in the metadata
resolver. See: FW-1349.\n if (importTypesWithProviders !== undefined) {\n for (let i = 0; i <
importTypesWithProviders.length; i++) {\n const {ngModule, providers} = importTypesWithProviders[i];\n
 deepForEach(\n providers!,\n provider => this.processProvider(provider, ngModule, providers ||
EMPTY_ARRAY));\n }\n }\n }\n // Track the InjectorType and add a provider for it. It's important that
this is done after the\n // def's imports.\n this.injectorDefTypes.add(defType);\n this.records.set(defType,
makeRecord(def.factory, NOT_YET));\n\n // Next, include providers listed on the definition itself.\n const
defProviders = def.providers;\n if (defProviders != null && !isDuplicate) {\n const injectorType =
defOrWrappedDef as InjectorType<any>;\n deepForEach(\n defProviders, provider =>
this.processProvider(provider, injectorType, defProviders));\n }\n\n return (\n ngModule !== undefined
&&\n (defOrWrappedDef as InjectorTypeWithProviders<any>).providers !== undefined);\n }\n\n /**\n *
Process a `SingleProvider` and add it.\n *\n private processProvider(\n provider: SingleProvider,
ngModuleType: InjectorType<any>, providers: any[]): void {\n // Determine the token from the provider. Either
it's its own token, or has a {provide: ...}\n // property.\n provider = resolveForwardRef(provider);\n let token:
any =\n isTypeProvider(provider) ? provider : resolveForwardRef(provider && provider.provide);\n\n //
Construct a `Record` for the provider.\n const record = providerToRecord(provider, ngModuleType,
providers);\n\n if (!isTypeProvider(provider) && provider.multi === true) {\n // If the provider indicates that
it's a multi-provider, process it specially.\n // First check whether it's been defined already.\n let multiRecord =
this.records.get(token);\n if (multiRecord) {\n // It has. Throw a nice error if\n if (ngDevMode &&
multiRecord.multi === undefined) {\n throwMixedMultiProviderError();\n }\n } else {\n
multiRecord = makeRecord(undefined, NOT_YET, true);\n multiRecord.factory = () =>

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injectArgs(multiRecord!.multi!);\n this.records.set(token, multiRecord);\n }\n token = provider;\n multiRecord.multi!.push(provider);\n } else {\n const existing = this.records.get(token);\n if (ngDevMode\n && existing && existing.multi !== undefined) {\n throwMixedMultiProviderError();\n }\n }\n this.records.set(token, record);\n}\n\nprivate hydrate<T>(token: Type<T>|InjectionToken<T>, record:\nRecord<T>): T {\n if (ngDevMode && record.value === CIRCULAR) {\n throwCyclicDependencyError(stringify(token));\n } else if (record.value === NOT_YET) {\n record.value =\n CIRCULAR;\n record.value = record.factory!();\n }\n if (typeof record.value === 'object' && record.value\n && hasOnDestroy(record.value)) {\n this.onDestroy.add(record.value);\n }\n return record.value as T;\n}\n\nprivate injectableDefInScope(def: InjectableDef<any>): boolean {\n if (!def.providedIn) {\n return\n false;\n } else if (typeof def.providedIn === 'string') {\n return def.providedIn === 'any' || (def.providedIn ===\n this.scope);\n } else {\n return this.injectorDefTypes.has(def.providedIn);\n }\n}\n\nfunction\ninjectableDefOrInjectorDefFactory(token: Type<any>|InjectionToken<any>): FactoryFn<any> {\n // Most tokens\n will have an injectable def directly on them, which specifies a factory directly.\n const injectableDef =\n getInjectableDef(token);\n const factory = injectableDef !== null ? injectableDef.factory :\n getFactoryDef(token);\n\n if (factory !== null) {\n return factory;\n }\n\n // If the token is an NgModule, it's also\n injectable but the factory is on its injector def\n // ('inj')\n const injectorDef = getInjectorDef(token);\n if\n (injectorDef !== null) {\n return injectorDef.factory;\n }\n\n // InjectionTokens should have an injectable def\n (prov) and thus should be handled above.\n // If it's missing that, it's an error.\n if (token instanceof InjectionToken)\n {\n throw new Error(`Token ${stringify(token)} is missing a prov definition.`);\n }\n\n // Undecorated types can\n sometimes be created if they have no constructor arguments.\n if (token instanceof Function) {\n return\n getUndecoratedInjectableFactory(token);\n }\n\n // There was no way to resolve a factory for this token.\n throw\n new Error('unreachable');\n}\n\nfunction getUndecoratedInjectableFactory(token: Function) {\n // If the token has\n parameters then it has dependencies that we cannot resolve implicitly.\n const paramLength = token.length;\n if\n (paramLength > 0) {\n const args: string[] = newArray(paramLength, '?');\n throw new Error(`Can't resolve all\n parameters for ${stringify(token)}: (${args.join(', ')}).`);\n }\n\n // The constructor function appears to have no\n parameters.\n // This might be because it inherits from a super-class. In which case, use an injectable\n // def from\n an ancestor if there is one.\n // Otherwise this really is a simple class with no dependencies, so return a factory\n that\n // just instantiates the zero-arg constructor.\n const inheritedInjectableDef =\n getInheritedInjectableDef(token);\n if (inheritedInjectableDef !== null) {\n return () =>\n inheritedInjectableDef.factory(token as Type<any>);\n } else {\n return () => new (token as Type<any>)();\n }\n}\n\nfunction providerToRecord(\n provider: SingleProvider, ngModuleType: InjectorType<any>, providers:\n any[]): Record<any> {\n if (isValueProvider(provider)) {\n return makeRecord(undefined, provider.useValue);\n }\n else {\n const factory: (() => any)|undefined = providerToFactory(provider, ngModuleType, providers);\n return makeRecord(factory, NOT_YET);\n }\n}\n\n/**\n * Converts a `SingleProvider` into a factory function.\n *\n * @param provider provider to convert to factory\n */\nexport function providerToFactory(\n provider:\n SingleProvider, ngModuleType?: InjectorType<any>, providers?: any[]): () => any {\n let factory: (() =>\n any)|undefined = undefined;\n if (isTypeProvider(provider)) {\n const unwrappedProvider =\n resolveForwardRef(provider);\n return getFactoryDef(unwrappedProvider) ||\n injectableDefOrInjectorDefFactory(unwrappedProvider);\n } else {\n if (isValueProvider(provider)) {\n factory = () => resolveForwardRef(provider.useValue);\n } else if (isFactoryProvider(provider)) {\n factory =\n () => provider.useFactory(...injectArgs(provider.deps || []));\n } else if (isExistingProvider(provider)) {\n factory = () => inject(resolveForwardRef(provider.useExisting));\n } else {\n const classRef =\n resolveForwardRef(\n provider &&\n ((provider as StaticClassProvider | ClassProvider).useClass ||\n provider.provide));\n if (ngDevMode && !classRef) {\n throwInvalidProviderError(ngModuleType,\n providers, provider);\n }\n if (hasDeps(provider)) {\n factory = () => new\n (classRef)(...injectArgs(provider.deps));\n } else {\n return getFactoryDef(classRef) ||\n injectableDefOrInjectorDefFactory(classRef);\n }\n }\n }\n return factory;\n}\n\nfunction makeRecord<T>(\n factory: (() => T)|undefined, value: T|{, multi: boolean = false): Record<T> {\n return {\n factory: factory,\n }

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value: value;\n multi: multi ? [] : undefined;\n };\n}\n\nfunction isValueProvider(value: SingleProvider): value is
ValueProvider {\n return value !== null && typeof value === 'object' && USE_VALUE in value;\n}\n\nfunction
isExistingProvider(value: SingleProvider): value is ExistingProvider {\n return !(value && (value as
ExistingProvider).useExisting);\n}\n\nfunction isFactoryProvider(value: SingleProvider): value is FactoryProvider
{\n return !(value && (value as FactoryProvider).useFactory);\n}\n\n\nexport function isTypeProvider(value:
SingleProvider): value is TypeProvider {\n return typeof value === 'function';\n}\n\n\nexport function
isClassProvider(value: SingleProvider): value is ClassProvider {\n return !(value as StaticClassProvider |
ClassProvider).useClass;\n}\n\n\nfunction hasDeps(value: ClassProvider|ConstructorProvider|\n
StaticClassProvider): value is ClassProvider&{deps: any[]} {\n return !(value as any).deps;\n}\n\n\nfunction
hasOnDestroy(value: any): value is OnDestroy {\n return value !== null && typeof value === 'object' &&\n
typeof (value as OnDestroy).ngOnDestroy === 'function';\n}\n\n\nfunction couldBeInjectableType(value: any): value
is Type<any>|InjectionToken<any> {\n return (typeof value === 'function') ||\n (typeof value === 'object' &&
value instanceof InjectionToken);\n}\n\n"/**\n * @license\n * Copyright Google LLC All Rights Reserved.\n *\n *
Use of this source code is governed by an MIT-style license that can be\n * found in the LICENSE file at
https://angular.io/license\n */\n\nimport { AbstractType, Type } from './interface/type';\nimport { stringify } from
'./util/stringify';\nimport { resolveForwardRef } from './forward_ref';\nimport { InjectionToken } from
'./injection_token';\nimport { catchInjectorError, formatError, NG_TEMP_TOKEN_PATH, setCurrentInjector,
THROW_IF_NOT_FOUND, USE_VALUE, inject } from './injector_compatibility';\nimport { InjectorMarkers }
from './injector_marker';\nimport { INJECTOR } from './injector_token';\nimport { getInjectableDef, defineInjectable }
from './interface/defs';\nimport { InjectFlags } from './interface/injector';\nimport { ConstructorProvider,
ExistingProvider, FactoryProvider, StaticClassProvider, StaticProvider, ValueProvider } from
'./interface/provider';\nimport { Inject, Optional, Self, SkipSelf } from './metadata';\nimport { NullInjector } from
'./null_injector';\nimport { createInjector } from './r3_injector';\nimport { INJECTOR_SCOPE } from
'./scope';\n\nexport function INJECTOR_IMPL__PRE_R3__(\n providers: StaticProvider[], parent:
Injector|undefined, name: string) {\n return new StaticInjector(providers, parent, name);\n}\n\nexport function
INJECTOR_IMPL__POST_R3__(\n providers: StaticProvider[], parent: Injector|undefined, name: string) {\n
return createInjector({ name: name }, parent, providers, name);\n}\n\nexport const INJECTOR_IMPL =
INJECTOR_IMPL__PRE_R3__;\n\n/**\n * Concrete injectors implement this interface. Injectors are configured\n
* with [providers](guide/glossary#provider) that associate\n * dependencies of various types with [injection
tokens](guide/glossary#di-token).\n *\n * @see ["DI Providers"](guide/dependency-injection-providers).\n *\n * @see
`StaticProvider`\n *\n * @usageNotes\n *\n * The following example creates a service injector instance.\n *\n *
{@example core/di/ts/provider_spec.ts region='ConstructorProvider'}\n *\n * ### Usage example\n *\n *
{@example core/di/ts/injector_spec.ts region='Injector'}\n *\n * `Injector` returns itself when given `Injector` as a
token:\n *\n * {@example core/di/ts/injector_spec.ts region='injectInjector'}\n *\n * @publicApi\n */\n\nexport
abstract class Injector {\n static THROW_IF_NOT_FOUND = THROW_IF_NOT_FOUND;\n static NULL:
Injector = new NullInjector();\n\n /**\n * Retrieves an instance from the injector based on the provided token.\n
 *\n * @returns The instance from the injector if defined, otherwise the `notFoundValue`.\n * @throws When the
`notFoundValue` is `undefined` or `Injector.THROW_IF_NOT_FOUND`.\n */\n abstract get<T>(\n token:
Type<T>|InjectionToken<T>|AbstractType<T>, notFoundValue?: T, flags?: InjectFlags): T;\n\n /**\n *
@deprecated from v4.0.0 use Type<T> or InjectionToken<T>\n * @suppress {duplicate}\n */\n abstract
get(token: any, notFoundValue?: any): any;\n\n /**\n * @deprecated from v5 use the new signature\n */\n
 Injector.create(options)\n */\n static create(providers: StaticProvider[], parent?: Injector): Injector;\n\n /**\n
 * Creates a new injector instance that provides one or more dependencies,\n * according to a given type or types of
`StaticProvider`.\n *\n * @param options An object with the following properties:\n * * `providers`: An array of
providers of the [StaticProvider type](api/core/StaticProvider).\n * * `parent`: (optional) A parent injector.\n *
* `name`: (optional) A developer-defined identifying name for the new injector.\n *\n * @returns The new injector
instance.\n *\n */\n static create(options: { providers: StaticProvider[], parent?: Injector, name?: string }):
Injector;\n\n static create(\n options: StaticProvider[]|{ providers: StaticProvider[], parent?: Injector, name?:

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looks like a provider: {provide: ?, ...}\n let token = resolveForwardRef(provider.provide);\n const
resolvedProvider = resolveProvider(provider);\n if (provider.multi === true) {\n // This is a multi provider.\n
 let multiProvider: Record|undefined = records.get(token);\n if (multiProvider) {\n if (multiProvider.fn
!:= MULTI_PROVIDER_FN) {\n throw multiProviderMixError(token);\n }\n } else {\n //
Create a placeholder factory which will look up the constituents of the multi provider.\n records.set(token,
multiProvider = <Record>{\n token: provider.provide,\n deps: [],\n useNew: false,\n fn:
MULTI_PROVIDER_FN,\n value: EMPTY\n });\n }\n // Treat the provider as the token.\n
token = provider;\n multiProvider.deps.push({ token, options: OptionFlags.Default});\n }\n const record =
records.get(token);\n if (record && record.fn === MULTI_PROVIDER_FN) {\n throw
multiProviderMixError(token);\n }\n if (token === INJECTOR_SCOPE) {\n scope =
resolvedProvider.value;\n }\n records.set(token, resolvedProvider);\n } else {\n throw
staticError('Unexpected provider', provider);\n }\n }\n return scope;\n }\n\nfunction tryResolveToken(\n token:
any, record: Record|undefined|null, records: Map<any, Record|null>, parent: Injector,\n notFoundValue: any,
flags: InjectFlags): any {\n try {\n return resolveToken(token, record, records, parent, notFoundValue, flags);\n }
catch (e) {\n // ensure that 'e' is of type Error.\n if (!(e instanceof Error)) {\n e = new Error(e);\n }\n const
path: any[] = e[NG_TEMP_TOKEN_PATH] = e[NG_TEMP_TOKEN_PATH] || [];\n path.unshift(token);\n if
(record && record.value === CIRCULAR) {\n // Reset the Circular flag.\n record.value = EMPTY;\n }\n
throw e;\n }\n}\n\nfunction resolveToken(\n token: any, record: Record|undefined|null, records: Map<any,
Record|null>, parent: Injector,\n notFoundValue: any, flags: InjectFlags): any {\n let value;\n if (record &&
!(flags & InjectFlags.SkipSelf)) {\n // If we don't have a record, this implies that we don't own the provider hence
don't know how\n // to resolve it.\n value = record.value;\n if (value === CIRCULAR) {\n throw
Error(NO_NEW_LINE + 'Circular dependency');\n } else if (value === EMPTY) {\n record.value =
CIRCULAR;\n let obj = undefined;\n let useNew = record.useNew;\n let fn = record.fn;\n let
depRecords = record.deps;\n let deps = EMPTY;\n if (depRecords.length) {\n deps = [];\n for (let i =
0; i < depRecords.length; i++) {\n const depRecord: DependencyRecord = depRecords[i];\n const
options = depRecord.options;\n const childRecord =\n options & OptionFlags.CheckSelf ?
records.get(depRecord.token) : undefined;\n deps.push(tryResolveToken(\n // Current Token to
resolve\n depRecord.token,\n // A record which describes how to resolve the token.\n // If
undefined, this means we don't have such a record\n childRecord,\n // Other records we know
about.\n records,\n // If we don't know how to resolve dependency and we should not check parent
for it,\n // than pass in Null injector.\n !childRecord && !(options & OptionFlags.CheckParent) ?
Injector.NULL : parent,\n options & OptionFlags.Optional ? null : Injector.THROW_IF_NOT_FOUND,\n
InjectFlags.Default));\n }\n }\n record.value = value = useNew ? new (fn as any)(...deps) :
fn.apply(obj, deps);\n }\n } else if (!(flags & InjectFlags.Self)) {\n value = parent.get(token, notFoundValue,
InjectFlags.Default);\n } else if (!(flags & InjectFlags.Optional)) {\n value = Injector.NULL.get(token,
notFoundValue);\n } else {\n value = Injector.NULL.get(token, typeof notFoundValue !== 'undefined' ?
notFoundValue : null);\n }\n return value;\n }\n\nfunction computeDeps(provider: StaticProvider):
DependencyRecord[] {\n let deps: DependencyRecord[] = EMPTY;\n const providerDeps: any[] =\n (provider
as ExistingProvider & StaticClassProvider & ConstructorProvider).deps;\n if (providerDeps &&
providerDeps.length) {\n deps = [];\n for (let i = 0; i < providerDeps.length; i++) {\n let options =
OptionFlags.Default;\n let token = resolveForwardRef(providerDeps[i]);\n if (Array.isArray(token)) {\n
for (let j = 0, annotations = token; j < annotations.length; j++) {\n const annotation = annotations[j];\n if
(annotation instanceof Optional || annotation === Optional) {\n options = options | OptionFlags.Optional;\n
} else if (annotation instanceof SkipSelf || annotation === SkipSelf) {\n options = options &
~OptionFlags.CheckSelf;\n } else if (annotation instanceof Self || annotation === Self) {\n options =
options & ~OptionFlags.CheckParent;\n } else if (annotation instanceof Inject) {\n token = (annotation
as Inject).token;\n } else {\n token = resolveForwardRef(annotation);\n }\n }\n }\n }\n
deps.push({token, options});\n }\n } else if ((provider as ExistingProvider).useExisting) {\n const token =

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resolveForwardRef((provider as ExistingProvider).useExisting);\n deps = [{token, options:
OptionFlags.Default}];\n } else if (!providerDeps && !(USE_VALUE in provider)) {\n // useValue &
useExisting are the only ones which are exempt from deps all others need it.\n throw staticError("\`deps\`
required', provider);\n }\n return deps;\n}\n\nfunction staticError(text: string, obj: any): Error {\n return new
Error(formatError(text, obj, 'StaticInjectorError'));\n}\n\n"/**\n * @license\n * Copyright Google LLC All Rights
Reserved.\n *\n * Use of this source code is governed by an MIT-style license that can be\n * found in the
LICENSE file at https://angular.io/license\n *\n\nimport {Injector} from '../di/injector';\nimport {assertEqual}
from '../util/assert';\nimport {assertLView} from '../assert';\nimport {discoverLocalRefs,
GetComponentAtNodeIndex, getDirectivesAtNodeIndex, getLContext} from './context_discovery';\nimport
{NodeInjector} from '../di';\nimport {buildDebugNode} from './instructions/lview_debug';\nimport {LContext}
from './interfaces/context';\nimport {DirectiveDef} from './interfaces/definition';\nimport {TElementNode, TNode,
TNodeProviderIndexes} from './interfaces/node';\nimport {isLView} from './interfaces/type_checks';\nimport
{CLEANUP, CONTEXT, DebugNode, FLAGS, LView, LViewFlags, T_HOST, TVIEW, TViewType} from
 './interfaces/view';\nimport {stringifyForError} from './stringify_utils';\nimport {getLViewParent, getRootContext}
from './view_traversal_utils';\nimport {getTNode, unwrapRNode} from './view_utils';\n\n\n/**\n * Retrieves the
component instance associated with a given DOM element.\n *\n * @usageNotes\n * Given the following DOM
structure:\n *\n * ``html\n * <my-app>\n * <div>\n * <child-comp></child-comp>\n * </div>\n * </my-app>\n *
``\n * Calling `GetComponent` on `<child-comp>` will return the instance of `ChildComponent`\n * associated with
this DOM element.\n *\n * Calling the function on `<my-app>` will return the `MyApp` instance.\n *\n * @param element DOM element from which the component should be retrieved.\n * @returns Component instance
associated with the element or `null` if there\n * is no component associated with it.\n *\n * @publicApi\n *
@globalApi\n */\n\nexport function GetComponent<T>(element: Element): T|null {\n
assertDomElement(element);\n const context = loadLContext(element, false);\n if (context === null) return
null;\n\n if (context.component === undefined) {\n context.component =
GetComponentAtNodeIndex(context.nodeIndex, context.IView);\n }\n\n return context.component as
T;\n}\n\n\n/**\n * If inside an embedded view (e.g. `ngIf` or `ngFor`), retrieves the context of the embedded\n *
view that the element is part of. Otherwise retrieves the instance of the component whose view\n * owns the element
(in this case, the result is the same as calling `getOwningComponent`).\n *\n * @param element Element for which
to get the surrounding component instance.\n * @returns Instance of the component that is around the element or
null if the element isn't\n * inside any component.\n *\n * @publicApi\n * @globalApi\n */\n\nexport function
getContext<T>(element: Element): T|null {\n assertDomElement(element);\n const context =
loadLContext(element, false);\n return context === null ? null : context.IView[CONTEXT] as T;\n}\n\n\n/**\n *
Retrieves the component instance whose view contains the DOM element.\n *\n * For example, if `<child-comp>` is
used in the template of `<app-comp>`\n * (i.e. a `ViewChild` of `<app-comp>`), calling `getOwningComponent` on
`<child-comp>`\n * would return `<app-comp>`.\n *\n * @param elementOrDir DOM element, component or
directive instance\n * for which to retrieve the root components.\n * @returns Component instance whose view
owns the DOM element or null if the element is not\n * part of a component view.\n *\n * @publicApi\n *
@globalApi\n */\n\nexport function getOwningComponent<T>(elementOrDir: Element|{}): T|null {\n const
context = loadLContext(elementOrDir, false);\n if (context === null) return null;\n\n let IView = context.IView;\n
let parent: LView|null;\n ngDevMode && assertLView(IView);\n while (IView[TVIEW].type ===
TViewType.Embedded && (parent = getLViewParent(IView!))) {\n IView = parent;\n }\n return IView[FLAGS]
& LViewFlags.IsRoot ? null : IView[CONTEXT] as T;\n}\n\n\n/**\n * Retrieves all root components associated with
a DOM element, directive or component instance.\n * Root components are those which have been bootstrapped by
Angular.\n *\n * @param elementOrDir DOM element, component or directive instance\n * for which to retrieve
the root components.\n * @returns Root components associated with the target object.\n *\n * @publicApi\n *
@globalApi\n */\n\nexport function getRootComponents(elementOrDir: Element|{}): {}[] {\n return
[...getRootContext(elementOrDir).components];\n}\n\n\n/**\n * Retrieves an `Injector` associated with an element,
component or directive instance.\n *\n * @param elementOrDir DOM element, component or directive instance for

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which to\n * retrieve the injector.\n * @returns Injector associated with the element, component or directive
instance.\n *\n * @publicApi\n * @globalApi ng\n */\nexport function getInjector(elementOrDir: Element|{}):
Injector {\n const context = loadLContext(elementOrDir, false);\n if (context === null) return Injector.NULL;\n const tNode = context.IView[TVIEW].data[context.nodeIndex] as TElementNode;\n return new
NodeInjector(tNode, context.IView);\n}\n\n/**\n * Retrieve a set of injection tokens at a given DOM node.\n *\n * @param element Element for which the injection tokens should be retrieved.\n */\nexport function
getInjectionTokens(element: Element): any[] {\n const context = loadLContext(element, false);\n if (context ===
null) return [];\n const IView = context.IView;\n const tView = IView[TVIEW];\n const tNode =
tView.data[context.nodeIndex] as TNode;\n const providerTokens: any[] = [];\n const startIndex =
tNode.providerIndexes & TNodeProviderIndexes.ProvidersStartIndexMask;\n const endIndex =
tNode.directiveEnd;\n for (let i = startIndex; i < endIndex; i++) {\n let value = tView.data[i];\n if
(isDirectiveDefHack(value)) {\n // The fact that we sometimes store Type and sometimes DirectiveDef in this
location is a\n // design flaw. We should always store same type so that we can be monomorphic. The issue\n
// is that for Components/Directives we store the def instead the type. The correct behavior\n // is that we should
always be storing injectable type in this location.\n value = value.type;\n }\n providerTokens.push(value);\n }\n return providerTokens;\n}\n\n/**\n * Retrieves directive instances associated with a given DOM element. Does
not include\n * component instances.\n *\n * @usageNotes\n * Given the following DOM structure:\n * ```\n *
<my-app>\n * <button my-button></button>\n * <my-comp></my-comp>\n * </my-app>\n * ```\n * Calling
`getDirectives` on `<button>` will return an array with an instance of the `MyButton`\n * directive that is associated
with the DOM element.\n * Calling `getDirectives` on `<my-comp>` will return an empty array.\n *\n * @param
element DOM element for which to get the directives.\n * @returns Array of directives associated with the
element.\n *\n * @publicApi\n * @globalApi ng\n */\nexport function getDirectives(element: Element): {}[] {\n
const context = loadLContext(element!);\n if (context.directives === undefined) {\n context.directives =
getDirectivesAtNodeIndex(context.nodeIndex, context.IView, false);\n }\n // The `directives` in this case are a
named array called `LComponentView`. Clone the\n // result so we don't expose an internal data structure in the
user's console.\n return context.directives === null ? [] : [...context.directives];\n}\n\n/**\n * Returns LContext
associated with a target passed as an argument.\n * Throws if a given target doesn't have associated LContext.\n
*/\nexport function loadLContext(target: {}): LContext;\nexport function loadLContext(target: {},
throwOnNotFound: boolean =
true): LContext|null {\n const context = getLContext(target);\n if (!context && throwOnNotFound) {\n throw
new Error(\n ngDevMode ? `Unable to find context associated with ${stringifyForError(target)}` :\n
'Invalid ng target');\n }\n return context;\n}\n\n/**\n * Retrieve map of local references.\n *\n * The references are
retrieved as a map of local reference name to element or directive instance.\n *\n * @param target DOM element,
component or directive instance for which to retrieve\n * the local references.\n */\nexport function
getLocalRefs(target: {}): {[key: string]: any} {\n const context = loadLContext(target, false);\n if (context ===
null) return {};\n if (context.localRefs === undefined) {\n context.localRefs =
discoverLocalRefs(context.IView, context.nodeIndex);\n }\n return context.localRefs || {};\n}\n\n/**\n *
Retrieves the host element of a component or directive instance.\n * The host element is the DOM element that
matched the selector of the directive.\n *\n * @param componentOrDirective Component or directive instance for
which the host\n * element should be retrieved.\n * @returns Host element of the target.\n *\n * @publicApi\n *
@globalApi ng\n */\nexport function getHostElement(componentOrDirective: {}): Element {\n return
getLContext(componentOrDirective!).native as never as Element;\n}\n\n/**\n * Retrieves the rendered text for a
given component.\n *\n * This function retrieves the host element of a component and\n * and then returns the
`textContent` for that element. This implies\n * that the text returned will include re-projected content of\n * the
component as well.\n *\n * @param component The component to return the content text for.\n */\nexport function
getRenderedText(component: any): string {\n const hostElement = getHostElement(component);\n return
hostElement.textContent || '';\n}\n\nexport function loadLContextFromNode(node: Node): LContext {\n if (!(node
instanceof Node)) throw new Error('Expecting instance of DOM Element');\n return

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from './interfaces/view';\nimport {writeDirectClass, writeDirectStyle} from './node_manipulation';\nimport
{enterView, getCurrentTNode, leaveView, setSelectedIndex} from './state';\nimport {computeStaticStyling} from
 './styling/static_styling';\nimport {setUpAttributes} from './util/attrs_utils';\nimport {publishDefaultGlobalUtils}
from './util/global_utils';\nimport {defaultScheduler} from './util/misc_utils';\nimport {getRootContext} from
 './util/view_traversal_utils';\nimport {readPatchedLView} from './util/view_utils';\n\n\n/** Options that control
how the component should be bootstrapped. */\nexport interface CreateComponentOptions {\n /** Which renderer
factory to use. */\n rendererFactory?: RendererFactory3;\n\n /** A custom sanitizer instance */\n sanitizer?:
Sanitizer;\n\n /** A custom animation player handler */\n playerHandler?: PlayerHandler;\n\n /**\n * Host
element on which the component will be bootstrapped. If not specified,\n * the component definition's `tag` is used
to query the existing DOM for the\n * element to bootstrap.\n */\n host?: RElement|string;\n\n /** Module
injector for the component. If unspecified, the injector will be NULL_INJECTOR. */\n injector?: Injector;\n\n
 /**\n * List of features to be applied to the created component. Features are simply\n * functions that decorate a
component with a certain behavior.\n *\n * Typically, the features in this list are features that cannot be added to
the\n * other features list in the component definition because they rely on other factors.\n *\n * Example:
`LifecycleHooksFeature` is a function that adds lifecycle hook capabilities\n * to root components in a tree-
shakable way. It cannot be added to the component\n * features list because there's no way of knowing when the
component will be used as\n * a root component.\n */\n hostFeatures?: HostFeature[];\n\n /**\n * A function
which is used to schedule change detection work in the future.\n *\n * When marking components as dirty, it is
necessary to schedule the work of\n * change detection in the future. This is done to coalesce multiple\n * { @link
markDirty} calls into a single changed detection processing.\n *\n * The default value of the scheduler is the
`requestAnimationFrame` function.\n *\n * It is also useful to override this function for testing purposes.\n */\n
 scheduler?: (work: () => void) => void;\n}\n\n\n/** See CreateComponentOptions.hostFeatures */\ntype HostFeature
= (<T>(component: T, componentDef: ComponentDef<T>) => void);\n\n// TODO: A hack to not pull in the
NullInjector from @angular/core.\nexport const NULL_INJECTOR: Injector = {\n get: (token: any,
notFoundValue?: any) => {\n throwProviderNotFoundError(token, 'NullInjector');\n }\n};\n\n\n/** Bootstraps a
Component into an existing host element and returns an instance\n * of the component.\n *\n * Use this function to
bootstrap a component into the DOM tree. Each invocation\n * of this function will create a separate tree of
components, injectors and\n * change detection cycles and lifetimes. To dynamically insert a new component\n *
into an existing tree such that it shares the same injection, change detection\n * and object lifetime, use { @link
ViewContainer#createComponent}.\n *\n * @param componentType Component to bootstrap\n * @param options
Optional parameters which control bootstrapping */\nexport function renderComponent<T>(\n componentType:
ComponentType<T>|\n Type<T> /* Type as workaround for: Microsoft/TypeScript/issues/4881 */\n ,\n opts:
CreateComponentOptions = {}): T {\n ngDevMode && publishDefaultGlobalUtils();\n ngDevMode &&
assertComponentType(componentType);\n\n const rendererFactory = opts.rendererFactory ||
domRendererFactory3;\n const sanitizer = opts.sanitizer || null;\n const componentDef =
getComponentDef<T>(componentType);\n if (componentDef.type !== componentType) (componentDef as {type:
Type<any>}).type = componentType;\n\n // The first index of the first selector is the tag name.\n const
componentTag = componentDef.selectors![0][0] as string;\n const hostRenderer =
rendererFactory.createRenderer(null, null);\n const hostRNode =\n locateHostElement(hostRenderer, opts.host ||
componentTag, componentDef.encapsulation);\n const rootFlags = componentDef.onPush ? LViewFlags.Dirty |
LViewFlags.IsRoot :\n\n LViewFlags.CheckAlways | LViewFlags.IsRoot;\n const
rootContext = createRootContext(opts.scheduler, opts.playerHandler);\n\n const renderer =
rendererFactory.createRenderer(hostRNode, componentDef);\n const rootTView = createTView(TViewType.Root,
null, null, 1, 0, null, null, null, null, null);\n const rootView: LView = createLView(\n null, rootTView,
rootContext, rootFlags, null, null, rendererFactory, renderer, null,\n opts.injector || null);\n\n enterView(rootView);\n let component: T;\n\n try {\n if (rendererFactory.begin) rendererFactory.begin();\n\n const componentView = createRootComponentView(\n hostRNode, componentDef, rootView, rendererFactory,
renderer, sanitizer);\n component = createRootComponent(\n componentView, componentDef, rootView,

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rootContext, opts.hostFeatures || null);\n\n // create mode pass\n renderView(rootTView, rootView, null);\n //
update mode pass\n refreshView(rootTView, rootView, null, null);\n } finally {\n leaveView();\n if
(rendererFactory.end) rendererFactory.end();\n }\n\n return component;\n}\n\n/**\n * Creates the root component
view and the root component node.\n *\n * @param rNode Render host element.\n *\n * @param def ComponentDef\n
*\n * @param rootView The parent view where the host node is stored\n *\n * @param rendererFactory Factory to be used
for creating child renderers.\n *\n * @param hostRenderer The current renderer\n *\n * @param sanitizer The sanitizer, if
provided\n *\n * @returns Component view created\n */\n\nexport function createRootComponentView(\n rNode:
RElement|null, def: ComponentDef<any>, rootView: LView,\n rendererFactory: RendererFactory3, hostRenderer:
Renderer3, sanitizer?: Sanitizer|null): LView {\n const tView = rootView[TVIEW];\n const index =
HEADER_OFFSET;\n ngDevMode && assertIndexInRange(rootView, index);\n rootView[index] = rNode;\n //
'#host' is added here as we don't know the real host DOM name (we don't want to read it) and at\n // the same time
we want to communicate the the debug `TNode` that this is a special `TNode`\n // representing a host element.\n
const tNode: TElementNode = getOrCreateTNode(tView, index, TNodeType.Element, '#host', null);\n const
mergedAttrs = tNode.mergedAttrs = def.hostAttrs;\n if (mergedAttrs !== null) {\n computeStaticStyling(tNode,
mergedAttrs, true);\n if (rNode !== null) {\n setUpAttributes(hostRenderer, rNode, mergedAttrs);\n if
(tNode.classes !== null) {\n writeDirectClass(hostRenderer, rNode, tNode.classes);\n }\n if (tNode.styles
!== null) {\n writeDirectStyle(hostRenderer, rNode, tNode.styles);\n }\n }\n }\n\n const viewRenderer =
rendererFactory.createRenderer(rNode, def);\n const componentView = createLView(\n rootView,\n getOrCreateTComponentView(def), null,\n def.onPush ? LViewFlags.Dirty : LViewFlags.CheckAlways,\n rootView[index], tNode,\n rendererFactory, viewRenderer, sanitizer || null, null);\n\n if (tView.firstCreatePass)
{\n diPublicInInjector(getOrCreateNodeInjectorForNode(tNode, rootView), tView, def.type);\n markAsComponentHost(tView, tNode);\n initTNodeFlags(tNode, rootView.length, 1);\n }\n\n addToViewTree(rootView, componentView);\n\n // Store component view at node index, with node as the HOST\n
return rootView[index] = componentView;\n}\n\n/**\n * Creates a root component and sets it up with features and
host bindings. Shared by\n * renderComponent() and ViewContainerRef.createComponent().\n */\n\nexport function
createRootComponent<T>(\n componentView: LView, componentDef: ComponentDef<T>, rootLView: LView,\n rootContext: RootContext,\n hostFeatures: HostFeature[]|null): any {\n const tView = rootLView[TVIEW];\n //
Create directive instance with factory() and store at next index in viewData\n const component =
instantiateRootComponent(tView, rootLView, componentDef);\n\n rootContext.components.push(component);\n
 componentView[CONTEXT] = component;\n\n hostFeatures && hostFeatures.forEach((feature) =>
feature(component, componentDef));\n\n // We want to generate an empty QueryList for root content queries for
backwards\n // compatibility with ViewEngine.\n if (componentDef.contentQueries) {\n const tNode =
getCurrentTNode()!;\n ngDevMode && assertDefined(tNode, 'TNode expected');\n
 componentDef.contentQueries(RenderFlags.Create, component, tNode.directiveStart);\n }\n\n const rootTNode =
getCurrentTNode()!;\n ngDevMode && assertDefined(rootTNode, 'tNode should have been already created');\n if
(tView.firstCreatePass &&\n (componentDef.hostBindings !== null || componentDef.hostAttrs !== null)) {\n
 setSelectedIndex(rootTNode.index);\n const rootTView = rootLView[TVIEW];\n
 registerHostBindingOpCodes(\n rootTView, rootTNode, rootLView, rootTNode.directiveStart,\n rootTNode.directiveEnd,\n componentDef);\n\n invokeHostBindingsInCreationMode(componentDef,
component);\n }\n return component;\n}\n\n\nexport function createRootContext(\n scheduler?: (workFn: () =>
void) => void, playerHandler?: PlayerHandler|null): RootContext {\n return {\n components: [],\n scheduler:
scheduler || defaultScheduler,\n clean: CLEAN_PROMISE,\n playerHandler: playerHandler || null,\n flags:
RootContextFlags.Empty\n };\n}\n\n/**\n * Used to enable lifecycle hooks on the root component.\n *\n * Include
this feature when calling `renderComponent` if the root component\n * you are rendering has lifecycle hooks
defined. Otherwise, the hooks won't\n * be called properly.\n *\n * Example:\n *\n * ```\n *
renderComponent(AppComponent, {hostFeatures: [LifecycleHooksFeature]});\n * ```\n */\n\nexport function
LifecycleHooksFeature(component: any, def: ComponentDef<any>): void {\n const IView =
readPatchedLView(component)!;\n ngDevMode && assertDefined(IView, 'LView is required');\n const tView =

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IView[TVIEW];\n const tNode = getCurrentTNode(!);\n ngDevMode && assertDefined(tNode, 'TNode is
required');\n registerPostOrderHooks(tView, tNode);\n}\n\n/**\n * Wait on component until it is rendered.\n *\n * This function returns a `Promise` which is resolved when the component's\n * change detection is executed. This is
determined by finding the scheduler\n * associated with the `component`'s render tree and waiting until the
scheduler\n * flushes. If nothing is scheduled, the function returns a resolved promise.\n *\n * Example:\n * ```\n * await whenRendered(myComponent);\n * ```\n *\n * @param component Component to wait upon\n * @returns
Promise which resolves when the component is rendered.\n */\nexport function whenRendered(component: any):
Promise<null> {\n return getRootContext(component).clean;\n}\n\n",/**\n * @license\n * Copyright Google LLC
All Rights Reserved.\n *\n * Use of this source code is governed by an MIT-style license that can be\n * found in
the LICENSE file at https://angular.io/license\n */\nimport {Type, Writable} from './interface/type';\nimport
{fillProperties} from './util/property';\nimport {EMPTY_ARRAY, EMPTY_OBJ} from './empty';\nimport
{ComponentDef, ContentQueriesFunction, DirectiveDef, DirectiveDefFeature, HostBindingsFunction, RenderFlags,
ViewQueriesFunction} from './interfaces/definition';\nimport {TAttributes} from './interfaces/node';\nimport
{isComponentDef} from './interfaces/type_checks';\nimport {mergeHostAttrs} from './util/attrs_utils';\n\nexport
function getSuperType(type: Type<any>): Type<any>&\n {cmp?: ComponentDef<any>, dir?:
DirectiveDef<any>} {\n return Object.getPrototypeOf(type.prototype).constructor;\n}\n\nntype WritableDef =
Writable<DirectiveDef<any>|ComponentDef<any>>;\n\n/**\n * Merges the definition from a super class to a sub
class.\n *\n * @param definition The definition that is a SubClass of another directive of component\n *\n *
@codeGenApi\n */\nexport function InheritDefinitionFeature(definition:
DirectiveDef<any>|ComponentDef<any>): void {\n let superType = getSuperType(definition.type);\n let
shouldInheritFields = true;\n const inheritanceChain: WritableDef[] = [definition];\n while (superType) {\n let
superDef: DirectiveDef<any>|ComponentDef<any>|undefined = undefined;\n if (isComponentDef(definition)) {\n
 // Don't use getComponentDef/getDirectiveDef. This logic relies on inheritance.\n superDef = superType.cmp
|| superType.dir;\n } else {\n if (superType.cmp) {\n throw new Error('Directives cannot inherit
Components');\n }\n // Don't use getComponentDef/getDirectiveDef. This logic relies on inheritance.\n
 superDef = superType.dir;\n }\n if (superDef) {\n if (shouldInheritFields) {\n
 inheritanceChain.push(superDef);\n // Some fields in the definition may be empty, if there were no values to put
in them that\n // would've justified object creation. Unwrap them if necessary.\n const writeableDef =
definition as WritableDef;\n writeableDef.inputs = maybeUnwrapEmpty(definition.inputs);\n
 writeableDef.declaredInputs = maybeUnwrapEmpty(definition.declaredInputs);\n writeableDef.outputs =
maybeUnwrapEmpty(definition.outputs);\n // Merge hostBindings\n const superHostBindings =
superDef.hostBindings;\n superHostBindings && inheritHostBindings(definition, superHostBindings);\n // Merge queries\n
 const superViewQuery = superDef.viewQuery;\n const superContentQueries =
superDef.contentQueries;\n superViewQuery && inheritViewQuery(definition, superViewQuery);\n
 superContentQueries && inheritContentQueries(definition, superContentQueries);\n // Merge inputs and
outputs\n fillProperties(definition.inputs, superDef.inputs);\n fillProperties(definition.declaredInputs,
superDef.declaredInputs);\n fillProperties(definition.outputs, superDef.outputs);\n // Merge animations
metadata.\n // If `superDef` is a Component, the `data` field is present (defaults to an empty object).\n if
(isComponentDef(superDef) && superDef.data.animation) {\n // If super def is a Component, the `definition`
is also a Component, since Directives can\n // not inherit Components (we throw an error above and cannot
reach this code).\n const defData = (definition as ComponentDef<any>).data;\n defData.animation =
(defData.animation || []).concat(superDef.data.animation);\n }\n // Run parent features\n const
features = superDef.features;\n if (features) {\n for (let i = 0; i < features.length; i++) {\n const feature
= features[i];\n if (feature && feature.ngInherit) {\n (feature as DirectiveDefFeature)(definition);\n
 }\n // If `InheritDefinitionFeature` is a part of the current `superDef`, it means that this\n // def already
has all the necessary information inherited from its super class(es), so we\n // can stop merging fields from
super classes. However we need to iterate through the\n // prototype chain to look for classes that might
contain other `features` (like\n // NgOnChanges), which we should invoke for the original `definition`. We

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set the\n // `shouldInheritFields` flag to indicate that, essentially skipping fields inheritance\n // logic and
only invoking functions from the `features` list.\n if (feature === InheritDefinitionFeature) {\n
shouldInheritFields = false;\n }\n }\n }\n }\n superType = Object.getPrototypeOf(superType);\n
}\n mergeHostAttrsAcrossInheritance(inheritanceChain);\n }\n }\n }\n }\n Merge the `hostAttrs` and `hostVars` from
the inherited parent to the base class.\n *\n * @param inheritanceChain A list of `WritableDefs` starting at the top
most type and listing\n * sub-types in order. For each type take the `hostAttrs` and `hostVars` and merge it with the
child\n * type.\n *\n * function mergeHostAttrsAcrossInheritance(inheritanceChain: WritableDef[]) {\n let hostVars:
number = 0;\n let hostAttrs: TAttributes|null = null;\n // We process the inheritance order from the base to the
leaves here.\n for (let i = inheritanceChain.length - 1; i >= 0; i--) {\n const def = inheritanceChain[i];\n // For
each `hostVars`, we need to add the superclass amount.\n def.hostVars = (hostVars += def.hostVars);\n // For
each `hostAttrs` we need to merge it with superclass.\n def.hostAttrs =\n mergeHostAttrs(def.hostAttrs,
hostAttrs = mergeHostAttrs(hostAttrs, def.hostAttrs));\n }\n }\n }\n }\n function maybeUnwrapEmpty<T>(value: T[]):
T[];\n function maybeUnwrapEmpty<T>(value: T): T;\n function maybeUnwrapEmpty(value: any): any {\n if (value
=== EMPTY_OBJ) {\n return {};\n } else if (value === EMPTY_ARRAY) {\n return [];\n } else {\n return
value;\n }\n }\n }\n }\n function inheritViewQuery(definition: WritableDef, superViewQuery:
ViewQueriesFunction<any>) {\n const prevViewQuery = definition.viewQuery;\n if (prevViewQuery) {\n
definition.viewQuery = (rf, ctx) => {\n superViewQuery(rf, ctx);\n prevViewQuery(rf, ctx);\n };\n } else
{\n definition.viewQuery = superViewQuery;\n }\n }\n }\n function inheritContentQueries(\n definition:
WritableDef, superContentQueries: ContentQueriesFunction<any>) {\n const prevContentQueries =
definition.contentQueries;\n if (prevContentQueries) {\n definition.contentQueries = (rf, ctx, directiveIndex) =>
{\n superContentQueries(rf, ctx, directiveIndex);\n prevContentQueries(rf, ctx, directiveIndex);\n };\n }
else {\n definition.contentQueries = superContentQueries;\n }\n }\n }\n function inheritHostBindings(\n definition:
WritableDef, superHostBindings: HostBindingsFunction<any>) {\n const prevHostBindings =
definition.hostBindings;\n if (prevHostBindings) {\n definition.hostBindings = (rf: RenderFlags, ctx: any) => {\n
superHostBindings(rf, ctx);\n prevHostBindings(rf, ctx);\n };\n } else {\n definition.hostBindings =
superHostBindings;\n }\n }\n }\n }\n *\n * @license\n * Copyright Google LLC All Rights Reserved.\n *\n * Use of
this source code is governed by an MIT-style license that can be\n * found in the LICENSE file at
https://angular.io/license\n *\n *\n * import { ComponentDef, DirectiveDef } from './interfaces/definition';\n * import
{ isComponentDef } from './interfaces/type_checks';\n * import { getSuperType } from
'./inherit_definition_feature';\n *\n *\n * Fields which exist on either directive or component definitions, and need to
be copied from\n * parent to child classes by the `CopyDefinitionFeature`.\n *\n *\n * const
COPY_DIRECTIVE_FIELDS: (keyof DirectiveDef<unknown>>[] = [\n // The child class should use the providers
of its parent.\n 'providersResolver',\n // Not listed here are any fields which are handled by the
`InheritDefinitionFeature`, such\n // as inputs, outputs, and host binding functions.\n];\n *\n *\n * Fields which exist
only on component definitions, and need to be copied from parent to child\n * classes by the
`CopyDefinitionFeature`.\n *\n *\n * The type here allows any field of `ComponentDef` which is not also a property of
`DirectiveDef`,\n * since those should go in `COPY_DIRECTIVE_FIELDS` above.\n *\n *\n * const
COPY_COMPONENT_FIELDS: Exclude<keyof ComponentDef<unknown>, keyof DirectiveDef<unknown>>[] =
[\n // The child class should use the template function of its parent, including all template\n // semantics.\n
'template',\n 'decls',\n 'consts',\n 'vars',\n 'onPush',\n 'ngContentSelectors',\n // The child class should use the
CSS styles of its parent, including all styling semantics.\n 'styles',\n 'encapsulation',\n // The child class should
be checked by the runtime in the same way as its parent.\n 'schemas',\n];\n *\n *\n * Copies the fields not handled by
the `InheritDefinitionFeature` from the supertype of a\n * definition.\n *\n *\n * This exists primarily to support ngcc
migration of an existing View Engine pattern, where an\n * entire decorator is inherited from a parent to a child
class. When ngcc detects this case, it\n * generates a skeleton definition on the child class, and applies this feature.\n *\n *\n * The `CopyDefinitionFeature` then copies any needed fields from the parent class' definition,\n * including
things like the component template function.\n *\n *\n * @param definition The definition of a child class which
inherits from a parent class with its\n * own definition.\n *\n *\n * @codeGenApi\n * export function

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CopyDefinitionFeature(definition: DirectiveDef<any>|ComponentDef<any>): void {
 let superType = getSuperType(definition.type!);
 let superDef: DirectiveDef<any>|ComponentDef<any>|undefined = undefined;
 if (isComponentDef(definition)) {
 // Don't use getComponentDef/getDirectiveDef. This logic relies on inheritance.
 superDef = superType.cmp!;
 } else {
 // Don't use getComponentDef/getDirectiveDef. This logic relies on inheritance.
 superDef = superType.dir!;
 }
 // Needed because `definition` fields are readonly.
 const defAny = (definition as any);
 // Copy over any fields that apply to either directives or components.
 for (const field of COPY_DIRECTIVE_FIELDS) {
 defAny[field] = superDef[field];
 }
 if (isComponentDef(superDef)) {
 // Copy over any component-specific fields.
 for (const field of COPY_COMPONENT_FIELDS) {
 defAny[field] = superDef[field];
 }
 }
}

/**
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 */
import {global as _global} from './global';
// When Symbol.iterator doesn't exist, retrieves the key used in es6-shim
declare const Symbol: any;
let _symbolIterator: any = null;
export function getSymbolIterator(): string|symbol {
 if (!_symbolIterator) {
 const Symbol = _global['Symbol'];
 if (Symbol && Symbol.iterator) {
 _symbolIterator = Symbol.iterator;
 } else {
 // es6-shim specific logic
 const keys = Object.getOwnPropertyNames(Map.prototype);
 for (let i = 0; i < keys.length; ++i) {
 const key = keys[i];
 if (key !== 'entries' && key !== 'size' && (Map as any).prototype[key] === Map.prototype['entries']) {
 _symbolIterator = key;
 }
 }
 }
 }
 return _symbolIterator;
}

/**
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 */
import {getSymbolIterator} from './util/symbol';
export function devModeEqual(a: any, b: any): boolean {
 const isListLikeIterableA = isListLikeIterable(a);
 const isListLikeIterableB = isListLikeIterable(b);
 if (isListLikeIterableA && isListLikeIterableB) {
 return areIterablesEqual(a, b, devModeEqual);
 } else {
 const isAObject = a && (typeof a === 'object' || typeof a === 'function');
 const isBObject = b && (typeof b === 'object' || typeof b === 'function');
 if (!isListLikeIterableA && isAObject && !isListLikeIterableB && isBObject) {
 return true;
 } else {
 return Object.is(a, b);
 }
 }
}

/**
 * Indicates that the result of a {@link Pipe} transformation has changed even though the reference has not changed.
 * Wrapped values are unwrapped automatically during the change detection, and the unwrapped value is stored.
 * Example:
 * if (this._latestValue === this._latestReturnedValue) {
 * return this._latestReturnedValue;
 * } else {
 * this._latestReturnedValue = this._latestValue;
 * return WrappedValue.wrap(this._latestValue); // this will force update
 * }
 * @publicApi
 * @deprecated from v10 stop using. (No replacement, deemed unnecessary.)
 */
export class WrappedValue {
 /**
 * @deprecated from 5.3, use `unwrap()` instead - will switch to protected
 */
 wrapped: any;
 constructor(value: any) {
 this.wrapped = value;
 }
 /**
 * Creates a wrapped value.
 */
 static wrap(value: any): WrappedValue {
 return new WrappedValue(value);
 }
 /**
 * Returns the underlying value of a wrapped value.
 */
 /**
 * Returns the given `value` when it is not wrapped.
 */
 static unwrap(value: any): any {
 return WrappedValue.isWrapped(value) ? value.wrapped : value;
 }
 /**
 * Returns true if `value` is a wrapped value.
 */
 static isWrapped(value: any): value is WrappedValue {
 return value instanceof WrappedValue;
 }
}

export function isListLikeIterable(obj: any): boolean {
 if (!isObject(obj)) return false;
 return Array.isArray(obj) || ((obj instanceof Map) && // JS Map are iterables but return entries as [k, v]
 getSymbolIterator() in obj);
 // JS Iterable have a Symbol.iterator prop
}

export function areIterablesEqual(a: any, b: any, comparator: (a: any, b: any) => boolean): boolean {
 const iterator1 = a[getSymbolIterator]();
 const iterator2 = b[getSymbolIterator]();
 while (true) {
 const item1 = iterator1.next();
 const item2 = iterator2.next();
 if (item1.done && item2.done) return true;
 if (item1.done || item2.done) return false;
 if (!comparator(item1.value, item2.value)) return false;
 }
}

export function iterateListLike(obj: any, fn: (p: any) => any) {
 if (Array.isArray(obj)) {
 for (let i = 0; i < obj.length; i++) {
 fn(obj[i]);
 }
 } else {
 const iterator = obj[getSymbolIterator]();
 let item: any;
 while (!(item = iterator.next()).done) {
 fn(item.value);
 }
 }
}

export function isJsObject(o: any): boolean {
 return o !== null && (typeof o ===

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'function' || typeof o === 'object');\n}\n", "/*\n * @license\n * Copyright Google LLC All Rights Reserved.\n *\n * Use of this source code is governed by an MIT-style license that can be\n * found in the LICENSE file at\n https://angular.io/license\n */\nimport { devModeEqual } from './change_detection/change_detection_util';\nimport\n {assertIndexInRange, assertLessThan, assertNotSame} from './util/assert';\nimport\n {getExpressionChangedErrorDetails, throwErrorIfNoChangesMode} from './errors';\nimport {LView} from\n './interfaces/view';\nimport {isInCheckNoChangesMode} from './state';\nimport {NO_CHANGE} from\n './tokens';\n\n// TODO(misko): consider inlining\n/**\n * Updates binding and returns the value.\n */\nexport function\n updateBinding(IView: LView, bindingIndex: number, value: any): any {\n return IView[bindingIndex] =\n value;\n}\n\n/**\n * Gets the current binding value.\n */\nexport function\n getBinding(IView: LView, bindingIndex:\n number): any {\n ngDevMode && assertIndexInRange(IView, bindingIndex);\n ngDevMode &&\n assertNotSame(IView[bindingIndex], NO_CHANGE, 'Stored value should never be NO_CHANGE.);\n return\n IView[bindingIndex];\n}\n\n/**\n * Updates binding if changed, then returns whether it was updated.\n *\n * This\n function also checks the `CheckNoChangesMode` and throws if changes are made.\n *\n * Some changes\n (Objects/iterables) during `CheckNoChangesMode` are exempt to comply with VE\n *\n * behavior.\n *\n * @param\n IView current `LView`\n *\n * @param\n bindingIndex The binding in the `LView` to check\n *\n * @param\n value New\n value to check against `IView[bindingIndex]`\n *\n * @returns\n `true` if the bindings has changed. (Throws if binding\n has changed during\n *\n * `CheckNoChangesMode`)\n */\nexport function\n bindingUpdated(IView: LView,\n bindingIndex: number, value: any): boolean {\n ngDevMode && assertNotSame(value, NO_CHANGE, 'Incoming\n value should never be NO_CHANGE.);\n ngDevMode &&\n assertLessThan(bindingIndex, IView.length, `Slot\n should have been initialized to NO_CHANGE`);\n const\n oldValue = IView[bindingIndex];\n if\n (Object.is(oldValue, value)) {\n return\n false;\n } else {\n if\n (ngDevMode && isInCheckNoChangesMode()) {\n // View engine didn't report undefined values as changed on the first\n // checkNoChanges pass\n // (before the\n change detection was run).\n const\n oldValueToCompare = oldValue !== NO_CHANGE ? oldValue :\n undefined;\n if\n (!devModeEqual(oldValueToCompare, value)) {\n const\n details =\n getExpressionChangedErrorDetails(IView, bindingIndex, oldValueToCompare,\n value);\n throw\n throwErrorIfNoChangesMode(\n oldValue === NO_CHANGE, details.oldValue, details.newValue,\n details.propName);\n }\n // There was a change, but the `devModeEqual` decided that the change is\n // exempt\n // from an error.\n // For this reason we exit as if no change. The early exit is needed to\n // prevent the changed\n // value to be written into `LView` (If we would write the new value that\n // we would not see it\n // as change on next\n // CD.)\n return\n false;\n }\n IView[bindingIndex] =\n value;\n return\n true;\n }\n}\n\n/**\n * Updates 2 bindings if\n changed, then returns whether either was updated.\n */\nexport function\n bindingUpdated2(IView: LView,\n bindingIndex: number, exp1: any, exp2: any): boolean {\n const\n different = bindingUpdated(IView, bindingIndex,\n exp1);\n return\n bindingUpdated(IView, bindingIndex + 1, exp2) ||\n different;\n}\n\n/**\n * Updates 3 bindings if\n changed, then returns whether any was updated.\n */\nexport function\n bindingUpdated3(IView: LView,\n bindingIndex: number, exp1: any, exp2: any, exp3: any): boolean {\n const\n different = bindingUpdated2(IView,\n bindingIndex, exp1, exp2);\n return\n bindingUpdated(IView, bindingIndex + 2, exp3) ||\n different;\n}\n\n/**\n * Updates\n 4 bindings if changed, then returns whether any was updated.\n */\nexport function\n bindingUpdated4(IView: LView,\n bindingIndex: number, exp1: any, exp2: any, exp3: any, exp4: any): boolean {\n const\n different =\n bindingUpdated2(IView, bindingIndex, exp1, exp2);\n return\n bindingUpdated2(IView, bindingIndex + 2, exp3,\n exp4) ||\n different;\n}\n", "/*\n * @license\n * Copyright Google LLC All Rights Reserved.\n *\n * Use of this\n source code is governed by an MIT-style license that can be\n * found in the LICENSE file at\n https://angular.io/license\n */\nimport {bindingUpdated} from './bindings';\nimport {SanitizerFn} from\n './interfaces/sanitization';\nimport {getLView, getSelectedTNode, getTView, nextBindingIndex} from\n './state';\nimport {elementAttributeInternal, storePropertyBindingMetadata} from './shared';\n\n/**\n * Updates\n the value of or removes a bound attribute on an Element.\n *\n * Used in the case of `[attr.title]="value"`\n *\n * @param\n name The name of the attribute.\n *\n * @param\n value The attribute is removed when value is\n `null` or `undefined`.\n *\n * Otherwise the attribute value is set to the stringified value.\n *\n * @param\n sanitizer An optional function used to sanitize the value.\n *\n * @param\n namespace Optional namespace to use when setting the

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attribute.\n *\n * @codegenApi\n */\nexport function attribute(\n name: string, value: any, sanitizer?:
SanitizerFn|null,\n namespace?: string): typeof attribute {\n const lView = getLView();\n const bindingIndex =
nextBindingIndex();\n if (bindingUpdated(lView, bindingIndex, value)) {\n const tView = getTView();\n const
tNode = getSelectedTNode();\n elementAttributeInternal(tNode, lView, name, value, sanitizer, namespace);\n
ngDevMode && storePropertyBindingMetadata(tView.data, tNode, 'attr.' + name, bindingIndex);\n }\n return
attribute;\n}\n\n"/**\n * @license\n * Copyright Google LLC All Rights Reserved.\n *\n * Use of this source code is
governed by an MIT-style license that can be\n * found in the LICENSE file at https://angular.io/license\n
*/\n\nimport {assertEqual, assertLessThan} from '../util/assert';\nimport {bindingUpdated, bindingUpdated2,
bindingUpdated3, bindingUpdated4} from './bindings';\nimport {LView} from './interfaces/view';\nimport
{getBindingIndex, incrementBindingIndex, nextBindingIndex, setBindingIndex} from './state';\nimport
{NO_CHANGE} from './tokens';\nimport {renderStringify} from './util/stringify_utils';\n\n\n/**\n * Create
interpolation bindings with a variable number of expressions.\n *\n * If there are 1 to 8 expressions
`interpolation1()` to `interpolation8()` should be used instead.\n *\n * Those are faster because there is no need to create
an array of expressions and iterate over it.\n *\n * `values`:\n * - has static text at even indexes,\n * - has evaluated
expressions at odd indexes.\n *\n * Returns the concatenated string when any of the arguments changes,
`NO_CHANGE` otherwise.\n */\nexport function interpolationV(lView: LView, values: any[]):
string|NO_CHANGE {\n ngDevMode && assertLessThan(2, values.length, 'should have at least 3 values');\n
ngDevMode && assertEqual(values.length % 2, 1, 'should have an odd number of values');\n let isBindingUpdated
= false;\n let bindingIndex = getBindingIndex();\n\n for (let i = 1; i < values.length; i += 2) {\n // Check if
bindings (odd indexes) have changed\n isBindingUpdated = bindingUpdated(lView, bindingIndex++, values[i]) ||
isBindingUpdated;\n }\n setBindingIndex(bindingIndex);\n\n if (!isBindingUpdated) {\n return
NO_CHANGE;\n }\n\n // Build the updated content\n let content = values[0];\n for (let i = 1; i < values.length; i
+= 2) {\n content += renderStringify(values[i]) + values[i + 1];\n }\n\n return content;\n}\n\n\n/**\n * Creates an
interpolation binding with 1 expression.\n *\n * @param prefix static value used for concatenation only.\n *\n
@param v0 value checked for change.\n *\n * @param suffix static value used for concatenation only.\n */\nexport
function interpolation1(lView: LView, prefix: string, v0: any, suffix: string): string|\n NO_CHANGE {\n const
different = bindingUpdated(lView, nextBindingIndex(), v0);\n return different ? prefix + renderStringify(v0) +
suffix : NO_CHANGE;\n}\n\n\n/**\n * Creates an interpolation binding with 2 expressions.\n */\nexport function
interpolation2(\n lView: LView, prefix: string, v0: any, i0: string, v1: any, suffix: string): string|\n NO_CHANGE {\n
const bindingIndex = getBindingIndex();\n const different = bindingUpdated2(lView, bindingIndex, v0, v1);\n
incrementBindingIndex(2);\n\n return different ? prefix + renderStringify(v0) + i0 + renderStringify(v1) + suffix :
NO_CHANGE;\n}\n\n\n/**\n * Creates an interpolation binding with 3 expressions.\n */\nexport function
interpolation3(\n lView: LView, prefix: string, v0: any, i0: string, v1: any, i1: string, v2: any,\n suffix: string):
string|\n NO_CHANGE {\n const bindingIndex = getBindingIndex();\n const different = bindingUpdated3(lView,
bindingIndex, v0, v1, v2);\n incrementBindingIndex(3);\n\n return different ?\n prefix + renderStringify(v0) +
i0 + renderStringify(v1) + i1 + renderStringify(v2) + suffix :\n NO_CHANGE;\n}\n\n\n\n/**\n * Create an
interpolation binding with 4 expressions.\n */\nexport function interpolation4(\n lView: LView, prefix: string, v0:
any, i0: string, v1: any, i1: string, v2: any, i2: string,\n v3: any, suffix: string): string|\n NO_CHANGE {\n
const bindingIndex = getBindingIndex();\n const different = bindingUpdated4(lView, bindingIndex, v0, v1, v2, v3);\n
incrementBindingIndex(4);\n\n return different ? prefix + renderStringify(v0) + i0 + renderStringify(v1) + i1 +\n
renderStringify(v2) + i2 + renderStringify(v3) + suffix :\n NO_CHANGE;\n}\n\n\n\n/**\n * Creates an
interpolation binding with 5 expressions.\n */\nexport function interpolation5(\n lView: LView, prefix: string, v0:
any, i0: string, v1: any, i1: string, v2: any, i2: string,\n v3: any, i3: string, v4: any, suffix: string):
string|\n NO_CHANGE {\n const bindingIndex = getBindingIndex();\n let different = bindingUpdated4(lView,
bindingIndex, v0, v1, v2, v3);\n different = bindingUpdated(lView, bindingIndex + 4, v4) || different;\n
incrementBindingIndex(5);\n\n return different ? prefix + renderStringify(v0) + i0 + renderStringify(v1) + i1 +\n
renderStringify(v2) + i2 + renderStringify(v3) + i3 + renderStringify(v4) + suffix :\n
NO_CHANGE;\n}\n\n\n\n/**\n * Creates an interpolation binding with 6 expressions.\n */\nexport function

```

```

interpolation6(\n IView: LView, prefix: string, v0: any, i0: string, v1: any, i1: string, v2: any, i2: string,\n v3:
any, i3: string, v4: any, i4: string, v5: any, suffix: string): string|NO_CHANGE {\n const bindingIndex =
getBindingIndex();\n let different = bindingUpdated4(IView, bindingIndex, v0, v1, v2, v3);\n different =
bindingUpdated2(IView, bindingIndex + 4, v4, v5) || different;\n incrementBindingIndex(6);\n return different
?\n prefix + renderStringify(v0) + i0 + renderStringify(v1) + i1 + renderStringify(v2) + i2 +\n
renderStringify(v3) + i3 + renderStringify(v4) + i4 + renderStringify(v5) + suffix : \n NO_CHANGE;\n}\n\n/**\n
* Creates an interpolation binding with 7 expressions.\n */\nexport function interpolation7(\n IView: LView,
prefix: string, v0: any, i0: string, v1: any, i1: string, v2: any, i2: string,\n v3: any, i3: string, v4: any, i4: string, v5:
any, i5: string, v6: any, suffix: string): string|\n NO_CHANGE {\n const bindingIndex = getBindingIndex();\n let
different = bindingUpdated4(IView, bindingIndex, v0, v1, v2, v3);\n different = bindingUpdated3(IView,
bindingIndex + 4, v4, v5, v6) || different;\n incrementBindingIndex(7);\n return different ? prefix +
renderStringify(v0) + i0 + renderStringify(v1) + i1 +\n renderStringify(v2) + i2 + renderStringify(v3) + i3 +
renderStringify(v4) + i4 +\n renderStringify(v5) + i5 + renderStringify(v6) + suffix : \n
NO_CHANGE;\n}\n\n/**\n
* Creates an interpolation binding with 8 expressions.\n */\nexport function
interpolation8(\n IView: LView, prefix: string, v0: any, i0: string, v1: any, i1: string, v2: any, i2: string,\n v3:
any, i3: string, v4: any, i4: string, v5: any, i5: string, v6: any, i6: string, v7: any,\n suffix: string):
string|\n NO_CHANGE {\n const bindingIndex = getBindingIndex();\n let different = bindingUpdated4(IView,
bindingIndex, v0, v1, v2, v3);\n different = bindingUpdated4(IView, bindingIndex + 4, v4, v5, v6, v7) || different;\n
incrementBindingIndex(8);\n return different ? prefix + renderStringify(v0) + i0 + renderStringify(v1) + i1 +\n
 renderStringify(v2) + i2 + renderStringify(v3) + i3 + renderStringify(v4) + i4 +\n renderStringify(v5) + i5 +
renderStringify(v6) + i6 + renderStringify(v7) + suffix : \n
NO_CHANGE;\n}\n\n"/**\n * @license\n *
Copyright Google LLC All Rights Reserved.\n * \n * Use of this source code is governed by an MIT-style license
that can be\n * found in the LICENSE file at https://angular.io/license\n */\nimport { SanitizerFn } from
'./interfaces/sanitization';\nimport { getBindingIndex, getLView, getSelectedTNode, getTView } from
'./state';\nimport { NO_CHANGE } from './tokens';\nimport { interpolation1, interpolation2, interpolation3,
interpolation4, interpolation5, interpolation6, interpolation7, interpolation8, interpolationV } from
'./interpolation';\nimport { elementAttributeInternal, storePropertyBindingMetadata } from './shared';\n\n\n/**\n
* Update an interpolated attribute on an element with single bound value surrounded by text.\n */\n * Used when the
value passed to a property has 1 interpolated value in it:\n */\n * ``html\n * <div
attr.title="prefix{{v0}}suffix"></div>\n * ``\n */\n * Its compiled representation is:\n */\n * ``ts\n *
attributeInterpolate1('title', 'prefix', v0, 'suffix');\n * ``\n */\n * @param attrName The name of the attribute to
update\n * @param prefix Static value used for concatenation only.\n * @param v0 Value checked for change.\n *
@param suffix Static value used for concatenation only.\n * @param sanitizer An optional sanitizer function\n *
@returns itself, so that it may be chained.\n * @codeGenApi\n */\nexport function attributeInterpolate1(\n
attrName: string, prefix: string, v0: any, suffix: string, sanitizer?: SanitizerFn,\n namespace?: string): typeOf
attributeInterpolate1 {\n const IView = getLView();\n const interpolatedValue = interpolation1(IView, prefix, v0,
suffix);\n if (interpolatedValue !== NO_CHANGE) {\n const tNode = getSelectedTNode();\n
elementAttributeInternal(tNode, IView, attrName, interpolatedValue, sanitizer, namespace);\n ngDevMode &&\n
storePropertyBindingMetadata(\n getTView().data, tNode, 'attr.' + attrName, getBindingIndex() - 1, prefix,
suffix);\n }\n return attributeInterpolate1;\n}\n\n\n/**\n
* Update an interpolated attribute on an element with 2
bound values surrounded by text.\n */\n * Used when the value passed to a property has 2 interpolated values in it:\n
*/\n * ``html\n * <div attr.title="prefix{{v0}}-{{v1}}suffix"></div>\n * ``\n */\n * Its compiled representation
is:\n */\n * ``ts\n * attributeInterpolate2('title', 'prefix', v0, '-', v1, 'suffix');\n * ``\n */\n * @param attrName The
name of the attribute to update\n * @param prefix Static value used for concatenation only.\n * @param v0 Value
checked for change.\n * @param i0 Static value used for concatenation only.\n * @param v1 Value checked for
change.\n * @param suffix Static value used for concatenation only.\n * @param sanitizer An optional sanitizer
function\n * @returns itself, so that it may be chained.\n * @codeGenApi\n */\nexport function
attributeInterpolate2(\n attrName: string, prefix: string, v0: any, i0: string, v1: any, suffix: string,\n sanitizer?:

```

```

SanitizerFn, namespace?: string): typeof attributeInterpolate2 {
 const IView = getLView();
 const interpolatedValue = interpolation2(IView, prefix, v0, i0, v1, suffix);
 if (interpolatedValue !== NO_CHANGE) {
 const tNode = getSelectedTNode();
 elementAttributeInternal(tNode, IView, attrName, interpolatedValue, sanitizer, namespace);
 ngDevMode && storePropertyBindingMetadata(getTView().data, tNode, 'attr.' + attrName, getBindingIndex() - 2, prefix, i0, suffix);
 }
 return attributeInterpolate2;
}

Update an interpolated attribute on an element with 3 bound values surrounded by text.
Used when the value passed to a property has 3 interpolated values in it:
`html`
`<div attr.title="prefix{v0}-{v1}-{v2}suffix"></div>`
Its compiled representation is:
`ts`
`attributeInterpolate3`
(title, 'prefix', v0, '-', v1, '-', v2, 'suffix');
@param attrName The name of the attribute to update
@param prefix Static value used for concatenation only.
@param v0 Value checked for change.
@param i0 Static value used for concatenation only.
@param v1 Value checked for change.
@param i1 Static value used for concatenation only.
@param v2 Value checked for change.
@param suffix Static value used for concatenation only.
@param sanitizer An optional sanitizer function
@returns itself, so that it may be chained.
@codeGenApi
^next export function attributeInterpolate3(
 attrName: string, prefix: string, v0: any, i0: string, v1: any, i1: string, v2: any, suffix: string, sanitizer?: SanitizerFn, namespace?: string): typeof attributeInterpolate3 {
 const IView = getLView();
 const interpolatedValue = interpolation3(IView, prefix, v0, i0, v1, i1, v2, suffix);
 if (interpolatedValue !== NO_CHANGE) {
 const tNode = getSelectedTNode();
 elementAttributeInternal(tNode, IView, attrName, interpolatedValue, sanitizer, namespace);
 ngDevMode && storePropertyBindingMetadata(getTView().data, tNode, 'attr.' + attrName, getBindingIndex() - 3, prefix, i0, i1, suffix);
 }
 return attributeInterpolate3;
}

Update an interpolated attribute on an element with 4 bound values surrounded by text.
Used when the value passed to a property has 4 interpolated values in it:
`html`
`<div attr.title="prefix{v0}-{v1}-{v2}-{v3}suffix"></div>`
Its compiled representation is:
`ts`
`attributeInterpolate4`
(title, 'prefix', v0, '-', v1, '-', v2, '-', v3, 'suffix');
@param attrName The name of the attribute to update
@param prefix Static value used for concatenation only.
@param v0 Value checked for change.
@param i0 Static value used for concatenation only.
@param v1 Value checked for change.
@param i1 Static value used for concatenation only.
@param v2 Value checked for change.
@param i2 Static value used for concatenation only.
@param v3 Value checked for change.
@param suffix Static value used for concatenation only.
@param sanitizer An optional sanitizer function
@returns itself, so that it may be chained.
@codeGenApi
^next export function attributeInterpolate4(
 attrName: string, prefix: string, v0: any, i0: string, v1: any, i1: string, v2: any, i2: string, v3: any, suffix: string, sanitizer?: SanitizerFn, namespace?: string): typeof attributeInterpolate4 {
 const IView = getLView();
 const interpolatedValue = interpolation4(IView, prefix, v0, i0, v1, i1, v2, i2, v3, suffix);
 if (interpolatedValue !== NO_CHANGE) {
 const tNode = getSelectedTNode();
 elementAttributeInternal(tNode, IView, attrName, interpolatedValue, sanitizer, namespace);
 ngDevMode && storePropertyBindingMetadata(getTView().data, tNode, 'attr.' + attrName, getBindingIndex() - 4, prefix, i0, i1, i2, suffix);
 }
 return attributeInterpolate4;
}

Update an interpolated attribute on an element with 5 bound values surrounded by text.
Used when the value passed to a property has 5 interpolated values in it:
`html`
`<div attr.title="prefix{v0}-{v1}-{v2}-{v3}-{v4}suffix"></div>`
Its compiled representation is:
`ts`
`attributeInterpolate5`
(title, 'prefix', v0, '-', v1, '-', v2, '-', v3, '-', v4, 'suffix');
@param attrName The name of the attribute to update
@param prefix Static value used for concatenation only.
@param v0 Value checked for change.
@param i0 Static value used for concatenation only.
@param v1 Value checked for change.
@param i1 Static value used for concatenation only.
@param v2 Value checked for change.
@param i2 Static value used for concatenation only.
@param v3 Value checked for change.
@param i3 Static value used for concatenation only.
@param v4 Value checked for change.
@param suffix Static value used for concatenation only.
@param sanitizer An optional sanitizer function
@returns itself, so that it may be chained.
@codeGenApi
^next export function attributeInterpolate5(
 attrName: string, prefix: string, v0: any, i0: string, v1: any, i1: string, v2: any, i2: string, v3: any, i3: string, v4: any, suffix: string, sanitizer?:

```

```

SanitizerFn,\n namespace?: string): typeof attributeInterpolate5 {\n const IView = getLView();\n const
interpolatedValue =\n interpolation5(IView, prefix, v0, i0, v1, i1, v2, i2, v3, i3, v4, suffix);\n if
(interpolatedValue !== NO_CHANGE) {\n const tNode = getSelectedTNode();\n
elementAttributeInternal(tNode, IView, attrName, interpolatedValue, sanitizer, namespace);\n ngDevMode &&\n
storePropertyBindingMetadata(\n getView().data, tNode, 'attr.' + attrName, getBindingIndex() - 5, prefix,
i0, i1, i2,\n i3, suffix);\n }\n return attributeInterpolate5;\n}\n\n/**\n *\n * Update an interpolated attribute
on an element with 6 bound values surrounded by text.\n *\n * Used when the value passed to a property has 6
interpolated values in it:\n *\n * ```html\n * <div attr.title="prefix{{v0}}-{{v1}}-{{v2}}-{{v3}}-{{v4}}-
{{v5}}suffix"></div>\n * ```\n *\n * Its compiled representation is:\n *\n * ```ts\n * attributeInterpolate6(\n *
'title', 'prefix', v0, '-', v1, '-', v2, '-', v3, '-', v4, '-', v5, 'suffix');\n * ```\n *\n * @param attrName The name of the
attribute to update\n * @param prefix Static value used for concatenation only.\n * @param v0 Value checked for
change.\n * @param i0 Static value used for concatenation only.\n * @param v1 Value checked for change.\n *
@param i1 Static value used for concatenation only.\n * @param v2 Value checked for change.\n * @param i2
Static value used for concatenation only.\n * @param v3 Value checked for change.\n * @param i3 Static value
used for concatenation only.\n * @param v4 Value checked for change.\n * @param i4 Static value used for
concatenation only.\n * @param v5 Value checked for change.\n * @param suffix Static value used for
concatenation only.\n * @param sanitizer An optional sanitizer function\n * @returns itself, so that it may be
chained.\n * @codeGenApi\n * ^\nexport function attributeInterpolate6(\n attrName: string, prefix: string, v0: any,
i0: string, v1: any, i1: string, v2: any, i2: string,\n v3: any, i3: string, v4: any, i4: string, v5: any, suffix: string,
sanitizer?: SanitizerFn,\n namespace?: string): typeof attributeInterpolate6 {\n const IView = getLView();\n const
interpolatedValue =\n interpolation6(IView, prefix, v0, i0, v1, i1, v2, i2, v3, i3, v4, i4, v5, suffix);\n if
(interpolatedValue !== NO_CHANGE) {\n const tNode = getSelectedTNode();\n
elementAttributeInternal(tNode, IView, attrName, interpolatedValue, sanitizer, namespace);\n ngDevMode &&\n
storePropertyBindingMetadata(\n getView().data, tNode, 'attr.' + attrName, getBindingIndex() - 6, prefix,
i0, i1, i2,\n i3, i4, suffix);\n }\n return attributeInterpolate6;\n}\n\n/**\n *\n * Update an interpolated
attribute on an element with 7 bound values surrounded by text.\n *\n * Used when the value passed to a property
has 7 interpolated values in it:\n *\n * ```html\n * <div attr.title="prefix{{v0}}-{{v1}}-{{v2}}-{{v3}}-{{v4}}-
{{v5}}-{{v6}}suffix"></div>\n * ```\n *\n * Its compiled representation is:\n *\n * ```ts\n *
attributeInterpolate7(\n * 'title', 'prefix', v0, '-', v1, '-', v2, '-', v3, '-', v4, '-', v5, '-', v6, 'suffix');\n *
```\n *\n * @param attrName The name of the attribute to update\n * @param prefix Static value used for concatenation
only.\n * @param v0 Value checked for change.\n * @param i0 Static value used for concatenation only.\n *
@param v1 Value checked for change.\n * @param i1 Static value used for concatenation only.\n * @param v2
Value checked for change.\n * @param i2 Static value used for concatenation only.\n * @param v3 Value checked
for change.\n * @param i3 Static value used for concatenation only.\n * @param v4 Value checked for change.\n *
@param i4 Static value used for concatenation only.\n * @param v5 Value checked for change.\n * @param i5
Static value used for concatenation only.\n * @param v6 Value checked for change.\n * @param suffix Static value
used for concatenation only.\n * @param sanitizer An optional sanitizer function\n * @returns itself, so that it may
be chained.\n * @codeGenApi\n * ^\nexport function attributeInterpolate7(\n attrName: string, prefix: string, v0:
any, i0: string, v1: any, i1: string, v2: any, i2: string,\n v3: any, i3: string, v4: any, i4: string, v5: any, i5: string, v6:
any, suffix: string,\n sanitizer?: SanitizerFn, namespace?: string): typeof attributeInterpolate7 {\n const IView =
getLView();\n const interpolatedValue =\n interpolation7(IView, prefix, v0, i0, v1, i1, v2, i2, v3, i3, v4, i4, v5,
i5, v6, suffix);\n if (interpolatedValue !== NO_CHANGE) {\n const tNode = getSelectedTNode();\n
elementAttributeInternal(tNode, IView, attrName, interpolatedValue, sanitizer, namespace);\n ngDevMode &&\n
storePropertyBindingMetadata(\n getView().data, tNode, 'attr.' + attrName, getBindingIndex() - 7, prefix,
i0, i1, i2,\n i3, i4, i5, suffix);\n }\n return attributeInterpolate7;\n}\n\n/**\n *\n * Update an interpolated
attribute on an element with 8 bound values surrounded by text.\n *\n * Used when the value passed to a property
has 8 interpolated values in it:\n *\n * ```html\n * <div attr.title="prefix{{v0}}-{{v1}}-{{v2}}-{{v3}}-{{v4}}-
{{v5}}-{{v6}}-{{v7}}suffix"></div>\n * ```\n *\n * Its compiled representation is:\n *\n * ```ts\n *

```



```

TNodeType.Container, tagName || null,\n    getConstant<TAttributes>(tViewConsts, attrsIndex));\n\nresolveDirectives(tView, IView, tNode, getConstant<string[]>(tViewConsts, localRefsIndex));\n\nregisterPostOrderHooks(tView, tNode);\n\nconst embeddedTView = tNode.tViews = createTView(\n  TViewType.Embedded, tNode, templateFn, decls, vars, tView.directiveRegistry,\n    tView.pipeRegistry, null,\n  tView.schemas, tViewConsts);\n\nif (tView.queries !== null) {\n  tView.queries.template(tView, tNode);\n  embeddedTView.queries = tView.queries.embeddedTView(tNode);\n}\n\nreturn tNode;\n}\n\n/**\n * Creates an LContainer for an ng-template (dynamically-inserted view), e.g.\n * <ng-template #foo>\n * <div></div>\n * </ng-template>\n * @param index The index of the container in the data array\n * @param templateFn Inline template\n * @param decls The number of nodes, local refs, and pipes for this template\n * @param vars The number of bindings for this template\n * @param tagName The name of the container element, if applicable\n * @param attrsIndex Index of template attributes in the `const` array.\n * @param localRefs Index of the local references in the `const` array.\n * @param localRefExtractor A function which extracts local-refs values from the template.\n * Defaults to the current element associated with the local-ref.\n * @codeGenApi\n */\nexport function template(\n  index: number, templateFn: ComponentTemplate<any>|null, decls: number, vars: number,\n  tagName?: string|null, attrsIndex?: number|null, localRefsIndex?: number|null,\n  localRefExtractor?: LocalRefExtractor) {\n  const IView = getLView();\n  const tView = getTView();\n  const adjustedIndex = index +\n    HEADER_OFFSET;\n\n  const tNode = tView.firstCreatePass ? templateFirstCreatePass(\n    adjustedIndex, tView, IView, templateFn, decls, vars,\n    tagName, attrsIndex,\n    localRefsIndex) :\n    tView.data[adjustedIndex] as TContainerNode;\n\n  setCurrentTNode(tNode, false);\n\n  const comment = IView[RENDERER].createComment(ngDevMode ?\n    'container' : '');\n  appendChild(tView, IView, comment, tNode);\n  attachPatchData(comment, IView);\n\n  addToViewTree(IView, IView[adjustedIndex] = createLContainer(comment, IView, comment, tNode));\n\n  if (isDirectiveHost(tNode)) {\n    createDirectivesInstances(tView, IView, tNode);\n  }\n\n  if (localRefsIndex !== null) {\n    saveResolvedLocalsInData(IView, tNode, localRefExtractor);\n  }\n}\n\n"/**\n * @license\n * Copyright\n * Google LLC All Rights Reserved.\n * Use of this source code is governed by an MIT-style license that can be\n * found in the LICENSE file at https://angular.io/license\n */\nimport {HEADER_OFFSET, LView, TView} from\n  './interfaces/view';\nimport {getContextLView} from './state';\nimport {load} from './util/view_utils';\n\n/**\n * Store a value in the `data` at a given `index`.\n */\nexport function store<T>(tView: TView, IView: LView, index:\n  number, value: T): void {\n  // We don't store any static data for local variables, so the first time\n  // we see the\n  // template, we should store as null to avoid a sparse array\n  if (index >= tView.data.length) {\n    tView.data[index] =\n      null;\n    tView.blueprint[index] = null;\n  }\n  IView[index] = value;\n}\n\n/**\n * Retrieves a local reference from the current contextViewData.\n * If the reference to retrieve is in a parent view, this instruction is used in\n * conjunction\n * with a nextContext() call, which walks up the tree and updates the contextViewData instance.\n * @param index The index of the local ref in contextViewData.\n * @codeGenApi\n */\nexport function\n  reference<T>(index: number) {\n  const contextLView = getContextLView();\n  return load<T>(contextLView,\n    HEADER_OFFSET + index);\n}\n\n"/**\n * @license\n * Copyright\n * Google LLC All Rights Reserved.\n * Use of this source code is governed by an MIT-style license that can be\n * found in the LICENSE file at\n * https://angular.io/license\n */\nimport {Type} from './../interface/type';\nimport {isForwardRef,\n  resolveForwardRef} from './forward_ref';\nimport {inject, invalidFactoryDep} from\n  './injector_compatibility';\nimport {getInjectableDef, getInjectorDef, defineInjectable, defineInjector} from\n  './interface/defs';\n\n/**\n * A mapping of the @angular/core API surface used in generated expressions to the\n * actual symbols.\n * This should be kept up to date with the public exports of @angular/core.\n */\nexport const\n  angularCoreDiEnv: {[name: string]: Function} = {\n  'defineInjectable': defineInjectable,\n  'defineInjector':\n    defineInjector,\n  'inject': inject,\n  'getFactoryOf': getFactoryOf,\n  'invalidFactoryDep':\n    invalidFactoryDep,\n};\n\nfunction getFactoryOf<T>(type: Type<any>): ((type?: Type<T>) => T)|null {\n  const\n    typeAny = type as any;\n\n  if (isForwardRef(type)) {\n    return (() => {\n      const factory =\n        getFactoryOf<T>(resolveForwardRef(typeAny));\n      return factory ? factory() : null;\n    }) as any;\n  }\n\n  const def = getInjectableDef<T>(typeAny) || getInjectorDef<T>(typeAny);\n  if (!def || def.factory ===

```



```

expect(e.originalStack).toBeDefined());\n * }\n * ```\n *^\nexport function instantiationError(\n injector:
ReflectiveInjector, originalException: any, originalStack: any,\n key: ReflectiveKey): InjectionError {\n return
injectionError(injector, key, function(keys: ReflectiveKey[]) {\n const first = stringify(keys[0].token);\n return
`${originalException.message}: Error during instantiation of ${first}!${\n constructResolvingPath(keys)}.`;
}, originalException);\n}\n\n/**\n * Thrown when an object other than {@link Provider} (or `Type`) is passed to
{@link Injector}\n * creation.\n * @usageNotes\n * ### Example\n * ```\ntypescript\n * expect(() =>
Injector.resolveAndCreate(['not a type'])).toThrowError();\n * ```\n *^\nexport function
invalidProviderError(provider: any) {\n return Error(\n `Invalid provider - only instances of Provider and Type
are allowed, got: ${provider}`);\n}\n\n/**\n * Thrown when the class has no annotation information.\n * @usageNotes\n * ### Example\n * ```\ntypescript\n * class A {\n * constructor(b
){\n * }\n * }\n * expect(() => Injector.resolveAndCreate([A])).toThrowError();\n * ```\n * This error is also
thrown when the class not marked with {@link Injectable} has parameter types.\n * @usageNotes\n * ### Example\n * ```\ntypescript\n * class B
{\n * }\n * class A {\n * constructor(b:B) {} // no information about the parameter types of A is available at
runtime.\n * }\n * expect(() => Injector.resolveAndCreate([A,B])).toThrowError();\n * ```\n *^\nexport
function noAnnotationError(typeOrFunc: Type<any>|Function, params: any[][]): Error {\n const signature: string[]
= [];\n for (let i = 0, ii = params.length; i < ii; i++) {\n const parameter = params[i];\n if (!parameter ||
parameter.length === 0) {\n signature.push('?');\n } else {\n signature.push(parameter.map(stringify).join('
'));\n }\n }\n return Error(\n `Cannot resolve all parameters for \\` + stringify(typeOrFunc) + '\\`(' +\n
signature.join(', ') + ')'.`);\n }\n\n/**\n * Thrown when getting an object by index.\n * @usageNotes\n * ### Example\n * ```\ntypescript\n * class A {\n * }\n * var injector = Injector.resolveAndCreate([A]);\n * expect(() => injector.getAt(100)).toThrowError();\n * ```\n *^\nexport function
outOfBoundsError(index: number) {\n return Error(`Index ${index} is out-of-
bounds.`);\n}\n\n// TODO: add a working example after alpha38 is released\n\n/**\n * Thrown when a multi provider
and a regular provider are bound to the same token.\n * @usageNotes\n * ### Example\n * ```\ntypescript\n *
expect(() => Injector.resolveAndCreate([\n * { provide: `Strings`, useValue: `string1`, multi: true},\n * {
provide: `Strings`, useValue: `string2`, multi: false}\n * ])).toThrowError();\n * ```\n *^\nexport function
mixingMultiProvidersWithRegularProvidersError(\n provider1: any, provider2: any): Error {\n return
Error(`Cannot mix multi providers and regular providers, got: ${provider1} ${provider2}`);\n}\n\n"/**\n *
@license\n * Copyright Google LLC All Rights Reserved.\n * Use of this source code is governed by an MIT-
style license that can be\n * found in the LICENSE file at https://angular.io/license\n *^\nimport {stringify} from
'./util/stringify';\nimport {resolveForwardRef} from './forward_ref';\n\n/**\n * A unique object used for retrieving
items from the {@link ReflectiveInjector}.\n * Keys have:\n * - a system-wide unique `id`.\n * - a `token`.\n * `Key`
is used internally by {@link ReflectiveInjector} because its system-wide unique `id` allows\n * the\n * injector to
store created objects in a more efficient way.\n * `Key` should not be created directly. {@link
ReflectiveInjector} creates keys automatically when\n * resolving\n * providers.\n * @deprecated No
replacement\n * @publicApi\n *^\nexport class ReflectiveKey {\n public readonly displayName: string;\n /**\n *
Private\n */\n constructor(public token: Object, public id: number) {\n if (!token) {\n throw new Error("Token
must be defined!");\n }\n this.displayName = stringify(this.token);\n }\n\n /**\n * Retrieves a `Key` for a
token.\n */\n static get(token: Object): ReflectiveKey {\n return
_globalKeyRegistry.get(resolveForwardRef(token));\n }\n\n /**\n * @returns the number of keys registered in the
system.\n */\n static get numberOfKeys(): number {\n return _globalKeyRegistry.numberOfKeys;\n
}\n}\n\nexport class KeyRegistry {\n private _allKeys = new Map<Object, ReflectiveKey>();\n\n get(token:
Object): ReflectiveKey {\n if (token instanceof ReflectiveKey) return token;\n if (this._allKeys.has(token)) {\n
return this._allKeys.get(token)!;\n }\n\n const newKey = new ReflectiveKey(token,
ReflectiveKey.numberOfKeys);\n this._allKeys.set(token, newKey);\n return newKey;\n }\n\n get
numberOfKeys(): number {\n return this._allKeys.size;\n }\n}\n\nconst _globalKeyRegistry = new

```

```

KeyRegistry();\n", "/*\n * @license\n * Copyright Google LLC All Rights Reserved.\n *\n * Use of this source
code is governed by an MIT-style license that can be\n * found in the LICENSE file at https://angular.io/license\n
*\n\nimport {Type} from './interface/type';\nimport {PlatformReflectionCapabilities} from
'./platform_reflection_capabilities';\nimport {GetterFn, MethodFn, SetterFn} from './types';\n\nexport
{PlatformReflectionCapabilities};\n\nexport {GetterFn, MethodFn, SetterFn};\n\n/**\n * Provides access to reflection
data about symbols. Used internally by Angular\n * to power dependency injection and compilation.\n */\n\nexport
class Reflector {\n  constructor(public reflectionCapabilities: PlatformReflectionCapabilities) {}\n\n  updateCapabilities(caps: PlatformReflectionCapabilities) {\n    this.reflectionCapabilities = caps;\n  }\n\n  factory(type: Type<any>): Function {\n    return this.reflectionCapabilities.factory(type);\n  }\n\n  parameters(typeOrFunc: Type<any>): any[][] {\n    return this.reflectionCapabilities.parameters(typeOrFunc);\n  }\n\n  annotations(typeOrFunc: Type<any>): any[] {\n    return
this.reflectionCapabilities.annotations(typeOrFunc);\n  }\n\n  propMetadata(typeOrFunc: Type<any>): {[key:
string]: any[]} {\n    return this.reflectionCapabilities.propMetadata(typeOrFunc);\n  }\n\n  hasLifecycleHook(type:
any, lcProperty: string): boolean {\n    return this.reflectionCapabilities.hasLifecycleHook(type, lcProperty);\n  }\n\n  getter(name: string): GetterFn {\n    return this.reflectionCapabilities.getter(name);\n  }\n\n  setter(name: string):
SetterFn {\n    return this.reflectionCapabilities.setter(name);\n  }\n\n  method(name: string): MethodFn {\n    return
this.reflectionCapabilities.method(name);\n  }\n\n  importUri(type: any): string {\n    return
this.reflectionCapabilities.importUri(type);\n  }\n\n  resourceUri(type: any): string {\n    return
this.reflectionCapabilities.resourceUri(type);\n  }\n\n  resolveIdentifier(name: string, moduleUrl: string, members:
string[], runtime: any): any {\n    return this.reflectionCapabilities.resolveIdentifier(name, moduleUrl, members,
runtime);\n  }\n\n  resolveEnum(identifier: any, name: string): any {\n    return
this.reflectionCapabilities.resolveEnum(identifier, name);\n  }\n}\n", "/*\n * @license\n * Copyright Google LLC
All Rights Reserved.\n *\n * Use of this source code is governed by an MIT-style license that can be\n * found in
the LICENSE file at https://angular.io/license\n *\n\nimport {ReflectionCapabilities} from
'./reflection_capabilities';\nimport {Reflector} from './reflector';\n\nexport {Reflector} from './reflector';\n\n/**\n *
The {@link Reflector} used internally in Angular to access metadata\n * about symbols.\n */\n\nexport const reflector
= new Reflector(new ReflectionCapabilities());\n", "/*\n * @license\n * Copyright Google LLC All Rights
Reserved.\n *\n * Use of this source code is governed by an MIT-style license that can be\n * found in the
LICENSE file at https://angular.io/license\n *\n\nimport {Type} from './interface/type';\nimport {reflector} from
'./reflection/reflection';\nimport {resolveForwardRef} from './forward_ref';\nimport {InjectionToken} from
'./injection_token';\nimport {ClassProvider, ExistingProvider, FactoryProvider, Provider, TypeProvider,
ValueProvider} from './interface/provider';\nimport {Inject, Optional, Self, SkipSelf} from './metadata';\nimport
{invalidProviderError, mixingMultiProvidersWithRegularProvidersError, noAnnotationError} from
'./reflective_errors';\nimport {ReflectiveKey} from './reflective_key';\n\ninterface NormalizedProvider extends
TypeProvider, ValueProvider, ClassProvider, ExistingProvider,\n                                     FactoryProvider
{\n}\n\n/**\n * `Dependency` is used by the framework\n to extend DI.\n * This is internal to Angular and should not be
used directly.\n */\n\nexport class ReflectiveDependency {\n  constructor(\n    public key: ReflectiveKey, public
optional: boolean, public visibility: Self|SkipSelf|null) {}\n\n  static fromKey(key: ReflectiveKey):
ReflectiveDependency {\n    return new ReflectiveDependency(key, false, null);\n  }\n}\n\nconst _EMPTY_LIST:
any[] = [];\n\n/**\n * An internal resolved representation of a `Provider` used by the `Injector`.\n *\n *
@usageNotes\n * This is usually created automatically by `Injector.resolveAndCreate`.\n *\n * It can be created
manually, as follows:\n *\n * ### Example\n *\n * ```typescript\n * var resolvedProviders = Injector.resolve({\n
provide: 'message', useValue: 'Hello' });\n * var injector = Injector.fromResolvedProviders(resolvedProviders);\n
*\n * expect(injector.get('message')).toEqual('Hello');\n * ```\n *\n * @publicApi\n */\n\nexport interface
ResolvedReflectiveProvider {\n  /**\n   * A key, usually a `Type<any>`.\n   */\n  key: ReflectiveKey;\n\n  /**\n   *
Factory function which can return an instance of an object represented by a key.\n   */\n  resolvedFactories:
ResolvedReflectiveFactory[];\n\n  /**\n   * Indicates if the provider is a multi-provider or a regular provider.\n   */\n
multiProvider: boolean;\n}\n\nexport class ResolvedReflectiveProvider_ implements ResolvedReflectiveProvider

```

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{\n  readonly resolvedFactory: ResolvedReflectiveFactory;\n\n  constructor(\n    public key: ReflectiveKey, public
resolvedFactories: ResolvedReflectiveFactory[],\n    public multiProvider: boolean) {\n    this.resolvedFactory =
this.resolvedFactories[0];\n  }\n}\n\n/**\n * An internal resolved representation of a factory function created by
resolving `Provider`. \n * @publicApi\n */\nexport class ResolvedReflectiveFactory {\n  constructor(\n    /**\n * Factory function which can return an instance of an object represented by a key.\n    */\n    public factory:
Function,\n\n    /**\n * Arguments (dependencies) to the `factory` function.\n    */\n    public dependencies:
ReflectiveDependency[]) {\n  }\n}\n\n/**\n * Resolve a single provider.\n */\nfunction
resolveReflectiveFactory(provider: NormalizedProvider): ResolvedReflectiveFactory {\n  let factoryFn: Function;\n  let resolvedDeps: ReflectiveDependency[];\n  if (provider.useClass) {\n    const useClass =
resolveForwardRef(provider.useClass);\n    factoryFn = reflector.factory(useClass);\n    resolvedDeps =
_dependenciesFor(useClass);\n  } else if (provider.useExisting) {\n    factoryFn = (aliasInstance: any) =>
aliasInstance;\n    resolvedDeps = [ReflectiveDependency.fromKey(ReflectiveKey.get(provider.useExisting))];\n  }
else if (provider.useFactory) {\n    factoryFn = provider.useFactory;\n    resolvedDeps =
constructDependencies(provider.useFactory, provider.deps);\n  } else {\n    factoryFn = () => provider.useValue;\n    resolvedDeps = _EMPTY_LIST;\n  }\n  return new ResolvedReflectiveFactory(factoryFn,
resolvedDeps);\n}\n\n/**\n * Converts the `Provider` into `ResolvedProvider`. \n * \n * `Injector` internally only uses
`ResolvedProvider`, `Provider` contains convenience provider\n * syntax.\n */\nfunction
resolveReflectiveProvider(provider: NormalizedProvider): ResolvedReflectiveProvider {\n  return new
ResolvedReflectiveProvider_(\n    ReflectiveKey.get(provider.provide), [resolveReflectiveFactory(provider)],\n    provider.multi || false);\n}\n\n/**\n * Resolve a list of Providers.\n */\nexport function
resolveReflectiveProviders(providers: Provider[]): ResolvedReflectiveProvider[] {\n  const normalized =
_normalizeProviders(providers, []);\n  const resolved = normalized.map(resolveReflectiveProvider);\n  const
resolvedProviderMap = mergeResolvedReflectiveProviders(resolved, new Map());\n  return
Array.from(resolvedProviderMap.values());\n}\n\n/**\n * Merges a list of ResolvedProviders into a list where each
key is contained exactly once and\n * multi providers have been merged.\n */\nexport function
mergeResolvedReflectiveProviders(\n  providers: ResolvedReflectiveProvider[],\n  normalizedProvidersMap:
Map<number, ResolvedReflectiveProvider>:\n  Map<number, ResolvedReflectiveProvider> {\n  for (let i = 0; i <
providers.length; i++) {\n    const provider = providers[i];\n    const existing =
normalizedProvidersMap.get(provider.key.id);\n    if (existing) {\n      if (provider.multiProvider !==
existing.multiProvider) {\n        throw mixingMultiProvidersWithRegularProvidersError(existing, provider);\n      }\n      if (provider.multiProvider) {\n        for (let j = 0; j < provider.resolvedFactories.length; j++) {\n
existing.resolvedFactories.push(provider.resolvedFactories[j]);\n        }\n      } else {\n
normalizedProvidersMap.set(provider.key.id, provider);\n      }\n    } else {\n      let resolvedProvider:
ResolvedReflectiveProvider;\n      if (provider.multiProvider) {\n        resolvedProvider = new
ResolvedReflectiveProvider_(\n          provider.key, provider.resolvedFactories.slice(), provider.multiProvider);\n      }
else {\n        resolvedProvider = provider;\n      }\n      normalizedProvidersMap.set(provider.key.id,
resolvedProvider);\n    }\n  }\n  return normalizedProvidersMap;\n}\n\nfunction _normalizeProviders(\n  providers:
Provider[], res: NormalizedProvider[]): NormalizedProvider[] {\n  providers.forEach(b => {\n    if (b instanceof
Type) {\n      res.push({provide: b, useClass: b} as NormalizedProvider);\n    } else if (b && typeof b == 'object'
&& (b as any).provide !== undefined) {\n      res.push(b as NormalizedProvider);\n    } else if (Array.isArray(b))
{\n      _normalizeProviders(b, res);\n    } else {\n      throw invalidProviderError(b);\n    }\n  });\n  return
res;\n}\n\nexport function constructDependencies(\n  typeOrFunc: any, dependencies?: any[]):
ReflectiveDependency[] {\n  if (!dependencies) {\n    return _dependenciesFor(typeOrFunc);\n  } else {\n    const
params: any[][] = dependencies.map(t => [t]);\n    return dependencies.map(t => _extractToken(typeOrFunc, t,
params));\n  }\n}\n\nfunction _dependenciesFor(typeOrFunc: any): ReflectiveDependency[] {\n  const params =
reflector.parameters(typeOrFunc);\n  if (!params) return [];\n  if (params.some(p => p == null)) {\n    throw
noAnnotationError(typeOrFunc, params);\n  }\n  return params.map(p => _extractToken(typeOrFunc, p,
params));\n}\n\nfunction _extractToken(\n  typeOrFunc: any, metadata: any[]|any, params: any[][]):

```



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ReflectiveDependency {\n let token: any = null;\n let optional = false;\n\n if (!Array.isArray(metadata)) {\n if
(metadata instanceof Inject) {\n return _createDependency(metadata.token, optional, null);\n } else {\n
return _createDependency(metadata, optional, null);\n }\n }\n\n let visibility: Self|SkipSelf|null = null;\n\n for
(let i = 0; i < metadata.length; ++i) {\n const paramMetadata = metadata[i];\n\n if (paramMetadata instanceof
Type) {\n token = paramMetadata;\n\n } else if (paramMetadata instanceof Inject) {\n token =
paramMetadata.token;\n\n } else if (paramMetadata instanceof Optional) {\n optional = true;\n\n } else if
(paramMetadata instanceof Self || paramMetadata instanceof SkipSelf) {\n visibility = paramMetadata;\n } else
if (paramMetadata instanceof InjectionToken) {\n token = paramMetadata;\n }\n }\n\n token =
resolveForwardRef(token);\n\n if (token != null) {\n return _createDependency(token, optional, visibility);\n }
else {\n throw noAnnotationError(typeOrFunc, params);\n }\n }\n\nfunction _createDependency(\n token: any,
optional: boolean, visibility: Self|SkipSelf|null): ReflectiveDependency {\n return new
ReflectiveDependency(ReflectiveKey.get(token), optional, visibility);\n }\n\n"/**\n * @license\n * Copyright
Google LLC All Rights Reserved.\n * Use of this source code is governed by an MIT-style license that can be\n
* found in the LICENSE file at https://angular.io/license\n */\n\nimport {Injector} from './injector';\nimport
{THROW_IF_NOT_FOUND} from './injector_compatibility';\nimport {Provider} from
 './interface/provider';\nimport {Self, SkipSelf} from './metadata';\nimport {cyclicDependencyError,
instantiationError, noProviderError, outOfBoundsError} from './reflective_errors';\nimport {ReflectiveKey} from
 './reflective_key';\nimport {ReflectiveDependency, ResolvedReflectiveFactory, ResolvedReflectiveProvider,
resolveReflectiveProviders} from './reflective_provider';\n\n// Threshold for the dynamic version\nconst
UNDEFINED = {};\n\n/**\n * A ReflectiveDependency injection container used for instantiating objects and
resolving\n * dependencies.\n * An `Injector` is a replacement for a `new` operator, which can automatically
resolve the\n * constructor dependencies.\n * In typical use, application code asks for the dependencies in the
constructor and they are\n * resolved by the `Injector`.\n * @usageNotes\n * ### Example\n * The following
example creates an `Injector` configured to create `Engine` and `Car`.\n * ```typescript\n * @Injectable()\n *
class Engine {\n * }\n * @Injectable()\n * class Car {\n * constructor(public engine:Engine) {\n * }\n * }\n *
var injector = ReflectiveInjector.resolveAndCreate([Car, Engine]);\n * var car = injector.get(Car);\n * expect(car
instanceof Car).toBe(true);\n * expect(car.engine instanceof Engine).toBe(true);\n * ```\n * Notice, we don't use
the `new` operator because we explicitly want to have the `Injector`\n * resolve all of the object's dependencies
automatically.\n * @deprecated from v5 - slow and brings in a lot of code, Use `Injector.create` instead.\n *
@publicApi\n */\nexport abstract class ReflectiveInjector implements Injector {\n /**\n * Turns an array of
provider definitions into an array of resolved providers.\n * A resolution is a process of flattening multiple
nested arrays and converting individual\n * providers into an array of `ResolvedReflectiveProvider`s.\n *
@usageNotes\n * ### Example\n * ```typescript\n * @Injectable()\n * class Engine {\n * }\n *
@Injectable()\n * class Car {\n * constructor(public engine:Engine) {\n * }\n * }\n * var providers =
ReflectiveInjector.resolve([Car, [[Engine]]]);\n * expect(providers.length).toEqual(2);\n * expect(providers[0]
instanceof ResolvedReflectiveProvider).toBe(true);\n * expect(providers[0].key.displayName).toBe("Car");\n *
expect(providers[0].dependencies.length).toEqual(1);\n * expect(providers[0].factory).toBeDefined();\n *
expect(providers[1].key.displayName).toBe("Engine");\n * });\n * ```\n */\n static resolve(providers: Provider[]): ResolvedReflectiveProvider[] {\n return
resolveReflectiveProviders(providers);\n }\n\n /**\n * Resolves an array of providers and creates an injector from
those providers.\n * The passed-in providers can be an array of `Type`, `Provider`,\n * or a recursive array of
more providers.\n * @usageNotes\n * ### Example\n * ```typescript\n * @Injectable()\n * class
Engine {\n * }\n * @Injectable()\n * class Car {\n * constructor(public engine:Engine) {\n * }\n * }\n *
var injector = ReflectiveInjector.resolveAndCreate([Car, Engine]);\n * expect(injector.get(Car) instanceof
Car).toBe(true);\n * ```\n */\n static resolveAndCreate(providers: Provider[], parent?: Injector): ReflectiveInjector
{\n const ResolvedReflectiveProviders = ReflectiveInjector.resolve(providers);\n return
ReflectiveInjector.fromResolvedProviders(ResolvedReflectiveProviders, parent);\n }\n\n /**\n * Creates an
injector from previously resolved providers.\n * This API is the recommended way to construct injectors in

```



```

resolveAndCreateChild(providers: Provider[]): ReflectiveInjector {\n  const ResolvedReflectiveProviders =
ReflectiveInjector.resolve(providers);\n  return this.createChildFromResolved(ResolvedReflectiveProviders);\n
}\n\n createChildFromResolved(providers: ResolvedReflectiveProvider[]): ReflectiveInjector {\n  const inj = new
ReflectiveInjector_(providers);\n  (inj as {parent: Injector | null}).parent = this;\n  return inj;\n }\n\n
resolveAndInstantiate(provider: Provider): any {\n  return
this.instantiateResolved(ReflectiveInjector.resolve([provider])[0]);\n }\n\n instantiateResolved(provider:
ResolvedReflectiveProvider): any {\n  return this._instantiateProvider(provider);\n }\n\n
getProviderAtIndex(index: number): ResolvedReflectiveProvider {\n  if (index < 0 || index >=
this._providers.length) {\n    throw outOfBoundsError(index);\n  }\n  return this._providers[index];\n }\n\n /**
@internal */\n _new(provider: ResolvedReflectiveProvider): any {\n  if (this._constructionCounter++ >
this._getMaxNumberOfObjects()) {\n    throw cyclicDependencyError(this, provider.key);\n  }\n  return
this._instantiateProvider(provider);\n }\n\n private _getMaxNumberOfObjects(): number {\n  return
this.objs.length;\n }\n\n private _instantiateProvider(provider: ResolvedReflectiveProvider): any {\n  if
(provider.multiProvider) {\n    const res = [];\n    for (let i = 0; i < provider.resolvedFactories.length; ++i) {\n
res[i] = this._instantiate(provider, provider.resolvedFactories[i]);\n    }\n    return res;\n  } else {\n  return
this._instantiate(provider, provider.resolvedFactories[0]);\n  }\n }\n\n private _instantiate(\n  provider:
ResolvedReflectiveProvider,\n  ResolvedReflectiveFactory: ResolvedReflectiveFactory): any {\n  const factory
= ResolvedReflectiveFactory.factory;\n\n  let deps: any[];\n  try {\n    deps =\nResolvedReflectiveFactory.dependencies.map(dep => this._getByReflectiveDependency(dep));\n  } catch (e) {\n
if (e.addKey) {\n    e.addKey(this, provider.key);\n  }\n  throw e;\n }\n\n  let obj: any;\n  try {\n    obj =
factory(...deps);\n  } catch (e) {\n    throw instantiationError(this, e, e.stack, provider.key);\n  }\n\n  return
obj;\n }\n\n private _getByReflectiveDependency(dep: ReflectiveDependency): any {\n  return
this._getByKey(dep.key, dep.visibility, dep.optional ? null : THROW_IF_NOT_FOUND);\n }\n\n private
_getByKey(key: ReflectiveKey, visibility: Self|SkipSelf|null, notFoundValue: any): any {\n  if (key ===
ReflectiveInjector_.INJECTOR_KEY) {\n    return this;\n  }\n\n  if (visibility instanceof Self) {\n    return
this._getByKeySelf(key, notFoundValue);\n  } else {\n    return this._getByKeyDefault(key, notFoundValue,
visibility);\n  }\n }\n\n private _getObjByKeyId(keyId: number): any {\n  for (let i = 0; i < this.keyIds.length;
i++) {\n    if (this.keyIds[i] === keyId) {\n      if (this.objs[i] === UNDEFINED) {\n        this.objs[i] =
this._new(this._providers[i]);\n      }\n      return this.objs[i];\n    }\n  }\n\n  return UNDEFINED;\n }\n\n
/** @internal */\n _throwOrNull(key: ReflectiveKey, notFoundValue: any): any {\n  if (notFoundValue !==
THROW_IF_NOT_FOUND) {\n    return notFoundValue;\n  } else {\n    throw noProviderError(this, key);\n  }\n
}\n\n /** @internal */\n _getByKeySelf(key: ReflectiveKey, notFoundValue: any): any {\n  const obj =
this._getObjByKeyId(key.id);\n  return (obj !== UNDEFINED) ? obj : this._throwOrNull(key, notFoundValue);\n
}\n\n /** @internal */\n _getByKeyDefault(key: ReflectiveKey, notFoundValue: any, visibility:
Self|SkipSelf|null): any {\n  let inj: Injector|null;\n\n  if (visibility instanceof SkipSelf) {\n    inj = this.parent;\n
} else {\n    inj = this;\n  }\n\n  while (inj instanceof ReflectiveInjector_) {\n    const inj_ =
<ReflectiveInjector_>inj;\n    const obj = inj._getObjByKeyId(key.id);\n    if (obj !== UNDEFINED) return
obj;\n    inj = inj_.parent;\n  }\n\n  if (inj !== null) {\n    return inj.get(key.token, notFoundValue);\n  } else {\n
return this._throwOrNull(key, notFoundValue);\n  }\n }\n\n get displayName(): string {\n  const providers =\n    _mapProviders(this, (b: ResolvedReflectiveProvider) => `\" + b.key.displayName + `\" )\n    .join(', ');
\n  return `ReflectiveInjector(providers: [${providers}]`;\n }\n\n toString(): string {\n  return this.displayName;\n
}\n\n\nfunction _mapProviders(injector: ReflectiveInjector_, fn: Function): any[] {\n  const res: any[] = [];\n  for
(let i = 0; i < injector._providers.length; ++i) {\n    res[i] = fn(injector.getProviderAtIndex(i));\n  }\n  return
res;\n }\n\n", "/*\n * @license\n * Copyright Google LLC All Rights Reserved.\n * Use of this source code is
governed by an MIT-style license that can be\n * found in the LICENSE file at https://angular.io/license\n
*\n\n */\n * @module\n * @description\n * The `di` module provides dependency injection container services.\n
*\n\n */\n\nexport * from './metadata';\nexport {InjectFlags} from './interface/injector';\nexport {defineInjectable,
defineInjectable, defineInjector, InjectableType, InjectorType} from './interface/defs';\nexport {forwardRef,

```

```

resolveForwardRef, ForwardRefFn} from './forward_ref';\nexport {Injectable, InjectableDecorator,
InjectableProvider} from './injectable';\nexport {Injector} from './injector';\nexport {inject, inject,
invalidFactoryDep} from './injector_compatibility';\nexport {INJECTOR} from './injector_token';\nexport
{ReflectiveInjector} from './reflective_injector';\nexport {ClassProvider, ClassSansProvider, ConstructorProvider,
ConstructorSansProvider, ExistingProvider, ExistingSansProvider, FactoryProvider, FactorySansProvider, Provider,
StaticClassProvider, StaticClassSansProvider, StaticProvider, TypeProvider, ValueProvider, ValueSansProvider}
from './interface/provider';\nexport {ResolvedReflectiveFactory, ResolvedReflectiveProvider} from
'./reflective_provider';\nexport {ReflectiveKey} from './reflective_key';\nexport {InjectionToken} from
'./injection_token';\n"/**\n * @license\n * Copyright Google LLC All Rights Reserved.\n * Use of this source
code is governed by an MIT-style license that can be\n * found in the LICENSE file at https://angular.io/license\n
*\n *\n * This file should not be necessary because node resolution should just default to `./di/index`\n *
However it does not seem to work and it breaks:\n * - //packages/animations/browser/test:test_web_chromium-
local\n * - //packages/compiler-cli/test:extract_i18n\n * - //packages/compiler-cli/test:ngc\n * -
//packages/compiler-cli/test:perform_watch\n * - //packages/compiler-cli/test/diagnostics:check_types\n * -
//packages/compiler-cli/test/transformers:test\n * - //packages/compiler/test:test\n * -
//tools/public_api_guard:core_api\n *\n * Remove this file once the above is solved or wait until `ngc` is deleted and
then it should be\n * safe to delete this file.\n */\n\nexport * from './di/index';\n"/**\n * @license\n * Copyright
Google LLC All Rights Reserved.\n * Use of this source code is governed by an MIT-style license that can be\n
* found in the LICENSE file at https://angular.io/license\n */\nimport {InjectFlags, InjectionToken,
resolveForwardRef} from './../di';\nimport {assertInjectImplementationNotEqual} from
'./../di/inject_switch';\nimport {inject} from './../di/injector_compatibility';\nimport {Type} from
'./../interface/type';\nimport {getOrCreateInjectable, injectAttributeImpl} from './di';\nimport
{TDirectiveHostNode} from './interfaces/node';\nimport {getCurrentTNode, getLView} from './state';\n\n/**\n *
Returns the value associated to the given token from the injectors.\n *\n * `directiveInject` is intended to be used for
directive, component and pipe factories.\n * All other injection use `inject` which does not walk the node injector
tree.\n *\n * Usage example (in factory function):\n *\n * ```ts\n * class SomeDirective {\n *   constructor(directive:
DirectiveA) {\n *\n *     static dir = defineDirective({\n *       type: SomeDirective,\n *       factory: () => new
SomeDirective(directiveInject(DirectiveA))\n *     });\n *\n *   }\n *\n *   @param token the type or token to inject\n *
@param flags Injection flags\n * @returns the value from the injector or `null` when not found\n *\n *
@codeGenApi\n */\nexport function directiveInject<T>(token: Type<T>|InjectionToken<T>): T;\nexport function
directiveInject<T>(token: Type<T>|InjectionToken<T>, flags: InjectFlags): T;\nexport function
directiveInject<T>(\n  token: Type<T>|InjectionToken<T>, flags = InjectFlags.Default): T|null {\n  const IView =
getLView();\n  // Fall back to inject() if view hasn't been created. This situation can happen in tests\n  // if inject
utilities are used before bootstrapping.\n  if (IView === null) {\n    // Verify that we will not get into infinite loop.\n
ngDevMode && assertInjectImplementationNotEqual(directiveInject);\n    return inject(token, flags);\n  }\n  const
tNode = getCurrentTNode();\n  return getOrCreateInjectable<T>(\n    tNode as TDirectiveHostNode, IView,\n    resolveForwardRef(token), flags);\n  }\n\n/**\n * Facade for the attribute injection from DI.\n *\n * @codeGenApi\n */\nexport function injectAttribute(attrNameToInject: string): string|null {\n  return
injectAttributeImpl(getCurrentTNode()!, attrNameToInject);\n}\n\n/**\n * Throws an error indicating that a factory
function could not be generated by the compiler for a\n * particular class.\n *\n * This instruction allows the actual
error message to be optimized away when ngDevMode is turned\n * off, saving bytes of generated code while still
providing a good experience in dev mode.\n *\n * The name of the class is not mentioned here, but will be in the
generated factory function name\n * and thus in the stack trace.\n *\n * @codeGenApi\n */\nexport function
invalidFactory(): never {\n  const msg =\n    ngDevMode ? `This constructor was not compatible with Dependency
Injection.` : 'invalid';\n  throw new Error(msg);\n}\n"/**\n * @license\n * Copyright Google LLC All Rights
Reserved.\n * Use of this source code is governed by an MIT-style license that can be\n * found in the
LICENSE file at https://angular.io/license\n */\nimport {bindingUpdated} from './bindings';\nimport {TNode} from
'./interfaces/node';\nimport {SanitizerFn} from './interfaces/sanitization';\nimport {LView, RENDERER, TView}

```

```

from './interfaces/view';\nimport { getLView, getSelectedTNode, getTView, nextBindingIndex } from
'./state';\nimport { elementPropertyInternal, setInputsForProperty, storePropertyBindingMetadata } from
'./shared';\n\n/**\n * Update a property on a selected element.\n *\n * Operates on the element selected by index
via the { @link select } instruction.\n *\n * If the property name also exists as an input property on one of the
element's directives,\n * the component property will be set instead of the element property. This check must\n * be
conducted at runtime so child components that add new `@Inputs` don't have to be re-compiled\n *\n * @param
propName Name of property. Because it is going to DOM, this is not subject to\n * renaming as part of
minification.\n * @param value New value to write.\n * @param sanitizer An optional function used to sanitize the
value.\n * @returns This function returns itself so that it may be chained\n * (e.g. `property('name', ctx.name)(title',
ctx.title)`)\n *\n * @codeGenApi\n */\nexport function property<T>(\n  propName: string, value: T, sanitizer?:
SanitizerFn|null): typeof property {\n  const lView = getLView();\n  const bindingIndex = nextBindingIndex();\n  if
(bindingUpdated(lView, bindingIndex, value)) {\n    const tView = getTView();\n    const tNode =
getSelectedTNode();\n    elementPropertyInternal(\n      tView, tNode, lView, propName, value,\n      lView[RENDERER], sanitizer, false);\n    ngDevMode && storePropertyBindingMetadata(tView.data, tNode,\n      propName, bindingIndex);\n  }\n  return property;\n}\n\n/**\n * Given `<div style="..." my-dir` and `MyDir` with
`@Input('style')` we need to write to\n * directive input.\n */\nexport function
setDirectiveInputsWhichShadowsStyling(\n  tView: TView, tNode: TNode, lView: LView, value: any,\n  isClassBased: boolean) {\n  const inputs = tNode.inputs!;\n  const property = isClassBased ? 'class' : 'style';\n  // We
support both 'class' and `className` hence the fallback.\n  setInputsForProperty(tView, lView, inputs[property],\n    property, value);\n}\n\n"/**\n * @license\n * Copyright Google LLC All Rights Reserved.\n *\n * Use of this source
code is governed by an MIT-style license that can be\n * found in the LICENSE file at https://angular.io/license\n
*/\nimport { assertDefined, assertEqual, assertIndexInRange } from './util/assert';\nimport { assertFirstCreatePass,\n  assertHasParent } from './assert';\nimport { attachPatchData } from './context_discovery';\nimport
{ formatRuntimeError, RuntimeErrorCode } from './error_code';\nimport { registerPostOrderHooks } from
'./hooks';\nimport { hasClassInput, hasStyleInput, TAttributes, TElementNode, TNode, TNodeFlags, TNodeType }
from './interfaces/node';\nimport { RElement } from './interfaces/renderer_dom';\nimport { isContentQueryHost,\n  isDirectiveHost } from './interfaces/type_checks';\nimport { HEADER_OFFSET, LView, RENDERER, TView }
from './interfaces/view';\nimport { assertTNodeType } from './node_assert';\nimport { appendChild,\n  createElementNode, writeDirectClass, writeDirectStyle } from './node_manipulation';\nimport
{ decreaseElementDepthCount, getBindingIndex, getCurrentTNode, getElementDepthCount, getLView,\n  getNamespace, getTView, increaseElementDepthCount, isCurrentTNodeParent, setCurrentTNode,\n  setCurrentTNodeAsNotParent } from './state';\nimport { computeStaticStyling } from
'./styling/static_styling';\nimport { setUpAttributes } from './util/attrs_utils';\nimport { getConstant } from
'./util/view_utils';\nimport { setDirectiveInputsWhichShadowsStyling } from './property';\nimport
{ createDirectivesInstances, executeContentQueries, getOrCreateTNode, matchingSchemas, resolveDirectives,\n  saveResolvedLocalsInData } from './shared';\n\nfunction elementStartFirstCreatePass(\n  index: number, tView:
TView, lView: LView, native: RElement, name: string,\n  attrsIndex?: number|null, localRefsIndex?: number):
TElementNode {\n  ngDevMode && assertFirstCreatePass(tView);\n  ngDevMode &&
ngDevMode.firstCreatePass++;\n\n  const tViewConsts = tView.consts;\n  const attrs =
getConstant<TAttributes>(tViewConsts, attrsIndex);\n  const tNode = getOrCreateTNode(tView, index,\n    TNodeType.Element, name, attrs);\n\n  const hasDirectives =\n    resolveDirectives(tView, lView, tNode,\n    getConstant<string[]>(tViewConsts, localRefsIndex));\n  ngDevMode && logUnknownElementError(tView,\n    native, tNode, hasDirectives);\n\n  if (tNode.attrs !== null) {\n    computeStaticStyling(tNode, tNode.attrs, false);\n  }\n\n  if (tNode.mergedAttrs !== null) {\n    computeStaticStyling(tNode, tNode.mergedAttrs, true);\n  }\n\n  if
(tView.queries !== null) {\n    tView.queries.elementStart(tView, tNode);\n  }\n\n  return tNode;\n}\n\n/**\n *
Create DOM element. The instruction must later be followed by `elementEnd()` call.\n *\n * @param index Index of
the element in the LView array\n * @param name Name of the DOM Node\n * @param attrsIndex Index of the
element's attributes in the `consts` array.\n * @param localRefsIndex Index of the element's local references in the

```



```

because while most browsers return 'function', IE returns 'object'.\n      (typeof HTMLUnknownElement !==
'undefined' && HTMLUnknownElement &&\n      element instanceof HTMLUnknownElement) ||\n      (typeof
customElements !== 'undefined' && tagName.indexOf('-') > -1 &&\n      !customElements.get(tagName));\n\n      if
(isUnknown && !matchingSchemas(tView, tagName)) {\n      let message = `${tagName}` is not a known
element:\n`;\n      message += `1. If `${tagName}` is an Angular component, then verify that it is part of this
module.\n`;\n      if (tagName && tagName.indexOf('-') > -1) {\n      message += `2. If `${tagName}` is a
Web Component then add 'CUSTOM_ELEMENTS_SCHEMA' to the '@NgModule.schemas' of this component to
suppress this message.`;\n      } else {\n      message +=\n      `2. To allow any element add
'NO_ERRORS_SCHEMA' to the '@NgModule.schemas' of this component.`;\n      }\n      console.error(formatRuntimeError(RuntimeErrorCode.UNKNOWN_ELEMENT, message));\n      }\n      }\n      }", /**\n      * @license\n      * Copyright Google LLC All Rights Reserved.\n      * Use of this source code is governed by an MIT-
style license that can be\n      * found in the LICENSE file at https://angular.io/license\n      */\n      import {assertEqual,
assertIndexInRange} from '../util/assert';\n      import {assertHasParent} from './assert';\n      import {attachPatchData}
from './context_discovery';\n      import {registerPostOrderHooks} from './hooks';\n      import {TAttributes,
TElementContainerNode, TNodeType} from './interfaces/node';\n      import {isContentQueryHost, isDirectiveHost}
from './interfaces/type_checks';\n      import {HEADER_OFFSET, LView, RENDERER, T_HOST, TVIEW} from
'./interfaces/view';\n      import {assertTNodeType} from './node_assert';\n      import {appendChild} from
'./node_manipulation';\n      import {getBindingIndex, getCurrentTNode, getLView, getTVIEW, isCurrentTNodeParent,
setCurrentTNode, setCurrentTNodeAsNotParent} from './state';\n      import {computeStaticStyling} from
'./styling/static_styling';\n      import {getConstant} from './util/view_utils';\n      import {createDirectivesInstances,
executeContentQueries, getOrCreateTNode, resolveDirectives, saveResolvedLocalsInData} from
'./shared';\n      function elementContainerStartFirstCreatePass(\n      index: number, tView: TVIEW, IView: LView,
attrsIndex?: number|null,\n      localRefsIndex?: number): TElementContainerNode {\n      ngDevMode &&
ngDevMode.firstCreatePass++;\n\n      const tViewConsts = tView.consts;\n      const attrs =
getConstant<TAttributes>(tViewConsts, attrsIndex);\n      const tNode = getOrCreateTNode(tView, index,
TNodeType.ElementContainer, 'ng-container', attrs);\n\n      // While ng-container doesn't necessarily support styling,
we use the style context to identify\n      // and execute directives on the ng-container.\n      if (attrs !== null) {\n      computeStaticStyling(tNode, attrs, true);\n      }\n\n      const localRefs = getConstant<string[]>(tViewConsts,
localRefsIndex);\n      resolveDirectives(tView, IView, tNode, localRefs);\n\n      if (tView.queries !== null) {\n      tView.queries.elementStart(tView, tNode);\n      }\n\n      return tNode;\n      }\n      /**\n      * Creates a logical container for other
nodes (<ng-container>) backed by a comment node in the DOM.\n      * The instruction must later be followed by
`elementContainerEnd()` call.\n      * @param index Index of the element in the LView array\n      * @param
attrsIndex Index of the container attributes in the `consts` array.\n      * @param localRefsIndex Index of the container's
local references in the `consts` array.\n      * Even if this instruction accepts a set of attributes no actual attribute
values are propagated to\n      * the DOM (as a comment node can't have attributes). Attributes are here only for
directive\n      * matching purposes and setting initial inputs of directives.\n      * @codeGenApi\n      */\n      export function
elementContainerStart(\n      index: number, attrsIndex?: number|null, localRefsIndex?: number): void {\n      const
IView = getLView();\n      const tView = getTVIEW();\n      const adjustedIndex = index + HEADER_OFFSET;\n\n      ngDevMode && assertIndexInRange(IView, adjustedIndex);\n      ngDevMode &&\n      assertEquals(\n      getBindingIndex(), tView.bindingStartIndex,\n      `element containers should be created before any
bindings`);\n\n      const tNode = tView.firstCreatePass ?\n      elementContainerStartFirstCreatePass(\n      adjustedIndex, tView, IView, attrsIndex, localRefsIndex) :\n      tView.data[adjustedIndex] as
TElementContainerNode;\n      setCurrentTNode(tNode, true);\n\n      ngDevMode &&
ngDevMode.rendererCreateComment++;\n      const native = IView[adjustedIndex] =\n      IView[RENDERER].createComment(ngDevMode ? 'ng-container' : '');\n      appendChild(tView, IView, native,
tNode);\n      attachPatchData(native, IView);\n\n      if (isDirectiveHost(tNode)) {\n      createDirectivesInstances(tView,
IView, tNode);\n      executeContentQueries(tView, tNode, IView);\n      }\n\n      if (localRefsIndex !== null) {\n      saveResolvedLocalsInData(IView, tNode);\n      }\n      }\n      /**\n      * Mark the end of the <ng-container>.\n      */\n      *

```

```

@codeGenApi\n *^\nexport function elementContainerEnd(): void {\n let currentTNode = getCurrentTNode();\n const tView = getTView();\n if (isCurrentTNodeParent()) {\n setCurrentTNodeAsNotParent();\n } else {\n ngDevMode && assertHasParent(currentTNode);\n currentTNode = currentTNode.parent!;\n setCurrentTNode(currentTNode, false);\n }\n\n ngDevMode && assertTNodeType(currentTNode,\n TNodeType.ElementContainer);\n\n if (tView.firstCreatePass) {\n registerPostOrderHooks(tView,\n currentTNode);\n if (isContentQueryHost(currentTNode)) {\n tView.queries!.elementEnd(currentTNode);\n }\n }\n}\n\n/**\n * Creates an empty logical container using {@link elementContainerStart}\n * and {@link elementContainerEnd}\n * @param index Index of the element in the LView array\n * @param attrsIndex Index of the container attributes in the `const`s array.\n * @param localRefsIndex Index of the container's local references in the `const`s array.\n * @codeGenApi\n *^\nexport function elementContainer(\n index: number, attrsIndex?: number|null, localRefsIndex?: number): void {\n elementContainerStart(index, attrsIndex, localRefsIndex);\n elementContainerEnd();\n}\n\n"/**\n * @license\n * Copyright Google LLC All Rights Reserved.\n * Use of this source code is governed by an MIT-style license that can be\n * found in the LICENSE file at\n https://angular.io/license\n *^\nimport {OpaqueViewState} from '../interfaces/view';\nimport {getLView} from '../state';\n\n/**\n * Returns the current OpaqueViewState instance.\n * Used in conjunction with the\n restoreView() instruction to save a snapshot\n * of the current view and restore it when listeners are invoked. This\n allows\n * walking the declaration view tree in listeners to get vars from parent views.\n *^\n * @codeGenApi\n *^\nexport function getCurrentView(): OpaqueViewState {\n return getLView() as any as\n OpaqueViewState;\n}\n\n"/**\n * @license\n * Copyright Google LLC All Rights Reserved.\n * Use of this source code is governed by an MIT-style license that can be\n * found in the LICENSE file at\n https://angular.io/license\n *^\nimport {Observable} from 'rxjs';\n\n/**\n * Determine if the argument is shaped\n like a Promise\n *^\nexport function isPromise<T = any>(obj: any): obj is Promise<T> {\n // allow any Promise/A+\n compliant thenable.\n // It's up to the caller to ensure that obj.then conforms to the spec\n return !!obj && typeof\n obj.then === 'function';\n}\n\n/**\n * Determine if the argument is an Observable\n * Strictly this tests that the\n `obj` is `Subscribable`, since `Observable`\n * types need additional methods, such as `lift()`. But it is adequate for\n our\n * needs since within the Angular framework code we only ever need to use the\n * `subscribe()` method, and\n RxJS has mechanisms to wrap `Subscribable`\n * objects\n * into `Observable`\n * as needed.\n *^\nexport function\n isObservable(obj: any|Observable<any>): obj is Observable<any> {\n return !!obj && typeof obj.subscribe ===\n 'function';\n}\n\n"/**\n * @license\n * Copyright Google LLC All Rights Reserved.\n * Use of this source code\n is governed by an MIT-style license that can be\n * found in the LICENSE file at https://angular.io/license\n *^\n\nimport {assertIndexInRange} from '../util/assert';\nimport {isObservable} from '../util/lang';\nimport {EMPTY_OBJ} from '../empty';\nimport {PropertyAliasValue, TNode, TNodeFlags, TNodeType} from\n '../interfaces/node';\nimport {GlobalTargetResolver, isProceduralRenderer, Renderer3} from\n '../interfaces/renderer';\nimport {RElement} from '../interfaces/renderer_dom';\nimport {isDirectiveHost} from\n '../interfaces/type_checks';\nimport {CLEANUP, FLAGS, LView, LViewFlags, RENDERER, TView} from\n '../interfaces/view';\nimport {assertTNodeType} from '../node_assert';\nimport {getCurrentDirectiveDef,\n getCurrentTNode, getLView, getTView} from '../state';\nimport {getComponentLViewByIndex,\n getNativeByTNode, unwrapRNode} from '../util/view_utils';\nimport {getLCleanup, handleError,\n loadComponentRenderer, markViewDirty} from '../shared';\n\n\n/**\n * Adds an event listener to the current\n node.\n * If an output exists on one of the node's directives, it also subscribes to the output\n * and saves the\n subscription for later cleanup.\n *^\n * @param eventName Name of the event\n * @param listenerFn The function\n to be called when event emits\n * @param useCapture Whether or not to use capture in event listener\n * @param\n eventTargetResolver Function that returns global target information in case this listener\n * should be attached to a\n global object like window, document or body\n *^\n * @codeGenApi\n *^\nexport function listener(\n eventName:\n string, listenerFn: (e?: any) => any, useCapture = false,\n eventTargetResolver?: GlobalTargetResolver): typeof\n listener {\n const lView = getLView();\n const tView = getTView();\n const tNode = getCurrentTNode();\n\n listenerInternal(\n tView, lView, lView[RENDERER], tNode, eventName, listenerFn, useCapture,\n eventTargetResolver);\n\n return listener;\n}\n\n/**\n * Registers a synthetic host listener (e.g. `(@foo.start)`) on a

```


component or directive.

`* This instruction is for compatibility purposes and is designed to ensure that a synthetic host listener (e.g. @HostListener('@foo.start')) properly gets rendered in the component's renderer. Normally all host listeners are evaluated with the parent component's renderer, but, in the case of animation @triggers, they need to be evaluated with the sub component's renderer (because that's where the animation triggers are defined).`

`* Do not use this instruction as a replacement for listener. This instruction only exists to ensure compatibility with the ViewEngine's host binding behavior.`

`* @param eventName Name of the event`

`* @param listenerFn The function to be called when event emits`

`* @param useCapture Whether or not to use capture in event listener`

`* @param eventTargetResolver Function that returns global target information in case this listener should be attached to a global object like window, document or body`

```

@codeGenApi
export function syntheticHostListener(
  eventName: string, listenerFn: (e?: any) => any,
  useCapture = false,
  eventTargetResolver?: GlobalTargetResolver): typeOf syntheticHostListener {
  const
  tNode = getCurrentTNode();
  const lView = getLView();
  const tView = getTView();
  const currentDef =
  getCurrentDirectiveDef(tView.data);
  const renderer = loadComponentRenderer(currentDef, tNode, lView);
  listenerInternal(
    tView, lView, renderer, tNode, eventName, listenerFn, useCapture, eventTargetResolver);
  return syntheticHostListener;
}

/**
 * A utility function that checks if a given element has already an event
 * handler registered for an event with a specified name. The TView.cleanup data structure is used to find out
 * which events are registered for a given element.
 */
function findExistingListener(
  tView: TView, lView:
  LView, eventName: string, tNodeIdx: number): ((e?: any) => any)|null {
  const tCleanup = tView.cleanup;
  if
  (tCleanup != null) {
    for (let i = 0; i < tCleanup.length - 1; i += 2) {
      const cleanupEventName =
      tCleanup[i];
      if (cleanupEventName === eventName && tCleanup[i + 1] === tNodeIdx) {
        // We have
        found a matching event name on the same node but it might not have been
        // registered yet, so we must
        explicitly verify entries in the LView cleanup data
        // structures.
        const lCleanup = lView[CLEANUP];
        const listenerIdxInLCleanup = tCleanup[i + 2];
        return lCleanup.length > listenerIdxInLCleanup ?
        lCleanup[listenerIdxInLCleanup] : null;
      }
    }
    // TView.cleanup can have a mix of 4-elements entries (for
    event handler cleanups) or
    // 2-element entries (for directive and queries destroy hooks). As such we can
    encounter
    // blocks of 4 or 2 items in the tView.cleanup and this is why we iterate over 2 elements
    // first
    and jump another 2 elements if we detect listeners cleanup (4 elements). Also check
    // documentation of
    TView.cleanup for more details of this data structure layout.
    if (typeof cleanupEventName === 'string') {
      i += 2;
    }
  }
  return null;
}

function listenerInternal(
  tView: TView, lView: LView, renderer:
  Renderer3, tNode: TNode, eventName: string,
  listenerFn: (e?: any) => any, useCapture = false,
  eventTargetResolver?: GlobalTargetResolver): void {
  const isTNodeDirectiveHost = isDirectiveHost(tNode);
  const firstCreatePass = tView.firstCreatePass;
  const tCleanup: false|any[] = firstCreatePass && (tView.cleanup ||
  (tView.cleanup = []));
  // When the listener instruction was generated and is executed we know that there is
  either a
  // native listener or a directive output on this element. As such we we know that we will have to
  //
  register a listener and store its cleanup function on LView.
  const lCleanup = getLCleanup(lView);
  ngDevMode && assertTNodeType(tNode, TNodeType.AnyRNode | TNodeType.AnyContainer);
  let
  processOutputs = true;
  // add native event listener - applicable to elements only
  if (tNode.type &
  TNodeType.AnyRNode) {
    const native = getNativeByTNode(tNode, lView) as RElement;
    const resolved =
    eventTargetResolver ? eventTargetResolver(native) : EMPTY_OBJ as any;
    const target = resolved.target ||
    native;
    const lCleanupIndex = lCleanup.length;
    const idxOrTargetGetter = eventTargetResolver ?
    (_lView: LView) => eventTargetResolver(unwrapRNode(_lView[tNode.index])).target :
    tNode.index;
    //
    // In order to match current behavior, native DOM event listeners must be added for all
    // events (including
    outputs).
    if (isProceduralRenderer(renderer)) {
      // There might be cases where multiple directives on the
      same element try to register an event
      // handler function for the same event. In this situation we want to avoid
      registration of
      // several native listeners as each registration would be intercepted by NgZone and
      // trigger
      change detection. This would mean that a single user action would result in several
      // change detections being
      invoked. To avoid this situation we want to have only one call to
      // native handler registration (for the same
      element and same type of event).
      //
      // In order to have just one native event handler in presence of multiple

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handler functions,\n    // we just register a first handler function as a native event listener and then chain\n    // (coalesce) other handler functions on top of the first native handler function.\n    let existingListener = null;\n    // Please note that the coalescing described here doesn't happen for events specifying an\n    // alternative target (ex. (document:click)) - this is to keep backward compatibility with the\n    // view engine.\n    // Also, we don't have to search for existing listeners if there are no directives\n    // matching on a given node as we can't register multiple event handlers for the same event in\n    // a template (this would mean having duplicate attributes).\n    if (!eventTargetResolver && isTNodeDirectiveHost) {\n        existingListener = findExistingListener(tView, IView, eventName, tNode.index);\n    }\n    if (existingListener !== null) {\n        // Attach a new listener to coalesced listeners list, maintaining the order in which\n        // listeners are registered. For performance reasons, we keep a reference to the last\n        // listener in that list (in `__ngLastListenerFn` field), so we can avoid going through\n        // the entire set each time we need to add a new listener.\n        const lastListenerFn = (<any>existingListener).__ngLastListenerFn__ || existingListener;\n        lastListenerFn.__ngNextListenerFn__ = listenerFn;\n        (<any>existingListener).__ngLastListenerFn__ = listenerFn;\n        processOutputs = false;\n    } else {\n        // The first argument of `listen` function in Procedural Renderer is:\n        // - either a target name (as a string) in case of global target (window, document, body)\n        // - or element reference (in all other cases)\n        listenerFn = wrapListener(tNode, IView, listenerFn, false /** preventDefault */);\n        const cleanupFn = renderer.listen(resolved.name || target, eventName, listenerFn);\n        ngDevMode && ngDevMode.rendererAddEventListener++;\n        ICleanup.push(listenerFn, cleanupFn);\n        tCleanup && tCleanup.push(eventName, idxOrTargetGetter, ICleanupIndex, ICleanupIndex + 1);\n    }\n    } else {\n        listenerFn = wrapListener(tNode, IView, listenerFn, true /** preventDefault */);\n        target.addEventListener(eventName, listenerFn, useCapture);\n        ngDevMode && ngDevMode.rendererAddEventListener++;\n        ICleanup.push(listenerFn);\n        tCleanup && tCleanup.push(eventName, idxOrTargetGetter, ICleanupIndex, useCapture);\n    }\n    }\n    // subscribe to directive outputs\n    const outputs = tNode.outputs;\n    let props: PropertyAliasValue|undefined;\n    if (processOutputs && outputs !== null && (props = outputs[eventName])) {\n        const propsLength = props.length;\n        if (propsLength) {\n            for (let i = 0; i < propsLength; i += 2) {\n                const index = props[i] as number;\n                ngDevMode && assertIndexInRange(IView, index);\n                const minifiedName = props[i + 1];\n                const directiveInstance = IView[index];\n                const output = directiveInstance[minifiedName];\n                if (ngDevMode && !isObservable(output)) {\n                    throw new Error(`@Output ${minifiedName} not initialized in '${directiveInstance.constructor.name}'`);\n                }\n                const subscription = output.subscribe(listenerFn);\n                const idx = ICleanup.length;\n                ICleanup.push(listenerFn, subscription);\n                tCleanup && tCleanup.push(eventName, tNode.index, idx, -(idx + 1));\n            }\n        }\n    }\n    function executeListenerWithErrorHandling(\n        IView: LView, listenerFn: (e?: any) => any, e: any): boolean {\n        try {\n            // Only explicitly returning false from a listener should preventDefault\n            return listenerFn(e) !== false;\n        } catch (error) {\n            handleError(IView, error);\n            return false;\n        }\n    }\n    /**\n     * Wraps an event listener with a function that marks ancestors dirty and prevents default behavior,\n     * if applicable.\n     * @param tNode The TNode associated with this listener\n     * @param IView The LView that contains this listener\n     * @param listenerFn The listener function to call\n     * @param wrapWithPreventDefault Whether or not to prevent default behavior\n     * (the procedural renderer does this already, so in those cases, we should skip)\n     */\n    function wrapListener(\n        tNode: TNode, IView: LView, listenerFn: (e?: any) => any, wrapWithPreventDefault: boolean): EventListener {\n        // Note: we are performing most of the work in the listener function itself\n        // to optimize listener registration.\n        return function wrapListenerIn_markDirtyAndPreventDefault(e: any) {\n            // Ivy uses `Function` as a special token that allows us to unwrap the function\n            // so that it can be invoked programmatically by `DebugNode.triggerEventHandler`.\n            if (e === Function) {\n                return listenerFn;\n            }\n            // In order to be backwards compatible with View Engine, events on component host nodes\n            // must also mark the component view itself dirty (i.e. the view that it owns).\n            const startView = tNode.flags & TNodeFlags.isComponentHost ?\n                GetComponentLViewByIndex(tNode.index, IView) :\n                IView;\n            // See interfaces/view.ts for more on LViewFlags.ManualOnPush\n            if ((IView[FLAGS] & LViewFlags.ManualOnPush) === 0) {\n
```

```

markViewDirty(startView);\n  }\n\n  let result = executeListenerWithErrorHandling(IView, listenerFn, e);\n  //
A just-invoked listener function might have coalesced listeners so we need to check for\n  // their presence and
invoke as needed.\n  let nextListenerFn =
(<any>wrapListenerIn_markDirtyAndPreventDefault).__ngNextListenerFn__;\n  while (nextListenerFn) {\n  //
We should prevent default if any of the listeners explicitly return false\n  result =
executeListenerWithErrorHandling(IView, nextListenerFn, e) && result;\n  nextListenerFn =
(<any>nextListenerFn).__ngNextListenerFn__;\n  }\n\n  if (wrapWithPreventDefault && result === false) {\n
e.preventDefault();\n  // Necessary for legacy browsers that don't support preventDefault (e.g. IE)\n
e.returnValue = false;\n  }\n\n  return result;\n  };\n}\n"/**\n * @license\n * Copyright Google LLC All Rights
Reserved.\n *\n * Use of this source code is governed by an MIT-style license that can be\n * found in the
LICENSE file at https://angular.io/license\n */\n\nexport {namespaceHTML, namespaceMathML, namespaceSVG}
from './state';\n"/**\n * @license\n * Copyright Google LLC All Rights Reserved.\n *\n * Use of this source code
is governed by an MIT-style license that can be\n * found in the LICENSE file at https://angular.io/license\n
*/\n\nimport {nextContextImpl} from './state';\n"/**\n * Retrieves a context at the level specified and saves it as the
global, contextViewData.\n * Will get the next level up if level is not specified.\n *\n * This is used to save contexts
of parent views so they can be bound in embedded views, or\n * in conjunction with reference() to bind a ref from a
parent view.\n *\n * @param level The relative level of the view from which to grab context compared to
contextViewData\n * @returns context\n *\n * @codeGenApi\n */\n\nexport function nextContext<T = any>(level:
number = 1): T {\n  return nextContextImpl(level);\n}\n"/**\n * @license\n * Copyright Google LLC All Rights
Reserved.\n *\n * Use of this source code is governed by an MIT-style license that can be\n * found in the
LICENSE file at https://angular.io/license\n */\n\nimport {newArray} from '../util/array_utils';\nimport {TAttributes,
TElementNode, TNode, TNodeFlags, TNodeType} from './interfaces/node';\nimport {ProjectionSlots} from
'./interfaces/projection';\nimport {DECLARATION_COMPONENT_VIEW, HEADER_OFFSET, T_HOST} from
'./interfaces/view';\nimport {applyProjection} from './node_manipulation';\nimport {getProjectAsAttrValue,
isNodeMatchingSelectorList, isSelectorInSelectorList} from './node_selector_matcher';\nimport {getLView,
getTView, setCurrentTNodeAsNotParent} from './state';\nimport {getOrCreateTNode} from './shared';\n\n\n/**\n
 * Checks a given node against matching projection slots and returns the\n * determined slot index. Returns \"null\" if
no slot matched the given node.\n *\n * This function takes into account the parsed ngProjectAs selector from the\n
 * node's attributes. If present, it will check whether the ngProjectAs selector\n * matches any of the projection slot
selectors.\n */\n\nexport function matchingProjectionSlotIndex(tNode: TNode, projectionSlots: ProjectionSlots):
number\n  null {\n  let wildcardNgContentIndex = null;\n  const ngProjectAsAttrVal =
getProjectAsAttrValue(tNode);\n  for (let i = 0; i < projectionSlots.length; i++) {\n    const slotValue =
projectionSlots[i];\n    // The last wildcard projection slot should match all nodes which aren't matching\n    // any
selector. This is necessary to be backwards compatible with view engine.\n    if (slotValue === '*') {\n
wildcardNgContentIndex = i;\n    continue;\n    }\n    // If we ran into an `ngProjectAs` attribute, we should match
its parsed selector\n    // to the list of selectors, otherwise we fall back to matching against the node.\n    if
(ngProjectAsAttrVal === null ?\n      isNodeMatchingSelectorList(tNode, slotValue, /* isProjectionMode */
true) :\n      isSelectorInSelectorList(ngProjectAsAttrVal, slotValue)) {\n      return i; // first matching selector\n
}\n  }\n  return wildcardNgContentIndex;\n}\n\n\n/**\n * Instruction to distribute
projectable nodes among <ng-content> occurrences in a given template.\n * It takes all the selectors from the entire
component's template and decides where\n * each projected node belongs (it re-distributes nodes among \"buckets\"\n
where each \"bucket\" is\n * backed by a selector).\n *\n * This function requires CSS selectors to be provided in 2
forms: parsed (by a compiler) and text,\n * un-parsed form.\n *\n * The parsed form is needed for efficient matching
of a node against a given CSS selector.\n * The un-parsed, textual form is needed for support of the ngProjectAs
attribute.\n *\n * Having a CSS selector in 2 different formats is not ideal, but alternatives have even more\n *
drawbacks:\n * - having only a textual form would require runtime parsing of CSS selectors;\n * - we can't have
only a parsed as we can't re-construct textual form from it (as entered by a\n * template author).\n *\n * @param
projectionSlots? A collection of projection slots. A projection slot can be based\n *      on a parsed CSS selectors or

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set to the wildcard selector (``*) in order to match all nodes which do not match any selector. If not
specified, a single wildcard selector projection slot will be defined.
@codeGenApi\n * \nexport
function projectionDef(projectionSlots?: ProjectionSlots): void {\n  const componentNode =
  getLView()[DECLARATION_COMPONENT_VIEW][T_HOST] as TElementNode;\n\n  if
  (!componentNode.projection) {\n    // If no explicit projection slots are defined, fall back to a single
    // projection slot with the wildcard selector.\n    const numProjectionSlots = projectionSlots ? projectionSlots.length : 1;\n    const
    projectionHeads: (TNode|null)[] = componentNode.projection ?\n      new Array(numProjectionSlots, null) as
    TNode);\n    const tails: (TNode|null)[] = projectionHeads.slice();\n\n    let componentChild: TNode|null =
    componentNode.child;\n\n    while (componentChild !== null) {\n      const slotIndex =\n        projectionSlots ?\n        matchingProjectionSlotIndex(componentChild, projectionSlots) : 0;\n\n      if (slotIndex !== null) {\n        if
        (tails[slotIndex]) {\n          tails[slotIndex].projectionNext = componentChild;\n        } else {\n
        projectionHeads[slotIndex] = componentChild;\n        }\n        tails[slotIndex] = componentChild;\n      }\n\n      componentChild = componentChild.next;\n    }\n  }\n\n  /**\n   * Inserts previously re-distributed projected
   * nodes. This instruction must be preceded by a call\n   * to the projectionDef instruction.\n   * @param nodeIndex\n   * @param selectorIndex\n   * - 0 when the selector is ``*` (or unspecified as this is the default value),\n   * - 1
   * based index of the selector from the { @link projectionDef}\n   * @codeGenApi\n   * \nexport function
   * projection(\n   * nodeIndex: number, selectorIndex: number = 0, attrs?: TAttributes): void {\n   * const IView =
   * getLView();\n   * const tView = getTView();\n   * const tProjectionNode =\n   * getOrCreateTNode(tView,
   * HEADER_OFFSET + nodeIndex, TNodeType.Projection, null, attrs || null);\n\n   * // We can't use
   * viewData[HOST_NODE] because projection nodes can be nested in embedded views.\n   * if
   * (tProjectionNode.projection === null) tProjectionNode.projection = selectorIndex;\n\n   * // `<ng-content>` has no
   * content\n   * setCurrentTNodeAsNotParent();\n\n   * if ((tProjectionNode.flags & TNodeFlags.isDetached) !==
   * TNodeFlags.isDetached) {\n   * // re-distribution of projectable nodes is stored on a component's view level\n
   * applyProjection(tView, IView, tProjectionNode);\n   * }\n   * }\n   * }"/**\n   * @license\n   * Copyright Google LLC All
   * Rights Reserved.\n   * Use of this source code is governed by an MIT-style license that can be\n   * found in the
   * LICENSE file at https://angular.io/license\n   * \nimport { SanitizerFn } from './interfaces/sanitization';\nimport
   * { RENDERER } from './interfaces/view';\nimport { getBindingIndex, getLView, getSelectedTNode, getTView } from
   * './state';\nimport { NO_CHANGE } from './tokens';\nimport { interpolation1, interpolation2, interpolation3,
   * interpolation4, interpolation5, interpolation6, interpolation7, interpolation8, interpolationV } from
   * './interpolation';\nimport { elementPropertyInternal, storePropertyBindingMetadata } from './shared';\n\n/**\n   * Update an interpolated property on an element with a lone bound value\n   * Used when the value passed to a
   * property has 1 interpolated value in it, an no additional text\n   * surrounds that interpolated value:\n   * ``html\n   * <div title="{ {v0}} "></div>\n   * Its compiled representation is:\n   * ``ts\n   *
   * propertyInterpolate('title', v0);\n   * ``\n   * If the property name also exists as an input property on one of the
   * element's directives,\n   * the component property will be set instead of the element property. This check must\n   * be
   * conducted at runtime so child components that add new `@Inputs` don't have to be re-compiled.\n   * @param
   * propName The name of the property to update\n   * @param prefix Static value used for concatenation only.\n   *
   * @param v0 Value checked for change.\n   * @param suffix Static value used for concatenation only.\n   * @param
   * sanitizer An optional sanitizer function\n   * @returns itself, so that it may be chained.\n   * @codeGenApi\n
   * \nexport function propertyInterpolate(\n   * propName: string, v0: any, sanitizer?: SanitizerFn): typeof
   * propertyInterpolate {\n   * propertyInterpolate1(propName, "", v0, "", sanitizer);\n   * return
   * propertyInterpolate;\n   * }\n\n   * Update an interpolated property on an element with single bound value
   * surrounded by text.\n   * Used when the value passed to a property has 1 interpolated value in it:\n   * ``html\n
   * * <div title="prefix{ {v0}}suffix"></div>\n   * Its compiled representation is:\n   * ``ts\n   *
   * propertyInterpolate1('title', 'prefix', v0, 'suffix');\n   * ``\n   * If the property name also exists as an input property
   * on one of the element's directives,\n   * the component property will be set instead of the element property. This
   * check must\n   * be conducted at runtime so child components that add new `@Inputs` don't have to be re-compiled.\n
   * \n   * @param propName The name of the property to update\n   * @param prefix Static value used for concatenation

```

only.\n * @param v0 Value checked for change.\n * @param suffix Static value used for concatenation only.\n * @param sanitizer An optional sanitizer function\n * @returns itself, so that it may be chained.\n * @codeGenApi\n * ^\nexport function propertyInterpolate1(\n propName: string, prefix: string, v0: any, suffix: string,\n sanitizer?: SanitizerFn): typeof propertyInterpolate1 {\n const IView = getLView();\n const interpolatedValue = interpolation1(IView, prefix, v0, suffix);\n if (interpolatedValue !== NO_CHANGE) {\n const tView = getTView();\n const tNode = getSelectedTNode();\n elementPropertyInternal(\n tView, tNode, IView, propName, interpolatedValue, IView[RENDERER], sanitizer, false);\n ngDevMode &&\n storePropertyBindingMetadata(\n tView.data, tNode, propName, getBindingIndex() - 1, prefix, suffix);\n }\n } return propertyInterpolate1;\n }\n\n/**\n * Update an interpolated property on an element with 2 bound values surrounded by text.\n * Used when the value passed to a property has 2 interpolated values in it:\n * ``html\n * <div title="prefix{{v0}}-{{v1}}suffix"></div>\n * ``\n * Its compiled representation is:\n * ``ts\n * propertyInterpolate2('title', 'prefix', v0, '-', v1, 'suffix');\n * ``\n * If the property name also exists as an input property on one of the element's directives,\n * the component property will be set instead of the element property. This check must\n * be conducted at runtime so child components that add new `@Inputs` don't have to be re-compiled.\n * @param propName The name of the property to update\n * @param prefix Static value used for concatenation only.\n * @param v0 Value checked for change.\n * @param i0 Static value used for concatenation only.\n * @param v1 Value checked for change.\n * @param suffix Static value used for concatenation only.\n * @param sanitizer An optional sanitizer function\n * @returns itself, so that it may be chained.\n * @codeGenApi\n * ^\nexport function propertyInterpolate2(\n propName: string, prefix: string, v0: any, i0: string, v1: any, suffix: string,\n sanitizer?: SanitizerFn): typeof propertyInterpolate2 {\n const IView = getLView();\n const interpolatedValue = interpolation2(IView, prefix, v0, i0, v1, suffix);\n if (interpolatedValue !== NO_CHANGE) {\n const tView = getTView();\n const tNode = getSelectedTNode();\n elementPropertyInternal(\n tView, tNode, IView, propName, interpolatedValue, IView[RENDERER], sanitizer, false);\n ngDevMode &&\n storePropertyBindingMetadata(\n tView.data, tNode, propName, getBindingIndex() - 2, prefix, i0, suffix);\n }\n } return propertyInterpolate2;\n }\n\n/**\n * Update an interpolated property on an element with 3 bound values surrounded by text.\n * Used when the value passed to a property has 3 interpolated values in it:\n * ``html\n * <div title="prefix{{v0}}-{{v1}}-{{v2}}suffix"></div>\n * ``\n * Its compiled representation is:\n * ``ts\n * propertyInterpolate3(\n * 'title', 'prefix', v0, '-', v1, '-', v2, 'suffix');\n * ``\n * If the property name also exists as an input property on one of the element's directives,\n * the component property will be set instead of the element property. This check must\n * be conducted at runtime so child components that add new `@Inputs` don't have to be re-compiled.\n * @param propName The name of the property to update\n * @param prefix Static value used for concatenation only.\n * @param v0 Value checked for change.\n * @param i0 Static value used for concatenation only.\n * @param v1 Value checked for change.\n * @param i1 Static value used for concatenation only.\n * @param v2 Value checked for change.\n * @param suffix Static value used for concatenation only.\n * @param sanitizer An optional sanitizer function\n * @returns itself, so that it may be chained.\n * @codeGenApi\n * ^\nexport function propertyInterpolate3(\n propName: string, prefix: string, v0: any, i0: string, v1: any, i1: string, v2: any,\n suffix: string, sanitizer?: SanitizerFn): typeof propertyInterpolate3 {\n const IView = getLView();\n const interpolatedValue = interpolation3(IView, prefix, v0, i0, v1, i1, v2, suffix);\n if (interpolatedValue !== NO_CHANGE) {\n const tView = getTView();\n const tNode = getSelectedTNode();\n elementPropertyInternal(\n tView, tNode, IView, propName, interpolatedValue, IView[RENDERER], sanitizer, false);\n ngDevMode &&\n storePropertyBindingMetadata(\n tView.data, tNode, propName, getBindingIndex() - 3, prefix, i0, i1, suffix);\n }\n } return propertyInterpolate3;\n }\n\n/**\n * Update an interpolated property on an element with 4 bound values surrounded by text.\n * Used when the value passed to a property has 4 interpolated values in it:\n * ``html\n * <div title="prefix{{v0}}-{{v1}}-{{v2}}-{{v3}}suffix"></div>\n * ``\n * Its compiled representation is:\n * ``ts\n * propertyInterpolate4(\n * 'title', 'prefix', v0, '-', v1, '-', v2, '-', v3, 'suffix');\n * ``\n * If the property name also exists as an input property on one of the element's directives,\n * the component property will be set instead of the element property. This check

must be conducted at runtime so child components that add new `@Inputs` don't have to be re-compiled.

`@param propName` The name of the property to update

`@param prefix` Static value used for concatenation only.

`@param v0` Value checked for change.

`@param i0` Static value used for concatenation only.

`@param v1` Value checked for change.

`@param i1` Static value used for concatenation only.

`@param v2` Value checked for change.

`@param i2` Static value used for concatenation only.

`@param v3` Value checked for change.

`@param suffix` Static value used for concatenation only.

`@param sanitizer` An optional sanitizer function

`@returns` itself, so that it may be chained.

`@codeGenApi` `export function`

```
propertyInterpolate4(\n  propName: string, prefix: string, v0: any, i0: string, v1: any, i1: string, v2: any, i2: string,\n    v3: any, suffix: string, sanitizer?: SanitizerFn): typeof propertyInterpolate4 {\n  const IView = getLView();\n  const interpolatedValue = interpolation4(IView, prefix, v0, i0, v1, i1, v2, i2, v3, suffix);\n  if (interpolatedValue !==\n    NO_CHANGE) {\n    const tView = getTView();\n    const tNode = getSelectedTNode();\n    elementPropertyInternal(\n      tView, tNode, IView, propName, interpolatedValue, IView[RENDERER], sanitizer,\n      false);\n    ngDevMode &&\n      storePropertyBindingMetadata(\n        tView.data, tNode, propName,\n        getBindingIndex() - 4, prefix, i0, i1, i2, suffix);\n  }\n  return propertyInterpolate4;\n}\n\n/**\n * Update an interpolated property on an element with 5 bound values surrounded by text.\n * Used when the value passed to a property has 5 interpolated values in it:\n * ``html\n * <div title="prefix{{v0}}-{{v1}}-{{v2}}-{{v3}}-{{v4}}suffix"></div>\n * ``\n * Its compiled representation is:\n * ``ts\n * propertyInterpolate5(\n *   'title', 'prefix', v0, '-', v1, '-', v2, '-', v3, '-', v4, 'suffix');\n * ``\n * If the property name also exists as an input property on one of the element's directives,\n * the component property will be set instead of the element property. This check must\n * be conducted at runtime so child components that add new `@Inputs` don't have to be re-compiled.\n * @param propName The name of the property to update\n * @param prefix Static value used for concatenation only.\n * @param v0 Value checked for change.\n * @param i0 Static value used for concatenation only.\n * @param v1 Value checked for change.\n * @param i1 Static value used for concatenation only.\n * @param v2 Value checked for change.\n * @param i2 Static value used for concatenation only.\n * @param v3 Value checked for change.\n * @param i3 Static value used for concatenation only.\n * @param v4 Value checked for change.\n * @param suffix Static value used for concatenation only.\n * @param sanitizer An optional sanitizer function\n * @returns itself, so that it may be chained.\n * @codeGenApi\n */\nexport function\npropertyInterpolate5(\n  propName: string, prefix: string, v0: any, i0: string, v1: any, i1: string, v2: any, i2: string,\n    v3: any, i3: string, v4: any, suffix: string,\n  sanitizer?: SanitizerFn): typeof propertyInterpolate5 {\n  const IView = getLView();\n  const interpolatedValue =\n    interpolation5(IView, prefix, v0, i0, v1, i1, v2, i2, v3, i3, v4,\n    suffix);\n  if (interpolatedValue !== NO_CHANGE) {\n    const tView = getTView();\n    const tNode =\n      getSelectedTNode();\n    elementPropertyInternal(\n      tView, tNode, IView, propName, interpolatedValue,\n      IView[RENDERER], sanitizer, false);\n    ngDevMode &&\n      storePropertyBindingMetadata(\n        tView.data, tNode, propName, getBindingIndex() - 5, prefix, i0, i1, i2, i3, suffix);\n  }\n  return\npropertyInterpolate5;\n}\n\n/**\n * Update an interpolated property on an element with 6 bound values surrounded by text.\n * Used when the value passed to a property has 6 interpolated values in it:\n * ``html\n * <div title="prefix{{v0}}-{{v1}}-{{v2}}-{{v3}}-{{v4}}-{{v5}}suffix"></div>\n * ``\n * Its compiled representation is:\n * ``ts\n * propertyInterpolate6(\n *   'title', 'prefix', v0, '-', v1, '-', v2, '-', v3, '-', v4, '-', v5, 'suffix');\n * ``\n * If the property name also exists as an input property on one of the element's directives,\n * the component property will be set instead of the element property. This check must\n * be conducted at runtime so child components that add new `@Inputs` don't have to be re-compiled.\n * @param propName The name of the property to update\n * @param prefix Static value used for concatenation only.\n * @param v0 Value checked for change.\n * @param i0 Static value used for concatenation only.\n * @param v1 Value checked for change.\n * @param i1 Static value used for concatenation only.\n * @param v2 Value checked for change.\n * @param i2 Static value used for concatenation only.\n * @param v3 Value checked for change.\n * @param i3 Static value used for concatenation only.\n * @param v4 Value checked for change.\n * @param i4 Static value used for concatenation only.\n * @param v5 Value checked for change.\n * @param suffix Static value used for concatenation only.\n * @param sanitizer An optional sanitizer function\n * @returns itself, so that it may be
```

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chained.\n * @codegenApi\n */\nexport function propertyInterpolate6(\n  propName: string, prefix: string, v0:
any, i0: string, v1: any, i1: string, v2: any, i2: string,\n  v3: any, i3: string, v4: any, i4: string, v5: any, suffix:
string,\n  sanitizer?: SanitizerFn): typeof propertyInterpolate6 {\n  const IView = getLView();\n  const
interpolatedValue =\n    interpolation6(IView, prefix, v0, i0, v1, i1, v2, i2, v3, i3, v4, i4, v5, suffix);\n  if
(interpolatedValue !== NO_CHANGE) {\n    const tView = getTView();\n    const tNode = getSelectedTNode();\n
elementPropertyInternal(\n      tView, tNode, IView, propName, interpolatedValue, IView[RENDERER], sanitizer,
false);\n    ngDevMode &&\n      storePropertyBindingMetadata(\n        tView.data, tNode, propName,
getBindingIndex() - 6, prefix, i0, i1, i2, i3, i4, suffix);\n  }\n  return propertyInterpolate6;\n}\n\n/**\n * Update
an interpolated property on an element with 7 bound values surrounded by text.\n * Used when the value passed
to a property has 7 interpolated values in it:\n * \n * ``html\n * <div title="prefix{{v0}}-{{v1}}-{{v2}}-{{v3}}-
{{v4}}-{{v5}}-{{v6}}suffix"></div>\n * ``\n * Its compiled representation is:\n * \n * ``ts\n *
propertyInterpolate7(\n *   'title', 'prefix', v0, '-', v1, '-', v2, '-', v3, '-', v4, '-', v5, '-', v6, 'suffix');\n * ``\n * If the
property name also exists as an input property on one of the element's directives,\n * the component property will be
set instead of the element property. This check must\n * be conducted at runtime so child components that add new
`@Inputs` don't have to be re-compiled.\n * \n * @param propName The name of the property to update\n * @param
prefix Static value used for concatenation only.\n * @param v0 Value checked for change.\n * @param i0 Static
value used for concatenation only.\n * @param v1 Value checked for change.\n * @param i1 Static value used for
concatenation only.\n * @param v2 Value checked for change.\n * @param i2 Static value used for concatenation
only.\n * @param v3 Value checked for change.\n * @param i3 Static value used for concatenation only.\n *
@param v4 Value checked for change.\n * @param i4 Static value used for concatenation only.\n * @param v5
Value checked for change.\n * @param i5 Static value used for concatenation only.\n * @param v6 Value checked
for change.\n * @param suffix Static value used for concatenation only.\n * @param sanitizer An optional sanitizer
function\n * @returns itself, so that it may be chained.\n * @codegenApi\n */\nexport function
propertyInterpolate7(\n  propName: string, prefix: string, v0: any, i0: string, v1: any, i1: string, v2: any, i2: string,\n
v3: any, i3: string, v4: any, i4: string, v5: any, i5: string, v6: any, suffix: string,\n  sanitizer?: SanitizerFn): typeof
propertyInterpolate7 {\n  const IView = getLView();\n  const interpolatedValue =\n    interpolation7(IView, prefix,
v0, i0, v1, i1, v2, i2, v3, i3, v4, i4, v5, i5, v6, suffix);\n  if (interpolatedValue !== NO_CHANGE) {\n    const tView
= getTView();\n    const tNode = getSelectedTNode();\n    elementPropertyInternal(\n      tView, tNode, IView,
propName, interpolatedValue, IView[RENDERER], sanitizer, false);\n    ngDevMode &&\n      storePropertyBindingMetadata(\n
        tView.data, tNode, propName, getBindingIndex() - 7, prefix, i0, i1, i2, i3,
i4, i5,\n        suffix);\n  }\n  return propertyInterpolate7;\n}\n\n/**\n * Update an interpolated property on an
element with 8 bound values surrounded by text.\n * Used when the value passed to a property has 8 interpolated
values in it:\n * \n * ``html\n * <div title="prefix{{v0}}-{{v1}}-{{v2}}-{{v3}}-{{v4}}-{{v5}}-{{v6}}-
{{v7}}suffix"></div>\n * ``\n * Its compiled representation is:\n * \n * ``ts\n *
propertyInterpolate8(\n *   'title', 'prefix', v0, '-', v1, '-', v2, '-', v3, '-', v4, '-', v5, '-', v6, '-', v7, 'suffix');\n * ``\n * If the
property name also exists as an input property on one of the element's directives,\n * the component property will be
set instead of the element property. This check must\n * be conducted at runtime so child components that add new
`@Inputs` don't have to be re-compiled.\n * \n * @param propName The name of the property to update\n * @param
prefix Static value used for concatenation only.\n * @param v0 Value checked for change.\n * @param i0 Static
value used for concatenation only.\n * @param v1 Value checked for change.\n * @param i1 Static value used for
concatenation only.\n * @param v2 Value checked for change.\n * @param i2 Static value used for concatenation
only.\n * @param v3 Value checked for change.\n * @param i3 Static value used for concatenation only.\n * @param v4
Value checked for change.\n * @param i4 Static value used for concatenation only.\n * @param v5 Value checked
for change.\n * @param i5 Static value used for concatenation only.\n * @param v6 Value checked for change.\n *
@param i6 Static value used for concatenation only.\n * @param v7 Value checked for change.\n * @param suffix
Static value used for concatenation only.\n * @param sanitizer An optional sanitizer function\n * @returns itself, so
that it may be chained.\n * @codegenApi\n */\nexport function propertyInterpolate8(\n  propName: string, prefix:
string, v0: any, i0: string, v1: any, i1: string, v2: any, i2: string,\n  v3: any, i3: string, v4: any, i4: string, v5: any, i5:

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string, v6: any, i6: string, v7: any,\n  suffix: string, sanitizer?: SanitizerFn): typeof propertyInterpolate8 {\n  const
  IView = getLView();\n  const interpolatedValue = interpolation8(\n    IView, prefix, v0, i0, v1, i1, v2, i2, v3, i3, v4,
  i4, v5, i5, v6, i6, v7, suffix);\n  if (interpolatedValue !== NO_CHANGE) {\n    const tView = getTView();\n    const
  tNode = getSelectedTNode();\n    elementPropertyInternal(\n      tView, tNode, IView, propName,
  interpolatedValue, IView[RENDERER], sanitizer, false);\n    ngDevMode &&\n
  storePropertyBindingMetadata(\n      tView.data, tNode, propName, getBindingIndex() - 8, prefix, i0, i1, i2, i3,
  i4, i5, i6,\n      suffix);\n  }\n  return propertyInterpolate8;\n}\n\n/**\n * Update an interpolated property on an
  element with 9 or more bound values surrounded by text.\n * Used when the number of interpolated values
  exceeds 8.\n * ``html\n * <div\n *   title="prefix{{v0}}-{{v1}}-{{v2}}-{{v3}}-{{v4}}-{{v5}}-{{v6}}-
  {{v7}}-{{v8}}-{{v9}}suffix"></div>\n * ``\n * Its compiled representation is:\n * ``ts\n *
  propertyInterpolateV(\n *   'title', ['prefix', v0, '-', v1, '-', v2, '-', v3, '-', v4, '-', v5, '-', v6, '-', v7, '-', v9,\n *   'suffix']);\n *
  ``\n * If the property name also exists as an input property on one of the element's directives,\n * the component
  property will be set instead of the element property. This check must\n * be conducted at runtime so child
  components that add new `@Inputs` don't have to be re-compiled.\n *\n * @param propName The name of the
  property to update.\n * @param values The collection of values and the strings inbetween those values, beginning
  with a\n * string prefix and ending with a string suffix.\n * (e.g. `['prefix', value0, '-', value1, '-', value2, ..., value99,
  'suffix']`)\n * @param sanitizer An optional sanitizer function\n * @returns itself, so that it may be chained.\n *
  @codeGenApi\n * ^\nexport function propertyInterpolateV(\n  propName: string, values: any[], sanitizer?:
  SanitizerFn): typeof propertyInterpolateV {\n  const IView = getLView();\n  const interpolatedValue =
  interpolationV(IView, values);\n  if (interpolatedValue !== NO_CHANGE) {\n    const tView = getTView();\n
  const tNode = getSelectedTNode();\n    elementPropertyInternal(\n      tView, tNode, IView, propName,
  interpolatedValue, IView[RENDERER], sanitizer, false);\n    if (ngDevMode) {\n      const interpolationInBetween
  = [values[0]]; // prefix\n      for (let i = 2; i < values.length; i += 2) {\n
  interpolationInBetween.push(values[i]);\n      }\n      storePropertyBindingMetadata(\n        tView.data, tNode,
  propName, getBindingIndex() - interpolationInBetween.length + 1,\n        ...interpolationInBetween);\n      }\n    }\n
  return propertyInterpolateV;\n}\n\n"/**\n * @license\n * Copyright Google LLC All Rights Reserved.\n * Use
  of this source code is governed by an MIT-style license that can be\n * found in the LICENSE file at
  https://angular.io/license\n * ^\nimport {initNgDevMode} from './ng_dev_mode';\n\n/**\n * This file contains
  reuseable "empty" symbols that can be used as default return values\n * in different parts of the rendering code.
  Because the same symbols are returned, this\n * allows for identity checks against these values to be consistently
  used by the framework\n * code.\n *\nexport const EMPTY_OBJ: {} = {};\nexport const EMPTY_ARRAY:
  any[] = [];\n\n// freezing the values prevents any code from accidentally inserting new values in\nif ((typeof
  ngDevMode === 'undefined' || ngDevMode) && initNgDevMode()) {\n  // These property accesses can be ignored
  because ngDevMode will be set to false\n  // when optimizing code and the whole if statement will be dropped.\n  //
  tslint:disable-next-line:no-toplevel-property-access\n  Object.freeze(EMPTY_OBJ);\n  // tslint:disable-next-line:no-
  toplevel-property-access\n  Object.freeze(EMPTY_ARRAY);\n}\n\n"/**\n * @license\n * Copyright Google LLC
  All Rights Reserved.\n * Use of this source code is governed by an MIT-style license that can be\n * found in
  the LICENSE file at https://angular.io/license\n * ^\nimport {KeyValueArray, keyValueArrayIndexOf} from
  './../util/array_utils';\nimport {assertEqual, assertIndexInRange, assertNotEqual} from './../util/assert';\nimport
  {assertFirstUpdatePass} from './assert';\nimport {TNode} from './interfaces/node';\nimport
  {getTStylingRangeNext, getTStylingRangePrev, setTStylingRangeNext, setTStylingRangeNextDuplicate,
  setTStylingRangePrev, setTStylingRangePrevDuplicate, toTStylingRange, TStylingKey, TStylingKeyPrimitive,
  TStylingRange} from './interfaces/styling';\nimport {TData} from './interfaces/view';\nimport {getTView} from
  './state';\n\n\n/**\n * NOTE: The word `styling` is used interchangeably as style or class styling.\n * This file
  contains code to link styling instructions together so that they can be replayed in\n * priority order. The file
  exists because Ivy styling instruction execution order does not match\n * that of the priority order. The purpose
  of this code is to create a linked list so that the\n * instructions can be traversed in priority order when
  computing the styles.\n *\n * Assume we are dealing with the following code:\n * ``\n * @Component({\n *   template: `
  
```



```

`TStylingRange`\n * \n * @param tData The `TData` to insert into.\n * @param tNode `TNode` associated with the
styling element.\n * @param tStylingKey See `TStylingKey`.\n * @param index location of where `tStyleValue`
should be stored (and linked into list.)\n * @param isHostBinding `true` if the insertion is for a `hostBinding`.
(insertion is in front of\n *      template.)\n * @param isClassBinding True if the associated `tStylingKey` as a
`class` styling.\n *      `tNode.classBindings` should be used (or `tNode.styleBindings` otherwise.)\n
*/\n\nexport function insertTStylingBinding(\n  tData: TData, tNode: TNode, tStylingKeyWithStatic: TStylingKey,
index: number,\n  isHostBinding: boolean, isClassBinding: boolean): void {\n  ngDevMode &&
assertFirstUpdatePass(getTView());\n  let tBindings = isClassBinding ? tNode.classBindings :
tNode.styleBindings;\n  let tmpHead = getTStylingRangePrev(tBindings);\n  let tmpTail =
getTStylingRangeNext(tBindings);\n\n  tData[index] = tStylingKeyWithStatic;\n  let isKeyDuplicateOfStatic =
false;\n  let tStylingKey: TStylingKeyPrimitive;\n  if (Array.isArray(tStylingKeyWithStatic)) {\n    // We are case
when the `TStylingKey` contains static fields as well.\n    const staticKeyValueArray = tStylingKeyWithStatic as
KeyValueArray<any>;\n    tStylingKey = staticKeyValueArray[1]; // unwrap.\n    // We need to check if our key is
present in the static so that we can mark it as duplicate.\n    if (tStylingKey === null ||\n
keyValueArray.indexOf(staticKeyValueArray, tStylingKey as string) > 0) {\n      // tStylingKey is present in the
statics, need to mark it as duplicate.\n      isKeyDuplicateOfStatic = true;\n    }\n  } else {\n    tStylingKey =
tStylingKeyWithStatic;\n  }\n  if (isHostBinding) {\n    // We are inserting host bindings\n\n    // If we don't have
template bindings then `tail` is 0.\n    const hasTemplateBindings = tmpTail !== 0;\n    // This is important to know
because that means that the `head` can't point to the first\n    // template bindings (there are none.) Instead the head
points to the tail of the template.\n    if (hasTemplateBindings) {\n      // template head's `prev` will point to last
host binding or to 0 if no host bindings yet\n      const previousNode = getTStylingRangePrev(tData[tmpHead + 1]
as TStylingRange);\n      tData[index + 1] = toTStylingRange(previousNode, tmpHead);\n      // if a host binding has
already been registered, we need to update the next of that host\n      // binding to point to this one\n      if
(previousNode !== 0) {\n        // We need to update the template-tail value to point to us.\n        tData[previousNode
+ 1] =\n          setTStylingRangeNext(tData[previousNode + 1] as TStylingRange, index);\n      }\n      // The
`previous` of the template binding head should point to this host binding\n      tData[tmpHead + 1] =
setTStylingRangePrev(tData[tmpHead + 1] as TStylingRange, index);\n    } else {\n      tData[index + 1] =
toTStylingRange(tmpHead, 0);\n      // if a host binding has already been registered, we need to update the next of
that host\n      // binding to point to this one\n      if (tmpHead !== 0) {\n        // We need to update the template-tail
value to point to us.\n        tData[tmpHead + 1] = setTStylingRangeNext(tData[tmpHead + 1] as TStylingRange,
index);\n      }\n      // if we don't have template, the head points to template-tail, and needs to be advanced.\n
tmpHead = index;\n    }\n  } else {\n    // We are inserting in template section.\n    // We need to set this binding's
`previous` to the current template tail\n    tData[index + 1] = toTStylingRange(tmpTail, 0);\n    ngDevMode &&\n
assertEqual(\n      tmpHead !== 0 && tmpTail === 0, false,\n      'Adding template bindings after
hostBindings is not allowed.);\n    if (tmpHead === 0) {\n      tmpHead = index;\n    } else {\n      // We need to
update the previous value `next` to point to this binding\n      tData[tmpTail + 1] =
setTStylingRangeNext(tData[tmpTail + 1] as TStylingRange, index);\n    }\n    tmpTail = index;\n  }\n\n  // Now
we need to update / compute the duplicates.\n  // Starting with our location search towards head (least priority)\n  if
(isKeyDuplicateOfStatic) {\n    tData[index + 1] = setTStylingRangePrevDuplicate(tData[index + 1] as
TStylingRange);\n  }\n  markDuplicates(tData, tStylingKey, index, true, isClassBinding);\n  markDuplicates(tData,
tStylingKey, index, false, isClassBinding);\n  markDuplicateOfResidualStyling(tNode, tStylingKey, tData, index,
isClassBinding);\n\n  tBindings = toTStylingRange(tmpHead, tmpTail);\n  if (isClassBinding) {\n
tNode.classBindings = tBindings;\n  } else {\n    tNode.styleBindings = tBindings;\n  }\n}\n\n/**\n * Look into the
residual styling to see if the current `tStylingKey` is duplicate of residual.\n * \n * @param tNode `TNode` where the
residual is stored.\n * @param tStylingKey `TStylingKey` to store.\n * @param tData `TData` associated with the
current `LView`.\n * @param index location of where `tStyleValue` should be stored (and linked into list.)\n *
\n * @param isClassBinding True if the associated `tStylingKey` as a `class` styling.\n *
\n * `tNode.classBindings` should be used (or `tNode.styleBindings` otherwise.)\n */\nfunction

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markDuplicateOfResidualStyling(\n  tNode: TNode, tStylingKey: TStylingKey, tData: TData, index: number,
isClassBinding: boolean) {\n  const residual = isClassBinding ? tNode.residualClasses : tNode.residualStyles;\n  if
(residual != null /* or undefined */ && typeof tStylingKey === 'string' &&\n    keyValueArrayIndexOf(residual,
tStylingKey) >= 0) {\n    // We have duplicate in the residual so mark ourselves as duplicate.\n    tData[index + 1] =
setTStylingRangeNextDuplicate(tData[index + 1] as TStylingRange);\n  }\n}\n\n/*\n * Marks `TStyleValue`s as
duplicates if another style binding in the list has the same\n * `TStyleValue`.\n * NOTE: this function is
intended to be called twice once with `isPrevDir` set to `true` and once\n * with it set to `false` to search both the
previous as well as next items in the list.\n * No duplicate case\n * ```\n * [style.color]\n * [style.width.px]
<<- index\n * [style.height.px]\n * ```\n * In the above case adding `[style.width.px]` to the existing
`[style.color]` produces no\n * duplicates because `width` is not found in any other part of the linked list.\n *\n * Duplicate case\n * ```\n * [style.color]\n * [style.width.em]\n * [style.width.px] <<- index\n * ```\n * In the
above case adding `[style.width.px]` will produce a duplicate with `[style.width.em]`\n * because `width` is found in
the chain.\n *\n * Map case 1\n * ```\n * [style.width.px]\n * [style.color]\n * [style] <<- index\n * ```\n * In the
above case adding `[style]` will produce a duplicate with any other bindings because\n * `[style]` is a Map and as
such is fully dynamic and could produce `color` or `width`.\n *\n * Map case 2\n * ```\n * [style]\n *
[style.width.px]\n * [style.color] <<- index\n * ```\n * In the above case adding `[style.color]` will produce a
duplicate because there is already a\n * `[style]` binding which is a Map and as such is fully dynamic and could
produce `color` or\n * `width`.\n *\n * NOTE: Once `[style]` (Map) is added into the system all things are mapped
as duplicates.\n * NOTE: We use `style` as example, but same logic is applied to `class`es as well.\n *\n * @param
tData `TData` where the linked list is stored.\n * @param tStylingKey `TStylingKeyPrimitive` which contains the
value to compare to other keys in\n * the linked list.\n * @param index Starting location in the linked list to
search from\n * @param isPrevDir Direction.\n * - `true` for previous (lower priority);\n * - `false` for next
(higher priority).\n */\nfunction markDuplicates(\n  tData: TData, tStylingKey: TStylingKeyPrimitive, index:
number, isPrevDir: boolean,\n  isClassBinding: boolean) {\n  const tStylingAtIndex = tData[index + 1] as
TStylingRange;\n  const isMap = tStylingKey === null;\n  let cursor =\n    isPrevDir ?
getTStylingRangePrev(tStylingAtIndex) : getTStylingRangeNext(tStylingAtIndex);\n  let foundDuplicate = false;\n
// We keep iterating as long as we have a cursor\n // AND either:\n // - we found what we are looking for, OR\n // -
we are a map in which case we have to continue searching even after we find what we were\n // looking for since
we are a wild card and everything needs to be flipped to duplicate.\n  while (cursor !== 0 && (foundDuplicate ===
false || isMap)) {\n    ngDevMode && assertIndexInRange(tData, cursor);\n    const tStylingValueAtCursor =
tData[cursor] as TStylingKey;\n    const tStyleRangeAtCursor = tData[cursor + 1] as TStylingRange;\n    if
(isStylingMatch(tStylingValueAtCursor, tStylingKey)) {\n      foundDuplicate = true;\n      tData[cursor + 1] =
isPrevDir ? setTStylingRangeNextDuplicate(tStyleRangeAtCursor) :\n      setTStylingRangePrevDuplicate(tStyleRangeAtCursor);\n    }\n    cursor = isPrevDir ?
getTStylingRangePrev(tStyleRangeAtCursor) :\n      getTStylingRangeNext(tStyleRangeAtCursor);\n  }\n  if (foundDuplicate) {\n    // if we found a duplicate, than mark ourselves.\n    tData[index + 1] = isPrevDir ?
setTStylingRangePrevDuplicate(tStylingAtIndex) :\n      setTStylingRangeNextDuplicate(tStylingAtIndex);\n  }\n}\n\n/*\n * Determines if two `TStylingKey`s are a
match.\n * When computing whether a binding contains a duplicate, we need to compare if the instruction\n *
`TStylingKey` has a match.\n * Here are examples of `TStylingKey`s which match given `TStylingKeyCursor`\n
is:\n * - `color`\n * - `color` // Match another color\n * - `null` // That means that `tStylingKey` is a
`classMap`/`styleMap` instruction\n * - `[`, `color`, `other`, true]` // wrapped `color` so match\n * - `[`, null,
`other`, true]` // wrapped `null` so match\n * - `[`, `width`, `color`, `value`]` // wrapped static value contains a
match on `color`\n * - `null` // `TStylingKeyCursor` always match as it is `classMap`/`styleMap` instruction\n
*\n * @param tStylingKeyCursor\n * @param tStylingKey\n */\nfunction isStylingMatch(tStylingKeyCursor:
TStylingKey, tStylingKey: TStylingKeyPrimitive) {\n  ngDevMode &&\n    assertNotEqual(\n
Array.isArray(tStylingKey), true, 'Expected that `\\tStylingKey` has been unwrapped');\n  if (\n
tStylingKeyCursor === null || // If the cursor is `null` it means that we have map at that\n //

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location so we must assume that we have a match.\n    tStylingKey == null || // If `tStylingKey` is `null` then it is a
map therefor assume that it\n                // contains a match.\n    (Array.isArray(tStylingKeyCursor) ?
tStylingKeyCursor[1] : tStylingKeyCursor) ===\n    tStylingKey // If the keys match explicitly than we are a
match.\n } {\n  return true;\n } else if (Array.isArray(tStylingKeyCursor) && typeof tStylingKey === 'string') {\n
// if we did not find a match, but `tStylingKeyCursor` is `KeyValueArray` that means cursor has\n // statics and
we need to check those as well.\n  return keyValueArrayIndexOf(tStylingKeyCursor, tStylingKey) >=\n    0; //
see if we are matching the key\n } \n return false;\n }\n", "/*\n * @license\n * Copyright Google LLC All Rights
Reserved.\n *\n * Use of this source code is governed by an MIT-style license that can be\n * found in the
LICENSE file at https://angular.io/license\n *\n\nimport {assertEqual, throwError} from '../util/assert';\nimport
{CharCode} from '../util/char_code';\n\n/**\n * Stores the locations of key/value indexes while parsing styling.\n
*\n * In case of `cssText` parsing the indexes are like so:\n * ```\n * |"key1: value1; key2: value2; key3: value3"|
*\n *      ^   ^ ^   ^           ^\n *      |   | |           +-- textEnd\n *      |   | |           |   |   +-----
valueEnd\n *      | | +----- value\n *      | +----- keyEnd\n
+----- key\n * ```\n *\n * In case of `className` parsing the indexes are like so:\n * ```\n *
|"key1 key2 key3"| \n *      ^ ^   ^\n *      | | +-- textEnd\n *      | +----- keyEnd\n *      +--
----- key\n * ```\n *\n * NOTE: `value` and `valueEnd` are used only for styles, not classes.\n
*\n\ninterface ParserState {\n  textEnd: number;\n  key: number;\n  keyEnd: number;\n  value: number;\n  valueEnd:
number;\n}\n// Global state of the parser. (This makes parser non-reentrant, but that is not an issue)\nconst
parserState: ParserState = {\n  textEnd: 0,\n  key: 0,\n  keyEnd: 0,\n  value: 0,\n  valueEnd: 0,\n};\n\n/**\n *
Retrieves the last parsed `key` of style.\n * @param text the text to substring the key from.\n */\nexport function
getLastParsedKey(text: string): string {\n  return text.substring(parserState.key, parserState.keyEnd);\n}\n\n/**\n *
Retrieves the last parsed `value` of style.\n * @param text the text to substring the key from.\n */\nexport function
getLastParsedValue(text: string): string {\n  return text.substring(parserState.value,\n  parserState.valueEnd);\n}\n\n/**\n * Initializes `className` string for parsing and parses the first token.\n *\n
This function is intended to be used in this format:\n * ```\n * for (let i = parseClassName(text); i >= 0; i =
parseClassNameNext(text, i)) {\n *   const key = getLastParsedKey();\n *   ... \n * }\n * ```\n * @param text
`className` to parse\n * @returns index where the next invocation of `parseClassNameNext` should resume.\n
*/\nexport function parseClassName(text: string): number {\n  resetParserState(text);\n  return
parseClassNameNext(text, consumeWhitespace(text, 0, parserState.textEnd));\n}\n\n/**\n * Parses next
`className` token.\n *\n * This function is intended to be used in this format:\n * ```\n * for (let i =
parseClassName(text); i >= 0; i = parseClassNameNext(text, i)) {\n *   const key = getLastParsedKey();\n *   ... \n
* }\n * ```\n * @param text `className` to parse\n * @param index where the parsing should resume.\n *
@returns index where the next invocation of `parseClassNameNext` should resume.\n */\nexport function
parseClassNameNext(text: string, index: number): number {\n  const end = parserState.textEnd;\n  if (end ===
index) {\n    return -1;\n  }\n  index = parserState.keyEnd = consumeClassToken(text, parserState.key = index,\n
end);\n  return consumeWhitespace(text, index, end);\n}\n\n/**\n * Initializes `cssText` string for parsing and parses
the first key/values.\n *\n * This function is intended to be used in this format:\n * ```\n * for (let i =
parseStyle(text); i >= 0; i = parseStyleNext(text, i)) {\n *   const key = getLastParsedKey();\n *   const value =
getLastParsedValue();\n *   ... \n * }\n * ```\n * @param text `cssText` to parse\n * @returns index where the next
invocation of `parseStyleNext` should resume.\n */\nexport function parseStyle(text: string): number {\n
resetParserState(text);\n  return parseStyleNext(text, consumeWhitespace(text, 0, parserState.textEnd));\n}\n\n/**\n
* Parses the next `cssText` key/values.\n *\n * This function is intended to be used in this format:\n * ```\n * for (let
i = parseStyle(text); i >= 0; i = parseStyleNext(text, i)) {\n *   const key = getLastParsedKey();\n *   const value =
getLastParsedValue();\n *   ... \n * }\n * ```\n * @param text `cssText` to parse\n * @param index where the parsing
should resume.\n * @returns index where the next invocation of `parseStyleNext` should resume.\n */\nexport
function parseStyleNext(text: string, startIndex: number): number {\n  const end = parserState.textEnd;\n  let index
= parserState.key = consumeWhitespace(text, startIndex, end);\n  if (end === index) {\n    // we reached an end so
just quit\n    return -1;\n  }\n  index = parserState.keyEnd = consumeStyleKey(text, index, end);\n  index =

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consumeSeparator(text, index, end, CharCode.COLON);\n index = parserState.value = consumeWhitespace(text,
index, end);\n index = parserState.valueEnd = consumeStyleValue(text, index, end);\n return
consumeSeparator(text, index, end, CharCode.SEMI_COLON);\n}\n\n/**\n * Reset the global state of the styling
parser.\n * @param text The styling text to parse.\n */\nexport function resetParserState(text: string): void {\n
parserState.key = 0;\n parserState.keyEnd = 0;\n parserState.value = 0;\n parserState.valueEnd = 0;\n
parserState.textEnd = text.length;\n}\n\n/**\n * Returns index of next non-whitespace character.\n * @param
text Text to scan\n * @param startIndex Starting index of character where the scan should start.\n * @param
endIndex Ending index of character where the scan should end.\n * @returns Index of next non-whitespace
character (May be the same as `start` if no whitespace at\n * that location.)\n */\nexport function
consumeWhitespace(text: string, startIndex: number, endIndex: number): number {\n while (startIndex < endIndex
&& text.charCodeAtAt(startIndex) <= CharCode.SPACE) {\n startIndex++;\n }\n return startIndex;\n}\n\n/**\n *
Returns index of last char in class token.\n * @param text Text to scan\n * @param startIndex Starting index of
character where the scan should start.\n * @param endIndex Ending index of character where the scan should end.\n
* @returns Index after last char in class token.\n */\nexport function consumeClassToken(text: string, startIndex:
number, endIndex: number): number {\n while (startIndex < endIndex && text.charCodeAtAt(startIndex) >
CharCode.SPACE) {\n startIndex++;\n }\n return startIndex;\n}\n\n/**\n * Consumes all of the characters
belonging to style key and token.\n * @param text Text to scan\n * @param startIndex Starting index of
character where the scan should start.\n * @param endIndex Ending index of character where the scan should end.\n
* @returns Index after last style key character.\n */\nexport function consumeStyleKey(text: string, startIndex:
number, endIndex: number): number {\n let ch: number;\n while (startIndex < endIndex &&\n ((ch =
text.charCodeAtAt(startIndex)) === CharCode.DASH || ch === CharCode.UNDERSCORE ||\n ((ch &
CharCode.UPPER_CASE) >= CharCode.A && (ch & CharCode.UPPER_CASE) <= CharCode.Z) ||\n (ch >=
CharCode.ZERO && ch <= CharCode.NINE))) {\n startIndex++;\n }\n return startIndex;\n}\n\n/**\n *
Consumes all whitespace and the separator `:` after the style key.\n * @param text Text to scan\n * @param
startIndex Starting index of character where the scan should start.\n * @param endIndex Ending index of character
where the scan should end.\n * @returns Index after separator and surrounding whitespace.\n */\nexport function
consumeSeparator(\n text: string, startIndex: number, endIndex: number, separator: number): number {\n
startIndex = consumeWhitespace(text, startIndex, endIndex);\n if (startIndex < endIndex) {\n if (ngDevMode &&
text.charCodeAtAt(startIndex) !== separator) {\n malformedStyleError(text, String.fromCharCode(separator),
startIndex);\n }\n startIndex++;\n }\n return startIndex;\n}\n\n/**\n * Consumes style value honoring `url()`
and `\"` text.\n * @param text Text to scan\n * @param startIndex Starting index of character where the scan
should start.\n * @param endIndex Ending index of character where the scan should end.\n * @returns Index after
last style value character.\n */\nexport function consumeStyleValue(text: string, startIndex: number, endIndex:
number): number {\n let ch1 = -1; // 1st previous character\n let ch2 = -1; // 2nd previous character\n let ch3 = -1;
// 3rd previous character\n let i = startIndex;\n let lastChIndex = i;\n while (i < endIndex) {\n const ch: number =
text.charCodeAtAt(i++);\n if (ch === CharCode.SEMI_COLON) {\n return lastChIndex;\n } else if (ch ===
CharCode.DOUBLE_QUOTE || ch === CharCode.SINGLE_QUOTE) {\n lastChIndex = i =
consumeQuotedText(text, ch, i, endIndex);\n } else if (\n startIndex ===\n i - 4 && // We have seen
only 4 characters so far \"URL(\" (Ignore \"foo_URL()\")\n ch3 === CharCode.U &&\n ch2 ===
CharCode.R && ch1 === CharCode.L && ch === CharCode.OPEN_PAREN) {\n lastChIndex = i =
consumeQuotedText(text, CharCode.CLOSE_PAREN, i, endIndex);\n } else if (ch > CharCode.SPACE) {\n //
if we have a non-whitespace character then capture its location\n lastChIndex = i;\n }\n ch3 = ch2;\n ch2 =
ch1;\n ch1 = ch & CharCode.UPPER_CASE;\n }\n return lastChIndex;\n}\n\n/**\n * Consumes all of the quoted
characters.\n * @param text Text to scan\n * @param quoteCharCode CharCode of either `\"` or `` quote or `)`
for `url(...)`.\n * @param startIndex Starting index of character where the scan should start.\n * @param endIndex
Ending index of character where the scan should end.\n * @returns Index after quoted characters.\n */\nexport
function consumeQuotedText(\n text: string, quoteCharCode: number, startIndex: number, endIndex: number):
number {\n let ch1 = -1; // 1st previous character\n let index = startIndex;\n while (index < endIndex) {\n const

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ch = text.charCodeAt(index++);\n  if (ch === quoteCharCode && ch1 !== CharCode.BACK_SLASH) {\n    return
index;\n  }\n  if (ch === CharCode.BACK_SLASH && ch1 === CharCode.BACK_SLASH) {\n    // two back
slashes cancel each other out. For example `\"\"` should properly end the\n    // quotation. (It should not assume
that the last `\"` is escaped.)\n    ch1 = 0;\n  } else {\n    ch1 = ch;\n  }\n}\n}\n\nthrow ngDevMode ?
malformedStyleError(text, String.fromCharCode(quoteCharCode), endIndex) : \n      new
Error();\n}\n\nfunction malformedStyleError(text: string, expecting: string, index: number): never {\n  ngDevMode
&& assertEquals(typeof text === 'string', true, 'String expected here');\n  throw throwError(\n    `Malformed style at
location ${index} in string ` + text.substring(0, index) + `[>>' +\n    text.substring(index, index + 1) + '<<]' +
text.substr(index + 1) + ``. Expecting '${expecting}'.`);\n}\n\n"/**\n * @license\n * Copyright Google LLC All
Rights Reserved.\n * \n * Use of this source code is governed by an MIT-style license that can be\n * found in the
LICENSE file at https://angular.io/license\n */\n\nimport { SafeValue, unwrapSafeValue } from
'./../sanitization/bypass';\nimport { KeyValueArray, keyValueArrayGet, keyValueArraySet } from
'./../util/array_utils';\nimport { assertDefined, assertEquals, assertLessThan, assertNotEqual, throwError } from
'./../util/assert';\nimport { EMPTY_ARRAY } from './../util/empty';\nimport { concatStringsWithSpace, stringify }
from './../util/stringify';\nimport { assertFirstUpdatePass } from './assert';\nimport { bindingUpdated } from
'./bindings';\nimport { DirectiveDef } from './interfaces/definition';\nimport { AttributeMarker, TAttributes, TNode,
TNodeFlags, TNodeType } from './interfaces/node';\nimport { Renderer3 } from './interfaces/renderer';\nimport
{ RElement } from './interfaces/renderer_dom';\nimport { getTStylingRangeNext, getTStylingRangeNextDuplicate,
getTStylingRangePrev, getTStylingRangePrevDuplicate, TStylingKey, TStylingRange } from
'./interfaces/styling';\nimport { LView, RENDERER, TData, TView } from './interfaces/view';\nimport
{ applyStyling } from './node_manipulation';\nimport { getCurrentDirectiveDef, getLView, getSelectedIndex,
getTView, incrementBindingIndex } from './state';\nimport { insertTStylingBinding } from
'./styling/style_binding_list';\nimport { getLastParsedKey, getLastParsedValue, parseClassName,
parseClassNameNext, parseStyle, parseStyleNext } from './styling/styling_parser';\nimport { NO_CHANGE } from
'./tokens';\nimport { getNativeByIndex } from './util/view_utils';\nimport
{ setDirectiveInputsWhichShadowsStyling } from './property';\n\n/**\n * Update a style binding on an element with
the provided value.\n * \n * If the style value is falsy then it will be removed from the element\n * (or assigned a
different value depending if there are any styles placed\n * on the element with `styleMap` or any static styles that
are\n * present from when the element was created with `styling`).\n * \n * Note that the styling element is updated
as part of `stylingApply`.\n * \n * @param prop A valid CSS property.\n * @param value New value to write ( `null`
or an empty string to remove).\n * @param suffix Optional suffix. Used with scalar values to add unit such as
`px`.\n * \n * Note that this will apply the provided style value to the host element if this function is called\n *
within a host binding function.\n * \n * @codeGenApi\n */\n\nexport function styleProp(\n  prop: string, value:
string|number|SafeValue|undefined|null,\n  suffix?: string|null): typeOf styleProp {\n  checkStylingProperty(prop,
value, suffix, false);\n  return styleProp;\n}\n\n/**\n * Update a class binding on an element with the provided
value.\n * \n * This instruction is meant to handle the `[class.foo]="exp"` case and,\n * therefore, the class binding
itself must already be allocated using\n * `styling` within the creation block.\n * \n * @param prop A valid CSS class
(only one).\n * @param value A true/false value which will turn the class on or off.\n * \n * Note that this will apply
the provided class value to the host element if this function\n * is called within a host binding function.\n * \n *
@codeGenApi\n */\n\nexport function classProp(className: string, value: boolean|undefined|null): typeOf classProp
{\n  checkStylingProperty(className, value, null, true);\n  return classProp;\n}\n\n/**\n * Update style bindings
using an object literal on an element.\n * \n * This instruction is meant to apply styling via the `[style]="exp"`
template bindings.\n * \n * When styles are applied to the element they will then be updated with respect to\n * any
styles/classes set via `styleProp`. If any styles are set to falsy\n * then they will be removed from the element.\n *
\n * Note that the styling instruction will not be applied until `stylingApply` is called.\n * \n * @param styles A
key/value style map of the styles that will be applied to the given element.\n * \n * Any missing styles (that have
already been applied to the element beforehand) will be\n * removed (unset) from the element's styling.\n * \n *
Note that this will apply the provided styleMap value to the host element if this function\n * is called within a host

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binding.\n *\n * @codegenApi\n *^\nexport function styleMap(styles: {[styleName: string]:
any}|string|undefined|null): void {\n  checkStylingMap(styleKeyValueArraySet, styleStringParser, styles,
false);\n}\n\n\n**\n * Parse text as style and add values to KeyValueArray.\n *\n * This code is pulled out to a
separate function so that it can be tree shaken away if it is not\n * needed. It is only referenced from `styleMap`.\n
*\n * @param keyValueArray KeyValueArray to add parsed values to.\n * @param text text to parse.\n *^\nexport
function styleStringParser(keyValueArray: KeyValueArray<any>, text: string): void {\n  for (let i =
parseStyle(text); i >= 0; i = parseStyleNext(text, i)) {\n    styleKeyValueArraySet(keyValueArray,
getLastParsedKey(text), getLastParsedValue(text));\n  }\n}\n\n\n**\n * Update class bindings using an object literal
or class-string on an element.\n *\n * This instruction is meant to apply styling via the `[class]="exp"` template
bindings.\n * When classes are applied to the element they will then be updated with\n * respect to any styles/classes
set via `classProp`. If any\n * classes are set to falsy then they will be removed from the element.\n *\n * Note that
the styling instruction will not be applied until `stylingApply` is called.\n * Note that this will the provided classMap
value to the host element if this function is called\n * within a host binding.\n *\n * @param classes A key/value
map or string of CSS classes that will be added to the\n *      given element. Any missing classes (that have already
been applied to the element\n *      beforehand) will be removed (unset) from the element's list of CSS classes.\n
*\n * @codegenApi\n *^\nexport function classMap(classes: {[className: string]:
boolean|undefined|null}|string|undefined|\n
null): void {\n  checkStylingMap(keyValueArraySet,
classStringParser, classes, true);\n}\n\n\n**\n * Parse text as class and add values to KeyValueArray.\n *\n * This
code is pulled out to a separate function so that it can be tree shaken away if it is not\n * needed. It is only
referenced from `classMap`.\n *\n * @param keyValueArray KeyValueArray to add parsed values to.\n * @param
text text to parse.\n *^\nexport function classStringParser(keyValueArray: KeyValueArray<any>, text: string): void
{\n  for (let i = parseClassName(text); i >= 0; i = parseClassNameNext(text, i)) {\n
keyValueArraySet(keyValueArray, getLastParsedKey(text), true);\n  }\n}\n\n\n**\n * Common code between
`classProp` and `styleProp`.\n *\n * @param prop property name.\n * @param value binding value.\n * @param
suffix suffix for the property (e.g. `em` or `px`)\n * @param isClassBased `true` if `class` change (`false` if
`style`)\n *^\nexport function checkStylingProperty(\n  prop: string, value: any|NO_CHANGE, suffix:
string|undefined|null,\n  isClassBased: boolean): void {\n  const IView = getLView();\n  const tView =
getTView();\n  // Styling instructions use 2 slots per binding.\n  // 1. one for the value / TStylingKey\n  // 2. one for
the intermittent-value / TStylingRange\n  const bindingIndex = incrementBindingIndex(2);\n  if
(tView.firstUpdatePass) {\n    stylingFirstUpdatePass(tView, prop, bindingIndex, isClassBased);\n  }\n  if (value
!== NO_CHANGE && bindingUpdated(IView, bindingIndex, value)) {\n    const tNode =
tView.data[getSelectedIndex()] as TNode;\n    updateStyling(\n      tView, tNode, IView, IView[RENDERER],
prop,\n      IView[bindingIndex + 1] = normalizeSuffix(value, suffix), isClassBased, bindingIndex);\n  }\n}\n\n\n**\n * Common code between `classMap` and `styleMap`.\n *\n * @param keyValueArraySet (See
`keyValueArraySet` in `util/array_utils`) Gets passed in as a\n *      function so that `style` can be processed. This
is done for tree shaking purposes.\n * @param stringParser Parser used to parse `value` if `string`. (Passed in as
`style` and `class`\n *      have different parsers.)\n * @param value bound value from application\n * @param
isClassBased `true` if `class` change (`false` if `style`)\n *^\nexport function checkStylingMap(\n
keyValueArraySet: (keyValueArray: KeyValueArray<any>, key: string, value: any) => void,\n  stringParser:
(styleKeyValueArray: KeyValueArray<any>, text: string) => void,\n  value: any|NO_CHANGE, isClassBased:
boolean): void {\n  const tView = getTView();\n  const bindingIndex = incrementBindingIndex(2);\n  if
(tView.firstUpdatePass) {\n    stylingFirstUpdatePass(tView, null, bindingIndex, isClassBased);\n  }\n  const IView
= getLView();\n  if (value !== NO_CHANGE && bindingUpdated(IView, bindingIndex, value)) {\n    //
`getSelectedIndex()` should be here (rather than in instruction) so that it is guarded by the\n    // if so as not to read
unnecessarily.\n    const tNode = tView.data[getSelectedIndex()] as TNode;\n    if (hasStylingInputShadow(tNode,
isClassBased) && !isInHostBindings(tView, bindingIndex)) {\n      if (ngDevMode) {\n        // verify that if we are
shadowing then `TData` is appropriately marked so that we skip\n        // processing this binding in styling
resolution.\n        const tStylingKey = tView.data[bindingIndex];\n        assertEquals(\n

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Array.isArray(tStylingKey) ? tStylingKey[1] : tStylingKey, false,\n      'Styling linked list shadow input should
be marked as \\false\\');\n    }\n    // VE does not concatenate the static portion like we are doing here.\n    //
Instead VE just ignores the static completely if dynamic binding is present.\n    // Because of locality we have
already set the static portion because we don't know if there\n    // is a dynamic portion until later. If we would
ignore the static portion it would look like\n    // the binding has removed it. This would confuse
`[ngStyle]`/`[ngClass]` to do the wrong\n    // thing as it would think that the static portion was removed. For this
reason we\n    // concatenate it so that `[ngStyle]`/`[ngClass]` can continue to work on changed.\n    let
staticPrefix = isClassBased ? tNode.classesWithoutHost : tNode.stylesWithoutHost;\n    ngDevMode &&
isClassBased === false && staticPrefix !== null &&\n      assertEquals(\n        staticPrefix.endsWith(';'), true,
'Expecting static portion to end with `;`');\n    if (staticPrefix !== null) {\n      // We want to make sure that falsy
values of `value` become empty strings.\n      value = concatStringsWithSpace(staticPrefix, value ? value : '');\n
    }\n    // Given `

` such that `my-dir` has `@Input('style')`.\n    // This takes over the `[style]`
binding. (Same for `[class]`)\n    setDirectiveInputsWhichShadowsStyling(tView, tNode, IView, value,
isClassBased);\n  } else {\n    updateStylingMap(\n      tView, tNode, IView, IView[RENDERER],
IView[bindingIndex + 1],\n      IView[bindingIndex + 1] = toStylingKeyValueArray(keyValueArraySet,
stringParser, value),\n      isClassBased, bindingIndex);\n  }\n}\n\n/**\n * Determines when the binding is in
`hostBindings` section\n * @param tView Current `TVIEW`\n * @param bindingIndex index of binding which
we would like if it is in `hostBindings`\n */\nfunction isInHostBindings(tView: TVIEW, bindingIndex: number):
boolean {\n  // All host bindings are placed after the expando section.\n  return bindingIndex >=
tView.expandoStartIndex;\n}\n\n/**\n * Collects the necessary information to insert the binding into a linked list of
style bindings\n * using `insertTStylingBinding`.\n * @param tView `TVIEW` where the binding linked list will
be stored.\n * @param tStylingKey Property/key of the binding.\n * @param bindingIndex Index of binding
associated with the `prop`\n * @param isClassBased `true` if `class` change (`false` if `style`)\n */\nfunction
stylingFirstUpdatePass(\n  tView: TVIEW, tStylingKey: TStylingKey, bindingIndex: number, isClassBased:
boolean): void {\n  ngDevMode && assertFirstUpdatePass(tView);\n  const tData = tView.data;\n  if
(tData[bindingIndex + 1] === null) {\n    // The above check is necessary because we don't clear first update pass
until first successful\n    // (no exception) template execution. This prevents the styling instruction from double
adding\n    // itself to the list.\n    // `getSelectedIndex()` should be here (rather than in instruction) so that it is
guarded by the\n    // if so as not to read unnecessarily.\n    const tNode = tData[getSelectedIndex()] as TNode;\n
    ngDevMode && assertDefined(tNode, 'TNode expected');\n    const isHostBindings = isInHostBindings(tView,
bindingIndex);\n    if (hasStylingInputShadow(tNode, isClassBased) && tStylingKey === null &&
!isHostBindings) {\n      // `tStylingKey === null` implies that we are either `[style]` or `[class]` binding.\n
      // If there is a directive which uses `@Input('style')` or `@Input('class')` than\n      // we need to neutralize this binding
since that directive is shadowing it.\n      // We turn this into a noop by setting the key to `false`\n      tStylingKey =
false;\n    }\n    tStylingKey = wrapInStaticStylingKey(tData, tNode, tStylingKey, isClassBased);\n
    insertTStylingBinding(tData, tNode, tStylingKey, bindingIndex, isHostBindings, isClassBased);\n  }\n}\n\n/**\n * Adds static styling information to the binding if applicable.\n * @param tData `TData` where the linked list is stored.\n * @param tNode `TNode` for which the styling is being
computed.\n * @param stylingKey `TStylingKeyPrimitive` which may need to be wrapped into `TStylingKey`\n *
@param isClassBased `true` if `class` (`false` if `style`)\n */\nexport function wrapInStaticStylingKey(\n  tData:
TData, tNode: TNode, stylingKey: TStylingKey, isClassBased: boolean): TStylingKey {\n  const hostDirectiveDef
= getCurrentDirectiveDef(tData);\n  let residual = isClassBased ? tNode.residualClasses : tNode.residualStyles;\n
  if (hostDirectiveDef === null) {\n    // We are in template node.\n    // If template node already had styling instruction
then it has already collected the static\n    // styling and there is no need to collect them again. We know that we are
the first styling\n    // instruction because the `TNode.*Bindings` points to 0 (nothing has been inserted yet).\n
    const isFirstStylingInstructionInTemplate = !\n      (isClassBased ? tNode.classBindings : tNode.styleBindings) as


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any as number === 0;\n  if (isFirstStylingInstructionInTemplate) {\n    // It would be nice to be able to get the
statics from `mergeAttrs`, however, at this point\n    // they are already merged and it would not be possible to
figure which property belongs where\n    // in the priority.\n    stylingKey = collectStylingFromDirectives(null,
tData, tNode, stylingKey, isClassBased);\n    stylingKey = collectStylingFromTAttrs(stylingKey, tNode.attrs,
isClassBased);\n    // We know that if we have styling binding in template we can't have residual.\n    residual =
null;\n  }\n } else {\n  // We are in host binding node and there was no binding instruction in template node.\n  //
This means that we need to compute the residual.\n  const directiveStylingLast = tNode.directiveStylingLast;\n  const isFirstStylingInstructionInHostBinding = \n    directiveStylingLast === -1 || tData[directiveStylingLast] !==
hostDirectiveDef;\n  if (isFirstStylingInstructionInHostBinding) {\n    stylingKey =\n    collectStylingFromDirectives(hostDirectiveDef, tData, tNode, stylingKey, isClassBased);\n    if (residual === null)
{\n      // - If `null` than either:\n      //   - Template styling instruction already ran and it has consumed the static\n
      //   styling into its `TStylingKey` and so there is no need to update residual. Instead\n      //   we need to
update the `TStylingKey` associated with the first template node\n      //   instruction. OR\n      //   - Some other
styling instruction ran and determined that there are no residuals\n      let templateStylingKey =
getTemplateHeadTStylingKey(tData, tNode, isClassBased);\n      if (templateStylingKey !== undefined &&
Array.isArray(templateStylingKey)) {\n        // Only recompute if `templateStylingKey` had static values. (If no
static value found\n        // then there is nothing to do since this operation can only produce less static keys, not\n
        // more.)\n        templateStylingKey = collectStylingFromDirectives(\n          null, tData, tNode,
templateStylingKey[1] /* unwrap previous statics */, \n          isClassBased);\n        templateStylingKey =\n        collectStylingFromTAttrs(templateStylingKey, tNode.attrs, isClassBased);\n
setTemplateHeadTStylingKey(tData, tNode, isClassBased, templateStylingKey);\n      }\n    } else {\n      // We
only need to recompute residual if it is not `null`.\n      // - If existing residual (implies there was no template
styling). This means that some of\n      // the statics may have moved from the residual to the `stylingKey` and so
we have to\n      // recompute.\n      // - If `undefined` this is the first time we are running.\n      residual =
collectResidual(tData, tNode, isClassBased);\n    }\n  }\n }\n if (residual !== undefined) {\n   isClassBased ?
(tNode.residualClasses = residual) : (tNode.residualStyles = residual);\n }\n return stylingKey;\n }\n\n/*\n *
Retrieve the `TStylingKey` for the template styling instruction.\n * This is needed since `hostBinding` styling
instructions are inserted after the template\n * instruction. While the template instruction needs to update the
residual in `TNode` the\n * `hostBinding` instructions need to update the `TStylingKey` of the template instruction
because\n * the template instruction is downstream from the `hostBindings` instructions.\n * @param tData
`TData` where the linked list is stored.\n * @param tNode `TNode` for which the styling is being computed.\n *
@param isClassBased `true` if `class` (`false` if `style`)\n * @return `TStylingKey` if found or `undefined` if not
found.\n */\nfunction getTemplateHeadTStylingKey(tData: TData, tNode: TNode, isClassBased: boolean):
TStylingKey\n  undefined {\n  const bindings = isClassBased ? tNode.classBindings : tNode.styleBindings;\n  if
(getTStylingRangeNext(bindings) === 0) {\n    // There does not seem to be a styling instruction in the `template`.\n
    return undefined;\n  }\n  return tData[getTStylingRangePrev(bindings)] as TStylingKey;\n }\n\n/*\n * Update the
`TStylingKey` of the first template instruction in `TNode`.\n * Logically `hostBindings` styling instructions are
of lower priority than that of the template.\n * However, they execute after the template styling instructions. This
means that they get inserted\n * in front of the template styling instructions.\n * If we have a template styling
instruction and a new `hostBindings` styling instruction is\n * executed it means that it may need to steal static fields
from the template instruction. This\n * method allows us to update the first template instruction `TStylingKey` with
a new value.\n * Assume:\n * ``\n * <div my-dir style="color: red" [style.color]="tmplExp"></div>\n * \n *
@Directive({\n *   host: {\n *     'style': 'width: 100px',\n *     '[style.color]': 'dirExp',\n *   }\n * })\n * class MyDir
{\n *   ``\n * \n * when `[style.color]="tmplExp"` executes it creates this data structure.\n * ``\n * [", 'color',
'color', 'red', 'width', '100px'],\n * ``\n * \n * The reason for this is that the template instruction does not know if there
are styling\n * instructions and must assume that there are none and must collect all of the static styling.\n * (both\n * `color` and `width`)\n * \n * When `[style.color]: 'dirExp',` executes we need to insert a new data into the linked
list.\n * ``\n * [", 'color', 'width', '100px'], // newly inserted\n * [", 'color', 'color', 'red', 'width', '100px'], // this is

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wrong\n * ```\n *\n * Notice that the template statics is now wrong as it incorrectly contains `width` so we need to\n
* update it like so:\n * ```\n * [", 'color', 'width', '100px'],\n * [", 'color', 'color', 'red'], // UPDATE\n * ```\n *\n * @param tData `TData` where the linked list is stored.\n * @param tNode `TNode` for which the styling is being\n
computed.\n * @param isClassBased `true` if `class` (`false` if `style`)\n * @param tStylingKey New `TStylingKey`\n
which is replacing the old one.\n */\nfunction setTemplateHeadTStylingKey(\n  tData: TData, tNode: TNode,\n  isClassBased: boolean, tStylingKey: TStylingKey): void {\n  const bindings = isClassBased ? tNode.classBindings :\n
tNode.styleBindings;\n  ngDevMode &&\n  assertNotEqual(\n    getTStylingRangeNext(bindings), 0,\n    'Expecting to have at least one template styling binding.);\n  tData[getTStylingRangePrev(bindings)] =\n
tStylingKey;\n}\n\n/**\n * Collect all static values after the current `TNode.directiveStylingLast` index.\n *\n * Collect the remaining styling information which has not yet been collected by an existing\n * styling instruction.\n *\n * @param tData `TData` where the `DirectiveDefs` are stored.\n * @param tNode `TNode` which contains the\n
directive range.\n * @param isClassBased `true` if `class` (`false` if `style`)\n */\nfunction collectResidual(tData:\n  TData, tNode: TNode, isClassBased: boolean): KeyValueArray<any>|\n  null {\n  let residual:\n
KeyValueArray<any>|\n  null|undefined = undefined;\n  const directiveEnd = tNode.directiveEnd;\n  ngDevMode\n
&&\n  assertNotEqual(\n    tNode.directiveStylingLast, -1,\n    'By the time this function gets called at\n
least one hostBindings-node styling instruction must have executed.);\n  // We add `1 + tNode.directiveStart`\n
because we need to skip the current directive (as we are\n // collecting things after the last `hostBindings` directive\n
which had a styling instruction.)\n  for (let i = 1 + tNode.directiveStylingLast; i < directiveEnd; i++) {\n  const attr\n
= (tData[i] as DirectiveDef<any>).hostAttrs;\n  residual = collectStylingFromTAttrs(residual, attr, isClassBased)\n
as KeyValueArray<any>|\n  null;\n  }\n  return collectStylingFromTAttrs(residual, tNode.attrs, isClassBased) as\n
KeyValueArray<any>|\n  null;\n}\n\n/**\n * Collect the static styling information with lower priority than\n
`hostDirectiveDef`.\n *\n * (This is opposite of residual styling.)\n *\n * @param hostDirectiveDef `DirectiveDef`\n
for which we want to collect lower priority static\n * styling. (Or `null` if template styling)\n *\n * @param tData\n
`TData` where the linked list is stored.\n * @param tNode `TNode` for which the styling is being computed.\n *\n
* @param stylingKey Existing `TStylingKey` to update or wrap.\n * @param isClassBased `true` if `class` (`false` if\n
`style`)\n */\nfunction collectStylingFromDirectives(\n  hostDirectiveDef: DirectiveDef<any>|\n  null, tData: TData,\n  tNode: TNode, stylingKey: TStylingKey,\n  isClassBased: boolean): TStylingKey {\n  // We need to loop because\n
there can be directives which have `hostAttrs` but don't have\n // `hostBindings` so this loop catches up to the\n
current directive..\n  let currentDirective: DirectiveDef<any>|\n  null = null;\n  const directiveEnd =\n
tNode.directiveEnd;\n  let directiveStylingLast = tNode.directiveStylingLast;\n  if (directiveStylingLast === -1) {\n
directiveStylingLast = tNode.directiveStart;\n  } else {\n  directiveStylingLast++;\n  }\n  while\n
(directiveStylingLast < directiveEnd) {\n  currentDirective = tData[directiveStylingLast] as DirectiveDef<any>;\n
ngDevMode && assertDefined(currentDirective, 'expected to be defined');\n  stylingKey =\n
collectStylingFromTAttrs(stylingKey, currentDirective.hostAttrs, isClassBased);\n  if (currentDirective ===\n
hostDirectiveDef) break;\n  directiveStylingLast++;\n  }\n  if (hostDirectiveDef !== null) {\n  // we only advance\n
the styling cursor if we are collecting data from host bindings.\n // Template executes before host bindings and so\n
if we would update the index,\n // host bindings would not get their statics.\n  tNode.directiveStylingLast =\n
directiveStylingLast;\n  }\n  return stylingKey;\n}\n\n/**\n * Convert `TAttrs` into `TStylingStatic`.\n *\n * @param stylingKey existing `TStylingKey` to update or wrap.\n * @param attr `TAttributes` to process.\n *\n
* @param isClassBased `true` if `class` (`false` if `style`)\n */\nfunction collectStylingFromTAttrs(\n  stylingKey:\n
TStylingKey|undefined, attr: TAttributes|\n  null, isClassBased: boolean): TStylingKey {\n  const desiredMarker =\n
isClassBased ? AttributeMarker.Classes : AttributeMarker.Styles;\n  let currentMarker =\n
AttributeMarker.ImplicitAttributes;\n  if (attr !== null) {\n  for (let i = 0; i < attr.length; i++) {\n  const item =\n
attr[i] as number | string;\n  if (typeof item === 'number') {\n  currentMarker = item;\n  } else {\n  if\n
(currentMarker === desiredMarker) {\n  if (!Array.isArray(stylingKey)) {\n  stylingKey = stylingKey\n
=== undefined ? [] : [", stylingKey] as any;\n  }\n  keyValueArraySet(\n  stylingKey as\n
KeyValueArray<any>, item, isClassBased ? true : attr[+i]);\n  }\n  }\n  }\n  }\n  return stylingKey ===\n
undefined ? null : stylingKey;\n}\n\n/**\n * Convert user input to `KeyValueArray`.\n *\n * This function takes user

```

input which could be `string`, Object literal, or iterable and converts it into a consistent representation. The output of this is `KeyValueArray` (which is an array where even indexes contain keys and odd indexes contain values for those keys). The advantage of converting to `KeyValueArray` is that we can perform diff in an input independent way. (ie we can compare `foo bar` to `[bar, 'baz']` and determine a set of changes which need to be applied). The fact that `KeyValueArray` is sorted is very important because it allows us to compute the difference in linear fashion without the need to allocate any additional data. For example if we kept this as a `Map` we would have to iterate over previous `Map` to determine which values need to be deleted, over the new `Map` to determine additions, and we would have to keep additional `Map` to keep track of duplicates or items which have not yet been visited.

```

@param keyValueArraySet (See `keyValueArraySet` in `util/array_utils`) Gets passed in as a function so that `style` can be processed. This is done for tree shaking purposes.
@param stringParser The parser is passed in so that it will be tree shakable. See `styleStringParser` and `classStringParser`
@param value The value to parse/convert to `KeyValueArray`
*/
export function toStylingKeyValueArray(
  keyValueArraySet: (keyValueArray: KeyValueArray<any>, key: string, value: any) => void,
  stringParser: (styleKeyValueArray: KeyValueArray<any>, text: string) => void,
  value: string | string[] | {[key: string]: any} | SafeValue | null | undefined): KeyValueArray<any> {
  if (value === null || value === undefined || value === "") return EMPTY_ARRAY as any;
  const styleKeyValueArray: KeyValueArray<any> = [] as any;
  const unwrappedValue = unwrapSafeValue(value) as string | string[] | {[key: string]: any};
  if (Array.isArray(unwrappedValue)) {
    for (let i = 0; i < unwrappedValue.length; i++) {
      keyValueArraySet(styleKeyValueArray, unwrappedValue[i], true);
    }
  } else if (typeof unwrappedValue === 'object') {
    for (const key in unwrappedValue) {
      if (unwrappedValue.hasOwnProperty(key)) {
        keyValueArraySet(styleKeyValueArray, key, unwrappedValue[key]);
      }
    }
  } else if (typeof unwrappedValue === 'string') {
    stringParser(styleKeyValueArray, unwrappedValue);
  } else {
    ngDevMode && throwError('Unsupported styling type ' + typeof unwrappedValue + ': ' + unwrappedValue);
  }
  return styleKeyValueArray;
}
*/
Set a `value` for a `key`. See:
`keyValueArraySet` for details
@param keyValueArray KeyValueArray to add to.
@param key Style key to add.
@param value The value to set.
*/
export function styleKeyValueArraySet(
  keyValueArray: KeyValueArray<any>, key: string, value: any) {
  keyValueArraySet(keyValueArray, key,
  unwrapSafeValue(value));
}
*/
Update map based styling.
*/
Map based styling could be anything which contains more than one binding. For example `string`, or object literal. Dealing with all of these types would complicate the logic so instead this function expects that the complex input is first converted into normalized `KeyValueArray`. The advantage of normalization is that we get the values sorted, which makes it very cheap to compute deltas between the previous and current value.
@param tView Associated `TView.data` contains the linked list of binding priorities.
@param tNode `TNode` where the binding is located.
@param lView `LView` contains the values associated with other styling binding at this `TNode`.
@param renderer Renderer to use if any updates.
@param oldKeyValueArray Previous value represented as `KeyValueArray`
@param newKeyValueArray Current value represented as `KeyValueArray`
@param isClassBased `true` if `class` (`false` if `style`)
@param bindingIndex Binding index of the binding.
*/
function updateStylingMap(
  tView: TView, tNode: TNode, lView: LView, renderer: Renderer3,
  oldKeyValueArray: KeyValueArray<any>, newKeyValueArray: KeyValueArray<any>,
  isClassBased: boolean, bindingIndex: number) {
  if (oldKeyValueArray as KeyValueArray<any> | NO_CHANGE === NO_CHANGE) {
    // On first execution the oldKeyValueArray is NO_CHANGE => treat it as empty KeyValueArray.
    oldKeyValueArray = EMPTY_ARRAY as any;
  }
  let oldIndex = 0;
  let newIndex = 0;
  let oldKey: string | null = 0 < oldKeyValueArray.length ? oldKeyValueArray[0] : null;
  let newKey: string | null = 0 < newKeyValueArray.length ? newKeyValueArray[0] : null;
  while (oldKey !== null || newKey !== null) {
    ngDevMode && assertLessThan(oldIndex, 999, 'Are we stuck in infinite loop?');
    ngDevMode && assertLessThan(newIndex, 999, 'Are we stuck in infinite loop?');
    const oldValue = oldIndex < oldKeyValueArray.length ? oldKeyValueArray[oldIndex + 1] : undefined;
    const newValue = newIndex < newKeyValueArray.length ? newKeyValueArray[newIndex + 1] : undefined;
    let setKey: string | null = null;

```

```

let setValue: any = undefined;\n  if (oldKey === newKey) {\n    // UPDATE: Keys are equal => new value is
overwriting old value.\n    oldIndex += 2;\n    newIndex += 2;\n    if (oldValue !== newValue) {\n      setKey =
newKey;\n      setValue = newValue;\n    }\n  } else if (newKey === null || oldKey !== null && oldKey <
newKey!) {\n    // DELETE: oldKey key is missing or we did not find the oldKey in the newValue\n    // (because
the keyValueArray is sorted and `newKey` is found later alphabetically).\n    // `\"background\" < \"color\"` so we
need to delete `\"background\"` because it is not found in the\n    // new array.\n    oldIndex += 2;\n    setKey =
oldKey;\n  } else {\n    // CREATE: newKey's is earlier alphabetically than oldKey's (or no oldKey) => we have
new key.\n    // `\"color\" > \"background\"` so we need to add `color` because it is in new array but not in\n    //
old array.\n    ngDevMode && assertDefined(newKey, 'Expecting to have a valid key');\n    newIndex += 2;\n
setKey = newKey;\n    setValue = newValue;\n  }\n  if (setKey !== null) {\n    updateStyling(tView, tNode,
IView, renderer, setKey, setValue, isClassBased, bindingIndex);\n  }\n  oldKey = oldIndex <
oldKeyValueArray.length ? oldKeyValueArray[oldIndex] : null;\n  newKey = newIndex <
newKeyValueArray.length ? newKeyValueArray[newIndex] : null;\n  }\n}\n\n/**\n * Update a simple (property
name) styling.\n * This function takes `prop` and updates the DOM to that value. The function takes the
binding\n * value as well as binding priority into consideration to determine which value should be written\n * to
DOM. (For example it may be determined that there is a higher priority overwrite which blocks\n * the DOM write,
or if the value goes to `undefined` a lower priority overwrite may be consulted.)\n * @param tView Associated
`TView.data` contains the linked list of binding priorities.\n * @param tNode `TNode` where the binding is
located.\n * @param IView `LView` contains the values associated with other styling binding at this `TNode`.\n *
@param renderer Renderer to use if any updates.\n * @param prop Either style property name or a class name.\n *
@param value Either style value for `prop` or `true`/`false` if `prop` is class.\n * @param isClassBased `true` if
`class` (`false` if `style`)\n * @param bindingIndex Binding index of the binding.\n */\nfunction updateStyling(\n
tView: TView, tNode: TNode, IView: LView, renderer: Renderer3, prop: string,\n  value:
string|undefined|null|boolean, isClassBased: boolean, bindingIndex: number) {\n  if (!(tNode.type &
TNodeType.AnyRNode)) {\n    // It is possible to have styling on non-elements (such as ng-container).\n    // This is
rare, but it does happen. In such a case, just ignore the binding.\n    return;\n  }\n  const tData = tView.data;\n  const
tRange = tData[bindingIndex + 1] as TStylingRange;\n  const higherPriorityValue =
getTStylingRangeNextDuplicate(tRange) ?\n    findStylingValue(tData, tNode, IView, prop,
getTStylingRangeNext(tRange), isClassBased) :\n    undefined;\n  if (!isStylingValuePresent(higherPriorityValue))
{\n    // We don't have a next duplicate, or we did not find a duplicate value.\n    if (!isStylingValuePresent(value))
{\n      // We should delete current value or restore to lower priority value.\n      if
(getTStylingRangePrevDuplicate(tRange)) {\n        // We have a possible prev duplicate, let's retrieve it.\n        value
= findStylingValue(tData, null, IView, prop, bindingIndex, isClassBased);\n      }\n    }\n    const rNode =
getNativeByIndex(getSelectedIndex(), IView) as RElement;\n    applyStyling(renderer, isClassBased, rNode, prop,
value);\n  }\n}\n\n/**\n * Search for styling value with higher priority which is overwriting current value, or a\n *
value of lower priority to which we should fall back if the value is `undefined`.\n * When value is being applied
at a location, related values need to be consulted.\n * - If there is a higher priority binding, we should be using that
one instead.\n * For example `

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retrieving the actual values.\n * @param prop Property which we are interested in.\n * @param index Starting index
in the linked list of styling bindings where the search should start.\n * @param isClassBased `true` if `class` (`false`
if `style`)\n */\nfunction findStylingValue(\n  tData: TData, tNode: TNode|null, lView: LView, prop: string, index:
number,\n  isClassBased: boolean): any {\n  // `TNode` to use for resolving static styling. Also controls search
direction.\n  // - `TNode` search next and quit as soon as `isStylingValuePresent(value)` is true.\n  // If no value
found consult `tNode.residualStyle`/`tNode.residualClass` for default value.\n  // - `null` search prev and go all the
way to end. Return last value where\n  // `isStylingValuePresent(value)` is true.\n  const isPrevDirection = tNode
=== null;\n  let value: any = undefined;\n  while (index > 0) {\n    const rawKey = tData[index] as TStylingKey;\n
const containsStatics = Array.isArray(rawKey);\n    // Unwrap the key if we contain static values.\n    const key =
containsStatics ? (rawKey as string[])[1] : rawKey;\n    const isStylingMap = key === null;\n    let
valueAtLViewIndex = lView[index + 1];\n    if (valueAtLViewIndex === NO_CHANGE) {\n      // In
firstUpdatePass the styling instructions create a linked list of styling.\n      // On subsequent passes it is possible for a
styling instruction to try to read a binding\n      // which\n      // has not yet executed. In that case we will find
`NO_CHANGE` and we should assume that\n      // we have `undefined` (or empty array in case of styling-map
instruction) instead. This\n      // allows the resolution to apply the value (which may later be overwritten when the\n
// binding actually executes.)\n      valueAtLViewIndex = isStylingMap ? EMPTY_ARRAY : undefined;\n    }\n
let currentValue = isStylingMap ? keyValueArrayGet(valueAtLViewIndex, prop) :\n      // key
=== prop ? valueAtLViewIndex : undefined;\n    if (containsStatics && !isStylingValuePresent(currentValue)) {\n
currentValue = keyValueArrayGet(rawKey as KeyValueArray<any>, prop);\n    }\n    if
(isStylingValuePresent(currentValue)) {\n      value = currentValue;\n      if (isPrevDirection) {\n        return value;\n
      }\n    }\n    const tRange = tData[index + 1] as TStylingRange;\n    index = isPrevDirection ?
getTStylingRangePrev(tRange) : getTStylingRangeNext(tRange);\n  }\n  if (tNode !== null) {\n    // in case where
we are going in next direction AND we did not find anything, we need to\n    // consult residual styling\n    let
residual = isClassBased ? tNode.residualClasses : tNode.residualStyles;\n    if (residual !== null /** OR residual !==
undefined */) {\n      value = keyValueArrayGet(residual!, prop);\n    }\n  }\n  return value;\n}\n\n/**\n *
Determines if the binding value should be used (or if the value is 'undefined' and hence priority\n * resolution should
be used.)\n * @param value Binding style value.\n */\nfunction isStylingValuePresent(value: any): boolean {\n
// Currently only `undefined` value is considered non-binding. That is `undefined` says I don't\n // have an opinion
as to what this binding should be and you should consult other bindings by\n // priority to determine the valid
value.\n // This is extracted into a single function so that we have a single place to control this.\n return value !==
undefined;\n}\n\n/**\n * Normalizes and/or adds a suffix to the value.\n * @param value\n * @param suffix\n */\nfunction normalizeSuffix(value: any, suffix:
string|undefined|null): string|null|undefined|boolean {\n  if (value === null /** || value === undefined */) {\n    // do
nothing\n  } else if (typeof suffix === 'string') {\n    value = value + suffix;\n  } else if (typeof value === 'object') {\n
value = stringify(unwrapSafeValue(value));\n  }\n  return value;\n}\n\n/**\n * Tests if the `TNode` has input
shadow.\n * @param tNode `TNode` which we would like to see if it has shadow.\n * @param
isClassBased `true` if `class` (`false` if `style`)\n */\nexport function hasStylingInputShadow(tNode: TNode,
isClassBased: boolean) {\n  return (tNode.flags & (isClassBased ? TNodeFlags.hasClassInput :
TNodeFlags.hasStyleInput)) !== 0;\n}\n\n", "/*\n * @license\n * Copyright Google LLC All Rights Reserved.\n * \n *
Use of this source code is governed by an MIT-style license that can be\n * found in the LICENSE file at
https://angular.io/license\n */\nimport {assertEqual, assertIndexInRange} from '../util/assert';\nimport
{TElementNode, TNodeType} from '../interfaces/node';\nimport {HEADER_OFFSET, RENDERER, T_HOST}
from '../interfaces/view';\nimport {appendChild, createTextNode} from '../node_manipulation';\nimport
{getBindingIndex, getLView, getTView, setCurrentTNode} from '../state';\nimport {getOrCreateTNode} from
'./shared';\n\n/**\n * Create static text node\n * @param index Index of the node in the data array\n *
@param value Static string value to write.\n * @codeGenApi\n */\nexport function text(index: number, value:
string = ""): void {\n  const lView = getLView();\n  const tView = getTView();\n  const adjustedIndex = index +

```

```

HEADER_OFFSET;\n\n ngDevMode &&\n  assertEquals(\n    getBindingIndex(), tView.bindingStartIndex,\n    'text nodes should be created before any bindings');\n  ngDevMode && assertIndexInRange(IView,\n    adjustedIndex);\n\n  const tNode = tView.firstCreatePass ?\n    getOrCreateTNode(tView, adjustedIndex,\n    TNodeType.Text, value, null) :\n    tView.data[adjustedIndex] as TElementNode;\n\n  const textNative =\n    IView[adjustedIndex] = createTextNode(IView[RENDERER], value);\n  appendChild(tView, IView, textNative,\n    tNode);\n\n  // Text nodes are self closing.\n  setCurrentTNode(tNode, false);\n}\n\n"/**\n * @license\n * Copyright\n * Google LLC All Rights Reserved.\n * Use of this source code is governed by an MIT-style license that can be\n * found in the LICENSE file at https://angular.io/license\n */\n\nimport {getLView, getSelectedIndex} from\n './state';\nimport {NO_CHANGE} from './tokens';\nimport {interpolation1, interpolation2, interpolation3,\n  interpolation4, interpolation5, interpolation6, interpolation7, interpolation8, interpolationV} from\n './interpolation';\nimport {textBindingInternal} from './shared';\n\n/**\n * Update text content with a lone\n * bound value\n * Used when a text node has 1 interpolated value in it, an no additional text\n * surrounds that\n * interpolated value:\n * ```html\n * <div>{v0}</div>\n * ```\n * Its compiled representation is:\n * ```\n * ts\n * textInterpolate(v0);\n * ```\n * @returns itself, so that it may be chained.\n * @see textInterpolateV\n * @codeGenApi\n */\nexport function textInterpolate(v0: any): typeof textInterpolate {\n  textInterpolate1(", v0, ");\n  return textInterpolate;\n}\n\n/**\n * Update text content with single bound value surrounded by other text.\n * Used when a text node has 1 interpolated value in it:\n * ```html\n * <div>prefix{v0}suffix</div>\n * ```\n * Its compiled representation is:\n * ```\n * ts\n * textInterpolate1('prefix', v0, 'suffix');\n * ```\n * @returns\n * itself, so that it may be chained.\n * @see textInterpolateV\n * @codeGenApi\n */\nexport function\n  textInterpolate1(\n    prefix: string, v0: any, suffix: string): typeof textInterpolate1 {\n  const IView = getLView();\n  const interpolated = interpolation1(IView, prefix, v0, suffix);\n  if (interpolated !== NO_CHANGE) {\n    textBindingInternal(IView, getSelectedIndex(), interpolated as string);\n  }\n  return textInterpolate1;\n}\n\n/**\n * Update text content with 2 bound values surrounded by other text.\n * Used when a text node has 2\n * interpolated values in it:\n * ```html\n * <div>prefix{v0}-{v1}suffix</div>\n * ```\n * Its compiled\n * representation is:\n * ```\n * ts\n * textInterpolate2('prefix', v0, '-', v1, 'suffix');\n * ```\n * @returns\n * itself, so that it\n * may be chained.\n * @see textInterpolateV\n * @codeGenApi\n */\nexport function textInterpolate2(\n  prefix:\n  string, v0: any, i0: string, v1: any, suffix: string): typeof textInterpolate2 {\n  const IView = getLView();\n  const\n  interpolated = interpolation2(IView, prefix, v0, i0, v1, suffix);\n  if (interpolated !== NO_CHANGE) {\n    textBindingInternal(IView, getSelectedIndex(), interpolated as string);\n  }\n  return textInterpolate2;\n}\n\n/**\n * Update text content with 3 bound values surrounded by other text.\n * Used when a text node has 3\n * interpolated values in it:\n * ```html\n * <div>prefix{v0}-{v1}-{v2}suffix</div>\n * ```\n * Its\n * compiled\n * representation is:\n * ```\n * ts\n * textInterpolate3(\n * 'prefix', v0, '-', v1, '-', v2, 'suffix');\n * ```\n * @returns\n * itself, so that it\n * may be chained.\n * @see textInterpolateV\n * @codeGenApi\n */\nexport function\n  textInterpolate3(\n    prefix: string, v0: any, i0: string, v1: any, i1: string, v2: any,\n    suffix: string): typeof\n  textInterpolate3 {\n  const IView = getLView();\n  const\n  interpolated = interpolation3(IView, prefix, v0, i0, v1, i1,\n  v2, suffix);\n  if (interpolated !== NO_CHANGE) {\n    textBindingInternal(IView, getSelectedIndex(), interpolated\n  as string);\n  }\n  return textInterpolate3;\n}\n\n/**\n * Update text content with 4 bound values surrounded by\n * other text.\n * Used when a text node has 4 interpolated values in it:\n * ```html\n * <div>prefix{v0}-\n * {v1}-\n * {v2}-\n * {v3}suffix</div>\n * ```\n * Its compiled\n * representation is:\n * ```\n * ts\n * textInterpolate4(\n * 'prefix', v0, '-', v1, '-', v2, '-', v3, 'suffix');\n * ```\n * @returns\n * itself, so that it\n * may be chained.\n * @see textInterpolateV\n * @codeGenApi\n */\nexport function textInterpolate4(\n  prefix: string, v0: any, i0:\n  string, v1: any, i1: string, v2: any, i2: string, v3: any,\n  suffix: string): typeof textInterpolate4 {\n  const IView =\n  getLView();\n  const\n  interpolated = interpolation4(IView, prefix, v0, i0, v1, i1, v2, i2, v3, suffix);\n  if (interpolated\n  !== NO_CHANGE) {\n    textBindingInternal(IView, getSelectedIndex(), interpolated\n  as string);\n  }\n  return\n  textInterpolate4;\n}\n\n/**\n * Update text content with 5 bound values surrounded by other text.\n * Used\n * when a text node has 5 interpolated values in it:\n * ```html\n * <div>prefix{{v0}}-\n * {v1}}-\n * {v2}}-\n * {v3}}-\n * {v4}suffix</div>\n * ```\n * Its compiled\n * representation is:\n * ```\n * ts\n * textInterpolate5(\n * 'prefix', v0, '-\n * ', v1, '-', v2, '-', v3, '-', v4, 'suffix');\n * ```\n * @returns\n * itself, so that it\n * may be chained.\n * @see textInterpolateV\n */

```



```

class="prefix{{v0}}suffix"></div>\n * ``\n *\n * Its compiled representation is:\n *\n * ``\n *\n * classMapInterpolate1('prefix', v0, 'suffix');\n * ``\n *\n * @param prefix Static value used for concatenation only.\n * @param v0 Value checked for change.\n * @param suffix Static value used for concatenation only.\n * @codeGenApi\n * ^\nexport function classMapInterpolate1(prefix: string, v0: any, suffix: string): void {\n const\n IView = getLView();\n const interpolatedValue = interpolation1(IView, prefix, v0, suffix);\n checkStylingMap(keyValueArraySet, classStringParser, interpolatedValue, true);\n}\n\n/**\n *\n * Update an interpolated class on an element with 2 bound values surrounded by text.\n *\n * Used when the value passed to a property has 2 interpolated values in it:\n *\n * ``html\n * <div class="prefix{{v0}}-{{v1}}suffix"></div>\n * ``\n *\n * Its compiled representation is:\n *\n * ``\n *\n * classMapInterpolate2('prefix', v0, '-', v1, 'suffix');\n * ``\n *\n * @param prefix Static value used for concatenation only.\n * @param v0 Value checked for change.\n * @param i0 Static value used for concatenation only.\n * @param v1 Value checked for change.\n * @param suffix Static value used for concatenation only.\n * @codeGenApi\n * ^\nexport function classMapInterpolate2(\n prefix:\n string, v0: any, i0: string, v1: any, suffix: string): void {\n const IView = getLView();\n const interpolatedValue =\n interpolation2(IView, prefix, v0, i0, v1, suffix);\n checkStylingMap(keyValueArraySet, classStringParser,\n interpolatedValue, true);\n}\n\n/**\n *\n * Update an interpolated class on an element with 3 bound values surrounded by text.\n *\n * Used when the value passed to a property has 3 interpolated values in it:\n *\n * ``html\n * <div class="prefix{{v0}}-{{v1}}-{{v2}}suffix"></div>\n * ``\n *\n * Its compiled representation is:\n *\n * ``\n *\n * classMapInterpolate3(\n * 'prefix', v0, '-', v1, '-', v2, 'suffix');\n * ``\n *\n * @param prefix Static value used for concatenation only.\n * @param v0 Value checked for change.\n * @param i0 Static value used for concatenation only.\n * @param v1 Value checked for change.\n * @param i1 Static value used for concatenation only.\n * @param v2 Value checked for change.\n * @param suffix Static value used for concatenation only.\n * @codeGenApi\n * ^\nexport function classMapInterpolate3(\n prefix: string, v0: any, i0: string, v1: any, i1: string,\n v2: any, suffix: string): void {\n const IView = getLView();\n const interpolatedValue = interpolation3(IView,\n prefix, v0, i0, v1, i1, v2, suffix);\n checkStylingMap(keyValueArraySet, classStringParser, interpolatedValue,\n true);\n}\n\n/**\n *\n * Update an interpolated class on an element with 4 bound values surrounded by text.\n *\n * Used when the value passed to a property has 4 interpolated values in it:\n *\n * ``html\n * <div\n class="prefix{{v0}}-{{v1}}-{{v2}}-{{v3}}suffix"></div>\n * ``\n *\n * Its compiled representation is:\n *\n * ``\n *\n * classMapInterpolate4(\n * 'prefix', v0, '-', v1, '-', v2, '-', v3, 'suffix');\n * ``\n *\n * @param prefix Static value used for concatenation only.\n * @param v0 Value checked for change.\n * @param i0 Static value used for concatenation only.\n * @param v1 Value checked for change.\n * @param i1 Static value used for concatenation only.\n * @param v2 Value checked for change.\n * @param i2 Static value used for concatenation only.\n * @param v3 Value checked for change.\n * @param suffix Static value used for concatenation only.\n * @codeGenApi\n * ^\nexport function classMapInterpolate4(\n prefix: string, v0: any, i0: string, v1: any, i1: string,\n v2: any, i2: string, v3: any,\n suffix: string): void {\n const IView = getLView();\n const interpolatedValue =\n interpolation4(IView, prefix, v0, i0, v1, i1, v2, i2, v3, suffix);\n checkStylingMap(keyValueArraySet,\n classStringParser, interpolatedValue, true);\n}\n\n/**\n *\n * Update an interpolated class on an element with 5 bound values surrounded by text.\n *\n * Used when the value passed to a property has 5 interpolated values in it:\n *\n * ``html\n * <div class="prefix{{v0}}-{{v1}}-{{v2}}-{{v3}}-{{v4}}suffix"></div>\n * ``\n *\n * Its compiled representation is:\n *\n * ``\n *\n * classMapInterpolate5(\n * 'prefix', v0, '-', v1, '-', v2, '-', v3, '-', v4,\n * 'suffix');\n * ``\n *\n * @param prefix Static value used for concatenation only.\n * @param v0 Value checked for change.\n * @param i0 Static value used for concatenation only.\n * @param v1 Value checked for change.\n * @param i1 Static value used for concatenation only.\n * @param v2 Value checked for change.\n * @param i2 Static value used for concatenation only.\n * @param v3 Value checked for change.\n * @param i3 Static value used for concatenation only.\n * @param v4 Value checked for change.\n * @param suffix Static value used for concatenation only.\n * @codeGenApi\n * ^\nexport function classMapInterpolate5(\n prefix: string, v0: any, i0:\n string, v1: any, i1: string, v2: any, i2: string, v3: any, i3: string, v4: any, suffix: string): void {\n const IView =\n getLView();\n const interpolatedValue =\n interpolation5(IView, prefix, v0, i0, v1, i1, v2, i2, v3, i3, v4,\n suffix);\n checkStylingMap(keyValueArraySet, classStringParser, interpolatedValue, true);\n}\n\n/**\n *\n *

```


Update an interpolated class on an element with 6 bound values surrounded by text.
 * Used when the value passed to a property has 6 interpolated values in it:
 * `<div class="prefix{v0}-{v1}-{v2}-{v3}-{v4}-{v5}suffix"></div>`
 * Its compiled representation is:
 * `classMapInterpolate6('prefix', v0, '-', v1, '-', v2, '-', v3, '-', v4, '-', v5, 'suffix');`
 * @param prefix Static value used for concatenation only.
 * @param v0 Value checked for change.
 * @param i0 Static value used for concatenation only.
 * @param v1 Value checked for change.
 * @param i1 Static value used for concatenation only.
 * @param v2 Value checked for change.
 * @param i2 Static value used for concatenation only.
 * @param v3 Value checked for change.
 * @param i3 Static value used for concatenation only.
 * @param v4 Value checked for change.
 * @param i4 Static value used for concatenation only.
 * @param v5 Value checked for change.
 * @param suffix Static value used for concatenation only.
 * @codeGenApi
 * `function classMapInterpolate6(prefix: string, v0: any, i0: string, v1: any, i1: string, v2: any, i2: string, v3: any, i3: string, v4: any, i4: string, v5: any, suffix: string): void {
 * const IView = getLView();
 * const interpolatedValue = interpolation6(IView, prefix, v0, i0, v1, i1, v2, i2, v3, i3, v4, i4, v5, suffix);
 * checkStylingMap(keyValueArraySet, classStringParser, interpolatedValue, true);
 * }`
 * Update an interpolated class on an element with 7 bound values surrounded by text.
 * Used when the value passed to a property has 7 interpolated values in it:
 * `<div class="prefix{v0}-{v1}-{v2}-{v3}-{v4}-{v5}-{v6}suffix"></div>`
 * Its compiled representation is:
 * `classMapInterpolate7('prefix', v0, '-', v1, '-', v2, '-', v3, '-', v4, '-', v5, '-', v6, 'suffix');`
 * @param prefix Static value used for concatenation only.
 * @param v0 Value checked for change.
 * @param i0 Static value used for concatenation only.
 * @param v1 Value checked for change.
 * @param i1 Static value used for concatenation only.
 * @param v2 Value checked for change.
 * @param i2 Static value used for concatenation only.
 * @param v3 Value checked for change.
 * @param i3 Static value used for concatenation only.
 * @param v4 Value checked for change.
 * @param i4 Static value used for concatenation only.
 * @param v5 Value checked for change.
 * @param i5 Static value used for concatenation only.
 * @param v6 Value checked for change.
 * @param suffix Static value used for concatenation only.
 * @codeGenApi
 * `function classMapInterpolate7(prefix: string, v0: any, i0: string, v1: any, i1: string, v2: any, i2: string, v3: any, i3: string, v4: any, i4: string, v5: any, i5: string, v6: any, suffix: string): void {
 * const IView = getLView();
 * const interpolatedValue = interpolation7(IView, prefix, v0, i0, v1, i1, v2, i2, v3, i3, v4, i4, v5, i5, v6, suffix);
 * checkStylingMap(keyValueArraySet, classStringParser, interpolatedValue, true);
 * }`
 * Update an interpolated class on an element with 8 bound values surrounded by text.
 * Used when the value passed to a property has 8 interpolated values in it:
 * `<div class="prefix{v0}-{v1}-{v2}-{v3}-{v4}-{v5}-{v6}-{v7}suffix"></div>`
 * Its compiled representation is:
 * `classMapInterpolate8('prefix', v0, '-', v1, '-', v2, '-', v3, '-', v4, '-', v5, '-', v6, '-', v7, 'suffix');`
 * @param prefix Static value used for concatenation only.
 * @param v0 Value checked for change.
 * @param i0 Static value used for concatenation only.
 * @param v1 Value checked for change.
 * @param i1 Static value used for concatenation only.
 * @param v2 Value checked for change.
 * @param i2 Static value used for concatenation only.
 * @param v3 Value checked for change.
 * @param i3 Static value used for concatenation only.
 * @param v4 Value checked for change.
 * @param i4 Static value used for concatenation only.
 * @param v5 Value checked for change.
 * @param i5 Static value used for concatenation only.
 * @param v6 Value checked for change.
 * @param i6 Static value used for concatenation only.
 * @param v7 Value checked for change.
 * @param suffix Static value used for concatenation only.
 * @codeGenApi
 * `function classMapInterpolate8(prefix: string, v0: any, i0: string, v1: any, i1: string, v2: any, i2: string, v3: any, i3: string, v4: any, i4: string, v5: any, i5: string, v6: any, i6: string, v7: any, suffix: string): void {
 * const IView = getLView();
 * const interpolatedValue = interpolation8(IView, prefix, v0, i0, v1, i1, v2, i2, v3, i3, v4, i4, v5, i5, v6, i6, v7, suffix);
 * checkStylingMap(keyValueArraySet, classStringParser, interpolatedValue, true);
 * }`
 * Update an interpolated class on an element with 9 or more bound values surrounded by text.
 * Used when the number of interpolated values exceeds 8.
 * `<div class="prefix{v0}-{v1}-{v2}-{v3}-{v4}-{v5}-{v6}-{v7}-{v8}-{v9}suffix"></div>`
 * Its compiled

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representation is:\n * \n * ``ts\n * classMapInterpolateV(\n * ['prefix', v0, '-', v1, '-', v2, '-', v3, '-', v4, '-', v5, '-', v6, '-',
', v7, '-', v9,\n * 'suffix']);\n * ``\n * \n * @param values The collection of values and the strings in-between those
values, beginning with\n * a string prefix and ending with a string suffix.\n * (e.g. `[ 'prefix', value0, '-', value1, '-',
value2, ..., value99, 'suffix' ]`)\n * @codeGenApi\n * ^\nexport function classMapInterpolateV(values: any[]): void
{\n const IView = getLView();\n const interpolatedValue = interpolationV(IView, values);\n
checkStylingMap(keyValueArraySet, classStringParser, interpolatedValue, true);\n}\n\n"/**\n * @license\n *
Copyright Google LLC All Rights Reserved.\n * \n * Use of this source code is governed by an MIT-style license
that can be\n * found in the LICENSE file at https://angular.io/license\n * ^\n\nimport { getLView } from
'./state';\nimport { interpolation1, interpolation2, interpolation3, interpolation4, interpolation5, interpolation6,
interpolation7, interpolation8, interpolationV } from './interpolation';\nimport { styleMap } from './styling';\n}\n\n/**\n *
\n * Update an interpolated style on an element with single bound value surrounded by text.\n * \n * Used when the
value passed to a property has 1 interpolated value in it:\n * \n * ``html\n * <div style="key:
{{v0}}suffix"></div>\n * ``\n * \n * Its compiled representation is:\n * \n * ``ts\n * styleMapInterpolate1('key: ',
v0, 'suffix');\n * ``\n * \n * @param prefix Static value used for concatenation only.\n * @param v0 Value checked
for change.\n * @param suffix Static value used for concatenation only.\n * @codeGenApi\n * ^\nexport function
styleMapInterpolate1(prefix: string, v0: any, suffix: string): void {\n const IView = getLView();\n const
interpolatedValue = interpolation1(IView, prefix, v0, suffix);\n styleMap(interpolatedValue);\n}\n\n/**\n * \n *
Update an interpolated style on an element with 2 bound values surrounded by text.\n * \n * Used when the value
passed to a property has 2 interpolated values in it:\n * \n * ``html\n * <div style="key: {{v0}}; key1:
{{v1}}suffix"></div>\n * ``\n * \n * Its compiled representation is:\n * \n * ``ts\n * styleMapInterpolate2('key: ',
v0, '; key1: ', v1, 'suffix');\n * ``\n * \n * @param prefix Static value used for concatenation only.\n * @param v0
Value checked for change.\n * @param i0 Static value used for concatenation only.\n * @param v1 Value checked
for change.\n * @param suffix Static value used for concatenation only.\n * @codeGenApi\n * ^\nexport function
styleMapInterpolate2(\n prefix: string, v0: any, i0: string, v1: any, suffix: string): void {\n const IView =
getLView();\n const interpolatedValue = interpolation2(IView, prefix, v0, i0, v1, suffix);\n
styleMap(interpolatedValue);\n}\n\n/**\n * \n * Update an interpolated style on an element with 3 bound values
surrounded by text.\n * \n * Used when the value passed to a property has 3 interpolated values in it:\n * \n *
``html\n * <div style="key: {{v0}}; key2: {{v1}}; key2: {{v2}}suffix"></div>\n * ``\n * \n * Its compiled
representation is:\n * \n * ``ts\n * styleMapInterpolate3(\n key: ', v0, '; key1: ', v1, '; key2: ', v2, 'suffix');\n *
``\n * \n * @param prefix Static value used for concatenation only.\n * @param v0 Value checked for change.\n *
@param i0 Static value used for concatenation only.\n * @param v1 Value checked for change.\n * @param i1
Static value used for concatenation only.\n * @param v2 Value checked for change.\n * @param suffix Static value
used for concatenation only.\n * @codeGenApi\n * ^\nexport function styleMapInterpolate3(\n prefix: string, v0:
any, i0: string, v1: any, i1: string, v2: any, suffix: string): void {\n const IView = getLView();\n const
interpolatedValue = interpolation3(IView, prefix, v0, i0, v1, i1, v2, suffix);\n
styleMap(interpolatedValue);\n}\n\n/**\n * \n * Update an interpolated style on an element with 4 bound values
surrounded by text.\n * \n * Used when the value passed to a property has 4 interpolated values in it:\n * \n *
``html\n * <div style="key: {{v0}}; key1: {{v1}}; key2: {{v2}}; key3: {{v3}}suffix"></div>\n * ``\n * \n * Its
compiled representation is:\n * \n * ``ts\n * styleMapInterpolate4(\n key: ', v0, '; key1: ', v1, '; key2: ', v2, ';
key3: ', v3, 'suffix');\n * ``\n * \n * @param prefix Static value used for concatenation only.\n * @param v0 Value
checked for change.\n * @param i0 Static value used for concatenation only.\n * @param v1 Value checked for
change.\n * @param i1 Static value used for concatenation only.\n * @param v2 Value checked for change.\n *
@param i2 Static value used for concatenation only.\n * @param v3 Value checked for change.\n * @param suffix
Static value used for concatenation only.\n * @codeGenApi\n * ^\nexport function styleMapInterpolate4(\n prefix:
string, v0: any, i0: string, v1: any, i1: string, v2: any, i2: string, v3: any,\n suffix: string): void {\n const IView =
getLView();\n const interpolatedValue = interpolation4(IView, prefix, v0, i0, v1, i1, v2, i2, v3, suffix);\n
styleMap(interpolatedValue);\n}\n\n/**\n * \n * Update an interpolated style on an element with 5 bound values
surrounded by text.\n * \n * Used when the value passed to a property has 5 interpolated values in it:\n * \n *

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`html` * <div style="key: {{v0}}; key1: {{v1}}; key2: {{v2}}; key3: {{v3}}; key4: {{v4}}suffix"></div>*
` * Its compiled representation is: * `ts` * styleMapInterpolate5(* `key: ', v0, '; key1: ', v1, ';
key2: ', v2, '; key3: ', v3, '; key4: ', v4, 'suffix'); * ` * @param prefix Static value used for concatenation
only. * @param v0 Value checked for change. * @param i0 Static value used for concatenation only. *
@param v1 Value checked for change. * @param i1 Static value used for concatenation only. * @param v2
Value checked for change. * @param i2 Static value used for concatenation only. * @param v3 Value checked
for change. * @param i3 Static value used for concatenation only. * @param v4 Value checked for change. *
@param suffix Static value used for concatenation only. * @codeGenApi * ^\nexport function
styleMapInterpolate5(* ` prefix: string, v0: any, i0: string, v1: any, i1: string, v2: any, i2: string, v3: any, i3:
string, v4: any, suffix: string): void { * ` const IView = getLView(); * ` const interpolatedValue = * `
interpolation5(IView, prefix, v0, i0, v1, i1, v2, i2, v3, i3, v4, suffix); * ` styleMap(interpolatedValue); * ` } * ` *
` * Update an interpolated style on an element with 6 bound values surrounded by text. * ` * Used when the
value passed to a property has 6 interpolated values in it: * ` * `html` * <div style="key: {{v0}}; key1:
{{v1}}; key2: {{v2}}; key3: {{v3}}; key4: {{v4}}; * ` key5: {{v5}}suffix"></div>* ` * Its
compiled representation is: * ` * `ts` * styleMapInterpolate6(* ` `key: ', v0, '; key1: ', v1, '; key2: ', v2, ';
key3: ', v3, '; key4: ', v4, '; key5: ', v5, * ` `suffix'); * ` * @param prefix Static value used for
concatenation only. * @param v0 Value checked for change. * @param i0 Static value used for concatenation
only. * @param v1 Value checked for change. * @param i1 Static value used for concatenation only. *
@param v2 Value checked for change. * @param i2 Static value used for concatenation only. * @param v3
Value checked for change. * @param i3 Static value used for concatenation only. * @param v4 Value checked
for change. * @param i4 Static value used for concatenation only. * @param v5 Value checked for change. *
@param suffix Static value used for concatenation only. * @codeGenApi * ^\nexport function
styleMapInterpolate6(* ` prefix: string, v0: any, i0: string, v1: any, i1: string, v2: any, i2: string, v3: any, i3:
string, v4: any, i4: string, v5: any, suffix: string): void { * ` const IView = getLView(); * ` const interpolatedValue = * `
interpolation6(IView, prefix, v0, i0, v1, i1, v2, i2, v3, i3, v4, i4, v5, suffix); * `
styleMap(interpolatedValue); * ` } * ` * Update an interpolated style on an element with 7 bound values
surrounded by text. * ` * Used when the value passed to a property has 7 interpolated values in it: * ` * `
`html` * <div style="key: {{v0}}; key1: {{v1}}; key2: {{v2}}; key3: {{v3}}; key4: {{v4}}; key5: {{v5}}; * `
key6: {{v6}}suffix"></div>* ` * Its compiled representation is: * ` * `ts` *
styleMapInterpolate7(* ` `key: ', v0, '; key1: ', v1, '; key2: ', v2, '; key3: ', v3, '; key4: ', v4, '; key5: ', v5, * `
'; key6: ', v6, 'suffix'); * ` * @param prefix Static value used for concatenation only. * @param v0 Value
checked for change. * @param i0 Static value used for concatenation only. * @param v1 Value checked for
change. * @param i1 Static value used for concatenation only. * @param v2 Value checked for change. *
@param i2 Static value used for concatenation only. * @param v3 Value checked for change. * @param i3
Static value used for concatenation only. * @param v4 Value checked for change. * @param i4 Static value
used for concatenation only. * @param v5 Value checked for change. * @param i5 Static value used for
concatenation only. * @param v6 Value checked for change. * @param suffix Static value used for
concatenation only. * @codeGenApi * ^\nexport function styleMapInterpolate7(* ` prefix: string, v0: any, i0:
string, v1: any, i1: string, v2: any, i2: string, v3: any, i3: string, v4: any, i4: string, v5: any, i5: string, v6: any,
suffix: string): void { * ` const IView = getLView(); * ` const interpolatedValue = * ` interpolation7(IView, prefix,
v0, i0, v1, i1, v2, i2, v3, i3, v4, i4, v5, i5, v6, suffix); * ` styleMap(interpolatedValue); * ` } * ` * Update an
interpolated style on an element with 8 bound values surrounded by text. * ` * Used when the value passed to a
property has 8 interpolated values in it: * ` * `html` * <div style="key: {{v0}}; key1: {{v1}}; key2: {{v2}};
key3: {{v3}}; key4: {{v4}}; key5: {{v5}}; * ` key6: {{v6}}; key7: {{v7}}suffix"></div>* ` * Its
compiled representation is: * ` * `ts` * styleMapInterpolate8(* ` `key: ', v0, '; key1: ', v1, '; key2: ', v2, ';
key3: ', v3, '; key4: ', v4, '; key5: ', v5, * ` `'; key6: ', v6, '; key7: ', v7, 'suffix'); * ` * @param prefix Static
value used for concatenation only. * @param v0 Value checked for change. * @param i0 Static value used for
concatenation only. * @param v1 Value checked for change. * @param i1 Static value used for concatenation

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only.\n * @param v2 Value checked for change.\n * @param i2 Static value used for concatenation only.\n *
@param v3 Value checked for change.\n * @param i3 Static value used for concatenation only.\n * @param v4
Value checked for change.\n * @param i4 Static value used for concatenation only.\n * @param v5 Value checked
for change.\n * @param i5 Static value used for concatenation only.\n * @param v6 Value checked for change.\n *
@param i6 Static value used for concatenation only.\n * @param v7 Value checked for change.\n * @param suffix
Static value used for concatenation only.\n * @codeGenApi\n * ^\nexport function styleMapInterpolate8(\n prefix:
string, v0: any, i0: string, v1: any, i1: string, v2: any, i2: string, v3: any, i3: string, v4: any, i4: string, v5: any, i5:
string, v6: any, i6: string, v7: any, i7: string, suffix: string): void {\n const IView = getLView();\n const interpolatedValue
= interpolation8(\n IView, prefix, v0, i0, v1, i1, v2, i2, v3, i3, v4, i4, v5, i5, v6, i6, v7, i7, suffix);\n
styleMap(interpolatedValue);\n}\n\n/**\n * Update an interpolated style on an element with 9 or more bound values
surrounded by text.\n * \n * Used when the number of interpolated values exceeds 8.\n * \n * ```html\n * <div\n *
class="key: {{v0}}; key1: {{v1}}; key2: {{v2}}; key3: {{v3}}; key4: {{v4}}; key5: {{v5}};\n * key6:
{{v6}}; key7: {{v7}}; key8: {{v8}}; key9: {{v9}}suffix"></div>\n * ```\n * \n * Its compiled representation is:\n
*\n * ```ts\n * styleMapInterpolateV(\n * ['key: ', v0, ', ', key1: ', v1, ', ', key2: ', v2, ', ', key3: ', v3, ', ', key4: ', v4, ', ', key5:
', v5,\n * ', ', key6: ', v6, ', ', key7: ', v7, ', ', key8: ', v8, ', ', key9: ', v9, 'suffix'];\n * ```\n * \n * @param values The
collection of values and the strings in-between those values, beginning with\n * a string prefix and ending with a
string suffix.\n * (e.g. `[prefix', value0, ', key2: ', value1, ', key2: ', value2, ..., value99, 'suffix']`)\n *
@codeGenApi\n * ^\nexport function styleMapInterpolateV(values: any[]): void {\n const IView = getLView();\n
const interpolatedValue = interpolationV(IView, values);\n styleMap(interpolatedValue);\n}\n\n"/**\n * @license\n
* Copyright Google LLC All Rights Reserved.\n * \n * Use of this source code is governed by an MIT-style license
that can be\n * found in the LICENSE file at https://angular.io/license\n * \n\nimport {getLView,} from
'./state';\nimport {interpolation1, interpolation2, interpolation3, interpolation4, interpolation5, interpolation6,
interpolation7, interpolation8, interpolationV} from './interpolation';\nimport {checkStylingProperty} from
'./styling';\n}\n\n/**\n * Update an interpolated style property on an element with single bound value surrounded
by text.\n * \n * Used when the value passed to a property has 1 interpolated value in it.\n * \n * ```html\n * <div
style.color="prefix{{v0}}suffix"></div>\n * ```\n * \n * Its compiled representation is:\n
*\n * ```ts\n * stylePropInterpolate1(0, 'prefix', v0, 'suffix');\n * ```\n * \n * @param styleIndex Index of style to update. This index
value refers to the\n * index of the style in the style bindings array that was passed into\n * `styling`.\n *
@param prefix Static value used for concatenation only.\n * @param v0 Value checked for change.\n * @param
suffix Static value used for concatenation only.\n * @param valueSuffix Optional suffix. Used with scalar values to
add unit such as `px`.\n * @returns itself, so that it may be chained.\n * @codeGenApi\n * ^\nexport function
stylePropInterpolate1(\n prop: string, prefix: string, v0: any, suffix: string,\n valueSuffix?: string|null): typeof
stylePropInterpolate1 {\n const IView = getLView();\n const interpolatedValue = interpolation1(IView, prefix, v0,
suffix);\n checkStylingProperty(prop, interpolatedValue, valueSuffix, false);\n return
stylePropInterpolate1;\n}\n\n/**\n * Update an interpolated style property on an element with 2 bound values
surrounded by text.\n * \n * Used when the value passed to a property has 2 interpolated values in it.\n * \n *
```html\n * <div style.color="prefix{{v0}}-{{v1}}suffix"></div>\n * ```\n * \n * Its compiled representation is:\n
*\n * ```ts\n * stylePropInterpolate2(0, 'prefix', v0, '-', v1, 'suffix');\n * ```\n * \n * @param styleIndex Index of style
to update. This index value refers to the\n * index of the style in the style bindings array that was passed into\n *
`styling`.\n * @param prefix Static value used for concatenation only.\n * @param v0 Value checked for
change.\n * @param i0 Static value used for concatenation only.\n * @param v1 Value checked for change.\n *
@param suffix Static value used for concatenation only.\n * @param valueSuffix Optional suffix. Used with scalar
values to add unit such as `px`.\n * @returns itself, so that it may be chained.\n * @codeGenApi\n * ^\nexport
function stylePropInterpolate2(\n prop: string, prefix: string, v0: any, i0: string, v1: any, suffix: string,\n
valueSuffix?: string|null): typeof stylePropInterpolate2 {\n const IView = getLView();\n const interpolatedValue =
interpolation2(IView, prefix, v0, i0, v1, suffix);\n checkStylingProperty(prop, interpolatedValue, valueSuffix,
false);\n return stylePropInterpolate2;\n}\n\n/**\n * Update an interpolated style property on an element with 3
bound values surrounded by text.\n * \n * Used when the value passed to a property has 3 interpolated values in it:\n

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*\n * ``html\n * <div style.color="\{v0}\-\{v1}\-\{v2}\}suffix\"></div>\n * ``\n * \n * Its compiled
representation is:\n * \n * ``\n * stylePropInterpolate3(0, 'prefix', v0, '-', v1, '-', v2, 'suffix');\n * ``\n * \n * @param
styleIndex Index of style to update. This index value refers to the\n * index of the style in the style bindings
array that was passed into\n * `styling`.\n * @param prefix Static value used for concatenation only.\n *
@param v0 Value checked for change.\n * @param i0 Static value used for concatenation only.\n * @param v1
Value checked for change.\n * @param i1 Static value used for concatenation only.\n * @param v2 Value checked
for change.\n * @param suffix Static value used for concatenation only.\n * @param valueSuffix Optional suffix.
Used with scalar values to add unit such as `px`.\n * @returns itself, so that it may be chained.\n * @codeGenApi\n
*\nexport function stylePropInterpolate3(\n prop: string, prefix: string, v0: any, i0: string, v1: any, i1: string, v2:
any, suffix: string,\n valueSuffix?: string|null): typeof stylePropInterpolate3 {\n const IView = getLView();\n
const interpolatedValue = interpolation3(IView, prefix, v0, i0, v1, i1, v2, suffix);\n checkStylingProperty(prop,
interpolatedValue, valueSuffix, false);\n return stylePropInterpolate3;\n}\n\n**\n * \n * Update an interpolated style
property on an element with 4 bound values surrounded by text.\n * \n * Used when the value passed to a property
has 4 interpolated values in it:\n * \n * ``html\n * <div style.color="\{v0}\-\{v1}\}\-\{v2}\}\-\{v3}\}\}suffix\"></div>\n *
``\n * \n * Its compiled representation is:\n * \n * ``\n * stylePropInterpolate4(0,
'prefix', v0, '-', v1, '-', v2, '-', v3, 'suffix');\n * ``\n * \n * @param styleIndex Index of style to update. This index
value refers to the\n * index of the style in the style bindings array that was passed into\n * `styling`.\n *
@param prefix Static value used for concatenation only.\n * @param v0 Value checked for change.\n * @param i0
Static value used for concatenation only.\n * @param v1 Value checked for change.\n * @param i1 Static value
used for concatenation only.\n * @param v2 Value checked for change.\n * @param i2 Static value used for
concatenation only.\n * @param v3 Value checked for change.\n * @param suffix Static value used for
concatenation only.\n * @param valueSuffix Optional suffix. Used with scalar values to add unit such as `px`.\n *
@returns itself, so that it may be chained.\n * @codeGenApi\n *\nexport function stylePropInterpolate4(\n prop:
string, prefix: string, v0: any, i0: string, v1: any, i1: string, v2: any, i2: string,\n v3: any, suffix: string,
valueSuffix?: string|null): typeof stylePropInterpolate4 {\n const IView = getLView();\n const interpolatedValue =
interpolation4(IView, prefix, v0, i0, v1, i1, v2, i2, v3, suffix);\n checkStylingProperty(prop, interpolatedValue,
valueSuffix, false);\n return stylePropInterpolate4;\n}\n\n**\n * \n * Update an interpolated style property on an
element with 5 bound values surrounded by text.\n * \n * Used when the value passed to a property has 5 interpolated
values in it:\n * \n * ``html\n * <div style.color="\{v0}\}\-\{v1}\}\-\{v2}\}\-\{v3}\}\}\-\{v4}\}\}suffix\"></div>\n *
``\n * \n * Its compiled representation is:\n * \n * ``\n * stylePropInterpolate5(0, 'prefix', v0, '-', v1, '-', v2, '-', v3, '-',
v4, 'suffix');\n * ``\n * \n * @param styleIndex Index of style to update. This index value refers to the\n *
index of the style in the style bindings array that was passed into\n * `styling`.\n * @param prefix Static value
used for concatenation only.\n * @param v0 Value checked for change.\n * @param i0 Static value used for
concatenation only.\n * @param v1 Value checked for change.\n * @param i1 Static value used for concatenation
only.\n * @param v2 Value checked for change.\n * @param i2 Static value used for concatenation only.\n *
@param v3 Value checked for change.\n * @param i3 Static value used for concatenation only.\n * @param v4
Value checked for change.\n * @param suffix Static value used for concatenation only.\n * @param valueSuffix
Optional suffix. Used with scalar values to add unit such as `px`.\n * @returns itself, so that it may be chained.\n *
@codeGenApi\n *\nexport function stylePropInterpolate5(\n prop: string, prefix: string, v0: any, i0: string, v1:
any, i1: string, v2: any, i2: string,\n v3: any, i3: string, v4: any, suffix: string,\n valueSuffix?: string|null): typeof
stylePropInterpolate5 {\n const IView = getLView();\n const interpolatedValue =\n interpolation5(IView,
prefix, v0, i0, v1, i1, v2, i2, v3, i3, v4, suffix);\n checkStylingProperty(prop, interpolatedValue, valueSuffix,
false);\n return stylePropInterpolate5;\n}\n\n**\n * \n * Update an interpolated style property on an element with 6
bound values surrounded by text.\n * \n * Used when the value passed to a property has 6 interpolated values in it:\n *
\n * ``html\n * <div style.color="\{v0}\}\-\{v1}\}\}\-\{v2}\}\}\-\{v3}\}\}\}\-\{v4}\}\}\}\}\-\{v5}\}\}suffix\"></div>\n *
``\n * \n * Its compiled representation is:\n * \n * ``\n * stylePropInterpolate6(0, 'prefix', v0, '-', v1, '-', v2, '-', v3, '-', v4,
'-', v5, 'suffix');\n * ``\n * \n * @param styleIndex Index of style to update. This index value refers to the\n *
index of the style in the style bindings array that was passed into\n * `styling`.\n * @param prefix Static value

```

used for concatenation only.\n \* @param v0 Value checked for change.\n \* @param i0 Static value used for concatenation only.\n \* @param v1 Value checked for change.\n \* @param i1 Static value used for concatenation only.\n \* @param v2 Value checked for change.\n \* @param i2 Static value used for concatenation only.\n \* @param v3 Value checked for change.\n \* @param i3 Static value used for concatenation only.\n \* @param v4 Value checked for change.\n \* @param i4 Static value used for concatenation only.\n \* @param v5 Value checked for change.\n \* @param suffix Static value used for concatenation only.\n \* @param valueSuffix Optional suffix. Used with scalar values to add unit such as `px`.\n \* @returns itself, so that it may be chained.\n \* @codeGenApi\n \* ^\nexport function stylePropInterpolate6(\n prop: string, prefix: string, v0: any, i0: string, v1: any, i1: string, v2: any, i2: string,\n v3: any, i3: string, v4: any, i4: string, v5: any, suffix: string,\n valueSuffix?: string|null): typeof stylePropInterpolate6 {\n const IView = getLView();\n const interpolatedValue =\n interpolation6(IView, prefix, v0, i0, v1, i1, v2, i2, v3, i3, v4, i4, v5, suffix);\n checkStylingProperty(prop, interpolatedValue, valueSuffix, false);\n return stylePropInterpolate6;\n}\n\n/\*\*\n \* \n \* Update an interpolated style property on an element with 7 bound values surrounded by text.\n \* \n \* Used when the value passed to a property has 7 interpolated values in it:\n \* \n \* ```html\n \* <div style.color="\n \* prefix{{v0}}-{{v1}}-{{v2}}-{{v3}}-{{v4}}-{{v5}}-{{v6}}suffix\n \* "></div>\n \* ```\n \* \n \* Its compiled representation is:\n \* \n \* ```ts\n \* stylePropInterpolate7(\n \* 0, 'prefix', v0, '-', v1, '-', v2, '-', v3, '-', v4, '-', v5, '-', v6, 'suffix');\n \* ```\n \* \n \* @param styleIndex Index of style to update. This index value refers to the\n \* index of the style in the style bindings array that was passed into\n \* `styling`.\n \* @param prefix Static value used for concatenation only.\n \* @param v0 Value checked for change.\n \* @param i0 Static value used for concatenation only.\n \* @param v1 Value checked for change.\n \* @param i1 Static value used for concatenation only.\n \* @param v2 Value checked for change.\n \* @param i2 Static value used for concatenation only.\n \* @param v3 Value checked for change.\n \* @param i3 Static value used for concatenation only.\n \* @param v4 Value checked for change.\n \* @param i4 Static value used for concatenation only.\n \* @param v5 Value checked for change.\n \* @param i5 Static value used for concatenation only.\n \* @param v6 Value checked for change.\n \* @param suffix Static value used for concatenation only.\n \* @param valueSuffix Optional suffix. Used with scalar values to add unit such as `px`.\n \* @returns itself, so that it may be chained.\n \* @codeGenApi\n \* ^\nexport function stylePropInterpolate7(\n prop: string, prefix: string, v0: any, i0: string, v1: any, i1: string, v2: any, i2: string,\n v3: any, i3: string, v4: any, i4: string, v5: any, i5: string, v6: any, suffix: string,\n valueSuffix?: string|null): typeof stylePropInterpolate7 {\n const IView = getLView();\n const interpolatedValue =\n interpolation7(IView, prefix, v0, i0, v1, i1, v2, i2, v3, i3, v4, i4, v5, i5, v6, suffix);\n checkStylingProperty(prop, interpolatedValue, valueSuffix, false);\n return stylePropInterpolate7;\n}\n\n/\*\*\n \* \n \* Update an interpolated style property on an element with 8 bound values surrounded by text.\n \* \n \* Used when the value passed to a property has 8 interpolated values in it:\n \* \n \* ```html\n \* <div style.color="\n \* prefix{{v0}}-{{v1}}-{{v2}}-{{v3}}-{{v4}}-{{v5}}-{{v6}}-{{v7}}suffix\n \* "></div>\n \* ```\n \* \n \* Its compiled representation is:\n \* \n \* ```ts\n \* stylePropInterpolate8(0, 'prefix', v0, '-', v1, '-', v2, '-', v3, '-', v4, '-', v5, '-', v6, '-', v7, 'suffix');\n \* ```\n \* \n \* @param styleIndex Index of style to update. This index value refers to the\n \* index of the style in the style bindings array that was passed into\n \* `styling`.\n \* @param prefix Static value used for concatenation only.\n \* @param v0 Value checked for change.\n \* @param i0 Static value used for concatenation only.\n \* @param v1 Value checked for change.\n \* @param i1 Static value used for concatenation only.\n \* @param v2 Value checked for change.\n \* @param i2 Static value used for concatenation only.\n \* @param v3 Value checked for change.\n \* @param i3 Static value used for concatenation only.\n \* @param v4 Value checked for change.\n \* @param i4 Static value used for concatenation only.\n \* @param v5 Value checked for change.\n \* @param i5 Static value used for concatenation only.\n \* @param v6 Value checked for change.\n \* @param i6 Static value used for concatenation only.\n \* @param v7 Value checked for change.\n \* @param suffix Static value used for concatenation only.\n \* @param valueSuffix Optional suffix. Used with scalar values to add unit such as `px`.\n \* @returns itself, so that it may be chained.\n \* @codeGenApi\n \* ^\nexport function stylePropInterpolate8(\n prop: string, prefix: string, v0: any, i0: string, v1: any, i1: string, v2: any, i2: string,\n v3: any, i3: string, v4: any, i4: string, v5: any, i5: string, v6: any, i6: string, v7: any,\n suffix: string, valueSuffix?: string|null): typeof stylePropInterpolate8 {\n const IView = getLView();\n const interpolatedValue = interpolation8(\n IView,

```

prefix, v0, i0, v1, i1, v2, i2, v3, i3, v4, i4, v5, i5, v6, i6, v7, suffix);\n checkStylingProperty(prop,
interpolatedValue, valueSuffix, false);\n return stylePropInterpolate8;\n}\n\n/**\n * Update an interpolated style
property on an element with 9 or more bound values surrounded by\n * text.\n * Used when the number of
interpolated values exceeds 8.\n * \n * `html` \n * <div\n * style.color=\`"prefix{{v0}}-{{v1}}-{{v2}}-{{v3}}-
{{v4}}-{{v5}}-{{v6}}-{{v7}}-{{v8}}-{{v9}}suffix\`>\n * </div>\n * \n * Its compiled representation is:\n
*\n * \n * `ts` \n * stylePropInterpolateV(\n * 0, ['prefix', v0, '-', v1, '-', v2, '-', v3, '-', v4, '-', v5, '-', v6, '-', v7, '-', v9,\n
* 'suffix']);\n * \n * \n * @param styleIndex Index of style to update. This index value refers to the\n * index of
the style in the style bindings array that was passed into\n * `styling`..\n * @param values The collection of
values and the strings in-between those values, beginning with\n * a string prefix and ending with a string suffix.\n
* (e.g. `[prefix', value0, '-', value1, '-', value2, ..., value99, 'suffix']`)\n * @param valueSuffix Optional suffix. Used
with scalar values to add unit such as `px`.\n * @returns itself, so that it may be chained.\n * @codeGenApi\n
*/\n\nexport function stylePropInterpolateV(\n prop: string, values: any[], valueSuffix?: string|null): typeof
stylePropInterpolateV {\n const IView = getLView();\n const interpolatedValue = interpolationV(IView, values);\n
checkStylingProperty(prop, interpolatedValue, valueSuffix, false);\n return stylePropInterpolateV;\n}\n\n"/**\n *
@license\n * Copyright Google LLC All Rights Reserved.\n * Use of this source code is governed by an MIT-
style license that can be\n * found in the LICENSE file at https://angular.io/license\n */\n\nimport {bindingUpdated}
from './bindings';\nimport {SanitizerFn} from './interfaces/sanitization';\nimport {RENDERER} from
 './interfaces/view';\nimport {getCurrentDirectiveDef, getLView, getSelectedTNode, getTView, nextBindingIndex}
from './state';\nimport {NO_CHANGE} from './tokens';\n\nimport {elementPropertyInternal,
loadComponentRenderer, storePropertyBindingMetadata} from './shared';\n\n/**\n * Update a property on a host
element. Only applies to native node properties, not inputs.\n * Operates on the element selected by index via the
{@link select} instruction.\n * @param propName Name of property. Because it is going to DOM, this is not
subject to\n * renaming as part of minification.\n * @param value New value to write.\n * @param sanitizer An
optional function used to sanitize the value.\n * @returns This function returns itself so that it may be chained\n
* (e.g. `property('name', ctx.name)('title', ctx.title)`)\n * @codeGenApi\n */\n\nexport function hostProperty<T>(\n
propName: string, value: T, sanitizer?: SanitizerFn|null): typeof hostProperty {\n const IView = getLView();\n
const bindingIndex = nextBindingIndex();\n if (bindingUpdated(IView, bindingIndex, value)) {\n const tView =
getTView();\n const tNode = getSelectedTNode();\n elementPropertyInternal(tView, tNode, IView, propName,
value, IView[RENDERER], sanitizer, true);\n ngDevMode && storePropertyBindingMetadata(tView.data, tNode,
propName, bindingIndex);\n }\n return hostProperty;\n}\n\n/**\n * Updates a synthetic host binding (e.g.
`{@foo}`) on a component or directive.\n * This instruction is for compatibility purposes and is designed to
ensure that a\n * synthetic host binding (e.g. `@HostBinding('@foo')`) properly gets rendered in\n * the component's
renderer. Normally all host bindings are evaluated with the parent\n * component's renderer, but, in the case of
animation @triggers, they need to be\n * evaluated with the sub component's renderer (because that's where the
animation\n * triggers are defined).\n * Do not use this instruction as a replacement for `elementProperty`. This
instruction\n * only exists to ensure compatibility with the ViewEngine's host binding behavior.\n * @param
index The index of the element to update in the data array\n * @param propName Name of property. Because it is
going to DOM, this is not subject to\n * renaming as part of minification.\n * @param value New value to
write.\n * @param sanitizer An optional function used to sanitize the value.\n * @codeGenApi\n */\n\nexport
function syntheticHostProperty<T>(\n propName: string, value: T|NO_CHANGE,\n sanitizer?:
SanitizerFn|null): typeof syntheticHostProperty {\n const IView = getLView();\n const bindingIndex =
nextBindingIndex();\n if (bindingUpdated(IView, bindingIndex, value)) {\n const tView = getTView();\n const
tNode = getSelectedTNode();\n const currentDef = getCurrentDirectiveDef(tView.data);\n const renderer =
loadComponentRenderer(currentDef, tNode, IView);\n elementPropertyInternal(tView, tNode, IView, propName,
value, renderer, sanitizer, true);\n ngDevMode && storePropertyBindingMetadata(tView.data, tNode, propName,
bindingIndex);\n }\n return syntheticHostProperty;\n}\n\n"/**\n * @license\n * Copyright Google LLC All Rights
Reserved.\n * Use of this source code is governed by an MIT-style license that can be\n * found in the
LICENSE file at https://angular.io/license\n */\n\nimport {global} from './global';\n\ndeclare global {\n const

```

```

ngI18nClosureMode: boolean;
}

NOTE: changes to the `ngI18nClosureMode` name must be synced
with `compiler-cli/src/tooling.ts`.

if (typeof ngI18nClosureMode === 'undefined') {
 // These property
 // accesses can be ignored because ngI18nClosureMode will be set to false
 // when optimizing code and the whole if
 // statement will be dropped.
 // Make sure to refer to ngI18nClosureMode as ['ngI18nClosureMode'] for closure.
 // NOTE: we need to have it in IIFE so that the tree-shaker is happy.
 (function() {
 // tslint:disable-next-
 // line:no-toplevel-property-access
 global['ngI18nClosureMode'] =
 // TODO(FW-1250): validate that this
 // actually, you know, works.
 // tslint:disable-next-line:no-toplevel-property-access
 typeof goog !==
 'undefined' && typeof goog.getMsg === 'function';
 })();
}

/**
 * @license
 * Copyright Google LLC All
 * Rights Reserved.
 * Use of this source code is governed by an MIT-style license that can be
 * found in the
 * LICENSE file at https://angular.io/license
 * THIS CODE IS GENERATED - DO NOT MODIFY
 * See
 * angular/tools/gulp-tasks/cldr/extract.js
 */
const u = undefined;

function plural(n: number): number {
 let i =
 Math.floor(Math.abs(n)),
 v = n.toString().replace(/^[^.\d]*\./, "").length;
 if (i === 1 && v === 0) return 1;
 return
 5;
}

export default {
 'en',
 ['a', 'p'],
 ['AM', 'PM'],
 u,
 ['AM', 'PM'],
 u,
 ['S', 'M', 'T', 'W', 'T', 'F',
 'S'],
 ['Sun', 'Mon', 'Tue', 'Wed', 'Thu', 'Fri', 'Sat'],
 ['Sunday', 'Monday', 'Tuesday', 'Wednesday', 'Thursday',
 'Friday', 'Saturday'],
 ['Su', 'Mo', 'Tu', 'We', 'Th', 'Fr', 'Sa'],
 u,
 ['J', 'F', 'M', 'A', 'M', 'J', 'J', 'A', 'S', 'O',
 'N', 'D'],
 ['Jan', 'Feb', 'Mar', 'Apr', 'May', 'Jun', 'Jul', 'Aug', 'Sep', 'Oct', 'Nov', 'Dec'],
 ['January', 'February',
 'March', 'April', 'May', 'June', 'July', 'August', 'September',
 'October', 'November', 'December'],
 u,
 ['B', 'A'],
 ['BC', 'AD'],
 ['Before Christ', 'Anno Domini'],
 0,
 [6, 0],
 ['M/d/yy', 'MMM d, y', 'MMMM d, y',
 'EEEE', 'MMMM d, y'],
 ['h:mm a', 'h:mm:ss a', 'h:mm:ss a z', 'h:mm:ss a zzzz'],
 ['1', '0'],
 u,
 ['1'] \\at\\ '0',
 u,
 ['.', ',', ';', '%', '+', '-', 'E', 'x', '%', '', 'NaN', ':'],
 ['#', '###0.###', '#,###0%', '¤#,###0.00', '#E0'],
 'USD',
 '$',
 'US
 Dollar',
 {}
},
 'ltr',
 plural;
}

/**
 * @license
 * Copyright Google LLC All Rights Reserved.
 * Use
 * of this source code is governed by an MIT-style license that can be
 * found in the LICENSE file at
 * https://angular.io/license
 */
import { global } from './util/global';
import localeEn from './locale_en';

This const is used to store the locale data registered with `registerLocaleData`.
let LOCALE_DATA:
{[localeId: string]: any} = {};

Register locale data to be used internally by Angular. See the
["I18n
guide"](guide/i18n#i18n-pipes) to know how to import additional locale data.

The signature
`registerLocaleData(data: any, extraData?: any)` is deprecated since v5.1.

export function
registerLocaleData(data: any, localeId?: string | any, extraData?: any): void {
 if (typeof localeId !== 'string') {
 localeId =
 localeId;
 localeId = data[LocaleDataIndex.LocaleId];
 }
 localeId =
 localeId.toLowerCase().replace(/_/g, '-');
 LOCALE_DATA[localeId] = data;
 if (extraData) {
 LOCALE_DATA[localeId][LocaleDataIndex.ExtraData] = extraData;
 }
}

Finds the locale data for a
given locale.

@param locale The locale code.
@returns The locale data.
@see [Internationalization
(i18n) Guide](https://angular.io/guide/i18n)

export function findLocaleData(locale: string): any {
 const
 normalizedLocale = normalizeLocale(locale);
 let match = getLocaleData(normalizedLocale);
 if (match) {
 return match;
 }
 // let's try to find a parent locale
 const parentLocale = normalizedLocale.split('-')[0];
 match = getLocaleData(parentLocale);
 if (match) {
 return match;
 }
 if (parentLocale === 'en') {
 return localeEn;
 }
 throw new Error(`Missing locale data for the locale "${locale}`);
}

Retrieves the default currency code for the given locale.

The default is defined as the first currency which is
still in use.

@param locale The code of the locale whose currency code we want.
@returns The code of
the default currency for the given locale.

export function getLocaleCurrencyCode(locale: string):
string | null {
 const data = findLocaleData(locale);
 return data[LocaleDataIndex.CurrencyCode] ||
 null;
}

Retrieves the plural function used by ICU expressions to determine the plural case to use
for a given locale.

@param locale A locale code for the locale format rules to use.
@returns The plural function
for the locale.
@see `NgPlural`
@see [Internationalization (i18n) Guide](https://angular.io/guide/i18n)

export function getLocalePluralCase(locale: string): (value: number) => number {
 const data =
 findLocaleData(locale);
 return data[LocaleDataIndex.PluralCase];
}

Helper function to get the
given `normalizedLocale` from `LOCALE_DATA` or from the global `ng.common.locale`.

export
function getLocaleData(normalizedLocale: string): any {
 if (!(normalizedLocale in LOCALE_DATA)) {

```



```

LOCALE_DATA[normalizedLocale] = global.ng && global.ng.common && global.ng.common.locales &&\n
global.ng.common.locales[normalizedLocale];\n } \n return LOCALE_DATA[normalizedLocale];\n }\n\n/**\n *
Helper function to remove all the locale data from `LOCALE_DATA`.\n */\nexport function
unregisterAllLocaleData() {\n LOCALE_DATA = {};\n}\n\n/**\n * Index of each type of locale data from the
locale data array\n */\nexport enum LocaleDataIndex {\n LocaleId = 0,\n DayPeriodsFormat,\n DayPeriodsStandalone,\n DaysFormat,\n DaysStandalone,\n MonthsFormat,\n MonthsStandalone,\n Eras,\n FirstDayOfWeek,\n WeekendRange,\n DateFormat,\n TimeFormat,\n DateTimeFormat,\n NumberSymbols,\n NumberFormats,\n CurrencyCode,\n CurrencySymbol,\n CurrencyName,\n Currencies,\n Directionality,\n PluralCase,\n ExtraData\n}\n\n/**\n * Index of each type of locale data from the extra locale data array\n */\nexport
const enum ExtraLocaleDataIndex {\n ExtraDayPeriodFormats = 0,\n ExtraDayPeriodStandalone,\n ExtraDayPeriodsRules\n}\n\n/**\n * Index of each value in currency data (used to describe CURRENCIES_EN in
currencies.ts)\n */\nexport const enum CurrencyIndex {\n Symbol = 0,\n SymbolNarrow,\n NbOfDigits\n}\n\n/**\n * Returns the canonical form of a locale name - lowercase with `_` replaced with `.`.\n */\nexport function normalizeLocale(locale: string): string {\n return locale.toLowerCase().replace(/_/g, '.');\n}\n\n/**\n *
@license\n * Copyright Google LLC All Rights Reserved.\n * Use of this source code is governed by an MIT-
style license that can be\n * found in the LICENSE file at https://angular.io/license\n */\nimport
{getLocalePluralCase} from './locale_data_api';\n\nconst pluralMapping = ['zero', 'one', 'two', 'few', 'many'];\n\n/**\n * Returns the plural case based on the locale\n */\nexport function getPluralCase(value: string, locale: string): string
{\n const plural = getLocalePluralCase(locale)(parseInt(value, 10));\n const result = pluralMapping[plural];\n return (result !== undefined) ? result : 'other';\n}\n\n/**\n * The locale id that the application is using by default (for
translations and ICU expressions).\n */\nexport const DEFAULT_LOCALE_ID = 'en-US';\n\n/**\n * USD currency
code that the application uses by default for CurrencyPipe when no\n * DEFAULT_CURRENCY_CODE is
provided.\n */\nexport const USD_CURRENCY_CODE = 'USD';\n\n/**\n * @license\n * Copyright Google LLC
All Rights Reserved.\n * Use of this source code is governed by an MIT-style license that can be\n * found in
the LICENSE file at https://angular.io/license\n */\nimport {SanitizerFn} from './sanitization';\n\n/**\n * Stores
a list of nodes which need to be removed.\n */\n * Numbers are indexes into the `LView`\n * - index > 0:
`removeRNode(IView[0])`\n * - index < 0: `removeICU(~IView[0])`\n */\nexport interface I18nRemoveOpCodes
extends Array<number> {\n __brand__: 'I18nRemoveOpCodes';\n}\n\n/**\n * `I18nMutateOpCode` defines
OpCodes for `I18nMutateOpCodes` array.\n */\n * OpCodes are efficient operations which can be applied to the
DOM to update it. (For example to\n * update to a new ICU case requires that we clean up previous elements and
create new ones.)\n */\n * OpCodes contain three parts:\n * 1) Parent node index offset. (p)\n * 2) Reference node
index offset. (r)\n * 3) The instruction to execute. (i)\n */\n * pppp pppp pppp pppp rrrr rrrr rrrr rrrr\n * 3322 2222
2222 1111 1111 1110 0000 0000\n * 1098 7654 3210 9876 5432 1098 7654 3210\n */\n * ```\n * var parent =
IView[opCode >>> SHIFT_PARENT];\n * var refNode = IView[((opCode & MASK_REF) >>> SHIFT_REF)];\n *
var instruction = opCode & MASK_OPCODE;\n * ```\n */\n * See: `I18nCreateOpCodes` for example of usage.\n */\nexport const enum IcuCreateOpCode {\n /**\n * Stores shift amount for bits 17-3 that contain reference
index.\n */\n SHIFT_REF = 1,\n /**\n * Stores shift amount for bits 31-17 that contain parent index.\n */\n SHIFT_PARENT = 17,\n /**\n * Mask for OpCode\n */\n MASK_INSTRUCTION = 0b1,\n /**\n * Mask
for the Reference node (bits 16-3)\n */\n MASK_REF = 0b1111111111111110,\n //
1111111000000000\n // 65432109876543210\n */\n /**\n * Instruction to append the current node to
`PARENT`.\n */\n AppendChild = 0b0,\n /**\n * Instruction to set the attribute of a node.\n */\n Attr =
0b1,\n}\n\n/**\n * Array storing OpCode for dynamically creating `i18n` blocks.\n */\n * Example:\n * ```\n *
<I18nCreateOpCode>[\n * // For adding text nodes\n * // -----\n * // Equivalent to:\n * //
IView[1].appendChild(IView[0] = document.createTextNode('xyz'));\n * 'xyz', 0, 1 << SHIFT_PARENT | 0 <<
SHIFT_REF | AppendChild,\n * // For adding element nodes\n * // -----\n * // Equivalent to:\n * //
IView[1].appendChild(IView[0] = document.createElement('div'));\n * ELEMENT_MARKER, 'div', 0, 1 <<
SHIFT_PARENT | 0 << SHIFT_REF | AppendChild,\n * // For adding comment nodes\n * // -----
\n * // Equivalent to:\n * // IView[1].appendChild(IView[0] = document.createComment(''));\n *

```

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ICU_MARKER, ", 0, 1 << SHIFT_PARENT | 0 << SHIFT_REF | AppendChild,\n *\n * // For moving existing
nodes to a different location\n * // -----\n * // Equivalent to:\n * // const
node = IView[1];\n * // IView[2].appendChild(node);\n * 1 << SHIFT_REF | Select, 2 << SHIFT_PARENT | 0
<< SHIFT_REF | AppendChild,\n *\n * // For removing existing nodes\n * // -----
-----\n * // const node = IView[1];\n * // removeChild(tView.data(1), node, IView);\n * 1 << SHIFT_REF |
Remove,\n *\n * // For writing attributes\n * // -----\n * // const node =
IView[1];\n * // node.setAttribute('attr', 'value');\n * 1 << SHIFT_REF | Attr, 'attr', 'value'\n *];\n * ``\n
*/\nexport interface IcuCreateOpCodes extends
Array<number|string|ELEMENT_MARKER|ICU_MARKER|null>,\n I18nDebug {\n
 __brand__: 'I18nCreateOpCodes';\n}\n\nexport const enum I18nUpdateOpCode {\n /**\n * Stores shift amount
for bits 17-2 that contain reference index.\n */\n SHIFT_REF = 2,\n /**\n * Mask for OpCode\n */\n
MASK_OPCODE = 0b11,\n /**\n * Instruction to update a text node.\n */\n Text = 0b00,\n /**\n *
Instruction to update a attribute of a node.\n */\n Attr = 0b01,\n /**\n * Instruction to switch the current ICU
case.\n */\n IcuSwitch = 0b10,\n /**\n * Instruction to update the current ICU case.\n */\n IcuUpdate =
0b11,\n}\n\n/**\n * Marks that the next string is an element name.\n *\n * See `I18nMutateOpCodes`
documentation.\n */\nexport const ELEMENT_MARKER: ELEMENT_MARKER = {\n marker:
'element'\n};\n\nexport interface ELEMENT_MARKER {\n marker: 'element';\n}\n\n/**\n * Marks that the next
string is comment text need for ICU.\n *\n * See `I18nMutateOpCodes` documentation.\n */\nexport const
ICU_MARKER: ICU_MARKER = {\n marker: 'ICU'\n};\n\nexport interface ICU_MARKER {\n marker:
'ICU';\n}\n\nexport interface I18nDebug {\n /**\n * Human readable representation of the OpCode arrays.\n */\n
* NOTE: This property only exists if `ngDevMode` is set to `true` and it is not present in\n * production. Its
presence is purely to help debug issue in development, and should not be relied\n * on in production application.\n
*/\n debug?: string[];\n}\n\n/**\n * Array storing OpCode for dynamically creating `i18n` translation DOM
elements.\n *\n * This array creates a sequence of `Text` and `Comment` (as ICU anchor) DOM elements. It
consists\n * of a pair of `number` and `string` pairs which encode the operations for the creation of the\n * translated
block.\n *\n * The number is shifted and encoded according to `I18nCreateOpCode`\n *\n * Pseudocode:\n * ``\n
const i18nCreateOpCodes = [\n * 10 << I18nCreateOpCode.SHIFT, \"Text Node add to DOM\",\n * 11 <<
I18nCreateOpCode.SHIFT | I18nCreateOpCode.COMMENT, \"Comment Node add to DOM\",\n * 12 <<
I18nCreateOpCode.SHIFT | I18nCreateOpCode.APPEND_LATER, \"Text Node added later\"\n *];\n *\n * for(var
i=0; i<i18nCreateOpCodes.length; i++) {\n * const opcode = i18nCreateOpCodes[i+1];\n * const index = opcode
>> I18nCreateOpCode.SHIFT;\n * const text = i18nCreateOpCodes[i];\n * let node: Text|Comment;\n * if
(opcode & I18nCreateOpCode.COMMENT === I18nCreateOpCode.COMMENT) {\n * node = IView[~index] =
document.createComment(text);\n * } else {\n * node = IView[index] = document.createText(text);\n * }\n *
if (opcode & I18nCreateOpCode.APPEND_EAGERLY !== I18nCreateOpCode.APPEND_EAGERLY) {\n *
parentNode.appendChild(node);\n * }\n * }\n * ``\n */\nexport interface I18nCreateOpCodes extends
Array<number|string>,\n I18nDebug {\n __brand__: 'I18nCreateOpCodes';\n}\n\n/**\n * See `I18nCreateOpCodes`\n
*/\nexport enum I18nCreateOpCode {\n /**\n * Number of bits to shift index so that it can be combined with the
`APPEND_EAGERLY` and\n * `COMMENT`.\n */\n SHIFT = 2,\n /**\n * Should the node be appended to
parent immediately after creation.\n */\n APPEND_EAGERLY = 0b01,\n /**\n * If set the node should be
comment (rather than a text) node.\n */\n COMMENT = 0b10,\n}\n\n/**\n * Stores DOM operations which
need to be applied to update DOM render tree due to changes in\n * expressions.\n *\n * The basic idea is that
`i18nExp` OpCodes capture expression changes and update a change\n * mask bit. (Bit 1 for expression 1, bit 2 for
expression 2 etc..., bit 32 for expression 32 and\n * higher.) The OpCodes then compare its own change mask
against the expression change mask to\n * determine if the OpCodes should execute.\n *\n * NOTE: 32nd bit is
special as it says 32nd or higher. This way if we have more than 32 bindings\n * the code still works, but with lower
efficiency. (it is unlikely that a translation would have\n * more than 32 bindings.)\n *\n * These OpCodes can be
used by both the i18n block as well as ICU sub-block.\n *\n * ## Example\n *\n * Assume\n * ``\n * if (rf &
RenderFlags.Update) {\n * i18nExp(ctx.exp1); // If changed set mask bit 1\n * i18nExp(ctx.exp2); // If changed

```



```

setLocaleId(localeId: string) {\n assertDefined(localeId, `Expected localeId to be defined`);\n if (typeof localeId
=== 'string') {\n LOCALE_ID = localeId.toLowerCase().replace(/_/g, '-');\n }\n}\n\n/**\n * Gets the locale id that
will be used for translations and ICU expressions.\n * This is the ivy version of `LOCALE_ID` that was defined as
an injection token for the view engine\n * but is now defined as a global value.\n */\n\nexport function getLocaleId():
string {\n return LOCALE_ID;\n}\n\n"/**\n * @license\n * Copyright Google LLC All Rights Reserved.\n *\n * Use of this source code is governed by an MIT-style license that can be\n * found in the LICENSE file at
https://angular.io/license\n */\n\nimport {assertDomNode, assertIndexInRange} from './util/assert';\nimport
{TNode, TNodeFlags, TNodeType} from './interfaces/node';\nimport {Renderer3} from
 './interfaces/renderer';\nimport {RElement, RNode} from './interfaces/renderer_dom';\nimport {LView} from
 './interfaces/view';\nimport {getInsertInFrontOfRNodeWithNoI18n, nativeInsertBefore} from
 './node_manipulation';\nimport {unwrapRNode} from './util/view_utils';\n\n/**\n * Find a node in front of which
`currentTNode` should be inserted (takes i18n into account).\n *\n * This method determines the `RNode` in front of
which we should insert the `currentRNode`. This\n * takes `TNode.insertBeforeIndex` into account.\n *\n * @param
parentTNode parent `TNode`\n * @param currentTNode current `TNode` (The node which we would like to insert
into the DOM)\n * @param lView current `LView`\n */\n\nexport function getInsertInFrontOfRNodeWithI18n(\n
parentTNode: TNode, currentTNode: TNode, lView: LView): RNode|null {\n const tNodeInsertBeforeIndex =
currentTNode.insertBeforeIndex;\n const insertBeforeIndex =\n Array.isArray(tNodeInsertBeforeIndex) ?
tNodeInsertBeforeIndex[0] : tNodeInsertBeforeIndex;\n if (insertBeforeIndex === null) {\n return
getInsertInFrontOfRNodeWithNoI18n(parentTNode, currentTNode, lView);\n } else {\n ngDevMode &&
assertIndexInRange(lView, insertBeforeIndex);\n return unwrapRNode(lView[insertBeforeIndex]);\n }\n}\n\n/**\n * Process `TNode.insertBeforeIndex` by adding i18n text nodes.\n *\n * See
`TNode.insertBeforeIndex`\n */\n\nexport function processI18nInsertBefore(\n renderer: Renderer3, childTNode:
TNode, lView: LView, childRNode: RNode|RNode[],\n parentRElement: RElement|null): void {\n const
tNodeInsertBeforeIndex = childTNode.insertBeforeIndex;\n if (Array.isArray(tNodeInsertBeforeIndex)) {\n // An
array indicates that there are i18n nodes that need to be added as children of this\n // `childRNode`. These i18n
nodes were created before this `childRNode` was available and so\n // only now can be added. The first element of
the array is the normal index where we should\n // insert the `childRNode`. Additional elements are the extra
nodes to be added as children of\n // `childRNode`.\n ngDevMode && assertDomNode(childRNode);\n let
i18nParent: RElement|null = childRNode as RElement;\n let anchorRNode: RNode|null = null;\n if
(!(childTNode.type & TNodeType.AnyRNode)) {\n anchorRNode = i18nParent;\n i18nParent =
parentRElement;\n }\n if (i18nParent !== null && (childTNode.flags & TNodeFlags.isComponentHost) === 0)
{\n for (let i = 1; i < tNodeInsertBeforeIndex.length; i++) {\n // No need to `unwrapRNode` because all of
the indexes point to i18n text nodes.\n // see `assertDomNode` below.\n const i18nChild =
lView[tNodeInsertBeforeIndex[i]];\n nativeInsertBefore(renderer, i18nParent, i18nChild, anchorRNode,
false);\n }\n }\n }\n}\n\n"/**\n * @license\n * Copyright Google LLC All Rights Reserved.\n *\n * Use of this
source code is governed by an MIT-style license that can be\n * found in the LICENSE file at
https://angular.io/license\n */\n\nimport {assertEqual} from './../util/assert';\nimport {TNode, TNodeType} from
 './interfaces/node';\nimport {setI18nHandling} from './node_manipulation';\nimport
{getInsertInFrontOfRNodeWithI18n, processI18nInsertBefore} from './node_manipulation_i18n';\n\n/**\n * Add
`tNode` to `previousTNodes` list and update relevant `TNode`s in `previousTNodes` list\n *\n * `tNode.insertBeforeIndex`.\n *\n * Things to keep in mind:\n * 1. All i18n text nodes are encoded as
`TNodeType.Element` and are created eagerly by the\n * `i18nStart` instruction.\n * 2. All
`TNodeType.Placeholder` `TNodes` are elements which will be created later by\n * `elementStart` instruction.\n *
3. `elementStart` instruction will create `TNode`s in the ascending `TNode.index` order. (So a\n * smaller index
`TNode` is guaranteed to be created before a larger one)\n *\n * We use the above three invariants to determine
`TNode.insertBeforeIndex`.\n *\n * In an ideal world `TNode.insertBeforeIndex` would always be
`TNode.next.index`. However,\n * this will not work because `TNode.next.index` may be larger than `TNode.index`
which means that\n * the next node is not yet created and therefore we can't insert in front of it.\n *\n * Rule1:

```

```

`TNode.insertBeforeIndex = null` if `TNode.next` === null` (Initial condition, as we don't know if there will
be further `TNode`s inserted after.)\n * Rule2: If `previousTNode` is created after the `tNode` being inserted, then\n
* `previousTNode.insertBeforeNode = tNode.index` (So when a new `tNode` is added we check\n *
previous to see if we can update its `insertBeforeTNode`)\n *\n * See `TNode.insertBeforeIndex` for more
context.\n *\n * @param previousTNodes A list of previous TNodes so that we can easily traverse `TNode`s in\n *
reverse order. (If `TNode` would have `previous` this would not be necessary.)\n * @param newTNode A TNode to
add to the `previousTNodes` list.\n *\nexport function addTNodeAndUpdateInsertBeforeIndex(previousTNodes:
TNode[], newTNode: TNode) {\n // Start with Rule1\n ngDevMode &&\n
assertEqual(newTNode.insertBeforeIndex, null, 'We expect that insertBeforeIndex is not set');\n\n
previousTNodes.push(newTNode);\n if (previousTNodes.length > 1) {\n for (let i = previousTNodes.length - 2; i
>= 0; i--) {\n const existingTNode = previousTNodes[i];\n // Text nodes are created eagerly and so they don't
need their `indexBeforeIndex` updated.\n // It is safe to ignore them.\n if (!isI18nText(existingTNode)) {\n
if (isNewTNodeCreatedBefore(existingTNode, newTNode) &&\n getInsertBeforeIndex(existingTNode) ===
null) {\n // If it was created before us in time, (and it does not yet have `insertBeforeIndex`)\n // then add
the `insertBeforeIndex`.\n setInsertBeforeIndex(existingTNode, newTNode.index);\n }\n }\n }\n }\n }\n\n
function isI18nText(tNode: TNode): boolean {\n return !(tNode.type &
TNodeType.Placeholder);\n}\n\nfunction isNewTNodeCreatedBefore(existingTNode: TNode, newTNode: TNode):
boolean {\n return isI18nText(newTNode) || existingTNode.index > newTNode.index;\n}\n\nfunction
getInsertBeforeIndex(tNode: TNode): number|null {\n const index = tNode.insertBeforeIndex;\n return
Array.isArray(index) ? index[0] : index;\n}\n\nfunction setInsertBeforeIndex(tNode: TNode, value: number): void
{\n const index = tNode.insertBeforeIndex;\n if (Array.isArray(index)) {\n // Array is stored if we have to insert
child nodes. See `TNode.insertBeforeIndex`\n index[0] = value;\n } else {\n
setI18nHandling(getInsertInFrontOfRNodeWithI18n, processI18nInsertBefore);\n tNode.insertBeforeIndex =
value;\n }\n }\n\n", /*\n * @license\n * Copyright Google LLC All Rights Reserved.\n *\n * Use of this source code
is governed by an MIT-style license that can be\n * found in the LICENSE file at https://angular.io/license\n
*\n *\nimport {assertEqual, assertGreaterThan, assertGreaterThanOrEqual, throwError} from '../util/assert';\nimport
{assertTicu, assertTNode} from './assert';\nimport {createTNodeAtIndex} from './instructions/shared';\nimport
{IcuCreateOpCode, Ticu} from './interfaces/i18n';\nimport {TicuContainerNode, TNode, TNodeType} from
'./interfaces/node';\nimport {LView, TView} from './interfaces/view';\nimport {assertTNodeType} from
'./node_assert';\nimport {setI18nHandling} from './node_manipulation';\nimport
{getInsertInFrontOfRNodeWithI18n, processI18nInsertBefore} from './node_manipulation_i18n';\nimport
{addTNodeAndUpdateInsertBeforeIndex} from './i18n_insert_before_index';\n\n/**\n * Retrieve `Ticu` at a given
`index`.\n *\n * The `Ticu` can be stored either directly (if it is nested ICU) OR\n * it is stored inside the
`TicuContainer` if it is top level ICU.\n *\n * The reason for this is that the top level ICU need a `TNode` so that
they are part of the render\n * tree, but nested ICU's have no TNode, because we don't know ahead of time if the
nested ICU is\n * expressed (parent ICU may have selected a case which does not contain it.)\n *\n * @param tView
Current `TView`.\n * @param index Index where the value should be read from.\n *\nexport function
getTicu(tView: TView, index: number): Ticu|null {\n const value = tView.data[index] as null | Ticu |
TicuContainerNode | string;\n if (value === null || typeof value === 'string') return null;\n if (ngDevMode &&\n
!(value.hasOwnProperty('tViews') || value.hasOwnProperty('currentCaseLViewIndex'))) {\n throwError('We
expect to get \\`null\\`|\\`Ticu\\`|\\`TicuContainer\\`, but got: ' + value);\n }\n // Here the
`value.hasOwnProperty('currentCaseLViewIndex')` is a polymorphic read as it can be\n // either Ticu or
TicuContainerNode. This is not ideal, but we still think it is OK because it\n // will be just two cases which fits into
the browser inline cache (inline cache can take up to\n // 4)\n const ticu =
value.hasOwnProperty('currentCaseLViewIndex') ? value as Ticu :\n (value
as TicuContainerNode).value;\n ngDevMode && assertTicu(ticu);\n return ticu;\n }\n\n/**\n * Store `Ticu` at a
give `index`.\n *\n * The `Ticu` can be stored either directly (if it is nested ICU) OR\n * it is stored inside the
`TicuContainer` if it is top level ICU.\n *\n * The reason for this is that the top level ICU need a `TNode` so that

```

they are part of the render tree, but nested ICU's have no TNode, because we don't know ahead of time if the nested ICU is expressed (parent ICU may have selected a case which does not contain it.)

```

@param tView
Current `TView`.
@param index Index where the value should be stored at in `tView.data`
@param tIcu The TIcu to store.
*/
export function setTicu(tView: TView, index: number, tIcu: TIcu): void {
 const tNode = tView.data[index] as null | TicuContainerNode;
 ngDevMode && assertEqual(tNode === null || tNode.hasOwnProperty('tViews'), true,
 'We expect to get `null` or `TicuContainer`');
 if (tNode === null) {
 tView.data[index] = tIcu;
 } else {
 ngDevMode && assertTNodeType(tNode, TNodeType.Icu);
 tNode.value = tIcu;
 }
}

Set `TNode.insertBeforeIndex` taking the `Array` into account.
See `TNode.insertBeforeIndex`
*/
export function setTNodeInsertBeforeIndex(tNode: TNode, index: number) {
 ngDevMode && assertTNode(tNode);
 let insertBeforeIndex = tNode.insertBeforeIndex;
 if (insertBeforeIndex === null) {
 setI18nHandling(getInsertInFrontOfRNodeWithI18n, processI18nInsertBefore);
 insertBeforeIndex = tNode.insertBeforeIndex = [null /* may be updated to number later */, index];
 } else {
 assertEqual(Array.isArray(insertBeforeIndex), true, 'Expecting array here');
 (insertBeforeIndex as number[]).push(index);
 }
}

Create `TNode.type=TNodeType.Placeholder` node.
See `TNodeType.Placeholder` for more information.
*/
export function createTNodePlaceholder(tView: TView, previousTNodes: TNode[], index: number): TNode {
 const tNode = createTNodeAtIndex(tView, index, TNodeType.Placeholder, null, null);
 addTNodeAndUpdateInsertBeforeIndex(previousTNodes, tNode);
 return tNode;
}

Returns current ICU case.
ICU cases are stored as index into the `Ticu.cases`.
At times it is necessary to communicate that the ICU case just switched and that next ICU update should update all bindings regardless of the mask. In such a case the we store negative numbers for cases which have just been switched. This function removes the negative flag.
*/
export function getCurrentICUCaseIndex(tIcu: TIcu, lView: LView) {
 const currentCase: number | null = lView[tIcu.currentCaseLViewIndex];
 return currentCase === null ? currentCase : (currentCase < 0 ? ~currentCase : currentCase);
}

export function getParentFromIcuCreateOpCode(mergedCode: number): number {
 return mergedCode >>> IcuCreateOpCode.SHIFT_PARENT;
}

export function getRefFromIcuCreateOpCode(mergedCode: number): number {
 return (mergedCode & IcuCreateOpCode.MASK_REF) >>> IcuCreateOpCode.SHIFT_REF;
}

export function getInstructionFromIcuCreateOpCode(mergedCode: number): number {
 return mergedCode & IcuCreateOpCode.MASK_INSTRUCTION;
}

export function icuCreateOpCode(opCode: IcuCreateOpCode, parentIdx: number, refIdx: number) {
 ngDevMode && assertGreaterThanOrEqual(parentIdx, 0, 'Missing parent index');
 ngDevMode && assertGreaterThan(refIdx, 0, 'Missing ref index');
 return opCode | parentIdx << IcuCreateOpCode.SHIFT_PARENT | refIdx << IcuCreateOpCode.SHIFT_REF;
}

/*
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https://angular.io/license
*/
import {getPluralCase} from './i18n/localization';
import {assertDefined, assertDomNode, assertEqual, assertGreaterThan, assertIndexInRange, throwError} from './util/assert';
import {assertIndexInExpandoRange, assertTicu} from './assert';
import {attachPatchData} from './context_discovery';
import {elementPropertyInternal, setElementAttribute} from './instructions/shared';
import {ELEMENT_MARKER, I18nCreateOpCode, I18nCreateOpCodes, I18nUpdateOpCode, I18nUpdateOpCodes, ICU_MARKER, IcuCreateOpCode, IcuCreateOpCodes, IcuType, TI18n, Tlcu} from './interfaces/i18n';
import {TNode} from './interfaces/node';
import {RElement, RNode, RText} from './interfaces/renderer_dom';
import {SanitizerFn} from './interfaces/sanitization';
import {HEADER_OFFSET, LView, RENDERER, TView} from './interfaces/view';
import {createCommentNode, createElementNode, createTextNode, nativeInsertBefore, nativeParentNode, nativeRemoveNode, updateTextNode} from './node_manipulation';
import {getBindingIndex} from './state';
import {renderStringify} from './util/stringify_utils';
import {getNativeByIndex, unwrapRNode} from './util/view_utils';
import {getLocaleId} from './i18n_locale_id';
import {getCurrentICUCaseIndex, getParentFromIcuCreateOpCode, getRefFromIcuCreateOpCode, getTlcu} from './i18n_util';

Keep track of which input bindings in `i18nExp` have changed.
This is used to efficiently update expressions in i18n only when the corresponding input has changed.
1) Each bit represents which of the `i18nExp` has

```







```

(checkBit & changeMask) {\n // The value has been updated since last checked\n let value = ""; for (let j =
i + 1; j <= (i + skipCodes); j++) {\n const opCode = updateOpCodes[j];\n if (typeof opCode === 'string') {\n
value += opCode;\n } else if (typeof opCode === 'number') {\n if (opCode < 0) {\n // Negative
opCode represent `i18nExp` values offset.\n value += renderStringify(IView[bindingsStartIndex -
opCode]);\n } else {\n const nodeIndex = (opCode >>> I18nUpdateOpCode.SHIFT_REF);\n
switch (opCode & I18nUpdateOpCode.MASK_OPCODE) {\n case I18nUpdateOpCode.Attr:\n
const propName = updateOpCodes[++j] as string;\n const sanitizeFn = updateOpCodes[++j] as SanitizerFn
| null;\n const tNodeOrTagName = tView.data[nodeIndex] as TNode | string;\n ngDevMode &&
assertDefined(tNodeOrTagName, 'Expecting TNode or string');\n if (typeof tNodeOrTagName === 'string')
{\n // IF we don't have a `TNode`, then we are an element in ICU (as ICU content does\n // not
have TNode), in which case we know that there are no directives, and hence\n // we use attribute
setting.\n setElementAttribute(\n IView[RENDERER], IView[nodeIndex], null,
tNodeOrTagName, propName, value,\n sanitizeFn);\n } else {\n
elementPropertyInternal(\n tView, tNodeOrTagName, IView, propName, value, IView[RENDERER],
sanitizeFn,\n false);\n }\n break;\n case I18nUpdateOpCode.Text:\n
const rText = IView[nodeIndex] as RText | null;\n rText !== null &&
updateTextNode(IView[RENDERER], rText, value);\n break;\n case
I18nUpdateOpCode.IcuSwitch:\n applyIcuSwitchCase(tView, getTlCu(tView, nodeIndex)!, IView,
value);\n break;\n case I18nUpdateOpCode.IcuUpdate:\n applyIcuUpdateCase(tView,
getTlCu(tView, nodeIndex)!, bindingsStartIndex, IView);\n break;\n }\n }\n }\n }\n }
else {\n const opCode = updateOpCodes[i + 1] as number;\n if (opCode > 0 && (opCode &
I18nUpdateOpCode.MASK_OPCODE) === I18nUpdateOpCode.IcuUpdate) {\n // Special case for the
`icuUpdateCase`. It could be that the mask did not match, but\n // we still need to execute `icuUpdateCase`
because the case has changed recently due to\n // previous `icuSwitchCase` instruction. (`icuSwitchCase` and
`icuUpdateCase` always come in\n // pairs.)\n const nodeIndex = (opCode >>>
I18nUpdateOpCode.SHIFT_REF);\n const tlCu = getTlCu(tView, nodeIndex)!;\n const currentIndex =
IView[tlCu.currentCaseLViewIndex];\n if (currentIndex < 0) {\n applyIcuUpdateCase(tView, tlCu,
bindingsStartIndex, IView);\n }\n }\n i += skipCodes;\n }\n}\n\n/**\n * Apply OpCodes associated
with updating an existing ICU.\n * @param tView Current `TView`\n * @param tlCu Current `TlCu`\n *
@param bindingsStartIndex Location of the first `i18nApply`\n * @param IView Current `LView`\n */\nfunction
applyIcuUpdateCase(tView: TView, tlCu: TlCu, bindingsStartIndex: number, IView: LView) {\n ngDevMode &&
assertIndexInRange(IView, tlCu.currentCaseLViewIndex);\n let activeCaseIndex =
IView[tlCu.currentCaseLViewIndex];\n if (activeCaseIndex !== null) {\n let mask = changeMask;\n if
(activeCaseIndex < 0) {\n // Clear the flag.\n // Negative number means that the ICU was freshly created and
we need to force the update.\n activeCaseIndex = IView[tlCu.currentCaseLViewIndex] = ~activeCaseIndex;\n
// -1 is same as all bits on, which simulates creation since it marks all bits dirty\n mask = -1;\n }\n
applyUpdateOpCodes(tView, IView, tlCu.update[activeCaseIndex], bindingsStartIndex, mask);\n }\n}\n\n/**\n *
Apply OpCodes associated with switching a case on ICU.\n * This involves tearing down existing case and than
building up a new case.\n * @param tView Current `TView`\n * @param tlCu Current `TlCu`\n * @param
IView Current `LView`\n * @param value Value of the case to update to.\n */\nfunction
applyIcuSwitchCase(tView: TView, tlCu: TlCu, IView: LView, value: string) {\n // Rebuild a new case for this
ICU\n const caseIndex = getCaseIndex(tlCu, value);\n let activeCaseIndex = getCurrentICUCaseIndex(tlCu,
IView);\n if (activeCaseIndex !== caseIndex) {\n applyIcuSwitchCaseRemove(tView, tlCu, IView);\n
IView[tlCu.currentCaseLViewIndex] = caseIndex === null ? null : ~caseIndex;\n if (caseIndex !== null) {\n //
Add the nodes for the new case\n const anchorRNode = IView[tlCu.anchorIdx];\n if (anchorRNode) {\n
ngDevMode && assertDomNode(anchorRNode);\n applyMutableOpCodes(tView, tlCu.create[caseIndex],
IView, anchorRNode);\n }\n }\n }\n}\n\n/**\n * Apply OpCodes associated with tearing ICU case.\n * This
involves tearing down existing case and than building up a new case.\n * @param tView Current

```

```

`TView`\n * @param tIcu Current `Ticu`\n * @param lView Current `LView`\n */\nfunction
applyIcuSwitchCaseRemove(tView: TView, tIcu: Ticu, lView: LView) {\n let activeCaseIndex =
getCurrentICUCaseIndex(tIcu, lView);\n if (activeCaseIndex !== null) {\n const removeCodes =
tIcu.remove[activeCaseIndex];\n for (let i = 0; i < removeCodes.length; i++) {\n const nodeOrIcuIndex =
removeCodes[i] as number;\n if (nodeOrIcuIndex > 0) {\n // Positive numbers are `RNode`s.\n const
rNode = getNativeByIndex(nodeOrIcuIndex, lView);\n rNode !== null &&
nativeRemoveNode(lView[RENDERER], rNode);\n } else {\n // Negative numbers are ICUs\n
applyIcuSwitchCaseRemove(tView, getTicu(tView, ~nodeOrIcuIndex!), lView);\n }\n }\n}\n\n/**\n *
Returns the index of the current case of an ICU expression depending on the main binding value\n *\n * @param
icuExpression\n * @param bindingValue The value of the main binding used by this ICU expression\n */\nfunction
getCaseIndex(icuExpression: Ticu, bindingValue: string): number|null {\n let index =
icuExpression.cases.indexOf(bindingValue);\n if (index === -1) {\n switch (icuExpression.type) {\n case
IcuType.plural: {\n const resolvedCase = getPluralCase(bindingValue, getLocaleId());\n index =
icuExpression.cases.indexOf(resolvedCase);\n if (index === -1 && resolvedCase !== 'other') {\n index =
icuExpression.cases.indexOf('other');\n }\n break;\n }\n case IcuType.select: {\n index =
icuExpression.cases.indexOf('other');\n break;\n }\n }\n }\n return index === -1 ? null :
index;\n}\n", "/*\n * @license\n * Copyright Google LLC All Rights Reserved.\n *\n * Use of this source code is
governed by an MIT-style license that can be\n * found in the LICENSE file at https://angular.io/license\n
*/\n\nimport {assertDomNode, assertNumber, assertNumberInRange} from '../util/assert';\nimport {assertTicu,
assertTNodeForLView} from '../assert';\nimport {EMPTY_ARRAY} from '../empty';\nimport
{getCurrentICUCaseIndex} from './i18n/i18n_util';\nimport {I18nRemoveOpCodes, Ticu} from
../interfaces/i18n';\nimport {TicuContainerNode} from '../interfaces/node';\nimport {RNode} from
../interfaces/renderer_dom';\nimport {LView, TVIEW} from '../interfaces/view';\n\nexport function
loadIcuContainerVisitor() {\n const _stack: any[] = [];\n let _index: number = -1;\n let _lView: LView;\n let
_remove: I18nRemoveOpCodes;\n\n /**\n * Retrieves a set of root nodes from `Ticu.remove`. Used by
`TNodeType.ICUContainer`\n * to determine which root belong to the ICU.\n * Example of usage.\n * ```\n *
const nextRNode = icuContainerIteratorStart(tIcuContainerNode, lView);\n * let rNode: RNode|null;\n *
while(rNode = nextRNode()) {\n * console.log(rNode);\n * }\n * ```\n * @param tIcuContainerNode
Current `TicuContainerNode`\n * @param lView `LView` where the `RNode`s should be looked up.\n */\n
function icuContainerIteratorStart(tIcuContainerNode: TicuContainerNode, lView: LView): () => RNode | null
{\n _lView = lView;\n while (_stack.length) _stack.pop();\n ngDevMode &&
assertTNodeForLView(tIcuContainerNode, lView);\n enterIcu(tIcuContainerNode.value, lView);\n return
icuContainerIteratorNext;\n }\n\n function enterIcu(tIcu: Ticu, lView: LView) {\n _index = 0;\n const
currentCase = getCurrentICUCaseIndex(tIcu, lView);\n if (currentCase !== null) {\n ngDevMode &&
assertNumberInRange(currentCase, 0, tIcu.cases.length - 1);\n _remove = tIcu.remove[currentCase];\n } else
{\n _remove = EMPTY_ARRAY as any;\n }\n }\n\n function icuContainerIteratorNext(): RNode|null {\n
if (_index < _remove.length) {\n const removeOpCode = _remove[_index++] as number;\n ngDevMode
&& assertNumber(removeOpCode, 'Expecting OpCode number');\n if (removeOpCode > 0) {\n const rNode
= _lView[removeOpCode];\n ngDevMode && assertDomNode(rNode);\n return rNode;\n } else {\n
_stack.push(_index, _remove);\n // ICUs are represented by negative indices\n const tIcuIndex =
~removeOpCode;\n const tIcu = _lView[TVIEW].data[tIcuIndex] as Ticu;\n ngDevMode &&
assertTicu(tIcu);\n enterIcu(tIcu, _lView);\n return icuContainerIteratorNext();\n }\n } else {\n if
(_stack.length === 0) {\n return null;\n } else {\n _remove = _stack.pop();\n _index =
_stack.pop();\n return icuContainerIteratorNext();\n }\n }\n }\n\n return
icuContainerIteratorStart;\n}\n", "/*\n * @license\n * Copyright Google LLC All Rights Reserved.\n *\n * Use of
this source code is governed by an MIT-style license that can be\n * found in the LICENSE file at
https://angular.io/license\n */\n\nimport {assertNumber, assertString} from '../util/assert';\nimport
{ELEMENT_MARKER, I18nCreateOpCode, I18nCreateOpCodes, I18nRemoveOpCodes, I18nUpdateOpCode,

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I18nUpdateOpCodes, ICU_MARKER, IcuCreateOpCode, IcuCreateOpCodes} from './interfaces/i18n';\n\nimport
{getInstructionFromIcuCreateOpCode, getParentFromIcuCreateOpCode, getRefFromIcuCreateOpCode} from
 './i18n_util';\n\n/**\n * Converts `I18nCreateOpCodes` array into a human readable format.\n * This function
is attached to the `I18nCreateOpCodes.debug` property if `ngDevMode` is enabled.\n * This function provides a
human readable view of the opcodes. This is useful when debugging the\n * application as well as writing more
readable tests.\n *\n * @param this `I18nCreateOpCodes` if attached as a method.\n * @param opcodes
`I18nCreateOpCodes` if invoked as a function.\n */\nexport function i18nCreateOpCodesToString(\n this:
I18nCreateOpCodes|void, opcodes?: I18nCreateOpCodes): string[] {\n const createOpCodes: I18nCreateOpCodes
= opcodes || (Array.isArray(this) ? this : [] as any);\n let lines: string[] = [];\n for (let i = 0; i <
createOpCodes.length; i++) {\n const opCode = createOpCodes[i++] as any;\n const text = createOpCodes[i] as
string;\n const isComment = (opCode & I18nCreateOpCode.COMMENT) ===
I18nCreateOpCode.COMMENT;\n const appendNow =\n (opCode &
I18nCreateOpCode.APPEND_EAGERLY) === I18nCreateOpCode.APPEND_EAGERLY;\n const index =
opCode >>> I18nCreateOpCode.SHIFT;\n lines.push(`IView[${index}] = document.${isComment ?
'createComment' : 'createText'}(${\n JSON.stringify(text)});`);\n if (appendNow) {\n
lines.push(`parent.appendChild(IView[${index}]);`);\n }\n }\n return lines;\n}\n\n/**\n * Converts
`I18nUpdateOpCodes` array into a human readable format.\n * This function is attached to the
`I18nUpdateOpCodes.debug` property if `ngDevMode` is enabled.\n * This function provides a human readable
view of the opcodes. This is useful when debugging the\n * application as well as writing more readable tests.\n *\n
* @param this `I18nUpdateOpCodes` if attached as a method.\n * @param opcodes `I18nUpdateOpCodes` if
invoked as a function.\n */\nexport function i18nUpdateOpCodesToString(\n this: I18nUpdateOpCodes|void,
opcodes?: I18nUpdateOpCodes): string[] {\n const parser = new OpCodeParser(opcodes || (Array.isArray(this) ?
this : []));\n let lines: string[] = [];\n\n function consumeOpCode(value: number): string {\n const ref = value >>>
I18nUpdateOpCode.SHIFT_REF;\n const opCode = value & I18nUpdateOpCode.MASK_OPCODE;\n switch
(opCode) {\n case I18nUpdateOpCode.Text:\n return `(IView[${ref}] as Text).textContent = $$$`;\n case
I18nUpdateOpCode.Attr:\n const attrName = parser.consumeString();\n const sanitizationFn =
parser.consumeFunction();\n const value = sanitizationFn ? `(${sanitizationFn})($$$)` : '$$$`;\n return
`(IView[${ref}] as Element).setAttribute('${attrName}', ${value})`;\n case I18nUpdateOpCode.IcuSwitch:\n
return `icuSwitchCase(${ref}, $$$)`;\n case I18nUpdateOpCode.IcuUpdate:\n return
`icuUpdateCase(${ref})`;\n }\n throw new Error('unexpected OpCode');\n }\n\n while (parser.hasMore()) {\n
let mask = parser.consumeNumber();\n let size = parser.consumeNumber();\n const end = parser.i + size;\n const
statements: string[] = [];\n let statement = ` `;\n while (parser.i < end) {\n let value =
parser.consumeNumberOrString();\n if (typeof value === 'string') {\n statement += value;\n } else if
(value < 0) {\n // Negative numbers are ref indexes\n // Here `i` refers to current binding index. It is to
signify that the value is relative,\n // rather than absolute.\n statement += `${IView[i + value +]}`;\n }
else {\n // Positive numbers are operations.\n const opCodeText = consumeOpCode(value);\n statements.push(opCodeText.replace('$$$', `` + statement + ``) + `;`);\n statement = ` `;\n }\n }\n lines.push(`if (mask & 0b${mask.toString(2)}) { ${statements.join(' ')} `);\n }\n return lines;\n}\n\n/**\n * Converts `I18nCreateOpCodes` array into a human readable format.\n * This function is attached to the
`I18nCreateOpCodes.debug` if `ngDevMode` is enabled. This\n * function provides a human readable view of the
opcodes. This is useful when debugging the\n * application as well as writing more readable tests.\n *\n * @param
this `I18nCreateOpCodes` if attached as a method.\n * @param opcodes `I18nCreateOpCodes` if invoked as a
function.\n */\nexport function icuCreateOpCodesToString(\n this: IcuCreateOpCodes|void, opcodes?:
IcuCreateOpCodes): string[] {\n const parser = new OpCodeParser(opcodes || (Array.isArray(this) ? this : []));\n let
lines: string[] = [];\n\n function consumeOpCode(opCode: number): string {\n const parent =
getParentFromIcuCreateOpCode(opCode);\n const ref = getRefFromIcuCreateOpCode(opCode);\n switch
(getInstructionFromIcuCreateOpCode(opCode)) {\n case IcuCreateOpCode.AppendChild:\n return
`(IView[${parent}] as Element).appendChild(IView[${lastRef}])`;\n case IcuCreateOpCode.Attr:\n return

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 (IView[${ref}] as Element).setAttribute("${parser.consumeString()}", "${\n
 parser.consumeString()}\n");\n } throw new Error('Unexpected OpCode: ' +
 getInstructionFromIcuCreateOpCode(opCode));\n }\n\n let lastRef = -1;\n while (parser.hasMore()) {\n let value
 = parser.consumeNumberStringOrMarker();\n if (value === ICU_MARKER) {\n const text =
 parser.consumeString();\n lastRef = parser.consumeNumber();\n lines.push(IView[${lastRef}] =
 document.createComment("${text}")); \n } else if (value === ELEMENT_MARKER) {\n const text =
 parser.consumeString();\n lastRef = parser.consumeNumber();\n lines.push(IView[${lastRef}] =
 document.createElement("${text}")); \n } else if (typeof value === 'string') {\n lastRef =
 parser.consumeNumber();\n lines.push(IView[${lastRef}] = document.createTextNode("${value}")); \n }
 else if (typeof value === 'number') {\n const line = consumeOpCode(value);\n line && lines.push(line);\n }
 else {\n throw new Error('Unexpected value');\n }\n }\n\n return lines;\n}\n\n/**\n * Converts
 `I18nRemoveOpCodes` array into a human readable format.\n *\n * This function is attached to the
 `I18nRemoveOpCodes.debug` if `ngDevMode` is enabled. This\n * function provides a human readable view of the
 opcodes. This is useful when debugging the\n * application as well as writing more readable tests.\n *\n * @param
 this `I18nRemoveOpCodes` if attached as a method.\n *\n * @param opcodes `I18nRemoveOpCodes` if invoked as a
 function.\n *\n export function i18nRemoveOpCodesToString(\n this: I18nRemoveOpCodes|void, opcodes?:
 I18nRemoveOpCodes): string[] {\n const removeCodes = opcodes || (Array.isArray(this) ? this : []);\n let lines:
 string[] = [];\n\n for (let i = 0; i < removeCodes.length; i++) {\n const nodeOrIcuIndex = removeCodes[i] as
 number;\n if (nodeOrIcuIndex > 0) {\n // Positive numbers are `RNode`s.\n
 lines.push(`remove(IView[${nodeOrIcuIndex}])`);\n } else {\n // Negative numbers are ICUs\n
 lines.push(`removeNestedICU(${~nodeOrIcuIndex})`);\n } \n } \n\n return lines;\n}\n\n\nclass OpCodeParser {\n
 i: number = 0;\n codes: any[];\n\n constructor(codes: any[]) {\n this.codes = codes;\n } \n\n hasMore() {\n
 return this.i < this.codes.length;\n } \n\n consumeNumber(): number {\n let value = this.codes[this.i++];\n
 assertNumber(value, 'expecting number in OpCode');\n return value;\n } \n\n consumeString(): string {\n let
 value = this.codes[this.i++];\n assertString(value, 'expecting string in OpCode');\n return value;\n } \n\n
 consumeFunction(): Function|null {\n let value = this.codes[this.i++];\n if (value === null || typeof value ===
 'function') {\n return value;\n } \n\n throw new Error('expecting function in OpCode');\n } \n\n
 consumeNumberOrString(): number|string {\n let value = this.codes[this.i++];\n if (typeof value === 'string') {\n
 return value;\n } \n\n assertNumber(value, 'expecting number or string in OpCode');\n return value;\n } \n\n
 consumeNumberStringOrMarker(): number|string|ICU_MARKER|ELEMENT_MARKER {\n let value =
 this.codes[this.i++];\n if (typeof value === 'string' || typeof value === 'number' || value === ICU_MARKER ||\n
 value === ELEMENT_MARKER) {\n return value;\n } \n\n assertNumber(value, 'expecting number, string,
 ICU_MARKER or ELEMENT_MARKER in OpCode');\n return value;\n } \n\n"}\n\n * @license\n *
 Copyright Google LLC All Rights Reserved.\n *\n * Use of this source code is governed by an MIT-style license
 that can be\n * found in the LICENSE file at https://angular.io/license\n *\n import './../util/ng_dev_mode';\n import
 './../util/ng_i18n_closure_mode';\n\n import {getTemplateContent, SRCSET_ATTRS, URI_ATTRS,
 VALID_ATTRS, VALID_ELEMENTS} from './../sanitization/html_sanitizer';\n import {getInertBodyHelper} from
 './../sanitization/inert_body';\n import {_sanitizeUrl, sanitizeSrcset} from './../sanitization/url_sanitizer';\n
 import {assertDefined, assertEqual, assertGreaterThanOrEqual, assertOneOf, assertString} from './../util/assert';\n
 import {CharCode} from './../util/char_code';\n import {loadIcuContainerVisitor} from
 './instructions/i18n_icu_container_visitor';\n import {allocExpando, createTNodeAtIndex} from
 './instructions/shared';\n import {getDocument} from './interfaces/document';\n import {ELEMENT_MARKER,
 I18nCreateOpCode, I18nCreateOpCodes, I18nRemoveOpCodes, I18nUpdateOpCode, I18nUpdateOpCodes,
 ICU_MARKER, IcuCreateOpCode, IcuCreateOpCodes, IcuExpression, IcuType, THeader, THeaderType, TNode, TNodeType}
 from './interfaces/node';\n import {SanitizerFn} from
 './interfaces/sanitization';\n import {HEADER_OFFSET, LView, TView} from './interfaces/view';\n import
 {getCurrentParentTNode, getCurrentTNode, setCurrentTNode} from './state';\n import {attachDebugGetter} from
 './util/debug_utils';\n\n import {i18nCreateOpCodesToString, i18nRemoveOpCodesToString,

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i18nUpdateOpCodesToString, icuCreateOpCodesToString} from './i18n_debug';\nimport
{addTNodeAndUpdateInsertBeforeIndex} from './i18n_insert_before_index';\nimport
{ensureIcuContainerVisitorLoaded} from './i18n_tree_shaking';\nimport {createTNodePlaceholder,
icuCreateOpCode, setTicu, setTNodeInsertBeforeIndex} from './i18n_util';\n\n\nconst BINDING_REGEXP =
/((\d+):?\d*/gi;\nconst ICU_REGEXP = /(\\s*\d+:\d*\s*,\s*\S{6}\s*,[\\s\\S]*)/gi;\nconst NESTED_ICU =
/((\d+);;\nconst ICU_BLOCK_REGEXP = /^(\\s*(\d+:\d*)\s*,\s*(select|plural)\s*,;/;\n\nconst MARKER =
``;\nconst SUBTEMPLATE_REGEXP = /\|/?\|*(\d+:\d+)/gi;\nconst PH_REGEXP =
/(\|/?[##*]\d+):?\d*/gi;\n\n/**\n * Angular Dart introduced as a placeholder for non-removable space, see:\n * https://github.com/dart-
lang/angular/blob/0bb611387d29d65b5af7f9d2515ab571fd3fbee4/_tests/test/compiler/preserve_whitespace_test.dart
#L25-L32\n * In Angular Dart is converted to the 0xE500 PUA (Private Use Areas) unicode character\n *
and later on replaced by a space. We are re-implementing the same idea here, since translations\n * might contain
this special character.\n *\nconst NGSP_UNICODE_REGEXP = /\uE500/g;\nfunction replaceNgsp(value: string):
string {\n return value.replace(NGSP_UNICODE_REGEXP, ' ');}\n\n\n/**\n * Create dynamic nodes from i18n
translation block.\n *\n * - Text nodes are created synchronously\n * - TNodes are linked into tree lazily\n *\n *
@param tView Current `TView`\n * @parentTNodeIndex index to the parent TNode of this i18n block\n * @param
lView Current `LView`\n * @param index Index of `i18nStart` instruction.\n * @param message Message to
translate.\n * @param subTemplateIndex Index into the sub template of message translation. (ie in case of\n *
`ngIf`) (-1 otherwise)\n *\nexport function i18nStartFirstCreatePass(\n tView: TView, parentTNodeIndex:
number, lView: LView, index: number, message: string,\n subTemplateIndex: number) {\n const rootTNode =
getCurrentParentTNode();\n const createOpCodes: I18nCreateOpCodes = [] as any;\n const updateOpCodes:
I18nUpdateOpCodes = [] as any;\n const existingTNodeStack: TNode[][] = [[]];\n if (ngDevMode) {\n
attachDebugGetter(createOpCodes, i18nCreateOpCodesToString);\n attachDebugGetter(updateOpCodes,
i18nUpdateOpCodesToString);\n }\n\n message = getTranslationForTemplate(message, subTemplateIndex);\n
const msgParts = replaceNgsp(message).split(PH_REGEXP);\n for (let i = 0; i < msgParts.length; i++) {\n let
value = msgParts[i];\n if ((i & 1) === 0) {\n // Even indexes are text (including bindings & ICU expressions)\n
const parts = i18nParseTextIntoPartsAndICU(value);\n for (let j = 0; j < parts.length; j++) {\n let part =
parts[j];\n if ((j & 1) === 0) {\n // `j` is odd therefore `part` is string\n const text = part as string;\n
ngDevMode && assertString(text, 'Parsed ICU part should be string');\n if (text !== '') {\n
i18nStartFirstCreatePassProcessTextNode(\n tView, rootTNode, existingTNodeStack[0], createOpCodes,
updateOpCodes, lView, text);\n }\n } else {\n // `j` is Even therefor `part` is an `ICUExpression`\n
const icuExpression: IcuExpression = part as IcuExpression;\n // Verify that ICU expression has the right
shape. Translations might contain invalid\n // constructions (while original messages were correct), so ICU
parsing at runtime may\n // not succeed (thus `icuExpression` remains a string).\n // Note: we
intentionally retain the error here by not using `ngDevMode`, because\n // the value can change based on the
locale and users aren't guaranteed to hit\n // an invalid string while they're developing.\n if (typeof
icuExpression !== 'object') {\n throw new Error(`Unable to parse ICU expression in \"${message}\"
message.`);\n }\n const icuContainerTNode = createTNodeAndAddOpCode(\n tView,
rootTNode, existingTNodeStack[0], lView, createOpCodes,\n ngDevMode ? `ICU
${index}:${icuExpression.mainBinding}` : '', true);\n const icuNodeIndex = icuContainerTNode.index;\n
ngDevMode &&\n assertGreaterThanOrEqual(\n icuNodeIndex, HEADER_OFFSET, 'Index
must be in absolute LView offset');\n icuStart(tView, lView, updateOpCodes, parentTNodeIndex,
icuExpression, icuNodeIndex);\n }\n }\n } else {\n // Odd indexes are placeholders (elements and sub-
templates)\n // At this point value is something like: `/#1:2` (originally coming from `/#1:2`)\n const isClosing
= value.charCodeAt(0) === CharCode.SLASH;\n const type = value.charCodeAt(isClosing ? 1 : 0);\n
ngDevMode && assertOneOf(type, CharCode.STAR, CharCode.HASH);\n const index = HEADER_OFFSET +
Number.parseInt(value.substring((isClosing ? 2 : 1)));\n if (isClosing) {\n existingTNodeStack.shift();\n
setCurrentTNode(getCurrentParentTNode()!, false);\n } else {\n const tNode =

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RegExp(`${MARKER}*\\\\\\\\\\\\\\\\d+:${subTemplateIndex}${MARKER}`));\n return
removeInnerTemplateTranslation(message.substring(start, end));\n }\n}\n\n/**\n * Generate the OpCodes for ICU
expressions.\n *\n * @param icuExpression\n * @param index Index where the anchor is stored and an optional
`TicuContainerNode`\n * - `IView[anchorIdx]` points to a `Comment` node representing the anchor for the ICU.\n
* - `tView.data[anchorIdx]` points to the `TicuContainerNode` if ICU is root (`null` otherwise)\n */\n\nexport
function icuStart(\n tView: TView, IView: LView, updateOpCodes: I18nUpdateOpCodes, parentIdx: number,\n icuExpression: IcuExpression, anchorIdx: number) {\n ngDevMode && assertDefined(icuExpression, 'ICU
expression must be defined');\n let bindingMask = 0;\n const tIcu: TIcu = {\n type: icuExpression.type,\n
currentCaseLViewIndex: allocExpando(tView, IView, 1, null),\n anchorIdx,\n cases: [],\n create: [],\n
remove: [],\n update: []\n};\n addUpdateIcuSwitch(updateOpCodes, icuExpression, anchorIdx);\n
setTIcu(tView, anchorIdx, tIcu);\n const values = icuExpression.values;\n for (let i = 0; i < values.length; i++) {\n
// Each value is an array of strings & other ICU expressions\n const valueArr = values[i];\n const nestedIcus:
IcuExpression[] = [];\n for (let j = 0; j < valueArr.length; j++) {\n const value = valueArr[j];\n if (typeof
value !== 'string') {\n // It is an nested ICU expression\n const icuIndex = nestedIcus.push(value as
IcuExpression) - 1;\n // Replace nested ICU expression by a comment node\n valueArr[j] = `<!--
${icuIndex}>`;}\n }\n }\n bindingMask = parseIcuCase(\n tView, tIcu, IView, updateOpCodes,
parentIdx, icuExpression.cases[i],\n valueArr.join(""), nestedIcus) |\n bindingMask;\n }\n if
(bindingMask) {\n addUpdateIcuUpdate(updateOpCodes, bindingMask, anchorIdx);\n }\n}\n\n/**\n * Parses text
containing an ICU expression and produces a JSON object for it.\n * Original code from closure library, modified
for Angular.\n *\n * @param pattern Text containing an ICU expression that needs to be parsed.\n */\n\nexport
function parseICUBlock(pattern: string): IcuExpression {\n const cases = [];\n const values:
(stringIcuExpression)[][] = [];\n let icuType = IcuType.plural;\n let mainBinding = 0;\n pattern =
pattern.replace(ICU_BLOCK_REGEXP, function(str: string, binding: string, type: string) {\n if (type === 'select')
{\n icuType = IcuType.select;\n } else {\n icuType = IcuType.plural;\n }\n mainBinding =
parseInt(binding.substr(1), 10);\n return ";\n });\n\n const parts = i18nParseTextIntoPartsAndICU(pattern) as
string[];\n // Looking for (key block)+ sequence. One of the keys has to be "other".\n for (let pos = 0; pos <
parts.length;) {\n let key = parts[pos++].trim();\n if (icuType === IcuType.plural) {\n // Key can be "=x",
we just want "x"\n key = key.replace(/\\s*(?:=)?(\\w+)\\s*/, '$1');\n }\n if (key.length) {\n
cases.push(key);\n }\n\n const blocks = i18nParseTextIntoPartsAndICU(parts[pos++]) as string[];\n if
(cases.length > values.length) {\n values.push(blocks);\n }\n }\n\n // TODO(ocombe): support ICU
expressions in attributes, see #21615\n return {type: icuType, mainBinding: mainBinding, cases,
values};\n}\n\n\n/**\n * Breaks pattern into strings and top level {...} blocks.\n * Can be used to break a message
into text and ICU expressions, or to break an ICU expression\n * into keys and cases. Original code from closure
library, modified for Angular.\n *\n * @param pattern (sub)Pattern to be broken.\n * @returns An
`Array<stringIcuExpression>` where:\n * - odd positions: `string` => text between ICU expressions\n * - even
positions: `ICUExpression` => ICU expression parsed into `ICUExpression` record.\n */\n\nexport function
i18nParseTextIntoPartsAndICU(pattern: string): (stringIcuExpression)[] {\n if (!pattern) {\n return [];\n }\n\n let
prevPos = 0;\n const braceStack = [];\n const results: (stringIcuExpression)[] = [];\n const braces = /{}/g;\n //
lastIndex doesn't get set to 0 so we have to.\n braces.lastIndex = 0;\n let match;\n while (match =
braces.exec(pattern)) {\n const pos = match.index;\n if (match[0] === '}') {\n braceStack.pop();\n\n if
(braceStack.length === 0) {\n // End of the block.\n const block = pattern.substring(prevPos, pos);\n if
(ICU_BLOCK_REGEXP.test(block)) {\n results.push(parseICUBlock(block));\n } else {\n
results.push(block);\n }\n\n prevPos = pos + 1;\n }\n } else {\n if (braceStack.length === 0) {\n
const substring = pattern.substring(prevPos, pos);\n results.push(substring);\n prevPos = pos + 1;\n }\n
braceStack.push('{');\n }\n }\n\n const substring = pattern.substring(prevPos);\n results.push(substring);\n
return results;\n}\n\n\n\n/**\n * Parses a node, its children and its siblings, and generates the mutate & update
OpCodes.\n *\n */\n\nexport function parseIcuCase(\n tView: TView, tIcu: TIcu, IView: LView, updateOpCodes:
I18nUpdateOpCodes, parentIdx: number,\n caseName: string, unsafeCaseHtml: string, nestedIcus:

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IcuExpression[]): number {\n const create: IcuCreateOpCodes = [] as any;\n const remove: I18nRemoveOpCodes
= [] as any;\n const update: I18nUpdateOpCodes = [] as any;\n if (ngDevMode) {\n attachDebugGetter(create,
icuCreateOpCodesToString);\n attachDebugGetter(remove, i18nRemoveOpCodesToString);\n
attachDebugGetter(update, i18nUpdateOpCodesToString);\n }\n tIcu.cases.push(caseName);\n
tIcu.create.push(create);\n tIcu.remove.push(remove);\n tIcu.update.push(update);\n\n const inertBodyHelper =
getInertBodyHelper(getDocument());\n const inertBodyElement =
inertBodyHelper.getInertBodyElement(unsafeCaseHtml);\n ngDevMode && assertDefined(inertBodyElement,
'Unable to generate inert body element');\n const inertRootNode = getTemplateContent(inertBodyElement!) as
Element || inertBodyElement;\n if (inertRootNode) {\n return walkIcuTree(\n tView, tIcu, IView,
updateOpCodes, create, remove, update, inertRootNode, parentIdx,\n nestedIcus, 0);\n } else {\n return 0;\n
}\n}\n\nfunction walkIcuTree(\n tView: TView, tIcu: TIcu, IView: LView, sharedUpdateOpCodes:
I18nUpdateOpCodes,\n create: IcuCreateOpCodes, remove: I18nRemoveOpCodes, update:
I18nUpdateOpCodes,\n parentNode: Element, parentIdx: number, nestedIcus: IcuExpression[], depth: number):
number {\n let bindingMask = 0;\n let currentNode = parentNode.firstChild;\n while (currentNode) {\n const
newIndex = allocExpando(tView, IView, 1, null);\n switch (currentNode.nodeType) {\n case
Node.ELEMENT_NODE:\n const element = currentNode as Element;\n const tagName =
element.tagName.toLowerCase();\n if (VALID_ELEMENTS.hasOwnProperty(tagName)) {\n
addCreateNodeAndAppend(create, ELEMENT_MARKER, tagName, parentIdx, newIndex);\n
tView.data[newIndex] = tagName;\n const elAttrs = element.attributes;\n for (let i = 0; i < elAttrs.length;
i++) {\n const attr = elAttrs.item(i)!;\n const lowerAttrName = attr.name.toLowerCase();\n
const hasBinding = !!attr.value.match(BINDING_REGEXP);\n // we assume the input string is safe, unless
it's using a binding\n if (hasBinding) {\n if (VALID_ATTRS.hasOwnProperty(lowerAttrName)) {\n
 if (URI_ATTRS[lowerAttrName]) {\n generateBindingUpdateOpCodes(\n update,
attr.value, newIndex, attr.name, _sanitizeUrl);\n } else if (SRCSET_ATTRS[lowerAttrName]) {\n
 generateBindingUpdateOpCodes(\n update, attr.value, newIndex, attr.name, sanitizeSrcset);\n
 } else {\n generateBindingUpdateOpCodes(update, attr.value, newIndex, attr.name);\n }\n
 } else {\n ngDevMode &&\n console.warn(\n `WARNING: ignoring unsafe
attribute value ` +\n `${lowerAttrName} on element ${tagName} (see http://g.co/ng/security#xss)`);\n
 }\n } else {\n addCreateAttribute(create, newIndex, attr);\n }\n }\n // Parse
the children of this node (if any)\n bindingMask = walkIcuTree(\n tView, tIcu, IView,
sharedUpdateOpCodes, create, remove, update,\n currentNode as Element, newIndex, nestedIcus,
depth + 1) | bindingMask;\n addRemoveNode(remove, newIndex, depth);\n }\n break;\n
case Node.TEXT_NODE:\n const value = currentNode.textContent || ";\n const hasBinding =
value.match(BINDING_REGEXP);\n addCreateNodeAndAppend(create, null, hasBinding ? " : value,
parentIdx, newIndex);\n addRemoveNode(remove, newIndex, depth);\n if (hasBinding) {\n
bindingMask = generateBindingUpdateOpCodes(update, value, newIndex) | bindingMask;\n }\n break;\n
case Node.COMMENT_NODE:\n // Check if the comment node is a placeholder for a nested ICU\n const
isNestedIcu = NESTED_ICU.exec(currentNode.textContent || ");\n if (isNestedIcu) {\n const
nestedIcuIndex = parseInt(isNestedIcu[1], 10);\n const icuExpression: IcuExpression =
nestedIcus[nestedIcuIndex];\n // Create the comment node that will anchor the ICU expression\n
addCreateNodeAndAppend(\n create, ICU_MARKER, ngDevMode ? `nested ICU ${nestedIcuIndex}` : ",
parentIdx,\n newIndex);\n icuStart(tView, IView, sharedUpdateOpCodes, parentIdx, icuExpression,
newIndex);\n addRemoveNestedIcu(remove, newIndex, depth);\n }\n break;\n }\n currentNode =
currentNode.nextSibling;\n }\n }\n return bindingMask;\n }\n}\n\nfunction addRemoveNode(remove:
I18nRemoveOpCodes, index: number, depth: number) {\n if (depth === 0) {\n remove.push(index);\n
}\n}\n\nfunction addRemoveNestedIcu(remove: I18nRemoveOpCodes, index: number, depth: number) {\n if
(depth === 0) {\n remove.push(~index); // remove ICU at `index`\n remove.push(index); // remove ICU
comment at `index`\n }\n}\n\nfunction addUpdateIcuSwitch(\n update: I18nUpdateOpCodes, icuExpression:

```

```

IcuExpression, index: number) {\n update.push(\n toMaskBit(icuExpression.mainBinding), 2, -1 -
icuExpression.mainBinding,\n index << I18nUpdateOpCode.SHIFT_REF |
I18nUpdateOpCode.IcuSwitch);\n}\n\nfunction addUpdateIcuUpdate(update: I18nUpdateOpCodes, bindingMask:
number, index: number) {\n update.push(bindingMask, 1, index << I18nUpdateOpCode.SHIFT_REF |
I18nUpdateOpCode.IcuUpdate);\n}\n\nfunction addCreateNodeAndAppend(\n create: IcuCreateOpCodes,
marker: null|ICU_MARKER|ELEMENT_MARKER, text: string,\n appendToParentIdx: number, createAtIdx:
number) {\n if (marker !== null) {\n create.push(marker);\n }\n create.push(\n text, createAtIdx,\n icuCreateOpCode.IcuCreateOpCode.AppendChild, appendToParentIdx, createAtIdx);\n}\n\nfunction
addCreateAttribute(create: IcuCreateOpCodes, newIndex: number, attr: Attr) {\n create.push(newIndex <<
IcuCreateOpCode.SHIFT_REF | IcuCreateOpCode.Attr, attr.name, attr.value);\n}\n}\n"/**\n *
Copyright Google LLC All Rights Reserved.\n * Use of this source code is governed by an MIT-style license
that can be\n * found in the LICENSE file at https://angular.io/license\n */\n\n// i18nPostprocess consts\nconst
ROOT_TEMPLATE_ID = 0;\nconst PP_MULTI_VALUE_PLACEHOLDERS_REGEXP = /\[\[.(+??)\]\]/;\nconst
PP_PLACEHOLDERS_REGEXP = /\[\[.(+??)\]\](\[\?*\d+:\d+\])/g;\nconst PP_ICU_VARS_REGEXP =
/(\[s*\](VAR_(PLURAL|SELECT)(_\d+)?)(\[s*\])/g;\nconst PP_ICU_PLACEHOLDERS_REGEXP = /(\[A-Z0-
9_\])+/g;\nconst PP_ICUS_REGEXP = /I18N_EXP_(ICU(_\d+)?)/g;\nconst PP_CLOSE_TEMPLATE_REGEXP
= /\[\[*/;\nconst PP_TEMPLATE_ID_REGEXP = /\d+:\d+:/;\n\n// Parsed placeholder structure used in
postprocessing (within `i18nPostprocess` function)\n// Contains the following fields: [templateId,
isCloseTemplateTag, placeholder]\ntype PostprocessPlaceholder = [number, boolean, string];\n\n/**\n * Handles
message string post-processing for internationalization.\n * Handles message string post-processing by
transforming it from intermediate\n * format (that might contain some markers that we need to replace) to the final\n
* form, consumable by i18nStart instruction. Post processing steps include:\n * 1. Resolve all multi-value cases
(like [*1:1#2:1|#4:1|5])\n * 2. Replace all ICU vars (like "VAR_PLURAL")\n * 3. Replace all placeholders used
inside ICUs in a form of {PLACEHOLDER}\n * 4. Replace all ICU references with corresponding values (like
ICU_EXP_ICU_1)\n * in case multiple ICUs have the same placeholder name\n * @param message Raw
translation string for post processing\n * @param replacements Set of replacements that should be applied\n *
@return Transformed string that can be consumed by i18nStart instruction\n * @codeGenApi\n */\nexport
function i18nPostprocess(\n message: string, replacements: {[key: string]: (string|string[])} = {}): string {\n
/**\n * Step 1: resolve all multi-value placeholders like [#5]*1:1#2:1|#4:1]\n * Note: due to the way we process
nested templates (BFS), multi-value placeholders are typically\n * grouped by templates, for example:
[#5|#6|#1:1|#3:2] where #5 and #6 belong to root\n * template, #1:1 belong to nested template with index 1 and
#1:2 - nested template with index\n * 3. However in real templates the order might be different: i.e. #1:1 and/or
#3:2 may go in\n * front of #6. The post processing step restores the right order by keeping track of the\n *
template id stack and looks for placeholders that belong to the currently active template.\n */\n let result: string =
message;\n if (PP_MULTI_VALUE_PLACEHOLDERS_REGEXP.test(message)) {\n const matches: {[key:
string]: PostprocessPlaceholder[]} = {};\n const templateIdsStack: number[] = [ROOT_TEMPLATE_ID];\n result = result.replace(PP_PLACEHOLDERS_REGEXP, (m: any, phs: string, tmpl: string): string => {\n const
content = phs || tmpl;\n const placeholders: PostprocessPlaceholder[] = matches[content] || [];\n if
(!placeholders.length) {\n content.split('').forEach((placeholder: string) => {\n const match =
placeholder.match(PP_TEMPLATE_ID_REGEXP);\n const templateId = match ? parseInt(match[1], 10) :
ROOT_TEMPLATE_ID;\n const isCloseTemplateTag =
PP_CLOSE_TEMPLATE_REGEXP.test(placeholder);\n placeholders.push([templateId, isCloseTemplateTag,
placeholder]);\n });\n matches[content] = placeholders;\n }\n if (!placeholders.length) {\n
throw new Error(`i18n postprocess: unmatched placeholder - ${content}`);\n }\n const currentTemplateId =
templateIdsStack[templateIdsStack.length - 1];\n let idx = 0;\n // find placeholder index that matches current
template id\n for (let i = 0; i < placeholders.length; i++) {\n if (placeholders[i][0] === currentTemplateId)
{\n idx = i;\n break;\n }\n }\n // update template id stack based on the current tag extracted\n
const [templateId, isCloseTemplateTag, placeholder] = placeholders[idx];\n if (isCloseTemplateTag) {\n

```

```

templateIdsStack.pop();\n } else if (currentTemplateId !== templateId) {\n
templateIdsStack.push(templateId);\n }\n // remove processed tag from the list\n placeholders.splice(idx,
1);\n return placeholder;\n });\n }\n // return current result if no replacements specified\n if
(!Object.keys(replacements).length) {\n return result;\n }\n /**\n * Step 2: replace all ICU vars (like
`VAR_PLURAL`)\n */\n result = result.replace(PP_ICU_VARS_REGEXP, (match, start, key, _type, _idx, end):
string => {\n return replacements.hasOwnProperty(key) ? `${start}${replacements[key]}${end}` : match;\n
 });\n /**\n * Step 3: replace all placeholders used inside ICUs in a form of {PLACEHOLDER}\n */\n result =
result.replace(PP_ICU_PLACEHOLDERS_REGEXP, (match, key): string => {\n return
replacements.hasOwnProperty(key) ? replacements[key] as string : match;\n });\n /**\n * Step 4: replace all
ICU references with corresponding values (like ICU_EXP_ICU_1) in case\n * multiple ICUs have the same
placeholder name\n */\n result = result.replace(PP_ICUS_REGEXP, (match, key): string => {\n if
(replacements.hasOwnProperty(key)) {\n const list = replacements[key] as string[];\n if (!list.length) {\n
throw new Error(`i18n postprocess: unmatched ICU - ${match} with key: ${key}`);\n }\n return list.shift(!);\n
 }\n return match;\n });\n return result;\n}\n\n", "/*\n * @license\n * Copyright Google LLC All Rights
Reserved.\n */\n * Use of this source code is governed by an MIT-style license that can be\n * found in the
LICENSE file at https://angular.io/license\n */\nimport './../util/ng_dev_mode';\nimport
'./../util/ng_i18n_closure_mode';\nimport {assertDefined} from './../util/assert';\nimport {bindingUpdated} from
'./bindings';\nimport {applyCreateOpCodes, applyI18n, setMaskBit} from './i18n/i18n_apply';\nimport
{i18nAttributesFirstPass, i18nStartFirstCreatePass} from './i18n/i18n_parse';\nimport {i18nPostprocess} from
'./i18n/i18n_postprocess';\nimport {TI18n} from './interfaces/i18n';\nimport {TElementNode, TNodeType} from
'./interfaces/node';\nimport {HEADER_OFFSET, T_HOST} from './interfaces/view';\nimport
{getClosestRElement} from './node_manipulation';\nimport {getCurrentParentTNode, getLView, getTView,
nextBindingIndex, setInI18nBlock} from './state';\nimport {getConstant} from './util/view_utils';\n\n/**\n * Marks
a block of text as translatable.\n */\n * The instructions `i18nStart` and `i18nEnd` mark the translation block in the
template.\n * The translation `message` is the value which is locale specific. The translation string may\n * contain
placeholders which associate inner elements and sub-templates within the translation.\n * The translation
`message` placeholders are:\n * - `{index}(:{block})`: *Binding Placeholder*: Marks a location where an
expression will be\n * interpolated into. The placeholder `index` points to the expression binding index. An
optional\n * `block` that matches the sub-template in which it was declared.\n * -
`#{index}(:{block})`/^#{index}(:{block})`: *Element Placeholder*: Marks the beginning\n * and end of DOM
element that were embedded in the original translation block. The placeholder\n * `index` points to the element
index in the template instructions set. An optional `block` that\n * matches the sub-template in which it was
declared.\n * - `*{index}:{block}`/^*{index}:{block}`: *Sub-template Placeholder*: Sub-templates must be\n *
split up and translated separately in each angular template function. The `index` points to the\n * `template`
instruction index. A `block` that matches the sub-template in which it was declared.\n */\n * @param index A unique
index of the translation in the static block.\n * @param messageIndex An index of the translation message from the
`def.consts` array.\n * @param subTemplateIndex Optional sub-template index in the `message`.\n */\n *
@codeGenApi\n */\nexport function i18nStart(\n index: number, messageIndex: number, subTemplateIndex:
number = -1): void {\n const tView = getTView();\n const lView = getLView();\n const adjustedIndex =
HEADER_OFFSET + index;\n ngDevMode && assertDefined(tView, `tView should be defined`);\n const
message = getConstant<string>(tView.consts, messageIndex)!;\n const parentTNode = getCurrentParentTNode() as
TElementNode | null;\n if (tView.firstCreatePass) {\n i18nStartFirstCreatePass(\n tView, parentTNode ===
null ? 0 : parentTNode.index, lView, adjustedIndex, message,\n subTemplateIndex);\n }\n const tI18n =
tView.data[adjustedIndex] as TI18n;\n const sameViewParentTNode = parentTNode === lView[T_HOST] ? null :
parentTNode;\n const parentRNode = getClosestRElement(tView, sameViewParentTNode, lView);\n // If
`parentTNode` is an `ElementContainer` than it has `<!--ng-container-->`.\n // When we do inserts we have to
make sure to insert in front of `<!--ng-container-->`.\n const insertInFrontOf = parentTNode &&
(parentTNode.type & TNodeType.ElementContainer) ?\n lView[parentTNode.index] :\n null;\n

```



<https://github.com/angular/angular/commit/d5e3f2c64bd13ce83e7c70788b7fc514ca4a9918>

the `instructions.ts` file was moved to `instructions/instructions.ts` and an `index.ts` file was used to re-export everything. Having had file names that were importing from `instructions` directly (not the from the sub file or the `index.ts` file) caused strange CI issues. `index.ts` had to be renamed to `all.ts` for this to work.

Jira Issue = FW-1184

```

export * from './attribute';
export * from './attribute_interpolation';
export * from './change_detection';
export * from './template';
export * from './storage';
export * from './di';
export * from './element';
export * from './element_container';
export * from './get_current_view';
export * from './listener';
export * from './namespace';
export * from './next_context';
export * from './projection';
export * from './property';
export * from './property_interpolation';
export * from './advance';
export * from './styling';
export * from './text';
export * from './text_interpolation';
export * from './class_map_interpolation';
export * from './style_map_interpolation';
export * from './style_prop_interpolation';
export * from './host_property';
export * from './i18n';

```

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```

import { resolveForwardRef } from './di/forward_ref';
import { ClassProvider, Provider } from './di/interface/provider';
import { isClassProvider, isTypeProvider, providerToFactory } from './di/r3_injector';
import { assertDefined } from './util/assert';
import { diPublicInInjector, getNodeInjectable, getOrCreateNodeInjectorForNode } from './di';
import { directiveInject } from './instructions/all';
import { DirectiveDef } from './interfaces/definition';
import { NodeInjectorFactory } from './interfaces/injector';
import { TContainerNode, TDirectiveHostNode, TElementContainerNode, TElementNode, TNodeProviderIndexes } from './interfaces/node';
import { isComponentDef } from './interfaces/type_checks';
import { DestroyHookData, LView, TData, TVIEW, TView } from './interfaces/view';
import { getCurrentTNode, getLView, getTView } from './state';

```

Resolves the providers which are defined in the DirectiveDef. When inserting the tokens and the factories in their respective arrays, we can assume that this method is called first for the component (if any), and then for other directives on the same node. As a consequence, the providers are always processed in that order:

- 1) The view providers of the component
- 2) The providers of the component
- 3) The providers of the other directives

This matches the structure of the injectables arrays of a view (for each node). So the tokens and the factories can be pushed at the end of the arrays, except in one case for multi providers.

```

@param def the directive definition
@param providers: Array of `providers`
@param viewProviders: Array of `viewProviders`
export function providersResolver<T>(\n def: DirectiveDef<T>,
providers: Provider[], viewProviders: Provider[]): void {\n const tView = getTView();\n if (tView.firstCreatePass) {\n const isComponent = isComponentDef(def);\n // The list of view providers is processed first, and the flags are updated\n resolveProvider(viewProviders, tView.data, tView.blueprint, isComponent, true);\n // Then, the list of providers is processed, and the flags are updated\n resolveProvider(providers, tView.data, tView.blueprint, isComponent, false);\n }\n}

```

Resolves a provider and publishes it to the DI system.

```

function resolveProvider(\n provider: Provider, tInjectables: TData, IInjectablesBlueprint: NodeInjectorFactory[],\n isComponent: boolean, isViewProvider: boolean): void {\n provider = resolveForwardRef(provider);\n if (Array.isArray(provider)) {\n // Recursively call `resolveProvider`\n // Recursion is OK in this case because this code will not be in hot-path once we implement\n // cloning of the initial state.\n for (let i = 0; i < provider.length; i++) {\n resolveProvider(provider[i], tInjectables, IInjectablesBlueprint, isComponent, isViewProvider);\n }\n } else {\n const tView = getTView();\n const IView = getLView();\n let token: any = isTypeProvider(provider) ? provider : resolveForwardRef(provider.provider);\n let providerFactory: () => any = providerToFactory(provider);\n const tNode = getCurrentTNode();\n const beginIndex = tNode.providerIndexes & TNodeProviderIndexes.ProvidersStartIndexMask;\n const endIndex = tNode.directiveStart;\n const cptViewProvidersCount = tNode.providerIndexes >> TNodeProviderIndexes.CptViewProvidersCountShift;\n if (isTypeProvider(provider) || !provider.multi) {\n // Single provider case: the factory is created and pushed immediately\n const factory = new NodeInjectorFactory(providerFactory, isViewProvider, directiveInject);\n const existingFactoryIndex = indexOf(token, tInjectables, isViewProvider ? beginIndex : beginIndex + cptViewProvidersCount,\n
```



```

isTypeProvider(provider);\n if (providerIsTypeProvider || isClassProvider(provider)) {\n const prototype =
((provider as ClassProvider).useClass || provider).prototype;\n const ngOnDestroy = prototype.ngOnDestroy;\n if
(ngOnDestroy) {\n const hooks = tView.destroyHooks || (tView.destroyHooks = []);\n if
(!providerIsTypeProvider && ((provider as ClassProvider)).multi) {\n ngDevMode &&\n
assertDefined(\n indexInFactory, 'indexInFactory when registering multi factory destroy hook');\n
const existingCallbacksIndex = hooks.indexOf(contextIndex);\n if (existingCallbacksIndex === -1) {\n
hooks.push(contextIndex, [indexInFactory, ngOnDestroy]);\n } else {\n (hooks[existingCallbacksIndex +
1] as DestroyHookData).push(indexInFactory!, ngOnDestroy);\n }\n } else {\n
hooks.push(contextIndex, ngOnDestroy);\n }\n}\n}\n\n/**\n * Add a factory in a multi factory.\n *
@returns Index at which the factory was inserted.\n */\nfunction multiFactoryAdd(\n multiFactory:
NodeInjectorFactory, factory: () => any, isComponentProvider: boolean): number {\n if (isComponentProvider) {\n
multiFactory.componentProviders!++; \n }\n return multiFactory.multi!.push(factory) - 1;\n}\n\n/**\n * Returns
the index of item in the array, but only in the begin to end range.\n */\nfunction indexOf(item: any, arr: any[], begin:
number, end: number) {\n for (let i = begin; i < end; i++) {\n if (arr[i] === item) return i;\n }\n return -
1;\n}\n\n/**\n * Use this with `multi` providers`.\n */\nfunction multiProvidersFactoryResolver(\n this:
NodeInjectorFactory, _: undefined, tData: TData, lData: LView,\n tNode: TDirectiveHostNode): any[] {\n return
multiResolve(this.multi!, []);\n}\n\n/**\n * Use this with `multi` viewProviders`.\n */\n * This factory knows how to
concatenate itself with the existing `multi` providers`.\n */\nfunction multiViewProvidersFactoryResolver(\n this:
NodeInjectorFactory, _: undefined, tData: TData, lView: LView,\n tNode: TDirectiveHostNode): any[] {\n const
factories = this.multi!;\n let result: any[];\n if (this.providerFactory) {\n const componentCount =
this.providerFactory.componentProviders!;\n const multiProviders =\n getNodeInjectable(lView,
lView[TVIEW], this.providerFactory!.index!, tNode);\n // Copy the section of the array which contains `multi`
providers` from the component\n result = multiProviders.slice(0, componentCount);\n // Insert the
viewProvider` instances.\n multiResolve(factories, result);\n // Copy the section of the array which contains
multi` providers` from other directives\n for (let i = componentCount; i < multiProviders.length; i++) {\n
result.push(multiProviders[i]);\n }\n } else {\n result = [];\n // Insert the `viewProvider` instances.\n
multiResolve(factories, result);\n }\n return result;\n}\n\n/**\n * Maps an array of factories into an array of
values.\n */\nfunction multiResolve(factories: Array<() => any>, result: any[]): any[] {\n for (let i = 0; i <
factories.length; i++) {\n const factory = factories[i] as () => null;\n result.push(factory());\n }\n return
result;\n}\n\n/**\n * Creates a multi factory.\n */\nfunction multiFactory(\n factoryFn: (\n this:
NodeInjectorFactory, _: undefined, tData: TData, lData: LView,\n tNode: TDirectiveHostNode) => any,\n index: number, isViewProvider: boolean, isComponent: boolean,\n f: () => any): NodeInjectorFactory {\n const
factory = new NodeInjectorFactory(factoryFn, isViewProvider, directiveInject);\n factory.multi = [];\n
factory.index = index;\n factory.componentProviders = 0;\n multiFactoryAdd(factory, f, isComponent &&
!isViewProvider);\n return factory;\n}\n\n"/**\n * @license\n * Copyright Google LLC All Rights Reserved.\n */\n
 * Use of this source code is governed by an MIT-style license that can be\n * found in the LICENSE file at
https://angular.io/license\n */\nimport {ProcessProvidersFunction, Provider} from
'./../di/interface/provider';\nimport {providersResolver} from './di_setup';\nimport {DirectiveDef} from
'./interfaces/definition';\n\n/**\n * This feature resolves the providers of a directive (or component),\n * and publish
them into the DI system, making it visible to others for injection.\n */\n * For example:\n * ```ts\n * class
ComponentWithProviders {\n * constructor(private greeter: GreeterDE) {} \n * static cmp =
defineComponent({\n * type: ComponentWithProviders,\n * selectors: [['component-with-providers']],\n *
factory: () => new ComponentWithProviders(directiveInject(GreeterDE as any)),\n * decls: 1,\n * vars: 1,\n *
template: function(fs: RenderFlags, ctx: ComponentWithProviders) {\n * if (fs & RenderFlags.Create) {\n *
text(0);\n * }\n * if (fs & RenderFlags.Update) {\n * textInterpolate(ctx.greeter.greet());\n *
 }\n * },\n * features: [ProvidersFeature([GreeterDE])]\n * });\n * }\n * ```\n */\n * @param definition\n */\n
 * @codeGenApi\n */\nexport function ProvidersFeature<T>(providers: Provider[], viewProviders: Provider[] = []) {\n
return (definition: DirectiveDef<T>) => {\n definition.providersResolver =\n (def: DirectiveDef<T>,

```





```

given type.\n * @param component The component type.\n */\n abstract
resolveComponentFactory<T>(component: Type<T>): ComponentFactory<T>;\n}\n\nexport class
CodegenComponentFactoryResolver implements ComponentFactoryResolver {\n private _factories = new
Map<any, ComponentFactory<any>>();\n\n constructor(\n factories: ComponentFactory<any>[], private
_parent: ComponentFactoryResolver,\n private _ngModule: NgModuleRef<any>) {\n for (let i = 0; i <
factories.length; i++) {\n const factory = factories[i];\n this._factories.set(factory.componentType, factory);\n
}\n }\n\n resolveComponentFactory<T>(component: {new(...args: any[]): T}): ComponentFactory<T> {\n let
factory = this._factories.get(component);\n if (!factory && this._parent) {\n factory =
this._parent.resolveComponentFactory(component);\n }\n if (!factory) {\n throw
noComponentFactoryError(component);\n }\n return new ComponentFactoryBoundToModule(factory,
this._ngModule);\n }\n}\n\nexport class ComponentFactoryBoundToModule<C> extends ComponentFactory<C>
{\n readonly selector: string;\n readonly componentType: Type<any>;\n readonly ngContentSelectors: string[];\n
readonly inputs: {propName: string, templateName: string}[];\n readonly outputs: {propName: string,
templateName: string}[];\n\n constructor(private factory: ComponentFactory<C>, private ngModule:
NgModuleRef<any>) {\n super();\n this.selector = factory.selector;\n this.componentType =
factory.componentType;\n this.ngContentSelectors = factory.ngContentSelectors;\n this.inputs =
factory.inputs;\n this.outputs = factory.outputs;\n }\n\n create(\n injector: Injector, projectableNodes?: any[][],
rootSelectorOrNode?: string|any,\n ngModule?: NgModuleRef<any>): ComponentRef<C> {\n return
this.factory.create(\n injector, projectableNodes, rootSelectorOrNode, ngModule || this.ngModule);\n
}\n}\n\n", "/*\n * @license\n * Copyright Google LLC All Rights Reserved.\n * Use of this source code is
governed by an MIT-style license that can be\n * found in the LICENSE file at https://angular.io/license\n
/\n\nexport function noop(...args: any[]): any {\n // Do nothing.\n}\n\n", "/\n * @license\n * Copyright Google
LLC All Rights Reserved.\n * Use of this source code is governed by an MIT-style license that can be\n * found
in the LICENSE file at https://angular.io/license\n */\n\nimport {TNode} from './render3/interfaces/node';\nimport
{RElement} from './render3/interfaces/renderer_dom';\nimport {LView} from './render3/interfaces/view';\nimport
{getCurrentTNode, getLView} from './render3/state';\nimport {getNativeByTNode} from
'./render3/util/view_utils';\nimport {noop} from './util/noop';\n\n/**\n * Creates an ElementRef from the most
recent node.\n * @returns The ElementRef instance to use\n */\nexport function injectElementRef():
ElementRef {\n return createElementRef(getCurrentTNode()!, getLView());\n}\n\n/**\n * Creates an ElementRef
given a node.\n * @param tNode The node for which you'd like an ElementRef\n * @param IView The view to
which the node belongs\n * @returns The ElementRef instance to use\n */\nexport function
createElementRef(tNode: TNode, IView: LView): ElementRef {\n return new
ElementRef(getNativeByTNode(tNode, IView) as RElement);\n}\n\nexport const
SWITCH_ELEMENT_REF_FACTORY__POST_R3__ = injectElementRef;\n\nconst
SWITCH_ELEMENT_REF_FACTORY__PRE_R3__ = noop;\n\nconst SWITCH_ELEMENT_REF_FACTORY:
typeof injectElementRef = SWITCH_ELEMENT_REF_FACTORY__PRE_R3__;\n\n/**\n * A wrapper around a
native element inside of a View.\n * An `ElementRef` is backed by a render-specific element. In the browser,
this is usually a DOM\n * element.\n * @security Permitting direct access to the DOM can make your
application more vulnerable to\n * XSS attacks. Carefully review any use of `ElementRef` in your code. For more
detail, see the\n * [Security Guide](http://g.co/ng/security).\n * @publicApi\n */\n\n// Note: We don't expose
things like `Injector`, `ViewContainer`, ... here,\n // i.e. users have to ask for what they need. With that, we can build
better analysis tools\n // and could do better codegen in the future.\nexport class ElementRef<T = any> {\n /**\n *
The underlying native element or `null` if direct access to native elements is not supported\n * (e.g. when the
application runs in a web worker).\n * <div class=\"callout is-critical\">\n * <header>Use with
caution</header>\n * <p>\n * Use this API as the last resort when direct access to DOM is needed. Use
templating and\n * data-binding provided by Angular instead. Alternatively you can take a look at {@link\n *
Renderer2}\n * which provides API that can safely be used even when direct access to native elements is not\n
* supported.\n * </p>\n * <p>\n * Relying on direct DOM access creates tight coupling between your

```



```

@param parent The parent node.\n * @param oldChild The child node to remove.\n * @param isHostElement
Optionally signal to the renderer whether this element is a host element\n * or not\n */\n abstract
removeChild(parent: any, oldChild: any, isHostElement?: boolean): void;\n /**\n * Implement this callback to
prepare an element to be bootstrapped\n * as a root element, and return the element instance.\n * @param
selectorOrNode The DOM element.\n * @param preserveContent Whether the contents of the root element\n *
should be preserved, or cleared upon bootstrap (default behavior).\n * Use with `ViewEncapsulation.ShadowDom`
to allow simple native\n * content projection via `` elements.\n * @returns The root element.\n */\n
abstract selectRootElement(selectorOrNode: string|any, preserveContent?: boolean): any;\n /**\n * Implement this
callback to get the parent of a given node\n * in the host element's DOM.\n * @param node The child node to
query.\n * @returns The parent node, or null if there is no parent.\n * For WebWorkers, always returns true.\n *
This is because the check is synchronous,\n * and the caller can't rely on checking for null.\n */\n abstract
parentNode(node: any): any;\n /**\n * Implement this callback to get the next sibling node of a given node\n * in
the host element's DOM.\n * @returns The sibling node, or null if there is no sibling.\n * For WebWorkers,
always returns a value.\n * This is because the check is synchronous,\n * and the caller can't rely on checking for
null.\n */\n abstract nextSibling(node: any): any;\n /**\n * Implement this callback to set an attribute value for
an element in the DOM.\n * @param el The element.\n * @param name The attribute name.\n * @param value
The new value.\n * @param namespace The namespace.\n */\n abstract setAttribute(el: any, name: string, value:
string, namespace?: string|null): void;\n\n /**\n * Implement this callback to remove an attribute from an element
in the DOM.\n * @param el The element.\n * @param name The attribute name.\n * @param namespace The
namespace.\n */\n abstract removeAttribute(el: any, name: string, namespace?: string|null): void;\n /**\n *
Implement this callback to add a class to an element in the DOM.\n * @param el The element.\n * @param name
The class name.\n */\n abstract addClass(el: any, name: string): void;\n\n /**\n * Implement this callback to
remove a class from an element in the DOM.\n * @param el The element.\n * @param name The class name.\n
*/\n abstract removeClass(el: any, name: string): void;\n\n /**\n * Implement this callback to set a CSS style for
an element in the DOM.\n * @param el The element.\n * @param style The name of the style.\n * @param
value The new value.\n * @param flags Flags for style variations. No flags are set by default.\n */\n abstract
setStyle(el: any, style: string, value: any, flags?: RendererStyleFlags2): void;\n\n /**\n * Implement this callback
to remove the value from a CSS style for an element in the DOM.\n * @param el The element.\n * @param style
The name of the style.\n * @param flags Flags for style variations to remove, if set. ???\n */\n abstract
removeStyle(el: any, style: string, flags?: RendererStyleFlags2): void;\n\n /**\n * Implement this callback to set
the value of a property of an element in the DOM.\n * @param el The element.\n * @param name The property
name.\n * @param value The new value.\n */\n abstract setProperty(el: any, name: string, value: any): void;\n\n
/**\n * Implement this callback to set the value of a node in the host element.\n * @param node The node.\n *
@param value The new value.\n */\n abstract setValue(node: any, value: string): void;\n\n /**\n * Implement
this callback to start an event listener.\n * @param target The context in which to listen for events. Can be\n *
the entire window or document, the body of the document, or a specific\n * DOM element.\n * @param eventName
The event to listen for.\n * @param callback A handler function to invoke when the event occurs.\n * @returns
An `unlisten` function for disposing of this handler.\n */\n abstract listen(\n target:
'window'|'document'|'body'|any, eventName: string,\n callback: (event: any) => boolean | void): () => void;\n\n
/**\n * @internal\n * @nocollapse\n */\n static __NG_ELEMENT_ID__: () => Renderer2 = () =>
SWITCH_RENDERER2_FACTORY();\n}\n\nexport const SWITCH_RENDERER2_FACTORY__POST_R3__
= injectRenderer2;\nconst SWITCH_RENDERER2_FACTORY__PRE_R3__ = noop;\nconst
SWITCH_RENDERER2_FACTORY: typeof injectRenderer2 =
SWITCH_RENDERER2_FACTORY__PRE_R3__;\n\n/** Returns a Renderer2 (or throws when application was
bootstrapped with Renderer3) */\nfunction getOrCreateRenderer2(IView: LView): Renderer2 {\n const renderer =
IView[RENDERER];\n if (ngDevMode && !isProceduralRenderer(renderer)) {\n throw new Error('Cannot inject
Renderer2 when the application uses Renderer3!');\n }\n return renderer as Renderer2;\n}\n\n/** Injects a
Renderer2 for the current component. */\nexport function injectRenderer2(): Renderer2 {\n // We need the Renderer

```

```

to be based on the component that it's being injected into, however since
// DI happens before we've entered its
view, `getLView` will return the parent view instead.
const IView = getLView();
const tNode =
getCurrentTNode();
const nodeAtIndex = getComponentLViewByIndex(tNode.index, IView);
return
getOrCreateRenderer2(isLView(nodeAtIndex) ? nodeAtIndex : IView);
}
}
",
/**
 * @license
 * Copyright
 * Google LLC All Rights Reserved.
 * Use of this source code is governed by an MIT-style license that can be
 * found in the LICENSE file at https://angular.io/license
 */
import {defineInjectable} from
'./di/interface/defs';
import {SecurityContext} from './security';
/**
 * Sanitizer is used by the views to sanitize
 * potentially dangerous values.
 */
@publicApi
export abstract class Sanitizer {
 abstract sanitize(context:
 SecurityContext, value: { }|string|null): string|null;
 /**
 * @nocollapse
 */
 static prov = defineInjectable({
 token: Sanitizer,
 providedIn: 'root',
 factory: () => null,
 });
}
",
/**
 * @license
 * Copyright
 * Google
 * LLC All Rights Reserved.
 * Use of this source code is governed by an MIT-style license that can be
 * found
 * in the LICENSE file at https://angular.io/license
 */
/**
 * @description Represents the version of Angular
 */
@publicApi
export class Version {
 public readonly major: string;
 public readonly minor: string;
 public readonly patch: string;
 constructor(public full: string) {
 this.major = full.split('.')[0];
 this.minor =
full.split('.')[1];
 this.patch = full.split('.')[2].slice(2).join('.');
 }
}
/**
 * @publicApi
 */
export const
VERSION = new Version('11.0.2');
",
/**
 * @license
 * Copyright
 * Google LLC All Rights Reserved.
 * Use of this source code is governed by an MIT-style license that can be
 * found in the LICENSE file at
 * https://angular.io/license
 */
import {stringify} from './util/stringify';
import {isListLikeIterable,
iterateListLike} from './change_detection_util';
import {IterableChangeRecord, IterableChanges, IterableDiffer,
IterableDifferFactory, NgIterable, TrackByFunction} from './iterable_differs';
export class
DefaultIterableDifferFactory implements IterableDifferFactory {
 constructor() {}
 supports(obj:
Object|null|undefined): boolean {
 return isListLikeIterable(obj);
 }
 create<V>(trackByFn?:
TrackByFunction<V>): DefaultIterableDiffer<V> {
 return new DefaultIterableDiffer<V>(trackByFn);
 }
}
const trackByIdentity = (index: number, item: any) => item;
/**
 * @deprecated v4.0.0 - Should not be
 * part of public API.
 */
@publicApi
export class DefaultIterableDiffer<V> implements IterableDiffer<V>,
IterableChanges<V> {
 public readonly length: number = 0;
 // TODO(issue/24571): remove '!'.
 public
 readonly collection!: V[]|Iterable<V>|null;
 // Keeps track of the used records at any point in time (during & across
 `check()` calls)
 private _linkedRecords: _DuplicateMap<V>|null = null;
 // Keeps track of the removed records
 at any point in time during `check()` calls.
 private _unlinkedRecords: _DuplicateMap<V>|null = null;
 private
 _previousItHead: IterableChangeRecord<V>|null = null;
 private _itHead: IterableChangeRecord<V>|null =
 null;
 private _itTail: IterableChangeRecord<V>|null = null;
 private _additionsHead:
 IterableChangeRecord<V>|null = null;
 private _additionsTail: IterableChangeRecord<V>|null = null;
 private
 _movesHead: IterableChangeRecord<V>|null = null;
 private _movesTail: IterableChangeRecord<V>|null =
 null;
 private _removalsHead: IterableChangeRecord<V>|null = null;
 private _removalsTail:
 IterableChangeRecord<V>|null = null;
 // Keeps track of records where custom track by is the same, but item
 identity has changed
 private _identityChangesHead: IterableChangeRecord<V>|null = null;
 private
 _identityChangesTail: IterableChangeRecord<V>|null = null;
 private _trackByFn: TrackByFunction<V>;
 constructor(trackByFn?: TrackByFunction<V>) {
 this._trackByFn = trackByFn || trackByIdentity;
 }
 forEachItem(fn: (record: IterableChangeRecord<V>) => void) {
 let record: IterableChangeRecord<V>|null;
 for (record = this._itHead; record !== null; record = record._next) {
 fn(record);
 }
 }
 forEachOperation(fn: (item: IterableChangeRecord<V>, previousIndex: number|null, currentIndex:
 number|null) => void) {
 let nextIt = this._itHead;
 let nextRemove = this._removalsHead;
 let
 addRemoveOffset = 0;
 let moveOffsets: number[]|null = null;
 while (nextIt || nextRemove) {
 // Figure
 out which is the next record to process
 // Order: remove, add, move
 const record:
 IterableChangeRecord<V> = !nextRemove ||
 nextIt &&
 nextIt.currentIndex! <
 getNextIndex(nextRemove, addRemoveOffset, moveOffsets) ?
 nextIt :
 nextRemove;
 const
 adjPreviousIndex = getNextIndex(record, addRemoveOffset, moveOffsets);
 const currentIndex =
 record.currentIndex;
 // consume the item, and adjust the addRemoveOffset and update moveDistance if

```

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necessary\n if (record === nextRemove) {\n addRemoveOffset--;\n nextRemove =
nextRemove._nextRemoved;\n } else {\n nextIt = nextIt!._next;\n if (record.previousIndex === null) {\n
 addRemoveOffset++;\n } else {\n // INVARIANT: currentIndex < previousIndex\n if
(!moveOffsets) moveOffsets = [];\n const localMovePreviousIndex = adjPreviousIndex - addRemoveOffset;\n
 const localCurrentIndex = currentIndex! - addRemoveOffset;\n if (localMovePreviousIndex !=
localCurrentIndex) {\n for (let i = 0; i < localMovePreviousIndex; i++) {\n const offset = i <
moveOffsets.length ? moveOffsets[i] : (moveOffsets[i] = 0);\n const index = offset + i;\n if
(localCurrentIndex <= index && index < localMovePreviousIndex) {\n moveOffsets[i] = offset + 1;\n
 }\n }\n const previousIndex = record.previousIndex;\n moveOffsets[previousIndex] =
localCurrentIndex - localMovePreviousIndex;\n }\n }\n if (adjPreviousIndex !==
currentIndex) {\n fn(record, adjPreviousIndex, currentIndex);\n }\n }\n\n forEachPreviousItem(fn:
(record: IterableChangeRecord_<V>) => void) {\n let record: IterableChangeRecord_<V>|null;\n for (record =
this._previousItHead; record !== null; record = record._nextPrevious) {\n fn(record);\n }\n }\n\n forEachAddedItem(fn: (record: IterableChangeRecord_<V>) => void) {\n let record:
IterableChangeRecord_<V>|null;\n for (record = this._additionsHead; record !== null; record =
record._nextAdded) {\n fn(record);\n }\n }\n\n forEachMovedItem(fn: (record: IterableChangeRecord_<V>)
=> void) {\n let record: IterableChangeRecord_<V>|null;\n for (record = this._movesHead; record !== null;
record = record._nextMoved) {\n fn(record);\n }\n }\n\n forEachRemovedItem(fn: (record:
IterableChangeRecord_<V>) => void) {\n let record: IterableChangeRecord_<V>|null;\n for (record =
this._removalsHead; record !== null; record = record._nextRemoved) {\n fn(record);\n }\n }\n\n forEachIdentityChange(fn: (record: IterableChangeRecord_<V>) => void) {\n let record:
IterableChangeRecord_<V>|null;\n for (record = this._identityChangesHead; record !== null; record =
record._nextIdentityChange) {\n fn(record);\n }\n }\n\n diff(collection: NgIterable<V>|null|undefined):
DefaultIterableDiffer<V>|null {\n if (collection === null) collection = [];\n if (!isListLikeIterable(collection)) {\n
 throw new Error(\n `Error trying to diff '${stringify(collection)}'. Only arrays and iterables are allowed`);\n
 }\n\n if (this.check(collection)) {\n return this;\n } else {\n return null;\n }\n }\n\n onDestory() {\n\n }\n\n check(collection: NgIterable<V>): boolean {\n this._reset();\n\n let record: IterableChangeRecord_<V>|null =
this._itHead;\n let maybeDirty: boolean = false;\n let index: number;\n let item: V;\n let itemTrackBy:
any;\n if (Array.isArray(collection)) {\n (this as {length: number}).length = collection.length;\n\n for (let
index = 0; index < this.length; index++) {\n item = collection[index];\n itemTrackBy =
this._trackByFn(index, item);\n if (record === null || !Object.is(record.trackById, itemTrackBy)) {\n
 record = this._mismatch(record, item, itemTrackBy, index);\n maybeDirty = true;\n } else {\n if
(maybeDirty) {\n // TODO(misko): can we limit this to duplicates only?\n record =
this._verifyReinsertion(record, item, itemTrackBy, index);\n }\n if (!Object.is(record.item, item))
this._addIdentityChange(record, item);\n }\n record = record._next;\n }\n } else {\n index = 0;\n iterateListLike(collection, (item: V) => {\n itemTrackBy = this._trackByFn(index, item);\n if (record ===
null || !Object.is(record.trackById, itemTrackBy)) {\n record = this._mismatch(record, item, itemTrackBy,
index);\n maybeDirty = true;\n } else {\n if (maybeDirty) {\n // TODO(misko): can we limit
this to duplicates only?\n record = this._verifyReinsertion(record, item, itemTrackBy, index);\n }\n if (!Object.is(record.item, item))
this._addIdentityChange(record, item);\n }\n record = record._next;\n });\n (this as {length: number}).length = index;\n }\n\n this._truncate(record);\n (this as
{collection: V[] | Iterable<V>}).collection = collection;\n return this.isDirty;\n }\n\n /* CollectionChanges is
considered dirty if it has any additions, moves, removals, or identity\n * changes.\n */\n get isDirty(): boolean {\n
 return this._additionsHead !== null || this._movesHead !== null ||\n this._removalsHead !== null ||\n this._identityChangesHead !== null;\n }\n\n /**\n * Reset the state of the change objects to show no changes.
This means set previousKey to\n * currentKey, and clear all of the queues (additions, moves, removals).\n * Set
the previousIndexes of moved and added items to their currentIndexes\n * Reset the list of additions, moves and
removals\n */\n * @internal\n * ^\n _reset() {\n if (this.isDirty) {\n let record:

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IterableChangeRecord_<V>|null;|n\n for (record = this._previousItHead = this._itHead; record !== null; record =
record._next) {\n record._nextPrevious = record._next;|n\n }\n\n for (record = this._additionsHead; record
!== null; record = record._nextAdded) {\n record.previousIndex = record.currentIndex;|n\n }\n
this._additionsHead = this._additionsTail = null;|n\n for (record = this._movesHead; record !== null; record =
record._nextMoved) {\n record.previousIndex = record.currentIndex;|n\n }\n this._movesHead =
this._movesTail = null;|n\n this._removalsHead = this._removalsTail = null;|n\n this._identityChangesHead =
this._identityChangesTail = null;|n\n // TODO(vicb): when assert gets supported|n\n // assert(!this.isDirty);|n
}\n }\n\n /**|n\n * This is the core function which handles differences between collections.|n\n *|n\n * - `record` is
the record which we saw at this position last time. If null then it is a new|n\n * item.|n\n * - `item` is the current item
in the collection|n\n * - `index` is the position of the item in the collection|n\n *|n\n * @internal|n\n */|n
mismatch(record: IterableChangeRecord<V>|null, item: V, itemTrackBy: any, index: number):|n
IterableChangeRecord_<V> {\n // The previous record after which we will append the current one.|n\n let
previousRecord: IterableChangeRecord_<V>|null;|n\n if (record === null) {\n previousRecord = this._itTail;|n
 } else {\n previousRecord = record._prev;|n\n // Remove the record from the collection since we know it does
not match the item.|n\n this._remove(record);|n\n }\n\n // Attempt to see if we have seen the item before.|n
record = this._linkedRecords === null ? null : this._linkedRecords.get(itemTrackBy, index);|n\n if (record !== null)
{\n // We have seen this before, we need to move it forward in the collection.|n\n // But first we need to check if
identity changed, so we can update in view if necessary|n\n if (!Object.is(record.item, item))
this._addIdentityChange(record, item);|n\n this._moveAfter(record, previousRecord, index);|n\n } else {\n //
Never seen it, check evicted list.|n\n record = this._unlinkedRecords === null ? null :
this._unlinkedRecords.get(itemTrackBy, null);|n\n if (record !== null) {\n // It is an item which we have
evicted earlier: reinsert it back into the list.|n\n // But first we need to check if identity changed, so we can update
in view if necessary|n\n if (!Object.is(record.item, item)) this._addIdentityChange(record, item);|n\n
this._reinsertAfter(record, previousRecord, index);|n\n } else {\n // It is a new item: add it.|n\n record =|n
 this._addAfter(new IterableChangeRecord_<V>(item, itemTrackBy), previousRecord, index);|n\n }\n\n }\n\n
return record;|n\n }\n\n /**|n\n * This check is only needed if an array contains duplicates. (Short circuit of nothing
dirty)|n\n *|n\n * Use case: `[a, a] => [b, a, a]|n\n *|n\n * If we did not have this check then the insertion of `b`
would:|n\n * 1) evict first `a`|n\n * 2) insert `b` at `0` index.|n\n * 3) leave `a` at index `1` as is. <-- this is
wrong|n\n * 3) reinsert `a` at index 2. <-- this is wrong!|n\n *|n\n * The correct behavior is:|n\n * 1) evict first `a`|n
* 2) insert `b` at `0` index.|n\n * 3) reinsert `a` at index 1.|n\n * 3) move `a` at from `1` to `2`.|n\n *|n\n *|n\n
Double check that we have not evicted a duplicate item. We need to check if the item type may|n\n * have already
been removed:|n\n * The insertion of b will evict the first 'a'. If we don't reinsert it now it will be reinserted|n\n * at
the end. Which will show up as the two 'a's switching position. This is incorrect, since a|n\n * better way to think of
it is as insert of 'b' rather than switch 'a' with 'b' and then add 'a'|n\n * at the end.|n\n *|n\n * @internal|n\n */|n
verifyReinsertion(record: IterableChangeRecord<V>, item: V, itemTrackBy: any, index: number):|n
IterableChangeRecord_<V> {\n let reinsertRecord: IterableChangeRecord_<V>|null =|n
this._unlinkedRecords === null ? null : this._unlinkedRecords.get(itemTrackBy, null);|n\n if (reinsertRecord !==
null) {\n record = this._reinsertAfter(reinsertRecord, record._prev!, index);|n\n } else if (record.currentIndex !=
index) {\n record.currentIndex = index;|n\n this._addToMoves(record, index);|n\n }\n\n return record;|n\n }\n\n
/**|n\n * Get rid of any excess {@link IterableChangeRecord_}s from the previous collection|n\n *|n\n * - `record`
The first excess {@link IterableChangeRecord_}.|n\n *|n\n * @internal|n\n */|n\n _truncate(record:
IterableChangeRecord_<V>|null) {\n // Anything after that needs to be removed;|n\n while (record !== null) {\n
const nextRecord: IterableChangeRecord_<V>|null = record._next;|n
this._addToRemovals(this._unlink(record));|n\n record = nextRecord;|n\n }\n\n if (this._unlinkedRecords !== null)
{\n this._unlinkedRecords.clear();|n\n }\n\n if (this._additionsTail !== null) {\n
this._additionsTail._nextAdded = null;|n\n }\n\n if (this._movesTail !== null) {\n this._movesTail._nextMoved =
null;|n\n }\n\n if (this._itTail !== null) {\n this._itTail._next = null;|n\n }\n\n if (this._removalsTail !== null) {\n
this._removalsTail._nextRemoved = null;|n\n }\n\n if (this._identityChangesTail !== null) {\n

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this._identityChangesTail._nextIdentityChange = null;\n }\n }\n\n /** @internal *\n _reinsertAfter(\n record:
IterableChangeRecord_<V>, prevRecord: IterableChangeRecord_<V>|null,\n index: number):
IterableChangeRecord_<V> {\n if (this._unlinkedRecords !== null) {\n
this._unlinkedRecords.remove(record);\n }\n const prev = record._prevRemoved;\n const next =
record._nextRemoved;\n\n if (prev === null) {\n this._removalsHead = next;\n } else {\n
prev._nextRemoved = next;\n }\n if (next === null) {\n this._removalsTail = prev;\n } else {\n
next._prevRemoved = prev;\n }\n\n this._insertAfter(record, prevRecord, index);\n this._addToMoves(record,
index);\n return record;\n }\n\n /** @internal *\n _moveAfter(\n record: IterableChangeRecord_<V>,
prevRecord: IterableChangeRecord_<V>|null,\n index: number): IterableChangeRecord_<V> {\n
this._unlink(record);\n this._insertAfter(record, prevRecord, index);\n this._addToMoves(record, index);\n
return record;\n }\n\n /** @internal *\n _addAfter(\n record: IterableChangeRecord_<V>, prevRecord:
IterableChangeRecord_<V>|null,\n index: number): IterableChangeRecord_<V> {\n this._insertAfter(record,
prevRecord, index);\n\n if (this._additionsTail === null) {\n // TODO(vicb):\n // assert(this._additionsHead
=== null);\n this._additionsTail = this._additionsHead = record;\n } else {\n // TODO(vicb):\n //
assert(_additionsTail._nextAdded === null);\n // assert(record._nextAdded === null);\n this._additionsTail =
this._additionsTail._nextAdded = record;\n }\n return record;\n }\n\n /** @internal *\n _insertAfter(\n
record: IterableChangeRecord_<V>, prevRecord: IterableChangeRecord_<V>|null,\n index: number):
IterableChangeRecord_<V> {\n // TODO(vicb):\n // assert(record !== prevRecord);\n // assert(record._next ===
null);\n // assert(record._prev === null);\n\n const next: IterableChangeRecord_<V>|null =\n prevRecord
=== null ? this._itHead : prevRecord._next;\n // TODO(vicb):\n // assert(next !== record);\n //
assert(prevRecord !== record);\n record._next = next;\n record._prev = prevRecord;\n if (next === null) {\n
this._itTail = record;\n } else {\n next._prev = record;\n }\n if (prevRecord === null) {\n this._itHead =
record;\n } else {\n prevRecord._next = record;\n }\n\n if (this._linkedRecords === null) {\n
this._linkedRecords = new _DuplicateMap<V>();\n }\n this._linkedRecords.put(record);\n\n record.currentIndex = index;\n return record;\n }\n\n /** @internal *\n _remove(record:
IterableChangeRecord_<V>): IterableChangeRecord_<V> {\n return
this._addToRemovals(this._unlink(record));\n }\n\n /** @internal *\n _unlink(record:
IterableChangeRecord_<V>): IterableChangeRecord_<V> {\n if (this._linkedRecords !== null) {\n
this._linkedRecords.remove(record);\n }\n\n const prev = record._prev;\n const next = record._next;\n\n //
TODO(vicb):\n // assert((record._prev = null) === null);\n // assert((record._next = null) === null);\n\n if (prev
=== null) {\n this._itHead = next;\n } else {\n prev._next = next;\n }\n if (next === null) {\n
this._itTail = prev;\n } else {\n next._prev = prev;\n }\n\n return record;\n }\n\n /** @internal *\n
addToMoves(record: IterableChangeRecord<V>, toIndex: number): IterableChangeRecord_<V> {\n //
TODO(vicb):\n // assert(record._nextMoved === null);\n\n if (record.previousIndex === toIndex) {\n return
record;\n }\n\n if (this._movesTail === null) {\n // TODO(vicb):\n // assert(_movesHead === null);\n
this._movesTail = this._movesHead = record;\n } else {\n // TODO(vicb):\n //
assert(_movesTail._nextMoved === null);\n this._movesTail = this._movesTail._nextMoved = record;\n }\n\n
return record;\n }\n\n private _addToRemovals(record: IterableChangeRecord_<V>): IterableChangeRecord_<V>
{\n if (this._unlinkedRecords === null) {\n this._unlinkedRecords = new _DuplicateMap<V>();\n }\n
this._unlinkedRecords.put(record);\n record.currentIndex = null;\n record._nextRemoved = null;\n\n if
(this._removalsTail === null) {\n // TODO(vicb):\n // assert(_removalsHead === null);\n
this._removalsTail = this._removalsHead = record;\n } else {\n //
TODO(vicb):\n // assert(_removalsTail._nextRemoved === null);\n // assert(record._nextRemoved ===
null);\n record._prevRemoved = this._removalsTail;\n this._removalsTail = this._removalsTail._nextRemoved
= record;\n }\n return record;\n }\n\n /** @internal *\n _addIdentityChange(record:
IterableChangeRecord_<V>, item: V) {\n record.item = item;\n if (this._identityChangesTail === null) {\n
this._identityChangesTail = this._identityChangesHead = record;\n } else {\n this._identityChangesTail =
this._identityChangesTail._nextIdentityChange = record;\n }\n return record;\n }\n}\n\nexport class

```

```

IterableChangeRecord_<V> implements IterableChangeRecord<V> {\n currentIndex: number|null = null;\n previousIndex: number|null = null;\n /** @internal */\n _nextPrevious: IterableChangeRecord_<V>|null = null;\n /** @internal */\n _prev: IterableChangeRecord_<V>|null = null;\n /** @internal */\n _next: IterableChangeRecord_<V>|null = null;\n /** @internal */\n _prevDup: IterableChangeRecord_<V>|null = null;\n /** @internal */\n _nextDup: IterableChangeRecord_<V>|null = null;\n /** @internal */\n _prevRemoved: IterableChangeRecord_<V>|null = null;\n /** @internal */\n _nextRemoved: IterableChangeRecord_<V>|null = null;\n /** @internal */\n _nextAdded: IterableChangeRecord_<V>|null = null;\n /** @internal */\n _nextMoved: IterableChangeRecord_<V>|null = null;\n /** @internal */\n _nextIdentityChange: IterableChangeRecord_<V>|null = null;\n\n constructor(public item: V, public trackById: any) {} }\n\n// A linked list of IterableChangeRecords with the same IterableChangeRecord_item\n\nclass _DuplicateItemRecordList<V> {\n /** @internal */\n _head: IterableChangeRecord_<V>|null = null;\n /** @internal */\n _tail: IterableChangeRecord_<V>|null = null;\n\n /**\n * Append the record to the list of duplicates.\n *\n * Note: by design all records in the list of duplicates hold the same value in record.item.\n */\n add(record: IterableChangeRecord_<V>): void {\n if (this._head === null) {\n this._head = this._tail = record;\n record._nextDup = null;\n record._prevDup = null;\n } else {\n // TODO(vicb):\n // assert(record.item === _head.item ||\n // record.item is num && record.item.isNaN && _head.item is num && _head.item.isNaN);\n this._tail!._nextDup = record;\n record._prevDup = this._tail;\n record._nextDup = null;\n this._tail = record;\n }\n }\n\n // Returns a IterableChangeRecord_ having\n IterableChangeRecord_ trackById == trackById and\n // IterableChangeRecord_.currentIndex >= atOrAfterIndex\n get(trackById: any, atOrAfterIndex: number|null): IterableChangeRecord_<V>|null {\n let record: IterableChangeRecord_<V>|null;\n for (record = this._head; record !== null; record = record._nextDup) {\n if ((atOrAfterIndex === null || atOrAfterIndex <= record.currentIndex!) &&\n Object.is(record.trackById, trackById)) {\n return record;\n }\n }\n return null;\n }\n\n /**\n * Remove one {@link IterableChangeRecord_} from the list of duplicates.\n *\n * Returns whether the list of duplicates is empty.\n */\n remove(record: IterableChangeRecord_<V>): boolean {\n // TODO(vicb):\n // assert(() {\n // // verify that the record being removed is in the list.\n // for (IterableChangeRecord_ cursor = _head; cursor != null; cursor = cursor._nextDup) {\n // // if (identical(cursor, record)) return true;\n // // }\n // // return false;\n // });\n\n const prev: IterableChangeRecord_<V>|null = record._prevDup;\n const next: IterableChangeRecord_<V>|null = record._nextDup;\n if (prev === null) {\n this._head = next;\n } else {\n prev._nextDup = next;\n }\n if (next === null) {\n this._tail = prev;\n } else {\n next._prevDup = prev;\n }\n return this._head === null;\n }\n}\n\nclass _DuplicateMap<V> {\n map = new Map<any, _DuplicateItemRecordList<V>>();\n\n put(record: IterableChangeRecord_<V>) {\n const key = record.trackById;\n\n let duplicates = this.map.get(key);\n if (!duplicates) {\n duplicates = new _DuplicateItemRecordList<V>();\n this.map.set(key, duplicates);\n }\n duplicates.add(record);\n }\n\n /**\n * Retrieve the `value` using key. Because the IterableChangeRecord_ value may be one which we\n * have already iterated over, we use the `atOrAfterIndex` to pretend it is not there.\n *\n * Use case: `[a, b, c, a, a]` if we are at index `3` which is the second `a` then asking if we\n * have any more `a`s needs to return the second `a`.\n */\n get(trackById: any, atOrAfterIndex: number|null): IterableChangeRecord_<V>|null {\n const key = trackById;\n const recordList = this.map.get(key);\n return recordList ? recordList.get(trackById, atOrAfterIndex) : null;\n }\n\n /**\n * Removes a {@link IterableChangeRecord_} from the list of duplicates.\n *\n * The list of duplicates also is removed from the map if it gets empty.\n */\n remove(record: IterableChangeRecord_<V>):\n IterableChangeRecord_<V> {\n const key = record.trackById;\n const recordList: _DuplicateItemRecordList<V> = this.map.get(key)!;\n // Remove the list of duplicates when it gets empty\n if (recordList.remove(record)) {\n this.map.delete(key);\n }\n return record;\n }\n\n get isEmpty(): boolean {\n return this.map.size === 0;\n }\n\n clear() {\n this.map.clear();\n }\n\n function getPreviousIndex(item: any, addRemoveOffset: number, moveOffsets: number[]|null): number {\n const previousIndex = item.previousIndex;\n if (previousIndex === null) return previousIndex;\n let moveOffset = 0;\n if (moveOffsets && previousIndex < moveOffsets.length) {\n moveOffset = moveOffsets[previousIndex];\n }\n return previousIndex +

```



```

addRemoveOffset + moveOffset;\n}\n", "/*\n * @license\n * Copyright Google LLC All Rights Reserved.\n *\n *
Use of this source code is governed by an MIT-style license that can be\n * found in the LICENSE file at
https://angular.io/license\n *\n\nimport {stringify} from '../util/stringify';\nimport {isObject} from
'../change_detection_util';\nimport {KeyValueChangeRecord, KeyValueChanges, KeyValueDiffer,
KeyValueDifferFactory} from './keyvalue_differs';\n\n\nexport class DefaultKeyValueDifferFactory<K, V>
implements KeyValueDifferFactory {\n constructor() {}\n supports(obj: any): boolean {\n return obj instanceof
Map || isObject(obj);\n }\n create<K, V>(): KeyValueDiffer<K, V> {\n return new
DefaultKeyValueDiffer<K, V>();\n }\n}\n\n\nexport class DefaultKeyValueDiffer<K, V> implements
KeyValueDiffer<K, V>, KeyValueChanges<K, V> {\n private _records = new Map<K,
KeyValueChangeRecord<K, V>>();\n private _mapHead: KeyValueChangeRecord<K, V>|null = null;\n //
_appendAfter is used in the check loop\n private _appendAfter: KeyValueChangeRecord<K, V>|null = null;\n
private _previousMapHead: KeyValueChangeRecord<K, V>|null = null;\n private _changesHead:
KeyValueChangeRecord<K, V>|null = null;\n private _changesTail: KeyValueChangeRecord<K, V>|null =
null;\n private _additionsHead: KeyValueChangeRecord<K, V>|null = null;\n private _additionsTail:
KeyValueChangeRecord<K, V>|null = null;\n private _removalsHead: KeyValueChangeRecord<K, V>|null =
null;\n private _removalsTail: KeyValueChangeRecord<K, V>|null = null;\n\n get isDirty(): boolean {\n return
this._additionsHead !== null || this._changesHead !== null ||\n this._removalsHead !== null;\n }\n\n forEachItem(fn: (r: KeyValueChangeRecord<K, V>) => void) {\n let record: KeyValueChangeRecord<K,
V>|null;\n for (record = this._mapHead; record !== null; record = record._next) {\n fn(record);\n }\n }\n\n forEachPreviousItem(fn: (r: KeyValueChangeRecord<K, V>) => void) {\n let record:
KeyValueChangeRecord<K, V>|null;\n for (record = this._previousMapHead; record !== null; record =
record._nextPrevious) {\n fn(record);\n }\n }\n\n forEachChangedItem(fn: (r: KeyValueChangeRecord<K,
V>) => void) {\n let record: KeyValueChangeRecord<K, V>|null;\n for (record = this._changesHead; record
!== null; record = record._nextChanged) {\n fn(record);\n }\n }\n\n forEachAddedItem(fn: (r:
KeyValueChangeRecord<K, V>) => void) {\n let record: KeyValueChangeRecord<K, V>|null;\n for (record =
this._additionsHead; record !== null; record = record._nextAdded) {\n fn(record);\n }\n }\n\n
forEachRemovedItem(fn: (r: KeyValueChangeRecord<K, V>) => void) {\n let record:
KeyValueChangeRecord<K, V>|null;\n for (record = this._removalsHead; record !== null; record =
record._nextRemoved) {\n fn(record);\n }\n }\n\n diff(map?: Map<any, any>|{[k: string]: any}|null): any {\n
if (!map) {\n map = new Map();\n } else if (!(map instanceof Map || isObject(map))) {\n throw new
Error(\n `Error trying to diff '${stringify(map)}'. Only maps and objects are allowed`);\n }\n\n return
this.check(map) ? this : null;\n }\n\n onDestroy() {}*\n * Check the current state of the map vs the
previous.\n * The algorithm is optimised for when the keys do no change.\n *\n check(map: Map<any, any>|{[k:
string]: any}): boolean {\n this._reset();\n\n let insertBefore = this._mapHead;\n this._appendAfter = null;\n\n
this._forEach(map, (value: any, key: any) => {\n if (insertBefore && insertBefore.key === key) {\n
this._maybeAddToChanges(insertBefore, value);\n this._appendAfter = insertBefore;\n insertBefore =
insertBefore._next;\n } else {\n const record = this._getOrCreateRecordForKey(key, value);\n
insertBefore = this._insertBeforeOrAppend(insertBefore, record);\n }\n });\n\n // Items remaining at the end
of the list have been deleted\n if (insertBefore) {\n if (insertBefore._prev) {\n insertBefore._prev._next =
null;\n }\n\n this._removalsHead = insertBefore;\n\n for (let record: KeyValueChangeRecord<K, V>|null
= insertBefore; record !== null;\n record = record._nextRemoved) {\n if (record === this._mapHead) {\n
this._mapHead = null;\n }\n this._records.delete(record.key);\n record._nextRemoved =
record._next;\n record.previousValue = record.currentValue;\n record.currentValue = null;\n\n
record._prev = null;\n record._next = null;\n }\n }\n\n // Make sure tails have no next records from
previous runs\n if (this._changesTail) this._changesTail._nextChanged = null;\n if (this._additionsTail)
this._additionsTail._nextAdded = null;\n\n return this.isDirty;\n }\n\n /*\n * Inserts a record before `before` or
append at the end of the list when `before` is null.\n *\n * Notes:\n * - This method appends at
`this._appendAfter`,\n * - This method updates `this._appendAfter`,\n * - The return value is the new value for the

```

```

insertion pointer.\n
 */\n
 private _insertBeforeOrAppend(\n
 before: KeyValueChangeRecord_<K, V>|null,\n
 record: KeyValueChangeRecord_<K, V>): KeyValueChangeRecord_<K, V>|null {\n
 if (before) {\n
 const prev = before._prev;\n
 record._next = before;\n
 record._prev = prev;\n
 before._prev = record;\n
 if (prev) {\n
 prev._next = record;\n
 }\n
 if (before === this._mapHead) {\n
 this._mapHead = record;\n
 }\n
 this._appendAfter = before;\n
 return before;\n
 }\n
 if (this._appendAfter) {\n
 this._appendAfter._next = record;\n
 record._prev = this._appendAfter;\n
 } else {\n
 this._mapHead = record;\n
 }\n
 this._appendAfter = record;\n
 return null;\n
 }\n
 private _getOrCreateRecordForKey(key: K, value: V):\n
 KeyValueChangeRecord_<K, V> {\n
 if (this._records.has(key)) {\n
 const record = this._records.get(key)!;\n
 this._maybeAddToChanges(record, value);\n
 const prev = record._prev;\n
 const next = record._next;\n
 if (prev) {\n
 prev._next = next;\n
 }\n
 if (next) {\n
 next._prev = prev;\n
 }\n
 record._next = null;\n
 record._prev = null;\n
 return record;\n
 }\n
 const record = new KeyValueChangeRecord_<K, V>(key);\n
 this._records.set(key, record);\n
 record.currentValue = value;\n
 this._addToAdditions(record);\n
 return record;\n
 }\n
 /** @internal */\n
 _reset() {\n
 if (this.isDirty) {\n
 let record: KeyValueChangeRecord_<K, V>|null;\n
 // let `_previousMapHead` contain the state of the map before the changes\n
 this._previousMapHead = this._mapHead;\n
 for (record = this._previousMapHead; record !== null; record = record._next) {\n
 record._nextPrevious = record._next;\n
 }\n
 // Update `record.previousValue` with the value of the item before the changes\n
 // We need to update all changed items (that's those which have been added and changed)\n
 for (record = this._changesHead; record !== null; record = record._nextChanged) {\n
 record.previousValue = record.currentValue;\n
 }\n
 for (record = this._additionsHead; record !== null; record = record._nextAdded) {\n
 record.previousValue = record.currentValue;\n
 }\n
 this._changesHead = this._changesTail = null;\n
 this._additionsHead = this._additionsTail = null;\n
 this._removalsHead = null;\n
 }\n
 }\n
 // Add the record or a given key to the list of changes only when the value has actually changed\n
 private _maybeAddToChanges(record: KeyValueChangeRecord_<K, V>, newValue: any): void {\n
 if (!Object.is(newValue, record.currentValue)) {\n
 record.previousValue = record.currentValue;\n
 record.currentValue = newValue;\n
 this._addToChanges(record);\n
 }\n
 }\n
 private _addToAdditions(record: KeyValueChangeRecord_<K, V>) {\n
 if (this._additionsHead === null) {\n
 this._additionsHead = this._additionsTail = record;\n
 } else {\n
 this._additionsTail!._nextAdded = record;\n
 this._additionsTail = record;\n
 }\n
 }\n
 private _addToChanges(record: KeyValueChangeRecord_<K, V>) {\n
 if (this._changesHead === null) {\n
 this._changesHead = this._changesTail = record;\n
 } else {\n
 this._changesTail!._nextChanged = record;\n
 this._changesTail = record;\n
 }\n
 }\n
 /** @internal */\n
 private _forEach<K, V>(obj: Map<K, V>|{[k: string]: V}, fn: (v: V, k: any) => void) {\n
 if (obj instanceof Map) {\n
 obj.forEach(fn);\n
 } else {\n
 Object.keys(obj).forEach(k => fn(obj[k], k));\n
 }\n
 }\n
 }\n
 class\n
 KeyValueChangeRecord_<K, V> implements KeyValueChangeRecord<K, V> {\n
 previousValue: V|null = null;\n
 currentValue: V|null = null;\n
 /** @internal */\n
 nextPrevious: KeyValueChangeRecord<K, V>|null = null;\n
 /** @internal */\n
 next: KeyValueChangeRecord<K, V>|null = null;\n
 /** @internal */\n
 prev: KeyValueChangeRecord<K, V>|null = null;\n
 /** @internal */\n
 nextAdded: KeyValueChangeRecord<K, V>|null = null;\n
 /** @internal */\n
 nextRemoved: KeyValueChangeRecord<K, V>|null = null;\n
 /** @internal */\n
 nextChanged: KeyValueChangeRecord<K, V>|null = null;\n
 constructor(public key: K) {\n
 }\n
 }\n
 /**\n
 * @license\n
 * Copyright Google LLC All Rights Reserved.\n
 * * Use of this source code is governed by an MIT-style license that can be\n
 * * found in the LICENSE file at https://angular.io/license\n
 */\n
 import\n
 {defineInjectable} from '../di/interface/defs';\n
 import {StaticProvider} from '../di/interface/provider';\n
 import\n
 {Optional, SkipSelf} from '../di/metadata';\n
 import {DefaultIterableDifferFactory} from\n
 '../differs/default_iterable_differ';\n
 /**\n
 * A type describing supported iterable types.\n
 */\n
 @publicApi\n
 export type NgIterable<T> = Array<T>|Iterable<T>;\n
 /**\n
 * A strategy for tracking changes over time to an iterable. Used by { @link NgForOf } to\n
 * respond to changes in an iterable by effecting equivalent changes in the DOM.\n
 */\n
 @publicApi\n
 export interface IterableDiffer<V> {\n
 /**\n
 * Compute a difference between the previous state and the new `object` state.\n
 * @param object containing the new value.\n
 * @returns an object describing the difference. The return value is only valid until the next\n
 * `diff()` invocation.\n
 */\n
 }

```







creates multiple @extends in Closure annotations, which is illegal. This workaround fixes the multiple @extends by making the annotation @implements instead

```

export interface
viewEngine_ChangeDetectorRef_interface extends viewEngine_ChangeDetectorRef {}
export class
ViewRef<T> implements viewEngine_EmbeddedViewRef<T>, viewEngine_InternalViewRef,
viewEngine_ChangeDetectorRef_interface {
 private _appRef: ViewRefTracker|null = null;
 private
_viewContainerRef: viewEngine_ViewContainerRef|null = null;
 get rootNodes(): any[] {
 const IView =
this._IView;
 const tView = IView[TVIEW];
 return collectNativeNodes(tView, IView, tView.firstChild, []);
 }
 constructor(
 /**
 * This represents `LView` associated with the component when ViewRef is a
ChangeDetectorRef.
 *
 * When ViewRef is created for a dynamic component, this also represents the
`LView` for the
 * component.
 *
 * For a "regular" ViewRef created for an embedded view, this is
the `LView` for the embedded
 * view.
 *
 * @internal
 */
 public _IView: LView,
 /**
 * This represents the `LView` associated with the point where `ChangeDetectorRef` was
requested.
 *
 * This may be different from `_IView` if the `_cdRefInjectingView` is an embedded view.
 */
 private _cdRefInjectingView?: LView) {}
 get context(): T {
 return this._IView[CONTEXT] as
T;
 }
 get destroyed(): boolean {
 return (this._IView[FLAGS] & LViewFlags.Destroyed) ===
LViewFlags.Destroyed;
 }
 destroy(): void {
 if (this._appRef) {
 this._appRef.detachView(this);
 }
 else if (this._viewContainerRef) {
 const index = this._viewContainerRef.indexOf(this);
 if (index > -1) {
 this._viewContainerRef.detach(index);
 }
 this._viewContainerRef = null;
 }
 destroyLView(this._IView[TVIEW], this._IView);
 }
 onDestroy(callback: Function) {
 storeCleanupWithContext(this._IView[TVIEW], this._IView, null, callback);
 }
 /**
 * Marks a view and all
of its ancestors dirty.
 *
 * It also triggers change detection by calling `scheduleTick` internally, which
coalesces
 * multiple `markForCheck` calls into one change detection run.
 *
 * This can be used to ensure
an { @link ChangeDetectionStrategy#OnPush OnPush } component is
 * checked when it needs to be re-rendered
but the two normal triggers haven't marked it
 * dirty (i.e. inputs haven't changed and events haven't fired in the
view).
 *
 * <!-- TODO: Add a link to a chapter on OnPush components -->
 * @usageNotes
 * ###
Example
 *
 * ```typescript
 * @Component({
 * selector: 'my-app',
 * template: `Number of ticks:
{{numberOfTicks}}`
 * changeDetection: ChangeDetectionStrategy.OnPush,
 * })
 * class AppComponent
 * {
 * numberOfTicks = 0;
 * constructor(private ref: ChangeDetectorRef) {
 * setInterval(() => {
 * this.numberOfTicks++;
 * // the following is required, otherwise the view will not be updated
 * this.ref.markForCheck();
 * }, 1000);
 * }
 * markForCheck(): void {
 * markViewDirty(this._cdRefInjectingView || this._IView);
 * }
 * }
 *
 * Detaches the view from the change
detection tree.
 *
 * Detached views will not be checked during change detection runs until they are
re-
 * attached, even if they are dirty. `detach` can be used in combination with
 * { @link
ChangeDetectorRef#detectChanges detectChanges } to implement local change
 * detection checks.
 *
 * <!--
TODO: Add a link to a chapter on detach/reattach/local digest -->
 * <!-- TODO: Add a live demo once
ref.detectChanges is merged into master -->
 * @usageNotes
 * ###
Example
 *
 * The following
example defines a component with a large list of readonly data.
 *
 * Imagine the data changes constantly, many
times per second. For performance reasons,
 * we want to check and update the list every five seconds. We can do
that by detaching
 * the component's change detector and doing a local check every five seconds.
 *
 * ```typescript
 * class DataProvider {
 * // in a real application the returned data will be different every time
 * get data() {
 * return [1,2,3,4,5];
 * }
 * }
 * @Component({
 * selector: 'giant-list',
 * template: `
<li *ngFor="let d of dataProvider.data">Data {{d}}
 * `
 * })
 * class GiantList
 * {
 * constructor(private ref: ChangeDetectorRef, private dataProvider: DataProvider) {
 * ref.detach();
 * setInterval(() => {
 * this.ref.detectChanges();
 * }, 5000);
 * }
 * }
 * @Component({
 * selector: 'app',
 * providers: [DataProvider],
 * template: `
<giant-list><giant-list>
 * `
 * })
 * class App {
 * }
 *
 * detach(): void {
 * this._IView[FLAGS] &= ~LViewFlags.Attached;
 * }
 *
 * Re-attaches a view to the change detection tree.
 *
 * This can be used to re-attach views that
were previously detached from the tree
 * using { @link ChangeDetectorRef#detach detach }. Views are attached

```

to the tree by default.

```

 * <!-- TODO: Add a link to a chapter on detach/reattach/local digest -->
 * @usageNotes
 * ### Example
 * The following example creates a component displaying `live` data. The
 * component will detach its change detector from the main change detector tree when the component's live
 * property is set to false.
 * ```typescript
 * class DataProvider {
 * data = 1;
 * constructor() {
 * setInterval(() => {
 * this.data = this.data * 2;
 * }, 500);
 * }
 * }
 * @Component({
 * selector: 'live-data',
 * inputs: ['live'],
 * template: 'Data: {{dataProvider.data}}'
 * })
 * class LiveData {
 * constructor(private ref: ChangeDetectorRef, private dataProvider: DataProvider) {}
 * set live(value) {
 * if (value) {
 * this.ref.reattach();
 * } else {
 * this.ref.detach();
 * }
 * }
 * }
 * @Component({
 * selector: 'my-app',
 * providers: [DataProvider],
 * template: `
 * Live Update: <input type="checkbox" [(ngModel)]="live">
 * <live-data
 * [live]="live"><live-data>
 * `
 * })
 * class AppComponent {
 * live = true;
 * }
 * ```
 * reattach(): void {
 * this._lView[FLAGS] |= LViewFlags.Attached;
 * }
 * /**
 * Checks the view and its
 * children.
 * This can also be used in combination with {@link ChangeDetectorRef#detach detach} to
 * implement local change detection checks.
 * <!-- TODO: Add a link to a chapter on
 * detach/reattach/local digest -->
 * <!-- TODO: Add a live demo once ref.detectChanges is merged into master --
 * >
 * @usageNotes
 * ### Example
 * The following example defines a component with a large list
 * of readonly data. Imagine, the data changes constantly, many times per second. For performance reasons,
 * we want to check and update the list every five seconds. We can do that by detaching the component's
 * change detector and doing a local change detection check every five seconds. See {@link
 * ChangeDetectorRef#detach detach} for more information.
 * ^ detectChanges(): void {
 * detectChangesInternal(this._lView[TVIEW], this._lView, this.context);
 * }
 * /**
 * Checks the change
 * detector and its children, and throws if any changes are detected.
 * This is used in development mode to
 * verify that running change detection doesn't introduce other changes.
 * ^ checkNoChanges(): void {
 * checkNoChangesInternal(this._lView[TVIEW], this._lView, this.context);
 * }
 * attachToViewContainerRef(vcRef: viewEngine_ViewContainerRef) {
 * if (this._appRef) {
 * throw new
 * Error("This view is already attached directly to the ApplicationRef!");
 * }
 * this._viewContainerRef = vcRef;
 * }
 * detachFromAppRef() {
 * this._appRef = null;
 * renderDetachView(this._lView[TVIEW], this._lView);
 * }
 * attachToAppRef(appRef: ViewRefTracker) {
 * if (this._viewContainerRef) {
 * throw new Error("This
 * view is already attached to a ViewContainer!");
 * }
 * this._appRef = appRef;
 * }
 * }
 * @internal
 * ^next
 * class RootViewRef<T> extends ViewRef<T> {
 * constructor(_view: LView) {
 * super(_view);
 * }
 * detectChanges(): void {
 * detectChangesInRootView(this._view);
 * }
 * checkNoChanges(): void {
 * checkNoChangesInRootView(this._view);
 * }
 * get context(): T {
 * return null!;
 * }
 * }
 * /**
 * @license
 * * Copyright Google LLC All Rights Reserved.
 * * Use of this source code is governed by an MIT-style license
 * that can be found in the LICENSE file at https://angular.io/license
 * ^
 * ^
 * import { TNode, TNodeType } from
 * './render3/interfaces/node';
 * import { isComponentHost } from './render3/interfaces/type_checks';
 * import
 * { DECLARATION_COMPONENT_VIEW, LView } from './render3/interfaces/view';
 * import { getCurrentTNode,
 * getLView } from './render3/state';
 * import { getComponentLViewByIndex } from './render3/util/view_utils';
 * import
 * { ViewRef as R3_ViewRef } from './render3/view_ref';
 * import { noop } from './util/noop';
 * ^
 * ^
 * const
 * SWITCH_CHANGE_DETECTOR_REF_FACTORY__POST_R3__ = injectChangeDetectorRef;
 * const
 * SWITCH_CHANGE_DETECTOR_REF_FACTORY__PRE_R3__ = noop;
 * ^
 * ^
 * SWITCH_CHANGE_DETECTOR_REF_FACTORY: typeof injectChangeDetectorRef =
 * SWITCH_CHANGE_DETECTOR_REF_FACTORY__PRE_R3__;
 * ^
 * ^
 * Base class that provides change
 * detection functionality. A change-detection tree collects all views that are to be checked for changes. Use
 * the methods to add and remove views from the tree, initiate change-detection, and explicitly mark views as
 * _dirty_, meaning that they have changed and need to be re-rendered.
 * @see [Using change detection
 * hooks](guide/lifecycle-hooks#using-change-detection-hooks)
 * @see [Defining custom change
 * detection](guide/lifecycle-hooks#defining-custom-change-detection)
 * @usageNotes
 * The following
 * examples demonstrate how to modify default change-detection behavior to perform explicit detection when

```

needed. `### Use `markForCheck()` with `CheckOnce` strategy`

The following example sets the `OnPush` change-detection strategy for a component` (`CheckOnce`, rather than the default CheckAlways`), then forces a second check` after an interval. See [live demo](http://plnkr.co/edit/GC512b?p=preview).`

```
<code-example path="core/ts/change_detect/change-detection.ts" region="mark-for-check">
Detach change detector to limit how often check occurs
The following example defines a component with a large list of read-only data that is expected to change constantly, many times per second. To improve performance, we want to check and update the list less often than the changes actually occur. To do that, we detach the component's change detector and perform an explicit local check every five seconds.
<code-example path="core/ts/change_detect/change-detection.ts" region="detach">
Reattaching a detached component
The following example creates a component displaying live data. The component detaches its change detector from the main change detector tree when the `live` property is set to false, and reattaches it when the property becomes true.
<code-example path="core/ts/change_detect/change-detection.ts" region="reattach">
@publicApi
export abstract class ChangeDetectorRef {
 /**
 * When a view uses the {@link ChangeDetectionStrategy#OnPush OnPush} change detection strategy, explicitly marks the view as changed so that it can be checked again.
 * Components are normally marked as dirty (in need of rerendering) when inputs have changed or events have fired in the view. Call this method to ensure that a component is checked even if these triggers have not occurred.
 * <!-- TODO: Add a link to a chapter on OnPush components -->
 * @abstract markForCheck(): void;
 * Detaches this view from the change-detection tree. A detached view is not checked until it is reattached. Use in combination with `detectChanges()` to implement local change detection checks. Detached views are not checked during change detection runs until they are re-attached, even if they are marked as dirty.
 * <!-- TODO: Add a link to a chapter on detach/reattach/local digest -->
 * <!-- TODO: Add a live demo once ref.detectChanges is merged into master -->
 * @abstract detach(): void;
 * Checks this view and its children. Use in combination with {@link ChangeDetectorRef#detach detach} to implement local change detection checks.
 * <!-- TODO: Add a link to a chapter on detach/reattach/local digest -->
 * <!-- TODO: Add a live demo once ref.detectChanges is merged into master -->
 * @abstract detectChanges(): void;
 * Checks the change detector and its children, and throws if any changes are detected. Use in development mode to verify that running change detection doesn't introduce other changes.
 * @abstract checkNoChanges(): void;
 * Re-attaches the previously detached view to the change detection tree. Views are attached to the tree by default.
 * <!-- TODO: Add a link to a chapter on detach/reattach/local digest -->
 * @abstract reattach(): void;
 * @internal
 * @nocollapse
 * @static
 * __NG_ELEMENT_ID__: () => ChangeDetectorRef = SWITCH_CHANGE_DETECTOR_REF_FACTORY;
 * This marker is need so that the JIT compiler can correctly identify this class as special.
 * @internal
 * @nocollapse
 * @static
 * __ChangeDetectorRef__ = true;
 * Returns a ChangeDetectorRef (a.k.a. a ViewRef)
 * @next export function injectChangeDetectorRef(isPipe = false): ChangeDetectorRef {
 * return createViewRef(getCurrentTNode()!, getLView(), isPipe);
 * }
 * Creates a ViewRef and stores it on the injector as ChangeDetectorRef (public alias).
 * @param tNode The node that is requesting a ChangeDetectorRef
 * @param IView The view to which the node belongs
 * @param isPipe Whether the view is being injected into a pipe.
 * @returns The ChangeDetectorRef to use
 * @next function createViewRef(tNode: TNode, IView: LView, isPipe: boolean): ChangeDetectorRef {
 * // `isComponentView` will be true for Component and Directives (but not for Pipes).
 * // See https://github.com/angular/angular/pull/33072 for proper fix
 * const isComponentView = !isPipe && isComponentHost(tNode);
 * if (isComponentView) {
 * // The LView represents the location where the component is declared.
 * // Instead we want the LView for the component View and so we need to look it up.
 * const componentView = getComponentLViewByIndex(tNode.index, IView);
 * // look down
 * return new R3_ViewRef(componentView, componentView);
 * } else if (tNode.type & (TNodeType.AnyRNode | TNodeType.AnyContainer | TNodeType.Icu)) {
 * // The LView represents the location where the injection is requested from.
 * // We need to

```



```

locate the containing LView (in case where the `IView` is an embedded view)\n const hostComponentView =
IView[DECLARATION_COMPONENT_VIEW]; // look up\n return new R3_ViewRef(hostComponentView,
IView);\n } \n return null!;\n}", "/*\n * @license\n * Copyright Google LLC All Rights Reserved.\n *\n * Use of
this source code is governed by an MIT-style license that can be\n * found in the LICENSE file at
https://angular.io/license\n */\n\nimport {DefaultIterableDifferFactory} from
'./differs/default_iterable_differ';\nimport {DefaultKeyValueDifferFactory} from
'./differs/default_keyvalue_differ';\nimport {IterableDifferFactory, IterableDiffers} from
'./differs/iterable_differs';\nimport {KeyValueDifferFactory, KeyValueDiffers} from
'./differs/keyvalue_differs';\n\nexport {SimpleChange, SimpleChanges} from './interface/simple_change';\nexport
{devModeEqual, WrappedValue} from './change_detection_util';\nexport {ChangeDetectorRef} from
'./change_detector_ref';\nexport {ChangeDetectionStrategy, ChangeDetectorStatus,
isDefaultChangeDetectionStrategy} from './constants';\nexport {DefaultIterableDifferFactory} from
'./differs/default_iterable_differ';\nexport {DefaultIterableDiffer} from './differs/default_iterable_differ';\nexport
{DefaultKeyValueDifferFactory} from './differs/default_keyvalue_differ';\nexport {IterableChangeRecord,
IterableChanges, IterableDiffer, IterableDifferFactory, IterableDiffers, NgIterable, TrackByFunction} from
'./differs/iterable_differs';\nexport {KeyValueChangeRecord, KeyValueChanges, KeyValueDiffer,
KeyValueDifferFactory, KeyValueDiffers} from './differs/keyvalue_differs';\nexport {PipeTransform} from
'./pipe_transform';\n\n\n/**\n * Structural diffing for `Object`'s and `Map`'s.\n */\nconst keyValDiff:
KeyValueDifferFactory[] = [new DefaultKeyValueDifferFactory()];\n\n/**\n * Structural diffing for `Iterable` types
such as `Array`'s.\n */\nconst iterableDiff: IterableDifferFactory[] = [new DefaultIterableDifferFactory()];\n\nexport
const defaultIterableDiffers = new IterableDiffers(iterableDiff);\n\nexport const defaultKeyValueDiffers = new
KeyValueDiffers(keyValDiff);\n", "/*\n * @license\n * Copyright Google LLC All Rights Reserved.\n *\n * Use of
this source code is governed by an MIT-style license that can be\n * found in the LICENSE file at
https://angular.io/license\n */\n\nimport {assertLContainer} from './render3/assert';\nimport {createLView,
renderView} from './render3/instructions/shared';\nimport {TContainerNode, TNode, TNodeType} from
'./render3/interfaces/node';\nimport {DECLARATION_LCONTAINER, LView, LViewFlags, QUERIES, TView}
from './render3/interfaces/view';\nimport {getCurrentTNode, getLView} from './render3/state';\nimport {ViewRef
as R3_ViewRef} from './render3/view_ref';\nimport {assertDefined} from './util/assert';\nimport {noop} from
'./util/noop';\nimport {createElementRef, ElementRef} from './element_ref';\nimport {EmbeddedViewRef} from
'./view_ref';\n\n\nexport const SWITCH_TEMPLATE_REF_FACTORY__POST_R3__ =
injectTemplateRef;\nconst SWITCH_TEMPLATE_REF_FACTORY__PRE_R3__ = noop;\nconst
SWITCH_TEMPLATE_REF_FACTORY: typeof injectTemplateRef =
SWITCH_TEMPLATE_REF_FACTORY__PRE_R3__;\n\n/**\n * Represents an embedded template that can be
used to instantiate embedded views.\n * To instantiate embedded views based on a template, use the
`ViewContainerRef`'n * method `createEmbeddedView()`.\n * Access a `TemplateRef` instance by placing a
directive on an ``\n * element (or directive prefixed with `*`). The `TemplateRef` for the embedded
view\n * is injected into the constructor of the directive,\n * using the `TemplateRef` token.\n * You can also use
a `Query` to find a `TemplateRef` associated with\n * a component or a directive.\n */\n * @see
`ViewContainerRef`'n * @see [Navigate the Component Tree with DI](guide/dependency-injection-navtree)\n */\n *
@publicApi\n */\nexport abstract class TemplateRef<C> {\n /**\n * The anchor element in the parent view for
this embedded view.\n *\n * The data-binding and injection contexts of embedded views created from this
`TemplateRef`\n * inherit from the contexts of this location.\n *\n * Typically new embedded views are attached
to the view container of this location, but in\n * advanced use-cases, the view can be attached to a different
container while keeping the\n * data-binding and injection context from the original location.\n */\n * //
TODO(i): rename to anchor or location\n abstract get elementRef(): ElementRef;\n\n /**\n * Instantiates an
embedded view based on this template,\n * and attaches it to the view container.\n * @param context The data-
binding context of the embedded view, as declared\n * in the `` usage.\n * @returns The new
embedded view object.\n */\n abstract createEmbeddedView(context: C): EmbeddedViewRef<C>;\n\n /**\n *

```

```

@internal\n * @nocollapse\n */\n static __NG_ELEMENT_ID__: () => TemplateRef<any>| null =
SWITCH_TEMPLATE_REF_FACTORY;\n}\n\nconst ViewEngineTemplateRef = TemplateRef;\n\nconst
R3TemplateRef = class TemplateRef<T> extends ViewEngineTemplateRef<T> {\n constructor(\n private
_declarationLView: LView, private _declarationTContainer: TContainerNode,\n public elementRef:
ElementRef) {\n super();\n }\n\n createEmbeddedView(context: T): EmbeddedViewRef<T> {\n const
embeddedTView = this._declarationTContainer.tViews as TView;\n const embeddedLView = createLView(\n
this._declarationLView, embeddedTView, context, LViewFlags.CheckAlways, null,\n
embeddedTView.declTNode, null, null, null, null);\n const declarationLContainer =
this._declarationLView[this._declarationTContainer.index];\n ngDevMode &&
assertLContainer(declarationLContainer);\n embeddedLView[DECLARATION_LCONTAINER] =
declarationLContainer;\n\n const declarationViewLQueries = this._declarationLView[QUERIES];\n if
(declarationViewLQueries !== null) {\n embeddedLView[QUERIES] =
declarationViewLQueries.createEmbeddedView(embeddedTView);\n }\n\n renderView(embeddedTView,
embeddedLView, context);\n return new R3_ViewRef<T>(embeddedLView);\n }\n};\n\n/**\n * Creates a
TemplateRef given a node.\n */\n * @returns The TemplateRef instance to use\n */\nexport function
injectTemplateRef<T>(): TemplateRef<T>|null {\n return createTemplateRef<T>(getCurrentTNode(),
getLView());\n}\n\n/**\n * Creates a TemplateRef and stores it on the injector.\n */\n * @param hostTNode The
node on which a TemplateRef is requested\n */\n * @param hostLView The `LView` to which the node belongs\n */
 * @returns The TemplateRef instance or null if we can't create a TemplateRef on a given node type\n */\nexport
function createTemplateRef<T>(hostTNode: TNode, hostLView: LView): TemplateRef<T>|null {\n if
(hostTNode.type & TNodeType.Container) {\n ngDevMode && assertDefined(hostTNode.tViews, 'TView must
be allocated');\n return new R3TemplateRef(\n hostLView, hostTNode as TContainerNode,
createElementRef(hostTNode, hostLView);\n)\n return null;\n }\n}\n\n"/**\n * @license\n * Copyright Google LLC
All Rights Reserved.\n */\n * Use of this source code is governed by an MIT-style license that can be\n * found in
the LICENSE file at https://angular.io/license\n */\n\nimport {Injector} from './di/injector';\n\nimport {Type} from
 './interface/type';\n\nimport {ComponentFactoryResolver} from './component_factory_resolver';\n\n\n/**\n *
Represents an instance of an `NgModule` created by an `NgModuleFactory`.\n */\n * Provides access to the `NgModule`
instance and related objects.\n */\n * @publicApi\n */\nexport abstract class NgModuleRef<T> {\n /**\n * The
injector that contains all of the providers of the `NgModule`.\n */\n * abstract get injector(): Injector;\n\n /**\n *
The resolver that can retrieve the component factories\n */\n * declared in the `entryComponents` property of the
module.\n */\n * abstract get componentFactoryResolver(): ComponentFactoryResolver;\n\n /**\n * The
`NgModule` instance.\n */\n * abstract get instance(): T;\n\n /**\n * Destroys the module instance and all of the
data structures associated with it.\n */\n * abstract destroy(): void;\n\n /**\n * Registers a callback to be executed
when the module is destroyed.\n */\n * abstract onDestroy(callback: () => void): void;\n}\n\nexport interface
InternalNgModuleRef<T> extends NgModuleRef<T> {\n // Note: we are using the prefix _ as NgModuleData is an
NgModuleRef and therefore directly\n // exposed to the user.\n _bootstrapComponents: Type<any>[];\n}\n\n\n/**\n *
 * @publicApi\n */\nexport abstract class NgModuleFactory<T> {\n abstract get moduleType(): Type<T>;\n
 abstract create(parentInjector: Injector|null): NgModuleRef<T>;\n}\n\n"/**\n * @license\n * Copyright Google LLC
All Rights Reserved.\n */\n * Use of this source code is governed by an MIT-style license that can be\n * found in
the LICENSE file at https://angular.io/license\n */\n\nimport {Injector} from './di/injector';\n\nimport
{assertNodeInjector} from './render3/assert';\n\nimport {getParentInjectorLocation, NodeInjector} from
 './render3/di';\n\nimport {addToViewTree, createLContainer} from './render3/instructions/shared';\n\nimport
{CONTAINER_HEADER_OFFSET, LContainer, NATIVE, VIEW_REFS} from
 './render3/interfaces/container';\n\nimport {NodeInjectorOffset} from './render3/interfaces/injector';\n\nimport
{TContainerNode, TDirectiveHostNode, TElementContainerNode, TElementNode, TNodeType} from
 './render3/interfaces/node';\n\nimport {RComment, RElement} from './render3/interfaces/renderer_dom';\n\nimport
{isLContainer} from './render3/interfaces/type_checks';\n\nimport {LView, PARENT, RENDERER, T_HOST,
TVIEW} from './render3/interfaces/view';\n\nimport {assertTNodeType} from './render3/node_assert';\n\nimport

```

```

{addViewToContainer, destroyLView, detachView, getBeforeNodeForView, insertView, nativeInsertBefore,
nativeNextSibling, nativeParentNode} from './render3/node_manipulation';\nimport {getCurrentTNode, getLView}
from './render3/state';\nimport {getParentInjectorIndex, getParentInjectorView, hasParentInjector} from
 './render3/util/injector_utils';\nimport {getNativeByTNode, unwrapRNode, viewAttachedToContainer} from
 './render3/util/view_utils';\nimport {ViewRef as R3ViewRef} from './render3/view_ref';\nimport {addToArray,
removeFromArray} from './util/array_utils';\nimport {assertEqual, assertGreaterThan, assertLessThan} from
 './util/assert';\nimport {noop} from './util/noop';\nimport {ComponentFactory, ComponentRef} from
 './component_factory';\nimport {createElementRef, ElementRef} from './element_ref';\nimport {NgModuleRef}
from './ng_module_factory';\nimport {TemplateRef} from './template_ref';\nimport {EmbeddedViewRef, ViewRef}
from './view_ref';\n\nexport const SWITCH_VIEW_CONTAINER_REF_FACTORY__POST_R3__ =
injectViewContainerRef;\nconst SWITCH_VIEW_CONTAINER_REF_FACTORY__PRE_R3__ = noop as typeof
injectViewContainerRef;\nconst SWITCH_VIEW_CONTAINER_REF_FACTORY: typeof
injectViewContainerRef =\n SWITCH_VIEW_CONTAINER_REF_FACTORY__PRE_R3__;\n\n/**\n *
Represents a container where one or more views can be attached to a component.\n * Can contain *host views*
(created by instantiating a\n * component with the `createComponent()` method), and *embedded views*\n *
(created by instantiating a `TemplateRef` with the `createEmbeddedView()` method).\n * A view container
instance can contain other view containers,\n * creating a [view hierarchy](guide/glossary#view-tree).\n * @see
`ComponentRef`\n * @see `EmbeddedViewRef`\n * @publicApi\n */\nexport abstract class ViewContainerRef
{\n /**\n * Anchor element that specifies the location of this container in the containing view.\n * Each view
container can have only one anchor element, and each anchor element\n * can have only a single view container.\n
*\n * Root elements of views attached to this container become siblings of the anchor element in\n * the rendered
view.\n * Access the `ViewContainerRef` of an element by placing a `Directive` injected\n * with
`ViewContainerRef` on the element, or use a `ViewChild` query.\n * <!-- TODO: rename to anchorElement -->\n
 * ^\n abstract get element(): ElementRef;\n\n /**\n * The [dependency injector](guide/glossary#injector) for
this view container.\n * ^\n abstract get injector(): Injector;\n\n /** @deprecated No replacement */\n abstract get
parentInjector(): Injector;\n\n /**\n * Destroys all views in this container.\n * ^\n abstract clear(): void;\n\n
 /**\n * Retrieves a view from this container.\n * @param index The 0-based index of the view to retrieve.\n * @returns
The `ViewRef` instance, or null if the index is out of range.\n * ^\n abstract get(index: number): ViewRef|null;\n\n
 /**\n * Reports how many views are currently attached to this container.\n * @returns The number of views.\n
 * ^\n abstract get length(): number;\n\n /**\n * Instantiates an embedded view and inserts it\n * into this
container.\n * @param templateRef The HTML template that defines the view.\n * @param index The 0-based
index at which to insert the new view into this container.\n * If not specified, appends the new view as the last
entry.\n * ^\n * @returns The `ViewRef` instance for the newly created view.\n * ^\n abstract
createEmbeddedView<C>(templateRef: TemplateRef<C>, context?: C, index?: number):\n
 EmbeddedViewRef<C>;\n\n /**\n * Instantiates a single component and inserts its host view into this container.\n
*\n * @param componentFactory The factory to use.\n * @param index The index at which to insert the new
component's host view into this container.\n * If not specified, appends the new view as the last entry.\n *
*\n * @param injector The injector to use as the parent for the new component.\n * @param projectableNodes\n *
*\n * @param ngModule\n * ^\n * @returns The new component instance, containing the host view.\n * ^\n
 abstract createComponent<C>(\n componentFactory: ComponentFactory<C>, index?: number, injector?:
 Injector,\n projectableNodes?: any[][], ngModule?: NgModuleRef<any>): ComponentRef<C>;\n\n /**\n *
Inserts a view into this container.\n * @param viewRef The view to insert.\n * @param index The 0-based index
at which to insert the view.\n * If not specified, appends the new view as the last entry.\n * @returns The inserted
`ViewRef` instance.\n * ^\n abstract insert(viewRef: ViewRef, index?: number): ViewRef;\n\n /**\n *
Moves a view to a new location in this container.\n * @param viewRef The view to move.\n * @param index The
0-based index of the new location.\n * @returns The moved `ViewRef` instance.\n * ^\n abstract move(viewRef:
 ViewRef, currentIndex: number): ViewRef;\n\n /**\n * Returns the index of a view within the current container.\n
*\n * @param viewRef The view to query.\n * @returns The 0-based index of the view's position in this container,\n

```

```

* or -1 if this container doesn't contain the view.\n
* ^\n
abstract indexOf(viewRef: ViewRef): number;\n\n
/**\n
* Destroys a view attached to this container\n
* @param index The 0-based index of the view to destroy.\n
* If not specified, the last view in the container is removed.\n
* ^\n
abstract remove(index?: number): void;\n\n
/**\n
* Detaches a view from this container without destroying it.\n
* Use along with insert() to move a view within the current container.\n
* @param index The 0-based index of the view to detach.\n
* If not specified, the last view in the container is detached.\n
* ^\n
abstract detach(index?: number): ViewRef|null;\n\n
/**\n
* @internal\n
* @nocollapse\n
* ^\n
static __NG_ELEMENT_ID__: () => ViewContainerRef = SWITCH_VIEW_CONTAINER_REF_FACTORY;\n\n\n
/**\n
* Creates a ViewContainerRef and stores it on the injector. Or, if the ViewContainerRef\n
* already exists, retrieves the existing ViewContainerRef.\n
* ^\n
* @returns The ViewContainerRef instance to use\n
* ^\n
export function injectViewContainerRef(): ViewContainerRef {\n
const previousTNode = getCurrentTNode() as TElementNode | TElementContainerNode | TContainerNode;\n
return createContainerRef(previousTNode, getLView());\n\n\n
const VE_ViewContainerRef = ViewContainerRef;\n\n
const R3ViewContainerRef = class ViewContainerRef extends VE_ViewContainerRef {\n
constructor(\n
private _lContainer: LContainer,\n
private _hostTNode: TElementNode|TContainerNode|TElementContainerNode,\n
private _hostLView: LView) {\n
super();\n
}\n\n
get element(): ElementRef {\n
return createElementRef(this._hostTNode, this._hostLView);\n
}\n\n
get injector(): Injector {\n
return new NodeInjector(this._hostTNode, this._hostLView);\n
}\n\n
/** @deprecated No replacement */\n
get parentInjector(): Injector {\n
const parentLocation = getParentInjectorLocation(this._hostTNode, this._hostLView);\n
if (hasParentInjector(parentLocation)) {\n
const parentView = getParentInjectorView(parentLocation, this._hostLView);\n
const injectorIndex = getParentInjectorIndex(parentLocation);\n
ngDevMode && assertNodeInjector(parentView, injectorIndex);\n
const parentTNode =\n
parentView[TVIEW].data[injectorIndex + NodeInjectorOffset.TNODE] as TElementNode;\n
return new NodeInjector(parentTNode, parentView);\n
} else {\n
return new NodeInjector(null, this._hostLView);\n
}\n
}\n\n
clear(): void {\n
while (this.length > 0) {\n
this.remove(this.length - 1);\n
}\n
}\n\n
get(index: number): ViewRef|null {\n
const viewRefs = getViewRefs(this._lContainer);\n
return viewRefs !== null && viewRefs[index] || null;\n
}\n\n
get length(): number {\n
return this._lContainer.length - CONTAINER_HEADER_OFFSET;\n
}\n\n
createEmbeddedView<C>(templateRef: TemplateRef<C>, context?: C, index?: number):\n
EmbeddedViewRef<C> {\n
const viewRef = templateRef.createEmbeddedView(context || <any>{});\n
this.insert(viewRef, index);\n
return viewRef;\n
}\n\n
createComponent<C>(\n
componentFactory: ComponentFactory<C>,\n
index?: number|undefined,\n
injector?: Injector|undefined,\n
projectableNodes?: any[][]|undefined,\n
ngModuleRef?: NgModuleRef<any>|undefined): ComponentRef<C> {\n
const contextInjector = injector || this.parentInjector;\n
if (!ngModuleRef && (componentFactory as any).ngModule == null && contextInjector) {\n
// DO NOT REFACTOR. The code here used to have a `value || undefined` expression\n
// which seems to cause internal google apps to fail. This is documented in the\n
// following internal bug issue: go/b/142967802\n
const result = contextInjector.get(NgModuleRef, null);\n
if (result) {\n
ngModuleRef = result;\n
}\n
}\n
const componentRef =\n
componentFactory.create(contextInjector, projectableNodes, undefined, ngModuleRef);\n
this.insert(componentRef.hostView, index);\n
return componentRef;\n
}\n\n
insert(viewRef: ViewRef, index?: number): ViewRef {\n
const IView = (viewRef as R3ViewRef<any>)._IView!;\n
const tView = IView[TVIEW];\n
if (ngDevMode && viewRef.destroyed) {\n
throw new Error('Cannot insert a destroyed View in a ViewContainer!');\n
}\n
if (viewAttachedToContainer(IView)) {\n
// If view is already attached, detach it first so we clean up references appropriately.\n\n
const prevIdx = this.indexOf(viewRef);\n
// A view might be attached either to this or a different container. The `prevIdx` for\n
// those cases will be:\n
// equal to -1 for views attached to this ViewContainerRef\n
// >= 0 for views attached to a different ViewContainerRef\n
if (prevIdx !== -1) {\n
this.detach(prevIdx);\n
} else {\n
const prevLContainer = IView[PARENT] as LContainer;\n
ngDevMode &&\n
assertEqual(\n
isLContainer(prevLContainer), true,\n
'An attached view should have its PARENT point to a container.);\n\n
// We need to re-create a R3ViewContainerRef instance

```

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since those are not stored on\n // LView (nor anywhere else).\n const prevVCRef = new
R3ViewContainerRef(\n prevLContainer, prevLContainer[T_HOST] as TDirectiveHostNode,
prevLContainer[PARENT]);\n\n prevVCRef.detach(prevVCRef.indexOf(viewRef));\n }\n }\n\n //
Logical operation of adding `LView` to `LContainer`\n const adjustedIdx = this._adjustIndex(index);\n const
LContainer = this._lContainer;\n insertView(tView, lView, lContainer, adjustedIdx);\n\n // Physical operation of
adding the DOM nodes.\n const beforeNode = getBeforeNodeForView(adjustedIdx, lContainer);\n const
renderer = lView[RENDERER];\n const parentRNode = nativeParentNode(renderer, lContainer[NATIVE] as
RElement | RComment);\n if (parentRNode !== null) {\n addViewToContainer(tView, lContainer[T_HOST],
renderer, lView, parentRNode, beforeNode);\n }\n\n (viewRef as
R3ViewRef<any>).attachToViewContainerRef(this);\n addToArray(getOrCreateViewRefs(lContainer),
adjustedIdx, viewRef);\n\n return viewRef;\n }\n\n move(viewRef: ViewRef, newIndex: number): ViewRef {\n
if (ngDevMode && viewRef.destroyed) {\n throw new Error('Cannot move a destroyed View in a
ViewContainer!');\n }\n return this.insert(viewRef, newIndex);\n }\n\n indexOf(viewRef: ViewRef): number
{\n const viewRefsArr = getViewRefs(this._lContainer);\n return viewRefsArr !== null ?
viewRefsArr.indexOf(viewRef) : -1;\n }\n\n remove(index?: number): void {\n const adjustedIdx =
this._adjustIndex(index, -1);\n const detachedView = detachView(this._lContainer, adjustedIdx);\n if
(detachedView) {\n // Before destroying the view, remove it from the container's array of `ViewRef`s.\n //
This ensures the view container length is updated before calling\n // `destroyLView`, which could recursively call
view container methods that\n // rely on an accurate container length.\n // (e.g. a method on this view
container being called by a child directive's OnDestroy\n // lifecycle hook)\n removeFromArray(getOrCreateViewRefs(this._lContainer), adjustedIdx);\n
destroyLView(detachedView[TVIEW], detachedView);\n }\n }\n\n detach(index?: number): ViewRef|null {\n
const adjustedIdx = this._adjustIndex(index, -1);\n const view = detachView(this._lContainer, adjustedIdx);\n\n
const wasDetached =\n view && removeFromArray(getOrCreateViewRefs(this._lContainer), adjustedIdx) !=
null;\n return wasDetached ? new R3ViewRef(view!) : null;\n }\n\n private _adjustIndex(index?: number, shift:
number = 0) {\n if (index == null) {\n return this.length + shift;\n }\n if (ngDevMode) {\n
assertGreaterThan(index, -1, `ViewRef index must be positive, got ${index}`);\n // +1 because it's legal to insert
at the end.\n assertLessThan(index, this.length + 1 + shift, 'index');\n }\n return index;\n }\n\nfunction
getViewRefs(lContainer: LContainer): ViewRef[]|null {\n return lContainer[VIEW_REFS] as
ViewRef[];\n }\n\nfunction getOrCreateViewRefs(lContainer: LContainer): ViewRef[] {\n return
(lContainer[VIEW_REFS] || (lContainer[VIEW_REFS] = [])) as ViewRef[];\n }\n\n/**\n * Creates a
ViewContainerRef and stores it on the injector.\n * @param ViewContainerRefToken The ViewContainerRef
type\n * @param ElementRefToken The ElementRef type\n * @param hostTNode The node that is requesting a
ViewContainerRef\n * @param hostLView The view to which the node belongs\n * @returns The
ViewContainerRef instance to use\n */\nexport function createContainerRef(\n hostTNode:
TElementNode|TContainerNode|TElementContainerNode,\n hostLView: LView): ViewContainerRef {\n
ngDevMode && assertTNodeType(hostTNode, TNodeType.AnyContainer | TNodeType.AnyRNode);\n\n let
lContainer: LContainer;\n const slotValue = hostLView[hostTNode.index];\n if (isLContainer(slotValue)) {\n //
If the host is a container, we don't need to create a new LContainer\n lContainer = slotValue;\n } else {\n let
commentNode: RComment;\n // If the host is an element container, the native host element is guaranteed to be a\n
// comment and we can reuse that comment as anchor element for the new LContainer.\n // The comment node in
question is already part of the DOM structure so we don't need to append\n // it again.\n if (hostTNode.type &
TNodeType.ElementContainer) {\n commentNode = unwrapRNode(slotValue) as RComment;\n } else {\n
// If the host is a regular element, we have to insert a comment node manually which will\n // be used as an
anchor when inserting elements. In this specific case we use low-level DOM\n // manipulation to insert it.\n const renderer = hostLView[RENDERER];\n ngDevMode && ngDevMode.rendererCreateComment++;\n commentNode = renderer.createComment(ngDevMode ? 'container' : '');\n const hostNative =
getNativeByTNode(hostTNode, hostLView!);\n const parentOfHostNative = nativeParentNode(renderer,

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ViewData): void;\n}\n\n// helper functions to create an overloaded function type.\n\nexport interface NodeCheckFn
{\n (view: ViewData, nodeIndex: number, argStyle: ArgumentType.Dynamic, values: any[]): any;\n (view:
ViewData, nodeIndex: number, argStyle: ArgumentType.Inline, v0?: any, v1?: any, v2?: any,\n v3?: any, v4?: any,
v5?: any, v6?: any, v7?: any, v8?: any, v9?: any): any;\n}\n\nexport const enum ArgumentType {\n Inline = 0,\n
Dynamic = 1\n}\n\nexport interface ViewHandleEventFn {\n (view: ViewData, nodeIndex: number, eventName:
string, event: any): boolean;\n}\n\n/**\n * Bitmask for ViewDefinition.flags.\n */\nexport const enum ViewFlags
{\n None = 0,\n OnPush = 1 << 1,\n}\n\n/**\n * A node definition in the view.\n */\n * Note: We use one type for
all nodes so that loops that loop over all nodes\n * of a ViewDefinition stay monomorphic!\n */\nexport interface
NodeDef {\n flags: NodeFlags;\n // Index of the node in view data and view definition (those are the same)\n
nodeIndex: number;\n // Index of the node in the check functions\n // Differ from nodeIndex when nodes are added
or removed at runtime (ie after compilation)\n checkIndex: number;\n parent: NodeDef|null;\n renderParent:
NodeDef|null;\n /** this is checked against NgContentDef.index to find matched nodes *\n ngContentIndex:
number|null;\n /** number of transitive children *\n childCount: number;\n /** aggregated NodeFlags for all
transitive children (does not include self) *\n childFlags: NodeFlags;\n /** aggregated NodeFlags for all direct
children (does not include self) *\n directChildFlags: NodeFlags;\n\n bindingIndex: number;\n bindings:
BindingDef[];\n bindingFlags: BindingFlags;\n outputIndex: number;\n outputs: OutputDef[];\n /**\n *
references that the user placed on the element\n */\n references: {[refId: string]: QueryValueType};\n /**\n * ids
and value types of all queries that are matched by this node.\n */\n matchedQueries: {[queryId: number]:
QueryValueType};\n /** Binary or of all matched query ids of this node. *\n matchedQueryIds: number;\n /**\n *
Binary or of all query ids that are matched by one of the children.\n */\n * This includes query ids from templates as
well.\n */\n * Used as a bloom filter.\n */\n childMatchedQueries: number;\n element: ElementDef|null;\n provider:
ProviderDef|null;\n text: TextDef|null;\n query: QueryDef|null;\n ngContent: NgContentDef|null;\n}\n\n/**\n *
Bitmask for NodeDef.flags.\n */\n * Naming convention:\n * - `Type...`: flags that are mutually exclusive\n * - `Cat...`:
union of multiple `Type...` (short for category).\n */\nexport const enum NodeFlags {\n None = 0,\n TypeElement
= 1 << 0,\n TypeText = 1 << 1,\n ProjectedTemplate = 1 << 2,\n CatRenderNode = TypeElement | TypeText,\n
TypeNgContent = 1 << 3,\n TypePipe = 1 << 4,\n TypePureArray = 1 << 5,\n TypePureObject = 1 << 6,\n
TypePurePipe = 1 << 7,\n CatPureExpression = TypePureArray | TypePureObject | TypePurePipe,\n
TypeValueProvider = 1 << 8,\n TypeClassProvider = 1 << 9,\n TypeFactoryProvider = 1 << 10,\n
TypeUseExistingProvider = 1 << 11,\n LazyProvider = 1 << 12,\n PrivateProvider = 1 << 13,\n TypeDirective = 1
<< 14,\n Component = 1 << 15,\n CatProviderNoDirective =\n TypeValueProvider | TypeClassProvider |
TypeFactoryProvider | TypeUseExistingProvider,\n CatProvider = CatProviderNoDirective | TypeDirective,\n
OnInit = 1 << 16,\n OnDestroy = 1 << 17,\n DoCheck = 1 << 18,\n OnChanges = 1 << 19,\n AfterContentInit = 1
<< 20,\n AfterContentChecked = 1 << 21,\n AfterViewInit = 1 << 22,\n AfterViewChecked = 1 << 23,\n
EmbeddedViews = 1 << 24,\n ComponentView = 1 << 25,\n TypeContentQuery = 1 << 26,\n TypeViewQuery =
1 << 27,\n StaticQuery = 1 << 28,\n DynamicQuery = 1 << 29,\n TypeNgModule = 1 << 30,\n CatQuery =
TypeContentQuery | TypeViewQuery,\n\n // mutually exclusive values...\n Types = CatRenderNode |
TypeNgContent | TypePipe | CatPureExpression | CatProvider | CatQuery\n}\n\nexport interface BindingDef {\n
flags: BindingFlags;\n ns: string|null;\n name: string|null;\n nonMinifiedName: string|null;\n securityContext:
SecurityContext|null;\n suffix: string|null;\n}\n\nexport const enum BindingFlags {\n TypeElementAttribute = 1 <<
0,\n TypeElementClass = 1 << 1,\n TypeElementStyle = 1 << 2,\n TypeProperty = 1 << 3,\n SyntheticProperty =
1 << 4,\n SyntheticHostProperty = 1 << 5,\n CatSyntheticProperty = SyntheticProperty |
SyntheticHostProperty,\n\n // mutually exclusive values...\n Types = TypeElementAttribute | TypeElementClass |
TypeElementStyle | TypeProperty\n}\n\nexport interface OutputDef {\n type: OutputType;\n target:
'window'|'document'|'body'|'component'|null;\n eventName: string;\n propName: string|null;\n}\n\nexport const
enum OutputType {\n ElementOutput,\n DirectiveOutput\n}\n\nexport const enum QueryValueType {\n
ElementRef = 0,\n RenderElement = 1,\n TemplateRef = 2,\n ViewContainerRef = 3,\n Provider = 4\n}\n\nexport
interface ElementDef {\n // set to null for ``\n name: string|null;\n ns: string|null;\n /** ns, name,
value *\n attrs: [string, string, string][]|null;\n template: ViewDefinition|null;\n componentProvider:

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NodeDef|null;\n componentRendererType: RendererType2|null;\n // closure to allow recursive components\n
componentView: ViewDefinitionFactory|null;\n /**\n * visible public providers for DI in the view,\n * as see
from this element. This does not include private providers.\n */\n publicProviders: {[tokenKey: string]:
NodeDef}|null;\n /**\n * same as visiblePublicProviders, but also includes private providers\n * that are located
on this element.\n */\n allProviders: {[tokenKey: string]: NodeDef}|null;\n handleEvent:
ElementHandleEventFn|null;\n}\n\nexport interface ElementHandleEventFn {\n (view: ViewData, eventName:
string, event: any): boolean;\n}\n\nexport interface ProviderDef {\n token: any;\n value: any;\n deps:
DepDef[];\n}\n\nexport interface NgModuleProviderDef {\n flags: NodeFlags;\n index: number;\n token: any;\n
value: any;\n deps: DepDef[];\n}\n\nexport interface DepDef {\n flags: DepFlags;\n token: any;\n tokenKey:
string;\n}\n\n/**\n * Bitmask for DI flags\n */\nexport const enum DepFlags {\n None = 0,\n SkipSelf = 1 << 0,\n
Optional = 1 << 1,\n Self = 1 << 2,\n Value = 1 << 3,\n}\n\nexport interface TextDef {\n prefix:
string;\n}\n\nexport interface QueryDef {\n id: number;\n // variant of the id that can be used to check against
NodeDef.matchedQueryIds, ...\n filterId: number;\n bindings: QueryBindingDef[];\n}\n\nexport interface
QueryBindingDef {\n propName: string;\n bindingType: QueryBindingType;\n}\n\nexport const enum
QueryBindingType {\n First = 0,\n All = 1\n}\n\nexport interface NgContentDef {\n /**\n * this index is checked
against NodeDef.ngContentIndex to find the nodes\n * that are matched by this ng-content.\n * Note that a
NodeDef with an ng-content can be reprojected, i.e.\n * have a ngContentIndex on its own.\n */\n index:
number;\n}\n\n// -----\nData\n-----\n\nexport interface
NgModuleData extends Injector, NgModuleRef<any> {\n // Note: we are using the prefix _ as NgModuleData is an
NgModuleRef and therefore directly\n // exposed to the user.\n _def: NgModuleDefinition;\n _parent: Injector;\n
_providers: any[];\n}\n\n/**\n * View instance data.\n * Attention: Adding fields to this is performance sensitive!\n
*/\nexport interface ViewData {\n def: ViewDefinition;\n root: RootData;\n renderer: Renderer2;\n // index of
component provider / anchor.\n parentNodeDef: NodeDef|null;\n parent: ViewData|null;\n viewContainerParent:
ViewData|null;\n component: any;\n context: any;\n // Attention: Never loop over this, as this will\n // create a
polymorphic usage site.\n // Instead: Always loop over ViewDefinition.nodes,\n // and call the right accessor (e.g.
`elementData`) based on\n // the NodeType.\n nodes: {[key: number]: NodeData};\n state: ViewState;\n
oldValues: any[];\n disposables: DisposableFn[]|null;\n initIndex: number;\n}\n\n/**\n * Bitmask of states\n
*/\nexport const enum ViewState {\n BeforeFirstCheck = 1 << 0,\n FirstCheck = 1 << 1,\n Attached = 1 << 2,\n
ChecksEnabled = 1 << 3,\n IsProjectedView = 1 << 4,\n CheckProjectedView = 1 << 5,\n CheckProjectedViews =
1 << 6,\n Destroyed = 1 << 7,\n}\n\n // initState Uses 3 bits\n initState_Mask = 7 << 8,\n initState_BeforeInit = 0 <<
8,\n initState_CallingOnInit = 1 << 8,\n initState_CallingAfterContentInit = 2 << 8,\n
initState_CallingAfterViewInit = 3 << 8,\n initState_AfterInit = 4 << 8,\n\n CatDetectChanges = Attached |
ChecksEnabled,\n CatInit = BeforeFirstCheck | CatDetectChanges | initState_BeforeInit\n}\n\n// Called before each
cycle of a view's check to detect whether this is in the\n// initState for which we need to call ngOnInit,
ngAfterContentInit or ngAfterViewInit\n// lifecycle methods. Returns true if this check cycle should call
lifecycle\n// methods.\nexport function shiftInitState(\n view: ViewData, priorInitState: ViewState, newInitState:
ViewState): boolean {\n // Only update the initState if we are currently in the prior state.\n // For example, only
move into CallingInit if we are in BeforeInit. Only\n // move into CallingContentInit if we are in CallingInit.
Normally this will\n // always be true because of how checkCycle is called in checkAndUpdateView.\n // However,
if checkAndUpdateView is called recursively or if an exception is\n // thrown while checkAndUpdateView is
running, checkAndUpdateView starts over\n // from the beginning. This ensures the state is monotonically
increasing,\n // terminating in the AfterInit state, which ensures the Init methods are called\n // at least once and
only once.\n const state = view.state;\n const initState = state & ViewState.initState_Mask;\n if (initState ===
priorInitState) {\n view.state = (state & ~ViewState.initState_Mask) | newInitState;\n view.initIndex = -1;\n
return true;\n }\n return initState === newInitState;\n}\n\n// Returns true if the lifecycle init method should be
called for the node with\n// the given init index.\nexport function shouldCallLifecycleInitHook(\n view:
ViewData, initState: ViewState, index: number): boolean {\n if ((view.state & ViewState.initState_Mask) ===
initState && view.initIndex <= index) {\n view.initIndex = index + 1;\n return true;\n }\n return

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false;\n}\n\nexport interface DisposableFn {\n (): void;\n}\n\n/**\n * Node instance data.\n *\n * We have a
separate type per NodeType to save memory.\n * (TextData | ElementData | ProviderData | PureExpressionData |
QueryList<any>)\n *\n * To keep our code monomorphic,\n * we prohibit using `NodeData` directly but enforce the
use of accessors (`asElementData`, ...).\n * This way, no usage site can get a `NodeData` from view.nodes and then
use it for different\n * purposes.\n */\n\nexport class NodeData {\n private __brand: any;\n}\n\n/**\n * Data for an
instantiated NodeType.Text.\n *\n * Attention: Adding fields to this is performance sensitive!\n */\n\nexport interface
TextData {\n renderText: any;\n}\n\n/**\n * Accessor for view.nodes, enforcing that every usage site stays
monomorphic.\n */\n\nexport function asTextData(view: ViewData, index: number): TextData {\n return
<any>view.nodes[index];\n}\n\n/**\n * Data for an instantiated NodeType.Element.\n *\n * Attention: Adding
fields to this is performance sensitive!\n */\n\nexport interface ElementData {\n renderElement: any;\n
componentView: ViewData;\n viewContainer: ViewContainerData|null;\n template: TemplateData;\n}\n\nexport
interface ViewContainerData extends ViewContainerRef {\n // Note: we are using the prefix _ as
ViewContainerData is a ViewContainerRef and therefore\n // directly\n // exposed to the user.\n
 _embeddedViews: ViewData[];\n}\n\nexport interface TemplateData extends TemplateRef<any> {\n // views that
have been created from the template\n // of this element,\n // but inserted into the embeddedViews of another
element.\n // By default, this is undefined.\n // Note: we are using the prefix _ as TemplateData is a TemplateRef
and therefore directly\n // exposed to the user.\n _projectedViews: ViewData[];\n}\n\n/**\n * Accessor for
view.nodes, enforcing that every usage site stays monomorphic.\n */\n\nexport function asElementData(view:
ViewData, index: number): ElementData {\n return <any>view.nodes[index];\n}\n\n/**\n * Data for an instantiated
NodeType.Provider.\n *\n * Attention: Adding fields to this is performance sensitive!\n */\n\nexport interface
ProviderData {\n instance: any;\n}\n\n/**\n * Accessor for view.nodes, enforcing that every usage site stays
monomorphic.\n */\n\nexport function asProviderData(view: ViewData, index: number): ProviderData {\n return
<any>view.nodes[index];\n}\n\n/**\n * Data for an instantiated NodeType.PureExpression.\n *\n * Attention:
Adding fields to this is performance sensitive!\n */\n\nexport interface PureExpressionData {\n value:
any;\n}\n\n/**\n * Accessor for view.nodes, enforcing that every usage site stays monomorphic.\n */\n\nexport
function asPureExpressionData(view: ViewData, index: number): PureExpressionData {\n return
<any>view.nodes[index];\n}\n\n/**\n * Accessor for view.nodes, enforcing that every usage site stays
monomorphic.\n */\n\nexport function asQueryList(view: ViewData, index: number): QueryList<any> {\n return
<any>view.nodes[index];\n}\n\nexport interface RootData {\n injector: Injector;\n ngModule:
NgModuleRef<any>;\n projectableNodes: any[][];\n selectorOrNode: any;\n renderer: Renderer2;\n
rendererFactory: RendererFactory2;\n errorHandler: ErrorHandler;\n sanitizer: Sanitizer;\n}\n\nexport abstract
class DebugContext {\n abstract get view(): ViewData;\n abstract get nodeIndex(): number|null;\n abstract get
injector(): Injector;\n abstract get component(): any;\n abstract get providerTokens(): any[];\n abstract get
references(): {[key: string]: any};\n abstract get context(): any;\n abstract get componentRenderElement(): any;\n
abstract get renderNode(): any;\n abstract logError(console: Console, ...values: any[]): void;\n}\n\n// -----
-----\n\n// Other\n\n// -----\n\nexport const enum CheckType {\n
 CheckAndUpdate,\n CheckNoChanges\n}\n\nexport interface ProviderOverride {\n token: any;\n flags:
NodeFlags;\n value: any;\n deps: ([DepFlags, any] | any)[];\n deprecatedBehavior: boolean;\n}\n\nexport interface
Services {\n setCurrentNode(view: ViewData, nodeIndex: number): void;\n createRootView(\n injector:
Injector, projectableNodes: any[[], rootSelectorOrNode: string|any,\n def: ViewDefinition, ngModule:
NgModuleRef<any>, context?: any): ViewData;\n createEmbeddedView(parent: ViewData, anchorDef: NodeDef,
viewDef: ViewDefinition, context?: any):\n ViewData;\n createComponentView(\n parentView: ViewData,
nodeDef: NodeDef, viewDef: ViewDefinition, hostElement: any):\n ViewData;\n createNgModuleRef(\n
moduleType: Type<any>, parent: Injector, bootstrapComponents: Type<any>[],\n def: NgModuleDefinition):
NgModuleRef<any>;\n overrideProvider(override: ProviderOverride): void;\n
 overrideComponentView(compType: Type<any>, compFactory: ComponentFactory<any>): void;\n
 clearOverrides(): void;\n checkAndUpdateView(view: ViewData): void;\n checkNoChangesView(view:
ViewData): void;\n destroyView(view: ViewData): void;\n resolveDep(\n view: ViewData, elDef:

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NodeDef|null, allowPrivateServices: boolean, depDef: DepDef,\n notFoundValue?: any): any;\n
createDebugContext(view: ViewData, nodeIndex: number): DebugContext;\n
handleEvent: ViewHandleEventFn;\n
updateDirectives: (view: ViewData, checkType: CheckType) => void;\n
updateRenderer: (view: ViewData, checkType: CheckType) => void;\n
dirtyParentQueries: (view: ViewData) => void;\n}\n\n/*\n * This object is used to prevent cycles in the source files and to have a place where\n * debug mode can hook it. It is lazily filled when `isDevMode` is known.\n */\nexport const Services: Services = {\n setCurrentNode: undefined!,\n createRootView: undefined!,\n createEmbeddedView: undefined!,\n createComponentView: undefined!,\n createNgModuleRef: undefined!,\n overrideProvider: undefined!,\n overrideComponentView: undefined!,\n clearOverrides: undefined!,\n checkAndUpdateView: undefined!,\n checkNoChangesView: undefined!,\n destroyView: undefined!,\n resolveDep: undefined!,\n createDebugContext: undefined!,\n handleEvent: undefined!,\n updateDirectives: undefined!,\n updateRenderer: undefined!,\n dirtyParentQueries: undefined!,\n};\n"/**\n * @license\n * Copyright Google LLC All Rights Reserved.\n *\n * Use of this source code is governed by an MIT-style license that can be\n * found in the LICENSE file at https://angular.io/license\n */\n\nimport {devModeEqual, WrappedValue} from '../change_detection/change_detection';\nimport {SOURCE} from '../di/injector_compatibility';\nimport {ViewEncapsulation} from '../metadata/view';\nimport {RendererType2} from '../render/api_flags';\nimport {stringify} from '../util/stringify';\n\nimport {expressionChangedAfterItHasBeenCheckedError} from './errors';\nimport {asElementData, asTextData, BindingDef, BindingFlags, Definition, DefinitionFactory, DepDef, DepFlags, ElementData, NodeDef, NodeFlags, QueryValueType, Services, ViewData, ViewDefinition, ViewDefinitionFactory, ViewFlags, ViewState} from './types';\n\nexport const NOOP: any = () => {};\n\nconst _tokenKeyCache = new Map<any, string>();\n\nexport function tokenKey(token: any): string {\n let key = _tokenKeyCache.get(token);\n if (!key) {\n key = stringify(token) + '_' + _tokenKeyCache.size;\n _tokenKeyCache.set(token, key);\n }\n return key;\n}\n\nexport function unwrapValue(view: ViewData, nodeId: number, bindingIdx: number, value: any): any {\n if (WrappedValue.isWrapped(value)) {\n value = WrappedValue.unwrap(value);\n const globalBindingIdx = view.def.nodes[nodeId].bindingIndex + bindingIdx;\n const oldValue = WrappedValue.unwrap(view.oldValues[globalBindingIdx]);\n view.oldValues[globalBindingIdx] = new WrappedValue(oldValue);\n }\n return value;\n}\n\nconst UNDEFINED_RENDERER_TYPE_ID = '$$undefined';\nconst EMPTY_RENDERER_TYPE_ID = '$$empty';\n\n// Attention: this function is called as top level function.\n// Putting any logic in here will destroy closure tree shaking!\n\nexport function createRendererType2(values: {\n styles: (string|any[])[],\n encapsulation: ViewEncapsulation,\n data: {[kind: string]: any[]}\n}): RendererType2 {\n return {\n id: UNDEFINED_RENDERER_TYPE_ID,\n styles: values.styles,\n encapsulation: values.encapsulation,\n data: values.data\n };}\n\nlet _renderCompCount = 0;\n\nexport function resolveRendererType2(type?: RendererType2|null): RendererType2|null {\n if (type && type.id === UNDEFINED_RENDERER_TYPE_ID) {\n // first time we see this RendererType2. Initialize it...\n const isFilled =\n ((type.encapsulation !== null && type.encapsulation !== ViewEncapsulation.None) ||\n type.styles.length || Object.keys(type.data).length);\n if (isFilled) {\n type.id = `c${_renderCompCount++}`;\n } else {\n type.id = EMPTY_RENDERER_TYPE_ID;\n }\n if (type && type.id === EMPTY_RENDERER_TYPE_ID) {\n type = null;\n }\n return type || null;\n }\n}\n\nexport function checkBinding(\n view: ViewData, def: NodeDef, bindingIdx: number, value: any): boolean {\n const oldValues = view.oldValues;\n if ((view.state & ViewState.FirstCheck) ||\n !Object.is(oldValues[def.bindingIndex + bindingIdx], value)) {\n return true;\n }\n return false;\n}\n\nexport function checkAndUpdateBinding(\n view: ViewData, def: NodeDef, bindingIdx: number, value: any): boolean {\n if (checkBinding(view, def, bindingIdx, value)) {\n view.oldValues[def.bindingIndex + bindingIdx] = value;\n return true;\n }\n return false;\n}\n\nexport function checkBindingNoChanges(\n view: ViewData, def: NodeDef, bindingIdx: number, value: any) {\n const oldValue = view.oldValues[def.bindingIndex + bindingIdx];\n if ((view.state & ViewState.BeforeFirstCheck) ||\n !devModeEqual(oldValue, value)) {\n const bindingName = def.bindings[bindingIdx].name;\n throw expressionChangedAfterItHasBeenCheckedError(\n Services.createDebugContext(view, def.nodeIndex), `${bindingName}: ${oldValue}`,\n `${bindingName}`);

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 ${value}`, (view.state & ViewState.BeforeFirstCheck) !== 0);
 }
}

export function
markParentViewsForCheck(view: ViewData) {
 let currView: ViewData|null = view;
 while (currView) {
 if (currView.def.flags & ViewFlags.OnPush) {
 currView.state |= ViewState.ChecksEnabled;
 }
 currView = currView.viewContainerParent || currView.parent;
 }
}

export function
markParentViewsForCheckProjectedViews(view: ViewData, endView: ViewData) {
 let currView: ViewData|null = view;
 while (currView && currView !== endView) {
 currView.state |= ViewState.CheckProjectedViews;
 currView = currView.viewContainerParent || currView.parent;
 }
}

export function dispatchEvent(view:
ViewData, nodeIndex: number, eventName: string, event: any): boolean|undefined {
 try {
 const nodeDef = view.def.nodes[nodeIndex];
 const startView = nodeDef.flags & NodeFlags.ComponentView ?
asElementData(view, nodeIndex).componentView :
view;
 markParentViewsForCheck(startView);
 return Services.handleEvent(view, nodeIndex, eventName, event);
 } catch (e) {
 // Attention: Don't rethrow, as
it would cancel Observable subscriptions!
 view.root.errorHandler.handleError(e);
 }
}

export function
declaredViewContainer(view: ViewData): ElementData|null {
 if (view.parent) {
 const parentView = view.parent;
 return asElementData(parentView, view.parentNodeDef!.nodeIndex);
 }
 return null;
}

// * for component views, this is the host element.
// * for embedded views, this is the index of the
parent node
// * that contains the view container.
export function viewParentEl(view: ViewData):
NodeDef|null {
 const parentView = view.parent;
 if (parentView) {
 return view.parentNodeDef!.parent;
 }
 else {
 return null;
 }
}

export function renderNode(view: ViewData, def: NodeDef): any {
 switch (def.flags & NodeFlags.Types) {
 case NodeFlags.TypeElement:
 return asElementData(view, def.nodeIndex).renderElement;
 case NodeFlags.TypeText:
 return asTextData(view, def.nodeIndex).renderText;
 }
}

export function elementEventFullName(target: string|null, name: string):
string {
 return target ? `${target}:${name}` : name;
}

export function isComponentView(view: ViewData):
boolean {
 return !!view.parent && !(view.parentNodeDef!.flags & NodeFlags.Component);
}

export function isEmbeddedView(view: ViewData):
boolean {
 return !!view.parent && !(view.parentNodeDef!.flags & NodeFlags.Component);
}

export function filterQueryId(queryId: number): number {
 return 1 << (queryId % 32);
}

export function splitMatchedQueriesDsl(matchedQueriesDsl: [string|number, QueryValueType][]|null):
{
 matchedQueries: {[queryId: string]: QueryValueType},
 references: {[refId: string]: QueryValueType},
 matchedQueryIds: number
} {
 const matchedQueries: {[queryId: string]: QueryValueType} = {};
 let matchedQueryIds = 0;
 const references: {[refId: string]: QueryValueType} = {};
 if (matchedQueriesDsl) {
 matchedQueriesDsl.forEach(([queryId, valueType]) => {
 if (typeof queryId === 'number') {
 matchedQueries[queryId] = valueType;
 matchedQueryIds |= filterQueryId(queryId);
 } else {
 references[queryId] = valueType;
 }
 });
 }
 return {matchedQueries, references, matchedQueryIds};
}

export function splitDepsDsl(deps: ([DepFlags, any]|any)[], sourceName?: string):
DepDef[] {
 return deps.map(value => {
 let token: any;
 let flags: DepFlags;
 if (Array.isArray(value)) {
 [flags, token] = value;
 } else {
 flags = DepFlags.None;
 token = value;
 }
 if (token && (typeof token === 'function' || typeof token === 'object') && sourceName) {
 Object.defineProperty(token, SOURCE, {value: sourceName, configurable: true});
 }
 return {flags, token, tokenKey: tokenKey(token)};
 });
}

export function getParentRenderElement(view: ViewData, renderHost: any, def: NodeDef): any {
 let renderParent = def.renderParent;
 if (renderParent) {
 if ((renderParent.flags & NodeFlags.TypeElement) === 0 ||
(renderParent.flags & NodeFlags.ComponentView) === 0 ||
(renderParent.element!.componentRendererType &&
(renderParent.element!.componentRendererType!.encapsulation ===
ViewEncapsulation.ShadowDom ||
// TODO(FW-2290): remove the `encapsulation === 1` fallback logic in v12.
renderParent.element!.componentRendererType!.encapsulation === 1))) {
 // only children of non components,
or children of components with native encapsulation should
// be attached.
 return asElementData(view, def.renderParent!.nodeIndex).renderElement;
 }
 }
 else {
 return renderHost;
 }
}

const DEFINITION_CACHE = new WeakMap<any, Definition<any>>();
export function resolveDefinition<D
extends Definition<any>>(factory: DefinitionFactory<D>): D {
 let value = DEFINITION_CACHE.get(factory)!

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as D;\n if (!value) {\n value = factory(() => NOOP);\n value.factory = factory;\n
DEFINITION_CACHE.set(factory, value);\n }\n return value;\n}\n\nexport function rootRenderNodes(view:
ViewData): any[] {\n const renderNodes: any[] = [];\n visitRootRenderNodes(view, RenderNodeAction.Collect,
undefined, undefined, renderNodes);\n return renderNodes;\n}\n\nexport const enum RenderNodeAction {\n
Collect,\n AppendChild,\n InsertBefore,\n RemoveChild\n}\n\nexport function visitRootRenderNodes(\n view:
ViewData, action: RenderNodeAction, parentNode: any, nextSibling: any, target?: any[]) {\n // We need to re-
compute the parent node in case the nodes have been moved around manually\n if (action ===
RenderNodeAction.RemoveChild) {\n parentNode = view.renderer.parentNode(renderNode(view,
view.def.lastRenderRootNode!));\n }\n visitSiblingRenderNodes(\n view, action, 0, view.def.nodes.length - 1,
parentNode, nextSibling, target);\n}\n\nexport function visitSiblingRenderNodes(\n view: ViewData, action:
RenderNodeAction, startIndex: number, endIndex: number, parentNode: any,\n nextSibling: any, target?: any[])
{\n for (let i = startIndex; i <= endIndex; i++) {\n const nodeDef = view.def.nodes[i];\n if (nodeDef.flags &
(NodeFlags.TypeElement | NodeFlags.TypeText | NodeFlags.TypeNgContent)) {\n visitRenderNode(view,
nodeDef, action, parentNode, nextSibling, target);\n }\n // jump to next sibling\n i += nodeDef.childCount;\n }\n}\n\nexport function visitProjectedRenderNodes(\n view: ViewData, ngContentIndex: number, action:
RenderNodeAction, parentNode: any,\n nextSibling: any, target?: any[]) {\n let compView: ViewData|null =
view;\n while (compView && !isComponentView(compView)) {\n compView = compView.parent;\n }\n const
hostView = compView!.parent;\n const hostElDef = viewParentEl(compView!);\n const startIndex =
hostElDef!.nodeIndex + 1;\n const endIndex = hostElDef!.nodeIndex + hostElDef!.childCount;\n for (let i =
startIndex; i <= endIndex; i++) {\n const nodeDef = hostView!.def.nodes[i];\n if (nodeDef.ngContentIndex ===
ngContentIndex) {\n visitRenderNode(hostView!, nodeDef, action, parentNode, nextSibling, target);\n }\n //
jump to next sibling\n i += nodeDef.childCount;\n }\n if (!hostView!.parent) {\n // a root view\n const
projectedNodes = view.root.projectableNodes[ngContentIndex];\n if (projectedNodes) {\n for (let i = 0; i <
projectedNodes.length; i++) {\n execRenderNodeAction(view, projectedNodes[i], action, parentNode,
nextSibling, target);\n }\n }\n }\n}\n\nfunction visitRenderNode(\n view: ViewData, nodeDef: NodeDef,
action: RenderNodeAction, parentNode: any, nextSibling: any,\n target?: any[]) {\n if (nodeDef.flags &
NodeFlags.TypeNgContent) {\n visitProjectedRenderNodes(\n view, nodeDef.ngContent!.index, action,
parentNode, nextSibling, target);\n } else {\n const rn = renderNode(view, nodeDef);\n if (action ===
RenderNodeAction.RemoveChild && (nodeDef.flags & NodeFlags.ComponentView) &&\n
(nodeDef.bindingFlags & BindingFlags.CatSyntheticProperty)) {\n // Note: we might need to do both actions.\n
if (nodeDef.bindingFlags & (BindingFlags.SyntheticProperty)) {\n execRenderNodeAction(view, rn, action,
parentNode, nextSibling, target);\n }\n if (nodeDef.bindingFlags & (BindingFlags.SyntheticHostProperty))
{\n const compView = asElementData(view, nodeDef.nodeIndex).componentView;\n
execRenderNodeAction(compView, rn, action, parentNode, nextSibling, target);\n }\n } else {\n execRenderNodeAction(view, rn, action, parentNode, nextSibling, target);\n }\n if (nodeDef.flags &
NodeFlags.EmbeddedViews) {\n const embeddedViews = asElementData(view,
nodeDef.nodeIndex).viewContainer!._embeddedViews;\n for (let k = 0; k < embeddedViews.length; k++) {\n
visitRootRenderNodes(embeddedViews[k], action, parentNode, nextSibling, target);\n }\n }\n if
(nodeDef.flags & NodeFlags.TypeElement && !nodeDef.element!.name) {\n visitSiblingRenderNodes(\n
view, action, nodeDef.nodeIndex + 1, nodeDef.nodeIndex + nodeDef.childCount, parentNode,\n nextSibling,
target);\n }\n }\n}\n\nfunction execRenderNodeAction(\n view: ViewData, renderNode: any, action:
RenderNodeAction, parentNode: any, nextSibling: any,\n target?: any[]) {\n const renderer = view.renderer;\n
switch (action) {\n case RenderNodeAction.AppendChild:\n renderer.appendChild(parentNode, renderNode);\n
break;\n case RenderNodeAction.InsertBefore:\n renderer.insertBefore(parentNode, renderNode,
nextSibling);\n break;\n case RenderNodeAction.RemoveChild:\n renderer.removeChild(parentNode,
renderNode);\n break;\n case RenderNodeAction.Collect:\n target!.push(renderNode);\n break;\n }\n}\n\nconst NS_PREFIX_RE = /^(?:[^\s:]+):?$/;\n\nexport function splitNamespace(name: string): string[] {\n if
(name[0] === ':') {\n const match = name.match(NS_PREFIX_RE);\n return [match[1], match[2]];\n }\n}

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return ['', name];\n}\n\nexport function calcBindingFlags(bindings: BindingDef[]): BindingFlags {\n let flags = 0;\n for (let i = 0; i < bindings.length; i++) {\n flags |= bindings[i].flags;\n }\n return flags;\n}\n\nexport function interpolate(valueCount: number, constAndInterp: string[]): string {\n let result = \";\n for (let i = 0; i < valueCount * 2; i = i + 2) {\n result = result + constAndInterp[i] + _toStringWithNull(constAndInterp[i + 1]);\n }\n return result + constAndInterp[valueCount * 2];\n}\n\nexport function inlineInterpolate(\n valueCount: number, c0: string, a1: any, c1: string, a2?: any, c2?: string, a3?: any, c3?: string, a4?: any, c4?: string, a5?: any, c5?: string, a6?: any, c6?: string, a7?: any, c7?: string, a8?: any, c8?: string, a9?: any, c9?: string): string {\n switch (valueCount) {\n case 1:\n return c0 + _toStringWithNull(a1) + c1;\n case 2:\n return c0 + _toStringWithNull(a1) + c1 + _toStringWithNull(a2) + c2;\n case 3:\n return c0 + _toStringWithNull(a1) + c1 + _toStringWithNull(a2) + c2 + _toStringWithNull(a3) +\n c3;\n case 4:\n return c0 + _toStringWithNull(a1) + c1 + _toStringWithNull(a2) + c2 + _toStringWithNull(a3) +\n c3 + _toStringWithNull(a4) + c4;\n case 5:\n return c0 + _toStringWithNull(a1) + c1 + _toStringWithNull(a2) + c2 + _toStringWithNull(a3) +\n c3 + _toStringWithNull(a4) + c4 + _toStringWithNull(a5) + c5;\n case 6:\n return c0 + _toStringWithNull(a1) + c1 + _toStringWithNull(a2) + c2 + _toStringWithNull(a3) +\n c3 + _toStringWithNull(a4) + c4 + _toStringWithNull(a5) + c5 + _toStringWithNull(a6) + c6;\n case 7:\n return c0 + _toStringWithNull(a1) + c1 + _toStringWithNull(a2) + c2 + _toStringWithNull(a3) +\n c3 + _toStringWithNull(a4) + c4 + _toStringWithNull(a5) + c5 + _toStringWithNull(a6) +\n c6 + _toStringWithNull(a7) + c7;\n case 8:\n return c0 + _toStringWithNull(a1) + c1 + _toStringWithNull(a2) + c2 + _toStringWithNull(a3) +\n c3 + _toStringWithNull(a4) + c4 + _toStringWithNull(a5) + c5 + _toStringWithNull(a6) +\n c6 + _toStringWithNull(a7) + c7 + _toStringWithNull(a8) + c8;\n case 9:\n return c0 + _toStringWithNull(a1) + c1 + _toStringWithNull(a2) + c2 + _toStringWithNull(a3) +\n c3 + _toStringWithNull(a4) + c4 + _toStringWithNull(a5) + c5 + _toStringWithNull(a6) +\n c6 + _toStringWithNull(a7) + c7 + _toStringWithNull(a8) + c8 + _toStringWithNull(a9) + c9;\n default:\n throw new Error(`Does not support more than 9 expressions`);\n }\n}\n\nfunction _toStringWithNull(v: any): string {\n return v != null ? v.toString() : \";\n}\n\nexport const EMPTY_ARRAY: any[] = [];\nexport const EMPTY_MAP: {[key: string]: any} = {};\n\n/**\n * @license\n * Copyright Google LLC All Rights Reserved.\n *\n * Use of this source code is governed by an MIT-style license that can be\n * found in the LICENSE file at\n https://angular.io/license\n */\n\nimport {resolveForwardRef} from './di/forward_ref';\nimport {Injector} from './di/injector';\nimport {setCurrentInjector} from './di/injector_compatibility';\nimport {INJECTOR} from './di/injector_token';\nimport {getInjectableDef, InjectableDef} from './di/interface/defs';\nimport {INJECTOR_SCOPE} from './di/scope';\nimport {NgModuleRef} from './linker/ng_module_factory';\nimport {newArray} from './util/array_utils';\nimport {stringify} from './util/stringify';\n\nimport {DepDef, DepFlags, NgModuleData, NgModuleDefinition, NgModuleProviderDef, NodeFlags} from './types';\nimport {splitDepsDsl, tokenKey} from './util';\n\nconst UNDEFINED_VALUE = {};\nconst InjectorRefTokenKey = tokenKey(Injector);\nconst INJECTORRefTokenKey = tokenKey(INJECTOR);\nconst NgModuleRefTokenKey = tokenKey(NgModuleRef);\n\nexport function moduleProvideDef(\n flags: NodeFlags, token: any, value: any, deps: ([DepFlags, any]|any)[]): NgModuleProviderDef {\n // Need to resolve forwardRefs as e.g. for `useValue` we\n // lowered the expression and then stopped evaluating it, // i.e. also didn't unwrap it.\n value = resolveForwardRef(value);\n const depDeps = splitDepsDsl(deps, stringify(token));\n return {\n // will be set by the module definition\n index: -1,\n deps: depDeps,\n flags,\n token,\n value\n };\n}\n\nexport function moduleDef(providers: NgModuleProviderDef[]): NgModuleDefinition {\n const providersByKey: {[key: string]: NgModuleProviderDef} = {};\n const modules = [];\n let scope: 'root'|'platform'|null = null;\n for (let i = 0; i < providers.length; i++) {\n const provider = providers[i];\n if (provider.token === INJECTOR_SCOPE) {\n scope = provider.value;\n }\n if (provider.flags & NodeFlags.TypeNgModule) {\n modules.push(provider.token);\n }\n provider.index = i;\n providersByKey[tokenKey(provider.token)] = provider;\n }\n return {\n // Will be filled later...\n factory: null,\n providersByKey,\n providers,\n modules,\n scope: scope,\n };\n}\n\nexport function initNgModule(data: NgModuleData) {\n const def = data._def;\n const providers = data._providers = newArray(def.providers.length);\n for (let i = 0; i <

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def.providers.length; i++) {\n const provDef = def.providers[i];\n if (!(provDef.flags &
NodeFlags.LazyProvider)) {\n // Make sure the provider has not been already initialized outside this loop.\n if
(providers[i] === undefined) {\n providers[i] = _createProviderInstance(data, provDef);\n }\n }\n}\n\nexport function resolveNgModuleDep(\n data: NgModuleData, depDef: DepDef, notFoundValue: any =
Injector.THROW_IF_NOT_FOUND): any {\n const former = setCurrentInjector(data);\n try {\n if (depDef.flags & DepFlags.Value) {\n return depDef.token;\n }\n if (depDef.flags & DepFlags.Optional) {\n
notFoundValue = null;\n }\n if (depDef.flags & DepFlags.SkipSelf) {\n return data._parent.get(depDef.token,
notFoundValue);\n }\n const tokenKey = depDef.tokenKey;\n switch (tokenKey) {\n case
InjectorRefTokenKey:\n case INJECTORRefTokenKey:\n case NgModuleRefTokenKey:\n return data;\n }\n const providerDef = data._def.providersByKey[tokenKey];\n let injectableDef: InjectableDef<any>|null;\n if (providerDef) {\n let providerInstance = data._providers[providerDef.index];\n if (providerInstance ===
undefined) {\n providerInstance = data._providers[providerDef.index] =\n _createProviderInstance(data,
providerDef);\n }\n return providerInstance === UNDEFINED_VALUE ? undefined : providerInstance;\n }\n else if (\n (injectableDef = getInjectableDef(depDef.token)) && targetsModule(data, injectableDef)) {\n
const index = data._providers.length;\n data._def.providers[index] =
data._def.providersByKey[depDef.tokenKey] = {\n flags: NodeFlags.TypeFactoryProvider |
NodeFlags.LazyProvider,\n value: injectableDef.factory,\n deps: [],\n index,\n token:
depDef.token,\n };\n data._providers[index] = UNDEFINED_VALUE;\n return (\n
data._providers[index] =\n _createProviderInstance(data, data._def.providersByKey[depDef.tokenKey]));\n }\n } else if (depDef.flags & DepFlags.Self) {\n return notFoundValue;\n }\n return
data._parent.get(depDef.token, notFoundValue);\n } finally {\n setCurrentInjector(former);\n }\n}\n\nfunction
moduleTransitivelyPresent(ngModule: NgModuleData, scope: any): boolean {\n return
ngModule._def.modules.indexOf(scope) > -1;\n}\n\nfunction targetsModule(ngModule: NgModuleData, def:
InjectableDef<any>): boolean {\n const providedIn = def.providedIn;\n return providedIn !== null &&\n
(providedIn === 'any' || providedIn === ngModule._def.scope ||\n moduleTransitivelyPresent(ngModule,
providedIn));\n}\n\nfunction _createProviderInstance(ngModule: NgModuleData, providerDef:
NgModuleProviderDef): any {\n let injectable: any;\n switch (providerDef.flags & NodeFlags.Types) {\n case
NodeFlags.TypeClassProvider:\n injectable = _createClass(ngModule, providerDef.value, providerDef.deps);\n break;\n case NodeFlags.TypeFactoryProvider:\n injectable = _callFactory(ngModule, providerDef.value,
providerDef.deps);\n break;\n case NodeFlags.TypeUseExistingProvider:\n injectable =
resolveNgModuleDep(ngModule, providerDef.deps[0]);\n break;\n case NodeFlags.TypeValueProvider:\n
injectable = providerDef.value;\n break;\n }\n // The read of `ngOnDestroy` here is slightly expensive as it's
megamorphic, so it should be\n // avoided if possible. The sequence of checks here determines whether
ngOnDestroy needs to be\n // checked. It might not if the `injectable` isn't an object or if NodeFlags.OnDestroy is
already\n // set (ngOnDestroy was detected statically).\n if (injectable !== UNDEFINED_VALUE && injectable
!== null && typeof injectable === 'object' &&\n !(providerDef.flags & NodeFlags.OnDestroy) && typeof
injectable.ngOnDestroy === 'function') {\n providerDef.flags |= NodeFlags.OnDestroy;\n }\n return injectable
=== undefined ? UNDEFINED_VALUE : injectable;\n}\n\nfunction _createClass(ngModule: NgModuleData, ctor:
any, deps: DepDef[]): any {\n const len = deps.length;\n switch (len) {\n case 0:\n return new ctor();\n case
1:\n return new ctor(resolveNgModuleDep(ngModule, deps[0]));\n case 2:\n return new
ctor(resolveNgModuleDep(ngModule, deps[0]), resolveNgModuleDep(ngModule, deps[1]));\n case 3:\n return
new ctor(\n resolveNgModuleDep(ngModule, deps[0]), resolveNgModuleDep(ngModule, deps[1]),\n resolveNgModuleDep(ngModule, deps[2]));\n default:\n const depValues = [];\n for (let i = 0; i < len; i++)\n {\n depValues[i] = resolveNgModuleDep(ngModule, deps[i]);\n }\n return new ctor(...depValues);\n }\n }\n}\n\nfunction _callFactory(ngModule: NgModuleData, factory: any, deps: DepDef[]): any {\n const len =
deps.length;\n switch (len) {\n case 0:\n return factory();\n case 1:\n return
factory(resolveNgModuleDep(ngModule, deps[0]));\n case 2:\n return
factory(resolveNgModuleDep(ngModule, deps[0]), resolveNgModuleDep(ngModule, deps[1]));\n case 3:\n

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embeddedViews[oldViewIndex];\n removeFromArray(embeddedViews, oldViewIndex);\n if (newViewIndex ==
null) {\n newViewIndex = embeddedViews.length;\n }\n addToArray(embeddedViews, newViewIndex,
view);\n\n // Note: Don't need to change projectedViews as the order in there\n // as always invalid...\n\n
Services.dirtyParentQueries(view);\n\n renderDetachView(view);\n const prevView = newViewIndex > 0 ?
embeddedViews[newViewIndex - 1] : null;\n renderAttachEmbeddedView(elementData, prevView, view);\n\n
return view;\n}\n\nfunction renderAttachEmbeddedView(\n elementData: ElementData, prevView:
ViewData|null, view: ViewData) {\n const prevRenderNode =\n prevView ? renderNode(prevView,
prevView.def.lastRenderRootNode!) : elementData.renderElement;\n const parentNode =
view.renderer.parentNode(prevRenderNode);\n const nextSibling = view.renderer.nextSibling(prevRenderNode);\n
// Note: We can't check if `nextSibling` is present, as on WebWorkers it will always be!\n // However, browsers
automatically do `appendChild` when there is no `nextSibling`.\n visitRootRenderNodes(view,
RenderNodeAction.InsertBefore, parentNode, nextSibling, undefined);\n}\n\nexport function
renderDetachView(view: ViewData) {\n visitRootRenderNodes(view, RenderNodeAction.RemoveChild, null, null,
undefined);\n}\n\n"/**\n * @license\n * Copyright Google LLC All Rights Reserved.\n * Use of this source
code is governed by an MIT-style license that can be\n * found in the LICENSE file at https://angular.io/license\n
*/\n\nimport { ChangeDetectorRef } from './change_detection/change_detection';\nimport { Injector } from
'./di/injector';\nimport { InjectFlags } from './di/interface/injector';\nimport { Type } from './interface/type';\nimport
{ ComponentFactory, ComponentRef } from './linker/component_factory';\nimport
{ ComponentFactoryBoundToModule, ComponentFactoryResolver } from
'./linker/component_factory_resolver';\nimport { ElementRef } from './linker/element_ref';\nimport
{ InternalNgModuleRef, NgModuleRef } from './linker/ng_module_factory';\nimport { TemplateRef } from
'./linker/template_ref';\nimport { ViewContainerRef } from './linker/view_container_ref';\nimport
{ EmbeddedViewRef, InternalViewRef, ViewRef, ViewRefTracker } from './linker/view_ref';\nimport { stringify }
from './util/stringify';\nimport { VERSION } from './version';\nimport { callNgModuleLifecycle, initNgModule,
resolveNgModuleDep } from './ng_module';\nimport { asElementData, asProviderData, asTextData, DepFlags,
ElementData, NgModuleData, NgModuleDefinition, NodeDef, NodeFlags, Services, TemplateData,
ViewContainerData, ViewData, ViewDefinitionFactory, ViewState } from './types';\nimport
{ markParentViewsForCheck, resolveDefinition, rootRenderNodes, tokenKey, viewParentEl } from './util';\nimport
{ attachEmbeddedView, detachEmbeddedView, moveEmbeddedView, renderDetachView } from
'./view_attach';\n\nconst EMPTY_CONTEXT = {};\n\n// Attention: this function is called as top level function.\n\n
Putting any logic in here will destroy closure tree shaking!\n\nexport function createComponentFactory(\n selector:
string, componentType: Type<any>, viewDefFactory: ViewDefinitionFactory,\n inputs: {[propName: string]:
string}|null, outputs: {[propName: string]: string},\n ngContentSelectors: string[]): ComponentFactory<any> {\n
return new ComponentFactory_(\n selector, componentType, viewDefFactory, inputs, outputs,
ngContentSelectors);\n}\n\nexport function getComponentViewDefinitionFactory(componentFactory:
ComponentFactory<any>):\n ViewDefinitionFactory {\n return (componentFactory as
ComponentFactory_).viewDefFactory;\n}\n\n\nclass ComponentFactory_ extends ComponentFactory<any> {\n /**\n
 * @internal\n * viewDefFactory: ViewDefinitionFactory;\n\n constructor(\n public selector: string, public
componentType: Type<any>,\n viewDefFactory: ViewDefinitionFactory, private _inputs: {[propName: string]:
string}|null,\n private _outputs: {[propName: string]: string}, public ngContentSelectors: string[]) {\n //
Attention: this ctor is called as top level function.\n // Putting any logic in here will destroy closure tree shaking!\n
super();\n this.viewDefFactory = viewDefFactory;\n }\n\n get inputs() {\n const inputsArr: {propName: string,
templateName: string}[] = [];\n const inputs = this._inputs!;\n for (let propName in inputs) {\n const
templateName = inputs[propName];\n inputsArr.push({propName, templateName});\n }\n return inputsArr;\n
}\n\n get outputs() {\n const outputsArr: {propName: string, templateName: string}[] = [];\n for (let propName
in this._outputs) {\n const templateName = this._outputs[propName];\n outputsArr.push({propName,
templateName});\n }\n return outputsArr;\n }\n\n /**\n * Creates a new component.\n */\n create(\n
injector: Injector, projectableNodes?: any[][], rootSelectorOrNode?: string|any,\n ngModule?:

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NgModuleRef<any>): ComponentRef<any> {\n if (!NgModule) {\n throw new Error('NgModule should be
provided');\n }\n const viewDef = resolveDefinition(this.viewDefFactory);\n const componentNodeIndex =
viewDef.nodes[0].element!.componentProvider!.nodeIndex;\n const view = Services.createRootView(\n
injector, projectableNodes || [], rootSelectorOrNode, viewDef, NgModule, EMPTY_CONTEXT);\n const
component = asProviderData(view, componentNodeIndex).instance;\n if (rootSelectorOrNode) {\n
view.renderer.setAttribute(asElementData(view, 0).renderElement, 'ng-version', VERSION.full);\n }\n\n
return new ComponentRef_(view, new ViewRef_(view), component);\n }\n}\n\nclass ComponentRef_ extends
ComponentRef<any> {\n public readonly hostView: ViewRef;\n public readonly instance: any;\n public readonly
changeDetectorRef: ChangeDetectorRef;\n private _elDef: NodeDef;\n constructor(private _view: ViewData,
private _viewRef: ViewRef, private _component: any) {\n super();\n this._elDef = this._view.def.nodes[0];\n
this.hostView = _viewRef;\n this.changeDetectorRef = _viewRef;\n this.instance = _component;\n }\n get
location(): ElementRef {\n return new ElementRef(asElementData(this._view,
this._elDef.nodeIndex).renderElement);\n }\n get injector(): Injector {\n return new Injector_(this._view,
this._elDef);\n }\n get componentType(): Type<any> {\n return <any>this._component.constructor;\n }\n\n
destroy(): void {\n this._viewRef.destroy();\n }\n onDestroy(callback: Function): void {\n
this._viewRef.onDestroy(callback);\n }\n}\n\nexport function createViewContainerData(\n view: ViewData,
elDef: NodeDef, elData: ElementData): ViewContainerData {\n return new ViewContainerRef_(view, elDef,
elData);\n}\n\nclass ViewContainerRef_ implements ViewContainerData {\n /**\n * @internal\n */\n _embeddedViews: ViewData[] = [];\n constructor(private _view: ViewData, private _elDef: NodeDef, private
_data: ElementData) {\n }\n get element(): ElementRef {\n return new ElementRef(this._data.renderElement);\n }\n\n
get injector(): Injector {\n return new Injector_(this._view, this._elDef);\n }\n\n /** @deprecated No
replacement */\n get parentInjector(): Injector {\n let view = this._view;\n let elDef = this._elDef.parent;\n
while (!elDef && view) {\n elDef = viewParentEl(view);\n view = view.parent!;\n }\n\n return view ?
new Injector_(view, elDef) : new Injector_(this._view, null);\n }\n\n clear(): void {\n const len =
this._embeddedViews.length;\n for (let i = len - 1; i >= 0; i--) {\n const view =
detachEmbeddedView(this._data, i);\n Services.destroyView(view);\n }\n }\n\n get(index: number):
ViewRef|null {\n const view = this._embeddedViews[index];\n if (view) {\n const ref = new
ViewRef_(view);\n ref.attachToViewContainerRef(this);\n return ref;\n }\n return null;\n }\n\n
get length(): number {\n return this._embeddedViews.length;\n }\n\n createEmbeddedView<C>(templateRef:
TemplateRef<C>, context?: C, index?: number): EmbeddedViewRef<C> {\n const viewRef =
templateRef.createEmbeddedView(context || <any>{});\n this.insert(viewRef, index);\n return viewRef;\n }\n\n
createComponent<C>(\n componentFactory: ComponentFactory<C>, index?: number, injector?: Injector,\n projectableNodes?: any[][], NgModuleRef?: NgModuleRef<any>): ComponentRef<C> {\n const contextInjector =
injector || this.parentInjector;\n if (!NgModuleRef && !(componentFactory instanceof
ComponentFactoryBoundToModule)) {\n NgModuleRef = contextInjector.get(NgModuleRef);\n }\n const
componentRef =\n componentFactory.create(contextInjector, projectableNodes, undefined, NgModuleRef);\n this.insert(componentRef.hostView, index);\n return componentRef;\n }\n\n insert(viewRef: ViewRef, index?:
number): ViewRef {\n if (viewRef.destroyed) {\n throw new Error('Cannot insert a destroyed View in a
ViewContainer!');\n }\n const viewRef_ = <ViewRef_>viewRef;\n const viewData = viewRef._view;\n
attachEmbeddedView(this._view, this._data, index, viewData);\n viewRef_.attachToViewContainerRef(this);\n
return viewRef;\n }\n\n move(viewRef: ViewRef_, currentIndex: number): ViewRef {\n if (viewRef.destroyed)
{\n throw new Error('Cannot move a destroyed View in a ViewContainer!');\n }\n const previousIndex =
this._embeddedViews.indexOf(viewRef._view);\n moveEmbeddedView(this._data, previousIndex,
currentIndex);\n return viewRef;\n }\n\n indexOf(viewRef: ViewRef): number {\n return
this._embeddedViews.indexOf(<<ViewRef_>viewRef)._view);\n }\n\n remove(index?: number): void {\n const
viewData = detachEmbeddedView(this._data, index);\n if (viewData) {\n Services.destroyView(viewData);\n
}\n }\n\n detach(index?: number): ViewRef|null {\n const view = detachEmbeddedView(this._data, index);\n
return view ? new ViewRef_(view) : null;\n }\n}\n\nexport function createChangeDetectorRef(view: ViewData):

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ChangeDetectorRef {\n return new ViewRef_(view);\n}\n\nexport class ViewRef_ implements
EmbeddedViewRef<any>, InternalViewRef {\n /** @internal */\n _view: ViewData;\n private
_viewContainerRef: ViewContainerRef|null;\n private _appRef: ViewRefTracker|null;\n\n constructor(_view:
ViewData) {\n this._view = _view;\n this._viewContainerRef = null;\n this._appRef = null;\n }\n\n get
rootNodes(): any[] {\n return rootRenderNodes(this._view);\n }\n\n get context() {\n return
this._view.context;\n }\n\n get destroyed(): boolean {\n return (this._view.state & ViewState.Destroyed) !== 0;\n
}\n\n markForCheck(): void {\n markParentViewsForCheck(this._view);\n }\n\n detach(): void {\n
this._view.state &= ~ViewState.Attached;\n }\n\n detectChanges(): void {\n const fs =
this._view.root.rendererFactory;\n if (fs.begin) {\n fs.begin();\n }\n try {\n
Services.checkAndUpdateView(this._view);\n } finally {\n if (fs.end) {\n fs.end();\n }\n }\n }\n\n
checkNoChanges(): void {\n Services.checkNoChangesView(this._view);\n }\n\n reattach(): void {\n
this._view.state |= ViewState.Attached;\n }\n\n onDestroy(callback: Function) {\n if (!this._view.disposables) {\n
this._view.disposables = [];\n }\n this._view.disposables.push(<any>callback);\n }\n\n destroy() {\n if
(this._appRef) {\n this._appRef.detachView(this);\n } else if (this._viewContainerRef) {\n
this._viewContainerRef.detach(this._viewContainerRef.indexOf(this));\n }\n\n
Services.destroyView(this._view);\n }\n\n detachFromAppRef() {\n this._appRef = null;\n
renderDetachView(this._view);\n Services.dirtyParentQueries(this._view);\n }\n\n attachToAppRef(appRef:
ViewRefTracker) {\n if (this._viewContainerRef) {\n throw new Error("This view is already attached to a
ViewContainer!");\n }\n this._appRef = appRef;\n }\n\n attachToViewContainerRef(vcRef: ViewContainerRef)
{\n if (this._appRef) {\n throw new Error("This view is already attached directly to the ApplicationRef!");\n
}\n this._viewContainerRef = vcRef;\n }\n}\n\nexport function createTemplateData(view: ViewData, def:
NodeDef): TemplateData {\n return new TemplateRef_(view, def);\n}\n\nclass TemplateRef_ extends
TemplateRef<any> implements TemplateData {\n /**\n * @internal\n */\n // TODO(issue/24571): remove '!.\n
_projectedViews!: ViewData[];\n\n constructor(private _parentView: ViewData, private _def: NodeDef) {\n
super();\n }\n\n createEmbeddedView(context: any): EmbeddedViewRef<any> {\n return new
ViewRef_(Services.createEmbeddedView(\n this._parentView, this._def, this._def.element!.template!,
context));\n }\n\n getElementRef(): ElementRef {\n return new ElementRef(asElementData(this._parentView,
this._def.nodeIndex).renderElement);\n }\n}\n\nexport function createInjector(view: ViewData, elDef: NodeDef):
Injector {\n return new Injector_(view, elDef);\n}\n\nclass Injector_ implements Injector {\n constructor(private
view: ViewData, private elDef: NodeDef|null) {\n get(token: any, notFoundValue: any =
Injector.THROW_IF_NOT_FOUND): any {\n const allowPrivateServices =\n this.elDef ? (this.elDef.flags &
NodeFlags.ComponentView) !== 0 : false;\n return Services.resolveDep(\n this.view, this.elDef,
allowPrivateServices,\n {flags: DepFlags.None, token, tokenKey: tokenKey(token)}, notFoundValue);\n
}\n}\n\nexport function nodeValue(view: ViewData, index: number): any {\n const def = view.def.nodes[index];\n
if (def.flags & NodeFlags.TypeElement) {\n const elData = asElementData(view, def.nodeIndex);\n return
def.element!.template ? elData.template : elData.renderElement;\n } else if (def.flags & NodeFlags.TypeText) {\n
return asTextData(view, def.nodeIndex).renderText;\n } else if (def.flags & (NodeFlags.CatProvider |
NodeFlags.TypePipe)) {\n return asProviderData(view, def.nodeIndex).instance;\n }\n throw new Error("Illegal
state: read nodeValue for node index ${index}");\n}\n\nexport function createNgModuleRef(\n moduleType:
Type<any>, parent: Injector, bootstrapComponents: Type<any>[],\n def: NgModuleDefinition):
NgModuleRef<any> {\n return new NgModuleRef_(moduleType, parent, bootstrapComponents, def);\n}\n\nclass
NgModuleRef_ implements NgModuleData, InternalNgModuleRef<any> {\n private _destroyListeners: (() =>
void)[] = [];\n private _destroyed: boolean = false;\n /** @internal */\n // TODO(issue/24571): remove '!.\n
_providers!: any[];\n /** @internal */\n // TODO(issue/24571): remove '!.\n _modules!: any[];\n\n readonly
injector: Injector = this;\n\n constructor(\n private _moduleType: Type<any>, public _parent: Injector,\n
public _bootstrapComponents: Type<any>[], public _def: NgModuleDefinition) {\n initNgModule(this);\n }\n\n
get(token: any, notFoundValue: any = Injector.THROW_IF_NOT_FOUND,\n injectFlags: InjectFlags =
InjectFlags.Default): any {\n let flags = DepFlags.None;\n if (injectFlags & InjectFlags.SkipSelf) {\n flags |=

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def);\n}\n\nexport function createPipeInstance(view: ViewData, def: NodeDef): any {\n // deps are looked up from
component.\n let compView = view;\n while (compView.parent && !isComponentView(compView)) {\n
compView = compView.parent;\n }\n // pipes can see the private services of the component\n const
allowPrivateServices = true;\n // pipes are always eager and classes!\n return createClass(\n compView.parent!,
viewParentEl(compView)!, allowPrivateServices, def.provider!.value,\n def.provider!.deps);\n}\n\nexport
function createDirectiveInstance(view: ViewData, def: NodeDef): any {\n // components can see other private
services, other directives can't.\n const allowPrivateServices = (def.flags & NodeFlags.Component) > 0;\n //
directives are always eager and classes!\n const instance =\n createClass(view, def.parent!, allowPrivateServices,
def.provider!.value, def.provider!.deps);\n if (def.outputs.length) {\n for (let i = 0; i < def.outputs.length; i++) {\n
const output = def.outputs[i];\n const outputObservable = instance[output.propName!];\n if
(isObservable(outputObservable)) {\n const subscription = outputObservable.subscribe(\n
eventHandlerClosure(view, def.parent!.nodeIndex, output.eventName));\n view.disposables![def.outputIndex +
i] = subscription.unsubscribe.bind(subscription);\n } else {\n throw new Error(\n `@Output
${output.propName} not initialized in '${instance.constructor.name}'.`);\n }\n }\n }\n return
instance;\n}\n\nfunction eventHandlerClosure(view: ViewData, index: number, eventName: string) {\n return
(event: any) => dispatchEvent(view, index, eventName, event);\n}\n\nexport function
checkAndUpdateDirectiveInline(\n view: ViewData, def: NodeDef, v0: any, v1: any, v2: any, v3: any, v4: any, v5:
any, v6: any,\n v7: any, v8: any, v9: any): boolean {\n const providerData = asProviderData(view,
def.nodeIndex);\n const directive = providerData.instance;\n let changed = false;\n let changes: SimpleChanges =
undefined!;\n const bindLen = def.bindings.length;\n if (bindLen > 0 && checkBinding(view, def, 0, v0)) {\n
changed = true;\n changes = updateProp(view, providerData, def, 0, v0, changes);\n }\n if (bindLen > 1 &&
checkBinding(view, def, 1, v1)) {\n changed = true;\n changes = updateProp(view, providerData, def, 1, v1,
changes);\n }\n if (bindLen > 2 && checkBinding(view, def, 2, v2)) {\n changed = true;\n changes =
updateProp(view, providerData, def, 2, v2, changes);\n }\n if (bindLen > 3 && checkBinding(view, def, 3, v3)) {\n
changed = true;\n changes = updateProp(view, providerData, def, 3, v3, changes);\n }\n if (bindLen > 4 &&
checkBinding(view, def, 4, v4)) {\n changed = true;\n changes = updateProp(view, providerData, def, 4, v4,
changes);\n }\n if (bindLen > 5 && checkBinding(view, def, 5, v5)) {\n changed = true;\n changes =
updateProp(view, providerData, def, 5, v5, changes);\n }\n if (bindLen > 6 && checkBinding(view, def, 6, v6)) {\n
changed = true;\n changes = updateProp(view, providerData, def, 6, v6, changes);\n }\n if (bindLen > 7 &&
checkBinding(view, def, 7, v7)) {\n changed = true;\n changes = updateProp(view, providerData, def, 7, v7,
changes);\n }\n if (bindLen > 8 && checkBinding(view, def, 8, v8)) {\n changed = true;\n changes =
updateProp(view, providerData, def, 8, v8, changes);\n }\n if (bindLen > 9 && checkBinding(view, def, 9, v9)) {\n
changed = true;\n changes = updateProp(view, providerData, def, 9, v9, changes);\n }\n if (changes) {\n
directive.ngOnChanges(changes);\n }\n if (((def.flags & NodeFlags.OnInit) &&\n
shouldCallLifecycleInitHook(view, ViewState.InitState_CallingOnInit, def.nodeIndex)) {\n
directive.ngOnInit();\n }\n if (def.flags & NodeFlags.DoCheck) {\n directive.ngDoCheck();\n }\n return
changed;\n}\n\nexport function checkAndUpdateDirectiveDynamic(\n view: ViewData, def: NodeDef, values:
any[]): boolean {\n const providerData = asProviderData(view, def.nodeIndex);\n const directive =
providerData.instance;\n let changed = false;\n let changes: SimpleChanges = undefined!;\n for (let i = 0; i <
values.length; i++) {\n if (checkBinding(view, def, i, values[i])) {\n changed = true;\n changes =
updateProp(view, providerData, def, i, values[i], changes);\n }\n }\n if (changes) {\n
directive.ngOnChanges(changes);\n }\n if (((def.flags & NodeFlags.OnInit) &&\n
shouldCallLifecycleInitHook(view, ViewState.InitState_CallingOnInit, def.nodeIndex)) {\n
directive.ngOnInit();\n }\n if (def.flags & NodeFlags.DoCheck) {\n directive.ngDoCheck();\n }\n return
changed;\n}\n\nfunction _createProviderInstance(view: ViewData, def: NodeDef): any {\n // private services can
see other private services\n const allowPrivateServices = (def.flags & NodeFlags.PrivateProvider) > 0;\n const
providerDef = def.provider;\n switch (def.flags & NodeFlags.Types) {\n case NodeFlags.TypeClassProvider:\n
return createClass(\n view, def.parent!, allowPrivateServices, providerDef!.value, providerDef!.deps);\n case

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providerData.instance;
 }
 }
 allowPrivateServices = isComponentView(searchView);
 elDef = viewParentEl(searchView!);
 searchView = searchView.parent!;
 if (depDef.flags & DepFlags.Self)
 {
 searchView = null;
 }
 const value = startView.root.injector.get(depDef.token,
 NOT_FOUND_CHECK_ONLY_ELEMENT_INJECTOR);
 if (value !==
 NOT_FOUND_CHECK_ONLY_ELEMENT_INJECTOR ||
 notFoundValue ===
 NOT_FOUND_CHECK_ONLY_ELEMENT_INJECTOR) {
 // Return the value from the root element injector
 when
 // - it provides it
 // (value !== NOT_FOUND_CHECK_ONLY_ELEMENT_INJECTOR)
 // - the
 module injector should not be checked
 // (notFoundValue ===
 NOT_FOUND_CHECK_ONLY_ELEMENT_INJECTOR)
 return value;
 }
 return
 startView.root.ngModule.injector.get(depDef.token, notFoundValue);
}
function findCompView(view:
ViewData, elDef: NodeDef, allowPrivateServices: boolean) {
 let compView: ViewData;
 if
 (allowPrivateServices) {
 compView = asElementData(view, elDef.nodeIndex).componentView;
 } else {
 compView = view;
 while (compView.parent && !isComponentView(compView)) {
 compView =
 compView.parent;
 }
 }
 return compView;
}
function updateProp(view: ViewData, providerData:
ProviderData, def: NodeDef, bindingIdx: number, value: any,
changes: SimpleChanges): SimpleChanges {
 if
 (def.flags & NodeFlags.Component) {
 const compView = asElementData(view,
 def.parent!.nodeIndex).componentView;
 if (compView.def.flags & ViewFlags.OnPush) {
 compView.state
 |= ViewState.ChecksEnabled;
 }
 const binding = def.bindings[bindingIdx];
 const propName =
 binding.name!;
 // Note: This is still safe with Closure Compiler as
 // the user passed in the property name as an
 object has to `providerDef`,
 // so Closure Compiler will have renamed the property correctly already.
 providerData.instance[propName] = value;
 if (def.flags & NodeFlags.OnChanges) {
 changes = changes ||
 {};
 const oldValue = WrappedValue.unwrap(view.oldValues[def.bindingIndex + bindingIdx]);
 const binding
 = def.bindings[bindingIdx];
 changes[binding.nonMinifiedName!] =
 new SimpleChange(oldValue, value,
 (view.state & ViewState.FirstCheck) !== 0);
 view.oldValues[def.bindingIndex + bindingIdx] = value;
 }
 return changes;
 }
 // This function calls the ngAfterContentCheck, ngAfterContentInit,
 // ngAfterViewCheck,
 // and ngAfterViewInit lifecycle hooks (depending on the node
 // flags in lifecycle). Unlike ngDoCheck,
 // ngOnChanges and ngOnInit, which are
 // called during a pre-order traversal of the view tree (that is calling the
 // parent hooks before the child hooks) these events are sent in using a
 // post-order traversal of the tree (children
 // before parents). This changes the
 // meaning of initIndex in the view state. For ngOnInit, initIndex tracks the
 // expected nodeIndex which a ngOnInit should be called. When sending
 // ngAfterContentInit and ngAfterViewInit
 // it is the expected count of
 // ngAfterContentInit or ngAfterViewInit methods that have been called. This
 // ensure
 // that despite being called recursively or after picking up after an
 // exception, the ngAfterContentInit or
 // ngAfterViewInit will be called on the
 // correct nodes. Consider for example, the following (where E is an
 // element
 // and D is a directive)
 // Tree:
 // pre-order index post-order index
 // E1 0 6 E2
 // 1 1 D3 2 0 E4 3 5 E5 4 4 E6 5
 // 2 E7 6 3
 // As can be seen, the post-order index has an unclear relationship to the
 // pre-order
 // index (postOrderIndex === preOrderIndex - parentCount + childCount). Since number of calls to
 // ngAfterContentInit and ngAfterViewInit
 // are stable (will be the same for the same view regardless of exceptions
 // or
 // recursion) we just need to count them which will roughly correspond to the
 // post-order index (it skips
 // elements and directives that do not have
 // lifecycle hooks).
 // For example, if an exception is raised in the
 // E6.onAfterViewInit() the
 // initIndex is left at 3 (by shouldCallLifecycleInitHook() which set it to
 // initIndex +
 // 1). When checkAndUpdateView() is called again D3, E2 and E6 will
 // not have their ngAfterViewInit() called but,
 // starting with E7, the rest of
 // the view will begin getting ngAfterViewInit() called until a check and
 // pass is
 // complete.
 // This algorithm also handles recursion. Consider if E4's ngAfterViewInit()
 // indirectly calls E1's
 // ChangeDetectorRef.detectChanges(). The expected
 // initIndex is set to 6, the recursive checkAndUpdateView()
 // starts walk again.
 // D3, E2, E6, E7, E5 and E4 are skipped, ngAfterViewInit() is called on E1.
 // When the
 // recursion returns the initIndex will be 7 so E1 is skipped as it
 // has already been called in the recursively called
 // checkAnUpdateView().
 export function callLifecycleHooksChildrenFirst(view: ViewData, lifecycles: NodeFlags)

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{\n if (!(view.def.nodeFlags & lifecycles)) {\n return;\n }}\n const nodes = view.def.nodes;\n let initIndex = 0;\n for (let i = 0; i < nodes.length; i++) {\n const nodeDef = nodes[i];\n let parent = nodeDef.parent;\n if (!parent\n && nodeDef.flags & lifecycles) {\n // matching root node (e.g. a pipe)\n callProviderLifecycles(view, i,\n nodeDef.flags & lifecycles, initIndex++);\n }\n if ((nodeDef.childFlags & lifecycles) === 0) {\n // no child\n matches one of the lifecycles\n i += nodeDef.childCount;\n }\n while (parent && (parent.flags &\n NodeFlags.TypeElement) &&\n i === parent.nodeIndex + parent.childCount) {\n // last child of an\n element\n if (parent.directChildFlags & lifecycles) {\n initIndex = callElementProvidersLifecycles(view,\n parent, lifecycles, initIndex);\n }\n parent = parent.parent;\n }}\n}\n\nfunction\n callElementProvidersLifecycles(\n view: ViewData, elDef: NodeDef, lifecycles: NodeFlags, initIndex: number):\n number {\n for (let i = elDef.nodeIndex + 1; i <= elDef.nodeIndex + elDef.childCount; i++) {\n const nodeDef =\n view.def.nodes[i];\n if (nodeDef.flags & lifecycles) {\n callProviderLifecycles(view, i, nodeDef.flags &\n lifecycles, initIndex++);\n }\n // only visit direct children\n i += nodeDef.childCount;\n }\n return\n initIndex;\n}\n\nfunction callProviderLifecycles(\n view: ViewData, index: number, lifecycles: NodeFlags,\n initIndex: number) {\n const providerData = asProviderData(view, index);\n if (!providerData) {\n return;\n }\n const provider = providerData.instance;\n if (!provider) {\n return;\n }\n Services.setCurrentNode(view,\n index);\n if (lifecycles & NodeFlags.AfterContentInit &&\n shouldCallLifecycleInitHook(view,\n ViewState.InitState_CallingAfterContentInit, initIndex)) {\n provider.ngAfterContentInit();\n }\n if (lifecycles &\n NodeFlags.AfterContentChecked) {\n provider.ngAfterContentChecked();\n }\n if (lifecycles &\n NodeFlags.AfterViewInit &&\n shouldCallLifecycleInitHook(view, ViewState.InitState_CallingAfterViewInit,\n initIndex)) {\n provider.ngAfterViewInit();\n }\n if (lifecycles & NodeFlags.AfterViewChecked) {\n provider.ngAfterViewChecked();\n }\n if (lifecycles & NodeFlags.OnDestroy) {\n provider.ngOnDestroy();\n }\n}\n\n"/**\n * @license\n * Copyright Google LLC All Rights Reserved.\n *\n * Use of this source code is\n governed by an MIT-style license that can be\n * found in the LICENSE file at https://angular.io/license\n */\n\nimport {ChangeDetectorRef as ViewEngine_ChangeDetectorRef} from\n './change_detection/change_detector_ref';\nimport {InjectionToken} from './di/injection_token';\nimport {Injector}\n from './di/injector';\nimport {InjectFlags} from './di/interface/injector';\nimport {Type} from\n './interface/type';\nimport {ComponentFactory as viewEngine_ComponentFactory, ComponentRef as\n viewEngine_ComponentRef} from './linker/component_factory';\nimport {ComponentFactoryResolver as\n viewEngine_ComponentFactoryResolver} from './linker/component_factory_resolver';\nimport {createElementRef,\n ElementRef as viewEngine_ElementRef} from './linker/element_ref';\nimport {NgModuleRef as\n viewEngine_NgModuleRef} from './linker/ng_module_factory';\nimport {RendererFactory2} from\n './render/api';\nimport {Sanitizer} from './sanitization/sanitizer';\nimport {VERSION} from './version';\nimport\n {NOT_FOUND_CHECK_ONLY_ELEMENT_INJECTOR} from './view/provider';\nimport\n {assertComponentType} from './assert';\nimport {createRootComponent, createRootComponentView,\n createRootContext, LifecycleHooksFeature} from './component';\nimport {getComponentDef} from\n './definition';\nimport {NodeInjector} from './di';\nimport {createLView, createTVView, locateHostElement,\n renderView} from './instructions/shared';\nimport {ComponentDef} from './interfaces/definition';\nimport\n {TContainerNode, TElementContainerNode, TElementNode, TNode} from './interfaces/node';\nimport\n {domRendererFactory3, RendererFactory3} from './interfaces/renderer';\nimport {RNode} from\n './interfaces/renderer_dom';\nimport {HEADER_OFFSET, LView, LViewFlags, TViewType} from\n './interfaces/view';\nimport {MATH_ML_NAMESPACE, SVG_NAMESPACE} from './namespaces';\nimport\n {createElementNode, writeDirectClass} from './node_manipulation';\nimport {extractAttrsAndClassesFromSelector,\n stringifyCSSSelectorList} from './node_selector_matcher';\nimport {enterView, leaveView} from './state';\nimport\n {setUpAttributes} from './util/attrs_utils';\nimport {defaultScheduler} from './util/misc_utils';\nimport {getTNode}\n from './util/view_utils';\nimport {RootViewRef, ViewRef} from './view_ref';\n\nexport class\n ComponentFactoryResolver extends viewEngine_ComponentFactoryResolver {\n /**\n * @param ngModule The\n NgModuleRef to which all resolved factories are bound.\n *\n * ^\n constructor(private ngModule?:\n viewEngine_NgModuleRef<any>) {\n super();\n }\n\n resolveComponentFactory<T>(component: Type<T>):

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viewEngine_ComponentFactory<T> {\n ngDevMode && assertComponentType(component);\n const
componentDef = getComponentDef(component!);\n return new ComponentFactory(componentDef,
this.ngModule);\n } \n\nfunction toRefArray(map: {[key: string]: string}): {propName: string; templateName:
string;}[] {\n const array: {propName: string; templateName: string;}[] = [];\n for (let nonMinified in map) {\n if
(map.hasOwnProperty(nonMinified)) {\n const minified = map[nonMinified];\n array.push({propName:
minified, templateName: nonMinified});\n } \n } \n return array;\n}\n\nfunction getNamespace(elementName:
string): string|null {\n const name = elementName.toLowerCase();\n return name === 'svg' ? SVG_NAMESPACE
: (name === 'math' ? MATH_ML_NAMESPACE : null);\n}\n\n/**\n * A change detection scheduler token for
{@link RootContext}. This token is the default value used\n * for the default `RootContext` found in the {@link
ROOT_CONTEXT} token.\n */\nexport const SCHEDULER = new InjectionToken<((fn: () => void) =>
void)>('SCHEDULER_TOKEN', {\n providedIn: 'root',\n factory: () => defaultScheduler,\n});\n\nfunction
createChainedInjector(rootViewInjector: Injector, moduleInjector: Injector): Injector {\n return {\n get:
<T>(token: Type<T>|InjectionToken<T>, notFoundValue?: T, flags?: InjectFlags): T => {\n const value =
rootViewInjector.get(token, NOT_FOUND_CHECK_ONLY_ELEMENT_INJECTOR as T, flags);\n\n if (value
!=== NOT_FOUND_CHECK_ONLY_ELEMENT_INJECTOR ||\n notFoundValue ===
NOT_FOUND_CHECK_ONLY_ELEMENT_INJECTOR) {\n // Return the value from the root element
injector when\n // - it provides it\n // (value !==
NOT_FOUND_CHECK_ONLY_ELEMENT_INJECTOR)\n // - the module injector should not be checked\n
// (notFoundValue === NOT_FOUND_CHECK_ONLY_ELEMENT_INJECTOR)\n return value;\n } \n\n return
moduleInjector.get(token, notFoundValue, flags);\n } \n }; \n}\n\n/**\n * Render3 implementation of
{@link viewEngine_ComponentFactory}.\n */\nexport class ComponentFactory<T> extends
viewEngine_ComponentFactory<T> {\n selector: string;\n componentType: Type<any>;\n ngContentSelectors:
string[];\n isBoundToModule: boolean;\n\n get inputs(): {propName: string; templateName: string;}[] {\n return
toRefArray(this.componentDef.inputs);\n } \n\n get outputs(): {propName: string; templateName: string;}[] {\n
return toRefArray(this.componentDef.outputs);\n } \n\n /**\n * @param componentDef The component
definition.\n * @param ngModule The NgModuleRef to which the factory is bound.\n */\n constructor(\n
private componentDef: ComponentDef<any>, private ngModule?: viewEngine_NgModuleRef<any>) {\n
super();\n this.componentType = componentDef.type;\n this.selector =
stringifyCSSSelectorList(componentDef.selectors);\n this.ngContentSelectors =\n
componentDef.ngContentSelectors ? componentDef.ngContentSelectors : [];\n this.isBoundToModule =
!!ngModule;\n } \n\n create(\n injector: Injector, projectableNodes?: any[][]|undefined, rootSelectorOrNode?:
any,\n ngModule?: viewEngine_NgModuleRef<any>|undefined): viewEngine_ComponentRef<T> {\n
ngModule = ngModule || this.ngModule;\n\n const rootViewInjector =\n ngModule ?
createChainedInjector(injector, ngModule.injector) : injector;\n\n const rendererFactory =\n
rootViewInjector.get(RendererFactory2, domRendererFactory3) as RendererFactory3;\n const sanitizer =
rootViewInjector.get(Sanitizer, null);\n\n const hostRenderer = rendererFactory.createRenderer(null,
this.componentDef);\n // Determine a tag name used for creating host elements when this component is created\n
// dynamically. Default to 'div' if this component did not specify any tag name in its selector.\n const elementName
= this.componentDef.selectors[0][0] as string || 'div';\n const hostRNode = rootSelectorOrNode ?\n
locateHostElement(hostRenderer, rootSelectorOrNode, this.componentDef.encapsulation) :\n
createElementNode(\n rendererFactory.createRenderer(null, this.componentDef), elementName,\n
getNamespace(elementName));\n\n const rootFlags = this.componentDef.onPush ? LViewFlags.Dirty |
LViewFlags.IsRoot :\n LViewFlags.CheckAlways | LViewFlags.IsRoot;\n const
rootContext = createRootContext();\n\n // Create the root view. Uses empty TView and ContentTemplate.\n
const rootTView = createTView(TViewType.Root, null, null, 1, 0, null, null, null, null);\n const rootLView =
createLView(\n null, rootTView, rootContext, rootFlags, null, null, rendererFactory, hostRenderer,\n
sanitizer, rootViewInjector);\n\n // rootView is the parent when bootstrapping\n // TODO(misko): it looks like
we are entering view here but we don't really need to as\n // `renderView` does that. However as the code is

```



```

written it is needed because\n // `createRootComponentView` and `createRootComponent` both read global state.
Fixing those\n // issues would allow us to drop this.\n enterView(rootLView);\n\n let component: T;\n let
tElementNode: TElementNode;\n\n try {\n const componentView = createRootComponentView(\n
hostRNode, this.componentDef, rootLView, rendererFactory, hostRenderer);\n if (hostRNode) {\n if
(rootSelectorOrNode) {\n setUpAttributes(hostRenderer, hostRNode, ['ng-version', VERSION.full]);\n }
else {\n // If host element is created as a part of this function call (i.e. `rootSelectorOrNode`\n // is not
defined), also apply attributes and classes extracted from component selector.\n // Extract attributes and classes
from the first selector only to match VE behavior.\n const {attrs, classes} =\n
extractAttrsAndClassesFromSelector(this.componentDef.selectors[0]);\n if (attrs) {\n
setUpAttributes(hostRenderer, hostRNode, attrs);\n }\n if (classes && classes.length > 0) {\n
writeDirectClass(hostRenderer, hostRNode, classes.join(' '));\n }\n }\n }\n\n tElementNode =
getTNode(rootTView, HEADER_OFFSET) as TElementNode;\n\n if (projectableNodes !== undefined) {\n
const projection: (TNode|RNode[]|null)[] = tElementNode.projection = [];\n for (let i = 0; i <
this.ngContentSelectors.length; i++) {\n const nodesforSlot = projectableNodes[i];\n // Projectable nodes
can be passed as array of arrays or an array of iterables (ngUpgrade\n // case). Here we do normalize passed
data structure to be an array of arrays to avoid\n // complex checks down the line.\n // We also normalize
the length of the passed in projectable nodes (to match the number of\n // <ng-container> slots defined by a
component).\n projection.push(nodesforSlot != null ? Array.from(nodesforSlot) : null);\n }\n }\n\n //
TODO: should LifecycleHooksFeature and other host features be generated by the compiler and\n // executed
here?\n // Angular 5 reference: https://stackblitz.com/edit/lifecycle-hooks-vcref\n component =
createRootComponent(\n componentView, this.componentDef, rootLView, rootContext,
[LifecycleHooksFeature]);\n\n renderView(rootTView, rootLView, null);\n } finally {\n leaveView();\n
}\n\n return new ComponentRef(\n this.componentType, component, createElementRef(tElementNode,
rootLView), rootLView,\n tElementNode);\n }\n\n\nconst componentFactoryResolver:
ComponentFactoryResolver = new ComponentFactoryResolver();\n\n/**\n * Creates a ComponentFactoryResolver
and stores it on the injector. Or, if the\n * ComponentFactoryResolver\n * already exists, retrieves the existing
ComponentFactoryResolver.\n * @returns The ComponentFactoryResolver instance to use\n */\nexport function
injectComponentFactoryResolver(): viewEngine_ComponentFactoryResolver {\n return
componentFactoryResolver;\n}\n\n/**\n * Represents an instance of a Component created via a {@link
ComponentFactory}.\n * @ComponentRef provides access to the Component Instance as well other objects
related to this\n * Component Instance and allows you to destroy the Component Instance via the {@link
#destroy}\n * method.\n * @export class ComponentRef<T> extends viewEngine_ComponentRef<T> {\n
destroyCbs: (() => void)[]|null = [];\n instance: T;\n hostView: ViewRef<T>;\n changeDetectorRef:
ViewEngine_ChangeDetectorRef;\n componentType: Type<T>;\n\n constructor(\n componentType: Type<T>,
instance: T, public location: viewEngine_ElementRef,\n private _rootLView: LView,\n private tNode:
TElementNode|TContainerNode|TElementContainerNode) {\n super();\n this.instance = instance;\n
this.hostView = this.changeDetectorRef = new RootViewRef<T>(_rootLView);\n this.componentType =
componentType;\n }\n\n get injector(): Injector {\n return new NodeInjector(this._tNode, this._rootLView);\n
}\n\n destroy(): void {\n if (this.destroyCbs) {\n this.destroyCbs.forEach(fn => fn());\n this.destroyCbs =
null;\n !this.hostView.destroyed && this.hostView.destroy();\n }\n }\n\n onDestroy(callback: () => void):
void {\n if (this.destroyCbs) {\n this.destroyCbs.push(callback);\n }\n }\n\n\n"/**\n * @license\n *
Copyright Google LLC All Rights Reserved.\n * Use of this source code is governed by an MIT-style license
that can be\n * found in the LICENSE file at https://angular.io/license\n */\nimport {Type} from
'./interface/type';\nimport {noSideEffects} from './util/closure';\ninterface TypeWithMetadata extends
Type<any> {\n decorators?: any[];\n ctorParameters?: () => any[];\n propDecorators?: {[field: string]:
any};\n}\n\n/**\n * Adds decorator, constructor, and property metadata to a given type via static metadata fields\n *
on the type.\n * @These metadata fields can later be read with Angular's `ReflectionCapabilities` API.\n * @Calls to `setClassMetadata` can be marked as pure, resulting in the metadata assignments being\n * tree-shaken

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./definition';\nimport {setLocaleId} from './i18n/i18n_locale_id';\nimport {maybeUnwrapFn} from
./util/misc_utils';\n\nexport class NgModuleRef<T> extends viewEngine_NgModuleRef<T> implements
InternalNgModuleRef<T> {\n // tslint:disable-next-line:require-internal-with-underscore\n _bootstrapComponents:
Type<any>[] = [];\n // tslint:disable-next-line:require-internal-with-underscore\n _r3Injector: R3Injector;\n
injector: Injector = this;\n instance: T;\n destroyCbs: (() => void)[]\nnull = [];\n\n // When bootstrapping a module
we have a dependency graph that looks like this:\n // ApplicationRef -> ComponentFactoryResolver ->
NgModuleRef. The problem is that if the\n // module being resolved tries to inject the ComponentFactoryResolver,
it'll create a\n // circular dependency which will result in a runtime error, because the injector doesn't\n // exist yet.
We work around the issue by creating the ComponentFactoryResolver ourselves\n // and providing it, rather than
letting the injector resolve it.\n readonly componentFactoryResolver: ComponentFactoryResolver = new
ComponentFactoryResolver(this);\n\n constructor(ngModuleType: Type<T>, public _parent: Injector|null) {\n
super();\n const ngModuleDef = getNgModuleDef(ngModuleType);\n ngDevMode &&\n assertDefined(\n
ngModuleDef,\n `NgModule '${stringify(ngModuleType)}' is not a subtype of 'NgModuleType'.`);\n\n
const ngLocaleIdDef = getNgLocaleIdDef(ngModuleType);\n ngLocaleIdDef && setLocaleId(ngLocaleIdDef);\n
this._bootstrapComponents = maybeUnwrapFn(ngModuleDef!.bootstrap);\n this._r3Injector =
createInjectorWithoutInjectorInstances(\n ngModuleType, _parent,\n [n
{provide: viewEngine_NgModuleRef, useValue: this}, {n provide:
viewEngine_ComponentFactoryResolver,\n useValue: this.componentFactoryResolver\n
}],\n stringify(ngModuleType)) as R3Injector;\n\n // We need to
resolve the injector types separately from the injector creation, because\n // the module might be trying to use this
ref in its constructor for DI which will cause a\n // circular error that will eventually error out, because the injector
isn't created yet.\n this._r3Injector._resolveInjectorDefTypes();\n this.instance = this.get(ngModuleType);\n
}\n\n get(token: any, notFoundValue: any = Injector.THROW_IF_NOT_FOUND,\n injectFlags: InjectFlags =
InjectFlags.Default): any {\n if (token === Injector || token === viewEngine_NgModuleRef || token ===
INJECTOR) {\n return this;\n }\n return this._r3Injector.get(token, notFoundValue, injectFlags);\n }\n\n
destroy(): void {\n ngDevMode && assertDefined(this.destroyCbs, 'NgModule already destroyed');\n const
injector = this._r3Injector;\n injector.destroyed && injector.destroy();\n this.destroyCbs!.forEach(fn => fn());\n
this.destroyCbs = null;\n }\n onDestroy(callback: () => void): void {\n ngDevMode &&
assertDefined(this.destroyCbs, 'NgModule already destroyed');\n this.destroyCbs!.push(callback);\n
}\n}\n\nexport class NgModuleFactory<T> extends viewEngine_NgModuleFactory<T> {\n constructor(public
moduleType: Type<T>) {\n super();\n\n const ngModuleDef = getNgModuleDef(moduleType);\n if
(ngModuleDef !== null) {\n // Register the NgModule with Angular's module registry. The location (and hence
timing) of\n // this call is critical to ensure this works correctly (modules get registered when expected)\n //
without bloating bundles (modules are registered when otherwise not referenced).\n //\n // In View Engine,
registration occurs in the .ngfactory.js file as a side effect. This has\n // several practical consequences:\n //\n
// - If an .ngfactory file is not imported from, the module won't be registered (and can be\n // tree shaken).\n
// - If an .ngfactory file is imported from, the module will be registered even if an instance\n // is not actually
created (via `create` below).\n // - Since an .ngfactory file in View Engine references the .ngfactory files of the
NgModule's\n // imports,\n //\n // In Ivy, things are a bit different. .ngfactory files still exist for
compatibility, but are\n // not a required API to use - there are other ways to obtain an NgModuleFactory for a
given\n // NgModule. Thus, relying on a side effect in the .ngfactory file is not sufficient. Instead,\n // the side
effect of registration is added here, in the constructor of NgModuleFactory,\n // ensuring no matter how a factory
is created, the module is registered correctly.\n //\n // An alternative would be to include the registration side
effect inline following the actual\n // NgModule definition. This also has the correct timing, but breaks tree-
shaking - modules\n // will be registered and retained even if they're otherwise never referenced.\n
registerNgModuleType(moduleType as NgModuleType);\n }\n }\n\n create(parentInjector: Injector|null):
viewEngine_NgModuleRef<T> {\n return new NgModuleRef(this.moduleType, parentInjector);\n }\n}\n\n",/**\n
* @license\n * Copyright Google LLC All Rights Reserved.\n * Use of this source code is governed by an MIT-

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cached value\n *\n * @codegenApi\n *^\\nexport function pureFunction5(\n slotOffset: number, pureFn: (v1: any,
v2: any, v3: any, v4: any, v5: any) => any, exp1: any,\n exp2: any, exp3: any, exp4: any, exp5: any, thisArg?:
any): any {\n const bindingIndex = getBindingRoot() + slotOffset;\n const lView = getLView();\n const different
= bindingUpdated4(lView, bindingIndex, exp1, exp2, exp3, exp4);\n return bindingUpdated(lView, bindingIndex +
4, exp5) || different ?\n updateBinding(\n lView, bindingIndex + 5,\n thisArg ? pureFn.call(thisArg,
exp1, exp2, exp3, exp4, exp5) :\n pureFn(exp1, exp2, exp3, exp4, exp5)) :\n getBinding(lView,
bindingIndex + 5);\n}\n\n/**\n * If the value of any provided exp has changed, calls the pure function to return\n *
an updated value. Or if no values have changed, returns cached value.\n *\n * @param slotOffset the offset from
binding root to the reserved slot\n * @param pureFn\n * @param exp1\n * @param exp2\n * @param exp3\n *
@param exp4\n * @param exp5\n * @param exp6\n * @param thisArg Optional calling context of pureFn\n *
@returns Updated or cached value\n *\n * @codegenApi\n *^\\nexport function pureFunction6(\n slotOffset:
number, pureFn: (v1: any, v2: any, v3: any, v4: any, v5: any, v6: any) => any,\n exp1: any, exp2: any, exp3: any,
exp4: any, exp5: any, exp6: any, thisArg?: any): any {\n const bindingIndex = getBindingRoot() + slotOffset;\n
const lView = getLView();\n const different = bindingUpdated4(lView, bindingIndex, exp1, exp2, exp3, exp4);\n
return bindingUpdated2(lView, bindingIndex + 4, exp5, exp6) || different ?\n updateBinding(\n lView,
bindingIndex + 6,\n thisArg ? pureFn.call(thisArg, exp1, exp2, exp3, exp4, exp5, exp6) :\n pureFn(exp1, exp2, exp3, exp4, exp5, exp6)) :\n getBinding(lView, bindingIndex + 6);\n}\n\n/**\n * If the value
of any provided exp has changed, calls the pure function to return\n * an updated value. Or if no values have
changed, returns cached value.\n *\n * @param slotOffset the offset from binding root to the reserved slot\n *
@param pureFn\n * @param exp1\n * @param exp2\n * @param exp3\n * @param exp4\n * @param exp5\n *
@param exp6\n * @param exp7\n * @param thisArg Optional calling context of pureFn\n * @returns Updated or
cached value\n *\n * @codegenApi\n *^\\nexport function pureFunction7(\n slotOffset: number,\n pureFn: (v1:
any, v2: any, v3: any, v4: any, v5: any, v6: any, v7: any) => any, exp1: any,\n exp2: any, exp3: any, exp4: any,
exp5: any, exp6: any, exp7: any, thisArg?: any): any {\n const bindingIndex = getBindingRoot() + slotOffset;\n
const lView = getLView();\n let different = bindingUpdated4(lView, bindingIndex, exp1, exp2, exp3, exp4);\n
return bindingUpdated3(lView, bindingIndex + 4, exp5, exp6, exp7) || different ?\n updateBinding(\n lView,
bindingIndex + 7,\n thisArg ? pureFn.call(thisArg, exp1, exp2, exp3, exp4, exp5, exp6, exp7) :\n pureFn(exp1, exp2, exp3, exp4, exp5, exp6, exp7)) :\n getBinding(lView, bindingIndex + 7);\n}\n\n/**\n * If
the value of any provided exp has changed, calls the pure function to return\n * an updated value. Or if no values
have changed, returns cached value.\n *\n * @param slotOffset the offset from binding root to the reserved slot\n *
@param pureFn\n * @param exp1\n * @param exp2\n * @param exp3\n * @param exp4\n * @param exp5\n *
@param exp6\n * @param exp7\n * @param exp8\n * @param thisArg Optional calling context of pureFn\n *
@returns Updated or cached value\n *\n * @codegenApi\n *^\\nexport function pureFunction8(\n slotOffset:
number,\n pureFn: (v1: any, v2: any, v3: any, v4: any, v5: any, v6: any, v7: any, v8: any) => any,\n exp1: any,
exp2: any, exp3: any, exp4: any, exp5: any, exp6: any, exp7: any, exp8: any,\n thisArg?: any): any {\n const
bindingIndex = getBindingRoot() + slotOffset;\n const lView = getLView();\n const different =
bindingUpdated4(lView, bindingIndex, exp1, exp2, exp3, exp4);\n return bindingUpdated4(lView, bindingIndex +
4, exp5, exp6, exp7, exp8) || different ?\n updateBinding(\n lView, bindingIndex + 8,\n thisArg ?
pureFn.call(thisArg, exp1, exp2, exp3, exp4, exp5, exp6, exp7, exp8) :\n pureFn(exp1, exp2, exp3, exp4,
exp5, exp6, exp7, exp8)) :\n getBinding(lView, bindingIndex + 8);\n}\n\n/**\n * pureFunction instruction that
can support any number of bindings.\n *\n * If the value of any provided exp has changed, calls the pure function to
return\n * an updated value. Or if no values have changed, returns cached value.\n *\n * @param slotOffset the
offset from binding root to the reserved slot\n * @param pureFn A pure function that takes binding values and
builds an object or array\n * containing those values.\n * @param exps An array of binding values\n * @param
thisArg Optional calling context of pureFn\n * @returns Updated or cached value\n *\n * @codegenApi\n
*^\\nexport function pureFunctionV(\n slotOffset: number, pureFn: (...v: any[]) => any, exps: any[], thisArg?: any):
any {\n return pureFunctionVInternal(getLView(), getBindingRoot(), slotOffset, pureFn, exps,
thisArg);\n}\n\n/**\n * Results of a pure function invocation are stored in LView in a dedicated slot that is

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initialized\n \* to NO\_CHANGE. In rare situations a pure pipe might throw an exception on the very first\n \* invocation and not produce any valid results. In this case LView would keep holding the NO\_CHANGE\n \* value. The NO\_CHANGE is not something that we can use in expressions / bindings thus we convert\n \* it to `undefined`.\n \*\nfunction getPureFunctionReturnValue(IView: LView, returnValueIndex: number) {\n ngDevMode && assertIndexInRange(IView, returnValueIndex);\n const lastReturnValue = IView[returnValueIndex];\n return lastReturnValue === NO\_CHANGE ? undefined : lastReturnValue;\n}\n\n/\*\*\n \* If the value of the provided exp has changed, calls the pure function to return\n \* an updated value. Or if the value has not changed, returns cached value.\n \*\n \* @param IView LView in which the function is being executed.\n \* @param bindingRoot Binding root index.\n \* @param slotOffset the offset from binding root to the reserved slot\n \* @param pureFn Function that returns an updated value\n \* @param exp Updated expression value\n \* @param thisArg Optional calling context of pureFn\n \* @returns Updated or cached value\n \*/\nexport function pureFunction1Internal(\n IView: LView, bindingRoot: number, slotOffset: number, pureFn: (v: any) => any, exp: any,\n thisArg?: any): any {\n const bindingIndex = bindingRoot + slotOffset;\n return bindingUpdated(IView, bindingIndex, exp) ?\n updateBinding(IView, bindingIndex + 1, thisArg ? pureFn.call(thisArg, exp) :\n pureFn(exp)) :\n getPureFunctionReturnValue(IView, bindingIndex + 1);\n}\n\n/\*\*\n \* If the value of any provided exp has changed, calls the pure function to return\n \* an updated value. Or if no values have changed, returns cached value.\n \*\n \* @param IView LView in which the function is being executed.\n \* @param bindingRoot Binding root index.\n \* @param slotOffset the offset from binding root to the reserved slot\n \* @param pureFn\n \* @param exp1\n \* @param exp2\n \* @param thisArg Optional calling context of pureFn\n \* @returns Updated or cached value\n \*/\nexport function pureFunction2Internal(\n IView: LView, bindingRoot: number, slotOffset: number, pureFn: (v1: any, v2: any) => any,\n exp1: any, exp2: any, thisArg?: any): any {\n const bindingIndex = bindingRoot + slotOffset;\n return bindingUpdated2(IView, bindingIndex, exp1, exp2) ?\n updateBinding(\n IView, bindingIndex + 2,\n thisArg ? pureFn.call(thisArg, exp1, exp2) : pureFn(exp1, exp2)) :\n getPureFunctionReturnValue(IView, bindingIndex + 2);\n}\n\n/\*\*\n \* If the value of any provided exp has changed, calls the pure function to return\n \* an updated value. Or if no values have changed, returns cached value.\n \*\n \* @param IView LView in which the function is being executed.\n \* @param bindingRoot Binding root index.\n \* @param slotOffset the offset from binding root to the reserved slot\n \* @param pureFn\n \* @param exp1\n \* @param exp2\n \* @param exp3\n \* @param thisArg Optional calling context of pureFn\n \* @returns Updated or cached value\n \*/\nexport function pureFunction3Internal(\n IView: LView, bindingRoot: number, slotOffset: number,\n pureFn: (v1: any, v2: any, v3: any) => any, exp1: any, exp2: any, exp3: any,\n thisArg?: any): any {\n const bindingIndex = bindingRoot + slotOffset;\n return bindingUpdated3(IView, bindingIndex, exp1, exp2, exp3) ?\n updateBinding(\n IView, bindingIndex + 3,\n thisArg ? pureFn.call(thisArg, exp1, exp2, exp3) : pureFn(exp1, exp2, exp3)) :\n getPureFunctionReturnValue(IView, bindingIndex + 3);\n}\n\n/\*\*\n \* If the value of any provided exp has changed, calls the pure function to return\n \* an updated value. Or if no values have changed, returns cached value.\n \*\n \* @param IView LView in which the function is being executed.\n \* @param bindingRoot Binding root index.\n \* @param slotOffset the offset from binding root to the reserved slot\n \* @param pureFn\n \* @param exp1\n \* @param exp2\n \* @param exp3\n \* @param exp4\n \* @param thisArg Optional calling context of pureFn\n \* @returns Updated or cached value\n \*/\nexport function pureFunction4Internal(\n IView: LView, bindingRoot: number, slotOffset: number,\n pureFn: (v1: any, v2: any, v3: any, v4: any) => any, exp1: any, exp2: any, exp3: any, exp4: any,\n thisArg?: any): any {\n const bindingIndex = bindingRoot + slotOffset;\n return bindingUpdated4(IView, bindingIndex, exp1, exp2, exp3, exp4) ?\n updateBinding(\n IView, bindingIndex + 4,\n thisArg ? pureFn.call(thisArg, exp1, exp2, exp3, exp4) : pureFn(exp1, exp2, exp3, exp4)) :\n getPureFunctionReturnValue(IView, bindingIndex + 4);\n}\n\n/\*\*\n \* pureFunction instruction that can support any number of bindings.\n \*\n \* If the value of any provided exp has changed, calls the pure function to return\n \* an updated value. Or if no values have changed, returns cached value.\n \*\n \* @param IView LView in which the function is being executed.\n \* @param bindingRoot Binding root index.\n \* @param slotOffset the offset from binding root to the reserved slot\n \* @param pureFn A pure function that takes binding values and builds an object or array\n \* containing those values.\n \* @param exps An

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array of binding values\n * @param thisArg Optional calling context of pureFn\n * @returns Updated or cached
value\n */\nexport function pureFunctionVInternal(\n IView: LView, bindingRoot: number, slotOffset: number,
pureFn: (...v: any[]) => any,\n exps: any[], thisArg?: any): any {\n let bindingIndex = bindingRoot + slotOffset;\n let different = false;\n for (let i = 0; i < exps.length; i++) {\n bindingUpdated(IView, bindingIndex++, exps[i])
&& (different = true);\n }\n return different ? updateBinding(IView, bindingIndex, pureFn.apply(thisArg, exps))
:\n getPureFunctionReturnValue(IView, bindingIndex);\n}\n"/**\n * @license\n * Copyright Google
LLC All Rights Reserved.\n * Use of this source code is governed by an MIT-style license that can be\n * found
in the LICENSE file at https://angular.io/license\n */\nimport { WrappedValue } from
'./change_detection/change_detection_util';\nimport { PipeTransform } from
'./change_detection/pipe_transform';\nimport { setInjectImplementation } from './di/inject_switch';\nimport
{ getFactoryDef } from './definition_factory';\nimport { setIncludeViewProviders } from './di';\nimport { RuntimeError,
RuntimeErrorCode } from './error_code';\nimport { store, directiveInject } from './instructions/all';\nimport { PipeDef,
PipeDefList } from './interfaces/definition';\nimport { HEADER_OFFSET, LView, TVIEW } from
'./interfaces/view';\nimport { pureFunction1Internal, pureFunction2Internal, pureFunction3Internal,
pureFunction4Internal, pureFunctionVInternal } from './pure_function';\nimport { getBindingIndex, getBindingRoot,
getLView, getTView } from './state';\nimport { NO_CHANGE } from './tokens';\nimport { load } from
'./util/view_utils';\n\n\n/**\n * Create a pipe.\n * @param index Pipe index where the pipe will be stored.\n *
@param pipeName The name of the pipe\n * @returns T the instance of the pipe.\n * @codeGenApi\n
*/\nexport function pipe(index: number, pipeName: string): any {\n const tView = getTView();\n let pipeDef:
PipeDef<any>;\n const adjustedIndex = index + HEADER_OFFSET;\n\n if (tView.firstCreatePass) {\n pipeDef
= getPipeDef(pipeName, tView.pipeRegistry);\n tView.data[adjustedIndex] = pipeDef;\n if (pipeDef.onDestroy)
{\n (tView.destroyHooks || (tView.destroyHooks = [])).push(adjustedIndex, pipeDef.onDestroy);\n }\n } else
{\n pipeDef = tView.data[adjustedIndex] as PipeDef<any>;\n }\n\n const pipeFactory = pipeDef.factory ||
(pipeDef.factory = getFactoryDef(pipeDef.type, true));\n const previousInjectImplementation =
setInjectImplementation(directiveInject);\n try {\n // DI for pipes is supposed to behave like directives when
placed on a component\n // host node, which means that we have to disable access to `viewProviders`\n const
previousIncludeViewProviders = setIncludeViewProviders(false);\n const pipeInstance = pipeFactory();\n setIncludeViewProviders(previousIncludeViewProviders);\n store(tView, getLView(), adjustedIndex,
pipeInstance);\n return pipeInstance;\n } finally {\n // we have to restore the injector implementation in finally,
just in case the creation of the\n // pipe throws an error.\n setInjectImplementation(previousInjectImplementation);\n }\n}\n\n\n/**\n * Searches the pipe registry for a pipe with
the given name. If one is found,\n * returns the pipe. Otherwise, an error is thrown because the pipe cannot be
resolved.\n * @param name Name of pipe to resolve\n * @param registry Full list of available pipes\n *
@returns Matching PipeDef\n */\nfunction getPipeDef(name: string, registry: PipeDefList|null): PipeDef<any> {\n
if (registry) {\n for (let i = registry.length - 1; i >= 0; i--) {\n const pipeDef = registry[i];\n if (name ===
pipeDef.name) {\n return pipeDef;\n }\n }\n}\n throw new
RuntimeError(RuntimeErrorCode.PIPE_NOT_FOUND, `The pipe '${name}' could not be found!`);\n}\n\n\n/**\n *
Invokes a pipe with 1 arguments.\n * This instruction acts as a guard to { @link PipeTransform#transform }
invoking\n * the pipe only when an input to the pipe changes.\n * @param index Pipe index where the pipe was
stored on creation.\n * @param slotOffset the offset in the reserved slot space\n * @param v1 1st argument to
{ @link PipeTransform#transform }.\n * @codeGenApi\n */\nexport function pipeBind1(index: number,
slotOffset: number, v1: any): any {\n const adjustedIndex = index + HEADER_OFFSET;\n const IView =
getLView();\n const pipeInstance = load<PipeTransform>(IView, adjustedIndex);\n return unwrapValue(\n IView,\n isPure(IView, adjustedIndex) ?\n pureFunction1Internal(\n IView, getBindingRoot(),
slotOffset, pipeInstance.transform, v1, pipeInstance) :\n pipeInstance.transform(v1));\n}\n\n\n/**\n * Invokes a
pipe with 2 arguments.\n * This instruction acts as a guard to { @link PipeTransform#transform } invoking\n *
the pipe only when an input to the pipe changes.\n * @param index Pipe index where the pipe was stored on
creation.\n * @param slotOffset the offset in the reserved slot space\n * @param v1 1st argument to { @link

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PipeTransform#transform}.\n * @param v2 2nd argument to { @link PipeTransform#transform}.\n *\n *
@codeGenApi\n *\nexport function pipeBind2(index: number, slotOffset: number, v1: any, v2: any): any {\n const
adjustedIndex = index + HEADER_OFFSET;\n const lView = getLView();\n const pipeInstance =
load<PipeTransform>(lView, adjustedIndex);\n return unwrapValue(\n lView,\n isPure(lView,
adjustedIndex) ?\n pureFunction2Internal(\n lView, getBindingRoot(), slotOffset,
pipeInstance.transform, v1, v2, pipeInstance) :\n pipeInstance.transform(v1, v2));\n}\n\n/**\n * Invokes a pipe
with 3 arguments.\n *\n * This instruction acts as a guard to { @link PipeTransform#transform} invoking\n * the
pipe only when an input to the pipe changes.\n *\n * @param index Pipe index where the pipe was stored on
creation.\n * @param slotOffset the offset in the reserved slot space\n * @param v1 1st argument to { @link
PipeTransform#transform}.\n * @param v2 2nd argument to { @link PipeTransform#transform}.\n * @param v3
4rd argument to { @link PipeTransform#transform}.\n *\n * @codeGenApi\n *\nexport function pipeBind3(index:
number, slotOffset: number, v1: any, v2: any, v3: any): any {\n const adjustedIndex = index +
HEADER_OFFSET;\n const lView = getLView();\n const pipeInstance = load<PipeTransform>(lView,
adjustedIndex);\n return unwrapValue(\n lView,\n isPure(lView, adjustedIndex) ? pureFunction3Internal(\n
lView, getBindingRoot(), slotOffset,\n pipeInstance.transform, v1,
v2, v3, pipeInstance) :\n pipeInstance.transform(v1, v2, v3));\n}\n\n/**\n * Invokes a pipe
with 4 arguments.\n *\n * This instruction acts as a guard to { @link PipeTransform#transform} invoking\n * the
pipe only when an input to the pipe changes.\n *\n * @param index Pipe index where the pipe was stored on
creation.\n * @param slotOffset the offset in the reserved slot space\n * @param v1 1st argument to { @link
PipeTransform#transform}.\n * @param v2 2nd argument to { @link PipeTransform#transform}.\n * @param v3
3rd argument to { @link PipeTransform#transform}.\n * @param v4 4th argument to { @link
PipeTransform#transform}.\n *\n * @codeGenApi\n *\nexport function pipeBind4(\n index: number, slotOffset:
number, v1: any, v2: any, v3: any, v4: any): any {\n const adjustedIndex = index + HEADER_OFFSET;\n const
lView = getLView();\n const pipeInstance = load<PipeTransform>(lView, adjustedIndex);\n return
unwrapValue(\n lView,\n isPure(lView, adjustedIndex) ? pureFunction4Internal(\n
lView, getBindingRoot(), slotOffset,\n pipeInstance.transform, v1, v2, v3, v4,
pipeInstance) :\n pipeInstance.transform(v1, v2, v3, v4));\n}\n\n/**\n * Invokes a pipe with
variable number of arguments.\n *\n * This instruction acts as a guard to { @link PipeTransform#transform}
invoking\n * the pipe only when an input to the pipe changes.\n *\n * @param index Pipe index where the pipe was
stored on creation.\n * @param slotOffset the offset in the reserved slot space\n * @param values Array of
arguments to pass to { @link PipeTransform#transform} method.\n *\n * @codeGenApi\n *\nexport function
pipeBindV(index: number, slotOffset: number, values: [any, ...any[]]): any {\n const adjustedIndex = index +
HEADER_OFFSET;\n const lView = getLView();\n const pipeInstance = load<PipeTransform>(lView,
adjustedIndex);\n return unwrapValue(\n lView,\n isPure(lView, adjustedIndex) ?\n
pureFunctionVInternal(\n lView, getBindingRoot(), slotOffset, pipeInstance.transform, values,
pipeInstance) :\n pipeInstance.transform.apply(pipeInstance, values));\n}\n\nfunction isPure(lView: LView,
index: number): boolean {\n return (<PipeDef<any>>lView[TVIEW].data[index]).pure;\n}\n\n/**\n * Unwrap the
output of a pipe transformation.\n * In order to trick change detection into considering that the new value is always
different from\n * the old one, the old value is overwritten by NO_CHANGE.\n *\n * @param newValue the pipe
transformation output.\n *\nfunction unwrapValue(lView: LView, newValue: any): any {\n if
(WrappedValue.isWrapped(newValue)) {\n newValue = WrappedValue.unwrap(newValue);\n // The
NO_CHANGE value needs to be written at the index where the impacted binding value is\n // stored\n const
bindingToInvalidateIdx = getBindingIndex();\n lView[bindingToInvalidateIdx] = NO_CHANGE;\n }\n return
newValue;\n}\n\n",/**\n * @license\n * Copyright Google LLC All Rights Reserved.\n *\n * Use of this source code
is governed by an MIT-style license that can be\n * found in the LICENSE file at https://angular.io/license\n
*\n\n// <reference types="rxjs" />\n\nimport {Subject, Subscription} from 'rxjs';\n\n/**\n * Use in components
with the `@Output` directive to emit custom events\n * synchronously or asynchronously, and register handlers for
those events\n * by subscribing to an instance.\n *\n * @usageNotes\n *\n * Extends\n * [RxJS

```



```

`Subject`](https://rxjs.dev/api/index/class/Subject)\n * for Angular by adding the `emit()` method.\n *\n * In the
following example, a component defines two output properties\n * that create event emitters. When the title is
clicked, the emitter\n * emits an open or close event to toggle the current visibility state.\n *\n * ``html\n *
@Component({\n * selector: 'zippy',\n * template: `
\n * <div class="zippy">\n * <div
(click)="toggle()">Toggle</div>\n * <div [hidden]="!visible">\n * <ng-content></ng-content>\n *
</div>\n * </div>`})\n * export class Zippy {\n * visible: boolean = true;\n * @Output() open:
EventEmitter<any> = new EventEmitter();\n * @Output() close: EventEmitter<any> = new EventEmitter();\n *\n * toggle() {\n * this.visible = !this.visible;\n * if (this.visible) {\n * this.open.emit(null);\n * } else {\n *
this.close.emit(null);\n * }\n * }\n * }\n * ``\n *\n * Access the event object with the `Sevent` argument
passed to the output event\n * handler:\n *\n * ``html\n * <zippy (open)="onOpen($event)"
(close)="onClose($event)"></zippy>\n * ``\n *\n * @see [Observables in Angular](guide/observables-in-
angular)\n * @publicApi\n * ^\n * export interface EventEmitter<T> extends Subject<T> {\n * /**\n * @internal\n *
*\n * __isAsync: boolean;\n *\n * /**\n * Creates an instance of this class that can\n * deliver events synchronously
or asynchronously.\n *\n * @param [isAsync=false] When true, deliver events asynchronously.\n *\n * ^\n *
new(isAsync?: boolean): EventEmitter<T>;\n *\n * /**\n * Emits an event containing a given value.\n * @param
value The value to emit.\n * ^\n * emit(value?: T): void;\n *\n * /**\n * Registers handlers for events emitted by this
instance.\n * @param generatorOrNext When supplied, a custom handler for emitted events.\n * @param error
When supplied, a custom handler for an error notification\n * from this emitter.\n * @param complete When
supplied, a custom handler for a completion\n * notification from this emitter.\n * ^\n *
subscribe(generatorOrNext?: any, error?: any, complete?: any): Subscription;\n * }\n *\n * class EventEmitter_ extends
Subject<any> {\n * __isAsync: boolean; // tslint:disable-line\n *\n * constructor(isAsync: boolean = false) {\n *
super();\n * this.__isAsync = isAsync;\n * }\n *\n * emit(value?: any) {\n * super.next(value);\n * }\n *\n *
subscribe(generatorOrNext?: any, error?: any, complete?: any): Subscription {\n * let schedulerFn: (t: any) =>
any;\n * let errorFn = (err: any): any => null;\n * let completeFn = (): any => null;\n *\n * if (generatorOrNext &&
typeof generatorOrNext === 'object') {\n * schedulerFn = this.__isAsync ? (value: any) => {\n * setTimeout(()
=> generatorOrNext.next(value));\n * } : (value: any) => {\n * generatorOrNext.next(value);\n * };\n *\n * if
(generatorOrNext.error) {\n * errorFn = this.__isAsync ? (err) => {\n * setTimeout(() =>
generatorOrNext.error(err));\n * } : (err) => {\n * generatorOrNext.error(err);\n * };\n * }\n *\n * if
(generatorOrNext.complete) {\n * completeFn = this.__isAsync ? () => {\n * setTimeout(() =>
generatorOrNext.complete());\n * } : () => {\n * generatorOrNext.complete();\n * };\n * }\n * } else {\n *
schedulerFn = this.__isAsync ? (value: any) => {\n * setTimeout(() => generatorOrNext(value));\n * } : (value:
any) => {\n * generatorOrNext(value);\n * };\n *\n * if (error) {\n * errorFn = this.__isAsync ? (err) => {\n *
setTimeout(() => error(err));\n * } : (err) => {\n * error(err);\n * };\n * }\n *\n * if (complete) {\n *
completeFn = this.__isAsync ? () => {\n * setTimeout(() => complete());\n * } : () => {\n * complete();\n *
};\n * }\n * }\n *\n * const sink = super.subscribe(schedulerFn, errorFn, completeFn);\n *\n * if (generatorOrNext
instanceof Subscription) {\n * generatorOrNext.add(sink);\n * }\n *\n * return sink;\n * }\n * }\n *\n * ^\n *
*\n * @publicApi\n * ^\n * export const EventEmitter: {\n * new (isAsync?: boolean): EventEmitter<any>;\n * new<T>(isAsync?: boolean):
EventEmitter<T>;\n * readonly prototype: EventEmitter<any>;\n * } = EventEmitter_ as any;\n * "/**\n * @license\n *
Copyright Google LLC All Rights Reserved.\n *\n * Use of this source code is governed by an MIT-style license
that can be\n * found in the LICENSE file at https://angular.io/license\n * ^\n *\n * import {Observable} from
'rxjs';\n * import {EventEmitter} from './event_emitter';\n * import {flatten} from './util/array_utils';\n * import
{getSymbolIterator} from './util/symbol';\n *\n * function symbolIterator<T>(this: QueryList<T>): Iterator<T> {\n *
return ((this as any as { _results: Array<T> })._results as any)[getSymbolIterator()];\n * }\n *\n * ^\n * *\n * An unmodifiable
list of items that Angular keeps up to date when the state\n * of the application changes.\n *\n * The type of object
that { @link ViewChildren }, { @link ContentChildren }, and { @link QueryList }\n * provide.\n *\n * Implements an
iterable interface, therefore it can be used in both ES6\n * javascript `for (var i of items)` loops as well as in Angular
templates with\n * `*ngFor="let i of myList"`.\n *\n * Changes can be observed by subscribing to the changes
`Observable`.\n *\n * NOTE: In the future this class will implement an `Observable` interface.\n *

```

```

@usageNotes\n * ### Example\n * ```typescript\n * @Component({...})\n * class Container {\n *
@ViewChildren(Item) items:QueryList<Item>;\n * }\n * ```\n * @publicApi\n * ^\nexport class QueryList<T>
implements Iterable<T> {\n public readonly dirty = true;\n private _results: Array<T> = [];\n public readonly
changes: Observable<any> = new EventEmitter();\n\n readonly length: number = 0;\n // TODO(issue/24571):
remove '!\n readonly first!: T;\n // TODO(issue/24571): remove '!\n readonly last!: T;\n\n constructor() {\n //
This function should be declared on the prototype, but doing so there will cause the class\n // declaration to have
side-effects and become not tree-shakable. For this reason we do it in\n // the constructor.\n //
[getSymbolIterator]()(): Iterator<T> { ... }\n const symbol = getSymbolIterator();\n const proto =
QueryList.prototype as any;\n if (!proto[symbol]) proto[symbol] = symbolIterator;\n }\n\n /**\n * See\n *
[Array.map](https://developer.mozilla.org/en-US/docs/Web/JavaScript/Reference/Global_Objects/Array/map)\n
*\n map<U>(fn: (item: T, index: number, array: T[]) => U): U[] {\n return this._results.map(fn);\n }\n\n /**\n
* See\n * [Array.filter](https://developer.mozilla.org/en-
US/docs/Web/JavaScript/Reference/Global_Objects/Array/filter)\n *\n filter(fn: (item: T, index: number, array:
T[]) => boolean): T[] {\n return this._results.filter(fn);\n }\n\n /**\n * See\n *
[Array.find](https://developer.mozilla.org/en-US/docs/Web/JavaScript/Reference/Global_Objects/Array/find)\n
*\n find(fn: (item: T, index: number, array: T[]) => boolean): T|undefined {\n return this._results.find(fn);\n
}\n\n /**\n * See\n * [Array.reduce](https://developer.mozilla.org/en-
US/docs/Web/JavaScript/Reference/Global_Objects/Array/reduce)\n *\n reduce<U>(fn: (prevValue: U, curValue:
T, curIndex: number, array: T[]) => U, init: U): U {\n return this._results.reduce(fn, init);\n }\n\n /**\n
* See\n * [Array.forEach](https://developer.mozilla.org/en-
US/docs/Web/JavaScript/Reference/Global_Objects/Array/forEach)\n *\n forEach(fn: (item: T, index: number,
array: T[]) => void): void {\n this._results.forEach(fn);\n }\n\n /**\n * See\n *
[Array.some](https://developer.mozilla.org/en-US/docs/Web/JavaScript/Reference/Global_Objects/Array/some)\n
*\n some(fn: (value: T, index: number, array: T[]) => boolean): boolean {\n return this._results.some(fn);\n }\n\n
/**\n * Returns a copy of the internal results list as an Array.\n * ^\n toArray(): T[] {\n return
this._results.slice();\n }\n\n toString(): string {\n return this._results.toString();\n }\n\n /**\n * Updates the
stored data of the query list, and resets the `dirty` flag to `false`, so that\n * on change detection, it will not notify
of changes to the queries, unless a new change\n * occurs.\n * @param resultsTree The query results to
store\n * ^\n reset(resultsTree: Array<T|any[]>): void {\n this._results = flatten(resultsTree);\n (this as {dirty:
boolean}).dirty = false;\n (this as {length: number}).length = this._results.length;\n (this as {last: T}).last =
this._results[this.length - 1];\n (this as {first: T}).first = this._results[0];\n }\n\n /**\n * Triggers a change event
by emitting on the `changes` @link EventEmitter.\n * ^\n notifyOnChanges(): void {\n (this.changes as
EventEmitter<any>).emit(this);\n }\n\n /** internal *\n setDirty() {\n (this as {dirty: boolean}).dirty = true;\n
}\n\n /** internal *\n destroy(): void {\n (this.changes as EventEmitter<any>).complete();\n (this.changes as
EventEmitter<any>).unsubscribe();\n }\n\n // The implementation of `Symbol.iterator` should be declared here, but
this would cause\n // tree-shaking issues with `QueryList`. So instead, it's added in the constructor (see comments\n
// there) and this declaration is left here to ensure that TypeScript considers QueryList to\n // implement the Iterable
interface. This is required for template type-checking of NgFor loops\n // over QueryLists to work correctly, since
QueryList must be assignable to NgIterable.\n [Symbol.iterator]!: () => Iterator<T>;\n }\n\n /**\n * @license\n *
Copyright Google LLC All Rights Reserved.\n * Use of this source code is governed by an MIT-style license
that can be\n * found in the LICENSE file at https://angular.io/license\n * ^\n\nimport {ProcessProvidersFunction}
from '../di/interface/provider';\nimport {Type} from '../interface/type';\nimport {SchemaMetadata} from
'../metadata/schema';\nimport {ViewEncapsulation} from '../metadata/view';\nimport {FactoryFn} from
'../definition_factory';\nimport {TAttributes, TConstantsOrFactory} from './node';\nimport {CssSelectorList} from
'./projection';\nimport {TView} from './view';\n\n/**\n * Definition of what a template rendering function should
look like for a component.\n * ^\nexport type ComponentTemplate<T> = {\n // Note: the ctx parameter is typed as
T|U, as using only U would prevent a template with\n // e.g. ctx: {} from being assigned to
ComponentTemplate<any> as TypeScript won't infer U = any\n // in that scenario. By including T this

```

incompatibility is resolved.

```

<U extends T>(rf: RenderFlags, ctx: T|U): void;

```

Definition of what a view queries function should look like.

```

export type ViewQueriesFunction<T> = <U extends T>(rf: RenderFlags, ctx: U) => void;

```

Definition of what a content queries function should look like.

```

export type ContentQueriesFunction<T> = <U extends T>(rf: RenderFlags, ctx: U, directiveIndex: number) => void;

```

Flags passed into template functions to determine which blocks (i.e. creation, update) should be executed.

Typically, a template runs both the creation block and the update block on initialization and subsequent runs only execute the update block. However, dynamically created views require that the creation block be executed separately from the update block (for backwards compat).

```

export const enum RenderFlags {
 Create = 0b01,
 Update = 0b10
}

```

A subclass of `Type` which has a static `cmp` field making it consumable for rendering.

```

export interface ComponentType<T> extends Type<T> {
 cmp: never;
}

```

A subclass of `Type` which has a static `dir` field making it consumable for rendering.

```

export interface DirectiveType<T> extends Type<T> {
 dir: never;
 fac: () => T;
}

```

A subclass of `Type` which has a static `pipe` field making it consumable for rendering.

```

export interface PipeType<T> extends Type<T> {
 pipe: never;
}

```

An object literal of this type is used to represent the metadata of a constructor dependency. The type itself is never referred to from generated code.

```

export type CtorDependency = {
 attribute?: string|unknown;
 optional?: true;
 host?: true;
 self?: true;
 skipSelf?: true;
} | null;

```

An object literal of this type is used to represent the metadata of a constructor dependency. The type itself is never referred to from generated code.

```

export type AttributeMetadata = {
 attribute?: string|unknown;
 optional?: true;
 host?: true;
 self?: true;
 skipSelf?: true;
} | null;

```

```

export type DirectiveDefWithMeta<T, Selector extends string, ExportAs extends string[], InputMap extends {[key: string]: string}, OutputMap extends {[key: string]: string}, QueryFields extends string[]> = DirectiveDef<T>;

```

Runtime link information for Directives.

This is an internal data structure used by the render to link directives into templates.

NOTE: Always use `defineDirective` function to create this object, never create the object directly since the shape of this object can change between versions.

```

@param Selector type metadata specifying the selector of the directive or component
See: { @link defineDirective }

```

```

export interface DirectiveDef<T> {
 inputs: {[P in keyof T]: string};
 @deprecated
 readonly declaredInputs: {[P in keyof T]: string};
 outputs: {[P in keyof T]: string};
 @deprecated
 readonly outputs: {[P in keyof T]: string};
 contentQueries: ContentQueriesFunction<T>|null;
 queryRelatedInstructions: QueryRelatedInstructions;
 viewQuery: ViewQueriesFunction<T>|null;
 refreshesHostBindings: HostBindingsFunction<T>|null;
 readonly hostBindings: HostBindingsFunction<T>|null;
 readonly hostVars: number;
 assignStaticAttributeValues: AssignStaticAttributeValues;
 hostAttrs: AssignStaticAttributeValues;
}

```

This is only here because `NgOnChanges` incorrectly uses declared name instead of public or minified name.

```

readonly declaredInputs: {[P in keyof T]: string};
readonly outputs: {[P in keyof T]: string};

```

Function to create and refresh content queries associated with a given directive.

```

contentQueries: ContentQueriesFunction<T>|null;

```

Query-related instructions for a directive. Note that while directives don't have a view and as such view queries won't necessarily do anything, there might be components that extend the directive.

```

viewQuery: ViewQueriesFunction<T>|null;
refreshesHostBindings: HostBindingsFunction<T>|null;
readonly hostBindings: HostBindingsFunction<T>|null;
readonly hostVars: number;
assignStaticAttributeValues: AssignStaticAttributeValues;
hostAttrs: AssignStaticAttributeValues;

```

Refreshes host bindings on the associated directive.

```

readonly hostBindings: HostBindingsFunction<T>|null;

```

The number of bindings in this directive `hostBindings` (including pure fn bindings).

```

readonly hostVars: number;

```

Used to calculate the length of the component's LView array, so we can pre-fill the array and set the host binding start index.

```

assignStaticAttributeValues: AssignStaticAttributeValues;
hostAttrs: AssignStaticAttributeValues;

```

Assign static attribute values to a host element. This property will assign static attribute values as well as class and style values to a host element. Since attribute values can consist of different types of values, the `hostAttrs` array must include the values in the following format:

```

// static attributes (like `title`, `name`, `id`...)
attr1, value1, attr2, value,
// a single namespace value (like `x:id`)
NAMESPACE_MARKER, namespaceUri1, name1, value1,

```

another single namespace value (like `x:name`)\n \* `NAMESPACE_MARKER`, namespaceUri2, name2, value2,\n \*  
 \*\n \* // a series of CSS classes that will be applied to the element (no spaces)\n \* `CLASSES_MARKER`,  
 class1, class2, class3,\n \*  
 \*\n \* // a series of CSS styles (property + value) that will be applied to the element\n \*  
`STYLES_MARKER`, prop1, value1, prop2, value2\n \* ]\n \*  
 \*\n \* All non-class and non-style attributes must be  
 defined at the start of the list\n \* first before all class and style values are set. When there is a change in value\n \*  
 type (like when classes and styles are introduced) a marker must be used to separate\n \* the entries. The marker  
 values themselves are set via entries found in the\n \* `[AttributeMarker]` enum.\n \*  
 \*\n \* readonly hostAttrs:  
 TAttributes|null;\n \*  
 \*\* Token representing the directive. Used by DI. \*\n \*  
 \*\n \* readonly type: Type<T>;\n \*  
 \*\*  
 Function that resolves providers and publishes them into the DI system. \*\n \*  
 \*\n \* providersResolver:\n \* (`U` extends  
 T>(def: DirectiveDef<U>, processProvidersFn?: ProcessProvidersFunction) =>\n \*  
 void)|null;\n \*  
 \*\* The  
 selectors that will be used to match nodes to this directive. \*\n \*  
 \*\n \* readonly selectors: CssSelectorList;\n \*  
 \*\*\n \*  
 Name under which the directive is exported (for use with local references in template)\n \*  
 \*\n \* readonly exportAs:  
 string[]|null;\n \*  
 \*\*\n \*  
 Factory function used to create a new directive instance. Will be null initially.\n \*  
 \*\n \*  
 Populated when the factory is first requested by directive instantiation logic.\n \*  
 \*\n \* readonly factory:  
 FactoryFn<T>|null;\n \*  
 \*\*\n \*  
 The features applied to this directive\n \*  
 \*\n \* readonly features:  
 DirectiveDefFeature[]|null;\n \*  
 setInput:\n \* (`U` extends T>(\n \*  
 this: DirectiveDef<U>, instance: U, value:  
 any, publicName: string,\n \*  
 privateName: string) => void)|null;\n \*  
 \*\*\n \*  
 @codeGenApi\n \*  
 \n \*  
 export type  
 ComponentDefWithMeta<\n \*  
 T, Selector extends String, ExportAs extends\n \*  
 string[], InputMap extends  
 {[key: string]: string},\n \*  
 OutputMap extends {[key: string]: string}, QueryFields extends\n \*  
 string[], NgContentSelectors extends string[]> = ComponentDef<T>;\n \*  
 \*\*\n \*  
 @codeGenApi\n \*  
 \n \*  
 export type  
 FactoryDef<T, CtorDependencies extends CtorDependency[]> = () => T;\n \*  
 \*\*\n \*  
 Runtime link information for  
 Components.\n \*  
 \*\n \*  
 This is an internal data structure used by the render to link\n \*  
 components into templates.\n \*  
 \*\n \*  
 NOTE: Always use `defineComponent` function to create this object,\n \*  
 never create the object directly since  
 the shape of this object\n \*  
 can change between versions.\n \*  
 \*\n \*  
 See: { @link defineComponent }\n \*  
 \n \*  
 export  
 interface ComponentDef<T> extends DirectiveDef<T> {\n \*  
 \*\*\n \*  
 Runtime unique component ID.\n \*  
 \*\n \*  
 readonly id: string;\n \*  
 \*\*\n \*  
 The View template of the component.\n \*  
 \*\n \*  
 readonly template:  
 ComponentTemplate<T>;\n \*  
 \*\*  
 Constants associated with the component's view. \*\n \*  
 \*\n \*  
 readonly consts:  
 TConstantsOrFactory|null;\n \*  
 \*\*\n \*  
 An array of `ngContent[selector]` values that were found in the template.\n \*  
 \*\n \*  
 readonly ngContentSelectors?: string[];\n \*  
 \*\*\n \*  
 A set of styles that the component needs to be present for  
 component to render correctly.\n \*  
 \*\n \*  
 readonly styles: string[];\n \*  
 \*\*\n \*  
 The number of nodes, local refs, and  
 pipes in this component template.\n \*  
 \*\n \*  
 Used to calculate the length of the component's LView array, so we\n \*  
 can pre-fill the array and set the binding start index.\n \*  
 \*\n \*  
 // TODO(kara): remove queries from this count\n \*  
 \*\n \*  
 readonly decls: number;\n \*  
 \*\*\n \*  
 The number of bindings in this component template (including pure fn  
 bindings).\n \*  
 \*\n \*  
 Used to calculate the length of the component's LView array, so we\n \*  
 can pre-fill the array  
 and set the host binding start index.\n \*  
 \*\n \*  
 readonly vars: number;\n \*  
 \*\*\n \*  
 Query-related instructions for a  
 component.\n \*  
 \*\n \*  
 viewQuery: ViewQueriesFunction<T>|null;\n \*  
 \*\*\n \*  
 The view encapsulation type, which  
 determines how styles are applied to\n \*  
 DOM elements. One of\n \*  
 - `Emulated` (default): Emulate native  
 scoping of styles.\n \*  
 \*\n \*  
 - `Native`: Use the native encapsulation mechanism of the renderer.\n \*  
 \*\n \*  
 - `ShadowDom`:  
 Use modern [ShadowDOM](https://w3c.github.io/webcomponents/spec/shadow/) and\n \*  
 create a `ShadowRoot`  
 for component's host element.\n \*  
 \*\n \*  
 - `None`: Do not provide any template or style encapsulation.\n \*  
 \*\n \*  
 readonly  
 encapsulation: ViewEncapsulation;\n \*  
 \*\*\n \*  
 Defines arbitrary developer-defined data to be stored on a renderer  
 instance.\n \*  
 \*\n \*  
 This is useful for renderers that delegate to other renderers.\n \*  
 \*\n \*  
 readonly data: {[kind: string]:  
 any};\n \*  
 \*\*  
 Whether or not this component's ChangeDetectionStrategy is OnPush \*\n \*  
 \*\n \*  
 readonly onPush:  
 boolean;\n \*  
 \*\*\n \*  
 Registry of directives and components that may be found in this view.\n \*  
 \*\n \*  
 The property  
 is either an array of `DirectiveDef`s or a function which returns the array of\n \*  
`DirectiveDef`s. The function is  
 necessary to be able to support forward declarations.\n \*  
 \*\n \*  
 directiveDefs: DirectiveDefListOrFactory|null;\n \*  
 \*\*\n \*  
 Registry of pipes that may be found in this view.\n \*  
 \*\n \*  
 The property is either an array of `PipeDef`s or  
 a function which returns the array of\n \*  
`PipeDef`s. The function is necessary to be able to support forward

```

declarations.\n *\n pipeDefs: PipeDefListOrFactory|null;\n\n /**\n * The set of schemas that declare elements to
be allowed in the component's template.\n *\n schemas: SchemaMetadata[]|null;\n\n /**\n * Ivy runtime uses
this place to store the computed tView for the component. This gets filled on\n * the first run of component.\n *\n tView: TView|null;\n\n /**\n * Used to store the result of `noSideEffects` function so that it is not removed by
closure\n * compiler. The property should never be read.\n *\n readonly _?: never;\n}\n\n/**\n * Runtime link
information for Pipes.\n *\n * This is an internal data structure used by the renderer to link\n * pipes into
templates.\n *\n * NOTE: Always use `definePipe` function to create this object,\n * never create the object directly
since the shape of this object\n * can change between versions.\n *\n * See: {@link definePipe}\n *\nexport
interface PipeDef<T> {\n /** Token representing the pipe. *\n type: Type<T>;\n\n /**\n * Pipe name.\n *\n *
Used to resolve pipe in templates.\n *\n readonly name: string;\n\n /**\n * Factory function used to create a new
pipe instance. Will be null initially.\n * Populated when the factory is first requested by pipe instantiation logic.\n
*\n factory: FactoryFn<T>|null;\n\n /**\n * Whether or not the pipe is pure.\n *\n * Pure pipes result only
depends on the pipe input and not on internal\n * state of the pipe.\n *\n readonly pure: boolean;\n\n /* The
following are lifecycle hooks for this pipe *\n onDestroy: (() => void)|null;\n}\n\n/**\n * @codeGenApi\n
*\nexport type PipeDefWithMeta<T, Name extends string> = PipeDef<T>;\n\nexport interface
DirectiveDefFeature {\n <T>(directiveDef: DirectiveDef<T>): void;\n /**\n * Marks a feature as something that
{@link InheritDefinitionFeature} will execute\n * during inheritance.\n *\n * NOTE: DO NOT SET IN ROOT
OF MODULE! Doing so will result in tree-shakers/bundlers\n * identifying the change as a side effect, and the
feature will be included in\n * every bundle.\n *\n ngInherit?: true;\n}\n\nexport interface
ComponentDefFeature {\n <T>(componentDef: ComponentDef<T>): void;\n /**\n * Marks a feature as
something that {@link InheritDefinitionFeature} will execute\n * during inheritance.\n *\n * NOTE: DO NOT
SET IN ROOT OF MODULE! Doing so will result in tree-shakers/bundlers\n * identifying the change as a side
effect, and the feature will be included in\n * every bundle.\n *\n ngInherit?: true;\n}\n\n/**\n * Type used for
directiveDefs on component definition.\n *\n * The function is necessary to be able to support forward
declarations.\n *\nexport type DirectiveDefListOrFactory = (() => DirectiveDefList)|DirectiveDefList;\n\nexport
type DirectiveDefList = (DirectiveDef<any>|ComponentDef<any>)[];\n\nexport type DirectiveTypesOrFactory =
(() => DirectiveTypeList)|DirectiveTypeList;\n\nexport type DirectiveTypeList =\n (DirectiveType<any>|ComponentType<any>)\n Type<any>/* Type as workaround for:
Microsoft/TypeScript/issues/4881 */[];\n\nexport type HostBindingsFunction<T> = <U extends T>(rf:
RenderFlags, ctx: U) => void;\n\n/**\n * Type used for PipeDefs on component definition.\n *\n * The function is
necessary to be able to support forward declarations.\n *\nexport type PipeDefListOrFactory = (() =>
PipeDefList)|PipeDefList;\n\nexport type PipeDefList = PipeDef<any>[];\n\nexport type PipeTypesOrFactory = (()
=> PipeTypeList)|PipeTypeList;\n\nexport type PipeTypeList =\n (PipeType<any>|Type<any>/* Type as
workaround for: Microsoft/TypeScript/issues/4881 */[]);\n\n\n// Note: This hack is necessary so we don't
erroneously get a circular dependency\n// failure based on types.\n\nexport const unusedValueExportToPlacateAjd =
1;\n", /**\n * @license\n * Copyright Google LLC All Rights Reserved.\n *\n * Use of this source code is governed
by an MIT-style license that can be\n * found in the LICENSE file at https://angular.io/license\n *\n\nimport
{InjectionToken} from '../di/injection_token';\n\nimport {Type} from '../interface/type';\n\nimport {QueryList} from
'../linker/query_list';\n\nimport {TNode} from './node';\n\nimport {TView} from './view';\n\n\n/**\n * An object
representing query metadata extracted from query annotations.\n *\nexport interface TQueryMetadata {\n
predicate: Type<any>|InjectionToken<unknown>|string[];\n descendants: boolean;\n read: any;\n isStatic:
boolean;\n}\n\n\n/**\n * TQuery objects represent all the query-related data that remain the same from one view
instance\n * to another and can be determined on the very first template pass. Most notably TQuery holds all\n *
the matches for a given view.\n *\nexport interface TQuery {\n /**\n * Query metadata extracted from query
annotations.\n *\n metadata: TQueryMetadata;\n\n /**\n * Index of a query in a declaration view in case of
queries propagated to an embedded view, -1\n * for queries declared in a given view. We are storing this index so
we can find a parent query\n * to clone for an embedded view (when an embedded view is created).\n *\n
indexInDeclarationView: number;\n\n /**\n * Matches collected on the first template pass. Each match is a pair

```

of:\n \* - TNode index;\n \* - match index;\n \* \n \* A TNode index can be either:\n \* - a positive number (the most common case) to indicate a matching TNode;\n \* - a negative number to indicate that a given query is crossing a <ng-template> element and\n \* results from views created based on TemplateRef should be inserted at this place.\n \* \n \* A match index is a number used to find an actual value (for a given node) when query results\n \* are materialized. This index can have one of the following values:\n \* - -2 - indicates that we need to read a special token (TemplateRef, ViewContainerRef etc.); \n \* - -1 - indicates that we need to read a default value based on the node type (TemplateRef for\n \* ng-template and ElementRef for other elements); \n \* - a positive number - index of an injectable to be read from the element injector.\n \* \n matches: number[]|null;\n\n /\*\*\n \* A flag indicating if a given query crosses an <ng-template> element. This flag exists for\n \* performance reasons: we can notice that queries not crossing any <ng-template> elements will\n \* have matches from a given view only (and adapt processing accordingly).\n \* \n crossesNgTemplate: boolean;\n\n /\*\*\n \* A method call when a given query is crossing an element (or element container). This is where a\n \* given TNode is matched against a query predicate.\n \* @param tView\n \* @param tNode\n \* \n elementStart(tView: TView, tNode: TNode): void;\n\n /\*\*\n \* A method called when processing the elementEnd instruction - this is mostly useful to determine\n \* if a given content query should match any nodes past this point.\n \* @param tNode\n \* \n elementEnd(tNode: TNode): void;\n\n /\*\*\n \* A method called when processing the template instruction. This is where a\n \* given TContainerNode is matched against a query predicate.\n \* @param tView\n \* @param tNode\n \* \n template(tView: TView, tNode: TNode): void;\n\n /\*\*\n \* A query-related method called when an embedded TView is created based on the content of a\n \* <ng-template> element. We call this method to determine if a given query should be propagated\n \* to the embedded view and if so - return a cloned TQuery for this embedded view.\n \* @param tNode\n \* @param childQueryIndex\n \* \n embeddedTView(tNode: TNode, childQueryIndex: number): TQuery|null;\n\n /\*\*\n \* TQueries represent a collection of individual TQuery objects tracked in a given view. Most of the\n \* methods on this interface are simple proxy methods to the corresponding functionality on TQuery.\n \* \n export interface TQueries {\n /\*\*\n \* Adds a new TQuery to a collection of queries tracked in a given view.\n \* @param tQuery\n \* \n track(tQuery: TQuery): void;\n /\*\*\n \* Returns a TQuery instance for at the given index in the queries array.\n \* @param index\n \* \n getByIndex(index: number): TQuery;\n\n /\*\*\n \* Returns the number of queries tracked in a given view.\n \* \n length: number;\n /\*\*\n \* A proxy method that iterates over all the TQueries in a given TView and calls the corresponding\n \* `elementStart` on each and every TQuery.\n \* @param tView\n \* @param tNode\n \* \n elementStart(tView: TView, tNode: TNode): void;\n\n /\*\*\n \* A proxy method that iterates over all the TQueries in a given TView and calls the corresponding\n \* `elementEnd` on each and every TQuery.\n \* @param tNode\n \* \n elementEnd(tNode: TNode): void;\n\n /\*\*\n \* A proxy method that iterates over all the TQueries in a given TView and calls the corresponding\n \* `template` on each and every TQuery.\n \* @param tView\n \* @param tNode\n \* \n template(tView: TView, tNode: TNode): void;\n\n /\*\*\n \* A proxy method that iterates over all the TQueries in a given TView and calls the corresponding\n \* `embeddedTView` on each and every TQuery.\n \* @param tNode\n \* \n embeddedTView(tNode: TNode): TQueries|null;\n\n /\*\*\n \* An interface that represents query-related information specific to a view instance. Most notably\n \* it contains:\n \* - materialized query matches;\n \* - a pointer to a QueryList where materialized query results should be reported.\n \* \n export interface LQuery<T> {\n /\*\*\n \* Materialized query matches for a given view only (!). Results are initialized lazily so the\n \* array of matches is set to `null` initially.\n \* \n matches: (T|null)[]|null;\n\n /\*\*\n \* A QueryList where materialized query results should be reported.\n \* \n queryList: QueryList<T>;\n\n /\*\*\n \* Clones an LQuery for an embedded view. A cloned query shares the same `QueryList` but has a\n \* separate collection of materialized matches.\n \* \n clone(): LQuery<T>;\n\n /\*\*\n \* Called when an embedded view, impacting results of this query, is inserted or removed.\n \* \n setDirty(): void;\n\n /\*\*\n \* LQueries represent a collection of individual LQuery objects tracked in a given view.\n \* \n export interface LQueries {\n /\*\*\n \* A collection of queries tracked in a given view.\n \* \n queries: LQuery<any>[];\n\n /\*\*\n \* A method called when a new embedded view is created. As a result a set of LQueries applicable\n \* for a new embedded view is instantiated (cloned) from the declaration view.\n \* @param tView\n \* \n createEmbeddedView(tView: TView): LQueries|null;\n\n /\*\*\n \* A

```

method called when an embedded view is inserted into a container. As a result all impacted
`LQuery` objects (and associated `QueryList`) are marked as dirty.
@param tView
insertView(tView: TView): void;
/**
 * A method called when an embedded view is detached from a container. As a result all impacted
 * `LQuery` objects (and associated `QueryList`) are marked as dirty.
 * @param tView
 * detachView(tView: TView): void;
}
}
Note: This hack is necessary so we don't erroneously get a circular dependency failure
based on types.
export const unusedValueExportToPlacateAjd = 1;
/**
 * @license
 * Copyright Google
 * LLC All Rights Reserved.
 * Use of this source code is governed by an MIT-style license that can be found
 * in the LICENSE file at https://angular.io/license
 * We are temporarily importing the existing
 * viewEngine_ from core so we can be sure we are correctly implementing its interfaces for backwards
 * compatibility.
import { InjectionToken } from './di/injection_token';
import { Type } from './interface/type';
import { createElementRef, ElementRef as ViewEngine_ElementRef } from './linker/element_ref';
import { QueryList } from './linker/query_list';
import { createTemplateRef, TemplateRef as ViewEngine_TemplateRef } from './linker/template_ref';
import { createContainerRef, ViewContainerRef } from './linker/view_container_ref';
import { assertDefined, assertIndexInRange, throwError } from './util/assert';
import { stringify } from './util/stringify';
import { assertFirstCreatePass, assertLContainer } from './assert';
import { getNodeInjectable, locateDirectiveOrProvider } from './di';
import { storeCleanupWithContext } from './instructions/shared';
import { CONTAINER_HEADER_OFFSET, LContainer, MOVED_VIEWS } from './interfaces/container';
import { unusedValueExportToPlacateAjd as unused1 } from './interfaces/definition';
import { unusedValueExportToPlacateAjd as unused2 } from './interfaces/injector';
import { TContainerNode, TElementContainerNode, TElementNode, TNode, TNodeType,
unusedValueExportToPlacateAjd as unused3 } from './interfaces/node';
import { LQueries, LQuery, TQueries, TQuery, TQueryMetadata, unusedValueExportToPlacateAjd as unused4 } from './interfaces/query';
import { DECLARATION_LCONTAINER, LView, PARENT, QUERIES, TVIEW, TView } from './interfaces/view';
import { assertTNodeType } from './node_assert';
import { getCurrentQueryIndex, getCurrentTNode, getLView, getTView, setCurrentQueryIndex } from './state';
import { isCreationMode } from './util/view_utils';
const unusedValueToPlacateAjd = unused1 + unused2 + unused3 + unused4;
class LQuery<T> implements LQuery<T> {
 matches: (T|null)[] | null = null;
 constructor(public queryList: QueryList<T>) {}
 clone(): LQuery<T> {
 return new LQuery_(this.queryList);
 }
 setDirty(): void {
 this.queryList.setDirty();
 }
}
class LQueries_ implements LQueries {
 constructor(public queries: LQuery<any>[] = []) {}
 createEmbeddedView(tView: TView): LQueries | null {
 const tQueries = tView.queries;
 if (tQueries !== null) {
 const noOfInheritedQueries = tView.contentQueries !== null ? tView.contentQueries[0] : tQueries.length;
 const viewLQueries: LQuery<any>[] = [];
 // An embedded view has queries propagated from a declaration view at the beginning of the
 // TQueries collection and up until a first content query declared in the embedded view. Only
 // propagated LQueries are created at this point (LQuery corresponding to declared content
 // queries will be instantiated from the content query instructions for each directive).
 for (let i = 0; i < noOfInheritedQueries; i++) {
 const tQuery = tQueries.getByIndex(i);
 const parentLQuery = this.queries[tQuery.indexInDeclarationView];
 viewLQueries.push(parentLQuery.clone());
 }
 return new LQueries_(viewLQueries);
 }
 return null;
 }
 insertView(tView: TView): void {
 this.dirtyQueriesWithMatches(tView);
 }
 detachView(tView: TView): void {
 this.dirtyQueriesWithMatches(tView);
 }
 private dirtyQueriesWithMatches(tView: TView) {
 for (let i = 0; i < this.queries.length; i++) {
 if (getTQuery(tView, i).matches !== null) {
 this.queries[i].setDirty();
 }
 }
 }
}
class TQueryMetadata_ implements TQueryMetadata {
 constructor(\n public predicate: Type<any> | InjectionToken<unknown> | string[], public descendants: boolean, \n public isStatic: boolean, public read: any = null) {}
}
class TQueries_ implements TQueries {
 constructor(private queries: TQuery[] = []) {}
 elementStart(tView: TView, tNode: TNode): void {
 ngDevMode && assertFirstCreatePass(\n tView, 'Queries should collect results on the first template pass only');
 for (let i = 0; i < this.queries.length; i++) {
 this.queries[i].elementStart(tView, tNode);
 }
 }
 elementEnd(tNode: TNode): void {
 for (let i = 0;

```

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i < this.queries.length; i++) {\n this.queries[i].elementEnd(tNode);\n }\n }\n embeddedTView(tNode: TNode):
TQueries|null {\n let queriesForTemplateRef: TQuery[]|null = null;\n for (let i = 0; i < this.length; i++) {\n
const childQueryIndex = queriesForTemplateRef !== null ? queriesForTemplateRef.length : 0;\n const
tqueryClone = this.getByIndex(i).embeddedTView(tNode, childQueryIndex);\n if (tqueryClone) {\n
tqueryClone.indexInDeclarationView = i;\n if (queriesForTemplateRef !== null) {\n
queriesForTemplateRef.push(tqueryClone);\n } else {\n queriesForTemplateRef = [tqueryClone];\n
}\n }\n }\n return queriesForTemplateRef !== null ? new TQueries_(queriesForTemplateRef) : null;\n
}\n\n template(tView: TView, tNode: TNode): void {\n ngDevMode &&\n assertFirstCreatePass(\n
tView, 'Queries should collect results on the first template pass only');\n for (let i = 0; i < this.queries.length; i++)
{\n this.queries[i].template(tView, tNode);\n }\n }\n getByIndex(index: number): TQuery {\n ngDevMode
&& assertIndexInRange(this.queries, index);\n return this.queries[index];\n }\n get length(): number {\n
return this.queries.length;\n }\n\n track(tquery: TQuery): void {\n this.queries.push(tquery);\n }\n }\n\n class
TQuery_ implements TQuery {\n matches: number[]|null = null;\n indexInDeclarationView = -1;\n
crossesNgTemplate = false;\n\n /**\n * A node index on which a query was declared (-1 for view queries and ones
inherited from the\n * declaration template). We use this index (alongside with _appliesToNextNode flag) to
know\n * when to apply content queries to elements in a template.\n */\n private _declarationNodeIndex:
number;\n\n /**\n * A flag indicating if a given query still applies to nodes it is crossing. We use this flag\n *
(alongside with _declarationNodeIndex) to know when to stop applying content queries to\n * elements in a
template.\n */\n private _appliesToNextNode = true;\n\n constructor(public metadata: TQueryMetadata,
nodeIndex: number = -1) {\n this._declarationNodeIndex = nodeIndex;\n }\n\n elementStart(tView: TView,
tNode: TNode): void {\n if (this.isApplyingToNode(tNode)) {\n this.matchTNode(tView, tNode);\n }\n }\n\n elementEnd(tNode: TNode): void {\n if (this._declarationNodeIndex === tNode.index) {\n
this._appliesToNextNode = false;\n }\n }\n\n template(tView: TView, tNode: TNode): void {\n
this.elementStart(tView, tNode);\n }\n\n embeddedTView(tNode: TNode, childQueryIndex: number): TQuery|null
{\n if (this.isApplyingToNode(tNode)) {\n this.crossesNgTemplate = true;\n // A marker indicating a `` element (a placeholder for query results from\n // embedded views created based on this ``).\n this.addMatch(-tNode.index, childQueryIndex);\n return new TQuery_(this.metadata);\n }\n
return null;\n }\n\n private isApplyingToNode(tNode: TNode): boolean {\n if (this._appliesToNextNode &&
this.metadata.descendants === false) {\n const declarationNodeIdx = this._declarationNodeIndex;\n let parent
= tNode.parent;\n // Determine if a given TNode is a `direct` child of a node on which a content query was\n
// declared (only direct children of query's host node can match with the descendants: false\n // option). There are
3 main use-case / conditions to consider here:\n // - <needs-target><i #target></i></needs-target>: here <i
#target> parent node is a query\n // host node;\n // - <needs-target><ng-template [ngIf]="true"><i
#target></i></ng-template></needs-target>:\n // here <i #target> parent node is null;\n // - <needs-target><ng-
container><i #target></i></ng-container></needs-target>: here we need\n // to go past `` to
determine <i #target> parent node (but we shouldn't traverse\n // up past the query's host node!).\n while
(parent !== null && (parent.type & TNodeType.ElementContainer) &&\n parent.index !==
declarationNodeIdx) {\n parent = parent.parent;\n }\n return declarationNodeIdx === (parent !== null ?
parent.index : -1);\n }\n return this._appliesToNextNode;\n }\n\n private matchTNode(tView: TView, tNode:
TNode): void {\n const predicate = this.metadata.predicate;\n if (Array.isArray(predicate)) {\n for (let i = 0; i
< predicate.length; i++) {\n const name = predicate[i];\n this.matchTNodeWithReadOption(tView, tNode,
getIdxOfMatchingSelector(tNode, name));\n // Also try matching the name to a provider since strings can be
used as DI tokens too.\n this.matchTNodeWithReadOption(\n tView, tNode,
locateDirectiveOrProvider(tNode, tView, name, false, false));\n }\n } else {\n if ((predicate as any) ===
ViewEngine_TemplateRef) {\n if (tNode.type & TNodeType.Container) {\n
this.matchTNodeWithReadOption(tView, tNode, -1);\n }\n } else {\n
this.matchTNodeWithReadOption(\n tView, tNode, locateDirectiveOrProvider(tNode, tView, predicate,
false, false));\n }\n }\n }\n\n private matchTNodeWithReadOption(tView: TView, tNode: TNode,

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nodeMatchIdx: number|null): void {\n if (nodeMatchIdx !== null) {\n const read = this.metadata.read;\n if (read !== null) {\n if (read === ViewEngine_ElementRef || read === ViewContainerRef ||\n read === ViewEngine_TemplateRef && (tNode.type & TNodeType.Container)) {\n this.addMatch(tNode.index, -2);\n } else {\n const directiveOrProviderIdx =\n locateDirectiveOrProvider(tNode, tView, read, false,\n false);\n if (directiveOrProviderIdx !== null) {\n this.addMatch(tNode.index,\n directiveOrProviderIdx);\n } else {\n this.addMatch(tNode.index, nodeMatchIdx);\n }\n }\n }\n }\n private addMatch(tNodeIdx: number, matchIdx: number) {\n if (this.matches === null) {\n this.matches = [tNodeIdx, matchIdx];\n } else {\n this.matches.push(tNodeIdx, matchIdx);\n }\n }\n}\n\n/**\n * Iterates over local names for a given node and returns directive index\n * (or -1 if a local name points to an element).\n * @param tNode static data of a node to check\n * @param selector selector to match\n * @returns directive index, -1 or null if a selector didn't match any of the local names\n */\nfunction\ngetIdxOfMatchingSelector(tNode: TNode, selector: string): number|null {\n const localNames =\n tNode.localNames;\n if (localNames !== null) {\n for (let i = 0; i < localNames.length; i += 2) {\n if (localNames[i] === selector) {\n return localNames[i + 1] as number;\n }\n }\n }\n return\n null;\n}\n\nfunction createResultByTNodeType(tNode: TNode, currentView: LView): any {\n if (tNode.type &\n (TNodeType.AnyRNode | TNodeType.ElementContainer)) {\n return createElementRef(tNode, currentView);\n }\n else if (tNode.type & TNodeType.Container) {\n return createTemplateRef(tNode, currentView);\n }\n return\n null;\n}\n\nfunction createResultForNode(IView: LView, tNode: TNode, matchingIdx: number, read: any): any\n{\n if (matchingIdx === -1) {\n // if read token and / or strategy is not specified, detect it using appropriate tNode\n type\n return createResultByTNodeType(tNode, IView);\n } else if (matchingIdx === -2) {\n // read a special\n token from a node injector\n return createSpecialToken(IView, tNode, read);\n } else {\n // read a token\n return getNodeInjectable(IView, IView[TVIEW], matchingIdx, tNode as TElementNode);\n }\n}\n\nfunction\ncreateSpecialToken(IView: LView, tNode: TNode, read: any): any {\n if (read === ViewEngine_ElementRef) {\n return createElementRef(tNode, IView);\n } else if (read === ViewEngine_TemplateRef) {\n return\n createTemplateRef(tNode, IView);\n } else if (read === ViewContainerRef) {\n ngDevMode &&\n assertTNodeType(tNode, TNodeType.AnyRNode | TNodeType.AnyContainer);\n return createContainerRef(\n tNode as TElementNode | TContainerNode | TElementContainerNode, IView);\n } else {\n ngDevMode &&\n throwError(\n `Special token to read should be one of ElementRef, TemplateRef or ViewContainerRef but\n got ${\n stringify(read)}.`);\n }\n}\n\n/**\n * A helper function that creates query results for a given view.\n * This function is meant to do the\n * processing once and only once for a given view instance (a set of results for a\n * given view\n * doesn't change).\n */\nfunction materializeViewResults<T>(\n tView: TView, IView: LView,\n tQuery: TQuery, queryIndex: number): (T|null)[] {\n const IQuery = IView[QUERIES]!.queries![queryIndex];\n if (IQuery.matches === null) {\n const tViewData = tView.data;\n const tQueryMatches = tQuery.matches!;\n const result: T|null[] = [];\n for (let i = 0; i < tQueryMatches.length; i += 2) {\n const matchedNodeIdx =\n tQueryMatches[i];\n if (matchedNodeIdx < 0) {\n // we at the <ng-template> marker which might have\n results in views created based on this\n // <ng-template> - those results will be in separate views though, so here\n we just leave\n // null as a placeholder\n result.push(null);\n } else {\n ngDevMode &&\n assertIndexInRange(tViewData, matchedNodeIdx);\n const tNode = tViewData[matchedNodeIdx] as TNode;\n result.push(createResultForNode(IView, tNode, tQueryMatches[i + 1], tQuery.metadata.read));\n }\n }\n IQuery.matches = result;\n }\n return IQuery.matches;\n}\n\n/**\n * A helper function that collects (already\n * materialized) query results from a tree of views,\n * starting with a provided LView.\n */\nfunction\ncollectQueryResults<T>(tView: TView, IView: LView, queryIndex: number, result: T[]): T[] {\n const tQuery =\n tView.queries!.getByIndex(queryIndex);\n const tQueryMatches = tQuery.matches;\n if (tQueryMatches !== null)\n {\n const IViewResults = materializeViewResults<T>(tView, IView, tQuery, queryIndex);\n for (let i = 0; i <\n tQueryMatches.length; i += 2) {\n const tNodeIdx = tQueryMatches[i];\n if (tNodeIdx > 0) {\n result.push(IViewResults[i / 2] as T);\n } else {\n const childQueryIndex = tQueryMatches[i + 1];\n const declarationLContainer = IView[-tNodeIdx] as LContainer;\n ngDevMode &&\n assertLContainer(declarationLContainer);\n // collect matches for views inserted in this container\n for

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(let i = CONTAINER_HEADER_OFFSET; i < declarationLContainer.length; i++) {\n const embeddedLView
= declarationLContainer[i];\n if (embeddedLView[DECLARATION_LCONTAINER] ===
embeddedLView[PARENT]) {\n collectQueryResults(embeddedLView[TVIEW], embeddedLView,
childQueryIndex, result);\n }\n }\n // collect matches for views created from this declaration
container and inserted into\n // different containers\n if (declarationLContainer[MOVED_VIEWS] !==
null) {\n const embeddedLViews = declarationLContainer[MOVED_VIEWS];\n for (let i = 0; i <
embeddedLViews.length; i++) {\n const embeddedLView = embeddedLViews[i];\n collectQueryResults(embeddedLView[TVIEW], embeddedLView, childQueryIndex, result);\n }\n }\n }\n return result;\n}\n\n/**\n * Refreshes a query by combining matches from all active views and
removing matches from deleted\n * views.\n * @returns `true` if a query got dirty during change detection or if
this is a static query\n * resolving in creation mode, `false` otherwise.\n * @codeGenApi\n */\nexport function
queryRefresh(queryList: QueryList<any>): boolean {\n const lView = getLView();\n const tView = getTView();\n const queryIndex = getCurrentQueryIndex();\n setCurrentQueryIndex(queryIndex + 1);\n const tQuery =
getTQuery(tView, queryIndex);\n if (queryList.dirty && (isCreationMode(lView) === tQuery.metadata.isStatic))
{\n if (tQuery.matches === null) {\n queryList.reset([]);\n } else {\n const result =
tQuery.crossesNgTemplate ?\n collectQueryResults(tView, lView, queryIndex, []) :\n materializeViewResults(tView, lView, tQuery, queryIndex);\n queryList.reset(result);\n queryList.notifyOnChanges();\n }\n return true;\n }\n return false;\n}\n\n/**\n * Creates new QueryList for a
static view query.\n * @param predicate The type for which the query will search\n * @param descend Whether
or not to descend into children\n * @param read What to save in the query\n * @codeGenApi\n */\nexport
function staticViewQuery<T>(\n predicate: Type<any>|InjectionToken<unknown>|string[], descend: boolean,
read?: any): void {\n viewQueryInternal(getTView(), getLView(), predicate, descend, read, true);\n}\n\n/**\n *
Creates new QueryList, stores the reference in LView and returns QueryList.\n * @param predicate The type for
which the query will search\n * @param descend Whether or not to descend into children\n * @param read What
to save in the query\n * @codeGenApi\n */\nexport function viewQuery<T>(\n predicate:
Type<any>|InjectionToken<unknown>|string[], descend: boolean, read?: any): void {\n
 viewQueryInternal(getTView(), getLView(), predicate, descend, read, false);\n}\n\nfunction
viewQueryInternal<T>(\n tView: TView, lView: LView, predicate:
Type<any>|InjectionToken<unknown>|string[],\n descend: boolean, read: any, isStatic: boolean): void {\n if
(tView.firstCreatePass) {\n createTQuery(tView, new TQueryMetadata_(predicate, descend, isStatic, read), -1);\n
 if (isStatic) {\n tView.staticViewQueries = true;\n }\n }\n createLQuery<T>(tView, lView);\n}\n\n/**\n *
Registers a QueryList, associated with a content query, for later refresh (part of a view\n * refresh).\n * @param
directiveIndex Current directive index\n * @param predicate The type for which the query will search\n * @param
descend Whether or not to descend into children\n * @param read What to save in the query\n * @returns
QueryList<T>\n * @codeGenApi\n */\nexport function contentQuery<T>(\n directiveIndex: number,
predicate: Type<any>|InjectionToken<unknown>|string[], descend: boolean,\n read?: any): void {\n
 contentQueryInternal(\n getTView(), getLView(), predicate, descend, read, false, getCurrentTNode(),
directiveIndex);\n}\n\n/**\n * Registers a QueryList, associated with a static content query, for later refresh\n * (part
of a view refresh).\n * @param directiveIndex Current directive index\n * @param predicate The type for which
the query will search\n * @param descend Whether or not to descend into children\n * @param read What to save
in the query\n * @returns QueryList<T>\n * @codeGenApi\n */\nexport function staticContentQuery<T>(\n
directiveIndex: number, predicate: Type<any>|InjectionToken<unknown>|string[], descend: boolean,\n read?:
any): void {\n contentQueryInternal(\n getTView(), getLView(), predicate, descend, read, true,
getCurrentTNode(), directiveIndex);\n}\n\nfunction contentQueryInternal<T>(\n tView: TView, lView: LView,
predicate: Type<any>|InjectionToken<unknown>|string[],\n descend: boolean, read: any, isStatic: boolean, tNode:
TNode, directiveIndex: number): void {\n if (tView.firstCreatePass) {\n createTQuery(tView, new
TQueryMetadata_(predicate, descend, isStatic, read), tNode.index);\n saveContentQueryAndDirectiveIndex(tView, directiveIndex);\n if (isStatic) {\n tView.staticContentQueries =

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true;\n }\n }\n\n createLQuery<T>(tView, IView);\n}\n\n/**\n * Loads a QueryList corresponding to the current
view or content query.\n *\n * @codeGenApi\n */\nexport function loadQuery<T>(): QueryList<T> {\n return
loadQueryInternal<T>(getLView(), getCurrentQueryIndex());\n}\n\nfunction loadQueryInternal<T>(IView: LView,
queryIndex: number): QueryList<T> {\n ngDevMode &&\n assertDefined(IView[QUERIES], 'LQueries should
be defined when trying to load a query');\n ngDevMode && assertIndexInRange(IView[QUERIES]!.queries,
queryIndex);\n return IView[QUERIES]!.queries[queryIndex].queryList;\n}\n\nfunction createLQuery<T>(tView:
TView, IView: LView) {\n const queryList = new QueryList<T>();\n storeCleanupWithContext(tView, IView,
queryList, queryList.destroy);\n if (IView[QUERIES] === null) IView[QUERIES] = new LQueries_();\n IView[QUERIES]!.queries.push(new LQuery_(queryList));\n}\n\nfunction createTQuery(tView: TView, metadata:
TQueryMetadata, nodeIndex: number): void {\n if (tView.queries === null) tView.queries = new TQueries_();\n
tView.queries.track(new TQuery_(metadata, nodeIndex));\n}\n\nfunction
saveContentQueryAndDirectiveIndex(tView: TView, directiveIndex: number) {\n const tViewContentQueries =
tView.contentQueries || (tView.contentQueries = []);\n const lastSavedDirectiveIndex =\n
tViewContentQueries.length ? tViewContentQueries[tViewContentQueries.length - 1] : -1;\n if (directiveIndex !==
lastSavedDirectiveIndex) {\n tViewContentQueries.push(tView.queries!.length - 1, directiveIndex);\n
 }\n}\n\nfunction getTQuery(tView: TView, index: number): TQuery {\n ngDevMode &&
assertDefined(tView.queries, 'TQueries must be defined to retrieve a TQuery');\n return
tView.queries!.getByIndex(index);\n}\n\n", "/*\n * @license\n * Copyright Google LLC All Rights Reserved.\n *\n *
Use of this source code is governed by an MIT-style license that can be\n * found in the LICENSE file at
https://angular.io/license\n */\n\nimport { ChangeDetectorRef, injectChangeDetectorRef } from
'./change_detection/change_detector_ref';\nimport { InjectFlags } from './di/interface/injector';\nimport
{ createTemplateRef, TemplateRef } from './linker/template_ref';\nimport { throwProviderNotFoundError } from
'./errors_di';\nimport { TNode } from './interfaces/node';\nimport { LView } from './interfaces/view';\n\n/**\n *
Retrieves `TemplateRef` instance from `Injector` when a local reference is placed on the\n * ``
element.\n *\n * @codeGenApi\n */\nexport function templateRefExtractor(tNode: TNode, IView: LView):
TemplateRef<any>|null {\n return createTemplateRef(tNode, IView);\n}\n\n/**\n * Returns the appropriate
`ChangeDetectorRef` for a pipe.\n *\n * @codeGenApi\n */\nexport function injectPipeChangeDetectorRef(flags =
InjectFlags.Default): ChangeDetectorRef|null {\n const value = injectChangeDetectorRef(true);\n if (value == null
&& !(flags & InjectFlags.Optional)) {\n throwProviderNotFoundError('ChangeDetectorRef');\n } else {\n
return value;\n }\n}\n\n", "/*\n * @license\n * Copyright Google LLC All Rights Reserved.\n *\n *
Use of this source code is governed by an MIT-style license that can be\n * found in the LICENSE file at
https://angular.io/license\n */\n\nimport { LifecycleHooksFeature, renderComponent, whenRendered } from
'./component';\nimport { defineComponent, defineDirective, defineNgModule, definePipe, setComponentScope, setNgModuleScope } from
'./definition';\nimport { CopyDefinitionFeature } from './features/copy_definition_feature';\nimport
{ InheritDefinitionFeature } from './features/inherit_definition_feature';\nimport { NgOnChangesFeature } from
'./features/ng_onchanges_feature';\nimport { ProvidersFeature } from './features/providers_feature';\nimport
{ ComponentDef, ComponentTemplate, ComponentType, DirectiveDef, DirectiveType, PipeDef,
ComponentDefWithMeta, DirectiveDefWithMeta, FactoryDef, PipeDefWithMeta } from
'./interfaces/definition';\nimport { getComponent, getDirectives, getHostElement, getRenderedText } from
'./util/discovery_utils';\n\nexport { NgModuleType } from './metadata/ng_module_def';\nexport { ComponentFactory,
ComponentFactoryResolver, ComponentRef, injectComponentFactoryResolver } from './component_ref';\nexport
{ getFactoryOf, getInheritedFactory } from './di';\nexport { getLocaleId, setLocaleId } from './i18n/i18n_locale_id';\n//
clang-format off\nexport {\n detectChanges,\n markDirty,\n store,\n tick,\n advance,\n\n attribute,\n
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'trustConstantHtml': sanitization.trustConstantHtml,\n 'trustConstantScript': sanitization.trustConstantScript,\n
'trustConstantResourceUrl': sanitization.trustConstantResourceUrl,\n)));\n", "/*\n * @license\n * Copyright\n
Google LLC All Rights Reserved.\n *\n * Use of this source code is governed by an MIT-style license that can be\n
* found in the LICENSE file at https://angular.io/license\n *\nimport {ViewEncapsulation} from\n
'../metadata/view';\n\nexport interface JitCompilerOptions {\n defaultEncapsulation?: ViewEncapsulation;\n
preserveWhitespaces?: boolean;\n}\n\nlet jitOptions: JitCompilerOptions|null = null;\n\nexport function\n
setJitOptions(options: JitCompilerOptions): void {\n if (jitOptions !== null) {\n if (options.defaultEncapsulation\n
!== jitOptions.defaultEncapsulation) {\n ngDevMode &&\n console.error(\n 'Provided value for\n
`defaultEncapsulation` can not be changed once it has been set.);\n return;\n }\n if\n
(options.preserveWhitespaces !== jitOptions.preserveWhitespaces) {\n ngDevMode &&\n console.error(\n\n
 'Provided value for `preserveWhitespaces` can not be changed once it has been set.);\n return;\n }\n }\n
jitOptions = options;\n}\n\nexport function getJitOptions(): JitCompilerOptions|null {\n return\n
jitOptions;\n}\n\nexport function resetJitOptions(): void {\n jitOptions = null;\n}\n", "/*\n * @license\n *
Copyright Google LLC All Rights Reserved.\n *\n * Use of this source code is governed by an MIT-style license\n
that can be\n * found in the LICENSE file at https://angular.io/license\n *\nimport {getCompilerFacade,\n
R3InjectorMetadataFacade} from '../compiler/compiler_facade';\nimport {resolveForwardRef} from\n
'../di/forward_ref';\nimport {NG_INJ_DEF} from '../di/interface/defs';\nimport {reflectDependencies} from\n
'../di/jit/util';\nimport {Type} from '../interface/type';\nimport {Component} from\n
'../metadata/directives';\nimport {ModuleWithProviders, NgModule} from '../metadata/ng_module';\nimport\n
{NgModuleDef, NgModuleTransitiveScopes, NgModuleType} from '../metadata/ng_module_def';\nimport\n
{deepForEach, flatten} from '../util/array_utils';\nimport {assertDefined} from '../util/assert';\nimport\n
{getComponentDef, getDirectiveDef, getNgModuleDef, getPipeDef} from '../definition';\nimport\n
{NG_COMP_DEF, NG_DIR_DEF, NG_MOD_DEF, NG_PIPE_DEF} from '../fields';\nimport {ComponentDef}\n
from '../interfaces/definition';\nimport {maybeUnwrapFn} from '../util/misc_utils';\nimport {stringifyForError} from\n
'../util/stringify_utils';\nimport {angularCoreEnv} from './environment';\n\nconst EMPTY_ARRAY: Type<any>[]\n
= [];\n\ninterface ModuleQueueItem {\n moduleType: Type<any>;\n ngModule: NgModule;\n}\n\nconst\n
moduleQueue: ModuleQueueItem[] = [];\n\n/**\n * Enqueues moduleDef to be checked later to see if scope can be\n
set on its\n * component declarations.\n *\nfunction enqueueModuleForDelayedScoping(moduleType: Type<any>,\n
ngModule: NgModule) {\n moduleQueue.push({moduleType, ngModule});\n}\n\nlet flushingModuleQueue =\n
false;\n\n/**\n * Loops over queued module definitions, if a given module definition has all of its\n * declarations\n
resolved, it dequeues that module definition and sets the scope on\n * its declarations.\n *\nexport function\n
flushModuleScopingQueueAsMuchAsPossible() {\n if (!flushingModuleQueue) {\n flushingModuleQueue =\n
true;\n try {\n for (let i = moduleQueue.length - 1; i >= 0; i--) {\n const {moduleType, ngModule} =\n
moduleQueue[i];\n\n if (ngModule.declarations && ngModule.declarations.every(isResolvedDeclaration)) {\n\n
 // dequeue\n moduleQueue.splice(i, 1);\n setScopeOnDeclaredComponents(moduleType,\n
ngModule);\n }\n }\n } finally {\n flushingModuleQueue = false;\n }\n }\n}\n\n/**\n * Returns truthy\n
if a declaration has resolved. If the declaration happens to be\n * an array of declarations, it will recurse to check\n
each declaration in that array\n * (which may also be arrays).\n *\nfunction isResolvedDeclaration(declaration:\n
any[]|Type<any>): boolean {\n if (Array.isArray(declaration)) {\n return\n
declaration.every(isResolvedDeclaration);\n }\n return !!resolveForwardRef(declaration);\n}\n\n/**\n * Compiles a\n
module in JIT mode.\n *\n * This function automatically gets called when a class has a `@NgModule` decorator.\n\n
*\nexport function compileNgModule(moduleType: Type<any>, ngModule: NgModule = {}): void {\n \n
compileNgModuleDefs(moduleType as NgModuleType, ngModule);\n\n // Because we don't know if all\n
declarations have resolved yet at the moment the\n // NgModule decorator is executing, we're enqueueing the\n
setting of module scope\n // on its declarations to be run at a later time when all declarations for the module,\n
including forward refs, have resolved.\n enqueueModuleForDelayedScoping(moduleType, ngModule);\n}\n\n/**\n\n
* Compiles and adds the `mod` and `inj` properties to the module class.\n *\n * It's possible to compile a module via

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declarations.forEach(verifyComponentEntryComponentsIsPartOfNgModule);\n\n const ngModule =
getAnnotation<NgModule>(moduleType, 'NgModule');\n if (ngModule) {\n ngModule.imports &&\n
flatten(ngModule.imports).map(unwrapModuleWithProvidersImports).forEach(mod => {\n
verifySemanticsOfNgModuleImport(mod, moduleType);\n verifySemanticsOfNgModuleDef(mod, false,
moduleType);\n });\n ngModule.bootstrap && deepForEach(ngModule.bootstrap,
verifyCorrectBootstrapType);\n ngModule.bootstrap && deepForEach(ngModule.bootstrap,
verifyComponentIsPartOfNgModule);\n ngModule.entryComponents &&\n
deepForEach(ngModule.entryComponents, verifyComponentIsPartOfNgModule);\n } }\n\n // Throw Error if any
errors were detected.\n if (errors.length) {\n throw new Error(errors.join('\n'));\n }\n
//\n function
verifyDeclarationsHaveDefinitions(type: Type<any>): void {\n type = resolveForwardRef(type);\n const def =
getComponentDef(type) || getDirectiveDef(type) || getPipeDef(type);\n if (!def) {\n errors.push(`Unexpected
value '${stringifyForError(type)}' declared by the module '${\n stringifyForError(moduleType)}'. Please add a
@Pipe/@Directive/@Component annotation.`);\n }\n }\n\n function verifyDirectivesHaveSelector(type:
Type<any>): void {\n type = resolveForwardRef(type);\n const def = getDirectiveDef(type);\n if
(!getComponentDef(type) && def && def.selectors.length == 0) {\n errors.push(`Directive
${stringifyForError(type)} has no selector, please add it!`);\n }\n }\n\n function
verifyExportsAreDeclaredOrReExported(type: Type<any>) {\n type = resolveForwardRef(type);\n const kind =
getComponentDef(type) && 'component' || getDirectiveDef(type) && 'directive' ||\n getPipeDef(type) &&
'pipe';\n if (kind) {\n // only checked if we are declared as Component, Directive, or Pipe\n // Modules don't
need to be declared or imported.\n if (combinedDeclarations.lastIndexOf(type) === -1) {\n // We are
exporting something which we don't explicitly declare or import.\n errors.push(`Can't export ${kind}
${stringifyForError(type)} from ${\n stringifyForError(moduleType)} as it was neither declared nor
imported!`);\n }\n }\n }\n\n function verifyDeclarationIsUnique(type: Type<any>, suppressErrors: boolean)
{\n type = resolveForwardRef(type);\n const existingModule = ownerNgModule.get(type);\n if
(existingModule && existingModule !== moduleType) {\n if (!suppressErrors) {\n const modules =
[existingModule, moduleType].map(stringifyForError).sort();\n errors.push(\n `Type
${stringifyForError(type)} is part of the declarations of 2 modules: ${\n modules[0]} and ${modules[1]}!`\n
+`\n `Please consider moving ${stringifyForError(type)} to a higher module that imports ${\n
modules[0]} and ${modules[1]}.` +`\n `You can also create a new NgModule that exports and includes ${\n
stringifyForError(\n type)} then import that NgModule in ${modules[0]} and ${modules[1]}.`);\n
 }\n } else {\n // Mark type as having owner.\n ownerNgModule.set(type, moduleType);\n }\n }\n\n
function verifyComponentIsPartOfNgModule(type: Type<any>) {\n type = resolveForwardRef(type);\n const
existingModule = ownerNgModule.get(type);\n if (!existingModule) {\n errors.push(`Component ${\n
stringifyForError(\n type)} is not part of any NgModule or the module has not been imported into your
module.`);\n }\n }\n\n function verifyCorrectBootstrapType(type: Type<any>) {\n type =
resolveForwardRef(type);\n if (!getComponentDef(type)) {\n errors.push(` ${stringifyForError(type)} cannot be
used as an entry component.`);\n }\n }\n\n function verifyComponentEntryComponentsIsPartOfNgModule(type:
Type<any>) {\n type = resolveForwardRef(type);\n if (getComponentDef(type)) {\n // We know we are
component\n const component = getAnnotation<Component>(type, 'Component');\n if (component &&
component.entryComponents) {\n deepForEach(component.entryComponents,
verifyComponentIsPartOfNgModule);\n }\n }\n }\n\n function verifySemanticsOfNgModuleImport(type:
Type<any>, importingModule: Type<any>) {\n type = resolveForwardRef(type);\n\n if
(getComponentDef(type) || getDirectiveDef(type)) {\n throw new Error(`Unexpected directive '${type.name}'
imported by the module '${\n importingModule.name}'. Please add an @NgModule annotation.`);\n }\n }\n\n
if (getPipeDef(type)) {\n throw new Error(`Unexpected pipe '${type.name}' imported by the module '${\n
importingModule.name}'. Please add an @NgModule annotation.`);\n }\n }\n }\n\nfunction
unwrapModuleWithProvidersImports(typeOrWithProviders: NgModuleType<any>)\n

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{ngModule: NgModuleType<any>}): NgModuleType<any> {\n typeOrWithProviders =
resolveForwardRef(typeOrWithProviders);\n return (typeOrWithProviders as any).ngModule ||
typeOrWithProviders;\n}\n\nfunction getAnnotation<T>(type: any, name: string): T|null {\n let annotation: T|null =
null;\n collect(type.__annotations__); \n collect(type.decorators);\n return annotation;\n\n function
collect(annotations: any[]|null) {\n if (annotations) {\n annotations.forEach(readAnnotation);\n }\n }\n\n
function readAnnotation(\n decorator: {type: {prototype: {ngMetadataName: string}}, args: any[]}, args: any):
void {\n if (!annotation) {\n const proto = Object.getPrototypeOf(decorator);\n if (proto.ngMetadataName
== name) {\n annotation = decorator as any;\n } else if (decorator.type) {\n const proto =
Object.getPrototypeOf(decorator.type);\n if (proto.ngMetadataName == name) {\n annotation =
decorator.args[0];\n }\n }\n }\n }\n}\n\n/**\n * Keep track of compiled components. This is needed
because in tests we often want to compile the\n * same component with more than one NgModule. This would cause
an error unless we reset which\n * NgModule the component belongs to. We keep the list of compiled components
here so that the\n * TestBed can reset it later.\n */\nlet ownerNgModule = new Map<Type<any>,
NgModuleType<any>>();\nlet verifiedNgModule = new Map<NgModuleType<any>, boolean>();\n\nexport
function resetCompiledComponents(): void {\n ownerNgModule = new Map<Type<any>,
NgModuleType<any>>();\n verifiedNgModule = new Map<NgModuleType<any>, boolean>();\n
moduleQueue.length = 0;\n}\n\n/**\n * Computes the combined declarations of explicit declarations, as well as
declarations inherited by\n * traversing the exports of imported modules.\n * @param type\n */\nfunction
computeCombinedExports(type: Type<any>): Type<any>[] {\n type = resolveForwardRef(type);\n const
ngModuleDef = getNgModuleDef(type, true);\n return
[...flatten(maybeUnwrapFn(ngModuleDef.exports).map((type) => {\n const ngModuleDef =
getNgModuleDef(type);\n if (ngModuleDef) {\n verifySemanticsOfNgModuleDef(type as any as
NgModuleType, false);\n return computeCombinedExports(type);\n } else {\n return type;\n }\n
})]);\n}\n\n/**\n * Some declared components may be compiled asynchronously, and thus may not have their\n *
cmp set yet. If this is the case, then a reference to the module is written into\n * the `ngSelectorScope` property of
the declared type.\n */\nfunction setScopeOnDeclaredComponents(moduleType: Type<any>, NgModule:
NgModule) {\n const declarations: Type<any>[] = flatten(ngModule.declarations || EMPTY_ARRAY);\n const
transitiveScopes = transitiveScopesFor(moduleType);\n declarations.forEach(declaration => {\n if
(declaration.hasOwnProperty(NG_COMP_DEF)) {\n // A `cmp` field exists - go ahead and patch the component
directly.\n const component = declaration as Type<any>& {cmp: ComponentDef<any>};\n const
componentDef = getComponentDef(component)!;\n patchComponentDefWithScope(componentDef,
transitiveScopes);\n } else if (\n !declaration.hasOwnProperty(NG_DIR_DEF) &&
!declaration.hasOwnProperty(NG_PIPE_DEF)) {\n // Set `ngSelectorScope` for future reference when the
component compilation finishes.\n (declaration as Type<any>& {ngSelectorScope?: any}).ngSelectorScope =
moduleType;\n }\n });\n}\n\n/**\n * Patch the definition of a component with directives and pipes from the
compilation scope of\n * a given module.\n */\nexport function patchComponentDefWithScope<C>(\n
componentDef: ComponentDef<C>, transitiveScopes: NgModuleTransitiveScopes) {\n
componentDef.directiveDefs = () =>\n Array.from(transitiveScopes.compilation.directives)\n .map(\n
dir => dir.hasOwnProperty(NG_COMP_DEF) ? getComponentDef(dir)! : getDirectiveDef(dir)!)\n)\n
.filter(def => !!def);\n componentDef.pipeDefs = () =>\n
Array.from(transitiveScopes.compilation.pipes).map(pipe => getPipeDef(pipe)!);\n componentDef.schemas =
transitiveScopes.schemas;\n\n // Since we avoid Components/Directives/Pipes recompiling in case there are no
overrides, we\n // may face a problem where previously compiled defs available to a given Component/Directive\n
// are cached in TView and may become stale (in case any of these defs gets recompiled). In\n // order to avoid this
problem, we force fresh TView to be created.\n componentDef.tView = null;\n}\n\n/**\n * Compute the pair of
transitive scopes (compilation scope and exported scope) for a given module.\n */\n * This operation is memoized
and the result is cached on the module's definition. This function can\n * be called on modules with components that
have not fully compiled yet, but the result should not\n * be used until they have.\n */\n * @param moduleType

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module that transitive scope should be calculated for.\n *^\nexport function transitiveScopesFor<T>(moduleType:
Type<T>): NgModuleTransitiveScopes {\n if (!isNgModule(moduleType)) {\n throw new
Error(` ${moduleType.name} does not have a module def (mod property)`);\n }\n const def =
getNgModuleDef(moduleType);\n\n if (def.transitiveCompileScopes !== null) {\n return
def.transitiveCompileScopes;\n }\n\n const scopes: NgModuleTransitiveScopes = {\n schemas: def.schemas ||
null,\n compilation: {\n directives: new Set<any>(),\n pipes: new Set<any>(),\n },\n exported: {\n
directives: new Set<any>(),\n pipes: new Set<any>(),\n },\n };\n\n maybeUnwrapFn(def.imports).forEach(<I>(imported: Type<I>) => {\n const importedType = imported as
Type<I>& {\n // If imported is an @NgModule:\n mod?: NgModuleDef<I>;\n };\n\n if
(!isNgModule<I>(importedType)) {\n throw new Error(` Importing ${importedType.name} which does not have
a mod property`);\n }\n\n // When this module imports another, the imported module's exported directives and
pipes are\n // added to the compilation scope of this module.\n const importedScope =
transitiveScopesFor(importedType);\n importedScope.exported.directives.forEach(entry =>
scopes.compilation.directives.add(entry));\n importedScope.exported.pipes.forEach(entry =>
scopes.compilation.pipes.add(entry));\n });\n\n maybeUnwrapFn(def.declarations).forEach(declared => {\n const
declaredWithDefs = declared as Type<any>& {\n pipe?: any;\n };\n\n if (getPipeDef(declaredWithDefs)) {\n
scopes.compilation.pipes.add(declared);\n } else {\n // Either declared has a cmp or dir, or it's a component
which hasn't\n // had its template compiled yet. In either case, it gets added to the compilation's\n //
directives.\n scopes.compilation.directives.add(declared);\n }\n });\n\n maybeUnwrapFn(def.exports).forEach(<E>(exported: Type<E>) => {\n const exportedType = exported as
Type<E>& {\n // Components, Directives, NgModules, and Pipes can all be exported.\n cmp?: any;\n dir?:
any;\n mod?: NgModuleDef<E>;\n pipe?: any;\n };\n\n // Either the type is a module, a pipe, or a
component/directive (which may not have a\n // cmp as it might be compiled asynchronously).\n if
(isNgModule(exportedType)) {\n // When this module exports another, the exported module's exported directives
and pipes are\n // added to both the compilation and exported scopes of this module.\n const exportedScope =
transitiveScopesFor(exportedType);\n exportedScope.exported.directives.forEach(entry => {\n
scopes.compilation.directives.add(entry);\n scopes.exported.directives.add(entry);\n });\n\n
exportedScope.exported.pipes.forEach(entry => {\n scopes.compilation.pipes.add(entry);\n
scopes.exported.pipes.add(entry);\n });\n } else if (getPipeDef(exportedType)) {\n
scopes.exported.pipes.add(exportedType);\n } else {\n scopes.exported.directives.add(exportedType);\n }\n
});\n\n def.transitiveCompileScopes = scopes;\n return scopes;\n }\n\nfunction expandModuleWithProviders(value:
Type<any>|ModuleWithProviders<{}>): Type<any> {\n if (isModuleWithProviders(value)) {\n return
value.ngModule;\n }\n return value;\n }\n\nfunction isModuleWithProviders(value: any): value is
ModuleWithProviders<{}> {\n return (value as {ngModule?: any}).ngModule !== undefined;\n }\n\nfunction
isNgModule<T>(value: Type<T>): value is Type<T>&{mod: NgModuleDef<T>} {\n return
!!getNgModuleDef(value);\n }\n\n"/**\n * @license\n * Copyright Google LLC All Rights Reserved.\n * Use of
this source code is governed by an MIT-style license that can be\n * found in the LICENSE file at
https://angular.io/license\n */\n\nimport {getCompilerFacade, R3DirectiveMetadataFacade} from
'./../compiler/compiler_facade';\nimport {R3ComponentMetadataFacade, R3QueryMetadataFacade} from
'./../compiler/compiler_facade_interface';\nimport {resolveForwardRef} from './../di/forward_ref';\nimport
{getReflect, reflectDependencies} from './../di/jit/util';\nimport {Type} from './../interface/type';\nimport {Query}
from './../metadata/di';\nimport {Component, Directive, Input} from './../metadata/directives';\nimport
{componentNeedsResolution, maybeQueueResolutionOfComponentResources} from
'./../metadata/resource_loading';\nimport {ViewEncapsulation} from './../metadata/view';\nimport
{initNgDevMode} from './../util/ng_dev_mode';\nimport {getComponentDef, getDirectiveDef} from
'./definition';\nimport {EMPTY_ARRAY, EMPTY_OBJ} from './empty';\nimport {NG_COMP_DEF,
NG_DIR_DEF, NG_FACTORY_DEF} from './fields';\nimport {ComponentType} from
'./interfaces/definition';\nimport {stringifyForError} from './util/stringify_utils';\nimport {angularCoreEnv} from

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./environment';\nimport {getJitOptions} from './jit_options';\nimport
{flushModuleScopingQueueAsMuchAsPossible, patchComponentDefWithScope, transitiveScopesFor} from
./module';\n\n/**\n * Keep track of the compilation depth to avoid reentrancy issues during JIT compilation. This\n
* matters in the following scenario:\n *\n * Consider a component 'A' that extends component 'B', both declared in
module 'M'. During\n * the compilation of 'A' the definition of 'B' is requested to capture the inheritance chain,\n *
potentially triggering compilation of 'B'. If this nested compilation were to trigger\n *
`flushModuleScopingQueueAsMuchAsPossible` it may happen that module 'M' is still pending in the\n * queue,
resulting in 'A' and 'B' to be patched with the NgModule scope. As the compilation of\n * 'A' is still in progress, this
would introduce a circular dependency on its compilation. To avoid\n * this issue, the module scope queue is only
flushed for compilations at the depth 0, to ensure\n * all compilations have finished.\n */\nlet compilationDepth =
0;\n\n/**\n * Compile an Angular component according to its decorator metadata, and patch the resulting\n *
component def (cmp) onto the component type.\n *\n * Compilation may be asynchronous (due to the need to
resolve URLs for the component template or\n * other resources, for example). In the event that compilation is not
immediate, `compileComponent`\n * will enqueue resource resolution into a global queue and will fail to return the
`cmp`\n * until the global queue has been resolved with a call to `resolveComponentResources`.\n */\nexport
function compileComponent(type: Type<any>, metadata: Component): void {\n // Initialize ngDevMode. This must
be the first statement in compileComponent.\n // See the `initNgDevMode` docstring for more information.\n
(typeof ngDevMode === 'undefined' || ngDevMode) && initNgDevMode();\n\n let ngComponentDef: any =
null;\n\n // Metadata may have resources which need to be resolved.\n
maybeQueueResolutionOfComponentResources(type, metadata);\n\n // Note that we're using the same function as
`Directive`, because that's only subset of metadata\n // that we need to create the ngFactoryDef. We're avoiding
using the component metadata\n // because we'd have to resolve the asynchronous templates.\n
addDirectiveFactoryDef(type, metadata);\n\n Object.defineProperty(type, NG_COMP_DEF, {\n get: () => {\n
if (ngComponentDef === null) {\n const compiler = getCompilerFacade();\n if
(componentNeedsResolution(metadata)) {\n const error = ['Component `${type.name}` is not resolved:'];\n
if (metadata.templateUrl) {\n error.push(` - templateUrl: ${metadata.templateUrl}`);\n } \n if
(metadata.styleUrls && metadata.styleUrls.length) {\n error.push(` - styleUrls:
${JSON.stringify(metadata.styleUrls)}`);\n } \n error.push(`Did you run and wait for
`resolveComponentResources()?`);\n throw new Error(error.join("\\n")); \n } \n\n // This const was
called `jitOptions` previously but had to be renamed to `options` because\n // of a bug with Terser that caused
optimized JIT builds to throw a `ReferenceError`.\n // This bug was investigated in
https://github.com/angular/angular-cli/issues/17264. \n // We should not rename it back until
https://github.com/terser/terser/issues/615 is fixed.\n
const options = getJitOptions();\n let
preserveWhitespaces = metadata.preserveWhitespaces;\n if (preserveWhitespaces === undefined) {\n if
(options !== null && options.preserveWhitespaces !== undefined) {\n preserveWhitespaces =
options.preserveWhitespaces;\n } else {\n preserveWhitespaces = false;\n } \n } \n let
encapsulation = metadata.encapsulation;\n if (encapsulation === undefined) {\n if (options !== null &&
options.defaultEncapsulation !== undefined) {\n encapsulation = options.defaultEncapsulation;\n } else
{\n encapsulation = ViewEncapsulation.Emulated;\n } \n } \n\n const templateUrl =
metadata.templateUrl || `ng://${type.name}/template.html`; \n const meta: R3ComponentMetadataFacade = {\n
...directiveMetadata(type, metadata),\n typeSourceSpan: compiler.createParseSourceSpan('Component',
type.name, templateUrl),\n template: metadata.template || "",\n preserveWhitespaces,\n styles:
metadata.styles || EMPTY_ARRAY,\n animations: metadata.animations,\n directives: [],\n
changeDetection: metadata.changeDetection,\n pipes: new Map(),\n encapsulation,\n interpolation:
metadata.interpolation,\n viewProviders: metadata.viewProviders || null,\n }; \n\n compilationDepth++;\n
try {\n if (meta.usesInheritance) {\n
addDirectiveDefToUndecoratedParents(type);\n } \n ngComponentDef =
compiler.compileComponent(angularCoreEnv, templateUrl, meta);\n } finally {\n // Ensure that the

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compilation depth is decremented even when the compilation failed.\n compilationDepth--;\n }\n\n if
(compilationDepth === 0) {\n // When NgModule decorator executed, we enqueued the module definition
such that\n // it would only dequeue and add itself as module scope to all of its declarations,\n // but only
if if all of its declarations had resolved. This call runs the check\n // to see if any modules that are in the queue
can be dequeued and add scope to\n // their declarations.\n
flushModuleScopingQueueAsMuchAsPossible();\n }\n\n // If component compilation is async, then the
@NgModule annotation which declares the\n // component may execute and set an ngSelectorScope property
on the component type. This\n // allows the component to patch itself with directiveDefs from the module after
it\n // finishes compiling.\n if (hasSelectorScope(type)) {\n const scopes =
transitiveScopesFor(type.ngSelectorScope);\n patchComponentDefWithScope(ngComponentDef, scopes);\n
 }\n }\n return ngComponentDef;\n},\n // Make the property configurable in dev mode to allow
overriding in tests\n configurable: !!ngDevMode,\n});\n\n\nfunction hasSelectorScope<T>(component:
Type<T>): component is Type<T>&\n {ngSelectorScope: Type<any>} {\n return (component as
{ngSelectorScope?: any}).ngSelectorScope !== undefined;\n}\n\n\n/**\n * Compile an Angular directive according to
its decorator metadata, and patch the resulting\n * directive def onto the component type.\n * In the event that
compilation is not immediate, `compileDirective` will return a `Promise` which\n * will resolve when compilation
completes and the directive becomes usable.\n */\nexport function compileDirective(type: Type<any>, directive:
Directive|null): void {\n let ngDirectiveDef: any = null;\n\n addDirectiveFactoryDef(type, directive || {});\n\n
Object.defineProperty(type, NG_DIR_DEF, {\n get: () => {\n if (ngDirectiveDef === null) {\n //
`directive` can be null in the case of abstract directives as a base class\n // that use `@Directive()` with no
selector. In that case, pass empty object to the\n // `directiveMetadata` function instead of null.\n const meta
= getDirectiveMetadata(type, directive || {});\n ngDirectiveDef =\n
getCompilerFacade().compileDirective(angularCoreEnv, meta.sourceMapUrl, meta.metadata);\n }\n return
ngDirectiveDef;\n },\n // Make the property configurable in dev mode to allow overriding in tests\n
configurable: !!ngDevMode,\n});\n\n\nfunction getDirectiveMetadata(type: Type<any>, metadata: Directive) {\n
const name = type && type.name;\n const sourceMapUrl = `ng://${name}/dir.js`;\n const compiler =
getCompilerFacade();\n const facade = directiveMetadata(type as ComponentType<any>, metadata);\n
facade.typeSourceSpan = compiler.createParseSourceSpan('Directive', name, sourceMapUrl);\n if
(facade.usesInheritance) {\n addDirectiveDefToUndecoratedParents(type);\n }\n return {metadata: facade,
sourceMapUrl};\n}\n\n\nfunction addDirectiveFactoryDef(type: Type<any>, metadata: Directive|Component) {\n
let ngFactoryDef: any = null;\n\n Object.defineProperty(type, NG_FACTORY_DEF, {\n get: () => {\n if
(ngFactoryDef === null) {\n const meta = getDirectiveMetadata(type, metadata);\n const compiler =
getCompilerFacade();\n ngFactoryDef = compiler.compileFactory(angularCoreEnv, `ng://${type.name}/fac.js`,
{\n ...meta.metadata,\n injectFn: 'directiveInject',\n target: compiler.R3FactoryTarget.Directive\n
});\n }\n return ngFactoryDef;\n },\n // Make the property configurable in dev mode to allow overriding in
tests\n configurable: !!ngDevMode,\n });\n\n\nexport function extendsDirectlyFromObject(type: Type<any>):
boolean {\n return Object.getPrototypeOf(type.prototype) === Object.prototype;\n}\n\n\n/**\n * Extract the
`R3DirectiveMetadata` for a particular directive (either a `Directive` or a\n * `Component`).\n */\nexport function
directiveMetadata(type: Type<any>, metadata: Directive): R3DirectiveMetadataFacade {\n // Reflect inputs and
outputs.\n const reflect = getReflect();\n const propMetadata = reflect.ownPropMetadata(type);\n\n return {\n
name: type.name,\n type: type,\n typeArgumentCount: 0,\n selector: metadata.selector !== undefined ?
metadata.selector : null,\n deps: reflectDependencies(type),\n host: metadata.host || EMPTY_OBJ,\n
propMetadata: propMetadata,\n inputs: metadata.inputs || EMPTY_ARRAY,\n outputs: metadata.outputs ||
EMPTY_ARRAY,\n queries: extractQueriesMetadata(type, propMetadata, isContentQuery),\n lifecycle:
{usesOnChanges: reflect.hasLifecycleHook(type, 'ngOnChanges')},\n typeSourceSpan: null!,\n usesInheritance:
!extendsDirectlyFromObject(type),\n exportAs: extractExportAs(metadata.exportAs),\n providers:
metadata.providers || null,\n viewQueries: extractQueriesMetadata(type, propMetadata, isViewQuery)\n
};\n}\n\n\n/**\n * Adds a directive definition to all parent classes of a type that don't have an Angular decorator.\n

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*\nfunction addDirectiveDefToUndecoratedParents(type: Type<any>) {\n const objPrototype =
Object.prototype;\n let parent = Object.getPrototypeOf(type.prototype).constructor;\n // Go up the prototype until
we hit `Object`.\n while (parent && parent !== objPrototype) {\n // Since inheritance works if the class was
annotated already, we only need to add\n // the def if there are no annotations and the def hasn't been created
already.\n if (!getDirectiveDef(parent) && !getComponentDef(parent) &&\n shouldAddAbstractDirective(parent)) {\n compileDirective(parent, null);\n }\n parent =
Object.getPrototypeOf(parent);\n }\n}\n\nfunction convertToR3QueryPredicate(selector: any): any|string[] {\n
return typeof selector === 'string' ? splitByComma(selector) : resolveForwardRef(selector);\n}\n\n\nexport function
convertToR3QueryMetadata(propertyName: string, ann: Query): R3QueryMetadataFacade {\n return {\n
propertyName: propertyName,\n predicate: convertToR3QueryPredicate(ann.selector),\n descendants:
ann.descendants,\n first: ann.first,\n read: ann.read ? ann.read : null,\n static: !!ann.static\n };\n}\n\nfunction
extractQueriesMetadata(\n type: Type<any>, propMetadata: {[key: string]: any[]},\n isQueryAnn: (ann: any) =>
ann is Query): R3QueryMetadataFacade[] {\n const queriesMeta: R3QueryMetadataFacade[] = [];\n for (const
field in propMetadata) {\n if (propMetadata.hasOwnProperty(field)) {\n const annotations =
propMetadata[field];\n annotations.forEach(ann => {\n if (isQueryAnn(ann)) {\n if (!ann.selector) {\n
throw new Error(\n `Can't construct a query for the property \"${field}\" of ` +\n
 `\"${stringifyForError(type)}\" since the query selector wasn't defined.`);\n }\n if
(annotations.some(isInputAnnotation)) {\n throw new Error(`Cannot combine @Input decorators with query
decorators`);\n }\n queriesMeta.push(convertToR3QueryMetadata(field, ann));\n }\n });\n }\n }\n return queriesMeta;\n}\n\nfunction extractExportAs(exportAs: string|undefined): string[]|null {\n return
exportAs === undefined ? null : splitByComma(exportAs);\n}\n\nfunction isContentQuery(value: any): value is
Query {\n const name = value.ngMetadataName;\n return name === 'ContentChild' || name ===
'ContentChildren';\n}\n\nfunction isViewQuery(value: any): value is Query {\n const name =
value.ngMetadataName;\n return name === 'ViewChild' || name === 'ViewChildren';\n}\n\nfunction
isInputAnnotation(value: any): value is Input {\n return value.ngMetadataName === 'Input';\n}\n\nfunction
splitByComma(value: string): string[] {\n return value.split(',').map(piece => piece.trim());\n}\n\n\nconst
LIFECYCLE_HOOKS = [\n 'ngOnChanges', 'ngOnInit', 'ngOnDestroy', 'ngDoCheck', 'ngAfterViewInit',
'ngAfterViewChecked',\n 'ngAfterContentInit', 'ngAfterContentChecked'\n];\n\nfunction
shouldAddAbstractDirective(type: Type<any>): boolean {\n const reflect = getReflect();\n if
(LIFECYCLE_HOOKS.some(hookName => reflect.hasLifecycleHook(type, hookName))) {\n return true;\n }\n}\n\n
const propMetadata = reflect.propMetadata(type);\n\n for (const field in propMetadata) {\n const annotations =
propMetadata[field];\n for (let i = 0; i < annotations.length; i++) {\n const current = annotations[i];\n const
metadataName = current.ngMetadataName;\n\n if (isInputAnnotation(current) || isContentQuery(current) ||
isViewQuery(current) ||\n metadataName === 'Output' || metadataName === 'HostBinding' ||\n metadataName === 'HostListener') {\n return true;\n }\n }\n }\n return false;\n}\n\n\n/**\n * @license\n
 * Copyright Google LLC All Rights Reserved.\n * Use of this source code is governed by an MIT-style license
that can be\n * found in the LICENSE file at https://angular.io/license\n */\n\nimport {getCompilerFacade,
R3PipeMetadataFacade} from '../compiler/compiler_facade';\nimport {reflectDependencies} from
'../di/jit/util';\nimport {Type} from '../interface/type';\nimport {Pipe} from '../metadata/directives';\nimport
{NG_FACTORY_DEF, NG_PIPE_DEF} from '../fields';\nimport {angularCoreEnv} from
'./environment';\n\nexport function compilePipe(type: Type<any>, meta: Pipe): void {\n let ngPipeDef: any =
null;\n let ngFactoryDef: any = null;\n\n Object.defineProperty(type, NG_FACTORY_DEF, {\n get: () => {\n
if (ngFactoryDef === null) {\n const metadata = getPipeMetadata(type, meta);\n const compiler =
getCompilerFacade();\n ngFactoryDef = compiler.compileFactory(\n angularCoreEnv,\n
`ng://${metadata.name}/fac.js`,\n {...metadata, injectFn: 'directiveInject', target:
compiler.R3FactoryTarget.Pipe});\n }\n return ngFactoryDef;\n },\n // Make the property configurable in
dev mode to allow overriding in tests\n configurable: !!ngDevMode,\n });\n\n Object.defineProperty(type,
NG_PIPE_DEF, {\n get: () => {\n if (ngPipeDef === null) {\n const metadata = getPipeMetadata(type,

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component.  
`styles?: string[];`  
 \* One or more animation `trigger()` calls, containing `state()` and `transition()` definitions. See the [Animations guide](/guide/animations) and animations API documentation.  
`animations?: any[];`  
 \* An encapsulation policy for the template and CSS styles. One of:  
 \* - `ViewEncapsulation.Emulated`: Use shimmed CSS that emulates the native behavior.  
 \* - `ViewEncapsulation.None`: Use global CSS without any encapsulation.  
 \* - `ViewEncapsulation.ShadowDom`: Use Shadow DOM v1 to encapsulate styles.  
 \* If not supplied, the value is taken from `CompilerOptions`. The default compiler option is `ViewEncapsulation.Emulated`.  
 \* If the policy is set to `ViewEncapsulation.Emulated` and the component has no `styles` or `styleUrls` specified, the policy is automatically switched to `ViewEncapsulation.None`.  
`encapsulation?: ViewEncapsulation;`  
 \* Overrides the default encapsulation start and end delimiters (`{`` and ``}`)  
`interpolation?: [string, string];`  
 \* A set of components that should be compiled along with this component. For each component listed here, Angular creates a `@link ComponentFactory` and stores it in the `@link ComponentFactoryResolver`.  
 \* @deprecated Since 9.0.0. With Ivy, this property is no longer necessary.  
`entryComponents?: Array<Type<any>|any[]>;`  
 \* True to preserve or false to remove potentially superfluous whitespace characters from the compiled template. Whitespace characters are those matching the `\s` character class in JavaScript regular expressions. Default is false, unless overridden in compiler options.  
`preserveWhitespaces?: boolean;`  
 \* Component decorator and metadata.  
`@Annotation`  
`@publicApi`  
`export const Component: ComponentDecorator = makeDecorator(  
 'Component', (c: Component = {}) => ({changeDetection: ChangeDetectionStrategy.Default, ...c}),  
 Directive, undefined,  
 (type: Type<any>, meta: Component) => SWITCH_COMPILE_COMPONENT(type, meta));`  
 \* Type of the Pipe decorator / constructor function.  
`@publicApi`  
`export interface PipeDecorator {  
 * Decorator that marks a class as pipe and supplies configuration metadata.  
 * A pipe class must implement the PipeTransform interface. For example, if the name is "myPipe", use a template binding expression such as the following:  
{{ exp | myPipe }}  
 * The result of the expression is passed to the pipe's transform() method.  
 * A pipe must belong to an NgModule in order for it to be available to a template. To make it a member of an NgModule, list it in the declarations field of the NgModule metadata.  
 * @see [Style Guide: Pipe Names](guide/styleguide#02-09)  
 * (obj: Pipe): TypeDecorator;  
 * See the Pipe decorator.  
 * new(obj: Pipe): Pipe;`  
 \* Type of the Pipe metadata.  
`@publicApi`  
`export interface Pipe {  
 * The pipe name to use in template bindings. Typically uses [lowerCamelCase](guide/glossary#case-types) because the name cannot contain hyphens.  
 * name: string;  
 * When true, the pipe is pure, meaning that the transform() method is invoked only when its input arguments change. Pipes are pure by default.  
 * If the pipe has internal state (that is, the result depends on state other than its arguments), set pure to false. In this case, the pipe is invoked on each change-detection cycle, even if the arguments have not changed.  
 * pure?: boolean;`  
`@Annotation`  
`@publicApi`  
`export const Pipe: PipeDecorator = makeDecorator(  
 'Pipe', (p: Pipe) => ({pure: true, ...p}), undefined, undefined,  
 (type: Type<any>, meta: Pipe) => SWITCH_COMPILE_PIPE(type, meta));`  
`@publicApi`  
`export interface InputDecorator {  
 * Decorator that marks a class field as an input property and supplies configuration metadata.  
 * The input property is bound to a DOM property in the template. During change detection, Angular automatically updates the data property with the DOM property's value.  
 * @usageNotes  
 * You can supply an optional name to use in templates when the component is instantiated, that maps to the name of the bound property. By default, the original name of the bound property is used for input binding.  
 * The following example creates a component with two input properties, one of which is given a special binding name.  
typescript  
@Component({  
 selector: 'bank-account',  
 template: `Bank Name: {{bankName}} Account Id: {{id}}`  
 })  
 class BankAccount {  
 // This property is bound using its original name.  
 @Input() bankName: string;  
 // this property value is bound to a different property name  
 // when this component is instantiated in a template.  
 @Input('account-id') id: string;  
 // this property is not bound, and is not automatically`

updated by Angular

```

 * normalizedBankName: string;
 }
 * @Component({
 * selector: 'app',
 * template: `
 * <bank-account bankName="RBC" account-id="4747"></bank-account>
 * `
 * })
 * class App {}
 * ``
 * @see [Input and Output properties](guide/inputs-outputs)
 * ^
 (bindingPropertyName?: string): any;
 new(bindingPropertyName?: string): any;
 }
 * Type of metadata
 for an `Input` property.
 * @publicApi
 * ^
 export interface Input {
 * /**
 * The name of the DOM
 property to which the input property is bound.
 * ^
 bindingPropertyName?: string;
 }
 * @Annotation
 * @publicApi
 * ^
 export const Input: InputDecorator =
 * makePropDecorator('Input', (bindingPropertyName?:
 string) => ({bindingPropertyName}));
 * Type of the Output decorator / constructor function.
 * @publicApi
 * ^
 export interface OutputDecorator {
 * /**
 * Decorator that marks a class field as an output
 property and supplies configuration metadata.
 * The DOM property bound to the output property is automatically
 updated during change detection.
 * @usageNotes
 * You can supply an optional name to use in
 templates when the
 * component is instantiated, that maps to the
 * name of the bound property. By default,
 the original
 * name of the bound property is used for output binding.
 * See `Input` decorator for an
 example of providing a binding name.
 * @see [Input and Output properties](guide/inputs-outputs)
 * ^
 (bindingPropertyName?: string): any;
 new(bindingPropertyName?: string): any;
 }
 * Type of the
 Output metadata.
 * @publicApi
 * ^
 export interface Output {
 * /**
 * The name of the DOM property to
 which the output property is bound.
 * ^
 bindingPropertyName?: string;
 }
 * @Annotation
 * @publicApi
 * ^
 export const Output: OutputDecorator =
 * makePropDecorator('Output',
 (bindingPropertyName?: string) => ({bindingPropertyName}));
 * Type of the HostBinding decorator /
 constructor function.
 * @publicApi
 * ^
 export interface HostBindingDecorator {
 * /**
 * Decorator that
 marks a DOM property as a host-binding property and supplies configuration
 * metadata.
 * Angular
 automatically checks host property bindings during change detection, and
 * if a binding changes it updates the
 host element of the directive.
 * @usageNotes
 * The following example creates a directive that sets
 the `valid` and `invalid`
 * properties on the DOM element that has an `ngModel` directive on it.
 * ``
 * typescript
 * @Directive({selector: '[ngModel]'})
 * class NgModelStatus {
 * constructor(public control:
 NgModel) {}
 * @HostBinding('class.valid') get valid() { return this.control.valid; }
 * @HostBinding('class.invalid') get invalid() { return this.control.invalid; }
 * }
 * @Component({
 * selector: 'app',
 * template: `<input [(ngModel)]="prop">`,
 * })
 * class App {
 * prop;
 * }
 * ``
 * ^
 (hostPropertyName?: string): any;
 new(hostPropertyName?: string): any;
 }
 * Type of
 the HostBinding metadata.
 * @publicApi
 * ^
 export interface HostBinding {
 * /**
 * The DOM property
 that is bound to a data property.
 * ^
 hostPropertyName?: string;
 }
 * @Annotation
 * @publicApi
 * ^
 export const HostBinding: HostBindingDecorator =
 * makePropDecorator('HostBinding',
 (hostPropertyName?: string) => ({hostPropertyName}));
 * Type of the HostListener decorator /
 constructor function.
 * @publicApi
 * ^
 export interface HostListenerDecorator {
 * /**
 * Decorator that
 declares a DOM event to listen for,
 * and provides a handler method to run when that event occurs.
 * ^
 (eventName: string, args?: string[]): any;
 new(eventName: string, args?: string[]): any;
 }
 * Type of the
 HostListener metadata.
 * @publicApi
 * ^
 export interface HostListener {
 * /**
 * The DOM event to
 listen for.
 * ^
 eventName?: string;
 * /**
 * A set of arguments to pass to the handler method when the event
 occurs.
 * ^
 args?: string[];
 }
 * Decorator that binds a DOM event to a host listener and supplies
 configuration metadata.
 * Angular invokes the supplied handler method when the host element emits the specified
 event,
 * and updates the bound element with the result.
 * If the handler method returns false, applies
 `preventDefault` on the bound element.
 * @usageNotes
 * The following example declares a directive
 that attaches a click listener to a button and counts clicks.
 * ``
 * ts
 * @Directive({selector:
 'button[counting]'})
 * class CountClicks {
 * numberOfClicks = 0;
 * @HostListener('click',
 ['$event.target'])
 * onClick(btn) {
 * console.log('button', btn, 'number of clicks:', this.numberOfClicks++);
 * }
 * }
 * @Component({
 * selector: 'app',
 * template: `<button counting>Increment</button>`,
 * })
 * class App {}
 * ``
 * The following example registers another DOM event handler that listens for
 key-press events.
 * ``
 * ts
 * import { HostListener, Component } from '@angular/core';
 *

```



```

* The following example allows the CommonModule to use the `NgFor` directive.
* ```javascript
@NgModule({
 declarations: [NgFor]
})
class CommonModule {}
declarations?: Array<Type<any>|any[]>;
/**
 * The set of NgModules whose exported
 [declarables](guide/glossary#declarable)
 * are available to templates in this module.
 *
 * @usageNotes
 *
 * A template can use exported declarables from any
 * imported module, including those from modules that
 are imported indirectly
 * and re-exported.
 * For example, `ModuleA` imports `ModuleB`, and also exports
 * it, which makes the declarables from `ModuleB` available
 * wherever `ModuleA` is imported.
 * ###
 Example
 *
 * The following example allows MainModule to use anything exported by
 `CommonModule`:
 * ```javascript
 * @NgModule({
 * imports: [CommonModule]
 * })
 * class
 MainModule {}
 * ```
 * imports?: Array<Type<any>|ModuleWithProviders<{}>|any[]>;
 /**
 * The set of components, directives, and pipes declared in this
 * NgModule that can be used in the
 template of any component that is part of an
 * NgModule that imports this NgModule. Exported declarations are
 the module's public API.
 *
 * A declarable belongs to one and only one NgModule.
 * A module can list
 another module among its exports, in which case all of that module's
 * public declaration are exported.
 *
 * @usageNotes
 *
 * Declarations are private by default.
 * If this ModuleA does not export UserComponent,
 then only the components within this
 * ModuleA can use UserComponent.
 *
 * ModuleA can import
 ModuleB and also export it, making exports from ModuleB
 * available to an NgModule that imports ModuleA.
 *
 * ### Example
 *
 * The following example exports the `NgFor` directive from CommonModule.
 * ```javascript
 * @NgModule({
 * exports: [NgFor]
 * })
 * class CommonModule {}
 * ```
 * exports?: Array<Type<any>|any[]>;
 /**
 * The set of components to compile when this NgModule is
 defined,
 * so that they can be dynamically loaded into the view.
 *
 * For each component listed here,
 Angular creates a `ComponentFactory`
 * and stores it in the `ComponentFactoryResolver`.
 *
 * Angular
 automatically adds components in the module's bootstrap
 * and route definitions into the `entryComponents` list.
 Use this
 * option to add components that are bootstrapped
 * using one of the imperative techniques, such as
 `ViewContainerRef.createComponent`.
 *
 * @see [Entry Components](guide/entry-components)
 *
 * @deprecated Since 9.0.0. With Ivy, this property is no longer necessary.
 *
 * entryComponents?:
 Array<Type<any>|any[]>;
 /**
 * The set of components that are bootstrapped when
 * this module is
 bootstrapped. The components listed here
 * are automatically added to `entryComponents`.
 *
 * bootstrap?:
 Array<Type<any>|any[]>;
 /**
 * The set of schemas that declare elements to be allowed in the NgModule.
 *
 * Elements and properties that are neither Angular components nor directives
 * must be declared in a schema.
 *
 * Allowed value are `NO_ERRORS_SCHEMA` and `CUSTOM_ELEMENTS_SCHEMA`.
 *
 * @security When using one of `NO_ERRORS_SCHEMA` or `CUSTOM_ELEMENTS_SCHEMA`
 * you must
 ensure that allowed elements and properties securely escape inputs.
 *
 * schemas?:
 Array<SchemaMetadata|any[]>;
 /**
 * A name or path that uniquely identifies this NgModule in
 `getModuleFactory`.
 *
 * If left `undefined`, the NgModule is not registered with
 * `getModuleFactory`.
 *
 * id?: string;
 /**
 * When present, this module is ignored by the AOT compiler.
 *
 * It remains in distributed
 code, and the JIT compiler attempts to compile it
 * at run time, in the browser.
 *
 * To ensure the correct
 behavior, the app must import `@angular/compiler`.
 *
 * jit?: true;
 *
 * @Annotation
 *
 * @publicApi
 *
 * export const NgModule: NgModuleDecorator = makeDecorator(
 * 'NgModule', (ngModule:
 NgModule) => ngModule, undefined, undefined,
 /**
 * Decorator that marks the following class as an
 NgModule, and supplies
 * configuration metadata for it.
 *
 * * The `declarations` and
 `entryComponents` options configure the compiler
 * with information about what belongs to the NgModule.
 *
 * * The `providers` options configures the NgModule's injector to provide
 * dependencies the NgModule
 members.
 *
 * * The `imports` and `exports` options bring in members from other modules, and make
 * this
 module's members available to others.
 *
 * (type: Type<any>, meta: NgModule) =>
 SWITCH_COMPILE_NGMODULE(type, meta);
 */
function preR3NgModuleCompile(moduleType:
 Type<any>, metadata?: NgModule): void {
 let imports = (metadata && metadata.imports) || [];
 if (metadata
 && metadata.exports) {
 imports = [...imports, metadata.exports];
 }
 (moduleType as

```



```

{ @link ViewEncapsulation#Emulated ViewEncapsulation.Emulated } is being used.\n * \n * BY default, the value is
randomly generated and assigned to the application by Angular.\n * To provide a custom ID value, use a DI provider
<!-- TODO: provider --> to configure\n * the root { @link Injector } that uses this token.\n * \n * @publicApi\n
*\nexport const APP_ID = new InjectionToken<string>('AppId');\n\nexport function
_appIdRandomProviderFactory() {\n return `${_randomChar()}${_randomChar()}${_randomChar()}`;\n}\n\n/**\n
* Providers that generate a random `APP_ID_TOKEN`.\n * @publicApi\n *\nexport const
APP_ID_RANDOM_PROVIDER = {\n provide: APP_ID,\n useFactory: _appIdRandomProviderFactory,\n deps:
<any[]>[],\n};\n\nfunction _randomChar(): string {\n return String.fromCharCode(97 + Math.floor(Math.random()
* 25));\n}\n\n/**\n * A function that is executed when a platform is initialized.\n * @publicApi\n *\nexport const
PLATFORM_INITIALIZER = new InjectionToken<Array<() => void>>('Platform_INITIALIZER');\n\n/**\n * A token
that indicates an opaque platform ID.\n * @publicApi\n *\nexport const PLATFORM_ID = new
InjectionToken<Object>('Platform ID');\n\n/**\n * A [DI token](guide/glossary#di-token "DI token definition")
that provides a set of callbacks to\n * be called for every component that is bootstrapped.\n * \n * Each callback must
take a `ComponentRef` instance and return nothing.\n * \n * (componentRef: ComponentRef) => void\n * \n *
@publicApi\n *\nexport const APP_BOOTSTRAP_LISTENER =\n new InjectionToken<Array<(compRef:
ComponentRef<any>) => void>>('appBootstrapListener');\n\n/**\n * A [DI token](guide/glossary#di-token "DI
token definition") that indicates the root directory of\n * the application\n * @publicApi\n *\nexport const
PACKAGE_ROOT_URL = new InjectionToken<string>('Application Packages Root URL');\n\n", "/*\n * @license\n
* Copyright Google LLC All Rights Reserved.\n * \n * Use of this source code is governed by an MIT-style license
that can be\n * found in the LICENSE file at https://angular.io/license\n *\n\nimport { Injectable } from
'./di';\n\n@Injectable()\nexport class Console {\n log(message: string): void {\n // tslint:disable-next-line:no-
console\n console.log(message);\n }\n // Note: for reporting errors use `DOM.logError()` as it is platform
specific\n warn(message: string): void {\n // tslint:disable-next-line:no-console\n console.warn(message);\n
}\n}\n\n", "/*\n * @license\n * Copyright Google LLC All Rights Reserved.\n * \n * Use of this source code is
governed by an MIT-style license that can be\n * found in the LICENSE file at https://angular.io/license\n
*\n\nimport { InjectionToken } from './di/injection_token';\n\n/**\n * Provide this token to set the locale of your
application.\n * It is used for i18n extraction, by i18n pipes (DatePipe, I18nPluralPipe, CurrencyPipe,\n *
DecimalPipe and PercentPipe) and by ICU expressions.\n * \n * See the [i18n guide](guide/i18n#setting-up-locale)
for more information.\n * \n * @usageNotes\n * ### Example\n * \n * ```typescript\n * import { LOCALE_ID } from
'@angular/core';\n * import { platformBrowserDynamic } from '@angular/platform-browser-dynamic';\n * import {
AppModule } from './app/app.module';\n * \n * platformBrowserDynamic().bootstrapModule(AppModule, {\n *
providers: [{provide: LOCALE_ID, useValue: 'en-US'}]\n * });\n * \n * \n * \n * @publicApi\n *\nexport const
LOCALE_ID = new InjectionToken<string>('LocaleId');\n\n/**\n * Provide this token to set the default currency
code your application uses for\n * CurrencyPipe when there is no currency code passed into it. This is only used
by\n * CurrencyPipe and has no relation to locale currency. Defaults to USD if not configured.\n * \n * See the [i18n
guide](guide/i18n#setting-up-locale) for more information.\n * \n * <div class="alert is-helpful">\n * \n *
Deprecation notice:\n * \n * The default currency code is currently always `USD` but this is deprecated from
v9.\n * \n * **In v10 the default currency code will be taken from the current locale.**\n * \n * If you need the
previous behavior then set it by creating a `DEFAULT_CURRENCY_CODE` provider in\n * your application\n * `NgModule`:\n * \n * ```ts\n * {provide: DEFAULT_CURRENCY_CODE, useValue: 'USD'}\n * \n * \n * \n *
</div>\n * \n * @usageNotes\n * ### Example\n * \n * ```typescript\n * import { platformBrowserDynamic } from
'@angular/platform-browser-dynamic';\n * import { AppModule } from './app/app.module';\n * \n *
platformBrowserDynamic().bootstrapModule(AppModule, {\n * providers: [{provide:
DEFAULT_CURRENCY_CODE, useValue: 'EUR'}]\n * });\n * \n * \n * \n * @publicApi\n *\nexport const
DEFAULT_CURRENCY_CODE = new InjectionToken<string>('DefaultCurrencyCode');\n\n/**\n * Use this token
at bootstrap to provide the content of your translation file (`xtb`,\n * `xlf` or `xlf2`) when you want to translate your
application in another language.\n * \n * See the [i18n guide](guide/i18n#merge) for more information.\n * \n *
@usageNotes\n * ### Example\n * \n * ```typescript\n * import { TRANSLATIONS } from '@angular/core';\n *

```

```

import { platformBrowserDynamic } from '@angular/platform-browser-dynamic';
import { AppModule } from './app/app.module';
const translations = '...';
platformBrowserDynamic().bootstrapModule(AppModule, {
 providers: [{ provide: TRANSLATIONS, useValue: translations }]
});
@publicApi
export const TRANSLATIONS = new InjectionToken<string>('Translations');
Provide this token at bootstrap to set the format of your { @link TRANSLATIONS }: `xtb` or `xlf` or `xlf2`. See the [i18n guide](guide/i18n#merge) for more information.
@usageNotes
Example
typescript
import { TRANSLATIONS_FORMAT } from '@angular/core';
import { platformBrowserDynamic } from '@angular/platform-browser-dynamic';
import { AppModule } from './app/app.module';
platformBrowserDynamic().bootstrapModule(AppModule, {
 providers: [{ provide: TRANSLATIONS_FORMAT, useValue: 'xlf' }]
});
@publicApi
export const TRANSLATIONS_FORMAT = new InjectionToken<string>('TranslationsFormat');
Use this enum at bootstrap as an option of `bootstrapModule` to define the strategy that the compiler should use in case of missing translations:
- Error: throw if you have missing translations.
- Warning (default): show a warning in the console and/or shell.
- Ignore: do nothing.
See the [i18n guide](guide/i18n#missing-translation) for more information.
@usageNotes
Example
typescript
import { MissingTranslationStrategy } from '@angular/core';
import { platformBrowserDynamic } from '@angular/platform-browser-dynamic';
import { AppModule } from './app/app.module';
platformBrowserDynamic().bootstrapModule(AppModule, {
 missingTranslation: MissingTranslationStrategy.Error
});
@publicApi
export enum MissingTranslationStrategy {
 Error = 0,
 Warning = 1,
 Ignore = 2,
}
"/**
 * @license
 * Copyright Google LLC All Rights Reserved.
 * Use of this source code is governed by an MIT-style license that can be found in the LICENSE file at https://angular.io/license
 */
export const SWITCH_IVY_ENABLED__POST_R3__ = true;
const SWITCH_IVY_ENABLED__PRE_R3__ = false;
export const ivyEnabled = SWITCH_IVY_ENABLED__PRE_R3__;
"/**
 * @license
 * Copyright Google LLC All Rights Reserved.
 * Use of this source code is governed by an MIT-style license that can be found in the LICENSE file at https://angular.io/license
 */
import { Injectable } from './di/injectable';
import { InjectionToken } from './di/injection_token';
import { StaticProvider } from './di/interface/provider';
import { MissingTranslationStrategy } from './i18n/tokens';
import { Type } from './interface/type';
import { ViewEncapsulation } from './metadata/view';
import { ComponentFactory as ComponentFactoryR3 } from './render3/component_ref';
import { getComponentDef, getNgModuleDef } from './render3/definition';
import { NgModuleFactory as NgModuleFactoryR3 } from './render3/ng_module_ref';
import { maybeUnwrapFn } from './render3/util/misc_utils';
import { ComponentFactory } from './component_factory';
import { NgModuleFactory } from './ng_module_factory';
/**
 * Combination of NgModuleFactory and ComponentFactories.
 */
@publicApi
export class ModuleWithComponentFactories<T> {
 constructor(
 public ngModuleFactory: NgModuleFactory<T>,
 public componentFactories: ComponentFactory<any>[]
) {}
 function _throwError() {
 throw new Error('Runtime compiler is not loaded');
 }
 const Compiler_compileModuleSync__PRE_R3__: <T>(moduleType: Type<T>) => NgModuleFactory<T> =
 _throwError as any;
 export const Compiler_compileModuleSync__POST_R3__: <T>(moduleType: Type<T>) => NgModuleFactory<T> =
 function<T>(moduleType: Type<T>): NgModuleFactory<T> {
 return new NgModuleFactoryR3(moduleType);
 };
 const Compiler_compileModuleSync = Compiler_compileModuleSync__PRE_R3__;
 const Compiler_compileModuleAsync__PRE_R3__: <T>(moduleType: Type<T>) => Promise<NgModuleFactory<T>> =
 _throwError as any;
 export const Compiler_compileModuleAsync__POST_R3__: <T>(moduleType: Type<T>) => Promise<NgModuleFactory<T>> =
 function<T>(moduleType: Type<T>): Promise<NgModuleFactory<T>> {
 return Promise.resolve(Compiler_compileModuleSync__POST_R3__(moduleType));
 };
 const Compiler_compileModuleAsync = Compiler_compileModuleAsync__PRE_R3__;
 const Compiler_compileModuleAndAllComponentsSync__PRE_R3__: <T>(moduleType: Type<T>) =>

```







```

delivered.\n */\n readonly onError: EventEmitter<any> = new EventEmitter(false);\n\n\n
constructor({enableLongStackTrace = false, shouldCoalesceEventChangeDetection = false}) {\n if (typeof Zone
== 'undefined') {\n throw new Error(`In this configuration Angular requires Zone.js`);\n }\n\n
Zone.assertZonePatched();\n const self = this as any as NgZonePrivate;\n self._nesting = 0;\n self._outer =
self._inner = Zone.current;\n if ((Zone as any)[`TaskTrackingZoneSpec`]) {\n self._inner =
self._inner.fork(new ((Zone as any)[`TaskTrackingZoneSpec`] as any));\n }\n if (enableLongStackTrace &&
(Zone as any)[`longStackTraceZoneSpec`]) {\n self._inner = self._inner.fork((Zone as
any)[`longStackTraceZoneSpec`]);\n }\n self.shouldCoalesceEventChangeDetection =
shouldCoalesceEventChangeDetection;\n self.lastRequestAnimationFrameId = -1;\n
self.nativeRequestAnimationFrame = getNativeRequestAnimationFrame().nativeRequestAnimationFrame;\n
forkInnerZoneWithAngularBehavior(self);\n }\n\n
static isInAngularZone(): boolean {\n return
Zone.current.get(`isAngularZone`) === true;\n }\n\n
static assertInAngularZone(): void {\n if
(!NgZone.isInAngularZone()) {\n throw new Error(`Expected to be in Angular Zone, but it is not!`);\n }\n }\n\n
static assertNotInAngularZone(): void {\n if (NgZone.isInAngularZone()) {\n throw new Error(`Expected to not
be in Angular Zone, but it is!`);\n }\n }\n\n
/**\n * Executes the `fn` function synchronously within the Angular
zone and returns value returned by\n * the function.\n * Running functions via `run` allows you to reenter
Angular zone from a task that was executed\n * outside of the Angular zone (typically started via {@link
#runOutsideAngular}).\n * Any future tasks or microtasks scheduled from within this function will continue
executing from\n * within the Angular zone.\n * If a synchronous error happens it will be rethrown and not
reported via `onError`.\n */\n run<T>(fn: (...args: any[]) => T, applyThis?: any, applyArgs?: any[]): T {\n return
(this as any as NgZonePrivate)._inner.run(fn, applyThis, applyArgs);\n }\n\n
/**\n * Executes the `fn` function
synchronously within the Angular zone as a task and returns value\n * returned by the function.\n * Running
functions via `run` allows you to reenter Angular zone from a task that was executed\n * outside of the Angular
zone (typically started via {@link #runOutsideAngular}).\n * Any future tasks or microtasks scheduled from
within this function will continue executing from\n * within the Angular zone.\n * If a synchronous error
happens it will be rethrown and not reported via `onError`.\n */\n runTask<T>(fn: (...args: any[]) => T,
applyThis?: any, applyArgs?: any[], name?: string): T {\n const zone = (this as any as NgZonePrivate)._inner;\n
const task = zone.scheduleEventTask(`NgZoneEvent: ` + name, fn, EMPTY_PAYLOAD, noop, noop);\n try {\n
return zone.runTask(task, applyThis, applyArgs);\n } finally {\n zone.cancelTask(task);\n }\n }\n\n
/**\n * Same as `run`, except that synchronous errors are caught and forwarded via `onError` and not\n * rethrown.\n */\n
runGuarded<T>(fn: (...args: any[]) => T, applyThis?: any, applyArgs?: any[]): T {\n return (this as any as
NgZonePrivate)._inner.runGuarded(fn, applyThis, applyArgs);\n }\n\n
/**\n * Executes the `fn` function
synchronously in Angular's parent zone and returns value returned by\n * the function.\n * Running
functions via {@link #runOutsideAngular} allows you to escape Angular's zone and do\n * work that\n * doesn't
trigger Angular change-detection or is subject to Angular's error handling.\n * Any future tasks or microtasks
scheduled from within this function will continue executing from\n * outside of the Angular zone.\n * Use
{@link #run} to reenter the Angular zone and do work that updates the application model.\n */\n
runOutsideAngular<T>(fn: (...args: any[]) => T): T {\n return (this as any as NgZonePrivate)._outer.run(fn);\n
}\n\n
function noop() {\n}\n\n
const EMPTY_PAYLOAD = {};\n\n
interface NgZonePrivate extends NgZone {\n
 _outer: Zone;\n _inner: Zone;\n _nesting: number;\n _hasPendingMicrotasks: boolean;\n\n
hasPendingMacrotasks: boolean;\n hasPendingMicrotasks: boolean;\n lastRequestAnimationFrameId: number;\n
isStable: boolean;\n shouldCoalesceEventChangeDetection: boolean;\n nativeRequestAnimationFrame: (callback:
FrameRequestCallback) => number;\n // Cache of \"fake\" top eventTask. This is done so that we don't need to
schedule a new task every\n // time we want to run a `checkStable`.\n fakeTopEventTask: Task;\n}\n\n
function
checkStable(zone: NgZonePrivate) {\n if (zone._nesting === 0 && !zone.hasPendingMicrotasks && !zone.isStable)
{\n try {\n zone._nesting++;\n zone.onMicrotaskEmpty.emit(null);\n } finally {\n zone._nesting--;\n
}\n }\n if (!zone.hasPendingMicrotasks) {\n try {\n zone.runOutsideAngular(() => zone.onStable.emit(null));\n
}\n } finally {\n zone.isStable = true;\n }\n }\n }\n\n
function

```



```

./di';\nimport {scheduleMicroTask} from './util/microtask';\nimport {NgZone} from './zone/ng_zone';\n\n/**\n * Testability API.\n * `declare` keyword causes tsickle to generate externs, so these methods are\n * not renamed by Closure Compiler.\n * @publicApi\n */\nexport declare interface PublicTestability {\n isStable(): boolean;\n whenStable(callback: Function, timeout?: number, updateCallback?: Function): void;\n findProviders(using: any, provider: string, exactMatch: boolean): any[];\n}\n\n// Angular internal, not intended for public API.\nexport interface PendingMacrotask {\n source: string;\n creationLocation: Error;\n runCount?: number;\n data?: TaskData;\n}\n\nexport interface TaskData {\n target?: XMLHttpRequest;\n delay?: number;\n isPeriodic?: boolean;\n}\n\n// Angular internal, not intended for public API.\nexport type DoneCallback = (didWork: boolean, tasks?: PendingMacrotask[]) => void;\nexport type UpdateCallback = (tasks: PendingMacrotask[]) => boolean;\n\ninterface WaitCallback {\n // Needs to be 'any' - setTimeout returns a number according to ES6, but\n // on NodeJS it returns a Timer.\n timeoutId: any;\n doneCb: DoneCallback;\n updateCb?: UpdateCallback;\n}\n\n/**\n * The Testability service provides testing hooks that can be accessed from\n * the browser and by services such as Protractor. Each bootstrapped Angular\n * application on the page will have an instance of Testability.\n * @publicApi\n */\n@Injectable()\nexport class Testability implements PublicTestability {\n private _pendingCount: number = 0;\n private _isZoneStable: boolean = true;\n /**\n * Whether any work was done since the last 'whenStable' callback. This is\n * useful to detect if this could have potentially destabilized another\n * component while it is stabilizing.\n */\n private _didWork: boolean = false;\n private _callbacks: WaitCallback[] = [];\n private taskTrackingZone: {macroTasks: Task[]} | null = null;\n\n constructor(private ngZone: NgZone) {\n this._watchAngularEvents();\n ngZone.run(() => {\n this.taskTrackingZone =\n typeof Zone == 'undefined' ? null : Zone.current.get('TaskTrackingZone');\n });\n\n private _watchAngularEvents(): void {\n this.ngZone.onUnstable.subscribe({\n next: () => {\n this._didWork = true;\n this._isZoneStable = false;\n }\n });\n this.ngZone.runOutsideAngular(() => {\n this.ngZone.onStable.subscribe({\n next: () => {\n NgZone.assertNotInAngularZone();\n scheduleMicroTask(() => {\n this._isZoneStable = true;\n this._runCallbacksIfReady();\n });\n }\n });\n });\n }\n\n /**\n * Increases the number of pending request\n * @deprecated pending requests are now tracked with zones.\n */\n increasePendingRequestCount(): number {\n this._pendingCount += 1;\n this._didWork = true;\n return this._pendingCount;\n }\n\n /**\n * Decreases the number of pending request\n * @deprecated pending requests are now tracked with zones\n */\n decreasePendingRequestCount(): number {\n this._pendingCount -= 1;\n if (this._pendingCount < 0) {\n throw new Error('pending async requests below zero');\n }\n this._runCallbacksIfReady();\n return this._pendingCount;\n }\n\n /**\n * Whether an associated application is stable\n */\n isStable(): boolean {\n return this._isZoneStable && this._pendingCount === 0 && !this.ngZone.hasPendingMacrotasks;\n }\n\n private _runCallbacksIfReady(): void {\n if (this.isStable()) {\n // Schedules the call backs in a new frame so that it is always async.\n scheduleMicroTask(() => {\n while (this._callbacks.length !== 0) {\n let cb = this._callbacks.pop()!;\n clearTimeout(cb.timeoutId);\n cb.doneCb(this._didWork);\n }\n this._didWork = false;\n });\n } else {\n // Still not stable, send updates.\n let pending = this.getPendingTasks();\n this._callbacks = this._callbacks.filter(cb => {\n if (cb.updateCb && cb.updateCb(pending)) {\n clearTimeout(cb.timeoutId);\n return false;\n }\n return true;\n });\n this._didWork = true;\n }\n }\n\n private getPendingTasks(): PendingMacrotask[] {\n if (!this.taskTrackingZone) {\n return [];\n }\n\n // Copy the tasks data so that we don't leak tasks.\n return this.taskTrackingZone.macroTasks.map((t: Task) => {\n return {\n source: t.source,\n // From TaskTrackingZone:\n creationLocation: (t as any).creationLocation as Error,\n data: t.data\n };\n });\n }\n\n private addCallback(cb: DoneCallback, timeout?: number, updateCb?: UpdateCallback) {\n let timeoutId: any = -1;\n if (timeout && timeout > 0) {\n timeoutId = setTimeout(() => {\n this._callbacks = this._callbacks.filter(cb => cb.timeoutId !== timeoutId);\n cb(this._didWork, this.getPendingTasks());\n }, timeout);\n }\n\n this._callbacks.push(<WaitCallback>{\n doneCb: cb,\n timeoutId: timeoutId,\n updateCb: updateCb\n });\n }\n\n /**\n * Wait for the application to be stable with a timeout. If the timeout is reached before that\n * happens, the callback

```



```

{Type} from './interface/type';\nimport {ivyEnabled} from './ivy_switch';\nimport {COMPILER_OPTIONS,
CompilerFactory, CompilerOptions} from './linker/compiler';\nimport {ComponentFactory, ComponentRef} from
 './linker/component_factory';\nimport {ComponentFactoryBoundToModule, ComponentFactoryResolver} from
 './linker/component_factory_resolver';\nimport {InternalNgModuleRef, NgModuleFactory, NgModuleRef} from
 './linker/ng_module_factory';\nimport {InternalViewRef, ViewRef} from './linker/view_ref';\nimport
 {isComponentResourceResolutionQueueEmpty, resolveComponentResources} from
 './metadata/resource_loading';\nimport {assertNgModuleType} from './render3/assert';\nimport {ComponentFactory
 as R3ComponentFactory} from './render3/component_ref';\nimport {setLocaleId} from
 './render3/i18n/i18n_locale_id';\nimport {setJitOptions} from './render3/jit/jit_options';\nimport {NgModuleFactory
 as R3NgModuleFactory} from './render3/ng_module_ref';\nimport {publishDefaultGlobalUtils as
 _publishDefaultGlobalUtils} from './render3/util/global_utils';\nimport {Testability, TestabilityRegistry} from
 './testability/testability';\nimport {isDevMode} from './util/is_dev_mode';\nimport {isPromise} from
 './util/lang';\nimport {scheduleMicroTask} from './util/microtask';\nimport {stringify} from './util/stringify';\nimport
 {NgZone, NoopNgZone} from './zone/ng_zone';\n\nlet _platform: PlatformRef;\n\nlet compileNgModuleFactory:\n
<M>(injector: Injector, options: CompilerOptions, moduleType: Type<M>) =>\n
Promise<NgModuleFactory<M>> = compileNgModuleFactory__PRE_R3__;\n\nfunction
compileNgModuleFactory__PRE_R3__<M>(\n injector: Injector, options: CompilerOptions,\n moduleType:
Type<M>): Promise<NgModuleFactory<M>> {\n const compilerFactory: CompilerFactory =
injector.get(CompilerFactory);\n const compiler = compilerFactory.createCompiler([options]);\n return
compiler.compileModuleAsync(moduleType);\n}\n\nexport function
compileNgModuleFactory__POST_R3__<M>(\n injector: Injector, options: CompilerOptions,\n moduleType:
Type<M>): Promise<NgModuleFactory<M>> {\n ngDevMode && assertNgModuleType(moduleType);\n\n const
moduleFactory = new R3NgModuleFactory(moduleType);\n\n // All of the logic below is irrelevant for AOT-
compiled code.\n if (typeof ngJitMode !== 'undefined' && !ngJitMode) {\n return
Promise.resolve(moduleFactory);\n }\n\n const compilerOptions = injector.get(COMPILER_OPTIONS,
[]).concat(options);\n\n // Configure the compiler to use the provided options. This call may fail when multiple
modules\n // are bootstrapped with incompatible options, as a component can only be compiled according to\n // a
single set of options.\n setJitOptions({\n defaultEncapsulation: _lastDefined(compilerOptions.map(opts =>
opts.defaultEncapsulation)),\n preserveWhitespaces: _lastDefined(compilerOptions.map(opts =>
opts.preserveWhitespaces)),\n });\n\n if (isComponentResourceResolutionQueueEmpty()) {\n return
Promise.resolve(moduleFactory);\n }\n\n const compilerProviders = _mergeArrays(compilerOptions.map(o =>
o.providers!));\n\n // In case there are no compiler providers, we just return the module factory as\n // there won't
be any resource loader. This can happen with Ivy, because AOT compiled\n // modules can be still passed through
\"bootstrapModule\". In that case we shouldn't\n // unnecessarily require the JIT compiler.\n if
(compilerProviders.length === 0) {\n return Promise.resolve(moduleFactory);\n }\n\n const compiler =
getCompilerFacade();\n const compilerInjector = Injector.create({providers: compilerProviders});\n const
resourceLoader = compilerInjector.get(compiler.ResourceLoader);\n // The resource loader can also return a string
while the \"resolveComponentResources\"\n // always expects a promise. Therefore we need to wrap the returned
value in a promise.\n return resolveComponentResources(url => Promise.resolve(resourceLoader.get(url)))\n
.then(() => moduleFactory);\n}\n\n// the `window.ng` global utilities are only available in non-VE versions of\n//
Angular. The function switch below will make sure that the code is not\n// included into Angular when PRE mode is
active.\n\nexport function publishDefaultGlobalUtils__PRE_R3__() {\n}\n\nexport function
publishDefaultGlobalUtils__POST_R3__() {\n ngDevMode && _publishDefaultGlobalUtils();\n}\n\nlet
publishDefaultGlobalUtils: () => any = publishDefaultGlobalUtils__PRE_R3__;\n\nlet isBoundToModule: <C>(cf:
ComponentFactory<C>) => boolean = isBoundToModule__PRE_R3__;\n\nexport function
isBoundToModule__PRE_R3__<C>(cf: ComponentFactory<C>): boolean {\n return cf instanceof
ComponentFactoryBoundToModule;\n}\n\nexport function isBoundToModule__POST_R3__<C>(cf:
ComponentFactory<C>): boolean {\n return (cf as R3ComponentFactory<C>).isBoundToModule;\n}\n\nexport

```

```

const ALLOW_MULTIPLE_PLATFORMS = new InjectionToken<boolean>('AllowMultipleToken');
* A token for third-party components that can register themselves with NgProbe.
class NgProbeToken {
 constructor(public name: string, public token: any) {}
}
* Creates a platform.
* Platforms must be created on launch using this function.
@publicApi
^next export function
createPlatform(injector: Injector): PlatformRef {
 if (_platform && !_platform.destroyed &&
 !_platform.injector.get(ALLOW_MULTIPLE_PLATFORMS, false)) {
 throw new Error('There can be only one platform. Destroy the previous one to create a new one.');
```

publishDefaultGlobalUtils();

```

 _platform = injector.get(PlatformRef);
 const inits = injector.get(PLATFORM_INITIALIZER, null);
 if (inits) inits.forEach((init: any) => init());
 return _platform;
 }
}
* Creates a factory for a platform. Can be used to provide or override `Providers` specific to your application's runtime needs, such as `PLATFORM_INITIALIZER` and `PLATFORM_ID`.
@publicApi
^next export function createPlatformFactory(
 parentPlatformFactory: ((extraProviders?: StaticProvider[]) => PlatformRef) | null,
 name: string,
 providers: StaticProvider[] = []): (extraProviders?: StaticProvider[]) => PlatformRef {
 const desc = `Platform: ${name}`;
 const marker = new InjectionToken(desc);
 return (extraProviders: StaticProvider[] = []) => {
 let platform = getPlatform();
 if (!platform || platform.injector.get(ALLOW_MULTIPLE_PLATFORMS, false)) {
 if (parentPlatformFactory) {
 parentPlatformFactory(
 providers.concat(extraProviders).concat({provide: marker, useValue: true}));
 } else {
 const injectedProviders: StaticProvider[] = providers.concat(extraProviders).concat({provide: marker, useValue: true}, {provide: INJECTOR_SCOPE, useValue: 'platform'});
 createPlatform(Injector.create({providers: injectedProviders, name: desc}));
 }
 }
 return assertPlatform(marker);
 };
}
* Checks that there is currently a platform that contains the given token as a provider.
@publicApi
^next export function
assertPlatform(requiredToken: any): PlatformRef {
 const platform = getPlatform();
 if (!platform) {
 throw new Error('No platform exists!');
 }
 if (!platform.injector.get(requiredToken, null)) {
 throw new Error('A platform with a different configuration has been created. Please destroy it first.');
```

return platform;

\* Destroys the current Angular platform and all Angular applications on the page.

\* Destroys all modules and listeners registered with the platform.

```

@publicApi
^next export function
destroyPlatform(): void {
 if (_platform && !_platform.destroyed) {
 _platform.destroy();
 }
}
* Returns the current platform.
@publicApi
^next export function
getPlatform(): PlatformRef | null {
 return _platform && !_platform.destroyed ? _platform : null;
}
* Provides additional options to the bootstrapping process.
@publicApi
^next export interface BootstrapOptions {
 /**
 * Optionally specify which `NgZone` should be used.
 * - Provide your own `NgZone` instance.
 * - `zone.js` - Use default `NgZone` which requires `Zone.js`.
 * - `noop` - Use `NoopNgZone` which does nothing.
 */
 ngZone?: NgZone | 'zone.js' | 'noop';
 /**
 * Optionally specify coalescing event change detections or not.
 * Consider the following case:
 * <div (click)="doSomething()">
 * <button (click)="doSomethingElse()"></button>
 * </div>
 * When button is clicked, because of the event bubbling, both event handlers will be called and 2 change detections will be triggered. We can coalesce such kind of events to only trigger change detection only once.
 * By default, this option will be false. So the events will not be coalesced and the change detection will be triggered multiple times.
 * And if this option be set to true, the change detection will be triggered async by scheduling an animation frame. So in the case above, the change detection will only be triggered once.
 */
 ngZoneEventCoalescing?: boolean;
}
* The Angular platform is the entry point for Angular on a web page. Each page has exactly one platform. Services (such as reflection) which are common to every Angular application running on the page are bound in its scope. A page's platform is initialized implicitly when a platform is created using a platform factory such as `PlatformBrowser`, or explicitly by calling the `createPlatform()` function.
@publicApi
^next @Injectable()
export class PlatformRef {

```





```

destroy() {\n if (this._destroyed) {\n throw new Error('The platform has already been destroyed!');\n }\n this._modules.slice().forEach(module => module.destroy());\n this._destroyListeners.forEach(listener => listener());\n this._destroyed = true;\n }\n\n get destroyed() {\n return this._destroyed;\n }\n\nfunction\ngetNgZone(\n ngZoneOption: NgZone|'zone.js'|'noop'|undefined, ngZoneEventCoalescing: boolean): NgZone {\n let ngZone: NgZone;\n if (ngZoneOption === 'noop') {\n ngZone = new NoopNgZone();\n } else {\n ngZone = (ngZoneOption === 'zone.js' ? undefined : ngZoneOption) || new NgZone({\n enableLongStackTrace: isDevMode(),\n shouldCoalesceEventChangeDetection: ngZoneEventCoalescing\n });\n }\n return ngZone;\n}\n\nfunction _callAndReportToErrorHandler(\n errorHandler: ErrorHandler, ngZone: NgZone, callback: () => any): any {\n try {\n const result = callback();\n if (isPromise(result)) {\n return result.catch((e: any) => {\n ngZone.runOutsideAngular(() => errorHandler.handleError(e));\n // rethrow as the exception handler might not do it\n throw e;\n });\n }\n return result;\n } catch (e) {\n ngZone.runOutsideAngular(() => errorHandler.handleError(e));\n // rethrow as the exception handler might not do it\n throw e;\n }\n}\n\nfunction optionsReducer<T extends Object>(dst: any, objs: T|T[]): T {\n if (Array.isArray(objs)) {\n dst = objs.reduce(optionsReducer, dst);\n } else {\n dst = {...dst, ...(objs as any)};\n }\n return dst;\n}\n\n**\n * A reference to an Angular application running on a page.\n *\n * @usageNotes\n *\n * { @a is-stable-examples }\n * ### isStable examples and caveats\n *\n * Note two important points about `isStable`, demonstrated in the examples below:\n *\n * - the application will never be stable if you start any kind\n * of recurrent asynchronous task when the application starts\n * (for example for a polling process, started with a `setInterval`, a `setTimeout`\n * or using RxJS operators like `interval`);\n *\n * - the `isStable` Observable runs outside of the Angular zone.\n *\n * Let's imagine that you start a recurrent task\n * (here incrementing a counter, using RxJS `interval`),\n *\n * and at the same time subscribe to `isStable`.\n *\n * ``\n * constructor(appRef: ApplicationRef) {\n * appRef.isStable.pipe(\n * filter(stable => stable)\n *).subscribe(() => console.log('App is stable now'));\n * interval(1000).subscribe(counter => console.log(counter));\n * }\n * ``\n *\n * In this example, `isStable` will never emit `true`,\n * and the trace `\"App is stable now\"` will never get logged.\n *\n * If you want to execute something when the app is stable,\n * you have to wait for the application to be stable\n * before starting your polling process.\n *\n * ``\n * constructor(appRef: ApplicationRef) {\n * appRef.isStable.pipe(\n * first(stable => stable),\n * tap(stable => console.log('App is stable now')),\n * switchMap(() => interval(1000))\n *).subscribe(counter => console.log(counter));\n * }\n * ``\n *\n * In this example, the trace `\"App is stable now\"` will be logged\n * and then the counter starts incrementing every second.\n *\n * Note also that this Observable runs outside of the Angular zone,\n * which means that the code in the subscription\n * to this Observable will not trigger the change detection.\n *\n * Let's imagine that instead of logging the counter value,\n * you update a field of your component\n * and display it in its template.\n *\n * ``\n * constructor(appRef: ApplicationRef) {\n * appRef.isStable.pipe(\n * first(stable => stable),\n * switchMap(() => interval(1000))\n *).subscribe(counter => this.value = counter);\n * }\n * ``\n *\n * As the `isStable` Observable runs outside the zone,\n * the `value` field will be updated properly,\n * but the template will not be refreshed!\n *\n * You'll have to manually trigger the change detection to update the template.\n *\n * ``\n * constructor(appRef: ApplicationRef, cd: ChangeDetectorRef) {\n * appRef.isStable.pipe(\n * first(stable => stable),\n * switchMap(() => interval(1000))\n *).subscribe(counter => {\n * this.value = counter;\n * cd.detectChanges();\n * });\n * }\n * ``\n *\n * Or make the subscription callback run inside the zone.\n *\n * ``\n * constructor(appRef: ApplicationRef, zone: NgZone) {\n * appRef.isStable.pipe(\n * first(stable => stable),\n * switchMap(() => interval(1000))\n *).subscribe(counter => zone.run(() => this.value = counter));\n * }\n * ``\n *\n * @publicApi\n *\n * @Injectable()\n * export class ApplicationRef {\n * /** @internal */\n * private _bootstrapListeners: ((compRef: ComponentRef<any>) => void)[] = [];\n * private _views: InternalViewRef[] = [];\n * private _runningTick: boolean = false;\n * private _enforceNoNewChanges: boolean = false;\n * private _stable = true;\n * /**\n * * Get a list of component types registered to this application.\n * * This list is populated even before the component is created.\n * */\n * public readonly componentTypes: Type<any>[] = [];\n * /**\n * * Get a list of components registered to this application.\n * */\n * public readonly components: ComponentRef<any>[] = [];\n * /**\n * * Returns an Observable that indicates when the application is stable or unstable.\n * */\n * @see [Usage notes](#is-stable-examples) for

```

```

examples and caveats when using this API.\n *^\n // TODO(issue/24571): remove '!.\n public readonly isStable!:
Observable<boolean>;\n\n /** @internal *^\n constructor(\n private _zone: NgZone, private _console: Console,
private _injector: Injector,\n private _exceptionHandler: ErrorHandler,\n private _componentFactoryResolver:
ComponentFactoryResolver,\n private _initStatus: ApplicationInitStatus) {\n this._enforceNoNewChanges =
isDevMode();\n\n this._zone.onMicrotaskEmpty.subscribe({\n next: () => {\n this._zone.run(() => {\n
this.tick();\n });\n });\n });\n\n const isCurrentlyStable = new Observable<boolean>((observer:
Observer<boolean>) => {\n this._stable = this._zone.isStable && !this._zone.hasPendingMacrotasks &&\n
!this._zone.hasPendingMicrotasks;\n this._zone.runOutsideAngular(() => {\n observer.next(this._stable);\n
observer.complete();\n });\n });\n\n const isStable = new Observable<boolean>((observer:
Observer<boolean>) => {\n // Create the subscription to onStable outside the Angular Zone so that\n // the
callback is run outside the Angular Zone.\n let stableSub: Subscription;\n this._zone.runOutsideAngular(() =>
{\n stableSub = this._zone.onStable.subscribe(() => {\n NgZone.assertNotInAngularZone();\n\n //
Check whether there are no pending macro/micro tasks in the next tick\n // to allow for NgZone to update the
state.\n scheduleMicroTask(() => {\n if (!this._stable && !this._zone.hasPendingMacrotasks &&\n
!this._zone.hasPendingMicrotasks) {\n this._stable = true;\n observer.next(true);\n }\n
});\n });\n });\n\n const unstableSub: Subscription = this._zone.onUnstable.subscribe(() => {\n
NgZone.assertInAngularZone();\n if (this._stable) {\n this._stable = false;\n
this._zone.runOutsideAngular(() => {\n observer.next(false);\n });\n });\n });\n\n return () =>
{\n stableSub.unsubscribe();\n unstableSub.unsubscribe();\n });\n });\n\n (this as {isStable:
Observable<boolean>}).isStable =\n merge(isCurrentlyStable, isStable.pipe(share()));\n }\n\n /**\n *
Bootstrap a new component at the root level of the application.\n *\n * @usageNotes\n * ### Bootstrap
process\n *\n * When bootstrapping a new root component into an application, Angular mounts the\n * specified
application component onto DOM elements identified by the componentType's\n * selector and kicks off automatic
change detection to finish initializing the component.\n *\n * Optionally, a component can be mounted onto a
DOM element that does not match the\n * componentType's selector.\n *\n * ### Example\n * {@example
core/ts/platform/platform.ts region='longform'}\n *^\n bootstrap<C>(componentOrFactory:
ComponentFactory<C>|Type<C>, rootSelectorOrNode?: string|any):\n ComponentRef<C> {\n if
(!this._initStatus.done) {\n throw new Error(\n 'Cannot bootstrap as there are still asynchronous initializers
running. Bootstrap components in the `ngDoBootstrap` method of the root module.);\n }\n let
componentFactory: ComponentFactory<C>;\n if (componentOrFactory instanceof ComponentFactory) {\n
componentFactory = componentOrFactory;\n } else {\n componentFactory =\n
this._componentFactoryResolver.resolveComponentFactory(componentOrFactory)!;\n }\n
this.componentTypes.push(componentFactory.componentType);\n\n // Create a factory associated with the current
module if it's not bound to some other\n const ngModule =\n isBoundToModule(componentFactory) ?
undefined : this._injector.get(NgModuleRef);\n const selectorOrNode = rootSelectorOrNode ||
componentFactory.selector;\n const compRef = componentFactory.create(Injector.NULL, [], selectorOrNode,
ngModule);\n\n compRef.onDestroy(() => {\n this._unloadComponent(compRef);\n });\n const testability =
compRef.injector.get(Testability, null);\n if (testability) {\n compRef.injector.get(TestabilityRegistry)\n
.registerApplication(compRef.location.nativeElement, testability);\n }\n\n this._loadComponent(compRef);\n
if (isDevMode()) {\n this._console.log(\n `Angular is running in development mode. Call
enableProdMode() to enable production mode.`);\n }\n return compRef;\n }\n\n /**\n * Invoke this method to
explicitly process change detection and its side-effects.\n *\n * In development mode, `tick()` also performs a
second change detection cycle to ensure that no\n * further changes are detected. If additional changes are picked
up during this second cycle,\n * bindings in the app have side-effects that cannot be resolved in a single change
detection\n * pass.\n * In this case, Angular throws an error, since an Angular application can only have one
change\n * detection pass during which all change detection must complete.\n *^\n tick(): void {\n if
(this._runningTick) {\n throw new Error('ApplicationRef.tick is called recursively');\n }\n\n try {\n
this._runningTick = true;\n for (let view of this._views) {\n view.detectChanges();\n }\n if

```



```

./ng_module_factory_loader';\n\nconst _SEPARATOR = '#';\n\nconst FACTORY_CLASS_SUFFIX =
'NgFactory';\ndeclare var System: any;\n\n/**\n * Configuration for SystemJsNgModuleLoader.\n * token.\n *\n * @publicApi\n * @deprecated the `string` form of `loadChildren` is deprecated, and
`SystemJsNgModuleLoaderConfig`\n * is part of its implementation. See `LoadChildren` for more details.\n
*\nexport abstract class SystemJsNgModuleLoaderConfig {\n /**\n * Prefix to add when computing the name of
the factory module for a given module name.\n *\n // TODO(issue/24571): remove '!.\n factoryPathPrefix!:
string;\n\n /**\n * Suffix to add when computing the name of the factory module for a given module name.\n
*\n // TODO(issue/24571): remove '!.\n factoryPathSuffix!: string;\n\n}\n\nconst DEFAULT_CONFIG:
SystemJsNgModuleLoaderConfig = {\n factoryPathPrefix: '',\n factoryPathSuffix: '.ngfactory',\n};\n\n/**\n *
NgModuleFactoryLoader that uses SystemJS to load NgModuleFactory\n * @publicApi\n * @deprecated the
`string` form of `loadChildren` is deprecated, and `SystemJsNgModuleLoader` is\n * part of its implementation. See
`LoadChildren` for more details.\n *\n@Injectable()\nexport class SystemJsNgModuleLoader implements
NgModuleFactoryLoader {\n private _config: SystemJsNgModuleLoaderConfig;\n\n constructor(private
_compiler: Compiler, @Optional() config?: SystemJsNgModuleLoaderConfig) {\n this._config = config ||
DEFAULT_CONFIG;\n }\n\n load(path: string): Promise<NgModuleFactory<any>> {\n const
legacyOfflineMode = !ivyEnabled && this._compiler instanceof Compiler;\n return legacyOfflineMode ?
this.loadFactory(path) : this.loadAndCompile(path);\n }\n\n private loadAndCompile(path: string):
Promise<NgModuleFactory<any>> {\n let [module, exportName] = path.split(_SEPARATOR);\n if
(exportName === undefined) {\n exportName = 'default';\n }\n\n return System.import(module)\n
.then((module: any) => module[exportName])\n .then((type: any) => checkNotEmpty(type, module,
exportName))\n .then((type: any) => this._compiler.compileModuleAsync(type));\n }\n\n private
loadFactory(path: string): Promise<NgModuleFactory<any>> {\n let [module, exportName] =
path.split(_SEPARATOR);\n let factoryClassSuffix = FACTORY_CLASS_SUFFIX;\n if (exportName ===
undefined) {\n exportName = 'default';\n factoryClassSuffix = '';\n }\n\n return
System.import(this._config.factoryPathPrefix + module + this._config.factoryPathSuffix)\n
.then((module: any)
=> module[exportName + factoryClassSuffix])\n .then((factory: any) => checkNotEmpty(factory, module,
exportName));\n }\n\n\nfunction checkNotEmpty(value: any, modulePath: string, exportName: string): any {\n if
(!value) {\n throw new Error(`Cannot find '${exportName}' in '${modulePath}'`);\n }\n return
value;\n}\n\n",/**\n * @license\n * Copyright Google LLC All Rights Reserved.\n *\n * Use of this source code is
governed by an MIT-style license that can be\n * found in the LICENSE file at https://angular.io/license\n
*\nimport { ChangeDetectorRef } from './change_detection/change_detector_ref';\n\n/**\n * Represents an
Angular [view](guide/glossary#view "Definition").\n *\n * @see { @link ChangeDetectorRef#usage-notes Change
detection usage}\n *\n * @publicApi\n *\nexport abstract class ViewRef extends ChangeDetectorRef {\n /**\n *
Destroys this view and all of the data structures associated with it.\n *\n abstract destroy(): void;\n\n /**\n *
Reports whether this view has been destroyed.\n * @returns True after the `destroy()` method has been called, false
otherwise.\n *\n abstract get destroyed(): boolean;\n\n /**\n * A lifecycle hook that provides additional
developer-defined cleanup\n * functionality for views.\n * @param callback A handler function that cleans up
developer-defined data\n * associated with a view. Called when the `destroy()` method is invoked.\n *\n abstract
onDestroy(callback: Function): any /** TODO #9100 */;\n\n}\n\n/**\n * Represents an Angular
[view](guide/glossary#view) in a view container.\n * An [embedded view](guide/glossary#view-tree) can be
referenced from a component\n * other than the hosting component whose template defines it, or it can be defined\n
* independently by a `TemplateRef`.\n *\n * Properties of elements in a view can change, but the structure (number
and order) of elements in\n * a view cannot. Change the structure of elements by inserting, moving, or\n * removing
nested views in a view container.\n *\n * @see `ViewContainerRef`\n *\n * @usageNotes\n *\n * The following
template breaks down into two separate `TemplateRef` instances,\n * an outer one and an inner one.\n *\n * ```\n *
Count: {{ items.length }}\n * \n * <li *ngFor="let item of items">{{ item }}\n * \n * ```\n *\n * This
is the outer `TemplateRef`:\n *\n * ```\n * Count: {{ items.length }}\n * \n * <ng-template ngFor let-item
[ngForOf]="items"></ng-template>\n * \n * ```\n *\n * This is the inner `TemplateRef`:\n *\n * ```\n *

```

```

{ {item} }\n * ``\n *\n * The outer and inner `TemplateRef` instances are assembled into views as
follows:\n *\n * ``\n * <!-- ViewRef: outer-0 -->\n * Count: 2\n * \n * <ng-template view-container-ref></ng-
template>\n * <!-- ViewRef: inner-1 -->first<!-- /ViewRef: inner-1 -->\n * <!-- ViewRef: inner-2 --
>second<!-- /ViewRef: inner-2 -->\n * \n * <!-- /ViewRef: outer-0 -->\n * ``\n * @publicApi\n
*\nexport abstract class EmbeddedViewRef<C> extends ViewRef {\n /**\n * The context for this view, inherited
from the anchor element.\n */\n abstract get context(): C;\n\n /**\n * The root nodes for this embedded view.\n
*/\n abstract get rootNodes(): any[];\n}\n\nexport interface InternalViewRef extends ViewRef {\n
detachFromAppRef(): void;\n attachToAppRef(appRef: ViewRefTracker): void;\n\n/**\n * Interface for
tracking root `ViewRef`s in `ApplicationRef`.\n *\n * NOTE: Importing `ApplicationRef` here directly creates
circular dependency, which is why we have\n * a subset of the `ApplicationRef` interface `ViewRefTracker` here.\n
*/\nexport interface ViewRefTracker {\n detachView(viewRef: ViewRef): void;\n}\n"/**\n * @license\n *
Copyright Google LLC All Rights Reserved.\n *\n * Use of this source code is governed by an MIT-style license
that can be\n * found in the LICENSE file at https://angular.io/license\n */\n\n// Public API for compiler\nexport
{Compiler, COMPILER_OPTIONS, CompilerFactory, CompilerOptions, ModuleWithComponentFactories} from
'./linker/compiler';\nexport {ComponentFactory, ComponentRef} from './linker/component_factory';\nexport
{ComponentFactoryResolver} from './linker/component_factory_resolver';\nexport {ElementRef} from
'./linker/element_ref';\nexport {NgModuleFactory, NgModuleRef} from './linker/ng_module_factory';\nexport
{getModuleFactory, NgModuleFactoryLoader} from './linker/ng_module_factory_loader';\nexport {QueryList}
from './linker/query_list';\nexport {SystemJsNgModuleLoader, SystemJsNgModuleLoaderConfig} from
'./linker/system_js_ng_module_factory_loader';\nexport {TemplateRef} from './linker/template_ref';\nexport
{ViewContainerRef} from './linker/view_container_ref';\nexport {EmbeddedViewRef, ViewRef} from
'./linker/view_ref';\n"/**\n * @license\n * Copyright Google LLC All Rights Reserved.\n *\n * Use of this source
code is governed by an MIT-style license that can be\n * found in the LICENSE file at https://angular.io/license\n
*/\n\nimport {Injector} from './di/injector';\nimport {assertTNodeForLView} from './render3/assert';\nimport
{CONTAINER_HEADER_OFFSET, LContainer, NATIVE} from './render3/interfaces/container';\nimport
{TElementNode, TNode, TNodeFlags, TNodeType} from './render3/interfaces/node';\nimport {isComponentHost,
isLContainer} from './render3/interfaces/type_checks';\nimport {DECLARATION_COMPONENT_VIEW, LView,
PARENT, T_HOST, TData, TVIEW} from './render3/interfaces/view';\nimport {getComponent, getContext,
getInjectionTokens, getInjector, getListeners, getLocalRefs, getOwningComponent, loadLContext} from
'./render3/util/discovery_utils';\nimport {INTERPOLATION_DELIMITER} from
'./render3/util/misc_utils';\nimport {renderStringify} from './render3/util/stringify_utils';\nimport
{getComponentLViewByIndex, getNativeByTNodeOrNull} from './render3/util/view_utils';\nimport
{assertDomNode} from './util/assert';\nimport {DebugContext} from './view/types';\n\n/**\n * @publicApi\n
*/\nexport class DebugEventListener {\n constructor(public name: string, public callback: Function) {} \n\n/**\n
* @publicApi\n */\nexport interface DebugNode {\n readonly listeners: DebugEventListener[];\n readonly parent:
DebugElement|null;\n readonly nativeNode: any;\n readonly injector: Injector;\n readonly componentInstance:
any;\n readonly context: any;\n readonly references: {[key: string]: any};\n readonly providerTokens:
any[];\n}\n\nexport class DebugNode__PRE_R3__ {\n readonly listeners: DebugEventListener[] = [];\n readonly
parent: DebugElement|null = null;\n readonly nativeNode: any;\n private readonly _debugContext:
DebugContext;\n\n constructor(nativeNode: any, parent: DebugNode|null, _debugContext: DebugContext) {\n
this._debugContext = _debugContext;\n this.nativeNode = nativeNode;\n if (parent && parent instanceof
DebugElement__PRE_R3__) {\n parent.addChild(this);\n } \n }\n\n get injector(): Injector {\n return
this._debugContext.injector;\n }\n\n get componentInstance(): any {\n return this._debugContext.component;\n
}\n\n get context(): any {\n return this._debugContext.context;\n }\n\n get references(): {[key: string]: any} {\n
return this._debugContext.references;\n }\n\n get providerTokens(): any[] {\n return
this._debugContext.providerTokens;\n }\n}\n\n/**\n * @publicApi\n */\nexport interface DebugElement extends
DebugNode {\n readonly name: string;\n readonly properties: {[key: string]: any};\n readonly attributes: {[key:
string]: string|null};\n readonly classes: {[key: string]: boolean};\n readonly styles: {[key: string]: string|null};\n

```

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readonly childNodes: DebugNode[];
readonly nativeElement: any;
readonly children: DebugElement[];
query(predicate: Predicate<DebugElement>): DebugElement;
queryAll(predicate: Predicate<DebugElement>):
DebugElement[];
queryAllNodes(predicate: Predicate<DebugNode>): DebugNode[];
triggerEventHandler(eventName: string, eventObj: any): void;
}
export class DebugElement__PRE_R3__
extends DebugNode__PRE_R3__ implements DebugElement {
readonly name!: string;
readonly properties:
{[key: string]: any} = {};
readonly attributes: {[key: string]: string|null} = {};
readonly classes: {[key: string]:
boolean} = {};
readonly styles: {[key: string]: string|null} = {};
readonly childNodes: DebugNode[] = [];
readonly nativeElement: any;
constructor(nativeNode: any, parent: any, _debugContext: DebugContext) {
super(nativeNode, parent, _debugContext);
this.nativeElement = nativeNode;
}
addChild(child:
DebugNode) {
if (child) {
this.childNodes.push(child);
(child as {parent: DebugNode}).parent =
this;
}
}
removeChild(child: DebugNode) {
const childIndex = this.childNodes.indexOf(child);
if (childIndex !== -1) {
(child as {parent: DebugNode | null}).parent = null;
this.childNodes.splice(childIndex, 1);
}
insertChildrenAfter(child: DebugNode, newChildren:
DebugNode[]) {
const siblingIndex = this.childNodes.indexOf(child);
if (siblingIndex !== -1) {
this.childNodes.splice(siblingIndex + 1, 0, ...newChildren);
newChildren.forEach(c => {
if (c.parent) {
(c.parent as DebugElement__PRE_R3__).removeChild(c);
}
(child as {parent:
DebugNode}).parent = this;
});
}
insertBefore(refChild: DebugNode, newChild: DebugNode):
void {
const refIndex = this.childNodes.indexOf(refChild);
if (refIndex === -1) {
this.addChild(newChild);
} else {
if (newChild.parent) {
(newChild.parent as
DebugElement__PRE_R3__).removeChild(newChild);
}
(newChild as {parent: DebugNode}).parent =
this;
this.childNodes.splice(refIndex, 0, newChild);
}
}
query(predicate:
Predicate<DebugElement>): DebugElement {
const results = this.queryAll(predicate);
return results[0] ||
null;
}
queryAll(predicate: Predicate<DebugElement>): DebugElement[] {
const matches:
DebugElement[] = [];
_queryElementChildren(this, predicate, matches);
return matches;
}
queryAllNodes(predicate: Predicate<DebugNode>): DebugNode[] {
const matches: DebugNode[] = [];
_queryNodeChildren(this, predicate, matches);
return matches;
}
get children(): DebugElement[] {
return this.childNodes //\n
.filter((node) => node instanceof DebugElement__PRE_R3__) as
DebugElement[];
}
triggerEventHandler(eventName: string, eventObj: any) {
this.listeners.forEach((listener) => {
if (listener.name === eventName) {
listener.callback(eventObj);
}
});
}
}
}
export function asNativeElements(debugEls: DebugElement[]): any
{
return debugEls.map((el) => el.nativeElement);
}
function _queryElementChildren(\n element:
DebugElement, predicate: Predicate<DebugElement>, matches: DebugElement[]) {
element.childNodes.forEach(node => {
if (node instanceof DebugElement__PRE_R3__) {
if
(predicate(node)) {
matches.push(node);
}
_queryElementChildren(node, predicate, matches);
}
});
}
function _queryNodeChildren(\n parentNode: DebugNode, predicate: Predicate<DebugNode>,
matches: DebugNode[]) {
if (parentNode instanceof DebugElement__PRE_R3__) {
parentNode.childNodes.forEach(node => {
if (predicate(node)) {
matches.push(node);
}
if
(node instanceof DebugElement__PRE_R3__) {
_queryNodeChildren(node, predicate, matches);
}
});
}
}
}
class DebugNode__POST_R3__ implements DebugNode {
readonly nativeNode: Node;
constructor(nativeNode: Node) {
this.nativeNode = nativeNode;
}
get parent(): DebugElement|null {
const parent = this.nativeNode.parentNode as Element;
return parent ? new
DebugElement__POST_R3__(parent) : null;
}
get injector(): Injector {
return
getInjector(this.nativeNode);
}
get componentInstance(): any {
const nativeElement = this.nativeNode;
return nativeElement && \n
(getComponent(nativeElement as Element)) ||
getOwningComponent(nativeElement);
}
get context(): any {
return getComponent(this.nativeNode as
Element) || getContext(this.nativeNode as Element);
}
get listeners(): DebugEventListener[] {
return
getListeners(this.nativeNode as Element).filter(listener => listener.type === 'dom');
}
get references(): {[key:
string]: any;} {
return getLocalRefs(this.nativeNode);
}
get providerTokens(): any[] {
return
}

```



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DebugElement[] {\n const nativeElement = this.nativeElement;\n if (!nativeElement) return [];\n const\n childNodes = nativeElement.children;\n const children: DebugElement[] = [];\n for (let i = 0; i <\n childNodes.length; i++) {\n const element = childNodes[i];\n children.push(getDebugNode_POST_R3__(element));\n }\n return children;\n }\n\nquery(predicate:\n Predicate<DebugElement>): DebugElement {\n const results = this.queryAll(predicate);\n return results[0] ||\n null;\n }\n\nqueryAll(predicate: Predicate<DebugElement>): DebugElement[] {\n const matches:\n DebugElement[] = [];\n _queryAllR3(this, predicate, matches, true);\n return matches;\n }\n\nqueryAllNodes(predicate: Predicate<DebugNode>): DebugNode[] {\n const matches: DebugNode[] = [];\n _queryAllR3(this, predicate, matches, false);\n return matches;\n }\n\ntriggerEventHandler(eventName: string,\n eventObj: any): void {\n const node = this.nativeNode as any;\n const invokedListeners: Function[] = [];\n this.listeners.forEach(listener => {\n if (listener.name === eventName) {\n const callback =\n listener.callback;\n callback.call(node, eventObj);\n invokedListeners.push(callback);\n }\n });\n\n //\n We need to check whether `eventListeners` exists, because it's something\n // that Zone.js only adds to\n `EventTarget` in browser environments.\n if (typeof node.eventListeners === 'function') {\n // Note that in Ivy\n we wrap event listeners with a call to `event.preventDefault` in some\n // cases. We use `__ngUnwrap__` as a\n special token that gives us access to the actual event\n // listener.\n node.eventListeners(eventName).forEach((listener: Function) => {\n // In order to ensure that we can detect the\n special __ngUnwrap__ token described above, we\n // use `toString` on the listener and see if it contains the\n token. We use this approach to\n // ensure that it still worked with compiled code since it cannot remove or\n rename string\n // literals. We also considered using a special function name (i.e. if(listener.name ===\n // special)) but that was more cumbersome and we were also concerned the compiled code could\n // strip the\n name, turning the condition in to (\"\\\" === '\\\") and always returning true.\n if\n (listener.toString().indexOf('__ngUnwrap__') !== -1) {\n const unwrappedListener =\n listener('__ngUnwrap__');\n return invokedListeners.indexOf(unwrappedListener) === -1 &&\n unwrappedListener.call(node, eventObj);\n }\n });\n\n }\n\n}\n\nfunction copyDomProperties(element:\n Element|null, properties: {[name: string]: string}): void {\n if (element) {\n // Skip own properties (as those are\n patched)\n let obj = Object.getPrototypeOf(element);\n const NodePrototype: any = Node.prototype;\n while\n (obj !== null && obj !== NodePrototype) {\n const descriptors = Object.getOwnPropertyDescriptors(obj);\n for (let key in descriptors) {\n if (!key.startsWith('__') && !key.startsWith('on')) {\n // don't include\n properties starting with `__` and `on`.\n // `__` are patched values which should not be included.\n // `on`\n are listeners which also should not be included.\n const value = (element as any)[key];\n if\n (isPrimitiveValue(value)) {\n properties[key] = value;\n }\n }\n }\n }\n obj =\n Object.getPrototypeOf(obj);\n }\n }\n\n}\n\nfunction isPrimitiveValue(value: any): boolean {\n return typeof value\n === 'string' || typeof value === 'boolean' || typeof value === 'number' ||\n value === null;\n }\n\n/**\n * Walk the\n TNode tree to find matches for the predicate.\n * @param parentElement the element from which the walk is\n started\n * @param predicate the predicate to match\n * @param matches the list of positive matches\n * @param\n elementsOnly whether only elements should be searched\n */\nfunction _queryAllR3(\n parentElement:\n DebugElement, predicate: Predicate<DebugElement>, matches: DebugElement[],\n elementsOnly: true):\n void;\nfunction _queryAllR3(\n parentElement: DebugElement, predicate: Predicate<DebugNode>, matches:\n DebugNode[],\n elementsOnly: false): void;\nfunction _queryAllR3(\n parentElement: DebugElement,\n predicate: Predicate<DebugElement>|Predicate<DebugNode>,\n matches: DebugElement[]|DebugNode[],\n elementsOnly: boolean) {\n const context = loadLContext(parentElement.nativeNode, false);\n if (context !== null)\n {\n const parentTNode = context.IView[TVIEW].data[context.nodeIndex] as TNode;\n _queryNodeChildrenR3(\n parentTNode, context.IView, predicate, matches, elementsOnly,\n parentElement.nativeNode);\n } else {\n // If the context is null, then `parentElement` was either created with\n Renderer2 or native DOM\n // APIs.\n _queryNativeNodeDescendants(parentElement.nativeNode, predicate,\n matches, elementsOnly);\n }\n\n}\n\n/**\n * Recursively match the current TNode against the predicate, and goes on\n with the next ones.\n * @param tNode the current TNode\n * @param IView the LView of this TNode\n */

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@param predicate the predicate to match\n * @param matches the list of positive matches\n * @param
elementsOnly whether only elements should be searched\n * @param rootNativeNode the root native node on which
predicate should not be matched\n */\nfunction _queryNodeChildrenR3(\n tNode: TNode, IView: LView,\n predicate: Predicate<DebugElement>|Predicate<DebugNode>,\n matches: DebugElement[]|DebugNode[],\n elementsOnly: boolean, rootNativeNode: any) {\n ngDevMode && assertTNodeForLView(tNode, IView);\n const\n nativeNode = getNativeByTNodeOrNull(tNode, IView);\n // For each type of TNode, specific logic is executed.\n if (tNode.type & (TNodeType.AnyRNode | TNodeType.ElementContainer)) {\n // Case 1: the TNode is an\n element\n // The native node has to be checked.\n _addQueryMatchR3(nativeNode, predicate, matches,\n elementsOnly, rootNativeNode);\n if (isComponentHost(tNode)) {\n // If the element is the host of a\n component, then all nodes in its view have to be processed.\n // Note: the component's content (tNode.child) will\n be processed from the insertion points.\n const componentView = getComponentLViewByIndex(tNode.index,\n IView);\n if (componentView && componentView[TVIEW].firstChild) {\n _queryNodeChildrenR3(\n componentView[TVIEW].firstChild!, componentView, predicate, matches, elementsOnly,\n rootNativeNode);\n }\n } else {\n if (tNode.child) {\n // Otherwise, its children have to be processed.\n _queryNodeChildrenR3(tNode.child, IView, predicate, matches, elementsOnly, rootNativeNode);\n }\n }\n }\n // We also have to query the DOM directly in order to catch elements inserted through\n // Renderer2. Note that this\n is __not__ optimal, because we're walking similar trees multiple\n // times. ViewEngine could do it more\n efficiently, because all the insertions go through\n // Renderer2, however that's not the case in Ivy. This approach\n is being used because:\n // 1. Matching the ViewEngine behavior would mean potentially introducing a\n dependency\n // from `Renderer2` to Ivy which could bring Ivy code into ViewEngine.\n // 2. We would have\n to make `Renderer3` \"know\" about debug nodes.\n // 3. It allows us to capture nodes that were inserted directly\n via the DOM.\n nativeNode && _queryNativeNodeDescendants(nativeNode, predicate, matches,\n elementsOnly);\n }\n // In all cases, if a dynamic container exists for this node, each view inside it has to be\n // processed.\n const nodeOrContainer = IView[tNode.index];\n if (isLContainer(nodeOrContainer)) {\n _queryNodeChildrenInContainerR3(\n nodeOrContainer, predicate, matches, elementsOnly,\n rootNativeNode);\n } else if (tNode.type & TNodeType.Container) {\n // Case 2: the TNode is a container\n // The native node has to be checked.\n const IContainer = IView[tNode.index];\n _addQueryMatchR3(IContainer[NATIVE], predicate, matches, elementsOnly, rootNativeNode);\n // Each view\n inside the container has to be processed.\n _queryNodeChildrenInContainerR3(IContainer, predicate, matches,\n elementsOnly, rootNativeNode);\n } else if (tNode.type & TNodeType.Projection) {\n // Case 3: the TNode is a\n projection insertion point (i.e. a <ng-content>).\n // The nodes projected at this location all need to be processed.\n const componentView = IView![DECLARATION_COMPONENT_VIEW];\n const componentHost =\n componentView[T_HOST] as TElementNode;\n const head: TNode|null =\n (componentHost.projection as\n (TNode | null)[])[tNode.projection as number];\n if (Array.isArray(head)) {\n for (let nativeNode of head) {\n _addQueryMatchR3(nativeNode, predicate, matches, elementsOnly, rootNativeNode);\n }\n } else if (head)\n {\n const nextLView = componentView[PARENT]! as LView;\n const nextTNode =\n nextLView[TVIEW].data[head.index] as TNode;\n _queryNodeChildrenR3(nextTNode, nextLView, predicate,\n matches, elementsOnly, rootNativeNode);\n }\n } else if (tNode.child) {\n // Case 4: the TNode is a view.\n _queryNodeChildrenR3(tNode.child, IView, predicate, matches, elementsOnly, rootNativeNode);\n }\n // We\n don't want to go to the next sibling of the root node.\n if (rootNativeNode !== nativeNode) {\n // To determine the\n next node to be processed, we need to use the next or the projectionNext\n // link, depending on whether the\n current node has been projected.\n const nextTNode = (tNode.flags & TNodeFlags.isProjected) ?\n tNode.projectionNext : tNode.next;\n if (nextTNode) {\n _queryNodeChildrenR3(nextTNode, IView, predicate,\n matches, elementsOnly, rootNativeNode);\n }\n }\n}\n\n/**\n * Process all TNodes in a given container.\n */\n * @param IContainer the container to be processed\n * @param predicate the predicate to match\n * @param matches the list of positive matches\n * @param elementsOnly whether only elements should be searched\n * @param\n rootNativeNode the root native node on which predicate should not be matched\n */\nfunction\n_queryNodeChildrenInContainerR3(\n IContainer: LContainer, predicate:

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Predicate<DebugElement>|Predicate<DebugNode>,\n matches: DebugElement[]|DebugNode[], elementsOnly:
boolean, rootNativeNode: any) {\n for (let i = CONTAINER_HEADER_OFFSET; i < lContainer.length; i++) {\n
const childView = lContainer[i] as LView;\n const firstChild = childView[TVIEW].firstChild;\n if (firstChild)
{\n _queryNodeChildrenR3(firstChild, childView, predicate, matches, elementsOnly, rootNativeNode);\n }
}\n}\n\n/**\n * Match the current native node against the predicate.\n *\n * @param nativeNode the current native
node\n * @param predicate the predicate to match\n * @param matches the list of positive matches\n * @param
elementsOnly whether only elements should be searched\n * @param rootNativeNode the root native node on which
predicate should not be matched\n */\nfunction _addQueryMatchR3(\n nativeNode: any, predicate:
Predicate<DebugElement>|Predicate<DebugNode>,\n matches: DebugElement[]|DebugNode[], elementsOnly:
boolean, rootNativeNode: any) {\n if (rootNativeNode !== nativeNode) {\n const debugNode =
getDebugNode(nativeNode);\n if (!debugNode) {\n return;\n }\n // Type of the \"predicate and \"matches\"
array are set based on the value of\n // the \"elementsOnly\" parameter. TypeScript is not able to properly infer
these\n // types with generics, so we manually cast the parameters accordingly.\n if (elementsOnly &&
debugNode instanceof DebugElement__POST_R3__ && predicate(debugNode) &&\n
matches.indexOf(debugNode) === -1) {\n matches.push(debugNode);\n } else if (\n !elementsOnly &&
(predicate as Predicate<DebugNode>)(debugNode) &&\n (matches as DebugNode[]).indexOf(debugNode) ===
-1) {\n (matches as DebugNode[]).push(debugNode);\n }\n }\n}\n\n/**\n * Match all the descendants of a
DOM node against a predicate.\n *\n * @param nativeNode the current native node\n * @param predicate the
predicate to match\n * @param matches the list where matches are stored\n * @param elementsOnly whether only
elements should be searched\n */\nfunction _queryNativeNodeDescendants(\n parentNode: any, predicate:
Predicate<DebugElement>|Predicate<DebugNode>,\n matches: DebugElement[]|DebugNode[], elementsOnly:
boolean) {\n const nodes = parentNode.childNodes;\n const length = nodes.length;\n\n for (let i = 0; i < length;
i++) {\n const node = nodes[i];\n const debugNode = getDebugNode(node);\n\n if (debugNode) {\n if
(elementsOnly && debugNode instanceof DebugElement__POST_R3__ && predicate(debugNode) &&\n
matches.indexOf(debugNode) === -1) {\n matches.push(debugNode);\n } else if (\n !elementsOnly
&& (predicate as Predicate<DebugNode>)(debugNode) &&\n (matches as
DebugNode[]).indexOf(debugNode) === -1) {\n (matches as DebugNode[]).push(debugNode);\n }\n\n
_queryNativeNodeDescendants(node, predicate, matches, elementsOnly);\n }\n }\n}\n\n/**\n * Iterates through
the property bindings for a given node and generates\n * a map of property names to values. This map only contains
property bindings\n * defined in templates, not in host bindings.\n */\nfunction collectPropertyBindings(\n
properties: {[key: string]: string}, tNode: TNode, lView: LView, tData: TData): void {\n let bindingIndexes =
tNode.propertyBindings;\n\n if (bindingIndexes !== null) {\n for (let i = 0; i < bindingIndexes.length; i++) {\n
const bindingIndex = bindingIndexes[i];\n const propMetadata = tData[bindingIndex] as string;\n const
metadataParts = propMetadata.split(INTERPOLATION_DELIMITER);\n const propertyName =
metadataParts[0];\n if (metadataParts.length > 1) {\n let value = metadataParts[1];\n for (let j = 1; j <
metadataParts.length - 1; j++) {\n value += renderStringify(lView[bindingIndex + j - 1]) + metadataParts[j +
1];\n }\n properties[propertyName] = value;\n } else {\n properties[propertyName] =
lView[bindingIndex];\n }\n }\n}\n\n// Need to keep the nodes in a global Map so that multiple angular
apps are supported.\nconst _nativeNodeToDebugNode = new Map<any, DebugNode>();\n\nfunction
getDebugNode__PRE_R3__(nativeNode: any): DebugNode|null {\n return
_nativeNodeToDebugNode.get(nativeNode) || null;\n}\n\nconst NG_DEBUG_PROPERTY =
'__ng_debug__';\n\nexport function getDebugNode__POST_R3__(nativeNode: Element):
DebugElement__POST_R3__;\nexport function getDebugNode__POST_R3__(nativeNode: Node):
DebugNode__POST_R3__;\nexport function getDebugNode__POST_R3__(nativeNode: null): null;\nexport
function getDebugNode__POST_R3__(nativeNode: any): DebugNode|null {\n if (nativeNode instanceof Node) {\n
if (!(nativeNode.hasOwnProperty(NG_DEBUG_PROPERTY))) {\n (nativeNode as
any)[NG_DEBUG_PROPERTY] = nativeNode.nodeType === Node.ELEMENT_NODE ?\n new
DebugElement__POST_R3__(nativeNode as Element) :\n new DebugNode__POST_R3__(nativeNode);\n

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NodeFlags,\n matchedQueriesDsl: null|[string | number, QueryValueType][], ngContentIndex: null|number,\n childCount: number, namespaceAndName: string|null, fixedAttrs: null|[string, string][] = [],\n bindings?:\n null|[BindingFlags, string, string | SecurityContext | null][],\n outputs?: null|([string, string])[], handleEvent?:\n null|ElementHandleEventFn,\n componentView?: null|ViewDefinitionFactory,\n componentRendererType?:\n RendererType2|null): NodeDef {\n if (!handleEvent) {\n handleEvent = NOOP;\n }\n const {matchedQueries,\n references, matchedQueryIds} = splitMatchedQueriesDsl(matchedQueriesDsl);\n let ns: string = null!;\n let name:\n string = null!;\n if (namespaceAndName) {\n [ns, name] = splitNamespace(namespaceAndName);\n }\n bindings = bindings || [];\n const bindingDefs: BindingDef[] = [];\n for (let i = 0; i < bindings.length; i++) {\n const [bindingFlags, namespaceAndName, suffixOrSecurityContext] = bindings[i];\n const [ns, name] =\n splitNamespace(namespaceAndName);\n let securityContext: SecurityContext = undefined!;\n let suffix: string\n = undefined!;\n switch (bindingFlags & BindingFlags.Types) {\n case BindingFlags.TypeElementStyle:\n suffix = <string>suffixOrSecurityContext;\n break;\n case BindingFlags.TypeElementAttribute:\n case\n BindingFlags.TypeProperty:\n securityContext = <SecurityContext>suffixOrSecurityContext;\n break;\n }\n bindingDefs[i] =\n {\n flags: bindingFlags, ns, name, nonMinifiedName: name, securityContext, suffix\n };\n }\n outputs = outputs || [];\n const outputDefs: OutputDef[] = [];\n for (let i = 0; i < outputs.length; i++) {\n const\n [target, eventName] = outputs[i];\n outputDefs[i] =\n {\n type: OutputType.ElementOutput, target: <any>target,\n eventName, propName: null\n };\n }\n fixedAttrs = fixedAttrs || [];\n const attrs = <[string, string,\n string][]>fixedAttrs.map(([namespaceAndName, value]) => {\n const [ns, name] =\n splitNamespace(namespaceAndName);\n return [ns, name, value];\n }));\n componentRendererType =\n resolveRendererType2(componentRendererType);\n if (componentView) {\n flags |=\n NodeFlags.ComponentView;\n }\n flags |= NodeFlags.TypeElement;\n return {\n // will bet set by the view\n definition\n nodeId: -1,\n parent: null,\n renderParent: null,\n bindingIndex: -1,\n outputIndex: -1,\n //\n regular values\n checkIndex,\n flags,\n childFlags: 0,\n directChildFlags: 0,\n childMatchedQueries: 0,\n \n matchedQueries,\n matchedQueryIds,\n references,\n ngContentIndex,\n childCount,\n bindings:\n bindingDefs,\n bindingFlags: calcBindingFlags(bindingDefs),\n outputs: outputDefs,\n element: {\n ns,\n name,\n attrs,\n template: null,\n // will bet set by the view definition\n componentProvider: null,\n \n componentView: componentView || null,\n componentRendererType: componentRendererType,\n \n publicProviders: null,\n allProviders: null,\n handleEvent: handleEvent || NOOP,\n },\n provider: null,\n \n text: null,\n query: null,\n ngContent: null\n };\n}\n\nexport function createElement(view: ViewData,\n renderHost: any, def: NodeDef): ElementData {\n const elDef = def.element!;\n const rootSelectorOrNode =\n view.root.selectorOrNode;\n const renderer = view.renderer;\n let el: any;\n if (view.parent ||\n !rootSelectorOrNode) {\n if (elDef.name) {\n el = renderer.createElement(elDef.name, elDef.ns);\n } else {\n el =\n renderer.createComment("");\n }\n const parentEl = getParentRenderElement(view, renderHost, def);\n if (parentEl) {\n renderer.appendChild(parentEl, el);\n } else {\n // when using native Shadow DOM, do\n not clear the root element contents to allow slot projection\n const preserveContent =\n (!elDef.componentRendererType &&\n elDef.componentRendererType.encapsulation ===\n ViewEncapsulation.ShadowDom);\n el =\n renderer.selectRootElement(rootSelectorOrNode, preserveContent);\n }\n if (elDef.attrs) {\n for (let i = 0; i < elDef.attrs.length; i++) {\n const [ns, name, value] =\n elDef.attrs[i];\n renderer.setAttribute(el, name, value, ns);\n }\n }\n return el;\n }\n}\n\nexport function\n listenToElementOutputs(view: ViewData, compView: ViewData, def: NodeDef, el: any) {\n for (let i = 0; i <\n def.outputs.length; i++) {\n const output = def.outputs[i];\n const handleEventClosure =\n renderEventHandlerClosure(\n view, def.nodeIndex, elementEventFullName(output.target,\n output.eventName));\n let listenTarget: 'window'|'document'|'body'|'component'|null = output.target;\n let\n listenerView = view;\n if (output.target === 'component') {\n listenTarget = null;\n listenerView =\n compView;\n }\n const disposable =\n <any>listenerView.renderer.listen(listenTarget || el,\n output.eventName, handleEventClosure);\n view.disposables![def.outputIndex + i] = disposable;\n }\n}\n\nfunction renderEventHandlerClosure(view: ViewData, index: number, eventName: string) {\n return\n (event: any) => dispatchEvent(view, index, eventName, event);\n}\n\nexport function

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checkAndUpdateElementInline(\n view: ViewData, def: NodeDef, v0: any, v1: any, v2: any, v3: any, v4: any, v5:
any, v6: any,\n v7: any, v8: any, v9: any): boolean {\n const bindLen = def.bindings.length;\n let changed =
false;\n if (bindLen > 0 && checkAndUpdateElementValue(view, def, 0, v0)) changed = true;\n if (bindLen > 1
&& checkAndUpdateElementValue(view, def, 1, v1)) changed = true;\n if (bindLen > 2 &&
checkAndUpdateElementValue(view, def, 2, v2)) changed = true;\n if (bindLen > 3 &&
checkAndUpdateElementValue(view, def, 3, v3)) changed = true;\n if (bindLen > 4 &&
checkAndUpdateElementValue(view, def, 4, v4)) changed = true;\n if (bindLen > 5 &&
checkAndUpdateElementValue(view, def, 5, v5)) changed = true;\n if (bindLen > 6 &&
checkAndUpdateElementValue(view, def, 6, v6)) changed = true;\n if (bindLen > 7 &&
checkAndUpdateElementValue(view, def, 7, v7)) changed = true;\n if (bindLen > 8 &&
checkAndUpdateElementValue(view, def, 8, v8)) changed = true;\n if (bindLen > 9 &&
checkAndUpdateElementValue(view, def, 9, v9)) changed = true;\n return changed;\n}\n\nexport function
checkAndUpdateElementDynamic(view: ViewData, def: NodeDef, values: any[]): boolean {\n let changed =
false;\n for (let i = 0; i < values.length; i++) {\n if (checkAndUpdateElementValue(view, def, i, values[i]))
changed = true;\n }\n return changed;\n}\n\nfunction checkAndUpdateElementValue(view: ViewData, def:
NodeDef, bindingIdx: number, value: any) {\n if (!checkAndUpdateBinding(view, def, bindingIdx, value)) {\n
return false;\n }\n const binding = def.bindings[bindingIdx];\n const elData = asElementData(view,
def.nodeIndex);\n const renderNode = elData.renderElement;\n const name = binding.name!;\n switch
(binding.flags & BindingFlags.Types) {\n case BindingFlags.TypeElementAttribute:\n setElementAttribute(view, binding, renderNode, binding.ns, name, value);\n break;\n case
BindingFlags.TypeElementClass:\n setElementClass(view, renderNode, name, value);\n break;\n case
BindingFlags.TypeElementStyle:\n setElementStyle(view, binding, renderNode, name, value);\n break;\n case BindingFlags.TypeProperty:\n const bindView = (def.flags & NodeFlags.ComponentView &&\n
binding.flags & BindingFlags.SyntheticHostProperty) ?\n elData.componentView : \n view;\n setElementProperty(bindView, binding, renderNode, name, value);\n break;\n }\n return true;\n}\n\nfunction
setElementAttribute(\n view: ViewData, binding: BindingDef, renderNode: any, ns: string|null, name: string,\n value: any) {\n const securityContext = binding.securityContext;\n let renderValue = securityContext ?
view.root.sanitizer.sanitize(securityContext, value) : value;\n renderValue = renderValue != null ?
renderValue.toString() : null;\n const renderer = view.renderer;\n if (value != null) {\n
renderer.setAttribute(renderNode, name, renderValue, ns);\n } else {\n renderer.removeAttribute(renderNode,
name, ns);\n }\n}\n\nfunction setElementClass(view: ViewData, renderNode: any, name: string, value: boolean) {\n
const renderer = view.renderer;\n if (value) {\n renderer.addClass(renderNode, name);\n } else {\n
renderer.removeClass(renderNode, name);\n }\n}\n\nfunction setElementStyle(\n view: ViewData, binding:
BindingDef, renderNode: any, name: string, value: any) {\n let renderValue: string|null =\n
view.root.sanitizer.sanitize(SecurityContext.STYLE, value as { } | string);\n if (renderValue != null) {\n
renderValue = renderValue.toString();\n const unit = binding.suffix;\n if (unit != null) {\n renderValue =
renderValue + unit;\n }\n } else {\n renderValue = null;\n }\n const renderer = view.renderer;\n if
(renderValue != null) {\n renderer.setStyle(renderNode, name, renderValue);\n } else {\n
renderer.removeStyle(renderNode, name);\n }\n}\n\nfunction setElementProperty(\n view: ViewData, binding:
BindingDef, renderNode: any, name: string, value: any) {\n const securityContext = binding.securityContext;\n
let renderValue = securityContext ? view.root.sanitizer.sanitize(securityContext, value) : value;\n
view.renderer.setProperty(renderNode, name, renderValue);\n}\n\n"/**\n * @license\n * Copyright Google LLC All
Rights Reserved.\n * Use of this source code is governed by an MIT-style license that can be\n * found in the
LICENSE file at https://angular.io/license\n */\n\nimport {ElementRef} from './linker/element_ref';\nimport
{QueryList} from './linker/query_list';\nimport {asElementData, asProviderData, asQueryList, NodeDef,
NodeFlags, QueryBindingDef, QueryBindingType, QueryDef, QueryValueType, ViewData} from './types';\nimport
{declaredViewContainer, filterQueryId, isEmbeddedView} from './util';\n\nexport function queryDef(\n flags:
NodeFlags, id: number, bindings: {[propName: string]: QueryBindingType}): NodeDef {\n let bindingDefs:

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QueryBindingDef[] = [];\n for (let propName in bindings) {\n const bindingType = bindings[propName];\n bindingDefs.push({propName, bindingType});\n }\n\n return {\n // will be set by the view definition\n nodeIndex: -1,\n parent: null,\n renderParent: null,\n bindingIndex: -1,\n outputIndex: -1,\n // regular values\n // TODO(vicb): check\n checkIndex: -1,\n flags,\n childFlags: 0,\n directChildFlags: 0,\n childMatchedQueries: 0,\n ngContentIndex: -1,\n matchedQueries: {},\n matchedQueryIds: 0,\n references: {},\n childCount: 0,\n bindings: [],\n bindingFlags: 0,\n outputs: [],\n element: null,\n provider: null,\n text: null,\n query: {id, filterId: filterQueryId(id), bindings: bindingDefs},\n ngContent: null\n };}\n\n\nexport function createQuery(): QueryList<any> {\n return new QueryList();\n}\n\n\nexport function dirtyParentQueries(view: ViewData) {\n const queryIds = view.def.nodeMatchedQueries;\n while (view.parent && isEmbeddedView(view)) {\n let tplDef = view.parentNodeDef!;\n view = view.parent;\n // content queries\n const end = tplDef.nodeIndex + tplDef.childCount;\n for (let i = 0; i <= end; i++) {\n const nodeDef = view.def.nodes[i];\n if ((nodeDef.flags & NodeFlags.TypeContentQuery) && (nodeDef.flags & NodeFlags.DynamicQuery) && (nodeDef.query!.filterId & queryIds) === nodeDef.query!.filterId) {\n asQueryList(view, i).setDirty();\n }\n if ((nodeDef.flags & NodeFlags.TypeElement && i + nodeDef.childCount < tplDef.nodeIndex) ||\n !(nodeDef.childFlags & NodeFlags.TypeContentQuery) ||\n !(nodeDef.childFlags & NodeFlags.DynamicQuery)) {\n // skip elements that don't contain the template element or no query.\n i += nodeDef.childCount;\n }\n }\n }\n\n // view queries\n if (view.def.nodeFlags & NodeFlags.TypeViewQuery) {\n for (let i = 0; i < view.def.nodes.length; i++) {\n const nodeDef = view.def.nodes[i];\n if ((nodeDef.flags & NodeFlags.TypeViewQuery) && (nodeDef.flags & NodeFlags.DynamicQuery)) {\n asQueryList(view, i).setDirty();\n }\n // only visit the root nodes\n i += nodeDef.childCount;\n }\n }\n\n\nexport function checkAndUpdateQuery(view: ViewData, nodeDef: NodeDef) {\n const queryList = asQueryList(view, nodeDef.nodeIndex);\n if (!queryList.dirty) {\n return;\n }\n\n let directiveInstance: any;\n let newValues: any[] = undefined!;\n if (nodeDef.flags & NodeFlags.TypeContentQuery) {\n const elementDef = nodeDef.parent!.parent!;\n newValues = calcQueryValues(\n view, elementDef.nodeIndex, elementDef.nodeIndex + elementDef.childCount,\n nodeDef.query!,\n []);\n directiveInstance = asProviderData(view, nodeDef.parent!.nodeIndex).instance;\n } else if (nodeDef.flags & NodeFlags.TypeViewQuery) {\n newValues = calcQueryValues(view, 0, view.def.nodes.length - 1, nodeDef.query!, []);\n directiveInstance = view.component;\n }\n\n queryList.reset(newValues);\n const bindings = nodeDef.query!.bindings;\n let notify = false;\n for (let i = 0; i < bindings.length; i++) {\n const binding = bindings[i];\n let boundValue: any;\n switch (binding.bindingType) {\n case QueryBindingType.First:\n boundValue = queryList.first;\n break;\n case QueryBindingType.All:\n boundValue = queryList;\n notify = true;\n break;\n }\n directiveInstance[binding.propName] = boundValue;\n }\n if (notify) {\n queryList.notifyOnChanges();\n }\n}\n\n\nfunction calcQueryValues(\n view: ViewData, startIndex: number, endIndex: number, queryDef: QueryDef,\n values: any[]): any[] {\n for (let i = startIndex; i <= endIndex; i++) {\n const nodeDef = view.def.nodes[i];\n const valueType = nodeDef.matchedQueries[queryDef.id];\n if (valueType != null) {\n values.push(getQueryValue(view, nodeDef, valueType));\n }\n if (nodeDef.flags & NodeFlags.TypeElement && nodeDef.element!.template && (nodeDef.element!.template!.nodeMatchedQueries & queryDef.filterId) === queryDef.filterId) {\n const elementData = asElementData(view, i);\n // check embedded views that were attached at the place of their template,\n // but process child nodes first if some match the query (see issue #16568)\n if ((nodeDef.childMatchedQueries & queryDef.filterId) === queryDef.filterId) {\n calcQueryValues(view, i + 1, i + nodeDef.childCount, queryDef, values);\n i += nodeDef.childCount;\n }\n if (nodeDef.flags & NodeFlags.EmbeddedViews) {\n const embeddedViews = elementData.viewContainer!._embeddedViews;\n for (let k = 0; k < embeddedViews.length; k++) {\n const embeddedView = embeddedViews[k];\n const dvc = declaredViewContainer(embeddedView);\n if (dvc && dvc === elementData) {\n calcQueryValues(embeddedView, 0, embeddedView.def.nodes.length - 1, queryDef, values);\n }\n }\n }\n const projectedViews = elementData.template._projectedViews;\n if (projectedViews) {\n for (let k = 0; k < projectedViews.length;

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k++) {\n const projectedView = projectedViews[k];\n calcQueryValues(projectedView, 0,\nprojectedView.def.nodes.length - 1, queryDef, values);\n }\n }\n }\n if ((nodeDef.childMatchedQueries\n& queryDef.filterId) !== queryDef.filterId) {\n // if no child matches the query, skip the children.\n i +=\nnodeDef.childCount;\n }\n }\n return values;\n}\n\nexport function getQueryValue(\n view: ViewData,\nnodeDef: NodeDef, queryValueType: QueryValueType): any {\n if (queryValueType != null) {\n // a match\nswitch (queryValueType) {\n case QueryValueType.RenderElement:\n return asElementData(view,\nnodeDef.nodeIndex).renderElement;\n case QueryValueType.ElementRef:\n return new\nElementRef(asElementData(view, nodeDef.nodeIndex).renderElement);\n case QueryValueType.TemplateRef:\n return asElementData(view, nodeDef.nodeIndex).template;\n case QueryValueType.ViewContainerRef:\n return asElementData(view, nodeDef.nodeIndex).viewContainer;\n case QueryValueType.Provider:\n return\nasProviderData(view, nodeDef.nodeIndex).instance;\n }\n}\n}\n\n", "/*\n * @license\n * Copyright Google LLC\nAll Rights Reserved.\n * Use of this source code is governed by an MIT-style license that can be\n * found in\nthe LICENSE file at https://angular.io/license\n */\n\nimport {NodeDef, NodeFlags, ViewData} from\n './types';\nimport {getParentRenderElement, RenderNodeAction, visitProjectedRenderNodes} from './util';\n\nexport\nfunction ngContentDef(ngContentIndex: null|number, index: number): NodeDef {\n return {\n // will bet set by\nthe view definition\n nodeIndex: -1,\n parent: null,\n renderParent: null,\n bindingIndex: -1,\n outputIndex:\n-1,\n // regular values\n checkIndex: -1,\n flags: NodeFlags.TypeNgContent,\n childFlags: 0,\n directChildFlags: 0,\n childMatchedQueries: 0,\n matchedQueries: {},\n matchedQueryIds: 0,\n references:\n{\n},\n ngContentIndex,\n childCount: 0,\n bindings: [],\n bindingFlags: 0,\n outputs: [],\n element: null,\n provider: null,\n text: null,\n query: null,\n ngContent: {index}\n};\n}\n\nexport function\nappendNgContent(view: ViewData, renderHost: any, def: NodeDef) {\n const parentEl =\ngetParentRenderElement(view, renderHost, def);\n if (!parentEl) {\n // Nothing to do if there is no parent\n element.\n return;\n }\n const ngContentIndex = def.ngContent!.index;\n visitProjectedRenderNodes(\n view,\nngContentIndex, RenderNodeAction.AppendChild, parentEl, null, undefined);\n}\n\n", "/*\n * @license\n * Copyright Google LLC All Rights Reserved.\n * Use of this source code is governed by an MIT-style license\nthat can be\n * found in the LICENSE file at https://angular.io/license\n */\n\nimport {newArray} from\n './util/array_utils';\nimport {asPureExpressionData, BindingDef, BindingFlags, NodeDef, NodeFlags,\nPureExpressionData, ViewData} from './types';\nimport {calcBindingFlags, checkAndUpdateBinding} from\n './util';\n\nexport function purePipeDef(checkIndex: number, argCount: number): NodeDef {\n // argCount + 1 to\ninclude the pipe as first arg\n return _pureExpressionDef(NodeFlags.TypePurePipe, checkIndex,\nnewArray(argCount + 1));\n}\n\nexport function pureArrayDef(checkIndex: number, argCount: number): NodeDef\n{\n return _pureExpressionDef(NodeFlags.TypePureArray, checkIndex, newArray(argCount));\n}\n\nexport\nfunction pureObjectDef(checkIndex: number, propToIndex: {[p: string]: number}): NodeDef {\n const keys =\nObject.keys(propToIndex);\n const nbKeys = keys.length;\n const propertyNames = [];\n for (let i = 0; i < nbKeys;\ni++) {\n const key = keys[i];\n const index = propToIndex[key];\n propertyNames.push(key);\n }\n return\n_pureExpressionDef(NodeFlags.TypePureObject, checkIndex, propertyNames);\n}\n\nfunction\n_pureExpressionDef(\n flags: NodeFlags, checkIndex: number, propertyNames: string[]): NodeDef {\n const\nbindings: BindingDef[] = [];\n for (let i = 0; i < propertyNames.length; i++) {\n const prop = propertyNames[i];\n bindings.push({\n flags: BindingFlags.TypeProperty,\n name: prop,\n ns: null,\n nonMinifiedName:\nprop,\n securityContext: null,\n suffix: null\n });\n }\n return {\n // will bet set by the view definition\n nodeIndex: -1,\n parent: null,\n renderParent: null,\n bindingIndex: -1,\n outputIndex: -1,\n // regular\nvalues\n checkIndex,\n flags,\n childFlags: 0,\n directChildFlags: 0,\n childMatchedQueries: 0,\n matchedQueries: {},\n matchedQueryIds: 0,\n references: {},\n ngContentIndex: -1,\n childCount: 0,\n bindings,\n bindingFlags: calcBindingFlags(bindings),\n outputs: [],\n element: null,\n provider: null,\n text: null,\n query: null,\n ngContent: null\n};\n}\n\nexport function createPureExpression(view: ViewData,\ndef: NodeDef): PureExpressionData {\n return {value: undefined};\n}\n\nexport function\ncheckAndUpdatePureExpressionInline(\n view: ViewData, def: NodeDef, v0: any, v1: any, v2: any, v3: any, v4:\nany, v5: any, v6: any,\n v7: any, v8: any, v9: any): boolean {\n const bindings = def.bindings;\n let changed =

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element: null,\n provider: null,\n text: {prefix: staticText[0]},\n query: null,\n ngContent: null,\n
};\n}\n\nexport function createText(view: ViewData, renderHost: any, def: NodeDef): TextData {\n let renderNode:
any;\n const renderer = view.renderer;\n renderNode = renderer.createText(def.text!.prefix);\n const parentEl =
getParentRenderElement(view, renderHost, def);\n if (parentEl) {\n renderer.appendChild(parentEl,
renderNode);\n }\n return {renderText: renderNode};\n}\n\nexport function checkAndUpdateTextInline(\n view:
ViewData, def: NodeDef, v0: any, v1: any, v2: any, v3: any, v4: any, v5: any, v6: any,\n v7: any, v8: any, v9:
any): boolean {\n let changed = false;\n const bindings = def.bindings;\n const bindLen = bindings.length;\n if
(bindLen > 0 && checkAndUpdateBinding(view, def, 0, v0)) changed = true;\n if (bindLen > 1 &&
checkAndUpdateBinding(view, def, 1, v1)) changed = true;\n if (bindLen > 2 && checkAndUpdateBinding(view,
def, 2, v2)) changed = true;\n if (bindLen > 3 && checkAndUpdateBinding(view, def, 3, v3)) changed = true;\n if
(bindLen > 4 && checkAndUpdateBinding(view, def, 4, v4)) changed = true;\n if (bindLen > 5 &&
checkAndUpdateBinding(view, def, 5, v5)) changed = true;\n if (bindLen > 6 && checkAndUpdateBinding(view,
def, 6, v6)) changed = true;\n if (bindLen > 7 && checkAndUpdateBinding(view, def, 7, v7)) changed = true;\n if
(bindLen > 8 && checkAndUpdateBinding(view, def, 8, v8)) changed = true;\n if (bindLen > 9 &&
checkAndUpdateBinding(view, def, 9, v9)) changed = true;\n\n if (changed) {\n let value = def.text!.prefix;\n if
(bindLen > 0) value += _addInterpolationPart(v0, bindings[0]);\n if (bindLen > 1) value +=
_addInterpolationPart(v1, bindings[1]);\n if (bindLen > 2) value += _addInterpolationPart(v2, bindings[2]);\n if
(bindLen > 3) value += _addInterpolationPart(v3, bindings[3]);\n if (bindLen > 4) value +=
_addInterpolationPart(v4, bindings[4]);\n if (bindLen > 5) value += _addInterpolationPart(v5, bindings[5]);\n if
(bindLen > 6) value += _addInterpolationPart(v6, bindings[6]);\n if (bindLen > 7) value +=
_addInterpolationPart(v7, bindings[7]);\n if (bindLen > 8) value += _addInterpolationPart(v8, bindings[8]);\n if
(bindLen > 9) value += _addInterpolationPart(v9, bindings[9]);\n const renderNode = asTextData(view,
def.nodeIndex).renderText;\n view.renderer.setValue(renderNode, value);\n }\n return changed;\n}\n\nexport
function checkAndUpdateTextDynamic(view: ViewData, def: NodeDef, values: any[]): boolean {\n const bindings
= def.bindings;\n let changed = false;\n for (let i = 0; i < values.length; i++) {\n // Note: We need to loop over all
values, so that\n // the old values are updates as well!\n if (checkAndUpdateBinding(view, def, i, values[i])) {\n
changed = true;\n }\n }\n if (changed) {\n let value = ";\n for (let i = 0; i < values.length; i++) {\n value =
value + _addInterpolationPart(values[i], bindings[i]);\n }\n value = def.text!.prefix + value;\n const
renderNode = asTextData(view, def.nodeIndex).renderText;\n view.renderer.setValue(renderNode, value);\n }\n
return changed;\n}\n\nfunction _addInterpolationPart(value: any, binding: BindingDef): string {\n const valueStr =
value != null ? value.toString() : ";\n return valueStr + binding.suffix;\n}\n\n"/**\n * @license\n * Copyright
Google LLC All Rights Reserved.\n * Use of this source code is governed by an MIT-style license that can be\n
* found in the LICENSE file at https://angular.io/license\n */\n\nimport {Renderer2} from './render/api';\n\nimport
{checkAndUpdateElementDynamic, checkAndUpdateElementInline, createElement, listenToElementOutputs} from
 './element';\nimport {expressionChangedAfterItHasBeenCheckedError} from './errors';\nimport {appendNgContent}
from './ng_content';\nimport {callLifecycleHooksChildrenFirst, checkAndUpdateDirectiveDynamic,
checkAndUpdateDirectiveInline, createDirectiveInstance, createPipeInstance, createProviderInstance} from
 './provider';\nimport {checkAndUpdatePureExpressionDynamic, checkAndUpdatePureExpressionInline,
createPureExpression} from './pure_expression';\nimport {checkAndUpdateQuery, createQuery} from
 './query';\nimport {createTemplateData, createViewContainerData} from './refs';\nimport
{checkAndUpdateTextDynamic, checkAndUpdateTextInline, createText} from './text';\nimport {ArgumentType,
asElementData, asQueryList, asTextData, CheckType, ElementData, NodeData, NodeDef, NodeFlags,
ProviderData, RootData, Services, shiftInitState, ViewData, ViewDefinition, ViewFlags, ViewHandleEventFn,
ViewState, ViewUpdateFn} from './types';\nimport {checkBindingNoChanges, isComponentView,
markParentViewsForCheckProjectedViews, NOOP, resolveDefinition, tokenKey} from './util';\nimport
{detachProjectedView} from './view_attach';\n\nexport function viewDef(\n flags: ViewFlags, nodes: NodeDef[],
updateDirectives?: null|ViewUpdateFn,\n updateRenderer?: null|ViewUpdateFn): ViewDefinition {\n // clone
nodes and set auto calculated values\n let viewBindingCount = 0;\n let viewDisposableCount = 0;\n let

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viewNodeFlags = 0;\n let viewRootNodeFlags = 0;\n let viewMatchedQueries = 0;\n let currentParent:
NodeDef|null = null;\n let currentRenderParent: NodeDef|null = null;\n let currentElementHasPublicProviders =
false;\n let currentElementHasPrivateProviders = false;\n let lastRenderRootNode: NodeDef|null = null;\n for (let i
= 0; i < nodes.length; i++) {\n const node = nodes[i];\n node.nodeIndex = i;\n node.parent = currentParent;\n
node.bindingIndex = viewBindingCount;\n node.outputIndex = viewDisposableCount;\n node.renderParent =
currentRenderParent;\n\n viewNodeFlags |= node.flags;\n viewMatchedQueries |= node.matchedQueryIds;\n\n
if (node.element) {\n const elDef = node.element;\n elDef.publicProviders =\n currentParent ?
currentParent.element!.publicProviders : Object.create(null);\n elDef.allProviders = elDef.publicProviders;\n
// Note: We assume that all providers of an element are before any child element!\n
currentElementHasPublicProviders = false;\n currentElementHasPrivateProviders = false;\n\n if
(node.element.template) {\n viewMatchedQueries |= node.element.template.nodeMatchedQueries;\n }\n
}\n validateNode(currentParent, node, nodes.length);\n\n viewBindingCount += node.bindings.length;\n
viewDisposableCount += node.outputs.length;\n\n if (!currentRenderParent && (node.flags &
NodeFlags.CatRenderNode)) {\n lastRenderRootNode = node;\n }\n\n if (node.flags &
NodeFlags.CatProvider) {\n if (!currentElementHasPublicProviders) {\n currentElementHasPublicProviders
= true;\n // Use prototypical inheritance to not get O(n^2) complexity...\n
currentParent!.element!.publicProviders =\n Object.create(currentParent!.element!.publicProviders);\n
currentParent!.element!.allProviders = currentParent!.element!.publicProviders;\n }\n const isPrivateService =
(node.flags & NodeFlags.PrivateProvider) !== 0;\n const isComponent = (node.flags & NodeFlags.Component)
!== 0;\n if (!isPrivateService || isComponent) {\n
currentParent!.element!.publicProviders![tokenKey(node.provider!.token)] = node;\n } else {\n if
(!currentElementHasPrivateProviders) {\n currentElementHasPrivateProviders = true;\n // Use
prototypical inheritance to not get O(n^2) complexity...\n currentParent!.element!.allProviders =\n
Object.create(currentParent!.element!.publicProviders);\n }\n
currentParent!.element!.allProviders![tokenKey(node.provider!.token)] = node;\n }\n if (isComponent) {\n
currentParent!.element!.componentProvider = node;\n }\n }\n\n if (currentParent) {\n
currentParent.childFlags |= node.flags;\n currentParent.directChildFlags |= node.flags;\n
currentParent.childMatchedQueries |= node.matchedQueryIds;\n if (node.element && node.element.template)
{\n currentParent.childMatchedQueries |= node.element.template.nodeMatchedQueries;\n }\n } else {\n
viewRootNodeFlags |= node.flags;\n }\n\n if (node.childCount > 0) {\n currentParent = node;\n\n if
(!isNgContainer(node)) {\n currentRenderParent = node;\n }\n } else {\n // When the current node has
no children, check if it is the last children of its parent.\n // When it is, propagate the flags up.\n // The loop is
required because an element could be the last transitive children of several\n // elements. We loop to either the
root or the highest opened element (= with remaining\n // children)\n while (currentParent && i ===
currentParent.nodeIndex + currentParent.childCount) {\n const newParent: NodeDef|null =
currentParent.parent;\n if (newParent) {\n newParent.childFlags |= currentParent.childFlags;\n
newParent.childMatchedQueries |= currentParent.childMatchedQueries;\n }\n currentParent = newParent;\n
// We also need to update the render parent & account for ng-container\n if (currentParent &&
isNgContainer(currentParent)) {\n currentRenderParent = currentParent.renderParent;\n } else {\n
currentRenderParent = currentParent;\n }\n }\n\n const handleEvent: ViewHandleEventFn =
(view, nodeIndex, eventName, event) =>\n nodes[nodeIndex].element!.handleEvent!(view, eventName,
event);\n\n return {\n // Will be filled later...\n factory: null,\n nodeFlags: viewNodeFlags,\n rootNodeFlags:
viewRootNodeFlags,\n nodeMatchedQueries: viewMatchedQueries,\n flags,\n nodes: nodes,\n
updateDirectives: updateDirectives || NOOP,\n updateRenderer: updateRenderer || NOOP,\n handleEvent,\n
bindingCount: viewBindingCount,\n outputCount: viewDisposableCount,\n lastRenderRootNode\n
};\n}\n\nfunction isNgContainer(node: NodeDef): boolean {\n return (node.flags & NodeFlags.TypeElement) !== 0
&& node.element!.name === null;\n}\n\nfunction validateNode(parent: NodeDef|null, node: NodeDef, nodeCount:
number) {\n const template = node.element && node.element.template;\n if (template) {\n if

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(!template.lastRenderRootNode) {\n throw new Error(`Illegal State: Embedded templates without nodes are not
allowed!`);\n } \n if (template.lastRenderRootNode &&\n template.lastRenderRootNode.flags &
NodeFlags.EmbeddedViews) {\n throw new Error(\n `Illegal State: Last root node of a template can't have
embedded views, at index ${\n node.nodeType}`);\n } \n } \n if (node.flags & NodeFlags.CatProvider)
{\n const parentFlags = parent ? parent.flags : 0;\n if ((parentFlags & NodeFlags.TypeElement) === 0) {\n
throw new Error(\n `Illegal State: StaticProvider/Directive nodes need to be children of elements or anchors, at
index ${\n node.nodeType}`);\n } \n } \n if (node.query) {\n if (node.flags &
NodeFlags.TypeContentQuery &&\n (!parent || (parent.flags & NodeFlags.TypeDirective) === 0)) {\n throw
new Error(\n `Illegal State: Content Query nodes need to be children of directives, at index ${\n
node.nodeType}`);\n } \n } \n if (node.flags & NodeFlags.TypeViewQuery && parent) {\n throw new
Error(`Illegal State: View Query nodes have to be top level nodes, at index ${\n node.nodeType}`);\n } \n
} \n if (node.childCount) {\n const parentEnd = parent ? parent.nodeType + parent.childCount : nodeCount - 1;\n
if (node.nodeType <= parentEnd && node.nodeType + node.childCount > parentEnd) {\n throw new Error(\n
 `Illegal State: childCount of node leads outside of parent, at index ${node.nodeType}`);\n } \n } \n } \n
\nexport
function createEmbeddedView(\n parent: ViewData, anchorDef: NodeDef, viewDef: ViewDefinition, context?:
any): ViewData {\n // embedded views are seen as siblings to the anchor, so we need\n // to get the parent of the
anchor and use it as parentIndex.\n const view = createView(parent.root, parent.renderer, parent, anchorDef,
viewDef);\n initView(view, parent.component, context);\n createViewNodes(view);\n return view;\n} \n\nexport
function createRootView(root: RootData, def: ViewDefinition, context?: any): ViewData {\n const view =
createView(root, root.renderer, null, null, def);\n initView(view, context, context);\n createViewNodes(view);\n
return view;\n} \n\nexport function createComponentView(\n parentView: ViewData, nodeDef: NodeDef,
viewDef: ViewDefinition, hostElement: any): ViewData {\n const rendererType =
nodeDef.element!.componentRendererType;\n let compRenderer: Renderer2;\n if (!rendererType) {\n
compRenderer = parentView.root.renderer;\n } else {\n compRenderer =
parentView.root.rendererFactory.createRenderer(hostElement, rendererType);\n } \n return createView(\n
parentView.root, compRenderer, parentView, nodeDef.element!.componentProvider, viewDef);\n} \n\nfunction
createView(\n root: RootData, renderer: Renderer2, parent: ViewData|null, parentNodeDef: NodeDef|null,\n def:
ViewDefinition): ViewData {\n const nodes: NodeData[] = new Array(def.nodes.length);\n const disposables =
def.outputCount ? new Array(def.outputCount) : null;\n const view: ViewData = {\n def,\n parent,\n
viewContainerParent: null,\n parentNodeDef,\n context: null,\n component: null,\n nodes,\n state:
ViewState.CatInit,\n root,\n renderer,\n oldValues: new Array(def.bindingCount),\n disposables,\n
initIndex: -1\n };\n return view;\n} \n\nfunction initView(view: ViewData, component: any, context: any) {\n
view.component = component;\n view.context = context;\n} \n\nfunction createViewNodes(view: ViewData) {\n
let renderHost: any;\n if (isComponentView(view)) {\n const hostDef = view.parentNodeDef;\n renderHost =
asElementData(view.parent!, hostDef!.parent!.nodeIndex).renderElement;\n } \n const def = view.def;\n const
nodes = view.nodes;\n for (let i = 0; i < def.nodes.length; i++) {\n const nodeDef = def.nodes[i];\n
Services.setCurrentNode(view, i);\n let nodeData: any;\n switch (nodeDef.flags & NodeFlags.Types) {\n case
NodeFlags.TypeElement:\n const el = createElement(view, renderHost, nodeDef) as any;\n let
componentView: ViewData = undefined!;\n if (nodeDef.flags & NodeFlags.ComponentView) {\n const
compViewDef = resolveDefinition(nodeDef.element!.componentView!);\n componentView =
Services.createComponentView(view, nodeDef, compViewDef, el);\n } \n listenToElementOutputs(view,
componentView, nodeDef, el);\n nodeData = <ElementData>{\n renderElement: el,\n
componentView,\n viewContainer: null,\n template: nodeDef.element!.template ?
createTemplateData(view, nodeDef) : undefined\n };\n if (nodeDef.flags & NodeFlags.EmbeddedViews)
{\n nodeData.viewContainer = createViewContainerData(view, nodeDef, nodeData);\n } \n break;\n
case NodeFlags.TypeText:\n nodeData = createText(view, renderHost, nodeDef) as any;\n break;\n
case NodeFlags.TypeClassProvider:\n case NodeFlags.TypeFactoryProvider:\n case
NodeFlags.TypeUseExistingProvider:\n case NodeFlags.TypeValueProvider: {\n nodeData = nodes[i];\n

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projectedViews.length; i++) {\n const projectedView = projectedViews[i];\n projectedView.state |=\n ViewState.CheckProjectedView;\n markParentViewsForCheckProjectedViews(projectedView, view);\n }\n } else if ((nodeDef.childFlags & NodeFlags.ProjectedTemplate) === 0) {\n // a parent with leaf\n // no child is a component,\n // then skip the children\n i += nodeDef.childCount;\n }\n}\n\nfunction\ncheckAndUpdateNodeInline(\n view: ViewData, nodeDef: NodeDef, v0?: any, v1?: any, v2?: any, v3?: any, v4?:\n any, v5?: any,\n v6?: any, v7?: any, v8?: any, v9?: any): boolean {\n switch (nodeDef.flags & NodeFlags.Types)\n {\n case NodeFlags.TypeElement:\n return checkAndUpdateElementInline(view, nodeDef, v0, v1, v2, v3, v4,\n v5, v6, v7, v8, v9);\n case NodeFlags.TypeText:\n return checkAndUpdateTextInline(view, nodeDef, v0, v1,\n v2, v3, v4, v5, v6, v7, v8, v9);\n case NodeFlags.TypeDirective:\n return\n checkAndUpdateDirectiveInline(view, nodeDef, v0, v1, v2, v3, v4, v5, v6, v7, v8, v9);\n case\n NodeFlags.TypePureArray:\n case NodeFlags.TypePureObject:\n case NodeFlags.TypePurePipe:\n return\n checkAndUpdatePureExpressionInline(\n view, nodeDef, v0, v1, v2, v3, v4, v5, v6, v7, v8, v9);\n default:\n throw 'unreachable';\n }\n}\n\nfunction checkAndUpdateNodeDynamic(view: ViewData, nodeDef: NodeDef,\n values: any[]): boolean {\n switch (nodeDef.flags & NodeFlags.Types) {\n case NodeFlags.TypeElement:\n return checkAndUpdateElementDynamic(view, nodeDef, values);\n case NodeFlags.TypeText:\n return\n checkAndUpdateTextDynamic(view, nodeDef, values);\n case NodeFlags.TypeDirective:\n return\n checkAndUpdateDirectiveDynamic(view, nodeDef, values);\n case NodeFlags.TypePureArray:\n case\n NodeFlags.TypePureObject:\n case NodeFlags.TypePurePipe:\n return\n checkAndUpdatePureExpressionDynamic(view, nodeDef, values);\n default:\n throw 'unreachable';\n }\n}\n\nexport function checkNoChangesNode(\n view: ViewData, nodeDef: NodeDef, argStyle: ArgumentType,\n v0?: any, v1?: any, v2?: any,\n v3?: any, v4?: any, v5?: any, v6?: any, v7?: any, v8?: any, v9?: any): any {\n if\n (argStyle === ArgumentType.Inline) {\n checkNoChangesNodeInline(view, nodeDef, v0, v1, v2, v3, v4, v5, v6,\n v7, v8, v9);\n } else {\n checkNoChangesNodeDynamic(view, nodeDef, v0);\n }\n // Returning false is ok here\n as we would have thrown in case of a change.\n return false;\n}\n\nfunction checkNoChangesNodeInline(\n view:\n ViewData, nodeDef: NodeDef, v0: any, v1: any, v2: any, v3: any, v4: any, v5: any, v6: any,\n v7: any, v8: any, v9:\n any): void {\n const bindLen = nodeDef.bindings.length;\n if (bindLen > 0) checkBindingNoChanges(view,\n nodeDef, 0, v0);\n if (bindLen > 1) checkBindingNoChanges(view, nodeDef, 1, v1);\n if (bindLen > 2)\n checkBindingNoChanges(view, nodeDef, 2, v2);\n if (bindLen > 3) checkBindingNoChanges(view, nodeDef, 3,\n v3);\n if (bindLen > 4) checkBindingNoChanges(view, nodeDef, 4, v4);\n if (bindLen > 5)\n checkBindingNoChanges(view, nodeDef, 5, v5);\n if (bindLen > 6) checkBindingNoChanges(view, nodeDef, 6,\n v6);\n if (bindLen > 7) checkBindingNoChanges(view, nodeDef, 7, v7);\n if (bindLen > 8)\n checkBindingNoChanges(view, nodeDef, 8, v8);\n if (bindLen > 9) checkBindingNoChanges(view, nodeDef, 9,\n v9);\n}\n\nfunction checkNoChangesNodeDynamic(view: ViewData, nodeDef: NodeDef, values: any[]): void {\n for (let i = 0; i < values.length; i++) {\n checkBindingNoChanges(view, nodeDef, i, values[i]);\n }\n}\n\n/**\n * Workaround https://github.com/angular/tsickle/issues/497\n * @suppress {misplacedTypeAnnotation}\n */\nfunction checkNoChangesQuery(view: ViewData, nodeDef: NodeDef) {\n const queryList = asQueryList(view,\n nodeDef.nodeIndex);\n if (queryList.dirty) {\n throw expressionChangedAfterItHasBeenCheckedError(\n Services.createDebugContext(view, nodeDef.nodeIndex),\n `Query ${nodeDef.query!.id} not dirty`, `Query\n ${nodeDef.query!.id} dirty`,\n (view.state & ViewState.BeforeFirstCheck) !== 0);\n }\n}\n\nexport function\ndestroyView(view: ViewData) {\n if (view.state & ViewState.Destroyed) {\n return;\n }\n execEmbeddedViewsAction(view, ViewAction.Destroy);\n execComponentViewsAction(view,\n ViewAction.Destroy);\n callLifecycleHooksChildrenFirst(view, NodeFlags.OnDestroy);\n if (view.disposables)\n {\n for (let i = 0; i < view.disposables.length; i++) {\n view.disposables[i]();\n }\n }\n detachProjectedView(view);\n if (view.renderer.destroyNode) {\n destroyViewNodes(view);\n }\n if\n (isComponentView(view)) {\n view.renderer.destroy();\n }\n view.state |= ViewState.Destroyed;\n}\n\nfunction\ndestroyViewNodes(view: ViewData) {\n const len = view.def.nodes.length;\n for (let i = 0; i < len; i++) {\n const\n def = view.def.nodes[i];\n if (def.flags & NodeFlags.TypeElement) {\n view.renderer.destroyNode!(asElementData(view, i).renderElement);\n } else if (def.flags &

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NodeFlags.TypeText) {\n view.renderer.destroyNode!(asTextData(view, i).renderText);\n } else if (def.flags &
NodeFlags.TypeContentQuery || def.flags & NodeFlags.TypeViewQuery) {\n asQueryList(view, i).destroy();\n
}\n }\n}\n\nenum ViewAction {\n CreateViewNodes,\n CheckNoChanges,\n CheckNoChangesProjectedViews,\n CheckAndUpdate,\n CheckAndUpdateProjectedViews,\n Destroy\n}\n\nfunction
execComponentViewsAction(view: ViewData, action: ViewAction) {\n const def = view.def;\n if (!(def.nodeFlags
& NodeFlags.ComponentView)) {\n return;\n }\n for (let i = 0; i < def.nodes.length; i++) {\n const nodeDef =
def.nodes[i];\n if (nodeDef.flags & NodeFlags.ComponentView) {\n // a leaf\n
callViewAction(asElementData(view, i).componentView, action);\n } else if ((nodeDef.childFlags &
NodeFlags.ComponentView) === 0) {\n // a parent with leafs\n // no child is a component,\n // then skip
the children\n i += nodeDef.childCount;\n }\n }\n}\n\nfunction execEmbeddedViewsAction(view: ViewData,
action: ViewAction) {\n const def = view.def;\n if (!(def.nodeFlags & NodeFlags.EmbeddedViews)) {\n return;\n
}\n for (let i = 0; i < def.nodes.length; i++) {\n const nodeDef = def.nodes[i];\n if (nodeDef.flags &
NodeFlags.EmbeddedViews) {\n // a leaf\n const embeddedViews = asElementData(view,
i).viewContainer!._embeddedViews;\n for (let k = 0; k < embeddedViews.length; k++) {\n
callViewAction(embeddedViews[k], action);\n }\n } else if ((nodeDef.childFlags &
NodeFlags.EmbeddedViews) === 0) {\n // a parent with leafs\n // no child is a component,\n // then skip
the children\n i += nodeDef.childCount;\n }\n }\n}\n\nfunction callViewAction(view: ViewData, action:
ViewAction) {\n const viewState = view.state;\n switch (action) {\n case ViewAction.CheckNoChanges:\n if
((viewState & ViewState.Destroyed) === 0) {\n if ((viewState & ViewState.CatDetectChanges) ===
ViewState.CatDetectChanges) {\n checkNoChangesView(view);\n } else if (viewState &
ViewState.CheckProjectedViews) {\n execProjectedViewsAction(view,
ViewAction.CheckNoChangesProjectedViews);\n }\n } break;\n case
ViewAction.CheckNoChangesProjectedViews:\n if ((viewState & ViewState.Destroyed) === 0) {\n if
(viewState & ViewState.CheckProjectedView) {\n checkNoChangesView(view);\n } else if (viewState &
ViewState.CheckProjectedViews) {\n execProjectedViewsAction(view, action);\n }\n } break;\n
case ViewAction.CheckAndUpdate:\n if ((viewState & ViewState.Destroyed) === 0) {\n if ((viewState &
ViewState.CatDetectChanges) === ViewState.CatDetectChanges) {\n checkAndUpdateView(view);\n }
else if (viewState & ViewState.CheckProjectedViews) {\n execProjectedViewsAction(view,
ViewAction.CheckAndUpdateProjectedViews);\n }\n } break;\n case
ViewAction.CheckAndUpdateProjectedViews:\n if ((viewState & ViewState.Destroyed) === 0) {\n if
(viewState & ViewState.CheckProjectedView) {\n checkAndUpdateView(view);\n } else if (viewState &
ViewState.CheckProjectedViews) {\n execProjectedViewsAction(view, action);\n }\n } break;\n
case ViewAction.Destroy:\n // Note: destroyView recurses over all views,\n // so we don't need to special case
projected views here.\n destroyView(view);\n break;\n case ViewAction.CreateViewNodes:\n createViewNodes(view);\n break;\n }\n}\n\nfunction execProjectedViewsAction(view: ViewData, action:
ViewAction) {\n execEmbeddedViewsAction(view, action);\n execComponentViewsAction(view,
action);\n}\n\nfunction execQueriesAction(\n view: ViewData, queryFlags: NodeFlags, staticDynamicQueryFlag:
NodeFlags,\n checkType: CheckType) {\n if (!(view.def.nodeFlags & queryFlags) || !(view.def.nodeFlags &
staticDynamicQueryFlag)) {\n return;\n }\n const nodeCount = view.def.nodes.length;\n for (let i = 0; i <
nodeCount; i++) {\n const nodeDef = view.def.nodes[i];\n if ((nodeDef.flags & queryFlags) && (nodeDef.flags
& staticDynamicQueryFlag)) {\n Services.setCurrentNode(view, nodeDef.nodeIndex);\n switch (checkType)
{\n case CheckType.CheckAndUpdate:\n checkAndUpdateQuery(view, nodeDef);\n break;\n
case CheckType.CheckNoChanges:\n checkNoChangesQuery(view, nodeDef);\n break;\n }\n }\n }\n if (!(nodeDef.childFlags & queryFlags) || !(nodeDef.childFlags & staticDynamicQueryFlag)) {\n // no child has a
matching query\n // then skip the children\n i += nodeDef.childCount;\n }\n}\n\n"/**\n * @license\n *
Copyright Google LLC All Rights Reserved.\n * Use of this source code is governed by an MIT-style license
that can be\n * found in the LICENSE file at https://angular.io/license\n */\n\nimport { DebugElement __PRE_R3__,
DebugEventListener, DebugNode __PRE_R3__, getDebugNode, indexDebugNode, removeDebugNodeFromIndex }

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from './debug/debug_node';\nimport {Injector} from './di';\nimport {getInjectableDef, InjectableType,
InjectableDef} from './di/interface/defs';\nimport {ErrorHandler} from './error_handler';\nimport {Type} from
 './interface/type';\nimport {ComponentFactory} from './linker/component_factory';\nimport {NgModuleRef} from
 './linker/ng_module_factory';\nimport {Renderer2, RendererFactory2} from './render/api';\nimport
 {RendererStyleFlags2, RendererType2} from './render/api_flags';\nimport {Sanitizer} from
 './sanitization/sanitizer';\nimport {isDevMode} from './util/is_dev_mode';\nimport {normalizeDebugBindingName,
normalizeDebugBindingValue} from './util/ng_reflect';\n\nimport {isViewDebugError, viewDestroyedError,
viewWrappedDebugError} from './errors';\nimport {resolveDep} from './provider';\nimport {dirtyParentQueries,
getQueryValue} from './query';\nimport {createInjector, createNgModuleRef,
getComponentViewDefinitionFactory} from './refs';\nimport {ArgumentType, asElementData,
asPureExpressionData, BindingFlags, CheckType, DebugContext, ElementData, NgModuleDefinition, NodeDef,
NodeFlags, NodeLogger, ProviderOverride, RootData, Services, ViewData, ViewDefinition, ViewState} from
 './types';\nimport {isComponentView, NOOP, renderNode, resolveDefinition, splitDepsDsl, tokenKey,
viewParentEl} from './util';\nimport {checkAndUpdateNode, checkAndUpdateView, checkNoChangesNode,
checkNoChangesView, createComponentView, createEmbeddedView, createRootView, destroyView} from
 './view';\n\n\nlet initialized = false;\n\nexport function initServicesIfNeeded() {\n if (initialized) {\n return;\n }\n
initialized = true;\n const services = isDevMode() ? createDebugServices() : createProdServices();\n
Services.setCurrentNode = services.setCurrentNode;\n Services.createRootView = services.createRootView;\n
Services.createEmbeddedView = services.createEmbeddedView;\n Services.createComponentView =
services.createComponentView;\n Services.createNgModuleRef = services.createNgModuleRef;\n
Services.overrideProvider = services.overrideProvider;\n Services.overrideComponentView =
services.overrideComponentView;\n Services.clearOverrides = services.clearOverrides;\n
Services.checkAndUpdateView = services.checkAndUpdateView;\n Services.checkNoChangesView =
services.checkNoChangesView;\n Services.destroyView = services.destroyView;\n Services.resolveDep =
resolveDep;\n Services.createDebugContext = services.createDebugContext;\n Services.handleEvent =
services.handleEvent;\n Services.updateDirectives = services.updateDirectives;\n Services.updateRenderer =
services.updateRenderer;\n Services.dirtyParentQueries = dirtyParentQueries;\n\n\nfunction createProdServices()
{\n return {\n setCurrentNode: () => {},\n createRootView: createProdRootView,\n createEmbeddedView:
createEmbeddedView,\n createComponentView: createComponentView,\n createNgModuleRef:
createNgModuleRef,\n overrideProvider: NOOP,\n overrideComponentView: NOOP,\n clearOverrides:
NOOP,\n checkAndUpdateView: checkAndUpdateView,\n checkNoChangesView: checkNoChangesView,\n
destroyView: destroyView,\n createDebugContext: (view: ViewData, nodeIndex: number) => new
DebugContext_(view, nodeIndex),\n handleEvent: (view: ViewData, nodeIndex: number, eventName: string,
event: any) =>\n view.def.handleEvent(view, nodeIndex, eventName, event),\n updateDirectives: (view:
ViewData, checkType: CheckType) => view.def.updateDirectives(\n checkType ===
CheckType.CheckAndUpdate ? prodCheckAndUpdateNode : prodCheckNoChangesNode,\n view),\n
updateRenderer: (view: ViewData, checkType: CheckType) => view.def.updateRenderer(\n checkType ===
CheckType.CheckAndUpdate ? prodCheckAndUpdateNode : prodCheckNoChangesNode,\n view),\n
};\n\n\nfunction createDebugServices() {\n return {\n setCurrentNode: debugSetCurrentNode,\n
createRootView: debugCreateRootView,\n createEmbeddedView: debugCreateEmbeddedView,\n
createComponentView: debugCreateComponentView,\n createNgModuleRef: debugCreateNgModuleRef,\n
overrideProvider: debugOverrideProvider,\n overrideComponentView: debugOverrideComponentView,\n
clearOverrides: debugClearOverrides,\n checkAndUpdateView: debugCheckAndUpdateView,\n
checkNoChangesView: debugCheckNoChangesView,\n destroyView: debugDestroyView,\n
createDebugContext: (view: ViewData, nodeIndex: number) => new DebugContext_(view, nodeIndex),\n
handleEvent: debugHandleEvent,\n updateDirectives: debugUpdateDirectives,\n updateRenderer:
debugUpdateRenderer,\n };}\n\n\nfunction createProdRootView(\n eInjector: Injector, projectableNodes: any[[[]],
rootSelectorOrNode: string|any,\n def: ViewDefinition, ngModule: NgModuleRef<any>, context?: any):

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ViewData {\n const rendererFactory: RendererFactory2 = ngModule.injector.get(RendererFactory2);\n return\n createRootView(\n createRootData(eInjector, ngModule, rendererFactory, projectableNodes,\n rootSelectorOrNode),\n def, context);\n}\n\nfunction debugCreateRootView(\n eInjector: Injector,\n projectableNodes: any[][], rootSelectorOrNode: string|any,\n def: ViewDefinition, ngModule:\n NgModuleRef<any>, context?: any): ViewData {\n const rendererFactory: RendererFactory2 =\n ngModule.injector.get(RendererFactory2);\n const root = createRootData(\n eInjector, ngModule, new\n DebugRendererFactory2(rendererFactory), projectableNodes,\n rootSelectorOrNode);\n const defWithOverride\n = applyProviderOverridesToView(def);\n return callWithDebugContext(\n DebugAction.create,\n createRootView, null, [root, defWithOverride, context]);\n}\n\nfunction createRootData(\n eInjector: Injector,\n ngModule: NgModuleRef<any>, rendererFactory: RendererFactory2,\n projectableNodes: any[][],\n rootSelectorOrNode: any): RootData {\n const sanitizer = ngModule.injector.get(Sanitizer);\n const errorHandler =\n ngModule.injector.get(ErrorHandler);\n const renderer = rendererFactory.createRenderer(null, null);\n return {\n ngModule,\n injector: eInjector,\n projectableNodes,\n selectorOrNode: rootSelectorOrNode,\n sanitizer,\n rendererFactory,\n renderer,\n errorHandler\n };}\n\nfunction debugCreateEmbeddedView(\n parentView:\n ViewData, anchorDef: NodeDef, viewDef: ViewDefinition, context?: any): ViewData {\n const defWithOverride =\n applyProviderOverridesToView(viewDef);\n return callWithDebugContext(\n DebugAction.create,\n createEmbeddedView, null,\n [parentView, anchorDef, defWithOverride, context]);\n}\n\nfunction\n debugCreateComponentView(\n parentView: ViewData, nodeDef: NodeDef, viewDef: ViewDefinition,\n hostElement: any): ViewData {\n const overrideComponentView =\n viewDefOverrides.get(nodeDef.element!.componentProvider!.provider!.token);\n if (overrideComponentView) {\n viewDef = overrideComponentView;\n } else {\n viewDef = applyProviderOverridesToView(viewDef);\n }\n return callWithDebugContext(\n DebugAction.create, createComponentView, null, [parentView, nodeDef,\n viewDef, hostElement]);\n}\n\nfunction debugCreateNgModuleRef(\n moduleType: Type<any>, parentInjector:\n Injector, bootstrapComponents: Type<any>[],\n def: NgModuleDefinition): NgModuleRef<any> {\n const\n defWithOverride = applyProviderOverridesToNgModule(def);\n return createNgModuleRef(moduleType,\n parentInjector, bootstrapComponents, defWithOverride);\n}\n\nconst providerOverrides = new Map<any,\n ProviderOverride>();\nconst providerOverridesWithScope = new Map<InjectableType<any>,\n ProviderOverride>();\nconst viewDefOverrides = new Map<any, ViewDefinition>();\n\nfunction\n debugOverrideProvider(override: ProviderOverride) {\n providerOverrides.set(override.token, override);\n let\n injectableDef: InjectableDef<any>|null;\n if (typeof override.token === 'function' && (injectableDef =\n getInjectableDef(override.token)) && typeof injectableDef.providedIn === 'function') {\n providerOverridesWithScope.set(override.token as InjectableType<any>, override);\n }\n}\n\nfunction\n debugOverrideComponentView(comp: any, compFactory: ComponentFactory<any>) {\n const hostViewDef =\n resolveDefinition(getComponentViewDefinitionFactory(compFactory));\n const compViewDef =\n resolveDefinition(hostViewDef.nodes[0].element!.componentView!);\n viewDefOverrides.set(comp,\n compViewDef);\n}\n\nfunction debugClearOverrides() {\n providerOverrides.clear();\n providerOverridesWithScope.clear();\n viewDefOverrides.clear();\n}\n\n// Notes about the algorithm:\n// 1) Locate\n the providers of an element and check if one of them was overwritten\n// 2) Change the providers of that\n element\n//\n// We only create new datastructures if we need to, to keep perf impact\n// reasonable.\nfunction\n applyProviderOverridesToView(def: ViewDefinition): ViewDefinition {\n if (providerOverrides.size === 0) {\n return def;\n }\n const elementIndicesWithOverwrittenProviders =\n findElementIndicesWithOverwrittenProviders(def);\n if (elementIndicesWithOverwrittenProviders.length === 0)\n {\n return def;\n }\n // clone the whole view definition,\n // as it maintains references between the nodes that are\n hard to update.\n def = def.factory!(() => NOOP);\n for (let i = 0; i <\n elementIndicesWithOverwrittenProviders.length; i++) {\n applyProviderOverridesToElement(def,\n elementIndicesWithOverwrittenProviders[i]);\n }\n return def;\n}\n\nfunction\n findElementIndicesWithOverwrittenProviders(def: ViewDefinition): number[] {\n const\n elIndicesWithOverwrittenProviders: number[] = [];\n let lastElementDef: NodeDef|null = null;\n for (let i = 0; i

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< def.nodes.length; i++) {\n const nodeDef = def.nodes[i];\n if (nodeDef.flags & NodeFlags.TypeElement)\n {\n lastElementDef = nodeDef;\n }\n if (lastElementDef && nodeDef.flags &\n NodeFlags.CatProviderNoDirective &&\n providerOverrides.has(nodeDef.provider!.token)) {\n elIndicesWithOverwrittenProviders.push(lastElementDef!.nodeIndex);\n lastElementDef = null;\n }\n }\n return elIndicesWithOverwrittenProviders;\n }\n\n function applyProviderOverridesToElement(viewDef:\n ViewDefinition, elIndex: number) {\n for (let i = elIndex + 1; i < viewDef.nodes.length; i++) {\n const\n nodeDef = viewDef.nodes[i];\n if (nodeDef.flags & NodeFlags.TypeElement) {\n // stop at the next\n element\n return;\n }\n if (nodeDef.flags & NodeFlags.CatProviderNoDirective) {\n const provider =\n nodeDef.provider!;\n const override = providerOverrides.get(provider.token);\n if (override) {\n nodeDef.flags = (nodeDef.flags & ~NodeFlags.CatProviderNoDirective) | override.flags;\n provider.deps =\n splitDepsDsl(override.deps);\n provider.value = override.value;\n }\n }\n }\n }\n\n // Notes about\n the algorithm:\n // We only create new datastructures if we need to, to keep perf impact\n // reasonable.\n\n function\n applyProviderOverridesToNgModule(def: NgModuleDefinition): NgModuleDefinition {\n const {hasOverrides,\n hasDeprecatedOverrides} = calcHasOverrides(def);\n if (!hasOverrides) {\n return def;\n }\n // clone the whole\n view definition,\n // as it maintains references between the nodes that are hard to update.\n def = def.factory!(() =>\n NOOP);\n applyProviderOverrides(def);\n return def;\n\n function calcHasOverrides(def: NgModuleDefinition):\n {\n hasOverrides: boolean, hasDeprecatedOverrides: boolean} {\n let hasOverrides = false;\n let\n hasDeprecatedOverrides = false;\n if (providerOverrides.size === 0) {\n return {hasOverrides,\n hasDeprecatedOverrides};\n }\n def.providers.forEach(node => {\n const override =\n providerOverrides.get(node.token);\n if ((node.flags & NodeFlags.CatProviderNoDirective) && override) {\n hasOverrides = true;\n hasDeprecatedOverrides = hasDeprecatedOverrides || override.deprecatedBehavior;\n }\n });\n def.modules.forEach(module => {\n providerOverridesWithScope.forEach((override, token) => {\n if (getInjectableDef(token)!.providedIn === module) {\n hasOverrides = true;\n hasDeprecatedOverrides = hasDeprecatedOverrides || override.deprecatedBehavior;\n }\n });\n });\n return {hasOverrides, hasDeprecatedOverrides};\n }\n\n function applyProviderOverrides(def:\n NgModuleDefinition) {\n for (let i = 0; i < def.providers.length; i++) {\n const provider = def.providers[i];\n if (hasDeprecatedOverrides) {\n // We had a bug where we made\n // all providers lazy. Keep this logic\n behind a flag\n // for migrating existing users.\n provider.flags |= NodeFlags.LazyProvider;\n }\n const override = providerOverrides.get(provider.token);\n if (override) {\n provider.flags = (provider.flags &\n ~NodeFlags.CatProviderNoDirective) | override.flags;\n provider.deps = splitDepsDsl(override.deps);\n provider.value = override.value;\n }\n }\n if (providerOverridesWithScope.size > 0) {\n let moduleSet =\n new Set<any>(def.modules);\n providerOverridesWithScope.forEach((override, token) => {\n if\n (moduleSet.has(getInjectableDef(token)!.providedIn)) {\n let provider = {\n token: token,\n flags:\n override.flags | (hasDeprecatedOverrides ? NodeFlags.LazyProvider : NodeFlags.None),\n deps: splitDepsDsl(override.deps),\n value: override.value,\n index: def.providers.length,\n });\n def.providers.push(provider);\n def.providersByKey[tokenKey(token)] = provider;\n }\n });\n }\n }\n\n function prodCheckAndUpdateNode(\n view: ViewData, checkIndex: number, argStyle: ArgumentType,\n v0?: any, v1?: any, v2?: any,\n v3?: any, v4?: any, v5?: any, v6?: any, v7?: any, v8?: any, v9?: any): any {\n const\n nodeDef = view.def.nodes[checkIndex];\n checkAndUpdateNode(view, nodeDef, argStyle, v0, v1, v2, v3, v4, v5,\n v6, v7, v8, v9);\n return (nodeDef.flags & NodeFlags.CatPureExpression) ?\n asPureExpressionData(view,\n checkIndex).value :\n undefined;\n }\n\n function prodCheckNoChangesNode(\n view: ViewData, checkIndex:\n number, argStyle: ArgumentType, v0?: any, v1?: any, v2?: any,\n v3?: any, v4?: any, v5?: any, v6?: any, v7?: any,\n v8?: any, v9?: any): any {\n const nodeDef = view.def.nodes[checkIndex];\n checkNoChangesNode(view,\n nodeDef, argStyle, v0, v1, v2, v3, v4, v5, v6, v7, v8, v9);\n return (nodeDef.flags & NodeFlags.CatPureExpression)\n ?\n asPureExpressionData(view, checkIndex).value :\n undefined;\n }\n\n function\n debugCheckAndUpdateView(view: ViewData) {\n return callWithDebugContext(DebugAction.detectChanges,\n checkAndUpdateView, null, [view]);\n }\n\n function debugCheckNoChangesView(view: ViewData) {\n return\n callWithDebugContext(DebugAction.checkNoChanges, checkNoChangesView, null, [view]);\n }\n\n function

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debugDestroyView(view: ViewData) {\n return callWithDebugContext(DebugAction.destroy, destroyView, null,
[view]);\n}\n\nenum DebugAction {\n create,\n detectChanges,\n checkNoChanges,\n destroy,\n
handleEvent\}\n\nlet _currentAction: DebugAction;\nlet _currentView: ViewData;\nlet _currentNodeIndex:
number|null;\n\nfunction debugSetCurrentNode(view: ViewData, nodeIndex: number|null) {\n _currentView =
view;\n _currentNodeIndex = nodeIndex;\n}\n\nfunction debugHandleEvent(view: ViewData, nodeIndex: number,
eventName: string, event: any) {\n debugSetCurrentNode(view, nodeIndex);\n return callWithDebugContext(\n
DebugAction.handleEvent, view.def.handleEvent, null, [view, nodeIndex, eventName, event]);\n}\n\nfunction
debugUpdateDirectives(view: ViewData, checkType: CheckType) {\n if (view.state & ViewState.Destroyed) {\n
throw viewDestroyedError(DebugAction[_currentAction]);\n }\n debugSetCurrentNode(view,
nextDirectiveWithBinding(view, 0));\n return view.def.updateDirectives(debugCheckDirectivesFn, view);\n}\n\n
function debugCheckDirectivesFn(\n view: ViewData, nodeIndex: number, argStyle: ArgumentType, ...values:
any[]) {\n const nodeDef = view.def.nodes[nodeIndex];\n if (checkType === CheckType.CheckAndUpdate) {\n
debugCheckAndUpdateNode(view, nodeDef, argStyle, values);\n } else {\n
debugCheckNoChangesNode(view, nodeDef, argStyle, values);\n }\n if (nodeDef.flags &
NodeFlags.TypeDirective) {\n debugSetCurrentNode(view, nextDirectiveWithBinding(view, nodeIndex));\n
}\n return (nodeDef.flags & NodeFlags.CatPureExpression) ?\n asPureExpressionData(view,
nodeDef.nodeIndex).value :\n undefined;\n }\n}\n\nfunction debugUpdateRenderer(view: ViewData,
checkType: CheckType) {\n if (view.state & ViewState.Destroyed) {\n throw
viewDestroyedError(DebugAction[_currentAction]);\n }\n debugSetCurrentNode(view,
nextRenderNodeWithBinding(view, 0));\n return view.def.updateRenderer(debugCheckRenderNodeFn, view);\n}\n\n
function debugCheckRenderNodeFn(\n view: ViewData, nodeIndex: number, argStyle: ArgumentType, ...values:
any[]) {\n const nodeDef = view.def.nodes[nodeIndex];\n if (checkType === CheckType.CheckAndUpdate) {\n
debugCheckAndUpdateNode(view, nodeDef, argStyle, values);\n } else {\n
debugCheckNoChangesNode(view, nodeDef, argStyle, values);\n }\n if (nodeDef.flags &
NodeFlags.CatRenderNode) {\n debugSetCurrentNode(view, nextRenderNodeWithBinding(view,
nodeIndex));\n }\n return (nodeDef.flags & NodeFlags.CatPureExpression) ?\n asPureExpressionData(view,
nodeDef.nodeIndex).value :\n undefined;\n }\n}\n\nfunction debugCheckAndUpdateNode(\n view:
ViewData, nodeDef: NodeDef, argStyle: ArgumentType, givenValues: any[]): void {\n const changed =
(<any>checkAndUpdateNode)(view, nodeDef, argStyle, ...givenValues);\n if (changed) {\n const values =
argStyle === ArgumentType.Dynamic ? givenValues[0] : givenValues;\n if (nodeDef.flags &
NodeFlags.TypeDirective) {\n const bindingValues: {[key: string]: string} = {};\n for (let i = 0; i <
nodeDef.bindings.length; i++) {\n const binding = nodeDef.bindings[i];\n const value = values[i];\n if
(binding.flags & BindingFlags.TypeProperty) {\n
bindingValues[normalizeDebugBindingName(binding.nonMinifiedName!)] =\n
normalizeDebugBindingValue(value);\n }\n }\n const elDef = nodeDef.parent!;\n const el =
asElementData(view, elDef.nodeIndex).renderElement;\n if (!elDef.element!.name) {\n // a comment.\n
view.renderer.setValue(el, `bindings=${JSON.stringify(bindingValues, null, 2)}`);\n } else {\n // a regular
element.\n for (let attr in bindingValues) {\n const value = bindingValues[attr];\n if (value != null)
{\n view.renderer.setAttribute(el, attr, value);\n } else {\n view.renderer.removeAttribute(el,
attr);\n }\n }\n }\n }\n }\n}\n\nfunction debugCheckNoChangesNode(\n view: ViewData,
nodeDef: NodeDef, argStyle: ArgumentType, values: any[]): void {\n (<any>checkNoChangesNode)(view,
nodeDef, argStyle, ...values);\n}\n\nfunction nextDirectiveWithBinding(view: ViewData, nodeIndex: number):
number|null {\n for (let i = nodeIndex; i < view.def.nodes.length; i++) {\n const nodeDef = view.def.nodes[i];\n
if (nodeDef.flags & NodeFlags.TypeDirective && nodeDef.bindings && nodeDef.bindings.length) {\n return
i;\n }\n }\n return null;\n}\n\nfunction nextRenderNodeWithBinding(view: ViewData, nodeIndex: number):
number|null {\n for (let i = nodeIndex; i < view.def.nodes.length; i++) {\n const nodeDef = view.def.nodes[i];\n
if ((nodeDef.flags & NodeFlags.CatRenderNode) && nodeDef.bindings && nodeDef.bindings.length) {\n return
i;\n }\n }\n return null;\n}\n}\n\nclass DebugContext_ implements DebugContext {\n private nodeDef: NodeDef;\n

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private elView: ViewData;\n private elDef: NodeDef;\n\n constructor(public view: ViewData, public nodeIndex:
number|null) {\n if (nodeIndex == null) {\n this.nodeIndex = nodeIndex = 0;\n }\n this.nodeDef =
view.def.nodes[nodeIndex];\n let elDef = this.nodeDef;\n let elView = view;\n while (elDef && (elDef.flags &
NodeFlags.TypeElement) === 0) {\n elDef = elDef.parent!;\n }\n if (!elDef) {\n while (!elDef &&
elView) {\n elDef = viewParentEl(elView!);\n elView = elView.parent!;\n }\n }\n this.elDef =
elDef;\n this.elView = elView;\n }\n\n private get elOrCompView() {\n // Has to be done lazily as we use the
DebugContext also during creation of elements...\n return asElementData(this.elView,
this.elDef.nodeIndex).componentView || this.view;\n }\n\n get injector(): Injector {\n return
createInjector(this.elView, this.elDef);\n }\n\n get component(): any {\n return this.elOrCompView.component;\n
}\n\n get context(): any {\n return this.elOrCompView.context;\n }\n\n get providerTokens(): any[] {\n const
tokens: any[] = [];\n if (this.elDef) {\n for (let i = this.elDef.nodeIndex + 1; i <= this.elDef.nodeIndex +
this.elDef.childCount;\n i++) {\n const childDef = this.elView.def.nodes[i];\n if (childDef.flags &
NodeFlags.CatProvider) {\n tokens.push(childDef.provider!.token);\n }\n i += childDef.childCount;\n
}\n }\n return tokens;\n }\n\n get references(): {[key: string]: any} {\n const references: {[key: string]:
any} = {};\n if (this.elDef) {\n collectReferences(this.elView, this.elDef, references);\n\n for (let i =
this.elDef.nodeIndex + 1; i <= this.elDef.nodeIndex + this.elDef.childCount;\n i++) {\n const childDef =
this.elView.def.nodes[i];\n if (childDef.flags & NodeFlags.CatProvider) {\n
collectReferences(this.elView, childDef, references);\n }\n i += childDef.childCount;\n }\n }\n
return references;\n }\n\n get componentRenderElement() {\n const elData =
findHostElement(this.elOrCompView);\n return elData ? elData.renderElement : undefined;\n }\n\n get
renderNode(): any {\n return this.nodeDef.flags & NodeFlags.TypeText ? renderNode(this.view, this.nodeDef) : \n
renderNode(this.elView, this.elDef);\n }\n\n logError(console: Console, ...values:
any[]) {\n let logViewDef: ViewDefinition;\n let logNodeIndex: number;\n if (this.nodeDef.flags &
NodeFlags.TypeText) {\n logViewDef = this.view.def;\n logNodeIndex = this.nodeDef.nodeIndex;\n } else
{\n logViewDef = this.elView.def;\n logNodeIndex = this.elDef.nodeIndex;\n }\n // Note: we only
generate a log function for text and element nodes\n // to make the generated code as small as possible.\n const
renderNodeIndex = getRenderNodeIndex(logViewDef, logNodeIndex);\n let currRenderNodeIndex = -1;\n let
nodeLogger: NodeLogger = () => {\n currRenderNodeIndex++;\n if (currRenderNodeIndex ===
renderNodeIndex) {\n return console.error.bind(console, ...values);\n } else {\n return NOOP;\n }\n
};\n logViewDef.factory!(nodeLogger);\n if (currRenderNodeIndex < renderNodeIndex) {\n
console.error('Illegal state: the ViewDefinitionFactory did not call the logger!);\n
(<any>console.error)(...values);\n }\n }\n\n\nfunction getRenderNodeIndex(viewDef: ViewDefinition,
nodeIndex: number): number {\n let renderNodeIndex = -1;\n for (let i = 0; i <= nodeIndex; i++) {\n const
nodeDef = viewDef.nodes[i];\n if (nodeDef.flags & NodeFlags.CatRenderNode) {\n renderNodeIndex++; \n
}\n }\n return renderNodeIndex;\n }\n\n\nfunction findHostElement(view: ViewData): ElementData|null {\n while
(view && !isComponentView(view)) {\n view = view.parent!;\n }\n if (view.parent) {\n return
asElementData(view.parent, viewParentEl(view)!.nodeIndex);\n }\n return null;\n }\n\n\nfunction
collectReferences(view: ViewData, nodeDef: NodeDef, references: {[key: string]: any}) {\n for (let refName in
nodeDef.references) {\n references[refName] = getQueryValue(view, nodeDef, nodeDef.references[refName]);\n
}\n }\n\n\nfunction callWithDebugContext(action: DebugAction, fn: any, self: any, args: any[]) {\n const oldAction =
_currentAction;\n const oldView = _currentView;\n const oldNodeIndex = _currentNodeIndex;\n try {\n
_currentAction = action;\n const result = fn.apply(self, args);\n _currentView = oldView;\n _currentNodeIndex
= oldNodeIndex;\n _currentAction = oldAction;\n return result;\n } catch (e) {\n if (isViewDebugError(e) ||
!_currentView) {\n throw e;\n }\n throw viewWrappedDebugError(e, getCurrentDebugContext());\n
}\n }\n\n\nexport function getCurrentDebugContext(): DebugContext|null {\n return _currentView ? new
DebugContext_(_currentView, _currentNodeIndex) : null;\n }\n\n\nexport class DebugRendererFactory2 implements
RendererFactory2 {\n constructor(private delegate: RendererFactory2) {\n }\n\n createRenderer(element: any,
renderData: RendererType2|null): Renderer2 {\n return new

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debugEl instanceof DebugElement__PRE_R3__) {\n debugEl.styles[style] = value;\n }\n
this.delegate.setStyle(el, style, value, flags);\n }\n\n removeStyle(el: any, style: string, flags: RendererStyleFlags2):
void {\n const debugEl = getDebugNode(el);\n if (debugEl && debugEl instanceof
DebugElement__PRE_R3__) {\n debugEl.styles[style] = null;\n }\n this.delegate.removeStyle(el, style,
flags);\n }\n\n setProperty(el: any, name: string, value: any): void {\n const debugEl = getDebugNode(el);\n if
(debugEl && debugEl instanceof DebugElement__PRE_R3__) {\n debugEl.properties[name] = value;\n }\n
this.delegate.setProperty(el, name, value);\n }\n\n listen(\n target: 'document'|'windows'|'body'|any, eventName:
string,\n callback: (event: any) => boolean): () => void {\n if (typeof target !== 'string') {\n const debugEl =
getDebugNode(target);\n if (debugEl) {\n debugEl.listeners.push(new DebugEventListener(eventName,
callback));\n }\n }\n\n return this.delegate.listen(target, eventName, callback);\n }\n\n parentNode(node:
any): any {\n return this.delegate.parentNode(node);\n }\n nextSibling(node: any): any {\n return
this.delegate.nextSibling(node);\n }\n setValue(node: any, value: string): void {\n return
this.delegate.setValue(node, value);\n }\n}\n\n", "/*\n * @license\n * Copyright Google LLC All Rights Reserved.\n
*\n * Use of this source code is governed by an MIT-style license that can be\n * found in the LICENSE file at
https://angular.io/license\n */\n\nimport {Injector} from './di/injector';\nimport {Type} from
'./interface/type';\nimport {ComponentFactory} from './linker/component_factory';\nimport {NgModuleFactory,
NgModuleRef} from './linker/ng_module_factory';\nimport {initServicesIfNeeded} from './services';\nimport
{NgModuleDefinition, NgModuleDefinitionFactory, NgModuleProviderDef, ProviderOverride, Services,
ViewDefinition} from './types';\nimport {resolveDefinition} from './util';\n\nexport function
overrideProvider(override: ProviderOverride) {\n initServicesIfNeeded();\n return
Services.overrideProvider(override);\n}\n\nexport function overrideComponentView(comp: Type<any>,
componentFactory: ComponentFactory<any>) {\n initServicesIfNeeded();\n return
Services.overrideComponentView(comp, componentFactory);\n}\n\nexport function clearOverrides() {\n
 initServicesIfNeeded();\n return Services.clearOverrides();\n}\n\n// Attention: this function is called as top level
function.\n// Putting any logic in here will destroy closure tree shaking!\n\nexport function createNgModuleFactory(\n
 ngModuleType: Type<any>, bootstrapComponents: Type<any>[],\n defFactory: NgModuleDefinitionFactory):
NgModuleFactory<any> {\n return new NgModuleFactory_(ngModuleType, bootstrapComponents,
defFactory);\n}\n\nfunction cloneNgModuleDefinition(def: NgModuleDefinition): NgModuleDefinition {\n const
providers = Array.from(def.providers);\n const modules = Array.from(def.modules);\n const providersByKey:
{[tokenKey: string]: NgModuleProviderDef} = {};\n for (const key in def.providersByKey) {\n
 providersByKey[key] = def.providersByKey[key];\n }\n\n return {\n factory: def.factory,\n scope: def.scope,\n
 providers,\n modules,\n providersByKey,\n };\n}\n\nclass NgModuleFactory_ extends NgModuleFactory<any>
{\n constructor(\n public readonly moduleType: Type<any>, private _bootstrapComponents: Type<any>[],\n
 private _ngModuleDefFactory: NgModuleDefinitionFactory) {\n // Attention: this ctor is called as top level
function.\n // Putting any logic in here will destroy closure tree shaking!\n super();\n }\n\n create(parentInjector: Injector|null): NgModuleRef<any> {\n initServicesIfNeeded();\n // Clone the
NgModuleDefinition so that any tree shakeable provider definition\n // added to this instance of the NgModuleRef
doesn't affect the cached copy.\n // See https://github.com/angular/angular/issues/25018.\n const def =
cloneNgModuleDefinition(resolveDefinition(this._ngModuleDefFactory));\n return
Services.createNgModuleRef(\n this.moduleType, parentInjector || Injector.NULL, this._bootstrapComponents,
def);\n }\n}\n\n", "/*\n * @license\n * Copyright Google LLC All Rights Reserved.\n
*\n * Use of this source code is governed by an MIT-style license that can be\n * found in the LICENSE file at https://angular.io/license\n
*/\n\nexport {anchorDef, elementDef} from './element';\nexport {clearOverrides, createNgModuleFactory,
overrideComponentView, overrideProvider} from './entrypoint';\nexport {ngContentDef} from
'./ng_content';\nexport {moduleDef, moduleProvideDef} from './ng_module';\nexport {directiveDef, pipeDef,
providerDef} from './provider';\nexport {pureArrayDef, pureObjectDef, purePipeDef} from
'./pure_expression';\nexport {queryDef} from './query';\nexport {createComponentFactory,
getComponentViewDefinitionFactory, nodeValue, ViewRef_} from './refs';\nexport {initServicesIfNeeded} from

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getDebugNode__POST_R3__,\n} from './debug/debug_node';\nexport {\n
SWITCH_COMPILE_INJECTABLE__POST_R3__ as SWITCH_COMPILE_INJECTABLE__POST_R3__,\n}
from './di/injectable';\nexport {INJECTOR_IMPL__POST_R3__ as INJECTOR_IMPL__POST_R3__} from
'/di/injector';\nexport {\n NG_INJ_DEF as NG_INJ_DEF,\n NG_PROV_DEF as NG_PROV_DEF,\n} from
'/di/interface/defs';\nexport {createInjector as createInjector} from './di/r3_injector';\nexport {\n
SWITCH_IVY_ENABLED__POST_R3__ as SWITCH_IVY_ENABLED__POST_R3__,\n} from
'/ivy_switch';\nexport {\n Compiler_compileModuleAndAllComponentsAsync__POST_R3__ as
Compiler_compileModuleAndAllComponentsAsync__POST_R3__,\n
Compiler_compileModuleAndAllComponentsSync__POST_R3__ as
Compiler_compileModuleAndAllComponentsSync__POST_R3__,\n
Compiler_compileModuleAsync__POST_R3__ as Compiler_compileModuleAsync__POST_R3__,\n
Compiler_compileModuleSync__POST_R3__ as Compiler_compileModuleSync__POST_R3__,\n} from
'/linker/compiler';\nexport {\n SWITCH_ELEMENT_REF_FACTORY__POST_R3__ as
SWITCH_ELEMENT_REF_FACTORY__POST_R3__,\n} from './linker/element_ref';\nexport {
getModuleFactory__POST_R3__ as getModuleFactory__POST_R3__ } from
'/linker/ng_module_factory_loader';\nexport { registerNgModuleType as registerNgModuleType } from
'/linker/ng_module_factory_registration';\nexport {\n SWITCH_TEMPLATE_REF_FACTORY__POST_R3__ as
SWITCH_TEMPLATE_REF_FACTORY__POST_R3__,\n} from './linker/template_ref';\nexport {\n
SWITCH_VIEW_CONTAINER_REF_FACTORY__POST_R3__ as
SWITCH_VIEW_CONTAINER_REF_FACTORY__POST_R3__,\n} from './linker/view_container_ref';\nexport
{\n SWITCH_COMPILE_COMPONENT__POST_R3__ as
SWITCH_COMPILE_COMPONENT__POST_R3__,\n SWITCH_COMPILE_DIRECTIVE__POST_R3__ as
SWITCH_COMPILE_DIRECTIVE__POST_R3__,\n SWITCH_COMPILE_PIPE__POST_R3__ as
SWITCH_COMPILE_PIPE__POST_R3__,\n} from './metadata/directives';\nexport {\n
NgModuleDefWithMeta,\n} from './metadata/ng_module';\nexport {\n
SWITCH_COMPILE_NGMODULE__POST_R3__ as SWITCH_COMPILE_NGMODULE__POST_R3__,\n}
from './metadata/ng_module';\nexport {\n NgModuleDef as NgModuleDef,\n NgModuleTransitiveScopes as
NgModuleTransitiveScopes,\n} from './metadata/ng_module_def';\nexport {\n
SWITCH_RENDERER2_FACTORY__POST_R3__ as SWITCH_RENDERER2_FACTORY__POST_R3__,\n}
from './render/api';\nexport {\n getLContext as getLContext\n} from './render3/context_discovery';\nexport {\n
NG_COMP_DEF as NG_COMP_DEF,\n NG_DIR_DEF as NG_DIR_DEF,\n NG_ELEMENT_ID as
NG_ELEMENT_ID,\n NG_MOD_DEF as NG_MOD_DEF,\n NG_PIPE_DEF as NG_PIPE_DEF,\n} from
'/render3/fields';\nexport {\n AttributeMarker as AttributeMarker,\n ComponentDef as ComponentDef,\n
ComponentFactory as Render3ComponentFactory,\n ComponentRef as Render3ComponentRef,\n
ComponentType as ComponentType,\n CssSelectorList as CssSelectorList,\n detectChanges as detectChanges,\n
DirectiveDef as DirectiveDef,\n DirectiveType as DirectiveType,\n getDirectives as getDirectives,\n
getHostElement as getHostElement,\n LifecycleHooksFeature as LifecycleHooksFeature,\n markDirty as
markDirty,\n NgModuleFactory as NgModuleFactory,\n NgModuleRef as Render3NgModuleRef,\n
NgModuleType as NgModuleType,\n NO_CHANGE as NO_CHANGE,\n PipeDef as PipeDef,\n
renderComponent as renderComponent,\n RenderFlags as RenderFlags,\n setClassMetadata as setClassMetadata,\n
setLocaleId as setLocaleId,\n store as store,\n whenRendered as whenRendered,\n advance,\n attribute,\n
attributeInterpolate1,\n attributeInterpolate2,\n attributeInterpolate3,\n attributeInterpolate4,\n
attributeInterpolate5,\n attributeInterpolate6,\n attributeInterpolate7,\n attributeInterpolate8,\n
attributeInterpolateV,\n classMap,\n classMapInterpolate1,\n classMapInterpolate2,\n classMapInterpolate3,\n
classMapInterpolate4,\n classMapInterpolate5,\n classMapInterpolate6,\n classMapInterpolate7,\n
classMapInterpolate8,\n classMapInterpolateV,\n classProp,\n ComponentDefWithMeta,\n contentQuery,\n
CopyDefinitionFeature,\n defineComponent,\n defineDirective,\n defineNgModule,\n definePipe,\n
DirectiveDefWithMeta,\n directiveInject,\n disableBindings,\n element,\n elementContainer,\n

```



elementContainerEnd,\n elementContainerStart,\n elementEnd,\n elementStart,\n enableBindings,\n FactoryDef,\n getCurrentView,\n getFactoryOf,\n getInheritedFactory,\n hostProperty,\n i18n,\n i18nApply,\n i18nAttributes,\n i18nEnd,\n i18nExp,\n i18nPostprocess,\n i18nStart,\n InheritDefinitionFeature,\n injectAttribute,\n injectPipeChangeDetectorRef,\n invalidFactory,\n listener,\n loadQuery,\n namespaceHTML,\n namespaceMathML,\n namespaceSVG,\n nextContext,\n NgOnChangesFeature,\n pipe,\n pipeBind1,\n pipeBind2,\n pipeBind3,\n pipeBind4,\n pipeBindV,\n PipeDefWithMeta,\n projection,\n projectionDef,\n property,\n propertyInterpolate,\n propertyInterpolate1,\n propertyInterpolate2,\n propertyInterpolate3,\n propertyInterpolate4,\n propertyInterpolate5,\n propertyInterpolate6,\n propertyInterpolate7,\n propertyInterpolate8,\n propertyInterpolateV,\n ProvidersFeature,\n pureFunction0,\n pureFunction1,\n pureFunction2,\n pureFunction3,\n pureFunction4,\n pureFunction5,\n pureFunction6,\n pureFunction7,\n pureFunction8,\n pureFunctionV,\n queryRefresh,\n reference,\n resolveBody,\n resolveDocument,\n resolveWindow,\n restoreView,\n\n setComponentScope,\n setNgModuleScope,\n staticContentQuery,\n staticViewQuery,\n styleMap,\n styleMapInterpolate1,\n styleMapInterpolate2,\n styleMapInterpolate3,\n styleMapInterpolate4,\n styleMapInterpolate5,\n styleMapInterpolate6,\n styleMapInterpolate7,\n styleMapInterpolate8,\n styleMapInterpolateV,\n styleProp,\n stylePropInterpolate1,\n stylePropInterpolate2,\n stylePropInterpolate3,\n stylePropInterpolate4,\n stylePropInterpolate5,\n stylePropInterpolate6,\n stylePropInterpolate7,\n stylePropInterpolate8,\n stylePropInterpolateV,\n syntheticHostListener,\n syntheticHostProperty,\n template,\n templateRefExtractor,\n text,\n textInterpolate,\n textInterpolate1,\n textInterpolate2,\n textInterpolate3,\n textInterpolate4,\n textInterpolate5,\n textInterpolate6,\n textInterpolate7,\n textInterpolate8,\n textInterpolateV,\n viewQuery,\n\n} from './render3/index';\nexport {\n LContext as LContext,\n} from './render3/interfaces/context';\nexport {\n setDocument as setDocument\n} from './render3/interfaces/document';\nexport {\n Player as Player,\n PlayerFactory as PlayerFactory,\n PlayerHandler as PlayerHandler,\n PlayState as PlayState,\n} from './render3/interfaces/player';\nexport {\n compileComponent as compileComponent,\n compileDirective as compileDirective,\n} from './render3/jit/directive';\nexport {\n resetJitOptions as resetJitOptions,\n} from './render3/jit/jit\_options';\nexport {\n compileNgModule as compileNgModule,\n compileNgModuleDefs as compileNgModuleDefs,\n flushModuleScopingQueueAsMuchAsPossible as flushModuleScopingQueueAsMuchAsPossible,\n patchComponentDefWithScope as patchComponentDefWithScope,\n resetCompiledComponents as resetCompiledComponents,\n transitiveScopesFor as transitiveScopesFor,\n} from './render3/jit/module';\nexport {\n compilePipe as compilePipe,\n} from './render3/jit/pipe';\nexport {\n publishDefaultGlobalUtils as publishDefaultGlobalUtils,\n\n publishGlobalUtil as publishGlobalUtil\n} from './render3/util/global\_utils';\nexport {\n bypassSanitizationTrustHtml as bypassSanitizationTrustHtml,\n bypassSanitizationTrustResourceUrl as bypassSanitizationTrustResourceUrl,\n bypassSanitizationTrustScript as bypassSanitizationTrustScript,\n bypassSanitizationTrustStyle as bypassSanitizationTrustStyle,\n bypassSanitizationTrustUrl as bypassSanitizationTrustUrl,\n} from './sanitization/bypass';\nexport {\n sanitizeHtml,\n sanitizeResourceUrl,\n sanitizeScript,\n sanitizeStyle,\n sanitizeUrl,\n sanitizeUrlOrResourceUrl,\n trustConstantHtml,\n trustConstantResourceUrl,\n trustConstantScript,\n} from './sanitization/sanitization';\nexport {\n noSideEffects as noSideEffects,\n} from './util/closure';\n\n// clang-format on\n\n\n \* @license\n \* Copyright Google LLC All Rights Reserved.\n \* Use of this source code is governed by an MIT-style license that can be\n \* found in the LICENSE file at https://angular.io/license\n\n\n}\nexport {CodegenComponentFactoryResolver as CodegenComponentFactoryResolver} from './linker/component\_factory\_resolver';\nexport {registerModuleFactory as registerModuleFactory} from './linker/ng\_module\_factory\_registration';\nexport {anchorDef as and,\n ArgumentType as ArgumentType,\n BindingFlags as BindingFlags,\n createComponentFactory as ccf,\n createNgModuleFactory as cmf,\n createRendererType2 as crt,\n DepFlags as DepFlags,\n directiveDef as did,\n elementDef as eld,\n EMPTY\_ARRAY as EMPTY\_ARRAY,\n EMPTY\_MAP as EMPTY\_MAP,\n getComponentViewDefinitionFactory as getComponentViewDefinitionFactory,\n inlineInterpolate as inlineInterpolate,\n interpolate as interpolate,\n moduleDef as mod,\n moduleProvideDef as mpd,\n ngContentDef as ncd,\n NodeFlags as NodeFlags,\n nodeValue as nov,\n pipeDef as pid,\n providerDef as prd,\n pureArrayDef as pad,

```

pureObjectDef as pod, purePipeDef as ppd, QueryBindingType as QueryBindingType, queryDef as qud,
QueryValueType as QueryValueType, textDef as ted, unwrapValue as unv, viewDef as vid, ViewDefinition as
ViewDefinition, ViewFlags as ViewFlags } from './view/index';\n", "/*\n * @license\n * Copyright Google LLC All
Rights Reserved.\n *\n * Use of this source code is governed by an MIT-style license that can be\n * found in the
LICENSE file at https://angular.io/license\n *\n\n*\n * @module\n * @description\n * Entry point from which
you should import all public core APIs.\n */\nexport * from './metadata';\nexport * from './version';\nexport
{TypeDecorator} from './util/decorators';\nexport * from './di';\nexport {createPlatform, assertPlatform,
destroyPlatform, getPlatform, PlatformRef, ApplicationRef, createPlatformFactory, NgProbeToken} from
 './application_ref';\nexport {enableProdMode, isDevMode} from './util/is_dev_mode';\nexport {APP_ID,
PACKAGE_ROOT_URL, PLATFORM_INITIALIZER, PLATFORM_ID, APP_BOOTSTRAP_LISTENER} from
 './application_tokens';\nexport {APP_INITIALIZER, ApplicationInitStatus} from './application_init';\nexport * from
 './zone';\nexport * from './render';\nexport * from './linker';\nexport {DebugElement, DebugEventListener,
DebugNode, asNativeElements, getDebugNode, Predicate} from './debug/debug_node';\nexport {GetTestability,
Testability, TestabilityRegistry, setTestabilityGetter} from './testability/testability';\nexport * from
 './change_detection';\nexport * from './platform_core_providers';\nexport {TRANSLATIONS,
TRANSLATIONS_FORMAT, LOCALE_ID, DEFAULT_CURRENCY_CODE, MissingTranslationStrategy} from
 './i18n/tokens';\nexport {ApplicationModule} from './application_module';\nexport {AbstractType, Type} from
 './interface/type';\nexport {EventEmitter} from './event_emitter';\nexport {ErrorHandler} from
 './error_handler';\nexport * from './core_private_export';\nexport * from './core_render3_private_export';\nexport
{SecurityContext} from './sanitization/security';\nexport {Sanitizer} from './sanitization/sanitizer';\nexport * from
 './codegen_private_exports';\n\nimport {global} from './util/global';\nif (typeof ngDevMode !== 'undefined' &&
ngDevMode) {\n // This helper is to give a reasonable error message to people upgrading to v9 that have not yet\n
// installed `@angular/localize` in their app.\n // tslint:disable-next-line: no-toplevel-property-access\n
global.$localize = global.$localize || function() {\n throw new Error(\n 'It looks like your application or one of
its dependencies is using i18n.\n' +\n 'Angular 9 introduced a global `$localize()` function that needs to be
loaded.\n' +\n 'Please run `ng add @angular/localize` from the Angular CLI.\n' +\n '(For non-CLI projects,
add `import `@angular/localize/init`` to your `polyfills.ts` file.\n' +\n 'For server-side rendering applications
add the import to your `main.server.ts` file.);');\n };}\n", "/*\n * @license\n * Copyright Google LLC All Rights
Reserved.\n *\n * Use of this source code is governed by an MIT-style license that can be\n * found in the
LICENSE file at https://angular.io/license\n *\n\n*\n * @module\n * @description\n * Entry point for all public
APIs of this package.\n */\nexport * from './src/core';\n\n// This file only reexports content of the `src` folder. Keep
it that way.\n", "/*\n * @license\n * Copyright Google LLC All Rights Reserved.\n *\n * Use of this source code is
governed by an MIT-style license that can be\n * found in the LICENSE file at https://angular.io/license\n *\n\n//
This file is not used to build this module. It is only used during editing\n// by the TypeScript language service and
during build for verification. `ngc` \n// replaces this file with production index.ts when it rewrites private symbol\n//
names.\n\nexport * from './public_api';\n", "/*\n * Generated bundle index. Do not edit.\n */\n\nexport * from
 './index';\n\nexport {APPLICATION_MODULE_PROVIDERS as
angular_packages_core_core_w_iterableDiffersFactory as angular_packages_core_core_t_keyValueDiffersFactory
as angular_packages_core_core_u_localeFactory as angular_packages_core_core_v_zoneSchedulerFactory as
angular_packages_core_core_x} from './src/application_module';\nexport {_appIdRandomProviderFactory as
angular_packages_core_core_f} from './src/application_tokens';\nexport {injectChangeDetectorRef as
angular_packages_core_core_q} from './src/change_detection/change_detector_ref';\nexport
{DefaultIterableDifferFactory as angular_packages_core_core_r} from
 './src/change_detection/differs/default_iterable_differ';\nexport {DefaultKeyValueDifferFactory as
angular_packages_core_core_s} from './src/change_detection/differs/default_keyvalue_differ';\nexport
{DebugElement__PRE_R3__ as angular_packages_core_core_o, DebugNode__PRE_R3__ as
angular_packages_core_core_n, getDebugNodeR2__PRE_R3__ as angular_packages_core_core_p} from
 './src/debug/debug_node';\nexport {isForwardRef as angular_packages_core_core_a} from

```

./src/di/forward\_ref';\nextport {getInjectImplementation as angular\_packages\_core\_core\_bs} from  
./src/di/inject\_switch';\nextport {injectInjectorOnly as angular\_packages\_core\_core\_b} from  
./src/di/injector\_compatibility';\nextport {InjectorMarkers as angular\_packages\_core\_core\_bt} from  
./src/di/injector\_marker';\nextport {NullInjector as angular\_packages\_core\_core\_br} from  
./src/di/null\_injector';\nextport {ReflectiveInjector\_ as angular\_packages\_core\_core\_c} from  
./src/di/reflective\_injector';\nextport {ReflectiveDependency as  
angular\_packages\_core\_core\_d,resolveReflectiveProviders as angular\_packages\_core\_core\_e} from  
./src/di/reflective\_provider';\nextport {USD\_CURRENCY\_CODE as angular\_packages\_core\_core\_y} from  
./src/i18n/localization';\nextport {createElementRef as angular\_packages\_core\_core\_i,injectElementRef as  
angular\_packages\_core\_core\_h} from './src/linker/element\_ref';\nextport {getModuleFactory\_\_PRE\_R3\_\_ as  
angular\_packages\_core\_core\_j} from './src/linker/ng\_module\_factory\_loader';\nextport {createTemplateRef as  
angular\_packages\_core\_core\_l,injectTemplateRef as angular\_packages\_core\_core\_k} from  
./src/linker/template\_ref';\nextport {injectViewContainerRef as angular\_packages\_core\_core\_m} from  
./src/linker/view\_container\_ref';\nextport {injectRenderer2 as angular\_packages\_core\_core\_g} from  
./src/render/api';\nextport {SCHEDULER as angular\_packages\_core\_core\_bc} from  
./src/render3/component\_ref';\nextport {injectAttributeImpl as angular\_packages\_core\_core\_bd} from  
./src/render3/di';\nextport {NgOnChangesFeatureImpl as angular\_packages\_core\_core\_bb} from  
./src/render3/features/ng\_onchanges\_feature';\nextport {i18nPostprocess as angular\_packages\_core\_core\_bx} from  
./src/render3/i18n/i18n\_postprocess';\nextport {TElementNode as angular\_packages\_core\_core\_bh} from  
./src/render3/interfaces/node';\nextport {LView as angular\_packages\_core\_core\_bv} from  
./src/render3/interfaces/view';\nextport {pureFunction1Internal as  
angular\_packages\_core\_core\_bi,pureFunction2Internal as angular\_packages\_core\_core\_bj,pureFunction3Internal as  
angular\_packages\_core\_core\_bk,pureFunction4Internal as angular\_packages\_core\_core\_bl,pureFunctionVInternal  
as angular\_packages\_core\_core\_bm} from './src/render3/pure\_function';\nextport {getBindingRoot as  
angular\_packages\_core\_core\_bf,getLView as angular\_packages\_core\_core\_be,nextContextImpl as  
angular\_packages\_core\_core\_bg} from './src/render3/state';\nextport {getRootContext as  
angular\_packages\_core\_core\_bw} from './src/render3/util/view\_traversal\_utils';\nextport {getNativeByTNode as  
angular\_packages\_core\_core\_bu} from './src/render3/util/view\_utils';\nextport {getUrlSanitizer as  
angular\_packages\_core\_core\_bn} from './src/sanitization/sanitization';\nextport {makeParamDecorator as  
angular\_packages\_core\_core\_bo,makePropDecorator as angular\_packages\_core\_core\_bp} from  
./src/util/decorators';\nextport {getClosureSafeProperty as angular\_packages\_core\_core\_bq} from  
./src/util/property';\nextport {trustedHTMLFromString as angular\_packages\_core\_core\_by,trustedScriptFromString  
as angular\_packages\_core\_core\_ca,trustedScriptURLFromString as angular\_packages\_core\_core\_bz} from  
./src/util/security/trusted\_types';\nextport {\_def as angular\_packages\_core\_core\_z} from  
./src/view/provider';\nextport {DebugContext as angular\_packages\_core\_core\_ba} from  
./src/view/types';}], "names":["global", "ViewEncapsulation", "unusedValueExportToPlacateAjd", "unused1", "unused  
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w", "createInjector", "InjectorRefTokenKey", "INJECTORRefTokenKey", "\_createProviderInstance", "ComponentFact  
oryResolver", "viewEngine\_ComponentFactoryResolver", "ComponentFactory", "getNamespace", "viewEngine\_Com  
ponentFactory", "ComponentRef", "viewEngine\_ComponentRef", "NgModuleRef", "viewEngine\_NgModuleRef", "Ng  
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wEngine\_ElementRef", "r3.attribute", "r3.attributeInterpolate1", "r3.attributeInterpolate2", "r3.attributeInterpolate3", "r  
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erpolate8", "r3.attributeInterpolateV", "r3.defineComponent", "r3.defineDirective", "r3.defineNgModule", "r3.definePi  
pe", "r3.directiveInject", "r3.getFactoryOf", "r3.getInheritedFactory", "r3.injectAttribute", "r3.invalidFactory", "r3.inject  
PipeChangeDetectorRef", "r3.templateRefExtractor", "r3.NgOnChangesFeature", "r3.ProvidersFeature", "r3.CopyDefi

initionFeature", "r3.InheritDefinitionFeature", "r3.nextContext", "r3.namespaceHTML", "r3.namespaceMathML", "r3.namespaceSVG", "r3.enableBindings", "r3.disableBindings", "r3.elementStart", "r3.elementEnd", "r3.element", "r3.elementContainerStart", "r3.elementContainerEnd", "r3.elementContainer", "r3.pureFunction0", "r3.pureFunction1", "r3.pureFunction2", "r3.pureFunction3", "r3.pureFunction4", "r3.pureFunction5", "r3.pureFunction6", "r3.pureFunction7", "r3.pureFunction8", "r3.pureFunctionV", "r3.getCurrentView", "r3.restoreView", "r3.listener", "r3.projection", "r3.syntheticHostProperty", "r3.syntheticHostListener", "r3.pipeBind1", "r3.pipeBind2", "r3.pipeBind3", "r3.pipeBind4", "r3.pipeBindV", "r3.projectionDef", "r3.hostProperty", "r3.property", "r3.propertyInterpolate", "r3.propertyInterpolate1", "r3.propertyInterpolate2", "r3.propertyInterpolate3", "r3.propertyInterpolate4", "r3.propertyInterpolate5", "r3.propertyInterpolate6", "r3.propertyInterpolate7", "r3.propertyInterpolate8", "r3.propertyInterpolateV", "r3.pipe", "r3.queryRefresh", "r3.viewQuery", "r3.staticViewQuery", "r3.staticContentQuery", "r3.loadQuery", "r3.contentQuery", "r3.reference", "r3.classMap", "r3.classMapInterpolate1", "r3.classMapInterpolate2", "r3.classMapInterpolate3", "r3.classMapInterpolate4", "r3.classMapInterpolate5", "r3.classMapInterpolate6", "r3.classMapInterpolate7", "r3.classMapInterpolate8", "r3.classMapInterpolateV", "r3.styleMap", "r3.styleMapInterpolate1", "r3.styleMapInterpolate2", "r3.styleMapInterpolate3", "r3.styleMapInterpolate4", "r3.styleMapInterpolate5", "r3.styleMapInterpolate6", "r3.styleMapInterpolate7", "r3.styleMapInterpolate8", "r3.styleMapInterpolateV", "r3.styleProp", "r3.stylePropInterpolate1", "r3.stylePropInterpolate2", "r3.stylePropInterpolate3", "r3.stylePropInterpolate4", "r3.stylePropInterpolate5", "r3.stylePropInterpolate6", "r3.stylePropInterpolate7", "r3.stylePropInterpolate8", "r3.stylePropInterpolateV", "r3.classProp", "r3.advance", "r3.template", "r3.text", "r3.textInterpolate", "r3.textInterpolate1", "r3.textInterpolate2", "r3.textInterpolate3", "r3.textInterpolate4", "r3.textInterpolate5", "r3.textInterpolate6", "r3.textInterpolate7", "r3.textInterpolate8", "r3.textInterpolateV", "r3.i18n", "r3.i18nAttributes", "r3.i18nExp", "r3.i18nStart", "r3.i18nEnd", "r3.i18nApply", "r3.i18nPostprocess", "r3.resolveWindow", "r3.resolveDocument", "r3.resolveBody", "r3.setComponentScope", "r3.setNgModuleScope", "sanitization.sanitizeHtml", "sanitization.sanitizeStyle", "sanitization.sanitizeResourceUrl", "sanitization.sanitizeScript", "sanitization.sanitizeUrl", "sanitization.sanitizeUrlOrResourceUrl", "sanitization.trustConstantHtml", "sanitization.trustConstantScript", "sanitization.trustConstantResourceUrl", "render3CompileComponent", "render3CompileDirective", "render3CompilePipe", "render3CompileNgModule", "LOCALE\_ID", "NgModuleFactoryR3", "ComponentFactoryR3", "noop", "R3NgModuleFactory", "\_publishDefaultGlobalUtils", "publishDefaultGlobalUtils", "merge", "ViewRef", "getDebugNode", "setElementAttribute"], "mappings": ";;;;;;;;;AAAA;;;;;;;;;AAQA;;;;;;;;;SASgB,aAAa,CAAI,EAAW;IAC1C,OAAO,EAAC,QAAQ,EAAC,EAAC,EAAC,CAAC,QAAQ,EAakB,CAAC;AACnD;;ACnBA;;;;;;;;;AAsCO,MAAM,WAAW,GAAG,iBAAB,CAAC;AACtC,MAAM,UAAU,GAAG,gBAAGB,CAAC;AACpC,MAAM,aAAa,GAAG,oBAAoB,CAAC;AAEID;;SAGgB,aAAa,CACzB,IAAY,EAAE,KAA+B,EAAE,WAAiB,EACHE,oBAA8C,EAC9C,MAAGd;IAEID,OAAO,aAAa,CAAC;QACnB,MAAM,QAAQ,GAAG,gBAAGB,CAAC,KAAC,CAAC,CAAC;QAEzC,SAAS,gBAAGB,CACKB,GAAG,IAAW;YACvD,IAAI,IAAI,YAAY,gBAAGB,EAAE;gBACpC,QAAQ,CAAC,IAAI,CAAC,IAAI,EAAE,GAAG,IAAI,CAAC,CAAC;gBAC7B,OAAO,IAA+B,CAAC;aACxC;YAED,MAAM,kBAakB,GAAG,IAAK,gBAAwB,CAAC,GAAG,IAAI,CAAC,CAAC;YACIE,OAAO,SAAS,aAAa,CAAC,GAAY;gBACxC,IAAI,MAAM;oBAAE,MAAM,CAAC,GAAG,EAAE,GAAG,IAAI,CAAC,CAAC;;;gBAGjC,MAAM,WAAW,GAAG,GAAG,CAAC,cAAc,CAAC,WAAW,CAAC;oBAC9C,GAAW,CAAC,WAAW,CAAC;oBACzB,MAAM,CAAC,cAAc,CAAC,GAAG,EAAE,WAAW,EAAE,EAAC,KAAC,EAAE,EAAE,EAAC,CAAC,CAAC,WAAW,CAAC,CAAC;gBACtE,WAAW,CAAC,IAAI,CAAC,kBAakB,CAAC,CAAC;gBAGrC,IAAI,oBAAoB;oBAAE,oBAAoB,CAAC,GAAG,CAAC,CAAC;gBAEpD,OAAO,GAAG,CAAC;aACZ,CAAC;SACH;QAED,IAAI,WAAW,EAAE;YACf,gBAAGB,CAAC,SAAS,GAAG,MAAM,CAAC,MAAM,CAAC,WAAW,CAAC,SAAS,CAAC,CAAC;SACnE;QAED,gBAAGB,CAAC,SAAS,CAAC,cAAc,GAAG,IAAI,CAAC;QACHd,gBAAwB,CAAC,aAAa,GAAG,gBAAGB,CAAC;QAC3D,OAAO,gBAAuB,CAAC;KACHC,CAAC,CAAC;AACL,CAAC;AAED,SAAS,gBAAGB,CAAC,KAA+B;IACvD,OAAO,SAAS,IAAI,CAAY,GAAG,IAAW;QAC5C,IAAI,KAAC,EAAE;YACT,MAAM,MAAM,GAAG,KAAC,CAAC,GAAG,IAAI,CAAC,CAAC;YAC9B,KAAC,MAAM,QAAQ,IAAI,MAAM,EAAE;gBAC7B,IAAI,CAAC,QAAQ,CAAC,GAAG,MAAM,CAAC,QAAQ,CAAC,CAAC;aACnC;SACF;KACF,CAAC;AACJ,CAAC;SAEE,kBAakB,CAC9B,IAAY,EAAE,KAA+B,EAAE,WAAiB;IACIE,OAAO,aAAa,CAAC;QACnB,MAAM,QAAQ,GAAG,gBAAGB,CAAC,KAAC,CAAC,CAAC;QACzC,SAAS,qBAAqB,CACKB,GAAG,IAAW;YAC5D,IAAI,IAAI,YAAY,qBAAqB,EAAE;gBACzC,QAAQ,CAAC,KAAC,CAAC,IAAI,EAAE,IAAI,CAAC,CAAC;gBAC3B,OAA

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S;CACV,CAAC;AAEF;;;;SAGBgB,uBAAuB,CAAC,UAA+C;IACrF,IAAI,SAAS,GAAG,YAAY,CAAC,U  
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e,GAAG,MAAM,CAAC,QAAQ,CAAC;SACnC;aAAM;;YAEL,MAAM,IAAI,GAAG,MAAM,CAAC,mBAAmB,  
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G,CAAC,OAAO,CAAC,mBAAmB,EAAE,IAAI,CAAC,CAAC;SAC9C;QACD,IAAI,GAAG,CAAC,MAAM,EAAE;YACd,KAAK,CAAC,IAAI,CAAC,GAAG,CAAC,CAAC;SACjB;QAED,MAAM,MAAM,GAAG,4BAA4B,CAAC,KAAK,CAAC,GAAG,EAAE,CAAC,CAAa,CAAC;QACtE,IAAI,KAAK,CAAC,MAAM,GAAG,MAAM,CAAC,MAAM,EAAE;YACbC,MAAM,CAAC,IAAI,CAAC,MAAM,CAAC,CAAC;SACrB;KACF;;IAGD,OAAO,EAAE,IAAI,EAAE,OAAO,EAAE,WAAW,EAAE,WAAW,EAAE,KAAK,EAAE,MAAM,EAAC,CAAC;AACIE,CAAC;AAGD;,,,,,;SAUgB,4BAA4B,CAAC,OAAe;IAC1D,IAAI,CAAC,OAAO,EAAE;QACZ,OAAO,EAAE,CAAC;KACX;IAED,IAAI,OAAO,GAAG,CAAC,CAAC;IACbB,MAAM,UAAU,GAAG,EAAE,CAAC;IACtB,MAAM,OAAO,GAA6B,EAAE,CAAC;IAC7C,MAAM,MAAM,GAAG,OAAO,CAAC;;IAEvB,MAAM,CAAC,SAAS,GAAAG,CAAC,CAAC;IAErB,IAAI,KAAK,CAAC;IACV,OAAO,KAAK,GAAG,MAAM,CAAC,IAAI,CAAC,OAAO,CAAC,EAAE;QACnC,MAAM,GAAG,GAAG,KAAK,CAAC,KAAK,CAAC;QACxB,IAAI,KAAK,CAAC,CAAC,CAAC,IAAI,GAAG,EAAE;YACnB,UAAU,CAAC,GAAG,EAAE,CAAC;YAEjB,IAAI,UAAU,CAAC,MAAM,IAAI,CAAC,EAAE;;gBAE1B,MAAM,KAAK,GAAG,OAAO,CAAC,SAAS,CAAC,OAAO,EAAE,GAAG,CAAC,CAAC;gBAC9C,IAAI,gBAAgB,CAAC,IAAI,CAAC,KAAK,CAAC,EAAE;oBACbC,OAAO,CAAC,IAAI,CAAC,aAAa,CAAC,KAAK,CAAC,CAAC,CAAC;IBACpC;qBAAM;oBACL,OAAO,CAAC,IAAI,CAAC,KAAK,CAAC,CAAC;IBACrB;gBAED,OAAO,GAAG,GAAG,GAAG,CAAC,CAAC;aACnB;SACF;aAAM;YACL,IAAI,UAAU,CAAC,MAAM,IAAI,CAAC,EAAE;gBAC1B,MAAM,SAAS,GAAG,OAAO,CAAC,SAAS,CAAC,OAAO,EAAE,GAAG,CAAC,CAAC;gBAC1D,OAAO,CAAC,IAAI,CAAC,SAAS,CAAC,CAAC;gBACxB,OAAO,GAAG,GAAG,GAAG,CAAC,CAAC;aACnB;YACD,UAAU,CAAC,IAAI,CAAC,GAAG,CAAC,CAAC;SACtB;KACF;IAED,MAAM,SAAS,GAAG,OAAO,CAAC,SAAS,CAAC,OAAO,CAAC,CAAC;IAC7C,OAAO,CAAC,IAAI,CAAC,SAAS,CAAC,CAAC;IACxB,OAAO,OAAO,CAAC;AACjB,CAAC;AAGD;;;SAIgB,YAAAY,CACxB,KAAY,EAAE,IAAU,EAAE,KAAY,EAAE,aAAgC,EAAE,SAAiB,EAC3F,QAAgB,EAAE,cAAaB,EAAE,UAA2B;IACvE,MAAM,MAAM,GAAqB,EAAS,CAAC;IAC3C,MAAM,MAAM,GAAsB,EAAS,CAAC;IAC5C,MAAM,MAAM,GAAsB,EAAAS,CAAC;IAC5C,IAAI,SAAS,EAAE;QACb,iBAAiB,CAAC,MAAM,EAAE,wBAAwB,CAAC,CAAC;QACpD,iBAAiB,CAAC,MAAM,EAAE,yBAAYB,CAAC,CAAC;QACrD,iBAAiB,CAAC,MAAM,EAAE,yBAAYB,CAAC,CAAC;KACtD;IACD,IAAI,CAAC,KAAK,CAAC,IAAI,CAAC,QAAQ,CAAC,CAAC;IAC1B,IAAI,CAAC,MAAM,CAAC,IAAI,CAAC,MAAM,CAAC,CAAC;IACzB,IAAI,CAAC,MAAM,CAAC,IAAI,CAAC,MAAM,CAAC,CAAC;IACzB,IAAI,CAAC,MAAM,CAAC,IAAI,CAAC,MAAM,CAAC,CAAC;IAEzB,MAAM,eAAe,GAAG,kBAaKB,CAAC,WAAW,EAAE,CAAC,CAAC;IAC1D,MAAM,gBAAgB,GAAG,eAAe,CAAC,mBAAmB,CAAC,cAAc,CAAC,CAAC;IAC7E,SAAS,IAAI,aAAa,CAAC,gBAAgB,EAAE,uCAAuC,CAAC,CAAC;IACtF,MAAM,aAAa,GAAg,kBAaKB,CAAC,gBAAiB,CAAY,IAAI,gBAAgB,CAAC;IAC3F,IAAI,aAAa,EAAE;QACjB,OAAO,WAAW,CACd,KAAK,EAAE,IAAI,EAAE,KAAK,EAAE,aAAa,EAAE,MAAM,EAAE,MAAM,EAAE,MAAM,EAAE,aAAa,EAAE,SAAS,EACnF,UAAU,EAAE,CAAC,CAAC,CAAC;KACpB;SAAM;QACL,OAAO,CAAC,CAAC;KACV;AACH,CAAC;AAED,SAAS,WAAW,CACb,KAAY,EAAE,IAAU,EAAE,KAAY,EAAE,mBAAsC,EAC9E,MAAwB,EAAE,MAAYB,EAAE,MAAYB,EAC9E,UAAmB,EAAE,SAAiB,EAAE,UAA2B,EAAE,KAAa;IACpF,IAAI,WAAW,GAAG,CAAC,CAAC;IACpB,IAAI,WAAW,GAAG,UAAU,CAAC,UAAU,CAAC;IACxC,OAAO,WAAW,EAAE;QACIB,MAAM,QAAQ,GAAG,YAAAY,CAAC,KAAK,EAAE,KAAK,EAAE,CAAC,EAAE,IAAI,CAAC,CAAC;QACrD,QAAQ,WAAW,CAAC,QAAQ;YAC1B,KAAK,IAAI,CAAC,YAAAY;gBACpB,MAAM,OAAO,GAAG,WAAaB,CAAC;gBACvC,MAAM,OAAO,GAAG,OAAO,CAAC,OAAO,CAAC,WAAW,EAAE,CAAC;gBAC9C,IAAI,cAAc,CAAC,cAAc,CAAC,OAAO,CAAC,EAAE;oBAC1C,sBAAsB,CAAC,MAAM,EAAE,cAAc,EAAE,OAAO,EAAE,SAAS,EAAE,QAAQ,CAAC,CAAC;oBAC7E,KAAK,CAAC,IAAI,CAAC,QAAQ,CAAC,GAAG,OAAO,CAAC;oBAC/B,MAAM,OAAO,GAAG,OAAO,CAAC,UAAU,CAAC;oBACnC,KAAK,IAAI,CAAC,GAAG,CAAC,EAAE,CAAC,GAAG,OAAO,CAAC,MAAM,EAAE,CAAC,EAAE,EAAE;wBACvC,MAAM,IAAI,GAAG,OAAO,CAAC,IAAI,CAAC,CAAC,CAAE,CAAC;wBAC9B,MAAM,aAAa,GAAG,IAAI,CAAC,IAAI,CAAC,WAAW,EAAE,CAAC;wBAC9C,MAAM,UAAU,GAAG,CAAC,CAAC,IAAI,CAAC,KAAK,CAAC,KAAK,CAAC,cAAc,CAAC,CAAC;;wBAEtD,IAAI,UAAU,EAAE;4BACd,IAAI,WAAW,CAAC,cAAc,CAAC,aAAa,CAAC,EAAE;gCAC7C,IAAI,SAAS,CAAC,aAAa,CAAC,EAAE;oCAC5B,4BAA4B,CACxB,MAAM,EAAE,IAAI,CAAC,KAAK,EAAE,QAAQ,EAAE,IAAI,CAAC,IAAI,EAAE,YAAAY,CAAC,CAAC;iCAC5D;qCAAM,IAAI,YAAAY,CAAC,aAAa,CAAC,EAAE;oCACtC,4BAA4B,CACxB,MAAM,EAAE,IAAI,CAAC,KAAK,EAAE,QAAQ,EAAE,IAAI,C

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UAAU,GAAG,IAAI,CAAC,UAAU,CAAC,UAAU,CAAC;QAC9C,MAAM,QAAQ,GAAgB,EAAE,CAAC;QACjC, KAAK,IAAI,CAAC,GAAG,CAAC,EAAE,CAAC,GAAG,UAAU,CAAC,MAAM,EAAE,CAAC,EAAE,EAAE;Y AC1C,MAAM,OAAO,GAAG,UAAU,CAAC,CAAC,CAAC,CAAC;YAC9B,QAAQ,CAAC,IAAI,CAAC,uBAAuB ,CAAC,OAAO,CAAC,CAAC,CAAC;SACjD;QACD,OAAO,QAAQ,CAAC;KACjB;IAED,IAAI,QAAQ;QACV,M AAM,aAAa,GAAG,IAAI,CAAC,aAAa,CAAC;QACzC,IAAI,CAAC,aAAa;YAAE,OAAO,EAAE,CAAC;QAC9B, MAAM,UAAU,GAAG,aAAa,CAAC,QAAQ,CAAC;QAC1C,MAAM,QAAQ,GAAmB,EAAE,CAAC;QACpC,KA AK,IAAI,CAAC,GAAG,CAAC,EAAE,CAAC,GAAG,UAAU,CAAC,MAAM,EAAE,CAAC,EAAE,EAAE;YAC1 C,MAAM,OAAO,GAAG,UAAU,CAAC,CAAC,CAAC,CAAC;YAC9B,QAAQ,CAAC,IAAI,CAAC,uBAAuB,CA AC,OAAO,CAAC,CAAC,CAAC;SACjD;QACD,OAAO,QAAQ,CAAC;KACjB;IAED,KAAK,CAAC,SAaKc;QA CtC,MAAM,OAAO,GAAG,IAAI,CAAC,QAAQ,CAAC,SAAS,CAAC,CAAC;QACzC,OAAO,OAAO,CAAC,CA AC,CAAC,IAAI,IAAI,CAAC;KAC3B;IAED,QAAQ,CAAC,SAaKc;QACzC,MAAM,OAAO,GAAmB,EAAE,CA AC;QACnC,WAAW,CAAC,IAAI,EAAE,SAAS,EAAE,OAAO,EAAE,IAAI,CAAC,CAAC;QAC5C,OAAO,OAA O,CAAC;KACb;IAED,aAAa,CAAC,SAA+B;QAC3C,MAAM,OAAO,GAAgB,EAAE,CAAC;QACbC,WAAW, CAAC,IAAI,EAAE,SAAS,EAAE,OAAO,EAAE,KAAK,CAAC,CAAC;QAC7C,OAAO,OAAO,CAAC;KACb;IA ED,mBAAmB,CAAC,SAAiB,EAAE,QAAa;QACiD,MAAM,IAAI,GAAG,IAAI,CAAC,UAAiB,CAAC;QACpC,M AAM,gBAAgB,GAAe,EAAE,CAAC;QAExC,IAAI,CAAC,SAAS,CAAC,OAAO,CAAC,QAAQ;YAC7B,IAAI,Q AAQ,CAAC,IAAI,KAAK,SAAS,EAAE;gBAC/B,MAAM,QAAQ,GAAG,QAAQ,CAAC,QAAQ,CAAC;gBACnC, QAAQ,CAAC,IAAI,CAAC,IAAI,EAAE,QAAQ,CAAC,CAAC;gBAC9B,gBAAgB,CAAC,IAAI,CAAC,QAAQ,C AAC,CAAC;aACjC;SACF,CAAC,CAAC;;;QAIH,IAAI,OAAO,IAAI,CAAC,cAAc,KAAK,UAAU,EAAE;;;YAI7 C,IAAI,CAAC,cAAc,CAAC,SAAS,CAAC,CAAC,OAAO,CAAC,CAAC,QAaKb;,,,,;gBAOxD,IAAI,QAAQ,CA AC,QAAQ,EAAE,CAAC,OAAO,CAAC,cAAc,CAAC,KAAK,CAAC,CAAC,EAAE;oBACtD,MAAM,iBAAiB,G AAG,QAAQ,CAAC,cAAc,CAAC,CAAC;oBACnD,OAAO,gBAAgB,CAAC,OAAO,CAAC,iBAAiB,CAAC,KAA K,CAAC,CAAC;wBACrD,iBAAiB,CAAC,IAAI,CAAC,IAAI,EAAE,QAAQ,CAAC,CAAC;iBAC5C;aACF,CAA C,CAAC;SACJ;KACF;CACF;AAED,SAAS,iBAAiB,CAAC,OAAqB,EAAE,UAAoC;IACpF,IAAI,OAAO,EAAE;; QAEX,IAAI,GAAG,GAAG,MAAM,CAAC,cAAc,CAAC,OAAO,CAAC,CAAC;QACzC,MAAM,aAAa,GAAQ,IA AI,CAAC,SAAS,CAAC;QAC1C,OAAO,GAAG,KAAK,IAAI,IAAI,GAAG,KAAK,aAAa,EAAE;YAC5C,MAAM, WAAW,GAAG,MAAM,CAAC,yBAAyB,CAAC,GAAG,CAAC,CAAC;YAC1D,KAAK,IAAI,GAAG,IAAI,WAA W,EAAE;gBAC3B,IAAI,CAAC,GAAG,CAAC,UAAU,CAAC,IAAI,CAAC,IAAI,CAAC,GAAG,CAAC,UAAU,C AAC,IAAI,CAAC,EAAE;;;oBAIID,MAAM,KAAK,GAAI,OAAe,CAAC,GAAG,CAAC,CAAC;oBACpC,IAAI,g BAAgB,CAAC,KAAK,CAAC,EAAE;wBAC3B,UAAU,CAAC,GAAG,CAAC,GAAG,KAAK,CAAC;qBACzB;iB ACF;aACF;YACD,GAAG,GAAG,MAAM,CAAC,cAAc,CAAC,GAAG,CAAC,CAAC;SAC1C;KACF;AACH,CA AC;AAED,SAAS,gBAAgB,CAAC,KAAU;IAC1C,OAAO,OAAO,KAAK,KAAK,QAAQ,IAAI,OAAO,KAAK,KA AK,SAAS,IAAI,OAAO,KAAK,KAAK,QAAQ;QACvF,KAAK,KAAK,IAAI,CAAC;AACrB,CAAC;AAgBD,SAA S,WAAW,CACb,aAA2B,EAAE,SAAuD,EACpF,OAAmC,EAAE,YAAqB;IAC5D,MAAM,OAAO,GAAG,YAA Y,CAAC,aAAa,CAAC,UAAU,EAAE,KAAK,CAAC,CAAC;IAC9D,IAAI,OAAO,KAAK,IAAI,EAAE;QACpB,M AAM,WAAW,GAAG,OAAO,CAAC,KAAK,CAAC,KAAK,CAAC,CAAC,IAAI,CAAC,OAAO,CAAC,SAAS,CA AU,CAAC;QAC1E,oBAAoB,CACb,WAAW,EAAE,OAAO,CAAC,KAAK,EAAE,SAAS,EAAE,OAAO,EAAE, YAAE,EAAE,aAAa,CAAC,UAAU,CAAC,CAAC;KAC7F;SAAM;;;QAGL,2BAA2B,CAAC,aAAa,CAAC,UAAU ,EAAE,SAAS,EAAE,OAAO,EAAE,YAAE,CAAC,CAAC;KACzF;AACH,CAAC;AAED;,,,,,AAUA,SAAS,oB AAoB,CACzB,KAAE,EAAE,KAAE,SAAUd,EACnF,OAAmC,EAAE,YAAqB,EAAE,cAAmB;IACjF,SA AS,IAAI,mBAAmB,CAAC,KAAK,EAAE,KAAK,CAAC,CAAC;IAC/C,MAAM,UAAU,GAAG,sBAAsB,CAAC, KAAK,EAAE,KAAK,CAAC,CAAC;;IAExD,IAAI,KAAK,CAAC,IAAI,IAAI,4CAAgD,EAAE;;;QAGIE,gBAAgB ,CAAC,UAAU,EAAE,SAAS,EAAE,OAAO,EAAE,YAAE,EAAE,cAAc,CAAC,CAAC;QAC/E,IAAI,eAAe,CAAC ,KAAK,CAAC,EAAE;;;YAG1B,MAAM,aAAa,GAAG,wBAAwB,CAAC,KAAK,CAAC,KAAK,EAAE,KAAK,C AAC,CAAC;YACnE,IAAI,aAAa,IAAI,aAAa,CAAC,KAAK,CAAC,CAAC,UAAU,EAAE;gBACpD,oBAAoB,CA ChB,aAAa,CAAC,KAAK,CAAC,CAAC,UAAW,EAAE,aAAa,EAAE,SAAS,EAAE,OAAO,EAAE,YAAE,EACjF, cAAc,CAAC,CAAC;aACrB;SACF;aAAM;YACL,IAAI,KAAK,CAAC,KAAK,EAAE;;gBAEf,oBAAoB,CAAC,K AAK,CAAC,KAAK,EAAE,KAAK,EAAE,SAAS,EAAE,OAAO,EAAE,YAAE,EAAE,cAAc,CAAC,CAAC;aAC5



F;;;;;;;YAUD,UAAU,IAAI,2BAA2B,CAAC,UAAU,EAAE,SAAS,EAAE,OAAO,EAAE,YAA Y,CAAC,CAAC;S ACzF;;;QAGD,MAAM,eAAe,GAAG,KAAK,CAAC,KAAK,CAAC,KAAK,CAAC,CAAC;QAC3C,IAAI,YAA Y, CAAC,eAAe,CAAC,EAAE;YACjC,+BAA+B,CAC3B,eAAe,EAAE,SAAS,EAAE,OAAO,EAAE,YAA Y,EAAE,c AAc,CAAC,CAAC;SACxE;KACF;SAAM,IAAI,KAAK,CAAC,IAAI,sBAAwB;;;QAG3C,MAAM,UAAU,GAAG, KAAK,CAAC,KAAK,CAAC,KAAK,CAAC,CAAC;QACtC,gBAAgB,CAAC,UAAU,CAAC,MAAM,CAAC,EAA E,SAAS,EAAE,OAAO,EAAE,YAA Y,EAAE,cAAc,CAAC,CAAC;;QAEvF,+BAA+B,CAAC,UAAU,EAAE,SAAS ,EAAE,OAAO,EAAE,YAA Y,EAAE,cAAc,CAAC,CAAC;KAC/F;SAAM,IAAI,KAAK,CAAC,IAAI,wBAAyB;;;Q AG5C,MAAM,aAAa,GAAG,KAAM,CAAC,0BAA0B,CAAC,CAAC;QACzD,MAAM,aAAa,GAAG,aAAa,CAAC ,MAAM,CAAiB,CAAC;QAC5D,MAAM,IAAI,GACL,aAAa,CAAC,UAA+B,CAAC,KAAK,CAAC,UAAoB,CAA C,CAAC;QAE/E,IAAI,KAAK,CAAC,OAAO,CAAC,IAAI,CAAC,EAAE;YACvB,KAAK,IAAI,UAAU,IAAI,IAA I,EAAE;gBAC3B,gBAAgB,CAAC,UAAU,EAAE,SAAS,EAAE,OAAO,EAAE,YAA Y,EAAE,cAAc,CAAC,CAA C;aAchF;SACF;aAAM,IAAI,IAAI,EAAE;YACf,MAAM,SAAS,GAAG,aAAa,CAAC,MAAM,CAAW,CAAC;YA CID,MAAM,SAAS,GAAG,SAAS,CAAC,KAAK,CAAC,CAAC,IAAI,CAAC,IAAI,CAAC,KAAK,CAAU,CAAC; YAC7D,oBAAoB,CAAC,SAAS,EAAE,SAAS,EAAE,SAAS,EAAE,OAAO,EAAE,YAA Y,EAAE,cAAc,CAAC,C AAC;SAC9F;KACF;SAAM,IAAI,KAAK,CAAC,KAAK,EAAE;;QAEtB,oBAAoB,CAAC,KAAK,CAAC,KAAK, EAAE,KAAK,EAAE,SAAS,EAAE,OAAO,EAAE,YAA Y,EAAE,cAAc,CAAC,CAAC;KAC5F;;;IAGD,IAAI,cAAc ,KAAK,UAAU,EAAE;;;QAGjC,MAAM,SAAS,GAAG,CAAC,KAAK,CAAC,KAAK,0BAA6B,KAAK,CAAC,cA Ac,GAAG,KAAK,CAAC,IAAI,CAAC;QAC7F,IAAI,SAAS,EAAE;YACb,oBAAoB,CAAC,SAAS,EAAE,KAAK, EAAE,SAAS,EAAE,OAAO,EAAE,YAA Y,EAAE,cAAc,CAAC,CAAC;SAC1F;KACF;AACH,CAAC;AAED;;;;;; ;AASA,SAAS,+BAA+B,CACpC,UAA sB,EAAE,SAAuD,EAC/E,OAAmC,EAAE,YAAqB,EAAE,cAAmB;IACjF, KAAK,IAAI,CAAC,GAAG,uBAAuB,EAAE,CAAC,GAAG,UAAU,CAAC,MAAM,EAAE,CAAC,EAAE,EAAE; QACHE,MAAM,SAAS,GAAG,UAAU,CAAC,CAAC,CAAU,CAAC;QACzC,MAAM,UAAU,GAAG,SAAS,CAA C,KAAK,CAAC,CAAC,UAAU,CAAC;QAC/C,IAAI,UAAU,EAAE;YACd,oBAAoB,CAAC,UAAU,EAAE,SAAS ,EAAE,SAAS,EAAE,OAAO,EAAE,YAA Y,EAAE,cAAc,CAAC,CAAC;SAC/F;KACF;AACH,CAAC;AAED;;;;;; ;AASA,SAAS,gBAAgB,CACrB,UAAe,EAAE,SAAuD,EACxE,OAAmC,EAAE,YAAqB,EAAE,cAAmB;IACjF,I AAI,cAAc,KAAK,UAAU,EAAE;QACjC,MAAM,SAAS,GAAGC,cAAY,CAAC,UAAU,CAAC,CAAC;QAC3C,I AAI,CAAC,SAAS,EAAE;YACd,OAAO;SACR;;;QAID,IAAI,YAA Y,IAAI,SAAS,YAA Y,uBAAuB,IAAI,SAAS, CAAC,SAAS,CAAC;YACpF,OAAO,CAAC,OAAO,CAAC,SAAS,CAAC,KAAK,CAAC,CAAC,EAAE;YACrC,O AAO,CAAC,IAAI,CAAC,SAAS,CAAC,CAAC;SACzB;aAAM,IACH,CAAC,YAA Y,IAAK,SAAkC,CAAC,SAAS ,CAAC;YAC9D,OAAuB,CAAC,OAAO,CAAC,SAAS,CAAC,KAAK,CAAC,CAAC,EAAE;YACrD,OAAuB,CAA C,IAAI,CAAC,SAAS,CAAC,CAAC;SAC1C;KACF;AACH,CAAC;AAED;;;;;;;AAQA,SAAS,2BAA2B,CACHc, UAAe,EAAE,SAAuD,EACxE,OAAmC,EAAE,YAAqB;IAC5D,MAAM,KAAK,GAAG,UAAU,CAAC,UAAU,CA AC;IACpC,MAAM,MAAM,GAAG,KAAK,CAAC,MAAM,CAAC;IAE5B,KAAK,IAAI,CAAC,GAAG,CAAC,EA AE,CAAC,GAAG,MAAM,EAAE,CAAC,EAAE,EAAE;QAC/B,MAAM,IAAI,GAAG,KAAK,CAAC,CAAC,CAA C,CAAC;QACtB,MAAM,SAAS,GAAGA,cAAY,CAAC,IAAI,CAAC,CAAC;QAErC,IAAI,SAAS,EAAE;YACb,I AAI,YAA Y,IAAI,SAAS,YAA Y,uBAAuB,IAAI,SAAS,CAAC,SAAS,CAAC;gBACpF,OAAO,CAAC,OAAO,CA AC,SAAS,CAAC,KAAK,CAAC,CAAC,EAAE;gBACrC,OAAO,CAAC,IAAI,CAAC,SAAS,CAAC,CAAC;aACz B;iBAAM,IACH,CAAC,YAA Y,IAAK,SAAkC,CAAC,SAAS,CAAC;gBAC9D,OAAuB,CAAC,OAAO,CAAC,SA AS,CAAC,KAAK,CAAC,CAAC,EAAE;gBACrD,OAAuB,CAAC,IAAI,CAAC,SAAS,CAAC,CAAC;aAC1C;YAE D,2BAA2B,CAAC,IAAI,EAAE,SAAS,EAAE,OAAO,EAAE,YAA Y,CAAC,CAAC;SACrE;KACF;AACH,CAAC; AAED;;;;;AAKA,SAAS,uBAAuB,CAC5B,UAAmC,EAAE,KAA Y,EAAE,KAA Y,EAAE,KAA Y;IAC/E,IAAI,cAA c,GAAG,KAAK,CAAC,gBAAgB,CAAC;IAE5C,IAAI,cAAc,KAAK,IAAI,EAAE;QAC3B,KAAK,IAAI,CAAC,G AAG,CAAC,EAAE,CAAC,GAAG,cAAc,CAAC,MAAM,EAAE,CAAC,EAAE,EAAE;YAC9C,MAAM,YAA Y,G AAG,cAAc,CAAC,CAAC,CAAC;YACvC,MAAM,YAA Y,GAAG,KAAK,CAAC,YAA Y,CAAW,CAAC; YACnD,MAAM,aAAa,GAAG,YAA Y,CAAC,KAAK,CAAC,uBAAuB,CAAC,CAAC;YACIE,MAAM,YAA Y,GA AG,aAAa,CAAC,CAAC,CAAC;YACtC,IAAI,aAAa,CAAC,MAAM,GAAG,CAAC,EAAE;gBAC5B,IAAI, KAAK,GAAG,aAAa,CAAC,CAAC,CAAC;gBAC7B,KAAK,IAAI,CAAC,GAAG,CAAC,EAAE,CAAC,G AAG,aAAa,CAAC,MAAM,GAAG,CAAC,EAAE,CAAC,EAAE,EAAE;oBACjD,KAAK,IAAI,eAAe,CAAC,KAA

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AC;AACJ,CAAC;AAED,MAAM,gBAAiB,SAAQ,eAAoB;IACjD,YACoB,UAAqB,EAAU,oBAAiC,EACxE,mBA  
A8C;;;QAGxD,KAAK,EAAE,CAAC;QAJU,eAAU,GAAV,UAAU,CAAW;QAAU,yBAAoB,GAApB,oBAAoB,C  
AAa;QACxE,wBAAmB,GAAnB,mBAAmB,CAA2B;KAIzD;IAED,MAAM,CAAC,cAA6B;QACIC,oBAAoB,EA  
AE,CAAC;;;QAIvB,MAAM,GAAG,GAAG,uBAAuB,CAAC,iBAAiB,CAAC,IAAI,CAAC,mBAAmB,CAAC,CA

AC,CAAC;QACjF,OAAO,QAAQ,CAAC,iBAAiB,CAC7B,IAAI,CAAC,UAAU,EAAE,cAAc,IAAI,QAAQ,CAAC  
,IAAI,EAAE,IAAI,CAAC,oBAAoB,EAAE,GAAG,CAAC,CAAC;KACvF;;;AC1EH;;;;;;;;;ACAA;;;;;;;;;ACAA;;;;;;;;;  
AA8SA;;AC9SA;;;;;;;;;ACAA;;;;;;;;;AAwCA,IAAI,OAAO,SAAS,KAAK,WAAW,IAAI,SAAS,EAAE;;;IAIjDxM,O  
AAM,CAAC,SAAS,GAAGA,OAAM,CAAC,SAAS,IAAI;QACrC,MAAM,IAAI,KAAK,CACX,4EAA4E;YAC5E,  
iFAAiF;YACjF,+DAA+D;YAC/D,gGAAgG;YACgG,uFAAuF,CAAC,CAAC;KAC9F,CAAC;;;ACnDJ;;;;;;;;;AAeA;  
;ACfA;;;;;;;;;ACAA;;;;;;;;;"} }

Found in path(s):

\* /opt/cola/permits/1358260587\_1657134851.1917841/0/core-11-0-2-tgz/package/fesm2015/core.js.map

# 1.54 flink-streaming-java 1.11.0

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Written by: Philip Hazel  
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Python was created in the early 1990s by Guido van Rossum at Stichting Mathematisch Centrum (CWI, see <http://www.cwi.nl>) in the Netherlands as a successor of a language called ABC. Guido remains Python's principal author, although it includes many contributions from others.

In 1995, Guido continued his work on Python at the Corporation for National Research Initiatives (CNRI, see <http://www.cnri.reston.va.us>) in Reston, Virginia where he released several versions of the software.

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2.0	1.6	2000	BeOpen.com	no
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2.1	2.0+1.6.1	2001	PSF	no
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## xwd v1.0.7

### xwd utility

<pre>

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include/GL/wglxt.h :
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# 1.62 base-files 10.1ubuntu2.11

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Because of this blurred distinction, using the ordinary General Public License for libraries did not effectively promote software

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However, unrestricted linking of non-free programs would deprive the users of those programs of all benefit from the free status of the libraries themselves. This Library General Public License is intended to permit developers of non-free programs to use free libraries, while preserving your freedom as a user of such programs to change the free libraries that are incorporated in them. (We have not seen how to achieve this as regards changes in header files, but we have achieved it as regards changes in the actual functions of the Library.) The hope is that this will lead to faster development of free libraries.

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Note that it is possible for a library to be covered by the ordinary General Public License rather than by this special one.

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```
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```

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```
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```

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```

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```

```
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Also add information on how to contact you by electronic and paper mail.

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```
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Gnomovision comes with ABSOLUTELY NO WARRANTY; for details type `show w'.
This is free software, and you are welcome to redistribute it
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```

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```
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program `Gnomovision' (a program to direct compilers to make passes
at assemblers) written by James Hacker.
```

```
<signature of Ty Coon>, 1 April 1989
Ty Coon, President of Vice
```

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## 1.64 dhcp 4.2.4-7ubuntu12.10

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\* `configure.ac`, `Makefile.am`: The original versions were derived from the ones in the XML Catalog Manager project, version 2.2.

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\* `atf-c/ui.c`: The `format_paragraph` and `format_text` functions were derived from the ones in the Monotone project, revision 3a0982da308228d796df35f98d787c5cff2bb5b6.

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\* `atf-c++/detail/io.hpp`, `atf-c++/detail/io.cpp`, `atf-c++/detail/io_test.cpp`: These files were derived from the `file_handle`, `systembuf`, `pipe` and `pistream` classes and tests found in the Boost.Process library.

Author: Julio Merino <jmmv84@gmail.com>

\* `admin/check-style.sh`, `admin/check-style-common.awk`, `admin/check-style-cpp.awk`, `admin/check-style-shell.awk`: These files,

except the first one, were first implemented in the Buildtool project. They were later adapted to be part of Boost.Process and, during that process, the shell script was created.

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=====
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-->

<!-- Id -->

<!-- Generate ISC copyright comments from Docbook copyright metadata. -->

<xsl:stylesheet version="1.0"
xmlns:xsl="http://www.w3.org/1999/XSL/Transform"
xmlns:xi="http://www.w3.org/2001/XInclude"
xmlns:db="http://docbook.org/ns/docbook">

<xsl:template name="isc.copyright.format">
 <xsl:param name="text"/>
 <xsl:value-of select="$isc.copyright.leader"/>
 <xsl:value-of select="normalize-space(substring-before($text, '
'))"/>
 <xsl:text>
</xsl:text>
 <xsl:variable name="rest" select="substring-after($text, '
')"/>
 <xsl:if test="translate($rest, '	 ', '')">
 <xsl:call-template name="isc.copyright.format">
 <xsl:with-param name="text" select="$rest"/>
 </xsl:call-template>
 </xsl:if>
</xsl:template>

<xsl:variable name="isc.copyright.text">
 <xsl:text>
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 </xsl:text>
</xsl:variable>

<xsl:variable name="isc.copyright">
```

```
<xsl:call-template name="isc.copyright.format">
 <xsl:with-param name="text">
 <xsl:for-each select="book/info/copyright | refentry/docinfo/copyright">
 <xsl:text>Copyright (C) </xsl:text>
 <xsl:call-template name="copyright.years">
 <xsl:with-param name="years" select="year"/>
 </xsl:call-template>
 <xsl:text> </xsl:text>
 <xsl:value-of select="holder"/>
 <xsl:value-of select="$isc.copyright.breakline"/>
 <xsl:text>
</xsl:text>
 </xsl:for-each>
 <xsl:value-of select="$isc.copyright.text"/>
 </xsl:with-param>
</xsl:call-template>
</xsl:variable>
</xsl:stylesheet>
```

<!--

- Local variables:

- mode: sgml

- End:

-->

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\* /opt/cola/permits/1335933469\_1654004406.6611712/0/reflectasm-1-11-3-sources-2-jar/com/esotericsoftware/reflectasm/ConstructorAccess.java

\* /opt/cola/permits/1335933469\_1654004406.6611712/0/reflectasm-1-11-3-sources-2-jar/com/esotericsoftware/reflectasm/FieldAccess.java

\* /opt/cola/permits/1335933469\_1654004406.6611712/0/reflectasm-1-11-3-sources-2-jar/com/esotericsoftware/reflectasm/PublicConstructorAccess.java

\* /opt/cola/permits/1335933469\_1654004406.6611712/0/reflectasm-1-11-3-sources-2-jar/com/esotericsoftware/reflectasm/MethodAccess.java

## 1.66 minlog 1.3.0

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## 1.70 jaxb-api 2.3.1

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## 1.72 tomcat-embed-websocket 9.0.60

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support/man2html.c

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f,EADnCD,EAACc,EAAGC,GAEjBD,EAAEgB,UAAkB,OAANf,EAAaC,OAAOe,OAAOhB,IAAMa,EAAGE,UAAYf,EAAEe,UAAW,IAAIF,GAuR/ED,CAAUL,EAA0BC,GAMpCD,EAAyBQ,UAAUE,kBAaOB,SAAUC,GAC7D,IAAIC,EAAW1B,EAAO2B,UAAUC,qBAAqBC,cAAc,YACnEH,EAASI,UAAy,YAAeL,EAAW,WAI/C,IAHA,IAAIM,EAgBZ,SAASC,EAAWC,GACHB,MAAI,YAAaA,EACNA,EAACK,QAGLD;,,,,,,,,,,,,;OArBMD,CAAWN,GAAUS,WAE9BC,EAAWIC,KAAKc,KAAKqB,iBAaIB,cACjCC,EAAI,EAAGA,EAAIF,EAASG,OAAQD,IAcJcCtC,EAAO2B,UAAUa,OAAOJ,EAASE,IAErCpC,KAAKc,KAAKyB,KAAKC,YAAyX,IAExBjB,EAIbKc,CAmB3CjB,EAAQ8C,uBACV7B,EAAYB8B,WAAa,CACIC,CAAEC,KAAM/C,EAAKgD,aAEjBhC,EAAYBiC,eAAiB,WAAc,MAAO,CAC3D,CAAEF,UAMMG,EAAWJ,WAAy,CAAC,CAAEC,KAAM/C,EAAKmD,OAAQC,KAAm,CAACID,EAAOmD,eA0BvE,IA8IIC,EA9IAC,EAAqB,CACrB,CAAEC,QAASID,EAAUmD,iBAaKBC,KAAm,CAACvD,EAASwD,mBACvD,CAAEH,QAASrD,EAASyD,aAAcC,YAAavD,EAAUmD,kBACzD,CAAED,QAASID,EAAUwD,sBAaUbj,KAAm,CAACvD,EAASwD,mBAC5D,CAAEH,QAASrD,EAAS4D,kBAaAmBF,YAAavD,EAAUwD,uBAC9D,CAAEN,QAASID,EAAU0D,qBAAsBN,KAAm,CAACvD,EAASwD,mBAC3D,CAAEH,QAASrD,EAAS8D,iBAaKBJ,YAAavD,EAAU0D,uBAE7DE,EAA4C,WAC5C,SAASA,EAA2BC,EAAWC,GAC3ChE,KAAK+D,UAAyA,EACjB/D,KAAKgE,iBAaAmBA,EAM5B,OAJAF,EAA2B1C,UAAU6C,sBAaWb,SAAUC,GACnE,IAAIInE,EAAWC,KAAKgE,iBAaIBG,eAAeD,GACpD,OAAO,IAAIE,EAAoBrE,EAAUA,EAASsE,SAASC,IAAIpE,EAAUwD,uBAaWb3D,EAASsE,SAASC,IAAIpE,EAAUmD,kBAaAmBtD,EAASsE,SAASC,IAAIpE,EAAU0D,wBAEjLE,EAToC,GAW3CM,EAAqC,WACrC,SAASA,EAAoBG,EAAWC,EAAoBC,EAAeC,GACvE1E,KAAKuE,UAAyA,EACjBvE,KAAKwE,mBAaQBA,EAC1BxE,KAAKyE,cAAgBA,EACrBzE,KAAK0E,gBAaKBA,EACvB1E,KAAK2E,WAAa,IAAIhF,EAAQIF,mBAoEIC,OAIEAtE,OAAOuE,eAAeT,EAAoBhD,UAAW,WAAy,CAC7Dkd,IAAK,WACD,OAAOtE,KAAKuE,UAAUF,UAE1BS,YAAy,EACZC,cAAc,IAEIBX,EAAoBhD,UAAU4D,kBAaOB,SAAUC,GACxD,OAAOjF,KAAKuE,UAAUS,kBAaKBC,IAE5Cb,EAAoBhD,UAAU8D,mBAaQb,SAAUD,GACzD,OAAOjF,KAAKuE,UAAUW,mBAaAmBD,IAE7Cb,EAAoBhD,UAAU+D,kCAAoC,SAAUF,GACxE,OAAOjF,KAAKuE,UAAUY,kCAaKCF,IAE5Db,EAAoBhD,UAAUgE,mCAAqC,SAAUH,GACzE,OAAOjF,KAAKuE,UAAUa,mCAAmCH,IAE7Db,EAAoBhD,UAAUiE,oBAAsB,SAAUC,GAC1D,OAAOtF,KAAKuE,UAAUc,oBAaOB,IAE9CIB,EAAoBhD,UAAUmE,qBAaUjB,SAAU5C,GAC3D,GAAI3C,KAAKuE,UAAUiB,cAAc7C,GAC7B,MAAM,IAAI8C,MAAM7F,EAAK8F,WAAW/C,GAAQ,0DAGhDyB,EAAoBhD,UAAUuE,eAAiB,SAAUC,EAAUC,GAC/D7F,KAAKuF,qBAAqBK,GAC1B,IAAIE,EAAc9F,KAAK0E,gBAaGqB,QAAQH,GAU,GACzD5F,KAAK0E,gBAaGbsB,YAAyJ,EAAU5F,KAAK2E,WAAWsB,iBAaIBrG,EAAKsG,SAAUJ,EAAaD,IACxG7F,KAAKmG,cAAcP,IAEvBxB,EAAoBhD,UAAUgF,kBAaOB,SAAUC,EAAWR,GACnE7F,KAAKuF,qBAAqBc,GAC1B,IAAIP,EAAc9F,KAAKwE,mBAaAmBuB,QAAQM,GAAW,GAC7DrG,KAAKwE,mBAaAmB8B,aAAaD,EAAWrG,KAAK2E,WAAWsB,iBAaIBrG,EAAK2G,UAAWT,EAAaD,IAC9G7F,KAAKmG,cAAcE,IAEvBjC,EAAoBhD,UAAUoF,kBAaOB,SAAUIB,EAAWO,GACnE7F,KAAKuF,qBAAqBD,GAC1B,IAAIQ,EAAc9F,KAAKwE,mBAaAmBuB,QAAQT,GAAW,GAC7DtF,KAAKwE,mBAaAmB8B,aAAahB,EAAWtF,KAAK2E,WAAWsB,iBAaIBrG,EAAK6G,UAAWX,EAAaD,IAC9G7F,KAAKmG,cAAcb,IAEvBIB,EAAoBhD,UAAUsF,aAAe,SAAUC,EAAMd,GACzD7F,KAAKuF,qBAAqBoB,GAC1B,IAAIb,EAAc9F,KAAKyE,cAAcsB,QAAQY,GAAM,GACnD3G,KAAKyE,cAAcmC,QAAQD,EAAM3G,KAAK2E,WAAWsB,iBAaIBrG,EAAKiH,KAAmF,EAAaD,IAC1F7F,KAAKmG,cAAcQ,IAEvBvC,EAAoBhD,UAAU0F,iBAaAmB,SAAUC,GACvD/G,KAAKuE,UAAUuC,iBAaIBc,IAEpC3C,EAAoBhD,UAAU4F,WAAa,WACvChH,KAAKuE,UAAUyC,cAEnB5C,EAAoBhD,UAAU+e,cAAgB,SAAUxD,GACpD3C,KAAKuE,UAAU4B,cAAcxD,IAEjCyB,EAAoBhD,UAAU6F,sBAaWb,SAAUC,GAC5D,OAAOA,EAAMnH,EAASoH,uBAAYB,MAEnD/C,EAAoBhD,UAAUgG,YAAc,SAAUnC,GACID,OAAOjF,KAAK0E,gBAaGqB,QAAQd,GAAY,GAAMoC,IAEnDjD,EA1E6B,GA0FpCkD,EAA6B1H,EAAK2H,sBAAsB7H,EAAuB8H,qBAAsB,qBAAsB,CAC3H,CAAEPe,QAASxD,EAAK6H,iBAaKBC,SAP7B,CAAEC,UAAWxE,GAO8ByE,OAAO,GACvD,CACIxE,QAASzD,EAAQkI,wBACjBC,SAAUhE,EACVR,KAAm,CAAC1D,EAAKmI,SAAUnI,EAAKoI,oBAAsB/BC,EAAgCrI,EAAK2H,sBAAsBD,EAA4B,wBAAYB5H,EAAuBwI,+CAMvIhF,EACA,SAASA,OAIeR,WAAa,CACrC,CAAEC,KAAM/C,EAAKsG,SAAUID,KAAm,CAAC,CACIB7D,QAAS,CAAcC,EAAUKI,sBACpBR,UAAW,CACP,CAAEvE,QAASzD,EAAQ8C,sBAaUjBqF,SAAUIH;,,,,,,,,,,,,;AAyBxEzB,EAAQ+D,4BAa8BA,EACtC/D,EAAQ8I,8BAaGCA,EACx9I,EAAQjI,0BAa4BxH,EACpCzB,EAAQkI,6DAA+DIF,EACvEhE,EAAQmJ,6DAA+DxE,EACvE3E,EAAQoJ,4BAa8BjB,EAETChH,OAAOuE,eAAe1F,EAAS,a

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AAc,CAAEqJ,OAAO","sourcesContent":["/*\n * @license Angular v11.0.2\n * (c) 2010-2020 Google LLC.
https://angular.io/\n * License: MIT\n *\n\n(function (global, factory) {\n typeof exports === 'object' && typeof
module !== 'undefined' ? factory(exports, require('@angular/core'), require('@angular/core/testing'),
require('@angular/platform-browser-dynamic'), require('@angular/platform-browser/testing'),
require('@angular/common'), require('@angular/compiler'), require('@angular/compiler/testing')) :\n typeof define
=== 'function' && define.amd ? define('@angular/platform-browser-dynamic/testing', ['exports', '@angular/core',
'@angular/core/testing', '@angular/platform-browser-dynamic', '@angular/platform-browser/testing',
'@angular/common', '@angular/compiler', '@angular/compiler/testing'], factory) :\n (global = global || self,
factory((global.ng = global.ng || {}, global.ng.platformBrowserDynamic = global.ng.platformBrowserDynamic || {},
global.ng.platformBrowserDynamic.testing = {}), global.ng.core, global.ng.core.testing,
global.ng.platformBrowserDynamic, global.ng.platformBrowser.testing, global.ng.common, global.ng.compiler,
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*****\n\n /* global
Reflect, Promise *\n\n var extendStatics = function (d, b) {\n extendStatics = Object.setPrototypeOf ||\n ({ __proto__: [] } instanceof Array && function (d, b) { d.__proto__ = b; }) ||\n function (d, b) { for (var p in b)\n if (b.hasOwnProperty(p))\n d[p] = b[p]; }; return extendStatics(d, b);\n };\n\n function __extends(d, b) {\n extendStatics(d, b);\n function __() { this.constructor = d; }\n d.prototype
= b === null ? Object.create(b) : (__proto__ = b.prototype, new __());\n }\n\n var __assign = function () {\n __assign = Object.assign || function __assign(t) {\n for (var s, i = 1, n = arguments.length; i < n; i++) {\n s = arguments[i];\n for (var p in s)\n if (Object.prototype.hasOwnProperty.call(s, p))\n t[p] = s[p];\n }\n return t;\n }; return __assign.apply(this, arguments);\n };\n\n function __rest(s, e) {\n var t = {};\n for (var p in s)\n if (Object.prototype.hasOwnProperty.call(s, p)
&& e.indexOf(p) < 0)\n t[p] = s[p];\n if (s != null && typeof Object.getOwnPropertySymbols ===
\"function\")\n for (var i = 0, p = Object.getOwnPropertySymbols(s); i < p.length; i++)\n if
(e.indexOf(p[i]) < 0 && Object.prototype.propertyIsEnumerable.call(s, p[i]))\n t[p[i]] = s[p[i]];\n }\n\n return t;\n }\n\n function __decorate(decorators, target, key, desc) {\n var c = arguments.length, r = c
< 3 ? target : desc === null ? desc = Object.getOwnPropertyDescriptor(target, key) : desc, d;\n if (typeof Reflect
=== \"object\" && typeof Reflect.decorate === \"function\")\n r = Reflect.decorate(decorators, target, key, desc);\n else\n for (var i = decorators.length - 1; i >= 0; i--)\n if (d = decorators[i])\n r = (c < 3 ? d(r) : c > 3 ? d(target, key, r) : d(target, key)) || r;\n return c > 3 && r &&
Object.defineProperty(target, key, r, r);\n }\n\n function __param(paramIndex, decorator) {\n return function
(target, key) { decorator(target, key, paramIndex); }\n }\n\n function __metadata(metadataKey, metadataValue)
{\n if (typeof Reflect === \"object\" && typeof Reflect.metadata === \"function\")\n return
Reflect.metadata(metadataKey, metadataValue);\n }\n\n function __awaiter(thisArg, _arguments, P, generator) {\n function adopt(value) { return value instanceof P ? value : new P(function (resolve) { resolve(value); }); }\n return new (P || (P = Promise))(function (resolve, reject) {\n function fulfilled(value) { try {\n step(generator.next(value));\n }\n catch (e) {\n reject(e);\n }\n })\n function
rejected(value) { try {\n step(generator[\"throw\"](value));\n }\n catch (e) {\n

```

```

reject(e);\n } }\n function step(result) { result.done ? resolve(result.value) :
adopt(result.value).then(fulfilled, rejected); }\n step((generator = generator.apply(thisArg, _arguments ||
[])).next());\n });\n }\n function __generator(thisArg, body) {\n var _ = { label: 0, sent: function () { if
(t[0] & 1)\n throw t[1]; return t[1]; }, trys: [], ops: [] }, f, y, t, g;\n return g = { next: verb(0), "throw":
verb(1), "return": verb(2) }, typeof Symbol === "function" && (g[Symbol.iterator] = function () { return this; }),
g;\n function verb(n) { return function (v) { return step([n, v]); }; }\n function step(op) {\n if (f)\n throw new TypeError("Generator is already executing.");\n while (_)\n try {\n if
(f = 1, y && (t = op[0] & 2 ? y["return"] : op[0] ? y["throw"] || ((t = y["return"]) && t.call(y, 0) : y.next) &&
!(t = t.call(y, op[1])).done)\n return t;\n if (y = 0, t)\n op = [op[0] & 2,
t.value];\n switch (op[0]) {\n case 0:\n case 1:\n t = op;\n break;\n case 4:\n _label++;\n return { value: op[1],
done: false };}\n case 5:\n _label++;\n y = op[1];\n op = [0];\n continue;\n case 7:\n op = _ops.pop();\n _trys.pop();\n continue;\n default:\n if (!(t = _trys, t = t.length > 0
&& t[t.length - 1]) && (op[0] === 6 || op[0] === 2)) {\n _ = 0;\n continue;\n }\n if (op[0] === 3 && (!t || (op[1] > t[0] && op[1] < t[3]))) {\n
_label = op[1];\n break;\n }\n if (op[0] === 6 && _label <
t[1]) {\n _label = t[1];\n t = op;\n break;\n }\n if (t && _label < t[2]) {\n _label = t[2];\n _ops.push(op);\n break;\n }\n if (t[2])\n _ops.pop();\n _trys.pop();\n continue;\n }\n op =
body.call(thisArg, _);\n }\n catch (e) {\n op = [6, e];\n y = 0;\n }\n finally {\n f = t = 0;\n }\n if (op[0] & 5)\n throw op[1];\n return { value: op[0] ? op[1] : void 0, done: true }; }\n }\n }\n var __createBinding = Object.create ? (function
(o, m, k, k2) {\n if (k2 === undefined)\n k2 = k;\n Object.defineProperty(o, k2, { enumerable: true,
get: function () { return m[k]; } });\n }) : (function (o, m, k, k2) {\n if (k2 === undefined)\n k2 = k;\n o[k2] = m[k];\n });\n function __exportStar(m, exports) {\n for (var p in m)\n if (p !== "default"
&& !exports.hasOwnProperty(p))\n __createBinding(exports, m, p);\n }\n function __values(o) {\n var s = typeof Symbol === "function" && Symbol.iterator, m = s && o[s], i = 0;\n if (m)\n return
m.call(o);\n if (o && typeof o.length === "number")\n return {\n next: function () {\n if (o && i <= o.length)\n o = void 0;\n return { value: o && o[i++], done: !o };}\n }\n }\n throw new TypeError(s ? "Object is not iterable." : "Symbol.iterator is not defined.");\n }\n function __read(o, n) {\n var m = typeof Symbol === "function" && o[Symbol.iterator];\n if (!m)\n return o;\n var i = m.call(o), r, ar = [], e;\n try {\n while ((n === void 0 || n-- > 0) && !(r =
i.next()).done)\n ar.push(r.value);\n }\n catch (error) {\n e = { error: error };}\n }\n finally {\n try {\n if (r && !r.done && (m = i["return"]))\n m.call(i);\n }\n finally {\n if (e)\n throw e.error;\n }\n }\n return ar;\n }\n function
__spread() {\n for (var ar = [], i = 0; i < arguments.length; i++)\n ar = ar.concat(__read(arguments[i]));\n return ar;\n }\n function __spreadArrays() {\n for (var s = 0, i = 0, il = arguments.length; i < il; i++)\n s += arguments[i].length;\n for (var r = Array(s), k = 0, i = 0; i < il; i++)\n for (var a = arguments[i], j
= 0, jl = a.length; j < jl; j++, k++)\n r[k] = a[j];\n return r;\n }\n }\n function __await(v) {\n return this instanceof __await ? (this.v = v, this) : new __await(v);\n }\n function __asyncGenerator(thisArg,
_arguments, generator) {\n if (!Symbol.asyncIterator)\n throw new TypeError("Symbol.asyncIterator is
not defined.");\n var g = generator.apply(thisArg, _arguments || []), i, q = [];\n return i = { }, verb("next"),
verb("throw"), verb("return"), i[Symbol.asyncIterator] = function () { return this; }, i;\n function verb(n) { if
(g[n])\n i[n] = function (v) { return new Promise(function (a, b) { q.push([n, v, a, b]) > 1 || resume(n, v); }); };\n }\n function resume(n, v) { try {\n step(g[n](v));\n }\n catch (e) {\n settle(q[0][3], e);\n }\n }\n function step(r) { r.value instanceof __await ? Promise.resolve(r.value.v).then(fulfill, reject) :

```

```

settle(q[0][2], r); }
function fulfill(value) { resume('\next', value); }
function reject(value) {
resume('\throw', value); }
function settle(f, v) { if (f(v), q.shift(), q.length)
resume(q[0][0], q[0][1]);
}
function __asyncDelegator(o) {
var i, p;
return i = {}, verb('\next'), verb('\throw'),
function (e) { throw e; }, verb('\return'), i[Symbol.iterator] = function () { return this; }, i;
function verb(n, f) { i[n] = o[n] ? function (v) { return (p = !p) ? { value: __await(o[n](v)), done: n === '\return' } : f ? f(v) : v; } : f; }
}
function __asyncValues(o) {
if (!Symbol.asyncIterator)
throw new
TypeError('\Symbol.asyncIterator is not defined.');
```

```

var m = o[Symbol.asyncIterator], i;
return m ?
m.call(o) : (o = typeof __values === '\function' ? __values(o) : o[Symbol.iterator](), i = {}, verb('\next'),
verb('\throw'), verb('\return'), i[Symbol.asyncIterator] = function () { return this; }, i);
function verb(n) {
i[n] = o[n] && function (v) { return new Promise(function (resolve, reject) { v = o[n](v), settle(resolve, reject,
v.done, v.value); }); }; }
function settle(resolve, reject, d, v) { Promise.resolve(v).then(function (v) {
resolve({ value: v, done: d }); }, reject); }
}
function __makeTemplateObject(cooked, raw) {
if (Object.defineProperty) {
Object.defineProperty(cooked, '\raw', { value: raw });
}
else {
cooked.raw = raw;
}
return cooked;
}
;
var __setModuleDefault = Object.create ?
(function (o, v) {
Object.defineProperty(o, '\default', { enumerable: true, value: v });
}) : function (o, v) {
o['\default'] = v;
};
function __importStar(mod) {
if (mod && mod.__esModule)
return mod;
var result = {};
if (mod != null)
for (var k in mod)
if (Object.hasOwnProperty.call(mod, k))
__createBinding(result, mod, k);
__setModuleDefault(result, mod);
return result;
}
function __importDefault(mod) {
return (mod
&& mod.__esModule) ? mod : { default: mod };
}
function __classPrivateFieldGet(receiver, privateMap) {
if (!privateMap.has(receiver))
throw new TypeError('\attempted to get private field on non-
instance');
```

```

}
return privateMap.get(receiver);
}
function __classPrivateFieldSet(receiver, privateMap, value) {
if (!privateMap.has(receiver))
throw new TypeError('\attempted to set private
field on non-instance');
```

```

}
privateMap.set(receiver, value);
return value;
}
}
/**
 * A
DOM based implementation of the TestComponentRenderer.
 */
var DOMTestComponentRenderer = /**
@class */
(function (_super) {
__extends(DOMTestComponentRenderer, _super);
function
DOMTestComponentRenderer(_doc) {
var _this = _super.call(this) || this;
_this._doc = _doc;
return _this;
}
DOMTestComponentRenderer.prototype.insertRootElement = function (rootElId) {
var template = common.getDOM().getDefaultDocument().createElement('template');
template.innerHTML = '<div id=\\\"' + rootElId + '\\\"></div>';
var rootEl =
getContent(template).firstChild;
// TODO(juliemr): can/should this be optional?
var oldRoots =
this._doc.querySelectorAll('[id^=root]');
for (var i = 0; i < oldRoots.length; i++) {
common.getDOM().remove(oldRoots[i]);
}
this._doc.body.appendChild(rootEl);
};
return DOMTestComponentRenderer;
})(testing.TestComponentRenderer);
DOMTestComponentRenderer.decorators = [
{ type: core.Injectable }
];
DOMTestComponentRenderer.ctorParameters = function () {
return [
{ type: undefined, decorators: [{ type:
core.Inject, args: [common.DOCUMENT,] }] }
];
}
function getContent(node) {
if ('content' in node)
return node.content;
}
else {
return node;
}
}
}
/**
 * @license
 * Copyright Google LLC All Rights Reserved.
 * Use of this source code is governed by an MIT-style
license that can be
 * found in the LICENSE file at https://angular.io/license
 */
/**
 * @license
 * Copyright Google LLC All Rights Reserved.
 * Use of this source code is governed by an MIT-style
license that can be
 * found in the LICENSE file at https://angular.io/license
 */
var
COMPILER_PROVIDERS = [
{ provide: testing$2.MockPipeResolver, deps: [compiler.CompileReflector]
},
{ provide: compiler.PipeResolver, useExisting: testing$2.MockPipeResolver },
{ provide:
testing$2.MockDirectiveResolver, deps: [compiler.CompileReflector] },
{ provide:
compiler.DirectiveResolver, useExisting: testing$2.MockDirectiveResolver },
{ provide:
testing$2.MockNgModuleResolver, deps: [compiler.CompileReflector] },
{ provide:
compiler.NgModuleResolver, useExisting: testing$2.MockNgModuleResolver },
];
var

```

```

TestingCompilerFactoryImpl = /** @class */ (function () {\n function TestingCompilerFactoryImpl(_injector,\n _compilerFactory) {\n this._injector = _injector;\n this._compilerFactory = _compilerFactory;\n }\n TestingCompilerFactoryImpl.prototype.createTestingCompiler = function (options) {\n var compiler\n = this._compilerFactory.createCompiler(options);\n return new TestingCompilerImpl(compiler,\n compiler.injector.get(testing$2.MockDirectiveResolver), compiler.injector.get(testing$2.MockPipeResolver),\n compiler.injector.get(testing$2.MockNgModuleResolver));\n };\n return TestingCompilerFactoryImpl;\n }());\n var TestingCompilerImpl = /** @class */ (function () {\n function TestingCompilerImpl(_compiler,\n _directiveResolver, _pipeResolver, _moduleResolver) {\n this._compiler = _compiler;\n this._directiveResolver = _directiveResolver;\n this._pipeResolver = _pipeResolver;\n this._moduleResolver = _moduleResolver;\n this._overrider = new testing.MetadataOverrider();\n }\n Object.defineProperty(TestingCompilerImpl.prototype, "injector", {\n get: function () {\n return\n this._compiler.injector;\n },\n enumerable: false,\n configurable: true\n });\n TestingCompilerImpl.prototype.compileModuleSync = function (moduleType) {\n return\n this._compiler.compileModuleSync(moduleType);\n };\n TestingCompilerImpl.prototype.compileModuleAsync = function (moduleType) {\n return\n this._compiler.compileModuleAsync(moduleType);\n };\n TestingCompilerImpl.prototype.compileModuleAndAllComponentsSync = function (moduleType) {\n return\n this._compiler.compileModuleAndAllComponentsSync(moduleType);\n };\n TestingCompilerImpl.prototype.compileModuleAndAllComponentsAsync = function (moduleType) {\n return\n this._compiler.compileModuleAndAllComponentsAsync(moduleType);\n };\n TestingCompilerImpl.prototype.getComponentFactory = function (component) {\n return\n this._compiler.getComponentFactory(component);\n };\n TestingCompilerImpl.prototype.checkOverrideAllowed = function (type) {\n if\n (this._compiler.hasAotSummary(type)) {\n throw new Error(core.stringify(type) + "\n was AOT compiled,\n so its metadata cannot be changed.");\n }\n };\n TestingCompilerImpl.prototype.overrideModule =\n function (ngModule, override) {\n this.checkOverrideAllowed(ngModule);\n var oldMetadata =\n this._moduleResolver.resolve(ngModule, false);\n this._moduleResolver.setNgModule(ngModule,\n this._overrider.overrideMetadata(core.NgModule, oldMetadata, override));\n this.clearCacheFor(ngModule);\n };\n TestingCompilerImpl.prototype.overrideDirective = function\n (directive, override) {\n this.checkOverrideAllowed(directive);\n var oldMetadata =\n this._directiveResolver.resolve(directive, false);\n this._directiveResolver.setDirective(directive,\n this._overrider.overrideMetadata(core.Directive, oldMetadata, override));\n this.clearCacheFor(directive);\n };\n TestingCompilerImpl.prototype.overrideComponent = function (component, override) {\n this.checkOverrideAllowed(component);\n var oldMetadata = this._directiveResolver.resolve(component,\n false);\n this._directiveResolver.setDirective(component, this._overrider.overrideMetadata(core.Component,\n oldMetadata, override));\n this.clearCacheFor(component);\n };\n TestingCompilerImpl.prototype.overridePipe = function (pipe, override) {\n this.checkOverrideAllowed(pipe);\n var oldMetadata = this._pipeResolver.resolve(pipe, false);\n this._pipeResolver.setPipe(pipe, this._overrider.overrideMetadata(core.Pipe, oldMetadata, override));\n this.clearCacheFor(pipe);\n };\n TestingCompilerImpl.prototype.loadAotSummaries = function\n (summaries) {\n this._compiler.loadAotSummaries(summaries);\n };\n TestingCompilerImpl.prototype.clearCache = function () {\n this._compiler.clearCache();\n };\n TestingCompilerImpl.prototype.clearCacheFor = function (type) {\n this._compiler.clearCacheFor(type);\n };\n TestingCompilerImpl.prototype.getComponentFromError = function (error) {\n return\n error[compiler.ERROR_COMPONENT_TYPE] || null;\n };\n TestingCompilerImpl.prototype.getModuleId\n = function (moduleType) {\n return\n this._moduleResolver.resolve(moduleType, true).id;\n };\n return\n TestingCompilerImpl;\n }());\n /**\n * @license\n * Copyright Google LLC All Rights\n Reserved.\n *\n * Use of this source code is governed by an MIT-style license that can be\n * found in the

```



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```
global Reflect, Promise
var extendStatics = function(d, b) {
 extendStatics =
Object.setPrototypeOf ||
 function(d, b) { for (var p in b) if (b.hasOwnProperty(p)) d[p] = b[p]; }
 return extendStatics(d, b);
}
export function __extends(d, b) {
 extendStatics(d, b);
 function __() { this.constructor = d; }
 d.prototype = b === null ? Object.create(b) : (
 __.prototype = b.prototype, new __());
}
export var __assign = function() {
 __assign = Object.assign || function(t) {
 for (var s, i = 1, n = arguments.length; i < n; i++) {
 s = arguments[i];
 for (var p in s) if (
 Object.prototype.hasOwnProperty.call(s, p)) t[p] = s[p];
 }
 return t;
 };
 return __assign.apply(this, arguments);
}
export function __rest(s, e) {
 var t = {};
 for (var p in s) if (
 Object.prototype.hasOwnProperty.call(s, p) && e.indexOf(p) < 0) t[p] = s[p];
 if (s != null && typeof Object.getOwnPropertySymbols === "function")
 for (var i = 0, p = Object.getOwnPropertySymbols(s); i < p.length; i++) {
 if (e.indexOf(p[i]) < 0 && Object.prototype.propertyIsEnumerable.call(s, p[i]))
 t[p[i]] = s[p[i]];
 }
 return t;
}
export function __decorate(decorators, target, key, desc) {
 var c = arguments.length, r = c < 3 ? target : desc === null ? desc = Object.getOwnPropertyDescriptor(target, key) : desc, d;
 if (typeof Reflect === "object" && typeof Reflect.decorate === "function") r = Reflect.decorate(decorators, target, key, desc);
 else for (var i = decorators.length - 1; i >= 0; i--) if (d = decorators[i]) r = (c < 3 ? d(r) : c > 3 ? d(target, key, r) : d(target, key)) || r;
 return c > 3 && r && Object.defineProperty(target, key, r, r);
}
export function __param(paramIndex, decorator) {
 return function(target, key) { decorator(target, key, paramIndex); }
}
export function __metadata(metadataKey, metadataValue) {
 if (typeof Reflect === "object" && typeof Reflect.metadata === "function") return Reflect.metadata(metadataKey, metadataValue);
}
export function __awaiter(thisArg, arguments, P, generator) {
 function adopt(value) { return value instanceof P ? value : new P(function(resolve) { resolve(value); }); }
 return new (P || (P = Promise))(function(resolve, reject) {
 function fulfilled(value) { try { step(generator.next(value)); } catch (e) { reject(e); } }
 function rejected(value) { try { step(generator["throw"](value)); } catch (e) { reject(e); } }
 function step(result) { result.done ? resolve(result.value) : adopt(result.value).then(fulfilled, rejected); }
 step((generator = generator.apply(thisArg, arguments || [])).next());
 });
}
export function __generator(thisArg, body) {
 var _ = { label: 0, sent: function() { if (t[0] & 1) throw t[1]; return t[1]; }, trys: [], ops: [] }, f, y, t, g;
 return g = { next: verb(0), "throw": verb(1), "return": verb(2) }, typeof Symbol === "function" && (g[Symbol.iterator] = function() { return this; }), g;
 function verb(n) { return function(v) { return step([n, v]); }; }
 function step(op) {
 if (f) throw new TypeError("Generator is already executing.");
 while (
 _ try {
 if (f = 1, y && (t = op[0] & 2 ? y["return"] : op[0] ? y["throw"] || ((t = y["return"]) && t.call(y), 0) : y.next) && !(t = t.call(y, op[1])).done) return t;
 if (y = 0, t) op = [op[0] & 2, t.value];
 switch (op[0]) {
 case 0: case 1: t = op; break;
 case 4: _label++; return { value: op[1], done: false };
 case 5: _label++; y = op[1]; op = [0]; continue;
 case 7: op = _ops.pop(); _trys.pop(); continue;
 default:
 if (!(t = _trys, t = t.length > 0 && t[t.length - 1]) && (op[0] === 6 || op[0] === 2)) { _ = 0; continue; }
 if (op[0] === 3 && (!t || (op[1] > t[0] && op[1] < t[3]))) { _label = op[1]; break; }
 if (op[0] === 6 && _label < t[1]) { _label = t[1]; t = op; break; }
 if (t && _label < t[2]) { _label = t[2]; _ops.push(op); break; }
 if (t[2])

```





```

}\r\n privateMap.set(receiver, value);\r\n return value;\r\n}\r\n", "/*\n * @license\n * Copyright Google LLC
All Rights Reserved.\n *\n * Use of this source code is governed by an MIT-style license that can be\n * found in
the LICENSE file at https://angular.io/license\n *\n\nimport { DOCUMENT, getDOM as getDOM } from
'@angular/common';\nimport { Inject, Injectable } from '@angular/core';\nimport { TestComponentRenderer } from
'@angular/core/testing';\n\n/**\n * A DOM based implementation of the TestComponentRenderer.\n
\n\n@Injectable()\nexport class DOMTestComponentRenderer extends TestComponentRenderer {\n
constructor(@Inject(DOCUMENT) private _doc: any) {\n super();\n }\n\n insertRootElement(rootElId: string)
{\n const template = getDOM().getDefaultDocument().createElement('template');\n template.innerHTML =
`<div id="\${rootElId}"></div>`; \n const rootEl = <HTMLElement>getContent(template).firstChild;\n\n //
TODO(juliemr): can/should this be optional?\n const oldRoots = this._doc.querySelectorAll('[id^=root]');\n for
(let i = 0; i < oldRoots.length; i++) {\n getDOM().remove(oldRoots[i]);\n }\n
this._doc.body.appendChild(rootEl);\n }\n\nfunction getContent(node: Node): Node {\n if ('content' in node)
{\n return (<any>node).content;\n } else {\n return node;\n }\n}\n", "/*\n * @license\n * Copyright Google
LLC All Rights Reserved.\n *\n * Use of this source code is governed by an MIT-style license that can be\n * found
in the LICENSE file at https://angular.io/license\n *\n\n`MetadataOverride` has been moved to core/testing to
allow using it from the render3 TestBed\nexport { MetadataOverride as MetadataOverride } from
'@angular/core/testing';\n", "/*\n * @license\n * Copyright Google LLC All Rights Reserved.\n *\n * Use of this
source code is governed by an MIT-style license that can be\n * found in the LICENSE file at
https://angular.io/license\n *\n\nimport { CompileReflector, DirectiveResolver, ERROR_COMPONENT_TYPE,
NgModuleResolver, PipeResolver } from '@angular/compiler';\nimport { MockDirectiveResolver,
MockNgModuleResolver, MockPipeResolver } from '@angular/compiler/testing';\nimport { CompilerFactory,
CompilerOptions, Component, ComponentFactory, Directive, Injector, ModuleWithComponentFactories,
NgModule, NgModuleFactory, Pipe, StaticProvider, Type, stringify as stringify } from '@angular/core';\nimport
{ MetadataOverride, TestingCompiler as TestingCompiler, TestingCompilerFactory as TestingCompilerFactory }
from '@angular/core/testing';\nimport { CompilerImpl as CompilerImpl } from '@angular/platform-browser-
dynamic';\nimport { MetadataOverride } from './metadata_override';\n\nexport const COMPILER_PROVIDERS:
StaticProvider[] = [\n { provide: MockPipeResolver, deps: [CompileReflector]},\n { provide: PipeResolver,
useExisting: MockPipeResolver},\n { provide: MockDirectiveResolver, deps: [CompileReflector]},\n { provide:
DirectiveResolver, useExisting: MockDirectiveResolver},\n { provide: MockNgModuleResolver, deps:
[CompileReflector]},\n { provide: NgModuleResolver, useExisting: MockNgModuleResolver},\n];\n\nexport class
TestingCompilerFactoryImpl implements TestingCompilerFactory {\n constructor(private _injector: Injector,
private _compilerFactory: CompilerFactory) {}\n\n createTestingCompiler(options: CompilerOptions[]):
TestingCompiler {\n const compiler = <CompilerImpl>this._compilerFactory.createCompiler(options);\n return
new TestingCompilerImpl(\n compiler, compiler.injector.get(MockDirectiveResolver),\n
compiler.injector.get(MockPipeResolver), compiler.injector.get(MockNgModuleResolver));\n }\n\nexport class
TestingCompilerImpl implements TestingCompiler {\n private _override = new MetadataOverride();\n
constructor(\n private _compiler: CompilerImpl, private _directiveResolver: MockDirectiveResolver,\n
private _pipeResolver: MockPipeResolver, private _moduleResolver: MockNgModuleResolver) {}\n\n get injector():
Injector {\n return this._compiler.injector;\n }\n\n compileModuleSync<T>(moduleType: Type<T>):
NgModuleFactory<T> {\n return this._compiler.compileModuleSync(moduleType);\n }\n\n
compileModuleAsync<T>(moduleType: Type<T>): Promise<NgModuleFactory<T>> {\n return
this._compiler.compileModuleAsync(moduleType);\n }\n\n
compileModuleAndAllComponentsSync<T>(moduleType: Type<T>): ModuleWithComponentFactories<T> {\n
return this._compiler.compileModuleAndAllComponentsSync(moduleType);\n }\n\n
compileModuleAndAllComponentsAsync<T>(moduleType: Type<T>):\n
Promise<ModuleWithComponentFactories<T>> {\n return
this._compiler.compileModuleAndAllComponentsAsync(moduleType);\n }\n\n
getComponentFactory<T>(component: Type<T>): ComponentFactory<T> {\n return

```



BrowserDynamicTestingModule {\n}\n", "/\*\n \* @license\n \* Copyright Google LLC All Rights Reserved.\n \*\n \* Use of this source code is governed by an MIT-style license that can be\n \* found in the LICENSE file at  
https://angular.io/license\n \*\n \*\n \* @module\n \* @description\n \* Entry point for all public APIs of this  
package.\n \*\n \* ^\n \* export \* from './src/testing';\n \*", "/\*\n \* @license\n \* Copyright Google LLC All Rights Reserved.\n \*\n \* Use of this source code is governed by an MIT-style license that can be\n \* found in the LICENSE file at  
https://angular.io/license\n \*\n \*\n \* This file is not used to build this module. It is only used during editing\n \* by the TypeScript language service and during build for verification. `ngc`\n \* replaces this file with production index.ts when it rewrites private symbol\n \* names.\n \* ^\n \* export \* from './public\_api';\n \*", "/\*\n \* Generated bundle index. Do not edit.\n \* ^\n \* export \* from './index';\n \* ^\n \* export { COMPILER\_PROVIDERS as angular\_packages\_platform\_browser\_dynamic\_testing\_testing\_a, TestingCompilerFactoryImpl as angular\_packages\_platform\_browser\_dynamic\_testing\_testing\_b } from './src/compiler\_factory';\n \*", "names": ["getDOM", "TestComponentRenderer", "Injectable", "Inject", "DOCUMENT", "MockPipeResolver", "CompileReflector", "PipeResolver", "MockDirectiveResolver", "DirectiveResolver", "MockNgModuleResolver", "NgModuleResolver", "MetadataOverride", "stringify", "NgModule", "Directive", "Component", "Pipe", "ERROR\_COMPONENT\_TYPE", "createPlatformFactory", "platformCoreDynamic", "COMPILER\_OPTIONS", "TestingCompilerFactory", "Injector", "CompilerFactory", "INTERNAL\_BROWSER\_DYNAMIC\_PLATFORM\_PROVIDERS", "BrowserTestingModule"], "mappings": ";;;;;;;;;;IAAA;;;;;;;;;;;IAcA;IAEA,IAAI,aAAa,GAAG,UAAS,CAAC,EAAE,CAAC;QAC7B,aAAa,GAAG,MAAM,CAAC,cAAc;aAChC,EAAE,SAAS,EAAE,EAAE,EAAE,YAA Y,KAAK,IAAI,UAAU,CAAC,EAAE,CAAC,IAAI,CAAC,CAAC,SAAS,GAAG,CAAC,CAAC,EAAE,CAAC;YAC5E,UAAU,CAAC,EAAE,CAAC,IAAI,KAAK,IAAI,CAAC,IAAI,CAAC;gBAAE,IAAI,CAAC,CAAC,cAAc,CAAC,CAAC,CAAC;oBAAE,CAAC,CAAC,CAAC,CAAC,GAAG,CAAC,CAAC,CAAC,CAAC,EAAE,CAAC;QAC/E,OAAO,aAAa,CAAC,CAAC,EAAE,CAAC,CAAC,CAAC;IAC/B,CAAC,CAAC;aAEc,SAAS,CAAC,CAAC,EAAE,CAAC;QAC1B,aAAa,CAAC,CAAC,EAAE,CAAC,CAAC,CAAC;QACpB,SAAS,EAAE,KAAK,IAAI,CAAC,WAAW,GAAG,CAAC,CAAC,EAAE;QACvC,CAAC,CAAC,SAAS,GAAG,CAAC,KAAK,IAAI,GAAG,MAAM,CAAC,MAAM,CAAC,CAAC,CAAC,IAAI,EAAE,CAAC,SAAS,GAAG,CAAC,CAAC,SAAS,EAAE,IAAI,EAAE,EAAE,CAAC,CAAC;IACzF,CAAC;IAEM,IAAI,QAAQ,GAAG;QACIB,QAAQ,GAAG,MAAM,CAAC,MAAM,IAAI,SAAS,QAAQ,CAAC,CAAC;YAC3C,KAAK,IAAI,CAAC,EAAE,CAAC,GAAG,CAAC,EAAE,CAAC,GAAG,SAAS,CAAC,MAAM,EAAE,CAAC,GAAG,CAAC,EAAE,CAAC,EAAE,EAAE;gBACjD,CAAC,GAAG,SAAS,CAAC,CAAC,CAAC,CAAC;gBACjB,KAAK,IAAI,CAAC,IAAI,CAAC;oBAAE,IAAI,MAAM,CAAC,SAAS,CAAC,cAAc,CAAC,IAAI,CAAC,CAAC,EAAE,CAAC,CAAC;wBAAE,CAAC,CAAC,CAAC,GAAG,CAAC,CAAC,CAAC,CAAC,CAAC;aAChF;YACD,OAAO,CAAC,CAAC;SACZ,CAAA;QACD,OAAO,QAAQ,CAAC,KAAK,CAAC,IAAI,EAAE,SAAS,CAAC,CAAC;IAC3C,CAAC,CAAA;aAEe,MAAM,CAAC,CAAC,EAAE,CAAC;QACvB,IAAI,CAAC,GAAG,EAAE,CAAC;QACX,KAAK,IAAI,CAAC,IAAI,CAAC;YAAE,IAAI,MAAM,CAAC,SAAS,CAAC,cAAc,CAAC,IAAI,CAAC,CAAC,EAAE,CAAC,CAAC,IAAI,CAAC,CAAC,OAAO,CAAC,CAAC,CAAC,GAAG,CAAC;gBAC/E,CAAC,CAAC,CAAC,CAAC,GAAG,CAAC,CAAC,CAAC,CAAC,CAAC,CAAC;QAC7H,IAAI,CAAC,IAAI,IAAI,IAAI,OAAO,MAAM,CAAC,qBAAqB,KAAK,UAAU;YAC/D,KAAK,IAAI,CAAC,GAAG,CAAC,EAAE,CAAC,GAAG,MAAM,CAAC,qBAAqB,CAAC,CAAC,CAAC,EAAE,CAAC,GAAG,CAAC,CAAC,MAAM,EAAE,CAAC,EAAE,EAAE;gBACpE,IAAI,CAAC,CAAC,OAAO,CAAC,CAAC,CAAC,CAAC,CAAC,GAAG,CAAC,IAAI,MAAM,CAAC,SAAS,CAAC,oBAAoB,CAAC,IAAI,CAAC,CAAC,EAAE,CAAC,CAAC,CAAC,CAAC,CAAC;oBAC1E,CAAC,CAAC,CAAC,CAAC,CAAC,CAAC,CAAC,GAAG,CAAC,CAAC,CAAC,CAAC,CAAC,CAAC,CAAC;AACzB;QACL,OAAO,CAAC,CAAC;IACb,CAAC;aAEe,UAAU,CAAC,UAAU,EAAE,MAAM,EAAE,GAAG,EAAE,IAAI;QACpD,IAAI,CAAC,GAAG,SAAS,CAAC,MAAM,EAAE,CAAC,GAAG,CAAC,GAAG,CAAC,GAAG,MAAM,GAAG,IAAI,KAAK,IAAI,GAAG,IAAI,GAAG,MAAM,CAAC,wBAAwB,CAAC,MAAM,EAAE,GAAG,CAAC,GAAG,IAAI,EAAE,CAAC,CAAC;QAC7H,IAAI,OAAO,OAAO,KAAK,QAAQ,IAAI,OAAO,OAAO,CAAC,QAAQ,KAAK,UAAU;YAAE,CAAC,GAAG,OAAO,CAAC,QAAQ,CAAC,UAAU,EAAE,MAAM,EAAE,GAAG,EAAE,IAAI,CAAC,CAAC;;YAC1H,KAAK,IAAI,CAAC,GAAG,UAAU,CAAC,MAAM,GAAG,CAAC,EAAE,CAAC,IAAI,CAAC,EAAE,CAAC,EAAE;gBAAE,IAAI,CAAC,GAAG,UAAU,CAAC,CAAC,CAAC;oBAAE,CAAC,GAAG,CAAC,CAAC,GAAG,CAAC,GAAG,CA

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```
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WA;,,,,;gBANCX,aAAQ,SAAC;oBACR,OAAO,EAAE,CAACY,8BAAoB,CAAC;oBAC/B,SAAS,EAAE;wBACT,
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;,,,;ICAA;,,,,;,,,,;," }
```

Found in path(s):

```
* /opt/cola/permits/1358260602_1657134853.7637453/0/platform-browser-dynamic-11-0-2-
tgz/package/bundles/platform-browser-dynamic-testing.umd.js.map
No license file was found, but licenses were detected in source scan.
```

```
/**
```

```
* @license
* Copyright Google LLC All Rights Reserved.
*
* Use of this source code is governed by an MIT-style license that can be
* found in the LICENSE file at https://angular.io/license
*/
```

Found in path(s):

```
* /opt/cola/permits/1358260602_1657134853.7637453/0/platform-browser-dynamic-11-0-2-
tgz/package/esm2015/testing/src/private_export_testing.js
* /opt/cola/permits/1358260602_1657134853.7637453/0/platform-browser-dynamic-11-0-2-
tgz/package/esm2015/src/platform_providers.js
* /opt/cola/permits/1358260602_1657134853.7637453/0/platform-browser-dynamic-11-0-2-
tgz/package/esm2015/src/resource_loader/resource_loader_cache.js
* /opt/cola/permits/1358260602_1657134853.7637453/0/platform-browser-dynamic-11-0-2-
tgz/package/esm2015/testing/src/platform_core_dynamic_testing.js
* /opt/cola/permits/1358260602_1657134853.7637453/0/platform-browser-dynamic-11-0-2-
tgz/package/esm2015/src/compiler_reflector.js
* /opt/cola/permits/1358260602_1657134853.7637453/0/platform-browser-dynamic-11-0-2-
tgz/package/esm2015/testing/src/dom_test_component_renderer.js
```

- \* /opt/cola/permits/1358260602\_1657134853.7637453/0/platform-browser-dynamic-11-0-2-tgz/package/esm2015/testing/src/compiler\_factory.js
- \* /opt/cola/permits/1358260602\_1657134853.7637453/0/platform-browser-dynamic-11-0-2-tgz/package/esm2015/testing/src/testing.js
- \* /opt/cola/permits/1358260602\_1657134853.7637453/0/platform-browser-dynamic-11-0-2-tgz/package/esm2015/index.js
- \* /opt/cola/permits/1358260602\_1657134853.7637453/0/platform-browser-dynamic-11-0-2-tgz/package/esm2015/src/platform-browser-dynamic.js
- \* /opt/cola/permits/1358260602\_1657134853.7637453/0/platform-browser-dynamic-11-0-2-tgz/package/esm2015/src/private\_export.js
- \* /opt/cola/permits/1358260602\_1657134853.7637453/0/platform-browser-dynamic-11-0-2-tgz/package/esm2015/public\_api.js
- \* /opt/cola/permits/1358260602\_1657134853.7637453/0/platform-browser-dynamic-11-0-2-tgz/package/esm2015/testing/index.js
- \* /opt/cola/permits/1358260602\_1657134853.7637453/0/platform-browser-dynamic-11-0-2-tgz/package/esm2015/src/compiler\_factory.js
- \* /opt/cola/permits/1358260602\_1657134853.7637453/0/platform-browser-dynamic-11-0-2-tgz/package/esm2015/src/resource\_loader/resource\_loader\_impl.js
- \* /opt/cola/permits/1358260602\_1657134853.7637453/0/platform-browser-dynamic-11-0-2-tgz/package/esm2015/src/version.js
- \* /opt/cola/permits/1358260602\_1657134853.7637453/0/platform-browser-dynamic-11-0-2-tgz/package/esm2015/testing/src/metadata\_overrider.js
- \* /opt/cola/permits/1358260602\_1657134853.7637453/0/platform-browser-dynamic-11-0-2-tgz/package/esm2015/src/platform\_core\_dynamic.js
- \* /opt/cola/permits/1358260602\_1657134853.7637453/0/platform-browser-dynamic-11-0-2-tgz/package/esm2015/testing/public\_api.js

No license file was found, but licenses were detected in source scan.

```

{"version":3,"file":"platform-browser-dynamic.js","sources":["../../../../../../packages/platform-browser-dynamic/src/compiler_reflector.ts", "../../../../../../packages/platform-browser-dynamic/src/compiler_factory.ts", "../../../../../../packages/platform-browser-dynamic/src/platform_core_dynamic.ts", "../../../../../../packages/platform-browser-dynamic/src/resource_loader/resource_loader_impl.ts", "../../../../../../packages/platform-browser-dynamic/src/platform_providers.ts", "../../../../../../packages/platform-browser-dynamic/src/resource_loader/resource_loader_cache.ts", "../../../../../../packages/platform-browser-dynamic/src/private_export.ts", "../../../../../../packages/platform-browser-dynamic/src/version.ts", "../../../../../../packages/platform-browser-dynamic/src/platform-browser-dynamic.ts", "../../../../../../packages/platform-browser-dynamic/public_api.ts", "../../../../../../packages/platform-browser-dynamic/index.ts", "../../../../../../packages/platform-browser-dynamic/platform-browser-dynamic.ts"],"sourcesContent":["/*\n * @license\n * Copyright Google LLC All Rights Reserved.\n * Use of this source code is governed by an MIT-style license that can be found in the LICENSE file at https://angular.io/license\n *\nimport { CompileReflector, ExternalReference, getUrlScheme, Identifiers, syntaxError } from '@angular/compiler';\nimport { ANALYZE_FOR_ENTRY_COMPONENTS, ChangeDetectionStrategy, ChangeDetectorRef, Component, ComponentFactory, ComponentFactoryResolver, ComponentRef, ElementRef, Injector, LOCALE_ID, NgModuleFactory, NgModuleRef, QueryList, Renderer2, SecurityContext, TemplateRef, TRANSLATIONS_FORMAT, ViewContainerRef, ViewEncapsulation, and, ccf, cmf, CodegenComponentFactoryResolver, crt, did, eld, EMPTY_ARRAY, EMPTY_MAP, inlineInterpolate, interpolate, mod, mpd, ncd, nov, pad, pid, pod, ppd, prd, qud, ReflectionCapabilities as ReflectionCapabilities,

```

```

registerModuleFactory, stringify as stringify, ted, unv, vid} from '@angular/core';\n\nexport const
MODULE_SUFFIX = ";\nconst builtinExternalReferences = createBuiltinExternalReferencesMap();\n\nexport class
JitReflector implements CompileReflector {\n private reflectionCapabilities = new ReflectionCapabilities();\n\n componentModuleUrl(type: any, cmpMetadata: Component): string {\n const moduleId =
cmpMetadata.moduleId;\n if (typeof moduleId === 'string') {\n const scheme = getUrlScheme(moduleId);\n return scheme ? moduleId : `package:${moduleId}${MODULE_SUFFIX}`;\n } else if (moduleId !== null &&
moduleId !== void 0) {\n throw syntaxError(`moduleId should be a string in "${stringify(type)}"`. See https://goo.gl/wIDDiL for more information.\n } +\n `If you're using Webpack you
should inline the template and the styles, see https://goo.gl/X2J8zc.`);\n }\n return `.${stringify(type)}`;\n }\n\n parameters(typeOrFunc: /*Type*/ any): any[][] {\n return this.reflectionCapabilities.parameters(typeOrFunc);\n }\n\n tryAnnotations(typeOrFunc: /*Type*/ any): any[] {\n return this.annotations(typeOrFunc);\n }\n\n annotations(typeOrFunc: /*Type*/ any): any[] {\n return this.reflectionCapabilities.annotations(typeOrFunc);\n }\n\n shallowAnnotations(typeOrFunc: /*Type*/ any): any[] {\n throw new Error('Not supported in JIT mode');\n }\n\n propMetadata(typeOrFunc: /*Type*/ any): {[key: string]: any[]} {\n return
this.reflectionCapabilities.propMetadata(typeOrFunc);\n }\n\n hasLifecycleHook(type: any, lcProperty: string):
boolean {\n return this.reflectionCapabilities.hasLifecycleHook(type, lcProperty);\n }\n\n guards(type: any): {[key:
string]: any} {\n return this.reflectionCapabilities.guards(type);\n }\n\n resolveExternalReference(ref:
ExternalReference): any {\n return builtinExternalReferences.get(ref) || ref.runtime;\n }\n}\n\nfunction
createBuiltinExternalReferencesMap() {\n const map = new Map<ExternalReference, any>();\n map.set(Identifiers.ANALYZE_FOR_ENTRY_COMPONENTS, ANALYZE_FOR_ENTRY_COMPONENTS);\n map.set(Identifiers.ElementRef, ElementRef);\n map.set(Identifiers.NgModuleRef, NgModuleRef);\n map.set(Identifiers.ViewContainerRef, ViewContainerRef);\n map.set(Identifiers.ChangeDetectorRef, ChangeDetectorRef);\n map.set(Identifiers.Renderer2, Renderer2);\n map.set(Identifiers.QueryList, QueryList);\n map.set(Identifiers.TemplateRef, TemplateRef);\n map.set(Identifiers.CodegenComponentFactoryResolver, CodegenComponentFactoryResolver);\n map.set(Identifiers.ComponentFactoryResolver, ComponentFactoryResolver);\n map.set(Identifiers.ComponentFactory, ComponentFactory);\n map.set(Identifiers.ComponentRef, ComponentRef);\n map.set(Identifiers.NgModuleFactory, NgModuleFactory);\n map.set(Identifiers.createModuleFactory, cmf);\n map.set(Identifiers.moduleDef, mod);\n map.set(Identifiers.moduleProviderDef, mpd);\n map.set(Identifiers.RegisterModuleFactoryFn, registerModuleFactory);\n map.set(Identifiers.Injector, Injector);\n map.set(Identifiers.ViewEncapsulation, ViewEncapsulation);\n map.set(Identifiers.ChangeDetectionStrategy, ChangeDetectionStrategy);\n map.set(Identifiers.SecurityContext, SecurityContext);\n map.set(Identifiers.LOCALE_ID, LOCALE_ID);\n map.set(Identifiers.TRANSLATIONS_FORMAT, TRANSLATIONS_FORMAT);\n map.set(Identifiers.inlineInterpolate, inlineInterpolate);\n map.set(Identifiers.interpolate, interpolate);\n map.set(Identifiers.EMPTY_ARRAY, EMPTY_ARRAY);\n map.set(Identifiers.EMPTY_MAP, EMPTY_MAP);\n map.set(Identifiers.viewDef, vid);\n map.set(Identifiers.elementDef, eld);\n map.set(Identifiers.anchorDef, and);\n map.set(Identifiers.textDef, ted);\n map.set(Identifiers.directiveDef, did);\n map.set(Identifiers.providerDef, prd);\n map.set(Identifiers.queryDef, qud);\n map.set(Identifiers.pureArrayDef, pad);\n map.set(Identifiers.pureObjectDef, pod);\n map.set(Identifiers.purePipeDef, ppd);\n map.set(Identifiers.pipeDef, pid);\n map.set(Identifiers.nodeValue, nov);\n map.set(Identifiers.ngContentDef, ncd);\n map.set(Identifiers.unwrapValue, unv);\n map.set(Identifiers.createRendererType2, crt);\n map.set(Identifiers.createComponentFactory, ccf);\n return map;\n}\n\n"/**\n * @license\n * Copyright Google LLC All Rights Reserved.\n * Use of this source
code is governed by an MIT-style license that can be\n * found in the LICENSE file at https://angular.io/license\n */\n\nimport {CompileMetadataResolver, CompilerConfig, CompileReflector, DirectiveNormalizer, DirectiveResolver, DomElementSchemaRegistry, ElementSchemaRegistry, HtmlParser, I18NHtmlParser, JitCompiler, JitEvaluator, JitSummaryResolver, Lexer, NgModuleCompiler, NgModuleResolver, Parser, PipeResolver, ProviderMeta, ResourceLoader, StaticSymbolCache, StyleCompiler, SummaryResolver, TemplateParser, UrlResolver, ViewCompiler} from '@angular/compiler';\nimport {Compiler, CompilerFactory,

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CompilerOptions, ComponentFactory, Inject, InjectionToken, Injector, isDevMode, MissingTranslationStrategy,
ModuleWithComponentFactories, NgModuleFactory, Optional, PACKAGE_ROOT_URL, StaticProvider,
TRANSLATIONS, TRANSLATIONS_FORMAT, Type, ViewEncapsulation, Console as Console} from
'@angular/core';\n\nimport { JitReflector } from './compiler_reflector';\n\nexport const
ERROR_COLLECTOR_TOKEN = new InjectionToken('ErrorCollector');\n\n/**\n * A default provider for { @link
PACKAGE_ROOT_URL } that maps to './.\n */\n\nexport const DEFAULT_PACKAGE_URL_PROVIDER = {\n
provide: PACKAGE_ROOT_URL,\n useValue: './\n};\n\nconst _NO_RESOURCE_LOADER: ResourceLoader =
{\n get(url: string): Promise<string> {\n throw new Error(\n `No ResourceLoader implementation has been
provided. Can't read the url \"${url}\"`);\n };\n};\n\nconst baseHtmlParser = new
InjectionToken('HtmlParser');\n\nexport class CompilerImpl implements Compiler {\n private _delegate:
JitCompiler;\n public readonly injector: Injector;\n constructor(\n injector: Injector, private _metadataResolver:
CompileMetadataResolver,\n templateParser: TemplateParser, styleCompiler: StyleCompiler, viewCompiler:
ViewCompiler,\n NgModuleCompiler: NgModuleCompiler, summaryResolver:
SummaryResolver<Type<any>>,\n compileReflector: CompileReflector, jitEvaluator: JitEvaluator,\n
compilerConfig: CompilerConfig, console: Console) {\n this._delegate = new JitCompiler(\n
_metadataResolver, templateParser, styleCompiler, viewCompiler, NgModuleCompiler,\n summaryResolver,
compileReflector, jitEvaluator, compilerConfig, console,\n this.getExtraNgModuleProviders.bind(this));\n
this.injector = injector;\n }\n\n private getExtraNgModuleProviders() {\n return
[this._metadataResolver.getProviderMetadata(\n new ProviderMeta(Compiler, {useValue: this}))];\n }\n\n
compileModuleSync<T>(moduleType: Type<T>): NgModuleFactory<T> {\n return
this._delegate.compileModuleSync(moduleType) as NgModuleFactory<T>;\n }\n\n
compileModuleAsync<T>(moduleType: Type<T>): Promise<NgModuleFactory<T>> {\n return
this._delegate.compileModuleAsync(moduleType) as Promise<NgModuleFactory<T>>;\n }\n\n
compileModuleAndAllComponentsSync<T>(moduleType: Type<T>): ModuleWithComponentFactories<T> {\n
const result = this._delegate.compileModuleAndAllComponentsSync(moduleType);\n return {\n
ngModuleFactory: result.ngModuleFactory as NgModuleFactory<T>,\n componentFactories:
result.componentFactories as ComponentFactory<any>[],\n };;\n }\n\n
compileModuleAndAllComponentsAsync<T>(moduleType: Type<T>):\n
Promise<ModuleWithComponentFactories<T>> {\n return
this._delegate.compileModuleAndAllComponentsAsync(moduleType)\n .then((result) => ({\n
ngModuleFactory: result.ngModuleFactory as NgModuleFactory<T>,\n componentFactories:
result.componentFactories as ComponentFactory<any>[],\n }));\n }\n\n loadAotSummaries(summaries: ()
=> any[]) {\n this._delegate.loadAotSummaries(summaries);\n }\n\n hasAotSummary(ref: Type<any>): boolean
{\n return this._delegate.hasAotSummary(ref);\n }\n\n getComponentFactory<T>(component: Type<T>):
ComponentFactory<T> {\n return this._delegate.getComponentFactory(component) as ComponentFactory<T>;\n
}\n\n clearCache(): void {\n this._delegate.clearCache();\n }\n\n clearCacheFor(type: Type<any>) {\n
this._delegate.clearCacheFor(type);\n }\n\n getModuleId(moduleType: Type<any>): string|undefined {\n const
meta = this._metadataResolver.getNgModuleMetadata(moduleType);\n return meta && meta.id || undefined;\n
}\n}\n\n/**\n * A set of providers that provide `JitCompiler` and its dependencies to use for\n * template
compilation.\n */\n\nconst COMPILER_PROVIDERS__PRE_R3__ = <StaticProvider[]>[\n { provide:
CompileReflector, useValue: new JitReflector() },\n { provide: ResourceLoader, useValue:
_NO_RESOURCE_LOADER },\n { provide: JitSummaryResolver, deps: [] },\n { provide: SummaryResolver,
useExisting: JitSummaryResolver },\n { provide: Console, deps: [] },\n { provide: Lexer, deps: [] },\n
{ provide: Parser, deps: [Lexer] },\n {\n provide: baseHtmlParser,\n useClass: HtmlParser,\n deps: [],\n },\n {\n
provide: I18NHtmlParser,\n useFactory:\n (parser: HtmlParser, translations: string|null, format: string, config:
CompilerConfig,\n console: Console) => {\n translations = translations || \"\n\n const
missingTranslation =\n\n translations ? config.missingTranslation! : MissingTranslationStrategy.Ignore;\n
return new I18NHtmlParser(parser, translations, format, missingTranslation, console);\n },\n deps: [\n

```

```

baseHtmlParser,\n [new Optional(), new Inject(TRANSLATIONS)],\n [new Optional(), new
Inject(TRANSLATIONS_FORMAT)],\n [CompilerConfig],\n [Console],\n]\n },\n {\n provide:
HtmlParser,\n useExisting: I18NHtmlParser,\n },\n {\n provide: TemplateParser,\n deps: [CompilerConfig,
CompileReflector, Parser, ElementSchemaRegistry, I18NHtmlParser, Console]\n },\n {provide: JitEvaluator,
useClass: JitEvaluator, deps: []},\n {provide: DirectiveNormalizer, deps: [ResourceLoader, UrlResolver,
HtmlParser, CompilerConfig]},\n {\n provide: CompileMetadataResolver,\n deps: [\n CompilerConfig,
HtmlParser, NgModuleResolver, DirectiveResolver, PipeResolver,\n SummaryResolver,
ElementSchemaRegistry, DirectiveNormalizer, Console,\n [Optional, StaticSymbolCache], CompileReflector,
[Optional, ERROR_COLLECTOR_TOKEN]\n]\n },\n DEFAULT_PACKAGE_URL_PROVIDER,\n {provide:
StyleCompiler, deps: [UrlResolver]},\n {provide: ViewCompiler, deps: [CompileReflector]},\n {provide:
NgModuleCompiler, deps: [CompileReflector]},\n {provide: CompilerConfig, useValue: new
CompilerConfig(),\n {\n provide: Compiler,\n useClass: CompilerImpl,\n deps: [\n Injector,
CompileMetadataResolver, TemplateParser, StyleCompiler, ViewCompiler,\n NgModuleCompiler,
SummaryResolver, CompileReflector, JitEvaluator, CompilerConfig, Console\n]\n },\n {provide:
DomElementSchemaRegistry, deps: []},\n {provide: ElementSchemaRegistry, useExisting:
DomElementSchemaRegistry},\n {provide: UrlResolver, deps: [PACKAGE_ROOT_URL]},\n {provide:
DirectiveResolver, deps: [CompileReflector]},\n {provide: PipeResolver, deps: [CompileReflector]},\n {provide:
NgModuleResolver, deps: [CompileReflector]},\n};\n\nexport const COMPILER_PROVIDERS__POST_R3__ =\n<StaticProvider>[{\n provide: Compiler, useFactory: () => new Compiler()};\n\nexport const
COMPILER_PROVIDERS = COMPILER_PROVIDERS__PRE_R3__;\n\n/**\n * @publicApi\n */\nexport class
JitCompilerFactory implements CompilerFactory {\n private _defaultOptions: CompilerOptions[];\n\n /* @internal
*\n constructor(defaultOptions: CompilerOptions[]) {\n const compilerOptions: CompilerOptions = {\n useJit:
true,\n defaultEncapsulation: ViewEncapsulation.Emulated,\n missingTranslation:
MissingTranslationStrategy.Warning,\n };\n\n this._defaultOptions = [compilerOptions, ...defaultOptions];\n
}\n\n createCompiler(options: CompilerOptions[] = []): Compiler {\n const opts =
_mergeOptions(this._defaultOptions.concat(options));\n const injector = Injector.create([\n
COMPILER_PROVIDERS, {\n provide: CompilerConfig,\n useFactory: () => {\n return new
CompilerConfig({\n // let explicit values from the compiler options overwrite options\n // from the app
providers\n useJit: opts.useJit,\n jitDevMode: isDevMode(),\n // let explicit values from the
compiler options overwrite options\n // from the app providers\n defaultEncapsulation:
opts.defaultEncapsulation,\n missingTranslation: opts.missingTranslation,\n preserveWhitespaces:
opts.preserveWhitespaces,\n });\n },\n],\n deps: []\n },\n opts.providers!\n]);\n return
injector.get(Compiler);\n }\n\nfunction _mergeOptions(optionsArr: CompilerOptions[]): CompilerOptions {\n
return {\n useJit: _lastDefined(optionsArr.map(options => options.useJit)),\n defaultEncapsulation:
_lastDefined(optionsArr.map(options => options.defaultEncapsulation)),\n providers:
_mergeArrays(optionsArr.map(options => options.providers!)),\n missingTranslation:
_lastDefined(optionsArr.map(options => options.missingTranslation)),\n preserveWhitespaces:
_lastDefined(optionsArr.map(options => options.preserveWhitespaces)),\n };}\n\nfunction _lastDefined<T>(args:
T[]): T|undefined {\n for (let i = args.length - 1; i >= 0; i--) {\n if (args[i] !== undefined) {\n return
args[i];\n }\n }\n return undefined;\n}\n\nfunction _mergeArrays(parts: any[][]): any[] {\n const result: any[] = [];\n
parts.forEach((part) => part && result.push(...part));\n return result;\n}\n\n"/**\n * @license\n * Copyright Google
LLC All Rights Reserved.\n *\n * Use of this source code is governed by an MIT-style license that can be\n * found
in the LICENSE file at https://angular.io/license\n */\n\nimport {COMPILER_OPTIONS, CompilerFactory,
createPlatformFactory, platformCore, PlatformRef, StaticProvider} from '@angular/core';\n\nimport
{JitCompilerFactory} from './compiler_factory';\n\n/**\n * A platform that included corePlatform and the
compiler.\n *\n * @publicApi\n */\nexport const platformCoreDynamic = createPlatformFactory(platformCore,
'coreDynamic', [\n {provide: COMPILER_OPTIONS, useValue: {}, multi: true},\n {provide: CompilerFactory,
useClass: JitCompilerFactory, deps: [COMPILER_OPTIONS]},\n]);\n\n"/**\n * @license\n * Copyright Google

```



```
style license that can be\n * found in the LICENSE file at https://angular.io/license\n *\nimport
{ResourceLoader} from '@angular/compiler';\nimport {CompilerFactory, createPlatformFactory, platformCore,
PlatformRef, Provider, StaticProvider} from '@angular/core';\nimport {platformCoreDynamic} from
 './platform_core_dynamic';\nimport {INTERNAL_BROWSER_DYNAMIC_PLATFORM_PROVIDERS} from
 './platform_providers';\nimport {CachedResourceLoader} from './resource_loader/resource_loader_cache';\n\nexport
 * from './private_export';\nexport {VERSION} from './version';\nexport {JitCompilerFactory} from
 './compiler_factory';\n\n/**\n * @publicApi\n */\nexport const RESOURCE_CACHE_PROVIDER: Provider[] =\n [\n {\n provide: ResourceLoader,\n useClass: CachedResourceLoader,\n deps: []\n }];\n\n/**\n * @publicApi\n */\nexport const
 platformBrowserDynamic = createPlatformFactory(\n platformCoreDynamic, 'browserDynamic',
 INTERNAL_BROWSER_DYNAMIC_PLATFORM_PROVIDERS);\n\n"/**\n * @license\n * Copyright Google
 LLC All Rights Reserved.\n *\n * Use of this source code is governed by an MIT-style license that can be\n * found
 in the LICENSE file at https://angular.io/license\n */\n\n * @module\n * @description\n * Entry point for all
 public APIs of this package.\n */\nexport * from './src/platform-browser-dynamic';\n\n// This file only reexports
 content of the `src` folder. Keep it that way.\n"/**\n * @license\n * Copyright Google LLC All Rights Reserved.\n *\n * Use of this source code is governed by an MIT-style license that can be\n * found in the LICENSE file at
 https://angular.io/license\n */\n\n// This file is not used to build this module. It is only used during editing\n// by the
 TypeScript language service and during build for verification. `ngc`\n// replaces this file with production index.ts
 when it rewrites private symbol\n// names.\n\nexport * from './public_api';\n\n"/**\n * Generated bundle index. Do
 not edit.\n */\n\nexport * from './index';\n\nexport {CachedResourceLoader as
 angular_packages_platform_browser_dynamic_platform_browser_dynamic_a} from
 './src/resource_loader/resource_loader_cache';\n\n,"names":["ReflectionCapabilities","stringify","Console","PLATFO
 RM_BROWSER_ID","INTERNAL_BROWSER_PLATFORM_PROVIDERS","global"],"mappings":":
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 C,CAAC,CAAC;IACvF,GAAG,CAAC,GAAG,CAAC,WAAW,CAAC,wBAAwB,EAAE,wBAAwB,CAAC,CAAC
 ;IACxE,GAAG,CAAC,GAAG,CAAC,WAAW,CAAC,gBAAGB,EAAE,gBAAGB,CAAC,CAAC;IACxD,GAAG,C
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No license file was found, but licenses were detected in source scan.

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{"version":3,"file":"testing.js","sources":["../../../../../../packages/platform-browser-dynamic/testing/src/dom_test_component_renderer.ts", "../../../../../../packages/platform-browser-dynamic/testing/src/metadata_overrider.ts", "../../../../../../packages/platform-browser-dynamic/testing/src/compiler_factory.ts", "../../../../../../packages/platform-browser-dynamic/testing/src/platform_core_dynamic_testing.ts", "../../../../../../packages/platform-browser-dynamic/testing/src/private_export_testing.ts", "../../../../../../packages/platform-browser-dynamic/testing/src/testing.ts", "../../../../../../packages/platform-browser-dynamic/testing/public_api.ts", "../../../../../../packages/platform-browser-dynamic/testing/index.ts", "../../../../../../packages/platform-browser-dynamic/testing/testing.ts"],"sourcesContent":["/**\n * @license\n * Copyright Google LLC All Rights Reserved.\n *\n * Use of this source code is governed by an MIT-style license that can be\n * found in the LICENSE file at\n https://angular.io/license\n *\nimport {DOCUMENT, getDOM as getDOM} from '@angular/common';\nimport {Inject, Injectable} from '@angular/core';\nimport {TestComponentRenderer} from '@angular/core/testing';\n\n/**\n * A DOM based implementation of the TestComponentRenderer.\n *\n@Injectable()\nexport class DOMTestComponentRenderer extends TestComponentRenderer {\n constructor(@Inject(DOCUMENT) private _doc: any) {\n super();\n }\n\n insertRootElement(rootElId: string)\n {\n const template = getDOM().getDefaultDocument().createElement('template');\n template.innerHTML =\n`<div id=\"${rootElId}\"></div>`;\n const rootEl = <HTMLElement>getContent(template).firstChild;\n\n //\n TODO(juliemr): can/should this be optional?\n const oldRoots = this._doc.querySelectorAll('[id^=root]');\n for\n (let i = 0; i < oldRoots.length; i++) {\n getDOM().remove(oldRoots[i]);\n }\n this._doc.body.appendChild(rootEl);\n }\n\n function getContent(node: Node): Node {\n if ('content' in node)\n return (<any>node).content;\n else {\n return node;\n }\n }\n\n /**\n * @license\n * Copyright Google\n * LLC All Rights Reserved.\n *\n * Use of this source code is governed by an MIT-style license that can be\n * found\n * in the LICENSE file at https://angular.io/license\n *\n`MetadataOverrider` has been moved to core/testing to\n allow using it from the render3 TestBed\nexport {MetadataOverrider as MetadataOverrider} from '@angular/core/testing';\n\n/**\n * @license\n * Copyright Google LLC All Rights Reserved.\n *\n * Use of this\n * source code is governed by an MIT-style license that can be\n * found in the LICENSE file at\n https://angular.io/license\n *\nimport {CompileReflector, DirectiveResolver, ERROR_COMPONENT_TYPE,\n NgModuleResolver, PipeResolver} from '@angular/compiler';\nimport {MockDirectiveResolver,\n MockNgModuleResolver, MockPipeResolver} from '@angular/compiler/testing';\nimport {CompilerFactory,\n CompilerOptions, Component, ComponentFactory, Directive, Injector, ModuleWithComponentFactories,\n NgModule, NgModuleFactory, Pipe, StaticProvider, Type, stringify as stringify} from '@angular/core';\nimport {MetadataOverride, TestingCompiler as TestingCompiler, TestingCompilerFactory as TestingCompilerFactory}\n from '@angular/core/testing';\nimport {CompilerImpl as CompilerImpl} from '@angular/platform-browser-dynamic';\nimport {MetadataOverrider} from './metadata_overrider';\n\nexport const COMPILER_PROVIDERS:\n StaticProvider[] = [\n {provide: MockPipeResolver, deps: [CompileReflector]},\n {provide: PipeResolver,\n useExisting: MockPipeResolver},\n {provide: MockDirectiveResolver, deps: [CompileReflector]},\n {provide:\n DirectiveResolver, useExisting: MockDirectiveResolver},\n {provide: MockNgModuleResolver, deps:\n [CompileReflector]},\n {provide: NgModuleResolver, useExisting: MockNgModuleResolver},\n];\n\nexport class\n TestingCompilerFactoryImpl implements TestingCompilerFactory {\n constructor(private _injector: Injector,\n private _compilerFactory: CompilerFactory) {\n }\n\n createTestingCompiler(options: CompilerOptions[]):
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TestingCompiler {\n const compiler = <CompilerImpl>this._compilerFactory.createCompiler(options);\n return
new TestingCompilerImpl(\n compiler, compiler.injector.get(MockDirectiveResolver),\n
compiler.injector.get(MockPipeResolver), compiler.injector.get(MockNgModuleResolver));\n } \n\n\nexport class
TestingCompilerImpl implements TestingCompiler {\n private _overrides = new MetadataOverride();\n
constructor(\n private _compiler: CompilerImpl, private _directiveResolver: MockDirectiveResolver,\n
private _pipeResolver: MockPipeResolver, private _moduleResolver: MockNgModuleResolver) {\n } \n get injector():
Injector {\n return this._compiler.injector;\n } \n\n compileModuleSync<T>(moduleType: Type<T>):
NgModuleFactory<T> {\n return this._compiler.compileModuleSync(moduleType);\n } \n\n compileModuleAsync<T>(moduleType: Type<T>): Promise<NgModuleFactory<T>> {\n return
this._compiler.compileModuleAsync(moduleType);\n } \n\n compileModuleAndAllComponentsSync<T>(moduleType: Type<T>): ModuleWithComponentFactories<T> {\n
return this._compiler.compileModuleAndAllComponentsSync(moduleType);\n } \n\n compileModuleAndAllComponentsAsync<T>(moduleType: Type<T>):\n
Promise<ModuleWithComponentFactories<T>> {\n return
this._compiler.compileModuleAndAllComponentsAsync(moduleType);\n } \n\n getComponentFactory<T>(component: Type<T>): ComponentFactory<T> {\n return
this._compiler.getComponentFactory(component);\n } \n\n checkOverrideAllowed(type: Type<any>) {\n if
(this._compiler.hasAotSummary(type)) {\n throw new Error(`${stringify(type)} was AOT compiled, so its
metadata cannot be changed.`);\n } \n } \n\n overrideModule(ngModule: Type<any>, override:
MetadataOverride<NgModule>): void {\n this.checkOverrideAllowed(ngModule);\n const oldMetadata =
this._moduleResolver.resolve(ngModule, false);\n this._moduleResolver.setNgModule(\n ngModule,
this._overrides.overrideMetadata(ngModule, oldMetadata, override));\n this.clearCacheFor(ngModule);\n } \n\n overrideDirective(directive: Type<any>, override: MetadataOverride<Directive>): void {\n
this.checkOverrideAllowed(directive);\n const oldMetadata = this._directiveResolver.resolve(directive, false);\n
this._directiveResolver.setDirective(\n directive, this._overrides.overrideMetadata(Directive, oldMetadata!,
override));\n this.clearCacheFor(directive);\n } \n\n overrideComponent(component: Type<any>, override:
MetadataOverride<Component>): void {\n this.checkOverrideAllowed(component);\n const oldMetadata =
this._directiveResolver.resolve(component, false);\n this._directiveResolver.setDirective(\n component,
this._overrides.overrideMetadata(Component, oldMetadata!, override));\n this.clearCacheFor(component);\n } \n\n overridePipe(pipe: Type<any>, override: MetadataOverride<Pipe>): void {\n this.checkOverrideAllowed(pipe);\n
const oldMetadata = this._pipeResolver.resolve(pipe, false);\n this._pipeResolver.setPipe(pipe,
this._overrides.overrideMetadata(Pipe, oldMetadata, override));\n this.clearCacheFor(pipe);\n } \n\n loadAotSummaries(summaries: () => any[]) {\n this._compiler.loadAotSummaries(summaries);\n } \n\n clearCache(): void {\n this._compiler.clearCache();\n } \n\n clearCacheFor(type: Type<any>) {\n
this._compiler.clearCacheFor(type);\n } \n\n getComponentFromError(error: Error) {\n return (error as
any)[ERROR_COMPONENT_TYPE] || null;\n } \n\n getModuleId(moduleType: Type<any>): string|undefined {\n
return this._moduleResolver.resolve(moduleType, true).id;\n } \n\n\n",/**\n * @license\n * Copyright Google
LLC All Rights Reserved.\n * \n * Use of this source code is governed by an MIT-style license that can be\n * found
in the LICENSE file at https://angular.io/license\n */\nimport { COMPILER_OPTIONS, CompilerFactory,
createPlatformFactory, Injector, PlatformRef } from '@angular/core';\nimport { TestingCompilerFactory as
TestingCompilerFactory } from '@angular/core/testing';\nimport { platformCoreDynamic as platformCoreDynamic }
from '@angular/platform-browser-dynamic';\nimport { COMPILER_PROVIDERS, TestingCompilerFactoryImpl }
from './compiler_factory';\n\n/**\n * Platform for dynamic tests\n */\n * @publicApi\n */\nexport const
platformCoreDynamicTesting: (extraProviders?: any[]) => PlatformRef =\n
createPlatformFactory(platformCoreDynamic, 'coreDynamicTesting', [\n { provide: COMPILER_OPTIONS,
useValue: { providers: COMPILER_PROVIDERS }, multi: true },\n { provide: TestingCompilerFactory,\n
useClass: TestingCompilerFactoryImpl,\n deps: [Injector, CompilerFactory]\n } \n]);\n\n",/**\n *
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style license that can be\n * found in the LICENSE file at https://angular.io/license\n *\n\nexport
{DOMTestComponentRenderer as DOMTestComponentRenderer} from './dom_test_component_renderer';\nexport
{platformCoreDynamicTesting as platformCoreDynamicTesting} from './platform_core_dynamic_testing';\n"/**\n
* @license\n * Copyright Google LLC All Rights Reserved.\n *\n * Use of this source code is governed by an MIT-
style license that can be\n * found in the LICENSE file at https://angular.io/license\n *\n\nimport
{createPlatformFactory, NgModule, PlatformRef, StaticProvider} from '@angular/core';\nimport
{TestComponentRenderer} from '@angular/core/testing';\nimport
{INTERNAL_BROWSER_DYNAMIC_PLATFORM_PROVIDERS as
INTERNAL_BROWSER_DYNAMIC_PLATFORM_PROVIDERS} from '@angular/platform-browser-
dynamic';\nimport {BrowserTestingModule} from '@angular/platform-browser/testing';\nimport
{DOMTestComponentRenderer} from './dom_test_component_renderer';\nimport {platformCoreDynamicTesting}
from './platform_core_dynamic_testing';\n\nexport * from './private_export_testing';\n"/**\n * @publicApi\n
*\n\nexport const platformBrowserDynamicTesting = createPlatformFactory(\n platformCoreDynamicTesting,
'browserDynamicTesting',\n INTERNAL_BROWSER_DYNAMIC_PLATFORM_PROVIDERS);\n\n"/**\n *
NgModule for testing.\n *\n * @publicApi\n *\n\n@NgModule({\n exports: [BrowserTestingModule],\n providers:
[\n {provide: TestComponentRenderer, useClass: DOMTestComponentRenderer},\n]\n})\nexport class
BrowserDynamicTestingModule {\n}\n"/**\n * @license\n * Copyright Google LLC All Rights Reserved.\n *\n *
Use of this source code is governed by an MIT-style license that can be\n * found in the LICENSE file at
https://angular.io/license\n *\n\n"/**\n * @module\n * @description\n * Entry point for all public APIs of this
package.\n *\n\nexport * from './src/testing';\n"/**\n * @license\n * Copyright Google LLC All Rights Reserved.\n
*\n * Use of this source code is governed by an MIT-style license that can be\n * found in the LICENSE file at
https://angular.io/license\n *\n\n// This file is not used to build this module. It is only used during editing\n// by the
TypeScript language service and during build for verification. `ngc`\n// replaces this file with production index.ts
when it rewrites private symbol\n// names.\n\nexport * from './public_api';\n"/**\n * Generated bundle index. Do
not edit.\n *\n\nexport * from './index';\n\nexport {COMPILER_PROVIDERS as
angular_packages_platform_browser_dynamic_testing_testing_a,TestingCompilerFactoryImpl as
angular_packages_platform_browser_dynamic_testing_testing_b} from
'./src/compiler_factory';\n\nnames:["getDOM","MetadataOverrider","stringify","platformCoreDynamic","TestingC
ompilerFactory","INTERNAL_BROWSER_DYNAMIC_PLATFORM_PROVIDERS"],mappings:";";;AA
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Found in path(s):

\* /opt/cola/permits/1358260602\_1657134853.7637453/0/platform-browser-dynamic-11-0-2-tgz/package/fesm2015/testing.js.map

No license file was found, but licenses were detected in source scan.

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***** *\n /* global
Reflect, Promise *\n var extendStatics = function (d, b) {\n extendStatics = Object.setPrototypeOf ||\n ({ __proto__: [] } instanceof Array && function (d, b) { d.__proto__ = b; }) ||\n function (d, b) { for (var p in b)\n if (b.hasOwnProperty(p))\n d[p] = b[p]; }; return extendStatics(d, b);\n };\n function __extends(d, b) {\n extendStatics(d, b);\n function __() { this.constructor = d; }\n d.prototype = b === null ? Object.create(b) : (__proto__ = b.prototype, new __());\n }\n var __assign = function () {\n __assign = Object.assign || function __assign(t) {\n for (var s, i = 1, n = arguments.length; i < n; i++) {\n s = arguments[i];\n for (var p in s)\n if (Object.prototype.hasOwnProperty.call(s, p))\n t[p] = s[p];\n }\n return t;\n };\n return __assign.apply(this, arguments);\n };\n function __rest(s, e) {\n var t = {};\n for (var p in s)\n if (Object.prototype.hasOwnProperty.call(s, p)\n && e.indexOf(p) < 0)\n t[p] = s[p];\n if (s != null && typeof Object.getOwnPropertySymbols ===\n \"function\")\n for (var i = 0, p = Object.getOwnPropertySymbols(s); i < p.length; i++) {\n if\n (e.indexOf(p[i]) < 0 && Object.prototype.propertyIsEnumerable.call(s, p[i]))\n t[p[i]] = s[p[i]];\n }\n return t;\n }\n function __decorate(decorators, target, key, desc) {\n var c = arguments.length, r = c\n < 3 ? target : desc === null ? desc = Object.getOwnPropertyDescriptor(target, key) : desc, d;\n if (typeof Reflect\n === \"object\" && typeof Reflect.decorate === \"function\")\n r = Reflect.decorate(decorators, target, key,\n desc);\n else\n for (var i = decorators.length - 1; i >= 0; i--)\n if (d = decorators[i])\n r = (c < 3 ? d(r) : c > 3 ? d(target, key, r) : d(target, key)) || r;\n return c > 3 && r &&\n Object.defineProperty(target, key, r, r);\n }\n function __param(paramIndex, decorator) {\n return function\n (target, key) { decorator(target, key, paramIndex); }; }\n function __metadata(metadataKey, metadataValue)\n {\n if (typeof Reflect === \"object\" && typeof Reflect.metadata === \"function\")\n return\n Reflect.metadata(metadataKey, metadataValue);\n }\n function __awaiter(thisArg, _arguments, P, generator) {\n function adopt(value) { return value instanceof P ? value : new P(function (resolve) { resolve(value); }); }\n return new (P || (P = Promise))(function (resolve, reject) {\n function fulfilled(value) { try {\n step(generator.next(value));\n }\n catch (e) {\n reject(e);\n } }\n function\n rejected(value) { try {\n step(generator[\"throw\"](value));\n }\n catch (e) {\n reject(e);\n } }\n function step(result) { result.done ? resolve(result.value) :\n adopt(result.value).then(fulfilled, rejected); }\n step((generator = generator.apply(thisArg, _arguments ||\n [])).next());\n });\n }\n function __generator(thisArg, body) {\n var _ = { label: 0, sent: function () { if\n (t[0] & 1)\n throw t[1]; return t[1]; }, trys: [], ops: [] }, f, y, t, g;\n return g = { next: verb(0), \"throw\":\n verb(1), \"return\": verb(2) }, typeof Symbol === \"function\" && (g[Symbol.iterator] = function () { return this; }),\n g;\n function verb(n) { return function (v) { return step([n, v]); }; }\n function step(op) {\n if (f)\n throw new TypeError(\"Generator is already executing.\");\n while (!_)\n try {\n if\n (f = 1, y && (t = op[0] & 2 ? y[\"return\"] : op[0] ? y[\"throw\"] || ((t = y[\"return\"])\n && t.call(y, 0) : y.next) &&\n !(t = t.call(y, op[1])).done)\n return t;\n if (y = 0, t)\n op = [op[0] & 2,\n t.value];\n switch (op[0]) {\n case 0:\n case 1:\n t = op;\n break;\n case 4:\n _label++;\n return { value: op[1],\n done: false }; \n case 5:\n _label++;\n y = op[1];\n op = [0];\n continue;\n case 7:\n op = _ops.pop();\n _trys.pop();\n continue;\n default:\n if (!(t = _trys, t = t.length > 0\n && t[t.length - 1]) && (op[0] === 6 || op[0] === 2)) {\n _ = 0;\n continue;\n }\n if (op[0] === 3 && (!t || (op[1] > t[0] && op[1] < t[3]))) {\n _label = op[1];\n break;\n }\n if (op[0] === 6 && _label <\n t[1]) {\n _label = t[1];\n t = op;\n break;\n }\n if (t && _label < t[2]) {\n _label = t[2];\n _ops.push(op);\n break;\n }\n if (t[2])\n
```

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_ops.pop();\n _trys.pop();\n continue;\n }\n op =
body.call(thisArg, _);\n }\n catch (e) {\n op = [6, e];\n y = 0;\n }\n finally {\n f = t = 0;\n }\n if (op[0] & 5)\n throw op[1];\n return { value: op[0] ? op[1] : void 0, done: true }; }\n }\n }\n var __createBinding = Object.create ? (function
(o, m, k, k2) {\n if (k2 === undefined)\n k2 = k;\n Object.defineProperty(o, k2, { enumerable: true,
get: function () { return m[k]; } });\n }) : (function (o, m, k, k2) {\n if (k2 === undefined)\n k2 = k;\n o[k2] = m[k];\n });\n function __exportStar(m, exports) {\n for (var p in m)\n if (p !== \"default\"
&& !exports.hasOwnProperty(p))\n __createBinding(exports, m, p);\n }\n function __values(o) {\n var s = typeof Symbol === \"function\" && Symbol.iterator, m = s && o[s], i = 0;\n if (m)\n return
m.call(o);\n if (o && typeof o.length === \"number\")\n return {\n next: function () {\n if (o && i >= o.length)\n o = void 0;\n return { value: o && o[i++], done: !o };
\n }\n };\n throw new TypeError(s ? \"Object is not iterable.\" : \"Symbol.iterator is not defined.\");\n }\n function __read(o, n) {\n var m = typeof Symbol === \"function\" && o[Symbol.iterator];\n if (!m)\n return o;\n var i = m.call(o), r, ar = [], e;\n try {\n while ((n === void 0 || n-- > 0) && !(r =
i.next()).done)\n ar.push(r.value);\n }\n catch (error) {\n e = { error: error };\n }\n finally {\n try {\n if (r && !r.done && (m = i[\"return\"])\n m.call(i);\n }\n finally {\n if (e)\n throw e.error;\n }\n }\n return ar;\n }\n function
__spread() {\n for (var ar = [], i = 0; i < arguments.length; i++)\n ar = ar.concat(__read(arguments[i]));\n return ar;\n }\n function __spreadArrays() {\n for (var s = 0, i = 0, il = arguments.length; i < il; i++)\n s += arguments[i].length;\n for (var r = Array(s), k = 0, i = 0; i < il; i++)\n for (var a = arguments[i], j
= 0, jl = a.length; j < jl; j++, k++)\n r[k] = a[j];\n return r;\n }\n ;\n function __await(v) {\n return this instanceof __await ? (this.v = v, this) : new __await(v);\n }\n function __asyncGenerator(thisArg,
_arguments, generator) {\n if (!Symbol.asyncIterator)\n throw new TypeError(\"Symbol.asyncIterator is
not defined.\");\n var g = generator.apply(thisArg, _arguments || []), i, q = [];\n return i = { }, verb(\"next\"),
verb(\"throw\"), verb(\"return\"), i[Symbol.asyncIterator] = function () { return this; }, i;\n function verb(n) { if
(g[n])\n i[n] = function (v) { return new Promise(function (a, b) { q.push([n, v, a, b]) > 1 || resume(n, v); }); };\n }\n function resume(n, v) { try {\n step(g[n](v));\n }\n catch (e) {\n settle(q[0][3], e);\n }
}\n function step(r) { r.value instanceof __await ? Promise.resolve(r.value.v).then(fulfill, reject) :
settle(q[0][2], r); }\n function fulfill(value) { resume(\"next\", value); }\n function reject(value) {\n resume(\"throw\", value); }\n function settle(f, v) { if (f(v), q.shift(), q.length)\n resume(q[0][0], q[0][1]);
}\n }\n function __asyncDelegator(o) {\n var i, p;\n return i = { }, verb(\"next\"), verb(\"throw\"),
function (e) { throw e; }, verb(\"return\"), i[Symbol.iterator] = function () { return this; }, i;\n function verb(n,
f) { i[n] = o[n] ? function (v) { return (p = !p) ? { value: __await(o[n](v)), done: n === \"return\" } : f ? f(v) : v; } : f;
}\n }\n function __asyncValues(o) {\n if (!Symbol.asyncIterator)\n throw new
TypeError(\"Symbol.asyncIterator is not defined.\");\n var m = o[Symbol.asyncIterator], i;\n return m ?
m.call(o) : (o = typeof __values === \"function\" ? __values(o) : o[Symbol.iterator](), i = { }, verb(\"next\"),
verb(\"throw\"), verb(\"return\"), i[Symbol.asyncIterator] = function () { return this; }, i);\n function verb(n) {\n i[n] = o[n] && function (v) { return new Promise(function (resolve, reject) { v = o[n](v), settle(resolve, reject,
v.done, v.value); }); };\n }\n function settle(resolve, reject, d, v) { Promise.resolve(v).then(function (v) {\n resolve({ value: v, done: d }); }, reject); }\n }\n }\n function __makeTemplateObject(cooked, raw) {\n if
(Object.defineProperty) {\n Object.defineProperty(cooked, \"raw\", { value: raw });\n }\n else {\n cooked.raw = raw;\n }\n return cooked;\n }\n ;\n var __setModuleDefault = Object.create ?
(function (o, v) {\n Object.defineProperty(o, \"default\", { enumerable: true, value: v });\n }) : function (o, v)
{\n o[\"default\"] = v;\n };\n function __importStar(mod) {\n if (mod && mod.__esModule)\n return mod;\n var result = {};\n if (mod != null)\n for (var k in mod)\n if
(Object.hasOwnProperty.call(mod, k))\n __createBinding(result, mod, k);\n __setModuleDefault(result, mod);\n return result;\n }\n function __importDefault(mod) {\n return (mod
&& mod.__esModule) ? mod : { default: mod };\n }\n function __classPrivateFieldGet(receiver, privateMap)

```



```

core.interpolate);\n map.set(compiler.Identifiers.EMPTY_ARRAY, core.EMPTY_ARRAY);\n map.set(compiler.Identifiers.EMPTY_MAP, core.EMPTY_MAP);\n map.set(compiler.Identifiers.viewDef, core.vid);\n map.set(compiler.Identifiers.elementDef, core.eld);\n map.set(compiler.Identifiers.anchorDef, core.and);\n map.set(compiler.Identifiers.textDef, core.ted);\n map.set(compiler.Identifiers.directiveDef, core.did);\n map.set(compiler.Identifiers.providerDef, core.prd);\n map.set(compiler.Identifiers.queryDef, core.qud);\n map.set(compiler.Identifiers.pureArrayDef, core.pad);\n map.set(compiler.Identifiers.pureObjectDef, core.pod);\n map.set(compiler.Identifiers.purePipeDef, core.ppd);\n map.set(compiler.Identifiers.pipeDef, core.pid);\n map.set(compiler.Identifiers.nodeValue, core.nov);\n map.set(compiler.Identifiers.ngContentDef, core.ncd);\n map.set(compiler.Identifiers.unwrapValue, core.unv);\n map.set(compiler.Identifiers.createRendererType2, core.crt);\n map.set(compiler.Identifiers.createComponentFactory, core.ccf);\n return map;\n }\n\n var ERROR_COLLECTOR_TOKEN = new core.InjectionToken('ErrorCollector');\n /**\n * A default provider for {@link PACKAGE_ROOT_URL} that maps to '/'\n */\n var DEFAULT_PACKAGE_ROOT_URL_PROVIDER = {\n provide: core.PACKAGE_ROOT_URL,\n useValue: '/'\n };\n var NO_RESOURCE_LOADER = {\n get: function (url) {\n throw new Error("No ResourceLoader implementation has been provided. Can't read the url '" + url + "'");\n }\n };\n var baseHtmlParser = new core.InjectionToken('HtmlParser');\n var CompilerImpl = /** @class */ (function () {\n function CompilerImpl(injector, _metadataResolver, templateParser, styleCompiler, viewCompiler, ngModuleCompiler, summaryResolver, compileReflector, jitEvaluator, compilerConfig, console) {\n this._metadataResolver = _metadataResolver;\n this._delegate = new compiler.JitCompiler(_metadataResolver, templateParser, styleCompiler, viewCompiler, ngModuleCompiler, summaryResolver, compileReflector, jitEvaluator, compilerConfig, console, this.getExtraNgModuleProviders.bind(this));\n this.injector = injector;\n }\n\n CompilerImpl.prototype.getExtraNgModuleProviders = function () {\n return [this._metadataResolver.getProviderMetadata(new compiler.ProviderMeta(core.Compiler, { useValue: this }));\n];\n\n CompilerImpl.prototype.compileModuleSync = function (moduleType) {\n return this._delegate.compileModuleSync(moduleType);\n };\n\n CompilerImpl.prototype.compileModuleAsync = function (moduleType) {\n return this._delegate.compileModuleAsync(moduleType);\n };\n\n CompilerImpl.prototype.compileModuleAndAllComponentsSync = function (moduleType) {\n var result = this._delegate.compileModuleAndAllComponentsSync(moduleType);\n return {\n ngModuleFactory: result.ngModuleFactory,\n componentFactories: result.componentFactories,\n };\n };\n\n CompilerImpl.prototype.compileModuleAndAllComponentsAsync = function (moduleType) {\n return this._delegate.compileModuleAndAllComponentsAsync(moduleType)\n .then(function (result) {\n return ({\n ngModuleFactory: result.ngModuleFactory,\n componentFactories: result.componentFactories,\n });\n });\n };\n\n CompilerImpl.prototype.loadAotSummaries = function (summaries) {\n this._delegate.loadAotSummaries(summaries);\n };\n\n CompilerImpl.prototype.hasAotSummary = function (ref) {\n return this._delegate.hasAotSummary(ref);\n };\n\n CompilerImpl.prototype.getComponentFactory = function (component) {\n return this._delegate.getComponentFactory(component);\n };\n\n CompilerImpl.prototype.clearCache = function () {\n this._delegate.clearCache();\n };\n\n CompilerImpl.prototype.clearCacheFor = function (type) {\n this._delegate.clearCacheFor(type);\n };\n\n CompilerImpl.prototype.getModuleId = function (moduleType) {\n var meta = this._metadataResolver.getNgModuleMetadata(moduleType);\n return meta && meta.id || undefined;\n };\n\n return CompilerImpl;\n })();\n var 0 = new JitReflector(), 1 = _NO_RESOURCE_LOADER, 2 = function (parser, translations, format, config, console) {\n translations = translations || "";\n var missingTranslation = translations ? config.missingTranslation : core.MissingTranslationStrategy.Ignore;\n return new compiler.I18NHtmlParser(parser, translations, format, missingTranslation, console);\n }, 3 = new compiler.CompilerConfig();\n /**\n * A set of providers that provide `JitCompiler` and its dependencies to use for\n * template compilation.\n */\n var COMPILER_PROVIDERS__PRE_R3__ = [\n { provide: compiler.CompileReflector, useValue: 0 },\n {

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provide: compiler.ResourceLoader, useValue: 1 },\n { provide: compiler.JitSummaryResolver, deps: [] },\n
{ provide: compiler.SummaryResolver, useExisting: compiler.JitSummaryResolver },\n { provide:
core.Console, deps: [] },\n { provide: compiler.Lexer, deps: [] },\n { provide: compiler.Parser, deps:
[compiler.Lexer] },\n {\n provide: baseHtmlParser,\n useClass: compiler.HtmlParser,\n
deps: [],\n },\n {\n provide: compiler.I18NHtmlParser,\n useFactory: 2,\n deps: [\n
 baseHtmlParser,\n [new core.Optional(), new core.Inject(core.TRANSLATIONS)],\n [new
core.Optional(), new core.Inject(core.TRANSLATIONS_FORMAT)],\n [compiler.CompilerConfig],\n
 [core.Console],\n]\n },\n {\n provide: compiler.HtmlParser,\n useExisting:
compiler.I18NHtmlParser,\n },\n {\n provide: compiler.TemplateParser,\n deps:
[compiler.CompilerConfig, compiler.CompileReflector, compiler.Parser, compiler.ElementSchemaRegistry,
compiler.I18NHtmlParser, core.Console]\n },\n { provide: compiler.JitEvaluator, useClass:
compiler.JitEvaluator, deps: [] },\n { provide: compiler.DirectiveNormalizer, deps: [compiler.ResourceLoader,
compiler.UrlResolver, compiler.HtmlParser, compiler.CompilerConfig] },\n {\n provide:
compiler.CompileMetadataResolver,\n deps: [\n compiler.CompilerConfig, compiler.HtmlParser,\n
compiler.NgModuleResolver, compiler.DirectiveResolver, compiler.PipeResolver,\n
compiler.SummaryResolver, compiler.ElementSchemaRegistry, compiler.DirectiveNormalizer, core.Console,\n
 [core.Optional, compiler.StaticSymbolCache], compiler.CompileReflector, [core.Optional,
ERROR_COLLECTOR_TOKEN]\n]\n },\n DEFAULT_PACKAGE_URL_PROVIDER,\n {
provide: compiler.StyleCompiler, deps: [compiler.UrlResolver] },\n { provide: compiler.ViewCompiler, deps:
[compiler.CompileReflector] },\n { provide: compiler.NgModuleCompiler, deps: [compiler.CompileReflector]
},\n { provide: compiler.CompilerConfig, useValue: 3 },\n {\n provide: core.Compiler,\n
useClass: CompilerImpl,\n deps: [\n core.Injector, compiler.CompileMetadataResolver,\n
compiler.TemplateParser, compiler.StyleCompiler, compiler.ViewCompiler,\n
compiler.NgModuleCompiler, compiler.SummaryResolver, compiler.CompileReflector, compiler.JitEvaluator,\n
compiler.CompilerConfig, core.Console\n]\n },\n { provide: compiler.DomElementSchemaRegistry,
deps: [] },\n { provide: compiler.ElementSchemaRegistry, useExisting: compiler.DomElementSchemaRegistry
},\n { provide: compiler.UrlResolver, deps: [core.PACKAGE_ROOT_URL] },\n { provide:
compiler.DirectiveResolver, deps: [compiler.CompileReflector] },\n { provide: compiler.PipeResolver, deps:
[compiler.CompileReflector] },\n { provide: compiler.NgModuleResolver, deps: [compiler.CompileReflector]
},\n];\n var COMPILER_PROVIDERS__POST_R3__ = [{ provide: core.Compiler, useFactory: function () {
return new core.Compiler(); } }];\n var COMPILER_PROVIDERS = COMPILER_PROVIDERS__PRE_R3__;
\n /**\n * @publicApi\n */\n var JitCompilerFactory = /** @class */ (function () {\n /* @internal */\n
function JitCompilerFactory(defaultOptions) {\n var compilerOptions = {\n useJit: true,\n
defaultEncapsulation: core.ViewEncapsulation.Emulated,\n missingTranslation:
core.MissingTranslationStrategy.Warning,\n };\n this._defaultOptions = __spread([compilerOptions],
defaultOptions);\n JitCompilerFactory.prototype.createCompiler = function (options) {\n if
(options === void 0) { options = []; }\n var opts = _mergeOptions(this._defaultOptions.concat(options));\n
 var injector = core.Injector.create([\n COMPILER_PROVIDERS,\n {\n provide:
compiler.CompilerConfig,\n useFactory: function () {\n return new
compiler.CompilerConfig({\n // let explicit values from the compiler options overwrite options\n
 // from the app providers\n useJit: opts.useJit,\n jitDevMode:
core.isDevMode(),\n // let explicit values from the compiler options overwrite options\n
 // from the app providers\n defaultEncapsulation: opts.defaultEncapsulation,\n
 missingTranslation: opts.missingTranslation,\n preserveWhitespaces: opts.preserveWhitespaces,\n
 });\n },\n deps: []\n },\n opts.providers\n]);\n return injector.get(core.Compiler);\n };\n return JitCompilerFactory;\n }());\n function
_mergeOptions(optionsArr) {\n return {\n useJit: _lastDefined(optionsArr.map(function (options) {
return options.useJit; })),\n defaultEncapsulation: _lastDefined(optionsArr.map(function (options) { return

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options.defaultEncapsulation; })),\n providers: _mergeArrays(optionsArr.map(function (options) { return
options.providers; })),\n missingTranslation: _lastDefined(optionsArr.map(function (options) { return
options.missingTranslation; })),\n preserveWhitespaces: _lastDefined(optionsArr.map(function (options) {
return options.preserveWhitespaces; })),\n });\n }\n function _lastDefined(args) {\n for (var i =
args.length - 1; i >= 0; i--) {\n if (args[i] !== undefined) {\n return args[i];\n }\n }\n return undefined;\n }\n function _mergeArrays(parts) {\n var result = [];\n parts.forEach(function (part)
{ return part && result.push.apply(result, __spread(part)); });\n return result;\n }\n /**\n * @license\n * Copyright Google LLC All Rights Reserved.\n * Use of this source code is governed by an MIT-style
license that can be\n * found in the LICENSE file at https://angular.io/license\n */\n var 0$1 = {};\n /**\n * A platform that included corePlatform and the compiler.\n */\n @publicApi\n *^n var
platformCoreDynamic = core.createPlatformFactory(core.platformCore, 'coreDynamic', [\n { provide:
core.COMPILER_OPTIONS, useValue: 0$1, multi: true },\n { provide: core.CompilerFactory, useClass:
JitCompilerFactory, deps: [core.COMPILER_OPTIONS] },\n]);\n var ResourceLoaderImpl = /** @class */
(function (_super) {\n __extends(ResourceLoaderImpl, _super);\n function ResourceLoaderImpl() {\n return _super !== null && _super.apply(this, arguments) || this;\n }\n ResourceLoaderImpl.prototype.get =
function (url) {\n var resolve;\n var reject;\n var promise = new Promise(function (res, rej) {\n resolve = res;\n reject = rej;\n });\n var xhr = new XMLHttpRequest();\n xhr.open('GET', url, true);\n xhr.responseType = 'text';\n xhr.onload = function () {\n //
responseText is the old-school way of retrieving response (supported by IE8 & 9)\n //
response/responseType properties were introduced in ResourceLoader Level2 spec (supported\n // by
IE10)\n var response = xhr.response || xhr.responseText;\n // normalize IE9 bug
(http://bugs.jquery.com/ticket/1450)\n var status = xhr.status === 1223 ? 204 : xhr.status;\n // fix
status code when it is 0 (0 status is undocumented).\n // Occurs when accessing file resources or on
Android 4.1 stock browser\n // while retrieving files from application cache.\n if (status === 0)
{\n status = response ? 200 : 0;\n }\n if (200 <= status && status <= 300) {\n resolve(response);\n }\n else {\n reject("Failed to load " + url);\n }\n };\n xhr.onerror = function () {\n reject("Failed to load " + url);\n }; \n xhr.send();\n return promise;\n }; \n return ResourceLoaderImpl;\n })(compiler.ResourceLoader));\n ResourceLoaderImpl.decorators = [\n { type: core.Injectable }\n];\n /**\n * @license\n * Copyright
Google LLC All Rights Reserved.\n */\n * Use of this source code is governed by an MIT-style license that can
be\n * found in the LICENSE file at https://angular.io/license\n */\n var 0$2 = { providers: [{ provide:
compiler.ResourceLoader, useClass: ResourceLoaderImpl, deps: [] }] }, 1$1 =
common.PLATFORM_BROWSER_ID;\n /**\n * @publicApi\n */\n var
INTERNAL_BROWSER_DYNAMIC_PLATFORM_PROVIDERS = [\n platformBrowser.INTERNAL_BROWSER_PLATFORM_PROVIDERS,\n {\n provide:
core.COMPILER_OPTIONS,\n useValue: 0$2,\n multi: true\n },\n {\n provide:
core.PLATFORM_ID, useValue: 1$1 },\n];\n /**\n * An implementation of ResourceLoader that uses a
template cache to avoid doing an actual\n * ResourceLoader.\n * The template cache needs to be built
and loaded into window.$templateCache\n * via a separate mechanism.\n */\n @publicApi\n *^n var
CachedResourceLoader = /** @class */ (function (_super) {\n __extends(CachedResourceLoader, _super);\n function CachedResourceLoader() {\n var _this = _super.call(this) || this;\n _this._cache =
core.global.$templateCache;\n if (_this._cache == null) {\n throw new
Error('CachedResourceLoader: Template cache was not found in $templateCache.);\n }\n return
_this;\n }\n CachedResourceLoader.prototype.get = function (url) {\n if
(this._cache.hasOwnProperty(url)) {\n return Promise.resolve(this._cache[url]);\n }\n else {\n return Promise.reject('CachedResourceLoader: Did not find cached template for ' + url);\n }\n };\n return CachedResourceLoader;\n })(compiler.ResourceLoader));\n /**\n * @license\n *
Copyright Google LLC All Rights Reserved.\n */\n * Use of this source code is governed by an MIT-style

```





## PERFORMANCE OF THIS SOFTWARE.

```
***** */
/**
 * @license
 * Copyright Google LLC All Rights Reserved.
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 * Use of this source code is governed by an MIT-style license that can be
 * found in the LICENSE file at https://angular.io/license
 */
```

Found in path(s):

```
* /opt/cola/permits/1358260602_1657134853.7637453/0/platform-browser-dynamic-11-0-2-
tgz/package/bundles/platform-browser-dynamic-testing.umd.js
* /opt/cola/permits/1358260602_1657134853.7637453/0/platform-browser-dynamic-11-0-2-
tgz/package/bundles/platform-browser-dynamic-testing.umd.min.js
* /opt/cola/permits/1358260602_1657134853.7637453/0/platform-browser-dynamic-11-0-2-
tgz/package/bundles/platform-browser-dynamic.umd.js
* /opt/cola/permits/1358260602_1657134853.7637453/0/platform-browser-dynamic-11-0-2-
tgz/package/bundles/platform-browser-dynamic.umd.min.js
```

No license file was found, but licenses were detected in source scan.

Angular

=====

The sources for this package are in the main [Angular](<https://github.com/angular/angular>) repo. Please file issues and pull requests against that repo.

Usage information and reference details can be found in [Angular documentation](<https://angular.io/docs>).

License: MIT

Found in path(s):

```
* /opt/cola/permits/1358260602_1657134853.7637453/0/platform-browser-dynamic-11-0-2-
tgz/package/README.md
```

No license file was found, but licenses were detected in source scan.

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dynamic/index.ts","../../packages/platform-browser-dynamic/platform-browser-
```

dynamic.ts"], "sourcesContent": [ /\*!

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SOFTWARE.\r\n\*\*\*\*\*

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/\r\n global Reflect, Promise *\r\nvar extendStatics = function(d, b) {\r\n extendStatics =\r\n Object.setPrototypeOf ||\r\n ({ __proto__: [] } instanceof Array && function(d, b) { d.__proto__ = b; }) ||\r\n function(d, b) { for (var p in b) if (b.hasOwnProperty(p)) d[p] = b[p]; };\r\n return extendStatics(d, b);\r\n};\r\n\r\nexport function __extends(d, b) {\r\n extendStatics(d, b);\r\n function __() { this.constructor = d; }\r\n d.prototype = b === null ? Object.create(b) : (__.prototype = b.prototype, new __());\r\n}\r\n\r\nexport var __assign = function() {\r\n __assign = Object.assign || function __assign(t) {\r\n for (var s, i = 1, n = arguments.length; i < n; i++) {\r\n s = arguments[i];\r\n for (var p in s) if (Object.prototype.hasOwnProperty.call(s, p)) t[p] = s[p];\r\n }\r\n return t;\r\n };\r\n return __assign.apply(this, arguments);\r\n}\r\n\r\nexport function __rest(s, e) {\r\n var t = {};\r\n for (var p in s) if (Object.prototype.hasOwnProperty.call(s, p) && e.indexOf(p) < 0)\r\n t[p] = s[p];\r\n if (s != null && typeof Object.getOwnPropertySymbols === \"function\")\r\n for (var i = 0, p = Object.getOwnPropertySymbols(s); i < p.length; i++) {\r\n if (e.indexOf(p[i]) < 0 && Object.prototype.propertyIsEnumerable.call(s, p[i]))\r\n t[p[i]] = s[p[i]];\r\n }\r\n return t;\r\n}\r\n\r\nexport function __decorate(decorators, target, key, desc) {\r\n var c = arguments.length, r = c < 3 ? target : desc === null ? desc = Object.getOwnPropertyDescriptor(target, key) : desc, d;\r\n if (typeof Reflect === \"object\" && typeof Reflect.decorate === \"function\") r = Reflect.decorate(decorators, target, key, desc);\r\n else for (var i = decorators.length - 1; i >= 0; i--) if (d = decorators[i]) r = (c < 3 ? d(r) : c > 3 ? d(target, key, r) : d(target, key)) || r;\r\n return c > 3 && r && Object.defineProperty(target, key, r), r;\r\n}\r\n\r\nexport function __param(paramIndex, decorator) {\r\n return function(target, key) { decorator(target, key, paramIndex); }\r\n}\r\n\r\nexport function __metadata(metadataKey, metadataValue) {\r\n if (typeof Reflect === \"object\" && typeof Reflect.metadata === \"function\") return Reflect.metadata(metadataKey, metadataValue);\r\n}\r\n\r\nexport function __awaiter(thisArg, _arguments, P, generator) {\r\n function adopt(value) { return value instanceof P ? value : new P(function(resolve) { resolve(value); }); }\r\n return new (P || (P = Promise))(function(resolve, reject) {\r\n function fulfilled(value) { try { step(generator.next(value)); } catch (e) { reject(e); } }\r\n function step(result) { result.done ? resolve(result.value) : adopt(result.value).then(fulfilled, rejected); }\r\n step((generator = generator.apply(thisArg, _arguments || [])).next());\r\n });\r\n}\r\n\r\nexport function __generator(thisArg, body) {\r\n var _ = { label: 0, sent: function() { if (t[0] & 1) throw t[1]; return t[1]; }, trys: [], ops: [] }, f, y, t, g;\r\n return g = { next: verb(0), \"throw\": verb(1), \"return\": verb(2) }, typeof Symbol === \"function\" && (g[Symbol.iterator] = function() { return this; }), g;\r\n function verb(n) { return function(v) { return step([n, v]); } }\r\n function step(op) {\r\n if (f) throw new TypeError(\"Generator is already executing.\");\r\n while (1) try {\r\n if (f = 1, y && (t = op[0] & 2 ? y[\"return\"] : op[0] ? y[\"throw\"] || ((t = y[\"return\"]) && t.call(y), 0) : y.next) && !(t = t.call(y, op[1])).done) return t;\r\n switch (op[0]) {\r\n case 0: case 1: t = op; break;\r\n case 4: _label++; return { value: op[1], done: false };\r\n case 5: _label++; y = op[1]; op = [0]; continue;\r\n case 7: op = _ops.pop(); _trys.pop(); continue;\r\n default:\r\n if (!t = _trys, t = t.length > 0 && t[t.length - 1] && (op[0] === 6 || op[0] === 2)) { _ = 0; continue; }\r\n if (op[0] === 3 && (!t || (op[1] > t[0] && op[1] <
```



```

privateMap.get(receiver);\r\n}\r\n\r\nexport function __classPrivateFieldSet(receiver, privateMap, value) {\r\n if
(!privateMap.has(receiver)) {\r\n throw new TypeError("attempted to set private field on non-instance");\r\n
}\r\n privateMap.set(receiver, value);\r\n return value;\r\n}\r\n"/**\n * @license\n * Copyright Google LLC
All Rights Reserved.\n * Use of this source code is governed by an MIT-style license that can be\n * found in
the LICENSE file at https://angular.io/license\n */\n\nimport { CompileReflector, ExternalReference, getUrlScheme,
Identifiers, syntaxError } from '@angular/compiler';\nimport { ANALYZE_FOR_ENTRY_COMPONENTS,
ChangeDetectionStrategy, ChangeDetectorRef, Component, ComponentFactory, ComponentFactoryResolver,
ComponentRef, ElementRef, Injector, LOCALE_ID, NgModuleFactory, NgModuleRef, QueryList, Renderer2,
SecurityContext, TemplateRef, TRANSLATIONS_FORMAT, ViewContainerRef, ViewEncapsulation, and, ccf,
cmf, CodegenComponentFactoryResolver, crt, did, eld, EMPTY_ARRAY, EMPTY_MAP, inlineInterpolate,
interpolate, mod, mpd, ncd, nov, pad, pid, pod, ppp, prd, qud, ReflectionCapabilities as ReflectionCapabilities,
registerModuleFactory, stringify as stringify, ted, unv, vid } from '@angular/core';\n\nexport const
MODULE_SUFFIX = ";\nconst builtinExternalReferences = createBuiltinExternalReferencesMap();\n\nexport class
JitReflector implements CompileReflector {\n private reflectionCapabilities = new ReflectionCapabilities();\n
componentModuleUrl(type: any, cmpMetadata: Component): string {\n const moduleId =
cmpMetadata.moduleId;\n\n if (typeof moduleId === 'string') {\n const scheme = getUrlScheme(moduleId);\n
return scheme ? moduleId : `package:${moduleId}${MODULE_SUFFIX}`;\n } else if (moduleId !== null &&
moduleId !== void 0) {\n throw syntaxError(`moduleId should be a string in "${\n
stringify(type)}"`. See https://goo.gl/wIDDiL for more information.\n` +\n `If you're using Webpack you
should inline the template and the styles, see https://goo.gl/X2J8zc.`);\n }\n\n return `.${stringify(type)}`;\n
}\n\n parameters(typeOrFunc: /*Type*/ any): any[][] {\n return this.reflectionCapabilities.parameters(typeOrFunc);\n
}\n\n tryAnnotations(typeOrFunc: /*Type*/ any): any[] {\n return this.annotations(typeOrFunc);\n }\n\n
annotations(typeOrFunc: /*Type*/ any): any[] {\n return this.reflectionCapabilities.annotations(typeOrFunc);\n
}\n\n shallowAnnotations(typeOrFunc: /*Type*/ any): any[] {\n throw new Error('Not supported in JIT mode');\n
}\n\n propMetadata(typeOrFunc: /*Type*/ any): {[key: string]: any[]} {\n return
this.reflectionCapabilities.propMetadata(typeOrFunc);\n }\n\n hasLifecycleHook(type: any, lcProperty: string):
boolean {\n return this.reflectionCapabilities.hasLifecycleHook(type, lcProperty);\n }\n\n guards(type: any): {[key:
string]: any} {\n return this.reflectionCapabilities.guards(type);\n }\n\n resolveExternalReference(ref:
ExternalReference): any {\n return builtinExternalReferences.get(ref) || ref.runtime;\n }\n\n\n\nfunction
createBuiltinExternalReferencesMap() {\n const map = new Map<ExternalReference, any>();\n
map.set(Identifiers.ANALYZE_FOR_ENTRY_COMPONENTS, ANALYZE_FOR_ENTRY_COMPONENTS);\n
map.set(Identifiers.ElementRef, ElementRef);\n map.set(Identifiers.NgModuleRef, NgModuleRef);\n
map.set(Identifiers.ViewContainerRef, ViewContainerRef);\n map.set(Identifiers.ChangeDetectorRef,
ChangeDetectorRef);\n map.set(Identifiers.Renderer2, Renderer2);\n map.set(Identifiers.QueryList, QueryList);\n
map.set(Identifiers.TemplateRef, TemplateRef);\n map.set(Identifiers.CodegenComponentFactoryResolver,
CodegenComponentFactoryResolver);\n map.set(Identifiers.ComponentFactoryResolver,
ComponentFactoryResolver);\n map.set(Identifiers.ComponentFactory, ComponentFactory);\n
map.set(Identifiers.ComponentRef, ComponentRef);\n map.set(Identifiers.NgModuleFactory,
NgModuleFactory);\n map.set(Identifiers.createModuleFactory, cmf);\n map.set(Identifiers.moduleDef, mod);\n
map.set(Identifiers.moduleProviderDef, mpd);\n map.set(Identifiers.RegisterModuleFactoryFn,
registerModuleFactory);\n map.set(Identifiers.Injector, Injector);\n map.set(Identifiers.ViewEncapsulation,
ViewEncapsulation);\n map.set(Identifiers.ChangeDetectionStrategy, ChangeDetectionStrategy);\n
map.set(Identifiers.SecurityContext, SecurityContext);\n map.set(Identifiers.LOCALE_ID, LOCALE_ID);\n
map.set(Identifiers.TRANSLATIONS_FORMAT, TRANSLATIONS_FORMAT);\n
map.set(Identifiers.inlineInterpolate, inlineInterpolate);\n map.set(Identifiers.interpolate, interpolate);\n
map.set(Identifiers.EMPTY_ARRAY, EMPTY_ARRAY);\n map.set(Identifiers.EMPTY_MAP, EMPTY_MAP);\n
map.set(Identifiers.viewDef, vid);\n map.set(Identifiers.elementDef, eld);\n map.set(Identifiers.anchorDef, and);\n
map.set(Identifiers.textDef, ted);\n map.set(Identifiers.directiveDef, did);\n map.set(Identifiers.providerDef, prd);\n
}

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map.set(Identifiers.queryDef, qud);\n map.set(Identifiers.pureArrayDef, pad);\n map.set(Identifiers.pureObjectDef,
pod);\n map.set(Identifiers.purePipeDef, ppd);\n map.set(Identifiers.pipeDef, pid);\n
map.set(Identifiers.nodeValue, nov);\n map.set(Identifiers.ngContentDef, ncd);\n map.set(Identifiers.unwrapValue,
unv);\n map.set(Identifiers.createRendererType2, crt);\n map.set(Identifiers.createComponentFactory, ccf);\n
return map;\n}\n", "/*\n * @license\n * Copyright Google LLC All Rights Reserved.\n *\n * Use of this source
code is governed by an MIT-style license that can be\n * found in the LICENSE file at https://angular.io/license\n
*\n\nimport { CompileMetadataResolver, CompilerConfig, CompileReflector, DirectiveNormalizer,
DirectiveResolver, DomElementSchemaRegistry, ElementSchemaRegistry, HtmlParser, I18NHtmlParser,
JitCompiler, JitEvaluator, JitSummaryResolver, Lexer, NgModuleCompiler, NgModuleResolver, Parser,
PipeResolver, ProviderMeta, ResourceLoader, StaticSymbolCache, StyleCompiler, SummaryResolver,
TemplateParser, UrlResolver, ViewCompiler } from '@angular/compiler';\nimport { Compiler, CompilerFactory,
CompilerOptions, ComponentFactory, Inject, InjectionToken, Injector, isDevMode, MissingTranslationStrategy,
ModuleWithComponentFactories, NgModuleFactory, Optional, PACKAGE_ROOT_URL, StaticProvider,
TRANSLATIONS, TRANSLATIONS_FORMAT, Type, ViewEncapsulation, Console as Console } from
'@angular/core';\n\nimport { JitReflector } from './compiler_reflector';\n\nexport const
ERROR_COLLECTOR_TOKEN = new InjectionToken('ErrorCollector');\n\n/**\n * A default provider for { @link
PACKAGE_ROOT_URL } that maps to './\n *\n\nexport const DEFAULT_PACKAGE_URL_PROVIDER = {\n
provide: PACKAGE_ROOT_URL,\n useValue: './\n};\n\nconst _NO_RESOURCE_LOADER: ResourceLoader =
{\n get(url: string): Promise<string> {\n throw new Error(\n `No ResourceLoader implementation has been
provided. Can't read the url \"${url}\"`);\n };\n};\n\nconst baseHtmlParser = new
InjectionToken('HtmlParser');\n\nexport class CompilerImpl implements Compiler {\n private _delegate:
JitCompiler;\n public readonly injector: Injector;\n constructor(\n injector: Injector, private _metadataResolver:
CompileMetadataResolver,\n templateParser: TemplateParser, styleCompiler: StyleCompiler, viewCompiler:
ViewCompiler,\n ngModuleCompiler: NgModuleCompiler, summaryResolver:
SummaryResolver<Type<any>>,\n compileReflector: CompileReflector, jitEvaluator: JitEvaluator,\n
compilerConfig: CompilerConfig, console: Console) {\n this._delegate = new JitCompiler(\n
_metadataResolver, templateParser, styleCompiler, viewCompiler, ngModuleCompiler,\n summaryResolver,
compileReflector, jitEvaluator, compilerConfig, console,\n this.getExtraNgModuleProviders.bind(this));\n
this.injector = injector;\n }\n\n private getExtraNgModuleProviders() {\n return
[this._metadataResolver.getProviderMetadata(\n new ProviderMeta(Compiler, {useValue: this}))];\n }\n\n
compileModuleSync<T>(moduleType: Type<T>): NgModuleFactory<T> {\n return
this._delegate.compileModuleSync(moduleType) as NgModuleFactory<T>;\n }\n
compileModuleAsync<T>(moduleType: Type<T>): Promise<NgModuleFactory<T>> {\n return
this._delegate.compileModuleAsync(moduleType) as Promise<NgModuleFactory<T>>;\n }\n
compileModuleAndAllComponentsSync<T>(moduleType: Type<T>): ModuleWithComponentFactories<T> {\n
const result = this._delegate.compileModuleAndAllComponentsSync(moduleType);\n return {\n
ngModuleFactory: result.ngModuleFactory as NgModuleFactory<T>,\n componentFactories:
result.componentFactories as ComponentFactory<any>[],\n };;\n }\n
compileModuleAndAllComponentsAsync<T>(moduleType: Type<T>):\n
Promise<ModuleWithComponentFactories<T>> {\n return
this._delegate.compileModuleAndAllComponentsAsync(moduleType)\n .then((result) => ({\n
ngModuleFactory: result.ngModuleFactory as NgModuleFactory<T>,\n componentFactories:
result.componentFactories as ComponentFactory<any>[],\n }));\n }\n loadAotSummaries(summaries: ()
=> any[]) {\n this._delegate.loadAotSummaries(summaries);\n }\n hasAotSummary(ref: Type<any>): boolean
{\n return this._delegate.hasAotSummary(ref);\n }\n getComponentFactory<T>(component: Type<T>):
ComponentFactory<T> {\n return this._delegate.getComponentFactory(component) as ComponentFactory<T>;\n
}\n clearCache(): void {\n this._delegate.clearCache();\n }\n clearCacheFor(type: Type<any>) {\n
this._delegate.clearCacheFor(type);\n }\n getModuleId(moduleType: Type<any>): string|undefined {\n const

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meta = this._metadataResolver.getNgModuleMetadata(moduleType);\n return meta && meta.id || undefined;\n }\n}\n\n/**\n * A set of providers that provide `JitCompiler` and its dependencies to use for\n * template compilation.\n */\nconst COMPILER_PROVIDERS__PRE_R3__ = <StaticProvider[]>[\n {provide: CompileReflector, useValue: new JitReflector(),\n {provide: ResourceLoader, useValue: _NO_RESOURCE_LOADER},\n {provide: JitSummaryResolver, deps: []},\n {provide: SummaryResolver, useExisting: JitSummaryResolver},\n {provide: Console, deps: []},\n {provide: Lexer, deps: []},\n {provide: Parser, deps: [Lexer]},\n {\n provide: baseHtmlParser,\n useClass: HtmlParser,\n deps: [],\n },\n {\n provide: I18NHtmlParser,\n useFactory:\n (parser: HtmlParser, translations: string|null, format: string, config: CompilerConfig,\n console: Console) => {\n translations = translations || ";\n const missingTranslation =\n translations ? config.missingTranslation! : MissingTranslationStrategy.Ignore;\n return new I18NHtmlParser(parser, translations, format, missingTranslation, console);\n },\n deps: [\n baseHtmlParser,\n [new Optional(), new Inject(TRANSLATIONS)],\n [new Optional(), new Inject(TRANSLATIONS_FORMAT)],\n [CompilerConfig],\n [Console],\n],\n },\n {\n provide: HtmlParser,\n useExisting: I18NHtmlParser,\n },\n {\n provide: TemplateParser,\n deps: [CompilerConfig, CompileReflector, Parser, ElementSchemaRegistry, I18NHtmlParser, Console]\n },\n {\n provide: JitEvaluator,\n useClass: JitEvaluator, deps: []},\n {\n provide: DirectiveNormalizer, deps: [ResourceLoader, UrlResolver, HtmlParser, CompilerConfig]},\n {\n provide: CompileMetadataResolver,\n deps: [\n CompilerConfig, HtmlParser, NgModuleResolver, DirectiveResolver, PipeResolver,\n SummaryResolver, ElementSchemaRegistry, DirectiveNormalizer, Console,\n [Optional, StaticSymbolCache], CompileReflector, [Optional, ERROR_COLLECTOR_TOKEN]\n]\n },\n DEFAULT_PACKAGE_URL_PROVIDER,\n {\n provide: StyleCompiler, deps: [UrlResolver]},\n {\n provide: ViewCompiler, deps: [CompileReflector]},\n {\n provide: NgModuleCompiler, deps: [CompileReflector]},\n {\n provide: CompilerConfig, useValue: new CompilerConfig(),\n },\n {\n provide: Compiler,\n useClass: CompilerImpl,\n deps: [\n Injector, CompileMetadataResolver, TemplateParser, StyleCompiler, ViewCompiler,\n NgModuleCompiler, SummaryResolver, CompileReflector, JitEvaluator, CompilerConfig, Console\n]\n },\n {\n provide: DomElementSchemaRegistry, deps: []},\n {\n provide: ElementSchemaRegistry, useExisting: DomElementSchemaRegistry},\n {\n provide: UrlResolver, deps: [PACKAGE_ROOT_URL]},\n {\n provide: DirectiveResolver, deps: [CompileReflector]},\n {\n provide: PipeResolver, deps: [CompileReflector]},\n {\n provide: NgModuleResolver, deps: [CompileReflector]}\n];\n\nexport const COMPILER_PROVIDERS__POST_R3__ =\n <StaticProvider[]>[{\n provide: Compiler, useFactory: () => new Compiler()\n}];\n\nexport const COMPILER_PROVIDERS = COMPILER_PROVIDERS__PRE_R3__;\n\n/**\n * @publicApi\n */\nexport class JitCompilerFactory implements CompilerFactory {\n private _defaultOptions: CompilerOptions[];\n\n /* @internal\n *\n * constructor(defaultOptions: CompilerOptions[]) {\n const compilerOptions: CompilerOptions = {\n useJit: true,\n defaultEncapsulation: ViewEncapsulation.Emulated,\n missingTranslation: MissingTranslationStrategy.Warning,\n };\n\n this._defaultOptions = [compilerOptions, ...defaultOptions];\n }\n\n createCompiler(options: CompilerOptions[] = []): Compiler {\n const opts = _mergeOptions(this._defaultOptions.concat(options));\n const injector = Injector.create([\n COMPILER_PROVIDERS, {\n provide: CompilerConfig,\n useFactory: () => {\n return new CompilerConfig({\n // let explicit values from the compiler options overwrite options\n // from the app providers\n useJit: opts.useJit,\n jitDevMode: isDevMode(),\n // let explicit values from the compiler options overwrite options\n // from the app providers\n defaultEncapsulation: opts.defaultEncapsulation,\n missingTranslation: opts.missingTranslation,\n preserveWhitespaces: opts.preserveWhitespaces,\n });\n },\n deps: [],\n },\n opts.providers!\n]);\n return injector.get(Compiler);\n }\n\n function _mergeOptions(optionsArr: CompilerOptions[]): CompilerOptions {\n return {\n useJit: _lastDefined(optionsArr.map(options => options.useJit)),\n defaultEncapsulation: _lastDefined(optionsArr.map(options => options.defaultEncapsulation)),\n providers: _mergeArrays(optionsArr.map(options => options.providers!)),\n missingTranslation: _lastDefined(optionsArr.map(options => options.missingTranslation)),\n preserveWhitespaces:

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_lastDefined(optionsArr.map(options => options.preserveWhitespaces)),\n };\n}\n\nfunction _lastDefined<T>(args:
T[]): T|undefined {\n for (let i = args.length - 1; i >= 0; i--) {\n if (args[i] !== undefined) {\n return args[i];\n
}\n }\n return undefined;\n}\n\nfunction _mergeArrays(parts: any[][]): any[] {\n const result: any[] = [];\n
parts.forEach((part) => part && result.push(...part));\n return result;\n}\n\n"/**\n * @license\n * Copyright Google
LLC All Rights Reserved.\n *\n * Use of this source code is governed by an MIT-style license that can be\n * found
in the LICENSE file at https://angular.io/license\n */\n\nimport {COMPILER_OPTIONS, CompilerFactory,
createPlatformFactory, platformCore, PlatformRef, StaticProvider} from '@angular/core';\n\nimport
{JitCompilerFactory} from './compiler_factory';\n\n/**\n * A platform that included corePlatform and the
compiler.\n *\n * @publicApi\n */\n\nexport const platformCoreDynamic = createPlatformFactory(platformCore,
'coreDynamic', [\n {provide: COMPILER_OPTIONS, useValue: {}, multi: true},\n {provide: CompilerFactory,
useClass: JitCompilerFactory, deps: [COMPILER_OPTIONS]},\n]);\n\n"/**\n * @license\n * Copyright Google
LLC All Rights Reserved.\n *\n * Use of this source code is governed by an MIT-style license that can be\n * found
in the LICENSE file at https://angular.io/license\n */\n\nimport {ResourceLoader} from '@angular/compiler';\n\nimport
{Injectable} from '@angular/core';\n\n\n@injectable()\nexport class ResourceLoaderImpl extends ResourceLoader
{\n get(url: string): Promise<string> {\n let resolve: (result: any) => void;\n let reject: (error: any) => void;\n
const promise = new Promise<string>((res, rej) => {\n resolve = res;\n reject = rej;\n });\n const xhr = new
XMLHttpRequest();\n xhr.open('GET', url, true);\n xhr.responseType = 'text';\n\n xhr.onload = function() {\n
// responseText is the old-school way of retrieving response (supported by IE8 & 9)\n // response/responseType
properties were introduced in ResourceLoader Level2 spec (supported\n // by IE10)\n const response =
xhr.response || xhr.responseText;\n\n // normalize IE9 bug (http://bugs.jquery.com/ticket/1450)\n let status =
xhr.status === 1223 ? 204 : xhr.status;\n\n // fix status code when it is 0 (0 status is undocumented).\n //
Occurs when accessing file resources or on Android 4.1 stock browser\n // while retrieving files from application
cache.\n if (status === 0) {\n status = response ? 200 : 0;\n }\n\n if (200 <= status && status <= 300)\n
{\n resolve(response);\n } else {\n reject(`Failed to load ${url}`);\n }\n\n }; \n\n\n xhr.onerror =
function() {\n reject(`Failed to load ${url}`);\n }; \n\n\n xhr.send();\n return promise;\n }\n}\n\n"/**\n *
@license\n * Copyright Google LLC All Rights Reserved.\n *\n * Use of this source code is governed by an MIT-
style license that can be\n * found in the LICENSE file at https://angular.io/license\n */\n\nimport
{PLATFORM_BROWSER_ID as PLATFORM_BROWSER_ID} from '@angular/common';\n\nimport
{ResourceLoader} from '@angular/compiler';\n\nimport {COMPILER_OPTIONS, PLATFORM_ID, StaticProvider}
from '@angular/core';\n\nimport {INTERNAL_BROWSER_PLATFORM_PROVIDERS as
INTERNAL_BROWSER_PLATFORM_PROVIDERS} from '@angular/platform-browser';\n\nimport
{ResourceLoaderImpl} from './resource_loader/resource_loader_impl';\n\n\n/**\n * @publicApi\n */\n\nexport const
INTERNAL_BROWSER_DYNAMIC_PLATFORM_PROVIDERS: StaticProvider[] = [\n
INTERNAL_BROWSER_PLATFORM_PROVIDERS,\n {\n provide: COMPILER_OPTIONS,\n useValue:
{\n providers: [{provide: ResourceLoader, useClass: ResourceLoaderImpl, deps: []}],\n multi: true\n },\n
{\n provide: PLATFORM_ID, useValue: PLATFORM_BROWSER_ID,\n },\n\n"/**\n * @license\n * Copyright
Google LLC All Rights Reserved.\n *\n * Use of this source code is governed by an MIT-style license that can be\n
* found in the LICENSE file at https://angular.io/license\n */\n\nimport {ResourceLoader} from
'@angular/compiler';\n\nimport {global as global} from '@angular/core';\n\n\n/**\n * An implementation of
ResourceLoader that uses a template cache to avoid doing an actual\n * ResourceLoader.\n *\n * The template cache
needs to be built and loaded into window.$templateCache\n * via a separate mechanism.\n *\n * @publicApi\n
*/\n\nexport class CachedResourceLoader extends ResourceLoader {\n private _cache: {[url: string]: string};\n\n
constructor() {\n super();\n this._cache = (<any>global).$templateCache;\n if (this._cache == null) {\n
throw new Error('CachedResourceLoader: Template cache was not found in $templateCache.);\n }\n }\n\n\n
get(url: string): Promise<string> {\n if (this._cache.hasOwnProperty(url)) {\n return
Promise.resolve(this._cache[url]);\n } else {\n return <Promise<any>>Promise.reject(\n
'CachedResourceLoader: Did not find cached template for ' + url);\n }\n }\n}\n\n"/**\n * @license\n * Copyright
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,IAAI,CAAC,OAAO,EAAE,UAAU,CAAC,IAAI,MAAM,CAAC,CAAC,EAAE,CAAC,EAAE,IAAI,CAAC,QAAQ,CAAC,EAAE,CAAC,CAAC,MAAM,CAAC,QAAQ,CAAC,GAAG,cAAc,OAAO,IAAI,CAAC,EAAE,EAAE,CAAC,CAAC;QAC5I,SAAS,IAAI,CAAC,CAAC,EAAE,CAAC,IAAI,CAAC,CAAC,CAAC,CAAC,GAAG,CAAC,CAAC,CAAC,GAAG,UAAU,CAAC,IAAI,OAAO,CAAC,CAAC,GAAG,CAAC,CAAC,IAAI,EAAE,KAAK,EAAE,OAAO,CAAC,CAAC,CAAC,CAAC,CAAC,CAAC,CAAC,CAAC,EAAE,IAAI,EAAE,CAAC,KAAK,QAAQ,EAAE,GAAG,CAAC,GAAG,CAAC,CAAC,CAAC,CAAC,GAAG,CAAC,CAAC,EAAE,GAAG,CAAC,CAAC,EAAE;IACnJ,CAAC;aAEe,aAAa,CAAC,CAAC;QAC3B,IAAI,CAAC,MAAM,CAAC,aAAa;YAAE,MAAM,IAAI,SAAS,CAAC,sCAAsC,CAAC,CAAC;QACvF,IAAI,CAAC,GAAG,CAAC,CAAC,MAAM,CAAC,aAAa,CAAC,EAAE,CAAC,CAAC;QACnC,OAAO,CAAC,GAAG,CAAC,CAAC,IAAI,CAAC,CAAC,CAAC,IAAI,CAAC,GAAG,OAAO,QAAQ,KAAK,UAAU,GAAG,QAAQ,CAAC,CAAC,CAAC,GAAG,CAAC,CAAC,MAAM,CAAC,QAAQ,CAAC,EAAE,EAAE,CAAC,GAAG,EAAE,EAAE,IAAI,CAAC,MAAM,CAAC,EAAE,IAAI,CAAC,OAAO,CAAC,EAAE,IAAI,CAAC,QAAQ,CAAC,EAAE,CAAC,CAAC,MAAM,CAAC,aAAa,CAAC,GAAG,cAAc,OAAO,IAAI,CAAC,EAAE,EAAE,CAAC,CAAC,CAAC;QACjN,SAAS,IAAI,CAAC,CAAC,IAAI,CAAC,CAAC,CAAC,GAAG,CAAC,CAAC,CAAC,CAAC,IAAI,UAAU,CAAC,IAAI,OAAO,IAAI,OAAO,CAAC,UAAU,OAAO,EAAE,MAAM,IAAI,CAAC,GAAG,CAAC,CAAC,CAAC,CAAC,CAAC,CAAC,CAAC,EAAE,MAAM,CAAC,OAAO,EAAE,MAAM,EAAE,CAAC,CAAC,IAAI,EAAE,CAAC,CAAC,KAAK,CAAC,CAAC,EAAE,CAAC,EAAE;QACk,SAAS,MAAM,CAAC,OAAO,EAAE,MAAM,EAAE,CAAC,EAAE,CAAC,IAAI,OAAO,CAAC,OAAO,CAAC,CAAC,CAAC,IAAI,OAAO,CAAC,EAAE,KAAK,EAAE,CAAC,EAAE,IAAI,EAAE,CAAC,EAAE,CAAC,CAAC,EAAE,EAAE,MAAM,CAAC,CAAC,EAAE;IACl,CAAC;aAEe,oBAAoB,CAAC,MAAM,EAAE,GAAG;QAC5C,IAAI,MAAM,CAAC,cAAc,EAAE;YAAE,MAAM,CAAC,cAAc,CAAC,MAAM,EAAE,KAAK,EAAE,EAAE,KAAK,EAAE,GAAG,EAAE,CAAC,CAAC;SAAE;aAAM;YAAE,MAAM,CAAC,GAAG,GAAG,GAAG,CAAC;SAAE;QAC/G,OAAO,MAAM,CAAC;IACIB,CAAC;IAAA,CAAC;IAEF,IAAI,kBAakB,GAAG,MAAM,CAAC,MAAM,IAAI,UAAS,CAAC,EAAE,CAAC;QACnD,MAAM,CAAC,cAAc,CAAC,CAAC,EAAE,SAAS,EAAE,EAAE,UAAU,EAAE,IAAI,EAAE,KAAK,EAAE,CAAC,EAAE,CAAC,CAAC;IACxE,CAAC,IAAI,UAAS,CAAC,EAAE,CAAC;QACd,CAAC,CAAC,SAAS,CAAC,GAAG,CAAC,CAAC;IACrB,CAAC,CAAC;aAEc,YAAy,CAAC,GAAG;QAC5B,IAAI,GAAG,IAAI,GAAG,CAAC,UAAU;YAAE,OAAO,GAAG,CAAC;QACtC,IAAI,MAAM,GAAG,EAAE,CAAC;QACb,IAAI,GAAG,IAAI,IAAI;YAAE,KAAK,IAAI,CAAC,IAAI,GAAG;gBAAE,IAAI,MAAM,CAAC,cAAc,CAAC,IAAI,CAAC,GAAG,EAAE,CAAC,CAAC;oBAAE,eAAe,CAAC,MAAM,EAAE,GAAG,EAAE,CAAC,CAAC,CAAC;QAC5G,kBAakB,CAAC,MAAM,EAAE,GAAG,CAAC,CAAC;QACc,OAAO,MAAM,CAAC;IACIB,CAAC;aAEe,eAAe,CAAC,GAAG;QAC/B,OAAO,CAAC,GAAG,IAAI,GAAG,CAAC,UAAU,IAAI,GAAG,GAAG,EAAE,OAAO,EAAE,GAAG,EAAE,CAAC;IAC5D,CAAC;aAEe,sBAAsB,CAAC,QAAQ,EAAE,UAAU;QACvD,IAAI,CAAC,UAAU,CAAC,GAAG,CAAC,QAAQ,CAAC,EAAE;YAC3B,MAAM,IAAI,SAAS,CAAC,gDAAGD,CAAC,CAAC;SACzE;QACD,OAAO,UAAU,CAAC,GAAG,CAAC,QAAQ,CAAC,CAAC;IACpC,CAAC;aAEe,sBAAsB,CAAC,QAAQ,EAAE,UAAU,EAAE,KAAK;QAC9D,IAAI,CAAC,UAAU,CAAC,GAAG,CAAC,QAAQ,CAAC,EAAE;YAC3B,MAAM,IAAI,SAAS,CAAC,gDAAGD,CAAC,CAAC;SACzE;QACD,UAAU,CAAC,GAAG,CAAC,QAAQ,EAAE,KAAK,CAAC,CAAC;QACc,OAAO,KAAK,CAAC;IACjB;;IClOA;;;;;;IAWO,IAAM,aAAa,GAAG,EAAE,CAAC;IACc,IAAM,yBAyB,GAAG,kCAakC,EAAE,CAAC;IAEvE;QAAA;YACU,2BAAsB,GAAG,IAAIA,4BAAsB,EAAE,CAAC;SAyC/D;QAvCC,yCAakB,GAAIB,UAAmB,IAAS,EAAE,WAAAsB;YACID,IAAM,QAAQ,GAAG,WAAW,CAAC,QAAQ,CAAC;YAEtC,IAAI,OAAO,QAAQ,KAAK,QAAQ,EAAE;gBACc,IAAM,MAAM,GAAGC,qBAAY,CAAC,QAAQ,CAAC,CAAC;gBACtC,OAAO,MAAM,GAAG,QAAQ,GAAG,aAAW,QAAQ,GAAG,aAAe,CAAC;aACIE;iBAAM,IAAI,QAAQ,KAAK,IAAI,IAAI,QAAQ,KAAK,KAAK,CAAC,EAAE;gBACnD,MAAMC,oBAAW,CACb,sCACIC,eAAS,CAAC,IAAI,CAAC,0DAAsD;oBACzE,mGAAMG,CAAC,CAAC;aACIG;YAED,OAAO,OAAKA,eAAS,CAAC,IAAI,CAAG,CAAC;SAC/B;QACD,iCAAU,GAAV,UAAW,UAAwB;YACjC,OAAO,IAAI,CAAC,sBAAsB,CAAC,UAAU,CAAC,UAAU,CAAC,CAAC;SAC3D;QACD,qCAAc,GAAAd,UAAe,UAAwB;YACrC,OAAO,IAAI,CAAC,WAAW,CAAC,UAAU,CAAC,CAAC;SACrC;QACD,kCAAW,GAAAX,UAAy,UAAwB;YACIC,OAAO,IAAI,CAAC,sBAAsB,CAAC,WAAW,CAAC,UAAU,CAAC,CAAC;SAC5D;QACD,yCAakB,GAAIB,UAAmB,UAAwB;YACzC,MAAM,IAAI,KAAK,CAAC,2BAA2B,CAAC,CAAC;SAC

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(For example, a function in a library to compute square roots has a purpose that is entirely well-defined independent of the application. Therefore, Subsection 2d requires that any application-supplied function or table used by this function must be optional: if the application does not supply it, the square root function must still compute square roots.)

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Thus, it is not the intent of this section to claim rights or contest

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If distribution of object code is made by offering access to copy from a designated place, then offering equivalent access to copy the source code from the same place satisfies the requirement to distribute the source code, even though third parties are not compelled to copy the source along with the object code.

5. A program that contains no derivative of any portion of the Library, but is designed to work with the Library by being compiled or linked with it, is called a "work that uses the Library". Such a work, in isolation, is not a derivative work of the Library, and therefore falls outside the scope of this License.

However, linking a "work that uses the Library" with the Library creates an executable that is a derivative of the Library (because it contains portions of the Library), rather than a "work that uses the library". The executable is therefore covered by this License.

Section 6 states terms for distribution of such executables.

When a "work that uses the Library" uses material from a header file that is part of the Library, the object code for the work may be a derivative work of the Library even though the source code is not. Whether this is true is especially significant if the work can be linked without the Library, or if the work is itself a library. The threshold for this to be true is not precisely defined by law.

If such an object file uses only numerical parameters, data structure layouts and accessors, and small macros and small inline functions (ten lines or less in length), then the use of the object file is unrestricted, regardless of whether it is legally a derivative work. (Executables containing this object code plus portions of the Library will still fall under Section 6.)

Otherwise, if the work is a derivative of the Library, you may distribute the object code for the work under the terms of Section 6. Any executables containing that work also fall under Section 6, whether or not they are linked directly with the Library itself.

6. As an exception to the Sections above, you may also combine or link a "work that uses the Library" with the Library to produce a work containing portions of the Library, and distribute that work under terms of your choice, provided that the terms permit modification of the work for the customer's own use and reverse engineering for debugging such modifications.

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c) Accompany the work with a written offer, valid for at least three years, to give the same user the materials specified in Subsection 6a, above, for a charge no more than the cost of performing this distribution.

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The reason we have a separate public license for some libraries is that they blur the distinction we usually make between modifying or adding to a program and simply using it. Linking a program with a library, without changing the library, is in some sense simply using the library, and is analogous to running a utility program or application program. However, in a textual and legal sense, the linked executable is a combined work, a derivative of the original library, and the ordinary General Public License treats it as such.

Because of this blurred distinction, using the ordinary General

Public License for libraries did not effectively promote software sharing, because most developers did not use the libraries. We concluded that weaker conditions might promote sharing better.

However, unrestricted linking of non-free programs would deprive the users of those programs of all benefit from the free status of the libraries themselves. This Library General Public License is intended to permit developers of non-free programs to use free libraries, while preserving your freedom as a user of such programs to change the free libraries that are incorporated in them. (We have not seen how to achieve this as regards changes in header files, but we have achieved it as regards changes in the actual functions of the Library.) The hope is that this will lead to faster development of free libraries.

The precise terms and conditions for copying, distribution and modification follow. Pay close attention to the difference between a "work based on the library" and a "work that uses the library". The former contains code derived from the library, while the latter only works together with the library.

Note that it is possible for a library to be covered by the ordinary General Public License rather than by this special one.

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- d) If a facility in the modified Library refers to a function or a table of data to be supplied by an application program that uses the facility, other than as an argument passed when the facility is invoked, then you must make a good faith effort to ensure that, in the event an application does not supply such function or table, the facility still operates, and performs whatever part of its purpose remains meaningful.

(For example, a function in a library to compute square roots has a purpose that is entirely well-defined independent of the application. Therefore, Subsection 2d requires that any application-supplied function or table used by this function must be optional: if the application does not supply it, the square

root function must still compute square roots.)

These requirements apply to the modified work as a whole. If identifiable sections of that work are not derived from the Library, and can be reasonably considered independent and separate works in themselves, then this License, and its terms, do not apply to those sections when you distribute them as separate works. But when you distribute the same sections as part of a whole which is a work based on the Library, the distribution of the whole must be on the terms of this License, whose permissions for other licensees extend to the entire whole, and thus to each and every part regardless of who wrote it.

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If distribution of object code is made by offering access to copy from a designated place, then offering equivalent access to copy the



source code from the same place satisfies the requirement to distribute the source code, even though third parties are not compelled to copy the source along with the object code.

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## 1.84 gson 2.8.9

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*/opt/cola/permits/1231335344_1637640927.1/0/gson-2-8-9-sources-jar/com/google/gson/internal/Streams.java
*/opt/cola/permits/1231335344_1637640927.1/0/gson-2-8-9-sources-jar/com/google/gson/JsonSyntaxException.java
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  - \* /opt/cola/permits/1231335344\_1637640927.1/0/gson-2-8-9-sources-jar/com/google/gson/JsonParseException.java
  - \* /opt/cola/permits/1231335344\_1637640927.1/0/gson-2-8-9-sources-jar/com/google/gson/FieldNamingPolicy.java
  - \* /opt/cola/permits/1231335344\_1637640927.1/0/gson-2-8-9-sources-jar/com/google/gson/FieldNamingStrategy.java
  - \* /opt/cola/permits/1231335344\_1637640927.1/0/gson-2-8-9-sources-jar/com/google/gson/reflect/TypeToken.java
  - \* /opt/cola/permits/1231335344\_1637640927.1/0/gson-2-8-9-sources-jar/com/google/gson/JsonIOException.java
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  - \* /opt/cola/permits/1231335344\_1637640927.1/0/gson-2-8-9-sources-jar/com/google/gson/internal/Primitives.java
  - \* /opt/cola/permits/1231335344\_1637640927.1/0/gson-2-8-9-sources-jar/com/google/gson/JsonDeserializer.java
  - \* /opt/cola/permits/1231335344\_1637640927.1/0/gson-2-8-9-sources-jar/com/google/gson/JsonArray.java
  - \* /opt/cola/permits/1231335344\_1637640927.1/0/gson-2-8-9-sources-jar/com/google/gson/GsonBuilder.java
  - \* /opt/cola/permits/1231335344\_1637640927.1/0/gson-2-8-9-sources-jar/com/google/gson/annotations/Expose.java
  - \* /opt/cola/permits/1231335344\_1637640927.1/0/gson-2-8-9-sources-jar/com/google/gson/ExclusionStrategy.java
  - \* /opt/cola/permits/1231335344\_1637640927.1/0/gson-2-8-9-sources-jar/com/google/gson/JsonDeserializationContext.java
  - \* /opt/cola/permits/1231335344\_1637640927.1/0/gson-2-8-9-sources-jar/com/google/gson/annotations/Until.java
  - \* /opt/cola/permits/1231335344\_1637640927.1/0/gson-2-8-9-sources-jar/com/google/gson/internal/ObjectConstructor.java
  - \* /opt/cola/permits/1231335344\_1637640927.1/0/gson-2-8-9-sources-jar/com/google/gson/annotations/Since.java
  - \* /opt/cola/permits/1231335344\_1637640927.1/0/gson-2-8-9-sources-jar/com/google/gson/annotations/SerializedName.java
  - \* /opt/cola/permits/1231335344\_1637640927.1/0/gson-2-8-9-sources-jar/com/google/gson/JsonPrimitive.java
  - \* /opt/cola/permits/1231335344\_1637640927.1/0/gson-2-8-9-sources-jar/com/google/gson/JsonElement.java
  - \* /opt/cola/permits/1231335344\_1637640927.1/0/gson-2-8-9-sources-jar/com/google/gson/JsonSerializationContext.java
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  - \* /opt/cola/permits/1231335344\_1637640927.1/0/gson-2-8-9-sources-jar/com/google/gson/InstanceCreator.java
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jar/com/google/gson/internal/LinkedTreeMap.java
* /opt/cola/permits/1231335344_1637640927.1/0/gson-2-8-9-sources-
jar/com/google/gson/internal/LinkedHashMap.java
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* /opt/cola/permits/1231335344_1637640927.1/0/gson-2-8-9-sources-
jar/com/google/gson/internal/bind/DateTypeAdapter.java
* /opt/cola/permits/1231335344_1637640927.1/0/gson-2-8-9-sources-
jar/com/google/gson/internal/sql/SqlDateTypeAdapter.java
* /opt/cola/permits/1231335344_1637640927.1/0/gson-2-8-9-sources-
jar/com/google/gson/internal/LazilyParsedNumber.java
* /opt/cola/permits/1231335344_1637640927.1/0/gson-2-8-9-sources-
jar/com/google/gson/internal/ConstructorConstructor.java
* /opt/cola/permits/1231335344_1637640927.1/0/gson-2-8-9-sources-
jar/com/google/gson/internal/UnsafeAllocator.java
* /opt/cola/permits/1231335344_1637640927.1/0/gson-2-8-9-sources-
jar/com/google/gson/internal/sql/SqlTimeTypeAdapter.java
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* /opt/cola/permits/1231335344_1637640927.1/0/gson-2-8-9-sources-jar/com/google/gson/stream/JsonWriter.java
* /opt/cola/permits/1231335344_1637640927.1/0/gson-2-8-9-sources-
jar/com/google/gson/stream/MalformedJsonException.java
* /opt/cola/permits/1231335344_1637640927.1/0/gson-2-8-9-sources-jar/com/google/gson/stream/JsonScope.java
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jar/com/google/gson/internal/reflect/ReflectionAccessor.java
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jar/com/google/gson/internal/JavaVersion.java
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\* /opt/cola/permits/1231335344\_1637640927.1/0/gson-2-8-9-sources-jar/com/google/gson/internal/bind/CollectionTypeAdapterFactory.java  
\* /opt/cola/permits/1231335344\_1637640927.1/0/gson-2-8-9-sources-jar/com/google/gson/internal/bind/ReflectiveTypeAdapterFactory.java  
\* /opt/cola/permits/1231335344\_1637640927.1/0/gson-2-8-9-sources-jar/com/google/gson/internal/JsonReaderInternalAccess.java  
\* /opt/cola/permits/1231335344\_1637640927.1/0/gson-2-8-9-sources-jar/com/google/gson/TypeAdapterFactory.java  
\* /opt/cola/permits/1231335344\_1637640927.1/0/gson-2-8-9-sources-jar/com/google/gson/internal/bind/JsonTreeReader.java  
\* /opt/cola/permits/1231335344\_1637640927.1/0/gson-2-8-9-sources-jar/com/google/gson/TypeAdapter.java  
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\* /opt/cola/permits/1231335344\_1637640927.1/0/gson-2-8-9-sources-jar/com/google/gson/internal/bind/TypeAdapterRuntimeTypeWrapper.java  
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jar/org/springframework/data/rest/webmvc/ProfileController.java
* /opt/cola/permits/1306894519_1649861339.61/0/spring-data-rest-webmvc-3-6-3-sources-
jar/org/springframework/data/rest/webmvc/json/JsonSchemaPropertyCustomizer.java
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jar/org/springframework/data/rest/webmvc/config/RepositoryRestConfigurerDelegate.java
* /opt/cola/permits/1306894519_1649861339.61/0/spring-data-rest-webmvc-3-6-3-sources-
jar/org/springframework/data/rest/webmvc/config/ProjectionDefinitionRegistrar.java
* /opt/cola/permits/1306894519_1649861339.61/0/spring-data-rest-webmvc-3-6-3-sources-
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\* /opt/cola/permits/1306894519\_1649861339.61/0/spring-data-rest-webmvc-3-6-3-sources-jar/org/springframework/data/rest/webmvc/config/QuerydslAwareRootResourceInformationHandlerMethodArgumentResolver.java  
\* /opt/cola/permits/1306894519\_1649861339.61/0/spring-data-rest-webmvc-3-6-3-sources-jar/org/springframework/data/rest/webmvc/json/JacksonSerializers.java  
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\* /opt/cola/permits/1306894519\_1649861339.61/0/spring-data-rest-webmvc-3-6-3-sources-jar/org/springframework/data/rest/webmvc/RepositorySearchesResource.java  
\* /opt/cola/permits/1306894519\_1649861339.61/0/spring-data-rest-webmvc-3-6-3-sources-jar/org/springframework/data/rest/webmvc/config/ArgumentResolverPagingAndSortingTemplateVariables.java  
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\* /opt/cola/permits/1306894519\_1649861339.61/0/spring-data-rest-webmvc-3-6-3-sources-jar/org/springframework/data/rest/webmvc/RepositoryRestHandlerAdapter.java  
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jar/org/springframework/data/rest/webmvc/json/MappingAwareDefaultedPageableArgumentResolver.java  
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jar/org/springframework/data/rest/webmvc/support/ExcerptProjector.java  
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jar/org/springframework/data/rest/webmvc/json/MappedProperties.java  
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jar/org/springframework/data/rest/webmvc/json/MappingAwarePageableArgumentResolver.java  
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jar/org/springframework/data/rest/webmvc/HttpHeadersPreparer.java  
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jar/org/springframework/data/rest/webmvc/json/WrappedProperties.java  
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jar/org/springframework/data/rest/webmvc/support/DefaultExcerptProjector.java  
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jar/org/springframework/data/rest/webmvc/EmbeddedResourcesAssembler.java  
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jar/org/springframework/data/rest/webmvc/json/patch/PatchException.java  
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jar/org/springframework/data/rest/webmvc/mapping/Associations.java  
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jar/org/springframework/data/rest/webmvc/json/patch/AddOperation.java  
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jar/org/springframework/data/rest/webmvc/json/JacksonMetadata.java  
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jar/org/springframework/data/rest/webmvc/IncomingRequest.java  
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jar/org/springframework/data/rest/webmvc/config/PersistentEntityResourceAssemblerArgumentResolver.java  
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jar/org/springframework/data/rest/webmvc/support/DefaultedPageable.java  
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jar/com/amazonaws/services/s3/model/ServerSideEncryptionRule.java  
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jar/com/amazonaws/services/s3/model/SseKmsEncryptedObjectsStatus.java  
\* /opt/cola/permits/1273483828\_1645114031.28/0/aws-java-sdk-s3-1-12-86-sources-  
jar/com/amazonaws/services/s3/model/DeleteBucketEncryptionRequest.java  
\* /opt/cola/permits/1273483828\_1645114031.28/0/aws-java-sdk-s3-1-12-86-sources-  
jar/com/amazonaws/services/s3/model/ServerSideEncryptionByDefault.java  
\* /opt/cola/permits/1273483828\_1645114031.28/0/aws-java-sdk-s3-1-12-86-sources-  
jar/com/amazonaws/services/s3/model/ReplicaModificationsStatus.java  
\* /opt/cola/permits/1273483828\_1645114031.28/0/aws-java-sdk-s3-1-12-86-sources-  
jar/com/amazonaws/services/s3/model/DeleteMarkerReplication.java

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\*/  
/\*\*  
\* Interface for providing encryption materials.  
\* Implementations are free to use any strategy for providing encryption  
\* materials, such as simply providing static material that doesn't change,  
\* or more complicated implementations, such as integrating with existing  
\* key management systems.  
\*/

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jar/com/amazonaws/services/s3/model/EncryptionMaterialsProvider.java  
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jar/com/amazonaws/services/s3/model/WriteGetObjectResponseResult.java  
\* /opt/cola/permits/1273483828\_1645114031.28/0/aws-java-sdk-s3-1-12-86-sources-  
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jar/com/amazonaws/services/s3/internal/S3ObjectLambdaOperationEndpointBuilder.java  
\* /opt/cola/permits/1273483828\_1645114031.28/0/aws-java-sdk-s3-1-12-86-sources-  
jar/com/amazonaws/services/s3/internal/S3ObjectLambdaEndpointBuilder.java

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jar/com/amazonaws/services/s3/model/ExpectedBucketOwnerRequest.java  
\* /opt/cola/permits/1273483828\_1645114031.28/0/aws-java-sdk-s3-1-12-86-sources-  
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jar/com/amazonaws/services/s3/model/intelligenttiering/IntelligentTieringAccessTier.java  
\* /opt/cola/permits/1273483828\_1645114031.28/0/aws-java-sdk-s3-1-12-86-sources-  
jar/com/amazonaws/services/s3/EndpointParams.java  
\* /opt/cola/permits/1273483828\_1645114031.28/0/aws-java-sdk-s3-1-12-86-sources-  
jar/com/amazonaws/services/s3/internal/IntermediateOutpostResource.java  
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jar/com/amazonaws/services/s3/model/AbortIncompleteMultipartUpload.java  
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jar/com/amazonaws/services/s3/transfer/internal/future/CompletedFuture.java
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\* /opt/cola/permits/1273483828\_1645114031.28/0/aws-java-sdk-s3-1-12-86-sources-jar/com/amazonaws/services/s3/internal/crypto/keywrap/AesGcmKeyWrapper.java  
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\* /opt/cola/permits/1273483828\_1645114031.28/0/aws-java-sdk-s3-1-12-86-sources-jar/com/amazonaws/services/s3/AmazonS3EncryptionClientParamsWrapper.java

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\* /opt/cola/permits/1273483828\_1645114031.28/0/aws-java-sdk-s3-1-12-86-sources-jar/com/amazonaws/services/s3/model/S3KeyFilter.java  
\* /opt/cola/permits/1273483828\_1645114031.28/0/aws-java-sdk-s3-1-12-86-sources-jar/com/amazonaws/services/s3/model/FilterRule.java  
\* /opt/cola/permits/1273483828\_1645114031.28/0/aws-java-sdk-s3-1-12-86-sources-jar/com/amazonaws/services/s3/model/transform/GetPublicAccessBlockStaxUnmarshaller.java  
\* /opt/cola/permits/1273483828\_1645114031.28/0/aws-java-sdk-s3-1-12-86-sources-jar/com/amazonaws/services/s3/AbstractAmazonS3.java

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* /opt/cola/permits/1273483828_1645114031.28/0/aws-java-sdk-s3-1-12-86-sources-
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jar/com/amazonaws/services/s3/model/intelligenttiering/IntelligentTieringAndOperator.java  
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jar/com/amazonaws/services/s3/internal/DeleteObjectsResponse.java  
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jar/com/amazonaws/services/s3/internal/ResponseHeaderHandlerChain.java  
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jar/com/amazonaws/services/s3/transfer/internal/CopyMonitor.java  
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jar/com/amazonaws/services/s3/internal/ServerSideEncryptionHeaderHandler.java  
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\* /opt/cola/permits/1273483828\_1645114031.28/0/aws-java-sdk-s3-1-12-86-sources-  
jar/com/amazonaws/auth/AwsChunkedEncodingInputStream.java  
\* /opt/cola/permits/1273483828\_1645114031.28/0/aws-java-sdk-s3-1-12-86-sources-  
jar/com/amazonaws/services/s3/transfer/internal/TransferManagerUtils.java  
\* /opt/cola/permits/1273483828\_1645114031.28/0/aws-java-sdk-s3-1-12-86-sources-  
jar/com/amazonaws/services/s3/internal/S3ObjectResponseHandler.java  
\* /opt/cola/permits/1273483828\_1645114031.28/0/aws-java-sdk-s3-1-12-86-sources-  
jar/com/amazonaws/services/s3/internal/ObjectRestoreHeaderHandler.java  
\* /opt/cola/permits/1273483828\_1645114031.28/0/aws-java-sdk-s3-1-12-86-sources-  
jar/com/amazonaws/services/s3/transfer/Upload.java  
\* /opt/cola/permits/1273483828\_1645114031.28/0/aws-java-sdk-s3-1-12-86-sources-  
jar/com/amazonaws/services/s3/internal/InputSubstream.java  
\* /opt/cola/permits/1273483828\_1645114031.28/0/aws-java-sdk-s3-1-12-86-sources-  
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\* /opt/cola/permits/1273483828\_1645114031.28/0/aws-java-sdk-s3-1-12-86-sources-  
jar/com/amazonaws/services/s3/S3AccessPointResource.java  
\* /opt/cola/permits/1273483828\_1645114031.28/0/aws-java-sdk-s3-1-12-86-sources-  
jar/com/amazonaws/auth/policy/resources/S3BucketResource.java  
\* /opt/cola/permits/1273483828\_1645114031.28/0/aws-java-sdk-s3-1-12-86-sources-  
jar/com/amazonaws/services/s3/model/MetadataDirective.java  
\* /opt/cola/permits/1273483828\_1645114031.28/0/aws-java-sdk-s3-1-12-86-sources-  
jar/com/amazonaws/services/s3/S3ArnConverter.java  
\* /opt/cola/permits/1273483828\_1645114031.28/0/aws-java-sdk-s3-1-12-86-sources-  
jar/com/amazonaws/services/s3/model/UploadPartRequest.java  
\* /opt/cola/permits/1273483828\_1645114031.28/0/aws-java-sdk-s3-1-12-86-sources-  
jar/com/amazonaws/services/s3/internal/S3ErrorResponseHandler.java  
\* /opt/cola/permits/1273483828\_1645114031.28/0/aws-java-sdk-s3-1-12-86-sources-  
jar/com/amazonaws/services/s3/model/CopyObjectResult.java  
\* /opt/cola/permits/1273483828\_1645114031.28/0/aws-java-sdk-s3-1-12-86-sources-

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\* /opt/cola/permits/1273483828\_1645114031.28/0/aws-java-sdk-s3-1-12-86-sources-  
jar/com/amazonaws/services/s3/model/EncryptionMaterials.java  
\* /opt/cola/permits/1273483828\_1645114031.28/0/aws-java-sdk-s3-1-12-86-sources-  
jar/com/amazonaws/services/s3/model/transform/ReplicationPredicateVisitorImpl.java  
\* /opt/cola/permits/1273483828\_1645114031.28/0/aws-java-sdk-s3-1-12-86-sources-  
jar/com/amazonaws/services/s3/transfer/model/UploadResult.java  
\* /opt/cola/permits/1273483828\_1645114031.28/0/aws-java-sdk-s3-1-12-86-sources-  
jar/com/amazonaws/services/s3/model/ListBucketsRequest.java  
\* /opt/cola/permits/1273483828\_1645114031.28/0/aws-java-sdk-s3-1-12-86-sources-  
jar/com/amazonaws/services/s3/model/CryptoConfiguration.java  
\* /opt/cola/permits/1273483828\_1645114031.28/0/aws-java-sdk-s3-1-12-86-sources-  
jar/com/amazonaws/services/s3/model/InitiateMultipartUploadResult.java  
\* /opt/cola/permits/1273483828\_1645114031.28/0/aws-java-sdk-s3-1-12-86-sources-  
jar/com/amazonaws/services/s3/transfer/UploadContext.java  
\* /opt/cola/permits/1273483828\_1645114031.28/0/aws-java-sdk-s3-1-12-86-sources-  
jar/com/amazonaws/services/s3/transfer/internal/TransferProgressUpdatingListener.java  
\* /opt/cola/permits/1273483828\_1645114031.28/0/aws-java-sdk-s3-1-12-86-sources-  
jar/com/amazonaws/services/s3/model/S3Location.java  
\* /opt/cola/permits/1273483828\_1645114031.28/0/aws-java-sdk-s3-1-12-86-sources-  
jar/com/amazonaws/services/s3/S3ResourceType.java  
\* /opt/cola/permits/1273483828\_1645114031.28/0/aws-java-sdk-s3-1-12-86-sources-  
jar/com/amazonaws/services/s3/internal/S3RestoreOutputPathResult.java  
\* /opt/cola/permits/1273483828\_1645114031.28/0/aws-java-sdk-s3-1-12-86-sources-  
jar/com/amazonaws/services/s3/transfer/internal/CopyImpl.java  
\* /opt/cola/permits/1273483828\_1645114031.28/0/aws-java-sdk-s3-1-12-86-sources-  
jar/com/amazonaws/services/s3/model/DeleteObjectRequest.java  
\* /opt/cola/permits/1273483828\_1645114031.28/0/aws-java-sdk-s3-1-12-86-sources-  
jar/com/amazonaws/services/s3/model/transform/AnalyticsPredicateVisitorImpl.java  
\* /opt/cola/permits/1273483828\_1645114031.28/0/aws-java-sdk-s3-1-12-86-sources-  
jar/com/amazonaws/services/s3/model/AbortMultipartUploadRequest.java  
\* /opt/cola/permits/1273483828\_1645114031.28/0/aws-java-sdk-s3-1-12-86-sources-  
jar/com/amazonaws/services/s3/model/QuoteFields.java  
\* /opt/cola/permits/1273483828\_1645114031.28/0/aws-java-sdk-s3-1-12-86-sources-  
jar/com/amazonaws/services/s3/model/IllegalBucketNameException.java  
\* /opt/cola/permits/1273483828\_1645114031.28/0/aws-java-sdk-s3-1-12-86-sources-  
jar/com/amazonaws/services/s3/model/ReplicationTime.java  
\* /opt/cola/permits/1273483828\_1645114031.28/0/aws-java-sdk-s3-1-12-86-sources-  
jar/com/amazonaws/services/s3/model/ownership/OwnershipControls.java  
\* /opt/cola/permits/1273483828\_1645114031.28/0/aws-java-sdk-s3-1-12-86-sources-  
jar/com/amazonaws/services/s3/internal/S3VersionHeaderHandler.java  
\* /opt/cola/permits/1273483828\_1645114031.28/0/aws-java-sdk-s3-1-12-86-sources-  
jar/com/amazonaws/services/s3/AmazonS3.java  
\* /opt/cola/permits/1273483828\_1645114031.28/0/aws-java-sdk-s3-1-12-86-sources-  
jar/com/amazonaws/services/s3/internal/S3Signer.java  
\* /opt/cola/permits/1273483828\_1645114031.28/0/aws-java-sdk-s3-1-12-86-sources-  
jar/com/amazonaws/services/s3/internal/S3RestoreOutputPathHeaderHandler.java  
\* /opt/cola/permits/1273483828\_1645114031.28/0/aws-java-sdk-s3-1-12-86-sources-

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jar/com/amazonaws/services/s3/model/PutObjectResult.java
* /opt/cola/permits/1273483828_1645114031.28/0/aws-java-sdk-s3-1-12-86-sources-
jar/com/amazonaws/services/s3/internal/crypto/AdjustedRangeInputStream.java
* /opt/cola/permits/1273483828_1645114031.28/0/aws-java-sdk-s3-1-12-86-sources-
jar/com/amazonaws/services/s3/model/InputSerialization.java
* /opt/cola/permits/1273483828_1645114031.28/0/aws-java-sdk-s3-1-12-86-sources-
jar/com/amazonaws/services/s3/transfer/ObjectMetadataProvider.java
* /opt/cola/permits/1273483828_1645114031.28/0/aws-java-sdk-s3-1-12-86-sources-
jar/com/amazonaws/services/s3/model/ObjectMetadata.java
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jar/com/amazonaws/services/s3/transfer/TransferManagerConfiguration.java
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jar/com/amazonaws/services/s3/transfer/internal/UploadPartCallable.java
* /opt/cola/permits/1273483828_1645114031.28/0/aws-java-sdk-s3-1-12-86-sources-
jar/com/amazonaws/services/s3/model/GetObjectMetadataRequest.java
* /opt/cola/permits/1273483828_1645114031.28/0/aws-java-sdk-s3-1-12-86-sources-
jar/com/amazonaws/services/s3/model/EncryptionMaterialsAccessor.java
* /opt/cola/permits/1273483828_1645114031.28/0/aws-java-sdk-s3-1-12-86-sources-
jar/com/amazonaws/services/s3/model/transform/AbstractSSEHandler.java
* /opt/cola/permits/1273483828_1645114031.28/0/aws-java-sdk-s3-1-12-86-sources-
jar/com/amazonaws/services/s3/model/CompleteMultipartUploadRequest.java
* /opt/cola/permits/1273483828_1645114031.28/0/aws-java-sdk-s3-1-12-86-sources-
jar/com/amazonaws/services/s3/model/OutputLocation.java
* /opt/cola/permits/1273483828_1645114031.28/0/aws-java-sdk-s3-1-12-86-sources-
jar/com/amazonaws/services/s3/model/DeleteObjectsRequest.java
* /opt/cola/permits/1273483828_1645114031.28/0/aws-java-sdk-s3-1-12-86-sources-
jar/com/amazonaws/services/s3/internal/S3XmlResponseHandler.java
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* /opt/cola/permits/1273483828_1645114031.28/0/aws-java-sdk-s3-1-12-86-sources-
jar/com/amazonaws/services/s3/internal/S3ObjectLambdasResource.java
* /opt/cola/permits/1273483828_1645114031.28/0/aws-java-sdk-s3-1-12-86-sources-
```



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jar/com/amazonaws/services/s3/transfer/internal/PreparedDownloadContext.java
* /opt/cola/permits/1273483828_1645114031.28/0/aws-java-sdk-s3-1-12-86-sources-
jar/com/amazonaws/services/s3/transfer/ObjectCannedAclProvider.java
* /opt/cola/permits/1273483828_1645114031.28/0/aws-java-sdk-s3-1-12-86-sources-
jar/com/amazonaws/services/s3/internal/S3AccessPointBuilder.java
* /opt/cola/permits/1273483828_1645114031.28/0/aws-java-sdk-s3-1-12-86-sources-
jar/com/amazonaws/services/s3/transfer/internal/DownloadS3ObjectCallable.java
* /opt/cola/permits/1273483828_1645114031.28/0/aws-java-sdk-s3-1-12-86-sources-
jar/com/amazonaws/services/s3/model/ScanRange.java
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* permissions and limitations under the License.
*/
// The Amazon S3 DevPay token header is a special exception and can be safely moved
```

```
Found in path(s):
* /opt/cola/permits/1273483828_1645114031.28/0/aws-java-sdk-s3-1-12-86-sources-
jar/com/amazonaws/services/s3/AmazonS3Client.java
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\* /opt/cola/permits/1273483828\_1645114031.28/0/aws-java-sdk-s3-1-12-86-sources-jar/com/amazonaws/services/s3/transfer/internal/AbstractTransfer.java  
\* /opt/cola/permits/1273483828\_1645114031.28/0/aws-java-sdk-s3-1-12-86-sources-jar/com/amazonaws/services/s3/model/S3ObjectInputStream.java  
\* /opt/cola/permits/1273483828\_1645114031.28/0/aws-java-sdk-s3-1-12-86-sources-jar/com/amazonaws/services/s3/transfer/internal/MultipleFileUploadImpl.java  
\* /opt/cola/permits/1273483828\_1645114031.28/0/aws-java-sdk-s3-1-12-86-sources-jar/com/amazonaws/services/s3/transfer/internal/MultipleFileTransfer.java  
\* /opt/cola/permits/1273483828\_1645114031.28/0/aws-java-sdk-s3-1-12-86-sources-jar/com/amazonaws/services/s3/transfer/internal/TransferStateChangeListener.java  
\* /opt/cola/permits/1273483828\_1645114031.28/0/aws-java-sdk-s3-1-12-86-sources-jar/com/amazonaws/services/s3/transfer/internal/MultipleFileDownloadImpl.java  
\* /opt/cola/permits/1273483828\_1645114031.28/0/aws-java-sdk-s3-1-12-86-sources-jar/com/amazonaws/services/s3/transfer/internal/MultipleFileTransferMonitor.java  
\* /opt/cola/permits/1273483828\_1645114031.28/0/aws-java-sdk-s3-1-12-86-sources-jar/com/amazonaws/services/s3/transfer/internal/DownloadMonitor.java  
\* /opt/cola/permits/1273483828\_1645114031.28/0/aws-java-sdk-s3-1-12-86-sources-jar/com/amazonaws/services/s3/transfer/MultipleFileDownload.java  
\* /opt/cola/permits/1273483828\_1645114031.28/0/aws-java-sdk-s3-1-12-86-sources-jar/com/amazonaws/services/s3/transfer/MultipleFileUpload.java

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\* /opt/cola/permits/1273483828\_1645114031.28/0/aws-java-sdk-s3-1-12-86-sources-jar/com/amazonaws/services/s3/internal/crypto/v2/SecuredCEK.java

\* /opt/cola/permits/1273483828\_1645114031.28/0/aws-java-sdk-s3-1-12-86-sources-jar/com/amazonaws/services/s3/internal/crypto/v1/KMSSecuredCEK.java

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jar/com/amazonaws/services/s3/transfer/PauseResult.java
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jar/com/amazonaws/services/s3/model/Progress.java
* /opt/cola/permits/1273483828_1645114031.28/0/aws-java-sdk-s3-1-12-86-sources-
jar/com/amazonaws/services/s3/model/SelectObjectContentEventVisitor.java
* /opt/cola/permits/1273483828_1645114031.28/0/aws-java-sdk-s3-1-12-86-sources-
jar/com/amazonaws/services/s3/model/JSONType.java
* /opt/cola/permits/1273483828_1645114031.28/0/aws-java-sdk-s3-1-12-86-sources-
jar/com/amazonaws/services/s3/model/ObjectLockLegalHold.java
* /opt/cola/permits/1273483828_1645114031.28/0/aws-java-sdk-s3-1-12-86-sources-
jar/com/amazonaws/services/s3/model/GetObjectRetentionResult.java
```

\* /opt/cola/permits/1273483828\_1645114031.28/0/aws-java-sdk-s3-1-12-86-sources-jar/com/amazonaws/services/s3/model/SetObjectLockConfigurationResult.java  
\* /opt/cola/permits/1273483828\_1645114031.28/0/aws-java-sdk-s3-1-12-86-sources-jar/com/amazonaws/services/s3/model/SelectObjectContentEventStream.java  
\* /opt/cola/permits/1273483828\_1645114031.28/0/aws-java-sdk-s3-1-12-86-sources-jar/com/amazonaws/services/s3/model/PresignedUrlUploadResult.java  
\* /opt/cola/permits/1273483828\_1645114031.28/0/aws-java-sdk-s3-1-12-86-sources-jar/com/amazonaws/services/s3/model/JSONInput.java  
\* /opt/cola/permits/1273483828\_1645114031.28/0/aws-java-sdk-s3-1-12-86-sources-jar/com/amazonaws/services/s3/internal/eventstreaming/MessageDecoder.java  
\* /opt/cola/permits/1273483828\_1645114031.28/0/aws-java-sdk-s3-1-12-86-sources-jar/com/amazonaws/services/s3/transfer/internal/AbstractDownloadCallableConfig.java  
\* /opt/cola/permits/1273483828\_1645114031.28/0/aws-java-sdk-s3-1-12-86-sources-jar/com/amazonaws/services/s3/model/SetObjectLegalHoldRequest.java  
\* /opt/cola/permits/1273483828\_1645114031.28/0/aws-java-sdk-s3-1-12-86-sources-jar/com/amazonaws/services/s3/model/SelectObjectContentResult.java  
\* /opt/cola/permits/1273483828\_1645114031.28/0/aws-java-sdk-s3-1-12-86-sources-jar/com/amazonaws/services/s3/transfer/internal/PresignedUrlDownloadImpl.java  
\* /opt/cola/permits/1273483828\_1645114031.28/0/aws-java-sdk-s3-1-12-86-sources-jar/com/amazonaws/services/s3/model/GetObjectLegalHoldRequest.java  
\* /opt/cola/permits/1273483828\_1645114031.28/0/aws-java-sdk-s3-1-12-86-sources-jar/com/amazonaws/services/s3/model/Stats.java  
\* /opt/cola/permits/1273483828\_1645114031.28/0/aws-java-sdk-s3-1-12-86-sources-jar/com/amazonaws/services/s3/model/ObjectLockLegalHoldStatus.java  
\* /opt/cola/permits/1273483828\_1645114031.28/0/aws-java-sdk-s3-1-12-86-sources-jar/com/amazonaws/services/s3/model/SetObjectLegalHoldResult.java  
\* /opt/cola/permits/1273483828\_1645114031.28/0/aws-java-sdk-s3-1-12-86-sources-jar/com/amazonaws/services/s3/model/ObjectLockMode.java  
\* /opt/cola/permits/1273483828\_1645114031.28/0/aws-java-sdk-s3-1-12-86-sources-jar/com/amazonaws/services/s3/transfer/PresignedUrlDownload.java  
\* /opt/cola/permits/1273483828\_1645114031.28/0/aws-java-sdk-s3-1-12-86-sources-jar/com/amazonaws/services/s3/internal/UploadObjectStrategy.java  
\* /opt/cola/permits/1273483828\_1645114031.28/0/aws-java-sdk-s3-1-12-86-sources-jar/com/amazonaws/services/s3/model/ParquetInput.java  
\* /opt/cola/permits/1273483828\_1645114031.28/0/aws-java-sdk-s3-1-12-86-sources-jar/com/amazonaws/services/s3/model/ObjectLockRule.java  
\* /opt/cola/permits/1273483828\_1645114031.28/0/aws-java-sdk-s3-1-12-86-sources-jar/com/amazonaws/services/s3/model/SelectRecordsInputStream.java  
\* /opt/cola/permits/1273483828\_1645114031.28/0/aws-java-sdk-s3-1-12-86-sources-jar/com/amazonaws/services/s3/model/transform/ObjectLockLegalHoldXmlFactory.java  
\* /opt/cola/permits/1273483828\_1645114031.28/0/aws-java-sdk-s3-1-12-86-sources-jar/com/amazonaws/services/s3/model/GetObjectLegalHoldResult.java  
\* /opt/cola/permits/1273483828\_1645114031.28/0/aws-java-sdk-s3-1-12-86-sources-jar/com/amazonaws/services/s3/model/transform/SelectObjectContentEventUnmarshaller.java  
\* /opt/cola/permits/1273483828\_1645114031.28/0/aws-java-sdk-s3-1-12-86-sources-jar/com/amazonaws/services/s3/model/SelectObjectContentEventException.java  
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\* /opt/cola/permits/1273483828\_1645114031.28/0/aws-java-sdk-s3-1-12-86-sources-  
jar/com/amazonaws/services/s3/waiters/AmazonS3Waiters.java

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\* /opt/cola/permits/1273483828\_1645114031.28/0/aws-java-sdk-s3-1-12-86-sources-  
jar/com/amazonaws/services/s3/model/BucketTaggingConfiguration.java

\* /opt/cola/permits/1273483828\_1645114031.28/0/aws-java-sdk-s3-1-12-86-sources-  
jar/com/amazonaws/services/s3/model/BucketPolicy.java

\* /opt/cola/permits/1273483828\_1645114031.28/0/aws-java-sdk-s3-1-12-86-sources-  
jar/com/amazonaws/services/s3/internal/Mimetypes.java

\* /opt/cola/permits/1273483828\_1645114031.28/0/aws-java-sdk-s3-1-12-86-sources-  
jar/com/amazonaws/services/s3/internal/S3StringResponseHandler.java

\* /opt/cola/permits/1273483828\_1645114031.28/0/aws-java-sdk-s3-1-12-86-sources-  
jar/com/amazonaws/services/s3/internal/ServiceUtils.java

\* /opt/cola/permits/1273483828\_1645114031.28/0/aws-java-sdk-s3-1-12-86-sources-  
jar/com/amazonaws/services/s3/internal/RepeatableFileInputStream.java

\* /opt/cola/permits/1273483828\_1645114031.28/0/aws-java-sdk-s3-1-12-86-sources-  
jar/com/amazonaws/services/s3/internal/RepeatableInputStream.java

\* /opt/cola/permits/1273483828\_1645114031.28/0/aws-java-sdk-s3-1-12-86-sources-  
jar/com/amazonaws/services/s3/model/TagSet.java

\* /opt/cola/permits/1273483828\_1645114031.28/0/aws-java-sdk-s3-1-12-86-sources-

jar/com/amazonaws/services/s3/model/EmailAddressGrantee.java  
\* /opt/cola/permits/1273483828\_1645114031.28/0/aws-java-sdk-s3-1-12-86-sources-  
jar/com/amazonaws/services/s3/model/transform/XmlResponsesSaxParser.java  
\* /opt/cola/permits/1273483828\_1645114031.28/0/aws-java-sdk-s3-1-12-86-sources-  
jar/com/amazonaws/services/s3/model/CanonicalGrantee.java  
\* /opt/cola/permits/1273483828\_1645114031.28/0/aws-java-sdk-s3-1-12-86-sources-  
jar/com/amazonaws/services/s3/model/Owner.java  
\* /opt/cola/permits/1273483828\_1645114031.28/0/aws-java-sdk-s3-1-12-86-sources-  
jar/com/amazonaws/services/s3/model/Bucket.java  
\* /opt/cola/permits/1273483828\_1645114031.28/0/aws-java-sdk-s3-1-12-86-sources-  
jar/com/amazonaws/services/s3/model/RequestPaymentConfiguration.java  
\* /opt/cola/permits/1273483828\_1645114031.28/0/aws-java-sdk-s3-1-12-86-sources-  
jar/com/amazonaws/services/s3/model/AccessControlList.java  
\* /opt/cola/permits/1273483828\_1645114031.28/0/aws-java-sdk-s3-1-12-86-sources-  
jar/com/amazonaws/services/s3/model/Grantee.java  
\* /opt/cola/permits/1273483828\_1645114031.28/0/aws-java-sdk-s3-1-12-86-sources-  
jar/com/amazonaws/services/s3/model/BucketLoggingConfiguration.java  
\* /opt/cola/permits/1273483828\_1645114031.28/0/aws-java-sdk-s3-1-12-86-sources-  
jar/com/amazonaws/services/s3/model/BucketNotificationConfiguration.java  
\* /opt/cola/permits/1273483828\_1645114031.28/0/aws-java-sdk-s3-1-12-86-sources-  
jar/com/amazonaws/services/s3/model/Grant.java  
\* /opt/cola/permits/1273483828\_1645114031.28/0/aws-java-sdk-s3-1-12-86-sources-  
jar/com/amazonaws/services/s3/internal/RestUtils.java

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jar/com/amazonaws/services/s3/iterable/S3Objects.java  
\* /opt/cola/permits/1273483828\_1645114031.28/0/aws-java-sdk-s3-1-12-86-sources-  
jar/com/amazonaws/services/s3/model/StaticEncryptionMaterialsProvider.java  
\* /opt/cola/permits/1273483828\_1645114031.28/0/aws-java-sdk-s3-1-12-86-sources-  
jar/com/amazonaws/services/s3/iterable/S3Versions.java  
\* /opt/cola/permits/1273483828\_1645114031.28/0/aws-java-sdk-s3-1-12-86-sources-

jar/com/amazonaws/services/s3/transfer/Download.java

\* /opt/cola/permits/1273483828\_1645114031.28/0/aws-java-sdk-s3-1-12-86-sources-

jar/com/amazonaws/services/s3/transfer/internal/DownloadImpl.java

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jar/com/amazonaws/services/s3/model/KMSEncryptionMaterials.java

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\* /opt/cola/permits/1273483828\_1645114031.28/0/aws-java-sdk-s3-1-12-86-sources-

jar/com/amazonaws/services/s3/model/S3Object.java

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 * express or implied. See the License for the specific language governing
 * permissions and limitations under the License.
 */
/**
 * Synchronous client for accessing Amazon S3.
 *
 * <h1>Appendix: Amazon S3 client-side encryption meta information</h1>
 *
 * <h2>Introduction</h2>
 *
 * <p>
 * This appendix summarizes the current crypto related meta information
 * associated with an S3 object encrypted using SDK client-side encryption. In
 * SDK's terminology, these meta information are classified as "user metadata".
 * In general, the meta information is just a map of key/value pairs. Physically
 * they are persisted either as metadata of the encrypted S3 object, or as a
 * separate S3 object called an "instruction file" (which is just a JSON file in
 * plaintext.) For all references to the Cipher Algorithm Names, Modes, and Padding,
 * such as <code>"AES/GCM/NoPadding"</code>, please refer to Oracle's <a
 * href="http://docs.oracle.com/javase/7/docs/technotes/guides/security/StandardNames.html"
 * >Java™ Cryptography Architecture Standard Algorithm Name Documentation
 * for more details.
 *
 * <h2>S3 metadata vs instruction file</h2>
 *
 * <p>
 * Note when a key/value pair is stored as "user metadata" as part of the S3
 * metadata, the SDK always adds an additional prefix of x-amz-meta- to
 * the key name. In contrast, the SDK doesn't add any prefix when the key names
 * are stored in an instruction file. (The reason has to do with how the http
 * headers are handled.)
 *
 * <p>
 * For example, x-amz-key would get stored as x-amz-meta-x-amz-key
 * in S3 metadata. In contrast, x-amz-key would simply be stored as is
 * (ie without the prefix) in an instruction file. All the keys described below
 * are considered "user metadata" by the SDK.
 *
 * <h2>S3 1st gen crypto meta information</h2>
 *
 * <p>
```

- \* For non-KMS client side encryption, this crypto meta information is used
- \* to support the "Encryption Only" crypto mode (which involves the use of
- \* `AES/CBC/PKCS5Padding` for content encryption, and
- \* `AES/ECB` for encrypting the one-time randomly generated data
- \* key). For KMS client-side encryption, the 2nd gen crypto meta information is used.

### Scope

- \* This metadata can only be generated when encrypting using the V1 encryption client,
- \* { @link com.amazonaws.services.s3.AmazonS3EncryptionClient }, but can be interpreted (decrypted) by
- \* { @link com.amazonaws.services.s3.AmazonS3EncryptionClientV2 }.
- \* The format is also known as v1 metadata, but because there are now v1 and v2 clients,
- \* the term v1 metadata is confusing.

**Encryption:** { @link com.amazonaws.services.s3.AmazonS3EncryptionClient }, crypto mode EncryptionOnly  
**Decryption:** { @link com.amazonaws.services.s3.AmazonS3EncryptionClient }, crypto mode EncryptionOnly or { @link com.amazonaws.services.s3.AmazonS3EncryptionClientV2 }, crypto mode AuthenticationOnly

### Metadata

key	description
<b>x-amz-key</b>	Content encrypting key (cek) in encrypted form, base64 encoded. The cek is randomly generated per S3 object, and is always an AES 256-bit key. The corresponding cipher is always "AES/CBC/PKCS5Padding".
<b>x-amz-iv</b>	Randomly generated IV (per S3 object), base64 encoded
<b>x-amz-matdesc</b>	Customer provided material description in JSON (UTF8) format. Used to identify the client-side master key (ie used to encrypt/wrap the generated content encrypting key).
<b>x-amz-unencrypted-content-length</b>	Unencrypted content length (optional but should be specified whenever possible).

## S3 2nd gen crypto meta information

\* <p>

\* This crypto meta information is used to support both authenticated encryption (which involves the use of <code>AES/GCM/NoPadding</code> for content encryption, and key wrapping for the one-time randomly generated data key), and KMS client-side encryption (which can either be encryption-only or authenticated encryption).

\* <h3>Scope</h3>

\* 2nd gen metadata can be generated/encrypted by both the V1 and V2 encryption clients.

\* The format is also known as v2 metadata, but this is confusing since the V1 client also generates 2nd gen metadata in the AuthenticatedEncryption and StrictAuthenticatedEncryption modes.

\* <p>

\* <b>Encryption:</b> { @link com.amazonaws.services.s3.AmazonS3EncryptionClient/ { @link com.amazonaws.services.s3.AmazonS3EncryptionClient}, crypto modes AuthenticatedEncryption and StrictAuthenticatedEncryption<br>

\* <b>Decryption:</b> { @link com.amazonaws.services.s3.AmazonS3EncryptionClient}, all crypto modes, or { @link com.amazonaws.services.s3.AmazonS3EncryptionClientV2}, crypto modes AuthenticatedEncryption and StrictAuthenticatedEncryption.

\* <p>

\* <b>Note:</b>

\* While the V1 client can both generate and interpret 2nd gen metadata, it cannot decrypt any object encrypted using the V2 client, because the values of <b>x-amz-wrap-alg</b> differ.

\* <p>

\* <h3>Metadata used the same way by V1 and V2 clients</h3>

key	description
<b>x-amz-key-v2</b>	CEK in key wrapped form. This is necessary so that the S3 encryption client that doesn't recognize the v2 format will not mistakenly decrypt S3 object encrypted in v2 format.
<b>x-amz-iv</b>	Randomly generated IV (per S3 object), base64 encoded. (Same as v1.)
<b>x-amz-unencrypted-content-length</b>	Unencrypted content length. (optional but should be specified whenever possible. Same as v1.)
<b>x-amz-tag-len</b>	Tag length (in bits) when AEAD is in use.

- Only applicable if AEAD is in use. This meta information is absent otherwise, or if KMS is in use.



```

* Supported value: <code>"128"</code>
*
* </td>
* </tr>
* </table>
* <h3>Metadata using V1 client</h3>
* <table border=1>
* <tr aligned="left">
* <th>key</th>
* <th>description</th>
* </tr>
* <td>x-amz-matdesc</td>
* <td>Customer provided material description in JSON format. (Same as v1). Used
* to identify the client-side master key.
*
* For KMS client side encryption, the KMS Customer Master Key ID is stored
* as part of the material description, x-amz-matdesc, under the key-name
* <code>"kms_cmk_id"</code>.
*
* </td>
* </tr>
* <tr>
* <td>x-amz-wrap-alg</td>
* <td>Key wrapping algorithm used.
*
* Supported values:
* <code>"AESWrap", "RSA/ECB/OAEPWithSHA-256AndMGF1Padding", "kms"</code>
* No standard key wrapping is used if this meta information is absent
* Always set to "kms" if KMS is used for client-side encryption
*
* </td>
* </tr>
* <tr>
* <td>x-amz-cek-alg</td>
* <td>Content encryption algorithm used.
*
* Supported values:
* <code>"AES/GCM/NoPadding", "AES/CBC/PKCS5Padding"</code>
* Default to <code>"AES/CBC/PKCS5Padding"</code> if this key is absent.
*
* </td>
* </tr>
* </table>
* <h3>Metadata using V2 client</h3>
* <table border=1>
* <tr aligned="left">
* <th>key</th>
* <th>description</th>

```

```

* </tr>
* <tr>
* <td>x-amz-matdesc</td>
* <td>Customer provided material description in JSON format. (Same as v1). For KMS client side encryption,
* the cek algorithm is stored as part of the material description under the key-name <code>aws:x-amz-cek-
alg</code>.
* </td>
* </tr>
* <tr>
* <td>x-amz-wrap-alg</td>
* <td>Key wrapping algorithm used.
*
* Supported values:
* <code>"AES/GCM/NoPadding" (symmetric default), "RSA-OAEP-SHA1", "RSA-OAEP-SHA1" (asymmetric
default), "kms"</code>
*
* No standard key wrapping is used if this meta information is absent
* Always set to "kms" if KMS is used for client-side encryption
*
* </td>
* </tr>
* <tr>
* <td>x-amz-cek-alg</td>
* <td>Content encryption algorithm used. Supported values: <code>"AES/GCM/NoPadding"</code>
* </td>
* </tr>
* </table>
* <p>
* <h3>KMS Integration for client-side encryption</h3>
*
* All client-side KMS protected S3 objects are stored in v2 crypto meta information
* format. However, the key wrapping algorithm, x-amz-wrap-alg is always
* set to "kms".
* For V1 clients, the KMS Customer Master Key ID is currently stored as part of the
* material description, x-amz-matdesc, under the key-name
* "kms_cm_k_id".
* For V2 clients, the KMS Customer Master Key ID is not stored as part of the
* material description and must be supplied by the decrypting client.
*
* <p>
* <h4>Sample S3 crypto meta information for KMS client-side encryption</h4>
* <p>
* <h5>V1 client, CryptoMode: EncryptionOnly</h5>
*
* <pre>
* x-amz-meta-x-amz-key-v2:
*
CiAJ2GqwpJRnt4izujwoalC2YdNRNSMEsIG5rw3pEI+J8hKnAQEBAwB4CdhqsKSUZ7eIs7o8KGpQtmHTUTUj

```

```
BLJRua8N6RCPifIAAAB+MHwGCSqGSib3DQEHBqBvMG0CAQAWaAYJKoZlHvcNAQcBMB4GCWCGSAFI
AwQBLjARBAyD0rzN3KHViWixDVcCARCAOwhZ6xA8rob3Z0mNx3uKFieHKVYIC/PKlchALvG1oVLnf86m
cZJNpTXtwMkKkDocVj3Z1zGjZTufFsOH
```

```
* x-amz-iv: xqOHh+M6y0UogwG5SHJM3Q==
```

```
* x-amz-unencrypted-content-length: 32768
```

```
* x-amz-cek-alg: AES/CBC/PKCS5Padding
```

```
* x-amz-wrap-alg: kms
```

```
* x-amz-matdesc: {"kms_cmek_id":"d3fd2273-4ca0-4da5-b1c2-c89742ec6a26"}
```

```
* </pre>
```

```
*
```

```
* <h5>V1 client, CryptoMode: AuthenticatedEncryption/StrictAuthenticatedEncryption</h5>
```

```
*
```

```
* <pre>
```

```
* x-amz-key-v2:
```

```
CiAJ2GqwpJRnt4izujwoalC2YdNRNSMEslG5rw3pEI+J8hKnAQEBABwB4CdhqsKSUZ7eIs7o8KGpQtmHTUTUj
BLJRua8N6RCPifIAAAB+MHwGCSqGSib3DQEHBqBvMG0CAQAWaAYJKoZlHvcNAQcBMB4GCWCGSAFI
AwQBLjARBAytFVyW4I6QmwcPK1ECARCAO1VzoM6KxA9DHyNMm/BEbbjle2vLA7IY7f9OkUoSqrxdxgKxp
NID9QaL/7928m1Djtd0bJpHefjm89C
```

```
* x-amz-iv: VZBksyij6DhrUMye
```

```
* x-amz-unencrypted-content-length: 32768
```

```
* x-amz-cek-alg: AES/GCM/NoPadding
```

```
* x-amz-wrap-alg: kms
```

```
* x-amz-matdesc: {"kms_cmek_id":"d3fd2273-4ca0-4da5-b1c2-c89742ec6a26"}
```

```
* x-amz-tag-len: 128
```

```
* </pre>
```

```
*
```

```
* <h5>V2 client, CryptoMode: AuthenticatedEncryption/StrictAuthenticatedEncryption</h5>
```

```
*
```

```
* <pre>
```

```
* x-amz-key-v2:
```

```
CiAJ2GqwpJRnt4izujwoalC2YdNRNSMEslG5rw3pEI+J8hKnAQEBABwB4CdhqsKSUZ7eIs7o8KGpQtmHTUTUj
BLJRua8N6RCPifIAAAB+MHwGCSqGSib3DQEHBqBvMG0CAQAWaAYJKoZlHvcNAQcBMB4GCWCGSAFI
AwQBLjARBAytFVyW4I6QmwcPK1ECARCAO1VzoM6KxA9DHyNMm/BEbbjle2vLA7IY7f9OkUoSqrxdxgKxp
NID9QaL/7928m1Djtd0bJpHefjm89C
```

```
* x-amz-iv: VZBksyij6DhrUMye
```

```
* x-amz-unencrypted-content-length: 32768
```

```
* x-amz-cek-alg: AES/GCM/NoPadding
```

```
* x-amz-wrap-alg: kms
```

```
* x-amz-matdesc: {"aws:x-amz-cek-alg":"AES/GCM/NoPadding"}
```

```
* x-amz-tag-len: 128
```

```
* </pre>
```

```
*
```

```
* <h2>S3 metadata of an instruction file</h2>
```

```
* <p>
```

```
* The following key is always included as part of the S3 metadata of the
```

```
* instruction file (which is just an S3 object). Since the SDK treats this key
```

```
* as "user metadata", the key name is always prefixed with x-amz-meta-
```

```
* when physically stored.
```

```

* <p>
* <table border=1>
* <tr aligned="left">
* <th>key</th>
* <th>description</th>
* </tr>
* <tr>
* <td width="200">x-amz-crypto-instr-file</td>
* <td>the presence of this key is used to indicate this S3 object is an
* instruction file (of an associated client-side encrypted S3 object).</td>
* </tr>
* </table>
*/

```

Found in path(s):

```

* /opt/cola/permits/1273483828_1645114031.28/0/aws-java-sdk-s3-1-12-86-sources-
jar/com/amazonaws/services/s3/package-info.java

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```

Found in path(s):

```

* /opt/cola/permits/1273483828_1645114031.28/0/aws-java-sdk-s3-1-12-86-sources-
jar/com/amazonaws/services/s3/waiters/HeadObjectFunction.java
* /opt/cola/permits/1273483828_1645114031.28/0/aws-java-sdk-s3-1-12-86-sources-
jar/com/amazonaws/services/s3/waiters/HeadBucketFunction.java

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* express or implied. See the License for the specific language governing
* permissions and limitations under the License.
*/
/**
 * Gets the optional <code>versionIdMarker</code> parameter indicating where in the
 * sorted list of all versions in the specified bucket to begin returning
 * results. Results are always ordered first lexicographically (i.e.
 * alphabetically) and then from most recent version to least recent
 * version.
 * <p>
 * A key marker must be specified when specifying a <code>versionIdMarker</code>.
 * Results begin immediately after the version with the specified key and
 * version ID.
 * </p>
 *
 * @return The optional <code>versionIdMarker</code> parameter indicating where in the
 * sorted list of all versions in the specified bucket to begin
 * returning results.
 *
 * @see ListVersionsRequest#setVersionIdMarker(String)
 * @see ListVersionsRequest#withVersionIdMarker(String)
 */

```

Found in path(s):

```

* /opt/cola/permits/1273483828_1645114031.28/0/aws-java-sdk-s3-1-12-86-sources-
jar/com/amazonaws/services/s3/model/ListVersionsRequest.java

```

# 1.95 httpcomponents-core 4.4.15

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Acknowledgments:

The deflate format used by zlib was defined by Phil Katz. The deflate and zlib specifications were written by Peter Deutsch. Thanks to all the people who reported problems and suggested various improvements in zlib; they are too numerous to cite here.

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## 1.100 hibernate-commons-annotations

### 5.1.2.Final

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# 1.101 ngx-tippy-wrapper 3.0.0

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# 1.102 jasmine-reporters 2.0.0

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# 1.103 angular-common 11.0.2

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```
{"version":3,"file":"http.js","sources":["../../../../packages/common/http/src/backend.ts", "../../../../packages/common/http/src/headers.ts", "../../../../packages/common/http/src/params.ts", "../../../../packages/common/http/src/request.ts", "../../../../packages/common/http/src/response.ts", "../../../../packages/common/http/src/client.ts", "../../../../packages/common/http/src/interceptor.ts", "../../../../packages/common/http/src/jsonp.ts", "../../../../packages/common/http/src/xhr.ts", "../../../../packages/common/http/src/xsrf.ts", "../../../../packages/common/http/src/module.ts", "../../../../packages/common/http/public_api.ts", "../../../../packages/common/http/index.ts", "../../../../packages/common/http/http.ts"],"sourcesContent":["/**\n * @license\n * Copyright Google LLC All Rights Reserved.\n *\n * Use of this source code is governed by an MIT-style license that can be\n * found in the LICENSE file at https://angular.io/license\n *\nimport {Observable} from 'rxjs';\nimport {HttpRequest} from './request';\nimport {HttpEvent} from './response';\n\n/**\n * Transforms an `HttpRequest` into a stream of `HttpEvent`s, one of which will likely be a\n * `HttpResponse`.\n *\n * `HttpHandler` is injectable. When injected, the handler instance dispatches requests to the\n * first interceptor in the chain, which dispatches to the second, etc, eventually reaching the\n * `HttpBackend`.\n *\n * In an `HttpInterceptor`, the `HttpHandler` parameter is the next interceptor in the chain.\n *\n * @publicApi\n */\nexport abstract class HttpHandler {\n abstract handle(req:
```

```

HttpRequest<any>): Observable<HttpEvent<any>>;\n}\n\n/**\n * A final `HttpHandler` which will dispatch the
request via browser HTTP APIs to a backend.\n *\n * Interceptors sit between the `HttpClient` interface and the
`HttpBackend`.\n *\n * When injected, `HttpBackend` dispatches requests directly to the backend, without going\n *
through the interceptor chain.\n *\n * @publicApi\n */\nexport abstract class HttpBackend implements HttpHandler
{\n abstract handle(req: HttpRequest<any>): Observable<HttpEvent<any>>;\n}\n", "/*\n * @license\n * Copyright
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*\n * found in the LICENSE file at https://angular.io/license\n */\n\ninterface Update {\n name: string;\n value?:
string|string[];\n op: 'a'|'s'|'d';\n}\n\n/**\n * Represents the header configuration options for an HTTP request.\n *
Instances are immutable. Modifying methods return a cloned\n * instance with the change. The original object is
never changed.\n *\n * @publicApi\n */\nexport class HttpHeaders {\n /**\n * Internal map of lowercase header
names to values.\n *\n * // TODO(issue/24571): remove '!'.\n private headers!: Map<string, string[]>;\n\n /**\n * Internal map of lowercased header names to the normalized\n * form of the name (the form seen first).\n *\n * private normalizedNames: Map<string, string> = new Map();\n\n /**\n * Complete the lazy initialization of this
object (needed before reading).\n *\n * private lazyInit!: HttpHeaders|Function|null;\n\n /**\n * Queued updates
to be materialized the next initialization.\n *\n * private lazyUpdate: Update[]|null = null;\n\n /**\n * Constructs a new
HTTP header object with the given values.\n *\n * constructor(headers?: string|{[name: string]: string | string[]}) {\n
if (!headers) {\n this.headers = new Map<string, string[]>();\n } else if (typeof headers === 'string') {\n
this.lazyInit = () => {\n this.headers = new Map<string, string[]>();\n headers.split('\\n').forEach(line => {\n
const index = line.indexOf(':');\n if (index > 0) {\n const name = line.slice(0, index);\n const
key = name.toLowerCase();\n const value = line.slice(index + 1).trim();\n this.maybeSetNormalizedName(name, key);\n }
if (this.headers.has(key)) {\n this.headers.get(key)!.push(value);\n } else {\n this.headers.set(key, [value]);\n }
}\n });\n } else {\n this.lazyInit = () => {\n this.headers = new Map<string, string[]>();\n Object.keys(headers).forEach(name => {\n
let values: string|string[] = headers[name];\n const key =
name.toLowerCase();\n if (typeof values === 'string') {\n values = [values];\n }\n if
(values.length > 0) {\n this.headers.set(key, values);\n this.maybeSetNormalizedName(name, key);\n }
}\n });\n });\n }\n}\n\n/**\n * Checks for existence of a given header.\n *\n * @param name The
header name to check for existence.\n *\n * @returns True if the header exists, false otherwise.\n *\n * has(name:
string): boolean {\n this.init();\n return this.headers.has(name.toLowerCase());\n}\n\n/**\n * Retrieves the
first value of a given header.\n *\n * @param name The header name.\n *\n * @returns The value string if the
header exists, null otherwise.\n *\n * get(name: string): string|null {\n this.init();\n\n const values =
this.headers.get(name.toLowerCase());\n return values && values.length > 0 ? values[0] : null;\n}\n\n/**\n *
Retrieves the names of the headers.\n *\n * @returns A list of header names.\n *\n * keys(): string[] {\n this.init();\n return Array.from(this.normalizedNames.values());\n}\n\n/**\n * Retrieves a list of values for a
given header.\n *\n * @param name The header name from which to retrieve values.\n *\n * @returns A string
of values if the header exists, null otherwise.\n *\n * getAll(name: string): string[]|null {\n this.init();\n return
this.headers.get(name.toLowerCase()) || null;\n}\n\n/**\n * Appends a new value to the existing set of values for
a header\n * and returns them in a clone of the original instance.\n *\n * @param name The header name for
which to append the values.\n * @param value The value to append.\n *\n * @returns A clone of the HTTP
headers object with the value appended to the given header.\n *\n * append(name: string, value: string|string[]):
HttpHeaders {\n return this.clone({name, value, op: 'a'});\n}\n\n/**\n * Sets or modifies a value for a given
header in a clone of the original instance.\n * If the header already exists, its value is replaced with the given
value\n * in the returned object.\n *\n * @param name The header name.\n * @param value The value or
values to set or override for the given header.\n *\n * @returns A clone of the HTTP headers object with the newly
set header value.\n *\n * set(name: string, value: string|string[]): HttpHeaders {\n return this.clone({name, value,
op: 's'});\n}\n\n/**\n * Deletes values for a given header in a clone of the original instance.\n *\n * @param
name The header name.\n * @param value The value or values to delete for the given header.\n *\n * @returns
A clone of the HTTP headers object with the given value deleted.\n *\n * delete(name: string, value?:

```

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string|string[]): HttpHeaders {\n return this.clone({name, value, op: 'd'});\n } \n\n private
maybeSetNormalizedName(name: string, lcName: string): void {\n if (!this.normalizedNames.has(lcName)) {\n
this.normalizedNames.set(lcName, name);\n } \n } \n\n private init(): void {\n if (!this.lazyInit) {\n if
(this.lazyInit instanceof HttpHeaders) {\n this.copyFrom(this.lazyInit);\n } else {\n this.lazyInit();\n
}\n this.lazyInit = null;\n if (!this.lazyUpdate) {\n this.lazyUpdate.forEach(update =>
this.applyUpdate(update));\n this.lazyUpdate = null;\n } \n } \n\n private copyFrom(other:
HttpHeaders) {\n other.init();\n Array.from(other.headers.keys()).forEach(key => {\n this.headers.set(key,
other.headers.get(key)!);\n this.normalizedNames.set(key, other.normalizedNames.get(key)!);\n }); \n } \n\n
private clone(update: Update): HttpHeaders {\n const clone = new HttpHeaders();\n clone.lazyInit =\n (!!this.lazyInit && this.lazyInit instanceof HttpHeaders) ? this.lazyInit : this;\n clone.lazyUpdate =
(this.lazyUpdate || []).concat([update]);\n return clone;\n } \n\n private applyUpdate(update: Update): void {\n
const key = update.name.toLowerCase();\n switch (update.op) {\n case 'a':\n case 's':\n let value =
update.value!;\n if (typeof value === 'string') {\n value = [value];\n } \n if (value.length === 0)
{\n return;\n } \n this.maybeSetNormalizedName(update.name, key);\n const base = (update.op
=== 'a' ? this.headers.get(key) : undefined) || [];\n base.push(...value);\n this.headers.set(key, base);\n
break;\n case 'd':\n const toDelete = update.value as string | undefined;\n if (!toDelete) {\n
this.headers.delete(key);\n this.normalizedNames.delete(key);\n } else {\n let existing =
this.headers.get(key);\n if (!existing) {\n return;\n } \n existing = existing.filter(value =>
toDelete.indexOf(value) === -1);\n if (existing.length === 0) {\n this.headers.delete(key);\n
this.normalizedNames.delete(key);\n } else {\n this.headers.set(key, existing);\n } \n } \n } \n\n
}\n } \n\n /**\n * @internal\n *\n * forEach(fn: (name: string, values: string[]) => void) {\n
this.init();\n Array.from(this.normalizedNames.keys()).\n .forEach(key => fn(this.normalizedNames.get(key)!,
this.headers.get(key)!)); \n } \n } \n\n", /**\n * @license\n * Copyright Google LLC All Rights Reserved.\n *\n * Use
of this source code is governed by an MIT-style license that can be\n * found in the LICENSE file at
https://angular.io/license\n *\n\n **\n * A codec for encoding and decoding parameters in URLs.\n *\n * Used by
`HttpParams`.\n *\n * @publicApi\n **\n * export interface HttpParameterCodec {\n encodeKey(key: string):
string;\n encodeValue(value: string): string;\n decodeKey(key: string): string;\n decodeValue(value: string):
string;\n } \n\n\n **\n * Provides encoding and decoding of URL parameter and query-string values.\n *\n * Serializes
and parses URL parameter keys and values to encode and decode them.\n *\n * If you pass URL query parameters
without encoding,\n * the query parameters can be misinterpreted at the receiving end.\n *\n * @publicApi\n
 *\n * export class HttpUrlEncodingCodec implements HttpParameterCodec {\n /**\n * Encodes a key name for a
URL parameter or query-string.\n * @param key The key name.\n * @returns The encoded key name.\n */\n encodeKey(key: string): string {\n return standardEncoding(key);\n } \n\n /**\n * Encodes the value of a URL
parameter or query-string.\n * @param value The value.\n * @returns The encoded value.\n */\n encodeValue(value: string): string {\n return standardEncoding(value);\n } \n\n /**\n * Decodes an encoded
URL parameter or query-string key.\n * @param key The encoded key name.\n * @returns The decoded key
name.\n */\n decodeKey(key: string): string {\n return decodeURIComponent(key);\n } \n\n /**\n * Decodes
an encoded URL parameter or query-string value.\n * @param value The encoded value.\n * @returns The
decoded value.\n */\n decodeValue(value: string) {\n return decodeURIComponent(value);\n } \n } \n\n\n function
paramParser(rawParams: string, codec: HttpParameterCodec): Map<string, string[]> {\n const map = new
Map<string, string[]>();\n if (rawParams.length > 0) {\n const params: string[] = rawParams.split('&');\n
 params.forEach((param: string) => {\n const eqIdx = param.indexOf('=');\n const [key, val]: string[] = eqIdx
=== -1 ?\n [codec.decodeKey(param), ""] :\n [codec.decodeKey(param.slice(0, eqIdx)),\n
codec.decodeValue(param.slice(eqIdx + 1))];\n const list = map.get(key) || [];\n list.push(val);\n
map.set(key, list);\n }); \n } \n\n return map;\n } \n\n function standardEncoding(v: string): string {\n
return\n encodeURIComponent(v)\n .replace(/%40/gi, '@')\n .replace(/%3A/gi, ':')\n .replace(/%24/gi, '$')\n
 .replace(/%2C/gi, ',')\n .replace(/%3B/gi, ';')\n .replace(/%2B/gi, '+')\n .replace(/%3D/gi, '=')\n
 .replace(/%3F/gi, '?')\n .replace(/%2F/gi, '/'); \n } \n\n interface Update {\n param: string;\n value?: string;\n op:

```

```

'a|d|s';\n}\n\n/**\n * Options used to construct an `HttpParams` instance.\n * \n * @publicApi\n * \nexport
interface HttpParamsOptions {\n /**\n * String representation of the HTTP parameters in URL-query-string
format.\n * Mutually exclusive with `fromObject`.\n * \n fromString?: string;\n\n /** Object map of the HTTP
parameters. Mutually exclusive with `fromString`.\n * \n fromObject?: {[param: string]:
string|ReadonlyArray<string>};\n\n /** Encoding codec used to parse and serialize the parameters.\n * \n encoder?:
HttpParameterCodec;\n}\n\n/**\n * An HTTP request/response body that represents serialized parameters,\n * per
the MIME type `application/x-www-form-urlencoded`.\n * \n * This class is immutable; all mutation operations
return a new instance.\n * \n * @publicApi\n * \nexport class HttpParams {\n private map: Map<string,
string[]>|null;\n private encoder: HttpParameterCodec;\n private updates: Update[]|null = null;\n private
cloneFrom: HttpParams|null = null;\n\n constructor(options: HttpParamsOptions = { } as HttpParamsOptions) {\n
this.encoder = options.encoder || new UrlEncodingCodec();\n if (!!options.fromString) {\n if
(!options.fromObject) {\n throw new Error(`Cannot specify both fromString and fromObject.`);\n }\n
this.map = paramParser(options.fromString, this.encoder);\n } else if (!!options.fromObject) {\n this.map =
new Map<string, string[]>();\n Object.keys(options.fromObject).forEach(key => {\n const value =
(options.fromObject as any)[key];\n this.map!.set(key, Array.isArray(value) ? value : [value]);\n });\n }
else {\n this.map = null;\n }\n }\n\n /**\n * Reports whether the body includes one or more values for a
given parameter.\n * \n * @param param The parameter name.\n * \n * @returns True if the parameter has one or more
values,\n * false if it has no value or is not present.\n * \n * \n has(param: string): boolean {\n this.init();\n
return
this.map!.has(param);\n }\n\n /**\n * Retrieves the first value for a parameter.\n * \n * @param param The parameter
name.\n * \n * @returns The first value of the given parameter,\n * or `null` if the parameter is not present.\n * \n
\n get(param: string): string|null {\n this.init();\n const res = this.map!.get(param);\n return !!res ? res[0] :
null;\n }\n\n /**\n * Retrieves all values for a parameter.\n * \n * @param param The parameter name.\n * \n * @returns All
values in a string array,\n * or `null` if the parameter not present.\n * \n * \n getAll(param: string): string[]|null {\n
this.init();\n return this.map!.get(param) || null;\n }\n\n /**\n * Retrieves all the parameters for this body.\n *
\n * @returns The parameter names in a string array.\n * \n * \n keys(): string[] {\n this.init();\n return
Array.from(this.map!.keys());\n }\n\n /**\n * Appends a new value to existing values for a parameter.\n * \n
\n * @param param The parameter name.\n * \n * @param value The new value to add.\n * \n * @return A new body with the
appended value.\n * \n * \n append(param: string, value: string): HttpParams {\n return this.clone({param, value, op:
'a'});\n }\n\n /**\n * Replaces the value for a parameter.\n * \n * @param param The parameter name.\n * \n * @param
value The new value.\n * \n * @return A new body with the new value.\n * \n * \n set(param: string, value: string):
HttpParams {\n return this.clone({param, value, op: 's'});\n }\n\n /**\n * Removes a given value or all values
from a parameter.\n * \n * @param param The parameter name.\n * \n * @param value The value to remove, if
provided.\n * \n * @return A new body with the given value removed, or with all values\n * removed if no value is
specified.\n * \n * \n delete(param: string, value?: string): HttpParams {\n return this.clone({param, value, op:
'd'});\n }\n\n /**\n * Serializes the body to an encoded string, where key-value pairs (separated by `=`) are\n *
separated by `&`s.\n * \n * \n toString(): string {\n this.init();\n return this.keys().map(key => {\n const eKey =
this.encoder.encodeKey(key);\n // `a: ['1']` produces `a=1`\n // `b: []` produces ``\n // `c: ['1', '2']`
produces `c=1&c=2`\n return this.map!.get(key)!.map(value => eKey + '=' +
this.encoder.encodeValue(value)).join('&');\n })\n // filter out empty values because `b: []`
produces ``\n // which results in `a=1&&c=1&c=2` instead of `a=1&c=1&c=2` if we don't\n .filter(param
=> param !== '')\n .join('&');\n }\n\n private clone(update: Update): HttpParams {\n const clone = new
HttpParams({encoder: this.encoder} as HttpParamsOptions);\n clone.cloneFrom = this.cloneFrom || this;\n
clone.updates = (this.updates || []).concat([update]);\n return clone;\n }\n\n private init() {\n if (this.map ===
null) {\n this.map = new Map<string, string[]>();\n }\n if (this.cloneFrom !== null) {\n
this.cloneFrom.init();\n this.cloneFrom.keys().forEach(key => this.map!.set(key,
this.cloneFrom!.map!.get(key)!));\n this.updates!.forEach(update => {\n switch (update.op) {\n case
'a':\n case 's':\n const base = (update.op === 'a' ? this.map!.get(update.param) : undefined) || [];\n
base.push(update.value!);\n this.map!.set(update.param, base);\n break;\n case 'd':\n if

```



```

the HttpRequestInit\n // options, if any.\n let options: HttpRequestInit|undefined;\n // Check whether a body
argument is expected. The only valid way to omit\n // the body argument is to use a known no-body method like
GET.\n if (mightHaveBody(this.method) || !fourth) {\n // Body is the third argument, options are the fourth.\n
this.body = (third !== undefined) ? third as T : null;\n options = fourth;\n } else {\n // No body required,
options are the third argument. The body stays null.\n options = third as HttpRequestInit;\n }\n // If options
have been passed, interpret them.\n if (options) {\n // Normalize reportProgress and withCredentials.\n
this.reportProgress = !options.reportProgress;\n this.withCredentials = !options.withCredentials;\n\n //
Override default response type of 'json' if one is provided.\n if (!options.responseType) {\n
this.responseType = options.responseType;\n }\n // Override headers if they're provided.\n if
(!options.headers) {\n this.headers = options.headers;\n }\n if (!options.params) {\n this.params =
options.params;\n }\n }\n // If no headers have been passed in, construct a new HttpHeaders instance.\n if
(!this.headers) {\n this.headers = new HttpHeaders();\n }\n // If no parameters have been passed in,
construct a new HttpUrlEncodedParams instance.\n if (!this.params) {\n this.params = new HttpParams();\n
this.urlWithParams = url;\n } else {\n // Encode the parameters to a string in preparation for inclusion in the
URL.\n const params = this.params.toString();\n if (params.length === 0) {\n // No parameters, the visible
URL is just the URL given at creation time.\n this.urlWithParams = url;\n } else {\n // Does the URL
already have query parameters? Look for '?'.\n const qIdx = url.indexOf('?');\n // There are 3 cases to
handle:\n // 1) No existing parameters -> append '?' followed by params.\n // 2) '?' exists and is followed by
existing query string ->\n // append '&' followed by params.\n // 3) '?' exists at the end of the url -> append
params directly.\n // This basically amounts to determining the character, if any, with\n // which to join the
URL and parameters.\n const sep: string = qIdx === -1 ? '?' : (qIdx < url.length - 1 ? '&' : '');\n
this.urlWithParams = url + sep + params;\n }\n }\n /**\n * Transform the free-form body into a
serialized format suitable for\n * transmission to the server.\n *\n * serializeBody():
ArrayBuffer|Blob|FormData|string|null {\n // If no body is present, no need to serialize it.\n if (this.body ===
null) {\n return null;\n }\n // Check whether the body is already in a serialized form. If so,\n // it can just be
returned directly.\n if (isArrayBuffer(this.body) || isBlob(this.body) || isFormData(this.body) ||\n typeof
this.body === 'string') {\n return this.body;\n }\n // Check whether the body is an instance of
HttpUrlEncodedParams.\n if (this.body instanceof HttpParams) {\n return this.body.toString();\n }\n //
Check whether the body is an object or array, and serialize with JSON if so.\n if (typeof this.body === 'object' ||
typeof this.body === 'boolean' ||\n Array.isArray(this.body)) {\n return JSON.stringify(this.body);\n }\n
// Fall back on toString() for everything else.\n return (this.body as any).toString();\n }\n /**\n * Examine the
body and attempt to infer an appropriate MIME type\n * for it.\n *\n * If no such type can be inferred, this
method will return `null`.\n *\n * detectContentTypeHeader(): string|null {\n // An empty body has no content
type.\n if (this.body === null) {\n return null;\n }\n // FormData bodies rely on the browser's content type
assignment.\n if (isFormData(this.body)) {\n return null;\n }\n // Blobs usually have their own content type.
If it doesn't, then\n // no type can be inferred.\n if (isBlob(this.body)) {\n return this.body.type || null;\n }\n
// Array buffers have unknown contents and thus no type can be inferred.\n if (isArrayBuffer(this.body)) {\n
return null;\n }\n // Technically, strings could be a form of JSON data, but it's safe enough\n // to assume
they're plain strings.\n if (typeof this.body === 'string') {\n return 'text/plain';\n }\n //
`HttpUrlEncodedParams` has its own content-type.\n if (this.body instanceof HttpParams) {\n return
'application/x-www-form-urlencoded;charset=UTF-8';\n }\n // Arrays, objects, and numbers will be encoded as
JSON.\n if (typeof this.body === 'object' || typeof this.body === 'number' ||\n Array.isArray(this.body)) {\n
return 'application/json';\n }\n // No type could be inferred.\n return null;\n }\n\n clone(): HttpRequest<T>;\n
clone(update: {\n headers?: HttpHeaders,\n reportProgress?: boolean,\n params?: HttpParams,\n
responseType?: 'arraybuffer'|'blob'|'json'|'text',\n withCredentials?: boolean,\n body?: T|null,\n method?:
string,\n url?: string,\n setHeaders?: {[name: string]: string|string[]},\n setParams?: {[param: string]: string},\n
}): HttpRequest<T>;\n clone<V>(update: {\n headers?: HttpHeaders,\n reportProgress?: boolean,\n params?:
HttpParams,\n responseType?: 'arraybuffer'|'blob'|'json'|'text',\n withCredentials?: boolean,\n body?: V|null,\n

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method?: string,\n url?: string,\n setHeaders?: {[name: string]: string|string[]},\n setParams?: {[param: string]:\n string},\n }): HttpRequest<V>;\n clone(update: {\n headers?: HttpHeaders,\n reportProgress?: boolean,\n params?: HttpParams,\n responseType?: 'arraybuffer'|'blob'|'json'|'text',\n withCredentials?: boolean,\n body?:\n any|null,\n method?: string,\n url?: string,\n setHeaders?: {[name: string]: string|string[]},\n setParams?:\n {[param: string]: string};\n } = {}): HttpRequest<any> {\n // For method, url, and responseType, take the current\n value unless\n // it is overridden in the update hash.\n const method = update.method || this.method;\n const url\n = update.url || this.url;\n const responseType = update.responseType || this.responseType;\n\n // The body is\n somewhat special - a `null` value in update.body means\n // whatever current body is present is being overridden\n with an empty\n // body, whereas an `undefined` value in update.body implies no\n // override.\n const body =\n (update.body !== undefined) ? update.body : this.body;\n\n // Carefully handle the boolean options to differentiate\n between\n // `false` and `undefined` in the update args.\n const withCredentials =\n (update.withCredentials\n !== undefined) ? update.withCredentials : this.withCredentials;\n const reportProgress =\n (update.reportProgress !== undefined) ? update.reportProgress : this.reportProgress;\n\n // Headers and params\n may be appended to if `setHeaders` or\n // `setParams` are used.\n let headers = update.headers || this.headers;\n let params = update.params || this.params;\n\n // Check whether the caller has asked to add headers.\n if\n (update.setHeaders !== undefined) {\n // Set every requested header.\n headers =\n Object.keys(update.setHeaders)\n .reduce((headers, name) => headers.set(name, update.setHeaders![name]),\n headers);\n }\n\n // Check whether the caller has asked to set params.\n if (update.setParams) {\n // Set\n every requested param.\n params = Object.keys(update.setParams)\n .reduce((params, param) =>\n params.set(param, update.setParams![param]), params);\n }\n\n // Finally, construct the new HttpRequest using\n the pieces from above.\n return new HttpRequest(method, url, body, {\n params,\n headers,\n reportProgress,\n responseType,\n withCredentials,\n });\n }\n}\n", "/*\n * @license\n * Copyright Google\n LLC All Rights Reserved.\n *\n * Use of this source code is governed by an MIT-style license that can be\n * found\n in the LICENSE file at https://angular.io/license\n */\n\nimport {HttpHeaders} from './headers';\n\n/**\n * Type\n enumeration for the different kinds of `HttpEvent`.\n *\n * @publicApi\n */\nexport enum HttpEventType {\n /**\n * The request was sent out over the wire.\n */\n Sent,\n\n /**\n * An upload progress event was received.\n */\n UploadProgress,\n\n /**\n * The response status code and headers were received.\n */\n ResponseHeader,\n\n /**\n * A download progress event was received.\n */\n DownloadProgress,\n\n /**\n * The full response including the body was received.\n */\n Response,\n\n /**\n * A custom event from an\n interceptor or a backend.\n */\n User,\n}\n\n/**\n * Base interface for progress events.\n *\n * @publicApi\n */\nexport interface HttpProgressEvent {\n /**\n * Progress event type is either upload or download.\n */\n type:\n HttpEventType.DownloadProgress|HttpEventType.UploadProgress;\n\n /**\n * Number of bytes uploaded or\n downloaded.\n */\n loaded: number;\n\n /**\n * Total number of bytes to upload or download. Depending on the\n request or\n * response, this may not be computable and thus may not be present.\n */\n total?:\n number;\n}\n\n/**\n * A download progress event.\n *\n * @publicApi\n */\nexport interface\n HttpDownloadProgressEvent extends HttpProgressEvent {\n type: HttpEventType.DownloadProgress;\n\n /**\n * The partial response body as downloaded so far.\n *\n * Only present if the responseType was `text`.\n */\n partialText?: string;\n}\n\n/**\n * An upload progress event.\n *\n * @publicApi\n */\nexport interface\n HttpUploadProgressEvent extends HttpProgressEvent {\n type: HttpEventType.UploadProgress;\n}\n\n/**\n * An\n event indicating that the request was sent to the server. Useful\n * when a request may be retried multiple times, to\n distinguish between\n * retries on the final event stream.\n *\n * @publicApi\n */\nexport interface HttpSentEvent\n {\n type: HttpEventType.Sent;\n}\n\n/**\n * A user-defined event.\n *\n * Grouping all custom events under this\n type ensures they will be handled\n * and forwarded by all implementations of interceptors.\n *\n * @publicApi\n */\nexport interface HttpUserEvent<T> {\n type: HttpEventType.User;\n}\n\n/**\n * An error that represents a\n failed attempt to JSON.parse text coming back\n * from the server.\n *\n * It bundles the Error object with the actual\n response body that failed to parse.\n *\n * @publicApi\n */\nexport interface HttpJsonParseError {\n error: Error;\n text:\n string;\n}\n\n/**\n * Union type for all possible events on the response stream.\n *\n * Typed according to the\n expected type of the response.\n *\n * @publicApi\n */\nexport type HttpEvent<T> =\n

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HttpSentEvent|HttpHeaderResponse|HttpResponse<T>|HttpProgressEvent|HttpUserEvent<T>;\n\n/**\n * Base
class for both `HttpResponse` and `HttpHeaderResponse`.\n *\n * @publicApi\n *^\nexport abstract class
HttpResponseBase {\n /**\n * All response headers.\n */\n readonly headers: HttpHeaders;\n\n /**\n *
Response status code.\n */\n readonly status: number;\n\n /**\n * Textual description of response status code.\n
*\n * Do not depend on this.\n */\n readonly statusText: string;\n\n /**\n * URL of the resource retrieved, or
null if not available.\n */\n readonly url: string|null;\n\n /**\n * Whether the status code falls in the 2xx range.\n
*/\n readonly ok: boolean;\n\n /**\n * Type of the response, narrowed to either the full response or the header.\n
*/\n // TODO(issue/24571): remove '!.\n\n readonly type!:
HttpEventType.Response|HttpEventType.ResponseHeader;\n\n /**\n * Super-constructor for all responses.\n *\n
* The single parameter accepted is an initialization hash. Any properties\n * of the response passed there will
override the default values.\n */\n constructor(\n init: {\n headers?: HttpHeaders,\n status?: number,\n
statusText?: string,\n url?: string,\n },\n defaultStatus: number = 200, defaultStatusText: string = 'OK')
{\n // If the hash has values passed, use them to initialize the response.\n // Otherwise use the default values.\n
this.headers = init.headers || new HttpHeaders();\n this.status = init.status !== undefined ? init.status :
defaultStatus;\n this.statusText = init.statusText || defaultStatusText;\n this.url = init.url || null;\n\n // Cache the
ok value to avoid defining a getter.\n this.ok = this.status >= 200 && this.status < 300;\n }\n}\n\n/**\n * A partial
HTTP response which only includes the status and header data,\n * but no response body.\n *\n *
`HttpHeaderResponse` is a `HttpEvent` available on the response\n * event stream, only when progress events are
requested.\n *\n * @publicApi\n *^\nexport class HttpHeaderResponse extends HttpResponseBase {\n /**\n *
Create a new `HttpHeaderResponse` with the given parameters.\n */\n constructor(init: {\n headers?:
HttpHeaders,\n status?: number,\n statusText?: string,\n url?: string,\n } = {}) {\n super(init);\n }\n\n
readonly type: HttpEventType.ResponseHeader = HttpEventType.ResponseHeader;\n\n /**\n * Copy this
`HttpHeaderResponse`, overriding its contents with the\n * given parameter hash.\n */\n clone(update: {headers?:
HttpHeaders; status?: number; statusText?: string; url?: string;} = {}):\n HttpHeaderResponse {\n // Perform a
straightforward initialization of the new HttpHeaderResponse,\n // overriding the current parameters with new
ones if given.\n return new HttpHeaderResponse({\n headers: update.headers || this.headers,\n status:
update.status !== undefined ? update.status : this.status,\n statusText: update.statusText || this.statusText,\n
url: update.url || this.url || undefined,\n });\n }\n}\n\n/**\n * A full HTTP response, including a typed response
body (which may be `null`\n * if one was not returned).\n *\n * `HttpResponse` is a `HttpEvent` available on the
response event\n * stream.\n *\n * @publicApi\n *^\nexport class HttpResponse<T> extends HttpResponseBase {\n
/**\n * The response body, or `null` if one was not returned.\n */\n readonly body: T|null;\n\n /**\n * Construct
a new `HttpResponse`.\n */\n constructor(init: {\n body?: T|null,\n headers?: HttpHeaders;\n status?:
number;\n statusText?: string;\n url?: string;\n } = {}) {\n super(init);\n this.body = init.body !== undefined
? init.body : null;\n }\n\n readonly type: HttpEventType.Response = HttpEventType.Response;\n\n clone():
HttpResponse<T>;\n\n clone(update: {headers?: HttpHeaders; status?: number; statusText?: string; url?: string;}):\n
HttpResponse<T>;\n\n clone<V>(update: {\n body?: V|null,\n headers?: HttpHeaders;\n status?: number;\n
statusText?: string;\n url?: string;\n }): HttpResponse<V>;\n\n clone(update: {\n body?: any|null;\n headers?:
HttpHeaders;\n status?: number;\n statusText?: string;\n url?: string;\n } = {}): HttpResponse<any> {\n
return new HttpResponse<any>({\n body: (update.body !== undefined) ? update.body : this.body,\n headers:
update.headers || this.headers,\n status: (update.status !== undefined) ? update.status : this.status,\n
statusText: update.statusText || this.statusText,\n url: update.url || this.url || undefined,\n });\n }\n}\n\n/**\n * A response
that represents an error or failure, either from a\n * non-successful HTTP status, an error while executing the
request,\n * or some other failure which occurred during the parsing of the response.\n *\n * Any error returned on
the `Observable` response stream will be\n * wrapped in an `HttpErrorResponse` to provide additional context
about\n * the state of the HTTP layer when the error occurred. The error property\n * will contain either a wrapped
Error object or the error response returned\n * from the server.\n *\n * @publicApi\n *^\nexport class
HttpErrorResponse extends HttpResponseBase implements Error {\n readonly name = 'HttpErrorResponse';\n
readonly message: string;\n readonly error: any|null;\n\n /**\n * Errors are never okay, even when the status code

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is in the 2xx success range.\n *\n readonly ok = false;\n\n constructor(init: {\n error?: any;\n headers?:
HttpHeaders;\n status?: number;\n statusText?: string;\n url?: string;\n }) {\n // Initialize with a default status
of 0 / Unknown Error.\n super(init, 0, 'Unknown Error');\n\n // If the response was successful, then this was a
parse error. Otherwise, it was\n // a protocol-level failure of some sort. Either the request failed in transit\n // or
the server returned an unsuccessful status code.\n if (this.status >= 200 && this.status < 300) {\n this.message
= `Http failure during parsing for ${init.url || '(unknown url)'}`; \n } else {\n this.message = `Http failure
response for ${init.url || '(unknown url)'}: ${init.status} ${\n init.statusText}`;\n }\n this.error = init.error ||
null;\n }\n}\n"/**\n * @license\n * Copyright Google LLC All Rights Reserved.\n *\n * Use of this source code is
governed by an MIT-style license that can be\n * found in the LICENSE file at https://angular.io/license\n
*\n\nimport {Injectable} from '@angular/core';\nimport {Observable, of} from 'rxjs';\nimport {concatMap, filter,
map} from 'rxjs/operators';\nimport {HttpHandler} from './backend';\nimport {HttpHeaders} from
 './headers';\nimport {HttpParams, HttpParamsOptions} from './params';\nimport {HttpRequest} from
 './request';\nimport {HttpEvent, HttpResponse} from './response';\n\n/**\n * Constructs an instance of
`HttpRequestOptions<T>` from a source `HttpMethodOptions` and\n * the given `body`. This function clones the
object and adds the body.\n *\n * Note that the `responseType` *options* value is a String that identifies the\n *
single data type of the response.\n *\n * A single overload version of the method handles each response type.\n * The
value of `responseType` cannot be a union, as the combined signature could imply.\n *\n *\nfunction
addBody<T>(\n options: {\n headers?: HttpHeaders|{\n [header: string]: string | string[]\n },\n observe?:
HttpObserve,\n params?: HttpParams|{\n [param: string]: string | string[]\n },\n reportProgress?: boolean,\n
 responseType?: 'arraybuffer'|'blob'|'json'|'text',\n withCredentials?: boolean,\n },\n body: T|null): any {\n
 return {\n body,\n headers: options.headers,\n observe: options.observe,\n params: options.params,\n
 reportProgress: options.reportProgress,\n responseType: options.responseType,\n withCredentials:
options.withCredentials,\n }; \n}\n\nexport type HttpObserve = 'body'|'events'|'response';\n\n/**\n * Performs HTTP
requests.\n *\n * This service is available as an injectable class, with methods to perform HTTP requests.\n *\n * Each
request method has multiple signatures, and the return type varies based on\n * the signature that is called (mainly
the values of `observe` and `responseType`).\n *\n * Note that the `responseType` *options* value is a String that
identifies the\n * single data type of the response.\n *\n * A single overload version of the method handles each
response type.\n *\n * The value of `responseType` cannot be a union, as the combined signature could imply.\n\n *\n
*\n * @usageNotes\n * Sample HTTP requests for the [Tour of Heroes](/tutorial/toh-pt0) application.\n *\n * ### HTTP
Request Example\n *\n * ```\n * // GET heroes whose name contains search term\n * searchHeroes(term: string):
observable<Hero[]>{\n * const params = new HttpParams({fromString: 'name=term'});\n * return
this.httpClient.request('GET', this.heroesUrl, {responseType: 'json', params});\n * }\n * ```\n * ### JSONP
Example\n *\n * ```\n * requestJsonp(url, callback = 'callback') {\n * return this.httpClient.jsonp(this.heroesURL,
callback);\n * }\n * ```\n *\n * ### PATCH Example\n *\n * ```\n * // PATCH one of the heroes' name\n * patchHero
(id: number, heroName: string): Observable<> {\n * const url = `${this.heroesUrl}/${id}`; // PATCH
api/heroes/42\n * return this.httpClient.patch(url, {name: heroName}, httpOptions)\n *
.pipe(catchError(this.handleError('patchHero')));\n * }\n * ```\n *\n * @see [HTTP Guide](guide/http)\n *\n
*\n * @publicApi\n *\n\n@Injectable()\nexport class HttpClient {\n constructor(private handler: HttpHandler) {\n }\n\n
/**\n * Sends an `HttpRequest` and returns a stream of `HTTPEvents`. \n *\n * @return An `Observable` of the
response, with the response body as a stream of `HTTPEvents`. \n *\n *\n request<R>(req: HttpRequest<any>):
Observable<HttpEvent<R>>;\n\n /**\n * Constructs a request that interprets the body as an `ArrayBuffer` and
returns the response in\n * an `ArrayBuffer`. \n *\n * @param method The HTTP method. \n *\n * @param url The
endpoint URL. \n *\n * @param options The HTTP options to send with the request. \n *\n *\n * @return An
`Observable` of the response, with the response body as an `ArrayBuffer`. \n *\n *\n request(method: string, url:
string, options: {\n body?: any,\n headers?: HttpHeaders|{\n [header: string]: string | string[]\n },\n observe?:
'body',\n params?: HttpParams|{\n [param: string]: string | string[]\n },\n reportProgress?: boolean, responseType:
'arraybuffer',\n withCredentials?: boolean,\n }): Observable<ArrayBuffer>;\n\n /**\n * Constructs a request that
interprets the body as a blob and returns\n * the response as a blob. \n *\n * @param method The HTTP

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method.\n * @param url The endpoint URL.\n * @param options The HTTP options to send with the request.\n
*\n * @return An `Observable` of the response, with the response body of type `Blob`.\n */\n request(method:
string, url: string, options: {\n body?: any,\n headers?: HttpHeaders|{[header: string]: string | string[]},\n
observe?: 'body',\n params?: HttpParams|{[param: string]: string | string[]},\n reportProgress?: boolean,
responseType: 'blob',\n withCredentials?: boolean,\n }): Observable<Blob>;\n\n /**\n * Constructs a request
that interprets the body as a text string and\n * returns a string value.\n */\n * @param method The HTTP
method.\n * @param url The endpoint URL.\n * @param options The HTTP options to send with the request.\n
*\n * @return An `Observable` of the response, with the response body of type string.\n */\n request(method:
string, url: string, options: {\n body?: any,\n headers?: HttpHeaders|{[header: string]: string | string[]},\n
observe?: 'body',\n params?: HttpParams|{[param: string]: string | string[]},\n reportProgress?: boolean,
responseType: 'text',\n withCredentials?: boolean,\n }): Observable<string>;\n\n /**\n * Constructs a request
that interprets the body as an `ArrayBuffer` and returns the\n * the full event stream.\n */\n * @param method
The HTTP method.\n * @param url The endpoint URL.\n * @param options The HTTP options to send with
the request.\n *\n * @return An `Observable` of the response, with the response body as an array of
`HTTPEvents` for\n * the\n * request.\n */\n request(method: string, url: string, options: {\n body?: any,\n
headers?: HttpHeaders|{[header: string]: string | string[]},\n params?: HttpParams|{[param: string]: string |
string[]}, observe: 'events',\n reportProgress?: boolean, responseType: 'arraybuffer',\n withCredentials?:
boolean,\n }): Observable<HttpEvent<ArrayBuffer>>;\n\n /**\n * Constructs a request that interprets the body as
a `Blob` and returns\n * the full event stream.\n */\n * @param method The HTTP method.\n * @param url
The endpoint URL.\n * @param options The HTTP options to send with the request.\n *\n * @return An
`Observable` of of all `HttpEvents` for the request,\n * with the response body of type `Blob`.\n */\n
request(method: string, url: string, options: {\n body?: any,\n headers?: HttpHeaders|{[header: string]: string |
string[]}, observe: 'events',\n params?: HttpParams|{[param: string]: string | string[]},\n reportProgress?:
boolean, responseType: 'blob',\n withCredentials?: boolean,\n }): Observable<HttpEvent<Blob>>;\n\n /**\n *
Constructs a request which interprets the body as a text string and returns the full event\n * stream.\n */\n
*\n * @param method The HTTP method.\n * @param url The endpoint URL.\n * @param options The HTTP
options to send with the request.\n *\n * @return An `Observable` of all `HttpEvents` for the request,\n *
with the response body of type string.\n */\n request(method: string, url: string, options: {\n body?: any,\n
headers?: HttpHeaders|{[header: string]: string | string[]}, observe: 'events',\n params?: HttpParams|{[param:
string]: string | string[]},\n reportProgress?: boolean, responseType: 'text',\n withCredentials?: boolean,\n
}): Observable<HttpEvent<string>>;\n\n /**\n * Constructs a request which interprets the body as a JSON object
and returns the full event\n * stream.\n */\n * @param method The HTTP method.\n * @param url The endpoint
URL.\n * @param options The HTTP options to send with the request.\n *\n * @return An `Observable` of all
`HttpEvents` for the request,\n * with the response body of type `Object`.\n */\n request(method: string, url:
string, options: {\n body?: any,\n headers?: HttpHeaders|{[header: string]: string | string[]},\n reportProgress?:
boolean, observe: 'events',\n params?: HttpParams|{[param: string]: string | string[]},\n responseType?: 'json',\n
withCredentials?: boolean,\n }): Observable<HttpEvent<any>>;\n\n /**\n * Constructs a request which interprets
the body as a JSON object and returns the full event\n * stream.\n */\n * @param method The HTTP method.\n
*\n * @param method The HTTP method.\n * @param url The endpoint URL.\n * @param options The HTTP
options to send with the request.\n *\n * @return An `Observable` of all `HttpEvents` for the request,\n *
with the response body of type `R`.\n */\n request<R>(method: string, url:
string, options: {\n body?: any,\n headers?: HttpHeaders|{[header: string]: string | string[]},\n reportProgress?:
boolean, observe: 'events',\n params?: HttpParams|{[param: string]: string | string[]},\n responseType?: 'json',\n
withCredentials?: boolean,\n }): Observable<HttpEvent<R>>;\n\n /**\n * Constructs a request which interprets
the body as an `ArrayBuffer`\n * and returns the full `HTTPResponse`.\n */\n *\n * @param method The HTTP
method.\n * @param url The endpoint URL.\n * @param options The HTTP options to send with the request.\n
*\n * @return An `Observable` of the `HTTPResponse`, with the
response body as an `ArrayBuffer`.\n */\n request(method: string, url: string, options: {\n body?: any,\n
headers?: HttpHeaders|{[header: string]: string | string[]}, observe: 'response',\n params?: HttpParams|{[param:

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string]: string | string[]),\n reportProgress?: boolean, responseType: 'arraybuffer',\n withCredentials?: boolean,\n }): Observable<HttpResponse<ArrayBuffer>>;\n\n /**\n * Constructs a request which interprets the body as a
`Blob` and returns the full `HttpResponse`.\n * \n * @param method The HTTP method.\n * @param url
The endpoint URL.\n * @param options The HTTP options to send with the request.\n * \n * @return An
`Observable` of the `HttpResponse`, with the response body of type `Blob`.\n * \n request(method: string, url:
string, options: {\n body?: any,\n headers?: HttpHeaders|[header: string]: string | string[]}, observe:
'response',\n params?: HttpParams|[param: string]: string | string[]),\n reportProgress?: boolean, responseType:
'blob',\n withCredentials?: boolean,\n }): Observable<HttpResponse<Blob>>;\n\n /**\n * Constructs a request
which interprets the body as a text stream and returns the full\n * `HttpResponse`.\n * \n * @param method
The HTTP method.\n * @param url The endpoint URL.\n * @param options The HTTP options to send with
the request.\n * \n * @return An `Observable` of the HTTP response, with the response body of type string.\n
*\n * \n request(method: string, url: string, options: {\n body?: any,\n headers?: HttpHeaders|[header: string]:
string | string[]}, observe: 'response',\n params?: HttpParams|[param: string]: string | string[]),\n
reportProgress?: boolean, responseType: 'text',\n withCredentials?: boolean,\n }):
Observable<HttpResponse<string>>;\n\n /**\n * Constructs a request which interprets the body as a JSON object
and returns the full\n * `HttpResponse`.\n * \n * @param method The HTTP method.\n * @param url The
endpoint URL.\n * @param options The HTTP options to send with the request.\n * \n * @return An
`Observable` of the full `HttpResponse`,\n * with the response body of type `Object`.\n * \n request(method:
string, url: string, options: {\n body?: any,\n headers?: HttpHeaders|[header: string]: string | string[]),\n
reportProgress?: boolean, observe: 'response',\n params?: HttpParams|[param: string]: string | string[]),\n
responseType?: 'json',\n withCredentials?: boolean,\n }): Observable<HttpResponse<Object>>;\n\n /**\n *
Constructs a request which interprets the body as a JSON object and returns\n * the full `HttpResponse` with the
response body in the requested type.\n * \n * @param method The HTTP method.\n * @param url The
endpoint URL.\n * @param options The HTTP options to send with the request.\n * \n * @return An
`Observable` of the full `HttpResponse`, with the response body of type `R`.\n * \n request<R>(method: string,
url: string, options: {\n body?: any,\n headers?: HttpHeaders|[header: string]: string | string[]),\n
reportProgress?: boolean, observe: 'response',\n params?: HttpParams|[param: string]: string | string[]),\n
responseType?: 'json',\n withCredentials?: boolean,\n }): Observable<HttpResponse<R>>;\n\n /**\n *
Constructs a request which interprets the body as a JSON object and returns the full\n * `HttpResponse` as a
JSON object.\n * \n * @param method The HTTP method.\n * @param url The endpoint URL.\n * @param
options The HTTP options to send with the request.\n * \n * @return An `Observable` of the `HttpResponse`,
with the response body of type `Object`.\n * \n request(method: string, url: string, options?: {\n body?: any,\n
headers?: HttpHeaders|[header: string]: string | string[]),\n observe?: 'body',\n params?: HttpParams|[param:
string]: string | string[]),\n responseType?: 'json',\n reportProgress?: boolean,\n withCredentials?: boolean,\n
}): Observable<Object>;\n\n /**\n * Constructs a request which interprets the body as a JSON object\n * with the
response body of the requested type.\n * \n * @param method The HTTP method.\n * @param url The
endpoint URL.\n * @param options The HTTP options to send with the request.\n * \n * @return An
`Observable` of the `HttpResponse`, with the response body of type `R`.\n * \n request<R>(method: string, url:
string, options?: {\n body?: any,\n headers?: HttpHeaders|[header: string]: string | string[]),\n observe?:
'body',\n params?: HttpParams|[param: string]: string | string[]),\n responseType?: 'json',\n reportProgress?:
boolean,\n withCredentials?: boolean,\n }): Observable<R>;\n\n /**\n * Constructs a request where response
type and requested observable are not known statically.\n * \n * @param method The HTTP method.\n *
@param url The endpoint URL.\n * @param options The HTTP options to send with the request.\n * \n *
@return An `Observable` of the requested response, with body of type `any`.\n * \n request(method: string, url:
string, options?: {\n body?: any,\n headers?: HttpHeaders|[header: string]: string | string[]),\n params?:
HttpParams|[param: string]: string | string[]),\n observe?: HttpObserve,\n reportProgress?: boolean,\n
responseType?: 'arraybuffer'|'blob'|'json'|'text',\n withCredentials?: boolean,\n }): Observable<any>;\n\n /**\n *
Constructs an observable for a generic HTTP request that, when subscribed,\n * fires the request through the chain

```

of registered interceptors and on to the server. You can pass an `HttpRequest` directly as the only parameter. In this case, the call returns an observable of the raw `HttpEvent` stream. Alternatively you can pass an HTTP method as the first parameter, a URL string as the second, and an options hash containing the request body as the third. See `addBody()`. In this case, the specified `responseType` and `observe` options determine the type of returned observable. The `responseType` value determines how a successful response body is parsed. If `responseType` is the default `'json'`, you can pass a type interface for the resulting object as a type parameter to the call. The `observe` value determines the return type, according to what you are interested in observing. An `observe` value of `events` returns an observable of the raw `HttpEvent` stream, including progress events by default. An `observe` value of `response` returns an observable of `HttpResponse<T>`, where the `T` parameter depends on the `responseType` and any optionally provided type parameter. An `observe` value of `body` returns an observable of `<T>` with the same `T` body type.

```

request(first: string|HttpRequest<any>, url?: string, options: {
 body?: any,
 headers?: HttpHeaders|[header: string]: string | string[]},
 observe?: HttpObserve,
 params?: HttpParams|[param: string]: string | string[]},
 reportProgress?: boolean,
 responseType?: 'arraybuffer'|'blob'|'json'|'text',
 withCredentials?: boolean,
} = {}): Observable<any> {
 let req: HttpRequest<any>;
 // First, check whether the primary argument is an instance of `HttpRequest`.
 if (first instanceof HttpRequest) {
 // It is. The other arguments must be undefined (per the signatures) and can be
 // ignored.
 req = first;
 } else {
 // It's a string, so it represents a URL. Construct a request based on it,
 // and incorporate the remaining arguments (assuming `GET` unless a method is
 // provided.
 // Figure out the headers.
 let headers: HttpHeaders|undefined = undefined;
 if (options.headers instanceof HttpHeaders) {
 headers = options.headers;
 } else {
 headers = new HttpHeaders(options.headers);
 }
 // Sort out parameters.
 let params: HttpParams|undefined = undefined;
 if (!options.params) {
 if (options.params instanceof HttpParams) {
 params = options.params;
 } else {
 params = new HttpParams({fromObject: options.params} as HttpParamsOptions);
 }
 }
 // Construct the request.
 req = new HttpRequest(first, url!, (options.body !== undefined ? options.body : null), {
 headers,
 params,
 reportProgress: options.reportProgress,
 // By default, JSON is assumed to be returned for all calls.
 responseType: options.responseType || 'json',
 withCredentials: options.withCredentials,
 });
 // Start with an Observable.of() the initial request, and run the handler
 // (which includes all interceptors) inside a concatMap(). This way, the handler runs
 // inside an Observable chain, which causes interceptors to be re-run on every
 // subscription (this also makes retries re-run the handler, including interceptors).
 const events$: Observable<HttpEvent<any>> = Observable.of(req).pipe(concatMap((req:
 HttpRequest<any>) => this.handler.handle(req)));
 // If coming via the API signature which accepts a previously constructed
 // HttpRequest, the only option is to get the event stream. Otherwise, return the
 // event stream if that is what was requested.
 if (first instanceof HttpRequest || options.observe === 'events') {
 return events$;
 }
 // The requested stream contains either the full response or the body. In either
 // case, the first step is to filter the event stream to extract a stream of
 // responses(s).
 const res$: Observable<HttpResponse<any>> = events$.pipe(
 filter((event: HttpEvent<any>) => event instanceof HttpResponse));
 // Decide which stream to return.
 switch (options.observe || 'body') {
 case 'body':
 // The requested stream is the body. Map the response stream to the
 // response body. This could be done more simply, but a misbehaving
 // interceptor might transform the response body into a different format
 // and ignore the requested responseType. Guard against this by
 // validating that the response is of the requested type.
 switch (req.responseType) {
 case 'arraybuffer':
 return res$.pipe(map((res: HttpResponse<any>) => {
 // Validate that the body is an ArrayBuffer.
 if (res.body !== null && !(res.body instanceof ArrayBuffer)) {
 throw new Error('Response is not an ArrayBuffer.');
```

```

HttpResponse<any> => {\n // Validate that the body is a string.\n if (res.body !== null && typeof
res.body !== 'string') {\n throw new Error('Response is not a string.');

```

HTTP options to send with the request.\n \* \n \* @return An `Observable` of all the `HTTPEvents` for the request, with a response\n \* body in the requested type.\n \* \n delete<T>(url: string, options: {\n headers?: HttpHeaders|{\n header: string: string | string[]}, observe: 'events',\n params?: HttpParams|{\n param: string: string | string[]},\n reportProgress?: boolean,\n responseType?: 'json',\n withCredentials?: boolean,\n }): Observable<HttpEvent<T>>;\n\n /\*\*\n \* Constructs a `DELETE` request that interprets the body as an `ArrayBuffer` and returns\n \* the full `HTTPResponse`.\n \* \n \* @param url The endpoint URL.\n \* @param options The HTTP options to send with the request.\n \* \n \* @return An `Observable` of the full `HTTPResponse`, with the response body as an `ArrayBuffer`.\n \* \n delete(url: string, options: {\n headers?: HttpHeaders|{\n header: string: string | string[]}, observe: 'response',\n params?: HttpParams|{\n param: string: string | string[]},\n reportProgress?: boolean, responseType: 'arraybuffer',\n withCredentials?: boolean,\n }): Observable<HttpResponse<ArrayBuffer>>;\n\n /\*\*\n \* Constructs a `DELETE` request that interprets the body as a `Blob` and returns the full\n \* `HTTPResponse`.\n \* \n \* @param url The endpoint URL.\n \* @param options The HTTP options to send with the request.\n \* \n \* @return An `Observable` of the `HTTPResponse`, with the response body of type `Blob`.\n \* \n delete(url: string, options: {\n headers?: HttpHeaders|{\n header: string: string | string[]}, observe: 'response',\n params?: HttpParams|{\n param: string: string | string[]},\n reportProgress?: boolean, responseType: 'blob',\n withCredentials?: boolean,\n }): Observable<HttpResponse<Blob>>;\n\n /\*\*\n \* Constructs a `DELETE` request that interprets the body as a text stream and\n \* returns the full `HTTPResponse`.\n \* \n \* @param url The endpoint URL.\n \* @param options The HTTP options to send with the request.\n \* \n \* @return An `Observable` of the full `HTTPResponse`, with the response body of type string.\n \* \n delete(url: string, options: {\n headers?: HttpHeaders|{\n header: string: string | string[]}, observe: 'response',\n params?: HttpParams|{\n param: string: string | string[]},\n reportProgress?: boolean, responseType: 'text',\n withCredentials?: boolean,\n }): Observable<HttpResponse<string>>;\n\n /\*\*\n \* Constructs a `DELETE` request the interprets the body as a JSON object and returns\n \* the full `HTTPResponse`.\n \* \n \* @param url The endpoint URL.\n \* @param options The HTTP options to send with the request.\n \* \n \* @return An `Observable` of the `HTTPResponse`, with the response body of type `Object`.\n \* \n \* \n delete(url: string, options: {\n headers?: HttpHeaders|{\n header: string: string | string[]}, observe: 'response',\n params?: HttpParams|{\n param: string: string | string[]},\n reportProgress?: boolean,\n responseType?: 'json',\n withCredentials?: boolean,\n }): Observable<HttpResponse<Object>>;\n\n /\*\*\n \* Constructs a `DELETE` request that interprets the body as a JSON object\n \* and returns the full `HTTPResponse`.\n \* \n \* @param url The endpoint URL.\n \* @param options The HTTP options to send with the request.\n \* \n \* @return An `Observable` of the `HTTPResponse`, with the response body of the requested type.\n \* \n delete<T>(url: string, options: {\n headers?: HttpHeaders|{\n header: string: string | string[]}, observe: 'response',\n params?: HttpParams|{\n param: string: string | string[]},\n reportProgress?: boolean,\n responseType?: 'json',\n withCredentials?: boolean,\n }): Observable<HttpResponse<T>>;\n\n /\*\*\n \* Constructs a `DELETE` request that interprets the body as a JSON object and\n \* returns the response body as a JSON object.\n \* \n \* @param url The endpoint URL.\n \* @param options The HTTP options to send with the request.\n \* \n \* @return An `Observable` of the response, with the response body of type `Object`.\n \* \n \* \n delete(url: string, options?: {\n headers?: HttpHeaders|{\n header: string: string | string[]},\n observe?: 'body',\n params?: HttpParams|{\n param: string: string | string[]},\n reportProgress?: boolean,\n responseType?: 'json',\n withCredentials?: boolean,\n }): Observable<Object>;\n\n /\*\*\n \* Constructs a DELETE request that interprets the body as a JSON object and returns\n \* the response in a given type.\n \* \n \* @param url The endpoint URL.\n \* @param options The HTTP options to send with the request.\n \* \n \* @return An `Observable` of the `HTTPResponse`, with response body in the requested type.\n \* \n \* \n delete<T>(url: string, options?: {\n headers?: HttpHeaders|{\n header: string: string | string[]},\n observe?: 'body',\n params?: HttpParams|{\n param: string: string | string[]},\n reportProgress?: boolean,\n responseType?: 'json',\n withCredentials?: boolean,\n }): Observable<T>;\n\n /\*\*\n \* Constructs an observable that, when subscribed, causes the configured\n \* `DELETE` request to execute on the server. See the individual overloads for\n \* details on the return type.\n \* \n \* @param url The endpoint URL.\n \* @param options The

HTTP options to send with the request.

```

delete(url: string, options: {
 headers?:
 HttpHeaders|[header: string]: string | string[]},
 observe?: HttpObserve,
 params?: HttpParams|[param:
 string]: string | string[]},
 reportProgress?: boolean,
 responseType?: 'arraybuffer'|'blob'|'json'|'text',
 withCredentials?: boolean,
 } = {}): Observable<any>
 return this.request<any>('DELETE', url, options as
 any);

```

Constructs a `GET` request that interprets the body as an `ArrayBuffer` and returns the response in an `ArrayBuffer`.

```

@param url The endpoint URL.
@param options The HTTP
options to send with the request.
@return An `Observable` of the response, with the response body as an
`ArrayBuffer`.

```

```

get(url: string, options: {
 headers?: HttpHeaders|[header: string]: string | string[]},
 observe?: 'body',
 params?: HttpParams|[param: string]: string | string[]},
 reportProgress?: boolean,
 responseType: 'arraybuffer',
 withCredentials?: boolean,
 }): Observable<ArrayBuffer>;

```

Constructs a `GET` request that interprets the body as a `Blob` and returns the response as a `Blob`.

```

@param url The endpoint URL.
@param options The HTTP options to send with the request.
@return An `Observable` of the response, with the response body as an
`Blob`.

```

```

get(url: string, options: {
 headers?: HttpHeaders|[header: string]: string | string[]},
 observe?: 'body',
 params?: HttpParams|[param:
 string]: string | string[]},
 reportProgress?: boolean,
 responseType: 'blob',
 withCredentials?: boolean,
 }):
 Observable<Blob>;

```

Constructs a `GET` request that interprets the body as a text string and returns the response as a string value.

```

@param url The endpoint URL.
@param options The HTTP options
to send with the request.
@return An `Observable` of the response, with the response body of type
string.

```

```

get(url: string, options: {
 headers?: HttpHeaders|[header: string]: string | string[]},
 observe?:
 'body',
 params?: HttpParams|[param: string]: string | string[]},
 reportProgress?: boolean,
 responseType:
 'text',
 withCredentials?: boolean,
 }): Observable<string>;

```

Constructs a `GET` request that interprets the body as an `ArrayBuffer` and returns the full event stream.

```

@param url The
endpoint URL.
@param options The HTTP options to send with the request.
@return An
`Observable` of all `HttpEvents` for the request, with the response
body as an `ArrayBuffer`.

```

```

get(url:
 string, options: {
 headers?: HttpHeaders|[header: string]: string | string[]},
 observe: 'events',
 params?:
 HttpParams|[param: string]: string | string[]},
 reportProgress?: boolean,
 responseType: 'arraybuffer',
 withCredentials?: boolean,
 }): Observable<HttpEvent<ArrayBuffer>>;

```

Constructs a `GET` request that interprets the body as a `Blob` and returns the full event stream.

```

@param url The endpoint
URL.
@param options The HTTP options to send with the request.
@return An `Observable` of the
response, with the response body as a `Blob`.

```

```

get(url: string, options: {
 headers?: HttpHeaders|[header:
 string]: string | string[]},
 observe: 'events',
 params?:
 HttpParams|[param: string]: string | string[]},
 reportProgress?: boolean,
 responseType: 'blob',
 withCredentials?: boolean,
 }):
 Observable<HttpEvent<Blob>>;

```

Constructs a `GET` request that interprets the body as a text string and returns the full event stream.

```

@param url The endpoint URL.
@param options The HTTP
options to send with the request.
@return An `Observable` of the response, with the response body of type
string.

```

```

get(url: string, options: {
 headers?: HttpHeaders|[header: string]: string | string[]},
 observe:
 'events',
 params?: HttpParams|[param: string]: string | string[]},
 reportProgress?: boolean,
 responseType:
 'text',
 withCredentials?: boolean,
 }): Observable<HttpEvent<string>>;

```

Constructs a `GET` request that interprets the body as a JSON object and returns the full event stream.

```

@param url The endpoint URL.
@param options The HTTP options to send with the request.
@return An
`Observable` of the response, with the response body of type `Object`.

```

```

get(url: string, options: {
 headers?: HttpHeaders|[header: string]: string | string[]},
 observe: 'events',
 params?:
 HttpParams|[param: string]: string | string[]},
 reportProgress?: boolean,
 responseType?: 'json',
 withCredentials?: boolean,
 }): Observable<HttpEvent<Object>>;

```

Constructs a `GET` request that interprets the body as a JSON object and returns the full event stream.

```

@param url The endpoint URL.
@param options The
HTTP options to send with the request.
@return An `Observable` of the response, with a response body in
the requested type.

```

```

get<T>(url: string, options: {
 headers?: HttpHeaders|[header: string]: string |
 string[]},
 observe: 'events',
 params?:
 HttpParams|[param: string]: string | string[]},
 reportProgress?:

```

```

boolean, \n responseType?: 'json', \n withCredentials?: boolean, \n }): Observable<HttpEvent<T>>;\n\n /**\n * Constructs a `GET` request that interprets the body as an `ArrayBuffer` and\n * returns the full `HTTPResponse`.\n *\n * @param url The endpoint URL.\n * @param options The HTTP options to send with the request.\n *\n * @return An `Observable` of the `HTTPResponse` for the request,\n * with the response body as an\n `ArrayBuffer`.\n */\n get(url: string, options: {\n headers?: HttpHeaders|{\n [header: string]: string | string[]\n },\n observe: 'response',\n params?: HttpParams|{\n [param: string]: string | string[]\n },\n reportProgress?: boolean,\n responseType: 'arraybuffer',\n withCredentials?: boolean, \n }): Observable<HttpResponse<ArrayBuffer>>;\n\n /**\n * Constructs a `GET` request that interprets the body as a `Blob` and\n * returns the full `HTTPResponse`.\n *\n * @param url The endpoint URL.\n * @param options The HTTP options to send with the request.\n *\n * @return An `Observable` of the `HTTPResponse` for the request,\n * with the response body as a `Blob`.\n */\n get(url: string, options: {\n headers?: HttpHeaders|{\n [header: string]: string | string[]\n },\n observe: 'response',\n params?: HttpParams|{\n [param: string]: string | string[]\n },\n reportProgress?: boolean, responseType: 'blob',\n withCredentials?: boolean, \n }): Observable<HttpResponse<Blob>>;\n\n /**\n * Constructs a `GET` request that\n interprets the body as a text stream and\n * returns the full `HTTPResponse`.\n *\n * @param url The\n endpoint URL.\n * @param options The HTTP options to send with the request.\n *\n * @return An\n `Observable` of the `HTTPResponse` for the request,\n * with the response body of type string.\n */\n get(url:\n string, options: {\n headers?: HttpHeaders|{\n [header: string]: string | string[]\n },\n observe: 'response',\n params?:\n HttpParams|{\n [param: string]: string | string[]\n },\n reportProgress?: boolean, responseType: 'text',\n withCredentials?: boolean, \n }): Observable<HttpResponse<string>>;\n\n /**\n * Constructs a `GET` request that\n interprets the body as a JSON object and\n * returns the full `HTTPResponse`.\n *\n * @param url The\n endpoint URL.\n * @param options The HTTP options to send with the request.\n *\n * @return An\n `Observable` of the full `HttpResponse`,\n * with the response body of type `Object`.\n */\n get(url: string,\n options: {\n headers?: HttpHeaders|{\n [header: string]: string | string[]\n },\n observe: 'response',\n params?:\n HttpParams|{\n [param: string]: string | string[]\n },\n reportProgress?: boolean, \n responseType?: 'json',\n withCredentials?: boolean, \n }): Observable<HttpResponse<Object>>;\n\n /**\n * Constructs a `GET` request\n that interprets the body as a JSON object and\n * returns the full `HTTPResponse`.\n *\n * @param url The\n endpoint URL.\n * @param options The HTTP options to send with the request.\n *\n * @return An\n `Observable` of the full `HTTPResponse` for the request,\n * with a response body in the requested type.\n */\n get<T>(url: string, options: {\n headers?: HttpHeaders|{\n [header: string]: string | string[]\n },\n observe: 'response',\n params?:\n HttpParams|{\n [param: string]: string | string[]\n },\n reportProgress?: boolean, \n responseType?: 'json',\n withCredentials?: boolean, \n }): Observable<HttpResponse<T>>;\n\n /**\n * Constructs a `GET` request that\n interprets the body as a JSON object and\n * returns the response body as a JSON object.\n *\n * @param url\n The endpoint URL.\n * @param options The HTTP options to send with the request.\n *\n * @return An\n `Observable` of the response body as a JSON object.\n */\n get(url: string, options?: {\n headers?:\n HttpHeaders|{\n [header: string]: string | string[]\n },\n observe?: 'body',\n params?:\n HttpParams|{\n [param: string]:\n string | string[]\n },\n reportProgress?: boolean, \n responseType?: 'json',\n withCredentials?: boolean, \n }):\n Observable<Object>;\n\n /**\n * Constructs a `GET` request that interprets the body as a JSON object and\n returns\n * the response body in a given type.\n *\n * @param url The endpoint URL.\n * @param options\n The HTTP options to send with the request.\n *\n * @return An `Observable` of the `HTTPResponse`, with a\n response body in the requested type.\n */\n get<T>(url: string, options?: {\n headers?:\n HttpHeaders|{\n [header:\n string]: string | string[]\n },\n observe?: 'body',\n params?:\n HttpParams|{\n [param: string]:\n string | string[]\n },\n reportProgress?: boolean, \n responseType?: 'json',\n withCredentials?: boolean, \n }): Observable<T>;\n\n /**\n * Constructs an observable that, when subscribed, causes the configured\n * `GET` request to execute on the\n server. See the individual overloads for\n * details on the return type.\n */\n get(url: string, options: {\n headers?:\n HttpHeaders|{\n [header: string]:\n string | string[]\n },\n observe?:\n HttpObserve, \n params?:\n HttpParams|{\n [param: string]:\n string | string[]\n },\n reportProgress?: boolean, \n responseType?:\n 'arraybuffer'|'blob'|'json'|'text',\n withCredentials?: boolean, \n } = {}): Observable<any> {\n return\n this.request<any>('GET', url, options as any);\n }\n\n /**\n * Constructs a `HEAD` request that interprets the

```



body as an `ArrayBuffer` and\n \* returns the response as an `ArrayBuffer`.\n \*\n \* @param url The endpoint URL.\n \* @param options The HTTP options to send with the request.\n \*\n \* @return An `Observable` of the response, with the response body as an `ArrayBuffer`.\n \*/\n head(url: string, options: {\n headers?: HttpHeaders|{\n header: string]: string | string[]},\n observe?: 'body',\n params?: HttpParams|{\n param: string]: string | string[]},\n reportProgress?: boolean, responseType: 'arraybuffer',\n withCredentials?: boolean,\n }): Observable<ArrayBuffer>;\n\n /\*\*\n \* Constructs a `HEAD` request that interprets the body as a `Blob` and returns\n \* the response as a `Blob`.\n \*\n \* @param url The endpoint URL.\n \* @param options The HTTP options to send with the request.\n \*\n \* @return An `Observable` of the response, with the response body as a `Blob`.\n \*/\n head(url: string, options: {\n headers?: HttpHeaders|{\n header: string]: string | string[]},\n observe?: 'body',\n params?: HttpParams|{\n param: string]: string | string[]},\n reportProgress?: boolean, responseType: 'blob',\n withCredentials?: boolean,\n }): Observable<Blob>;\n\n /\*\*\n \* Constructs a `HEAD` request that interprets the body as a text string and returns the response\n \* as a string value.\n \*\n \* @param url The endpoint URL.\n \* @param options The HTTP options to send with the request.\n \*\n \* @return An `Observable` of the response, with the response body of type string.\n \*/\n head(url: string, options: {\n headers?: HttpHeaders|{\n header: string]: string | string[]},\n observe?: 'body',\n params?: HttpParams|{\n param: string]: string | string[]},\n reportProgress?: boolean, responseType: 'text',\n withCredentials?: boolean,\n }): Observable<string>;\n\n /\*\*\n \* Constructs a `HEAD` request that interprets the body as an `ArrayBuffer` and returns the full event stream.\n \*\n \* @param url The endpoint URL.\n \* @param options The HTTP options to send with the request.\n \*\n \* @return An `Observable` of tall `HttpEvents` for the request, with the response body as an `ArrayBuffer`.\n \*/\n head(url: string, options: {\n headers?: HttpHeaders|{\n header: string]: string | string[]},\n observe: 'events',\n params?: HttpParams|{\n param: string]: string | string[]},\n reportProgress?: boolean, responseType: 'arraybuffer',\n withCredentials?: boolean,\n }): Observable<HttpEvent<ArrayBuffer>>;\n\n /\*\*\n \* Constructs a `HEAD` request that interprets the body as a `Blob` and\n \* returns the full event stream.\n \*\n \* @param url The endpoint URL.\n \* @param options The HTTP options to send with the request.\n \*\n \* @return An `Observable` of all `HttpEvents` for the request, with the response body as a `Blob`.\n \*/\n head(url: string, options: {\n headers?: HttpHeaders|{\n header: string]: string | string[]},\n observe: 'events',\n params?: HttpParams|{\n param: string]: string | string[]},\n reportProgress?: boolean, responseType: 'blob',\n withCredentials?: boolean,\n }): Observable<HttpEvent<Blob>>;\n\n /\*\*\n \* Constructs a `HEAD` request that interprets the body as a text string\n \* and returns the full event stream.\n \*\n \* @param url The endpoint URL.\n \* @param options The HTTP options to send with the request.\n \*\n \* @return An `Observable` of all HttpEvents for the request, with the response body of type\n \* string.\n \*/\n head(url: string, options: {\n headers?: HttpHeaders|{\n header: string]: string | string[]},\n observe: 'events',\n params?: HttpParams|{\n param: string]: string | string[]},\n reportProgress?: boolean, responseType: 'text',\n withCredentials?: boolean,\n }): Observable<HttpEvent<string>>;\n\n /\*\*\n \* Constructs a `HEAD` request that interprets the body as a JSON object\n \* and returns the full HTTP event stream.\n \*\n \* @param url The endpoint URL.\n \* @param options The HTTP options to send with the request.\n \*\n \* @return An `Observable` of all `HTTPEvents` for the request, with a response body of\n \* type `Object`.\n \*/\n head(url: string, options: {\n headers?: HttpHeaders|{\n header: string]: string | string[]},\n observe: 'events',\n params?: HttpParams|{\n param: string]: string | string[]},\n reportProgress?: boolean,\n responseType?: 'json',\n withCredentials?: boolean,\n }): Observable<HttpEvent<Object>>;\n\n /\*\*\n \* Constructs a `HEAD` request that interprets the body as a JSON object and\n \* returns the full event stream.\n \*\n \* @return An `Observable` of all the `HTTPEvents` for the request\n \* , with a response body in the requested type.\n \*\n \* @param url The endpoint URL.\n \* @param options The HTTP options to send with the request.\n \*/\n head<T>(url: string, options: {\n headers?: HttpHeaders|{\n header: string]: string | string[]},\n observe: 'events',\n params?: HttpParams|{\n param: string]: string | string[]},\n reportProgress?: boolean,\n responseType?: 'json',\n withCredentials?: boolean,\n }): Observable<HttpEvent<T>>;\n\n /\*\*\n \* Constructs a `HEAD` request that interprets the body as an `ArrayBuffer` and returns the full HTTP response.\n \*\n \* @param url The endpoint URL.\n \* @param



`Observable` of the response object, with response body as an object.`
  
`*/n jsonp(url: string, callbackParam: string): Observable<Object>;`
  
`/**\n * Constructs a `JSONP` request for the given URL and name of the callback parameter.\n *\n * @param url The resource URL.\n * @param callbackParam The callback function name.\n *\n * You must install a suitable interceptor, such as one provided by `HttpClientJsonpModule`.\n * If no such interceptor is reached,\n * then the `JSONP` request can be rejected by the configured backend.\n *\n * @return An `Observable` of the response object, with response body in the requested type.`
  
`*/n jsonp<T>(url: string, callbackParam: string): Observable<T>;`
  
`/**\n * Constructs an `Observable` that, when subscribed, causes a request with the special method\n * `JSONP` to be dispatched via the interceptor pipeline.\n * The [JSONP pattern](https://en.wikipedia.org/wiki/JSONP) works around limitations of certain\n * API endpoints that don't support newer,\n * and preferable [CORS](https://developer.mozilla.org/en-US/docs/Web/HTTP/CORS) protocol.\n * JSONP treats the endpoint API as a JavaScript file and tricks the browser to process the\n * requests even if the API endpoint is not located on the same domain (origin) as the client-side\n * application making the request.\n * The endpoint API must support JSONP callback for JSONP requests to work.\n * The resource API returns the JSON response wrapped in a callback function.\n * You can pass the callback function name as one of the query parameters.\n * Note that JSONP requests can only be used with `GET` requests.\n *\n * @param url The resource URL.\n * @param callbackParam The callback function name.\n *\n */n jsonp<T>(url: string, callbackParam: string): Observable<T> {\n return this.request<any>('JSONP', url, {\n params: new HttpParams().append(callbackParam, 'JSONP_CALLBACK'),\n observe: 'body',\n responseType: 'json',\n });\n }\n /**\n * Constructs an `OPTIONS` request that interprets the body as an\n * `ArrayBuffer` and returns the response as an `ArrayBuffer`.\n *\n * @param url The endpoint URL.\n * @param options HTTP options.\n *\n * @return An `Observable` of the response, with the response body as an `ArrayBuffer`.`
  
`*/n options(url: string, options: {\n headers?: HttpHeaders|{[header: string]: string | string[]},\n observe?: 'body',\n params?: HttpParams|{[param: string]: string | string[]},\n reportProgress?: boolean, responseType: 'arraybuffer',\n withCredentials?: boolean,\n }): Observable<ArrayBuffer>;`
  
`/**\n * Constructs an `OPTIONS` request that interprets the body as a `Blob` and returns\n * the response as a `Blob`.\n *\n * @param url The endpoint URL.\n * @param options HTTP options.\n *\n * @return An `Observable` of the response, with the response body as a `Blob`.`
  
`*/n options(url: string, options: {\n headers?: HttpHeaders|{[header: string]: string | string[]},\n observe?: 'body',\n params?: HttpParams|{[param: string]: string | string[]},\n reportProgress?: boolean, responseType: 'blob',\n withCredentials?: boolean,\n }): Observable<Blob>;`
  
`/**\n * Constructs an `OPTIONS` request that interprets the body as a text string and\n * returns a string value.\n *\n * @param url The endpoint URL.\n * @param options HTTP options.\n *\n * @return An `Observable` of the response, with the response body of type string.`
  
`*/n options(url: string, options: {\n headers?: HttpHeaders|{[header: string]: string | string[]},\n observe?: 'body',\n params?: HttpParams|{[param: string]: string | string[]},\n reportProgress?: boolean, responseType: 'text',\n withCredentials?: boolean,\n }): Observable<string>;`
  
`/**\n * Constructs an `OPTIONS` request that interprets the body as an `ArrayBuffer`\n * and returns the full event stream.\n *\n * @param url The endpoint URL.\n * @param options HTTP options.\n *\n * @return An `Observable` of all `HttpEvents` for the request,\n * with the response body as an `ArrayBuffer`.`
  
`*/n options(url: string, options: {\n headers?: HttpHeaders|{[header: string]: string | string[]},\n observe: 'events',\n params?: HttpParams|{[param: string]: string | string[]},\n reportProgress?: boolean, responseType: 'arraybuffer',\n withCredentials?: boolean,\n }): Observable<HttpEvent<ArrayBuffer>>;`
  
`/**\n * Constructs an `OPTIONS` request that interprets the body as a `Blob` and\n * returns the full event stream.\n *\n * @param url The endpoint URL.\n * @param options HTTP options.\n *\n * @return An `Observable` of all `HttpEvents` for the request,\n * with the response body as a `Blob`.`
  
`*/n options(url: string, options: {\n headers?: HttpHeaders|{[header: string]: string | string[]},\n observe: 'events',\n params?: HttpParams|{[param: string]: string | string[]},\n reportProgress?: boolean, responseType: 'blob',\n withCredentials?: boolean,\n }): Observable<HttpEvent<Blob>>;`
  
`/**\n * Constructs an `OPTIONS` request that interprets the body as a text string\n * and returns the full event stream.\n *\n * @param url The endpoint URL.\n * @param options HTTP options.\n *\n * @return An `Observable` of all the `HTTPEvents` for the request,\n * with the response body of`

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type string.\n *\n options(url: string, options: {\n headers?: HttpHeaders{[header: string]: string | string[]},
observe: 'events',\n params?: HttpParams{[param: string]: string | string[]},\n reportProgress?: boolean,
responseType: 'text',\n withCredentials?: boolean,\n }): Observable<HttpEvent<string>>;\n\n /**\n * Constructs
an `OPTIONS` request that interprets the body as a JSON object\n * and returns the full event stream.\n *\n *
@param url The endpoint URL.\n * @param options HTTP options.\n *\n * @return An `Observable` of all the
`HttpEvents` for the request with the response\n * body of type `Object`.\n *\n */\n\n options(url: string, options: {\n
headers?: HttpHeaders{[header: string]: string | string[]}, observe: 'events',\n params?: HttpParams{[param:
string]: string | string[]},\n reportProgress?: boolean,\n responseType?: 'json',\n withCredentials?: boolean,\n
}): Observable<HttpEvent<Object>>;\n\n /**\n * Constructs an `OPTIONS` request that interprets the body as a
JSON object and\n * returns the full event stream.\n *\n * @param url The endpoint URL.\n * @param options
HTTP options.\n *\n * @return An `Observable` of all the `HttpEvents` for the request,\n * with a response body
in the requested type.\n *\n */\n\n options<T>(url: string, options: {\n headers?: HttpHeaders{[header: string]:
string | string[]}, observe: 'events',\n params?: HttpParams{[param: string]: string | string[]},\n reportProgress?:
boolean,\n responseType?: 'json',\n withCredentials?: boolean,\n }): Observable<HttpEvent<T>>;\n\n /**\n *
Constructs an `OPTIONS` request that interprets the body as an `ArrayBuffer`\n * and returns the full HTTP
response.\n *\n * @param url The endpoint URL.\n * @param options HTTP options.\n *\n * @return An
`Observable` of the `HttpResponse` for the request,\n * with the response body as an `ArrayBuffer`.\n *\n */\n\n
options(url: string, options: {\n headers?: HttpHeaders{[header: string]: string | string[]}, observe: 'response',\n
params?: HttpParams{[param: string]: string | string[]},\n reportProgress?: boolean, responseType: 'arraybuffer',\n
withCredentials?: boolean,\n }): Observable<HttpResponse<ArrayBuffer>>;\n\n /**\n * Constructs an
`OPTIONS` request that interprets the body as a `Blob`\n * and returns the full `HttpResponse`.\n *\n *
@param url The endpoint URL.\n * @param options HTTP options.\n *\n * @return An `Observable` of the
`HttpResponse` for the request,\n * with the response body as a `Blob`.\n *\n */\n\n options(url: string, options: {\n
headers?: HttpHeaders{[header: string]: string | string[]}, observe: 'response',\n params?: HttpParams{[param:
string]: string | string[]},\n reportProgress?: boolean, responseType: 'blob',\n withCredentials?: boolean,\n
}): Observable<HttpResponse<Blob>>;\n\n /**\n * Constructs an `OPTIONS` request that interprets the body as text
stream\n * and returns the full `HttpResponse`.\n *\n * @param url The endpoint URL.\n * @param options
HTTP options.\n *\n * @return An `Observable` of the `HttpResponse` for the request,\n * with the response
body of type string.\n *\n */\n\n options(url: string, options: {\n headers?: HttpHeaders{[header: string]: string |
string[]}, observe: 'response',\n params?: HttpParams{[param: string]: string | string[]},\n reportProgress?:
boolean, responseType: 'text',\n withCredentials?: boolean,\n }): Observable<HttpResponse<string>>;\n\n /**\n *
Constructs an `OPTIONS` request that interprets the body as a JSON object\n * and returns the full
`HttpResponse`.\n *\n * @param url The endpoint URL.\n * @param options HTTP options.\n *\n *
@return An `Observable` of the `HttpResponse` for the request,\n * with the response body of type `Object`.\n
*\n */\n\n options(url: string, options: {\n headers?: HttpHeaders{[header: string]: string | string[]}, observe:
'response',\n params?: HttpParams{[param: string]: string | string[]},\n reportProgress?: boolean,\n
responseType?: 'json',\n withCredentials?: boolean,\n }): Observable<HttpResponse<Object>>;\n\n /**\n *
Constructs an `OPTIONS` request that interprets the body as a JSON object and\n * returns the full
`HttpResponse`.\n *\n * @param url The endpoint URL.\n * @param options HTTP options.\n *\n *
@return An `Observable` of the `HttpResponse` for the request,\n * with a response body in the requested type.\n
*\n */\n\n options<T>(url: string, options: {\n headers?: HttpHeaders{[header: string]: string | string[]}, observe:
'response',\n params?: HttpParams{[param: string]: string | string[]},\n reportProgress?: boolean,\n
responseType?: 'json',\n withCredentials?: boolean,\n }): Observable<HttpResponse<T>>;\n\n /**\n *
Constructs an `OPTIONS` request that interprets the body as a JSON object and returns the\n * response body as a
JSON object.\n *\n * @param url The endpoint URL.\n * @param options HTTP options.\n *\n * @return An
`Observable` of the response, with the response body as a JSON object.\n *\n */\n\n options(url: string, options?: {\n
headers?: HttpHeaders{[header: string]: string | string[]},\n observe?: 'body',\n params?: HttpParams{[param:
string]: string | string[]},\n reportProgress?: boolean,\n responseType?: 'json',\n withCredentials?: boolean,\n

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}): Observable<Object>;\n\n /**\n * Constructs an `OPTIONS` request that interprets the body as a JSON object
and returns the\n * response in a given type.\n *\n * @param url The endpoint URL.\n * @param options
HTTP options.\n *\n * @return An `Observable` of the `HttpResponse`, with a response body of the given
type.\n */\n options<T>(url: string, options?: {\n headers?: HttpHeaders|[header: string]: string | string[]},\n
observe?: 'body',\n params?: HttpParams|[param: string]: string | string[]},\n reportProgress?: boolean,\n
responseType?: 'json',\n withCredentials?: boolean,\n }): Observable<T>;\n\n /**\n * Constructs an
`Observable` that, when subscribed, causes the configured\n * `OPTIONS` request to execute on the server. This
method allows the client\n * to determine the supported HTTP methods and other capabilities of an endpoint,\n *
without implying a resource action. See the individual overloads for\n * details on the return type.\n */\n
options(url: string, options: {\n headers?: HttpHeaders|[header: string]: string | string[]},\n observe?:
HttpObserve,\n params?: HttpParams|[param: string]: string | string[]},\n reportProgress?: boolean,\n
responseType?: 'arraybuffer'|'blob'|'json'|'text',\n withCredentials?: boolean,\n } = {}): Observable<any> {\n
return this.request<any>('OPTIONS', url, options as any);\n }\n\n /**\n * Constructs a `PATCH` request that
interprets the body as an `ArrayBuffer` and returns\n * the response as an `ArrayBuffer`.\n *\n * @param url
The endpoint URL.\n * @param body The resources to edit.\n * @param options HTTP options.\n *\n *
@return An `Observable` of the response, with the response `body` as an `ArrayBuffer`.\n */\n patch(url: string,
body: any|null, options: {\n headers?: HttpHeaders|[header: string]: string | string[]},\n observe?: 'body',\n
params?: HttpParams|[param: string]: string | string[]},\n reportProgress?: boolean, responseType: 'arraybuffer',\n
withCredentials?: boolean,\n }): Observable<ArrayBuffer>;\n\n /**\n * Constructs a `PATCH` request that
interprets the body as a `Blob` and returns the response\n * as a `Blob`.\n *\n * @param url The endpoint
URL.\n * @param body The resources to edit.\n * @param options HTTP options.\n *\n * @return An
`Observable` of the response, with the response body as a `Blob`.\n */\n patch(url: string, body: any|null, options:
{\n headers?: HttpHeaders|[header: string]: string | string[]},\n observe?: 'body',\n params?:
HttpParams|[param: string]: string | string[]},\n reportProgress?: boolean, responseType: 'blob',\n
withCredentials?: boolean,\n }): Observable<Blob>;\n\n /**\n * Constructs a `PATCH` request that interprets the
body as a text string and\n * returns the response as a string value.\n *\n * @param url The endpoint URL.\n *
@return An `Observable` of the response, with a response body of type string.\n */\n patch(url: string, body: any|null, options: {\n
headers?: HttpHeaders|[header: string]: string | string[]},\n observe?: 'body',\n params?: HttpParams|[param: string]:
string | string[]},\n reportProgress?: boolean, responseType: 'text',\n withCredentials?: boolean,\n }):
Observable<string>;\n\n /**\n * Constructs a `PATCH` request that interprets the body as an `ArrayBuffer` and\n
* returns the the full event stream.\n *\n * @param url The endpoint URL.\n * @param body The resources to
edit.\n * @param options HTTP options.\n *\n * @return An `Observable` of all the `HTTPEvents` for the
request,\n * with the response body as an `ArrayBuffer`.\n */\n patch(url: string, body: any|null, options: {\n
headers?: HttpHeaders|[header: string]: string | string[]}, observe: 'events',\n params?: HttpParams|[param:
string]: string | string[]},\n reportProgress?: boolean, responseType: 'arraybuffer',\n withCredentials?: boolean,\n
}): Observable<HttpEvent<ArrayBuffer>>;\n\n /**\n * Constructs a `PATCH` request that interprets the body as a
`Blob`\n * and returns the full event stream.\n *\n * @param url The endpoint URL.\n * @param body The
resources to edit.\n * @param options HTTP options.\n *\n * @return An `Observable` of all the `HTTPEvents`
for the request, with the\n * response body as `Blob`.\n */\n patch(url: string, body: any|null, options: {\n
headers?: HttpHeaders|[header: string]: string | string[]}, observe: 'events',\n params?: HttpParams|[param:
string]: string | string[]},\n reportProgress?: boolean, responseType: 'blob',\n withCredentials?: boolean,\n
}): Observable<HttpEvent<Blob>>;\n\n /**\n * Constructs a `PATCH` request that interprets the body as a text string
and\n * returns the full event stream.\n *\n * @param url The endpoint URL.\n * @param body The resources
to edit.\n * @param options HTTP options.\n *\n * @return An `Observable` of all the `HTTPEvents` for the
request, with a\n * response body of type string.\n */\n patch(url: string, body: any|null, options: {\n
headers?: HttpHeaders|[header: string]: string | string[]}, observe: 'events',\n params?: HttpParams|[param: string]:
string | string[]},\n reportProgress?: boolean, responseType: 'text',\n withCredentials?: boolean,\n }):

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Observable<HttpEvent<string>>;\n\n /**\n * Constructs a `PATCH` request that interprets the body as a JSON
object\n * and returns the full event stream.\n *\n * @param url The endpoint URL.\n * @param body The
resources to edit.\n * @param options HTTP options.\n *\n * @return An `Observable` of all the `HTTPEvents`
for the request,\n * with a response body of type `Object`.\n */\n patch(url: string, body: any|null, options: {\n
headers?: HttpHeaders|{\n header: string]: string | string[]},\n observe: 'events',\n params?: HttpParams|{\n param:
string]: string | string[]},\n reportProgress?: boolean,\n responseType?: 'json',\n withCredentials?: boolean,\n
}): Observable<HttpEvent<Object>>;\n\n /**\n * Constructs a `PATCH` request that interprets the body as a
JSON object\n * and returns the full event stream.\n *\n * @param url The endpoint URL.\n * @param body
The resources to edit.\n * @param options HTTP options.\n *\n * @return An `Observable` of all the
`HTTPEvents` for the request,\n * with a response body in the requested type.\n */\n patch<T>(url: string, body:
any|null, options: {\n headers?: HttpHeaders|{\n header: string]: string | string[]},\n observe: 'events',\n
params?: HttpParams|{\n param: string]: string | string[]},\n reportProgress?: boolean,\n responseType?: 'json',\n
withCredentials?: boolean,\n }): Observable<HttpEvent<T>>;\n\n /**\n * Constructs a `PATCH` request that
interprets the body as an `ArrayBuffer`\n * and returns the full `HTTPResponse`.\n *\n * @param url The
endpoint URL.\n * @param body The resources to edit.\n * @param options HTTP options.\n *\n * @return
An `Observable` of the `HttpResponse` for the request,\n * with the response body as an `ArrayBuffer`.\n */\n
patch(url: string, body: any|null, options: {\n headers?: HttpHeaders|{\n header: string]: string | string[]},\n
observe: 'response',\n params?: HttpParams|{\n param: string]: string | string[]},\n reportProgress?: boolean,\n
responseType: 'arraybuffer',\n withCredentials?: boolean,\n }): Observable<HttpResponse<ArrayBuffer>>;\n\n /**\n *
Constructs a `PATCH` request that interprets the body as a `Blob` and returns the full\n * `HTTPResponse`.\n *\n *
@param url The endpoint URL.\n * @param body The resources to edit.\n * @param options HTTP options.\n *\n *
@return An `Observable` of the `HttpResponse` for the request,\n * with the response body as a `Blob`.\n */\n
patch(url: string, body: any|null, options: {\n headers?: HttpHeaders|{\n header: string]: string | string[]},\n
observe: 'response',\n params?: HttpParams|{\n param: string]: string | string[]},\n reportProgress?: boolean,\n
responseType: 'blob',\n withCredentials?: boolean,\n }): Observable<HttpResponse<Blob>>;\n\n /**\n *
Constructs a `PATCH` request that interprets the body as a text stream and returns the\n * full `HTTPResponse`.\n *\n *
@param url The endpoint URL.\n * @param body The resources to edit.\n * @param options HTTP
options.\n *\n * @return An `Observable` of the `HttpResponse` for the request,\n * with a response body of
type string.\n */\n patch(url: string, body: any|null, options: {\n headers?: HttpHeaders|{\n header: string]:
string | string[]},\n observe: 'response',\n params?: HttpParams|{\n param: string]: string | string[]},\n
reportProgress?: boolean,\n responseType: 'text',\n withCredentials?: boolean,\n }): Observable<HttpResponse<string>>;\n\n /**\n *
Constructs a `PATCH` request that interprets the body as a JSON object\n * and returns the full
`HTTPResponse`.\n *\n * @param url The endpoint URL.\n * @param body The resources to edit.\n *
@param options HTTP options.\n *\n * @return An `Observable` of the `HttpResponse` for the request,\n * with
a response body in the requested type.\n */\n patch(url: string, body: any|null, options: {\n headers?:
HttpHeaders|{\n header: string]: string | string[]},\n observe: 'response',\n params?: HttpParams|{\n param:
string]: string | string[]},\n reportProgress?: boolean,\n responseType?: 'json',\n withCredentials?: boolean,\n
}): Observable<HttpResponse<Object>>;\n\n /**\n * Constructs a `PATCH` request that interprets the body as a
JSON object\n * and returns the full `HTTPResponse`.\n *\n * @param url The endpoint URL.\n * @param
body The resources to edit.\n * @param options HTTP options.\n *\n * @return An `Observable` of the
`HttpResponse` for the request,\n * with a response body in the given type.\n */\n patch<T>(url: string, body:
any|null, options: {\n headers?: HttpHeaders|{\n header: string]: string | string[]},\n observe: 'response',\n
params?: HttpParams|{\n param: string]: string | string[]},\n reportProgress?: boolean,\n responseType?: 'json',\n
withCredentials?: boolean,\n }): Observable<HttpResponse<T>>;\n\n /**\n * Constructs a `PATCH` request that
interprets the body as a JSON object and\n * returns the response body as a JSON object.\n *\n * @param url
The endpoint URL.\n * @param body The resources to edit.\n * @param options HTTP options.\n *\n *
@return An `Observable` of the response, with the response body as a JSON object.\n */\n patch(url: string, body:
any|null, options?: {\n headers?: HttpHeaders|{\n header: string]: string | string[]},\n observe?: 'body',\n

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params?: HttpParams|{[param: string]: string | string[]},\n reportProgress?: boolean,\n responseType?: 'json',\n withCredentials?: boolean,\n }): Observable<Object>;\n\n /**\n * Constructs a `PATCH` request that interprets the body as a JSON object\n * and returns the response in a given type.\n *\n * @param url The endpoint URL.\n * @param body The resources to edit.\n * @param options HTTP options.\n *\n * @return An `Observable` of the `HttpResponse` for the request,\n * with a response body in the given type.\n */\n patch<T>(url: string, body: any|null, options?: {\n headers?: HttpHeaders|{[header: string]: string | string[]},\n observe?: 'body',\n params?: HttpParams|{[param: string]: string | string[]},\n reportProgress?: boolean,\n responseType?: 'json',\n withCredentials?: boolean,\n }): Observable<T>;\n\n /**\n * Constructs an observable that, when subscribed, causes the configured\n * `PATCH` request to execute on the server. See the individual overloads for\n * details on the return type.\n */\n patch(url: string, body: any|null, options: {\n headers?: HttpHeaders|{[header: string]: string | string[]},\n observe?: HttpObserve,\n params?: HttpParams|{[param: string]: string | string[]},\n reportProgress?: boolean,\n responseType?: 'arraybuffer'|'blob'|'json'|'text',\n withCredentials?: boolean,\n } = {}): Observable<any> {\n return this.request<any>('PATCH', url, addBody(options, body));\n }\n\n /**\n * Constructs a `POST` request that interprets the body as an `ArrayBuffer` and returns\n * an `ArrayBuffer`.\n *\n * @param url The endpoint URL.\n * @param body The content to replace with.\n * @param options HTTP options.\n *\n * @return An `Observable` of the response, with the response body as an `ArrayBuffer`.\n */\n post(url: string, body: any|null, options: {\n headers?: HttpHeaders|{[header: string]: string | string[]},\n observe?: 'body',\n params?: HttpParams|{[param: string]: string | string[]},\n reportProgress?: boolean, responseType: 'arraybuffer',\n withCredentials?: boolean,\n }): Observable<ArrayBuffer>;\n\n /**\n * Constructs a `POST` request that interprets the body as a `Blob` and returns the\n * response as a `Blob`.\n *\n * @param url The endpoint URL.\n * @param body The content to replace with.\n * @param options HTTP options.\n *\n * @return An `Observable` of the response, with the response body as a `Blob`.\n */\n post(url: string, body: any|null, options: {\n headers?: HttpHeaders|{[header: string]: string | string[]},\n observe?: 'body',\n params?: HttpParams|{[param: string]: string | string[]},\n reportProgress?: boolean, responseType: 'blob',\n withCredentials?: boolean,\n }): Observable<Blob>;\n\n /**\n * Constructs a `POST` request that interprets the body as a text string and\n * returns the response as a string value.\n *\n * @param url The endpoint URL.\n * @param body The content to replace with.\n * @param options HTTP options.\n *\n * @return An `Observable` of the response, with a response body of type string.\n */\n post(url: string, body: any|null, options: {\n headers?: HttpHeaders|{[header: string]: string | string[]},\n observe?: 'body',\n params?: HttpParams|{[param: string]: string | string[]},\n reportProgress?: boolean, responseType: 'text',\n withCredentials?: boolean,\n }): Observable<string>;\n\n /**\n * Constructs a `POST` request that interprets the body as an `ArrayBuffer` and\n * returns the full event stream.\n *\n * @param url The endpoint URL.\n * @param body The content to replace with.\n * @param options HTTP options.\n *\n * @return An `Observable` of all `HttpEvents` for the request,\n * with the response body as an `ArrayBuffer`.\n */\n post(url: string, body: any|null, options: {\n headers?: HttpHeaders|{[header: string]: string | string[]},\n observe: 'events',\n params?: HttpParams|{[param: string]: string | string[]},\n reportProgress?: boolean, responseType: 'arraybuffer',\n withCredentials?: boolean,\n }): Observable<HttpEvent<ArrayBuffer>>;\n\n /**\n * Constructs a `POST` request that interprets the body as a `Blob` and returns the response in an observable of the full event stream.\n *\n * @param url The endpoint URL.\n * @param body The content to replace with.\n * @param options HTTP options.\n *\n * @return An `Observable` of all `HttpEvents` for the request, with the response body as `Blob`.\n */\n post(url: string, body: any|null, options: {\n headers?: HttpHeaders|{[header: string]: string | string[]},\n observe: 'events',\n params?: HttpParams|{[param: string]: string | string[]},\n reportProgress?: boolean, responseType: 'blob',\n withCredentials?: boolean,\n }): Observable<HttpEvent<Blob>>;\n\n /**\n * Constructs a `POST` request that interprets the body as a text string and returns the full\n * event stream.\n *\n * @param url The endpoint URL.\n * @param body The content to replace with.\n * @param options HTTP options.\n *\n * @return An `Observable` of all `HttpEvents` for the request,\n * with a response body of type string.\n */\n post(url: string, body: any|null, options: {\n headers?: HttpHeaders|{[header: string]: string | string[]},\n observe: 'events',\n params?: HttpParams|{[param: string]: string | string[]},\n })

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string[]),\n reportProgress?: boolean, responseType: 'text',\n withCredentials?: boolean,\n }): Observable<HttpEvent<string>>;\n\n /**\n * Constructs a POST request that interprets the body as a JSON object
and returns the full event\n * stream.\n * @param url The endpoint URL.\n * @param body The content to
replace with.\n * @param options HTTP options\n * @return An `Observable` of all `HttpEvents` for the
request,\n * with a response body of type `Object`.\n */\n post(url: string, body: any|null, options: {\n headers?:
HttpHeaders|{\n [header: string]: string | string[]}, observe: 'events',\n params?: HttpParams|{\n [param: string]: string |
string[]},\n reportProgress?: boolean,\n responseType?: 'json',\n withCredentials?: boolean,\n }): Observable<HttpEvent<Object>>;\n\n /**\n * Constructs a POST request that interprets the body as a JSON
object and returns the full event\n * stream.\n * @param url The endpoint URL.\n * @param body The
content to replace with.\n * @param options HTTP options\n * @return An `Observable` of all `HttpEvents`
for the request,\n * with a response body in the requested type.\n */\n post<T>(url: string, body: any|null, options:
{\n headers?: HttpHeaders|{\n [header: string]: string | string[]}, observe: 'events',\n params?: HttpParams|{\n [param:
string]: string | string[]},\n reportProgress?: boolean,\n responseType?: 'json',\n withCredentials?: boolean,\n }): Observable<HttpEvent<T>>;\n\n /**\n * Constructs a POST request that interprets the body as an
`ArrayBuffer`\n * and returns the full `HTTPResponse`.\n * @param url The endpoint URL.\n * @param
body The content to replace with.\n * @param options HTTP options\n * @return An `Observable` of the
`HTTPResponse` for the request,\n * with the response body as an\n * `ArrayBuffer`.\n */\n post(url: string, body:
any|null, options: {\n headers?: HttpHeaders|{\n [header: string]: string | string[]}, observe: 'response',\n params?:
HttpParams|{\n [param: string]: string | string[]},\n reportProgress?: boolean, responseType: 'arraybuffer',\n withCredentials?:
boolean,\n }): Observable<HttpEvent<ArrayBuffer>>;\n\n /**\n * Constructs a `POST`
request that interprets the body as a `Blob` and returns the full\n * `HTTPResponse`.\n * @param url The
endpoint URL.\n * @param body The content to replace with.\n * @param options HTTP options\n * @return An `Observable` of the `HTTPResponse` for the request,\n * with the response body as a `Blob`.\n */\n post(url: string, body: any|null, options: {\n headers?:
HttpHeaders|{\n [header: string]: string | string[]}, observe: 'response',\n params?: HttpParams|{\n [param: string]: string | string[]},\n reportProgress?: boolean, responseType:
'blob',\n withCredentials?: boolean,\n }): Observable<HttpEvent<Blob>>;\n\n /**\n * Constructs a `POST`
request that interprets the body as a text stream and returns\n * the full `HTTPResponse`.\n * @param url
The endpoint URL.\n * @param body The content to replace with.\n * @param options HTTP options\n * @return An `Observable` of the `HTTPResponse` for the request,\n * with a response body of type string.\n */\n post(url: string, body: any|null, options: {\n headers?:
HttpHeaders|{\n [header: string]: string | string[]}, observe: 'response',\n params?: HttpParams|{\n [param: string]: string | string[]},\n reportProgress?: boolean, responseType:
'text',\n withCredentials?: boolean,\n }): Observable<HttpEvent<string>>;\n\n /**\n * Constructs a `POST`
request that interprets the body as a JSON object\n * and returns the full `HTTPResponse`.\n * @param url
The endpoint URL.\n * @param body The content to replace with.\n * @param options HTTP options\n * @return An `Observable` of the `HTTPResponse` for the request,\n * with a response body of type\n * `Object`.\n */\n post(url: string, body: any|null, options: {\n headers?:
HttpHeaders|{\n [header: string]: string | string[]}, observe: 'response',\n params?: HttpParams|{\n [param: string]: string | string[]},\n reportProgress?: boolean,\n responseType?: 'json',\n withCredentials?: boolean,\n }): Observable<HttpEvent<Object>>;\n\n /**\n * Constructs a `POST`
request that interprets the body as a JSON object and returns the full\n * `HTTPResponse`.\n * @param url
The endpoint URL.\n * @param body The content to replace with.\n * @param options
HTTP options\n * @return An `Observable` of the `HTTPResponse` for the request,\n * with a response body in
the\n * requested type.\n */\n post<T>(url: string, body: any|null, options: {\n headers?:
HttpHeaders|{\n [header: string]: string | string[]}, observe: 'response',\n params?: HttpParams|{\n [param: string]:
string | string[]},\n reportProgress?: boolean,\n responseType?: 'json',\n withCredentials?: boolean,\n }): Observable<HttpEvent<T>>;\n\n /**\n * Constructs a `POST` request that interprets the body as a\n * JSON
object and returns the response body as a JSON object.\n * @param url The endpoint URL.\n * @param
body The content to replace with.\n * @param options HTTP options\n * @return An `Observable` of the
response,\n * with the response body as a JSON object.\n */\n post(url: string, body: any|null, options?: {\n headers?:

```



```

HttpHeaders|[header: string]: string | string[]],\n observe?: 'body',\n params?: HttpParams|[param: string]:
string | string[]],\n reportProgress?: boolean,\n responseType?: 'json',\n withCredentials?: boolean,\n }):
Observable<Object>;\n\n /**\n * Constructs a `POST` request that interprets the body as a JSON object\n * and
returns an observable of the response.\n *\n * @param url The endpoint URL.\n * @param body The content to
replace with.\n * @param options HTTP options\n *\n * @return An `Observable` of the `HTTPResponse` for
the request, with a response body in the\n * requested type.\n */\n post<T>(url: string, body: any|null, options?:
{\n headers?: HttpHeaders|[header: string]: string | string[]],\n observe?: 'body',\n params?:
HttpParams|[param: string]: string | string[]],\n reportProgress?: boolean,\n responseType?: 'json',\n
withCredentials?: boolean,\n }): Observable<T>;\n\n /**\n * Constructs an observable that, when subscribed,
causes the configured\n * `POST` request to execute on the server. The server responds with the location of\n *
the replaced resource. See the individual overloads for\n * details on the return type.\n */\n post(url: string, body:
any|null, options: {\n headers?: HttpHeaders|[header: string]: string | string[]],\n observe?: HttpObserve,\n
params?: HttpParams|[param: string]: string | string[]],\n reportProgress?: boolean,\n responseType?:
'arraybuffer'|'blob'|'json'|'text',\n withCredentials?: boolean,\n } = {}): Observable<any> {\n return
this.request<any>(POST, url, addBody(options, body));\n }\n\n /**\n * Constructs a `PUT` request that interprets
the body as an `ArrayBuffer` and returns the\n * response as an `ArrayBuffer`.\n *\n * @param url The endpoint
URL.\n * @param body The resources to add/update.\n * @param options HTTP options\n *\n * @return An
`Observable` of the response, with the response body as an `ArrayBuffer`.\n */\n put(url: string, body: any|null,
options: {\n headers?: HttpHeaders|[header: string]: string | string[]],\n observe?: 'body',\n params?:
HttpParams|[param: string]: string | string[]],\n reportProgress?: boolean, responseType: 'arraybuffer',\n
withCredentials?: boolean,\n }): Observable<ArrayBuffer>;\n\n /**\n * Constructs a `PUT` request that interprets
the body as a `Blob` and returns\n * the response as a `Blob`.\n *\n * @param url The endpoint URL.\n *
@param body The resources to add/update.\n * @param options HTTP options\n *\n * @return An
`Observable` of the response, with the response body as a `Blob`.\n */\n put(url: string, body: any|null, options: {\n
headers?: HttpHeaders|[header: string]: string | string[]],\n observe?: 'body',\n params?: HttpParams|[param:
string]: string | string[]],\n reportProgress?: boolean, responseType: 'blob',\n withCredentials?: boolean,\n
}): Observable<Blob>;\n\n /**\n * Constructs a `PUT` request that interprets the body as a text string and\n *
returns the response as a string value.\n *\n * @param url The endpoint URL.\n * @param body The resources to
add/update.\n * @param options HTTP options\n *\n * @return An `Observable` of the response, with a
response body of type string.\n */\n put(url: string, body: any|null, options: {\n headers?: HttpHeaders|[header:
string]: string | string[]],\n observe?: 'body',\n params?: HttpParams|[param: string]: string | string[]],\n
reportProgress?: boolean, responseType: 'text',\n withCredentials?: boolean,\n }): Observable<string>;\n\n /**\n
* Constructs a `PUT` request that interprets the body as an `ArrayBuffer` and\n * returns the full event stream.\n
*\n * @param url The endpoint URL.\n * @param body The resources to add/update.\n * @param options
HTTP options\n *\n * @return An `Observable` of all `HttpEvents` for the request,\n * with the response body
as an `ArrayBuffer`.\n */\n put(url: string, body: any|null, options: {\n headers?: HttpHeaders|[header: string]:
string | string[]], observe: 'events',\n params?: HttpParams|[param: string]: string | string[]],\n reportProgress?:
boolean, responseType: 'arraybuffer',\n withCredentials?: boolean,\n }):
Observable<HttpEvent<ArrayBuffer>>;\n\n /**\n * Constructs a `PUT` request that interprets the body as a
`Blob` and returns the full event\n * stream.\n *\n * @param url The endpoint URL.\n * @param body The
resources to add/update.\n * @param options HTTP options\n *\n * @return An `Observable` of all
`HttpEvents` for the request,\n * with the response body as a `Blob`.\n */\n put(url: string, body: any|null,
options: {\n headers?: HttpHeaders|[header: string]: string | string[]], observe: 'events',\n params?:
HttpParams|[param: string]: string | string[]],\n reportProgress?: boolean, responseType: 'blob',\n
withCredentials?: boolean,\n }): Observable<HttpEvent<Blob>>;\n\n /**\n * Constructs a `PUT` request that
interprets the body as a text string and returns the full event\n * stream.\n *\n * @param url The endpoint
URL.\n * @param body The resources to add/update.\n * @param options HTTP options\n *\n * @return An
`Observable` of all HttpEvents for the request, with a response body\n * of type string.\n */\n put(url: string,

```

```

body: any|null, options: {\n headers?: HttpHeaders|[header: string]: string | string[]], observe: 'events',\n
params?: HttpParams|[param: string]: string | string[]],\n reportProgress?: boolean, responseType: 'text',\n
withCredentials?: boolean,\n }): Observable<HttpEvent<string>>;\n\n /**\n * Constructs a `PUT` request that
interprets the body as a JSON object and returns the full event\n * stream.\n * @param url The endpoint
URL.\n * @param body The resources to add/update.\n * @param options HTTP options\n * @return An
`Observable` of all `HttpEvents` for the request, with a response body of\n * type `Object`.\n */\n
put(url: string, body: any|null, options: {\n headers?: HttpHeaders|[header: string]: string | string[]],
observe: 'events',\n
params?: HttpParams|[param: string]: string | string[]],\n reportProgress?: boolean,\n
responseType?: 'json',\n
withCredentials?: boolean,\n }): Observable<HttpEvent<Object>>;\n\n /**\n * Constructs a `PUT` request that
interprets the body as a JSON object and returns the\n * full event stream.\n * @param url The endpoint
URL.\n * @param body The resources to add/update.\n * @param options HTTP options\n * @return An
`Observable` of all `HttpEvents` for the request,\n * with a response body in the requested type.\n */\n
put<T>(url: string, body: any|null, options: {\n headers?: HttpHeaders|[header: string]: string | string[]],
observe:
'events',\n
params?: HttpParams|[param: string]: string | string[]],\n reportProgress?: boolean,\n
responseType?: 'json',\n
withCredentials?: boolean,\n }): Observable<HttpEvent<T>>;\n\n /**\n * Constructs a
`PUT` request that interprets the body as an\n * `ArrayBuffer` and returns an observable of the full HTTP
response.\n * @param url The endpoint URL.\n * @param body The resources to add/update.\n * @param
options HTTP options\n * @return An `Observable` of the `HTTPResponse` for the request, with the response
body as an\n * `ArrayBuffer`.\n */\n
put(url: string, body: any|null, options: {\n headers?:
HttpHeaders|[header: string]: string | string[]], observe: 'response',\n
params?: HttpParams|[param: string]:
string | string[]],\n reportProgress?: boolean, responseType: 'arraybuffer',\n
withCredentials?: boolean,\n }): Observable<HttpResponse<ArrayBuffer>>;\n\n /**\n * Constructs a `PUT` request that interprets the body as a
`Blob` and returns the\n * full HTTP response.\n * @param url The endpoint URL.\n * @param body The
resources to add/update.\n * @param options HTTP options\n * @return An `Observable` of the
`HTTPResponse` for the request,\n * with the response body as a `Blob`.\n */\n
put(url: string, body: any|null, options: {\n headers?: HttpHeaders|[header: string]: string | string[]],
observe: 'response',\n
params?:
HttpParams|[param: string]: string | string[]],\n reportProgress?: boolean, responseType: 'blob',\n
withCredentials?: boolean,\n }): Observable<HttpResponse<Blob>>;\n\n /**\n * Constructs a `PUT` request that
interprets the body as a text stream and returns the\n * full HTTP response.\n * @param url The endpoint
URL.\n * @param body The resources to add/update.\n * @param options HTTP options\n * @return An
`Observable` of the `HTTPResponse` for the request, with a response body of type\n * string.\n */\n
put(url: string, body: any|null, options: {\n headers?: HttpHeaders|[header: string]: string | string[]],
observe: 'response',\n
params?: HttpParams|[param: string]: string | string[]],\n reportProgress?: boolean, responseType: 'text',\n
withCredentials?: boolean,\n }): Observable<HttpResponse<string>>;\n\n /**\n * Constructs a `PUT` request that
interprets the body as a JSON object and returns the full HTTP\n * response.\n * @param url The endpoint
URL.\n * @param body The resources to add/update.\n * @param options HTTP options\n * @return An
`Observable` of the `HTTPResponse` for the request, with a response body\n * of type `Object`.\n */\n
put(url: string, body: any|null, options: {\n headers?: HttpHeaders|[header: string]: string | string[]],
observe: 'response',\n
params?: HttpParams|[param: string]: string | string[]],\n reportProgress?: boolean,\n
responseType?: 'json',\n
withCredentials?: boolean,\n }): Observable<HttpResponse<Object>>;\n\n /**\n * Constructs a `PUT` request
that interprets the body as an instance of the requested type and\n * returns the full HTTP response.\n * @param url The endpoint URL.\n * @param body The resources to add/update.\n * @param options HTTP
options\n * @return An `Observable` of the `HTTPResponse` for the request,\n * with a response body in
the requested type.\n */\n
put<T>(url: string, body: any|null, options: {\n headers?: HttpHeaders|[header:
string]: string | string[]], observe: 'response',\n
params?: HttpParams|[param: string]: string | string[]],\n
reportProgress?: boolean,\n
responseType?: 'json',\n
withCredentials?: boolean,\n }): Observable<HttpResponse<T>>;\n\n /**\n * Constructs a `PUT` request that interprets the body as a JSON
object\n * and returns an observable of JSON object.\n * @param url The endpoint URL.\n * @param body

```

The resources to add/update.

```

 * @param options HTTP options
 * @return An `Observable` of the response as a JSON object.
 * put(url: string, body: any|null, options?: {
 headers?: HttpHeaders|[header: string]: string | string[]],
 observe?: 'body',
 params?: HttpParams|[param: string]: string | string[]],
 reportProgress?: boolean,
 responseType?: 'json',
 withCredentials?: boolean,
 }): Observable<Object>;
 /**
 * Constructs a `PUT` request that interprets the body as an instance of the requested type
 * and returns an observable of the requested type.
 * @param url The endpoint URL.
 * @param body The resources to add/update.
 * @param options HTTP options
 * @return An `Observable` of the requested type.
 * put<T>(url: string, body: any|null, options?: {
 headers?: HttpHeaders|[header: string]: string | string[]],
 observe?: 'body',
 params?: HttpParams|[param: string]: string | string[]],
 reportProgress?: boolean,
 responseType?: 'json',
 withCredentials?: boolean,
 }): Observable<T>;
 /**
 * Constructs an observable that, when subscribed, causes the configured
 * `PUT` request to execute on the server. The `PUT` method replaces an existing resource
 * with a new set of values. See the individual overloads for details on the return type.
 * put(url: string, body: any|null, options?: {
 headers?: HttpHeaders|[header: string]: string | string[]],
 observe?: HttpObserve,
 params?: HttpParams|[param: string]: string | string[]],
 reportProgress?: boolean,
 responseType?: 'arraybuffer'|'blob'|'json'|'text',
 withCredentials?: boolean,
 }) = {
 return this.request<any>('PUT', url, addBody(options, body));
 };
 /**
 * @license
 * Copyright Google LLC All Rights Reserved.
 * Use of this source code is governed by an MIT-style license that can be
 * found in the LICENSE file at https://angular.io/license
 */
 @Injectable()
 class HttpInterceptor {
 constructor(private next: HttpHandler, private interceptor: HttpInterceptor) {}
 handle(req: HttpRequest<any>): Observable<HttpEvent<any>> {
 return this.interceptor.intercept(req, this.next);
 }
 }
 /**
 * A multi-provider token that represents the array of registered
 * `HttpInterceptor` objects.
 * @publicApi
 */
 @Injectable()
 export const HTTP_INTERCEPTORS = new InjectionToken<HttpInterceptor[]>('HTTP_INTERCEPTORS');
 @Injectable()
 export class NoopInterceptor implements HttpInterceptor {
 intercept(req: HttpRequest<any>, next: HttpHandler):
 Observable<HttpEvent<any>> {
 return next.handle(req);
 }
 }
 /**
 * @license
 * Copyright Google LLC All Rights Reserved.
 * Use of this source code is governed by an MIT-style license that can be
 * found in the LICENSE file at https://angular.io/license
 */
 @Injectable()
 export class DOCUMENT from '@angular/common';
 @Injectable()
 export class Inject, Injectable from '@angular/core';
 @Injectable()
 export class Observable, Observer from rxjs;
 @Injectable()
 export class HttpBackend, HttpHandler from './backend';
 @Injectable()
 export class HttpRequest from './request';
 @Injectable()
 export class HttpResponse, HttpEvent, HttpEventType, HttpErrorResponse from './response';
 /**
 * Every request made through JSONP needs a callback name
 */

```

```

that's unique across the whole page. Each request is assigned an id and the callback name is constructed from
that. The next id to be assigned is tracked in a global variable here that is shared among all applications on the
page.
let nextRequestId: number = 0;
Error text given when a JSONP script is injected, but doesn't invoke the
callback passed in its URL.
export const JSONP_ERR_NO_CALLBACK = 'JSONP injected script did not
invoke callback.';
Error text given when a request is passed to the JsonpClientBackend that doesn't have a
request method JSONP.
export const JSONP_ERR_WRONG_METHOD = 'JSONP requests must use JSONP
request method.';
export const JSONP_ERR_WRONG_RESPONSE_TYPE = 'JSONP requests must use Json
response type.';
DI token/abstract type representing a map of JSONP callbacks.
In the browser,
this should always be the `window` object.
In the browser,
export abstract class JsonpCallbackContext {
[key:
string]: (data: any) => void;
}
Processes an `HttpRequest` with the JSONP method, by performing
JSONP style requests.
@see `HttpHandler`
@see `HttpXHRBackend`
@api
@Inject()
export class JsonpClientBackend implements HttpBackend {
/** A resolved promise that
can be used to schedule microtasks in the event handlers.
private readonly resolvedPromise =
Promise.resolve();
constructor(private callbackMap: JsonpCallbackContext, @Inject(DOCUMENT) private
document: any) {}
/** Get the name of the next callback method, by incrementing the global
`nextRequestId`.
private nextCallback(): string {
return `ng_jsonp_callback_${nextRequestId++}`;
}
/** Processes a JSONP request and returns an event stream of the results.
@param req The request
object.
@return An observable of the response events.
handle(req: HttpRequest<never>):
Observable<HttpEvent<any>> {
// Firstly, check both the method and response type. If either doesn't match
// then the request was improperly routed here and cannot be handled.
if (req.method !== 'JSONP') {
throw
new Error(JSONP_ERR_WRONG_METHOD);
} else if (req.responseType !== 'json') {
throw new
Error(JSONP_ERR_WRONG_RESPONSE_TYPE);
}
// Everything else happens inside the Observable
boundary.
return new Observable<HttpEvent<any>>((observer: Observer<HttpEvent<any>>) => {
// The
first step to make a request is to generate the callback name, and replace the
// callback placeholder in the URL
with the name. Care has to be taken here to ensure
// a trailing &, if matched, gets inserted back into the URL in
the correct place.
const callback = this.nextCallback();
const url =
req.urlWithParams.replace(/=JSONP_CALLBACK(&|$)/, `=${callback}$1`);
// Construct the <script> tag
and point it at the URL.
const node = this.document.createElement('script');
node.src = url;
// A
JSONP request requires waiting for multiple callbacks. These variables
// are closed over and track state across
those callbacks.
// The response object, if one has been received, or null otherwise.
let body: any|null =
null;
// Whether the response callback has been called.
let finished: boolean = false;
// Whether
the request has been cancelled (and thus any other callbacks)
// should be ignored.
let cancelled: boolean =
false;
// Set the response callback in this.callbackMap (which will be the window
// object in the
browser. The script being loaded via the <script> tag will
// eventually call this callback.
this.callbackMap[callback] = (data?: any) => {
// Data has been received from the JSONP script. Firstly,
delete this callback.
delete this.callbackMap[callback];
// Next, make sure the request wasn't cancelled
in the meantime.
if (cancelled) {
return;
}
// Set state to indicate data was received.
body = data;
finished = true;
};
// cleanup() is a utility closure that removes the <script> from the
page and
// the response callback from the window. This logic is used in both the
// success, error, and
cancellation paths, so it's extracted out for convenience.
const cleanup = () => {
// Remove the <script>
tag if it's still on the page.
if (node.parentNode) {
node.parentNode.removeChild(node);
}
// Remove the response callback from the callbackMap (window object in the
// browser).
delete
this.callbackMap[callback];
};
// onLoad() is the success callback which runs after the response
callback
// if the JSONP script loads successfully. The event itself is unimportant.
// If something went
wrong, onLoad() may run without the response callback
// having been invoked.
const onLoad = (event:
Event) => {
// Do nothing if the request has been cancelled.
if (cancelled) {
return;
}
// We wrap it in an extra Promise, to ensure the microtask
// is scheduled after the loaded endpoint has
executed any potential microtask itself,
// which is not guaranteed in Internet Explorer and EdgeHTML. See

```



```

error message when a user attempts to use\n // HttpClient.jsonp() without installing the HttpClientJsonpModule\n
if (req.method === 'JSONP') {\n throw new Error(\n `Attempted to construct Jsonp request without\n
HttpClientJsonpModule installed.`);\n }\n\n // Everything happens on Observable subscription.\n return new\n
Observable((observer: Observer<HttpEvent<any>>) => {\n // Start by setting up the XHR object with request\n
method, URL, and withCredentials flag.\n const xhr = this.xhrFactory.build();\n xhr.open(req.method,\n
req.urlWithParams);\n if (!req.withCredentials) {\n xhr.withCredentials = true;\n }\n\n // Add all the\n
requested headers.\n req.headers.forEach((name, values) => xhr.setRequestHeader(name, values.join(','));\n\n\n
// Add an Accept header if one isn't present already.\n if (!req.headers.has('Accept')) {\n\n
xhr.setRequestHeader('Accept', 'application/json, text/plain, */*');\n }\n\n // Auto-detect the Content-Type\n
header if one isn't present already.\n if (!req.headers.has('Content-Type')) {\n const detectedType =\n
req.detectContentTypeHeader();\n // Sometimes Content-Type detection fails.\n if (detectedType !== null)\n
{\n xhr.setRequestHeader('Content-Type', detectedType);\n }\n }\n\n // Set the responseType if one\n
was requested.\n if (req.responseType) {\n const responseType = req.responseType.toLowerCase();\n\n\n
// JSON responses need to be processed as text. This is because if the server\n // returns an XSSI-prefixed JSON\n
response, the browser will fail to parse it,\n // xhr.response will be null, and xhr.responseText cannot be\n
accessed to\n // retrieve the prefixed JSON data in order to strip the prefix. Thus, all JSON\n // is parsed by\n
first requesting text and then applying JSON.parse.\n xhr.responseType = ((responseType !== 'json') ?\n
responseType : 'text') as any;\n }\n\n // Serialize the request body if one is present. If not, this will be set to\n
null.\n const reqBody = req.serializeBody();\n\n // If progress events are enabled, response headers will be\n
delivered\n // in two events - the HttpHeadersResponse event and the full HttpResponse\n // event. However,\n
since response headers don't change in between these\n // two events, it doesn't make sense to parse them twice.\n
So headerResponse\n // caches the data extracted from the response whenever it's first parsed,\n // to ensure\n
parsing isn't duplicated.\n let headerResponse: HttpHeadersResponse|null = null;\n\n // partialFromXhr extracts\n
the HttpHeadersResponse from the current XMLHttpRequest\n // state, and memoizes it into headerResponse.\n
const partialFromXhr = (): HttpHeadersResponse => {\n if (headerResponse !== null) {\n return\n
headerResponse;\n }\n\n // Read status and normalize an IE9 bug (http://bugs.jquery.com/ticket/1450).\n
const status: number = xhr.status === 1223 ? 204 : xhr.status;\n const statusText = xhr.statusText || 'OK';\n\n
// Parse headers from XMLHttpRequest - this step is lazy.\n const headers = new\n
HttpHeaders(xhr.getAllResponseHeaders());\n\n // Read the response URL from the XMLHttpRequest\n
instance and fall back on the\n // request URL.\n const url = getResponseUrl(xhr) || req.url;\n\n //\n
Construct the HttpHeadersResponse and memoize it.\n headerResponse = new HttpHeadersResponse({ headers,\n
status, statusText, url});\n return headerResponse;\n });\n\n // Next, a few closures are defined for the\n
various events which XMLHttpRequest can\n // emit. This allows them to be unregistered as event listeners\n
later.\n\n // First up is the load event, which represents a response being fully available.\n const onLoad = ()\n
=> {\n // Read response state from the memoized partial data.\n let { headers, status, statusText, url } =\n
partialFromXhr();\n\n // The body will be read out if present.\n let body: any|null = null;\n\n if (status\n
!== 204) {\n // Use XMLHttpRequest.response if set, responseText otherwise.\n body = (typeof\n
xhr.response === 'undefined') ? xhr.responseText : xhr.response;\n }\n\n // Normalize another potential bug\n
(this one comes from CORS).\n if (status === 0) {\n status = !!body ? 200 : 0;\n }\n\n // ok\n
determines whether the response will be transmitted on the event or\n // error channel. Unsuccessful status\n
codes (not 2xx) will always be errors,\n // but a successful status code can still result in an error if the user\n
// asked for JSON data and the body cannot be parsed as such.\n let ok = status >= 200 && status < 300;\n\n
// Check whether the body needs to be parsed as JSON (in many cases the browser\n // will have done that\n
already).\n if (req.responseType === 'json' && typeof body === 'string') {\n // Save the original body,\n
before attempting XSSI prefix stripping.\n const originalBody = body;\n body =\n
body.replace(XSSI_PREFIX, '');\n try {\n // Attempt the parse. If it fails, a parse error should be\n
delivered to the user.\n body = body !== '' ? JSON.parse(body) : null;\n } catch (error) {\n //\n
Since the JSON.parse failed, it's reasonable to assume this might not have been a\n // JSON response. Restore

```



```

style license that can be found in the LICENSE file at https://angular.io/license
import {DOCUMENT, parseCookieValue as parseCookieValue} from '@angular/common';
import {Inject, Injectable, InjectionToken, PLATFORM_ID} from '@angular/core';
import {Observable} from 'rxjs';
import {HttpHandler} from './backend';
import {HttpInterceptor} from './interceptor';
import {HttpRequest} from './request';
import {HttpEvent} from './response';
export const XSRF_COOKIE_NAME = new InjectionToken<string>('XSRF_COOKIE_NAME');
export const XSRF_HEADER_NAME = new InjectionToken<string>('XSRF_HEADER_NAME');
/**
 * Retrieves the current XSRF token to use with the next outgoing request.
 */
@publicApi
export abstract class HttpXsrfTokenExtractor {
 /**
 * Get the XSRF token to use with an outgoing request.
 * Will be called for every request, so the token may change between requests.
 */
 abstract getToken(): string|null;
}
/**
 * `HttpXsrfTokenExtractor` which retrieves the token from a cookie.
 */
@Injectable()
export class HttpXsrfCookieExtractor implements HttpXsrfTokenExtractor {
 private lastCookieString: string = '';
 private lastToken: string|null = null;
 /**
 * @internal for testing
 */
 parseCount: number = 0;
 constructor(
 @Inject(DOCUMENT) private doc: any,
 @Inject(PLATFORM_ID) private platform: string,
 @Inject(XSRF_COOKIE_NAME) private cookieName: string
) {}
 getToken(): string|null {
 if (this.platform === 'server') {
 return null;
 }
 const cookieString = this.doc.cookie || '';
 if (cookieString !== this.lastCookieString) {
 this.parseCount++;
 this.lastToken = parseCookieValue(cookieString, this.cookieName);
 this.lastCookieString = cookieString;
 }
 return this.lastToken;
 }
}
/**
 * `HttpInterceptor` which adds an XSRF token to eligible outgoing requests.
 */
@Injectable()
export class HttpXsrfInterceptor implements HttpInterceptor {
 constructor(
 private tokenService: HttpXsrfTokenExtractor,
 @Inject(XSRF_HEADER_NAME) private headerName: string
) {}
 intercept(req: HttpRequest<any>, next: HttpHandler): Observable<HttpEvent<any>> {
 const lcUrl = req.url.toLowerCase();
 // Skip both non-mutating requests and absolute URLs.
 // Non-mutating requests don't require a token, and absolute URLs require special handling
 // anyway as the cookie set on our origin is not the same as the token expected by another origin.
 if (req.method === 'GET' || req.method === 'HEAD' || lcUrl.startsWith('http://') || lcUrl.startsWith('https://')) {
 return next.handle(req);
 }
 const token = this.tokenService.getToken();
 // Be careful not to overwrite an existing header of the same name.
 if (token !== null && !req.headers.has(this.headerName)) {
 req = req.clone({
 headers: req.headers.set(this.headerName, token);
 });
 }
 return next.handle(req);
 }
}
/**
 * @license
 * Copyright Google LLC All Rights Reserved.
 * Use of this source code is governed by an MIT-style license that can be found in the LICENSE file at https://angular.io/license
 */
import {Injectable, Injector, ModuleWithProviders, NgModule} from '@angular/core';
import {Observable} from 'rxjs';
import {HttpBackend, HttpHandler} from './backend';
import {HttpClient} from './client';
import {HTTP_INTERCEPTORS, HttpInterceptor, HttpInterceptorHandler, NoopInterceptor} from './interceptor';
import {JsonpCallbackContext, JsonpClientBackend, JsonpInterceptor} from './jsonp';
import {HttpRequest} from './request';
import {HttpEvent} from './response';
import {BrowserXhr, HttpXhrBackend, XhrFactory} from './xhr';
import {HttpXsrfCookieExtractor, HttpXsrfInterceptor, HttpXsrfTokenExtractor, XSRF_COOKIE_NAME, XSRF_HEADER_NAME} from './xsrf';
/**
 * An injectable `HttpHandler` that applies multiple interceptors to a request before passing it to the given `HttpBackend`.
 */
/**
 * The interceptors are loaded lazily from the injector, to allow interceptors to themselves inject classes depending indirectly on `HttpInterceptingHandler` itself.
 */
@see `HttpInterceptor`
@Injectable()
export class HttpInterceptingHandler implements HttpHandler {
 private chain: HttpHandler|null = null;
 constructor(
 private backend: HttpBackend,
 private injector: Injector
) {}
 handle(req: HttpRequest<any>): Observable<HttpEvent<any>> {
 if (this.chain === null) {
 const interceptors = this.injector.get(HTTP_INTERCEPTORS, []);
 this.chain = interceptors.reduceRight(
 (next, interceptor) => new HttpInterceptorHandler(next, interceptor),
 this.backend);
 }
 return this.chain.handle(req);
 }
}
/**
 * Constructs an `HttpHandler` that applies interceptors to a request before passing it to the given `HttpBackend`.
 */
/**
 * Use as a factory function within `HttpClientModule`.
 */
export function interceptingHandler(
 backend: HttpBackend,
 interceptors: HttpInterceptor[]|null = []): HttpHandler {
 if (!interceptors) {
 return backend;
 }
 return

```



```

interceptors.reduceRight(\n (next, interceptor) => new HttpInterceptorHandler(next, interceptor),
backend);\n}\n\n/**\n * Factory function that determines where to store JSONP callbacks.\n *\n * Ordinarily
JSONP callbacks are stored on the `window` object, but this may not exist\n * in test environments. In that case,
callbacks are stored on an anonymous object instead.\n *\n */\nexport function jsonpCallbackContext(): Object
{\n if (typeof window === 'object') {\n return window;\n }\n return {};\n}\n\n/**\n * Configures XSRF
protection support for outgoing requests.\n *\n * For a server that supports a cookie-based XSRF protection
system,\n * use directly to configure XSRF protection with the correct\n * cookie and header names.\n *\n * If no
names are supplied, the default cookie name is `XSRF-TOKEN`\n * and the default header name is `X-XSRF-
TOKEN`.\n *\n * @publicApi\n */\n@NgModule({\n providers: [\n HttpXsrfInterceptor,\n { provide:
HTTP_INTERCEPTORS, useExisting: HttpXsrfInterceptor, multi: true },\n { provide: HttpXsrfTokenExtractor,
useClass: HttpXsrfCookieExtractor },\n { provide: XSRF_COOKIE_NAME, useValue: 'XSRF-TOKEN' },\n
 { provide: XSRF_HEADER_NAME, useValue: 'X-XSRF-TOKEN' },\n],\n})\nexport class HttpClientXsrfModule
{\n /**\n * Disable the default XSRF protection.\n */\n static disable():
ModuleWithProviders<HttpClientXsrfModule> {\n return {\n ngModule: HttpClientXsrfModule,\n
 providers: [\n { provide: HttpXsrfInterceptor, useClass: NoopInterceptor },\n],\n];\n
}\n\n /**\n * Configure XSRF protection.\n * @param options An object that can specify either or both\n *
cookie name or header name.\n * - Cookie name default is `XSRF-TOKEN`.\n * - Header name default is `X-XSRF-TOKEN`.\n
*\n */\n static withOptions(options: {\n cookieName?: string,\n headerName?: string,\n } = {}):
ModuleWithProviders<HttpClientXsrfModule> {\n return {\n ngModule: HttpClientXsrfModule,\n
 providers: [\n options.cookieName ? { provide: XSRF_COOKIE_NAME, useValue: options.cookieName } :
[],\n options.headerName ? { provide: XSRF_HEADER_NAME, useValue: options.headerName } : [],\n],\n
];\n }\n }\n}\n\n/**\n * Configures the [dependency injector](guide/glossary#injector) for `HttpClient`\n *
with supporting services for XSRF. Automatically imported by `HttpClientModule`.\n *\n * You can add interceptors to
the chain behind `HttpClient` by binding them to the\n * multiprovider for built-in [DI token](guide/glossary#di-
token) `HTTP_INTERCEPTORS`.\n *\n * @publicApi\n */\n@NgModule({\n /**\n * Optional configuration for
XSRF protection.\n */\n imports: [\n HttpClientXsrfModule.withOptions({\n cookieName: 'XSRF-
TOKEN',\n headerName: 'X-XSRF-TOKEN',\n }),\n],\n /**\n * Configures the [dependency
injector](guide/glossary#injector) where it is imported\n * with supporting services for HTTP communications.\n
*\n */\n providers: [\n HttpClient,\n { provide: HttpHandler, useClass: HttpInterceptingHandler },\n
 HttpXhrBackend,\n { provide: HttpBackend, useExisting: HttpXhrBackend },\n BrowserXhr,\n { provide:
XhrFactory, useExisting: BrowserXhr },\n],\n})\nexport class HttpClientModule {\n /**\n * Configures the
[dependency injector](guide/glossary#injector) for `HttpClient`\n * with supporting services for JSONP.\n *
Without this module, Jsonp requests reach the backend\n * with method JSONP, where they are rejected.\n *
You can add interceptors to the chain behind `HttpClient` by binding them to the\n * multiprovider for built-in [DI
token](guide/glossary#di-token) `HTTP_INTERCEPTORS`.\n * @publicApi\n */\n @NgModule({\n providers:
[\n JsonpClientBackend,\n { provide: JsonpCallbackContext, useFactory: jsonpCallbackContext },\n {
provide: HTTP_INTERCEPTORS, useClass: JsonpInterceptor, multi: true },\n],\n })\n export class HttpClientJsonpModule
{\n }\n\n /**\n * @license\n * Copyright Google LLC All Rights Reserved.\n * Use of this source code is
governed by an MIT-style license that can be\n * found in the LICENSE file at https://angular.io/license\n
*\n */\n export { HttpBackend, HttpHandler } from './src/backend';\n export { HttpClient } from './src/client';\n
 export { HttpHeaders } from './src/headers';\n export { HTTP_INTERCEPTORS, HttpInterceptor } from
 './src/interceptor';\n export { JsonpClientBackend, JsonpInterceptor } from './src/jsonp';\n export
 { HttpClientJsonpModule, HttpClientModule, HttpClientXsrfModule, HttpInterceptingHandler as
HttpInterceptingHandler } from './src/module';\n export { HttpParameterCodec, HttpParams, HttpUrlEncodingCodec }
from './src/params';\n export { HttpRequest } from './src/request';\n export { HttpDownloadProgressEvent,
HttpErrorResponse, HttpEvent, HttpEventType, HttpHeaders, HttpHeaderResponse, HttpProgressEvent, HttpResponse,
HttpResponseBase, HttpSentEvent, HttpUploadProgressEvent, HttpUserEvent } from './src/response';\n export
 { HttpXhrBackend, XhrFactory } from './src/xhr';\n export { HttpXsrfTokenExtractor } from './src/xsrf';\n}
\n\n/**\n *

```



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{}, global.ng.common.http = global.ng.common.http || {}, global.ng.common.http.testing = {}),  
global.ng.common.http, global.ng.core, global.rxjs));\n})(this, (function (exports, http, core, rxjs) { 'use strict';\n\n/\*\*\n \* @license\n \* Copyright Google LLC All Rights Reserved.\n \* Use of this source code is  
governed by an MIT-style license that can be\n \* found in the LICENSE file at https://angular.io/license\n \*/



```

/**\n * Controller to be injected into tests, that allows for mocking and flushing\n * of requests.\n *\n * @publicApi\n *\n var HttpTestingController = /** @class */ (function () {\n function\n HttpTestingController() {\n }\n return HttpTestingController;\n }());\n\n /**\n * @license\n * Copyright Google LLC All Rights Reserved.\n *\n * Use of this source code is governed by an MIT-style\n license that can be\n * found in the LICENSE file at https://angular.io/license\n *\n *\n * A mock\n requests that was received and is ready to be answered.\n *\n * This interface allows access to the underlying\n `HttpRequest`, and allows\n * responding with `HttpEvent`s or `HttpErrorResponse`s.\n *\n * @publicApi\n *\n var TestRequest = /** @class */ (function () {\n function TestRequest(request, observer) {\n this.request = request;\n this.observer = observer;\n\n /**\n * @internal set by\n `HttpClientTestingModule`\n *\n this._cancelled = false;\n }\n\n Object.defineProperty(TestRequest.prototype, 'cancelled', {\n /**\n * Whether the request was\n cancelled after it was sent.\n *\n get: function () {\n return this._cancelled;\n },\n enumerable: false,\n configurable: true\n });\n\n /**\n * Resolve the request by returning a body\n plus additional HTTP information (such as response\n * headers) if provided.\n * If the request specifies\n an expected body type, the body is converted into the requested type.\n * Otherwise, the body is converted to\n `JSON` by default.\n *\n * Both successful and unsuccessful responses can be delivered via `flush()`.\n *\n TestRequest.prototype.flush = function (body, opts) {\n if (opts === void 0) { opts = {}; }\n\n if (this.cancelled) {\n throw new Error("Cannot flush a cancelled request.");\n }\n\n var url =\n this.request.urlWithParams;\n var headers = (opts.headers instanceof http.HttpHeaders) ? opts.headers : new\n http.HttpHeaders(opts.headers);\n body = _maybeConvertBody(this.request.responseType, body);\n var statusText = opts.statusText;\n var status = opts.status !== undefined ? opts.status : 200;\n if\n (opts.status === undefined) {\n if (body === null) {\n status = 204;\n statusText =\n statusText || 'No Content';\n }\n else {\n statusText = statusText || 'OK';\n }\n }\n\n if (statusText === undefined) {\n throw new Error('statusText is required when setting a\n custom status.);\n }\n\n if (status >= 200 && status < 300) {\n this.observer.next(new\n http.HttpResponse({ body: body, headers: headers, status: status, statusText: statusText, url: url }));\n this.observer.complete();\n }\n else {\n this.observer.error(new http.HttpErrorResponse({\n error: body, headers: headers, status: status, statusText: statusText, url: url }));\n }\n\n /**\n * Resolve the request by returning an `ErrorEvent` (e.g. simulating a network failure).\n *\n TestRequest.prototype.error = function (error, opts) {\n if (opts === void 0) { opts = {}; }\n\n if\n (this.cancelled) {\n throw new Error("Cannot return an error for a cancelled request.");\n }\n\n if (opts.status && opts.status >= 200 && opts.status < 300) {\n throw new Error("error() called with a\n successful status.");\n }\n\n var headers = (opts.headers instanceof http.HttpHeaders) ? opts.headers :\n new http.HttpHeaders(opts.headers);\n this.observer.error(new http.HttpErrorResponse({\n error:\n error,\n headers: headers,\n status: opts.status || 0,\n statusText: opts.statusText || "",\n url: this.request.urlWithParams,\n }));\n\n /**\n * Deliver an arbitrary `HttpEvent` (such\n as a progress event) on the response stream for this\n * request.\n *\n TestRequest.prototype.event =\n function (event) {\n if (this.cancelled) {\n throw new Error("Cannot send events to a cancelled\n request.");\n }\n\n this.observer.next(event);\n }\n\n return TestRequest;\n }());\n\n /**\n * Helper function to convert a response body to an ArrayBuffer.\n *\n function _toArrayBufferBody(body) {\n if (typeof ArrayBuffer === 'undefined') {\n throw new Error('ArrayBuffer responses are not supported on\n this platform.);\n }\n\n if (body instanceof ArrayBuffer) {\n return body;\n }\n\n throw new\n Error('Automatic conversion to ArrayBuffer is not supported for response type.);\n }\n\n /**\n * Helper\n function to convert a response body to a Blob.\n *\n function _toBlob(body) {\n if (typeof Blob ===\n 'undefined') {\n throw new Error('Blob responses are not supported on this platform.);\n }\n\n if (body\n instanceof Blob) {\n return body;\n }\n\n if (ArrayBuffer && body instanceof ArrayBuffer) {\n return new Blob([body]);\n }\n\n throw new Error('Automatic conversion to Blob is not supported for\n response type.);\n }\n\n /**\n * Helper function to convert a response body to JSON data.\n *\n function

```



```

+ "\\\"", found none.":\n if (this.open.length > 0) {\n // Show the methods and URLs of open
requests in the error, for convenience.\n var requests = this.open\n .map(function (testReq)
{\n var url = testReq.request.urlWithParams;\n var method = testReq.request.method;\n
return method + " " + url;\n })\n .join(', ');
message += "\n
Requests received are: " + requests + ":\n }\n throw new Error(message);\n }\n
return matches[0];\n };\n /**\n * Expect that no outstanding requests match the given matcher, and
throw an error\n * if any do.\n */\n HttpClientTestingModule.prototype.expectNone = function
(match, description) {\n description = description || this.descriptionFromMatcher(match);\n var
matches = this.match(match);\n if (matches.length > 0) {\n throw new Error("Expected zero
matching requests for criteria \"" + description + "\", found " + matches.length + "):\n }\n };\n
/**\n * Validate that there are no outstanding requests.\n */\n
HttpClientTestingModule.prototype.verify = function (opts) {\n if (opts === void 0) { opts = {}; }\n
var open = this.open;\n // It's possible that some requests may be cancelled, and this is expected.\n //
The user can ask to ignore open requests which have been cancelled.\n if (opts.ignoreCancelled) {\n
open = open.filter(function (testReq) { return !testReq.cancelled; });\n }\n if (open.length > 0) {\n
// Show the methods and URLs of open requests in the error, for convenience.\n var requests =
open.map(function (testReq) {\n var url = testReq.request.urlWithParams.split('?')[0];\n var
method = testReq.request.method;\n return method + " " + url;\n })\n .join(', ');
throw new Error("Expected no open requests, found " + open.length + ":\n " + requests);\n }\n
};\n HttpClientTestingModule.prototype.descriptionFromMatcher = function (matcher) {\n if (typeof
matcher === 'string') {\n return "Match URL: " + matcher;\n }\n else if (typeof matcher
=== 'object') {\n var method = matcher.method || '(any)';\n var url = matcher.url || '(any)';\n
return "Match method: " + method + ", URL: " + url;\n }\n else {\n return "Match by
function: " + matcher.name;\n }\n };\n return HttpClientTestingModule;\n });\n
HttpClientTestingModule.decorators = [\n { type: core.Injectable }\n];\n /**\n * @license\n *
Copyright Google LLC All Rights Reserved.\n * Use of this source code is governed by an MIT-style
license that can be\n * found in the LICENSE file at https://angular.io/license\n */\n /**\n * Configures
`HttpClientTestingModule` as the `HttpBackend` used by `HttpClient`.\n * Inject `HttpTestingController`
to expect and flush requests in your tests.\n */\n * @publicApi\n */\n var HttpClientTestingModule = /**
@class */ (function () {\n function HttpClientTestingModule() {\n }\n return
HttpClientTestingModule;\n }());\n HttpClientTestingModule.decorators = [\n { type: core.NgModule, args:
[{\n imports: [\n http.HttpClientModule,\n],\n providers: [\n
HttpClientTestingModule,\n {\n provide: http.HttpBackend, useExisting:\n
HttpClientTestingModule },\n {\n provide: HttpTestingController, useExisting:\n
HttpClientTestingModule },\n],\n },\n],\n }];\n /**\n * @license\n * Copyright
Google LLC All Rights Reserved.\n * Use of this source code is governed by an MIT-style license that can
be\n * found in the LICENSE file at https://angular.io/license\n */\n /**\n * @license\n * Copyright
Google LLC All Rights Reserved.\n * Use of this source code is governed by an MIT-style license that can
be\n * found in the LICENSE file at https://angular.io/license\n */\n /**\n * Generated bundle index. Do
not edit.\n */\n exports.HttpClientTestingModule = HttpClientTestingModule;\n
exports.HttpTestingController = HttpTestingController;\n exports.TestRequest = TestRequest;\n
exports.angular_packages_common_http_testing_testing_a = HttpClientTestingModule;\n
Object.defineProperty(exports, '__esModule', { value: true });\n });\n // sourceMappingURL=common-http-
testing.umd.js.map\n]}

```

Found in path(s):

```

* /opt/cola/permits/1358260638_1657134870.9548028/0/common-11-0-2-tgz/package/bundles/common-http-
testing.umd.min.js.map

```

No license file was found, but licenses were detected in source scan.

```
/**
 * @license Angular v11.0.2
 * (c) 2010-2020 Google LLC. https://angular.io/
 * License: MIT
 */
/**
 * @license
 * Copyright Google LLC All Rights Reserved.
 *
 * Use of this source code is governed by an MIT-style license that can be
 * found in the LICENSE file at https://angular.io/license
 */
```

Found in path(s):

```
* /opt/cola/permits/1358260638_1657134870.9548028/0/common-11-0-2-tgz/package/bundles/common-http-testing.umd.js
* /opt/cola/permits/1358260638_1657134870.9548028/0/common-11-0-2-tgz/package/bundles/common-http-testing.umd.min.js
* /opt/cola/permits/1358260638_1657134870.9548028/0/common-11-0-2-tgz/package/bundles/common-http.umd.min.js
```

No license file was found, but licenses were detected in source scan.

```
{ "version": 3, "file": "common-testing.umd.js", "sources": ["../..../packages/common/testing/src/location_mock.ts", "../..../external/npm/node_modules/tslib/tslib.es6.js", "../..../packages/common/testing/src/mock_location_strategy.ts", "../..../packages/common/testing/src/mock_platform_location.ts", "../..../packages/common/testing/src/testing.ts", "../..../packages/common/testing/public_api.ts", "../..../packages/common/testing/index.ts", "../..../packages/common/testing/testing.ts"], "sourcesContent": ["/*\n * @license\n * Copyright Google LLC All Rights Reserved.\n *\n * Use of this source code is governed by an MIT-style license that can be\n * found in the LICENSE file at\n * https://angular.io/license\n */\n\nimport { Location, LocationStrategy, PlatformLocation } from '@angular/common';\nimport { EventEmitter, Injectable } from '@angular/core';\nimport { SubscriptionLike } from 'rxjs';\n\n/**\n * A spy for { @link Location } that allows tests to fire simulated location events.\n */\n\n@publicApi\n@Injectable()\nexport class SpyLocation implements Location {\n urlChanges: string[] = [];\n private _history: LocationState[] = [new LocationState("", "", null)];\n private _historyIndex: number = 0;\n\n /**\n * @internal\n * _subject: EventEmitter<any> = new EventEmitter();\n * @internal\n * _baseHref: string = "";\n * @internal\n * _platformStrategy: LocationStrategy = null!;\n * @internal\n * _platformLocation: PlatformLocation = null!;\n * @internal\n * _urlChangeListeners: ((url: string, state: unknown) => void)[] = [];\n * @internal\n * _urlChangeSubscription?: SubscriptionLike;\n\n setInitialPath(url: string) {\n this._history[this._historyIndex].path = url;\n }\n\n setBaseHref(url: string) {\n this._baseHref = url;\n }\n\n path(): string {\n return this._history[this._historyIndex].path;\n }\n\n getState(): unknown {\n return this._history[this._historyIndex].state;\n }\n\n isCurrentPathEqualTo(path: string, query: string = ""): boolean {\n const givenPath = path.endsWith('/') ? path.substring(0, path.length - 1) : path;\n const currPath = this.path().endsWith('/') ? this.path().substring(0, this.path().length - 1) : this.path();\n return currPath === givenPath + (query.length > 0 ? '?' + query : "");\n }\n\n simulateUrlPop(pathname: string) {\n this._subject.emit({ 'url': pathname, 'pop': true, 'type': 'popstate' });\n }\n\n simulateHashChange(pathname: string) {\n // Because we don't prevent the native event, the browser will independently update the path\n
```

```

this.setInitialPath(pathname);\n this.urlChanges.push('hash: ' + pathname);\n this._subject.emit({'url': pathname,\n 'pop': true, 'type': 'hashchange'});\n }\n\n prepareExternalUrl(url: string): string {\n if (url.length > 0 &&\n !url.startsWith('/')) {\n url = '/' + url;\n }\n return this._baseHref + url;\n }\n\n go(path: string, query: string =\n "", state: any = null) {\n path = this.prepareExternalUrl(path);\n\n if (this._historyIndex > 0) {\n this._history.splice(this._historyIndex + 1);\n this._history.push(new LocationState(path, query, state));\n this._historyIndex = this._history.length - 1;\n\n const locationState = this._history[this._historyIndex - 1];\n if\n (locationState.path == path && locationState.query == query) {\n return;\n }\n\n const url = path +\n (query.length > 0 ? ('?' + query) : '');\n this.urlChanges.push(url);\n this._subject.emit({'url': url, 'pop': false});\n }\n\n replaceState(path: string, query: string = "", state: any = null) {\n path = this.prepareExternalUrl(path);\n\n const history = this._history[this._historyIndex];\n if (history.path == path && history.query == query) {\n return;\n }\n\n history.path = path;\n history.query = query;\n history.state = state;\n\n const url = path +\n (query.length > 0 ? ('?' + query) : '');\n this.urlChanges.push('replace: ' + url);\n }\n\n forward() {\n if\n (this._historyIndex < (this._history.length - 1)) {\n this._historyIndex++;\n this._subject.emit({'url':\n this.path(), 'state': this.getState(), 'pop': true});\n }\n }\n\n back() {\n if (this._historyIndex > 0) {\n this._historyIndex--;\n this._subject.emit({'url': this.path(), 'state': this.getState(), 'pop': true});\n }\n }\n\n onUrlChange(fn: (url: string, state: unknown) => void) {\n this._urlChangeListener.push(fn);\n\n if\n (!this._urlChangeSubscription) {\n this._urlChangeSubscription = this.subscribe(v => {\n this._notifyUrlChangeListeners(v.url, v.state);\n });\n }\n }\n\n /** @internal *\n _notifyUrlChangeListeners(url: string = "", state: unknown) {\n this._urlChangeListeners.forEach(fn => fn(url,\n state));\n }\n\n subscribe(\n onNext: (value: any) => void, onThrow?: ((error: any) => void)|null,\n onReturn?: (() => void)|null): SubscriptionLike {\n return this._subject.subscribe({next: onNext, error: onThrow,\n complete: onReturn});\n }\n\n normalize(url: string): string {\n return null!;\n }\n }\n\n class LocationState {\n constructor(public path: string, public query: string, public state: any) {\n }\n }\n }

```

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```

/\r\n/ global Reflect, Promise *\r\n\r\nvar extendStatics = function(d, b) {\r\n extendStatics =\n Object.setPrototypeOf ||\r\n ({ __proto__: [] } instanceof Array && function (d, b) { d.__proto__ = b; }) ||\r\n function (d, b) { for (var p in b) if (b.hasOwnProperty(p)) d[p] = b[p]; }; \r\n return extendStatics(d,\n b);\r\n};\r\n\r\n\r\nexport function __extends(d, b) {\r\n extendStatics(d, b);\r\n function __() { this.constructor = d; }\r\n d.prototype = b === null ? Object.create(b) : (__proto__ = b.prototype, new\n __());\r\n}\r\n\r\n\r\nexport var __assign = function() {\r\n __assign = Object.assign || function __assign(t) {\r\n for (var s, i = 1, n =\n arguments.length; i < n; i++) {\r\n s = arguments[i];\r\n for (var p in s) if\n (Object.prototype.hasOwnProperty.call(s, p)) t[p] = s[p];\r\n }\r\n return t;\r\n }\r\n return\n __assign.apply(this, arguments);\r\n}\r\n\r\n\r\nexport function __rest(s, e) {\r\n var t = {};\r\n for (var p in s) if\n (Object.prototype.hasOwnProperty.call(s, p) && e.indexOf(p) < 0)\r\n t[p] = s[p];\r\n if (s != null && typeof\n Object.getOwnPropertySymbols === \"function\")\r\n for (var i = 0, p = Object.getOwnPropertySymbols(s); i <\n p.length; i++) {\r\n if (e.indexOf(p[i]) < 0 && Object.prototype.propertyIsEnumerable.call(s, p[i]))\r\n t[p[i]] = s[p[i];\r\n }\r\n }\r\n return t;\r\n}\r\n\r\n\r\nexport function __decorate(decorators, target, key, desc) {\r\n var c = arguments.length, r = c < 3 ? target : desc === null ? desc = Object\n .getOwnPropertyDescriptor(target, key) : desc, d;\r\n if (typeof Reflect === \"object\" && typeof Reflect.decorate === \"function\") r =

```



```

resume(n, v) { try { step(g[n](v)); } catch (e) { settle(q[0][3], e); }}\r\n function step(r) { r.value instanceof
__await ? Promise.resolve(r.value.v).then(fulfill, reject) : settle(q[0][2], r); }\r\n function fulfill(value) {
resume("next", value); }\r\n function reject(value) { resume("throw", value); }\r\n function settle(f, v) { if
(f(v), q.shift(), q.length) resume(q[0][0], q[0][1]); }\r\n}\r\n\r\nexport function __asyncDelegator(o) {\r\n var i,
p;\r\n return i = {}, verb("next"), verb("throw"), function (e) { throw e; }, verb("return"), i[Symbol.iterator] =
function () { return this; }, i;\r\n function verb(n, f) { i[n] = o[n] ? function (v) { return (p = !p) ? { value:
__await(o[n](v)), done: n === "return" } : f ? f(v) : v; } : f; }\r\n}\r\n\r\nexport function __asyncValues(o) {\r\n if
(!Symbol.asyncIterator) throw new TypeError("Symbol.asyncIterator is not defined.");\r\n var m =
o[Symbol.asyncIterator], i;\r\n return m ? m.call(o) : (o = typeof __values === "function" ? __values(o) :
o[Symbol.iterator](), i = {}, verb("next"), verb("throw"), verb("return"), i[Symbol.asyncIterator] = function () {
return this; }, i);\r\n function verb(n) { i[n] = o[n] && function (v) { return new Promise(function (resolve, reject)
{ v = o[n](v), settle(resolve, reject, v.done, v.value); }); }; }\r\n function settle(resolve, reject, d, v) {
Promise.resolve(v).then(function(v) { resolve({ value: v, done: d }); }, reject); }\r\n}\r\n\r\nexport function
__makeTemplateObject(cooked, raw) {\r\n if (Object.defineProperty) { Object.defineProperty(cooked, "raw", {
value: raw }); } else { cooked.raw = raw; }\r\n return cooked;\r\n};\r\n\r\nvar __setModuleDefault = Object.create
? (function(o, v) {\r\n Object.defineProperty(o, "default", { enumerable: true, value: v });\r\n}) : function(o, v)
{\r\n o["default"] = v;\r\n};\r\n\r\nexport function __importStar(mod) {\r\n if (mod && mod.__esModule)
return mod;\r\n var result = {};\r\n if (mod != null) for (var k in mod) if (Object.hasOwnProperty.call(mod, k))
__createBinding(result, mod, k);\r\n __setModuleDefault(result, mod);\r\n return result;\r\n}\r\n\r\nexport
function __importDefault(mod) {\r\n return (mod && mod.__esModule) ? mod : { default: mod
};\r\n}\r\n\r\nexport function __classPrivateFieldGet(receiver, privateMap) {\r\n if (!privateMap.has(receiver))
{\r\n throw new TypeError("attempted to get private field on non-instance");\r\n }\r\n return
privateMap.get(receiver);\r\n}\r\n\r\nexport function __classPrivateFieldSet(receiver, privateMap, value) {\r\n if
(!privateMap.has(receiver)) {\r\n throw new TypeError("attempted to set private field on non-instance");\r\n }\r\n
privateMap.set(receiver, value);\r\n return value;\r\n}\r\n}\r\n\r\n/**\n * @license\n * Copyright Google LLC
All Rights Reserved.\n * Use of this source code is governed by an MIT-style license that can be\n * found in
the LICENSE file at https://angular.io/license\n *\nimport { LocationStrategy } from '@angular/common';\nimport
{ EventEmitter, Injectable } from '@angular/core';\n\n\n/**\n * A mock implementation of { @link
LocationStrategy } that allows tests to fire simulated\n * location events.\n *\n * @publicApi\n
*\n * @Injectable()\nexport class MockLocationStrategy extends LocationStrategy {\n internalBaseHref: string =
'/';\n internalPath: string = '';\n internalTitle: string = '';\n urlChanges: string[] = [];\n /** @internal *\n _subject:
EventEmitter<any> = new EventEmitter();\n private stateChanges: any[] = [];\n constructor() {\n super();\n }\n simulatePopState(url: string): void {\n this.internalPath = url;\n this._subject.emit(new
_MockPopStateEvent(this.path()));\n }\n path(includeHash: boolean = false): string {\n return
this.internalPath;\n }\n prepareExternalUrl(internal: string): string {\n if (internal.startsWith('/') &&
this.internalBaseHref.endsWith('/')) {\n return this.internalBaseHref + internal.substring(1);\n }\n return
this.internalBaseHref + internal;\n }\n pushState(ctx: any, title: string, path: string, query: string): void {\n //
Add state change to changes array\n this.stateChanges.push(ctx);\n\n this.internalTitle = title;\n\n const url =
path + (query.length > 0 ? ('?' + query) : '');\n this.internalPath = url;\n\n const externalUrl =
this.prepareExternalUrl(url);\n this.urlChanges.push(externalUrl);\n }\n replaceState(ctx: any, title: string, path:
string, query: string): void {\n // Reset the last index of stateChanges to the ctx (state) object\n this.stateChanges[(this.stateChanges.length || 1) - 1] = ctx;\n\n this.internalTitle = title;\n\n const url = path +
(query.length > 0 ? ('?' + query) : '');\n this.internalPath = url;\n\n const externalUrl =
this.prepareExternalUrl(url);\n this.urlChanges.push('replace: ' + externalUrl);\n }\n onPopState(fn: (value:
any) => void): void {\n this._subject.subscribe({next: fn});\n }\n getBaseHref(): string {\n return
this.internalBaseHref;\n }\n back(): void {\n if (this.urlChanges.length > 0) {\n this.urlChanges.pop();\n this.stateChanges.pop();\n const nextUrl = this.urlChanges.length > 0 ? this.urlChanges[this.urlChanges.length -
1] : '';\n this.simulatePopState(nextUrl);\n }\n }\n forward(): void {\n throw 'not implemented';\n }\n}

```

```

getState(): unknown {\n return this.stateChanges[(this.stateChanges.length || 1) - 1];\n }\n}\n\nclass
_MockPopStateEvent {\n pop: boolean = true;\n type: string = 'popstate';\n constructor(public newUrl: string)
{\n}\n}\n", "/*\n * @license\n * Copyright Google LLC All Rights Reserved.\n *\n * Use of this source code is
governed by an MIT-style license that can be\n * found in the LICENSE file at https://angular.io/license\n
*\n\nimport {LocationChangeEvent, LocationChangeListener, PlatformLocation} from
'@angular/common';\nimport {Inject, Injectable, InjectionToken, Optional} from '@angular/core';\nimport
{Subject} from 'rxjs';\n\n/**\n * Parser from https://tools.ietf.org/html/rfc3986#appendix-B\n *
^(([^:/?#]+):)?(//([^/?#]*))?([^?#]*)(\\?([^#]*))?(#(.*))?;\n * 12 3 4 5 6 7 8 9\n *\n * Example:
http://www.ics.uci.edu/pub/ietf/uri/#Related\n *\n * Results in:\n *\n * $1 = http:\n * $2 = http\n * $3 =
//www.ics.uci.edu\n * $4 = www.ics.uci.edu\n * $5 = /pub/ietf/uri/\n * $6 = <undefined>\n * $7 = <undefined>\n *
$8 = #Related\n * $9 = Related\n */\nconst urlParse =
/^(?:([^\s:/?#\[\]@!$%&'()*+,-.~:;:\n\nfunction parseUrl(urlStr: string, baseHref: string)
{\n const verifyProtocol = /^(http[s]?ftp):\/\//;\n let serverBase: string|undefined;\n\n // URL class requires full
URL. If the URL string doesn't start with protocol, we need to add\n // an arbitrary base URL which can be
removed afterward.\n if (!verifyProtocol.test(urlStr)) {\n serverBase = 'http://empty.com/';\n }\n let parsedUrl:
{\n protocol: string,\n hostname: string,\n port: string,\n pathname: string,\n search: string,\n hash:
string\n };\n try {\n parsedUrl = new URL(urlStr, serverBase);\n } catch (e) {\n const result =
urlParse.exec(serverBase || "" + urlStr);\n if (!result) {\n throw new Error('Invalid URL: ${urlStr} with base:
${baseHref}');\n }\n const hostSplit = result[4].split(':');\n parsedUrl = {\n protocol: result[1],\n
hostname: hostSplit[0],\n port: hostSplit[1] || "",\n pathname: result[5],\n search: result[6],\n hash:
result[8],\n }; \n }\n if (parsedUrl.pathname && parsedUrl.pathname.indexOf(baseHref) === 0) {\n
parsedUrl.pathname = parsedUrl.pathname.substring(baseHref.length);\n }\n return {\n hostname: !serverBase
&& parsedUrl.hostname || "",\n protocol: !serverBase && parsedUrl.protocol || "",\n port: !serverBase &&
parsedUrl.port || "",\n pathname: parsedUrl.pathname || '/',\n search: parsedUrl.search || "",\n hash: parsedUrl.hash
|| "",\n };\n}\n\n/**\n * Mock platform location config\n *\n * @publicApi\n *\nexport interface
MockPlatformLocationConfig {\n startUrl?: string;\n appBaseHref?: string;\n}\n\n/**\n * Provider for mock
platform location config\n *\n * @publicApi\n *\nexport const MOCK_PLATFORM_LOCATION_CONFIG =\nnew InjectionToken<MockPlatformLocationConfig>('MOCK_PLATFORM_LOCATION_CONFIG');\n\n/**\n *
Mock implementation of URL state.\n *\n * @publicApi\n *\n@Injectable()\nexport class MockPlatformLocation
implements PlatformLocation {\n private baseHref: string = "";\n private hashUpdate = new
Subject<LocationChangeEvent>();\n private urlChanges: {\n hostname: string,\n protocol: string,\n port:
string,\n pathname: string,\n search: string,\n hash: string,\n state: unknown\n }[] = [{hostname: "", protocol:
"", port: "", pathname: "/", search: "", hash: "", state: null}];\n\n constructor(@Inject(MOCK_PLATFORM_LOCATION_CONFIG) @Optional() config?:\nMockPlatformLocationConfig) {\n if (config) {\n this.baseHref = config.appBaseHref || "";\n const
parsedChanges =\n this.parseChanges(null, config.startUrl || 'http://<empty>', this.baseHref);\n this.urlChanges[0] = {
...parsedChanges};\n }\n }\n\n get hostname() {\n return this.urlChanges[0].hostname;\n }\n get protocol() {\n
return this.urlChanges[0].protocol;\n }\n get port() {\n return this.urlChanges[0].port;\n }\n get pathname() {\n
return this.urlChanges[0].pathname;\n }\n get search() {\n return
this.urlChanges[0].search;\n }\n get hash() {\n return this.urlChanges[0].hash;\n }\n get state() {\n return
this.urlChanges[0].state;\n }\n\n getBaseHrefFromDOM(): string {\n return this.baseHref;\n }\n\n onPopState(fn: LocationChangeListener): void {\n // No-op: a state stack is not implemented, so\n // no events
will ever come.\n }\n\n onHashChange(fn: LocationChangeListener): void {\n this.hashUpdate.subscribe(fn);\n }\n\n get href(): string {\n
let url = `${this.protocol}://${this.hostname}${this.port ? ':' + this.port : ''}`;\n url +=
`${this.pathname === '/' ? '' : this.pathname}${this.search}${this.hash}`;\n return url;\n }\n\n get url(): string {\n
return `${this.pathname}${this.search}${this.hash}`;\n }\n\n private parseChanges(state: unknown, url: string,
baseHref: string = "") {\n // When the `history.state` value is stored, it is always copied.\n state =
JSON.parse(JSON.stringify(state));\n return {...parseUrl(url, baseHref), state};\n }\n\n replaceState(state: any,

```



```
title: string, newUrl: string): void {\n const {pathname, search, state: parsedState, hash} = this.parseChanges(state,
newUrl);\n this.urlChanges[0] = {...this.urlChanges[0], pathname, search, hash, state: parsedState};\n }\n\npushState(state: any, title: string, newUrl: string): void {\n const {pathname, search, state: parsedState, hash} =
this.parseChanges(state, newUrl);\n this.urlChanges.unshift({...this.urlChanges[0], pathname, search, hash, state:
parsedState});\n }\n\nforward(): void {\n throw new Error('Not implemented');\n }\n\nback(): void {\n const
oldUrl = this.url;\n const oldHash = this.hash;\n this.urlChanges.shift();\n const newHash = this.hash;\n if
(oldHash !== newHash) {\n scheduleMicroTask(\n () => this.hashUpdate.next(\n {type:
'hashchange', state: null, oldUrl, newUrl: this.url} as LocationChangeEvent));\n }\n }\n\ngetState(): unknown
{\n return this.state;\n }\n}\n\nexport function scheduleMicroTask(cb: () => any) {\n
Promise.resolve(null).then(cb);\n }\n\n"/**\n * @license\n * Copyright Google LLC All Rights Reserved.\n *\n *
Use of this source code is governed by an MIT-style license that can be\n * found in the LICENSE file at
https://angular.io/license\n */\n\n**\n * @module\n * @description\n * Entry point for all public APIs of the
common/testing package.\n */\n\nexport {SpyLocation} from './location_mock';\nexport {MockLocationStrategy}
from './mock_location_strategy';\nexport {MOCK_PLATFORM_LOCATION_CONFIG, MockPlatformLocation,
MockPlatformLocationConfig} from './mock_platform_location';\n\n"/**\n * @license\n * Copyright Google LLC
All Rights Reserved.\n *\n * Use of this source code is governed by an MIT-style license that can be\n * found in
the LICENSE file at https://angular.io/license\n */\n\n**\n * @module\n * @description\n * Entry point for all
public APIs of this package.\n */\n\nexport * from './src/testing';\n\n// This file only reexports content of the `src`
folder. Keep it that way.\n\n"/**\n * @license\n * Copyright Google LLC All Rights Reserved.\n *\n * Use of this
source code is governed by an MIT-style license that can be\n * found in the LICENSE file at
https://angular.io/license\n */\n\n// This file is not used to build this module. It is only used during editing\n// by the
TypeScript language service and during build for verification. `ngc`\n// replaces this file with production index.ts
when it rewrites private symbol\n// names.\n\nexport * from './public_api';\n\n"/**\n * Generated bundle index. Do
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Found in path(s):

\* /opt/cola/permits/1358260638\_1657134870.9548028/0/common-11-0-2-tgz/package/bundles/common-testing.umd.js.map

No license file was found, but licenses were detected in source scan.

```
{ "version": 3, "file": "common.umd.js", "sources": ["../..../packages/common/src/dom_adapter.ts", "../..../external/npm/node_modules/tslib/tslib.es6.js", "../..../packages/common/src/dom_tokens.ts", "../..../packages/common/src/location/platform_location.ts", "../..../packages/common/src/private_export.ts", "../..../packages/common/src/location/util.ts", "../..../packages/common/src/location/location_strategy.ts", "../..../packages/common/src/location/hash_location_strategy.ts", "../..../packages/common/src/location/location.ts", "../..../packages/common/src/location/index.ts", "../..../packages/common/src/i18n/currencies.ts", "../..../packages/common/src/i18n/locale_data_api.ts", "../..../packages/common/src/i18n/format_date.ts", "../..../packages/common/src/i18n/format_number.ts", "../..../packages/common/src/i18n/localization.ts", "../..../packages/common/src/i18n/locale_data.ts", "../..../packages/common/src/cookie.ts", "../..../packages/common/src/directives/ng_class.ts", "../..../packages/common/src/directives/ng_component_outlet.ts", "../..../packages/common/src/directives/ng_for_of.ts", "../..../packages/common/src/directives/ng_if.ts", "../..../packages/common/src/directives/ng_switch.ts", "../..../packages/common/src/directives/ng_plural.ts", "../..../packages/common/src/directives/ng_style.ts", "../..../packages/common/src/directives/ng_template_outlet.ts", "../..../packages/common/src/directives/index.ts", "../..../packages/common/src/pipes/invalid_pipe_argument_error.ts", "../..../packages/common/src/pipes/async_pipe.ts", "../..../packages/common/src/pipes/case_conversion_pipes.ts", "../..../packages/common/src/pipes/date_pipe.ts", "../..../packages/common/src/pipes/i18n_plural_pipe.ts", "../..../packages/common/src/pipes/i18n_select_pipe.ts", "../..../packages/common/src/pipes/json_pipe.ts", "../..../packages/common/src/pipes/keyvalue_pipe.ts", "../..../packages/common/src/pipes/number_pipe.ts", "../..../packages/common/src/pipes/slice_pipe.ts", "../..../packages/common/src/pipes/index.ts", "../..../packages/common/src/common_module.ts", "../..../packages/common/src/platform_id.ts", "../..../packages/common/src/version.ts", "../..../packages/common/src/viewport_scroller.ts", "../..../packages/common/src/common.ts", "../..../packages/common/public_api.ts", "../..../packages/common/index.ts", "../..../packages/common/common.ts"], "sourcesContent": ["/*\n * @license\n * Copyright Google LLC All Rights Reserved.\n * Use of this source code is governed by an MIT-style license that can be\n * found in the LICENSE file at https://angular.io/license\n */\n\nlet _DOM: DomAdapter
```





```

metadataValue) {\r\n if (typeof Reflect === \"object\" && typeof Reflect.metadata === \"function\") return
Reflect.metadata(metadataKey, metadataValue);\r\n}\r\n\r\nexport function __awaiter(thisArg, _arguments, P,
generator) {\r\n function adopt(value) { return value instanceof P ? value : new P(function (resolve) {
resolve(value); }); }\r\n return new (P || (P = Promise))(function (resolve, reject) {\r\n function fulfilled(value)
{ try { step(generator.next(value)); } catch (e) { reject(e); } }\r\n function rejected(value) { try {
step(generator[\"throw\"](value)); } catch (e) { reject(e); } }\r\n function step(result) { result.done ?
resolve(result.value) : adopt(result.value).then(fulfilled, rejected); }\r\n step((generator =
generator.apply(thisArg, _arguments || [])).next());\r\n });\r\n}\r\n\r\nexport function __generator(thisArg, body)
{\r\n var _ = { label: 0, sent: function() { if (t[0] & 1) throw t[1]; return t[1]; }, trys: [], ops: [] }, f, y, t, g;\r\n return g = { next: verb(0), \"throw\": verb(1), \"return\": verb(2) }, typeof Symbol === \"function\" &&
(g[Symbol.iterator] = function() { return this; }), g;\r\n function verb(n) { return function (v) { return step([n, v]);
}; }\r\n function step(op) {\r\n if (f) throw new TypeError(\"Generator is already executing.\");\r\n while
(____) try {\r\n if (f = 1, y && (t = op[0] & 2 ? y[\"return\"] : op[0] ? y[\"throw\"] || ((t = y[\"return\"])) &&
t.call(y, 0) : y.next) && !(t = t.call(y, op[1])).done) return t;\r\n if (y = 0, t) op = [op[0] & 2, t.value];\r\n switch (op[0]) {\r\n case 0: case 1: t = op; break;\r\n case 4: __.label++; return { value: op[1],
done: false }; \r\n case 5: __.label++; y = op[1]; op = [0]; continue;\r\n case 7: op = __.ops.pop();
__trys.pop(); continue;\r\n default:\r\n if (!(t = __trys, t = t.length > 0 && t[t.length - 1]) &&
(op[0] === 6 || op[0] === 2)) { _ = 0; continue; } \r\n if (op[0] === 3 && !(t || (op[1] > t[0] && op[1] <
t[3]))) { __.label = op[1]; break; } \r\n if (op[0] === 6 && __.label < t[1]) { __.label = t[1]; t = op; break;
} \r\n if (t && __.label < t[2]) { __.label = t[2]; __.ops.push(op); break; } \r\n if (t[2])
__ops.pop(); \r\n __trys.pop(); continue;\r\n } \r\n op = body.call(thisArg, _); \r\n } catch
(e) { op = [6, e]; y = 0; } finally { f = t = 0; } \r\n if (op[0] & 5) throw op[1]; return { value: op[0] ? op[1] : void
0, done: true }; } \r\n } \r\n }\r\n\r\nexport var __createBinding = Object.create ? (function(o, m, k, k2) {\r\n if (k2
=== undefined) k2 = k;\r\n Object.defineProperty(o, k2, { enumerable: true, get: function() { return m[k]; }
});\r\n}) : (function(o, m, k, k2) {\r\n if (k2 === undefined) k2 = k;\r\n o[k2] = m[k];\r\n});\r\n\r\nexport
function __exportStar(m, exports) {\r\n for (var p in m) if (p !== \"default\" && !exports.hasOwnProperty(p))
__createBinding(exports, m, p);\r\n}\r\n\r\nexport function __values(o) {\r\n var s = typeof Symbol ===
\"function\" && Symbol.iterator, m = s && o[s], i = 0;\r\n if (m) return m.call(o);\r\n if (o && typeof o.length
=== \"number\") return {\r\n next: function () {\r\n if (o && i >= o.length) o = void 0;\r\n return {
value: o && o[i++], done: !o }; \r\n } \r\n }; \r\n throw new TypeError(s ? \"Object is not iterable.\" :
\"Symbol.iterator is not defined.\");\r\n}\r\n\r\nexport function __read(o, n) {\r\n var m = typeof Symbol ===
\"function\" && o[Symbol.iterator];\r\n if (!m) return o;\r\n var i = m.call(o), r, ar = [], e;\r\n try {\r\n while ((n === void 0 || n-- > 0) && !(r = i.next()).done) ar.push(r.value);\r\n } \r\n catch (error) { e = { error:
error }; } \r\n finally {\r\n try {\r\n if (r && !r.done && (m = i[\"return\"])) m.call(i); \r\n } \r\n finally { if (e) throw e.error; } \r\n } \r\n return ar;\r\n}\r\n\r\nexport function __spread() {\r\n for (var ar = [], i =
0; i < arguments.length; i++)\r\n ar = ar.concat(__read(arguments[i]));\r\n return ar;\r\n}\r\n\r\nexport function
__spreadArrays() {\r\n for (var s = 0, i = 0, il = arguments.length; i < il; i++) s += arguments[i].length;\r\n for
(var r = Array(s), k = 0, i = 0; i < il; i++)\r\n for (var a = arguments[i], j = 0, jl = a.length; j < jl; j++, k++)\r\n r[k] = a[j];\r\n return r;\r\n}\r\n\r\nexport function __await(v) {\r\n return this instanceof __await ? (this.v =
v, this) : new __await(v);\r\n}\r\n\r\nexport function __asyncGenerator(thisArg, _arguments, generator) {\r\n if
(!Symbol.asyncIterator) throw new TypeError(\"Symbol.asyncIterator is not defined.\");\r\n var g =
generator.apply(thisArg, _arguments || []), i, q = [];\r\n return i = {}, verb(\"next\"), verb(\"throw\"),
verb(\"return\"), i[Symbol.asyncIterator] = function () { return this; }, i;\r\n function verb(n) { if (g[n]) i[n] =
function (v) { return new Promise(function (a, b) { q.push([n, v, a, b]) > 1 || resume(n, v); }); }; }\r\n function
resume(n, v) { try { step(g[n](v)); } catch (e) { settle(q[0][3], e); } }\r\n function step(r) { r.value instanceof
__await ? Promise.resolve(r.value.v).then(fulfill, reject) : settle(q[0][2], r); }\r\n function fulfill(value) {
resume(\"next\", value); }\r\n function reject(value) { resume(\"throw\", value); }\r\n function settle(f, v) { if
(f(v), q.shift(), q.length) resume(q[0][0], q[0][1]); }\r\n}\r\n\r\nexport function __asyncDelegator(o) {\r\n var i,

```



```

inject(BrowserPlatformLocation);\n}\n\n/**\n * @description\n * Indicates when a location is initialized.\n *\n * @publicApi\n * \nexport const LOCATION_INITIALIZED = new InjectionToken<Promise<any>>('Location
Initialized');\n\n/**\n * @description\n * A serializable version of the event from `onPopState` or
`onHashChange`\n *\n * @publicApi\n * \nexport interface LocationChangeEvent {\n type: string;\n state:
any;\n}\n\n/**\n * @publicApi\n * \nexport interface LocationChangeListener {\n (event: LocationChangeEvent):
any;\n}\n\n\nPlatformLocation` encapsulates all of the direct calls to platform APIs.\n * This class should
not be used directly by an application developer. Instead, use\n * {@link Location}.\n * \n@Injectables({\n
providedIn: 'platform',\n // See #23917\n useFactory: createBrowserPlatformLocation,\n})\nexport class
BrowserPlatformLocation extends PlatformLocation {\n public readonly location!: Location;\n private _history!:
History;\n\n constructor(@Inject(DOCUMENT) private _doc: any) {\n super();\n this._init();\n }\n\n // This is
moved to its own method so that `MockPlatformLocationStrategy` can overwrite it\n /** @internal *\n _init() {\n
(this as {location: Location}).location = getDOM().getLocation();\n this._history = getDOM().getHistory();\n
}\n\n getBaseHrefFromDOM(): string {\n return getDOM().getBaseHref(this._doc!);\n }\n\n onPopState(fn:
LocationChangeListener): void {\n getDOM().getGlobalEventTarget(this._doc,
'window').addEventListener('popstate', fn, false);\n }\n\n onHashChange(fn: LocationChangeListener): void {\n
getDOM().getGlobalEventTarget(this._doc, 'window').addEventListener('hashchange', fn, false);\n }\n\n get href():
string {\n return this.location.href;\n }\n\n get protocol(): string {\n return this.location.protocol;\n }\n\n get
hostname(): string {\n return this.location.hostname;\n }\n\n get port(): string {\n return this.location.port;\n }\n
}\n\n get pathname(): string {\n return this.location.pathname;\n }\n\n get search(): string {\n return
this.location.search;\n }\n\n get hash(): string {\n return this.location.hash;\n }\n\n set pathname(newPath: string)
{\n this.location.pathname = newPath;\n }\n\n pushState(state: any, title: string, url: string): void {\n if
(supportsState()) {\n this._history.pushState(state, title, url);\n } else {\n this.location.hash = url;\n }\n
}\n\n replaceState(state: any, title: string, url: string): void {\n if (supportsState()) {\n
this._history.replaceState(state, title, url);\n } else {\n this.location.hash = url;\n }\n }\n\n forward(): void {\n
this._history.forward();\n }\n\n back(): void {\n this._history.back();\n }\n\n getState(): unknown {\n return
this._history.state;\n }\n}\n\nexport function supportsState(): boolean {\n return
!!window.history.pushState;\n}\n\nexport function createBrowserPlatformLocation() {\n return new
BrowserPlatformLocation(inject(DOCUMENT));\n}\n\n",/**\n * @license\n * Copyright Google LLC All Rights
Reserved.\n *\n * Use of this source code is governed by an MIT-style license that can be\n * found in the
LICENSE file at https://angular.io/license\n * \nexport {DomAdapter as DomAdapter, getDOM as getDOM,
setRootDomAdapter as setRootDomAdapter} from './dom_adapter';\nexport {BrowserPlatformLocation as
BrowserPlatformLocation} from './location/platform_location';\n\n",/**\n * @license\n * Copyright Google LLC All
Rights Reserved.\n *\n * Use of this source code is governed by an MIT-style license that can be\n * found in the
LICENSE file at https://angular.io/license\n * \n\n\n/**\n * Joins two parts of a URL with a slash if needed.\n *\n *
@param start URL string\n * @param end URL string\n *\n * @returns The joined URL string.\n * \nexport
function joinWithSlash(start: string, end: string): string {\n if (start.length == 0) {\n return end;\n }\n if
(end.length == 0) {\n return start;\n }\n let slashes = 0;\n if (start.endsWith('/')) {\n slashes++;}\n if
(end.startsWith('/')) {\n slashes++;}\n if (slashes == 2) {\n return start + end.substring(1);\n }\n if (slashes
== 1) {\n return start + end;\n }\n return start + '/' + end;\n}\n\n\n/**\n * Removes a trailing slash from a URL
string if needed.\n * Looks for the first occurrence of either `#`, `?`, or the end of the\n * line as `^` characters and
removes the trailing slash if one exists.\n *\n * @param url URL string.\n *\n * @returns The URL string, modified
if needed.\n * \nexport function stripTrailingSlash(url: string): string {\n const match = url.match(/#|\\|?|$/);\n const
pathEndIdx = match && match.index || url.length;\n const droppedSlashIdx = pathEndIdx - (url[pathEndIdx - 1]
=== '/' ? 1 : 0);\n return url.slice(0, droppedSlashIdx) + url.slice(pathEndIdx);\n}\n\n\n/**\n * Normalizes URL
parameters by prepending with `?` if needed.\n *\n * @param params String of URL parameters.\n *\n * @returns
The normalized URL parameters string.\n * \nexport function normalizeQueryParams(params: string): string {\n
return params && params[0] !== '?' ? '?' + params : params;\n}\n\n",/**\n * @license\n * Copyright Google LLC All
Rights Reserved.\n *\n * Use of this source code is governed by an MIT-style license that can be\n * found in the

```

LICENSE file at <https://angular.io/license>

```

import {Inject, Injectable, InjectionToken, Optional, inject} from
'@angular/core';
import {DOCUMENT} from './dom_tokens';
import {LocationChangeListener,
PlatformLocation} from './platform_location';
import {joinWithSlash, normalizeQueryParams} from
'./util';
/**
 * Enables the `Location` service to read route state from the browser's URL.
 * Angular provides
 two strategies: `HashLocationStrategy` and `PathLocationStrategy`.
 * Applications should use the `Router`
 or `Location` services to
 * interact with application route state.
 * For instance, `HashLocationStrategy`
 produces URLs like
 * <code class="no-auto-link">http://example.com#/foo</code>,
 * and
 `PathLocationStrategy` produces
 * <code class="no-auto-link">http://example.com/foo</code> as an equivalent
 URL.
 * See these two classes for more.
 * @publicApi
 * @Injectable({providedIn: 'root', useFactory:
provideLocationStrategy})
export abstract class LocationStrategy {
 abstract path(includeHash?: boolean):
string;
 abstract prepareExternalUrl(internal: string): string;
 abstract pushState(state: any, title: string, url: string,
queryParams: string): void;
 abstract replaceState(state: any, title: string, url: string,
queryParams: string): void;
 abstract forward(): void;
 abstract back(): void;
 abstract onPopState(fn: LocationChangeListener): void;
 abstract getBaseHref(): string;
}
export function provideLocationStrategy(platformLocation: PlatformLocation)
{
 // See #23917
 const location = inject(DOCUMENT).location;
 return new PathLocationStrategy(
inject(PlatformLocation as any), location && location.origin || "");
}
/**
 * A predefined [DI
token](guide/glossary#di-token) for the base href
 * to be used with the `PathLocationStrategy`.
 * The base href
 is the URL prefix that should be preserved when generating
 * and recognizing URLs.
 * @usageNotes
 * The following example shows how to use this token to configure the root app injector
 * with a base href value,
 so that the DI framework can supply the dependency anywhere in the app.
 * ```typescript
import
{Component, NgModule} from '@angular/core';
import {APP_BASE_HREF} from '@angular/common';
 * @NgModule({
 providers: [{provide: APP_BASE_HREF, useValue: '/my/app'}]
 * })
 * class AppModule
 {
 * ```
 * @publicApi
 * @export const APP_BASE_HREF = new
InjectionToken<string>('appBaseHref');
/**
 * A {@link LocationStrategy} used to configure
 the {@link Location} service to
 * represent its state in the
 * [path](https://en.wikipedia.org/wiki/Uniform_Resource_Locator#Syntax) of the
 * browser's URL.
 * If you're
 using `PathLocationStrategy`, you must provide a {@link APP_BASE_HREF}
 * or add a `<base href>` element
 to the document.
 * For instance, if you provide an `APP_BASE_HREF` of `'/my/app/'` and call
 * `location.go('/foo')`, the browser's URL will become
 * `example.com/my/app/foo`. To ensure all relative URIs
 resolve correctly,
 * the `<base href>` and/or `APP_BASE_HREF` should end with a `/.`
 * Similarly, if you
 add `<base href=/my/app/'>` to the document and call
 * `location.go('/foo')`, the browser's URL will become
 * `example.com/my/app/foo`.
 * Note that when using `PathLocationStrategy`, neither the query nor
 * the
 fragment in the `<base href>` will be preserved, as outlined
 * by the
 [RFC](https://tools.ietf.org/html/rfc3986#section-5.2.2).
 * @usageNotes
 * ### Example
 *
 * @example common/location/ts/path_location_component.ts region='LocationComponent'
 * @publicApi
 * @Injectable()
 * export class PathLocationStrategy extends LocationStrategy {
 private _baseHref: string;
 constructor(
 private _platformLocation: PlatformLocation,
 @Optional() @Inject(APP_BASE_HREF)
href?: string) {
 super();
 if (href == null) {
 href = this._platformLocation.getBaseHrefFromDOM();
 }
 if (href == null) {
 throw new Error(
`No base href set. Please provide a value for the
APP_BASE_HREF token or add a base element to the document.`);
 }
 this._baseHref = href;
 }
 onPopState(fn: LocationChangeListener): void {
 this._platformLocation.onPopState(fn);
 }
 this._platformLocation.onHashChange(fn);
 }
 getBaseHref(): string {
 return this._baseHref;
 }
 prepareExternalUrl(internal: string): string {
 return joinWithSlash(this._baseHref, internal);
 }
 path(includeHash: boolean = false): string {
 const pathname =
this._platformLocation.pathname +
normalizeQueryParams(this._platformLocation.search);
 const hash = this._platformLocation.hash;
 return
hash && includeHash ? `${pathname}${hash}` : pathname;
 }
 pushState(state: any, title: string, url: string,
queryParams: string) {
 const externalUrl = this.prepareExternalUrl(url +
normalizeQueryParams(queryParams));
 this._platformLocation.pushState(state, title, externalUrl);
 }
}

```

```

replaceState(state: any, title: string, url: string, queryParams: string) {\n const externalUrl =
this.prepareExternalUrl(url + normalizeQueryParams(queryParams));\n this._platformLocation.replaceState(state,
title, externalUrl);\n }
forward(): void {\n this._platformLocation.forward();\n }
back(): void {\n
this._platformLocation.back();\n }
}
"/**\n * @license\n * Copyright Google LLC All Rights Reserved.\n *\n *
Use of this source code is governed by an MIT-style license that can be\n * found in the LICENSE file at
https://angular.io/license\n */
import {Inject, Injectable, Optional} from '@angular/core';\nimport
{APP_BASE_HREF, LocationStrategy} from './location_strategy';\nimport {LocationChangeListener,
PlatformLocation} from './platform_location';\nimport {joinWithSlash, normalizeQueryParams} from
'./util';\n\n\n/**\n * @description\n * A {@link LocationStrategy} used to configure the {@link Location} service
to\n * represent its state in the\n * [hash
fragment](https://en.wikipedia.org/wiki/Uniform_Resource_Locator#Syntax)\n * of the browser's URL.\n *\n * For
instance, if you call `location.go('/foo')`, the browser's URL will become\n * `example.com#/foo`.\n *\n *
@usageNotes\n *\n * ### Example\n *\n * {@example common/location/ts/hash_location_component.ts
region='LocationComponent'}\n *\n * @publicApi\n */
@Injectable()\nexport class HashLocationStrategy extends
LocationStrategy {\n private _baseHref: string = '';\n constructor(\n private _platformLocation:
PlatformLocation,\n @Optional() @Inject(APP_BASE_HREF) _baseHref?: string) {\n super();\n if
(_baseHref != null) {\n this._baseHref = _baseHref;\n }\n }\n onPopState(fn: LocationChangeListener):
void {\n this._platformLocation.onPopState(fn);\n this._platformLocation.onHashChange(fn);\n }\n getBaseHref(): string {\n return this._baseHref;\n }\n path(includeHash: boolean = false): string {\n // the
hash value is always prefixed with a `#\n // and if it is empty then it will stay empty\n let path =
this._platformLocation.hash;\n if (path == null) path = '#';\n return path.length > 0 ? path.substring(1) : path;\n
}\n prepareExternalUrl(internal: string): string {\n const url = joinWithSlash(this._baseHref, internal);\n
return url.length > 0 ? ('#' + url) : url;\n }\n pushState(state: any, title: string, path: string, queryParams: string)
{\n let url: string|null = this.prepareExternalUrl(path + normalizeQueryParams(queryParams));\n if (url.length
== 0) {\n url = this._platformLocation.pathname;\n }\n this._platformLocation.pushState(state, title, url);\n
}\n replaceState(state: any, title: string, path: string, queryParams: string) {\n let url =
this.prepareExternalUrl(path + normalizeQueryParams(queryParams));\n if (url.length == 0) {\n url =
this._platformLocation.pathname;\n }\n this._platformLocation.replaceState(state, title, url);\n }\n forward():
void {\n this._platformLocation.forward();\n }\n back(): void {\n this._platformLocation.back();\n
}\n}
"/**\n * @license\n * Copyright Google LLC All Rights Reserved.\n *\n * Use of this source code is
governed by an MIT-style license that can be\n * found in the LICENSE file at https://angular.io/license\n */
import {EventEmitter, Injectable, inject} from '@angular/core';\nimport {SubscriptionLike} from
'rxjs';\nimport {LocationStrategy} from './location_strategy';\nimport {PlatformLocation} from
'./platform_location';\nimport {joinWithSlash, normalizeQueryParams, stripTrailingSlash} from './util';\n\n\n/**\n * @publicApi\n */
@Injectable()\nexport interface PopStateEvent {\n pop?: boolean;\n state?: any;\n type?: string;\n url?:
string;\n}\n\n\n/**\n * @description\n *\n * A service that applications can use to interact with a browser's URL.\n *\n *
Depending on the `LocationStrategy` used, `Location` persists\n * to the URL's path or the URL's hash
segment.\n *\n * @usageNotes\n *\n * It's better to use the `Router#navigate` service to trigger route changes. Use\n *
`Location` only if you need to interact with or create normalized URLs outside of\n * routing.\n *\n * `Location` is
responsible for normalizing the URL against the application's base href.\n * A normalized URL is absolute from the
URL host, includes the application's base href, and has no\n * trailing slash:\n * - `~/my/app/user/123` is
normalized\n * - `~/my/app/user/123` **is not** normalized\n * - `~/my/app/user/123/` **is not** normalized\n *\n *
Example\n *\n * <code-example path='common/location/ts/path_location_component.ts'\n *
region='LocationComponent'></code-example>\n *\n * @publicApi\n */
@Injectable({\n providedIn: 'root',\n //
See #23917\n useFactory: createLocation,\n})\nexport class Location {\n /** @internal */\n _subject:
EventEmitter<any> = new EventEmitter();\n /** @internal */\n _baseHref: string;\n /** @internal */\n
_platformStrategy: LocationStrategy;\n /** @internal */\n _platformLocation: PlatformLocation;\n /** @internal
*/\n _urlChangeListeners: ((url: string, state: unknown) => void)[] = [];\n /** @internal */\n

```

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_urlChangeSubscription?: SubscriptionLike;\n\n constructor(platformStrategy: LocationStrategy, platformLocation: PlatformLocation) {\n this._platformStrategy = platformStrategy;\n const browserBaseHref = this._platformStrategy.getBaseHref();\n this._platformLocation = platformLocation;\n this._baseHref = stripTrailingSlash(_stripIndexHtml(browserBaseHref));\n this._platformStrategy.onPopState((ev) => {\n this._subject.emit({\n 'url': this.path(true),\n 'pop': true,\n 'state': ev.state,\n 'type': ev.type,\n });\n });\n}\n\n/**\n * Normalizes the URL path for this location.\n * @param includeHash True to include an anchor fragment in the path.\n * @returns The normalized URL path.\n * // TODO: vsavkin. Remove the boolean flag and always include hash once the deprecated router is removed.\n path(includeHash: boolean = false): string {\n return this.normalize(this._platformStrategy.path(includeHash));\n}\n\n/**\n * Reports the current state of the location history.\n * @returns The current value of the `history.state` object.\n */\n getState(): unknown {\n return this._platformLocation.getState();\n}\n\n/**\n * Normalizes the given path and compares to the current normalized path.\n * @param path The given URL path.\n * @param query Query parameters.\n * @returns True if the given URL path is equal to the current normalized path, false otherwise.\n */\n isCurrentPathEqualTo(path: string, query: string = ""): boolean {\n return this.path() === this.normalize(path + normalizeQueryParams(query));\n}\n\n/**\n * Normalizes a URL path by stripping any trailing slashes.\n * @param url String representing a URL.\n * @returns The normalized URL string.\n */\n normalize(url: string): string {\n return Location.stripTrailingSlash(_stripBaseHref(this._baseHref, _stripIndexHtml(url)));\n}\n\n/**\n * Normalizes an external URL path.\n * If the given URL doesn't begin with a leading slash ('/'), adds one before normalizing. Adds a hash if `HashLocationStrategy` is in use, or the `APP_BASE_HREF` if the `PathLocationStrategy` is in use.\n * @param url String representing a URL.\n * @returns A normalized platform-specific URL.\n */\n prepareExternalUrl(url: string): string {\n if (url && url[0] !== '/') {\n url = '/' + url;\n }\n return this._platformStrategy.prepareExternalUrl(url);\n}\n\n// TODO: rename this method to pushState\n/**\n * Changes the browser's URL to a normalized version of a given URL, and pushes a new item onto the platform's history.\n * @param path URL path to normalize.\n * @param query Query parameters.\n * @param state Location history state.\n */\n go(path: string, query: string = "", state: any = null): void {\n this._platformStrategy.pushState(state, "", path, query);\n this._notifyUrlChangeListeners(\n this.prepareExternalUrl(path + normalizeQueryParams(query)), state);\n}\n\n/**\n * Changes the browser's URL to a normalized version of the given URL, and replaces the top item on the platform's history stack.\n * @param path URL path to normalize.\n * @param query Query parameters.\n * @param state Location history state.\n */\n replaceState(path: string, query: string = "", state: any = null): void {\n this._platformStrategy.replaceState(state, "", path, query);\n this._notifyUrlChangeListeners(\n this.prepareExternalUrl(path + normalizeQueryParams(query)), state);\n}\n\n/**\n * Navigates forward in the platform's history.\n */\n forward(): void {\n this._platformStrategy.forward();\n}\n\n/**\n * Navigates back in the platform's history.\n */\n back(): void {\n this._platformStrategy.back();\n}\n\n/**\n * Registers a URL change listener. Use to catch updates performed by the Angular framework that are not detectible through "popstate" or "hashchange" events.\n * @param fn The change handler function, which take a URL and a location history state.\n */\n onUrlChange(fn: (url: string, state: unknown) => void) {\n this._urlChangeListeners.push(fn);\n if (!this._urlChangeSubscription) {\n this._urlChangeSubscription = this.subscribe(v => {\n this._notifyUrlChangeListeners(v.url, v.state);\n });\n }\n}\n\n/** @internal */\n _notifyUrlChangeListeners(url: string = "", state: unknown) {\n this._urlChangeListeners.forEach(fn => fn(url, state));\n}\n\n/**\n * Subscribes to the platform's `popState` events.\n * @param value Event that is triggered when the state history changes.\n * @param exception The exception to throw.\n * @returns Subscribed events.\n */\n subscribe(\n onNext: (value: PopStateEvent) => void, onThrow?: ((exception: any) => void)|null,\n onReturn?: (() => void)|null): SubscriptionLike {\n return this._subject.subscribe({\n next: onNext, error: onThrow, complete: onReturn;\n });\n}\n\n/**\n * Normalizes URL parameters by prepending with '?' if needed.\n * @param params String of URL parameters.\n * @returns The normalized URL parameters string.\n */\n public static normalizeQueryParams: (params: string) => string = normalizeQueryParams;\n\n/**\n * Joins two parts of a URL with a slash if needed.\n * @param start URL

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string\n * @param end URL string\n *\n *\n * @returns The joined URL string.\n */\n public static
joinWithSlash: (start: string, end: string) => string = joinWithSlash;\n\n /**\n * Removes a trailing slash from a
URL string if needed.\n * Looks for the first occurrence of either `#`, `?`, or the end of the\n * line as `^
characters and removes the trailing slash if one exists.\n *\n * @param url URL string.\n *\n * @returns The
URL string, modified if needed.\n */\n public static stripTrailingSlash: (url: string) => string =
stripTrailingSlash;\n}\n\nexport function createLocation() {\n return new Location(inject(LocationStrategy as any),
inject(PlatformLocation as any));\n}\n\nfunction _stripBaseHref(baseHref: string, url: string): string {\n return
baseHref && url.startsWith(baseHref) ? url.substring(baseHref.length) : url;\n}\n\nfunction _stripIndexHtml(url:
string): string {\n return url.replace(/\\/index.html$/, "");\n}\n\n"/**\n * @license\n * Copyright Google LLC All
Rights Reserved.\n *\n * Use of this source code is governed by an MIT-style license that can be\n * found in the
LICENSE file at https://angular.io/license\n */\n\nexport {HashLocationStrategy} from
'./hash_location_strategy';\nexport {Location, PopStateEvent} from './location';\nexport {APP_BASE_HREF,
LocationStrategy, PathLocationStrategy} from './location_strategy';\nexport {LOCATION_INITIALIZED,
LocationChangeEvent, LocationChangeListener, PlatformLocation} from './platform_location';\n"/**\n *
@license\n * Copyright Google LLC All Rights Reserved.\n *\n * Use of this source code is governed by an MIT-
style license that can be\n * found in the LICENSE file at https://angular.io/license\n */\n\n// THIS CODE IS
GENERATED - DO NOT MODIFY\n// See angular/tools/gulp-tasks/cldr/extract.js\n\nexport type
CurrenciesSymbols = [string][string | undefined, string];\n\n/** @internal */\n\nexport const CURRENCIES_EN:\n
{[code: string]: CurrenciesSymbols[string | undefined, string | undefined, number]} = {\n 'ADP': [undefined,
undefined, 0],\n 'AFN': [undefined, undefined, 0],\n 'ALL': [undefined, undefined, 0],\n 'AMD': [undefined,
undefined, 2],\n 'AOA': [undefined, 'Kz'],\n 'ARS': [undefined, '$'],\n 'AUD': ['A$', '$'],\n 'BAM':
[undefined, 'KM'],\n 'BBD': [undefined, '$'],\n 'BDT': [undefined, "],\n 'BHD': [undefined, undefined, 3],\n
'BIF': [undefined, undefined, 0],\n 'BMD': [undefined, '$'],\n 'BND': [undefined, '$'],\n 'BOB': [undefined,
'Bs'],\n 'BRL': ['R$'],\n 'BSD': [undefined, '$'],\n 'BWP': [undefined, 'P'],\n 'BYN': [undefined, '.', 2],\n
'BYR': [undefined, undefined, 0],\n 'BZD': [undefined, '$'],\n 'CAD': ['CA$', '$', 2],\n 'CHF': [undefined,
undefined, 2],\n 'CLF': [undefined, undefined, 4],\n 'CLP': [undefined, '$', 0],\n 'CNY': ['CN¥', '¥'],\n
'COP': [undefined, '$', 2],\n 'CRC': [undefined, "], 2],\n 'CUC': [undefined, '$'],\n 'CUP': [undefined, '$'],\n
'CZK': [undefined, 'K', 2],\n 'DJF': [undefined, undefined, 0],\n 'DKK': [undefined, 'kr', 2],\n 'DOP':
[undefined, '$'],\n 'EGP': [undefined, 'E£'],\n 'ESP': [undefined, "], 0],\n 'EUR': ['€'],\n 'FJD': [undefined,
'$'],\n 'FKP': [undefined, '£'],\n 'GBP': ['£'],\n 'GEL': [undefined, "],\n 'GIP': [undefined, '£'],\n 'GNF':
[undefined, 'FG', 0],\n 'GTQ': [undefined, 'Q'],\n 'GYD': [undefined, '$', 2],\n 'HKD': ['HK$', '$'],\n
'HNL': [undefined, 'L'],\n 'HRK': [undefined, 'kn'],\n 'HUF': [undefined, 'Ft', 2],\n 'IDR': [undefined, 'Rp',
2],\n 'ILS': [''],\n 'INR': [''],\n 'IQD': [undefined, undefined, 0],\n 'IRR': [undefined, undefined, 0],\n
'ISK': [undefined, 'kr', 0],\n 'ITL': [undefined, undefined, 0],\n 'JMD': [undefined, '$'],\n 'JOD': [undefined,
undefined, 3],\n 'JPY': ['¥', undefined, 0],\n 'KHR': [undefined, "],\n 'KMF': [undefined, 'CF', 0],\n
'KPW': [undefined, "], 0],\n 'KRW': ["], undefined, 0],\n 'KWD': [undefined, undefined, 3],\n 'KYD':
[undefined, '$'],\n 'KZT': [undefined, "],\n 'LAK': [undefined, "], 0],\n 'LBP': [undefined, 'L£', 0],\n
'LKR': [undefined, 'Rs'],\n 'LRD': [undefined, '$'],\n 'LTL': [undefined, 'Lt'],\n 'LUF': [undefined,
undefined, 0],\n 'LVL': [undefined, 'Ls'],\n 'LYD': [undefined, undefined, 3],\n 'MGA': [undefined, 'Ar',
0],\n 'MGF': [undefined, undefined, 0],\n 'MMK': [undefined, 'K', 0],\n 'MNT': [undefined, "], 2],\n
'MRO': [undefined, undefined, 0],\n 'MUR': [undefined, 'Rs', 2],\n 'MXN': ['MX$', '$'],\n 'MYR':
[undefined, 'RM'],\n 'NAD': [undefined, '$'],\n 'NGN': [undefined, "],\n 'NIO': [undefined, 'CS'],\n
'NOK': [undefined, 'kr', 2],\n 'NPR': [undefined, 'Rs'],\n 'NZD': ['NZ$', '$'],\n 'OMR': [undefined,
undefined, 3],\n 'PHP': [undefined, "],\n 'PKR': [undefined, 'Rs', 2],\n 'PLN': [undefined, 'z'],\n 'PYG':
[undefined, "], 0],\n 'RON': [undefined, 'lei'],\n 'RSD': [undefined, undefined, 0],\n 'RUB': [undefined, "],\n
'RUR': [undefined, '.'],\n 'RWF': [undefined, 'RF', 0],\n 'SBD': [undefined, '$'],\n 'SEK': [undefined, 'kr',
2],\n 'SGD': [undefined, '$'],\n 'SHP': [undefined, '£'],\n 'SLL': [undefined, undefined, 0],\n 'SOS':
[undefined, undefined, 0],\n 'SRD': [undefined, '$'],\n 'SSP': [undefined, '£'],\n 'STD': [undefined,

```



undefined, 0],\n 'STN': [undefined, 'Db'],\n 'SYP': [undefined, '£', 0],\n 'THB': [undefined, '฿'],\n 'TMM':  
 [undefined, undefined, 0],\n 'TND': [undefined, undefined, 3],\n 'TOP': [undefined, '₺'],\n 'TRL':  
 [undefined, undefined, 0],\n 'TRY': [undefined, '₺'],\n 'TTD': [undefined, '\$'],\n 'TWD': ['NT\$', '\$', 2],\n  
 'TZS': [undefined, undefined, 2],\n 'UAH': [undefined, '₴'],\n 'UGX': [undefined, undefined, 0],\n 'USD':  
 ['\$'],\n 'UYI': [undefined, undefined, 0],\n 'UYU': [undefined, '\$'],\n 'UYW': [undefined, undefined, 4],\n  
 'UZS': [undefined, undefined, 2],\n 'VEF': [undefined, 'Bs', 2],\n 'VND': ['₫', undefined, 0],\n 'VUV':  
 [undefined, undefined, 0],\n 'XAF': ['FCFA', undefined, 0],\n 'XCD': ['EC\$', '\$'],\n 'XOF': ['CFA',  
 undefined, 0],\n 'XPF': ['CFPF', undefined, 0],\n 'XXX': ['¤'],\n 'YER': [undefined, undefined, 0],\n  
 'ZAR': [undefined, 'R'],\n 'ZMK': [undefined, undefined, 0],\n 'ZMW': [undefined, 'ZK'],\n 'ZWD':  
 [undefined, undefined, 0]\n };\n", "/\*\n \* @license\n \* Copyright Google LLC All Rights Reserved.\n \* Use  
 of this source code is governed by an MIT-style license that can be\n \* found in the LICENSE file at  
 https://angular.io/license\n \*/\nimport { CurrencyIndex, ExtraLocaleDataIndex, findLocaleData,  
 getLocaleCurrencyCode, getLocalePluralCase, LocaleDataIndex } from '@angular/core';\nimport  
 { CURRENCIES\_EN, CurrenciesSymbols } from './currencies';\n\n/\*\n \* Format styles that can be used to  
 represent numbers.\n \* @see `getLocaleNumberFormat()`\n \* @see [Internationalization (i18n)  
 Guide](https://angular.io/guide/i18n)\n \*/\n \* @publicApi\n \*/\nexport enum NumberFormatStyle {\n Decimal,\n  
 Percent,\n Currency,\n Scientific\n}\n\n/\*\n \* Plurality cases used for translating plurals to different languages.\n  
 \*\n \* @see `NgPlural`\n \* @see `NgPluralCase`\n \* @see [Internationalization (i18n)  
 Guide](https://angular.io/guide/i18n)\n \*/\n \* @publicApi\n \*/\nexport enum Plural {\n Zero = 0,\n One = 1,\n  
 Two = 2,\n Few = 3,\n Many = 4,\n Other = 5,\n}\n\n/\*\n \* Context-dependant translation forms for strings.\n \*  
 Typically the standalone version is for the nominative form of the word,\n \* and the format version is used for the  
 genitive case.\n \* @see [CLDR website](http://cldr.unicode.org/translation/date-time-1/date-time#TOC-Standalone-  
 vs.-Format-Styles)\n \* @see [Internationalization (i18n) Guide](https://angular.io/guide/i18n)\n \*/\n \* @publicApi\n \*/\nexport enum FormStyle {\n Format,\n Standalone\n}\n\n/\*\n \* String widths available for translations.\n \*  
 The specific character widths are locale-specific.\n \* Examples are given for the word "Sunday" in English.\n \*/\n \* @publicApi\n \*/\nexport enum TranslationWidth {\n /\*\* 1 character for `en-US`. For example: 'S'\n \*/\n Narrow,\n  
 /\*\* 3 characters for `en-US`. For example: 'Sun'\n \*/\n Abbreviated,\n  
 /\*\* Full length for `en-US`. For example:  
 "Sunday"\n \*/\n Wide,\n  
 /\*\* 2 characters for `en-US`. For example: "Su"\n \*/\n Short\n}\n\n/\*\n \* String widths  
 available for date-time formats.\n \* The specific character widths are locale-specific.\n \* Examples are given for  
 `en-US`.\n \*/\n \* @see `getLocaleDateFormat()`\n \* @see `getLocaleTimeFormat()`\n \* @see  
 `getLocaleDateTimeFormat()`\n \* @see [Internationalization (i18n) Guide](https://angular.io/guide/i18n)\n \*/\n \* @publicApi\n \*/\nexport enum FormatWidth {\n /\*\*\n \* For `en-US`, 'M/d/yy, h:mm a'\n \* (Example: `6/15/15,  
 9:03 AM`)\n \*/\n Short,\n  
 /\*\*\n \* For `en-US`, `MMM d, y, h:mm:ss a`\n \* (Example: `Jun 15, 2015, 9:03:01  
 AM`)\n \*/\n Medium,\n  
 /\*\*\n \* For `en-US`, `MMMM d, y, h:mm:ss a z`\n \* (Example: `June 15, 2015 at  
 9:03:01 AM GMT+1`)\n \*/\n Long,\n  
 /\*\*\n \* For `en-US`, `EEEE, MMMM d, y, h:mm:ss a zzzz`\n \*  
 (Example: `Monday, June 15, 2015 at 9:03:01 AM GMT+01:00`)\n \*/\n Full\n}\n\n/\*\n \* Symbols that can be  
 used to replace placeholders in number patterns.\n \* Examples are based on `en-US` values.\n \*/\n \* @see  
 `getLocaleNumberSymbol()`\n \* @see [Internationalization (i18n) Guide](https://angular.io/guide/i18n)\n \*/\n \* @publicApi\n \*/\nexport enum NumberSymbol {\n /\*\*\n \* Decimal separator.\n \* For `en-US`, the dot  
 character.\n \* Example: `2,345`.67\n \*/\n Decimal,\n  
 /\*\*\n \* Grouping separator, typically for thousands.\n  
 For `en-US`, the comma character.\n \* Example: `2,345.67`\n \*/\n Group,\n  
 /\*\*\n \* List-item separator.\n \*  
 Example: `one, two, and three`\n \*/\n List,\n  
 /\*\*\n \* Sign for percentage (out of 100).\n \* Example: `23.4%`\n  
 \*/\n PercentSign,\n  
 /\*\*\n \* Sign for positive numbers.\n \* Example: `+23`\n \*/\n PlusSign,\n  
 /\*\*\n \* Sign for  
 negative numbers.\n \* Example: `-23`\n \*/\n MinusSign,\n  
 /\*\*\n \* Computer notation for exponential value (n  
 times a power of 10).\n \* Example: `1.2E3`\n \*/\n Exponential,\n  
 /\*\*\n \* Human-readable format of  
 exponential.\n \* Example: `1.2x103`\n \*/\n SuperscriptingExponent,\n  
 /\*\*\n \* Sign for permille (out of 1000).\n  
 \* Example: `23.4‰`\n \*/\n PerMille,\n  
 /\*\*\n \* Infinity, can be used with plus and minus.\n \* Example: `+, -`\n  
 \*/\n Infinity,\n  
 /\*\*\n \* Not a number.\n \* Example: `NaN`\n \*/\n NaN,\n  
 /\*\*\n \* Symbol used between time

units.  
 \* Example: 10:52  
 \* TimeSeparator,  
 \* Decimal separator for currency values (fallback to `Decimal`),  
 \* Example: \$2,345.67  
 \* CurrencyDecimal,  
 \* Group separator for currency values (fallback to `Group`),  
 \* Example: \$2,345.67  
 \* CurrencyGroup  
 \* The value for each day of the week, based on the `en-US` locale  
 \* @publicApi  
 \* export enum WeekDay {  
 Sunday = 0,  
 Monday,  
 Tuesday,  
 Wednesday,  
 Thursday,  
 Friday,  
 Saturday  
 }  
 \* Retrieves the locale ID from the currently loaded locale.  
 \* The loaded locale could be, for example, a global one rather than a regional one.  
 \* @param locale A locale code, such as `fr-FR`.  
 \* @returns The locale code. For example, `fr`.  
 \* @see [Internationalization (i18n) Guide](https://angular.io/guide/i18n)  
 \* @publicApi  
 \* export function getLocaleId(locale: string): string {  
 return findLocaleData(locale)[LocaleDataIndex.LocaleId];  
 }  
 \* Retrieves day period strings for the given locale.  
 \* @param locale A locale code for the locale format rules to use.  
 \* @param formStyle The required grammatical form.  
 \* @param width The required character width.  
 \* @returns An array of localized period strings. For example, `[AM, PM]` for `en-US`.  
 \* @see [Internationalization (i18n) Guide](https://angular.io/guide/i18n)  
 \* @publicApi  
 \* export function getLocaleDayPeriods(locale: string, formStyle: FormStyle, width: TranslationWidth): Readonly<string, string> {  
 const data = findLocaleData(locale);  
 const amPmData = <string, string>[[data[LocaleDataIndex.DayPeriodsFormat], data[LocaleDataIndex.DayPeriodsStandalone]]];  
 const amPm = getLastDefinedValue(amPmData, formStyle);  
 return getLastDefinedValue(amPm, width);  
 }  
 \* Retrieves days of the week for the given locale, using the Gregorian calendar.  
 \* @param locale A locale code for the locale format rules to use.  
 \* @param formStyle The required grammatical form.  
 \* @param width The required character width.  
 \* @returns An array of localized name strings. For example, `[Sunday, Monday, ... Saturday]` for `en-US`.  
 \* @see [Internationalization (i18n) Guide](https://angular.io/guide/i18n)  
 \* @publicApi  
 \* export function getLocaleDayNames(locale: string, formStyle: FormStyle, width: TranslationWidth): ReadonlyArray<string> {  
 const data = findLocaleData(locale);  
 const daysData = <string>[[data[LocaleDataIndex.DaysFormat], data[LocaleDataIndex.DaysStandalone]]];  
 const days = getLastDefinedValue(daysData, formStyle);  
 return getLastDefinedValue(days, width);  
 }  
 \* Retrieves months of the year for the given locale, using the Gregorian calendar.  
 \* @param locale A locale code for the locale format rules to use.  
 \* @param formStyle The required grammatical form.  
 \* @param width The required character width.  
 \* @returns An array of localized name strings. For example, `[January, February, ...]` for `en-US`.  
 \* @see [Internationalization (i18n) Guide](https://angular.io/guide/i18n)  
 \* @publicApi  
 \* export function getLocaleMonthNames(locale: string, formStyle: FormStyle, width: TranslationWidth): ReadonlyArray<string> {  
 const data = findLocaleData(locale);  
 const monthsData = <string>[[data[LocaleDataIndex.MonthsFormat], data[LocaleDataIndex.MonthsStandalone]]];  
 const months = getLastDefinedValue(monthsData, formStyle);  
 return getLastDefinedValue(months, width);  
 }  
 \* Retrieves Gregorian-calendar eras for the given locale.  
 \* @param locale A locale code for the locale format rules to use.  
 \* @param width The required character width.  
 \* @returns An array of localized era strings. For example, `[AD, BC]` for `en-US`.  
 \* @see [Internationalization (i18n) Guide](https://angular.io/guide/i18n)  
 \* @publicApi  
 \* export function getLocaleEraNames(locale: string, width: TranslationWidth): Readonly<string, string> {  
 const data = findLocaleData(locale);  
 const erasData = <string, string>[[data[LocaleDataIndex.Eras]];  
 return getLastDefinedValue(erasData, width);  
 }  
 \* Retrieves the first day of the week for the given locale.  
 \* @param locale A locale code for the locale format rules to use.  
 \* @returns A day index number, using the 0-based week-day index for `en-US` (Sunday = 0, Monday = 1, ...).  
 \* For example, for `fr-FR`, returns 1 to indicate that the first day is Monday.  
 \* @see [Internationalization (i18n) Guide](https://angular.io/guide/i18n)  
 \* @publicApi  
 \* export function getLocaleFirstDayOfWeek(locale: string): WeekDay {  
 const data = findLocaleData(locale);  
 return data[LocaleDataIndex.FirstDayOfWeek];  
 }  
 \* Range of week days that are considered the week-end for the given locale.  
 \* @param locale A locale code for the locale format rules to use.  
 \* @returns The range of day values, `[startDay, endDay]`.  
 \* @see [Internationalization (i18n) Guide](https://angular.io/guide/i18n)  
 \* @publicApi  
 \* export function getLocaleWeekEndRange(locale: string): [WeekDay, WeekDay] {  
 const data =

```

findLocaleData(locale);\n return data[LocaleDataIndex.WeekendRange];\n}\n\n/**\n * Retrieves a localized date-
value formatting string.\n *\n * @param locale A locale code for the locale format rules to use.\n * @param width
The format type.\n * @returns The localized formatting string.\n * @see `FormatWidth`\n * @see
[Internationalization (i18n) Guide](https://angular.io/guide/i18n)\n *\n * @publicApi\n */\nexport function
getLocaleDateFormat(locale: string, width: FormatWidth): string {\n const data = findLocaleData(locale);\n return
getLastDefinedValue(data[LocaleDataIndex.DateFormat], width);\n}\n\n/**\n * Retrieves a localized time-value
formatting string.\n *\n * @param locale A locale code for the locale format rules to use.\n * @param width The
format type.\n * @returns The localized formatting string.\n * @see `FormatWidth`\n * @see [Internationalization
(i18n) Guide](https://angular.io/guide/i18n)\n\n * @publicApi\n */\nexport function getLocaleTimeFormat(locale:
string, width: FormatWidth): string {\n const data = findLocaleData(locale);\n return
getLastDefinedValue(data[LocaleDataIndex.TimeFormat], width);\n}\n\n/**\n * Retrieves a localized date-time
formatting string.\n *\n * @param locale A locale code for the locale format rules to use.\n * @param width The
format type.\n * @returns The localized formatting string.\n * @see `FormatWidth`\n * @see [Internationalization
(i18n) Guide](https://angular.io/guide/i18n)\n *\n * @publicApi\n */\nexport function
getLocaleDateTimeFormat(locale: string, width: FormatWidth): string {\n const data = findLocaleData(locale);\n
const dateTimeFormatData = <string[]>data[LocaleDataIndex.DateTimeFormat];\n return
getLastDefinedValue(dateTimeFormatData, width);\n}\n\n/**\n * Retrieves a localized number symbol that can be
used to replace placeholders in number formats.\n *\n * @param locale The locale code.\n * @param symbol The
symbol to localize.\n * @returns The character for the localized symbol.\n * @see `NumberSymbol`\n * @see
[Internationalization (i18n) Guide](https://angular.io/guide/i18n)\n *\n * @publicApi\n */\nexport function
getLocaleNumberSymbol(locale: string, symbol: NumberSymbol): string {\n const data = findLocaleData(locale);\n
const res = data[LocaleDataIndex.NumberSymbols][symbol];\n if (typeof res === 'undefined') {\n if (symbol ===
NumberSymbol.CurrencyDecimal) {\n return
data[LocaleDataIndex.NumberSymbols][NumberSymbol.Decimal];\n } else if (symbol ===
NumberSymbol.CurrencyGroup) {\n return data[LocaleDataIndex.NumberSymbols][NumberSymbol.Group];\n
}\n }\n return res;\n}\n\n/**\n * Retrieves a number format for a given locale.\n *\n * Numbers are formatted using
patterns, like `#,###.00`. For example, the pattern `#,###.00`\n * when used to format the number 12345.678 could
result in `"12'345,678"`. That would happen if the\n * grouping separator for your language is an apostrophe, and the
decimal separator is a comma.\n *\n * Important: The characters `.``,``,`0`,`#` (and others below) are special
placeholders\n * that stand for the decimal separator, and so on, and are NOT real characters.\n * You must NOT
"translate" the placeholders. For example, don't change `.` to ``,` even though in\n * your language the decimal
point is written with a comma. The symbols should be replaced by the\n * local equivalents, using the appropriate
`NumberSymbol` for your language.\n *\n * Here are the special characters used in number patterns:\n *\n * |
Symbol | Meaning\n * |-----|-----|\n * | . | Replaced automatically by the character used for the decimal point.
\n * | , | Replaced by the "grouping" (thousands) separator. \n * | 0 | Replaced by a digit (or zero if there aren't
enough digits). \n * | # | Replaced by a digit (or nothing if there aren't enough). \n * | ¤ | Replaced by a currency
symbol, such as $ or USD. \n * | % | Marks a percent format. The % symbol may change position, but must be
retained. \n * | E | Marks a scientific format. The E symbol may change position, but must be retained. \n * | ' |
Special characters used as literal characters are quoted with ASCII single quotes. \n *\n * @param locale A locale
code for the locale format rules to use.\n * @param type The type of numeric value to be formatted (such as
`Decimal` or `Currency`.)\n * @returns The localized format string.\n * @see `NumberFormatStyle`\n * @see
[CLDR website](http://cldr.unicode.org/translation/number-patterns)\n * @see [Internationalization (i18n)
Guide](https://angular.io/guide/i18n)\n *\n * @publicApi\n */\nexport function getLocaleNumberFormat(locale:
string, type: NumberFormatStyle): string {\n const data = findLocaleData(locale);\n return
data[LocaleDataIndex.NumberFormats][type];\n}\n\n/**\n * Retrieves the symbol used to represent the currency for
the main country\n * corresponding to a given locale. For example, '$' for `en-US`.\n *\n * @param locale A locale
code for the locale format rules to use.\n * @returns The localized symbol character,\n * or `null` if the main
country cannot be determined.\n * @see [Internationalization (i18n) Guide](https://angular.io/guide/i18n)\n *\n

```

```

@publicApi\n * \nexport function getLocaleCurrencySymbol(locale: string): string|null {\n const data =
findLocaleData(locale);\n return data[LocaleDataIndex.CurrencySymbol] || null;\n}\n\n/**\n * Retrieves the name
of the currency for the main country corresponding\n * to a given locale. For example, 'US Dollar' for `en-US`.\n *
@param locale A locale code for the locale format rules to use.\n * @returns The currency name,\n * or `null` if the
main country cannot be determined.\n * @see [Internationalization (i18n) Guide](https://angular.io/guide/i18n)\n
*\n * @publicApi\n * \nexport function getLocaleCurrencyName(locale: string): string|null {\n const data =
findLocaleData(locale);\n return data[LocaleDataIndex.CurrencyName] || null;\n}\n\n/**\n * Retrieves the default
currency code for the given locale.\n * \n * The default is defined as the first currency which is still in use.\n * \n *
@param locale The code of the locale whose currency code we want.\n * @returns The code of the default currency
for the given locale.\n * \n * @publicApi\n * \nexport function getLocaleCurrencyCode(locale: string): string|null
{\n return getLocaleCurrencyCode(locale);\n}\n\n/**\n * Retrieves the currency values for a given locale.\n *
@param locale A locale code for the locale format rules to use.\n * @returns The currency values.\n * @see
[Internationalization (i18n) Guide](https://angular.io/guide/i18n)\n * \nfunction getLocaleCurrencies(locale: string):
{[code: string]: CurrenciesSymbols} {\n const data = findLocaleData(locale);\n return
data[LocaleDataIndex.Currencies];\n}\n\n/**\n * @alias core/getLocalePluralCase\n * @publicApi\n * \nexport
const getLocalePluralCase: (locale: string) => ((value: number) => Plural) =\n getLocalePluralCase;\n\nfunction
checkFullData(data: any) {\n if (!data[LocaleDataIndex.ExtraData]) {\n throw new Error(`Missing extra locale
data for the locale "${\n data[LocaleDataIndex\n .LocaleId]}`). Use "registerLocaleData" to load
new data. See the "I18n guide" on angular.io to know more.`);\n }\n}\n\n/**\n * Retrieves locale-specific rules
used to determine which day period to use\n * when more than one period is defined for a locale.\n * \n * There is a
rule for each defined day period. The\n * first rule is applied to the first day period and so on.\n * Fall back to
AM/PM when no rules are available.\n * \n * A rule can specify a period as time range, or as a single time value.\n
*\n * This functionality is only available when you have loaded the full locale data.\n * See the ["I18n
guide"](guide/i18n#i18n-pipes).\n * \n * @param locale A locale code for the locale format rules to use.\n *
@returns The rules for the locale, a single time value or array of *from-time, to-time*,\n * or null if no periods are
available.\n * \n * @see `getLocaleExtraDayPeriods()`\n * @see [Internationalization (i18n)
Guide](https://angular.io/guide/i18n)\n * \n * @publicApi\n * \nexport function
getLocaleExtraDayPeriodRules(locale: string): (Time|[Time, Time])[] {\n const data = findLocaleData(locale);\n
checkFullData(data);\n const rules =
data[LocaleDataIndex.ExtraData][ExtraLocaleDataIndex.ExtraDayPeriodsRules] || [];\n return rules.map((rule:
string|[string, string]) => {\n if (typeof rule === 'string') {\n return extractTime(rule);\n }\n return
[extractTime(rule[0]), extractTime(rule[1])];\n });\n}\n\n/**\n * Retrieves locale-specific day periods, which
indicate roughly how a day is broken up\n * in different languages.\n * For example, for `en-US`, periods are
morning, noon, afternoon, evening, and midnight.\n * \n * This functionality is only available when you have loaded
the full locale data.\n * See the ["I18n guide"](guide/i18n#i18n-pipes).\n * \n * @param locale A locale code for
the locale format rules to use.\n * @param formStyle The required grammatical form.\n * @param width The
required character width.\n * @returns The translated day-period strings.\n * @see
`getLocaleExtraDayPeriodRules()`\n * @see [Internationalization (i18n) Guide](https://angular.io/guide/i18n)\n * \n *
@publicApi\n * \nexport function getLocaleExtraDayPeriods(\n locale: string, formStyle: FormStyle, width:
TranslationWidth): string[] {\n const data = findLocaleData(locale);\n checkFullData(data);\n const
dayPeriodsData = <string[][]>[\n
data[LocaleDataIndex.ExtraData][ExtraLocaleDataIndex.ExtraDayPeriodFormats],\n
data[LocaleDataIndex.ExtraData][ExtraLocaleDataIndex.ExtraDayPeriodStandalone]\n];\n const dayPeriods =
getLastDefinedValue(dayPeriodsData, formStyle) || [];\n return getLastDefinedValue(dayPeriods, width) ||
[];\n}\n\n/**\n * Retrieves the writing direction of a specified locale\n * @param locale A locale code for the locale
format rules to use.\n * @publicApi\n * @returns 'rtl' or 'ltr'\n * @see [Internationalization (i18n)
Guide](https://angular.io/guide/i18n)\n * \nexport function getLocaleDirection(locale: string): 'ltr'|'rtl' {\n const data
= findLocaleData(locale);\n return data[LocaleDataIndex.Directionality];\n}\n\n/**\n * Retrieves the first value that

```

is defined in an array, going backwards from an index position.

`* To avoid repeating the same data (as when the "format" and "standalone" forms are the same)`

`* add the first value to the locale data arrays, and add other values only if they are different.`

`* @param data The data array to retrieve from.`

`* @param index A 0-based index into the array to start from.`

`* @returns The value immediately before the given index position.`

`* @see [Internationalization (i18n) Guide](https://angular.io/guide/i18n)`

`* @publicApi`

```

function
getLastDefinedValue<T>(data: T[], index: number): T {
 for (let i = index; i > -1; i--) {
 if (typeof data[i] !==
'undefined') {
 return data[i];
 }
 }
 throw new Error('Locale data API: locale data
undefined');
}

```

`* Represents a time value with hours and minutes.`

`* @publicApi`

```

export type
Time = {
 hours: number;
 minutes: number;
}

```

`* Extracts the hours and minutes from a string like "15:45"`

```

function extractTime(time: string): Time {
 const [h, m] = time.split(':');
 return {hours: +h,
minutes: +m};
}

```

`* Retrieves the currency symbol for a given currency code.`

`* For example, for the default `en-US` locale, the code `USD` can be represented by the narrow symbol `$` or the wide symbol `US$`.`

`* @param code The currency code.`

`* @param format The format, `wide` or `narrow`.`

`* @param locale A locale code for the locale format rules to use.`

`* @returns The symbol, or the currency code if no symbol is available.`

`* @see [Internationalization (i18n) Guide](https://angular.io/guide/i18n)`

`* @publicApi`

```

export function getCurrencySymbol(code: string, format: 'wide'|'narrow', locale = 'en'): string {
 const currency = getLocaleCurrencies(locale)[code] || CURRENCIES_EN[code] || [];
 const symbolNarrow = currency[CurrencyIndex.SymbolNarrow];
 if (format === 'narrow' && typeof symbolNarrow === 'string') {
 return symbolNarrow;
 }
 return currency[CurrencyIndex.Symbol] || code;
}

```

`// Most currencies have cents, that's why the default is 2`

```

const DEFAULT_NB_OF_CURRENCY_DIGITS = 2;

```

`* Reports the number of decimal digits for a given currency.`

`* The value depends upon the presence of cents in that particular currency.`

`* @param code The currency code.`

`* @returns The number of decimal digits, typically 0 or 2.`

`* @see [Internationalization (i18n) Guide](https://angular.io/guide/i18n)`

`* @publicApi`

```

export function
getNumberOfCurrencyDigits(code: string): number {
 let digits;
 const currency = CURRENCIES_EN[code];
 if (currency) {
 digits = currency[CurrencyIndex.NbOfDigits];
 }
 return typeof digits === 'number' ? digits :
DEFAULT_NB_OF_CURRENCY_DIGITS;
}

```

`* @license`

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```

import {FormatWidth, FormStyle, getLocaleDateFormat,
getLocaleDateTimeFormat, getLocaleDayNames, getLocaleDayPeriods, getLocaleEraNames,
getLocaleExtraDayPeriodRules, getLocaleExtraDayPeriods, getLocaleId, getLocaleMonthNames,
getLocaleNumberSymbol, getLocaleTimeFormat, NumberSymbol, Time, TranslationWidth} from
'/locale_data_api';
export const ISO8601_DATE_REGEX =
/^\d{4}-?\d{1,2}-
?\d{1,2}(?:T\d{1,2}:(?:\d{1,2}(?:\d{1,2}(\.\d+)?))?)?(Z|([+-])\d{1,2}:\d{1,2})?)?$/;
const NAMED_FORMATS: {[localeId: string]: {[format: string]:
string}} = {};
const DATE_FORMATS_SPLIT =
/((?:[^\GyYMLwWdEabBhHmsSzZO]+)|(?:'(?![^"]*)'|(?:G{1,5}|y{1,4}|Y{1,4}|M{1,5}|L{1,5}|w{1,2}|W{1}|d{1,2}|E{1,6}|a{1,5}|b{1,5}|B{1,5}|h{1,2}|H{1,2}|m{1,2}|s{1,2}|S{1,3}|z{1,4}|Z{1,5}|O{1,4})))([s\S]*);
enum
ZoneWidth {
 Short,
 ShortGMT,
 Long,
 Extended
}
enum DateType {
 FullYear,
 Month,
 Date,
 Hours,
 Minutes,
 Seconds,
 FractionalSeconds,
 Day
}
enum TranslationType {
 DayPeriods,
 Days,
 Months,
 Eras
}

```

`* @ngModule CommonModule`

`* @description`

`* Formats a date according to locale rules.`

`* @param value The date to format, as a Date, or a number (milliseconds since UTC epoch) or an [ISO date-time string](https://www.w3.org/TR/NOTE-datetime).`

`* @param format The date-time components to include. See `DatePipe` for details.`

`* @param locale A locale code for the locale format rules to use.`

`* @param timezone The time zone. A time zone offset from GMT (such as `+0430`), or a standard UTC/GMT or continental US time zone abbreviation. If not specified, uses host system settings.`

`* @returns The formatted date string.`

`* @see `DatePipe``

`* @see [Internationalization (i18n) Guide](https://angular.io/guide/i18n)`

`* @publicApi`

```

export function formatDate(
 value:
string|number|Date, format: string, locale: string, timezone?: string): string {
 let date = toDate(value);
 const

```



```

DateType.Date:\n return date.getDate();\n case DateType.Hours:\n return date.getHours();\n case
DateType.Minutes:\n return date.getMinutes();\n case DateType.Seconds:\n return date.getSeconds();\n
case DateType.FractionalSeconds:\n return date.getMilliseconds();\n case DateType.Day:\n return
date.getDay();\n default:\n throw new Error(`Unknown DateType value \`${part}\`.`);\n };\n\n/**\n *
Returns a date formatter that transforms a date into its locale string representation\n *\nfunction dateStrGetter(\n
name: TranslationType, width: TranslationWidth, form: FormStyle = FormStyle.Format,\n extended = false):
DateFormatter {\n return function(date: Date, locale: string): string {\n return getDateTranslation(date, locale,
name, width, form, extended);\n };;\n}\n\n/**\n * Returns the locale translation of a date for a given form, type and
width\n *\nfunction getDateTranslation(\n date: Date, locale: string, name: TranslationType, width:
TranslationWidth, form: FormStyle,\n extended: boolean) {\n switch (name) {\n case
TranslationType.Months:\n return getLocaleMonthNames(locale, form, width)[date.getMonth()];\n case
TranslationType.Days:\n return getLocaleDayNames(locale, form, width)[date.getDay()];\n case
TranslationType.DayPeriods:\n const currentHours = date.getHours();\n const currentMinutes =
date.getMinutes();\n if (extended) {\n const rules = getLocaleExtraDayPeriodRules(locale);\n const
dayPeriods = getLocaleExtraDayPeriods(locale, form, width);\n const index = rules.findIndex(rule => {\n
if (Array.isArray(rule)) {\n // morning, afternoon, evening, night\n const [from, to] = rule;\n
const afterFrom = currentHours >= from.hours && currentMinutes >= from.minutes;\n const beforeTo =\n
(currentHours < to.hours ||\n (currentHours === to.hours && currentMinutes < to.minutes));\n
// We must account for normal rules that span a period during the day (e.g. 6am-9am)\n // where `from` is less
(earlier) than `to`. But also rules that span midnight (e.g.\n // 10pm - 5am) where `from` is greater (later!)
than `to`.\n // In the first case the current time must be BOTH after `from` AND before `to`\n
// (e.g. 8am is after 6am AND before 10am).\n // In the second case the current time must be
EITHER after `from` OR before `to`\n // (e.g. 4am is before 5am but not after 10pm; and 11pm is not before
5am but it is\n // after 10pm).\n if (from.hours < to.hours) {\n if (afterFrom && beforeTo) {\n
return true;\n } else if (afterFrom || beforeTo) {\n return true;\n }\n
 } else if (rule.hours === currentHours && rule.minutes === currentMinutes) {\n return true;\n }\n
 } else {\n return false;\n }\n });\n if (index !== -1) {\n return
dayPeriods[index];\n }\n // if no rules for the day periods, we use am/pm by default\n return
getLocaleDayPeriods(locale, form, <TranslationWidth>width)[currentHours < 12 ? 0 : 1];\n }\n case
TranslationType.Eras:\n return getLocaleEraNames(locale, <TranslationWidth>width)[date.getFullYear() <= 0 ?
0 : 1];\n default:\n // This default case is not needed by TypeScript compiler, as the switch is exhaustive.\n //
However Closure Compiler does not understand that and reports an error in typed mode.\n // The `throw new
Error` below works around the problem, and the unexpected: never variable\n // makes sure tsc still checks this
code is unreachable.\n const unexpected: never = name;\n throw new Error(`unexpected translation type
${unexpected}`);\n }\n }\n }\n}\n\n/**\n * Returns a date formatter that transforms a date and an offset into a timezone
with ISO8601 or\n * GMT format depending on the width (eg: short = +0430, short:GMT = GMT+4, long =
GMT+04:30,\n * extended = +04:30)\n *\nfunction timeZoneGetter(width: ZoneWidth): DateFormatter {\n return
function(date: Date, locale: string, offset: number) {\n const zone = -1 * offset;\n const minusSign =
getLocaleNumberSymbol(locale, NumberSymbol.MinusSign);\n const hours = zone > 0 ? Math.floor(zone / 60) :
Math.ceil(zone / 60);\n switch (width) {\n case ZoneWidth.Short:\n return ((zone >= 0) ? '+' : '-') +
padNumber(hours, 2, minusSign) +\n padNumber(Math.abs(zone % 60), 2, minusSign);\n case
ZoneWidth.ShortGMT:\n return 'GMT' + ((zone >= 0) ? '+' : '-') + padNumber(hours, 1, minusSign);\n case
ZoneWidth.Long:\n return 'GMT' + ((zone >= 0) ? '+' : '-') + padNumber(hours, 2, minusSign) + ':' +\n
 padNumber(Math.abs(zone % 60), 2, minusSign);\n case ZoneWidth.Extended:\n if (offset === 0) {\n
return 'Z';\n } else {\n return ((zone >= 0) ? '+' : '-') + padNumber(hours, 2, minusSign) + ':' +\n
 padNumber(Math.abs(zone % 60), 2, minusSign);\n }\n default:\n throw new Error(`Unknown zone
width \`${width}\``);\n }\n }\n }\n}\n\nconst JANUARY = 0;\nconst THURSDAY = 4;\nfunction
getFirstThursdayOfYear(year: number) {\n const firstDayOfYear = (new Date(year, JANUARY, 1)).getDay();\n

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return new Date(\n year, 0, 1 + ((firstDayOfYear <= THURSDAY) ? THURSDAY : THURSDAY + 7) -
firstDayOfYear);\n}\n\nfunction getThursdayThisWeek(datetime: Date) {\n return new Date(\n
datetime.getFullYear(), datetime.getMonth(),\n datetime.getDate() + (THURSDAY -
datetime.getDay()));\n}\n\nfunction weekGetter(size: number, monthBased = false): DateFormatter {\n return
function(date: Date, locale: string) {\n let result;\n if (monthBased) {\n const nbDaysBefore1stDayOfMonth
=\n new Date(date.getFullYear(), date.getMonth(), 1).getDate() - 1;\n const today = date.getDate();\n
result = 1 + Math.floor((today + nbDaysBefore1stDayOfMonth) / 7);\n } else {\n const thisThurs =
getThursdayThisWeek(date);\n // Some days of a year are part of next year according to ISO 8601.\n //
Compute the firstThurs from the year of this week's Thursday\n const firstThurs =
getFirstThursdayOfYear(thisThurs.getFullYear());\n const diff = thisThurs.getTime() - firstThurs.getTime();\n
result = 1 + Math.round(diff / 6.048e8); // 6.048e8 ms per week\n } }\n\n return padNumber(result, size,
getLocaleNumberSymbol(locale, NumberSymbol.MinusSign));\n };\n}\n\n/**\n * Returns a date formatter that
provides the week-numbering year for the input date.\n */\nfunction weekNumberingYearGetter(size: number, trim
= false): DateFormatter {\n return function(date: Date, locale: string) {\n const thisThurs =
getThursdayThisWeek(date);\n const weekNumberingYear = thisThurs.getFullYear();\n return padNumber(\n
weekNumberingYear, size, getLocaleNumberSymbol(locale, NumberSymbol.MinusSign), trim);\n };\n}\n\ntype
DateFormatter = (date: Date, locale: string, offset: number) => string;\n\nconst DATE_FORMATS: {[format:
string]: DateFormatter} = {};\n\n// Based on CLDR formats:\n// See complete list:
http://www.unicode.org/reports/tr35/tr35-dates.html#Date_Field_Symbol_Table\n// See also explanations:
http://cldr.unicode.org/translation/date-time\n// TODO(ocombe): support all missing cldr formats: Y, U, Q, D, F, e,
c, j, J, C, A, v, V, X, x\nfunction getDateFormatter(format: string): DateFormatter|null {\n if
(DATE_FORMATS[format]) {\n return DATE_FORMATS[format];\n } }\n\n let formatter;\n switch (format) {\n
// Era name (AD/BC)\n case 'G':\n case 'GG':\n case 'GGG':\n formatter =
dateStrGetter(TranslationType.Eras, TranslationWidth.Abbreviated);\n break;\n case 'GGGG':\n formatter =
dateStrGetter(TranslationType.Eras, TranslationWidth.Wide);\n break;\n case 'GGGGG':\n formatter =
dateStrGetter(TranslationType.Eras, TranslationWidth.Narrow);\n break;\n\n // 1 digit representation of the
year, e.g. (AD 1 => 1, AD 199 => 199)\n case 'y':\n formatter = dateGetter(DateType.FullYear, 1, 0, false,
true);\n break;\n // 2 digit representation of the year, padded (00-99). (e.g. AD 2001 => 01, AD 2010 => 10)\n
case 'yy':\n formatter = dateGetter(DateType.FullYear, 2, 0, true, true);\n break;\n // 3 digit representation of
the year, padded (000-999). (e.g. AD 2001 => 01, AD 2010 => 10)\n case 'yyy':\n formatter =
dateGetter(DateType.FullYear, 3, 0, false, true);\n break;\n // 4 digit representation of the year (e.g. AD 1 =>
0001, AD 2010 => 2010)\n case 'yyyy':\n formatter = dateGetter(DateType.FullYear, 4, 0, false, true);\n
break;\n\n // 1 digit representation of the week-numbering year, e.g. (AD 1 => 1, AD 199 => 199)\n case 'Y':\n
formatter = weekNumberingYearGetter(1);\n break;\n // 2 digit representation of the week-numbering year,
padded (00-99). (e.g. AD 2001 => 01, AD\n // 2010 => 10)\n case 'YY':\n formatter =
weekNumberingYearGetter(2, true);\n break;\n // 3 digit representation of the week-numbering year, padded
(000-999). (e.g. AD 1 => 001, AD\n // 2010 => 2010)\n case 'YYY':\n formatter =
weekNumberingYearGetter(3);\n break;\n // 4 digit representation of the week-numbering year (e.g. AD 1 =>
0001, AD 2010 => 2010)\n case 'YYYY':\n formatter = weekNumberingYearGetter(4);\n break;\n\n //
Month of the year (1-12), numeric\n case 'M':\n case 'L':\n formatter = dateGetter(DateType.Month, 1, 1);\n
break;\n case 'MM':\n case 'LL':\n formatter = dateGetter(DateType.Month, 2, 1);\n break;\n\n // Month
of the year (January, ...), string, format\n case 'MMM':\n formatter = dateStrGetter(TranslationType.Months,
TranslationWidth.Abbreviated);\n break;\n case 'MMMM':\n formatter =
dateStrGetter(TranslationType.Months, TranslationWidth.Wide);\n break;\n case 'MMMMM':\n formatter =
dateStrGetter(TranslationType.Months, TranslationWidth.Narrow);\n break;\n\n // Month of the year (January,
...), string, standalone\n case 'LLL':\n formatter =\n dateStrGetter(TranslationType.Months,
TranslationWidth.Abbreviated, FormStyle.Standalone);\n break;\n case 'LLLL':\n formatter =\n dateStrGetter(TranslationType.Months, TranslationWidth.Wide, FormStyle.Standalone);\n break;\n case

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'LLLL':\n formatter =\n dateStrGetter(TranslationType.Months, TranslationWidth.Narrow,
FormStyle.Standalone);\n break;\n\n // Week of the year (1, ... 52)\n case 'w':\n formatter =
weekGetter(1);\n break;\n case 'ww':\n formatter = weekGetter(2);\n break;\n\n // Week of the month
(1, ...)\n case 'W':\n formatter = weekGetter(1, true);\n break;\n\n // Day of the month (1-31)\n case 'd':\n formatter = dateGetter(DateType.Date, 1);\n break;\n case 'dd':\n formatter = dateGetter(DateType.Date,
2);\n break;\n\n // Day of the Week\n case 'E':\n case 'EE':\n case 'EEE':\n formatter =
dateStrGetter(TranslationType.Days, TranslationWidth.Abbreviated);\n break;\n case 'EEEE':\n formatter =
dateStrGetter(TranslationType.Days, TranslationWidth.Wide);\n break;\n case 'EEEEEE':\n formatter =
dateStrGetter(TranslationType.Days, TranslationWidth.Narrow);\n break;\n case 'EEEEEEE':\n formatter =
dateStrGetter(TranslationType.Days, TranslationWidth.Short);\n break;\n\n // Generic period of the day (am-
pm)\n case 'a':\n case 'aa':\n case 'aaa':\n formatter = dateStrGetter(TranslationType.DayPeriods,
TranslationWidth.Abbreviated);\n break;\n case 'aaaa':\n formatter =
dateStrGetter(TranslationType.DayPeriods, TranslationWidth.Wide);\n break;\n case 'aaaaa':\n formatter =
dateStrGetter(TranslationType.DayPeriods, TranslationWidth.Narrow);\n break;\n\n // Extended period of the
day (midnight, at night, ...), standalone\n case 'b':\n case 'bb':\n case 'bbb':\n formatter = dateStrGetter(\n
TranslationType.DayPeriods, TranslationWidth.Abbreviated, FormStyle.Standalone, true);\n break;\n case
'bbbb':\n formatter = dateStrGetter(\n
TranslationType.DayPeriods, TranslationWidth.Wide,
FormStyle.Standalone, true);\n break;\n case 'bbbbb':\n formatter = dateStrGetter(\n
TranslationType.DayPeriods, TranslationWidth.Narrow, FormStyle.Standalone, true);\n break;\n\n // Extended
period of the day (midnight, night, ...), standalone\n case 'B':\n case 'BB':\n case 'BBB':\n formatter =
dateStrGetter(\n
TranslationType.DayPeriods, TranslationWidth.Abbreviated, FormStyle.Format, true);\n break;\n case 'BBBB':\n formatter =\n dateStrGetter(TranslationType.DayPeriods,
TranslationWidth.Wide, FormStyle.Format, true);\n break;\n case 'BBBBB':\n formatter = dateStrGetter(\n
TranslationType.DayPeriods, TranslationWidth.Narrow, FormStyle.Format, true);\n break;\n\n // Hour in
AM/PM, (1-12)\n case 'h':\n formatter = dateGetter(DateType.Hours, 1, -12);\n break;\n case 'hh':\n formatter = dateGetter(DateType.Hours, 2, -12);\n break;\n\n // Hour of the day (0-23)\n case 'H':\n formatter = dateGetter(DateType.Hours, 1);\n break;\n // Hour in day, padded (00-23)\n case 'HH':\n formatter = dateGetter(DateType.Hours, 2);\n break;\n\n // Minute of the hour (0-59)\n case 'm':\n formatter = dateGetter(DateType.Minutes, 1);\n break;\n case 'mm':\n formatter =
dateGetter(DateType.Minutes, 2);\n break;\n\n // Second of the minute (0-59)\n case 's':\n formatter =
dateGetter(DateType.Seconds, 1);\n break;\n case 'ss':\n formatter = dateGetter(DateType.Seconds, 2);\n break;\n\n // Fractional second\n case 'S':\n formatter = dateGetter(DateType.FractionalSeconds, 1);\n break;\n case 'SS':\n formatter = dateGetter(DateType.FractionalSeconds, 2);\n break;\n case 'SSS':\n formatter = dateGetter(DateType.FractionalSeconds, 3);\n break;\n\n\n // Timezone ISO8601 short format (-
0430)\n case 'Z':\n case 'ZZ':\n case 'ZZZ':\n formatter = timeZoneGetter(ZoneWidth.Short);\n break;\n\n // Timezone ISO8601 extended format (-04:30)\n case 'ZZZZ':\n formatter =
timeZoneGetter(ZoneWidth.Extended);\n break;\n\n // Timezone GMT short format (GMT+4)\n case 'O':\n case 'OO':\n case 'OOO':\n // Should be location, but fallback to format O instead because we don't have the data
yet\n case 'z':\n case 'zz':\n case 'zzz':\n formatter = timeZoneGetter(ZoneWidth.ShortGMT);\n break;\n\n // Timezone GMT long format (GMT+0430)\n case 'OOOO':\n case 'ZZZZ':\n // Should be location, but
fallback to format O instead because we don't have the data yet\n case 'zzzz':\n formatter =
timeZoneGetter(ZoneWidth.Long);\n break;\n\n default:\n return null;\n }\n DATE_FORMATS[format] =
formatter;\n return formatter;\n}\n\nfunction timezoneToOffset(timezone: string, fallback: number): number {\n //
Support: IE 11 only, Edge 13-15+\n // IE/Edge do not \"understand\" colon (':') in timezone\n timezone =
timezone.replace(/:/g, '');\n const requestedTimezoneOffset = Date.parse('Jan 01, 1970 00:00:00 ' + timezone) /
60000;\n return isNaN(requestedTimezoneOffset) ? fallback : requestedTimezoneOffset;\n}\n\nfunction
addDateMinutes(date: Date, minutes: number) {\n date = new Date(date.getTime());\n date.setMinutes(date.getMinutes() + minutes);\n return date;\n}\n\nfunction convertTimezoneToLocal(date: Date,

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timezone: string, reverse: boolean): Date {
 const reverseValue = reverse ? -1 : 1;
 const dateTzOffset = date.getTimezoneOffset();
 const tzOffset = timezoneToOffset(timezone, dateTzOffset);
 return addDateMinutes(date, reverseValue * (tzOffset - dateTzOffset));
}

/**
 * Converts a value to date.
 * Supported input formats:
 * - `Date`
 * - number: timestamp
 * - string: numeric (e.g. "1234"), ISO and date strings in a format supported by
 * [Date.parse()](https://developer.mozilla.org/en-US/docs/Web/JavaScript/Reference/Global_Objects/Date/parse).
 * Note: ISO strings without time return a date without timeoffset.
 * Throws if unable to convert to a date.
 */
export function toDate(value: string|number|Date): Date {
 if (isDate(value)) {
 return value;
 }
 if (typeof value === 'number' && !isNaN(value)) {
 return new Date(value);
 }
 if (typeof value === 'string') {
 value = value.trim();
 const parsedNb = parseFloat(value);
 // any string that only contains numbers, like "1234" but not like "1234hello"
 if (!isNaN(value as any - parsedNb)) {
 return new Date(parsedNb);
 }
 if (/^\d{4}-\d{1,2}-\d{1,2}$/.test(value)) {
 /* For ISO Strings without time the day, month and year must be extracted from the ISO String before Date creation to avoid time offset and errors in the new Date.
 If we only replace '-' with ',' in the ISO String ("2015,01,01"), and try to create a new date, some browsers (e.g. IE 9) will throw an invalid Date error.
 If we leave the '-' ("2015-01-01") and try to create a new Date("2015-01-01") the timeoffset is applied.
 Note: ISO months are 0 for January, 1 for February, ...
 */
 const [y, m, d] = value.split('-').map((val: string) => +val);
 return new Date(y, m - 1, d);
 }
 let match: RegExpMatchArray|null;
 if (match = value.match(ISO8601_DATE_REGEX)) {
 return isoStringToDate(match);
 }
 const date = new Date(value as any);
 if (!isDate(date)) {
 throw new Error(`Unable to convert "${value}" into a date`);
 }
 return date;
 }
}

/**
 * Converts a date in ISO8601 to a Date.
 * Used instead of `Date.parse` because of browser discrepancies.
 */
export function isoStringToDate(match: RegExpMatchArray): Date {
 const date = new Date(0);
 let tzHour = 0;
 let tzMin = 0;
 // match[8] means that the string contains "Z" (UTC) or a timezone like "+01:00" or "+0100"
 const dateSetter = match[8] ? date.setUTCFullYear : date.setFullYear;
 const timeSetter = match[8] ? date.setUTCHours : date.setHours;
 // if there is a timezone defined like "+01:00" or "+0100"
 if (match[9]) {
 tzHour = Number(match[9] + match[10]);
 tzMin = Number(match[9] + match[11]);
 }
 dateSetter.call(date, Number(match[1]), Number(match[2]) - 1, Number(match[3]));
 const h = Number(match[4] || 0) - tzHour;
 const m = Number(match[5] || 0) - tzMin;
 const s = Number(match[6] || 0);
 // The ECMAScript specification (https://www.ecma-international.org/ecma-262/5.1/#sec-15.9.1.11) defines that `DateTime` milliseconds should always be rounded down, so that `999.9ms` becomes `999ms`.
 const ms = Math.floor(parseFloat("0." + (match[7] || 0)) * 1000);
 timeSetter.call(date, h, m, s, ms);
 return date;
}

export function isDate(value: any): value is Date {
 return value instanceof Date && !isNaN(value.valueOf());
}

/**
 * @license
 * Copyright Google LLC All Rights Reserved.
 * Use of this source code is governed by an MIT-style license that can be found in the LICENSE file at https://angular.io/license
 */
import {getLocaleNumberFormat, getLocaleNumberSymbol, getNumberOfCurrencyDigits, NumberFormatStyle, NumberSymbol} from './locale_data_api';
export const NUMBER_FORMAT_REGEX = /^(\d+)?\.((\d+)-(\d+))?$;/;
const MAX_DIGITS = 22;
const DECIMAL_SEP = '.';
const ZERO_CHAR = '0';
const PATTERN_SEP = ',';
const GROUP_SEP = ',';
const DIGIT_CHAR = '#';
const CURRENCY_CHAR = '¤';
const PERCENT_CHAR = '%';

/**
 * Transforms a number to a locale string based on a style and a format.
 */
function formatNumberToLocaleString(
 value: number, pattern: ParsedNumberFormat, locale: string, groupSymbol: NumberSymbol,
 decimalSymbol: NumberSymbol, digitsInfo?: string, isPercent = false): string {
 let formattedText = "";
 let isZero = false;
 if (!isFinite(value)) {
 formattedText = getLocaleNumberSymbol(locale, NumberSymbol.Infinity);
 } else {
 let parsedNumber = parseNumber(value);
 if (isPercent) {
 parsedNumber = toPercent(parsedNumber);
 }
 let minInt = pattern.minInt;
 let minFraction = pattern.minFrac;
 let maxFraction = pattern.maxFrac;
 if (digitsInfo) {
 const parts = digitsInfo.match(NUMBER_FORMAT_REGEX);
 if (parts === null) {
 throw new Error(`${digitsInfo} is not a valid digit info`);
 }
 const minIntPart = parts[1];
 const minFractionPart = parts[3];
 const maxFractionPart = parts[5];
 if (minIntPart !== null) {
 minInt =

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parseIntAutoRadix(minIntPart);\n }\n if (minFractionPart != null) {\n minFraction =
parseIntAutoRadix(minFractionPart);\n }\n if (maxFractionPart != null) {\n maxFraction =
parseIntAutoRadix(maxFractionPart);\n } else if (minFractionPart != null && minFraction > maxFraction) {\n
 maxFraction = minFraction;\n }\n }\n roundNumber(parsedNumber, minFraction, maxFraction);\n\n let
digits = parsedNumber.digits;\n let integerLen = parsedNumber.integerLen;\n const exponent =
parsedNumber.exponent;\n let decimals = [];\n isZero = digits.every(d => !d);\n\n // pad zeros for small
numbers\n for (; integerLen < minInt; integerLen++) {\n digits.unshift(0);\n }\n\n // pad zeros for small
numbers\n for (; integerLen < 0; integerLen++) {\n digits.unshift(0);\n }\n\n // extract decimals digits\n if
(integerLen > 0) {\n decimals = digits.splice(integerLen, digits.length);\n } else {\n decimals = digits;\n
digits = [0];\n }\n\n // format the integer digits with grouping separators\n const groups = [];\n if
(digits.length >= pattern.lgSize) {\n groups.unshift(digits.splice(-pattern.lgSize, digits.length).join("));\n }\n\n
while (digits.length > pattern.gSize) {\n groups.unshift(digits.splice(-pattern.gSize, digits.length).join("));\n
 }\n\n if (digits.length) {\n groups.unshift(digits.join("));\n }\n\n formattedText =
groups.join(getLocaleNumberSymbol(locale, groupSymbol));\n\n // append the decimal digits\n if
(decimals.length) {\n formattedText += getLocaleNumberSymbol(locale, decimalSymbol) + decimals.join(");\n
 }\n\n if (exponent) {\n formattedText += getLocaleNumberSymbol(locale, NumberSymbol.Exponential) + '+' +
exponent;\n }\n }\n\n if (value < 0 && !isZero) {\n formattedText = pattern.negPre + formattedText +
pattern.negSuf;\n } else {\n formattedText = pattern.posPre + formattedText + pattern.posSuf;\n }\n\n return
formattedText;\n}\n\n/**\n * @ngModule CommonModule\n * @description\n * Formats a number as currency
using locale rules.\n * @param value The number to format.\n * @param locale A locale code for the locale
format rules to use.\n * @param currency A string containing the currency symbol or its name,\n * such as \"$" or
"Canadian Dollar". Used in output string, but does not affect the operation\n * of the function.\n * @param
currencyCode The [ISO 4217](https://en.wikipedia.org/wiki/ISO_4217)\n * currency code, such as `USD` for the
US dollar and `EUR` for the euro.\n * Used to determine the number of digits in the decimal part.\n * @param
digitInfo Decimal representation options, specified by a string in the following format:\n *
`{minIntegerDigits}.{minFractionDigits}-{maxFractionDigits}`. See `DecimalPipe` for more details.\n *\n *
@return The formatted currency value.\n *\n * @see `formatNumber()`\n * @see `DecimalPipe`\n * @see
[Internationalization (i18n) Guide](https://angular.io/guide/i18n)\n *\n * @publicApi\n */\nexport function
formatCurrency(\n value: number, locale: string, currency: string, currencyCode?: string,\n digitsInfo?: string):
string {\n const format = getLocaleNumberFormat(locale, NumberFormatStyle.Currency);\n const pattern =
parseNumberFormat(format, getLocaleNumberSymbol(locale, NumberSymbol.MinusSign));\n\n pattern.minFrac =
getNumberOfCurrencyDigits(currencyCode!);\n pattern.maxFrac = pattern.minFrac;\n\n const res =
formatNumberToLocaleString(\n value, pattern, locale, NumberSymbol.CurrencyGroup,
NumberSymbol.CurrencyDecimal, digitsInfo);\n return res\n .replace(CURRENCY_CHAR, currency)\n // if
we have 2 time the currency character, the second one is ignored\n .replace(CURRENCY_CHAR, "")\n // If
there is a spacing between currency character and the value and\n // the currency character is suppressed by
passing an empty string, the\n // spacing character would remain as part of the string. Then we\n // should
remove it.\n .trim();\n}\n\n/**\n * @ngModule CommonModule\n * @description\n * Formats a number as a
percentage according to locale rules.\n * @param value The number to format.\n * @param locale A locale code
for the locale format rules to use.\n * @param digitInfo Decimal representation options, specified by a string in the
following format:\n * `{minIntegerDigits}.{minFractionDigits}-{maxFractionDigits}`. See `DecimalPipe` for more
details.\n *\n * @returns The formatted percentage value.\n *\n * @see `formatNumber()`\n * @see
`DecimalPipe`\n * @see [Internationalization (i18n) Guide](https://angular.io/guide/i18n)\n *\n * @publicApi\n */\nexport function
formatPercent(value: number, locale: string, digitsInfo?: string): string {\n const format =
getLocaleNumberFormat(locale, NumberFormatStyle.Percent);\n const pattern = parseNumberFormat(format,
getLocaleNumberSymbol(locale, NumberSymbol.MinusSign));\n const res = formatNumberToLocaleString(\n
value, pattern, locale, NumberSymbol.Group, NumberSymbol.Decimal, digitsInfo, true);\n return res.replace(\n
new RegExp(PERCENT_CHAR, 'g'), getLocaleNumberSymbol(locale, NumberSymbol.PercentSign));\n}\n\n/**

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* @ngModule CommonModule\n * @description\n *\n * Formats a number as text, with group sizing, separator,
and other\n * parameters based on the locale.\n *\n * @param value The number to format.\n * @param locale A
locale code for the locale format rules to use.\n * @param digitInfo Decimal representation options, specified by a
string in the following format:\n * `{minIntegerDigits}.{minFractionDigits}-{maxFractionDigits}`. See
`DecimalPipe` for more details.\n *\n * @returns The formatted text string.\n * @see [Internationalization (i18n)
Guide](https://angular.io/guide/i18n)\n *\n * @publicApi\n */\nexport function formatNumber(value: number,
locale: string, digitsInfo?: string): string {\n const format = getLocaleNumberFormat(locale,
NumberFormatStyle.Decimal);\n const pattern = parseNumberFormat(format, getLocaleNumberSymbol(locale,
NumberSymbol.MinusSign));\n return formatNumberToLocaleString(\n value, pattern, locale,
NumberSymbol.Group, NumberSymbol.Decimal, digitsInfo);\n}\n\ninterface ParsedNumberFormat {\n minInt:
number;\n // the minimum number of digits required in the fraction part of the number\n minFrac: number;\n // the
maximum number of digits required in the fraction part of the number\n maxFrac: number;\n // the prefix for a
positive number\n posPre: string;\n // the suffix for a positive number\n posSuf: string;\n // the prefix for a
negative number (e.g. `` or `(`))\n negPre: string;\n // the suffix for a negative number (e.g. `)`)\n negSuf: string;\n
// number of digits in each group of separated digits\n gSize: number;\n // number of digits in the last group of
digits before the decimal separator\n lgSize: number;\n}\n\nfunction parseNumberFormat(format: string, minusSign
= '-'): ParsedNumberFormat {\n const p = {\n minInt: 1,\n minFrac: 0,\n maxFrac: 0,\n posPre: "",\n posSuf:
",\n negPre: "",\n negSuf: "",\n gSize: 0,\n lgSize: 0\n };\n const patternParts =
format.split(PATTERN_SEP);\n const positive = patternParts[0];\n const negative = patternParts[1];\n const
positiveParts = positive.indexOf(DECIMAL_SEP) !== -1 ?\n positive.split(DECIMAL_SEP) : [\n positive.substring(0,
positive.lastIndexOf(ZERO_CHAR) + 1),\n positive.substring(positive.lastIndexOf(ZERO_CHAR) + 1)\n],\n integer = positiveParts[0], fraction =
positiveParts[1] || ";\n p.posPre = integer.substr(0, integer.indexOf(DIGIT_CHAR));\n for (let i = 0; i <
fraction.length; i++) {\n const ch = fraction.charAt(i);\n if (ch === ZERO_CHAR) {\n p.minFrac =
p.maxFrac = i + 1;\n } else if (ch === DIGIT_CHAR) {\n p.maxFrac = i + 1;\n } else {\n p.posSuf +=
ch;\n }\n }\n const groups = integer.split(GROUP_SEP);\n p.gSize = groups[1] ? groups[1].length : 0;\n p.lgSize =
(groups[2] || groups[1]) ? (groups[2] || groups[1]).length : 0;\n if (negative) {\n const trunkLen =
positive.length - p.posPre.length - p.posSuf.length,\n pos = negative.indexOf(DIGIT_CHAR);\n p.negPre =
negative.substr(0, pos).replace(/g, ");\n p.negSuf = negative.substr(pos + trunkLen).replace(/g, ");\n } else {\n p.negPre =
minusSign + p.posPre;\n p.negSuf = p.posSuf;\n }\n return p;\n}\n\ninterface ParsedNumber {\n //
an array of digits containing leading zeros as necessary\n digits: number[];\n // the exponent for numbers that
would need more than `MAX_DIGITS` digits in `d`\n exponent: number;\n // the number of the digits in `d` that
are to the left of the decimal point\n integerLen: number;\n}\n\n// Transforms a parsed number into a percentage by
multiplying it by 100\nfunction toPercent(parsedNumber: ParsedNumber): ParsedNumber {\n // if the number is 0,
don't do anything\n if (parsedNumber.digits[0] === 0) {\n return parsedNumber;\n }\n // Getting the current
number of decimals\n const fractionLen = parsedNumber.digits.length - parsedNumber.integerLen;\n if
(parsedNumber.exponent) {\n parsedNumber.exponent += 2;\n } else {\n if (fractionLen === 0) {\n parsedNumber.digits.push(0, 0);\n } else if (fractionLen === 1) {\n parsedNumber.digits.push(0);\n }\n parsedNumber.integerLen += 2;\n }\n return parsedNumber;\n}\n\n/**\n * Parses a number.\n * Significant bits
of this parse algorithm came from https://github.com/MikeMcl/big.js\n */\nfunction parseNumber(num: number):
ParsedNumber {\n let numStr = Math.abs(num) + ";\n let exponent = 0, digits, integerLen;\n let i, j, zeros;\n //
Decimal point?\n if ((integerLen = numStr.indexOf(DECIMAL_SEP)) > -1) {\n numStr =
numStr.replace(DECIMAL_SEP, ");\n }\n // Exponential form?\n if ((i = numStr.search(/e/i)) > 0) {\n // Work
out the exponent.\n if (integerLen < 0) integerLen = i;\n integerLen += +numStr.slice(i + 1);\n numStr =
numStr.substring(0, i);\n } else if (integerLen < 0) {\n // There was no decimal point or exponent so it is an
integer.\n integerLen = numStr.length;\n }\n // Count the number of leading zeros.\n for (i = 0;\n numStr.charAt(i) === ZERO_CHAR; i++) { /* empty */\n }\n if (i === (zeros = numStr.length)) {\n // The
digits are all zero.\n digits = [0];\n integerLen = 1;\n } else {\n // Count the number of trailing zeros\n zeros-

```

```

-;\n while (numStr.charAt(zeros) === ZERO_CHAR) zeros--;\n\n // Trailing zeros are insignificant so ignore
them\n integerLen -= i;\n digits = [];\n // Convert string to array of digits without leading/trailing zeros.\n for
(j = 0; i <= zeros; i++, j++) {\n digits[j] = Number(numStr.charAt(i));\n }\n }\n\n // If the number overflows
the maximum allowed digits then use an exponent.\n if (integerLen > MAX_DIGITS) {\n digits = digits.splice(0,
MAX_DIGITS - 1);\n exponent = integerLen - 1;\n integerLen = 1;\n }\n\n return {digits, exponent,
integerLen};\n}\n\n/**\n * Round the parsed number to the specified number of decimal places\n * This function
changes the parsedNumber in-place\n */\nfunction roundNumber(parsedNumber: ParsedNumber, minFrac: number,
maxFrac: number) {\n if (minFrac > maxFrac) {\n throw new Error(`The minimum number of digits after fraction
(${\n minFrac}) is higher than the maximum (${maxFrac}).`);\n }\n\n let digits = parsedNumber.digits;\n let
fractionLen = digits.length - parsedNumber.integerLen;\n const fractionSize = Math.min(Math.max(minFrac,
fractionLen), maxFrac);\n\n // The index of the digit to where rounding is to occur\n let roundAt = fractionSize +
parsedNumber.integerLen;\n let digit = digits[roundAt];\n\n if (roundAt > 0) {\n // Drop fractional digits beyond
`roundAt`\n digits.splice(Math.max(parsedNumber.integerLen, roundAt));\n\n // Set non-fractional digits beyond
`roundAt` to 0\n for (let j = roundAt; j < digits.length; j++) {\n digits[j] = 0;\n }\n } else {\n // We rounded
to zero so reset the parsedNumber\n fractionLen = Math.max(0, fractionLen);\n parsedNumber.integerLen = 1;\n
digits.length = Math.max(1, roundAt = fractionSize + 1);\n digits[0] = 0;\n for (let i = 1; i < roundAt; i++)
digits[i] = 0;\n }\n\n if (digit >= 5) {\n if (roundAt - 1 < 0) {\n for (let k = 0; k > roundAt; k--) {\n
digits.unshift(0);\n parsedNumber.integerLen++;\n }\n digits.unshift(1);\n
parsedNumber.integerLen++;\n } else {\n digits[roundAt - 1]++;\n }\n }\n\n // Pad out with zeros to get the
required fraction length\n for (; fractionLen < Math.max(0, fractionSize); fractionLen++) digits.push(0);\n\n let
dropTrailingZeros = fractionSize !== 0;\n // Minimal length = nb of decimals required + current nb of integers\n //
Any number besides that is optional and can be removed if it's a trailing 0\n const minLen = minFrac +
parsedNumber.integerLen;\n // Do any carrying, e.g. a digit was rounded up to 10\n const carry =
digits.reduceRight(function(carry, d, i, digits) {\n d = d + carry;\n digits[i] = d < 10 ? d : d - 10; // d % 10\n if
(dropTrailingZeros) {\n // Do not keep meaningless fractional trailing zeros (e.g. 15.52000 --> 15.52)\n if
(digits[i] === 0 && i >= minLen) {\n digits.pop();\n } else {\n dropTrailingZeros = false;\n }\n }\n }\n
return d >= 10 ? 1 : 0; // Math.floor(d / 10);\n }, 0);\n\n if (carry) {\n digits.unshift(carry);\n
parsedNumber.integerLen++;\n }\n}\n\nexport function parseIntAutoRadix(text: string): number {\n const result:
number = parseInt(text);\n if (isNaN(result)) {\n throw new Error('Invalid integer literal when parsing ' + text);\n
}\n return result;\n}\n\n", "/*\n * @license\n * Copyright Google LLC All Rights Reserved.\n *\n * Use of this
source code is governed by an MIT-style license that can be\n * found in the LICENSE file at
https://angular.io/license\n */\n\nimport {Inject, Injectable, LOCALE_ID} from '@angular/core';\n\nimport
{getLocalePluralCase, Plural} from './locale_data_api';\n\n/**\n * @publicApi\n */\nexport abstract class
NgLocalization {\n abstract getPluralCategory(value: any, locale?: string): string;\n}\n\n/**\n * Returns the plural
category for a given value.\n * - "="value" when the case exists,\n * - the plural category otherwise\n */\nexport
function getPluralCategory(\n value: number, cases: string[], ngLocalization: NgLocalization, locale?: string):
string {\n let key = `=${value}`;\n if (cases.indexOf(key) > -1) {\n return key;\n }\n\n key =
ngLocalization.getPluralCategory(value, locale);\n\n if (cases.indexOf(key) > -1) {\n return key;\n }\n\n if
(cases.indexOf('other') > -1) {\n return 'other';\n }\n\n throw new Error(`No plural message found for value
`${value}``);\n}\n\n/**\n * Returns the plural case based on the locale\n *\n * @publicApi\n */\n\n@Injectable()\nexport class NgLocaleLocalization extends NgLocalization {\n
constructor(@Inject(LOCALE_ID) protected locale: string) {\n super();\n }\n\n getPluralCategory(value: any,
locale?: string): string {\n const plural = getLocalePluralCase(locale || this.locale)(value);\n\n switch (plural) {\n
case Plural.Zero:\n return 'zero';\n case Plural.One:\n return 'one';\n case Plural.Two:\n return
'two';\n case Plural.Few:\n return 'few';\n case Plural.Many:\n return 'many';\n default:\n
return 'other';\n }\n }\n}\n\n", "/*\n * @license\n * Copyright Google LLC All Rights Reserved.\n *\n * Use of this
source code is governed by an MIT-style license that can be\n * found in the LICENSE file at
https://angular.io/license\n */\n\nimport {registerLocaleData} from '@angular/core';\n\n/**\n * Register global data

```

to be used internally by Angular. See the [Angular guide](#) ([guide/i18n#i18n-pipes](#)) to know how to import additional locale data.

The signature `registerLocaleData(data: any, extraData?: any)` is deprecated since v5.1.

`@publicApi`

```

export function registerLocaleData(data: any, localeId?: string|any, extraData?: any): void {
 return registerLocaleData(data, localeId, extraData);
}

```

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```

export function parseCookieValue(cookieStr: string, name: string): string|null {
 name = encodeURIComponent(name);
 for (const cookie of cookieStr.split(';')) {
 const eqIndex = cookie.indexOf('=');
 const [cookieName, cookieValue]: string[] =
 eqIndex === -1 ? [cookie, ''] :
 [cookie.slice(0, eqIndex), cookie.slice(eqIndex + 1)];
 if (cookieName.trim() === name) {
 return decodeURIComponent(cookieValue);
 }
 }
 return null;
}

```

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```

import {Directive, DoCheck, ElementRef, Input, IterableChanges, IterableDiffer, IterableDiffers, KeyValueChanges, KeyValueDiffer, KeyValueDiffers, Renderer2, isListLikeIterable as isListLikeIterable, stringify as stringify} from '@angular/core';
import {NgClassSupportedTypes = string[]|Set<string>|{[klass: string]: any}|null|undefined;} from '@angular/common';
import {CommonModule} from '@angular/core';
import {usageNotes} from '@angular/core';
<some-element [ngClass]="['first second']">...</some-element>
<some-element [ngClass]="['first', 'second']">...</some-element>
<some-element [ngClass]="{'first': true, 'second': true, 'third': false}">...</some-element>
<some-element [ngClass]="stringExp|arrayExp|objExp">...</some-element>
<some-element [ngClass]="{'class1 class2 class3': true}">...</some-element>

```

Adds and removes CSS classes on an HTML element.

The CSS classes are updated as follows, depending on the type of the expression evaluation:

- `'string'` - the CSS classes listed in the string (space delimited) are added,
- `Array` - the CSS classes declared as Array elements are added,
- `Object` - keys are CSS classes that get added when the expression given in the value evaluates to a truthy value, otherwise they are removed.

```

@publicApi
@Directive({selector: '[ngClass]'})
export class NgClass implements DoCheck {
 private _iterableDiffer: IterableDiffer<string>|null = null;
 private _keyValueDiffer: KeyValueDiffer<string, any>|null = null;
 private _initialClasses: string[] = [];
 private _rawClass: NgClassSupportedTypes = null;
 constructor(
 private _iterableDiffers: IterableDiffers, private _keyValueDiffers: KeyValueDiffers,
 private _ngEl: ElementRef, private _renderer: Renderer2) {}
 @Input('class')
 set klass(value: string) {
 this._removeClasses(this._initialClasses);
 this._initialClasses = typeof value === 'string' ? value.split(/\s+/) : [];
 this._applyClasses(this._initialClasses);
 this._applyClasses(this._rawClass);
 }
 @Input('ngClass')
 set ngClass(value: string|string[]|Set<string>|{[klass: string]: any}) {
 this._removeClasses(this._rawClass);
 this._applyClasses(this._initialClasses);
 this._iterableDiffer = null;
 this._keyValueDiffer = null;
 this._rawClass = typeof value === 'string' ? value.split(/\s+/) : value;
 if (this._rawClass) {
 if (isListLikeIterable(this._rawClass)) {
 this._iterableDiffer = this._iterableDiffers.find(this._rawClass).create();
 } else {
 this._keyValueDiffer = this._keyValueDiffers.find(this._rawClass).create();
 }
 }
 }
 ngDoCheck() {
 if (this._iterableDiffer) {
 const iterableChanges = this._iterableDiffer.diff(this._rawClass as string[]);
 if (iterableChanges) {
 this._applyIterableChanges(iterableChanges);
 }
 } else if (this._keyValueDiffer) {
 const keyValueChanges = this._keyValueDiffer.diff(this._rawClass as {[k: string]: any});
 if (keyValueChanges) {
 this._applyKeyValueChanges(keyValueChanges);
 }
 }
 }
 private _applyKeyValueChanges(changes: KeyValueChanges<string, any>): void {
 changes.forEachAddedItem((record) => this._toggleClass(record.key, record.currentValue));
 changes.forEachChangedItem((record) => this._toggleClass(record.key, record.currentValue));
 changes.forEachRemovedItem((record) => {
 if (record.previousValue) {
 this._toggleClass(record.key, false);
 }
 });
 }
 private _applyIterableChanges(changes: IterableChanges<string>): void {
 changes.forEachAddedItem((record) => {
 if (typeof record.item === 'string') {
 this._toggleClass(record.item, true);
 } else {
 throw new Error(`NgClass can only toggle CSS classes

```

```

expressed as strings, got ${\n stringify(record.item)});\n }\n });\n\n
changes.forEachRemovedItem((record) => this._toggleClass(record.item, false));\n }\n\n /**\n * Applies a
collection of CSS classes to the DOM element.\n *\n * For argument of type Set and Array CSS class names
contained in those collections are always\n * added.\n * For argument of type Map CSS class name in the map's
key is toggled based on the value (added\n * for truthy and removed for falsy).\n */\n private
_applyClasses(rawClassVal: NgClassSupportedTypes) {\n if (rawClassVal) {\n if (Array.isArray(rawClassVal)
|| rawClassVal instanceof Set) {\n (<any>rawClassVal).forEach((klass: string) => this._toggleClass(klass,
true));\n } else {\n Object.keys(rawClassVal).forEach(klass => this._toggleClass(klass,
!!rawClassVal[klass]));\n }\n }\n }\n\n /**\n * Removes a collection of CSS classes from the DOM element.
This is mostly useful for cleanup\n * purposes.\n */\n private _removeClasses(rawClassVal:
NgClassSupportedTypes) {\n if (rawClassVal) {\n if (Array.isArray(rawClassVal) || rawClassVal instanceof
Set) {\n (<any>rawClassVal).forEach((klass: string) => this._toggleClass(klass, false));\n } else {\n Object.keys(rawClassVal).forEach(klass => this._toggleClass(klass, false));\n }\n }\n }\n\n private
_toggleClass(klass: string, enabled: boolean): void {\n klass = klass.trim();\n if (klass) {\n klass.split(/\\s+/g).forEach(klass => {\n if (enabled) {\n this._renderer.addClass(this._ngEl.nativeElement,
klass);\n } else {\n this._renderer.removeClass(this._ngEl.nativeElement, klass);\n }\n });\n }\n }\n\n }"/**\n * @license\n * Copyright Google LLC All Rights Reserved.\n *\n * Use of this source code is
governed by an MIT-style license that can be\n * found in the LICENSE file at https://angular.io/license\n
*/\n\nimport { ComponentFactoryResolver, ComponentRef, Directive, Injector, Input, NgModuleFactory,
NgModuleRef, OnChanges, OnDestroy, SimpleChanges, StaticProvider, Type, ViewContainerRef } from
'@angular/core';\n\n\n/**\n * Instantiates a single { @link Component } type and inserts its Host View into current
View.\n * `NgComponentOutlet` provides a declarative approach for dynamic component creation.\n *\n *
`NgComponentOutlet` requires a component type, if a falsy value is set the view will clear and\n * any existing
component will get destroyed.\n *\n * @usageNotes\n *\n * ### Fine tune control\n *\n * You can control the
component creation process by using the following optional attributes:\n *\n * * `ngComponentOutletInjector` :
Optional custom { @link Injector } that will be used as parent for\n * the Component. Defaults to the injector of the
current view container.\n *\n * * `ngComponentOutletContent` : Optional list of projectable nodes to insert into the
content\n * section of the component, if exists.\n *\n * * `ngComponentOutletNgModuleFactory` : Optional module
factory to allow dynamically loading other\n * module, then load a component from that module.\n *\n * ###
Syntax\n *\n * Simple\n * ```\n * <ng-container *ngComponentOutlet="componentTypeExpression"></ng-
container>\n * ```\n *\n * Customized injector/content\n * ```\n * <ng-container
*ngComponentOutlet="componentTypeExpression";\n * injector: injectorExpression;\n *
 content: contentNodesExpression;">\n * </ng-container>\n * ```\n *\n * Customized
ngNgModuleFactory\n * ```\n * <ng-container *ngComponentOutlet="componentTypeExpression;\n *
 ngNgModuleFactory: moduleFactory;">\n * </ng-container>\n * ```\n *\n * ### A simple example\n *\n *
{ @example common/ngComponentOutlet/ts/module.ts region='SimpleExample'}\n *\n * A more complete example
with additional options:\n *\n * { @example common/ngComponentOutlet/ts/module.ts
region='CompleteExample'}\n *\n * @publicApi\n * @ngModule CommonModule\n */\n @Directive({ selector:
'[ngComponentOutlet]'})\n export class NgComponentOutlet implements OnChanges, OnDestroy {\n //
TODO(issue/24571): remove '!.\n @Input() ngComponentOutlet!: Type<any>;\n // TODO(issue/24571): remove
'!\n @Input() ngComponentOutletInjector!: Injector;\n // TODO(issue/24571): remove '!.\n @Input()
ngComponentOutletContent!: any[][];\n // TODO(issue/24571): remove '!.\n @Input()
ngComponentOutletNgModuleFactory!: NgModuleFactory<any>;\n\n private _componentRef:
ComponentRef<any>|null = null;\n private _moduleRef: NgModuleRef<any>|null = null;\n\n constructor(private
_viewContainerRef: ViewContainerRef) {\n\n ngOnChanges(changes: SimpleChanges) {\n this._viewContainerRef.clear();\n this._componentRef = null;\n\n if (this.ngComponentOutlet) {\n const
elInjector = this.ngComponentOutletInjector || this._viewContainerRef.parentInjector;\n\n if
(changes['ngComponentOutletNgModuleFactory']) {\n if (this._moduleRef) this._moduleRef.destroy();\n\n

```

```

if (this.ngComponentOutletNgModuleFactory) {\n const parentModule = eInjector.get(NgModuleRef);\n this._moduleRef = this.ngComponentOutletNgModuleFactory.create(parentModule.injector);\n } else {\n this._moduleRef = null;\n }\n }\n const componentFactoryResolver = this._moduleRef ?\n this._moduleRef.componentFactoryResolver :\n eInjector.get(ComponentFactoryResolver);\n const componentFactory =\n componentFactoryResolver.resolveComponentFactory(this.ngComponentOutlet);\n this._componentRef =\n this._viewContainerRef.createComponent(\n componentFactory, this._viewContainerRef.length, eInjector,\n this.ngComponentOutletContent);\n }\n ngOnDestroy() {\n if (this._moduleRef)\n this._moduleRef.destroy();\n }\n}\n", "/*\n * @license\n * Copyright Google LLC All Rights Reserved.\n *\n * Use of this source code is governed by an MIT-style license that can be\n * found in the LICENSE file at\n * https://angular.io/license\n */\n\nimport {Directive, DoCheck, EmbeddedViewRef, Input, isDevMode,\n IterableChangeRecord, IterableChanges, IterableDiffer, IterableDiffers, NgIterable, TemplateRef, TrackByFunction,\n ViewContainerRef} from '@angular/core';\n\n/**\n * @publicApi\n */\nexport class NgForOfContext<T, U> extends\n NgIterable<T> = NgIterable<T> {\n constructor(public $implicit: T, public ngForOf: U, public index: number,\n public count: number) {}\n get first(): boolean {\n return this.index === 0;\n }\n get last(): boolean {\n return this.index === this.count - 1;\n }\n get even(): boolean {\n return this.index % 2 === 0;\n }\n get\n odd(): boolean {\n return !this.even;\n }\n}\n\n/**\n * A [structural directive](guide/structural-directives) that\n renders\n * a template for each item in a collection.\n * The directive is placed on an element, which becomes the\n parent\n * of the cloned templates.\n *\n * The `ngForOf` directive is generally used in the\n * [shorthand\n form](guide/structural-directives#the-asterisk--prefix) `*ngFor`.\n * In this form, the template to be rendered for\n each iteration is the content\n * of an anchor element containing the directive.\n *\n * The following example shows\n the shorthand syntax with some options,\n * contained in an `- ` element.\n *\n * ```\n * <li *ngFor="let item of\n items; index as i; trackBy: trackByFn">...\n * ```\n *\n * The shorthand form expands into a long form that\n uses the `ngForOf` selector\n * on an `` element.\n * The content of the `` element is\n the `- ` element that held the\n * short-form directive.\n *\n * Here is the expanded version of the short-form\n example.\n *\n * ```\n * <ng-template ngFor let-item [ngForOf]="items" let-i="index"\n [ngForTrackBy]="trackByFn">\n * ...\n * </ng-template>\n * ```\n *\n * Angular automatically expands\n the shorthand syntax as it compiles the template.\n * The context for each embedded view is logically merged to the\n current component\n * context according to its lexical position.\n *\n * When using the shorthand syntax, Angular\n allows only [one structural directive\n * on an element](guide/structural-directives#one-structural-directive-per-\n host-element).\n * If you want to iterate conditionally, for example,\n * put the `*ngIf` on a container element that\n wraps the `*ngFor` element.\n * For further discussion, see\n * [Structural Directives](guide/structural-\n directives#one-per-element).\n *\n * @usageNotes\n *\n * ### Local variables\n *\n * `NgForOf` provides exported\n values that can be aliased to local variables.\n * For example:\n *\n * ```\n * <li *ngFor="let user of users; index as\n i; first as isFirst">\n * {{i}} / {{users.length}}. {{user}} default\n * \n * ```\n *\n * The following exported values can be aliased to local variables:\n *\n * - `$implicit: T`: The value of the\n individual items in the iterable (`ngForOf`).\n * - `ngForOf: NgIterable<T>`: The value of the iterable expression.\n Useful when the expression is\n * more complex than a property access, for example when using the async pipe\n (`userStreams | async`).\n * - `index: number`: The index of the current item in the iterable.\n * - `count:\n number`: The length of the iterable.\n * - `first: boolean`: True when the item is the first item in the iterable.\n * -\n `last: boolean`: True when the item is the last item in the iterable.\n * - `even: boolean`: True when the item has an\n even index in the iterable.\n * - `odd: boolean`: True when the item has an\n odd index in the iterable.\n *\n * ###\n Change propagation\n *\n * When the contents of the iterator changes, `NgForOf` makes the\n corresponding changes\n * to the DOM:\n *\n * * When an item is added, a new instance of the template is added to the\n DOM.\n * * When an\n item is removed, its template instance is removed from the DOM.\n * * When items are reordered, their respective\n templates are reordered in the DOM.\n *\n * Angular uses object identity to track insertions and deletions within the\n iterator and reproduce\n * those changes in the DOM. This has important implications for animations and any\n stateful\n * controls that are present, such as `` elements that accept user input. Inserted rows can be

```



animated in, deleted rows can be animated out, and unchanged rows retain any unsaved state\n \* such as user input.\n \* For more on animations, see [Transitions and Triggers](guide/transition-and-triggers).\n \* The identities of elements in the iterator can change while the data does not.\n \* This can happen, for example, if the iterator is produced from an RPC to the server, and that\n \* RPC is re-run. Even if the data hasn't changed, the second response produces objects with\n \* different identities, and Angular must tear down the entire DOM and rebuild it (as if all old\n \* elements were deleted and all new elements inserted).\n \* To avoid this expensive operation, you can customize the default tracking algorithm.\n \* by supplying the `trackBy` option to `NgForOf`.\n \* `trackBy` takes a function that has two arguments: `index` and `item`.\n \* If `trackBy` is given, Angular tracks changes by the return value of the function.\n \* @see [Structural Directives](guide/structural-directives)\n \* @ngModule CommonModule\n \* @publicApi\n \* ^\n @Directive({selector: '[ngFor][ngForOf]'})\n export class NgForOf<T, U extends NgIterable<T> = NgIterable<T>> implements DoCheck {\n /\*\*\n \* The value of the iterable expression, which can be used as a\n \* [template input variable](guide/structural-directives#template-input-variable).\n \* @Input()\n set ngForOf(ngForOf: U&NgIterable<T>|undefined|null) {\n this.\_ngForOf = ngForOf;\n this.\_ngForOfDirty = true;\n }\n /\*\*\n \* A function that defines how to track changes for items in the iterable.\n \* When items are added, moved, or removed in the iterable,\n \* the directive must re-render the appropriate DOM nodes.\n \* To minimize churn in the DOM, only nodes that have changed\n \* are re-rendered.\n \* By default, the change detector assumes that\n \* the object instance identifies the node in the iterable.\n \* When this function is supplied, the directive uses\n \* the result of calling this function to identify the item node,\n \* rather than the identity of the object itself.\n \* The function receives two inputs,\n \* the iteration index and the associated node data.\n \* @Input()\n set ngForTrackBy(fn: TrackByFunction<T>) {\n if (isDevMode() && fn != null && typeof fn !== 'function') {\n // TODO(vicb): use a log service once there is a public one available\n if (<any>console && <any>console.warn) {\n console.warn(\n `trackBy must be a function, but received \${JSON.stringify(fn)}.` +\n `See https://angular.io/api/common/NgForOf#change-propagation for more information.`);\n }\n }\n this.\_trackByFn = fn;\n }\n get ngForTrackBy(): TrackByFunction<T> {\n return this.\_trackByFn;\n }\n private \_ngForOf: U|undefined|null = null;\n private \_ngForOfDirty: boolean = true;\n private \_differ: IterableDiffer<T>|null = null;\n // TODO(issue/24571): remove '!'.\n private \_trackByFn!: TrackByFunction<T>;\n constructor(\n private \_viewContainer: ViewContainerRef,\n private \_template: TemplateRef<NgForOfContext<T, U>>, private \_differs: IterableDiffers) {\n /\*\*\n \* A reference to the template that is stamped out for each item in the iterable.\n \* @see [template reference variable](guide/template-reference-variables)\n \* @Input()\n set ngForTemplate(value: TemplateRef<NgForOfContext<T, U>>) {\n // TODO(TS2.1): make TemplateRef<Partial<NgForRowOf<T>>> once we move to TS v2.1\n // The current type is too restrictive; a template that just uses index, for example,\n // should be acceptable.\n if (value) {\n this.\_template = value;\n }\n }\n /\*\*\n \* Applies the changes when needed.\n \* @ngDoCheck(): void {\n if (this.\_ngForOfDirty) {\n this.\_ngForOfDirty = false;\n // React on ngForOf changes only once all inputs have been initialized\n const value = this.\_ngForOf;\n if (!this.\_differ && value) {\n try {\n this.\_differ = this.\_differs.find(value).create(this.ngForTrackBy);\n } catch {\n throw new Error(`Cannot find a differ supporting object '\${value}' of type '\${\n getTypeName(value)}'. NgFor only supports binding to Iterables such as Arrays.`);\n }\n }\n if (this.\_differ) {\n const changes = this.\_differ.diff(this.\_ngForOf);\n if (changes) this.\_applyChanges(changes);\n }\n }\n private \_applyChanges(changes: IterableChanges<T>) {\n const insertTuples: RecordViewTuple<T, U>[] = [];\n changes.forEachOperation(\n (item: IterableChangeRecord<any>, adjustedPreviousIndex: number|null,\n currentIndex: number|null) => {\n if (item.previousIndex == null) {\n // NgForOf is never \"null\" or \"undefined\" here because the differ detected\n // that a new item needs to be inserted from the iterable. This implies that\n // there is an iterable value for \"\_ngForOf\".\n const view = this.\_viewContainer.createEmbeddedView(\n this.\_template, new NgForOfContext<T, U>(null!, this.\_ngForOf!, -1, -1),\n currentIndex === null ? undefined : currentIndex);\n const tuple = new RecordViewTuple<T, U>(item, view);\n insertTuples.push(tuple);\n } else if (currentIndex == null) {\n

```

 this._viewContainer.remove(\n adjustedPreviousIndex === null ? undefined :
adjustedPreviousIndex);\n } else if (adjustedPreviousIndex !== null) {\n const view =
this._viewContainer.get(adjustedPreviousIndex);\n this._viewContainer.move(view, currentIndex);\n
const tuple = new RecordViewTuple(item, <EmbeddedViewRef<NgForOfContext<T, U>>>view);\n
insertTuples.push(tuple);\n }\n });\n for (let i = 0; i < insertTuples.length; i++) {\n
this._perViewChange(insertTuples[i].view, insertTuples[i].record);\n }\n for (let i = 0, ilen =
this._viewContainer.length; i < ilen; i++) {\n const viewRef = <EmbeddedViewRef<NgForOfContext<T,
U>>>this._viewContainer.get(i);\n viewRef.context.index = i;\n viewRef.context.count = ilen;\n
viewRef.context.ngForOf = this._ngForOf!;\n }\n changes.forEachIdentityChange((record: any) => {\n
const viewRef =\n <EmbeddedViewRef<NgForOfContext<T,
U>>>this._viewContainer.get(record.currentIndex);\n viewRef.context.Simplicit = record.item;\n });\n }\n private _perViewChange(\n view: EmbeddedViewRef<NgForOfContext<T, U>>, record:
IterableChangeRecord<any>) {\n view.context.Simplicit = record.item;\n }\n /**\n * Asserts the correct type
of the context for the template that `NgForOf` will render.\n * The presence of this method is a signal to the
Ivy template type-check compiler that the\n * `NgForOf` structural directive renders its template with a specific
context type.\n */\n static ngTemplateContextGuard<T, U extends NgIterable<T>>(dir: NgForOf<T, U>, ctx:
any):\n ctx is NgForOfContext<T, U> {\n return true;\n }\n }\n class RecordViewTuple<T, U extends
NgIterable<T>> {\n constructor(public record: any, public view: EmbeddedViewRef<NgForOfContext<T, U>>)\n
 }\n }\n function getTypeName(type: any): string {\n return type['name'] || typeof type;\n }\n }
/**\n * @license\n * Copyright Google LLC All Rights Reserved.\n * Use of this source code is governed by an MIT-style license
that can be\n * found in the LICENSE file at https://angular.io/license\n */\n import {Directive,
EmbeddedViewRef, Input, TemplateRef, ViewContainerRef, stringify as stringify} from '@angular/core';\n }\n }\n /**\n * A structural directive that conditionally includes a template based on the value of\n * an expression coerced to
Boolean.\n * When the expression evaluates to true, Angular renders the template\n * provided in a `then` clause,
and when false or null,\n * Angular renders the template provided in an optional `else` clause. The default\n *
template for the `else` clause is blank.\n * A [shorthand form](guide/structural-directives#the-asterisk--prefix) of
the directive,\n * `*ngIf="condition"`, is generally used, provided\n * as an attribute of the anchor element for the
inserted template.\n * Angular expands this into a more explicit version, in which the anchor element\n * is
contained in an `` element.\n * Simple form with shorthand syntax:\n * ```\n * <div
*ngIf="condition">Content to render when condition is true.</div>\n * ```\n * Simple form with expanded
syntax:\n * ```\n * <ng-template [ngIf]="condition"><div>Content to render when condition is\n *
true.</div></ng-template>\n * ```\n * Form with an "else" block:\n * ```\n * <div *ngIf="condition; else
elseBlock">Content to render when condition is true.</div>\n * <ng-template #elseBlock>Content to render when
condition is false.</ng-template>\n * ```\n * Shorthand form with "then" and "else" blocks:\n * ```\n *
<div *ngIf="condition; then thenBlock else elseBlock"></div>\n * <ng-template #thenBlock>Content to render
when condition is true.</ng-template>\n * <ng-template #elseBlock>Content to render when condition is false.</ng-
template>\n * ```\n * Form with storing the value locally:\n * ```\n * <div *ngIf="condition as value; else
elseBlock">{ {value}}</div>\n * <ng-template #elseBlock>Content to render when value is null.</ng-template>\n
 * ```\n * @usageNotes\n * The `*ngIf` directive is most commonly used to conditionally show an inline
template,\n * as seen in the following example.\n * The default `else` template is blank.\n * {@example
common/ngIf/ts/module.ts region='NgIfSimple'}\n * ### Showing an alternative template using `else`\n * To
display a template when `expression` evaluates to false, use an `else` template\n * binding as shown in the following
example.\n * The `else` binding points to an `` element labeled `#elseBlock`.\n * The template can be
defined anywhere in the component view, but is typically placed right after\n * `ngIf` for readability.\n * {\n * @example common/ngIf/ts/module.ts region='NgIfElse'}\n * ### Using an external `then` template\n * In
the previous example, the then-clause template is specified inline, as the content of the\n * tag that contains the
`ngIf` directive. You can also specify a template that is defined\n * externally, by referencing a labeled `` element. When you do this, you can\n * change which template to use at runtime, as shown in the

```

following example.

```

{ @example common/ngIf/ts/module.ts region='NgIfThenElse'}
Storing a conditional result in a variable
You might want to show a set of properties from the same object. If you are waiting for asynchronous data, the object can be undefined. In this case, you can use `ngIf` and store the result of the condition in a local variable as shown in the the following example.
{ @example common/ngIf/ts/module.ts region='NgIfAs'}
This code uses only one `AsyncPipe`, so only one subscription is created. The conditional statement stores the result of `userStream|async` in the local variable `user`. You can then bind the local `user` repeatedly.
The conditional displays the data only if `userStream` returns a value, so you don't need to use the [safe-navigation-operator](guide/template-expression-operators#safe-navigation-operator) (`?.`) to guard against null values when accessing properties. You can display an alternative template while waiting for the data.
Shorthand syntax
The shorthand syntax `*ngIf` expands into two separate template specifications for the `then` and `else` clauses. For example, consider the following shorthand statement, that is meant to show a loading page while waiting for data to be loaded.
```
<div class="hero-list" *ngIf="heroes else loading"> ... </div>
<ng-template #loading>
<div>Loading...</div>
</ng-template>
```
You can see that the `else` clause references the `<ng-template>` with the `#loading` label, and the template for the `then` clause is provided as the content of the anchor element. However, when Angular expands the shorthand syntax, it creates another `<ng-template>` tag, with `ngIf` and `ngIfElse` directives. The anchor element containing the template for the `then` clause becomes the content of this unlabeled `<ng-template>` tag.
```
<ng-template [ngIf]="heroes" [ngIfElse]="loading">
<div class="hero-list"> ... </div>
</ng-template>
<ng-template #loading>
<div>Loading...</div>
</ng-template>
```
The presence of the implicit template object has implications for the nesting of structural directives. For more on this subject, see [Structural Directives](https://angular.io/guide/structural-directives#one-per-element).
@ngModule CommonModule
* @publicApi
*/
@Directive({selector: '[ngIf]'})
export class NgIf<T = unknown> {
 private _context: NgIfContext<T> = new NgIfContext<T>();
 private _thenTemplateRef: TemplateRef<NgIfContext<T>> | null = null;
 private _elseTemplateRef: TemplateRef<NgIfContext<T>> | null = null;
 private _thenViewRef: EmbeddedViewRef<NgIfContext<T>> | null = null;
 private _elseViewRef: EmbeddedViewRef<NgIfContext<T>> | null = null;
 constructor(private _viewContainer: ViewContainerRef,
 templateRef: TemplateRef<NgIfContext<T>>) {
 this._thenTemplateRef = templateRef;
 }
 /**
 * The Boolean expression to evaluate as the condition for showing a template.
 */
 @Input() set ngIf(condition: T) {
 this._context.$implicit = this._context.ngIf = condition;
 this._updateView();
 }
 /**
 * A template to show if the condition expression evaluates to true.
 */
 @Input() set ngIfThen(templateRef: TemplateRef<NgIfContext<T>> | null) {
 assertTemplate('ngIfThen', templateRef);
 this._thenTemplateRef = templateRef;
 this._thenViewRef = null; // clear previous view if any.
 this._updateView();
 }
 /**
 * A template to show if the condition expression evaluates to false.
 */
 @Input() set ngIfElse(templateRef: TemplateRef<NgIfContext<T>> | null) {
 assertTemplate('ngIfElse', templateRef);
 this._elseTemplateRef = templateRef;
 this._elseViewRef = null; // clear previous view if any.
 this._updateView();
 }
 private _updateView() {
 if (this._context.$implicit) {
 if (!this._thenViewRef) {
 this._viewContainer.clear();
 this._elseViewRef = null;
 if (this._thenTemplateRef) {
 this._thenViewRef =
 this._viewContainer.createEmbeddedView(this._thenTemplateRef, this._context);
 }
 }
 } else {
 if (!this._elseViewRef) {
 this._viewContainer.clear();
 this._thenViewRef = null;
 if (this._elseTemplateRef) {
 this._elseViewRef =
 this._viewContainer.createEmbeddedView(this._elseTemplateRef, this._context);
 }
 }
 }
 }
 /**
 * @internal
 */
 public static ngIfUseIfTypeGuard: void;
 /**
 * Assert the correct type of the expression bound to the `ngIf` input within the template.
 */
 /**
 * The presence of this static field is a signal to the Ivy template type check compiler that when the `NgIf` structural directive renders its template, the type of the expression bound to `ngIf` should be narrowed in some way. For `NgIf`, the binding expression itself is used to narrow its type, which allows the strictNullChecks feature of TypeScript to work with `NgIf`.
 */
 static ngTemplateGuard_ngIf: 'binding';
 /**
 * Asserts the correct type of the context for the template that `NgIf`

```

will render.

\* The presence of this method is a signal to the Ivy template type-check compiler that the  
`NgIf` structural directive renders its template with a specific context type.

```

static
ngTemplateContextGuard<T>(dir: NgIf<T>, ctx: any): boolean {
 ctx is NgIfContext<Exclude<T,
false|0|''|null|undefined>> {
 return true;
}
}

/**
 * @publicApi
 * @export class NgIfContext<T =
unknown> {
 public $implicit: T = null!;
 public ngIf: T = null!;
}

function assertTemplate(property: string,
templateRef: TemplateRef<any>|null): void {
 const isTemplateRefOrNull = !(templateRef ||
templateRef.createEmbeddedView);
 if (!isTemplateRefOrNull) {
 throw new Error(`${property} must be a
TemplateRef, but received '${stringify(templateRef)}'.`);
 }
}

/**
 * @license
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 *
 * Use of this source code is governed by an MIT-style license that can be
 * found in
the LICENSE file at https://angular.io/license
 */

import { Directive, DoCheck, Host, Input, TemplateRef,
ViewContainerRef } from '@angular/core';

export class SwitchView {
 private _created = false;

 constructor(
 private _viewContainerRef: ViewContainerRef,
 private _templateRef: TemplateRef<Object>
) {}

 create(): void {
 this._created = true;

 this._viewContainerRef.createEmbeddedView(this._templateRef);
 }

 destroy(): void {
 this._created =
false;
 this._viewContainerRef.clear();
 }

 enforceState(created: boolean) {
 if (created &&
!this._created) {
 this.create();
 } else if (!created && this._created) {
 this.destroy();
 }
 }
}

/**
 * @ngModule CommonModule
 * @description
 * The `ngSwitch` directive on a container
specifies an expression to match against.
 *
 * The expressions to match are provided by `ngSwitchCase` directives on
views within the container.
 *
 * - Every view that matches is rendered.
 *
 * - If there are no matches, a view with the
`ngSwitchDefault` directive is rendered.
 *
 * - Elements within the `[NgSwitch]` statement but outside of any
`NgSwitchCase` or `ngSwitchDefault` directive are preserved at the location.
 *
 * @usageNotes
 * Define a
container element for the directive, and specify the switch expression
 *
 * to match against as an attribute:
 *
 *
 *
 * Within the container,
`ngSwitchCase` statements specify the match expressions
 *
 * as attributes. Include `ngSwitchDefault` as the final
case.
 *
 *
 *
 * <container-element [ngSwitch]="switch_expression">
 *
 * <some-element
 *ngSwitchCase="match_expression_1">...</some-element>
 *
 * ...
 *
 * <some-element
 *ngSwitchDefault>...</some-element>
 *
 * </container-element>
 *
 *
 *
 * ### Usage Examples
 *
 * The
following example shows how to use more than one case to display the same view:
 *
 *
 *
 * <container-
element [ngSwitch]="switch_expression">
 *
 * <!-- the same view can be shown in more than one case -->
 *
 * <some-element *ngSwitchCase="match_expression_1">...</some-element>
 *
 * <some-element
 *ngSwitchCase="match_expression_2">...</some-element>
 *
 * <some-other-element
 *ngSwitchCase="match_expression_3">...</some-other-element>
 *
 * <!-- default case when there are no matches
-->
 *
 * <some-element *ngSwitchDefault>...</some-element>
 *
 * </container-element>
 *
 *
 *
 * The
following example shows how cases can be nested:
 *
 *
 *
 * <container-element
[ngSwitch]="switch_expression">
 *
 * <some-element *ngSwitchCase="match_expression_1">...</some-
element>
 *
 * <some-element *ngSwitchCase="match_expression_2">...</some-element>
 *
 * <some-
other-element *ngSwitchCase="match_expression_3">...</some-other-element>
 *
 * <ng-container
 *ngSwitchCase="match_expression_3">
 *
 * <!-- use a ng-container to group multiple root nodes -->
 *
 * <inner-element></inner-element>
 *
 * <inner-other-element></inner-other-element>
 *
 * </ng-container>
 *
 * <some-element *ngSwitchDefault>...</some-element>
 *
 * </container-element>
 *
 *
 *
 *
 * @publicApi
 * @see `NgSwitchCase`
 * @see `NgSwitchDefault`
 * @see [Structural
Directives](guide/structural-directives)
 */

export class NgSwitch {
 //
 // TODO(issue/24571): remove '!'.
 private _defaultViews!: SwitchView[];
 private _defaultUsed = false;
 private _caseCount = 0;
 private _lastCaseCheckIndex = 0;
 private _lastCasesMatched = false;
 private _ngSwitch:
any;

 @Input()
 set ngSwitch(newValue: any) {
 this._ngSwitch = newValue;
 if (this._caseCount ===
0) {
 this._updateDefaultCases(true);
 }
 }

 /**
 * @internal
 */
 _addCase(): number {
 return
this._caseCount++;
 }

 /**
 * @internal
 */
 _addDefault(view: SwitchView) {
 if (!this._defaultViews) {
 this._defaultViews = [];
 }
 this._defaultViews.push(view);
 }

 /**
 * @internal
 */
 _matchCase(value:

```



```

SwitchView): void {\n this._caseViews[value] = switchView;\n }\n\n private _updateView(): void {\n
this._clearViews();\n\n const cases = Object.keys(this._caseViews);\n const key =
getPluralCategory(this._switchValue, cases, this._localization);\n this._activateView(this._caseViews[key]);\n
}\n\n private _clearViews() {\n if (this._activeView) this._activeView.destroy();\n }\n\n private
_activateView(view: SwitchView) {\n if (view) {\n this._activeView = view;\n this._activeView.create();\n
 }\n }\n}\n\n/**\n * @ngModule CommonModule\n *\n * @description\n *\n * Creates a view that will be
added/removed from the parent { @link NgPlural } when the\n * given expression matches the plural expression
according to CLDR rules.\n *\n * @usageNotes\n * ``\n * <some-element [ngPlural]="value">\n * <ng-template
ngPluralCase="=0">...</ng-template>\n * <ng-template ngPluralCase="other">...</ng-template>\n * </some-
element>\n * ``\n *\n * See { @link NgPlural } for more details and example.\n *\n * @publicApi\n
\n\n @Directive({ selector: '[ngPluralCase]' })\nexport class NgPluralCase {\n constructor(\n
@Attribute('ngPluralCase') public value: string, template: TemplateRef<Object>,\n viewContainer:
ViewContainerRef, @Host() ngPlural: NgPlural) {\n const isANumber: boolean = !isNaN(Number(value));\n
ngPlural.addCase(isANumber ? `=${value}` : value, new SwitchView(viewContainer, template));\n }\n}\n\n",/**\n
* @license\n * Copyright Google LLC All Rights Reserved.\n *\n * Use of this source code is governed by an MIT-
style license that can be\n * found in the LICENSE file at https://angular.io/license\n *\n*\nimport { Directive,
DoCheck, ElementRef, Input, KeyValueChanges, KeyValueDiffer, KeyValueDiffers, Renderer2 } from
'@angular/core';\n\n\n/**\n * @ngModule CommonModule\n *\n * @usageNotes\n *\n * Set the font of the
containing element to the result of an expression.\n *\n * ``\n * <some-element [ngStyle]="{'font-style':
styleExp}">...</some-element>\n * ``\n *\n * Set the width of the containing element to a pixel value returned by
an expression.\n *\n * ``\n * <some-element [ngStyle]="{'max-width.px': widthExp}">...</some-element>\n *
``\n *\n * Set a collection of style values using an expression that returns key-value pairs.\n *\n * ``\n * <some-
element [ngStyle]="objExp">...</some-element>\n * ``\n *\n * @description\n *\n * An attribute directive that
updates styles for the containing HTML element.\n *\n * Sets one or more style properties, specified as colon-separated
key-value pairs.\n *\n * The key is a style name, with an optional `.<unit>` suffix\n * (such as 'top.px', 'font-style.em').\n
*\n * The value is an expression to be evaluated.\n *\n * The resulting non-null value, expressed in the given unit,\n * is
assigned to the given style property.\n *\n * If the result of evaluation is null, the corresponding style is removed.\n *\n
*\n * @publicApi\n *\n*\n @Directive({ selector: '[ngStyle]' })\nexport class NgStyle implements DoCheck {\n private
_ngStyle: {[key: string]: string}|null = null;\n private _differ: KeyValueDiffer<string, string|number>|null =
null;\n\n constructor(\n private _ngEl: ElementRef, private _differs: KeyValueDiffers, private _renderer:
Renderer2) {\n\n @Input('ngStyle')\n set ngStyle(values: {[klass: string]: any}|null) {\n this._ngStyle =
values;\n if (!this._differ && values) {\n this._differ = this._differs.find(values).create();\n }\n }\n\n ngDoCheck() {\n if (this._differ) {\n const changes = this._differ.diff(this._ngStyle!);\n if (changes) {\n this._applyChanges(changes);\n }\n }\n }\n\n private _setStyle(nameAndUnit: string, value:
string|number|null|undefined): void {\n const [name, unit] = nameAndUnit.split('.');\n value = value != null &&
unit ? `${value}${unit}` : value;\n\n if (value != null) {\n this._renderer.setStyle(this._ngEl.nativeElement,
name, value as string);\n } else {\n this._renderer.removeStyle(this._ngEl.nativeElement, name);\n }\n }\n\n private _applyChanges(changes: KeyValueChanges<string, string|number>): void {\n
changes.forEachRemovedItem((record) => this._setStyle(record.key, null));\n
changes.forEachAddedItem((record) => this._setStyle(record.key, record.currentValue));\n
changes.forEachChangedItem((record) => this._setStyle(record.key, record.currentValue));\n }\n}\n\n",/**\n
* @license\n * Copyright Google LLC All Rights Reserved.\n *\n * Use of this source code is governed by an MIT-
style license that can be\n * found in the LICENSE file at https://angular.io/license\n *\n*\nimport { Directive,
EmbeddedViewRef, Input, OnChanges, SimpleChange, SimpleChanges, TemplateRef, ViewContainerRef } from
'@angular/core';\n\n\n/**\n * @ngModule CommonModule\n *\n * @description\n *\n * Inserts an embedded view
from a prepared `TemplateRef`.\n *\n * You can attach a context object to the `EmbeddedViewRef` by setting
`[ngTemplateOutletContext]`.\n *\n * `[ngTemplateOutletContext]` should be an object, the object's keys will be
available for binding\n * by the local template `let` declarations.\n *\n * @usageNotes\n * ``\n * <ng-container

```

```

*ngTemplateOutlet=<templateRefExp; context: contextExp></ng-container>
Using the key `$implicit` in the context object will set its value as default.
Example
@example
common/ngTemplateOutlet/ts/module.ts region='NgTemplateOutlet'
@publicApi
@Directive({selector: '[ngTemplateOutlet]'})
export class NgTemplateOutlet implements OnChanges {
 private _viewRef: EmbeddedViewRef<any> | null = null;
 /**
 * A context object to attach to the {@link EmbeddedViewRef}. This should be an object, the object's keys will be available for binding by the local template `let` declarations.
 * Using the key `'$implicit` in the context object will set its value as default.
 */
 @Input() public ngTemplateOutletContext: Object | null = null;
 /**
 * A string defining the template reference and optionally the context object for the template.
 */
 @Input() public ngTemplateOutlet: TemplateRef<any> | null = null;
 constructor(private _viewContainerRef: ViewContainerRef) {}
 ngOnChanges(changes: SimpleChanges) {
 const recreateView = this._shouldRecreateView(changes);
 if (recreateView) {
 const viewContainerRef = this._viewContainerRef;
 if (this._viewRef) {
 viewContainerRef.remove(viewContainerRef.indexOf(this._viewRef));
 }
 this._viewRef = this.ngTemplateOutlet ? viewContainerRef.createEmbeddedView(this.ngTemplateOutlet, this.ngTemplateOutletContext) : null;
 } else if (this._viewRef && this.ngTemplateOutletContext) {
 this._updateExistingContext(this.ngTemplateOutletContext);
 }
 }
 /**
 * We need to re-create existing embedded view if:
 * - templateRef has changed
 * - context has changes
 * We mark context object as changed when the corresponding object's shape changes (new properties are added or existing properties are removed).
 * In other words we consider context with the same properties as "the same" even if object reference changes (see https://github.com/angular/angular/issues/13407).
 */
 private _shouldRecreateView(changes: SimpleChanges): boolean {
 const ctxChange = changes['ngTemplateOutletContext'];
 return !!changes['ngTemplateOutlet'] || (ctxChange && this._hasContextShapeChanged(ctxChange));
 }
 private _hasContextShapeChanged(ctxChange: SimpleChange): boolean {
 const prevCtxKeys = Object.keys(ctxChange.previousValue || {});
 const currCtxKeys = Object.keys(ctxChange.currentValue || {});
 if (prevCtxKeys.length === currCtxKeys.length) {
 for (let propName of currCtxKeys) {
 if (prevCtxKeys.indexOf(propName) === -1) {
 return true;
 }
 }
 return false;
 }
 return true;
 }
 private _updateExistingContext(ctx: Object): void {
 for (let propName of Object.keys(ctx)) {
 (<any>this._viewRef!.context)[propName] = (<any>this.ngTemplateOutletContext)[propName];
 }
 }
}
"@license
 * Copyright Google LLC
All Rights Reserved.
 * Use of this source code is governed by an MIT-style license that can be found in the LICENSE file at https://angular.io/license
import { Provider } from '@angular/core';
import { NgClass } from './ng_class';
import { NgComponentOutlet } from './ng_component_outlet';
import { NgForOf, NgForOfContext } from './ng_for_of';
import { NgIf, NgIfContext } from './ng_if';
import { NgPlural, NgPluralCase } from './ng_plural';
import { NgStyle } from './ng_style';
import { NgSwitch, NgSwitchCase, NgSwitchDefault } from './ng_switch';
import { NgTemplateOutlet } from './ng_template_outlet';
export { NgClass, NgComponentOutlet, NgForOf, NgForOfContext, NgIf, NgIfContext, NgPlural, NgPluralCase, NgStyle, NgSwitch, NgSwitchCase, NgSwitchDefault, NgTemplateOutlet };
/**
 * A collection of Angular directives that are likely to be used in each and every Angular application.
 */
export const COMMON_DIRECTIVES: Provider[] = [
 NgClass,
 NgComponentOutlet,
 NgForOf,
 NgIf,
 NgTemplateOutlet,
 NgStyle,
 NgSwitch,
 NgSwitchCase,
 NgSwitchDefault,
 NgPlural,
 NgPluralCase,
];
"@license
 * Copyright Google LLC
All Rights Reserved.
 * Use of this source code is governed by an MIT-style license that can be found in the LICENSE file at https://angular.io/license
import { Type, stringify as stringify } from '@angular/core';
export function invalidPipeArgumentError(type: Type<any>, value: Object) {
 return Error(`InvalidPipeArgument: '${value}' for pipe '${stringify(type)}'`);
}
"@license
 * Copyright Google LLC
All Rights Reserved.
 * Use of this source code is governed by an MIT-style license that can be found in the LICENSE file at https://angular.io/license
import { ChangeDetectorRef, EventEmitter, OnDestroy, Pipe, PipeTransform, isObservable, isPromise } from '@angular/core';
import { Observable,

```

```

SubscriptionLike} from 'rxjs';\nimport {invalidPipeArgumentError} from
'./invalid_pipe_argument_error';\n\ninterface SubscriptionStrategy {\n createSubscription(async:
Observable<any>|Promise<any>, updateLatestValue: any): SubscriptionLike\n |Promise<any>;\n dispose(subscription: SubscriptionLike|Promise<any>): void;\n onDestroy(subscription:
SubscriptionLike|Promise<any>): void;\n}\n\nclass ObservableStrategy implements SubscriptionStrategy {\n createSubscription(async: Observable<any>, updateLatestValue: any): SubscriptionLike {\n return
async.subscribe({\n next: updateLatestValue,\n error: (e: any) => {\n throw e;\n }\n });\n }\n dispose(subscription: SubscriptionLike): void {\n subscription.unsubscribe();\n }\n onDestroy(subscription:
SubscriptionLike): void {\n subscription.unsubscribe();\n }\n}\n\nclass PromiseStrategy implements
SubscriptionStrategy {\n createSubscription(async: Promise<any>, updateLatestValue: (v: any) => any):
Promise<any> {\n return async.then(updateLatestValue, e => {\n throw e;\n });\n }\n dispose(subscription: Promise<any>): void {\n }\n onDestroy(subscription: Promise<any>): void {\n }\n}\n\nconst
_promiseStrategy = new PromiseStrategy();\nconst _observableStrategy = new ObservableStrategy();\n\n/**\n *
@ngModule CommonModule\n * @description\n * Unwraps a value from an asynchronous primitive.\n *\n *
The `async` pipe subscribes to an `Observable` or `Promise` and returns the latest value it has\n * emitted. When a
new value is emitted, the `async` pipe marks the component to be checked for\n * changes. When the component
gets destroyed, the `async` pipe unsubscribes automatically to avoid\n * potential memory leaks.\n *\n *
@usageNotes\n *\n * ### Examples\n *\n * This example binds a `Promise` to the view. Clicking the `Resolve`
button resolves the\n * promise.\n *\n * { @example common/pipes/ts/async_pipe.ts region='AsyncPipePromise'}\n *\n * It's also possible to use `async` with Observables. The example below binds the `time` Observable\n * to the
view. The Observable continuously updates the view with the current time.\n *\n * { @example
common/pipes/ts/async_pipe.ts region='AsyncPipeObservable'}\n *\n * @publicApi\n * ^\n * @Pipe({ name: 'async',
pure: false})\n * export class AsyncPipe implements OnDestroy, PipeTransform {\n private _latestValue: any =
null;\n private _subscription: SubscriptionLike|Promise<any>|null = null;\n private _obj:
Observable<any>|Promise<any>|EventEmitter<any>|null = null;\n private _strategy: SubscriptionStrategy =
null;\n constructor(private _ref: ChangeDetectorRef) {\n }\n ngOnDestroy(): void {\n if (this._subscription) {\n
 this._dispose();\n }\n }\n transform<T>(obj: Observable<T>|Promise<T>): T|null;\n transform<T>(obj:
null|undefined): null;\n transform<T>(obj: Observable<T>|Promise<T>|null|undefined): T|null;\n transform<T>(obj:
Observable<T>|Promise<T>|null|undefined): T|null {\n if (!this._obj) {\n if (obj) {\n
 this._subscribe(obj);\n }\n return this._latestValue;\n }\n if (obj !== this._obj) {\n
 this._dispose();\n return this.transform(obj);\n }\n return this._latestValue;\n }\n private _subscribe(obj:
Observable<any>|Promise<any>|EventEmitter<any>): void {\n this._obj = obj;\n this._strategy =
this._selectStrategy(obj);\n this._subscription = this._strategy.createSubscription(\n obj, (value: Object) =>
this._updateLatestValue(obj, value));\n }\n private _selectStrategy(obj:
Observable<any>|Promise<any>|EventEmitter<any>): any {\n if (isPromise(obj)) {\n return
_promiseStrategy;\n }\n if (isObservable(obj)) {\n return _observableStrategy;\n }\n throw
invalidPipeArgumentError(AsyncPipe, obj);\n }\n private _dispose(): void {\n
 this._strategy.dispose(this._subscription!);\n this._latestValue = null;\n this._subscription = null;\n this._obj =
null;\n }\n private _updateLatestValue(async: any, value: Object): void {\n if (async === this._obj) {\n
 this._latestValue = value;\n this._ref.markForCheck();\n }\n }\n }\n\n", /**\n * @license\n * Copyright Google
LLC All Rights Reserved.\n *\n * Use of this source code is governed by an MIT-style license that can be\n * found
in the LICENSE file at https://angular.io/license\n * ^\n *\n */\nimport {Pipe, PipeTransform} from
'@angular/core';\nimport {invalidPipeArgumentError} from './invalid_pipe_argument_error';\n\n/**\n * Transforms
text to all lower case.\n *\n * @see `UpperCasePipe`\n * @see `TitleCasePipe`\n * @usageNotes\n *\n * The
following example defines a view that allows the user to enter\n * text, and then uses the pipe to convert the input
text to all lower case.\n *\n * <code-example path='common/pipes/ts/lowerupper_pipe.ts'\n * region='LowerCasePipe'></code-example>\n *\n * @ngModule CommonModule\n * @publicApi\n * ^\n * @Pipe({ name: 'lowercase'})\n * export class LowerCasePipe implements PipeTransform {\n /**\n * @param

```



value The string to transform to lower case.\n \*/\n transform(value: string): string;\n transform(value: null|undefined): null;\n transform(value: string|null|undefined): string|null;\n transform(value: string|null|undefined): string|null {\n if (value == null) return null;\n if (typeof value !== 'string') {\n throw invalidPipeArgumentError(LowerCasePipe, value);\n }\n return value.toLowerCase();\n }\n}\n\n/\n// Regex below matches any Unicode word and compatible with ES5. In ES2018 the same result\n// can be achieved by using `\\p{L}\\S*/gu` and also known as Unicode Property Escapes\n// (<http://2ality.com/2017/07/regexp-unicode-property-escapes.html>). Since there is no\n// transpilation of this functionality down to ES5 without external tool, the only solution is\n// to use already transpiled form. Example can be found here -\n//

<https://mothereff.in/regexpu#input=var+regex+%3D+%5Cp%7B%7D%u%3B&unicodePropertyEscape=1>\n\n

```
const unicodeWordMatch = /\n (?:[A-Za-z\\xAA\\xB5\\xBA\\xC0-\\xD6\\xD8-\\xF6\\xF8-\\u02C1\\u02C6-\\u02D1\\u02E0-\\u02E4\\u02EC\\u02EE\\u0370-\\u0374\\u0376\\u0377\\u037A-\\u037D\\u037F\\u0386\\u0388-\\u038A\\u038C\\u038E-\\u03A1\\u03A3-\\u03F5\\u03F7-\\u0481\\u048A-\\u052F\\u0531-\\u0556\\u0559\\u0561-\\u0587\\u05D0-\\u05EA\\u05F0-\\u05F2\\u0620-\\u064A\\u066E\\u066F\\u0671-\\u06D3\\u06D5\\u06E5\\u06E6\\u06EE\\u06EF\\u06FA-\\u06FC\\u06FF\\u0710\\u0712-\\u072F\\u074D-\\u07A5\\u07B1\\u07CA-\\u07EA\\u07F4\\u07F5\\u07FA\\u0800-\\u0815\\u081A\\u0824\\u0828\\u0840-\\u0858\\u0860-\\u086A\\u08A0-\\u08B4\\u08B6-\\u08BD\\u0904-\\u0939\\u093D\\u0950\\u0958-\\u0961\\u0971-\\u0980\\u0985-\\u098C\\u098F\\u0990\\u0993-\\u09A8\\u09AA-\\u09B0\\u09B2\\u09B6-\\u09B9\\u09BD\\u09CE\\u09DC\\u09DD\\u09DF-\\u09E1\\u09F0\\u09F1\\u09FC\\u0A05-\\u0A0A\\u0A0F\\u0A10\\u0A13-\\u0A28\\u0A2A-\\u0A30\\u0A32\\u0A33\\u0A35\\u0A36\\u0A38\\u0A39\\u0A59-\\u0A5C\\u0A5E\\u0A72-\\u0A74\\u0A85-\\u0A8D\\u0A8F-\\u0A91\\u0A93-\\u0AA8\\u0AAA-\\u0AB0\\u0AB2\\u0AB3\\u0AB5-\\u0AB9\\u0ABD\\u0AD0\\u0AE0\\u0AE1\\u0AF9\\u0B05-\\u0B0C\\u0B0F\\u0B10\\u0B13-\\u0B28\\u0B2A-\\u0B30\\u0B32\\u0B33\\u0B35-\\u0B39\\u0B3D\\u0B5C\\u0B5D\\u0B5F-\\u0B61\\u0B71\\u0B83\\u0B85-\\u0B8A\\u0B8E-\\u0B90\\u0B92-\\u0B95\\u0B99\\u0B9A\\u0B9C\\u0B9E\\u0B9F\\u0BA3\\u0BA4\\u0BA8-\\u0BAA\\u0BAE-\\u0BB9\\u0BD0\\u0C05-\\u0C0C\\u0C0E-\\u0C10\\u0C12-\\u0C28\\u0C2A-\\u0C39\\u0C3D\\u0C58-\\u0C5A\\u0C60\\u0C61\\u0C80\\u0C85-\\u0C8C\\u0C8E-\\u0C90\\u0C92-\\u0CA8\\u0CAA-\\u0CB3\\u0CB5-\\u0CB9\\u0CBD\\u0CDE\\u0CE0\\u0CE1\\u0CF1\\u0CF2\\u0D05-\\u0D0C\\u0D0E-\\u0D10\\u0D12-\\u0D3A\\u0D3D\\u0D4E\\u0D54-\\u0D56\\u0D5F-\\u0D61\\u0D7A-\\u0D7F\\u0D85-\\u0D96\\u0D9A-\\u0DB1\\u0DB3-\\u0DBB\\u0DBD\\u0DC0-\\u0DC6\\u0E01-\\u0E30\\u0E32\\u0E33\\u0E40-\\u0E46\\u0E81\\u0E82\\u0E84\\u0E87\\u0E88\\u0E8A\\u0E8D\\u0E94-\\u0E97\\u0E99-\\u0E9F\\u0EA1-\\u0EA3\\u0EA5\\u0EA7\\u0EAA\\u0EAB\\u0EAD-\\u0EB0\\u0EB2\\u0EB3\\u0EBD\\u0EC0-\\u0EC4\\u0EC6\\u0EDC-\\u0EDF\\u0F00\\u0F40-\\u0F47\\u0F49-\\u0F6C\\u0F88-\\u0F8C\\u1000-\\u102A\\u103F\\u1050-\\u1055\\u105A-\\u105D\\u1061\\u1065\\u1066\\u106E-\\u1070\\u1075-\\u1081\\u108E\\u10A0-\\u10C5\\u10C7\\u10CD\\u10D0-\\u10FA\\u10FC-\\u1248\\u124A-\\u124D\\u1250-\\u1256\\u1258\\u125A-\\u125D\\u1260-\\u1288\\u128A-\\u128D\\u1290-\\u12B0\\u12B2-\\u12B5\\u12B8-\\u12BE\\u12C0\\u12C2-\\u12C5\\u12C8-\\u12D6\\u12D8-\\u1310\\u1312-\\u1315\\u1318-\\u135A\\u1380-\\u138F\\u13A0-\\u13F5\\u13F8-\\u13FD\\u1401-\\u166C\\u166F-\\u167F\\u1681-\\u169A\\u16A0-\\u16EA\\u16F1-\\u16F8\\u1700-\\u170C\\u170E-\\u1711\\u1720-\\u1731\\u1740-\\u1751\\u1760-\\u176C\\u176E-\\u1770\\u1780-\\u17B3\\u17D7\\u17DC\\u1820-\\u1877\\u1880-\\u1884\\u1887-\\u18A8\\u18AA\\u18B0-\\u18F5\\u1900-\\u191E\\u1950-\\u196D\\u1970-\\u1974\\u1980-\\u19AB\\u19B0-\\u19C9\\u1A00-\\u1A16\\u1A20-\\u1A54\\u1AA7\\u1B05-\\u1B33\\u1B45-\\u1B4B\\u1B83-\\u1BA0\\u1BAE\\u1BAF\\u1BBA-\\u1BE5\\u1C00-\\u1C23\\u1C4D-\\u1C4F\\u1C5A-\\u1C7D\\u1C80-\\u1C88\\u1CE9-\\u1CEC\\u1CEE-\\u1CF1\\u1CF5\\u1CF6\\u1D00-\\u1DBF\\u1E00-\\u1F15\\u1F18-\\u1F1D\\u1F20-\\u1F45\\u1F48-\\u1F4D\\u1F50-\\u1F57\\u1F59\\u1F5B\\u1F5D\\u1F5F-\\u1F7D\\u1F80-\\u1FB4\\u1FB6-\\u1FBC\\u1FBE\\u1FC2-\\u1FC4\\u1FC6-\\u1FCC\\u1FD0-\\u1FD3\\u1FD6-\\u1FDB\\u1FE0-\\u1FEC\\u1FF2-\\u1FF4\\u1FF6-\\u1FFC\\u2071\\u207F\\u2090-\\u209C\\u2102\\u2107\\u210A-\\u2113\\u2115\\u2119-\\u211D\\u2124\\u2126\\u2128\\u212A-\\u212D\\u212F-\\u2139\\u213C-\\u213F\\u2145-\\u2149\\u214E\\u2183\\u2184\\u2C00-\\u2C2E\\u2C30-\\u2C5E\\u2C60-\\u2CE4\\u2CEB-
```

\\u2CEE\\u2CF2\\u2CF3\\u2D00-\\u2D25\\u2D27\\u2D2D\\u2D30-\\u2D67\\u2D6F\\u2D80-\\u2D96\\u2DA0-  
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\\u2DD6\\u2DD8-\\u2DDE\\u2E2F\\u3005\\u3006\\u3031-\\u3035\\u303B\\u303C\\u3041-\\u3096\\u309D-  
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\\u31FF\\u3400-\\u4DB5\\u4E00-\\u9FEA\\uA000-\\uA48C\\uA4D0-\\uA4FD\\uA500-\\uA60C\\uA610-  
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\\uDFCF]\\uD801[\\uDC00-\\uDC9D\\uDCB0-\\uDCD3\\uDCD8-\\uDCFB\\uDD00-\\uDD27\\uDD30-  
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\\uDC35\\uDC37\\uDC38\\uDC3C\\uDC3F-\\uDC55\\uDC60-\\uDC76\\uDC80-\\uDC9E\\uDCE0-  
\\uDCF2\\uDCF4\\uDCF5\\uDD00-\\uDD15\\uDD20-\\uDD39\\uDD80-  
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\\uDDB2\\uDDC1-\\uDDC4\\uDDDA\\uDDDC\\uDE00-\\uDE11\\uDE13-\\uDE2B\\uDE80-  
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\\uDF0C\\uDF0F\\uDF10\\uDF13-\\uDF28\\uDF2A-\\uDF30\\uDF32\\uDF33\\uDF35-  
\\uDF39\\uDF3D\\uDF50\\uDF5D-\\uDF61]\\uD805[\\uDC00-\\uDC34\\uDC47-\\uDC4A\\uDC80-  
\\uDCAF\\uDCC4\\uDCC5\\uDCC7\\uDD80-\\uDDAE\\uDDD8-\\uDDDB\\uDE00-\\uDE2F\\uDE44\\uDE80-  
\\uDEAA\\uDF00-\\uDF19]\\uD806[\\uDCA0-\\uDCDF\\uDCFF\\uDE00\\uDE0B-  
\\uDE32\\uDE3A\\uDE50\\uDE5C-\\uDE83\\uDE86-\\uDE89\\uDEC0-\\uDEF8]\\uD807[\\uDC00-  
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\\uDD30\\uDD46]\\uD808[\\uDC00-\\uDF99]\\uD809[\\uDC80-\\uDD43][\\uD80C\\uD81C-\\uD820\\uD840-  
\\uD868\\uD86A-\\uD86C\\uD86F-\\uD872\\uD874-\\uD879][\\uDC00-\\uDFFF]\\uD80D[\\uDC00-  
\\uDC2E]\\uD811[\\uDC00-\\uDE46]\\uD81A[\\uDC00-\\uDE38\\uDE40-\\uDE5E\\uDED0-\\uDEED\\uDF00-  
\\uDF2F\\uDF40-\\uDF43\\uDF63-\\uDF77\\uDF7D-\\uDF8F]\\uD81B[\\uDF00-\\uDF44\\uDF50\\uDF93-  
\\uDF9F\\uDFE0\\uDFE1]\\uD821[\\uDC00-\\uDFEC]\\uD822[\\uDC00-\\uDEF2]\\uD82C[\\uDC00-  
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\\uDC99]\\uD835[\\uDC00-\\uDC54\\uDC56-\\uDC9C\\uDC9E\\uDC9F\\uDCA2\\uDCA5\\uDCA6\\uDCA9-  
\\uDCAC\\uDCAE-\\uDCB9\\uDCBB\\uDCBD-\\uDCC3\\uDCC5-\\uDD05\\uDD07-\\uDD0A\\uDD0D-  
\\uDD14\\uDD16-\\uDD1C\\uDD1E-\\uDD39\\uDD3B-\\uDD3E\\uDD40-\\uDD44\\uDD46\\uDD4A-  
\\uDD50\\uDD52-\\uDEA5\\uDEA8-\\uDEC0\\uDEC2-\\uDEDA\\uDEDC-\\uDEFA\\uDEFC-\\uDF14\\uDF16-  
\\uDF34\\uDF36-\\uDF4E\\uDF50-\\uDF6E\\uDF70-\\uDF88\\uDF8A-\\uDFA8\\uFAA-\\uDFC2\\uDFC4-  
\\uDFCB]\\uD83A[\\uDC00-\\uDCC4\\uDD00-\\uDD43]\\uD83B[\\uDE00-\\uDE03\\uDE05-

```

\uDE1F\uDE21\uDE22\uDE24\uDE27\uDE29-\uDE32\uDE34-
\uDE37\uDE39\uDE3B\uDE42\uDE47\uDE49\uDE4B\uDE4D-
\uDE4F\uDE51\uDE52\uDE54\uDE57\uDE59\uDE5B\uDE5D\uDE5F\uDE61\uDE62\uDE64\uDE67-
\uDE6A\uDE6C-\uDE72\uDE74-\uDE77\uDE79-\uDE7C\uDE7E\uDE80-\uDE89\uDE8B-
\uDE9B\uDEA1-\uDEA3\uDEA5-\uDEA9\uDEAB-\uDEBB)\uDC00-\uDED6\uDF00-
\uDFFF)\uDC00-\uDF34\uDF40-\uDFFF)\uDC00-\uDC1D\uDC20-
\uDFFF)\uDC00-\uDEA1\uDEB0-\uDFFF)\uDC00-\uDFE0)\uDC00-\uDE1D)]S*/g;\n\n/**\n * Transforms text to title case.\n * Capitalizes the first letter of each word and transforms
the\n * rest of the word to lower case.\n * Words are delimited by any whitespace character, such as a space, tab, or
line-feed character.\n * @see `LowerCasePipe`\n * @see `UpperCasePipe`\n * @usageNotes\n * The
following example shows the result of transforming various strings into title case.\n * @ngModule
CommonModule\n * @publicApi\n * @Pipe({name: 'titlecase'})\nexport class TitleCasePipe implements
PipeTransform {\n /**\n * @param value The string to transform to title case.\n */\n transform(value: string):
string;\n transform(value: null|undefined): null;\n transform(value: string|null|undefined): string|null;\n
transform(value: string|null|undefined): string|null {\n if (value == null) return null;\n if (typeof value !==
'string') {\n throw invalidPipeArgumentError(TitleCasePipe, value);\n }\n return value.replace(\n
unicodeWordMatch, (txt => txt[0].toUpperCase() + txt.substr(1).toLowerCase()));\n }\n}\n\n/**\n * Transforms
text to all upper case.\n * @see `LowerCasePipe`\n * @see `TitleCasePipe`\n * @ngModule CommonModule\n
* @publicApi\n */\n @Pipe({name: 'uppercase'})\nexport class UpperCasePipe implements PipeTransform {\n
/**\n * @param value The string to transform to upper case.\n */\n transform(value: string): string;\n
transform(value: null|undefined): null;\n transform(value: string|null|undefined): string|null;\n transform(value:
string|null|undefined): string|null {\n if (value == null) return null;\n if (typeof value !== 'string') {\n
throw invalidPipeArgumentError(UpperCasePipe, value);\n }\n return value.toUpperCase();\n }\n}\n\n",/**\n *
@license\n * Copyright Google LLC All Rights Reserved.\n * Use of this source code is governed by an MIT-
style license that can be\n * found in the LICENSE file at https://angular.io/license\n */\nimport {Inject,
LOCALE_ID, Pipe, PipeTransform} from '@angular/core';\nimport {formatDate} from
'./i18n/format_date';\nimport {invalidPipeArgumentError} from './invalid_pipe_argument_error';\n\n// clang-format
off\n/**\n * @ngModule CommonModule\n * @description\n * Formats a date value according to locale
rules.\n * Only the `en-US` locale data comes with Angular. To localize dates\n * in another language, you must
import the corresponding locale data.\n * See the [i18n guide](guide/i18n#i18n-pipes) for more information.\n *
@see `formatDate()`\n * @usageNotes\n * The result of this pipe is not reevaluated when the input is
mutated. To avoid the need to\n * reformat the date on every change-detection cycle, treat the date as an immutable
object\n * and change the reference when the pipe needs to run again.\n * ### Pre-defined format options\n *
Examples are given in `en-US` locale.\n * - `short`: equivalent to `M/d/yy, h:mm a` (^6/15/15, 9:03 AM).\n * -
`medium`: equivalent to `MMM d, y, h:mm:ss a` (^Jun 15, 2015, 9:03:01 AM).\n * - `long`: equivalent to
`MMMM d, y, h:mm:ss a z` (^June 15, 2015 at 9:03:01 AM GMT+1).\n * - `full`: equivalent to `EEEE,
MMMM d, y, h:mm:ss a zzzz` (^Monday, June 15, 2015 at ^9:03:01 AM GMT+01:00).\n * - `shortDate`:
equivalent to `M/d/yy` (^6/15/15).\n * - `mediumDate`: equivalent to `MMM d, y` (^Jun 15, 2015).\n * -
`longDate`: equivalent to `MMMM d, y` (^June 15, 2015).\n * - `fullDate`: equivalent to `EEEE, MMMM d, y`
(^Monday, June 15, 2015).\n * - `shortTime`: equivalent to `h:mm a` (^9:03 AM).\n * - `mediumTime`:
equivalent to `h:mm:ss a` (^9:03:01 AM).\n * - `longTime`: equivalent to `h:mm:ss a z` (^9:03:01 AM
GMT+1).\n * - `fullTime`: equivalent to `h:mm:ss a zzzz` (^9:03:01 AM GMT+01:00).\n * ### Custom
format options\n * You can construct a format string using symbols to specify the components\n * of a date-time
value, as described in the following table.\n * Format details depend on the locale.\n * Fields marked with (*) are
only available in the extra data set for the given locale.\n * | Field type | Format | Description
| Example Value | Field type | Format | Description |
-----|-----|-----|-----|-----|-----|-----|
| G, GG &

```

GGG | Abbreviated | AD | \n \* |  
GGGG | Wide | Anno Domini | \n \* |  
| GGGGG | Narrow | A | \n \* | Year  
| y | Numeric: minimum digits | 2, 20, 201, 2017, 20173 | \n \* |  
| yy | Numeric: 2 digits + zero padded | 02, 20, 01, 17, 73  
\n \* | | yyy | Numeric: 3 digits + zero padded | 002, 020, 201, 2017, 20173  
| \n \* | | yyyy | Numeric: 4 digits or more + zero padded | 0002, 0020,  
0201, 2017, 20173 | \n \* | Week-numbering year| Y | Numeric: minimum digits  
| 2, 20, 201, 2017, 20173 | \n \* | | YY | Numeric: 2 digits + zero  
padded | 02, 20, 01, 17, 73 | \n \* | | YYY | Numeric: 3  
digits + zero padded | 002, 020, 201, 2017, 20173 | \n \* | | YYYY  
| Numeric: 4 digits or more + zero padded | 0002, 0020, 0201, 2017, 20173 | \n \* |  
Month | M | Numeric: 1 digit | 9, 12 | \n \* |  
| | MM | Numeric: 2 digits + zero padded | 09, 12  
\n \* | | MMM | Abbreviated | Sep  
\n \* | | MMMM | Wide | September  
\n \* | | MMMMM | Narrow | S  
\n \* | Month standalone | L | Numeric: 1 digit | 9, 12  
| \n \* | | LL | Numeric: 2 digits + zero padded | 09, 12  
| \n \* | | LLL | Abbreviated | Sep  
| \n \* | | LLLL | Wide | September  
| \n \* | | LLLLL | Narrow | S  
\n \* | Week of year | w | Numeric: minimum digits | 1... 53  
| \n \* | | ww | Numeric: 2 digits + zero padded | 01... 53  
| \n \* | Week of month | W | Numeric: 1 digit | 1... 5  
| \n \* | Day of month | d | Numeric: minimum digits | 1  
| \n \* | | dd | Numeric: 2 digits + zero padded | 01  
| \n \* | Week day | E, EE & EEE | Abbreviated |  
Tue | \n \* | | EEEE | Wide |  
Tuesday | \n \* | | EEEEE | Narrow |  
T | \n \* | | EEEEEEE | Short | Tu  
| \n \* | Period | a, aa & aaa | Abbreviated |  
am/pm or AM/PM | \n \* | | aaaa | Wide (fallback to `a` when missing)  
| ante meridiem/post meridiem | \n \* | | aaaaa | Narrow  
| a/p | \n \* | Period\* | B, BB & BBB | Abbreviated  
| mid. | \n \* | | BBBB | Wide  
| am, pm, midnight, noon, morning, afternoon, evening, night | \n \* | |BBBBB |  
Narrow | md | \n \* | Period standalone\* | b, bb  
& bbb | Abbreviated | mid. | \n \* | |  
bbbb | Wide | am, pm, midnight, noon, morning, afternoon, evening, night  
\n \* | | bbbbbb | Narrow | md | \n  
\* | Hour 1-12 | h | Numeric: minimum digits | 1, 12  
| \n \* | | hh | Numeric: 2 digits + zero padded | 01, 12  
| \n \* | Hour 0-23 | H | Numeric: minimum digits | 0, 23  
| \n \* | | HH | Numeric: 2 digits + zero padded | 00, 23  
| \n \* | Minute | m | Numeric: minimum digits | 8, 59  
| \n \* | | mm | Numeric: 2 digits + zero padded | 08, 59  
| \n \* | Second | s | Numeric: minimum digits | 0...



```

locale a `string` defining the locale to use (uses the current {@link LOCALE_ID} by default).\n *
transform(value: number|null|undefined, pluralMap: {[count: string]: string}, locale?: string):\n string {\n if
(value == null) return '';\n if (typeof pluralMap !== 'object' || pluralMap === null) {\n throw
invalidPipeArgumentError(I18nPluralPipe, pluralMap);\n }\n const key = getPluralCategory(value,
Object.keys(pluralMap), this._localization, locale);\n return
pluralMap[key].replace(_INTERPOLATION_REGEXP, value.toString());\n }\n}\n",/**\n *
Copyright Google LLC All Rights Reserved.\n *\n * Use of this source code is governed by an MIT-style license
that can be\n * found in the LICENSE file at https://angular.io/license\n */\nimport {Pipe, PipeTransform} from
'@angular/core';\nimport {invalidPipeArgumentError} from './invalid_pipe_argument_error';\n/**\n *
@ngModule CommonModule\n * @description\n *\n * Generic selector that displays the string that matches the
current value.\n *\n * If none of the keys of the `mapping` match the `value`, then the content\n * of the `other` key
is returned when present, otherwise an empty string is returned.\n *\n * @usageNotes\n *\n * ### Example\n *\n *
{@example common/pipes/ts/i18n_pipe.ts region='I18nSelectPipeComponent'}\n *\n * @publicApi\n
*/\n@Pipe({name: 'i18nSelect', pure: true})\nexport class I18nSelectPipe implements PipeTransform {\n /**\n *
@param value a string to be internationalized.\n * @param mapping an object that indicates the text that should be
displayed\n * for different values of the provided `value`.\n */\n transform(value: string|null|undefined, mapping:
{[key: string]: string}): string {\n if (value == null) return '';\n if (typeof mapping !== 'object' || typeof value
!== 'string') {\n throw invalidPipeArgumentError(I18nSelectPipe, mapping);\n }\n if
(mapping.hasOwnProperty(value)) {\n return mapping[value];\n }\n if (mapping.hasOwnProperty('other'))
{\n return mapping['other'];\n }\n return '';\n }\n}\n",/**\n *
Copyright Google LLC All
Rights Reserved.\n *\n * Use of this source code is governed by an MIT-style license that can be\n * found in the
LICENSE file at https://angular.io/license\n */\nimport {Pipe, PipeTransform} from '@angular/core';\n/**\n *
@ngModule CommonModule\n * @description\n *\n * Converts a value into its JSON-format representation.
Useful for debugging.\n *\n * @usageNotes\n *\n * The following component uses a JSON pipe to convert an
object\n * to JSON format, and displays the string in both formats for comparison.\n *\n * {@example
common/pipes/ts/json_pipe.ts region='JsonPipe'}\n *\n * @publicApi\n */\n@Pipe({name: 'json', pure:
false})\nexport class JsonPipe implements PipeTransform {\n /**\n *
@param value A value of any type to
convert into a JSON-format string.\n */\n transform(value: any): string {\n return JSON.stringify(value, null,
2);\n }\n}\n",/**\n *
Copyright Google LLC All Rights Reserved.\n *\n * Use of this source code is
governed by an MIT-style license that can be\n * found in the LICENSE file at https://angular.io/license\n
*/\nimport {KeyValueChangeRecord, KeyValueChanges, KeyValueDiffer, KeyValueDiffers, Pipe,
PipeTransform} from '@angular/core';\nfunction makeKeyValuePair<K, V>(key: K, value: V): KeyValue<K, V>
{\n return {key: key, value: value};\n}\n/**\n * A key value pair.\n * Usually used to represent the key value
pairs from a Map or Object.\n *\n * @publicApi\n */\nexport interface KeyValue<K, V> {\n key: K;\n value:
V;\n}\n/**\n * @ngModule CommonModule\n * @description\n *\n * Transforms Object or Map into an array of
key value pairs.\n *\n * The output array will be ordered by keys.\n *\n * By default the comparator will be by Unicode
point value.\n *\n * You can optionally pass a compareFn if your keys are complex types.\n *\n * @usageNotes\n *
Examples\n *\n * This examples show how an Object or a Map can be iterated by ngFor with the use of this\n *
keyvalue pipe.\n *\n * {@example common/pipes/ts/keyvalue_pipe.ts region='KeyValuePipe'}\n *\n *
@publicApi\n */\n@Pipe({name: 'keyvalue', pure: false})\nexport class KeyValuePipe implements PipeTransform
{\n constructor(private readonly differs: KeyValueDiffers) {\n }\n private differ!: KeyValueDiffer<any, any>;\n
private keyValues: Array<KeyValue<any, any>> = [];\n /**\n * NOTE: when the `input` value is a simple
Record<K, V> object, the keys are extracted with\n * Object.keys(). This means that even if the `input` type is
Record<number, V> the keys are\n * compared/returned as `string`s.\n */\n transform<K, V>(\n input:
ReadonlyMap<K, V>,\n compareFn?: (a: KeyValue<K, V>, b: KeyValue<K, V>) => number):
Array<KeyValue<K, V>>;\n transform<K extends number, V>(\n input: Record<K, V>, compareFn?: (a:
KeyValue<string, V>, b: KeyValue<string, V>) => number):\n Array<KeyValue<string, V>>;\n transform<K
extends string, V>(\n input: Record<K, V>|ReadonlyMap<K, V>,\n compareFn?: (a: KeyValue<K, V>, b:

```

```

KeyValue<K, V> => number): Array<KeyValue<K, V>>;\n
transform(\n input: null|undefined,\n
compareFn?: (a: KeyValue<unknown, unknown>, b: KeyValue<unknown, unknown>) => number): null;\n
transform<K, V>(\n input: ReadonlyMap<K, V>|null|undefined,\n compareFn?: (a: KeyValue<K, V>, b:
KeyValue<K, V>) => number): Array<KeyValue<K, V>>|null;\n
transform<K extends number, V>(\n input:
Record<K, V>|null|undefined,\n compareFn?: (a: KeyValue<string, V>, b: KeyValue<string, V>) => number):\n
Array<KeyValue<string, V>>|null;\n
transform<K extends string, V>(\n input: Record<K,
V>|ReadonlyMap<K, V>|null|undefined,\n compareFn?: (a: KeyValue<K, V>, b: KeyValue<K, V>) =>
number): Array<KeyValue<K, V>>|null;\n
transform<K, V>(\n input: undefined|null|{[key: string]: V, [key:
number]: V}|ReadonlyMap<K, V>,\n compareFn: (a: KeyValue<K, V>, b: KeyValue<K, V>) => number =
defaultComparator):\n Array<KeyValue<K, V>>|null {\n if (!input || (!(input instanceof Map) && typeof input
!== 'object')) {\n return null;\n }\n if (!this.differ) {\n // make a differ for whatever type we've been
passed in\n this.differ = this.differs.find(input).create();\n }\n const differChanges: KeyValueChanges<K,
V>|null = this.differ.diff(input as any);\n if (differChanges) {\n this.keyValues = [];\n differChanges.forEachItem((r: KeyValueChangeRecord<K, V>) => {\n
this.keyValues.push(makeKeyValuePair(r.key, r.currentValue!));\n });\n this.keyValues.sort(compareFn);\n }\n return this.keyValues;\n }\n}\n\nexport function defaultComparator<K, V>(\n keyValueA: KeyValue<K,
V>, keyValueB: KeyValue<K, V>): number {\n const a = keyValueA.key;\n const b = keyValueB.key;\n // if
same exit with 0;\n if (a === b) return 0;\n // make sure that undefined are at the end of the sort.\n if (a ===
undefined) return 1;\n if (b === undefined) return -1;\n // make sure that nulls are at the end of the sort.\n if (a ===
null) return 1;\n if (b === null) return -1;\n if (typeof a === 'string' && typeof b === 'string') {\n return a < b ? -1 :
1;\n }\n if (typeof a === 'number' && typeof b === 'number') {\n return a - b;\n }\n if (typeof a === 'boolean' &&
typeof b === 'boolean') {\n return a < b ? -1 : 1;\n }\n // `a` and `b` are of different types. Compare their string
values.\n const aString = String(a);\n const bString = String(b);\n return aString === bString ? 0 : aString < bString
? -1 : 1;\n }\n}"/**\n * @license\n * Copyright Google LLC All Rights Reserved.\n * \n * Use of this source code is
governed by an MIT-style license that can be\n * found in the LICENSE file at https://angular.io/license\n
*\n\nimport {DEFAULT_CURRENCY_CODE, Inject, LOCALE_ID, Pipe, PipeTransform} from
'@angular/core';\nimport {formatCurrency, formatNumber, formatPercent} from './i18n/format_number';\nimport
{getCurrencySymbol} from './i18n/locale_data_api';\n\nimport {invalidPipeArgumentError} from
'/invalid_pipe_argument_error';\n\n/**\n * @ngModule CommonModule\n * @description\n * \n * Transforms a
number into a string,\n * formatted according to locale rules that determine group sizing and\n * separator, decimal-
point character, and other locale-specific\n * configurations.\n * \n * If no parameters are specified, the function
rounds off to the nearest value using this\n * [rounding
method](https://en.wikibooks.org/wiki/Arithmetic/Rounding).\n * The behavior differs from that of the JavaScript
`Math.round()` function.\n * In the following case for example, the pipe rounds down where\n *
`Math.round()` rounds up:\n * \n * `<code>html</code>` -2.5 | number: '1.0-0'\n * > -3\n * Math.round(-2.5)\n * > -2\n *
`\n * \n * @see `formatNumber`\n * \n * @usageNotes\n * The following code shows how the pipe transforms
numbers\n * into text strings, according to various format specifications,\n * where the caller's default locale is `en-
US`.\n * \n * ### Example\n * \n * <code-example path="common/pipes/ts/number_pipe.ts"
region="NumberPipe"></code-example>\n * \n * @publicApi\n * \n * @Pipe({name: 'number'})\n\nexport class
DecimalPipe implements PipeTransform {\n constructor(@Inject(LOCALE_ID) private _locale: string) {\n\n
/**\n * @param value The number to be formatted.\n * @param digitsInfo Decimal representation options,
specified by a string\n * in the following format:
\n * <code>{minIntegerDigits} . {minFractionDigits} -
{maxFractionDigits}</code>.\n * - `minIntegerDigits`: The minimum number of integer digits before the decimal
point.\n * Default is `1`.\n * - `minFractionDigits`: The minimum number of digits after the decimal point.\n *
Default is `0`.\n * - `maxFractionDigits`: The maximum number of digits after the decimal point.\n * Default is
`3`.\n * @param locale A locale code for the locale format rules to use.\n * When not supplied, uses the value of
`LOCALE_ID`, which is `en-US` by default.\n * See [Setting your app locale](guide/i18n#setting-up-the-locale-of-
your-app).\n * \n * \n * transform(value: number|string, digitsInfo?: string, locale?: string): string|null;\n

```

```

transform(value: null|undefined, digitsInfo?: string, locale?: string): null;\n
transform(value: number|string|null|undefined, digitsInfo?: string, locale?: string): string|null;\n
transform(value: number|string|null|undefined, digitsInfo?: string, locale?: string): string\n
 |null {\n
 if (!isValue(value)) return null;\n
 locale = locale || this._locale;\n
 try {\n
 const num = strToNumber(value);\n
 return formatNumber(num, locale, digitsInfo);\n
 } catch (error) {\n
 throw invalidPipeArgumentError(DecimalPipe, error.message);\n
 } }\n
 }\n
}

@ngModule CommonModule\n
* @description\n
*\n
* Transforms a number to a percentage\n
* string, formatted according to locale rules that determine group sizing and\n
* separator, decimal-point character, and other locale-specific\n
* configurations.\n
*\n
* @see `formatPercent()`\n
*\n
* @usageNotes\n
* The following code shows how the pipe transforms numbers\n
* into text strings, according to various format specifications,\n
* where the caller's default locale is `en-US`.\n
*\n
* <code-example\n
path=`common/pipes/ts/percent_pipe.ts`\n
region=`PercentPipe`\n
></code-example>\n
*\n
* @publicApi\n
*\n
* @Pipe({name: 'percent'})\n
export class PercentPipe implements PipeTransform {\n
 constructor(@Inject(LOCALE_ID) private _locale: string) {\n
 }\n
 /**\n
 *\n
 * @param value The number to be formatted as a percentage.\n
 * @param digitsInfo Decimal representation options, specified by a string\n
 * in the following format:\n
 * <code>{minIntegerDigits}.{minFractionDigits}-{maxFractionDigits}</code>.\n
 * - `minIntegerDigits`: The minimum number of integer digits before the decimal point.\n
 * Default is `1`.\n
 * - `minFractionDigits`: The minimum number of digits after the decimal point.\n
 * Default is `0`.\n
 * - `maxFractionDigits`: The maximum number of digits after the decimal point.\n
 * Default is `0`.\n
 * @param locale A locale code for the locale format rules to use.\n
 * When not supplied, uses the value of `LOCALE_ID`, which is `en-US` by default.\n
 * See [Setting your app locale](guide/i18n#setting-up-the-locale-of-your-app).\n
 */\n
 transform(value: number|string, digitsInfo?: string, locale?: string): string|null;\n
 transform(value: null|undefined, digitsInfo?: string, locale?: string): null;\n
 transform(value: number|string|null|undefined, digitsInfo?: string, locale?: string): string\n
 |null {\n
 if (!isValue(value)) return null;\n
 locale = locale || this._locale;\n
 try {\n
 const num = strToNumber(value);\n
 return formatPercent(num, locale, digitsInfo);\n
 } catch (error) {\n
 throw invalidPipeArgumentError(PercentPipe, error.message);\n
 } }\n
 }\n
}

@ngModule CommonModule\n
* @description\n
*\n
* Transforms a number to a currency string, formatted according to locale rules\n
* that determine group sizing and separator, decimal-point character,\n
* and other locale-specific configurations.\n
*\n
* { @a currency-code-deprecation }\n
* <div class=`alert is-helpful`>\n
*\n
* **Deprecation notice:**\n
*\n
* The default currency code is currently always `USD` but this is deprecated from v9.\n
*\n
* **In v11 the default currency code will be taken from the current locale identified by\n
* the `LOCAL_ID` token. See the [i18n guide](guide/i18n#setting-up-the-locale-of-your-app) for\n
* more information.**\n
*\n
* If you need the previous behavior then set it by creating a `DEFAULT_CURRENCY_CODE` provider in\n
* your application\n
* `NgModule`:\n
*\n
* ```\n
* ts\n
* { provide: DEFAULT_CURRENCY_CODE, useValue: 'USD' }\n
* ```\n
*\n
* </div>\n
*\n
* @see `getCurrencySymbol()`\n
* @see `formatCurrency()`\n
*\n
* @usageNotes\n
* The following code shows how the pipe transforms numbers\n
* into text strings, according to various format specifications,\n
* where the caller's default locale is `en-US`.\n
*\n
* <code-example\n
path=`common/pipes/ts/currency_pipe.ts`\n
region=`CurrencyPipe`\n
></code-example>\n
*\n
* @publicApi\n
*\n
* @Pipe({name: 'currency'})\n
export class CurrencyPipe implements PipeTransform {\n
 constructor(\n
 @Inject(LOCALE_ID) private _locale: string,\n
 @Inject(DEFAULT_CURRENCY_CODE) private _defaultCurrencyCode: string = 'USD') {\n
 }\n
 /**\n
 *\n
 * @param value The number to be formatted as currency.\n
 * @param currencyCode The [ISO 4217](https://en.wikipedia.org/wiki/ISO_4217) currency code,\n
 * such as `USD` for the US dollar and `EUR` for the euro. The default currency code can be\n
 * configured using the `DEFAULT_CURRENCY_CODE` injection token.\n
 * @param display The format for the currency indicator. One of the following:\n
 * - `code`: Show the code (such as `USD`).\n
 * - `symbol` (default): Show the symbol (such as `$`).\n
 * - `symbol-narrow`: Use the narrow symbol for locales that have two symbols for their\n
 * currency.\n
 * For example, the Canadian dollar CAD has the symbol `CA$` and the symbol-narrow `$`.\n
 * If the\n
 * locale has no narrow symbol, uses the standard symbol for the locale.\n
 * - String: Use the given string value instead of a code or a symbol.\n
 * For example, an

```



empty string will suppress the currency & symbol.

- `boolean` (marked deprecated in v5): `true` for symbol and false for `code`.
- `digitsInfo`: Decimal representation options, specified by a string in the following format: `<minIntegerDigits>.{minFractionDigits}-{maxFractionDigits}</code>`
- `minIntegerDigits`: The minimum number of integer digits before the decimal point. Default is `1`.
- `minFractionDigits`: The minimum number of digits after the decimal point. Default is `2`.
- `maxFractionDigits`: The maximum number of digits after the decimal point. Default is `2`.

If not provided, the number will be formatted with the proper amount of digits, depending on what the [ISO 4217](https://en.wikipedia.org/wiki/ISO\_4217) specifies. For example, the Canadian dollar has 2 digits, whereas the Chilean peso has none.

`locale`: A locale code for the locale format rules to use. When not supplied, uses the value of `LOCALE_ID`, which is `en-US` by default. See [Setting your app locale](guide/i18n#setting-up-the-locale-of-your-app).

```

transform(
 value: number|string,
 currencyCode?: string,
 display?: 'code'|'symbol'|'symbol-narrow'|string|boolean,
 digitsInfo?: string,
 locale?: string): string|null;
transform(
 value: null|undefined,
 currencyCode?: string,
 display?: 'code'|'symbol'|'symbol-narrow'|string|boolean,
 digitsInfo?: string,
 locale?: string): null;
transform(
 value: number|string|null|undefined,
 currencyCode?: string,
 display?: 'code'|'symbol'|'symbol-narrow'|string|boolean,
 digitsInfo?: string,
 locale?: string): string|null;
transform(
 value: number|string|null|undefined,
 currencyCode?: string,
 display: 'code'|'symbol'|'symbol-narrow'|string|boolean = 'symbol',
 digitsInfo?: string,
 locale?: string): string|null {
 if (!isValue(value)) return null;
 locale = locale || this._locale;
 if (typeof display === 'boolean') {
 if (<any>console && <any>console.warn) {
 console.warn(
 `Warning: the currency pipe has been changed in Angular v5. The symbolDisplay option (third parameter) is now a string instead of a boolean. The accepted values are \"code\", \"symbol\" or \"symbol-narrow\".`);
 }
 display = display ? 'symbol' : 'code';
 }
 let currency: string = currencyCode || this._defaultCurrencyCode;
 if (display !== 'code') {
 if (display === 'symbol' || display === 'symbol-narrow') {
 currency = getCurrencySymbol(currency, display === 'symbol' ? 'wide' : 'narrow', locale);
 }
 }
 else {
 currency = display;
 }
}
try {
 const num = strToNumber(value);
 return formatCurrency(num, locale, currency, currencyCode, digitsInfo);
} catch (error) {
 throw invalidPipeArgumentError(CurrencyPipe, error.message);
}
}

function isValue(value: number|string|null|undefined): boolean {
 return !(value == null || value === '' || value !== value);
}

function strToNumber(value: number|string): number {
 // Convert strings to numbers
 if (typeof value === 'string' && !isNaN(Number(value)) - parseFloat(value)) {
 return Number(value);
 }
 if (typeof value !== 'number') {
 throw new Error(`${value} is not a number`);
 }
 return value;
}

/**
 * @license
 * Copyright Google LLC All Rights Reserved.
 * Use of this source code is governed by an MIT-style license that can be found in the LICENSE file at https://angular.io/license
 */
import {Pipe, PipeTransform} from '@angular/core';
import {InvalidPipeArgumentError} from './invalid_pipe_argument_error';
import {NgModule} from '@ngModule';
import {CommonModule} from '@ngModule';

/**
 * @description
 * Creates a new `Array` or `String` containing a subset (slice) of the elements.
 *
 * @usageNotes
 * All behavior is based on the expected behavior of the JavaScript API
 * `Array.prototype.slice()` and `String.prototype.slice()`.
 *
 * When operating on an `Array`, the returned `Array` is always a copy even when all the elements are being returned.
 *
 * When operating on a blank value, the pipe returns the blank value.
 *
 * ### List Example
 *
 * This `ngFor` example:
 *
 * @example common/pipes/ts/slice_pipe.ts
 * region='SlicePipe_list'
 * produces the following:
 *
 * ```html
 * b
 * c
 * ```
 *
 * ### String Examples
 *
 * @example common/pipes/ts/slice_pipe.ts
 * region='SlicePipe_string'
 *
 * @publicApi
 */
@Pipe({name: 'slice', pure: false})
export class SlicePipe implements PipeTransform {
 /**
 * @param value a list or a string to be sliced.
 * @param start the starting index of the subset to return.
 * - **a positive integer**: return the item at `start` index and all items after in the list or string expression.
 * - **a negative integer**: return the item at `start` index from the end and all items after in the list or string expression.
 * - **if positive and greater than the size of the expression**: return an empty list or string.
 * - **if negative and greater than the size of the expression**: return entire
 */
 transform(
 value: number|string|Array<any>|string,
 start: number,
 end: number,
 locale?: string): any[]|string {
 if (!isValue(value)) return value;
 if (typeof value !== 'string' && !Array.isArray(value)) return value;
 if (start > value.length || (start < 0 && -start > value.length)) return [];
 if (end > value.length) end = value.length;
 if (end < 0) end = value.length + end;
 return value.slice(start, end);
 }
}

```

```

list or string.\n * @param end the ending index of the subset to return.\n * - **omitted**\n * return all items until the end.\n * - **if positive**\n * return all items before `end` index of the list or string.\n * - **if negative**\n * return all items before `end` index from the end of the list or string.\n */\n transform<T>(value: ReadonlyArray<T>, start: number, end?: number): Array<T>;\n transform(value: null|undefined, start: number, end?: number): null;\n transform<T>(value: ReadonlyArray<T>|null|undefined, start: number, end?: number): Array<T>|null;\n transform(value: string, start: number, end?: number): string;\n transform(value: string|null|undefined, start: number, end?: number): string|null;\n transform<T>(value: ReadonlyArray<T>|string|null|undefined, start: number, end?: number):\n Array<T>|string|null {\n if (value === null) return null;\n if (!this.supports(value)) {\n throw invalidPipeArgumentError(SlicePipe, value);\n }\n return value.slice(start, end);\n }\n\n private supports(obj: any): boolean {\n return typeof obj === 'string' || Array.isArray(obj);\n }\n}\n", "/*\n * @license\n * Copyright Google LLC All Rights Reserved.\n *\n * Use of this source code is governed by an MIT-style license that can be\n * found in the LICENSE file at\n * https://angular.io/license\n */\n\n * @module\n * @description\n * This module provides a set of common Pipes.\n */\nimport { AsyncPipe } from './async_pipe';\nimport { LowerCasePipe, TitleCasePipe, UpperCasePipe } from './case_conversion_pipes';\nimport { DatePipe } from './date_pipe';\nimport { I18nPluralPipe } from './i18n_plural_pipe';\nimport { I18nSelectPipe } from './i18n_select_pipe';\nimport { JsonPipe } from './json_pipe';\nimport { KeyValue, KeyValuePipe } from './keyvalue_pipe';\nimport { CurrencyPipe, DecimalPipe, PercentPipe } from './number_pipe';\nimport { SlicePipe } from './slice_pipe';\n\nexport {\n AsyncPipe,\n CurrencyPipe,\n DatePipe,\n DecimalPipe,\n I18nPluralPipe,\n I18nSelectPipe,\n JsonPipe,\n KeyValue,\n KeyValuePipe,\n LowerCasePipe,\n PercentPipe,\n SlicePipe,\n TitleCasePipe,\n UpperCasePipe,\n};\n\n/**\n * A collection of Angular pipes that are likely to be used in each and every application.\n */\nexport const\nCOMMON_PIPES = [\n AsyncPipe,\n UpperCasePipe,\n LowerCasePipe,\n JsonPipe,\n SlicePipe,\n DecimalPipe,\n PercentPipe,\n TitleCasePipe,\n CurrencyPipe,\n DatePipe,\n I18nPluralPipe,\n I18nSelectPipe,\n KeyValuePipe,\n];\n", "/*\n * @license\n * Copyright Google LLC All Rights Reserved.\n *\n * Use of this source code is governed by an MIT-style license that can be\n * found in the LICENSE file at\n * https://angular.io/license\n */\n\nimport { NgModule } from '@angular/core';\nimport { COMMON_DIRECTIVES } from './directives/index';\nimport { NgLocaleLocalization, NgLocalization } from './i18n/localization';\nimport { COMMON_PIPES } from './pipes/index';\n\n// Note: This does not contain the location providers, as they\n// need some platform specific implementations to work.\n\n * Exports all the basic Angular directives and pipes,\n * such as `NgIf`, `NgForOf`, `DecimalPipe`, and so on.\n * Re-exported by `BrowserModule`, which is included\n * automatically in the root `AppModule` when you create a new app with the CLI `new` command.\n *\n * The `providers` options configure the NgModule's injector to provide\n * localization dependencies to members.\n *\n * The `exports` options make the declared directives and pipes available for import\n * by other NgModules.\n *\n * @publicApi\n */\n@NgModule({\n declarations: [COMMON_DIRECTIVES, COMMON_PIPES],\n exports: [COMMON_DIRECTIVES, COMMON_PIPES],\n providers: [\n { provide: NgLocalization, useClass: NgLocaleLocalization },\n],\n})\nexport class CommonModule {\n}\n", "/*\n * @license\n * Copyright Google LLC All Rights Reserved.\n *\n * Use of this source code is governed by an MIT-style license that can be\n * found in the LICENSE file at https://angular.io/license\n */\n\nexport const PLATFORM_BROWSER_ID = 'browser';\nexport const PLATFORM_SERVER_ID = 'server';\nexport const PLATFORM_WORKER_APP_ID = 'browserWorkerApp';\nexport const PLATFORM_WORKER_UI_ID = 'browserWorkerUi';\n\n/**\n * Returns whether a platform id represents a browser platform.\n *\n * @publicApi\n */\nexport function\nisPlatformBrowser(platformId: Object): boolean {\n return platformId === PLATFORM_BROWSER_ID;\n}\n\n/**\n * Returns whether a platform id represents a server platform.\n *\n * @publicApi\n */\nexport function\nisPlatformServer(platformId: Object): boolean {\n return platformId === PLATFORM_SERVER_ID;\n}\n\n/**\n * Returns whether a platform id represents a web worker app platform.\n *\n * @publicApi\n */\nexport function\nisPlatformWorkerApp(platformId: Object): boolean {\n return platformId === PLATFORM_WORKER_APP_ID;\n}\n\n/**\n * Returns whether a platform id represents a web worker UI platform.\n *\n * @publicApi\n */\nexport function\nisPlatformWorkerUi(platformId: Object): boolean {\n return

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platformId === PLATFORM_WORKER_UI_ID;\n}\n", "/*\n * @license\n * Copyright Google LLC All Rights
Reserved.\n *\n * Use of this source code is governed by an MIT-style license that can be\n * found in the
LICENSE file at https://angular.io/license\n *\n\n/**\n * @module\n * @description\n * Entry point for all public
APIs of the common package.\n *\n\nimport {Version} from '@angular/core';\n\n/**\n * @publicApi\n *\n\nexport
const VERSION = new Version('11.0.2');\n", "/*\n * @license\n * Copyright Google LLC All Rights Reserved.\n
*\n * Use of this source code is governed by an MIT-style license that can be\n * found in the LICENSE file at
https://angular.io/license\n *\n\nimport {ErrorHandler, defineInjectable, inject} from '@angular/core';\n\nimport
{DOCUMENT} from './dom_tokens';\n\n\n/**\n * Defines a scroll position manager. Implemented by
`BrowserViewportScroller`.\n *\n * @publicApi\n *\n\nexport abstract class ViewportScroller {\n // De-sugared
tree-shakable injection\n // See #23917\n /** @nocollapse\n *\n static prov = defineInjectable({\n token:
ViewportScroller,\n providedIn: 'root',\n factory: () => new BrowserViewportScroller(inject(DOCUMENT),
window, inject(ErrorHandler))\n });\n\n /**\n * Configures the top offset used when scrolling to an anchor.\n *
@param offset A position in screen coordinates (a tuple with x and y values)\n * or a function that returns the top
offset position.\n * \n *\n *\n abstract setOffset(offset: [number, number]|(() => [number, number])): void;\n\n /**\n
* Retrieves the current scroll position.\n * @returns A position in screen coordinates (a tuple with x and y
values).\n * \n *\n *\n abstract getScrollPosition(): [number, number];\n\n /**\n * Scrolls to a specified position.\n *
@param position A position in screen coordinates (a tuple with x and y values).\n * \n *\n *\n abstract
scrollToPosition(position: [number, number]): void;\n\n /**\n * Scrolls to an anchor element.\n * @param
anchor The ID of the anchor element.\n * \n *\n *\n abstract scrollToAnchor(anchor: string): void;\n\n /**\n * Disables
automatic scroll restoration provided by the browser.\n * See also [window.history.scrollRestoration\n *
info](https://developers.google.com/web/updates/2015/09/history-api-scroll-restoration).\n * \n *\n *\n abstract
setHistoryScrollRestoration(scrollRestoration: 'auto'|'manual'): void;\n}\n\n\n/**\n * Manages the scroll position for a
browser window.\n *\n\nexport class BrowserViewportScroller implements ViewportScroller {\n private offset: ()
=> [number, number] = () => [0, 0];\n\n constructor(private document: any, private window: any, private
errorHandler: ErrorHandler) {\n\n /**\n * Configures the top offset used when scrolling to an anchor.\n *
@param offset A position in screen coordinates (a tuple with x and y values)\n * or a function that returns the top
offset position.\n * \n *\n *\n setOffset(offset: [number, number]|(() => [number, number])): void {\n if
(Array.isArray(offset)) {\n this.offset = () => offset;\n } else {\n this.offset = offset;\n }\n }\n\n /**\n
* Retrieves the current scroll position.\n * @returns The position in screen coordinates.\n * \n *\n *\n getScrollPosition():
[number, number] {\n if (this.supportsScrolling()) {\n return [this.window.scrollX, this.window.scrollY];\n }
else {\n return [0, 0];\n }\n }\n\n /**\n * Sets the scroll position.\n * @param position The new position in
screen coordinates.\n * \n *\n *\n scrollToPosition(position: [number, number]): void {\n if (this.supportsScrolling())
{\n this.window.scrollTo(position[0], position[1]);\n }\n }\n\n /**\n * Scrolls to an anchor element.\n *
@param anchor The ID of the anchor element.\n * \n *\n *\n scrollToAnchor(anchor: string): void {\n if
(this.supportsScrolling()) {\n const elSelected =\n this.document.getElementById(anchor) ||
this.document.getElementsByName(anchor)[0];\n if (elSelected) {\n this.scrollToElement(elSelected);\n }\n }\n }\n\n /**\n
* Disables automatic scroll restoration provided by the browser.\n * \n *\n *\n setHistoryScrollRestoration(scrollRestoration: 'auto'|'manual'): void {\n if (this.supportScrollRestoration()) {\n
const history = this.window.history;\n if (history && history.scrollRestoration) {\n history.scrollRestoration
= scrollRestoration;\n }\n }\n }\n\n private scrollToElement(el: any): void {\n const rect =
el.getBoundingClientRect();\n const left = rect.left + this.window.pageXOffset;\n const top = rect.top +
this.window.pageYOffset;\n const offset = this.offset();\n this.window.scrollTo(left - offset[0], top - offset[1]);\n
}\n\n /**\n * We only support scroll restoration when we can get a hold of window.\n * This means that we do
not support this behavior when running in a web worker.\n * \n *\n *\n Lifting this restriction right now would require
more changes in the dom adapter.\n * Since webworkers aren't widely used, we will lift it once RouterScroller is\n
* battle-tested.\n * \n *\n *\n private supportScrollRestoration(): boolean {\n try {\n if (!this.window ||
!this.window.scrollTo) {\n return false;\n }\n // The `scrollRestoration` property could be on the `history`
instance or its prototype.\n const scrollRestorationDescriptor =

```

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getScrollRestorationProperty(this.window.history) ||\n
getScrollRestorationProperty(Object.getPrototypeOf(this.window.history));\n // We can write to the
`scrollRestoration` property if it is a writable data field or it has a\n // setter function.\n return
!!scrollRestorationDescriptor &&\n !(scrollRestorationDescriptor.writable ||
scrollRestorationDescriptor.set);\n } catch {\n return false;\n }\n }\n\n private supportsScrolling(): boolean
{\n try {\n return !!this.window.scrollTo;\n } catch {\n return false;\n }\n }\n}\n\nfunction
getScrollRestorationProperty(obj: any): PropertyDescriptor|undefined {\n return
Object.getOwnPropertyDescriptor(obj, 'scrollRestoration');\n}\n\n/**\n * Provides an empty implementation of the
viewport scroller.\n */\nexport class NullViewportScroller implements ViewportScroller {\n /**\n * Empty
implementation\n */\n setOffset(offset: [number, number]|((=> [number, number])): void {\n\n /**\n * Empty
implementation\n */\n getScrollPosition(): [number, number] {\n return [0, 0];\n }\n\n /**\n * Empty
implementation\n */\n scrollToPosition(position: [number, number]): void {\n\n /**\n * Empty
implementation\n */\n scrollToAnchor(anchor: string): void {\n\n /**\n * Empty implementation\n */\n
setHistoryScrollRestoration(scrollRestoration: 'auto'|'manual'): void {\n}\n}\n\n", "/*\n * @license\n * Copyright
Google LLC All Rights Reserved.\n */\n * Use of this source code is governed by an MIT-style license that can be\n
* found in the LICENSE file at https://angular.io/license\n */\n\n/**\n * @module\n * @description\n * Entry point
for all public APIs of the common package.\n */\nexport * from './private_export';\nexport * from
'/location/index';\nexport {formatDate} from './i18n/format_date';\nexport {formatCurrency, formatNumber,
formatPercent} from './i18n/format_number';\nexport {NgLocaleLocalization, NgLocalization} from
'/i18n/localization';\nexport {registerLocaleData} from './i18n/locale_data';\nexport {Plural, NumberFormatStyle,
FormStyle, Time, TranslationWidth, FormatWidth, NumberSymbol, WeekDay, getNumberOfCurrencyDigits,
getCurrencySymbol, getLocaleDayPeriods, getLocaleDayNames, getLocaleMonthNames, getLocaleId,
getLocaleEraNames, getLocaleWeekEndRange, getLocaleFirstDayOfWeek, getLocaleDateFormat,
getLocaleDateTimeFormat, getLocaleExtraDayPeriodRules, getLocaleExtraDayPeriods, getLocalePluralCase,
getLocaleTimeFormat, getLocaleNumberSymbol, getLocaleNumberFormat, getLocaleCurrencyCode,
getLocaleCurrencyName, getLocaleCurrencySymbol, getLocaleDirection} from './i18n/locale_data_api';\nexport
{parseCookieValue as parseCookieValue} from './cookie';\nexport {CommonModule} from
'/common_module';\nexport {NgClass, NgForOf, NgForOfContext, NgIf, NgIfContext, NgPlural, NgPluralCase,
NgStyle, NgSwitch, NgSwitchCase, NgSwitchDefault, NgTemplateOutlet, NgComponentOutlet} from
'/directives/index';\nexport {DOCUMENT} from './dom_tokens';\nexport {AsyncPipe, DatePipe, I18nPluralPipe,
I18nSelectPipe, JsonPipe, LowerCasePipe, CurrencyPipe, DecimalPipe, PercentPipe, SlicePipe, UpperCasePipe,
TitleCasePipe, KeyValuePipe, KeyValue} from './pipes/index';\nexport {PLATFORM_BROWSER_ID as
PLATFORM_BROWSER_ID, PLATFORM_SERVER_ID as PLATFORM_SERVER_ID,
PLATFORM_WORKER_APP_ID as PLATFORM_WORKER_APP_ID, PLATFORM_WORKER_UI_ID as
PLATFORM_WORKER_UI_ID, isPlatformBrowser, isPlatformServer, isPlatformWorkerApp,
isPlatformWorkerUi} from './platform_id';\nexport {VERSION} from './version';\nexport {ViewportScroller,
NullViewportScroller as NullViewportScroller} from './viewport_scroller';\n", "/*\n * @license\n * Copyright
Google LLC All Rights Reserved.\n */\n * Use of this source code is governed by an MIT-style license that can be\n
* found in the LICENSE file at https://angular.io/license\n */\n\n/**\n * @module\n * @description\n * Entry point
for all public APIs of this package.\n */\nexport * from './src/common';\n\n// This file only reexports content of the
`src` folder. Keep it that way.\n", "/*\n * @license\n * Copyright Google LLC All Rights Reserved.\n */\n * Use of
this source code is governed by an MIT-style license that can be\n * found in the LICENSE file at
https://angular.io/license\n */\n\n// This file is not used to build this module. It is only used during editing\n// by the
TypeScript language service and during build for verification. `ngc`\n// replaces this file with production index.ts
when it rewrites private symbol\n// names.\n\nexport * from './public_api';\n\n", "/*\n * Generated bundle index. Do
not edit.\n */\n\nexport * from './index';\n\nexport {COMMON_DIRECTIVES as
angular_packages_common_common_e} from './src/directives/index';\nexport {createLocation as
angular_packages_common_common_c} from './src/location/location';\nexport {provideLocationStrategy as

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angular_packages_common_common_d} from './src/location/location_strategy';\nexport
{createBrowserPlatformLocation as angular_packages_common_common_b,useBrowserPlatformLocation as
angular_packages_common_common_a} from './src/location/platform_location';\nexport {COMMON_PIPES as
angular_packages_common_common_f} from
'./src/pipes/index';}], "names":["InjectionToken", "Injectable", "inject", "Inject", "Optional", "EventEmitter", "NumberFo
rmatStyle", "Plural", "FormStyle", "TranslationWidth", "FormatWidth", "NumberSymbol", "WeekDay", "findLocaleDat
a", "LocaleDataIndex", "getLocaleCurrencyCode", "getLocalePluralCase", "LOCALE_ID", "registerLocaleData", "isLi
stLikeIterable", "stringify", "Directive", "IterableDiffers", "KeyValueDiffers", "ElementRef", "Renderer2", "Input", "Ng
ModuleRef", "ComponentFactoryResolver", "ViewContainerRef", "isDevMode", "TemplateRef", "Host", "Attribute", "i
sPromise", "isObservable", "Pipe", "ChangeDetectorRef", "DEFAULT_CURRENCY_CODE", "NgModule", "Version"
, "defineInjectable", "ErrorHandler"], "mappings":":;,,,,,;IAAA;,,,,;IAQA,IAAI,IAAI,GAaE,IAAK,CAAC;aAEb,
MAAM;QACpB,OAAO,IAAI,CAAC;IACd,CAAC;aAEe,MAAM,CAAC,OAAmB;QACxC,IAAI,GAAG,OAAO,
CAAC;IACjB,CAAC;aAEe,iBAaIB,CAAC,OAAmB;QACnD,IAAI,CAAC,IAAI,EAAE;YACT,IAAI,GAAG,OA
AO,CAAC;SACHb;IACH,CAAC;IAED;IACA;,,,,;QAMA;SA6CC;yBAAA;KAAA;IC5ED;,,,,,;IAcA;IAEA,
IAAI,aAAa,GAAG,UAAAS,CAAC,EAAE,CAAC;QAC7B,aAAa,GAAG,MAAM,CAAC,cAAc;aAChC,EAAE,SAA
S,EAAE,EAAE,EAAE,YAAY,KAAK,IAAI,UAAU,CAAC,EAAE,CAAC,IAAI,CAAC,CAAC,SAAS,GAAG,CAA
C,CAAC,EAAE,CAAC;YAC5E,UAAU,CAAC,EAAE,CAAC,IAAI,KAAK,IAAI,CAAC,IAAI,CAAC;gBAAE,IA
AI,CAAC,CAAC,cAAc,CAAC,CAAC,CAAC;oBAAE,CAAC,CAAC,CAAC,CAAC,GAAG,CAAC,CAAC,CAAC
,CAAC,CAAC,EAAE,CAAC;QAC/E,OAAO,aAAa,CAAC,CAAC,EAAE,CAAC,CAAC,CAAC;IAC/B,CAAC,CA
AC;aAEc,SAAS,CAAC,CAAC,EAAE,CAAC;QAC1B,aAAa,CAAC,CAAC,EAAE,CAAC,CAAC,CAAC;QACpB,
SAAS,EAAE,KAAK,IAAI,CAAC,WAAW,GAAG,CAAC,CAAC,EAAE;QACvC,CAAC,CAAC,SAAS,GAAG,C
AAC,KAAK,IAAI,GAAG,MAAM,CAAC,MAAM,CAAC,CAAC,CAAC,IAAI,EAAE,CAAC,SAAS,GAAG,CAA
C,CAAC,SAAS,EAAE,IAAI,EAAE,EAAE,CAAC,CAAC;IACzF,CAAC;IAEM,IAAI,QAAQ,GAAG;QACIB,QA
AQ,GAAG,MAAM,CAAC,MAAM,IAAI,SAAS,QAAQ,CAAC,CAAC;YAC3C,KAAK,IAAI,CAAC,EAAE,CAA
C,GAAG,CAAC,EAAE,CAAC,GAAG,SAAS,CAAC,MAAM,EAAE,CAAC,GAAG,CAAC,EAAE,CAAC,EAAE,
EAAE;gBACjD,CAAC,GAAG,SAAS,CAAC,CAAC,CAAC,CAAC;gBACjB,KAAK,IAAI,CAAC,IAAI,CAAC;oB
AAE,IAAI,MAAM,CAAC,SAAS,CAAC,cAAc,CAAC,IAAI,CAAC,CAAC,EAAE,CAAC,CAAC;wBAAE,CAAC,
CAAC,CAAC,CAAC,GAAG,CAAC,CAAC,CAAC,CAAC,CAAC;aAChF;YACD,OAAO,CAAC,CAAC;SACZ,C
AAA;QACD,OAAO,QAAQ,CAAC,KAAK,CAAC,IAAI,EAAE,SAAS,CAAC,CAAC;IAC3C,CAAC,CAAA;aAEe
,MAAM,CAAC,CAAC,EAAE,CAAC;QACvB,IAAI,CAAC,GAAG,EAAE,CAAC;QACX,KAAK,IAAI,CAAC,IA
AI,CAAC;YAAE,IAAI,MAAM,CAAC,SAAS,CAAC,cAAc,CAAC,IAAI,CAAC,CAAC,EAAE,CAAC,CAAC,IA
AI,CAAC,CAAC,OAAO,CAAC,CAAC,CAAC,GAAG,CAAC;gBAC/E,CAAC,CAAC,CAAC,CAAC,GAAG,CA
AC,CAAC,CAAC,CAAC;QACHb,IAAI,CAAC,IAAI,IAAI,IAAI,OAAO,MAAM,CAAC,qBAAqB,KAAK,
UAAU;YAC/D,KAAK,IAAI,CAAC,GAAG,CAAC,EAAE,CAAC,GAAG,MAAM,CAAC,qBAAqB,CAAC,CAAC
,CAAC,EAAE,CAAC,GAAG,CAAC,CAAC,MAAM,EAAE,CAAC,EAAE,EAAE;gBACpE,IAAI,CAAC,CAAC,O
AAO,CAAC,CAAC,CAAC,CAAC,CAAC,GAAG,CAAC,IAAI,MAAM,CAAC,SAAS,CAAC,oBAAoB,C
AAC,IAAI,CAAC,CAAC,EAAE,CAAC,CAAC,CAAC,CAAC,CAAC;oBAC1E,CAAC,CAAC,CAAC,CAAC,CA
AC,CAAC,CAAC,GAAG,CAAC,CAAC,CAAC,CAAC,CAAC,CAAC,CAAC,CAAC;aACzB;QACL,OAAO,CAA
C,CAAC;IACb,CAAC;aAEe,UAAU,CAAC,UAAU,EAAE,MAAM,EAAE,GAAG,EAAE,IAAI;QACpD,IAAI,CA
AC,GAAG,SAAS,CAAC,MAAM,EAAE,CAAC,GAAG,CAAC,GAAG,CAAC,GAAG,MAAM,GAAG,IAAI,KAA
K,IAAI,GAAG,IAAI,GAAG,MAAM,CAAC,wBAAwB,CAAC,MAAM,EAAE,GAAG,CAAC,GAAG,IAAI,EAAE
,CAAC,CAAC;QAC7H,IAAI,OAAO,OAAO,KAAK,QAAQ,IAAI,OAAO,OAAO,CAAC,QAAQ,KAAK,UAAU;Y
AAE,CAAC,GAAG,OAAO,CAAC,QAAQ,CAAC,UAAU,EAAE,MAAM,EAAE,GAAG,EAAE,IAAI,CAAC,CAA
C;;YAC1H,KAAK,IAAI,CAAC,GAAG,UAAU,CAAC,MAAM,GAAG,CAAC,EAAE,CAAC,IAAI,CAAC,EAAE,
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AAG,CAAC,GAAG,CAAC,CAAC,CAAC,GAAG,CAAC,GAAG,CAAC,GAAG,CAAC,CAAC,MAAM,E
AAE,GAAG,EAAE,CAAC,CAAC,GAAG,CAAC,CAAC,MAAM,EAAE,GAAG,CAAC,KAAK,CAAC,CAAC;Q
ACIJ,OAAO,CAAC,GAAG,CAAC,IAAI,CAAC,IAAI,MAAM,CAAC,cAAc,CAAC,MAAM,EAAE,GAAG,EAAE
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D;QAED,4BAAO,GAAP;YACE,IAAI,CAAC,QAAQ,GAAG,KAAK,CAAC;YACtB,IAAI,CAAC,iBAAiB,CAAC, KAAK,EAAE,CAAC;SACHc;QAED,iCAAy,GAAZ,UAAa,OAAGB;YAC3B,IAAI,OOAO,IAAI,CAAC,IAAI,CA AC,QAAQ,EAAE;gBAC7B,IAAI,CAAC,MAAM,EAAE,CAAC;aACf;iBAAM,IAAI,CAAC,OOAO,IAAI,IAAI,C AAC,QAAQ,EAAE;gBACpC,IAAI,CAAC,OOAO,EAAE,CAAC;aACbB;SACF;yBACF;KAAA,IAAA;IAED;,,,,; .....;QAkEA;YAIU,iBAAY,GAAG,KAAK,CAAC;YACrB,eAAU,GAAG,CA AC,CAAC;YACf,wBAAmB,GAAG,CAAC,CAAC;YACxB,sBAAiB,GAAG,KAAK,CAAC;SA8CnC;QA3CC,sB ACI,8BAAQ;iBADZ,UACa,QAAa;gBACxB,IAAI,CAAC,SAAS,GAAG,QAAQ,CAAC;gBAC1B,IAAI,IAAI,CA AC,UAAU,KAAK,CAAC,EAAE;oBACzB,IAAI,CAAC,mBAAmB,CAAC,IAAI,CAAC,CAAC;iBACbC;aACF;;; WAAA;;QAGD,2BAAQ,GAAR;YACE,OOAO,IAAI,CAAC,UAAU,EAAE,CAAC;SAC1B;;QAGD,8BAAW,GA AX,UAAy,IAAGB;YAC1B,IAAI,CAAC,IAAI,CAAC,aAAa,EAAE;gBACvB,IAAI,CAAC,aAAa,GAAG,EAAE,C AAC;aACzB;YACD,IAAI,CAAC,aAAa,CAAC,IAAI,CAAC,IAAI,CAAC,CAAC;SAC/B;;QAGD,6BAAU,GAAV ,UAAW,KAAU;YACnB,IAAM,OOAO,GAAG,KAAK,IAAI,IAAI,CAAC,SAAS,CAAC;YACxC,IAAI,CAAC,iB AAiB,GAAG,IAAI,CAAC,iBAAiB,IAAI,OOAO,CAAC;YAC3D,IAAI,CAAC,mBAAmB,EAAE,CAAC;YAC3B,I AAI,IAAI,CAAC,mBAAmB,KAAK,IAAI,CAAC,UAAU,EAAE;gBACbD,IAAI,CAAC,mBAAmB,CAAC,CAAC, IAAI,CAAC,iBAAiB,CAAC,CAAC;gBACID,IAAI,CAAC,mBAAmB,GAAG,CAAC,CAAC;gBAC7B,IAAI,CAA C,iBAAiB,GAAG,KAAK,CAAC;aACbC;YACD,OOAO,OOAO,CAAC;SACHb;QAEo,sCAAmB,GAAnB,UAAo B,UAAmB;YAC7C,IAAI,IAAI,CAAC,aAAa,IAAI,UAAU,KAAK,IAAI,CAAC,YAAy,EAAE;gBAC1D,IAAI,CA AC,YAAy,GAAG,UAAU,CAAC;gBAC/B,KAAK,IAAI,CAAC,GAAG,CAAC,EAAE,CAAC,GAAG,IAAI,CAAC ,aAAa,CAAC,MAAM,EAAE,CAAC,EAAE,EAAE;oBACID,IAAM,WAAW,GAAG,IAAI,CAAC,aAAa,CAAC,C AAC,CAAC,CAAC;oBAC1C,WAAW,CAAC,YAAy,CAAC,UAAU,CAAC,CAAC;iBACtC;aACF;SACF;;;gBAp DFC,YAAS,SAAC,EAAC,QAAQ,EAAE,YAAy,EAAC;;;2BAUhCK,QAAK;;IA6CR;,,,,,;QAy CE,sBACI,aAA+B,EAAE,WAAgC,EACjD,QAAkB;YAAIB,aAAQ,GAAR,QAAQ,CAAU;YACpC,QAAQ,CAAC, QAAQ,EAAE,CAAC;YACpB,IAAI,CAAC,KAAK,GAAG,IAAI,UAAU,CAAC,aAAa,EAAE,WAAW,CAAC,CA AC;SACzD;;;QAKD,gCAAS,GAAT;YACE,IAAI,CAAC,KAAK,CAAC,YAAy,CAAC,IAAI,CAAC,QAAQ,CA AC,UAAU,CAAC,IAAI,CAAC,YAAy,CAAC,CAAC,CAAC;SACtE;;;gBApBFL,YAAS,SAAC,EAAC,QAAQ,E AAE,gBAAGB,EAAC;;;gBArLeQ,mBAAGB;gBAA7BE,cAAW;gBA+LpB,QAAQ,uBAAjCC,OOAI;;+BAJRN,Q AAK;;IAiBR;,,,,,;QAGBE,yBACI,aAA+B,EAAE,WAAgC,EACzD,QAAkB;YAC5B,QAAQ,CAAC,WAAW, CAAC,IAAI,UAAU,CAAC,aAAa,EAAE,WAAW,CAAC,CAAC,CAAC;SACIE;;;gBANFL,YAAS,SAAC,EAAC, QAAQ,EAAE,mBAAmB,EAAC;;;gBA1NYQ,mBAAGB;gBAA7BE,cAAW;gBA8N5B,QAAQ,uBAAzBC,OOAI;; ICtOX;,,,,;IAeA;,,,,,;QAUCE,kBAaOB,aAA6B;YAA7B,kBAaA,GAAb,aAAa,CAAGB;YAFzC,e AAU,GAA8B,EAAE,CAAC;SAEE;QAErD,sBACI,8BAAQ;iBADZ,UACa,KAAa;gBACxB,IAAI,CAAC,YAAy, GAAG,KAAK,CAAC;gBAC1B,IAAI,CAAC,WAAW,EAAE,CAAC;aACpB;;;WAAA;QAED,0BAAO,GAAP,UA AQ,KAAa,EAAE,UAAsB;YAC3C,IAAI,CAAC,UAAU,CAAC,KAAK,CAAC,GAAG,UAAU,CAAC;SACrC;QA EO,8BAAW,GAAX;YACN,IAAI,CAAC,WAAW,EAAE,CAAC;YAEbB,IAAM,KAAK,GAAG,MAAM,CAAC,IA AI,CAAC,IAAI,CAAC,UAAU,CAAC,CAAC;YAC3C,IAAM,GAAG,GAAG,iBAAiB,CAAC,IAAI,CAAC,YAAy ,EAAE,KAAK,EAAE,IAAI,CAAC,aAAa,CAAC,CAAC;YAC5E,IAAI,CAAC,aAAa,CAAC,IAAI,CAAC,UAAU, CAAC,GAAG,CAAC,CAAC,CAAC;SAC1C;QAEo,8BAAW,GAAX;YACN,IAAI,IAAI,CAAC,WAAW;gBAE, IAAI,CAAC,WAAW,CAAC,OOAO,EAAE,CAAC;SACID;QAEo,gCAaA,GAAb,UAAc,IAAGB;YACpC,IAAI,IA AI,EAAE;gBACR,IAAI,CAAC,WAAW,GAAG,IAAI,CAAC;gBACxB,IAAI,CAAC,WAAW,CAAC,MAAM,EAA E,CAAC;aAC3B;SACF;;;gBArCFX,YAAS,SAAC,EAAC,QAAQ,EAAE,YAAy,EAAC;;;gBApCR,cAAc;;;2BA8 CtCK,QAAK;;IA8BR;,,,,,;QAsBE,sBACsC,KAAa,EAAE,QAA6B,EAC9E,aAA+B,EAU,QAAkB;YAD zB,UAAK,GAAL,KAAK,CAAQ;YAEjD,IAAM,SAAS,GAAY,CAAC,KAAK,CAAC,MAAM,CAAC,KAAK,CA AC,CAAC,CAAC;YACjD,QAAQ,CAAC,OOAO,CAAC,SAAS,GAAG,MAAI,KAAO,GAAG,KAAK,EAAE,IAAI ,UAAU,CAAC,aAAa,EAAE,QAAQ,CAAC,CAAC,CAAC;SAC5F;;;gBAPFL,YAAS,SAAC,EAAC,QAAQ,EAA E,gBAAGB,EAAC;;;6CAGhCY,YAAS,SAAC,cAAc;gBArGYF,cAAW;gBAAEF,mBAAGB;gBAsGf,QAAQ,uBA AzBG,OOAI;;ICpG5C;,,,,,;QAYCE,iBACY,KAAiB,EAU,QAAyB,EAU,SAaOB;YAAIF, UAAK,GAAL,KAAK,CAAY;YAAU,aAAQ,GAAR,QAAQ,CAAiB;YAAU,cAAS,GAAT,SAAS,CAAW;YAJtF,a AAQ,GAAiC,IAAI,CAAC;YAC9C,YAAO,GAA+C,IAAI,CAAC;SAG+B;QAEIG,sBACI,4BAAO;iBADX,UACY

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,CAAC,GAAG,EAAE,MAAM,EAAE,UAAU,CAAC,CAAC;aAC/C;YAAc,OAAO,KAAK,EAAE;gBACd,MAA  
M,wBAAwB,CAAC,WAAW,EAAE,KAAK,CAAC,OAAO,CAAC,CAAC;aAC5D;SACF;;;gBAjCFmB,OAAI,SA  
AC,EAAC,IAAI,EAAE,SAAS,EAAC;;6CAERjC,SAAM,SAACc,YAAS;;IAkC/B;;;;;QA  
0CE,sBAC+B,OAAe,EACH,oBAAoC;YAApC,qCAAA,EAAA,4BAAoC;YADhD,YAAO,GAAP,OAAO,CAAQ;  
YACH,yBAAoB,GAAPB,oBAAoB,CAAgB;SAAI;QA+CnF,gCAAS,GAAT,UACI,KAAmC,EAAE,YAAqB,EAC

ID,OAAkE,EAAE,UAAmB,EACvF,MAAe;YADf,wBAAA,EAAA,kBAAkE;YAEpE,IAAI,CAAC,OAAO,CAAC, KAAK,CAAC;gBAAE,OAAO,IAAI,CAAC;YAEjC,MAAM,GAAG,MAAM,IAAI,IAAI,CAAC,OAAO,CAAC;Y AEhC,IAAI,OAAO,OAAO,KAAK,SAAS,EAAE;gBACbC,IAAS,OAAO,IAAS,OAAO,CAAC,IAAI,EAAE;oBAC rC,OAAO,CAAC,IAAI,CACR,gNAA0M,CAAC,CAAC;iBACjN;gBACD,OAAO,GAAG,OAAO,GAAG,QAAQ,G AAG,MAAM,CAAC;aACvC;YAED,IAAI,QAAQ,GAAW,YAAY,IAAI,IAAI,CAAC,oBAAoB,CAAC;YACjE,IA AI,OAAO,KAAK,MAAM,EAAE;gBACtB,IAAI,OAAO,KAAK,QAAQ,IAAI,OAAO,KAAK,eAAe,EAAE;oBACv D,QAAQ,GAAG,iBAAiB,CAAC,QAAQ,EAAE,OAAO,KAAK,QAAQ,GAAG,MAAM,GAAG,QAAQ,EAAE,MA AM,CAAC,CAAC;iBAClF;qBAAM;oBACL,QAAQ,GAAG,OAAO,CAAC;iBACpB;aACf;YAED,IAAI;gBACf, IAAM,GAAG,GAAG,WAAW,CAAC,KAAK,CAAC,CAAC;gBAC/B,OAAO,cAAc,CAAC,GAAG,EAAE,MAAM ,EAAE,QAAQ,EAAE,YAAY,EAAE,UAAU,CAAC,CAAC;aACxE;YAAC,OAAO,KAAK,EAAE;gBACd,MAAM, wBAAwB,CAAC,YAAY,EAAE,KAAK,CAAC,OAAO,CAAC,CAAC;aAC7D;SACF;;;gBAIfmB,OAAI,SAAC, EAAC,IAAI,EAAE,UAAU,EAAC;;;6CAGjBjC,SAAM,SAACc,YAAS;6CACHbD,SAAM,SAACmC,wBAAqB;;IA iFnC,SAAS,OAAO,CAAC,KAAmC;QACID,OAAO,EAAE,KAAK,IAAI,IAAI,IAAI,KAAK,KAAK,EAAE,IAAI, KAAK,KAAK,KAAK,CAAC,CAAC;IAC7D,CAAC;IAED;;;IAGA,SAAS,WAAW,CAAC,KAAoB;;QAEvC,IAAI ,OAAO,KAAK,KAAK,QAAQ,IAAI,CAAC,KAAK,CAAC,MAAM,CAAC,KAAK,CAAC,GAAG,UAAU,CAAC, KAAK,CAAC,CAAC,EAAE;YACIE,OAAO,MAAM,CAAC,KAAK,CAAC,CAAC;SACtB;QACD,IAAI,OAAO, KAAK,KAAK,QAAQ,EAAE;YAC7B,MAAM,IAAI,KAAK,CAAI,KAAK,qBAaKB,CAAC,CAAC;SAC7C;QAC D,OAAO,KAAK,CAAC;IACf;;IC5RA;;;;IAWA;;;;;QAOCA;;QAqBE,6BAAS,GAAT,UAA a,KAA6C,EAAE,KAAa,EAAE,GAAY;YAErF,IAAI,KAAK,IAAI,IAAI;gBAAE,OAAO,IAAI,CAAC;YAE/B,IAA I,CAAC,IAAI,CAAC,QAAQ,CAAC,KAAK,CAAC,EAAE;gBACzB,MAAM,wBAAwB,CAAC,SAAS,EAAE,KA AK,CAAC,CAAC;aACID;YAED,OAAO,KAAK,CAAC,KAAK,CAAC,KAAK,EAAE,GAAG,CAAC,CAAC;SAC hC;QAE0,4BAAQ,GAAR,UAAU,GAAG;YACvB,OAAO,OAAO,GAAG,KAAK,QAAQ,IAAI,KAAK,CAAC,OA AO,CAAC,GAAG,CAAC,CAAC;SACtD;;;gBAnCFF,OAAI,SAAC,EAAC,IAAI,EAAE,OAAO,EAAE,IAAI,EA AE,KAAK,EAAE;;;IC9CIC;;;;IAyCA;;QAGa,YAAY,GAAG;QACIB,SAAS;QACT,aAAa;QACb,aAAa;QACb, QAAQ;QACR,SAAS;QACT,WAAW;QACX,WAAW;QACX,aAAa;QACb,YAAY;QACZ,QAAQ;QACR,cAAc;Q ACd,cAAc;QACd,YAAY;;ICzDd;;;;IACa;IACA;IACA;;;;QAOBA;;;gBAPCG,WAAQ,SAAC;oBACR, YAAY,EAAE,CAAC,iBAAiB,EAAE,YAAY,CAAC;oBAC/C,OAAO,EAAE,CAAC,iBAAiB,EAAE,YAAY,CAA C;oBAC1C,SAAS,EAAE;wBACT,EAAC,OAAO,EAAE,cAAc,EAAE,QAAQ,EAAE,oBAAoB,EAAC;qBACID;i BACF;;ICnCD;;;;QAQa,mBAAmB,GAAG,UAAU;QACbC,kBAaKB,GAAG,SAAS;QAC9B,sBAAsB,GAAG, mBAAmB;QAC5C,qBAAqB,GAAG,kBAaKB;IAEvD;;;aAIgB,iBAAiB,CAAC,UAAKB;QACID,OAAO,UAAU, KAAK,mBAAmB,CAAC;IAC5C,CAAC;IAED;;;aAIgB,gBAAgB,CAAC,UAAKB;QACjD,OAAO,UAAU,KAAK ,kBAaKB,CAAC;IAC3C,CAAC;IAED;;;aAIgB,mBAAmB,CAAC,UAAKB;QACpD,OAAO,UAAU,KAAK,sBAA sB,CAAC;IAC/C,CAAC;IAED;;;aAIgB,kBAaKB,CAAC,UAAKB;QACnD,OAAO,UAAU,KAAK,qBAAqB,CAA C;IAC9C;;IC3CA;;;;IAGBa;;QAGa,OAAO,GAAG,IAAIC,UAAO,CAAC,mBAAmB;;ICnBtD;;;;IACa;;;;QA KA;;;IACE;IACA;IACA;IACO,sBAAK,GAAGC,qBAaKB,CAAC;QACbC,KAAK,EAAE,gBAAgB;QACvB,UA AU,EAAE,MAAM;QACIB,OAAO,EAAE,cAAM,OAAA,IAAI,uBAAuB,CAACvC,WAAQ,CAAC,QAAQ,CAAC, EAAE,MAAM,EAAEA,WAAQ,CAACwC,eAAY,CAAC,CAAC,GAAA;KAC/F,CAAC,CAAC;IAoCL;;IAGA;Q AGE,iCAAoB,QAAa,EAU,MAAW,EAU,YAA0B;YAAtE,aAAQ,GAAR,QAAQ,CAAK;YAAU,WAAM,GAA N,MAAM,CAAK;YAAU,iBAAY,GAAZ,YAAY,CAAC;YAFIF,WAAM,GAA2B,cAAM,OAAA,CAAC,CAAC,E AAE,CAAC,CAAC,GAAA,CAAC;SAEWc;;;;QAQ9F,2CAAS,GAAT,UAAU,MAAiD;YACzD,IAAI,KAAK,C AAC,OAAO,CAAC,MAAM,CAAC,EAAE;gBACzB,IAAI,CAAC,MAAM,GAAG,cAAM,OAAA,MAAM,GAAA, CAAC;aAC5B;iBAAM;gBACL,IAAI,CAAC,MAAM,GAAG,MAAM,CAAC;aACtB;SACF;;;;QAMD,mDAAiB, GAAjB;YACE,IAAI,IAAI,CAAC,iBAAiB,EAAE,EAAE;gBAC5B,OAAO,CAAC,IAAI,CAAC,MAAM,CAAC,O AAO,EAAE,IAAI,CAAC,MAAM,CAAC,OAAO,CAAC,CAAC;aACnD;iBAAM;gBACL,OAAO,CAAC,CAAC,E AAE,CAAC,CAAC,CAAC;aACf;SACF;;;;QAMD,kDAAGB,GAAhB,UAAiB,QAA0B;YACzC,IAAI,IAAI,CAAC ,iBAAiB,EAAE,EAAE;gBAC5B,IAAI,CAAC,MAAM,CAAC,QAAQ,CAAC,QAAQ,CAAC,CAAC,CAAC,EAAE ,QAAQ,CAAC,CAAC,CAAC,CAAC,CAAC;aACd;SACF;;;;QAMD,gDAAC,GAAd,UAAe,MAAc;YAC3B,IAA I,IAAI,CAAC,iBAAiB,EAAE,EAAE;gBAC5B,IAAM,UAAU,GACZ,IAAI,CAAC,QAAQ,CAAC,cAAc,CAAC,M





```

If no such request has been made, or more than one such request has been made, fail with an
 * error message including the given request description, if any.\n
 */\n
abstract expectOne(matchFn: ((req: HttpRequest<any>) =>
boolean), description?: string):\n
 TestRequest;\n\n
/**\n
 * Expect that a single request has been made which
matches the given condition, and return
 * its mock.\n
 */\n
 * If no such request has been made, or more than one
such request has been made, fail with an
 * error message including the given request description, if any.\n
 */\n
abstract expectOne(\n
 match: string|RequestMatch|((req: HttpRequest<any>) => boolean),\n
 description?:
string): TestRequest;\n\n
/**\n
 * Expect that no requests have been made which match the given URL.\n
 */\n
 * If
a matching request has been made, fail with an error message including the given request
 * description, if any.\n
 */\n
abstract expectNone(url: string, description?: string): void;\n\n
/**\n
 * Expect that no requests have been
made which match the given parameters.\n
 */\n
 * If a matching request has been made, fail with an error message
including the given request
 * description, if any.\n
 */\n
abstract expectNone(params: RequestMatch,
description?: string): void;\n\n
/**\n
 * Expect that no requests have been made which match the given predicate
function.\n
 */\n
 * If a matching request has been made, fail with an error message including the given request
 *
description, if any.\n
 */\n
abstract expectNone(matchFn: ((req: HttpRequest<any>) => boolean), description?:
string): void;\n\n
/**\n
 * Expect that no requests have been made which match the given condition.\n
 */\n
 * If a
matching request
has been made, fail with an error message including the given request
 * description, if any.\n
 */\n
abstract expectNone(\n
 match: string|RequestMatch|((req: HttpRequest<any>) => boolean), description?:
string): void;\n\n
/**\n
 * Verify that no unmatched requests are outstanding.\n
 */\n
 * If any requests are
outstanding, fail with an error message indicating which requests were not
 * handled.\n
 */\n
 * If
`ignoreCancelled` is not set (the default), `verify()` will also fail if cancelled requests
 * were not explicitly
matched.\n
 */\n
abstract verify(opts?: {ignoreCancelled?: boolean}): void;\n\n
"/**\n
 * @license\n
 * Copyright
Google LLC All Rights Reserved.\n
 */\n
 * Use of this source code is governed by an MIT-style license that can be
 *
found in the LICENSE file at https://angular.io/license\n
 */\n\n
import {HttpErrorResponse, HttpEvent,
HttpHeaders, HttpRequest, HttpResponse} from '@angular/common/http';\n\n
import {Observer} from 'rxjs';\n\n
/**\n
 * A mock requests that was received and is ready to be answered.\n
 */\n
 * This interface allows access to the
underlying `HttpRequest`, and allows
 * responding with `HttpEvent`s or `HttpErrorResponse`s.\n
 */\n
 *
@publicApi\n\n
export class TestRequest {\n\n
/**\n
 * Whether the request was cancelled after it was sent.\n
 */\n
 *
get cancelled(): boolean {\n
 return this._cancelled;\n
}\n\n
/**\n
 * @internal set by
`HttpClientTestingBackend`\n
 */\n
 _cancelled = false;\n\n
 constructor(public request: HttpRequest<any>, private
observer: Observer<HttpEvent<any>>) {\n\n
/**\n
 * Resolve the request by returning a body plus additional
HTTP information (such as response
 * headers) if provided.\n
 * If the request specifies an expected body type,
the body is converted into the requested type.\n
 * Otherwise, the body is converted to `JSON` by default.\n
 */\n
 *
Both successful and unsuccessful responses can be delivered via `flush()`.
 */\n
 flush(\n
 body:
ArrayBuffer|Blob|boolean|string|number|Object|(boolean|string|number|Object|null)[]\n
 null,\n
 opts: {\n
headers?: HttpHeaders|{[name: string]: string | string[]},\n
status?: number,\n
statusText?: string,\n
} =
{}): void {\n
 if (this.cancelled) {\n
 throw new Error(`Cannot flush a cancelled request.`);\n
 }\n
 const url =
this.request.urlWithParams;\n
 const headers =\n
 (opts.headers instanceof HttpHeaders) ? opts.headers : new
HttpHeaders(opts.headers);\n
 body = _maybeConvertBody(this.request.responseType, body);\n
 let statusText:
string|undefined = opts.statusText;\n
 let status: number = opts.status !== undefined ? opts.status : 200;\n
 if
(opts.status === undefined) {\n
 if (body === null) {\n
 status = 204;\n
 statusText = statusText || 'No
Content';\n
 } else {\n
 statusText = statusText || 'OK';\n
 }\n
 }\n
 if (statusText === undefined) {\n
 throw new Error('statusText is required when setting a custom status.);\n
 }\n
 if (status >= 200 && status < 300)
{\n
 this.observer.next(new HttpResponse<any>({body, headers, status, statusText, url}));\n
 }\n
 this.observer.complete();\n
 } else {\n
 this.observer.error(new HttpErrorResponse({error: body, headers, status,
statusText, url}));\n
 }\n\n
}\n\n
/**\n
 * Resolve the request by returning an `ErrorEvent` (e.g. simulating a
network failure).\n
 */\n
 error(error: ErrorEvent, opts: {\n
headers?: HttpHeaders|{[name: string]: string |
string[]},\n
status?: number,\n
statusText?: string,\n
} = {}): void {\n
 if (this.cancelled) {\n
 throw new
Error(`Cannot return an error for a cancelled request.`);\n
 }\n
 if (opts.status && opts.status >= 200 &&

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opts.status < 300) {\n throw new Error(`error() called with a successful status.`);\n }\n const headers =\n (opts.headers instanceof HttpHeaders) ? opts.headers : new HttpHeaders(opts.headers);\n this.observer.error(new\n HttpResponse({\n error,\n headers,\n status: opts.status || 0,\n statusText: opts.statusText || '',\n url: this.request.urlWithParams,\n }));\n}\n\n/**\n * Deliver an arbitrary `HttpEvent` (such as a progress\n event) on the response stream for this\n * request.\n */\n event(event: HttpEvent<any>): void {\n if\n (this.cancelled) {\n throw new Error(`Cannot send events to a cancelled request.`);\n }\n\n this.observer.next(event);\n}\n}\n\n/**\n * Helper function to convert a response body to an ArrayBuffer.\n */\nfunction _toArrayBufferBody(body: ArrayBuffer|Blob|string|number|Object|\n (string | number\n | Object | null)[]): ArrayBuffer {\n if (typeof ArrayBuffer === 'undefined') {\n throw new Error('ArrayBuffer\n responses are not supported on this platform.);\n }\n if (body instanceof ArrayBuffer) {\n return body;\n }\n throw new Error('Automatic conversion to ArrayBuffer is not supported for response type.);\n}\n\n/**\n * Helper\n function to convert a response body to a Blob.\n */\nfunction _toBlob(body:\n ArrayBuffer|Blob|string|number|Object|\n (string | number | Object | null)[]): Blob {\n if (typeof Blob ===\n 'undefined') {\n throw new Error('Blob responses are not supported on this platform.);\n }\n if (body instanceof\n Blob) {\n return body;\n }\n if (ArrayBuffer && body instanceof ArrayBuffer) {\n return new Blob([body]);\n }\n throw new Error('Automatic conversion to Blob is not supported for response type.);\n}\n\n/**\n * Helper\n function to convert a response body to JSON data.\n */\nfunction _toJsonBody(\n body:\n ArrayBuffer|Blob|boolean|string|number|Object|\n (boolean | string | number | Object | null)[],\n format: string =\n 'JSON'): Object|string|number|(Object | string | number)[] {\n if (typeof ArrayBuffer !== 'undefined' && body\n instanceof ArrayBuffer) {\n throw new Error(`Automatic conversion to ${format} is not supported for\n ArrayBuffers.`);\n }\n if (typeof Blob !== 'undefined' && body instanceof Blob) {\n throw new Error(`Automatic\n conversion to ${format} is not supported for Blobs.`);\n }\n if (typeof body === 'string' || typeof body ===\n 'number' || typeof body === 'object' ||\n typeof body === 'boolean' || Array.isArray(body)) {\n return body;\n }\n throw new Error(`Automatic conversion to ${format} is not supported for response type.);\n}\n\n/**\n * Helper\n function to convert a response body to a string.\n */\nfunction _toTextBody(body:\n ArrayBuffer|Blob|string|number|Object|\n (string | number | Object | null)[]): string {\n if (typeof body\n === 'string') {\n return body;\n }\n if (typeof ArrayBuffer !== 'undefined' && body instanceof ArrayBuffer) {\n throw new Error('Automatic conversion to text is not supported for ArrayBuffers.);\n }\n if (typeof Blob !==\n 'undefined' && body instanceof Blob) {\n throw new Error('Automatic conversion to text is not supported for\n Blobs.);\n }\n return JSON.stringify(_toJsonBody(body, 'text'));\n}\n\n/**\n * Convert a response body to the\n requested type.\n */\nfunction _maybeConvertBody(\n responseType: string,\n body:\n ArrayBuffer|Blob|string|number|Object|(string | number | Object | null)[]|\n null):\n ArrayBuffer|Blob|string|number|Object|(string | number | Object | null)[]|\n null {\n if (body === null) {\n return\n null;\n }\n switch (responseType) {\n case 'arraybuffer':\n return _toArrayBufferBody(body);\n case 'blob':\n return\n _toBlob(body);\n case 'json':\n return _toJsonBody(body);\n case 'text':\n return\n _toTextBody(body);\n default:\n throw new Error(`Unsupported responseType: ${responseType}`);\n }\n}\n\n"/**\n * @license\n * Copyright Google LLC All Rights Reserved.\n */\n * Use of this source code is\n governed by an MIT-style license that can be\n * found in the LICENSE file at https://angular.io/license\n */\n\nimport {HttpBackend, HttpEvent, HttpEventType, HttpRequest}\n from '@angular/common/http';\nimport\n {Injectable}\n from '@angular/core';\nimport {Observable, Observer}\n from 'rxjs';\n\nimport {HttpTestingController,\n RequestMatch}\n from './api';\nimport {TestRequest}\n from './request';\n\n/**\n * A testing backend for `HttpClient`\n which both acts as an `HttpBackend`\n * and as the `HttpTestingController`.\n */\n * `HttpClientTestingBackend`\n works by keeping a list of all open requests.\n * As requests come in, they're added to the list. Users can assert that\n specific\n * requests were made and then flush them. In the end, a verify() method asserts\n * that no unexpected\n requests were made.\n */\n * @Injectable()\nexport class HttpClientTestingBackend implements HttpBackend,\n HttpTestingController {\n /**\n * List of pending requests which have not yet been expected.\n */\n private\n open: TestRequest[] = [];\n\n /**\n * Handle an incoming request by queuing it in the list of open requests.\n */\n handle(req: HttpRequest<any>): Observable<HttpEvent<any>> {\n return new Observable((observer:\n
```



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HttpTestingController, useExisting: HttpClientTestingBackend},\n],\n}))\nexport class HttpClientTestingModule\n{\n}\n"/**\n * @license\n * Copyright Google LLC All Rights Reserved.\n * Use of this source code is\n governed by an MIT-style license that can be\n * found in the LICENSE file at https://angular.io/license\n */\nexport {HttpTestingController, RequestMatch} from './src/api';\nexport {HttpClientTestingModule} from\n './src/module';\nexport {TestRequest} from './src/request';\n"/**\n * @license\n * Copyright Google LLC All\n Rights Reserved.\n * Use of this source code is governed by an MIT-style license that can be\n * found in the\n LICENSE file at https://angular.io/license\n */\nexport * from './public_api';\n"/**\n * Generated bundle index.\n Do not edit.\n */\nexport * from './index';\nexport {HttpClientTestingBackend as\n angular_packages_common_http_testing_testing_a} from\n './src/backend';\n},\n names:["HttpHeaders", "HttpResponse", "HttpErrorResponse", "Observable", "HttpEventType", "In\n jectable", "NgModule", "HttpClientModule", "HttpBackend"],\n 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C5BN,OAAQ7E,EAAM6E,QAIId7E,EAAM8E,mBACNI,EAASH,MAAQ/E,EAAM+E,OAG3BrD,EAASvK,KAA  
K+N,IAMbIB,OAhBA1B,EAAlf,iBAaiB,OAAQJ,GAC7BmB,EAAlf,iBAaiB,QAASD,GAElB/C,EAAlnC,iBAE  
JkG,EAAlf,iBAaiB,WAAYiC,GAejB,OAAZd,GAAoBJ,EAAl4B,QACxB5B,EAAl4B,OAAO3C,iBAaiB,WAAY  
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Ha,EAAlZ,oBAAoB,QAASJ,GACjCgB,EAAlZ,oBAAoB,OAAQP,GAC5B5C,EAAlnC,iBACJkG,EAAlZ,oBAAo  
B,WAAY8B,GACpB,OAAZd,GAAoBJ,EAAl4B,QACxB5B,EAAl4B,OAAOxC,oBAAoB,WAAYqC,IAI/CzB,EA  
Al8B,aAAe9B,EAAl+B,MACvB/B,EAAlgC,aAKblC,EAlPwB,GAoPnCA,EAae/C,WAAa,CACxB,CAAErC,KA  
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EAAYc,WACzC,SAASA,EAawBC,EAACKC,EAAMUC,GAC5CxQ,KAACKsQ,IAAMA,EACXtQ,KAACKuQ,SAAW  
A,EACbVq,KAACKwQ,WAAaA,EACIBxQ,KAACKyQ,iBAAMb,GACxBzQ,KAACK0Q,UAYY,KAIjB1Q,KAACK2  
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EX,IAAIM,EAae7Q,KAACKsQ,IAAIQ,QAAU,GAMtC,OALID,IAAIb7Q,KAACKyQ,mBACtBzQ,KAACK2Q,aACL  
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DAMAGES WHATSOEVER RESULTING FROM LOSS OF USE, DATA OR PROFITS, WHETHER IN AN ACTION OF CONTRACT, NEGLIGENCE OR OTHER TORTIOUS ACTION, ARISING OUT OF OR IN CONNECTION WITH THE USE OR PERFORMANCE OF THIS SOFTWARE.

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Reflect, Promise */
var extendStatics = function (d, b) {\n extendStatics = Object.setPrototypeOf ||\n ({ __proto__: [] } instanceof Array && function (d, b) { d.__proto__ = b; }) ||\n function (d, b) { for (var p in b)\n if (b.hasOwnProperty(p))\n d[p] = b[p]; }; return extendStatics(d, b);\n};\nfunction __extends(d, b) {\n extendStatics(d, b);\n function __() { this.constructor = d; }\n d.prototype = b === null ? Object.create(b) : (__proto__ = b.prototype, new __());\n}\nvar __assign = function () {\n __assign = Object.assign || function __assign(t) {\n for (var s, i = 1, n = arguments.length; i < n; i++) {\n s = arguments[i];\n for (var p in s)\n if (Object.prototype.hasOwnProperty.call(s, p))\n t[p] = s[p];\n }\n return t;\n };\n return __assign.apply(this, arguments);\n};\nfunction __rest(s, e) {\n var t = {};\n for (var p in s)\n if (Object.prototype.hasOwnProperty.call(s, p)\n && e.indexOf(p) < 0)\n t[p] = s[p];\n if (s != null && typeof Object.getPrototypeOf ===\n \"function\")\n for (var i = 0, p = Object.getPrototypeOf(s); i < p.length; i++) {\n if\n (e.indexOf(p[i]) < 0 && Object.prototype.propertyIsEnumerable.call(s, p[i]))\n t[p[i]] = s[p[i]];\n }\n return t;\n}\nfunction __decorate(decorators, target, key, desc) {\n var c = arguments.length, r = c < 3 ? target : desc === null ? desc = Object.getOwnPropertyDescriptor(target, key) : desc, d;\n if (typeof Reflect === \"object\" && typeof Reflect.decorate === \"function\")\n r = Reflect.decorate(decorators, target, key, desc);\n else\n for (var i = decorators.length - 1; i >= 0; i--)\n if (d = decorators[i])\n r = (c < 3 ? d(r) : c > 3 ? d(target, key, r) : d(target, key)) || r;\n return c > 3 && r &&\n Object.defineProperty(target, key, r, r);\n}\nfunction __param(paramIndex, decorator) {\n return function (target, key) {\n decorator(target, key, paramIndex);\n }\n}\nfunction __metadata(metadataKey, metadataValue) {\n if (typeof Reflect === \"object\" && typeof Reflect.metadata === \"function\")\n return Reflect.metadata(metadataKey, metadataValue);\n}\nfunction __awaiter(thisArg, _arguments, P, generator) {\n function adopt(value) {\n return value instanceof P ? value : new P(function (resolve) {\n resolve(value);\n });\n }\n return new (P || (P = Promise))(function (resolve, reject) {\n function fulfilled(value) {\n try {\n step(generator.next(value));\n }\n catch (e) {\n reject(e);\n }\n }\n function rejected(value) {\n try {\n step(generator[\"throw\"](value));\n }\n catch (e) {\n reject(e);\n }\n }\n function step(result) {\n result.done ? resolve(result.value) :\n adopt(result.value).then(fulfilled, rejected);\n }\n step((generator = generator.apply(thisArg, _arguments ||\n [])).next());\n });\n}\nfunction __generator(thisArg, body) {\n var _ = { label: 0, sent: function () {\n if (t[0] & 1)\n throw t[1];\n return t[1];\n }, trys: [], ops: [] }, f, y, t, g;\n return g = { next: verb(0), \"throw\":\n verb(1), \"return\": verb(2) }, typeof Symbol === \"function\" && (g[Symbol.iterator] = function () {\n return this;\n });\n function verb(n) {\n return function (v) {\n return step([n, v]);\n }\n }\n function step(op) {\n if (f)\n throw new TypeError(\"Generator is already executing.\");\n while (!_)\n try {\n if (f = 1, y && (t = op[0] & 2 ? y[\"return\"] : op[0] ? y[\"throw\"] || ((t = y[\"return\"])\n && t.call(y, 0) : y.next) && !(t = t.call(y, op[1])).done)\n return t;\n if (y = 0, t)\n op = [op[0] & 2,\n t.value];\n switch (op[0]) {\n case 0:\n t = op;\n break;\n case 4:\n _label++;\n return {\n value: op[1],\n done: false\n };\n case 5:\n _label++;\n y = op[1];\n op = [0];\n continue;\n case 7:\n op = _ops.pop();\n continue;\n default:\n if (!(t = _trys, t = t.length > 0\n && t[t.length - 1]) && (op[0] === 6 || op[0] === 2))\n _ = 0;\n continue;\n }\n }\n if (op[0] === 3 && (!t || (op[1] > t[0] && op[1] < t[3])))\n _label = op[1];\n break;\n }\n if (op[0] === 6 && _label <\n t[1])\n _label = t[1];\n t = op;\n break;\n }\n if (t && _label < t[2])\n _label = t[2];\n }\n}
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_ops.push(op);\n break;\n }\n if (t[2])\n_ops.pop();\n _trys.pop();\n continue;\n }\n op =\nbody.call(thisArg, _);\n }\n catch (e) {\n op = [6, e];\n y = 0;\n}\n finally {\n f = t = 0;\n }\n if (op[0] & 5)\n throw op[1];\nreturn { value: op[0] ? op[1] : void 0, done: true }; }\n }\n }\n var __createBinding = Object.create ? (function\n(o, m, k, k2) {\n if (k2 === undefined)\n k2 = k;\n Object.defineProperty(o, k2, { enumerable: true,\nget: function () { return m[k]; } });\n }) : (function (o, m, k, k2) {\n if (k2 === undefined)\n k2 = k;\n o[k2] = m[k];\n });\n function __exportStar(m, exports) {\n for (var p in m)\n if (p !== \"default\"\n&& !exports.hasOwnProperty(p))\n __createBinding(exports, m, p);\n }\n function __values(o) {\n var s = typeof Symbol === \"function\" && Symbol.iterator, m = s && o[s], i = 0;\n if (m)\n return\nm.call(o);\n if (o && typeof o.length === \"number\")\n return {\n next: function () {\n if (o && i >= o.length)\n o = void 0;\n return { value: o && o[i++], done: !o }; \n }\n };\n throw new TypeError(s ? \"Object is not iterable.\" : \"Symbol.iterator is not defined.\");\n}\n function __read(o, n) {\n var m = typeof Symbol === \"function\" && o[Symbol.iterator];\n if (!m)\n return o;\n var i = m.call(o), r, ar = [], e;\n try {\n while ((n === void 0 || n-- > 0) && !(r =\ni.next()).done)\n ar.push(r.value);\n } catch (error) {\n e = { error: error };\n }\n finally {\n try {\n if (r && !r.done && (m = i[\"return\"])\n) m.call(i);\n }\n }\n finally {\n if (e)\n throw e.error;\n }\n }\n return ar;\n }\n function\n__spread() {\n for (var ar = [], i = 0; i < arguments.length; i++)\n ar = ar.concat(__read(arguments[i]));\n return ar;\n }\n function __spreadArrays() {\n for (var s = 0, i = 0, il = arguments.length; i < il; i++)\n s += arguments[i].length;\n for (var r = Array(s), k = 0, i = 0; i < il; i++)\n for (var a = arguments[i], j\n= 0, jl = a.length; j < jl; j++, k++)\n r[k] = a[j];\n return r;\n }\n function __await(v) {\n return this instanceof __await ? (this.v = v, this) : new __await(v);\n }\n function __asyncGenerator(thisArg,\n_arguments, generator) {\n if (!Symbol.asyncIterator)\n throw new TypeError(\"Symbol.asyncIterator is\nnot defined.\");\n var g = generator.apply(thisArg, _arguments || []), i, q = [];\n return i = { }, verb(\"next\"),\n verb(\"throw\"), verb(\"return\"), i[Symbol.asyncIterator] = function () { return this; }, i;\n function verb(n) {\n if\n(g[n])\n i[n] = function (v) { return new Promise(function (a, b) { q.push([n, v, a, b]) > 1 || resume(n, v); }); };\n }\n function resume(n, v) {\n try {\n step(g[n](v));\n }\n catch (e) {\n settle(q[0][3], e);\n }\n }\n function step(r) {\n r.value instanceof __await ? Promise.resolve(r.value.v).then(fulfill, reject) :\n settle(q[0][2], r);\n }\n function fulfill(value) {\n resume(\"next\", value);\n }\n function reject(value) {\n resume(\"throw\", value);\n }\n function settle(f, v) {\n if (f(v), q.shift(), q.length)\n resume(q[0][0], q[0][1]);\n }\n }\n function __asyncDelegator(o) {\n var i, p;\n return i = { }, verb(\"next\"), verb(\"throw\"),\n function (e) {\n throw e; }, verb(\"return\"), i[Symbol.iterator] = function () {\n return this; }, i;\n function verb(n, f) {\n i[n] = o[n] ? function (v) {\n return (p = !p) ? { value: __await(o[n](v)), done: n === \"return\" } : f ? f(v) : v; }\n : f;\n }\n }\n function __asyncValues(o) {\n if (!Symbol.asyncIterator)\n throw new\n TypeError(\"Symbol.asyncIterator is not defined.\");\n var m = o[Symbol.asyncIterator], i;\n return m ?\n m.call(o) : (o = typeof __values === \"function\" ? __values(o) : o[Symbol.iterator](), i = { }, verb(\"next\"),\n verb(\"throw\"), verb(\"return\"), i[Symbol.asyncIterator] = function () {\n return this; }, i);\n function verb(n) {\n i[n] = o[n] && function (v) {\n return new Promise(function (resolve, reject) {\n v = o[n](v), settle(resolve, reject,\n v.done, v.value); });\n }; }\n function settle(resolve, reject, d, v) {\n Promise.resolve(v).then(function (v) {\n resolve({ value: v, done: d });\n }, reject);\n }\n }\n function __makeTemplateObject(cooked, raw) {\n if\n (Object.defineProperty)\n Object.defineProperty(cooked, \"raw\", { value: raw });\n }\n else {\n cooked.raw = raw;\n }\n return cooked;\n }\n ;\n var __setModuleDefault = Object.create ?\n (function (o, v) {\n Object.defineProperty(o, \"default\", { enumerable: true, value: v });\n }) : function (o, v)\n {\n o[\"default\"] = v;\n }\n function __importStar(mod) {\n if (mod && mod.__esModule)\n return mod;\n var result = {};\n if (mod != null)\n for (var k in mod)\n if\n (Object.hasOwnProperty.call(mod, k))\n __createBinding(result, mod, k);\n __setModuleDefault(result, mod);\n return result;\n }\n function __importDefault(mod) {\n return (mod\n && mod.__esModule) ? mod : { default: mod };

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&& mod.__esModule) ? mod : { default: mod };
}

function __classPrivateFieldGet(receiver, privateMap)
{
 if (!privateMap.has(receiver)) {
 throw new TypeError("attempted to get private field on non-instance");
 }
 return privateMap.get(receiver);
}

function __classPrivateFieldSet(receiver, privateMap, value)
{
 if (!privateMap.has(receiver)) {
 throw new TypeError("attempted to set private field on non-instance");
 }
 privateMap.set(receiver, value);
 return value;
}

/**
 *
 * @license
 * Copyright Google LLC All Rights Reserved.
 * Use of this source code is governed by an MIT-style license that can be found in the LICENSE file at https://angular.io/license
 */

/**
 * Represents the header configuration options for an HTTP request.
 * Instances are immutable. Modifying methods return a cloned instance with the change. The original object is never changed.
 */
/**
 * @publicApi
 */
var HttpHeaders = /** @class */ (function () {
 /**
 * Constructs a new HTTP header object with the given values.
 */
 function HttpHeaders(headers) {
 var _this = this;

 /**
 * Internal map of lowercased header names to the normalized form of the name (the form seen first).
 */
 _this.normalizedNames = new Map();

 /**
 * Queued updates to be materialized the next initialization.
 */
 _this.lazyUpdate = null;

 if (!headers) {
 _this.headers = new Map();
 } else if (typeof headers === 'string') {
 _this.lazyInit = function () {
 _this.headers = new Map();
 headers.split('\n').forEach(function (line) {
 var index = line.indexOf(':');
 if (index > 0) {
 var name = line.slice(0, index);
 var key = name.toLowerCase();
 var value = line.slice(index + 1).trim();
 _this.maybeSetNormalizedName(name, key);
 if (_this.headers.has(key)) {
 _this.headers.get(key).push(value);
 } else {
 _this.headers.set(key, [value]);
 }
 } else {
 _this.lazyInit = function () {
 _this.headers = new Map();
 };
 Object.keys(headers).forEach(function (name) {
 var values = headers[name];
 var key = name.toLowerCase();
 if (typeof values === 'string') {
 values = [values];
 }
 if (values.length > 0) {
 _this.headers.set(key, values);
 _this.maybeSetNormalizedName(name, key);
 }
 });
 }
 });
 };
 }

 /**
 * Checks for existence of a given header.
 * @param name The header name to check for existence.
 * @returns True if the header exists, false otherwise.
 */
 HttpHeaders.prototype.has = function (name) {
 this.init();
 return this.headers.has(name.toLowerCase());
 };

 /**
 * Retrieves the first value of a given header.
 * @param name The header name.
 * @returns The value string if the header exists, null otherwise.
 */
 HttpHeaders.prototype.get = function (name) {
 this.init();
 var values = this.headers.get(name.toLowerCase());
 return values && values.length > 0 ? values[0] : null;
 };

 /**
 * Retrieves the names of the headers.
 * @returns A list of header names.
 */
 HttpHeaders.prototype.keys = function () {
 this.init();
 return Array.from(this.normalizedNames.values());
 };

 /**
 * Retrieves a list of values for a given header.
 * @param name The header name from which to retrieve values.
 * @returns A string of values if the header exists, null otherwise.
 */
 HttpHeaders.prototype.getAll = function (name) {
 this.init();
 return this.headers.get(name.toLowerCase()) || null;
 };

 /**
 * Appends a new value to the existing set of values for a header and returns them in a clone of the original instance.
 * @param name The header name for which to append the values.
 * @param value The value to append.
 * @returns A clone of the HTTP headers object with the value appended to the given header.
 */
 HttpHeaders.prototype.append = function (name, value) {
 return this.clone({ name: name, value: value, op: 'a' });
 };

 /**
 * Sets or modifies a value for a given header in a clone of the original instance.
 * If the header already exists, its value is replaced with the given value in the returned object.
 * @param name The header name.
 * @param value The value or values to set or override for the given header.
 * @returns A clone of the HTTP headers object with the newly set header value.
 */
 HttpHeaders.prototype.set = function (name, value) {
 return

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this.clone({ name: name, value: value, op: 's' });\n };\n /**\n * Deletes values for a given header in a
clone of the original instance.\n *\n * @param name The header name.\n * @param value The value
or values to delete for the given header.\n *\n * @returns A clone of the HTTP headers object with the
given value deleted.\n */\n HttpHeaders.prototype.delete = function (name, value) {\n return
this.clone({ name: name, value: value, op: 'd' });\n };
HttpHeaders.prototype.maybeSetNormalizedNames
= function (name, lcName) {\n if (!this.normalizedNames.has(lcName)) {\n
this.normalizedNames.set(lcName, name);\n }\n };
HttpHeaders.prototype.init = function () {\n
 var _this = this;\n if (!this.lazyInit) {\n if (this.lazyInit instanceof HttpHeaders) {\n
this.copyFrom(this.lazyInit);\n }\n else {\n this.lazyInit();\n }\n
this.lazyInit = null;\n if (!this.lazyUpdate) {\n this.lazyUpdate.forEach(function (update) {\n
return _this.applyUpdate(update); });\n this.lazyUpdate = null;\n }\n }\n };
HttpHeaders.prototype.copyFrom = function (other) {\n var _this = this;\n other.init();\n
Array.from(other.headers.keys()).forEach(function (key) {\n _this.headers.set(key,\n
other.headers.get(key));\n _this.normalizedNames.set(key, other.normalizedNames.get(key));\n
});\n };
HttpHeaders.prototype.clone = function (update) {\n var clone = new HttpHeaders();\n
clone.lazyInit =\n (!!this.lazyInit && this.lazyInit instanceof HttpHeaders) ? this.lazyInit : this;\n
clone.lazyUpdate = (this.lazyUpdate || []).concat([update]);\n return clone;\n };
HttpHeaders.prototype.applyUpdate = function (update) {\n var key = update.name.toLowerCase();\n
switch (update.op) {\n case 'a':\n case 's':\n var value = update.value;\n if
(typeof value === 'string') {\n value = [value];\n }\n if (value.length === 0)\n {\n return;\n }\n this.maybeSetNormalizedName(update.name, key);\n
var base = (update.op === 'a' ? this.headers.get(key) : undefined) || [];\n base.push.apply(base,\n
__spread(value));\n this.headers.set(key, base);\n break;\n case 'd':\n
var toDelete_1 = update.value;\n if (!toDelete_1) {\n this.headers.delete(key);\n
this.normalizedNames.delete(key);\n }\n else {\n var existing =
this.headers.get(key);\n if (!existing) {\n return;\n }\n
existing = existing.filter(function (value) { return toDelete_1.indexOf(value) === -1; });\n if
(existing.length === 0) {\n this.headers.delete(key);\n
this.normalizedNames.delete(key);\n }\n }\n else {\n this.headers.set(key,\n
existing);\n }\n }\n break;\n }\n };
/**\n * @internal\n */\n HttpHeaders.prototype.forEach = function (fn) {\n var _this = this;\n this.init();\n
Array.from(this.normalizedNames.keys()).\n .forEach(function (key) { return
fn(_this.normalizedNames.get(key), _this.headers.get(key)); });\n };
return HttpHeaders;\n }());\n\n
/**\n * @license\n * Copyright Google LLC All Rights Reserved.\n *\n * Use of this source code is
governed by an MIT-style license that can be\n * found in the LICENSE file at https://angular.io/license\n */\n\n
/**\n * Provides encoding and decoding of URL parameter and query-string values.\n *\n * Serializes and
parses URL parameter keys and values to encode and decode them.\n * If you pass URL query parameters
without encoding,\n * the query parameters can be misinterpreted at the receiving end.\n *\n *\n *
@publicApi\n */\n var HttpUrlEncodingCodec = /** @class */ (function () {\n function
HttpUrlEncodingCodec() {\n }\n /**\n * Encodes a key name for a URL parameter or query-string.\n
 * @param key The key name.\n * @returns The encoded key name.\n */\n
HttpUrlEncodingCodec.prototype.encodeKey = function (key) {\n return standardEncoding(key);\n };\n
 /**\n * Encodes the value of a URL parameter or query-string.\n * @param value The value.\n
 * @returns The encoded value.\n */\n HttpUrlEncodingCodec.prototype.encodeValue = function (value) {\n
return standardEncoding(value);\n };
 /**\n * Decodes an encoded URL parameter or query-
string key.\n * @param key The encoded key name.\n * @returns The decoded key name.\n */\n
HttpUrlEncodingCodec.prototype.decodeKey = function (key) {\n return decodeURIComponent(key);\n
 };\n /**\n * Decodes an encoded URL parameter or query-string value.\n * @param value The

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encoded value.\n * @returns The decoded value.\n */\n
encodeURIComponent.prototype.decodeValue = function (value) {\n return decodeURIComponent(value);\n
};\n return encodeURIComponent;\n
}());\n function paramParser(rawParams, codec) {\n var map
= new Map();\n if (rawParams.length > 0) {\n var params = rawParams.split('&');\n
params.forEach(function (param) {\n var eqIdx = param.indexOf('=');\n var _a = __read(eqIdx ==
-1 ?\n [codec.decodeKey(param), ""] :\n [codec.decodeKey(param.slice(0, eqIdx)),
codec.decodeValue(param.slice(eqIdx + 1)), 2], key = _a[0], val = _a[1];\n var list = map.get(key) || [];\n
list.push(val);\n map.set(key, list);\n });\n }\n return map;\n
}\n function
standardEncoding(v) {\n return encodeURIComponent(v)\n .replace(/%40/gi, '@')\n
.replace(/%3A/gi, ':')\n .replace(/%24/gi, '$')\n .replace(/%2C/gi, ',')\n .replace(/%3B/gi, ';')\n
.replace(/%2B/gi, '+')\n .replace(/%3D/gi, '=')\n .replace(/%3F/gi, '?')\n .replace(/%2F/gi,
'/');\n
}\n /**\n * An HTTP request/response body that represents serialized parameters,\n * per the MIME
type `application/x-www-form-urlencoded`.\n *\n * This class is immutable; all mutation operations return a
new instance.\n *\n * @publicApi\n */\n var HttpParams = /** @class */ (function () {\n function
HttpParams(options) {\n var _this = this;\n if (options === void 0) { options = {}; }\n
this.updates = null;\n this.cloneFrom = null;\n this.encoder = options.encoder || new
encodeURIComponent();\n if (!options.fromString) {\n if (!options.fromObject) {\n
throw new Error("Cannot specify both fromString and fromObject.");\n }\n this.map =
paramParser(options.fromString, this.encoder);\n }\n else if (!options.fromObject) {\n
this.map = new Map();\n Object.keys(options.fromObject).forEach(function (key) {\n var
value = options.fromObject[key];\n _this.map.set(key, Array.isArray(value) ? value : [value]);\n
});\n }\n else {\n this.map = null;\n }\n }\n /**\n * Reports whether the
body includes one or more values for a given parameter.\n *\n * @param param The parameter name.\n *
*\n * @returns True if the parameter has one or more values,\n * false if it has no value or is not present.\n */\n
HttpParams.prototype.has = function (param) {\n this.init();\n return this.map.has(param);\n
};\n /**\n * Retrieves the first value for a parameter.\n *\n * @param param The parameter name.\n *
*\n * @returns The first value of the given parameter,\n * or `null` if the parameter is not present.\n */\n
HttpParams.prototype.get = function (param) {\n this.init();\n var res = this.map.get(param);\n
return !!res ? res[0] : null;\n
};\n /**\n * Retrieves all values for a parameter.\n *\n * @param param
The parameter name.\n *\n * @returns All values in a string array,\n * or `null` if the parameter not present.\n */\n
HttpParams.prototype.getAll = function (param) {\n this.init();\n return
this.map.get(param) || null;\n
};\n /**\n * Retrieves all the parameters for this body.\n *\n * @returns
The parameter names in a string array.\n */\n HttpParams.prototype.keys = function () {\n
this.init();\n return Array.from(this.map.keys());\n
};\n /**\n * Appends a new value to existing
values for a parameter.\n *\n * @param param The parameter name.\n * @param value The new value to
add.\n *\n * @return A new body with the appended value.\n */\n HttpParams.prototype.append =
function (param, value) {\n return this.clone({ param: param, value: value, op: 'a' });\n
};\n /**\n * Replaces the value for a parameter.\n *\n * @param param The parameter name.\n * @param value The
new value.\n *\n * @return A new body with the new value.\n */\n HttpParams.prototype.set = function
(param, value) {\n return this.clone({ param: param, value: value, op: 's' });\n
};\n /**\n * Removes a given value or all values from a parameter.\n *\n * @param param The parameter name.\n *
*\n * @param value The value to remove, if provided.\n *\n * @return A new body with the given value removed, or
with all values\n * removed if no value is specified.\n */\n HttpParams.prototype.delete = function
(param, value) {\n return this.clone({ param: param, value: value, op: 'd' });\n
};\n /**\n * Serializes the body to an encoded string, where key-value pairs (separated by `=`) are\n * separated by `&`s.\n */\n
HttpParams.prototype.toString = function () {\n var _this = this;\n this.init();\n
return this.keys()\n .map(function (key) {\n var eKey = _this.encoder.encodeKey(key);\n
// `a: [1]` produces `a=1`\n // `b: []` produces ``\n // `c: [1, '2']` produces `c=1&c=2`\n

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return _this.map.get(key).map(function (value) { return eKey + '=' + _this.encoder.encodeValue(value); })\n
 .join('&');\n })\n // filter out empty values because `b: []` produces ``\n // which results\nin `a=1&&c=1&c=2` instead of `a=1&c=1&c=2` if we don't\n .filter(function (param) { return param !==\n"; })\n .join('&');\n });\n HttpParams.prototype.clone = function (update) {\n var clone =\nnew HttpParams({ encoder: this.encoder });\n clone.cloneFrom = this.cloneFrom || this;\nclone.updates = (this.updates || []).concat([update]);\n return clone;\n });\n HttpParams.prototype.init\n= function () {\n var _this = this;\n if (this.map === null) {\n this.map = new Map();\n}\n if (this.cloneFrom !== null) {\n this.cloneFrom.init();\nthis.cloneFrom.keys().forEach(function (key) { return _this.map.set(key, _this.cloneFrom.map.get(key)); });\n this.updates.forEach(function (update) {\n switch (update.op) {\n case 'a':\n case 's':\n var base = (update.op === 'a' ? _this.map.get(update.param) : undefined) || [];\n base.push(update.value);\n _this.map.set(update.param, base);\n break;\n case 'd':\n if (update.value !== undefined) {\n var base_1 =\n_this.map.get(update.param) || [];\n var idx = base_1.indexOf(update.value);\nif (idx !== -1) {\n base_1.splice(idx, 1);\n }\n if\n(base_1.length > 0) {\n _this.map.set(update.param, base_1);\n }\n else {\n _this.map.delete(update.param);\n }\n}\n else {\n _this.map.delete(update.param);\n break;\n }\n }\n });\n this.cloneFrom = this.updates = null;\n });\nreturn HttpParams;\n }());\n\n /**\n * @license\n * Copyright Google LLC All Rights Reserved.\n *\n * Use of this source code is governed by an MIT-style license that can be\n * found in the LICENSE file at\n https://angular.io/license\n *\n /**\n * Determine whether the given HTTP method may include a body.\n *\n function mightHaveBody(method) {\n switch (method) {\n case 'DELETE':\n case 'GET':\n case 'HEAD':\n case 'OPTIONS':\n case 'JSONP':\n return false;\n default:\n return true;\n }\n }\n\n /**\n * Safely assert whether the given value is an ArrayBuffer.\n *\n * In\nsome execution environments ArrayBuffer is not defined.\n *\n function isArrayBuffer(value) {\n return\ntypeof ArrayBuffer !== 'undefined' && value instanceof ArrayBuffer;\n }\n\n /**\n * Safely assert whether the\ngiven value is a Blob.\n *\n * In some execution environments Blob is not defined.\n *\n function\nisBlob(value) {\n return typeof Blob !== 'undefined' && value instanceof Blob;\n }\n\n /**\n * Safely\nassert whether the given value is a FormData instance.\n *\n * In some execution environments FormData is\nnot defined.\n *\n function isFormData(value) {\n return typeof FormData !== 'undefined' && value\ninstanceof FormData;\n }\n\n /**\n * An outgoing HTTP request with an optional typed body.\n *\n *\n `HttpRequest` represents an outgoing request, including URL, method,\n * headers, body, and other request\nconfiguration options. Instances should be\n * assumed to be immutable. To modify a `HttpRequest`, the\n`clone`\n * method should be used.\n *\n * @publicApi\n *\n var HttpRequest = /** @class */ (function\n()) {\n function HttpRequest(method, url, third, fourth) {\n this.url = url;\n /**\n * The\nrequest body, or `null` if one isn't set.\n *\n * Bodies are not enforced to be immutable, as they can\ninclude a reference to any\n * user-defined data type. However, interceptors should take care to preserve\n * idempotence by treating them as such.\n *\n this.body = null;\n /**\n * Whether\nthis request should be made in a way that exposes progress events.\n *\n * Progress events are\nexpensive (change detection runs on each event) and so\n * they should only be requested if the consumer\nintends to monitor them.\n *\n this.reportProgress = false;\n /**\n * Whether this\nrequest should be sent with outgoing credentials (cookies).\n *\n this.withCredentials = false;\n\n /**\n * The expected response type of the server.\n *\n * This is used to parse the response\nappropriately before returning it to\n * the requestee.\n *\n this.responseType = 'json';\n\n this.method = method.toUpperCase();\n // Next, need to figure out which argument holds the\nHttpRequestInit\n // options, if any.\n var options;\n // Check whether a body argument is\nexpected. The only valid way to omit\n // the body argument is to use a known no-body method like GET.\n
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 if (mightHaveBody(this.method) || !!fourth) {\n // Body is the third argument, options are the fourth.\n this.body = (third !== undefined) ? third : null;\n options = fourth;\n } else {\n // No body required, options are the third argument. The body stays null.\n options = third;\n }\n // If options have been passed, interpret them.\n if (options) {\n // Normalize reportProgress\n and withCredentials.\n this.reportProgress = !!options.reportProgress;\n this.withCredentials =\n !!options.withCredentials;\n // Override default response type of 'json' if one is provided.\n if\n (!!options.responseType) {\n this.responseType = options.responseType;\n }\n //\n Override headers if they're provided.\n if (!!options.headers) {\n this.headers =\n options.headers;\n }\n if (!!options.params) {\n this.params = options.params;\n }\n }\n // If no headers have been passed in, construct a new HttpHeaders instance.\n if\n (!this.headers) {\n this.headers = new HttpHeaders();\n }\n // If no parameters have been\n passed in, construct a new HttpUrlEncodedParams instance.\n if (!this.params) {\n this.params =\n new HttpParams();\n this.urlWithParams = url;\n } else {\n // Encode the\n parameters to a string in preparation for inclusion in the URL.\n var params = this.params.toString();\n if (params.length === 0) {\n // No parameters, the visible URL is just the URL given at creation\n time.\n this.urlWithParams = url;\n } else {\n // Does the URL already\n have query parameters? Look for '?'.\n var qIdx = url.indexOf('?);\n // There are 3 cases to\n handle:\n // 1) No existing parameters -> append '?' followed by params.\n // 2) '?' exists and\n is followed by existing query string ->\n // append '&' followed by params.\n // 3) '?' exists\n at the end of the url -> append params directly.\n // This basically amounts to determining the character,\n if any, with\n // which to join the URL and parameters.\n var sep = qIdx === -1 ? '?' : (qIdx\n < url.length - 1 ? '&' : '');\n this.urlWithParams = url + sep + params;\n }\n }\n /**\n * Transform the free-form body into a serialized format suitable for\n * transmission to the\n server.\n */\n *^n HttpRequest.prototype.serializeBody = function () {\n // If no body is present, no need\n to serialize it.\n if (this.body === null) {\n return null;\n }\n // Check whether the body\n is already in a serialized form. If so,\n // it can just be returned directly.\n if (isArrayBuffer(this.body)\n || isBlob(this.body) || isFormData(this.body) ||\n typeof this.body === 'string') {\n return\n this.body;\n }\n // Check whether the body is an instance of HttpUrlEncodedParams.\n if\n (this.body instanceof HttpParams) {\n return this.body.toString();\n }\n // Check whether the\n body is an object or array, and serialize with JSON if so.\n if (typeof this.body === 'object' || typeof this.body\n === 'boolean' ||\n Array.isArray(this.body)) {\n return JSON.stringify(this.body);\n }\n // Fall back on toString() for everything else.\n return this.body.toString();\n };\n /**\n * Examine the body and attempt to infer an appropriate MIME type\n * for it.\n * If no such type\n can be inferred, this method will return `null`.\n */\n *^n HttpRequest.prototype.detectContentTypeHeader =\n function () {\n // An empty body has no content type.\n if (this.body === null) {\n return\n null;\n }\n // FormData bodies rely on the browser's content type assignment.\n if\n (isFormData(this.body)) {\n return null;\n }\n // Blobs usually have their own content type. If\n it doesn't, then\n // no type can be inferred.\n if (isBlob(this.body)) {\n return this.body.type ||\n null;\n }\n // Array buffers have unknown contents and thus no type can be inferred.\n if\n (isArrayBuffer(this.body)) {\n return null;\n }\n // Technically, strings could be a form of\n JSON data, but it's safe enough\n // to assume they're plain strings.\n if (typeof this.body === 'string')\n {\n return 'text/plain';\n }\n // `HttpUrlEncodedParams` has its own content-type.\n if\n (this.body instanceof HttpParams) {\n return 'application/x-www-form-urlencoded; charset=UTF-8';\n }\n // Arrays, objects, and numbers will be encoded as JSON.\n if (typeof this.body === 'object' ||\n typeof this.body === 'number' ||\n Array.isArray(this.body)) {\n return 'application/json';\n }\n // No type could be inferred.\n return null;\n };\n HttpRequest.prototype.clone = function\n (update) {\n if (update === void 0) { update = {}; }\n // For method, url, and responseType, take the\n current value unless\n // it is overridden in the update hash.\n var method = update.method ||

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this.method;\n var url = update.url || this.url;\n var responseType = update.responseType ||
this.responseType;\n // The body is somewhat special - a `null` value in update.body means\n // whatever current body is present is being overridden with an empty\n // body, whereas an `undefined` value
in update.body implies no\n // override.\n var body = (update.body !== undefined) ? update.body :
this.body;\n // Carefully handle the boolean options to differentiate between\n // `false` and
`undefined` in the update args.\n var withCredentials = (update.withCredentials !== undefined) ?
update.withCredentials : this.withCredentials;\n var reportProgress = (update.reportProgress !== undefined) ?
update.reportProgress : this.reportProgress;\n // Headers and params may be appended to if `setHeaders` or\n
// `setParams` are used.\n var headers = update.headers || this.headers;\n var params =
update.params || this.params;\n // Check whether the caller has asked to add headers.\n if
(update.setHeaders !== undefined) {\n // Set every requested header.\n headers =\nObject.keys(update.setHeaders)\n .reduce(function (headers, name) { return headers.set(name,
update.setHeaders[name]); }, headers);\n }\n // Check whether the caller has asked to set params.\n if (update.setParams) {\n // Set every requested param.\n params =
Object.keys(update.setParams)\n .reduce(function (params, param) { return params.set(param,
update.setParams[param]); }, params);\n }\n // Finally, construct the new HttpRequest using the pieces
from above.\n return new HttpRequest(method, url, body, {\n params: params,\n headers:
headers,\n reportProgress: reportProgress,\n responseType: responseType,\n
withCredentials: withCredentials,\n });\n });\n return HttpRequest;\n }());\n (function
(HttpEventType) {\n /**\n * The request was sent out over the wire.\n */\n
HttpEventType[HttpEventType["Sent"] = 0] = "Sent";\n /**\n * An upload progress event was
received.\n */\n HttpEventType[HttpEventType["UploadProgress"] = 1] = "UploadProgress";\n
/**\n * The response status code and headers were received.\n */\n
HttpEventType[HttpEventType["ResponseHeader"] = 2] = "ResponseHeader";\n /**\n * A download
progress event was received.\n */\n HttpEventType[HttpEventType["DownloadProgress"] = 3] =
"DownloadProgress";\n /**\n * The full response including the body was received.\n */\n
HttpEventType[HttpEventType["Response"] = 4] = "Response";\n /**\n * A custom event from an
interceptor or a backend.\n */\n HttpEventType[HttpEventType["User"] = 5] = "User";\n
})(exports.HttpEventType || (exports.HttpEventType = {}));\n /**\n * Base class for both `HttpResponse` and
`HttpHeaderResponse`.\n */\n @publicApi\n ^\n var HttpResponseBase = /** @class */ (function () {\n
 /**\n * Super-constructor for all responses.\n */\n /**\n * The single parameter accepted is an
initialization hash. Any properties\n * of the response passed there will override the default values.\n */\n
 function HttpResponseBase(init, defaultStatus, defaultStatusText) {\n if (defaultStatus === void 0) {\n
 defaultStatus = 200; }\n if (defaultStatusText === void 0) {\n defaultStatusText = 'OK'; }\n // If the hash
has values passed, use them to initialize the response.\n // Otherwise use the default values.\n
 this.headers = init.headers || new HttpHeaders();\n this.status = init.status !== undefined ? init.status :
 defaultStatus;\n this.statusText = init.statusText || defaultStatusText;\n this.url = init.url || null;\n
 // Cache the ok value to avoid defining a getter.\n this.ok = this.status >= 200 && this.status < 300;\n }\n
 return HttpResponseBase;\n }());\n /**\n * A partial HTTP response which only includes the status and
header data,\n * but no response body.\n */\n /**\n * `HttpHeaderResponse` is a `HttpEvent` available on the
response\n * event stream, only when progress events are requested.\n */\n @publicApi\n ^\n var
HttpHeaderResponse = /** @class */ (function (_super) {\n __extends(HttpHeaderResponse, _super);\n
 })\n /**\n * Create a new `HttpHeaderResponse` with the given parameters.\n */\n function
HttpHeaderResponse(init) {\n if (init === void 0) {\n init = {};\n }\n var _this = _super.call(this, init) ||
 this;\n _this.type = exports.HttpEventType.ResponseHeader;\n return _this;\n }\n /**\n *
Copy this `HttpHeaderResponse`, overriding its contents with the\n * given parameter hash.\n */\n
 HttpHeaderResponse.prototype.clone = function (update) {\n if (update === void 0) {\n update = {};\n }\n
 // Perform a straightforward initialization of the new HttpHeaderResponse,\n // overriding the current

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parameters with new ones if given.\n return new HttpHeadersResponse({\n headers: update.headers ||
this.headers,\n status: update.status !== undefined ? update.status : this.status,\n statusText:
update.statusText || this.statusText,\n url: update.url || this.url || undefined,\n });\n });\n return HttpHeadersResponse;\n })(HttpResponseBody);\n /**\n * A full HTTP response, including a typed
response body (which may be `null`\n * if one was not returned).\n *\n * `HttpResponseBody` is a `HttpEvent`
available on the response event.\n * stream.\n *\n * @publicApi\n */\n var HttpHeadersResponse = /** @class */
(function (_super) {\n __extends(HttpResponseBody, _super);\n /**\n * Construct a new `HttpResponseBody`.\n *\n * function HttpHeadersResponse(init) {\n if (init === void 0) { init = {}; }\n var _this =
_super.call(this, init) || this;\n _this.type = exports.HttpEventTypes.ResponseBody;\n _this.body = init.body
!== undefined ? init.body : null;\n return _this;\n }\n HttpHeadersResponse.prototype.clone = function
(update) {\n if (update === void 0) { update = {}; }\n return new HttpHeadersResponse({\n body:
(update.body !== undefined) ? update.body : this.body,\n headers: update.headers || this.headers,\n status: (update.status !== undefined) ? update.status : this.status,\n statusText: update.statusText ||
this.statusText,\n url: update.url || this.url || undefined,\n });\n });\n return HttpHeadersResponse;\n })(HttpResponseBody);\n /**\n * A response that represents an error or failure, either from a\n * non-
successful HTTP status, an error while executing the request,\n * or some other failure which occurred during the
parsing of the response.\n *\n * Any error returned on the `Observable` response stream will be\n * wrapped
in an `HttpErrorResponse` to provide additional context about\n * the state of the HTTP layer when the error
occurred. The error property\n * will contain either a wrapped Error object or the error response returned\n *
from the server.\n *\n * @publicApi\n */\n var HttpErrorResponse = /** @class */ (function (_super) {\n __extends(HttpErrorResponse, _super);\n function HttpErrorResponse(init) {\n var _this = \n //
Initialize with a default status of 0 / Unknown Error.\n _super.call(this, init, 0, 'Unknown Error') || this;\n _this.name = 'HttpErrorResponse';\n /**\n * Errors are never okay, even when the status code is in
the 2xx success range.\n *\n * @publicApi\n */\n _this.ok = false;\n // If the response was successful, then this was
a parse error. Otherwise, it was\n // a protocol-level failure of some sort. Either the request failed in transit\n // or the server returned an unsuccessful status code.\n if (_this.status >= 200 && _this.status < 300) {\n _this.message = `Http failure during parsing for ` + (init.url || '(unknown url)');\n } else {\n _this.message = `Http failure response for ` + (init.url || '(unknown url)') + `: ` + init.status + ` ` +
init.statusText;\n }\n _this.error = init.error || null;\n return _this;\n }\n return
HttpErrorResponse;\n })(HttpResponseBody);\n /**\n * @license\n * Copyright Google LLC All Rights
Reserved.\n *\n * Use of this source code is governed by an MIT-style license that can be\n * found in the
LICENSE file at https://angular.io/license\n *\n * Constructs an instance of `HttpRequestOptions`

from a source `HttpMethodOptions` and\n * the given `body`. This function clones the object and adds the
body.\n *\n * Note that the `responseType` *options* value is a String that identifies the\n * single data type
of the response.\n * A single overload version of the method handles each response type.\n * The value of
`responseType` cannot be a union, as the combined signature could imply.\n *\n * function
addBody(options, body) {\n return {\n body: body,\n headers: options.headers,\n observe:
options.observe,\n params: options.params,\n reportProgress: options.reportProgress,\n responseType: options.responseType,\n withCredentials: options.withCredentials,\n });\n }\n /**\n * Performs HTTP requests.\n * This service is available as an injectable class, with methods to perform HTTP
requests.\n * Each request method has multiple signatures, and the return type varies based on\n * the signature
that is called (mainly the values of `observe` and `responseType`).\n *\n * Note that the `responseType`
options value is a String that identifies the\n * single data type of the response.\n * A single overload version
of the method handles each response type.\n * The value of `responseType` cannot be a union, as the combined
signature could imply.\n *\n * @usageNotes\n * Sample HTTP requests for the [Tour of
Heroes](/tutorial/toh-pt0) application.\n *\n * ### HTTP Request Example\n *\n * ```\n * // GET
heroes whose name contains search term\n * searchHeroes(term: string): observable<Hero[]>{\n * const
params = new HttpParams({fromString: 'name=term'});\n * return this.httpClient.request('GET', this.heroesUrl,

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{ responseType: 'json', params });\n * }\n * ```\n * ### JSONP Example\n * ```\n * requestJsonp(url,
callback = 'callback') {\n * return this.httpClient.jsonp(this.heroesURL, callback);\n * }\n * ```\n *\n *
PATCH Example\n * ```\n * // PATCH one of the heroes' name\n * patchHero (id: number, heroName:
string): Observable<{}> {\n * const url = `${this.heroesUrl}/${id}`; // PATCH api/heroes/42\n * return
this.httpClient.patch(url, { name: heroName }, httpOptions)\n *
.pipe(catchError(this.handleError('patchHero')));\n * }\n * ```\n *\n * @see [HTTP Guide](guide/http)\n
*\n * @publicApi\n * \n var HttpClient = /** @class */ (function () {\n * function HttpClient(handler) {\n *
this.handler = handler;\n * }\n * /**\n * Constructs an observable for a generic HTTP request that,
when subscribed,\n * fires the request through the chain of registered interceptors and on to the\n *
server.\n * \n * You can pass an `HttpRequest` directly as the only parameter. In this case,\n * the call
returns an observable of the raw `HttpEvent` stream.\n * \n * Alternatively you can pass an HTTP method
as the first parameter,\n * a URL string as the second, and an options hash containing the request body as the
third.\n * See `addBody()`. In this case, the specified `responseType` and `observe` options determine the\n
* type of returned observable.\n * * The `responseType` value determines how a successful response body is
parsed.\n * * If `responseType` is the default `json`, you can pass a type interface for the resulting\n *
object as a type parameter to the call.\n * \n * The `observe` value determines the return type, according to
what you are interested in\n * observing.\n * * An `observe` value of events returns an observable of the
raw `HttpEvent` stream, including\n * progress events by default.\n * * An `observe` value of response
returns an observable of `HttpResponse<T>`,\n * where the `T` parameter depends on the `responseType` and
any optionally provided type\n * parameter.\n * * An `observe` value of body returns an observable of
`<T>` with the same `T` body type.\n * \n * \n * HttpClient.prototype.request = function (first, url,
options) {\n * var _this = this;\n * if (options === void 0) { options = {}; }\n * var req;\n * //
First, check whether the primary argument is an instance of `HttpRequest`.\n * if (first instanceof HttpRequest)
{\n * // It is. The other arguments must be undefined (per the signatures) and can be\n * // ignored.\n
req = first;\n * } else {\n * // It's a string, so it represents a URL. Construct a request
based on it,\n * // and incorporate the remaining arguments (assuming `GET` unless a method is\n * //
provided.\n * // Figure out the headers.\n * var headers = undefined;\n * if (options.headers
instanceof HttpHeaders) {\n * headers = options.headers;\n * }\n * else {\n
headers = new HttpHeaders(options.headers);\n * }\n * // Sort out parameters.\n * var params
= undefined;\n * if (!!options.params) {\n * if (options.params instanceof HttpParams) {\n
params = options.params;\n * }\n * else {\n * params = new HttpParams({
fromObject: options.params });\n * }\n * }\n * // Construct the request.\n * req =
new HttpRequest(first, url, (options.body !== undefined ? options.body : null), {\n * headers: headers,\n
params: params,\n * reportProgress: options.reportProgress,\n * // By default, JSON is
assumed to be returned for all calls.\n * responseType: options.responseType || 'json',\n
withCredentials: options.withCredentials,\n * });\n * }\n * // Start with an Observable.of() the
initial request, and run the handler (which\n * // includes all interceptors) inside a concatMap(). This way, the
handler runs\n * // inside an Observable chain, which causes interceptors to be re-run on every\n * //
subscription (this also makes retries re-run the handler, including interceptors).\n * var events$ =
rxjs.of(req).pipe(operators.concatMap(function (req) { return _this.handler.handle(req); }));\n * // If coming via
the API signature which accepts a previously constructed HttpRequest,\n * // the only option is to get the event
stream. Otherwise, return the event stream if\n * // that is what was requested.\n * if (first instanceof
HttpRequest || options.observe === 'events') {\n * return events$;\n * }\n * // The requested stream
contains either the full response or the body. In either\n * // case, the first step is to filter the event stream to
extract a stream of\n * // responses(s).\n * var res$ = events$.pipe(operators.filter(function (event) { return
event instanceof HttpResponse; }));\n * // Decide which stream to return.\n * switch (options.observe ||
'body') {\n * case 'body':\n * // The requested stream is the body. Map the response stream to the
response\n * // body. This could be done more simply, but a misbehaving interceptor might\n

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// transform the response body into a different format and ignore the requested\n // responseType. Guard
against this by validating that the response is of the\n // requested type.\n switch
(req.responseType) {\n case 'arraybuffer':\n return res$.pipe(operators.map(function
(res) {\n // Validate that the body is an ArrayBuffer.\n if (res.body !== null
&& !(res.body instanceof ArrayBuffer)) {\n throw new Error('Response is not an
ArrayBuffer.);\n }\n return res.body;\n }));\n case 'blob':\n return res$.pipe(operators.map(function (res) {\n // Validate that
the body is a Blob.\n if (res.body !== null && !(res.body instanceof Blob)) {\n
throw new Error('Response is not a Blob.);\n }\n return res.body;\n
}));\n case 'text':\n return res$.pipe(operators.map(function (res) {\n
// Validate that the body is a string.\n if (res.body !== null && typeof res.body !==
'string') {\n throw new Error('Response is not a string.);\n }\n
return res.body;\n }));\n case 'json':\n default:\n //
No validation needed for JSON responses, as they can be of any type.\n return
res$.pipe(operators.map(function (res) { return res.body; }));\n case 'response':\n
// The response stream was requested directly, so return it.\n return res$;\n default:\n
// Guard against new future observe types being added.\n throw new Error(`Unreachable: unhandled
observe type ` + options.observe + `)`);\n };\n /**\n * Constructs an observable that,
when subscribed, causes the configured\n * `DELETE` request to execute on the server. See the individual
overloads for\n * details on the return type.\n *\n * @param url The endpoint URL.\n *\n
@param options The HTTP options to send with the request.\n *\n */\n HttpClient.prototype.delete =
function (url, options) {\n if (options === void 0) { options = {}; }\n return this.request('DELETE', url,
options);\n };\n /**\n * Constructs an observable that, when subscribed, causes the configured\n *
`GET` request to execute on the server. See the individual overloads for\n * details on the return type.\n
*\n */\n HttpClient.prototype.get = function (url, options) {\n if (options === void 0) { options = {}; }\n
return this.request('GET', url, options);\n };\n /**\n * Constructs an observable that, when subscribed,
causes the configured\n * `HEAD` request to execute on the server. The `HEAD` method returns\n * meta
information about the resource without transferring the\n * resource itself. See the individual overloads for\n
* details on the return type.\n */\n HttpClient.prototype.head = function (url, options) {\n if
(options === void 0) { options = {}; }\n return this.request('HEAD', url, options);\n };\n /**\n *
Constructs an `Observable` that, when subscribed, causes a request with the special method\n * `JSONP` to be
dispatched via the interceptor pipeline.\n * The [JSONP pattern](https://en.wikipedia.org/wiki/JSONP) works
around limitations of certain\n * API endpoints that don't support newer,\n * and preferable
[CORS](https://developer.mozilla.org/en-US/docs/Web/HTTP/CORS) protocol.\n * JSONP treats the endpoint
API as a JavaScript file and tricks the browser to process the\n * requests even if the API endpoint is not
located on the same domain (origin) as the client-side\n * application making the request.\n * The
endpoint API must support JSONP callback for JSONP requests to work.\n * The resource API returns the
JSON response wrapped in a callback function.\n * You can pass the callback function name as one of the
query parameters.\n * Note that JSONP requests can only be used with `GET` requests.\n *\n
@param url The resource URL.\n * @param callbackParam The callback function name.\n *\n */\n
HttpClient.prototype.jsonp = function (url, callbackParam) {\n return this.request('JSONP', url, {\n
params: new HttpParams().append(callbackParam, 'JSONP_CALLBACK'),\n observe: 'body',\n
responseType: 'json',\n });\n };\n /**\n * Constructs an `Observable` that, when subscribed,
causes the configured\n * `OPTIONS` request to execute on the server. This method allows the client\n *
to determine the supported HTTP methods and other capabilities of an endpoint,\n * without implying a
resource action. See the individual overloads for\n * details on the return type.\n */\n
HttpClient.prototype.options = function (url, options) {\n if (options === void 0) { options = {}; }\n
return this.request('OPTIONS', url, options);\n };\n /**\n * Constructs an observable that, when

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subscribed, causes the configured
* `PATCH` request to execute on the server. See the individual overloads
for
* details on the return type.
*^
HttpClient.prototype.patch = function (url, body, options) {
 if (options === void 0) { options = {}; }
 return this.request('PATCH', url, addBody(options, body));
};
/**
 * Constructs an observable that, when subscribed, causes the configured
* `POST`
request to execute on the server. The server responds with the location of
* the replaced resource. See the
individual overloads for
* details on the return type.
*^
HttpClient.prototype.post = function (url,
body, options) {
 if (options === void 0) { options = {}; }
 return this.request('POST', url,
addBody(options, body));
};
/**
 * Constructs an observable that, when subscribed, causes the
configured
* `PUT` request to execute on the server. The `PUT` method replaces an existing resource
* with a new set of values.
* See the individual overloads for details on the return type.
*^
HttpClient.prototype.put = function (url, body, options) {
 if (options === void 0) { options = {}; }
 return this.request('PUT', url, addBody(options, body));
};
return HttpClient;
})();
HttpClient.decorators = [
 { type: core.Injectable }
];
HttpClient.ctorParameters = function () { return
[
 { type: HttpHandler }
];
};
/**
 * @license
 * Copyright Google LLC All Rights
Reserved.
* Use of this source code is governed by an MIT-style license that can be
* found in the
LICENSE file at https://angular.io/license
*^
/**
 * `HttpHandler` which applies an `HttpInterceptor` to
an `HttpRequest`.
*
*
*
var HttpInterceptorHandler = /** @class */ (function () {
 function
HttpInterceptorHandler(next, interceptor) {
 this.next = next;
 this.interceptor = interceptor;
 }
 HttpInterceptorHandler.prototype.handle = function (req) {
 return this.interceptor.intercept(req,
this.next);
 };
 return HttpInterceptorHandler;
})();
/**
 * A multi-provider token that
represents the array of registered
* `HttpInterceptor` objects.
*
* @publicApi
*^
var
HTTP_INTERCEPTORS = new core.InjectionToken('HTTP_INTERCEPTORS');
var NoopInterceptor = /**
@class */ (function () {
 function NoopInterceptor() {}
 NoopInterceptor.prototype.intercept =
function (req, next) {
 return next.handle(req);
 };
 return NoopInterceptor;
})();
NoopInterceptor.decorators = [
 { type: core.Injectable }
];
/**
 * @license
 * Copyright
Google LLC All Rights Reserved.
* Use of this source code is governed by an MIT-style license that can
be
* found in the LICENSE file at https://angular.io/license
*^
// Every request made through JSONP
needs a callback name that's unique across the
// whole page. Each request is assigned an id and the callback
name is constructed
// from that. The next id to be assigned is tracked in a global variable here that
// is
shared among all applications on the page.
var nextRequestId = 0;
// Error text given when a JSONP script is
injected, but doesn't invoke the callback
// passed in its URL.
var JSONP_ERR_NO_CALLBACK = 'JSONP
injected script did not invoke callback.';
// Error text given when a request is passed to the JsonpClientBackend
that doesn't
// have a request method JSONP.
var JSONP_ERR_WRONG_METHOD = 'JSONP requests
must use JSONP request method.';
var JSONP_ERR_WRONG_RESPONSE_TYPE = 'JSONP requests must use
Json response type.';
/**
 * DI token/abstract type representing a map of JSONP callbacks.
*
* In
the browser, this should always be the `window` object.
*
*
*^
var JsonpCallbackContext = /**
@class */ (function () {
 function JsonpCallbackContext() {}
 return JsonpCallbackContext;
})();
/**
 * Processes an `HttpRequest` with the JSONP method,
* by performing JSONP style
requests.
* @see `HttpHandler`
* @see `HttpXHRBackend`
*
* @publicApi
*^
var
JsonpClientBackend = /** @class */ (function () {
 function JsonpClientBackend(callbackMap, document) {
 this.callbackMap = callbackMap;
 this.document = document;
 }
 /**
 * A resolved
promise that can be used to schedule microtasks in the event handlers.
*^
 this.resolvedPromise =
Promise.resolve();
}
/**
 * Get the name of the next callback method, by incrementing the global
`nextRequestId`.
*^
 JsonpClientBackend.prototype.nextCallback = function () {
 return
`ng_jsonp_callback_${nextRequestId++}`;
 };
 /**
 * Processes a JSONP request and returns an
event stream of the results.
* @param req The request object.
* @returns An observable of the
response events.
*
*^
 JsonpClientBackend.prototype.handle = function (req) {
 var _this
= this;
 // Firstly, check both the method and response type. If either doesn't match
// then the

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request was improperly routed here and cannot be handled.\n if (req.method !== 'JSONP') {\n throw
new Error(JSONP_ERR_WRONG_METHOD);\n }\n else if (req.responseType !== 'json') {\n
throw new Error(JSONP_ERR_WRONG_RESPONSE_TYPE);\n }\n // Everything else happens
inside the Observable boundary.\n return new rxjs.Observable(function (observer) {\n // The first
step to make a request is to generate the callback name, and replace the\n // callback placeholder in the
URL with the name. Care has to be taken here to ensure\n // a trailing &, if matched, gets inserted back into
the URL in the correct place.\n var callback = _this.nextCallback();\n var url =
req.urlWithParams.replace(/=JSONP_CALLBACK(&|$)/, '=' + callback + '$1');\n // Construct the
<script> tag and point it at the URL.\n var node = _this.document.createElement('script');\n
node.src = url;\n // A JSONP request requires waiting for multiple callbacks. These variables\n //
are closed over and track state across those callbacks.\n // The response object, if one has been received, or
null otherwise.\n var body = null;\n // Whether the response callback has been called.\n
var finished = false;\n // Whether the request has been cancelled (and thus any other callbacks)\n
// should be ignored.\n var cancelled = false;\n // Set the response callback in this.callbackMap
(which will be the window\n // object in the browser. The script being loaded via the <script> tag will\n
// eventually call this callback.\n _this.callbackMap[callback] = function (data) {\n // Data
has been received from the JSONP script. Firstly, delete this callback.\n delete
_this.callbackMap[callback];\n // Next, make sure the request wasn't cancelled in the meantime.\n
if (cancelled) {\n return;\n }\n // Set state to indicate data was received.\n
body = data;\n finished = true;\n });\n // cleanup() is a utility closure that
removes the <script> from the page and\n // the response callback from the window. This logic is used in
both the\n // success, error, and cancellation paths, so it's extracted out for convenience.\n var
cleanup = function () {\n // Remove the <script> tag if it's still on the page.\n if
(node.parentNode) {\n node.parentNode.removeChild(node);\n }\n // Remove
the response callback from the callbackMap (window object in the\n // browser).\n delete
_this.callbackMap[callback];\n };\n // onLoad() is the success callback which runs after the
response callback\n // if the JSONP script loads successfully. The event itself is unimportant.\n //
If something went wrong, onLoad() may run without the response callback\n // having been invoked.\n
var onLoad = function (event) {\n // Do nothing if the request has been cancelled.\n if
(cancelled) {\n return;\n }\n // We wrap it in an extra Promise, to ensure the
microtask\n // is scheduled after the loaded endpoint has executed any potential microtask itself,\n
// which is not guaranteed in Internet Explorer and EdgeHTML. See issue #39496\n
_this.resolvedPromise.then(function () {\n // Cleanup the page.\n cleanup();\n
// Check whether the response callback has run.\n if (!finished) {\n // It hasn't,
something went wrong with the request. Return an error via\n // the Observable error path. All
JSONP errors have status 0.\n observer.error(new HttpResponse({\n url:
url,\n status: 0,\n statusText: 'JSONP Error',\n error: new
Error(JSONP_ERR_NO_CALLBACK),\n }));\n return;\n });\n // Success. body either contains the response body or null if none was\n
// returned.\n observer.next(new HttpResponse({\n body: body,\n status: 200,\n
statusText: 'OK',\n url: url,\n }));\n // Complete the stream, the
response is over.\n observer.complete();\n });\n // onError() is the
error callback, which runs if the script returned generates\n // a Javascript error. It emits the error via the
Observable error channel as\n // a HttpResponse.\n var onError = function (error) {\n
// If the request was already cancelled, no need to emit anything.\n if (cancelled) {\n
return;\n }\n cleanup();\n // Wrap the error in a HttpResponse.\n
observer.error(new HttpResponse({\n error: error,\n status: 0,\n
statusText: 'JSONP Error',\n url: url,\n }));\n });\n // Subscribe to both

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xhr.setRequestHeader('Accept', 'application/json, text/plain, */*');\n }\n // Auto-detect the
Content-Type header if one isn't present already.\n if (!req.headers.has('Content-Type')) {\n var
detectedType = req.detectContentTypeHeader();\n // Sometimes Content-Type detection fails.\n if (detectedType !== null) {\n xhr.setRequestHeader('Content-Type', detectedType);\n }\n }\n // Set the responseType if one was requested.\n if (req.responseType) {\n var responseType = req.responseType.toLowerCase();\n // JSON responses need to be processed as
text. This is because if the server\n // returns an XSSI-prefixed JSON response, the browser will fail to
parse it,\n // xhr.response will be null, and xhr.responseText cannot be accessed to\n //
retrieve the prefixed JSON data in order to strip the prefix. Thus, all JSON\n // is parsed by first
requesting text and then applying JSON.parse.\n xhr.responseType = ((responseType !== 'json') ?
responseType : 'text');\n }\n // Serialize the request body if one is present. If not, this will be set to
null.\n var reqBody = req.serializeBody();\n // If progress events are enabled, response headers
will be delivered\n // in two events - the HttpHeadersResponse event and the full HttpResponse\n
// event. However, since response headers don't change in between these\n // two events, it doesn't make
sense to parse them twice. So headerResponse\n // caches the data extracted from the response whenever
it's first parsed,\n // to ensure parsing isn't duplicated.\n var headerResponse = null;\n //
partialFromXhr extracts the HttpHeadersResponse from the current XMLHttpRequest\n // state, and
memoizes it into headerResponse.\n var partialFromXhr = function () {\n if (headerResponse
!== null) {\n return headerResponse;\n }\n }\n // Read status and normalize an IE9
bug (http://bugs.jquery.com/ticket/1450).\n var status = xhr.status === 1223 ? 204 : xhr.status;\n var
statusText = xhr.statusText || 'OK';\n // Parse headers from XMLHttpRequest - this step is lazy.\n var
headers = new HttpHeaders(xhr.getAllResponseHeaders());\n // Read the response URL
from the XMLHttpRequest instance and fall back on the\n // request URL.\n var url =
getResponseUrl(xhr) || req.url;\n // Construct the HttpHeadersResponse and memoize it.\n headerResponse = new HttpHeadersResponse({ headers: headers, status: status, statusText: statusText, url: url });\n return headerResponse;\n });\n // Next, a few closures are defined for the various events
which XMLHttpRequest can\n // emit. This allows them to be unregistered as event listeners later.\n // First up is the load event, which represents a response being fully available.\n var onLoad = function ()
{\n // Read response state from the memoized partial data.\n var _a = partialFromXhr(),
headers = _a.headers, status = _a.status, statusText = _a.statusText, url = _a.url;\n // The body will be
read out if present.\n var body = null;\n if (status !== 204) {\n // Use
XMLHttpRequest.response if set, responseText otherwise.\n body = (typeof xhr.response ===
'undefined') ? xhr.responseText : xhr.response;\n }\n // Normalize another potential bug (this
one comes from CORS).\n if (status === 0) {\n status = !!body ? 200 : 0;\n }\n // ok determines whether the response will be transmitted on the event or\n // error channel.
Unsuccessful status codes (not 2xx) will always be errors,\n // but a successful status code can still result
in an error if the user\n // asked for JSON data and the body cannot be parsed as such.\n var
ok = status >= 200 && status < 300;\n // Check whether the body needs to be parsed as JSON (in many
cases the browser\n // will have done that already).\n if (req.responseType === 'json' &&
typeof body === 'string') {\n // Save the original body, before attempting XSSI prefix stripping.\n var originalBody = body;\n body = body.replace(XSSI_PREFIX, '');\n try {\n // Attempt the parse. If it fails, a parse error should be delivered to the user.\n body =
body !== " ? JSON.parse(body) : null;\n }\n catch (error) {\n // Since
the JSON.parse failed, it's reasonable to assume this might not have been a\n // JSON response.
Restore the original body (including any XSSI prefix) to deliver\n // a better error response.\n body = originalBody;\n }\n // If this was an error request to begin with, leave it as a string, it
probably\n // just isn't JSON. Otherwise, deliver the parsing error to the user.\n if
(ok) {\n // Even though the response status was 2xx, this is still an error.\n ok

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= false;\n // The parse error contains the text of the body that failed to parse.\nbody = { error: error, text: body };\n }\n }\n }\n if (ok) {\n // A successful response is delivered on the event stream.\n observer.next(new\nHttpResponse({\n body: body,\n headers: headers,\n status:\nstatus,\n statusText: statusText,\n url: url || undefined,\n }));\n // The full body has been received and delivered, no further events\n // are possible. This\nrequest is complete.\n observer.complete();\n }\n else {\n // An\nunsuccessful request is delivered on the error channel.\n observer.error(new HttpResponse({\n // The error in this case is the response body (error from the server).\n error: body,\n headers: headers,\n status: status,\n statusText: statusText,\n url: url || undefined,\n }));\n }\n });\n // The onError callback is\n // called when something goes wrong at the network level.\n // Connection timeout, DNS error, offline, etc.\n // These are actual errors, and are\n // transmitted on the error channel.\n var onError = function\n(error) {\n var url = partialFromXhr().url;\n var res = new HttpResponse({\n error: error,\n status: xhr.status || 0,\n statusText: xhr.statusText || 'Unknown Error',\n url: url || undefined,\n });\n observer.error(res);\n });\n // The\n // sentHeaders flag tracks whether the HttpResponseHeaders event\n // has been sent on the stream. This is\n // necessary to track if progress\n // is enabled since the event will be sent on only the first download\n // progress event.\n var sentHeaders = false;\n // The download progress event handler, which is\n // only registered if\n // progress events are enabled.\n var onDownProgress = function (event) {\n // Send the HttpResponseHeaders event if it hasn't been sent already.\n if (!sentHeaders) {\n observer.next(partialFromXhr());\n sentHeaders = true;\n }\n // Start\n // building the download progress event to deliver on the response\n // event stream.\n var\n // progressEvent = {\n // type: exports.HttpEventType.DownloadProgress,\n // loaded:\n // event.loaded,\n // };\n // Set the total number of bytes in the event if it's available.\n if (event.lengthComputable) {\n // If\n // the request was for text content and a partial response is\n // available on XMLHttpRequest, include it in\n // the progress event\n // to allow for streaming reads.\n if (req.responseType === 'text' &&\n // !!xhr.responseText) {\n // progressEvent.partialText = xhr.responseText;\n // }\n // Finally, fire the event.\n // observer.next(progressEvent);\n // };\n // The upload progress\n // event handler, which is only registered if\n // progress events are enabled.\n var onUpProgress =\n // function (event) {\n // Upload progress events are simpler. Begin building the progress\n // event.\n // var progress = {\n // type: exports.HttpEventType.UploadProgress,\n // loaded: event.loaded,\n // };\n // If the total number of bytes being uploaded is available,\n // include\n // it.\n // if (event.lengthComputable) {\n // progress.total = event.total;\n // }\n // Send the event.\n // observer.next(progress);\n // };\n // By\n // default, register for load and error events.\n // xhr.addEventListener('load', onLoad);\n // xhr.addEventListener('error', onError);\n // Progress events are only enabled if requested.\n // if\n // (req.reportProgress) {\n // Download progress is always enabled if requested.\n // xhr.addEventListener('progress', onDownProgress);\n // Upload progress depends on whether there is a\n // body to upload.\n // if (reqBody !== null && xhr.upload) {\n // xhr.upload.addEventListener('progress', onUpProgress);\n // }\n // }\n // Fire the request,\n // and notify the event stream that it was fired.\n // xhr.send(reqBody);\n // observer.next({ type:\n // exports.HttpEventType.Sent });\n // This is the return from the Observable function, which is the\n // request cancellation handler.\n // return function () {\n // On a cancellation, remove all\n // registered event listeners.\n // xhr.removeEventListener('error', onError);\n // xhr.removeEventListener('load', onLoad);\n // if (req.reportProgress) {\n // xhr.removeEventListener('progress', onDownProgress);\n // if (reqBody !== null && xhr.upload) {\n //

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 xhr.upload.removeEventListener('progress', onUpProgress);\n }\n }\n // Finally, abort the in-flight request.\n if (xhr.readyState !== xhr.DONE) {\n xhr.abort();\n }\n });\n });\n return HttpXhrBackend;\n }());\n HttpXhrBackend.decorators = [\n { type: core.Injectable }\n];\n HttpXhrBackend.ctorParameters = function\n () { return [\n { type: XhrFactory }\n];};\n /**\n * @license\n * Copyright Google LLC All Rights\n Reserved.\n *\n * Use of this source code is governed by an MIT-style license that can be\n * found in the\n LICENSE file at https://angular.io/license\n */\n var XSRF_COOKIE_NAME = new\n core.InjectionToken('XSRF_COOKIE_NAME');\n var XSRF_HEADER_NAME = new\n core.InjectionToken('XSRF_HEADER_NAME');\n /**\n * Retrieves the current XSRF token to use with the\n next outgoing request.\n *\n * @publicApi\n */\n var HttpXsrfTokenExtractor = /** @class */ (function ()\n {\n function HttpXsrfTokenExtractor() {\n }\n return HttpXsrfTokenExtractor;\n }());\n /**\n * `HttpXsrfTokenExtractor` which retrieves the token from a cookie.\n */\n var HttpXsrfCookieExtractor = /**\n @class */ (function () {\n function HttpXsrfCookieExtractor(doc, platform, cookieName) {\n this.doc =\n doc;\n this.platform = platform;\n this.cookieName = cookieName;\n this.lastCookieString =\n '';\n this.lastToken = null;\n /**\n * @internal for testing\n */\n this.parseCount =\n 0;\n }\n HttpXsrfCookieExtractor.prototype.getToken = function () {\n if (this.platform === 'server')\n {\n return null;\n }\n var cookieString = this.doc.cookie || '';\n if (cookieString !==\n this.lastCookieString) {\n this.parseCount++;\n this.lastToken =\n common.parseCookieValue(cookieString, this.cookieName);\n this.lastCookieString = cookieString;\n }\n return this.lastToken;\n });\n return HttpXsrfCookieExtractor;\n }());\n HttpXsrfCookieExtractor.decorators = [\n { type: core.Injectable }\n];\n HttpXsrfCookieExtractor.ctorParameters = function () { return [\n { type: undefined, decorators: [{ type:\n core.Inject, args: [common.DOCUMENT,] }]},\n { type: String, decorators: [{ type: core.Inject, args:\n [core.PLATFORM_ID,] }]},\n { type: String, decorators: [{ type: core.Inject, args: [XSRF_COOKIE_NAME,\n] }]}\n];};\n /**\n * `HttpInterceptor` which adds an XSRF token to eligible outgoing requests.\n */\n var\n HttpXsrfInterceptor = /** @class */ (function () {\n function HttpXsrfInterceptor(tokenService, headerName)\n {\n this.tokenService = tokenService;\n this.headerName = headerName;\n }\n HttpXsrfInterceptor.prototype.intercept = function (req, next) {\n var lcUrl = req.url.toLowerCase();\n // Skip both non-mutating requests and absolute URLs.\n // Non-mutating requests don't require a token, and\n absolute URLs require special handling\n // anyway as the cookie set\n // on our origin is not the same\n as the token expected by another origin.\n if (req.method === 'GET' || req.method === 'HEAD' ||\n lcUrl.startsWith('http://') ||\n lcUrl.startsWith('https://')) {\n return next.handle(req);\n }\n var token = this.tokenService.getToken();\n // Be careful not to overwrite an existing header of the same\n name.\n if (token !== null && !req.headers.has(this.headerName)) {\n req = req.clone({ headers:\n req.headers.set(this.headerName, token) });\n }\n return next.handle(req);\n });\n return\n HttpXsrfInterceptor;\n }());\n HttpXsrfInterceptor.decorators = [\n { type: core.Injectable }\n];\n HttpXsrfInterceptor.ctorParameters = function () { return [\n { type: HttpXsrfTokenExtractor },\n { type:\n String, decorators: [{ type: core.Inject, args: [XSRF_HEADER_NAME,] }]}\n];};\n /**\n * @license\n * Copyright Google LLC All Rights Reserved.\n *\n * Use of this source code is governed by an MIT-style\n license that can be\n * found in the LICENSE file at https://angular.io/license\n */\n /**\n * An injectable\n `HttpHandler` that applies multiple interceptors\n * to a request before passing it to the given `HttpBackend`.\n *\n * The interceptors are loaded lazily from the injector, to allow\n * interceptors to themselves inject classes\n depending indirectly\n * on `HttpInterceptingHandler` itself.\n * @see `HttpInterceptor`\n */\n var\n HttpInterceptingHandler = /** @class */ (function () {\n function HttpInterceptingHandler(backend, injector)\n {\n this.backend = backend;\n this.injector = injector;\n this.chain = null;\n }\n HttpInterceptingHandler.prototype.handle = function (req) {\n if (this.chain === null) {\n var\n interceptors = this.injector.get(HTTP_INTERCEPTORS, []);\n this.chain =\n interceptors.reduceRight(function (next, interceptor) { return new\n HttpInterceptorHandler(next, interceptor); },

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this.backend);\n }\n return this.chain.handle(req);\n });\n return HttpInterceptingHandler;\n\n });\n HttpInterceptingHandler.decorators = [\n { type: core.Injectable }\n];\n\n HttpInterceptingHandler.ctorParameters = function () { return [\n { type: HttpBackend },\n { type: core.Injector }\n]; }; \n\n /**\n * Constructs an `HttpHandler` that applies interceptors\n * to a request before passing it to the given `HttpBackend`.\n *\n * Use as a factory function within `HttpClientModule`.\n *\n */\n function interceptingHandler(backend, interceptors) {\n if (interceptors === void 0) { interceptors = []; }\n if (!interceptors) {\n return backend;\n }\n return interceptors.reduceRight(function (next, interceptor) { return new HttpInterceptorHandler(next, interceptor); }, backend);\n }\n\n /**\n * Factory function that determines where to store JSONP callbacks.\n *\n * Ordinarily JSONP callbacks are stored on the `window` object, but this may not exist\n * in test environments. In that case, callbacks are stored on an anonymous object instead.\n *\n */\n function jsonpCallbackContext() {\n if (typeof window === 'object') {\n return window;\n }\n return {};\n }\n\n /**\n * Configures XSRF protection support for outgoing requests.\n *\n * For a server that supports a cookie-based XSRF protection system,\n * use directly to configure XSRF protection with the correct\n * cookie and header names.\n *\n * If no names are supplied, the default cookie name is `XSRF-TOKEN`\n * and the default header name is `X-XSRF-TOKEN`.\n *\n * @publicApi\n */\n var HttpClientXsrfModule = /** @class */ (function () {\n function HttpClientXsrfModule() {\n /**\n * Disable the default XSRF protection.\n */\n\n HttpClientXsrfModule.disable = function () {\n return {\n ngModule: HttpClientXsrfModule,\n providers: [\n { provide: HttpXsrfInterceptor, useClass: NoopInterceptor },\n],\n };\n }\n\n /**\n * Configure XSRF protection.\n * @param options An object that can specify either or both\n * cookie name or header name.\n * - Cookie name default is `XSRF-TOKEN`.\n * - Header name default is `X-XSRF-TOKEN`.\n */\n HttpClientXsrfModule.withOptions = function (options) {\n if (options === void 0) { options = {}; }\n return {\n ngModule: HttpClientXsrfModule,\n providers: [\n options.cookieName ? { provide: XSRF_COOKIE_NAME, useValue: options.cookieName } : [],\n options.headerName ? { provide: XSRF_HEADER_NAME, useValue: options.headerName } : [],\n],\n };\n }\n\n return {\n ngModule: HttpClientXsrfModule,\n providers: [\n HttpXsrfInterceptor,\n { provide: HTTP_INTERCEPTORS, useExisting: HttpXsrfInterceptor, multi: true },\n { provide: HttpXsrfTokenExtractor, useClass: HttpXsrfCookieExtractor },\n { provide: XSRF_COOKIE_NAME, useValue: 'XSRF-TOKEN' },\n { provide: XSRF_HEADER_NAME, useValue: 'X-XSRF-TOKEN' },\n],\n };\n }\n\n /**\n * Configures the [dependency injector](guide/glossary#injector) for `HttpClient` with supporting services for XSRF. Automatically imported by `HttpClientModule`.\n *\n * You can add interceptors to the chain behind `HttpClient` by binding them to the\n * multiprovider for built-in [DI token](guide/glossary#di-token) `HTTP_INTERCEPTORS`.\n *\n * @publicApi\n */\n var HttpClientModule = /** @class */ (function () {\n function HttpClientModule() {\n return HttpClientModule;\n }\n\n HttpClientModule.decorators = [\n { type: core.NgModule, args: [{\n providers: [\n HttpXsrfInterceptor,\n],\n useExisting: HttpXsrfInterceptor, multi: true },\n { provide: HttpXsrfTokenExtractor, useClass: HttpXsrfCookieExtractor },\n { provide: XSRF_COOKIE_NAME, useValue: 'XSRF-TOKEN' },\n { provide: XSRF_HEADER_NAME, useValue: 'X-XSRF-TOKEN' },\n] }];\n\n /**\n * Configures the [dependency injector](guide/glossary#injector) for `HttpClient` with supporting services for JSONP.\n *\n * Without this module, Jsonp requests reach the backend\n * with method JSONP, where they are rejected.\n *\n * You can add interceptors to the chain behind `HttpClient` by binding them to the\n * multiprovider for built-in

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```
* /opt/cola/permits/1358260638_1657134870.9548028/0/common-11-0-2-tgz/package/http/http.d.ts
* /opt/cola/permits/1358260638_1657134870.9548028/0/common-11-0-2-tgz/package/testing.d.ts
* /opt/cola/permits/1358260638_1657134870.9548028/0/common-11-0-2-tgz/package/common.d.ts
No license file was found, but licenses were detected in source scan.
```

```
/**
 * @license Angular v11.0.2
 * (c) 2010-2020 Google LLC. https://angular.io/
 * License: MIT
 */
 * @license
 * Copyright Google LLC All Rights Reserved.
 *
 * Use of this source code is governed by an MIT-style license that can be
 * found in the LICENSE file at https://angular.io/license
 */
/*! *****
Copyright (c) Microsoft Corporation.

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purpose with or without fee is hereby granted.

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REGARD TO THIS SOFTWARE INCLUDING ALL IMPLIED WARRANTIES OF MERCHANTABILITY
AND FITNESS. IN NO EVENT SHALL THE AUTHOR BE LIABLE FOR ANY SPECIAL, DIRECT,
INDIRECT, OR CONSEQUENTIAL DAMAGES OR ANY DAMAGES WHATSOEVER RESULTING FROM
LOSS OF USE, DATA OR PROFITS, WHETHER IN AN ACTION OF CONTRACT, NEGLIGENCE OR
OTHER TORTIOUS ACTION, ARISING OUT OF OR IN CONNECTION WITH THE USE OR
PERFORMANCE OF THIS SOFTWARE.
***** */
```

Found in path(s):

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* /opt/cola/permits/1358260638_1657134870.9548028/0/common-11-0-2-tgz/package/bundles/common-testing.umd.js
* /opt/cola/permits/1358260638_1657134870.9548028/0/common-11-0-2-tgz/package/bundles/common-http.umd.js
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* /opt/cola/permits/1358260638_1657134870.9548028/0/common-11-0-2-tgz/package/bundles/common.umd.min.js
No license file was found, but licenses were detected in source scan.
```

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```

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vD73B,KAAY3B,qBACLz3B,KAAY6F,OAAOiyB,SAASD,EAAS,GAAIA,EAAS,KAOndV,EAawB12B,UAAU82B,eAAiB,SAAUC,GACzD,GAAIh4B,KAAY3B,oBAAqB,CAC1B,IAAIQ,EAAaj4B,KAAYq3B,SAASa,eAAeF,IAAWH4B,KAAYq3B,SAASc,kBAakBH,GAAQ,GAC7FC,GACAj4B,KAAYk4B,gBAAGBH,KAOjCd,EAAwB12B,UAAUo3B,4BAA8B,SAAUC,GACtE,GAAIt4B,KAAYk4B,2BAA4B,CACjC,IAAIzyB,EAAU9F,KAAY6F,OAAOC,QACtBA,GAAWA,EAAQwyB,oBACnBxyB,EAAQwyB,kBAAoBA,KAIxCnB,EAAwB12B,UAAUm3B,gBAakB,SAAUI,GAC1D,IAAIC,EAAOD,EAAGE,wBACVC,EAAOF,EAKE,KAAO34B,KAAY6F,OAAO+yB,YAC/BC,EAAMJ,EAAKI,IAAM74B,KAAY6F,OAAOizB,YAC7B1b,EAASpd,KAAYKod,SAC1Bpd,KAAY6F,OAAOiyB,SAASa,EAAOvb,EAAO,GAAIyb,EAAMzb,EAAO,KAUXD+Z,EAawB12B,UAAUs3B,yBAA2B,WACzD,IACI,IAAY4B,KAAY6F,SAAW7F,KAAY6F,OAAOiyB,SAC7B,OAAO,EAGX,IAAIiB,EAA8BC,GAA6Bh5B,KAAY6F,OAAOC,UACvEkzB,GAA6Bx4B,OAAOy4B,eAAej5B,KAAY6F,OAAOC,UAGnE,SAASizB,IACFA,EAA4BG,WAAYH,EAA4B/zB,KAEE,MAAOmR,GACH,OAAO,IAGfghB,EAawB12B,UAAUw2B,kBAAoB,WACID,IACI,QAASz3B,KAAY6F,OAAOiyB,SAEZB,MAAO3hB,GACH,OAAO,IAGrghB,EAZGiC,GA2G5C,SAAS6B,GAA6B7F,GACIC,OAAO3yB,OAAO24B,yBAAyBhG,EAAY,qBAKHd,IAAIiG,GAAcS,WACtC,SAA SA,KAwBT,OAnBAA,EAAqBn4B,UAAUs2B,UAAy,SAAUna,KAIrDgc,EAAqBn4B,UAAUu2B,kBAAoB,WAC/C,MAAO,CAAC,EAAG,IAKf4B,EAAqBn4B,UAAU22B,iBAAmB,SAAUC,KAI5DuB,EAAqBn4B,UAAU82B,eAAiB,SAAUC,KAI1DoB,EAAqBn4B,UAAUo3B,4BAA8B,SAAUC,KACHec,EAZB8B;;;;;;;OAYDzC75B,EAAQ8H,cAAgBA,EACxB9H,EAAQozB,UAAyA,GACpBpzB,EAAQk3B,aAAeA,GACvB13B,EAAQ42B,aAAeA,GACvB52B,EAAQid,SAAWA,EACnBjd,EAAQ60B,SAAWA,GACnB70B,EAAQu2B,YAAcA,GACtBv2B,EAAQOI,qBAAuBA,EAC/B1I,EAAQg1B,eAAiBA,GACzBh1B,EAAQm1B,eAAiBA,GACzBn1B,EAAQq1B,SAAWA,GACnBr1B,EAAQs1B,aAAeA,GACvBt1B,EAAQgE,qBAAuBA,EAC/BhE,EAAQ2I,SAAWA,EACnB3I,EAAQ+D,iBAAmBA,EAC3B/D,EAAQs0B,cAAgBA,GACxBt0B,EAAQmmB,QAAUA,GACIBnmB,EAAQgpB,kBAAoBA,GAC5BhpB,EAAQ4qB,QAAUA,GACIB5qB,EAAQuqB,eAAiBA,GACzBvqB,EAAQitB,KAAOA,GACfjtB,EAAQotB,YAAcA,GACtBptB,EAAQ4IB,qBAAuBA,GAC/B5IB,EAAQ4gB,eAAiBA,GACzB5gB,EAAQ2vB,SAAWA,GACnB3vB,EAAQ0vB,aAAeA,GACvB1vB,EAAQwwB,QAAUA,GACIBxwB,EAAQuB,SAAWA,GACnBruB,EAAQqvB,aAAeA,GACvBrvB,EAAQovB,gBAakBA,GAC1BpvB,EAAQixB,iBAAmBA,GAC3BjxB,EAAQyH,qBAAuBA,EAC/BzH,EAAQ22B,YAAcA,GACtB32B,EAAQgD,iBAAmBA,EAC3BhD,EAAQg3B,UAAyA,GACpBh3B,EAAQy0B,cAAgBA,GACxBz0B,EAAQ40B,cAAgBA,GACxB50B,EAAQ03B,QAAUA,GACIB13B,EAAQy3B,iBAAmBA,GAC3Bz3B,EAAQqkB,eAAiBA,GACzBrkB,EAAQ+X,WAAaA,GACrB/X,EAAQ6kB,aAAeA,GACvB7kB,EAAQykB,cAAgBA,GACxBzkB,EAAQgX,kBAAoBA,EAC5BhX,EAAQ85B,sBA/gIR,SAASA,GAAcBnmB,GAC3B,OAAOjT,EAAQq5B,uBAAuBpmB,IA+gIRc3T,EAAQg6B,sBA9hIR,SAASA,GAAcBrmB,GAE3B,OADWjT,EAAGkT,gBAAGBD,GACIBjT,EAAGmT,iBAAiBomB,eAAiB,MA6hIrDj6B,EAAQk6B,wBA7iIR,SAASA,GAAwBvmB,GAE7B,OADWjT,EAAGkT,gBAAGBD,GACIBjT,EAAGmT,iBAAiBsmB,iBAAmB,MA4iIvDn6B,EAAQiv,oBAAsBA,EAC9BjV,EAAQqV,wBAA0BA,EACICrV,EAAQuU,kBAAoBA,EAC5BvU,EAAQ+T,oBAAsBA,EAC9B/T,EAAQo6B,mBA37HR,SAASA,GAAmBzmB,GAExB,OADWjT,EAAGkT,gBAAGBD,GACIBjT,EAAGmT,iBAAiBwmB,iBA07HpCr6B,EAAQ+U,kBAAoBA,EAC5B/U,EAAQqW,6BAA+BA,EACvCrW,EAAQyW,yBAA2BA,EACnCzW,EAAQs6B,wBA9rIR,SAASA,GAAwB3mB,GAE7B,OADWjT,EAAGkT,gBAAGBD,GACIBjT,EAAGmT,iBAAiB0mB,iBA6rIpCv6B,EAAQ0T,YAAcA,EACtB1T,EAAQ2U,oBAAsBA,EAC9B3U,EAAQ+V,sBAAwBA,EACChC/V,EAAQuV,sBAAwBA,EACChCvV,EAAQiw,oBAAsBA,EAC9BjW,EAAQmV,oBAAsBA,EAC9BnV,EAAQw6B,sBAxrIR,SAASA,GAAcB7mB,GAE3B,OADWjT,EAAGkT,gBAAGBD,GACIBjT,EAAGmT,iBAAiB4mB,eAurIpCz6B,EAAQuX,0BAA4BA,EACpCvX,EAAQ06B,kBA3SR,SAASA,GAAkBC,GACvB,MATsB,YASfA,GA2SX36B,EAAQ46B,iBArSR,SAASA,GAAiBD,GACtB,MAfqB,WAEaA,GAAqSX36B,EAAQ66B,oBA/RR,SAASA,GAAoBF,GACzB,MArByB,qBAqBlBA,GA+RX36B,EAAQ86B,mBAzRR,SAASA,GAAmBH,GACxB,MA3BwB,oBA2BjBA,GAYRX36B,EAAQ+6B;;;;;AAxuFR,SAASA,GAAmB7mB,EAAMwF,EAAUshB,GACxC,OAAOt6B,EAAGu6B,oBAAoB/mB,EAAMwF,EAAUshB;;;;;QAWuFIDh7B,EAAQk7B,yBAA2B73B,EACnCrD,EAAQm7B,YAAct6B,EACtBb,EAAQo7B,sBAAwBvB,GACCh75B,EAAQq7B,qBA3TkB,UA4T1Br7B,EAAQs7B,oBA3TiB,SA4TzB7B,EAAQu7B,wBA3TqB,mBA4T7Bv7B,EAAQw7B,uBA3ToB,kBA4T5Bx7B,EAAQy7B,kCAAoCt4B,EAC5CnD,EAAQ07B,kCAAoC11B,EAC5CxG,EAAQ27B,kCAAoCrxB,EAC5CtK,EAAQ47B,kCAAoCr0B,EAC5CvH,EAAQ67B,kCAAoCvJ,GAC5CtyB,EAAQ87B,kCAAoC3E,G

AC5Cn3B,EAAQ+7B,QAAUn7B,EACIBZ,EAAQg8B,kBA5uFR,SAASC,GAAiBC,EAAWve,GACjC,IAAI+T,EA  
AK9a,EACT+G,EAAOwe,mBAAmBxe,GAC1B,IACI,IAAK,IAAIuU,EAAKtwB,EAASs6B,EAAUr1B,MAAM,M  
AAOsb,EAAKD,EAAG7vB,QAAS8vB,EAAG5vB,KAAM4vB,EAAKD,EAAG7vB,OAAQ,CACpF,IAAI+5B,EA  
ASjK,EAAG7vB,MACZ+5B,EAAUD,EAAOta,QAAQ,KACzBwa,EAAK75B,GAAMb,GAAZ45B,EAAGb,CAA  
CD,EAAQ,IAAM,CAACA,EAAOh1B,MAAM,EAAGi1B,GAAUD,EAAOh1B,MAAMi1B,EAAU,IAAK,GAAwB  
E,EAACd,EAAG,GAC/I,GADuHA,EAAG,GAC3GhkB,SAAWqF,EACTb,OAAO6e,mBAAmBD,IAItC,MAAOxK  
,GAASL,EAAM,CAAE3uB,MAAOgvB,GAC/B,QACI,IACQI,IAAOA,EAAG5vB,OAASqU,EAAKsb,EAAGF,S  
AASpb,EAAGzU,KAAK+vB,GAEPd,QAAU,GAAIR,EAAK,MAAMA,EAAl3uB,OAejC,OAAO,MAyFX/C,EA  
AQy8B,mBAvmLR,SAASC,GAakBC,GACIBh8B,IACDA,EAAOg8B,IAumLf17B,OAAO+D,eAAehF,EAAS,aA  
Ac,CAAESc,OAAO","sourcesContent":["/\*\*\n \* @license Angular v11.0.2\n \* (c) 2010-2020 Google LLC.

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https://angular.io/\n * License: MIT\n *\n(function (global, factory) {\n typeof exports === 'object' && typeof\n module !== 'undefined' ? factory(exports, require('@angular/core')) :\n typeof define === 'function' &&\n define.amd ? define('@angular/common', ['exports', '@angular/core'], factory) :\n (global = global || self,\n factory((global.ng = global.ng || {}), global.ng.common = {}), global.ng.core));\n})(this, (function (exports, i0) {\n 'use\n strict';\n\n /**\n * @license\n * Copyright Google LLC All Rights Reserved.\n *\n * Use of this source\n code is governed by an MIT-style license that can be\n * found in the LICENSE file at https://angular.io/license\n\n *\n var _DOM = null;\n function getDOM() {\n return _DOM;\n }\n function setDOM(adapter) {\n _DOM = adapter;\n }\n function setRootDomAdapter(adapter) {\n if (!_DOM) {\n _DOM =\n adapter;\n }\n }\n\n /* tslint:disable:requireParameterType *\n /**\n * Provides DOM operations in an\n environment-agnostic way.\n *\n * @security Tread carefully! Interacting with the DOM directly is dangerous\n and\n * can introduce XSS risks.\n *\n var DomAdapter = /** @class */ (function () {\n function\n DomAdapter() {\n }\n\n return DomAdapter;\n });\n\n /*!
```

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ACTION OF CONTRACT, NEGLIGENCE OR\n OTHER TORTIOUS ACTION, ARISING OUT OF OR IN  
CONNECTION WITH THE USE OR\n PERFORMANCE OF THIS SOFTWARE.\n\n

```
***** *\n /* global
Reflect, Promise *\n var extendStatics = function (d, b) {\n extendStatics = Object.setPrototypeOf ||\n ({ __proto__: [] } instanceof Array && function (d, b) { d.__proto__ = b; }) ||\n function (d, b) { for (var p in\n b)\n if (b.hasOwnProperty(p))\n d[p] = b[p];\n }; return extendStatics(d, b);\n\n function __extends(d, b) {\n extendStatics(d, b);\n function __() { this.constructor = d; }\n d.prototype\n = b === null ? Object.create(b) : (__proto__ = b.prototype, new __());\n }\n\n var __assign = function () {\n __assign = Object.assign || function __assign(t) {\n for (var s, i = 1, n = arguments.length; i < n; i++) {\n s = arguments[i];\n for (var p in s)\n if (Object.prototype.hasOwnProperty.call(s, p))\n t[p] = s[p];\n }\n return t;\n }; return __assign.apply(this, arguments);\n }\n\n function __rest(s, e) {\n var t = {};\n for (var p in s)\n if (Object.prototype.hasOwnProperty.call(s, p)\n && e.indexOf(p) < 0)\n t[p] = s[p];\n if (s != null && typeof Object.getOwnPropertySymbols ===\n \"function\")\n for (var i = 0, p = Object.getOwnPropertySymbols(s); i < p.length; i++) {\n if\n (e.indexOf(p[i]) < 0 && Object.prototype.propertyIsEnumerable.call(s, p[i]))\n t[p[i]] = s[p[i]];\n }\n return t;\n }\n\n function __decorate(decorators, target, key, desc) {\n var c = arguments.length, r = c\n < 3 ? target : desc === null ? desc = Object.getOwnPropertyDescriptor(target, key) : desc, d;\n if (typeof Reflect\n === \"object\" && typeof Reflect.decorate === \"function\")\n r = Reflect.decorate(decorators, target, key,\n desc);\n else\n for (var i = decorators.length - 1; i >= 0; i--)\n if (d = decorators[i])\n
```

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r = (c < 3 ? d(r) : c > 3 ? d(target, key, r) : d(target, key)) || r;
return c > 3 && r &&
Object.defineProperty(target, key, r, r);
function __param(paramIndex, decorator) {
return function
(target, key) { decorator(target, key, paramIndex); };
}
function __metadata(metadataKey, metadataValue)
{
if (typeof Reflect === "object" && typeof Reflect.metadata === "function")
return
Reflect.metadata(metadataKey, metadataValue);
}
function __awaiter(thisArg, _arguments, P, generator) {
function adopt(value) { return value instanceof P ? value : new P(function (resolve) { resolve(value); }); }
return new (P || (P = Promise))(function (resolve, reject) {
function fulfilled(value) { try {
step(generator.next(value));
} catch (e) { reject(e); } }
function
rejected(value) { try {
step(generator["throw"](value));
} catch (e) {
reject(e);
} }
function step(result) { result.done ? resolve(result.value) :
adopt(result.value).then(fulfilled, rejected); }
step((generator = generator.apply(thisArg, _arguments ||
[])).next());
});
}
function __generator(thisArg, body) {
var _ = { label: 0, sent: function () { if
(t[0] & 1)
throw t[1]; return t[1]; }, trys: [], ops: [] }, f, y, t, g;
return g = { next: verb(0), "throw":
verb(1), "return": verb(2) }, typeof Symbol === "function" && (g[Symbol.iterator] = function () { return this; }),
g;
function verb(n) { return function (v) { return step([n, v]); }; }
function step(op) {
if (f)
throw new TypeError("Generator is already executing.");
while (_)
try {
if
(f = 1, y && (t = op[0] & 2 ? y["return"] : op[0] ? y["throw"] || ((t = y["return"]) && t.call(y, 0) : y.next) &&
!(t = t.call(y, op[1])).done)
return t;
if (y = 0, t)
op = [op[0] & 2,
t.value];
switch (op[0]) {
case 0:
case 1:
t = op;
break;
case 4:
_label++;
return { value: op[1],
done: false };
case 5:
_label++;
y = op[1];
op = [0];
continue;
case 7:
op = _ops.pop();
_ops.pop();
continue;
default:
if (!(t = _trys, t = t.length > 0
&& t[t.length - 1]) && (op[0] === 6 || op[0] === 2)) {
_ = 0;
continue;
}
if (op[0] === 3 && (!t || (op[1] > t[0] && op[1] < t[3]))) {
_label = op[1];
break;
}
if (op[0] === 6 && _label <
t[1]) {
_label = t[1];
t = op;
break;
}
if (t && _label < t[2]) {
_label = t[2];
_ops.push(op);
break;
}
if (t[2])
_ops.pop();
_trys.pop();
continue;
}
}
}
catch (e) {
op = [6, e];
y = 0;
}
finally {
f = t = 0;
if (op[0] & 5)
throw op[1];
return { value: op[0] ? op[1] : void 0, done: true };
}
}
var __createBinding = Object.create ? (function
(o, m, k, k2) {
if (k2 === undefined)
k2 = k;
Object.defineProperty(o, k2, { enumerable: true,
get: function () { return m[k]; } });
})(function (o, m, k, k2) {
if (k2 === undefined)
k2 = k;
o[k2] = m[k];
});
function __exportStar(m, exports) {
for (var p in m)
if (p !== "default"
&& !exports.hasOwnProperty(p))
__createBinding(exports, m, p);
}
function __values(o) {
var s = typeof Symbol === "function" && Symbol.iterator, m = s && o[s], i = 0;
if (m)
return
m.call(o);
if (o && typeof o.length === "number")
return {
next: function () {
if (o && i >= o.length)
o = void 0;
return { value: o && o[i++], done: !o };
}
};
throw new TypeError(s ? "Object is not iterable." : "Symbol.iterator is not defined.");
}
function __read(o, n) {
var m = typeof Symbol === "function" && o[Symbol.iterator];
if (!m)
return o;
var i = m.call(o), ar = [], e;
try {
while ((n === void 0 || n-- > 0) && !(r =
i.next()).done)
ar.push(r.value);
} catch (error) {
e = { error: error };
}
finally {
try {
if (r && !r.done && (m = i["return"]))
m.call(i);
}
finally {
if (e)
throw e.error;
}
}
return ar;
}
function __spread() {
for (var ar = [], i = 0; i < arguments.length; i++)
ar = ar.concat(__read(arguments[i]));
return ar;
}
function __spreadArrays() {
for (var s = 0, i = 0, il = arguments.length; i < il; i++)

```

```

 s += arguments[i].length;\n for (var r = Array(s), k = 0, i = 0; i < il; i++)\n for (var a = arguments[i], j
= 0, jl = a.length; j < jl; j++, k++)\n r[k] = a[j];\n return r;\n };\n function __await(v) {\n
return this instanceof __await ? (this.v = v, this) : new __await(v);\n };\n function __asyncGenerator(thisArg,
_arguments, generator) {\n if (!Symbol.asyncIterator)\n throw new TypeError("Symbol.asyncIterator is
not defined.");\n var g = generator.apply(thisArg, _arguments || []), i, q = [];\n return i = {}, verb("next"),
verb("throw"), verb("return"), i[Symbol.asyncIterator] = function () { return this; }, i;\n function verb(n) { if
(g[n])\n i[n] = function (v) { return new Promise(function (a, b) { q.push([n, v, a, b]) > 1 || resume(n, v); }); };\n
 function resume(n, v) { try {\n step(g[n](v));\n } catch (e) {\n settle(q[0][3], e);\n
 } }\n function step(r) { r.value instanceof __await ? Promise.resolve(r.value.v).then(fulfill, reject) :
settle(q[0][2], r); }\n function fulfill(value) { resume("next", value); }\n function reject(value) {\n
resume("throw", value); }\n function settle(f, v) { if (f(v), q.shift(), q.length)\n resume(q[0][0], q[0][1]);
}\n };\n function __asyncDelegator(o) {\n var i, p;\n return i = {}, verb("next"), verb("throw"),
function (e) { throw e; }, verb("return"), i[Symbol.iterator] = function () { return this; }, i;\n function verb(n,
f) { i[n] = o[n] ? function (v) { return (p = !p) ? { value: __await(o[n](v)), done: n === "return" } : f ? f(v) : v; } : f;
}\n };\n function __asyncValues(o) {\n if (!Symbol.asyncIterator)\n throw new
TypeError("Symbol.asyncIterator is not defined.");\n var m = o[Symbol.asyncIterator], i;\n return m ?
m.call(o) : (o = typeof __values === "function" ? __values(o) : o[Symbol.iterator](), i = {}, verb("next"),
verb("throw"), verb("return"), i[Symbol.asyncIterator] = function () { return this; }, i);\n function verb(n) {\n
i[n] = o[n] && function (v) { return new Promise(function (resolve, reject) { v = o[n](v), settle(resolve, reject,
v.done, v.value); }); };\n function settle(resolve, reject, d, v) { Promise.resolve(v).then(function (v) {\n
resolve({ value: v, done: d }); }, reject); }\n }\n function __makeTemplateObject(cooked, raw) {\n if
(Object.defineProperty) {\n Object.defineProperty(cooked, "raw", { value: raw });\n } else {\n
cooked.raw = raw;\n }\n return cooked;\n };\n ;\n var __setModuleDefault = Object.create ?
(function (o, v) {\n Object.defineProperty(o, "default", { enumerable: true, value: v });\n }) : function (o, v)
{\n o["default"] = v;\n };\n function __importStar(mod) {\n if (mod && mod.__esModule)\n return mod;\n var result = {};\n if (mod != null)\n for (var k in mod)\n if
(Object.hasOwnProperty.call(mod, k))\n __createBinding(result, mod, k);\n __setModuleDefault(result, mod);\n return result;\n };\n function __importDefault(mod) {\n return (mod
&& mod.__esModule) ? mod : { default: mod };\n };\n function __classPrivateFieldGet(receiver, privateMap)
{\n if (!privateMap.has(receiver))\n throw new TypeError("attempted to get private field on non-
instance");\n return privateMap.get(receiver);\n };\n function __classPrivateFieldSet(receiver, privateMap, value) {\n
if (!privateMap.has(receiver))\n throw new TypeError("attempted to set private field on non-instance");\n privateMap.set(receiver, value);\n return value;\n };\n\n /**\n *
@license\n * Copyright Google LLC All Rights Reserved.\n * Use of this source code is governed by an
MIT-style license that can be\n * found in the LICENSE file at https://angular.io/license\n */\n\n * A
DI Token representing the main rendering context. In a browser this is the DOM Document.\n * Note:
Document might not be available in the Application Context when Application and Rendering\n * Contexts are
not the same (e.g. when running the application in a Web Worker).\n * @publicApi\n */\n var
DOCUMENT = new i0.InjectionToken('DocumentToken');\n\n /**\n * This class should not be used directly by
an application developer. Instead, use\n * {@link Location}.\n * `PlatformLocation` encapsulates all
calls to DOM APIs, which allows the Router to be\n * platform-agnostic.\n * This means that we can have
different implementation of `PlatformLocation` for the different\n * platforms that Angular supports. For
example, `@angular/platform-browser` provides an\n * implementation specific to the browser environment,
while `@angular/platform-server` provides\n * one suitable for use with server-side rendering.\n * The
`PlatformLocation` class is used directly by all implementations of {@link LocationStrategy}\n * when they need
to interact with the DOM APIs like pushState, popState, etc.\n * {@link LocationStrategy} in turn is used
by the {@link Location} service which is used directly\n * by the {@link Router} in order to navigate between
routes. Since all interactions between {@link\n * Router} /\n * {@link Location} / {@link LocationStrategy}

```

```

and DOM APIs flow through the `PlatformLocation` class, they are all platform-agnostic.

/**
 * @publicApi
 */
var PlatformLocation = /** @class */ (function () {
 function PlatformLocation() {}
 return PlatformLocation;
})();
PlatformLocation.prototype = i0.defineInjectable({
 factory: useBrowserPlatformLocation,
 token: PlatformLocation,
 providedIn: "platform"
});

PlatformLocation.decorators = [
 { type: i0.Injectable, args: [
 { providedIn: 'platform',
 // See #23917
 useFactory: useBrowserPlatformLocation
 }
]
},
 { type: i0.Injectable, args: [
 { providedIn: 'platform',
 // See #23917
 useFactory: useBrowserPlatformLocation
 }
]
}
];

function useBrowserPlatformLocation() {
 return i0.inject(BrowserPlatformLocation);
}

/**
 * @description
 * Indicates when a location is initialized.
 */
/**
 * @publicApi
 */
var LOCATION_INITIALIZED = new i0.InjectionToken('Location Initialized');

/**
 * `PlatformLocation` encapsulates all of the direct calls to platform APIs.
 * This class should not be used directly by an application developer.
 * Instead, use
 *
 * @link Location
 */
var BrowserPlatformLocation = /** @class */ (function (_super) {
 __extends(BrowserPlatformLocation, _super);
 function BrowserPlatformLocation(_doc) {
 var _this = _super.call(this) || this;
 _this._doc = _doc;
 _this._init();
 return _this;
 }
 // This is moved to its own method so that `MockPlatformLocationStrategy` can overwrite it
 /**
 * @internal
 */
 BrowserPlatformLocation.prototype._init = function () {
 this.location = getDOM().getLocation();
 this._history = getDOM().getHistory();
 };
 BrowserPlatformLocation.prototype.getBaseHrefFromDOM = function () {
 return getDOM().getBaseHref(this._doc);
 };
 BrowserPlatformLocation.prototype.onPopState = function (fn) {
 getDOM().getGlobalEventTarget(this._doc, 'window').addEventListener('popstate', fn, false);
 };
 BrowserPlatformLocation.prototype.onHashChange = function (fn) {
 getDOM().getGlobalEventTarget(this._doc, 'window').addEventListener('hashchange', fn, false);
 };
 Object.defineProperty(BrowserPlatformLocation.prototype, "href", {
 get: function () {
 return this.location.href;
 },
 enumerable: false,
 configurable: true
 });
 Object.defineProperty(BrowserPlatformLocation.prototype, "protocol", {
 get: function () {
 return this.location.protocol;
 },
 enumerable: false,
 configurable: true
 });
 Object.defineProperty(BrowserPlatformLocation.prototype, "hostname", {
 get: function () {
 return this.location.hostname;
 },
 enumerable: false,
 configurable: true
 });
 Object.defineProperty(BrowserPlatformLocation.prototype, "port", {
 get: function () {
 return this.location.port;
 },
 enumerable: false,
 configurable: true
 });
 Object.defineProperty(BrowserPlatformLocation.prototype, "pathname", {
 get: function () {
 return this.location.pathname;
 },
 set: function (newPath) {
 this.location.pathname = newPath;
 },
 enumerable: false,
 configurable: true
 });
 Object.defineProperty(BrowserPlatformLocation.prototype, "search", {
 get: function () {
 return this.location.search;
 },
 enumerable: false,
 configurable: true
 });
 Object.defineProperty(BrowserPlatformLocation.prototype, "hash", {
 get: function () {
 return this.location.hash;
 },
 enumerable: false,
 configurable: true
 });
 BrowserPlatformLocation.prototype.pushState = function (state, title, url) {
 if (supportsState()) {
 this._history.pushState(state, title, url);
 } else {
 this.location.hash = url;
 }
 };
 BrowserPlatformLocation.prototype.replaceState = function (state, title, url) {
 if (supportsState()) {
 this._history.replaceState(state, title, url);
 } else {
 this.location.hash = url;
 }
 };
 BrowserPlatformLocation.prototype.forward = function () {
 this._history.forward();
 };
 BrowserPlatformLocation.prototype.back = function () {
 this._history.back();
 };
 BrowserPlatformLocation.prototype.getState = function () {
 return this._history.state;
 };
 return BrowserPlatformLocation;
})(PlatformLocation);

BrowserPlatformLocation.prototype = i0.defineInjectable({
 factory: createBrowserPlatformLocation,
 token: BrowserPlatformLocation,
 providedIn: "platform"
});

BrowserPlatformLocation.decorators = [
 { type: i0.Injectable, args: [
 { providedIn: 'platform',
 // See #23917
 useFactory: createBrowserPlatformLocation
 }
]
},
 { type: i0.Injectable, args: [
 { providedIn: 'platform',
 // See #23917
 useFactory: createBrowserPlatformLocation
 }
]
}
];

BrowserPlatformLocation.ctorParameters = function () {

```



```

return {\n { type: undefined, decorators: [{ type: i0.Inject, args: [DOCUMENT,] }] }\n];\n };\n function\n supportsState() {\n return !!window.history.pushState;\n }\n function createBrowserPlatformLocation() {\n return new BrowserPlatformLocation(i0.inject(DOCUMENT));\n }\n /**\n * @license\n * Copyright\n * Google LLC All Rights Reserved.\n * Use of this source code is governed by an MIT-style license that can\n * be\n * found in the LICENSE file at https://angular.io/license\n */\n /**\n * @license\n * Copyright\n * Google LLC All Rights Reserved.\n * Use of this source code is governed by an MIT-style license that can\n * be\n * found in the LICENSE file at https://angular.io/license\n */\n /**\n * Joins two parts of a URL with\n * a slash if needed.\n * @param start URL string\n * @param end URL string\n * @returns The joined URL string.\n */\n function joinWithSlash(start, end) {\n if (start.length == 0) {\n return end;\n }\n if (end.length == 0) {\n return start;\n }\n var slashes = 0;\n if\n (start.endsWith('/')) {\n slashes++;\n }\n if (end.startsWith('/')) {\n slashes++;\n }\n if\n (slashes == 2) {\n return start + end.substring(1);\n }\n if (slashes == 1) {\n return start +\n end;\n }\n return start + '/' + end;\n }\n /**\n * Removes a trailing slash from a URL string if\n * needed.\n * Looks for the first occurrence of either `#`, `?`, or the end of the\n * line as `^` characters and\n * removes the trailing slash if one exists.\n * @param url URL string.\n * @returns The URL string,\n * modified if needed.\n */\n function stripTrailingSlash(url) {\n var match = url.match(/#\\|\\?$/);\n var\n pathEndIdx = match && match.index || url.length;\n var droppedSlashIdx = pathEndIdx - (url[pathEndIdx - 1]\n === '/' ? 1 : 0);\n return url.slice(0, droppedSlashIdx) + url.slice(pathEndIdx);\n }\n /**\n * Normalizes\n * URL parameters by prepending with `?` if needed.\n * @param params String of URL parameters.\n * @returns The normalized URL parameters string.\n */\n function normalizeQueryParams(params) {\n return params && params[0] !== '?' ? '?' + params : params;\n }\n /**\n * Enables the `Location` service to\n * read route state from the browser's URL.\n * Angular provides two strategies: `HashLocationStrategy` and\n * `PathLocationStrategy`.\n * Applications should use the `Router` or `Location` services to\n * interact\n * with application route state.\n * For instance, `HashLocationStrategy` produces URLs like\n * <code\n * class=\"no-auto-link\">http://example.com#/foo</code>,\n * and `PathLocationStrategy` produces\n * <code\n * class=\"no-auto-link\">http://example.com/foo</code> as an equivalent URL.\n * See these two classes for\n * more.\n * @publicApi\n */\n var LocationStrategy = /** @class */ (function () {\n function\n LocationStrategy() {\n }\n return LocationStrategy;\n })();\n LocationStrategy.prototype =\n i0.defineInjectable({ factory: provideLocationStrategy, token: LocationStrategy, providedIn: \"root\" });\n LocationStrategy.decorators = [\n { type: i0.Injectable, args: [{ providedIn: 'root', useFactory:\n provideLocationStrategy, }] }\n];\n function provideLocationStrategy(platformLocation) {\n // See\n #23917\n var location = i0.inject(DOCUMENT).location;\n return new\n PathLocationStrategy(i0.inject(PlatformLocation), location && location.origin || \"");\n }\n /**\n * A\n * predefined [DI token](guide/glossary#di-token) for the base href\n * to be used with the `PathLocationStrategy`.\n * The base href is the URL prefix that should be preserved when generating\n * and recognizing URLs.\n * @usageNotes\n * The following example shows how to use this token to configure the root app\n * injector\n * with a base href value, so that the DI framework can supply the dependency anywhere in the app.\n * ```typescript\n * import { Component, NgModule } from '@angular/core';\n * import\n * { APP_BASE_HREF } from '@angular/common';\n * @NgModule({\n * providers: [{ provide:\n * APP_BASE_HREF, useValue: '/my/app' }]\n * })\n * class AppModule {\n * ```\n * @publicApi\n * *\n * var APP_BASE_HREF = new i0.InjectionToken('appBaseHref');\n * /**\n * * @description\n * * A\n * * {@link LocationStrategy} used to configure the {@link Location} service to\n * * represent its state in the\n * * [path](https://en.wikipedia.org/wiki/Uniform_Resource_Locator#Syntax) of the\n * * browser's URL.\n * * If you're using `PathLocationStrategy`, you must provide a {@link APP_BASE_HREF}\n * * or add a `<base\n * * href>` element to the document.\n * * For instance, if you provide an `APP_BASE_HREF` of `'/my/app/'`\n * * and call\n * * `location.go('/foo')`, the browser's URL will become\n * * `example.com/my/app/foo`. To ensure all\n * * relative URIs resolve correctly,\n * * the `<base href>` and/or `APP_BASE_HREF` should end with a `^`.\n * * Similarly, if you add `<base href='/my/app/'>` to the document and call\n * * `location.go('/foo')`, the browser's

```

URL will become``example.com/my/app/foo`.`` Note that when using `PathLocationStrategy`, neither the query nor``the fragment in the`<base href>` will be preserved, as outlined`by the [RFC](https://tools.ietf.org/html/rfc3986#section-5.2.2).``

```

@usageNotes
Example
{
 @example common/location/ts/path_location_component.ts region='LocationComponent'
}
@publicApi
var PathLocationStrategy = /** @class */ (function (_super) {
 __extends(PathLocationStrategy, _super);
 function PathLocationStrategy(_platformLocation, href) {
 var _this = _super.call(this) || this;
 _this._platformLocation = _platformLocation;
 if (href == null) {
 href = _this._platformLocation.getBaseHrefFromDOM();
 }
 if (href == null) {
 throw new Error("No base href set. Please provide a value for the APP_BASE_HREF token or add a base element to the document.");
 }
 _this._baseHref = href;
 return _this;
 }
 PathLocationStrategy.prototype.onPopState = function (fn) {
 this._platformLocation.onPopState(fn);
 this._platformLocation.onHashChange(fn);
 };
 PathLocationStrategy.prototype.getBaseHref = function () {
 return this._baseHref;
 };
 PathLocationStrategy.prototype.prepareExternalUrl = function (internal) {
 return joinWithSlash(this._baseHref, internal);
 };
 PathLocationStrategy.prototype.path = function (includeHash) {
 if (includeHash === void 0) {
 includeHash = false;
 }
 var pathname = this._platformLocation.pathname +
 normalizeQueryParams(this._platformLocation.search);
 var hash = this._platformLocation.hash;
 return hash && includeHash ? "" + pathname + hash : pathname;
 };
 PathLocationStrategy.prototype.pushState = function (state, title, url, queryParams) {
 var externalUrl = this.prepareExternalUrl(url + normalizeQueryParams(queryParams));
 this._platformLocation.pushState(state, title, externalUrl);
 };
 PathLocationStrategy.prototype.replaceState = function (state, title, url, queryParams) {
 var externalUrl = this.prepareExternalUrl(url + normalizeQueryParams(queryParams));
 this._platformLocation.replaceState(state, title, externalUrl);
 };
 PathLocationStrategy.prototype.forward = function () {
 this._platformLocation.forward();
 };
 PathLocationStrategy.prototype.back = function () {
 this._platformLocation.back();
 };
 return PathLocationStrategy;
})(LocationStrategy);
PathLocationStrategy.decorators = [
 { type: i0.Injectable }
];
PathLocationStrategy.ctorParameters = function () {
 return [
 { type: PlatformLocation },
 { type: String },
];
};
/**
 * @description
 * A {@link LocationStrategy} used to configure the {@link Location} service to represent its state in the [hash fragment](https://en.wikipedia.org/wiki/Uniform_Resource_Locator#Syntax) of the browser's URL.
 * For instance, if you call `location.go('/foo')`, the browser's URL will become `example.com#/foo`.
 * @usageNotes
 * ### Example
 * {
 * @example common/location/ts/hash_location_component.ts region='LocationComponent'
 * }
 * @publicApi
 * var HashLocationStrategy = /** @class */ (function (_super) {
 * __extends(HashLocationStrategy, _super);
 * function HashLocationStrategy(_platformLocation, _baseHref) {
 * var _this = _super.call(this) || this;
 * _this._platformLocation = _platformLocation;
 * _this._baseHref = "";
 * if (_baseHref != null) {
 * _this._baseHref = _baseHref;
 * }
 * return _this;
 * }
 * HashLocationStrategy.prototype.onPopState = function (fn) {
 * this._platformLocation.onPopState(fn);
 * this._platformLocation.onHashChange(fn);
 * };
 * HashLocationStrategy.prototype.getBaseHref = function () {
 * return this._baseHref;
 * };
 * HashLocationStrategy.prototype.path = function (includeHash) {
 * if (includeHash === void 0) {
 * includeHash = false;
 * }
 * // the hash value is always prefixed with a `#`
 * // and if it is empty then it will stay empty
 * var path = this._platformLocation.hash;
 * if (path == null)
 * path = '#';
 * return path.length > 0 ? path.substring(1) : path;
 * };
 * HashLocationStrategy.prototype.prepareExternalUrl = function (internal) {
 * var url = joinWithSlash(this._baseHref, internal);
 * return url.length > 0 ? ('#' + url) : url;
 * };
 * HashLocationStrategy.prototype.pushState = function (state, title, path, queryParams) {
 * var url = this.prepareExternalUrl(path + normalizeQueryParams(queryParams));
 * if (url.length == 0)
 * url

```

```

= this._platformLocation.pathname;
 }
 this._platformLocation.pushState(state, title, url);
 };
 HashLocationStrategy.prototype.replaceState = function (state, title, path, queryParams) {
 var url = this.prepareExternalUrl(path + normalizeQueryParams(queryParams));
 if (url.length === 0) {
 url = this._platformLocation.pathname;
 }
 this._platformLocation.replaceState(state, title, url);
 };
 HashLocationStrategy.prototype.forward = function () {
 this._platformLocation.forward();
 };
 HashLocationStrategy.prototype.back = function () {
 this._platformLocation.back();
 };
 return HashLocationStrategy;
})(LocationStrategy);
HashLocationStrategy.decorators = [
 { type: i0.Injectable }
];
HashLocationStrategy.ctorParameters = function () {
 return [
 { type: PlatformLocation },
 { type: String, decorators: [
 { type: i0.Optional },
 { type: i0.Inject, args: [APP_BASE_HREF,] }
] }
];
};
/**
 * @license
 * Copyright Google LLC All Rights Reserved.
 *
 * Use of this source code is governed by an MIT-style license that can be
 * found in the LICENSE file at
 * https://angular.io/license
 *
 * @description
 *
 * A service that applications can use to interact with a browser's URL.
 *
 * Depending on the `LocationStrategy` used, `Location` persists to the URL's path or the URL's hash segment.
 *
 * @usageNotes
 *
 * It's better to use the `Router#navigate` service to trigger route changes. Use `Location` only if you need to interact with or create normalized URLs outside of routing.
 *
 * `Location` is responsible for normalizing the URL against the application's base href.
 *
 * A normalized URL is absolute from the URL host, includes the application's base href, and has no trailing slash:
 *
 * - `/my/app/user/123` is normalized
 * - `/my/app/user/123` is not normalized
 * - `/my/app/user/123/` is not normalized
 *
 * ### Example
 *
 * <code-example path='common/location/ts/path_location_component.ts' region='LocationComponent'></code-example>
 *
 * @publicApi
 *
 * var Location = /** @class */ (function () {
 function Location(platformStrategy, platformLocation) {
 var _this = this;
 /** @internal */
 this._subject = new i0.EventEmitter();
 /** @internal */
 this._urlChangeListeners = [];
 this._platformStrategy = platformStrategy;
 var browserBaseHref = this._platformStrategy.getBaseHref();
 this._platformLocation = platformLocation;
 this._baseHref = stripTrailingSlash(_stripIndexHtml(browserBaseHref));
 this._platformStrategy.onPopState(function (ev) {
 _this._subject.emit({
 'url': _this.path(true),
 'pop': true,
 'state': ev.state,
 'type': ev.type,
 });
 });
 }
 /**
 * Normalizes the URL path for this location.
 *
 * @param includeHash True to include an anchor fragment in the path.
 *
 * @returns The normalized URL path.
 *
 * // TODO: vsavkin. Remove the boolean flag and always include hash once the deprecated router is removed.
 */
 Location.prototype.path = function (includeHash) {
 if (includeHash === void 0) { includeHash = false; }
 return this.normalize(this._platformStrategy.path(includeHash));
 };
 /**
 * Reports the current state of the location history.
 *
 * @returns The current value of the `history.state` object.
 */
 Location.prototype.getState = function () {
 return this._platformLocation.getState();
 };
 /**
 * Normalizes the given path and compares to the current normalized path.
 *
 * @param path The given URL path.
 *
 * @param query Query parameters.
 *
 * @returns True if the given URL path is equal to the current normalized path, false otherwise.
 */
 Location.prototype.isCurrentPathEqualTo = function (path, query) {
 if (query === void 0) { query = ""; }
 return this.path() === this.normalize(path + normalizeQueryParams(query));
 };
 /**
 * Normalizes a URL path by stripping any trailing slashes.
 *
 * @param url String representing a URL.
 *
 * @returns The normalized URL string.
 */
 Location.prototype.normalize = function (url) {
 return Location.stripTrailingSlash(_stripBaseHref(this._baseHref, _stripIndexHtml(url)));
 };
 /**
 * Normalizes an external URL path.
 *
 * If the given URL doesn't begin with a leading slash ('/'), adds one before normalizing. Adds a hash if `HashLocationStrategy` is in use, or the `APP_BASE_HREF` if the `PathLocationStrategy` is in use.
 *
 * @param url String representing a URL.
 *
 * @returns A normalized platform-specific URL.
 */
 Location.prototype.prepareExternalUrl = function (url) {
 if (url && url[0] !== '/') {
 url = '/' +

```

```

url;\n }\n return this._platformStrategy.prepareExternalUrl(url);\n };\n // TODO: rename this
method to pushState\n /**\n * Changes the browser's URL to a normalized version of a given URL, and
pushes a\n * new item onto the platform's history.\n *\n * @param path URL path to normalize.\n * @param query Query parameters.\n * @param state Location history state.\n *\n */\n Location.prototype.go = function (path, query, state) {\n if (query === void 0) { query = "; }\n if (state
=== void 0) { state = null; }\n this._platformStrategy.pushState(state, "", path, query);\n };
this._notifyUrlChangeListeners(this.prepareExternalUrl(path + normalizeQueryParams(query)), state);\n };\n /**\n * Changes the browser's URL to a normalized version of the given URL, and replaces\n * the top
item on the platform's history stack.\n *\n * @param path URL path to normalize.\n * @param query
Query parameters.\n * @param state Location history state.\n */\n Location.prototype.replaceState =
function (path, query, state) {\n if (query === void 0) { query = "; }\n if (state === void 0) { state =
null; }\n this._platformStrategy.replaceState(state, "", path, query);\n };
this._notifyUrlChangeListeners(this.prepareExternalUrl(path + normalizeQueryParams(query)), state);\n };\n /**\n * Navigates forward in the platform's history.\n */\n Location.prototype.forward = function ()
{\n this._platformStrategy.forward();\n };
/**\n * Navigates back in the platform's history.\n */\n Location.prototype.back = function () {\n this._platformStrategy.back();\n };
/**\n * Registers a URL change listener. Use to catch updates performed by the Angular\n * framework that are not
detectable through "popstate" or "hashchange" events.\n *\n * @param fn The change handler function,
which take a URL and a location history state.\n */\n Location.prototype.onUrlChange = function (fn) {\n
 var _this = this;\n this._urlChangeListeners.push(fn);\n if (!this._urlChangeSubscription) {\n
 this._urlChangeSubscription = this.subscribe(function (v) {\n _this._notifyUrlChangeListeners(v.url,
v.state);\n });\n }\n };
/** @internal */\n Location.prototype._notifyUrlChangeListeners = function (url, state) {\n if (url === void 0) { url = "; }\n
 this._urlChangeListeners.forEach(function (fn) { return fn(url, state); });\n };
/**\n * Subscribes to
the platform's `popState` events.\n *\n * @param value Event that is triggered when the state history
changes.\n * @param exception The exception to throw.\n *\n * @returns Subscribed events.\n */\n Location.prototype.subscribe = function (onNext, onThrow, onReturn) {\n return
this._subject.subscribe({ next: onNext, error: onThrow, complete: onReturn });\n };
return Location;\n }());
/**\n * Normalizes URL parameters by prepending with `?` if needed.\n *\n * @param params
String of URL parameters.\n *\n * @returns The normalized URL parameters string.\n */\n Location.normalizeQueryParams = normalizeQueryParams;\n /**\n * Joins two parts of a URL with a slash if
needed.\n *\n * @param start URL string\n * @param end URL string\n *\n * @returns The
joined URL string.\n */\n Location.joinWithSlash = joinWithSlash;\n /**\n * Removes a trailing slash from
a URL string if needed.\n * Looks for the first occurrence of either `#`, `?`, or the end of the\n * line as `^`
characters and removes the trailing slash if one exists.\n *\n * @param url URL string.\n *\n * @returns
The URL string, modified if needed.\n */\n Location.stripTrailingSlash = stripTrailingSlash;\n Location.prov
= i0.defineInjectable({ factory: createLocation, token: Location, providedIn: "root" });\n Location.decorators =
[\n { type: i0.Injectable, args: [{\n providedIn: 'root',\n // See #23917\n useFactory: createLocation,\n },] }\n];\n Location.ctorParameters = function () { return [\n { type:
LocationStrategy },\n { type: PlatformLocation }\n] };
function createLocation() {\n return new
Location(i0.inject(LocationStrategy), i0.inject(PlatformLocation));\n }\n function _stripBaseHref(baseHref, url)
{\n return baseHref && url.startsWith(baseHref) ? url.substring(baseHref.length) : url;\n }\n function
_stripIndexHtml(url) {\n return url.replace(/\\/index.html$/, "");\n }\n /**\n * @license\n * Copyright
Google LLC All Rights Reserved.\n * Use of this source code is governed by an MIT-style license that can
be\n * found in the LICENSE file at https://angular.io/license\n */\n /**\n * @license\n * Copyright
Google LLC All Rights Reserved.\n * Use of this source code is governed by an MIT-style license that can
be\n * found in the LICENSE file at https://angular.io/license\n */\n /** @internal */\n var
CURRENCIES_EN = {\n 'ADP': [undefined, undefined, 0],\n 'AFN': [undefined, undefined, 0],\n

```

'ALL': [undefined, undefined, 0],\n 'AMD': [undefined, undefined, 2],\n 'AOA': [undefined, 'Kz'],\n 'ARS': [undefined, '\$'],\n 'AUD': ['A\$', '\$'],\n 'BAM': [undefined, 'KM'],\n 'BBD': [undefined, '\$'],\n 'BDT': [undefined, ''],\n 'BHD': [undefined, undefined, 3],\n 'BIF': [undefined, undefined, 0],\n 'BMD': [undefined, '\$'],\n 'BND': [undefined, '\$'],\n 'BOB': [undefined, 'Bs'],\n 'BRL': ['R\$'],\n 'BSD': [undefined, '\$'],\n 'BWP': [undefined, 'P'],\n 'BYN': [undefined, ',', 2],\n 'BYR': [undefined, undefined, 0],\n 'BZD': [undefined, '\$'],\n 'CAD': ['CA\$', '\$', 2],\n 'CHF': [undefined, undefined, 2],\n 'CLF': [undefined, undefined, 4],\n 'CLP': [undefined, '\$', 0],\n 'CNY': ['CN¥', '¥'],\n 'COP': [undefined, '\$', 2],\n 'CRC': [undefined, ',', 2],\n 'CUC': [undefined, '\$'],\n 'CUP': [undefined, '\$'],\n 'CZK': [undefined, 'K', 2],\n 'DJF': [undefined, undefined, 0],\n 'DKK': [undefined, 'kr', 2],\n 'DOP': [undefined, '\$'],\n 'EGP': [undefined, 'E£'],\n 'ESP': [undefined, ',', 0],\n 'EUR': ['€'],\n 'FJD': [undefined, '\$'],\n 'FKP': [undefined, '£'],\n 'GBP': ['£'],\n 'GEL': [undefined, ''],\n 'GIP': [undefined, '£'],\n 'GNF': [undefined, 'FG', 0],\n 'GTQ': [undefined, 'Q'],\n 'GYD': [undefined, '\$', 2],\n 'HKD': ['HK\$', '\$'],\n 'HNL': [undefined, 'L'],\n 'HRK': [undefined, 'kn'],\n 'HUF': [undefined, 'Ft', 2],\n 'IDR': [undefined, 'Rp', 2],\n 'ILS': [''],\n 'INR': [''],\n 'IQD': [undefined, undefined, 0],\n 'IRR': [undefined, undefined, 0],\n 'ISK': [undefined, 'kr', 0],\n 'ITL': [undefined, undefined, 0],\n 'JMD': [undefined, '\$'],\n 'JOD': [undefined, undefined, 3],\n 'JPY': ['¥', undefined, 0],\n 'KHR': [undefined, ''],\n 'KMF': [undefined, 'CF', 0],\n 'KPW': [undefined, ',', 0],\n 'KRW': ['', undefined, 0],\n 'KWD': [undefined, undefined, 3],\n 'KYD': [undefined, '\$'],\n 'KZT': [undefined, ''],\n 'LAK': [undefined, ''],\n 'LBP': [undefined, 'L£', 0],\n 'LKR': [undefined, 'Rs'],\n 'LRD': [undefined, '\$'],\n 'LTL': [undefined, 'Lt'],\n 'LUF': [undefined, undefined, 0],\n 'LVL': [undefined, 'Ls'],\n 'LYD': [undefined, undefined, 3],\n 'MGA': [undefined, 'Ar', 0],\n 'MGF': [undefined, undefined, 0],\n 'MMK': [undefined, 'K', 0],\n 'MNT': [undefined, ',', 2],\n 'MRO': [undefined, undefined, 0],\n 'MUR': [undefined, 'Rs', 2],\n 'MXN': ['MX\$', '\$'],\n 'MYR': [undefined, 'RM'],\n 'NAD': [undefined, '\$'],\n 'NGN': [undefined, ''],\n 'NIO': [undefined, 'C\$'],\n 'NOK': [undefined, 'kr', 2],\n 'NPR': [undefined, 'Rs'],\n 'NZD': ['NZ\$', '\$'],\n 'OMR': [undefined, undefined, 3],\n 'PHP': [undefined, ''],\n 'PKR': [undefined, 'Rs', 2],\n 'PLN': [undefined, 'z'],\n 'PYG': [undefined, ',', 0],\n 'RON': [undefined, 'lei'],\n 'RSD': [undefined, undefined, 0],\n 'RUB': [undefined, ''],\n 'RUR': [undefined, ',', ],\n 'RWF': [undefined, 'RF', 0],\n 'SBD': [undefined, '\$'],\n 'SEK': [undefined, 'kr', 2],\n 'SGD': [undefined, '\$'],\n 'SHP': [undefined, '£'],\n 'SLL': [undefined, undefined, 0],\n 'SOS': [undefined, undefined, 0],\n 'SRD': [undefined, '\$'],\n 'SSP': [undefined, '£'],\n 'STD': [undefined, undefined, 0],\n 'STN': [undefined, 'Db'],\n 'SYP': [undefined, '£', 0],\n 'THB': [undefined, ''],\n 'TMM': [undefined, undefined, 0],\n 'TND': [undefined, undefined, 3],\n 'TOP': [undefined, 'T\$'],\n 'TRL': [undefined, undefined, 0],\n 'TRY': [undefined, ''],\n 'TTD': [undefined, '\$'],\n 'TWD': ['NT\$', '\$', 2],\n 'TZS': [undefined, undefined, 2],\n 'UAH': [undefined, ''],\n 'UGX': [undefined, undefined, 0],\n 'USD': ['\$'],\n 'UYI': [undefined, undefined, 0],\n 'UYU': [undefined, '\$'],\n 'UYW': [undefined, undefined, 4],\n 'UZS': [undefined, undefined, 2],\n 'VEF': [undefined, 'Bs', 2],\n 'VND': ['', undefined, 0],\n 'VUV': [undefined, undefined, 0],\n 'XAF': ['FCFA', undefined, 0],\n 'XCD': ['EC\$', '\$'],\n 'XOF': ['CFA', undefined, 0],\n 'XPF': ['CFPF', undefined, 0],\n 'XXX': ['¤'],\n 'YER': [undefined, undefined, 0],\n 'ZAR': [undefined, 'R'],\n 'ZMK': [undefined, undefined, 0],\n 'ZMW': [undefined, 'ZK'],\n 'ZWD': [undefined, undefined, 0]\n };\n\n (function (NumberFormatStyle) {\n NumberFormatStyle[NumberFormatStyle["Decimal"] = 0] = "Decimal";\n NumberFormatStyle[NumberFormatStyle["Percent"] = 1] = "Percent";\n NumberFormatStyle[NumberFormatStyle["Currency"] = 2] = "Currency";\n NumberFormatStyle[NumberFormatStyle["Scientific"] = 3] = "Scientific";\n })(exports.NumberFormatStyle || (exports.NumberFormatStyle = {}));\n\n (function (Plural) {\n Plural[Plural["Zero"] = 0] = "Zero";\n Plural[Plural["One"] = 1] = "One";\n Plural[Plural["Two"] = 2] = "Two";\n Plural[Plural["Few"] = 3] = "Few";\n Plural[Plural["Many"] = 4] = "Many";\n Plural[Plural["Other"] = 5] = "Other";\n })(exports.Plural || (exports.Plural = {}));\n\n (function (FormStyle) {\n FormStyle[FormStyle["Format"] = 0] = "Format";\n FormStyle[FormStyle["Standalone"] = 1] = "Standalone";\n })(exports.FormStyle ||

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(exports.FormStyle = {}));\n (function (TranslationWidth) {\n /** 1 character for `en-US`. For example: 'S'
*\n TranslationWidth[TranslationWidth[\"Narrow\"] = 0] = \"Narrow\";\n /** 3 characters for `en-US`. For
example: 'Sun' *\n TranslationWidth[TranslationWidth[\"Abbreviated\"] = 1] = \"Abbreviated\";\n /** Full
length for `en-US`. For example: \"Sunday\" *\n TranslationWidth[TranslationWidth[\"Wide\"] = 2] =
\"Wide\";\n /** 2 characters for `en-US`, For example: \"Su\" *\n
TranslationWidth[TranslationWidth[\"Short\"] = 3] = \"Short\";\n })(exports.TranslationWidth ||
(exports.TranslationWidth = {}));\n (function (FormatWidth) {\n /**\n * For `en-US`, 'M/d/yy, h:mm
a'\n * (Example: `6/15/15, 9:03 AM`)\n *\n FormatWidth[FormatWidth[\"Short\"] = 0] =
\"Short\";\n /**\n * For `en-US`, `MMM d, y, h:mm:ss a`\n * (Example: `Jun 15, 2015, 9:03:01
AM`)\n *\n FormatWidth[FormatWidth[\"Medium\"] = 1] = \"Medium\";\n /**\n * For `en-US`,
`MMMM d, y, h:mm:ss a z`\n * (Example: `June 15, 2015 at 9:03:01 AM GMT+1`)\n *\n
FormatWidth[FormatWidth[\"Long\"] = 2] = \"Long\";\n /**\n * For `en-US`, `EEEE, MMMM d, y,
h:mm:ss a zzzz`\n * (Example: `Monday, June 15, 2015 at 9:03:01 AM GMT+01:00`)\n *\n
FormatWidth[FormatWidth[\"Full\"] = 3] = \"Full\";\n })(exports.FormatWidth || (exports.FormatWidth = {}));\n
(function (NumberSymbol) {\n /**\n * Decimal separator.\n * For `en-US`, the dot character.\n *
Example : 2,345.67\n *\n NumberSymbol[NumberSymbol[\"Decimal\"] = 0] = \"Decimal\";\n /**\n
* Grouping separator, typically for thousands.\n * For `en-US`, the comma character.\n * Example:
2,345.67\n *\n NumberSymbol[NumberSymbol[\"Group\"] = 1] = \"Group\";\n /**\n * List-
item separator.\n * Example: \"one, two, and three\"\n *\n NumberSymbol[NumberSymbol[\"List\"]
= 2] = \"List\";\n /**\n * Sign for percentage (out of 100).\n * Example: 23.4%\n *\n
NumberSymbol[NumberSymbol[\"PercentSign\"] = 3] = \"PercentSign\";\n /**\n * Sign for positive
numbers.\n * Example: +23\n *\n NumberSymbol[NumberSymbol[\"PlusSign\"] = 4] =
\"PlusSign\";\n /**\n * Sign for negative numbers.\n * Example: -23\n *\n
NumberSymbol[NumberSymbol[\"MinusSign\"] = 5] = \"MinusSign\";\n /**\n * Computer notation for
exponential value (n times a power of 10).\n * Example: 1.2E3\n *\n
NumberSymbol[NumberSymbol[\"Exponential\"] = 6] = \"Exponential\";\n /**\n * Human-readable
format of exponential.\n * Example: 1.2x103\n *\n
NumberSymbol[NumberSymbol[\"SuperscriptingExponent\"] = 7] = \"SuperscriptingExponent\";\n /**\n
* Sign for permille (out of 1000).\n * Example: 23.4‰\n *\n
NumberSymbol[NumberSymbol[\"PerMille\"] = 8] = \"PerMille\";\n /**\n * Infinity, can be used with plus
and minus.\n * Example: +, -\n *\n NumberSymbol[NumberSymbol[\"Infinity\"] = 9] =
\"Infinity\";\n /**\n * Not a number.\n * Example: NaN\n *\n
NumberSymbol[NumberSymbol[\"NaN\"] = 10] = \"NaN\";\n /**\n * Symbol used between time units.\n
* Example: 10:52\n *\n NumberSymbol[NumberSymbol[\"TimeSeparator\"] = 11] =
\"TimeSeparator\";\n /**\n * Decimal separator for currency values (fallback to `Decimal`).\n *
Example: $2,345.67\n *\n NumberSymbol[NumberSymbol[\"CurrencyDecimal\"] = 12] =
\"CurrencyDecimal\";\n /**\n * Group separator for currency values (fallback to `Group`).\n *
Example: $2,345.67\n *\n NumberSymbol[NumberSymbol[\"CurrencyGroup\"] = 13] =
\"CurrencyGroup\";\n })(exports.NumberSymbol || (exports.NumberSymbol = {}));\n (function (WeekDay) {\n
WeekDay[WeekDay[\"Sunday\"] = 0] = \"Sunday\";\n WeekDay[WeekDay[\"Monday\"] = 1] =
\"Monday\";\n WeekDay[WeekDay[\"Tuesday\"] = 2] = \"Tuesday\";\n
WeekDay[WeekDay[\"Wednesday\"] = 3] = \"Wednesday\";\n WeekDay[WeekDay[\"Thursday\"] = 4] =
\"Thursday\";\n WeekDay[WeekDay[\"Friday\"] = 5] = \"Friday\";\n WeekDay[WeekDay[\"Saturday\"] =
6] = \"Saturday\";\n })(exports.WeekDay || (exports.WeekDay = {}));\n /**\n * Retrieves the locale ID from
the currently loaded locale.\n * The loaded locale could be, for example, a global one rather than a regional one.\n
* @param locale A locale code, such as `fr-FR`.\n * @returns The locale code. For example, `fr`.\n * @see
[Internationalization (i18n) Guide](https://angular.io/guide/i18n)\n *\n * @publicApi\n *\n function
getLocaleId(locale) {\n return i0.findLocaleData(locale)[i0.LocaleDataIndex.LocaleId];\n }\n /**\n *

```

```

Retrieves day period strings for the given locale.
 * @param locale A locale code for the locale format
rules to use.
 * @param formStyle The required grammatical form.
 * @param width The required character
width.
 * @returns An array of localized period strings. For example, `[AM, PM]` for `en-US`.
 * @see [Internationalization (i18n) Guide](https://angular.io/guide/i18n)
 * @publicApi
 * function
getLocaleDayPeriods(locale, formStyle, width) {
 var data = i0.findLocaleData(locale);
 var amPmData = [data[i0.LocaleDataIndex.DayPeriodsFormat], data[i0.LocaleDataIndex.DayPeriodsStandalone]];
 var amPm = getLastDefinedValue(amPmData, formStyle);
 return getLastDefinedValue(amPm, width);
}
/**
 * Retrieves days of the week for the given locale, using the Gregorian calendar.
 * @param locale A locale code for the locale format rules to use.
 * @param formStyle The required grammatical form.
 * @param width The required character width.
 * @returns An array of localized name strings.
 * For example, `[Sunday, Monday, ... Saturday]` for `en-US`.
 * @see [Internationalization (i18n) Guide](https://angular.io/guide/i18n)
 * @publicApi
 * function getLocaleDayNames(locale, formStyle, width) {
 var data = i0.findLocaleData(locale);
 var daysData = [data[i0.LocaleDataIndex.DaysFormat], data[i0.LocaleDataIndex.DaysStandalone]];
 var days = getLastDefinedValue(daysData, formStyle);
 return getLastDefinedValue(days, width);
}
/**
 * Retrieves months of the year for the given locale, using the Gregorian calendar.
 * @param locale A locale code for the locale format rules to use.
 * @param formStyle The required grammatical form.
 * @param width The required character width.
 * @returns An array of localized name strings.
 * For example, `[January, February, ...]` for `en-US`.
 * @see [Internationalization (i18n) Guide](https://angular.io/guide/i18n)
 * @publicApi
 * function getLocaleMonthNames(locale, formStyle, width) {
 var data = i0.findLocaleData(locale);
 var monthsData = [data[i0.LocaleDataIndex.MonthsFormat], data[i0.LocaleDataIndex.MonthsStandalone]];
 var months = getLastDefinedValue(monthsData, formStyle);
 return getLastDefinedValue(months, width);
}
/**
 * Retrieves Gregorian-calendar eras for the given locale.
 * @param locale A locale code for the locale format rules to use.
 * @param width The required character width.
 * @returns An array of localized era strings.
 * For example, `[AD, BC]` for `en-US`.
 * @see [Internationalization (i18n) Guide](https://angular.io/guide/i18n)
 * @publicApi
 * function getLocaleEraNames(locale, width) {
 var data = i0.findLocaleData(locale);
 var erasData = data[i0.LocaleDataIndex.Eras];
 return getLastDefinedValue(erasData, width);
}
/**
 * Retrieves the first day of the week for the given locale.
 * @param locale A locale code for the locale format rules to use.
 * @returns A day index number, using the 0-based week-day index for `en-US` (Sunday = 0, Monday = 1, ...).
 * For example, for `fr-FR`, returns 1 to indicate that the first day is Monday.
 * @see [Internationalization (i18n) Guide](https://angular.io/guide/i18n)
 * @publicApi
 * function getLocaleFirstDayOfWeek(locale) {
 var data = i0.findLocaleData(locale);
 return data[i0.LocaleDataIndex.FirstDayOfWeek];
}
/**
 * Range of week days that are considered the week-end for the given locale.
 * @param locale A locale code for the locale format rules to use.
 * @returns The range of day values, `[startDay, endDay]`.
 * @see [Internationalization (i18n) Guide](https://angular.io/guide/i18n)
 * @publicApi
 * function getLocaleWeekEndRange(locale) {
 var data = i0.findLocaleData(locale);
 return data[i0.LocaleDataIndex.WeekendRange];
}
/**
 * Retrieves a localized date-value formatting string.
 * @param locale A locale code for the locale format rules to use.
 * @param width The format type.
 * @returns The localized formatting string.
 * @see `FormatWidth`
 * @see [Internationalization (i18n) Guide](https://angular.io/guide/i18n)
 * @publicApi
 * function getLocaleDateFormat(locale, width) {
 var data = i0.findLocaleData(locale);
 return getLastDefinedValue(data[i0.LocaleDataIndex.DateFormat], width);
}
/**
 * Retrieves a localized time-value formatting string.
 * @param locale A locale code for the locale format rules to use.
 * @param width The format type.
 * @returns The localized formatting string.
 * @see `FormatWidth`
 * @see [Internationalization (i18n) Guide](https://angular.io/guide/i18n)
 * @publicApi
 * function getLocaleTimeFormat(locale, width) {
 var data = i0.findLocaleData(locale);
 return

```

```

getLastDefinedValue(data[i0.LocaleDataIndex.TimeFormat], width);\n } \n /**\n * Retrieves a localized date-time formatting string.\n * \n * @param locale A locale code for the locale format rules to use.\n * @param width The format type.\n * @returns The localized formatting string.\n * @see `FormatWidth`\n * @see [Internationalization (i18n) Guide](https://angular.io/guide/i18n)\n * \n * @publicApi\n */\n function\ngetLocaleDateTimeFormat(locale, width) {\n var data = i0.findLocaleData(locale);\n var\n dateTimeFormatData = data[i0.LocaleDataIndex.DateTimeFormat];\n return\n getLastDefinedValue(dateTimeFormatData, width);\n } \n /**\n * Retrieves a localized number symbol that can be used to replace placeholders in number formats.\n * @param locale The locale code.\n * @param symbol The symbol to localize.\n * @returns The character for the localized symbol.\n * @see `NumberSymbol`\n * @see [Internationalization (i18n) Guide](https://angular.io/guide/i18n)\n * \n * @publicApi\n */\n function\ngetLocaleNumberSymbol(locale, symbol) {\n var data =\n i0.findLocaleData(locale);\n var res = data[i0.LocaleDataIndex.NumberSymbols][symbol];\n if (typeof res\n === 'undefined') {\n if (symbol === exports.NumberSymbol.CurrencyDecimal) {\n return\n data[i0.LocaleDataIndex.NumberSymbols][exports.NumberSymbol.Decimal];\n } \n else if (symbol\n === exports.NumberSymbol.CurrencyGroup) {\n return\n data[i0.LocaleDataIndex.NumberSymbols][exports.NumberSymbol.Group];\n } \n return res;\n }\n } \n /**\n * Retrieves a number format for a given locale.\n * \n * Numbers are formatted using patterns, like `#,###.00`. For example, the pattern `#,###.00` \n * when used to format the number 12345.678 could result in `12'345,678`. That would happen if the \n * grouping separator for your language is an apostrophe, and the decimal separator is a comma.\n * \n * Important: The characters `.` `0` `#` (and others below) are special placeholders \n * that stand for the decimal separator, and so on, and are NOT real characters. \n * You must NOT "translate" the placeholders. For example, don't change `.` to `,` even though in \n * your language the decimal point is written with a comma. The symbols should be replaced by the \n * local equivalents, using the appropriate `NumberSymbol` for your language.\n * \n * Here are the special characters used in number patterns:\n * \n * | Symbol | Meaning | \n * |-----|-----| \n * | . | Replaced automatically by the character used for the decimal point. \n * | , | Replaced by the "grouping" (thousands) separator. \n * | 0 | Replaced by a digit (or zero if there aren't enough digits). \n * | # | Replaced by a digit (or nothing if there aren't enough). \n * | ¤ | Replaced by a currency symbol, such as $ or USD. \n * | % | Marks a percent format. The % symbol may change position, but must be retained. \n * | E | Marks a scientific format. The E symbol may change position, but must be retained. \n * | ' | Special characters used as literal characters are quoted with ASCII single quotes. \n * \n * @param locale A locale code for the locale format rules to use.\n * @param type The type of numeric value to be formatted (such as `Decimal` or `Currency`.)\n * @returns The localized format string.\n * @see `NumberFormatStyle`\n * @see [CLDR website](http://cldr.unicode.org/translation/number-patterns)\n * @see [Internationalization (i18n) Guide](https://angular.io/guide/i18n)\n * \n * @publicApi\n */\n function\ngetLocaleNumberFormat(locale, type) {\n var data = i0.findLocaleData(locale);\n return\n data[i0.LocaleDataIndex.NumberFormats][type];\n } \n /**\n * Retrieves the symbol used to represent the currency for the main country \n * corresponding to a given locale. For example, '$' for `en-US`. \n * \n * @param locale A locale code for the locale format rules to use.\n * @returns The localized symbol character, \n * or `null` if the main country cannot be determined.\n * @see [Internationalization (i18n)\n * Guide](https://angular.io/guide/i18n)\n * \n * @publicApi\n */\n function\ngetLocaleCurrencySymbol(locale) {\n var data = i0.findLocaleData(locale);\n return\n data[i0.LocaleDataIndex.CurrencySymbol] || null;\n } \n /**\n * Retrieves the name of the currency for the main country corresponding \n * to a given locale. For example, 'US Dollar' for `en-US`. \n * @param locale A locale code for the locale format rules to use.\n * @returns The currency name, \n * or `null` if the main country cannot be determined.\n * @see [Internationalization (i18n) Guide](https://angular.io/guide/i18n)\n * \n * @publicApi\n */\n function\ngetLocaleCurrencyName(locale) {\n var data = i0.findLocaleData(locale);\n return data[i0.LocaleDataIndex.CurrencyName] || null;\n } \n /**\n * Retrieves the default currency code for the given locale.\n * \n * The default is defined as the first currency which is still in use.\n * \n * @param

```



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locale The code of the locale whose currency code we want.\n * @returns The code of the default currency for the
given locale.\n *\n * @publicApi\n */\n function getLocaleCurrencyCode(locale) {\n return
i0.getLocaleCurrencyCode(locale);\n }\n /**\n * Retrieves the currency values for a given locale.\n *
@param locale A locale code for the locale format rules to use.\n * @returns The currency values.\n * @see
[Internationalization (i18n) Guide](https://angular.io/guide/i18n)\n */\n function getLocaleCurrencies(locale)
{\n var data = i0.findLocaleData(locale);\n return data[i0.LocaleDataIndex.Currencies];\n }\n /**\n *
@alias core/getLocalePluralCase\n * @publicApi\n */\n var getLocalePluralCase = i0.getLocalePluralCase;\n
function checkFullData(data) {\n if (!data[i0.LocaleDataIndex.ExtraData]) {\n throw new
Error("Missing extra locale data for the locale '" + data[i0.LocaleDataIndex\n .LocaleId] + "'\n Use
'registerLocaleData' to load new data. See the 'I18n guide' on angular.io to know more.");\n }\n }\n
/**\n * Retrieves locale-specific rules used to determine which day period to use\n * when more than one
period is defined for a locale.\n *\n * There is a rule for each defined day period. The\n * first rule is applied
to the first day period and so on.\n * Fall back to AM/PM when no rules are available.\n *\n * A rule can
specify a period as time range, or as a single time value.\n *\n * This functionality is only available when you
have loaded the full locale data.\n * See the ['I18n guide'](guide/i18n#i18n-pipes).\n *\n * @param locale
A locale code for the locale format rules to use.\n * @returns The rules for the locale, a single time value or array
of *from-time, to-time*,\n * or null if no periods are available.\n *\n * @see `getLocaleExtraDayPeriods()`\n
* @see [Internationalization (i18n) Guide](https://angular.io/guide/i18n)\n *\n * @publicApi\n */\n
function getLocaleExtraDayPeriodRules(locale) {\n var data = i0.findLocaleData(locale);\n
checkFullData(data);\n var rules = data[i0.LocaleDataIndex.ExtraData][2 /* ExtraDayPeriodsRules */] || [];\n
return rules.map(function (rule) {\n if (typeof rule === 'string') {\n return extractTime(rule);\n
}\n return [extractTime(rule[0]), extractTime(rule[1])];\n });\n }\n /**\n * Retrieves locale-
specific day periods, which indicate roughly how a day is broken up\n * in different languages.\n * For
example, for `en-US`, periods are morning, noon, afternoon, evening, and midnight.\n *\n * This functionality
is only available when you have loaded the full locale data.\n * See the ['I18n guide'](guide/i18n#i18n-pipes).\n
*\n * @param locale A locale code for the locale format rules to use.\n * @param formStyle The required
grammatical form.\n * @param width The required character width.\n * @returns The translated day-period
strings.\n * @see `getLocaleExtraDayPeriodRules()`\n * @see [Internationalization (i18n)
Guide](https://angular.io/guide/i18n)\n *\n * @publicApi\n */\n function
getLocaleExtraDayPeriods(locale, formStyle, width) {\n var data = i0.findLocaleData(locale);\n
checkFullData(data);\n var dayPeriodsData = [\n data[i0.LocaleDataIndex.ExtraData][0 /*
ExtraDayPeriodFormats */],\n data[i0.LocaleDataIndex.ExtraData][1 /* ExtraDayPeriodStandalone */]\n
];\n var dayPeriods = getLastDefinedValue(dayPeriodsData, formStyle) || [];\n return
getLastDefinedValue(dayPeriods, width) || [];\n }\n /**\n * Retrieves the writing direction of a specified
locale\n * @param locale A locale code for the locale format rules to use.\n * @publicApi\n * @returns 'rtl'
or 'ltr'\n * @see [Internationalization (i18n) Guide](https://angular.io/guide/i18n)\n */\n function
getLocaleDirection(locale) {\n var data = i0.findLocaleData(locale);\n return
data[i0.LocaleDataIndex.Directionality];\n }\n /**\n * Retrieves the first value that is defined in an array,
going backwards from an index position.\n *\n * To avoid repeating the same data (as when the `format` and
`standalone` forms are the same)\n * add the first value to the locale data arrays, and add other values only if
they are different.\n *\n * @param data The data array to retrieve from.\n * @param index A 0-based index
into the array to start from.\n * @returns The value immediately before the given index position.\n * @see
[Internationalization (i18n) Guide](https://angular.io/guide/i18n)\n *\n * @publicApi\n */\n function
getLastDefinedValue(data, index) {\n for (var i = index; i > -1; i--) {\n if (typeof data[i] !== 'undefined')
{\n return data[i];\n }\n }\n throw new Error('Locale data API: locale data undefined');\n
}\n /**\n * Extracts the hours and minutes from a string like `15:45`\n */\n function extractTime(time) {\n
var _a = __read(time.split(':', 2), 2), h = _a[0], m = _a[1];\n return { hours: +h, minutes: +m }; }\n
/**\n * Retrieves the currency symbol for a given currency code.\n *\n * For example, for the default `en-US` locale,

```

the code `USD` can be represented by the narrow symbol `\$` or the wide symbol `US\$`.

**code** The currency code.

**format** The format, `wide` or `narrow`.

**locale** A locale code for the locale format rules to use.

**returns** The symbol, or the currency code if no symbol is available.

**see** [Internationalization (i18n) Guide](https://angular.io/guide/i18n)

**publicApi**

```
function getCurrencySymbol(code, format, locale) {
 if (locale === void 0) { locale = 'en'; }
 var currency = getLocaleCurrencies(locale)[code] || CURRENCIES_EN[code] || [];
 var symbolNarrow = currency[1 /* SymbolNarrow */];
 if (format === 'narrow' && typeof symbolNarrow === 'string') {
 return symbolNarrow;
 }
 return currency[0 /* Symbol */] || code;
} // Most currencies have cents, that's why the default is 2
var DEFAULT_NB_OF_CURRENCY_DIGITS = 2;
/* Reports the number of decimal digits for a given currency.
The value depends upon the presence of cents in that particular currency.
code The currency code.
returns The number of decimal digits, typically 0 or 2.
see [Internationalization (i18n) Guide](https://angular.io/guide/i18n)
publicApi
function getNumberOfCurrencyDigits(code) {
 var digits;
 var currency = CURRENCIES_EN[code];
 if (currency) {
 digits = currency[2 /* NbOfDigits */];
 }
 return typeof digits === 'number' ? digits : DEFAULT_NB_OF_CURRENCY_DIGITS;
}
var ISO8601_DATE_REGEX = /^(d{4})-?(d{d})-?(T|(d{d})(?::(d{d})(?::(d{d})(?::(d{d})?)?)?)?(Z|([+-])(d{d}):?(d{d}))?)?$/;
// 1 2 3 4 5 6 7 8 9 10 11
var NAMED_FORMATS = {};
var DATE_FORMATS_SPLIT =
/((?:[GyYMLwWdEabBhHmsSzZO']+)|(?:'(?:[^\"]|")*(?:G{1,5}|y{1,4}|Y{1,4}|M{1,5}|L{1,5}|w{1,2}|W{1}|d{1,2}|E{1,6}|a{1,5}|b{1,5}|B{1,5}|h{1,2}|H{1,2}|m{1,2}|s{1,2}|S{1,3}|z{1,4}|Z{1,5}|O{1,4})))([s\S]*)/;
var ZoneWidth;
(function (ZoneWidth) {
 ZoneWidth[ZoneWidth["Short"] = 0] = "Short";
 ZoneWidth[ZoneWidth["ShortGMT"] = 1] = "ShortGMT";
 ZoneWidth[ZoneWidth["Long"] = 2] = "Long";
 ZoneWidth[ZoneWidth["Extended"] = 3] = "Extended";
})(ZoneWidth || (ZoneWidth = {}));
var DateType;
(function (DateType) {
 DateType[DateType["FullYear"] = 0] = "FullYear";
 DateType[DateType["Month"] = 1] = "Month";
 DateType[DateType["Date"] = 2] = "Date";
 DateType[DateType["Hours"] = 3] = "Hours";
 DateType[DateType["Minutes"] = 4] = "Minutes";
 DateType[DateType["Seconds"] = 5] = "Seconds";
 DateType[DateType["FractionalSeconds"] = 6] = "FractionalSeconds";
 DateType[DateType["Day"] = 7] = "Day";
})(DateType || (DateType = {}));
var TranslationType;
(function (TranslationType) {
 TranslationType[TranslationType["DayPeriods"] = 0] = "DayPeriods";
 TranslationType[TranslationType["Days"] = 1] = "Days";
 TranslationType[TranslationType["Months"] = 2] = "Months";
 TranslationType[TranslationType["Eras"] = 3] = "Eras";
})(TranslationType || (TranslationType = {}));
/* ngModule CommonModule
description
Formats a date according to locale rules.
param value The date to format, as a Date, or a number (milliseconds since UTC epoch) or an [ISO date-time string](https://www.w3.org/TR/NOTE-datetime).
param format The date-time components to include. See `DatePipe` for details.
param locale A locale code for the locale format rules to use.
param timezone The time zone. A time zone offset from GMT (such as `+0430`), or a standard UTC/GMT or continental US time zone abbreviation.
If not specified, uses host system settings.
returns The formatted date string.
see `DatePipe`
see [Internationalization (i18n) Guide](https://angular.io/guide/i18n)
publicApi
function formatDate(value, format, locale, timezone) {
 var date = toDate(value);
 var namedFormat = getNamedFormat(locale, format);
 format = namedFormat || format;
 var parts = [];
 var match;
 while (format) {
 match = DATE_FORMATS_SPLIT.exec(format);
 if (match) {
 parts = parts.concat(match.slice(1));
 var part = parts.pop();
 if (!part) {
 break;
 }
 format = part;
 }
 else {
 parts.push(format);
 break;
 }
 }
 var date timezoneOffset = date.getTimezoneOffset();
 if (timezone) {
 date timezoneOffset = timezoneToOffset(timezone, date timezoneOffset);
 date = convertTimezoneToLocal(date, timezone, true);
 }
 var text = "";
 parts.forEach(function (value) {
 var dateFormatter = getDateFormatter(value);
 text +=

```

```

dateFormatter ?\n dateFormatter(date, locale, dateTImezoneOffset) :\n value === "\\\" ? \"\" :
value.replace(/(^|$$)/g, "").replace(/"/g, "\\");\n });\n return text;\n }\n function getNamedFormat(locale,
format) {\n var localeId = getLocaleId(locale);\n NAMED_FORMATS[localeId] =
NAMED_FORMATS[localeId] || {};\n if (NAMED_FORMATS[localeId][format]) {\n return
NAMED_FORMATS[localeId][format];\n }\n var formatValue = ";\n switch (format) {\n case
'shortDate':\n formatValue = getLocaleDateFormat(locale, exports.FormatWidth.Short);\n break;\n case 'mediumDate':\n formatValue = getLocaleDateFormat(locale,
exports.FormatWidth.Medium);\n break;\n case 'longDate':\n formatValue =
getLocaleDateFormat(locale, exports.FormatWidth.Long);\n break;\n case 'fullDate':\n formatValue = getLocaleDateFormat(locale, exports.FormatWidth.Full);\n break;\n case
'shortTime':\n formatValue = getLocaleTimeFormat(locale, exports.FormatWidth.Short);\n break;\n case 'mediumTime':\n formatValue = getLocaleTimeFormat(locale,
exports.FormatWidth.Medium);\n break;\n case 'longTime':\n formatValue =
getLocaleTimeFormat(locale, exports.FormatWidth.Long);\n break;\n case 'fullTime':\n formatValue = getLocaleTimeFormat(locale, exports.FormatWidth.Full);\n break;\n case 'short':\n var shortTime = getNamedFormat(locale, 'shortTime');\n var shortDate = getNamedFormat(locale,
'shortDate');\n formatValue = formatDate(getLocaleDateFormat(locale,
exports.FormatWidth.Short), [shortTime, shortDate]);\n break;\n case 'medium':\n var
mediumTime = getNamedFormat(locale, 'mediumTime');\n var mediumDate = getNamedFormat(locale,
'mediumDate');\n formatValue = formatDate(getLocaleDateFormat(locale,
exports.FormatWidth.Medium), [mediumTime, mediumDate]);\n break;\n case 'long':\n var longTime = getNamedFormat(locale, 'longTime');\n var longDate = getNamedFormat(locale,
'longDate');\n formatValue =\n formatDate(getLocaleDateFormat(locale,
exports.FormatWidth.Long), [longTime, longDate]);\n break;\n case 'full':\n var fullTime =
getNamedFormat(locale, 'fullTime');\n var fullDate = getNamedFormat(locale, 'fullDate');\n formatValue =\n formatDate(getLocaleDateFormat(locale, exports.FormatWidth.Full),
[fullTime, fullDate]);\n break;\n }\n if (formatValue) {\n NAMED_FORMATS[localeId][format] = formatValue;\n }\n return formatValue;\n }\n function
formatDateTime(str, opt_values) {\n if (opt_values) {\n str = str.replace(/\\{([^\}]+)}/g, function (match,
key) {\n return (opt_values != null && key in opt_values) ? opt_values[key] : match;\n });\n }\n return str;\n }\n function padNumber(num, digits, minusSign, trim, negWrap) {\n if (minusSign ===
void 0) { minusSign = '-'; }\n var neg = ";\n if (num < 0 || (negWrap && num <= 0)) {\n if
(negWrap) {\n num = -num + 1;\n }\n else {\n num = -num;\n neg =
minusSign;\n }\n }\n var strNum = String(num);\n while (strNum.length < digits) {\n
strNum = '0' + strNum;\n }\n if (trim) {\n strNum = strNum.substr(strNum.length - digits);\n }\n return neg + strNum;\n }\n function formatFractionalSeconds(milliseconds, digits) {\n var strMs =
padNumber(milliseconds, 3);\n return strMs.substr(0, digits);\n }\n /**\n * Returns a date formatter that
transforms a date into its locale digit representation\n *\n * function dateGetter(name, size, offset, trim,
negWrap) {\n if (offset === void 0) { offset = 0; }\n if (trim === void 0) { trim = false; }\n if (negWrap
=== void 0) { negWrap = false; }\n return function (date, locale) {\n var part = getDatePart(name,
date);\n if (offset > 0 || part > -offset) {\n part += offset;\n }\n if (name ===
DateType.Hours) {\n if (part === 0 && offset === -12) {\n part = 12;\n }\n }\n else if (name === DateType.FractionalSeconds) {\n return formatFractionalSeconds(part,
size);\n }\n var localeMinus = getLocaleNumberSymbol(locale,
exports.NumberSymbol.MinusSign);\n return padNumber(part, size, localeMinus, trim, negWrap);\n };\n }\n function getDatePart(part, date) {\n switch (part) {\n case DateType.FullYear:\n return
date.getFullYear();\n case DateType.Month:\n return date.getMonth();\n case
DateType.Date:\n return date.getDate();\n case DateType.Hours:\n return

```

```

date.getHours();\n case Dateype.Minutes:\n return date.getMinutes();\n case
Dateype.Seconds:\n return date.getSeconds();\n case Dateype.FractionalSeconds:\n
return date.getMilliseconds();\n case Dateype.Day:\n return date.getDay();\n default:\n
 throw new Error("Unknown Dateype value \\\\" + part + \\\\".");\n }\n }\n /**\n * Returns a date
formatter that transforms a date into its locale string representation\n */\n function dateStrGetter(name, width,
form, extended) {\n if (form === void 0) { form = exports.FormStyle.Format; }\n if (extended === void 0)
{ extended = false; }\n return function (date, locale) {\n return getDateTranslation(date, locale, name,
width, form, extended);\n }; \n }\n /**\n * Returns the locale translation of a date for a given form, type
and width\n */\n function getDateTranslation(date, locale, name, width, form, extended) {\n switch (name)
{\n case TranslationType.Months:\n return getLocaleMonthNames(locale, form,
width)[date.getMonth()];\n case TranslationType.Days:\n return getLocaleDayNames(locale, form,
width)[date.getDay()];\n case TranslationType.DayPeriods:\n var currentHours_1 =
date.getHours();\n var currentMinutes_1 = date.getMinutes();\n if (extended) {\n var
rules = getLocaleExtraDayPeriodRules(locale);\n var dayPeriods = getLocaleExtraDayPeriods(locale,
form, width);\n var index = rules.findIndex(function (rule) {\n if (Array.isArray(rule)) {\n
// morning, afternoon, evening, night\n var _a = __read(rule, 2), from = _a[0], to =
_a[1];\n var afterFrom = currentHours_1 >= from.hours && currentMinutes_1 >= from.minutes;\n
 var beforeTo = (currentHours_1 < to.hours ||\n (currentHours_1 === to.hours &&
currentMinutes_1 < to.minutes));\n // We must account for normal rules that span a period during
the day (e.g. 6am-9am)\n // where `from` is less (earlier) than `to`. But also rules that span midnight
(e.g.\n // 10pm - 5am) where `from` is greater (later!) than `to`.\n //\n // In the first case the current time must be BOTH after `from` AND before `to`\n // (e.g. 8am is
after 6am AND before 10am).\n //\n // In the second case the current time must be
EITHER after `from` OR before `to`\n // (e.g. 4am is before 5am but not after 10pm; and 11pm is
not before 5am but it is\n // after 10pm).\n if (from.hours < to.hours) {\n
 if (afterFrom && beforeTo) {\n return true;\n }\n }\n
 else if (afterFrom || beforeTo) {\n return true;\n }\n }\n
 else { // noon or midnight\n if (rule.hours === currentHours_1 &&
rule.minutes === currentMinutes_1) {\n return true;\n }\n }\n
 return false;\n });\n if (index !== -1) {\n return dayPeriods[index];\n
 }\n // if no rules for the day periods, we use am/pm by default\n return
getLocaleDayPeriods(locale, form, width)[currentHours_1 < 12 ? 0 : 1];\n case TranslationType.Eras:\n
 return getLocaleEraNames(locale, width)[date.getFullYear() <= 0 ? 0 : 1];\n default:\n // This
default case is not needed by TypeScript compiler, as the switch is exhaustive.\n // However Closure
Compiler does not understand that and reports an error in typed mode.\n // The `throw new Error` below
works around the problem, and the unexpected: never variable\n // makes sure tsc still checks this code is
unreachable.\n var unexpected = name;\n throw new Error("unexpected translation type " +
unexpected);\n }\n }\n /**\n * Returns a date formatter that transforms a date and an offset into a
timezone with ISO8601 or\n * GMT format depending on the width (eg: short = +0430, short:GMT = GMT+4,
long = GMT+04:30,\n * extended = +04:30)\n */\n function timeZoneGetter(width) {\n return function
(date, locale, offset) {\n var zone = -1 * offset;\n var minusSign = getLocaleNumberSymbol(locale,
exports.NumberSymbol.MinusSign);\n var hours = zone > 0 ? Math.floor(zone / 60) : Math.ceil(zone / 60);\n
 switch (width) {\n case ZoneWidth.Short:\n return ((zone >= 0) ? '+' : '') +
padNumber(hours, 2, minusSign) +\n padNumber(Math.abs(zone % 60), 2, minusSign);\n case
ZoneWidth.ShortGMT:\n return 'GMT' + ((zone >= 0) ? '+' : '') + padNumber(hours, 1,
minusSign);\n case ZoneWidth.Long:\n return 'GMT' + ((zone >= 0) ? '+' : '') +
padNumber(hours, 2, minusSign) + ':' +\n padNumber(Math.abs(zone % 60), 2, minusSign);\n case
ZoneWidth.Extended:\n if (offset === 0) {\n return 'Z';\n }\n }\n }\n }\n

```

```

else {\n
 return ((zone >= 0) ? '+' : '-') + padNumber(hours, 2, minusSign) + ':' +\n
 padNumber(Math.abs(zone % 60), 2, minusSign);\n
}\n
default:\n
 throw new\n
 Error("Unknown zone width \\\"\\\" + width + '\\\"\\\"");\n
}\n
};\n
}\n
var JANUARY = 0;\n
var\n
THURSDAY = 4;\n
function getFirstThursdayOfYear(year) {\n
 var firstDayOfYear = (new Date(year,\n
 JANUARY, 1)).getDay();\n
 return new Date(year, 0, 1 + ((firstDayOfYear <= THURSDAY) ? THURSDAY :\n
 THURSDAY + 7) - firstDayOfYear);\n
}\n
function getThursdayThisWeek(datetime) {\n
 return new\n
 Date(datetime.getFullYear(), datetime.getMonth(), datetime.getDate() + (THURSDAY - datetime.getDay()));\n
}\n
function weekGetter(size, monthBased) {\n
 if (monthBased === void 0) { monthBased = false; }\n
 return function (date, locale) {\n
 var result;\n
 if (monthBased) {\n
 var\n
 nbDaysBefore1stDayOfMonth = new Date(date.getFullYear(), date.getMonth(), 1).getDay() - 1;\n
 var\n
 today = date.getDate();\n
 result = 1 + Math.floor((today + nbDaysBefore1stDayOfMonth) / 7);\n
 }\n
 else {\n
 var thisThurs = getThursdayThisWeek(date);\n
 // Some days of a year are part of\n
 next year according to ISO 8601.\n
 // Compute the firstThurs from the year of this week's Thursday\n
 var firstThurs = getFirstThursdayOfYear(thisThurs.getFullYear());\n
 var diff = thisThurs.getTime() -\n
 firstThurs.getTime();\n
 result = 1 + Math.round(diff / 6.048e8); // 6.048e8 ms per week\n
 }\n
 return padNumber(result, size, getLocaleNumberSymbol(locale, exports.NumberSymbol.MinusSign));\n
 };\n
}\n
/**\n
 * Returns a date formatter that provides the week-numbering year for the input date.\n
 */\n
function weekNumberingYearGetter(size, trim) {\n
 if (trim === void 0) { trim = false; }\n
 return function\n
 (date, locale) {\n
 var thisThurs = getThursdayThisWeek(date);\n
 var weekNumberingYear =\n
 thisThurs.getFullYear();\n
 return padNumber(weekNumberingYear, size, getLocaleNumberSymbol(locale,\n
 exports.NumberSymbol.MinusSign), trim);\n
 };\n
}\n
var DATE_FORMATS = {};\n
// Based on CLDR\n
formats;\n
// See complete list: http://www.unicode.org/reports/tr35/tr35-dates.html#Date_Field_Symbol_Table\n
// See also explanations: http://cldr.unicode.org/translation/date-time\n
// TODO(ocombe): support all missing cldr\n
formats: Y, U, Q, D, F, e, c, j, J, C, A, v, V, X, x\n
function getDateFormatter(format) {\n
 if\n
 (DATE_FORMATS[format]) {\n
 return DATE_FORMATS[format];\n
 }\n
 var formatter;\n
 switch (format) {\n
 // Era name (AD/BC)\n
 case 'G':\n
 case 'GG':\n
 case 'GGG':\n
 formatter = dateStrGetter(TranslationType.Eras, exports.TranslationWidth.Abbreviated);\n
 break;\n
 case 'GGGG':\n
 formatter = dateStrGetter(TranslationType.Eras, exports.TranslationWidth.Wide);\n
 break;\n
 case 'GGGGG':\n
 formatter = dateStrGetter(TranslationType.Eras,\n
 exports.TranslationWidth.Narrow);\n
 break;\n
 // 1 digit representation of the year, e.g. (AD 1 => 1,\n
 AD 199 => 199)\n
 case 'y':\n
 formatter = dateGetter(DateType.FullYear, 1, 0, false, true);\n
 break;\n
 // 2 digit representation of the year, padded (00-99). (e.g. AD 2001 => 01, AD 2010 => 10)\n
 case 'yy':\n
 formatter = dateGetter(DateType.FullYear, 2, 0, true, true);\n
 break;\n
 // 3 digit\n
 representation of the year, padded (000-999). (e.g. AD 2001 => 001, AD 2010 => 010)\n
 case 'yyy':\n
 formatter = dateGetter(DateType.FullYear, 3, 0, false, true);\n
 break;\n
 // 4 digit representation of\n
 the year (e.g. AD 1 => 0001, AD 2010 => 2010)\n
 case 'yyyy':\n
 formatter =\n
 dateGetter(DateType.FullYear, 4, 0, false, true);\n
 break;\n
 // 1 digit representation of the week-\n
 numbering year, e.g. (AD 1 => 1, AD 199 => 199)\n
 case 'Y':\n
 formatter =\n
 weekNumberingYearGetter(1);\n
 break;\n
 // 2 digit representation of the week-numbering year,\n
 padded (00-99). (e.g. AD 2001 => 01, AD\n
 // 2010 => 10)\n
 case 'YY':\n
 formatter =\n
 weekNumberingYearGetter(2, true);\n
 break;\n
 // 3 digit representation of the week-numbering year,\n
 padded (000-999). (e.g. AD 1 => 001, AD\n
 // 2010 => 0010)\n
 case 'YYY':\n
 formatter =\n
 weekNumberingYearGetter(3);\n
 break;\n
 // 4 digit representation of the week-numbering year (e.g.\n
 AD 1 => 0001, AD 2010 => 2010)\n
 case 'YYYY':\n
 formatter = weekNumberingYearGetter(4);\n
 break;\n
 // Month of the year (1-12), numeric\n
 case 'M':\n
 case 'L':\n
 formatter\n
 = dateGetter(DateType.Month, 1, 1);\n
 break;\n
 case 'MM':\n
 case 'LL':\n
 formatter\n
 = dateGetter(DateType.Month, 2, 1);\n
 break;\n
 // Month of the year (January, ...), string, format\n
 case 'MMM':\n
 formatter = dateStrGetter(TranslationType.Months,\n

```

```

exports.TranslationWidth.Abbreviated);\n break;\n case 'MMMM':\n formatter =
dateStrGetter(TranslationType.Months, exports.TranslationWidth.Wide);\n break;\n case
'MMMMM':\n formatter = dateStrGetter(TranslationType.Months, exports.TranslationWidth.Narrow);\n
 break;\n // Month of the year (January, ...), string, standalone\n case 'LLL':\n formatter
=\n dateStrGetter(TranslationType.Months, exports.TranslationWidth.Abbreviated,
exports.FormStyle.Standalone);\n break;\n case 'LLLL':\n formatter =\n dateStrGetter(TranslationType.Months, exports.TranslationWidth.Wide, exports.FormStyle.Standalone);\n
 break;\n case 'LLLLL':\n formatter =\n dateStrGetter(TranslationType.Months,
exports.TranslationWidth.Narrow, exports.FormStyle.Standalone);\n break;\n // Week of the year
(1, ... 52)\n case 'w':\n formatter = weekGetter(1);\n break;\n case 'ww':\n
formatter = weekGetter(2);\n break;\n // Week of the month (1, ...)\n case 'W':\n
formatter = weekGetter(1, true);\n break;\n // Day of the month (1-31)\n case 'd':\n
formatter = dateGetter(DateType.Date, 1);\n break;\n case 'dd':\n formatter =
dateGetter(DateType.Date, 2);\n break;\n // Day of the Week\n case 'E':\n case 'EE':\n
 case 'EEE':\n formatter = dateStrGetter(TranslationType.Days,
exports.TranslationWidth.Abbreviated);\n break;\n case 'EEEE':\n formatter =
dateStrGetter(TranslationType.Days, exports.TranslationWidth.Wide);\n break;\n case 'EEEEE':\n
 formatter = dateStrGetter(TranslationType.Days, exports.TranslationWidth.Narrow);\n break;\n
 case 'EEEEEE':\n formatter = dateStrGetter(TranslationType.Days, exports.TranslationWidth.Short);\n
 break;\n // Generic period of the day (am-pm)\n case 'a':\n case 'aa':\n case 'aaa':\n
 formatter = dateStrGetter(TranslationType.DayPeriods, exports.TranslationWidth.Abbreviated);\n
 break;\n case 'aaaa':\n formatter = dateStrGetter(TranslationType.DayPeriods,
exports.TranslationWidth.Wide);\n break;\n case 'aaaaa':\n formatter =
dateStrGetter(TranslationType.DayPeriods, exports.TranslationWidth.Narrow);\n break;\n //
Extended period of the day (midnight, at night, ...), standalone\n case 'b':\n case 'bb':\n case
'bbb':\n formatter = dateStrGetter(TranslationType.DayPeriods, exports.TranslationWidth.Abbreviated,
exports.FormStyle.Standalone, true);\n break;\n case 'bbbb':\n formatter =
dateStrGetter(TranslationType.DayPeriods, exports.TranslationWidth.Wide, exports.FormStyle.Standalone, true);\n
 break;\n case 'bbbbb':\n formatter = dateStrGetter(TranslationType.DayPeriods,
exports.TranslationWidth.Narrow, exports.FormStyle.Standalone, true);\n break;\n // Extended
period of the day (midnight, night, ...), standalone\n case 'B':\n case 'BB':\n case 'BBB':\n
 formatter = dateStrGetter(TranslationType.DayPeriods, exports.TranslationWidth.Abbreviated,
exports.FormStyle.Format, true);\n break;\n case 'BBBB':\n formatter =\n dateStrGetter(TranslationType.DayPeriods, exports.TranslationWidth.Wide, exports.FormStyle.Format, true);\n
 break;\n case 'BBBBB':\n formatter = dateStrGetter(TranslationType.DayPeriods,
exports.TranslationWidth.Narrow, exports.FormStyle.Format, true);\n break;\n // Hour in AM/PM,
(1-12)\n case 'h':\n formatter = dateGetter(DateType.Hours, 1, -12);\n break;\n case
'hh':\n formatter = dateGetter(DateType.Hours, 2, -12);\n break;\n // Hour of the day (0-
23)\n case 'H':\n formatter = dateGetter(DateType.Hours, 1);\n break;\n // Hour in
day, padded (00-23)\n case 'HH':\n formatter = dateGetter(DateType.Hours, 2);\n break;\n
 // Minute of the hour (0-59)\n case 'm':\n formatter = dateGetter(DateType.Minutes, 1);\n
 break;\n case 'mm':\n formatter = dateGetter(DateType.Minutes, 2);\n break;\n //
Second of the minute (0-59)\n case 's':\n formatter = dateGetter(DateType.Seconds, 1);\n
 break;\n case 'ss':\n formatter = dateGetter(DateType.Seconds, 2);\n break;\n //
Fractional second\n case 'S':\n formatter = dateGetter(DateType.FractionalSeconds, 1);\n
 break;\n case 'SS':\n formatter = dateGetter(DateType.FractionalSeconds, 2);\n break;\n
 case 'SSS':\n formatter = dateGetter(DateType.FractionalSeconds, 3);\n break;\n //
Timezone ISO8601 short format (-0430)\n case 'Z':\n case 'ZZ':\n case 'ZZZ':\n

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formatter = timeZoneGetter(ZoneWidth.Short);\n break;\n // Timezone ISO8601 extended format (-
04:30)\n case 'ZZZZ':\n formatter = timeZoneGetter(ZoneWidth.Extended);\n break;\n // Timezone GMT short format (GMT+4)\n case 'O':\n case 'OO':\n case 'OOO':\n //
Should be location, but fallback to format O instead because we don't have the data yet\n case 'z':\n
case 'zz':\n case 'zzz':\n formatter = timeZoneGetter(ZoneWidth.ShortGMT);\n break;\n // Timezone GMT long format (GMT+0430)\n case 'OOOO':\n case 'ZZZZ':\n // Should be
location, but fallback to format O instead because we don't have the data yet\n case 'zzzz':\n
formatter = timeZoneGetter(ZoneWidth.Long);\n break;\n default:\n return null;\n }\n
DATE_FORMATS[format] = formatter;\n return formatter;\n }\n function timezoneToOffset(timezone,
fallback) {\n // Support: IE 11 only, Edge 13-15+\n // IE/Edge do not "understand" colon (':') in
timezone\n timezone = timezone.replace(/:/g, "");\n var requestedTimezoneOffset = Date.parse('Jan 01, 1970
00:00:00 ' + timezone) / 60000;\n return isNaN(requestedTimezoneOffset) ? fallback :
requestedTimezoneOffset;\n }\n function addDateMinutes(date, minutes) {\n date = new
Date(date.getTime());\n date.setMinutes(date.getMinutes() + minutes);\n return date;\n }\n function
convertTimezoneToLocal(date, timezone, reverse) {\n var reverseValue = reverse ? -1 : 1;\n var
dateTimezoneOffset = date.getTimezoneOffset();\n var timezoneOffset = timezoneToOffset(timezone,
dateTimezoneOffset);\n return addDateMinutes(date, reverseValue * (timezoneOffset - dateTimezoneOffset));\n
 }\n /**\n * Converts a value to date.\n *\n * Supported input formats:\n * - `Date`\n * - number:
timestamp\n * - string: numeric (e.g. `1234`), ISO and date strings in a format supported by\n *
[Date.parse()](https://developer.mozilla.org/en-US/docs/Web/JavaScript/Reference/Global_Objects/Date/parse).\n
 * Note: ISO strings without time return a date without timeoffset.\n *\n * Throws if unable to convert to a
date.\n *\n function toDate(value) {\n if (isDate(value)) {\n return value;\n }\n if (typeof
value === 'number' && !isNaN(value)) {\n return new Date(value);\n }\n if (typeof value ===
'string') {\n value = value.trim();\n var parsedNb = parseFloat(value);\n // any string that only
contains numbers, like `1234` but not like `1234hello`\n if (!isNaN(value - parsedNb)) {\n return
new Date(parsedNb);\n }\n if (/^\d{4}-\d{1,2}-\d{1,2}$/.test(value)) {\n /* For ISO
Strings without time the day, month and year must be extracted from the ISO String\n before Date creation
to avoid time offset and errors in the new Date.\n If we only replace '-' with ',' in the ISO String
(`2015,01,01`), and try to create a new\n date, some browsers (e.g. IE 9) will throw an invalid Date
error.\n If we leave the '-' (`2015-01-01`) and try to create a new Date(`2015-01-01`) the timeoffset\n
is applied.\n Note: ISO months are 0 for January, 1 for February, ... *\n var _a =
__read(value.split('-').map(function (val) { return +val; }), 3), y = _a[0], m = _a[1], d = _a[2];\n return new
Date(y, m - 1, d);\n }\n var match = void 0;\n if (match =
value.match(ISO8601_DATE_REGEX)) {\n return isoStringToDate(match);\n }\n }\n var
date = new Date(value);\n if (!isDate(date)) {\n throw new Error("Unable to convert \"" + value +
"\" into a date");\n }\n return date;\n }\n /**\n * Converts a date in ISO8601 to a Date.\n * Used
instead of `Date.parse` because of browser discrepancies.\n *\n function isoStringToDate(match) {\n var
date = new Date(0);\n var tzHour = 0;\n var tzMin = 0;\n // match[8] means that the string contains
`Z` (UTC) or a timezone like `+01:00` or `+0100`\n var dateSetter = match[8] ? date.setUTCFullYear :
date.setFullYear;\n var timeSetter = match[8] ? date.setUTCHours : date.setHours;\n // if there is a
timezone defined like `+01:00` or `+0100`\n if (match[9]) {\n tzHour = Number(match[9] +
match[10]);\n tzMin = Number(match[9] + match[11]);\n }\n dateSetter.call(date,
Number(match[1]), Number(match[2]) - 1, Number(match[3]));\n var h = Number(match[4] || 0) - tzHour;\n
 var m = Number(match[5] || 0) - tzMin;\n var s = Number(match[6] || 0);\n // The ECMAScript
specification (https://www.ecma-international.org/ecma-262/5.1/#sec-15.9.1.11)\n // defines that `DateTime`
milliseconds should always be rounded down, so that `999.9ms`\n // becomes `999ms`.\n var ms =
Math.floor(parseFloat('0.' + (match[7] || 0)) * 1000);\n timeSetter.call(date, h, m, s, ms);\n return date;\n
 }\n function isDate(value) {\n return value instanceof Date && !isNaN(value.valueOf());\n }\n /**\n

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var
NUMBER_FORMAT_REGEX = /^(d+)?\.(d+)?$/;
var MAX_DIGITS = 22;
var DECIMAL_SEP = '.';
var ZERO_CHAR = '0';
var PATTERN_SEP = ',';
var GROUP_SEP = ',';
var DIGIT_CHAR = '#';
var CURRENCY_CHAR = '¤';
var PERCENT_CHAR = '%';
/**
 * Transforms
a number to a locale string based on a style and a format.
function formatNumberToLocaleString(value,
pattern, locale, groupSymbol, decimalSymbol, digitsInfo, isPercent) {
 if (isPercent === void 0) { isPercent =
false; }
 var formattedText = "";
 var isZero = false;
 if (!isFinite(value)) { formattedText =
getLocaleNumberSymbol(locale, exports.NumberSymbol.Infinity); }
 else {
 var parsedNumber =
parseNumber(value);
 if (isPercent) {
 parsedNumber = toPercent(parsedNumber);
 }
 var minInt = pattern.minInt;
 var minFraction = pattern.minFrac;
 var maxFraction =
pattern.maxFrac;
 if (digitsInfo) {
 var parts =
digitsInfo.match(NUMBER_FORMAT_REGEX);
 if (parts === null) {
 throw new
Error(digitsInfo + " is not a valid digit info");
 }
 var minIntPart = parts[1];
 var minFractionPart = parts[3];
 var maxFractionPart = parts[5];
 if (minIntPart !== null) {
 minInt = parseIntAutoRadix(minIntPart);
 }
 if (minFractionPart !== null) {
 minFraction = parseIntAutoRadix(minFractionPart);
 }
 if (maxFractionPart !== null) {
 maxFraction = parseIntAutoRadix(maxFractionPart);
 }
 else if (minFractionPart !== null
&& minFraction > maxFraction) {
 maxFraction = minFraction;
 }
 }
 roundNumber(parsedNumber, minFraction, maxFraction);
 var digits = parsedNumber.digits;
 var integerLen = parsedNumber.integerLen;
 var exponent = parsedNumber.exponent;
 var decimals =
[];
 isZero = digits.every(function (d) { return !d; });
 // pad zeros for small numbers
 for (;
integerLen < minInt; integerLen++) {
 digits.unshift(0);
 }
 // pad zeros for small
numbers
 for (; integerLen < 0; integerLen++) {
 digits.unshift(0);
 }
 // extract
decimals
 digits
 if (integerLen > 0) {
 decimals = digits.splice(integerLen, digits.length);
 }
 else {
 decimals = digits;
 digits = [0];
 }
 // format the integer digits
with grouping separators
 var groups = [];
 if (digits.length >= pattern.lgSize) {
 groups.unshift(digits.splice(-pattern.lgSize, digits.length).join(""));
 }
 while (digits.length >
pattern.gSize) {
 groups.unshift(digits.splice(-pattern.gSize, digits.length).join(""));
 }
 if
(digits.length) {
 groups.unshift(digits.join(""));
 }
 formattedText =
groups.join(getLocaleNumberSymbol(locale, groupSymbol));
 // append the decimal digits
 if
(decimals.length) {
 formattedText += getLocaleNumberSymbol(locale, decimalSymbol) +
decimals.join("");
 }
 if (exponent) {
 formattedText += getLocaleNumberSymbol(locale,
exports.NumberSymbol.Exponential) + '+' + exponent;
 }
 if (value < 0 && !isZero) {
 formattedText = pattern.negPre + formattedText + pattern.negSuf;
 }
 else {
 formattedText =
pattern.posPre + formattedText + pattern.posSuf;
 }
 return formattedText;
 }
}
/**
 *
@ngModule CommonModule
 * @description
 * Formats a number as currency using locale rules.
 *
 * @param value The number to format.
 * @param locale A locale code for the locale format rules to
use.
 * @param currency A string containing the currency symbol or its name,
such as "$" or "Canadian
Dollar". Used in output string, but does not affect the operation
of the function.
 * @param currencyCode
The [ISO 4217](https://en.wikipedia.org/wiki/ISO_4217)
currency code, such as `USD` for the US dollar and
`EUR` for the euro.
 * Used to determine the number of digits in the decimal part.
 * @param digitInfo
Decimal representation options, specified by a string in the following format:
 *
`{minIntegerDigits}.{minFractionDigits}-{maxFractionDigits}`. See `DecimalPipe` for more details.
 *
 * @returns The formatted currency value.
 * @see `formatNumber()`
 * @see `DecimalPipe`
 *
 * @see [Internationalization (i18n) Guide](https://angular.io/guide/i18n)
 * @publicApi
function
formatCurrency(value, locale, currency, currencyCode, digitsInfo) {
 var format =
getLocaleNumberFormat(locale, exports.NumberFormatStyle.Currency);
 var pattern =

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parseNumberFormat(format, getLocaleNumberSymbol(locale, exports.NumberSymbol.MinusSign));\n
pattern.minFrac = getNumberOfCurrencyDigits(currencyCode);\n pattern.maxFrac = pattern.minFrac;\n var\n
res = formatNumberToLocaleString(value, pattern, locale, exports.NumberSymbol.CurrencyGroup,\n
exports.NumberSymbol.CurrencyDecimal, digitsInfo);\n return res\n .replace(CURRENCY_CHAR,\n
currency)\n // if we have 2 time the currency character, the second one is ignored\n
.replace(CURRENCY_CHAR, "")\n // If there is a spacing between currency character and the value and\n
// the currency character is suppressed by passing an empty string, the\n // spacing character would remain\n
as part of the string. Then we\n // should remove it.\n .trim();\n }\n /**\n * @ngModule\n
CommonModule\n * @description\n * \n * Formats a number as a percentage according to locale rules.\n
*\n * @param value The number to format.\n * @param locale A locale code for the locale format rules to\n
use.\n * @param digitInfo Decimal representation options, specified by a string in the following format:\n *\n
`{minIntegerDigits}.{minFractionDigits}-{maxFractionDigits}`. See `DecimalPipe` for more details.\n * \n *\n
@returns The formatted percentage value.\n * \n * @see `formatNumber()`\n * @see `DecimalPipe`\n *\n
@see [Internationalization (i18n) Guide](https://angular.io/guide/i18n)\n * @publicApi\n * \n */\n function\n
formatPercent(value, locale, digitsInfo) {\n var format = getLocaleNumberFormat(locale,\n
exports.NumberFormatStyle.Percent);\n var pattern = parseNumberFormat(format,\n
getLocaleNumberSymbol(locale, exports.NumberSymbol.MinusSign));\n var res =\n
formatNumberToLocaleString(value, pattern, locale, exports.NumberSymbol.Group,\n
exports.NumberSymbol.Decimal, digitsInfo, true);\n return res.replace(new RegExp(PERCENT_CHAR, 'g'),\n
getLocaleNumberSymbol(locale, exports.NumberSymbol.PercentSign));\n }\n /**\n * @ngModule\n
CommonModule\n * @description\n * \n * Formats a number as text, with group sizing, separator, and\n
other\n * parameters based on the locale.\n * \n * @param value The number to format.\n * @param locale\n
A locale code for the locale format rules to use.\n * @param digitInfo Decimal representation options, specified\n
by a string in the following format:\n * \n * `{minIntegerDigits}.{minFractionDigits}-{maxFractionDigits}`. See\n
`DecimalPipe` for more details.\n * \n * @returns The formatted text string.\n * @see [Internationalization\n
(i18n) Guide](https://angular.io/guide/i18n)\n * \n * @publicApi\n * \n */\n function formatNumber(value,\n
locale, digitsInfo) {\n var format = getLocaleNumberFormat(locale, exports.NumberFormatStyle.Decimal);\n \n
var pattern = parseNumberFormat(format, getLocaleNumberSymbol(locale,\n
exports.NumberSymbol.MinusSign));\n return formatNumberToLocaleString(value, pattern, locale,\n
exports.NumberSymbol.Group, exports.NumberSymbol.Decimal, digitsInfo);\n }\n function\n
parseNumberFormat(format, minusSign) {\n if (minusSign === void 0) { minusSign = '-'; }\n var p = {\n
minInt: 1,\n minFrac: 0,\n maxFrac: 0,\n posPre: ",\n posSuf: ",\n negPre: ",\n
negSuf: ",\n gSize: 0,\n lgSize: 0\n };\n var patternParts =\n
format.split(PATTERN_SEP);\n var positive = patternParts[0];\n var negative = patternParts[1];\n var\n
positiveParts = positive.indexOf(DECIMAL_SEP) !== -1 ?\n positive.split(DECIMAL_SEP) :\n [\n
 positive.substr(0, positive.lastIndexOf(ZERO_CHAR) + 1),\n
 positive.substr(positive.lastIndexOf(ZERO_CHAR) + 1)\n], integer = positiveParts[0], fraction =\n
positiveParts[1] || "";\n p.posPre = integer.substr(0, integer.indexOf(DIGIT_CHAR));\n for (var i = 0; i <\n
fraction.length; i++) {\n var ch = fraction.charAt(i);\n if (ch === ZERO_CHAR) {\n
p.minFrac = p.maxFrac = i + 1;\n }\n else if (ch === DIGIT_CHAR) {\n p.maxFrac = i +\n
1;\n }\n else {\n p.posSuf += ch;\n }\n }\n var groups =\n
integer.split(GROUP_SEP);\n p.gSize = groups[1] ? groups[1].length : 0;\n p.lgSize = (groups[2] ||\n
groups[1]) ? (groups[2] || groups[1]).length : 0;\n if (negative) {\n var trunkLen = positive.length -\n
p.posPre.length - p.posSuf.length, pos = negative.indexOf(DIGIT_CHAR);\n p.negPre = negative.substr(0,\n
pos).replace(/g, "");\n p.negSuf = negative.substr(pos + trunkLen).replace(/g, "");\n }\n else {\n
p.negPre = minusSign + p.posPre;\n p.negSuf = p.posSuf;\n }\n return p;\n }\n // Transforms a\n
parsed number into a percentage by multiplying it by 100\n function toPercent(parsedNumber) {\n // if the\n
number is 0, don't do anything\n if (parsedNumber.digits[0] === 0) {\n return parsedNumber;\n }\n

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 // Getting the current number of decimals\n var fractionLen = parsedNumber.digits.length -
parsedNumber.integerLen;\n if (parsedNumber.exponent) {\n parsedNumber.exponent += 2;\n }\n else {\n if (fractionLen === 0) {\n parsedNumber.digits.push(0, 0);\n }\n else if
(fractionLen === 1) {\n parsedNumber.digits.push(0);\n }\n parsedNumber.integerLen +=
2;\n }\n return parsedNumber;\n }\n /**\n * Parses a number.\n * Significant bits of this parse
algorithm came from https://github.com/MikeMcI/big.js\n *\n * function parseNumber(num) {\n var numStr
= Math.abs(num) + ";\n var exponent = 0, digits, integerLen;\n var i, j, zeros;\n // Decimal point?\n
if ((integerLen = numStr.indexOf(DECIMAL_SEP)) > -1) {\n numStr = numStr.replace(DECIMAL_SEP,
");\n }\n // Exponential form?\n if ((i = numStr.search(/e/i)) > 0) {\n // Work out the exponent.\n
if (integerLen < 0)\n integerLen = i;\n integerLen += +numStr.slice(i + 1);\n numStr =
numStr.substring(0, i);\n }\n else if (integerLen < 0) {\n // There was no decimal point or exponent
so it is an integer.\n integerLen = numStr.length;\n }\n // Count the number of leading zeros.\n
for (i = 0; numStr.charAt(i) === ZERO_CHAR; i++) { /* empty *\n }\n if (i === (zeros = numStr.length))
{\n // The digits are all zero.\n digits = [0];\n integerLen = 1;\n }\n else {\n //
Count the number of trailing zeros\n zeros--;\n while (numStr.charAt(zeros) === ZERO_CHAR)\n
 zeros--;\n // Trailing zeros are insignificant so ignore them\n integerLen -= i;\n digits =
[];\n // Convert string to array of digits without leading/trailing zeros.\n for (j = 0; i <= zeros; i++, j++)
{\n digits[j] = Number(numStr.charAt(i));\n }\n }\n // If the number overflows the
maximum allowed digits then use an exponent.\n if (integerLen > MAX_DIGITS) {\n digits =
digits.splice(0, MAX_DIGITS - 1);\n exponent = integerLen - 1;\n integerLen = 1;\n }\n
return { digits: digits, exponent: exponent, integerLen: integerLen }; }\n /**\n * Round the parsed number
to the specified number of decimal places\n * This function changes the parsedNumber in-place\n *\n * function roundNumber(parsedNumber, minFrac, maxFrac) {\n if (minFrac > maxFrac) {\n throw new
Error(\`The minimum number of digits after fraction (\` + minFrac + `\`) is higher than the maximum (\` + maxFrac
+ `\`).\`);\n }\n var digits = parsedNumber.digits;\n var fractionLen = digits.length -
parsedNumber.integerLen;\n var fractionSize = Math.min(Math.max(minFrac, fractionLen), maxFrac);\n //
The index of the digit to where rounding is to occur\n var roundAt = fractionSize + parsedNumber.integerLen;\n
 var digit = digits[roundAt];\n if (roundAt > 0) {\n // Drop fractional digits beyond `roundAt`\n
digits.splice(Math.max(parsedNumber.integerLen, roundAt));\n // Set non-fractional digits beyond `roundAt`
to 0\n for (var j = roundAt; j < digits.length; j++) {\n digits[j] = 0;\n }\n }\n else {\n
 // We rounded to zero so reset the parsedNumber\n fractionLen = Math.max(0, fractionLen);\n
parsedNumber.integerLen = 1;\n digits.length = Math.max(1, roundAt = fractionSize + 1);\n digits[0]
= 0;\n for (var i = 1; i < roundAt; i++)\n digits[i] = 0;\n }\n if (digit >= 5) {\n if
(roundAt - 1 < 0) {\n for (var k = 0; k > roundAt; k--) {\n digits.unshift(0);\n
 parsedNumber.integerLen++;\n }\n digits.unshift(1);\n parsedNumber.integerLen++;\n
 }\n else {\n digits[roundAt - 1]++;\n }\n }\n // Pad out with zeros to get the
required fraction length\n for (; fractionLen < Math.max(0, fractionSize); fractionLen++)\n digits.push(0);\n var dropTrailingZeros = fractionSize !== 0;\n // Minimal length = nb of decimals required
+ current nb of integers\n // Any number besides that is optional and can be removed if it's a trailing 0\n var
minLen = minFrac + parsedNumber.integerLen;\n // Do any carrying, e.g. a digit was rounded up to 10\n
var carry = digits.reduceRight(function (carry, d, i, digits) {\n d = d + carry;\n digits[i] = d < 10 ? d : d
- 10; // d % 10\n if (dropTrailingZeros) {\n // Do not keep meaningless fractional trailing zeros (e.g.
15.52000 --> 15.52)\n if (digits[i] === 0 && i >= minLen) {\n digits.pop();\n }\n
 else {\n dropTrailingZeros = false;\n }\n }\n return d >= 10 ? 1 : 0; //
Math.floor(d / 10);\n }, 0);\n if (carry) {\n digits.unshift(carry);\n parsedNumber.integerLen++;\n }\n }\n function parseIntAutoRadix(text) {\n var result =
parseInt(text);\n if (isNaN(result)) {\n throw new Error('Invalid integer literal when parsing ' + text);\n }\n
 return result;\n }\n\n /**\n * @publicApi\n *\n * var NgLocalization = /** @class */ (function ()

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{\n function NgLocalization() {\n }\n return NgLocalization;\n }();\n /**\n * Returns the plural
category for a given value.\n * - \"=value\" when the case exists,\n * - the plural category otherwise\n */\n function getPluralCategory(value, cases, ngLocalization, locale) {\n var key = \"=\" + value;\n if
(cases.indexOf(key) > -1) {\n return key;\n }\n key = ngLocalization.getPluralCategory(value,
locale);\n if (cases.indexOf(key) > -1) {\n return key;\n }\n if (cases.indexOf('other') > -1) {\n
 return 'other';\n }\n throw new Error(\"No plural message found for value \" + value + \"\");\n
 }\n /**\n * Returns the plural case based on the locale\n */\n @publicApi\n var
NgLocaleLocalization = /** @class */ (function (_super) {\n __extends(NgLocaleLocalization, _super);\n
function NgLocaleLocalization(locale) {\n var _this = _super.call(this) || this;\n _this.locale = locale;\n
 return _this;\n }\n NgLocaleLocalization.prototype.getPluralCategory = function (value, locale) {\n
 var plural = getLocalePluralCase(locale || this.locale)(value);\n switch (plural) {\n case
exports.Plural.Zero:\n return 'zero';\n case exports.Plural.One:\n return 'one';\n
 case exports.Plural.Two:\n return 'two';\n case exports.Plural.Few:\n return
'few';\n case exports.Plural.Many:\n return 'many';\n default:\n return
'other';\n }\n };\n return NgLocaleLocalization;\n })(NgLocalization));\n NgLocaleLocalization.decorators = [\n { type: i0.Injectable }\n];\n NgLocaleLocalization.ctorParameters =
function () { return [\n { type: String, decorators: [{ type: i0.Inject, args: [i0.LOCALE_ID,] }] }\n]; }\n\n
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governed by an MIT-style license that can be\n * found in the LICENSE file at https://angular.io/license\n */\n
/**\n * Register global data to be used internally by Angular. See the\n * [\"I18n guide\"](guide/i18n#i18n-
pipes) to know how to import additional locale data.\n */\n * The signature registerLocaleData(data: any,
extraData?: any) is deprecated since v5.1\n */\n * @publicApi\n */\n function registerLocaleData(data,
localeId, extraData) {\n return i0.registerLocaleData(data, localeId, extraData);\n }\n\n /**\n * @license\n * Copyright Google LLC All Rights Reserved.\n */\n * Use of this source code is governed by an MIT-style
license that can be\n * found in the LICENSE file at https://angular.io/license\n */\n function
parseCookieValue(cookieStr, name) {\n var e_1, _a;\n name = encodeURIComponent(name);\n try {\n
 for (var _b = __values(cookieStr.split(';')), _c = _b.next(); !_c.done; _c = _b.next()) {\n var cookie =
_c.value;\n var eqIndex = cookie.indexOf('=');\n var _d = __read(eqIndex === -1 ? [cookie,] :
[cookie.slice(0, eqIndex), cookie.slice(eqIndex + 1), 2], cookieName = _d[0], cookieValue = _d[1];\n if
(cookieName.trim() === name) {\n return decodeURIComponent(cookieValue);\n }\n }\n }\n catch (e_1_1) { e_1 = { error: e_1_1 }; }\n finally {\n try {\n if (_c &&
!_c.done && (_a = _b.return)) _a.call(_b);\n }\n finally { if (e_1) throw e_1.error; }\n }\n return null;\n }\n\n /**\n * @license\n * Copyright Google LLC All Rights Reserved.\n */\n * Use of
this source code is governed by an MIT-style license that can be\n * found in the LICENSE file at
https://angular.io/license\n */\n /**\n * @ngModule CommonModule\n */\n /**\n * @usageNotes\n */\n
* <some-element [ngClass]=\"first second\">...</some-element>\n */\n * <some-element
[ngClass]=\"['first', 'second']\">...</some-element>\n */\n * <some-element [ngClass]=\"{'first': true, 'second':
true, 'third': false}\">...</some-element>\n */\n * <some-element
[ngClass]=\"stringExp|arrayExp|objExp\">...</some-element>\n */\n * <some-element [ngClass]=\"{'class1
class2 class3': true}\">...</some-element>\n */\n\n /**\n * @description\n */\n * Adds and removes CSS
classes on an HTML element.\n */\n * The CSS classes are updated as follows, depending on the type of the
expression evaluation:\n * - `string` - the CSS classes listed in the string (space delimited) are added,\n * -
`Array` - the CSS classes declared as Array elements are added,\n * - `Object` - keys are CSS classes that get
added when the expression given in the value\n * evaluates to a truthy value, otherwise they are
removed.\n */\n * @publicApi\n */\n var NgClass = /** @class */ (function () {\n function
NgClass(_iterableDiffers, _keyValueDiffers, _ngEl, _renderer) {\n this._iterableDiffers = _iterableDiffers;\n
 this._keyValueDiffers = _keyValueDiffers;\n this._ngEl = _ngEl;\n this._renderer = _renderer;\n
 this._iterableDiffer = null;\n this._keyValueDiffer = null;\n this._initialClasses = [];\n }\n })();\n}

```

```

this._rawClass = null;\n }\n Object.defineProperty(NgClass.prototype, \"class\", {\n set: function\n (value) {\n this._removeClasses(this._initialClasses);\n this._initialClasses = typeof value ===\n 'string' ? value.split(/\\s+/) : [];\n this._applyClasses(this._initialClasses);\n this._applyClasses(this._rawClass);\n },\n enumerable: false,\n configurable: true\n });\n Object.defineProperty(NgClass.prototype, \"ngClass\", {\n set: function (value) {\n this._removeClasses(this._rawClass);\n this._applyClasses(this._initialClasses);\n this._iterableDiffer = null;\n this._keyValueDiffer = null;\n this._rawClass = typeof value ===\n 'string' ? value.split(/\\s+/) : value;\n if (this._rawClass) {\n if\n (i0.isListLikeIterable(this._rawClass)) {\n this._iterableDiffer =\n this._iterableDiffer.find(this._rawClass).create();\n }\n else {\n this._keyValueDiffer = this._keyValueDiffer.find(this._rawClass).create();\n }\n }\n },\n enumerable: false,\n configurable: true\n });\n NgClass.prototype.ngDoCheck = function\n () {\n if (this._iterableDiffer) {\n var iterableChanges = this._iterableDiffer.diff(this._rawClass);\n if (iterableChanges) {\n this._applyIterableChanges(iterableChanges);\n }\n else if (this._keyValueDiffer) {\n var keyValueChanges = this._keyValueDiffer.diff(this._rawClass);\n if (keyValueChanges) {\n this._applyKeyValueChanges(keyValueChanges);\n }\n }\n NgClass.prototype._applyKeyValueChanges = function (changes) {\n var _this = this;\n changes.forEachAddedItem(function (record) { return _this._toggleClass(record.key, record.currentValue); });\n changes.forEachChangedItem(function (record) { return _this._toggleClass(record.key, record.currentValue);\n });\n changes.forEachRemovedItem(function (record) {\n if (record.previousValue) {\n _this._toggleClass(record.key, false);\n }\n });\n });\n NgClass.prototype._applyIterableChanges = function (changes) {\n var _this = this;\n changes.forEachAddedItem(function (record) {\n if (typeof record.item === 'string') {\n _this._toggleClass(record.item, true);\n }\n else {\n throw new Error(\"NgClass can\n only toggle CSS classes expressed as strings, got '\" + i0.stringify(record.item));\n }\n });\n changes.forEachRemovedItem(function (record) { return _this._toggleClass(record.item, false); });\n });\n /**\n * Applies a collection of CSS classes to the DOM element.\n * For argument of type Set\n and Array CSS class names contained in those collections are always\n * added.\n * For argument of type\n Map CSS class name in the map's key is toggled based on the value (added\n * for truthy and removed for\n falsy).\n */\n NgClass.prototype._applyClasses = function (rawClassVal) {\n var _this = this;\n if (rawClassVal) {\n if (Array.isArray(rawClassVal) || rawClassVal instanceof Set) {\n rawClassVal.forEach(function (klass) { return _this._toggleClass(klass, true); });\n }\n else {\n Object.keys(rawClassVal).forEach(function (klass) { return _this._toggleClass(klass, !!rawClassVal[klass]);\n });\n }\n }\n });\n /**\n * Removes a collection of CSS classes from the DOM element.\n This is mostly useful for cleanup\n * purposes.\n */\n NgClass.prototype._removeClasses = function\n (rawClassVal) {\n var _this = this;\n if (rawClassVal) {\n if (Array.isArray(rawClassVal) ||\n rawClassVal instanceof Set) {\n rawClassVal.forEach(function (klass) { return _this._toggleClass(klass,\n false); });\n }\n else {\n Object.keys(rawClassVal).forEach(function (klass) { return\n _this._toggleClass(klass, false); });\n }\n }\n });\n NgClass.prototype._toggleClass =\n function (klass, enabled) {\n var _this = this;\n klass = klass.trim();\n if (klass) {\n klass.split(/\\s+/g).forEach(function (klass) {\n if (enabled) {\n _this._renderer.addClass(_this._ngEl.nativeElement, klass);\n }\n else {\n _this._renderer.removeClass(_this._ngEl.nativeElement, klass);\n }\n });\n }\n return NgClass;\n }());\n NgClass.decorators = [\n { type: i0.Directive, args: [{ selector: '[ngClass]' },] }\n];\n NgClass.ctorParameters = function () { return [\n { type: i0.IterableDiffer },\n { type:\n i0.KeyValueDiffer },\n { type: i0.ElementRef },\n { type: i0.Renderer2 }\n]; }\n NgClass.propDecorators = [\n klass: [{ type: i0.Input, args: ['class',] }],\n ngClass: [{ type: i0.Input, args:\n ['ngClass',] }]\n];\n /**\n * @license\n * Copyright Google LLC All Rights Reserved.\n * Use

```

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Instantiates a single `{@link Component}` type and inserts its Host View into current View.

`NgComponentOutlet`` provides a declarative approach for dynamic component creation.

`NgComponentOutlet`` requires a component type, if a falsy value is set the view will clear and any existing component will get destroyed.

@usageNotes

### Fine tune control

You can control the component creation process by using the following optional attributes:

- `NgComponentOutletInjector``: Optional custom `{@link Injector}` that will be used as parent for the Component. Defaults to the injector of the current view container.
- `NgComponentOutletContent``: Optional list of projectable nodes to insert into the content section of the component, if exists.
- `NgComponentOutletNgModuleFactory``: Optional module factory to allow dynamically loading other module, then load a component from that module.

### Syntax

```

<ng-container *ngComponentOutlet="componentTypeExpression"></ng-container>
<ng-container *ngComponentOutlet="componentTypeExpression; injector: injectorExpression; content: contentNodesExpression;"></ng-container>
<ng-container *ngComponentOutlet="componentTypeExpression; NgModuleFactory: NgModuleFactory;"></ng-container>

```

### A simple example

```

{@example common/ngComponentOutlet/ts/module.ts region='SimpleExample'}

```

A more complete example with additional options:

```

{@example common/ngComponentOutlet/ts/module.ts region='CompleteExample'}

```

```

@publicApi
@ngModule CommonModule
var
NgComponentOutlet = /** @class */ (function () {
 function NgComponentOutlet(_viewContainerRef) {
 this._viewContainerRef = _viewContainerRef;
 this._componentRef = null;
 this._moduleRef = null;
 }
 NgComponentOutlet.prototype.ngOnChanges = function (changes) {
 this._viewContainerRef.clear();
 this._componentRef = null;
 if (this.ngComponentOutlet) {
 var elInjector = this.ngComponentOutletInjector || this._viewContainerRef.parentInjector;
 if (changes['ngComponentOutletNgModuleFactory']) {
 if (this._moduleRef) {
 this._moduleRef.destroy();
 if (this.ngComponentOutletNgModuleFactory) {
 var parentModule = elInjector.get(i0.NgModuleRef);
 this._moduleRef = this.ngComponentOutletNgModuleFactory.create(parentModule.injector);
 } else {
 this._moduleRef = null;
 }
 var componentFactoryResolver = this._moduleRef ? this._moduleRef.componentFactoryResolver : elInjector.get(i0.ComponentFactoryResolver);
 var componentFactory = componentFactoryResolver.resolveComponentFactory(this.ngComponentOutlet);
 this._componentRef = this._viewContainerRef.createComponent(componentFactory, this._viewContainerRef.length, elInjector, this.ngComponentOutletContent);
 }
 }
 }
 NgComponentOutlet.prototype.ngOnDestroy = function () {
 if (this._moduleRef) {
 this._moduleRef.destroy();
 }
 return NgComponentOutlet;
 };
 NgComponentOutlet.decorators = [
 { type: i0.Directive, args: [
 { selector: '[ngComponentOutlet]' }
]
 };
 NgComponentOutlet.ctorParameters = function () {
 return [
 { type: i0.ViewContainerRef }
];
 };
 NgComponentOutlet.propDecorators = {
 ngComponentOutlet: [
 { type: i0.Input }
],
 ngComponentOutletInjector: [
 { type: i0.Input }
],
 ngComponentOutletContent: [
 { type: i0.Input }
],
 ngComponentOutletNgModuleFactory: [
 { type: i0.Input }
]
 };
 }
 /**
 * @license
 * Copyright Google LLC All Rights Reserved.
 * Use of this source code is governed by an MIT-style license that can be found in the LICENSE file at https://angular.io/license
 */
 @publicApi
 var NgForOfContext = /** @class */ (function () {
 function NgForOfContext($simplicit, ngForOf, index, count) {
 this.$simplicit = $simplicit;
 this.ngForOf = ngForOf;
 this.index = index;
 this.count = count;
 }
 Object.defineProperty(NgForOfContext.prototype, "first", {
 get: function () {
 return this.index === 0;
 },
 enumerable: false,
 configurable: true
 });
 Object.defineProperty(NgForOfContext.prototype, "last", {
 get: function () {
 return this.index === this.count - 1;
 },
 enumerable: false,
 configurable: true
 });
 });

```

```

return this.index === this.count - 1;
 },
 enumerable: false,
 configurable: true
 });
 Object.defineProperty(NgForOfContext.prototype, "even", {
 get: function () {
 return this.index % 2 === 0;
 },
 enumerable: false,
 configurable: true
 });
 Object.defineProperty(NgForOfContext.prototype, "odd", {
 get: function () {
 return !this.even;
 },
 enumerable: false,
 configurable: true
 });
 return NgForOfContext;
}());

```

A [structural directive](guide/structural-directives) that renders a template for each item in a collection. The directive is placed on an element, which becomes the parent of the cloned templates. The `ngForOf` directive is generally used in the [shorthand form](guide/structural-directives#the-asterisk--prefix) `*ngFor`. In this form, the template to be rendered for each iteration is the content of an anchor element containing the directive. The following example shows the shorthand syntax with some options, contained in an `<li>` element.

```

<li *ngFor="let item of items; index as i; trackBy: trackByFn">...

```

The shorthand form expands into a long form that uses the `ngForOf` selector on an `<ng-template>` element. The content of the `<ng-template>` element is the `<li>` element that held the short-form directive. Here is the expanded version of the short-form example.
 

```

<ng-template ngFor let-item [ngForOf]="items" let-i="index" [ngForTrackBy]="trackByFn">
 ...
</ng-template>

```

Angular automatically expands the shorthand syntax as it compiles the template. The context for each embedded view is logically merged to the current component context according to its lexical position. When using the shorthand syntax, Angular allows only [one structural directive on an element](guide/structural-directives#one-structural-directive-per-host-element). If you want to iterate conditionally, for example, put the `*ngIf` on a container element that wraps the `*ngFor` element. For further discussion, see [Structural Directives](guide/structural-directives#one-per-element).

@usageNotes

### Local variables

`NgForOf` provides exported values that can be aliased to local variables. For example:
 

```

<li *ngFor="let user of users; index as i; first as isFirst">
 {{i}}/{{users.length}}. {{user}} default


```

The following exported values can be aliased to local variables:

- `$implicit: T`: The value of the individual items in the iterable (`ngForOf`).
- `ngForOf: NgIterable<T>`: The value of the iterable expression. Useful when the expression is more complex than a property access, for example when using the `async` pipe (`userStreams | async`).
- `index: number`: The index of the current item in the iterable.
- `count: number`: The length of the iterable.
- `first: boolean`: True when the item is the first item in the iterable.
- `last: boolean`: True when the item is the last item in the iterable.
- `even: boolean`: True when the item has an even index in the iterable.
- `odd: boolean`: True when the item has an odd index in the iterable.

### Change propagation

When the contents of the iterator changes, `NgForOf` makes the corresponding changes to the DOM:

- When an item is added, a new instance of the template is added to the DOM.
- When an item is removed, its template instance is removed from the DOM.
- When items are reordered, their respective templates are reordered in the DOM.

Angular uses object identity to track insertions and deletions within the iterator and reproduce those changes in the DOM. This has important implications for animations and any stateful controls that are present, such as `<input>` elements that accept user input. Inserted rows can be animated in, deleted rows can be animated out, and unchanged rows retain any unsaved state such as user input. For more on animations, see [Transitions and Triggers](guide/transition-and-triggers).

The identities of elements in the iterator can change while the data does not. This can happen, for example, if the iterator is produced from an RPC to the server, and that RPC is re-run. Even if the data hasn't changed, the second response produces objects with different identities, and Angular must tear down the entire DOM and rebuild it (as if all old elements were deleted and all new elements inserted). To avoid this expensive operation, you can customize the default tracking algorithm by supplying the `trackBy` option to `ngForOf`. `trackBy` takes a function that has two arguments: `index` and `item`. If `trackBy` is given, Angular tracks changes by the return value of the function. @see [Structural Directives](guide/structural-directives) @ngModule

```

CommonModule\n * @publicApi\n *\n var NgForOf = /** @class */ (function () {\n function
NgForOf(_viewContainer, _template, _differs) {\n this._viewContainer = _viewContainer;\n
this._template = _template;\n this._differs = _differs;\n this._ngForOf = null;\n
this._ngForOfDirty = true;\n this._differ = null;\n }\n Object.defineProperty(NgForOf.prototype,
\'ngForOf\', {\n /**\n * The value of the iterable expression, which can be used as a\n *
[template input variable](guide/structural-directives#template-input-variable).\n */\n set: function
(ngForOf) {\n this._ngForOf = ngForOf;\n this._ngForOfDirty = true;\n },\n
enumerable: false,\n configurable: true\n });\n Object.defineProperty(NgForOf.prototype,
\'ngForTrackBy\', {\n get: function () {\n return this._trackByFn;\n },\n /**\n
* A function that defines how to track changes for items in the iterable.\n */\n * When items are
added, moved, or removed in the iterable,\n * the directive must re-render the appropriate DOM nodes.\n
 * To minimize churn in the DOM, only nodes that have changed\n * are re-rendered.\n */\n
 * By default, the change detector assumes that\n * the object instance identifies the node in the iterable.\n
 * When this function is supplied, the directive uses\n * the result of calling this function to identify the
item node,\n * rather than the identity of the object itself.\n */\n * The function receives two
inputs,\n * the iteration index and the associated node data.\n */\n set: function (fn) {\n
if (i0.isDevMode() && fn != null && typeof fn !== 'function') {\n // TODO(vicb): use a log service
once there is a public one available\n if (console && console.warn) {\n
console.warn(\'trackBy must be a function, but received \' + JSON.stringify(fn) + \'.\')\n }\n
}\n this._trackByFn = fn;\n },\n enumerable: false,\n configurable: true\n });\n Object.defineProperty(NgForOf.prototype, \'ngForTemplate\', {\n /**\n
* A reference to the template
that is stamped out for each item in the iterable.\n * @see [template reference variable](guide/template-
reference-variables)\n */\n set: function (value) {\n // TODO(TS2.1): make
TemplateRef<Partial<NgForRowOf<T>>> once we move to TS v2.1\n // The current type is too
restrictive; a template that just uses index, for example,\n // should be acceptable.\n if (value) {\n
this._template = value;\n }\n },\n enumerable: false,\n configurable: true\n });\n /**\n
* Applies the changes when needed.\n */\n NgForOf.prototype.ngDoCheck =
function () {\n if (this._ngForOfDirty) {\n this._ngForOfDirty = false;\n // React on
ngForOf changes only once all inputs have been initialized\n var value = this._ngForOf;\n if
(!this._differ && value) {\n try {\n this._differ =
this._differs.find(value).create(this.ngForTrackBy);\n }\n catch (_a) {\n throw
new Error(\'Cannot find a differ supporting object \'' + value + '\'' of type \'' + getTypeName(value) + \'. NgFor
only supports binding to Iterables such as Arrays.\');\n }\n }\n if (this._differ)
{\n var changes = this._differ.diff(this._ngForOf);\n if (changes)\n this._applyChanges(changes);\n }\n }\n NgForOf.prototype._applyChanges = function (changes)
{\n var _this = this;\n var insertTuples = [];\n changes.forEachOperation(function (item,
adjustedPreviousIndex, currentIndex) {\n if (item.previousIndex === null) {\n // NgForOf is
never \'null\' or \'undefined\' here because the differ detected\n // that a new item needs to be inserted
from the iterable. This implies that\n // there is an iterable value for \'_ngForOf\'.\n var view
= _this._viewContainer.createEmbeddedView(_this._template, new NgForOfContext(null, _this._ngForOf, -1, -1),
currentIndex === null ? undefined : currentIndex);\n var tuple = new RecordViewTuple(item, view);\n
insertTuples.push(tuple);\n }\n else if (currentIndex === null) {\n _this._viewContainer.remove(adjustedPreviousIndex === null ? undefined : adjustedPreviousIndex);\n }\n
 else if (adjustedPreviousIndex !== null) {\n var view =
_this._viewContainer.get(adjustedPreviousIndex);\n _this._viewContainer.move(view, currentIndex);\n
 var tuple = new RecordViewTuple(item, view);\n insertTuples.push(tuple);\n }\n
 });\n for (var i = 0; i < insertTuples.length; i++) {\n this._perViewChange(insertTuples[i].view,

```

```

insertTuples[i].record);\n }\n for (var i = 0, ilen = this._viewContainer.length; i < ilen; i++) {\n
var viewRef = this._viewContainer.get(i);\n viewRef.context.index = i;\n viewRef.context.count
= ilen;\n viewRef.context.ngForOf = this._ngForOf;\n }\n
changes.forEachIdentityChange(function (record) {\n var viewRef =
_this._viewContainer.get(record.currentIndex);\n viewRef.context.$implicit = record.item;\n });\n
NgForOf.prototype._perViewChange = function (view, record) {\n view.context.$implicit =
record.item;\n };\n /**\n * Asserts the correct type of the context for the template that `NgForOf` will
render.\n *\n * The presence of this method is a signal to the Ivy template type-check compiler that the\n
 *\n * `NgForOf` structural directive renders its template with a specific context type.\n */\n
NgForOf.ngTemplateContextGuard = function (dir, ctx) {\n return true;\n };\n return NgForOf;\n
})();\n
NgForOf.decorators = [\n { type: i0.Directive, args: [{ selector: '[ngFor][ngForOf]', }] }\n];\n
NgForOf.ctorParameters = function () { return [\n { type: i0.ViewContainerRef },\n { type: i0.TemplateRef
},\n { type: i0.IterableDiffers }\n]; }; \n
NgForOf.propDecorators = {\n ngForOf: [{ type: i0.Input }],\n
 ngForTrackBy: [{ type: i0.Input }],\n
 ngForTemplate: [{ type: i0.Input }]\n };\n
var RecordViewTuple =
/** @class */ (function () {\n function RecordViewTuple(record, view) {\n this.record = record;\n
this.view = view;\n }\n return RecordViewTuple;\n }());\n
function getTypeName(type) {\n return
type['name'] || typeof type;\n }\n /**\n * @license\n * Copyright Google LLC All Rights Reserved.\n
 *\n * Use of this source code is governed by an MIT-style license that can be\n * found in the LICENSE file at
https://angular.io/license\n */\n /**\n * A structural directive that conditionally includes a template based on
the value of\n * an expression coerced to Boolean.\n * When the expression evaluates to true, Angular renders
the template\n * provided in a `then` clause, and when false or null,\n * Angular renders the template provided
in an optional `else` clause. The default\n * template for the `else` clause is blank.\n *\n * A [shorthand
form](guide/structural-directives#the-asterisk--prefix) of the directive,\n * `*ngIf="condition"`, is generally
used, provided\n * as an attribute of the anchor element for the inserted template.\n * Angular expands this into
a more explicit version, in which the anchor element\n * is contained in an `` element.\n *\n *
Simple form with shorthand syntax:\n *\n * ```\n * <div *ngIf="condition">Content to render when
condition is true.</div>\n * ```\n * Simple form with expanded syntax:\n *\n * ```\n * <ng-
template [ngIf]="condition"><div>Content to render when condition is\n * true.</div></ng-template>\n *
```\n      * Form with an `else` block:\n      *\n      * ```\n      * <div *ngIf="condition; else elseBlock">Content
to render when condition is true.</div>\n      * <ng-template #elseBlock>Content to render when condition is
false.</ng-template>\n      * ```\n      * Shorthand form with `then` and `else` blocks:\n      *\n      * ```\n      *
<div *ngIf="condition; then thenBlock else elseBlock"></div>\n      * <ng-template #thenBlock>Content to render
when condition is true.</ng-template>\n      * <ng-template #elseBlock>Content to render when condition is
false.</ng-template>\n      * ```\n      * Form with storing the value locally:\n      *\n      * ```\n      * <div
*ngIf="condition as value; else elseBlock">{{ value }}</div>\n      * <ng-template #elseBlock>Content to render
when value is null.</ng-template>\n      * ```\n      * @usageNotes\n      *\n      * The `*ngIf` directive is most
commonly used to conditionally show an inline template,\n      * as seen in the following example.\n      * The default
`else` template is blank.\n      *\n      * {@example common/ngIf/ts/module.ts region='NgIfSimple'}\n      *\n      * ###
Showing an alternative template using `else`\n      *\n      * To display a template when `expression` evaluates to false,
use an `else` template\n      * binding as shown in the following example.\n      * The `else` binding points to an `` element labeled `#elseBlock`.\n      * The template can be defined anywhere in the component view, but
is typically placed right after\n      * `*ngIf` for readability.\n      *\n      * {@example common/ngIf/ts/module.ts
region='NgIfElse'}\n      *\n      * ### Using an external `then` template\n      *\n      * In the previous example, the
then-clause template is specified inline, as the content of the\n      * tag that contains the `ngIf` directive. You can
also specify a template that is defined\n      * externally, by referencing a labeled `` element. When
you do this, you can\n      * change which template to use at runtime, as shown in the following example.\n      *\n      *
{@example common/ngIf/ts/module.ts region='NgIfThenElse'}\n      *\n      * ### Storing a conditional result in a
variable\n      *\n      * You might want to show a set of properties from the same object. If you are waiting\n      * for

```


asynchronous data, the object can be undefined.

In this case, you can use `ngIf` and store the result of the condition in a local variable as shown in the the following example.

```
@example
common/ngIf/ts/module.ts region='NgIfAs')
// This code uses only one `AsyncPipe`, so only one
// subscription is created.
// The conditional statement stores the result of `userStream|async` in the local variable
// `user`.
// You can then bind the local `user` repeatedly.
// The conditional displays the data only if
// `userStream` returns a value,
// so you don't need to use the [safe-navigation-operator](guide/template-expression-operators#safe-navigation-operator) `?.` to guard against null values when accessing
// properties.
// You can display an alternative template while waiting for the data.
### Shorthand
// syntax
// The shorthand syntax `*ngIf` expands into two separate template specifications for the
// "then" and "else" clauses. For example, consider the following shorthand statement,
// that is meant to show a
// loading page while waiting for data to be loaded.
//
// <div class="hero-list" *ngIf="heroes else
// loading">
// ...
// </div>
// <ng-template #loading>
// <div>Loading...</div>
// </ng-template>
//
// You can see that the "else" clause references the <ng-template> with the
// #loading` label, and the template for the "then" clause
// is provided as the content of the anchor element.
//
// However, when Angular expands the shorthand syntax, it creates another <ng-template> tag, with
// `ngIf` and `ngIfElse` directives.
// The anchor element containing the template for the "then" clause becomes
// the content of this unlabeled <ng-template> tag.
//
// <ng-template [ngIf]="heroes"
// [ngIfElse]="loading">
// <div class="hero-list">
// ...
// </div>
// </ng-template>
// <ng-template #loading>
// <div>Loading...</div>
// </ng-template>
//
// The presence of
// the implicit template object has implications for the nesting of structural directives. For more on this subject,
// see [Structural Directives](https://angular.io/guide/structural-directives#one-per-element).
```

```
@NgModule CommonModule
@publicApi
^
var NgIf = /** @class */ (function () {
function
NgIf(_viewContainer, templateRef) {
this._viewContainer = _viewContainer;
this._context = new
NgIfContext();
this._thenTemplateRef = null;
this._elseTemplateRef = null;
this._thenViewRef = null;
this._elseViewRef = null;
this._thenTemplateRef = templateRef;
}
Object.defineProperty(NgIf.prototype, "ngIf", {
/**
* The Boolean expression to
evaluate as the condition for showing a template.
^
set: function (condition) {
this._context.$implicit = this._context.ngIf = condition;
this._updateView();
},
enumerable: false,
configurable: true
});
Object.defineProperty(NgIf.prototype, "ngIfThen",
{
/**
* A template to show if the condition expression evaluates to true.
^
set:
function (templateRef) {
assertTemplate('ngIfThen', templateRef);
this._thenTemplateRef =
templateRef;
this._thenViewRef = null; // clear previous view if any.
this._updateView();
},
enumerable: false,
configurable: true
});
Object.defineProperty(NgIf.prototype,
"ngIfElse", {
/**
* A template to show if the condition expression evaluates to false.
^
set: function (templateRef) {
assertTemplate('ngIfElse', templateRef);
this._elseTemplateRef = templateRef;
this._elseViewRef = null; // clear previous view if any.
this._updateView();
},
enumerable: false,
configurable: true
});
NgIf.prototype._updateView = function () {
if (this._context.$implicit) {
if (!this._thenViewRef)
{
this._viewContainer.clear();
this._elseViewRef = null;
if
(this._thenTemplateRef) {
this._thenViewRef =
this._viewContainer.createEmbeddedView(this._thenTemplateRef, this._context);
}
}
}
else {
if (!this._elseViewRef) {
this._viewContainer.clear();
this._thenViewRef = null;
if (this._elseTemplateRef) {
this._elseViewRef =
this._viewContainer.createEmbeddedView(this._elseTemplateRef, this._context);
}
}
}
};
/**
* Asserts the correct type of the context for the template that `NgIf` will
render.
*
* The presence of this method is a signal to the Ivy template type-check compiler that the
* `NgIf` structural directive renders its template with a specific context type.
^
NgIf.ngTemplateContextGuard = function (dir, ctx) {
return true;
};
return NgIf;
})();
```

```

NgIf.decorators = [\n      { type: i0.Directive, args: [{ selector: '[ngIf]' },] }\n    ];\n    NgIf.ctorParameters =
function () { return [\n      { type: i0.ViewContainerRef },\n      { type: i0.TemplateRef }\n    ]; };
NgIf.propDecorators = {\n      ngIf: [{ type: i0.Input }],\n      ngIfThen: [{ type: i0.Input }],\n      ngIfElse: [{
type: i0.Input }]\n    };
    /**\n     * @publicApi\n     *\n     * var NgIfContext = /** @class */ (function () {\n
function NgIfContext() {\n      this.$implicit = null;\n      this.ngIf = null;\n    }\n    return
NgIfContext;\n  }());\n  function assertTemplate(property, templateRef) {\n    var isTemplateRefOrNull =
!!(!templateRef || templateRef.createEmbeddedView);\n    if (!isTemplateRefOrNull) {\n      throw new
Error(property + "\n must be a TemplateRef, but received \"" + i0.stringify(templateRef) + "\".");\n    }\n  }\n  /**\n   * @license\n   * Copyright Google LLC All Rights Reserved.\n   * Use of this source code is
governed by an MIT-style license that can be\n   * found in the LICENSE file at https://angular.io/license\n   */\n  var SwitchView = /** @class */ (function () {\n    function SwitchView(_viewContainerRef, _templateRef) {\n
      this._viewContainerRef = _viewContainerRef;\n      this._templateRef = _templateRef;\n
      this._created = false;\n    }\n    SwitchView.prototype.create = function () {\n      this._created = true;\n
      this._viewContainerRef.createEmbeddedView(this._templateRef);\n    };
    SwitchView.prototype.destroy =
function () {\n      this._created = false;\n      this._viewContainerRef.clear();\n    };
    SwitchView.prototype.enforceState = function (created) {\n      if (created && !this._created) {\n
this.create();\n      }\n      else if (!created && this._created) {\n        this.destroy();\n      }\n    };
    return SwitchView;\n  }());
  /**\n   * @ngModule CommonModule\n   * @description\n   * The
`[ngSwitch]` directive on a container specifies an expression to match against.\n   * The expressions to match are
provided by `ngSwitchCase` directives on views within the container.\n   * - Every view that matches is
rendered.\n   * - If there are no matches, a view with the `ngSwitchDefault` directive is rendered.\n   * - Elements
within the `[NgSwitch]` statement but outside of any `NgSwitchCase` or `ngSwitchDefault` directive are
preserved at the location.\n   * @usageNotes\n   * Define a container element for the directive, and specify
the switch expression\n   * to match against as an attribute:\n   * \n   * <container-element
[ngSwitch]="switch_expression">\n   * \n   * Within the container, `ngSwitchCase` statements specify
the match expressions\n   * as attributes. Include `ngSwitchDefault` as the final case.\n   * \n   * <container-element [ngSwitch]="switch_expression">\n   * <some-element
*ngSwitchCase="match_expression_1">...</some-element>\n   * ...<some-element
*ngSwitchDefault>...</some-element>\n   * </container-element>\n   * \n   * ### Usage Examples\n
*\n   * The following example shows how to use more than one case to display the same view:\n   * \n   * <container-element [ngSwitch]="switch_expression">\n   * <!-- the same view can be shown in more than one
case -->\n   * <some-element *ngSwitchCase="match_expression_1">...</some-element>\n   * <some-
element *ngSwitchCase="match_expression_2">...</some-element>\n   * <some-other-element
*ngSwitchCase="match_expression_3">...</some-other-element>\n   * <!--default case when there are no
matches -->\n   * <some-element *ngSwitchDefault>...</some-element>\n   * </container-element>\n   * \n   * The following example shows how cases can be nested:\n   * \n   * <container-element
[ngSwitch]="switch_expression">\n   * <some-element *ngSwitchCase="match_expression_1">...</some-
element>\n   * <some-element *ngSwitchCase="match_expression_2">...</some-element>\n   * <some-
other-element *ngSwitchCase="match_expression_3">...</some-other-element>\n   * <ng-container
*ngSwitchCase="match_expression_3">\n   * <!-- use a ng-container to group multiple root nodes -->\n   *
<inner-element></inner-element>\n   * <inner-other-element></inner-other-element>\n   * </ng-
container>\n   * <some-element *ngSwitchDefault>...</some-element>\n   * </container-element>\n   *
*\n   * @publicApi\n   * @see `NgSwitchCase`\n   * @see `NgSwitchDefault`\n   * @see [Structural
Directives](guide/structural-directives)\n   * \n   * var NgSwitch = /** @class */ (function () {\n    function
NgSwitch() {\n      this._defaultUsed = false;\n      this._caseCount = 0;\n      this._lastCaseCheckIndex =
0;\n      this._lastCasesMatched = false;\n    }\n    Object.defineProperty(NgSwitch.prototype, 'ngSwitch',
{\n      set: function (newValue) {\n        this._ngSwitch = newValue;\n        if (this._caseCount === 0)\n        {\n          this._updateDefaultCases(true);\n        }\n      },\n      enumerable: false,\n

```

```

configurable: true\n    });\n    /** @internal */\n    NgSwitch.prototype._addCase = function () {\n
return this._caseCount++;\n    });\n    /** @internal */\n    NgSwitch.prototype._addDefault = function (view)\n
{\n    if (!this._defaultViews) {\n        this._defaultViews = [];\n    }\n
this._defaultViews.push(view);\n    });\n    /** @internal */\n    NgSwitch.prototype._matchCase = function\n
(value) {\n        var matched = value === this._ngSwitch;\n        this._lastCasesMatched =\n
this._lastCasesMatched || matched;\n        this._lastCaseCheckIndex++;\n        if (this._lastCaseCheckIndex\n
=== this._caseCount) {\n            this._updateDefaultCases(!this._lastCasesMatched);\n
this._lastCaseCheckIndex = 0;\n            this._lastCasesMatched = false;\n        }\n        return matched;\n
};\n    NgSwitch.prototype._updateDefaultCases = function (useDefault) {\n        if (this._defaultViews &&\n
useDefault !== this._defaultUsed) {\n            this._defaultUsed = useDefault;\n            for (var i = 0; i <\n
this._defaultViews.length; i++) {\n                var defaultView = this._defaultViews[i];\n
defaultView.enforceState(useDefault);\n            }\n        }\n    });\n    return NgSwitch;\n    });\n
NgSwitch.decorators = [\n    { type: i0.Directive, args: [{ selector: '[ngSwitch]' },] }\n    ];\n
NgSwitch.propDecorators = {\n    ngSwitch: [{ type: i0.Input }]\n    };\n    /**\n     * @ngModule\n
CommonModule\n     * @description\n     * Provides a switch case expression to match against an enclosing\n
`ngSwitch` expression.\n     * When the expressions match, the given `NgSwitchCase` template is rendered.\n     * If\n
multiple match expressions match the switch expression value, all of them are displayed.\n     *\n     *\n
@usageNotes\n     * Within a switch container, `ngSwitchCase` statements specify the match expressions\n
as attributes. Include `ngSwitchDefault` as the final case.\n     *\n     * ``\n     * <container-element\n
[ngSwitch]="switch_expression">\n     *   <some-element ngSwitchCase="match_expression_1">...</some-\n
element>\n     *   ...<some-element ngSwitchDefault>...</some-element>\n     * </container-element>\n
``\n     *\n     * Each switch-case statement contains an in-line HTML template or template reference\n
that\n
defines the subtree to be selected if the value of the match expression\n     * matches the value of the switch\n
expression.\n     *\n     * Unlike JavaScript, which uses strict equality, Angular uses loose equality.\n     * This\n
means that the empty string, `""` matches 0.\n     *\n     * @publicApi\n     * @see `NgSwitch`\n     * @see\n
`NgSwitchDefault`\n     *\n     */\n    var NgSwitchCase = /** @class */ (function () {\n        function\n
NgSwitchCase(viewContainer, templateRef, ngSwitch) {\n            this.ngSwitch = ngSwitch;\n
ngSwitch._addCase();\n            this._view = new SwitchView(viewContainer, templateRef);\n        }\n        /**\n
     * Performs case matching. For internal use only.\n     */\n        NgSwitchCase.prototype.ngDoCheck = function ()\n
{\n            this._view.enforceState(this.ngSwitch._matchCase(this.ngSwitchCase));\n        }; \n        return\n
NgSwitchCase;\n    });\n    NgSwitchCase.decorators = [\n    { type: i0.Directive, args: [{ selector:\n
'[ngSwitchCase]' },] }\n    ];\n    NgSwitchCase.ctorParameters = function () { return [\n    { type:\n
i0.ViewContainerRef },\n    { type: i0.TemplateRef },\n    { type: NgSwitch, decorators: [{ type: i0.Host } ] }\n
]; }; \n    NgSwitchCase.propDecorators = {\n    ngSwitchCase: [{ type: i0.Input }]\n    };\n    /**\n
     * @ngModule\n
CommonModule\n     * @description\n     * Creates a view that is rendered when no\n
`NgSwitchCase` expressions\n     * match the `NgSwitch` expression.\n     * This statement should be the final case\n
in an `NgSwitch`.\n     *\n     * @publicApi\n     * @see `NgSwitch`\n     * @see `NgSwitchCase`\n     *\n     */\n
var NgSwitchDefault = /** @class */ (function () {\n        function NgSwitchDefault(viewContainer, templateRef,\n
ngSwitch) {\n            ngSwitch._addDefault(new SwitchView(viewContainer, templateRef));\n        }\n        return\n
NgSwitchDefault;\n    });\n    NgSwitchDefault.decorators = [\n    { type: i0.Directive, args: [{ selector:\n
'[ngSwitchDefault]' },] }\n    ];\n    NgSwitchDefault.ctorParameters = function () { return [\n    { type:\n
i0.ViewContainerRef },\n    { type: i0.TemplateRef },\n    { type: NgSwitch, decorators: [{ type: i0.Host } ] }\n
]; }; \n\n    /**\n     * @license\n     * Copyright Google LLC All Rights Reserved.\n     * Use of this source\n
code is governed by an MIT-style license that can be\n     * found in the LICENSE file at https://angular.io/license\n
*\n     */\n    /**\n     * @ngModule\n
CommonModule\n     * @usageNotes\n     * ``\n     * <some-element\n
[ngPlural]="value">\n     *   <ng-template ngPluralCase="=0">there is nothing</ng-template>\n     *   <ng-\n
template ngPluralCase="=1">there is one</ng-template>\n     *   <ng-template ngPluralCase="=few">there are a\n
few</ng-template>\n     * </some-element>\n     * ``\n     *\n     * @description\n     * Adds / removes DOM

```

sub-trees based on a numeric value. Tailored for pluralization.

`ngPlural` * Displays DOM sub-trees that match the switch expression value, or failing that, DOM sub-trees that match the switch expression's pluralization category.

`ngPluralCase` * To use this directive you must provide a container element that sets the `ngPlural` attribute to a switch expression. Inner elements with a `ngPluralCase` will display based on their `ngPluralCase` expression.

`ngPluralCase` - if `ngPluralCase` is set to a value starting with `=`, it will only display if the value matches the switch expression exactly, otherwise, the view will be treated as a "category match", and will only display if exact value matches aren't found and the value maps to its category for the defined locale.

See <http://cldr.unicode.org/index/cldr-spec/plural-rules>

```

@publicApi
var NgPlural = /** @class */
(function () {
  function NgPlural(_localization) {
    this._localization = _localization;
    this._caseViews = {};
    Object.defineProperty(NgPlural.prototype, "ngPlural", {
      set: function (value) {
        this._switchValue = value;
        this._updateView();
      },
      enumerable: false,
      configurable: true
    });
    NgPlural.prototype.addCase = function (value, switchView) {
      this._caseViews[value] = switchView;
    };
    NgPlural.prototype._updateView = function () {
      this._clearViews();
      var cases = Object.keys(this._caseViews);
      var key = getPluralCategory(this._switchValue, cases, this._localization);
      this._activateView(this._caseViews[key]);
    };
    NgPlural.prototype._clearViews = function () {
      if (this._activeView)
        this._activeView.destroy();
    };
    NgPlural.prototype._activateView = function (view) {
      if (view) {
        this._activeView = view;
        this._activeView.create();
      }
    };
    return NgPlural;
  }();
  NgPlural.decorators = [
    { type: i0.Directive, args: [
      { selector: '[ngPlural]' },
    ] },
  ];
  NgPlural.ctorParameters = function () {
    return [
      { type: NgLocalization },
    ];
  };
  NgPlural.propDecorators = {
    ngPlural: [
      { type: i0.Input },
    ],
  };
  /** @ngModule CommonModule */
  @description
  * Creates a view that will be added/removed from the parent { @link NgPlural } when the given expression matches the plural expression according to CLDR rules.
  * @usageNotes
  * ````
  * <some-element [ngPlural]="value">
  * <ng-template
  ngPluralCase="=0">...</ng-template>
  * <ng-template ngPluralCase="other">...</ng-template>
  * </some-element>
  * ````
  * See { @link NgPlural } for more details and example.
  * @publicApi
  var NgPluralCase = /** @class */
  (function () {
    function NgPluralCase(value, template, viewContainer, ngPlural) {
      this.value = value;
      var isANumber = !isNaN(Number(value));
      ngPlural.addCase(isANumber ? "=" + value : value, new SwitchView(viewContainer, template));
    }
    return NgPluralCase;
  }());
  NgPluralCase.decorators = [
    { type: i0.Directive, args: [
      { selector: '[ngPluralCase]' },
    ] },
  ];
  NgPluralCase.ctorParameters = function () {
    return [
      { type: String, decorators: [
        { type: i0.Attribute, args: ['ngPluralCase'] },
      ] },
      { type: i0.TemplateRef },
      { type: i0.ViewContainerRef },
      { type: NgPlural, decorators: [
        { type: i0.Host },
      ] },
    ];
  };
  /** @ngModule CommonModule */
  @usageNotes
  * Set the font of the containing element to the result of an expression.
  * ````
  * <some-element [ngStyle]="{'font-style': styleExp}">...</some-element>
  * ````
  * Set the width of the containing element to a pixel value returned by an expression.
  * ````
  * <some-element [ngStyle]="{'max-width.px': widthExp}">...</some-element>
  * ````
  * Set a collection of style values using an expression that returns key-value pairs.
  * ````
  * <some-element [ngStyle]="objExp">...</some-element>
  * ````
  * @description
  * An attribute directive that updates styles for the containing HTML element.
  * Sets one or more style properties, specified as colon-separated key-value pairs.
  * The key is a style name, with an optional <unit> suffix (such as 'top.px', 'font-style.em').
  * The value is an expression to be evaluated.
  * The resulting non-null value, expressed in the given unit, is assigned to the given style property.
  * If the result of evaluation is null, the corresponding style is removed.
  * @publicApi
  var NgStyle = /** @class */
  (function () {
    function NgStyle(_ngEl, _differs, _renderer) {
      this._ngEl = _ngEl;
      this._differs = _differs;
      this._renderer = _renderer;
      this._ngStyle = null;
      this._differ = null;
    }
    Object.defineProperty(NgStyle.prototype, "ngStyle", {
      set: function (values) {
        this._ngStyle = values;
        if (!this._differ && values) {

```

```

this._differ = this._differs.find(values).create();\n
    },\n
    enumerable: false,\n
    configurable: true\n
  });\n
  NgStyle.prototype.ngDoCheck = function () {\n
    if (this._differ) {\n
      var changes = this._differ.diff(this._ngStyle);\n
      if (changes) {\n
        this._applyChanges(changes);\n
      }\n
    }\n
  }; \n
  NgStyle.prototype._setStyle = function (nameAndUnit, value) {\n
    var _a = __read(nameAndUnit.split('.'), 2), name = _a[0], unit = _a[1];\n
    value = value != null && unit ? "\"" + value + unit : value;\n
    if (value != null) {\n
      this._renderer.setStyle(this._ngEl.nativeElement, name, value);\n
    } \n
    else {\n
      this._renderer.removeStyle(this._ngEl.nativeElement, name);\n
    } \n
  }; \n
  NgStyle.prototype._applyChanges = function (changes) {\n
    var _this = this;\n
    changes.forEachRemovedItem(function (record) { return _this._setStyle(record.key, null); });\n
    changes.forEachAddedItem(function (record) { return _this._setStyle(record.key, record.currentValue); });\n
    changes.forEachChangedItem(function (record) { return _this._setStyle(record.key, record.currentValue); });\n
  }; \n
  return NgStyle;\n
}());\n
NgStyle.decorators = [\n
  { type: i0.Directive, args: [{ selector: '[ngStyle']\n
}], ]\n
]; \n
NgStyle.ctorParameters = function () { return [\n
  { type: i0.ElementRef },\n
  { type: i0.KeyValueDiffers },\n
  { type: i0.Renderer2 } ]\n
}; \n
NgStyle.propDecorators = {\n
  ngStyle: [{ type: i0.Input, args: ['ngStyle', ''] }]\n
}; \n
\n
/**\n
 * @ngModule CommonModule\n
 * \n
 * @description\n
 * \n
 * Inserts an embedded view from a prepared `TemplateRef`.\n
 * \n
 * You can attach a context object to the `EmbeddedViewRef` by setting `[ngTemplateOutletContext]`.\n
 * \n
 * `[ngTemplateOutletContext]` should be an object, the object's keys will be available for binding\n
 * \n
 * by the local template `let` declarations.\n
 * \n
 * \n
 * @usageNotes\n
 * ```\n
 * <ng-container *ngTemplateOutlet="templateRefExp; context: contextExp"></ng-container>\n
 * ```\n
 * \n
 * Using the key `$$implicit` in the context object will set its value as default.\n
 * \n
 * \n
 * ### Example\n
 * \n
 * { @example common/ngTemplateOutlet/ts/module.ts region='NgTemplateOutlet'}\n
 * \n
 * @publicApi\n
 * \n
 * var NgTemplateOutlet = /** @class */ (function () {\n
  function NgTemplateOutlet(_viewContainerRef) {\n
    this._viewContainerRef = _viewContainerRef;\n
    this._viewRef = null;\n
    /**\n
     * A context object to attach to the {@link EmbeddedViewRef}. This should be an\n
     * object, the object's keys will be available for binding by the local template `let`\n
     * declarations.\n
     * Using the key `$$implicit` in the context object will set its value as default.\n
     */\n
    this.ngTemplateOutletContext = null;\n
    /**\n
     * A string defining the template reference and optionally the context object for the template.\n
     */\n
    this.ngTemplateOutlet = null;\n
  }\n
  NgTemplateOutlet.prototype.ngOnChanges = function (changes) {\n
    var recreateView = this._shouldRecreateView(changes);\n
    if (recreateView) {\n
      var viewContainerRef = this._viewContainerRef;\n
      if (this._viewRef) {\n
        viewContainerRef.remove(viewContainerRef.indexOf(this._viewRef));\n
      }\n
      this._viewRef = this.ngTemplateOutlet ? viewContainerRef.createEmbeddedView(this.ngTemplateOutlet, this.ngTemplateOutletContext) : null;\n
    } \n
    else if (this._viewRef && this.ngTemplateOutletContext) {\n
      this._updateExistingContext(this.ngTemplateOutletContext);\n
    } \n
  }; \n
  /**\n
   * We need to re-create existing embedded view if:\n
   * \n
   * - templateRef has changed\n
   * \n
   * - context has changes\n
   * \n
   * We mark context object as changed when the corresponding object\n
   * \n
   * shape changes (new properties are added or existing properties are removed).\n
   * \n
   * In other words we consider context with the same properties as "the same" even\n
   * \n
   * if object reference changes (see https://github.com/angular/angular/issues/13407).\n
   */\n
  NgTemplateOutlet.prototype._shouldRecreateView = function (changes) {\n
    var ctxChange = changes['ngTemplateOutletContext'];\n
    return !!changes['ngTemplateOutlet'] || (ctxChange && this._hasContextShapeChanged(ctxChange));\n
  }; \n
  NgTemplateOutlet.prototype._hasContextShapeChanged = function (ctxChange) {\n
    var e_1, _a;\n
    var prevCtxKeys = Object.keys(ctxChange.previousValue || {});\n
    var currCtxKeys = Object.keys(ctxChange.currentValue || {});\n
    if (prevCtxKeys.length === currCtxKeys.length) {\n
      try {\n
        for (var currCtxKeys_1 = __values(currCtxKeys), currCtxKeys_1_1 = currCtxKeys_1.next();

```

```

!currCtxKeys_1_1.done; currCtxKeys_1_1 = currCtxKeys_1.next()) {\n                var propName =
currCtxKeys_1_1.value;\n                if (prevCtxKeys.indexOf(propName) === -1) {\n                    return
true;\n                }\n            }\n        }\n        catch (e_1_1) { e_1 = { error: e_1_1 }; }\n
finally {\n        try {\n            if (currCtxKeys_1_1 && !currCtxKeys_1_1.done && (_a =
currCtxKeys_1.return)) _a.call(currCtxKeys_1);\n        }\n        finally { if (e_1) throw e_1.error; }\n
        }\n        return false;\n    }\n    return true;\n};\n
NgTemplateOutlet.prototype._updateExistingContext = function (ctx) {\n    var e_2, _a;\n    try {\n
for (var _b = __values(Object.keys(ctx)), _c = _b.next(); !_c.done; _c = _b.next()) {\n        var propName =
_c.value;\n        this._viewRef.context[propName] = this.ngTemplateOutletContext[propName];\n
    }\n    }\n    catch (e_2_1) { e_2 = { error: e_2_1 }; }\n    finally {\n        try {\n            if (_c
&& !_c.done && (_a = _b.return)) _a.call(_b);\n        }\n        finally { if (e_2) throw e_2.error; }\n
    }\n};\nreturn NgTemplateOutlet;\n})();\nNgTemplateOutlet.decorators = [\n    { type: i0.Directive,
args: [{ selector: '[ngTemplateOutlet]' },] }\n];\nNgTemplateOutlet.ctorParameters = function () { return [\n
{ type: i0.ViewContainerRef }\n];};\nNgTemplateOutlet.propDecorators = {\n    ngTemplateOutletContext:
[{\n        type: i0.Input\n    }],\n    ngTemplateOutlet: [\n        {\n            type: i0.Input\n        }\n    ]\n};\n
/**\n * @license\n * Copyright\n * Google LLC All Rights Reserved.\n * \n * Use of this source code is governed by an MIT-style license that can
be\n * found in the LICENSE file at https://angular.io/license\n * \n * A collection of Angular
directives that are likely to be used in each and every Angular\n * application.\n * \n var
COMMON_DIRECTIVES = [\n    NgClass,\n    NgComponentOutlet,\n    NgForOf,\n    NgIf,\n
NgTemplateOutlet,\n    NgStyle,\n    NgSwitch,\n    NgSwitchCase,\n    NgSwitchDefault,\n
NgPlural,\n    NgPluralCase,\n];\n\n/**\n * @license\n * Copyright Google LLC All Rights Reserved.\n
*\n * Use of this source code is governed by an MIT-style license that can be\n * found in the LICENSE file
at https://angular.io/license\n * \n function InvalidPipeArgumentError(type, value) {\n    return
Error("InvalidPipeArgument: \"" + value + "\" for pipe \"" + i0.stringify(type) + "\"");\n}\n\n/**\n *
@license\n * Copyright Google LLC All Rights Reserved.\n * \n * Use of this source code is governed by an
MIT-style license that can be\n * found in the LICENSE file at https://angular.io/license\n * \n var
ObservableStrategy = /** @class */ (function () {\n    function ObservableStrategy() {\n    }\n
ObservableStrategy.prototype.createSubscription = function (async, updateLatestValue) {\n    return
async.subscribe({\n        next: updateLatestValue,\n        error: function (e) {\n            throw e;\n
        }\n    });\n};\nObservableStrategy.prototype.dispose = function (subscription) {\n
subscription.unsubscribe();\n};\nObservableStrategy.prototype.onDestroy = function (subscription) {\n
subscription.unsubscribe();\n};\nreturn ObservableStrategy;\n})();\nvar PromiseStrategy = /**
@class */ (function () {\n    function PromiseStrategy() {\n    }\n
PromiseStrategy.prototype.createSubscription = function (async, updateLatestValue) {\n    return
async.then(updateLatestValue, function (e) {\n        throw e;\n    });\n};\n
PromiseStrategy.prototype.dispose = function (subscription) {\n};\nPromiseStrategy.prototype.onDestroy =
function (subscription) {\n};\nreturn PromiseStrategy;\n})();\nvar _promiseStrategy = new
PromiseStrategy();\nvar _observableStrategy = new ObservableStrategy();\n\n/**\n * @ngModule\n *
CommonModule\n * @description\n * \n * Unwraps a value from an asynchronous primitive.\n * \n *
The `async` pipe subscribes to an `Observable` or `Promise` and returns the latest value it has\n * emitted. When
a new value is emitted, the `async` pipe marks the component to be checked for\n * changes. When the
component gets destroyed, the `async` pipe unsubscribes automatically to avoid\n * potential memory leaks.\n
*\n * @usageNotes\n * \n * ### Examples\n * \n * This example binds a `Promise` to the view. Clicking
the `Resolve` button resolves the\n * promise.\n * \n * {@example common/pipes/ts/async_pipe.ts
region='AsyncPipePromise'}\n * \n * It's also possible to use `async` with Observables. The example below
binds the `time` Observable\n * to the view. The Observable continuously updates the view with the current
time.\n * \n * {@example common/pipes/ts/async_pipe.ts region='AsyncPipeObservable'}\n * \n *
@publicApi\n * \n var AsyncPipe = /** @class */ (function () {\n    function AsyncPipe(_ref) {\n

```

```

this._ref = _ref;\n      this._latestValue = null;\n      this._subscription = null;\n      this._obj = null;\n      this._strategy = null;\n    }\n    AsyncPipe.prototype.ngOnDestroy = function () {\n      if\n      (this._subscription) {\n        this._dispose();\n      }\n    };\n    AsyncPipe.prototype.transform =\n    function (obj) {\n      if (!this._obj) {\n        if (obj) {\n          this._subscribe(obj);\n        }\n        return this._latestValue;\n      }\n      if (obj !== this._obj) {\n        this._dispose();\n        return\n        this.transform(obj);\n      }\n      return this._latestValue;\n    };\n    AsyncPipe.prototype._subscribe =\n    function (obj) {\n      var _this = this;\n      this._obj = obj;\n      this._strategy =\n      this._selectStrategy(obj);\n      this._subscription = this._strategy.createSubscription(obj, function (value) {\n        return _this._updateLatestValue(obj, value); });\n    };\n    AsyncPipe.prototype._selectStrategy = function (obj)\n    {\n      if (i0.isPromise(obj)) {\n        return _promiseStrategy;\n      }\n      if (i0.isObservable(obj))\n      {\n        return _observableStrategy;\n      }\n      throw invalidPipeArgumentError(AsyncPipe, obj);\n    };\n    AsyncPipe.prototype._dispose = function () {\n      this._strategy.dispose(this._subscription);\n      this._latestValue = null;\n      this._subscription = null;\n      this._obj = null;\n    };\n    AsyncPipe.prototype._updateLatestValue = function (async, value) {\n      if (async === this._obj) {\n        this._latestValue = value;\n        this._ref.markForCheck();\n      }\n    };\n    return AsyncPipe;\n  }());\n  AsyncPipe.decorators = [\n    { type: i0.Pipe, args: [{ name: 'async', pure: false }, ] }\n  ];\n  AsyncPipe.ctorParameters = function () { return [\n    { type: i0.ChangeDetectorRef }\n  ]; }\n  /**\n   *  

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   * found in the LICENSE file at https://angular.io/license  

   *  

   * Transforms text to all lower case.  

   * @see `UpperCasePipe`  

   * @see `TitleCasePipe`  

   *  

   * @usageNotes  

   * The following example defines a view that allows the user to enter  

   * text, and then  

   * uses the pipe to convert the input text to all lower case.  

   *  

   * <code-example  

   * path="common/pipes/ts/lowerupper_pipe.ts" region="LowerUpperCasePipe"></code-example>  

   *  

   * @NgModule CommonModule  

   * @publicApi  

   *  

   * var LowerCasePipe = /** @class */ (function () {\n  

   * function LowerCasePipe() {\n  

   * }  

   * LowerCasePipe.prototype.transform = function (value) {\n      if  

   * (value == null)\n      return null;\n      if (typeof value !== 'string') {\n        throw  

   * invalidPipeArgumentError(LowerCasePipe, value);\n      }\n      return value.toLowerCase();\n    };\n    return LowerCasePipe;\n  }());\n  LowerCasePipe.decorators = [\n    { type: i0.Pipe, args: [{ name: 'lowercase',  

   * }, ] }\n  ];  

   * //  

   * // Regex below matches any Unicode word and compatible with ES5. In ES2018 the same  

   * result  

   * // can be achieved by using \\p{L}\\S*/gu and also known as Unicode Property Escapes  

   * //  

   * (http://2ality.com/2017/07/regexp-unicode-property-escapes.html). Since there is no  

   * // transpilation of this  

   * functionality down to ES5 without external tool, the only solution is  

   * // to use already transpiled form. Example  

   * can be found here -  

   * //  

   * https://mothereff.in/regexpu#input=var+regex+%3D+%5Cp%7B%7D%u%3B&unicodePropertyEscape=1  

   * //  

   * var unicodeWordMatch = /(?:[A-Za-z]|\\xAA|\\xB5|\\xBA|\\xC0-\\xD6|\\xD8-\\xF6|\\xF8-\\u02C1\\u02C6-  

   * \\u02D1\\u02E0-\\u02E4\\u02EC\\u02EE\\u0370-\\u0374\\u0376\\u0377\\u037A-\\u037D\\u037F\\u0386\\u0388-  

   * \\u038A\\u038C\\u038E-\\u03A1\\u03A3-\\u03F5\\u03F7-\\u0481\\u048A-\\u052F\\u0531-\\u0556\\u0559\\u0561-  

   * \\u0587\\u05D0-\\u05EA\\u05F0-\\u05F2\\u0620-\\u064A\\u066E\\u066F\\u0671-  

   * \\u06D3\\u06D5\\u06E5\\u06E6\\u06EE\\u06EF\\u06FA-\\u06FC\\u06FF\\u0710\\u0712-\\u072F\\u074D-  

   * \\u07A5\\u07B1\\u07CA-\\u07EA\\u07F4\\u07F5\\u07FA\\u0800-\\u0815\\u081A\\u0824\\u0828\\u0840-  

   * \\u0858\\u0860-\\u086A\\u08A0-\\u08B4\\u08B6-\\u08BD\\u0904-\\u0939\\u093D\\u0950\\u0958-\\u0961\\u0971-  

   * \\u0980\\u0985-\\u098C\\u098F\\u0990\\u0993-\\u09A8\\u09AA-\\u09B0\\u09B2\\u09B6-  

   * \\u09B9\\u09BD\\u09CE\\u09DC\\u09DD\\u09DF-\\u09E1\\u09F0\\u09F1\\u09FC\\u0A05-  

   * \\u0A0A\\u0A0F\\u0A10\\u0A13-\\u0A28\\u0A2A-  

   * \\u0A30\\u0A32\\u0A33\\u0A35\\u0A36\\u0A38\\u0A39\\u0A59-\\u0A5C\\u0A5E\\u0A72-\\u0A74\\u0A85-  

   * \\u0A8D\\u0A8F-\\u0A91\\u0A93-\\u0AA8\\u0AAA-\\u0AB0\\u0AB2\\u0AB3\\u0AB5-  

   * \\u0AB9\\u0ABD\\u0AD0\\u0AE0\\u0AE1\\u0AF9\\u0B05-\\u0B0C\\u0B0F\\u0B10\\u0B13-\\u0B28\\u0B2A-  

   * \\u0B30\\u0B32\\u0B33\\u0B35-\\u0B39\\u0B3D\\u0B5C\\u0B5D\\u0B5F-\\u0B61\\u0B71\\u0B83\\u0B85-

```

\\u0B8A\\u0B8E-\\u0B90\\u0B92-\\u0B95\\u0B99\\u0B9A\\u0B9C\\u0B9E\\u0B9F\\u0BA3\\u0BA4\\u0BA8-
\\u0BAA\\u0BAE-\\u0BB9\\u0BD0\\u0C05-\\u0C0C\\u0C0E-\\u0C10\\u0C12-\\u0C28\\u0C2A-
\\u0C39\\u0C3D\\u0C58-\\u0C5A\\u0C60\\u0C61\\u0C80\\u0C85-\\u0C8C\\u0C8E-\\u0C90\\u0C92-
\\u0CA8\\u0CAA-\\u0CB3\\u0CB5-\\u0CB9\\u0CBD\\u0CDE\\u0CE0\\u0CE1\\u0CF1\\u0CF2\\u0D05-
\\u0D0C\\u0D0E-\\u0D10\\u0D12-\\u0D3A\\u0D3D\\u0D4E\\u0D54-\\u0D56\\u0D5F-\\u0D61\\u0D7A-
\\u0D7F\\u0D85-\\u0D96\\u0D9A-\\u0DB1\\u0DB3-\\u0DBB\\u0DBD\\u0DC0-\\u0DC6\\u0E01-
\\u0E30\\u0E32\\u0E33\\u0E40-\\u0E46\\u0E81\\u0E82\\u0E84\\u0E87\\u0E88\\u0E8A\\u0E8D\\u0E94-
\\u0E97\\u0E99-\\u0E9F\\u0EA1-\\u0EA3\\u0EA5\\u0EA7\\u0EAA\\u0EAB\\u0EAD-
\\u0EB0\\u0EB2\\u0EB3\\u0EBD\\u0EC0-\\u0EC4\\u0EC6\\u0EDC-\\u0EDF\\u0F00\\u0F40-\\u0F47\\u0F49-
\\u0F6C\\u0F88-\\u0F8C\\u1000-\\u102A\\u103F\\u1050-\\u1055\\u105A-\\u105D\\u1061\\u1065\\u1066\\u106E-
\\u1070\\u1075-\\u1081\\u108E\\u10A0-\\u10C5\\u10C7\\u10CD\\u10D0-\\u10FA\\u10FC-\\u1248\\u124A-
\\u124D\\u1250-\\u1256\\u1258\\u125A-\\u125D\\u1260-\\u1288\\u128A-\\u128D\\u1290-\\u12B0\\u12B2-
\\u12B5\\u12B8-\\u12BE\\u12C0\\u12C2-\\u12C5\\u12C8-\\u12D6\\u12D8-\\u1310\\u1312-\\u1315\\u1318-
\\u135A\\u1380-\\u138F\\u13A0-\\u13F5\\u13F8-\\u13FD\\u1401-\\u166C\\u166F-\\u167F\\u1681-\\u169A\\u16A0-
\\u16EA\\u16F1-\\u16F8\\u1700-\\u170C\\u170E-\\u1711\\u1720-\\u1731\\u1740-\\u1751\\u1760-\\u176C\\u176E-
\\u1770\\u1780-\\u17B3\\u17D7\\u17DC\\u1820-\\u1877\\u1880-\\u1884\\u1887-\\u18A8\\u18AA\\u18B0-
\\u18F5\\u1900-\\u191E\\u1950-\\u196D\\u1970-\\u1974\\u1980-\\u19AB\\u19B0-\\u19C9\\u1A00-
\\u1A16\\u1A20-\\u1A54\\u1AA7\\u1B05-\\u1B33\\u1B45-\\u1B4B\\u1B83-\\u1BA0\\u1BAE\\u1BAF\\u1BBA-
\\u1BE5\\u1C00-\\u1C23\\u1C4D-\\u1C4F\\u1C5A-\\u1C7D\\u1C80-\\u1C88\\u1CE9-\\u1CEC\\u1CEE-
\\u1CF1\\u1CF5\\u1CF6\\u1D00-\\u1DBF\\u1E00-\\u1F15\\u1F18-\\u1F1D\\u1F20-\\u1F45\\u1F48-
\\u1F4D\\u1F50-\\u1F57\\u1F59\\u1F5B\\u1F5D\\u1F5F-\\u1F7D\\u1F80-\\u1FB4\\u1FB6-
\\u1FBC\\u1FBE\\u1FC2-\\u1FC4\\u1FC6-\\u1FCC\\u1FD0-\\u1FD3\\u1FD6-\\u1FDB\\u1FE0-\\u1FEC\\u1FF2-
\\u1FF4\\u1FF6-\\u1FFC\\u2071\\u207F\\u2090-\\u209C\\u2102\\u2107\\u210A-\\u2113\\u2115\\u2119-
\\u211D\\u2124\\u2126\\u2128\\u212A-\\u212D\\u212F-\\u2139\\u213C-\\u213F\\u2145-
\\u2149\\u214E\\u2183\\u2184\\u2C00-\\u2C2E\\u2C30-\\u2C5E\\u2C60-\\u2CE4\\u2CEB-
\\u2CEE\\u2CF2\\u2CF3\\u2D00-\\u2D25\\u2D27\\u2D2D\\u2D30-\\u2D67\\u2D6F\\u2D80-\\u2D96\\u2DA0-
\\u2DA6\\u2DA8-\\u2DAE\\u2DB0-\\u2DB6\\u2DB8-\\u2DBE\\u2DC0-\\u2DC6\\u2DC8-\\u2DCE\\u2DD0-
\\u2DD6\\u2DD8-\\u2DDE\\u2E2F\\u3005\\u3006\\u3031-\\u3035\\u303B\\u303C\\u3041-\\u3096\\u309D-
\\u309F\\u30A1-\\u30FA\\u30FC-\\u30FF\\u3105-\\u312E\\u3131-\\u318E\\u31A0-\\u31BA\\u31F0-
\\u31FF\\u3400-\\u4DB5\\u4E00-\\u9FEA\\uA000-\\uA48C\\uA4D0-\\uA4FD\\uA500-\\uA60C\\uA610-
\\uA61F\\uA62A\\uA62B\\uA640-\\uA66E\\uA67F-\\uA69D\\uA6A0-\\uA6E5\\uA717-\\uA71F\\uA722-
\\uA788\\uA78B-\\uA7AE\\uA7B0-\\uA7B7\\uA7F7-\\uA801\\uA803-\\uA805\\uA807-\\uA80A\\uA80C-
\\uA822\\uA840-\\uA873\\uA882-\\uA8B3\\uA8F2-\\uA8F7\\uA8FB\\uA8FD\\uA90A-\\uA925\\uA930-
\\uA946\\uA960-\\uA97C\\uA984-\\uA9B2\\uA9CF\\uA9E0-\\uA9E4\\uA9E6-\\uA9EF\\uA9FA-\\uA9FE\\uAA00-
\\uAA28\\uAA40-\\uAA42\\uAA44-\\uAA4B\\uAA60-\\uAA76\\uAA7A\\uAA7E-
\\uAAAF\\uAAB1\\uAAB5\\uAAB6\\uAAB9-\\uAABD\\uAAC0\\uAAC2\\uAADB-\\uAADD\\uAAE0-
\\uAAEA\\uAAF2-\\uAAF4\\uAB01-\\uAB06\\uAB09-\\uAB0E\\uAB11-\\uAB16\\uAB20-\\uAB26\\uAB28-
\\uAB2E\\uAB30-\\uAB5A\\uAB5C-\\uAB65\\uAB70-\\uABE2\\uAC00-\\uD7A3\\uD7B0-\\uD7C6\\uD7CB-
\\uD7FB\\uF900-\\uFA6D\\uFA70-\\uFAD9\\uFB00-\\uFB06\\uFB13-\\uFB17\\uFB1D\\uFB1F-\\uFB28\\uFB2A-
\\uFB36\\uFB38-\\uFB3C\\uFB3E\\uFB40\\uFB41\\uFB43\\uFB44\\uFB46-\\uFBB1\\uFBD3-\\uFD3D\\uFD50-
\\uFD8F\\uFD92-\\uFDC7\\uFDF0-\\uFDFB\\uFE70-\\uFE74\\uFE76-\\uFEFC\\uFF21-\\uFF3A\\uFF41-
\\uFF5A\\uFF66-\\uFFBE\\uFFC2-\\uFFC7\\uFFCA-\\uFFCF\\uFFD2-\\uFFD7\\uFFDA-
\\uFFDC]\\uD800[\\uDC00-\\uDC0B\\uDC0D-\\uDC26\\uDC28-\\uDC3A\\uDC3C\\uDC3D\\uDC3F-
\\uDC4D\\uDC50-\\uDC5D\\uDC80-\\uDCFA\\uDE80-\\uDE9C\\uDEA0-\\uDED0\\uDF00-\\uDF1F\\uDF2D-
\\uDF40\\uDF42-\\uDF49\\uDF50-\\uDF75\\uDF80-\\uDF9D\\uDFA0-\\uDFC3\\uDFC8-
\\uDFCF]\\uD801[\\uDC00-\\uDC9D\\uDCB0-\\uDCD3\\uDCD8-\\uDCFB\\uDD00-\\uDD27\\uDD30-
\\uDD63\\uDE00-\\uDF36\\uDF40-\\uDF55\\uDF60-\\uDF67]\\uD802[\\uDC00-\\uDC05\\uDC08\\uDC0A-
\\uDC35\\uDC37\\uDC38\\uDC3C\\uDC3F-\\uDC55\\uDC60-\\uDC76\\uDC80-\\uDC9E\\uDCE0-


```

\uDCf2\uDCf4\uDCf5\uDD00-\uDD15\uDD20-\uDD39\uDD80-
\uDDB7\uDDBE\uDDBF\uDE00\uDE10-\uDE13\uDE15-\uDE17\uDE19-\uDE33\uDE60-
\uDE7C\uDE80-\uDE9C\uDEC0-\uDEC7\uDEC9-\uDEE4\uDF00-\uDF35\uDF40-\uDF55\uDF60-
\uDF72\uDF80-\uDF91\uD803[\uDC00-\uDC48\uDC80-\uDCB2\uDCC0-\uDCF2\uD804[\uDC03-
\uDC37\uDC83-\uDCAF\uDCD0-\uDCE8\uDD03-\uDD26\uDD50-\uDD72\uDD76\uDD83-
\uDDB2\uDDC1-\uDDC4\uDDDA\uDDDC\uDE00-\uDE11\uDE13-\uDE2B\uDE80-
\uDE86\uDE88\uDE8A-\uDE8D\uDE8F-\uDE9D\uDE9F-\uDEA8\uDEB0-\uDEDE\uDF05-
\uDF0C\uDF0F\uDF10\uDF13-\uDF28\uDF2A-\uDF30\uDF32\uDF33\uDF35-
\uDF39\uDF3D\uDF50\uDF5D-\uDF61\uD805[\uDC00-\uDC34\uDC47-\uDC4A\uDC80-
\uDCAF\uDCC4\uDCC5\uDCC7\uDD80-\uDDAE\uDDD8-\uDDDB\uDE00-\uDE2F\uDE44\uDE80-
\uDEAA\uDF00-\uDF19\uD806[\uDCA0-\uDCDF\uDCFF\uDE00\uDE0B-
\uDE32\uDE3A\uDE50\uDE5C-\uDE83\uDE86-\uDE89\uDEC0-\uDEF8]\uDD807[\uDC00-
\uDC08\uDC0A-\uDC2E\uDC40\uDC72-\uDC8F\uDD00-\uDD06\uDD08\uDD09\uDD0B-
\uDD30\uDD46]\uDD808[\uDC00-\uDF99]\uDD809[\uDC80-\uDD43][\uD80C\uD81C-\uD820\uD840-
\uD868\uD86A-\uD86C\uD86F-\uD872\uD874-\uD879][\uDC00-\uDFFF]\uDD80D[\uDC00-
\uDC2E]\uDD811[\uDC00-\uDE46]\uDD81A[\uDC00-\uDE38\uDE40-\uDE5E\uDED0-\uDEED\uDF00-
\uDF2F\uDF40-\uDF43\uDF63-\uDF77\uDF7D-\uDF8F]\uDD81B[\uDF00-\uDF44\uDF50\uDF93-
\uDF9F\uDFE0\uDFE1]\uDD821[\uDC00-\uDFEC]\uDD822[\uDC00-\uDEF2]\uDD82C[\uDC00-
\uDD1E\uDD70-\uDEFB]\uDD82F[\uDC00-\uDC6A\uDC70-\uDC7C\uDC80-\uDC88\uDC90-
\uDC99]\uDD835[\uDC00-\uDC54\uDC56-\uDC9C\uDC9E\uDC9F\uDCA2\uDCA5\uDCA6\uDCA9-
\uDCAC\uDCAE-\uDCB9\uDCBB\uDCBD-\uDCC3\uDCC5-\uDD05\uDD07-\uDD0A\uDD0D-
\uDD14\uDD16-\uDD1C\uDD1E-\uDD39\uDD3B-\uDD3E\uDD40-\uDD44\uDD46\uDD4A-
\uDD50\uDD52-\uDEA5\uDEA8-\uDEC0\uDEC2-\uDEDA\uDEDC-\uDEFA\uDEFC-\uDF14\uDF16-
\uDF34\uDF36-\uDF4E\uDF50-\uDF6E\uDF70-\uDF88\uDF8A-\uDFA8\uDFAA-\uDFC2\uDFC4-
\uDFCB]\uDD83A[\uDC00-\uDCC4\uDD00-\uDD43]\uDD83B[\uDE00-\uDE03\uDE05-
\uDE1F\uDE21\uDE22\uDE24\uDE27\uDE29-\uDE32\uDE34-
\uDE37\uDE39\uDE3B\uDE42\uDE47\uDE49\uDE4B\uDE4D-
\uDE4F\uDE51\uDE52\uDE54\uDE57\uDE59\uDE5B\uDE5D\uDE5F\uDE61\uDE62\uDE64\uDE67-
\uDE6A\uDE6C-\uDE72\uDE74-\uDE77\uDE79-\uDE7C\uDE7E\uDE80-\uDE89\uDE8B-
\uDE9B\uDEA1-\uDEA3\uDEA5-\uDEA9\uDEAB-\uDEBB]\uDD869[\uDC00-\uDED6\uDF00-
\uDFFF]\uDD86D[\uDC00-\uDF34\uDF40-\uDFFF]\uDD86E[\uDC00-\uDC1D\uDC20-
\uDFFF]\uDD873[\uDC00-\uDEA1\uDEB0-\uDFFF]\uDD87A[\uDC00-\uDFE0]\uDD87E[\uDC00-
\uDE1D)]\S*/g;\n  /**\n   * Transforms text to title case.\n   * Capitalizes the first letter of each word and
transforms the\n   * rest of the word to lower case.\n   * Words are delimited by any whitespace character, such as
a space, tab, or line-feed character.\n   *\n   * @see `LowerCasePipe`\n   * @see `UpperCasePipe`\n   *\n   * @usageNotes\n   * The following example shows the result of transforming various strings into title case.\n   *\n   * <code-example path=\"common/pipes/ts/titlecase_pipe.ts\" region=\"TitleCasePipe\"></code-example>\n   *\n   * @ngModule CommonModule\n   * @publicApi\n   *^\n   var TitleCasePipe = /** @class */ (function () {\n
function TitleCasePipe() {\n    }\n    TitleCasePipe.prototype.transform = function (value) {\n        if (value
=== null)\n            return null;\n        if (typeof value !== 'string') {\n            throw
invalidPipeArgumentError(TitleCasePipe, value);\n        }\n        return value.replace(unicodeWordMatch,
(function (txt) { return txt[0].toUpperCase() + txt.substr(1).toLowerCase(); }));\n    };\n    return
TitleCasePipe;\n  }());\n  TitleCasePipe.decorators = [\n    { type: i0.Pipe, args: [{ name: 'titlecase' },] }\n  ];\n  /**\n   * Transforms text to all upper case.\n   * @see `LowerCasePipe`\n   * @see `TitleCasePipe`\n   *\n   * @ngModule CommonModule\n   * @publicApi\n   *^\n   var UpperCasePipe = /** @class */ (function () {\n
function UpperCasePipe() {\n    }\n    UpperCasePipe.prototype.transform = function (value) {\n        if
(value === null)\n            return null;\n        if (typeof value !== 'string') {\n            throw
invalidPipeArgumentError(UpperCasePipe, value);\n        }\n        return value.toUpperCase();\n    };\n

```



```

* </div>\n * })\n * // Get the current date and time as a date-time value.\n * export class
DatePipeComponent {\n * today: number = Date.now();\n * }\n * ```\n *\n * @publicApi\n *\n //
clang-format on\n var DatePipe = /** @class */ (function () {\n function DatePipe(locale) {\n
this.locale = locale;\n }\n DatePipe.prototype.transform = function (value, format, timezone, locale) {\n
if (format === void 0) { format = 'mediumDate'; }\n if (value == null || value === '' || value !== value)\n
return null;\n try {\n return formatDate(value, format, locale || this.locale, timezone);\n
}\n catch (error) {\n throw invalidPipeArgumentError(DatePipe, error.message);\n }\n
};\n return DatePipe;\n }());\n DatePipe.decorators = [\n { type: i0.Pipe, args: [{ name: 'date', pure: true
},] }\n ];\n DatePipe.ctorParameters = function () { return [\n { type: String, decorators: [{ type: i0.Inject,
args: [i0.LOCALE_ID,] } ] }\n ]; }; \n\n /**\n * @license\n * Copyright Google LLC All Rights Reserved.\n
*\n * Use of this source code is governed by an MIT-style license that can be\n * found in the LICENSE file
at https://angular.io/license\n *\n var _INTERPOLATION_REGEXP = /#/g;\n /**\n * @ngModule
CommonModule\n * @description\n *\n * Maps a value to a string that pluralizes the value according to
locale rules.\n *\n * @usageNotes\n *\n * ### Example\n *\n * {@example
common/pipes/ts/i18n_pipe.ts region='I18nPluralPipeComponent'}\n *\n * @publicApi\n *\n var
I18nPluralPipe = /** @class */ (function () {\n function I18nPluralPipe(_localization) {\n
this._localization = _localization;\n }\n /**\n * @param value the number to be formatted\n *
@param pluralMap an object that mimics the ICU format, see\n * http://userguide.icu-
project.org/formatparse/messages.\n * @param locale a `string` defining the locale to use (uses the current
{@link LOCALE_ID} by\n * default).\n *\n I18nPluralPipe.prototype.transform = function (value,
pluralMap, locale) {\n if (value == null)\n return '';\n if (typeof pluralMap !== 'object' ||
pluralMap === null) {\n throw invalidPipeArgumentError(I18nPluralPipe, pluralMap);\n }\n
var key = getPluralCategory(value, Object.keys(pluralMap), this._localization, locale);\n return
pluralMap[key].replace(_INTERPOLATION_REGEXP, value.toString());\n }; \n return I18nPluralPipe;\n
}());\n I18nPluralPipe.decorators = [\n { type: i0.Pipe, args: [{ name: 'i18nPlural', pure: true },] }\n ];\n
I18nPluralPipe.ctorParameters = function () { return [\n { type: NgLocalization }\n ]; }; \n\n /**\n *
@license\n * Copyright Google LLC All Rights Reserved.\n *\n * Use of this source code is governed by an
MIT-style license that can be\n * found in the LICENSE file at https://angular.io/license\n *\n /**\n *
@ngModule CommonModule\n * @description\n *\n * Generic selector that displays the string that matches
the current value.\n *\n * If none of the keys of the `mapping` match the `value`, then the content\n * of the
`other` key is returned when present, otherwise an empty string is returned.\n *\n * @usageNotes\n *\n *
### Example\n *\n * {@example common/pipes/ts/i18n_pipe.ts region='I18nSelectPipeComponent'}\n *\n
*\n * @publicApi\n *\n var I18nSelectPipe = /** @class */ (function () {\n function I18nSelectPipe() {\n
}\n /**\n * @param value a string to be internationalized.\n * @param mapping an object that
indicates the text that should be displayed\n * for different values of the provided `value`.\n *\n
I18nSelectPipe.prototype.transform = function (value, mapping) {\n if (value == null)\n return '';\n
if (typeof mapping !== 'object' || typeof value !== 'string') {\n throw
invalidPipeArgumentError(I18nSelectPipe, mapping);\n }\n if (mapping.hasOwnProperty(value)) {\n
return mapping[value];\n }\n if (mapping.hasOwnProperty('other')) {\n return
mapping['other'];\n }\n return '';\n }; \n return I18nSelectPipe;\n }());\n
I18nSelectPipe.decorators = [\n { type: i0.Pipe, args: [{ name: 'i18nSelect', pure: true },] }\n ]; \n\n /**\n *
@license\n * Copyright Google LLC All Rights Reserved.\n *\n * Use of this source code is governed by an
MIT-style license that can be\n * found in the LICENSE file at https://angular.io/license\n *\n /**\n *
@ngModule CommonModule\n * @description\n *\n * Converts a value into its JSON-format
representation. Useful for debugging.\n *\n * @usageNotes\n *\n * The following component uses a
JSON pipe to convert an object\n * to JSON format, and displays the string in both formats for comparison.\n
*\n * {@example common/pipes/ts/json_pipe.ts region='JsonPipe'}\n *\n * @publicApi\n *\n var
JsonPipe = /** @class */ (function () {\n function JsonPipe() {\n }\n /**\n * @param value A

```

```

value of any type to convert into a JSON-format string.\n      */\n      JsonPipe.prototype.transform = function
(value) {\n      return JSON.stringify(value, null, 2);\n      };\n      return JsonPipe;\n    }());\n
JsonPipe.decorators = [\n      { type: i0.Pipe, args: [{ name: 'json', pure: false },] }\n    ];\n\n    /**\n     * @license\n     * Copyright Google LLC All Rights Reserved.\n     * Use of this source code is governed by an MIT-style
license that can be\n     * found in the LICENSE file at https://angular.io/license\n     */\n    function
makeKeyValuePair(key, value) {\n      return { key: key, value: value };\n    }\n\n    /**\n     * @ngModule
CommonModule\n     * @description\n     * Transforms Object or Map into an array of key value pairs.\n
*\n     * The output array will be ordered by keys.\n     * By default the comparator will be by Unicode point value.\n
*\n     * You can optionally pass a compareFn if your keys are complex types.\n     */\n\n    @usageNotes\n    ###
Examples\n     *\n     * This examples show how an Object or a Map can be iterated by ngFor with the use of this\n
* keyvalue pipe.\n     *\n     * @example common/pipes/ts/keyvalue_pipe.ts region='KeyValuePipe'\n     *\n     *
@publicApi\n     */\n    var KeyValuePipe = /** @class */ (function () {\n      function KeyValuePipe(differs) {\n
this.differs = differs;\n        this.keyValues = [];\n      }\n\n      KeyValuePipe.prototype.transform = function
(input, compareFn) {\n        var _this = this;\n        if (compareFn === void 0) { compareFn =
defaultComparator; }\n        if (!input || (!(input instanceof Map) && typeof input !== 'object')) {\n
return null;\n        }\n        if (!this.differ) {\n          // make a differ for whatever type we've been passed in\n
this.differ = this.differs.find(input).create();\n          }\n          var differChanges = this.differ.diff(input);\n
if (differChanges) {\n            this.keyValues = [];\n            differChanges.forEachItem(function (r) {\n
              _this.keyValues.push(makeKeyValuePair(r.key, r.currentValue));\n            });\n          }\n
this.keyValues.sort(compareFn);\n          }\n          return this.keyValues;\n        };\n        return KeyValuePipe;\n
      }());\n\n      KeyValuePipe.decorators = [\n        { type: i0.Pipe, args: [{ name: 'keyvalue', pure: false },] }\n      ];\n
      KeyValuePipe.ctorParameters = function () { return [\n        { type: i0.KeyValueDiffers }\n      ]; }; \n      function
defaultComparator(keyValueA, keyValueB) {\n        var a = keyValueA.key;\n        var b = keyValueB.key;\n        //
if same exit with 0;\n        if (a === b)\n          return 0;\n        // make sure that undefined are at the end of the
sort.\n        if (a === undefined)\n          return 1;\n        if (b === undefined)\n          return -1;\n        // make sure
that nulls are at the end of the sort.\n        if (a === null)\n          return 1;\n        if (b === null)\n          return -1;\n
        if (typeof a === 'string' && typeof b === 'string') {\n          return a < b ? -1 : 1;\n        }\n        if (typeof a ===
'number' && typeof b === 'number') {\n          return a - b;\n        }\n        if (typeof a === 'boolean' && typeof b ===
'boolean') {\n          return a < b ? -1 : 1;\n        }\n        // `a` and `b` are of different types. Compare their string
values.\n        var aString = String(a);\n        var bString = String(b);\n        return aString === bString ? 0 : aString <
bString ? -1 : 1;\n      }\n    }\n\n    /**\n     * @license\n     * Copyright Google LLC All Rights Reserved.\n     * Use
of this source code is governed by an MIT-style license that can be\n     * found in the LICENSE file at
https://angular.io/license\n     */\n\n    /**\n     * @ngModule CommonModule\n     * @description\n     * Transforms a number into a string,\n
* formatted according to locale rules that determine group sizing and\n     * separator, decimal-point character, and other locale-specific\n
* configurations.\n     * If no parameters are specified, the function rounds off to the nearest value using this\n     * [rounding
method](https://en.wikibooks.org/wiki/Arithmetic/Rounding).\n     * The behavior differs from that of the JavaScript
`Math.round()`\n     * function.\n     * In the following case for example, the pipe rounds down where\n     *
`Math.round()` rounds up:\n     *\n     * ```html\n     * -2.5 | number: '1.0-0'\n     * > -3\n     * Math.round(-2.5)\n
* > -2\n     * ```\n     * @see `formatNumber()`\n     * @usageNotes\n     * The following code shows
how the pipe transforms numbers\n     * into text strings, according to various format specifications,\n     * where the
caller's default locale is `en-US`.\n     * ### Example\n     * <code-example
path='\"common/pipes/ts/number_pipe.ts\"' region='NumberPipe'></code-example>\n     * @publicApi\n     */\n    var DecimalPipe = /** @class */ (function () {\n      function DecimalPipe(_locale) {\n
this._locale =
_locale;\n      }\n\n      DecimalPipe.prototype.transform = function (value, digitsInfo, locale) {\n        if
(!isValue(value))\n          return null;\n        locale = locale || this._locale;\n        try {\n          var num =
strToNumber(value);\n          return formatNumber(num, locale, digitsInfo);\n        } catch (error) {\n          throw
invalidPipeArgumentError(DecimalPipe, error.message);\n        }\n      };\n      return

```

```

DecimalPipe;
}());
DecimalPipe.decorators = [
  { type: i0.Pipe, args: [{ name: 'number' },] ]
];
DecimalPipe.ctorParameters = function () { return [
  { type: String, decorators: [{ type: i0.Inject, args:
[i0.LOCALE_ID,] } ] }
]; };
/**
 * @ngModule CommonModule
 * @description
 *
 * Transforms a number to a percentage
 * string, formatted according to locale rules that determine group sizing
and
 * separator, decimal-point character, and other locale-specific
 * configurations.
 *
 * @see
`formatPercent()`
 *
 * @usageNotes
 * The following code shows how the pipe transforms numbers
 * into text strings, according to various format specifications,
 * where the caller's default locale is `en-US`.
 *
 * <code-example path="common/pipes/ts/percent_pipe.ts" region='PercentPipe'>
 *
 * @publicApi
 *
 * var PercentPipe = /** @class */ (function () {
 *   function PercentPipe(_locale) {
 *     this._locale = _locale;
 *   }
 *   PercentPipe.prototype.transform = function (value, digitsInfo, locale) {
 *     if (!isValue(value))
 *       return null;
 *     locale = locale || this._locale;
 *     try {
 *       var
 * num = strToNumber(value);
 *       return formatPercent(num, locale, digitsInfo);
 *     }
 *     catch
 * (error) {
 *       throw invalidPipeArgumentError(PercentPipe, error.message);
 *     }
 *   };
 *   return
 * PercentPipe;
 * }());
 * PercentPipe.decorators = [
 *   { type: i0.Pipe, args: [{ name: 'percent' },] ]
 * ];
 * PercentPipe.ctorParameters = function () { return [
 *   { type: String, decorators: [{ type: i0.Inject, args:
[i0.LOCALE_ID,] } ] }
 * ]; };
 *
 * @ngModule CommonModule
 * @description
 *
 * Transforms a number to a currency string, formatted according to locale rules
 * that determine group sizing and
 * separator, decimal-point character,
 * and other locale-specific configurations.
 *
 * { @a currency-code-
 * deprecation}
 * <div class="alert is-helpful">
 *
 * ***Deprecation notice:***
 *
 * The default
 * currency code is currently always `USD` but this is deprecated from v9.
 *
 * ***In v11 the default currency
 * code will be taken from the current locale identified by
 * the `LOCAL_ID` token. See the [i18n
 * guide](guide/i18n#setting-up-the-locale-of-your-app) for
 * more information.***
 *
 * If you need the
 * previous behavior then set it by creating a `DEFAULT_CURRENCY_CODE` provider in
 * your application
 * `NgModule`:
 *
 * ``ts
 * {provide: DEFAULT_CURRENCY_CODE, useValue: 'USD'}
 * ``
 *
 * </div>
 *
 * @see `getCurrencySymbol()`
 * @see `formatCurrency()`
 *
 * @usageNotes
 * The following code shows how the pipe transforms numbers
 * into text strings, according
 * to various format specifications,
 * where the caller's default locale is `en-US`.
 *
 * <code-example
 * path="common/pipes/ts/currency_pipe.ts" region='CurrencyPipe'>
 *
 * @publicApi
 *
 * var CurrencyPipe = /** @class */ (function () {
 *   function CurrencyPipe(_locale, _defaultCurrencyCode) {
 *     if (_defaultCurrencyCode === void 0) { _defaultCurrencyCode = 'USD'; }
 *     this._locale =
 * _locale;
 *     this._defaultCurrencyCode = _defaultCurrencyCode;
 *   }
 *   CurrencyPipe.prototype.transform = function (value, currencyCode, display, digitsInfo, locale) {
 *     if (display
 * === void 0) { display = 'symbol'; }
 *     if (!isValue(value))
 *       return null;
 *     locale = locale ||
 * this._locale;
 *     if (typeof display === 'boolean') {
 *       if (console && console.warn) {
 * console.warn("Warning: the currency pipe has been changed in Angular v5. The symbolDisplay option (third
 * parameter) is now a string instead of a boolean. The accepted values are 'code', 'symbol' or 'symbol-
 * narrow'.");
 *       }
 *       display = display ? 'symbol' : 'code';
 *     }
 *     var currency =
 * currencyCode || this._defaultCurrencyCode;
 *     if (display !== 'code') {
 *       if (display === 'symbol' ||
 * display === 'symbol-narrow') {
 *         currency = getCurrencySymbol(currency, display === 'symbol' ?
 * 'wide' : 'narrow', locale);
 *       }
 *       else {
 *         currency = display;
 *       }
 *     }
 *     try {
 *       var num = strToNumber(value);
 *       return formatCurrency(num, locale, currency,
 * currencyCode, digitsInfo);
 *     }
 *     catch (error) {
 *       throw
 * invalidPipeArgumentError(CurrencyPipe, error.message);
 *     }
 *   };
 *   return CurrencyPipe;
 * }());
 * CurrencyPipe.decorators = [
 *   { type: i0.Pipe, args: [{ name: 'currency' },] ]
 * ];
 * CurrencyPipe.ctorParameters = function () { return [
 *   { type: String, decorators: [{ type: i0.Inject, args:
[i0.LOCALE_ID,] } ] },
 *   { type: String, decorators: [{ type: i0.Inject, args:
[i0.DEFAULT_CURRENCY_CODE,] } ] }
 * ]; };
 * function isValue(value) {
 *   return !(value === null ||
 * value === "" || value !== value);
 * }
 *
 * /**
 * * Transforms a string into a number (if needed).
 *
 */

```



```

function isPlatformWorkerUi(platformId) {\n    return platformId === PLATFORM_WORKER_UI_ID;\n }\n\n/**\n * @license\n * Copyright Google LLC All Rights Reserved.\n * Use of this source code is governed by an MIT-style license that can be\n * found in the LICENSE file at https://angular.io/license\n */\n\n/**\n * @publicApi\n */\n var VERSION = new i0.Version('11.0.2');\n\n/**\n * @license\n * Copyright Google LLC All Rights Reserved.\n * Use of this source code is governed by an MIT-style license that can be\n * found in the LICENSE file at https://angular.io/license\n */\n\n/**\n * Defines a scroll position manager. Implemented by `BrowserViewportScroller`.\n * @publicApi\n */\n var ViewportScroller = /** @class */ (function () {\n    function ViewportScroller() {\n    }\n    return ViewportScroller;\n }());\n // De-sugared tree-shakable injection\n // See #23917\n /** @nocollapse */\n ViewportScroller.prov = i0.defineInjectable({\n    token: ViewportScroller,\n    providedIn: 'root',\n    factory: function () { return new BrowserViewportScroller(i0.inject(DOCUMENT), window, i0.inject(i0.ErrorHandler)); }\n });\n\n/**\n * Manages the scroll position for a browser window.\n */\n var BrowserViewportScroller = /** @class */ (function () {\n    function BrowserViewportScroller(document, window, errorHandler) {\n        this.document = document;\n        this.window = window;\n        this.errorHandler = errorHandler;\n        this.offset = function () { return [0, 0]; }\n    }\n\n    /**\n     * Configures the top offset used when scrolling to an anchor.\n     * @param offset A position in screen coordinates (a tuple with x and y values)\n     * or a function that returns the top offset position.\n     */\n    BrowserViewportScroller.prototype.setOffset = function (offset) {\n        if (Array.isArray(offset)) {\n            this.offset = function () { return offset; }\n        } else {\n            this.offset = offset\n        }\n    }\n\n    /**\n     * Retrieves the current scroll position.\n     * @returns The position in screen coordinates.\n     */\n    BrowserViewportScroller.prototype.getScrollPosition = function () {\n        if (this.supportsScrolling()) {\n            return [this.window.scrollX, this.window.scrollY];\n        } else {\n            return [0, 0];\n        }\n    }\n\n    /**\n     * Sets the scroll position.\n     * @param position The new position in screen coordinates.\n     */\n    BrowserViewportScroller.prototype.scrollToPosition = function (position) {\n        if (this.supportsScrolling()) {\n            this.window.scrollTo(position[0], position[1]);\n        }\n    }\n\n    /**\n     * Scrolls to an anchor element.\n     * @param anchor The ID of the anchor element.\n     */\n    BrowserViewportScroller.prototype.scrollToAnchor = function (anchor) {\n        if (this.supportsScrolling()) {\n            var elSelected = this.document.getElementById(anchor) || this.document.getElementsByName(anchor)[0];\n            if (elSelected) {\n                this.scrollToElement(elSelected);\n            }\n        }\n    }\n\n    /**\n     * Disables automatic scroll restoration provided by the browser.\n     */\n    BrowserViewportScroller.prototype.setHistoryScrollRestoration = function (scrollRestoration) {\n        if (this.supportScrollRestoration()) {\n            var history = this.window.history;\n            if (history && history.scrollRestoration) {\n                history.scrollRestoration = scrollRestoration;\n            }\n        }\n    }\n\n    BrowserViewportScroller.prototype.scrollToElement = function (el) {\n        var rect = el.getBoundingClientRect();\n        var left = rect.left + this.window.pageXOffset;\n        var top = rect.top + this.window.pageYOffset;\n        var offset = this.offset();\n        this.window.scrollTo(left - offset[0], top - offset[1]);\n    }\n\n    /**\n     * We only support scroll restoration when we can get a hold of window.\n     * This means that we do not support this behavior when running in a web worker.\n     * Lifting this restriction right now would require more changes in the dom adapter.\n     * Since webworkers aren't widely used, we will lift it once RouterScroller is\n     * battle-tested.\n     */\n    BrowserViewportScroller.prototype.supportScrollRestoration = function () {\n        try {\n            if (!this.window || !this.window.scrollTo) {\n                return false;\n            }\n            // The `scrollRestoration` property could be on the `history` instance or its prototype.\n            var scrollRestorationDescriptor = getScrollRestorationProperty(this.window.history) ||\n                getScrollRestorationProperty(Object.getPrototypeOf(this.window.history));\n            // We can write to the `scrollRestoration` property if it is a writable data field or it has a\n            // setter function.\n            return !!scrollRestorationDescriptor && !(scrollRestorationDescriptor.writable ||\n                scrollRestorationDescriptor.set);\n        } catch (_a) {\n            return false;\n        }\n    }\n\n};\n
```



```

BrowserViewportScroller.prototype.supportsScrolling = function () {\n      try {\n          return
!!this.window.scrollTo;\n      }\n      catch (_a) {\n          return false;\n      }\n      }\n      return
BrowserViewportScroller;\n    }());\n    function getScrollRestorationProperty(obj) {\n      return
Object.getOwnPropertyDescriptor(obj, 'scrollRestoration');\n    }\n    /**\n     * Provides an empty implementation
of the viewport scroller.\n     */\n    var NullViewportScroller = /** @class */ (function () {\n      function
NullViewportScroller() {\n      }\n      /**\n       * Empty implementation\n       */\n      NullViewportScroller.prototype.setOffset = function (offset) { }\n      /**\n       * Empty implementation\n       */\n      NullViewportScroller.prototype.getScrollPosition = function () {\n        return [0, 0];\n      }\n      /**\n       * Empty implementation\n       */\n      NullViewportScroller.prototype.scrollToPosition = function (position)
{\n      }\n      /**\n       * Empty implementation\n       */\n      NullViewportScroller.prototype.scrollToAnchor =
function (anchor) { }\n      /**\n       * Empty implementation\n       */\n      NullViewportScroller.prototype.setHistoryScrollRestoration = function (scrollRestoration) { }\n      return
NullViewportScroller;\n    }());\n\n    /**\n     * @license\n     * Copyright Google LLC All Rights Reserved.\n     *\n     * Use of this source code is governed by an MIT-style license that can be\n     * found in the LICENSE file at
https://angular.io/license\n     */\n\n    /**\n     * @license\n     * Copyright Google LLC All Rights Reserved.\n     *\n     * Use of this source code is governed by an MIT-style license that can be\n     * found in the LICENSE file at
https://angular.io/license\n     */\n\n    // This file only reexports content of the `src` folder. Keep it that way.\n\n    /**\n     * @license\n     * Copyright Google LLC All Rights Reserved.\n     *\n     * Use of this source code is
governed by an MIT-style license that can be\n     * found in the LICENSE file at https://angular.io/license\n     */\n\n    /**\n     * Generated bundle index. Do not edit.\n     */\n\n    exports.APP_BASE_HREF =
APP_BASE_HREF;\n    exports.AsyncPipe = AsyncPipe;\n    exports.CommonModule = CommonModule;\n    exports.CurrencyPipe = CurrencyPipe;\n    exports.DOCUMENT = DOCUMENT;\n    exports.DatePipe =
DatePipe;\n    exports.DecimalPipe = DecimalPipe;\n    exports.HashLocationStrategy = HashLocationStrategy;\n    exports.I18nPluralPipe = I18nPluralPipe;\n    exports.I18nSelectPipe = I18nSelectPipe;\n    exports.JsonPipe =
JsonPipe;\n    exports.KeyValuePipe = KeyValuePipe;\n    exports.LOCATION_INITIALIZED =
LOCATION_INITIALIZED;\n    exports.Location = Location;\n    exports.LocationStrategy = LocationStrategy;\n    exports.LowerCasePipe = LowerCasePipe;\n    exports.NgClass = NgClass;\n    exports.NgComponentOutlet =
NgComponentOutlet;\n    exports.NgForOf = NgForOf;\n    exports.NgForOfContext = NgForOfContext;\n    exports.NgIf = NgIf;\n    exports.NgIfContext = NgIfContext;\n    exports.NgLocaleLocalization =
NgLocaleLocalization;\n    exports.NgLocalization = NgLocalization;\n    exports.NgPlural = NgPlural;\n    exports.NgPluralCase = NgPluralCase;\n    exports.NgStyle = NgStyle;\n    exports.NgSwitch = NgSwitch;\n    exports.NgSwitchCase = NgSwitchCase;\n    exports.NgSwitchDefault = NgSwitchDefault;\n    exports.NgTemplateOutlet = NgTemplateOutlet;\n    exports.PathLocationStrategy = PathLocationStrategy;\n    exports.PercentPipe = PercentPipe;\n    exports.PlatformLocation = PlatformLocation;\n    exports.SlicePipe =
SlicePipe;\n    exports.TitleCasePipe = TitleCasePipe;\n    exports.UpperCasePipe = UpperCasePipe;\n    exports.VERSION = VERSION;\n    exports.ViewportScroller = ViewportScroller;\n    exports.formatCurrency =
formatCurrency;\n    exports.formatDate = formatDate;\n    exports.formatNumber = formatNumber;\n    exports.formatPercent = formatPercent;\n    exports.getCurrencySymbol = getCurrencySymbol;\n    exports.getLocaleCurrencyCode = getLocaleCurrencyCode;\n    exports.getLocaleCurrencyName =
getLocaleCurrencyName;\n    exports.getLocaleCurrencySymbol = getLocaleCurrencySymbol;\n    exports.getLocaleDateFormat = getLocaleDateFormat;\n    exports.getLocaleDateTimeFormat =
getLocaleDateTimeFormat;\n    exports.getLocaleDayNames = getLocaleDayNames;\n    exports.getLocaleDayPeriods = getLocaleDayPeriods;\n    exports.getLocaleDirection = getLocaleDirection;\n    exports.getLocaleEraNames = getLocaleEraNames;\n    exports.getLocaleExtraDayPeriodRules =
getLocaleExtraDayPeriodRules;\n    exports.getLocaleExtraDayPeriods = getLocaleExtraDayPeriods;\n    exports.getLocaleFirstDayOfWeek = getLocaleFirstDayOfWeek;\n    exports.getLocaleId = getLocaleId;\n    exports.getLocaleMonthNames = getLocaleMonthNames;\n    exports.getLocaleNumberFormat =
getLocaleNumberFormat;\n    exports.getLocaleNumberSymbol = getLocaleNumberSymbol;\n

```


roperty","pctEncodeSpaces","encodeURIComponent","LOCATION_UPGRADE_CONFIGURATION","InjectionToken","APP_BASE_HREF_RESOLVED","LocationUpgradeModule","config","ngModule","providers","Location","provide","useFactory","provide\$location","deps","UpgradeModule","PlatformLocation","LocationStrategy","useValue","provideUrlCodec","provideAppBaseHref","Inject","APP_BASE_HREF","Optional","provideLocationStrategy","appBaseHref","baseHref","options","useHash","HashLocationStrategy","PathLocationStrategy","decorators","type","NgModule","args","imports","CommonModule","angular_packages_common_upgrade_upgrade_a","angular_packages_common_upgrade_upgrade_b","angular_packages_common_upgrade_upgrade_c","angular_packages_common_upgrade_upgrade_d","defineProperty"],"mappings":";;;;;CAMC,SAAUA,EAAQC,GACI,iBAAZC,SAAOC,oBAAXC,OAAyBF,EAAQC,QAASE,QAAQ,QAASA,QAAQ,mBAAoBA,QAAQ,iBAAkBA,QAAQ,4BAC7I,mBAAXC,QAAyBA,OAAOC,IAAMD,OAAO,0BAA2B,CAAC,UAAW,OAAQ,kBAAmB,gBAAiB,2BAA4BJ,GACzIA,IAAZBD,EAASA,GAAUO,MAAsBC,GAACKR,EAAOQ,IAAM,GAAIR,EAAOQ,GAAGC,OAAST,EAAOQ,GAAGC,QAAU,GAAIT,EAAOQ,GAAGC,OAAOC,QAAU,IAAKV,EAAOW,KAAMX,EAAOQ,GAAGC,OAAQT,EAAOQ,GAAGI,KAAMZ,EAAOQ,GAAGE,QAAQG,QAHHn,CAIEC,MAAM,SAAWZ,EAASS,EAAMF,EAAQG,EAAMG,GAAW;;;;;;oFAqVvD,IAAIC,EAAa,iCACbC,EAAqB,gBACrBC,EAAoB,4BACpBC,EAAgB,CAChBC,QAAS,GACTC,SAAU,IACVC,OAAQ,IAURC,EAA+B,WAC/B,SAASA,EAACc,EAAWC,EAAUC,EAakBC,EAAUC,GACpE,IAAIC,EAAQf,KACZA,KAACKW,SAAWA,EACbBX,KAAKY,iBAAmBA,EACxBZ,KAAKa,SAAWA,EACbBb,KAAKc,iBAAmBA,EACxBd,KAAKgB,aAAc,EACnBhB,KAAKiB,eAAgB,EACrBjB,KAAKkB,SAAW,GACbIB,KAAKmB,MAAQ,GACbnB,KAAKoB,OAAS,GACdpB,KAAKqB,WAAy,EACjBrB,KAAKsB,OAAS,GACdtB,KAAKuB,SAAW,GACbVb,KAAKwB,OAAS,GACdxB,KAAKyB,kBAAoB,GACzBzB,KAAK0B,YAAc,KACnB1B,KAAK2B,WAAa,IAAI9B,EAAK+B,cAAc,GACzC5B,KAAK6B,eAAiB,GAEtB7B,KAAK8B,gBAakB,KACvB,IAAIC,EAAa/B,KAAKgC,aACIBC,EAAYjC,KAAKa,SAASqB,MAAMH,GACpC,GAAYB,iBAAdE,EACP,KAAM,cAEVjC,KAAKmC,WAAaF,EAAUG,SAC5BpC,KAAKoB,OAASa,EAAUI,SACxBrC,KAAKsC,OAASC,SAASN,EAAUO,OAASnC,EAAc4B,EAAUG,WAAa,KAC/EpC,KAAKyC,eAAeV,EAAYA,GACb/B,KAAK0C,aACL1C,KAAK2C,QAAU3C,KAAK4C,eACpB5C,KAAKW,SAASkC,aAAY,SAAUC,EAAQC,GACxChC,EAAMY,WAAWqB,KAAK,CAAEF,OAAQA,EAAQC,SAAUa,OAxD9D,SAASE,EAAUC,GAGf,QAASA,GAA2B,mBAAAb,EAaIC,KAuDnBF,CAAUvC,GACVA,EAAUyC,MAAK,SAAUC,GAAM,OAOrC,EAAMsC,WAAWD,MAGvDpD,KAAKqD,WAAW3C,GAmDxB,OAhdAD,EAAC6C,UAAUD,WAAa,SAAU3C,GAC3C,IAAIK,EAAQf,KACRuD,EAAa7C,EAAU8C,IAAI,cAC3BC,EAAe/C,EAAU8C,IAAI,gBACjCC,EAAaC,GAAg,SAAS,SAAUC,GAC/B,KAAIA,EAAMC,SAAWD,EAAME,SAAWF,EAAMG,UAA4B,IAAhBH,EAAMI,OACzC,IAAjBJ,EAAMK,QADV,CAMA,IAFA,IAAIC,EAAMN,EAAMO,OAETD,GAAsC,MAA/BA,EAaIE,SAA SC,eAEvB,GAaIH,IAAQR,EAAa,MAAQQ,EAAMA,EAaII,YACvC,OAGR,GArfZ,SAASC,EAASC,GACd,YAAmBC,IAAZD,EAAGE,KAoFGH,CAASL,GAAd,CAGA,IAAIS,EAAUT,EAaIQ,KACdE,EAAUV,EAaIW,aAAa,QAE3BxE,EAAkByE,KAAKH,KAGvBA,GAAYT,EAaIW,aAAa,WAAcjB,EAAMmB,sBAC7C/D,EAAM0B,eAAeiC,EAASC,KAI9BhB,EAAMoB,iBAEFhE,EAAMiE,WAAajE,EAAMiB,cACzBuB,EAAW0B,eAK3BjF,KAAK2B,WAAWuD,WAAU,SAAUC,GACbC,IAAIrC,EAASqC,EAAGrC,OAAQC,EAAWoC,EAAGpC,SACICqC,EAASrE,EAAMiE,SACfK,EAAWtE,EAAM4B,QACrB5B,EAAMuE,QAAQxC,GACdA,EAAS/B,EAAMiE,SACfjE,EAAM4B,QAAUI,EACbB,IAAIwC,EAAMbHc,EAAWiC,WAAW,uBAAwB1C,EAAQsC,EAAQrC,EAAUsC,GAC1fE,iBAGDxE,EAAMiE,WAAaIc,IAEnByC,GACAxE,EAAMuE,QAAQF,GACdrE,EAAM0E,MAAMJ,GACZtE,EAAM2E,0BAA0BN,GAAQ,EAAOC,GAC/CtE,EAAM4E,wBAAwB5E,EAAM6E,MAA07E,EAAM4B,QAAASyC,EAAQC,KAGIEtE,EAAMC,aAAc,EACpBuC,EAAWiC,WAAW,yBAA0B1C,EAAQsC,EAAQrC,EAAUsC,GAC1EtE,EAAM8E,sBAELtC,EAAWuC,SACZvC,EAAWwC,cAInBxC,EAAWyC,QA AO,WACd,GAaIjF,EAAMC,aAAeD,EAAME,cAAe,CAC1CF,EAAME,eAAgB,EActB,IAAIgF,EAAWIF,EAAMiB,aACjBc,EAAS/B,EAAMiE,SACfkB,EAAnF,EAAM6B,eACnBuD,EAAMbPf,EAAMM,UACzB+E,GA AUBrF,EAAMF,SAASwF,SAASJ,EAAUnD,IAAWoD,IAAenF,EAAM4B,SAKzF5B,EAAMC,aAAeoF,KACrBrF,EAAMC,aAAc,EACpBuC,EA AW+C,YAAW,WAEIB,IAAIxD,EAAS/B,EAAMiE,SACfO,EAAMbHc,EACiBiC,WAAW,uBAAwB1C,EAAQmD,EAAUIF,EAAM4B,QAASuD,GACpEX,iBAGDxE,EAAMiE,WAAaIc,IAEnByC,GACAxE,EAAMuE,QAAQW,GACdIF,EAAM4B,QAAUuD,IAKZE,IACArF,EAAM2E,0BAA0B5C,EAAQqD,EAakBD,IAAenF,EAAM4B,QAAU,KAA05B,EAAM4B,SACtG5B,EAAMM,WAAy,GAEtBkC,EAAWiC,WAAW,yBAA0B1C,EAAQmD,E

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AEhBT,EAAC6C,UAAUsC,IAAM,SAAUA,GACpC,GAAMb,iBAARA,EAakB,CACpBA,EAAl8B,SACL9B,EAAM,KAeV,IAAIqC,EAAQ/H,EAAWiK,KAAKvE,GAC5B,OAAKqC,IAEDA,EAAM,IAAc,KAARrC,IACZ5F,KAAKkI,KAAKII,KAAKa,SAASwH,WAAWJ,EAAM,MACzCA,EAAM,IAAMA,EAAM,IAAc,KAARrC,IACxB5F,KAAKuI,OAAON,EAAM,IAAM,IAC5BjI,KAAKyI,KAAKR,EAAM,IAAM,IAEfiJ,MAPIA,KASf,OAAOA,KAAKmB,OAWhBV,EAAC6C,UAAUIB,SAAW,WAC/B,OAAOpC,KAAKmC,YaqBhB1B,EAAC6C,UAAU8G,KAAO,WAC3B,OAAOpK,KAAKoB,QAWhBX,EAAC6C,UAAUd,KAAO,WAC3B,OAAOxC,KAAKsC,QAehB7B,EAAC6C,UAAU4E,KAAO,SAAUA,GACrC,YAAoB,IAATA,EACAI,KAAKsB,QAIhB4G,EAA0B,OAD1BA,EAAGb,OAATA,EAAGbA,EAAKmC,WAAa,IAC7BrC,OAAO,GAAaE,EAAO,IAAMA,EAC7CI,KAAKsB,OAAS4G,EACdII,KAAK8J,cACE9J,OAEXS,EAAC6C,UAAUif,OAAS,SAAUA,EAAQ+B,GAC/C,OAAQC,UAAU7C,QACd,KAAK,EACD,OAAO1H,KAAKuB,SACb,KAAK,EACD,GAAsB,iBAAXgH,GAAYc,iBAAXA,EACrCvI,KAAKuB,SAAWvB,KAAKa,SAASyH,aAAaC,EAAO8B,gBAEjD,CAAA,GAAsB,iBAAX9B,GAakC,OAAXA,EAWnC,MAAM,IAAIT,MAAM,4EAPhB,IAAK,IAAI0C,KAFTjC,EAASkC,OAAOC,OAAO,GAAInC,GAGJ,MAAfA,EAAOic,WACajC,EAAOic,GAETbxK,KAAKuB,SAAWgH,EAKpB,MACJ,QACI,GAAsB,iBAAXA,EAaqB,CAC5B,IAAIoC,EAAGb3K,KAAKuI,SACzB,OAAI,MAAO+B,UACAK,EAACPc,GACdV,KAAKuI,OAAOoC,KAGnBA,EAACPc,GAAU+B,EACjBtK,KAAKuI,OAAOoC,KAKnC,OADA3K,KAAK8J,cACE9J,MAEXS,EAAC6C,UAAUmF,KAAO,SAAUA,GACrC,YAAoB,IAATA,EACAZI,KAAKwB,QAehBxB,KAAKwB,OAAkB,OAATiH,EAAGbA,EAAK4B,WAAa,GAChDrK,KAAK8J,cACE9J,OAMXS,EAAC6C,UAAUId,QAAU,WAE9B,OADAvG,KAAKqB,WAAY,EACVrB,MAEXS,EAAC6C,UAAUmC,MAAQ,SAAUA,GACtC,YAAqB,IAAVA,EACAZF,KAAK2C,SAEhB3C,KAAK2C,QAAU8C,EACRzF,OAeJS,EA3fuB,GAMgB9BmK,EAaUc,WACvC,SAASA,EAAsBC,EAAWIK,EAauc,EAakBC,EAauc,GAC5Ed,KAAK6K,UAYYA,EACjB7K,KAAKW,SAAWA,EACHBX,KAAKY,iBAAmBA,EACxBZ,KAAKa,SAAWA,EACHBb,KAAKc,iBAAmBA,EAsB5B,OAjBA8J,EAAsBtH,UAAUwH,KAAO,WACnC,OAAO,IAAIrK,EAACt,KAAK6K,UAAUnK,UAAWV,KAAKW,SAAUx,KAAKY,iBAakBZ,KAAKa,SAAUb,KAAKc,mBAMjH8J,EAAsBtH,UAAUyH,WAAa,SAAUC,GACnD,MAAM,IAAIID,MAAM,2EAMpB8C,EAAsBtH,UAAU2H,UAYY,SAAUC,GACID,MAAM,IAAIpD,MAAM,2EAEB8C,EA5B+B,GAA2CtCO,EACA,SAASA,MAUTC,EAAMc,WACnC,SAASA,KA4FT,OAZFAA,EAakB9H,UAAU+H,WAAa,SAAUnD,GAG/C,IAFA,IAAIoD,EAAWpD,EAAKqD,MAAM,KACtBhC,EAAl+B,EAAS5D,OACV6B,KAeh+B,EAAS/B,GAakic,EAaiBF,EAAS/B,GAAGhD,QAAQ,OAAQ,MAG/D,OAmFR,SAASkF,EAAGb7F,GACrB,OAAOA,EAAlW,QAAQ,gBAaiB,IAPfzBkF,GADpVd,EAAOoD,EAASI,KAAK,OACuB,MAAZxD,EAak,GAAC,IAAO,IAAMA,IAGpEkD,EAakB9H,UAAUqI,aAAe,SAAUpD,GAKjD,MAJsB,iBAAXA,IACPA,EAASqD,EAACrD,KAE3BA,EAKIR,SAASd,EAAW3I,GACHb,IAAI4I,EAAQ,GACRC,EAAU,SAAUvB,GACpB,IAAIb,EAAQzG,EAAlS,H,GACZtD,MAAMC,QAAQwC,GACdA,EAAMb,SAAQ,SAAUkD,GACpBF,EAAMjD,KAAKoD,EAaezB,GAak,KACX,IAAfwB,EAAsB,GAak,IAAMC,EAaeD,GAAY,QAIrEF,EAAMjD,KAAKoD,EAaezB,GAak,KACHb,IAAVb,EAaiB,GAak,IAAMsC,EAaetC,GAAO,MAG/D,IAAK,IAAIa,KAAOtH,EACZ6I,EAAQvB,GAEZ,OAAOsB,EAAMpE,OAASoE,EAAMJ,KAAK,KAAO,GAPJ3BG,CAAWtD,IACJ,IAAMA,EAAS,IAGnC6C,EAakB9H,UAAU4I,WAAa,SAAUzD,GAe/C,OADAA,EAAO+C,EAaiB/C,IACV,IAAMA,EAAO,IAG/B2C,EAakB9H,UAAU+E,WAAa,SAAUH,EAAM+C,QACnC,IAAdA,IAAwBA,GAAY,GAGxC,IAFA,IAAIK,EAAWpD,EAakqD,MAAM,KACtBhC,EAAl+B,EAAS5D,OACV6B,KACH+B,EAAS/B,GAak4C,mBAAmBb,EAAS/B,IACTc0B,IAEAK,EAAS/B,GAak+B,EAAS/B,GAAGhD,QAAQ,MAAO,QAGjD,OAAO+E,EAASI,KAAK,MAGzBN,EAakB9H,UAAUgF,aAAe,SAAUC,GACjD,OAAOqD,EAACrD,IAGzB6C,EAakB9H,UAAUkF,WAAa,SAAUC,GAe/C,MAAmB,OADnBA,EAAO0D,mBAAmB1D,IACd,GAAaA,EAakL,UAAU,GAakK,GAejD2C,EAakB9H,UAAU4G,UAYY,SAAUkC,EAAY7D,EAAQE,EAAM4D,GACxE,GAAYB,IAArB9B,UAAU7C,OAAC,CACxB,IAAI4E,EAAStM,KAAKkC,MAAMkK,EAAYC,GACpC,GAAsB,iBAAXC,EACP,OAAOA,EAEX,IAAIC,EAAYD,EAAOIK,SAAW,MAAQkK,EAaoJk,UAYYiK,EAao9J,KAAO,IAAM8J,EAao9J,KAAO,IAC/F,OAAOxC,KAAKkK,UAAUIK,KAAKqI,WAAWiE,EAAOnE,UAAWnI,KAAKsI,aAAagE,EAAO/D,QAASvI,KAAKwI,WAAW8D,EAAO7D,MAAO8D,GAGxH,IAAIC,EAAXm,KAAKqL,WAAWe,GAC1BK,EAAYIE,GAAUvI,KAAK2L,aAAapD,IAAW,GACnDmE,EAAUjE,GAAQzI,KAAKkM,WAAWzD,IAAS,GAC3CkE,GAACn,GAAW,IAAMG,EAInC,OAHKG,EAAWjF,QAA4B,MAAIbIF,EAAW,KACjCA,EAaA,IAAMA,GAehBA,EAaAF,EAAYC,GAGxCtB,EAakB9H,UAAU+C,SAAW,SAAUg,EAAMC,GACnD,OAAO7M,KAAKkK,UAAU0C,KAAU5M,

KAaKkK,UAAU2C,IAGnDzB,EAakB9H,UAAUpB,MAAQ,SAAU0D,EAak2B,GAC/C,IAEI,IAAI+E,EAAU/E,EAAsB,IAAIuF,IAAIH,EAak2B,GAA5B,IAAIuF,IAAIH,GAC7B,MAAO,CACHnB,KAAM6H,EAao7H,KACbrC,SAAUkK,EAAOIK,SAAWkK,EAAOIK,SAASmE,QAAQ,KAAM,IAAM,GACHe6D,KAAMkC,EAAOIC,KAcb7B,OAAQ+D,EAAO/D,OAAS+D,EAAO/D,OAAOhC,QAAQ,MAAO,IAAM,GAC3DkC,KAAM6D,EAAO7D,KAao6D,EAAO7D,KAakIC,QAAQ,KAAM,IAAM,GACpDIE,SAAUiK,EAAojK,SACjBG,KAAM8J,EAAO9J,KACb2F,SAAyC,MAA9BmE,EAAOnE,SAASH,OAAO,GAAsE,EAAOnE,SAAW,IAAMmE,EAAOnE,UAGvF,MAAOB,GACH,MAAM,IAAIQ,MAAM,gBAakBIC,EAAM,gBAakB2B,EAAO,OAGIE6D,EA7F2B,GAwGtC,SAA52B,EAAsBpD,GAC3B,IACI,OAAOwC,mBAAmBxC,GAe9B,MAAOrc,GAEH,QAOR,SAASsE,EAAcoB,GACnB,IAAI9J,EAAM,GAyBV,OAxBc8J,GAAY,IAAIzB,MAAM,KAakZC,SAAQ,SAAUkE,GAC1C,IAAIC,EAAYzC,EAak0C,EACjBF,IACaXC,EAAMwC,EAAWA,EAASzG,QAAQ,MAAO,QAerB,KADpB0G,EAAaD,EAASG,QAAQ,QAe1B3C,EAAMwC,EAAS5E,UAAU,EAAG6E,GAC5BC,EAAMF,EAAS5E,UAAU6E,EAAa,SAGvB,KADnBzC,EAAMuC,EAAsBvC,MAExB0C,OAAqB,IAARA,GAAsBH,EAAsBG,GACpDhK,EAAIkK,eAAe5C,GAGftD,MAAMC,QAAQjE,EAAsH,IACvBtH,EAAsH,GAak3B,KAakqE,GAGdhK,EAAsH,GAao,CAACtH,EAAsH,GAAM0C,GANtBhK,EAAsH,GAao0C,OAwpBhK,EAuCX,SAASsI,EAAiB0B,GACtB,OAAojB,EAAeiB,GAak,GAAM3G,QAAQ,OAAQ,KAaKA,QAAQ,QAAS,KAaKA,QAAQ,QAAS,KAejG,SAAS0F,EAAeiB,EAakG,GAezB,YADwB,IAApBA,IAA8BA,GAakB,GAC7CC,mBAAmBJ,GACrB3G,QAAQ,OAAQ,KACbBA,QAAQ,QAAS,KACjBA,QAAQ,OAAQ,KACbBA,QAAQ,QAAS,KACjBA,QAAQ,QAAS,KACjBA,QAAQ,OAAAS8G,EAakB,MAAQ;;;;;;;OAepD,IAAIE,EAAiC,IAAIzN,EAak0N,eAAe,kCACzDC,EAAyB,IAAI3N,EAak0N,eAAe,0BAQjDE,EAauC,WACvC,SAASA,KA+BT,OA7BAA,EAAsBC,OAAS,SAAUA,GACrC,MAAO,CACHC,SAAUF,EACVg,UAAW,CACPIO,EAAOmO,SACP,CACIC,QAAStN,EACTuN,WAAyC,EACZC,KAAM,C AACjO,EAAQkO,cAAexO,EAAOmO,SAAUnO,EAAOyO,iBAakBjD,EAAUxL,EAAO0O,mBAE7F,CAAEN,QAASR,EAAgCe,SAAUX,GAakB,IACvE,CAAEI,QAAS5C,EAAU6C,WAAyO,EAAiBL,KAAM,CAACX,IACzD,CACIQ,QAASN,EACTO,WAAyQ,EACZN,KAAM,CAACX,EAAgC,CAAC,IAAIzN,EAak2O,OAAO9O,EAAO+O,eAAgB,IAAI5O,EAak6O,YAE5F,CACIZ,QAASpO,EAAO0O,iBACHBL,WAAyY,EACZV,KAAM,CACFvO,EAAOyO,iBACPX,EACAF,OAMbG,EAhC+B,GAqC1C,SAASc,EAAMbB,EAAQkB,GACHC,OAAIIB,GAAGC,MAAtBA,EAAokB,YACVIB,EAAokB,YAEM,MAAfA,EACEA,EAEJ,GAEX,SAASN,EAAgBZ,GAerB,OAAO,IADKA,GAAUA,EAAO9M,UAAyUk,GAG7C,SAASwD,EAAwBhO,EAakBkO,EAAUC,GAezD,YADgB,IAAZA,IAAsBA,EAAU,IAC7BA,EAAQC,QAAU,IAAIrP,EAAOsP,qBAaqBrO,EAakBkO,GACvE,IAAIInP,EAAOuP,qBAaqBtO,EAakBkO,GAe1D,SAASb,EAAiBpD,EAAWIK,EAAUC,EAakBC,EAAUC,GAevE,OADwB,IAAI8J,EAAsBC,EAAWIK,EAAUC,EAakBC,EAAUC,GACIEgK;;;;;;;OAvB7B4C,EAAsByB,WAAa,CAC/B,CAAEC,KAAMtP,EAakuP,SAAUC,KAAM,CAAC,CAAEC,QAAS,CAAC5P,EAAO6P,kBAsDrDpQ,EAAQqB,cAAgBA,EACxBrB,EAAQwL,sBAawBA,EACHCxL,EAAQgM,kBAaOBA,EAC5BhM,EAAQmO,+BAAiCA,EACzCnO,EAAQsO,sBAawBA,EACHCtO,EAAQ+L,SAAWA,EACnB/L,EAAQqQ,2CAA6CjB,EACrDpP,EAAQsQ,2CAA6CnB,EACrDnP,EAAQuQ,2CAA6Cf,EACrDxP,EAAQwQ,2CAA6C3B,EAerDxD,OAAOf,eAAezQ,E AAS,aAAc,CAAeUk,OAAO","sourcesContent":["/**\n * @license Angular v11.0.2\n * (c) 2010-2020 Google LLC. https://angular.io\n * License: MIT\n *\n(function (global, factory) {\n typeof exports === 'object' && typeof module !== 'undefined' ? factory(exports, require('rxjs'), require('@angular/common'), require('@angular/core'), require('@angular/upgrade/static')) :\n typeof define === 'function' && define.amd ? define('@angular/common/upgrade', ['exports', 'rxjs', '@angular/common', '@angular/core', '@angular/upgrade/static'], factory) :\n (global = global || self, factory((global.ng = global.ng || {}), global.ng.common = global.ng.common || {}, global.ng.common.upgrade = {}), global.rxjs, global.ng.common, global.ng.core, global.ng.upgrade.static));\n})(this, (function (exports, rxjs, common, core, _static) { 'use strict';\n\n/*! *****\n\n Copyright (c) Microsoft Corporation.\n\n Permission to use, copy, modify, and/or distribute this software for any\n purpose with or without fee is hereby granted.\n\n THE SOFTWARE IS PROVIDED \"AS IS\" AND THE AUTHOR DISCLAIMS ALL WARRANTIES WITH\n REGARD TO THIS SOFTWARE INCLUDING ALL IMPLIED WARRANTIES OF MERCHANTABILITY\n AND FITNESS. IN NO EVENT SHALL THE AUTHOR BE LIABLE FOR ANY SPECIAL, DIRECT,\n INDIRECT, OR CONSEQUENTIAL DAMAGES OR ANY

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Reflect, Promise */n /* global

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Reflect, Promise */n var extendStatics = function (d, b) {\n    extendStatics = Object.setPrototypeOf ||\n    ({ __proto__: [] } instanceof Array && function (d, b) { d.__proto__ = b; }) ||\n    function (d, b) { for (var p in b)\n        if (b.hasOwnProperty(p))\n            d[p] = b[p]; }; return extendStatics(d, b); }\n\nfunction __extends(d, b) {\n    extendStatics(d, b);\n    function __() { this.constructor = d; }\n    d.prototype = b === null ? Object.create(b) : (__proto__ = b.prototype, new __());\n}\n\nvar __assign = function () {\n    __assign = Object.assign || function __assign(t) {\n        for (var s, i = 1, n = arguments.length; i < n; i++) {\n            s = arguments[i];\n            for (var p in s)\n                if (Object.prototype.hasOwnProperty.call(s, p))\n                    t[p] = s[p];\n        }\n        return t;\n    };\n    return __assign.apply(this, arguments);\n};\n\nfunction __rest(s, e) {\n    var t = {};\n    for (var p in s)\n        if (Object.prototype.hasOwnProperty.call(s, p)\n            && e.indexOf(p) < 0)\n            t[p] = s[p];\n    if (s != null && typeof Object.getPrototypeOfSymbols ===\n        \"function\")\n        for (var i = 0, p = Object.getPrototypeOfSymbols(s); i < p.length; i++) {\n            if\n                (e.indexOf(p[i]) < 0 && Object.prototype.propertyIsEnumerable.call(s, p[i]))\n                t[p[i]] = s[p[i]];\n        }\n    return t;\n}\n\nfunction __decorate(decorators, target, key, desc) {\n    var c = arguments.length, r = c < 3 ? target : desc === null ? desc = Object.getPrototypeOfDescriptor(target, key) : desc, d;\n    if (typeof Reflect === \"object\" && typeof Reflect.decorate === \"function\")\n        r = Reflect.decorate(decorators, target, key, desc);\n    else\n        for (var i = decorators.length - 1; i >= 0; i--)\n            if (d = decorators[i])\n                r = (c < 3 ? d(r) : c > 3 ? d(target, key, r) : d(target, key)) || r;\n    return c > 3 && r &&\n        Object.defineProperty(target, key, r, r);\n}\n\nfunction __param(paramIndex, decorator) {\n    return function (target, key) {\n        decorator(target, key, paramIndex);\n    }\n}\n\nfunction __metadata(metadataKey, metadataValue) {\n    if (typeof Reflect === \"object\" && typeof Reflect.metadata === \"function\")\n        return Reflect.metadata(metadataKey, metadataValue);\n}\n\nfunction __awaiter(thisArg, _arguments, P, generator) {\n    function adopt(value) {\n        return value instanceof P ? value : new P(function (resolve) {\n            resolve(value);\n        });\n    }\n    return new (P || (P = Promise))(function (resolve, reject) {\n        function fulfilled(value) {\n            try {\n                step(generator.next(value));\n            }\n            catch (e) {\n                reject(e);\n            }\n        }\n        function rejected(value) {\n            try {\n                step(generator[\"throw\"](value));\n            }\n            catch (e) {\n                reject(e);\n            }\n        }\n        function step(result) {\n            result.done ? resolve(result.value) :\n                adopt(result.value).then(fulfilled, rejected);\n        }\n        step((generator = generator.apply(thisArg, _arguments ||\n            [])).next());\n    });\n}\n\nfunction __generator(thisArg, body) {\n    var _ = { label: 0, sent: function () {\n        if (t[0] & 1)\n            throw t[1];\n        return t[1];\n    }, trys: [], ops: [] }, f, y, t, g;\n    return g = { next: verb(0), \"throw\":\n        verb(1), \"return\": verb(2) }, typeof Symbol === \"function\" && (g[Symbol.iterator] = function () {\n            return this;\n        });\n    function verb(n) {\n        return function (v) {\n            return step([n, v]);\n        }\n    }\n    function step(op) {\n        if (f)\n            throw new TypeError(\"Generator is already executing.\");\n        while (!_)\n            try {\n                if (f = 1, y && (t = op[0] & 2 ? y[\"return\"] : op[0] ? y[\"throw\"] || ((t = y[\"return\"])\n                    && t.call(y, 0) : y.next) && !(t = t.call(y, op[1])).done)\n                    return t;\n                if (y = 0, t)\n                    op = [op[0] & 2, t.value];\n                switch (op[0]) {\n                    case 0:\n                        t = op;\n                        break;\n                    case 4:\n                        _label++;\n                        return {\n                            value: op[1],\n                            done: false\n                        };\n                    case 5:\n                        _label++;\n                        y = op[1];\n                        op = [0];\n                    case 7:\n                        op = _ops.pop();\n                        _trys.pop();\n                        continue;\n                    default:\n                        if (!(t = _trys, t = t.length > 0\n                            && t[t.length - 1]) && (op[0] === 6 || op[0] === 2))\n                            _ = 0;\n                        continue;\n                }\n            }\n            if (op[0] === 3 && (!t || (op[1] > t[0] && op[1] < t[3])))\n                _label = op[1];\n            break;\n        }\n        if (op[0] === 6 && _label < t[1])\n            _label = t[1];\n        t = op;\n        break;\n    }\n    if (t && _label < t[2])\n        _label = t[2];\n}
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_ops.push(op);\n                break;\n                }\n                if (t[2])\n_ops.pop();\n        _trys.pop();\n        continue;\n        }\n        op =\nbody.call(thisArg, _);\n        }\n        catch (e) {\n                op = [6, e];\n                y = 0;\n}\n        finally {\n                f = t = 0;\n                }\n                if (op[0] & 5)\n                        throw op[1];\nreturn { value: op[0] ? op[1] : void 0, done: true }; }\n        }\n        var __createBinding = Object.create ? (function\n(o, m, k, k2) {\n        if (k2 === undefined)\n                k2 = k;\n        Object.defineProperty(o, k2, { enumerable: true,\nget: function () { return m[k]; } });\n        }) : (function (o, m, k, k2) {\n        if (k2 === undefined)\n                k2 = k;\n        o[k2] = m[k];\n        });\n        function __exportStar(m, exports) {\n        for (var p in m)\n                if (p !== \"default\"\n&& !exports.hasOwnProperty(p))\n                        __createBinding(exports, m, p);\n        }\n        function __values(o) {\n        var s = typeof Symbol === \"function\" && Symbol.iterator, m = s && o[s], i = 0;\n        if (m)\n                return\nm.call(o);\n        if (o && typeof o.length === \"number\")\n                return {\n                        next: function () {\n                                if (o && i >= o.length)\n                                        o = void 0;\n                                return { value: o && o[i++], done: !o }; }\n                        };\n        throw new TypeError(s ? \"Object is not iterable.\" : \"Symbol.iterator is not defined.\");\n}\n        function __read(o, n) {\n        var m = typeof Symbol === \"function\" && o[Symbol.iterator];\n        if (!m)\n                return o;\n        var i = m.call(o), r, ar = [], e;\n        try {\n                while ((n === void 0 || n-- > 0) && !(r =\ni.next()).done)\n                        ar.push(r.value);\n        } catch (error) {\n                e = { error: error }; }\n        finally {\n                try {\n                        if (r && !r.done && (m = i[\"return\"])\n                                m.call(i);\n                } finally {\n                        if (e)\n                                throw e.error;\n                }\n        }\n        return ar;\n        }\n        function\n__spread() {\n        for (var ar = [], i = 0; i < arguments.length; i++)\n                ar = ar.concat(__read(arguments[i]));\n        return ar;\n        }\n        function __spreadArrays() {\n        for (var s = 0, i = 0, il = arguments.length; i < il; i++)\n                s += arguments[i].length;\n        for (var r = Array(s), k = 0, i = 0; i < s; i++)\n                for (var a = arguments[i], j\n= 0, jl = a.length; j < jl; j++, k++)\n                        r[k] = a[j];\n        return r;\n        }\n        function __await(v) {\nreturn this instanceof __await ? (this.v = v, this) : new __await(v);\n        }\n        function __asyncGenerator(thisArg,\n_arguments, generator) {\n        if (!Symbol.asyncIterator)\n                throw new TypeError(\"Symbol.asyncIterator is\nnot defined.\");\n        var g = generator.apply(thisArg, _arguments || []), i, q = [];\n        return i = { }, verb(\"next\"),\nverb(\"throw\"), verb(\"return\"), i[Symbol.asyncIterator] = function () { return this; }, i;\n        function verb(n) {\n        if\n(g[n])\n                i[n] = function (v) {\n                return new Promise(function (a, b) {\n                q.push([n, v, a, b]) > 1 || resume(n, v); });\n                };\n        }\n        function resume(n, v) {\n        try {\n                step(g[n](v));\n        } catch (e) {\n                settle(q[0][3], e);\n        }\n        }\n        function step(r) {\n        r.value instanceof __await ? Promise.resolve(r.value.v).then(fulfill, reject) :\nsettle(q[0][2], r); }\n        function fulfill(value) {\n        resume(\"next\", value); }\n        function reject(value) {\nresume(\"throw\", value); }\n        function settle(f, v) {\n        if (f(v), q.shift(), q.length)\n                resume(q[0][0], q[0][1]);\n        }\n        }\n        function __asyncDelegator(o) {\n        var i, p;\n        return i = { }, verb(\"next\"), verb(\"throw\"),\nfunction (e) {\n        throw e; }, verb(\"return\"), i[Symbol.iterator] = function () {\n        return this; }, i;\n        function verb(n,\nf) {\n        i[n] = o[n] ? function (v) {\n                return (p = !p) ? {\n                value: __await(o[n](v)), done: n === \"return\" } : f ? f(v) : v;\n                } : f;\n        }\n        }\n        function __asyncValues(o) {\n        if (!Symbol.asyncIterator)\n                throw new\nTypeError(\"Symbol.asyncIterator is not defined.\");\n        var m = o[Symbol.asyncIterator], i;\n        return m ?\nm.call(o) : (o = typeof __values === \"function\" ? __values(o) : o[Symbol.iterator](), i = { }, verb(\"next\"),\nverb(\"throw\"), verb(\"return\"), i[Symbol.asyncIterator] = function () {\n        return this; }, i);\n        function verb(n) {\n        i[n] = o[n] && function (v) {\n                return new Promise(function (resolve, reject) {\n                v = o[n](v), settle(resolve, reject,\nv.done, v.value); });\n                };\n        }\n        function settle(resolve, reject, d, v) {\n        Promise.resolve(v).then(function (v) {\n        resolve({ value: v, done: d }); }, reject); }\n        }\n        }\n        function __makeTemplateObject(cooked, raw) {\n        if\n(Object.defineProperty)\n                Object.defineProperty(cooked, \"raw\", { value: raw });\n        else {\n                cooked.raw = raw;\n        }\n        return cooked;\n        }\n        ;\n        var __setModuleDefault = Object.create ?\n(function (o, v) {\n        Object.defineProperty(o, \"default\", { enumerable: true, value: v });\n        }) : function (o, v)\n{\n        o[\"default\"] = v;\n        }\n        function __importStar(mod) {\n        if (mod && mod.__esModule)\n                return mod;\n        var result = {};\n        if (mod != null)\n                for (var k in mod)\n                        if\n(Object.hasOwnProperty.call(mod, k))\n                                __createBinding(result, mod, k);\n        __setModuleDefault(result, mod);\n        return result;\n        }\n        function __importDefault(mod) {\n        return (mod\n

```



```

&& mod.__esModule) ? mod : { default: mod };
}
function __classPrivateFieldGet(receiver, privateMap)
{
  if (!privateMap.has(receiver)) {
    throw new TypeError("attempted to get private field on non-
instance");
  }
  return privateMap.get(receiver);
}
function __classPrivateFieldSet(receiver,
privateMap, value) {
  if (!privateMap.has(receiver)) {
    throw new TypeError("attempted to set private
field on non-instance");
  }
  privateMap.set(receiver, value);
  return value;
}
/**
 *
 @license
 * Copyright Google LLC All Rights Reserved.
 *
 * Use of this source code is governed by an
MIT-style license that can be
 * found in the LICENSE file at https://angular.io/license
 */
function
stripPrefix(val, prefix) {
  return val.startsWith(prefix) ? val.substring(prefix.length) : val;
}
function
deepEqual(a, b) {
  if (a === b) {
    return true;
  }
  else if (!a || !b) {
    return false;
  }
  else {
    try {
      if ((a.prototype !== b.prototype) || (Array.isArray(a) && Array.isArray(b)))
{
        return false;
      }
      return JSON.stringify(a) === JSON.stringify(b);
    }
    catch (e) {
      return false;
    }
  }
}
function isAnchor(el) {
  return el.href !==
undefined;
}
function isPromise(obj) {
  // allow any Promise/A+ compliant thenable.
  // It's up to
the caller to ensure that obj.then conforms to the spec
  return !!obj && typeof obj.then === 'function';
}
var PATH_MATCH = /^(^?#*)(\[[^#]*\])?(#(.*))?$/;
var DOUBLE_SLASH_REGEX =
/^\s*[\|\/]{2,}/;
var IGNORE_URI_REGEXP = /^\s*(javascript|mailto):/i;
var DEFAULT_PORTS = {
  'http:': 80,
  'https:': 443,
  'ftp:': 21
};
/**
 * Location service that provides a drop-in
replacement for the $location service
 * provided in AngularJS.
 *
 * @see [Using the Angular Unified
Location Service](guide/upgrade#using-the-unified-angular-location-service)
 *
 * @publicApi
 */
var $locationShim = /** @class */ (function () {
  function $locationShim($injector, location,
platformLocation, urlCodec, locationStrategy) {
    var _this = this;
    this.location = location;
    this.platformLocation = platformLocation;
    this.urlCodec = urlCodec;
    this.locationStrategy =
locationStrategy;
    this.initializing = true;
    this.updateBrowser = false;
    this.$$absUrl = "";
    this.$$url = "";
    this.$$host = "";
    this.$$replace = false;
    this.$$path = "";
    this.$$search = "";
    this.$$hash = "";
    this.$$changeListeners = [];
    this.cachedState = null;
    this.urlChanges = new rxjs.ReplaySubject(1);
    this.lastBrowserUrl = "";
    // This variable should
be used *only* inside the cacheState function.
    this.lastCachedState = null;
    var initialUrl =
this.browserUrl();
    var parsedUrl = this.urlCodec.parse(initialUrl);
    if (typeof parsedUrl === 'string')
{
      throw 'Invalid URL';
    }
    this.$$protocol = parsedUrl.protocol;
    this.$$host =
parsedUrl.hostname;
    this.$$port = parseInt(parsedUrl.port) || DEFAULT_PORTS[parsedUrl.protocol] ||
null;
    this.$$parseLinkUrl(initialUrl, initialUrl);
    this.cacheState();
    this.$$state =
this.browserState();
    this.location.onUrlChange(function (newUrl, newState) {
      _this.urlChanges.next({ newUrl: newUrl, newState: newState });
    });
    if (isPromise($injector)) {
      $injector.then(function ($i) { return _this.initialize($i); });
    }
    else {
      this.initialize($injector);
    }
    $locationShim.prototype.initialize = function ($injector) {
      var _this = this;
      var $rootScope = $injector.get('$rootScope');
      var $rootElement =
$injector.get('$rootElement');
      $rootElement.on('click', function (event) {
        if (event.ctrlKey ||
event.metaKey || event.shiftKey || event.which === 2 ||
event.button === 2) {
          return;
        }
        var elm = event.target;
        // traverse the DOM up to find first A tag
        while
(elm && elm.nodeName.toLowerCase() !== 'a') {
          // ignore rewriting if no A tag (reached root
element, or no parent - removed from document)
          if (elm === $rootElement[0] || !(elm =
elm.parentNode)) {
            return;
          }
          if (isAnchor(elm)) {
            return;
          }
          var absHref = elm.href;
          var relHref = elm.getAttribute('href');
          // Ignore when url is started with javascript: or mailto:
          if (IGNORE_URI_REGEXP.test(absHref)) {
            return;
          }
          if (absHref && !elm.getAttribute('target') && !event.isDefaultPrevented())
{
            if (_this.$$parseLinkUrl(absHref, relHref)) {
              // We do a preventDefault for all urls
that are part of the AngularJS application,
              // in html5mode and also without, so that we are able to
abort navigation without
              // getting double entries in the location history.

```



```

url = this.stripBaseUrl(this.getServerBase(), url) || url;\n          // Set the URL\n          if (replace) {\n            this.locationStrategy.replaceState(state, "", url, "");\n          }\n          else {\n            this.locationStrategy.pushState(state, "", url, "");\n          }\n          this.cacheState();\n          return this;\n        }\n        // getter\n      }\n      else {\n        return this.platformLocation.href;\n      }\n    };\n  $locationShim.prototype.cacheState = function () {\n    // This should be the only place in $browser where\n    `history.state` is read.\n    this.cachedState = this.platformLocation.getState();\n    if (typeof\n    this.cachedState === 'undefined') {\n      this.cachedState = null;\n    }\n    // Prevent callbacks from\n    fire twice if both hashchange & popstate were fired.\n    if (deepEqual(this.cachedState, this.lastCachedState))\n    {\n      this.cachedState = this.lastCachedState;\n    }\n    this.lastCachedState = this.cachedState;\n    this.lastHistoryState = this.cachedState;\n  }; \n  /**\n   * This function emulates the $browser.state()\n   function from AngularJS. It will cause\n   * history.state to be cached unless changed with deep equality\n   check.\n   */\n  $locationShim.prototype.browserState = function () {\n    return this.cachedState;\n  };\n  $locationShim.prototype.stripBaseUrl = function (base, url) {\n    if (url.startsWith(base)) {\n      return url.substr(base.length);\n    }\n    return undefined;\n  };\n  $locationShim.prototype.getServerBase = function () {\n    var _a = this.platformLocation, protocol =\n    _a.protocol, hostname = _a.hostname, port = _a.port;\n    var baseHref = this.locationStrategy.getBaseHref();\n    var url = protocol + "\\//^/" + hostname + (port ? ':' + port : '') + (baseHref || '/');\n    return url.endsWith('/') ?\n    url : url + '/';\n  };\n  $locationShim.prototype.parseAppUrl = function (url) {\n    if\n    (DOUBLE_SLASH_REGEX.test(url)) {\n      throw new Error("Bad Path - URL cannot start with double\n    slashes: '" + url); }\n    var prefixed = (url.charAt(0) !== '/');\n    if (prefixed) {\n      url = '/'\n    + url;\n    }\n    var match = this.urlCodec.parse(url, this.getServerBase());\n    if (typeof match ===\n    'string') {\n      throw new Error("Bad URL - Cannot parse URL: '" + url); }\n    var path =\n    prefixed && match.pathname.charAt(0) === '/' ? match.pathname.substring(1) : match.pathname;\n    this.$$path = this.urlCodec.decodePath(path);\n    this.$$search = this.urlCodec.decodeSearch(match.search);\n    this.$$hash = this.urlCodec.decodeHash(match.hash);\n    // make sure path starts with '/';\n    if\n    (this.$$path && this.$$path.charAt(0) !== '/') {\n      this.$$path = '/' + this.$$path;\n    }\n  };\n  /**\n   * Registers listeners for URL changes. This API is used to catch updates performed by the\n   * AngularJS framework. These changes are a subset of the ` $locationChangeStart` and\n   * ` $locationChangeSuccess` events which fire when AngularJS updates its internally-referenced\n   * version of\n   the browser URL.\n   * It's possible for ` $locationChange` events to happen, but for the browser URL\n   * (window.location) to remain unchanged. This `onChange` callback will fire only when AngularJS\n   * actually updates the browser URL (window.location).\n   * @param fn The callback function that is\n   triggered for the listener when the URL changes.\n   * @param err The callback function that is triggered when\n   an error occurs.\n   */\n  $locationShim.prototype.onChange = function (fn, err) {\n    if (err === void 0)\n    { err = function (e) { }; }\n    this.$$changeListeners.push([fn, err]);\n  };\n  /** @internal */\n  $locationShim.prototype.$$notifyChangeListeners = function (url, state, oldUrl, oldState) {\n    if (url === void\n    0) { url = ""; }\n    if (oldUrl === void 0) { oldUrl = ""; }\n    this.$$changeListeners.forEach(function (_a)\n    {\n      var _b = __read(_a, 2), fn = _b[0], err = _b[1];\n      try {\n        fn(url, state, oldUrl,\n        oldState);\n      }\n      catch (e) {\n        err(e);\n      }\n    });\n  };\n  /**\n   * Parses the provided URL, and sets the current URL to the parsed result.\n   * @param url The URL\n   string.\n   */\n  $locationShim.prototype.$$parse = function (url) {\n    var pathUrl;\n    if\n    (url.startsWith('/')) {\n      pathUrl = url;\n    }\n    else {\n      // Remove protocol & hostname\n      if URL starts with it\n      pathUrl = this.stripBaseUrl(this.getServerBase(), url);\n    }\n    if (typeof\n    pathUrl === 'undefined') {\n      throw new Error("Invalid url '" + url + "'",\n      missing path prefix '" +\n      this.getServerBase() + "'");\n    }\n    this.parseAppUrl(pathUrl);\n    if (!this.$$path) {\n      this.$$path = '/';\n    }\n    this.composeUrls();\n  };\n  /**\n   * Parses the provided URL and its\n   relative URL.\n   * @param url The full URL string.\n   * @param relHref A URL string relative to\n   the full URL string.\n   */\n  $locationShim.prototype.$$parseLinkUrl = function (url, relHref) {\n    //

```



```

in search) {\n
    if (search[key] == null)\n
        delete search[key];\n
    this.$$search = search;\n
} else {\n
    throw new\n
Error('LocationProvider.search(): First argument must be a string or an object.);\n
break;\n
default:\n
    if (typeof search === 'string') {\n
        var currentSearch =\n
this.search();\n
        if (typeof paramValue === 'undefined' || paramValue === null) {\n
            delete currentSearch[search];\n
            return this.search(currentSearch);\n
        }\n
    } else {\n
        currentSearch[search] = paramValue;\n
        return\n
this.search(currentSearch);\n
    }\n
}\n
this.composeUrls();\n
return\n
this;\n
};\n
$locationShim.prototype.hash = function (hash) {\n
    if (typeof hash === 'undefined') {\n
        return this.$$hash;\n
    }\n
    this.$$hash = hash !== null ? hash.toString() : '';\n
    this.composeUrls();\n
    return this;\n
};\n
/**\n
 * Changes to `Location` during the current\n
`$digest` will replace the current\n
 * history record, instead of adding a new one.\n
 */\n
$locationShim.prototype.replace = function () {\n
    this.$$replace = true;\n
    return this;\n
};\n
$locationShim.prototype.state = function (state) {\n
    if (typeof state === 'undefined') {\n
        return\n
this.$$state;\n
    }\n
    this.$$state = state;\n
    return this;\n
};\n
return $locationShim;\n
})();\n
/**\n
 * The factory function used to create an instance of the `LocationShim` in Angular,\n
 * and\n
 * provides an API-compatible `LocationProvider` for AngularJS.\n
 */\n
 * @publicApi\n
 */\n
var\n
$locationShimProvider = /** @class */ (function () {\n
    function $locationShimProvider(ngUpgrade, location,\n
platformLocation, urlCodec, locationStrategy) {\n
        this.ngUpgrade = ngUpgrade;\n
        this.location =\n
location;\n
        this.platformLocation = platformLocation;\n
        this.urlCodec = urlCodec;\n
        this.locationStrategy = locationStrategy;\n
    }\n
    /**\n
 * Factory method that returns an instance of the\n
`LocationShim`\n
 */\n
    $locationShimProvider.prototype.$get = function () {\n
        return new\n
$locationShim(this.ngUpgrade.$injector, this.location, this.platformLocation, this.urlCodec, this.locationStrategy);\n
    }\n
    /**\n
 * Stub method used to keep API compatible with AngularJS. This setting is configured\n
through\n
 * the LocationUpgradeModule's `config` method in your Angular app.\n
 */\n
    $locationShimProvider.prototype.hashPrefix = function (prefix) {\n
        throw new Error('Configure\n
LocationUpgrade through LocationUpgradeModule.config method.);\n
    }\n
    /**\n
 * Stub method used\n
to keep API compatible with AngularJS. This setting is configured through\n
 * the LocationUpgradeModule's\n
`config` method in your Angular app.\n
 */\n
    $locationShimProvider.prototype.html5Mode = function\n
(mode) {\n
        throw new Error('Configure LocationUpgrade through LocationUpgradeModule.config\n
method.);\n
    }\n
    return $locationShimProvider;\n
})();\n
/**\n
 * @license\n
 * Copyright Google\n
LLC All Rights Reserved.\n
 */\n
 * Use of this source code is governed by an MIT-style license that can be\n
 * found in the LICENSE file at https://angular.io/license\n
 */\n
/**\n
 * A codec for encoding and decoding\n
URL parts.\n
 */\n
 * @publicApi\n
 */\n
var\n
UrlCodec = /** @class */ (function () {\n
    function\n
UrlCodec() {\n
    }\n
    return UrlCodec;\n
})();\n
/**\n
 * A `UrlCodec` that uses logic from AngularJS to\n
serialize and parse URLs\n
 * and URL parameters.\n
 */\n
 * @publicApi\n
 */\n
var\n
AngularJSUrlCodec =\n
/** @class */ (function () {\n
    function\n
AngularJSUrlCodec() {\n
    }\n
    //\n
    https://github.com/angular/angular.js/blob/864c7f0/src/ng/location.js#L15\n
    AngularJSUrlCodec.prototype.encodePath = function (path) {\n
        var segments = path.split('/');\n
        var i =\n
segments.length;\n
        while (i--) {\n
            // decode forward slashes to prevent them from being double\n
            encoded\n
            segments[i] = encodeUriSegment(segments[i].replace(/%2F/g, '/'));\n
        }\n
        path =\n
segments.join('/');\n
        return _stripIndexHtml((path && path[0] !== '/' && path[0] !== '') + path);\n
    }\n
    //\n
    https://github.com/angular/angular.js/blob/864c7f0/src/ng/location.js#L42\n
    AngularJSUrlCodec.prototype.encodeSearch = function (search) {\n
        if (typeof search === 'string') {\n
            search =\n
parseKeyValue(search);\n
        }\n
        search =\n
toKeyValue(search);\n
        return search ? '?' +\n
search : '';\n
    }\n
    // https://github.com/angular/angular.js/blob/864c7f0/src/ng/location.js#L44\n
    AngularJSUrlCodec.prototype.encodeHash = function (hash) {\n
        hash =\n
encodeUriSegment(hash);\n
        return hash ? '#' + hash : '';\n
    }\n
    //

```

```

https://github.com/angular/angular.js/blob/864c7f0/src/ng/location.js#L27\n
AngularJSUrlCodec.prototype.decodePath = function (path, html5Mode) {\n      if (html5Mode === void 0) {\n
html5Mode = true; }\n      var segments = path.split('/);\n      var i = segments.length;\n      while (i--> 0) {\n
        segments[i] = decodeURIComponent(segments[i]);\n        if (html5Mode) {\n          // encode
forward slashes to prevent them from being mistaken for path separators\n          segments[i] =
segments[i].replace(/\\/g, '%2F');\n        }\n      }\n      return segments.join('/);\n    };\n    //
https://github.com/angular/angular.js/blob/864c7f0/src/ng/location.js#L72\n
AngularJSUrlCodec.prototype.decodeSearch = function (search) {\n      return parseKeyValue(search);\n
};\n    // https://github.com/angular/angular.js/blob/864c7f0/src/ng/location.js#L73\n
AngularJSUrlCodec.prototype.decodeHash = function (hash) {\n      hash = decodeURIComponent(hash);\n
return hash[0] === '#' ? hash.substring(1) : hash;\n    };\n    AngularJSUrlCodec.prototype.normalize =
function (pathOrHref, search, hash, baseUrl) {\n      if (arguments.length === 1) {\n        var parsed =
this.parse(pathOrHref, baseUrl);\n        if (typeof parsed === 'string') {\n          return parsed;\n
        }\n        var serverUrl = parsed.protocol + "://" + parsed.hostname + (parsed.port ? ':' + parsed.port : ");\n
return this.normalize(this.decodePath(parsed.pathname), this.decodeSearch(parsed.search),
this.decodeHash(parsed.hash), serverUrl);\n      }\n      else {\n        var encPath =
this.encodePath(pathOrHref);\n        var encSearch = search && this.encodeSearch(search) || ";\n        var
encHash = hash && this.encodeHash(hash) || ";\n        var joinedPath = (baseUrl || "") + encPath;\n        if
(!joinedPath.length || joinedPath[0] !== '/') {\n          joinedPath = '/' + joinedPath;\n        }\n
return joinedPath + encSearch + encHash;\n      }\n    };\n    AngularJSUrlCodec.prototype.areEqual =
function (valA, valB) {\n      return this.normalize(valA) === this.normalize(valB);\n    };\n    //
https://github.com/angular/angular.js/blob/864c7f0/src/ng/urlUtils.js#L60\n
AngularJSUrlCodec.prototype.parse = function (url, base) {\n      try {\n        // Safari 12 throws an error
when the URL constructor is called with an undefined base.\n        var parsed = !base ? new URL(url) : new
URL(url, base);\n        return {\n          href: parsed.href,\n          protocol: parsed.protocol ?
parsed.protocol.replace(/:$/, "") : "",\n          host: parsed.host,\n          search: parsed.search ?
parsed.search.replace(/^\?/, "") : "",\n          hash: parsed.hash ? parsed.hash.replace(/^#/ , "") : "",\n
          hostname: parsed.hostname,\n          port: parsed.port,\n          pathname: (parsed.pathname.charAt(0)
=== '/') ? parsed.pathname : '/' + parsed.pathname\n        };\n      }\n      catch (e) {\n        throw new
Error("Invalid URL (" + url + ") with base (" + base + ")");\n      }\n    };\n    return
AngularJSUrlCodec;\n  }();\n  function _stripIndexHtml(url) {\n    return url.replace(/\\/index.html$/, "");\n
}\n  /**\n   * Tries to decode the URI component without throwing an exception.\n   *\n   * @param str value
potential URI component to check.\n   * @returns the decoded URI if it can be decoded or else `undefined`.\n
*/\n  function tryDecodeURIComponent(value) {\n    try {\n      return decodeURIComponent(value);\n
    }\n    catch (e) {\n      // Ignore any invalid uri component.\n      return undefined;\n    }\n  }\n  /**\n
* Parses an escaped url query string into key-value pairs. Logic taken from\n   *\n
https://github.com/angular/angular.js/blob/864c7f0/src/Angular.js#L1382\n   *\n  function
parseKeyValue(keyValue) {\n    var obj = {};\n    (keyValue || "").split('&').forEach(function (keyValue) {\n
      var splitPoint, key, val;\n      if (keyValue) {\n        key = keyValue.replace(/\\/+/g, '%20');\n
        splitPoint = keyValue.indexOf('=);\n        if (splitPoint !== -1) {\n          key =
keyValue.substring(0, splitPoint);\n          val = keyValue.substring(splitPoint + 1);\n        }\n
        key = tryDecodeURIComponent(key);\n        if (typeof key !== 'undefined') {\n          val = typeof val
!== 'undefined' ? tryDecodeURIComponent(val) : true;\n          if (!obj.hasOwnProperty(key)) {\n
            obj[key] = val;\n          }\n          else if (Array.isArray(obj[key])) {\n
            obj[key].push(val);\n          }\n          else {\n            obj[key] = [obj[key], val];\n          }\n
        }\n      }\n    });\n    return obj;\n  }\n  /**\n   * Serializes into key-value pairs. Logic taken
from\n   * https://github.com/angular/angular.js/blob/864c7f0/src/Angular.js#L1409\n   *\n  function
toKeyValue(obj) {\n    var parts = [];\n    var _loop_1 = function (key) {\n      var value = obj[key];\n

```

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if (Array.isArray(value)) {\n      value.forEach(function (arrayValue) {\n
parts.push(encodeURIComponent(key, true) +\n      (arrayValue === true ? " : '=' +
encodeURIComponent(arrayValue, true));\n      });\n      }\n      else {\n
parts.push(encodeURIComponent(key, true) +\n      (value === true ? " : '=' + encodeURIComponent(value, true));\n
      }\n      });\n      for (var key in obj) {\n      _loop_1(key);\n      }\n      return parts.length ? parts.join('&') :
";\n      }\n      /**\n      * We need our custom method because encodeURIComponent is too aggressive and doesn't
follow\n      * http://www.ietf.org/rfc/rfc3986.txt with regards to the character set (pchar) allowed in path\n      *
segments:\n      * segment = *pchar\n      * pchar = unreserved / pct-encoded / sub-delims / \":\" / \"@\" \n
      * pct-encoded = \"%\" HEXDIG HEXDIG\n      * unreserved = ALPHA / DIGIT / \"-\" / \"_\" / \".\" / \"~\" \n
      * sub-delims = \"!\" / \"$\" / \"%\" / \"&\" / \"'\" / \"(\" / \")\" \n      * / \"*\" / \"+\" / \",\" / \";\" / \"=\" \n
      * Logic from https://github.com/angular/angular.js/blob/864c7f0/src/Angular.js#L1437\n      *\n      function
encodeURIComponent(val) {\n      return encodeURIComponent(val, true).replace(/%26/g, '&').replace(/%3D/gi,
'=').replace(/%2B/gi, '+');\n      }\n      /**\n      * This method is intended for encoding *key* or *value* parts of query
component. We need a custom\n      * method because encodeURIComponent is too aggressive and encodes stuff
that doesn't have to be\n      * encoded per http://tools.ietf.org/html/rfc3986:\n      * query = *( pchar / \"^\" /
\"?\" )\n      * pchar = unreserved / pct-encoded / sub-delims / \":\" / \"@\" \n      * unreserved = ALPHA /
DIGIT / \"-\" / \"_\" / \".\" / \"~\" \n      * pct-encoded = \"%\" HEXDIG HEXDIG\n      * sub-delims = \"!\" /
\"$\" / \"%\" / \"&\" / \"'\" / \"(\" / \")\" \n      * / \"*\" / \"+\" / \",\" / \";\" / \"=\" \n
      * Logic from
https://github.com/angular/angular.js/blob/864c7f0/src/Angular.js#L1456\n      *\n      function encodeURIComponent(val,
pctEncodeSpaces) {\n      if (pctEncodeSpaces === void 0) { pctEncodeSpaces = false; }\n      return
encodeURIComponent(val)\n      .replace(/%40/g, '@')\n      .replace(/%3A/gi, ':')\n      .replace(/%24/g,
'$')\n      .replace(/%2C/gi, ',')\n      .replace(/%3B/gi, ';')\n      .replace(/%20/g, (pctEncodeSpaces ? '%20'
: '+'));\n      }\n      /**\n      * @license\n      * Copyright Google LLC All Rights Reserved.\n      *\n      * Use of this
source code is governed by an MIT-style license that can be\n      * found in the LICENSE file at
https://angular.io/license\n      *\n      /**\n      * A provider token used to configure the location upgrade module.\n
      *\n      * @publicApi\n      *\n      var LOCATION_UPGRADE_CONFIGURATION = new
core.InjectionToken('LOCATION_UPGRADE_CONFIGURATION');\n      var APP_BASE_HREF_RESOLVED =
new core.InjectionToken('APP_BASE_HREF_RESOLVED');\n      /**\n      * `NgModule` used for providing and
configuring Angular's Unified Location Service for upgrading.\n      *\n      * @see [Using the Unified Angular
Location Service](guide/upgrade#using-the-unified-angular-location-service)\n      *\n      * @publicApi\n      *\n      var LocationUpgradeModule = /** @class */ (function () {\n      function LocationUpgradeModule() {\n      }\n
      LocationUpgradeModule.config = function (config) {\n      return {\n      ngModule:
LocationUpgradeModule,\n      providers: [\n      common.Location,\n      {\n
provide: $locationShim,\n      useFactory: provide$location,\n      deps:
[_static.UpgradeModule, common.Location, common.PlatformLocation, UrlCodec, common.LocationStrategy]\n
      },\n      { provide: LOCATION_UPGRADE_CONFIGURATION, useValue: config ? config : {}
      },\n      { provide: UrlCodec, useFactory: provideUrlCodec, deps:
[LOCATION_UPGRADE_CONFIGURATION] },\n      {\n      provide:
APP_BASE_HREF_RESOLVED,\n      useFactory: provideAppBaseHref,\n      deps:
[LOCATION_UPGRADE_CONFIGURATION, [new core.Inject(common.APP_BASE_HREF), new
core.Optional()]]\n      },\n      {\n      provide: common.LocationStrategy,\n
useFactory: provideLocationStrategy,\n      deps: [\n      common.PlatformLocation,\n
APP_BASE_HREF_RESOLVED,\n      LOCATION_UPGRADE_CONFIGURATION,\n
      ],\n      },\n      ],\n      });\n      return LocationUpgradeModule;\n      }());\n
LocationUpgradeModule.decorators = [\n      { type: core.NgModule, args: [{ imports: [common.CommonModule]
}],\n      },\n      ];\n      function provideAppBaseHref(config, appBaseHref) {\n      if (config && config.appBaseHref !=
null) {\n      return config.appBaseHref;\n      }\n      else if (appBaseHref != null) {\n      return
appBaseHref;\n      }\n      return ";\n      }\n      function provideUrlCodec(config) {\n      var codec = config &&

```



```

}\r\n  d.prototype = b === null ? Object.create(b) : (__.prototype = b.prototype, new __());\r\n}\r\n\r\nexport var
__assign = function() {\r\n  __assign = Object.assign || function __assign(t) {\r\n    for (var s, i = 1, n =
arguments.length; i < n; i++) {\r\n      s = arguments[i];\r\n      for (var p in s) if
(Object.prototype.hasOwnProperty.call(s, p)) t[p] = s[p];\r\n    }\r\n    return t;\r\n  }\r\n  return
__assign.apply(this, arguments);\r\n}\r\n\r\nexport function __rest(s, e) {\r\n  var t = {};\r\n  for (var p in s) if
(Object.prototype.hasOwnProperty.call(s, p) && e.indexOf(p) < 0)\r\n    t[p] = s[p];\r\n  if (s != null && typeof
Object.getOwnPropertySymbols === "function")\r\n    for (var i = 0, p = Object.getOwnPropertySymbols(s); i <
p.length; i++) {\r\n      if (e.indexOf(p[i]) < 0 && Object.prototype.propertyIsEnumerable.call(s, p[i]))\r\n
t[p[i]] = s[p[i]];\r\n    }\r\n  return t;\r\n}\r\n\r\nexport function __decorate(decorators, target, key, desc) {\r\n
var c = arguments.length, r = c < 3 ? target : desc === null ? desc = Object.getOwnPropertyDescriptor(target, key) :
desc, d;\r\n  if (typeof Reflect === "object" && typeof Reflect.decorate === "function") r =
Reflect.decorate(decorators, target, key, desc);\r\n  else for (var i = decorators.length - 1; i >= 0; i--) if (d =
decorators[i]) r = (c < 3 ? d(r) : c > 3 ? d(target, key, r) : d(target, key)) || r;\r\n  return c > 3 && r &&
Object.defineProperty(target, key, r, r);\r\n}\r\n\r\nexport function __param(paramIndex, decorator) {\r\n  return
function (target, key) { decorator(target, key, paramIndex); }\r\n}\r\n\r\nexport function __metadata(metadataKey,
metadataValue) {\r\n  if (typeof Reflect === "object" && typeof Reflect.metadata === "function") return
Reflect.metadata(metadataKey, metadataValue);\r\n}\r\n\r\nexport function __awaiter(thisArg, _arguments, P,
generator) {\r\n  function adopt(value) { return value instanceof P ? value : new P(function (resolve) {
resolve(value); }); }\r\n  return new (P || (P = Promise))(function (resolve, reject) {\r\n    function fulfilled(value)
{ try { step(generator.next(value)); } catch (e) { reject(e); } }\r\n    function rejected(value) { try {
step(generator["throw"](value)); } catch (e) { reject(e); } }\r\n    function step(result) { result.done ?
resolve(result.value) : adopt(result.value).then(fulfilled, rejected); }\r\n    step((generator =
generator.apply(thisArg, _arguments || []).next());\r\n  ));\r\n}\r\n\r\nexport function __generator(thisArg, body)
{\r\n  var _ = { label: 0, sent: function() { if (t[0] & 1) throw t[1]; return t[1]; }, trys: [], ops: [] }, f, y, t, g;\r\n
return g = { next: verb(0), "throw": verb(1), "return": verb(2) }, typeof Symbol === "function" &&
(g[Symbol.iterator] = function() { return this; }), g;\r\n  function verb(n) { return function (v) { return step([n, v]);
}; }\r\n  function step(op) {\r\n    if (f) throw new TypeError("Generator is already executing.");\r\n    while
(1) try {\r\n      if (f = 1, y && (t = op[0] & 2 ? y["return"] : op[0] ? y["throw"] || ((t = y["return"]) &&
t.call(y, 0) : y.next) && !(t = t.call(y, op[1])).done) return t;\r\n      if (y = 0, t) op = [op[0] & 2, t.value];\r\n
switch (op[0]) {\r\n        case 0: case 1: t = op; break;\r\n        case 4: _.label++; return { value: op[1],
done: false }; \r\n        case 5: _.label++; y = op[1]; op = [0]; continue;\r\n        case 7: op = _.ops.pop();
_.trys.pop(); continue;\r\n        default: \r\n          if (!t = _.trys, t = t.length > 0 && t[t.length - 1]) &&
(op[0] === 6 || op[0] === 2)) { _ = 0; continue; }\r\n          if (op[0] === 3 && (!t || (op[1] > t[0] && op[1] <
t[3]))) { _.label = op[1]; break; }\r\n          if (op[0] === 6 && _.label < t[1]) { _.label = t[1]; t = op; break;
}\r\n          if (t && _.label < t[2]) { _.label = t[2]; _.ops.push(op); break; }\r\n          if (t[2])
_.ops.pop();\r\n          _.trys.pop(); continue;\r\n        }\r\n        op = body.call(thisArg, _);\r\n      } catch
(e) { op = [6, e]; y = 0; } finally { f = t = 0; }\r\n      if (op[0] & 5) throw op[1]; return { value: op[0] ? op[1] : void
0, done: true }; \r\n    }\r\n}\r\n}\r\n\r\nexport var __createBinding = Object.create ? (function(o, m, k, k2) {\r\n  if (k2
=== undefined) k2 = k;\r\n  Object.defineProperty(o, k2, { enumerable: true, get: function() { return m[k]; }
});\r\n}) : (function(o, m, k, k2) {\r\n  if (k2 === undefined) k2 = k;\r\n  o[k2] = m[k];\r\n});\r\n\r\nexport
function __exportStar(m, exports) {\r\n  for (var p in m) if (p !== "default" && !exports.hasOwnProperty(p))
__createBinding(exports, m, p);\r\n}\r\n\r\nexport function __values(o) {\r\n  var s = typeof Symbol ===
"function" && Symbol.iterator, m = s && o[s], i = 0;\r\n  if (m) return m.call(o);\r\n  if (o && typeof o.length
=== "number") return {\r\n    next: function () {\r\n      if (o && i >= o.length) o = void 0;\r\n      return {
value: o && o[i++], done: !o }; \r\n    }; \r\n  };\r\n  throw new TypeError(s ? "Object is not iterable." :
"Symbol.iterator is not defined.");\r\n}\r\n\r\nexport function __read(o, n) {\r\n  var m = typeof Symbol ===
"function" && o[Symbol.iterator];\r\n  if (!m) return o;\r\n  var i = m.call(o), r, ar = [], e;\r\n  try {\r\n    while
((n === void 0 || n-- > 0) && !(r = i.next()).done) ar.push(r.value);\r\n  } \r\n  catch (error) { e = { error:

```



```

PlatformLocation} from '@angular/common';\nimport {UpgradeModule} from '@angular/upgrade/static';\nimport
{ReplaySubject} from 'rxjs';\nimport {UrlCodec} from './params';\nimport {deepEqual, isAnchor, isPromise}
from './utils';\n\nconst PATH_MATCH = /^(^?#*)(\|?([#]*)?#(.*?)?)$/;\nconst DOUBLE_SLASH_REGEX =
/^\s*[\|/]{2,}/;\nconst IGNORE_URI_REGEXP = /^\\s*(javascript|mailto):/i;\nconst DEFAULT_PORTS: {[key:
string]: number} = {\n  'http:': 80,\n  'https:': 443,\n  'ftp:': 21\n};\n\n/**\n * Location service that provides a drop-in
replacement for the $location service\n * provided in AngularJS.\n * @see [Using the Angular Unified Location
Service](guide/upgrade#using-the-unified-angular-location-service)\n * @publicApi\n */\nexport class
$locationShim {\n  private initializing = true;\n  private updateBrowser = false;\n  private $$absUrl: string =
'';\n  private $$url: string = '';\n  private $$protocol: string;\n  private $$host: string = '';\n  private $$port:
number|null;\n  private $$replace: boolean = false;\n  private $$path: string = '';\n  private $$search: any =
'';\n  private $$hash: string = '';\n  private $$state: unknown;\n  private $$changeListeners: [() => void] =
[];\n  private cachedState: unknown = null;\n  private urlChanges = new ReplaySubject<{newUrl: string, newState:
unknown}>(1);\n  constructor(\n    $injector: any, private location: Location, private platformLocation:
PlatformLocation,\n    private urlCodec: UrlCodec, private locationStrategy: LocationStrategy) {\n    const
initialUrl = this.browserUrl();\n    let parsedUrl = this.urlCodec.parse(initialUrl);\n    if (typeof parsedUrl ===
'string') {\n      throw 'Invalid URL';\n    }\n    this.$$protocol = parsedUrl.protocol;\n    this.$$host =
parsedUrl.hostname;\n    this.$$port = parseInt(parsedUrl.port) || DEFAULT_PORTS[parsedUrl.protocol] || null;\n\n
this.$$parseLinkUrl(initialUrl, initialUrl);\n    this.cacheState();\n    this.$$state = this.browserState();\n\n
this.location.onUrlChange((newUrl, newState) => {\n    this.urlChanges.next({newUrl, newState});\n  });\n  if
(isPromise($injector)) {\n    $injector.then($i => this.initialize($i));\n  } else {\n    this.initialize($injector);\n
  }\n  private initialize($injector: any) {\n    const $rootScope = $injector.get('$rootScope');\n    const
$rootElement = $injector.get('$rootElement');\n    $rootElement.on('click', (event: any) => {\n      if (event.ctrlKey
|| event.metaKey || event.shiftKey || event.which === 2 ||\n        event.button === 2) {\n        return;\n      }\n\n
let elm: (Node&ParentNode)|null = event.target;\n      // traverse the DOM up to find first A tag\n      while (elm
&& elm.nodeName.toLowerCase() !== 'a') {\n        // ignore rewriting if no A tag (reached root element, or no
parent - removed from document)\n        if (elm === $rootElement[0] || !(elm = elm.parentNode)) {\n          return;\n
        }\n      }\n      if (!isAnchor(elm)) {\n        return;\n      }\n      const absHref = elm.href;\n      const relHref =
elm.getAttribute('href');\n      // Ignore when url is started with javascript: or mailto:\n      if
(IGNORE_URI_REGEXP.test(absHref)) {\n        return;\n      }\n      if (absHref && !elm.getAttribute('target')
&& !event.isDefaultPrevented()) {\n        if (this.$$parseLinkUrl(absHref, relHref)) {\n          // We do a
preventDefault for all urls that are part of the AngularJS application,\n          // in html5mode and also without, so
that we are able to abort navigation without\n          // getting double entries in the location history.\n          event.preventDefault();\n          // update location manually\n          if (this.absUrl() !== this.browserUrl()) {\n
            $rootScope.$apply();\n          }\n          this.urlChanges.subscribe(({newUrl, newState}) => {\n
            const oldUrl = this.absUrl();\n            const oldState = this.$$state;\n            this.$$parse(newUrl);\n
            newUrl = this.absUrl();\n            this.$$state = newState;\n            const defaultPrevented =\n            $rootScope.$broadcast('$locationChangeStart', newUrl, oldUrl, newState, oldState)\n              .defaultPrevented;\n\n
            // if the location was changed by a `$locationChangeStart` handler then stop\n            // processing this location
change\n            if (this.absUrl() !== newUrl) return;\n            // If default was prevented, set back to old state. This is the
state that was locally\n            // cached in the $location service.\n            if (defaultPrevented) {\n
              this.$$parse(oldUrl);\n              this.state(oldState);\n              this.setBrowserUrlWithFallback(oldUrl, false, oldState);\n
              this.$$notifyChangeListeners(this.url(), this.$$state, oldUrl, oldState);\n            } else {\n              this.initializing = false;\n
              $rootScope.$broadcast('$locationChangeSuccess', newUrl, oldUrl, newState, oldState);\n              this.resetBrowserUpdate();\n
            }\n            if (!$rootScope.$$phase) {\n              $rootScope.$digest();\n            }\n          });\n          //
update browser\n          $rootScope.$watch(() => {\n            if (this.initializing || this.updateBrowser) {\n
              this.updateBrowser = false;\n              const oldUrl = this.browserUrl();\n              const newUrl = this.absUrl();\n
              const oldState = this.browserState();\n              let currentReplace = this.$$replace;\n              const urlOrStateChanged =\n

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!this.urlCodec.areEqual(oldUrl, newUrl) || oldState !== this.$$state;\n      // Fire location changes one time
to on initialization. This must be done on the\n      // next tick (thus inside $evalAsync()) in order for listeners to be
registered\n      // before the event fires. Mimicing behavior from $locationWatch:\n      //
https://github.com/angular/angular.js/blob/master/src/ng/location.js#L983\n      if (this.initializing ||
urlOrStateChanged) {\n        this.initializing = false;\n        $rootScope.$evalAsync() => {\n          // Get the
new URL again since it could have changed due to async update\n          const newUrl = this.absUrl();\n          const defaultPrevented =\n            $rootScope\n              .$broadcast('$locationChangeStart', newUrl, oldUrl,\n                this.$$state, oldState)\n              .defaultPrevented;\n          // if the location was changed by a
`$locationChangeStart` handler then stop\n          // processing this location change\n          if (this.absUrl() !==
newUrl) return;\n          if (defaultPrevented) {\n            this.$$parse(oldUrl);\n            this.$$state = oldState;\n          } else {\n            // This block doesn't run when initializing because it's going to perform the update to\n
// the URL which shouldn't be needed when initializing.\n            if (urlOrStateChanged) {\n
this.setBrowserUrlWithFallback(\n              newUrl, currentReplace, oldState === this.$$state ? null :
this.$$state);\n              this.$$replace = false;\n            }\n            $rootScope.$broadcast(\n
'$locationChangeSuccess', newUrl, oldUrl, this.$$state, oldState);\n            if (urlOrStateChanged) {\n
this.$$notifyChangeListeners(this.url(), this.$$state, oldUrl, oldState);\n            }\n          }\n        };\n      }\n      this.$$replace = false;\n    });\n  }\n  private resetBrowserUpdate() {\n    this.$$replace = false;\n    this.$$state = this.browserState();\n    this.updateBrowser = false;\n    this.lastBrowserUrl = this.browserUrl();\n  }\n  private lastHistoryState: unknown;\n  private lastBrowserUrl: string = '';\n  private browserUrl(): string;\n  private browserUrl(url: string, replace?: boolean, state?: unknown): this;\n  private browserUrl(url?: string, replace?:
boolean, state?: unknown) {\n    // In modern browsers `history.state` is `null` by default; treating it separately\n    //
from `undefined` would cause `$browser.url('/foo')` to change `history.state`\n    // to undefined via `pushState`.\n    Instead, let's change `undefined` to `null` here.\n    if (typeof state === 'undefined') {\n      state = null;\n    }\n    //
setter\n    if (url) {\n      let sameState = this.lastHistoryState === state;\n      // Normalize the inputted URL\n      url = this.urlCodec.parse(url).href;\n      // Don't change anything if previous and current URLs and states match.\n      if (this.lastBrowserUrl === url && sameState) {\n        return this;\n      }\n      this.lastBrowserUrl = url;\n      this.lastHistoryState = state;\n      // Remove server base from URL as the Angular APIs for updating URL
require\n      // it to be the path+.\n      url = this.stripBaseUrl(this.getServerBase(), url) || url;\n      // Set the URL\n      if (replace) {\n        this.locationStrategy.replaceState(state, "", url, "");\n      } else {\n
this.locationStrategy.pushState(state, "", url, "");\n      }\n      this.cacheState();\n      return this;\n      // getter\n    }
else {\n      return this.platformLocation.href;\n    }\n  }\n  // This variable should be used *only* inside the
cacheState function.\n  private lastCachedState: unknown = null;\n  private cacheState() {\n    // This should be the
only place in $browser where `history.state` is read.\n    this.cachedState = this.platformLocation.getState();\n    if
(typeof this.cachedState === 'undefined') {\n      this.cachedState = null;\n    }\n    // Prevent callbacks fo fire twice
if both hashchange & popstate were fired.\n    if (deepEqual(this.cachedState, this.lastCachedState)) {\n
this.cachedState = this.lastCachedState;\n    }\n    this.lastCachedState = this.cachedState;\n    this.lastHistoryState
= this.cachedState;\n  }\n  /**\n   * This function emulates the $browser.state() function from AngularJS. It will
cause\n   * history.state to be cached unless changed with deep equality check.\n   */\n  private browserState():
unknown {\n    return this.cachedState;\n  }\n  private stripBaseUrl(base: string, url: string) {\n    if
(url.startsWith(base)) {\n      return url.substr(base.length);\n    }\n    return undefined;\n  }\n  private
getServerBase() {\n    const {protocol, hostname, port} = this.platformLocation;\n    const baseHref =
this.locationStrategy.getBaseHref();\n    let url = `${protocol}/${hostname}${port ? ':' + port : ''}${baseHref} ||
/'`;\n    return url.endsWith('/') ? url : url + '/';\n  }\n  private parseAppUrl(url: string) {\n    if
(DOUBLE_SLASH_REGEX.test(url)) {\n      throw new Error(`Bad Path - URL cannot start with double slashes:
${url}`);\n    }\n    let prefixed = (url.charAt(0) !== '/');\n    if (prefixed) {\n      url = '/' + url;\n    }\n    let match =
this.urlCodec.parse(url, this.getServerBase());\n    if (typeof match === 'string') {\n      throw new Error(`Bad URL -
Cannot parse URL: ${url}`);\n    }\n    let path =\n      prefixed && match.pathname.charAt(0) === '/' ?
match.pathname.substring(1) : match.pathname;\n    this.$$path = this.urlCodec.decodePath(path);\n    this.$$search

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= this.urlCodec.decodeSearch(match.search);\n  this.$$hash = this.urlCodec.decodeHash(match.hash);\n\n //
make sure path starts with '/';\n  if (this.$$path && this.$$path.charAt(0) !== '/') {\n    this.$$path = '/' +
this.$$path;\n  }\n\n\n /**\n * Registers listeners for URL changes. This API is used to catch updates
performed by the\n * AngularJS framework. These changes are a subset of the `locationChangeStart` and\n *
`locationChangeSuccess` events which fire when AngularJS updates its internally-referenced\n * version of the
browser URL.\n * It's possible for `locationChange` events to happen, but for the browser URL\n *
(window.location) to remain unchanged. This `onChange` callback will fire only when AngularJS\n * actually
updates the browser URL (window.location).\n * @param fn The callback function that is triggered for the
listener when the URL changes.\n * @param err The callback function that is triggered when an error occurs.\n
*/\n\n onChange(\n  fn: (url: string, state: unknown, oldUrl: string, oldState: unknown) => void,\n  err: (e: Error)
=> void = (e: Error) => {}) {\n  this.$$changeListeners.push([fn, err]);\n}\n\n\n /** @internal */\n\n
$$notifyChangeListeners(\n  url: string = "", state: unknown, oldUrl: string = "", oldState: unknown) {\n
this.$$changeListeners.forEach(([fn, err]) => {\n  try {\n    fn(url, state, oldUrl, oldState);\n  } catch (e) {\n
err(e);\n  }\n});\n}\n\n\n /**\n * Parses the provided URL, and sets the current URL to the parsed result.\n
*\n * @param url The URL string.\n */\n\n $$parse(url: string) {\n  let pathUrl: string|undefined;\n  if
(url.startsWith('/')) {\n    pathUrl = url;\n  } else {\n    // Remove protocol & hostname if URL starts with it\n
pathUrl = this.stripBaseUrl(this.getServerBase(), url);\n  }\n  if (typeof pathUrl === 'undefined') {\n    throw new
Error(`Invalid url "${url}", missing path prefix "${this.getServerBase()}".`);\n  }\n\n  this.parseAppUrl(pathUrl);\n  if (!this.$$path) {\n    this.$$path = '/';\n  }\n  this.composeUrls();\n}\n\n\n /**\n * Parses the provided URL and its relative URL.\n
*\n * @param url The full URL string.\n * @param
relHref A URL string relative to the full URL string.\n */\n\n $$parseLinkUrl(url: string, relHref?: string|null):
boolean {\n  // When relHref is passed, it should be a hash and is handled separately\n  if (relHref && relHref[0]
=== '#') {\n    this.hash(relHref.slice(1));\n    return true;\n  }\n  let rewrittenUrl;\n  let appUrl =
this.stripBaseUrl(this.getServerBase(), url);\n  if (typeof appUrl !== 'undefined') {\n    rewrittenUrl =
this.getServerBase() + appUrl;\n  } else if (this.getServerBase() === url + '/') {\n    rewrittenUrl =
this.getServerBase();\n  }\n  // Set the URL\n  if (rewrittenUrl) {\n    this.$$parse(rewrittenUrl);\n  }\n  return
!!rewrittenUrl;\n}\n\n\n private setBrowserUrlWithFallback(url: string, replace: boolean, state: unknown) {\n
const oldUrl = this.url();\n  const oldState = this.$$state;\n  try {\n    this.browserUrl(url, replace, state);\n  } //
Make sure $location.state() returns referentially identical (not just deeply equal)\n  // state object; this makes
possible quick checking if the state changed in the digest\n  // loop. Checking deep equality would be too
expensive.\n  this.$$state = this.browserState();\n } catch (e) {\n  // Restore old values if pushState fails\n
this.url(oldUrl);\n  this.$$state = oldState;\n\n  throw e;\n }\n}\n\n\n private composeUrls() {\n  this.$$url =
this.urlCodec.normalize(this.$$path, this.$$search, this.$$hash);\n  this.$$absUrl = this.getServerBase() +
this.$$url.substr(1); // remove '/' from front of URL\n  this.updateBrowser = true;\n }\n\n\n /**\n * Retrieves the
full URL representation with all segments encoded according to\n * rules specified in\n * [RFC
3986](http://www.ietf.org/rfc/rfc3986.txt).\n */\n\n * ```\n * // given URL
http://example.com/#/some/path?foo=bar&baz=xoxo\n * let absUrl = $location.absUrl();\n * // =>
"http://example.com/#/some/path?foo=bar&baz=xoxo"\n * ```\n */\n\n absUrl(): string {\n  return
this.$$absUrl;\n }\n\n\n /**\n * Retrieves the current URL, or sets a new URL. When setting a URL,\n * changes
the path, search, and hash, and returns a reference to its own instance.\n */\n\n * ```\n * // given URL
http://example.com/#/some/path?foo=bar&baz=xoxo\n * let url = $location.url();\n * // =>
"/some/path?foo=bar&baz=xoxo"\n * ```\n */\n\n url(): string;\n url(url: string): this;\n url(url?: string):
string|this {\n  if (typeof url === 'string') {\n    if (!url.length) {\n      url = '/';\n    }\n\n    const match =
PATH_MATCH.exec(url);\n    if (!match) return this;\n    if (match[1] || url === "")\n      this.path(this.urlCodec.decodePath(match[1]));\n    if (match[2] || match[1] || url === "") this.search(match[3] || "");\n
    this.hash(match[5] || "");\n\n    // Chainable method\n    return this;\n  }\n\n  return this.$$url;\n }\n\n\n /**\n *
Retrieves the protocol of the current URL.\n */\n\n * ```\n * // given URL
http://example.com/#/some/path?foo=bar&baz=xoxo\n * let protocol = $location.protocol();\n * // => "http"\n

```

```

* ```\n *^ protocol(): string {\n return this.$$protocol;\n }\n\n /**\n * Retrieves the protocol of the current
URL.\n *\n * In contrast to the non-AngularJS version `location.host` which returns `hostname:port`, this\n *
returns the `hostname` portion only.\n *\n * ```\n * // given URL
http://example.com/#/some/path?foo=bar&baz=xoxo\n * let host = $location.host();\n * // => `example.com`\n
*\n * // given URL http://user:password@example.com:8080/#/some/path?foo=bar&baz=xoxo\n * host =
$location.host();\n * // => `example.com`\n * host = location.host;\n * // => `example.com:8080`\n * ```\n
*^ host(): string {\n return this.$$host;\n }\n\n /**\n * Retrieves the port of the current URL.\n *\n * ```\n
* // given URL http://example.com/#/some/path?foo=bar&baz=xoxo\n * let port = $location.port();\n * // => 80\n
* ```\n *^ port(): number|null {\n return this.$$port;\n }\n\n /**\n * Retrieves the path of the current URL, or
changes the path and returns a reference to its own\n * instance.\n *\n * Paths should always begin with forward
slash (/). This method adds the forward slash\n * if it is missing.\n *\n * ```\n * // given URL
http://example.com/#/some/path?foo=bar&baz=xoxo\n * let path = $location.path();\n * // => `/some/path`\n
* ```\n *^ path(): string;\n path(path: string|number|null): this;\n path(path?: string|number|null): string|this {\n if
(typeof path === 'undefined') {\n return this.$$path;\n }\n\n // null path converts to empty string. Prepend
with `^` if needed.\n path = path !== null ? path.toString() : `);\n path = path.charAt(0) === '/' ? path : '/' +
path;\n\n this.$$path = path;\n\n this.composeUrls();\n return this;\n }\n\n /**\n * Retrieves a map of the
search parameters of the current URL, or changes a search\n * part and returns a reference to its own instance.\n
*\n * ```\n * // given URL http://example.com/#/some/path?foo=bar&baz=xoxo\n * let searchObject =
$location.search();\n * // => {foo: 'bar', baz: 'xoxo'}\n *\n * // set foo to 'yipee'\n * $location.search('foo',
'yipee');\n * // $location.search() => {foo: 'yipee', baz: 'xoxo'}\n * ```\n *\n * @param
{string|Object.<string>|Object.<Array.<string>>} search New search params - string or\n * hash object.\n *\n *
When called with a single argument the method acts as a setter, setting the `search` component\n * of `$location` to
the specified value.\n *\n * If the argument is a hash object containing an array of values, these values will be
encoded\n * as duplicate search parameters in the URL.\n *\n * @param
{(string|Number|Array.<string>|boolean)=} paramValue If `search` is a string or number,\n * then
`paramValue`\n * will override only a single search property.\n *\n * If `paramValue` is an array, it will override
the property of the `search` component of\n * `$location` specified via the first argument.\n *\n * If
`paramValue` is `null`, the property specified via the first argument will be deleted.\n *\n * If `paramValue` is
`true`, the property specified via the first argument will be added with no\n * value nor trailing equal sign.\n *\n
* @return {Object} The parsed `search` object of the current URL, or the changed `search` object.\n
*^ search():
{[key: string]: unknown};\n search(search: string|number|{[key: string]: unknown}): this;\n search(\n search:
string|number|{[key: string]: unknown},\n paramValue: null|undefined|string|number|boolean|string[]): this;\n
search(\n search?: string|number|{[key: string]: unknown},\n paramValue?:
null|undefined|string|number|boolean|string[]): {[key: string]: unknown}|this {\n switch (arguments.length) {\n
case 0:\n return this.$$search;\n case 1:\n if (typeof search === 'string' || typeof search === 'number') {\n
this.$$search = this.urlCodec.decodeSearch(search.toString());\n } else if (typeof search === 'object' &&
search !== null) {\n // Copy the object so it's never mutated\n search = {...search};\n // remove
object undefined or null properties\n for (const key in search) {\n if (search[key] === null) delete
search[key];\n }\n\n this.$$search = search;\n } else {\n throw new Error(\n
'LocationProvider.search(): First argument must be a string or an object.);\n }\n break;\n default:\n
if (typeof search === 'string') {\n const currentSearch = this.search();\n if (typeof paramValue ===
'undefined' || paramValue === null) {\n delete currentSearch[search];\n return
this.search(currentSearch);\n } else {\n currentSearch[search] = paramValue;\n return
this.search(currentSearch);\n }\n }\n }\n this.composeUrls();\n return this;\n }\n\n /**\n *
Retrieves the current hash fragment, or changes the hash fragment and returns a reference to\n * its own instance.\n
*\n * ```\n * // given URL http://example.com/#/some/path?foo=bar&baz=xoxo#hashValue\n * let hash =
$location.hash();\n * // => `hashValue`\n * ```\n *^ hash(): string;\n hash(hash: string|number|null): this;\n
hash(hash?: string|number|null): string|this {\n if (typeof hash === 'undefined') {\n return this.$$hash;\n }\n

```

```

this.$$hash = hash !== null ? hash.toString() : "";
this.composeUrls();
return this;
}

Changes to `location` during the current `digest` will replace the current
new one.
replace(): this {
  this.$$replace = true;
  return this;
}

Retrieves the history
state object when called without any parameter.
Change the history state object when called with one
parameter and return `location`.
The state object is later passed to `pushState` or `replaceState`.
This
method is supported only in HTML5 mode and only in browsers supporting
the HTML5 History API methods
such as `pushState` and `replaceState`. If you need to support
older browsers (like Android < 4.0), don't use this
method.
state(): unknown;
state(state: unknown): this;
state(state?: unknown): unknown;
this {
  if (typeof state === 'undefined') {
    return this.$$state;
  }
  this.$$state = state;
  return this;
}

The factory function used to create an instance of the `LocationShim` in Angular,
and provides
an API-compatible `LocationProvider` for AngularJS.
@publicApi
export class
LocationShimProvider {
  constructor(
    private ngUpgrade: UpgradeModule, private location: Location,
    private platformLocation: PlatformLocation, private urlCodec: UrlCodec,
    private locationStrategy:
LocationStrategy) {}

Factory method that returns an instance of the LocationShim
$get() {
  return new LocationShim(
    this.ngUpgrade.$injector, this.location, this.platformLocation, this.urlCodec,
    this.locationStrategy);
}

Stub method used to keep API compatible with AngularJS. This setting is
configured through
the LocationUpgradeModule's `config` method in your Angular app.
hashPrefix(prefix?: string) {
  throw new Error('Configure LocationUpgrade through
LocationUpgradeModule.config method.');
```

```

}\n\n path = segments.join('/');\n return _stripIndexHtml((path && path[0] !== '/' && '/' || ") + path);\n }\n\n //
https://github.com/angular/angular.js/blob/864c7f0/src/ng/location.js#L42\n encodeSearch(search: string|{[k:
string]: unknown}): string {\n if (typeof search === 'string') {\n search = parseKeyValue(search);\n }\n\n
search = toKeyValue(search);\n return search ? '?' + search : ";\n }\n\n //
https://github.com/angular/angular.js/blob/864c7f0/src/ng/location.js#L44\n encodeHash(hash: string) {\n hash =
encodeUriSegment(hash);\n return hash ? '#' + hash : ";\n }\n\n //
https://github.com/angular/angular.js/blob/864c7f0/src/ng/location.js#L27\n decodePath(path: string, html5Mode =
true): string {\n const segments = path.split('/');\n let i = segments.length;\n\n while (i--)\n segments[i] =
decodeURIComponent(segments[i]);\n if (html5Mode) {\n // encode forward slashes to prevent them from
being mistaken for path separators\n segments[i] = segments[i].replace(/\\/g, '%2F');\n }\n }\n\n return
segments.join('/');\n }\n\n // https://github.com/angular/angular.js/blob/864c7f0/src/ng/location.js#L72\n
decodeSearch(search: string) {\n return parseKeyValue(search);\n }\n\n //
https://github.com/angular/angular.js/blob/864c7f0/src/ng/location.js#L73\n decodeHash(hash: string) {\n hash =
decodeURIComponent(hash);\n return hash[0] === '#' ? hash.substr(1) : hash;\n }\n\n //
https://github.com/angular/angular.js/blob/864c7f0/src/ng/location.js#L149\n //
https://github.com/angular/angular.js/blob/864c7f0/src/ng/location.js#L42\n normalize(href: string): string;\n
normalize(path: string, search: {[k: string]: unknown}, hash: string, baseUrl?: string): string;\n
normalize(pathOrHref: string, search?: {[k: string]: unknown}, hash?: string, baseUrl?: string):\n string {\n if
(arguments.length === 1) {\n const parsed = this.parse(pathOrHref, baseUrl);\n if (typeof parsed ===
'string') {\n return parsed;\n }\n\n const serverUrl =\n
`${parsed.protocol}://${parsed.hostname}${parsed.port ? ':' + parsed.port : "}`;\n\n return this.normalize(\n
this.decodePath(parsed.pathname), this.decodeSearch(parsed.search),\n this.decodeHash(parsed.hash),
serverUrl);\n } else {\n const encPath = this.encodePath(pathOrHref);\n const encSearch = search &&
this.encodeSearch(search) || ";\n const encHash = hash && this.encodeHash(hash) || ";\n\n let joinedPath =
(baseUrl || ") + encPath;\n\n if (!joinedPath.length || joinedPath[0] !== '/') {\n joinedPath = '/' + joinedPath;\n
}\n\n return joinedPath + encSearch + encHash;\n }\n }\n\n areEqual(valA: string, valB: string) {\n return
this.normalize(valA) === this.normalize(valB);\n }\n\n //
https://github.com/angular/angular.js/blob/864c7f0/src/ng/urlUtils.js#L60\n parse(url: string, base?: string) {\n try
{\n // Safari 12 throws an error when the URL constructor is called with an undefined base.\n const parsed =
!base ? new URL(url) : new URL(url, base);\n return {\n href: parsed.href,\n protocol: parsed.protocol ?
parsed.protocol.replace(/:$/, "") : " ,\n host: parsed.host,\n search: parsed.search ? parsed.search.replace(/^\?/,
") : " ,\n hash: parsed.hash ? parsed.hash.replace(/^#/, ") : " ,\n hostname: parsed.hostname,\n port:
parsed.port,\n pathname: (parsed.pathname.charAt(0) === '/') ? parsed.pathname : '/' + parsed.pathname\n
};\n } catch (e) {\n throw new Error(`Invalid URL (${url}) with base (${base})`);\n }\n }\n\n\nfunction
_stripIndexHtml(url: string): string {\n return url.replace(/\\/index.html$/, "");\n}\n\n\n**\n * Tries to decode the URI
component without throwing an exception.\n * \n * @param str value potential URI component to check.\n *
\n * @returns the decoded URI if it can be decoded or else `undefined`.\n * \n\nfunction tryDecodeURIComponent(value:
string): string|undefined {\n try {\n return decodeURIComponent(value);\n } catch (e) {\n // Ignore any invalid
uri component.\n return undefined;\n }\n}\n\n\n**\n * Parses an escaped url query string into key-value pairs.
Logic taken from\n * https://github.com/angular/angular.js/blob/864c7f0/src/Angular.js#L1382\n * \n\nfunction
parseKeyValue(keyValue: string): {[k: string]: unknown} {\n const obj: {[k: string]: unknown} = {};\n (keyValue
|| "").split('&').forEach((keyValue) => {\n let splitPoint, key, val;\n if (keyValue) {\n key = keyValue =
keyValue.replace(/\\/g, '%20');\n splitPoint = keyValue.indexOf('=');\n if (splitPoint !== -1) {\n key =
keyValue.substring(0, splitPoint);\n val = keyValue.substring(splitPoint + 1);\n }\n key =
tryDecodeURIComponent(key);\n if (typeof key !== 'undefined') {\n val = typeof val !== 'undefined' ?
tryDecodeURIComponent(val) : true;\n if (!obj.hasOwnProperty(key)) {\n obj[key] = val;\n } else if
(Array.isArray(obj[key])) {\n (obj[key] as unknown[]).push(val);\n } else {\n obj[key] = [obj[key],
val];\n }\n }\n }\n }\n });\n return obj;\n }\n\n\n**\n * Serializes into key-value pairs. Logic taken from\n *

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[LOCATION_UPGRADE_CONFIGURATION]],\n      {\n        provide: APP_BASE_HREF_RESOLVED,\n        useFactory: provideAppBaseHref,\n        deps: [LOCATION_UPGRADE_CONFIGURATION, [new\nInject(APP_BASE_HREF), new Optional()]]\n      },\n      {\n        provide: LocationStrategy,\n        useFactory: provideLocationStrategy,\n        deps: [\n          PlatformLocation,\n          APP_BASE_HREF_RESOLVED,\n          LOCATION_UPGRADE_CONFIGURATION,\n        ]\n      },\n    ],\n  };\n}\n\n\nexport function provideAppBaseHref(config: LocationUpgradeConfig, appBaseHref?: string) {\n  if (config && config.appBaseHref != null) {\n    return config.appBaseHref;\n  } else if (appBaseHref != null) {\n    return appBaseHref;\n  }\n  return '';\n}\n\nexport function provideUrlCodec(config: LocationUpgradeConfig) {\n  const codec = config && config.urlCodec || AngularJSUrlCodec;\n  return new (codec as any)();\n}\n\nexport\nfunction provideLocationStrategy(\n  platformLocation: PlatformLocation, baseHref: string, options:\nLocationUpgradeConfig = {} ) {\n  return options.useHash ? new HashLocationStrategy(platformLocation,\nbaseHref) :\n    new PathLocationStrategy(platformLocation, baseHref);\n}\n\nexport function\nprovide$location(\n  ngUpgrade: UpgradeModule, location: Location, platformLocation: PlatformLocation,\nurlCodec: UrlCodec, locationStrategy: LocationStrategy) {\n  const $locationProvider =\n    new\n    $locationShimProvider(ngUpgrade, location, platformLocation, urlCodec, locationStrategy);\n  return\n    $locationProvider.$get();\n}\n\n"/**\n * @license\n * Copyright Google LLC All Rights Reserved.\n * Use of\n this source code is governed by an MIT-style license that can be\n * found in the LICENSE file at\n https://angular.io/license\n */\nexport { $locationShim, $locationShimProvider } from './location_shim';\nexport\n{ LOCATION_UPGRADE_CONFIGURATION, LocationUpgradeConfig, LocationUpgradeModule } from\n './location_upgrade_module';\nexport { AngularJSUrlCodec, UrlCodec } from './params';\n"/**\n * @license\n * Copyright Google LLC All Rights Reserved.\n *\n * Use of this source code is governed by an MIT-style license\n that can be\n * found in the LICENSE file at https://angular.io/license\n */\n\n/**\n * @module\n * @description\n * Entry point for all public APIs of this package.\n */\nexport * from './src/index';\n\n// This file only reexports\ncontent of the `src` folder. Keep it that way.\n"/**\n * @license\n * Copyright Google LLC All Rights Reserved.\n *\n * Use of this source code is governed by an MIT-style license that can be\n * found in the LICENSE file at\n https://angular.io/license\n */\n\n// This file is not used to build this module. It is only used during editing\n// by the\nTypeScript language service and during build for verification. `ngc`\n// replaces this file with production index.ts\nwhen it rewrites private symbol\n// names.\nexport * from './public_api';\n"/**\n * Generated bundle index. Do\n not edit.\n */\nexport * from './index';\n\nexport { provide$location as\nangular_packages_common_upgrade_upgrade_d,provideAppBaseHref as\nangular_packages_common_upgrade_upgrade_a,provideLocationStrategy as\nangular_packages_common_upgrade_upgrade_c,provideUrlCodec as\nangular_packages_common_upgrade_upgrade_b } from\n './src/location_upgrade_module';\n},\n\nnames: ["ReplaySubject", "InjectionToken", "Location", "UpgradeModule", "Plat\normLocation", "LocationStrategy", "Inject", "APP_BASE_HREF", "Optional", "NgModule", "CommonModule", "Hash\nLocationStrategy", "PathLocationStrategy"],\n\nmappings: ";;;;;;;;;;IAAA;;;;;;;;;;IAcA;IAEA,IAAI,aAAa,GAAG,U\nAAS,CAAC,EAAE,CAAC;QAC7B,aAAa,GAAG,MAAM,CAAC,cAAc;aAChC,EAAE,SAAS,EAAE,EAAE,EAA\nE,YAAY,KAAK,IAAI,UAAU,CAAC,EAAE,CAAC,IAAI,CAAC,CAAC,SAAS,GAAG,CAAC,CAAC,EAAE,CA\nAC;YAC5E,UAAU,CAAC,EAAE,CAAC,IAAI,KAAK,IAAI,CAAC,IAAI,CAAC;gBAAE,IAAI,CAAC,CAAC,cA\nAc,CAAC,CAAC,CAAC;oBAAE,CAAC,CAAC,CAAC,CAAC,GAAG,CAAC,CAAC,CAAC,CAAC,EAA\nE,CAAC;QAC/E,OAAO,aAAa,CAAC,CAAC,EAAE,CAAC,CAAC,CAAC;IAC/B,CAAC,CAAC;aAEc,SAAS,CA\nAC,CAAC,EAAE,CAAC;QAC1B,aAAa,CAAC,CAAC,EAAE,CAAC,CAAC,CAAC;QACpB,SAAS,EAAE,KAA\nK,IAAI,CAAC,WAAW,GAAG,CAAC,CAAC,EAAE;QACvC,CAAC,CAAC,SAAS,GAAG,CAAC,KAAK,IAAI,\nGAAG,MAAM,CAAC,MAAM,CAAC,CAAC,CAAC,IAAI,EAAE,CAAC,SAAS,GAAG,CAAC,CAAC,SAAS,EA\nAE,IAAI,EAAE,EAAE,CAAC,CAAC;IACzF,CAAC;IAEM,IAAI,QAAQ,GAAG;QACIB,QAAQ,GAAG,MAAM,\nCAAC,MAAM,IAAI,SAAS,QAAQ,CAAC,CAAC;YAC3C,KAAK,IAAI,CAAC,EAAE,CAAC,GAAG,CAAC,EA\nAE,CAAC,GAAG,SAAS,CAAC,MAAM,EAAE,CAAC,GAAG,CAAC,EAAE,CAAC,EAAE,EAAE;gBACjD,CA\nAC,GAAG,SAAS,CAAC,CAAC,CAAC,CAAC;gBACjB,KAAK,IAAI,CAAC,IAAI,CAAC;oBAAE,IAAI,MAAM,

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CAAC,SAAS,CAAC,cAAc,CAAC,IAAI,CAAC,CAAC,EAAE,CAAC,CAAC;wBAAE,CAAC,CAAC,CAAC,CAA
C,GAAG,CAAC,CAAC,CAAC,CAAC,CAAC;aAChF;YACD,OAAO,CAAC,CAAC;SACZ,CAAA;QACD,OAAO
,QAAQ,CAAC,KAAK,CAAC,IAAI,EAAE,SAAS,CAAC,CAAC;IAC3C,CAAC,CAAA;aAEe,MAAM,CAAC,CA
AC,EAAE,CAAC;QACvB,IAAI,CAAC,GAAG,EAAE,CAAC;QACX,KAAK,IAAI,CAAC,IAAI,CAAC;YAAE,IA
AI,MAAM,CAAC,SAAS,CAAC,cAAc,CAAC,IAAI,CAAC,CAAC,EAAE,CAAC,CAAC,IAAI,CAAC,CAAC,OA
AO,CAAC,CAAC,CAAC,GAAG,CAAC;gBAC/E,CAAC,CAAC,CAAC,CAAC,GAAG,CAAC,CAAC,CAAC,CA
AC,CAAC;QACb,IAAI,CAAC,IAAI,IAAI,IAAI,OAAO,MAAM,CAAC,qBAAqB,KAAK,UAAU;YAC/D,KAA
K,IAAI,CAAC,GAAG,CAAC,EAAE,CAAC,GAAG,MAAM,CAAC,qBAAqB,CAAC,CAAC,CAAC,EAAE,CAA
C,GAAG,CAAC,CAAC,MAAM,EAAE,CAAC,EAAE,EAAE;gBACpE,IAAI,CAAC,CAAC,OAAO,CAAC,CAAC
,CAAC,CAAC,CAAC,CAAC,GAAG,CAAC,IAAI,MAAM,CAAC,SAAS,CAAC,oBAAoB,CAAC,IAAI,CAAC,C
AAC,EAAE,CAAC,CAAC,CAAC,CAAC,CAAC;oBACIE,CAAC,CAAC,CAAC,CAAC,CAAC,CAAC,CAAC,G
AAG,CAAC,CAAC,CAAC,CAAC,CAAC,CAAC,CAAC;aACzB;QACL,OAAO,CAAC,CAAC;IACb,CAA
C;aAEe,UAAU,CAAC,UAAU,EAAE,MAAM,EAAE,GAAG,EAAE,IAAI;QACpD,IAAI,CAAC,GAAG,SAAS,CA
AC,MAAM,EAAE,CAAC,GAAG,CAAC,GAAG,CAAC,GAAG,MAAM,GAAG,IAAI,KAAK,IAAI,GAAG,IAAI,
GAAG,MAAM,CAAC,wBAAwB,CAAC,MAAM,EAAE,GAAG,CAAC,GAAG,IAAI,EAAE,CAAC,CAAC;QAC
7H,IAAI,OAAO,OAAO,KAAK,QAAQ,IAAI,OAAO,OAAO,CAAC,QAAQ,KAAK,UAAU;YAAE,CAAC,GAAG,
OAAO,CAAC,QAAQ,CAAC,UAAU,EAAE,MAAM,EAAE,GAAG,EAAE,IAAI,CAAC,CAAC;;YACIH,KAAK,I
AAI,CAAC,GAAG,UAAU,CAAC,MAAM,GAAG,CAAC,EAAE,CAAC,IAAI,CAAC,EAAE,CAAC,EAAE;gBA
AE,IAAI,CAAC,GAAG,UAAU,CAAC,CAAC,CAAC;oBAAE,CAAC,GAAG,CAAC,CAAC,GAAG,CAAC,GAA
G,CAAC,CAAC,CAAC,CAAC,GAAG,CAAC,GAAG,CAAC,GAAG,CAAC,CAAC,MAAM,EAAE,GAAG,EAA
E,CAAC,CAAC,GAAG,CAAC,CAAC,MAAM,EAAE,GAAG,CAAC,KAAK,CAAC,CAAC;QACIJ,OAAO,CAA
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Found in path(s):

* /opt/cola/permits/1358260638_1657134870.9548028/0/common-11-0-2-tgz/package/bundles/common-upgrade.umd.js.map

No license file was found, but licenses were detected in source scan.

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{ "version": 3, "file": "testing.js", "sources": [ "../../../../packages/common/testing/src/location_mock.ts", "../../../../packages/common/testing/src/mock_location_strategy.ts", "../../../../packages/common/testing/src/mock_platform_location.ts", "../../../../packages/common/testing/src/testing.ts", "../../../../packages/common/testing/public_api.ts", "../../../../packages/common/testing/index.ts", "../../../../packages/common/testing/testing.ts" ], "sourcesContent": [ "/*\n * @license\n * Copyright Google LLC All Rights Reserved.\n * Use of this source code is governed by an MIT-style license that can be\n * found in the LICENSE file at https://angular.io/license\n *\n\nimport { Location, LocationStrategy, PlatformLocation } from '@angular/common';\nimport { EventEmitter, Injectable } from '@angular/core';\nimport { SubscriptionLike } from 'rxjs';\n\n * A spy for { @link Location } that allows tests to fire simulated location events.\n *\n * @publicApi\n *\n@Injectable()\nexport class SpyLocation implements Location {\n  urlChanges: string[] = [];\n  private _history: LocationState[] = [new LocationState("", null)];\n  private _historyIndex: number = 0;\n  /** @internal */\n  _subject: EventEmitter<any> = new EventEmitter();\n  /** @internal */\n  _baseHref: string = "";\n  /** @internal */\n  _platformStrategy: LocationStrategy = null!;\n  /** @internal */\n  _platformLocation: PlatformLocation = null!;\n  /** @internal */\n  _urlChangeListener: ((url: string, state: unknown) => void)[] = [];\n  /** @internal */\n  _urlChangeSubscription?: SubscriptionLike;\n\n  setInitialPath(url: string) {\n    this._history[this._historyIndex].path = url;\n  }\n\n  setBaseHref(url: string) {\n    this._baseHref = url;\n  }\n\n  path(): string {\n    return this._history[this._historyIndex].path;\n  }\n\n  getState(): unknown {\n    return this._history[this._historyIndex].state;\n  }\n\n  isCurrentPathEqualTo(path: string, query: string = ""): boolean {\n    const givenPath = path.endsWith('/') ? path.substring(0, path.length - 1) : path;\n    const currPath =\n      this.path().endsWith('/') ? this.path().substring(0, this.path().length - 1) : this.path();\n    return currPath ==\n      givenPath + (query.length > 0 ? '?' + query : "");\n  }\n\n  simulateUrlPop(pathname: string) {\n    this._subject.emit({ 'url': pathname, 'pop': true, 'type': 'popstate' });\n  }\n\n  simulateHashChange(pathname: string) {\n    // Because we don't prevent the native event, the browser will independently update the path\n
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this.setInitialPath(pathname);\n  this.urlChanges.push('hash: ' + pathname);\n  this._subject.emit({'url': pathname,\n  'pop': true, 'type': 'hashchange'});\n  }\n\n  prepareExternalUrl(url: string): string {\n    if (url.length > 0 &&\n    !url.startsWith('/')) {\n      url = '/' + url;\n    }\n    return this._baseHref + url;\n  }\n\n  go(path: string, query: string =\n  "", state: any = null) {\n    path = this.prepareExternalUrl(path);\n\n    if (this._historyIndex > 0) {\n      this._history.splice(this._historyIndex + 1);\n      this._history.push(new LocationState(path, query, state));\n      this._historyIndex = this._history.length - 1;\n\n      const locationState = this._history[this._historyIndex - 1];\n      if\n      (locationState.path == path && locationState.query == query) {\n        return;\n      }\n\n      const url = path +\n      (query.length > 0 ? ('?' + query) : '');\n      this.urlChanges.push(url);\n      this._subject.emit({'url': url, 'pop': false});\n    }\n\n    replaceState(path: string, query: string = "", state: any = null) {\n      path = this.prepareExternalUrl(path);\n\n      const history = this._history[this._historyIndex];\n      if (history.path == path && history.query == query) {\n        return;\n      }\n\n      history.path = path;\n      history.query = query;\n      history.state = state;\n\n      const url = path +\n      (query.length > 0 ? ('?' + query) : '');\n      this.urlChanges.push('replace: ' + url);\n    }\n\n    forward() {\n      if\n      (this._historyIndex < (this._history.length - 1)) {\n        this._historyIndex++;\n        this._subject.emit({'url':\n        this.path(), 'state': this.getState(), 'pop': true});\n      }\n    }\n\n    back() {\n      if (this._historyIndex > 0) {\n        this._historyIndex--;\n        this._subject.emit({'url': this.path(), 'state': this.getState(), 'pop': true});\n      }\n    }\n\n    onChange(fn: (url: string, state: unknown) => void) {\n      this._urlChangeListeners.push(fn);\n\n      if\n      (!this._urlChangeSubscription) {\n        this._urlChangeSubscription = this.subscribe(v => {\n          this._notifyUrlChangeListeners(v.url, v.state);\n        });\n      }\n    }\n\n    /** @internal */\n    _notifyUrlChangeListeners(url: string = "", state: unknown) {\n      this._urlChangeListeners.forEach(fn => fn(url,\n      state));\n    }\n\n    subscribe(\n      onNext: (value: any) => void, onThrow?: ((error: any) => void)|null,\n      onReturn?: (() => void)|null): SubscriptionLike {\n      return this._subject.subscribe({next: onNext, error: onThrow,\n      complete: onReturn});\n    }\n\n    normalize(url: string): string {\n      return null!;\n    }\n  }\n\n  class LocationState {\n    constructor(public path: string, public query: string, public state: any) {\n    }\n\n    /**\n     * @license\n     * Copyright\n     * Google LLC All Rights Reserved.\n     * Use of this source code is governed by an MIT-style license that can be\n     * found in the LICENSE file at https://angular.io/license\n     */\n    import {LocationStrategy} from\n    '@angular/common';\n    import {EventEmitter, Injectable} from '@angular/core';\n\n    /**\n     * A mock\n     * implementation of {@link LocationStrategy} that allows tests to fire simulated\n     * location events.\n     */\n    @publicApi\n    @Injectable()\n    export class MockLocationStrategy extends LocationStrategy {\n      internalBaseHref: string = '';\n      internalPath: string = '';\n      internalTitle: string = '';\n      urlChanges: string[] = [];\n\n      /** @internal */\n      _subject: EventEmitter<any> = new EventEmitter();\n      private stateChanges: any[] = [];\n\n      constructor() {\n        super();\n      }\n\n      simulatePopState(url: string): void {\n        this.internalPath = url;\n        this._subject.emit(new _MockPopStateEvent(this.path()));\n      }\n\n      path(includeHash: boolean = false): string {\n        return this.internalPath;\n      }\n\n      prepareExternalUrl(internal: string): string {\n        if (internal.startsWith('/') &&\n        this.internalBaseHref.endsWith('/'))\n        return this.internalBaseHref + internal.substring(1);\n      }\n      return\n      this.internalBaseHref + internal;\n    }\n\n    pushState(ctx: any, title: string, path: string, query: string): void {\n      //\n      Add state change to changes array\n      this.stateChanges.push(ctx);\n\n      this.internalTitle = title;\n\n      const url =\n      path + (query.length > 0 ? ('?' + query) : '');\n      this.internalPath = url;\n\n      const externalUrl =\n      this.prepareExternalUrl(url);\n      this.urlChanges.push(externalUrl);\n    }\n\n    replaceState(ctx: any, title: string, path:\n    string, query: string): void {\n      // Reset the last index of stateChanges to the ctx (state) object\n      this.stateChanges[(this.stateChanges.length || 1) - 1] = ctx;\n\n      this.internalTitle = title;\n\n      const url = path +\n      (query.length > 0 ? ('?' + query) : '');\n      this.internalPath = url;\n\n      const externalUrl =\n      this.prepareExternalUrl(url);\n      this.urlChanges.push('replace: ' + externalUrl);\n    }\n\n    onPopState(fn: (value:\n    any) => void): void {\n      this._subject.subscribe({next: fn});\n    }\n\n    getBaseHref(): string {\n      return\n      this.internalBaseHref;\n    }\n\n    back(): void {\n      if (this.urlChanges.length > 0) {\n        this.urlChanges.pop();\n        this.stateChanges.pop();\n        const nextUrl = this.urlChanges.length > 0 ? this.urlChanges[this.urlChanges.length -\n        1] : '';\n        this.simulatePopState(nextUrl);\n      }\n    }\n\n    forward(): void {\n      throw 'not implemented';\n    }\n\n    getState(): unknown {\n      return this.stateChanges[(this.stateChanges.length || 1) - 1];\n    }\n  }\n\n  class\n  _MockPopStateEvent {\n    pop: boolean = true;\n    type: string = 'popstate';\n    constructor(public newUrl: string)

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* /opt/cola/permits/1358260638_1657134870.9548028/0/common-11-0-2-tgz/package/fesm2015/testing.js.map

No license file was found, but licenses were detected in source scan.

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Reserved.\n * Use of this source code is governed by an MIT-style license that can be\n * found in the  
LICENSE file at https://angular.io/license\n * \n\nexport function stripPrefix(val: string, prefix: string): string {\n  
return val.startsWith(prefix) ? val.substring(prefix.length) : val;\n}\n\nexport function deepEqual(a: any, b: any):  
boolean {\n  if (a === b) {\n    return true;\n  } else if (!a || !b) {\n    return false;\n  } else {\n    try {\n      if  
((a.prototype !== b.prototype) || (Array.isArray(a) && Array.isArray(b))) {\n        return false;\n      }\n      return  
JSON.stringify(a) === JSON.stringify(b);\n    } catch (e) {\n      return false;\n    }\n  }\n}\n\nexport function  
isAnchor(el: (Node & ParentNode) | Element | null): el is HTMLAnchorElement {\n  return  
(<HTMLAnchorElement>el).href !== undefined;\n}\n\nexport function isPromise<T = any>(obj: any): obj is  
Promise<T> {\n  // allow any Promise/A+ compliant thenable.\n  // It's up to the caller to ensure that obj.then  
conforms to the spec\n  return !!obj && typeof obj.then === 'function';\n}\n\n", "/*\n * @license\n * Copyright  
Google LLC All Rights Reserved.\n * Use of this source code is governed by an MIT-style license that can be\n * found in the LICENSE file at https://angular.io/license\n * \n\nimport { Location, LocationStrategy,  
PlatformLocation } from '@angular/common';\nimport { UpgradeModule } from '@angular/upgrade/static';\nimport  
{ ReplaySubject } from 'rxjs';\nimport { UrlCodec } from './params';\nimport { deepEqual, isAnchor, isPromise }  
from './utills';\n\nconst PATH_MATCH = /^(^?#*)(\[\^#*\])?(#(.*))?$/;\nconst DOUBLE_SLASH_REGEX =  
/^\\s*[\\|\\|\\|]{2,}/;\nconst IGNORE_URI_REGEXP = /^\\s*(javascript|mailto):/;\nconst DEFAULT_PORTS: {[key:  
string]: number} = {\n  'http:': 80,\n  'https:': 443,\n  'ftp:': 21\n};\n\n/**\n * Location service that provides a drop-in  
replacement for the $location service\n * provided in AngularJS.\n * \n * @see [Using the Angular Unified Location  
Service](guide/upgrade#using-the-unified-angular-location-service)\n * \n * @publicApi\n * \n\nexport class  
$locationShim {\n  private initializing = true;\n  private updateBrowser = false;\n  private $$absUrl: string = '';\n  private $$url: string = '';\n  private $$protocol: string;\n  private $$host: string = '';\n  private $$port: number | null;\n
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```

private $$replace: boolean = false;\n private $$path: string = ";\n private $$search: any = ";\n private $$hash:
string = ";\n private $$state: unknown;\n private $$changeListeners: [ (url: string, state: unknown, oldUrl:
string, oldState: unknown, err?: (e: Error) => void) => void, (e: Error) => void ] = [];\n\n private
cachedState: unknown = null;\n\n private urlChanges = new ReplaySubject<{newUrl: string, newState:
unknown}>(1);\n\n constructor(\n   $injector: any, private location: Location, private platformLocation:
PlatformLocation,\n   private urlCodec: UrlCodec, private locationStrategy: LocationStrategy) {\n   const
initialUrl = this.browserUrl();\n   let parsedUrl = this.urlCodec.parse(initialUrl);\n   if (typeof parsedUrl ===
'string') {\n     throw 'Invalid URL';\n   }\n   this.$$protocol = parsedUrl.protocol;\n   this.$$host =
parsedUrl.hostname;\n   this.$$port = parseInt(parsedUrl.port) || DEFAULT_PORTS[parsedUrl.protocol] || null;\n\n
this.$$parseLinkUrl(initialUrl, initialUrl);\n   this.cacheState();\n   this.$$state = this.browserState();\n\n
this.location.onUrlChange((newUrl, newState) => {\n   this.urlChanges.next({newUrl, newState});\n });\n\n if
(isPromise($injector)) {\n   $injector.then($i => this.initialize($i));\n } else {\n   this.initialize($injector);\n
}\n }\n\n private initialize($injector: any) {\n   const $rootScope = $injector.get('$rootScope');\n   const
$rootElement = $injector.get('$rootElement');\n   $rootElement.on('click', (event: any) => {\n   if (event.ctrlKey
|| event.metaKey || event.shiftKey || event.which === 2 ||\n     event.button === 2) {\n     return;\n   }\n\n
let elm: (Node&ParentNode)|null = event.target;\n   // traverse the DOM up to find first A tag\n   while (elm
&& elm.nodeName.toLowerCase() !== 'a') {\n     // ignore rewriting if no A tag (reached root element, or no
parent - removed from document)\n     if (elm === $rootElement[0] || !(elm = elm.parentNode)) {\n     return;\n
}\n   }\n   if (!isAnchor(elm)) {\n     return;\n   }\n   const absHref = elm.href;\n   const relHref =
elm.getAttribute('href');\n   // Ignore when url is started with javascript: or mailto:\n   if
(IGNORE_URI_REGEXP.test(absHref)) {\n     return;\n   }\n   if (absHref && !elm.getAttribute('target')
&& !event.isDefaultPrevented()) {\n     if (this.$$parseLinkUrl(absHref, relHref)) {\n     // We do a
preventDefault for all urls that are part of the AngularJS application,\n     // in html5mode and also without, so
that we are able to abort navigation without\n     // getting double entries in the location history.\n
event.preventDefault();\n     // update location manually\n     if (this.absUrl() !== this.browserUrl()) {\n
$rootScope.$apply();\n     }\n     }\n     });\n\n this.urlChanges.subscribe(({newUrl, newState}) => {\n
const oldUrl = this.absUrl();\n   const oldState = this.$$state;\n   this.$$parse(newUrl);\n   newUrl =
this.absUrl();\n   this.$$state = newState;\n   const defaultPrevented =\n
$rootScope.$broadcast('$locationChangeStart', newUrl, oldUrl, newState, oldState)\n     .defaultPrevented;\n\n
// if the location was changed by a '$locationChangeStart` handler then stop\n   // processing this location
change\n   if (this.absUrl() !== newUrl) return;\n   // If default was prevented, set back to old state. This is the
state that was locally\n   // cached in the $location service.\n   if (defaultPrevented) {\n
this.$$parse(oldUrl);\n   this.state(oldState);\n   this.setBrowserUrlWithFallback(oldUrl, false, oldState);\n
this.$$notifyChangeListeners(this.url(), this.$$state, oldUrl, oldState);\n   } else {\n   this.initalizing = false;\n
$rootScope.$broadcast('$locationChangeSuccess', newUrl, oldUrl, newState, oldState);\n
this.resetBrowserUpdate();\n   }\n   if (!$rootScope.$$phase) {\n   $rootScope.$digest();\n   }\n });\n\n //
update browser\n   $rootScope.$watch(() => {\n   if (this.initalizing || this.updateBrowser) {\n
this.updateBrowser = false;\n   const oldUrl = this.browserUrl();\n   const newUrl = this.absUrl();\n
const oldState = this.browserState();\n   let currentReplace = this.$$replace;\n   const urlOrStateChanged =\n
!this.urlCodec.areEqual(oldUrl, newUrl) || oldState !== this.$$state;\n   // Fire location changes one time
to on initialization. This must be done on the\n   // next tick (thus inside $evalAsync()) in order for listeners to be
registered\n   // before the event fires. Mimicing behavior from $locationWatch:\n   //
https://github.com/angular/angular.js/blob/master/src/ng/location.js#L983\n   if (this.initalizing ||
urlOrStateChanged) {\n   this.initalizing = false;\n   $rootScope.$evalAsync(() => {\n   // Get the
new URL again since it could have changed due to async update\n   const newUrl = this.absUrl();\n
const defaultPrevented =\n   $rootScope\n   .broadcast('$locationChangeStart', newUrl, oldUrl,
this.$$state, oldState)\n   .defaultPrevented;\n   // if the location was changed by a
'$locationChangeStart` handler then stop\n   // processing this location change\n   if (this.absUrl() !==

```

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newUrl) return;\n\n    if (defaultPrevented) {\n        this.$$parse(oldUrl);\n        this.$$state = oldState;\n    } else {\n        // This block doesn't run when initializing because it's going to perform the update to\n        // the URL which shouldn't be needed when initializing.\n        if (urlOrStateChanged) {\n            this.setBrowserUrlWithFallback(\n                newUrl, currentReplace, oldState === this.$$state ? null :\n                this.$$state);\n            this.$$replace = false;\n        }\n        $rootScope.$broadcast(\n            '$locationChangeSuccess', newUrl, oldUrl, this.$$state, oldState);\n        if (urlOrStateChanged) {\n            this.$$notifyChangeListeners(this.url(), this.$$state, oldUrl, oldState);\n        }\n    };\n\n    this.$$replace = false;\n});\n\nprivate resetBrowserUpdate() {\n    this.$$replace = false;\n    this.$$state = this.browserState();\n    this.updateBrowser = false;\n    this.lastBrowserUrl = this.browserUrl();\n}\n\nprivate lastHistoryState: unknown;\nprivate lastBrowserUrl: string = '';\nprivate browserUrl(): string;\nprivate browserUrl(url: string, replace?: boolean, state?: unknown): this;\nprivate browserUrl(url?: string, replace?:\nboolean, state?: unknown) {\n    // In modern browsers `history.state` is `null` by default; treating it separately\n    // from `undefined` would cause `$browser.url('/foo')` to change `history.state` // to undefined via `pushState`.\n    // Instead, let's change `undefined` to `null` here.\n    if (typeof state === 'undefined') {\n        state = null;\n    }\n\n    //\n    // setter\n    if (url) {\n        let sameState = this.lastHistoryState === state;\n        // Normalize the inputted URL\n        url = this.urlCodec.parse(url).href;\n        // Don't change anything if previous and current URLs and states match.\n        if (this.lastBrowserUrl === url && sameState) {\n            return this;\n        }\n        this.lastBrowserUrl = url;\n        this.lastHistoryState = state;\n        // Remove server base from URL as the Angular APIs for updating URL\n        // require\n        // it to be the path+.\n        url = this.stripBaseUrl(this.getServerBase(), url) || url;\n        // Set the URL\n        if (replace) {\n            this.locationStrategy.replaceState(state, '', url); \n        } else {\n            this.locationStrategy.pushState(state, '', url);\n        }\n        this.cacheState();\n        return this; \n        // getter\n    } else {\n        return this.platformLocation.href;\n    }\n}\n\n// This variable should be used *only* inside the\n// cacheState function.\nprivate lastCachedState: unknown = null;\nprivate cacheState() {\n    // This should be the\n    // only place in $browser where `history.state` is read.\n    this.cachedState = this.platformLocation.getState();\n    if\n    (typeof this.cachedState === 'undefined') {\n        this.cachedState = null;\n    }\n\n    // Prevent callbacks from firing twice\n    // if both hashchange & popstate were fired.\n    if (deepEqual(this.cachedState, this.lastCachedState)) {\n        this.cachedState = this.lastCachedState;\n    }\n\n    this.lastCachedState = this.cachedState;\n    this.lastHistoryState\n    = this.cachedState;\n}\n\n/**\n * This function emulates the $browser.state() function from AngularJS. It will\n * cause\n * history.state to be cached unless changed with deep equality check.\n */\nprivate browserState():\nunknown {\n    return this.cachedState;\n}\n\nprivate stripBaseUrl(base: string, url: string) {\n    if\n    (url.startsWith(base)) {\n        return url.substr(base.length);\n    }\n    return undefined;\n}\n\nprivate\ngetServerBase() {\n    const {protocol, hostname, port} = this.platformLocation;\n    const baseHref =\nthis.locationStrategy.getBaseHref();\n    let url = `${protocol}/${hostname}${port ? ':' + port : ''}${baseHref ||\n''}`;\n    return url.endsWith('/') ? url : url + '/';\n}\n\nprivate parseAppUrl(url: string) {\n    if\n    (DOUBLE_SLASH_REGEX.test(url)) {\n        throw new Error(`Bad Path - URL cannot start with double slashes:\n${url}`);\n    }\n\n    let prefixed = (url.charAt(0) !== '/');\n    if (prefixed) {\n        url = '/' + url;\n    }\n\n    let match =\nthis.urlCodec.parse(url, this.getServerBase());\n    if (typeof match === 'string') {\n        throw new Error(`Bad URL -\nCannot parse URL: ${url}`);\n    }\n\n    let path =\n        prefixed && match.pathname.charAt(0) === '/' ?\n        match.pathname.substring(1) : match.pathname;\n    this.$$path = this.urlCodec.decodePath(path);\n    this.$$search\n    = this.urlCodec.decodeSearch(match.search);\n    this.$$hash = this.urlCodec.decodeHash(match.hash);\n\n    //\n    // make sure path starts with '/';\n    if (this.$$path && this.$$path.charAt(0) !== '/') {\n        this.$$path = '/' +\n        this.$$path;\n    }\n}\n\n/**\n * Registers listeners for URL changes. This API is used to catch updates\n * performed by the\n * AngularJS framework. These changes are a subset of the `$locationChangeStart` and\n * `$locationChangeSuccess` events which fire when AngularJS updates its internally-referenced\n * version of the\n * browser URL.\n * It's possible for `$locationChange` events to happen, but for the browser URL\n * (window.location) to remain unchanged. This `onChange` callback will fire only when AngularJS\n * actually\n * updates the browser URL (window.location).\n */\n@param fn The callback function that is triggered for the\nlistener when the URL changes.\n@param err The callback function that is triggered when an error occurs.\n
```

```

*\n onChange(\n    fn: (url: string, state: unknown, oldUrl: string, oldState: unknown) => void,\n    err: (e: Error)
=> void = (e: Error) => {}) {\n    this.$$changeListeners.push([fn, err]);\n  }\n  /** @internal */\n  $$notifyChangeListeners(\n    url: string = "", state: unknown, oldUrl: string = "", oldState: unknown) {\n    this.$$changeListeners.forEach(([fn, err]) => {\n      try {\n        fn(url, state, oldUrl, oldState);\n      } catch (e) {\n        err(e);\n      }\n    });\n  }\n  /**\n   * Parses the provided URL, and sets the current URL to the parsed result.\n   *\n   * @param url The URL string.\n   */\n  $$parse(url: string) {\n    let pathUrl: string|undefined;\n    if (url.startsWith('/')) {\n      pathUrl = url;\n    } else {\n      // Remove protocol & hostname if URL starts with it\n      pathUrl = this.stripBaseUrl(this.getServerBase(), url);\n    }\n    if (typeof pathUrl === 'undefined') {\n      throw new Error(`Invalid url "${url}", missing path prefix "${this.getServerBase()}".`);\n    }\n    this.parseAppUrl(pathUrl);\n    if (!this.$$path) {\n      this.$$path = '';\n    }\n    this.composeUrls();\n  }\n  /**\n   * Parses the provided URL and its relative URL.\n   *\n   * @param url The full URL string.\n   * @param relHref A URL string relative to the full URL string.\n   */\n  $$parseLinkUrl(url: string, relHref?: string|null): boolean {\n    // When relHref is passed, it should be a hash and is handled separately\n    if (relHref && relHref[0] === '#') {\n      this.hash(relHref.slice(1));\n      return true;\n    }\n    let rewrittenUrl;\n    let appUrl = this.stripBaseUrl(this.getServerBase(), url);\n    if (typeof appUrl !== 'undefined') {\n      rewrittenUrl = this.getServerBase() + appUrl;\n    } else if (this.getServerBase() === url + '/') {\n      rewrittenUrl = this.getServerBase();\n    }\n    // Set the URL\n    if (rewrittenUrl) {\n      this.$$parse(rewrittenUrl);\n    }\n    return !!rewrittenUrl;\n  }\n  private setBrowserUrlWithFallback(url: string, replace: boolean, state: unknown) {\n    const oldUrl = this.url();\n    const oldState = this.$$state;\n    try {\n      this.browserUrl(url, replace, state);\n    } // Make sure $location.state() returns referentially identical (not just deeply equal)\n    // state object; this makes possible quick checking if the state changed in the digest\n    // loop. Checking deep equality would be too expensive.\n    this.$$state = this.browserState();\n  } catch (e) {\n    // Restore old values if pushState fails\n    this.url(oldUrl);\n    this.$$state = oldState;\n  }\n  private composeUrls() {\n    this.$$url = this.urlCodec.normalize(this.$$path, this.$$search, this.$$hash);\n    this.$$absUrl = this.getServerBase() + this.$$url.substr(1); // remove '/' from front of URL\n    this.updateBrowser = true;\n  }\n  /**\n   * Retrieves the full URL representation with all segments encoded according to\n   * rules specified in\n   * [RFC 3986](http://www.ietf.org/rfc/rfc3986.txt).\n   */\n  * ``js\n  * // given URL\n  http://example.com/#/some/path?foo=bar&baz=xoxo\n  * let absUrl = $location.absUrl();\n  * // =>\n  "http://example.com/#/some/path?foo=bar&baz=xoxo"\n  * ``\n  * \n  * absUrl(): string {\n    return this.$$absUrl;\n  }\n  /**\n   * Retrieves the current URL, or sets a new URL. When setting a URL,\n   * changes the path, search, and hash, and returns a reference to its own instance.\n   */\n  * ``js\n  * // given URL\n  http://example.com/#/some/path?foo=bar&baz=xoxo\n  * let url = $location.url();\n  * // =>\n  "/some/path?foo=bar&baz=xoxo"\n  * ``\n  * \n  * url(): string;\n  * url(url: string): this;\n  * url(url?: string): string|this {\n    if (typeof url === 'string') {\n      if (!url.length) {\n        url = '';\n      }\n      const match = PATH_MATCH.exec(url);\n      if (!match) return this;\n      if (match[1] || url === "")\n        this.path(this.urlCodec.decodePath(match[1]));\n      if (match[2] || match[1] || url === "") this.search(match[3] || "");\n      this.hash(match[5] || "");\n    }\n    // Chainable method\n    return this;\n  }\n  return this.$$url;\n  }\n  /**\n   * Retrieves the protocol of the current URL.\n   */\n  * ``js\n  * // given URL\n  http://example.com/#/some/path?foo=bar&baz=xoxo\n  * let protocol = $location.protocol();\n  * // => "http"\n  * ``\n  * \n  * protocol(): string {\n    return this.$$protocol;\n  }\n  /**\n   * Retrieves the protocol of the current URL.\n   *\n   * In contrast to the non-AngularJS version `location.host` which returns `hostname:port`, this\n   * returns the `hostname` portion only.\n   */\n  * ``js\n  * // given URL\n  http://example.com/#/some/path?foo=bar&baz=xoxo\n  * let host = $location.host();\n  * // => "example.com"\n  * ``\n  * \n  * // given URL http://user:password@example.com:8080/#/some/path?foo=bar&baz=xoxo\n  * host = $location.host();\n  * // => "example.com"\n  * \n  * host = location.host;\n  * // => "example.com:8080"\n  * ``\n  * \n  * host(): string {\n    return this.$$host;\n  }\n  /**\n   * Retrieves the port of the current URL.\n   */\n  * ``js\n  * // given URL http://example.com/#/some/path?foo=bar&baz=xoxo\n  * let port = $location.port();\n  * // => 80\n  * ``\n  * \n  * port(): number|null {\n    return this.$$port;\n  }\n  /**\n   * Retrieves the path of the current URL, or

```

changes the path and returns a reference to its own instance.

```

 * instance.
 * Paths should always begin with forward slash (/). This method adds the forward slash if it is missing.
 * given URL http://example.com/#/some/path?foo=bar&baz=xoxo
 * let path = $location.path();
 * // => "/some/path"
 * path(): string;
 * path(path: string|number|null): this;
 * path(path?: string|number|null): string|this {
 * if (typeof path === 'undefined') {
 * return this.$$path;
 * }
 * // null path converts to empty string. Prepend with "/" if needed.
 * path = path !== null ? path.toString() : "";
 * path = path.charAt(0) === '/' ? path : '/' + path;
 * this.$$path = path;
 * this.composeUrls();
 * return this;
 * }
 * Retrieves a map of the search parameters of the current URL, or changes a search part and returns a reference to its own instance.
 * given URL http://example.com/#/some/path?foo=bar&baz=xoxo
 * let searchObject = $location.search();
 * // => {foo: 'bar', baz: 'xoxo'}
 * // set foo to 'yipee'
 * $location.search('foo', 'yipee');
 * // $location.search() => {foo: 'yipee', baz: 'xoxo'}
 * @param {string|Object.<string>|Object.<Array.<string>>} search New search params - string or hash object.
 * When called with a single argument the method acts as a setter, setting the `search` component of `location` to the specified value.
 * If the argument is a hash object containing an array of values, these values will be encoded as duplicate search parameters in the URL.
 * @param {(string|Number|Array.<string>|boolean)=} paramValue If `search` is a string or number, then `paramValue` will override only a single search property.
 * If `paramValue` is an array, it will override the property of the `search` component of `location` specified via the first argument.
 * If `paramValue` is `null`, the property specified via the first argument will be deleted.
 * If `paramValue` is `true`, the property specified via the first argument will be added with no value nor trailing equal sign.
 * @return {Object} The parsed `search` object of the current URL, or the changed `search` object.
 * search(): {[key: string]: unknown};
 * search(search: string|number|{[key: string]: unknown}): this;
 * search(search: string|number|{[key: string]: unknown}, paramValue: null|undefined|string|number|boolean|string[]): this;
 * search(search: string|number|{[key: string]: unknown}, paramValue?: null|undefined|string|number|boolean|string[]): {[key: string]: unknown}|this {
 * switch (arguments.length) {
 * case 0:
 * return this.$$search;
 * case 1:
 * if (typeof search === 'string' || typeof search === 'number') {
 * this.$$search = this.urlCodec.decodeSearch(search.toString());
 * } else if (typeof search === 'object' && search !== null) {
 * // Copy the object so it's never mutated
 * search = {...search};
 * // remove object undefined or null properties
 * for (const key in search) {
 * if (search[key] === null) delete search[key];
 * }
 * this.$$search = search;
 * } else {
 * throw new Error('LocationProvider.search(): First argument must be a string or an object.');
```

```

}
}

/**
 * The factory function used to create an instance of the `LocationShim` in Angular,
 * and provides an API-compatible `LocationProvider` for AngularJS.
 */
@publicApi
export class LocationShimProvider {
  constructor(
    private ngUpgrade: UpgradeModule,
    private location: Location,
    private platformLocation: PlatformLocation,
    private urlCodec: UrlCodec,
    private locationStrategy: LocationStrategy
  ) {}

  /**
   * Factory method that returns an instance of the LocationShim
   */
  $get(): LocationShim {
    return new LocationShim(
      this.ngUpgrade.Injector,
      this.location,
      this.platformLocation,
      this.urlCodec,
      this.locationStrategy
    );
  }

  /**
   * Stub method used to keep API compatible with AngularJS. This setting is
   * configured through the LocationUpgradeModule's `config` method in your Angular
   * app.
   */
  hashPrefix(prefix?: string) {
    throw new Error('Configure LocationUpgrade through LocationUpgradeModule.config method.');
```

```

}

/**
 * Stub method used to keep API compatible with AngularJS. This setting is
 * configured through the LocationUpgradeModule's `config` method in your Angular
 * app.
 */
html5Mode(mode?: any) {
  throw new Error('Configure LocationUpgrade through LocationUpgradeModule.config method.');
```

```

}

"/**
 * @license
 * Copyright Google LLC All Rights Reserved.
 * Use of this source code is governed by an MIT-style license that can be
 * found in the LICENSE file at https://angular.io/license
 */
A codec for encoding and decoding URL parts.
*/
@publicApi
export abstract class UrlCodec {
  /**
   * Encodes the path from the provided string
   */
  @param path The path string
  abstract encodePath(path: string): string;

  /**
   * Decodes the path from the provided string
   */
  @param path The path string
  abstract decodePath(path: string): string;

  /**
   * Encodes the search string from the provided string or object
   */
  @param path The path string or object
  abstract encodeSearch(search: string | {[k: string]: unknown}): string;

  /**
   * Decodes the search objects from the provided string
   */
  @param path The path string
  abstract decodeSearch(search: string): {[k: string]: unknown};

  /**
   * Encodes the hash from the provided string
   */
  @param path The hash string
  abstract encodeHash(hash: string): string;

  /**
   * Decodes the hash from the provided string
   */
  @param path The hash string
  abstract decodeHash(hash: string): string;

  /**
   * Normalizes the URL from the provided string
   */
  @param path The URL string
  abstract normalize(href: string): string;

  /**
   * Normalizes the URL from the provided string, search, hash, and base
   * URL parameters
   */
  @param path The URL path
  @param search The search object
  @param hash The has string
  @param baseUrl The base URL for the URL
  abstract normalize(path: string, search: {[k: string]: unknown}, hash: string, baseUrl?: string): string;

  /**
   * Checks whether the two strings are equal
   */
  @param valA First string for comparison
  @param valB Second string for comparison
  abstract areEqual(valA: string, valB: string): boolean;

  /**
   * Parses the URL string based on the base URL
   */
  @param url The full URL string
  @param base The base for the URL
  abstract parse(url: string, base?: string): {
    href: string,
    protocol: string,
    host: string,
    search: string,
    hash: string,
    hostname: string,
    port: string,
    pathname: string
  };
}

A `UrlCodec` that uses logic from AngularJS to serialize and parse URLs
and URL parameters.
*/
@publicApi
export class AngularJSUrlCodec implements UrlCodec {
  // https://github.com/angular/angular.js/blob/864c7f0/src/ng/location.js#L15
  encodePath(path: string): string {
    const segments = path.split('/');
    let i = segments.length;
    while (i--) {
      // decode forward slashes to prevent them from being double encoded
      segments[i] = encodeUriSegment(segments[i].replace(/%2F/g, '/'));
    }
    path = segments.join('/');
    return _stripIndexHtml((path && path[0] !== '/' && '/' || '') + path);
  }

  // https://github.com/angular/angular.js/blob/864c7f0/src/ng/location.js#L42
  encodeSearch(search: string | {[k: string]: unknown}): string {
    if (typeof search === 'string') {
      search = parseKeyValue(search);
    }
    search = toKeyValue(search);
    return search ? '?' + search : '';
  }

  // https://github.com/angular/angular.js/blob/864c7f0/src/ng/location.js#L44
  encodeHash(hash: string) {
    hash = encodeUriSegment(hash);
    return hash ? '#' + hash : '';
  }

  // https://github.com/angular/angular.js/blob/864c7f0/src/ng/location.js#L27
  decodePath(path: string, html5Mode = true): string {
    const segments = path.split('/');
    let i = segments.length;
    while (i--) {
      segments[i] = decodeURIComponent(segments[i]);
      if (html5Mode) {
        // encode forward slashes to prevent them from

```

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being mistaken for path separators\n    segments[i] = segments[i].replace(/\\/g, '%2F');\n    }\n    }\n    return
segments.join('/');\n    }\n    // https://github.com/angular/angular.js/blob/864c7f0/src/ng/location.js#L72\n
decodeSearch(search: string) {\n    return parseKeyValue(search);\n    }\n\n //
https://github.com/angular/angular.js/blob/864c7f0/src/ng/location.js#L73\n decodeHash(hash: string) {\n    hash =
decodeURIComponent(hash);\n    return hash[0] === '#' ? hash.substring(1) : hash;\n    }\n\n //
https://github.com/angular/angular.js/blob/864c7f0/src/ng/location.js#L149\n //
https://github.com/angular/angular.js/blob/864c7f0/src/ng/location.js#L42\n normalize(href: string): string;\n
normalize(path: string, search: {[k: string]: unknown}, hash: string, baseUrl?: string): string;\n
normalize(pathOrHref: string, search?: {[k: string]: unknown}, hash?: string, baseUrl?: string):\n    string {\n    if
(arguments.length === 1) {\n        const parsed = this.parse(pathOrHref, baseUrl);\n        if (typeof parsed ===
'string') {\n            return parsed;\n        }\n        const serverUrl =\n`$${parsed.protocol}://${parsed.hostname}${parsed.port ? ':' + parsed.port : ''}`;\n        return this.normalize(\n
this.decodePath(parsed.pathname), this.decodeSearch(parsed.search),\n        this.decodeHash(parsed.hash),
serverUrl);\n    } else {\n        const encPath = this.encodePath(pathOrHref);\n        const encSearch = search &&
this.encodeSearch(search) || '';\n        const encHash = hash && this.encodeHash(hash) || '';\n        let joinedPath =
(baseUrl || '') + encPath;\n        if (!joinedPath.length || joinedPath[0] !== '/') {\n            joinedPath = '/' + joinedPath;\n        }\n        return joinedPath + encSearch + encHash;\n    }\n    }\n\n areEqual(valA: string, valB: string) {\n    return
this.normalize(valA) === this.normalize(valB);\n    }\n\n //
https://github.com/angular/angular.js/blob/864c7f0/src/ng/urlUtils.js#L60\n parse(url: string, base?: string) {\n    try
{\n        // Safari 12 throws an error when the URL constructor is called with an undefined base.\n        const parsed =
!base ? new URL(url) : new URL(url, base);\n        return {\n            href: parsed.href,\n            protocol: parsed.protocol ?
parsed.protocol.replace(/:$/, '') : '',\n            host: parsed.host,\n            search: parsed.search ? parsed.search.replace(/^\\?/,
'') : '',\n            hash: parsed.hash ? parsed.hash.replace(/^#/, '') : '',\n            hostname: parsed.hostname,\n            port:
parsed.port,\n            pathname: (parsed.pathname.charAt(0) === '/') ? parsed.pathname : '/' + parsed.pathname\n        };\n    } catch (e) {\n        throw new Error(`Invalid URL (${url}) with base (${base})`);\n    }\n    }\n\n\nfunction
_stripIndexHtml(url: string): string {\n    return url.replace(/\\/index.html$/, '');\n    }\n\n\n**\n * Tries to decode the URI
component without throwing an exception.\n * \n * @param str value potential URI component to check.\n * \n *
@returns the decoded URI if it can be decoded or else `undefined`.\n * \n\nfunction tryDecodeURIComponent(value:
string): string|undefined {\n    try {\n        return decodeURIComponent(value);\n    } catch (e) {\n        // Ignore any invalid
uri component.\n        return undefined;\n    }\n    }\n\n\n**\n * Parses an escaped url query string into key-value pairs.
Logic taken from\n * https://github.com/angular/angular.js/blob/864c7f0/src/Angular.js#L1382\n * \n\nfunction
parseKeyValue(keyValue: string): {[k: string]: unknown} {\n    const obj: {[k: string]: unknown} = {};\n    (keyValue
|| '').split('&').forEach((keyValue) => {\n        let splitPoint, key, val;\n        if (keyValue) {\n            key = keyValue =
keyValue.replace(/\\/+/g, '%20');\n            splitPoint = keyValue.indexOf('=');\n            if (splitPoint !== -1) {\n                key =
keyValue.substring(0, splitPoint);\n                val = keyValue.substring(splitPoint + 1);\n            }\n            key =
tryDecodeURIComponent(key);\n            if (typeof key !== 'undefined') {\n                val = typeof val !== 'undefined' ?
tryDecodeURIComponent(val) : true;\n                if (!obj.hasOwnProperty(key)) {\n                    obj[key] = val;\n                } else if
(Array.isArray(obj[key])) {\n                    (obj[key] as unknown[]).push(val);\n                } else {\n                    obj[key] = [obj[key],
val];\n                }\n            }\n        }\n    });\n    return obj;\n    }\n\n\n**\n * Serializes into key-value pairs. Logic taken from\n *
https://github.com/angular/angular.js/blob/864c7f0/src/Angular.js#L1409\n * \n\nfunction toKeyValue(obj: {[k:
string]: unknown}) {\n    const parts: unknown[] = [];\n    for (const key in obj) {\n        let value = obj[key];\n        if
(Array.isArray(value)) {\n            value.forEach((arrayValue) => {\n                parts.push(\n                    encodeUriQuery(key,
true) +\n                    (arrayValue === true ? '' : '=' + encodeUriQuery(arrayValue, true));\n                });\n            } else {\n                parts.push(\n                    encodeUriQuery(key, true) +\n                    (value === true ? '' : '=' + encodeUriQuery(value as any,
true));\n                );\n            }\n        }\n    }\n    return parts.length ? parts.join('&') : '';\n    }\n\n\n**\n * We need our custom method because
encodeURIComponent is too aggressive and doesn't follow\n * http://www.ietf.org/rfc/rfc3986.txt with regards to
the character set (pchar) allowed in path\n * segments:\n * \n * segment = *pchar\n * \n * pchar = unreserved /
pct-encoded / sub-delims / \" / \" / \"@ / \"\n * \n * pct-encoded = \"%\" HEXDIG HEXDIG\n * \n * unreserved =

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No license file was found, but licenses were detected in source scan.

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Content":["/*\n * @license Angular v11.0.2\n * (c) 2010-2020 Google LLC. https://angular.io\n * License: MIT\n
*\n\n(function (global, factory) {\n  typeof exports === 'object' && typeof module !== 'undefined' ?
factory(exports, require('@angular/core'), require('@angular/common'), require('rxjs')) :\n  typeof define ===
'function' && define.amd ? define('@angular/common/testing', ['exports', '@angular/core', '@angular/common',
'rxjs'], factory) :\n  (global = global || self, factory((global.ng = global.ng || {}), global.ng.common =
global.ng.common || {}, global.ng.common.testing = {}), global.ng.core, global.ng.common, global.rxjs));\n})(this,
(function (exports, core, common, rxjs) { 'use strict';\n\n  /**\n   * @license\n   * Copyright Google LLC All
Rights Reserved.\n   *\n   * Use of this source code is governed by an MIT-style license that can be\n   * found
in the LICENSE file at https://angular.io/license\n   *\n   * A spy for {@link Location} that allows tests
to fire simulated location events.\n   *\n   * @publicApi\n   */\n  var SpyLocation = /** @class */ (function ()
{\n    function SpyLocation() {\n      this.urlChanges = [];\n      this._history = [new LocationState("", "",
null)];\n      this._historyIndex = 0;\n      /** @internal */\n      this._subject = new core.EventEmitter();\n      /** @internal */\n      this._baseHref = "";\n      /** @internal */\n      this._platformStrategy =
null;\n      /** @internal */\n      this._platformLocation = null;\n      /** @internal */\n
this._urlChangeListeners = [];\n    }\n    SpyLocation.prototype.setInitialPath = function (url) {\n
this._history[this._historyIndex].path = url;\n    }; \n    SpyLocation.prototype.setBaseHref = function (url) {\n
this._baseHref = url;\n    }; \n    SpyLocation.prototype.path = function () {\n      return
this._history[this._historyIndex].path;\n    }; \n    SpyLocation.prototype.getState = function () {\n      return
this._history[this._historyIndex].state;\n    }; \n    SpyLocation.prototype.isCurrentPathEqualTo = function
(path, query) {\n      if (query === void 0) { query = ""; }\n      var givenPath = path.endsWith("/") ?
path.substring(0, path.length - 1) : path;\n      var currPath = this.path().endsWith("/") ? this.path().substring(0,
this.path().length - 1) : this.path();\n      return currPath === givenPath + (query.length > 0 ? ('?' + query) : "");\n
}; \n    SpyLocation.prototype.simulateUrlPop = function (pathname) {\n      this._subject.emit({ 'url':
pathname, 'pop': true, 'type': 'popstate' });\n    }; \n    SpyLocation.prototype.simulateHashChange = function
(pathname) {\n      // Because we don't prevent the native event, the browser will independently update the path\n
this.setInitialPath(pathname);\n      this.urlChanges.push('hash: ' + pathname);\n      this._subject.emit({
'url': pathname, 'pop': true, 'type': 'hashchange' });\n    }; \n    SpyLocation.prototype.prepareExternalUrl =
function (url) {\n      if (url.length > 0 && !url.startsWith("/")) {\n        url = '/' + url;\n      }\n
return this._baseHref + url;\n    }; \n    SpyLocation.prototype.go = function (path, query, state) {\n      if
(query === void 0) { query = ""; }\n      if (state === void 0) { state = null; }\n      path =
this.prepareExternalUrl(path);\n      if (this._historyIndex > 0) {\n
this._history.splice(this._historyIndex + 1);\n      }\n      this._history.push(new LocationState(path, query,
state));\n      this._historyIndex = this._history.length - 1;\n      var locationState =
this._history[this._historyIndex - 1];\n      if (locationState.path === path && locationState.query === query) {\n
return;\n      }\n      var url = path + (query.length > 0 ? ('?' + query) : "");\n
this.urlChanges.push(url);\n      this._subject.emit({ 'url': url, 'pop': false });\n    }; \n
SpyLocation.prototype.replaceState = function (path, query, state) {\n      if (query === void 0) { query = ""; }\n
if (state === void 0) { state = null; }\n      path = this.prepareExternalUrl(path);\n      var history =
this._history[this._historyIndex];\n      if (history.path === path && history.query === query) {\n        return;\n
      }\n      history.path = path;\n      history.query = query;\n      history.state = state;\n      var url =
path + (query.length > 0 ? ('?' + query) : "");\n      this.urlChanges.push('replace: ' + url);\n    }; \n
SpyLocation.prototype.forward = function () {\n      if (this._historyIndex < (this._history.length - 1)) {\n
this._historyIndex++;\n      this._subject.emit({ 'url': this.path(), 'state': this.getState(), 'pop': true });\n
}

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}\n    });\n    SpyLocation.prototype.back = function () {\n        if (this._historyIndex > 0) {\n            this._historyIndex--;\n            this._subject.emit({ 'url': this.path(), 'state': this.getState(), 'pop': true });\n        }\n    });\n    SpyLocation.prototype.onUrlChange = function (fn) {\n        var _this = this;\n        this._urlChangeListeners.push(fn);\n        if (!this._urlChangeSubscription) {\n            this._urlChangeSubscription = this.subscribe(function (v) {\n                _this._notifyUrlChangeListeners(v.url,\n                v.state);\n            });\n        }\n    }; \n    /** @internal */\n    SpyLocation.prototype._notifyUrlChangeListeners = function (url, state) {\n        if (url === void 0) { url = ""; }\n        this._urlChangeListeners.forEach(function (fn) { return fn(url, state); });\n    }; \n    SpyLocation.prototype.subscribe = function (onNext, onThrow, onReturn) {\n        return\n        this._subject.subscribe({ next: onNext, error: onThrow, complete: onReturn });\n    }; \n    SpyLocation.prototype.normalize = function (url) {\n        return null;\n    }; \n    return SpyLocation;\n    }());\n    SpyLocation.decorators = [\n        { type: core.Injectable }\n    ]; \n    var LocationState = /** @class */\n    (function () {\n        function LocationState(path, query, state) {\n            this.path = path;\n            this.query =\n            query;\n            this.state = state;\n        }\n        return LocationState;\n    }()); \n    /**\n    *****\n    Copyright (c)\n    Microsoft Corporation.\n    Permission to use, copy, modify, and/or distribute this software for any\n    purpose\n    with or without fee is hereby granted.\n    THE SOFTWARE IS PROVIDED \"AS IS\" AND THE AUTHOR\n    DISCLAIMS ALL WARRANTIES WITH\n    REGARD TO THIS SOFTWARE INCLUDING ALL IMPLIED\n    WARRANTIES OF MERCHANTABILITY\n    AND FITNESS. IN NO EVENT SHALL THE AUTHOR BE\n    LIABLE FOR ANY SPECIAL, DIRECT,\n    INDIRECT, OR CONSEQUENTIAL DAMAGES OR ANY\n    DAMAGES WHATSOEVER RESULTING FROM\n    LOSS OF USE, DATA OR PROFITS, WHETHER IN AN\n    ACTION OF CONTRACT, NEGLIGENCE OR\n    OTHER TORTIOUS ACTION, ARISING OUT OF OR IN\n    CONNECTION WITH THE USE OR\n    PERFORMANCE OF THIS SOFTWARE.\n    *****\n    */\n    /* global\n    Reflect, Promise */\n    var extendStatics = function (d, b) {\n        extendStatics = Object.setPrototypeOf ||\n        ({ __proto__: [] } instanceof Array && function (d, b) { d.__proto__ = b; }) ||\n        function (d, b) { for (var p in\n        b)\n            if (b.hasOwnProperty(p))\n                d[p] = b[p];\n        });\n        return extendStatics(d, b);\n    }; \n    function __extends(d, b) {\n        extendStatics(d, b);\n        function __() { this.constructor = d; }\n        d.prototype\n        = b === null ? Object.create(b) : (__proto__ = b.prototype, new __());\n    }\n    var __assign = function () {\n        __assign = Object.assign || function __assign(t) {\n            for (var s, i = 1, n = arguments.length; i < n; i++) {\n                s = arguments[i];\n                for (var p in s)\n                    if (Object.prototype.hasOwnProperty.call(s, p))\n                        t[p] = s[p];\n            }\n            return t;\n        }; \n        return __assign.apply(this, arguments);\n    }; \n    function __rest(s, e) {\n        var t = {};\n        for (var p in s)\n            if (Object.prototype.hasOwnProperty.call(s, p)\n            && e.indexOf(p) < 0)\n                t[p] = s[p];\n        if (s != null && typeof Object.getPrototypeOf ===\n        \"function\")\n            for (var i = 0, p = Object.getPrototypeOf(s); i < p.length; i++) {\n                if\n                (e.indexOf(p[i]) < 0 && Object.prototype.propertyIsEnumerable.call(s, p[i]))\n                    t[p[i]] = s[p[i]];\n            }\n        return t;\n    }\n    function __decorate(decorators, target, key, desc) {\n        var c = arguments.length, r = c\n        < 3 ? target : desc === null ? desc = Object.getOwnPropertyDescriptor(target, key) : desc, d;\n        if (typeof Reflect\n        === \"object\" && typeof Reflect.decorate === \"function\")\n            r = Reflect.decorate(decorators, target, key,\n            desc);\n        else\n            for (var i = decorators.length - 1; i >= 0; i--)\n                if (d = decorators[i])\n                    r = (c < 3 ? d(r) : c > 3 ? d(target, key, r) : d(target, key)) || r;\n        return c > 3 && r &&\n        Object.defineProperty(target, key, r, r);\n    }\n    function __param(paramIndex, decorator) {\n        return function\n        (target, key) { decorator(target, key, paramIndex); }\n    }\n    function __metadata(metadataKey, metadataValue)\n    {\n        if (typeof Reflect === \"object\" && typeof Reflect.metadata === \"function\")\n            return\n            Reflect.metadata(metadataKey, metadataValue);\n    }\n    function __awaiter(thisArg, _arguments, P, generator) {\n        function\n        adopt(value) { return value instanceof P ? value : new P(function (resolve) { resolve(value); }); }\n        return new (P || (P = Promise))(function (resolve, reject) {\n            function fulfilled(value) { try {\n            step(generator.next(value));\n            }\n            catch (e) {\n                reject(e);\n            }\n            }\n            function

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rejected(value) { try {\n          step(generator["throw"](value));\n        }\n        catch (e) {\n
reject(e);\n        }\n        function step(result) { result.done ? resolve(result.value) :
adopt(result.value).then(fulfilled, rejected); }\n        step((generator = generator.apply(thisArg, _arguments ||
[])).next());\n        });\n        }\n        function __generator(thisArg, body) {\n          var _ = { label: 0, sent: function () { if
(t[0] & 1)\n            throw t[1]; return t[1]; }, trys: [], ops: [] }, f, y, t, g;\n          return g = { next: verb(0), "throw":
verb(1), "return": verb(2) }, typeof Symbol === "function" && (g[Symbol.iterator] = function () { return this; }),
g;\n          function verb(n) { return function (v) { return step([n, v]); }; }\n          function step(op) {\n            if (f)\n              throw new TypeError("Generator is already executing.");\n            while (_)\n              try {\n                if
(f = 1, y && (t = op[0] & 2 ? y["return"] : op[0] ? y["throw"] || ((t = y["return"]) && t.call(y), 0) : y.next) &&
!(t = t.call(y, op[1])).done)\n                  return t;\n                if (y = 0, t)\n                  op = [op[0] & 2,
t.value];\n                switch (op[0]) {\n                  case 0:\n                    case 1:\n                      t = op;\n                    break;\n                    case 4:\n                      _label++;\n                      return { value: op[1],
done: false };;\n                    case 5:\n                      _label++;\n                      y = op[1];\n                    op = [0];\n                    continue;\n                    case 7:\n                      op = _ops.pop();\n                    _trys.pop();\n                    continue;\n                    default:\n                      if (!(t = _trys, t = t.length > 0
&& t[t.length - 1]) && (op[0] === 6 || op[0] === 2)) {\n                        _ = 0;\n                        continue;\n                      }\n                      if (op[0] === 3 && (!t || (op[1] > t[0] && op[1] < t[3]))) {\n                        _label = op[1];\n                        break;\n                      }\n                      if (op[0] === 6 && _label <
t[1]) {\n                        _label = t[1];\n                        t = op;\n                        break;\n                      }\n                      if (t && _label < t[2]) {\n                        _label = t[2];\n                        _ops.push(op);\n                        break;\n                      }\n                      _ops.pop();\n                      _trys.pop();\n                      continue;\n                    }\n                    op =
body.call(thisArg, _);\n                  }\n                  catch (e) {\n                    op = [6, e];\n                    y = 0;\n                  }\n                  finally {\n                    f = t = 0;\n                  }\n                  if (op[0] & 5)\n                    throw op[1];\n                  return { value: op[0] ? op[1] : void 0, done: true };;\n                }\n                }\n                var __createBinding = Object.create ? (function
(o, m, k, k2) {\n                  if (k2 === undefined)\n                    k2 = k;\n                  Object.defineProperty(o, k2, { enumerable: true,
get: function () { return m[k]; } });\n                }) : (function (o, m, k, k2) {\n                  if (k2 === undefined)\n                    k2 = k;\n                  o[k2] = m[k];\n                });\n                function __exportStar(m, exports) {\n                  for (var p in m)\n                    if (p !== "default"
&& !exports.hasOwnProperty(p))\n                      __createBinding(exports, m, p);\n                }\n                function __values(o) {\n                  var s = typeof Symbol === "function" && Symbol.iterator, m = s && o[s], i = 0;\n                  if (m)\n                    return
m.call(o);\n                  if (o && typeof o.length === "number")\n                    return {\n                      next: function () {\n                        if (o && i >= o.length)\n                          o = void 0;\n                        return { value: o && o[i++], done: !o };;\n                      }\n                    };\n                  throw new TypeError(s ? "Object is not iterable." : "Symbol.iterator is not defined.");\n                }\n                }\n                function __read(o, n) {\n                  var m = typeof Symbol === "function" && o[Symbol.iterator];\n                  if (!m)\n                    return o;\n                  var i = m.call(o), r, ar = [], e;\n                  try {\n                    while ((n === void 0 || n-- > 0) && !(r =
i.next()).done)\n                      ar.push(r.value);\n                  }\n                  catch (error) {\n                    e = { error: error };;\n                  }\n                  finally {\n                    try {\n                      if (r && !r.done && (m = i["return"]))\n                        m.call(i);\n                    }\n                    finally {\n                      if (e)\n                        throw e.error;\n                    }\n                  }\n                  return ar;\n                }\n                }\n                function __spread() {\n                  for (var ar = [], i = 0; i < arguments.length; i++)\n                    ar = ar.concat(__read(arguments[i]));\n                  return ar;\n                }\n                }\n                function __spreadArrays() {\n                  for (var s = 0, i = 0, il = arguments.length; i < il; i++)\n                    s += arguments[i].length;\n                  for (var r = Array(s), k = 0, i = 0; i < il; i++)\n                    for (var a = arguments[i], j
= 0, jl = a.length; j < jl; j++, k++)\n                      r[k] = a[j];\n                  return r;\n                }\n                }\n                function __await(v) {\n                  return this instanceof __await ? (this.v = v, this) : new __await(v);\n                }\n                }\n                function __asyncGenerator(thisArg,
_arguments, generator) {\n                  if (!Symbol.asyncIterator)\n                    throw new TypeError("Symbol.asyncIterator is
not defined.");\n                  var g = generator.apply(thisArg, _arguments || []), i, q = [];\n                  return i = { }, verb("next"),
verb("throw"), verb("return"), i[Symbol.asyncIterator] = function () { return this; }, i;\n                  function verb(n) { if
(g[n])\n                    i[n] = function (v) { return new Promise(function (a, b) { q.push([n, v, a, b]) > 1 || resume(n, v); }); };\n                  }\n                  function resume(n, v) { try {\n                    step(g[n](v));\n                  }\n                  catch (e) {\n                    settle(q[0][3], e);\n

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} }\n    function step(r) { r.value instanceof __await ? Promise.resolve(r.value.v).then(fulfill, reject) :
settle(q[0][2], r); }\n    function fulfill(value) { resume("\next", value); }\n    function reject(value) {
resume("\throw", value); }\n    function settle(f, v) { if (f(v), q.shift(), q.length)\n        resume(q[0][0], q[0][1]);
}\n }\n function __asyncDelegator(o) {\n    var i, p;\n    return i = {}, verb("\next"), verb("\throw",
function (e) { throw e; }, verb("\return"), i[Symbol.iterator] = function () { return this; }, i;\n    function verb(n,
f) { i[n] = o[n] ? function (v) { return (p = !p) ? { value: __await(o[n](v)), done: n === "\return" } : f ? f(v) : v; } : f;
}\n }\n function __asyncValues(o) {\n    if (!Symbol.asyncIterator)\n        throw new
TypeError("\Symbol.asyncIterator is not defined.");\n    var m = o[Symbol.asyncIterator], i;\n    return m ?
m.call(o) : (o = typeof __values === "\function" ? __values(o) : o[Symbol.iterator](), i = {}, verb("\next"),
verb("\throw"), verb("\return"), i[Symbol.asyncIterator] = function () { return this; }, i);\n    function verb(n) {
i[n] = o[n] && function (v) { return new Promise(function (resolve, reject) { v = o[n](v), settle(resolve, reject,
v.done, v.value); }); }; }\n    function settle(resolve, reject, d, v) { Promise.resolve(v).then(function (v) {
resolve({ value: v, done: d }); }, reject); }\n }\n function __makeTemplateObject(cooked, raw) {\n    if
(Object.defineProperty) {\n        Object.defineProperty(cooked, "\raw", { value: raw });\n    }\n    else {\n
cooked.raw = raw;\n    }\n    return cooked;\n }\n ;\n var __setModuleDefault = Object.create ?
(function (o, v) {\n    Object.defineProperty(o, "\default", { enumerable: true, value: v });\n }) : function (o, v)
{\n    o["\default"] = v;\n }; \n function __importStar(mod) {\n    if (mod && mod.__esModule)\nreturn mod;\n    var result = {};\n    if (mod != null)\n        for (var k in mod)\n            if
(Object.hasOwnProperty.call(mod, k))\n                __createBinding(result, mod, k);\n    __setModuleDefault(result, mod);\n    return result;\n }\n function __importDefault(mod) {\n    return (mod
&& mod.__esModule) ? mod : { default: mod }; \n }\n function __classPrivateFieldGet(receiver, privateMap)
{\n    if (!privateMap.has(receiver))\n        throw new TypeError("\attempted to get private field on non-
instance");\n    }\n    return privateMap.get(receiver);\n }\n function __classPrivateFieldSet(receiver,
privateMap, value) {\n    if (!privateMap.has(receiver))\n        throw new TypeError("\attempted to set private
field on non-instance");\n    }\n    privateMap.set(receiver, value);\n    return value;\n }\n\n /**\n * A
mock implementation of {@link LocationStrategy} that allows tests to fire simulated\n * location events.\n *\n * @publicApi\n */\n var MockLocationStrategy = /** @class */ (function (_super) {\n
__extends(MockLocationStrategy, _super);\n    function MockLocationStrategy() {\n        var _this =
_super.call(this) || this;\n        _this.internalBaseHref = '/';\n        _this.internalPath = '/';\n        _this.internalTitle = '';\n        _this.urlChanges = [];\n        /** @internal */\n        _this._subject = new
core.EventEmitter();\n        _this.stateChanges = [];\n        return _this;\n    }\n    MockLocationStrategy.prototype.simulatePopState = function (url) {\n        this.internalPath = url;\n        this._subject.emit(new _MockPopStateEvent(this.path()));\n    }; \n    MockLocationStrategy.prototype.path =
function (includeHash) {\n        if (includeHash === void 0) { includeHash = false; }\n        return
this.internalPath;\n    }; \n    MockLocationStrategy.prototype.prepareExternalUrl = function (internal) {\n        if (internal.startsWith('/') && this.internalBaseHref.endsWith('/'))\n            return this.internalBaseHref +
internal.substring(1);\n        }\n        return this.internalBaseHref + internal;\n    }; \n    MockLocationStrategy.prototype.pushState = function (ctx, title, path, query) {\n        // Add state change to
changes array\n        this.stateChanges.push(ctx);\n        this.internalTitle = title;\n        var url = path +
(query.length > 0 ? ('?' + query) : '');\n        this.internalPath = url;\n        var externalUrl =
this.prepareExternalUrl(url);\n        this.urlChanges.push(externalUrl);\n    }; \n    MockLocationStrategy.prototype.replaceState = function (ctx, title, path, query) {\n        // Reset the last index of
stateChanges to the ctx (state) object\n        this.stateChanges[(this.stateChanges.length | 1) - 1] = ctx;\n        this.internalTitle = title;\n        var url = path + (query.length > 0 ? ('?' + query) : '');\n        this.internalPath =
url;\n        var externalUrl = this.prepareExternalUrl(url);\n        this.urlChanges.push('replace: ' +
externalUrl);\n    }; \n    MockLocationStrategy.prototype.onPopState = function (fn) {\n        this._subject.subscribe({ next: fn });\n    }; \n    MockLocationStrategy.prototype.getBaseHref = function () {\n
return this.internalBaseHref;\n    }; \n    MockLocationStrategy.prototype.back = function () {\n        if

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(this.urlChanges.length > 0) {\n          this.urlChanges.pop();\n          this.stateChanges.pop();\n          var\n          nextUrl = this.urlChanges.length > 0 ? this.urlChanges[this.urlChanges.length - 1] : '';\n          this.simulatePopState(nextUrl);\n          }\n          });\n          MockLocationStrategy.prototype.forward = function () {\n          throw 'not implemented';\n          };\n          MockLocationStrategy.prototype.getState = function () {\n          return this.stateChanges[(this.stateChanges.length || 1) - 1];\n          };\n          return MockLocationStrategy;\n          }(\n          common.LocationStrategy);\n          MockLocationStrategy.decorators = [\n          { type: core.Injectable }\n          ];\n          MockLocationStrategy.ctorParameters = function () { return []; };\n          var _MockPopStateEvent = /** @class */\n          (function () {\n          function _MockPopStateEvent(newUrl) {\n          this.newUrl = newUrl;\n          this.pop =\n          true;\n          this.type = 'popstate';\n          }\n          return _MockPopStateEvent;\n          }());\n          /**\n          * @license\n          * Copyright Google LLC All Rights Reserved.\n          * Use of this source code is governed by an MIT-style\n          license that can be\n          * found in the LICENSE file at https://angular.io/license\n          *\n          * Parser from\n          https://tools.ietf.org/html/rfc3986#appendix-B\n          * ^(([^:/?#]+):)?(//([^/?#]*))?([^?#]*)(\\?([^#]*))?(#(.*))?*\n          * 12      3 4      5      6 7      8 9\n          * Example: http://www.ics.uci.edu/pub/ietf/uri/#Related\n          *\n          * Results in:\n          * $1 = http:\n          * $2 = http:\n          * $3 = //www.ics.uci.edu\n          * $4 = www.ics.uci.edu\n          * $5 = /pub/ietf/uri/\n          * $6 = <undefined>\n          * $7 = <undefined>\n          * $8 = #Related\n          * $9 = Related\n          *\n          * var urlParse = /^(?:([^\s:/?#]+):)?(\\?\\?\\?([^\s:/?#]*))?([^\s?#]*)(\\?([^\s#]*))?(#(.*))?/;\n          function parseUrl(urlStr,\n          baseHref) {\n          var verifyProtocol = /^(http[s]?|ftp):\\?\\?\\?/;\n          var serverBase;\n          // URL class requires full\n          URL. If the URL string doesn't start with protocol, we need to add\n          // an arbitrary base URL which can be\n          removed afterward.\n          if (!verifyProtocol.test(urlStr)) {\n          serverBase = 'http://empty.com/';\n          }\n          var parsedUrl;\n          try {\n          parsedUrl = new URL(urlStr, serverBase);\n          }\n          catch (e) {\n          var\n          result = urlParse.exec(serverBase || '' + urlStr);\n          if (!result) {\n          throw new Error('Invalid URL: \'' +\n          urlStr + '\'' with base: \'' + baseHref);\n          }\n          var hostSplit = result[4].split(':');\n          parsedUrl = {\n          protocol: result[1],\n          hostname: hostSplit[0],\n          port: hostSplit[1] || '',\n          pathname:\n          result[5],\n          search: result[6],\n          hash: result[8],\n          };\n          }\n          if (parsedUrl.pathname\n          && parsedUrl.pathname.indexOf(baseHref) === 0) {\n          parsedUrl.pathname =\n          parsedUrl.pathname.substring(baseHref.length);\n          }\n          return {\n          hostname: !serverBase &&\n          parsedUrl.hostname || '',\n          protocol: !serverBase && parsedUrl.protocol || '',\n          port: !serverBase &&\n          parsedUrl.port || '',\n          pathname: parsedUrl.pathname || '/',\n          search: parsedUrl.search || '',\n          hash:\n          parsedUrl.hash || '',\n          };\n          };\n          };\n          /**\n          * Provider for mock platform location config\n          *\n          * @publicApi\n          *\n          * var MOCK_PLATFORM_LOCATION_CONFIG = new\n          core.InjectionToken('MOCK_PLATFORM_LOCATION_CONFIG');\n          /**\n          * Mock implementation of URL\n          state.\n          *\n          * @publicApi\n          *\n          * var MockPlatformLocation = /** @class */ (function () {\n          function\n          MockPlatformLocation(config) {\n          this.baseHref = '';\n          this.hashUpdate = new rxjs.Subject();\n          this.urlChanges = [{ hostname: '', protocol: '', port: '', pathname: '/', search: '', hash: '', state: null }];\n          if\n          (config) {\n          this.baseHref = config.appBaseHref || '';\n          var parsedChanges =\n          this.parseChanges(null, config.startUrl || 'http://<empty>', this.baseHref);\n          this.urlChanges[0] =\n          Object.assign({}, parsedChanges);\n          }\n          }\n          Object.defineProperty(MockPlatformLocation.prototype, 'hostname', {\n          get: function () {\n          return this.urlChanges[0].hostname;\n          },\n          enumerable: false,\n          configurable: true\n          });\n          Object.defineProperty(MockPlatformLocation.prototype, 'protocol', {\n          get: function () {\n          return this.urlChanges[0].protocol;\n          },\n          enumerable: false,\n          configurable: true\n          });\n          Object.defineProperty(MockPlatformLocation.prototype, 'port', {\n          get: function () {\n          return\n          this.urlChanges[0].port;\n          },\n          enumerable: false,\n          configurable: true\n          });\n          Object.defineProperty(MockPlatformLocation.prototype, 'pathname', {\n          get: function () {\n          return this.urlChanges[0].pathname;\n          },\n          enumerable: false,\n          configurable: true\n          });\n          Object.defineProperty(MockPlatformLocation.prototype, 'search', {\n          get: function () {\n          return\n          this.urlChanges[0].search;\n          },\n          enumerable: false,\n          configurable: true\n          });\n          Object.defineProperty(MockPlatformLocation.prototype, 'hash', {\n          get: function () {\n          return

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this.urlChanges[0].hash;\n      },\n      enumerable: false,\n      configurable: true\n    });\n    Object.defineProperty(MockPlatformLocation.prototype, \"state\", {\n      get: function () {\n        return\n        this.urlChanges[0].state;\n      },\n      enumerable: false,\n      configurable: true\n    });\n    MockPlatformLocation.prototype.getBaseHrefFromDOM = function () {\n      return this.baseHref;\n    };\n    MockPlatformLocation.prototype.onPopState = function (fn) {\n      // No-op: a state stack is not implemented,\n      so\n      // no events will ever come.\n    }; \n    MockPlatformLocation.prototype.onHashChange = function\n    (fn) {\n      this.hashUpdate.subscribe(fn);\n    };\n    Object.defineProperty(MockPlatformLocation.prototype, \"href\", {\n      get: function () {\n        var url =\n        this.protocol + \"//\" + this.hostname + (this.port ? ':' + this.port : '');\n        url += \"\" + (this.pathname === '/' ?\n        \"\": this.pathname) + this.search + this.hash;\n        return url;\n      },\n      enumerable: false,\n      configurable: true\n    });\n    Object.defineProperty(MockPlatformLocation.prototype, \"url\", {\n      get:\n      function () {\n        return \"\" + this.pathname + this.search + this.hash;\n      },\n      enumerable:\n      false,\n      configurable: true\n    });\n    MockPlatformLocation.prototype.parseChanges = function (state,\n    url, baseHref) {\n      if (baseHref === void 0) { baseHref = \"\"; }\n      // When the `history.state` value is\n      stored, it is always copied.\n      state = JSON.parse(JSON.stringify(state));\n      return\n      Object.assign(Object.assign({}, parseUrl(url, baseHref)), { state: state });\n    };\n    MockPlatformLocation.prototype.replaceState = function (state, title, newUrl) {\n      var _a =\n      this.parseChanges(state, newUrl), pathname = _a.pathname, search = _a.search, parsedState = _a.state, hash =\n      _a.hash;\n      this.urlChanges[0] = Object.assign(Object.assign({}, this.urlChanges[0]), { pathname: pathname,\n      search: search, hash: hash, state: parsedState });\n    };\n    MockPlatformLocation.prototype.pushState =\n    function (state, title, newUrl) {\n      var _a = this.parseChanges(state, newUrl), pathname = _a.pathname, search\n      = _a.search, parsedState = _a.state, hash = _a.hash;\n      this.urlChanges.unshift(Object.assign(Object.assign({},\n      this.urlChanges[0]), { pathname: pathname, search: search, hash: hash, state: parsedState }));\n    };\n    MockPlatformLocation.prototype.forward = function () {\n      throw new Error('Not implemented');\n    };\n    MockPlatformLocation.prototype.back = function () {\n      var _this = this;\n      var oldUrl = this.url;\n      var oldHash = this.hash;\n      this.urlChanges.shift();\n      var newHash = this.hash;\n      if (oldHash\n      !== newHash) {\n        scheduleMicroTask(function () { return _this.hashUpdate.next({ type: 'hashchange',\n        state: null, oldUrl: oldUrl, newUrl: _this.url }); });\n      }\n    };\n    MockPlatformLocation.prototype.getState = function () {\n      return this.state;\n    };\n    return\n    MockPlatformLocation;\n  }());\n  MockPlatformLocation.decorators = [\n    { type: core.Injectable }\n  ];\n  MockPlatformLocation.ctorParameters = function () { return [\n    { type: undefined, decorators: [\n      { type:\n      core.Inject, args: [MOCK_PLATFORM_LOCATION_CONFIG, ] },\n      { type: core.Optional }\n    ] }\n  ]; };\n  function\n  scheduleMicroTask(cb) {\n    Promise.resolve(null).then(cb);\n  }\n  /**\n   * @license\n   * Copyright\n   * Google LLC All Rights Reserved.\n   * Use of this source code is governed by an MIT-style license that can\n   * be\n   * found in the LICENSE file at https://angular.io/license\n   */\n  /**\n   * @license\n   * Copyright\n   * Google LLC All Rights Reserved.\n   * Use of this source code is governed by an MIT-style license that can\n   * be\n   * found in the LICENSE file at https://angular.io/license\n   */\n  // This file only reexports content of the\n  `src` folder. Keep it that way.\n  /**\n   * @license\n   * Copyright Google LLC All Rights Reserved.\n   * Use of this source code is governed by an MIT-style license that can be\n   * found in the LICENSE file at\n   * https://angular.io/license\n   */\n  /**\n   * Generated bundle index. Do not edit.\n   */\n  exports.MOCK_PLATFORM_LOCATION_CONFIG = MOCK_PLATFORM_LOCATION_CONFIG;\n  exports.MockLocationStrategy = MockLocationStrategy;\n  exports.MockPlatformLocation =\n  MockPlatformLocation;\n  exports.SpyLocation = SpyLocation;\n  Object.defineProperty(exports,\n  '__esModule', { value: true });\n  // # sourceMappingURL=common-testing.umd.js.map\n  ]

```

Found in path(s):

* /opt/cola/permits/1358260638_1657134870.9548028/0/common-11-0-2-tgz/package/bundles/common-testing.umd.min.js.map

No license file was found, but licenses were detected in source scan.

```
{"version":3,"file":"http__testing.js","sources":["../../../../../packages/common/http/testing/src/api.ts","../../../../../packages/common/http/testing/src/request.ts","../../../../../packages/common/http/testing/src/backend.ts","../../../../../packages/common/http/testing/src/module.ts","../../../../../packages/common/http/testing/public_api.ts","../../../../../packages/common/http/testing/index.ts","../../../../../packages/common/http/testing/testing.ts"],"sourcesContent":["/**\n * @license\n * Copyright Google LLC All Rights Reserved.\n *\n * Use of this source code is governed by an MIT-style license that can be\n * found in the LICENSE file at https://angular.io/license\n */\n\nimport\n * {HttpRequest} from '@angular/common/http';\nimport\n * {TestRequest} from './request';\n\n/**\n * Defines a matcher for requests based on URL, method, or both.\n *\n * @publicApi\n */\nexport\n * interface RequestMatch {\n *   method?: string;\n *   url?: string;\n * }\n\n/**\n * Controller to be injected into tests, that allows for mocking and\n * flushing\n * of requests.\n *\n * @publicApi\n */\nexport\n * abstract class HttpTestingController {\n *   /**\n *    * Search for requests that match the given parameter, without any expectations.\n *    *\n *    * @abstract\n *    * match(match: string|RequestMatch|((req: HttpRequest<any>) => boolean)): TestRequest[];\n *    *\n *    * Expect that a single request has been made which matches the given URL, and return its\n *    * mock.\n *    *\n *    * If no such request has been made, or more than one such request has been made, fail with an\n *    * error message including the given request description, if any.\n *    *\n *    * @abstract\n *    * expectOne(url: string, description?: string): TestRequest;\n *    *\n *    * Expect that a single request has been made which matches the given parameters, and return\n *    * its mock.\n *    *\n *    * If no such request has been made, or more than one such request has been made, fail with an\n *    * error message including the given request description, if any.\n *    *\n *    * @abstract\n *    * expectOne(params: RequestMatch, description?: string): TestRequest;\n *    *\n *    * Expect that a single request has been made which matches the given predicate\n *    * function, and\n *    * return its mock.\n *    *\n *    * If no such request has been made, or more than one such request has\n *    * been made, fail with an\n *    * error message including the given request description, if any.\n *    *\n *    * @abstract\n *    * expectOne(matchFn: ((req: HttpRequest<any>) => boolean), description?: string): TestRequest;\n *    *\n *    * Expect that a single request has been made which matches the given condition, and return\n *    * its mock.\n *    *\n *    * If no such request has been made, or more than one such request has been made, fail with an\n *    * error message including the given request description, if any.\n *    *\n *    * @abstract\n *    * expectOne(\n *    *   match: string|RequestMatch|((req: HttpRequest<any>) => boolean),\n *    *   description?: string): TestRequest;\n *    *\n *    * Expect that no requests have been made which match the given URL.\n *    *\n *    * If a matching request has been made, fail with an error message\n *    * including the given request\n *    * description, if any.\n *    *\n *    * @abstract\n *    * expectNone(url: string, description?: string):\n *    * void;\n *    *\n *    * Expect that no requests have been made which match the given parameters.\n *    *\n *    * If a\n *    * matching request has been made, fail with an error message including the given request\n *    * description, if any.\n *    *\n *    * @abstract\n *    * expectNone(params: RequestMatch, description?: string): void;\n *    *\n *    * Expect that no requests have been made which match the given predicate\n *    * function.\n *    *\n *    * If a matching request has been made, fail with\n *    * an error message including the given request\n *    * description, if any.\n *    *\n *    * @abstract\n *    * expectNone(matchFn: ((req: HttpRequest<any>) => boolean), description?: string): void;\n *    *\n *    * Expect that no requests have been made which match the given condition.\n *    *\n *    * If a matching request has been made, fail with an error message\n *    * including the given request\n *    * description, if any.\n *    *\n *    * @abstract\n *    * expectNone(\n *    *   match:\n *    *   string|RequestMatch|((req: HttpRequest<any>) => boolean), description?: string): void;\n *    *\n *    * Verify that no unmatched requests are outstanding.\n *    *\n *    * If any requests are outstanding, fail with an error message indicating\n *    * which requests were not\n *    * handled.\n *    *\n *    * If `ignoreCancelled` is not set (the default), `verify()` will also fail\n *    * if cancelled requests\n *    * were not explicitly matched.\n *    *\n *    * @abstract\n *    * verify(opts?: {ignoreCancelled?: boolean}):\n *    * void;\n *   }\n * }\n\n/**\n * @license\n * Copyright Google LLC All Rights Reserved.\n *\n * Use of this source code is governed by an MIT-style license that can be\n * found in the LICENSE file at https://angular.io/license\n */\n\nimport\n * {HttpErrorResponse, HttpEvent, HttpHeaders, HttpRequest, HttpResponse} from\n * '@angular/common/http';\nimport\n * {Observer} from 'rxjs';\n\n/**\n * A mock requests that was received and is ready to be answered.\n *\n * This interface allows access to the underlying `HttpRequest`, and allows\n * responding with\n * `HttpEvent`s or `HttpErrorResponse`s.\n *\n * @publicApi\n */\nexport\n * class TestRequest {\n *   /**\n *    * Whether the
```

```

request was cancelled after it was sent.\n  *^n get cancelled(): boolean {\n  return this._cancelled;\n  }\n\n /**\n  * @internal set by `HttpClientTestingBackend`\n  *^n _cancelled = false;\n\n  constructor(public request:
HttpRequest<any>, private observer: Observer<HttpEvent<any>>) {\n\n /**\n  * Resolve the request by returning
a body plus additional HTTP information (such as response\n  * headers) if provided.\n  * If the request specifies
an expected body type, the body is converted into the requested type.\n  * Otherwise, the body is converted to
`JSON` by default.\n  *\n  * Both successful and unsuccessful responses can be delivered via `flush()`.^n  *^n
flush(\n  body: ArrayBuffer|Blob|boolean|string|number|Object|(boolean|string|number|Object|null)[]|\n  null,\n  opts: {\n  headers?: HttpHeaders|{[name: string]: string | string[]},\n  status?: number,\n  statusText?:
string,\n  } = {}): void {\n  if (this.cancelled) {\n  throw new Error(`Cannot flush a cancelled request.`);\n
}\n  const url = this.request.urlWithParams;\n  const headers =\n  (opts.headers instanceof HttpHeaders) ?
opts.headers : new HttpHeaders(opts.headers);\n  body = _maybeConvertBody(this.request.responseType, body);\n
let statusText: string|undefined = opts.statusText;\n  let status: number = opts.status !== undefined ? opts.status :
200;\n  if (opts.status === undefined) {\n  if (body === null) {\n  status = 204;\n  statusText = statusText
|| 'No Content';\n  } else {\n  statusText = statusText || 'OK';\n  }\n  }\n  if (statusText === undefined) {\n
throw new Error('statusText is required when setting a custom status.);\n  }\n  if (status >= 200 && status <
300) {\n  this.observer.next(new HttpResponse<any>({body, headers, status, statusText, url}));\n
this.observer.complete();\n  } else {\n  this.observer.error(new HttpResponse({error: body, headers, status,
statusText, url}));\n  }\n\n /**\n  * Resolve the request by returning an `ErrorEvent` (e.g. simulating a
network failure).\n  *^n error(error: ErrorEvent, opts: {\n  headers?: HttpHeaders|{[name: string]: string |
string[]},\n  status?: number,\n  statusText?: string,\n  } = {}): void {\n  if (this.cancelled) {\n  throw new
Error(`Cannot return an error for a cancelled request.`);\n  }\n  if (opts.status && opts.status >= 200 &&
opts.status < 300) {\n  throw new Error(`error() called with a successful status.`);\n  }\n  const headers =\n
(opts.headers instanceof HttpHeaders) ? opts.headers : new HttpHeaders(opts.headers);\n  this.observer.error(new
HttpResponse({\n  error,\n  headers,\n  status: opts.status || 0,\n  statusText: opts.statusText || '',\n
url: this.request.urlWithParams,\n  }));\n  }\n\n /**\n  * Deliver an arbitrary `HttpEvent` (such as a progress
event) on the response stream for this\n  * request.\n  *^n event(event: HttpEvent<any>): void {\n  if
(this.cancelled) {\n  throw new Error(`Cannot send events to a cancelled request.`);\n  }\n
this.observer.next(event);\n  }\n\n\n /**\n  * Helper function to convert a response body to an ArrayBuffer.\n
^nfunction _toArrayBufferBody(body: ArrayBuffer|Blob|string|number|Object|\n  (string | number
| Object | null)[]): ArrayBuffer {\n  if (typeof ArrayBuffer === 'undefined') {\n  throw new Error('ArrayBuffer
responses are not supported on this platform.);\n  }\n  if (body instanceof ArrayBuffer) {\n  return body;\n  }\n
throw new Error('Automatic conversion to ArrayBuffer is not supported for response type.);\n  }\n\n\n /**\n  * Helper
function to convert a response body to a Blob.\n  ^nfunction _toBlob(body:
ArrayBuffer|Blob|string|number|Object|\n  (string | number | Object | null)[]): Blob {\n  if (typeof Blob ===
'undefined') {\n  throw new Error('Blob responses are not supported on this platform.);\n  }\n  if (body instanceof
Blob) {\n  return body;\n  }\n  if (ArrayBuffer && body instanceof ArrayBuffer) {\n  return new Blob([body]);\n
}\n  throw new Error('Automatic conversion to Blob is not supported for response type.);\n  }\n\n\n /**\n  * Helper
function to convert a response body to JSON data.\n  ^nfunction _toJsonBody(\n  body:
ArrayBuffer|Blob|boolean|string|number|Object|\n  (boolean | string | number | Object | null)[],\n  format: string =
'JSON'): Object|string|number|(Object | string | number)[] {\n  if (typeof ArrayBuffer !== 'undefined' && body
instanceof ArrayBuffer) {\n  throw new Error(`Automatic conversion to ${format} is not supported for
ArrayBuffers.`);\n  }\n  if (typeof Blob !== 'undefined' && body instanceof Blob) {\n  throw new Error(`Automatic
conversion to ${format} is not supported for Blobs.`);\n  }\n  if (typeof body === 'string' || typeof body ===
'number' || typeof body === 'object' ||\n  typeof body === 'boolean' || Array.isArray(body)) {\n  return body;\n
}\n  throw new Error(`Automatic conversion to ${format} is not supported for response type.`);\n  }\n\n\n /**\n  *
Helper function to convert a response body to a string.\n  ^nfunction _toTextBody(body:
ArrayBuffer|Blob|string|number|Object|\n  (string | number | Object | null)[]): string {\n  if (typeof body
=== 'string') {\n  return body;\n  }\n  if (typeof ArrayBuffer !== 'undefined' && body instanceof ArrayBuffer) {\n

```

```

throw new Error('Automatic conversion to text is not supported for ArrayBuffers.');
```

if (typeof Blob !== 'undefined' && body instanceof Blob) {
 throw new Error('Automatic conversion to text is not supported for Blobs.');

return JSON.stringify(_toJsonBody(body, 'text'));

Convert a response body to the requested type.

```

function _maybeConvertBody(responseType: string, body:
  ArrayBuffer|Blob|string|number|Object|(string | number | Object | null)[]|null):
  ArrayBuffer|Blob|string|number|Object|(string | number | Object | null)[]|null {
  if (body === null) return null;
  switch (responseType) {
    case 'arraybuffer': return _toArrayBufferBody(body);
    case 'blob': return _toBlob(body);
    case 'json': return _toJsonBody(body);
    case 'text': return _toTextBody(body);
    default: throw new Error(`Unsupported responseType: ${responseType}`);
  }
}
```

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```

import {HttpBackend, HttpEvent, HttpEventType, HttpRequest} from '@angular/common/http';
import {Injectable} from '@angular/core';
import {Observable, Observer} from 'rxjs';
import {HttpTestingController, RequestMatch} from './api';
import {TestRequest} from './request';

A testing backend for `HttpClient` which both acts as an `HttpBackend` and as the `HttpTestingController`. `HttpClientTestingBackend` works by keeping a list of all open requests. As requests come in, they're added to the list. Users can assert that specific requests were made and then flush them. In the end, a verify() method asserts that no unexpected requests were made.
```

```

@Injectable()
export class HttpClientTestingBackend implements HttpBackend,
  HttpTestingController {
  /** List of pending requests which have not yet been expected. */
  private open: TestRequest[] = [];

  /** Handle an incoming request by queueing it in the list of open requests. */
  handle(req: HttpRequest<any>): Observable<HttpEvent<any>> {
    return new Observable((observer: Observer<any>) => {
      const testReq = new TestRequest(req, observer);
      this.open.push(testReq);
      observer.next({type: HttpEventType.Sent} as HttpEvent<any>);
      return () => {
        testReq._cancelled = true;
      };
    });
  }

  /** Helper function to search for requests in the list of open requests. */
  private _match(match: string|RequestMatch|((req: HttpRequest<any>) => boolean)): TestRequest[] {
    if (typeof match === 'string') return this.open.filter(testReq => testReq.request.urlWithParams === match);
    else if (typeof match === 'function') return this.open.filter(testReq => match(testReq.request));
    else return this.open.filter(testReq => (!match.method || testReq.request.method === match.method.toUpperCase()) && (!match.url || testReq.request.urlWithParams === match.url));
  }

  /** Search for requests in the list of open requests, and return all that match without asserting anything about the number of matches. */
  match(match: string|RequestMatch|((req: HttpRequest<any>) => boolean)): TestRequest[] {
    const results = this._match(match);
    results.forEach(result => {
      const index = this.open.indexOf(result);
      if (index !== -1) this.open.splice(index, 1);
    });
    return results;
  }

  /** Expect that a single outstanding request matches the given matcher, and return it. */
  Requests returned through this API will no longer be in the list of open requests, and thus will not match twice.
  expectOne(match: string|RequestMatch|((req: HttpRequest<any>) => boolean), description?: string): TestRequest {
    description = description || this.descriptionFromMatcher(match);
    const matches = this.match(match);
    if (matches.length > 1) throw new Error(`Expected one matching request for criteria "${description}", found ${matches.length} requests.`);
    if (matches.length === 0) let message = `Expected one matching request for criteria "${description}", found none.`;
    if (this.open.length > 0) // Show the methods and URLs of open requests in the error, for convenience.
      const requests = this.open.map(testReq => {
        const url = testReq.request.urlWithParams;
        const method = testReq.request.method;
        return `${method} ${url}`;
      }).join(', ');
    message += `Requests received are: ${requests}`;
    throw new Error(message);
  }

  /** Expect that no outstanding requests match the given matcher, and throw an error if any do. */
  expectNone(match: string|RequestMatch|((req: HttpRequest<any>) => boolean), description?: string): void {
    description = description || this.descriptionFromMatcher(match);
    const matches = this.match(match);
    if (matches.length > 0) {

```


AAI,CAAC,SAAS,EAAE;YACIB,MAAM,IAAI,KAAC,CAAC,iDAAiD,CAAC,CAAC;SACpE;QACD,IAAI,IAAI,CAAC,MAAM,IAAI,IAAI,CAAC,MAAM,IAAI,GAAG,IAAI,IAAI,CAAC,MAAM,GAAG,GAAG,EAAE;YAC1D,MAAM,IAAI,KAAC,CAAC,0CAA0C,CAAC,CAAC;SAC7D;QACD,MAAM,OAAO,GACT,CAAC,IAAI,CAAC,OAAO,YAAY,WAAW,IAAI,IAAI,CAAC,OAAO,GAAG,IAAI,WAAW,CAAC,IAAI,CAAC,OAAO,CAAC,CAAC;QACzF,IAAI,CAAC,QAAQ,CAAC,KAAC,CAAC,IAAI,iBAAiB,CAAC;YACxC,KAAC;YACL,OAAO;YACP,MAAM,EAAE,IAAI,CAAC,MAAM,IAAI,CAAC;YACxB,UAAU,EAAE,IAAI,CAAC,UAAU,IAAI,EAAE;YACjC,GAAG,EAAE,IAAI,CAAC,OAAO,CAAC,aAAa;SAChC,CAAC,CAAC,CAAC;KACL;;;;;IAMD,KAAC,CAAC,KAAqB;QACzB,IAAI,IAAI,CAAC,SAAS,EAAE;YACIB,MAAM,IAAI,KAAC,CAAC,4CAA4C,CAAC,CAAC;SAC/D;QACD,IAAI,CAAC,QAAQ,CAAC,IAAI,CAAC,KAAC,CAAC,CAAC;KAC3B;CACF;AAGD;;;AAGA,SAAS,kBAaKB,CAAC,IACmC;IAC7D,IAAI,OAAO,WAAW,KAAC,WAAW,EAAE;QACtC,MAAM,IAAI,KAAC,CAAC,2DAA2D,CAAC,CAAC;KAC9E;IACD,IAAI,IAAI,YAAY,WAAW,EAAE;QAC/B,OAAO,IAAI,CAAC;KACb;IACD,MAAM,IAAI,KAAC,CAAC,yEAAyE,CAAC,CAAC;AAC7F,CAAC;AAED;;;AAGA,SAAS,OAAO,CAAC,IACmC;IACID,IAAI,OAAO,IAAI,KAAC,WAAW,EAAE;QAC/B,MAAM,IAAI,KAAC,CAAC,oDAAoD,CAAC,CAAC;KACvE;IACD,IAAI,IAAI,YAAY,IAAI,EAAE;QACxB,OAAO,IAAI,CAAC;KACb;IACD,IAAI,WAAW,IAAI,IAAI,YAAY,WAAW,EAAE;QAC9C,OAAO,IAAI,IAAI,CAAC,CAAC,IAAI,CAAC,CAAC,CAAC;KACzB;IACD,MAAM,IAAI,KAAC,CAAC,kEAAkE,CAAC,CAAC;AACtF,CAAC;AAED;;;AAGA,SAAS,WAAW,CACb,IAC6C,EAC7C,SAAiB,MAAM;IACzB,IAAI,OAAO,WAAW,KAAC,WAAW,IAAI,IAAI,YAAY,WAAW,EAAE;QACrE,MAAM,IAAI,KAAC,CAAC,2BAA2B,MAAM,qCAAqC,CAAC,CAAC;KACzF;IACD,IAAI,OAAO,IAAI,KAAC,WAAW,IAAI,IAAI,YAAY,IAAI,EAAE;QACvD,MAAM,IAAI,KAAC,CAAC,2BAA2B,MAAM,8BAA8B,CAAC,CAAC;KACIF;IACD,IAAI,OAAO,IAAI,KAAC,QAAQ,IAAI,OAAO,IAAI,KAAC,QAAQ,IAAI,OAAO,IAAI,KAAC,QAAQ;QACfF,OAAO,IAAI,KAAC,SAAS,IAAI,KAAC,CAAC,OAAO,CAAC,IAAI,CAAC,EAAE;QACpD,OAAO,IAAI,CAAC;KACb;IACD,MAAM,IAAI,KAAC,CAAC,2BAA2B,MAAM,sCAAsC,CAAC,CAAC;AAC3F,CAAC;AAED;;;AAGA,SAAS,WAAW,CAAC,IACmC;IACtD,IAAI,OAAO,IAAI,KAAC,QAAQ,EAAE;QAC5B,OAAO,IAAI,CAAC;KACb;IACD,IAAI,OAAO,WAAW,KAAC,WAAW,IAAI,IAAI,YAAY,WAAW,EAAE;QACrE,MAAM,IAAI,KAAC,CAAC,iEAAiE,CAAC,CAAC;KACpF;IACD,IAAI,OAAO,IAAI,KAAC,WAAW,IAAI,IAAI,YAAY,IAAI,EAAE;QACvD,MAAM,IAAI,KAAC,CAAC,0DAA0D,CAAC,CAAC;KAC7E;IACD,OAAO,IAAI,CAAC,SAAS,CAAC,WAAW,CAAC,IAAI,EAAE,MAAM,CAAC,CAAC,CAAC;AACnD,CAAC;AAED;;;AAGA,SAAS,iBAAiB,CACtB,YAAoB,EACpB,IACI;IACN,IAAI,IAAI,KAAC,IAAI,EAAE;QACjB,OAAO,IAAI,CAAC;KACb;IACD,QAAQ,YAAY;QACIB,KAAC,aAAa;YACbB,OAAO,kBAaKB,CAAC,IAAI,CAAC,CAAC;QACIC,KAAC,MAAM;YACT,OAAO,OAAO,CAAC,IAAI,CAAC,CAAC;QACvB,KAAC,MAAM;YACT,OAAO,WAAW,CAAC,IAAI,CAAC,CAAC;QAC3B,KAAC,MAAM;YACT,OAAO,WAAW,CAAC,IAAI,CAAC,CAAC;QAC3B;YACE,MAAM,IAAI,KAAC,CAAC,6BAA6B,YAAY,EAAE,CAAC,CAAC;KACbE;AACH;;AC9MA;;;;;AAgBA;;;;;MAYa,wBAawB;IADrC;;;QAKU,SAAI,GAaKB,EAAE,CAAC;KA+HIC;;;IA1HC,MAAM,CAAC,GAAqB;QACIB,OAAO,IAAI,UAAU,CAAC,CAAC,QAAuB;YAC5C,MAAM,OAAO,GAAG,IAAI,WAAW,CAAC,GAAG,EAAE,QAAQ,CAAC,CAAC;YAC/C,IAAI,CAAC,IAAI,CAAC,IAAI,CAAC,OAAO,CAAC,CAAC;YACxB,QAAQ,CAAC,IAAI,CAAC,EAAC,IAAI,EAAE,aAAa,CAAC,IAAI,EAAMB,CAAC,CAAC;YAC5D,OAAO;gBACL,OAAO,CAAC,UAAU,GAAG,IAAI,CAAC;aAC3B,CAAC;SACH,CAAC,CAAC;KACJ;;;IAKO,MAAM,CAAC,KAA+D;QAC5E,IAAI,OAAO,KAAC,KAAC,QAAQ,EAAE;YAC7B,OAAO,IAAI,CAAC,IAAI,CAAC,MAAM,CAAC,OAAO,IAAI,OAAO,CAAC,OAAO,CAAC,aAAa,KAAC,KAAC,CAAC,CAAC;SAC7E;aAAM,IAAI,OAAO,KAAC,KAAC,UAAU,EAAE;YACtC,OAAO,IAAI,CAAC,IAAI,CAAC,MAAM,CAAC,OAAO,IAAI,KAAC,CAAC,OAAO,CAAC,OAAO,CAAC,CAAC,CAAC;SAC5D;aAAM;YACL,OAAO,IAAI,CAAC,IAAI,CAAC,MAAM,CACnB,OAAO,IAAI,CAAC,CAAC,KAAC,CAAC,MAAM,IAAI,OAAO,CAAC,OAAO,CAAC,MAAM,KAAC,KAAC,CAAC,MAAM,CAAC,WAAW,EAAE;iBAC7E,CAAC,KAAC,CAAC,GAAG,IAAI,OAAO,CAAC,OAAO,CAAC,aAAa,KAAC,KAAC,CAAC,GAAG,CAAC,CAAC,CAAC;SACtE;KACF;;;;IAMD,KAAC,CAAC,KAA+D;QACnE,MAAM,OAAO,GAAG,IAAI,CAAC,MAAM,CAAC,KAAC,CAAC,CAAC;QACnC,OAAO,CAAC,OAAO,CAAC,MAAM;YACpB,MAAM,KAAC,GAAG,IAAI,CAAC,IAAI,CAAC,OAAO,CAAC,MAAM,CAAC,CAAC;YACxC,IAAI,KAAC,KAAC,CAAC,CAAC,EAAE;gBACbB,IAAI,CAAC,IAAI,CAAC,MAAM,CAAC,KAAC,EAAE,CAAC,CAAC,CAAC;aAC5B;SACF,CAAC,CAAC;QACH,OAAO,OAAO,

CAAC;KACHB;,,,,,,;IASD,SAAS,CAAC,KAA+D,EAAE,WAAoB;QAE7F,WAAW,GAAG,WAAW,IAAI,IAAI,CAAC,sBAAsB,CAAC,KAAK,CAAC,CAAC;QACHE,MAAM,OAAO,GAAG,IAAI,CAAC,KAAK,CAAC,KAAK,CAAC,CAAC;QACIC,IAAI,OAAO,CAAC,MAAM,GAAG,CAAC,EAAE;YACtB,MAAM,IAAI,KAAK,CAAC,+CAA+C,WAAW,YACtE,OAAO,CAAC,MAAM,YAAy,CAAC,CAAC;SACjC;QACD,IAAI,OAAO,CAAC,MAAM,KAAK,CAAC,EAAE;YACxB,IAAI,OAAO,GAAG,+CAA+C,WAAW,gBAAGb,CAAC;YACzF,IAAI,IAAI,CAAC,IAAI,CAAC,MAAM,GAAG,CAAC,EAAE;;gBAExB,MAAM,QAAQ,GAAG,IAAI,CAAC,IAAI;qBACJ,GAA G,CAAC,OAAO;oBACV,MAAM,GAAG,GAAG,OAAO,CAAC,OAAO,CAAC,aAAa,CAAC;oBAC1C,MAAM,MAAM,GAAG,OAAO,CAAC,OAAO,CAAC,MAAM,CAAC;oBACtC,OAAO,GAAG,MAAM,IAAI,GAAG,EAAE,CAAC;iBAC3B,CAAC;qBACD,IAAI,CAAC,IAAI,CAAC,CAAC;gBACjC,OAAO,IAAI,2BAA2B,QAAQ,GAAG,CAAC;aACnD;YACD,MAAM,IAAI,KAAK,CAAC,OAAO,CAAC,CAAC;SAC1B;QACD,OAAO,OAAO,CAAC,CAAC,CAAC,CAAC;KACnB;,,,,;IAMD,UAAU,CAAC,KAA+D,EAAE,WAAoB;QAE9F,WAAW,GAAG,WAAW,IAAI,IAAI,CAAC,sBAAsB,CAAC,KAAK,CAAC,CAAC;QACHE,MAAM,OAAO,GAAG,IAAI,CAAC,KAAK,CAAC,KAAK,CAAC,CAAC;QACIC,IAAI,OAAO,CAAC,MAAM,GAAG,CAAC,EAAE;YACtB,MAAM,IAAI,KAAK,CAAC,iDAAiD,WAAW,YACxE,OAAO,CAAC,MAAM,GAAG,CAAC,CAAC;SACxB;KACF;,,,;IAKD,MAAM,CAAC,OAAoC,EAAE;QAC3C,IAAI,IAAI,GAAG,IAAI,CAAC,IAAI,CAAC;,,,;QAGrB,IAAI,IAAI,CAAC,eAAe,EAAE;YACxB,IAAI,GAAG,IAAI,CAAC,MAAM,CAAC,OAAO,IAAI,CAAC,OAAO,CAAC,SAAS,CAAC,CAAC;SACnD;QACD,IAAI,IAAI,CAAC,MAAM,GAAG,CAAC,EAAE;;YAEEnB,MAAM,QAAQ,GAAG,IAAI,CAAC,GAAG,CAAC,OAAO;gBACV,MAAM,GAAG,GAAG,OAAO,CAAC,OAAO,CAAC,aAAa,CAAC,KAAK,CAAC,GAAG,CAAC,CAAC,CAAC,CAAC;gBACxD,MAAM,MAAM,GAAG,OAAO,CAAC,OAAO,CAAC,MAAM,CAAC;gBACtC,OAAO,GAAG,MAAM,IAAI,GAAG,EAAE,CAAC;aAC3B,CAAC;iBACD,IAAI,CAAC,IAAI,CAAC,CAAC;YACjC,MAAM,IAAI,KAAK,CAAC,oCAAoC,IAAI,CAAC,MAAM,KAAK,QAAQ,EAAE,CAAC,CAAC;SACjF;KACF;IAEO,sBAAsB,CAAC,OACoC;QACjE,IAAI,OAAO,OAAO,KAAK,QAAQ,EAAE;YAC/B,OAAO,cAAc,OAAO,EAAE,CAAC;SACHc;aAAM,IAAI,OAAO,OAAO,KAAK,QAAQ,EAAE;YACtC,MAAM,MAAM,GAAG,OAAO,CAAC,MAAM,IAAI,OAAO,CAAC;YACzC,MAAM,GAAG,GAAG,OAAO,CAAC,GAAG,IAAI,OAAO,CAAC;YACnC,OAAO,iBAAiB,MAAM,UAAU,GAAG,EAAE,CAAC;SAC/C;aAAM;YACL,OAAO,sBAAsB,OAAO,CAAC,IAAI,EAAE,CAAC;SAC7C;KACF;,,,;YAnIF,UAAU;,,,;AC3BX;,,,,,;AAeA;,,,,,;MAiBa,uBAAuB;,,,;YAVnC,QAAQ,SAAC;gBACR,OAAO,EAAE;oBACP,gBAAGb;iBACjB;gBACD,SAAS,EAAE;oBACT,wBAAwB;oBACxB,EAAC,OAAO,EAAE,WAAW,EAAE,WAAW,EAAE,wBAAwB,EAAC;oBAC7D,EAAC,OAAO,EAAE,qBAaQb,EAAE,WAAW,EAAE,wBAAwB,EAAC;iBACxE;aACF;,,,;AC/BD;,,,,,;ACAA;,,,,,;ACA A;,,,,,;"}
}

Found in path(s):

* /opt/cola/permits/1358260638_1657134870.9548028/0/common-11-0-2-tgz/package/fesm2015/http/testing.js.map
No license file was found, but licenses were detected in source scan.

```
{"version":3,"file":"common-http.umd.js","sources":["../../../../packages/common/http/src/backend.ts","../../../../external/npm/node_modules/tslib/tslib.es6.js","../../../../packages/common/http/src/headers.ts","../../../../packages/common/http/src/params.ts","../../../../packages/common/http/src/request.ts","../../../../packages/common/http/src/response.ts","../../../../packages/common/http/src/client.ts","../../../../packages/common/http/src/interceptor.ts","../../../../packages/common/http/src/jsonp.ts","../../../../packages/common/http/src/xhr.ts","../../../../packages/common/http/src/xsrf.ts","../../../../packages/common/http/src/module.ts","../../../../packages/common/http/public_api.ts","../../../../packages/common/http/index.ts","../../../../packages/common/http/http.ts"],"sourcesContent":["/**\n * @license\n * Copyright Google LLC All Rights Reserved.\n *\n * Use of this source code is governed by an MIT-style license that can be found in the LICENSE file at https://angular.io/license\n *\n\nimport {Observable} from 'rxjs';\nimport {HttpRequest} from './request';\nimport {HttpEvent} from './response';\n\n/**\n * Transforms an `HttpRequest` into a stream of `HttpEvent`s, one of which will likely be a `HttpResponse`. \n *\n * `HttpHandler` is injectable. When injected, the handler instance dispatches requests to the first interceptor in the chain, which dispatches to the second, etc,
```

eventually reaching the `HttpBackend`. In an `HttpInterceptor`, the `Handler` parameter is the next interceptor in the chain. `@publicApi` `export abstract class Handler { abstract handle(req: HttpRequest<any>): Observable<HttpEvent<any>>; }` A final `Handler` which will dispatch the request via browser HTTP APIs to a backend. Interceptors sit between the `HttpClient` interface and the `HttpBackend`. When injected, `HttpBackend` dispatches requests directly to the backend, without going through the interceptor chain. `@publicApi` `export abstract class Backend implements Handler { abstract handle(req: HttpRequest<any>): Observable<HttpEvent<any>>; }`

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```

* global Reflect, Promise
export declare namespace Reflect {
  extendStatics = function(d, b) {
    extendStatics = Object.setPrototypeOf ||
      ({__proto__: []} instanceof Array && function(d, b) { d.__proto__ = b; }) ||
      function(d, b) { for (var p in b) if (b.hasOwnProperty(p)) d[p] = b[p]; };
    return extendStatics(d, b);
  };
  export function __extends(d, b) {
    extendStatics(d, b);
    function __() { this.constructor = d; }
    d.prototype = b === null ? Object.create(b) : ().__proto__ = b.prototype;
    new __();
  };
  export var __assign = function() {
    __assign = Object.assign || function(t) {
      for (var s, i = 1, n = arguments.length; i < n; i++) {
        s = arguments[i];
        for (var p in s) if (Object.prototype.hasOwnProperty.call(s, p)) t[p] = s[p];
      }
      return t;
    };
  };
  export function __rest(s, e) {
    var t = {};
    for (var p in s) if (Object.prototype.hasOwnProperty.call(s, p) && e.indexOf(p) < 0) t[p] = s[p];
    if (s != null && typeof Object.getOwnPropertySymbols === "function")
      for (var i = 0, p = Object.getOwnPropertySymbols(s); i < p.length; i++) {
        if (e.indexOf(p[i]) < 0 && Object.prototype.propertyIsEnumerable.call(s, p[i])) t[p[i]] = s[p[i]];
      }
    return t;
  };
  export function __decorate(decorators, target, key, desc) {
    var c = arguments.length, r = c < 3 ? target : desc === null ? desc = Object.getOwnPropertyDescriptor(target, key) : desc, d;
    if (typeof Reflect === "object" && typeof Reflect.decorate === "function") r = Reflect.decorate(decorators, target, key, desc);
    else for (var i = decorators.length - 1; i >= 0; i--) if (d = decorators[i]) r = (c < 3 ? d(r) : c > 3 ? d(target, key, r) : d(target, key)) || r;
    return c > 3 && r && Object.defineProperty(target, key, r, r);
  };
  export function __param(paramIndex, decorator) {
    return function(target, key) { decorator(target, key, paramIndex); };
  };
  export function __metadata(metadataKey, metadataValue) {
    if (typeof Reflect === "object" && typeof Reflect.metadata === "function") return Reflect.metadata(metadataKey, metadataValue);
  };
  export function __awaiter(thisArg, _arguments, P, generator) {
    function adopt(value) { return value instanceof P ? value : new P(function(resolve) { resolve(value); }); }
    return new (P || (P = Promise))(function(resolve, reject) {
      function fulfilled(value) { try { step(generator.next(value)); } catch (e) { reject(e); } }
      function rejected(value) { try { step(generator["throw"](value)); } catch (e) { reject(e); } }
      function step(result) { result.done ? resolve(result.value) : adopt(result.value).then(fulfilled, rejected); }
      step((generator = generator.apply(thisArg, _arguments || [])).next());
    });
  };
  export function __generator(thisArg, body) {
    var _ = { label: 0, sent: function() { if (t[0] & 1) throw t[1]; return t[1]; }, trys: [], ops: [] }, f, y, t, g;
    return g = { next: verb(0), "throw": verb(1), "return": verb(2) }, typeof Symbol === "function" && (g[Symbol.iterator] = function() { return this; }), g;
    function verb(n) { return function(v) { return step([n, v]); }; }
    function step(op) {
      if (f) throw new TypeError("Generator is already executing.");
      while
  
```



```

{\r\n  o["default"] = v;\r\n};\r\n\r\nexport function __importStar(mod) {\r\n  if (mod && mod.__esModule)
return mod;\r\n  var result = {};\r\n  if (mod != null) for (var k in mod) if (Object.hasOwnProperty.call(mod, k))
__createBinding(result, mod, k);\r\n  __setModuleDefault(result, mod);\r\n  return result;\r\n}\r\n\r\nexport
function __importDefault(mod) {\r\n  return (mod && mod.__esModule) ? mod : { default: mod
};\r\n}\r\n\r\nexport function __classPrivateFieldGet(receiver, privateMap) {\r\n  if (!privateMap.has(receiver))
{\r\n    throw new TypeError("attempted to get private field on non-instance");\r\n  }\r\n  return
privateMap.get(receiver);\r\n}\r\n\r\nexport function __classPrivateFieldSet(receiver, privateMap, value) {\r\n  if
(!privateMap.has(receiver)) {\r\n    throw new TypeError("attempted to set private field on non-instance");\r\n
}\r\n  privateMap.set(receiver, value);\r\n  return value;\r\n}\r\n\r\n"/**\r\n * @license\r\n * Copyright Google LLC
All Rights Reserved.\r\n * Use of this source code is governed by an MIT-style license that can be\r\n * found in
the LICENSE file at https://angular.io/license\r\n */\r\n\r\ninterface Update {\r\n  name: string;\r\n  value?: string|string[];\r\n
op: 'a'|'s'|'d';\r\n}\r\n\r\n/**\r\n * Represents the header configuration options for an HTTP request.\r\n * Instances are
immutable. Modifying methods return a cloned\r\n * instance with the change. The original object is never changed.\r\n
*\r\n * @publicApi\r\n */\r\nexport class HttpHeaders {\r\n  /**\r\n   * Internal map of lowercase header names to values.\r\n
*\r\n   * // TODO(issue/24571): remove '!'\r\n   private headers!: Map<string, string[]>;\r\n\r\n   /**\r\n   * Internal map of
lowercased header names to the normalized\r\n   * form of the name (the form seen first).\r\n   *\r\n   private
normalizedNames: Map<string, string> = new Map();\r\n\r\n   /**\r\n   * Complete the lazy initialization of this object
(needed before reading).\r\n   *\r\n   private lazyInit!: HttpHeaders|Function|null;\r\n\r\n   /**\r\n   * Queued updates to be
materialized the next initialization.\r\n   *\r\n   private lazyUpdate: Update[]|null = null;\r\n\r\n   /** Constructs a new
HTTP header object with the given values.\r\n   *\r\n   constructor(headers?: string|{[name: string]: string | string[]}) {\r\n
if (!headers) {\r\n    this.headers = new Map<string, string[]>();\r\n  } else if (typeof headers === 'string') {\r\n
this.lazyInit = () => {\r\n    this.headers = new Map<string, string[]>();\r\n    headers.split('\r\n').forEach(line => {\r\n
const index = line.indexOf(':');\r\n    if (index > 0) {\r\n      const name = line.slice(0, index);\r\n      const
key = name.toLowerCase();\r\n      const value = line.slice(index + 1).trim();\r\n
this.maybeSetNormalizedName(name, key);\r\n      if (this.headers.has(key)) {\r\n
this.headers.get(key)!.push(value);\r\n      } else {\r\n        this.headers.set(key, [value]);\r\n      }\r\n
}\r\n  });\r\n  } else {\r\n    this.lazyInit = () => {\r\n      this.headers = new Map<string, string[]>();\r\n
Object.keys(headers).forEach(name => {\r\n      let values: string|string[] = headers[name];\r\n      const key =
name.toLowerCase();\r\n      if (typeof values === 'string') {\r\n        values = [values];\r\n      }\r\n      if
(values.length > 0) {\r\n        this.headers.set(key, values);\r\n        this.maybeSetNormalizedName(name, key);\r\n
      }\r\n    });\r\n  });\r\n  };\r\n  };\r\n  };\r\n}\r\n\r\n/**\r\n * Checks for existence of a given header.\r\n *
*\r\n * @param name The header name to check for existence.\r\n *
*\r\n * @returns True if the header exists, false otherwise.\r\n *
*\r\n   has(name: string): boolean {\r\n    this.init();\r\n    return this.headers.has(name.toLowerCase());\r\n  }\r\n\r\n  /**\r\n   * Retrieves the
first value of a given header.\r\n   *
*\r\n   * @param name The header name.\r\n   *
*\r\n   * @returns The value string if the header exists, null otherwise\r\n   *\r\n   get(name: string): string|null {\r\n    this.init();\r\n
const values = this.headers.get(name.toLowerCase());\r\n    return values && values.length > 0 ? values[0] : null;\r\n  }\r\n\r\n  /**\r\n   *
Retrieves the names of the headers.\r\n   *
*\r\n   * @returns A list of header names.\r\n   *\r\n   keys(): string[] {\r\n    this.init();\r\n    return Array.from(this.normalizedNames.values());\r\n  }\r\n\r\n  /**\r\n   * Retrieves a list of values for a
given header.\r\n   *
*\r\n   * @param name The header name from which to retrieve values.\r\n   *
*\r\n   * @returns A string of values if the header exists, null otherwise.\r\n   *\r\n   getAll(name: string): string[]|null {\r\n    this.init();\r\n
return this.headers.get(name.toLowerCase()) || null;\r\n  }\r\n\r\n  /**\r\n   * Appends a new value to the existing set of values for
a header\r\n   * and returns them in a clone of the original instance.\r\n   *
*\r\n   * @param name The header name for which to append the values.\r\n   *
*\r\n   * @param value The value to append.\r\n   *
*\r\n   * @returns A clone of the HTTP headers object with the value appended to the given header.\r\n   *\r\n   append(name: string, value: string|string[]):
HttpHeaders {\r\n    return this.clone({name, value, op: 'a'});\r\n  }\r\n\r\n  /**\r\n   * Sets or modifies a value for a given
header in a clone of the original instance.\r\n   *
*\r\n   * If the header already exists, its value is replaced with the given
value\r\n   * in the returned object.\r\n   *
*\r\n   * @param name The header name.\r\n   *
*\r\n   * @param value The value or values to set or override for the given header.\r\n   *
*\r\n   * @returns A clone of the HTTP headers object with the newly

```



```

map.set(key, list);
    });
    }
    return map;
}

function standardEncoding(v: string): string {
    return
    encodeURIComponent(v)
        .replace(/%40/gi, '@')
        .replace(/%3A/gi, ':')
        .replace(/%24/gi, '$')
        .replace(/%2C/gi, ',')
        .replace(/%3B/gi, ';')
        .replace(/%2B/gi, '+')
        .replace(/%3D/gi, '=')
        .replace(/%3F/gi, '?')
        .replace(/%2F/gi, '/');
}

interface Update {
    param: string;
    value?: string;
    op:
    'a'|'d'|'s';
}

/**
 * Options used to construct an `HttpParams` instance.
 */
@publicApi
export
interface HttpParamsOptions {
    /**
     * String representation of the HTTP parameters in URL-query-string
     format.
     * Mutually exclusive with `fromObject`.
     */
    fromString?: string;
    /**
     * Object map of the HTTP
     parameters. Mutually exclusive with `fromString`.
     */
    fromObject?: {[param: string]:
    string|ReadonlyArray<string>};
    /**
     * Encoding codec used to parse and serialize the parameters.
     */
    encoder?:
    HttpParameterCodec;
}

/**
 * An HTTP request/response body that represents serialized parameters,
 * per
 * the MIME type `application/x-www-form-urlencoded`.
 */
@publicApi
export
class HttpParams {
    private map: Map<string,
    string[]>|null;
    private encoder: HttpParameterCodec;
    private updates: Update[]|null = null;
    private
    cloneFrom: HttpParams|null = null;

    constructor(options: HttpParamsOptions = {} as HttpParamsOptions) {
        this.encoder = options.encoder || new
        UrlEncodingCodec();
        if (!options.fromString) {
            if
            (!options.fromObject) {
                throw new
                Error(`Cannot specify both fromString and fromObject.`);
            }
            this.map = paramParser(options.fromString,
            this.encoder);
        } else if (!options.fromObject) {
            this.map =
            new Map<string, string[]>();
            Object.keys(options.fromObject).forEach(key => {
                const value =
                (options.fromObject as any)[key];
                this.map!.set(key, Array.isArray(value) ?
                value : [value]);
            });
        } else {
            this.map = null;
        }
    }

    /**
     * Reports whether the body includes one or more values for a
     given parameter.
     */
    @param param The parameter name.
    @returns True if the parameter has one or more
    values,
    * false if it has no value or is not present.
    */
    has(param: string): boolean {
        return
        this.map!.has(param);
    }

    /**
     * Retrieves the first value for a parameter.
     */
    @param param The parameter
    name.
    @returns The first value of the given parameter,
    * or `null` if the parameter is not present.
    */
    get(param: string): string|null {
        return
        this.init();
        const res = this.map!.get(param);
        return !!res ? res[0] : null;
    }

    /**
     * Retrieves all values for a parameter.
     */
    @param param The parameter
    name.
    @returns All
    values in a string array,
    * or `null` if the parameter not present.
    */
    getAll(param: string): string[]|null {
        return
        this.init();
        return this.map!.get(param) || null;
    }

    /**
     * Retrieves all the parameters for this body.
     */
    @returns The parameter
    names in a string array.
    */
    keys(): string[] {
        return
        Array.from(this.map!.keys());
    }

    /**
     * Appends a new value to existing values for a parameter.
     */
    @param param The parameter
    name.
    @param value The new value to add.
    @return A new body with the
    appended value.
    */
    append(param: string, value: string): HttpParams {
        return
        this.clone({param, value, op:
        'a'});
    }

    /**
     * Replaces the value for a parameter.
     */
    @param param The parameter
    name.
    @param
    value The new value.
    @return A new body with the new value.
    */
    set(param: string, value: string):
    HttpParams {
        return
        this.clone({param, value, op: 's'});
    }

    /**
     * Removes a given value or all values
     from a parameter.
     */
    @param param The parameter
    name.
    @param value The value to remove, if
    provided.
    @return A new body with the given value removed, or with all values
    * removed if no value is
    specified.
    */
    delete(param: string, value?: string): HttpParams {
        return
        this.clone({param, value, op: 'd'});
    }

    /**
     * Serializes the body to an encoded string, where key-value pairs
     (separated by `=`) are
     * separated
     by `&`.
     */
    toString(): string {
        return
        this.init();
        return this.keys().map(key => {
            const eKey =
            this.encoder.encodeKey(key);
            // `a: ['1']` produces `a=1`
            // `b: []` produces ``
            // `c: ['1', '2']`
            produces `c=1&c=2`
            return this.map!.get(key)!.map(value => eKey + '=' +
            this.encoder.encodeValue(value))
            .join('&');
        })
        // filter out empty values because `b: []`
        produces ``
        // which results in `a=1&&c=1&c=2` instead of `a=1&c=1&c=2` if we don't
        .filter(param
        => param !== '')
        .join('&');
    }

    private clone(update: Update): HttpParams {
        const clone = new
        HttpParams({encoder: this.encoder} as HttpParamsOptions);
        clone.cloneFrom = this.cloneFrom || this;
        clone.updates = (this.updates || []).concat([update]);
        return clone;
    }

    private init() {
        if (this.map ===
        null) {
            this.map = new Map<string, string[]>();
        }
        if (this.cloneFrom !== null) {
            this.map = new Map<string, string[]>();
            Object.keys(this.cloneFrom.map).forEach(key => {
                const value =
                this.cloneFrom.map.get(key)!;
                this.map!.set(key, value);
            });
        }
    }
}

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this.cloneFrom.init();\n    this.cloneFrom.keys().forEach(key => this.map!.set(key,
this.cloneFrom!.map!.get(key!));\n    this.updates!.forEach(update => {\n    switch (update.op) {\n    case
'a':\n    case 's':\n    const base = (update.op === 'a' ? this.map!.get(update.param) : undefined) || [];\n
base.push(update.value!);\n    this.map!.set(update.param, base);\n    break;\n    case 'd':\n    if
(update.value !== undefined) {\n    let base = this.map!.get(update.param) || [];\n    const idx =
base.indexOf(update.value);\n    if (idx !== -1) {\n    base.splice(idx, 1);\n    }\n    if
(base.length > 0) {\n    this.map!.set(update.param, base);\n    } else {\n
this.map!.delete(update.param);\n    }\n    } else {\n    this.map!.delete(update.param);\n
break;\n    }\n    });\n    this.cloneFrom = this.updates = null;\n    }\n    }\n    }"/**\n    * @license\n    *
Copyright Google LLC All Rights Reserved.\n    * Use of this source code is governed by an MIT-style license
that can be\n    * found in the LICENSE file at https://angular.io/license\n    */\nimport {HttpHeaders} from
'/headers';\nimport {HttpParams} from './params';\n\n/**\n    * Construction interface for `HttpRequest`s.\n    * All
values are optional and will override default values if provided.\n    */\ninterface HttpRequestInit {\n    headers?:
HttpHeaders;\n    reportProgress?: boolean;\n    params?: HttpParams;\n    responseType?:
'arraybuffer'|'blob'|'json'|'text';\n    withCredentials?: boolean;\n}\n\n/**\n    * Determine whether the given HTTP
method may include a body.\n    */\nfunction mightHaveBody(method: string): boolean {\n    switch (method) {\n
case 'DELETE':\n    case 'GET':\n    case 'HEAD':\n    case 'OPTIONS':\n    case 'JSONP':\n    return false;\n
default:\n    return true;\n    }\n}\n\n/**\n    * Safely assert whether the given value is an ArrayBuffer.\n    * In some
execution environments ArrayBuffer is not defined.\n    */\nfunction isArrayBuffer(value: any): value is ArrayBuffer
{\n    return typeof ArrayBuffer !== 'undefined' && value instanceof ArrayBuffer;\n}\n\n/**\n    * Safely assert
whether the given value is a Blob.\n    * In some execution environments Blob is not defined.\n    */\nfunction
isBlob(value: any): value is Blob {\n    return typeof Blob !== 'undefined' && value instanceof Blob;\n}\n\n/**\n    *
Safely assert whether the given value is a FormData instance.\n    * In some execution environments FormData is
not defined.\n    */\nfunction isFormData(value: any): value is FormData {\n    return typeof FormData !== 'undefined'
&& value instanceof FormData;\n}\n\n/**\n    * An outgoing HTTP request with an optional typed body.\n    * `HttpRequest`
represents an outgoing request, including URL, method,\n    * headers, body, and other request
configuration options. Instances should be\n    * assumed to be immutable. To modify a `HttpRequest`, the `clone`\n    *
method should be used.\n    * @publicApi\n    */\nexport class HttpRequest<T> {\n    /**\n    * The request body, or
`null` if one isn't set.\n    * Bodies are not enforced to be immutable, as they can include a reference to any\n    *
user-defined data type. However, interceptors should take care to preserve\n    * idempotence by treating them as
such.\n    */\n    readonly body: T|null = null;\n\n    /**\n    * Outgoing headers for this request.\n    */\n    //
TODO(issue/24571): remove '!'.\n    readonly headers!: HttpHeaders;\n\n    /**\n    * Whether this request should be
made in a way that exposes progress events.\n    * Progress events are expensive (change detection runs on each
event) and so\n    * they should only be requested if the consumer intends to monitor them.\n    */\n    readonly
reportProgress: boolean = false;\n\n    /**\n    * Whether this request should be sent with outgoing credentials
(cookies).\n    */\n    readonly withCredentials: boolean = false;\n\n    /**\n    * The expected response type of the
server.\n    * This is used to parse the response appropriately before returning it to\n    * the requestee.\n    */\n    readonly responseType: 'arraybuffer'|'blob'|'json'|'text' = 'json';\n\n    /**\n    * The outgoing HTTP request method.\n    */\n    readonly method: string;\n\n    /**\n    * Outgoing URL parameters.\n    */\n    // TODO(issue/24571): remove '!'.\n    readonly params!: HttpParams;\n\n    /**\n    * The outgoing URL with all URL parameters set.\n    */\n    readonly
urlWithParams: string;\n\n    constructor(method: 'DELETE'|'GET'|'HEAD'|'JSONP'|'OPTIONS', url: string, init?: {\n
headers?: HttpHeaders,\n    reportProgress?: boolean,\n    params?: HttpParams,\n    responseType?:
'arraybuffer'|'blob'|'json'|'text',\n    withCredentials?: boolean,\n    });\n    constructor(method: 'POST'|'PUT'|'PATCH',
url: string, body: T|null, init?: {\n    headers?: HttpHeaders,\n    reportProgress?: boolean,\n    params?:
HttpParams,\n    responseType?: 'arraybuffer'|'blob'|'json'|'text',\n    withCredentials?: boolean,\n    });\n    constructor(method: string, url: string, body: T|null, init?: {\n    headers?: HttpHeaders,\n    reportProgress?:
boolean,\n    params?: HttpParams,\n    responseType?: 'arraybuffer'|'blob'|'json'|'text',\n    withCredentials?:
boolean,\n    });\n    constructor(\n    method: string, readonly url: string, third?: T){\n    headers?: HttpHeaders,\n

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    reportProgress?: boolean,\n    params?: HttpParams,\n    responseType?: 'arraybuffer'|'blob'|'json'|'text',\n    withCredentials?: boolean,\n  }|null,\n  fourth?: {\n    headers?: HttpHeaders,\n    reportProgress?:\n    boolean,\n    params?: HttpParams,\n    responseType?: 'arraybuffer'|'blob'|'json'|'text',\n    withCredentials?:\n    boolean,\n  }) {\n    this.method = method.toUpperCase();\n    // Next, need to figure out which argument holds\n    the HttpRequestInit\n    // options, if any.\n    let options: HttpRequestInit|undefined;\n    // Check whether a body\n    argument is expected. The only valid way to omit\n    // the body argument is to use a known no-body method like\n    GET.\n    if (mightHaveBody(this.method) || !fourth) {\n      // Body is the third argument, options are the fourth.\n      this.body = (third !== undefined) ? third as T : null;\n      options = fourth;\n    } else {\n      // No body required,\n      options are the third argument. The body stays null.\n      options = third as HttpRequestInit;\n    }\n    // If options\n    have been passed, interpret them.\n    if (options) {\n      // Normalize reportProgress and withCredentials.\n      this.reportProgress = !options.reportProgress;\n      this.withCredentials = !options.withCredentials;\n    }\n    //\n    Override default response type of 'json' if one is provided.\n    if (!options.responseType) {\n      this.responseType = options.responseType;\n    }\n    // Override headers if they're provided.\n    if\n    (!options.headers) {\n      this.headers = options.headers;\n    }\n    if (!options.params) {\n      this.params =\n      options.params;\n    }\n    // If no headers have been passed in, construct a new HttpHeaders instance.\n    if\n    (!this.headers) {\n      this.headers = new HttpHeaders();\n    }\n    // If no parameters have been passed in,\n    construct a new HttpUrlEncodedParams instance.\n    if (!this.params) {\n      this.params = new HttpParams();\n      this.urlWithParams = url;\n    } else {\n      // Encode the parameters to a string in preparation for inclusion in the\n      URL.\n      const params = this.params.toString();\n      if (params.length === 0) {\n        // No parameters, the visible\n        URL is just the URL given at creation time.\n        this.urlWithParams = url;\n      } else {\n        // Does the URL\n        already have query parameters? Look for '?'.\n        const qIdx = url.indexOf('?');\n        // There are 3 cases to\n        handle:\n        // 1) No existing parameters -> append '?' followed by params.\n        // 2) '?' exists and is followed by\n        existing query string ->\n        // append '&' followed by params.\n        // 3) '?' exists at the end of the url -> append\n        params directly.\n        // This basically amounts to determining the character, if any, with\n        // which to join the\n        URL and parameters.\n        const sep: string = qIdx === -1 ? '?' : (qIdx < url.length - 1 ? '&' : '');\n        this.urlWithParams = url + sep + params;\n      }\n    }\n    // **\n    * Transform the free-form body into a\n    serialized format suitable for\n    * transmission to the server.\n    * ^\n    serializeBody():\n    ArrayBuffer|Blob|FormData|string|null {\n      // If no body is present, no need to serialize it.\n      if (this.body ===\n      null) {\n        return null;\n      }\n      // Check whether the body is already in a serialized form. If so,\n      // it can just be\n      returned directly.\n      if (isArrayBuffer(this.body) || isBlob(this.body) || isFormData(this.body) ||\n      typeof\n      this.body === 'string') {\n        return this.body;\n      }\n      // Check whether the body is an instance of\n      HttpUrlEncodedParams.\n      if (this.body instanceof HttpParams) {\n        return this.body.toString();\n      }\n      //\n      Check whether the body is an object or array, and serialize with JSON if so.\n      if (typeof this.body === 'object' ||\n      typeof\n      this.body === 'boolean' ||\n      Array.isArray(this.body)) {\n        return JSON.stringify(this.body);\n      }\n      // Fall back on toString() for everything else.\n      return (this.body as any).toString();\n    }\n    // **\n    * Examine the\n    body and attempt to infer an appropriate MIME type\n    * for it.\n    * ^\n    * If no such type can be inferred, this\n    method will return `null`.\n    * ^\n    detectContentTypeHeader(): string|null {\n      // An empty body has no content\n      type.\n      if (this.body === null) {\n        return null;\n      }\n      // FormData bodies rely on the browser's content type\n      assignment.\n      if (isFormData(this.body)) {\n        return null;\n      }\n      // Blobs usually have their own content type.\n      If it doesn't, then\n      // no type can be inferred.\n      if (isBlob(this.body)) {\n        return this.body.type || null;\n      }\n      // Array buffers have unknown contents and thus no type can be inferred.\n      if (isArrayBuffer(this.body)) {\n        return null;\n      }\n      // Technically, strings could be a form of JSON data, but it's safe enough\n      // to assume\n      they're plain strings.\n      if (typeof this.body === 'string') {\n        return 'text/plain';\n      }\n      //\n      `HttpUrlEncodedParams` has its own content-type.\n      if (this.body instanceof HttpParams) {\n        return\n        'application/x-www-form-urlencoded;charset=UTF-8';\n      }\n      // Arrays, objects, and numbers will be encoded as\n      JSON.\n      if (typeof this.body === 'object' || typeof this.body === 'number' ||\n      Array.isArray(this.body)) {\n        return 'application/json';\n      }\n      // No type could be inferred.\n      return null;\n    }\n    clone(): HttpRequest<T>;\n    clone(update: {\n      headers?: HttpHeaders,\n      reportProgress?: boolean,\n      params?: HttpParams,\n    }

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responseType?: 'arraybuffer'|'blob'|'json'|'text',\n  withCredentials?: boolean,\n  body?: T|null,\n  method?:
string,\n  url?: string,\n  setHeaders?: {[name: string]: string|string[]},\n  setParams?: {[param: string]: string},\n
}): HttpRequest<T>;\n clone<V>(update: {\n  headers?: HttpHeaders,\n  reportProgress?: boolean,\n  params?:
HttpParams,\n  responseType?: 'arraybuffer'|'blob'|'json'|'text',\n  withCredentials?: boolean,\n  body?: V|null,\n
method?: string,\n  url?: string,\n  setHeaders?: {[name: string]: string|string[]},\n  setParams?: {[param: string]:
string},\n }): HttpRequest<V>;\n clone(update: {\n  headers?: HttpHeaders,\n  reportProgress?: boolean,\n
params?: HttpParams,\n  responseType?: 'arraybuffer'|'blob'|'json'|'text',\n  withCredentials?: boolean,\n  body?:
any|null,\n  method?: string,\n  url?: string,\n  setHeaders?: {[name: string]: string|string[]},\n  setParams?:
{[param: string]: string};\n } = {}): HttpRequest<any> {\n  // For method, url, and responseType, take the current
value unless\n  // it is overridden in the update hash.\n  const method = update.method || this.method;\n  const url
= update.url || this.url;\n  const responseType = update.responseType || this.responseType;\n\n  // The body is
somewhat special - a `null` value in update.body means\n  // whatever current body is present is being overridden
with an empty\n  // body, whereas an `undefined` value in update.body implies no\n  // override.\n  const body =
(update.body !== undefined) ? update.body : this.body;\n\n  // Carefully handle the boolean options to differentiate
between\n  // `false` and `undefined` in the update args.\n  const withCredentials =\n    (update.withCredentials
!== undefined) ? update.withCredentials : this.withCredentials;\n  const reportProgress =\n
(update.reportProgress !== undefined) ? update.reportProgress : this.reportProgress;\n\n  // Headers and params
may be appended to if `setHeaders` or\n  // `setParams` are used.\n  let headers = update.headers || this.headers;\n
let params = update.params || this.params;\n\n  // Check whether the caller has asked to add headers.\n  if
(update.setHeaders !== undefined) {\n    // Set every requested header.\n    headers =\n
Object.keys(update.setHeaders)\n      .reduce((headers, name) => headers.set(name, update.setHeaders![name]),
headers);\n  }\n\n  // Check whether the caller has asked to set params.\n  if (update.setParams) {\n    // Set
every requested param.\n    params = Object.keys(update.setParams)\n      .reduce((params, param) =>
params.set(param, update.setParams![param]), params);\n  }\n\n  // Finally, construct the new HttpRequest using
the pieces from above.\n  return new HttpRequest(method, url, body, {\n    params,\n    headers,\n
reportProgress,\n    responseType,\n    withCredentials,\n  });\n }\n}\n", "/*\n * @license\n * Copyright Google
LLC All Rights Reserved.\n *\n * Use of this source code is governed by an MIT-style license that can be\n * found
in the LICENSE file at https://angular.io/license\n */\n\nimport {HttpHeaders} from './headers';\n\n/**\n * Type
enumeration for the different kinds of `HttpEvent`.\n *\n * @publicApi\n */\nexport enum HttpEventType {\n /**\n
* The request was sent out over the wire.\n */\n Sent,\n /**\n * An upload progress event was received.\n */\n
UploadProgress,\n /**\n * The response status code and headers were received.\n */\n
ResponseHeader,\n /**\n * A download progress event was received.\n */\n DownloadProgress,\n /**\n *
The full response including the body was received.\n */\n Response,\n /**\n * A custom event from an
interceptor or a backend.\n */\n User,\n }\n\n/**\n * Base interface for progress events.\n *\n * @publicApi\n
*/\nexport interface HttpProgressEvent {\n /**\n * Progress event type is either upload or download.\n */\n type:
HttpEventType.DownloadProgress|HttpEventType.UploadProgress;\n /**\n * Number of bytes uploaded or
downloaded.\n */\n loaded: number;\n /**\n * Total number of bytes to upload or download. Depending on the
request or\n * response, this may not be computable and thus may not be present.\n */\n total?:
number;\n }\n\n/**\n * A download progress event.\n *\n * @publicApi\n */\nexport interface
HttpDownloadProgressEvent extends HttpProgressEvent {\n type: HttpEventType.DownloadProgress;\n /**\n *
The partial response body as downloaded so far.\n */\n partialText?: string;\n }\n\n/**\n * An upload progress
event.\n *\n * @publicApi\n */\nexport interface
HttpUploadProgressEvent extends HttpProgressEvent {\n type: HttpEventType.UploadProgress;\n }\n\n/**\n * An
event indicating that the request was sent to the server. Useful\n * when a request may be retried multiple times, to
distinguish between\n * retries on the final event stream.\n *\n * @publicApi\n */\nexport interface HttpSentEvent
{\n type: HttpEventType.Sent;\n }\n\n/**\n * A user-defined event.\n *\n * @publicApi\n
*/\nexport interface HttpUserEvent<T> {\n type: HttpEventType.User;\n }\n\n/**\n * An error that represents a

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failed attempt to JSON.parse text coming back\n * from the server.\n *\n * It bundles the Error object with the actual
response body that failed to parse.\n *\n *\n * \nexport interface HttpJsonParseError {\n  error: Error;\n  text:
string;\n}\n\n/**\n * Union type for all possible events on the response stream.\n *\n * Typed according to the
expected type of the response.\n *\n * @publicApi\n * \nexport type HttpEvent<T> =\n
HttpSentEvent|HttpHeaderResponse|HttpResponse<T>|HttpProgressEvent|HttpUserEvent<T>;\n\n/**\n * Base
class for both `HttpResponse` and `HttpHeaderResponse`.\n *\n * @publicApi\n * \nexport abstract class
HttpResponseBase {\n  /**\n   * All response headers.\n   */\n  readonly headers: HttpHeaders;\n\n  /**\n   *
Response status code.\n   */\n  readonly status: number;\n\n  /**\n   * Textual description of response status code.\n
*\n   * Do not depend on this.\n   */\n  readonly statusText: string;\n\n  /**\n   * URL of the resource retrieved, or
null if not available.\n   */\n  readonly url: string|null;\n\n  /**\n   * Whether the status code falls in the 2xx range.\n
*\n   * \n  readonly ok: boolean;\n\n  /**\n   * Type of the response, narrowed to either the full response or the header.\n
*\n   * \n  // TODO(issue/24571): remove '!'.\n  readonly type!:\n
HttpEventType.Response|HttpEventType.ResponseHeader;\n\n  /**\n   * Super-constructor for all responses.\n   *\n
   * The single parameter accepted is an initialization hash. Any properties\n   * of the response passed there will
override the default values.\n   */\n  constructor(\n    init: {\n      headers?: HttpHeaders,\n      status?: number,\n
      statusText?: string,\n      url?: string,\n    },\n    defaultStatus: number = 200, defaultStatusText: string = 'OK')
{\n    // If the hash has values passed, use them to initialize the response.\n    // Otherwise use the default values.\n
    this.headers = init.headers || new HttpHeaders();\n    this.status = init.status !== undefined ? init.status :
    defaultStatus;\n    this.statusText = init.statusText || defaultStatusText;\n    this.url = init.url || null;\n\n    // Cache the
ok value to avoid defining a getter.\n    this.ok = this.status >= 200 && this.status < 300;\n  }\n}\n\n/**\n * A partial
HTTP response which only includes the status and header data,\n * but no response body.\n *\n *
`HttpHeaderResponse` is a `HttpEvent` available on the response\n * event stream, only when progress events are
requested.\n *\n * @publicApi\n * \nexport class HttpHeaderResponse extends HttpResponseBase {\n  /**\n   *
Create a new `HttpHeaderResponse` with the given parameters.\n   */\n  constructor(init: {\n    headers?:
HttpHeaders,\n    status?: number,\n    statusText?: string,\n    url?: string,\n  } = {}) {\n    super(init);\n  }\n\n  readonly type: HttpEventType.ResponseHeader = HttpEventType.ResponseHeader;\n\n  /**\n   * Copy this
`HttpHeaderResponse`, overriding its contents with the\n   * given parameter hash.\n   */\n  clone(update: {headers?:
HttpHeaders; status?: number; statusText?: string; url?: string;} = {}):\n    HttpHeaderResponse {\n    // Perform a
straightforward initialization of the new HttpHeaderResponse,\n    // overriding the current parameters with new
ones if given.\n    return new HttpHeaderResponse({\n      headers: update.headers || this.headers,\n      status:
update.status !== undefined ? update.status : this.status,\n      statusText: update.statusText || this.statusText,\n
      url: update.url || this.url || undefined,\n    });\n  }\n}\n\n/**\n * A full HTTP response, including a typed response
body (which may be `null`\n * if one was not returned).\n *\n * `HttpResponse` is a `HttpEvent` available on the
response event\n * stream.\n *\n * @publicApi\n * \nexport class HttpResponse<T> extends HttpResponseBase {\n
  /**\n   * The response body, or `null` if one was not returned.\n   */\n  readonly body: T|null;\n\n  /**\n   * Construct
a new `HttpResponse`.\n   */\n  constructor(init: {\n    body?: T|null,\n    headers?: HttpHeaders;\n    status?:
number;\n    statusText?: string;\n    url?: string;\n  } = {}) {\n    super(init);\n    this.body = init.body !== undefined
? init.body : null;\n  }\n\n  readonly type: HttpEventType.Response = HttpEventType.Response;\n\n  clone():\n
  HttpResponse<T>;\n  clone(update: {headers?: HttpHeaders; status?: number; statusText?: string; url?: string;}):\n
  HttpResponse<T>;\n  clone<V>(update: {\n    body?: V|null,\n    headers?: HttpHeaders;\n    status?: number;\n
    statusText?: string;\n    url?: string;\n  }): HttpResponse<V>;\n  clone(update: {\n    body?: any|null;\n    headers?:
HttpHeaders;\n    status?: number;\n    statusText?: string;\n    url?: string;\n  } = {}): HttpResponse<any> {\n
    return new HttpResponse<any>({\n      body: (update.body !== undefined) ? update.body : this.body,\n      headers:
update.headers || this.headers,\n      status: (update.status !== undefined) ? update.status : this.status,\n      statusText:
update.statusText || this.statusText,\n      url: update.url || this.url || undefined,\n    });\n  }\n}\n\n/**\n * A response
that represents an error or failure, either from a\n * non-successful HTTP status, an error while executing the
request,\n * or some other failure which occurred during the parsing of the response.\n *\n * Any error returned on
the `Observable` response stream will be\n * wrapped in an `HttpErrorResponse` to provide additional context

```

about the state of the HTTP layer when the error occurred. The error property will contain either a wrapped Error object or the error response returned from the server.

```

@publicApi
export class
HttpErrorResponse extends HttpResponseBase implements Error {
  readonly name = 'HttpErrorResponse';
  readonly message: string;
  readonly error: any|null;

  /** Errors are never okay, even when the status code
  is in the 2xx success range. */
  readonly ok = false;

  constructor(
    init: {
      error?: any;
      headers?: HttpHeaders;
      status?: number;
      statusText?: string;
      url?: string;
    }
  ) {
    // Initialize with a default status
    of 0 / Unknown Error.
    super(
      init, 0, 'Unknown Error'
    );
    // If the response was successful, then this was a
    parse error. Otherwise, it was // a protocol-level failure of some sort.
    Either the request failed in transit // or
    the server returned an unsuccessful status code.
    if (this.status >= 200 && this.status < 300) {
      this.message = `Http failure during parsing for ${init.url || '(unknown url)'}`;
    } else {
      this.message = `Http failure
      response for ${init.url || '(unknown url)'}: ${init.status} ${init.statusText}`;
    }
    this.error = init.error ||
    null;
  }
}

```

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```

import {Injectable} from '@angular/core';
import {Observable, of} from 'rxjs';
import {concatMap, filter,
map} from 'rxjs/operators';
import {HttpHandler} from './backend';
import {HttpHeaders} from './headers';
import {HttpParams, HttpParamsOptions} from './params';
import {HttpRequest} from './request';
import {HttpEvent, HttpResponse} from './response';

/** Constructs an instance of
`HttpRequestOptions<T>` from a source `HttpMethodOptions` and
the given `body`. This function clones the
object and adds the body.
Note that the `responseType` *options* value is a String that identifies the
single data type of the response.
A single overload version of the method handles each response type.
The value of `responseType` cannot be a union, as the combined signature could imply.

function
addBody<T>(
  options: {
    headers?: HttpHeaders|{[header: string]: string | string[]},
    observe?:
    HttpObserve,
    params?: HttpParams|{[param: string]: string | string[]},
    reportProgress?: boolean,
    responseType?: 'arraybuffer'|'blob'|'json'|'text',
    withCredentials?: boolean,
  },
  body: T|null): any {
  return {
    body,
    headers: options.headers,
    observe: options.observe,
    params: options.params,
    reportProgress: options.reportProgress,
    responseType: options.responseType,
    withCredentials:
    options.withCredentials,
  };
}

```

export type HttpObserve = 'body'|'events'|'response';

Performs HTTP requests. This service is available as an injectable class, with methods to perform HTTP requests. Each request method has multiple signatures, and the return type varies based on the signature that is called (mainly the values of `observe` and `responseType`).

Note that the `responseType` *options* value is a String that identifies the single data type of the response. A single overload version of the method handles each response type. The value of `responseType` cannot be a union, as the combined signature could imply.

Sample HTTP requests for the [Tour of Heroes](/tutorial/toh-pt0) application.

HTTP Request Example

```

// GET heroes whose name contains search term
searchHeroes(term: string):
observable<Hero[]> {
  const params = new HttpParams({fromString: 'name=term'});
  return
  this.httpClient.request('GET', this.heroesUrl, {responseType: 'json', params});
}

### JSONP Example
requestJsonp(url, callback = 'callback') {
  return this.httpClient.jsonp(this.heroesURL,
  callback);
}

### PATCH Example
// PATCH one of the heroes' name
patchHero(id: number, heroName: string): Observable<{}> {
  const url = `${this.heroesUrl}/${id}`; // PATCH
  api/heroes/42
  return this.httpClient.patch(url, {name: heroName}, httpOptions)
  .pipe(catchError(this.handleError('patchHero')));
}

```

@see [HTTP Guide](guide/http)

```

@publicApi
@Injectable()
export class HttpClient {
  constructor(private handler: HttpHandler) {}

  /** Sends an `HttpRequest` and returns a stream of `HTTPEvents`.
  @return An `Observable` of the
  response, with the response body as a stream of `HTTPEvents`.
  request<R>(req: HttpRequest<any>):
  Observable<HttpEvent<R>>;

  /** Constructs a request that interprets the body as an `ArrayBuffer` and
  returns the response in
  an `ArrayBuffer`.
  @param method The HTTP method.
  @param url The endpoint URL.
  @param options The HTTP options to send with the request.
  @return An
  `Observable` of the response, with the response body as an `ArrayBuffer`.
  request(method: string, url:

```



```

string, options: {\n  body?: any,\n  headers?: HttpHeaders|{\n    [header: string]: string | string[]\n  },\n  observe?:
'body',\n  params?: HttpParams|{\n    [param: string]: string | string[]\n  },\n  reportProgress?: boolean, responseType:
'arraybuffer',\n  withCredentials?: boolean,\n  }): Observable<ArrayBuffer>;\n\n /**\n * Constructs a request that
interprets the body as a blob and returns\n * the response as a blob.\n * @param method The HTTP
method.\n * @param url The endpoint URL.\n * @param options The HTTP options to send with the request.\n
*\n * @return An `Observable` of the response, with the response body of type `Blob`.\n */\n request(method:
string, url: string, options: {\n  body?: any,\n  headers?: HttpHeaders|{\n    [header: string]: string | string[]\n  },\n
  observe?: 'body',\n  params?: HttpParams|{\n    [param: string]: string | string[]\n  },\n  reportProgress?: boolean,
responseType: 'blob',\n  withCredentials?: boolean,\n  }): Observable<Blob>;\n\n /**\n * Constructs a request
that interprets the body as a text string and\n * returns a string value.\n * @param method The HTTP
method.\n * @param url The endpoint URL.\n * @param options The HTTP options to send with the request.\n
*\n * @return An `Observable` of the response, with the response body of type string.\n */\n request(method:
string, url: string, options: {\n  body?: any,\n  headers?: HttpHeaders|{\n    [header: string]: string | string[]\n  },\n
  observe?: 'body',\n  params?: HttpParams|{\n    [param: string]: string | string[]\n  },\n  reportProgress?: boolean,
responseType: 'text',\n  withCredentials?: boolean,\n  }): Observable<string>;\n\n /**\n * Constructs a request
that interprets the body as an `ArrayBuffer` and returns the\n * the full event stream.\n * @param method
The HTTP method.\n * @param url The endpoint URL.\n * @param options The HTTP options to send with
the request.\n * @return An `Observable` of the response, with the response body as an array of
`HttpEvents` for\n * the\n * request.\n */\n request(method: string, url: string, options: {\n  body?: any,\n
  headers?: HttpHeaders|{\n    [header: string]: string | string[]\n  },\n  params?: HttpParams|{\n    [param: string]: string |
string[]\n  },\n  observe: 'events',\n  reportProgress?: boolean, responseType: 'arraybuffer',\n  withCredentials?:
boolean,\n  }): Observable<HttpEvent<ArrayBuffer>>;\n\n /**\n * Constructs a request that interprets the body as
a `Blob` and returns\n * the full event stream.\n * @param method The HTTP method.\n * @param url
The endpoint URL.\n * @param options The HTTP options to send with the request.\n * @return An
`Observable` of of all `HttpEvents` for the request,\n * with the response body of type `Blob`.\n */\n
request(method: string, url: string, options: {\n  body?: any,\n  headers?: HttpHeaders|{\n    [header: string]: string |
string[]\n  },\n  observe: 'events',\n  params?: HttpParams|{\n    [param: string]: string | string[]\n  },\n  reportProgress?:
boolean, responseType: 'blob',\n  withCredentials?: boolean,\n  }): Observable<HttpEvent<Blob>>;\n\n /**\n *
Constructs a request which interprets the body as a text string and returns the full event\n * stream.\n * @param
method The HTTP method.\n * @param url The endpoint URL.\n * @param options The HTTP
options to send with the request.\n * @return An `Observable` of all `HttpEvents` for the request,\n * with
the response body of type string.\n */\n request(method: string, url: string, options: {\n  body?: any,\n  headers?:
HttpHeaders|{\n    [header: string]: string | string[]\n  },\n  observe: 'events',\n  params?: HttpParams|{\n    [param:
string]: string | string[]\n  },\n  reportProgress?: boolean, responseType: 'text',\n  withCredentials?: boolean,\n
  }): Observable<HttpEvent<string>>;\n\n /**\n * Constructs a request which interprets the body as a JSON object and
returns the full event\n * stream.\n * @param method The HTTP method.\n * @param url The endpoint
URL.\n * @param options The HTTP options to send with the request.\n * @return An `Observable` of all
`HttpEvents` for the request,\n * with the response body of type `Object`.\n */\n request(method: string, url:
string, options: {\n  body?: any,\n  headers?: HttpHeaders|{\n    [header: string]: string | string[]\n  },\n  observe:
'events',\n  params?: HttpParams|{\n    [param: string]: string | string[]\n  },\n  reportProgress?: boolean,
responseType: 'json',\n  withCredentials?: boolean,\n  }): Observable<HttpEvent<any>>;\n\n /**\n * Constructs a request
which interprets the body as a JSON object and returns the full event\n * stream.\n * @param method The HTTP
method.\n * @param url The endpoint URL.\n * @param options The HTTP options to send with the request.\n
*\n * @return An `Observable` of all `HttpEvents` for the request,\n * with the response body of type `R`.\n */\n
request<R>(method: string, url: string, options: {\n  body?: any,\n  headers?: HttpHeaders|{\n    [header: string]: string
| string[]\n  },\n  reportProgress?: boolean, observe: 'events',\n  params?: HttpParams|{\n    [param: string]: string |
string[]\n  },\n  responseType: 'json',\n  withCredentials?: boolean,\n  }): Observable<HttpEvent<R>>;\n\n /**\n *
Constructs a request which interprets the body as an `ArrayBuffer`\n * and returns the full `HttpResponse`.\n

```

```

*\n * @param method The HTTP method.\n * @param url The endpoint URL.\n * @param options The
HTTP options to send with the request.\n *\n * @return An `Observable` of the `HttpResponse`, with the
response body as an `ArrayBuffer`.\n */\n request(method: string, url: string, options: {\n body?: any,\n
headers?: HttpHeaders|[header: string]: string | string[]], observe: 'response',\n params?: HttpParams|{[param:
string]: string | string[]],\n reportProgress?: boolean, responseType: 'arraybuffer',\n withCredentials?: boolean,\n
}): Observable<HttpResponse<ArrayBuffer>>;\n\n /**\n * Constructs a request which interprets the body as a
`Blob` and returns the full `HttpResponse`.\n *\n * @param method The HTTP method.\n * @param url
The endpoint URL.\n * @param options The HTTP options to send with the request.\n *\n * @return An
`Observable` of the `HttpResponse`, with the response body of type `Blob`.\n */\n request(method: string, url:
string, options: {\n body?: any,\n headers?: HttpHeaders|[header: string]: string | string[]], observe:
'response',\n params?: HttpParams|{[param: string]: string | string[]],\n reportProgress?: boolean, responseType:
'blob',\n withCredentials?: boolean,\n }): Observable<HttpResponse<Blob>>;\n\n /**\n * Constructs a request
which interprets the body as a text stream and returns the full\n * `HttpResponse`.\n *\n * @param method
The HTTP method.\n * @param url The endpoint URL.\n * @param options The HTTP options to send with
the request.\n *\n * @return An `Observable` of the HTTP response, with the response body of type string.\n
*/\n request(method: string, url: string, options: {\n body?: any,\n headers?: HttpHeaders|[header: string]:
string | string[]], observe: 'response',\n params?: HttpParams|{[param: string]: string | string[]],\n
reportProgress?: boolean, responseType: 'text',\n withCredentials?: boolean,\n }):
Observable<HttpResponse<string>>;\n\n /**\n * Constructs a request which interprets the body as a JSON object
and returns the full\n * `HttpResponse`.\n *\n * @param method The HTTP method.\n * @param url The
endpoint URL.\n * @param options The HTTP options to send with the request.\n *\n * @return An
`Observable` of the full `HttpResponse`,\n * with the response body of type `Object`.\n */\n request(method:
string, url: string, options: {\n body?: any,\n headers?: HttpHeaders|[header: string]: string | string[]],\n
reportProgress?: boolean, observe: 'response',\n params?: HttpParams|{[param: string]: string | string[]],\n
responseType?: 'json',\n withCredentials?: boolean,\n }): Observable<HttpResponse<Object>>;\n\n /**\n *
Constructs a request which interprets the body as a JSON object and returns\n * the full `HttpResponse` with the
response body in the requested type.\n *\n * @param method The HTTP method.\n * @param url The
endpoint URL.\n * @param options The HTTP options to send with the request.\n *\n * @return An
`Observable` of the full `HttpResponse`, with the response body of type `R`.\n */\n request<R>(method: string,
url: string, options: {\n body?: any,\n headers?: HttpHeaders|[header: string]: string | string[]],\n
reportProgress?: boolean, observe: 'response',\n params?: HttpParams|{[param: string]: string | string[]],\n
responseType?: 'json',\n withCredentials?: boolean,\n }): Observable<HttpResponse<R>>;\n\n /**\n *
Constructs a request which interprets the body as a JSON object and returns the full\n * `HttpResponse` as a
JSON object.\n *\n * @param method The HTTP method.\n * @param url The endpoint URL.\n * @param
options The HTTP options to send with the request.\n *\n * @return An `Observable` of the `HttpResponse`,
with the response body of type `Object`.\n */\n request(method: string, url: string, options?: {\n body?: any,\n
headers?: HttpHeaders|[header: string]: string | string[]],\n observe?: 'body',\n params?: HttpParams|{[param:
string]: string | string[]],\n responseType?: 'json',\n reportProgress?: boolean,\n withCredentials?: boolean,\n
}): Observable<Object>;\n\n /**\n * Constructs a request which interprets the body as a JSON object\n * with the
response body of the requested type.\n *\n * @param method The HTTP method.\n * @param url The
endpoint URL.\n * @param options The HTTP options to send with the request.\n *\n * @return An
`Observable` of the `HttpResponse`, with the response body of type `R`.\n */\n request<R>(method: string, url:
string, options?: {\n body?: any,\n headers?: HttpHeaders|[header: string]: string | string[]],\n observe?:
'body',\n params?: HttpParams|{[param: string]: string | string[]],\n responseType?: 'json',\n reportProgress?:
boolean,\n withCredentials?: boolean,\n }): Observable<R>;\n\n /**\n * Constructs a request where response
type and requested observable are not known statically.\n *\n * @param method The HTTP method.\n *
@param url The endpoint URL.\n * @param options The HTTP options to send with the request.\n *\n *
@return An `Observable` of the requested response, with body of type `any`.\n */\n request(method: string, url:

```

```

string, options?: {
  body?: any,
  headers?: HttpHeaders|[header: string]: string | string[]},
  params?:
  HttpParams|[param: string]: string | string[]},
  observe?: HttpObserve,
  reportProgress?: boolean,
  responseType?: 'arraybuffer'|'blob'|'json'|'text',
  withCredentials?: boolean,
}): Observable<any>;

/**
 * Constructs an observable for a generic HTTP request that, when subscribed,
 * fires the request through the chain
 * of registered interceptors and on to the
 * server.
 * You can pass an `HttpRequest` directly as the only
 * parameter. In this case,
 * the call returns an observable of the raw `HttpEvent` stream.
 * Alternatively
 * you can pass an HTTP method as the first parameter,
 * a URL string as the second, and an options hash
 * containing the request body as the third.
 * See `addBody()`. In this case, the specified `responseType` and
 * `observe` options determine the
 * type of returned observable.
 * * The `responseType` value determines how
 * a successful response body is parsed.
 * * If `responseType` is the default `json`, you can pass a type interface
 * for the resulting
 * object as a type parameter to the call.
 * * The `observe` value determines the return
 * type, according to what you are interested in
 * observing.
 * * An `observe` value of events returns an
 * observable of the raw `HttpEvent` stream, including
 * progress events by default.
 * * An `observe` value of
 * response returns an observable of `HttpResponse<T>`,
 * where the `T` parameter depends on the `responseType`
 * and any optionally provided type
 * parameter.
 * * An `observe` value of body returns an observable of
 * <T> with the same `T` body type.
 */
function request(first: string|HttpRequest<any>, url?: string, options: {
  body?: any,
  headers?: HttpHeaders|[header: string]: string | string[]},
  observe?: HttpObserve,
  params?:
  HttpParams|[param: string]: string | string[]},
  reportProgress?: boolean,
  responseType?:
  'arraybuffer'|'blob'|'json'|'text',
  withCredentials?: boolean,
} = {}): Observable<any> {
  let req:
  HttpRequest<any>;
  // First, check whether the primary argument is an instance of `HttpRequest`.
  if (first
  instanceof HttpRequest) {
    // It is. The other arguments must be undefined (per the signatures) and can be
    // ignored.
    req = first;
  } else {
    // It's a string, so it represents a URL. Construct a request based on it,
    // and incorporate the remaining arguments (assuming `GET` unless a method is
    // provided.
    // Figure
    // out the headers.
    let headers: HttpHeaders|undefined = undefined;
    if (options.headers instanceof
    HttpHeaders) {
      headers = options.headers;
    } else {
      headers = new HttpHeaders(options.headers);
    }
    // Sort out parameters.
    let params: HttpParams|undefined = undefined;
    if (!!options.params) {
      if (options.params instanceof HttpParams) {
        params = options.params;
      } else {
        params =
        new HttpParams({fromObject: options.params} as HttpParamsOptions);
      }
    }
    // Construct the
    // request.
    req = new HttpRequest(first, url!, (options.body !== undefined ? options.body : null), {
      headers,
      params,
      reportProgress: options.reportProgress,
      // By default, JSON is assumed to be
      // returned for all calls.
      responseType: options.responseType || 'json',
      withCredentials:
      options.withCredentials,
    });
    // Start with an Observable.of() the initial request, and run the handler
    // (which
    // includes all interceptors) inside a concatMap(). This way, the handler runs
    // inside an Observable
    // chain, which causes interceptors to be re-run on every
    // subscription (this also makes retries re-run the handler,
    // including interceptors).
    const events$: Observable<HttpEvent<any>> =
    of(req).pipe(concatMap((req:
    HttpRequest<any>) => this.handler.handle(req)));
    // If coming via the API signature which accepts a
    // previously constructed HttpRequest,
    // the only option is to get the event stream. Otherwise, return the event
    // stream if
    // that is what was requested.
    if (first instanceof HttpRequest || options.observe === 'events') {
      return events$;
    }
    // The requested stream contains either the full response or the body. In either
    // case,
    // the first step is to filter the event stream to extract a stream of
    // responses(s).
    const res$:
    Observable<HttpResponse<any>> = <Observable<HttpResponse<any>>>events$.pipe(
    filter((event:
    HttpEvent<any>) => event instanceof HttpResponse));
    // Decide which stream to return.
    switch
    (options.observe || 'body') {
      case 'body':
        // The requested stream is the body. Map the response stream to
        // the response
        // body. This could be done more simply, but a misbehaving interceptor might
        // transform
        // the response body into a different format and ignore the requested
        // responseType. Guard against this by
        // validating that the response is of the
        // requested type.
        switch (req.responseType) {
          case
          'arraybuffer':
            return res$.pipe(map((res: HttpResponse<any>) => {
              // Validate that the body is an
              // ArrayBuffer.
              if (res.body !== null && !(res.body instanceof ArrayBuffer)) {
                throw new

```

```

Error('Response is not an ArrayBuffer.');
```

```

    }
    return res.body;
  });
  case 'blob':
    return res$.pipe(map((res: HttpResponse<any>) => {
      // Validate that the body is a Blob.
      if (res.body !== null && !(res.body instanceof Blob)) {
        throw new Error('Response is not a Blob.');
```

```

      }
      return res.body;
    }));
  case 'text':
    return res$.pipe(map((res:
  HttpResponse<any>) => {
      // Validate that the body is a string.
      if (res.body !== null && typeof
  res.body !== 'string') {
        throw new Error('Response is not a string.');
```

```

      }
      return
  res.body;
    }));
  case 'json':
    default:
      // No validation needed for JSON responses, as
  they can be of any type.
      return res$.pipe(map((res: HttpResponse<any>) => res.body));
    }
  case
  'response':
    // The response stream was requested directly, so return it.
    return res$;
  default:
    //
  Guard against new future observe types being added.
    throw new Error(`Unreachable: unhandled observe type
  ${options.observe}`);
  }
}

/**
 * Constructs a `DELETE` request that interprets the body as an
 * `ArrayBuffer` and returns the response as an `ArrayBuffer`.
 * @param url The endpoint URL.
 * @param options The HTTP options to send with the request.
 * @return An `Observable` of the response
  body as an `ArrayBuffer`.
 */
export function delete(url: string, options: {
  headers?: HttpHeaders | { [header: string]: string |
  string[] },
  observe?: 'body',
  params?: HttpParams | { [param: string]: string | string[] },
  reportProgress?:
  boolean,
  responseType: 'arraybuffer',
  withCredentials?: boolean,
}): Observable<ArrayBuffer>;

/**
 * Constructs a `DELETE` request that interprets the body as a `Blob` and returns
 * the response as a `Blob`.
 * @param url The endpoint URL.
 * @param options The HTTP options to send with the request.
 * @return An `Observable` of the response body as a `Blob`.
 */
export function delete(url: string, options: {
  headers?:
  HttpHeaders | { [header: string]: string | string[] },
  observe?: 'body',
  params?: HttpParams | { [param: string]:
  string | string[] },
  reportProgress?: boolean,
  responseType: 'blob',
  withCredentials?: boolean,
}): Observable<Blob>;

/**
 * Constructs a `DELETE` request that interprets the body as a text string and
  returns a string.
 * @param url The endpoint URL.
 * @param options The HTTP options to send
  with the request.
 * @return An `Observable` of the response, with the response body of type string.
 */
export function delete(url: string, options: {
  headers?: HttpHeaders | { [header: string]: string |
  string[] },
  observe?: 'body',
  params?: HttpParams | { [param: string]:
  string | string[] },
  reportProgress?: boolean,
  responseType: 'text',
  withCredentials?: boolean,
}): Observable<string>;

/**
 * Constructs a `DELETE` request that interprets
  the body as an `ArrayBuffer` and returns the full event stream.
 * @param url The endpoint URL.
 * @param options The HTTP options to send with the request.
 * @return An `Observable` of all
  `HTTPEvents` for the request,
 * with response body as an `ArrayBuffer`.
 */
export function delete(url: string, options: {
  headers?: HttpHeaders | { [header: string]: string |
  string[] },
  observe: 'events',
  params?: HttpParams | { [param:
  string]: string | string[] },
  reportProgress?: boolean,
  responseType: 'arraybuffer',
  withCredentials?: boolean,
}): Observable<HttpEvent<ArrayBuffer>>;

/**
 * Constructs a `DELETE` request that interprets the body as a
  `Blob` and returns the full event stream.
 * @param url The endpoint URL.
 * @param options
  The HTTP options to send with the request.
 * @return An `Observable` of all the `HTTPEvents` for the
  request,
  with the response body as a `Blob`.
 */
export function delete(url: string, options: {
  headers?:
  HttpHeaders | { [header: string]: string | string[] },
  observe: 'events',
  params?: HttpParams | { [param: string]: string |
  string[] },
  reportProgress?: boolean,
  responseType: 'blob',
  withCredentials?: boolean,
}): Observable<HttpEvent<Blob>>;

/**
 * Constructs a `DELETE` request that interprets the body as a text
  string and returns the full event stream.
 * @param url The endpoint URL.
 * @param options The
  HTTP options to send with the request.
 * @return An `Observable` of all `HTTPEvents` for the request,
  with the response
  body of type string.
 */
export function delete(url: string, options: {
  headers?:
  HttpHeaders | { [header: string]: string | string[] },
  observe: 'events',
  params?: HttpParams | { [param: string]: string |
  string[] },
  reportProgress?: boolean,
  responseType: 'text',
  withCredentials?: boolean,
}): Observable<HttpEvent<string>>;

/**
 * Constructs a `DELETE` request that interprets the body as a JSON
  object and returns the full event stream.
 * @param url The endpoint URL.
 * @param options The
  HTTP options to send with the request.
 * @return An `Observable` of all `HTTPEvents` for the request,
  with response body of
  type `Object`.
 */
export function delete(url: string, options: {
  headers?: HttpHeaders | { [header:

```

```

string]: string | string[], observe: 'events',\n  params?: HttpParams|{[param: string]: string | string[]},\n  reportProgress?: boolean,\n  responseType?: 'json',\n  withCredentials?: boolean,\n  }):\nObservable<HttpEvent<Object>>;\n\n /**\n * Constructs a `DELETE` request that interprets the body as a JSON\n object\n * and returns the full event stream.\n *\n * @param url The endpoint URL.\n *\n * @param options The HTTP options to send with the request.\n *\n * @return An `Observable` of all the `HTTPEvents` for the request,\n with a response\n * body in the requested type.\n */\n delete<T>(url: string, options: {\n  headers?:\n  HttpHeaders|{[header: string]: string | string[]}, observe: 'events',\n  params?: HttpParams|{[param: string]: string | string[]},\n  reportProgress?: boolean,\n  responseType?: 'json',\n  withCredentials?: boolean,\n  }):\nObservable<HttpEvent<T>>;\n\n /**\n * Constructs a `DELETE` request that interprets the body as an\n `ArrayBuffer` and returns\n * the full `HTTPResponse`.\n *\n * @param url The endpoint URL.\n *\n * @param options The HTTP options to send with the request.\n *\n * @return An `Observable` of the full\n `HTTPResponse`, with the response body as an `ArrayBuffer`.\n */\n delete(url: string, options: {\n  headers?:\n  HttpHeaders|{[header: string]: string | string[]}, observe: 'response',\n  params?: HttpParams|{[param: string]:\n  string | string[]},\n  reportProgress?: boolean, responseType: 'arraybuffer',\n  withCredentials?: boolean,\n  }):\nObservable<HttpResponse<ArrayBuffer>>;\n\n /**\n * Constructs a `DELETE` request that interprets the body as a\n `Blob` and returns the full\n * `HTTPResponse`.\n *\n * @param url The endpoint URL.\n *\n * @param options The HTTP options to send with the request.\n *\n * @return An `Observable` of the `HTTPResponse`,\n with the response body of type `Blob`.\n */\n delete(url: string, options: {\n  headers?:\n  HttpHeaders|{[header: string]: string | string[]}, observe: 'response',\n  params?: HttpParams|{[param: string]: string | string[]},\n  reportProgress?: boolean, responseType: 'blob',\n  withCredentials?: boolean,\n  }):\nObservable<HttpResponse<Blob>>;\n\n /**\n * Constructs a `DELETE` request that interprets the body as a text\n stream and\n * returns the full `HTTPResponse`.\n *\n * @param url The endpoint URL.\n *\n * @param options The HTTP options to send with the request.\n *\n * @return An `Observable` of the full\n `HTTPResponse`, with the response body of type string.\n */\n delete(url: string, options: {\n  headers?:\n  HttpHeaders|{[header: string]: string | string[]}, observe: 'response',\n  params?: HttpParams|{[param: string]:\n  string | string[]},\n  reportProgress?: boolean, responseType: 'text',\n  withCredentials?: boolean,\n  }):\nObservable<HttpResponse<string>>;\n\n /**\n * Constructs a `DELETE` request the interprets the body as a\n JSON object and returns\n * the full `HTTPResponse`.\n *\n * @param url The endpoint URL.\n *\n * @param options The HTTP options to send with the request.\n *\n * @return An `Observable` of the `HTTPResponse`,\n with the response body of type `Object`.\n */\n delete(url: string, options: {\n  headers?:\n  HttpHeaders|{[header: string]: string | string[]}, observe: 'response',\n  params?: HttpParams|{[param: string]:\n  string | string[]},\n  reportProgress?: boolean,\n  responseType?: 'json',\n  withCredentials?: boolean,\n  }):\nObservable<HttpResponse<Object>>;\n\n /**\n * Constructs a `DELETE` request that interprets the body as a\n JSON object\n * and returns the full `HTTPResponse`.\n *\n * @param url The endpoint URL.\n *\n * @param options The HTTP options to send with the request.\n *\n * @return An `Observable` of the `HTTPResponse`,\n with the response body of the requested type.\n */\n delete<T>(url: string, options: {\n  headers?:\n  HttpHeaders|{[header: string]: string | string[]}, observe: 'response',\n  params?: HttpParams|{[param: string]:\n  string | string[]},\n  reportProgress?: boolean,\n  responseType?: 'json',\n  withCredentials?: boolean,\n  }):\nObservable<HttpResponse<T>>;\n\n /**\n * Constructs a `DELETE` request that interprets the body as a JSON\n object and\n * returns the response body as a JSON object.\n *\n * @param url The endpoint URL.\n *\n * @param options The HTTP options to send with the request.\n *\n * @return An `Observable` of the response,\n with the response body of type `Object`.\n */\n delete(url: string, options?: {\n  headers?:\n  HttpHeaders|{[header: string]: string | string[]},\n  observe?:\n  'body',\n  params?: HttpParams|{[param: string]: string | string[]},\n  reportProgress?: boolean,\n  responseType?: 'json',\n  withCredentials?: boolean,\n  }):\nObservable<Object>;\n\n /**\n * Constructs a DELETE request that interprets the body as a JSON object and returns\n * the response in a\n given type.\n *\n * @param url The endpoint URL.\n *\n * @param options The HTTP options to send with the\n request.\n *\n * @return An `Observable` of the `HTTPResponse`, with response body in the requested type.\n */\n delete<T>(url: string, options?: {\n  headers?:\n  HttpHeaders|{[header: string]: string | string[]},\n  observe?:

```

'body',\n params?: HttpParams|{[param: string]: string | string[]},\n reportProgress?: boolean,\n responseType?: 'json',\n withCredentials?: boolean,\n }): Observable<T>;\n\n /**\n * Constructs an observable that, when subscribed, causes the configured\n * `DELETE` request to execute on the server. See the individual overloads for\n * details on the return type.\n * @param url The endpoint URL.\n * @param options The HTTP options to send with the request.\n * @return An `Observable` of the response, with the response body as an `ArrayBuffer`.\n */\n delete(url: string, options: {\n headers?: HttpHeaders|{[header: string]: string | string[]},\n observe?: HttpObserve,\n params?: HttpParams|{[param: string]: string | string[]},\n reportProgress?: boolean,\n responseType?: 'arraybuffer'|'blob'|'json'|'text',\n withCredentials?: boolean,\n } = {}): Observable<any> {\n return this.request<any>('DELETE', url, options as any);\n }\n\n /**\n * Constructs a `GET` request that interprets the body as an `ArrayBuffer` and returns the\n * response in an `ArrayBuffer`.\n * @param url The endpoint URL.\n * @param options The HTTP options to send with the request.\n * @return An `Observable` of the response, with the response body as an `ArrayBuffer`.\n */\n get(url: string, options: {\n headers?: HttpHeaders|{[header: string]: string | string[]},\n observe?: 'body',\n params?: HttpParams|{[param: string]: string | string[]},\n reportProgress?: boolean,\n responseType: 'arraybuffer',\n withCredentials?: boolean,\n }): Observable<ArrayBuffer>;\n\n /**\n * Constructs a `GET` request that interprets the body as a `Blob` and returns the response as a `Blob`.\n * @param url The endpoint URL.\n * @param options The HTTP options to send with the request.\n * @return An `Observable` of the response, with the response body as a `Blob`.\n */\n get(url: string, options: {\n headers?: HttpHeaders|{[header: string]: string | string[]},\n observe?: 'body',\n params?: HttpParams|{[param: string]: string | string[]},\n reportProgress?: boolean,\n responseType: 'blob',\n withCredentials?: boolean,\n }): Observable<Blob>;\n\n /**\n * Constructs a `GET` request that interprets the body as a text string and returns the response as a string value.\n * @param url The endpoint URL.\n * @param options The HTTP options to send with the request.\n * @return An `Observable` of the response, with the response body of type string.\n */\n get(url: string, options: {\n headers?: HttpHeaders|{[header: string]: string | string[]},\n observe?: 'body',\n params?: HttpParams|{[param: string]: string | string[]},\n reportProgress?: boolean,\n responseType: 'text',\n withCredentials?: boolean,\n }): Observable<string>;\n\n /**\n * Constructs a `GET` request that interprets the body as an `ArrayBuffer` and returns\n * the full event stream.\n * @param url The endpoint URL.\n * @param options The HTTP options to send with the request.\n * @return An `Observable` of all `HttpEvents` for the request, with the response\n * body as an `ArrayBuffer`.\n */\n get(url: string, options: {\n headers?: HttpHeaders|[header: string]: string | string[]},\n observe: 'events',\n params?: HttpParams|{[param: string]: string | string[]},\n reportProgress?: boolean,\n responseType: 'arraybuffer',\n withCredentials?: boolean,\n }): Observable<HttpEvent<ArrayBuffer>>;\n\n /**\n * Constructs a `GET` request that interprets the body as a `Blob` and\n * returns the full event stream.\n * @param url The endpoint URL.\n * @param options The HTTP options to send with the request.\n * @return An `Observable` of the response, with the response body as a `Blob`.\n */\n get(url: string, options: {\n headers?: HttpHeaders|[header: string]: string | string[]},\n observe: 'events',\n params?: HttpParams|{[param: string]: string | string[]},\n reportProgress?: boolean,\n responseType: 'blob',\n withCredentials?: boolean,\n }): Observable<HttpEvent<Blob>>;\n\n /**\n * Constructs a `GET` request that interprets the body as a text string and returns\n * the full event stream.\n * @param url The endpoint URL.\n * @param options The HTTP options to send with the request.\n * @return An `Observable` of the response, with the response body of type string.\n */\n get(url: string, options: {\n headers?: HttpHeaders|[header: string]: string | string[]},\n observe: 'events',\n params?: HttpParams|{[param: string]: string | string[]},\n reportProgress?: boolean,\n responseType: 'text',\n withCredentials?: boolean,\n }): Observable<HttpEvent<string>>;\n\n /**\n * Constructs a `GET` request that interprets the body as a JSON object\n * and returns the full event stream.\n * @param url The endpoint URL.\n * @param options The HTTP options to send with the request.\n * @return An `Observable` of the response, with the response body of type `Object`.\n */\n get(url: string, options: {\n headers?: HttpHeaders|[header: string]: string | string[]},\n observe: 'events',\n params?: HttpParams|{[param: string]: string | string[]},\n reportProgress?: boolean,\n responseType: 'json',\n withCredentials?: boolean,\n }): Observable<HttpEvent<Object>>;\n\n /**\n * Constructs a `GET` request that interprets the body as a JSON

object and returns the full event

```

 * stream.
 * @param url The endpoint URL.
 * @param options The HTTP options to send with the request.
 * @return An `Observable` of the response, with a response body in the requested type.
 */
get<T>(url: string, options: {
  headers?: HttpHeaders|[header: string]: string | string[]
}, observe: 'events',
  params?: HttpParams|[param: string]: string | string[]
}, reportProgress?: boolean,
  responseType?: 'json',
  withCredentials?: boolean,
  ): Observable<HttpEvent<T>>;

```

Constructs a `GET` request that interprets the body as an `ArrayBuffer` and returns the full `HTTPResponse`.

```

 * @param url The endpoint URL.
 * @param options The HTTP options to send with the request.
 * @return An `Observable` of the `HTTPResponse` for the request, with the response body as an `ArrayBuffer`.
 */
get(url: string, options: {
  headers?: HttpHeaders|[header: string]: string | string[]
}, observe: 'response',
  params?: HttpParams|[param: string]: string | string[]
}, reportProgress?: boolean,
  responseType: 'arraybuffer',
  withCredentials?: boolean,
  ): Observable<HttpResponse<ArrayBuffer>>;

```

Constructs a `GET` request that interprets the body as a `Blob` and returns the full `HTTPResponse`.

```

 * @param url The endpoint URL.
 * @param options The HTTP options to send with the request.
 * @return An `Observable` of the `HTTPResponse` for the request, with the response body as a `Blob`.
 */
get(url: string, options: {
  headers?: HttpHeaders|[header: string]: string | string[]
}, observe: 'response',
  params?: HttpParams|[param: string]: string | string[]
}, reportProgress?: boolean, responseType: 'blob',
  withCredentials?: boolean,
  ): Observable<HttpResponse<Blob>>;

```

Constructs a `GET` request that interprets the body as a text stream and returns the full `HTTPResponse`.

```

 * @param url The endpoint URL.
 * @param options The HTTP options to send with the request.
 * @return An `Observable` of the `HTTPResponse` for the request, with the response body of type string.
 */
get(url: string, options: {
  headers?: HttpHeaders|[header: string]: string | string[]
}, observe: 'response',
  params?: HttpParams|[param: string]: string | string[]
}, reportProgress?: boolean, responseType: 'text',
  withCredentials?: boolean,
  ): Observable<HttpResponse<string>>;

```

Constructs a `GET` request that interprets the body as a JSON object and returns the full `HTTPResponse`.

```

 * @param url The endpoint URL.
 * @param options The HTTP options to send with the request.
 * @return An `Observable` of the full `HttpResponse`, with the response body of type `Object`.
 */
get(url: string, options: {
  headers?: HttpHeaders|[header: string]: string | string[]
}, observe: 'response',
  params?: HttpParams|[param: string]: string | string[]
}, reportProgress?: boolean,
  responseType?: 'json',
  withCredentials?: boolean,
  ): Observable<HttpResponse<Object>>;

```

Constructs a `GET` request that interprets the body as a JSON object and returns the full `HTTPResponse`.

```

 * @param url The endpoint URL.
 * @param options The HTTP options to send with the request.
 * @return An `Observable` of the full `HTTPResponse` for the request, with a response body in the requested type.
 */
get<T>(url: string, options: {
  headers?: HttpHeaders|[header: string]: string | string[]
}, observe: 'response',
  params?: HttpParams|[param: string]: string | string[]
}, reportProgress?: boolean,
  responseType?: 'json',
  withCredentials?: boolean,
  ): Observable<HttpResponse<T>>;

```

Constructs a `GET` request that interprets the body as a JSON object and returns the response body as a JSON object.

```

 * @param url The endpoint URL.
 * @param options The HTTP options to send with the request.
 * @return An `Observable` of the response body as a JSON object.
 */
get(url: string, options?: {
  headers?: HttpHeaders|[header: string]: string | string[]
}, observe?: 'body',
  params?: HttpParams|[param: string]: string | string[]
}, reportProgress?: boolean,
  responseType?: 'json',
  withCredentials?: boolean,
  ): Observable<Object>;

```

Constructs a `GET` request that interprets the body as a JSON object and returns the response body in a given type.

```

 * @param url The endpoint URL.
 * @param options The HTTP options to send with the request.
 * @return An `Observable` of the `HTTPResponse`, with a response body in the requested type.
 */
get<T>(url: string, options?: {
  headers?: HttpHeaders|[header: string]: string | string[]
}, observe?: 'body',
  params?: HttpParams|[param: string]: string | string[]
}, reportProgress?: boolean,
  responseType?: 'json',
  withCredentials?: boolean,
  ): Observable<T>;

```

Constructs an observable that, when subscribed, causes the configured `GET` request to execute on the server. See the individual overloads for details on the return type.

```

 * @param url The endpoint URL.
 * @param options The HTTP options to send with the request.
 * @return An `Observable` of the response body in the requested type.
 */
get(url: string, options: {
  headers?: HttpHeaders|[header: string]: string | string[]
}, observe?: 'body',
  params?: HttpParams|[param: string]: string | string[]
}, reportProgress?: boolean,
  responseType?: 'json',
  withCredentials?: boolean,
  ): Observable<T>;

```

```

headers?: HttpHeaders|[header: string]: string | string[]],\n observe?: HttpObserve,\n params?:
HttpParams|[param: string]: string | string[]],\n reportProgress?: boolean,\n responseType?:
'arraybuffer'|'blob'|'json'|'text',\n withCredentials?: boolean,\n } = {}): Observable<any> {\n return
this.request<any>('GET', url, options as any);\n }\n\n\n /**\n * Constructs a `HEAD` request that interprets the
body as an `ArrayBuffer` and\n * returns the response as an `ArrayBuffer`.\n * \n * @param url The endpoint
URL.\n * @param options The HTTP options to send with the request.\n * \n * @return An `Observable` of the
response, with the response body as an `ArrayBuffer`.\n */\n head(url: string, options: {\n headers?:
HttpHeaders|[header: string]: string | string[]],\n observe?: 'body',\n params?: HttpParams|[param: string]:
string | string[]],\n reportProgress?: boolean, responseType: 'arraybuffer',\n withCredentials?: boolean,\n }):
Observable<ArrayBuffer>;\n\n\n /**\n * Constructs a `HEAD` request that interprets the body as a `Blob` and
returns\n * the response as a `Blob`.\n * \n * @param url The endpoint URL.\n * @param options The HTTP
options to send with the request.\n * \n * @return An `Observable` of the response, with the response body as a
`Blob`.\n */\n head(url: string, options: {\n headers?: HttpHeaders|[header: string]: string | string[]],\n
observe?: 'body',\n params?: HttpParams|[param: string]: string | string[]],\n reportProgress?: boolean,
responseType: 'blob',\n withCredentials?: boolean,\n }): Observable<Blob>;\n\n\n /**\n * Constructs a `HEAD`
request that interprets the body as a text string and returns the response\n * as a string value.\n * \n * @param url
The endpoint URL.\n * @param options The HTTP options to send with the request.\n * \n * @return An
`Observable` of the response, with the response body of type string.\n */\n head(url: string, options: {\n
headers?: HttpHeaders|[header: string]: string | string[]],\n observe?: 'body',\n params?: HttpParams|[param:
string]: string | string[]],\n reportProgress?: boolean, responseType: 'text',\n withCredentials?: boolean,\n }):
Observable<string>;\n\n\n /**\n * Constructs a `HEAD` request that interprets the body as an `ArrayBuffer`\n *
and returns the full event stream.\n * \n * @param url The endpoint URL.\n * @param options The HTTP
options to send with the request.\n * \n * @return An `Observable` of tall `HttpEvents` for the request,\n * with
the response body as an `ArrayBuffer`.\n */\n head(url: string, options: {\n headers?: HttpHeaders|[header:
string]: string | string[]], observe: 'events',\n params?: HttpParams|[param: string]: string | string[]],\n
reportProgress?: boolean, responseType: 'arraybuffer',\n withCredentials?: boolean,\n }):
Observable<HttpEvent<ArrayBuffer>>;\n\n\n /**\n * Constructs a `HEAD` request that interprets the body as a
`Blob` and\n * returns the full event stream.\n * \n * @param url The endpoint URL.\n * @param options
The HTTP options to send with the request.\n * \n * @return An `Observable` of all `HttpEvents` for the
request,\n * with the response body as a `Blob`.\n */\n head(url: string, options: {\n headers?:
HttpHeaders|[header: string]: string | string[]], observe: 'events',\n params?: HttpParams|[param: string]: string |
string[]],\n reportProgress?: boolean, responseType: 'blob',\n withCredentials?: boolean,\n }):
Observable<HttpEvent<Blob>>;\n\n\n /**\n * Constructs a `HEAD` request that interprets the body as a text
string\n * and returns the full event stream.\n * \n * @param url The endpoint URL.\n * @param options The
HTTP options to send with the request.\n * \n * @return An `Observable` of all HttpEvents for the request, with
the response body of type\n * string.\n */\n head(url: string, options: {\n headers?: HttpHeaders|[header:
string]: string | string[]], observe: 'events',\n params?: HttpParams|[param: string]: string | string[]],\n
reportProgress?: boolean, responseType: 'text',\n withCredentials?: boolean,\n }):
Observable<HttpEvent<string>>;\n\n\n /**\n * Constructs a `HEAD` request that interprets the body as a JSON
object\n * and returns the full HTTP event stream.\n * \n * @param url The endpoint URL.\n * @param
options The HTTP options to send with the request.\n * \n * @return An `Observable` of all `HTTPEvents` for the
request, with a response body of\n * type `Object`.\n */\n head(url: string, options: {\n headers?:
HttpHeaders|[header: string]: string | string[]], observe: 'events',\n params?: HttpParams|[param: string]: string |
string[]],\n reportProgress?: boolean,\n responseType: 'json',\n withCredentials?: boolean,\n }):
Observable<HttpEvent<Object>>;\n\n\n /**\n * Constructs a `HEAD` request that interprets the body as a JSON
object and\n * returns the full event stream.\n * \n * @return An `Observable` of all the `HTTPEvents` for the
request\n * , with a response body in the requested type.\n * \n * @param url The endpoint URL.\n * @param
options The HTTP options to send with the request.\n */\n head<T>(url: string, options: {\n headers?:

```



```

HttpHeaders|[header: string]: string | string[], observe: 'events',\n  params?: HttpParams|[param: string]: string |
string[],\n  reportProgress?: boolean,\n  responseType?: 'json',\n  withCredentials?: boolean,\n  }):
Observable<HttpEvent<T>>;\n\n /**\n * Constructs a `HEAD` request that interprets the body as an
`ArrayBuffer`\n * and returns the full HTTP response.\n * @param url The endpoint URL.\n * @param
options The HTTP options to send with the request.\n * @return An `Observable` of the `HTTPResponse` for
the request,\n * with the response body as an `ArrayBuffer`.\n */\n head(url: string, options: {\n  headers?:
HttpHeaders|[header: string]: string | string[], observe: 'response',\n  params?: HttpParams|[param: string]:
string | string[],\n  reportProgress?: boolean, responseType: 'arraybuffer',\n  withCredentials?: boolean,\n  }):
Observable<HttpResponse<ArrayBuffer>>;\n\n /**\n * Constructs a `HEAD` request that interprets the body as a
`Blob` and returns\n * the full `HTTPResponse`.\n * @param url The endpoint URL.\n * @param
options The HTTP options to send with the request.\n * @return An `Observable` of the `HTTPResponse` for
the request,\n * with the response body as a blob.\n */\n head(url: string, options: {\n  headers?:
HttpHeaders|[header: string]: string | string[], observe: 'response',\n  params?: HttpParams|[param: string]:
string | string[],\n  reportProgress?: boolean, responseType: 'blob',\n  withCredentials?: boolean,\n  }):
Observable<HttpResponse<Blob>>;\n\n /**\n * Constructs a `HEAD` request that interprets the body as text
stream\n * and returns the full `HTTPResponse`.\n * @param url The endpoint URL.\n * @param
options The HTTP options to send with the request.\n * @return An `Observable` of the `HTTPResponse` for
the request,\n * with the response body of type string.\n */\n head(url: string, options: {\n  headers?:
HttpHeaders|[header: string]: string | string[], observe: 'response',\n  params?: HttpParams|[param: string]:
string | string[],\n  reportProgress?: boolean, responseType: 'text',\n  withCredentials?: boolean,\n  }):
Observable<HttpResponse<string>>;\n\n /**\n * Constructs a `HEAD` request that interprets the body as a JSON
object and\n * returns the full `HTTPResponse`.\n * @param url The endpoint URL.\n * @param
options The HTTP options to send with the request.\n * @return An `Observable` of the `HTTPResponse` for
the request,\n * with the response body of type `Object`.\n */\n head(url: string, options: {\n  headers?:
HttpHeaders|[header: string]: string | string[], observe: 'response',\n  params?: HttpParams|[param: string]:
string | string[],\n  reportProgress?: boolean,\n  responseType?: 'json',\n  withCredentials?: boolean,\n  }):
Observable<HttpResponse<Object>>;\n\n /**\n * Constructs a `HEAD` request that interprets the body as a JSON
object and\n * returns the response body as a JSON object.\n * @param url The endpoint URL.\n *
@param options The HTTP options to send with the request.\n * @return An `Observable` of the response,
with the response body as a JSON object.\n */\n head(url: string, options?: {\n  headers?: HttpHeaders|[header:
string]: string | string[],\n  observe?: 'body',\n  params?: HttpParams|[param: string]: string | string[],\n
reportProgress?: boolean,\n  responseType?: 'json',\n  withCredentials?: boolean,\n  }): Observable<Object>;\n\n
/**\n * Constructs a `HEAD` request that interprets the body as a JSON object and returns\n * the response in a
given type.\n * @param url The endpoint URL.\n * @param options The HTTP options to send with the
request.\n * @return An `Observable` of the `HTTPResponse` for the request,\n * with a response body of
the given type.\n */\n head<T>(url: string, options?: {\n  headers?: HttpHeaders|[header: string]: string |
string[],\n  observe?: 'body',\n  params?: HttpParams|[param: string]: string | string[],\n  reportProgress?:
boolean,\n  responseType?: 'json',\n  withCredentials?: boolean,\n  }): Observable<T>;\n\n /**\n * Constructs an
observable that, when subscribed, causes the configured\n * `HEAD` request to execute on the server. The `HEAD`
method returns\n * meta information about the resource without transferring the\n * resource itself. See the
individual overloads for\n * details on the return type.\n */\n head(url: string, options: {\n  headers?:
HttpHeaders|[header: string]: string | string[],\n  observe?: HttpObserve,\n  params?: HttpParams|[param:

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string]: string | string[]),\n  reportProgress?: boolean,\n  responseType?: 'arraybuffer'|'blob'|'json'|'text',\n  withCredentials?: boolean,\n  } = {}): Observable<any> {\n  return this.request<any>('HEAD', url, options as\n  any);\n }\n\n /**\n  * Constructs a `JSONP` request for the given URL and name of the callback parameter.\n  *\n  * @param url The resource URL.\n  * @param callbackParam The callback function name.\n  *\n  * @return An `Observable` of the response object, with response body as an object.\n  */\n  jsonp(url: string, callbackParam:\n  string): Observable<Object>;\n\n /**\n  * Constructs a `JSONP` request for the given URL and name of the\n  * callback parameter.\n  *\n  * @param url The resource URL.\n  * @param callbackParam The callback function\n  * name.\n  *\n  * You must install a suitable interceptor, such as one provided by `HttpClientJsonpModule`.\n  * If\n  * no such interceptor is reached,\n  * then the `JSONP` request can be rejected by the configured backend.\n  *\n  * @return An `Observable` of the response object, with response body in the requested type.\n  */\n  jsonp<T>(url:\n  string, callbackParam: string): Observable<T>;\n\n /**\n  * Constructs an `Observable` that, when subscribed,\n  * causes a request with the special method\n  * `JSONP` to be dispatched via the interceptor pipeline.\n  * The\n  * [JSONP pattern](https://en.wikipedia.org/wiki/JSONP) works around limitations of certain\n  * API endpoints that\n  * don't support newer,\n  * and preferable [CORS](https://developer.mozilla.org/en-US/docs/Web/HTTP/CORS)\n  * protocol.\n  * JSONP treats the endpoint API as a JavaScript file and tricks the browser to process the\n  * requests\n  * even if the API endpoint is not located on the same domain (origin) as the client-side\n  * application making the\n  * request.\n  * The endpoint API must support JSONP callback for JSONP requests to work.\n  * The resource API\n  * returns the JSON response wrapped in a callback function.\n  * You can pass the callback function name as one of\n  * the query parameters.\n  * Note that JSONP requests can only be used with `GET` requests.\n  *\n  * @param url\n  * The resource URL.\n  * @param callbackParam The callback function name.\n  *\n  */\n  jsonp<T>(url: string,\n  callbackParam: string): Observable<T> {\n  return this.request<any>('JSONP', url, {\n  params: new\n  HttpParams().append(callbackParam, 'JSONP_CALLBACK'),\n  observe: 'body',\n  responseType: 'json',\n  });\n }\n\n /**\n  * Constructs an `OPTIONS` request that interprets the body as an\n  * `ArrayBuffer` and returns\n  * the response as an `ArrayBuffer`.\n  *\n  * @param url The endpoint URL.\n  * @param options HTTP options.\n  *\n  * @return An `Observable` of the response, with the response body as an `ArrayBuffer`.\n  */\n  options(url:\n  string, options: {\n  headers?: HttpHeaders|{\n  [header: string]: string | string[]\n },\n  observe?: 'body',\n  params?:\n  HttpParams|{\n  [param: string]: string | string[]\n },\n  reportProgress?: boolean, responseType: 'arraybuffer',\n  withCredentials?: boolean,\n  }): Observable<ArrayBuffer>;\n\n /**\n  * Constructs an `OPTIONS` request that\n  * interprets the body as a `Blob` and returns\n  * the response as a `Blob`.\n  *\n  * @param url The endpoint\n  * URL.\n  * @param options HTTP options.\n  *\n  * @return An `Observable` of the response, with the response\n  * body as a `Blob`.\n  */\n  options(url: string, options: {\n  headers?: HttpHeaders|{\n  [header: string]: string | string[]\n },\n  observe?: 'body',\n  params?: HttpParams|{\n  [param: string]: string | string[]\n },\n  reportProgress?:\n  boolean, responseType: 'blob',\n  withCredentials?: boolean,\n  }): Observable<Blob>;\n\n /**\n  * Constructs an\n  * `OPTIONS` request that interprets the body as a text string and\n  * returns a string value.\n  *\n  * @param url\n  * The endpoint URL.\n  * @param options HTTP options.\n  *\n  * @return An `Observable` of the response, with\n  * the response body of type string.\n  */\n  options(url: string, options: {\n  headers?: HttpHeaders|{\n  [header: string]:\n  string | string[]\n },\n  observe?: 'body',\n  params?: HttpParams|{\n  [param: string]: string | string[]\n },\n  reportProgress?:\n  boolean, responseType: 'text',\n  withCredentials?: boolean,\n  }): Observable<string>;\n\n /**\n  * Constructs an `OPTIONS` request that interprets the body as an `ArrayBuffer`\n  * and returns the full event\n  * stream.\n  *\n  * @param url The endpoint URL.\n  * @param options HTTP options.\n  *\n  * @return An\n  * `Observable` of all `HttpEvents` for the request,\n  * with the response body as an `ArrayBuffer`.\n  */\n  options(url: string, options: {\n  headers?: HttpHeaders|{\n  [header: string]: string | string[]\n },\n  observe: 'events',\n  params?: HttpParams|{\n  [param: string]: string | string[]\n },\n  reportProgress?: boolean, responseType: 'arraybuffer',\n  withCredentials?: boolean,\n  }): Observable<HttpEvent<ArrayBuffer>>;\n\n /**\n  * Constructs an `OPTIONS`\n  * request that interprets the body as a `Blob` and\n  * returns the full event stream.\n  *\n  * @param url The\n  * endpoint URL.\n  * @param options HTTP options.\n  *\n  * @return An `Observable` of all `HttpEvents` for the\n  * request,\n  * with the response body as a `Blob`.\n  */\n  options(url: string, options: {\n  headers?:\n  HttpHeaders|{\n  [header: string]: string | string[]\n },\n  observe: 'events',\n  params?: HttpParams|{\n  [param: string]: string |

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string[]),\n  reportProgress?: boolean, responseType: 'blob',\n  withCredentials?: boolean,\n  }): Observable<HttpEvent<Blob>>;\n\n /**\n * Constructs an `OPTIONS` request that interprets the body as a text\n string\n * and returns the full event stream.\n *\n * @param url The endpoint URL.\n * @param options HTTP\n options.\n *\n * @return An `Observable` of all the `HttpEvents` for the request,\n * with the response body of\n type string.\n */\n options(url: string, options: {\n  headers?: HttpHeaders|[header: string]: string | string[]},\n observe: 'events',\n params?: HttpParams|[param: string]: string | string[]),\n reportProgress?: boolean,\n responseType: 'text',\n withCredentials?: boolean,\n  }): Observable<HttpEvent<string>>;\n\n /**\n * Constructs\n an `OPTIONS` request that interprets the body as a JSON object\n * and returns the full event stream.\n *\n * @param url The endpoint URL.\n * @param options HTTP\n options.\n *\n * @return An `Observable` of all the\n `HttpEvents` for the request with the response\n * body of type `Object`.\n */\n options(url: string, options: {\n  headers?: HttpHeaders|[header: string]: string | string[]},\n observe: 'events',\n params?: HttpParams|[param:\n string]: string | string[]),\n reportProgress?: boolean,\n responseType?: 'json',\n withCredentials?: boolean,\n  }): Observable<HttpEvent<Object>>;\n\n /**\n * Constructs an `OPTIONS` request that interprets the body as a\n JSON object and\n * returns the full event stream.\n *\n * @param url The endpoint URL.\n * @param options\n HTTP\n options.\n *\n * @return An `Observable` of all the `HttpEvents` for the request,\n * with a response body\n in the requested type.\n */\n options<T>(url: string, options: {\n  headers?: HttpHeaders|[header: string]: string | string | string[]},\n observe: 'events',\n params?: HttpParams|[param: string]: string | string[]),\n reportProgress?:\n boolean,\n responseType?: 'json',\n withCredentials?: boolean,\n  }): Observable<HttpEvent<T>>;\n\n /**\n * Constructs an `OPTIONS` request that interprets the body as an `ArrayBuffer`\n * and returns the full HTTP\n response.\n *\n * @param url The endpoint URL.\n * @param options\n HTTP\n options.\n *\n * @return An\n `Observable` of the `HttpResponse` for the request,\n * with the response body as an `ArrayBuffer`.\n */\n options(url: string, options: {\n  headers?: HttpHeaders|[header: string]: string | string[]},\n observe: 'response',\n params?: HttpParams|[param: string]: string | string[]),\n reportProgress?: boolean, responseType: 'arraybuffer',\n withCredentials?: boolean,\n  }): Observable<HttpResponse<ArrayBuffer>>;\n\n /**\n * Constructs an\n `OPTIONS` request that interprets the body as a `Blob`\n * and returns the full `HttpResponse`.\n *\n * @param url The endpoint URL.\n * @param options\n HTTP\n options.\n *\n * @return An `Observable` of the\n `HttpResponse` for the request,\n * with the response body as a `Blob`.\n */\n options(url: string, options: {\n  headers?: HttpHeaders|[header: string]: string | string[]},\n observe: 'response',\n params?: HttpParams|[param:\n string]: string | string[]),\n reportProgress?: boolean, responseType: 'blob',\n withCredentials?: boolean,\n  }): Observable<HttpResponse<Blob>>;\n\n /**\n * Constructs an `OPTIONS` request that interprets the body as text\n stream\n * and returns the full `HttpResponse`.\n *\n * @param url The endpoint URL.\n * @param options\n HTTP\n options.\n *\n * @return An `Observable` of the `HttpResponse` for the request,\n * with the response\n body of type string.\n */\n options(url: string, options: {\n  headers?: HttpHeaders|[header: string]: string | string | string[]},\n observe: 'response',\n params?: HttpParams|[param: string]: string | string[]),\n reportProgress?:\n boolean, responseType: 'text',\n withCredentials?: boolean,\n  }): Observable<HttpResponse<string>>;\n\n /**\n * Constructs an `OPTIONS` request that interprets the body as a JSON object\n * and returns the full\n `HttpResponse`.\n *\n * @param url The endpoint URL.\n * @param options\n HTTP\n options.\n *\n * @return An `Observable` of the `HttpResponse` for the request,\n * with the response body of type `Object`.\n */\n options(url: string, options: {\n  headers?: HttpHeaders|[header: string]: string | string[]},\n observe:\n 'response',\n params?: HttpParams|[param: string]: string | string[]),\n reportProgress?: boolean,\n responseType?: 'json',\n withCredentials?: boolean,\n  }): Observable<HttpResponse<Object>>;\n\n /**\n * Constructs an `OPTIONS` request that interprets the body as a JSON object and\n * returns the full\n `HttpResponse`.\n *\n * @param url The endpoint URL.\n * @param options\n HTTP\n options.\n *\n * @return An `Observable` of the `HttpResponse` for the request,\n * with a response body in the requested type.\n */\n options<T>(url: string, options: {\n  headers?: HttpHeaders|[header: string]: string | string | string[]},\n observe:\n 'response',\n params?: HttpParams|[param: string]: string | string[]),\n reportProgress?: boolean,\n responseType?: 'json',\n withCredentials?: boolean,\n  }): Observable<HttpResponse<T>>;\n\n /**\n * Constructs an `OPTIONS` request that interprets the body as a JSON object and returns the\n * response body as a

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JSON object.
 * @param url The endpoint URL.
 * @param options HTTP options.
 * @return An `Observable` of the response, with the response body as a JSON object.
 options(url: string, options?: {
 headers?: HttpHeaders|[header: string]: string | string[]],
 observe?: 'body',
 params?: HttpParams|[param: string]: string | string[]],
 reportProgress?: boolean,
 responseType?: 'json',
 withCredentials?: boolean,
 }): Observable<Object>;
 /**
 * Constructs an `OPTIONS` request that interprets the body as a JSON object and returns the
 * response in a given type.
 * @param url The endpoint URL.
 * @param options HTTP options.
 * @return An `Observable` of the `HTTPResponse`, with a response body of the given type.
 options<T>(url: string, options?: {
 headers?: HttpHeaders|[header: string]: string | string[]],
 observe?: 'body',
 params?: HttpParams|[param: string]: string | string[]],
 reportProgress?: boolean,
 responseType?: 'json',
 withCredentials?: boolean,
 }): Observable<T>;
 /**
 * Constructs an `Observable` that, when subscribed, causes the configured
 * `OPTIONS` request to execute on the server. This method allows the client
 * to determine the supported HTTP methods and other capabilities of an endpoint,
 * without implying a resource action. See the individual overloads for
 * details on the return type.
 options(url: string, options: {
 headers?: HttpHeaders|[header: string]: string | string[]],
 observe?:
 HttpObserve,
 params?: HttpParams|[param: string]: string | string[]],
 reportProgress?: boolean,
 responseType?: 'arraybuffer'|'blob'|'json'|'text',
 withCredentials?: boolean,
 } = {}): Observable<any> {
 return this.request<any>('OPTIONS', url, options as any);
 }
 /**
 * Constructs a `PATCH` request that interprets the body as an `ArrayBuffer` and returns
 * the response as an `ArrayBuffer`.
 * @param url The endpoint URL.
 * @param body The resources to edit.
 * @param options HTTP options.
 * @return An `Observable` of the response, with the response body as an `ArrayBuffer`.
 patch(url: string,
 body: any|null, options: {
 headers?: HttpHeaders|[header: string]: string | string[]],
 observe?: 'body',
 params?: HttpParams|[param: string]: string | string[]],
 reportProgress?: boolean, responseType: 'arraybuffer',
 withCredentials?: boolean,
 }): Observable<ArrayBuffer>;
 /**
 * Constructs a `PATCH` request that interprets the body as a `Blob` and returns the response
 * as a `Blob`.
 * @param url The endpoint URL.
 * @param body The resources to edit.
 * @param options HTTP options.
 * @return An `Observable` of the response, with the response body as a `Blob`.
 patch(url: string, body: any|null, options:
 {
 headers?: HttpHeaders|[header: string]: string | string[]],
 observe?: 'body',
 params?:
 HttpParams|[param: string]: string | string[]],
 reportProgress?: boolean, responseType: 'blob',
 withCredentials?: boolean,
 }): Observable<Blob>;
 /**
 * Constructs a `PATCH` request that interprets the body as a text string and
 * returns the response as a string value.
 * @param url The endpoint URL.
 * @param body The resources to edit.
 * @param options HTTP options.
 * @return An `Observable` of the response, with a response body of type string.
 patch(url: string, body: any|null, options: {
 headers?:
 HttpHeaders|[header: string]: string | string[]],
 observe?: 'body',
 params?: HttpParams|[param: string]:
 string | string[]],
 reportProgress?: boolean, responseType: 'text',
 withCredentials?: boolean,
 }):
 Observable<string>;
 /**
 * Constructs a `PATCH` request that interprets the body as an `ArrayBuffer` and
 * returns the the full event stream.
 * @param url The endpoint URL.
 * @param body The resources to edit.
 * @param options HTTP options.
 * @return An `Observable` of all the `HTTPEvents` for the request,
 * with the response body as an `ArrayBuffer`.
 patch(url: string, body: any|null, options: {
 headers?: HttpHeaders|[header: string]: string | string[]],
 observe: 'events',
 params?: HttpParams|[param:
 string]: string | string[]],
 reportProgress?: boolean, responseType: 'arraybuffer',
 withCredentials?: boolean,
 }): Observable<HttpEvent<ArrayBuffer>>;
 /**
 * Constructs a `PATCH` request that interprets the body as a
 * `Blob` and returns the full event stream.
 * @param url The endpoint URL.
 * @param body The resources to edit.
 * @param options HTTP options.
 * @return An `Observable` of all the `HTTPEvents` for the request, with the
 * response body as `Blob`.
 patch(url: string, body: any|null, options: {
 headers?: HttpHeaders|[header: string]: string | string[]],
 observe: 'events',
 params?: HttpParams|[param:
 string]: string | string[]],
 reportProgress?: boolean, responseType: 'blob',
 withCredentials?: boolean,
 }):
 Observable<HttpEvent<Blob>>;
 /**
 * Constructs a `PATCH` request that interprets the body as a text string and
 * returns the full event stream.
 * @param url The endpoint URL.
 * @param body The resources

interprets the body as a JSON object and
 * returns the response body as a JSON object.
 * @param url The endpoint URL.
 * @param body The resources to edit.
 * @param options HTTP options.
 * @return An `Observable` of the response, with the response body as a JSON object.
 patch(url: string, body: any|null, options?: {
 headers?: HttpHeaders|[header: string]: string | string[]},
 observe?: 'body',
 params?: HttpParams|[param: string]: string | string[]},
 reportProgress?: boolean,
 responseType?: 'json',
 withCredentials?: boolean,
 }): Observable<Object>;
 /**
 * Constructs a `PATCH` request that interprets the body as a JSON object
 * and returns the response in a given type.
 * @param url The endpoint URL.
 * @param body The resources to edit.
 * @param options HTTP options.
 * @return An `Observable` of the `HttpResponse` for the request,
 * with a response body in the given type.
 patch<T>(url: string, body: any|null, options?: {
 headers?: HttpHeaders|[header: string]: string | string[]},
 observe?: 'body',
 params?: HttpParams|[param: string]: string | string[]},
 reportProgress?: boolean,
 responseType?: 'json',
 withCredentials?: boolean,
 }): Observable<T>;
 /**
 * Constructs an observable that, when subscribed, causes the configured
 * `PATCH` request to execute on the server. See the individual overloads for
 * details on the return type.
 ^/n patch(url: string, body: any|null, options: {
 headers?: HttpHeaders|[header: string]: string | string[]},
 observe?: HttpObserve,
 params?: HttpParams|[param: string]: string | string[]},
 reportProgress?: boolean,
 responseType?: 'arraybuffer'|'blob'|'json'|'text',
 withCredentials?: boolean,
 } = {}): Observable<any> {
 return this.request<any>('PATCH', url, addBody(options, body));
 }
 /**
 * Constructs a `POST` request that interprets the body as an `ArrayBuffer` and returns
 * an `ArrayBuffer`.
 * @param url The endpoint URL.
 * @param body The content to replace with.
 * @param options HTTP options.
 * @return An `Observable` of the response, with the response body as an
 `ArrayBuffer`.
 ^/n post(url: string, body: any|null, options: {
 headers?: HttpHeaders|[header: string]: string | string[]},
 observe?: 'body',
 params?: HttpParams|[param: string]: string | string[]},
 reportProgress?: boolean, responseType: 'arraybuffer',
 withCredentials?: boolean,
 }): Observable<ArrayBuffer>;
 /**
 * Constructs a `POST` request that interprets the body as a `Blob` and returns the
 * response as a `Blob`.
 * @param url The endpoint URL.
 * @param body The content to replace with.
 * @param options HTTP options.
 * @return An `Observable` of the response, with the response body as a
 `Blob`.
 ^/n post(url: string, body: any|null, options: {
 headers?: HttpHeaders|[header: string]: string | string[]},
 observe?: 'body',
 params?: HttpParams|[param: string]: string | string[]},
 reportProgress?: boolean, responseType: 'blob',
 withCredentials?: boolean,
 }): Observable<Blob>;
 /**
 * Constructs a `POST` request that interprets the body as a text string and
 * returns the response as a string value.
 * @param url The endpoint URL.
 * @param body The content to replace with.
 * @param options HTTP options.
 * @return An `Observable` of the response, with a response body of type string.
 ^/n post(url: string, body: any|null, options: {
 headers?: HttpHeaders|[header: string]: string | string[]},
 observe?: 'body',
 params?: HttpParams|[param: string]: string | string[]},
 reportProgress?: boolean, responseType: 'text',
 withCredentials?: boolean,
 }): Observable<string>;
 /**
 * Constructs a `POST` request that interprets the body as an `ArrayBuffer` and
 * returns the full event stream.
 * @param url The endpoint URL.
 * @param body The content to replace with.
 * @param options HTTP options.
 * @return An `Observable` of all `HttpEvents` for the request, with the response body as an
 `ArrayBuffer`.
 ^/n post(url: string, body: any|null, options: {
 headers?: HttpHeaders|[header: string]: string | string[]},
 observe: 'events',
 params?: HttpParams|[param: string]: string | string[]},
 reportProgress?: boolean, responseType: 'arraybuffer',
 withCredentials?: boolean,
 }): Observable<HttpEvent<ArrayBuffer>>;
 /**
 * Constructs a `POST` request that interprets the body as a `Blob` and returns the response in an observable of the full event stream.
 * @param url The endpoint URL.
 * @param body The content to replace with.
 * @param options HTTP options.
 * @return An `Observable` of all `HttpEvents` for the request, with the response body as
 `Blob`.
 ^/n post(url: string, body: any|null, options: {
 headers?: HttpHeaders|[header: string]: string | string[]},
 observe: 'events',
 params?: HttpParams|[param: string]: string | string[]},
 reportProgress?: boolean, responseType: 'blob',
 withCredentials?: boolean,
 }): Observable<HttpEvent<Blob>>;
 /**
 * Constructs a `POST` request that interprets the body as a text string

and returns the full event stream.

`Observable<HttpEvent<string>>`; `url` The endpoint URL. `body` The content to replace with. `options` HTTP options. `return` An `Observable` of all `HttpEvents` for the request, with a response body of type `string`.

`Observable<HttpEvent<Object>>`; `url` The endpoint URL. `body` The content to replace with. `options` HTTP options. `return` An `Observable` of all `HttpEvents` for the request, with a response body of type `Object`.

`Observable<HttpEvent<T>>`; `url` The endpoint URL. `body` The content to replace with. `options` HTTP options. `return` An `Observable` of all `HttpEvents` for the request, with a response body in the requested type.

`Observable<HttpResponse<ArrayBuffer>>`; `url` The endpoint URL. `body` The content to replace with. `options` HTTP options. `return` An `Observable` of the `HttpResponse` for the request, with the response body as an `ArrayBuffer`.

`Observable<HttpResponse<Blob>>`; `url` The endpoint URL. `body` The content to replace with. `options` HTTP options. `return` An `Observable` of the `HttpResponse` for the request, with the response body as a `Blob`.

`Observable<HttpResponse<string>>`; `url` The endpoint URL. `body` The content to replace with. `options` HTTP options. `return` An `Observable` of the `HttpResponse` for the request, with a response body of type `string`.

`Observable<HttpResponse<Object>>`; `url` The endpoint URL. `body` The content to replace with. `options` HTTP options. `return` An `Observable` of the `HttpResponse` for the request, with a response body of type `Object`.

`Observable<HttpResponse<T>>`; `url` The endpoint URL. `body` The content to replace with. `options` HTTP options. `return` An `Observable` of the `HttpResponse` for the request, with a response body in the requested type.


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withCredentials?: boolean, \n }): Observable<HttpEvent<Blob>>;\n\n /**\n * Constructs a `PUT` request that
interprets the body as a text string and returns the full event\n * stream.\n * \n * @param url The endpoint
URL.\n * @param body The resources to add/update.\n * @param options HTTP options\n * \n * @return An
`Observable` of all HttpEvents for the request, with a response body\n * of type string.\n * \n put(url: string,
body: any|null, options: {\n headers?: HttpHeaders|[header: string]: string | string[]}, observe: 'events',\n
params?: HttpParams|[param: string]: string | string[]},\n reportProgress?: boolean, responseType: 'text',\n
withCredentials?: boolean, \n }): Observable<HttpEvent<string>>;\n\n /**\n * Constructs a `PUT` request that
interprets the body as a JSON object and returns the full event\n * stream.\n * \n * @param url The endpoint
URL.\n * @param body The resources to add/update.\n * @param options HTTP options\n * \n * @return An
`Observable` of all `HttpEvents` for the request, with a response body of\n * type `Object`.\n * \n put(url: string,
body: any|null, options: {\n headers?: HttpHeaders|[header: string]: string | string[]}, observe: 'events',\n
params?: HttpParams|[param: string]: string | string[]},\n reportProgress?: boolean,\n responseType?: 'json',\n
withCredentials?: boolean, \n }): Observable<HttpEvent<Object>>;\n\n /**\n * Constructs a `PUT` request that
interprets the body as a JSON object and returns the\n * full event stream.\n * \n * @param url The endpoint
URL.\n * @param body The resources to add/update.\n * @param options HTTP options\n * \n * @return An
`Observable` of all `HttpEvents` for the request,\n * with a response body in the requested type.\n * \n
put<T>(url: string, body: any|null, options: {\n headers?: HttpHeaders|[header: string]: string | string[]}, observe:
'events',\n params?: HttpParams|[param: string]: string | string[]},\n reportProgress?: boolean,\n
responseType?: 'json',\n withCredentials?: boolean, \n }): Observable<HttpEvent<T>>;\n\n /**\n * Constructs a
`PUT` request that interprets the body as an\n * `ArrayBuffer` and returns an observable of the full HTTP
response.\n * \n * @param url The endpoint URL.\n * @param body The resources to add/update.\n * @param
options HTTP options\n * \n * @return An `Observable` of the `HTTPResponse` for the request, with the response
body as an\n * `ArrayBuffer`.\n * \n put(url: string, body: any|null, options: {\n headers?:
HttpHeaders|[header: string]: string | string[]}, observe: 'response',\n params?: HttpParams|[param: string]:
string | string[]},\n reportProgress?: boolean, responseType: 'arraybuffer',\n withCredentials?: boolean, \n
}): Observable<HttpResponse<ArrayBuffer>>;\n\n /**\n * Constructs a `PUT` request that interprets the body as a
`Blob` and returns the\n * full HTTP response.\n * \n * @param url The endpoint URL.\n * @param body The
resources to add/update.\n * @param options HTTP options\n * \n * @return An `Observable` of the
`HTTPResponse` for the request,\n * with the response body as a `Blob`.\n * \n put(url: string, body: any|null,
options: {\n headers?: HttpHeaders|[header: string]: string | string[]}, observe: 'response',\n params?:
HttpParams|[param: string]: string | string[]},\n reportProgress?: boolean, responseType: 'blob',\n
withCredentials?: boolean, \n }): Observable<HttpResponse<Blob>>;\n\n /**\n * Constructs a `PUT` request that
interprets the body as a text stream and returns the\n * full HTTP response.\n * \n * @param url The endpoint
URL.\n * @param body The resources to add/update.\n * @param options HTTP options\n * \n * @return An
`Observable` of the `HTTPResponse` for the request, with a response body of type\n * string.\n * \n put(url:
string, body: any|null, options: {\n headers?: HttpHeaders|[header: string]: string | string[]}, observe: 'response',\n
params?: HttpParams|[param: string]: string | string[]},\n reportProgress?: boolean, responseType: 'text',\n
withCredentials?: boolean, \n }): Observable<HttpResponse<string>>;\n\n /**\n * Constructs a `PUT` request that
interprets the body as a JSON object and returns the full HTTP\n * response.\n * \n * @param url The endpoint
URL.\n * @param body The resources to add/update.\n * @param options HTTP options\n * \n * @return An
`Observable` of the `HTTPResponse` for the request, with a response body\n * of type `Object`.\n * \n put(url:
string, body: any|null, options: {\n headers?: HttpHeaders|[header: string]: string | string[]}, observe: 'response',\n
params?: HttpParams|[param: string]: string | string[]},\n reportProgress?: boolean,\n responseType?: 'json',\n
withCredentials?: boolean, \n }): Observable<HttpResponse<Object>>;\n\n /**\n * Constructs a `PUT` request
that interprets the body as an instance of the requested type and\n * returns the full HTTP response.\n * \n *
@param url The endpoint URL.\n * @param body The resources to add/update.\n * @param options HTTP
options\n * \n * @return An `Observable` of the `HTTPResponse` for the request,\n * with a response body in
the requested type.\n * \n put<T>(url: string, body: any|null, options: {\n headers?: HttpHeaders|[header:

```

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string]: string | string[]}, observe: 'response',\n  params?: HttpParams|{[param: string]: string | string[]},\n  reportProgress?: boolean,\n  responseType?: 'json',\n  withCredentials?: boolean,\n  }): Observable<T>;\n\n  /**\n   * Constructs a `PUT` request that interprets the body as a JSON\n   * object\n   * and returns an observable of JSON object.\n   * @param url The endpoint URL.\n   * @param body The resources to add/update.\n   * @param options HTTP options\n   * @return An `Observable` of the\n   * response as a JSON object.\n   */\n  put(url: string, body: any|null, options?: {\n    headers?: HttpHeaders|{\n      [header: string]: string | string[]},\n    observe?: 'body',\n    params?: HttpParams|{\n      [param: string]: string | string[]},\n    reportProgress?: boolean,\n    responseType?: 'json',\n    withCredentials?: boolean,\n  }): Observable<Object>;\n\n  /**\n   * Constructs a `PUT` request that interprets the body as an instance of the requested type\n   * and returns an\n   * observable of the requested type.\n   * @param url The endpoint URL.\n   * @param body The resources to\n   * add/update.\n   * @param options HTTP options\n   * @return An `Observable` of the requested type.\n   */\n  put<T>(url: string, body: any|null, options?: {\n    headers?: HttpHeaders|{\n      [header: string]: string | string[]},\n    observe?: 'body',\n    params?: HttpParams|{\n      [param: string]: string | string[]},\n    reportProgress?: boolean,\n    responseType?: 'json',\n    withCredentials?: boolean,\n  }): Observable<T>;\n\n  /**\n   * Constructs an observable\n   * that, when subscribed, causes the configured\n   * `PUT` request to execute on the server. The `PUT` method\n   * replaces an existing resource\n   * with a new set of values.\n   * See the individual overloads for details on the\n   * return type.\n   */\n  put(url: string, body: any|null, options?: {\n    headers?: HttpHeaders|{\n      [header: string]: string | string[]},\n    observe?: HttpObserve,\n    params?: HttpParams|{\n      [param: string]: string | string[]},\n    reportProgress?: boolean,\n    responseType?: 'arraybuffer'|'blob'|'json'|'text',\n    withCredentials?: boolean,\n  } =\n  {}): Observable<any> {\n    return this.request<any>('PUT', url, addBody(options, body));\n  }\n  }"/**\n   *\n   * @license\n   * Copyright Google LLC All Rights Reserved.\n   * Use of this source code is governed by an MIT-\n   * style license that can be\n   * found in the LICENSE file at https://angular.io/license\n   */\n  import {Injectable,\n  InjectionToken} from '@angular/core';\n  import {Observable} from 'rxjs';\n  import {HttpHandler} from\n  './backend';\n  import {HttpRequest} from './request';\n  import {HttpEvent} from './response';\n\n  /**\n   * Intercepts and\n   * handles an `HttpRequest` or `HttpResponse`.\n   * Most interceptors transform the outgoing request before\n   * passing it to the\n   * next interceptor in the chain, by calling `next.handle(transformedReq)`.\n   * An interceptor may\n   * transform the\n   * response event stream as well, by applying additional RxJS operators on the stream\n   * returned\n   * by `next.handle()`.\n   * More rarely, an interceptor may handle the request entirely,\n   * and compose a new event\n   * stream instead of invoking `next.handle()`. This is an\n   * acceptable behavior, but keep in mind that further\n   * interceptors will be skipped entirely.\n   * It is also rare but valid for an interceptor to return multiple responses on\n   * the\n   * event stream for a single request.\n   * @publicApi\n   * @see [HTTP Guide](guide/http#intercepting-\n   * requests-and-responses)\n   * @usageNotes\n   * To use the same instance of `HttpInterceptors` for the entire\n   * app, import the `HttpClientModule`\n   * only in your `AppModule`, and add the interceptors to the root application\n   * injector.\n   * If you import `HttpClientModule` multiple times across different modules (for example, in lazy\n   * loading modules), each import creates a new copy of the `HttpClientModule`, which overwrites the\n   * interceptors\n   * provided in the root module.\n   */\n  export interface HttpInterceptor {\n    /**\n     * Identifies and handles a given\n     * HTTP request.\n     * @param req The outgoing request object to handle.\n     * @param next The next interceptor in\n     * the chain, or the backend\n     * if no interceptors remain in the chain.\n     * @returns An observable of the event\n     * stream.\n     */\n    intercept(req: HttpRequest<any>, next: HttpHandler): Observable<HttpEvent<any>>;\n  }\n\n  /**\n   * `HttpHandler` which applies an `HttpInterceptor` to an `HttpRequest`.\n   */\n  export class\n  HttpInterceptorHandler implements HttpHandler {\n    constructor(private next: HttpHandler, private interceptor:\n    HttpInterceptor) {}\n\n    handle(req: HttpRequest<any>): Observable<HttpEvent<any>> {\n      return\n      this.interceptor.intercept(req, this.next);\n    }\n  }\n\n  /**\n   * A multi-provider token that represents the array of\n   * registered\n   * `HttpInterceptor` objects.\n   * @publicApi\n   */\n  export const HTTP_INTERCEPTORS = new\n  InjectionToken<HttpInterceptor[]>('HTTP_INTERCEPTORS');\n\n  @Injectable()\n  export class NoopInterceptor\n  implements HttpInterceptor {\n    intercept(req: HttpRequest<any>, next: HttpHandler):\n    Observable<HttpEvent<any>> {\n      return next.handle(req);\n    }\n  }\n\n  /**\n   * @license\n   * Copyright Google\n   * LLC All Rights Reserved.\n   * Use of this source code is governed by an MIT-style license that can be\n   * found

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```

@see `JsonpClientBackend`
 * @publicApi
 * @Injectable()
export class HttpXhrBackend implements
HttpBackend {
  constructor(private xhrFactory: XhrFactory) {}
  /**
   * Processes a request and returns a
   stream of response events.
   * @param req The request object.
   * @returns An observable of the response
   events.
   */
  handle(req: HttpRequest<any>): Observable<HttpEvent<any>> {
    // Quick check to give a better
    error message when a user attempts to use
    // HttpClient.jsonp() without installing the HttpClientJsonpModule
    if (req.method === 'JSONP') {
      throw new Error(
        `Attempted to construct Jsonp request without
        HttpClientJsonpModule installed.`);
    }
    // Everything happens on Observable subscription.
    return new
    Observable((observer: Observer<HttpEvent<any>>) => {
      // Start by setting up the XHR object with request
      method, URL, and withCredentials flag.
      const xhr = this.xhrFactory.build();
      xhr.open(req.method,
      req.urlWithParams);
      if (!!req.withCredentials) {
        xhr.withCredentials = true;
      }
      // Add all the
      requested headers.
      req.headers.forEach((name, values) => xhr.setRequestHeader(name, values.join(',')));
      // Add an Accept header if one isn't present already.
      if (!req.headers.has('Accept')) {
        xhr.setRequestHeader('Accept', 'application/json, text/plain, */*');
      }
      // Auto-detect the Content-Type
      header if one isn't present already.
      if (!req.headers.has('Content-Type')) {
        const detectedType =
        req.detectContentTypeHeader();
        // Sometimes Content-Type detection fails.
        if (detectedType !== null) {
          xhr.setRequestHeader('Content-Type', detectedType);
        }
      }
      // Set the responseType if one
      was requested.
      if (req.responseType) {
        const responseType = req.responseType.toLowerCase();
        // JSON responses need to be processed as text. This is because if the server
        // returns an XSSI-prefixed JSON
        response, the browser will fail to parse it,
        // xhr.response will be null, and xhr.responseText cannot be
        accessed to
        // retrieve the prefixed JSON data in order to strip the prefix. Thus, all JSON
        // is parsed by
        first requesting text and then applying JSON.parse.
        xhr.responseType = (responseType !== 'json') ?
        responseType : 'text' as any;
      }
      // Serialize the request body if one is present. If not, this will be set to
      null.
      const reqBody = req.serializeBody();
      // If progress events are enabled, response headers will be
      delivered
      // in two events - the HttpHeadersResponse event and the full HttpResponse
      // event. However,
      since response headers don't change in between these
      // two events, it doesn't make sense to parse them twice.
      So headerResponse
      // caches the data extracted from the response whenever it's first parsed,
      // to ensure
      parsing isn't duplicated.
      let headerResponse: HttpHeadersResponse|null = null;
      // partialFromXhr extracts
      the HttpHeadersResponse from the current XMLHttpRequest
      // state, and memoizes it into headerResponse.
      const partialFromXhr = (): HttpHeadersResponse => {
        if (headerResponse !== null) {
          return
          headerResponse;
        }
        // Read status and normalize an IE9 bug (http://bugs.jquery.com/ticket/1450).
        const status: number = xhr.status === 1223 ? 204 : xhr.status;
        const statusText = xhr.statusText || 'OK';
        // Parse headers from XMLHttpRequest - this step is lazy.
        const headers = new
        HttpHeaders(xhr.getAllResponseHeaders());
        // Read the response URL from the XMLHttpRequest
        instance and fall back on the
        // request URL.
        const url = getResponseUrl(xhr) || req.url;
        //
        Construct the HttpHeadersResponse and memoize it.
        headerResponse = new HttpHeadersResponse({headers,
        status, statusText, url});
        return headerResponse;
      };
      // Next, a few closures are defined for the
      various events which XMLHttpRequest can
      // emit. This allows them to be unregistered as event listeners
      later.
      // First up is the load event, which represents a response being fully available.
      const onLoad = ()
      => {
        // Read response state from the memoized partial data.
        let {headers, status, statusText, url} =
        partialFromXhr();
        // The body will be read out if present.
        let body: any|null = null;
        if (status
        !== 204) {
          // Use XMLHttpRequest.response if set, responseText otherwise.
          body = (typeof
          xhr.response === 'undefined') ? xhr.responseText : xhr.response;
        }
        // Normalize another potential bug
        (this one comes from CORS).
        if (status === 0) {
          status = !!body ? 200 : 0;
        }
        // ok
        determines whether the response will be transmitted on the event or
        // error channel. Unsuccessful status
        codes (not 2xx) will always be errors,
        // but a successful status code can still result in an error if the user
        // asked for JSON data and the body cannot be parsed as such.
        let ok = status >= 200 && status < 300;
        // Check whether the body needs to be parsed as JSON (in many cases the browser
        // will have done that
        already).
        if (req.responseType === 'json' && typeof body === 'string') {
          // Save the original body,

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before attempting XSSi prefix stripping.\n    const originalBody = body;\n    body =
body.replace(XSSI_PREFIX, "");\n    try {\n        // Attempt the parse. If it fails, a parse error should be
delivered to the user.\n        body = body !== " ? JSON.parse(body) : null;\n    } catch (error) {\n        //
Since the JSON.parse failed, it's reasonable to assume this might not have been a\n        // JSON response. Restore
the original body (including any XSSi prefix) to deliver\n        // a better error response.\n        body =
originalBody;\n        // If this was an error request to begin with, leave it as a string, it probably\n        // just
isn't JSON. Otherwise, deliver the parsing error to the user.\n        if (ok) {\n            // Even though the response
status was 2xx, this is still an error.\n            ok = false;\n            // The parse error contains the text of the body
that failed to parse.\n            body = {error, text: body} as HttpJsonParseError;\n        }\n    }\n    if (ok) {\n        // A successful response is delivered on the event stream.\n        observer.next(new
HttpResponse({\n            body,\n            headers,\n            status,\n            statusText,\n            url: url || undefined,\n        }));\n        // The full body has been received and delivered, no further events\n        // are possible. This
request is complete.\n        observer.complete();\n    } else {\n        // An unsuccessful request is delivered on the
error channel.\n        observer.error(new HttpResponse({\n            // The error in this case is the response body
(error from the server).\n            error: body,\n            headers,\n            status,\n            statusText,\n            url: url ||
undefined,\n        }));\n    }\n    // The onError callback is called when something goes wrong at the
network level.\n    // Connection timeout, DNS error, offline, etc. These are actual errors, and are\n    //
transmitted on the error channel.\n    const onError = (error: ProgressEvent) => {\n        const {url} =
partialFromXhr();\n        const res = new HttpResponse({\n            error,\n            status: xhr.status || 0,\n            statusText: xhr.statusText || 'Unknown Error',\n            url: url || undefined,\n        });\n        observer.error(res);\n    };\n    // The sentHeaders flag tracks whether the HttpResponseHeaders event\n    // has been sent on the stream.
This is necessary to track if progress\n    // is enabled since the event will be sent on only the first download\n    //
progress event.\n    let sentHeaders = false;\n    // The download progress event handler, which is only registered
if\n    // progress events are enabled.\n    const onDownProgress = (event: ProgressEvent) => {\n        // Send the
HttpResponseHeaders event if it hasn't been sent already.\n        if (!sentHeaders) {\n            observer.next(partialFromXhr());\n            sentHeaders = true;\n        }\n        // Start building the download progress
event to deliver on the response\n        // event stream.\n        let progressEvent: HttpDownloadProgressEvent = {\n            type: HttpEventType.DownloadProgress,\n            loaded: event.loaded,\n        };\n        // Set the total number of
bytes in the event if it's available.\n        if (event.lengthComputable) {\n            progressEvent.total = event.total;\n        }\n        // If the request was for text content and a partial response is\n        // available on XMLHttpRequest,
include it in the progress event\n        // to allow for streaming reads.\n        if (req.responseType === 'text' &&
!!xhr.responseText) {\n            progressEvent.partialText = xhr.responseText;\n        }\n        // Finally, fire the
event.\n        observer.next(progressEvent);\n    };\n    // The upload progress event handler, which is only
registered if\n    // progress events are enabled.\n    const onUpProgress = (event: ProgressEvent) => {\n        //
Upload progress events are simpler. Begin building the progress\n        // event.\n        let progress:
HttpUploadProgressEvent = {\n            type: HttpEventType.UploadProgress,\n            loaded: event.loaded,\n        };\n        // If the total number of bytes being uploaded is available, include\n        // it.\n        if
(event.lengthComputable) {\n            progress.total = event.total;\n        }\n        // Send the event.\n        observer.next(progress);\n    };\n    // By default, register for load and error events.\n    xhr.addEventListener('load', onLoad);\n    xhr.addEventListener('error', onError);\n    // Progress events are only
enabled if requested.\n    if (req.reportProgress) {\n        // Download progress is always enabled if requested.\n        xhr.addEventListener('progress', onDownProgress);\n        // Upload progress depends on whether there is a body
to upload.\n        if (reqBody !== null && xhr.upload) {\n            xhr.upload.addEventListener('progress',
onUpProgress);\n        }\n    }\n    // Fire the request, and notify the event stream that it was fired.\n    xhr.send(reqBody!);\n    observer.next({type: HttpEventType.Sent});\n    // This is the return from the
Observable function, which is the\n    // request cancellation handler.\n    return () => {\n        // On a cancellation,
remove all registered event listeners.\n        xhr.removeEventListener('error', onError);\n        xhr.removeEventListener('load', onLoad);\n        if (req.reportProgress) {\n

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xhr.removeListener('progress', onDownProgress);\n      if (reqBody !== null && xhr.upload) {\n
xhr.upload.removeListener('progress', onUpProgress);\n      }\n      }\n      // Finally, abort the in-flight
request.\n      if (xhr.readyState !== xhr.DONE) {\n        xhr.abort();\n      }\n    });\n  }\n}\n\n", "/*\n *
@license\n * Copyright Google LLC All Rights Reserved.\n * Use of this source code is governed by an MIT-
style license that can be\n * found in the LICENSE file at https://angular.io/license\n *\n\nimport {DOCUMENT,
parseCookieValue as parseCookieValue} from '@angular/common';\nimport {Inject, Injectable, InjectionToken,
PLATFORM_ID} from '@angular/core';\nimport {Observable} from 'rxjs';\nimport {HttpHandler} from
'./backend';\nimport {HttpInterceptor} from './interceptor';\nimport {HttpRequest} from './request';\nimport
{HttpEvent} from './response';\n\nexport const XSRF_COOKIE_NAME = new
InjectionToken<string>('XSRF_COOKIE_NAME');\nexport const XSRF_HEADER_NAME = new
InjectionToken<string>('XSRF_HEADER_NAME');\n\n/**\n * Retrieves the current XSRF token to use with the
next outgoing request.\n *\n * @publicApi\n *\n */\nexport abstract class HttpXsrfTokenExtractor {\n  /**\n   * Get the
XSRF token to use with an outgoing request.\n   *\n   * Will be called for every request, so the token may change
between requests.\n   *\n   */\n  abstract getToken(): string|null;\n}\n\n/**\n * `HttpXsrfTokenExtractor` which retrieves
the token from a cookie.\n *\n */\nexport class HttpXsrfCookieExtractor implements
HttpXsrfTokenExtractor {\n  private lastCookieString: string = '';\n  private lastToken: string|null = null;\n\n  /**\n   * @internal for testing\n   *\n   */\n  parseCount: number = 0;\n\n  constructor(\n    @Inject(DOCUMENT) private doc:
any, @Inject(PLATFORM_ID) private platform: string,\n    @Inject(XSRF_COOKIE_NAME) private
cookieName: string) {\n  }\n\n  getToken(): string|null {\n    if (this.platform === 'server') {\n      return null;\n    }\n\n    const cookieString = this.doc.cookie || '';\n    if (cookieString !== this.lastCookieString) {\n      this.parseCount++;\n      this.lastToken = parseCookieValue(cookieString, this.cookieName);\n      this.lastCookieString = cookieString;\n    }\n\n    return this.lastToken;\n  }\n}\n\n/**\n * `HttpInterceptor` which adds an XSRF token to eligible outgoing
requests.\n *\n */\nexport class HttpXsrfInterceptor implements HttpInterceptor {\n  constructor(\n    private tokenService: HttpXsrfTokenExtractor,\n    @Inject(XSRF_HEADER_NAME) private headerName:
string) {\n  }\n\n  intercept(req: HttpRequest<any>, next: HttpHandler): Observable<HttpEvent<any>> {\n    const
lcUrl = req.url.toLowerCase();\n    // Skip both non-mutating requests and absolute URLs.\n    // Non-mutating
requests don't require a token, and absolute URLs require special handling\n    // anyway as the cookie set\n    // on
our origin is not the same as the token expected by another origin.\n    if (req.method === 'GET' || req.method ===
'HEAD' || lcUrl.startsWith('http://') ||\n        lcUrl.startsWith('https://')) {\n      return next.handle(req);\n    }\n\n    const
token = this.tokenService.getToken();\n    // Be careful not to overwrite an existing header of the same name.\n    if
(token !== null && !req.headers.has(this.headerName)) {\n      req = req.clone({ headers:
req.headers.set(this.headerName, token)});\n    }\n\n    return next.handle(req);\n  }\n}\n\n", "/*\n *
@license\n * Copyright Google LLC All Rights Reserved.\n * Use of this source code is governed by an MIT-style license
that can be\n * found in the LICENSE file at https://angular.io/license\n *\n\nimport {Injectable, Injector,
ModuleWithProviders, NgModule} from '@angular/core';\nimport {Observable} from 'rxjs';\nimport
{HttpBackend, HttpHandler} from './backend';\nimport {HttpClient} from './client';\nimport
{HTTP_INTERCEPTORS, HttpInterceptor, HttpInterceptorHandler, NoopInterceptor} from './interceptor';\nimport
{JsonpCallbackContext, JsonpClientBackend, JsonpInterceptor} from './jsonp';\nimport {HttpRequest} from
'./request';\nimport {HttpEvent} from './response';\nimport {BrowserXhr, HttpXhrBackend, XhrFactory} from
'./xhr';\nimport {HttpXsrfCookieExtractor, HttpXsrfInterceptor, HttpXsrfTokenExtractor, XSRF_COOKIE_NAME,
XSRF_HEADER_NAME} from './xsrf';\n\n/**\n * An injectable `HttpHandler` that applies multiple interceptors\n
* to a request before passing it to the given `HttpBackend`.\n *\n * The interceptors are loaded lazily from the
injector, to allow\n * interceptors to themselves inject classes depending indirectly\n * on `HttpInterceptingHandler`
itself.\n *\n * @see `HttpInterceptor`\n *\n */\nexport class HttpInterceptingHandler implements
HttpHandler {\n  private chain: HttpHandler|null = null;\n\n  constructor(private backend: HttpBackend, private
injector: Injector) {\n  }\n\n  handle(req: HttpRequest<any>): Observable<HttpEvent<any>> {\n    if (this.chain ===
null) {\n      const interceptors = this.injector.get(HTTP_INTERCEPTORS, []);\n      this.chain =
interceptors.reduceRight(\n        (next, interceptor) => new HttpInterceptorHandler(next, interceptor),

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QAAQ,KAAK,UAAU;YAAE,CAAC,GAAG,OOAO,CAAC,QAAQ,CAAC,UAAU,EAAE,MAAM,EAAE,GAAG,
EAAE,IAAI,CAAC,CAAC;;YAC1H,KAAK,IAAI,CAAC,GAAG,UAAU,CAAC,MAAM,GAAG,CAAC,EAAE,C
AAC,IAAI,CAAC,EAAE,CAAC,EAAE;gBAAE,IAAI,CAAC,GAAG,UAAU,CAAC,CAAC,CAAC;oBAAE,CAA
C,GAAG,CAAC,CAAC,GAAG,CAAC,GAAG,CAAC,CAAC,CAAC,CAAC,GAAG,CAAC,GAAG,CAAC,GAAG
,CAAC,CAAC,MAAM,EAAE,GAAG,EAAE,CAAC,CAAC,GAAG,CAAC,CAAC,MAAM,EAAE,GAAG,CAAC,
KAAK,CAAC,CAAC;QACIJ,OOAO,CAAC,GAAG,CAAC,IAAI,CAAC,IAAI,MAAM,CAAC,cAAc,CAAC,MAA
M,EAAE,GAAG,EAAE,CAAC,CAAC,EAAE,CAAC,CAAC;IACIE,CAAC;aAEe,OOAO,CAAC,UAAU,EAAE,S
AAS;QACzC,OOAO,UAAU,MAAM,EAAE,GAAG,IAAI,SAAS,CAAC,MAAM,EAAE,GAAG,EAAE,UAAU,CA
AC,CAAC,EAAE,CAAA;IACzE,CAAC;aAEe,UAAU,CAAC,WAAW,EAAE,aAAa;QACjD,IAAI,OOAO,OOAO,
KAAK,QAAQ,IAAI,OOAO,OOAO,CAAC,QAAQ,KAAK,UAAU;YAAE,OOAO,OOAO,CAAC,QAAQ,CAAC,
WAAW,EAAE,aAAa,CAAC,CAAC;IACnI,CAAC;aAEe,SAAS,CAAC,OOAO,EAAE,UAAU,EAAE,CAAC,EAA
E,SAAS;QACvD,SAAS,KAAK,CAAC,KAAK,IAAI,OOAO,KAAK,YAAY,CAAC,GAAG,KAAK,GAAG,IAAI,C
AAC,CAAC,UAAU,OOAO,IAAI,OOAO,CAAC,KAAK,CAAC,CAAC,EAAE,CAAC,CAAC,EAAE;QAC5G,OA
AO,KAAK,CAAC,KAAK,CAAC,GAAG,OOAO,CAAC,EAAE,UAAU,OOAO,EAAE,MAAM;YACrD,SAAS,SA
AS,CAAC,KAAK,IAAI,IAAI;gBAAE,IAAI,CAAC,SAAS,CAAC,IAAI,CAAC,KAAK,CAAC,CAAC,CAAC;aAA
E;YAAC,OOAO,CAAC,EAAE;gBAAE,MAAM,CAAC,CAAC,CAAC,CAAC;aAAE,EAAE;YAC3F,SAAS,QAA
Q,CAAC,KAAK,IAAI,IAAI;gBAAE,IAAI,CAAC,SAAS,CAAC,OOAO,CAAC,CAAC,KAAK,CAAC,CAAC,CA
AC;aAAE;YAAC,OOAO,CAAC,EAAE;gBAAE,MAAM,CAAC,CAAC,CAAC,CAAC;aAAE,EAAE;YAC9F,SA
AS,IAAI,CAAC,MAAM,IAAI,MAAM,CAAC,IAAI,GAAG,OOAO,CAAC,MAAM,CAAC,KAAK,CAAC,GAAG,
KAAK,CAAC,MAAM,CAAC,KAAK,CAAC,CAAC,IAAI,CAAC,SAAS,EAAE,QAAQ,CAAC,CAAC,EAAE;YA
C9G,IAAI,CAAC,CAAC,SAAS,GAAG,SAAS,CAAC,KAAK,CAAC,OOAO,EAAE,UAAU,IAAI,EAAE,CAAC,E
AAE,IAAI,EAAE,CAAC,CAAC;SACzE,CAAC,CAAC;IACP,CAAC;aAEe,WAAW,CAAC,OOAO,EAAE,IAAI;
QACrC,IAAI,CAAC,GAAG,EAAE,KAAK,EAAE,CAAC,EAAE,IAAI,EAAE,cAAa,IAAI,CAAC,CAAC,CAAC,C
AAC,GAAG,CAAC;gBAAE,MAAM,CAAC,CAAC,CAAC,CAAC,CAAC,CAAC,OOAO,CAAC,CAAC,CAAC,C
AAC,CAAC,EAAE,EAAE,IAAI,EAAE,EAAE,EAAE,GAAG,EAAE,EAAE,EAAE,EAAE,CAAC,EAAE,CAAC,E
AAE,CAAC,EAAE,CAAC,CAAC;QACjH,OOAO,CAAC,GAAG,EAAE,IAAI,EAAE,IAAI,CAAC,CAAC,CAAC,
EAAE,OOAO,EAAE,IAAI,CAAC,CAAC,CAAC,EAAE,QAAQ,EAAE,IAAI,CAAC,CAAC,CAAC,EAAE,EAAE,
OOAO,MAAM,KAAK,UAAU,KAAK,CAAC,CAAC,MAAM,CAAC,QAAQ,CAAC,GAAG,cAAa,OOAO,IAAI,C
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 *
let _DOM: DomAdapter = null!;
export function getDOM(): DomAdapter {
  return _DOM;
}
export function setDOM(adapter: DomAdapter) {
  _DOM = adapter;
}
export function setRootDomAdapter(adapter: DomAdapter) {
  if (!_DOM) {
    _DOM = adapter;
  }
}
 * tslint:disable:requireParameterType
 *
Provides DOM operations in an environment-agnostic way.
 *
 * @security Tread carefully! Interacting with the DOM directly is dangerous and
 * can introduce XSS risks.
 *
export abstract class DomAdapter {
  // Needs Domino-friendly test utility
  abstract getProperty(el: Element, name: string): any;
  abstract dispatchEvent(el: any, evt: any): any;
  // Used by router
  abstract log(error: any): any;
  abstract logGroup(error: any): any;
  abstract logGroupEnd(): any;
  // Used by Meta
  abstract remove(el: any): Node;
  abstract createElement(tagName: any, doc?: any): HTMLElement;
  abstract createHtmlDocument(): HTMLDocument;
  abstract getDefaultDocument(): Document;
  // Used by By.css
  abstract isElementNode(node: any): boolean;
  // Used by Testability
  abstract isShadowRoot(node: any): boolean;
  // Used by KeyEventsPlugin
  abstract onCancel(el: any, evt: any, listener: any): Function;
  abstract supportsDOMEvents(): boolean;
  // Used by PlatformLocation and ServerEventManagerPlugin
  abstract getGlobalEventTarget(doc: Document, target: string): any;
  // Used by PlatformLocation
  abstract getHistory(): History;
  abstract getLocation(): any;
  /** This is the ambient Location definition, NOT Location from @angular/common. */
  abstract getBaseHref(doc: Document): string|null;
  abstract resetBaseElement(): void;
  // TODO: remove dependency in DefaultValueAccessor
  abstract getUserAgent(): string;
  // Used by AngularProfiler
  abstract performanceNow(): number;
  // Used by CookieXSRFStrategy
  abstract supportsCookies(): boolean;
  abstract getCookie(name: string): string|null;
}
 *
 * @license
 * Copyright Google LLC All Rights Reserved.
 * Use of this source code is governed by an MIT-style license that can be
 * found in the LICENSE file at https://angular.io/license
 *
import { InjectionToken } from '@angular/core';
 *
 * A DI Token representing the main rendering context. In a browser this is the DOM Document.
 * Note: Document might not be available in the Application Context when Application and Rendering
 * Contexts are not the same (e.g. when running the application in a Web Worker).
 *
 * @publicApi
 *
export const DOCUMENT = new InjectionToken<Document>('DocumentToken');
 *
 * @license
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 * found in the LICENSE file at https://angular.io/license
 *
import { Inject, Injectable, InjectionToken, inject } from '@angular/core';
import { getDOM } from './dom_adapter';
import { DOCUMENT } from './dom_tokens';
 *
 * This class should not be used directly by an application developer. Instead, use
 * { @link Location }.
 *
 * `PlatformLocation` encapsulates all calls to DOM APIs, which allows the Router to be
 * platform-agnostic.
 * This means that we can have different implementation of `PlatformLocation` for the different
 * platforms that Angular supports. For example, `@angular/platform-browser` provides an
 * implementation specific to the browser environment, while `@angular/platform-server` provides
 * one suitable for use with server-side rendering.
 *
 * The `PlatformLocation` class is used directly by all implementations of { @link LocationStrategy }
 * when they need to interact with the DOM APIs like pushState, popState, etc.
 *
 * { @link LocationStrategy } in turn is used by the { @link Location } service which is used directly
 * by the { @link Router } in order to navigate between routes. Since all interactions between
 * { @link Router } / { @link Location } / { @link LocationStrategy } and DOM APIs flow through the
 * `PlatformLocation` class, they are all platform-agnostic.
 *
 * @publicApi
 *
@Injectable({
  providedIn: 'platform',
  // See #23917
  useFactory: useBrowserPlatformLocation
})
export abstract class PlatformLocation {
  abstract getBaseHrefFromDOM(): string;
  abstract getState(): unknown;
  abstract onPopState(fn: LocationChangeListener): void;
  abstract onHashChange(fn: LocationChangeListener): void;
  abstract get href(): string;
  abstract get protocol(): string;
  abstract get hostname(): string;
  abstract get port(): string;
  abstract get pathname(): string;
  abstract get search(): string;
  abstract get hash(): string;
  abstract replaceState(state: any, title: string, url: string): void;
  abstract pushState(state: any, title: string, url: string): void;
  abstract forward(): void;
  abstract back(): void;
}
 *
 * export function useBrowserPlatformLocation() {
  return inject(BrowserPlatformLocation);
}
 *
 * @description
 * Indicates when a location is

```

```

initialized.\n * \n * @publicApi\n * \n\nexport const LOCATION_INITIALIZED = new
InjectionToken<Promise<any>>('Location Initialized');\n\n/**\n * @description\n * A serializable version of the
event from `onPopState` or `onHashChange`\n * \n * @publicApi\n * \n\nexport interface LocationChangeEvent {\n
type: string;\n state: any;\n}\n\n/**\n * @publicApi\n * \n\nexport interface LocationChangeListener {\n (event:
LocationChangeEvent): any;\n}\n\n\n\n/**\n * `PlatformLocation` encapsulates all of the direct calls to platform
APIs.\n * This class should not be used directly by an application developer. Instead, use\n * {@link Location}.\n
*\n * \n\n@Injectable({\n providedIn: 'platform',\n // See #23917\n useFactory:
createBrowserPlatformLocation,\n})\n\nexport class BrowserPlatformLocation extends PlatformLocation {\n public
readonly location!: Location;\n private _history!: History;\n\n constructor(@Inject(DOCUMENT) private _doc:
any) {\n super();\n this._init();\n }\n\n // This is moved to its own method so that
`MockPlatformLocationStrategy` can overwrite it\n /** @internal *\n _init() {\n (this as {location:
Location}).location = getDOM().getLocation();\n this._history = getDOM().getHistory();\n }\n\n
getBaseHrefFromDOM(): string {\n return getDOM().getBaseHref(this._doc!);\n }\n\n onPopState(fn:
LocationChangeListener): void {\n getDOM().getGlobalEventTarget(this._doc,
'window').addEventListener('popstate', fn, false);\n }\n\n onHashChange(fn: LocationChangeListener): void {\n
getDOM().getGlobalEventTarget(this._doc, 'window').addEventListener('hashchange', fn, false);\n }\n\n get href():
string {\n return this.location.href;\n }\n\n get protocol(): string {\n return this.location.protocol;\n }\n\n
get hostname(): string {\n return this.location.hostname;\n }\n\n get port(): string {\n return this.location.port;\n }\n
}\n\n get pathname(): string {\n return this.location.pathname;\n }\n\n get search(): string {\n return
this.location.search;\n }\n\n get hash(): string {\n return this.location.hash;\n }\n\n set pathname(newPath: string)
{\n this.location.pathname = newPath;\n }\n\n pushState(state: any, title: string, url: string): void {\n if
(supportsState()) {\n this._history.pushState(state, title, url);\n } else {\n this.location.hash = url;\n }\n
}\n\n replaceState(state: any, title: string, url: string): void {\n if (supportsState()) {\n
this._history.replaceState(state, title, url);\n } else {\n this.location.hash = url;\n }\n }\n\n forward(): void {\n
this._history.forward();\n }\n\n back(): void {\n this._history.back();\n }\n\n getState(): unknown {\n return
this._history.state;\n }\n}\n\nexport function supportsState(): boolean {\n return
!!window.history.pushState;\n}\n\nexport function createBrowserPlatformLocation() {\n return new
BrowserPlatformLocation(inject(DOCUMENT));\n}\n\n", /**\n * @license\n * Copyright Google LLC All Rights
Reserved.\n * \n * Use of this source code is governed by an MIT-style license that can be\n * found in the
LICENSE file at https://angular.io/license\n * \n\nexport {DomAdapter as DomAdapter, getDOM as getDOM,
setRootDomAdapter as setRootDomAdapter} from './dom_adapter';\n\nexport {BrowserPlatformLocation as
BrowserPlatformLocation} from './location/platform_location';\n\n", /**\n * @license\n * Copyright Google LLC All
Rights Reserved.\n * \n * Use of this source code is governed by an MIT-style license that can be\n * found in the
LICENSE file at https://angular.io/license\n * \n\n\n\n/**\n * Joins two parts of a URL with a slash if needed.\n * \n *
@param start URL string\n * @param end URL string\n * \n * @returns The joined URL string.\n * \n\nexport
function joinWithSlash(start: string, end: string): string {\n if (start.length == 0) {\n return end;\n }\n if
(end.length == 0) {\n return start;\n }\n let slashes = 0;\n if (start.endsWith('/')) {\n slashes++;}\n if
(end.startsWith('/')) {\n slashes++;}\n if (slashes == 2) {\n return start + end.substring(1);\n }\n if (slashes
== 1) {\n return start + end;\n }\n return start + '/' + end;\n}\n\n\n\n/**\n * Removes a trailing slash from a URL
string if needed.\n * Looks for the first occurrence of either `#`, `?`, or the end of the\n * line as `^` characters and
removes the trailing slash if one exists.\n * \n * @param url URL string.\n * \n * @returns The URL string, modified
if needed.\n * \n\nexport function stripTrailingSlash(url: string): string {\n const match = url.match(/#\\|\\|?|$/);\n const
pathEndIdx = match && match.index || url.length;\n const droppedSlashIdx = pathEndIdx - (url[pathEndIdx - 1]
=== '/' ? 1 : 0);\n return url.slice(0, droppedSlashIdx) + url.slice(pathEndIdx);\n}\n\n\n\n/**\n * Normalizes URL
parameters by prepending with `?` if needed.\n * \n * @param params String of URL parameters.\n * \n * @returns
The normalized URL parameters string.\n * \n\nexport function normalizeQueryParams(params: string): string {\n
return params && params[0] !== '?' ? '?' + params : params;\n}\n\n", /**\n * @license\n * Copyright Google LLC All
Rights Reserved.\n * \n * Use of this source code is governed by an MIT-style license that can be\n * found in the

```


LICENSE file at <https://angular.io/license>

```

import {Inject, Injectable, InjectionToken, Optional, inject} from
'@angular/core';
import {DOCUMENT} from './dom_tokens';
import {LocationChangeListener,
PlatformLocation} from './platform_location';
import {joinWithSlash, normalizeQueryParams} from
'./util';

```

Enables the `Location` service to read route state from the browser's URL. Angular provides two strategies: `HashLocationStrategy` and `PathLocationStrategy`. Applications should use the `Router` or `Location` services to interact with application route state. For instance, `HashLocationStrategy` produces URLs like `<code class="no-auto-link">http://example.com#/foo</code>`, and `PathLocationStrategy` produces `<code class="no-auto-link">http://example.com/foo</code>` as an equivalent URL. See these two classes for more.

```

@publicApi
@Injectable({providedIn: 'root', useFactory:
provideLocationStrategy})
export abstract class LocationStrategy {
  abstract path(includeHash?: boolean):
string;
  abstract prepareExternalUrl(internal: string): string;
  abstract pushState(state: any, title: string, url: string,
queryParams: string): void;
  abstract replaceState(state: any, title: string, url: string,
queryParams: string): void;
  abstract forward(): void;
  abstract back(): void;
  abstract onPopState(fn: LocationChangeListener): void;
  abstract getBaseHref(): string;
}

```

export function provideLocationStrategy(platformLocation: PlatformLocation) {
 // See #23917
 const location = inject(DOCUMENT).location;
 return new PathLocationStrategy(
 inject(PlatformLocation as any), location && location.origin || ");
}

A predefined [DI token](guide/glossary#di-token) for the base href to be used with the `PathLocationStrategy`. The base href is the URL prefix that should be preserved when generating and recognizing URLs.

@usageNotes

The following example shows how to use this token to configure the root app injector with a base href value, so that the DI framework can supply the dependency anywhere in the app.

```

typescript
import
{Component, NgModule} from '@angular/core';
import {APP_BASE_HREF} from '@angular/common';
@NgModule({
  providers: [{provide: APP_BASE_HREF, useValue: '/my/app'}]
})
class AppModule
{
  @publicApi
  export const APP_BASE_HREF = new
InjectionToken<string>('appBaseHref');
  @description
  A {@link LocationStrategy} used to configure
the {@link Location} service to
represent its state in the
[path](https://en.wikipedia.org/wiki/Uniform_Resource_Locator#Syntax) of the
browser's URL.

```

If you're using `PathLocationStrategy`, you must provide a `{@link APP_BASE_HREF}` or add a `<base href>` element to the document. For instance, if you provide an `APP_BASE_HREF` of `'/my/app/'` and call `location.go('/foo')`, the browser's URL will become `example.com/my/app/foo`. To ensure all relative URIs resolve correctly, the `<base href>` and/or `APP_BASE_HREF` should end with a `/`. Similarly, if you add `<base href=/my/app/'>` to the document and call `location.go('/foo')`, the browser's URL will become `example.com/my/app/foo`. Note that when using `PathLocationStrategy`, neither the query nor the fragment in the `<base href>` will be preserved, as outlined by the [RFC](https://tools.ietf.org/html/rfc3986#section-5.2.2).

@usageNotes

Example

```

@example common/location/ts/path_location_component.ts region='LocationComponent'
@publicApi
@Injectable()
export class PathLocationStrategy extends LocationStrategy {
  private _baseHref: string;
  constructor(
    private _platformLocation: PlatformLocation,
    @Optional() @Inject(APP_BASE_HREF)
href?: string) {
    super();
    if (href == null) {
      href = this._platformLocation.getBaseHrefFromDOM();
    }
    if (href == null) {
      throw new Error(`No base href set. Please provide a value for the
APP_BASE_HREF token or add a base element to the document.`);
    }
    this._baseHref = href;
  }
  onPopState(fn: LocationChangeListener): void {
    this._platformLocation.onPopState(fn);
  }
  this._platformLocation.onHashChange(fn);
}
  getBaseHref(): string {
    return this._baseHref;
  }
  path(includeHash: boolean = false): string {
    return joinWithSlash(this._baseHref, internal);
  }
  prepareExternalUrl(internal: string): string {
    return joinWithSlash(this._baseHref, internal);
  }
  path(includeHash: boolean = false): string {
    const pathname =
this._platformLocation.pathname +
normalizeQueryParams(this._platformLocation.search);
    const hash = this._platformLocation.hash;
    return hash && includeHash ? `${pathname}${hash}` : pathname;
  }
  pushState(state: any, title: string, url: string,
queryParams: string) {
    const externalUrl = this.prepareExternalUrl(url +
normalizeQueryParams(queryParams));
    this._platformLocation.pushState(state, title, externalUrl);
  }
}

```

```

replaceState(state: any, title: string, url: string, queryParams: string) {\n  const externalUrl =
this.prepareExternalUrl(url + normalizeQueryParams(queryParams));\n  this._platformLocation.replaceState(state,
title, externalUrl);\n }
forward(): void {\n  this._platformLocation.forward();\n }
back(): void {\n
this._platformLocation.back();\n }
}
"/**\n * @license\n * Copyright Google LLC All Rights Reserved.\n *\n *
Use of this source code is governed by an MIT-style license that can be\n * found in the LICENSE file at
https://angular.io/license\n */
import {Inject, Injectable, Optional} from '@angular/core';\nimport
{APP_BASE_HREF, LocationStrategy} from './location_strategy';\nimport {LocationChangeListener,
PlatformLocation} from './platform_location';\nimport {joinWithSlash, normalizeQueryParams} from
'./util';\n\n\n/**\n * @description\n * A {@link LocationStrategy} used to configure the {@link Location} service
to\n * represent its state in the\n * [hash
fragment](https://en.wikipedia.org/wiki/Uniform_Resource_Locator#Syntax)\n * of the browser's URL.\n *\n * For
instance, if you call `location.go('/foo')`, the browser's URL will become\n * `example.com#/foo`.\n *\n *
@usageNotes\n *\n * ### Example\n *\n * {@example common/location/ts/hash_location_component.ts
region='LocationComponent'}\n *\n * @publicApi\n */
@Injectable()\nexport class HashLocationStrategy extends
LocationStrategy {\n  private _baseHref: string = '';\n  constructor(\n    private _platformLocation:
PlatformLocation,\n    @Optional() @Inject(APP_BASE_HREF) _baseHref?: string) {\n    super();\n    if
(_baseHref != null) {\n      this._baseHref = _baseHref;\n    }\n  }\n  onPopState(fn: LocationChangeListener):
void {\n    this._platformLocation.onPopState(fn);\n    this._platformLocation.onHashChange(fn);\n  }\n  getBaseHref(): string {\n    return this._baseHref;\n  }\n  path(includeHash: boolean = false): string {\n    // the
hash value is always prefixed with a `#\n    // and if it is empty then it will stay empty\n    let path =
this._platformLocation.hash;\n    if (path == null) path = '#';\n    return path.length > 0 ? path.substring(1) : path;\n
}\n  prepareExternalUrl(internal: string): string {\n    const url = joinWithSlash(this._baseHref, internal);\n
return url.length > 0 ? ('#' + url) : url;\n  }\n  pushState(state: any, title: string, path: string, queryParams: string)
{\n    let url: string|null = this.prepareExternalUrl(path + normalizeQueryParams(queryParams));\n    if (url.length
== 0) {\n      url = this._platformLocation.pathname;\n    }\n    this._platformLocation.pushState(state, title, url);\n
}\n  replaceState(state: any, title: string, path: string, queryParams: string) {\n    let url =
this.prepareExternalUrl(path + normalizeQueryParams(queryParams));\n    if (url.length == 0) {\n      url =
this._platformLocation.pathname;\n    }\n    this._platformLocation.replaceState(state, title, url);\n  }\n  forward():
void {\n    this._platformLocation.forward();\n  }\n  back(): void {\n    this._platformLocation.back();\n
}\n}
"/**\n * @license\n * Copyright Google LLC All Rights Reserved.\n *\n * Use of this source code is
governed by an MIT-style license that can be\n * found in the LICENSE file at https://angular.io/license\n
*/
import {EventEmitter, Injectable, inject} from '@angular/core';\nimport {SubscriptionLike} from
'rxjs';\nimport {LocationStrategy} from './location_strategy';\nimport {PlatformLocation} from
'./platform_location';\nimport {joinWithSlash, normalizeQueryParams, stripTrailingSlash} from './util';\n\n\n/**
@publicApi\n */
@Injectable()\nexport interface PopStateEvent {\n  pop?: boolean;\n  state?: any;\n  type?: string;\n  url?:
string;\n}\n\n\n/**\n * @description\n *\n * A service that applications can use to interact with a browser's URL.\n
*\n * Depending on the `LocationStrategy` used, `Location` persists\n * to the URL's path or the URL's hash
segment.\n *\n * @usageNotes\n *\n * It's better to use the `Router#navigate` service to trigger route changes. Use\n
* `Location` only if you need to interact with or create normalized URLs outside of\n * routing.\n *\n * `Location` is
responsible for normalizing the URL against the application's base href.\n * A normalized URL is absolute from the
URL host, includes the application's base href, and has no\n * trailing slash:\n * - `~/my/app/user/123` is
normalized\n * - `my/app/user/123` **is not** normalized\n * - `~/my/app/user/123/` **is not** normalized\n *\n *
### Example\n *\n * <code-example path='common/location/ts/path_location_component.ts'\n *
region='LocationComponent'></code-example>\n *\n * @publicApi\n */
@Injectable({\n  providedIn: 'root',\n //
See #23917\n useFactory: createLocation,\n})\nexport class Location {\n  /** @internal */\n  _subject:
EventEmitter<any> = new EventEmitter();\n  /** @internal */\n  _baseHref: string;\n  /** @internal */\n
_platformStrategy: LocationStrategy;\n  /** @internal */\n  _platformLocation: PlatformLocation;\n  /** @internal
*/\n  _urlChangeListeners: ((url: string, state: unknown) => void)[] = [];\n  /** @internal */\n

```

```

_urlChangeSubscription?: SubscriptionLike;\n\n constructor(platformStrategy: LocationStrategy, platformLocation: PlatformLocation) {\n  this._platformStrategy = platformStrategy;\n  const browserBaseHref = this._platformStrategy.getBaseHref();\n  this._platformLocation = platformLocation;\n  this._baseHref = stripTrailingSlash(_stripIndexHtml(browserBaseHref));\n  this._platformStrategy.onPopState((ev) => {\n    this._subject.emit({\n      url: this.path(true),\n      pop: true,\n      state: ev.state,\n      type: ev.type,\n    });\n  });\n}\n\n/**\n * Normalizes the URL path for this location.\n * @param includeHash True to include an anchor fragment in the path.\n * @returns The normalized URL path.\n * // TODO: vsavkin. Remove the boolean flag and always include hash once the deprecated router is removed.\n path(includeHash: boolean = false): string {\n  return this.normalize(this._platformStrategy.path(includeHash));\n}\n\n/**\n * Reports the current state of the location history.\n * @returns The current value of the `history.state` object.\n */\n getState(): unknown {\n  return this._platformLocation.getState();\n}\n\n/**\n * Normalizes the given path and compares to the current normalized path.\n * @param path The given URL path.\n * @param query Query parameters.\n * @returns True if the given URL path is equal to the current normalized path, false otherwise.\n */\n isCurrentPathEqualTo(path: string, query: string = "): boolean {\n  return this.path() === this.normalize(path + normalizeQueryParams(query));\n}\n\n/**\n * Normalizes a URL path by stripping any trailing slashes.\n * @param url String representing a URL.\n * @returns The normalized URL string.\n */\n normalize(url: string): string {\n  return Location.stripTrailingSlash(_stripBaseHref(this._baseHref, _stripIndexHtml(url)));\n}\n\n/**\n * Normalizes an external URL path.\n * If the given URL doesn't begin with a leading slash ('/'), adds one before normalizing. Adds a hash if `HashLocationStrategy` is in use, or the `APP_BASE_HREF` if the `PathLocationStrategy` is in use.\n * @param url String representing a URL.\n * @returns A normalized platform-specific URL.\n */\n prepareExternalUrl(url: string): string {\n  if (url && url[0] !== '/') {\n    url = '/' + url;\n  }\n  return this._platformStrategy.prepareExternalUrl(url);\n}\n\n// TODO: rename this method to pushState\n/**\n * Changes the browser's URL to a normalized version of a given URL, and pushes a new item onto the platform's history.\n * @param path URL path to normalize.\n * @param query Query parameters.\n * @param state Location history state.\n * @param go(path: string, query: string = ", state: any = null): void {\n  this._platformStrategy.pushState(state, ", path, query);\n  this._notifyUrlChangeListeners(\n    this.prepareExternalUrl(path + normalizeQueryParams(query)), state);\n}\n\n/**\n * Changes the browser's URL to a normalized version of the given URL, and replaces the top item on the platform's history stack.\n * @param path URL path to normalize.\n * @param query Query parameters.\n * @param state Location history state.\n * @param replaceState(path: string, query: string = ", state: any = null): void {\n  this._platformStrategy.replaceState(state, ", path, query);\n  this._notifyUrlChangeListeners(\n    this.prepareExternalUrl(path + normalizeQueryParams(query)), state);\n}\n\n/**\n * Navigates forward in the platform's history.\n * @param forward(): void {\n  this._platformStrategy.forward();\n}\n\n/**\n * Navigates back in the platform's history.\n * @param back(): void {\n  this._platformStrategy.back();\n}\n\n/**\n * Registers a URL change listener. Use to catch updates performed by the Angular framework that are not detectible through "popstate" or "hashchange" events.\n * @param fn The change handler function, which take a URL and a location history state.\n * @param onUrlChange(fn: (url: string, state: unknown) => void) {\n  this._urlChangeListeners.push(fn);\n  if (!this._urlChangeSubscription) {\n    this._urlChangeSubscription = this.subscribe(v => {\n      this._notifyUrlChangeListeners(v.url, v.state);\n    });\n  }\n}\n\n/** @internal */\n_notifyUrlChangeListeners(url: string = ", state: unknown) {\n  this._urlChangeListeners.forEach(fn => fn(url, state));\n}\n\n/**\n * Subscribes to the platform's `popState` events.\n * @param value Event that is triggered when the state history changes.\n * @param exception The exception to throw.\n * @returns Subscribed events.\n * @param subscribe(\n  onNext: (value: PopStateEvent) => void, onThrow?: ((exception: any) => void)|null, onReturn?: (() => void)|null): SubscriptionLike {\n  return this._subject.subscribe({\n    next: onNext, error: onThrow, complete: onReturn;\n  });\n}\n\n/**\n * Normalizes URL parameters by prepending with '?' if needed.\n * @param params String of URL parameters.\n * @returns The normalized URL parameters string.\n */\n public static normalizeQueryParams: (params: string) => string = normalizeQueryParams;\n\n/**\n * Joins two parts of a URL with a slash if needed.\n * @param start URL

```

```

string\n * @param end URL string\n *\n *\n * @returns The joined URL string.\n */\n public static
joinWithSlash: (start: string, end: string) => string = joinWithSlash;\n\n /**\n * Removes a trailing slash from a
URL string if needed.\n * Looks for the first occurrence of either `#`, `?`, or the end of the\n * line as `^
characters and removes the trailing slash if one exists.\n *\n * @param url URL string.\n *\n * @returns The
URL string, modified if needed.\n */\n public static stripTrailingSlash: (url: string) => string =
stripTrailingSlash;\n}\n\nexport function createLocation() {\n return new Location(inject(LocationStrategy as any),
inject(PlatformLocation as any));\n}\n\nfunction _stripBaseHref(baseHref: string, url: string): string {\n return
baseHref && url.startsWith(baseHref) ? url.substring(baseHref.length) : url;\n}\n\nfunction _stripIndexHtml(url:
string): string {\n return url.replace(/\\/index.html$/, "");\n}\n\n"/**\n * @license\n * Copyright Google LLC All
Rights Reserved.\n *\n * Use of this source code is governed by an MIT-style license that can be\n * found in the
LICENSE file at https://angular.io/license\n */\n\nexport {HashLocationStrategy} from
'./hash_location_strategy';\nexport {Location, PopStateEvent} from './location';\nexport {APP_BASE_HREF,
LocationStrategy, PathLocationStrategy} from './location_strategy';\nexport {LOCATION_INITIALIZED,
LocationChangeEvent, LocationChangeListener, PlatformLocation} from './platform_location';\n"/**\n *
@license\n * Copyright Google LLC All Rights Reserved.\n *\n * Use of this source code is governed by an MIT-
style license that can be\n * found in the LICENSE file at https://angular.io/license\n */\n\n// THIS CODE IS
GENERATED - DO NOT MODIFY\n// See angular/tools/gulp-tasks/cldr/extract.js\n\nexport type
CurrenciesSymbols = [string][string | undefined, string];\n\n/** @internal */\n\nexport const CURRENCIES_EN:\n
{[code: string]: CurrenciesSymbols[string | undefined, string | undefined, number]} = {\n  'ADP': [undefined,
undefined, 0],\n  'AFN': [undefined, undefined, 0],\n  'ALL': [undefined, undefined, 0],\n  'AMD': [undefined,
undefined, 2],\n  'AOA': [undefined, 'Kz'],\n  'ARS': [undefined, '$'],\n  'AUD': ['A$', '$'],\n  'BAM':
[undefined, 'KM'],\n  'BBD': [undefined, '$'],\n  'BDT': [undefined, ""],\n  'BHD': [undefined, undefined, 3],\n
  'BIF': [undefined, undefined, 0],\n  'BMD': [undefined, '$'],\n  'BND': [undefined, '$'],\n  'BOB': [undefined,
'Bs'],\n  'BRL': ['R$'],\n  'BSD': [undefined, '$'],\n  'BWP': [undefined, 'P'],\n  'BYN': [undefined, '.', 2],\n
  'BYR': [undefined, undefined, 0],\n  'BZD': [undefined, '$'],\n  'CAD': ['CA$', '$', 2],\n  'CHF': [undefined,
undefined, 2],\n  'CLF': [undefined, undefined, 4],\n  'CLP': [undefined, '$', 0],\n  'CNY': ['CN¥', '¥'],\n
  'COP': [undefined, '$', 2],\n  'CRC': [undefined, "", 2],\n  'CUC': [undefined, '$'],\n  'CUP': [undefined, '$'],\n
  'CZK': [undefined, 'K', 2],\n  'DJF': [undefined, undefined, 0],\n  'DKK': [undefined, 'kr', 2],\n  'DOP':
[undefined, '$'],\n  'EGP': [undefined, 'E£'],\n  'ESP': [undefined, "", 0],\n  'EUR': ['€'],\n  'FJD': [undefined,
'$'],\n  'FKP': [undefined, '£'],\n  'GBP': ['£'],\n  'GEL': [undefined, "],\n  'GIP': [undefined, '£'],\n  'GNF':
[undefined, 'FG', 0],\n  'GTQ': [undefined, 'Q'],\n  'GYD': [undefined, '$', 2],\n  'HKD': ['HK$', '$'],\n
  'HNL': [undefined, 'L'],\n  'HRK': [undefined, 'kn'],\n  'HUF': [undefined, 'Ft', 2],\n  'IDR': [undefined, 'Rp',
2],\n  'ILS': ['"],\n  'INR': ["],\n  'IQD': [undefined, undefined, 0],\n  'IRR': [undefined, undefined, 0],\n
  'ISK': [undefined, 'kr', 0],\n  'ITL': [undefined, undefined, 0],\n  'JMD': [undefined, '$'],\n  'JOD': [undefined,
undefined, 3],\n  'JPY': ['¥', undefined, 0],\n  'KHR': [undefined, "],\n  'KMF': [undefined, 'CF', 0],\n
  'KPW': [undefined, "", 0],\n  'KRW': ["", undefined, 0],\n  'KWD': [undefined, undefined, 3],\n  'KYD':
[undefined, '$'],\n  'KZT': [undefined, "],\n  'LAK': [undefined, "", 0],\n  'LBP': [undefined, 'L£', 0],\n
  'LKR': [undefined, 'Rs'],\n  'LRD': [undefined, '$'],\n  'LTL': [undefined, 'Lt'],\n  'LUF': [undefined,
undefined, 0],\n  'LVL': [undefined, 'Ls'],\n  'LYD': [undefined, undefined, 3],\n  'MGA': [undefined, 'Ar',
0],\n  'MGF': [undefined, undefined, 0],\n  'MMK': [undefined, 'K', 0],\n  'MNT': [undefined, "", 2],\n
  'MRO': [undefined, undefined, 0],\n  'MUR': [undefined, 'Rs', 2],\n  'MXN': ['MX$', '$'],\n  'MYR':
[undefined, 'RM'],\n  'NAD': [undefined, '$'],\n  'NGN': [undefined, "],\n  'NIO': [undefined, 'CS'],\n
  'NOK': [undefined, 'kr', 2],\n  'NPR': [undefined, 'Rs'],\n  'NZD': ['NZ$', '$'],\n  'OMR': [undefined,
undefined, 3],\n  'PHP': [undefined, "],\n  'PKR': [undefined, 'Rs', 2],\n  'PLN': [undefined, 'z'],\n  'PYG':
[undefined, "", 0],\n  'RON': [undefined, 'lei'],\n  'RSD': [undefined, undefined, 0],\n  'RUB': [undefined, "],\n
  'RUR': [undefined, '.'],\n  'RWF': [undefined, 'RF', 0],\n  'SBD': [undefined, '$'],\n  'SEK': [undefined, 'kr',
2],\n  'SGD': [undefined, '$'],\n  'SHP': [undefined, '£'],\n  'SLL': [undefined, undefined, 0],\n  'SOS':
[undefined, undefined, 0],\n  'SRD': [undefined, '$'],\n  'SSP': [undefined, '£'],\n  'STD': [undefined,

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undefined, 0],\n 'STN': [undefined, 'Db'],\n 'SYP': [undefined, '£', 0],\n 'THB': [undefined, '฿'],\n 'TMM':
 [undefined, undefined, 0],\n 'TND': [undefined, undefined, 3],\n 'TOP': [undefined, '฿'],\n 'TRL':
 [undefined, undefined, 0],\n 'TRY': [undefined, '₺'],\n 'TTD': [undefined, '\$'],\n 'TWD': ['NT\$', '\$', 2],\n
 'TZS': [undefined, undefined, 2],\n 'UAH': [undefined, '₴'],\n 'UGX': [undefined, undefined, 0],\n 'USD':
 ['\$'],\n 'UYI': [undefined, undefined, 0],\n 'UYU': [undefined, '\$'],\n 'UYW': [undefined, undefined, 4],\n
 'UZS': [undefined, undefined, 2],\n 'VEF': [undefined, 'Bs', 2],\n 'VND': ['₫', undefined, 0],\n 'VUV':
 [undefined, undefined, 0],\n 'XAF': ['FCFA', undefined, 0],\n 'XCD': ['EC\$', '\$'],\n 'XOF': ['CFA',
 undefined, 0],\n 'XPF': ['CFPF', undefined, 0],\n 'XXX': ['¤'],\n 'YER': [undefined, undefined, 0],\n
 'ZAR': [undefined, 'R'],\n 'ZMK': [undefined, undefined, 0],\n 'ZMW': [undefined, 'ZK'],\n 'ZWD':
 [undefined, undefined, 0]\n };\n", "/*\n * @license\n * Copyright Google LLC All Rights Reserved.\n * Use
 of this source code is governed by an MIT-style license that can be\n * found in the LICENSE file at
 https://angular.io/license\n */\nimport {CurrencyIndex, ExtraLocaleDataIndex, findLocaleData,
 getLocaleCurrencyCode, getLocalePluralCase, LocaleDataIndex} from '@angular/core';\nimport
 {CURRENCIES_EN, CurrenciesSymbols} from './currencies';\n\n/**\n * Format styles that can be used to
 represent numbers.\n * @see `getLocaleNumberFormat()`. \n * @see [Internationalization (i18n)
 Guide](https://angular.io/guide/i18n)\n */\n * @publicApi\n */\nexport enum NumberFormatStyle {\n Decimal,\n
 Percent,\n Currency,\n Scientific\n}\n\n/**\n * Plurality cases used for translating plurals to different languages.\n
 *\n * @see `NgPlural`\n * @see `NgPluralCase`\n */\n * @see [Internationalization (i18n)
 Guide](https://angular.io/guide/i18n)\n */\n * @publicApi\n */\nexport enum Plural {\n Zero = 0,\n One = 1,\n
 Two = 2,\n Few = 3,\n Many = 4,\n Other = 5,\n}\n\n/**\n * Context-dependant translation forms for strings.\n *
 Typically the standalone version is for the nominative form of the word,\n * and the format version is used for the
 genitive case.\n * @see [CLDR website](http://cldr.unicode.org/translation/date-time-1/date-time#TOC-Standalone-
 vs.-Format-Styles)\n * @see [Internationalization (i18n) Guide](https://angular.io/guide/i18n)\n */\n * @publicApi\n */\nexport enum FormStyle {\n Format,\n Standalone\n}\n\n/**\n * String widths available for translations.\n *
 The specific character widths are locale-specific.\n * Examples are given for the word "Sunday" in English.\n */\n * @publicApi\n */\nexport enum TranslationWidth {\n /** 1 character for `en-US`. For example: 'S' *\n Narrow,\n
 /** 3 characters for `en-US`. For example: 'Sun' *\n Abbreviated,\n
 /** Full length for `en-US`. For example:
 \"Sunday\" *\n Wide,\n
 /** 2 characters for `en-US`. For example: \"Su\" *\n Short\n}\n\n/**\n * String widths
 available for date-time formats.\n * The specific character widths are locale-specific.\n * Examples are given for
 `en-US`.\n */\n * @see `getLocaleDateFormat()`. \n * @see `getLocaleTimeFormat()`. \n * @see
 `getLocaleDateTimeFormat()`. \n * @see [Internationalization (i18n) Guide](https://angular.io/guide/i18n)\n */\n * @publicApi\n */\nexport enum FormatWidth {\n /**\n * For `en-US`, 'M/d/yy, h:mm a'\n * (Example: `6/15/15,
 9:03 AM`)\n *\n Short,\n /**\n * For `en-US`, `MMM d, y, h:mm:ss a`\n * (Example: `Jun 15, 2015, 9:03:01
 AM`)\n *\n Medium,\n /**\n * For `en-US`, `MMMM d, y, h:mm:ss a z`\n * (Example: `June 15, 2015 at
 9:03:01 AM GMT+1`)\n *\n Long,\n /**\n * For `en-US`, `EEEE, MMMM d, y, h:mm:ss a zzzz`\n *
 (Example: `Monday, June 15, 2015 at 9:03:01 AM GMT+01:00`)\n *\n Full\n}\n\n/**\n * Symbols that can be
 used to replace placeholders in number patterns.\n * Examples are based on `en-US` values.\n */\n * @see
 `getLocaleNumberSymbol()`. \n * @see [Internationalization (i18n) Guide](https://angular.io/guide/i18n)\n */\n * @publicApi\n */\nexport enum NumberSymbol {\n /**\n * Decimal separator.\n * For `en-US`, the dot
 character.\n * Example: `2,345`. `67`\n *\n Decimal,\n /**\n * Grouping separator, typically for thousands.\n
 For `en-US`, the comma character.\n * Example: `2,345.67`\n *\n Group,\n /**\n * List-item separator.\n *
 Example: `\"one, two, and three\"`\n *\n List,\n /**\n * Sign for percentage (out of 100).\n * Example: `23.4%`\n
 *\n PercentSign,\n /**\n * Sign for positive numbers.\n * Example: `+23`\n *\n PlusSign,\n /**\n * Sign for
 negative numbers.\n * Example: `-23`\n *\n MinusSign,\n /**\n * Computer notation for exponential value (n
 times a power of 10).\n * Example: `1.2E3`\n *\n Exponential,\n /**\n * Human-readable format of
 exponential.\n * Example: `1.2x103`\n *\n SuperscriptingExponent,\n /**\n * Sign for permille (out of 1000).\n
 * Example: `23.4‰`\n *\n PerMille,\n /**\n * Infinity, can be used with plus and minus.\n * Example: `+, -`\n
 *\n Infinity,\n /**\n * Not a number.\n * Example: `NaN`\n *\n NaN,\n /**\n * Symbol used between time

units.
 * Example: 10:52
 * TimeSeparator,
 * Decimal separator for currency values (fallback to `Decimal`),
 * Example: \$2,345.67
 * CurrencyDecimal,
 * Group separator for currency values (fallback to `Group`),
 * Example: \$2,345.67
 * CurrencyGroup
 * The value for each day of the week, based on the `en-US` locale
 * @publicApi
 * export enum WeekDay {
 Sunday = 0,
 Monday,
 Tuesday,
 Wednesday,
 Thursday,
 Friday,
 Saturday
 }
 * Retrieves the locale ID from the currently loaded locale.
 * The loaded locale could be, for example, a global one rather than a regional one.
 * @param locale A locale code, such as `fr-FR`.
 * @returns The locale code. For example, `fr`.
 * @see [Internationalization (i18n) Guide](https://angular.io/guide/i18n)
 * @publicApi
 * export function getLocaleId(locale: string): string {
 return findLocaleData(locale)[LocaleDataIndex.LocaleId];
 }
 * Retrieves day period strings for the given locale.
 * @param locale A locale code for the locale format rules to use.
 * @param formStyle The required grammatical form.
 * @param width The required character width.
 * @returns An array of localized period strings. For example, `[AM, PM]` for `en-US`.
 * @see [Internationalization (i18n) Guide](https://angular.io/guide/i18n)
 * @publicApi
 * export function getLocaleDayPeriods(locale: string, formStyle: FormStyle, width: TranslationWidth): Readonly<string, string> {
 const data = findLocaleData(locale);
 const amPmData = <string, string>[[data[LocaleDataIndex.DayPeriodsFormat], data[LocaleDataIndex.DayPeriodsStandalone]]];
 const amPm = getLastDefinedValue(amPmData, formStyle);
 return getLastDefinedValue(amPm, width);
 }
 * Retrieves days of the week for the given locale, using the Gregorian calendar.
 * @param locale A locale code for the locale format rules to use.
 * @param formStyle The required grammatical form.
 * @param width The required character width.
 * @returns An array of localized name strings. For example, `[Sunday, Monday, ... Saturday]` for `en-US`.
 * @see [Internationalization (i18n) Guide](https://angular.io/guide/i18n)
 * @publicApi
 * export function getLocaleDayNames(locale: string, formStyle: FormStyle, width: TranslationWidth): ReadonlyArray<string> {
 const data = findLocaleData(locale);
 const daysData = <string>[[data[LocaleDataIndex.DaysFormat], data[LocaleDataIndex.DaysStandalone]]];
 const days = getLastDefinedValue(daysData, formStyle);
 return getLastDefinedValue(days, width);
 }
 * Retrieves months of the year for the given locale, using the Gregorian calendar.
 * @param locale A locale code for the locale format rules to use.
 * @param formStyle The required grammatical form.
 * @param width The required character width.
 * @returns An array of localized name strings. For example, `[January, February, ...]` for `en-US`.
 * @see [Internationalization (i18n) Guide](https://angular.io/guide/i18n)
 * @publicApi
 * export function getLocaleMonthNames(locale: string, formStyle: FormStyle, width: TranslationWidth): ReadonlyArray<string> {
 const data = findLocaleData(locale);
 const monthsData = <string>[[data[LocaleDataIndex.MonthsFormat], data[LocaleDataIndex.MonthsStandalone]]];
 const months = getLastDefinedValue(monthsData, formStyle);
 return getLastDefinedValue(months, width);
 }
 * Retrieves Gregorian-calendar eras for the given locale.
 * @param locale A locale code for the locale format rules to use.
 * @param width The required character width.
 * @returns An array of localized era strings. For example, `[AD, BC]` for `en-US`.
 * @see [Internationalization (i18n) Guide](https://angular.io/guide/i18n)
 * @publicApi
 * export function getLocaleEraNames(locale: string, width: TranslationWidth): Readonly<string, string> {
 const data = findLocaleData(locale);
 const erasData = <string, string>[[data[LocaleDataIndex.Eras]];
 return getLastDefinedValue(erasData, width);
 }
 * Retrieves the first day of the week for the given locale.
 * @param locale A locale code for the locale format rules to use.
 * @returns A day index number, using the 0-based week-day index for `en-US` (Sunday = 0, Monday = 1, ...).
 * For example, for `fr-FR`, returns 1 to indicate that the first day is Monday.
 * @see [Internationalization (i18n) Guide](https://angular.io/guide/i18n)
 * @publicApi
 * export function getLocaleFirstDayOfWeek(locale: string): WeekDay {
 const data = findLocaleData(locale);
 return data[LocaleDataIndex.FirstDayOfWeek];
 }
 * Range of week days that are considered the week-end for the given locale.
 * @param locale A locale code for the locale format rules to use.
 * @returns The range of day values, `[startDay, endDay]`.
 * @see [Internationalization (i18n) Guide](https://angular.io/guide/i18n)
 * @publicApi
 * export function getLocaleWeekEndRange(locale: string): [WeekDay, WeekDay] {
 const data =

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findLocaleData(locale);\n return data[LocaleDataIndex.WeekendRange];\n}\n\n/**\n * Retrieves a localized date-
value formatting string.\n *\n * @param locale A locale code for the locale format rules to use.\n * @param width
The format type.\n * @returns The localized formatting string.\n * @see `FormatWidth`\n * @see
[Internationalization (i18n) Guide](https://angular.io/guide/i18n)\n *\n * @publicApi\n */\nexport function
getLocaleDateFormat(locale: string, width: FormatWidth): string {\n const data = findLocaleData(locale);\n return
getLastDefinedValue(data[LocaleDataIndex.DateFormat], width);\n}\n\n/**\n * Retrieves a localized time-value
formatting string.\n *\n * @param locale A locale code for the locale format rules to use.\n * @param width The
format type.\n * @returns The localized formatting string.\n * @see `FormatWidth`\n * @see [Internationalization
(i18n) Guide](https://angular.io/guide/i18n)\n\n * @publicApi\n */\nexport function getLocaleTimeFormat(locale:
string, width: FormatWidth): string {\n const data = findLocaleData(locale);\n return
getLastDefinedValue(data[LocaleDataIndex.TimeFormat], width);\n}\n\n/**\n * Retrieves a localized date-time
formatting string.\n *\n * @param locale A locale code for the locale format rules to use.\n * @param width The
format type.\n * @returns The localized formatting string.\n * @see `FormatWidth`\n * @see [Internationalization
(i18n) Guide](https://angular.io/guide/i18n)\n *\n * @publicApi\n */\nexport function
getLocaleDateTimeFormat(locale: string, width: FormatWidth): string {\n const data = findLocaleData(locale);\n
const dateTimeFormatData = <string[]>data[LocaleDataIndex.DateTimeFormat];\n return
getLastDefinedValue(dateTimeFormatData, width);\n}\n\n/**\n * Retrieves a localized number symbol that can be
used to replace placeholders in number formats.\n *\n * @param locale The locale code.\n * @param symbol The
symbol to localize.\n * @returns The character for the localized symbol.\n * @see `NumberSymbol`\n * @see
[Internationalization (i18n) Guide](https://angular.io/guide/i18n)\n *\n * @publicApi\n */\nexport function
getLocaleNumberSymbol(locale: string, symbol: NumberSymbol): string {\n const data = findLocaleData(locale);\n
const res = data[LocaleDataIndex.NumberSymbols][symbol];\n if (typeof res === 'undefined') {\n if (symbol ===
NumberSymbol.CurrencyDecimal) {\n return
data[LocaleDataIndex.NumberSymbols][NumberSymbol.Decimal];\n } else if (symbol ===
NumberSymbol.CurrencyGroup) {\n return data[LocaleDataIndex.NumberSymbols][NumberSymbol.Group];\n
}\n }\n return res;\n}\n\n/**\n * Retrieves a number format for a given locale.\n *\n * Numbers are formatted using
patterns, like `#,###.00`. For example, the pattern `#,###.00`\n * when used to format the number 12345.678 could
result in `"12'345,678"`. That would happen if the\n * grouping separator for your language is an apostrophe, and the
decimal separator is a comma.\n *\n * Important: The characters `.``,``,`0`,`#` (and others below) are special
placeholders\n * that stand for the decimal separator, and so on, and are NOT real characters.\n * You must NOT
"translate" the placeholders. For example, don't change `.` to ``,` even though in\n * your language the decimal
point is written with a comma. The symbols should be replaced by the\n * local equivalents, using the appropriate
`NumberSymbol` for your language.\n *\n * Here are the special characters used in number patterns:\n *\n * |
Symbol | Meaning\n * |-----|-----|\n * | . | Replaced automatically by the character used for the decimal point.
\n * | , | Replaced by the "grouping" (thousands) separator. \n * | 0 | Replaced by a digit (or zero if there aren't
enough digits). \n * | # | Replaced by a digit (or nothing if there aren't enough). \n * | ¤ | Replaced by a currency
symbol, such as $ or USD. \n * | % | Marks a percent format. The % symbol may change position, but must be
retained. \n * | E | Marks a scientific format. The E symbol may change position, but must be retained. \n * | ' |
Special characters used as literal characters are quoted with ASCII single quotes. \n *\n * @param locale A locale
code for the locale format rules to use.\n * @param type The type of numeric value to be formatted (such as
`Decimal` or `Currency`.)\n * @returns The localized format string.\n * @see `NumberFormatStyle`\n * @see
[CLDR website](http://cldr.unicode.org/translation/number-patterns)\n * @see [Internationalization (i18n)
Guide](https://angular.io/guide/i18n)\n *\n * @publicApi\n */\nexport function getLocaleNumberFormat(locale:
string, type: NumberFormatStyle): string {\n const data = findLocaleData(locale);\n return
data[LocaleDataIndex.NumberFormats][type];\n}\n\n/**\n * Retrieves the symbol used to represent the currency for
the main country\n * corresponding to a given locale. For example, '$' for `en-US`.\n *\n * @param locale A locale
code for the locale format rules to use.\n * @returns The localized symbol character,\n * or `null` if the main
country cannot be determined.\n * @see [Internationalization (i18n) Guide](https://angular.io/guide/i18n)\n *\n

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@publicApi\n * \nexport function getLocaleCurrencySymbol(locale: string): string|null {\n  const data =
findLocaleData(locale);\n  return data[LocaleDataIndex.CurrencySymbol] || null;\n}\n\n/**\n * Retrieves the name
of the currency for the main country corresponding\n * to a given locale. For example, 'US Dollar' for `en-US`.\n *
@param locale A locale code for the locale format rules to use.\n * @returns The currency name,\n * or `null` if the
main country cannot be determined.\n * @see [Internationalization (i18n) Guide](https://angular.io/guide/i18n)\n
*\n * @publicApi\n * \nexport function getLocaleCurrencyName(locale: string): string|null {\n  const data =
findLocaleData(locale);\n  return data[LocaleDataIndex.CurrencyName] || null;\n}\n\n/**\n * Retrieves the default
currency code for the given locale.\n * \n * The default is defined as the first currency which is still in use.\n * \n *
@param locale The code of the locale whose currency code we want.\n * @returns The code of the default currency
for the given locale.\n * \n * @publicApi\n * \nexport function getLocaleCurrencyCode(locale: string): string|null
{\n  return getLocaleCurrencyCode(locale);\n}\n\n/**\n * Retrieves the currency values for a given locale.\n *
@param locale A locale code for the locale format rules to use.\n * @returns The currency values.\n * @see
[Internationalization (i18n) Guide](https://angular.io/guide/i18n)\n * \nfunction getLocaleCurrencies(locale: string):
{[code: string]: CurrenciesSymbols} {\n  const data = findLocaleData(locale);\n  return
data[LocaleDataIndex.Currencies];\n}\n\n/**\n * @alias core/getLocalePluralCase\n * @publicApi\n * \nexport
const getLocalePluralCase: (locale: string) => ((value: number) => Plural) =\n  getLocalePluralCase;\n\nfunction
checkFullData(data: any) {\n  if (!data[LocaleDataIndex.ExtraData]) {\n    throw new Error(`Missing extra locale
data for the locale "${\n      data[LocaleDataIndex\n        .LocaleId]}`). Use "registerLocaleData" to load
new data. See the "\n * \n * Retrieves locale-specific rules
used to determine which day period to use\n * when more than one period is defined for a locale.\n * \n * There is a
rule for each defined day period. The\n * first rule is applied to the first day period and so on.\n * Fall back to
AM/PM when no rules are available.\n * \n * A rule can specify a period as time range, or as a single time value.\n
*\n * This functionality is only available when you have loaded the full locale data.\n * See the ["\n * \n * @param locale A locale code for the locale format rules to use.\n *
@returns The rules for the locale, a single time value or array of *from-time, to-time*,\n * or null if no periods are
available.\n * \n * @see `getLocaleExtraDayPeriods()`\n * @see [Internationalization (i18n)
Guide](https://angular.io/guide/i18n)\n * \n * @publicApi\n * \nexport function
getLocaleExtraDayPeriodRules(locale: string): (Time|[Time, Time])[] {\n  const data = findLocaleData(locale);\n
checkFullData(data);\n  const rules =
data[LocaleDataIndex.ExtraData][ExtraLocaleDataIndex.ExtraDayPeriodsRules] || [];\n  return rules.map((rule:
string|[string, string]) => {\n    if (typeof rule === 'string') {\n      return extractTime(rule);\n    }\n    return
[extractTime(rule[0]), extractTime(rule[1])];\n  });\n}\n\n/**\n * Retrieves locale-specific day periods, which
indicate roughly how a day is broken up\n * in different languages.\n * For example, for `en-US`, periods are
morning, noon, afternoon, evening, and midnight.\n * \n * This functionality is only available when you have loaded
the full locale data.\n * See the ["\n * \n * @param locale A locale code for
the locale format rules to use.\n * @param formStyle The required grammatical form.\n * @param width The
required character width.\n * @returns The translated day-period strings.\n * @see
`getLocaleExtraDayPeriodRules()`\n * @see [Internationalization (i18n) Guide](https://angular.io/guide/i18n)\n * \n *
@publicApi\n * \nexport function getLocaleExtraDayPeriods(\n  locale: string, formStyle: FormStyle, width:
TranslationWidth): string[] {\n  const data = findLocaleData(locale);\n  checkFullData(data);\n  const
dayPeriodsData = <string[][]>[\n
data[LocaleDataIndex.ExtraData][ExtraLocaleDataIndex.ExtraDayPeriodFormats],\n
data[LocaleDataIndex.ExtraData][ExtraLocaleDataIndex.ExtraDayPeriodStandalone]\n ];\n  const dayPeriods =
getLastDefinedValue(dayPeriodsData, formStyle) || [];\n  return getLastDefinedValue(dayPeriods, width) ||
[];\n}\n\n/**\n * Retrieves the writing direction of a specified locale\n * @param locale A locale code for the locale
format rules to use.\n * @publicApi\n * @returns 'rtl' or 'ltr'\n * @see [Internationalization (i18n)
Guide](https://angular.io/guide/i18n)\n * \nexport function getLocaleDirection(locale: string): 'ltr'|'rtl' {\n  const data
= findLocaleData(locale);\n  return data[LocaleDataIndex.Directionality];\n}\n\n/**\n * Retrieves the first value that

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namedFormat = getNamedFormat(locale, format);\n format = namedFormat || format;\n\n let parts: string[] = [];\n let match;\n while (format) {\n   match = DATE_FORMATS_SPLIT.exec(format);\n   if (match) {\n     parts =\n     parts.concat(match.slice(1));\n     const part = parts.pop();\n     if (!part) {\n       break;\n     }\n     format = part;\n   } else {\n     parts.push(format);\n     break;\n   }\n }\n\n let dateTzOffset = date.getTimezoneOffset();\n if (timezone) {\n   dateTzOffset = timezoneToOffset(timezone, dateTzOffset);\n   date =\n   convertTzToLocal(date, timezone, true);\n }\n\n let text = "";\n parts.forEach(value => {\n   const\n   dateFormatter = getDateFormatter(value);\n   text += dateFormatter ?\n   dateFormatter(date, locale,\n   dateTzOffset) :\n   value === "\\|" ? "\\|" : value.replace(/(^|$/g, ").replace(/"/g, "\\");\n });\n\n return\n text;\n }\n\nfunction getNamedFormat(locale: string, format: string): string {\n  const localeId =\n  getLocaleId(locale);\n  NAMED_FORMATS[localeId] = NAMED_FORMATS[localeId] || {};\n  if\n  (NAMED_FORMATS[localeId][format]) {\n    return NAMED_FORMATS[localeId][format];\n  }\n  let\n  formatValue = "";\n  switch (format) {\n    case 'shortDate':\n      formatValue = getLocaleDateFormat(locale,\n      FormatWidth.Short);\n      break;\n    case 'mediumDate':\n      formatValue = getLocaleDateFormat(locale,\n      FormatWidth.Medium);\n      break;\n    case 'longDate':\n      formatValue = getLocaleDateFormat(locale,\n      FormatWidth.Long);\n      break;\n    case 'fullDate':\n      formatValue = getLocaleDateFormat(locale,\n      FormatWidth.Full);\n      break;\n    case 'shortTime':\n      formatValue = getLocaleTimeFormat(locale,\n      FormatWidth.Short);\n      break;\n    case 'mediumTime':\n      formatValue = getLocaleTimeFormat(locale,\n      FormatWidth.Medium);\n      break;\n    case 'longTime':\n      formatValue = getLocaleTimeFormat(locale,\n      FormatWidth.Long);\n      break;\n    case 'fullTime':\n      formatValue = getLocaleTimeFormat(locale,\n      FormatWidth.Full);\n      break;\n    case 'short':\n      const shortTime = getNamedFormat(locale, 'shortTime');\n      const shortDate = getNamedFormat(locale, 'shortDate');\n      formatValue = formatDate(\n      getLocaleDateTimeFormat(locale, FormatWidth.Short), [shortTime, shortDate]);\n      break;\n    case 'medium':\n      const mediumTime = getNamedFormat(locale, 'mediumTime');\n      const mediumDate = getNamedFormat(locale,\n      'mediumDate');\n      formatValue = formatDate(\n      getLocaleDateTimeFormat(locale,\n      FormatWidth.Medium), [mediumTime, mediumDate]);\n      break;\n    case 'long':\n      const longTime =\n      getNamedFormat(locale, 'longTime');\n      const longDate = getNamedFormat(locale, 'longDate');\n      formatValue\n      =\n      formatDate(getLocaleDateTimeFormat(locale, FormatWidth.Long), [longTime, longDate]);\n      break;\n    case 'full':\n      const fullTime = getNamedFormat(locale, 'fullTime');\n      const fullDate =\n      getNamedFormat(locale, 'fullDate');\n      formatValue =\n      formatDate(getLocaleDateTimeFormat(locale,\n      FormatWidth.Full), [fullTime, fullDate]);\n      break;\n  }\n  if (formatValue) {\n    NAMED_FORMATS[localeId][format] = formatValue;\n  }\n  return formatValue;\n }\n\nfunction\nformatDateTime(str: string, opt_values: string[]) {\n  if (opt_values) {\n    str = str.replace(/\\{([^\}]+)}/g,\n    function(match, key) {\n      return (opt_values != null && key in opt_values) ? opt_values[key] : match;\n    });\n  }\n  return str;\n }\n\nfunction padNumber(\n  num: number, digits: number, minusSign = '-', trim?: boolean,\n  negWrap?: boolean): string {\n  let neg = "";\n  if (num < 0 || (negWrap && num <= 0)) {\n    if (negWrap) {\n      num = -num + 1;\n    } else {\n      num = -num;\n      neg = minusSign;\n    }\n  }\n  let strNum = String(num);\n  while (strNum.length < digits) {\n    strNum = '0' + strNum;\n  }\n  if (trim) {\n    strNum =\n    strNum.substr(strNum.length - digits);\n  }\n  return neg + strNum;\n }\n\nfunction\nformatFractionalSeconds(milliseconds: number, digits: number): string {\n  const strMs = padNumber(milliseconds,\n  3);\n  return strMs.substr(0, digits);\n }\n\n/**\n * Returns a date formatter that transforms a date into its locale digit\n representation\n */\nfunction dateGetter(\n  name: DateType, size: number, offset: number = 0, trim = false,\n  negWrap = false): DateFormatter {\n  return function(date: Date, locale: string): string {\n    let part =\n    getDatePart(name, date);\n    if (offset > 0 || part > -offset) {\n      part += offset;\n    }\n    if (name ===\n    DateType.Hours) {\n      if (part === 0 && offset === -12) {\n        part = 12;\n      }\n    } else if (name ===\n    DateType.FractionalSeconds) {\n      return formatFractionalSeconds(part, size);\n    }\n    const localeMinus =\n    getLocaleNumberSymbol(locale, NumberSymbol.MinusSign);\n    return padNumber(part, size, localeMinus, trim,\n    negWrap);\n  }; }\n\nfunction getDatePart(part: DateType, date: Date): number {\n  switch (part) {\n    case\n    DateType.FullYear:\n      return date.getFullYear();\n    case DateType.Month:\n      return date.getMonth();\n    case

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DateType.Date:\n    return date.getDate();\n    case DateType.Hours:\n    return date.getHours();\n    case
DateType.Minutes:\n    return date.getMinutes();\n    case DateType.Seconds:\n    return date.getSeconds();\n
case DateType.FractionalSeconds:\n    return date.getMilliseconds();\n    case DateType.Day:\n    return
date.getDay();\n    default:\n    throw new Error(`Unknown DateType value \`${part}\`.`);\n } }\n\n/**\n *
Returns a date formatter that transforms a date into its locale string representation\n *\nfunction dateStrGetter(\n
name: TranslationType, width: TranslationWidth, form: FormStyle = FormStyle.Format,\n    extended = false):
DateFormatter {\n    return function(date: Date, locale: string): string {\n    return getDateTranslation(date, locale,
name, width, form, extended);\n    };\n }\n\n/**\n * Returns the locale translation of a date for a given form, type and
width\n *\nfunction getDateTranslation(\n    date: Date, locale: string, name: TranslationType, width:
TranslationWidth, form: FormStyle,\n    extended: boolean) {\n    switch (name) {\n    case
TranslationType.Months:\n    return getLocaleMonthNames(locale, form, width)[date.getMonth()];\n    case
TranslationType.Days:\n    return getLocaleDayNames(locale, form, width)[date.getDay()];\n    case
TranslationType.DayPeriods:\n    const currentHours = date.getHours();\n    const currentMinutes =
date.getMinutes();\n    if (extended) {\n    const rules = getLocaleExtraDayPeriodRules(locale);\n    const
dayPeriods = getLocaleExtraDayPeriods(locale, form, width);\n    const index = rules.findIndex(rule => {\n
if (Array.isArray(rule)) {\n    // morning, afternoon, evening, night\n    const [from, to] = rule;\n
const afterFrom = currentHours >= from.hours && currentMinutes >= from.minutes;\n    const beforeTo =\n
(currentHours < to.hours ||\n    (currentHours === to.hours && currentMinutes < to.minutes));\n
// We must account for normal rules that span a period during the day (e.g. 6am-9am)\n    // where `from` is less
(earlier) than `to`. But also rules that span midnight (e.g.\n    // 10pm - 5am) where `from` is greater (later!)
than `to`.\n    // In the first case the current time must be BOTH after `from` AND before `to`\n
// (e.g. 8am is after 6am AND before 10am).\n    // In the second case the current time must be
EITHER after `from` OR before `to`\n    // (e.g. 4am is before 5am but not after 10pm; and 11pm is not before
5am but it is\n    // after 10pm).\n    if (from.hours < to.hours) {\n    if (afterFrom && beforeTo) {\n
return true;\n    } else if (afterFrom || beforeTo) {\n    return true;\n    } else {\n    // noon or midnight\n
if (rule.hours === currentHours && rule.minutes === currentMinutes) {\n
return true;\n    } else {\n    return false;\n    };\n    };\n    if (index !== -1) {\n    return
dayPeriods[index];\n    } else {\n    // if no rules for the day periods, we use am/pm by default\n    return
getLocaleDayPeriods(locale, form, <TranslationWidth>width)[currentHours < 12 ? 0 : 1];\n    case
TranslationType.Eras:\n    return getLocaleEraNames(locale, <TranslationWidth>width)[date.getFullYear() <= 0 ?
0 : 1];\n    default:\n    // This default case is not needed by TypeScript compiler, as the switch is exhaustive.\n
// However Closure Compiler does not understand that and reports an error in typed mode.\n    // The `throw new
Error` below works around the problem, and the unexpected: never variable\n    // makes sure tsc still checks this
code is unreachable.\n    const unexpected: never = name;\n    throw new Error(`unexpected translation type
${unexpected}`);\n    } }\n\n/**\n * Returns a date formatter that transforms a date and an offset into a timezone
with ISO8601 or\n * GMT format depending on the width (eg: short = +0430, short:GMT = GMT+4, long =
GMT+04:30,\n * extended = +04:30)\n *\nfunction timeZoneGetter(width: ZoneWidth): DateFormatter {\n    return
function(date: Date, locale: string, offset: number) {\n    const zone = -1 * offset;\n    const minusSign =
getLocaleNumberSymbol(locale, NumberSymbol.MinusSign);\n    const hours = zone > 0 ? Math.floor(zone / 60) :
Math.ceil(zone / 60);\n    switch (width) {\n    case ZoneWidth.Short:\n    return ((zone >= 0) ? '+' : '') +
padNumber(hours, 2, minusSign) +\n    padNumber(Math.abs(zone % 60), 2, minusSign);\n    case
ZoneWidth.ShortGMT:\n    return 'GMT' + ((zone >= 0) ? '+' : '') + padNumber(hours, 1, minusSign);\n    case
ZoneWidth.Long:\n    return 'GMT' + ((zone >= 0) ? '+' : '') + padNumber(hours, 2, minusSign) + ':' +\n
padNumber(Math.abs(zone % 60), 2, minusSign);\n    case ZoneWidth.Extended:\n    if (offset === 0) {\n
return 'Z';\n    } else {\n    return ((zone >= 0) ? '+' : '') + padNumber(hours, 2, minusSign) + ':' +\n
padNumber(Math.abs(zone % 60), 2, minusSign);\n    } }\n    default:\n    throw new Error(`Unknown zone
width \`${width}\``);\n    } }\n }\n\nconst JANUARY = 0;\nconst THURSDAY = 4;\nfunction
getFirstThursdayOfYear(year: number) {\n    const firstDayOfYear = (new Date(year, JANUARY, 1)).getDay();\n

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return new Date(\n    year, 0, 1 + ((firstDayOfYear <= THURSDAY) ? THURSDAY : THURSDAY + 7) -
firstDayOfYear);\n}\n\nfunction getThursdayThisWeek(datetime: Date) {\n return new Date(\n
datetime.getFullYear(), datetime.getMonth(),\n    datetime.getDate() + (THURSDAY -
datetime.getDay()));\n}\n\nfunction weekGetter(size: number, monthBased = false): DateFormatter {\n return
function(date: Date, locale: string) {\n let result;\n if (monthBased) {\n    const nbDaysBefore1stDayOfMonth
=\n        new Date(date.getFullYear(), date.getMonth(), 1).getDay() - 1;\n    const today = date.getDate();\n
result = 1 + Math.floor((today + nbDaysBefore1stDayOfMonth) / 7);\n } else {\n    const thisThurs =
getThursdayThisWeek(date);\n    // Some days of a year are part of next year according to ISO 8601.\n    //
Compute the firstThurs from the year of this week's Thursday\n    const firstThurs =
getFirstThursdayOfYear(thisThurs.getFullYear());\n    const diff = thisThurs.getTime() - firstThurs.getTime();\n
result = 1 + Math.round(diff / 6.048e8); // 6.048e8 ms per week\n } }\n\n return padNumber(result, size,
getLocaleNumberSymbol(locale, NumberSymbol.MinusSign));\n };\n}\n\n/**\n * Returns a date formatter that
provides the week-numbering year for the input date.\n */\nfunction weekNumberingYearGetter(size: number, trim
= false): DateFormatter {\n return function(date: Date, locale: string) {\n    const thisThurs =
getThursdayThisWeek(date);\n    const weekNumberingYear = thisThurs.getFullYear();\n    return padNumber(\n
weekNumberingYear, size, getLocaleNumberSymbol(locale, NumberSymbol.MinusSign), trim);\n };\n}\n\ntype
DateFormatter = (date: Date, locale: string, offset: number) => string;\n\nconst DATE_FORMATS: {[format:
string]: DateFormatter} = {};\n\n// Based on CLDR formats:\n// See complete list:
http://www.unicode.org/reports/tr35/tr35-dates.html#Date\_Field\_Symbol\_Table\n// See also explanations:
http://cldr.unicode.org/translation/date-time\n// TODO(ocombe): support all missing cldr formats: Y, U, Q, D, F, e,
c, j, J, C, A, v, V, X, x\nfunction getDateFormatter(format: string): DateFormatter|null {\n if
(DATE_FORMATS[format]) {\n    return DATE_FORMATS[format];\n } }\n\nlet formatter;\n\nswitch (format) {\n
// Era name (AD/BC)\n case 'G':\n case 'GG':\n case 'GGG':\n    formatter =
dateStrGetter(TranslationType.Eras, TranslationWidth.Abbreviated);\n    break;\n case 'GGGG':\n    formatter =
dateStrGetter(TranslationType.Eras, TranslationWidth.Wide);\n    break;\n case 'GGGGG':\n    formatter =
dateStrGetter(TranslationType.Eras, TranslationWidth.Narrow);\n    break;\n\n // 1 digit representation of the
year, e.g. (AD 1 => 1, AD 199 => 199)\n case 'y':\n    formatter = dateGetter(DateType.FullYear, 1, 0, false,
true);\n    break;\n // 2 digit representation of the year, padded (00-99). (e.g. AD 2001 => 01, AD 2010 => 10)\n
case 'yy':\n    formatter = dateGetter(DateType.FullYear, 2, 0, true, true);\n    break;\n // 3 digit representation of
the year, padded (000-999). (e.g. AD 2001 => 01, AD 2010 => 10)\n case 'yyy':\n    formatter =
dateGetter(DateType.FullYear, 3, 0, false, true);\n    break;\n // 4 digit representation of the year (e.g. AD 1 =>
0001, AD 2010 => 2010)\n case 'yyyy':\n    formatter = dateGetter(DateType.FullYear, 4, 0, false, true);\n
break;\n\n // 1 digit representation of the week-numbering year, e.g. (AD 1 => 1, AD 199 => 199)\n case 'Y':\n
formatter = weekNumberingYearGetter(1);\n    break;\n // 2 digit representation of the week-numbering year,
padded (00-99). (e.g. AD 2001 => 01, AD\n // 2010 => 10)\n case 'YY':\n    formatter =
weekNumberingYearGetter(2, true);\n    break;\n // 3 digit representation of the week-numbering year, padded
(000-999). (e.g. AD 1 => 001, AD\n // 2010 => 2010)\n case 'YYY':\n    formatter =
weekNumberingYearGetter(3);\n    break;\n // 4 digit representation of the week-numbering year (e.g. AD 1 =>
0001, AD 2010 => 2010)\n case 'YYYY':\n    formatter = weekNumberingYearGetter(4);\n    break;\n\n //
Month of the year (1-12), numeric\n case 'M':\n case 'L':\n    formatter = dateGetter(DateType.Month, 1, 1);\n
break;\n case 'MM':\n case 'LL':\n    formatter = dateGetter(DateType.Month, 2, 1);\n    break;\n\n // Month
of the year (January, ...), string, format\n case 'MMM':\n    formatter = dateStrGetter(TranslationType.Months,
TranslationWidth.Abbreviated);\n    break;\n case 'MMMM':\n    formatter =
dateStrGetter(TranslationType.Months, TranslationWidth.Wide);\n    break;\n case 'MMMMM':\n    formatter =
dateStrGetter(TranslationType.Months, TranslationWidth.Narrow);\n    break;\n\n // Month of the year (January,
...), string, standalone\n case 'LLL':\n    formatter =\n        dateStrGetter(TranslationType.Months,
TranslationWidth.Abbreviated, FormStyle.Standalone);\n    break;\n case 'LLLL':\n    formatter =\n        dateStrGetter(TranslationType.Months, TranslationWidth.Wide, FormStyle.Standalone);\n    break;\n case

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'LLLL':\n    formatter =\n        dateStrGetter(TranslationType.Months, TranslationWidth.Narrow,
FormStyle.Standalone);\n    break;\n\n // Week of the year (1, ... 52)\n    case 'w':\n        formatter =
weekGetter(1);\n    break;\n    case 'ww':\n        formatter = weekGetter(2);\n    break;\n\n // Week of the month
(1, ...)\n    case 'W':\n        formatter = weekGetter(1, true);\n    break;\n\n // Day of the month (1-31)\n    case 'd':\n        formatter = dateGetter(DateType.Date, 1);\n    break;\n    case 'dd':\n        formatter = dateGetter(DateType.Date,
2);\n    break;\n\n // Day of the Week\n    case 'E':\n    case 'EE':\n    case 'EEE':\n        formatter =
dateStrGetter(TranslationType.Days, TranslationWidth.Abbreviated);\n    break;\n    case 'EEEE':\n        formatter =
dateStrGetter(TranslationType.Days, TranslationWidth.Wide);\n    break;\n    case 'EEEEEE':\n        formatter =
dateStrGetter(TranslationType.Days, TranslationWidth.Narrow);\n    break;\n    case 'EEEEEEE':\n        formatter =
dateStrGetter(TranslationType.Days, TranslationWidth.Short);\n    break;\n\n // Generic period of the day (am-
pm)\n    case 'a':\n    case 'aa':\n    case 'aaa':\n        formatter = dateStrGetter(TranslationType.DayPeriods,
TranslationWidth.Abbreviated);\n    break;\n    case 'aaaa':\n        formatter =
dateStrGetter(TranslationType.DayPeriods, TranslationWidth.Wide);\n    break;\n    case 'aaaaa':\n        formatter =
dateStrGetter(TranslationType.DayPeriods, TranslationWidth.Narrow);\n    break;\n\n // Extended period of the
day (midnight, at night, ...), standalone\n    case 'b':\n    case 'bb':\n    case 'bbb':\n        formatter = dateStrGetter(\n
TranslationType.DayPeriods, TranslationWidth.Abbreviated, FormStyle.Standalone, true);\n    break;\n    case
'bbbb':\n        formatter = dateStrGetter(\n
TranslationType.DayPeriods, TranslationWidth.Wide,
FormStyle.Standalone, true);\n    break;\n    case 'bbbbb':\n        formatter = dateStrGetter(\n
TranslationType.DayPeriods, TranslationWidth.Narrow, FormStyle.Standalone, true);\n    break;\n\n // Extended
period of the day (midnight, night, ...), standalone\n    case 'B':\n    case 'BB':\n    case 'BBB':\n        formatter =
dateStrGetter(\n
TranslationType.DayPeriods, TranslationWidth.Abbreviated, FormStyle.Format, true);\n    break;\n    case 'BBBB':\n        formatter =\n        dateStrGetter(TranslationType.DayPeriods,
TranslationWidth.Wide, FormStyle.Format, true);\n    break;\n    case 'BBBBB':\n        formatter = dateStrGetter(\n
TranslationType.DayPeriods, TranslationWidth.Narrow, FormStyle.Format, true);\n    break;\n\n // Hour in
AM/PM, (1-12)\n    case 'h':\n        formatter = dateGetter(DateType.Hours, 1, -12);\n    break;\n    case 'hh':\n        formatter = dateGetter(DateType.Hours, 2, -12);\n    break;\n\n // Hour of the day (0-23)\n    case 'H':\n        formatter = dateGetter(DateType.Hours, 1);\n    break;\n    // Hour in day, padded (00-23)\n    case 'HH':\n        formatter = dateGetter(DateType.Hours, 2);\n    break;\n\n // Minute of the hour (0-59)\n    case 'm':\n        formatter = dateGetter(DateType.Minutes, 1);\n    break;\n    case 'mm':\n        formatter =
dateGetter(DateType.Minutes, 2);\n    break;\n\n // Second of the minute (0-59)\n    case 's':\n        formatter =
dateGetter(DateType.Seconds, 1);\n    break;\n    case 'ss':\n        formatter = dateGetter(DateType.Seconds, 2);\n    break;\n\n // Fractional second\n    case 'S':\n        formatter = dateGetter(DateType.FractionalSeconds, 1);\n    break;\n    case 'SS':\n        formatter = dateGetter(DateType.FractionalSeconds, 2);\n    break;\n    case 'SSS':\n        formatter = dateGetter(DateType.FractionalSeconds, 3);\n    break;\n\n\n // Timezone ISO8601 short format (-
0430)\n    case 'Z':\n    case 'ZZ':\n    case 'ZZZ':\n        formatter = timeZoneGetter(ZoneWidth.Short);\n    break;\n\n // Timezone ISO8601 extended format (-04:30)\n    case 'ZZZZ':\n        formatter =
timeZoneGetter(ZoneWidth.Extended);\n    break;\n\n // Timezone GMT short format (GMT+4)\n    case 'O':\n    case 'OO':\n    case 'OOO':\n        // Should be location, but fallback to format O instead because we don't have the data
yet\n    case 'z':\n    case 'zz':\n    case 'zzz':\n        formatter = timeZoneGetter(ZoneWidth.ShortGMT);\n    break;\n\n // Timezone GMT long format (GMT+0430)\n    case 'OOOO':\n    case 'ZZZZ':\n        // Should be location, but
fallback to format O instead because we don't have the data yet\n    case 'zzzz':\n        formatter =
timeZoneGetter(ZoneWidth.Long);\n    break;\n\n default:\n        return null;\n    }\n    DATE_FORMATS[format] =
formatter;\n    return formatter;\n}\n\nfunction timezoneToOffset(timezone: string, fallback: number): number {\n //
Support: IE 11 only, Edge 13-15+\n // IE/Edge do not \"understand\" colon (':') in timezone\n    timezone =
timezone.replace(/:/g, '');\n    const requestedTimezoneOffset = Date.parse('Jan 01, 1970 00:00:00 ' + timezone) /
60000;\n    return isNaN(requestedTimezoneOffset) ? fallback : requestedTimezoneOffset;\n}\n\nfunction
addDateMinutes(date: Date, minutes: number) {\n    date = new Date(date.getTime());\n    date.setMinutes(date.getMinutes() + minutes);\n    return date;\n}\n\nfunction convertTimezoneToLocal(date: Date,

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timezone: string, reverse: boolean): Date {
  const reverseValue = reverse ? -1 : 1;
  const dateTzOffset = date.getTimezoneOffset();
  const tzOffset = timezoneToOffset(timezone, dateTzOffset);
  return addDateMinutes(date, reverseValue * (tzOffset - dateTzOffset));
}

/**
 * Converts a value to date.
 * Supported input formats:
 * - `Date`
 * - number: timestamp
 * - string: numeric (e.g. `1234`), ISO and date strings in a format supported by
 *   [Date.parse()](https://developer.mozilla.org/en-US/docs/Web/JavaScript/Reference/Global_Objects/Date/parse).
 * Note: ISO strings without time return a date without timeoffset.
 * Throws if unable to convert to a date.
 */
export function toDate(value: string|number|Date): Date {
  if (isDate(value)) {
    return value;
  }
  if (typeof value === 'number' && !isNaN(value)) {
    return new Date(value);
  }
  if (typeof value === 'string') {
    value = value.trim();
    const parsedNb = parseFloat(value);
    // any string that only contains numbers, like `1234` but not like `1234hello`
    if (!isNaN(value as any - parsedNb)) {
      return new Date(parsedNb);
    }
    if (/^\d{4}-\d{1,2}-\d{1,2}$/.test(value)) {
      /* For ISO Strings without time the day, month and year must be extracted from the ISO String before Date creation to avoid time offset and errors in the new Date.
       If we only replace '-' with ',' in the ISO String (`2015,01,01`), and try to create a new date, some browsers (e.g. IE 9) will throw an invalid Date error.
       If we leave the '-' (`2015-01-01`) and try to create a new Date(`2015-01-01`) the timeoffset is applied.
       Note: ISO months are 0 for January, 1 for February, ...
      */
      const [y, m, d] = value.split('-').map((val: string) => +val);
      return new Date(y, m - 1, d);
    }
    let match: RegExpMatchArray|null;
    if (match = value.match(ISO8601_DATE_REGEX)) {
      return isoStringToDate(match);
    }
    const date = new Date(value as any);
    if (!isDate(date)) {
      throw new Error(`Unable to convert "${value}" into a date`);
    }
    return date;
  }
}

/**
 * Converts a date in ISO8601 to a Date.
 * Used instead of `Date.parse` because of browser discrepancies.
 */
export function isoStringToDate(match: RegExpMatchArray): Date {
  const date = new Date(0);
  let tzHour = 0;
  let tzMin = 0;
  // match[8] means that the string contains `Z` (UTC) or a timezone like `+01:00` or `+0100`
  const dateSetter = match[8] ? date.setUTCFullYear : date.setFullYear;
  const timeSetter = match[8] ? date.setUTCHours : date.setHours;
  // if there is a timezone defined like `+01:00` or `+0100`
  if (match[9]) {
    tzHour = Number(match[9] + match[10]);
    tzMin = Number(match[9] + match[11]);
  }
  dateSetter.call(date, Number(match[1]), Number(match[2]) - 1, Number(match[3]));
  const h = Number(match[4] || 0) - tzHour;
  const m = Number(match[5] || 0) - tzMin;
  const s = Number(match[6] || 0);
  // The ECMAScript specification (https://www.ecma-international.org/ecma-262/5.1/#sec-15.9.1.11)
  // defines that `DateTime` milliseconds should always be rounded down, so that `999.9ms` becomes `999ms`.
  const ms = Math.floor(parseFloat('0.' + (match[7] || 0)) * 1000);
  timeSetter.call(date, h, m, s, ms);
  return date;
}

export function isDate(value: any): value is Date {
  return value instanceof Date && !isNaN(value.valueOf());
}

/**
 * @license
 * Copyright Google LLC All Rights Reserved.
 * Use of this source code is governed by an MIT-style license that can be found in the LICENSE file at https://angular.io/license
 */
import {getLocaleNumberFormat, getLocaleNumberSymbol, getNumberOfCurrencyDigits, NumberFormatStyle, NumberSymbol} from './locale_data_api';
export const NUMBER_FORMAT_REGEX = /^(\d+)?\.((\d+)-(\d+))?$;/;
const MAX_DIGITS = 22;
const DECIMAL_SEP = '.';
const ZERO_CHAR = '0';
const PATTERN_SEP = ',';
const GROUP_SEP = ',';
const DIGIT_CHAR = '#';
const CURRENCY_CHAR = '¤';
const PERCENT_CHAR = '%';

/**
 * Transforms a number to a locale string based on a style and a format.
 */
function formatNumberToLocaleString(
  value: number, pattern: ParsedNumberFormat, locale: string, groupSymbol: NumberSymbol,
  decimalSymbol: NumberSymbol, digitsInfo?: string, isPercent = false): string {
  let formattedText = "";
  let isZero = false;
  if (!isFinite(value)) {
    formattedText = getLocaleNumberSymbol(locale, NumberSymbol.Infinity);
  } else {
    let parsedNumber = parseNumber(value);
    if (isPercent) {
      parsedNumber = toPercent(parsedNumber);
    }
    let minInt = pattern.minInt;
    let minFraction = pattern.minFrac;
    let maxFraction = pattern.maxFrac;
    if (digitsInfo) {
      const parts = digitsInfo.match(NUMBER_FORMAT_REGEX);
      if (parts === null) {
        throw new Error(`${digitsInfo} is not a valid digit info`);
      }
      const minIntPart = parts[1];
      const minFractionPart = parts[3];
      const maxFractionPart = parts[5];
      if (minIntPart !== null) {
        minInt =

```

```

parseIntAutoRadix(minIntPart);\n    }\n    if (minFractionPart != null) {\n        minFraction =
parseIntAutoRadix(minFractionPart);\n    }\n    if (maxFractionPart != null) {\n        maxFraction =
parseIntAutoRadix(maxFractionPart);\n    } else if (minFractionPart != null && minFraction > maxFraction) {\n
        maxFraction = minFraction;\n    }\n    }\n    roundNumber(parsedNumber, minFraction, maxFraction);\n\n    let
digits = parsedNumber.digits;\n    let integerLen = parsedNumber.integerLen;\n    const exponent =
parsedNumber.exponent;\n    let decimals = [];\n    isZero = digits.every(d => !d);\n\n    // pad zeros for small
numbers\n    for (; integerLen < minInt; integerLen++) {\n        digits.unshift(0);\n    }\n\n    // pad zeros for small
numbers\n    for (; integerLen < 0; integerLen++) {\n        digits.unshift(0);\n    }\n\n    // extract decimals digits\n    if
(integerLen > 0) {\n        decimals = digits.splice(integerLen, digits.length);\n    } else {\n        decimals = digits;\n
digits = [0];\n    }\n\n    // format the integer digits with grouping separators\n    const groups = [];\n    if
(digits.length >= pattern.lgSize) {\n        groups.unshift(digits.splice(-pattern.lgSize, digits.length).join("));\n    }\n\n
while (digits.length > pattern.gSize) {\n        groups.unshift(digits.splice(-pattern.gSize, digits.length).join("));\n
    }\n\n    if (digits.length) {\n        groups.unshift(digits.join("));\n    }\n\n    formattedText =
groups.join(getLocaleNumberSymbol(locale, groupSymbol));\n\n    // append the decimal digits\n    if
(decimals.length) {\n        formattedText += getLocaleNumberSymbol(locale, decimalSymbol) + decimals.join(");\n
    }\n\n    if (exponent) {\n        formattedText += getLocaleNumberSymbol(locale, NumberSymbol.Exponential) + '+' +
exponent;\n    }\n    }\n\n    if (value < 0 && !isZero) {\n        formattedText = pattern.negPre + formattedText +
pattern.negSuf;\n    } else {\n        formattedText = pattern.posPre + formattedText + pattern.posSuf;\n    }\n\n    return
formattedText;\n}\n\n/**\n * @ngModule CommonModule\n * @description\n * Formats a number as currency
using locale rules.\n * @param value The number to format.\n * @param locale A locale code for the locale
format rules to use.\n * @param currency A string containing the currency symbol or its name,\n * such as \"$" or
"Canadian Dollar". Used in output string, but does not affect the operation\n * of the function.\n * @param
currencyCode The [ISO 4217](https://en.wikipedia.org/wiki/ISO_4217)\n * currency code, such as `USD` for the
US dollar and `EUR` for the euro.\n * Used to determine the number of digits in the decimal part.\n * @param
digitInfo Decimal representation options, specified by a string in the following format:\n *
`{minIntegerDigits}.{minFractionDigits}-{maxFractionDigits}`. See `DecimalPipe` for more details.\n *\n *
@return The formatted currency value.\n *\n * @see `formatNumber()`\n * @see `DecimalPipe`\n * @see
[Internationalization (i18n) Guide](https://angular.io/guide/i18n)\n *\n * @publicApi\n */\nexport function
formatCurrency(\n    value: number, locale: string, currency: string, currencyCode?: string,\n    digitsInfo?: string):
string {\n    const format = getLocaleNumberFormat(locale, NumberFormatStyle.Currency);\n    const pattern =
parseNumberFormat(format, getLocaleNumberSymbol(locale, NumberSymbol.MinusSign));\n\n    pattern.minFrac =
getNumberOfCurrencyDigits(currencyCode!);\n    pattern.maxFrac = pattern.minFrac;\n\n    const res =
formatNumberToLocaleString(\n        value, pattern, locale, NumberSymbol.CurrencyGroup,
NumberSymbol.CurrencyDecimal, digitsInfo);\n    return res\n        .replace(CURRENCY_CHAR, currency)\n        // if
we have 2 time the currency character, the second one is ignored\n        .replace(CURRENCY_CHAR, "")\n        // If
there is a spacing between currency character and the value and\n        // the currency character is suppressed by
passing an empty string, the\n        // spacing character would remain as part of the string. Then we\n        // should
remove it.\n        .trim();\n}\n\n/**\n * @ngModule CommonModule\n * @description\n * Formats a number as a
percentage according to locale rules.\n * @param value The number to format.\n * @param locale A locale code
for the locale format rules to use.\n * @param digitInfo Decimal representation options, specified by a string in the
following format:\n * `{minIntegerDigits}.{minFractionDigits}-{maxFractionDigits}`. See `DecimalPipe` for more
details.\n *\n * @returns The formatted percentage value.\n *\n * @see `formatNumber()`\n * @see
`DecimalPipe`\n * @see [Internationalization (i18n) Guide](https://angular.io/guide/i18n)\n *\n * @publicApi\n */\n
export function formatPercent(value: number, locale: string, digitsInfo?: string): string {\n    const format =
getLocaleNumberFormat(locale, NumberFormatStyle.Percent);\n    const pattern = parseNumberFormat(format,
getLocaleNumberSymbol(locale, NumberSymbol.MinusSign));\n    const res = formatNumberToLocaleString(\n
value, pattern, locale, NumberSymbol.Group, NumberSymbol.Decimal, digitsInfo, true);\n    return res.replace(\n
new RegExp(PERCENT_CHAR, 'g'), getLocaleNumberSymbol(locale, NumberSymbol.PercentSign));\n}\n\n/**

```

```

* @ngModule CommonModule\n * @description\n *\n * Formats a number as text, with group sizing, separator,
and other\n * parameters based on the locale.\n *\n * @param value The number to format.\n * @param locale A
locale code for the locale format rules to use.\n * @param digitInfo Decimal representation options, specified by a
string in the following format:\n * `{minIntegerDigits}.{minFractionDigits}-{maxFractionDigits}`. See
`DecimalPipe` for more details.\n *\n * @returns The formatted text string.\n * @see [Internationalization (i18n)
Guide](https://angular.io/guide/i18n)\n *\n * @publicApi\n */\nexport function formatNumber(value: number,
locale: string, digitsInfo?: string): string {\n  const format = getLocaleNumberFormat(locale,
NumberFormatStyle.Decimal);\n  const pattern = parseNumberFormat(format, getLocaleNumberSymbol(locale,
NumberSymbol.MinusSign));\n  return formatNumberToLocaleString(\n    value, pattern, locale,
NumberSymbol.Group, NumberSymbol.Decimal, digitsInfo);\n}\n\ninterface ParsedNumberFormat {\n  minInt:
number;\n  // the minimum number of digits required in the fraction part of the number\n  minFrac: number;\n  // the
maximum number of digits required in the fraction part of the number\n  maxFrac: number;\n  // the prefix for a
positive number\n  posPre: string;\n  // the suffix for a positive number\n  posSuf: string;\n  // the prefix for a
negative number (e.g. `` or `(`))\n  negPre: string;\n  // the suffix for a negative number (e.g. `)`)\n  negSuf: string;\n
// number of digits in each group of separated digits\n  gSize: number;\n  // number of digits in the last group of
digits before the decimal separator\n  lgSize: number;\n}\n\nfunction parseNumberFormat(format: string, minusSign
= '-'): ParsedNumberFormat {\n  const p = {\n    minInt: 1,\n    minFrac: 0,\n    maxFrac: 0,\n    posPre: "",\n    posSuf:
",\n    negPre: "",\n    negSuf: "",\n    gSize: 0,\n    lgSize: 0\n  };\n  const patternParts =
format.split(PATTERN_SEP);\n  const positive = patternParts[0];\n  const negative = patternParts[1];\n  const
positiveParts = positive.indexOf(DECIMAL_SEP) !== -1 ?\n    positive.split(DECIMAL_SEP) :\n    [\n      positive.substring(0, positive.lastIndexOf(ZERO_CHAR) + 1),\n      positive.substring(positive.lastIndexOf(ZERO_CHAR) + 1)\n    ],\n    integer = positiveParts[0], fraction =
positiveParts[1] || ";\n  p.posPre = integer.substr(0, integer.indexOf(DIGIT_CHAR));\n  for (let i = 0; i <
fraction.length; i++) {\n    const ch = fraction.charAt(i);\n    if (ch === ZERO_CHAR) {\n      p.minFrac =
p.maxFrac = i + 1;\n    } else if (ch === DIGIT_CHAR) {\n      p.maxFrac = i + 1;\n    } else {\n      p.posSuf +=
ch;\n    }\n  }\n  const groups = integer.split(GROUP_SEP);\n  p.gSize = groups[1] ? groups[1].length : 0;\n  p.lgSize = (groups[2] || groups[1]) ? (groups[2] || groups[1]).length : 0;\n  if (negative) {\n    const trunkLen =
positive.length - p.posPre.length - p.posSuf.length,\n      pos = negative.indexOf(DIGIT_CHAR);\n    p.negPre =
negative.substr(0, pos).replace(/g, ");\n    p.negSuf = negative.substr(pos + trunkLen).replace(/g, ");\n  } else {\n    p.negPre = minusSign + p.posPre;\n    p.negSuf = p.posSuf;\n  }\n  return p;\n}\n\ninterface ParsedNumber {\n  //
an array of digits containing leading zeros as necessary\n  digits: number[];\n  // the exponent for numbers that
would need more than `MAX_DIGITS` digits in `d`\n  exponent: number;\n  // the number of the digits in `d` that
are to the left of the decimal point\n  integerLen: number;\n}\n\n// Transforms a parsed number into a percentage by
multiplying it by 100\nfunction toPercent(parsedNumber: ParsedNumber): ParsedNumber {\n  // if the number is 0,
don't do anything\n  if (parsedNumber.digits[0] === 0) {\n    return parsedNumber;\n  }\n  // Getting the current
number of decimals\n  const fractionLen = parsedNumber.digits.length - parsedNumber.integerLen;\n  if
(parsedNumber.exponent) {\n    parsedNumber.exponent += 2;\n  } else {\n    if (fractionLen === 0) {\n      parsedNumber.digits.push(0, 0);\n    } else if (fractionLen === 1) {\n      parsedNumber.digits.push(0);\n    }\n    parsedNumber.integerLen += 2;\n  }\n  return parsedNumber;\n}\n\n/**\n * Parses a number.\n * Significant bits
of this parse algorithm came from https://github.com/MikeMcl/big.js\n */\nfunction parseNumber(num: number):
ParsedNumber {\n  let numStr = Math.abs(num) + ";\n  let exponent = 0, digits, integerLen;\n  let i, j, zeros;\n  //
Decimal point?\n  if ((integerLen = numStr.indexOf(DECIMAL_SEP)) > -1) {\n    numStr =
numStr.replace(DECIMAL_SEP, ");\n  }\n  // Exponential form?\n  if ((i = numStr.search(/e/i)) > 0) {\n    // Work
out the exponent.\n    if (integerLen < 0) integerLen = i;\n    integerLen += +numStr.slice(i + 1);\n    numStr =
numStr.substring(0, i);\n  } else if (integerLen < 0) {\n    // There was no decimal point or exponent so it is an
integer.\n    integerLen = numStr.length;\n  }\n  // Count the number of leading zeros.\n  for (i = 0;\n    numStr.charAt(i) === ZERO_CHAR; i++) { /* empty */\n  }\n  if (i === (zeros = numStr.length)) {\n    // The
digits are all zero.\n    digits = [0];\n    integerLen = 1;\n  } else {\n    // Count the number of trailing zeros\n    zeros-

```



```

-;\n while (numStr.charAt(zeros) === ZERO_CHAR) zeros--;\n\n // Trailing zeros are insignificant so ignore
them\n integerLen -= i;\n digits = [];\n // Convert string to array of digits without leading/trailing zeros.\n for
(j = 0; i <= zeros; i++, j++) {\n digits[j] = Number(numStr.charAt(i));\n }\n }\n\n // If the number overflows
the maximum allowed digits then use an exponent.\n if (integerLen > MAX_DIGITS) {\n digits = digits.splice(0,
MAX_DIGITS - 1);\n exponent = integerLen - 1;\n integerLen = 1;\n }\n\n return {digits, exponent,
integerLen};\n}\n\n/**\n * Round the parsed number to the specified number of decimal places\n * This function
changes the parsedNumber in-place\n */\nfunction roundNumber(parsedNumber: ParsedNumber, minFrac: number,
maxFrac: number) {\n if (minFrac > maxFrac) {\n throw new Error(`The minimum number of digits after fraction
(${\n minFrac}) is higher than the maximum (${maxFrac}).`);\n }\n\n let digits = parsedNumber.digits;\n let
fractionLen = digits.length - parsedNumber.integerLen;\n const fractionSize = Math.min(Math.max(minFrac,
fractionLen), maxFrac);\n\n // The index of the digit to where rounding is to occur\n let roundAt = fractionSize +
parsedNumber.integerLen;\n let digit = digits[roundAt];\n\n if (roundAt > 0) {\n // Drop fractional digits beyond
`roundAt`\n digits.splice(Math.max(parsedNumber.integerLen, roundAt));\n\n // Set non-fractional digits beyond
`roundAt` to 0\n for (let j = roundAt; j < digits.length; j++) {\n digits[j] = 0;\n }\n } else {\n // We rounded
to zero so reset the parsedNumber\n fractionLen = Math.max(0, fractionLen);\n parsedNumber.integerLen = 1;\n
digits.length = Math.max(1, roundAt = fractionSize + 1);\n digits[0] = 0;\n for (let i = 1; i < roundAt; i++)
digits[i] = 0;\n }\n\n if (digit >= 5) {\n if (roundAt - 1 < 0) {\n for (let k = 0; k > roundAt; k--) {\n
digits.unshift(0);\n parsedNumber.integerLen++;\n }\n digits.unshift(1);\n
parsedNumber.integerLen++;\n } else {\n digits[roundAt - 1]++;\n }\n }\n\n // Pad out with zeros to get the
required fraction length\n for (; fractionLen < Math.max(0, fractionSize); fractionLen++) digits.push(0);\n\n let
dropTrailingZeros = fractionSize !== 0;\n // Minimal length = nb of decimals required + current nb of integers\n //
Any number besides that is optional and can be removed if it's a trailing 0\n const minLen = minFrac +
parsedNumber.integerLen;\n // Do any carrying, e.g. a digit was rounded up to 10\n const carry =
digits.reduceRight(function(carry, d, i, digits) {\n d = d + carry;\n digits[i] = d < 10 ? d : d - 10; // d % 10\n if
(dropTrailingZeros) {\n // Do not keep meaningless fractional trailing zeros (e.g. 15.52000 --> 15.52)\n if
(digits[i] === 0 && i >= minLen) {\n digits.pop();\n } else {\n dropTrailingZeros = false;\n }\n }\n }\n
return d >= 10 ? 1 : 0; // Math.floor(d / 10);\n }, 0);\n if (carry) {\n digits.unshift(carry);\n
parsedNumber.integerLen++;\n }\n}\n\nexport function parseIntAutoRadix(text: string): number {\n const result:
number = parseInt(text);\n if (isNaN(result)) {\n throw new Error('Invalid integer literal when parsing ' + text);\n
}\n return result;\n}\n\n", "/*\n * @license\n * Copyright Google LLC All Rights Reserved.\n *\n * Use of this
source code is governed by an MIT-style license that can be\n * found in the LICENSE file at
https://angular.io/license\n */\n\nimport {Inject, Injectable, LOCALE_ID} from '@angular/core';\n\nimport
{getLocalePluralCase, Plural} from './locale_data_api';\n\n/**\n * @publicApi\n */\nexport abstract class
NgLocalization {\n abstract getPluralCategory(value: any, locale?: string): string;\n}\n\n/**\n * Returns the plural
category for a given value.\n * - "="value" when the case exists,\n * - the plural category otherwise\n */\nexport
function getPluralCategory(\n value: number, cases: string[], ngLocalization: NgLocalization, locale?: string):
string {\n let key = `=${value}`;\n if (cases.indexOf(key) > -1) {\n return key;\n }\n\n key =
ngLocalization.getPluralCategory(value, locale);\n\n if (cases.indexOf(key) > -1) {\n return key;\n }\n\n if
(cases.indexOf('other') > -1) {\n return 'other';\n }\n\n throw new Error(`No plural message found for value
\`${value}\``);\n}\n\n/**\n * Returns the plural case based on the locale\n *\n * @publicApi\n
*/\n\n@Injectable()\nexport class NgLocaleLocalization extends NgLocalization {\n
constructor(@Inject(LOCALE_ID) protected locale: string) {\n super();\n }\n\n getPluralCategory(value: any,
locale?: string): string {\n const plural = getLocalePluralCase(locale || this.locale)(value);\n\n switch (plural) {\n
case Plural.Zero:\n return 'zero';\n case Plural.One:\n return 'one';\n case Plural.Two:\n return
'two';\n case Plural.Few:\n return 'few';\n case Plural.Many:\n return 'many';\n default:\n
return 'other';\n }\n }\n}\n\n", "/*\n * @license\n * Copyright Google LLC All Rights Reserved.\n *\n * Use of this
source code is governed by an MIT-style license that can be\n * found in the LICENSE file at
https://angular.io/license\n */\n\nimport {registerLocaleData} from '@angular/core';\n\n/**\n * Register global data

```

to be used internally by Angular. See the [Angular guide](#) ([guide/i18n#i18n-pipes](#)) to know how to import additional locale data.

The signature `registerLocaleData(data: any, extraData?: any)` is deprecated since v5.1.

`@publicApi`

```

export function registerLocaleData(data: any, localeId?: string|any, extraData?: any): void {
  return registerLocaleData(data, localeId, extraData);
}

```

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```

export function parseCookieValue(cookieStr: string, name: string): string|null {
  name = encodeURIComponent(name);
  for (const cookie of cookieStr.split(';')) {
    const eqIndex = cookie.indexOf('=');
    const [cookieName, cookieValue]: string[] =
      eqIndex === -1 ? [cookie, ''] :
      [cookie.slice(0, eqIndex), cookie.slice(eqIndex + 1)];
    if (cookieName.trim() === name) {
      return decodeURIComponent(cookieValue);
    }
  }
  return null;
}

```

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```

import {Directive, DoCheck, ElementRef, Input, IterableChanges, IterableDiffer, IterableDiffers, KeyValueChanges, KeyValueDiffer, KeyValueDiffers, Renderer2, isListLikeIterable as isListLikeIterable, stringify as stringify} from '@angular/core';
import {NgClassSupportedTypes = string[]|Set<string>|{[klass: string]: any}|null|undefined;} from '@angular/common';
import {CommonModule} from '@angular/core';
import {usageNotes} from '@angular/core';
<some-element [ngClass]="['first second']">...</some-element>
<some-element [ngClass]="['first', 'second']">...</some-element>
<some-element [ngClass]="{'first': true, 'second': true, 'third': false}">...</some-element>
<some-element [ngClass]="stringExp|arrayExp|objExp">...</some-element>
<some-element [ngClass]="{'class1 class2 class3': true}">...</some-element>

```

Adds and removes CSS classes on an HTML element.

The CSS classes are updated as follows, depending on the type of the expression evaluation:

- `'string'` - the CSS classes listed in the string (space delimited) are added,
- `Array` - the CSS classes declared as Array elements are added,
- `Object` - keys are CSS classes that get added when the expression given in the value evaluates to a truthy value, otherwise they are removed.

`@publicApi`

```

@Directive({selector: '[ngClass]'})
export class NgClass implements DoCheck {
  private _iterableDiffer: IterableDiffer<string>|null = null;
  private _keyValueDiffer: KeyValueDiffer<string, any>|null = null;
  private _initialClasses: string[] = [];
  private _rawClass: NgClassSupportedTypes = null;

  constructor(
    private _iterableDiffers: IterableDiffers,
    private _keyValueDiffers: KeyValueDiffers,
    private _ngEl: ElementRef,
    private _renderer: Renderer2) {}

  @Input('class')
  set klass(value: string) {
    this._removeClasses(this._initialClasses);
    this._initialClasses = typeof value === 'string' ? value.split(/\s+/) : [];
    this._applyClasses(this._initialClasses);
    this._applyClasses(this._rawClass);
  }

  @Input('ngClass')
  set ngClass(value: string|string[]|Set<string>|{[klass: string]: any}) {
    this._removeClasses(this._rawClass);
    this._applyClasses(this._initialClasses);
    this._iterableDiffer = null;
    this._keyValueDiffer = null;
    this._rawClass = typeof value === 'string' ? value.split(/\s+/) : value;
    if (this._rawClass) {
      if (isListLikeIterable(this._rawClass)) {
        this._iterableDiffer = this._iterableDiffers.find(this._rawClass).create();
      } else {
        this._keyValueDiffer = this._keyValueDiffers.find(this._rawClass).create();
      }
    }
  }

  ngDoCheck() {
    if (this._iterableDiffer) {
      const iterableChanges = this._iterableDiffer.diff(this._rawClass as string[]);
      if (iterableChanges) {
        this._applyIterableChanges(iterableChanges);
      }
    } else if (this._keyValueDiffer) {
      const keyValueChanges = this._keyValueDiffer.diff(this._rawClass as {[k: string]: any});
      if (keyValueChanges) {
        this._applyKeyValueChanges(keyValueChanges);
      }
    }
  }

  private _applyKeyValueChanges(changes: KeyValueChanges<string, any>): void {
    changes.forEachAddedItem((record) => this._toggleClass(record.key, record.currentValue));
    changes.forEachChangedItem((record) => this._toggleClass(record.key, record.currentValue));
    changes.forEachRemovedItem((record) => {
      if (record.previousValue) {
        this._toggleClass(record.key, false);
      }
    });
  }

  private _applyIterableChanges(changes: IterableChanges<string>): void {
    changes.forEachAddedItem((record) => {
      if (typeof record.item === 'string') {
        this._toggleClass(record.item, true);
      } else {
        throw new Error(`NgClass can only toggle CSS classes

```

```

expressed as strings, got ${\n      stringify(record.item)});\n  }\n });\n\n
changes.forEachRemovedItem((record) => this._toggleClass(record.item, false));\n }\n\n /**\n * Applies a
collection of CSS classes to the DOM element.\n *\n * For argument of type Set and Array CSS class names
contained in those collections are always\n * added.\n * For argument of type Map CSS class name in the map's
key is toggled based on the value (added\n * for truthy and removed for falsy).\n */\n private
_applyClasses(rawClassVal: NgClassSupportedTypes) {\n  if (rawClassVal) {\n    if (Array.isArray(rawClassVal)
|| rawClassVal instanceof Set) {\n      (<any>rawClassVal).forEach((klass: string) => this._toggleClass(klass,
true));\n    } else {\n      Object.keys(rawClassVal).forEach(klass => this._toggleClass(klass,
!!rawClassVal[klass]));\n    }\n  }\n }\n\n /**\n * Removes a collection of CSS classes from the DOM element.
This is mostly useful for cleanup\n * purposes.\n */\n private _removeClasses(rawClassVal:
NgClassSupportedTypes) {\n  if (rawClassVal) {\n    if (Array.isArray(rawClassVal) || rawClassVal instanceof
Set) {\n      (<any>rawClassVal).forEach((klass: string) => this._toggleClass(klass, false));\n    } else {\n      Object.keys(rawClassVal).forEach(klass => this._toggleClass(klass, false));\n    }\n  }\n }\n\n private
_toggleClass(klass: string, enabled: boolean): void {\n  klass = klass.trim();\n  if (klass) {\n    klass.split(/\\s+/g).forEach(klass => {\n      if (enabled) {\n        this._renderer.addClass(this._ngEl.nativeElement,
klass);\n      } else {\n        this._renderer.removeClass(this._ngEl.nativeElement, klass);\n      }\n    });\n  }\n }\n\n }
"/**\n * @license\n * Copyright Google LLC All Rights Reserved.\n *\n * Use of this source code is
governed by an MIT-style license that can be\n * found in the LICENSE file at https://angular.io/license\n
*/\n\nimport { ComponentFactoryResolver, ComponentRef, Directive, Injector, Input, NgModuleFactory,
NgModuleRef, OnChanges, OnDestroy, SimpleChanges, StaticProvider, Type, ViewContainerRef } from
'@angular/core';\n\n\n/**\n * Instantiates a single { @link Component } type and inserts its Host View into current
View.\n * `NgComponentOutlet` provides a declarative approach for dynamic component creation.\n *\n *
`NgComponentOutlet` requires a component type, if a falsy value is set the view will clear and\n * any existing
component will get destroyed.\n *\n * @usageNotes\n *\n * ### Fine tune control\n *\n * You can control the
component creation process by using the following optional attributes:\n *\n * * `ngComponentOutletInjector` :
Optional custom { @link Injector } that will be used as parent for\n * the Component. Defaults to the injector of the
current view container.\n *\n * * `ngComponentOutletContent` : Optional list of projectable nodes to insert into the
content\n * section of the component, if exists.\n *\n * * `ngComponentOutletNgModuleFactory` : Optional module
factory to allow dynamically loading other\n * module, then load a component from that module.\n *\n * ###
Syntax\n *\n * Simple\n * ```\n * <ng-container *ngComponentOutlet="componentTypeExpression"></ng-
container>\n * ```\n *\n * Customized injector/content\n * ```\n * <ng-container
*ngComponentOutlet="componentTypeExpression";\n *                               injector: injectorExpression;\n *
                               content: contentNodesExpression;">\n * </ng-container>\n * ```\n *\n * Customized
ngNgModuleFactory\n * ```\n * <ng-container *ngComponentOutlet="componentTypeExpression;\n *
                               ngNgModuleFactory: moduleFactory;">\n * </ng-container>\n * ```\n *\n * ### A simple example\n *\n *
{ @example common/ngComponentOutlet/ts/module.ts region='SimpleExample'}\n *\n * A more complete example
with additional options:\n *\n * { @example common/ngComponentOutlet/ts/module.ts
region='CompleteExample'}\n *\n * @publicApi\n * @ngModule CommonModule\n */\n @Directive({ selector:
'[ngComponentOutlet]'})\n export class NgComponentOutlet implements OnChanges, OnDestroy {\n  //
TODO(issue/24571): remove '!.\n  @Input() ngComponentOutlet!: Type<any>;\n  // TODO(issue/24571): remove
'!\n  @Input() ngComponentOutletInjector!: Injector;\n  // TODO(issue/24571): remove '!.\n  @Input()
ngComponentOutletContent!: any[][];\n  // TODO(issue/24571): remove '!.\n  @Input()
ngComponentOutletNgModuleFactory!: NgModuleFactory<any>;\n  private _componentRef:
ComponentRef<any>|null = null;\n  private _moduleRef: NgModuleRef<any>|null = null;\n\n  constructor(private
_viewContainerRef: ViewContainerRef) {\n\n    ngOnChanges(changes: SimpleChanges) {\n      this._viewContainerRef.clear();\n      this._componentRef = null;\n\n      if (this.ngComponentOutlet) {\n        const
elInjector = this.ngComponentOutletInjector || this._viewContainerRef.parentInjector;\n\n        if
(changes['ngComponentOutletNgModuleFactory']) {\n          if (this._moduleRef) this._moduleRef.destroy();\n\n

```

```

if (this.ngComponentOutletNgModuleFactory) {\n      const parentModule = eInjector.get(NgModuleRef);\n      this._moduleRef = this.ngComponentOutletNgModuleFactory.create(parentModule.injector);\n    } else {\n      this._moduleRef = null;\n    }\n  }\n  const componentFactoryResolver = this._moduleRef ?\n  this._moduleRef.componentFactoryResolver :\n  eInjector.get(ComponentFactoryResolver);\n  const componentFactory =\n  componentFactoryResolver.resolveComponentFactory(this.ngComponentOutlet);\n  this._componentRef =\n  this._viewContainerRef.createComponent(\n    componentFactory, this._viewContainerRef.length, eInjector,\n    this.ngComponentOutletContent);\n  }\n  ngOnDestroy() {\n    if (this._moduleRef)\n      this._moduleRef.destroy();\n  }\n}\n", "/*\n * @license\n * Copyright Google LLC All Rights Reserved.\n *\n * Use of this source code is governed by an MIT-style license that can be\n * found in the LICENSE file at\n * https://angular.io/license\n */\n\nimport {Directive, DoCheck, EmbeddedViewRef, Input, isDevMode,\n  IterableChangeRecord, IterableChanges, IterableDiffer, IterableDiffers, NgIterable, TemplateRef, TrackByFunction,\n  ViewContainerRef} from '@angular/core';\n\n/**\n * @publicApi\n */\nexport class NgForOfContext<T, U> extends\n  NgIterable<T> = NgIterable<T> > {\n  constructor(public $implicit: T, public ngForOf: U, public index: number,\n    public count: number) {}\n  get first(): boolean {\n    return this.index === 0;\n  }\n  get last(): boolean {\n    return this.index === this.count - 1;\n  }\n  get even(): boolean {\n    return this.index % 2 === 0;\n  }\n  get\n  odd(): boolean {\n    return !this.even;\n  }\n}\n\n/**\n * A [structural directive](guide/structural-directives) that\n  renders\n * a template for each item in a collection.\n * The directive is placed on an element, which becomes the\n  parent\n * of the cloned templates.\n *\n * The `ngForOf` directive is generally used in the\n * [shorthand\n  form](guide/structural-directives#the-asterisk--prefix) `*ngFor`.\n * In this form, the template to be rendered for\n  each iteration is the content\n * of an anchor element containing the directive.\n *\n * The following example shows\n  the shorthand syntax with some options,\n * contained in an `- ` element.\n *\n * ```\n * <li *ngFor="let item of\n  items; index as i; trackBy: trackByFn">...</li>\n * ```\n *\n * The shorthand form expands into a long form that\n  uses the `ngForOf` selector\n * on an `` element.\n * The content of the `` element is\n  the `- ` element that held the\n * short-form directive.\n *\n * Here is the expanded version of the short-form\n  example.\n *\n * ```\n * <ng-template ngFor let-item [ngForOf]="items" let-i="index"\n  [ngForTrackBy]="trackByFn">\n *   <li>...</li>\n * </ng-template>\n * ```\n *\n * Angular automatically expands\n  the shorthand syntax as it compiles the template.\n * The context for each embedded view is logically merged to the\n  current component\n * context according to its lexical position.\n *\n * When using the shorthand syntax, Angular\n  allows only [one structural directive\n * on an element](guide/structural-directives#one-structural-directive-per-\n  host-element).\n * If you want to iterate conditionally, for example,\n * put the `*ngIf` on a container element that\n  wraps the `*ngFor` element.\n * For further discussion, see\n * [Structural Directives](guide/structural-\n  directives#one-per-element).\n *\n * @usageNotes\n *\n * ### Local variables\n *\n * `NgForOf` provides exported\n  values that can be aliased to local variables.\n * For example:\n *\n * ```\n * <li *ngFor="let user of users; index as\n  i; first as isFirst">\n *   {{i}} / {{users.length}}. {{user}} <span *ngIf="isFirst">default</span>\n * </li>\n * ```\n *\n * The following exported values can be aliased to local variables:\n *\n * - `$implicit: T`: The value of the\n  individual items in the iterable (`ngForOf`).\n * - `ngForOf: NgIterable<T>`: The value of the iterable expression.\n  Useful when the expression is\n * more complex than a property access, for example when using the async pipe\n  (`userStreams | async`).\n * - `index: number`: The index of the current item in the iterable.\n * - `count:\n  number`: The length of the iterable.\n * - `first: boolean`: True when the item is the first item in the iterable.\n * -\n  `last: boolean`: True when the item is the last item in the iterable.\n * - `even: boolean`: True when the item has an\n  even index in the iterable.\n * - `odd: boolean`: True when the item has an\n  odd index in the iterable.\n *\n * ###\n  Change propagation\n *\n * When the contents of the iterator changes, `NgForOf` makes the\n  corresponding changes\n * to the DOM:\n *\n * * When an item is added, a new instance of the template is added to the\n  DOM.\n * * When an\n  item is removed, its template instance is removed from the DOM.\n * * When items are reordered, their respective\n  templates are reordered in the DOM.\n *\n * Angular uses object identity to track insertions and deletions within the\n  iterator and reproduce\n * those changes in the DOM. This has important implications for animations and any\n  stateful\n * controls that are present, such as `` elements that accept user input. Inserted rows can be

```

animated in, deleted rows can be animated out, and unchanged rows retain any unsaved state\n * such as user input.\n * For more on animations, see [Transitions and Triggers](guide/transition-and-triggers).\n * The identities of elements in the iterator can change while the data does not.\n * This can happen, for example, if the iterator is produced from an RPC to the server, and that\n * RPC is re-run. Even if the data hasn't changed, the second response produces objects with\n * different identities, and Angular must tear down the entire DOM and rebuild it (as if all old\n * elements were deleted and all new elements inserted).\n * To avoid this expensive operation, you can customize the default tracking algorithm.\n * by supplying the `trackBy` option to `NgForOf`.\n * `trackBy` takes a function that has two arguments: `index` and `item`.\n * If `trackBy` is given, Angular tracks changes by the return value of the function.\n * @see [Structural Directives](guide/structural-directives)\n * @ngModule CommonModule\n * @publicApi\n * ^\n @Directive({selector: '[ngFor][ngForOf]'})\n export class NgForOf<T, U extends NgIterable<T> = NgIterable<T>> implements DoCheck {\n /**\n * The value of the iterable expression, which can be used as a\n * [template input variable](guide/structural-directives#template-input-variable).\n * @Input()\n set ngForOf(ngForOf: U&NgIterable<T>|undefined|null) {\n this._ngForOf = ngForOf;\n this._ngForOfDirty = true;\n }\n /**\n * A function that defines how to track changes for items in the iterable.\n * When items are added, moved, or removed in the iterable,\n * the directive must re-render the appropriate DOM nodes.\n * To minimize churn in the DOM, only nodes that have changed\n * are re-rendered.\n * By default, the change detector assumes that\n * the object instance identifies the node in the iterable.\n * When this function is supplied, the directive uses\n * the result of calling this function to identify the item node,\n * rather than the identity of the object itself.\n * The function receives two inputs,\n * the iteration index and the associated node data.\n * @Input()\n set ngForTrackBy(fn: TrackByFunction<T>) {\n if (isDevMode() && fn != null && typeof fn !== 'function') {\n // TODO(vicb): use a log service once there is a public one available\n if (<any>console && <any>console.warn) {\n console.warn(\n `trackBy must be a function, but received \${JSON.stringify(fn)}.` +\n `See https://angular.io/api/common/NgForOf#change-propagation for more information.`);\n }\n }\n this._trackByFn = fn;\n }\n get ngForTrackBy(): TrackByFunction<T> {\n return this._trackByFn;\n }\n private _ngForOf: U|undefined|null = null;\n private _ngForOfDirty: boolean = true;\n private _differ: IterableDiffer<T>|null = null;\n // TODO(issue/24571): remove '!'.\n private _trackByFn!: TrackByFunction<T>;\n constructor(\n private _viewContainer: ViewContainerRef,\n private _template: TemplateRef<NgForOfContext<T, U>>, private _differs: IterableDiffers) {\n /**\n * A reference to the template that is stamped out for each item in the iterable.\n * @see [template reference variable](guide/template-reference-variables)\n * @Input()\n set ngForTemplate(value: TemplateRef<NgForOfContext<T, U>>) {\n // TODO(TS2.1): make TemplateRef<Partial<NgForRowOf<T>>> once we move to TS v2.1\n // The current type is too restrictive; a template that just uses index, for example,\n // should be acceptable.\n if (value) {\n this._template = value;\n }\n }\n /**\n * Applies the changes when needed.\n * @ngDoCheck(): void {\n if (this._ngForOfDirty) {\n this._ngForOfDirty = false;\n // React on ngForOf changes only once all inputs have been initialized\n const value = this._ngForOf;\n if (!this._differ && value) {\n try {\n this._differ = this._differs.find(value).create(this.ngForTrackBy);\n } catch {\n throw new Error(`Cannot find a differ supporting object '\${value}' of type '\${\n getTypeName(value)}'. NgFor only supports binding to Iterables such as Arrays.`);\n }\n }\n if (this._differ) {\n const changes = this._differ.diff(this._ngForOf);\n if (changes) this._applyChanges(changes);\n }\n }\n private _applyChanges(changes: IterableChanges<T>) {\n const insertTuples: RecordViewTuple<T, U>[] = [];\n changes.forEachOperation(\n (item: IterableChangeRecord<any>, adjustedPreviousIndex: number|null,\n currentIndex: number|null) => {\n if (item.previousIndex == null) {\n // NgForOf is never \"null\" or \"undefined\" here because the differ detected\n // that a new item needs to be inserted from the iterable. This implies that\n // there is an iterable value for \"_ngForOf\".\n const view = this._viewContainer.createEmbeddedView(\n this._template, new NgForOfContext<T, U>(null!, this._ngForOf!, -1, -1),\n currentIndex === null ? undefined : currentIndex);\n const tuple = new RecordViewTuple<T, U>(item, view);\n insertTuples.push(tuple);\n } else if (currentIndex == null) {\n

```

    this._viewContainer.remove(\n        adjustedPreviousIndex === null ? undefined :
adjustedPreviousIndex);\n    } else if (adjustedPreviousIndex !== null) {\n        const view =
this._viewContainer.get(adjustedPreviousIndex);\n        this._viewContainer.move(view, currentIndex);\n
const tuple = new RecordViewTuple(item, <EmbeddedViewRef<NgForOfContext<T, U>>>view);\n
insertTuples.push(tuple);\n    }\n    });\n    for (let i = 0; i < insertTuples.length; i++) {\n
this._perViewChange(insertTuples[i].view, insertTuples[i].record);\n    }\n    for (let i = 0, ilen =
this._viewContainer.length; i < ilen; i++) {\n        const viewRef = <EmbeddedViewRef<NgForOfContext<T,
U>>>this._viewContainer.get(i);\n        viewRef.context.index = i;\n        viewRef.context.count = ilen;\n
viewRef.context.ngForOf = this._ngForOf!;\n    }\n    changes.forEachIdentityChange((record: any) => {\n
const viewRef =\n        <EmbeddedViewRef<NgForOfContext<T,
U>>>this._viewContainer.get(record.currentIndex);\n        viewRef.context.Simplicit = record.item;\n    });\n    }\n    private _perViewChange(\n        view: EmbeddedViewRef<NgForOfContext<T, U>>, record:
IterableChangeRecord<any>) {\n        view.context.Simplicit = record.item;\n    }\n    /**\n     * Asserts the correct type
of the context for the template that `NgForOf` will render.\n     * \n     * The presence of this method is a signal to the
Ivy template type-check compiler that the\n     * `NgForOf` structural directive renders its template with a specific
context type.\n     */\n    static ngTemplateContextGuard<T, U extends NgIterable<T>>(dir: NgForOf<T, U>, ctx:
any):\n        ctx is NgForOfContext<T, U> {\n        return true;\n    }\n    }\n    \n    class RecordViewTuple<T, U extends
NgIterable<T>> {\n        constructor(public record: any, public view: EmbeddedViewRef<NgForOfContext<T, U>>)\n
    }\n    }\n    \n    function getTypeName(type: any): string {\n        return type['name'] || typeof type;\n    }\n    }\n    \n    /**\n     * @license\n
     * Copyright Google LLC All Rights Reserved.\n     * \n     * Use of this source code is governed by an MIT-style license
that can be\n     * found in the LICENSE file at https://angular.io/license\n     */\n    \n    import {Directive,
EmbeddedViewRef, Input, TemplateRef, ViewContainerRef, stringify as stringify} from '@angular/core';\n    \n    /**\n
     * A structural directive that conditionally includes a template based on the value of\n     * an expression coerced to
Boolean.\n     * \n     * When the expression evaluates to true, Angular renders the template\n     * provided in a `then` clause,
and when false or null,\n     * Angular renders the template provided in an optional `else` clause. The default\n     *
template for the `else` clause is blank.\n     * \n     * A [shorthand form](guide/structural-directives#the-asterisk--prefix) of
the directive,\n     * `*ngIf="condition"`, is generally used, provided\n     * as an attribute of the anchor element for the
inserted template.\n     * \n     * Angular expands this into a more explicit version, in which the anchor element\n     * is
contained in an `` element.\n     * \n     * Simple form with shorthand syntax:\n     * \n     * ```\n     * <div
*ngIf="condition">Content to render when condition is true.</div>\n     * ```\n     * \n     * Simple form with expanded
syntax:\n     * \n     * ```\n     * <ng-template [ngIf]="condition"><div>Content to render when condition is\n
true.</div></ng-template>\n     * ```\n     * \n     * Form with an "else" block:\n     * \n     * ```\n     * <div *ngIf="condition; else
elseBlock">Content to render when condition is true.</div>\n     * <ng-template #elseBlock>Content to render when
condition is false.</ng-template>\n     * ```\n     * \n     * Shorthand form with "then" and "else" blocks:\n     * \n
     * ```\n     * <div *ngIf="condition; then thenBlock else elseBlock"></div>\n     * <ng-template #thenBlock>Content to render
when condition is true.</ng-template>\n     * <ng-template #elseBlock>Content to render when condition is false.</ng-
template>\n     * ```\n     * \n     * Form with storing the value locally:\n     * \n     * ```\n     * <div *ngIf="condition as value; else
elseBlock">{ value }</div>\n     * <ng-template #elseBlock>Content to render when value is null.</ng-template>\n
     * ```\n     * \n     * @usageNotes\n     * \n     * The `*ngIf` directive is most commonly used to conditionally show an inline
template,\n     * as seen in the following example.\n     * \n     * The default `else` template is blank.\n     * \n     * {@example
common/ngIf/ts/module.ts region='NgIfSimple'}\n     * \n     * ### Showing an alternative template using `else`\n     * \n     * To
display a template when `expression` evaluates to false, use an `else` template\n     * binding as shown in the following
example.\n     * \n     * The `else` binding points to an `` element labeled `#elseBlock`.\n     * \n     * The template can be
defined anywhere in the component view, but is typically placed right after\n     * `ngIf` for readability.\n     * \n     *
     * {@example common/ngIf/ts/module.ts region='NgIfElse'}\n     * \n     * ### Using an external `then` template\n     * \n     * In
the previous example, the then-clause template is specified inline, as the content of the\n     * tag that contains the
`ngIf` directive. You can also specify a template that is defined\n     * externally, by referencing a labeled `` element. When you do this, you can\n     * change which template to use at runtime, as shown in the

```

following example.

```

{ @example common/ngIf/ts/module.ts region='NgIfThenElse'}
### Storing a conditional result in a variable
You might want to show a set of properties from the same object. If you are waiting for asynchronous data, the object can be undefined. In this case, you can use `ngIf` and store the result of the condition in a local variable as shown in the the following example.
{ @example common/ngIf/ts/module.ts region='NgIfAs'}
This code uses only one `AsyncPipe`, so only one subscription is created. The conditional statement stores the result of `userStream|async` in the local variable `user`. You can then bind the local `user` repeatedly.
The conditional displays the data only if `userStream` returns a value, so you don't need to use the [safe-navigation-operator](guide/template-expression-operators#safe-navigation-operator) `?.` to guard against null values when accessing properties. You can display an alternative template while waiting for the data.
### Shorthand syntax
The shorthand syntax `*ngIf` expands into two separate template specifications for the `then` and `else` clauses. For example, consider the following shorthand statement, that is meant to show a loading page while waiting for data to be loaded.
```
<div class="hero-list" *ngIf="heroes else loading"> ... </div>
<ng-template #loading>
<div>Loading...</div>
</ng-template>
```
You can see that the `else` clause references the `<ng-template>` with the `#loading` label, and the template for the `then` clause is provided as the content of the anchor element. However, when Angular expands the shorthand syntax, it creates another `<ng-template>` tag, with `ngIf` and `ngIfElse` directives. The anchor element containing the template for the `then` clause becomes the content of this unlabeled `<ng-template>` tag.
```
<ng-template [ngIf]="heroes" [ngIfElse]="loading">
<div class="hero-list"> ... </div>
</ng-template>
<ng-template #loading>
<div>Loading...</div>
</ng-template>
```
The presence of the implicit template object has implications for the nesting of structural directives. For more on this subject, see [Structural Directives](https://angular.io/guide/structural-directives#one-per-element).
@ngModule CommonModule
* @publicApi
*/
@Directive({selector: '[ngIf]'})
export class NgIf<T = unknown> {
  private _context: NgIfContext<T> = new NgIfContext<T>();
  private _thenTemplateRef: TemplateRef<NgIfContext<T>> | null = null;
  private _elseTemplateRef: TemplateRef<NgIfContext<T>> | null = null;
  private _thenViewRef: EmbeddedViewRef<NgIfContext<T>> | null = null;
  private _elseViewRef: EmbeddedViewRef<NgIfContext<T>> | null = null;
  constructor(private _viewContainer: ViewContainerRef,
    templateRef: TemplateRef<NgIfContext<T>>) {
    this._thenTemplateRef = templateRef;
  }
  /**
   * The Boolean expression to evaluate as the condition for showing a template.
   */
  @Input() set ngIf(condition: T) {
    this._context.$implicit = this._context.ngIf = condition;
    this._updateView();
  }
  /**
   * A template to show if the condition expression evaluates to true.
   */
  @Input() set ngIfThen(templateRef: TemplateRef<NgIfContext<T>> | null) {
    assertTemplate('ngIfThen', templateRef);
    this._thenTemplateRef = templateRef;
    this._thenViewRef = null; // clear previous view if any.
    this._updateView();
  }
  /**
   * A template to show if the condition expression evaluates to false.
   */
  @Input() set ngIfElse(templateRef: TemplateRef<NgIfContext<T>> | null) {
    assertTemplate('ngIfElse', templateRef);
    this._elseTemplateRef = templateRef;
    this._elseViewRef = null; // clear previous view if any.
    this._updateView();
  }
  private _updateView() {
    if (this._context.$implicit) {
      if (!this._thenViewRef) {
        this._viewContainer.clear();
        this._elseViewRef = null;
        if (this._thenTemplateRef) {
          this._thenViewRef =
            this._viewContainer.createEmbeddedView(this._thenTemplateRef, this._context);
        }
      }
    } else {
      if (!this._elseViewRef) {
        this._viewContainer.clear();
        this._thenViewRef =
          null;
        if (this._elseTemplateRef) {
          this._elseViewRef =
            this._viewContainer.createEmbeddedView(this._elseTemplateRef, this._context);
        }
      }
    }
  }
  /**
   * @internal
   */
  public static ngIfUseIfTypeGuard: void;
  /**
   * Assert the correct type of the expression bound to the `ngIf` input within the template.
   * The presence of this static field is a signal to the Ivy template type check compiler that when the `NgIf` structural directive renders its template, the type of the expression bound to `ngIf` should be narrowed in some way. For `NgIf`, the binding expression itself is used to narrow its type, which allows the strictNullChecks feature of TypeScript to work with `NgIf`.
   */
  static ngTemplateGuard_ngIf: 'binding';
  /**
   * Asserts the correct type of the context for the template that `NgIf`

```



```

any): boolean {\n  const matched = value == this._ngSwitch;\n  this._lastCasesMatched = this._lastCasesMatched
|| matched;\n  this._lastCaseCheckIndex++;\n  if (this._lastCaseCheckIndex === this._caseCount) {\n
this._updateDefaultCases(!this._lastCasesMatched);\n  this._lastCaseCheckIndex = 0;\n
this._lastCasesMatched = false;\n  }\n  return matched;\n }\n\n private _updateDefaultCases(useDefault:
boolean) {\n  if (this._defaultViews && useDefault !== this._defaultUsed) {\n    this._defaultUsed =
useDefault;\n    for (let i = 0; i < this._defaultViews.length; i++) {\n      const defaultView =
this._defaultViews[i];\n      defaultView.enforceState(useDefault);\n    }\n  }\n}\n\n/n/n/**\n * @ngModule
CommonModule\n * @description\n * Provides a switch case expression to match against an enclosing
`ngSwitch` expression.\n * When the expressions match, the given `NgSwitchCase` template is rendered.\n * If
multiple match expressions match the switch expression value, all of them are displayed.\n *\n * @usageNotes\n *\n
* Within a switch container, `ngSwitchCase` statements specify the match expressions\n * as attributes. Include
`ngSwitchDefault` as the final case.\n *\n * ``\n * <container-element [ngSwitch]="switch_expression">\n *
<some-element *ngSwitchCase="match_expression_1">...</some-element>\n * ..\n * <some-element
*ngSwitchDefault>...</some-element>\n * ``\n *\n * Each switch-case statement contains
an in-line HTML template or template reference\n * that defines the subtree to be selected if the value of the match
expression\n * matches the value of the switch expression.\n *\n * Unlike JavaScript, which uses strict equality,
Angular uses loose equality.\n * This means that the empty string, `""` matches 0.\n *\n * @publicApi\n * @see
`NgSwitch`\n * @see `NgSwitchDefault`\n *\n * ^\n @Directive({ selector: '[ngSwitchCase]' })\nexport class
NgSwitchCase implements DoCheck {\n  private _view: SwitchView;\n  /**\n   * Stores the HTML template to be
selected on match.\n   *\n   * @Input() ngSwitchCase: any;\n\n   * constructor(\n   *   viewContainer: ViewContainerRef,
templateRef: TemplateRef<Object>,\n   *   @Host() private ngSwitch: NgSwitch) {\n   *     ngSwitch._addCase();\n
this._view = new SwitchView(viewContainer, templateRef);\n   *   }\n\n   * /**\n   * Performs case matching. For internal
use only.\n   *\n   * ^\n   * ngDoCheck() {\n   *   this._view.enforceState(this.ngSwitch._matchCase(this.ngSwitchCase));\n
}\n}\n\n/n/n/**\n * @ngModule CommonModule\n * @description\n * Creates a view that is rendered when no
`NgSwitchCase` expressions\n * match the `NgSwitch` expression.\n * This statement should be the final case in an
`NgSwitch`.\n *\n * @publicApi\n * @see `NgSwitch`\n * @see `NgSwitchCase`\n *\n * ^\n @Directive({ selector:
'[ngSwitchDefault]' })\nexport class NgSwitchDefault {\n  constructor(\n   *   viewContainer: ViewContainerRef,
templateRef: TemplateRef<Object>,\n   *   @Host() ngSwitch: NgSwitch) {\n   *     ngSwitch._addDefault(new
SwitchView(viewContainer, templateRef));\n   *   }\n}\n\n/n/n/**\n * @license\n * Copyright Google LLC All Rights
Reserved.\n *\n * Use of this source code is governed by an MIT-style license that can be\n * found in the
LICENSE file at https://angular.io/license\n *\n * ^\n\nimport { Attribute, Directive, Host, Input, TemplateRef,
ViewContainerRef } from '@angular/core';\n\nimport { getPluralCategory, NgLocalization } from
'./i18n/localization';\n\nimport { SwitchView } from './ng_switch';\n\n/n/n/**\n * @ngModule CommonModule\n *\n *
@usageNotes\n *\n * ``\n * <some-element [ngPlural]="value">\n * <ng-template ngPluralCase="=0">there is
nothing</ng-template>\n * <ng-template ngPluralCase="=1">there is one</ng-template>\n * <ng-template
ngPluralCase="few">there are a few</ng-template>\n * ``\n *\n * @description\n *\n * Adds / removes DOM sub-trees based on a numeric value. Tailored for pluralization.\n *\n * Displays DOM sub-
trees that match the switch expression value, or failing that, DOM sub-trees\n * that match the switch expression's
pluralization category.\n *\n * To use this directive you must provide a container element that sets the `[ngPlural]`
attribute\n * to a switch expression. Inner elements with a `[ngPluralCase]` will display based on their\n *
expression:\n * - if `[ngPluralCase]` is set to a value starting with `=`, it will only display if the value\n * matches
the switch expression exactly,\n * - otherwise, the view will be treated as a "category match", and will only display
if exact\n * value matches aren't found and the value maps to its category for the defined locale.\n *\n * See
http://cldr.unicode.org/index/cldr-spec/plural-rules\n *\n * @publicApi\n * ^\n @Directive({ selector:
'[ngPlural]' })\nexport class NgPlural {\n  // TODO(issue/24571): remove '!.\n  private _switchValue!: number;\n  //
TODO(issue/24571): remove '!.\n  private _activeView!: SwitchView;\n  private _caseViews: {[k: string]:
SwitchView} = {};\n\n  constructor(private _localization: NgLocalization) {\n  }\n\n  @Input()\n  set ngPlural(value:
number) {\n    this._switchValue = value;\n    this._updateView();\n  }\n\n  addCase(value: string, switchView:

```

```

SwitchView): void {\n  this._caseViews[value] = switchView;\n }\n\n private _updateView(): void {\n
this._clearViews();\n\n  const cases = Object.keys(this._caseViews);\n  const key =
getPluralCategory(this._switchValue, cases, this._localization);\n  this._activateView(this._caseViews[key]);\n
}\n\n private _clearViews() {\n  if (this._activeView) this._activeView.destroy();\n }\n\n private
_activateView(view: SwitchView) {\n  if (view) {\n    this._activeView = view;\n    this._activeView.create();\n
  }\n }\n}\n\n/**\n * @ngModule CommonModule\n *\n * @description\n *\n * Creates a view that will be
added/removed from the parent { @link NgPlural } when the\n * given expression matches the plural expression
according to CLDR rules.\n *\n * @usageNotes\n * ``\n * <some-element [ngPlural]="value">\n * <ng-template
ngPluralCase="=0">...</ng-template>\n * <ng-template ngPluralCase="other">...</ng-template>\n * </some-
element>\n * ``\n *\n * See { @link NgPlural } for more details and example.\n *\n * @publicApi\n
*\n*\n @Directive({ selector: '[ngPluralCase]' })\nexport class NgPluralCase {\n  constructor(\n
@Attribute('ngPluralCase') public value: string, template: TemplateRef<Object>,\n  viewContainer:
ViewContainerRef, @Host() ngPlural: NgPlural) {\n  const isANumber: boolean = !isNaN(Number(value));\n
ngPlural.addCase(isANumber ? `=${value}` : value, new SwitchView(viewContainer, template));\n }\n}\n\n",/**\n
* @license\n * Copyright Google LLC All Rights Reserved.\n *\n * Use of this source code is governed by an MIT-
style license that can be\n * found in the LICENSE file at https://angular.io/license\n *\n*\nimport { Directive,
DoCheck, ElementRef, Input, KeyValueChanges, KeyValueDiffer, KeyValueDiffers, Renderer2 } from
'@angular/core';\n\n\n/**\n * @ngModule CommonModule\n *\n * @usageNotes\n *\n * Set the font of the
containing element to the result of an expression.\n *\n * ``\n * <some-element [ngStyle]="{'font-style':
styleExp}">...</some-element>\n * ``\n *\n * Set the width of the containing element to a pixel value returned by
an expression.\n *\n * ``\n * <some-element [ngStyle]="{'max-width.px': widthExp}">...</some-element>\n *
``\n *\n * Set a collection of style values using an expression that returns key-value pairs.\n *\n * ``\n * <some-
element [ngStyle]="objExp">...</some-element>\n * ``\n *\n * @description\n *\n * An attribute directive that
updates styles for the containing HTML element.\n *\n * Sets one or more style properties, specified as colon-separated
key-value pairs.\n *\n * The key is a style name, with an optional `<unit>` suffix\n * (such as 'top.px', 'font-style.em').\n
*\n * The value is an expression to be evaluated.\n *\n * The resulting non-null value, expressed in the given unit,\n * is
assigned to the given style property.\n *\n * If the result of evaluation is null, the corresponding style is removed.\n *\n
*\n * @publicApi\n *\n*\n @Directive({ selector: '[ngStyle]' })\nexport class NgStyle implements DoCheck {\n  private
_ngStyle: {[key: string]: string}|null = null;\n  private _differ: KeyValueDiffer<string, string|number>|null =
null;\n\n  constructor(\n    private _ngEl: ElementRef, private _differs: KeyValueDiffers, private _renderer:
Renderer2) {\n\n    @Input('ngStyle')\n    set ngStyle(values: {[klass: string]: any}|null) {\n      this._ngStyle =
values;\n      if (!this._differ && values) {\n        this._differ = this._differs.find(values).create();\n      }\n    }\n\n    ngDoCheck() {\n      if (this._differ) {\n        const changes = this._differ.diff(this._ngStyle!);\n        if (changes) {\n          this._applyChanges(changes);\n        }\n      }\n    }\n\n    private _setStyle(nameAndUnit: string, value:
string|number|null|undefined): void {\n      const [name, unit] = nameAndUnit.split('.');\n      value = value != null &&
unit ? `${value}${unit}` : value;\n\n      if (value != null) {\n        this._renderer.setStyle(this._ngEl.nativeElement,
name, value as string);\n      } else {\n        this._renderer.removeStyle(this._ngEl.nativeElement, name);\n      }\n    }\n\n    private _applyChanges(changes: KeyValueChanges<string, string|number>): void {\n
changes.forEachRemovedItem((record) => this._setStyle(record.key, null));\n
changes.forEachAddedItem((record) => this._setStyle(record.key, record.currentValue));\n
changes.forEachChangedItem((record) => this._setStyle(record.key, record.currentValue));\n }\n}\n\n",/**\n
* @license\n * Copyright Google LLC All Rights Reserved.\n *\n * Use of this source code is governed by an MIT-
style license that can be\n * found in the LICENSE file at https://angular.io/license\n *\n*\nimport { Directive,
EmbeddedViewRef, Input, OnChanges, SimpleChange, SimpleChanges, TemplateRef, ViewContainerRef } from
'@angular/core';\n\n\n/**\n * @ngModule CommonModule\n *\n * @description\n *\n * Inserts an embedded view
from a prepared `TemplateRef`.\n *\n * You can attach a context object to the `EmbeddedViewRef` by setting
`[ngTemplateOutletContext]`.\n *\n * `[ngTemplateOutletContext]` should be an object, the object's keys will be
available for binding\n * by the local template `let` declarations.\n *\n * @usageNotes\n * ``\n * <ng-container

```

```

*ngTemplateOutlet=<templateRefExp; context: contextExp></ng-container>
Using the key `$implicit` in the context object will set its value as default.
### Example
@example
common/ngTemplateOutlet/ts/module.ts region='NgTemplateOutlet'
@publicApi
@Directive({selector: '[ngTemplateOutlet]'})
export class NgTemplateOutlet implements OnChanges {
  private _viewRef: EmbeddedViewRef<any> | null = null;

  /**
   * A context object to attach to the {@link EmbeddedViewRef}. This should be an object, the object's keys will be available for binding by the local template `let` declarations.
   * Using the key `'$implicit` in the context object will set its value as default.
   */
  @Input() public ngTemplateOutletContext: Object | null = null;

  /**
   * A string defining the template reference and optionally the context object for the template.
   */
  @Input() public ngTemplateOutlet: TemplateRef<any> | null = null;

  constructor(private _viewContainerRef: ViewContainerRef) {}

  ngOnChanges(changes: SimpleChanges) {
    const recreateView = this._shouldRecreateView(changes);
    if (recreateView) {
      const viewContainerRef = this._viewContainerRef;
      if (this._viewRef) {
        viewContainerRef.remove(viewContainerRef.indexOf(this._viewRef));
      }
      this._viewRef = this.ngTemplateOutlet ? viewContainerRef.createEmbeddedView(this.ngTemplateOutlet, this.ngTemplateOutletContext) : null;
    } else if (this._viewRef && this.ngTemplateOutletContext) {
      this._updateExistingContext(this.ngTemplateOutletContext);
    }
  }

  /**
   * We need to re-create existing embedded view if:
   * - templateRef has changed
   * - context has changes
   * We mark context object as changed when the corresponding object shape changes (new properties are added or existing properties are removed).
   * In other words we consider context with the same properties as "the same" even if object reference changes (see https://github.com/angular/angular/issues/13407).
   */
  private _shouldRecreateView(changes: SimpleChanges): boolean {
    const ctxChange = changes['ngTemplateOutletContext'];
    return !!changes['ngTemplateOutlet'] || (ctxChange && this._hasContextShapeChanged(ctxChange));
  }

  private _hasContextShapeChanged(ctxChange: SimpleChange): boolean {
    const prevCtxKeys = Object.keys(ctxChange.previousValue || {});
    const currCtxKeys = Object.keys(ctxChange.currentValue || {});
    if (prevCtxKeys.length === currCtxKeys.length) {
      for (let propName of currCtxKeys) {
        if (prevCtxKeys.indexOf(propName) === -1) {
          return true;
        }
      }
      return false;
    }
    return true;
  }

  private _updateExistingContext(ctx: Object): void {
    for (let propName of Object.keys(ctx)) {
      (<any>this._viewRef!.context)[propName] = (<any>this.ngTemplateOutletContext)[propName];
    }
  }
}

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 */
import {Provider} from '@angular/core';
import {NgClass} from './ng_class';
import {NgComponentOutlet} from './ng_component_outlet';
import {NgForOf, NgForOfContext} from './ng_for_of';
import {NgIf, NgIfContext} from './ng_if';
import {NgPlural, NgPluralCase} from './ng_plural';
import {NgStyle} from './ng_style';
import {NgSwitch, NgSwitchCase, NgSwitchDefault} from './ng_switch';
import {NgTemplateOutlet} from './ng_template_outlet';
export {
  NgClass,
  NgComponentOutlet,
  NgForOf,
  NgForOfContext,
  NgIf,
  NgIfContext,
  NgPlural,
  NgPluralCase,
  NgStyle,
  NgSwitch,
  NgSwitchCase,
  NgSwitchDefault,
  NgTemplateOutlet,
};

/**
 * A collection of Angular directives that are likely to be used in each and every Angular application.
 */
export const COMMON_DIRECTIVES: Provider[] = [
  NgClass,
  NgComponentOutlet,
  NgForOf,
  NgIf,
  NgTemplateOutlet,
  NgStyle,
  NgSwitch,
  NgSwitchCase,
  NgSwitchDefault,
  NgPlural,
  NgPluralCase,
];

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 */
import {Type, stringify as stringify} from '@angular/core';
export function invalidPipeArgumentError(type: Type<any>, value: Object) {
  return Error(`InvalidPipeArgument: '${value}' for pipe '${stringify(type)}'`);
}

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 * found in the LICENSE file at https://angular.io/license
 */
import {ChangeDetectorRef, EventEmitter, OnDestroy, Pipe, PipeTransform, isObservable, isPromise} from '@angular/core';
import {Observable,

```

```

SubscriptionLike} from 'rxjs';\nimport {invalidPipeArgumentError} from
'./invalid_pipe_argument_error';\n\ninterface SubscriptionStrategy {\n  createSubscription(async:
Observable<any>|Promise<any>, updateLatestValue: any): SubscriptionLike\n  |Promise<any>;\n  dispose(subscription: SubscriptionLike|Promise<any>): void;\n  onDestroy(subscription:
SubscriptionLike|Promise<any>): void;\n}\n\nclass ObservableStrategy implements SubscriptionStrategy {\n  createSubscription(async: Observable<any>, updateLatestValue: any): SubscriptionLike {\n    return
async.subscribe({\n      next: updateLatestValue,\n      error: (e: any) => {\n        throw e;\n      }\n    });\n  }\n  dispose(subscription: SubscriptionLike): void {\n    subscription.unsubscribe();\n  }\n  onDestroy(subscription:
SubscriptionLike): void {\n    subscription.unsubscribe();\n  }\n}\n\nclass PromiseStrategy implements
SubscriptionStrategy {\n  createSubscription(async: Promise<any>, updateLatestValue: (v: any) => any):
Promise<any> {\n    return async.then(updateLatestValue, e => {\n      throw e;\n    });\n  }\n  dispose(subscription: Promise<any>): void {\n  }\n  onDestroy(subscription: Promise<any>): void {\n  }\n}\n\nconst
_promiseStrategy = new PromiseStrategy();\nconst _observableStrategy = new ObservableStrategy();\n\n/**\n *
@ngModule CommonModule\n * @description\n * Unwraps a value from an asynchronous primitive.\n * \n *
The `async` pipe subscribes to an `Observable` or `Promise` and returns the latest value it has\n * emitted. When a
new value is emitted, the `async` pipe marks the component to be checked for\n * changes. When the component
gets destroyed, the `async` pipe unsubscribes automatically to avoid\n * potential memory leaks.\n * \n *
@usageNotes\n * \n * ### Examples\n * \n * This example binds a `Promise` to the view. Clicking the `Resolve`
button resolves the\n * promise.\n * \n * { @example common/pipes/ts/async_pipe.ts region='AsyncPipePromise'}\n * \n * It's also possible to use `async` with Observables. The example below binds the `time` Observable\n * to the
view. The Observable continuously updates the view with the current time.\n * \n * { @example
common/pipes/ts/async_pipe.ts region='AsyncPipeObservable'}\n * \n * @publicApi\n * \n * @Pipe({ name: 'async',
pure: false})\n * \n * export class AsyncPipe implements OnDestroy, PipeTransform {\n   private _latestValue: any =
null;\n   private _subscription: SubscriptionLike|Promise<any>|null = null;\n   private _obj:
Observable<any>|Promise<any>|EventEmitter<any>|null = null;\n   private _strategy: SubscriptionStrategy =
null;\n   constructor(private _ref: ChangeDetectorRef) {\n   }\n   ngOnDestroy(): void {\n     if (this._subscription) {\n       this._dispose();\n     }\n   }\n   transform<T>(obj: Observable<T>|Promise<T>): T|null;\n   transform<T>(obj:
null|undefined): null;\n   transform<T>(obj: Observable<T>|Promise<T>|null|undefined): T|null;\n   transform<T>(obj: Observable<T>|Promise<T>|null|undefined): T|null {\n     if (!this._obj) {\n       if (obj) {\n         this._subscribe(obj);\n       }\n       return this._latestValue;\n     }\n     if (obj !== this._obj) {\n       this._dispose();\n       return this.transform(obj);\n     }\n     return this._latestValue;\n   }\n   private _subscribe(obj:
Observable<any>|Promise<any>|EventEmitter<any>): void {\n     this._obj = obj;\n     this._strategy =
this._selectStrategy(obj);\n     this._subscription = this._strategy.createSubscription(\n       obj, (value: Object) =>
this._updateLatestValue(obj, value));\n   }\n   private _selectStrategy(obj:
Observable<any>|Promise<any>|EventEmitter<any>): any {\n     if (isPromise(obj)) {\n       return
_promiseStrategy;\n     }\n     if (isObservable(obj)) {\n       return _observableStrategy;\n     }\n     throw
invalidPipeArgumentError(AsyncPipe, obj);\n   }\n   private _dispose(): void {\n     this._strategy.dispose(this._subscription!);\n     this._latestValue = null;\n     this._subscription = null;\n     this._obj =
null;\n   }\n   private _updateLatestValue(async: any, value: Object): void {\n     if (async === this._obj) {\n       this._latestValue = value;\n       this._ref.markForCheck();\n     }\n   }\n }\n\n",/**\n * @license\n * Copyright Google
LLC All Rights Reserved.\n * \n * Use of this source code is governed by an MIT-style license that can be\n * found
in the LICENSE file at https://angular.io/license\n * \n *\n */\nimport {Pipe, PipeTransform} from
'@angular/core';\nimport {invalidPipeArgumentError} from './invalid_pipe_argument_error';\n\n/**\n * Transforms
text to all lower case.\n * \n * @see `UpperCasePipe`\n * @see `TitleCasePipe`\n * @usageNotes\n * \n * The
following example defines a view that allows the user to enter\n * text, and then uses the pipe to convert the input
text to all lower case.\n * \n * <code-example path="common/pipes/ts/lowerupper_pipe.ts"\n * region='LowerUpperCasePipe'></code-example>\n * \n * @ngModule CommonModule\n * @publicApi\n * \n * @Pipe({ name: 'lowercase'})\n * \n * export class LowerCasePipe implements PipeTransform {\n   /**\n   * @param

```


\\u2CEE\\u2CF2\\u2CF3\\u2D00-\\u2D25\\u2D27\\u2D2D\\u2D30-\\u2D67\\u2D6F\\u2D80-\\u2D96\\u2DA0-
\\u2DA6\\u2DA8-\\u2DAE\\u2DB0-\\u2DB6\\u2DB8-\\u2DBE\\u2DC0-\\u2DC6\\u2DC8-\\u2DCE\\u2DD0-
\\u2DD6\\u2DD8-\\u2DDE\\u2E2F\\u3005\\u3006\\u3031-\\u3035\\u303B\\u303C\\u3041-\\u3096\\u309D-
\\u309F\\u30A1-\\u30FA\\u30FC-\\u30FF\\u3105-\\u312E\\u3131-\\u318E\\u31A0-\\u31BA\\u31F0-
\\u31FF\\u3400-\\u4DB5\\u4E00-\\u9FEA\\uA000-\\uA48C\\uA4D0-\\uA4FD\\uA500-\\uA60C\\uA610-
\\uA61F\\uA62A\\uA62B\\uA640-\\uA66E\\uA67F-\\uA69D\\uA6A0-\\uA6E5\\uA717-\\uA71F\\uA722-
\\uA788\\uA78B-\\uA7AE\\uA7B0-\\uA7B7\\uA7F7-\\uA801\\uA803-\\uA805\\uA807-\\uA80A\\uA80C-
\\uA822\\uA840-\\uA873\\uA882-\\uA8B3\\uA8F2-\\uA8F7\\uA8FB\\uA8FD\\uA90A-\\uA925\\uA930-
\\uA946\\uA960-\\uA97C\\uA984-\\uA9B2\\uA9CF\\uA9E0-\\uA9E4\\uA9E6-\\uA9EF\\uA9FA-\\uA9FE\\uAA00-
\\uAA28\\uAA40-\\uAA42\\uAA44-\\uAA4B\\uAA60-\\uAA76\\uAA7A\\uAA7E-
\\uAAAF\\uAAB1\\uAAB5\\uAAB6\\uAAB9-\\uAABD\\uAAC0\\uAAC2\\uAADB-\\uAADD\\uAAE0-
\\uAAEA\\uAAF2-\\uAAF4\\uAB01-\\uAB06\\uAB09-\\uAB0E\\uAB11-\\uAB16\\uAB20-\\uAB26\\uAB28-
\\uAB2E\\uAB30-\\uAB5A\\uAB5C-\\uAB65\\uAB70-\\uABE2\\uAC00-\\uD7A3\\uD7B0-\\uD7C6\\uD7CB-
\\uD7FB\\uF900-\\uFA6D\\uFA70-\\uFAD9\\uFB00-\\uFB06\\uFB13-\\uFB17\\uFB1D\\uFB1F-\\uFB28\\uFB2A-
\\uFB36\\uFB38-\\uFB3C\\uFB3E\\uFB40\\uFB41\\uFB43\\uFB44\\uFB46-\\uFBB1\\uFBD3-\\uFD3D\\uFD50-
\\uFD8F\\uFD92-\\uFDC7\\uFDF0-\\uFDFB\\uFE70-\\uFE74\\uFE76-\\uFEFC\\uFF21-\\uFF3A\\uFF41-
\\uFF5A\\uFF66-\\uFFBE\\uFFC2-\\uFFC7\\uFFCA-\\uFFCF\\uFFD2-\\uFFD7\\uFFDA-
\\uFFDC]\\uD800[\\uDC00-\\uDC0B\\uDC0D-\\uDC26\\uDC28-\\uDC3A\\uDC3C\\uDC3D\\uDC3F-
\\uDC4D\\uDC50-\\uDC5D\\uDC80-\\uDCFA\\uDE80-\\uDE9C\\uDEA0-\\uDED0\\uDF00-\\uDF1F\\uDF2D-
\\uDF40\\uDF42-\\uDF49\\uDF50-\\uDF75\\uDF80-\\uDF9D\\uDFA0-\\uDFC3\\uDFC8-
\\uDFCF]\\uD801[\\uDC00-\\uDC9D\\uDCB0-\\uDCD3\\uDCD8-\\uDCFB\\uDD00-\\uDD27\\uDD30-
\\uDD63\\uDE00-\\uDF36\\uDF40-\\uDF55\\uDF60-\\uDF67]\\uD802[\\uDC00-\\uDC05\\uDC08\\uDC0A-
\\uDC35\\uDC37\\uDC38\\uDC3C\\uDC3F-\\uDC55\\uDC60-\\uDC76\\uDC80-\\uDC9E\\uDCE0-
\\uDCF2\\uDCF4\\uDCF5\\uDD00-\\uDD15\\uDD20-\\uDD39\\uDD80-
\\uDDB7\\uDDBE\\uDDBF\\uDE00\\uDE10-\\uDE13\\uDE15-\\uDE17\\uDE19-\\uDE33\\uDE60-
\\uDE7C\\uDE80-\\uDE9C\\uDEC0-\\uDEC7\\uDEC9-\\uDEE4\\uDF00-\\uDF35\\uDF40-\\uDF55\\uDF60-
\\uDF72\\uDF80-\\uDF91]\\uD803[\\uDC00-\\uDC48\\uDC80-\\uDCB2\\uDCC0-\\uDCF2]\\uD804[\\uDC03-
\\uDC37\\uDC83-\\uDCAF\\uDCD0-\\uDCE8\\uDD03-\\uDD26\\uDD50-\\uDD72\\uDD76\\uDD83-
\\uDDB2\\uDDC1-\\uDDC4\\uDDDA\\uDDDC\\uDE00-\\uDE11\\uDE13-\\uDE2B\\uDE80-
\\uDE86\\uDE88\\uDE8A-\\uDE8D\\uDE8F-\\uDE9D\\uDE9F-\\uDEA8\\uDEB0-\\uDEDE\\uDF05-
\\uDF0C\\uDF0F\\uDF10\\uDF13-\\uDF28\\uDF2A-\\uDF30\\uDF32\\uDF33\\uDF35-
\\uDF39\\uDF3D\\uDF50\\uDF5D-\\uDF61]\\uD805[\\uDC00-\\uDC34\\uDC47-\\uDC4A\\uDC80-
\\uDCAF\\uDCC4\\uDCC5\\uDCC7\\uDD80-\\uDDAE\\uDDD8-\\uDDDB\\uDE00-\\uDE2F\\uDE44\\uDE80-
\\uDEAA\\uDF00-\\uDF19]\\uD806[\\uDCA0-\\uDCDF\\uDCFF\\uDE00\\uDE0B-
\\uDE32\\uDE3A\\uDE50\\uDE5C-\\uDE83\\uDE86-\\uDE89\\uDEC0-\\uDEF8]\\uD807[\\uDC00-
\\uDC08\\uDC0A-\\uDC2E\\uDC40\\uDC72-\\uDC8F\\uDD00-\\uDD06\\uDD08\\uDD09\\uDD0B-
\\uDD30\\uDD46]\\uD808[\\uDC00-\\uDF99]\\uD809[\\uDC80-\\uDD43][\\uD80C\\uD81C-\\uD820\\uD840-
\\uD868\\uD86A-\\uD86C\\uD86F-\\uD872\\uD874-\\uD879][\\uDC00-\\uDFFF]\\uD80D[\\uDC00-
\\uDC2E]\\uD811[\\uDC00-\\uDE46]\\uD81A[\\uDC00-\\uDE38\\uDE40-\\uDE5E\\uDED0-\\uDEED\\uDF00-
\\uDF2F\\uDF40-\\uDF43\\uDF63-\\uDF77\\uDF7D-\\uDF8F]\\uD81B[\\uDF00-\\uDF44\\uDF50\\uDF93-
\\uDF9F\\uDFE0\\uDFE1]\\uD821[\\uDC00-\\uDFEC]\\uD822[\\uDC00-\\uDEF2]\\uD82C[\\uDC00-
\\uDD1E\\uDD70-\\uDEFB]\\uD82F[\\uDC00-\\uDC6A\\uDC70-\\uDC7C\\uDC80-\\uDC88\\uDC90-
\\uDC99]\\uD835[\\uDC00-\\uDC54\\uDC56-\\uDC9C\\uDC9E\\uDC9F\\uDCA2\\uDCA5\\uDCA6\\uDCA9-
\\uDCAC\\uDCAE-\\uDCB9\\uDCBB\\uDCBD-\\uDCC3\\uDCC5-\\uDD05\\uDD07-\\uDD0A\\uDD0D-
\\uDD14\\uDD16-\\uDD1C\\uDD1E-\\uDD39\\uDD3B-\\uDD3E\\uDD40-\\uDD44\\uDD46\\uDD4A-
\\uDD50\\uDD52-\\uDEA5\\uDEA8-\\uDEC0\\uDEC2-\\uDEDA\\uDEDC-\\uDEFA\\uDEFC-\\uDF14\\uDF16-
\\uDF34\\uDF36-\\uDF4E\\uDF50-\\uDF6E\\uDF70-\\uDF88\\uDF8A-\\uDFA8\\uFAA-\\uDFC2\\uDFC4-
\\uDFCB]\\uD83A[\\uDC00-\\uDCC4\\uDD00-\\uDD43]\\uD83B[\\uDE00-\\uDE03\\uDE05-

GGG | Abbreviated | AD | \n * | |

GGGG | Wide | Anno Domini | \n * |

| GGGGG | Narrow | A | \n * | Year

| y | Numeric: minimum digits | 2, 20, 201, 2017, 20173 | \n * |

| yy | Numeric: 2 digits + zero padded | 02, 20, 01, 17, 73

\n * | | yyy | Numeric: 3 digits + zero padded | 002, 020, 201, 2017, 20173

| \n * | | yyyy | Numeric: 4 digits or more + zero padded | 0002, 0020, 0201, 2017, 20173

| \n * | Week-numbering year| Y | Numeric: minimum digits | 2, 20, 201, 2017, 20173 | \n * | | YY | Numeric: 2 digits + zero padded | 02, 20, 01, 17, 73 | \n * | | YYY | Numeric: 3 digits + zero padded | 002, 020, 201, 2017, 20173 | \n * | | YYYY | Numeric: 4 digits or more + zero padded | 0002, 0020, 0201, 2017, 20173 | \n * |

Month | M | Numeric: 1 digit | 9, 12 | \n * |

| | MM | Numeric: 2 digits + zero padded | 09, 12

\n * | | MMM | Abbreviated | Sep

\n * | | MMMM | Wide | September

\n * | | MMMMM | Narrow | S

\n * | Month standalone | L | Numeric: 1 digit | 9, 12

| \n * | | LL | Numeric: 2 digits + zero padded | 09, 12

| \n * | | LLL | Abbreviated | Sep

| \n * | | LLLL | Wide | September

| \n * | | LLLLL | Narrow | S

\n * | Week of year | w | Numeric: minimum digits | 1... 53

| \n * | | ww | Numeric: 2 digits + zero padded | 01... 53

| \n * | Week of month | W | Numeric: 1 digit | 1... 5

| \n * | Day of month | d | Numeric: minimum digits | 1

| \n * | | dd | Numeric: 2 digits + zero padded | 01

| \n * | Week day | E, EE & EEE | Abbreviated |

Tue | \n * | | EEEE | Wide |

Tuesday | \n * | | EEEEE | Narrow |

T | \n * | | EEEEEEE | Short | Tu

| \n * | Period | a, aa & aaa | Abbreviated |

am/pm or AM/PM | \n * | | aaaa | Wide (fallback to `a` when missing)

| ante meridiem/post meridiem | \n * | | aaaaa | Narrow

| a/p | \n * | Period* | B, BB & BBB | Abbreviated

| mid. | \n * | | BBBB | Wide

| am, pm, midnight, noon, morning, afternoon, evening, night | \n * | | BBBBB |

Narrow | md | \n * | Period standalone* | b, bb & bbb | Abbreviated | mid. | \n * | |

bbbb | Wide | am, pm, midnight, noon, morning, afternoon, evening, night

\n * | | bbbbb | Narrow | md | \n

* | Hour 1-12 | h | Numeric: minimum digits | 1, 12

| \n * | | hh | Numeric: 2 digits + zero padded | 01, 12

| \n * | Hour 0-23 | H | Numeric: minimum digits | 0, 23

| \n * | | HH | Numeric: 2 digits + zero padded | 00, 23

| \n * | Minute | m | Numeric: minimum digits | 8, 59

| \n * | | mm | Numeric: 2 digits + zero padded | 08, 59

| \n * | Second | s | Numeric: minimum digits | 0...

| | | | | |
|--|---------------------------|---|---|----------------|
| 59 | <code>\n * </code> | <code> ss</code> | <code> Numeric: 2 digits + zero padded</code> | <code> </code> |
| 00... 59 | <code>\n * </code> | <code>Fractional seconds S</code> | <code> Numeric: 1 digit</code> | |
| 0... 9 | <code>\n * </code> | <code> SS</code> | <code> Numeric: 2 digits + zero padded</code> | |
| 00... 99 | <code>\n * </code> | <code> SSS</code> | <code> Numeric: 3 digits + zero padded (=</code> | |
| milliseconds) | <code> 000... 999</code> | <code>\n * Zone</code> | <code> z, zz & zzz Short specific</code> | |
| non location format (fallback to O) | <code> GMT-8</code> | <code>\n * </code> | <code> zzzz</code> | <code> </code> |
| Long specific non location format (fallback to OOOO) | <code> GMT-08:00</code> | <code>\n * </code> | | |
| Z, ZZ & ZZZ ISO8601 basic format | <code> -0800</code> | <code>\n *</code> | | |
| | <code> ZZZZ</code> | <code> Long localized GMT format</code> | <code> GMT-8:00</code> | |
| <code>\n * </code> | <code> ZZZZZ</code> | <code> ISO8601 extended format + Z indicator for offset 0 (= XXXXX)</code> | <code> -08:00</code> | |
| | <code>\n * </code> | <code> O, OO & OOO Short localized GMT format</code> | | <code> </code> |
| GMT-8 | <code>\n * </code> | <code> OOOO</code> | <code> Long localized GMT format</code> | |
| <code> GMT-08:00</code> | <code>\n *</code> | <code>\n *</code> | <code>* Note that timezone correction is not applied to an ISO</code> | |

string that has no time component, such as `'2016-09-19'`.
`### Format examples`
These examples transform a date into various formats, assuming that `dateObj` is a JavaScript `Date` object for year: 2015, month: 6, day: 15, hour: 21, minute: 43, second: 11, given in the local time for the `'en-US'` locale.

```

{{ dateObj | date }} // output is 'Jun 15, 2015'
{{ dateObj | date:'medium' }} // output is 'Jun 15, 2015, 9:43:11 PM'
{{ dateObj | date:'shortTime' }} // output is '9:43 PM'
{{ dateObj | date:'mm:ss' }} // output is '43:11'

```

`### Usage example`
The following component uses a date pipe to display the current date in different formats.

```

@Component({
  selector: 'date-pipe',
  template: `
<div>
<p>Today is {{today | date}}</p>
<p>Or if you prefer, {{today | date:'fullDate'}}</p>
<p>The time is {{today | date:'h:mm a z'}}</p>
</div>
`
})
export class DatePipeComponent {
  today: number = Date.now();
}
@publicApi
@Pipe({
  name: 'date',
  pure: true
})
export class DatePipe implements PipeTransform {
  constructor(@Inject(LOCALE_ID) private locale: string) {}
  /**
   * @param value The date expression: a `Date` object, a number (milliseconds since UTC epoch), or an ISO string (https://www.w3.org/TR/NOTE-datetime).
   * @param format The date/time components to include, using predefined options or a custom format string.
   * @param timezone A timezone offset (such as '+0430'), or a standard UTC/GMT or continental US timezone abbreviation.
   * When not supplied, uses the end-user's local system timezone.
   * @param locale A locale code for the locale format rules to use.
   * When not supplied, uses the value of 'LOCALE_ID', which is 'en-US' by default.
   * See [Setting your app locale](guide/i18n#setting-up-the-locale-of-your-app).
   * @returns A date string in the desired format.
   */
  transform(value: Date|string|number, format?: string, timezone?: string, locale?: string): string | null;
  transform(value: null|undefined, format?: string, timezone?: string, locale?: string): null;
  transform(value: Date|string|number|null|undefined, format?: string, timezone?: string, locale?: string): string|null;
  transform(value: Date|string|number|null|undefined, format: 'mediumDate', timezone?: string, locale?: string): string|null;
  if (value == null || value === '' || value !== value) return null;
  try {
    return formatDate(value, format, locale || this.locale, timezone);
  } catch (error) {
    throw invalidPipeArgumentError(DatePipe, error.message);
  }
}

```

`### Example`

```

@example
common/pipes/ts/i18n_pipe.ts
region='I18nPluralPipeComponent'
@publicApi
@Pipe({
  name: 'i18nPlural',
  pure: true
})
export class I18nPluralPipe implements PipeTransform {
  constructor(private _localization: NgLocalization) {}
  /**
   * @param value the number to be formatted
   * @param pluralMap an object that mimics the ICU format, see http://userguide.icu-project.org/formatparse/messages
   * @param

```

```

locale a `string` defining the locale to use (uses the current {@link LOCALE_ID} by default).\n *
transform(value: number|null|undefined, pluralMap: {[count: string]: string}, locale?: string):\n string {\n if
(value == null) return ";\n\n if (typeof pluralMap !== 'object' || pluralMap === null) {\n throw
invalidPipeArgumentError(I18nPluralPipe, pluralMap);\n }\n\n const key = getPluralCategory(value,
Object.keys(pluralMap), this._localization, locale);\n\n return
pluralMap[key].replace(_INTERPOLATION_REGEXP, value.toString());\n }\n}\n", /**\n *
Copyright Google LLC All Rights Reserved.\n *\n * Use of this source code is governed by an MIT-style license
that can be\n * found in the LICENSE file at https://angular.io/license\n */\n\nimport {Pipe, PipeTransform} from
'@angular/core';\nimport {invalidPipeArgumentError} from './invalid_pipe_argument_error';\n\n/**\n *
@ngModule CommonModule\n * @description\n *\n * Generic selector that displays the string that matches the
current value.\n *\n * If none of the keys of the `mapping` match the `value`, then the content\n * of the `other` key
is returned when present, otherwise an empty string is returned.\n *\n * @usageNotes\n *\n * ### Example\n *\n *
{@example common/pipes/ts/i18n_pipe.ts region='I18nSelectPipeComponent'}\n *\n * @publicApi\n
*/\n\n@Pipe({name: 'i18nSelect', pure: true})\nexport class I18nSelectPipe implements PipeTransform {\n /**\n *
@param value a string to be internationalized.\n * @param mapping an object that indicates the text that should be
displayed\n * for different values of the provided `value`.\n */\n transform(value: string|null|undefined, mapping:
{[key: string]: string}): string {\n if (value == null) return ";\n\n if (typeof mapping !== 'object' || typeof value
!== 'string') {\n throw invalidPipeArgumentError(I18nSelectPipe, mapping);\n }\n\n if
(mapping.hasOwnProperty(value)) {\n return mapping[value];\n }\n\n if (mapping.hasOwnProperty('other'))
{\n return mapping['other'];\n }\n\n return ";\n }\n}\n", /**\n *
Copyright Google LLC All Rights Reserved.\n *\n * Use of this source code is governed by an MIT-style license that can be\n * found in the
LICENSE file at https://angular.io/license\n */\n\nimport {Pipe, PipeTransform} from '@angular/core';\n\n/**\n *
@ngModule CommonModule\n * @description\n *\n * Converts a value into its JSON-format representation.
Useful for debugging.\n *\n * @usageNotes\n *\n * The following component uses a JSON pipe to convert an
object\n * to JSON format, and displays the string in both formats for comparison.\n *\n * {@example
common/pipes/ts/json_pipe.ts region='JsonPipe'}\n *\n * @publicApi\n */\n\n@Pipe({name: 'json', pure:
false})\nexport class JsonPipe implements PipeTransform {\n /**\n *
@param value A value of any type to
convert into a JSON-format string.\n */\n transform(value: any): string {\n return JSON.stringify(value, null,
2);\n }\n}\n", /**\n *
Copyright Google LLC All Rights Reserved.\n *\n * Use of this source code is
governed by an MIT-style license that can be\n * found in the LICENSE file at https://angular.io/license\n
*/\n\nimport {KeyValueChangeRecord, KeyValueChanges, KeyValueDiffer, KeyValueDiffers, Pipe,
PipeTransform} from '@angular/core';\n\nfunction makeKeyValuePair<K, V>(key: K, value: V): KeyValue<K, V>
{\n return {key: key, value: value};\n }\n\n/**\n * A key value pair.\n * Usually used to represent the key value
pairs from a Map or Object.\n *\n * @publicApi\n */\n\nexport interface KeyValue<K, V> {\n key: K;\n value:
V;\n }\n\n/**\n * @ngModule CommonModule\n * @description\n *\n * Transforms Object or Map into an array of
key value pairs.\n *\n * The output array will be ordered by keys.\n *\n * By default the comparator will be by Unicode
point value.\n *\n * You can optionally pass a compareFn if your keys are complex types.\n *\n * @usageNotes\n *
### Examples\n *\n * This examples show how an Object or a Map can be iterated by ngFor with the use of this\n *
keyvalue pipe.\n *\n * {@example common/pipes/ts/keyvalue_pipe.ts region='KeyValuePipe'}\n *\n *
@publicApi\n */\n\n@Pipe({name: 'keyvalue', pure: false})\nexport class KeyValuePipe implements PipeTransform
{\n constructor(private readonly differs: KeyValueDiffers) {\n\n private differ!: KeyValueDiffer<any, any>;\n
private keyValues: Array<KeyValue<any, any>> = [];\n }\n\n /**\n * NOTE: when the `input` value is a simple
Record<K, V> object, the keys are extracted with\n * Object.keys(). This means that even if the `input` type is
Record<number, V> the keys are\n * compared/returned as `string`s.\n */\n transform<K, V>(\n input:
ReadonlyMap<K, V>,\n compareFn?: (a: KeyValue<K, V>, b: KeyValue<K, V>) => number):
Array<KeyValue<K, V>>;\n transform<K extends number, V>(\n input: Record<K, V>, compareFn?: (a:
KeyValue<string, V>, b: KeyValue<string, V>) => number):\n Array<KeyValue<string, V>>;\n transform<K
extends string, V>(\n input: Record<K, V>|ReadonlyMap<K, V>,\n compareFn?: (a: KeyValue<K, V>, b:

```

```

KeyValue<K, V> => number): Array<KeyValue<K, V>>;\n
transform(\n  input: null|undefined,\n
compareFn?: (a: KeyValue<unknown, unknown>, b: KeyValue<unknown, unknown>) => number): null;\n
transform<K, V>(\n  input: ReadonlyMap<K, V>|null|undefined,\n  compareFn?: (a: KeyValue<K, V>, b:
KeyValue<K, V>) => number): Array<KeyValue<K, V>>|null;\n
transform<K extends number, V>(\n  input:
Record<K, V>|null|undefined,\n  compareFn?: (a: KeyValue<string, V>, b: KeyValue<string, V>) => number):\n
Array<KeyValue<string, V>>|null;\n
transform<K extends string, V>(\n  input: Record<K,
V>|ReadonlyMap<K, V>|null|undefined,\n  compareFn?: (a: KeyValue<K, V>, b: KeyValue<K, V>) =>
number): Array<KeyValue<K, V>>|null;\n
transform<K, V>(\n  input: undefined|null|{[key: string]: V, [key:
number]: V}|ReadonlyMap<K, V>,\n  compareFn: (a: KeyValue<K, V>, b: KeyValue<K, V>) => number =
defaultComparator):\n  Array<KeyValue<K, V>>|null {\n  if (!input || (!(input instanceof Map) && typeof input
!== 'object')) {\n    return null;\n  }\n  if (!this.differ) {\n    // make a differ for whatever type we've been
passed in\n    this.differ = this.differs.find(input).create();\n  }\n  const differChanges: KeyValueChanges<K,
V>|null = this.differ.diff(input as any);\n  if (differChanges) {\n    this.keyValues = [];\n
differChanges.forEachItem((r: KeyValueChangeRecord<K, V>) => {\n
this.keyValues.push(makeKeyValuePair(r.key, r.currentValue!));\n  });\n  this.keyValues.sort(compareFn);\n
}\n  return this.keyValues;\n }\n}\n\nexport function defaultComparator<K, V>(\n keyValueA: KeyValue<K,
V>, keyValueB: KeyValue<K, V>): number {\n  const a = keyValueA.key;\n  const b = keyValueB.key;\n  // if
same exit with 0;\n  if (a === b) return 0;\n  // make sure that undefined are at the end of the sort.\n  if (a ===
undefined) return 1;\n  if (b === undefined) return -1;\n  // make sure that nulls are at the end of the sort.\n  if (a ===
null) return 1;\n  if (b === null) return -1;\n  if (typeof a === 'string' && typeof b === 'string') {\n    return a < b ? -1 :
1;\n  }\n  if (typeof a === 'number' && typeof b === 'number') {\n    return a - b;\n  }\n  if (typeof a === 'boolean' &&
typeof b === 'boolean') {\n    return a < b ? -1 : 1;\n  }\n  // `a` and `b` are of different types. Compare their string
values.\n  const aString = String(a);\n  const bString = String(b);\n  return aString === bString ? 0 : aString < bString
? -1 : 1;\n }\n\n"/**\n * @license\n * Copyright Google LLC All Rights Reserved.\n * \n * Use of this source code is
governed by an MIT-style license that can be\n * found in the LICENSE file at https://angular.io/license\n
*\n\nimport {DEFAULT_CURRENCY_CODE, Inject, LOCALE_ID, Pipe, PipeTransform} from
'@angular/core';\nimport {formatCurrency, formatNumber, formatPercent} from './i18n/format_number';\nimport
{getCurrencySymbol} from './i18n/locale_data_api';\n\nimport {invalidPipeArgumentError} from
'/invalid_pipe_argument_error';\n\n/**\n * @ngModule CommonModule\n * @description\n * \n * Transforms a
number into a string,\n * formatted according to locale rules that determine group sizing and\n * separator, decimal-
point character, and other locale-specific\n * configurations.\n * \n * If no parameters are specified, the function
rounds off to the nearest value using this\n * [rounding
method](https://en.wikibooks.org/wiki/Arithmetic/Rounding).\n * The behavior differs from that of the JavaScript
`Math.round()` function.\n * In the following case for example, the pipe rounds down where\n *
`Math.round()` rounds up:\n * \n * `<code>html` -2.5 | number: '1.0-0`\n * > -3`\n * `Math.round(-2.5)\n * > -2`\n *
`\n * \n * @see `formatNumber`\n * \n * @usageNotes\n * The following code shows how the pipe transforms
numbers\n * into text strings, according to various format specifications,\n * where the caller's default locale is `en-
US`.\n * \n * ### Example\n * \n * <code-example path="common/pipes/ts/number_pipe.ts"
region="NumberPipe"></code-example>\n * \n * @publicApi\n * \n * @Pipe({name: 'number'})\n\nexport class
DecimalPipe implements PipeTransform {\n  constructor(@Inject(LOCALE_ID) private _locale: string) {\n\n
/**\n * @param value The number to be formatted.\n * @param digitsInfo Decimal representation options,
specified by a string\n * in the following format:<br>\n * <code>{minIntegerDigits} . {minFractionDigits} -
{maxFractionDigits}</code>.\n * - `minIntegerDigits`: The minimum number of integer digits before the decimal
point.\n * Default is `1`.\n * - `minFractionDigits`: The minimum number of digits after the decimal point.\n *
Default is `0`.\n * - `maxFractionDigits`: The maximum number of digits after the decimal point.\n * Default is
`3`.\n * @param locale A locale code for the locale format rules to use.\n * When not supplied, uses the value of
`LOCALE_ID`, which is `en-US` by default.\n * See [Setting your app locale](guide/i18n#setting-up-the-locale-of-
your-app).\n * \n * \n * transform(value: number|string, digitsInfo?: string, locale?: string): string|null;\n

```

```

transform(value: null|undefined, digitsInfo?: string, locale?: string): null;
transform(value: number|string|null|undefined, digitsInfo?: string, locale?: string): string|null;
transform(value: number|string|null|undefined, digitsInfo?: string, locale?: string): string
  |null {
    if (!isValue(value)) return null;
    locale = locale || this._locale;
    try {
      const num = strToNumber(value);
      return formatNumber(num, locale, digitsInfo);
    } catch (error) {
      throw invalidPipeArgumentError(DecimalPipe, error.message);
    }
  }
}
@ngModule CommonModule
@description
  * Transforms a number to a percentage
  * string, formatted according to locale rules that determine group sizing and
  * separator, decimal-point character, and other locale-specific
  * configurations.
  * @see `formatPercent()`
  * @usageNotes
  * The following code shows how the pipe transforms numbers
  * into text strings, according to various format specifications,
  * where the caller's default locale is `en-US`.
  * <code-example
  path="common/pipes/ts/percent_pipe.ts" region='PercentPipe'></code-example>
  * @publicApi
  *
  * @Pipe({name: 'percent'})
  export class PercentPipe implements PipeTransform {
    constructor(@Inject(LOCALE_ID) private _locale: string) {}
    /**
     * @param value The number to be formatted as a percentage.
     * @param digitsInfo Decimal representation options, specified by a string
     * in the following format:
     * <br>
     * <code>{minIntegerDigits}.{minFractionDigits}-{maxFractionDigits}</code>.
     * - `minIntegerDigits`: The minimum number of integer digits before the decimal point.
     * Default is `1`.
     * - `minFractionDigits`: The minimum number of digits after the decimal point.
     * Default is `0`.
     * - `maxFractionDigits`: The maximum number of digits after the decimal point.
     * Default is `0`.
     * @param locale A locale code for the locale format rules to use.
     * When not supplied, uses the value of `LOCALE_ID`, which is `en-US` by default.
     * See [Setting your app locale](guide/i18n#setting-up-the-locale-of-your-app).
     */
    transform(value: number|string, digitsInfo?: string, locale?: string): string|null;
    transform(value: null|undefined, digitsInfo?: string, locale?: string): null;
    transform(value: number|string|null|undefined, digitsInfo?: string, locale?: string): string
      |null {
        if (!isValue(value)) return null;
        locale = locale || this._locale;
        try {
          const num = strToNumber(value);
          return formatPercent(num, locale, digitsInfo);
        } catch (error) {
          throw invalidPipeArgumentError(PercentPipe, error.message);
        }
      }
    }
  }
@ngModule CommonModule
@description
  * Transforms a number to a currency string, formatted according to locale
  * rules
  * that determine group sizing and separator, decimal-point character,
  * and other locale-specific configurations.
  *
  * { @a currency-code-deprecation }
  * <div class="alert is-helpful">
  * **Deprecation notice:**
  * The default currency code is currently always `USD` but this is deprecated from v9.
  * In v11 the default currency code will be taken from the current locale identified by
  * the `LOCAL_ID` token. See the [i18n guide](guide/i18n#setting-up-the-locale-of-your-app) for
  * more information.
  *
  * If you need the previous behavior then set it by creating a `DEFAULT_CURRENCY_CODE` provider in
  * your application
  * `NgModule`:
  * ```ts
  * {provide: DEFAULT_CURRENCY_CODE, useValue: 'USD'}
  * ```
  * </div>
  * @see `getCurrencySymbol()`
  * @see `formatCurrency()`
  * @usageNotes
  * The following code shows how the pipe transforms numbers
  * into text strings, according to various format specifications,
  * where the caller's default locale is `en-US`.
  * <code-example
  path="common/pipes/ts/currency_pipe.ts" region='CurrencyPipe'></code-example>
  * @publicApi
  *
  * @Pipe({name: 'currency'})
  export class CurrencyPipe implements PipeTransform {
    constructor(
      @Inject(LOCALE_ID) private _locale: string,
      @Inject(DEFAULT_CURRENCY_CODE) private _defaultCurrencyCode: string = 'USD'
    ) {}
    /**
     * @param value The number to be formatted as currency.
     * @param currencyCode The [ISO 4217](https://en.wikipedia.org/wiki/ISO_4217)
     * currency code, such as `USD` for the US dollar and `EUR` for the euro.
     * The default currency code can be configured using the `DEFAULT_CURRENCY_CODE`
     * injection token.
     * @param display The format for the currency indicator. One of the following:
     * - `code`: Show the code (such as `USD`).
     * - `symbol` (default): Show the symbol (such as `$`).
     * - `symbol-narrow`: Use the narrow symbol for locales that have two symbols for their
     * currency. For example, the Canadian dollar CAD has the symbol `CA$` and the
     * symbol-narrow `$`. If the locale has no narrow symbol, uses the standard
     * symbol for the locale.
     * - String: Use the given string value instead of a code or a symbol. For example, an

```

empty string will suppress the currency & symbol.

- `symbol` - Boolean (marked deprecated in v5): `true` for symbol and false for `code`.
- `digitsInfo` Decimal representation options, specified by a string in the following format: `<minIntegerDigits>.{minFractionDigits}-{maxFractionDigits}</code>`
- `minIntegerDigits`: The minimum number of integer digits before the decimal point. Default is `1`.
- `minFractionDigits`: The minimum number of digits after the decimal point. Default is `2`.
- `maxFractionDigits`: The maximum number of digits after the decimal point. Default is `2`.

If not provided, the number will be formatted with the proper amount of digits, depending on what the [ISO 4217](https://en.wikipedia.org/wiki/ISO_4217) specifies. For example, the Canadian dollar has 2 digits, whereas the Chilean peso has none.

`locale` A locale code for the locale format rules to use. When not supplied, uses the value of `LOCALE_ID`, which is `en-US` by default. See [Setting your app locale](guide/i18n#setting-up-the-locale-of-your-app).

```

transform(
  value: number|string,
  currencyCode?: string,
  display?: 'code'|'symbol'|'symbol-narrow'|string|boolean,
  digitsInfo?: string,
  locale?: string): string|null;
transform(
  value: null|undefined,
  currencyCode?: string,
  display?: 'code'|'symbol'|'symbol-narrow'|string|boolean,
  digitsInfo?: string,
  locale?: string): null;
transform(
  value: number|string|null|undefined,
  currencyCode?: string,
  display?: 'code'|'symbol'|'symbol-narrow'|string|boolean,
  digitsInfo?: string,
  locale?: string): string|null;
transform(
  value: number|string|null|undefined,
  currencyCode?: string,
  display: 'code'|'symbol'|'symbol-narrow'|string|boolean = 'symbol',
  digitsInfo?: string,
  locale?: string): string|null
if (!isValue(value)) return null;
locale = locale || this._locale;
if (typeof display === 'boolean') {
  if (<any>console && <any>console.warn) {
    console.warn('Warning: the currency pipe has been changed in Angular v5. The symbolDisplay option (third parameter) is now a string instead of a boolean. The accepted values are \"code\", \"symbol\" or \"symbol-narrow\".');
  }
  display = display ? 'symbol' : 'code';
}
let currency: string = currencyCode || this._defaultCurrencyCode;
if (display !== 'code') {
  if (display === 'symbol' || display === 'symbol-narrow') {
    currency = getCurrencySymbol(currency, display === 'symbol' ? 'wide' : 'narrow', locale);
  }
} else {
  currency = display;
}
try {
  const num = strToNumber(value);
  return formatCurrency(num, locale, currency, currencyCode, digitsInfo);
} catch (error) {
  throw invalidPipeArgumentError(CurrencyPipe, error.message);
}
}

function isValue(value: number|string|null|undefined): value is number|string {
  return !(value == null || value === '' || value !== value);
}

function strToNumber(value: number|string): number {
  // Convert strings to numbers
  if (typeof value === 'string' && !isNaN(Number(value)) - parseFloat(value)) {
    return Number(value);
  }
  if (typeof value !== 'number') {
    throw new Error(`${value} is not a number`);
  }
  return value;
}

/**
 * @license
 * Copyright Google LLC All Rights Reserved.
 * Use of this source code is governed by an MIT-style license that can be found in the LICENSE file at https://angular.io/license
 */
import {Pipe, PipeTransform} from '@angular/core';
import {InvalidPipeArgumentError} from './invalid_pipe_argument_error';
import {NgModule} from '@ngModule';
import {CommonModule} from '@ngModule';

/**
 * @description
 * Creates a new `Array` or `String` containing a subset (slice) of the elements.
 *
 * @usageNotes
 * All behavior is based on the expected behavior of the JavaScript API
 * `Array.prototype.slice()` and `String.prototype.slice()`.
 *
 * When operating on an `Array`, the returned `Array` is always a copy even when all the elements are being returned.
 *
 * When operating on a blank value, the pipe returns the blank value.
 *
 * ### List Example
 *
 * This `ngFor` example:
 *
 * @example common/pipes/ts/slice_pipe.ts
 * region='SlicePipe_list'
 * produces the following:
 *
 * ```html
 * <li>b</li>
 * <li>c</li>
 * ```
 *
 * ### String Examples
 *
 * @example common/pipes/ts/slice_pipe.ts
 * region='SlicePipe_string'
 *
 * @publicApi
 */
@Pipe({name: 'slice', pure: false})
export class SlicePipe implements PipeTransform {
  /**
   * @param value a list or a string to be sliced.
   * @param start the starting index of the subset to return.
   * - **a positive integer**: return the item at `start` index and all items after in the list or string expression.
   * - **a negative integer**: return the item at `start` index from the end and all items after in the list or string expression.
   * - **if positive and greater than the size of the expression**: return an empty list or string.
   * - **if negative and greater than the size of the expression**: return entire
  */
}

```

```

list or string.\n * @param end the ending index of the subset to return.\n * - **omitted**\n * return all items until the end.\n * - **if positive**\n * return all items before `end` index of the list or string.\n * - **if negative**\n * return all items before `end` index from the end of the list or string.\n */\n transform<T>(value: ReadonlyArray<T>, start: number, end?: number): Array<T>;\n transform(value: null|undefined, start: number, end?: number): null;\n transform<T>(value: ReadonlyArray<T>|null|undefined, start: number, end?: number): Array<T>|null;\n transform(value: string, start: number, end?: number): string;\n transform(value: string|null|undefined, start: number, end?: number): string|null;\n transform<T>(value: ReadonlyArray<T>|string|null|undefined, start: number, end?: number):\n  Array<T>|string|null {\n    if (value === null) return null;\n    if (!this.supports(value)) {\n      throw invalidPipeArgumentError(SlicePipe, value);\n    }\n    return value.slice(start, end);\n  }\n  private supports(obj: any): boolean {\n    return typeof obj === 'string' || Array.isArray(obj);\n  }\n}\n"/**\n * @license\n * Copyright Google LLC All Rights Reserved.\n *\n * Use of this source code is governed by an MIT-style license that can be\n * found in the LICENSE file at\n *\n * https://angular.io/license\n *\n * @module\n * @description\n * This module provides a set of common Pipes.\n */\nimport { AsyncPipe } from './async_pipe';\nimport { LowerCasePipe, TitleCasePipe, UpperCasePipe } from './case_conversion_pipes';\nimport { DatePipe } from './date_pipe';\nimport { I18nPluralPipe } from './i18n_plural_pipe';\nimport { I18nSelectPipe } from './i18n_select_pipe';\nimport { JsonPipe } from './json_pipe';\nimport { KeyValue, KeyValuePipe } from './keyvalue_pipe';\nimport { CurrencyPipe, DecimalPipe, PercentPipe } from './number_pipe';\nimport { SlicePipe } from './slice_pipe';\n\nexport {\n  AsyncPipe,\n  CurrencyPipe,\n  DatePipe,\n  DecimalPipe,\n  I18nPluralPipe,\n  I18nSelectPipe,\n  JsonPipe,\n  KeyValue,\n  KeyValuePipe,\n  LowerCasePipe,\n  PercentPipe,\n  SlicePipe,\n  TitleCasePipe,\n  UpperCasePipe,\n};\n\n/**\n * A collection of Angular pipes that are likely to be used in each and every application.\n */\nexport const COMMON_PIPES = [\n  AsyncPipe,\n  UpperCasePipe,\n  LowerCasePipe,\n  JsonPipe,\n  SlicePipe,\n  DecimalPipe,\n  PercentPipe,\n  TitleCasePipe,\n  CurrencyPipe,\n  DatePipe,\n  I18nPluralPipe,\n  I18nSelectPipe,\n  KeyValuePipe,\n];\n"/**\n * @license\n * Copyright Google LLC All Rights Reserved.\n *\n * Use of this source code is governed by an MIT-style license that can be\n * found in the LICENSE file at\n *\n * https://angular.io/license\n */\nimport { NgModule } from '@angular/core';\nimport { COMMON_DIRECTIVES } from './directives/index';\nimport { NgLocaleLocalization, NgLocalization } from './i18n/localization';\nimport { COMMON_PIPES } from './pipes/index';\n\n// Note: This does not contain the location providers,\n// as they need some platform specific implementations to work.\n\n/**\n * Exports all the basic Angular directives and pipes,\n * such as `NgIf`, `NgForOf`, `DecimalPipe`, and so on.\n * Re-exported by `BrowserModule`, which is included automatically in the root\n * `AppModule` when you create a new app with the CLI `new` command.\n *\n * The `providers` options configure the NgModule's injector to provide\n * localization dependencies to members.\n *\n * The `exports` options make the declared directives and pipes available for import\n * by other NgModules.\n */\n@publicApi\n@NgModule({\n  declarations: [COMMON_DIRECTIVES, COMMON_PIPES],\n  exports: [COMMON_DIRECTIVES, COMMON_PIPES],\n  providers: [\n    {\n      provide: NgLocalization,\n      useClass: NgLocaleLocalization,\n    },\n  ],\n})\nexport class CommonModule {\n}\n"/**\n * @license\n * Copyright Google LLC All Rights Reserved.\n *\n * Use of this source code is governed by an MIT-style license that can be\n * found in the LICENSE file at\n *\n * https://angular.io/license\n */\nexport const PLATFORM_BROWSER_ID = 'browser';\nexport const PLATFORM_SERVER_ID = 'server';\nexport const PLATFORM_WORKER_APP_ID = 'browserWorkerApp';\nexport const PLATFORM_WORKER_UI_ID = 'browserWorkerUi';\n\n/**\n * Returns whether a platform id represents a browser platform.\n */\n@publicApi\nexport function isPlatformBrowser(platformId: Object): boolean {\n  return platformId === PLATFORM_BROWSER_ID;\n}\n\n/**\n * Returns whether a platform id represents a server platform.\n */\n@publicApi\nexport function isPlatformServer(platformId: Object): boolean {\n  return platformId === PLATFORM_SERVER_ID;\n}\n\n/**\n * Returns whether a platform id represents a web worker app platform.\n */\n@publicApi\nexport function isPlatformWorkerApp(platformId: Object): boolean {\n  return platformId === PLATFORM_WORKER_APP_ID;\n}\n\n/**\n * Returns whether a platform id represents a web worker UI platform.\n */\n@publicApi\nexport function isPlatformWorkerUi(platformId: Object): boolean {\n  return

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platformId === PLATFORM_WORKER_UI_ID;\n}\n", "/*\n * @license\n * Copyright Google LLC All Rights
Reserved.\n *\n * Use of this source code is governed by an MIT-style license that can be\n * found in the
LICENSE file at https://angular.io/license\n *\n\n/**\n * @module\n * @description\n * Entry point for all public
APIs of the common package.\n *\n\nimport {Version} from '@angular/core';\n\n/**\n * @publicApi\n *\n\nexport
const VERSION = new Version('11.0.2');\n", "/*\n * @license\n * Copyright Google LLC All Rights Reserved.\n
*\n * Use of this source code is governed by an MIT-style license that can be\n * found in the LICENSE file at
https://angular.io/license\n *\n\nimport {ErrorHandler, defineInjectable, inject} from '@angular/core';\n\nimport
{DOCUMENT} from './dom_tokens';\n\n\n/**\n * Defines a scroll position manager. Implemented by
`BrowserViewportScroller`.\n *\n * @publicApi\n *\n\nexport abstract class ViewportScroller {\n // De-sugared
tree-shakable injection\n // See #23917\n /** @nocollapse *\n static prov = defineInjectable({\n token:
ViewportScroller,\n providedIn: 'root',\n factory: () => new BrowserViewportScroller(inject(DOCUMENT),
window, inject(ErrorHandler))\n });\n\n /**\n * Configures the top offset used when scrolling to an anchor.\n *
@param offset A position in screen coordinates (a tuple with x and y values)\n * or a function that returns the top
offset position.\n * *\n *\n abstract setOffset(offset: [number, number]|(() => [number, number])): void;\n\n /**\n
* Retrieves the current scroll position.\n * @returns A position in screen coordinates (a tuple with x and y
values).\n * *\n *\n abstract getScrollPosition(): [number, number];\n\n /**\n * Scrolls to a specified position.\n *
@param position A position in screen coordinates (a tuple with x and y values).\n * *\n *\n abstract
scrollToPosition(position: [number, number]): void;\n\n /**\n * Scrolls to an anchor element.\n * @param
anchor The ID of the anchor element.\n * *\n *\n abstract scrollToAnchor(anchor: string): void;\n\n /**\n * Disables
automatic scroll restoration provided by the browser.\n * See also [window.history.scrollRestoration\n *
info](https://developers.google.com/web/updates/2015/09/history-api-scroll-restoration).\n * *\n *\n abstract
setHistoryScrollRestoration(scrollRestoration: 'auto'|'manual'): void;\n}\n\n\n/**\n * Manages the scroll position for a
browser window.\n *\n\nexport class BrowserViewportScroller implements ViewportScroller {\n private offset: ()
=> [number, number] = () => [0, 0];\n\n constructor(private document: any, private window: any, private
errorHandler: ErrorHandler) {\n\n /**\n * Configures the top offset used when scrolling to an anchor.\n *
@param offset A position in screen coordinates (a tuple with x and y values)\n * or a function that returns the top
offset position.\n * *\n *\n setOffset(offset: [number, number]|(() => [number, number])): void {\n if
(Array.isArray(offset)) {\n this.offset = () => offset;\n } else {\n this.offset = offset;\n }\n }\n\n /**\n
* Retrieves the current scroll position.\n * @returns The position in screen coordinates.\n * *\n *\n getScrollPosition():
[number, number] {\n if (this.supportsScrolling()) {\n return [this.window.scrollX, this.window.scrollY];\n }
else {\n return [0, 0];\n }\n }\n\n /**\n * Sets the scroll position.\n * @param position The new position in
screen coordinates.\n * *\n *\n scrollToPosition(position: [number, number]): void {\n if (this.supportsScrolling())
{\n this.window.scrollTo(position[0], position[1]);\n }\n }\n\n /**\n * Scrolls to an anchor element.\n *
@param anchor The ID of the anchor element.\n * *\n *\n scrollToAnchor(anchor: string): void {\n if
(this.supportsScrolling()) {\n const elSelected =\n this.document.getElementById(anchor) ||
this.document.getElementsByName(anchor)[0];\n if (elSelected) {\n this.scrollToElement(elSelected);\n }\n }\n }\n\n /**\n
* Disables automatic scroll restoration provided by the browser.\n * *\n *\n setHistoryScrollRestoration(scrollRestoration: 'auto'|'manual'): void {\n if (this.supportScrollRestoration()) {\n
const history = this.window.history;\n if (history && history.scrollRestoration) {\n history.scrollRestoration
= scrollRestoration;\n }\n }\n }\n\n private scrollToElement(el: any): void {\n const rect =
el.getBoundingClientRect();\n const left = rect.left + this.window.pageXOffset;\n const top = rect.top +
this.window.pageYOffset;\n const offset = this.offset();\n this.window.scrollTo(left - offset[0], top - offset[1]);\n }\n\n /**\n
* We only support scroll restoration when we can get a hold of window.\n * This means that we do
not support this behavior when running in a web worker.\n * *\n *\n * Lifting this restriction right now would require
more changes in the dom adapter.\n * Since webworkers aren't widely used, we will lift it once RouterScroller is\n
* battle-tested.\n * *\n *\n private supportScrollRestoration(): boolean {\n try {\n if (!this.window ||
!this.window.scrollTo) {\n return false;\n }\n // The `scrollRestoration` property could be on the `history`
instance or its prototype.\n const scrollRestorationDescriptor =

```

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getScrollRestorationProperty(this.window.history) ||\n
getScrollRestorationProperty(Object.getPrototypeOf(this.window.history));\n // We can write to the
`scrollRestoration` property if it is a writable data field or it has a\n // setter function.\n return
!!scrollRestorationDescriptor &&\n    !(scrollRestorationDescriptor.writable ||
scrollRestorationDescriptor.set);\n } catch {\n return false;\n }\n }\n\n private supportsScrolling(): boolean
{\n try {\n return !!this.window.scrollTo;\n } catch {\n return false;\n }\n }\n}\n\nfunction
getScrollRestorationProperty(obj: any): PropertyDescriptor|undefined {\n return
Object.getOwnPropertyDescriptor(obj, 'scrollRestoration');\n}\n\n/**\n * Provides an empty implementation of the
viewport scroller.\n */\nexport class NullViewportScroller implements ViewportScroller {\n /**\n * Empty
implementation\n */\n setOffset(offset: [number, number]|((() => [number, number])): void {\n\n /**\n * Empty
implementation\n */\n getScrollPosition(): [number, number] {\n return [0, 0];\n }\n\n /**\n * Empty
implementation\n */\n scrollToPosition(position: [number, number]): void {\n\n /**\n * Empty
implementation\n */\n scrollToAnchor(anchor: string): void {\n\n /**\n * Empty implementation\n */\n
setHistoryScrollRestoration(scrollRestoration: 'auto'|'manual'): void {\n}\n}\n\n", "/*\n * @license\n * Copyright
Google LLC All Rights Reserved.\n */\n * Use of this source code is governed by an MIT-style license that can be\n
* found in the LICENSE file at https://angular.io/license\n */\n\n/**\n * @module\n * @description\n * Entry point
for all public APIs of the common package.\n */\nexport * from './private_export';\nexport * from
'/location/index';\nexport {formatDate} from './i18n/format_date';\nexport {formatCurrency, formatNumber,
formatPercent} from './i18n/format_number';\nexport {NgLocaleLocalization, NgLocalization} from
'/i18n/localization';\nexport {registerLocaleData} from './i18n/locale_data';\nexport {Plural, NumberFormatStyle,
FormStyle, Time, TranslationWidth, FormatWidth, NumberSymbol, WeekDay, getNumberOfCurrencyDigits,
getCurrencySymbol, getLocaleDayPeriods, getLocaleDayNames, getLocaleMonthNames, getLocaleId,
getLocaleEraNames, getLocaleWeekEndRange, getLocaleFirstDayOfWeek, getLocaleDateFormat,
getLocaleDateTimeFormat, getLocaleExtraDayPeriodRules, getLocaleExtraDayPeriods, getLocalePluralCase,
getLocaleTimeFormat, getLocaleNumberSymbol, getLocaleNumberFormat, getLocaleCurrencyCode,
getLocaleCurrencyName, getLocaleCurrencySymbol, getLocaleDirection} from './i18n/locale_data_api';\nexport
{parseCookieValue as parseCookieValue} from './cookie';\nexport {CommonModule} from
'/common_module';\nexport {NgClass, NgForOf, NgForOfContext, NgIf, NgIfContext, NgPlural, NgPluralCase,
NgStyle, NgSwitch, NgSwitchCase, NgSwitchDefault, NgTemplateOutlet, NgComponentOutlet} from
'/directives/index';\nexport {DOCUMENT} from './dom_tokens';\nexport {AsyncPipe, DatePipe, I18nPluralPipe,
I18nSelectPipe, JsonPipe, LowerCasePipe, CurrencyPipe, DecimalPipe, PercentPipe, SlicePipe, UpperCasePipe,
TitleCasePipe, KeyValuePipe, KeyValue} from './pipes/index';\nexport {PLATFORM_BROWSER_ID as
PLATFORM_BROWSER_ID, PLATFORM_SERVER_ID as PLATFORM_SERVER_ID,
PLATFORM_WORKER_APP_ID as PLATFORM_WORKER_APP_ID, PLATFORM_WORKER_UI_ID as
PLATFORM_WORKER_UI_ID, isPlatformBrowser, isPlatformServer, isPlatformWorkerApp,
isPlatformWorkerUi} from './platform_id';\nexport {VERSION} from './version';\nexport {ViewportScroller,
NullViewportScroller as NullViewportScroller} from './viewport_scroller';\n", "/*\n * @license\n * Copyright
Google LLC All Rights Reserved.\n */\n * Use of this source code is governed by an MIT-style license that can be\n
* found in the LICENSE file at https://angular.io/license\n */\n\n/**\n * @module\n * @description\n * Entry point
for all public APIs of this package.\n */\nexport * from './src/common';\n\n// This file only reexports content of the
`src` folder. Keep it that way.\n", "/*\n * @license\n * Copyright Google LLC All Rights Reserved.\n */\n * Use of
this source code is governed by an MIT-style license that can be\n * found in the LICENSE file at
https://angular.io/license\n */\n\n// This file is not used to build this module. It is only used during editing\n// by the
TypeScript language service and during build for verification. `ngc`\n// replaces this file with production index.ts
when it rewrites private symbol\n// names.\n\nexport * from './public_api';\n\n", "/*\n * Generated bundle index. Do
not edit.\n */\n\nexport * from './index';\n\nexport {COMMON_DIRECTIVES as
angular_packages_common_common_e} from './src/directives/index';\nexport {createLocation as
angular_packages_common_common_c} from './src/location/location';\nexport {provideLocationStrategy as

```



```
angular_packages_common_common_d} from './src/location/location_strategy';\nexport
{createBrowserPlatformLocation as angular_packages_common_common_b,useBrowserPlatformLocation as
angular_packages_common_common_a} from './src/location/platform_location';\nexport {COMMON_PIPES as
angular_packages_common_common_f} from
'/src/pipes/index';}], "names":["isListLikeIterable", "stringify"], "mappings":";;";;AAAA;";;AAQA,IAAI,IAAI,G
AAe,IAAK,CAAC;SAEb,MAAM;IACpB,OAAO,IAAI,CAAC;AACd,CAAC;SAEe,MAAM,CAAC,OAAmB;IAC
xC,IAAI,GAAG,OAAO,CAAC;AACjB,CAAC;SAEe,iBAAiB,CAAC,OAAmB;IACnD,IAAI,CAAC,IAAI,EAAE;
QACT,IAAI,GAAG,OAAO,CAAC;KACbB;AACH,CAAC;AAED;AACa;";;MAMsB,UAAU;";AC/BhC;";;AA
UA;";;MAQa,QAAQ,GAAG,IAAI,cAAc,CAAW,eAAe;ACIBpE;";;AAYA;";;MA2BsB,gBAAGB;
;YALrC,UAAU,SAAC;gBACV,UAAU,EAAE,UAAU;gBAEtB,UAAU,EAAE,0BAA0B;aACvC;SawBe,0BAA
0B;IACxC,OAAO,QAAQ,CAAC,uBAAuB,CAAC,CAAC;AAC3C,CAAC;AAED;";;MAMa,oBAAoB,GAAG,IA
AI,cAAc,CAAE,sBAAsB,EAAE;AAsB7F;";;MAUa,uBAAwB,SAAQ,gBAAGB;IAI3D,YAAsC,IAAS;QAC7C,KA
AK,EAAE,CAAC;QAD4B,SAAI,GAAJ,IAAI,CAAK;QAE7C,IAAI,CAAC,KAAK,EAAE,CAAC;KACd;IAID,K
AAK;QACF,IAA6B,CAAC,QAAQ,GAAG,MAAM,EAAE,CAAC,WAAW,EAAE,CAAC;QACjE,IAAI,CAAC,Q
AAQ,GAAG,MAAM,EAAE,CAAC,UAAU,EAAE,CAAC;KACvC;IAED,kBAAkB;QACbB,OAAO,MAAM,EAA
E,CAAC,WAAW,CAAC,IAAI,CAAC,IAAI,CAAE,CAAC;KACzC;IAED,UAAU,CAAC,EAA0B;QACnC,MAA
M,EAAE,CAAC,oBAAoB,CAAC,IAAI,CAAC,IAAI,EAAE,QAAQ,CAAC,CAAC,gBAAGB,CAAC,UAAU,EAA
E,EAAE,EAAE,KAAK,CAAC,CAAC;KAC5F;IAED,YAAY,CAAC,EAA0B;QACrC,MAAM,EAAE,CAAC,oBA
AoB,CAAC,IAAI,CAAC,IAAI,EAAE,QAAQ,CAAC,CAAC,gBAAGB,CAAC,YAAY,EAAE,EAAE,EAAE,KAA
K,CAAC,CAAC;KAC9F;IAED,IAAI,IAAI;QACN,OAAO,IAAI,CAAC,QAAQ,CAAC,IAAI,CAAC;KAC3B;IAC
D,IAAI,QAAQ;QACV,OAAO,IAAI,CAAC,QAAQ,CAAC,QAAQ,CAAC;KAC/B;IACD,IAAI,QAAQ;QACV,OA
AO,IAAI,CAAC,QAAQ,CAAC,QAAQ,CAAC;KAC/B;IACD,IAAI,IAAI;QACN,OAAO,IAAI,CAAC,QAAQ,CA
AC,IAAI,CAAC;KAC3B;IACD,IAAI,QAAQ;QACV,OAAO,IAAI,CAAC,QAAQ,CAAC,QAAQ,CAAC;KAC/B;I
ACD,IAAI,MAAM;QACR,OAAO,IAAI,CAAC,QAAQ,CAAC,MAAM,CAAC;KAC7B;IACD,IAAI,IAAI;QACN,
OAAO,IAAI,CAAC,QAAQ,CAAC,IAAI,CAAC;KAC3B;IACD,IAAI,QAAQ,CAAC,OAAe;QAC1B,IAAI,CAAC,
QAAQ,CAAC,QAAQ,GAAG,OAAO,CAAC;KACIC;IAED,SAAS,CAAC,KAAU,EAAE,KAAa,EAAE,GAAW;Q
AC9C,IAAI,aAAa,EAAE,EAAE;YACnB,IAAI,CAAC,QAAQ,CAAC,SAAS,CAAC,KAAK,EAAE,KAAK,EAAE,
GAAG,CAAC,CAAC;SAC5C;aAAM;YACL,IAAI,CAAC,QAAQ,CAAC,IAAI,GAAG,GAAG,CAAC;SAC1B;KA
CF;IAED,YAAY,CAAC,KAAU,EAAE,KAAa,EAAE,GAAW;QACjD,IAAI,aAAa,EAAE,EAAE;YACnB,IAAI,C
AAC,QAAQ,CAAC,YAAY,CAAC,KAAK,EAAE,KAAK,EAAE,GAAG,CAAC,CAAC;SAC/C;aAAM;YACL,IA
AI,CAAC,QAAQ,CAAC,IAAI,GAAG,GAAG,CAAC;SAC1B;KACF;IAED,OAAO;QACL,IAAI,CAAC,QAAQ,C
AAC,OAAO,EAAE,CAAC;KACzB;IAED,IAAI;QACF,IAAI,CAAC,QAAQ,CAAC,IAAI,EAAE,CAAC;KACtB;I
AED,QAAQ;QACN,OAAO,IAAI,CAAC,QAAQ,CAAC,KAAK,CAAC;KAC5B;";;YApFF,UAAU,SAAC;gBACV,
UAAU,EAAE,UAAU;gBAEtB,UAAU,EAAE,6BAA6B;aAC1C;4CAKc,MAAM,SAAC,QAAQ;SA8Ed,aAAa;I
AC3B,OAAO,CAAC,CAAC,MAAM,CAAC,OAAO,CAAC,SAAS,CAAC;AACpC,CAAC;SACe,6BAA6B;IAC3C
,OAAO,IAAI,uBAAuB,CAAC,QAAQ,CAAC,QAAQ,CAAC,CAAC,CAAC;AACzD;AC/LA;";;ACAA;";;AA
SA;";;SASgB,aAAa,CAAC,KAAa,EAAE,GAAW;IACtD,IAAI,KAAK,CAAC,MAAM,IAAI,CAAC,EAAE;QA
CrB,OAAO,GAAG,CAAC;KACZ;IACD,IAAI,GAAG,CAAC,MAAM,IAAI,CAAC,EAAE;QACnB,OAAO,KAA
K,CAAC;KACd;IACD,IAAI,OAAO,GAAG,CAAC,CAAC;IACbB,IAAI,KAAK,CAAC,QAAQ,CAAC,GAAG,CA
AC,EAAE;QACvB,OAAO,EAAE,CAAC;KACX;IACD,IAAI,GAAG,CAAC,UAAU,CAAC,GAAG,CAAC,EAAE
;QACvB,OAAO,EAAE,CAAC;KACX;IACD,IAAI,OAAO,IAAI,CAAC,EAAE;QACbB,OAAO,KAAK,GAAG,G
AAG,CAAC,SAAS,CAAC,CAAC,CAAC;KACjC;IACD,IAAI,OAAO,IAAI,CAAC,EAAE;QACbB,OAAO
,KAAK,GAAG,GAAG,CAAC;KACpB;IACD,OAAO,KAAK,GAAG,GAAG,GAAG,GAAG,CAAC;AAC3B,CAA
C;AAED;";;SASgB,kBAAkB,CAAC,GAAW;IAC5C,MAAM,KAAK,GAAG,GAAG,CAAC,KAAK,CAAC,QA
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* /opt/cola/permits/1358260638_1657134870.9548028/0/common-11-0-2-tgz/package/fesm2015/common.js.map

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* /opt/cola/permits/1358260638_1657134870.9548028/0/common-11-0-2-tgz/package/fesm2015/http/testing.js
* /opt/cola/permits/1358260638_1657134870.9548028/0/common-11-0-2-tgz/package/fesm2015/http.js
* /opt/cola/permits/1358260638_1657134870.9548028/0/common-11-0-2-tgz/package/fesm2015/testing.js
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Angular

=====

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```
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upgrade.umd.js
* /opt/cola/permits/1358260638_1657134870.9548028/0/common-11-0-2-tgz/package/bundles/common-
upgrade.umd.min.js
```

1.104 openssl 1.0.2n-1ubuntu5.8

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1.105 aws-java-sdk-cloudwatch 1.11.553

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```
* /opt/cola/permits/1141636966_1615091421.37/0/aws-java-sdk-cloudwatch-1-11-553-sources-  
jar/com/amazonaws/services/cloudwatch/model/ScanBy.java  
* /opt/cola/permits/1141636966_1615091421.37/0/aws-java-sdk-cloudwatch-1-11-553-sources-  
jar/com/amazonaws/services/cloudwatch/model/MetricDataQuery.java  
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* /opt/cola/permits/1141636966_1615091421.37/0/aws-java-sdk-cloudwatch-1-11-553-sources-  
jar/com/amazonaws/services/cloudwatch/model/PutMetricDataRequest.java  
* /opt/cola/permits/1141636966_1615091421.37/0/aws-java-sdk-cloudwatch-1-11-553-sources-  
jar/com/amazonaws/services/cloudwatch/model/transform/DescribeAlarmsForMetricResultStaxUnmarshaller.java  
* /opt/cola/permits/1141636966_1615091421.37/0/aws-java-sdk-cloudwatch-1-11-553-sources-  
jar/com/amazonaws/services/cloudwatch/model/PutDashboardRequest.java  
* /opt/cola/permits/1141636966_1615091421.37/0/aws-java-sdk-cloudwatch-1-11-553-sources-  
jar/com/amazonaws/services/cloudwatch/model/InvalidNextTokenException.java
```

* /opt/cola/permits/1141636966_1615091421.37/0/aws-java-sdk-cloudwatch-1-11-553-sources-jar/com/amazonaws/services/cloudwatch/model/transform/DatapointStaxUnmarshaller.java

* /opt/cola/permits/1141636966_1615091421.37/0/aws-java-sdk-cloudwatch-1-11-553-sources-jar/com/amazonaws/services/cloudwatch/model/GetMetricWidgetImageRequest.java

* /opt/cola/permits/1141636966_1615091421.37/0/aws-java-sdk-cloudwatch-1-11-553-sources-jar/com/amazonaws/services/cloudwatch/model/transform/DashboardInvalidInputErrorExceptionUnmarshaller.java

* /opt/cola/permits/1141636966_1615091421.37/0/aws-java-sdk-cloudwatch-1-11-553-sources-jar/com/amazonaws/services/cloudwatch/model/DashboardNotFoundException.java

* /opt/cola/permits/1141636966_1615091421.37/0/aws-java-sdk-cloudwatch-1-11-553-sources-jar/com/amazonaws/services/cloudwatch/model/transform/ListMetricsResultStaxUnmarshaller.java

* /opt/cola/permits/1141636966_1615091421.37/0/aws-java-sdk-cloudwatch-1-11-553-sources-jar/com/amazonaws/services/cloudwatch/model/transform/TagResourceResultStaxUnmarshaller.java

* /opt/cola/permits/1141636966_1615091421.37/0/aws-java-sdk-cloudwatch-1-11-553-sources-jar/com/amazonaws/services/cloudwatch/model/transform/InvalidFormatExceptionUnmarshaller.java

* /opt/cola/permits/1141636966_1615091421.37/0/aws-java-sdk-cloudwatch-1-11-553-sources-jar/com/amazonaws/services/cloudwatch/model/transform/DeleteAlarmsRequestMarshaller.java

* /opt/cola/permits/1141636966_1615091421.37/0/aws-java-sdk-cloudwatch-1-11-553-sources-jar/com/amazonaws/services/cloudwatch/model/LimitExceededException.java

* /opt/cola/permits/1141636966_1615091421.37/0/aws-java-sdk-cloudwatch-1-11-553-sources-jar/com/amazonaws/services/cloudwatch/AbstractAmazonCloudWatch.java

* /opt/cola/permits/1141636966_1615091421.37/0/aws-java-sdk-cloudwatch-1-11-553-sources-jar/com/amazonaws/services/cloudwatch/model/transform/GetMetricDataResultStaxUnmarshaller.java

* /opt/cola/permits/1141636966_1615091421.37/0/aws-java-sdk-cloudwatch-1-11-553-sources-jar/com/amazonaws/services/cloudwatch/model/DescribeAlarmHistoryRequest.java

* /opt/cola/permits/1141636966_1615091421.37/0/aws-java-sdk-cloudwatch-1-11-553-sources-jar/com/amazonaws/services/cloudwatch/model/Tag.java

* /opt/cola/permits/1141636966_1615091421.37/0/aws-java-sdk-cloudwatch-1-11-553-sources-jar/com/amazonaws/services/cloudwatch/model/AlarmHistoryItem.java

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* /opt/cola/permits/1141636966_1615091421.37/0/aws-java-sdk-cloudwatch-1-11-553-sources-jar/com/amazonaws/services/cloudwatch/model/UntagResourceResult.java

* /opt/cola/permits/1141636966_1615091421.37/0/aws-java-sdk-cloudwatch-1-11-553-sources-jar/com/amazonaws/services/cloudwatch/model/transform/PutMetricDataResultStaxUnmarshaller.java

* /opt/cola/permits/1141636966_1615091421.37/0/aws-java-sdk-cloudwatch-1-11-553-sources-jar/com/amazonaws/services/cloudwatch/model/EnableAlarmActionsResult.java

* /opt/cola/permits/1141636966_1615091421.37/0/aws-java-sdk-cloudwatch-1-11-553-sources-jar/com/amazonaws/services/cloudwatch/model/Datapoint.java

* /opt/cola/permits/1141636966_1615091421.37/0/aws-java-sdk-cloudwatch-1-11-553-sources-jar/com/amazonaws/services/cloudwatch/model/MetricAlarm.java

* /opt/cola/permits/1141636966_1615091421.37/0/aws-java-sdk-cloudwatch-1-11-553-sources-jar/com/amazonaws/services/cloudwatch/model/SetAlarmStateRequest.java

* /opt/cola/permits/1141636966_1615091421.37/0/aws-java-sdk-cloudwatch-1-11-553-sources-jar/com/amazonaws/services/cloudwatch/model/GetDashboardResult.java

* /opt/cola/permits/1141636966_1615091421.37/0/aws-java-sdk-cloudwatch-1-11-553-sources-jar/com/amazonaws/services/cloudwatch/model/transform/SetAlarmStateResultStaxUnmarshaller.java

* /opt/cola/permits/1141636966_1615091421.37/0/aws-java-sdk-cloudwatch-1-11-553-sources-jar/com/amazonaws/services/cloudwatch/model/DeleteAlarmsRequest.java

* /opt/cola/permits/1141636966_1615091421.37/0/aws-java-sdk-cloudwatch-1-11-553-sources-jar/com/amazonaws/services/cloudwatch/model/transform/InvalidParameterCombinationExceptionUnmarshaller.java

1.106 jackson-datatype-jsr310 2.13.2

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1.108 spring-security-web 5.6.2

1.108.1 Available under license :

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1.109 zlib 1.2.8

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/* zlib.h -- interface of the 'zlib' general purpose compression library
version 1.2.11, January 15th, 2017

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1.110 dbus-python 1.2.6 1

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```

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```
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```

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1.112 jul-to-slf4j 1.7.36

1.112.1 Available under license :

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```
/**
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 */
```

Found in path(s):

```
* /opt/cola/permits/1281455938_1646319090.87/0/jul-to-slf4j-1-7-36-sources-
jar/org/slf4j/bridge/SLF4JBridgeHandler.java
```

1.113 nettle 3.4.1-0ubuntu0.18.04.1

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1.114 libcryptsetup12 2.0.2-1ubuntu1.2

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1.115 pygobject 3.26.1 2ubuntu1

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/* CMU libsasl

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*/

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/* CMU libsasl

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* Rob Earhart

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1.118 idna 2.8

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Found in path(s):

```
* /opt/cola/permits/1110810307_1606855956.29/0/kjd-idna-v2-8-0-g1cdf175-1-tar-gz/kjd-idna-375dc46/LICENSE.rst
```

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```
"""
```

A library to support the Internationalised Domain Names in Applications (IDNA) protocol as specified in RFC 5890 et.al. This new methodology, known as IDNA 2008, can generate materially different results to the previous standard. The library can act as a drop-in replacement for the "encodings.idna" module.

```
"""
```

```
import io, sys
from setuptools import setup
```

```
def main():
```

```
    python_version = sys.version_info[:2]
    if python_version < (2,7):
        raise SystemExit("Sorry, Python 2.7 or newer required")
```

```
    package_data = {}
    exec(open('idna/package_data.py').read(), package_data)
```

```
    arguments = {
        'name': 'idna',
        'packages': ['idna'],
        'version': package_data['__version__'],
        'description': 'Internationalized Domain Names in Applications (IDNA)',
        'long_description': io.open("README.rst", encoding="UTF-8").read(),
        'author': 'Kim Davies',
        'author_email': 'kim@cynosure.com.au',
        'license': 'BSD-like',
        'url': 'https://github.com/kjd/idna',
        'classifiers': [
            'Development Status :: 5 - Production/Stable',
            'Intended Audience :: Developers',
            'Intended Audience :: System Administrators',
            'License :: OSI Approved :: BSD License',
            'Operating System :: OS Independent',
            'Programming Language :: Python',
            'Programming Language :: Python :: 2',
            'Programming Language :: Python :: 2.7',
            'Programming Language :: Python :: 3',
            'Programming Language :: Python :: 3.4',
            'Programming Language :: Python :: 3.5',
```

```

    'Programming Language :: Python :: 3.6',
    'Topic :: Internet :: Name Service (DNS)',
    'Topic :: Software Development :: Libraries :: Python Modules',
    'Topic :: Utilities',
],
'python_requires': '>=2.7, !=3.0.*, !=3.1.*, !=3.2.*, !=3.3.*',
'test_suite': 'tests',
}

setup(**arguments)

if __name__ == '__main__':
    main()

Found in path(s):
* /opt/cola/permits/1110810307_1606855956.29/0/kjd-idna-v2-8-0-g1cdf175-1-tar-gz/kjd-idna-375dc46/setup.py

```

1.119 firebird3.0-common-doc

3.0.2.32703.ds4-11ubuntu2

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1.122 hostname 3.20

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hostname -- set the host name or show the host/domain name

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1.123 commons-beanutils 1.9.4

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1.124 commons-math 3.5

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1.126 python-requests 2.18.4 2ubuntu0.1

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1.127 cryptsetup 2.0.2-1ubuntu1.2

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1.130 python-certifi 2018.1.18-2

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Certificate data from Mozilla as of: Thu Nov 3 19:04:19 2011#

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@(#) \$RCSfile: certdata.txt,v \$ \$Revision: 1.80 \$ \$Date: 2011/11/03 15:11:58 \$

1.131 dash 0.5.8 2.10

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1.132 hyperscan 1.1.0_3-SNAPSHOT

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* /opt/cola/permits/1260753103_1643213354.0/0/hyperscan-1-0-0-jar/META-INF/maven/com.gliwka.hyperscan/hyperscan/pom.xml

1.133 debianutils 4.8.4

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@heading Vincent Rijmen, Antoon Bosselaers, Paulo Barreto

AES in libcrypto

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rijndael-alg-fst.c

@version 3.0 (December 2000)

Optimised ANSI C code for the Rijndael cipher (now AES)

@author Vincent Rijmen <vincent.rijmen@esat.kuleuven.ac.be>

@author Antoon Bosselaers <antoon.bosselaers@esat.kuleuven.ac.be>

@author Paulo Barreto <paulo.barreto@terra.com.br>

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kdc/announce.c

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DES core in libcrypto

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Thanks to: Dan Hoey for his excellent Initial and Inverse permutation code; Jim Gillogly & Phil Karn for the DES key schedule code; Dennis Ferguson, Eric Young and Dana How for comparing notes; and Ray Lau, for humouring me on.

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Windows support

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lib/hcrypto/test_dh.c

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1.137 flink-connector-kafka_2.11 1.11.0

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1.138 types-d3 5.0.1

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1.139 flink-annotations 1.11.0

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1.141 inetutils-ping 1.9.4-3ubuntu0.1

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1.143 curl 7.58.0-2ubuntu3.18

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=====

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* com.ongres.stringprep:saslprep:1.1

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1.147 ng-packagr 11.0.0

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1.148 base-passwd 3.5.44

1.148.1 Available under license :

Format-Specification: <http://svn.debian.org/wsvn/dep/web/deps/dep5.mdwn?op=file&rev=135>

Name: base-passwd

Maintainer: Colin Watson <cjwatson@debian.org>

Files: update-passwd.c, man/*

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Files: passwd.master, group.master

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X-Notes: Originally written by Ian Murdock <imurdock@debian.org> and
Bruce Perens <bruce@pixar.com>.

Files: doc/*

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1.149 automation 1.11-8

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* /opt/cola/permits/1135840548_1613612864.41/0/automaton-1-11-8-sources-3-
jar/dk/brics/automaton/ShuffleOperations.java
* /opt/cola/permits/1135840548_1613612864.41/0/automaton-1-11-8-sources-3-
jar/dk/brics/automaton/Datatypes.java
* /opt/cola/permits/1135840548_1613612864.41/0/automaton-1-11-8-sources-3-
jar/dk/brics/automaton/RegExp.java
* /opt/cola/permits/1135840548_1613612864.41/0/automaton-1-11-8-sources-3-jar/dk/brics/automaton/State.java
* /opt/cola/permits/1135840548_1613612864.41/0/automaton-1-11-8-sources-3-
jar/dk/brics/automaton/AutomatonProvider.java
* /opt/cola/permits/1135840548_1613612864.41/0/automaton-1-11-8-sources-3-
jar/dk/brics/automaton/TransitionComparator.java
* /opt/cola/permits/1135840548_1613612864.41/0/automaton-1-11-8-sources-3-
jar/dk/brics/automaton/MinimizationOperations.java
* /opt/cola/permits/1135840548_1613612864.41/0/automaton-1-11-8-sources-3-
jar/dk/brics/automaton/BasicOperations.java
* /opt/cola/permits/1135840548_1613612864.41/0/automaton-1-11-8-sources-3-
jar/dk/brics/automaton/Transition.java
* /opt/cola/permits/1135840548_1613612864.41/0/automaton-1-11-8-sources-3-
jar/dk/brics/automaton/StatePair.java
* /opt/cola/permits/1135840548_1613612864.41/0/automaton-1-11-8-sources-3-
jar/dk/brics/automaton/RunAutomaton.java
* /opt/cola/permits/1135840548_1613612864.41/0/automaton-1-11-8-sources-3-
jar/dk/brics/automaton/SpecialOperations.java
* /opt/cola/permits/1135840548_1613612864.41/0/automaton-1-11-8-sources-3-
jar/dk/brics/automaton/BasicAutomata.java
* /opt/cola/permits/1135840548_1613612864.41/0/automaton-1-11-8-sources-3-
jar/dk/brics/automaton/DatatypesAutomatonProvider.java
* /opt/cola/permits/1135840548_1613612864.41/0/automaton-1-11-8-sources-3-
jar/dk/brics/automaton/Automaton.java

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/*

* dk.brics.automaton - AutomatonMatcher

*

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1.150 acl 2.2.52 3build1

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1.152 commons-lang3 3.7

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1.153 file 5.32-2ubuntu0.4

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1.154 angular-tree-component 7.2.0

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1.155 gnupg 2.2.4 1ubuntu1.4

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* DNS resolver (dirmngr/dns.c)

dns.c - Recursive, Reentrant DNS Resolver.

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1.162 spring-jdbc 5.3.18

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jar/org/springframework/jdbc/core/BeanPropertyRowMapper.java
* /opt/cola/permits/1298106483_1648763973.4/0/spring-jdbc-5-3-18-sources-
jar/org/springframework/jdbc/support/incrementer/H2SequenceMaxValueIncrementer.java
* /opt/cola/permits/1298106483_1648763973.4/0/spring-jdbc-5-3-18-sources-
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*
* <p>Implementations can be generic (for example, using
* { @link java.sql.SQLException#getSQLState() SQLState } codes for JDBC) or wholly
* proprietary (for example, using Oracle error codes) for greater precision.
*
* @author Rod Johnson
```

* @author Juergen Hoeller
* @see org.springframework.dao.DataAccessException
*/

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* /opt/cola/permits/1298106483_1648763973.4/0/spring-jdbc-5-3-18-sources-
jar/org/springframework/jdbc/support/incrementer/DB2MainframeSequenceMaxValueIncrementer.java
* /opt/cola/permits/1298106483_1648763973.4/0/spring-jdbc-5-3-18-sources-
jar/org/springframework/jdbc/support/incrementer/DB2SequenceMaxValueIncrementer.java
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jar/org/springframework/jdbc/core/RowCallbackHandler.java
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jar/org/springframework/jdbc/support/lob/LobHandler.java
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jar/org/springframework/jdbc/datasource/lookup/DataSourceLookup.java
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 - * /opt/cola/permits/1298106483_1648763973.4/0/spring-jdbc-5-3-18-sources-jar/org/springframework/jdbc/core/support/AbstractLobStreamingResultSetExtractor.java
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 - * /opt/cola/permits/1298106483_1648763973.4/0/spring-jdbc-5-3-18-sources-jar/org/springframework/jdbc/support/CustomSQLExceptionTranslatorRegistry.java
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 - * /opt/cola/permits/1298106483_1648763973.4/0/spring-jdbc-5-3-18-sources-jar/org/springframework/jdbc/core/namedparam/BeanPropertySqlParameterSource.java
 - * /opt/cola/permits/1298106483_1648763973.4/0/spring-jdbc-5-3-18-sources-jar/org/springframework/jdbc/object/SqlFunction.java
 - * /opt/cola/permits/1298106483_1648763973.4/0/spring-jdbc-5-3-18-sources-jar/org/springframework/jdbc/datasource/init/ResourceDatabasePopulator.java
 - * /opt/cola/permits/1298106483_1648763973.4/0/spring-jdbc-5-3-18-sources-jar/org/springframework/jdbc/core/namedparam/SqlParameterSource.java
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```
/**
 * Close this LobCreator session and free its temporarily created BLOBs and CLOBs.
 * Will not need to do anything if using PreparedStatement's standard methods,
 * but might be necessary to free database resources if using proprietary means.
 * <p><b>NOTE</b></p>: Needs to be invoked after the involved PreparedStatements have
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* /opt/cola/permits/1298106483_1648763973.4/0/spring-jdbc-5-3-18-sources-jar/org/springframework/jdbc/support/incrementer/Db2LuwMaxValueIncrementer.java
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* /opt/cola/permits/1298106483_1648763973.4/0/spring-jdbc-5-3-18-sources-jar/org/springframework/jdbc/IncorrectResultSetColumnCountException.java
* /opt/cola/permits/1298106483_1648763973.4/0/spring-jdbc-5-3-18-sources-jar/org/springframework/jdbc/support/incrementer/DerbyMaxValueIncrementer.java
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jar/org/springframework/jdbc/support/SQLExceptionSubclassTranslator.java
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```
/**
 * The classes in this package make JDBC easier to use and
 * reduce the likelihood of common errors. In particular, they:
 * <ul>
 * <li>Simplify error handling, avoiding the need for try/catch/finally
 * blocks in application code.
 * <li>Present exceptions to application code in a generic hierarchy of
 * unchecked exceptions, enabling applications to catch data access
 * exceptions without being dependent on JDBC, and to ignore fatal
 * exceptions there is no value in catching.
 * <li>Allow the implementation of error handling to be modified
 * to target different RDBMSes without introducing proprietary
 * dependencies into application code.
 * </ul>
 *
 * <p>This package and related packages are discussed in Chapter 9 of
 * <a href="https://www.amazon.com/exec/obidos/tg/detail/-/0764543857/">Expert One-On-One J2EE Design and
 * Development</a>
 * by Rod Johnson (Wrox, 2002).
 */
```

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* /opt/cola/permits/1298106483_1648763973.4/0/spring-jdbc-5-3-18-sources-jar/org/springframework/jdbc/datasource/embedded/ConnectionProperties.java
* /opt/cola/permits/1298106483_1648763973.4/0/spring-jdbc-5-3-18-sources-jar/org/springframework/jdbc/support/incrementer/SqlServerMaxValueIncrementer.java
* /opt/cola/permits/1298106483_1648763973.4/0/spring-jdbc-5-3-18-sources-jar/org/springframework/jdbc/support/rowset/SqlRowSetMetaData.java
* /opt/cola/permits/1298106483_1648763973.4/0/spring-jdbc-5-3-18-sources-jar/org/springframework/jdbc/support/incrementer/HsqlMaxValueIncrementer.java
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- * /opt/cola/permits/1298106483_1648763973.4/0/spring-jdbc-5-3-18-sources-jar/org/springframework/jdbc/datasource/init/ScriptStatementFailedException.java

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- * /opt/cola/permits/1298106483_1648763973.4/0/spring-jdbc-5-3-18-sources-jar/org/springframework/jdbc/core/support/AbstractLobCreatingPreparedStatementCallback.java

- * /opt/cola/permits/1298106483_1648763973.4/0/spring-jdbc-5-3-18-sources-jar/org/springframework/jdbc/support/rowset/ResultSetWrappingSqlRowSet.java

- * /opt/cola/permits/1298106483_1648763973.4/0/spring-jdbc-5-3-18-sources-jar/org/springframework/jdbc/object/RdbmsOperation.java

- * /opt/cola/permits/1298106483_1648763973.4/0/spring-jdbc-5-3-18-sources-jar/org/springframework/jdbc/support/JdbcAccessor.java

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- * /opt/cola/permits/1298106483_1648763973.4/0/spring-jdbc-5-3-18-sources-jar/org/springframework/jdbc/datasource/lookup/AbstractRoutingDataSource.java

- * /opt/cola/permits/1298106483_1648763973.4/0/spring-jdbc-5-3-18-sources-jar/org/springframework/jdbc/core/SqlReturnTypes.java

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- * /opt/cola/permits/1298106483_1648763973.4/0/spring-jdbc-5-3-18-sources-jar/org/springframework/jdbc/core/namedparam/SqlParameterSourceUtils.java

- * /opt/cola/permits/1298106483_1648763973.4/0/spring-jdbc-5-3-18-sources-jar/org/springframework/jdbc/datasource/embedded/DataSourceFactory.java

- * /opt/cola/permits/1298106483_1648763973.4/0/spring-jdbc-5-3-18-sources-jar/org/springframework/jdbc/support/JdbcTransactionManager.java

- * /opt/cola/permits/1298106483_1648763973.4/0/spring-jdbc-5-3-18-sources-

jar/org/springframework/jdbc/core/SqlParameterValue.java
* /opt/cola/permits/1298106483_1648763973.4/0/spring-jdbc-5-3-18-sources-
jar/org/springframework/jdbc/core/SqlParameter.java
* /opt/cola/permits/1298106483_1648763973.4/0/spring-jdbc-5-3-18-sources-
jar/org/springframework/jdbc/datasource/LazyConnectionDataSourceProxy.java
* /opt/cola/permits/1298106483_1648763973.4/0/spring-jdbc-5-3-18-sources-
jar/org/springframework/jdbc/datasource/DriverManagerDataSource.java
* /opt/cola/permits/1298106483_1648763973.4/0/spring-jdbc-5-3-18-sources-
jar/org/springframework/jdbc/core/SingleColumnRowMapper.java
* /opt/cola/permits/1298106483_1648763973.4/0/spring-jdbc-5-3-18-sources-
jar/org/springframework/jdbc/support/GeneratedKeyHolder.java
* /opt/cola/permits/1298106483_1648763973.4/0/spring-jdbc-5-3-18-sources-
jar/org/springframework/jdbc/core/metadata/CallMetaDataProviderFactory.java
* /opt/cola/permits/1298106483_1648763973.4/0/spring-jdbc-5-3-18-sources-
jar/org/springframework/jdbc/datasource/SimpleDriverDataSource.java
* /opt/cola/permits/1298106483_1648763973.4/0/spring-jdbc-5-3-18-sources-
jar/org/springframework/jdbc/core/support/JdbcBeanDefinitionReader.java
* /opt/cola/permits/1298106483_1648763973.4/0/spring-jdbc-5-3-18-sources-
jar/org/springframework/jdbc/core/namedparam/ParsedSql.java
* /opt/cola/permits/1298106483_1648763973.4/0/spring-jdbc-5-3-18-sources-
jar/org/springframework/jdbc/datasource/DataSourceTransactionManager.java
* /opt/cola/permits/1298106483_1648763973.4/0/spring-jdbc-5-3-18-sources-
jar/org/springframework/jdbc/core/StatementCreatorUtils.java
* /opt/cola/permits/1298106483_1648763973.4/0/spring-jdbc-5-3-18-sources-
jar/org/springframework/jdbc/support/AbstractFallbackSQLExceptionTranslator.java
* /opt/cola/permits/1298106483_1648763973.4/0/spring-jdbc-5-3-18-sources-
jar/org/springframework/jdbc/core/namedparam/NamedParameterJdbcTemplate.java
* /opt/cola/permits/1298106483_1648763973.4/0/spring-jdbc-5-3-18-sources-
jar/org/springframework/jdbc/support/KeyHolder.java
* /opt/cola/permits/1298106483_1648763973.4/0/spring-jdbc-5-3-18-sources-
jar/org/springframework/jdbc/core/JdbcTemplate.java
* /opt/cola/permits/1298106483_1648763973.4/0/spring-jdbc-5-3-18-sources-
jar/org/springframework/jdbc/core/SqlProvider.java
* /opt/cola/permits/1298106483_1648763973.4/0/spring-jdbc-5-3-18-sources-
jar/org/springframework/jdbc/core/PreparedStatementCreatorFactory.java
* /opt/cola/permits/1298106483_1648763973.4/0/spring-jdbc-5-3-18-sources-
jar/org/springframework/jdbc/support/JdbcUtils.java
* /opt/cola/permits/1298106483_1648763973.4/0/spring-jdbc-5-3-18-sources-
jar/org/springframework/jdbc/datasource/SingleConnectionDataSource.java
* /opt/cola/permits/1298106483_1648763973.4/0/spring-jdbc-5-3-18-sources-
jar/org/springframework/jdbc/support/SQLExceptionCodesFactory.java
* /opt/cola/permits/1298106483_1648763973.4/0/spring-jdbc-5-3-18-sources-
jar/org/springframework/jdbc/datasource/embedded/AbstractEmbeddedDatabaseConfigurer.java
* /opt/cola/permits/1298106483_1648763973.4/0/spring-jdbc-5-3-18-sources-
jar/org/springframework/jdbc/support/DatabaseStartupValidator.java
* /opt/cola/permits/1298106483_1648763973.4/0/spring-jdbc-5-3-18-sources-
jar/org/springframework/jdbc/core/metadata/CallParameterMetaData.java
* /opt/cola/permits/1298106483_1648763973.4/0/spring-jdbc-5-3-18-sources-

jar/org/springframework/jdbc/support/DatabaseMetaDataCallback.java

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* /opt/cola/permits/1298106483_1648763973.4/0/spring-jdbc-5-3-18-sources-

jar/org/springframework/jdbc/core/namedparam/MapSqlParameterSourceExtensions.kt

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/**

* Implement this interface when parameters need to be customized based

* on the connection. We might need to do this to make use of proprietary

* features, available only with a specific Connection type.

*

* @author Rod Johnson

* @author Thomas Risberg

* @see CallableStatementCreatorFactory#newCallableStatementCreator(ParameterMapper)

* @see org.springframework.jdbc.object.StoredProcedure#execute(ParameterMapper)

```
*/
/**
 * Create a Map of input parameters, keyed by name.
 * @param con a JDBC connection. This is useful (and the purpose of this interface)
 * if we need to do something RDBMS-specific with a proprietary Connection
 * implementation class. This class conceals such proprietary details. However,
 * it is best to avoid using such proprietary RDBMS features if possible.
 * @return a Map of input parameters, keyed by name (never {@code null})
 * @throws SQLException if an SQLException is encountered setting
 * parameter values (that is, there's no need to catch SQLException)
 */
```

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```
*/opt/cola/permits/1298106483_1648763973.4/0/spring-jdbc-5-3-18-sources-
jar/org/springframework/jdbc/core/ParameterMapper.java
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jar/org/springframework/jdbc/support/lob/AbstractLobHandler.java
```

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- * /opt/cola/permits/1298106483_1648763973.4/0/spring-jdbc-5-3-18-sources-jar/org/springframework/jdbc/support/xml/XmlBinaryStreamProvider.java
- * /opt/cola/permits/1298106483_1648763973.4/0/spring-jdbc-5-3-18-sources-jar/org/springframework/jdbc/support/xml/SqlXmlFeatureNotImplementedException.java
- * /opt/cola/permits/1298106483_1648763973.4/0/spring-jdbc-5-3-18-sources-jar/org/springframework/jdbc/object/GenericStoredProcedure.java
- * /opt/cola/permits/1298106483_1648763973.4/0/spring-jdbc-5-3-18-sources-jar/org/springframework/jdbc/datasource/lookup/IndiDataSourceLookup.java
- * /opt/cola/permits/1298106483_1648763973.4/0/spring-jdbc-5-3-18-sources-jar/org/springframework/jdbc/support/xml/XmlCharacterStreamProvider.java
- * /opt/cola/permits/1298106483_1648763973.4/0/spring-jdbc-5-3-18-sources-jar/org/springframework/jdbc/datasource/lookup/SingleDataSourceLookup.java
- * /opt/cola/permits/1298106483_1648763973.4/0/spring-jdbc-5-3-18-sources-jar/org/springframework/jdbc/config/JdbcNamespaceHandler.java
- * /opt/cola/permits/1298106483_1648763973.4/0/spring-jdbc-5-3-18-sources-jar/org/springframework/jdbc/SQLWarningException.java
- * /opt/cola/permits/1298106483_1648763973.4/0/spring-jdbc-5-3-18-sources-jar/org/springframework/jdbc/support/SqlValue.java
- * /opt/cola/permits/1298106483_1648763973.4/0/spring-jdbc-5-3-18-sources-jar/org/springframework/jdbc/datasource/lookup/DataSourceLookupFailureException.java
- * /opt/cola/permits/1298106483_1648763973.4/0/spring-jdbc-5-3-18-sources-jar/org/springframework/jdbc/core/InterruptibleBatchPreparedStatementSetter.java
- * /opt/cola/permits/1298106483_1648763973.4/0/spring-jdbc-5-3-18-sources-jar/org/springframework/jdbc/support/incrementer/AbstractSequenceMaxValueIncrementer.java
- * /opt/cola/permits/1298106483_1648763973.4/0/spring-jdbc-5-3-18-sources-jar/org/springframework/jdbc/datasource/SmartDataSource.java
- * /opt/cola/permits/1298106483_1648763973.4/0/spring-jdbc-5-3-18-sources-jar/org/springframework/jdbc/support/xml/XmlResultProvider.java
- * /opt/cola/permits/1298106483_1648763973.4/0/spring-jdbc-5-3-18-sources-jar/org/springframework/jdbc/support/MetaDataAccessException.java
- * /opt/cola/permits/1298106483_1648763973.4/0/spring-jdbc-5-3-18-sources-jar/org/springframework/jdbc/core/BatchPreparedStatementSetter.java
- * /opt/cola/permits/1298106483_1648763973.4/0/spring-jdbc-5-3-18-sources-jar/org/springframework/jdbc/datasource/embedded/SimpleDriverDataSourceFactory.java

1.163 netaddr 0.7.19

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1.164 error_prone_annotations 2.3.2

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* /opt/cola/permits/1007294135_1646171712.95/0/error-prone-annotations-2-3-2-sources-jar/com/google/errorprone/annotations/FormatString.java
* /opt/cola/permits/1007294135_1646171712.95/0/error-prone-annotations-2-3-2-sources-jar/com/google/errorprone/annotations/RestrictedApi.java
* /opt/cola/permits/1007294135_1646171712.95/0/error-prone-annotations-2-3-2-sources-jar/com/google/errorprone/annotations/CompatibleWith.java
* /opt/cola/permits/1007294135_1646171712.95/0/error-prone-annotations-2-3-2-sources-jar/com/google/errorprone/annotations/FormatMethod.java

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* /opt/cola/permits/1007294135_1646171712.95/0/error-prone-annotations-2-3-2-sources-jar/com/google/errorprone/annotations/CheckReturnValue.java
* /opt/cola/permits/1007294135_1646171712.95/0/error-prone-annotations-2-3-2-sources-jar/com/google/errorprone/annotations/concurrent/GuardedBy.java

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* /opt/cola/permits/1007294135_1646171712.95/0/error-prone-annotations-2-3-2-sources-jar/com/google/errorprone/annotations/concurrent/LockMethod.java
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* /opt/cola/permits/1007294135_1646171712.95/0/error-prone-annotations-2-3-2-sources-jar/com/google/errorprone/annotations/RequiredModifiers.java
* /opt/cola/permits/1007294135_1646171712.95/0/error-prone-annotations-2-3-2-sources-jar/com/google/errorprone/annotations/CanIgnoreReturnValue.java
* /opt/cola/permits/1007294135_1646171712.95/0/error-prone-annotations-2-3-2-sources-


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jar/com/google/errorprone/annotations/Immutable.java
* /opt/cola/permits/1007294135_1646171712.95/0/error-prone-annotations-2-3-2-sources-
jar/com/google/errorprone/annotations/SuppressPackageLocation.java
* /opt/cola/permits/1007294135_1646171712.95/0/error-prone-annotations-2-3-2-sources-
jar/com/google/errorprone/annotations/ForOverride.java
* /opt/cola/permits/1007294135_1646171712.95/0/error-prone-annotations-2-3-2-sources-
jar/com/google/errorprone/annotations/Var.java
* /opt/cola/permits/1007294135_1646171712.95/0/error-prone-annotations-2-3-2-sources-
jar/com/google/errorprone/annotations/concurrent/LazyInit.java
* /opt/cola/permits/1007294135_1646171712.95/0/error-prone-annotations-2-3-2-sources-
jar/com/google/errorprone/annotations/IncompatibleModifiers.java
```

1.165 urllib3 1.25.6

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```
# Contributions to the urllib3 project
```

```
## Creator & Maintainer
```

```
* Andrey Petrov <andrey.petrov@shazow.net>
```

```
## Contributors
```

```
In chronological order:
```

```
* victor.vde <http://code.google.com/u/victor.vde/>
```

```
* HTTPS patch (which inspired HTTPSConnectionPool)
```

```
* erikcederstrand <http://code.google.com/u/erikcederstrand/>
```

```
* NTLM-authenticated HTTPSConnectionPool
```

```
* Basic-authenticated HTTPSConnectionPool (merged into make_headers)
```

```
* niphlod <niphlod@gmail.com>
```

```
* Client-verified SSL certificates for HTTPSConnectionPool
```

```
* Response gzip and deflate encoding support
```

```
* Better unicode support for filepost using StringIO buffers
```

```
* btoconnor <brian@btoconnor.net>
```

```
* Non-multipart encoding for POST requests
```

```
* p.dobrogost <http://code.google.com/u/@WBRSRIBZDhBFXQB6/>
```

```
* Code review, PEP8 compliance, benchmark fix
```

```
* kennethreitz <me@kennethreitz.com>
```

```
* Bugfixes, suggestions, Requests integration
```

- * georgemarshall <<https://github.com/georgemarshall>>
- * Bugfixes, Improvements and Test coverage

- * Thomas Kluyver <thomas@kluyver.me.uk>
- * Python 3 support

- * brandon-rhodes <<http://rhodesmill.org/brandon>>
- * Design review, bugfixes, test coverage.

- * studer <theo.studer@gmail.com>
- * IPv6 url support and test coverage

- * Shivaram Lingamneni <slingamn@cs.stanford.edu>
- * Support for explicitly closing pooled connections

- * hartator <hartator@gmail.com>
- * Corrected multipart behavior for params

- * Thomas Weischuh <thomas@t-8ch.de>
- * Support for TLS SNI
- * API unification of ssl_version/cert_reqs
- * SSL fingerprint and alternative hostname verification
- * Bugfixes in testsuite

- * Sune Kirkeby <mig@ibofobi.dk>
- * Optional SNI-support for Python 2 via PyOpenSSL.

- * Marc Schlaich <marc.schlaich@gmail.com>
- * Various bugfixes and test improvements.

- * Bryce Boe <bbzbryce@gmail.com>
- * Correct six.moves conflict
- * Fixed pickle support of some exceptions

- * Boris Figovsky <boris.figovsky@ravello.com>
- * Allowed to skip SSL hostname verification

- * Cory Benfield <<https://lukasa.co.uk/about/>>
- * Stream method for Response objects.
- * Return native strings in header values.
- * Generate 'Host' header when using proxies.

- * Jason Robinson <jaywink@basshero.org>
- * Add missing WrappedSocket.fileno method in PyOpenSSL

- * Audrius Butkevicius <audrius.butkevicius@elastichosts.com>
- * Fixed a race condition

- * Stanislav Vitkovskiy <stas.vitkovsky@gmail.com>
- * Added HTTPS (CONNECT) proxy support

- * Stephen Holsapple <sholsapp@gmail.com>
- * Added abstraction for granular control of request fields

- * Martin von Gagern <Martin.vGagern@gmx.net>
- * Support for non-ASCII header parameters

- * Kevin Burke <kev@inburke.com> and Pavel Kirichenko <juanych@yandex-team.ru>
- * Support for separate connect and request timeouts

- * Peter Waller <p@pwaller.net>
- * HTTPResponse.tell() for determining amount received over the wire

- * Nipunn Koorapati <nipunn1313@gmail.com>
- * Ignore default ports when comparing hosts for equality

- * Danilo @dbrgn <https://dbrgn.ch/>
- * Disabled TLS compression by default on Python 3.2+
- * Disabled TLS compression in pyopenssl contrib module
- * Configurable cipher suites in pyopenssl contrib module

- * Roman Bogorodskiy <roman.bogorodskiy@ericsson.com>
- * Account retries on proxy errors

- * Nicolas Delaby <nicolas.delaby@ezeep.com>
- * Use the platform-specific CA certificate locations

- * Josh Schneier <https://github.com/jschneier>
- * HTTPHeaderDict and associated tests and docs
- * Bugfixes, docs, test coverage

- * Tahia Khan <http://tahia.tk/>
- * Added Timeout examples in docs

- * Arthur Grunseid <https://grunseid.com>
- * source_address support and tests (with https://github.com/bui)

- * Ian Cordasco <graffatcolmingov@gmail.com>
- * PEP8 Compliance and Linting
- * Add ability to pass socket options to an HTTP Connection

- * Erik Tollerud <erik.tollerud@gmail.com>
- * Support for standard library io module.

- * Krishna Prasad <kprasad.iitd@gmail.com>
- * Google App Engine documentation

- * Aaron Meurer <asmeurer@gmail.com>
- * Added `Url.url`, which unparses a `Url`

- * Evgeny Kapun <abacabadabacaba@gmail.com>
- * Bugfixes

- * Benjamin Meyer <bm_witness@yahoo.com>
- * Security Warning Documentation update for proper capture

- * Shivan Sornarajah <github@sornars.com>
- * Support for using `ConnectionPool` and `PoolManager` as context managers.

- * Alex Gaynor <alex.gaynor@gmail.com>
- * Updates to the default SSL configuration

- * Tomas Tomecek <ttomecek@redhat.com>
- * Implemented generator for getting chunks from chunked responses.

- * tlynn <<https://github.com/tlynn>>
- * Respect the warning preferences at import.

- * David D. Riddle <ddriddle@illinois.edu>
- * IPv6 bugfixes in testsuite

- * Thea Flowers <magicalgirl@google.com>
- * App Engine environment tests.
- * Documentation re-write.

- * John Krauss <<https://github.com/talos>>
- * Clues to debugging problems with ``cryptography`` dependency in docs

- * Disassem <<https://github.com/Disassem>>
- * Fix pool-default headers not applying for url-encoded requests like GET.

- * James Atherfold <jlatherfold@hotmail.com>
- * Bugfixes relating to cleanup of connections during errors.

- * Christian Pedersen <<https://github.com/chripede>>
- * IPv6 HTTPS proxy bugfix

- * Jordan Moldow <<https://github.com/jmoldow>>
- * Fix low-level exceptions leaking from ```HTTPResponse.stream()```.
- * Bugfix for ```ConnectionPool.urlopen(release_conn=False)```.
- * Creation of ```HTTPConnectionPool.ResponseCls```.

- * Predrag Gruevski <<https://github.com/obi1kenobi>>
- * Made cert digest comparison use a constant-time algorithm.

- * Adam Talsma <<https://github.com/a-tal>>
- * Bugfix to ca_cert file paths.

- * Evan Meagher <<https://evanmeagher.net>>
- * Bugfix related to `memoryview` usage in PyOpenSSL adapter

- * John Vandenberg <jayvdb@gmail.com>
- * Python 2.6 fixes; pyflakes and pep8 compliance

- * Andy Caldwell <andy.m.caldwell@gmail.com>
- * Bugfix related to reusing connections in indeterminate states.

- * Ville Skytt <ville.skytta@iki.fi>
- * Logging efficiency improvements, spelling fixes, Travis config.

- * Shige Takeda <smtakeda@gmail.com>
- * Started Recipes documentation and added a recipe about handling concatenated gzip data in HTTP response

- * Jess Shapiro <jesse@jesseshapiro.net>
- * Various character-encoding fixes/tweaks
- * Disabling IPv6 DNS when IPv6 connections not supported

- * David Foster <<http://dafoster.net/>>
- * Ensure order of request and response headers are preserved.

- * Jeremy Cline <jeremy@jcline.org>
- * Added connection pool keys by scheme

- * Aviv Palivoda <palaviv@gmail.com>
- * History list to Retry object.
- * HTTPResponse contains the last Retry object.

- * Nate Prewitt <nate.prewitt@gmail.com>
- * Ensure timeouts are not booleans and greater than zero.
- * Fixed infinite loop in ``stream`` when amt=None.
- * Added length_remaining to determine remaining data to be read.
- * Added enforce_content_length to raise exception when incorrect content-length received.

- * Seth Michael Larson <sethmichaellarson@protonmail.com>
- * Created selectors backport that supports PEP 475.

- * Alexandre Dias <alex.dias@smarkets.com>
- * Don't retry on timeout if method not in whitelist

- * Moinuddin Quadri <moin18@gmail.com>
- * Lazily load idna package

- * Tom White <s6yg1ez3@mail2tor.com>
- * Made SOCKS handler differentiate socks5h from socks5 and socks4a from socks4.

- * Tim Burke <tim.burke@gmail.com>
- * Stop buffering entire deflate-encoded responses.

- * Tuukka Mustonen <tuukka.mustonen@gmail.com>
- * Add counter for status_forcelist retries.

- * Erik Rose <erik@mozilla.com>
- * Bugfix to pyopenssl vendoring

- * Wolfgang Richter <wolfgang.richter@gmail.com>
- * Bugfix related to loading full certificate chains with PyOpenSSL backend.

- * Mike Miller <github@mikeage.net>
- * Logging improvements to include the HTTP(S) port when opening a new connection

- * Ioannis Tziakos <mail@itziakos.gr>
- * Fix ``util.selectors._fileobj_to_fd`` to accept ``long``.
- * Update appveyor tox setup to use the 64bit python.

- * Akamai (through Jess Shapiro) <jshapiro@akamai.com>
- * Ongoing maintenance; 2017-2018

- * Dominique Leuenberger <dimstar@opensuse.org>
- * Minor fixes in the test suite

- * Will Bond <will@wbond.net>
- * Add Python 2.6 support to ``contrib.securetransport``

- * Aleksei Alekseev <alekseev.yeskela@gmail.com>
- * using auth info for socks proxy

- * Chris Wilcox <git@crwilcox.com>
- * Improve contribution guide
- * Add ``HTTPResponse.geturl`` method to provide ``urllib2.urlopen().geturl()`` behavior

- * Bruce Merry <https://www.brucemerry.org.za>
- * Fix leaking exceptions when system calls are interrupted with zero timeout

- * Hugo van Kemenade <https://github.com/hugovk>
- * Drop support for EOL Python 2.6

- * Tim Bell <https://github.com/timb07>
- * Bugfix for responses with Content-Type: message/* logging warnings

- * Justin Bramley <https://github.com/jbramleycl>

- * Add ability to handle multiple Content-Encodings
- * Katsuhiko YOSHIDA <<https://github.com/kyoshidajp>>
- * Remove Authorization header regardless of case when redirecting to cross-site
- * James Meickle <<https://permadeath.com/>>
- * Improve handling of Retry-After header
- * Chris Jerdonek <chris.jerdonek@gmail.com>
- * Remove a spurious TypeError from the exception chain inside
HTTPConnectionPool._make_request(), also for BaseExceptions.
- * [Your name or handle] <[email or website]>
- * [Brief summary of your changes]

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1.167 mpdecimal 2.4.2-1ubuntu1

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1.168 types-vis 4.21.9

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1.169 debconf 1.5.66ubuntu1

1.170 berkeley-db 5.3.28-13.1ubuntu1.1

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- */

1.171 zip 3.0

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RECORD

Carriage_Control carriage_return

Format stream_lf

1.172 python-requests 2.22.0

1.172.1 Available under license :

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1.173 commons-io 2.5

1.173.1 Available under license :

```
<!DOCTYPE html>
<html lang="en">
<head>
<meta charset="utf-8">
<meta http-equiv="X-UA-Compatible" content="IE=edge">
<meta name="viewport" content="width=device-width, initial-scale=1">
<meta name="description" content="Home page of The Apache Software Foundation">

<link rel="apple-touch-icon" sizes="57x57" href="/favicons/apple-touch-icon-57x57.png">
<link rel="apple-touch-icon" sizes="60x60" href="/favicons/apple-touch-icon-60x60.png">
<link rel="apple-touch-icon" sizes="72x72" href="/favicons/apple-touch-icon-72x72.png">
<link rel="apple-touch-icon" sizes="76x76" href="/favicons/apple-touch-icon-76x76.png">
<link rel="apple-touch-icon" sizes="114x114" href="/favicons/apple-touch-icon-114x114.png">
<link rel="apple-touch-icon" sizes="120x120" href="/favicons/apple-touch-icon-120x120.png">
<link rel="apple-touch-icon" sizes="144x144" href="/favicons/apple-touch-icon-144x144.png">
<link rel="apple-touch-icon" sizes="152x152" href="/favicons/apple-touch-icon-152x152.png">
<link rel="apple-touch-icon" sizes="180x180" href="/favicons/apple-touch-icon-180x180.png">
<link rel="icon" type="image/png" href="/favicons/favicon-32x32.png" sizes="32x32">
<link rel="icon" type="image/png" href="/favicons/favicon-194x194.png" sizes="194x194">
<link rel="icon" type="image/png" href="/favicons/favicon-96x96.png" sizes="96x96">
<link rel="icon" type="image/png" href="/favicons/android-chrome-192x192.png" sizes="192x192">
<link rel="icon" type="image/png" href="/favicons/favicon-16x16.png" sizes="16x16">
<link rel="manifest" href="/favicons/manifest.json">
<link rel="shortcut icon" href="/favicons/favicon.ico">
<meta name="msapplication-TileColor" content="#603cba">
<meta name="msapplication-TileImage" content="/favicons/mstile-144x144.png">
<meta name="msapplication-config" content="/favicons/browserconfig.xml">
<meta name="theme-color" content="#303284">
```

```
<title>Apache License, Version 2.0</title>
<link href='https://fonts.googleapis.com/css?family=Source+Sans+Pro:400,700%7cDroid+Serif:400,700'
rel='stylesheet' type='text/css'>
<link href="/css/min.bootstrap.css" rel="stylesheet">
<link href="/css/styles.css" rel="stylesheet">
```

```
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distributed under the License is distributed on an &quot;AS IS&quot; BASIS, WITHOUT WARRANTIES OR
CONDITIONS OF ANY KIND, either express or implied. See the License for the specific language governing
permissions and limitations under the License. -->
```

```
</head>
```

```
<body>
```

```
<!-- Navigation -->
```

```
<header>
```

```
<nav class="navbar navbar-default navbar-fixed-top">
```

```
<div class="container">
```

```
<div class="navbar-header">
```

```
<button class="navbar-toggle" type="button" data-toggle="collapse" data-target="#mainnav-collapse">
```

```
<span class="sr-only">Toggle navigation</span>
```

```
<span class="icon-bar"></span>
```

```
<span class="icon-bar"></span>
```

```
<span class="icon-bar"></span>
```

```
</button>
```

```
<a href="#" class="navbar-brand"><span class="glyphicon glyphicon-home"></span></a>
```

```
</div>
```

```
<div class="collapse navbar-collapse" id="mainnav-collapse">
```

```
<div style="line-height:20px; padding-top:5px; float:left"><a href="/">Home</a>&nbsp;&raquo;&nbsp;&nbsp;<a
href="/licenses/">Licenses</a></div>
```

```
<ul class="nav navbar-nav navbar-right">
```

```
<li class="dropdown">
```

```
<a href="#" class="dropdown-toggle" data-toggle="dropdown">About <span class="caret"></span></a>
```

```
<ul class="dropdown-menu" role="menu">
```

```
<li><a href="/foundation">Overview</a></li>
```

```
<li><a href="/foundation/members.html">Members</a></li>
```

```
<li><a href="/foundation/how-it-works.html">Process</a></li>
```

```
<li><a href="/foundation/sponsorship.html">Sponsorship</a></li>
```

```
<li><a href="/foundation/glossary.html">Glossary</a></li>
```

```
<li><a href="/foundation/preFAQ.html">FAQ</a></li>
```

```
<li><a href="/foundation/contact.html ">Contact</a></li>
```

```
</ul>
```

```
</li>
```

```

<li><a href="/index.html#projects-list">Projects</a></li>
<li class="dropdown">
  <a href="#" class="dropdown-toggle" data-toggle="dropdown">People <span class="caret"></span></a>
  <ul class="dropdown-menu" role="menu">
<li><a href="http://people.apache.org/">Overview</a></li>
<li><a href="http://people.apache.org/committer-index.html">Committers</a></li>
<li><a href="/foundation/how-it-works.html#meritocracy">Meritocracy</a></li>
<li><a href="/foundation/how-it-works.html#roles">Roles</a></li>
<li><a href="http://planet.apache.org/">Planet Apache</a></li>
  </ul>
</li>
<li class="dropdown">
  <a href="#" class="dropdown-toggle" data-toggle="dropdown">Get Involved <span
class="caret"></span></a>
  <ul class="dropdown-menu" role="menu">
    <li><a href="/foundation/getinvolved.html">Overview</a></li>
<li><a href="http://community.apache.org/">Community Development</a></li>
    <li><a href="http://helpwanted.apache.org/">Help Wanted</a></li>
<li><a href="http://www.apachecon.com/">ApacheCon</a></li>
  </ul>
</li>
<li><a href="/dyn/closer.cgi">Download</a></li>
<li class="dropdown">
  <a href="#" class="dropdown-toggle" data-toggle="dropdown">Support Apache <span
class="caret"></span></a>
  <ul class="dropdown-menu" role="menu">
<li><a href="/foundation/sponsorship.html">Sponsorship</a></li>
<li><a href="/foundation/contributing.html">Donations</a></li>
<li><a href="/foundation/buy_stuff.html">Buy Stuff</a></li>
<li><a href="/foundation/thanks.html">Thanks</a></li>
  </ul>
</li>
</ul>
</div>
</div>
</nav>
</header>
<!-- / Navigation -->
<div class="container">
<div class="row">
<div class="col-md-9 col-sm-8 col-xs-12">
  
<a href="http://apache.org/foundation/contributing.html" title="Support Apache" style="margin-left: 150px;">
  
</a>
</div>
<div class="col-md-3 col-sm-4 col-xs-12">
  <div class="input-group" style="margin-bottom: 5px;">

```

```

<script>
(function() {
var cx = '005703438322411770421:5mgshgrgx2u';
var gcse = document.createElement('script');
gcse.type = 'text/javascript';
gcse.async = true;
gcse.src = (document.location.protocol == 'https:' ? 'https:' : 'http:') +
  '//cse.google.com/cse.js?cx=' + cx;
var s = document.getElementsByTagName('script')[0];
s.parentNode.insertBefore(gcse, s);
})();
</script>
<gcse:searchbox-only></gcse:searchbox-only>
</div>
<a role="button" class="btn btn-block btn-default btn-xs" href="/foundation/governance/">The Apache Way</a>
<a role="button" class="btn btn-block btn-default btn-xs"
href="https://community.apache.org/contributors/">Contribute</a>
<a role="button" class="btn btn-block btn-default btn-xs" href="/foundation/thanks.html">ASF Sponsors</a>
</div>
</div>
</div>
<div class="container"><style type="text/css">
/* The following code is added by mdx_elementid.py
It was originally lifted from http://subversion.apache.org/style/site.css */
/*
* Hide class="elementid-permalink", except when an enclosing heading
* has the :hover property.
*/
.headerlink, .elementid-permalink {
visibility: hidden;
}
h2:hover > .headerlink, h3:hover > .headerlink, h1:hover > .headerlink, h6:hover > .headerlink, h4:hover >
.headerlink, h5:hover > .headerlink, dt:hover > .elementid-permalink { visibility: visible }</style>
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```

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```
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```

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```
</pre></div></div>
```

```
<!-- Footer -->
```

```
<footer class="bg-primary">
```

```
<div class="container">
```

```
<div class="row">
```

```
<br />
```

```
<div class="col-sm-1">
```

```
</div>
```

```
<div class="col-sm-2">
```

```
<h5 class="white">Community</h5>
```

```
<ul class="list-unstyled white" role="menu">
```

```
<li><a href="http://community.apache.org/">Overview</a></li>
```

```
<li><a href="/foundation/conferences.html">Conferences</a></li>
```

```
<li><a href="http://community.apache.org/gsoc.html">Summer of Code</a></li>
```

```
<li><a href="http://community.apache.org/newcomers/">Getting Started</a></li>
```

```
<li><a href="/foundation/how-it-works.html">The Apache Way</a></li>
```

```
<li><a href="/travel/">Travel Assistance</a></li>
```

```
<li><a href="/foundation/getinvolved.html">Get Involved</a></li>
```

```
<li><a href="http://community.apache.org/newbiefaq.html">Community FAQ</a></li>
```

```
<li><a href="/memorials/">Memorials</a></li>
```

```
</ul>
```

```
</div>
```

```
<div class="col-sm-2">
```

```
<h5 class="white">Innovation</h5>
```

```
<ul class="list-unstyled white" role="menu">
```

```
<li><a href="http://incubator.apache.org/">Incubator</a></li>
```

```
<li><a href="http://labs.apache.org/">Labs</a></li>
```

```
<li><a href="/licenses/">Licensing</a></li>
<li><a href="/foundation/license-faq.html">Licensing FAQ</a></li>
<li><a href="/foundation/marks/">Trademark Policy</a></li>
<li><a href="/foundation/contact.html">Contacts</a></li>
</ul>
</div>
```

```
<div class="col-sm-2">
<h5 class="white">Tech Operations</h5>
<ul class="list-unstyled white" role="menu">
<li><a href="/dev/">Developer Information</a></li>
<li><a href="/dev/infrastructure.html">Infrastructure</a></li>
<li><a href="/security/">Security</a></li>
<li><a href="http://status.apache.org">Status</a></li>
<li><a href="/foundation/contact.html">Contacts</a></li>
</ul>
</div>
```

```
<div class="col-sm-2">
<h5 class="white">Press</h5>
<ul class="list-unstyled white" role="menu">
<li><a href="/press/">Overview</a></li>
<li><a href="https://blogs.apache.org/">ASF News</a></li>
<li><a href="https://blogs.apache.org/foundation/">Announcements</a></li>
<li><a href="https://twitter.com/TheASF">Twitter Feed</a></li>
<li><a href="/press/#contact">Contacts</a></li>
</ul>
</div>
```

```
<div class="col-sm-2">
<h5 class="white">Legal</h5>
<ul class="list-unstyled white" role="menu">
<li><a href="/legal/">Legal Affairs</a></li>
<li><a href="/licenses/">Licenses</a></li>
<li><a href="/foundation/marks/">Trademark Policy</a></li>
<li><a href="/foundation/records/">Public Records</a></li>
<li><a href="/foundation/policies/privacy.html">Privacy Policy</a></li>
<li><a href="/licenses/exports/">Export Information</a></li>
<li><a href="/foundation/license-faq.html">License/Distribution FAQ</a></li>
<li><a href="/foundation/contact.html">Contacts</a></li>
</ul>
</div>
```

```
<div class="col-sm-1">
</div>
```

```
</div>
<hr class="col-lg-12 hr-white" />
```

```
<div class="row">
  <div class="col-lg-12">
    <p class="text-center">Copyright &#169; 2017 The Apache Software Foundation, Licensed under the <a
class="white" href="http://www.apache.org/licenses/LICENSE-2.0">Apache License, Version 2.0</a>.</p>
    <p class="text-center">Apache and the Apache feather logo are trademarks of The Apache Software
Foundation.</p>
  </div>
</div>
</div>

</footer>

<!-- / Footer -->

<script src="/js/jquery-2.1.1.min.js"></script>
<script src="/js/bootstrap.js"></script>
</body>
</html>
```

1.174 commons-digester 2.1

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- * /opt/cola/permits/1192756266_1629279299.6/0/lz4-java-1-8-0-sources-jar/net/jpountz/xxhash/XXHash32.java
- * /opt/cola/permits/1192756266_1629279299.6/0/lz4-java-1-8-0-sources-jar/net/jpountz/util/ByteBufferUtils.java
- * /opt/cola/permits/1192756266_1629279299.6/0/lz4-java-1-8-0-sources-jar/net/jpountz/lz4/LZ4JNICompressor.java
- * /opt/cola/permits/1192756266_1629279299.6/0/lz4-java-1-8-0-sources-jar/net/jpountz/util/UnsafeUtils.java
- * /opt/cola/permits/1192756266_1629279299.6/0/lz4-java-1-8-0-sources-jar/net/jpountz/lz4/LZ4FastDecompressor.java
- * /opt/cola/permits/1192756266_1629279299.6/0/lz4-java-1-8-0-sources-jar/net/jpountz/xxhash/XXHash32JNI.java
- * /opt/cola/permits/1192756266_1629279299.6/0/lz4-java-1-8-0-sources-jar/net/jpountz/util/SafeUtils.java
- * /opt/cola/permits/1192756266_1629279299.6/0/lz4-java-1-8-0-sources-jar/net/jpountz/lz4/LZ4Exception.java
- * /opt/cola/permits/1192756266_1629279299.6/0/lz4-java-1-8-0-sources-jar/net/jpountz/lz4/LZ4Decompressor.java
- * /opt/cola/permits/1192756266_1629279299.6/0/lz4-java-1-8-0-sources-jar/net/jpountz/xxhash/AbstractStreamingXXHash32Java.java
- * /opt/cola/permits/1192756266_1629279299.6/0/lz4-java-1-8-0-sources-jar/net/jpountz/lz4/LZ4JNIFastDecompressor.java
- * /opt/cola/permits/1192756266_1629279299.6/0/lz4-java-1-8-0-sources-jar/net/jpountz/xxhash/XXHashConstants.java
- * /opt/cola/permits/1192756266_1629279299.6/0/lz4-java-1-8-0-sources-jar/net/jpountz/lz4/LZ4UnknownSizeDecompressor.java
- * /opt/cola/permits/1192756266_1629279299.6/0/lz4-java-1-8-0-sources-jar/net/jpountz/lz4/LZ4JNISafeDecompressor.java
- * /opt/cola/permits/1192756266_1629279299.6/0/lz4-java-1-8-0-sources-jar/net/jpountz/lz4/LZ4UnsafeUtils.java
- * /opt/cola/permits/1192756266_1629279299.6/0/lz4-java-1-8-0-sources-jar/net/jpountz/lz4/LZ4SafeDecompressor.java
- * /opt/cola/permits/1192756266_1629279299.6/0/lz4-java-1-8-0-sources-jar/net/jpountz/xxhash/XXHashFactory.java
- * /opt/cola/permits/1192756266_1629279299.6/0/lz4-java-1-8-0-sources-jar/net/jpountz/lz4/LZ4JNI.java
- * /opt/cola/permits/1192756266_1629279299.6/0/lz4-java-1-8-0-sources-jar/net/jpountz/lz4/LZ4HCJNICompressor.java
- * /opt/cola/permits/1192756266_1629279299.6/0/lz4-java-1-8-0-sources-jar/net/jpountz/lz4/LZ4Compressor.java
- * /opt/cola/permits/1192756266_1629279299.6/0/lz4-java-1-8-0-sources-jar/net/jpountz/xxhash/XXHashJNI.java
- * /opt/cola/permits/1192756266_1629279299.6/0/lz4-java-1-8-0-sources-jar/net/jpountz/lz4/LZ4ByteBufferUtils.java

* /opt/cola/permits/1192756266_1629279299.6/0/lz4-java-1-8-0-sources-jar/net/jpountz/lz4/LZ4Utils.java
* /opt/cola/permits/1192756266_1629279299.6/0/lz4-java-1-8-0-sources-jar/net/jpountz/xxhash/StreamingXXHash32JNI.java
* /opt/cola/permits/1192756266_1629279299.6/0/lz4-java-1-8-0-sources-jar/net/jpountz/lz4/LZ4Factory.java
* /opt/cola/permits/1192756266_1629279299.6/0/lz4-java-1-8-0-sources-jar/net/jpountz/util/Native.java
* /opt/cola/permits/1192756266_1629279299.6/0/lz4-java-1-8-0-sources-jar/net/jpountz/lz4/LZ4SafeUtils.java
* /opt/cola/permits/1192756266_1629279299.6/0/lz4-java-1-8-0-sources-jar/net/jpountz/lz4/LZ4BlockOutputStream.java
* /opt/cola/permits/1192756266_1629279299.6/0/lz4-java-1-8-0-sources-jar/net/jpountz/lz4/LZ4BlockInputStream.java
* /opt/cola/permits/1192756266_1629279299.6/0/lz4-java-1-8-0-sources-jar/net/jpountz/util/Utils.java
* /opt/cola/permits/1192756266_1629279299.6/0/lz4-java-1-8-0-sources-jar/net/jpountz/xxhash/StreamingXXHash32.java
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* /opt/cola/permits/1192756266_1629279299.6/0/lz4-java-1-8-0-sources-jar/net/jpountz/lz4/LZ4DecompressorWithLength.java
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- * /opt/cola/permits/1192756266_1629279299.6/0/lz4-java-1-8-0-sources-jar/net/jpountz/util/package.html
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- * /opt/cola/permits/1192756266_1629279299.6/0/lz4-java-1-8-0-sources-jar/net/jpountz/lz4/LZ4FrameOutputStream.java
- * /opt/cola/permits/1192756266_1629279299.6/0/lz4-java-1-8-0-sources-jar/net/jpountz/lz4/LZ4FrameInputStream.java

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* /opt/cola/permits/1192756266_1629279299.6/0/lz4-java-1-8-0-sources-jar/net/jpountz/xxhash/XXHash64JNI.java

* /opt/cola/permits/1192756266_1629279299.6/0/lz4-java-1-8-0-sources-jar/net/jpountz/xxhash/XXHash64.java

* /opt/cola/permits/1192756266_1629279299.6/0/lz4-java-1-8-0-sources-jar/net/jpountz/xxhash/AbstractStreamingXXHash64Java.java

* /opt/cola/permits/1192756266_1629279299.6/0/lz4-java-1-8-0-sources-jar/net/jpountz/xxhash/StreamingXXHash64.java

* /opt/cola/permits/1192756266_1629279299.6/0/lz4-java-1-8-0-sources-jar/net/jpountz/xxhash/StreamingXXHash64JNI.java

1.176 apr 1.6.3 2

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From network_io/unix/inet_ntop.c, network_io/unix/inet_pton.c:

```
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From strings/apr_strnatcmp.c, include/apr_strings.h:

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From strings/apr_strnatcmp.c, include/apr_strings.h:

strnatcmp.c -- Perform 'natural order' comparisons of strings in C.
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A. HISTORY OF THE SOFTWARE

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Python was created in the early 1990s by Guido van Rossum at Stichting Mathematisch Centrum (CWI, see <http://www.cwi.nl>) in the Netherlands as a successor of a language called ABC. Guido remains Python's principal author, although it includes many contributions from others.

In 1995, Guido continued his work on Python at the Corporation for National Research Initiatives (CNRI, see <http://www.cnri.reston.va.us>) in Reston, Virginia where he released several versions of the software.

In May 2000, Guido and the Python core development team moved to BeOpen.com to form the BeOpen PythonLabs team. In October of the same year, the PythonLabs team moved to Digital Creations (now Zope Corporation, see <http://www.zope.com>). In 2001, the Python Software Foundation (PSF, see <http://www.python.org/psf/>) was formed, a non-profit organization created specifically to own Python-related Intellectual Property. Zope Corporation is a sponsoring member of the PSF.

All Python releases are Open Source (see <http://www.opensource.org> for the Open Source Definition). Historically, most, but not all, Python releases have also been GPL-compatible; the table below summarizes the various releases.

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0.9.0 thru 1.2		1991-1995	CWI	yes
1.3 thru 1.5.2	1.2	1995-1999	CNRI	yes
1.6	1.5.2	2000	CNRI	no
2.0	1.6	2000	BeOpen.com	no

1.6.1	1.6	2001	CNRI	yes (2)
2.1	2.0+1.6.1	2001	PSF	no
2.0.1	2.0+1.6.1	2001	PSF	yes
2.1.1	2.1+2.0.1	2001	PSF	yes
2.2	2.1.1	2001	PSF	yes
2.1.2	2.1.1	2002	PSF	yes
2.1.3	2.1.2	2002	PSF	yes
2.2 and above	2.1.1	2001-now	PSF	yes

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Mersenne Twister

The ``_random'` module includes code based on a download from ``http://www.math.keio.ac.jp/~matumoto/MT2002/emt19937ar.html'`. The following are the verbatim comments from the original code:

A C-program for MT19937, with initialization improved 2002/1/26.
Coded by Takuji Nishimura and Makoto Matsumoto.

Before using, initialize the state by using `init_genrand(seed)`
or `init_by_array(init_key, key_length)`.

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<http://www.math.keio.ac.jp/matsumoto/emt.html>

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Modified by Jack Jansen, CWI, July 1995:

- Use binascii module to do the actual line-by-line conversion between ascii and binary. This results in a 1000-fold speedup. The C version is still 5 times faster, though.
- Arguments more compliant with python standard

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```
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1.181 glibc 2.27-3ubuntu1.6

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*/

```

1.184 angular-animations 11.0.2

1.184.1 Available under license :

No license file was found, but licenses were detected in source scan.

```

{"version":3,"file":"browser__testing.js","sources":["../../../../../packages/animations/browser/testing/src/mock_animation_driver.ts","../../../../../packages/animations/browser/testing/src/testing.ts","../../../../../packages/animations/browser/testing/public_api.ts","../../../../../packages/animations/browser/testing/index.ts","../../../../../packages/animations/browser/testing/testing.ts"],"sourcesContent":["/**\n * @license\n * Copyright Google LLC All Rights Reserved.\n *\n * Use of this source code is governed by an MIT-style license that can be\n * found in the LICENSE file at https://angular.io/license\n *\nimport { AnimationPlayer, AUTO_STYLE, NoopAnimationPlayer, StyleData } from '@angular/animations';\nimport { AnimationDriver, allowPreviousPlayerStylesMerge as allowPreviousPlayerStylesMerge, containsElement as containsElement, invokeQuery as invokeQuery, matchesElement as matchesElement, validateStyleProperty as validateStyleProperty } from '@angular/animations/browser';\n\n/**\n * @publicApi\n *\nexport class MockAnimationDriver implements AnimationDriver {\n  static log: AnimationPlayer[] = [];\n  validateStyleProperty(prop: string): boolean {\n    return validateStyleProperty(prop);\n  }\n  matchesElement(element: any, selector: string): boolean {\n    return matchesElement(element, selector);\n  }\n  containsElement(elm1: any, elm2: any): boolean {\n    return containsElement(elm1, elm2);\n  }\n  query(element: any, selector: string, multi: boolean): any[] {\n    return invokeQuery(element, selector, multi);\n  }\n  computeStyle(element: any, prop: string, defaultValue?: string): string {\n    return defaultValue || '';\n  }\n  animate(\n    element: any, keyframes: {[key: string]: string|number}[], duration: number, delay: number,\n    easing: string, previousPlayers: any[] = []):\n  MockAnimationPlayer {\n    const player =\n      new MockAnimationPlayer(element, keyframes, duration, delay, easing, previousPlayers);\n    MockAnimationDriver.log.push(<AnimationPlayer>player);\n    return player;\n  }\n\n  /**\n * @publicApi\n *\nexport class MockAnimationPlayer extends NoopAnimationPlayer {\n  private __finished = false;\n  private __started = false;\n  public previousStyles: {[key: string]: string|number} = {};\n  private _onInitFns: (() => any)[] = [];\n  public currentSnapshot: StyleData = {};\n\n  constructor(\n    public element: any, public keyframes: {[key: string]: string|number}[],\n    public duration: number, public delay: number, public easing: string,\n    public previousPlayers: any[]) {\n    super(duration, delay);\n\n    if (allowPreviousPlayerStylesMerge(duration, delay)) {\n      previousPlayers.forEach(player => {\n        if (player instanceof MockAnimationPlayer) {\n          const styles = player.currentSnapshot;\n          Object.keys(styles).forEach(prop => this.previousStyles[prop] = styles[prop]);\n        }\n      });\n    }\n  }\n\n  /**

```


CAAC,SAAS,GAAG,IAAI,CAAC;KACvB;IAED,UAAU;QACR,OAAO,IAAI,CAAC,SAAS,CAAC;KACvB;IAE
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CAAC,OAAO,CAAC,EAAE;gBACvB,MAAM,CAAC,IAAI,CAAC,EAAE,CAAC,CAAC,OAAO,CAAC,IAAI;oB
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Found in path(s):

* /opt/cola/permits/1358260673_1657448337.9350824/0/animations-11-0-2-
tgz/package/fesm2015/browser/testing.js.map

No license file was found, but licenses were detected in source scan.

```
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mations/browser/public_api.ts", "../packages/animations/browser/index.ts", "../packages/animations/bro  
wser/browser.ts"], "sourcesContent": [ /*!
```

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ACTION OF CONTRACT, NEGLIGENCE OR\r\nOTHER TORTIOUS ACTION, ARISING OUT OF OR IN
CONNECTION WITH THE USE OR\r\nPERFORMANCE OF THIS

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```
*\r\n* global Reflect, Promise *  
\r\n\r\nvar extendStatics = function(d, b) {\r\n  extendStatics =  
Object.setPrototypeOf ||\r\n  ({ __proto__: [] } instanceof Array && function(d, b) { d.__proto__ = b; }) ||\r\n
```



```

"function" && o[Symbol.iterator];\r\n  if (!m) return o;\r\n  var i = m.call(o), r, ar = [], e;\r\n  try {\r\n    while ((n === void 0 || n-- > 0) && !(r = i.next()).done) ar.push(r.value);\r\n  }\r\n  catch (error) { e = { error: error }; }\r\n  finally {\r\n    try {\r\n      if (r && !r.done && (m = i["return"])) m.call(i);\r\n    }\r\n    finally { if (e) throw e.error; }\r\n  }\r\n  return ar;\r\n}\r\n\r\nexport function __spread() {\r\n  for (var ar = [], i = 0; i < arguments.length; i++)\r\n    ar = ar.concat(__read(arguments[i]));\r\n  return ar;\r\n}\r\n\r\nexport function __spreadArrays() {\r\n  for (var s = 0, i = 0, il = arguments.length; i < il; i++) s += arguments[i].length;\r\n  for (var r = Array(s), k = 0, i = 0; i < il; i++)\r\n    for (var a = arguments[i], j = 0, jl = a.length; j < jl; j++, k++)\r\n      r[k] = a[j];\r\n  return r;\r\n};\r\n\r\nexport function __await(v) {\r\n  return this instanceof __await ? (this.v = v, this) : new __await(v);\r\n}\r\n\r\nexport function __asyncGenerator(thisArg, _arguments, generator) {\r\n  if (!Symbol.asyncIterator) throw new TypeError("Symbol.asyncIterator is not defined.");\r\n  var g = generator.apply(thisArg, _arguments || []), i, q = [];\r\n  return i = {}, verb("next"), verb("throw"), verb("return"), i[Symbol.asyncIterator] = function () { return this; }, i;\r\n  function verb(n) { if (g[n]) i[n] = function (v) { return new Promise(function (a, b) { q.push([n, v, a, b]) > 1 || resume(n, v); }); }; }\r\n  function resume(n, v) { try { step(g[n](v)); } catch (e) { settle(q[0][3], e); } }\r\n  function step(r) { r.value instanceof __await ? Promise.resolve(r.value.v).then(fulfill, reject) : settle(q[0][2], r); }\r\n  function fulfill(value) { resume("next", value); }\r\n  function reject(value) { resume("throw", value); }\r\n  function settle(f, v) { if (f(v), q.shift(), q.length) resume(q[0][0], q[0][1]); }\r\n}\r\n\r\nexport function __asyncDelegator(o) {\r\n  var i, p;\r\n  return i = {}, verb("next"), verb("throw"), function (e) { throw e; }, verb("return"), i[Symbol.iterator] = function () { return this; }, i;\r\n  function verb(n, f) { i[n] = o[n] ? function (v) { return (p = !p) ? { value: __await(o[n](v)), done: n === "return" } : f ? f(v) : v; } : f; }\r\n}\r\n\r\nexport function __asyncValues(o) {\r\n  if (!Symbol.asyncIterator) throw new TypeError("Symbol.asyncIterator is not defined.");\r\n  var m = o[Symbol.asyncIterator], i;\r\n  return m ? m.call(o) : (o = typeof __values === "function" ? __values(o) : o[Symbol.iterator](), i = {}, verb("next"), verb("throw"), verb("return"), i[Symbol.asyncIterator] = function () { return this; }, i);\r\n  function verb(n) { i[n] = o[n] && function (v) { return new Promise(function (resolve, reject) { v = o[n](v), settle(resolve, reject, v.done, v.value); }); }; }\r\n  function settle(resolve, reject, d, v) { Promise.resolve(v).then(function(v) { resolve({ value: v, done: d }); }, reject); }\r\n}\r\n\r\nexport function __makeTemplateObject(cooked, raw) {\r\n  if (Object.defineProperty) { Object.defineProperty(cooked, "raw", { value: raw }); } else { cooked.raw = raw; }\r\n  return cooked;\r\n};\r\n\r\nvar __setModuleDefault = Object.create ? (function(o, v) {\r\n  Object.defineProperty(o, "default", { enumerable: true, value: v });\r\n}) : function(o, v) {\r\n  o["default"] = v;\r\n};\r\n\r\nexport function __importStar(mod) {\r\n  if (mod && mod.__esModule) return mod;\r\n  var result = {};\r\n  if (mod != null) for (var k in mod) if (Object.hasOwnProperty.call(mod, k)) __createBinding(result, mod, k);\r\n  __setModuleDefault(result, mod);\r\n  return result;\r\n}\r\n\r\nexport function __importDefault(mod) {\r\n  return (mod && mod.__esModule) ? mod : { default: mod }\r\n};\r\n\r\nexport function __classPrivateFieldGet(receiver, privateMap) {\r\n  if (!privateMap.has(receiver))\r\n    throw new TypeError("attempted to get private field on non-instance");\r\n  return privateMap.get(receiver);\r\n}\r\n\r\nexport function __classPrivateFieldSet(receiver, privateMap, value) {\r\n  if (!privateMap.has(receiver))\r\n    throw new TypeError("attempted to set private field on non-instance");\r\n  privateMap.set(receiver, value);\r\n  return value;\r\n}\r\n\r\n"/**\n * @license\n * Copyright Google LLC\n * All Rights Reserved.\n * Use of this source code is governed by an MIT-style license that can be\n * found in the LICENSE file at https://angular.io/license\n */\nimport { AnimationEvent, AnimationPlayer, AUTO_STYLE, NoopAnimationPlayer, AnimationGroupPlayer, PRE_STYLE as PRE_STYLE, StyleData } from '@angular/animations';\nimport { AnimationStyleNormalizer } from '../src/dsl/style_normalization/animation_style_normalizer';\nimport { AnimationDriver } from '../src/render/animation_driver';\n\n// We don't include ambient node types here since @angular/animations/browser is meant to target the browser so technically it should not depend on node types. `process` is just declared locally here as a result.\ndeclare const process: any;\nexport function isBrowser(): boolean {\r\n  return (typeof window !== 'undefined' && typeof window.document !== 'undefined');\r\n}\n\r\nexport function isNode(): boolean {\r\n  // Checking only for `process` isn't enough to identify whether or not we're in a

```

```

Node\n // environment, because Webpack by default will polyfill the `process`. While we can discern\n // that
Webpack polyfilled it by looking at `process.browser`, it's very Webpack-specific and\n // might not be future-
proof. Instead we look at the stringified version of `process` which\n // is `[object process]` in Node and `[object
Object]` when polyfilled.\n return typeof process !== 'undefined' && {}.toString.call(process) === '[object
process]';\n}\n\nexport function optimizeGroupPlayer(players: AnimationPlayer[]): AnimationPlayer {\n switch
(players.length) {\n case 0:\n return new NoopAnimationPlayer();\n case 1:\n return players[0];\n
default:\n return new AnimationGroupPlayer(players);\n }\n}\n\nexport function normalizeKeyframes(\n driver: AnimationDriver, normalizer: AnimationStyleNormalizer, element: any,\n keyframes: StyleData[],\n preStyles: StyleData = {},\n postStyles: StyleData = {}): StyleData[] {\n const errors: string[] = [];\n const
normalizedKeyframes: StyleData[] = [];\n let previousOffset = -1;\n let previousKeyframe: StyleData|null = null;\n
keyframes.forEach(kf => {\n const offset = kf['offset'] as number;\n const isSameOffset = offset ===
previousOffset;\n const normalizedKeyframe: StyleData = (isSameOffset && previousKeyframe) || {};\n
Object.keys(kf).forEach(prop => {\n let normalizedProp = prop;\n let normalizedValue = kf[prop];\n if
(prop !== 'offset') {\n normalizedProp = normalizer.normalizePropertyName(normalizedProp, errors);\n
switch (normalizedValue) {\n case PRE_STYLE:\n normalizedValue = preStyles[prop];\n
break;\n case AUTO_STYLE:\n normalizedValue = postStyles[prop];\n break;\n
default:\n normalizedValue =\n normalizer.normalizeStyleValue(prop, normalizedProp,\n
normalizedValue, errors);\n break;\n }\n })\n normalizedKeyframe[normalizedProp] =
normalizedValue;\n });\n if (!isSameOffset) {\n normalizedKeyframes.push(normalizedKeyframe);\n }\n
previousKeyframe = normalizedKeyframe;\n previousOffset = offset;\n });\n if (errors.length) {\n const
LINE_START = "\n -";\n throw new Error(\n `Unable to animate due to the following
errors:${LINE_START}${errors.join(LINE_START)}`);\n }\n}\n\n return normalizedKeyframes;\n}\n\nexport
function listenOnPlayer(\n player: AnimationPlayer, eventName: string, event: AnimationEvent|undefined,\n callback: (event: any) => any) {\n switch (eventName) {\n case 'start':\n player.onStart(() => callback(event
&& copyAnimationEvent(event, 'start', player))); break;\n case 'done':\n player.onDone(() =>
callback(event && copyAnimationEvent(event, 'done', player))); break;\n case 'destroy':\n
player.onDestroy(() => callback(event && copyAnimationEvent(event, 'destroy', player))); break;\n
}\n}\n\nexport function copyAnimationEvent(\n e: AnimationEvent, phaseName: string, player:
AnimationPlayer): AnimationEvent {\n const totalTime = player.totalTime;\n const disabled = (player as
any).disabled ? true : false;\n const event = makeAnimationEvent(\n e.element, e.triggerName, e.fromState,
e.toState, phaseName || e.phaseName,\n totalTime === undefined ? e.totalTime : totalTime, disabled);\n const
data = (e as any)['_data'];\n if (data != null) {\n (event as any)['_data'] = data;\n }\n return event;\n}\n\nexport
function makeAnimationEvent(\n element: any, triggerName: string, fromState: string, toState: string, phaseName:
string = "",\n totalTime: number = 0, disabled?: boolean): AnimationEvent {\n return {element, triggerName,
fromState, toState, phaseName, totalTime, disabled: !!disabled};\n}\n\nexport function getOrSetAsInMap(\n map:
Map<any, any>|{[key: string]: any}, key: any, defaultValue: any) {\n let value: any;\n if (map instanceof Map) {\n
value = map.get(key);\n if (!value) {\n map.set(key, value = defaultValue);\n }\n } else {\n value =
map[key];\n if (!value) {\n value = map[key] = defaultValue;\n }\n }\n return value;\n}\n\nexport function
parseTimelineCommand(command: string): [string, string] {\n const separatorPos = command.indexOf(':');\n const
id = command.substring(1, separatorPos);\n const action = command.substr(separatorPos + 1);\n return [id,
action];\n}\n\nlet _contains: (elm1: any, elm2: any) => boolean = (elm1: any, elm2: any) => false;\nlet _matches:
(element: any, selector: string) => boolean = (element: any, selector: string) =>\n false;\nlet _query: (element: any,
selector: string, multi: boolean) => any[] =\n (element: any, selector: string, multi: boolean) => {\n return [];\n
};\n\n// Define utility methods for browsers and platform-server(domino) where Element\n// and utility methods
exist.\nconst _isNode = isNode();\nif (_isNode || typeof Element !== 'undefined') {\n // this is well supported in all
browsers\n _contains = (elm1: any, elm2: any) => {\n return elm1.contains(elm2) as boolean;\n };\n\n _matches
= (() => {\n if (_isNode || Element.prototype.matches) {\n return (element: any, selector: string) =>\n
element.matches(selector);\n } else {\n const proto = Element.prototype as any;\n const fn =

```



```

animating';\nexport const NG_ANIMATING_SELECTOR = '.ng-animating';\n\nexport function
resolveTimingValue(value: string|number) {\n if (typeof value == 'number') return value;\n\n const matches =
value.match(/^(?[\.\d+](m?s)/);\n if (!matches || matches.length < 2) return 0;\n\n return
_convertTimeValueToMS(parseFloat(matches[1]), matches[2]);\n}\n\nfunction _convertTimeValueToMS(value:
number, unit: string): number {\n switch (unit) {\n case 's':\n return value * ONE_SECOND;\n default: // ms
or something else\n return value;\n }\n}\n\nexport function resolveTiming(\n timings:
string|number|AnimateTimings, errors: any[], allowNegativeValues?: boolean) {\n return
timings.hasOwnProperty('duration') ?\n <AnimateTimings>timings :\n
parseTimeExpression(<string|number>timings, errors, allowNegativeValues);\n}\n\nfunction
parseTimeExpression(\n exp: string|number, errors: string[], allowNegativeValues?: boolean): AnimateTimings
{\n const regex = /^(?[\.\d+](m?s)(?:\s+(-?[\.\d+](m?s))?(?:\s+([-a-z]+(?:\.(+?)?))?)?)$/i;\n let duration:
number;\n let delay: number = 0;\n let easing: string = ";\n if (typeof exp === 'string') {\n const matches =
exp.match(regex);\n if (matches === null) {\n errors.push('The provided timing value \"${exp}\" is
invalid.');


---



Open Source Used In NBAR SD-AVC 4.4.0 5494


```

```

dashCaseToCamelCase(prop);\n    element.style[camelProp] = "; \n    }); \n    // On the server set the 'style' attribute
since it's not automatically reflected.\n    if (isNode()) {\n        writeStyleAttribute(element);\n    }\n}\n}\n\nexport
function normalizeAnimationEntry(steps: AnimationMetadata\n                                AnimationMetadata[]):
AnimationMetadata {\n    if (Array.isArray(steps)) {\n        if (steps.length === 1) return steps[0];\n        return
sequence(steps);\n    }\n    return steps as AnimationMetadata;\n}\n\nexport function validateStyleParams(\n    value:
string|number, options: AnimationOptions, errors: any[]) {\n    const params = options.params || {};\n    const matches
= extractStyleParams(value);\n    if (matches.length) {\n        matches.forEach(varName => {\n            if
(!params.hasOwnProperty(varName)) {\n                errors.push(\n                    `Unable to resolve the local animation param
${varName} in the given list of values`);\n            }\n        });\n    }\n\n    const PARAM_REGEX =\n        new
RegExp(`${SUBSTITUTION_EXPR_START}\\\\s*(.+?)\\\\s*${SUBSTITUTION_EXPR_END}`, 'g');\n\n    export
function extractStyleParams(value: string|number): string[] {\n        let params: string[] = [];\n        if (typeof value ===
'string') {\n            let match: any;\n            while (match = PARAM_REGEX.exec(value)) {\n                params.push(match[1] as
string);\n            }\n            PARAM_REGEX.lastIndex = 0;\n        }\n        return params;\n    }\n\n    export function interpolateParams(\n        value: string|number, params: {[name: string]: any}, errors: any[]): string|number {\n        const original =
value.toString();\n        const str = original.replace(PARAM_REGEX, (_, varName) => {\n            let localVal =
params[varName];\n            // this means that the value was never overridden by the data passed in by the user\n            if
(!params.hasOwnProperty(varName)) {\n                errors.push(`Please provide a value for the animation param
${varName}`);\n                localVal = "; \n            }\n            return localVal.toString();\n        });\n        // we do this to assert that numeric
values stay as they are\n        return str === original ? value : str;\n    }\n\n    export function iteratorToArray(iterator: any):
any[] {\n        const arr: any[] = [];\n        let item = iterator.next();\n        while (!item.done) {\n            arr.push(item.value);\n            item
= iterator.next();\n        }\n        return arr;\n    }\n\n    export function mergeAnimationOptions(\n        source: AnimationOptions,
destination: AnimationOptions): AnimationOptions {\n        if (source.params) {\n            const p0 = source.params;\n            if
(!destination.params) {\n                destination.params = {};\n            }\n            const p1 = destination.params;\n            Object.keys(p0).forEach(param => {\n                if (!p1.hasOwnProperty(param)) {\n                    p1[param] = p0[param];\n                }\n            });\n        }\n        return destination;\n    }\n\n    const DASH_CASE_REGEX = /-+([a-z0-9])/g;\n\n    export function
dashCaseToCamelCase(input: string): string {\n        return input.replace(DASH_CASE_REGEX, (...m: any[]) =>
m[1].toUpperCase());\n    }\n\n    function camelCaseToDashCase(input: string): string {\n        return input.replace(/([a-
z])([A-Z])/g, '$1-$2').toLowerCase();\n    }\n\n    export function allowPreviousPlayerStylesMerge(duration: number,
delay: number) {\n        return duration === 0 || delay === 0;\n    }\n\n    export function
balancePreviousStylesIntoKeyframes(\n        element: any, keyframes: {[key: string]: any}[], previousStyles: {[key:
string]: any}) {\n        const previousStyleProps = Object.keys(previousStyles);\n        if (previousStyleProps.length &&
keyframes.length) {\n            let startingKeyframe = keyframes[0];\n            let missingStyleProps: string[] = [];\n            previousStyleProps.forEach(prop => {\n                if (!startingKeyframe.hasOwnProperty(prop)) {\n                    missingStyleProps.push(prop);\n                }\n                startingKeyframe[prop] = previousStyles[prop];\n            });\n            if
(missingStyleProps.length) {\n                // tslint:disable-next-line\n                for (var i = 1; i < keyframes.length; i++) {\n                    let
kf = keyframes[i];\n                    missingStyleProps.forEach(function(prop) {\n                        kf[prop] = computeStyle(element,
prop);\n                    });\n                }\n            }\n            return keyframes;\n        }\n\n    export function visitDslNode(\n        visitor:
AnimationDslVisitor, node: AnimationMetadata, context: any): any;\n    export function visitDslNode(\n        visitor:
AnimationAstVisitor, node: AnimationAst<AnimationMetadataType>, context: any): any;\n    export function
visitDslNode(visitor: any, node: any, context: any): any {\n        switch (node.type) {\n            case
AnimationMetadataType.Trigger:\n                return visitor.visitTrigger(node, context);\n            case
AnimationMetadataType.State:\n                return visitor.visitState(node, context);\n            case
AnimationMetadataType.Transition:\n                return visitor.visitTransition(node, context);\n            case
AnimationMetadataType.Sequence:\n                return visitor.visitSequence(node, context);\n            case
AnimationMetadataType.Group:\n                return visitor.visitGroup(node, context);\n            case
AnimationMetadataType.Animate:\n                return visitor.visitAnimate(node, context);\n            case
AnimationMetadataType.Keyframes:\n                return visitor.visitKeyframes(node, context);\n            case
AnimationMetadataType.Style:\n                return visitor.visitStyle(node, context);\n            case

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AnimationMetadataType.Reference:\n    return visitor.visitReference(node, context);\n    case
AnimationMetadataType.AnimateChild:\n    return visitor.visitAnimateChild(node, context);\n    case
AnimationMetadataType.AnimateRef:\n    return visitor.visitAnimateRef(node, context);\n    case
AnimationMetadataType.Query:\n    return visitor.visitQuery(node, context);\n    case
AnimationMetadataType.Stagger:\n    return visitor.visitStagger(node, context);\n    default:\n    throw new
Error(`Unable to resolve animation metadata node #${node.type}`);\n    }\n}\n\nexport function
computeStyle(element: any, prop: string): string {\n    return
(<any>window.getComputedStyle(element))[prop];\n}\n\n"/**\n * @license\n * Copyright Google LLC All Rights
Reserved.\n * Use of this source code is governed by an MIT-style license that can be\n * found in the
LICENSE file at https://angular.io/license\n */\nexport const ANY_STATE = '*';\nexport declare type
TransitionMatcherFn =\n    (fromState: any, toState: any, element: any, params: {[key: string]: any}) =>
boolean;\n\nexport function parseTransitionExpr(\n    transitionValue: string|TransitionMatcherFn, errors: string[]):
TransitionMatcherFn[] {\n    const expressions: TransitionMatcherFn[] = [];\n    if (typeof transitionValue === 'string')
{\n        transitionValue.split(/\\s*,\\s*/).forEach(\n            str => parseInnerTransitionStr(str, expressions, errors);\n        );\n    }
else {\n        expressions.push(<TransitionMatcherFn>transitionValue);\n    }\n    return expressions;\n}\n\nfunction
parseInnerTransitionStr(\n    eventStr: string, expressions: TransitionMatcherFn[], errors: string[]) {\n    if
(eventStr[0] === ':') {\n        const result = parseAnimationAlias(eventStr, errors);\n        if (typeof result === 'function') {\n
            expressions.push(result);\n            return;\n        }\n        eventStr = result;\n    }\n    const match = eventStr.match(/^(\\*|[-
\\w]+)\\s*(<?[=-]>)\\s*(\\*|[-\\w]+)$/);\n    if (match === null || match.length < 4) {\n        errors.push(`The provided
transition expression \"${eventStr}\" is not supported`);\n        return expressions;\n    }\n    const fromState =
match[1];\n    const separator = match[2];\n    const toState = match[3];\n
expressions.push(makeLambdaFromStates(fromState, toState));\n\n    const isFullAnyStateExpr = fromState ===
ANY_STATE && toState === ANY_STATE;\n    if (separator[0] === '<' && !isFullAnyStateExpr) {\n
expressions.push(makeLambdaFromStates(toState, fromState));\n    }\n}\n\nfunction parseAnimationAlias(alias:
string, errors: string[]): string|TransitionMatcherFn {\n    switch (alias) {\n        case 'enter':\n            return 'void => *';\n
        case 'leave':\n            return '* => void';\n        case 'increment':\n            return (fromState: any, toState: any): boolean =>
parseFloat(toState) > parseFloat(fromState);\n        case 'decrement':\n            return (fromState: any, toState: any):
boolean => parseFloat(toState) < parseFloat(fromState);\n        default:\n            errors.push(`The transition alias value
\"${alias}\" is not supported`);\n            return '* => *';\n    }\n}\n\n// DO NOT REFACTOR ... keep the follow set
instantiations\n// with the values intact (closure compiler for some reason\n// removes follow-up lines that add the
values outside of\n// the constructor...\nconst TRUE_BOOLEAN_VALUES = new Set<string>(['true', '1']);\nconst
FALSE_BOOLEAN_VALUES = new Set<string>(['false', '0']);\n\nfunction makeLambdaFromStates(lhs: string,
rhs: string): TransitionMatcherFn {\n    const LHS_MATCH_BOOLEAN = TRUE_BOOLEAN_VALUES.has(lhs) ||
FALSE_BOOLEAN_VALUES.has(lhs);\n    const RHS_MATCH_BOOLEAN =
TRUE_BOOLEAN_VALUES.has(rhs) || FALSE_BOOLEAN_VALUES.has(rhs);\n\n    return (fromState: any,
toState: any): boolean => {\n        let lhsMatch = lhs === ANY_STATE || lhs === fromState;\n        let rhsMatch = rhs ===
ANY_STATE || rhs === toState;\n\n        if (!lhsMatch && LHS_MATCH_BOOLEAN && typeof fromState ===
'boolean') {\n            lhsMatch = fromState ? TRUE_BOOLEAN_VALUES.has(lhs) :
FALSE_BOOLEAN_VALUES.has(lhs);\n        }\n        if (!rhsMatch && RHS_MATCH_BOOLEAN && typeof
toState === 'boolean') {\n            rhsMatch = toState ? TRUE_BOOLEAN_VALUES.has(rhs) :
FALSE_BOOLEAN_VALUES.has(rhs);\n        }\n\n        return lhsMatch && rhsMatch;\n    };\n}\n\n"/**\n * @license\n * Copyright Google LLC All Rights Reserved.\n * Use of this source code is governed by an MIT-style license
that can be\n * found in the LICENSE file at https://angular.io/license\n */\nimport {AnimateTimings,
AnimationAnimateChildMetadata, AnimationAnimateMetadata, AnimationAnimateRefMetadata,
AnimationGroupMetadata, AnimationKeyframesSequenceMetadata, AnimationMetadata, AnimationMetadataType,
AnimationOptions, AnimationQueryMetadata, AnimationQueryOptions, AnimationReferenceMetadata,
AnimationSequenceMetadata, AnimationStaggerMetadata, AnimationStateMetadata, AnimationStyleMetadata,
AnimationTransitionMetadata, AnimationTriggerMetadata, AUTO_STYLE, style, StyleData} from

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'@angular/animations';\n\nimport { AnimationDriver } from './render/animation_driver';\nimport
{ getOrSetAsInMap } from './render/shared';\nimport { copyObj, ENTER_SELECTOR, extractStyleParams,
iteratorToArray, LEAVE_SELECTOR, NG_ANIMATING_SELECTOR, NG_TRIGGER_SELECTOR,
normalizeAnimationEntry, resolveTiming, SUBSTITUTION_EXPR_START, validateStyleParams, visitDslNode }
from './util';\n\nimport { AnimateAst, AnimateChildAst, AnimateRefAst, Ast, DynamicTimingAst, GroupAst,
KeyframesAst, QueryAst, ReferenceAst, SequenceAst, StaggerAst, StateAst, StyleAst, TimingAst, TransitionAst,
TriggerAst } from './animation_ast';\nimport { AnimationDslVisitor } from './animation_dsl_visitor';\nimport
{ parseTransitionExpr } from './animation_transition_expr';\n\nconst SELF_TOKEN = ':self';\nconst
SELF_TOKEN_REGEX = new RegExp(`\\s*${SELF_TOKEN}\\s*,?`, 'g');\n\n/* The visitor
code below will traverse the animation AST generated by the animation verb functions
(the output is a tree of objects) and attempt to perform a series of validations on the data. The
following corner-cases will be validated:
1. Overlap of animations
Given that a CSS property cannot be animated in more than one
place at the same time, it's important that this behavior is detected and validated. The way in which this occurs is
that each time a style property is examined, a string-map containing the property will be updated with
the start and end times for when the property is used within an animation step.
If there are two or more parallel
animations that are currently running (these are invoked by the group()) on the same element then the validator
will throw an error. Since the start/end timing values are collected for each property then if the current animation
step is animating the same property and its timing values fall anywhere into the window of time that the property
is currently being animated within then this is what causes an error.
2. Timing values
The validator
will validate to see if a timing value of `duration delay easing` or `durationNumber` is valid or not.
(note that upon validation the code below will replace the timing data with an object containing
{duration,delay,easing}).
3. Offset Validation
Each of the style() calls are allowed to have an offset value
when placed inside of keyframes().
Offsets within keyframes() are considered valid when:
- No offsets
are used at all
- Each style() entry contains an offset value
- Each offset is between 0 and 1
- Each
offset is greater to or equal than the previous one
Otherwise an error will be thrown.
*/\n\nexport function
buildAnimationAst(\n  driver: AnimationDriver, metadata: AnimationMetadata|AnimationMetadata[],\n  errors:
any[]): Ast<AnimationMetadataType> {\n  return new AnimationAstBuilderVisitor(driver).build(metadata,
errors);\n}\n\nconst ROOT_SELECTOR = ";\n\nexport class AnimationAstBuilderVisitor implements
AnimationDslVisitor {\n  constructor(private _driver: AnimationDriver) {}\n\n  build(metadata:
AnimationMetadata|AnimationMetadata[], errors: any[]):\n    Ast<AnimationMetadataType> {\n    const context =
new AnimationAstBuilderContext(errors);\n    this._resetContextStyleTimingState(context);\n    return
<Ast<AnimationMetadataType>>visitDslNode(\n      this, normalizeAnimationEntry(metadata), context);\n    }\n\n  private _resetContextStyleTimingState(context: AnimationAstBuilderContext) {\n    context.currentQuerySelector =
ROOT_SELECTOR;\n    context.collectedStyles = {};\n    context.collectedStyles[ROOT_SELECTOR] = {};\n    context.currentTime = 0;\n  }\n\n  visitTrigger(metadata: AnimationTriggerMetadata, context:
AnimationAstBuilderContext):\n    TriggerAst {\n    let queryCount = context.queryCount = 0;\n    let depCount =
context.depCount = 0;\n    const states: StateAst[] = [];\n    const transitions: TransitionAst[] = [];\n    if
(metadata.name.charAt(0) === '@') {\n    context.errors.push(\n      'animation triggers cannot be prefixed with an
`@` sign (e.g. trigger(`@foo`, [...]))');\n    }\n\n    metadata.definitions.forEach(def => {\n
this._resetContextStyleTimingState(context);\n    if (def.type === AnimationMetadataType.State) {\n    const
stateDef = def as AnimationStateMetadata;\n    const name = stateDef.name;\n
name.toString().split(/\\s*,\\s*/).forEach(n => {\n    stateDef.name = n;\n
states.push(this.visitState(stateDef, context));\n    });\n    stateDef.name = name;\n    } else if (def.type ===
AnimationMetadataType.Transition) {\n    const transition = this.visitTransition(def as
AnimationTransitionMetadata, context);\n    queryCount += transition.queryCount;\n    depCount +=
transition.depCount;\n    transitions.push(transition);\n    } else {\n    context.errors.push(\n      'only state()
and transition() definitions can sit inside of a trigger()');\n    }\n    });\n\n    return {\n    type:
AnimationMetadataType.Trigger,\n    name: metadata.name,\n    states,\n    transitions,\n    queryCount,\n
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depCount,\n  options: null\n  };\n }\n\n visitState(metadata: AnimationStateMetadata, context:
AnimationAstBuilderContext): StateAst {\n  const styleAst = this.visitStyle(metadata.styles, context);\n  const
astParams = (metadata.options && metadata.options.params) || null;\n  if (styleAst.containsDynamicStyles) {\n
const missingSubs = new Set<string>();\n  const params = astParams || {};\n  styleAst.styles.forEach(value =>
{\n    if (isObject(value)) {\n      const stylesObj = value as any;\n      Object.keys(stylesObj).forEach(prop
=> {\n        extractStyleParams(stylesObj[prop]).forEach(sub => {\n          if (!params.hasOwnProperty(sub))
{\n            missingSubs.add(sub);\n          }\n        });\n      });\n    };\n    if (missingSubs.size)
{\n      const missingSubsArr = iteratorToArray(missingSubs.values());\n      context.errors.push(`state("${$
\n metadata\n      .name})", ...) must define default values for all the following style substitutions: ${\n
missingSubsArr.join(', ')}');\n    }\n  }\n\n  return {\n    type: AnimationMetadataType.State,\n    name:
metadata.name,\n    style: styleAst,\n    options: astParams ? {params: astParams} : null\n  };\n }\n\n
visitTransition(metadata: AnimationTransitionMetadata, context: AnimationAstBuilderContext):\n  TransitionAst
{\n  context.queryCount = 0;\n  context.depCount = 0;\n  const animation = visitDslNode(this,
normalizeAnimationEntry(metadata.animation), context);\n  const matchers = parseTransitionExpr(metadata.expr,
context.errors);\n\n  return {\n    type: AnimationMetadataType.Transition,\n    matchers,\n    animation,\n
queryCount: context.queryCount,\n    depCount: context.depCount,\n    options:
normalizeAnimationOptions(metadata.options)\n  };\n }\n\n visitSequence(metadata:
AnimationSequenceMetadata, context: AnimationAstBuilderContext):\n  SequenceAst {\n  return {\n    type:
AnimationMetadataType.Sequence,\n    steps: metadata.steps.map(s => visitDslNode(this, s, context)),\n
options: normalizeAnimationOptions(metadata.options)\n  };\n }\n\n visitGroup(metadata:
AnimationGroupMetadata, context: AnimationAstBuilderContext):\n  GroupAst {\n  const currentTime =
context.currentTime;\n  let furthestTime = 0;\n  const steps = metadata.steps.map(step => {\n
context.currentTime = currentTime;\n  const innerAst = visitDslNode(this, step, context);\n  furthestTime =
Math.max(furthestTime, context.currentTime);\n  return innerAst;\n });\n\n  context.currentTime =
furthestTime;\n  return {\n    type: AnimationMetadataType.Group,\n    steps,\n    options:
normalizeAnimationOptions(metadata.options)\n  };\n }\n\n visitAnimate(metadata: AnimationAnimateMetadata,
context: AnimationAstBuilderContext):\n  AnimateAst {\n  const timingAst =
constructTimingAst(metadata.timings, context.errors);\n  context.currentAnimateTimings = timingAst;\n\n  let
styleAst: StyleAst|KeyframesAst;\n  let styleMetadata: AnimationMetadata = metadata.styles ? metadata.styles :
style({});\n  if (styleMetadata.type == AnimationMetadataType.Keyframes) {\n    styleAst =
this.visitKeyframes(styleMetadata as AnimationKeyframesSequenceMetadata, context);\n  } else {\n    let
styleMetadata = metadata.styles as AnimationStyleMetadata;\n    let isEmpty = false;\n    if (!styleMetadata) {\n
isEmpty = true;\n    const newStyleData: {[prop: string]: string|number} = {};\n    if (timingAst.easing) {\n
newStyleData['easing'] = timingAst.easing;\n    }\n    styleMetadata = style(newStyleData);\n  }\n\n
context.currentTime += timingAst.duration + timingAst.delay;\n  const _styleAst = this.visitStyle(styleMetadata,
context);\n  _styleAst.isEmptyStep = isEmpty;\n  styleAst = _styleAst;\n  }\n\n
context.currentAnimateTimings = null;\n  return {\n    type: AnimationMetadataType.Animate,\n    timings:
timingAst,\n    style: styleAst,\n    options: null\n  };\n }\n\n visitStyle(metadata: AnimationStyleMetadata,
context: AnimationAstBuilderContext):\n  StyleAst {\n  const ast = this._makeStyleAst(metadata, context);\n
this._validateStyleAst(ast, context);\n  return ast;\n }\n\n private _makeStyleAst(metadata:
AnimationStyleMetadata, context: AnimationAstBuilderContext):\n  StyleAst {\n  const styles:
(StyleData|string)[] = [];\n  if (Array.isArray(metadata.styles)) {\n    (metadata.styles as (StyleData |
string)[]).forEach(styleTuple => {\n      if (typeof styleTuple == 'string') {\n        if (styleTuple ==
AUTO_STYLE) {\n          styles.push(styleTuple);\n        } else {\n          context.errors.push(`The provided style
string value ${styleTuple} is not allowed.`);\n        }\n      } else {\n        styles.push(styleTuple);\n      }\n
});\n    } else {\n      styles.push(metadata.styles);\n    }\n\n    let containsDynamicStyles = false;\n    let
collectedEasing: string|null = null;\n    styles.forEach(styleData => {\n      if (isObject(styleData)) {\n        const
styleMap = styleData as StyleData;\n        const easing = styleMap['easing'];\n        if (easing) {\n

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collectedEasing = easing as string;\n      delete styleMap['easing'];\n    }\n    if (!containsDynamicStyles) {\n      for (let prop in styleMap) {\n        const value = styleMap[prop];\n        if\n        (value.toString().indexOf(SUBSTITUTION_EXPR_START) >= 0) {\n          containsDynamicStyles = true;\n          break;\n        }\n      }\n    }\n  });\n  return {\n    type: AnimationMetadataType.Style,\n    styles,\n    easing: collectedEasing,\n    offset: metadata.offset,\n    containsDynamicStyles,\n    options: null\n  };\n}\n\nprivate _validateStyleAst(ast: StyleAst, context: AnimationAstBuilderContext): void {\n  const timings\n  = context.currentAnimateTimings;\n  let endTime = context.currentTime;\n  let startTime =\n  context.currentTime;\n  if (timings && startTime > 0) {\n    startTime -= timings.duration + timings.delay;\n  }\n\n  ast.styles.forEach(tuple => {\n    if (typeof tuple == 'string') return;\n\n    Object.keys(tuple).forEach(prop\n    => {\n      if (!this._driver.validateStyleProperty(prop)) {\n        context.errors.push(`The provided animation\n        property \"${\n          prop}\n        \" is not a supported CSS property for animations`);\n        return;\n      }\n\n      const collectedStyles = context.collectedStyles[context.currentQuerySelector!];\n      const collectedEntry =\n      collectedStyles[prop];\n      let updateCollectedStyle = true;\n      if (collectedEntry) {\n        if (startTime !=\n        endTime && startTime >= collectedEntry.startTime &&\n        endTime <= collectedEntry.endTime) {\n          context.errors.push(`The CSS property \"${prop}\" that exists between the times of \"${\n          collectedEntry.startTime}ms\" and \"${\n          collectedEntry\n          .endTime}ms\" is also being\n          animated in a parallel animation between the times of \"${\n          startTime}ms\" and \"${endTime}ms\"`);\n          updateCollectedStyle = false;\n        }\n        // we always choose the smaller start time value since we\n        // want to have a record of the entire animation window where\n        // the style property is being animated in\n        between\n        startTime = collectedEntry.startTime;\n      }\n      if (updateCollectedStyle) {\n        collectedStyles[prop] = {startTime, endTime};\n      }\n      if (context.options) {\n        validateStyleParams(tuple[prop], context.options, context.errors);\n      }\n    });\n  });\n}\n\nvisitKeyframes(metadata: AnimationKeyframesSequenceMetadata, context: AnimationAstBuilderContext):\nKeyframesAst {\n  const ast: KeyframesAst = {type: AnimationMetadataType.Keyframes, styles: [], options:\n  null};\n  if (!context.currentAnimateTimings) {\n    context.errors.push(`keyframes() must be placed inside of a\n    call to animate()`);\n    return ast;\n  }\n\n  const MAX_KEYFRAME_OFFSET = 1;\n  let\n  totalKeyframesWithOffsets = 0;\n  const offsets: number[] = [];\n  let offsetsOutOfOrder = false;\n  let\n  keyframesOutOfRange = false;\n  let previousOffset: number = 0;\n\n  const keyframes: StyleAst[] =\n  metadata.steps.map(styles => {\n    const style = this._makeStyleAst(styles, context);\n    let offsetVal:\n    number|null =\n    style.offset != null ? style.offset : consumeOffset(style.styles);\n    let offset: number = 0;\n    if (offsetVal != null) {\n      totalKeyframesWithOffsets++;\n      offset = style.offset = offsetVal;\n    }\n\n    keyframesOutOfRange = keyframesOutOfRange || offset < 0 || offset > 1;\n    offsetsOutOfOrder =\n    offsetsOutOfOrder || offset < previousOffset;\n    previousOffset = offset;\n    offsets.push(offset);\n    return\n    style;\n  });\n\n  if (keyframesOutOfRange) {\n    context.errors.push(`Please ensure that all keyframe offsets are\n    between 0 and 1`);\n  }\n\n  if (offsetsOutOfOrder) {\n    context.errors.push(`Please ensure that all keyframe\n    offsets are in order`);\n  }\n\n  const length = metadata.steps.length;\n  let generatedOffset = 0;\n  if\n  (totalKeyframesWithOffsets > 0 && totalKeyframesWithOffsets < length) {\n    context.errors.push(`Not all\n    style() steps within the declared keyframes() contain offsets`);\n  } else if (totalKeyframesWithOffsets == 0) {\n    generatedOffset = MAX_KEYFRAME_OFFSET / (length - 1);\n  }\n\n  const limit = length - 1;\n  const\n  currentTime = context.currentTime;\n  const currentAnimateTimings = context.currentAnimateTimings!;\n  const\n  animateDuration = currentAnimateTimings.duration;\n  keyframes.forEach((kf, i) => {\n    const offset =\n    generatedOffset > 0 ? (i == limit ? 1 : (generatedOffset * i)) : offsets[i];\n    const durationUpToThisFrame = offset\n    * animateDuration;\n    context.currentTime = currentTime + currentAnimateTimings.delay +\n    durationUpToThisFrame;\n    currentAnimateTimings.duration = durationUpToThisFrame;\n    this._validateStyleAst(kf, context);\n    kf.offset = offset;\n\n    ast.styles.push(kf);\n  });\n\n  return ast;\n}\n\nvisitReference(metadata: AnimationReferenceMetadata, context: AnimationAstBuilderContext):\nReferenceAst\n{\n  return {\n    type: AnimationMetadataType.Reference,\n    animation: visitDslNode(this,\n    normalizeAnimationEntry(metadata.animation), context),\n    options:\n  };\n}\n
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normalizeAnimationOptions(metadata.options)\n  };\n }\n\n visitAnimateChild(metadata:
AnimationAnimateChildMetadata, context: AnimationAstBuilderContext):\n  AnimateChildAst {\n
context.depCount++;\n  return {\n    type: AnimationMetadataType.AnimateChild,\n    options:
normalizeAnimationOptions(metadata.options)\n  };\n }\n\n visitAnimateRef(metadata:
AnimationAnimateRefMetadata, context: AnimationAstBuilderContext):\n  AnimateRefAst {\n  return {\n
type: AnimationMetadataType.AnimateRef,\n    animation: this.visitReference(metadata.animation, context),\n
options: normalizeAnimationOptions(metadata.options)\n  };\n }\n\n visitQuery(metadata:
AnimationQueryMetadata, context: AnimationAstBuilderContext): QueryAst {\n  const parentSelector =
context.currentQuerySelector!;\n  const options = (metadata.options || {}) as AnimationQueryOptions;\n\n
context.queryCount++;\n  context.currentQuery = metadata;\n  const [selector, includeSelf] =
normalizeSelector(metadata.selector);\n  context.currentQuerySelector =\n    parentSelector.length ?
(parentSelector + ' ' + selector) : selector;\n  getOrSetAsInMap(context.collectedStyles,
context.currentQuerySelector, {});\n\n  const animation = visitDslNode(this,
normalizeAnimationEntry(metadata.animation), context);\n  context.currentQuery = null;\n\n
context.currentQuerySelector = parentSelector;\n\n  return {\n    type: AnimationMetadataType.Query,\n
selector,\n    limit: options.limit || 0,\n    optional: !!options.optional,\n    includeSelf,\n    animation,\n
originalSelector: metadata.selector,\n    options: normalizeAnimationOptions(metadata.options)\n  };\n }\n\n
visitStagger(metadata: AnimationStaggerMetadata, context: AnimationAstBuilderContext):\n  StaggerAst {\n
(!context.currentQuery) {\n    context.errors.push(`stagger() can only be used inside of query()`);\n  }\n  const
timings = metadata.timings === 'full' ?\n    {duration: 0, delay: 0, easing: 'full'} :\n
resolveTiming(metadata.timings, context.errors, true);\n\n  return {\n    type: AnimationMetadataType.Stagger,\n
animation: visitDslNode(this, normalizeAnimationEntry(metadata.animation), context),\n    timings,\n
options: null\n  };\n }\n\n\nfunction normalizeSelector(selector: string): [string, boolean] {\n  const
hasAmpersand = selector.split(/\\s*,\\s*/).find(token => token == SELF_TOKEN) ? true : false;\n  if
(hasAmpersand) {\n    selector = selector.replace(SELF_TOKEN_REGEX, ");\n  }\n\n  // the :enter and :leave
selectors are filled in at runtime during timeline building\n  selector = selector.replace(/@\\*/g,
NG_TRIGGER_SELECTOR)\n    .replace(/@\\w+/g, match => NG_TRIGGER_SELECTOR + '-' +
match.substr(1))\n    .replace(/:animating/g, NG_ANIMATING_SELECTOR);\n\n  return [selector,
hasAmpersand];\n }\n\n\nfunction normalizeParams(obj: {[key: string]: any}|any): {[key: string]: any}|null {\n
return obj ? copyObj(obj) : null;\n }\n\n\nexport type StyleTimeTuple = {\n  startTime: number; endTime:
number;\n};\n\n\nexport class AnimationAstBuilderContext {\n  public queryCount: number = 0;\n  public depCount:
number = 0;\n  public currentTransition: AnimationTransitionMetadata|null = null;\n  public currentQuery:
AnimationQueryMetadata|null = null;\n  public currentQuerySelector: string|null = null;\n  public
currentAnimateTimings: TimingAst|null = null;\n  public currentTime: number = 0;\n  public collectedStyles:
{[selectorName: string]: {[propName: string]: StyleTimeTuple}} = {};\n  public options: AnimationOptions|null =
null;\n  constructor(public errors: any[]) {};\n }\n\n\nfunction consumeOffset(styles: StyleData|string|(StyleData |
string)|): number|null {\n  if (typeof styles == 'string') return null;\n\n  let offset: number|null = null;\n\n  if
(Array.isArray(styles)) {\n    styles.forEach(styleTuple => {\n      if (isObject(styleTuple) &&
styleTuple.hasOwnProperty('offset')) {\n        const obj = styleTuple as StyleData;\n        offset =
parseFloat(obj['offset'] as string);\n        delete obj['offset'];\n      }\n    });\n  } else if (isObject(styles) &&
styles.hasOwnProperty('offset')) {\n    const obj = styles;\n    offset = parseFloat(obj['offset'] as string);\n    delete
obj['offset'];\n  }\n  return offset;\n }\n\n\nfunction isObject(value: any): boolean {\n  return !Array.isArray(value) &&
typeof value == 'object';\n }\n\n\nfunction constructTimingAst(value: string|number|AnimateTimings, errors: any[])
{\n  let timings: AnimateTimings|null = null;\n  if (value.hasOwnProperty('duration')) {\n    timings = value as
AnimateTimings;\n  } else if (typeof value == 'number') {\n    const duration = resolveTiming(value,
errors).duration;\n    return makeTimingAst(duration, 0, ");\n  }\n\n  const strValue = value as string;\n  const
isDynamic = strValue.split(/\\s+/.some(v => v.charAt(0) == '{' && v.charAt(1) == '{');\n  if (isDynamic) {\n
const ast = makeTimingAst(0, 0, ") as any;\n    ast.dynamic = true;\n    ast.strValue = strValue;\n    return ast as

```



```

DynamicTimingAst;
}

timings = timings || resolveTiming(strValue, errors);
return
makeTimingAst(timings.duration, timings.delay, timings.easing);
}

function
normalizeAnimationOptions(options: AnimationOptions|null): AnimationOptions {
  if (options) {
    options =
copyObj(options);
    if (options['params']) {
      options['params'] = normalizeParams(options['params']);
    }
  } else {
    options = {};
  }
  return options;
}

function makeTimingAst(duration: number, delay: number,
easing: string|null): TimingAst {
  return {duration, delay, easing};
}

/**
 * @license
 * Copyright Google
LLC All Rights Reserved.
 * Use of this source code is governed by an MIT-style license that can be
 * found in the LICENSE file at https://angular.io/license
 */
import {StyleData} from '@angular/animations';
import {
AnimationEngineInstruction, AnimationTransitionInstructionType} from
'./render/animation_engine_instruction';
export interface AnimationTimelineInstruction extends
AnimationEngineInstruction {
  element: any;
  keyframes: StyleData[];
  preStyleProps: string[];
  postStyleProps: string[];
  duration: number;
  delay: number;
  totalTime: number;
  easing: string|null;
  stretchStartingKeyframe?: boolean;
  subTimeline: boolean;
}

export function createTimelineInstruction(
element: any, keyframes: StyleData[], preStyleProps: string[], postStyleProps: string[],
duration: number, delay:
number, easing: string|null = null,
subTimeline: boolean = false): AnimationTimelineInstruction {
  return {
type: AnimationTransitionInstructionType.TimelineAnimation,
element,
keyframes,
preStyleProps,
postStyleProps,
duration,
delay,
totalTime: duration + delay,
easing,
subTimeline
};
}

/**
 * @license
 * Copyright Google LLC All Rights Reserved.
 * Use of this source code is governed by an MIT-style license that can be
 * found in the LICENSE file at https://angular.io/license
 */
import {AnimationTimelineInstruction} from './animation_timeline_instruction';
export class
ElementInstructionMap {
  private _map = new Map<any, AnimationTimelineInstruction[]>();

  consume(element: any): AnimationTimelineInstruction[] {
    let instructions = this._map.get(element);
    if
(instructions) {
      this._map.delete(element);
    } else {
      instructions = [];
    }
    return instructions;
  }

  append(element: any, instructions: AnimationTimelineInstruction[]) {
    let existingInstructions =
this._map.get(element);
    if (!existingInstructions) {
      this._map.set(element, existingInstructions = []);
    }
    existingInstructions.push(...instructions);
  }

  has(element: any): boolean {
    return
this._map.has(element);
  }

  clear() {
    this._map.clear();
  }
}

/**
 * @license
 * Copyright Google
LLC All Rights Reserved.
 * Use of this source code is governed by an MIT-style license that can be
 * found in the LICENSE file at https://angular.io/license
 */
import {AnimateChildOptions, AnimateTimings,
AnimationMetadataType, AnimationOptions, AnimationQueryOptions, AUTO_STYLE, PRE_STYLE as
PRE_STYLE, StyleData} from '@angular/animations';
import {AnimationDriver} from
'./render/animation_driver';
import {copyObj, copyStyles, interpolateParams, iteratorToArray, resolveTiming,
resolveTimingValue, visitDslNode} from './util';
import {AnimateAst, AnimateChildAst, AnimateRefAst, Ast,
AstVisitor, DynamicTimingAst, GroupAst, KeyframesAst, QueryAst, ReferenceAst, SequenceAst, StaggerAst,
StateAst, StyleAst, TimingAst, TransitionAst, TriggerAst} from './animation_ast';
import
{AnimationTimelineInstruction, createTimelineInstruction} from './animation_timeline_instruction';
import
{ElementInstructionMap} from './element_instruction_map';
const ONE_FRAME_IN_MILLISECONDS =
1;
const ENTER_TOKEN = 'enter';
const ENTER_TOKEN_REGEX = new RegExp(ENTER_TOKEN,
'g');
const LEAVE_TOKEN = 'leave';
const LEAVE_TOKEN_REGEX = new RegExp(LEAVE_TOKEN,
'g');

/**
 * The code within this file aims to generate web-animations-compatible keyframes from Angular's
 * animation DSL code.
 * The code below will be converted from:
 * ```
 * sequence([
 *   style({ opacity:
0 }),
 *   animate(1000, style({ opacity: 0 }))]
 * ])
 * ```
 * To:
 * ```
 * keyframes = [{ opacity: 0, offset:
0 }, { opacity: 1, offset: 1 }
 * duration = 1000
 * delay = 0
 * easing = ""
 * For this operation to
cover the combination of animation verbs (style, animate, group, etc...) a
 * combination of prototypical
inheritance, AST traversal and merge-sort-like algorithms are used.
 * [AST Traversal]
 * Each of the
animation verbs, when executed, will return a string-map object representing what
 * type of action it is (style,
animate, group, etc...) and the data associated with it. This means
 * that when functional composition mix of these
functions is evaluated (like in the example above)
 * then it will end up producing a tree of objects representing the

```

animation itself. When this animation object tree is processed by the visitor code below it will visit each of the verb statements within the visitor. And during each visit it will build the context of the animation keyframes by interacting with the `TimelineBuilder`. [TimelineBuilder] This class is responsible for tracking the styles and building a series of keyframe objects for a timeline between a start and end time. The builder starts off with an initial timeline and each time the AST comes across a `group()`, `keyframes()` or a combination of the two within a `sequence()` then it will generate a sub timeline for each step as well as a new one after they are complete. As the AST is traversed, the timing state on each of the timelines will be incremented. If a sub timeline was created (based on one of the cases above) then the parent timeline will attempt to merge the styles used within the sub timelines into itself (only with group() this will happen). This happens with a merge operation (much like how the merge works in mergesort) and it will only copy the most recently used styles from the sub timelines into the parent timeline. This ensures that if the styles are used later on in another phase of the animation then they will be the most up-to-date values. [How Missing Styles Are Updated] Each timeline has a `backFill` property which is responsible for filling in new styles into already processed keyframes if a new style shows up later within the animation sequence.

```

sequence([
  style({ width: 0 }),
  animate(1000, style({ width: 100 })),
  animate(1000, style({ width: 200 })),
  animate(1000, style({ width: 300 })),
  animate(1000, style({ width: 400, height: 400 })) // notice
  how `height` doesn't exist anywhere else
])

```

What is happening here is that the `height` value is added later in the sequence, but is missing from all previous animation steps. Therefore when a keyframe is created it would also be missing from all previous keyframes up until where it is first used. For the timeline keyframe generation to properly fill in the style it will place the previous value (the value from the parent timeline) or a default value of `*` into the backFill object. Given that each of the keyframe styles are objects that prototypically inherit from the backFill object, this means that if a value is added into the backFill then it will automatically propagate any missing values to all keyframes. Therefore the missing `height` value will be properly filled into the already processed keyframes.

When a sub-timeline is created it will have its own backFill property. This is done so that styles present within the sub-timeline do not accidentally seep into the previous/future timeline keyframes (For prototypically-inherited contents to be detected a `for(i in obj)` loop must be used.)

[Validation] The code in this file is not responsible for validation. That functionality happens within the `AnimationValidatorVisitor` code.

```

export function buildAnimationTimelines(
  driver: AnimationDriver, rootElement: any, ast: Ast<AnimationMetadataType>,
  enterClassName: string, leaveClassName: string, startingStyles: StyleData = {},
  finalStyles: StyleData = {}, options: AnimationOptions,
  subInstructions?: ElementInstructionMap, errors: any[] = []):
  AnimationTimelineInstruction[] {
  return new AnimationTimelineBuilderVisitor().buildKeyframes(
    driver, rootElement, ast, enterClassName, leaveClassName, startingStyles, finalStyles,
    options, subInstructions, errors);
}
export class AnimationTimelineBuilderVisitor implements AstVisitor {
  buildKeyframes(
    driver: AnimationDriver, rootElement: any, ast: Ast<AnimationMetadataType>,
    enterClassName: string, leaveClassName: string, startingStyles: StyleData,
    finalStyles: StyleData, options: AnimationOptions,
    subInstructions?: ElementInstructionMap, errors: any[] = []): AnimationTimelineInstruction[] {
    subInstructions = subInstructions || new ElementInstructionMap();
    const context = new AnimationTimelineContext(
      driver, rootElement, subInstructions, enterClassName, leaveClassName, errors,
      []);
    context.options = options;
    context.currentTimeline.setStyles([startingStyles], null, context.errors,
    options);
    visitDsNode(this, ast, context);
    // this checks to see if an actual animation happened
    const timelines = context.timelines.filter(timeline => timeline.containsAnimation());
    if (timelines.length && Object.keys(finalStyles).length) {
      const tl = timelines[timelines.length - 1];
      if (!tl.allowOnlyTimelineStyles()) {
        tl.setStyles([finalStyles], null, context.errors, options);
      }
    }
    return timelines.length ? timelines.map(timeline => timeline.buildKeyframes()) :
    [createTimelineInstruction(rootElement, [], [], [], 0, 0, "", false)];
  }
  visitTrigger(ast: TriggerAst, context: AnimationTimelineContext): any {
    // these values are not visited in this AST
  }
  visitState(ast: StateAst, context: AnimationTimelineContext): any {
    // these values are not visited in this AST
  }
}

```

```

visitTransition(ast: TransitionAst, context: AnimationTimelineContext): any {\n // these values are not visited in
this AST\n }\n\n visitAnimateChild(ast: AnimateChildAst, context: AnimationTimelineContext): any {\n const
elementInstructions = context.subInstructions.consume(context.element);\n if (elementInstructions) {\n const
innerContext = context.createSubContext(ast.options);\n const startTime =
context.currentTimeline.currentTime;\n const endTime = this._visitSubInstructions(\n elementInstructions,
innerContext, innerContext.options as AnimateChildOptions);\n if (startTime != endTime) {\n // we do this
on the upper context because we created a sub context for\n // the sub child animations\n
context.transformIntoNewTimeline(endTime);\n }\n }\n context.previousNode = ast;\n }\n\n
visitAnimateRef(ast: AnimateRefAst, context: AnimationTimelineContext): any {\n const innerContext =
context.createSubContext(ast.options);\n innerContext.transformIntoNewTimeline();\n
this.visitReference(ast.animation, innerContext);\n
context.transformIntoNewTimeline(innerContext.currentTimeline.currentTime);\n context.previousNode = ast;\n
}\n\n private _visitSubInstructions(\n instructions: AnimationTimelineInstruction[], context:
AnimationTimelineContext,\n options: AnimateChildOptions): number {\n const startTime =
context.currentTimeline.currentTime;\n let furthestTime = startTime;\n\n // this is a special-case for when a user
wants to skip a sub\n // animation from being fired entirely.\n const duration = options.duration != null ?
resolveTimingValue(options.duration) : null;\n const delay = options.delay != null ?
resolveTimingValue(options.delay) : null;\n if (duration !== 0) {\n instructions.forEach(instruction => {\n
const instructionTimings =\n context.appendInstructionToTimeline(instruction, duration, delay);\n
furthestTime =\n Math.max(furthestTime, instructionTimings.duration + instructionTimings.delay);\n
});\n }\n\n return furthestTime;\n }\n\n visitReference(ast: ReferenceAst, context: AnimationTimelineContext)
{\n context.updateOptions(ast.options, true);\n visitDslNode(this, ast.animation, context);\n
context.previousNode = ast;\n }\n\n visitSequence(ast: SequenceAst, context: AnimationTimelineContext) {\n
const subContextCount = context.subContextCount;\n let ctx = context;\n const options = ast.options;\n if
(options && (options.params || options.delay)) {\n ctx = context.createSubContext(options);\n
ctx.transformIntoNewTimeline();\n if (options.delay != null) {\n if (ctx.previousNode.type ==
AnimationMetadataType.Style) {\n ctx.currentTimeline.snapshotCurrentStyles();\n ctx.previousNode =
DEFAULT_NOOP_PREVIOUS_NODE;\n }\n\n const delay = resolveTimingValue(options.delay);\n
ctx.delayNextStep(delay);\n }\n }\n\n if (ast.steps.length) {\n ast.steps.forEach(s => visitDslNode(this, s,
ctx));\n\n // this is here just incase the inner steps only contain or end with a style() call\n
ctx.currentTimeline.applyStylesToKeyframe();\n\n // this means that some animation function within the
sequence\n // ended up creating a sub timeline (which means the current\n // timeline cannot overlap with the
contents of the sequence)\n if (ctx.subContextCount > subContextCount) {\n
ctx.transformIntoNewTimeline();\n }\n }\n\n context.previousNode = ast;\n }\n\n visitGroup(ast: GroupAst,
context: AnimationTimelineContext) {\n const innerTimelines: TimelineBuilder[] = [];\n let furthestTime =
context.currentTimeline.currentTime;\n const delay = ast.options && ast.options.delay ?
resolveTimingValue(ast.options.delay) : 0;\n\n ast.steps.forEach(s => {\n const innerContext =
context.createSubContext(ast.options);\n if (delay) {\n innerContext.delayNextStep(delay);\n }\n\n
visitDslNode(this, s, innerContext);\n furthestTime = Math.max(furthestTime,
innerContext.currentTimeline.currentTime);\n innerTimelines.push(innerContext.currentTimeline);\n });\n\n
// this operation is run after the AST loop because otherwise\n // if the parent timeline's collected styles were
updated then\n // it would pass in invalid data into the new-to-be forked items\n innerTimelines.forEach(\n
timeline => context.currentTimeline.mergeTimelineCollectedStyles(timeline));\n
context.transformIntoNewTimeline(furthestTime);\n context.previousNode = ast;\n }\n\n private
_visitTiming(ast: TimingAst, context: AnimationTimelineContext): AnimateTimings {\n if ((ast as
DynamicTimingAst).dynamic) {\n const strValue = (ast as DynamicTimingAst).strValue;\n const
timingValue =\n context.params ? interpolateParams(strValue, context.params, context.errors) : strValue;\n
return resolveTiming(timingValue, context.errors);\n } else {\n return {duration: ast.duration, delay: ast.delay,

```

```

easing: ast.easing};\n  }\n\n visitAnimate(ast: AnimateAst, context: AnimationTimelineContext) {\n  const
timings = context.currentAnimateTimings = this._visitTiming(ast.timings, context);\n  const timeline =
context.currentTimeline;\n  if (timings.delay) {\n    context.incrementTime(timings.delay);\n
timeline.snapshotCurrentStyles();\n  }\n\n  const style = ast.style;\n  if (style.type ==
AnimationMetadataType.Keyframes) {\n    this.visitKeyframes(style, context);\n  } else {\n
context.incrementTime(timings.duration);\n    this.visitStyle(style as StyleAst, context);\n
timeline.applyStylesToKeyframe();\n  }\n\n  context.currentAnimateTimings = null;\n  context.previousNode =
ast;\n  }\n\n visitStyle(ast: StyleAst, context: AnimationTimelineContext) {\n  const timeline =
context.currentTimeline;\n  const timings = context.currentAnimateTimings!;\n\n  // this is a special case for when
a style() call\n  // directly follows an animate() call (but not inside of an animate() call)\n  if (!timings &&
timeline.getCurrentStyleProperties().length) {\n    timeline.forwardFrame();\n  }\n\n  const easing = (timings &&
timings.easing) || ast.easing;\n  if (ast.isEmptyStep) {\n    timeline.applyEmptyStep(easing);\n  } else {\n
timeline.setStyles(ast.styles, easing, context.errors, context.options);\n  }\n\n  context.previousNode = ast;\n  }\n\n
visitKeyframes(ast: KeyframesAst, context: AnimationTimelineContext) {\n  const currentAnimateTimings =
context.currentAnimateTimings!;\n  const startTime = (context.currentTimeline!).duration;\n  const duration =
currentAnimateTimings.duration;\n  const innerContext = context.createSubContext();\n  const innerTimeline =
innerContext.currentTimeline;\n  innerTimeline.easing = currentAnimateTimings.easing;\n\n
ast.styles.forEach(step => {\n  const offset: number = step.offset || 0;\n  innerTimeline.forwardTime(offset *
duration);\n  innerTimeline.setStyles(step.styles, step.easing, context.errors, context.options);\n
innerTimeline.applyStylesToKeyframe();\n  });\n\n  // this will ensure that the parent timeline gets all the styles
from\n  // the child even if the new timeline below is not used\n
context.currentTimeline.mergeTimelineCollectedStyles(innerTimeline);\n\n  // we do this because the window
between this timeline and the sub timeline\n  // should ensure that the styles within are exactly the same as they
were before\n  context.transformIntoNewTimeline(startTime + duration);\n  context.previousNode = ast;\n  }\n\n
visitQuery(ast: QueryAst, context: AnimationTimelineContext) {\n  // in the event that the first step before this is a
style step we need\n  // to ensure the styles are applied before the children are animated\n  const startTime =
context.currentTimeline.currentTime;\n  const options = (ast.options || {}) as AnimationQueryOptions;\n  const
delay = options.delay ? resolveTimingValue(options.delay) : 0;\n\n  if (delay &&\n
(context.previousNode.type === AnimationMetadataType.Style ||\n    (startTime == 0 &&
context.currentTimeline.getCurrentStyleProperties().length))) {\n
context.currentTimeline.snapshotCurrentStyles();\n  context.previousNode =
DEFAULT_NOOP_PREVIOUS_NODE;\n  }\n\n  let furthestTime = startTime;\n  const elms =
context.invokeQuery(\n    ast.selector, ast.originalSelector, ast.limit, ast.includeSelf,\n    options.optional ? true
: false, context.errors);\n\n  context.currentQueryTotal = elms.length;\n  let sameElementTimeline:
TimelineBuilder|null = null;\n  elms.forEach((element, i) => {\n  context.currentQueryIndex = i;\n  const
innerContext = context.createSubContext(ast.options, element);\n  if (delay) {\n
innerContext.delayNextStep(delay);\n  }\n\n  if (element === context.element) {\n    sameElementTimeline
= innerContext.currentTimeline;\n  }\n\n  visitDslNode(this, ast.animation, innerContext);\n\n  // this is here
just incase the inner steps only contain or end\n  // with a style() call (which is here to signal that this is a
preparatory\n  // call to style an element before it is animated again)\n
innerContext.currentTimeline.applyStylesToKeyframe();\n\n  const endTime =
innerContext.currentTimeline.currentTime;\n  furthestTime = Math.max(furthestTime, endTime);\n  });\n\n
context.currentQueryIndex = 0;\n  context.currentQueryTotal = 0;\n
context.transformIntoNewTimeline(furthestTime);\n\n  if (sameElementTimeline) {\n
context.currentTimeline.mergeTimelineCollectedStyles(sameElementTimeline);\n
context.currentTimeline.snapshotCurrentStyles();\n  }\n\n  context.previousNode = ast;\n  }\n\n
visitStagger(ast: StaggerAst, context: AnimationTimelineContext) {\n  const parentContext = context.parentContext!;\n  const tl =
context.currentTimeline;\n  const timings = ast.timings;\n  const duration = Math.abs(timings.duration);\n  const

```

```

maxTime = duration * (context.currentQueryTotal - 1);\n let delay = duration * context.currentQueryIndex;\n\n
let staggerTransformer = timings.duration < 0 ? 'reverse' : timings.easing;\n switch (staggerTransformer) {\n
case 'reverse':\n delay = maxTime - delay;\n break;\n case 'full':\n delay =
parentContext.currentStaggerTime;\n break;\n }\n\n const timeline = context.currentTimeline;\n if (delay)
{\n timeline.delayNextStep(delay);\n }\n\n const startingTime = timeline.currentTime;\n visitDslNode(this,
ast.animation, context);\n context.previousNode = ast;\n\n // time = duration + delay\n // the reason why this
computation is so complex is because\n // the inner timeline may either have a delay value or a stretched\n //
keyframe depending on if a subtimeline is not used or is used.\n parentContext.currentStaggerTime =\n
(tl.currentTime - startingTime) + (tl.startTime - parentContext.currentTimeline.startTime);\n }\n\n\nexport declare
type StyleAtTime = {\n time: number; value: string | number;\n};\n\nconst DEFAULT_NOOP_PREVIOUS_NODE
= <Ast<AnimationMetadataType>>{};\n\nexport class AnimationTimelineContext {\n public parentContext:
AnimationTimelineContext | null = null;\n public currentTimeline: TimelineBuilder;\n public
currentAnimateTimings: AnimateTimings | null = null;\n public previousNode: Ast<AnimationMetadataType> =
DEFAULT_NOOP_PREVIOUS_NODE;\n public subContextCount = 0;\n public options: AnimationOptions =
{};\n public currentQueryIndex: number = 0;\n public currentQueryTotal: number = 0;\n public
currentStaggerTime: number = 0;\n\n constructor(\n private _driver: AnimationDriver, public element: any,\n
public subInstructions: ElementInstructionMap, private _enterClassName: string,\n private _leaveClassName:
string, public errors: any[], public timelines: TimelineBuilder[],\n initialTimeline?: TimelineBuilder) {\n
this.currentTimeline = initialTimeline || new TimelineBuilder(this._driver, element, 0);\n
timelines.push(this.currentTimeline);\n }\n\n get params() {\n return this.options.params;\n }\n\n
updateOptions(options: AnimationOptions | null, skipIfExists?: boolean) {\n if (!options) return;\n\n const
newOptions = options as any;\n let optionsToUpdate = this.options;\n\n // NOTE: this will get patched up when
other animation methods support duration overrides\n if (newOptions.duration != null) {\n (optionsToUpdate as
any).duration = resolveTimingValue(newOptions.duration);\n }\n\n if (newOptions.delay != null) {\n
optionsToUpdate.delay = resolveTimingValue(newOptions.delay);\n }\n\n const newParams =
newOptions.params;\n if (newParams) {\n let paramsToUpdate: {[name: string]: any} =
optionsToUpdate.params!;\n if (!paramsToUpdate) {\n paramsToUpdate = this.options.params = {};\n
}\n\n Object.keys(newParams).forEach(name => {\n if (!skipIfExists ||
!paramsToUpdate.hasOwnProperty(name)) {\n paramsToUpdate[name] =
interpolateParams(newParams[name], paramsToUpdate, this.errors);\n }\n });\n }\n\n private
_copyOptions() {\n const options: AnimationOptions = {};\n if (this.options) {\n const oldParams =
this.options.params;\n if (oldParams) {\n const params: {[name: string]: any} = options['params'] = {};\n
Object.keys(oldParams).forEach(name => {\n params[name] = oldParams[name];\n });\n }\n }\n\n
return options;\n }\n\n createSubContext(options: AnimationOptions | null = null, element?: any, newTime?:
number):\n AnimationTimelineContext {\n const target = element || this.element;\n const context = new
AnimationTimelineContext(\n this._driver, target, this.subInstructions, this._enterClassName,
this._leaveClassName,\n this.errors, this.timelines, this.currentTimeline.fork(target, newTime || 0);\n
context.previousNode = this.previousNode;\n context.currentAnimateTimings = this.currentAnimateTimings;\n\n
context.options = this._copyOptions();\n context.updateOptions(options);\n\n context.currentQueryIndex =
this.currentQueryIndex;\n context.currentQueryTotal = this.currentQueryTotal;\n context.parentContext = this;\n
\n this.subContextCount++;\n return context;\n }\n\n transformIntoNewTimeline(newTime?: number) {\n
this.previousNode = DEFAULT_NOOP_PREVIOUS_NODE;\n this.currentTimeline =
this.currentTimeline.fork(this.element, newTime);\n this.timelines.push(this.currentTimeline);\n return
this.currentTimeline;\n }\n\n appendInstructionToTimeline(\n instruction: AnimationTimelineInstruction,
duration: number | null,\n delay: number | null): AnimateTimings {\n const updatedTimings: AnimateTimings =
{\n duration: duration != null ? duration : instruction.duration,\n delay: this.currentTimeline.currentTime +
(delay != null ? delay : 0) + instruction.delay,\n easing: ""\n }; \n const builder = new SubTimelineBuilder(\n
this._driver, instruction.element, instruction.keyframes, instruction.preStyleProps,\n

```

```

instruction.postStyleProps, updatedTimings, instruction.stretchStartingKeyframe);\n
this.timelines.push(builder);\n return updatedTimings;\n }\n\n incrementTime(time: number) {\n
this.currentTimeline.forwardTime(this.currentTimeline.duration + time);\n }\n\n delayNextStep(delay: number) {\n
// negative delays are not yet supported\n if (delay > 0) {\n this.currentTimeline.delayNextStep(delay);\n }\n
}\n\n invokeQuery(\n selector: string, originalSelector: string, limit: number, includeSelf: boolean,\n optional:
boolean, errors: any[]): any[] {\n let results: any[] = [];\n if (includeSelf) {\n results.push(this.element);\n
}\n if (selector.length > 0) { // if :self is only used then the selector is empty\n selector =
selector.replace(ENTER_TOKEN_REGEX, '.' + this._enterClassName);\n selector =
selector.replace(LEAVE_TOKEN_REGEX, '.' + this._leaveClassName);\n const multi = limit !== 1;\n let
elements = this._driver.query(this.element, selector, multi);\n if (limit !== 0) {\n elements = limit < 0 ?
elements.slice(elements.length + limit, elements.length) : \n elements.slice(0, limit);\n }\n
results.push(...elements);\n }\n\n if (!optional && results.length === 0) {\n
errors.push(`\`query("${originalSelector}")\` returned zero elements. (Use `\`query("${\n
originalSelector}", { optional: true })\` if you wish to allow this.)`);\n }\n return results;\n }\n}\n\n\nexport
class TimelineBuilder {\n public duration: number = 0;\n // TODO(issue/24571): remove '!'.\n public easing!:
string|null;\n private _previousKeyframe: StyleData = {};\n private _currentKeyframe: StyleData = {};\n private
_keyframes = new Map<number, StyleData>();\n private _styleSummary: {[prop: string]: StyleAtTime} = {};\n
private _localTimelineStyles: StyleData;\n private _globalTimelineStyles: StyleData;\n private _pendingStyles:
StyleData = {};\n private _backFill: StyleData = {};\n private _currentEmptyStepKeyframe: StyleData|null =
null;\n\n constructor(\n private _driver: AnimationDriver, public element: any, public startTime: number,\n private _elementTimelineStylesLookup?: Map<any, StyleData>) {\n if (!this._elementTimelineStylesLookup) {\n
this._elementTimelineStylesLookup = new Map<any, StyleData>();\n }\n\n this._localTimelineStyles =
Object.create(this._backFill, {});\n this._globalTimelineStyles =
this._elementTimelineStylesLookup.get(element)!;\n if (!this._globalTimelineStyles) {\n
this._globalTimelineStyles = this._localTimelineStyles;\n this._elementTimelineStylesLookup.set(element,
this._localTimelineStyles);\n }\n this._loadKeyframe();\n }\n\n containsAnimation(): boolean {\n switch
(this._keyframes.size) {\n case 0:\n return false;\n case 1:\n return
this.getCurrentStyleProperties().length > 0;\n default:\n return true;\n }\n }\n\n
getCurrentStyleProperties(): string[] {\n return Object.keys(this._currentKeyframe);\n }\n\n get currentTime() {\n
return this.startTime + this.duration;\n }\n\n delayNextStep(delay: number) {\n // in the event that a style() step
is placed right before a stagger()\n // and that style() step is the very first style() value in the animation\n // then
we need to make a copy of the keyframe [0, copy, 1] so that the delay\n // properly applies the style() values to
work with the stagger...\n const hasPreStyleStep = this._keyframes.size === 1 &&
Object.keys(this._pendingStyles).length;\n if (this.duration || hasPreStyleStep) {\n
this.forwardTime(this.currentTime + delay);\n if (hasPreStyleStep) {\n this.snapshotCurrentStyles();\n }\n
} else {\n this.startTime += delay;\n }\n }\n\n fork(element: any, currentTime?: number): TimelineBuilder
{\n this.applyStylesToKeyframe();\n return new TimelineBuilder(\n this._driver, element, currentTime ||
this.currentTime, this._elementTimelineStylesLookup);\n }\n\n private _loadKeyframe() {\n if
(this._currentKeyframe) {\n this._previousKeyframe = this._currentKeyframe;\n }\n this._currentKeyframe =
this._keyframes.get(this.duration)!;\n if (!this._currentKeyframe) {\n this._currentKeyframe =
Object.create(this._backFill, {});\n this._keyframes.set(this.duration, this._currentKeyframe);\n }\n }\n\n
forwardFrame() {\n this.duration += ONE_FRAME_IN_MILLISECONDS;\n this._loadKeyframe();\n }\n\n
forwardTime(time: number) {\n this.applyStylesToKeyframe();\n this.duration = time;\n
this._loadKeyframe();\n }\n\n private _updateStyle(prop: string, value: string|number) {\n
this._localTimelineStyles[prop] = value;\n this._globalTimelineStyles[prop] = value;\n
this._styleSummary[prop] = {time: this.currentTime, value};\n }\n\n allowOnlyTimelineStyles() {\n return
this._currentEmptyStepKeyframe !== this._currentKeyframe;\n }\n\n applyEmptyStep(easing: string|null) {\n if
(easing) {\n this._previousKeyframe['easing'] = easing;\n }\n\n // special case for animate(duration):\n // all

```

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missing styles are filled with a `*` value then\n // if any destination styles are filled in later on the same\n //
keyframe then they will override the overridden styles\n // We use `_globalTimelineStyles` here because there
may be\n // styles in previous keyframes that are not present in this timeline\n
Object.keys(this._globalTimelineStyles).forEach(prop => {\n  this._backFill[prop] =
this._globalTimelineStyles[prop] || AUTO_STYLE;\n  this._currentKeyframe[prop] = AUTO_STYLE;\n });\n
this._currentEmptyStepKeyframe = this._currentKeyframe;\n }\n\n setStyles(\n  input: (StyleData|string)[],
easing: string|null, errors: any[],\n  options?: AnimationOptions) {\n  if (easing) {\n
this._previousKeyframe['easing'] = easing;\n  }\n\n  const params = (options && options.params) || {};\n  const
styles = flattenStyles(input, this._globalTimelineStyles);\n  Object.keys(styles).forEach(prop => {\n  const val =
interpolateParams(styles[prop], params, errors);\n  this._pendingStyles[prop] = val;\n  if
(!this._localTimelineStyles.hasOwnProperty(prop)) {\n  this._backFill[prop] =
this._globalTimelineStyles.hasOwnProperty(prop) ?\n  this._globalTimelineStyles[prop] :\n  AUTO_STYLE;\n  }\n  this._updateStyle(prop, val);\n  });\n }\n\n applyStylesToKeyframe() {\n  const
styles = this._pendingStyles;\n  const props = Object.keys(styles);\n  if (props.length == 0) return;\n\n
this._pendingStyles = {};\n  props.forEach(prop => {\n  const val = styles[prop];\n
this._currentKeyframe[prop] = val;\n  });\n\n  Object.keys(this._localTimelineStyles).forEach(prop => {\n  if
(!this._currentKeyframe.hasOwnProperty(prop)) {\n  this._currentKeyframe[prop] =
this._localTimelineStyles[prop];\n  }\n  });\n }\n\n snapshotCurrentStyles() {\n
Object.keys(this._localTimelineStyles).forEach(prop => {\n  const val = this._localTimelineStyles[prop];\n
this._pendingStyles[prop] = val;\n  this._updateStyle(prop, val);\n  });\n }\n\n getFinalKeyframe() {\n  return
this._keyframes.get(this.duration);\n }\n\n get properties() {\n  const properties: string[] = [];\n  for (let prop in
this._currentKeyframe) {\n  properties.push(prop);\n  }\n  return properties;\n }\n\n
mergeTimelineCollectedStyles(timeline: TimelineBuilder) {\n  Object.keys(timeline._styleSummary).forEach(prop
=> {\n  const details0 = this._styleSummary[prop];\n  const details1 = timeline._styleSummary[prop];\n  if
(!details0 || details1.time > details0.time) {\n  this._updateStyle(prop, details1.value);\n  }\n  });\n }\n\n
buildKeyframes(): AnimationTimelineInstruction {\n  this.applyStylesToKeyframe();\n  const preStyleProps =
new Set<string>();\n  const postStyleProps = new Set<string>();\n  const isEmpty = this._keyframes.size === 1
&& this.duration === 0;\n\n  let finalKeyframes: StyleData[] = [];\n  this._keyframes.forEach((keyframe, time)
=> {\n  const finalKeyframe = copyStyles(keyframe, true);\n  Object.keys(finalKeyframe).forEach(prop => {\n
const value = finalKeyframe[prop];\n  if (value == PRE_STYLE) {\n  preStyleProps.add(prop);\n  }
else if (value == AUTO_STYLE) {\n  postStyleProps.add(prop);\n  }\n  });\n  if (!isEmpty) {\n
finalKeyframe['offset'] = time / this.duration;\n  }\n  finalKeyframes.push(finalKeyframe);\n  });\n\n  const
preProps: string[] = preStyleProps.size ? iteratorToArray(preStyleProps.values()) : [];\n  const postProps: string[] =
postStyleProps.size ? iteratorToArray(postStyleProps.values()) : [];\n\n  // special case for a 0-second animation
(which is designed just to place styles onscreen)\n  if (isEmpty) {\n  const kf0 = finalKeyframes[0];\n  const
kf1 = copyObj(kf0);\n  kf0['offset'] = 0;\n  kf1['offset'] = 1;\n  finalKeyframes = [kf0, kf1];\n  }\n\n  return
createTimelineInstruction(\n  this.element, finalKeyframes, preProps, postProps, this.duration, this.startTime,\n
this.easing, false);\n  })\n}\n\nclass SubTimelineBuilder extends TimelineBuilder {\n  public timings:
AnimateTimings;\n\n  constructor(\n  driver: AnimationDriver, public element: any, public keyframes:
StyleData[],\n  public preStyleProps: string[], public postStyleProps: string[], timings: AnimateTimings,\n
private _stretchStartingKeyframe: boolean = false) {\n  super(driver, element, timings.delay);\n  this.timings =
{duration: timings.duration, delay: timings.delay, easing: timings.easing};\n  }\n\n  containsAnimation(): boolean
{\n  return this.keyframes.length > 1;\n  }\n\n  buildKeyframes(): AnimationTimelineInstruction {\n  let
keyframes = this.keyframes;\n  let {delay, duration, easing} = this.timings;\n  if (this._stretchStartingKeyframe
&& delay) {\n  const newKeyframes: StyleData[] = [];\n  const totalTime = duration + delay;\n  const
startingGap = delay / totalTime;\n\n  // the original starting keyframe now starts once the delay is done\n  const
newFirstKeyframe = copyStyles(keyframes[0], false);\n  newFirstKeyframe['offset'] = 0;\n
newKeyframes.push(newFirstKeyframe);\n\n  const oldFirstKeyframe = copyStyles(keyframes[0], false);\n

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oldFirstKeyframe['offset'] = roundOffset(startingGap);\n    newKeyframes.push(oldFirstKeyframe);\n    /*\n    When the keyframe is stretched then it means that the delay before the animation\n    starts is gone. Instead the first keyframe is placed at the start of the animation\n    and it is then copied to where it starts when the original delay is over. This basically\n    means nothing animates during that delay, but the styles are still rendered. For\n    this to work the original offset values that exist in the original keyframes must be \"warped\"\n    so that they can take the new keyframe + delay into account.\n    delay=1000, duration=1000, keyframes = 0.5 1\n    turns into\n    delay=0, duration=2000, keyframes = 0.33 .66 1\n    */\n    // offsets between 1 ... n-1 are all warped by the keyframe stretch\n    const limit = keyframes.length - 1;\n    for (let i = 1; i <= limit; i++) {\n    let kf = copyStyles(keyframes[i], false);\n    const oldOffset = kf['offset'] as number;\n    const timeAtKeyframe = delay + oldOffset * duration;\n    kf['offset'] = roundOffset(timeAtKeyframe / totalTime);\n    newKeyframes.push(kf);\n    }\n    // the new starting keyframe should be added at the start\n    duration = totalTime;\n    delay = 0;\n    easing = \"\";\n    keyframes = newKeyframes;\n    }\n    return createTimelineInstruction(\n    this.element, keyframes, this.preStyleProps, this.postStyleProps, duration, delay, easing,\n    true);\n    }\n}\n\nfunction roundOffset(offset: number, decimalPoints = 3): number {\n    const mult = Math.pow(10, decimalPoints - 1);\n    return Math.round(offset * mult) / mult;\n}\n\nfunction flattenStyles(input: (StyleData|string)[], allStyles: StyleData) {\n    const styles: StyleData = {};\n    let allProperties: string[];\n    input.forEach(token => {\n    if (token === '*') {\n    allProperties = allProperties || Object.keys(allStyles);\n    allProperties.forEach(prop => {\n    styles[prop] = AUTO_STYLE;\n    });\n    } else {\n    copyStyles(token as StyleData, false, styles);\n    }\n    });\n    return styles;\n}\n\n\"/**\n * @license\n * Copyright Google LLC All Rights Reserved.\n * Use of this source code is governed by an MIT-style license that can be\n * found in the LICENSE file at https://angular.io/license\n */\nimport { AnimationMetadata, AnimationMetadataType, AnimationOptions, StyleData } from '@angular/animations';\nimport { AnimationDriver } from './render/animation_driver';\nimport { ENTER_CLASSNAME, LEAVE_CLASSNAME, normalizeStyles } from './util';\nimport { Ast } from './animation_ast';\nimport { buildAnimationAst } from './animation_ast_builder';\nimport { buildAnimationTimelines } from './animation_timeline_builder';\nimport { AnimationTimelineInstruction } from './animation_timeline_instruction';\nimport { ElementInstructionMap } from './element_instruction_map';\n\nexport class Animation {\n    private _animationAst: Ast<AnimationMetadataType>;\n    constructor(private _driver: AnimationDriver, input: AnimationMetadata|AnimationMetadata[]) {\n    const errors: any[] = [];\n    const ast = buildAnimationAst(_driver, input, errors);\n    if (errors.length) {\n    const errorMessage = `animation validation failed:\\n${errors.join(\"\\n\")}`;\n    throw new Error(errorMessage);\n    }\n    this._animationAst = ast;\n    }\n\n    buildTimelines(\n    element: any, startingStyles: StyleData|StyleData[],\n    destinationStyles: StyleData|StyleData[], options: AnimationOptions,\n    subInstructions?: ElementInstructionMap): AnimationTimelineInstruction[] {\n    const start = Array.isArray(startingStyles) ? normalizeStyles(startingStyles) : <StyleData>startingStyles;\n    const dest = Array.isArray(destinationStyles) ? normalizeStyles(destinationStyles) : <StyleData>destinationStyles;\n    const errors: any = [];\n    subInstructions = subInstructions || new ElementInstructionMap();\n    const result = buildAnimationTimelines(\n    this._driver, element, this._animationAst, ENTER_CLASSNAME, LEAVE_CLASSNAME, start, dest,\n    options, subInstructions, errors);\n    if (errors.length) {\n    const errorMessage = `animation building failed:\\n${errors.join(\"\\n\")}`;\n    throw new Error(errorMessage);\n    }\n    return result;\n    }\n}\n\n\"/**\n * @license\n * Copyright Google LLC All Rights Reserved.\n * Use of this source code is governed by an MIT-style license that can be\n * found in the LICENSE file at https://angular.io/license\n */\n\n/**\n * @publicApi\n */\nexport abstract class AnimationStyleNormalizer {\n    abstract normalizePropertyName(propertyName: string, errors: string[]): string;\n    abstract normalizeStyleValue(\n    userProvidedProperty: string, normalizedProperty: string, value: string|number,\n    errors: string[]): string;\n}\n\n\"/**\n * @publicApi\n */\nexport class NoopAnimationStyleNormalizer {\n    normalizePropertyName(propertyName: string, errors: string[]): string {\n    return propertyName;\n    }\n\n    normalizeStyleValue(\n    userProvidedProperty: string, normalizedProperty: string, value: string|number,\n
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errors: string[]): string {\n  return <any>value;\n }\n}\n", "/*\n * @license\n * Copyright Google LLC All Rights Reserved.\n *\n * Use of this source code is governed by an MIT-style license that can be\n * found in the LICENSE file at https://angular.io/license\n *\nimport {dashCaseToCamelCase} from './util';\nimport {AnimationStyleNormalizer} from './animation_style_normalizer';\nexport class WebAnimationsStyleNormalizer extends AnimationStyleNormalizer {\n  normalizePropertyName(propertyName: string, errors: string[]): string {\n    return dashCaseToCamelCase(propertyName);\n  }\n\n  normalizeStyleValue(\n    userProvidedProperty: string, normalizedProperty: string, value: string|number,\n    errors: string[]): string {\n    let unit: string = ";\n    const strVal = value.toString().trim();\n\n    if (DIMENSIONAL_PROP_MAP[normalizedProperty] && value !== 0 && value !== '0') {\n      if (typeof value === 'number') {\n        unit = 'px';\n      } else {\n        const valAndSuffixMatch = value.match(/^[+-]?[\\d\\.]+([a-z]*)$/);\n        if (valAndSuffixMatch && valAndSuffixMatch[1].length === 0) {\n          errors.push('Please provide a CSS unit value for ${userProvidedProperty}:${value}');\n        }\n      }\n    }\n\n    return strVal + unit;\n  }\n}\n\nconst DIMENSIONAL_PROP_MAP =\n  (( => makeBooleanMap(\n    'width,height,minWidth,minHeight,maxWidth,maxHeight,left,top,bottom,right,fontSize,outlineWidth,outlineOffset,paddingTop,paddingLeft,paddingBottom,paddingRight,marginTop,marginLeft,marginBottom,marginRight,borderRadius,borderWidth,borderTopWidth,borderLeftWidth,borderRightWidth,borderBottomWidth,textIndent,perspective'\n    .split(',')\n  )));\n\nfunction makeBooleanMap(keys: string[]): {[key: string]: boolean} {\n  const map: {[key: string]: boolean} = {};\n  keys.forEach(key => map[key] = true);\n  return map;\n}\n", "/*\n * @license\n * Copyright Google LLC All Rights Reserved.\n *\n * Use of this source code is governed by an MIT-style license that can be\n * found in the LICENSE file at https://angular.io/license\n *\nimport {StyleData} from '@angular/animations';\nimport {AnimationEngineInstruction, AnimationTransitionInstructionType} from './render/animation_engine_instruction';\nimport {AnimationTimelineInstruction} from './animation_timeline_instruction';\nexport interface AnimationTransitionInstruction extends AnimationEngineInstruction {\n  element: any;\n  triggerName: string;\n  isRemovalTransition: boolean;\n  fromState: string;\n  fromStyles: StyleData;\n  toState: string;\n  toStyles: StyleData;\n  timelines: AnimationTimelineInstruction[];\n  queriedElements: any[];\n  preStyleProps: Map<any, {[prop: string]: boolean}>;\n  postStyleProps: Map<any, {[prop: string]: boolean}>;\n  totalTime: number;\n  errors?: any[];\n}\n\nexport function createTransitionInstruction(\n  element: any, triggerName: string, fromState: string, toState: string,\n  isRemovalTransition: boolean, fromStyles: StyleData, toStyles: StyleData,\n  timelines: AnimationTimelineInstruction[], queriedElements: any[],\n  preStyleProps: Map<any, {[prop: string]: boolean}>,\n  postStyleProps: Map<any, {[prop: string]: boolean}>,\n  totalTime: number,\n  errors?: any[]): AnimationTransitionInstruction {\n  return {\n    type: AnimationTransitionInstructionType.TransitionAnimation,\n    element,\n    triggerName,\n    isRemovalTransition,\n    fromState,\n    fromStyles,\n    toState,\n    toStyles,\n    timelines,\n    queriedElements,\n    preStyleProps,\n    postStyleProps,\n    totalTime,\n    errors\n  };\n}\n", "/*\n * @license\n * Copyright Google LLC All Rights Reserved.\n *\n * Use of this source code is governed by an MIT-style license that can be\n * found in the LICENSE file at https://angular.io/license\n *\nimport {AnimationOptions, StyleData} from '@angular/animations';\nimport {AnimationDriver} from './render/animation_driver';\nimport {getOrSetAsInMap} from './render/shared';\nimport {copyObj, interpolateParams, iteratorToArray, mergeAnimationOptions} from './util';\nimport {StyleAst, TransitionAst} from './animation_ast';\nimport {buildAnimationTimelines} from './animation_timeline_builder';\nimport {TransitionMatcherFn} from './animation_transition_expr';\nimport {AnimationTransitionInstruction, createTransitionInstruction} from './animation_transition_instruction';\nimport {ElementInstructionMap} from './element_instruction_map';\n\nconst EMPTY_OBJECT = {};\n\nexport class AnimationTransitionFactory {\n  constructor(\n    private _triggerName: string, public ast: TransitionAst,\n    private _stateStyles: {[stateName: string]: AnimationStateStyles}) {}\n\n  match(currentState: any, nextState: any, element: any, params: {[key: string]: any}): boolean {\n    return oneOrMoreTransitionsMatch(this.ast.matchers, currentState, nextState, element, params);\n  }\n\n  buildStyles(stateName: string, params: {[key: string]: any}, errors: any[]) {\n    const backupStateStyler = this._stateStyles[*];\n    const stateStyler = this._stateStyles[stateName];\n    const backupStyles = backupStateStyler ? backupStateStyler.buildStyles(params, errors) : {};\n    return stateStyler ?

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stateStyler.buildStyles(params, errors) : backupStyles;\n }\n\n build(\n  driver: AnimationDriver, element: any,\n  currentState: any, nextState: any,\n  enterClassName: string, leaveClassName: string, currentOptions?:\n  AnimationOptions,\n  nextOptions?: AnimationOptions, subInstructions?: ElementInstructionMap,\n  skipAstBuild?: boolean): AnimationTransitionInstruction {\n  const errors: any[] = [];\n  const\n  transitionAnimationParams = this.ast.options && this.ast.options.params || EMPTY_OBJECT;\n  const\n  currentAnimationParams = currentOptions && currentOptions.params || EMPTY_OBJECT;\n  const\n  currentStateStyles = this.buildStyles(currentState, currentAnimationParams, errors);\n  const nextAnimationParams\n  = nextOptions && nextOptions.params || EMPTY_OBJECT;\n  const nextStateStyles = this.buildStyles(nextState,\n  nextAnimationParams, errors);\n  const queriedElements = new Set<any>();\n  const preStyleMap = new\n  Map<any, {[prop: string]: boolean}>();\n  const postStyleMap = new Map<any, {[prop: string]: boolean}>();\n  const isRemoval = nextState === 'void';\n  const animationOptions = {params: {...transitionAnimationParams,\n  ...nextAnimationParams}};\n  const timelines = skipAstBuild ?\n  [] :\n  buildAnimationTimelines(\n  driver, element, this.ast.animation, enterClassName, leaveClassName, currentStateStyles,\n  nextStateStyles,\n  animationOptions, subInstructions, errors);\n  let totalTime = 0;\n  timelines.forEach(tl => {\n  totalTime =\n  Math.max(tl.duration + tl.delay, totalTime);\n  });\n  if (errors.length) {\n  return\n  createTransitionInstruction(\n  element, this._triggerName, currentState, nextState, isRemoval,\n  currentStateStyles,\n  nextStateStyles, [], [], preStyleMap, postStyleMap, totalTime, errors);\n  }\n  timelines.forEach(tl => {\n  const elm = tl.element;\n  const preProps = getOrSetAsInMap(preStyleMap, elm,\n  {});\n  tl.preStyleProps.forEach(prop => preProps[prop] = true);\n  const postProps =\n  getOrSetAsInMap(postStyleMap, elm, {});\n  tl.postStyleProps.forEach(prop => postProps[prop] = true);\n  if (elm !== element) {\n  queriedElements.add(elm);\n  });\n  const queriedElementsList =\n  iteratorToArray(queriedElements.values());\n  return createTransitionInstruction(\n  element,\n  this._triggerName, currentState, nextState, isRemoval, currentStateStyles,\n  nextStateStyles, timelines,\n  queriedElementsList, preStyleMap, postStyleMap, totalTime);\n  }\n}\n\nfunction oneOrMoreTransitionsMatch(\n  matchFns: TransitionMatcherFn[], currentState: any, nextState: any, element: any,\n  params: {[key: string]: any}): boolean {\n  return matchFns.some(fn => fn(currentState, nextState, element, params));\n}\n\nexport class\n  AnimationStateStyles {\n  constructor(private styles: StyleAst, private defaultParams: {[key: string]: any}) {}\n\n  buildStyles(params: {[key: string]: any}, errors: string[]): StyleData {\n  const finalStyles: StyleData = {};\n  const combinedParams = copyObj(this.defaultParams);\n  Object.keys(params).forEach(key => {\n  const value\n  = params[key];\n  if (value != null) {\n  combinedParams[key] = value;\n  }\n  });\n  this.styles.styles.forEach(value => {\n  if (typeof value !== 'string') {\n  const styleObj = value as any;\n  Object.keys(styleObj).forEach(prop => {\n  let val = styleObj[prop];\n  if (val.length > 1) {\n  val =\n  interpolateParams(val, combinedParams, errors);\n  }\n  finalStyles[prop] = val;\n  });\n  });\n  return finalStyles;\n  }\n}\n\n"/**\n * @license\n * Copyright Google LLC All Rights Reserved.\n * Use of this\n  source code is governed by an MIT-style license that can be\n  found in the LICENSE file at\n  https://angular.io/license\n */\nimport {AnimationMetadataType, StyleData} from '@angular/animations';\nimport\n  {copyStyles, interpolateParams} from './util';\nimport {SequenceAst, StyleAst, TransitionAst, TriggerAst} from\n  './animation_ast';\nimport {AnimationStateStyles, AnimationTransitionFactory} from\n  './animation_transition_factory';\n\n/**\n * @publicApi\n */\nexport function buildTrigger(name: string, ast:\n  TriggerAst): AnimationTrigger {\n  return new AnimationTrigger(name, ast);\n}\n\n/**\n * @publicApi\n */\nexport class AnimationTrigger {\n  public transitionFactories: AnimationTransitionFactory[] = [];\n  public\n  fallbackTransition: AnimationTransitionFactory;\n  public states: {[stateName: string]: AnimationStateStyles} =\n  {};\n\n  constructor(public name: string, public ast: TriggerAst) {\n  ast.states.forEach(ast => {\n  const\n  defaultParams = (ast.options && ast.options.params) || {};\n  this.states[ast.name] = new\n  AnimationStateStyles(ast.style, defaultParams);\n  });\n\n  balanceProperties(this.states, 'true', '1');\n  balanceProperties(this.states, 'false', '0');\n  ast.transitions.forEach(ast => {\n  this.transitionFactories.push(new\n  AnimationTransitionFactory(name, ast, this.states));\n  });\n  this.fallbackTransition =\n  createFallbackTransition(name, this.states);\n  }\n\n  get containsQueries() {\n  return this.ast.queryCount > 0;\n  }\n}

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}\n\n matchTransition(currentState: any, nextState: any, element: any, params: {[key: string]: any}):\n
AnimationTransitionFactory|null {\n  const entry =\n    this.transitionFactories.find(f => f.match(currentState,\n
nextState, element, params));\n  return entry || null;\n }\n\n matchStyles(currentState: any, params: {[key: string]:\n
any}, errors: any[]): StyleData {\n  return this.fallbackTransition.buildStyles(currentState, params, errors);\n
}\n}\n\nfunction createFallbackTransition(\n  triggerName: string,\n  states: {[stateName: string]:\n
AnimationStateStyles}): AnimationTransitionFactory {\n  const matchers = [(fromState: any, toState: any) =>\n
true];\n  const animation: SequenceAst = {type: AnimationMetadataType.Sequence, steps: [], options: null};\n
const transition: TransitionAst = {\n  type: AnimationMetadataType.Transition,\n  animation,\n  matchers,\n
options: null,\n  queryCount: 0,\n  depCount: 0\n };\n  return new AnimationTransitionFactory(triggerName,\n
transition, states);\n}\n\nfunction balanceProperties(obj: {[key: string]: any}, key1: string, key2: string) {\n  if\n
(obj.hasOwnProperty(key1)) {\n    if (!obj.hasOwnProperty(key2)) {\n      obj[key2] = obj[key1];\n    }\n  } else if\n
(obj.hasOwnProperty(key2)) {\n    obj[key1] = obj[key2];\n  }\n}\n\n"/**\n * @license\n * Copyright Google LLC\n
All Rights Reserved.\n * Use of this source code is governed by an MIT-style license that can be\n * found in\n
the LICENSE file at https://angular.io/license\n */\nimport { AnimationMetadata, AnimationMetadataType,\n
AnimationOptions, AnimationPlayer, AUTO_STYLE, StyleData } from '@angular/animations';\nimport { Ast\n
from './dsl/animation_ast';\nimport { buildAnimationAst } from './dsl/animation_ast_builder';\nimport\n
{ buildAnimationTimelines } from './dsl/animation_timeline_builder';\nimport { AnimationTimelineInstruction } from\n
'./dsl/animation_timeline_instruction';\nimport { ElementInstructionMap } from\n
'./dsl/element_instruction_map';\nimport { AnimationStyleNormalizer } from\n
'./dsl/style_normalization/animation_style_normalizer';\nimport { ENTER_CLASSNAME,\n
LEAVE_CLASSNAME } from './util';\nimport { AnimationDriver } from './animation_driver';\nimport\n
{ getOrSetAsInMap, listenOnPlayer, makeAnimationEvent, normalizeKeyframes, optimizeGroupPlayer } from\n
'./shared';\n\nconst EMPTY_INSTRUCTION_MAP = new ElementInstructionMap();\n\nexport class\n
TimelineAnimationEngine {\n  private _animations: {[id: string]: Ast<AnimationMetadataType>} = {};\n  private\n
_playersById: {[id: string]: AnimationPlayer} = {};\n  public players: AnimationPlayer[] = [];\n\n  constructor(\n
public bodyNode: any, private _driver: AnimationDriver,\n  private _normalizer: AnimationStyleNormalizer)\n
{\n}\n\n  register(id: string, metadata: AnimationMetadata|AnimationMetadata[]) {\n    const errors: any[] = [];\n
const ast = buildAnimationAst(this._driver, metadata, errors);\n    if (errors.length) {\n      throw new Error(\n
`Unable to build the animation due to the following errors: ${errors.join("\\n")}`);\n    } else {\n
this._animations[id] = ast;\n    }\n  }\n\n  private _buildPlayer(\n    i: AnimationTimelineInstruction, preStyles:\n
StyleData,\n    postStyles?: StyleData): AnimationPlayer {\n    const element = i.element;\n    const keyframes =\n
normalizeKeyframes(\n      this._driver, this._normalizer, element, i.keyframes, preStyles, postStyles);\n    return\n
this._driver.animate(element, keyframes, i.duration, i.delay, i.easing, [], true);\n  }\n\n  create(id: string, element:\n
any, options: AnimationOptions = {}): AnimationPlayer {\n    const errors: any[] = [];\n    const ast =\n
this._animations[id];\n    let instructions: AnimationTimelineInstruction[];\n    const autoStylesMap = new\n
Map<any, StyleData>();\n\n    if (ast) {\n      instructions = buildAnimationTimelines(\n        this._driver, element,\n
ast, ENTER_CLASSNAME, LEAVE_CLASSNAME, {}, {}, options,\n        EMPTY_INSTRUCTION_MAP,\n        errors);\n      instructions.forEach(inst => {\n        const styles = getOrSetAsInMap(autoStylesMap, inst.element,\n
{});\n        inst.postStyleProps.forEach(prop => styles[prop] = null);\n      });\n    } else {\n      errors.push("The\n
requested animation doesn't exist or has already been destroyed");\n      instructions = [];\n    }\n\n    if\n
(errors.length) {\n      throw new Error(\n        `Unable to create the animation due to the following errors:\n
${errors.join("\\n")}`);\n    }\n\n    autoStylesMap.forEach((styles, element) => {\n
Object.keys(styles).forEach(prop => {\n      styles[prop] = this._driver.computeStyle(element, prop,\n
AUTO_STYLE);\n    });\n  });\n\n    const players = instructions.map(i => {\n      const styles =\n
autoStylesMap.get(i.element);\n      return this._buildPlayer(i, {}, styles);\n    });\n    const player =\n
optimizeGroupPlayer(players);\n    this._playersById[id] = player;\n    player.onDestroy(() => this.destroy(id));\n
if\n
this.players.push(player);\n    return player;\n  }\n\n  destroy(id: string) {\n    const player = this._getPlayer(id);\n
if\n
player.destroy();\n    delete this._playersById[id];\n    const index = this.players.indexOf(player);\n    if (index >= 0)

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{\n  this.players.splice(index, 1);\n  }\n }\n\n private _getPlayer(id: string): AnimationPlayer {\n  const player
= this._playersById[id];\n  if (!player) {\n    throw new Error(`Unable to find the timeline player referenced by
${id}`);\n  }\n  return player;\n  }\n\n listen(id: string, element: string, eventName: string, callback: (event: any)
=> any):\n  () => void {\n    // triggerName, fromState, toState are all ignored for timeline animations\n    const
baseEvent = makeAnimationEvent(element, "", "");\n    listenOnPlayer(this._getPlayer(id), eventName, baseEvent,
callback);\n    return () => {};\n  }\n\n\n command(id: string, element: any, command: string, args: any[]): void {\n
if (command == 'register') {\n  this.register(id, args[0] as AnimationMetadata | AnimationMetadata[]);\n
return;\n  }\n\n  if (command == 'create') {\n    const options = (args[0] || {}) as AnimationOptions;\n
this.create(id, element, options);\n    return;\n  }\n\n  const player = this._getPlayer(id);\n  switch (command)
{\n  case 'play':\n    player.play();\n    break;\n  case 'pause':\n    player.pause();\n    break;\n  case
'reset':\n    player.reset();\n    break;\n  case 'restart':\n    player.restart();\n    break;\n  case 'finish':\n
    player.finish();\n    break;\n  case 'init':\n    player.init();\n    break;\n  case 'setPosition':\n
    player.setPosition(parseFloat(args[0] as string));\n    break;\n  case 'destroy':\n    this.destroy(id);\n
break;\n  }\n  }\n}\n\n"/**\n * @license\n * Copyright Google LLC All Rights Reserved.\n * Use of this source
code is governed by an MIT-style license that can be\n * found in the LICENSE file at https://angular.io/license\n
*/\nimport { AnimationOptions, AnimationPlayer, AUTO_STYLE, NoopAnimationPlayer, AnimationGroupPlayer
as AnimationGroupPlayer, PRE_STYLE as PRE_STYLE, StyleData } from '@angular/animations';\nimport
{ AnimationTimelineInstruction } from '../dsl/animation_timeline_instruction';\nimport
{ AnimationTransitionFactory } from '../dsl/animation_transition_factory';\nimport { AnimationTransitionInstruction }
from '../dsl/animation_transition_instruction';\nimport { AnimationTrigger } from '../dsl/animation_trigger';\nimport
{ ElementInstructionMap } from '../dsl/element_instruction_map';\nimport { AnimationStyleNormalizer } from
 '../dsl/style_normalization/animation_style_normalizer';\nimport { copyObj, ENTER_CLASSNAME, eraseStyles,
iteratorToArray, LEAVE_CLASSNAME, NG_ANIMATING_CLASSNAME, NG_ANIMATING_SELECTOR,
NG_TRIGGER_CLASSNAME, NG_TRIGGER_SELECTOR, setStyles } from './util';\n\nimport
{ AnimationDriver } from './animation_driver';\nimport { getOrSetAsInMap, listenOnPlayer, makeAnimationEvent,
normalizeKeyframes, optimizeGroupPlayer } from './shared';\n\nconst QUEUED_CLASSNAME = 'ng-animate-
queued';\nconst QUEUED_SELECTOR = '.ng-animate-queued';\nconst DISABLED_CLASSNAME = 'ng-animate-
disabled';\nconst DISABLED_SELECTOR = '.ng-animate-disabled';\nconst STAR_CLASSNAME = 'ng-star-
inserted';\nconst STAR_SELECTOR = '.ng-star-inserted';\n\nconst EMPTY_PLAYER_ARRAY:
TransitionAnimationPlayer[] = [];\nconst NULL_REMOVAL_STATE: ElementAnimationState = {\n
namespaceId: "",\n setForRemoval: false,\n setForMove: false,\n hasAnimation: false,\n removedBeforeQueried:
false\n};\nconst NULL_REMOVED_QUERIED_STATE: ElementAnimationState = {\n namespaceId: "",\n
setForMove: false,\n setForRemoval: false,\n hasAnimation: false,\n removedBeforeQueried: true\n};\n\ninterface
TriggerListener {\n  name: string;\n  phase: string;\n  callback: (event: any) => any;\n}\n\nexport interface
QueueInstruction {\n  element: any;\n  triggerName: string;\n  fromState: StateValue;\n  toState: StateValue;\n
transition: AnimationTransitionFactory;\n  player: TransitionAnimationPlayer;\n  isFallbackTransition:
boolean;\n}\n\nexport const REMOVAL_FLAG = '__ng_removed';\n\nexport interface ElementAnimationState {\n
setForRemoval: boolean;\n setForMove: boolean;\n hasAnimation: boolean;\n namespaceId: string;\n
removedBeforeQueried: boolean;\n}\n\nexport class StateValue {\n  public value: string;\n  public options:
AnimationOptions;\n\n  get params(): {[key: string]: any} {\n    return this.options.params as {[key: string]: any};\n
}\n\n  constructor(input: any, public namespaceId: string = "") {\n    const isObj = input &&
input.hasOwnProperty('value');\n    const value = isObj ? input['value'] : input;\n    this.value =
normalizeTriggerValue(value);\n    if (isObj) {\n      const options = copyObj(input as any);\n      delete
options['value'];\n      this.options = options as AnimationOptions;\n    } else {\n      this.options = {};\n    }\n
if (!this.options.params) {\n      this.options.params = {};\n    }\n  }\n\n  absorbOptions(options: AnimationOptions)
{\n    const newParams = options.params;\n    if (newParams) {\n      const oldParams = this.options.params!;\n
Object.keys(newParams).forEach(prop => {\n      if (oldParams[prop] == null) {\n        oldParams[prop] =
newParams[prop];\n      }\n    });\n  }\n}\n\nexport const VOID_VALUE = 'void';\nexport const

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DEFAULT_STATE_VALUE = new StateValue(VOID_VALUE);\n\nexport class AnimationTransitionNamespace
{\n  public players: TransitionAnimationPlayer[] = [];\n  private _triggers: {[triggerName: string]:
AnimationTrigger} = {};\n  private _queue: QueueInstruction[] = [];\n  private _elementListeners = new
Map<any, TriggerListener[]>();\n\n  private _hostClassName: string;\n\n  constructor(\n    public id: string, public
hostElement: any, private _engine: TransitionAnimationEngine) {\n    this._hostClassName = 'ng-tns-' + id;\n    addClass(hostElement, this._hostClassName);\n  }\n\n  listen(element: any, name: string, phase: string, callback:
(event: any) => boolean): () => any {\n    if (!this._triggers.hasOwnProperty(name)) {\n      throw new Error('Unable
to listen on the animation trigger event \'' + phase + '\' because the animation trigger \'' + name + '\' doesn't
exist!');\n    }\n\n    if (phase == null || phase.length == 0) {\n      throw new Error('Unable to listen on the animation
trigger \'' + name + '\' because the provided event is undefined!');\n    }\n\n    if (!isTriggerEventValid(phase))
{\n      throw new Error('The provided animation trigger event \'' + phase + '\' for the animation trigger \'' + name +
\' is not supported!');\n    }\n\n    const listeners = getOrSetAsInMap(this._elementListeners, element, []);\n    const data = {name, phase, callback};\n    listeners.push(data);\n\n    const triggersWithStates =
getOrSetAsInMap(this._engine.statesByElement, element, {});\n    if (!triggersWithStates.hasOwnProperty(name))
{\n      addClass(element, NG_TRIGGER_CLASSNAME);\n      addClass(element, NG_TRIGGER_CLASSNAME
+ '-' + name);\n      triggersWithStates[name] = DEFAULT_STATE_VALUE;\n    }\n\n    return () => {\n      // the
event listener is removed AFTER the flush has occurred such\n      // that leave animations callbacks can fire
(otherwise if the node\n      // is removed in between then the listeners would be deregistered)\n      this._engine.afterFlush(() => {\n        const index = listeners.indexOf(data);\n        if (index >= 0) {\n          listeners.splice(index, 1);\n        }\n\n        if (!this._triggers[name]) {\n          delete triggersWithStates[name];\n        }\n      });\n    };\n\n    register(name: string, ast: AnimationTrigger): boolean {\n      if (this._triggers[name]) {\n        // throw\n        return false;\n      } else {\n        this._triggers[name] = ast;\n        return true;\n      }\n    }\n\n    private
_getTrigger(name: string) {\n      const trigger = this._triggers[name];\n      if (!trigger) {\n        throw new Error('The
provided animation trigger \'' + name + '\' has not been registered!');\n      }\n      return trigger;\n    }\n\n    trigger(element:
any, triggerName: string, value: any, defaultToFallback: boolean = true):\n    TransitionAnimationPlayer|undefined
{\n      const trigger = this._getTrigger(triggerName);\n      const player = new TransitionAnimationPlayer(this.id,
triggerName, element);\n\n      let triggersWithStates = this._engine.statesByElement.get(element);\n      if
(!triggersWithStates) {\n        addClass(element, NG_TRIGGER_CLASSNAME);\n        addClass(element,
NG_TRIGGER_CLASSNAME + '-' + triggerName);\n        this._engine.statesByElement.set(element,
triggersWithStates = {});\n      }\n\n      let fromState = triggersWithStates[triggerName];\n      const toState = new
StateValue(value, this.id);\n\n      const isObj = value && value.hasOwnProperty('value');\n      if (!isObj &&
fromState) {\n        toState.absorbOptions(fromState.options);\n      }\n\n      triggersWithStates[triggerName] =
toState;\n\n      if (!fromState) {\n        fromState = DEFAULT_STATE_VALUE;\n      }\n\n      const isRemoval =
toState.value === VOID_VALUE;\n\n      // normally this isn't reached by here, however, if an object expression\n
// is passed in then it may be a new object each time. Comparing the value\n      // is important since that will stay the
same despite there being a new object.\n      // The removal arc here is special cased because the same element is
triggered\n      // twice in the event that it contains animations on the outer/inner portions\n      // of the host container\n      if (!isRemoval && fromState.value === toState.value) {\n        // this means that despite the value not changing,
some inner params\n        // have changed which means that the animation final styles need to be applied\n        if
(!objEquals(fromState.params, toState.params)) {\n          const errors: any[] = [];\n          const fromStyles =
trigger.matchStyles(fromState.value, fromState.params, errors);\n          const toStyles =
trigger.matchStyles(toState.value, toState.params, errors);\n          if (errors.length) {\n            this._engine.reportError(errors);\n          } else {\n            this._engine.afterFlush(() => {\n              eraseStyles(element,
fromStyles);\n              setStyles(element, toStyles);\n            });\n          }\n        }\n\n        return;\n      }\n\n      const
playersOnElement: TransitionAnimationPlayer[] =\n      getOrSetAsInMap(this._engine.playersByElement,
element, []);\n      playersOnElement.forEach(player => {\n        // only remove the player if it is queued on the
EXACT same trigger/namespace\n        // we only also deal with queued players here because if the animation has\n
// started then we want to keep the player alive until the flush happens\n        // (which is where the previousPlayers

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});\n  });\n  }\n }\n\n removeNode(element: any, context: any): void {\n  const engine = this._engine;\n  if (element.childElementCount) {\n    this._signalRemovalForInnerTriggers(element, context);\n  }\n  // this means that a * => VOID animation was detected and kicked off\n  if (this.triggerLeaveAnimation(element, context, true)) return;\n  // find the player that is animating and make sure that the\n  // removal is delayed until that player has completed\n  let containsPotentialParentTransition = false;\n  if (engine.totalAnimations) {\n    const currentPlayers =\n      engine.players.length ? engine.playersByQueriedElement.get(element) : [];\n    // when this `if` statement does not continue forward it means that\n    // a previous animation query has selected the current element and\n    // is animating it. In this situation want to continue forwards and\n    // allow the element to be queued up for animation later.\n    if (currentPlayers && currentPlayers.length) {\n      containsPotentialParentTransition = true;\n    } else {\n      let parent = element;\n      while (parent = parent.parentNode) {\n        const triggers = engine.statesByElement.get(parent);\n        if (triggers) {\n          containsPotentialParentTransition = true;\n          break;\n        }\n      }\n    }\n  }\n  // at this stage we know that the element will either get removed\n  // during flush or will be picked up by a parent query. Either way\n  // we need to fire the listeners for this element when it DOES get\n  // removed (once the query parent animation is done or after flush)\n  this.prepareLeaveAnimationListeners(element);\n  // whether or not a parent has an animation we need to delay the deferral of the leave\n  // operation until we have more information (which we do after flush() has been called)\n  if (containsPotentialParentTransition) {\n    engine.markElementAsRemoved(this.id, element, false, context);\n  } else {\n    const removalFlag = element[REMOVAL_FLAG];\n    if (!removalFlag || removalFlag === NULL_REMOVAL_STATE) {\n      // we do this after the flush has occurred such\n      // that the callbacks can be fired\n      engine.afterFlush(() => this.clearElementCache(element));\n      engine.destroyInnerAnimations(element);\n      engine._onRemovalComplete(element, context);\n    }\n  }\n}\n\n insertNode(element: any, parent: any): void {\n  addClass(element, this._hostClassName);\n}\n\n drainQueuedTransitions(microtaskId: number): QueueInstruction[] {\n  const instructions: QueueInstruction[] = [];\n  this._queue.forEach(entry => {\n    const player = entry.player;\n    if (player.destroyed) return;\n    const element = entry.element;\n    const listeners = this._elementListeners.get(element);\n    if (listeners) {\n      listeners.forEach((listener: TriggerListener) => {\n        if (listener.name === entry.triggerName) {\n          const baseEvent = makeAnimationEvent(\n            element, entry.triggerName, entry.fromState.value, entry.toState.value);\n          (baseEvent as any)['_data'] = microtaskId;\n          listenOnPlayer(entry.player, listener.phase, baseEvent, listener.callback);\n        }\n      });\n    }\n    if (player.markedForDestroy) {\n      this._engine.afterFlush(() => {\n        // now we can destroy the element properly since the event listeners have\n        // been bound to the player\n        player.destroy();\n      });\n    } else {\n      instructions.push(entry);\n    }\n  });\n  this._queue = [];\n  return instructions.sort((a, b) => {\n    // if depCount === 0 them move to front\n    // otherwise if a contains b then move back\n    const d0 = a.transition.ast.depCount;\n    const d1 = b.transition.ast.depCount;\n    if (d0 === 0 || d1 === 0) {\n      return d0 - d1;\n    }\n    return this._engine.driver.containsElement(a.element, b.element) ? 1 : -1;\n  });\n}\n\n destroy(context: any) {\n  this.players.forEach(p => p.destroy());\n}\n\n this._signalRemovalForInnerTriggers(this.hostElement, context);\n}\n\n elementContainsData(element: any): boolean {\n  let containsData = false;\n  if (this._elementListeners.has(element)) containsData = true;\n  containsData =\n    (this._queue.find(entry => entry.element === element) ? true : false) || containsData;\n  return containsData;\n}\n}\n\n\nexport interface QueuedTransition {\n  element: any;\n  instruction: AnimationTransitionInstruction;\n  player: TransitionAnimationPlayer;\n}\n\n\nexport class TransitionAnimationEngine {\n  public players: TransitionAnimationPlayer[] = [];\n  public newHostElements = new Map<any, AnimationTransitionNamespace>();\n  public playersByElement = new Map<any, TransitionAnimationPlayer[]>();\n  public playersByQueriedElement = new Map<any, TransitionAnimationPlayer[]>();\n  public statesByElement = new Map<any, {[triggerName: string]: StateValue}>();\n  public disabledNodes = new Set<any>();\n  public totalAnimations = 0;\n  public totalQueuedPlayers = 0;\n  private _namespaceLookup: {[id: string]: AnimationTransitionNamespace} = {};\n  private _namespaceList: AnimationTransitionNamespace[] = [];\n  private _flushFns: (() => any)[] = [];\n  private

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_whenQuietFns: (() => any)[] = [];
public namespacesByHostElement = new Map<any,
AnimationTransitionNamespace>();
public collectedEnterElements: any[] = [];
public collectedLeaveElements:
any[] = [];
// this method is designed to be overridden by the code that uses this engine
public
onRemovalComplete = (element: any, context: any) => {};
/** @internal */
_onRemovalComplete(element:
any, context: any) {
  this.onRemovalComplete(element, context);
}
constructor({
  public bodyNode:
any, public driver: AnimationDriver,
  private _normalizer: AnimationStyleNormalizer
}) {
  get
queuedPlayers(): TransitionAnimationPlayer[] {
    const players: TransitionAnimationPlayer[] = [];
    this._namespaceList.forEach(ns => {
      ns.players.forEach(player => {
        if (player.queued) {
          players.push(player);
        }
      });
    });
    return players;
  }
  createNamespace(namespaceId: string,
hostElement: any) {
    const ns = new AnimationTransitionNamespace(namespaceId, hostElement, this);
    if (hostElement.parentNode) {
      this._balanceNamespaceList(ns, hostElement);
    } else {
      // defer this later
      until flush during when the host element has
      // been inserted so that we know exactly where to place it in
      // the namespace list
      this.newHostElements.set(hostElement, ns);
      // given that this host element is apart
      of the animation code, it
      // may or may not be inserted by a parent node that is an of an
      // animation
      renderer type. If this happens then we can still have
      // access to this item when we query for :enter nodes. If the
      parent
      // is a renderer then the set data-structure will normalize the entry
      this.collectEnterElement(hostElement);
    }
    return this._namespaceLookup[namespaceId] = ns;
  }
  private _balanceNamespaceList(ns: AnimationTransitionNamespace, hostElement: any) {
    const limit =
this._namespaceList.length - 1;
    if (limit >= 0) {
      let found = false;
      for (let i = limit; i >= 0; i--) {
        const nextNamespace = this._namespaceList[i];
        if (this.driver.containsElement(nextNamespace.hostElement,
hostElement)) {
          this._namespaceList.splice(i + 1, 0, ns);
          found = true;
          break;
        }
      }
      if (!found) {
        this._namespaceList.splice(0, 0, ns);
      }
    } else {
      this._namespaceList.push(ns);
    }
    this.namespacesByHostElement.set(hostElement, ns);
    return ns;
  }
  register(namespaceId: string,
hostElement: any) {
    let ns = this._namespaceLookup[namespaceId];
    if (!ns) {
      ns =
this.createNamespace(namespaceId, hostElement);
    }
    return ns;
  }
  registerTrigger(namespaceId: string,
name: string, trigger: AnimationTrigger) {
    let ns = this._namespaceLookup[namespaceId];
    if (ns &&
ns.register(name, trigger)) {
      this.totalAnimations++;
    }
  }
  destroy(namespaceId: string, context: any) {
    if (!namespaceId) return;
    const ns = this._fetchNamespace(namespaceId);
    this.afterFlush(() => {
      this.namespacesByHostElement.delete(ns.hostElement);
      delete this._namespaceLookup[namespaceId];
      const index = this._namespaceList.indexOf(ns);
      if (index >= 0) {
        this._namespaceList.splice(index, 1);
      }
    });
    this.afterFlushAnimationsDone(() => ns.destroy(context));
  }
  private _fetchNamespace(id:
string) {
    return this._namespaceLookup[id];
  }
  fetchNamespacesByElement(element: any):
Set<AnimationTransitionNamespace> {
    // normally there should only be one namespace per element, however
    // if @triggers are placed on both the component element and then
    // its host element (within the component
    code) then there will be
    // two namespaces returned. We use a set here to simply the dedupe
    // of namespaces
    incase there are multiple triggers both the elm and host
    const namespaces = new
Set<AnimationTransitionNamespace>();
    const elementStates = this.statesByElement.get(element);
    if (elementStates) {
      const keys = Object.keys(elementStates);
      for (let i = 0; i < keys.length; i++) {
        const nsId = elementStates[keys[i]].namespaceId;
        if (nsId) {
          const ns = this._fetchNamespace(nsId);
          if (ns) {
            namespaces.add(ns);
          }
        }
      }
      return namespaces;
    }
  }
  trigger(namespaceId: string, element: any, name: string, value: any): boolean {
    if (isElementNode(element)) {
      const ns = this._fetchNamespace(namespaceId);
      if (ns) {
        ns.trigger(element, name, value);
        return
true;
      }
    }
    return false;
  }
  insertNode(namespaceId: string, element: any, parent: any, insertBefore:
boolean): void {
    if (!isElementNode(element)) return;
    // special case for when an element is removed and
    reinserted (move operation)
    // when this occurs we do not want to use the element for deletion later
    const
details = element[REMOVAL_FLAG] as ElementAnimationState;
    if (details && details.setForRemoval) {
      details.setForRemoval = false;
      details.setForMove = true;
      const index =
this.collectedLeaveElements.indexOf(element);
      if (index >= 0) {

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this.collectedLeaveElements.splice(index, 1);\n    }\n  }\n\n  // in the event that the namespaceId is blank then the
caller\n  // code does not contain any animation code in it, but it is\n  // just being called so that the node is marked
as being inserted\n  if (namespaceId) {\n    const ns = this._fetchNamespace(namespaceId);\n    // This if-
statement is a workaround for router issue #21947.\n    // The router sometimes hits a race condition where while a
route\n    // is being instantiated a new navigation arrives, triggering leave\n    // animation of DOM that has not
been fully initialized, until this\n    // is resolved, we need to handle the scenario when DOM is not in a\n    //
consistent state during the animation.\n    if (ns) {\n      ns.insertNode(element, parent);\n    }\n  }\n\n  // only
*directives and host elements are inserted before\n  if (insertBefore) {\n    this.collectEnterElement(element);\n  }\n}\n\n  collectEnterElement(element: any) {\n    this.collectedEnterElements.push(element);\n  }\n\n  markElementAsDisabled(element: any, value: boolean) {\n    if (value) {\n      if (!this.disabledNodes.has(element))\n        this.disabledNodes.add(element);\n      addClass(element, DISABLED_CLASSNAME);\n    }\n  } else
if (this.disabledNodes.has(element)) {\n    this.disabledNodes.delete(element);\n    removeClass(element,
DISABLED_CLASSNAME);\n  }\n}\n\n  removeNode(namespaceId: string, element: any, isHostElement:
boolean, context: any): void {\n    if (isElementNode(element)) {\n      const ns = namespaceId ?
this._fetchNamespace(namespaceId) : null;\n      if (ns) {\n        ns.removeNode(element, context);\n      } else {\n
this.markElementAsRemoved(namespaceId, element, false, context);\n      }\n\n      if (isHostElement) {\n        const
hostNS = this.namespacesByHostElement.get(element);\n        if (hostNS && hostNS.id !== namespaceId) {\n
hostNS.removeNode(element, context);\n        }\n      }\n    } else {\n      this._onRemovalComplete(element,
context);\n    }\n  }\n\n  markElementAsRemoved(namespaceId: string, element: any, hasAnimation?: boolean,
context?: any) {\n    this.collectedLeaveElements.push(element);\n    element[REMOVAL_FLAG] =\n    {\n      namespaceId, setForRemoval: context, hasAnimation, removedBeforeQueried: false;\n    }\n\n    listen(\n
namespaceId: string, element: any, name: string, phase: string,\n    callback: (event: any) => boolean): () => any
{\n      if (isElementNode(element)) {\n        return this._fetchNamespace(namespaceId).listen(element, name, phase,
callback);\n      }\n      return () => {};\n    }\n\n    private _buildInstruction(\n      entry: QueueInstruction, subTimelines:
ElementInstructionMap, enterClassName: string,\n      leaveClassName: string, skipBuildAst?: boolean) {\n      return
entry.transition.build(\n        this.driver, entry.element, entry.fromState.value, entry.toState.value,\n        enterClassName,\n        leaveClassName, entry.fromState.options, entry.toState.options, subTimelines,\n        skipBuildAst);\n    }\n\n    destroyInnerAnimations(containerElement: any) {\n      let elements =
this.driver.query(containerElement, NG_TRIGGER_SELECTOR, true);\n      elements.forEach(element =>
this.destroyActiveAnimationsForElement(element));\n\n      if (this.playersByQueriedElement.size == 0) return;\n\n
elements = this.driver.query(containerElement, NG_ANIMATING_SELECTOR, true);\n      elements.forEach(element => this.finishActiveQueriedAnimationOnElement(element));\n    }\n\n    destroyActiveAnimationsForElement(element: any) {\n      const players = this.playersByElement.get(element);\n      if
(players) {\n        players.forEach(player => {\n          // special case for when an element is set for destruction, but
hasn't started.\n          // in this situation we want to delay the destruction until the flush occurs\n          // so that any
event listeners attached to the player are triggered.\n          if (player.queued) {\n            player.markedForDestroy =
true;\n          } else {\n            player.destroy();\n          }\n        });\n      }\n    }\n\n    finishActiveQueriedAnimationOnElement(element: any) {\n      const players =
this.playersByQueriedElement.get(element);\n      if (players) {\n        players.forEach(player => player.finish());\n      }\n    }\n\n    whenRenderingDone(): Promise<any> {\n      return new Promise(resolve => {\n        if (this.players.length)\n          return optimizeGroupPlayer(this.players).onDone(() => resolve());\n        } else {\n          resolve();\n        }\n      });\n    }\n\n    processLeaveNode(element: any) {\n      const details = element[REMOVAL_FLAG] as
ElementAnimationState;\n      if (details && details.setForRemoval) {\n        // this will prevent it from removing it
twice\n        element[REMOVAL_FLAG] = NULL_REMOVAL_STATE;\n        if (details.namespaceId) {\n
this.destroyInnerAnimations(element);\n          const ns = this._fetchNamespace(details.namespaceId);\n          if (ns)\n            ns.clearElementCache(element);\n        }\n      }\n      this._onRemovalComplete(element,
details.setForRemoval);\n    }\n\n    if (this.driver.matchesElement(element, DISABLED_SELECTOR)) {\n
this.markElementAsDisabled(element, false);\n    }\n\n    this.driver.query(element, DISABLED_SELECTOR,

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true).forEach(node => {\n  this.markElementAsDisabled(node, false);\n  });\n }\n\n flush(microtaskId: number
= -1) {\n  let players: AnimationPlayer[] = [];\n  if (this.newHostElements.size) {\n
this.newHostElements.forEach((ns, element) => this._balanceNamespaceList(ns, element));\n
this.newHostElements.clear();\n  }\n\n  if (this.totalAnimations && this.collectedEnterElements.length) {\n  for
(let i = 0; i < this.collectedEnterElements.length; i++) {\n    const elm = this.collectedEnterElements[i];\n
addClass(elm, STAR_CLASSNAME);\n  }\n  }\n\n  if (this._namespaceList.length &&\n
(this.totalQueuedPlayers || this.collectedLeaveElements.length)) {\n    const cleanupFns: Function[] = [];\n    try
{\n      players = this._flushAnimations(cleanupFns, microtaskId);\n    } finally {\n      for (let i = 0; i <
cleanupFns.length; i++) {\n        cleanupFns[i]();\n      }\n    } else {\n      for (let i = 0; i <
this.collectedLeaveElements.length; i++) {\n        const element = this.collectedLeaveElements[i];\n
this.processLeaveNode(element);\n      }\n    }\n\n    this.totalQueuedPlayers = 0;\n
this.collectedEnterElements.length = 0;\n    this.collectedLeaveElements.length = 0;\n    this._flushFns.forEach(fn
=> fn());\n    this._flushFns = [];\n\n    if (this._whenQuietFns.length) {\n      // we move these over to a variable so
that\n      // if any new callbacks are registered in another\n      // flush they do not populate the existing set\n
const quietFns = this._whenQuietFns;\n      this._whenQuietFns = [];\n      if (players.length) {\n
optimizeGroupPlayer(players).onDone(() => {\n        quietFns.forEach(fn => fn());\n      });\n    } else {\n
quietFns.forEach(fn => fn());\n    }\n  }\n\n  reportError(errors: string[]) {\n    throw new Error(\n
`Unable to process animations due to the following failed trigger transitions\n ${\n      errors.join("\n")`);\n
}\n\n  private _flushAnimations(cleanupFns: Function[], microtaskId: number):\n  TransitionAnimationPlayer[]
{\n    const subTimelines = new ElementInstructionMap();\n    const skippedPlayers: TransitionAnimationPlayer[] =
[];\n    const skippedPlayersMap = new Map<any, AnimationPlayer[]>();\n    const queuedInstructions:
QueuedTransition[] = [];\n    const queriedElements = new Map<any, TransitionAnimationPlayer[]>();\n    const
allPreStyleElements = new Map<any, Set<string>>();\n    const allPostStyleElements = new Map<any,
Set<string>>();\n\n    const disabledElementsSet = new Set<any>();\n    this.disabledNodes.forEach(node => {\n
disabledElementsSet.add(node);\n    const nodesThatAreDisabled = this.driver.query(node,
QUEUED_SELECTOR, true);\n    for (let i = 0; i < nodesThatAreDisabled.length; i++) {\n
disabledElementsSet.add(nodesThatAreDisabled[i]);\n    }\n  });\n\n    const bodyNode = this.bodyNode;\n
const allTriggerElements = Array.from(this.statesByElement.keys());\n    const enterNodeMap =
buildRootMap(allTriggerElements, this.collectedEnterElements);\n\n    // this must occur before the instructions are
built below such that\n    // the :enter queries match the elements (since the timeline queries\n    // are fired during
instruction building).\n    const enterNodeMapIds = new Map<any, string>();\n    let i = 0;\n
enterNodeMap.forEach((nodes, root) => {\n    const className = ENTER_CLASSNAME + i++;\n
enterNodeMapIds.set(root, className);\n    nodes.forEach(node => addClass(node, className));\n  });\n\n
const allLeaveNodes: any[] = [];\n    const mergedLeaveNodes = new Set<any>();\n    const
leaveNodesWithoutAnimations = new Set<any>();\n    for (let i = 0; i < this.collectedLeaveElements.length; i++)
{\n    const element = this.collectedLeaveElements[i];\n    const details = element[REMOVAL_FLAG] as
ElementAnimationState;\n    if (details && details.setForRemoval) {\n      allLeaveNodes.push(element);\n
mergedLeaveNodes.add(element);\n      if (details.hasAnimation) {\n        this.driver.query(element,
STAR_SELECTOR, true).forEach(elm => mergedLeaveNodes.add(elm));\n      } else {\n
leaveNodesWithoutAnimations.add(element);\n      }\n    }\n  }\n\n    const leaveNodeMapIds = new Map<any,
string>();\n    const leaveNodeMap = buildRootMap(allTriggerElements, Array.from(mergedLeaveNodes));\n
leaveNodeMap.forEach((nodes, root) => {\n    const className = LEAVE_CLASSNAME + i++;\n
leaveNodeMapIds.set(root, className);\n    nodes.forEach(node => addClass(node, className));\n  });\n\n
cleanupFns.push(() => {\n    enterNodeMap.forEach((nodes, root) => {\n      const className =
enterNodeMapIds.get(root);\n      nodes.forEach(node => removeClass(node, className));\n    });\n\n
leaveNodeMap.forEach((nodes, root) => {\n      const className = leaveNodeMapIds.get(root);\n
nodes.forEach(node => removeClass(node, className));\n    });\n\n    allLeaveNodes.forEach(element => {\n
this.processLeaveNode(element);\n  });\n  });\n\n  const allPlayers: TransitionAnimationPlayer[] = [];\n  const

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erroneousTransitions: AnimationTransitionInstruction[] = [];\n  for (let i = this._namespaceList.length - 1; i >= 0; i-
-) {\n    const ns = this._namespaceList[i];\n    ns.drainQueuedTransitions(microtaskId).forEach(entry => {\n
const player = entry.player;\n    const element = entry.element;\n    allPlayers.push(player);\n    if
(this.collectedEnterElements.length) {\n      const details = element[REMOVAL_FLAG] as
ElementAnimationState;\n      // move animations are currently not supported...\n      if (details &&
details.setForMove) {\n        player.destroy();\n        return;\n      }\n    }\n    const nodeIsOrphaned =
!bodyNode || !this.driver.containsElement(bodyNode, element);\n    const leaveClassName =
leaveNodeMapIds.get(element)!;\n    const enterClassName = enterNodeMapIds.get(element)!;\n    const
instruction = this._buildInstruction(\n      entry, subTimelines, enterClassName, leaveClassName,
nodeIsOrphaned);\n    if (instruction.errors && instruction.errors.length) {\n
erroneousTransitions.push(instruction);\n    return;\n  }\n  }\n  // even though the element may not be apart
of the DOM, it may\n  // still be added at a later point (due to the mechanics of content\n  // projection and/or
dynamic component insertion) therefore it's\n  // important we still style the element.\n  if (nodeIsOrphaned)
{\n    player.onStart(() => eraseStyles(element, instruction.fromStyles));\n    player.onDestroy(() =>
setStyles(element, instruction.toStyles));\n    skippedPlayers.push(player);\n    return;\n  }\n  // if a
unmatched transition is queued to go then it SHOULD NOT render\n  // an animation and cancel the previously
running animations.\n  if (entry.isFallbackTransition) {\n    player.onStart(() => eraseStyles(element,
instruction.fromStyles));\n    player.onDestroy(() => setStyles(element, instruction.toStyles));\n
skippedPlayers.push(player);\n    return;\n  }\n  // this means that if a parent animation uses this
animation as a sub trigger\n  // then it will instruct the timeline builder to not add a player delay, but\n  //
instead stretch the first keyframe gap up until the animation starts. The\n  // reason this is important is to prevent
extra initialization styles from being\n  // required by the user in the animation.\n
instruction.timelines.forEach(tl => tl.stretchStartingKeyframe = true);\n  subTimelines.append(element,
instruction.timelines);\n  const tuple = {instruction, player, element};\n  queuedInstructions.push(tuple);\n
instruction.queriedElements.forEach(\n    element =>
getOrSetAsInMap(queriedElements, element, []).push(player));\n  instruction.preStyleProps.forEach((stringMap, element) => {\n
const props = Object.keys(stringMap);\n  if (props.length) {\n    let setVal: Set<string> = allPreStyleElements.get(element)!;\n    if (!setVal) {\n
allPreStyleElements.set(element, setVal = new Set<string>());\n    }\n    props.forEach(prop =>
setVal.add(prop));\n  }\n  });\n  instruction.postStyleProps.forEach((stringMap, element) => {\n
const props = Object.keys(stringMap);\n    let setVal: Set<string> = allPostStyleElements.get(element)!;\n
if (!setVal) {\n    allPostStyleElements.set(element, setVal = new Set<string>());\n    }\n    props.forEach(prop => setVal.add(prop));\n  });\n  });\n  }\n  if (erroneousTransitions.length) {\n    const
errors: string[] = [];\n    erroneousTransitions.forEach(instruction => {\n
errors.push(`@${instruction.triggerName} has failed due to:\n`);\n    instruction.errors!.forEach(error =>
errors.push(`- ${error}\n`));\n  });\n  allPlayers.forEach(player => player.destroy());\n
this.reportError(errors);\n  }\n  const allPreviousPlayersMap = new Map<any,
TransitionAnimationPlayer[]>();\n  // this map works to tell which element in the DOM tree is contained by\n  //
which animation. Further down below this map will get populated once\n  // the players are built and in doing so it
can efficiently figure out\n  // if a sub player is skipped due to a parent player having priority.\n  const
animationElementMap = new Map<any, any>();\n  queuedInstructions.forEach(entry => {\n    const element =
entry.element;\n    if (subTimelines.has(element)) {\n      animationElementMap.set(element, element);\n
this._beforeAnimationBuild(\n      entry.player.namespaceId, entry.instruction, allPreviousPlayersMap);\n    }\n
  });\n  skippedPlayers.forEach(player => {\n    const element = player.element;\n    const previousPlayers =\n    this._getPreviousPlayers(element, false, player.namespaceId, player.triggerName, null);\n
previousPlayers.forEach(prevPlayer => {\n      getOrSetAsInMap(allPreviousPlayersMap, element,
[]).push(prevPlayer);\n      prevPlayer.destroy();\n    });\n  });\n  // this is a special case for nodes that will be
removed (either by)\n  // having their own leave animations or by being queried in a container\n  // that will be

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removed once a parent animation is complete. The idea
// here is that * styles must be identical to ! styles
because of
// backwards compatibility (* is also filled in by default in many places).
// Otherwise * styles
will return an empty value or auto since the element
// that is being getComputedStyle'd will not be visible (since
* = destination)
const replaceNodes = allLeaveNodes.filter(node => {
  return replacePostStylesAsPre(node,
  allPreStyleElements, allPostStyleElements);
});
// POST STAGE: fill the * styles
const postStylesMap =
new Map<any, StyleData>();
const allLeaveQueriedNodes = cloakAndComputeStyles(
  postStylesMap,
  this.driver, leaveNodesWithoutAnimations, allPostStyleElements, AUTO_STYLE);
allLeaveQueriedNodes.forEach(node => {
  if (replacePostStylesAsPre(node, allPreStyleElements,
  allPostStyleElements)) {
    replaceNodes.push(node);
  }
});
// PRE STAGE: fill the ! styles
const preStylesMap = new Map<any, StyleData>();
enterNodeMap.forEach((nodes, root) => {
  cloakAndComputeStyles(
    preStylesMap, this.driver, new Set(nodes), allPreStyleElements, PRE_STYLE);
});
replaceNodes.forEach(node => {
  const post = postStylesMap.get(node);
  const pre =
  preStylesMap.get(node);
  postStylesMap.set(node, {...post, ...pre} as any);
});
const rootPlayers:
TransitionAnimationPlayer[] = [];
const subPlayers: TransitionAnimationPlayer[] = [];
const
NO_PARENT_ANIMATION_ELEMENT_DETECTED = {};
queuedInstructions.forEach(entry => {
  const {element, player, instruction} = entry;
  // this means that it was never consumed by a parent animation
  which
  // means that it is independent and therefore should be set for animation
  if
  (subTimelines.has(element)) {
    if (disabledElementsSet.has(element)) {
      player.onDestroy(() =>
      setStyles(element, instruction.toStyles));
      player.disabled = true;
      player.overrideTotalTime(instruction.totalTime);
      skippedPlayers.push(player);
      return;
    }
    // this will flow up the DOM and query the map to figure out
    // if a parent animation has priority over it. In
    the situation
    // that a parent is detected then it will cancel the loop. If
    // nothing is detected, or it takes a
    few hops to find a parent,
    // then it will fill in the missing nodes and signal them as having
    // a detected
    parent (or a NO_PARENT value via a special constant).
    let parentWithAnimation: any =
    NO_PARENT_ANIMATION_ELEMENT_DETECTED;
    if (animationElementMap.size > 1) {
      let
      elm = element;
      const parentsToAdd: any[] = [];
      while (elm = elm.parentNode) {
        const
        detectedParent = animationElementMap.get(elm);
        if (detectedParent) {
          parentWithAnimation =
          detectedParent;
          break;
        }
        parentsToAdd.push(elm);
      }
      parentsToAdd.forEach(parent => animationElementMap.set(parent, parentWithAnimation));
    }
    const
    innerPlayer = this._buildAnimation(
      player.namespaceId, instruction, allPreviousPlayersMap,
      skippedPlayersMap, preStylesMap,
      postStylesMap);
    player.setRealPlayer(innerPlayer);
    if
    (parentWithAnimation === NO_PARENT_ANIMATION_ELEMENT_DETECTED) {
      rootPlayers.push(player);
    } else {
      const parentPlayers =
      this.playersByElement.get(parentWithAnimation);
      if (parentPlayers && parentPlayers.length) {
        player.parentPlayer = optimizeGroupPlayer(parentPlayers);
        skippedPlayers.push(player);
      }
      else {
        eraseStyles(element, instruction.fromStyles);
        player.onDestroy(() => setStyles(element,
        instruction.toStyles));
        // there still might be a ancestor player animating this
        // element therefore we will
        still add it as a sub player
        // even if its animation may be disabled
        subPlayers.push(player);
        if
        (disabledElementsSet.has(element)) {
          skippedPlayers.push(player);
        }
      }
      // find all of
      the sub players' corresponding inner animation player
      subPlayers.forEach(player => {
        // even if any players
        are not found for a sub animation then it
        // will still complete itself after the next tick since it's Noop
        const
        playersForElement = skippedPlayersMap.get(player.element);
        if (playersForElement &&
        playersForElement.length) {
          const innerPlayer = optimizeGroupPlayer(playersForElement);
          player.setRealPlayer(innerPlayer);
        }
      });
      // the reason why we don't actually play the animation is
      // because all that a skipped player is designed to do is to
      // fire the start/done transition callback events
      skippedPlayers.forEach(player => {
        if (player.parentPlayer) {
          player.syncPlayerEvents(player.parentPlayer);
        } else {
          player.destroy();
        }
      });
      // run
      through all of the queued removals and see if they
      // were picked up by a query. If not then perform the

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removal\n // operation right away unless a parent animation is ongoing.\n for (let i = 0; i < allLeaveNodes.length;
i++) {\n const element = allLeaveNodes[i];\n const details = element[REMOVAL_FLAG] as
ElementAnimationState;\n removeClass(element, LEAVE_CLASSNAME);\n\n // this means the element has
a removal animation that is being\n // taken care of and therefore the inner elements will hang around\n // until
that animation is over (or the parent queried animation)\n if (details && details.hasAnimation) continue;\n\n
let players: TransitionAnimationPlayer[] = [];\n\n // if this element is queried or if it contains queried children\n
// then we want for the element not to be removed from the page\n // until the queried animations have finished\n
if (queriedElements.size) {\n let queriedPlayerResults = queriedElements.get(element);\n if
(queriedPlayerResults && queriedPlayerResults.length) {\n players.push(...queriedPlayerResults);\n }\n\n
let queriedInnerElements = this.driver.query(element, NG_ANIMATING_SELECTOR, true);\n for (let j =
0; j < queriedInnerElements.length; j++) {\n let queriedPlayers =
queriedElements.get(queriedInnerElements[j]);\n if (queriedPlayers && queriedPlayers.length) {\n
players.push(...queriedPlayers);\n }\n }\n\n const activePlayers = players.filter(p =>
!p.destroyed);\n if (activePlayers.length) {\n removeNodesAfterAnimationDone(this, element,
activePlayers);\n } else {\n this.processLeaveNode(element);\n }\n }\n\n // this is required so the
cleanup method doesn't remove them\n allLeaveNodes.length = 0;\n\n rootPlayers.forEach(player => {\n
this.players.push(player);\n player.onDone(() => {\n player.destroy();\n\n const index =
this.players.indexOf(player);\n this.players.splice(index, 1);\n });\n player.play();\n });\n\n return
rootPlayers;\n }\n\n elementContainsData(namespaceId: string, element: any) {\n let containsData = false;\n
const details = element[REMOVAL_FLAG] as ElementAnimationState;\n if (details && details.setForRemoval)
containsData = true;\n if (this.playersByElement.has(element)) containsData = true;\n if
(this.playersByQueriedElement.has(element)) containsData = true;\n if (this.statesByElement.has(element))
containsData = true;\n return this._fetchNamespace(namespaceId).elementContainsData(element) ||
containsData;\n }\n\n afterFlush(callback: () => any) {\n this._flushFns.push(callback);\n }\n\n
afterFlushAnimationsDone(callback: () => any) {\n this._whenQuietFns.push(callback);\n }\n\n private
_getPreviousPlayers(\n element: string, isQueriedElement: boolean, namespaceId?: string, triggerName?:
string,\n toStateValue?: any): TransitionAnimationPlayer[] {\n let players: TransitionAnimationPlayer[] = [];\n
if (isQueriedElement) {\n const queriedElementPlayers = this.playersByQueriedElement.get(element);\n if
(queriedElementPlayers) {\n players = queriedElementPlayers;\n }\n } else {\n const elementPlayers =
this.playersByElement.get(element);\n if (elementPlayers) {\n const isRemovalAnimation = !toStateValue ||
toStateValue == VOID_VALUE;\n elementPlayers.forEach(player => {\n if (player.queued) return;\n
if (!isRemovalAnimation && player.triggerName != triggerName) return;\n players.push(player);\n
});\n }\n }\n if (namespaceId || triggerName) {\n players = players.filter(player => {\n if (namespaceId &&
namespaceId != player.namespaceId) return false;\n if (triggerName && triggerName != player.triggerName)
return false;\n return true;\n });\n }\n return players;\n }\n\n private _beforeAnimationBuild(\n
namespaceId: string, instruction: AnimationTransitionInstruction,\n allPreviousPlayersMap: Map<any,
TransitionAnimationPlayer[]>) {\n const triggerName = instruction.triggerName;\n const rootElement =
instruction.element;\n\n // when a removal animation occurs, ALL previous players are collected\n // and
destroyed (even if they are outside of the current namespace)\n const targetNameSpaceId: string|undefined =\n instruction.isRemovalTransition ? undefined : namespaceId;\n const targetTriggerName: string|undefined =\n instruction.isRemovalTransition ? undefined : triggerName;\n for (const timelineInstruction of
instruction.timelines) {\n const element = timelineInstruction.element;\n const isQueriedElement = element
!== rootElement;\n const players = getOrSetAsInMap(allPreviousPlayersMap, element, []);\n const
previousPlayers = this._getPreviousPlayers(\n element, isQueriedElement, targetNameSpaceId,
targetTriggerName, instruction.toState);\n previousPlayers.forEach(player => {\n const realPlayer = (player
as TransitionAnimationPlayer).getRealPlayer() as any;\n if (realPlayer.beforeDestroy) {\n
realPlayer.beforeDestroy();\n }\n player.destroy();\n players.push(player);\n });\n }\n\n // this
needs to be done so that the PRE/POST styles can be\n // computed properly without interfering with the previous

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animation\n  eraseStyles(rootElement, instruction.fromStyles);\n }\n\n private _buildAnimation(\n
namespaceId: string, instruction: AnimationTransitionInstruction,\n  allPreviousPlayersMap: Map<any,\n
TransitionAnimationPlayer[]>,\n  skippedPlayersMap: Map<any, AnimationPlayer[]>, preStylesMap: Map<any,\n
StyleData>,\n  postStylesMap: Map<any, StyleData>): AnimationPlayer {\n  const triggerName =\n
instruction.triggerName;\n  const rootElement = instruction.element;\n\n  // we first run this so that the previous\n
animation player\n  // data can be passed into the successive animation players\n  const allQueriedPlayers:\n
TransitionAnimationPlayer[] = [];\n  const allConsumedElements = new Set<any>();\n  const allSubElements =\n
new Set<any>();\n  const allNewPlayers = instruction.timelines.map(timelineInstruction => {\n  const element =\n
timelineInstruction.element;\n  allConsumedElements.add(element);\n\n  // FIXME (matsko): make sure to-be-\n
removed animations are removed properly\n  const details = element[REMOVAL_FLAG];\n  if (details &&\n
details.removedBeforeQueried)\n    return new NoopAnimationPlayer(timelineInstruction.duration,\n
timelineInstruction.delay);\n\n  const isQueriedElement = element !== rootElement;\n  const previousPlayers\n
=\n  flattenGroupPlayers((allPreviousPlayersMap.get(element) || EMPTY_PLAYER_ARRAY)\n
.map(p => p.getRealPlayer()))\n    .filter(p => {\n      // the `element` is not apart of the\n
AnimationPlayer definition, but\n      // Mock/WebAnimations\n      // use the element within their\n
implementation. This will be added in Angular5 to\n      // AnimationPlayer\n      const pp = p as any;\n
      return pp.element ? pp.element === element : false;\n    });\n\n  const preStyles =\n
preStylesMap.get(element);\n  const postStyles = postStylesMap.get(element);\n  const keyframes =\n
normalizeKeyframes(\n    this.driver, this._normalizer, element, timelineInstruction.keyframes, preStyles,\n
postStyles);\n  const player = this._buildPlayer(timelineInstruction, keyframes, previousPlayers);\n\n  // this\n
means that this particular player belongs to a sub trigger. It is\n  // important that we match this player up with the\n
corresponding (@trigger.listener)\n  if (timelineInstruction.subTimeline && skippedPlayersMap) {\n
allSubElements.add(element);\n  }\n\n  if (isQueriedElement) {\n    const wrappedPlayer = new\n
TransitionAnimationPlayer(namespaceId, triggerName, element);\n    wrappedPlayer.setRealPlayer(player);\n
allQueriedPlayers.push(wrappedPlayer);\n  }\n\n  return player;\n  });\n\n  allQueriedPlayers.forEach(player\n
=> {\n    getOrSetAsInMap(this.playersByQueriedElement, player.element, []).push(player);\n    player.onDone(()\n
=> deleteOrUnsetInMap(this.playersByQueriedElement, player.element, player));\n  });\n\n  allConsumedElements.forEach(element => addClass(element, NG_ANIMATING_CLASSNAME));\n  const\n
player = optimizeGroupPlayer(allNewPlayers);\n  player.onDestroy() => {\n
allConsumedElements.forEach(element => removeClass(element, NG_ANIMATING_CLASSNAME));\n
setStyles(rootElement, instruction.toStyles);\n  });\n\n  // this basically makes all of the callbacks for sub element\n
animations\n  // be dependent on the upper players for when they finish\n  allSubElements.forEach(element =>\n
{\n    getOrSetAsInMap(skippedPlayersMap, element, []).push(player);\n  });\n\n  return player;\n  }\n\n private\n
_buildPlayer(\n  instruction: AnimationTimelineInstruction, keyframes: StyleData[],\n  previousPlayers:\n
AnimationPlayer[]): AnimationPlayer {\n  if (keyframes.length > 0) {\n    return this.driver.animate(\n
instruction.element, keyframes, instruction.duration, instruction.delay,\n    instruction.easing,\n
previousPlayers);\n  }\n\n  // special case for when an empty transition definition is provided\n  // ... there is no\n
point in rendering an empty animation\n  return new NoopAnimationPlayer(instruction.duration,\n
instruction.delay);\n  }\n}\n\nexport class TransitionAnimationPlayer implements AnimationPlayer {\n  private\n
_player: AnimationPlayer = new NoopAnimationPlayer();\n  private _containsRealPlayer = false;\n\n  private\n
_queuedCallbacks: {[name: string]: (() => any)[]} = {};\n  public readonly destroyed = false;\n  //\n
TODO(issue/24571): remove '!'\n  public parentPlayer!: AnimationPlayer;\n  public markedForDestroy: boolean\n
= false;\n  public disabled = false;\n\n  readonly queued: boolean = true;\n  public readonly totalTime: number =\n
0;\n\n  constructor(public namespaceId: string, public triggerName: string, public element: any) {\n}\n\n
setRealPlayer(player: AnimationPlayer) {\n  if (this._containsRealPlayer) return;\n\n  this._player = player;\n
Object.keys(this._queuedCallbacks).forEach(phase => {\n    this._queuedCallbacks[phase].forEach(\n
callback => listenOnPlayer(player, phase, undefined, callback));\n  });\n  this._queuedCallbacks = {};\n
this._containsRealPlayer = true;\n  this.overrideTotalTime(player.totalTime);\n  (this as {queued:

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boolean}).queued = false;\n }\n\n getRealPlayer() {\n return this._player;\n }\n\n overrideTotalTime(totalTime:
number) {\n (this as any).totalTime = totalTime;\n }\n\n syncPlayerEvents(player: AnimationPlayer) {\n const
p = this._player as any;\n if (p.triggerCallback) {\n player.onStart(() => p.triggerCallback!('start'));\n }\n
player.onDone(() => this.finish());\n player.onDestroy(() => this.destroy());\n }\n\n private _queueEvent(name:
string, callback: (event: any) => any): void {\n getOrSetAsInMap(this._queuedCallbacks, name,
[]).push(callback);\n }\n\n onDone(fn: () => void): void {\n if (this.queued) {\n this._queueEvent('done', fn);\n
}\n this._player.onDone(fn);\n }\n\n onStart(fn: () => void): void {\n if (this.queued) {\n
this._queueEvent('start', fn);\n }\n this._player.onStart(fn);\n }\n\n onDestroy(fn: () => void): void {\n if
(this.queued) {\n this._queueEvent('destroy', fn);\n }\n this._player.onDestroy(fn);\n }\n\n init(): void {\n
this._player.init();\n }\n\n hasStarted(): boolean {\n return this.queued ? false : this._player.hasStarted();\n }\n\n
play(): void {\n !this.queued && this._player.play();\n }\n\n pause(): void {\n !this.queued &&
this._player.pause();\n }\n\n restart(): void {\n !this.queued && this._player.restart();\n }\n\n finish(): void {\n
this._player.finish();\n }\n\n destroy(): void {\n (this as {destroyed: boolean}).destroyed = true;\n
this._player.destroy();\n }\n\n reset(): void {\n !this.queued && this._player.reset();\n }\n\n setPosition(p: any):
void {\n if (!this.queued) {\n this._player.setPosition(p);\n }\n }\n\n getPosition(): number {\n return
this.queued ? 0 : this._player.getPosition();\n }\n\n /** @internal */\n triggerCallback(phaseName: string): void
{\n const p = this._player as any;\n if (p.triggerCallback) {\n p.triggerCallback(phaseName);\n }\n
}\n\nfunction deleteOrUnsetInMap(map: Map<any, any[]>|[key: string]: any}, key: any, value: any) {\n let
currentValues: any[]|null|undefined;\n if (map instanceof Map) {\n currentValues = map.get(key);\n if
(currentValues) {\n if (currentValues.length) {\n const index = currentValues.indexOf(value);\n
currentValues.splice(index, 1);\n }\n if (currentValues.length == 0) {\n map.delete(key);\n }\n }\n
}\n else {\n currentValues = map[key];\n if (currentValues) {\n if (currentValues.length) {\n const index =
currentValues.indexOf(value);\n currentValues.splice(index, 1);\n }\n if (currentValues.length == 0) {\n
delete map[key];\n }\n }\n }\n return currentValues;\n }\n\nfunction normalizeTriggerValue(value: any): any
{\n // we use `!= null` here because it's the most simple\n // way to test against a `"falsy"` value without mixing\n //
in empty strings or a zero value. DO NOT OPTIMIZE.\n return value != null ? value : null;\n }\n\nfunction
isElementNode(node: any) {\n return node && node['nodeType'] === 1;\n }\n\nfunction
isTriggerEventValid(eventName: string): boolean {\n return eventName == 'start' || eventName ==
'done';\n }\n\nfunction cloakElement(element: any, value?: string) {\n const oldValue = element.style.display;\n
element.style.display = value != null ? value : 'none';\n return oldValue;\n }\n\nfunction cloakAndComputeStyles(\n
valuesMap: Map<any, StyleData>, driver: AnimationDriver, elements: Set<any>,\n elementPropsMap: Map<any,
Set<string>>, defaultStyle: string): any[] {\n const cloakVals: string[] = [];\n elements.forEach(element =>
cloakVals.push(cloakElement(element)));\n const failedElements: any[] = [];\n\n
elementPropsMap.forEach((props: Set<string>, element: any) => {\n const styles: StyleData = {};\n
props.forEach(prop => {\n const value = styles[prop] = driver.computeStyle(element, prop, defaultStyle);\n\n
// there is no easy way to detect this because a sub element could be removed\n // by a parent animation element
being detached.\n if (!value || value.length == 0) {\n element[REMOVAL_FLAG] =
NULL_REMOVED_QUERIED_STATE;\n failedElements.push(element);\n }\n });\n\n
valuesMap.set(element, styles);\n });\n\n // we use a index variable here since Set.forEach(a, i) does not return\n //
an index value for the closure (but instead just the value)\n let i = 0;\n elements.forEach(element =>
cloakElement(element, cloakVals[i++]));\n\n return failedElements;\n }\n\n/*\n\nSince the Angular renderer code will
return a collection of inserted\nnodes in all areas of a DOM tree, it's up to this algorithm to figure\nout which nodes
are roots for each animation @trigger.\n\nBy placing each inserted node into a Set and traversing upwards, it\nis
possible to find the @trigger elements and well any direct *star\ninsertion nodes, if a @trigger root is found then the
enter element\nis placed into the Map[@trigger] spot.\n */\nfunction buildRootMap(roots: any[], nodes: any[]):
Map<any, any[]> {\n const rootMap = new Map<any, any[]>();\n roots.forEach(root => rootMap.set(root, []));\n\n
if (nodes.length == 0) return rootMap;\n\n const NULL_NODE = 1;\n const nodeSet = new Set(nodes);\n const
localRootMap = new Map<any, any>();\n\n function getRoot(node: any): any {\n if (!node) return

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NULL_NODE;\n\n let root = localRootMap.get(node);\n if (root) return root;\n\n const parent =
node.parentNode;\n if (rootMap.has(parent)) { // ngIf inside @trigger\n root = parent;\n } else if
(nodeSet.has(parent)) { // ngIf inside ngIf\n root = NULL_NODE;\n } else { // recurse upwards\n root =
getRoot(parent);\n }\n\n localRootMap.set(node, root);\n return root;\n }\n\n nodes.forEach(node => {\n
const root = getRoot(node);\n if (root !== NULL_NODE) {\n rootMap.get(root)!.push(node);\n }\n });\n\n
return rootMap;\n }\n\nconst CLASSES_CACHE_KEY = '$$classes';\nfunction containsClass(element: any,
className: string): boolean {\n if (element.classList) {\n return element.classList.contains(className);\n } else
{\n const classes = element[CLASSES_CACHE_KEY];\n return classes && classes[className];\n
}\n}\n\nfunction addClass(element: any, className: string) {\n if (element.classList) {\n
element.classList.add(className);\n } else {\n let classes: {[className: string]: boolean} =
element[CLASSES_CACHE_KEY];\n if (!classes) {\n classes = element[CLASSES_CACHE_KEY] = {};\n
}\n classes[className] = true;\n }\n}\n\nfunction removeClass(element: any, className: string) {\n if
(element.classList) {\n element.classList.remove(className);\n } else {\n let classes: {[className: string]:
boolean} = element[CLASSES_CACHE_KEY];\n if (classes) {\n delete classes[className];\n }\n
}\n}\n\nfunction removeNodesAfterAnimationDone(\n engine: TransitionAnimationEngine, element: any,
players: AnimationPlayer[]) {\n optimizeGroupPlayer(players).onDone() =>
engine.processLeaveNode(element);\n}\n\nfunction flattenGroupPlayers(players: AnimationPlayer[]):
AnimationPlayer[] {\n const finalPlayers: AnimationPlayer[] = [];\n _flattenGroupPlayersRecur(players,
finalPlayers);\n return finalPlayers;\n}\n\nfunction _flattenGroupPlayersRecur(players: AnimationPlayer[],
finalPlayers: AnimationPlayer[]) {\n for (let i = 0; i < players.length; i++) {\n const player = players[i];\n if
(player instanceof AnimationGroupPlayer) {\n _flattenGroupPlayersRecur(player.players, finalPlayers);\n }
else {\n finalPlayers.push(player);\n }\n }\n}\n\nfunction objEquals(a: {[key: string]: any}, b: {[key: string]:
any}): boolean {\n const k1 = Object.keys(a);\n const k2 = Object.keys(b);\n if (k1.length !== k2.length) return
false;\n for (let i = 0; i < k1.length; i++) {\n const prop = k1[i];\n if (!b.hasOwnProperty(prop) || a[prop] !==
b[prop]) return false;\n }\n return true;\n}\n\nfunction replacePostStylesAsPre(\n element: any,
allPreStyleElements: Map<any, Set<string>>,\n allPostStyleElements: Map<any, Set<string>>): boolean {\n
const postEntry = allPostStyleElements.get(element);\n if (!postEntry) return false;\n\n let preEntry =
allPreStyleElements.get(element);\n if (preEntry) {\n postEntry.forEach(data => preEntry!.add(data));\n } else
{\n allPreStyleElements.set(element, postEntry);\n }\n\n allPostStyleElements.delete(element);\n return
true;\n }\n\n"/**\n * @license\n * Copyright Google LLC All Rights Reserved.\n * Use of this source code is
governed by an MIT-style license that can be\n * found in the LICENSE file at https://angular.io/license\n
*/\n\nimport { AnimationMetadata, AnimationPlayer, AnimationTriggerMetadata } from
'@angular/animations';\nimport { TriggerAst } from './dsl/animation_ast';\nimport { buildAnimationAst } from
'./dsl/animation_ast_builder';\nimport { AnimationTrigger, buildTrigger } from './dsl/animation_trigger';\nimport
{ AnimationStyleNormalizer } from './dsl/style_normalization/animation_style_normalizer';\nimport
{ AnimationDriver } from './animation_driver';\nimport { parseTimelineCommand } from './shared';\nimport
{ TimelineAnimationEngine } from './timeline_animation_engine';\nimport { TransitionAnimationEngine } from
'./transition_animation_engine';\n\nexport class AnimationEngine {\n private _transitionEngine:
TransitionAnimationEngine;\n private _timelineEngine: TimelineAnimationEngine;\n\n private _triggerCache:
{[key: string]: AnimationTrigger} = {};\n\n // this method is designed to be overridden by the code that uses this
engine\n public onRemovalComplete = (element: any, context: any) => {};\n\n constructor(\n private
bodyNode: any, private _driver: AnimationDriver,\n private normalizer: AnimationStyleNormalizer) {\n
this._transitionEngine = new TransitionAnimationEngine(bodyNode, _driver, normalizer);\n this._timelineEngine
= new TimelineAnimationEngine(bodyNode, _driver, normalizer);\n\n
this._transitionEngine.onRemovalComplete = (element: any, context: any) =>\n
this.onRemovalComplete(element, context);\n }\n\n registerTrigger(\n componentId: string, namespaceId:
string, hostElement: any, name: string,\n metadata: AnimationTriggerMetadata): void {\n const cacheKey =
componentId + '-' + name;\n let trigger = this._triggerCache[cacheKey];\n if (!trigger) {\n const errors: any[]

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= [];\n    const ast =\n        buildAnimationAst(this._driver, metadata as AnimationMetadata, errors) as
TriggerAst;\n    if (errors.length) {\n        throw new Error(`The animation trigger \"${\n            name}\" has failed
to build due to the following errors:\n - ${errors.join('\n - ')}`);\n    }\n    trigger = buildTrigger(name, ast);\n    this._triggerCache[cacheKey] = trigger;\n    }\n    this._transitionEngine.registerTrigger(namespaceId, name,
trigger);\n    }\n\n register(namespaceId: string, hostElement: any) {\n    this._transitionEngine.register(namespaceId,
hostElement);\n    }\n\n destroy(namespaceId: string, context: any) {\n    this._transitionEngine.destroy(namespaceId,
context);\n    }\n\n onInsert(namespaceId: string, element: any, parent: any, insertBefore: boolean): void {\n
this._transitionEngine.insertNode(namespaceId, element, parent, insertBefore);\n    }\n\n onRemove(namespaceId:
string, element: any, context: any, isHostElement?: boolean): void {\n
this._transitionEngine.removeNode(namespaceId, element, isHostElement || false, context);\n    }\n\n
disableAnimations(element: any, disable: boolean) {\n    this._transitionEngine.markElementAsDisabled(element,
disable);\n    }\n\n process(namespaceId: string, element: any, property: string, value: any) {\n    if
(property.charAt(0) == '@') {\n        const [id, action] = parseTimelineCommand(property);\n        const args = value as
any[];\n        this._timelineEngine.command(id, element, action, args);\n    } else {\n
this._transitionEngine.trigger(namespaceId, element, property, value);\n    }\n    }\n\n listen(\n    namespaceId:
string, element: any, eventName: string, eventPhase: string,\n    callback: (event: any) => any): () => any {\n    //
@@listen\n    if (eventName.charAt(0) == '@') {\n        const [id, action] = parseTimelineCommand(eventName);\n
return this._timelineEngine.listen(id, element, action, callback);\n    }\n    return
this._transitionEngine.listen(namespaceId, element, eventName, eventPhase, callback);\n    }\n\n flush(microtaskId:
number = -1): void {\n    this._transitionEngine.flush(microtaskId);\n    }\n\n get players(): AnimationPlayer[] {\n
return (this._transitionEngine.players as AnimationPlayer[])\n        .concat(this._timelineEngine.players as
AnimationPlayer[]);\n    }\n\n whenRenderingDone(): Promise<any> {\n    return
this._transitionEngine.whenRenderingDone();\n    }\n}\n"/**\n * @license\n * Copyright Google LLC All Rights
Reserved.\n * Use of this source code is governed by an MIT-style license that can be\n * found in the
LICENSE file at https://angular.io/license\n */\nimport {eraseStyles, setStyles} from './util';\n/**\n * Returns an
instance of `SpecialCasedStyles` if and when any special (non animateable) styles are\n * detected.\n *\n * In CSS
there exist properties that cannot be animated within a keyframe animation\n * (whether it be via CSS keyframes or
web-animations) and the animation implementation\n * will ignore them. This function is designed to detect those
special cased styles and\n * return a container that will be executed at the start and end of the animation.\n *\n *
@returns an instance of `SpecialCasedStyles` if any special styles are detected otherwise `null`\n */\nexport function
packageNonAnimatableStyles(\n    element: any, styles: {[key: string]: any} | {[key: string]: any}[]):
SpecialCasedStyles | null {\n    let startStyles: {[key: string]: any} | null = null;\n    let endStyles: {[key: string]: any} | null
= null;\n    if (Array.isArray(styles) && styles.length) {\n        startStyles = filterNonAnimatableStyles(styles[0]);\n        if
(styles.length > 1) {\n            endStyles = filterNonAnimatableStyles(styles[styles.length - 1]);\n        }\n    } else if (styles)
{\n        startStyles = filterNonAnimatableStyles(styles);\n    }\n\n    return (startStyles || endStyles) ? new
SpecialCasedStyles(element, startStyles, endStyles) :\n        null;\n}\n\n/**\n * Designed to be
executed during a keyframe-based animation to apply any special-cased styles.\n *\n * When started (when the
`start()` method is run) then the provided `startStyles`\n * will be applied. When finished (when the `finish()`
method is called) the\n * `endStyles` will be applied as well any any starting styles. Finally when\n * `destroy()`
is called then all styles will be removed.\n */\nexport class SpecialCasedStyles {\n    static initialStylesByElement =
new WeakMap<any, {[key: string]: any}>();\n\n    private _state = SpecialCasedStylesState.Pending;\n    private
_initialStyles!: {[key: string]: any};\n\n    constructor(\n        private _element: any, private _startStyles: {[key: string]:
any} | null,\n        private _endStyles: {[key: string]: any} | null) {\n        let initialStyles =
SpecialCasedStyles.initialStylesByElement.get(_element);\n        if (!initialStyles) {\n
SpecialCasedStyles.initialStylesByElement.set(_element, initialStyles = {});\n        }\n        this._initialStyles =
initialStyles;\n    }\n\n    start() {\n        if (this._state < SpecialCasedStylesState.Started) {\n            if (this._startStyles) {\n
setStyles(this._element, this._startStyles, this._initialStyles);\n            }\n            this._state =
SpecialCasedStylesState.Started;\n        }\n    }\n\n    finish() {\n        this.start();\n        if (this._state <

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SpecialCasedStylesState.Finished) {\n  setStyles(this._element, this._initialStyles);\n  if (this._endStyles) {\n    setStyles(this._element, this._endStyles);\n    this._endStyles = null;\n  }\n  this._state =
SpecialCasedStylesState.Started;\n  }\n }\n\n destroy() {\n  this.finish();\n  if (this._state <
SpecialCasedStylesState.Destroyed) {\n    SpecialCasedStyles.initialStylesByElement.delete(this._element);\n  }
if
(this._startStyles) {\n    eraseStyles(this._element, this._startStyles);\n    this._endStyles = null;\n  }\n  if
(this._endStyles) {\n    eraseStyles(this._element, this._endStyles);\n    this._endStyles = null;\n  }\n
setStyles(this._element, this._initialStyles);\n  this._state = SpecialCasedStylesState.Destroyed;\n  }\n
}\n}\n\n/**\n * An enum of states reflective of what the status of `SpecialCasedStyles` is.\n * Depending on
how `SpecialCasedStyles` is interacted with, the start and end\n * styles may not be applied in the same way. This
enum ensures that if and when\n * the ending styles are applied then the starting styles are applied. It is\n * also
used to reflect what the current status of the special cased styles are\n * which helps prevent the starting/ending
styles not
be applied twice. It is\n * also used to cleanup the styles once `SpecialCasedStyles` is destroyed.\n */\n\nconst
enum
SpecialCasedStylesState {\n  Pending = 0,\n  Started = 1,\n  Finished = 2,\n  Destroyed = 3,\n}\n\nfunction
filterNonAnimatableStyles(styles: {[key: string]: any}) {\n  let result: {[key: string]: any} | null = null;\n  const
props
= Object.keys(styles);\n  for (let i = 0; i < props.length; i++) {\n    const prop = props[i];\n    if
(isNonAnimatableStyle(prop)) {\n      result = result || {};\n      result[prop] = styles[prop];\n    }\n  }\n  return
result;\n}\n\nfunction isNonAnimatableStyle(prop: string) {\n  return prop === 'display' || prop ===
'position';\n}\n\n"/**\n * @license\n * Copyright Google LLC All Rights Reserved.\n * Use of this source code
is governed by an MIT-style license that can be\n * found in the LICENSE file at https://angular.io/license\n */\n\nconst
ELAPSED_TIME_MAX_DECIMAL_PLACES = 3;\n\nconst ANIMATION_PROP = 'animation';\n\nconst
ANIMATIONEND_EVENT = 'animationend';\n\nconst ONE_SECOND = 1000;\n\nexport class
ElementAnimationStyleHandler {\n  private readonly _eventFn: (e: any) => any;\n  private _finished = false;\n  private
_destroyed = false;\n  private _startTime = 0;\n  private _position = 0;\n\n  constructor(\n    private readonly
_element: any, private readonly _name: string,\n    private readonly _duration: number, private readonly _delay:
number,\n    private readonly _easing: string, private readonly _fillMode: "'both'|'forwards'",\n    private readonly
_onDoneFn: () => any) {\n    this._eventFn = (e) => this._handleCallback(e);\n  }\n\n  apply() {\n    applyKeyframeAnimation(\n      this._element,\n      `${this._duration}ms ${this._easing} ${this._delay}ms 1
normal ${this._fillMode} ${\n        this._name}`);\n    addRemoveAnimationEvent(this._element, this._eventFn,
false);\n    this._startTime = Date.now();\n  }\n\n  pause() {\n    playPauseAnimation(this._element, this._name,
'paused');\n  }\n\n  resume() {\n    playPauseAnimation(this._element, this._name, 'running');\n  }\n\n  setPosition(position: number) {\n    const index = findIndexForAnimation(this._element, this._name);\n    this._position = position * this._duration;\n    setAnimationStyle(this._element, 'Delay', `-${this._position}ms`,
index);\n  }\n\n  getPosition() {\n    return this._position;\n  }\n\n  private _handleCallback(event: any) {\n    const
timestamp = event._ngTestManualTimestamp || Date.now();\n    const elapsedTime =\n      parseFloat(event.elapsedTime.toFixed(ELAPSED_TIME_MAX_DECIMAL_PLACES)) * ONE_SECOND;\n    if
(event.animationName === this._name &&\n      Math.max(timestamp - this._startTime, 0) >= this._delay &&
elapsedTime >= this._duration) {\n      this.finish();\n    }\n  }\n\n  finish() {\n    if (this._finished) return;\n    this._finished = true;\n    this._onDoneFn();\n    addRemoveAnimationEvent(this._element, this._eventFn, true);\n  }\n\n  destroy() {\n    if (this._destroyed) return;\n    this._destroyed = true;\n    this.finish();\n  }\n\n  removeKeyframeAnimation(this._element, this._name);\n  }\n}\n\nfunction playPauseAnimation(element: any,
name: string, status: 'running'|'paused') {\n  const index = findIndexForAnimation(element, name);\n  setAnimationStyle(element, 'PlayState', status, index);\n}\n\nfunction applyKeyframeAnimation(element: any,
value: string): number {\n  const anim = getAnimationStyle(element, "").trim();\n  let index = 0;\n  if (anim.length)
{\n    index = countChars(anim, ',') + 1;\n    value = `${anim}, ${value}`;\n  }\n  setAnimationStyle(element, "",
value);\n  return index;\n}\n\nfunction removeKeyframeAnimation(element: any, name: string) {\n  const anim =
getAnimationStyle(element, "");\n  const tokens = anim.split(',');\n  const index = findMatchingTokenIndex(tokens,
name);\n  if (index >= 0) {\n    tokens.splice(index, 1);\n    const newValue = tokens.join(',');\n    setAnimationStyle(element, "", newValue);\n  }\n}\n\nfunction findIndexForAnimation(element: any, value: string)

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{\n  const anim = getAnimationStyle(element, '');\n  if (anim.indexOf(',') > 0) {\n    const tokens = anim.split(',');\n    return findMatchingTokenIndex(tokens, value);\n  } \n  return findMatchingTokenIndex([anim,\n  value]);\n}\n\nfunction findMatchingTokenIndex(tokens: string[], searchToken: string): number {\n  for (let i = 0; i <\n  tokens.length; i++) {\n    if (tokens[i].indexOf(searchToken) >= 0) {\n      return i;\n    } \n  }\n  return -\n  1;\n}\n\nfunction addRemoveAnimationEvent(element: any, fn: (e: any) => any, doRemove: boolean) {\n  doRemove ? element.removeEventListener(ANIMATIONEND_EVENT, fn) : \n  element.addEventListener(ANIMATIONEND_EVENT, fn);\n}\n\nfunction setAnimationStyle(element: any, name:\n  string, value: string, index?: number) {\n  const prop = ANIMATION_PROP + name;\n  if (index != null) {\n    const oldValue = element.style[prop];\n    if (oldValue.length) {\n      const tokens = oldValue.split(',');\n      tokens[index] = value;\n      value = tokens.join(',');\n    } \n  }\n  element.style[prop] = value;\n}\n\nfunction\n  getAnimationStyle(element: any, name: string) {\n  return element.style[ANIMATION_PROP +\n  name];\n}\n\nfunction countChars(value: string, char: string): number {\n  let count = 0;\n  for (let i = 0; i <\n  value.length; i++) {\n    const c = value.charAt(i);\n    if (c === char) count++;\n  }\n  return count;\n}\n\n"/**\n *\n * @license\n * Copyright Google LLC All Rights Reserved.\n * Use of this source code is governed by an MIT-\n * style license that can be\n * found in the LICENSE file at https://angular.io/license\n */\nimport { AnimationPlayer\n  from '@angular/animations';\nimport { computeStyle } from './util';\nimport { SpecialCasedStyles } from\n  './special_cased_styles';\nimport { ElementAnimationStyleHandler } from\n  './element_animation_style_handler';\n\nconst DEFAULT_FILL_MODE = 'forwards';\nconst DEFAULT_EASING\n  = 'linear';\n\nexport const enum AnimatorControlState {\n  INITIALIZED = 1,\n  STARTED = 2,\n  FINISHED =\n  3,\n  DESTROYED = 4\n}\n\nexport class CssKeyframesPlayer implements AnimationPlayer {\n  private\n  _onDoneFns: Function[] = [];\n  private _onStartFns: Function[] = [];\n  private _onDestroyFns: Function[] = [];\n  private _started = false;\n  // TODO(issue/24571): remove '!'.\n  private _styler!\n  ElementAnimationStyleHandler;\n  // TODO(issue/24571): remove '!'.\n  public parentPlayer!\n  AnimationPlayer;\n  public readonly totalTime: number;\n  public readonly easing: string;\n  public\n  currentSnapshot: {[key: string]: string} = {};\n  private _state: AnimatorControlState = 0;\n  constructor(\n  public readonly element: any, public readonly keyframes: {[key: string]: string|number}[],\n  public readonly\n  animationName: string, private readonly _duration: number,\n  private readonly _delay: number, easing: string,\n  private readonly _finalStyles: {[key: string]: any},\n  private readonly _specialStyles?: SpecialCasedStyles|null)\n  {\n    this.easing = easing || DEFAULT_EASING;\n    this.totalTime = _duration + _delay;\n    this._buildStyler();\n  }\n  onStart(fn: () => void): void {\n    this._onStartFns.push(fn);\n  }\n  onDone(fn: () => void): void {\n    this._onDoneFns.push(fn);\n  }\n  onDestroy(fn: () => void): void {\n    this._onDestroyFns.push(fn);\n  }\n  destroy() {\n    this.init();\n    if (this._state >= AnimatorControlState.DESTROYED) return;\n    this._state =\n    AnimatorControlState.DESTROYED;\n    this._styler.destroy();\n    this._flushStartFns();\n    this._flushDoneFns();\n    if (this._specialStyles) {\n      this._specialStyles.destroy();\n    }\n    this._onDestroyFns.forEach(fn => fn());\n    this._onDestroyFns = [];\n  }\n  private _flushDoneFns() {\n    this._onDoneFns.forEach(fn => fn());\n    this._onDoneFns = [];\n  }\n  private _flushStartFns() {\n    this._onStartFns.forEach(fn => fn());\n    this._onStartFns = [];\n  }\n  finish() {\n    this.init();\n    if (this._state >=\n    AnimatorControlState.FINISHED) return;\n    this._state = AnimatorControlState.FINISHED;\n    this._styler.finish();\n    this._flushStartFns();\n    if (this._specialStyles) {\n      this._specialStyles.finish();\n    }\n    this._flushDoneFns();\n  }\n  setPosition(value: number) {\n    this._styler.setPosition(value);\n  }\n  getPosition(): number {\n    return this._styler.getPosition();\n  }\n  hasStarted(): boolean {\n    return this._state\n    >= AnimatorControlState.STARTED;\n  }\n  init(): void {\n    if (this._state >=\n    AnimatorControlState.INITIALIZED) return;\n    this._state = AnimatorControlState.INITIALIZED;\n    const elm\n    = this.element;\n    this._styler.apply();\n    if (this._delay) {\n      this._styler.pause();\n    }\n  }\n  play(): void {\n    this.init();\n    if (!this.hasStarted()) {\n      this._flushStartFns();\n      this._state =\n      AnimatorControlState.STARTED;\n      if (this._specialStyles) {\n        this._specialStyles.start();\n      }\n    }\n    this._styler.resume();\n  }\n  pause(): void {\n    this.init();\n    this._styler.pause();\n  }\n  restart(): void {\n    this.reset();\n    this.play();\n  }\n  reset(): void {\n    this._styler.destroy();\n    this._buildStyler();\n  }\n}

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this._styler.apply();\n }\n\n private _buildStyler() {\n this._styler = new ElementAnimationStyleHandler(\n this.element, this.animationName, this._duration, this._delay, this.easing,\n DEFAULT_FILL_MODE, () =>\n this.finish());\n }\n\n /** @internal */\n triggerCallback(phaseName: string): void {\n const methods =\n phaseName == 'start' ? this._onStartFns : this._onDoneFns;\n methods.forEach(fn => fn());\n methods.length =\n 0;\n }\n\n beforeDestroy() {\n this.init();\n const styles: {[key: string]: string} = {};\n if (this.hasStarted()) {\n const finished = this._state >= AnimatorControlState.FINISHED;\n Object.keys(this._finalStyles).forEach(prop => {\n if (prop != 'offset') {\n styles[prop] = finished ?\n this._finalStyles[prop] : computeStyle(this.element, prop);\n }\n });\n this.currentSnapshot = styles;\n }\n}\n", "/*\n * @license\n * Copyright Google LLC All Rights Reserved.\n * Use of this source code is\n governed by an MIT-style license that can be\n * found in the LICENSE file at https://angular.io/license\n */\n\nimport {NoopAnimationPlayer} from '@angular/animations';\nimport {hypeenatePropsObject} from\n './shared';\n\nexport class DirectStylePlayer extends NoopAnimationPlayer {\n private _startingStyles: {[key:\n string]: any} | null = {};\n private __initialized = false;\n private _styles: {[key: string]: any};\n\n constructor(public\n element: any, styles: {[key: string]: any}) {\n super();\n this._styles = hypeenatePropsObject(styles);\n }\n\n init() {\n if (this.__initialized || !this._startingStyles) return;\n this.__initialized = true;\n Object.keys(this._styles).forEach(prop => {\n this._startingStyles![prop] = this.element.style[prop];\n });\n super.init();\n }\n\n play() {\n if (!this._startingStyles) return;\n this.init();\n Object.keys(this._styles)\n .forEach(prop => this.element.style.setProperty(prop, this._styles[prop]));\n super.play();\n }\n\n destroy() {\n if (!this._startingStyles) return;\n Object.keys(this._startingStyles).forEach(prop => {\n const value =\n this._startingStyles![prop];\n if (value) {\n this.element.style.setProperty(prop, value);\n } else {\n this.element.style.removeProperty(prop);\n }\n });\n this._startingStyles = null;\n super.destroy();\n }\n}\n", "/*\n * @license\n * Copyright Google LLC All Rights Reserved.\n * Use of this source code is\n governed by an MIT-style license that can be\n * found in the LICENSE file at https://angular.io/license\n */\n\nimport {AnimationPlayer, StyleData} from '@angular/animations';\nimport\n {allowPreviousPlayerStylesMerge, balancePreviousStylesIntoKeyframes, computeStyle} from './../util';\nimport\n {AnimationDriver} from './animation_driver';\nimport {containsElement, hypeenatePropsObject, invokeQuery,\n matchesElement, validateStyleProperty} from './shared';\nimport {packageNonAnimatableStyles} from\n './special_cased_styles';\nimport {CssKeyframesPlayer} from './css_keyframes_player';\nimport\n {DirectStylePlayer} from './direct_style_player';\n\nconst KEYFRAMES_NAME_PREFIX = 'gen_css_kf_';\nconst\n TAB_SPACE = ' '\n\nexport class CssKeyframesDriver implements AnimationDriver {\n private _count = 0;\n private readonly _head: any = document.querySelector('head');\n private _warningIssued = false;\n\n validateStyleProperty(prop: string): boolean {\n return validateStyleProperty(prop);\n }\n\n matchesElement(element: any, selector: string): boolean {\n return matchesElement(element, selector);\n }\n\n containsElement(elm1: any, elm2: any): boolean {\n return containsElement(elm1, elm2);\n }\n\n query(element:\n any, selector: string, multi: boolean): any[] {\n return invokeQuery(element, selector, multi);\n }\n\n computeStyle(element: any, prop: string, defaultValue?: string): string {\n return\n (window.getComputedStyle(element) as any)[prop] as string;\n }\n\n buildKeyframeElement(element: any, name:\n string, keyframes: {[key: string]: any}[]): any {\n keyframes = keyframes.map(kf => hypeenatePropsObject(kf));\n let keyframeStr = `@keyframes ${name} {\n`; \n let tab = " "; \n keyframes.forEach(kf => {\n tab =\n TAB_SPACE;\n const offset = parseFloat(kf['offset']);\n keyframeStr += `${tab}${offset * 100}% {\n`; \n tab += TAB_SPACE;\n Object.keys(kf).forEach(prop => {\n const value = kf[prop];\n switch (prop) {\n case 'offset':\n return;\n case 'easing':\n if (value) {\n keyframeStr +=\n `${tab}animation-timing-function: ${value};\n`; \n }\n return;\n default:\n keyframeStr\n += `${tab}${prop}: ${value};\n`; \n return;\n }\n });\n keyframeStr += `${tab}\n`; \n });\n keyframeStr += `\n`; \n\n const kfElm = document.createElement('style');\n kfElm.textContent =\n keyframeStr;\n return kfElm;\n }\n\n animate(\n element: any, keyframes: StyleData[], duration: number,\n delay: number, easing: string,\n previousPlayers: AnimationPlayer[] = [], scrubberAccessRequested?: boolean):\n AnimationPlayer {\n if (scrubberAccessRequested) {\n this._notifyFaultyScrubber();\n }\n\n const

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previousCssKeyframePlayers = <CssKeyframesPlayer[]>previousPlayers.filter(\n    player => player instanceof
CssKeyframesPlayer);\n\n    const previousStyles: {[key: string]: any} = {};\n\n    if
(allowPreviousPlayerStylesMerge(duration, delay)) {\n    previousCssKeyframePlayers.forEach(player => {\n
let styles = player.currentSnapshot;\n    Object.keys(styles).forEach(prop => previousStyles[prop] =
styles[prop]);\n    });\n    }\n\n    keyframes = balancePreviousStylesIntoKeyframes(element, keyframes,
previousStyles);\n    const finalStyles = flattenKeyframesIntoStyles(keyframes);\n\n    // if there is no animation then
there is no point in applying\n    // styles and waiting for an event to get fired. This causes lag.\n    // It's better to just
directly apply the styles to the element\n    // via the direct styling animation player.\n    if (duration == 0) {\n
return new DirectStylePlayer(element, finalStyles);\n    }\n\n    const animationName =
`${KEYFRAMES_NAME_PREFIX}${this._count++}`;\n    const kfElm = this.buildKeyframeElement(element,
animationName, keyframes);\n    document.querySelector('head')!.appendChild(kfElm);\n\n    const specialStyles =
packageNonAnimatableStyles(element, keyframes);\n    const player = new CssKeyframesPlayer(\n    element,
keyframes, animationName, duration, delay, easing, finalStyles, specialStyles);\n\n    player.onDestroy(() =>
removeElement(kfElm));\n    return player;\n    }\n\n    private _notifyFaultyScrubber() {\n    if (!this._warningIssued)
{\n    console.warn(\n    '@angular/animations: please load the web-animations.js polyfill to allow
programmatic access...'\n    );\n    visit http://bit.ly/IWukam to learn more about using the web-animation-js
polyfill.');\n    this._warningIssued = true;\n    }\n    }\n\n    function flattenKeyframesIntoStyles(keyframes:
null|{[key: string]: any})\n    {[key: string]: any}[]: {[key: string]: any} {\n    let flatKeyframes:
{[key: string]: any} = {};\n    if (keyframes) {\n    const kfs = Array.isArray(keyframes) ? keyframes : [keyframes];\n
kfs.forEach(kf => {\n    Object.keys(kf).forEach(prop => {\n    if (prop == 'offset' || prop == 'easing') return;\n
flatKeyframes[prop] = kf[prop];\n    });\n    });\n    }\n\n    return flatKeyframes;\n    }\n\n    function removeElement(node:
any) {\n    node.parentNode.removeChild(node);\n    }\n\n    /**\n    * @license\n    * Copyright Google LLC All Rights
Reserved.\n    * Use of this source code is governed by an MIT-style license that can be\n    * found in the
LICENSE file at https://angular.io/license\n    */\n\n    import { AnimationPlayer } from '@angular/animations';\n\n    import
{ computeStyle } from '../util';\n\n    import { SpecialCasedStyles } from './special_cased_styles';\n\n    import
{ DOMAnimation } from './dom_animation';\n\n    export class WebAnimationsPlayer implements AnimationPlayer {\n
private _onDoneFns: Function[] = [];\n    private _onStartFns: Function[] = [];\n    private _onDestroyFns: Function[] =
[];\n\n    private _duration: number;\n    private _delay: number;\n    private _initialized = false;\n    private _finished =
false;\n    private _started = false;\n    private _destroyed = false;\n    // TODO(issue/24571): remove '!'\n    private
_finalKeyframe!: {[key: string]: string|number};\n\n    // TODO(issue/24571): remove '!'\n    public readonly
domPlayer!: DOMAnimation;\n\n    public time = 0;\n\n    public parentPlayer: AnimationPlayer|null = null;\n\n    public
currentSnapshot: {[styleName: string]: string|number} = {};\n\n    constructor(\n    public element: any, public
keyframes: {[key: string]: string|number}[],\n    public options: {[key: string]: string|number},\n    private
_specialStyles?: SpecialCasedStyles|null) {\n    this._duration = <number>options['duration'];\n    this._delay =
<number>options['delay'] || 0;\n    this.time = this._duration + this._delay;\n    }\n\n    private _onFinish() {\n    if
(!this._finished) {\n    this._finished = true;\n    this._onDoneFns.forEach(fn => fn());\n    this._onDoneFns =
[];\n    }\n    }\n\n    init(): void {\n    this._buildPlayer();\n    this._preparePlayerBeforeStart();\n    }\n\n    private
_buildPlayer(): void {\n    if (this._initialized) return;\n    this._initialized = true;\n\n    const keyframes =
this.keyframes;\n    (this as {domPlayer: DOMAnimation}).domPlayer =\n
this._triggerWebAnimation(this.element, keyframes, this.options);\n    this._finalKeyframe = keyframes.length ?
keyframes[keyframes.length - 1] : {};\n    this.domPlayer.addEventListener('finish', () => this._onFinish());\n    }\n\n    private
_preparePlayerBeforeStart() {\n    // this is required so that the player doesn't start to animate right away\n
if (this._delay) {\n    this._resetDomPlayerState();\n    } else {\n    this.domPlayer.pause();\n    }\n    }\n\n    /**
@internal *\n    _triggerWebAnimation(element: any, keyframes: any[], options: any): DOMAnimation {\n    //
jscompiler doesn't seem to know animate is a native property because it's not fully\n    // supported yet across
common browsers (we polyfill it for Edge/Safari) [CL #143630929]\n    return element['animate'](keyframes,
options) as DOMAnimation;\n    }\n\n    onStart(fn: () => void): void {\n    this._onStartFns.push(fn);\n    }\n\n    onDone(fn: () => void): void {\n    this._onDoneFns.push(fn);\n    }\n\n    onDestroy(fn: () => void): void {\n

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new WebAnimationsPlayer(element, keyframes, playerOptions, specialStyles);\n })\n\nexport function
supportsWebAnimations() {\n return typeof getElementAnimateFn() === 'function';\n}\n\nfunction
getElementAnimateFn(): any {\n return (isBrowser() && (<any>Element).prototype['animate']) || {};\n}\n\n"/**\n *
@license\n * Copyright Google LLC All Rights Reserved.\n *\n * Use of this source code is governed by an MIT-
style license that can be\n * found in the LICENSE file at https://angular.io/license\n *\n\nexport { Animation as
Animation} from './dsl/animation';\nexport { AnimationStyleNormalizer as AnimationStyleNormalizer,
NoopAnimationStyleNormalizer as NoopAnimationStyleNormalizer} from
'/dsl/style_normalization/animation_style_normalizer';\nexport { WebAnimationsStyleNormalizer as
WebAnimationsStyleNormalizer} from './dsl/style_normalization/web_animations_style_normalizer';\nexport
{ NoopAnimationDriver as NoopAnimationDriver} from './render/animation_driver';\nexport { AnimationEngine as
AnimationEngine} from './render/animation_engine_next';\nexport { CssKeyframesDriver as CssKeyframesDriver}
from './render/css_keyframes/css_keyframes_driver';\nexport { CssKeyframesPlayer as CssKeyframesPlayer} from
'/render/css_keyframes/css_keyframes_player';\nexport { containsElement as containsElement, invokeQuery as
invokeQuery, matchesElement as matchesElement, validateStyleProperty as validateStyleProperty} from
'/render/shared';\nexport { supportsWebAnimations as supportsWebAnimations, WebAnimationsDriver as
WebAnimationsDriver} from './render/web_animations/web_animations_driver';\nexport { WebAnimationsPlayer as
WebAnimationsPlayer} from './render/web_animations/web_animations_player';\nexport
{allowPreviousPlayerStylesMerge as allowPreviousPlayerStylesMerge} from './util';\n\n"/**\n *
@license\n *
Copyright Google LLC All Rights Reserved.\n *\n * Use of this source code is governed by an MIT-style license
that can be\n * found in the LICENSE file at https://angular.io/license\n *\n\nexport { AnimationDriver} from
'/render/animation_driver';\nexport * from './private_export';\n\n"/**\n *
@license\n * Copyright Google LLC All
Rights Reserved.\n *\n * Use of this source code is governed by an MIT-style license that can be\n * found in the
LICENSE file at https://angular.io/license\n *\n\nexport * from './src/browser';\n\n"/**\n *
@license\n * Copyright Google LLC All
Rights Reserved.\n *\n * Use of this source code is governed by an MIT-style license that can be\n * found in the
LICENSE file at https://angular.io/license\n *\n\n// This file is not used to build this module. It is only used during
editing\n// by the TypeScript language service and during build for verification. `ngc`\n// replaces this file with
production index.ts when it rewrites private symbol\n// names.\n\nexport * from './public_api';\n\n"/**\n *
Generated
bundle index. Do not edit.\n *\n\nexport * from './index';\n\nexport { SpecialCasedStyles as
angular_packages_animations_browser_browser_a} from
'/src/render/special_cased_styles';\n\n,"names":["NoopAnimationPlayer","AnimationGroupPlayer","PRE_STYLE",
"AUTO_STYLE","Injectable","sequence","style","AnimationGroupPlayer","ONE_SECOND"],"mappings":":;,,,,;,,,,;
;IAAA;,,,,;,,,,;IACa;IAEA,IAAI,aAAa,GAAG,UAAS,CAAC,EAAE,CAAC;QAC7B,aAAa,GAAG,MAAM,CAA
C,cAAc;aAChC,EAAE,SAAS,EAAE,EAAE,EAAE,YAAY,KAAK,IAAI,UAAU,CAAC,EAAE,CAAC,IAAI,CAA
C,CAAC,SAAS,GAAG,CAAC,CAAC,EAAE,CAAC;YAC5E,UAAU,CAAC,EAAE,CAAC,IAAI,KAAK,IAAI,CA
AC,IAAI,CAAC;gBAAE,IAAI,CAAC,CAAC,cAAc,CAAC,CAAC,CAAC;oBAAE,CAAC,CAAC,CAAC,CAAC,
GAAG,CAAC,CAAC,CAAC,CAAC,CAAC,EAAE,CAAC;QAC/E,OAAO,aAAa,CAAC,CAAC,EAAE,CAAC,CA
AC,CAAC;IAC/B,CAAC,CAAC;aAEc,SAAS,CAAC,CAAC,EAAE,CAAC;QACIB,aAAa,CAAC,CAAC,EAAE,C
AAC,CAAC,CAAC;QACpB,SAAS,EAAE,KAAK,IAAI,CAAC,WAAW,GAAG,CAAC,CAAC,EAAE;QACvC,C
AAC,CAAC,SAAS,GAAG,CAAC,KAAK,IAAI,GAAG,MAAM,CAAC,MAAM,CAAC,CAAC,CAAC,IAAI,EAA
E,CAAC,SAAS,GAAG,CAAC,CAAC,SAAS,EAAE,IAAI,EAAE,EAAE,CAAC,CAAC;IACzF,CAAC;IAEM,IAA
I,QAAQ,GAAG;QACIB,QAAQ,GAAG,MAAM,CAAC,MAAM,IAAI,SAAS,QAAQ,CAAC,CAAC;YAC3C,KAA
K,IAAI,CAAC,EAAE,CAAC,GAAG,CAAC,EAAE,CAAC,GAAG,SAAS,CAAC,MAAM,EAAE,CAAC,GAAG,C
AAC,EAAE,CAAC,EAAE,EAAE;gBACjD,CAAC,GAAG,SAAS,CAAC,CAAC,CAAC,CAAC;gBACjB,KAAK,I
AAI,CAAC,IAAI,CAAC;oBAAE,IAAI,MAAM,CAAC,SAAS,CAAC,cAAc,CAAC,IAAI,CAAC,CAAC,EAAE,C
AAC,CAAC;wBAAE,CAAC,CAAC,CAAC,CAAC,GAAG,CAAC,CAAC,CAAC,CAAC,CAAC;aAChF;YACD,O
AAO,CAAC,CAAC;SACZ,CAAA;QACD,OAAO,QAAQ,CAAC,KAAK,CAAC,IAAI,EAAE,SAAS,CAAC,CAA

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C;IAC3C,CAAC,CAAA;aAEe,MAAM,CAAC,CAAC,EAAE,CAAC;QACvB,IAAI,CAAC,GAAG,EAAE,CAAC;
QACX,KAAK,IAAI,CAAC,IAAI,CAAC;YAAE,IAAI,MAAM,CAAC,SAAS,CAAC,cAAc,CAAC,IAAI,CAAC,C
AAC,EAAE,CAAC,CAAC,IAAI,CAAC,CAAC,OAAO,CAAC,CAAC,CAAC,GAAG,CAAC;gBAC/E,CAAC,CA
AC,CAAC,CAAC,GAAG,CAAC,CAAC,CAAC,CAAC,CAAC;QACbB,IAAI,CAAC,IAAI,IAAI,IAAI,OAAO,MA
AM,CAAC,qBAAqB,KAAK,UAAU;YAC/D,KAAK,IAAI,CAAC,GAAG,CAAC,EAAE,CAAC,GAAG,MAAM,C
AAC,qBAAqB,CAAC,CAAC,CAAC,EAAE,CAAC,GAAG,CAAC,CAAC,MAAM,EAAE,CAAC,EAAE,EAAE;g
BACpE,IAAI,CAAC,CAAC,OAAO,CAAC,CAAC,CAAC,CAAC,CAAC,CAAC,GAAG,CAAC,IAAI,MAAM,CA
AC,SAAS,CAAC,oBAAoB,CAAC,IAAI,CAAC,CAAC,EAAE,CAAC,CAAC,CAAC,CAAC,CAAC;oBACIE,CA
AC,CAAC,CAAC,CAAC,CAAC,CAAC,CAAC,GAAG,CAAC,CAAC,CAAC,CAAC,CAAC,CAAC,CAAC,CAA
C;aACzB;QACL,OAAO,CAAC,CAAC;IACb,CAAC;aAEe,UAAU,CAAC,UAAU,EAAE,MAAM,EAAE,GAAG,E
AAE,IAAI;QACpD,IAAI,CAAC,GAAG,SAAS,CAAC,MAAM,EAAE,CAAC,GAAG,CAAC,GAAG,CAAC,GAA
G,MAAM,GAAG,IAAI,KAAK,IAAI,GAAG,IAAI,GAAG,MAAM,CAAC,wBAAwB,CAAC,MAAM,EAAE,GAA
G,CAAC,GAAG,IAAI,EAAE,CAAC,CAAC;QAC7H,IAAI,OAAO,OAAO,KAAK,QAAQ,IAAI,OAAO,OAAO,C
AAC,QAAQ,KAAK,UAAU;YAAE,CAAC,GAAG,OAAO,CAAC,QAAQ,CAAC,UAAU,EAAE,MAAM,EAAE,G
AAG,EAAE,IAAI,CAAC,CAAC;;YAC1H,KAAK,IAAI,CAAC,GAAG,UAAU,CAAC,MAAM,GAAG,CAAC,EA
AE,CAAC,IAAI,CAAC,EAAE,CAAC,EAAE;gBAAE,IAAI,CAAC,GAAG,UAAU,CAAC,CAAC,CAAC;oBAAE,
CAAC,GAAG,CAAC,CAAC,GAAG,CAAC,GAAG,CAAC,CAAC,CAAC,CAAC,GAAG,CAAC,GAAG,CAAC,G
AAG,CAAC,CAAC,MAAM,EAAE,GAAG,EAAE,CAAC,CAAC,GAAG,CAAC,CAAC,MAAM,EAAE,GAAG,C
AAC,KAAK,CAAC,CAAC;QACIJ,OAAO,CAAC,GAAG,CAAC,IAAI,CAAC,IAAI,MAAM,CAAC,cAAc,CAAC
,MAAM,EAAE,GAAG,EAAE,CAAC,CAAC,EAAE,CAAC,CAAC;IACIE,CAAC;aAEe,OAAO,CAAC,UAAU,EA
AE,SAAS;QACzC,OAAO,UAAU,MAAM,EAAE,GAAG,IAAI,SAAS,CAAC,MAAM,EAAE,GAAG,EAAE,UAA
U,CAAC,CAAC,EAAE,CAAA;IACzE,CAAC;aAEe,UAAU,CAAC,WAAW,EAAE,aAAa;QACjD,IAAI,OAAO,O
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https://angular.io/\n * License: MIT\n *\n(function (global, factory) {\n  typeof exports === 'object' && typeof\n  module !== 'undefined' ? factory(exports, require('@angular/animations'), require('@angular/animations/browser'))\n  :\n  typeof define === 'function' && define.amd ? define('@angular/animations/browser/testing', ['exports',\n  '@angular/animations', '@angular/animations/browser'], factory) :\n  (global = global || self, factory((global.ng =\n  global.ng || {}, global.ng.animations = global.ng.animations || {}, global.ng.animations.browser =\n  global.ng.animations.browser || {}, global.ng.animations.browser.testing = {}), global.ng.animations,\n  global.ng.animations.browser));\n})(this, (function (exports, animations, browser) { 'use strict';\n\n /*!
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***** */\n /* global
Reflect, Promise */\n var extendStatics = function (d, b) {\n extendStatics = Object.setPrototypeOf ||\n
({ __proto__: [] } instanceof Array && function (d, b) { d.__proto__ = b; }) ||\n function (d, b) { for (var p in b)\n if (b.hasOwnProperty(p))\n d[p] = b[p]; }; return extendStatics(d, b);\n };
function __extends(d, b) {\n extendStatics(d, b);\n function __() { this.constructor = d; }\n d.prototype = b === null ? Object.create(b) : (__proto__ = b.prototype, new __());\n }\n var __assign = function () {\n __assign = Object.assign || function __assign(t) {\n for (var s, i = 1, n = arguments.length; i < n; i++) {\n s = arguments[i];\n for (var p in s)\n if (Object.prototype.hasOwnProperty.call(s, p))\n t[p] = s[p];\n }\n return t;\n }; return __assign.apply(this, arguments);\n };
function __rest(s, e) {\n var t = {};\n for (var p in s)\n if (Object.prototype.hasOwnProperty.call(s, p) && e.indexOf(p) < 0)\n t[p] = s[p];\n if (s != null && typeof Object.getPrototypeOf === "function")\n for (var i = 0, p = Object.getPrototypeOf(s); i < p.length; i++) {\n if (e.indexOf(p[i]) < 0 && Object.prototype.propertyIsEnumerable.call(s, p[i]))\n t[p[i]] = s[p[i]];\n }\n return t;\n }\n function __decorate(decorators, target, key, desc) {\n var c = arguments.length, r = c < 3 ? target : desc === null ? desc = Object.getOwnPropertyDescriptor(target, key) : desc, d;\n if (typeof Reflect === "object" && typeof Reflect.decorate === "function")\n r = Reflect.decorate(decorators, target, key, desc);\n else\n for (var i = decorators.length - 1; i >= 0; i--)\n if (d = decorators[i])\n r = (c < 3 ? d(r) : c > 3 ? d(target, key, r) : d(target, key)) || r;\n return c > 3 && r && Object.defineProperty(target, key, r, r);\n }\n function __param(paramIndex, decorator) {\n return function (target, key) { decorator(target, key, paramIndex); }\n }\n function __metadata(metadataKey, metadataValue) {\n if (typeof Reflect === "object" && typeof Reflect.metadata === "function")\n return Reflect.metadata(metadataKey, metadataValue);\n }\n function __awaiter(thisArg, _arguments, P, generator) {\n function adopt(value) { return value instanceof P ? value : new P(function (resolve) { resolve(value); }); }\n return new (P || (P = Promise))(function (resolve, reject) {\n function fulfilled(value) { try {\n step(generator.next(value));\n }\n catch (e) {\n reject(e);\n }\n }\n function rejected(value) { try {\n step(generator["throw"](value));\n }\n catch (e) {\n reject(e);\n }\n }\n function step(result) { result.done ? resolve(result.value) : adopt(result.value).then(fulfilled, rejected); }\n step((generator = generator.apply(thisArg, _arguments || [])).next());\n });\n }\n function __generator(thisArg, body) {\n var _ = { label: 0, sent: function () { if (t[0] & 1)\n throw t[1]; return t[1]; }, trys: [], ops: [] }, f, y, t, g;\n return g = { next: verb(0), "throw": verb(1), "return": verb(2) }, typeof Symbol === "function" && (g[Symbol.iterator] = function () { return this; }), g;\n function verb(n) { return function (v) { return step([n, v]); }\n }\n function step(op) {\n if (f)\n throw new TypeError("Generator is already executing.");\n while (_)\n try {\n if (f = 1, y && (t = op[0] & 2 ? y["return"] : op[0] ? y["throw"] || ((t = y["return"]) && t.call(y), 0) : y.next) && !(t = t.call(y, op[1])).done)\n return t;\n if (y = 0, t)\n op = [op[0] & 2, t.value];\n switch (op[0]) {\n case 0:\n case 1:\n t = op;\n break;\n case 4:\n _label++;\n return { value: op[1], done: false };\n case 5:\n _label++;\n y = op[1];\n op = [0];\n continue;\n case 7:\n op = _ops.pop();\n _trys.pop();\n continue;\n default:\n if (!(t = _trys, t = t.length > 0 && t[t.length - 1]) && (op[0] === 6 || op[0] === 2)) {\n _ = 0;\n continue;\n }\n if (op[0] === 3 && (!t || (op[1] > t[0] && op[1] < t[3]))) {\n _label = op[1];\n break;\n }\n if (op[0] === 6 && _label < t[1]) {\n _label = t[1];\n t = op;\n break;\n }\n if (t && _label < t[2]) {\n _label = t[2];\n _ops.push(op);\n break;\n }\n if (t[2])\n _ops.pop();\n _trys.pop();\n continue;\n }\n }\n op =\n body.call(thisArg, _);\n }\n catch (e) {\n op = [6, e];\n y = 0;\n }

```

```

}\n      finally {\n          f = t = 0;\n      }\n      if (op[0] & 5)\n          throw op[1];\nreturn { value: op[0] ? op[1] : void 0, done: true };\n    }\n    }\n    var __createBinding = Object.create ? (function\n(o, m, k, k2) {\n      if (k2 === undefined)\n        k2 = k;\n      Object.defineProperty(o, k2, { enumerable: true,\nget: function () { return m[k]; } });\n    }): (function (o, m, k, k2) {\n      if (k2 === undefined)\n        k2 = k;\n      o[k2] = m[k];\n    });\n    function __exportStar(m, exports) {\n      for (var p in m)\n        if (p !== \"default\" && !exports.hasOwnProperty(p))\n          __createBinding(exports, m, p);\n    }\n    function __values(o) {\n      var s = typeof Symbol === \"function\" && Symbol.iterator, m = s && o[s], i = 0;\n      if (m)\n        return\nm.call(o);\n      if (o && typeof o.length === \"number\")\n        return {\n          next: function () {\n            if (o && i >= o.length)\n              o = void 0;\n            return { value: o && o[i++], done: !o }; \n          }\n        };\n      throw new TypeError(s ? \"Object is not iterable.\" : \"Symbol.iterator is not defined.\");\n    }\n    function __read(o, n) {\n      var m = typeof Symbol === \"function\" && o[Symbol.iterator];\n      if (!m)\n        return o;\n      var i = m.call(o), r, ar = [], e;\n      try {\n        while ((n === void 0 || n-- > 0) && !(r =\ni.next()).done)\n          ar.push(r.value);\n      } catch (error) {\n        e = { error: error };\n      }\n      finally {\n        try {\n          if (r && !r.done && (m = i[\"return\"])\n            m.call(i);\n        }\n        finally {\n          if (e)\n            throw e.error;\n        }\n      }\n      return ar;\n    }\n    function\n__spread() {\n      for (var ar = [], i = 0; i < arguments.length; i++)\n        ar = ar.concat(__read(arguments[i]));\n      return ar;\n    }\n    function __spreadArrays() {\n      for (var s = 0, i = 0, il = arguments.length; i < il; i++)\n        s += arguments[i].length;\n      for (var r = Array(s), k = 0, i = 0; i < il; i++)\n        for (var a = arguments[i], j\n= 0, jl = a.length; j < jl; j++, k++)\n          r[k] = a[j];\n      return r;\n    }\n    function __await(v) {\nreturn this instanceof __await ? (this.v = v, this) : new __await(v);\n    }\n    function __asyncGenerator(thisArg,\n_arguments, generator) {\n      if (!Symbol.asyncIterator)\n        throw new TypeError(\"Symbol.asyncIterator is\nnot defined.\");\n      var g = generator.apply(thisArg, _arguments || []), i, q = [];\n      return i = { }, verb(\"next\"),\n      verb(\"throw\"), verb(\"return\"), i[Symbol.asyncIterator] = function () { return this; }, i;\n      function verb(n) { if\n(g[n])\n        i[n] = function (v) { return new Promise(function (a, b) { q.push([n, v, a, b]) > 1 || resume(n, v); }); };\n      }\n      function resume(n, v) { try {\n        step(g[n](v));\n      } catch (e) {\n        settle(q[0][3], e);\n      }\n      }\n      function step(r) { r.value instanceof __await ? Promise.resolve(r.value.v).then(fulfill, reject) :\nsettle(q[0][2], r); }\n      function fulfill(value) { resume(\"next\", value); }\n      function reject(value) {\nresume(\"throw\", value); }\n      function settle(f, v) { if (f(v), q.shift(), q.length)\n        resume(q[0][0], q[0][1]);\n      }\n      }\n      function __asyncDelegator(o) {\n        var i, p;\n        return i = { }, verb(\"next\"), verb(\"throw\"),\n        function (e) { throw e; }, verb(\"return\"), i[Symbol.iterator] = function () { return this; }, i;\n        function verb(n,\nf) { i[n] = o[n] ? function (v) { return (p = !p) ? { value: __await(o[n](v)), done: n === \"return\" } : f ? f(v) : v; } : f;\n      }\n      }\n      function __asyncValues(o) {\n        if (!Symbol.asyncIterator)\n          throw new\nTypeError(\"Symbol.asyncIterator is not defined.\");\n        var m = o[Symbol.asyncIterator], i;\n        return m ?\nm.call(o) : (o = typeof __values === \"function\" ? __values(o) : o[Symbol.iterator](), i = { }, verb(\"next\"),\n      verb(\"throw\"), verb(\"return\"), i[Symbol.asyncIterator] = function () { return this; }, i);\n      function verb(n) {\ni[n] = o[n] && function (v) { return new Promise(function (resolve, reject) { v = o[n](v), settle(resolve, reject,\nv.done, v.value); }); };\n      }\n      function settle(resolve, reject, d, v) { Promise.resolve(v).then(function (v) {\n      resolve({ value: v, done: d }); }, reject); }\n      }\n      }\n      function __makeTemplateObject(cooked, raw) {\n        if\n(Object.defineProperty) {\n          Object.defineProperty(cooked, \"raw\", { value: raw });\n        }\n        else {\n          cooked.raw = raw;\n        }\n        return cooked;\n      }\n      }\n      var __setModuleDefault = Object.create ?\n(function (o, v) {\n        Object.defineProperty(o, \"default\", { enumerable: true, value: v });\n      }): function (o, v)\n{\n        o[\"default\"] = v;\n      };\n      function __importStar(mod) {\n        if (mod && mod.__esModule)\n          return mod;\n        var result = {};\n        if (mod != null)\n          for (var k in mod)\n            if\n(Object.hasOwnProperty.call(mod, k))\n              __createBinding(result, mod, k);\n        __setModuleDefault(result, mod);\n        return result;\n      }\n      }\n      function __importDefault(mod) {\n        return (mod\n&& mod.__esModule) ? mod : { default: mod };\n      }\n      }\n      function __classPrivateFieldGet(receiver, privateMap)\n{\n        if (!privateMap.has(receiver))\n          throw new TypeError(\"attempted to get private field on non-\ninstance\");\n        return privateMap.get(receiver);\n      }\n      }\n      function __classPrivateFieldSet(receiver,\n
```

```

privateMap, value) {\n    if (!privateMap.has(receiver)) {\n        throw new TypeError("attempted to set private
field on non-instance");\n    }\n    privateMap.set(receiver, value);\n    return value;\n }\n\n /**\n *
@publicApi\n */\n var MockAnimationDriver = /** @class */ (function () {\n    function
MockAnimationDriver() {\n    }\n    MockAnimationDriver.prototype.validateStyleProperty = function (prop)
{\n        return browser.validateStyleProperty(prop);\n    };\n
MockAnimationDriver.prototype.matchesElement = function (element, selector) {\n        return
browser.matchesElement(element, selector);\n    };\n    MockAnimationDriver.prototype.containsElement =
function (elm1, elm2) {\n        return browser.containsElement(elm1, elm2);\n    };\n
MockAnimationDriver.prototype.query = function (element, selector, multi) {\n        return
browser.invokeQuery(element, selector, multi);\n    };\n    MockAnimationDriver.prototype.computeStyle =
function (element, prop, defaultValue) {\n        return defaultValue || ";\n    };\n
MockAnimationDriver.prototype.animate = function (element, keyframes, duration, delay, easing, previousPlayers)
{\n        if (previousPlayers === void 0) { previousPlayers = []; }\n        var player = new
MockAnimationPlayer(element, keyframes, duration, delay, easing, previousPlayers);\n
MockAnimationDriver.log.push(player);\n        return player;\n    };\n    return MockAnimationDriver;\n
})();\n    MockAnimationDriver.log = [];\n    /**\n     * @publicApi\n     */\n    var MockAnimationPlayer = /**
@class */ (function (_super) {\n        __extends(MockAnimationPlayer, _super);\n        function
MockAnimationPlayer(element, keyframes, duration, delay, easing, previousPlayers) {\n            var _this =
_super.call(this, duration, delay) || this;\n            _this.element = element;\n            _this.keyframes = keyframes;\n
            _this.duration = duration;\n            _this.delay = delay;\n            _this.easing = easing;\n
            _this.previousPlayers = previousPlayers;\n            _this.__finished = false;\n            _this.__started = false;\n
            _this.previousStyles = {};\n            _this._onInitFns = [];\n            _this.currentSnapshot = {};\n            if
(browser.allowPreviousPlayerStylesMerge(duration, delay)) {\n                previousPlayers.forEach(function (player)
{\n                    if (player instanceof MockAnimationPlayer) {\n                        var styles_1 =
player.currentSnapshot;\n                        Object.keys(styles_1).forEach(function (prop) { return
_this.previousStyles[prop] = styles_1[prop]; });\n                    });\n                });\n            }\n            return _this;\n
        }\n        /* @internal */\n        MockAnimationPlayer.prototype.onInit = function (fn) {\n
            this._onInitFns.push(fn);\n        };\n        /* @internal */\n        MockAnimationPlayer.prototype.init = function () {\n
            _super.prototype.init.call(this);\n            this._onInitFns.forEach(function (fn) { return fn(); });\n
            this._onInitFns = [];\n        };\n        MockAnimationPlayer.prototype.finish = function () {\n
            _super.prototype.finish.call(this);\n            this.__finished = true;\n        };\n
MockAnimationPlayer.prototype.destroy = function () {\n            _super.prototype.destroy.call(this);\n
            this.__finished = true;\n        };\n        /* @internal */\n        MockAnimationPlayer.prototype.triggerMicrotask =
function () { };\n        MockAnimationPlayer.prototype.play = function () {\n
            _super.prototype.play.call(this);\n            this.__started = true;\n        };\n
MockAnimationPlayer.prototype.hasStarted = function () {\n            return this.__started;\n        };\n
MockAnimationPlayer.prototype.beforeDestroy = function () {\n            var _this = this;\n            var captures =
{};\n            Object.keys(this.previousStyles).forEach(function (prop) {\n                captures[prop] =
_this.previousStyles[prop];\n            });\n            if (this.hasStarted()) {\n                // when assembling the captured
styles, it's important that\n                // we build the keyframe styles in the following order:\n                // {other styles
within keyframes, ... previousStyles }\n                this.keyframes.forEach(function (kf) {\n
                    Object.keys(kf).forEach(function (prop) {\n                        if (prop !== 'offset') {\n                            captures[prop] =
_this.__finished ? kf[prop] : animations.AUTO_STYLE;\n                        }\n                    });\n                });\n            }\n
            this.currentSnapshot = captures;\n        };\n        return MockAnimationPlayer;\n
    })(animations.NoopAnimationPlayer);\n\n    /**\n     * @license\n     * Copyright Google LLC All Rights
Reserved.\n     * Use of this source code is governed by an MIT-style license that can be\n     * found in the
LICENSE file at https://angular.io/license\n     */\n\n    /**\n     * @license\n     * Copyright Google LLC All Rights
Reserved.\n     * Use of this source code is governed by an MIT-style license that can be\n     * found in the

```


* The full duration of an animation step. A number and optional time unit, such as `"1s"` or `"10ms"` for one second and 10 milliseconds, respectively. The default unit is milliseconds.

* The delay in applying an animation step. A number and optional time unit. The default unit is milliseconds.

* An easing style that controls how an animation step accelerates and decelerates during its run time. An easing function such as `cubic-bezier()` or one of the following constants: `ease-in`, `ease-out`, `ease-in-and-out`.

Options that control animation styling and timing. The following animation functions accept `AnimationOptions` data: transition()`, `sequence()`, `{ @link animations/group group()}`, `query()`, `animation()`, `useAnimation()`, `animateChild()`. Programmatic animations built using the AnimationBuilder` service also make use of AnimationOptions`.`

```
@publicApi
export declare interface AnimationOptions {
  /** Sets a time-delay for initiating an animation action. A number and optional time unit, such as "1s" or "10ms" for one second and 10 milliseconds, respectively. The default unit is milliseconds. Default value is 0, meaning no delay.
  delay?: number|string;
  /** A set of developer-defined parameters that modify styling and timing when an animation action starts. An array of key-value pairs, where the provided value is used as a default.
  params?: {[name: string]: any};
}

/** Adds duration options to control animation styling and timing for a child animation.
@see
animateChild()
@publicApi
export declare interface AnimateChildOptions extends AnimationOptions {
  duration?: number|string;
}

/** Constants for the categories of parameters that can be defined for animations. A corresponding function defines a set of parameters for each category, and collects them into a corresponding AnimationMetadata` object.
@publicApi
export const enum AnimationMetadataType {
  /** Associates a named animation state with a set of CSS styles. See state()`. State = 0,
  State = 0,
  /** Data for a transition from one animation state to another. See transition()`. Transition = 1,
  Transition = 1,
  /** Contains a set of animation steps. See sequence()`. Sequence = 2,
  Sequence = 2,
  /** Contains a set of animation steps. See { @link animations/group group()`. Group = 3,
  Group = 3,
  /** Contains an animation step. See animate()`. Animate = 4,
  Animate = 4,
  /** Contains a set of animation steps. See keyframes()`. Keyframes = 5,
  Keyframes = 5,
  /** Contains a set of CSS property-value pairs into a named style. See style()`. Style = 6,
  Style = 6,
  /** Associates an animation with an entry trigger that can be attached to an element. See trigger()`. Trigger = 7,
  Trigger = 7,
  /** Contains a reusable animation. See animation()`. Reference = 8,
  Reference = 8,
  /** Contains data to use in executing child animations returned by a query. See animateChild()`. AnimateChild = 9,
  AnimateChild = 9,
  /** Contains animation parameters for a re-usable animation. See useAnimation()`. AnimateRef = 10,
  AnimateRef = 10,
  /** Contains child-animation query data. See query()`. Query = 11,
  Query = 11,
  /** Contains data for staggering an animation sequence. See stagger()`. Stagger = 12
  Stagger = 12
}

/** Specifies automatic styling.
@publicApi
export const AUTO_STYLE = '*';
/** Base for animation data structures.
@publicApi
export interface AnimationMetadata {
  type: AnimationMetadataType;
}

/** Contains an animation trigger. Instantiated and returned by the trigger() function.
@publicApi
export interface AnimationTriggerMetadata extends AnimationMetadata {
  /** The trigger name, used to associate it with an element. Unique within the component.
  name: string;
  /** An animation definition object, containing an array of state and transition declarations.
  definitions: AnimationMetadata[];
  /** An options object containing a delay and developer-defined parameters that provide styling defaults and can be overridden on invocation.
  options: {
    params?: {[name: string]: any};
  }|null;
}

/** Encapsulates an animation state by associating a state name with a set of CSS styles. Instantiated and returned by the state() function.
@publicApi
export interface AnimationStateMetadata extends AnimationMetadata {
  /** The state name, unique within the component.
  name: string;
  /** The CSS styles associated with this state.
  styles: AnimationStyleMetadata;
  /** An options object containing developer-defined parameters that provide styling defaults and can be overridden on invocation.
  options?: {
    params: {[name: string]: any};
  };
}

/** Encapsulates an animation transition. Instantiated and returned by the
```



```

`transition()` function.\n *\n * @publicApi\n *^\nexport interface AnimationTransitionMetadata extends
AnimationMetadata {\n /**\n * An expression that describes a state change.\n *^\n expr: string|\n ((fromState:
string, toState: string, element?: any,\n     params?: {[key: string]: any}) => boolean);\n /**\n * One or more
animation objects to which this transition applies.\n *^\n animation: AnimationMetadata|AnimationMetadata[];\n
/**\n * An options object containing a delay and\n * developer-defined parameters that provide styling defaults
and\n * can be overridden on invocation. Default delay is 0.\n *^\n options: AnimationOptions|null;\n}\n\n/**\n *
Encapsulates a reusable animation, which is a collection of individual animation steps.\n * Instantiated and returned
by the `animation()` function, and\n * passed to the `useAnimation()` function.\n *\n * @publicApi\n *^\nexport
interface AnimationReferenceMetadata extends AnimationMetadata {\n /**\n * One or more animation step
objects.\n *^\n animation: AnimationMetadata|AnimationMetadata[];\n /**\n * An options object containing a
delay and\n * developer-defined parameters that provide styling defaults and\n * can be overridden on invocation.
Default delay is 0.\n *^\n options: AnimationOptions|null;\n}\n\n/**\n * Encapsulates an animation query.
Instantiated and returned by\n * the `query()` function.\n *\n * @publicApi\n *^\nexport interface
AnimationQueryMetadata extends AnimationMetadata {\n /**\n * The CSS selector for this query.\n *^\n
selector: string;\n /**\n * One or more animation step objects.\n *^\n animation:
AnimationMetadata|AnimationMetadata[];\n /**\n * A query options object.\n *^\n options:
AnimationQueryOptions|null;\n}\n\n/**\n * Encapsulates a keyframes sequence. Instantiated and returned by\n * the
`keyframes()` function.\n *\n * @publicApi\n *^\nexport interface AnimationKeyframesSequenceMetadata extends
AnimationMetadata {\n /**\n * An array of animation styles.\n *^\n steps:
AnimationStyleMetadata[];\n}\n\n/**\n * Encapsulates an animation style. Instantiated and returned by\n * the
`style()` function.\n *\n * @publicApi\n *^\nexport interface AnimationStyleMetadata extends AnimationMetadata
{\n /**\n * A set of CSS style properties.\n *^\n styles: *|{|key: string]: string | number}|Array<{|key: string]:
string | number}|*|>;\n /**\n * A percentage of the total animate time at which the style is to be applied.\n *^\n
offset: number|null;\n}\n\n/**\n * Encapsulates an animation step. Instantiated and returned by\n * the `animate()`
function.\n *\n * @publicApi\n *^\nexport interface AnimationAnimateMetadata extends AnimationMetadata {\n
/**\n * The timing data for the step.\n *^\n timings: string|number|AnimateTimings;\n /**\n * A set of styles
used in the step.\n *^\n styles: AnimationStyleMetadata|AnimationKeyframesSequenceMetadata|null;\n}\n\n/**\n *
Encapsulates a child animation, that can be run explicitly when the parent is run.\n * Instantiated and returned by
the `animateChild` function.\n *\n * @publicApi\n *^\nexport interface AnimationAnimateChildMetadata extends
AnimationMetadata {\n /**\n * An options object containing a delay and\n * developer-defined parameters that
provide styling defaults and\n * can be overridden on invocation. Default delay is 0.\n *^\n options:
AnimationOptions|null;\n}\n\n/**\n * Encapsulates a reusable animation.\n * Instantiated and returned by the
`useAnimation()` function.\n *\n * @publicApi\n *^\nexport interface AnimationAnimateRefMetadata extends
AnimationMetadata {\n /**\n * An animation reference object.\n *^\n animation:
AnimationReferenceMetadata;\n /**\n * An options object containing a delay and\n * developer-defined
parameters that provide styling defaults and\n * can be overridden on invocation. Default delay is 0.\n *^\n
options: AnimationOptions|null;\n}\n\n/**\n * Encapsulates an animation sequence.\n * Instantiated and returned by
the `sequence()` function.\n *\n * @publicApi\n *^\nexport interface AnimationSequenceMetadata extends
AnimationMetadata {\n /**\n * An array of animation step objects.\n *^\n steps: AnimationMetadata[];\n /**\n *
An options object containing a delay and\n * developer-defined parameters that provide styling defaults and\n *
can be overridden on invocation. Default delay is 0.\n *^\n options: AnimationOptions|null;\n}\n\n/**\n *
Encapsulates an animation group.\n * Instantiated and returned by the `{@link animations/group group()}`
function.\n *\n * @publicApi\n *^\nexport interface AnimationGroupMetadata extends AnimationMetadata {\n
/**\n * One or more animation or style steps that form this group.\n *^\n steps: AnimationMetadata[];\n /**\n *
An options object containing a delay and\n * developer-defined parameters that provide styling defaults and\n *
can be overridden on invocation. Default delay is 0.\n *^\n options: AnimationOptions|null;\n}\n\n/**\n *
Encapsulates animation query options.\n * Passed to the `query()` function.\n *\n * @publicApi\n *^\nexport declare
interface AnimationQueryOptions extends AnimationOptions {\n /**\n * True if this query is optional, false if it is

```

required. Default is false.

- `required`: A required query throws an error if no elements are retrieved when the query is executed. An optional query does not.
- `optional?: boolean`: An optional query.
- `limit?: number`: A maximum total number of results to return from the query. If negative, results are limited from the end of the query list towards the beginning. By default, results are not limited.
- `limit?: number`: Encapsulates parameters for staggering the start times of a set of animation steps. Instantiated and returned by the `stagger()` function.
- `@publicApi`: export interface `AnimationStaggerMetadata` extends `AnimationMetadata`

```
{
  timings: string|number;
  animation: AnimationMetadata|AnimationMetadata[];
}
```

 - `timings`: One or more animation steps.
 - `animation`: Creates a named animation trigger, containing a list of `state()` and `transition()` entries to be evaluated when the expression bound to the trigger changes.
- `@param name`: An identifying string.
- `@param definitions`: An animation definition object, containing an array of `state()` and `transition()` declarations.
- `@return`: An object that encapsulates the trigger data.
- `@usageNotes`: Define an animation trigger in the `animations` section of `@Component` metadata. In the template, reference the trigger by name and bind it to a trigger expression that evaluates to a defined animation state, using the following format:

```
[@triggerName]="expression"
```

 - Animation trigger bindings convert all values to strings, and then match the previous and current values against any linked transitions. Booleans can be specified as `'1'` or `'true'` and `'0'` or `'false'`.

Usage Example

The following example creates an animation trigger reference based on the provided name value. The provided animation value is expected to be an array consisting of state and transition declarations.

```

@Component({
  selector: 'my-component',
  templateUrl: 'my-component-tpl.html',
  animations: [
    trigger('myAnimationTrigger', [
      state(...),
      state(...),
      transition(...),
      transition(...)
    ])
  ])
class MyComponent {
  myStatusExp = 'something';
}

```

The template associated with this component makes use of the defined trigger by binding to an element within its template code.

```

<!-- somewhere inside of my-component-tpl.html -->
<div
  [@myAnimationTrigger]="myStatusExp">...</div>

```

Using an inline function

The `transition` animation method also supports reading an inline function which can decide if its associated animation should be run.

```

// this method is run each time the `myAnimationTrigger` trigger
// value changes.
function myInlineMatcherFn(fromState: string, toState: string, element: any, params: {[key: string]: any}): boolean {
  // notice that `element` and `params` are also available here
  return toState === 'yes-please-animate';
}
@Component({
  selector: 'my-component',
  templateUrl: 'my-component-tpl.html',
  animations: [
    trigger('myAnimationTrigger', [
      transition(myInlineMatcherFn, // the animation sequence code
    ])
  ])
class MyComponent {
  myStatusExp = 'yes-please-animate';
}

```

Disabling Animations

When true, the special animation control binding `@.disabled` binding prevents all animations from rendering. Place the `@.disabled` binding on an element to disable animations on the element itself, as well as any inner animation triggers within the element.

The following example shows how to use this feature:

```

@Component({
  selector: 'my-component',
  template: `
<div
  [@.disabled]="isDisabled">
    <div [@childAnimation]="exp"></div>
  </div>
`,
  animations: [
    trigger('childAnimation', [
      // ...
    ])
  ])
class MyComponent {
  isDisabled = true;
  exp = '...';
}

```

When `@.disabled` is true, it prevents the `@childAnimation` trigger from animating, along with any inner animations.

Disable animations application-wide

When an area of the template is set to have animations disabled, all inner components have their animations disabled as well. This means that you can disable all animations for an app by placing a host binding set on `@.disabled` on the topmost Angular component.

```

import {Component, HostBinding} from '@angular/core';
@Component({
  selector: 'app-component',
  templateUrl: 'app.component.html',
})
class AppComponent {
  @HostBinding('@.disabled') public animationsDisabled = true;
}

```

Overriding disablement of inner animations

Despite inner animations being disabled, a parent animation can `query()` for inner elements located in disabled areas of the template and still animate them if needed. This is also the case for when a sub animation is queried by a parent and then later animated using

`animateChild()`.
 ### Detecting when an animation is disabled
 If a region of the DOM (or the entire application) has its animations disabled, the animation trigger callbacks still fire, but for zero seconds. When the callback fires, it provides an instance of an `AnimationEvent`. If animations are disabled, the `.disabled` flag on the event is true.
 @publicApi
 /next export function trigger(name: string, definitions: AnimationMetadata[]): AnimationTriggerMetadata {
 return {type: AnimationMetadataType.Trigger, name, definitions, options: {}};
 }
 Defines an animation step that combines styling information with timing information.
 @param timings Sets `AnimateTimings` for the parent animation.
 A string in the format `"duration [delay] [easing]"`.
 - Duration and delay are expressed as a number and optional time unit, such as `"1s"` or `"10ms"` for one second and 10 milliseconds, respectively.
 - The default unit is milliseconds.
 - The easing value controls how the animation accelerates and decelerates during its runtime. Value is one of `'ease'`, `'ease-in'`, `'ease-out'`, `'ease-in-out'`, or a `'cubic-bezier()'` function call.
 If not supplied, no easing is applied.
 For example, the string `"1s 100ms ease-out"` specifies a duration of 1000 milliseconds, and delay of 100 ms, and the `'ease-out'` easing style, which decelerates near the end of the duration.
 @param styles Sets `AnimationStyles` for the parent animation.
 A function call to either `style()` or `keyframes()` that returns a collection of CSS style entries to be applied to the parent animation.
 When null, uses the styles from the destination state.
 This is useful when describing an animation step that will complete an animation; see `"Animating to the final state"` in `transitions()`.
 @returns An object that encapsulates the animation step.
 @usageNotes
 Call within an animation `sequence()`, `{@link animations/group group()}'`, or `transition()` call to specify an animation step that applies given style data to the parent animation for a given amount of time.
 ### Syntax Examples
 Timing examples
 The following examples show various `timings` specifications.
 - `animate(500)`: Duration is 500 milliseconds.
 - `animate("1s")`: Duration is 1000 milliseconds.
 - `animate("100ms 0.5s")`: Duration is 100 milliseconds, delay is 500 milliseconds.
 - `animate("5s ease-in")`: Duration is 5000 milliseconds, easing in.
 - `animate("5s 10ms cubic-bezier(.17,.67,.88,1)")`: Duration is 5000 milliseconds, delay is 10 milliseconds, easing according to a bezier curve.
 Style examples
 The following example calls `style()` to set a single CSS style.
 ```typescript  
 animate(500, style({ background: "red" }));  
 ```  
 The following example calls `keyframes()` to set a CSS style to different values for successive keyframes.
 ```typescript  
 animate(500, keyframes([  
 style({ background: "blue" }),  
 style({ background: "red" })  
 ]));  
 ```  
 @publicApi
 /next export function animate(timings: string|number, styles: AnimationStyleMetadata|AnimationKeyframesSequenceMetadata|null = null): AnimationAnimateMetadata {
 return {type: AnimationMetadataType.Animate, styles, timings};
 }
 @description Defines a list of animation steps to be run in parallel.
 @param steps An array of animation step objects.
 - When steps are defined by `style()` or `animate()` function calls, each call within the group is executed instantly.
 - To specify offset styles to be applied at a later time, define steps with `keyframes()`, or use `animate()` calls with a delay value.
 For example:
 ```typescript  
 group([  
 animate("1s", style({ background: "black" })),  
 animate("2s", style({ color: "white" })),  
 ])  
 ```  
 @param options An options object containing a delay and developer-defined parameters that provide styling defaults and can be overridden on invocation.
 @return An object that encapsulates the group data.
 @usageNotes
 Grouped animations are useful when a series of styles must be animated at different starting times and closed off at different ending times.
 When called within a `sequence()` or a `transition()` call, does not continue to the next instruction until all of the inner animation steps have completed.
 @publicApi
 /next export function group(steps: AnimationMetadata[], options: AnimationOptions|null = null): AnimationGroupMetadata {
 return {type: AnimationMetadataType.Group, steps, options};
 }
 Defines a list of animation steps to be run sequentially, one by one.
 @param steps An array of animation step objects.
 - Steps defined by `style()` calls apply the styling data immediately.
 - Steps defined by `animate()` calls apply the styling data over time as specified by the timing data.
 ```typescript  
 sequence([  
 style({ opacity: 0 }),  
 animate("1s", style({ opacity: 1 })),  
 ])  
 ```  
 @param options An options object containing a delay and developer-defined parameters that provide styling defaults and can be overridden on invocation.

`@return` An object that encapsulates the sequence data.
`@usageNotes` When you pass an array of steps to a `transition()` call, the steps run sequentially by default. Compare this to the `@link animations/group group()` call, which runs animation steps in parallel. When a sequence is used within a `@link animations/group group()` or a `transition()` call, execution continues to the next instruction only after each of the inner animation steps have completed.
`@publicApi` `**/nexport` function `sequence`(`steps`: AnimationMetadata[], `options`: AnimationOptions|null = null): AnimationSequenceMetadata {
`return` {`type`: AnimationMetadataType.Sequence, `steps`, `options`};
`**/n/n/**` Declares a key/value object containing CSS properties/styles that can then be used for an animation `state`, within an animation `sequence`, or as styling data for calls to `animate()` and `keyframes()`.
`@param` `tokens` A set of CSS styles or HTML styles associated with an animation state. The value can be any of the following:
- A key-value style pair associating a CSS property with a value.
- An array of key-value style pairs.
- An asterisk (*), to use auto-styling, where styles are derived from the element being animated and applied to the animation when it starts.
- Auto-styling can be used to define a state that depends on layout or other environmental factors.
`@return` An object that encapsulates the style data.
`@usageNotes` The following examples create animation styles that collect a set of CSS property values:
`typescript` // string values for CSS properties
`style({ background: "red", color: "blue" })`
// numerical pixel values
`style({ width: 100, height: 0 })`
The following example uses auto-styling to allow a component to animate from a height of 0 up to the height of the parent element:
`style({ height: 0 })`, `animate("1s", style({ height: "*" })`
`@publicApi` `**/nexport` function `style`(`tokens`: *|{[`key`: string]: string | number})
Array<*|{[`key`: string]: string | number}>): AnimationStyleMetadata {
`return` {`type`: AnimationMetadataType.Style, `styles`: `tokens`, `offset`: null};
`**/n/n/**` Declares an animation state within a trigger attached to an element.
`@param` `name` One or more names for the defined state in a comma-separated string. The following reserved state names can be supplied to define a style for specific use cases:
- `void` You can associate styles with this name to be used when the element is detached from the application. For example, when an `ngIf` evaluates to false, the state of the associated element is void.
- `*` (asterisk) Indicates the default state. You can associate styles with this name to be used as the fallback when the state that is being animated is not declared within the trigger.
`@param` `styles` A set of CSS styles associated with this state, created using the `style()` function. This set of styles persists on the element once the state has been reached.
`@param` `options` Parameters that can be passed to the state when it is invoked. 0 or more key-value pairs.
`@return` An object that encapsulates the new state data.
`@usageNotes` Use the `trigger()` function to register states to an animation trigger. Use the `transition()` function to animate between states. When a state is active within a component, its associated styles persist on the element, even when the animation ends.
`@publicApi` `**/nexport` function `state`(`name`: string, `styles`: AnimationStyleMetadata, `options`?: {`params`: {[`name`: string]: any}}): AnimationStateMetadata {
`return` {`type`: AnimationMetadataType.State, `name`, `styles`, `options`};
`**/n/n/**` Defines a set of animation styles, associating each style with an optional `offset` value.
`@param` `steps` A set of animation styles with optional offset data.
* The optional `offset` value for a style specifies a percentage of the total animation time at which that style is applied.
`@returns` An object that encapsulates the keyframes data.
`@usageNotes` Use with the `animate()` call. Instead of applying animations from the current state to the destination state, keyframes describe how each style entry is applied and at what point within the animation arc. Compare [CSS Keyframe Animations](https://www.w3schools.com/css/css3_animations.asp).
Usage
In the following example, the offset values describe when each `backgroundColor` value is applied. The color is red at the start, and changes to blue when 20% of the total time has elapsed.
`typescript` // the provided offset values
`animate("5s", keyframes([style({ backgroundColor: "red", offset: 0 }), style({ backgroundColor: "blue", offset: 0.2 }), style({ backgroundColor: "orange", offset: 0.3 }), style({ backgroundColor: "black", offset: 1 })]))`
* If there are no `offset` values specified in the style entries, the offsets are calculated automatically.
`typescript` `animate("5s", keyframes([style({ backgroundColor: "red" }) // offset = 0 style({ backgroundColor: "blue" }) // offset = 0.33 style({`

```

backgroundColor: \"orange\" }) // offset = 0.66\n * style({ backgroundColor: \"black\" }) // offset = 1\n * ))\n
*```\n\n * @publicApi\n * \n * export function keyframes(steps: AnimationStyleMetadata[]):
AnimationKeyframesSequenceMetadata {\n return {type: AnimationMetadataType.Keyframes, steps};\n}\n\n\n *
* Declares an animation transition as a sequence of animation steps to run when a given\n * condition is satisfied.
The condition is a Boolean expression or function that compares\n * the previous and current animation states, and
returns true if this transition should occur.\n * When the state criteria of a defined transition are met, the associated
animation is\n * triggered.\n * \n * @param stateChangeExpr A Boolean expression or function that compares the
previous and current\n * animation states, and returns true if this transition should occur. Note that \"true\" and
\"false\"\n * match 1 and 0, respectively. An expression is evaluated each time a state change occurs in the\n *
animation trigger element.\n * The animation steps run when the expression evaluates to true.\n * \n * - A state-
change string takes the form \"state1 => state2\", where each side is a defined animation\n * state, or an asterisk (*)
to refer to a dynamic start or end state.\n * - The expression string can contain multiple comma-separated
statements;\n * for example \"state1 => state2, state3 => state4\".\n * - Special values `:enter` and `:leave` initiate a
transition on the entry and exit states,\n * equivalent to \"void => *\" and \"* => void\".\n * - Special values
`:increment` and `:decrement` initiate a transition when a numeric value has\n * increased or decreased in value.\n *
- A function is executed each time a state change occurs in the animation trigger element.\n * The animation steps
run when the function returns true.\n * \n * @param steps One or more animation objects, as returned by the
`animate()` or\n * `sequence()` function, that form a transformation from one state to another.\n * A sequence is
used by default when you pass an array.\n * @param options An options object that can contain a delay value for the
start of the animation,\n * and additional developer-defined parameters. Provided values for additional parameters
are used\n * as defaults, and override values can be passed to the caller on invocation.\n * @returns An object that
encapsulates the transition data.\n * \n * @usageNotes\n * The template associated with a component binds an
animation trigger to an element.\n * \n * ````HTML\n * <!-- somewhere inside of my-component-tpl.html -->\n * <div
[@myAnimationTrigger]=\"myStatusExp\">...</div>\n * ````\n * \n * All transitions are defined within an animation
trigger,\n * along with named states that the transitions change to and from.\n * \n * ````typescript\n *
trigger(\"myAnimationTrigger\", [\n * // define states\n * state(\"on\", style({ background: \"green\" })),\n *
state(\"off\", style({ background: \"grey\" })),\n * ...]\n * ````\n * \n * Note that when you call the `sequence()`
function within a `@link animations/group group()`\n * or a `transition()` call, execution does not continue to the
next instruction\n * until each of the inner animation steps have completed.\n * \n * ### Syntax examples\n * \n *
The following examples define transitions between the two defined states (and default states),\n * using various
options:\n * \n * ````typescript\n * // Transition occurs when the state value\n * // bound to \"myAnimationTrigger\"
changes from \"on\" to \"off\"\n * transition(\"on => off\", animate(500))\n * // Run the same animation for both
directions\n * transition(\"on <=> off\", animate(500))\n * // Define multiple state-change pairs separated by
commas\n * transition(\"on => off, off => void\", animate(500))\n * ````\n * \n * ### Special values for state-change
expressions\n * \n * - Catch-all state change for when an element is inserted into the page and the\n * destination
state is unknown:\n * \n * ````typescript\n * transition(\"void => *\", [\n * style({ opacity: 0 }),\n * animate(500)\n *
])\n * ````\n * \n * - Capture a state change between any states:\n * \n * `transition(\"* => *\", animate(\"1s 0s\"))`\n *
\n * \n * - Entry and exit transitions:\n * \n * ````typescript\n * transition(\":enter\", [\n * style({ opacity: 0 }),\n *
animate(500, style({ opacity: 1 }))] )\n * ],\n * transition(\":leave\", [\n * animate(500, style({ opacity: 0 }))] )\n *
])\n * ````\n * \n * - Use `:increment` and `:decrement` to initiate transitions:\n * \n * ````typescript\n *
transition(\":increment\", group([\n * query(\":enter\", [\n * style({ left: '100%' })),\n * animate('0.5s ease-out',
style('*'))\n * ]),\n * query(\":leave\", [\n * animate('0.5s ease-out', style({ left: '-100%' }))] )\n * ]))\n * ])\n *
\n * transition(\":decrement\", group([\n * query(\":enter\", [\n * style({ left: '100%' })),\n * animate('0.5s ease-out',
style('*'))\n * ]),\n * query(\":leave\", [\n * animate('0.5s ease-out', style({ left: '-100%' }))] )\n * ]))\n * ])\n *
````\n * \n * ### State-change functions\n * \n * Here is an example of a `fromState` specified as a state-change function
that invokes an\n * animation when true:\n * \n * ````typescript\n * transition((fromState, toState) => {\n *
return fromState == \"off\" && toState == \"on\";\n * },\n * animate(\"1s 0s\"))\n * ````\n * \n * ### Animating to
the final state\n * \n * If the final step in a transition is a call to `animate()` that uses a timing value\n * with no style

```

data, that step is automatically considered the final animation arc, for the element to reach the final state. Angular automatically adds or removes CSS styles to ensure that the element is in the correct final state. The following example defines a transition that starts by hiding the element, then makes sure that it animates properly to whatever state is currently active for trigger:

```

typescript
transition("void => *", [
 style({ opacity: 0 }),
 animate(500)
])
Boolean value matching
If a trigger binding value is a Boolean, it can be matched using a transition expression that compares true and false or 1 and 0. For example:
// in the template
<div [@openClose]="open ? true : false">...</div>
// in the component metadata
trigger('openClose', [
 state('true', style({ height: '*' })),
 state('false', style({ height: '0px' })),
 transition('false <=> true', animate(500))
])
@publicApi
export function transition(
 stateChangeExpr: string,
 ((fromState: string, toState: string, element?: any, params?: {[key: string]: any}) => boolean),
 steps: AnimationMetadata[] | AnimationMetadata,
 options: AnimationOptions | null = null): AnimationTransitionMetadata {
 return {type: AnimationMetadataType.Transition, expr: stateChangeExpr, animation: steps, options};
}
@n
Produces a reusable animation that can be invoked in another animation or sequence, by calling the `useAnimation()` function.
@param steps One or more animation objects, as returned by the `animate()` or `sequence()` function, that form a transformation from one state to another. A sequence is used by default when you pass an array.
@param options An options object that can contain a delay value for the start of the animation, and additional developer-defined parameters. Provided values for additional parameters are used as defaults, and override values can be passed to the caller on invocation.
@returns An object that encapsulates the animation data.
@usageNotes The following example defines a reusable animation, providing some default parameter values.
typescript
var fadeAnimation = animation(
 style({ opacity: '{{ start }}' }),
 animate('{{ time }}',
 style({ opacity: '{{ end }}' })),
 { params: { time: '1000ms', start: 0, end: 1 } });
@n
The following invokes the defined animation with a call to `useAnimation()`, passing in override parameter values.
js
useAnimation(fadeAnimation, {
 params: {
 time: '2s',
 start: 1,
 end: 0
 }
})
@n
If any of the passed-in parameter values are missing from this call, the default values are used. If one or more parameter values are missing before a step is animated, `useAnimation()` throws an error.
@publicApi
export function animation(
 steps: AnimationMetadata[] | AnimationMetadata,
 options: AnimationOptions | null = null): AnimationReferenceMetadata {
 return {type: AnimationMetadataType.Reference, animation: steps, options};
}
@n
Executes a queried inner animation element within an animation sequence.
@param options An options object that can contain a delay value for the start of the animation, and additional override values for developer-defined parameters.
@return An object that encapsulates the child animation data.
@usageNotes Each time an animation is triggered in Angular, the parent animation has priority and any child animations are blocked. In order for a child animation to run, the parent animation must query each of the elements containing child animations, and run them using this function. Note that this feature is designed to be used with `query()` and it will only work with animations that are assigned using the Angular animation library. CSS keyframes and transitions are not handled by this API.
@publicApi
export function animateChild(
 options: AnimateChildOptions | null = null): AnimationAnimateChildMetadata {
 return {type: AnimationMetadataType.AnimateChild, options};
}
@n
Starts a reusable animation that is created using the `animation()` function.
@param animation The reusable animation to start.
@param options An options object that can contain a delay value for the start of the animation, and additional override values for developer-defined parameters.
@return An object that contains the animation parameters.
@publicApi
export function useAnimation(
 animation: AnimationReferenceMetadata,
 options: AnimationOptions | null = null): AnimationAnimateRefMetadata {
 return {type: AnimationMetadataType.AnimateRef, animation, options};
}
@n
Finds one or more inner elements within the current element that is being animated within a sequence. Use with `animate()`.
@param selector The element to query, or a set of elements that contain Angular-specific characteristics, specified with one or more of the following tokens.

- `query(":enter")` or `query(":leave")` : Query for newly inserted/removed elements.
- `query(":animating")` : Query all currently animating elements.
- `query("@triggerName")` : Query

```

elements that contain an animation trigger.

- `query('@*)`: Query all elements that contain an animation triggers.
- `query(':self')`: Include the current element into the animation sequence.
- `@param animation` One or more animation steps to apply to the queried element or elements. An array is treated as an animation sequence.
- `@param options` An options object. Use the 'limit' field to limit the total number of items to collect.
- `@return` An object that encapsulates the query data.
- `@usageNotes` Tokens can be merged into a combined query selector string. For example: `typescript query(':self', .record:enter, .record:leave, @subTrigger', [...])`

The `query()` function collects multiple elements and works internally by using `element.querySelectorAll`. Use the 'limit' field of an options object to limit the total number of items to be collected. For example: `js query('div', [animate(...), animate(...)], { limit: 1 })`

By default, throws an error when zero items are found. Set the 'optional' flag to ignore this error. For example: `js query('some-element-that-may-not-be-there', [animate(...), animate(...)], { optional: true })`

### Usage Example

The following example queries for inner elements and animates them individually using `animate()`.

```
typescript @Component({
 selector: 'inner',
 template: `
 <div [@queryAnimation]="exp">
 <h1>Title</h1>
 <div class="content">
 Blah blah blah
 </div>
 </div>`,
 animations: [
 trigger('queryAnimation', [
 transition('* => goAnimate', [
 // hide the inner elements
 query('h1', style({ opacity: 0 })),
 query('.content', style({ opacity: 0 })),
 // animate the inner elements in, one by one
 query('h1', animate(1000, style({ opacity: 1 }))),
 query('.content', animate(1000, style({ opacity: 1 }))),
]),
],
],
 class: Cmp,
 exp = '';
})
export function query(selector: string, animation: AnimationMetadata|AnimationMetadata[], options: AnimationQueryOptions|null = null): AnimationQueryMetadata {
 return { type: AnimationMetadataType.Query, selector, animation, options };
}

// Use within an animation `query()` call to issue a timing gap after each queried item is animated.
// @param timings A delay value.
// @param animation One ore more animation steps.
// @returns An object that encapsulates the stagger data.
// In the following example, a container element wraps a list of items stamped out by an `ngFor`. The container element contains an animation trigger that will later be set to query for each of the inner items. Each time items are added, the opacity fade-in animation runs, and each removed item is faded out. When either of these animations occur, the stagger effect is applied after each item's animation is started.
html `<!-- list.component.html -->
<button (click)="toggle()">Show / Hide Items</button>
<hr />
<div [@listAnimation]="items.length">
 <div *ngFor="let item of items">
 {{ item }}
 </div>
</div>`

Here is the component code:
typescript import { trigger, transition, style, animate, query, stagger } from '@angular/animations';
@Component({
 templateUrl: 'list.component.html',
 animations: [
 trigger('listAnimation', [
 ...
]),
],
 class: ListComponent,
 items = [],
 showItems() {
 this.items = [0,1,2,3,4];
 },
 hideItems() {
 this.items = [];
 },
 toggle() {
 this.items.length ? this.hideItems() : this.showItems();
 },
})
Here is the animation trigger code:
typescript trigger('listAnimation', [
 transition('* => *', [
 // each time the binding value changes
 query(':leave', [
 stagger(100, [
 animate('0.5s', style({ opacity: 0 })),
]),
],
 query(':enter', [
 style({ opacity: 0 }),
 stagger(100, [
 animate('0.5s', style({ opacity: 1 })),
]),
]),
]),
],
)

export function stagger(timings: string|number, animation: AnimationMetadata|AnimationMetadata[]): AnimationStaggerMetadata {
 return { type: AnimationMetadataType.Stagger, timings, animation };
}

/**
 * @license
 * Copyright Google LLC All Rights Reserved.
 * Use of this source code is governed by an MIT-style license that can be found in the LICENSE file at https://angular.io/license
 */
export function scheduleMicroTask(cb: () => any) {
 Promise.resolve(null).then(cb);
}

/**
 * @license
 * Copyright Google LLC All Rights Reserved.
 * Use of this source code is governed by an MIT-style license that can be found in the LICENSE file at https://angular.io/license
 */
import { scheduleMicroTask } from './util';

Provides programmatic control of a reusable animation sequence, built using the `build()` method of
```

```

`AnimationBuilder`. The `build()` method
 * returns a factory, whose `create()` method instantiates and initializes
this interface.
 * @see `AnimationBuilder`
 * @see `AnimationFactory`
 * @see `animate()`
 *
 * @publicApi
 * \nexport interface AnimationPlayer {
 * /**
 * Provides a callback to invoke when the animation
finishes.
 * @param fn The callback function.
 * @see `finish()`
 * \n onDone(fn: () => void): void;
 * /**
 * Provides a callback to invoke when the animation starts.
 * @param fn The callback function.
 * @see
`run()`
 * \n onStart(fn: () => void): void;
 * /**
 * Provides a callback to invoke after the animation is
destroyed.
 * @param fn The callback function.
 * @see `destroy()`
 * @see `beforeDestroy()`
 * \n
onDestroy(fn: () => void): void;
 * /**
 * Initializes the animation.
 * \n
init(): void;
 * /**
 * Reports
whether the animation has started.
 * @returns True if the animation has started, false otherwise.
 * \n
hasStarted(): boolean;
 * /**
 * Runs the animation, invoking the `onStart()` callback.
 * \n
play(): void;
 * /**
 * Pauses the animation.
 * \n
pause(): void;
 * /**
 * Restarts the paused animation.
 * \n
restart():
void;
 * /**
 * Ends the animation, invoking the `onDone()` callback.
 * \n
finish(): void;
 * /**
 * Destroys
the animation, after invoking the `beforeDestroy()` callback.
 * @calls the `onDestroy()` callback when destruction
is completed.
 * \n
destroy(): void;
 * /**
 * Resets the animation to its initial state.
 * \n
reset(): void;
 * /**
 * Sets the position of the animation.
 * @param position A 0-based offset into the duration, in
milliseconds.
 * \n
setPosition(position: any /** TODO #9100 */): void;
 * /**
 * Reports the current position
of the animation.
 * @returns A 0-based offset into the duration, in milliseconds.
 * \n
getPosition(): number;
 * /**
 * The parent of this player, if any.
 * \n
parentPlayer: AnimationPlayer|null;
 * /**
 * The total run time
of the animation, in milliseconds.
 * \n
readonly totalTime: number;
 * /**
 * Provides a callback to invoke
before the animation is destroyed.
 * \n
beforeDestroy?: () => any;
 * /**
 * @internal
 * Internal
 * \n
triggerCallback?: (phaseName: string) => void;
 * /**
 * @internal
 * Internal
 * \n
disabled?:
boolean;
 * \n}
 * /**
 * An empty programmatic controller for reusable animations.
 * Used internally when
animations are disabled, to avoid
 * checking for the null case when an animation player is expected.
 * @see
`animate()`
 * @see `AnimationPlayer`
 * @see `GroupPlayer`
 *
 * @publicApi
 * \nexport class
NoopAnimationPlayer implements AnimationPlayer {
 private _onDoneFns: Function[] = [];
 private
_onStartFns: Function[] = [];
 private _onDestroyFns: Function[] = [];
 private _started = false;
 private
_destroyed = false;
 private _finished = false;
 public parentPlayer: AnimationPlayer|null = null;
 public
readonly totalTime: number;
 constructor(duration: number = 0, delay: number = 0) {
 this.totalTime = duration
+ delay;
 }
 private _onFinish() {
 if (!this._finished) {
 this._finished = true;
 this._onDoneFns.forEach(fn => fn());
 this._onDoneFns = [];
 }
 }
 onStart(fn: () => void): void {
 this._onStartFns.push(fn);
 }
 onDone(fn: () => void): void {
 this._onDoneFns.push(fn);
 }
 onDestroy(fn: () => void): void {
 this._onDestroyFns.push(fn);
 }
 hasStarted(): boolean {
 return
this._started;
 }
 init(): void {
 }
 play(): void {
 if (!this.hasStarted()) {
 this._onStart();
 this.triggerMicrotask();
 }
 this._started = true;
 }
 /** @internal
 * \n
triggerMicrotask() {
 scheduleMicroTask(() => this._onFinish());
 }
 private _onStart() {
 this._onStartFns.forEach(fn => fn());
 this._onStartFns = [];
 }
 pause(): void {
 }
 restart(): void {
 }
 finish(): void {
 this._onFinish();
 }
 }
 }
 destroy(): void {
 if (!this._destroyed) {
 this._destroyed = true;
 if (!this.hasStarted()) {
 this._onStart();
 }
 this.finish();
 this._onDestroyFns.forEach(fn => fn());
 this._onDestroyFns =
[];
 }
 }
 reset(): void {
 }
 setPosition(position: number): void {
 }
 getPosition(): number {
 return 0;
 }
 }
 /** @internal
 * \n
triggerCallback(phaseName: string): void {
 const methods = phaseName === 'start' ?
this._onStartFns : this._onDoneFns;
 methods.forEach(fn => fn());
 methods.length = 0;
 }
 }
}
 *
 * @license
 * Copyright Google LLC All Rights Reserved.
 * Use of this source code is governed by an MIT-
style license that can be
 * found in the LICENSE file at https://angular.io/license
 * \n
import
{ scheduleMicroTask } from './util';
import { AnimationPlayer } from './animation_player';
 * \n
 * A
programmatic controller for a group of reusable animations.
 * Used internally
 * to control animations.
 * @see
`AnimationPlayer`
 * @see { @link animations/group group() }
 *
 * \n
 * \nexport class AnimationGroupPlayer
implements AnimationPlayer {
 private _onDoneFns: Function[] = [];
 private _onStartFns: Function[] = [];
 private _finished = false;
 private _started = false;
 private _destroyed = false;
 private _onDestroyFns:

```



```

Function[] = [];\n\n public parentPlayer: AnimationPlayer|null = null;\n public totalTime: number = 0;\n public
readonly players: AnimationPlayer[];\n\n constructor(_players: AnimationPlayer[]) {\n this.players = _players;\n
let doneCount = 0;\n let destroyCount = 0;\n let startCount = 0;\n const total = this.players.length;\n\n if
(total == 0) {\n scheduleMicroTask(() => this._onFinish());\n } else {\n this.players.forEach(player => {\n
player.onDone(() => {\n if (++doneCount == total) {\n this._onFinish();\n });\n
player.onDestroy(() => {\n if (++destroyCount == total) {\n this._onDestroy();\n });\n
player.onStart(() => {\n if (++startCount == total) {\n this._onStart();\n });\n });\n
})\n\n this.totalTime = this.players.reduce((time, player) => Math.max(time, player.totalTime), 0);\n }\n\n private
_onFinish() {\n if (!this._finished) {\n this._finished = true;\n this._onDoneFns.forEach(fn => fn());\n
this._onDoneFns = [];\n }\n }\n\n init(): void {\n this.players.forEach(player => player.init());\n }\n\n
onStart(fn: () => void): void {\n this._onStartFns.push(fn);\n }\n\n private _onStart() {\n if (!this.hasStarted())
{\n this._started = true;\n this._onStartFns.forEach(fn => fn());\n this._onStartFns = [];\n }\n }\n\n
onDone(fn: () => void): void {\n this._onDoneFns.push(fn);\n }\n\n onDestroy(fn: () => void): void {\n
this._onDestroyFns.push(fn);\n }\n\n hasStarted() {\n return this._started;\n }\n\n play() {\n if
(!this.parentPlayer) {\n this.init();\n }\n this._onStart();\n this.players.forEach(player => player.play());\n
}\n\n pause(): void {\n this.players.forEach(player => player.pause());\n }\n\n restart(): void {\n
this.players.forEach(player => player.restart());\n }\n\n finish(): void {\n this._onFinish();\n
this.players.forEach(player => player.finish());\n }\n\n destroy(): void {\n this._onDestroy();\n }\n\n private
_onDestroy() {\n if (!this._destroyed) {\n this._destroyed = true;\n this._onFinish();\n
this.players.forEach(player => player.destroy());\n this._onDestroyFns.forEach(fn => fn());\n
this._onDestroyFns = [];\n }\n }\n\n reset(): void {\n this.players.forEach(player => player.reset());\n
this._destroyed = false;\n this._finished = false;\n this._started = false;\n }\n\n setPosition(p: number): void {\n
const timeAtPosition = p * this.totalTime;\n this.players.forEach(player => {\n const position =
player.totalTime ? Math.min(1, timeAtPosition / player.totalTime) : 1;\n player.setPosition(position);\n });\n
}\n\n getPosition(): number {\n let min = 0;\n this.players.forEach(player => {\n const p =
player.getPosition();\n min = Math.min(p, min);\n });\n return min;\n }\n\n beforeDestroy(): void {\n
this.players.forEach(player => {\n if (player.beforeDestroy) {\n player.beforeDestroy();\n }\n });\n
}\n\n /** @internal *\n triggerCallback(phaseName: string): void {\n const methods = phaseName == 'start' ?
this._onStartFns : this._onDoneFns;\n methods.forEach(fn => fn());\n methods.length = 0;\n }\n\n", "/*\n *
@license\n * Copyright Google LLC All Rights Reserved.\n *\n * Use of this source code is governed by an MIT-
style license that can be\n * found in the LICENSE file at https://angular.io/license\n */\n\nexport
{AnimationGroupPlayer as AnimationGroupPlayer} from './players/animation_group_player';\n\nexport const
PRE_STYLE = '!';\n\n", "/*\n * @license\n * Copyright Google LLC All Rights Reserved.\n *\n * Use of this source
code is governed by an MIT-style license that can be\n * found in the LICENSE file at https://angular.io/license\n
/\n\n/\n *\n * @module\n * @description\n * Entry point for all animation APIs of the animation package.\n
*/\n\nexport {AnimationBuilder, AnimationFactory} from './animation_builder';\n\nexport {AnimationEvent} from
'./animation_event';\n\nexport {animate, animateChild, AnimateChildOptions, AnimateTimings, animation,
AnimationAnimateChildMetadata, AnimationAnimateMetadata, AnimationAnimateRefMetadata,
AnimationGroupMetadata, AnimationKeyframesSequenceMetadata, AnimationMetadata, AnimationMetadataType,
AnimationOptions, AnimationQueryMetadata, AnimationQueryOptions, AnimationReferenceMetadata,
AnimationSequenceMetadata, AnimationStaggerMetadata, AnimationStateMetadata, AnimationStyleMetadata,
AnimationTransitionMetadata, AnimationTriggerMetadata, AUTO_STYLE, group, keyframes, query, sequence,
stagger, state, style, transition, trigger, useAnimation, StyleData} from './animation_metadata';\n\nexport
{AnimationPlayer, NoopAnimationPlayer} from './players/animation_player';\n\nexport * from
'./private_export';\n\n", "/*\n * @license\n * Copyright Google LLC All Rights Reserved.\n *\n * Use of this source
code is governed by an MIT-style license that can be\n * found in the LICENSE file at https://angular.io/license\n
/\n\n/\n *\n * @module\n * @description\n * Entry point for all public APIs of this package.\n */\n\nexport * from
'./src/animations';\n\n", "/*\n * @license\n * Copyright Google LLC All Rights Reserved.\n *\n * Use of this source

```

code is governed by an MIT-style license that can be found in the LICENSE file at <https://angular.io/license>  
This file is not used to build this module. It is only used during editing by the TypeScript language service and during build for verification. ngc replaces this file with production index.ts when it rewrites private symbol names.  
export \* from './public\_api';  
Generated bundle index. Do not edit.  
export \*

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Found in path(s):

\* /opt/cola/permits/1358260673\_1657448337.9350824/0/animations-11-0-2-  
tgz/package/fesm2015/animations.js.map

No license file was found, but licenses were detected in source scan.

/\*\*

\* @license Angular v11.0.2

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\*/

/\*\*

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\*/

Found in path(s):

\* /opt/cola/permits/1358260673\_1657448337.9350824/0/animations-11-0-2-tgz/package/bundles/animations.umd.js

\* /opt/cola/permits/1358260673\_1657448337.9350824/0/animations-11-0-2-

tgz/package/bundles/animations.umd.min.js

No license file was found, but licenses were detected in source scan.

```
{"version":3,"file":"animations.umd.js","sources":["../../../../../packages/animations/src/animation_builder.ts","../../../../../packages/animations/src/animation_metadata.ts","../../../../../packages/animations/src/util.ts","../../../../../packages/animations/src/players/animation_player.ts","../../../../../packages/animations/src/players/animation_group_player.ts","../../../../../packages/animations/src/private_export.ts","../../../../../packages/animations/src/animations.ts","../../../../../packages/animations/public_api.ts","../../../../../packages/animations/index.ts","../../../../../packages/animations/animations.ts"],"sourcesContent":["/**\n * @license\n * Copyright Google LLC All Rights Reserved.\n *\n * Use of this\n * source code is governed by an MIT-style license that can be\n * found in the LICENSE file at\n * https://angular.io/license\n *\n * import { AnimationMetadata, AnimationOptions } from\n * './animation_metadata';\n * import { AnimationPlayer } from './players/animation_player';\n *\n * An injectable\n * service that produces an animation sequence programmatically within an\n * Angular component or directive.\n *\n * Provided by the `BrowserAnimationsModule` or `NoopAnimationsModule`.\n *\n * @usageNotes\n *\n * To use\n * this service, add it to your component or directive as a dependency.\n *\n * The service is instantiated along with your\n * component.\n *\n * Apps do not typically need to create their own animation players, but if you\n * do need to,\n * follow these steps:\n *\n * 1. Use the `build()` method to create a programmatic animation using the\n * `animate()`\n * function. The method returns an `AnimationFactory` instance.\n *\n * 2. Use the factory object to create an\n * `AnimationPlayer` and attach it to a DOM element.\n *\n * 3. Use the player object to control the animation\n * programmatically.\n *\n * For example:\n *\n * ``\n * ts\n * // import the service from BrowserAnimationsModule\n *
```



animations returned by a query.\n \* See `animateChild()`\n \*/\n AnimateChild = 9,\n /\*\*\n \* Contains animation parameters for a re-usable animation.\n \* See `useAnimation()`\n \*/\n AnimateRef = 10,\n /\*\*\n \* Contains child-animation query data.\n \* See `query()`\n \*/\n Query = 11,\n /\*\*\n \* Contains data for staggering an animation sequence.\n \* See `stagger()`\n \*/\n Stagger = 12\n}\n\n/\*\*\n \* Specifies automatic styling.\n \*/\n \* @publicApi\n \*/\nexport const AUTO\_STYLE = '\*';\n\n/\*\*\n \* Base for animation data structures.\n \*/\n \* @publicApi\n \*/\nexport interface AnimationMetadata {\n type: AnimationMetadataType;\n}\n\n/\*\*\n \* Contains an animation trigger. Instantiated and returned by the\n \* `trigger()` function.\n \*/\n \* @publicApi\n \*/\nexport interface AnimationTriggerMetadata extends AnimationMetadata {\n /\*\*\n \* The trigger name, used to associate it with an element. Unique within the component.\n \*/\n name: string;\n /\*\*\n \* An animation definition object, containing an array of state and transition declarations.\n \*/\n definitions: AnimationMetadata[];\n /\*\*\n \* An options object containing a delay and\n \* developer-defined parameters that provide styling defaults and\n \* can be overridden on invocation. Default delay is 0.\n \*/\n options: {params?: {[name: string]: any}}|null;\n}\n\n/\*\*\n \* Encapsulates an animation state by associating a state name with a set of CSS styles.\n \* Instantiated and returned by the `state()` function.\n \*/\n \* @publicApi\n \*/\nexport interface AnimationStateMetadata extends AnimationMetadata {\n /\*\*\n \* The state name, unique within the component.\n \*/\n name: string;\n /\*\*\n \* The CSS styles associated with this state.\n \*/\n styles: AnimationStyleMetadata;\n /\*\*\n \* An options object containing\n \* developer-defined parameters that provide styling defaults and\n \* can be overridden on invocation.\n \*/\n options?: {params: {[name: string]: any}};\n}\n\n/\*\*\n \* Encapsulates an animation transition. Instantiated and returned by the\n \* `transition()` function.\n \*/\n \* @publicApi\n \*/\nexport interface AnimationTransitionMetadata extends AnimationMetadata {\n /\*\*\n \* An expression that describes a state change.\n \*/\n expr: string|\n ((fromState: string, toState: string, element?: any,\n params?: {[key: string]: any}) => boolean);\n /\*\*\n \* One or more animation objects to which this transition applies.\n \*/\n animation: AnimationMetadata|AnimationMetadata[];\n /\*\*\n \* An options object containing a delay and\n \* developer-defined parameters that provide styling defaults and\n \* can be overridden on invocation. Default delay is 0.\n \*/\n options: AnimationOptions|null;\n}\n\n/\*\*\n \* Encapsulates a reusable animation, which is a collection of individual animation steps.\n \* Instantiated and returned by the `animation()` function, and\n \* passed to the `useAnimation()` function.\n \*/\n \* @publicApi\n \*/\nexport interface AnimationReferenceMetadata extends AnimationMetadata {\n /\*\*\n \* One or more animation step objects.\n \*/\n animation: AnimationMetadata|AnimationMetadata[];\n /\*\*\n \* An options object containing a delay and\n \* developer-defined parameters that provide styling defaults and\n \* can be overridden on invocation. Default delay is 0.\n \*/\n options: AnimationOptions|null;\n}\n\n/\*\*\n \* Encapsulates an animation query. Instantiated and returned by\n \* the `query()` function.\n \*/\n \* @publicApi\n \*/\nexport interface AnimationQueryMetadata extends AnimationMetadata {\n /\*\*\n \* The CSS selector for this query.\n \*/\n selector: string;\n /\*\*\n \* One or more animation step objects.\n \*/\n animation: AnimationMetadata|AnimationMetadata[];\n /\*\*\n \* A query options object.\n \*/\n options: AnimationQueryOptions|null;\n}\n\n/\*\*\n \* Encapsulates a keyframes sequence. Instantiated and returned by\n \* the `keyframes()` function.\n \*/\n \* @publicApi\n \*/\nexport interface AnimationKeyframesSequenceMetadata extends AnimationMetadata {\n /\*\*\n \* An array of animation styles.\n \*/\n steps: AnimationStyleMetadata[];\n}\n\n/\*\*\n \* Encapsulates an animation style. Instantiated and returned by\n \* the `style()` function.\n \*/\n \* @publicApi\n \*/\nexport interface AnimationStyleMetadata extends AnimationMetadata {\n /\*\*\n \* A set of CSS style properties.\n \*/\n styles: '\*'|{[key: string]: string | number}|Array<{[key: string]: string | number}|\*>;\n /\*\*\n \* A percentage of the total animate time at which the style is to be applied.\n \*/\n offset: number|null;\n}\n\n/\*\*\n \* Encapsulates an animation step. Instantiated and returned by\n \* the `animate()` function.\n \*/\n \* @publicApi\n \*/\nexport interface AnimationAnimateMetadata extends AnimationMetadata {\n /\*\*\n \* The timing data for the step.\n \*/\n timings: string|number|AnimateTimings;\n /\*\*\n \* A set of styles used in the step.\n \*/\n styles: AnimationStyleMetadata|AnimationKeyframesSequenceMetadata|null;\n}\n\n/\*\*\n \* Encapsulates a child animation, that can be run explicitly when the parent is run.\n \* Instantiated and returned by the `animateChild` function.\n \*/\n \* @publicApi\n \*/\nexport interface AnimationAnimateChildMetadata extends

AnimationMetadata {  
 \* An options object containing a delay and  
 \* developer-defined parameters that provide styling defaults and  
 \* can be overridden on invocation. Default delay is 0.  
 \* options:  
 AnimationOptions|null;  
 \* Encapsulates a reusable animation.  
 \* Instantiated and returned by the  
 \* useAnimation() function.  
 \* @publicApi  
 \* ^\nexport interface AnimationAnimateRefMetadata extends AnimationMetadata {  
 \* An animation reference object.  
 \* animation:  
 AnimationReferenceMetadata;  
 \* An options object containing a delay and  
 \* developer-defined parameters that provide styling defaults and  
 \* can be overridden on invocation. Default delay is 0.  
 \* options:  
 AnimationOptions|null;  
 \* Encapsulates an animation sequence.  
 \* Instantiated and returned by the  
 \* sequence() function.  
 \* @publicApi  
 \* ^\nexport interface AnimationSequenceMetadata extends AnimationMetadata {  
 \* An array of animation step objects.  
 \* steps: AnimationMetadata[];  
 \* An options object containing a delay and  
 \* developer-defined parameters that provide styling defaults and  
 \* can be overridden on invocation. Default delay is 0.  
 \* options:  
 AnimationOptions|null;  
 \* Encapsulates an animation group.  
 \* Instantiated and returned by the  
 \* { @link animations/group group() } function.  
 \* @publicApi  
 \* ^\nexport interface AnimationGroupMetadata extends AnimationMetadata {  
 \* One or more animation or style steps that form this group.  
 \* steps: AnimationMetadata[];  
 \* An options object containing a delay and  
 \* developer-defined parameters that provide styling defaults and  
 \* can be overridden on invocation. Default delay is 0.  
 \* options:  
 AnimationOptions|null;  
 \* Encapsulates animation query options.  
 \* Passed to the query() function.  
 \* @publicApi  
 \* ^\nexport declare interface AnimationQueryOptions extends AnimationOptions {  
 \* True if this query is optional, false if it is required. Default is false.  
 \* A required query throws an error if no elements are retrieved when  
 \* the query is executed. An optional query does not.  
 \* optional?: boolean;  
 \* A maximum total number of results to return from the query.  
 \* If negative, results are limited from the end of the query list towards the beginning.  
 \* By default, results are not limited.  
 \* limit?: number;  
 \* Encapsulates parameters for staggering the start times of a set of animation steps.  
 \* Instantiated and returned by the stagger() function.  
 \* @publicApi  
 \* ^\nexport interface AnimationStaggerMetadata extends AnimationMetadata {  
 \* The timing data for the steps.  
 \* timings: string|number;  
 \* One or more animation steps.  
 \* animation: AnimationMetadata|AnimationMetadata[];  
 \* Creates a named animation trigger, containing a list of  
 \* state() and transition() entries to be evaluated when the expression  
 \* bound to the trigger changes.  
 \* @param name An identifying string.  
 \* @param definitions An animation definition object, containing an array of  
 \* state() and transition() declarations.  
 \* @return An object that encapsulates the trigger data.  
 \* @usageNotes  
 \* Define an animation trigger in the animations section of @Component metadata.  
 \* In the template, reference the trigger by name and bind it to a trigger expression that  
 \* evaluates to a defined animation state, using the following format:  
 \* @[triggerName]=expression  
 \* Animation trigger bindings convert all values to strings, and then match the  
 \* previous and current values against any linked transitions.  
 \* Booleans can be specified as `1` or `true` and `0` or `false`.  
 \* ### Usage Example  
 \* The following example creates an animation trigger reference based on the provided  
 \* name value. The provided animation value is expected to be an array consisting of  
 \* state and transition declarations.  
 \* ```typescript  
 \* @Component({  
 \* selector: 'my-component',  
 \* templateUrl: 'my-component-tpl.html',  
 \* animations: [  
 \* trigger('myAnimationTrigger', [  
 \* state(...),  
 \* state(...),  
 \* transition(...),  
 \* transition(...)  
 \* ])  
 \* ]  
 \* })  
 \* class MyComponent {  
 \* myStatusExp = 'something';  
 \* }  
 \* ```  
 \* The template associated with this component makes use of the defined trigger  
 \* by binding to an element within its template code.  
 \* ```html  
 \* <!-- somewhere inside of my-component-tpl.html -->  
 \* <div  
 \* @[myAnimationTrigger]=myStatusExp  
 \* >...</div>  
 \* ```  
 \* ### Using an inline function  
 \* The transition animation method also supports reading an inline function which can decide  
 \* if its associated animation should be run.  
 \* ```typescript  
 \* // this method is run each time the myAnimationTrigger trigger value changes.  
 \* function myInlineMatcherFn(fromState: string, toState: string, element: any, params: {[key: string]: any}): boolean {  
 \* // notice that `element` and `params` are also available here  
 \* return toState === 'yes-please-animate';  
 \* }  
 \* @Component({  
 \* selector: 'my-component',  
 \* templateUrl: 'my-





AnimationStyleMetadata|AnimationKeyframesSequenceMetadata|null => AnimationAnimateMetadata  
 {  
   return {type: AnimationMetadataType.Animate, styles, timings};  
 };  
 }  
 @description Defines a list of animation steps to be run in parallel.  
 @param steps An array of animation step objects.  
 - When steps are defined by `style()` or `animate()` function calls, each call within the group is executed instantly.  
 - To specify offset styles to be applied at a later time, define steps with `keyframes()`, or use `animate()` calls with a delay value.  
 For example:  

```

 typescript
 group([
 animate("1s", style({ background: "black" })),
 animate("2s", style({ color: "white" }))]
)

```

 @param options An options object containing a delay and developer-defined parameters that provide styling defaults and can be overridden on invocation.  
 @return An object that encapsulates the group data.  
 @usageNotes Grouped animations are useful when a series of styles must be animated at different starting times and closed off at different ending times.  
 When called within a `sequence()` or a `transition()` call, does not continue to the next instruction until all of the inner animation steps have completed.  
 @publicApi  
 ^/export function group(steps: AnimationMetadata[], options: AnimationOptions|null = null): AnimationGroupMetadata {  
   return {type: AnimationMetadataType.Group, steps, options};  
 };  
 }  
 @description Defines a list of animation steps to be run sequentially, one by one.  
 @param steps An array of animation step objects.  
 - Steps defined by `style()` calls apply the styling data immediately.  
 - Steps defined by `animate()` calls apply the styling data over time as specified by the timing data.  

```

 typescript
 sequence([
 style({ opacity: 0 }),
 animate("1s", style({ opacity: 1 }))]
)

```

 @param options An options object containing a delay and developer-defined parameters that provide styling defaults and can be overridden on invocation.  
 @return An object that encapsulates the sequence data.  
 @usageNotes When you pass an array of steps to a `transition()` call, the steps run sequentially by default.  
 Compare this to the `{ @link animations/group group() }` call, which runs animation steps in parallel.  
 When a sequence is used within a `{ @link animations/group group() }` or a `transition()` call, execution continues to the next instruction only after each of the inner animation steps have completed.  
 @publicApi  
 \*\*/export function sequence(steps: AnimationMetadata[], options: AnimationOptions|null = null): AnimationSequenceMetadata {  
   return {type: AnimationMetadataType.Sequence, steps, options};  
 };  
 }  
 @description Declares a key/value object containing CSS properties/styles that can then be used for an animation `state`, within an animation `sequence`, or as styling data for calls to `animate()` and `keyframes()`.  
 @param tokens A set of CSS styles or HTML styles associated with an animation state.  
 The value can be any of the following:  
 - A key-value style pair associating a CSS property with a value.  
 - An array of key-value style pairs.  
 - An asterisk (\*), to use auto-styling, where styles are derived from the element being animated and applied to the animation when it starts.  
 Auto-styling can be used to define a state that depends on layout or other environmental factors.  
 @return An object that encapsulates the style data.  
 @usageNotes The following examples create animation styles that collect a set of CSS property values:  

```

 typescript
 // string values for CSS properties
 style({ background: "red", color: "blue" })
 // numerical pixel values
 style({ width: 100, height: 0 })

```

 The following example uses auto-styling to allow a component to animate from a height of 0 up to the height of the parent element:  

```

 style({ height: 0 }),
 animate("1s", style({ height: "*" }

```

 @publicApi  
 \*\*/export function style(tokens: '\*|{[key: string]: string | number}|Array<\*'|[key: string]: string | number}>): AnimationStyleMetadata {  
   return {type: AnimationMetadataType.Style, styles: tokens, offset: null};  
 };  
 }  
 @description Declares an animation state within a trigger attached to an element.  
 @param name One or more names for the defined state in a comma-separated string.  
 The following reserved state names can be supplied to define a style for specific use cases:  
 - `void` You can associate styles with this name to be used when the element is detached from the application. For example, when an `ngIf` evaluates to false, the state of the associated element is void.  
 - `*` (asterisk) Indicates the default state. You can associate styles with this name to be used as the fallback when the state that is being animated is not declared within the trigger.  
 @param styles A set of CSS styles associated with this state, created using the `style()` function.  
 This set of styles persists on the element once the state has been reached.  
 @param options Parameters that can be passed to the state when it is invoked.  
 0 or more key-

value pairs.  
 \* @return An object that encapsulates the new state data.  
 \* @usageNotes  
 \* Use the `trigger()` function to register states to an animation trigger.  
 \* Use the `transition()` function to animate between states.  
 \* When a state is active within a component, its associated styles persist on the element, even when the animation ends.  
 \* @publicApi  
 \* `export function state(name: string, styles: AnimationStyleMetadata, options?: {params: {[name: string]: any}}): AnimationStateMetadata {  
 * return {type: AnimationMetadataType.State, name, styles, options};  
 * }`  
 \* Defines a set of animation styles, associating each style with an optional `offset` value.  
 \* @param steps A set of animation styles with optional offset data.  
 \* The optional `offset` value for a style specifies a percentage of the total animation time at which that style is applied.  
 \* @returns An object that encapsulates the keyframes data.  
 \* @usageNotes  
 \* Use with the `animate()` call. Instead of applying animations from the current state to the destination state, keyframes describe how each style entry is applied and at what point within the animation arc.  
 \* Compare [CSS Keyframe Animations](https://www.w3schools.com/css/css3\_animations.asp).  
 \* ### Usage  
 \* In the following example, the offset values describe when each `backgroundColor` value is applied. The color is red at the start, and changes to blue when 20% of the total time has elapsed.  
 \* `animate("5s", keyframes([  
 * style({ backgroundColor: "red", offset: 0 }),  
 * style({ backgroundColor: "blue", offset: 0.2 }),  
 * style({ backgroundColor: "orange", offset: 0.3 }),  
 * style({ backgroundColor: "black", offset: 1 })  
 * ]))`  
 \* If there are no `offset` values specified in the style entries, the offsets are calculated automatically.  
 \* `animate("5s", keyframes([  
 * style({ backgroundColor: "red" }) // offset = 0  
 * style({ backgroundColor: "blue" }) // offset = 0.33  
 * style({ backgroundColor: "orange" }) // offset = 0.66  
 * style({ backgroundColor: "black" }) // offset = 1  
 * ]))`  
 \* @publicApi  
 \* `export function keyframes(steps: AnimationStyleMetadata[]): AnimationKeyframesSequenceMetadata {  
 * return {type: AnimationMetadataType.Keyframes, steps};  
 * }`  
 \* Declares an animation transition as a sequence of animation steps to run when a given condition is satisfied. The condition is a Boolean expression or function that compares the previous and current animation states, and returns true if this transition should occur. When the state criteria of a defined transition are met, the associated animation is triggered.  
 \* @param stateChangeExpr A Boolean expression or function that compares the previous and current animation states, and returns true if this transition should occur. Note that `"true"` and `"false"` match 1 and 0, respectively. An expression is evaluated each time a state change occurs in the animation trigger element.  
 \* The animation steps run when the expression evaluates to true.  
 \* - A state-change string takes the form `"state1 => state2"`, where each side is a defined animation state, or an asterisk (\*) to refer to a dynamic start or end state.  
 \* - The expression string can contain multiple comma-separated statements; for example `"state1 => state2, state3 => state4"`.  
 \* - Special values `enter` and `leave` initiate a transition on the entry and exit states, equivalent to `"void => *"` and `"* => void"`.  
 \* - Special values `increment` and `decrement` initiate a transition when a numeric value has increased or decreased in value.  
 \* - A function is executed each time a state change occurs in the animation trigger element. The animation steps run when the function returns true.  
 \* @param steps One or more animation objects, as returned by the `animate()` or `sequence()` function, that form a transformation from one state to another. A sequence is used by default when you pass an array.  
 \* @param options An options object that can contain a delay value for the start of the animation, and additional developer-defined parameters. Provided values for additional parameters are used as defaults, and override values can be passed to the caller on invocation.  
 \* @returns An object that encapsulates the transition data.  
 \* @usageNotes  
 \* The template associated with a component binds an animation trigger to an element.  
 \* `HTML  
 * <!-- somewhere inside of my-component-tpl.html -->  
 * <div [@myAnimationTrigger]="myStatusExp">...</div>`  
 \* All transitions are defined within an animation trigger, along with named states that the transitions change to and from.  
 \* `trigger("myAnimationTrigger", [  
 * // define states  
 * state("on", style({ background: "green" })),  
 * state("off", style({ background: "grey" })),  
 * ...  
 * ])`  
 \* Note that when you call the `sequence()` function within a `@link animations/group group()` or a `transition()` call, execution does not continue to the next instruction until each of the inner animation steps have completed.  
 \* ### Syntax examples

The following examples define transitions between the two defined states (and default states), using various options:

```

typescript
// Transition occurs when the state value bound to `myAnimationTrigger`
changes from `on` to `off`
transition('on => off', animate(500))
// Run the same animation for both
directions
transition('on <=> off', animate(500))
// Define multiple state-change pairs separated by
commas
transition('on => off, off => void', animate(500))
Special values for state-change
expressions
- Catch-all state change for when an element is inserted into the page and the
destination state is unknown:
typescript
transition('void => *', [style({ opacity: 0 }), animate(500)])
- Capture a state change between any states:
`transition('* => *', animate('1s 0s'))`
- Entry and exit transitions:
typescript
transition(':enter', [style({ opacity: 0 }), animate(500, style({ opacity: 1 })]),
transition(':leave', [animate(500, style({ opacity: 0 })])])
- Use `:increment` and `:decrement` to initiate transitions:
typescript
transition(':increment', group([query(':enter', [style({ left: '100%' })], animate('0.5s ease-out',
style('*'))]), query(':leave', [animate('0.5s ease-out', style({ left: '-100%' })])])])
transition(':decrement', group([query(':enter', [style({ left: '100%' })], animate('0.5s ease-out',
style('*'))]), query(':leave', [animate('0.5s ease-out', style({ left: '-100%' })])])])
State-change functions
Here is an example of a `fromState` specified as a state-change function
that invokes an animation when true:
typescript
transition((fromState, toState) => {
return fromState === 'off' && toState === 'on';
}, animate('1s 0s'))
Animating to
the final state
If the final step in a transition is a call to `animate()` that uses a timing value with no style
data, that step is automatically considered the final animation arc for the element to reach the final state.
Angular automatically adds or removes CSS styles to ensure that the element is in the correct final state.
The following example defines a transition that starts by hiding the element, then makes sure that it animates
properly to whatever state is currently active for trigger:
typescript
transition('void => *', [style({ opacity: 0 }), animate(500)])
Boolean value matching
If a trigger binding value
is a Boolean, it can be matched using a transition expression that compares true and false or 1 and 0. For
example:


```

// in the template
<div [@openClose]='open ? true : false'>...</div>
// in the
component metadata
trigger('openClose', [state('true', style({ height: '*' })), state('false', style({ height:
'0px' })]), transition('false <=> true', animate(500))]
@publicApi
export function
transition(\n stateChangeExpr: string | ((fromState: string, toState: string, element?: any, params?: {[key:
string]: any}) => boolean),\n steps: AnimationMetadata | AnimationMetadata[],\n options: AnimationOptions | null
= null): AnimationTransitionMetadata {\n return {type: AnimationMetadataType.Transition, expr:
stateChangeExpr, animation: steps, options};\n}
Produces a reusable animation that can be invoked in
another animation or sequence, by calling the `useAnimation()` function.
@param steps One or more
animation objects, as returned by the `animate()` or `sequence()` function, that form a transformation from one
state to another.
A sequence is used by default when you pass an array.
@param options An options object
that can contain a delay value for the start of the animation, and additional developer-defined parameters.
Provided values for additional parameters are used as defaults, and override values can be passed to the caller on
invocation.
@returns An object that encapsulates the animation data.
@usageNotes
The following
example defines a reusable animation, providing some default parameter values.
typescript
var
fadeAnimation = animation([style({ opacity: '{{ start }}'), animate('{{ time }}', style({ opacity: '{{
end }}')])], { params: { time: '1000ms', start: 0, end: 1 }});
The following invokes the
defined animation with a call to `useAnimation()`, passing in override parameter values.
js
useAnimation(fadeAnimation, { params: { time: '2s', start: 1, end: 0 }})
If any of the passed-in parameter values are missing from this call, the default values are used. If one or
more parameter values are missing before a step is animated, `useAnimation()` throws an error.
@publicApi
export function animation(\n steps: AnimationMetadata | AnimationMetadata[],\n options:
AnimationOptions | null = null): AnimationReferenceMetadata {\n return {type: AnimationMetadataType.Reference,
animation: steps, options};\n}
Executes a queried inner animation element within an animation

```


```

sequence.  
 @param options An options object that can contain a delay value for the start of the animation, and additional override values for developer-defined parameters.  
 @return An object that encapsulates the child animation data.  
 @usageNotes Each time an animation is triggered in Angular, the parent animation has priority and any child animations are blocked. In order for a child animation to run, the parent animation must query each of the elements containing child animations, and run them using this function. Note that this feature is designed to be used with `query()` and it will only work with animations that are assigned using the Angular animation library. CSS keyframes and transitions are not handled by this API.  
 @publicApi  
 export function animateChild(options: AnimateChildOptions | null = null): AnimationAnimateChildMetadata {  
 return {type: AnimationMetadataType.AnimateChild, options};  
 }  
 Starts a reusable animation that is created using the `animation()` function.  
 @param animation The reusable animation to start.  
 @param options An options object that can contain a delay value for the start of the animation, and additional override values for developer-defined parameters.  
 @return An object that contains the animation parameters.  
 @publicApi  
 export function useAnimation(animation: AnimationReferenceMetadata, options: AnimationOptions | null = null): AnimationAnimateRefMetadata {  
 return {type: AnimationMetadataType.AnimateRef, animation, options};  
 }  
 Finds one or more inner elements within the current element that is being animated within a sequence. Use with `animate()`.  
 @param selector The element to query, or a set of elements that contain Angular-specific characteristics, specified with one or more of the following tokens:  
 - `query(":enter")` or `query(":leave")`: Query for newly inserted/removed elements.  
 - `query(":animating")`: Query all currently animating elements.  
 - `query("@triggerName")`: Query elements that contain an animation trigger.  
 - `query("@*")`: Query all elements that contain an animation triggers.  
 - `query(":self")`: Include the current element into the animation sequence.  
 @param animation One or more animation steps to apply to the queried element or elements. An array is treated as an animation sequence.  
 @param options An options object. Use the 'limit' field to limit the total number of items to collect.  
 @return An object that encapsulates the query data.  
 @usageNotes Tokens can be merged into a combined query selector string. For example:  

```
query(':self, .record:enter, .record:leave, @subTrigger', [...])
```

 The `query()` function collects multiple elements and works internally by using `element.querySelectorAll`. Use the `limit` field of an options object to limit the total number of items to be collected. For example:  

```
js query('div', [animate(...), animate(...)], { limit: 1 })
```

 By default, throws an error when zero items are found. Set the `optional` flag to ignore this error. For example:  

```
js query('some-element-that-may-not-be-there', [animate(...), animate(...)], { optional: true })
```

 Usage Example  
 The following example queries for inner elements and animates them individually using `animate()`.  

```
typescript @Component({
 selector: 'inner',
 template: `<div [@queryAnimation]="exp">
 <h1>Title</h1>
 <div class="content">
 Blah blah blah
 </div>
 </div>`,
 animations: [trigger('queryAnimation', [transition('* => goAnimate', // hide the inner elements
 query('h1', style({ opacity: 0 })),
 query('.content', style({ opacity: 0 })),
 // animate the inner elements in, one by one
 query('h1', animate(1000, style({ opacity: 1 }))),
 query('.content', animate(1000, style({ opacity: 1 }))),
]),
 class Cmp {
 exp = "";
 goAnimate() {
 this.exp = 'goAnimate';
 }
 }
})
@publicApi
export function query(selector: string, animation: AnimationMetadata | AnimationMetadata[], options: AnimationQueryOptions | null = null): AnimationQueryMetadata {
 return {type: AnimationMetadataType.Query, selector, animation, options};
}
Use within an animation query() call to issue a timing gap after each queried item is animated.

 @param timings A delay value.

 @param animation One or more animation steps.

 @returns An object that encapsulates the stagger data.

 @usageNotes In the following example, a container element wraps a list of items stamped out by an ngFor. The container element contains an animation trigger that will later be set to query for each of the inner items. Each time items are added, the opacity fade-in animation runs, and each removed item is faded out. When either of these animations occur, the stagger effect is applied after each item's animation is started.


```
html <!-- list.component.html -->
```


```



```

this._onDoneFns.forEach(fn => fn());\n this._onDoneFns = [];\n }\n }\n onStart(fn: () => void): void {\n
this._onStartFns.push(fn);\n }\n onDone(fn: () => void): void {\n this._onDoneFns.push(fn);\n }\n
onDestroy(fn: () => void): void {\n this._onDestroyFns.push(fn);\n }\n hasStarted(): boolean {\n return
this._started;\n }\n init(): void {\n play(): void {\n if (!this.hasStarted()) {\n this._onStart();\n
this.triggerMicrotask();\n }\n this._started = true;\n }\n\n /** @internal *\n triggerMicrotask() {\n
scheduleMicroTask(() => this._onFinish());\n }\n\n private _onStart() {\n this._onStartFns.forEach(fn => fn());\n
this._onStartFns = [];\n }\n\n pause(): void {\n restart(): void {\n finish(): void {\n this._onFinish();\n }\n
destroy(): void {\n if (!this._destroyed) {\n this._destroyed = true;\n if (!this.hasStarted()) {\n
this._onStart();\n }\n this.finish();\n this._onDestroyFns.forEach(fn => fn());\n this._onDestroyFns =
[];\n }\n }\n reset(): void {\n setPosition(position: number): void {\n getPosition(): number {\n return 0;\n
}\n\n /** @internal *\n triggerCallback(phaseName: string): void {\n const methods = phaseName === 'start' ?
this._onStartFns : this._onDoneFns;\n methods.forEach(fn => fn());\n methods.length = 0;\n }\n\n }"}\n\n"/**\n *
@license\n * Copyright Google LLC All Rights Reserved.\n * Use of this source code is governed by an MIT-
style license that can be\n * found in the LICENSE file at https://angular.io/license\n */\n\nimport
{scheduleMicroTask} from './util';\nimport {AnimationPlayer} from './animation_player';\n\n/**\n * A
programmatic controller for a group of reusable animations.\n * Used internally to control animations.\n */\n * @see
`AnimationPlayer`\n * @see `{ @link animations/group group()}`\n */\n\nexport class AnimationGroupPlayer
implements AnimationPlayer {\n private _onDoneFns: Function[] = [];\n private _onStartFns: Function[] = [];\n
private _finished = false;\n private _started = false;\n private _destroyed = false;\n private _onDestroyFns:
Function[] = [];\n\n public parentPlayer: AnimationPlayer|null = null;\n public totalTime: number = 0;\n public
readonly players: AnimationPlayer[];\n\n constructor(_players: AnimationPlayer[]) {\n this.players = _players;\n
let doneCount = 0;\n let destroyCount = 0;\n let startCount = 0;\n const total = this.players.length;\n\n if
(total == 0) {\n scheduleMicroTask(() => this._onFinish());\n } else {\n this.players.forEach(player => {\n
player.onDone(() => {\n if (++doneCount == total) {\n this._onFinish();\n }\n });\n
player.onDestroy(() => {\n if (++destroyCount == total) {\n this._onDestroy();\n }\n });\n
player.onStart(() => {\n if (++startCount == total) {\n this._onStart();\n }\n });\n });\n\n }\n\n this.totalTime = this.players.reduce((time, player) => Math.max(time, player.totalTime), 0);\n }\n\n private
_onFinish() {\n if (!this._finished) {\n this._finished = true;\n this._onDoneFns.forEach(fn => fn());\n
this._onDoneFns = [];\n }\n }\n\n init(): void {\n this.players.forEach(player => player.init());\n }\n\n
onStart(fn: () => void): void {\n this._onStartFns.push(fn);\n }\n\n private _onStart() {\n if (!this.hasStarted())
{\n this._started = true;\n this._onStartFns.forEach(fn => fn());\n this._onStartFns = [];\n }\n }\n\n
onDone(fn: () => void): void {\n this._onDoneFns.push(fn);\n }\n\n onDestroy(fn: () => void): void {\n
this._onDestroyFns.push(fn);\n }\n\n hasStarted() {\n return this._started;\n }\n\n play() {\n if
(!this.parentPlayer) {\n this.init();\n }\n this._onStart();\n this.players.forEach(player => player.play());\n
}\n\n pause(): void {\n this.players.forEach(player => player.pause());\n }\n\n restart(): void {\n
this.players.forEach(player => player.restart());\n }\n\n finish(): void {\n this._onFinish();\n
this.players.forEach(player => player.finish());\n }\n\n destroy(): void {\n this._onDestroy();\n }\n\n private
_onDestroy() {\n if (!this._destroyed) {\n this._destroyed = true;\n this._onFinish();\n
this.players.forEach(player => player.destroy());\n this._onDestroyFns.forEach(fn => fn());\n
this._onDestroyFns = [];\n }\n }\n\n reset(): void {\n this.players.forEach(player => player.reset());\n
this._destroyed = false;\n this._finished = false;\n this._started = false;\n }\n\n setPosition(p: number): void {\n
const timeAtPosition = p * this.totalTime;\n this.players.forEach(player => {\n const position =
player.totalTime ? Math.min(1, timeAtPosition / player.totalTime) : 1;\n player.setPosition(position);\n });\n
}\n\n getPosition(): number {\n let min = 0;\n this.players.forEach(player => {\n const p =
player.getPosition();\n min = Math.min(p, min);\n });\n return min;\n }\n\n beforeDestroy(): void {\n
this.players.forEach(player => {\n if (player.beforeDestroy) {\n player.beforeDestroy();\n }\n });\n
}\n\n /** @internal *\n triggerCallback(phaseName: string): void {\n const methods = phaseName === 'start' ?
this._onStartFns : this._onDoneFns;\n methods.forEach(fn => fn());\n methods.length = 0;\n }\n\n }"}\n\n"/**\n *

```

```
@license\n * Copyright Google LLC All Rights Reserved.\n *\n * Use of this source code is governed by an MIT-
style license that can be\n * found in the LICENSE file at https://angular.io/license\n */\nexport
{ AnimationGroupPlayer as AnimationGroupPlayer } from './players/animation_group_player';\nexport const
PRE_STYLE = '!';\n", "/*\n * @license\n * Copyright Google LLC All Rights Reserved.\n *\n * Use of this source
code is governed by an MIT-style license that can be\n * found in the LICENSE file at https://angular.io/license\n *\n */\n\n * @module\n * @description\n * Entry point for all animation APIs of the animation package.\n *\n */\nexport { AnimationBuilder, AnimationFactory } from './animation_builder';\nexport { AnimationEvent } from
 './animation_event';\nexport { animate, animateChild, AnimateChildOptions, AnimateTimings, animation,
 AnimationAnimateChildMetadata, AnimationAnimateMetadata, AnimationAnimateRefMetadata,
 AnimationGroupMetadata, AnimationKeyframesSequenceMetadata, AnimationMetadata, AnimationMetadataType,
 AnimationOptions, AnimationQueryMetadata, AnimationQueryOptions, AnimationReferenceMetadata,
 AnimationSequenceMetadata, AnimationStaggerMetadata, AnimationStateMetadata, AnimationStyleMetadata,
 AnimationTransitionMetadata, AnimationTriggerMetadata, AUTO_STYLE, group, keyframes, query, sequence,
 stagger, state, style, transition, trigger, useAnimation, StyleData } from './animation_metadata';\nexport
{ AnimationPlayer, NoopAnimationPlayer } from './players/animation_player';\nexport * from
 './private_export';\n", "/*\n * @license\n * Copyright Google LLC All Rights Reserved.\n *\n * Use of this source
code is governed by an MIT-style license that can be\n * found in the LICENSE file at https://angular.io/license\n *\n */\n\n * @module\n * @description\n * Entry point for all public APIs of this package.\n *\n */\nexport * from
 './src/animations';\n", "/*\n * @license\n * Copyright Google LLC All Rights Reserved.\n *\n * Use of this source
code is governed by an MIT-style license that can be\n * found in the LICENSE file at https://angular.io/license\n *\n */\n\n// This file is not used to build this module. It is only used during editing\n// by the TypeScript language
service and during build for verification. `ngc`\n// replaces this file with production index.ts when it rewrites private
symbol\n// names.\n\nexport * from './public_api';\n", "/*\n * Generated bundle index. Do not edit.\n *\n */\nexport *
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Usage information and reference details can be found in [Angular documentation](https://angular.io/docs).

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Found in path(s):

\* /opt/cola/permits/1358260673\_1657448337.9350824/0/animations-11-0-2-tgz/package/README.md

No license file was found, but licenses were detected in source scan.

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{ "version":3,"sources":["packages/animations/animations-
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s = arguments[i];\n for (var p in s)\n if (Object.prototype.hasOwnProperty.call(s, p))\n t[p] = s[p];\n }\n return t;\n });\n return __assign.apply(this, arguments);\n });\nfunction __rest(s, e) {\n var t = {};\n for (var p in s)\n if (Object.prototype.hasOwnProperty.call(s, p)\n && e.indexOf(p) < 0)\n t[p] = s[p];\n if (s != null && typeof Object.getOwnPropertySymbols ===\n \"function\")\n for (var i = 0, p = Object.getOwnPropertySymbols(s); i < p.length; i++) {\n if\n (e.indexOf(p[i]) < 0 && Object.prototype.propertyIsEnumerable.call(s, p[i]))\n t[p[i]] = s[p[i]];\n }\n return t;\n }\n function __decorate(decorators, target, key, desc) {\n var c = arguments.length, r = c\n < 3 ? target : desc === null ? desc = Object.getOwnPropertyDescriptor(target, key) : desc, d;\n if (typeof Reflect\n === \"object\" && typeof Reflect.decorate === \"function\")\n r = Reflect.decorate(decorators, target, key,\n desc);\n else\n for (var i = decorators.length - 1; i >= 0; i--)\n if (d = decorators[i])\n r = (c < 3 ? d(r) : c > 3 ? d(target, key, r) : d(target, key)) || r;\n return c > 3 && r &&\n Object.defineProperty(target, key, r), r;\n }\n function __param(paramIndex, decorator) {\n return function\n (target, key) { decorator(target, key, paramIndex); }\n }\n function __metadata(metadataKey, metadataValue)\n {\n if (typeof Reflect === \"object\" && typeof Reflect.metadata === \"function\")\n return\n Reflect.metadata(metadataKey, metadataValue);\n }\n function __awaiter(thisArg, _arguments, P, generator) {\n function adopt(value) { return value instanceof P ? value : new P(function (resolve) { resolve(value); }); }\n return new (P || (P = Promise))(function (resolve, reject) {\n function fulfilled(value) { try { step(generator.next(value)); }\n step(generator.next(value));\n }\n catch (e) {\n reject(e);\n }\n }\n function\n rejected(value) { try { step(generator[\"throw\"](value)); }\n catch (e) {\n reject(e);\n }\n }\n function step(result) { result.done ? resolve(result.value) :\n adopt(result.value).then(fulfilled, rejected); }\n step((generator = generator.apply(thisArg, _arguments ||\n [])).next());\n });\n }\n function __generator(thisArg, body) {\n var _ = { label: 0, sent: function () { if\n (t[0] & 1)\n throw t[1]; return t[1]; }, trys: [], ops: [] }, f, y, t, g;\n return g = { next: verb(0), \"throw\":\n verb(1), \"return\": verb(2) }, typeof Symbol === \"function\" && (g[Symbol.iterator] = function () { return this; }),\n g;\n function verb(n) { return function (v) { return step([n, v]); }\n }\n function step(op) {\n if (f)\n throw new TypeError(\"Generator is already executing.\");\n while (!_)\n try {\n if\n (f = 1, y && (t = op[0] & 2 ? y[\"return\"] : op[0] ? y[\"throw\"] || ((t = y[\"return\"])\n && t.call(y, 0) : y.next) &&\n !(t = t.call(y, op[1])).done)\n return t;\n if (y = 0, t)\n op = [op[0] & 2,\n t.value];\n switch (op[0]) {\n case 0:\n t = op;\n break;\n case 4:\n _label++;\n return { value: op[1],\n done: false };\n case 5:\n _label++;\n y = op[1];\n op = [0];\n continue;\n case 7:\n op = _ops.pop();\n _trys.pop();\n continue;\n default:\n if (!(t = _trys, t = t.length > 0\n && t[t.length - 1]) && (op[0] === 6 || op[0] === 2))\n _ = 0;\n continue;\n }\n if (op[0] === 3 && (!t || (op[1] > t[0] && op[1] < t[3])))\n _label = op[1];\n break;\n }\n if (op[0] === 6 && _label <\n t[1]) {\n _label = t[1];\n t = op;\n break;\n }\n if (t && _label < t[2])\n _label = t[2];\n _ops.push(op);\n break;\n }\n if (t[2])\n _ops.pop();\n _trys.pop();\n continue;\n }\n op =\n body.call(thisArg, _);\n }\n catch (e) {\n op = [6, e];\n y = 0;\n }\n finally {\n f = t = 0;\n }\n if (op[0] & 5)\n throw op[1];\n }\n return { value: op[0] ? op[1] : void 0, done: true };\n }\n }\n var __createBinding = Object.create ? (function\n (o, m, k, k2) {\n if (k2 === undefined)\n k2 = k;\n Object.defineProperty(o, k2, { enumerable: true,\n get: function () { return m[k]; } });\n }) : (function (o, m, k, k2) {\n if (k2 === undefined)\n k2 = k;\n o[k2] = m[k];\n });\n function __exportStar(m, exports) {\n for (var p in m)\n if (p !== \"default\"\n && !exports.hasOwnProperty(p))\n __createBinding(exports, m, p);\n }\n function __values(o) {\n var s = typeof Symbol === \"function\" && Symbol.iterator, m = s && o[s], i = 0;\n if (m)\n return

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m.call(o);\n if (o && typeof o.length === \"number\")\n return {\n next: function () {\n if (o && i >= o.length)\n o = void 0;\n return { value: o && o[i++], done: !o };\n }\n };\n throw new TypeError(s ? \"Object is not iterable.\" : \"Symbol.iterator is not defined.\");\n}\n\nfunction __read(o, n) {\n var m = typeof Symbol === \"function\" && o[Symbol.iterator];\n if (!m)\n return o;\n var i = m.call(o), r, ar = [], e;\n try {\n while ((n === void 0 || n-- > 0) && !(r = i.next()).done)\n ar.push(r.value);\n } catch (error) {\n e = { error: error };\n }\n finally {\n try {\n if (r && !r.done && (m = i[\"return\"])\n m.call(i);\n }\n }\n finally {\n if (e)\n throw e.error;\n }\n return ar;\n}\n\nfunction __spread() {\n for (var ar = [], i = 0; i < arguments.length; i++)\n ar = ar.concat(__read(arguments[i]));\n return ar;\n}\n\nfunction __spreadArrays() {\n for (var s = 0, i = 0, il = arguments.length; i < il; i++)\n s += arguments[i].length;\n for (var r = Array(s), k = 0, i = 0; i < il; i++)\n for (var a = arguments[i], j = 0, jl = a.length; j < jl; j++, k++)\n r[k] = a[j];\n return r;\n}\n\nfunction __await(v) {\n return this instanceof __await ? (this.v = v, this) : new __await(v);\n}\n\nfunction __asyncGenerator(thisArg, _arguments, generator) {\n if (!Symbol.asyncIterator)\n throw new TypeError(\"Symbol.asyncIterator is not defined.\");\n var g = generator.apply(thisArg, _arguments || []), i, q = [];\n return i = { }, verb(\"next\"), verb(\"throw\"), verb(\"return\"), i[Symbol.asyncIterator] = function () { return this; }, i;\n}\n\nfunction verb(n) {\n if (g[n])\n i[n] = function (v) {\n return new Promise(function (a, b) {\n q.push([n, v, a, b]) > 1 || resume(n, v); });\n };\n function resume(n, v) {\n try {\n step(g[n](v));\n } catch (e) {\n settle(q[0][3], e);\n }\n }\n function step(r) {\n r.value instanceof __await ? Promise.resolve(r.value.v).then(fulfill, reject) : settle(q[0][2], r);\n }\n function fulfill(value) {\n resume(\"next\", value);\n }\n function reject(value) {\n resume(\"throw\", value);\n }\n function settle(f, v) {\n if (f(v), q.shift(), q.length)\n resume(q[0][0], q[0][1]);\n }\n}\n\nfunction __asyncDelegator(o) {\n var i, p;\n return i = { }, verb(\"next\"), verb(\"throw\"), function (e) {\n throw e; }, verb(\"return\"), i[Symbol.iterator] = function () {\n return this; }, i;\n}\n\nfunction verb(n, f) {\n i[n] = o[n] ? function (v) {\n return (p = !p) ? { value: __await(o[n](v)), done: n === \"return\" } : f ? f(v) : v; }\n : f;\n}\n\nfunction __asyncValues(o) {\n if (!Symbol.asyncIterator)\n throw new TypeError(\"Symbol.asyncIterator is not defined.\");\n var m = o[Symbol.asyncIterator], i;\n return m ? m.call(o) : (o = typeof __values === \"function\" ? __values(o) : o[Symbol.iterator](), i = { }, verb(\"next\"), verb(\"throw\"), verb(\"return\"), i[Symbol.asyncIterator] = function () {\n return this; }, i);\n}\n\nfunction verb(n) {\n i[n] = o[n] && function (v) {\n return new Promise(function (resolve, reject) {\n v = o[n](v), settle(resolve, reject, v.done, v.value); });\n };\n}\n\nfunction settle(resolve, reject, d, v) {\n Promise.resolve(v).then(function (v) {\n resolve({ value: v, done: d });\n }, reject);\n}\n\nfunction __makeTemplateObject(cooked, raw) {\n if (Object.defineProperty)\n Object.defineProperty(cooked, \"raw\", { value: raw });\n else {\n cooked.raw = raw;\n }\n return cooked;\n}\n\nvar __setModuleDefault = Object.create ? (function (o, v) {\n Object.defineProperty(o, \"default\", { enumerable: true, value: v });\n}) : function (o, v) {\n o[\"default\"] = v;\n};\n\nfunction __importStar(mod) {\n if (mod && mod.__esModule)\n return mod;\n var result = {};\n if (mod != null)\n for (var k in mod)\n if (Object.hasOwnProperty.call(mod, k))\n __createBinding(result, mod, k);\n __setModuleDefault(result, mod);\n return result;\n}\n\nfunction __importDefault(mod) {\n return (mod && mod.__esModule) ? mod : { default: mod };\n}\n\nfunction __classPrivateFieldGet(receiver, privateMap) {\n if (!privateMap.has(receiver))\n throw new TypeError(\"attempted to get private field on non-instance\");\n return privateMap.get(receiver);\n}\n\nfunction __classPrivateFieldSet(receiver, privateMap, value) {\n if (!privateMap.has(receiver))\n throw new TypeError(\"attempted to set private field on non-instance\");\n privateMap.set(receiver, value);\n return value;\n}\n\nfunction isBrowser() {\n return (typeof window !== 'undefined' && typeof window.document !== 'undefined');\n}\n\nfunction isNode() {\n // Checking only for `process` isn't enough to identify whether or not we're in a Node\n // environment, because Webpack by default will polyfill the `process`. While we can discern\n // that Webpack polyfilled it by looking at `process.browser`, it's very Webpack-specific and\n // might not be future-proof. Instead we look at the stringified version of `process` which\n // is `[object process]` in Node and `[object`

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Object]` when polyfilled.\n return typeof process !== 'undefined' && {}.toString.call(process) === '[object
process]';\n }\n function optimizeGroupPlayer(players) {\n switch (players.length) {\n case 0:\n return new animations.NoopAnimationPlayer();\n case 1:\n return players[0];\n default:\n return new animations.AnimationGroupPlayer(players);\n }\n }\n function
normalizeKeyframes(driver, normalizer, element, keyframes, preStyles, postStyles) {\n if (preStyles === void
0) { preStyles = {}; }\n if (postStyles === void 0) { postStyles = {}; }\n var errors = [];\n var
normalizedKeyframes = [];\n var previousOffset = -1;\n var previousKeyframe = null;\n keyframes.forEach(function (kf) {\n var offset = kf['offset'];\n var isSameOffset = offset ==
previousOffset;\n var normalizedKeyframe = (isSameOffset && previousKeyframe) || {};\n Object.keys(kf).forEach(function (prop) {\n var normalizedProp = prop;\n var normalizedValue =
kf[prop];\n if (prop !== 'offset') {\n normalizedProp =
normalizer.normalizePropertyName(normalizedProp, errors);\n switch (normalizedValue) {\n
 case animations.PRE_STYLE:\n normalizedValue = preStyles[prop];\n break;\n
 case animations.AUTO_STYLE:\n normalizedValue = postStyles[prop];\n break;\n
 default:\n normalizedValue = \n
normalizer.normalizeStyleValue(prop, normalizedProp, normalizedValue, errors);\n break;\n
 }\n }\n normalizedKeyframe[normalizedProp] = normalizedValue;\n });\n if
(!isSameOffset) {\n normalizedKeyframes.push(normalizedKeyframe);\n }\n previousKeyframe = normalizedKeyframe;\n previousOffset = offset;\n });\n if (errors.length) {\n var
LINE_START = "\\n - ";
 throw new Error("Unable to animate due to the following errors:" +
LINE_START + errors.join(LINE_START));\n }\n return normalizedKeyframes;\n }\n function
listenOnPlayer(player, eventName, event, callback) {\n switch (eventName) {\n case 'start':\n player.onStart(function () { return callback(event && copyAnimationEvent(event, 'start', player)); });\n break;\n case 'done':\n player.onDone(function () { return callback(event &&
copyAnimationEvent(event, 'done', player)); });\n break;\n case 'destroy':\n player.onDestroy(function () { return callback(event && copyAnimationEvent(event, 'destroy', player)); });\n break;\n }\n }\n function copyAnimationEvent(e, phaseName, player) {\n var totalTime =
player.totalTime;\n var disabled = player.disabled ? true : false;\n var event =
makeAnimationEvent(e.element, e.triggerName, e.fromState, e.toState, phaseName || e.phaseName, totalTime ===
undefined ? e.totalTime : totalTime, disabled);\n var data = e['_data'];\n if (data != null) {\n event['_data'] = data;\n }\n return event;\n }\n function makeAnimationEvent(element, triggerName,
fromState, toState, phaseName, totalTime, disabled) {\n if (phaseName === void 0) { phaseName = ""; }\n if (totalTime === void 0) { totalTime = 0; }\n return { element: element, triggerName: triggerName, fromState:
fromState, toState: toState, phaseName: phaseName, totalTime: totalTime, disabled: !!disabled };
 }\n function
getOrSetAsInMap(map, key, defaultValue) {\n var value;\n if (map instanceof Map) {\n value =
map.get(key);\n if (!value) {\n map.set(key, value = defaultValue);\n }\n } else {\n value = map[key];\n if (!value) {\n value = map[key] = defaultValue;\n }\n }\n return value;\n }\n function
parseTimelineCommand(command) {\n var separatorPos =
command.indexOf(':');\n var id = command.substr(1, separatorPos);\n var action =
command.substr(separatorPos + 1);\n return [id, action];\n }\n var _contains = function (elm1, elm2) {\n return false;
 }\n var 0 = _contains;\n var _matches = function (element, selector) {\n return false;
 }\n var 1 =
_matches;\n var _query = function (element, selector, multi) {\n return [];\n };\n var 2 = _query;\n //
Define utility methods for browsers and platform-server(domino) where Element\n // and utility methods exist.\n var _isNode = isNode();\n if (_isNode || typeof Element !== 'undefined') {\n // this is well supported in all
browsers\n _contains = function (elm1, elm2) {\n return elm1.contains(elm2);\n };\n _matches =
(function () {\n if (_isNode || Element.prototype.matches) {\n return function (element, selector) {\n return element.matches(selector);
 };\n } else {\n var proto = Element.prototype;\n var fn_1 = proto.matchesSelector || proto.mozMatchesSelector || proto.msMatchesSelector ||\n

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proto.oMatchesSelector || proto.webkitMatchesSelector;\n if (fn_1) {\n return function
(element, selector) { return fn_1.apply(element, [selector]); }; \n } \n else {\n return
_matches;\n } \n }); \n _query = function (element, selector, multi) {\n var
results = [];\n if (multi) {\n results.push.apply(results,
__spread(element.querySelectorAll(selector)));\n } \n else {\n var elm =
element.querySelector(selector);\n if (elm) {\n results.push(elm);\n } \n } \n return results;\n }; \n function containsVendorPrefix(prop) {\n // Webkit is the only real popular
vendor prefix nowadays\n // cc: http://shouldiprefix.com/\n return prop.substr(1, 6) == 'ebkit'; // webkit
or Webkit\n } \n var _CACHED_BODY = null;\n var _IS_WEBKIT = false;\n function
validateStyleProperty(prop) {\n if (!_CACHED_BODY) {\n _CACHED_BODY = getBodyNode() \n
 };\n _IS_WEBKIT = _CACHED_BODY.style ? ('WebkitAppearance' in _CACHED_BODY.style) : false;\n
 var result = true;\n if (_CACHED_BODY.style && !containsVendorPrefix(prop)) {\n result
= prop in _CACHED_BODY.style;\n if (!result && _IS_WEBKIT) {\n var camelProp = 'Webkit' +
prop.charAt(0).toUpperCase() + prop.substr(1);\n result = camelProp in _CACHED_BODY.style;\n
 } \n } \n return result;\n } \n function getBodyNode() {\n if (typeof document != 'undefined') {\n
return document.body;\n } \n return null;\n } \n var matchesElement = _matches;\n var
containsElement = _contains;\n var invokeQuery = _query;\n function hyphenatePropsObject(object) {\n var
newObj = {};\n Object.keys(object).forEach(function (prop) {\n var newProp = prop.replace(/([a-z])([A-
Z])/g, '$1-$2');\n newObj[newProp] = object[prop];\n }); \n return newObj;\n } \n /**\n *
@license\n * Copyright Google LLC All Rights Reserved.\n * \n * Use of this source code is governed by an
MIT-style license that can be\n * found in the LICENSE file at https://angular.io/license\n * \n */ \n *
@publicApi\n * \n var NoopAnimationDriver = /** @class */ (function () {\n function
NoopAnimationDriver() {\n } \n NoopAnimationDriver.prototype.validateStyleProperty = function (prop)
{\n return validateStyleProperty(prop);\n }; \n NoopAnimationDriver.prototype.matchesElement =
function (element, selector) {\n return matchesElement(element, selector);\n }; \n NoopAnimationDriver.prototype.containsElement = function (elm1, elm2) {\n return containsElement(elm1,
elm2);\n }; \n NoopAnimationDriver.prototype.query = function (element, selector, multi) {\n return
invokeQuery(element, selector, multi);\n }; \n NoopAnimationDriver.prototype.computeStyle = function
(element, prop, defaultValue) {\n return defaultValue || '';\n }; \n NoopAnimationDriver.prototype.animate = function (element, keyframes, duration, delay, easing, previousPlayers,
scrubberAccessRequested) {\n if (previousPlayers === void 0) { previousPlayers = []; } \n return new
animations.NoopAnimationPlayer(duration, delay);\n }; \n return NoopAnimationDriver;\n }()); \n NoopAnimationDriver.decorators = [\n { type: core.Injectable } \n]; \n /**\n * @publicApi\n * \n var
AnimationDriver = /** @class */ (function () {\n function AnimationDriver() {\n } \n return
AnimationDriver;\n }()); \n AnimationDriver.NOOP = new NoopAnimationDriver(); \n /**\n * @license\n * Copyright Google LLC All Rights Reserved.\n * \n * Use of this source code is governed by an MIT-style
license that can be\n * found in the LICENSE file at https://angular.io/license\n * \n var ONE_SECOND =
1000;\n var SUBSTITUTION_EXPR_START = '{';\n var SUBSTITUTION_EXPR_END = '}';\n var
ENTER_CLASSNAME = 'ng-enter';\n var LEAVE_CLASSNAME = 'ng-leave';\n var ENTER_SELECTOR =
'.ng-enter';\n var LEAVE_SELECTOR = '.ng-leave';\n var NG_TRIGGER_CLASSNAME = 'ng-trigger';\n var
NG_TRIGGER_SELECTOR = '.ng-trigger';\n var NG_ANIMATING_CLASSNAME = 'ng-animating';\n var
NG_ANIMATING_SELECTOR = '.ng-animating';\n function resolveTimingValue(value) {\n if (typeof value
== 'number')\n return value;\n var matches = value.match(/^(?![\.\d]+)(m?s)/);\n if (!matches ||
matches.length < 2)\n return 0;\n return _convertTimeValueToMS(parseFloat(matches[1]),
matches[2]);\n } \n function _convertTimeValueToMS(value, unit) {\n switch (unit) {\n case 's':\n return value * ONE_SECOND;\n default: // ms or something else\n return value;\n } \n } \n function resolveTiming(timings, errors, allowNegativeValues) {\n return
timings.hasOwnProperty('duration') ?\n timings :\n parseTimeExpression(timings, errors,

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allowNegativeValues);\n }\n function parseTimeExpression(exp, errors, allowNegativeValues) {\n var
regex = /^(?![\d]+)(m?s)(?:\s+(-?[\d]+)(m?s))?(?:\s+([-a-z]+(?:\.\d+)?))?\$/i;\n var duration;\n var
delay = 0;\n var easing = ";\n if (typeof exp === 'string') {\n var matches = exp.match(regex);\n
if (matches === null) {\n errors.push("The provided timing value '" + exp + "' is invalid.");\n
return { duration: 0, delay: 0, easing: " };\n }\n duration =
_convertTimeValueToMS(parseFloat(matches[1]), matches[2]);\n var delayMatch = matches[3];\n if
(delayMatch !== null) {\n delay = _convertTimeValueToMS(parseFloat(delayMatch), matches[4]);\n
}\n var easingVal = matches[5];\n if (easingVal) {\n easing = easingVal;\n }\n
}\n else {\n duration = exp;\n }\n if (!allowNegativeValues) {\n var containsErrors = false;\n
var startIndex = errors.length;\n if (duration < 0) {\n errors.push("Duration values below 0 are
not allowed for this animation step.");\n containsErrors = true;\n }\n if (delay < 0) {\n
errors.push("Delay values below 0 are not allowed for this animation step.");\n containsErrors = true;\n
}\n if (containsErrors) {\n errors.splice(startIndex, 0, "The provided timing value '" + exp +
"' is invalid.");\n }\n }\n return { duration: duration, delay: delay, easing: easing };\n }\n
function copyObj(obj, destination) {\n if (destination === void 0) { destination = {};\n
Object.keys(obj).forEach(function (prop) {\n destination[prop] = obj[prop];\n });\n return
destination;\n }\n function normalizeStyles(styles) {\n var normalizedStyles = {};\n if
(Array.isArray(styles)) {\n styles.forEach(function (data) { return copyStyles(data, false, normalizedStyles);
});\n }\n else {\n copyStyles(styles, false, normalizedStyles);\n }\n return
normalizedStyles;\n }\n function copyStyles(styles, readPrototype, destination) {\n if (destination === void
0) { destination = {};\n }\n if (readPrototype) {\n // we make use of a for-in loop so that the\n
// prototypically inherited properties are\n // revealed from the backFill map\n for (var prop in styles) {\n
destination[prop] = styles[prop];\n }\n }\n else {\n copyObj(styles, destination);\n
}\n return destination;\n }\n function getStyleAttributeString(element, key, value) {\n // Return the key-
value pair string to be added to the style attribute for the\n // given CSS style key.\n if (value) {\n
return key + ':' + value + ';\n }\n else {\n return ";\n }\n }\n function
writeStyleAttribute(element) {\n // Read the style property of the element and manually reflect it to the\n
// style attribute. This is needed because Domino on platform-server doesn't\n // understand the full set of allowed
CSS properties and doesn't reflect some\n // of them automatically.\n var styleAttrValue = ";\n for (var i
= 0; i < element.style.length; i++) {\n var key = element.style.item(i);\n styleAttrValue +=
getStyleAttributeString(element, key, element.style.getPropertyValue(key));\n }\n for (var key in
element.style) {\n // Skip internal Domino properties that don't need to be reflected.\n if
(!element.style.hasOwnProperty(key) || key.startsWith('_')) {\n continue;\n }\n var dashKey =
camelCaseToDashCase(key);\n styleAttrValue += getStyleAttributeString(element, dashKey,
element.style[key]);\n }\n element.setAttribute('style', styleAttrValue);\n }\n function setStyles(element,
styles, formerStyles) {\n if (element['style']) {\n Object.keys(styles).forEach(function (prop) {\n
var camelProp = dashCaseToCamelCase(prop);\n if (formerStyles &&
!formerStyles.hasOwnProperty(prop)) {\n formerStyles[prop] = element.style[camelProp];\n
}\n element.style[camelProp] = styles[prop];\n });\n // On the server set the 'style' attribute
since it's not automatically reflected.\n if (isNode()) {\n writeStyleAttribute(element);\n }\n
}\n }\n }\n function eraseStyles(element, styles) {\n if (element['style']) {\n
Object.keys(styles).forEach(function (prop) {\n var camelProp = dashCaseToCamelCase(prop);\n
element.style[camelProp] = ";\n });\n // On the server set the 'style' attribute since it's not automatically
reflected.\n if (isNode()) {\n writeStyleAttribute(element);\n }\n }\n }\n
function normalizeAnimationEntry(steps) {\n if (Array.isArray(steps)) {\n if (steps.length === 1)\n return
steps[0];\n return animations.sequence(steps);\n }\n return steps;\n }\n function
validateStyleParams(value, options, errors) {\n var params = options.params || {};\n var matches =
extractStyleParams(value);\n if (matches.length) {\n matches.forEach(function (varName) {\n if

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(!params.hasOwnProperty(varName)) {\n errors.push("Unable to resolve the local animation param \" +
varName + \" in the given list of values\");\n }\n });\n }\n }\n var PARAM_REGEX = new
RegExp(SUBSTITUTION_EXPR_START + "\\|s*(.+?)\\|s*" + SUBSTITUTION_EXPR_END, 'g');\n function
extractStyleParams(value) {\n var params = [];\n if (typeof value === 'string') {\n var match = void
0;\n while (match = PARAM_REGEX.exec(value)) {\n params.push(match[1]);\n }\n PARAM_REGEX.lastIndex = 0;\n }\n return params;\n }\n function interpolateParams(value, params,
errors) {\n var original = value.toString();\n var str = original.replace(PARAM_REGEX, function (_,
varName) {\n var localVal = params[varName];\n // this means that the value was never overridden by
the data passed in by the user\n if (!params.hasOwnProperty(varName)) {\n errors.push("Please
provide a value for the animation param \" + varName);\n localVal = "";\n }\n return
localVal.toString();\n });\n // we do this to assert that numeric values stay as they are\n return str ===
original ? value : str;\n }\n function iteratorToArray(iterator) {\n var arr = [];\n var item =
iterator.next();\n while (!item.done) {\n arr.push(item.value);\n item = iterator.next();\n }\n return arr;\n }\n function mergeAnimationOptions(source, destination) {\n if (source.params) {\n var
p0_1 = source.params;\n if (!destination.params) {\n destination.params = {};\n }\n var p1_1 = destination.params;\n Object.keys(p0_1).forEach(function (param) {\n if
(!p1_1.hasOwnProperty(param)) {\n p1_1[param] = p0_1[param];\n }\n });\n }\n return destination;\n }\n var DASH_CASE_REGEX = /-+([a-z0-9])/g;\n function
dashCaseToCamelCase(input) {\n return input.replace(DASH_CASE_REGEX, function () {\n var m =
[];\n for (var _i = 0; _i < arguments.length; _i++) {\n m[_i] = arguments[_i];\n }\n return m[1].toUpperCase();\n });\n }\n function camelCaseToDashCase(input) {\n return
input.replace(/([a-z])([A-Z])/g, '$1-$2').toLowerCase();\n }\n function
allowPreviousPlayerStylesMerge(duration, delay) {\n return duration === 0 || delay === 0;\n }\n function
balancePreviousStylesIntoKeyframes(element, keyframes, previousStyles) {\n var previousStyleProps =
Object.keys(previousStyles);\n if (previousStyleProps.length && keyframes.length) {\n var
startingKeyframe_1 = keyframes[0];\n var missingStyleProps_1 = [];\n previousStyleProps.forEach(function (prop) {\n if (!startingKeyframe_1.hasOwnProperty(prop)) {\n missingStyleProps_1.push(prop);\n }\n startingKeyframe_1[prop] = previousStyles[prop];\n });\n if (missingStyleProps_1.length) {\n var _loop_1 = function () {\n var kf =
keyframes[i];\n missingStyleProps_1.forEach(function (prop) {\n kf[prop] =
computeStyle(element, prop);\n });\n });\n // tslint:disable-next-line\n for (var
i = 1; i < keyframes.length; i++) {\n _loop_1();\n }\n }\n }\n return
keyframes;\n }\n function visitDslNode(visitor, node, context) {\n switch (node.type) {\n case 7 /*
Trigger */:\n return visitor.visitTrigger(node, context);\n case 0 /* State */:\n return
visitor.visitState(node, context);\n case 1 /* Transition */:\n return visitor.visitTransition(node,
context);\n case 2 /* Sequence */:\n return visitor.visitSequence(node, context);\n case 3 /*
Group */:\n return visitor.visitGroup(node, context);\n case 4 /* Animate */:\n return
visitor.visitAnimate(node, context);\n case 5 /* Keyframes */:\n return visitor.visitKeyframes(node,
context);\n case 6 /* Style */:\n return visitor.visitStyle(node, context);\n case 8 /* Reference
/:\n return visitor.visitReference(node, context);\n case 9 / AnimateChild */:\n return
visitor.visitAnimateChild(node, context);\n case 10 /* AnimateRef */:\n return
visitor.visitAnimateRef(node, context);\n case 11 /* Query */:\n return visitor.visitQuery(node,
context);\n case 12 /* Stagger */:\n return visitor.visitStagger(node, context);\n default:\n throw new Error("Unable to resolve animation metadata node #" + node.type);\n }\n }\n function
computeStyle(element, prop) {\n return window.getComputedStyle(element)[prop];\n }\n /**\n *\n * @license\n * Copyright Google LLC All Rights Reserved.\n * Use of this source code is governed by an
MIT-style license that can be\n * found in the LICENSE file at https://angular.io/license\n */\n var
ANY_STATE = '*';\n function parseTransitionExpr(transitionValue, errors) {\n var expressions = [];\n if

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(typeof transitionValue === 'string') {\n transitionValue.split(/\\s*,\\s*/).forEach(function (str) { return
parseInnerTransitionStr(str, expressions, errors); });\n }\n else {\n
expressions.push(transitionValue);\n }\n return expressions;\n }\n function
parseInnerTransitionStr(eventStr, expressions, errors) {\n if (eventStr[0] === ':') {\n var result =
parseAnimationAlias(eventStr, errors);\n if (typeof result === 'function') {\n
expressions.push(result);\n return;\n }\n eventStr = result;\n }\n var match =
eventStr.match(/^(\\|*|[-\\w+])\\s*(<?[->|\\s*(\\|*|[-\\w+])$/);\n if (match === null || match.length < 4) {\n
errors.push(\"The provided transition expression '\\\\'\" + eventStr + '\\\\'\" is not supported\");\n return
expressions;\n }\n var fromState = match[1];\n var separator = match[2];\n var toState =
match[3];\n expressions.push(makeLambdaFromStates(fromState, toState));\n var isFullAnyStateExpr =
fromState === ANY_STATE && toState === ANY_STATE;\n if (separator[0] === '<' && !isFullAnyStateExpr)
{\n expressions.push(makeLambdaFromStates(toState, fromState));\n }\n }\n function
parseAnimationAlias(alias, errors) {\n switch (alias) {\n case ':enter':\n return 'void => *';\n
 case ':leave':\n return '* => void';\n case ':increment':\n return function (fromState,
toState) { return parseFloat(toState) > parseFloat(fromState); };\n case ':decrement':\n return
function (fromState, toState) { return parseFloat(toState) < parseFloat(fromState); };\n default:\n
errors.push(\"The transition alias value '\\\\'\" + alias + '\\\\'\" is not supported\");\n return '* => *';\n }\n
 }\n // DO NOT REFACTOR ... keep the follow set instantiations\n // with the values intact (closure compiler for
some reason\n // removes follow-up lines that add the values outside of\n // the constructor...\n var
TRUE_BOOLEAN_VALUES = new Set(['true', '1']);\n var FALSE_BOOLEAN_VALUES = new Set(['false',
'0']);\n function makeLambdaFromStates(lhs, rhs) {\n var LHS_MATCH_BOOLEAN =
TRUE_BOOLEAN_VALUES.has(lhs) || FALSE_BOOLEAN_VALUES.has(lhs);\n var
RHS_MATCH_BOOLEAN = TRUE_BOOLEAN_VALUES.has(rhs) || FALSE_BOOLEAN_VALUES.has(rhs);\n
 return function (fromState, toState) {\n var lhsMatch = lhs === ANY_STATE || lhs === fromState;\n
var rhsMatch = rhs === ANY_STATE || rhs === toState;\n if (!lhsMatch && LHS_MATCH_BOOLEAN &&
typeof fromState === 'boolean') {\n lhsMatch = fromState ? TRUE_BOOLEAN_VALUES.has(lhs) :
FALSE_BOOLEAN_VALUES.has(lhs);\n }\n if (!rhsMatch && RHS_MATCH_BOOLEAN &&
typeof toState === 'boolean') {\n rhsMatch = toState ? TRUE_BOOLEAN_VALUES.has(rhs) :
FALSE_BOOLEAN_VALUES.has(rhs);\n }\n return lhsMatch && rhsMatch;\n }; \n }\n var
SELF_TOKEN = ':self';\n var SELF_TOKEN_REGEX = new RegExp(\"s*\" + SELF_TOKEN + \"s*\", 'g');\n
/*\n * [Validation]\n * The visitor code below will traverse the animation AST generated by the animation verb
functions\n * (the output is a tree of objects) and attempt to perform a series of validations on the data. The\n *
following corner-cases will be validated:\n * 1. Overlap of animations\n * Given that a CSS property
cannot be animated in more than one place at the same time, it's\n * important that this behavior is detected and
validated. The way in which this occurs is that\n * each time a style property is examined, a string-map containing
the property will be updated with\n * the start and end times for when the property is used within an animation
step.\n * If there are two or more parallel animations that are currently running (these are invoked by the\n *
group()) on the same element then the validator will throw an error. Since the start/end timing\n * values are
collected for each property then if the current animation step is animating the same\n * property and its timing
values fall anywhere into the window of time that the property is\n * currently being animated within then this is
what causes an error.\n * 2. Timing values\n * The validator will validate to see if a timing value of
`duration delay easing` or\n * `durationNumber` is valid or not.\n * (note that upon validation the code
below will replace the timing data with an object containing\n * {duration,delay,easing}.\n * 3. Offset
Validation\n * Each of the style() calls are allowed to have an offset value when placed inside of keyframes().\n
* Offsets within keyframes() are considered valid when:\n * - No offsets are used at all\n * - Each
style() entry contains an offset value\n * - Each offset is between 0 and 1\n * - Each offset is greater or
equal than the previous one\n * Otherwise an error will be thrown.\n */\n function
buildAnimationAst(driver, metadata, errors) {\n return new AnimationAstBuilderVisitor(driver).build(metadata,

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errors);\n }\n var ROOT_SELECTOR = ";\n var AnimationAstBuilderVisitor = /** @class */ (function () {\n function AnimationAstBuilderVisitor(_driver) {\n this._driver = _driver;\n }\n AnimationAstBuilderVisitor.prototype.build = function (metadata, errors) {\n var context = new\n AnimationAstBuilderContext(errors);\n this._resetContextStyleTimingState(context);\n return\n visitDslNode(this, normalizeAnimationEntry(metadata), context);\n };\n AnimationAstBuilderVisitor.prototype._resetContextStyleTimingState = function (context) {\n context.currentQuerySelector = ROOT_SELECTOR;\n context.collectedStyles = {};\n context.collectedStyles[ROOT_SELECTOR] = {};\n context.currentTime = 0;\n };\n AnimationAstBuilderVisitor.prototype.visitTrigger = function (metadata, context) {\n var _this = this;\n var queryCount = context.queryCount = 0;\n var depCount = context.depCount = 0;\n var states =\n [];\n var transitions = [];\n if (metadata.name.charAt(0) == '@') {\n context.errors.push('animation triggers cannot be prefixed with an `@` sign (e.g. trigger(`@foo`, [...]))');\n }\n metadata.definitions.forEach(function (def) {\n _this._resetContextStyleTimingState(context);\n if (def.type == 0 /* State */) {\n var stateDef_1 = def;\n var name =\n stateDef_1.name;\n name.toString().split(/\\s*/, \\s*/).forEach(function (n) {\n stateDef_1.name = n;\n states.push(_this.visitState(stateDef_1, context));\n });\n stateDef_1.name = name;\n } else if (def.type == 1 /* Transition */) {\n var\n transition = _this.visitTransition(def, context);\n queryCount += transition.queryCount;\n depCount += transition.depCount;\n transitions.push(transition);\n } else {\n context.errors.push('only state() and transition() definitions can sit inside of a trigger');\n }\n });\n return {\n type: 7 /* Trigger */,\n name: metadata.name,\n states: states,\n transitions: transitions,\n queryCount: queryCount,\n depCount: depCount,\n options: null\n };\n };\n AnimationAstBuilderVisitor.prototype.visitState = function (metadata,\n context) {\n var styleAst = this.visitStyle(metadata.styles, context);\n var astParams =\n (metadata.options && metadata.options.params) || null;\n if (styleAst.containsDynamicStyles) {\n var missingSubs_1 = new Set();\n var params_1 = astParams || {};\n styleAst.styles.forEach(function (value) {\n if (isObject(value)) {\n var stylesObj_1 =\n value;\n Object.keys(stylesObj_1).forEach(function (prop) {\n extractStyleParams(stylesObj_1[prop]).forEach(function (sub) {\n if\n (!params_1.hasOwnProperty(sub)) {\n missingSubs_1.add(sub);\n }\n });\n });\n }\n });\n if (missingSubs_1.size) {\n var missingSubsArr = iteratorToArray(missingSubs_1.values());\n context.errors.push("state(\\\"\\\" +\n metadata\n .name + "\\\"\\\", ...) must define default values for all the following style substitutions: \" +\n missingSubsArr.join(', '));\n }\n }\n return {\n type: 0 /* State */,\n name:\n metadata.name,\n style: styleAst,\n options: astParams ? { params: astParams } : null\n };\n };\n AnimationAstBuilderVisitor.prototype.visitTransition = function (metadata, context) {\n context.queryCount = 0;\n context.depCount = 0;\n var animation = visitDslNode(this,\n normalizeAnimationEntry(metadata.animation), context);\n var matchers =\n parseTransitionExpr(metadata.expr, context.errors);\n return {\n type: 1 /* Transition */,\n matchers: matchers,\n animation: animation,\n queryCount: context.queryCount,\n depCount: context.depCount,\n options: normalizeAnimationOptions(metadata.options)\n };\n };\n AnimationAstBuilderVisitor.prototype.visitSequence = function (metadata, context) {\n var _this =\n this;\n return {\n type: 2 /* Sequence */,\n steps: metadata.steps.map(function (s) {\n return\n visitDslNode(_this, s, context);\n }),\n options: normalizeAnimationOptions(metadata.options)\n };\n };\n AnimationAstBuilderVisitor.prototype.visitGroup = function (metadata, context) {\n var _this =\n this;\n var currentTime = context.currentTime;\n var furthestTime = 0;\n var steps =\n metadata.steps.map(function (step) {\n context.currentTime = currentTime;\n var innerAst =\n visitDslNode(_this, step, context);\n furthestTime = Math.max(furthestTime, context.currentTime);\n });\n };\n });\n}());

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return innerAst;\n });\n context.currentTime = furthestTime;\n return {\n type: 3 /*
Group */,\n steps: steps,\n options: normalizeAnimationOptions(metadata.options)\n };\n AnimationAstBuilderVisitor.prototype.visitAnimate = function (metadata, context) {\n var
timingAst = constructTimingAst(metadata.timings, context.errors);\n context.currentAnimateTimings =
timingAst;\n var styleAst;\n var styleMetadata = metadata.styles ? metadata.styles :
animations.style({});\n if (styleMetadata.type == 5 /* Keyframes */) {\n styleAst =
this.visitKeyframes(styleMetadata, context);\n }\n else {\n var styleMetadata_1 =
metadata.styles;\n var isEmpty = false;\n if (!styleMetadata_1) {\n isEmpty = true;\n }
 var newStyleData = {};\n if (timingAst.easing) {\n newStyleData['easing'] =
timingAst.easing;\n }\n styleMetadata_1 = animations.style(newStyleData);\n }\n context.currentTime += timingAst.duration + timingAst.delay;\n var _styleAst =
this.visitStyle(styleMetadata_1, context);\n _styleAst.isEmptyStep = isEmpty;\n styleAst =
_styleAst;\n }\n context.currentAnimateTimings = null;\n return {\n type: 4 /*
Animate */,\n timings: timingAst,\n style: styleAst,\n options: null\n };\n };\n AnimationAstBuilderVisitor.prototype.visitStyle = function (metadata, context) {\n var ast =
this._makeStyleAst(metadata, context);\n this._validateStyleAst(ast, context);\n return ast;\n };\n AnimationAstBuilderVisitor.prototype._makeStyleAst = function (metadata, context) {\n var styles = [];\n if (Array.isArray(metadata.styles)) {\n metadata.styles.forEach(function (styleTuple) {\n
if (typeof styleTuple == 'string') {\n if (styleTuple == animations.AUTO_STYLE) {\n
styles.push(styleTuple);\n }\n else {\n context.errors.push("The
provided style string value \" + styleTuple + \" is not allowed.");\n }\n }\n }
 else {\n styles.push(styleTuple);\n }\n });\n }\n else {\n styles.push(metadata.styles);\n }\n var containsDynamicStyles = false;\n var collectedEasing =
null;\n styles.forEach(function (styleData) {\n if (isObject(styleData)) {\n var styleMap
= styleData;\n var easing = styleMap['easing'];\n if (easing) {\n collectedEasing = easing;\n delete styleMap['easing'];\n }\n if
(!containsDynamicStyles) {\n for (var prop in styleMap) {\n var value =
styleMap[prop];\n if (value.toString().indexOf(SUBSTITUTION_EXPR_START) >= 0) {\n
containsDynamicStyles = true;\n break;\n }\n }\n }\n });\n return {\n type: 6 /* Style */,\n styles: styles,\n easing: collectedEasing,\n offset: metadata.offset,\n containsDynamicStyles:
containsDynamicStyles,\n options: null\n };\n };\n AnimationAstBuilderVisitor.prototype._validateStyleAst = function (ast, context) {\n var _this = this;\n var timings = context.currentAnimateTimings;\n var endTime = context.currentTime;\n var startTime
= context.currentTime;\n if (timings && startTime > 0) {\n startTime -= timings.duration +
timings.delay;\n }\n ast.styles.forEach(function (tuple) {\n if (typeof tuple == 'string')\n return;\n Object.keys(tuple).forEach(function (prop) {\n if
(!_this._driver.validateStyleProperty(prop)) {\n context.errors.push("The provided animation
property \" + prop + \" is not a supported CSS property for animations");\n return;\n }\n var collectedStyles = context.collectedStyles[context.currentQuerySelector];\n var
collectedEntry = collectedStyles[prop];\n var updateCollectedStyle = true;\n if
(collectedEntry) {\n if (startTime != endTime && startTime >= collectedEntry.startTime &&
endTime <= collectedEntry.endTime) {\n context.errors.push("The CSS property \" +
prop + \" that exists between the times of \" + collectedEntry.startTime + \"ms\" and \" + collectedEntry
.endTime + \"ms\" is also being animated in a parallel animation between the times of \" +
startTime + \"ms\" and \" + endTime + \"ms\");\n updateCollectedStyle = false;\n }\n // we always choose the smaller start time value since we\n // want to have a
record of the entire animation window where\n // the style property is being animated in between\n

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 startTime = collectedEntry.startTime;\n }\n if (updateCollectedStyle) {\n
 collectedStyles[prop] = { startTime: startTime, endTime: endTime };\n }\n if
(context.options) {\n validateStyleParams(tuple[prop], context.options, context.errors);\n
}\n });\n });\n });\n AnimationAstBuilderVisitor.prototype.visitKeyframes = function
(metadata, context) {\n var _this = this;\n var ast = { type: 5 /* Keyframes */, styles: [], options: null
};\n if (!context.currentAnimateTimings) {\n context.errors.push(\"keyframes() must be placed
inside of a call to animate()\");\n return ast;\n }\n var MAX_KEYFRAME_OFFSET = 1;\n
 var totalKeyframesWithOffsets = 0;\n var offsets = [];\n var offsetsOutOfOrder = false;\n
 var keyframesOutOfOrder = false;\n var previousOffset = 0;\n var keyframes =
metadata.steps.map(function (styles) {\n var style = _this._makeStyleAst(styles, context);\n var
offsetVal = style.offset != null ? style.offset : consumeOffset(style.styles);\n var offset = 0;\n if
(offsetVal != null) {\n totalKeyframesWithOffsets++;\n offset = style.offset = offsetVal;\n
 }\n keyframesOutOfOrder = keyframesOutOfOrder || offset < 0 || offset > 1;\n
 offsetsOutOfOrder = offsetsOutOfOrder || offset < previousOffset;\n previousOffset = offset;\n
 offsets.push(offset);\n return style;\n });\n if (keyframesOutOfOrder) {\n
 context.errors.push(\"Please ensure that all keyframe offsets are between 0 and 1\");\n }\n if
(offsetsOutOfOrder) {\n context.errors.push(\"Please ensure that all keyframe offsets are in order\");\n
 }\n var length = metadata.steps.length;\n var generatedOffset = 0;\n if
(totalKeyframesWithOffsets > 0 && totalKeyframesWithOffsets < length) {\n context.errors.push(\"Not
all style() steps within the declared keyframes() contain offsets\");\n }\n else if
(totalKeyframesWithOffsets == 0) {\n generatedOffset = MAX_KEYFRAME_OFFSET / (length - 1);\n
 }\n var limit = length - 1;\n var currentTime = context.currentTime;\n var
currentAnimateTimings = context.currentAnimateTimings;\n var animateDuration =
currentAnimateTimings.duration;\n keyframes.forEach(function (kf, i) {\n var offset =
generatedOffset > 0 ? (i == limit ? 1 : (generatedOffset * i)) : offsets[i];\n var durationUpToThisFrame =
offset * animateDuration;\n context.currentTime = currentTime + currentAnimateTimings.delay +
durationUpToThisFrame;\n currentAnimateTimings.duration = durationUpToThisFrame;\n
 _this._validateStyleAst(kf, context);\n kf.offset = offset;\n ast.styles.push(kf);\n });\n
 return ast;\n });\n AnimationAstBuilderVisitor.prototype.visitReference = function (metadata, context) {\n
 return {\n type: 8 /* Reference */,\n animation: visitDslNode(this,
normalizeAnimationEntry(metadata.animation), context),\n options:
normalizeAnimationOptions(metadata.options)\n };\n });\n AnimationAstBuilderVisitor.prototype.visitAnimateChild = function (metadata, context) {\n
 context.depCount++;\n return {\n type: 9 /* AnimateChild */,\n options:
normalizeAnimationOptions(metadata.options)\n };\n });\n AnimationAstBuilderVisitor.prototype.visitAnimateRef = function (metadata, context) {\n return {\n
 type: 10 /* AnimateRef */,\n animation: this.visitReference(metadata.animation, context),\n
 options: normalizeAnimationOptions(metadata.options)\n };\n });\n AnimationAstBuilderVisitor.prototype.visitQuery = function (metadata, context) {\n var parentSelector =
context.currentQuerySelector;\n var options = (metadata.options || {});\n context.queryCount++;\n
 context.currentQuery = metadata;\n var _a = __read(normalizeSelector(metadata.selector), 2), selector =
_a[0], includeSelf = _a[1];\n context.currentQuerySelector =\n parentSelector.length ?
(parentSelector + ' ' + selector) : selector;\n getOrSetAsInMap(context.collectedStyles,
context.currentQuerySelector, {});\n var animation = visitDslNode(this,
normalizeAnimationEntry(metadata.animation), context);\n context.currentQuery = null;\n
 context.currentQuerySelector = parentSelector;\n return {\n type: 11 /* Query */,\n
 selector: selector,\n limit: options.limit || 0,\n optional: !!options.optional,\n includeSelf:
includeSelf,\n animation: animation,\n originalSelector: metadata.selector,\n options:

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normalizeAnimationOptions(metadata.options)\n };\n };\n
AnimationAstBuilderVisitor.prototype.visitStagger = function (metadata, context) {\n if
(!context.currentQuery) {\n context.errors.push("stagger() can only be used inside of query()");\n
}\n var timings = metadata.timings === 'full' ?\n { duration: 0, delay: 0, easing: 'full' } :\n resolveTiming(metadata.timings, context.errors, true);\n return {\n type: 12 /* Stagger */,\n animation: visitDslNode(this, normalizeAnimationEntry(metadata.animation), context),\n timings:\n timings,\n options: null\n };\n };\n return AnimationAstBuilderVisitor;\n }());\n
function normalizeSelector(selector) {\n var hasAmpersand = selector.split(/\\s*,\\s*/).find(function (token) {\n return token === SELF_TOKEN; }) ? true : false;\n if (hasAmpersand) {\n selector =\n selector.replace(SELF_TOKEN_REGEX, "");\n }\n // the :enter and :leave selectors are filled in at runtime\n during timeline building\n selector = selector.replace(/@\\w*/g, NG_TRIGGER_SELECTOR)\n .replace(/@\\w+/g, function (match) {\n return NG_TRIGGER_SELECTOR + '-' + match.substr(1); })\n .replace(/:animating/g, NG_ANIMATING_SELECTOR);\n return [selector, hasAmpersand];\n }\n function\n normalizeParams(obj) {\n return obj ? copyObj(obj) : null;\n }\n var AnimationAstBuilderContext = /**\n @class */ (function () {\n function AnimationAstBuilderContext(errors) {\n this.errors = errors;\n this.queryCount = 0;\n this.depCount = 0;\n this.currentTransition = null;\n this.currentQuery =\n null;\n this.currentQuerySelector = null;\n this.currentAnimateTimings = null;\n this.currentTime = 0;\n this.collectedStyles = {};\n this.options = null;\n }\n return\n AnimationAstBuilderContext;\n }());\n function consumeOffset(styles) {\n if (typeof styles === 'string')\n return null;\n var offset = null;\n if (Array.isArray(styles)) {\n styles.forEach(function (styleTuple)\n {\n if (isObject(styleTuple) && styleTuple.hasOwnProperty('offset')) {\n var obj =\n styleTuple;\n offset = parseFloat(obj['offset']);\n delete obj['offset'];\n }\n });\n } else if (isObject(styles) && styles.hasOwnProperty('offset')) {\n var obj = styles;\n offset = parseFloat(obj['offset']);\n delete obj['offset'];\n }\n return offset;\n }\n function\n isObject(value) {\n return !Array.isArray(value) && typeof value === 'object';\n }\n function\n constructTimingAst(value, errors) {\n var timings = null;\n if (value.hasOwnProperty('duration')) {\n timings = value;\n } else if (typeof value === 'number') {\n var duration = resolveTiming(value,\n errors).duration;\n return makeTimingAst(duration, 0, "");\n }\n var strValue = value;\n var\n isDynamic = strValue.split(/\\s+/.some(function (v) {\n return v.charAt(0) === '{' && v.charAt(1) === '{'; });\n if\n (isDynamic) {\n var ast = makeTimingAst(0, 0, "");\n ast.dynamic = true;\n ast.strValue =\n strValue;\n return ast;\n }\n timings = timings || resolveTiming(strValue, errors);\n return\n makeTimingAst(timings.duration, timings.delay, timings.easing);\n }\n function\n normalizeAnimationOptions(options) {\n if (options) {\n options = copyObj(options);\n if\n (options['params']) {\n options['params'] = normalizeParams(options['params']);\n }\n } else {\n options = {};\n }\n return options;\n }\n function makeTimingAst(duration, delay,\n easing) {\n return {\n duration: duration,\n delay: delay,\n easing: easing\n };\n }\n function\n createTimelineInstruction(element, keyframes, preStyleProps, postStyleProps, duration, delay, easing, subTimeline)\n {\n if (easing === void 0) {\n easing = null;\n }\n if (subTimeline === void 0) {\n subTimeline = false;\n }\n return {\n type: 1 /* TimelineAnimation */,\n element: element,\n keyframes: keyframes,\n preStyleProps: preStyleProps,\n postStyleProps: postStyleProps,\n duration: duration,\n delay:\n delay,\n totalTime: duration + delay,\n easing: easing,\n subTimeline: subTimeline\n };\n }\n var ElementInstructionMap = /** @class */ (function () {\n function ElementInstructionMap() {\n this._map = new Map();\n }\n ElementInstructionMap.prototype.consume = function (element) {\n var instructions = this._map.get(element);\n if (instructions) {\n this._map.delete(element);\n }\n else {\n instructions = [];\n }\n return instructions;\n }\n ElementInstructionMap.prototype.append = function (element, instructions) {\n var existingInstructions =\n this._map.get(element);\n if (!existingInstructions) {\n this._map.set(element, existingInstructions =\n []);\n }\n existingInstructions.push.apply(existingInstructions, __spread(instructions));\n }\n }());\n

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ElementInstructionMap.prototype.has = function (element) {
 return this._map.has(element);
};
ElementInstructionMap.prototype.clear = function () {
 this._map.clear();
};
return
ElementInstructionMap;
})();
var ONE_FRAME_IN_MILLISECONDS = 1;
var ENTER_TOKEN =
'enter';
var ENTER_TOKEN_REGEX = new RegExp(ENTER_TOKEN, 'g');
var LEAVE_TOKEN =
'leave';
var LEAVE_TOKEN_REGEX = new RegExp(LEAVE_TOKEN, 'g');
/*
 * The code within this
file aims to generate web-animations-compatible keyframes from Angular's
 * animation DSL code.
 *
 * The code below will be converted from:
 *
 * ``
 * sequence([
 * style({ opacity: 0 }),
 * animate(1000, style({ opacity: 0 }))
 *])
 * ``
 * To:
 * ``
 * keyframes = [{ opacity: 0,
offset: 0 }, { opacity: 1, offset: 1 }]
 * duration = 1000
 * delay = 0
 * easing = "
 * ``
 *
 * For this operation to cover the combination of animation verbs (style, animate, group, etc...) a
 * combination of
prototypical inheritance, AST traversal and merge-sort-like algorithms are used.
 *
 * [AST Traversal]
 *
 * Each of the animation verbs, when executed, will return a string-map object representing what
 * type of action
it is (style, animate, group, etc...) and the data associated with it. This means
 * that when functional composition
mix of these functions is evaluated (like in the example above)
 * then it will end up producing a tree of objects
representing the animation itself.
 *
 * When this animation object tree is processed by the visitor code below
it will visit each of the
 * verb statements within the visitor. And during each visit it will build the context of
the
 * animation keyframes by interacting with the `TimelineBuilder`.
 *
 * [TimelineBuilder]
 * This
class is responsible for tracking the styles and building a series of keyframe objects for a
 * timeline between a
start and end time. The builder starts off with an initial timeline and each
 * time the AST comes across a
`group()`, `keyframes()` or a combination of the two within a
 * `sequence()` then it will generate a sub timeline
for each step as well as a new one after
 * they are complete.
 *
 * As the AST is traversed, the timing
state on each of the timelines will be incremented. If a sub
 * timeline was created (based on one of the cases
above) then the parent timeline will attempt to
 * merge the styles used within the sub timelines into itself (only
with group() this will happen).
 * This happens with a merge operation (much like how the merge works in
mergesort) and it will only
 * copy the most recently used styles from the sub timelines into the parent timeline.
This ensures
 * that if the styles are used later on in another phase of the animation then they will be the most
 * up-to-date values.
 *
 * [How Missing Styles Are Updated]
 * Each timeline has a `backFill` property
which is responsible for filling in new styles into
 * already processed keyframes if a new style shows up later
within the animation sequence.
 *
 * ``
 * sequence([
 * style({ width: 0 }),
 * animate(1000,
style({ width: 100 })),
 * animate(1000, style({ width: 200 })),
 * animate(1000, style({ width: 300 })),
 * animate(1000, style({ width: 400, height: 400 })) // notice how `height` doesn't exist anywhere
 * else
 *])
 * ``
 *
 * What is happening here is that the `height` value is added later in the sequence, but is
missing
 * from all previous animation steps. Therefore when a keyframe is created it would also be missing
 * from all previous keyframes up until where it is first used. For the timeline keyframe generation
 * to properly
fill in the style it will place the previous value (the value from the parent
 * timeline) or a default value of ``
into the backFill object. Given that each of the keyframe
 * styles are objects that prototypically inherit from the
backFill object, this means that if a
 * value is added into the backFill then it will automatically propagate any
missing values to all
 * keyframes. Therefore the missing `height` value will be properly filled into the already
 * processed keyframes.
 *
 * When a sub-timeline is created it will have its own backFill property. This is
done so that
 * styles present within the sub-timeline do not accidentally seep into the previous/future timeline
 * keyframes.
 *
 * (For prototypically-inherited contents to be detected a `for(i in obj)` loop must be used.)
 *
 * [Validation]
 * The code in this file is not responsible for validation. That functionality happens with
within
 * the `AnimationValidatorVisitor` code.
 */
function buildAnimationTimelines(driver,
rootElement, ast, enterClassName, leaveClassName, startingStyles, finalStyles, options, subInstructions, errors) {
 if (startingStyles === void 0) { startingStyles = {}; }
 if (finalStyles === void 0) { finalStyles = {}; }
 if (errors === void 0) { errors = []; }
 return new AnimationTimelineBuilderVisitor().buildKeyframes(driver,
rootElement, ast, enterClassName, leaveClassName, startingStyles, finalStyles, options, subInstructions, errors);
}
var AnimationTimelineBuilderVisitor = /** @class */ (function () {
 function

```



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AnimationTimelineBuilderVisitor() {\n }\n AnimationTimelineBuilderVisitor.prototype.buildKeyframes =
function (driver, rootElement, ast, enterClassName, leaveClassName, startingStyles, finalStyles, options,
subInstructions, errors) {\n if (errors === void 0) { errors = []; }\n subInstructions = subInstructions ||
new ElementInstructionMap();\n var context = new AnimationTimelineContext(driver, rootElement,
subInstructions, enterClassName, leaveClassName, errors, []);\n context.options = options;\n context.currentTimeline.setStyles([startingStyles], null, context.errors, options);\n visitDslNode(this, ast,
context);\n // this checks to see if an actual animation happened\n var timelines =
context.timelines.filter(function (timeline) { return timeline.containsAnimation(); });\n if (timelines.length
&& Object.keys(finalStyles).length) {\n var tl = timelines[timelines.length - 1];\n if
(!tl.allowOnlyTimelineStyles()) {\n tl.setStyles([finalStyles], null, context.errors, options);\n
 }\n }\n return timelines.length ? timelines.map(function (timeline) { return timeline.buildKeyframes();
}) :\n [createTimelineInstruction(rootElement, [], [], [], 0, 0, "", false)];\n };\n
AnimationTimelineBuilderVisitor.prototype.visitTrigger = function (ast, context) {\n // these values are not
visited in this AST\n }; \n AnimationTimelineBuilderVisitor.prototype.visitState = function (ast, context)
{\n // these values are not visited in this AST\n };\n
AnimationTimelineBuilderVisitor.prototype.visitTransition = function (ast, context) {\n // these values are
not visited in this AST\n }; \n AnimationTimelineBuilderVisitor.prototype.visitAnimateChild = function
(ast, context) {\n var elementInstructions = context.subInstructions.consume(context.element);\n if
(elementInstructions) {\n var innerContext = context.createSubContext(ast.options);\n var
startTime = context.currentTimeline.currentTime;\n var endTime =
this._visitSubInstructions(elementInstructions, innerContext, innerContext.options);\n if (startTime !=
endTime) {\n // we do this on the upper context because we created a sub context for\n // the
sub child animations\n context.transformIntoNewTimeline(endTime);\n }\n }\n context.previousNode = ast;\n }; \n AnimationTimelineBuilderVisitor.prototype.visitAnimateRef = function
(ast, context) {\n var innerContext = context.createSubContext(ast.options);\n innerContext.transformIntoNewTimeline();\n this.visitReference(ast.animation, innerContext);\n context.transformIntoNewTimeline(innerContext.currentTimeline.currentTime);\n context.previousNode =
ast;\n }; \n AnimationTimelineBuilderVisitor.prototype._visitSubInstructions = function (instructions,
context, options) {\n var startTime = context.currentTimeline.currentTime;\n var furthestTime =
startTime;\n // this is a special-case for when a user wants to skip a sub\n // animation from being fired
entirely.\n var duration = options.duration != null ? resolveTimingValue(options.duration) : null;\n var
delay = options.delay != null ? resolveTimingValue(options.delay) : null;\n if (duration !== 0) {\n
instructions.forEach(function (instruction) {\n var instructionTimings =
context.appendInstructionToTimeline(instruction, duration, delay);\n furthestTime =\n Math.max(furthestTime, instructionTimings.duration + instructionTimings.delay);\n });\n }\n return furthestTime;\n }; \n AnimationTimelineBuilderVisitor.prototype.visitReference = function (ast,
context) {\n context.updateOptions(ast.options, true);\n visitDslNode(this, ast.animation, context);\n context.previousNode = ast;\n }; \n AnimationTimelineBuilderVisitor.prototype.visitSequence =
function (ast, context) {\n var _this = this;\n var subContextCount = context.subContextCount;\n var ctx = context;\n var options = ast.options;\n if (options && (options.params || options.delay)) {\n
 ctx = context.createSubContext(options);\n ctx.transformIntoNewTimeline();\n if
(options.delay != null) {\n if (ctx.previousNode.type == 6 /* Style */) {\n
 ctx.currentTimeline.snapshotCurrentStyles();\n ctx.previousNode =
DEFAULT_NOOP_PREVIOUS_NODE;\n }\n var delay =
resolveTimingValue(options.delay);\n ctx.delayNextStep(delay);\n }\n }\n if
(ast.steps.length) {\n ast.steps.forEach(function (s) { return visitDslNode(_this, s, ctx); });\n }\n // this
is here just incase the inner steps only contain or end with a style() call\n ctx.currentTimeline.applyStylesToKeyframe();\n // this means that some animation function within the

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sequence\n // ended up creating a sub timeline (which means the current\n // timeline cannot
overlap with the contents of the sequence)\n if (ctx.subContextCount > subContextCount) {\n
ctx.transformIntoNewTimeline();\n }\n }\n context.previousNode = ast;\n };\n
AnimationTimelineBuilderVisitor.prototype.visitGroup = function (ast, context) {\n var _this = this;\n
var innerTimelines = [];\n var furthestTime = context.currentTimeline.currentTime;\n var delay =
ast.options && ast.options.delay ? resolveTimingValue(ast.options.delay) : 0;\n ast.steps.forEach(function (s)
{\n var innerContext = context.createSubContext(ast.options);\n if (delay) {\n
innerContext.delayNextStep(delay);\n }\n visitDslNode(_this, s, innerContext);\n
furthestTime = Math.max(furthestTime, innerContext.currentTimeline.currentTime);\n
innerTimelines.push(innerContext.currentTimeline);\n });\n // this operation is run after the AST loop
because otherwise\n // if the parent timeline's collected styles were updated then\n // it would pass in
invalid data into the new-to-be forked items\n innerTimelines.forEach(function (timeline) { return
context.currentTimeline.mergeTimelineCollectedStyles(timeline); });\n
context.transformIntoNewTimeline(furthestTime);\n context.previousNode = ast;\n };\n
AnimationTimelineBuilderVisitor.prototype._visitTiming = function (ast, context) {\n if (ast.dynamic) {\n
var strValue = ast.strValue;\n var timingValue = context.params ? interpolateParams(strValue,
context.params, context.errors) : strValue;\n return resolveTiming(timingValue, context.errors);\n
}\n else {\n return { duration: ast.duration, delay: ast.delay, easing: ast.easing }; \n }\n
};\n AnimationTimelineBuilderVisitor.prototype.visitAnimate = function (ast, context) {\n var timings =
context.currentAnimateTimings = this._visitTiming(ast.timings, context);\n var timeline =
context.currentTimeline;\n if (timings.delay) {\n context.incrementTime(timings.delay);\n
timeline.snapshotCurrentStyles();\n }\n var style = ast.style;\n if (style.type == 5 /* Keyframes
*/) {\n this.visitKeyframes(style, context);\n }\n else {\n
context.incrementTime(timings.duration);\n this.visitStyle(style, context);\n
timeline.applyStylesToKeyframe();\n }\n context.currentAnimateTimings = null;\n
context.previousNode = ast;\n };\n AnimationTimelineBuilderVisitor.prototype.visitStyle = function (ast,
context) {\n var timeline = context.currentTimeline;\n var timings = context.currentAnimateTimings;\n
// this is a special case for when a style() call\n // directly follows an animate() call (but not inside of an
animate() call)\n if (!timings && timeline.getCurrentStyleProperties().length) {\n
timeline.forwardFrame();\n }\n var easing = (timings && timings.easing) || ast.easing;\n if
(ast.isEmptyStep) {\n timeline.applyEmptyStep(easing);\n }\n else {\n
timeline.setStyles(ast.styles, easing, context.errors, context.options);\n }\n context.previousNode =
ast;\n };\n AnimationTimelineBuilderVisitor.prototype.visitKeyframes = function (ast, context) {\n
var currentAnimateTimings = context.currentAnimateTimings;\n var startTime =
(context.currentTimeline).duration;\n var duration = currentAnimateTimings.duration;\n var
innerContext = context.createSubContext();\n var innerTimeline = innerContext.currentTimeline;\n
innerTimeline.easing = currentAnimateTimings.easing;\n ast.styles.forEach(function (step) {\n var
offset = step.offset || 0;\n innerTimeline.forwardTime(offset * duration);\n
innerTimeline.setStyles(step.styles, step.easing, context.errors, context.options);\n
innerTimeline.applyStylesToKeyframe();\n });\n // this will ensure that the parent timeline gets all the
styles from\n // the child even if the new timeline below is not used\n
context.currentTimeline.mergeTimelineCollectedStyles(innerTimeline);\n // we do this because the window
between this timeline and the sub timeline\n // should ensure that the styles within are exactly the same as
they were before\n context.transformIntoNewTimeline(startTime + duration);\n context.previousNode
= ast;\n };\n AnimationTimelineBuilderVisitor.prototype.visitQuery = function (ast, context) {\n var
_this = this;\n // in the event that the first step before this is a style step we need\n // to ensure the
styles are applied before the children are animated\n var startTime = context.currentTimeline.currentTime;\n
var options = (ast.options || {});\n var delay = options.delay ? resolveTimingValue(options.delay) : 0;\n

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 if (delay &&\n (context.previousNode.type === 6 /* Style */ ||\n (startTime === 0 &&
context.currentTimeline.getCurrentStyleProperties().length))) {\n
context.currentTimeline.snapshotCurrentStyles();\n context.previousNode =
DEFAULT_NOOP_PREVIOUS_NODE;\n }\n var furthestTime = startTime;\n var elms =
context.invokeQuery(ast.selector, ast.originalSelector, ast.limit, ast.includeSelf, options.optional ? true : false,
context.errors);\n context.currentQueryTotal = elms.length;\n var sameElementTimeline = null;\n
elms.forEach(function (element, i) {\n context.currentQueryIndex = i;\n var innerContext =
context.createSubContext(ast.options, element);\n if (delay) {\n
innerContext.delayNextStep(delay);\n }\n if (element === context.element) {\n
sameElementTimeline = innerContext.currentTimeline;\n }\n visitDslNode(_this, ast.animation,
innerContext);\n // this is here just incase the inner steps only contain or end\n // with a style() call
(which is here to signal that this is a preparatory\n // call to style an element before it is animated again)\n
 innerContext.currentTimeline.applyStylesToKeyframe();\n var endTime =
innerContext.currentTimeline.currentTime;\n furthestTime = Math.max(furthestTime, endTime);\n
});\n context.currentQueryIndex = 0;\n context.currentQueryTotal = 0;\n
context.transformIntoNewTimeline(furthestTime);\n if (sameElementTimeline) {\n
context.currentTimeline.mergeTimelineCollectedStyles(sameElementTimeline);\n
context.currentTimeline.snapshotCurrentStyles();\n }\n context.previousNode = ast;\n };\n
AnimationTimelineBuilderVisitor.prototype.visitStagger = function (ast, context) {\n var parentContext =
context.parentContext;\n var tl = context.currentTimeline;\n var timings = ast.timings;\n var
duration = Math.abs(timings.duration);\n var maxTime = duration * (context.currentQueryTotal - 1);\n
var delay = duration * context.currentQueryIndex;\n var staggerTransformer = timings.duration < 0 ? 'reverse'
: timings.easing;\n switch (staggerTransformer) {\n case 'reverse':\n delay = maxTime -
delay;\n break;\n case 'full':\n delay = parentContext.currentStaggerTime;\n
 break;\n }\n var timeline = context.currentTimeline;\n if (delay) {\n
timeline.delayNextStep(delay);\n }\n var startingTime = timeline.currentTime;\n
visitDslNode(this, ast.animation, context);\n context.previousNode = ast;\n // time = duration + delay\n
 // the reason why this computation is so complex is because\n // the inner timeline may either have a
delay value or a stretched\n // keyframe depending on if a subtimeline is not used or is used.\n
parentContext.currentStaggerTime =\n (tl.currentTime - startingTime) + (tl.startTime -
parentContext.currentTimeline.startTime);\n };\n return AnimationTimelineBuilderVisitor;\n }());\n var
DEFAULT_NOOP_PREVIOUS_NODE = {};\n var AnimationTimelineContext = /** @class */ (function () {\n
function AnimationTimelineContext(_driver, element, subInstructions, _enterClassName, _leaveClassName,
errors, timelines, initialTimeline) {\n this._driver = _driver;\n this.element = element;\n
this.subInstructions = subInstructions;\n this._enterClassName = _enterClassName;\n
this._leaveClassName = _leaveClassName;\n this.errors = errors;\n this.timelines = timelines;\n
this.parentContext = null;\n this.currentAnimateTimings = null;\n this.previousNode =
DEFAULT_NOOP_PREVIOUS_NODE;\n this.subContextCount = 0;\n this.options = {};\n
this.currentQueryIndex = 0;\n this.currentQueryTotal = 0;\n this.currentStaggerTime = 0;\n
this.currentTimeline = initialTimeline || new TimelineBuilder(this._driver, element, 0);\n
timelines.push(this.currentTimeline);\n }\n Object.defineProperty(AnimationTimelineContext.prototype,
\"params\", {\n get: function () {\n return this.options.params;\n },\n enumerable:
false,\n configurable: true\n });\n AnimationTimelineContext.prototype.updateOptions = function
(options, skipIfExists) {\n var _this = this;\n if (!options)\n return;\n var newOptions =
options;\n var optionsToUpdate = this.options;\n // NOTE: this will get patched up when other
animation methods support duration overrides\n if (newOptions.duration != null) {\n
optionsToUpdate.duration = resolveTimingValue(newOptions.duration);\n }\n if (newOptions.delay !=
null) {\n optionsToUpdate.delay = resolveTimingValue(newOptions.delay);\n }\n var

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newParams = newOptions.params;\n if (newParams) {\n var paramsToUpdate_1 =
optionsToUpdate.params;\n if (!paramsToUpdate_1) {\n paramsToUpdate_1 =
this.options.params = {};\n }\n Object.keys(newParams).forEach(function (name) {\n
if (!skipIfExists || !paramsToUpdate_1.hasOwnProperty(name)) {\n paramsToUpdate_1[name] =
interpolateParams(newParams[name], paramsToUpdate_1, _this.errors);\n }\n });\n }\n AnimationTimelineContext.prototype._copyOptions = function () {\n var options = {};\n if (this.options) {\n var oldParams_1 = this.options.params;\n if (oldParams_1) {\n var
params_1 = options['params'] = {};\n Object.keys(oldParams_1).forEach(function (name) {\n
params_1[name] = oldParams_1[name];\n });\n }\n }\n return options;\n
};\n AnimationTimelineContext.prototype.createSubContext = function (options, element, newTime) {\n
if (options === void 0) { options = null; }\n var target = element || this.element;\n var context = new
AnimationTimelineContext(this._driver, target, this.subInstructions, this._enterClassName, this._leaveClassName,
this.errors, this.timelines, this.currentTimeline.fork(target, newTime || 0));\n context.previousNode =
this.previousNode;\n context.currentAnimateTimings = this.currentAnimateTimings;\n context.options
= this._copyOptions();\n context.updateOptions(options);\n context.currentQueryIndex =
this.currentQueryIndex;\n context.currentQueryTotal = this.currentQueryTotal;\n
context.parentContext = this;\n this.subContextCount++;\n return context;\n };\n
AnimationTimelineContext.prototype.transformIntoNewTimeline = function (newTime) {\n
this.previousNode = DEFAULT_NOOP_PREVIOUS_NODE;\n this.currentTimeline =
this.currentTimeline.fork(this.element, newTime);\n this.timelines.push(this.currentTimeline);\n return
this.currentTimeline;\n };\n AnimationTimelineContext.prototype.appendInstructionToTimeline = function
(instruction, duration, delay) {\n var updatedTimings = {\n duration: duration != null ? duration :
instruction.duration,\n delay: this.currentTimeline.currentTime + (delay != null ? delay : 0) +
instruction.delay,\n easing: "\n };\n var builder = new SubTimelineBuilder(this._driver,
instruction.element, instruction.keyframes, instruction.preStyleProps, instruction.postStyleProps, updatedTimings,
instruction.stretchStartingKeyframe);\n this.timelines.push(builder);\n return updatedTimings;\n
};\n AnimationTimelineContext.prototype.incrementTime = function (time) {\n
this.currentTimeline.forwardTime(this.currentTimeline.duration + time);\n };\n
AnimationTimelineContext.prototype.delayNextStep = function (delay) {\n // negative delays are not yet
supported\n if (delay > 0) {\n this.currentTimeline.delayNextStep(delay);\n }\n };\n
AnimationTimelineContext.prototype.invokeQuery = function (selector, originalSelector, limit, includeSelf,
optional, errors) {\n var results = [];\n if (includeSelf) {\n results.push(this.element);\n
}\n if (selector.length > 0) { // if :self is only used then the selector is empty\n selector =
selector.replace(ENTER_TOKEN_REGEX, '!' + this._enterClassName);\n selector =
selector.replace(LEAVE_TOKEN_REGEX, '!' + this._leaveClassName);\n var multi = limit != 1;\n var elements = this._driver.query(this.element, selector, multi);\n if (limit !== 0) {\n elements
= limit < 0 ? elements.slice(elements.length + limit, elements.length) : \n elements.slice(0, limit);\n
}\n results.push.apply(results, __spread(elements));\n }\n if (!optional && results.length
== 0) {\n errors.push("`query(\\\"\\\" + originalSelector + '\\\"\\\")` returned zero elements. (Use `query(\\\"\\\"
+ originalSelector + '\\\"\\\"`, { optional: true })` if you wish to allow this.)");\n }\n return results;\n
};\n return AnimationTimelineContext;\n }());\n var TimelineBuilder = /** @class */ (function () {\n
function TimelineBuilder(_driver, element, startTime, _elementTimelineStylesLookup) {\n this._driver =
_driver;\n this.element = element;\n this.startTime = startTime;\n
this._elementTimelineStylesLookup = _elementTimelineStylesLookup;\n this.duration = 0;\n
this._previousKeyframe = {};\n this._currentKeyframe = {};\n this._keyframes = new Map();\n
this._styleSummary = {};\n this._pendingStyles = {};\n this._backFill = {};\n
this._currentEmptyStepKeyframe = null;\n if (!this._elementTimelineStylesLookup) {\n
this._elementTimelineStylesLookup = new Map();\n }\n this._localTimelineStyles =

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Object.create(this._backFill, {});\n this._globalTimelineStyles =
this._elementTimelineStylesLookup.get(element);\n if (!this._globalTimelineStyles) {\n
this._globalTimelineStyles = this._localTimelineStyles;\n this._elementTimelineStylesLookup.set(element,
this._localTimelineStyles);\n }\n this._loadKeyframe();\n }\n
TimelineBuilder.prototype.containsAnimation = function () {\n switch (this._keyframes.size) {\n
case 0:\n return false;\n case 1:\n return this.getCurrentStyleProperties().length >
0;\n default:\n return true;\n }\n };\n
TimelineBuilder.prototype.getCurrentStyleProperties = function () {\n return
Object.keys(this._currentKeyframe);\n };\n Object.defineProperty(TimelineBuilder.prototype,
\"currentTime\", {\n get: function () {\n return this.startTime + this.duration;\n },\n
enumerable: false,\n configurable: true\n });\n TimelineBuilder.prototype.delayNextStep = function
(delay) {\n // in the event that a style() step is placed right before a stagger()\n // and that style() step is
the very first style() value in the animation\n // then we need to make a copy of the keyframe [0, copy, 1] so
that the delay\n // properly applies the style() values to work with the stagger...\n var hasPreStyleStep
= this._keyframes.size == 1 && Object.keys(this._pendingStyles).length;\n if (this.duration ||
hasPreStyleStep) {\n this.forwardTime(this.currentTime + delay);\n if (hasPreStyleStep) {\n
this.snapshotCurrentStyles();\n }\n }\n else {\n this.startTime += delay;\n
 }\n };\n TimelineBuilder.prototype.fork = function (element, currentTime) {\n
this.applyStylesToKeyframe();\n return new TimelineBuilder(this._driver, element, currentTime ||
this.currentTime, this._elementTimelineStylesLookup);\n };\n TimelineBuilder.prototype._loadKeyframe =
function () {\n if (this._currentKeyframe) {\n this._previousKeyframe = this._currentKeyframe;\n
 }\n this._currentKeyframe = this._keyframes.get(this.duration);\n if (!this._currentKeyframe) {\n
this._currentKeyframe = Object.create(this._backFill, {});\n this._keyframes.set(this.duration,
this._currentKeyframe);\n }\n };\n TimelineBuilder.prototype.forwardFrame = function () {\n
this.duration += ONE_FRAME_IN_MILLISECONDS;\n this._loadKeyframe();\n };\n
TimelineBuilder.prototype.forwardTime = function (time) {\n this.applyStylesToKeyframe();\n
this.duration = time;\n this._loadKeyframe();\n };\n TimelineBuilder.prototype._updateStyle =
function (prop, value) {\n this._localTimelineStyles[prop] = value;\n this._globalTimelineStyles[prop]
= value;\n this._styleSummary[prop] = { time: this.currentTime, value: value };\n };\n
TimelineBuilder.prototype.allowOnlyTimelineStyles = function () {\n return
this._currentEmptyStepKeyframe !== this._currentKeyframe;\n };\n
TimelineBuilder.prototype.applyEmptyStep = function (easing) {\n var _this = this;\n if (easing) {\n
this._previousKeyframe['easing'] = easing;\n }\n // special case for animate(duration):\n //
all missing styles are filled with a `*` value then\n // if any destination styles are filled in later on the same\n
// keyframe then they will override the overridden styles\n // We use `globalTimelineStyles` here
because there may be\n // styles in previous keyframes that are not present in this timeline\n
Object.keys(this._globalTimelineStyles).forEach(function (prop) {\n _this._backFill[prop] =
this._globalTimelineStyles[prop] || animations.AUTO_STYLE;\n this._currentKeyframe[prop] =
animations.AUTO_STYLE;\n });\n this._currentEmptyStepKeyframe = this._currentKeyframe;\n
};\n TimelineBuilder.prototype.setStyle = function (input, easing, errors, options) {\n var _this = this;\n
if (easing) {\n this._previousKeyframe['easing'] = easing;\n }\n var params = (options
&& options.params) || {};\n var styles = flattenStyles(input, this._globalTimelineStyles);\n
Object.keys(styles).forEach(function (prop) {\n var val = interpolateParams(styles[prop], params, errors);\n
 _this._pendingStyles[prop] = val;\n if (!this._localTimelineStyles.hasOwnProperty(prop)) {\n
 _this._backFill[prop] = this._globalTimelineStyles.hasOwnProperty(prop) ?\n
this._globalTimelineStyles[prop] :\n animations.AUTO_STYLE;\n }\n
 _this._updateStyle(prop, val);\n });\n };\n TimelineBuilder.prototype.applyStylesToKeyframe =
function () {\n var _this = this;\n var styles = this._pendingStyles;\n var props =

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Object.keys(styles);\n if (props.length === 0)\n return;\n this._pendingStyles = {};\n props.forEach(function (prop) {\n var val = styles[prop];\n _this._currentKeyframe[prop] = val;\n });\n Object.keys(this._localTimelineStyles).forEach(function (prop) {\n if\n (!_this._currentKeyframe.hasOwnProperty(prop)) {\n _this._currentKeyframe[prop] =\n _this._localTimelineStyles[prop];\n }\n });\n });\n TimelineBuilder.prototype.snapshotCurrentStyles = function () {\n var _this = this;\n Object.keys(this._localTimelineStyles).forEach(function (prop) {\n var val =\n _this._localTimelineStyles[prop];\n _this._pendingStyles[prop] = val;\n _this._updateStyle(prop,\n val);\n });\n });\n TimelineBuilder.prototype.getFinalKeyframe = function () {\n return\n this._keyframes.get(this.duration);\n });\n Object.defineProperty(TimelineBuilder.prototype, "properties",\n {\n get: function () {\n var properties = [];\n for (var prop in this._currentKeyframe) {\n properties.push(prop);\n }\n return properties;\n },\n enumerable: false,\n configurable: true\n });\n TimelineBuilder.prototype.mergeTimelineCollectedStyles = function\n (timeline) {\n var _this = this;\n Object.keys(timeline._styleSummary).forEach(function (prop) {\n var details0 = _this._styleSummary[prop];\n var details1 = timeline._styleSummary[prop];\n if (!details0 || details1.time > details0.time) {\n _this._updateStyle(prop, details1.value);\n }\n });\n });\n TimelineBuilder.prototype.buildKeyframes = function () {\n var _this = this;\n this.applyStylesToKeyframe();\n var preStyleProps = new Set();\n var postStyleProps = new Set();\n var isEmpty = this._keyframes.size === 1 && this.duration === 0;\n var finalKeyframes = [];\n this._keyframes.forEach(function (keyframe, time) {\n var finalKeyframe = copyStyles(keyframe, true);\n Object.keys(finalKeyframe).forEach(function (prop) {\n var value = finalKeyframe[prop];\n if (value === animations.PRE_STYLE) {\n preStyleProps.add(prop);\n }\n else if (value === animations.AUTO_STYLE) {\n postStyleProps.add(prop);\n }\n });\n if (!isEmpty) {\n finalKeyframe['offset'] = time / _this.duration;\n }\n finalKeyframes.push(finalKeyframe);\n });\n var preProps = preStyleProps.size ?\n iteratorToArray(preStyleProps.values()) : [];\n var postProps = postStyleProps.size ?\n iteratorToArray(postStyleProps.values()) : [];\n // special case for a 0-second animation (which is designed\n just to place styles onscreen)\n if (isEmpty) {\n var kf0 = finalKeyframes[0];\n var kf1 =\n copyObj(kf0);\n kf0['offset'] = 0;\n kf1['offset'] = 1;\n finalKeyframes = [kf0, kf1];\n }\n return createTimelineInstruction(this.element, finalKeyframes, preProps, postProps, this.duration,\n this.startTime, this.easing, false);\n });\n return TimelineBuilder;\n }());\n var SubTimelineBuilder = /**\n @class */ (function (_super) {\n __extends(SubTimelineBuilder, _super);\n function\n SubTimelineBuilder(driver, element, keyframes, preStyleProps, postStyleProps, timings, _stretchStartingKeyframe)\n {\n if (_stretchStartingKeyframe === void 0) { _stretchStartingKeyframe = false; }\n var _this =\n _super.call(this, driver, element, timings.delay) || this;\n _this.element = element;\n _this.keyframes =\n keyframes;\n _this.preStyleProps = preStyleProps;\n _this.postStyleProps = postStyleProps;\n _this._stretchStartingKeyframe = _stretchStartingKeyframe;\n _this.timings = { duration: timings.duration,\n delay: timings.delay, easing: timings.easing };\n return _this;\n }\n SubTimelineBuilder.prototype.containsAnimation = function () {\n return this.keyframes.length > 1;\n };\n SubTimelineBuilder.prototype.buildKeyframes = function () {\n var keyframes = this.keyframes;\n var _a = this.timings, delay = _a.delay, duration = _a.duration, easing = _a.easing;\n if\n (this._stretchStartingKeyframe && delay) {\n var newKeyframes = [];\n var totalTime = duration\n + delay;\n var startingGap = delay / totalTime;\n // the original starting keyframe now starts once\n the delay is done\n var newFirstKeyframe = copyStyles(keyframes[0], false);\n newFirstKeyframe['offset'] = 0;\n newKeyframes.push(newFirstKeyframe);\n var\n oldFirstKeyframe = copyStyles(keyframes[0], false);\n oldFirstKeyframe['offset'] =\n roundOffset(startingGap);\n newKeyframes.push(oldFirstKeyframe);\n /*\n When the\n keyframe is stretched then it means that the delay before the animation\n starts is gone. Instead the first

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keyframe is placed at the start of the animation and it is then copied to where it starts when the original
delay is over. This basically means nothing animates during that delay, but the styles are still
rendered. For this to work the original offset values that exist in the original keyframes must be
"warped" so that they can take the new keyframe + delay into account.
delay=1000, duration=1000, keyframes = 0 .5 1 turns into delay=0,
duration=2000, keyframes = 0 .33 .66 1 // offsets between 1 ... n - 1 are all warped by the
keyframe stretch
var limit = keyframes.length - 1; for (var i = 1; i <= limit; i++) {
 var kf = copyStyles(keyframes[i], false); var oldOffset = kf['offset']; var
timeAtKeyframe = delay + oldOffset * duration; kf['offset'] = roundOffset(timeAtKeyframe /
totalTime); newKeyframes.push(kf); } // the new starting keyframe should be
added at the start duration = totalTime; delay = 0; easing = ";
keyframes = newKeyframes; } return createTimelineInstruction(this.element, keyframes,
this.preStyleProps, this.postStyleProps, duration, delay, easing, true); }; return SubTimelineBuilder;
}(TimelineBuilder)); function roundOffset(offset, decimalPoints) { if (decimalPoints === void 0) {
decimalPoints = 3; } var mult = Math.pow(10, decimalPoints - 1); return Math.round(offset * mult) /
mult; } function flattenStyles(input, allStyles) { var styles = {}; var allProperties;
input.forEach(function (token) { if (token === '*') { allProperties = allProperties ||
Object.keys(allStyles); allProperties.forEach(function (prop) { styles[prop] =
animations.AUTO_STYLE; }); } else { copyStyles(token, false, styles); }
}); return styles; } var Animation = /** @class */ (function () { function
Animation(_driver, input) { this._driver = _driver; var errors = []; var ast =
buildAnimationAst(_driver, input, errors); if (errors.length) { var errorMessage = "animation
validation failed:\n" + errors.join("\n"); throw new Error(errorMessage); }
this._animationAst = ast; } Animation.prototype.buildTimelines = function (element, startingStyles,
destinationStyles, options, subInstructions) { var start = Array.isArray(startingStyles) ?
normalizeStyles(startingStyles) : startingStyles; var dest = Array.isArray(destinationStyles) ?
normalizeStyles(destinationStyles) : destinationStyles; var errors = []; subInstructions =
subInstructions || new ElementInstructionMap(); var result = buildAnimationTimelines(this._driver,
element, this._animationAst, ENTER_CLASSNAME, LEAVE_CLASSNAME, start, dest, options, subInstructions,
errors); if (errors.length) { var errorMessage = "animation building failed:\n" +
errors.join("\n"); throw new Error(errorMessage); } return result; }; return
Animation; }()); /**
 * @license
 * Copyright Google LLC All Rights Reserved.
 * Use
of this source code is governed by an MIT-style license that can be
 * found in the LICENSE file at
https://angular.io/license
 */ /**
 * @publicApi
 */ var AnimationStyleNormalizer = /** @class
 */ (function () { function AnimationStyleNormalizer() { } return AnimationStyleNormalizer;
}()); /**
 * @publicApi
 */ var NoopAnimationStyleNormalizer = /** @class
 */ (function () { function NoopAnimationStyleNormalizer() { }
NoopAnimationStyleNormalizer.prototype.normalizePropertyName = function (propertyName, errors) {
return propertyName; }; NoopAnimationStyleNormalizer.prototype.normalizeStyleValue = function
(userProvidedProperty, normalizedProperty, value, errors) { return value; }; return
NoopAnimationStyleNormalizer; }()); var WebAnimationsStyleNormalizer = /** @class
 */ (function (_super) { __extends(WebAnimationsStyleNormalizer, _super); function
WebAnimationsStyleNormalizer() { return _super !== null && _super.apply(this, arguments) || this; }
WebAnimationsStyleNormalizer.prototype.normalizePropertyName = function (propertyName, errors) {
return dashCaseToCamelCase(propertyName); };
WebAnimationsStyleNormalizer.prototype.normalizeStyleValue = function (userProvidedProperty,
normalizedProperty, value, errors) { var unit = "; var strVal = value.toString().trim(); if
(DIMENSIONAL_PROP_MAP[normalizedProperty] && value !== 0 && value !== '0') { if (typeof

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value === 'number') {\n unit = 'px';\n }\n else {\n var valAndSuffixMatch
= value.match(/^[\+]?[\d\.]+([a-z]*)$/);\n if (valAndSuffixMatch && valAndSuffixMatch[1].length ==
0) {\n errors.push("Please provide a CSS unit value for \" + userProvidedProperty + \":\" + value);\n
 }\n }\n }\n return strVal + unit;\n };\n return
WebAnimationsStyleNormalizer;\n }(AnimationStyleNormalizer));\n var O$1 = function () { return
makeBooleanMap('width,height,minWidth,minHeight,maxWidth,maxHeight,left,top,bottom,right,fontSize,outlineW
idth,outlineOffset,paddingTop,paddingLeft,paddingBottom,paddingRight,marginTop,marginLeft,marginBottom,ma
rginRight,borderRadius,borderWidth,borderTopWidth,borderLeftWidth,borderRightWidth,borderBottomWidth,te
xtIndent,perspective'\n .split(',')); };\n var DIMENSIONAL_PROP_MAP = (O$1());\n function
makeBooleanMap(keys) {\n var map = {};\n keys.forEach(function (key) { return map[key] = true; });\n
 return map;\n }\n function createTransitionInstruction(element, triggerName, fromState, toState,
isRemovalTransition, fromStyles, toStyles, timelines, queriedElements, preStyleProps, postStyleProps, totalTime,
errors) {\n return {\n type: 0 /* TransitionAnimation */,\n element: element,\n triggerName:
triggerName,\n isRemovalTransition: isRemovalTransition,\n fromState: fromState,\n
fromStyles: fromStyles,\n toState: toState,\n toStyles: toStyles,\n timelines: timelines,\n
queriedElements: queriedElements,\n preStyleProps: preStyleProps,\n postStyleProps:
postStyleProps,\n totalTime: totalTime,\n errors: errors\n };\n }\n var EMPTY_OBJECT =
{};\n var AnimationTransitionFactory = /** @class */ (function () {\n function
AnimationTransitionFactory(_triggerName, ast, _stateStyles) {\n this._triggerName = _triggerName;\n
this.ast = ast;\n this._stateStyles = _stateStyles;\n }\n AnimationTransitionFactory.prototype.match =
function (currentState, nextState, element, params) {\n return oneOrMoreTransitionsMatch(this.ast.matchers,
currentState, nextState, element, params);\n };\n AnimationTransitionFactory.prototype.buildStyles =
function (stateName, params, errors) {\n var backupStateStyler = this._stateStyles[*];\n var
stateStyler = this._stateStyles[stateName];\n var backupStyles = backupStateStyler ?
backupStateStyler.buildStyles(params, errors) : {};\n return stateStyler ? stateStyler.buildStyles(params,
errors) : backupStyles;\n };\n AnimationTransitionFactory.prototype.build = function (driver, element,
currentState, nextState, enterClassName, leaveClassName, currentOptions, nextOptions, subInstructions,
skipAstBuild) {\n var errors = [];\n var transitionAnimationParams = this.ast.options &&
this.ast.options.params || EMPTY_OBJECT;\n var currentAnimationParams = currentOptions &&
currentOptions.params || EMPTY_OBJECT;\n var currentStateStyles = this.buildStyles(currentState,
currentAnimationParams, errors);\n var nextAnimationParams = nextOptions && nextOptions.params ||
EMPTY_OBJECT;\n var nextStateStyles = this.buildStyles(nextState, nextAnimationParams, errors);\n
var queriedElements = new Set();\n var preStyleMap = new Map();\n var postStyleMap = new
Map();\n var isRemoval = nextState === 'void';\n var animationOptions = { params:
Object.assign(Object.assign({}, transitionAnimationParams), nextAnimationParams) };\n var timelines =
skipAstBuild ?\n [] :\n buildAnimationTimelines(driver, element, this.ast.animation,
enterClassName, leaveClassName, currentStateStyles, nextStateStyles, animationOptions, subInstructions, errors);\n
 var totalTime = 0;\n timelines.forEach(function (tl) {\n totalTime = Math.max(tl.duration +
tl.delay, totalTime);\n });\n if (errors.length) {\n return createTransitionInstruction(element,
this._triggerName, currentState, nextState, isRemoval, currentStateStyles, nextStateStyles, [], [], preStyleMap,
postStyleMap, totalTime, errors);\n }\n timelines.forEach(function (tl) {\n var elm =
tl.element;\n var preProps = getOrSetAsInMap(preStyleMap, elm, {});\n
tl.preStyleProps.forEach(function (prop) { return preProps[prop] = true; });\n var postProps =
getOrSetAsInMap(postStyleMap, elm, {});\n tl.postStyleProps.forEach(function (prop) { return
postProps[prop] = true; });\n if (elm !== element) {\n queriedElements.add(elm);\n
 }\n });\n var queriedElementsList = iteratorToArray(queriedElements.values());\n return
createTransitionInstruction(element, this._triggerName, currentState, nextState, isRemoval, currentStateStyles,
nextStateStyles, timelines, queriedElementsList, preStyleMap, postStyleMap, totalTime);\n };\n return

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AnimationTransitionFactory;\n });\n function oneOrMoreTransitionsMatch(matchFns, currentState, nextState,
element, params) {\n return matchFns.some(function (fn) { return fn(currentState, nextState, element, params);
});\n }\n var AnimationStateStyles = /** @class */ (function () {\n function AnimationStateStyles(styles,
defaultParams) {\n this.styles = styles;\n this.defaultParams = defaultParams;\n }\n AnimationStateStyles.prototype.buildStyles = function (params, errors) {\n var finalStyles = {};\n var
combinedParams = copyObj(this.defaultParams);\n Object.keys(params).forEach(function (key) {\n
var value = params[key];\n if (value != null) {\n combinedParams[key] = value;\n }\n
});\n this.styles.styles.forEach(function (value) {\n if (typeof value !== 'string') {\n
var styleObj_1 = value;\n Object.keys(styleObj_1).forEach(function (prop) {\n var val =
styleObj_1[prop];\n if (val.length > 1) {\n val = interpolateParams(val,
combinedParams, errors);\n }\n finalStyles[prop] = val;\n });\n });\n });\n return finalStyles;\n });\n return AnimationStateStyles;\n }());\n /**\n *
@publicApi\n */\n function buildTrigger(name, ast) {\n return new AnimationTrigger(name, ast);\n }\n
/**\n * @publicApi\n */\n var AnimationTrigger = /** @class */ (function () {\n function
AnimationTrigger(name, ast) {\n var _this = this;\n this.name = name;\n this.ast = ast;\n
this.transitionFactories = [];\n this.states = {};\n ast.states.forEach(function (ast) {\n var
defaultParams = (ast.options && ast.options.params) || {};\n _this.states[ast.name] = new
AnimationStateStyles(ast.style, defaultParams);\n });\n balanceProperties(this.states, 'true', '1');\n
balanceProperties(this.states, 'false', '0');\n ast.transitions.forEach(function (ast) {\n
_this.transitionFactories.push(new AnimationTransitionFactory(name, ast, _this.states));\n });\n
this.fallbackTransition = createFallbackTransition(name, this.states);\n }\n Object.defineProperty(AnimationTrigger.prototype, 'containsQueries', {\n get: function () {\n
return this.ast.queryCount > 0;\n },\n enumerable: false,\n configurable: true\n });\n
AnimationTrigger.prototype.matchTransition = function (currentState, nextState, element, params) {\n var
entry = this.transitionFactories.find(function (f) { return f.match(currentState, nextState, element, params); });\n
return entry || null;\n });\n AnimationTrigger.prototype.matchStyles = function (currentState, params,
errors) {\n return this.fallbackTransition.buildStyles(currentState, params, errors);\n });\n return
AnimationTrigger;\n }());\n function createFallbackTransition(triggerName, states) {\n var matchers =
[function (fromState, toState) { return true; }];\n var animation = { type: 2 /* Sequence */, steps: [], options:
null };\n var transition = {\n type: 1 /* Transition */,\n animation: animation,\n matchers:
matchers,\n options: null,\n queryCount: 0,\n depCount: 0\n };\n return new
AnimationTransitionFactory(triggerName, transition, states);\n }\n function balanceProperties(obj, key1, key2)
{\n if (obj.hasOwnProperty(key1)) {\n if (!obj.hasOwnProperty(key2)) {\n obj[key2] =
obj[key1];\n }\n } else if (obj.hasOwnProperty(key2)) {\n obj[key1] = obj[key2];\n }\n }\n
 /**\n * @license\n * Copyright Google LLC All Rights Reserved.\n * Use of this source code
is governed by an MIT-style license that can be\n * found in the LICENSE file at https://angular.io/license\n
 */\n var EMPTY_INSTRUCTION_MAP = new ElementInstructionMap();\n var TimelineAnimationEngine =
/** @class */ (function () {\n function TimelineAnimationEngine(bodyNode, _driver, _normalizer) {\n
this.bodyNode = bodyNode;\n this._driver = _driver;\n this._normalizer = _normalizer;\n
this._animations = {};\n this._playersById = {};\n this.players = [];\n }\n TimelineAnimationEngine.prototype.register = function (id, metadata) {\n var errors = [];\n var ast =
buildAnimationAst(this._driver, metadata, errors);\n if (errors.length) {\n throw new Error('Unable
to build the animation due to the following errors: \'' + errors.join('\\n');\n } else {\n
this._animations[id] = ast;\n }\n }; TimelineAnimationEngine.prototype._buildPlayer = function (i,
preStyles, postStyles) {\n var element = i.element;\n var keyframes =
normalizeKeyframes(this._driver, this._normalizer, element, i.keyframes, preStyles, postStyles);\n return
this._driver.animate(element, keyframes, i.duration, i.delay, i.easing, [], true);\n }; TimelineAnimationEngine.prototype.create = function (id, element, options) {\n var _this = this;\n if

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(options === void 0) { options = {}; }
var errors = [];
var ast = this._animations[id];
var instructions;
var autoStylesMap = new Map();
if (ast) {
 instructions = buildAnimationTimelines(this._driver, element, ast, ENTER_CLASSNAME, LEAVE_CLASSNAME, {}, {}, options, EMPTY_INSTRUCTION_MAP, errors);
 instructions.forEach(function (inst) {
 var styles = getOrSetAsInMap(autoStylesMap, inst.element, {});
 inst.postStyleProps.forEach(function (prop) {
 return styles[prop] = null;
 });
 });
 else {
 errors.push("The requested animation doesn't exist or has already been destroyed");
 instructions = [];
 }
 if (errors.length) {
 throw new Error("Unable to create the animation due to the following errors: " + errors.join("\n"));
 }
 autoStylesMap.forEach(function (styles, element) {
 Object.keys(styles).forEach(function (prop) {
 styles[prop] = _this._driver.computeStyle(element, prop, animations.AUTO_STYLE);
 });
 });
 var players = instructions.map(function (i) {
 var styles = autoStylesMap.get(i.element);
 return _this._buildPlayer(i, {}, styles);
 });
 var player = optimizeGroupPlayer(players);
 this._playersById[id] = player;
 player.onDestroy(function () {
 return _this.destroy(id);
 });
 this.players.push(player);
 return player;
};
TimelineAnimationEngine.prototype.destroy = function (id) {
 var player = this._getPlayer(id);
 player.destroy();
 delete this._playersById[id];
 var index = this.players.indexOf(player);
 if (index >= 0) {
 this.players.splice(index, 1);
 }
};
TimelineAnimationEngine.prototype._getPlayer = function (id) {
 var player = this._playersById[id];
 if (!player) {
 throw new Error("Unable to find the timeline player referenced by " + id);
 }
 return player;
};
TimelineAnimationEngine.prototype.listen = function (id, element, eventName, callback) {
 // triggerName, fromState, toState are all ignored for timeline animations
 var baseEvent = makeAnimationEvent(element, "", "");
 listenOnPlayer(this._getPlayer(id), eventName, baseEvent, callback);
 return function () {};
};
TimelineAnimationEngine.prototype.command = function (id, element, command, args) {
 if (command === 'register') {
 this.register(id, args[0]);
 return;
 }
 if (command === 'create') {
 var options = (args[0] || {});
 this.create(id, element, options);
 return;
 }
 var player = this._getPlayer(id);
 switch (command) {
 case 'play':
 player.play();
 break;
 case 'pause':
 player.pause();
 break;
 case 'reset':
 player.reset();
 break;
 case 'restart':
 player.restart();
 break;
 case 'finish':
 player.finish();
 break;
 case 'init':
 player.init();
 break;
 case 'setPosition':
 player.setPosition(parseFloat(args[0]));
 break;
 case 'destroy':
 this.destroy(id);
 break;
 }
};
return TimelineAnimationEngine;
})();
var QUEUED_CLASSNAME = 'ng-animate-queued';
var QUEUED_SELECTOR = '.ng-animate-queued';
var DISABLED_CLASSNAME = 'ng-animate-disabled';
var DISABLED_SELECTOR = '.ng-animate-disabled';
var STAR_CLASSNAME = 'ng-star-inserted';
var STAR_SELECTOR = '.ng-star-inserted';
var EMPTY_PLAYER_ARRAY = [];
var NULL_REMOVAL_STATE = {
 namespaceId: "",
 setForRemoval: false,
 setForMove: false,
 hasAnimation: false,
 removedBeforeQueried: false
};
var NULL_REMOVED_QUERIED_STATE = {
 namespaceId: "",
 setForMove: false,
 setForRemoval: false,
 hasAnimation: false,
 removedBeforeQueried: true
};
var REMOVAL_FLAG = '__ng_removed';
var StateValue = /** @class */ (function () {
 function StateValue(input, namespaceId) {
 if (namespaceId === void 0) {
 namespaceId = "";
 }
 this.namespaceId = namespaceId;
 var isObj = input && input.hasOwnProperty('value');
 var value = isObj ? input['value'] : input;
 this.value = normalizeTriggerValue(value);
 if (isObj) {
 var options = copyObj(input);
 delete options['value'];
 this.options = options;
 }
 else {
 this.options = {};
 }
 if (!this.options.params) {
 this.options.params = {};
 }
 }
 Object.defineProperty(StateValue.prototype, "params", {
 get: function () {
 return this.options.params;
 },
 enumerable: false,
 configurable: true
 });
});

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StateValue.prototype.absorbOptions = function (options) {\n var newParams = options.params;\n if\n (newParams) {\n var oldParams_1 = this.options.params;\n }\n Object.keys(newParams).forEach(function (prop) {\n if (oldParams_1[prop] == null) {\n }\n oldParams_1[prop] = newParams[prop];\n });\n return\n StateValue.prototype.constructor.call(this, options);\n StateValue(VOID_VALUE);\n var AnimationTransitionNamespace = /** @class */ (function () {\n function\n AnimationTransitionNamespace(id, hostElement, _engine) {\n this.id = id;\n this.hostElement =\n hostElement;\n this._engine = _engine;\n this.players = [];\n this._triggers = {};\n }\n this._queue = [];\n this._elementListeners = new Map();\n this._hostClassName = 'ng-tns-' + id;\n addClass(hostElement, this._hostClassName);\n AnimationTransitionNamespace.prototype.listen =\n function (element, name, phase, callback) {\n var _this = this;\n if\n (!this._triggers.hasOwnProperty(name)) {\n throw new Error("Unable to listen on the animation trigger\n event \"\" + phase + \"\" because the animation trigger \"\" + name + \"\" doesn't exist!");\n }\n if\n (phase == null || phase.length == 0) {\n throw new Error("Unable to listen on the animation trigger \"\" +\n name + \"\" because the provided event is undefined!");\n }\n if (!isTriggerEventValid(phase)) {\n throw new Error("The provided animation trigger event \"\" + phase + \"\" for the animation trigger \"\" +\n name + \"\" is not supported!");\n }\n var listeners = getOrSetAsInMap(this._elementListeners,\n element, []);\n var data = { name: name, phase: phase, callback: callback }; \n listeners.push(data);\n var triggersWithStates = getOrSetAsInMap(this._engine.statesByElement, element, {});\n if\n (!triggersWithStates.hasOwnProperty(name)) {\n addClass(element, NG_TRIGGER_CLASSNAME);\n }\n addClass(element, NG_TRIGGER_CLASSNAME + '-' + name);\n triggersWithStates[name] =\n DEFAULT_STATE_VALUE;\n return function () {\n // the event listener is removed\n AFTER the flush has occurred such\n // that leave animations callbacks can fire (otherwise if the node\n // is removed in between then the listeners would be deregistered)\n _this._engine.afterFlush(function\n () {\n var index = listeners.indexOf(data);\n if (index >= 0) {\n }\n listeners.splice(index, 1);\n }\n if (!this._triggers[name]) {\n delete\n triggersWithStates[name];\n }\n });\n });\n AnimationTransitionNamespace.prototype.register = function (name, ast) {\n if (this._triggers[name]) {\n }\n // throw\n return false;\n }\n else {\n this._triggers[name] = ast;\n }\n return true;\n });\n AnimationTransitionNamespace.prototype._getTrigger = function (name) {\n var trigger = this._triggers[name];\n if (!trigger) {\n throw new Error("The provided animation\n trigger \"\" + name + \"\" has not been registered!");\n }\n return trigger;\n });\n AnimationTransitionNamespace.prototype.trigger = function (element, triggerName, value, defaultToFallback) {\n var _this = this;\n if (defaultToFallback === void 0) { defaultToFallback = true; }\n var trigger =\n this._getTrigger(triggerName);\n var player = new TransitionAnimationPlayer(this.id, triggerName,\n element);\n var triggersWithStates = this._engine.statesByElement.get(element);\n if\n (!triggersWithStates) {\n addClass(element, NG_TRIGGER_CLASSNAME);\n }\n addClass(element, NG_TRIGGER_CLASSNAME + '-' + triggerName);\n this._engine.statesByElement.set(element, triggersWithStates = {});\n }\n var fromState =\n triggersWithStates[triggerName];\n var toState = new StateValue(value, this.id);\n var isObj = value\n && value.hasOwnProperty('value');\n if (!isObj && fromState) {\n }\n toState.absorbOptions(fromState.options);\n triggersWithStates[triggerName] = toState;\n if\n (!fromState) {\n fromState = DEFAULT_STATE_VALUE;\n }\n var isRemoval =\n toState.value === VOID_VALUE;\n // normally this isn't reached by here, however, if an object expression\n // is passed in then it may be a new object each time. Comparing the value\n // is important since that\n will stay the same despite there being a new object.\n // The removal arc here is special cased because the\n same element is triggered\n // twice in the event that it contains animations on the outer/inner portions\n // of the host container\n if (!isRemoval && fromState.value === toState.value) {\n // this means

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that despite the value not changing, some inner params\n // have changed which means that the animation
final styles need to be applied\n if (!objEquals(fromState.params, toState.params)) {\n var
errors = [];\n var fromStyles_1 = trigger.matchStyles(fromState.value, fromState.params, errors);\n
 var toStyles_1 = trigger.matchStyles(toState.value, toState.params, errors);\n if (errors.length) {\n
 this._engine.reportError(errors);\n }\n else {\n
this._engine.afterFlush(function () {\n eraseStyles(element, fromStyles_1);\n
setStyles(element, toStyles_1);\n });\n }\n }\n return;\n }\n
var playersOnElement = getOrSetAsInMap(this._engine.playersByElement, element, []);\n
playersOnElement.forEach(function (player) {\n // only remove the player if it is queued on the EXACT
same trigger/namespace\n // we only also deal with queued players here because if the animation has\n
 // started then we want to keep the player alive until the flush happens\n // (which is where the
previousPlayers are passed into the new palyer)\n if (player.namespaceId == _this.id &&
player.triggerName == triggerName && player.queued) {\n player.destroy();\n }\n });\n
 var transition = trigger.matchTransition(fromState.value, toState.value, element, toState.params);\n var
isFallbackTransition = false;\n if (!transition) {\n if (!defaultToFallback)\n return;\n
 transition = trigger.fallbackTransition;\n isFallbackTransition = true;\n }\n
this._engine.totalQueuedPlayers++;\n this._queue.push({ element: element, triggerName: triggerName,
transition: transition, fromState: fromState, toState: toState, player: player, isFallbackTransition:
isFallbackTransition });\n if (!isFallbackTransition) {\n addClass(element,
QUEUED_CLASSNAME);\n player.onStart(function () {\n removeClass(element,
QUEUED_CLASSNAME);\n });\n }\n player.onDone(function () {\n var index =
_this.players.indexOf(player);\n if (index >= 0) {\n _this.players.splice(index, 1);\n
 }\n var players = _this._engine.playersByElement.get(element);\n if (players) {\n var
index_1 = players.indexOf(player);\n if (index_1 >= 0) {\n players.splice(index_1, 1);\n
 }\n }\n });\n this.players.push(player);\n playersOnElement.push(player);\n
 return player;\n });\n AnimationTransitionNamespace.prototype.deregister = function (name) {\n
var _this = this;\n delete this._triggers[name];\n this._engine.statesByElement.forEach(function
(stateMap, element) {\n delete stateMap[name];\n });\n
this._elementListeners.forEach(function (listeners, element) {\n _this._elementListeners.set(element,
listeners.filter(function (entry) {\n return entry.name != name;\n }));\n });\n });\n
AnimationTransitionNamespace.prototype.clearElementCache = function (element) {\n
this._engine.statesByElement.delete(element);\n this._elementListeners.delete(element);\n var
elementPlayers = this._engine.playersByElement.get(element);\n if (elementPlayers) {\n
elementPlayers.forEach(function (player) { return player.destroy(); });\n
this._engine.playersByElement.delete(element);\n }\n });\n
AnimationTransitionNamespace.prototype._signalRemovalForInnerTriggers = function (rootElement, context) {\n
var _this = this;\n var elements = this._engine.driver.query(rootElement, NG_TRIGGER_SELECTOR,
true);\n // emulate a leave animation for all inner nodes within this node.\n // If there are no animations
found for any of the nodes then clear the cache\n // for the element.\n elements.forEach(function (elm)
{\n // this means that an inner remove() operation has already kicked off\n // the animation on this
element...\n if (elm[REMOVAL_FLAG])\n return;\n var namespaces =
_this._engine.fetchNamespacesByElement(elm);\n if (namespaces.size) {\n
namespaces.forEach(function (ns) { return ns.triggerLeaveAnimation(elm, context, false, true); });\n }\n
 else {\n _this.clearElementCache(elm);\n }\n });\n // If the child elements
were removed along with the parent, their animations might not\n // have completed. Clear all the elements
from the cache so we don't end up with a memory leak.\n this._engine.afterFlushAnimationsDone(function ()
{\n return elements.forEach(function (elm) { return _this.clearElementCache(elm); });\n });\n
 }\n AnimationTransitionNamespace.prototype.triggerLeaveAnimation = function (element, context,

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destroyAfterComplete, defaultToFallback) {\n var _this = this;\n var triggerStates =
this._engine.statesByElement.get(element);\n if (triggerStates) {\n var players_1 = [];\n
Object.keys(triggerStates).forEach(function (triggerName) {\n // this check is here in the event that an
element is removed\n // twice (both on the host level and the component level)\n if
(_this._triggers[triggerName]) {\n var player = _this.trigger(element, triggerName, VOID_VALUE,
defaultToFallback);\n if (player) {\n players_1.push(player);\n }\n
 }\n });\n if (players_1.length) {\n this._engine.markElementAsRemoved(this.id,
element, true, context);\n if (destroyAfterComplete) {\n
optimizeGroupPlayer(players_1).onDone(function () { return _this._engine.processLeaveNode(element); });\n
 }\n return true;\n }\n }\n return false;\n });\n
AnimationTransitionNamespace.prototype.prepareLeaveAnimationListeners = function (element) {\n var
_this = this;\n var listeners = this._elementListeners.get(element);\n if (listeners) {\n var
visitedTriggers_1 = new Set();\n listeners.forEach(function (listener) {\n var triggerName =
listener.name;\n if (visitedTriggers_1.has(triggerName))\n return;\n
 visitedTriggers_1.add(triggerName);\n var trigger = _this._triggers[triggerName];\n var
transition = trigger.fallbackTransition;\n var elementStates =
_this._engine.statesByElement.get(element);\n var fromState = elementStates[triggerName] ||
DEFAULT_STATE_VALUE;\n var toState = new StateValue(VOID_VALUE);\n var
player = new TransitionAnimationPlayer(_this.id, triggerName, element);\n
 _this._engine.totalQueuedPlayers++;\n _this._queue.push({\n element: element,\n
 triggerName: triggerName,\n transition: transition,\n fromState: fromState,\n
 toState: toState,\n player: player,\n isFallbackTransition: true\n
 });\n });\n }\n AnimationTransitionNamespace.prototype.removeNode = function
(element, context) {\n var _this = this;\n var engine = this._engine;\n if
(element.childElementCount) {\n this._signalRemovalForInnerTriggers(element, context);\n }\n
 // this means that a * => VOID animation was detected and kicked off\n if
(this.triggerLeaveAnimation(element, context, true))\n return;\n // find the player that is animating
and make sure that the\n // removal is delayed until that player has completed\n var
containsPotentialParentTransition = false;\n if (engine.totalAnimations) {\n var currentPlayers =
engine.players.length ? engine.playersByQueriedElement.get(element) : [];\n // when this `if statement`
does not continue forward it means that\n // a previous animation query has selected the current element
and\n // is animating it. In this situation want to continue forwards and\n // allow the element to
be queued up for animation later.\n if (currentPlayers && currentPlayers.length) {\n
containsPotentialParentTransition = true;\n }\n else {\n var parent = element;\n
 while (parent = parent.parentNode) {\n var triggers = engine.statesByElement.get(parent);\n
 if (triggers) {\n containsPotentialParentTransition = true;\n break;\n
 }\n }\n }\n // at this stage we know that the element will either get
removed\n // during flush or will be picked up by a parent query. Either way\n // we need to fire the
listeners for this element when it DOES get\n // removed (once the query parent animation is done or after
flush)\n this.prepareLeaveAnimationListeners(element);\n // whether or not a parent has an animation
we need to delay the deferral of the leave\n // operation until we have more information (which we do after
flush() has been called)\n if (containsPotentialParentTransition) {\n
engine.markElementAsRemoved(this.id, element, false, context);\n }\n else {\n var
removalFlag = element[REMOVAL_FLAG];\n if (!removalFlag || removalFlag ===
NULL_REMOVAL_STATE) {\n // we do this after the flush has occurred such\n // that the
callbacks can be fired\n engine.afterFlush(function () { return _this.clearElementCache(element); });\n
 engine.destroyInnerAnimations(element);\n engine._onRemovalComplete(element, context);\n
 }\n }\n }\n AnimationTransitionNamespace.prototype.insertNode = function (element,

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parent) {\n addClass(element, this._hostClassName);\n };\n
AnimationTransitionNamespace.prototype.drainQueuedTransitions = function (microtaskId) {\n var _this =\n this;\n var instructions = [];\n this._queue.forEach(function (entry) {\n var player =\n entry.player;\n if (player.destroyed)\n return;\n var element = entry.element;\n var listeners = _this._elementListeners.get(element);\n if (listeners) {\n listeners.forEach(function (listener) {\n if (listener.name == entry.triggerName) {\n var baseEvent = makeAnimationEvent(element, entry.triggerName, entry.fromState.value, entry.toState.value);\n baseEvent['_data'] = microtaskId;\n listenOnPlayer(entry.player, listener.phase,\n baseEvent, listener.callback);\n }\n });\n if\n (player.markedForDestroy) {\n _this._engine.afterFlush(function () {\n // now we can\n destroy the element properly since the event listeners have\n // been bound to the player\n player.destroy();\n });\n } else {\n instructions.push(entry);\n }\n }\n });\n this._queue = [];\n return instructions.sort(function (a, b) {\n // if depCount\n == 0 then move to front\n // otherwise if a contains b then move back\n var d0 =\n a.transition.ast.depCount;\n var d1 = b.transition.ast.depCount;\n if (d0 == 0 || d1 == 0) {\n return d0 - d1;\n }\n return _this._engine.driver.containsElement(a.element, b.element) ? 1 : -\n 1;\n });\n };\n
AnimationTransitionNamespace.prototype.destroy = function (context) {\n this.players.forEach(function (p) { return p.destroy(); });\n this._signalRemovalForInnerTriggers(this.hostElement, context);\n };\n
AnimationTransitionNamespace.prototype.elementContainsData = function (element) {\n var containsData =\n false;\n if (this._elementListeners.has(element))\n containsData = true;\n containsData =\n (this._queue.find(function (entry) { return entry.element === element; }) ? true : false) || containsData;\n return containsData;\n };\n
return AnimationTransitionNamespace;\n
})(\n var\n TransitionAnimationEngine = /** @class */ (function () {\n function TransitionAnimationEngine(bodyNode,\n driver, _normalizer) {\n this.bodyNode = bodyNode;\n this.driver = driver;\n this._normalizer =\n _normalizer;\n this.players = [];\n this.newHostElements = new Map();\n this.playersByElement = new Map();\n this.playersByQueriedElement = new Map();\n this.statesByElement = new Map();\n this.disabledNodes = new Set();\n this.totalAnimations = 0;\n this.totalQueuedPlayers = 0;\n this._namespaceLookup = {};\n this._namespaceList = [];\n this._flushFns = [];\n this._whenQuietFns = [];\n this.namespacesByHostElement = new Map();\n this.collectedEnterElements = [];\n this.collectedLeaveElements = [];\n // this method is designed to\n be overridden by the code that uses this engine\n this.onRemovalComplete = function (element, context) {\n };\n }\n /** @internal */\n TransitionAnimationEngine.prototype._onRemovalComplete = function\n (element, context) {\n this.onRemovalComplete(element, context);\n };\n Object.defineProperty(TransitionAnimationEngine.prototype, 'queuedPlayers', {\n get: function () {\n var players = [];\n this._namespaceList.forEach(function (ns) {\n ns.players.forEach(function (player) {\n if (player.queued) {\n players.push(player);\n }\n });\n });\n return players;\n },\n enumerable: false,\n configurable: true\n });\n TransitionAnimationEngine.prototype.createNamespace = function (namespaceId, hostElement) {\n var ns =\n new AnimationTransitionNamespace(namespaceId, hostElement, this);\n if (hostElement.parentNode) {\n this._balanceNamespaceList(ns, hostElement);\n } else {\n // defer this later until flush\n during when the host element has\n // been inserted so that we know exactly where to place it in\n // the namespace list\n this.newHostElements.set(hostElement, ns);\n // given that this host\n element is part of the animation code, it\n // may or may not be inserted by a parent node that is an of an\n // animation renderer type. If this happens then we can still have\n // access to this item when we\n query for :enter nodes. If the parent\n // is a renderer then the set data-structure will normalize the entry\n this.collectEnterElement(hostElement);\n }\n return this._namespaceLookup[namespaceId] =\n };\n });\n

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ns;\n };\n TransitionAnimationEngine.prototype._balanceNamespaceList = function (ns, hostElement) {\n
 var limit = this._namespaceList.length - 1;\n if (limit >= 0) {\n var found = false;\n for\n
 (var i = limit; i >= 0; i--) {\n var nextNamespace = this._namespaceList[i];\n if\n
 (this.driver.containsElement(nextNamespace.hostElement, hostElement)) {\n
 this._namespaceList.splice(i + 1, 0, ns);\n found = true;\n break;\n }\n
 }\n if (!found) {\n this._namespaceList.splice(0, 0, ns);\n }\n } else\n
 {\n this._namespaceList.push(ns);\n this.namespacesByHostElement.set(hostElement,\n
 ns);\n return ns;\n };\n TransitionAnimationEngine.prototype.register = function (namespaceId,\n
 hostElement) {\n var ns = this._namespaceLookup[namespaceId];\n if (!ns) {\n ns =\n
 this.createNamespace(namespaceId, hostElement);\n }\n return ns;\n };\n TransitionAnimationEngine.prototype.registerTrigger = function (namespaceId, name, trigger) {\n var ns =\n
 this._namespaceLookup[namespaceId];\n if (ns && ns.register(name, trigger)) {\n
 this.totalAnimations++;\n }\n };\n TransitionAnimationEngine.prototype.destroy = function\n
 (namespaceId, context) {\n var _this = this;\n if (!namespaceId)\n return;\n var ns =\n
 this._fetchNamespace(namespaceId);\n this.afterFlush(function () {\n
 _this.namespacesByHostElement.delete(ns.hostElement);\n delete\n
 _this._namespaceLookup[namespaceId];\n var index = _this._namespaceList.indexOf(ns);\n if\n
 (index >= 0) {\n _this._namespaceList.splice(index, 1);\n }\n });\n this.afterFlushAnimationsDone(function () { return ns.destroy(context); });\n };\n TransitionAnimationEngine.prototype._fetchNamespace = function (id) {\n return\n
 this._namespaceLookup[id];\n };\n TransitionAnimationEngine.prototype.fetchNamespacesByElement =\n
 function (element) {\n // normally there should only be one namespace per element, however\n // if\n
 @triggers are placed on both the component element and then\n // its host element (within the component\n
 code) then there will be\n // two namespaces returned. We use a set here to simply the dedupe\n // of\n
 namespaces incase there are multiple triggers both the elm and host\n var namespaces = new Set();\n var elementStates = this.statesByElement.get(element);\n if (elementStates) {\n var keys =\n
 Object.keys(elementStates);\n for (var i = 0; i < keys.length; i++) {\n var nsId =\n
 elementStates[keys[i]].namespaceId;\n if (nsId) {\n var ns =\n
 this._fetchNamespace(nsId);\n if (ns) {\n namespaces.add(ns);\n }\n
 }\n }\n return namespaces;\n }\n };\n TransitionAnimationEngine.prototype.trigger = function (namespaceId, element, name, value) {\n if\n
 (isElementNode(element)) {\n var ns = this._fetchNamespace(namespaceId);\n if (ns) {\n
 ns.trigger(element, name, value);\n return true;\n }\n }\n return false;\n
 };\n TransitionAnimationEngine.prototype.insertNode = function (namespaceId, element, parent, insertBefore)\n
 {\n if (!isElementNode(element))\n return;\n // special case for when an element is removed\n
 and reinserted (move operation)\n // when this occurs we do not want to use the element for deletion later\n
 var details = element[REMOVAL_FLAG];\n if (details && details.setForRemoval) {\n
 details.setForRemoval = false;\n details.setForMove = true;\n var index =\n
 this.collectedLeaveElements.indexOf(element);\n if (index >= 0) {\n
 this.collectedLeaveElements.splice(index, 1);\n }\n }\n // in the event that the namespaceId is\n
 blank then the caller\n // code does not contain any animation code in it, but it is\n // just being called\n
 so that the node is marked as being inserted\n if (namespaceId) {\n var ns =\n
 this._fetchNamespace(namespaceId);\n // This if-statement is a workaround for router issue #21947.\n
 // The router sometimes hits a race condition where while a route\n // is being instantiated a new\n
 navigation arrives, triggering leave\n // animation of DOM that has not been fully initialized, until this\n
 // is resolved, we need to handle the scenario when DOM is not in a\n // consistent state during the\n
 animation.\n if (ns) {\n ns.insertNode(element, parent);\n }\n }\n // only\n
 *directives and host elements are inserted before\n if (insertBefore) {\n

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this.collectEnterElement(element);\n }\n };\n
TransitionAnimationEngine.prototype.collectEnterElement = function (element) {\n
this.collectedEnterElements.push(element);\n }\n };\n
TransitionAnimationEngine.prototype.markElementAsDisabled = function (element, value) {\n if (value) {\n
 if (!this.disabledNodes.has(element)) {\n this.disabledNodes.add(element);\n
addClass(element, DISABLED_CLASSNAME);\n }\n }\n else if
(this.disabledNodes.has(element)) {\n this.disabledNodes.delete(element);\n
removeClass(element, DISABLED_CLASSNAME);\n }\n }\n };\n
TransitionAnimationEngine.prototype.removeNode = function (namespaceId, element, isHostElement, context) {\n
 if (isElementNode(element)) {\n var ns = namespaceId ? this._fetchNamespace(namespaceId) : null;\n
 if (ns) {\n ns.removeNode(element, context);\n }\n else {\n
this.markElementAsRemoved(namespaceId, element, false, context);\n }\n if (isHostElement) {\n
 var hostNS = this.namespacesByHostElement.get(element);\n if (hostNS && hostNS.id !==
namespaceId) {\n hostNS.removeNode(element, context);\n }\n }\n }\n else {\n
 this._onRemovalComplete(element, context);\n }\n };\n
TransitionAnimationEngine.prototype.markElementAsRemoved = function (namespaceId, element, hasAnimation,
context) {\n this.collectedLeaveElements.push(element);\n element[REMOVAL_FLAG] =\n
{ namespaceId: namespaceId, setForRemoval: context, hasAnimation: hasAnimation, removedBeforeQueried: false
};\n };\n
TransitionAnimationEngine.prototype.listen = function (namespaceId, element, name, phase,
callback) {\n if (isElementNode(element)) {\n return
this._fetchNamespace(namespaceId).listen(element, name, phase, callback);\n }\n return function () {\n
};\n };\n
TransitionAnimationEngine.prototype._buildInstruction = function (entry, subTimelines,
enterClassName, leaveClassName, skipBuildAst) {\n return entry.transition.build(this.driver, entry.element,
entry.fromState.value, entry.toState.value, enterClassName, leaveClassName, entry.fromState.options,
entry.toState.options, subTimelines, skipBuildAst);\n };\n
TransitionAnimationEngine.prototype.destroyInnerAnimations = function (containerElement) {\n var _this =
this;\n var elements = this.driver.query(containerElement, NG_TRIGGER_SELECTOR, true);\n
elements.forEach(function (element) { return _this.destroyActiveAnimationsForElement(element); });\n if
(this.playersByQueriedElement.size === 0)\n return;\n elements =
this.driver.query(containerElement, NG_ANIMATING_SELECTOR, true);\n elements.forEach(function
(element) { return _this.finishActiveQueriedAnimationOnElement(element); });\n };\n
TransitionAnimationEngine.prototype.destroyActiveAnimationsForElement = function (element) {\n var
players = this.playersByElement.get(element);\n if (players) {\n players.forEach(function (player)
{\n // special case for when an element is set for destruction, but hasn't started.\n // in this
situation we want to delay the destruction until the flush occurs\n // so that any event listeners attached
to the player are triggered.\n if (player.queued) {\n player.markedForDestroy = true;\n
 }\n else {\n player.destroy();\n }\n });\n }\n };\n
TransitionAnimationEngine.prototype.finishActiveQueriedAnimationOnElement = function (element) {\n
var players = this.playersByQueriedElement.get(element);\n if (players) {\n
players.forEach(function (player) { return player.finish(); });\n }\n };\n
TransitionAnimationEngine.prototype.whenRenderingDone = function () {\n var _this = this;\n return
new Promise(function (resolve) {\n if (_this.players.length) {\n return
optimizeGroupPlayer(_this.players).onDone(function () { return resolve(); });\n }\n else {\n
 resolve();\n }\n });\n };\n
TransitionAnimationEngine.prototype.processLeaveNode =
function (element) {\n var _this = this;\n var details = element[REMOVAL_FLAG];\n if
(details && details.setForRemoval) {\n // this will prevent it from removing it twice\n
element[REMOVAL_FLAG] = NULL_REMOVAL_STATE;\n }\n if (details.namespaceId) {\n
this.destroyInnerAnimations(element);\n var ns = this._fetchNamespace(details.namespaceId);\n

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 if (ns) {\n
 ns.clearElementCache(element);\n
 }\n
 }\n
 this._onRemovalComplete(element, details.setForRemoval);\n
 if\n
 (this.driver.matchesElement(element, DISABLED_SELECTOR)) {\n
 this.markElementAsDisabled(element, false);\n
 }\n
 this.driver.query(element,\n
 DISABLED_SELECTOR, true).forEach(function (node) {\n
 _this.markElementAsDisabled(node, false);\n
 });\n
 });\n
 TransitionAnimationEngine.prototype.flush = function (microtaskId) {\n
 var _this =\n
 this;\n
 if (microtaskId === void 0) { microtaskId = -1; }\n
 var players = [];\n
 if\n
 (this.newHostElements.size) {\n
 this.newHostElements.forEach(function (ns, element) { return\n
 _this._balanceNamespaceList(ns, element); });\n
 this.newHostElements.clear();\n
 }\n
 if\n
 (this.totalAnimations && this.collectedEnterElements.length) {\n
 for (var i = 0; i <\n
 this.collectedEnterElements.length; i++) {\n
 var elm = this.collectedEnterElements[i];\n
 addClass(elm, STAR_CLASSNAME);\n
 }\n
 }\n
 if (this._namespaceList.length &&\n
 (this.totalQueuedPlayers || this.collectedLeaveElements.length)) {\n
 var cleanupFns = [];\n
 try\n
 {\n
 players = this._flushAnimations(cleanupFns, microtaskId);\n
 }\n
 finally {\n
 for (var i = 0; i < cleanupFns.length; i++) {\n
 cleanupFns[i]();\n
 }\n
 }\n
 }\n
 else {\n
 for (var i = 0; i < this.collectedLeaveElements.length; i++) {\n
 var element\n
 = this.collectedLeaveElements[i];\n
 this.processLeaveNode(element);\n
 }\n
 }\n
 this.totalQueuedPlayers = 0;\n
 this.collectedEnterElements.length = 0;\n
 this.collectedLeaveElements.length = 0;\n
 this._flushFns.forEach(function (fn) { return fn(); });\n
 this._flushFns = [];\n
 if (this._whenQuietFns.length) {\n
 // we move these over to a variable so\n
 that\n
 // if any new callbacks are registered in another\n
 // flush they do not populate the existing\n
 set\n
 var quietFns_1 = this._whenQuietFns;\n
 this._whenQuietFns = [];\n
 if\n
 (players.length) {\n
 optimizeGroupPlayer(players).onDone(function () {\n
 quietFns_1.forEach(function (fn) { return fn(); });\n
 });\n
 }\n
 else {\n
 quietFns_1.forEach(function (fn) { return fn(); });\n
 }\n
 }\n
 });\n
 TransitionAnimationEngine.prototype.reportError = function (errors) {\n
 throw new Error("Unable to\n
 process animations due to the following failed trigger transitions\n
 \\n \\n" + errors.join("\\n")); \n
 };\n
 TransitionAnimationEngine.prototype._flushAnimations = function (cleanupFns, microtaskId) {\n
 var _this =\n
 this;\n
 var subTimelines = new ElementInstructionMap();\n
 var skippedPlayers = [];\n
 var\n
 skippedPlayersMap = new Map();\n
 var queuedInstructions = [];\n
 var queriedElements = new\n
 Map();\n
 var allPreStyleElements = new Map();\n
 var allPostStyleElements = new Map();\n
 var\n
 disabledElementsSet = new Set();\n
 this.disabledNodes.forEach(function (node) {\n
 disabledElementsSet.add(node);\n
 var nodesThatAreDisabled = _this.driver.query(node,\n
 QUEUED_SELECTOR, true);\n
 for (var i_1 = 0; i_1 < nodesThatAreDisabled.length; i_1++) {\n
 disabledElementsSet.add(nodesThatAreDisabled[i_1]);\n
 }\n
 });\n
 var bodyNode =\n
 this.bodyNode;\n
 var allTriggerElements = Array.from(this.statesByElement.keys());\n
 var\n
 enterNodeMap = buildRootMap(allTriggerElements, this.collectedEnterElements);\n
 // this must occur before\n
 the instructions are built below such that\n
 // the :enter queries match the elements (since the timeline\n
 queries\n
 // are fired during instruction building).\n
 var enterNodeMapIds = new Map();\n
 var i\n
 = 0;\n
 enterNodeMap.forEach(function (nodes, root) {\n
 var className = ENTER_CLASSNAME\n
 + i++; \n
 enterNodeMapIds.set(root, className);\n
 nodes.forEach(function (node) { return\n
 addClass(node, className); });\n
 });\n
 var allLeaveNodes = [];\n
 var mergedLeaveNodes =\n
 new Set();\n
 var leaveNodesWithoutAnimations = new Set();\n
 for (var i_2 = 0; i_2 <\n
 this.collectedLeaveElements.length; i_2++) {\n
 var element = this.collectedLeaveElements[i_2];\n
 var details = element[REMOVAL_FLAG];\n
 if (details && details.setForRemoval) {\n
 allLeaveNodes.push(element);\n
 mergedLeaveNodes.add(element);\n
 }\n
 if\n
 (details.hasAnimation) {\n
 this.driver.query(element, STAR_SELECTOR, true).forEach(function\n
 (elm) { return mergedLeaveNodes.add(elm); });\n
 }\n
 else {\n

```



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 props.forEach(function (prop) { return setVal.add(prop); });\n
 erroneousTransitions.length) {\n
 (instruction) {\n
 instruction.errors.forEach(function (error) { return errors_1.push("-" + error + "\\n"); });\n
 allPlayers.forEach(function (player) { return player.destroy(); });\n
 var allPreviousPlayersMap = new Map();\n
 contained by\n
 players are built and in doing so it can efficiently figure out\n
 player having priority.\n
 queuedInstructions.forEach(function (entry) {\n
 (subTimelines.has(element)) {\n
 _this._beforeAnimationBuild(entry.player.namespaceId, entry.instruction, allPreviousPlayersMap);\n
 });\n
 previousPlayers = _this._getPreviousPlayers(element, false, player.namespaceId, player.triggerName, null);\n
 previousPlayers.forEach(function (prevPlayer) {\n
 element, []).push(prevPlayer);\n
 special case for nodes that will be removed (either by)\n
 queried in a container\n
 // that is being getComputedStyle'd will not be visible (since * = destination)\n
 allLeaveNodes.filter(function (node) {\n
 allPostStyleElements);\n
 // POST STAGE: fill the * styles\n
 Map();\n
 leaveNodesWithoutAnimations, allPostStyleElements, animations.AUTO_STYLE);\n
 allLeaveQueriedNodes.forEach(function (node) {\n
 fill the ! styles\n
 animations.PRE_STYLE);\n
 Object.assign(Object.assign({}, post), pre));\n
 skippedPlayers.push(player);\n
 query the map to figure out\n
 that a parent is detected then it will cancel the loop. If\n
 find a parent,\n
 detected parent (or a NO_PARENT value via a special constant).\n
 var elm = element;\n
 {\n
 parentWithAnimation_1 = detectedParent;\n

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 parentsToAdd.push(elm);\n }\n parentsToAdd.forEach(function (parent) {\n
return animationElementMap.set(parent, parentWithAnimation_1); });\n }\n var innerPlayer
= _this._buildAnimation(player.namespaceId, instruction, allPreviousPlayersMap, skippedPlayersMap,
preStylesMap, postStylesMap);\n player.setRealPlayer(innerPlayer);\n if
(parentWithAnimation_1 === NO_PARENT_ANIMATION_ELEMENT_DETECTED) {\n
rootPlayers.push(player);\n }\n else {\n var parentPlayers =
_this.playersByElement.get(parentWithAnimation_1);\n if (parentPlayers && parentPlayers.length)
{\n player.parentPlayer = optimizeGroupPlayer(parentPlayers);\n }\n
skippedPlayers.push(player);\n }\n }\n else {\n eraseStyles(element,
instruction.fromStyles);\n player.onDestroy(function () { return setStyles(element, instruction.toStyles);
});\n // there still might be a ancestor player animating this\n // element therefore we will still
add it as a sub player\n // even if its animation may be disabled\n subPlayers.push(player);\n
 if (disabledElementsSet.has(element)) {\n skippedPlayers.push(player);\n }\n
 });\n // find all of the sub players' corresponding inner animation player\n
subPlayers.forEach(function (player) {\n // even if any players are not found for a sub animation then it\n
// will still complete itself after the next tick since it's Noop\n var playersForElement =
skippedPlayersMap.get(player.element);\n if (playersForElement && playersForElement.length) {\n
 var innerPlayer = optimizeGroupPlayer(playersForElement);\n player.setRealPlayer(innerPlayer);\n
 }\n });\n // the reason why we don't actually play the animation is\n // because all that a
skipped player is designed to do is to\n // fire the start/done transition callback events\n
skippedPlayers.forEach(function (player) {\n if (player.parentPlayer) {\n
player.syncPlayerEvents(player.parentPlayer);\n }\n else {\n player.destroy();\n
 }\n });\n // run through all of the queued removals and see if they\n // were picked up by a
query. If not then perform the removal\n // operation right away unless a parent animation is ongoing.\n
for (var i_4 = 0; i_4 < allLeaveNodes.length; i_4++) {\n var element = allLeaveNodes[i_4];\n var
details = element[REMOVAL_FLAG];\n removeClass(element, LEAVE_CLASSNAME);\n //
this means the element has a removal animation that is being\n // taken care of and therefore the inner
elements will hang around\n // until that animation is over (or the parent queried animation)\n if
(details && details.hasAnimation)\n continue;\n var players = [];\n // if this element is
queried or if it contains queried children\n // then we want for the element not to be removed from the
page\n // until the queried animations have finished\n if (queriedElements.size) {\n
var queriedPlayerResults = queriedElements.get(element);\n if (queriedPlayerResults &&
queriedPlayerResults.length) {\n players.push.apply(players, __spread(queriedPlayerResults));\n
 }\n var queriedInnerElements = this.driver.query(element, NG_ANIMATING_SELECTOR,
true);\n for (var j = 0; j < queriedInnerElements.length; j++) {\n var queriedPlayers =
queriedElements.get(queriedInnerElements[j]);\n if (queriedPlayers && queriedPlayers.length) {\n
 players.push.apply(players, __spread(queriedPlayers));\n }\n }\n
}\n var activePlayers = players.filter(function (p) { return !p.destroyed; });\n if
(activePlayers.length) {\n removeNodesAfterAnimationDone(this, element, activePlayers);\n
}\n else {\n this.processLeaveNode(element);\n }\n }\n // this is required
so the cleanup method doesn't remove them\n allLeaveNodes.length = 0;\n
rootPlayers.forEach(function (player) {\n _this.players.push(player);\n player.onDone(function ()
{\n player.destroy();\n var index = _this.players.indexOf(player);\n
_this.players.splice(index, 1);\n });\n player.play();\n });\n return rootPlayers;\n
});\n TransitionAnimationEngine.prototype.elementContainsData = function (namespaceId, element) {\n
var containsData = false;\n var details = element[REMOVAL_FLAG];\n if (details &&
details.setForRemoval)\n containsData = true;\n if (this.playersByElement.has(element))\n
containsData = true;\n if (this.playersByQueriedElement.has(element))\n containsData = true;\n
}

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 if (this.statesByElement.has(element))\n containsData = true;\n return
this._fetchNamespace(namespaceId).elementContainsData(element) || containsData;\n });\n
TransitionAnimationEngine.prototype.afterFlush = function (callback) {\n this._flushFns.push(callback);\n };\n
TransitionAnimationEngine.prototype.afterFlushAnimationsDone = function (callback) {\n
this._whenQuietFns.push(callback);\n };\n
TransitionAnimationEngine.prototype._getPreviousPlayers =
function (element, isQueriedElement, namespaceId, triggerName, toStateValue) {\n var players = [];\n
if (isQueriedElement) {\n var queriedElementPlayers = this.playersByQueriedElement.get(element);\n
 if (queriedElementPlayers) {\n players = queriedElementPlayers;\n }\n
} else {\n var elementPlayers = this.playersByElement.get(element);\n if (elementPlayers) {\n
 var isRemovalAnimation_1 = !toStateValue || toStateValue == VOID_VALUE;\n
elementPlayers.forEach(function (player) {\n if (player.queued)\n return;\n
 if (!isRemovalAnimation_1 && player.triggerName != triggerName)\n return;\n
 players.push(player);\n });\n
}\n
if (namespaceId || triggerName) {\n
players = players.filter(function (player) {\n if (namespaceId && namespaceId != player.namespaceId)\n return false;\n
 if (triggerName && triggerName != player.triggerName)\n
return false;\n return true;\n });\n
}\n
return players;\n };\n
TransitionAnimationEngine.prototype._beforeAnimationBuild = function (namespaceId, instruction,
allPreviousPlayersMap) {\n var e_1, _a;\n var triggerName = instruction.triggerName;\n var
rootElement = instruction.element;\n // when a removal animation occurs, ALL previous players are
collected\n // and destroyed (even if they are outside of the current namespace)\n var
targetNameSpaceId = instruction.isRemovalTransition ? undefined : namespaceId;\n var targetTriggerName
= instruction.isRemovalTransition ? undefined : triggerName;\n var _loop_1 = function (timelineInstruction)
{\n var element = timelineInstruction.element;\n var isQueriedElement = element !==
rootElement;\n var players = getOrSetAsInMap(allPreviousPlayersMap, element, []);\n var
previousPlayers = this_1._getPreviousPlayers(element, isQueriedElement, targetNameSpaceId, targetTriggerName,
instruction.toState);\n previousPlayers.forEach(function (player) {\n var realPlayer =
player.getRealPlayer();\n if (realPlayer.beforeDestroy) {\n realPlayer.beforeDestroy();\n
 }\n player.destroy();\n players.push(player);\n });\n };\n var
this_1 = this;\n try {\n for (var _b = __values(instruction.timelines), _c = _b.next(); !_c.done; _c =
_b.next()) {\n var timelineInstruction = _c.value;\n _loop_1(timelineInstruction);\n
}\n }\n catch (e_1_1) { e_1 = { error: e_1_1 }; }\n finally {\n try {\n if (_c
&& !_c.done && (_a = _b.return)) _a.call(_b);\n }\n finally { if (e_1) throw e_1.error; }\n
}\n // this needs to be done so that the PRE/POST styles can be\n // computed properly without
interfering with the previous animation\n eraseStyles(rootElement, instruction.fromStyles);\n };\n
TransitionAnimationEngine.prototype._buildAnimation = function (namespaceId, instruction,
allPreviousPlayersMap, skippedPlayersMap, preStylesMap, postStylesMap) {\n var _this = this;\n var
triggerName = instruction.triggerName;\n var rootElement = instruction.element;\n // we first run this
so that the previous animation player\n // data can be passed into the successive animation players\n
var allQueriedPlayers = [];\n var allConsumedElements = new Set();\n var allSubElements = new
Set();\n var allNewPlayers = instruction.timelines.map(function (timelineInstruction) {\n var
element = timelineInstruction.element;\n allConsumedElements.add(element);\n // FIXME
(matsko): make sure to-be-removed animations are removed properly\n var details =
element[REMOVAL_FLAG];\n if (details && details.removedBeforeQueried)\n return new
animations.NoopAnimationPlayer(timelineInstruction.duration, timelineInstruction.delay);\n var
isQueriedElement = element !== rootElement;\n var previousPlayers =
flattenGroupPlayers((allPreviousPlayersMap.get(element) || EMPTY_PLAYER_ARRAY)\n
.map(function (p) { return p.getRealPlayer(); })))\n .filter(function (p) {\n // the `element` is
not apart of the AnimationPlayer definition, but\n // Mock/WebAnimations\n // use the

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element within their implementation. This will be added in Angular5 to\n
// AnimationPlayer\n
var pp = p;\n
return pp.element ? pp.element === element : false;\n
});\n
var\n
preStyles = preStylesMap.get(element);\n
var postStyles = postStylesMap.get(element);\n
var\n
keyframes = normalizeKeyframes(_this.driver, _this._normalizer, element, timelineInstruction.keyframes, preStyles,\n
postStyles);\n
var player = _this._buildPlayer(timelineInstruction, keyframes, previousPlayers);\n
// this means that this particular player belongs to a sub trigger. It is\n
// important that we match this player\n
up with the corresponding (@trigger.listener)\n
if (timelineInstruction.subTimeline &&\n
skippedPlayersMap) {\n
allSubElements.add(element);\n
}\n
if (isQueriedElement)\n
{\n
var wrappedPlayer = new TransitionAnimationPlayer(namespaceId, triggerName, element);\n
wrappedPlayer.setRealPlayer(player);\n
allQueriedPlayers.push(wrappedPlayer);\n
}\n
return player;\n
});\n
allQueriedPlayers.forEach(function (player) {\n
getOrSetAsInMap(_this.playersByQueriedElement, player.element, []).push(player);\n
player.onDone(function () { return deleteOrUnsetInMap(_this.playersByQueriedElement, player.element, player);\n
});\n
});\n
allConsumedElements.forEach(function (element) { return addClass(element,\n
NG_ANIMATING_CLASSNAME); });\n
var player = optimizeGroupPlayer(allNewPlayers);\n
player.onDestroy(function () {\n
allConsumedElements.forEach(function (element) { return\n
removeClass(element, NG_ANIMATING_CLASSNAME); });\n
setStyles(rootElement,\n
instruction.toStyles);\n
});\n
// this basically makes all of the callbacks for sub element animations\n
// be dependent on the upper players for when they finish\n
allSubElements.forEach(function (element)\n
{\n
getOrSetAsInMap(skippedPlayersMap, element, []).push(player);\n
});\n
return player;\n
});\n
TransitionAnimationEngine.prototype._buildPlayer = function (instruction, keyframes, previousPlayers)\n
{\n
if (keyframes.length > 0) {\n
return this.driver.animate(instruction.element, keyframes,\n
instruction.duration, instruction.delay, instruction.easing, previousPlayers);\n
}\n
// special case for\n
when an empty transition|definition is provided\n
// ... there is no point in rendering an empty animation\n
return new animations.NoopAnimationPlayer(instruction.duration, instruction.delay);\n
});\n
return\n
TransitionAnimationEngine;\n
})();\n
var TransitionAnimationPlayer = /** @class */ (function () {\n
function TransitionAnimationPlayer(namespaceId, triggerName, element) {\n
this.namespaceId =\n
namespaceId;\n
this.triggerName = triggerName;\n
this.element = element;\n
this._player = new\n
animations.NoopAnimationPlayer();\n
this._containsRealPlayer = false;\n
this._queuedCallbacks =\n
{};\n
this.destroyed = false;\n
this.markedForDestroy = false;\n
this.disabled = false;\n
this.queued = true;\n
this.totalTime = 0;\n
}\n
TransitionAnimationPlayer.prototype.setRealPlayer =\n
function (player) {\n
var _this = this;\n
if (this._containsRealPlayer)\n
return;\n
this._player = player;\n
Object.keys(this._queuedCallbacks).forEach(function (phase) {\n
_this._queuedCallbacks[phase].forEach(function (callback) { return listenOnPlayer(player, phase, undefined,\n
callback); });\n
});\n
this._queuedCallbacks = {};\n
this._containsRealPlayer = true;\n
this.overrideTotalTime(player.totalTime);\n
this.queued = false;\n
};\n
TransitionAnimationPlayer.prototype.getRealPlayer = function () {\n
return this._player;\n
};\n
TransitionAnimationPlayer.prototype.overrideTotalTime = function (totalTime) {\n
this.totalTime =\n
totalTime;\n
};\n
TransitionAnimationPlayer.prototype.syncPlayerEvents = function (player) {\n
var\n
_this = this;\n
var p = this._player;\n
if (p.triggerCallback) {\n
player.onStart(function () {\n
return p.triggerCallback('start'); });\n
}\n
player.onDone(function () { return _this.finish(); });\n
player.onDestroy(function () { return _this.destroy(); });\n
};\n
TransitionAnimationPlayer.prototype._queueEvent = function (name, callback) {\n
getOrSetAsInMap(this._queuedCallbacks, name, []).push(callback);\n
};\n
TransitionAnimationPlayer.prototype.onDone = function (fn) {\n
if (this.queued) {\n
this._queueEvent('done', fn);\n
}\n
this._player.onDone(fn);\n
};\n
TransitionAnimationPlayer.prototype.onStart = function (fn) {\n
if (this.queued) {\n
this._queueEvent('start', fn);\n
}\n
this._player.onStart(fn);\n
};\n

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TransitionAnimationPlayer.prototype.onDestroy = function (fn) {\n if (this.queued) {\n
this._queueEvent('destroy', fn);\n }\n this._player.onDestroy(fn);\n };\n
TransitionAnimationPlayer.prototype.init = function () {\n this._player.init();\n };\n
TransitionAnimationPlayer.prototype.hasStarted = function () {\n return this.queued ? false :
this._player.hasStarted();\n };\n TransitionAnimationPlayer.prototype.play = function () {\n
!this.queued && this._player.play();\n };\n TransitionAnimationPlayer.prototype.pause = function () {\n
!this.queued && this._player.pause();\n };\n TransitionAnimationPlayer.prototype.restart = function ()
{\n !this.queued && this._player.restart();\n };\n TransitionAnimationPlayer.prototype.finish =
function () {\n this._player.finish();\n };\n TransitionAnimationPlayer.prototype.destroy = function ()
{\n this.destroyed = true;\n this._player.destroy();\n };\n
TransitionAnimationPlayer.prototype.reset = function () {\n !this.queued && this._player.reset();\n };\n
 TransitionAnimationPlayer.prototype.setPosition = function (p) {\n if (!this.queued) {\n
this._player.setPosition(p);\n }\n };\n TransitionAnimationPlayer.prototype.getPosition = function ()
{\n return this.queued ? 0 : this._player.getPosition();\n };\n /** @internal */\n
TransitionAnimationPlayer.prototype.triggerCallback = function (phaseName) {\n var p = this._player;\n
 if (p.triggerCallback) {\n p.triggerCallback(phaseName);\n }\n }\n return
TransitionAnimationPlayer;\n }());\n function deleteOrUnsetInMap(map, key, value) {\n var
currentValues;\n if (map instanceof Map) {\n currentValues = map.get(key);\n if (currentValues)
{\n if (currentValues.length) {\n var index = currentValues.indexOf(value);\n
currentValues.splice(index, 1);\n }\n if (currentValues.length == 0) {\n
map.delete(key);\n }\n }\n } else {\n currentValues = map[key];\n if
(currentValues) {\n if (currentValues.length) {\n var index = currentValues.indexOf(value);\n
currentValues.splice(index, 1);\n }\n if (currentValues.length == 0) {\n
delete map[key];\n }\n }\n }\n return currentValues;\n }\n function
normalizeTriggerValue(value) {\n // we use `!= null` here because it's the most simple\n // way to test
against a `falsy` value without mixing\n // in empty strings or a zero value. DO NOT OPTIMIZE.\n return
value != null ? value : null;\n }\n function isElementNode(node) {\n return node && node['nodeType'] ===
1;\n }\n function isTriggerEventValid(eventName) {\n return eventName == 'start' || eventName == 'done';\n
 }\n function cloakElement(element, value) {\n var oldValue = element.style.display;\n
element.style.display = value != null ? value : 'none';\n return oldValue;\n }\n function
cloakAndComputeStyles(valuesMap, driver, elements, elementPropsMap, defaultStyle) {\n var cloakVals =
[];\n elements.forEach(function (element) { return cloakVals.push(cloakElement(element)); });\n var
failedElements = [];\n elementPropsMap.forEach(function (props, element) {\n var styles = {};\n
props.forEach(function (prop) {\n var value = styles[prop] = driver.computeStyle(element, prop,
defaultStyle);\n // there is no easy way to detect this because a sub element could be removed\n //
by a parent animation element being detached.\n if (!value || value.length == 0) {\n
element[REMOVAL_FLAG] = NULL_REMOVED_QUERIED_STATE;\n
failedElements.push(element);\n }\n });\n valuesMap.set(element, styles);\n });\n //
we use a index variable here since Set.forEach(a, i) does not return\n // an index value for the closure (but
instead just the value)\n var i = 0;\n elements.forEach(function (element) { return cloakElement(element,
cloakVals[i++]); });\n return failedElements;\n }\n /*\n Since the Angular renderer code will return a
collection of inserted\n nodes in all areas of a DOM tree, it's up to this algorithm to figure\n out which nodes are
roots for each animation @trigger.\n \n \n By placing each inserted node into a Set and traversing upwards, it\n is
possible to find the @trigger elements and well any direct *star\n insertion nodes, if a @trigger root is found then
the enter element\n is placed into the Map[@trigger] spot.\n *\n function buildRootMap(roots, nodes) {\n
var rootMap = new Map();\n roots.forEach(function (root) { return rootMap.set(root, []); });\n if
(nodes.length == 0)\n return rootMap;\n var NULL_NODE = 1;\n var nodeSet = new Set(nodes);\n
var localRootMap = new Map();\n function getRoot(node) {\n if (!node)\n return

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NULL_NODE;\n var root = localRootMap.get(node);\n if (root)\n return root;\n var\n parent = node.parentNode;\n if (rootMap.has(parent)) { // ngIf inside @trigger\n root = parent;\n }\n else if (nodeSet.has(parent)) { // ngIf inside ngIf\n root = NULL_NODE;\n }\n else { // recurse upwards\n root = getRoot(parent);\n }\n localRootMap.set(node, root);\n return root;\n }\n nodes.forEach(function (node) {\n var root = getRoot(node);\n if (root !==\n NULL_NODE) {\n rootMap.get(root).push(node);\n }\n });\n return rootMap;\n }\n var\n CLASSES_CACHE_KEY = '$$classes';\n function containsClass(element, className) {\n if\n (element.classList) {\n return element.classList.contains(className);\n }\n else {\n var\n classes = element[CLASSES_CACHE_KEY];\n return classes && classes[className];\n }\n }\n function addClass(element, className) {\n if (element.classList) {\n element.classList.add(className);\n }\n else {\n var classes =\n element[CLASSES_CACHE_KEY];\n if (!classes) {\n classes =\n element[CLASSES_CACHE_KEY] = {};\n }\n classes[className] = true;\n }\n }\n function\n removeClass(element, className) {\n if (element.classList) {\n element.classList.remove(className);\n }\n else {\n var classes = element[CLASSES_CACHE_KEY];\n if (classes) {\n delete\n classes[className];\n }\n }\n }\n function removeNodesAfterAnimationDone(engine, element,\n players) {\n optimizeGroupPlayer(players).onDone(function () { return engine.processLeaveNode(element);\n });\n }\n function flattenGroupPlayers(players) {\n var finalPlayers = [];\n _flattenGroupPlayersRecur(players, finalPlayers);\n return finalPlayers;\n }\n function\n _flattenGroupPlayersRecur(players, finalPlayers) {\n for (var i = 0; i < players.length; i++) {\n var player\n = players[i];\n if (player instanceof animations.AnimationGroupPlayer) {\n _flattenGroupPlayersRecur(player.players, finalPlayers);\n }\n else {\n finalPlayers.push(player);\n }\n }\n }\n function objEquals(a, b) {\n var k1 = Object.keys(a);\n var k2 = Object.keys(b);\n if (k1.length != k2.length)\n return false;\n for (var i = 0; i < k1.length;\n i++) {\n var prop = k1[i];\n if (!b.hasOwnProperty(prop) || a[prop] !== b[prop])\n return\n false;\n }\n return true;\n }\n function replacePostStylesAsPre(element, allPreStyleElements,\n allPostStyleElements) {\n var postEntry = allPostStyleElements.get(element);\n if (!postEntry)\n return false;\n var preEntry = allPreStyleElements.get(element);\n if (preEntry) {\n postEntry.forEach(function (data) { return preEntry.add(data); });\n }\n else {\n allPreStyleElements.set(element, postEntry);\n }\n allPostStyleElements.delete(element);\n return\n true;\n }\n var AnimationEngine = /** @class */ (function () {\n function AnimationEngine(bodyNode,\n _driver, normalizer) {\n var _this = this;\n this.bodyNode = bodyNode;\n this._driver =\n _driver;\n this._triggerCache = {};\n // this method is designed to be overridden by the code that uses\n this engine\n this.onRemovalComplete = function (element, context) {};\n this._transitionEngine =\n new TransitionAnimationEngine(bodyNode, _driver, normalizer);\n this._timelineEngine = new\n TimelineAnimationEngine(bodyNode, _driver, normalizer);\n this._transitionEngine.onRemovalComplete =\n function (element, context) { return _this.onRemovalComplete(element, context); };\n }\n AnimationEngine.prototype.registerTrigger = function (componentId, namespaceId, hostElement, name, metadata)\n {\n var cacheKey = componentId + '-' + name;\n var trigger = this._triggerCache[cacheKey];\n if (!trigger) {\n var errors = [];\n var ast = buildAnimationAst(this._driver, metadata, errors);\n if (errors.length) {\n throw new Error("The animation trigger '" + name + "' has failed to\n build due to the following errors:\n " + errors.join("\n - '");\n }\n trigger = buildTrigger(name,\n ast);\n this._triggerCache[cacheKey] = trigger;\n }\n this._transitionEngine.registerTrigger(namespaceId, name, trigger);\n }\n AnimationEngine.prototype.register = function (namespaceId, hostElement) {\n this._transitionEngine.register(namespaceId, hostElement);\n }\n AnimationEngine.prototype.destroy =\n function (namespaceId, context) {\n this._transitionEngine.destroy(namespaceId, context);\n }\n AnimationEngine.prototype.onInsert = function (namespaceId, element, parent, insertBefore) {\n }

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this._transitionEngine.insertNode(namespaceId, element, parent, insertBefore);\n };\n
AnimationEngine.prototype.onRemove = function (namespaceId, element, context, isHostElement) {\n
this._transitionEngine.removeNode(namespaceId, element, isHostElement || false, context);\n };\n
AnimationEngine.prototype.disableAnimations = function (element, disable) {\n
this._transitionEngine.markElementAsDisabled(element, disable);\n };\n
AnimationEngine.prototype.process = function (namespaceId, element, property, value) {\n if
(property.charAt(0) == '@') {\n var _a = __read(parseTimelineCommand(property), 2), id = _a[0], action =
_a[1];\n var args = value;\n this._timelineEngine.command(id, element, action, args);\n }\n else {\n this._transitionEngine.trigger(namespaceId, element, property, value);\n }\n};\n
AnimationEngine.prototype.listen = function (namespaceId, element, eventName, eventPhase, callback) {\n
// @@listen\n if (eventName.charAt(0) == '@') {\n var _a =
__read(parseTimelineCommand(eventName), 2), id = _a[0], action = _a[1];\n return
this._timelineEngine.listen(id, element, action, callback);\n }\n return
this._transitionEngine.listen(namespaceId, element, eventName, eventPhase, callback);\n};\n
AnimationEngine.prototype.flush = function (microtaskId) {\n if (microtaskId === void 0) { microtaskId = -
1; }\n this._transitionEngine.flush(microtaskId);\n};\n
Object.defineProperty(AnimationEngine.prototype, "players", {\n get: function () {\n return
this._transitionEngine.players\n .concat(this._timelineEngine.players);\n },\n enumerable:
false,\n configurable: true\n});\n
AnimationEngine.prototype.whenRenderingDone = function () {\n
return this._transitionEngine.whenRenderingDone();\n};\n
return AnimationEngine;\n})();\n
/**\n * @license\n * Copyright Google LLC All Rights Reserved.\n * Use of this source code is
governed by an MIT-style license that can be\n * found in the LICENSE file at https://angular.io/license\n */\n
/**\n * Returns an instance of `SpecialCasedStyles` if and when any special (non animateable) styles are\n *
detected.\n * In CSS there exist properties that cannot be animated within a keyframe animation\n *
(whether it be via CSS keyframes or web-animations) and the animation implementation\n * will ignore them.
This function is designed to detect those special cased styles and\n * return a container that will be executed at the
start and end of the animation.\n * @returns an instance of `SpecialCasedStyles` if any special styles are
detected otherwise `null`\n */\n
function packageNonAnimatableStyles(element, styles) {\n var startStyles
= null;\n var endStyles = null;\n if (Array.isArray(styles) && styles.length) {\n startStyles =
filterNonAnimatableStyles(styles[0]);\n if (styles.length > 1) {\n endStyles =
filterNonAnimatableStyles(styles[styles.length - 1]);\n }\n } else if (styles) {\n startStyles =
filterNonAnimatableStyles(styles);\n }\n return (startStyles || endStyles) ? new SpecialCasedStyles(element,
startStyles, endStyles) :\n null;\n}\n
/**\n * Designed to be executed during a keyframe-based
animation to apply any special-cased styles.\n * When started (when the `start()` method is run) then the
provided `startStyles`\n * will be applied. When finished (when the `finish()` method is called) the\n *
`endStyles` will be applied as well any any starting styles. Finally when\n * `destroy()` is called then all styles
will be removed.\n */\n
var SpecialCasedStyles = /** @class */ (function () {\n function
SpecialCasedStyles(_element, _startStyles, _endStyles) {\n this._element = _element;\n
this._startStyles = _startStyles;\n this._endStyles = _endStyles;\n this._state = 0 /* Pending */;\n
var initialStyles = SpecialCasedStyles.initialStylesByElement.get(_element);\n if (!initialStyles) {\n
SpecialCasedStyles.initialStylesByElement.set(_element, initialStyles = {});\n }\n this._initialStyles =
initialStyles;\n }\n SpecialCasedStyles.prototype.start = function () {\n if (this._state < 1 /* Started
*/) {\n if (this._startStyles) {\n setStyles(this._element, this._startStyles, this._initialStyles);\n
 }\n this._state = 1 /* Started */;\n }\n };\n SpecialCasedStyles.prototype.finish =
function () {\n this.start();\n if (this._state < 2 /* Finished */) {\n setStyles(this._element,
this._initialStyles);\n if (this._endStyles) {\n setStyles(this._element, this._endStyles);\n
 }\n this._endStyles = null;\n }\n this._state = 1 /* Started */;\n };\n};\n
SpecialCasedStyles.prototype.destroy = function () {\n this.finish();\n if (this._state < 3 /* Destroyed

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/) {\n SpecialCasedStyles.initialStylesByElement.delete(this._element);\n if (this._startStyles)\n {\n eraseStyles(this._element, this._startStyles);\n this._endStyles = null;\n }\n if (this._endStyles) {\n eraseStyles(this._element, this._endStyles);\n this._endStyles =\n null;\n }\n setStyles(this._element, this._initialStyles);\n this._state = 3 / Destroyed\n*/;\n }\n });\n return SpecialCasedStyles;\n }());\n SpecialCasedStyles.initialStylesByElement =\n new WeakMap();\n function filterNonAnimatableStyles(styles) {\n var result = null;\n var props =\n Object.keys(styles);\n for (var i = 0; i < props.length; i++) {\n var prop = props[i];\n if\n (isNonAnimatableStyle(prop)) {\n result = result || {};\n result[prop] = styles[prop];\n }\n }\n return result;\n }\n function isNonAnimatableStyle(prop) {\n return prop === 'display' || prop ===\n 'position';\n }\n /**\n * @license\n * Copyright Google LLC All Rights Reserved.\n * Use of\n this source code is governed by an MIT-style license that can be\n * found in the LICENSE file at\n https://angular.io/license\n */\n var ELAPSED_TIME_MAX_DECIMAL_PLACES = 3;\n var\n ANIMATION_PROP = 'animation';\n var ANIMATIONEND_EVENT = 'animationend';\n var\n ONE_SECOND$1 = 1000;\n var ElementAnimationStyleHandler = /** @class */ (function () {\n function\n ElementAnimationStyleHandler(_element, _name, _duration, _delay, _easing, _fillMode, _onDoneFn) {\n var _this = this;\n this._element = _element;\n this._name = _name;\n this._duration =\n _duration;\n this._delay = _delay;\n this._easing = _easing;\n this._fillMode = _fillMode;\n this._onDoneFn = _onDoneFn;\n this._finished = false;\n this._destroyed = false;\n this._startTime = 0;\n this._position = 0;\n this._eventFn = function (e) { return\n _this._handleCallback(e); }; }\n ElementAnimationStyleHandler.prototype.apply = function () {\n applyKeyframeAnimation(this._element, this._duration + \"ms \" + this._easing + \" \" + this._delay + \"ms 1 normal\n \" + this._fillMode + \" \" + this._name);\n addRemoveAnimationEvent(this._element, this._eventFn, false);\n this._startTime = Date.now();\n }; }\n ElementAnimationStyleHandler.prototype.pause = function ()\n {\n playPauseAnimation(this._element, this._name, 'paused');\n }; }\n ElementAnimationStyleHandler.prototype.resume = function () {\n playPauseAnimation(this._element,\n this._name, 'running');\n }; }\n ElementAnimationStyleHandler.prototype.setPosition = function (position)\n {\n var index = findIndexForAnimation(this._element, this._name);\n this._position = position *
this._duration;\n setAnimationStyle(this._element, 'Delay', \"-\" + this._position + \"ms\", index);\n }; }\n ElementAnimationStyleHandler.prototype.getPosition = function () {\n return this._position;\n }; }\n ElementAnimationStyleHandler.prototype._handleCallback = function (event) {\n var timestamp =\n event._ngTestManualTimestamp || Date.now();\n var elapsedTime =\n parseFloat(event.elapsedTime.toFixed(ELAPSED_TIME_MAX_DECIMAL_PLACES)) * ONE_SECOND$1;\n if (event.animationName == this._name &&\n Math.max(timestamp - this._startTime, 0) >= this._delay
&& elapsedTime >= this._duration) {\n this.finish();\n }\n }; }\n ElementAnimationStyleHandler.prototype.finish = function () {\n if (this._finished)\n return;\n this._finished = true;\n this._onDoneFn();\n addRemoveAnimationEvent(this._element, this._eventFn,\n true);\n }; }\n ElementAnimationStyleHandler.prototype.destroy = function () {\n if\n (this._destroyed)\n return;\n this._destroyed = true;\n this.finish();\n removeKeyframeAnimation(this._element, this._name);\n }; }\n return ElementAnimationStyleHandler;\n }());\n function playPauseAnimation(element, name, status) {\n var index = findIndexForAnimation(element,\n name);\n setAnimationStyle(element, 'PlayState', status, index);\n }\n function\n applyKeyframeAnimation(element, value) {\n var anim = getAnimationStyle(element, \"\").trim();\n var index\n = 0;\n if (anim.length) {\n index = countChars(anim, ',') + 1;\n value = anim + \", \" + value;\n }\n setAnimationStyle(element, \"\", value);\n return index;\n }\n function\n removeKeyframeAnimation(element, name) {\n var anim = getAnimationStyle(element, \"\");\n var tokens =\n anim.split(',');\n var index = findMatchingTokenIndex(tokens, name);\n if (index >= 0) {\n tokens.splice(index, 1);\n var newValue = tokens.join(',');\n setAnimationStyle(element, \"\n ,\n newValue);\n }\n }\n function findIndexForAnimation(element, value) {\n var anim =

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getAnimationStyle(element, '');\n if (anim.indexOf(',') > 0) {\n var tokens = anim.split(',');\n return\n findMatchingTokenIndex(tokens, value);\n }\n return findMatchingTokenIndex([anim], value);\n }\n\nfunction findMatchingTokenIndex(tokens, searchToken) {\n for (var i = 0; i < tokens.length; i++) {\n if\n (tokens[i].indexOf(searchToken) >= 0) {\n return i;\n }\n }\n return -1;\n }\n\nfunction\naddRemoveAnimationEvent(element, fn, doRemove) {\n doRemove ?\n element.removeListener(ANIMATIONEND_EVENT, fn) :\n element.addEventListener(ANIMATIONEND_EVENT, fn);\n }\n\nfunction setAnimationStyle(element, name,\nvalue, index) {\n var prop = ANIMATION_PROP + name;\n if (index != null) {\n var oldValue =\n element.style[prop];\n if (oldValue.length) {\n var tokens = oldValue.split(',');\n tokens[index] = value;\n value = tokens.join(',');\n }\n element.style[prop] = value;\n }\n\n function getAnimationStyle(element, name) {\n return element.style[ANIMATION_PROP + name];\n }\n\n function countChars(value, char) {\n var count = 0;\n for (var i = 0; i < value.length; i++) {\n var c = value.charAt(i);\n if (c === char)\n count++;\n }\n return count;\n }\n\n var\n DEFAULT_FILL_MODE = 'forwards';\n var DEFAULT_EASING = 'linear';\n var CssKeyframesPlayer = /**\n @class */ (function () {\n function CssKeyframesPlayer(element, keyframes, animationName, _duration,\n _delay, easing, _finalStyles, _specialStyles) {\n this.element = element;\n this.keyframes =\n keyframes;\n this.animationName = animationName;\n this._duration = _duration;\n this._delay\n = _delay;\n this._finalStyles = _finalStyles;\n this._specialStyles = _specialStyles;\n\n this._onDoneFns = [];\n this._onStartFns = [];\n this._onDestroyFns = [];\n this._started =\n false;\n this.currentSnapshot = {};\n this._state = 0;\n this.easing = easing ||\n DEFAULT_EASING;\n this.totalTime = _duration + _delay;\n this._buildStyler();\n }\n\n CssKeyframesPlayer.prototype.onStart = function (fn) {\n this._onStartFns.push(fn);\n };\n\n CssKeyframesPlayer.prototype.onDone = function (fn) {\n this._onDoneFns.push(fn);\n };\n\n CssKeyframesPlayer.prototype.onDestroy = function (fn) {\n this._onDestroyFns.push(fn);\n };\n\n CssKeyframesPlayer.prototype.destroy = function () {\n this.init();\n if (this._state >= 4 /*\n DESTROYED */)\n return;\n this._state = 4 /* DESTROYED */;\n this._styler.destroy();\n\n this._flushStartFns();\n this._flushDoneFns();\n if (this._specialStyles) {\n this._specialStyles.destroy();\n }\n this._onDestroyFns.forEach(function (fn) { return fn(); });\n\n this._onDestroyFns = [];\n };\n\n CssKeyframesPlayer.prototype._flushDoneFns = function () {\n this._onDoneFns.forEach(function (fn) { return fn(); });\n this._onDoneFns = [];\n };\n\n CssKeyframesPlayer.prototype._flushStartFns = function () {\n this._onStartFns.forEach(function (fn) {\n return fn();\n });\n this._onStartFns = [];\n };\n\n CssKeyframesPlayer.prototype.finish = function () {\n this.init();\n if (this._state >= 3 /* FINISHED */)\n return;\n this._state = 3 /*\n FINISHED */;\n this._styler.finish();\n this._flushStartFns();\n if (this._specialStyles) {\n this._specialStyles.finish();\n }\n this._flushDoneFns();\n };\n\n CssKeyframesPlayer.prototype.setPosition = function (value) {\n this._styler.setPosition(value);\n };\n\n CssKeyframesPlayer.prototype.getPosition = function () {\n return this._styler.getPosition();\n };\n\n CssKeyframesPlayer.prototype.hasStarted = function () {\n return this._state >= 2 /* STARTED */;\n };\n\n CssKeyframesPlayer.prototype.init = function () {\n if (this._state >= 1 /* INITIALIZED */)\n return;\n this._state = 1 /* INITIALIZED */;\n var elm = this.element;\n this._styler.apply();\n if (this._delay) {\n this._styler.pause();\n }\n };\n\n CssKeyframesPlayer.prototype.play = function () {\n this.init();\n if (!this.hasStarted()) {\n this._flushStartFns();\n this._state = 2 /* STARTED */;\n if (this._specialStyles) {\n this._specialStyles.start();\n }\n }\n this._styler.resume();\n };\n\n CssKeyframesPlayer.prototype.pause = function () {\n this.init();\n this._styler.pause();\n };\n\n CssKeyframesPlayer.prototype.restart = function () {\n this.reset();\n this.play();\n };\n\n CssKeyframesPlayer.prototype.reset = function () {\n this._styler.destroy();\n this._buildStyler();\n this._styler.apply();\n };\n\n CssKeyframesPlayer.prototype._buildStyler = function () {\n var _this

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= this;\n this._styler = new ElementAnimationStyleHandler(this.element, this.animationName, this._duration,
this._delay, this.easing, DEFAULT_FILL_MODE, function () { return _this.finish(); });\n };\n /**
@internal */\n CssKeyframesPlayer.prototype.triggerCallback = function (phaseName) {\n var methods
= phaseName == 'start' ? this._onStartFns : this._onDoneFns;\n methods.forEach(function (fn) { return fn();
});\n methods.length = 0;\n };\n CssKeyframesPlayer.prototype.beforeDestroy = function () {\n
var _this = this;\n this.init();\n var styles = {};\n if (this.hasStarted()) {\n var
finished_1 = this._state >= 3 /* FINISHED */;\n Object.keys(this._finalStyles).forEach(function (prop) {\n
if (prop != 'offset') {\n styles[prop] = finished_1 ? _this._finalStyles[prop] :
computeStyle(_this.element, prop);\n }\n });\n this.currentSnapshot =
styles;\n };\n return CssKeyframesPlayer;\n }());\n\n var DirectStylePlayer = /** @class */ (function
(_super) {\n __extends(DirectStylePlayer, _super);\n function DirectStylePlayer(element, styles) {\n
var _this = _super.call(this) || this;\n _this.element = element;\n _this._startingStyles = {};\n
_this.__initialized = false;\n _this._styles = hyphenatePropsObject(styles);\n return _this;\n }\n
DirectStylePlayer.prototype.init = function () {\n var _this = this;\n if (this.__initialized ||
!this._startingStyles)\n return;\n this.__initialized = true;\n
Object.keys(this._styles).forEach(function (prop) {\n _this._startingStyles[prop] =
_this.element.style[prop];\n });\n _super.prototype.init.call(this);\n };\n
DirectStylePlayer.prototype.play = function () {\n var _this = this;\n if (!this._startingStyles)\n
return;\n this.init();\n Object.keys(this._styles)\n .forEach(function (prop) { return
_this.element.style.setProperty(prop, _this._styles[prop]); });\n _super.prototype.play.call(this);\n };\n
DirectStylePlayer.prototype.destroy = function () {\n var _this = this;\n if (!this._startingStyles)\n
return;\n Object.keys(this._startingStyles).forEach(function (prop) {\n var value =
_this._startingStyles[prop];\n if (value) {\n _this.element.style.setProperty(prop, value);\n
}\n else {\n _this.element.style.removeProperty(prop);\n }\n });\n
this._startingStyles = null;\n _super.prototype.destroy.call(this);\n };\n return DirectStylePlayer;\n
})(animations.NoopAnimationPlayer));\n\n var KEYFRAMES_NAME_PREFIX = 'gen_css_kf_';\n var
TAB_SPACE = ' ';\n var CssKeyframesDriver = /** @class */ (function () {\n function
CssKeyframesDriver() {\n this._count = 0;\n this._head = document.querySelector('head');\n
this._warningIssued = false;\n }\n CssKeyframesDriver.prototype.validateStyleProperty = function (prop)
{\n return validateStyleProperty(prop);\n };\n CssKeyframesDriver.prototype.matchesElement =
function (element, selector) {\n return matchesElement(element, selector);\n };\n
CssKeyframesDriver.prototype.containsElement = function (elm1, elm2) {\n return containsElement(elm1,
elm2);\n };\n CssKeyframesDriver.prototype.query = function (element, selector, multi) {\n return
invokeQuery(element, selector, multi);\n };\n CssKeyframesDriver.prototype.computeStyle = function
(element, prop, defaultValue) {\n return window.getComputedStyle(element)[prop];\n };\n
CssKeyframesDriver.prototype.buildKeyframeElement = function (element, name, keyframes) {\n keyframes
= keyframes.map(function (kf) { return hyphenatePropsObject(kf); });\n var keyframeStr = "@keyframes " +
name + "\n\n";\n var tab = "\n";\n keyframes.forEach(function (kf) {\n tab = TAB_SPACE;\n
var offset = parseFloat(kf['offset']);\n keyframeStr += "\n" + tab + offset * 100 + "%\n\n";\n
tab += TAB_SPACE;\n Object.keys(kf).forEach(function (prop) {\n var value = kf[prop];\n
switch (prop) {\n case 'offset':\n return;\n case 'easing':\n
if (value) {\n keyframeStr += tab + "animation-timing-function: " + value +
"\n\n";\n }\n return;\n default:\n keyframeStr +=
"\n" + tab + prop + ": " + value + "\n\n";\n return;\n }\n }));\n
keyframeStr += tab + "\n\n";\n });\n keyframeStr += "\n\n";\n var kfElm =
document.createElement('style');\n kfElm.textContent = keyframeStr;\n return kfElm;\n };\n
CssKeyframesDriver.prototype.animate = function (element, keyframes, duration, delay, easing, previousPlayers,
scrubberAccessRequested) {\n if (previousPlayers === void 0) { previousPlayers = []; }\n if

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(scrubberAccessRequested) {\n this._notifyFaultyScrubber();\n }\n var
previousCssKeyframePlayers = previousPlayers.filter(function (player) { return player instanceof
CssKeyframesPlayer; });\n var previousStyles = {};\n if (allowPreviousPlayerStylesMerge(duration,
delay)) {\n previousCssKeyframePlayers.forEach(function (player) {\n var styles =
player.currentSnapshot;\n Object.keys(styles).forEach(function (prop) { return previousStyles[prop] =
styles[prop]; });\n });\n }\n keyframes = balancePreviousStylesIntoKeyframes(element,
keyframes, previousStyles);\n var finalStyles = flattenKeyframesIntoStyles(keyframes);\n // if there is
no animation then there is no point in applying\n // styles and waiting for an event to get fired. This causes
lag.\n // It's better to just directly apply the styles to the element\n // via the direct styling animation
player.\n if (duration == 0) {\n return new DirectStylePlayer(element, finalStyles);\n }\n var animationName = \"\" + KEYFRAMES_NAME_PREFIX + this._count++; \n var kfElm =
this.buildKeyframeElement(element, animationName, keyframes);\n document.querySelector('head').appendChild(kfElm);\n var specialStyles =
packageNonAnimatableStyles(element, keyframes);\n var player = new CssKeyframesPlayer(element,
keyframes, animationName, duration, delay, easing, finalStyles, specialStyles);\n player.onDestroy(function
() { return removeElement(kfElm); });\n return player;\n });\n CssKeyframesDriver.prototype._notifyFaultyScrubber = function () {\n if (!this._warningIssued) {\n console.warn('@angular/animations: please load the web-animations.js polyfill to allow programmatic access...\\n',
'visit http://bit.ly/IWukam to learn more about using the web-animation-js polyfill.');

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this._onDoneFns.push(fn);\n };\n WebAnimationsPlayer.prototype.onDestroy = function (fn) {\n
this._onDestroyFns.push(fn);\n };\n WebAnimationsPlayer.prototype.play = function () {\n
this._buildPlayer();\n if (!this.hasStarted()) {\n this._onStartFns.forEach(function (fn) { return fn();\n
});\n this._onStartFns = [];\n this._started = true;\n if (this._specialStyles) {\n
this._specialStyles.start();\n }\n this.domPlayer.play();\n };\n
WebAnimationsPlayer.prototype.pause = function () {\n this.init();\n this.domPlayer.pause();\n
};\n WebAnimationsPlayer.prototype.finish = function () {\n this.init();\n if (this._specialStyles)\n
{\n this._specialStyles.finish();\n }\n this._onFinish();\n this.domPlayer.finish();\n
};\n WebAnimationsPlayer.prototype.reset = function () {\n this._resetDomPlayerState();\n
this._destroyed = false;\n this._finished = false;\n this._started = false;\n };\n
WebAnimationsPlayer.prototype._resetDomPlayerState = function () {\n if (this.domPlayer) {\n
this.domPlayer.cancel();\n }\n };\n WebAnimationsPlayer.prototype.restart = function () {\n
this.reset();\n this.play();\n };\n WebAnimationsPlayer.prototype.hasStarted = function () {\n
return this._started;\n };\n WebAnimationsPlayer.prototype.destroy = function () {\n if\n
(!this._destroyed) {\n this._destroyed = true;\n this._resetDomPlayerState();\n
this._onFinish();\n if (this._specialStyles) {\n this._specialStyles.destroy();\n }\n
 this._onDestroyFns.forEach(function (fn) { return fn(); });\n this._onDestroyFns = [];\n }\n
};\n WebAnimationsPlayer.prototype.setPosition = function (p) {\n this.domPlayer.currentTime = p *\n
this.time;\n };\n WebAnimationsPlayer.prototype.getPosition = function () {\n return\n
this.domPlayer.currentTime / this.time;\n };\n Object.defineProperty(WebAnimationsPlayer.prototype,\n
'totalTime', {\n get: function () {\n return this._delay + this._duration;\n },\n
enumerable: false,\n configurable: true\n });\n WebAnimationsPlayer.prototype.beforeDestroy =\n
function () {\n var _this = this;\n var styles = {};\n if (this.hasStarted()) {\n
Object.keys(this._finalKeyframe).forEach(function (prop) {\n if (prop != 'offset') {\n
styles[prop] =\n _this._finished ? _this._finalKeyframe[prop] : computeStyle(_this.element,\n
prop);\n }\n });\n this.currentSnapshot = styles;\n };\n /** @internal\n
*/\n WebAnimationsPlayer.prototype.triggerCallback = function (phaseName) {\n var methods =\n
phaseName == 'start' ? this._onStartFns : this._onDoneFns;\n methods.forEach(function (fn) { return fn();\n
});\n methods.length = 0;\n };\n return WebAnimationsPlayer;\n }());\n\n var\n
WebAnimationsDriver = /** @class */ (function () {\n function WebAnimationsDriver() {\n
this._isNativeImpl = /\{\s*\[native\]\s+code\}\s*/.test(getElementAnimateFn().toString());\n
this._cssKeyframesDriver = new CssKeyframesDriver();\n }\n
WebAnimationsDriver.prototype.validateStyleProperty = function (prop) {\n return\n
validateStyleProperty(prop);\n };\n WebAnimationsDriver.prototype.matchesElement = function (element,\n
selector) {\n return matchesElement(element, selector);\n };\n
WebAnimationsDriver.prototype.containsElement = function (elm1, elm2) {\n return containsElement(elm1,\n
elm2);\n };\n WebAnimationsDriver.prototype.query = function (element, selector, multi) {\n return\n
invokeQuery(element, selector, multi);\n };\n WebAnimationsDriver.prototype.computeStyle = function\n
(element, prop, defaultValue) {\n return window.getComputedStyle(element)[prop];\n };\n
WebAnimationsDriver.prototype.overrideWebAnimationsSupport = function (supported) {\n
this._isNativeImpl = supported;\n };\n WebAnimationsDriver.prototype.animate = function (element,\n
keyframes, duration, delay, easing, previousPlayers, scrubberAccessRequested) {\n if (previousPlayers ===\n
void 0) { previousPlayers = []; }\n var useKeyframes = !scrubberAccessRequested && !this._isNativeImpl;\n
if (useKeyframes) {\n return this._cssKeyframesDriver.animate(element, keyframes, duration, delay,\n
easing, previousPlayers);\n }\n var fill = delay == 0 ? 'both' : 'forwards';\n var playerOptions = {\n
duration: duration, delay: delay, fill: fill };\n // we check for this to avoid having a null|undefined value be\n
present\n // for the easing (which results in an error for certain browsers #9752)\n if (easing) {\n
playerOptions['easing'] = easing;\n }\n var previousStyles = {};\n var

```



\*/

Found in path(s):

\* /opt/cola/permits/1358260673\_1657448337.9350824/0/animations-11-0-2-tgz/package/fesm2015/browser/testing.js

\* /opt/cola/permits/1358260673\_1657448337.9350824/0/animations-11-0-2-tgz/package/fesm2015/animations.js

\* /opt/cola/permits/1358260673\_1657448337.9350824/0/animations-11-0-2-tgz/package/fesm2015/browser.js

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Found in path(s):

\* /opt/cola/permits/1358260673\_1657448337.9350824/0/animations-11-0-2-tgz/package/esm2015/src/util.js

\* /opt/cola/permits/1358260673\_1657448337.9350824/0/animations-11-0-2-tgz/package/esm2015/src/version.js

\* /opt/cola/permits/1358260673\_1657448337.9350824/0/animations-11-0-2-tgz/package/esm2015/src/players/animation\_player.js

\* /opt/cola/permits/1358260673\_1657448337.9350824/0/animations-11-0-2-tgz/package/esm2015/browser/testing/index.js

\* /opt/cola/permits/1358260673\_1657448337.9350824/0/animations-11-0-2-tgz/package/esm2015/browser/src/dsl/animation\_ast\_builder.js

\* /opt/cola/permits/1358260673\_1657448337.9350824/0/animations-11-0-2-tgz/package/esm2015/browser/src/dsl/style\_normalization/animation\_style\_normalizer.js

\* /opt/cola/permits/1358260673\_1657448337.9350824/0/animations-11-0-2-tgz/package/esm2015/browser/src/util.js

\* /opt/cola/permits/1358260673\_1657448337.9350824/0/animations-11-0-2-tgz/package/esm2015/browser/testing/public\_api.js

\* /opt/cola/permits/1358260673\_1657448337.9350824/0/animations-11-0-2-tgz/package/esm2015/src/animation\_metadata.js

\* /opt/cola/permits/1358260673\_1657448337.9350824/0/animations-11-0-2-tgz/package/esm2015/browser/src/dsl/animation\_transition\_expr.js

\* /opt/cola/permits/1358260673\_1657448337.9350824/0/animations-11-0-2-tgz/package/esm2015/browser/src/render/web\_animations/dom\_animation.js

\* /opt/cola/permits/1358260673\_1657448337.9350824/0/animations-11-0-2-tgz/package/esm2015/browser/src/render/special\_cased\_styles.js

\* /opt/cola/permits/1358260673\_1657448337.9350824/0/animations-11-0-2-tgz/package/esm2015/src/private\_export.js

\* /opt/cola/permits/1358260673\_1657448337.9350824/0/animations-11-0-2-tgz/package/esm2015/browser/testing/src/mock\_animation\_driver.js

\* /opt/cola/permits/1358260673\_1657448337.9350824/0/animations-11-0-2-tgz/package/esm2015/browser/src/render/css\_keyframes/element\_animation\_style\_handler.js

\* /opt/cola/permits/1358260673\_1657448337.9350824/0/animations-11-0-2-tgz/package/esm2015/src/players/animation\_group\_player.js



- \* /opt/cola/permits/1358260673\_1657448337.9350824/0/animations-11-0-2-tgz/package/esm2015/browser/src/render/transition\_animation\_engine.js
- \* /opt/cola/permits/1358260673\_1657448337.9350824/0/animations-11-0-2-tgz/package/esm2015/browser/src/render/css\_keyframes/direct\_style\_player.js
- \* /opt/cola/permits/1358260673\_1657448337.9350824/0/animations-11-0-2-tgz/package/esm2015/browser/public\_api.js
- \* /opt/cola/permits/1358260673\_1657448337.9350824/0/animations-11-0-2-tgz/package/esm2015/browser/src/browser.js
- \* /opt/cola/permits/1358260673\_1657448337.9350824/0/animations-11-0-2-tgz/package/esm2015/index.js
- \* /opt/cola/permits/1358260673\_1657448337.9350824/0/animations-11-0-2-tgz/package/esm2015/src/animations.js
- \* /opt/cola/permits/1358260673\_1657448337.9350824/0/animations-11-0-2-tgz/package/esm2015/browser/src/render/timeline\_animation\_engine.js
- \* /opt/cola/permits/1358260673\_1657448337.9350824/0/animations-11-0-2-tgz/package/esm2015/public\_api.js
- \* /opt/cola/permits/1358260673\_1657448337.9350824/0/animations-11-0-2-tgz/package/esm2015/src/animation\_event.js
- \* /opt/cola/permits/1358260673\_1657448337.9350824/0/animations-11-0-2-tgz/package/esm2015/browser/testing/src/testing.js
- \* /opt/cola/permits/1358260673\_1657448337.9350824/0/animations-11-0-2-tgz/package/esm2015/browser/src/dsl/animation\_timeline\_builder.js
- \* /opt/cola/permits/1358260673\_1657448337.9350824/0/animations-11-0-2-tgz/package/esm2015/browser/src/dsl/style\_normalization/web\_animations\_style\_normalizer.js
- \* /opt/cola/permits/1358260673\_1657448337.9350824/0/animations-11-0-2-tgz/package/esm2015/browser/src/render/animation\_driver.js
- \* /opt/cola/permits/1358260673\_1657448337.9350824/0/animations-11-0-2-tgz/package/esm2015/browser/src/private\_export.js
- \* /opt/cola/permits/1358260673\_1657448337.9350824/0/animations-11-0-2-tgz/package/esm2015/browser/index.js
- \* /opt/cola/permits/1358260673\_1657448337.9350824/0/animations-11-0-2-tgz/package/esm2015/browser/src/render/shared.js

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```
{
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 "file": "browser.js",
 "sources": [
 "../..../..../packages/animations/browser/src/render/shared.ts",
 "../..../..../packages/animations/browser/src/render/animation_driver.ts",
 "../..../..../packages/animations/browser/src/util.ts",
 "../..../..../packages/animations/browser/src/dsl/animation_transition_expr.ts",
 "../..../..../packages/animations/browser/src/dsl/animation_ast_builder.ts",
 "../..../..../packages/animations/browser/src/dsl/animation_timeline_instruction.ts",
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 "../..../..../packages/animations/browser/src/dsl/style_normalization/web_animations_style_normalizer.ts",
 "../..../..../packages/animations/browser/src/dsl/animation_transition_instruction.ts",
 "../..../..../packages/animations/browser/src/dsl/animation_transition_factory.ts",
 "../..../..../packages/animations/browser/src/dsl/animation_trigger.ts",
 "../..../..../packages/animations/browser/src/render/timeline_animation_engine.ts",
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 "../..../..../packages/animations/browser/src/render/animation_engine_next.ts",
 "../..../..../packages/animations/browser/src/render/special_cased_styles.ts",
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 "../..../..../packages/animations/browser/src/render/css_keyframes/css_keyframes_player.ts",
 "../..../..../packages/animations/browser/src/render/css_keyframes/css_keyframes_direct_style_player.ts",
 "../..../..../packages/animations/browser/src/render/css_keyframes/css_keyframes_driver.ts",
 "../..../..../packages/animations/browser/src/render/web_animations/web_animations_player.ts",
 "../..../..../packages/animations/browser/src/render/web_animations/web_animations_driver.ts",
 "../..../..../package"
]
}
```

```

s/animations/browser/src/private_export.ts", "../../../../../packages/animations/browser/src/browser.ts", "../../../../../p
ackages/animations/browser/public_api.ts", "../../../../../packages/animations/browser/index.ts", "../../../../../package
s/animations/browser/browser.ts"], "sourcesContent": ["/*\n * @license\n * Copyright Google LLC All Rights
Reserved.\n *\n * Use of this source code is governed by an MIT-style license that can be\n * found in the
LICENSE file at https://angular.io/license\n */\nimport { AnimationEvent, AnimationPlayer, AUTO_STYLE,
NoopAnimationPlayer, AnimationGroupPlayer, PRE_STYLE as PRE_STYLE, StyleData } from
'@angular/animations';\nimport { AnimationStyleNormalizer } from
'../../src/dsl/style_normalization/animation_style_normalizer';\nimport { AnimationDriver } from
'../../src/render/animation_driver';\n\n// We don't include ambient node types here since
@angular/animations/browser\n// is meant to target the browser so technically it should not depend on node\n//
types. `process` is just declared locally here as a result.\ndeclare const process: any;\n\nexport function isBrowser():
boolean {\n return (typeof window !== 'undefined' && typeof window.document !== 'undefined');\n}\n\nexport
function isNode(): boolean {\n // Checking only for `process` isn't enough to identify whether or not we're in a
Node\n // environment, because Webpack by default will polyfill the `process`. While we can discern\n // that
Webpack polyfilled it by looking at `process.browser`, it's very Webpack-specific and\n // might not be future-
proof. Instead we look at the stringified version of `process` which\n // is `[object process]` in Node and `[object
Object]` when polyfilled.\n return typeof process !== 'undefined' && { }.toString.call(process) === '[object
process]';\n}\n\nexport function optimizeGroupPlayer(players: AnimationPlayer[]): AnimationPlayer {\n switch
(players.length) {\n case 0:\n return new NoopAnimationPlayer();\n case 1:\n return players[0];\n default:\n return new AnimationGroupPlayer(players);\n }\n}\n\nexport function normalizeKeyframes(\n
driver: AnimationDriver, normalizer: AnimationStyleNormalizer, element: any, keyframes: StyleData[],
preStyles: StyleData = {}, postStyles: StyleData = {}): StyleData[] {\n const errors: string[] = [];\n const
normalizedKeyframes: StyleData[] = [];\n let previousOffset = -1;\n let previousKeyframe: StyleData|null = null;\n keyframes.forEach(kf => {\n const offset = kf['offset'] as number;\n const isSameOffset = offset ==
previousOffset;\n const normalizedKeyframe: StyleData = (isSameOffset && previousKeyframe) || {};\n Object.keys(kf).forEach(prop => {\n let normalizedProp = prop;\n let normalizedValue = kf[prop];\n if
(prop !== 'offset') {\n normalizedProp = normalizer.normalizePropertyName(normalizedProp, errors);\n switch (normalizedValue) {\n case PRE_STYLE:\n normalizedValue = preStyles[prop];\n break;\n case AUTO_STYLE:\n normalizedValue = postStyles[prop];\n break;\n default:\n normalizedValue =\n normalizer.normalizeStyleValue(prop, normalizedProp,
normalizedValue, errors);\n break;\n }\n normalizedKeyframe[normalizedProp] =
normalizedValue;\n });\n if (!isSameOffset) {\n normalizedKeyframes.push(normalizedKeyframe);\n }\n previousKeyframe = normalizedKeyframe;\n previousOffset = offset;\n });\n if (errors.length) {\n const
LINE_START = "\n - "; \n throw new Error(\n `Unable to animate due to the following
errors:${LINE_START}${errors.join(LINE_START)}`);\n }\n}\n\nexport function listenOnPlayer(\n player: AnimationPlayer, eventName: string, event: AnimationEvent|undefined, \n
callback: (event: any) => any) {\n switch (eventName) {\n case 'start':\n player.onStart(() => callback(event
&& copyAnimationEvent(event, 'start', player))); \n break;\n case 'done':\n player.onDone(() =>
callback(event && copyAnimationEvent(event, 'done', player))); \n break;\n case 'destroy':\n player.onDestroy(() => callback(event && copyAnimationEvent(event, 'destroy', player))); \n break;\n }\n}\n\nexport function copyAnimationEvent(\n e: AnimationEvent, phaseName: string, player:
AnimationPlayer): AnimationEvent {\n const totalTime = player.totalTime;\n const disabled = (player as any).disabled ? true : false;\n const event = makeAnimationEvent(\n e.element, e.triggerName, e.fromState,
e.toState, phaseName || e.phaseName, \n totalTime == undefined ? e.totalTime : totalTime, disabled);\n const
data = (e as any)['_data'];\n if (data != null) {\n (event as any)['_data'] = data;\n }\n return event;\n}\n\nexport function makeAnimationEvent(\n element: any, triggerName: string, fromState: string, toState: string, phaseName:
string = "", \n totalTime: number = 0, disabled?: boolean): AnimationEvent {\n return {element, triggerName,
fromState, toState, phaseName, totalTime, disabled: !!disabled};\n}\n\nexport function getOrSetAsInMap(\n map:

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Map<any, any>|{[key: string]: any}, key: any, defaultValue: any) {\n let value: any;\n if (map instanceof Map) {\n
value = map.get(key);\n if (!value) {\n map.set(key, value = defaultValue);\n }\n } else {\n value =
map[key];\n if (!value) {\n value = map[key] = defaultValue;\n }\n }\n return value;\n}\n\nexport function
parseTimelineCommand(command: string): [string, string] {\n const separatorPos = command.indexOf(':');\n const
id = command.substring(1, separatorPos);\n const action = command.substr(separatorPos + 1);\n return [id,
action];\n}\n\nlet _contains: (elm1: any, elm2: any) => boolean = (elm1: any, elm2: any) => false;\nlet _matches:
(element: any, selector: string) => boolean = (element: any, selector: string) =>\n false;\nlet _query: (element: any,
selector: string, multi: boolean) => any[] =\n (element: any, selector: string, multi: boolean) => {\n return [];\n
};\n\n// Define utility methods for browsers and platform-server(domino) where Element\n// and utility methods
exist.\nconst _isNode = isNode();\nif (_isNode || typeof Element !== 'undefined') {\n // this is well supported in all
browsers\n _contains = (elm1: any, elm2: any) => {\n return elm1.contains(elm2) as boolean;\n };\n\n _matches
= (() => {\n if (_isNode || Element.prototype.matches) {\n return (element: any, selector: string) =>
element.matches(selector);\n } else {\n const proto = Element.prototype as any;\n const fn =
proto.matchesSelector || proto.mozMatchesSelector || proto.msMatchesSelector ||\n proto.oMatchesSelector ||
proto.webkitMatchesSelector;\n if (fn) {\n return (element: any, selector: string) => fn.apply(element,
[selector]);\n } else {\n return _matches;\n }\n }\n });\n\n _query = (element: any, selector: string,
multi: boolean): any[] => {\n let results: any[] = [];\n if (multi) {\n
results.push(...element.querySelectorAll(selector));\n } else {\n const elm = element.querySelector(selector);\n
if (elm) {\n results.push(elm);\n }\n }\n return results;\n };\n}\n\nfunction containsVendorPrefix(prop:
string): boolean {\n // Webkit is the only real popular vendor prefix nowadays\n // cc: http://shouldiprefix.com/\n
return prop.substring(1, 6) === 'ebkit'; // webkit or Webkit\n}\n\nlet _CACHED_BODY: {style: any}|null =
null;\nlet _IS_WEBKIT = false;\nexport function validateStyleProperty(prop: string): boolean {\n if
(!_CACHED_BODY) {\n _CACHED_BODY = getBodyNode() || {};\n _IS_WEBKIT =
_CACHED_BODY!.style ? ('WebkitAppearance' in _CACHED_BODY!.style) : false;\n }\n\n let result = true;\n
if (_CACHED_BODY!.style && !containsVendorPrefix(prop)) {\n result = prop in _CACHED_BODY!.style;\n
if (!result && _IS_WEBKIT) {\n const camelProp = 'Webkit' + prop.charAt(0).toUpperCase() +
prop.substr(1);\n result = camelProp in _CACHED_BODY!.style;\n }\n }\n\n return result;\n}\n\nexport
function getBodyNode(): any|null {\n if (typeof document !== 'undefined') {\n return document.body;\n }\n
return null;\n}\n\nexport const matchesElement = _matches;\nexport const containsElement = _contains;\nexport const
invokeQuery = _query;\n\nexport function hyphenatePropsObject(object: {[key: string]: any}): {[key: string]: any}
{\n const newObj: {[key: string]: any} = {};\n Object.keys(object).forEach(prop => {\n const newProp =
prop.replace(/([a-z])([A-Z])/g, '$1-$2');\n newObj[newProp] = object[prop];\n });\n return newObj;\n}\n\n"/**\n
* @license\n * Copyright Google LLC All Rights Reserved.\n *\n * Use of this source code is governed by an MIT-
style license that can be\n * found in the LICENSE file at https://angular.io/license\n */\nimport {AnimationPlayer,
NoopAnimationPlayer} from '@angular/animations';\nimport {Injectable} from '@angular/core';\nimport
{containsElement, invokeQuery, matchesElement, validateStyleProperty} from './shared';\n\n/**\n * @publicApi\n
*/\n\n@injectable()\nexport class NoopAnimationDriver implements AnimationDriver {\n
validateStyleProperty(prop: string): boolean {\n return validateStyleProperty(prop);\n }\n\n
matchesElement(element: any, selector: string): boolean {\n return matchesElement(element, selector);\n }\n\n
containsElement(elm1: any, elm2: any): boolean {\n return containsElement(elm1, elm2);\n }\n\n
query(element: any, selector: string, multi: boolean): any[] {\n return invokeQuery(element, selector, multi);\n
}\n\n
computeStyle(element: any, prop: string, defaultValue?: string): string {\n return defaultValue || '';\n }\n\n
animate(\n element: any, keyframes: {[key: string]: string|number}[], duration: number, delay: number,\n
easing: string, previousPlayers: any[] = [],\n scrubberAccessRequested?: boolean): AnimationPlayer {\n return
new NoopAnimationPlayer(duration, delay);\n }\n}\n\n/**\n * @publicApi\n */\n\nexport abstract class
AnimationDriver {\n static NOOP: AnimationDriver = new NoopAnimationDriver();\n\n abstract
validateStyleProperty(prop: string): boolean;\n\n abstract matchesElement(element: any, selector: string):
boolean;\n\n abstract containsElement(elm1: any, elm2: any): boolean;\n\n abstract query(element: any, selector:

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string, multi: boolean): any[];\n\n abstract computeStyle(element: any, prop: string, defaultValue?: string):
string;\n\n abstract animate(\n element: any, keyframes: {[key: string]: string|number}[], duration: number,
delay: number,\n easing?: string|null, previousPlayers?: any[], scrubberAccessRequested?: boolean):
any;\n}\n", "/*\n * @license\n * Copyright Google LLC All Rights Reserved.\n *\n * Use of this source code is
governed by an MIT-style license that can be\n * found in the LICENSE file at https://angular.io/license\n
*/\n\nimport { AnimateTimings, AnimationMetadata, AnimationMetadataType, AnimationOptions, sequence,
StyleData } from '@angular/animations';\nimport { Ast as AnimationAst, AstVisitor as AnimationAstVisitor } from
'/dsl/animation_ast';\nimport { AnimationDslVisitor } from '/dsl/animation_dsl_visitor';\nimport { isNode } from
'/render/shared';\n\nexport const ONE_SECOND = 1000;\n\nexport const SUBSTITUTION_EXPR_START =
'{';\nexport const SUBSTITUTION_EXPR_END = '}';\nexport const ENTER_CLASSNAME = 'ng-
enter';\nexport const LEAVE_CLASSNAME = 'ng-leave';\nexport const ENTER_SELECTOR = '.ng-enter';\nexport
const LEAVE_SELECTOR = '.ng-leave';\nexport const NG_TRIGGER_CLASSNAME = 'ng-trigger';\nexport const
NG_TRIGGER_SELECTOR = '.ng-trigger';\nexport const NG_ANIMATING_CLASSNAME = 'ng-
animating';\nexport const NG_ANIMATING_SELECTOR = '.ng-animating';\n\nexport function
resolveTimingValue(value: string|number) {\n if (typeof value === 'number') return value;\n\n const matches =
value.match(/^(~?[0-9]+)(m?s)/);\n if (!matches || matches.length < 2) return 0;\n return
_convertTimeValueToMS(parseFloat(matches[1]), matches[2]);\n}\n\nfunction _convertTimeValueToMS(value:
number, unit: string): number {\n switch (unit) {\n case 's':\n return value * ONE_SECOND;\n default: // ms
or something else\n return value;\n }\n}\n\nexport function resolveTiming(\n timings:
string|number|AnimateTimings, errors: any[], allowNegativeValues?: boolean) {\n return
timings.hasOwnProperty('duration') ?\n <AnimateTimings>timings :\n parseTimeExpression(<string|number>timings, errors, allowNegativeValues);\n}\n\nfunction
parseTimeExpression(\n exp: string|number, errors: string[], allowNegativeValues?: boolean): AnimateTimings
{\n const regex = /^(~?[0-9]+)(m?s)(?:\s+(~?[0-9]+)(m?s))?(?:\s+([a-z]+(?:\.(.+)?))?)?$/i;\n let duration:
number;\n let delay: number = 0;\n let easing: string = '';\n if (typeof exp === 'string') {\n const matches =
exp.match(regex);\n if (matches === null) {\n errors.push(`The provided timing value "${exp}" is
invalid.`);\n return {duration: 0, delay: 0, easing: ''};\n }\n\n duration =
_convertTimeValueToMS(parseFloat(matches[1]), matches[2]);\n\n const delayMatch = matches[3];\n if
(delayMatch !== null) {\n delay = _convertTimeValueToMS(parseFloat(delayMatch), matches[4]);\n }\n\n const easingVal = matches[5];\n if (easingVal) {\n easing = easingVal;\n }\n } else {\n duration = exp;\n }\n\n if (!allowNegativeValues) {\n let containsErrors = false;\n let startIndex = errors.length;\n if (duration <
0) {\n errors.push(`Duration values below 0 are not allowed for this animation step.`);\n containsErrors =
true;\n }\n if (delay < 0) {\n errors.push(`Delay values below 0 are not allowed for this animation step.`);\n containsErrors =
true;\n }\n if (containsErrors) {\n errors.splice(startIndex, 0, `The provided timing value
"${exp}" is invalid.`);\n }\n }\n\n return {duration, delay, easing};\n}\n\nexport function copyObj(\n obj:
{[key: string]: any}, destination: {[key: string]: any} = {}): {[key: string]: any} {\n Object.keys(obj).forEach(prop
=> {\n destination[prop] = obj[prop];\n });\n return destination;\n}\n\nexport function normalizeStyles(styles:
StyleData|StyleData[]): StyleData {\n const normalizedStyles: StyleData = {};\n if (Array.isArray(styles)) {\n styles.forEach(data => copyStyles(data, false, normalizedStyles));\n } else {\n copyStyles(styles, false,
normalizedStyles);\n }\n return normalizedStyles;\n}\n\nexport function copyStyles(\n styles: StyleData,
readPrototype: boolean, destination: StyleData = {}): StyleData {\n if (readPrototype) {\n // we make use of a for-
in loop so that the\n // prototypically inherited properties are\n // revealed from the backFill map\n for (let prop
in styles) {\n destination[prop] = styles[prop];\n }\n } else {\n copyObj(styles, destination);\n }\n return
destination;\n}\n\nfunction getStyleAttributeString(element: any, key: string, value: string) {\n // Return the key-
value pair string to be added to the style attribute for the\n // given CSS style key.\n if (value) {\n return key + ':' +
value + ';\n } else {\n return '';\n }\n}\n\nfunction writeStyleAttribute(element: any) {\n // Read the style
property of the element and manually reflect it to the\n // style attribute. This is needed because Domino on
platform-server doesn't\n // understand the full set of allowed CSS properties and doesn't reflect some\n // of them

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automatically.\n let styleAttrValue = ";\n for (let i = 0; i < element.style.length; i++) {\n const key =
element.style.item(i);\n styleAttrValue += getStyleAttributeString(element, key,
element.style.getPropertyValue(key));\n } \n for (const key in element.style) {\n // Skip internal Domino
properties that don't need to be reflected.\n if (!element.style.hasOwnProperty(key) || key.startsWith('_')) {\n
continue;\n }\n const dashKey = camelCaseToDashCase(key);\n styleAttrValue +=
getStyleAttributeString(element, dashKey, element.style[key]);\n } \n element.setAttribute('style',
styleAttrValue);\n}\n\nexport function setStyles(element: any, styles: StyleData, formerStyles?: {[key: string]: any})
{\n if (element['style']) {\n Object.keys(styles).forEach(prop => {\n const camelProp =
dashCaseToCamelCase(prop);\n if (formerStyles && !formerStyles.hasOwnProperty(prop)) {\n
formerStyles[prop] = element.style[camelProp];\n }\n element.style[camelProp] = styles[prop];\n });\n } \n //
On the server set the 'style' attribute since it's not automatically reflected.\n if (isNode()) {\n
writeStyleAttribute(element);\n }\n }\n}\n\nexport function eraseStyles(element: any, styles: StyleData) {\n if
(element['style']) {\n Object.keys(styles).forEach(prop => {\n const camelProp =
dashCaseToCamelCase(prop);\n element.style[camelProp] = ";\n });\n } \n // On the server set the 'style' attribute
since it's not automatically reflected.\n if (isNode()) {\n writeStyleAttribute(element);\n }\n }\n}\n\nexport
function normalizeAnimationEntry(steps: AnimationMetadata\n AnimationMetadata[]):
AnimationMetadata {\n if (Array.isArray(steps)) {\n if (steps.length === 1) return steps[0];\n return
sequence(steps);\n }\n return steps as AnimationMetadata;\n}\n\nexport function validateStyleParams(\n value:
string|number, options: AnimationOptions, errors: any[]) {\n const params = options.params || {};\n const matches
= extractStyleParams(value);\n if (matches.length) {\n matches.forEach(varName => {\n if
(!params.hasOwnProperty(varName)) {\n errors.push(\n `Unable to resolve the local animation param
${varName} in the given list of values`);\n }\n });\n }\n}\n\nconst PARAM_REGEX =\n new
RegExp(`${SUBSTITUTION_EXPR_START}\\\\s*(.+?)\\\\s*${SUBSTITUTION_EXPR_END}` , 'g');\n\nexport
function extractStyleParams(value: string|number): string[] {\n let params: string[] = [];\n if (typeof value ===
'string') {\n let match: any;\n while (match = PARAM_REGEX.exec(value)) {\n params.push(match[1] as
string);\n }\n PARAM_REGEX.lastIndex = 0;\n }\n return params;\n}\n\nexport function interpolateParams(\n
value: string|number, params: {[name: string]: any}, errors: any[]): string|number {\n const original =
value.toString();\n const str = original.replace(PARAM_REGEX, (_, varName) => {\n let localVal =
params[varName];\n // this means that the value was never overridden by the data passed in by the user\n if
(!params.hasOwnProperty(varName)) {\n errors.push(`Please provide a value for the animation param
${varName}`);\n localVal = ";\n }\n return localVal.toString();\n });\n}\n\n// we do this to assert that numeric
values stay as they are\n return str === original ? value : str;\n}\n\nexport function iteratorToArray(iterator: any):
any[] {\n const arr: any[] = [];\n let item = iterator.next();\n while (!item.done) {\n arr.push(item.value);\n item
= iterator.next();\n }\n return arr;\n}\n\nexport function mergeAnimationOptions(\n source: AnimationOptions,
destination: AnimationOptions): AnimationOptions {\n if (source.params) {\n const p0 = source.params;\n if
(!destination.params) {\n destination.params = {};\n }\n const p1 = destination.params;\n
Object.keys(p0).forEach(param => {\n if (!p1.hasOwnProperty(param)) {\n p1[param] = p0[param];\n }\n
});\n }\n return destination;\n}\n\nconst DASH_CASE_REGEXP = /-+([a-z0-9])/g;\n\nexport function
dashCaseToCamelCase(input: string): string {\n return input.replace(DASH_CASE_REGEXP, (...m: any[]) =>
m[1].toUpperCase());\n}\n\nfunction camelCaseToDashCase(input: string): string {\n return input.replace(/([a-
z])([A-Z])/g, '$1-$2').toLowerCase();\n}\n\nexport function allowPreviousPlayerStylesMerge(duration: number,
delay: number) {\n return duration === 0 || delay === 0;\n}\n\nexport function
balancePreviousStylesIntoKeyframes(\n element: any, keyframes: {[key: string]: any}[], previousStyles: {[key:
string]: any}) {\n const previousStyleProps = Object.keys(previousStyles);\n if (previousStyleProps.length &&
keyframes.length) {\n let startingKeyframe = keyframes[0];\n let missingStyleProps: string[] = [];\n
previousStyleProps.forEach(prop => {\n if (!startingKeyframe.hasOwnProperty(prop)) {\n
missingStyleProps.push(prop);\n }\n startingKeyframe[prop] = previousStyles[prop];\n });\n if
(missingStyleProps.length) {\n // tslint:disable-next-line\n for (var i = 1; i < keyframes.length; i++) {\n let

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toState: any): boolean => {\n let lhsMatch = lhs === ANY_STATE || lhs === fromState;\n let rhsMatch = rhs ===
ANY_STATE || rhs === toState;\n if (!lhsMatch && LHS_MATCH_BOOLEAN && typeof fromState ===
'boolean') {\n lhsMatch = fromState ? TRUE_BOOLEAN_VALUES.has(lhs) :
FALSE_BOOLEAN_VALUES.has(lhs);\n }\n if (!rhsMatch && RHS_MATCH_BOOLEAN && typeof
toState === 'boolean') {\n rhsMatch = toState ? TRUE_BOOLEAN_VALUES.has(rhs) :
FALSE_BOOLEAN_VALUES.has(rhs);\n }\n return lhsMatch && rhsMatch;\n };}\n"/**\n * @license\n
* Copyright Google LLC All Rights Reserved.\n * Use of this source code is governed by an MIT-style license
that can be\n * found in the LICENSE file at https://angular.io/license\n */\nimport {AnimateTimings,
AnimationAnimateChildMetadata, AnimationAnimateMetadata, AnimationAnimateRefMetadata,
AnimationGroupMetadata, AnimationKeyframesSequenceMetadata, AnimationMetadata, AnimationMetadataType,
AnimationOptions, AnimationQueryMetadata, AnimationQueryOptions, AnimationReferenceMetadata,
AnimationSequenceMetadata, AnimationStaggerMetadata, AnimationStateMetadata, AnimationStyleMetadata,
AnimationTransitionMetadata, AnimationTriggerMetadata, AUTO_STYLE, style, StyleData} from
'@angular/animations';\nimport {AnimationDriver} from './render/animation_driver';\nimport
{getOrSetAsInMap} from './render/shared';\nimport {copyObj, ENTER_SELECTOR, extractStyleParams,
iteratorToArray, LEAVE_SELECTOR, NG_ANIMATING_SELECTOR, NG_TRIGGER_SELECTOR,
normalizeAnimationEntry, resolveTiming, SUBSTITUTION_EXPR_START, validateStyleParams, visitDslNode}
from './util';\nimport {AnimateAst, AnimateChildAst, AnimateRefAst, Ast, DynamicTimingAst, GroupAst,
KeyframesAst, QueryAst, ReferenceAst, SequenceAst, StaggerAst, StateAst, StyleAst, TimingAst, TransitionAst,
TriggerAst} from './animation_ast';\nimport {AnimationDslVisitor} from './animation_dsl_visitor';\nimport
{parseTransitionExpr} from './animation_transition_expr';\n\nconst SELF_TOKEN = 'self';\nconst
SELF_TOKEN_REGEX = new RegExp(`\\s*${SELF_TOKEN}\\s*,?`, 'g');\n\n/*\n * [Validation]\n * The visitor
code below will traverse the animation AST generated by the animation verb functions\n * (the output is a tree of
objects) and attempt to perform a series of validations on the data. The\n * following corner-cases will be
validated:\n *\n * 1. Overlap of animations\n * Given that a CSS property cannot be animated in more than one
place at the same time, it's\n * important that this behavior is detected and validated. The way in which this occurs is
that\n * each time a style property is examined, a string-map containing the property will be updated with\n * the
start and end times for when the property is used within an animation step.\n *\n * If there are two or more parallel
animations that are currently running (these are invoked by the\n * group()) on the same element then the validator
will throw an error. Since the start/end timing\n * values are collected for each property then if the current animation
step is animating the same\n * property and its timing values fall anywhere into the window of time that the property
is\n * currently being animated within then this is what causes an error.\n *\n * 2. Timing values\n * The validator
will validate to see if a timing value of `duration delay easing` or\n * `durationNumber` is valid or not.\n *\n * (note
that upon validation the code below will replace the timing data with an object containing\n *
{duration,delay,easing}.\n *\n * 3. Offset Validation\n * Each of the style() calls are allowed to have an offset value
when placed inside of keyframes().\n * Offsets within keyframes() are considered valid when:\n *\n * - No offsets
are used at all\n * - Each style() entry contains an offset value\n * - Each offset is between 0 and 1\n * - Each
offset is greater to or equal than the previous one\n *\n * Otherwise an error will be thrown.\n */\n\nexport function
buildAnimationAst(\n driver: AnimationDriver, metadata: AnimationMetadata|AnimationMetadata[],\n errors:
any[]): Ast<AnimationMetadataType> {\n return new AnimationAstBuilderVisitor(driver).build(metadata,
errors);\n}\n\nconst ROOT_SELECTOR = ";\n\nexport class AnimationAstBuilderVisitor implements
AnimationDslVisitor {\n constructor(private _driver: AnimationDriver) {} \n\n build(metadata:
AnimationMetadata|AnimationMetadata[], errors: any[]):\n Ast<AnimationMetadataType> {\n const context =
new AnimationAstBuilderContext(errors);\n this._resetContextStyleTimingState(context);\n return
<Ast<AnimationMetadataType>>visitDslNode(\n this, normalizeAnimationEntry(metadata), context);\n }\n\n private _resetContextStyleTimingState(context: AnimationAstBuilderContext) {\n context.currentQuerySelector =
ROOT_SELECTOR;\n context.collectedStyles = {};\n context.collectedStyles[ROOT_SELECTOR] = {};\n context.currentTime = 0;\n }\n\n visitTrigger(metadata: AnimationTriggerMetadata, context:

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AnimationAstBuilderContext):\n TriggerAst {\n let queryCount = context.queryCount = 0;\n let depCount = context.depCount = 0;\n const states: StateAst[] = [];\n const transitions: TransitionAst[] = [];\n if (metadata.name.charAt(0) == '@') {\n context.errors.push(\n 'animation triggers cannot be prefixed with an `@` sign (e.g. trigger(`@foo`, [...]))');\n }\n metadata.definitions.forEach(def => {\n this._resetContextStyleTimingState(context);\n if (def.type == AnimationMetadataType.State) {\n const stateDef = def as AnimationStateMetadata;\n const name = stateDef.name;\n name.toString().split(/\\s*/, \\s*/).forEach(n => {\n stateDef.name = n;\n states.push(this.visitState(stateDef, context));\n });\n stateDef.name = name;\n } else if (def.type == AnimationMetadataType.Transition) {\n const transition = this.visitTransition(def as AnimationTransitionMetadata, context);\n queryCount += transition.queryCount;\n depCount += transition.depCount;\n transitions.push(transition);\n } else {\n context.errors.push(\n 'only state() and transition() definitions can sit inside of a trigger()');\n }\n });\n return {\n type: AnimationMetadataType.Trigger,\n name: metadata.name,\n states,\n transitions,\n queryCount,\n depCount,\n options: null\n }; \n }\n visitState(metadata: AnimationStateMetadata, context: AnimationAstBuilderContext): StateAst {\n const styleAst = this.visitStyle(metadata.styles, context);\n const astParams = (metadata.options && metadata.options.params) || null;\n if (styleAst.containsDynamicStyles) {\n const missingSubs = new Set<string>();\n const params = astParams || {};\n styleAst.styles.forEach(value => {\n if (isObject(value)) {\n const stylesObj = value as any;\n Object.keys(stylesObj).forEach(prop => {\n extractStyleParams(stylesObj[prop]).forEach(sub => {\n if (!params.hasOwnProperty(sub)) {\n missingSubs.add(sub);\n }\n });\n });\n }\n });\n if (missingSubs.size) {\n const missingSubsArr = iteratorToArray(missingSubs.values());\n context.errors.push(`state("${\n metadata.name\n }.name)", ...) must define default values for all the following style substitutions: ${\n missingSubsArr.join(', ')}');\n }\n }\n return {\n type: AnimationMetadataType.State,\n name: metadata.name,\n style: styleAst,\n options: astParams ? {params: astParams} : null\n }; \n }\n visitTransition(metadata: AnimationTransitionMetadata, context: AnimationAstBuilderContext): TransitionAst {\n context.queryCount = 0;\n context.depCount = 0;\n const animation = visitDslNode(this, normalizeAnimationEntry(metadata.animation), context);\n const matchers = parseTransitionExpr(metadata.expr, context.errors);\n return {\n type: AnimationMetadataType.Transition,\n matchers,\n animation,\n queryCount: context.queryCount,\n depCount: context.depCount,\n options: normalizeAnimationOptions(metadata.options)\n }; \n }\n visitSequence(metadata: AnimationSequenceMetadata, context: AnimationAstBuilderContext): SequenceAst {\n return {\n type: AnimationMetadataType.Sequence,\n steps: metadata.steps.map(s => visitDslNode(this, s, context)),\n options: normalizeAnimationOptions(metadata.options)\n }; \n }\n visitGroup(metadata: AnimationGroupMetadata, context: AnimationAstBuilderContext): GroupAst {\n const currentTime = context.currentTime;\n let furthestTime = 0;\n const steps = metadata.steps.map(step => {\n context.currentTime = currentTime;\n const innerAst = visitDslNode(this, step, context);\n furthestTime = Math.max(furthestTime, context.currentTime);\n return innerAst;\n });\n context.currentTime = furthestTime;\n return {\n type: AnimationMetadataType.Group,\n steps,\n options: normalizeAnimationOptions(metadata.options)\n }; \n }\n visitAnimate(metadata: AnimationAnimateMetadata, context: AnimationAstBuilderContext): AnimateAst {\n const timingAst = constructTimingAst(metadata.timings, context.errors);\n context.currentAnimateTimings = timingAst;\n let styleAst: StyleAst|KeyframesAst;\n let styleMetadata: AnimationMetadata = metadata.styles ? metadata.styles : style({});\n if (styleMetadata.type == AnimationMetadataType.Keyframes) {\n styleAst = this.visitKeyframes(styleMetadata as AnimationKeyframesSequenceMetadata, context);\n } else {\n let styleMetadata = metadata.styles as AnimationStyleMetadata;\n let isEmpty = false;\n if (!styleMetadata) {\n isEmpty = true;\n const newStyleData: {[prop: string]: string|number} = {};\n if (timingAst.easing) {\n newStyleData['easing'] = timingAst.easing;\n }\n styleMetadata = style(newStyleData);\n }\n context.currentTime += timingAst.duration + timingAst.delay;\n const _styleAst = this.visitStyle(styleMetadata,

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context);\n _styleAst.isEmptyStep = isEmpty;\n styleAst = _styleAst;\n }\n\n context.currentAnimateTimings = null;\n return {\n type: AnimationMetadataType.Animate,\n timings:\n timingAst,\n style: styleAst,\n options: null\n };\n\n visitStyle(metadata: AnimationStyleMetadata,\n context: AnimationAstBuilderContext): StyleAst {\n const ast = this._makeStyleAst(metadata, context);\n this._validateStyleAst(ast, context);\n return ast;\n }\n\n private _makeStyleAst(metadata:\n AnimationStyleMetadata, context: AnimationAstBuilderContext):\n StyleAst {\n const styles:\n (StyleData|string)[] = [];\n if (Array.isArray(metadata.styles)) {\n (metadata.styles as (StyleData | string))\n .forEach(styleTuple => {\n if (typeof styleTuple === 'string') {\n if (styleTuple === AUTO_STYLE) {\n styles.push(styleTuple);\n } else {\n context.errors.push(`The provided style\n string value ${styleTuple} is not allowed.`);\n }\n } else {\n styles.push(styleTuple);\n }\n });\n } else {\n styles.push(metadata.styles);\n }\n\n let containsDynamicStyles = false;\n let\n collectedEasing: string|null = null;\n styles.forEach(styleData => {\n if (isObject(styleData)) {\n const\n styleMap = styleData as StyleData;\n const easing = styleMap['easing'];\n if (easing) {\n collectedEasing = easing as string;\n delete styleMap['easing'];\n }\n if (!containsDynamicStyles) {\n for (let prop in styleMap) {\n const value = styleMap[prop];\n if\n (value.toString().indexOf(SUBSTITUTION_EXPR_START) >= 0) {\n containsDynamicStyles = true;\n break;\n }\n }\n }\n });\n }\n\n return {\n type: AnimationMetadataType.Style,\n styles,\n easing: collectedEasing,\n offset: metadata.offset,\n containsDynamicStyles,\n options: null\n };\n }\n\n private _validateStyleAst(ast: StyleAst, context: AnimationAstBuilderContext): void {\n const timings\n = context.currentAnimateTimings;\n let endTime = context.currentTime;\n let startTime =\n context.currentTime;\n if (timings && startTime > 0) {\n startTime -= timings.duration + timings.delay;\n }\n\n ast.styles.forEach(tuple => {\n if (typeof tuple === 'string') return;\n\n Object.keys(tuple).forEach(prop\n => {\n if (!this._driver.validateStyleProperty(prop)) {\n context.errors.push(`The provided animation\n property \"${prop}\" is not a supported CSS property for animations`);\n return;\n }\n\n const collectedStyles = context.collectedStyles[context.currentQuerySelector!];\n const collectedEntry =\n collectedStyles[prop];\n let updateCollectedStyle = true;\n if (collectedEntry) {\n if (startTime !=\n endTime && startTime >= collectedEntry.startTime &&\n endTime <= collectedEntry.endTime) {\n context.errors.push(`The CSS property \"${prop}\" that exists between the times of\n \"${collectedEntry.startTime}ms\" and\n \"${collectedEntry.endTime}ms\" is also being\n animated in a parallel animation between the times of\n \"${startTime}ms\" and\n \"${endTime}ms\"`);\n updateCollectedStyle = false;\n }\n // we always choose the smaller start time value since we\n // want to have a record of the entire animation window where\n // the style property is being animated in\n between\n startTime = collectedEntry.startTime;\n }\n if (updateCollectedStyle) {\n collectedStyles[prop] = {startTime, endTime};\n }\n\n if (context.options) {\n validateStyleParams(tuple[prop], context.options, context.errors);\n }\n });\n });\n }\n\n visitKeyframes(metadata: AnimationKeyframesSequenceMetadata, context: AnimationAstBuilderContext):\n KeyframesAst {\n const ast: KeyframesAst = {type: AnimationMetadataType.Keyframes, styles: [], options:\n null};\n if (!context.currentAnimateTimings) {\n context.errors.push(`keyframes() must be placed inside of a\n call to animate()`);\n return ast;\n }\n\n const MAX_KEYFRAME_OFFSET = 1;\n let\n totalKeyframesWithOffsets = 0;\n const offsets: number[] = [];\n let offsetsOutOfOrder = false;\n let\n keyframesOutOfRange = false;\n let previousOffset: number = 0;\n\n const keyframes: StyleAst[] =\n metadata.steps.map(styles => {\n const style = this._makeStyleAst(styles, context);\n let offsetVal:\n number|null =\n style.offset != null ? style.offset : consumeOffset(style.styles);\n let offset: number = 0;\n if (offsetVal != null) {\n totalKeyframesWithOffsets++;\n offset = style.offset = offsetVal;\n }\n\n keyframesOutOfRange = keyframesOutOfRange || offset < 0 || offset > 1;\n offsetsOutOfOrder =\n offsetsOutOfOrder || offset < previousOffset;\n previousOffset = offset;\n offsets.push(offset);\n return\n style;\n });\n\n if (keyframesOutOfRange) {\n context.errors.push(`Please ensure that all keyframe offsets are\n between 0 and 1`);\n }\n\n if (offsetsOutOfOrder) {\n context.errors.push(`Please ensure that all keyframe

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offsets are in order`);\n }\n\n const length = metadata.steps.length;\n let generatedOffset = 0;\n if
(totalKeyframesWithOffsets > 0 && totalKeyframesWithOffsets < length) {\n context.errors.push(`Not all
style() steps within the declared keyframes() contain offsets`);\n } else if (totalKeyframesWithOffsets === 0) {\n
generatedOffset = MAX_KEYFRAME_OFFSET / (length - 1);\n }\n\n const limit = length - 1;\n const
currentTime = context.currentTime;\n const currentAnimateTimings = context.currentAnimateTimings!;\n const
animateDuration = currentAnimateTimings.duration;\n keyframes.forEach((kf, i) => {\n const offset =
generatedOffset > 0 ? (i === limit ? 1 : (generatedOffset * i)) : offsets[i];\n const durationUpToThisFrame = offset
* animateDuration;\n context.currentTime = currentTime + currentAnimateTimings.delay +
durationUpToThisFrame;\n currentAnimateTimings.duration = durationUpToThisFrame;\n
this._validateStyleAst(kf, context);\n kf.offset = offset;\n\n ast.styles.push(kf);\n });\n\n return ast;\n }\n\n
visitReference(metadata: AnimationReferenceMetadata, context: AnimationAstBuilderContext):\n ReferenceAst
{\n return {\n type: AnimationMetadataType.Reference,\n animation: visitDslNode(this,
normalizeAnimationEntry(metadata.animation), context),\n options:
normalizeAnimationOptions(metadata.options)\n };\n }\n\n visitAnimateChild(metadata:
AnimationAnimateChildMetadata, context: AnimationAstBuilderContext):\n AnimateChildAst {\n
context.depCount++;\n return {\n type: AnimationMetadataType.AnimateChild,\n options:
normalizeAnimationOptions(metadata.options)\n };\n }\n\n visitAnimateRef(metadata:
AnimationAnimateRefMetadata, context: AnimationAstBuilderContext):\n AnimateRefAst {\n return {\n
type: AnimationMetadataType.AnimateRef,\n animation: this.visitReference(metadata.animation, context),\n
options: normalizeAnimationOptions(metadata.options)\n };\n }\n\n visitQuery(metadata:
AnimationQueryMetadata, context: AnimationAstBuilderContext): QueryAst {\n const parentSelector =
context.currentQuerySelector!;\n const options = (metadata.options || {}) as AnimationQueryOptions;\n\n
context.queryCount++;\n context.currentQuery = metadata;\n const [selector, includeSelf] =
normalizeSelector(metadata.selector);\n context.currentQuerySelector =\n parentSelector.length ?
(parentSelector + ' ' + selector) : selector;\n getOrSetAsInMap(context.collectedStyles,
context.currentQuerySelector, {});\n\n const animation = visitDslNode(this,
normalizeAnimationEntry(metadata.animation), context);\n context.currentQuery = null;\n
context.currentQuerySelector = parentSelector;\n\n return {\n type: AnimationMetadataType.Query,\n
selector,\n limit: options.limit || 0,\n optional: !!options.optional,\n includeSelf,\n animation,\n
originalSelector: metadata.selector,\n options: normalizeAnimationOptions(metadata.options)\n };\n }\n\n
visitStagger(metadata: AnimationStaggerMetadata, context: AnimationAstBuilderContext):\n StaggerAst {\n
if (!context.currentQuery) {\n context.errors.push(`stagger() can only be used inside of query()`);\n }\n\n
const timings = metadata.timings === 'full' ?\n {duration: 0, delay: 0, easing: 'full'} :\n
resolveTiming(metadata.timings, context.errors, true);\n\n return {\n type: AnimationMetadataType.Stagger,\n
animation: visitDslNode(this, normalizeAnimationEntry(metadata.animation), context),\n timings,\n
options: null\n };\n }\n\nfunction normalizeSelector(selector: string): [string, boolean] {\n const
hasAmpersand = selector.split(/\\s*,\\s*/).find(token => token === SELF_TOKEN) ? true : false;\n if
(hasAmpersand) {\n selector = selector.replace(SELF_TOKEN_REGEX, ");\n }\n\n // the :enter and :leave
selectors are filled in at runtime during timeline building\n selector = selector.replace(/@\\s*/g,
NG_TRIGGER_SELECTOR)\n .replace(/@\\s+w+/g, match => NG_TRIGGER_SELECTOR + ' ' +
match.substr(1))\n .replace(/:animating/g, NG_ANIMATING_SELECTOR);\n\n return [selector,
hasAmpersand];\n }\n\nfunction normalizeParams(obj: {[key: string]: any}|any): {[key: string]: any}|null {\n
return obj ? copyObj(obj) : null;\n }\n\nexport type StyleTimeTuple = {\n startTime: number; endTime:
number;\n};\n\nexport class AnimationAstBuilderContext {\n public queryCount: number = 0;\n public depCount:
number = 0;\n public currentTransition: AnimationTransitionMetadata|null = null;\n public currentQuery:
AnimationQueryMetadata|null = null;\n public currentQuerySelector: string|null = null;\n public
currentAnimateTimings: TimingAst|null = null;\n public currentTime: number = 0;\n public collectedStyles:
{[selectorName: string]: {[propName: string]: StyleTimeTuple}} = {};\n public options: AnimationOptions|null =

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null;\n constructor(public errors: any[]) {};\n\nfunction consumeOffset(styles: StyleData|string|(StyleData |
string|[]): number|null {\n if (typeof styles == 'string') return null;\n\n let offset: number|null = null;\n\n if
(Array.isArray(styles)) {\n styles.forEach(styleTuple => {\n if (isObject(styleTuple) &&
styleTuple.hasOwnProperty('offset')) {\n const obj = styleTuple as StyleData;\n offset =
parseFloat(obj['offset'] as string);\n delete obj['offset'];\n }\n });\n } else if (isObject(styles) &&
styles.hasOwnProperty('offset')) {\n const obj = styles;\n offset = parseFloat(obj['offset'] as string);\n delete
obj['offset'];\n }\n return offset;\n}\n\nfunction isObject(value: any): boolean {\n return !Array.isArray(value) &&
typeof value == 'object';\n}\n\nfunction constructTimingAst(value: string|number|AnimateTimings, errors: any[])
{\n let timings: AnimateTimings|null = null;\n if (value.hasOwnProperty('duration')) {\n timings = value as
AnimateTimings;\n } else if (typeof value == 'number') {\n const duration = resolveTiming(value,
errors).duration;\n return makeTimingAst(duration, 0, "");\n }\n\n const strValue = value as string;\n const
isDynamic = strValue.split(/\\s+/.some(v => v.charAt(0) == '{' && v.charAt(1) == '}');\n if (isDynamic) {\n
const ast = makeTimingAst(0, 0, "") as any;\n ast.dynamic = true;\n ast.strValue = strValue;\n return ast as
DynamicTimingAst;\n }\n\n timings = timings || resolveTiming(strValue, errors);\n return
makeTimingAst(timings.duration, timings.delay, timings.easing);\n}\n\nfunction
normalizeAnimationOptions(options: AnimationOptions|null): AnimationOptions {\n if (options) {\n options =
copyObj(options);\n if (options['params']) {\n options['params'] = normalizeParams(options['params']);\n }\n
} else {\n options = {};\n }\n return options;\n}\n\nfunction makeTimingAst(duration: number, delay: number,
easing: string|null): TimingAst {\n return {duration, delay, easing};\n}\n\n",/**\n * @license\n * Copyright Google
LLC All Rights Reserved.\n *\n * Use of this source code is governed by an MIT-style license that can be\n * found
in the LICENSE file at https://angular.io/license\n */\nimport {StyleData} from '@angular/animations';\nimport
{AnimationEngineInstruction, AnimationTransitionInstructionType} from
'./render/animation_engine_instruction';\n\nexport interface AnimationTimelineInstruction extends
AnimationEngineInstruction {\n element: any;\n keyframes: StyleData[];\n preStyleProps: string[];\n
postStyleProps: string[];\n duration: number;\n delay: number;\n totalTime: number;\n easing: string|null;\n
stretchStartingKeyframe?: boolean;\n subTimeline: boolean;\n}\n\nexport function createTimelineInstruction(\n
element: any, keyframes: StyleData[], preStyleProps: string[], postStyleProps: string[],\n duration: number, delay:
number, easing: string|null = null,\n subTimeline: boolean = false): AnimationTimelineInstruction {\n return {\n
type: AnimationTransitionInstructionType.TimelineAnimation,\n element,\n keyframes,\n preStyleProps,\n
postStyleProps,\n duration,\n delay,\n totalTime: duration + delay,\n easing,\n subTimeline\n
};\n}\n\n",/**\n * @license\n * Copyright Google LLC All Rights Reserved.\n *\n * Use of this source code is
governed by an MIT-style license that can be\n * found in the LICENSE file at https://angular.io/license\n */\n
import {AnimationTimelineInstruction} from './animation_timeline_instruction';\n\nexport class
ElementInstructionMap {\n private _map = new Map<any, AnimationTimelineInstruction[]>();\n\n
consume(element: any): AnimationTimelineInstruction[] {\n let instructions = this._map.get(element);\n if
(instructions) {\n this._map.delete(element);\n } else {\n instructions = [];\n }\n return instructions;\n
}\n\n append(element: any, instructions: AnimationTimelineInstruction[]) {\n let existingInstructions =
this._map.get(element);\n if (!existingInstructions) {\n this._map.set(element, existingInstructions = []);\n }\n
existingInstructions.push(...instructions);\n }\n\n has(element: any): boolean {\n return
this._map.has(element);\n }\n\n clear() {\n this._map.clear();\n }\n}\n\n",/**\n * @license\n * Copyright Google
LLC All Rights Reserved.\n *\n * Use of this source code is governed by an MIT-style license that can be\n * found
in the LICENSE file at https://angular.io/license\n */\nimport {AnimateChildOptions, AnimateTimings,
AnimationMetadataType, AnimationOptions, AnimationQueryOptions, AUTO_STYLE, PRE_STYLE as
PRE_STYLE, StyleData} from '@angular/animations';\nimport {AnimationDriver} from
'./render/animation_driver';\nimport {copyObj, copyStyles, interpolateParams, iteratorToArray, resolveTiming,
resolveTimingValue, visitDslNode} from './util';\nimport {AnimateAst, AnimateChildAst, AnimateRefAst, Ast,
AstVisitor, DynamicTimingAst, GroupAst, KeyframesAst, QueryAst, ReferenceAst, SequenceAst, StaggerAst,
StateAst, StyleAst, TimingAst, TransitionAst, TriggerAst} from './animation_ast';\nimport

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{ AnimationTimelineInstruction, createTimelineInstruction } from './animation_timeline_instruction';
import
{ ElementInstructionMap } from './element_instruction_map';
const ONE_FRAME_IN_MILLISECONDS =
1;
const ENTER_TOKEN = 'enter';
const ENTER_TOKEN_REGEX = new RegExp(ENTER_TOKEN,
'g');
const LEAVE_TOKEN = 'leave';
const LEAVE_TOKEN_REGEX = new RegExp(LEAVE_TOKEN,
'g');
/*
 * The code within this file aims to generate web-animations-compatible keyframes from Angular's
 * animation DSL code.
 * The code below will be converted from:
 * sequence([
 * style({ opacity:
0 }),
 * animate(1000, style({ opacity: 0 }))
 *])
 * To:
 * keyframes = [{ opacity: 0, offset:
0 }, { opacity: 1, offset: 1 }]
 * duration = 1000
 * delay = 0
 * easing = ""
 * For this operation to
cover the combination of animation verbs (style, animate, group, etc...) a
 * combination of prototypical
inheritance, AST traversal and merge-sort-like algorithms are used.
 * [AST Traversal]
 * Each of the
animation verbs, when executed, will return a string-map object representing what
 * type of action it is (style,
animate, group, etc...) and the data associated with it. This means
 * that when functional composition mix of these
functions is evaluated (like in the example above)
 * then it will end up producing a tree of objects representing the
animation itself.
 * When this animation object tree is processed by the visitor code below it will visit each of
the
 * verb statements within the visitor. And during each visit it will build the context of the
animation
 * keyframes by interacting with the `TimelineBuilder`.
 * [TimelineBuilder]
 * This class is responsible for
tracking the styles and building a series of keyframe objects for a
 * timeline between a start and end time. The
builder starts off with an initial timeline and each
 * time the AST comes across a `group()`, `keyframes()` or a
combination of the two within a
 * `sequence()` then it will generate a sub timeline for each step as well as a new
one after
 * they are complete.
 * As the AST is traversed, the timing state on each of the timelines will be
incremented. If a sub
 * timeline was created (based on one of the cases above) then the parent timeline will
attempt to
 * merge the styles used within the sub timelines into itself (only with group() this will happen).
 * This
happens with a merge operation (much like how the merge works in mergesort) and it will only
 * copy the most
recently used styles from the sub timelines into the parent timeline. This ensures
 * that if the styles are used later
on in another phase of the animation then they will be the most
 * up-to-date values.
 * [How Missing Styles
Are Updated]
 * Each timeline has a `backFill` property which is responsible for filling in new styles into
 * already
processed keyframes if a new style shows up later within the animation sequence.
 *
 * sequence([
 * style({ width: 0 }),
 * animate(1000, style({ width: 100 })),
 * animate(1000, style({ width:
200 })),
 * animate(1000, style({ width: 300 })),
 * animate(1000, style({ width: 400, height: 400 }
)) // notice
how `height` doesn't exist anywhere
 * else
 *])
 * What is happening here is that the `height` value is
added later in the sequence, but is missing
 * from all previous animation steps. Therefore when a keyframe is
created it would also be missing
 * from all previous keyframes up until where it is first used. For the timeline
keyframe generation
 * to properly fill in the style it will place the previous value (the value from the parent
 * timeline) or a default value of `*` into the backFill object. Given that each of the keyframe
 * styles are objects that
prototypically inherit from the backFill object, this means that if a
 * value is added into the backFill then it will
automatically propagate any missing values to all
 * keyframes. Therefore the missing `height` value will be
properly filled into the already
 * processed keyframes.
 * When a sub-timeline is created it will have its own
backFill property. This is done so that
 * styles present within the sub-timeline do not accidentally seep into the
previous/future timeline
 * keyframes
 * (For prototypically-inherited contents to be detected a `for(i in obj)`
loop must be used.)
 * [Validation]
 * The code in this file is not responsible for validation. That functionality
happens with
 * within the `AnimationValidatorVisitor` code.
 *
 * export function buildAnimationTimelines(
 * driver: AnimationDriver, rootElement: any, ast: Ast<AnimationMetadataType>,
 * enterClassName: string,
 * leaveClassName: string, startingStyles: StyleData = {},
 * finalStyles: StyleData = {}, options:
 * AnimationOptions,
 * subInstructions?: ElementInstructionMap, errors: any[] = []):
 * AnimationTimelineInstruction[] {
 * return new AnimationTimelineBuilderVisitor().buildKeyframes(
 * driver,
 * rootElement, ast, enterClassName, leaveClassName, startingStyles, finalStyles,
 * options, subInstructions,
 * errors);
 * }
 * export class AnimationTimelineBuilderVisitor implements AstVisitor {
 * buildKeyframes(
 * driver: AnimationDriver, rootElement: any, ast: Ast<AnimationMetadataType>,
 * enterClassName: string,

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leaveClassName: string, startingStyles: StyleData,\n finalStyles: StyleData, options: AnimationOptions,
subInstructions?: ElementInstructionMap,\n errors: any[] = []): AnimationTimelineInstruction[] {\n
subInstructions = subInstructions || new ElementInstructionMap();\n const context = new
AnimationTimelineContext(\n driver, rootElement, subInstructions, enterClassName, leaveClassName, errors,
[]);\n context.options = options;\n context.currentTimeline.setStyles([startingStyles], null, context.errors,
options);\n\n visitDslNode(this, ast, context);\n\n // this checks to see if an actual animation happened\n const
timelines = context.timelines.filter(timeline => timeline.containsAnimation());\n if (timelines.length &&
Object.keys(finalStyles).length) {\n const tl = timelines[timelines.length - 1];\n if
(tl.allowOnlyTimelineStyles()) {\n tl.setStyles([finalStyles], null, context.errors, options);\n }\n }\n\n return timelines.length ? timelines.map(timeline => timeline.buildKeyframes()) :\n [createTimelineInstruction(rootElement, [], [], [], 0, 0, "", false)];\n\n visitTrigger(ast: TriggerAst, context:
AnimationTimelineContext): any {\n // these values are not visited in this AST\n }\n\n visitState(ast: StateAst,
context: AnimationTimelineContext): any {\n // these values are not visited in this AST\n }\n\n visitTransition(ast: TransitionAst, context: AnimationTimelineContext): any {\n // these values are not visited in
this AST\n }\n\n visitAnimateChild(ast: AnimateChildAst, context: AnimationTimelineContext): any {\n const
elementInstructions = context.subInstructions.consume(context.element);\n if (elementInstructions) {\n const
innerContext = context.createSubContext(ast.options);\n const startTime =
context.currentTimeline.currentTime;\n const endTime = this._visitSubInstructions(\n elementInstructions,
innerContext, innerContext.options as AnimateChildOptions);\n if (startTime != endTime) {\n // we do this
on the upper context because we created a sub context for\n // the sub child animations\n context.transformIntoNewTimeline(endTime);\n }\n context.previousNode = ast;\n }\n\n visitAnimateRef(ast: AnimateRefAst, context: AnimationTimelineContext): any {\n const innerContext =
context.createSubContext(ast.options);\n innerContext.transformIntoNewTimeline();\n this.visitReference(ast.animation, innerContext);\n\n context.transformIntoNewTimeline(innerContext.currentTimeline.currentTime);\n context.previousNode = ast;\n }\n\n private _visitSubInstructions(\n instructions: AnimationTimelineInstruction[], context:
AnimationTimelineContext,\n options: AnimateChildOptions): number {\n const startTime =
context.currentTimeline.currentTime;\n let furthestTime = startTime;\n\n // this is a special-case for when a user
wants to skip a sub\n // animation from being fired entirely.\n const duration = options.duration != null ?
resolveTimingValue(options.duration) : null;\n const delay = options.delay != null ?
resolveTimingValue(options.delay) : null;\n if (duration !== 0) {\n instructions.forEach(instruction => {\n
 const instructionTimings =\n context.appendInstructionToTimeline(instruction, duration, delay);\n
 furthestTime =\n Math.max(furthestTime, instructionTimings.duration + instructionTimings.delay);\n
 });\n }\n return furthestTime;\n }\n\n visitReference(ast: ReferenceAst, context: AnimationTimelineContext)
{\n context.updateOptions(ast.options, true);\n visitDslNode(this, ast.animation, context);\n\n context.previousNode = ast;\n }\n\n visitSequence(ast: SequenceAst, context: AnimationTimelineContext) {\n
 const subContextCount = context.subContextCount;\n let ctx = context;\n const options = ast.options;\n\n if
(options && (options.params || options.delay)) {\n ctx = context.createSubContext(options);\n ctx.transformIntoNewTimeline();\n if (options.delay != null) {\n if (ctx.previousNode.type ==
AnimationMetadataType.Style) {\n ctx.currentTimeline.snapshotCurrentStyles();\n ctx.previousNode =
DEFAULT_NOOP_PREVIOUS_NODE;\n }\n const delay = resolveTimingValue(options.delay);\n ctx.delayNextStep(delay);\n }\n }\n\n if (ast.steps.length) {\n ast.steps.forEach(s => visitDslNode(this, s,
ctx));\n // this is here just incase the inner steps only contain or end with a style() call\n ctx.currentTimeline.applyStylesToKeyframe();\n // this means that some animation function within the
sequence\n // ended up creating a sub timeline (which means the current\n // timeline cannot overlap with the
contents of the sequence)\n if (ctx.subContextCount > subContextCount) {\n
 ctx.transformIntoNewTimeline();\n }\n }\n context.previousNode = ast;\n }\n\n visitGroup(ast: GroupAst,
context: AnimationTimelineContext) {\n const innerTimelines: TimelineBuilder[] = [];\n let furthestTime =

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context.currentTimeline.currentTime;\n const delay = ast.options && ast.options.delay ?
resolveTimingValue(ast.options.delay) : 0;\n\n ast.steps.forEach(s => {\n const innerContext =
context.createSubContext(ast.options);\n if (delay) {\n innerContext.delayNextStep(delay);\n }\n visitDslNode(this, s, innerContext);\n furthestTime = Math.max(furthestTime,
innerContext.currentTimeline.currentTime);\n innerTimelines.push(innerContext.currentTimeline);\n });\n\n // this operation is run after the AST loop because otherwise\n // if the parent timeline's collected styles were
updated then\n // it would pass in invalid data into the new-to-be forked items\n innerTimelines.forEach(\n timeline => context.currentTimeline.mergeTimelineCollectedStyles(timeline));\n\n context.transformIntoNewTimeline(furthestTime);\n context.previousNode = ast;\n}\n\nprivate
_visitTiming(ast: TimingAst, context: AnimationTimelineContext): AnimateTimings {\n if ((ast as
DynamicTimingAst).dynamic) {\n const strValue = (ast as DynamicTimingAst).strValue;\n const
timingValue =\n context.params ? interpolateParams(strValue, context.params, context.errors) : strValue;\n return resolveTiming(timingValue, context.errors);\n } else {\n return {duration: ast.duration, delay: ast.delay,
easing: ast.easing};\n }\n}\n\nvisitAnimate(ast: AnimateAst, context: AnimationTimelineContext) {\n const
timings = context.currentAnimateTimings = this._visitTiming(ast.timings, context);\n const timeline =
context.currentTimeline;\n if (timings.delay) {\n context.incrementTime(timings.delay);\n timeline.snapshotCurrentStyles();\n }\n\n const style = ast.style;\n if (style.type ===
AnimationMetadataType.Keyframes) {\n this.visitKeyframes(style, context);\n } else {\n context.incrementTime(timings.duration);\n this.visitStyle(style as StyleAst, context);\n timeline.applyStylesToKeyframe();\n }\n\n context.currentAnimateTimings = null;\n context.previousNode =
ast;\n}\n\nvisitStyle(ast: StyleAst, context: AnimationTimelineContext) {\n const timeline =
context.currentTimeline;\n const timings = context.currentAnimateTimings!;\n\n // this is a special case for when
a style() call\n // directly follows an animate() call (but not inside of an animate() call)\n if (!timings &&
timeline.getCurrentStyleProperties().length) {\n timeline.forwardFrame();\n }\n\n const easing = (timings &&
timings.easing) || ast.easing;\n if (ast.isEmptyStep) {\n timeline.applyEmptyStep(easing);\n } else {\n timeline.setStyles(ast.styles, easing, context.errors, context.options);\n }\n\n context.previousNode = ast;\n}\n\nvisitKeyframes(ast: KeyframesAst, context: AnimationTimelineContext) {\n const currentAnimateTimings =
context.currentAnimateTimings!;\n const startTime = (context.currentTimeline!).duration;\n const duration =
currentAnimateTimings.duration;\n const innerContext = context.createSubContext();\n const innerTimeline =
innerContext.currentTimeline;\n innerTimeline.easing = currentAnimateTimings.easing;\n\n ast.styles.forEach(step => {\n const offset: number = step.offset || 0;\n innerTimeline.forwardTime(offset *
duration);\n innerTimeline.setStyles(step.styles, step.easing, context.errors, context.options);\n innerTimeline.applyStylesToKeyframe();\n });\n\n // this will ensure that the parent timeline gets all the styles
from\n // the child even if the new timeline below is not used\n context.currentTimeline.mergeTimelineCollectedStyles(innerTimeline);\n\n // we do this because the window
between this timeline and the sub timeline\n // should ensure that the styles within are exactly the same as they
were before\n context.transformIntoNewTimeline(startTime + duration);\n context.previousNode = ast;\n}\n\nvisitQuery(ast: QueryAst, context: AnimationTimelineContext) {\n // in the event that the first step before this is a
style step we need\n // to ensure the styles are applied before the children are animated\n const startTime =
context.currentTimeline.currentTime;\n const options = (ast.options || {}) as AnimationQueryOptions;\n const
delay = options.delay ? resolveTimingValue(options.delay) : 0;\n\n if (delay &&\n (context.previousNode.type === AnimationMetadataType.Style ||\n (startTime == 0 &&
context.currentTimeline.getCurrentStyleProperties().length))) {\n context.currentTimeline.snapshotCurrentStyles();\n context.previousNode =
DEFAULT_NOOP_PREVIOUS_NODE;\n }\n\n let furthestTime = startTime;\n const elms =
context.invokeQuery(\n ast.selector, ast.originalSelector, ast.limit, ast.includeSelf,\n options.optional ? true
: false, context.errors);\n\n context.currentQueryTotal = elms.length;\n let sameElementTimeline:
TimelineBuilder|null = null;\n elms.forEach((element, i) => {\n context.currentQueryIndex = i;\n const

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AnimationTimelineContext(\n this._driver, target, this.subInstructions, this._enterClassName,
this._leaveClassName,\n this.errors, this.timelines, this.currentTimeline.fork(target, newTime || 0));\n
context.previousNode = this.previousNode;\n context.currentAnimateTimings = this.currentAnimateTimings;\n\n
context.options = this._copyOptions();\n context.updateOptions(options);\n\n context.currentQueryIndex =
this.currentQueryIndex;\n context.currentQueryTotal = this.currentQueryTotal;\n context.parentContext = this;\n
 this.subContextCount++;\n return context;\n } \n\n transformIntoNewTimeline(newTime?: number) {\n
this.previousNode = DEFAULT_NOOP_PREVIOUS_NODE;\n this.currentTimeline =
this.currentTimeline.fork(this.element, newTime);\n this.timelines.push(this.currentTimeline);\n return
this.currentTimeline;\n } \n\n appendInstructionToTimeline(\n instruction: AnimationTimelineInstruction,
duration: number|null,\n delay: number|null): AnimateTimings {\n const updatedTimings: AnimateTimings =
{\n duration: duration != null ? duration : instruction.duration,\n delay: this.currentTimeline.currentTime +
(delay != null ? delay : 0) + instruction.delay,\n easing: "\n };\n const builder = new SubTimelineBuilder(\n
this._driver, instruction.element, instruction.keyframes, instruction.preStyleProps,\n
instruction.postStyleProps, updatedTimings, instruction.stretchStartingKeyframe);\n
this.timelines.push(builder);\n return updatedTimings;\n } \n\n incrementTime(time: number) {\n
this.currentTimeline.forwardTime(this.currentTimeline.duration + time);\n } \n\n delayNextStep(delay: number) {\n
// negative delays are not yet supported\n if (delay > 0) {\n this.currentTimeline.delayNextStep(delay);\n } \n
} \n\n invokeQuery(\n selector: string, originalSelector: string, limit: number, includeSelf: boolean,\n optional:
boolean, errors: any[]): any[] {\n let results: any[] = [];\n if (includeSelf) {\n results.push(this.element);\n
} \n if (selector.length > 0) { // if :self is only used then the selector is empty\n selector =
selector.replace(ENTER_TOKEN_REGEX, '.' + this._enterClassName);\n selector =
selector.replace(LEAVE_TOKEN_REGEX, '.' + this._leaveClassName);\n const multi = limit != 1;\n let
elements = this._driver.query(this.element, selector, multi);\n if (limit != 0) {\n elements = limit < 0 ?
elements.slice(elements.length + limit, elements.length) : \n elements.slice(0, limit);\n } \n
results.push(...elements);\n } \n\n if (!optional && results.length == 0) {\n
errors.push(`\`query("${originalSelector}")\` returned zero elements. (Use `\`query("${originalSelector}", { optional: true })\` if you wish to allow this.)`);\n } \n return results;\n } \n} \n\n\nexport
class TimelineBuilder {\n public duration: number = 0;\n // TODO(issue/24571): remove '!'.\n public easing!:
string|null;\n private _previousKeyframe: StyleData = {};\n private _currentKeyframe: StyleData = {};\n private
_keyframes = new Map<number, StyleData>();\n private _styleSummary: {[prop: string]: StyleAtTime} = {};\n
private _localTimelineStyles: StyleData;\n private _globalTimelineStyles: StyleData;\n private _pendingStyles:
StyleData = {};\n private _backFill: StyleData = {};\n private _currentEmptyStepKeyframe: StyleData|null =
null;\n\n constructor(\n private _driver: AnimationDriver, public element: any, public startTime: number,\n private _elementTimelineStylesLookup?: Map<any, StyleData>) {\n if (!this._elementTimelineStylesLookup) {\n
 this._elementTimelineStylesLookup = new Map<any, StyleData>();\n } \n\n this._localTimelineStyles =
Object.create(this._backFill, {});\n this._globalTimelineStyles =
this._elementTimelineStylesLookup.get(element)!;\n if (!this._globalTimelineStyles) {\n
 this._globalTimelineStyles = this._localTimelineStyles;\n this._elementTimelineStylesLookup.set(element,
this._localTimelineStyles);\n } \n this._loadKeyframe();\n } \n\n containsAnimation(): boolean {\n switch
(this._keyframes.size) {\n case 0:\n return false;\n case 1:\n return
this.getCurrentStyleProperties().length > 0;\n default:\n return true;\n } \n } \n\n getCurrentStyleProperties(): string[] {\n return Object.keys(this._currentKeyframe);\n } \n\n get currentTime() {\n
return this.startTime + this.duration;\n } \n\n delayNextStep(delay: number) {\n // in the event that a style() step
is placed right before a stagger()\n // and that style() step is the very first style() value in the animation\n // then
we need to make a copy of the keyframe [0, copy, 1] so that the delay\n // properly applies the style() values to
work with the stagger...\n const hasPreStyleStep = this._keyframes.size == 1 &&
Object.keys(this._pendingStyles).length;\n if (this.duration || hasPreStyleStep) {\n
 this.forwardTime(this.currentTime + delay);\n if (hasPreStyleStep) {\n this.snapshotCurrentStyles();\n } \n
} \n
} \n

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 } else {\n this.startTime += delay;\n }\n }\n\n fork(element: any, currentTime?: number): TimelineBuilder {\n this.applyStylesToKeyframe();\n return new TimelineBuilder(\n this._driver, element, currentTime ||\n this.currentTime, this._elementTimelineStylesLookup);\n }\n\n private _loadKeyframe() {\n if\n (this._currentKeyframe) {\n this._previousKeyframe = this._currentKeyframe;\n }\n this._currentKeyframe =\n this._keyframes.get(this.duration)!;\n if (!this._currentKeyframe) {\n this._currentKeyframe =\n Object.create(this._backFill, {});\n this._keyframes.set(this.duration, this._currentKeyframe);\n }\n }\n\n forwardFrame() {\n this.duration += ONE_FRAME_IN_MILLISECONDS;\n this._loadKeyframe();\n }\n\n forwardTime(time: number) {\n this.applyStylesToKeyframe();\n this.duration = time;\n this._loadKeyframe();\n }\n\n private _updateStyle(prop: string, value: string|number) {\n this._localTimelineStyles[prop] = value;\n this._globalTimelineStyles[prop] = value;\n this._styleSummary[prop] = {time: this.currentTime, value};\n }\n\n allowOnlyTimelineStyles() {\n return\n this._currentEmptyStepKeyframe !== this._currentKeyframe;\n }\n\n applyEmptyStep(easing: string|null) {\n if\n (easing) {\n this._previousKeyframe['easing'] = easing;\n }\n\n // special case for animate(duration):\n // all\n missing styles are filled with a `*` value then\n // if any destination styles are filled in later on the same\n //\n keyframe then they will override the overridden styles\n // We use `_globalTimelineStyles` here because there\n may be\n // styles in previous keyframes that are not present in this timeline\n Object.keys(this._globalTimelineStyles).forEach(prop => {\n this._backFill[prop] =\n this._globalTimelineStyles[prop] || AUTO_STYLE;\n this._currentKeyframe[prop] = AUTO_STYLE;\n });\n this._currentEmptyStepKeyframe = this._currentKeyframe;\n }\n\n setStyles(\n input: (StyleData|string)[],\n easing: string|null, errors: any[],\n options?: AnimationOptions) {\n if (easing) {\n this._previousKeyframe['easing'] = easing;\n }\n\n const params = (options && options.params) || {};\n const\n styles = flattenStyles(input, this._globalTimelineStyles);\n Object.keys(styles).forEach(prop => {\n const val =\n interpolateParams(styles[prop], params, errors);\n this._pendingStyles[prop] = val;\n if\n (!this._localTimelineStyles.hasOwnProperty(prop)) {\n this._backFill[prop] =\n this._globalTimelineStyles.hasOwnProperty(prop) ?\n this._globalTimelineStyles[prop] : AUTO_STYLE;\n }\n this._updateStyle(prop, val);\n });\n }\n\n applyStylesToKeyframe() {\n const\n styles = this._pendingStyles;\n const props = Object.keys(styles);\n if (props.length === 0) return;\n this._pendingStyles = {};\n props.forEach(prop => {\n const val = styles[prop];\n this._currentKeyframe[prop] = val;\n });\n Object.keys(this._localTimelineStyles).forEach(prop => {\n if\n (!this._currentKeyframe.hasOwnProperty(prop)) {\n this._currentKeyframe[prop] =\n this._localTimelineStyles[prop];\n }\n });\n }\n\n snapshotCurrentStyles() {\n Object.keys(this._localTimelineStyles).forEach(prop => {\n const val = this._localTimelineStyles[prop];\n this._pendingStyles[prop] = val;\n this._updateStyle(prop, val);\n });\n }\n\n getFinalKeyframe() {\n return\n this._keyframes.get(this.duration);\n }\n\n get properties() {\n const properties: string[] = [];\n for (let prop in\n this._currentKeyframe) {\n properties.push(prop);\n }\n return properties;\n }\n\n mergeTimelineCollectedStyles(timeline: TimelineBuilder) {\n Object.keys(timeline._styleSummary).forEach(prop\n => {\n const details0 = this._styleSummary[prop];\n const details1 = timeline._styleSummary[prop];\n if\n (!details0 || details1.time > details0.time) {\n this._updateStyle(prop, details1.value);\n }\n });\n }\n\n buildKeyframes(): AnimationTimelineInstruction {\n this.applyStylesToKeyframe();\n const preStyleProps =\n new Set<string>();\n const postStyleProps = new Set<string>();\n const isEmpty = this._keyframes.size === 1\n && this.duration === 0;\n let finalKeyframes: StyleData[] = [];\n this._keyframes.forEach((keyframe, time)\n => {\n const finalKeyframe = copyStyles(keyframe, true);\n Object.keys(finalKeyframe).forEach(prop => {\n const value = finalKeyframe[prop];\n if (value === PRE_STYLE) {\n preStyleProps.add(prop);\n }\n else if (value === AUTO_STYLE) {\n postStyleProps.add(prop);\n }\n });\n if (!isEmpty) {\n finalKeyframe['offset'] = time / this.duration;\n }\n finalKeyframes.push(finalKeyframe);\n });\n const\n preProps: string[] = preStyleProps.size ?\n iteratorToArray(preStyleProps.values()) : [];\n const\n postProps: string[] =\n postStyleProps.size ?\n iteratorToArray(postStyleProps.values()) : [];\n\n // special case for a 0-second animation\n (which is designed just to place styles onscreen)\n if (isEmpty) {\n const kf0 = finalKeyframes[0];\n const

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kf1 = copyObj(kf0);\n kf0['offset'] = 0;\n kf1['offset'] = 1;\n finalKeyframes = [kf0, kf1];\n }\n\n return\n createTimelineInstruction(\n this.element, finalKeyframes, preProps, postProps, this.duration, this.startTime,\n this.easing, false);\n }\n}\n\nclass SubTimelineBuilder extends TimelineBuilder {\n public timings:\n AnimateTimings;\n\n constructor(\n driver: AnimationDriver, public element: any, public keyframes:\n StyleData[],\n public preStyleProps: string[], public postStyleProps: string[], timings: AnimateTimings,\n private _stretchStartingKeyframe: boolean = false) {\n super(driver, element, timings.delay);\n this.timings =\n {duration: timings.duration, delay: timings.delay, easing: timings.easing};\n }\n\n containsAnimation(): boolean\n {\n return this.keyframes.length > 1;\n }\n\n buildKeyframes(): AnimationTimelineInstruction {\n let\n keyframes = this.keyframes;\n let {delay, duration, easing} = this.timings;\n if (this._stretchStartingKeyframe\n && delay) {\n const newKeyframes: StyleData[] = [];\n const totalTime = duration + delay;\n const\n startingGap = delay / totalTime;\n\n // the original starting keyframe now starts once the delay is done\n const\n newFirstKeyframe = copyStyles(keyframes[0], false);\n newFirstKeyframe['offset'] = 0;\n newKeyframes.push(newFirstKeyframe);\n\n const oldFirstKeyframe = copyStyles(keyframes[0], false);\n oldFirstKeyframe['offset'] = roundOffset(startingGap);\n newKeyframes.push(oldFirstKeyframe);\n } /*\n When the keyframe is stretched then it means that the delay before the animation\n starts is gone. Instead the\n first keyframe is placed at the start of the animation\n and it is then copied to where it starts when the original\n delay is over. This basically\n means nothing animates during that delay, but the styles are still rendered. For\n this\n to work the original offset values that exist in the original keyframes must be \"warped\"\n so that\n they can take the new keyframe + delay into account.\n\n delay=1000, duration=1000, keyframes = 0 .5 1\n turns into\n\n delay=0, duration=2000, keyframes = 0 .33 .66 1\n */\n\n // offsets between 1 ... n - 1 are\n all warped by the keyframe stretch\n const limit = keyframes.length - 1;\n for (let i = 1; i <= limit; i++) {\n let kf = copyStyles(keyframes[i], false);\n const oldOffset = kf['offset'] as number;\n const timeAtKeyframe\n = delay + oldOffset * duration;\n kf['offset'] = roundOffset(timeAtKeyframe / totalTime);\n newKeyframes.push(kf);\n }\n\n // the new starting keyframe should be added at the start\n duration =\n totalTime;\n delay = 0;\n easing = \"\";\n keyframes = newKeyframes;\n }\n\n return\n createTimelineInstruction(\n this.element, keyframes, this.preStyleProps, this.postStyleProps, duration, delay,\n easing,\n true);\n }\n}\n\nfunction roundOffset(offset: number, decimalPoints = 3): number {\n const mult =\n Math.pow(10, decimalPoints - 1);\n return Math.round(offset * mult) / mult;\n}\n\nfunction flattenStyles(input:\n (StyleData|string)[], allStyles: StyleData) {\n const styles: StyleData = {};\n let allProperties: string[];\n input.forEach(token => {\n if (token === '*') {\n allProperties = allProperties || Object.keys(allStyles);\n allProperties.forEach(prop => {\n styles[prop] = AUTO_STYLE;\n });\n } else {\n copyStyles(token as\n StyleData, false, styles);\n }\n });\n return styles;\n}\n\n\"/**\n * @license\n * Copyright Google LLC All Rights\n Reserved.\n * Use of this source code is governed by an MIT-style license that can be\n * found in the\n LICENSE file at https://angular.io/license\n */\n\nimport { AnimationMetadata, AnimationMetadataType,\n AnimationOptions, StyleData } from '@angular/animations';\nimport { AnimationDriver } from\n './render/animation_driver';\nimport { ENTER_CLASSNAME, LEAVE_CLASSNAME, normalizeStyles } from\n './util';\nimport { Ast } from './animation_ast';\nimport { buildAnimationAst } from\n './animation_ast_builder';\nimport { buildAnimationTimelines } from './animation_timeline_builder';\nimport\n { AnimationTimelineInstruction } from './animation_timeline_instruction';\nimport { ElementInstructionMap } from\n './element_instruction_map';\n\nexport class Animation {\n private _animationAst:\n Ast<AnimationMetadataType>;\n constructor(private _driver: AnimationDriver, input:\n AnimationMetadata|AnimationMetadata[]) {\n const errors: any[] = [];\n const ast = buildAnimationAst(_driver,\n input, errors);\n if (errors.length) {\n const errorMessage = `animation validation\n failed:\\n${errors.join(\"\\n\")}`;\n throw new Error(errorMessage);\n }\n this._animationAst = ast;\n }\n\n buildTimelines(\n element: any, startingStyles: StyleData|StyleData[],\n destinationStyles:\n StyleData|StyleData[], options: AnimationOptions,\n subInstructions?: ElementInstructionMap):\n AnimationTimelineInstruction[] {\n const start = Array.isArray(startingStyles) ? normalizeStyles(startingStyles)\n :<StyleData>startingStyles;\n const dest = Array.isArray(destinationStyles) ?

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normalizeStyles(destinationStyles):\n
 <StyleData>destinationStyles;\n const
errors: any = [];\n subInstructions = subInstructions || new ElementInstructionMap();\n const result =
buildAnimationTimelines(\n this._driver, element, this._animationAst, ENTER_CLASSNAME,
LEAVE_CLASSNAME, start, dest,\n options, subInstructions, errors);\n if (errors.length) {\n const
errorMessage = `animation building failed:\n${errors.join('\n')}`;\n throw new Error(errorMessage);\n }\n return result;\n }\n}\n", "/*\n * @license\n * Copyright Google LLC All Rights Reserved.\n * Use of this
source code is governed by an MIT-style license that can be\n * found in the LICENSE file at
https://angular.io/license\n */\n\n * @publicApi\n */\n\nexport abstract class AnimationStyleNormalizer {\n
 abstract normalizePropertyName(propertyName: string, errors: string[]): string;\n abstract normalizeStyleValue(\n
 userProvidedProperty: string, normalizedProperty: string, value: string|number,\n errors: string[]):
string;\n}\n\n * @publicApi\n */\n\nexport class NoopAnimationStyleNormalizer {\n
 normalizePropertyName(propertyName: string, errors: string[]): string {\n return propertyName;\n }\n
 normalizeStyleValue(\n userProvidedProperty: string, normalizedProperty: string, value: string|number,\n
 errors: string[]): string {\n return <any>value;\n }\n}\n", "/*\n * @license\n * Copyright Google LLC All Rights
Reserved.\n * Use of this source code is governed by an MIT-style license that can be\n * found in the
LICENSE file at https://angular.io/license\n */\n\nimport { dashCaseToCamelCase } from '../util';\nimport
{ AnimationStyleNormalizer } from './animation_style_normalizer';\n\nexport class WebAnimationsStyleNormalizer
extends AnimationStyleNormalizer {\n normalizePropertyName(propertyName: string, errors: string[]): string {\n
 return dashCaseToCamelCase(propertyName);\n }\n\n normalizeStyleValue(\n userProvidedProperty: string,
normalizedProperty: string, value: string|number,\n errors: string[]): string {\n let unit: string = ";\n
 const strVal = value.toString().trim();\n\n if (DIMENSIONAL_PROP_MAP[normalizedProperty] && value !== 0 &&
value !== '0') {\n if (typeof value === 'number') {\n unit = 'px';\n } else {\n const valAndSuffixMatch
= value.match(/^[+-]?[\\d\\.]+([a-z]*)$/);\n if (valAndSuffixMatch && valAndSuffixMatch[1].length === 0) {\n
 errors.push(`Please provide a CSS unit value for ${userProvidedProperty}:${value}`);\n }\n }\n
 }\n\n return strVal + unit;\n }\n}\n\nconst DIMENSIONAL_PROP_MAP =\n (() => makeBooleanMap(\n
'width,height,minWidth,minHeight,maxWidth,maxHeight,left,top,bottom,right,fontSize,outlineWidth,outlineOffset,
paddingTop,paddingLeft,paddingBottom,paddingRight,marginTop,marginLeft,marginBottom,marginRight,borderR
adius,borderWidth,borderTopWidth,borderLeftWidth,borderRightWidth,borderBottomWidth,textIndent,perspective'\n
 .split(',')\n)\n)\n\nfunction makeBooleanMap(keys: string[]): {[key: string]: boolean} {\n const map: {[key:
string]: boolean} = {};\n keys.forEach(key => map[key] = true);\n return map;\n}\n", "/*\n * @license\n *
Copyright Google LLC All Rights Reserved.\n * Use of this source code is governed by an MIT-style license
that can be\n * found in the LICENSE file at https://angular.io/license\n */\n\nimport { StyleData } from
'@angular/animations';\nimport { AnimationEngineInstruction, AnimationTransitionInstructionType } from
'../render/animation_engine_instruction';\nimport { AnimationTimelineInstruction } from
'./animation_timeline_instruction';\n\nexport interface AnimationTransitionInstruction extends
AnimationEngineInstruction {\n element: any;\n triggerName: string;\n isRemovalTransition: boolean;\n
 fromState: string;\n fromStyles: StyleData;\n toState: string;\n toStyles: StyleData;\n timelines:
AnimationTimelineInstruction[];\n queriedElements: any[];\n preStyleProps: Map<any, {[prop: string]:
boolean}>;\n postStyleProps: Map<any, {[prop: string]: boolean}>;\n totalTime: number;\n errors?:
any[];\n}\n\nexport function createTransitionInstruction(\n element: any, triggerName: string, fromState: string,
toState: string,\n isRemovalTransition: boolean, fromStyles: StyleData, toStyles: StyleData,\n timelines:
AnimationTimelineInstruction[], queriedElements: any[],\n preStyleProps: Map<any, {[prop: string]:
boolean}>,\n postStyleProps: Map<any, {[prop: string]: boolean}>,\n totalTime: number,\n errors?: any[]):
AnimationTransitionInstruction {\n return {\n type: AnimationTransitionInstructionType.TransitionAnimation,\n
 element,\n triggerName,\n isRemovalTransition,\n fromState,\n fromStyles,\n toState,\n toStyles,\n
 timelines,\n queriedElements,\n preStyleProps,\n postStyleProps,\n totalTime,\n errors\n };\n}\n", "/*\n *
@license\n * Copyright Google LLC All Rights Reserved.\n * Use of this source code is governed by an MIT-
style license that can be\n * found in the LICENSE file at https://angular.io/license\n */\n\nimport

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{AnimationOptions, StyleData} from '@angular/animations';\n\nimport { AnimationDriver } from
'./render/animation_driver';\nimport { getOrSetAsInMap } from './render/shared';\nimport { copyObj,
interpolateParams, iteratorToArray, mergeAnimationOptions } from './util';\n\nimport { StyleAst, TransitionAst }
from './animation_ast';\nimport { buildAnimationTimelines } from './animation_timeline_builder';\nimport
{ TransitionMatcherFn } from './animation_transition_expr';\nimport { AnimationTransitionInstruction,
createTransitionInstruction } from './animation_transition_instruction';\nimport { ElementInstructionMap } from
'./element_instruction_map';\n\nconst EMPTY_OBJECT = {};\n\nexport class AnimationTransitionFactory {\n
constructor(\n private _triggerName: string, public ast: TransitionAst,\n private _stateStyles: {[stateName:
string]: AnimationStateStyles}) {} \n\n match(currentState: any, nextState: any, element: any, params: {[key:
string]: any}): boolean {\n return oneOrMoreTransitionsMatch(this.ast.matchers, currentState, nextState, element,
params);\n }\n\n buildStyles(stateName: string, params: {[key: string]: any}, errors: any[]) {\n const
backupStateStyler = this._stateStyles['*'];\n const stateStyler = this._stateStyles[stateName];\n const
backupStyles = backupStateStyler ? backupStateStyler.buildStyles(params, errors) : {};\n return stateStyler ?
stateStyler.buildStyles(params, errors) : backupStyles;\n }\n\n build(\n driver: AnimationDriver, element: any,
currentState: any, nextState: any,\n enterClassName: string, leaveClassName: string, currentOptions?:
AnimationOptions,\n nextOptions?: AnimationOptions, subInstructions?: ElementInstructionMap,\n skipAstBuild?: boolean): AnimationTransitionInstruction {\n const errors: any[] = [];\n const
transitionAnimationParams = this.ast.options && this.ast.options.params || EMPTY_OBJECT;\n const
currentAnimationParams = currentOptions && currentOptions.params || EMPTY_OBJECT;\n const
currentStateStyles = this.buildStyles(currentState, currentAnimationParams, errors);\n const nextAnimationParams
= nextOptions && nextOptions.params || EMPTY_OBJECT;\n const nextStateStyles = this.buildStyles(nextState,
nextAnimationParams, errors);\n const queriedElements = new Set<any>();\n const preStyleMap = new
Map<any, {[prop: string]: boolean}>();\n const postStyleMap = new Map<any, {[prop: string]: boolean}>();\n
const isRemoval = nextState === 'void';\n const animationOptions = {params: {...transitionAnimationParams,
...nextAnimationParams}};\n const timelines = skipAstBuild ?\n [] :\n buildAnimationTimelines(\n driver, element, this.ast.animation, enterClassName, leaveClassName,
currentStateStyles,\n nextStateStyles, animationOptions, subInstructions, errors);\n let totalTime = 0;\n timelines.forEach(tl => {\n totalTime =
Math.max(tl.duration + tl.delay, totalTime);\n });\n if (errors.length) {\n return
createTransitionInstruction(\n element, this._triggerName, currentState, nextState, isRemoval,
currentStateStyles,\n nextStateStyles, [], [], preStyleMap, postStyleMap, totalTime, errors);\n }\n timelines.forEach(tl => {\n const elm = tl.element;\n const preProps = getOrSetAsInMap(preStyleMap, elm,
{});\n tl.preStyleProps.forEach(prop => preProps[prop] = true);\n const postProps =
getOrSetAsInMap(postStyleMap, elm, {});\n tl.postStyleProps.forEach(prop => postProps[prop] = true);\n
if (elm !== element) {\n queriedElements.add(elm);\n }\n });\n const queriedElementsList =
iteratorToArray(queriedElements.values());\n return createTransitionInstruction(\n element,
this._triggerName, currentState, nextState, isRemoval, currentStateStyles,\n nextStateStyles, timelines,
queriedElementsList, preStyleMap, postStyleMap, totalTime);\n }\n\n oneOrMoreTransitionsMatch(\n matchFns: TransitionMatcherFn[], currentState: any, nextState: any, element: any,\n params: {[key: string]: any}):
boolean {\n return matchFns.some(fn => fn(currentState, nextState, element, params));\n }\n\n export class
AnimationStateStyles {\n constructor(private styles: StyleAst, private defaultParams: {[key: string]: any}) {} \n\n
buildStyles(params: {[key: string]: any}, errors: string[]): StyleData {\n const finalStyles: StyleData = {};\n
const combinedParams = copyObj(this.defaultParams);\n Object.keys(params).forEach(key => {\n const value
= params[key];\n if (value !== null) {\n combinedParams[key] = value;\n }\n });\n
this.styles.styles.forEach(value => {\n if (typeof value !== 'string') {\n const styleObj = value as any;\n
Object.keys(styleObj).forEach(prop => {\n let val = styleObj[prop];\n if (val.length > 1) {\n val =
interpolateParams(val, combinedParams, errors);\n }\n finalStyles[prop] = val;\n });\n }\n });\n return finalStyles;\n }\n\n /**\n * @license\n * Copyright Google LLC All Rights Reserved.\n * Use of this
source code is governed by an MIT-style license that can be\n * found in the LICENSE file at

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transition: AnimationTransitionFactory;\n player: TransitionAnimationPlayer;\n isFallbackTransition:
boolean;\n}\n\nexport const REMOVAL_FLAG = '__ng_removed';\n\nexport interface ElementAnimationState {\n
setForRemoval: boolean;\n setForMove: boolean;\n hasAnimation: boolean;\n namespaceId: string;\n
removedBeforeQueried: boolean;\n}\n\nexport class StateValue {\n public value: string;\n public options:
AnimationOptions;\n\n get params(): {[key: string]: any} {\n return this.options.params as {[key: string]: any};\n
}\n\n constructor(input: any, public namespaceId: string = "") {\n const isObj = input &&
input.hasOwnProperty('value');\n const value = isObj ? input['value'] : input;\n this.value =
normalizeTriggerValue(value);\n if (isObj) {\n const options = copyObj(input as any);\n delete
options['value'];\n this.options = options as AnimationOptions;\n } else {\n this.options = {};\n }\n if
(!this.options.params) {\n this.options.params = {};\n }\n }\n\n absorbOptions(options: AnimationOptions)
{\n const newParams = options.params;\n if (newParams) {\n const oldParams = this.options.params!;\n
Object.keys(newParams).forEach(prop => {\n if (oldParams[prop] == null) {\n oldParams[prop] =
newParams[prop];\n }\n });\n }\n }\n\nexport const VOID_VALUE = 'void';\nexport const
DEFAULT_STATE_VALUE = new StateValue(VOID_VALUE);\n\nexport class AnimationTransitionNamespace
{\n public players: TransitionAnimationPlayer[] = [];\n private _triggers: {[triggerName: string]:
AnimationTrigger} = {};\n private _queue: QueueInstruction[] = [];\n private _elementListeners = new
Map<any, TriggerListener[]>();\n private _hostClassName: string;\n\n constructor(\n public id: string, public
hostElement: any, private _engine: TransitionAnimationEngine) {\n this._hostClassName = 'ng-tns-' + id;\n
addClass(hostElement, this._hostClassName);\n }\n\n listen(element: any, name: string, phase: string, callback:
(event: any) => boolean): () => any {\n if (!this._triggers.hasOwnProperty(name)) {\n throw new Error('Unable
to listen on the animation trigger event \"${\n phase}\" because the animation trigger \"${name}\" doesn't
exist!');\n }\n\n if (phase == null || phase.length == 0) {\n throw new Error('Unable to listen on the animation
trigger \"${\n name}\" because the provided event is undefined!');\n }\n\n if (!isTriggerEventValid(phase))
{\n throw new Error('The provided animation trigger event \"${phase}\" for the animation trigger \"${\n
name}\" is not supported!');\n }\n\n const listeners = getOrSetAsInMap(this._elementListeners, element, []);\n
const data = {name, phase, callback};\n listeners.push(data);\n\n const triggersWithStates =
getOrSetAsInMap(this._engine.statesByElement, element, {});\n if (!triggersWithStates.hasOwnProperty(name))
{\n addClass(element, NG_TRIGGER_CLASSNAME);\n addClass(element, NG_TRIGGER_CLASSNAME
+ '-' + name);\n triggersWithStates[name] = DEFAULT_STATE_VALUE;\n }\n\n return () => {\n // the
event listener is removed AFTER the flush has occurred such\n // that leave animations callbacks can fire
(otherwise if the node\n // is removed in between then the listeners would be deregistered)\n
this._engine.afterFlush(() => {\n const index = listeners.indexOf(data);\n if (index >= 0) {\n
listeners.splice(index, 1);\n }\n\n if (!this._triggers[name]) {\n delete triggersWithStates[name];\n
}\n });\n });\n }\n\n register(name: string, ast: AnimationTrigger): boolean {\n if (this._triggers[name]) {\n
// throw\n return false;\n } else {\n this._triggers[name] = ast;\n return true;\n }\n }\n\n private
_getTrigger(name: string) {\n const trigger = this._triggers[name];\n if (!trigger) {\n throw new Error('The
provided animation trigger \"${name}\" has not been registered!');\n }\n return trigger;\n }\n\n trigger(element:
any, triggerName: string, value: any, defaultToFallback: boolean = true):\n TransitionAnimationPlayer[undefined]
{\n const trigger = this._getTrigger(triggerName);\n const player = new TransitionAnimationPlayer(this.id,
triggerName, element);\n\n let triggersWithStates = this._engine.statesByElement.get(element);\n if
(!triggersWithStates) {\n addClass(element, NG_TRIGGER_CLASSNAME);\n addClass(element,
NG_TRIGGER_CLASSNAME + '-' + triggerName);\n this._engine.statesByElement.set(element,
triggersWithStates = {});\n }\n\n let fromState = triggersWithStates[triggerName];\n const toState = new
StateValue(value, this.id);\n\n const isObj = value && value.hasOwnProperty('value');\n if (!isObj &&
fromState) {\n toState.absorbOptions(fromState.options);\n }\n\n triggersWithStates[triggerName] =
toState;\n\n if (!fromState) {\n fromState = DEFAULT_STATE_VALUE;\n }\n\n const isRemoval =
toState.value === VOID_VALUE;\n\n // normally this isn't reached by here, however, if an object expression\n
// is passed in then it may be a new object each time. Comparing the value\n // is important since that will stay the

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same despite there being a new object.\n // The removal arc here is special cased because the same element is
triggered\n // twice in the event that it contains animations on the outer/inner portions\n // of the host container\n
if (!isRemoval && fromState.value === toState.value) {\n // this means that despite the value not changing,
some inner params\n // have changed which means that the animation final styles need to be applied\n if
(!objEquals(fromState.params, toState.params)) {\n const errors: any[] = [];\n const fromStyles =
trigger.matchStyles(fromState.value, fromState.params, errors);\n const toStyles =
trigger.matchStyles(toState.value, toState.params, errors);\n if (errors.length) {\n
this._engine.reportError(errors);\n } else {\n this._engine.afterFlush() => {\n eraseStyles(element,
fromStyles);\n setStyles(element, toStyles);\n });\n }\n }\n return;\n }\n\n const
playersOnElement: TransitionAnimationPlayer[] =\n getOrSetAsInMap(this._engine.playersByElement,
element, []);\n playersOnElement.forEach(player => {\n // only remove the player if it is queued on the
EXACT same trigger/namespace\n // we only also deal with queued players here because if the animation has\n
// started then we want to keep the player alive until the flush happens\n // (which is where the previousPlayers
are passed into the new palyer)\n if (player.namespaceId == this.id && player.triggerName == triggerName &&
player.queued) {\n player.destroy();\n }\n });\n\n let transition =\n trigger.matchTransition(fromState.value, toState.value, element, toState.params);\n let isFallbackTransition =
false;\n if (!transition) {\n if (!defaultToFallback) return;\n transition = trigger.fallbackTransition;\n
isFallbackTransition = true;\n }\n\n this._engine.totalQueuedPlayers++;\n this._queue.push(\n {element,
triggerName, transition, fromState, toState, player, isFallbackTransition});\n\n if (!isFallbackTransition) {\n
addClass(element, QUEUED_CLASSNAME);\n player.onStart() => {\n removeClass(element,
QUEUED_CLASSNAME);\n });\n }\n\n player.onDone() => {\n let index =
this.players.indexOf(player);\n if (index >= 0) {\n this.players.splice(index, 1);\n }\n\n const players =
this._engine.playersByElement.get(element);\n if (players) {\n let index = players.indexOf(player);\n if
(index >= 0) {\n players.splice(index, 1);\n }\n }\n });\n\n this.players.push(player);\n
playersOnElement.push(player);\n\n return player;\n }\n\n deregister(name: string) {\n delete
this._triggers[name];\n\n this._engine.statesByElement.forEach((stateMap, element) => {\n delete
stateMap[name];\n });\n\n this._elementListeners.forEach((listeners, element) => {\n
this._elementListeners.set(element, listeners.filter(entry => {\n return entry.name != name;\n }));\n }
);\n\n }\n\n clearElementCache(element: any) {\n this._engine.statesByElement.delete(element);\n
this._elementListeners.delete(element);\n const elementPlayers = this._engine.playersByElement.get(element);\n
if (elementPlayers) {\n elementPlayers.forEach(player => player.destroy());\n
this._engine.playersByElement.delete(element);\n }\n }\n\n private
_signalRemovalForInnerTriggers(rootElement: any, context: any) {\n const elements =
this._engine.driver.query(rootElement, NG_TRIGGER_SELECTOR, true);\n\n // emulate a leave animation for all
inner nodes within this node.\n // If there are no animations found for any of the nodes then clear the cache\n //
for the element.\n elements.forEach(elm => {\n // this means that an inner remove() operation has already
kicked off\n // the animation on this element...\n if (elm[REMOVAL_FLAG]) return;\n\n const
namespaces = this._engine.fetchNamespacesByElement(elm);\n if (namespaces.size) {\n
namespaces.forEach(ns => ns.triggerLeaveAnimation(elm, context, false, true));\n } else {\n
this.clearElementCache(elm);\n }\n }\n\n // If the child elements were removed along with the parent, their
animations might not\n // have completed. Clear all the elements from the cache so we don't end up with a memory
leak.\n this._engine.afterFlushAnimationsDone(\n () => elements.forEach(elm =>
this.clearElementCache(elm));\n }\n\n triggerLeaveAnimation(\n element: any, context: any,
destroyAfterComplete?: boolean,\n defaultToFallback?: boolean): boolean {\n const triggerStates =
this._engine.statesByElement.get(element);\n if (triggerStates) {\n const players: TransitionAnimationPlayer[]
= [];\n Object.keys(triggerStates).forEach(triggerName => {\n // this check is here in the event that an
element is removed\n // twice (both on the host level and the component level)\n if
(this._triggers[triggerName]) {\n const player = this.trigger(element, triggerName, VOID_VALUE,

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defaultToFallback));\n if (player) {\n players.push(player);\n }\n });\n\n if (players.length) {\n this._engine.markElementAsRemoved(this.id, element, true, context);\n if (destroyAfterComplete) {\n optimizeGroupPlayer(players).onDone(() => this._engine.processLeaveNode(element));\n }\n return true;\n }\n\n return false;\n }\n\n prepareLeaveAnimationListeners(element: any) {\n const listeners = this._elementListeners.get(element);\n if (listeners) {\n const visitedTriggers = new Set<string>();\n listeners.forEach(listener => {\n const triggerName = listener.name;\n if (visitedTriggers.has(triggerName)) return;\n visitedTriggers.add(triggerName);\n\n const trigger = this._triggers[triggerName];\n const transition = trigger.fallbackTransition;\n const elementStates = this._engine.statesByElement.get(element!);\n const fromState = elementStates[triggerName] || DEFAULT_STATE_VALUE;\n const toState = new StateValue(VOID_VALUE);\n const player = new TransitionAnimationPlayer(this.id, triggerName, element);\n\n this._engine.totalQueuedPlayers++;\n this._queue.push({\n element,\n triggerName,\n transition,\n fromState,\n toState,\n player,\n isFallbackTransition: true\n });\n });\n }\n\n removeNode(element: any, context: any): void {\n const engine = this._engine;\n\n if (element.childElementCount) {\n this._signalRemovalForInnerTriggers(element, context);\n }\n\n // this means that a * => VOID animation was detected and kicked off\n if (this.triggerLeaveAnimation(element, context, true)) return;\n\n // find the player that is animating and make sure that the // removal is delayed until that player has completed\n let containsPotentialParentTransition = false;\n if (engine.totalAnimations) {\n const currentPlayers =\n engine.players.length ? engine.playersByQueriedElement.get(element) : [];\n\n // when this `if` statement` does not continue forward it means that\n // a previous animation query has selected the current element and\n // is animating it. In this situation want to continue forwards and\n // allow the element to be queued up for animation later.\n if (currentPlayers && currentPlayers.length) {\n containsPotentialParentTransition = true;\n } else {\n let parent = element;\n while (parent = parent.parentNode) {\n const triggers = engine.statesByElement.get(parent);\n if (triggers) {\n containsPotentialParentTransition = true;\n break;\n }\n }\n }\n }\n\n // at this stage we know that the element will either get removed\n // during flush or will be picked up by a parent query. Either way\n // we need to fire the listeners for this element when it DOES get\n // removed (once the query parent animation is done or after flush)\n this.prepareLeaveAnimationListeners(element);\n\n // whether or not a parent has an animation we need to delay the deferral of the leave\n // operation until we have more information (which we do after flush() has been called)\n if (containsPotentialParentTransition) {\n engine.markElementAsRemoved(this.id, element, false, context);\n } else {\n const removalFlag = element[REMOVAL_FLAG];\n if (!removalFlag || removalFlag === NULL_REMOVAL_STATE) {\n // we do this after the flush has occurred such\n // that the callbacks can be fired\n engine.afterFlush(() => this.clearElementCache(element));\n engine.destroyInnerAnimations(element);\n engine._onRemovalComplete(element, context);\n }\n }\n\n insertNode(element: any, parent: any): void {\n addClass(element, this._hostClassName);\n }\n\n drainQueuedTransitions(microtaskId: number): QueueInstruction[] {\n const instructions: QueueInstruction[] = [];\n this._queue.forEach(entry => {\n const player = entry.player;\n if (player.destroyed) return;\n\n const element = entry.element;\n const listeners = this._elementListeners.get(element);\n if (listeners) {\n listeners.forEach((listener: TriggerListener) => {\n if (listener.name === entry.triggerName) {\n const baseEvent = makeAnimationEvent(\n element, entry.triggerName, entry.fromState.value, entry.toState.value);\n (baseEvent as any)['_data'] = microtaskId;\n listenOnPlayer(entry.player, listener.phase, baseEvent, listener.callback);\n }\n });\n }\n\n if (player.markedForDestroy) {\n this._engine.afterFlush(() => {\n // now we can destroy the element properly since the event listeners have\n // been bound to the player\n player.destroy();\n });\n } else {\n instructions.push(entry);\n }\n });\n\n this._queue = [];\n return instructions.sort((a, b) => {\n // if depCount == 0 them move to front\n // otherwise if a contains b then move back\n const d0 = a.transition.ast.depCount;\n const d1 = b.transition.ast.depCount;\n if (d0 == 0 || d1 == 0) {\n return d0 - d1;\n }\n return this._engine.driver.containsElement(a.element, b.element) ? 1 : -1;\n });\n }\n }\n }\n}

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destroy(context: any) {\n this.players.forEach(p => p.destroy());\n
this._signalRemovalForInnerTriggers(this.hostElement, context);\n }\n\n elementContainsData(element: any):
boolean {\n let containsData = false;\n if (this._elementListeners.has(element)) containsData = true;\n
containsData =\n (this._queue.find(entry => entry.element === element) ? true : false) || containsData;\n
return containsData;\n }\n}\n\nexport interface QueuedTransition {\n element: any;\n instruction:
AnimationTransitionInstruction;\n player: TransitionAnimationPlayer;\n }\n\nexport class
TransitionAnimationEngine {\n public players: TransitionAnimationPlayer[] = [];\n public newHostElements =
new Map<any, AnimationTransitionNamespace>;\n public playersByElement = new Map<any,
TransitionAnimationPlayer[]>;\n public playersByQueriedElement = new Map<any,
TransitionAnimationPlayer[]>;\n public statesByElement = new Map<any, {[triggerName: string]:
StateValue}>;\n public disabledNodes = new Set<any>;\n\n public totalAnimations = 0;\n public
totalQueuedPlayers = 0;\n\n private _namespaceLookup: {[id: string]: AnimationTransitionNamespace} = {};\n
private _namespaceList: AnimationTransitionNamespace[] = [];\n private _flushFns: (() => any)[] = [];\n
private _whenQuietFns: (() => any)[] = [];\n\n public namespacesByHostElement = new Map<any,
AnimationTransitionNamespace>;\n public collectedEnterElements: any[] = [];\n public collectedLeaveElements:
any[] = [];\n\n // this method is designed to be overridden by the code that uses this engine\n public
onRemovalComplete = (element: any, context: any) => {};\n\n /** @internal *\n _onRemovalComplete(element:
any, context: any) {\n this.onRemovalComplete(element, context);\n }\n\n constructor(\n public bodyNode:
any, public driver: AnimationDriver,\n private _normalizer: AnimationStyleNormalizer) {\n\n get
queuedPlayers(): TransitionAnimationPlayer[] {\n const players: TransitionAnimationPlayer[] = [];\n
this._namespaceList.forEach(ns => {\n ns.players.forEach(player => {\n if (player.queued) {\n
 players.push(player);\n }\n });\n });\n return players;\n }\n\n createNamespace(namespaceId: string,
hostElement: any) {\n const ns = new AnimationTransitionNamespace(namespaceId, hostElement, this);\n if
(hostElement.parentNode) {\n this._balanceNamespaceList(ns, hostElement);\n } else {\n // defer this later
until flush during when the host element has\n // been inserted so that we know exactly where to place it in\n
// the namespace list\n this.newHostElements.set(hostElement, ns);\n // given that this host element is apart
of the animation code, it\n // may or may not be inserted by a parent node that is an of an\n // animation
renderer type. If this happens then we can still have\n // access to this item when we query for :enter nodes. If the
parent\n // is a renderer then the set data-structure will normalize the entry\n
this.collectEnterElement(hostElement);\n }\n return this._namespaceLookup[namespaceId] = ns;\n }\n\n private _balanceNamespaceList(ns: AnimationTransitionNamespace, hostElement: any) {\n const limit =
this._namespaceList.length - 1;\n if (limit >= 0) {\n let found = false;\n for (let i = limit; i >= 0; i--) {\n
const nextNamespace = this._namespaceList[i];\n if (this.driver.containsElement(nextNamespace.hostElement,
hostElement)) {\n this._namespaceList.splice(i + 1, 0, ns);\n found = true;\n break;\n }\n }\n if (!found) {\n this._namespaceList.splice(0, 0, ns);\n }\n } else {\n this._namespaceList.push(ns);\n }\n\n this.namespacesByHostElement.set(hostElement, ns);\n return ns;\n }\n\n register(namespaceId: string,
hostElement: any) {\n let ns = this._namespaceLookup[namespaceId];\n if (!ns) {\n ns =
this.createNamespace(namespaceId, hostElement);\n }\n return ns;\n }\n\n registerTrigger(namespaceId: string,
name: string, trigger: AnimationTrigger) {\n let ns = this._namespaceLookup[namespaceId];\n if (ns &&
ns.register(name, trigger)) {\n this.totalAnimations++;\n }\n }\n\n destroy(namespaceId: string, context: any)
{\n if (!namespaceId) return;\n\n const ns = this._fetchNamespace(namespaceId);\n\n this.afterFlush(() => {\n
 this.namespacesByHostElement.delete(ns.hostElement);\n delete this._namespaceLookup[namespaceId];\n
const index = this._namespaceList.indexOf(ns);\n if (index >= 0) {\n this._namespaceList.splice(index, 1);\n
 }\n });\n\n this.afterFlushAnimationsDone(() => ns.destroy(context));\n }\n\n private _fetchNamespace(id:
string) {\n return this._namespaceLookup[id];\n }\n\n fetchNamespacesByElement(element: any):
Set<AnimationTransitionNamespace> {\n // normally there should only be one namespace per element, however\n
// if @triggers are placed on both the component element and then\n // its host element (within the component
code) then there will be\n // two namespaces returned. We use a set here to simply the dedupe\n // of namespaces

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incase there are multiple triggers both the elm and host\n const namespaces = new
Set<AnimationTransitionNamespace>();\n const elementStates = this.statesByElement.get(element);\n if
(elementStates) {\n const keys = Object.keys(elementStates);\n for (let i = 0; i < keys.length; i++) {\n
const nsId = elementStates[keys[i]].namespaceId;\n if (nsId) {\n const ns = this._fetchNamespace(nsId);\n
 if (ns) {\n namespaces.add(ns);\n }\n }\n }\n return namespaces;\n }\n\ntrigger(namespaceId: string, element: any, name: string, value: any): boolean {\n if (isElementNode(element)) {\n
const ns = this._fetchNamespace(namespaceId);\n if (ns) {\n ns.trigger(element, name, value);\n return
true;\n }\n }\n return false;\n }\n\ninsertNode(namespaceId: string, element: any, parent: any, insertBefore:
boolean): void {\n if (!isElementNode(element)) return;\n // special case for when an element is removed and
reinserted (move operation)\n // when this occurs we do not want to use the element for deletion later\n const
details = element[REMOVAL_FLAG] as ElementAnimationState;\n if (details && details.setForRemoval) {\n
details.setForRemoval = false;\n details.setForMove = true;\n const index =
this.collectedLeaveElements.indexOf(element);\n if (index >= 0) {\n
this.collectedLeaveElements.splice(index, 1);\n }\n }\n // in the event that the namespaceId is blank then the
caller\n // code does not contain any animation code in it, but it is\n // just being called so that the node is marked
as being inserted\n if (namespaceId) {\n const ns = this._fetchNamespace(namespaceId);\n // This if-
statement is a workaround for router issue #21947.\n // The router sometimes hits a race condition where while a
route\n // is being instantiated a new navigation arrives, triggering leave\n // animation of DOM that has not
been fully initialized, until this\n // is resolved, we need to handle the scenario when DOM is not in a\n //
consistent state during the animation.\n if (ns) {\n ns.insertNode(element, parent);\n }\n }\n // only
*directives and host elements are inserted before\n if (insertBefore) {\n this.collectEnterElement(element);\n
 }\n }\n collectEnterElement(element: any) {\n this.collectedEnterElements.push(element);\n }\n }\n
markElementAsDisabled(element: any, value: boolean) {\n if (value) {\n if (!this.disabledNodes.has(element))
{\n this.disabledNodes.add(element);\n addClass(element, DISABLED_CLASSNAME);\n }\n } else
if (this.disabledNodes.has(element)) {\n this.disabledNodes.delete(element);\n removeClass(element,
DISABLED_CLASSNAME);\n }\n }\n removeNode(namespaceId: string, element: any, isHostElement:
boolean, context: any): void {\n if (isElementNode(element)) {\n const ns = namespaceId ?
this._fetchNamespace(namespaceId) : null;\n if (ns) {\n ns.removeNode(element, context);\n } else {\n
this.markElementAsRemoved(namespaceId, element, false, context);\n }\n }\n if (isHostElement) {\n const
hostNS = this.namespacesByHostElement.get(element);\n if (hostNS && hostNS.id !== namespaceId) {\n
hostNS.removeNode(element, context);\n }\n }\n } else {\n this._onRemovalComplete(element,
context);\n }\n }\n markElementAsRemoved(namespaceId: string, element: any, hasAnimation?: boolean,
context?: any) {\n this.collectedLeaveElements.push(element);\n element[REMOVAL_FLAG] =\n
{namespaceId, setForRemoval: context, hasAnimation, removedBeforeQueried: false};\n }\n listen(\n
namespaceId: string, element: any, name: string, phase: string,\n callback: (event: any) => boolean): () => any
{\n if (isElementNode(element)) {\n return this._fetchNamespace(namespaceId).listen(element, name, phase,
callback);\n }\n return () => {};\n }\n private _buildInstruction(\n entry: QueueInstruction, subTimelines:
ElementInstructionMap, enterClassName: string,\n leaveClassName: string, skipBuildAst?: boolean) {\n return
entry.transition.build(\n this.driver, entry.element, entry.fromState.value, entry.toState.value,
enterClassName,\n leaveClassName, entry.fromState.options, entry.toState.options, subTimelines,
skipBuildAst);\n }\n destroyInnerAnimations(containerElement: any) {\n let elements =
this.driver.query(containerElement, NG_TRIGGER_SELECTOR, true);\n elements.forEach(element =>
this.destroyActiveAnimationsForElement(element));\n if (this.playersByQueriedElement.size == 0) return;\n
elements = this.driver.query(containerElement, NG_ANIMATING_SELECTOR, true);\n elements.forEach(element =>
this.finishActiveQueriedAnimationOnElement(element));\n }\n destroyActiveAnimationsForElement(element: any) {\n
const players = this.playersByElement.get(element);\n if
(players) {\n players.forEach(player => {\n // special case for when an element is set for destruction, but
hasn't started.\n // in this situation we want to delay the destruction until the flush occurs\n // so that any

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event listeners attached to the player are triggered.\n if (player.queued) {\n player.markedForDestroy =
true;\n } else {\n player.destroy();\n }\n});\n}\n}\n\nfinishActiveQueriedAnimationOnElement(element: any) {\n const players =
this.playersByQueriedElement.get(element);\n if (players) {\n players.forEach(player => player.finish());\n }\n}\n\nwhenRenderingDone(): Promise<any> {\n return new Promise(resolve => {\n if (this.players.length)
{\n return optimizeGroupPlayer(this.players).onDone(() => resolve());\n } else {\n resolve();\n }\n });\n}\n\nprocessLeaveNode(element: any) {\n const details = element[REMOVAL_FLAG] as
ElementAnimationState;\n if (details && details.setForRemoval) {\n // this will prevent it from removing it
twice\n element[REMOVAL_FLAG] = NULL_REMOVAL_STATE;\n if (details.namespaceId) {\n this.destroyInnerAnimations(element);\n const ns = this._fetchNamespace(details.namespaceId);\n if (ns)
{\n ns.clearElementCache(element);\n }\n }\n this._onRemovalComplete(element,
details.setForRemoval);\n }\n}\n\nif (this.driver.matchesElement(element, DISABLED_SELECTOR)) {\n this.markElementAsDisabled(element, false);\n}\n\nthis.driver.query(element, DISABLED_SELECTOR,
true).forEach(node => {\n this.markElementAsDisabled(node, false);\n});\n}\n\nflush(microtaskId: number
= -1) {\n let players: AnimationPlayer[] = [];\n if (this.newHostElements.size) {\n this.newHostElements.forEach((ns, element) => this._balanceNamespaceList(ns, element));\n this.newHostElements.clear();\n }\n\n if (this.totalAnimations && this.collectedEnterElements.length) {\n for
(let i = 0; i < this.collectedEnterElements.length; i++) {\n const elm = this.collectedEnterElements[i];\n addClass(elm, STAR_CLASSNAME);\n }\n }\n\n if (this._namespaceList.length && (this.totalQueuedPlayers || this.collectedLeaveElements.length)) {\n const cleanupFns: Function[] = [];\n try
{\n players = this._flushAnimations(cleanupFns, microtaskId);\n } finally {\n for (let i = 0; i <
cleanupFns.length; i++) {\n cleanupFns[i]();\n }\n } else {\n for (let i = 0; i <
this.collectedLeaveElements.length; i++) {\n const element = this.collectedLeaveElements[i];\n this.processLeaveNode(element);\n }\n }\n\n this.totalQueuedPlayers = 0;\n this.collectedEnterElements.length = 0;\n this.collectedLeaveElements.length = 0;\n this._flushFns.forEach(fn
=> fn());\n this._flushFns = [];\n\n if (this._whenQuietFns.length) {\n // we move these over to a variable so
that\n // if any new callbacks are registered in another\n // flush they do not populate the existing set\n const quietFns = this._whenQuietFns;\n this._whenQuietFns = [];\n if (players.length) {\n optimizeGroupPlayer(players).onDone(() => {\n quietFns.forEach(fn => fn());\n });\n } else {\n quietFns.forEach(fn => fn());\n }\n }\n\n reportError(errors: string[]) {\n throw new Error(\n `Unable to process animations due to the following failed trigger transitions\n $\n errors.join('\\n')`);\n }\n\n private _flushAnimations(cleanupFns: Function[], microtaskId: number): TransitionAnimationPlayer[]
{\n const subTimelines = new ElementInstructionMap();\n const skippedPlayers: TransitionAnimationPlayer[] =
[];\n const skippedPlayersMap = new Map<any, AnimationPlayer[]>();\n const queuedInstructions:
QueuedTransition[] = [];\n const queriedElements = new Map<any, TransitionAnimationPlayer[]>();\n const
allPreStyleElements = new Map<any, Set<string>>());\n const allPostStyleElements = new Map<any,
Set<string>>());\n\n const disabledElementsSet = new Set<any>();\n this.disabledNodes.forEach(node => {\n disabledElementsSet.add(node);\n });\n const nodesThatAreDisabled = this.driver.query(node,
QUEUED_SELECTOR, true);\n for (let i = 0; i < nodesThatAreDisabled.length; i++) {\n disabledElementsSet.add(nodesThatAreDisabled[i]);\n }\n }\n\n const bodyNode = this.bodyNode;\n const allTriggerElements = Array.from(this.statesByElement.keys());\n const enterNodeMap =
buildRootMap(allTriggerElements, this.collectedEnterElements);\n\n // this must occur before the instructions are
built below such that\n // the :enter queries match the elements (since the timeline queries\n // are fired during
instruction building).\n const enterNodeMapIds = new Map<any, string>();\n let i = 0;\n enterNodeMap.forEach((nodes, root) => {\n const className = ENTER_CLASSNAME + i++; \n enterNodeMapIds.set(root, className);\n nodes.forEach(node => addClass(node, className));\n });\n\n const allLeaveNodes: any[] = [];\n const mergedLeaveNodes = new Set<any>();\n const
leaveNodesWithoutAnimations = new Set<any>();\n for (let i = 0; i < this.collectedLeaveElements.length; i++)

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 } else {\n eraseStyles(element, instruction.fromStyles);\n player.onDestroy(() => setStyles(element,\ninstruction.toStyles));\n // there still might be a ancestor player animating this\n // element therefore we will\n still add it as a sub player\n // even if its animation may be disabled\n subPlayers.push(player);\n if\n (disabledElementsSet.has(element)) {\n skippedPlayers.push(player);\n }\n }\n });\n\n // find all of\n the sub players' corresponding inner animation\n player\n subPlayers.forEach(player => {\n // even if any players\n are not found for a sub animation then it\n // will still complete itself after the next tick since it's Noop\n const\n playersForElement = skippedPlayersMap.get(player.element);\n if (playersForElement &&\nplayersForElement.length) {\n const innerPlayer = optimizeGroupPlayer(playersForElement);\n player.setRealPlayer(innerPlayer);\n }\n });\n\n // the reason why we don't actually play the animation is\n // because all that a skipped player is designed to do is to\n // fire the start/done transition callback events\n skippedPlayers.forEach(player => {\n if (player.parentPlayer) {\n player.syncPlayerEvents(player.parentPlayer);\n } else {\n player.destroy();\n }\n });\n\n // run\n through all of the queued removals and see if they\n // were picked up by a query. If not then perform the\n removal\n // operation right away unless a parent animation is ongoing.\n for (let i = 0; i < allLeaveNodes.length;\ni++) {\n const element = allLeaveNodes[i];\n const details = element[REMOVAL_FLAG] as\nElementAnimationState;\n removeClass(element, LEAVE_CLASSNAME);\n\n // this means the element has\n a removal animation that is being\n // taken care of and therefore the inner elements will hang around\n // until\n that animation is over (or the parent queried animation)\n if (details && details.hasAnimation) continue;\n\n let players: TransitionAnimationPlayer[] = [];\n\n // if this element is queried or if it contains queried children\n // then we want for the element not to be removed from the page\n // until the queried animations have finished\n if (queriedElements.size) {\n let queriedPlayerResults = queriedElements.get(element);\n if\n (queriedPlayerResults && queriedPlayerResults.length) {\n players.push(...queriedPlayerResults);\n }\n\n let queriedInnerElements = this.driver.query(element, NG_ANIMATING_SELECTOR, true);\n for (let j =\n0; j < queriedInnerElements.length; j++) {\n let queriedPlayers =\nqueriedElements.get(queriedInnerElements[j]);\n if (queriedPlayers && queriedPlayers.length) {\n players.push(...queriedPlayers);\n }\n }\n\n const activePlayers = players.filter(p =>\n!p.destroyed);\n if (activePlayers.length) {\n removeNodesAfterAnimationDone(this, element,\nactivePlayers);\n } else {\n this.processLeaveNode(element);\n }\n\n // this is required so the\ncleanup method doesn't remove them\n allLeaveNodes.length = 0;\n\n rootPlayers.forEach(player => {\n this.players.push(player);\n player.onDone(() => {\n player.destroy();\n\n const index =\nthis.players.indexOf(player);\n this.players.splice(index, 1);\n });\n player.play();\n });\n\n return\n rootPlayers;\n }\n\n elementContainsData(namespaceId: string, element: any) {\n let containsData = false;\n const details = element[REMOVAL_FLAG] as ElementAnimationState;\n if (details && details.setForRemoval)\ncontainsData = true;\n if (this.playersByElement.has(element))\ncontainsData = true;\n if\n (this.playersByQueriedElement.has(element))\ncontainsData = true;\n if (this.statesByElement.has(element))\ncontainsData = true;\n return this._fetchNamespace(namespaceId).elementContainsData(element) ||\ncontainsData;\n }\n\n afterFlush(callback: () => any) {\n this._flushFns.push(callback);\n }\n\n afterFlushAnimationsDone(callback: () => any) {\n this._whenQuietFns.push(callback);\n }\n\n private\n _getPreviousPlayers(\n element: string, isQueriedElement: boolean, namespaceId?: string, triggerName?:\nstring,\n toStateValue?: any): TransitionAnimationPlayer[] {\n let players: TransitionAnimationPlayer[] = [];\n if (isQueriedElement) {\n const queriedElementPlayers = this.playersByQueriedElement.get(element);\n if\n (queriedElementPlayers) {\n players = queriedElementPlayers;\n }\n } else {\n const elementPlayers =\nthis.playersByElement.get(element);\n if (elementPlayers) {\n const isRemovalAnimation = !toStateValue ||\ntoStateValue == VOID_VALUE;\n elementPlayers.forEach(player => {\n if (player.queued) return;\n if (!isRemovalAnimation && player.triggerName != triggerName) return;\n players.push(player);\n });\n }\n }\n if (namespaceId || triggerName) {\n players = players.filter(player => {\n if (namespaceId &&\nnamespaceId != player.namespaceId) return false;\n if (triggerName && triggerName != player.triggerName)\nreturn false;\n return true;\n });\n }\n return players;\n }\n\n private _beforeAnimationBuild(\n
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namespaceId: string, instruction: AnimationTransitionInstruction,\n allPreviousPlayersMap: Map<any,\n TransitionAnimationPlayer[]>) {\n const triggerName = instruction.triggerName;\n const rootElement =\n instruction.element;\n\n // when a removal animation occurs, ALL previous players are collected\n // and destroyed (even if they are outside of the current namespace)\n const targetNamespaceId: string|undefined =\n instruction.isRemovalTransition ? undefined : namespaceId;\n const targetTriggerName: string|undefined =\n instruction.isRemovalTransition ? undefined : triggerName;\n for (const timelineInstruction of\n instruction.timelines) {\n const element = timelineInstruction.element;\n const isQueriedElement = element\n !== rootElement;\n const players = getOrSetAsInMap(allPreviousPlayersMap, element, []);\n const\n previousPlayers = this._getPreviousPlayers(\n element, isQueriedElement, targetNamespaceId,\n targetTriggerName, instruction.toState);\n previousPlayers.forEach(player => {\n const realPlayer = (player\n as TransitionAnimationPlayer).getRealPlayer() as any;\n if (realPlayer.beforeDestroy) {\n realPlayer.beforeDestroy();\n }\n player.destroy();\n players.push(player);\n });\n }\n\n // this\n needs to be done so that the PRE/POST styles can be\n // computed properly without interfering with the previous\n animation\n eraseStyles(rootElement, instruction.fromStyles);\n }\n\n private _buildAnimation(\n namespaceId: string, instruction: AnimationTransitionInstruction,\n allPreviousPlayersMap: Map<any,\n TransitionAnimationPlayer[]>,\n skippedPlayersMap: Map<any, AnimationPlayer[]>, preStylesMap: Map<any,\n StyleData>,\n postStylesMap: Map<any, StyleData>): AnimationPlayer {\n const triggerName =\n instruction.triggerName;\n const rootElement = instruction.element;\n\n // we first run this so that the previous\n animation player\n // data can be passed into the successive animation players\n const allQueriedPlayers:\n TransitionAnimationPlayer[] = [];\n const allConsumedElements = new Set<any>();\n const allSubElements =\n new Set<any>();\n const allNewPlayers = instruction.timelines.map(timelineInstruction => {\n const element =\n timelineInstruction.element;\n allConsumedElements.add(element);\n\n // FIXME (matsko): make sure to-be-\n removed animations are removed properly\n const details = element[REMOVAL_FLAG];\n if (details &&\n details.removedBeforeQueried)\n return new NoopAnimationPlayer(timelineInstruction.duration,\n timelineInstruction.delay);\n const isQueriedElement = element !== rootElement;\n const previousPlayers\n =\n flattenGroupPlayers((allPreviousPlayersMap.get(element) || EMPTY_PLAYER_ARRAY)\n .map(p => p.getRealPlayer()))\n .filter(p => {\n // the `element` is not apart of the\n AnimationPlayer definition, but\n // Mock/WebAnimations\n // use the element within their\n implementation. This will be added in Angular5 to\n // AnimationPlayer\n const pp = p as any;\n return pp.element ? pp.element === element : false;\n });\n const preStyles =\n preStylesMap.get(element);\n const postStyles = postStylesMap.get(element);\n const keyframes =\n normalizeKeyframes(\n this.driver, this._normalizer, element, timelineInstruction.keyframes, preStyles,\n postStyles);\n const player = this._buildPlayer(timelineInstruction, keyframes, previousPlayers);\n\n // this\n means that this particular player belongs to a sub trigger. It is\n // important that we match this player up with the\n corresponding (@trigger.listener)\n if (timelineInstruction.subTimeline && skippedPlayersMap) {\n allSubElements.add(element);\n }\n\n if (isQueriedElement) {\n const wrappedPlayer = new\n TransitionAnimationPlayer(namespaceId, triggerName, element);\n wrappedPlayer.setRealPlayer(player);\n allQueriedPlayers.push(wrappedPlayer);\n }\n\n return player;\n });\n allQueriedPlayers.forEach(player\n => {\n getOrSetAsInMap(this.playersByQueriedElement, player.element, []).push(player);\n player.onDone()\n => deleteOrUnsetInMap(this.playersByQueriedElement, player.element, player);\n });\n allConsumedElements.forEach(element => addClass(element, NG_ANIMATING_CLASSNAME));\n const\n player = optimizeGroupPlayer(allNewPlayers);\n player.onDestroy(() => {\n allConsumedElements.forEach(element => removeClass(element, NG_ANIMATING_CLASSNAME));\n setStyles(rootElement, instruction.toStyles);\n });\n\n // this basically makes all of the callbacks for sub element\n animations\n // be dependent on the upper players for when they finish\n allSubElements.forEach(element =>\n {\n getOrSetAsInMap(skippedPlayersMap, element, []).push(player);\n });\n return player;\n });\n private\n _buildPlayer(\n instruction: AnimationTimelineInstruction, keyframes: StyleData[],\n previousPlayers:\n AnimationPlayer[]): AnimationPlayer {\n if (keyframes.length > 0) {\n return this.driver.animate(\n

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instruction.element, keyframes, instruction.duration, instruction.delay,\n instruction.easing,
previousPlayers);\n }\n // special case for when an empty transition|definition is provided\n // ... there is no
point in rendering an empty animation\n return new NoopAnimationPlayer(instruction.duration,
instruction.delay);\n }\n}\n\nexport class TransitionAnimationPlayer implements AnimationPlayer {\n private
_player: AnimationPlayer = new NoopAnimationPlayer();\n private _containsRealPlayer = false;\n private
_queuedCallbacks: {[name: string]: ((=> any)[])} = {};\n public readonly destroyed = false;\n //
TODO(issue/24571): remove '!\n public parentPlayer!: AnimationPlayer;\n public markedForDestroy: boolean
= false;\n public disabled = false;\n public readonly queued: boolean = true;\n public readonly totalTime: number =
0;\n constructor(public namespaceId: string, public triggerName: string, public element: any) {\n\n
 setRealPlayer(player: AnimationPlayer) {\n if (this._containsRealPlayer) return;\n this._player = player;\n
Object.keys(this._queuedCallbacks).forEach(phase => {\n this._queuedCallbacks[phase].forEach(\n
callback => listenOnPlayer(player, phase, undefined, callback));\n });\n this._queuedCallbacks = {};\n
 this._containsRealPlayer = true;\n this.overrideTotalTime(player.totalTime);\n (this as {queued:
boolean}).queued = false;\n }\n getRealPlayer() {\n return this._player;\n }\n overrideTotalTime(totalTime:
number) {\n (this as any).totalTime = totalTime;\n }\n syncPlayerEvents(player: AnimationPlayer) {\n const
p = this._player as any;\n if (p.triggerCallback) {\n player.onStart() => p.triggerCallback!('start');\n }\n
 player.onDone() => this.finish();\n player.onDestroy() => this.destroy();\n }\n private _queueEvent(name:
string, callback: (event: any) => any): void {\n getOrSetAsInMap(this._queuedCallbacks, name,
[]).push(callback);\n }\n onDone(fn: () => void): void {\n if (this.queued) {\n this._queueEvent('done',
fn);\n }\n this._player.onDone(fn);\n }\n onStart(fn: () => void): void {\n if (this.queued) {\n
this._queueEvent('start', fn);\n }\n this._player.onStart(fn);\n }\n onDestroy(fn: () => void): void {\n
if (this.queued) {\n this._queueEvent('destroy', fn);\n }\n this._player.onDestroy(fn);\n }\n init(): void
{\n this._player.init();\n }\n hasStarted(): boolean {\n return this.queued ? false : this._player.hasStarted();\n
}\n play(): void {\n !this.queued && this._player.play();\n }\n pause(): void {\n !this.queued &&
this._player.pause();\n }\n restart(): void {\n !this.queued && this._player.restart();\n }\n finish(): void
{\n this._player.finish();\n }\n destroy(): void {\n (this as {destroyed: boolean}).destroyed = true;\n
this._player.destroy();\n }\n reset(): void {\n !this.queued && this._player.reset();\n }\n setPosition(p: any):
void {\n if (!this.queued) {\n this._player.setPosition(p);\n }\n }\n getPosition(): number {\n return
this.queued ? 0 : this._player.getPosition();\n }\n /** @internal *\n triggerCallback(phaseName: string): void
{\n const p = this._player as any;\n if (p.triggerCallback) {\n p.triggerCallback(phaseName);\n }\n }\n
function deleteOrUnsetInMap(map: Map<any, any[]>|{[key: string]: any}, key: any, value: any) {\n let
currentValues: any[]|null|undefined;\n if (map instanceof Map) {\n currentValues = map.get(key);\n }
if (currentValues) {\n if (currentValues.length) {\n const index = currentValues.indexOf(value);\n
currentValues.splice(index, 1);\n }\n if (currentValues.length === 0) {\n map.delete(key);\n }\n }
else {\n currentValues = map[key];\n if (currentValues) {\n if (currentValues.length) {\n const
index = currentValues.indexOf(value);\n currentValues.splice(index, 1);\n }\n if (currentValues.length
=== 0) {\n delete map[key];\n }\n }\n }\n return currentValues;\n }\n function normalizeTriggerValue(value: any): any
{\n // we use `!= null` here because it's the most simple\n // way to test against a \"falsy\" value without mixing\n
// in empty strings or a zero value. DO NOT OPTIMIZE.\n return value != null ? value : null;\n }\n function
isElementNode(node: any) {\n return node && node['nodeType'] === 1;\n }\n function
isTriggerEventValid(eventName: string): boolean {\n return eventName === 'start' || eventName ===
'done';\n }\n function cloakElement(element: any, value?: string) {\n const oldValue = element.style.display;\n
element.style.display = value != null ? value : 'none';\n return oldValue;\n }\n function cloakAndComputeStyles(\n
valuesMap: Map<any, StyleData>, driver: AnimationDriver, elements: Set<any>,\n elementPropsMap: Map<any,
Set<string>>, defaultStyle: string): any[] {\n const cloakVals: string[] = [];\n elements.forEach(element =>
cloakVals.push(cloakElement(element)));\n const failedElements: any[] = [];\n elementPropsMap.forEach((props:
Set<string>, element: any) => {\n const styles: StyleData = {};\n props.forEach(prop => {\n const
value = styles[prop] = driver.computeStyle(element, prop, defaultStyle);\n

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// there is no easy way to detect this because a sub element could be removed\n // by a parent animation element
being detached.\n if (!value || value.length == 0) {\n element[REMOVAL_FLAG] =
NULL_REMOVED_QUERIED_STATE;\n failedElements.push(element);\n }\n });\n
valuesMap.set(element, styles);\n });\n\n // we use a index variable here since Set.forEach(a, i) does not return\n //
an index value for the closure (but instead just the value)\n let i = 0;\n elements.forEach(element =>
cloakElement(element, cloakVals[i++]));\n\n return failedElements;\n}\n\n/*\nSince the Angular renderer code will
return a collection of inserted\nnodes in all areas of a DOM tree, it's up to this algorithm to figure\nout which nodes
are roots for each animation @trigger.\n\nBy placing each inserted node into a Set and traversing upwards, it\nis
possible to find the @trigger elements and well any direct *star\ninsertion nodes, if a @trigger root is found then the
enter element\nis placed into the Map[@trigger] spot.\n */\nfunction buildRootMap(roots: any[], nodes: any[]):
Map<any, any[]> {\n const rootMap = new Map<any, any[]>();\n roots.forEach(root => rootMap.set(root, []));\n\n
if (nodes.length == 0) return rootMap;\n\n const NULL_NODE = 1;\n const nodeSet = new Set(nodes);\n const
localRootMap = new Map<any, any>();\n\n function getRoot(node: any): any {\n if (!node) return
NULL_NODE;\n\n let root = localRootMap.get(node);\n if (root) return root;\n\n const parent =
node.parentNode;\n if (rootMap.has(parent)) { // ngIf inside @trigger\n root = parent;\n } else if
(nodeSet.has(parent)) { // ngIf inside ngIf\n root = NULL_NODE;\n } else { // recurse upwards\n root =
getRoot(parent);\n }\n\n localRootMap.set(node, root);\n return root;\n }\n\n nodes.forEach(node => {\n
const root = getRoot(node);\n if (root !== NULL_NODE) {\n rootMap.get(root)!.push(node);\n }\n });\n\n
return rootMap;\n}\n\nconst CLASSES_CACHE_KEY = '$$classes';\nfunction containsClass(element: any,
className: string): boolean {\n if (element.classList) {\n return element.classList.contains(className);\n } else
{\n const classes = element[CLASSES_CACHE_KEY];\n return classes && classes[className];\n
}\n}\n\nfunction addClass(element: any, className: string) {\n if (element.classList) {\n
element.classList.add(className);\n } else {\n let classes: {[className: string]: boolean} =
element[CLASSES_CACHE_KEY];\n if (!classes) {\n classes = element[CLASSES_CACHE_KEY] = {};\n
}\n\n classes[className] = true;\n }\n}\n\nfunction removeClass(element: any, className: string) {\n if
(element.classList) {\n element.classList.remove(className);\n } else {\n let classes: {[className: string]:
boolean} = element[CLASSES_CACHE_KEY];\n if (classes) {\n delete classes[className];\n }\n
}\n}\n\nfunction removeNodesAfterAnimationDone(\n engine: TransitionAnimationEngine, element: any,
players: AnimationPlayer[]) {\n optimizeGroupPlayer(players).onDone(() =>
engine.processLeaveNode(element));\n}\n\nfunction flattenGroupPlayers(players: AnimationPlayer[]):
AnimationPlayer[] {\n const finalPlayers: AnimationPlayer[] = [];\n _flattenGroupPlayersRecur(players,
finalPlayers);\n return finalPlayers;\n}\n\nfunction _flattenGroupPlayersRecur(players: AnimationPlayer[],
finalPlayers: AnimationPlayer[]) {\n for (let i = 0; i < players.length; i++) {\n const player = players[i];\n if
(player instanceof AnimationGroupPlayer) {\n _flattenGroupPlayersRecur(player.players, finalPlayers);\n }
else {\n finalPlayers.push(player);\n }\n }\n}\n\nfunction objEquals(a: {[key: string]: any}, b: {[key: string]:
any}): boolean {\n const k1 = Object.keys(a);\n const k2 = Object.keys(b);\n if (k1.length !== k2.length) return
false;\n for (let i = 0; i < k1.length; i++) {\n const prop = k1[i];\n if (!b.hasOwnProperty(prop) || a[prop] !==
b[prop]) return false;\n }\n return true;\n}\n\nfunction replacePostStylesAsPre(\n element: any,
allPreStyleElements: Map<any, Set<string>>, allPostStyleElements: Map<any, Set<string>>): boolean {\n
const postEntry = allPostStyleElements.get(element);\n if (!postEntry) return false;\n\n let preEntry =
allPreStyleElements.get(element);\n if (preEntry) {\n postEntry.forEach(data => preEntry!.add(data));\n } else
{\n allPreStyleElements.set(element, postEntry);\n }\n\n allPostStyleElements.delete(element);\n return
true;\n}\n\n", "/*\n * @license\n * Copyright Google LLC All Rights Reserved.\n * Use of this source code is
governed by an MIT-style license that can be\n * found in the LICENSE file at https://angular.io/license\n
*/\n\nimport { AnimationMetadata, AnimationPlayer, AnimationTriggerMetadata } from
'@angular/animations';\nimport { TriggerAst } from './dsl/animation_ast';\nimport { buildAnimationAst } from
'./dsl/animation_ast_builder';\nimport { AnimationTrigger, buildTrigger } from './dsl/animation_trigger';\nimport
{ AnimationStyleNormalizer } from './dsl/style_normalization/animation_style_normalizer';\n\nimport

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{AnimationDriver} from './animation_driver';\nimport {parseTimelineCommand} from './shared';\nimport
{TimelineAnimationEngine} from './timeline_animation_engine';\nimport {TransitionAnimationEngine} from
 './transition_animation_engine';\n\nexport class AnimationEngine {\n private _transitionEngine:
TransitionAnimationEngine;\n private _timelineEngine: TimelineAnimationEngine;\n\n private _triggerCache:
{[key: string]: AnimationTrigger} = {};\n\n // this method is designed to be overridden by the code that uses this
engine\n public onRemovalComplete = (element: any, context: any) => {};\n\n constructor(\n private
bodyNode: any, private _driver: AnimationDriver,\n normalizer: AnimationStyleNormalizer) {\n
this._transitionEngine = new TransitionAnimationEngine(bodyNode, _driver, normalizer);\n this._timelineEngine
= new TimelineAnimationEngine(bodyNode, _driver, normalizer);\n\n this._transitionEngine.onRemovalComplete = (element: any, context: any) =>\n
this.onRemovalComplete(element, context);\n }\n\n registerTrigger(\n componentId: string, namespaceId:
string, hostElement: any, name: string,\n metadata: AnimationTriggerMetadata): void {\n const cacheKey =
componentId + '-' + name;\n let trigger = this._triggerCache[cacheKey];\n if (!trigger) {\n const errors: any[]
= [];\n const ast =\n buildAnimationAst(this._driver, metadata as AnimationMetadata, errors) as
TriggerAst;\n if (errors.length) {\n throw new Error(`The animation trigger \"${\n name}\" has failed
to build due to the following errors:\n - ${errors.join("\n - ' ')}');\n }\n trigger = buildTrigger(name, ast);\n
this._triggerCache[cacheKey] = trigger;\n }\n this._transitionEngine.registerTrigger(namespaceId, name,
trigger);\n }\n\n register(namespaceId: string, hostElement: any) {\n this._transitionEngine.register(namespaceId,
hostElement);\n }\n\n destroy(namespaceId: string, context: any) {\n this._transitionEngine.destroy(namespaceId,
context);\n }\n\n onInsert(namespaceId: string, element: any, parent: any, insertBefore: boolean): void {\n
this._transitionEngine.insertNode(namespaceId, element, parent, insertBefore);\n }\n\n onRemove(namespaceId:
string, element: any, context: any, isHostElement?: boolean): void {\n
this._transitionEngine.removeNode(namespaceId, element, isHostElement || false, context);\n }\n\n disableAnimations(element: any, disable: boolean) {\n this._transitionEngine.markElementAsDisabled(element,
disable);\n }\n\n process(namespaceId: string, element: any, property: string, value: any) {\n if
(property.charAt(0) == '@') {\n const [id, action] = parseTimelineCommand(property);\n const args = value as
any[];\n this._timelineEngine.command(id, element, action, args);\n } else {\n
this._transitionEngine.trigger(namespaceId, element, property, value);\n }\n }\n\n listen(\n namespaceId:
string, element: any, eventName: string, eventPhase: string,\n callback: (event: any) => any): () => any {\n //
@@listen\n if (eventName.charAt(0) == '@') {\n const [id, action] = parseTimelineCommand(eventName);\n
return this._timelineEngine.listen(id, element, action, callback);\n }\n return
this._transitionEngine.listen(namespaceId, element, eventName, eventPhase, callback);\n }\n\n flush(microtaskId:
number = -1): void {\n this._transitionEngine.flush(microtaskId);\n }\n\n get players(): AnimationPlayer[] {\n
return (this._transitionEngine.players as AnimationPlayer[])\n .concat(this._timelineEngine.players as
AnimationPlayer[]);\n }\n\n whenRenderingDone(): Promise<any> {\n return
this._transitionEngine.whenRenderingDone();\n }\n}\n\n"/**\n * @license\n * Copyright Google LLC All Rights
Reserved.\n * Use of this source code is governed by an MIT-style license that can be\n * found in the
LICENSE file at https://angular.io/license\n */\nimport {eraseStyles, setStyles} from './util';\n\n/**\n * Returns an
instance of `SpecialCasedStyles` if and when any special (non animateable) styles are\n * detected.\n *\n * In CSS
there exist properties that cannot be animated within a keyframe animation\n * (whether it be via CSS keyframes or
web-animations) and the animation implementation\n * will ignore them. This function is designed to detect those
special cased styles and\n * return a container that will be executed at the start and end of the animation.\n *\n *
@returns an instance of `SpecialCasedStyles` if any special styles are detected otherwise `null`\n */\nexport function
packageNonAnimatableStyles(\n element: any, styles: {[key: string]: any} | {[key: string]: any}[]):
SpecialCasedStyles | null {\n let startStyles: {[key: string]: any} | null = null;\n let endStyles: {[key: string]: any} | null
= null;\n if (Array.isArray(styles) && styles.length) {\n startStyles = filterNonAnimatableStyles(styles[0]);\n if
(styles.length > 1) {\n endStyles = filterNonAnimatableStyles(styles[styles.length - 1]);\n }\n } else if (styles)
{\n startStyles = filterNonAnimatableStyles(styles);\n }\n\n return (startStyles || endStyles) ? new

```

```

SpecialCasedStyles(element, startStyles, endStyles) : \n
null; \n } \n \n /** \n * Designed to be
executed during a keyframe-based animation to apply any special-cased styles. \n * \n * When started (when the
`start()` method is run) then the provided `startStyles` \n * will be applied. When finished (when the `finish()`
method is called) the \n * `endStyles` will be applied as well any any starting styles. Finally when \n * `destroy()`
is called then all styles will be removed. \n * \n \n export class SpecialCasedStyles { \n static initialStylesByElement =
new WeakMap<any, {[key: string]: any}>(); \n private _state = SpecialCasedStylesState.Pending; \n private
_initialStyles!: {[key: string]: any}; \n constructor(\n private _element: any, private _startStyles: {[key: string]:
any} | null, \n private _endStyles: {[key: string]: any} | null) { \n let initialStyles =
SpecialCasedStyles.initialStylesByElement.get(_element); \n if (!initialStyles) { \n
SpecialCasedStyles.initialStylesByElement.set(_element, initialStyles = {}); \n } \n this._initialStyles =
initialStyles; \n } \n start() { \n if (this._state < SpecialCasedStylesState.Started) { \n if (this._startStyles) { \n
setStyles(this._element, this._startStyles, this._initialStyles); \n } \n this._state =
SpecialCasedStylesState.Started; \n } \n } \n finish() { \n this.start(); \n if (this._state <
SpecialCasedStylesState.Finished) { \n setStyles(this._element, this._initialStyles); \n if (this._endStyles) { \n
setStyles(this._element, this._endStyles); \n this._endStyles = null; \n } \n this._state =
SpecialCasedStylesState.Started; \n } \n } \n destroy() { \n this.finish(); \n if (this._state <
SpecialCasedStylesState.Destroyed) { \n SpecialCasedStyles.initialStylesByElement.delete(this._element); \n if
(this._startStyles) { \n eraseStyles(this._element, this._startStyles); \n this._endStyles = null; \n } \n if
(this._endStyles) { \n eraseStyles(this._element, this._endStyles); \n this._endStyles = null; \n } \n
setStyles(this._element, this._initialStyles); \n this._state = SpecialCasedStylesState.Destroyed; \n } \n
} \n } \n \n /** \n * An enum of states reflective of what the status of `SpecialCasedStyles` is. \n * \n * Depending on
how `SpecialCasedStyles` is interacted with, the start and end \n * styles may not be applied in the same way. This
enum ensures that if and when \n * the ending styles are applied then the starting styles are applied. It is \n * also used
to reflect what the current status of the special cased styles are \n * which helps prevent the starting/ending styles not
be applied twice. It is \n * also used to cleanup the styles once `SpecialCasedStyles` is destroyed. \n * \n \n const enum
SpecialCasedStylesState { \n Pending = 0, \n Started = 1, \n Finished = 2, \n Destroyed = 3, \n } \n \n function
filterNonAnimatableStyles(styles: {[key: string]: any}) { \n let result: {[key: string]: any} | null = null; \n const props
= Object.keys(styles); \n for (let i = 0; i < props.length; i++) { \n const prop = props[i]; \n if
(isNonAnimatableStyle(prop)) { \n result = result || {}; \n result[prop] = styles[prop]; \n } \n } \n return
result; \n } \n \n function isNonAnimatableStyle(prop: string) { \n return prop === 'display' || prop ===
'position'; \n } \n \n /** \n * @license \n * Copyright Google LLC All Rights Reserved. \n * \n * Use of this source code
is governed by an MIT-style license that can be \n * found in the LICENSE file at https://angular.io/license \n
* \n \n const ELAPSED_TIME_MAX_DECIMAL_PLACES = 3; \n const ANIMATION_PROP = 'animation'; \n const
ANIMATIONEND_EVENT = 'animationend'; \n const ONE_SECOND = 1000; \n \n export class
ElementAnimationStyleHandler { \n private readonly _eventFn: (e: any) => any; \n private _finished = false; \n
private _destroyed = false; \n private _startTime = 0; \n private _position = 0; \n constructor(\n private readonly
_element: any, private readonly _name: string, \n private readonly _duration: number, private readonly _delay:
number, \n private readonly _easing: string, private readonly _fillMode: "'both'|'forwards'", \n private readonly
_onDoneFn: () => any) { \n this._eventFn = (e) => this._handleCallback(e); \n } \n \n apply() { \n
applyKeyframeAnimation(\n this._element, \n `${this._duration}ms ${this._easing} ${this._delay}ms 1
normal ${this._fillMode} ${\n this._name}`); \n addRemoveAnimationEvent(this._element, this._eventFn,
false); \n this._startTime = Date.now(); \n } \n \n pause() { \n playPauseAnimation(this._element, this._name,
'paused'); \n } \n \n resume() { \n playPauseAnimation(this._element, this._name, 'running'); \n } \n \n
setPosition(position: number) { \n const index = findIndexForAnimation(this._element, this._name); \n
this._position = position * this._duration; \n setAnimationStyle(this._element, 'Delay', `-${this._position}ms`,
index); \n } \n \n getPosition() { \n return this._position; \n } \n \n private _handleCallback(event: any) { \n const
timestamp = event._ngTestManualTimestamp || Date.now(); \n const elapsedTime = \n
parseFloat(event.elapsedTime.toFixed(ELAPSED_TIME_MAX_DECIMAL_PLACES)) * ONE_SECOND; \n if

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(event.animationName == this._name &&\n Math.max(timestamp - this._startTime, 0) >= this._delay &&
elapsedTime >= this._duration) {\n this.finish();\n }\n}\n\nfinish() {\n if (this._finished) return;\n this._finished = true;\n this._onDoneFn();\n addRemoveAnimationEvent(this._element, this._eventFn, true);\n}\n\ndestroy() {\n if (this._destroyed) return;\n this._destroyed = true;\n this.finish();\n}\n\nremoveKeyframeAnimation(this._element, this._name);\n}\n}\n\nfunction playPauseAnimation(element: any,
name: string, status: 'running'|'paused') {\n const index = findIndexForAnimation(element, name);\n setAnimationStyle(element, 'PlayState', status, index);\n}\n}\n\nfunction applyKeyframeAnimation(element: any,
value: string): number {\n const anim = getAnimationStyle(element, ").trim();\n let index = 0;\n if (anim.length) {\n index = countChars(anim, ',') + 1;\n value = `${anim}, ${value}`;\n }\n setAnimationStyle(element, ",
value);\n return index;\n}\n}\n\nfunction removeKeyframeAnimation(element: any, name: string) {\n const anim =
getAnimationStyle(element, ");\n const tokens = anim.split(',');\n const index = findMatchingTokenIndex(tokens,
name);\n if (index >= 0) {\n tokens.splice(index, 1);\n const newValue = tokens.join(',');\n setAnimationStyle(element, ", newValue);\n }\n}\n}\n\nfunction findIndexForAnimation(element: any, value: string)
{\n const anim = getAnimationStyle(element, ");\n if (anim.indexOf(',') > 0) {\n const tokens = anim.split(',');\n return findMatchingTokenIndex(tokens, value);\n }\n return findMatchingTokenIndex([anim],
value);\n}\n}\n\nfunction findMatchingTokenIndex(tokens: string[], searchToken: string): number {\n for (let i = 0; i <
tokens.length; i++) {\n if (tokens[i].indexOf(searchToken) >= 0) {\n return i;\n }\n }\n return -
1;\n}\n}\n\nfunction addRemoveAnimationEvent(element: any, fn: (e: any) => any, doRemove: boolean) {\n
doRemove ? element.removeEventListener(ANIMATIONEND_EVENT, fn) :\n element.addEventListener(ANIMATIONEND_EVENT, fn);\n}\n}\n\nfunction setAnimationStyle(element: any, name:
string, value: string, index?: number) {\n const prop = ANIMATION_PROP + name;\n if (index != null) {\n
const oldValue = element.style[prop];\n if (oldValue.length) {\n const tokens = oldValue.split(',');\n
tokens[index] = value;\n value = tokens.join(',');\n }\n }\n element.style[prop] = value;\n}\n}\n\nfunction
getAnimationStyle(element: any, name: string) {\n return element.style[ANIMATION_PROP +
name];\n}\n}\n\nfunction countChars(value: string, char: string): number {\n let count = 0;\n for (let i = 0; i <
value.length; i++) {\n const c = value.charAt(i);\n if (c === char) count++;\n }\n return count;\n}\n}\n\n"/**\n *
@license\n * Copyright Google LLC All Rights Reserved.\n * Use of this source code is governed by an MIT-
style license that can be\n * found in the LICENSE file at https://angular.io/license\n */\n\nimport { AnimationPlayer }
from '@angular/animations';\n\nimport { computeStyle } from '../util';\n\nimport { SpecialCasedStyles } from
'./special_cased_styles';\n\nimport { ElementAnimationStyleHandler } from
'./element_animation_style_handler';\n\nconst DEFAULT_FILL_MODE = 'forwards';\n\nconst DEFAULT_EASING
= 'linear';\n\nexport const enum AnimatorControlState {\n INITIALIZED = 1,\n STARTED = 2,\n FINISHED =
3,\n DESTROYED = 4\n}\n\nexport class CssKeyframesPlayer implements AnimationPlayer {\n private
_onDoneFns: Function[] = [];\n private _onStartFns: Function[] = [];\n private _onDestroyFns: Function[] = [];\n
private _started = false;\n // TODO(issue/24571): remove '!'.\n private _styler!:
ElementAnimationStyleHandler;\n // TODO(issue/24571): remove '!'.\n public parentPlayer!:
AnimationPlayer;\n public readonly totalTime: number;\n public readonly easing: string;\n public
currentSnapshot: {[key: string]: string} = {};\n private _state: AnimatorControlState = 0;\n\n constructor(\n
public readonly element: any, public readonly keyframes: {[key: string]: string|number}[],\n public readonly
animationName: string, private readonly _duration: number,\n private readonly _delay: number, easing: string,\n
private readonly _finalStyles: {[key: string]: any},\n private readonly _specialStyles?: SpecialCasedStyles|null)
{\n this.easing = easing || DEFAULT_EASING;\n this.totalTime = _duration + _delay;\n this._buildStyler();\n
}\n\n onStart(fn: () => void): void {\n this._onStartFns.push(fn);\n }\n\n onDone(fn: () => void): void {\n
this._onDoneFns.push(fn);\n }\n\n onDestroy(fn: () => void): void {\n this._onDestroyFns.push(fn);\n }\n\n
destroy() {\n this.init();\n if (this._state >= AnimatorControlState.DESTROYED) return;\n this._state =
AnimatorControlState.DESTROYED;\n this._styler.destroy();\n this._flushStartFns();\n
this._flushDoneFns();\n if (this._specialStyles) {\n this._specialStyles.destroy();\n }\n
this._onDestroyFns.forEach(fn => fn());\n this._onDestroyFns = [];\n }\n\n private _flushDoneFns() {\n

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this._onDoneFns.forEach(fn => fn());\n this._onDoneFns = [];\n }\n\n private _flushStartFns() {\n
this._onStartFns.forEach(fn => fn());\n this._onStartFns = [];\n }\n\n finish() {\n this.init();\n if (this._state >=
AnimatorControlState.FINISHED) return;\n this._state = AnimatorControlState.FINISHED;\n
this._styler.finish();\n this._flushStartFns();\n if (this._specialStyles) {\n this._specialStyles.finish();\n }\n
this._flushDoneFns();\n }\n\n setPosition(value: number) {\n this._styler.setPosition(value);\n }\n\n
getPosition(): number {\n return this._styler.getPosition();\n }\n\n hasStarted(): boolean {\n return this._state
>= AnimatorControlState.STARTED;\n }\n\n init(): void {\n if (this._state >=
AnimatorControlState.INITIALIZED) return;\n this._state = AnimatorControlState.INITIALIZED;\n const elm
= this.element;\n this._styler.apply();\n if (this._delay) {\n this._styler.pause();\n }\n }\n\n
play(): void {\n this.init();\n if (!this.hasStarted()) {\n this._flushStartFns();\n this._state =
AnimatorControlState.STARTED;\n if (this._specialStyles) {\n this._specialStyles.start();\n }\n }\n
this._styler.resume();\n }\n\n pause(): void {\n this.init();\n this._styler.pause();\n }\n\n
restart(): void {\n this.reset();\n this.play();\n }\n\n reset(): void {\n this._styler.destroy();\n this._buildStyler();\n
this._styler.apply();\n }\n\n private _buildStyler() {\n this._styler = new ElementAnimationStyleHandler(\n
this.element, this.animationName, this._duration, this._delay, this.easing,\n DEFAULT_FILL_MODE, () =>
this.finish());\n }\n\n /** @internal */\n triggerCallback(phaseName: string): void {\n const methods =
phaseName == 'start' ? this._onStartFns : this._onDoneFns;\n methods.forEach(fn => fn());\n methods.length =
0;\n }\n\n beforeDestroy() {\n this.init();\n const styles: {[key: string]: string} = {};\n if (this.hasStarted()) {\n
const finished = this._state >= AnimatorControlState.FINISHED;\n
Object.keys(this._finalStyles).forEach(prop => {\n if (prop != 'offset') {\n styles[prop] = finished ?
this._finalStyles[prop] : computeStyle(this.element, prop);\n }\n });\n }\n this.currentSnapshot = styles;\n
}\n\n "/*\n * @license\n * Copyright Google LLC All Rights Reserved.\n * Use of this source code is
governed by an MIT-style license that can be\n * found in the LICENSE file at https://angular.io/license\n
*/\nimport {NoopAnimationPlayer} from '@angular/animations';\nimport {hypeatePropsObject} from
'./shared';\n\nexport class DirectStylePlayer extends NoopAnimationPlayer {\n private _startingStyles: {[key:
string]: any} | null = {};\n private __initialized = false;\n private _styles: {[key: string]: any};\n\n
constructor(public\n element: any, styles: {[key: string]: any}) {\n super();\n this._styles = hypeatePropsObject(styles);\n }\n\n
init() {\n if (this.__initialized || !this._startingStyles) return;\n this.__initialized = true;\n
Object.keys(this._styles).forEach(prop => {\n this._startingStyles![prop] = this.element.style[prop];\n });\n
super.init();\n }\n\n play() {\n if (!this._startingStyles) return;\n this.init();\n Object.keys(this._styles)\n
.forEach(prop => this.element.style.setProperty(prop, this._styles[prop]));\n super.play();\n }\n\n
destroy() {\n if (!this._startingStyles) return;\n Object.keys(this._startingStyles).forEach(prop => {\n const value =
this._startingStyles![prop];\n if (value) {\n this.element.style.setProperty(prop, value);\n } else {\n
this.element.style.removeProperty(prop);\n }\n });\n this._startingStyles = null;\n super.destroy();\n
}\n\n "/*\n * @license\n * Copyright Google LLC All Rights Reserved.\n * Use of this source code is
governed by an MIT-style license that can be\n * found in the LICENSE file at https://angular.io/license\n
*/\nimport {AnimationPlayer, StyleData} from '@angular/animations';\nimport
{allowPreviousPlayerStylesMerge, balancePreviousStylesIntoKeyframes, computeStyle} from '../util';\nimport
{AnimationDriver} from './animation_driver';\nimport {containsElement, hypeatePropsObject, invokeQuery,
matchesElement, validateStyleProperty} from './shared';\nimport {packageNonAnimatableStyles} from
'./special_cased_styles';\nimport {CssKeyframesPlayer} from './css_keyframes_player';\nimport
{DirectStylePlayer} from './direct_style_player';\n\nconst KEYFRAMES_NAME_PREFIX = 'gen_css_kf_';\nconst
TAB_SPACE = ' '\n\nexport class CssKeyframesDriver implements AnimationDriver {\n private _count = 0;\n
private readonly _head: any = document.querySelector('head');\n private _warningIssued = false;\n\n
validateStyleProperty(prop: string): boolean {\n return validateStyleProperty(prop);\n }\n\n
matchesElement(element: any, selector: string): boolean {\n return matchesElement(element, selector);\n }\n\n
containsElement(elm1: any, elm2: any): boolean {\n return containsElement(elm1, elm2);\n }\n\n
query(element: any, selector: string, multi: boolean): any[] {\n return invokeQuery(element, selector, multi);\n }\n\n

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computeStyle(element: any, prop: string, defaultValue?: string): string {
 return
 (window.getComputedStyle(element) as any)[prop] as string;
}

buildKeyframeElement(element: any, name:
string, keyframes: {[key: string]: any}[]): any {
 keyframes = keyframes.map(kf => hyphenatePropsObject(kf));
 let keyframeStr = `@keyframes ${name} {\n`;
 let tab = ";
 keyframes.forEach(kf => {
 tab =
 TAB_SPACE;
 const offset = parseFloat(kf['offset']);
 keyframeStr += `${tab}${offset * 100}% {\n`;
 tab += TAB_SPACE;
 Object.keys(kf).forEach(prop => {
 const value = kf[prop];
 switch (prop) {
 case 'offset':
 return;
 case 'easing':
 if (value) {
 keyframeStr +=
 `${tab}animation-timing-function: ${value};\n`;
 }
 return;
 default:
 keyframeStr
 += `${tab}${prop}: ${value};\n`;
 return;
 }
 });
 keyframeStr += `${tab}\n`;
 });
 keyframeStr += `}\n`;
 const kfElm = document.createElement('style');
 kfElm.textContent =
 keyframeStr;
 return kfElm;
}

animate(element: any, keyframes: StyleData[], duration: number,
delay: number, easing: string,
previousPlayers: AnimationPlayer[] = [], scrubberAccessRequested?: boolean):
AnimationPlayer {
 if (scrubberAccessRequested) {
 this._notifyFaultyScrubber();
 }
 const
 previousCssKeyframePlayers = <CssKeyframesPlayer[]>previousPlayers.filter(
 player => player instanceof
 CssKeyframesPlayer);
 const previousStyles: {[key: string]: any} = {};
 if
 (allowPreviousPlayerStylesMerge(duration, delay)) {
 previousCssKeyframePlayers.forEach(player => {
 let styles = player.currentSnapshot;
 Object.keys(styles).forEach(prop => previousStyles[prop] =
 styles[prop]);
 });
 }
 keyframes = balancePreviousStylesIntoKeyframes(element, keyframes,
 previousStyles);
 const finalStyles = flattenKeyframesIntoStyles(keyframes);
 // if there is no animation then
 there is no point in applying
 // styles and waiting for an event to get fired. This causes lag.
 // It's better to just
 directly apply the styles to the element
 // via the direct styling animation player.
 if (duration == 0) {
 return new DirectStylePlayer(element, finalStyles);
 }
 const animationName =
 `${KEYFRAMES_NAME_PREFIX}${this._count++}`;
 const kfElm = this.buildKeyframeElement(element,
 animationName, keyframes);
 document.querySelector('head')!.appendChild(kfElm);
 const specialStyles =
 packageNonAnimatableStyles(element, keyframes);
 const player = new CssKeyframesPlayer(
 element,
 keyframes, animationName, duration, delay, easing, finalStyles, specialStyles);
 player.onDestroy(() =>
 removeElement(kfElm));
 return player;
}

private _notifyFaultyScrubber() {
 if (!this._warningIssued) {
 console.warn(
 '@angular/animations: please load the web-animations.js polyfill to allow
 programmatic access...
 ' visit http://bit.ly/IWukam to learn more about using the web-animation-js
 polyfill.
);
 this._warningIssued = true;
 }
}

function flattenKeyframesIntoStyles(keyframes:
null|{[key: string]: any}|
{[key: string]: any}[]): {[key: string]: any} {
 let flatKeyframes:
 {[key: string]: any} = {};
 if (keyframes) {
 const kfs = Array.isArray(keyframes) ? keyframes : [keyframes];
 kfs.forEach(kf => {
 Object.keys(kf).forEach(prop => {
 if (prop == 'offset' || prop == 'easing') return;
 flatKeyframes[prop] = kf[prop];
 });
 });
 }
 return flatKeyframes;
}

function removeElement(node:
any) {
 node.parentNode.removeChild(node);
}

/**
 * @license
 * Copyright Google LLC All Rights
 Reserved.
 * Use of this source code is governed by an MIT-style license that can be
 * found in the
 LICENSE file at https://angular.io/license
 */
import { AnimationPlayer } from '@angular/animations';
import
 { computeStyle } from '../util';
import { SpecialCasedStyles } from './special_cased_styles';
import
 { DOMAnimation } from './dom_animation';
export class WebAnimationsPlayer implements AnimationPlayer {
 private _onDoneFns: Function[] = [];
 private _onStartFns: Function[] = [];
 private _onDestroyFns: Function[] =
 [];
 private _duration: number;
 private _delay: number;
 private _initialized = false;
 private _finished =
 false;
 private _started = false;
 private _destroyed = false;
 // TODO(issue/24571): remove '!'.
 private
 _finalKeyframe!: {[key: string]: string|number};
 // TODO(issue/24571): remove '!'.
 public readonly
 domPlayer!: DOMAnimation;
 public time = 0;
 public parentPlayer: AnimationPlayer|null = null;
 public
 currentSnapshot: {[styleName: string]: string|number} = {};
 constructor(
 public element: any, public
 keyframes: {[key: string]: string|number}[], public options: {[key: string]:
 string|number}, private
 _specialStyles?: SpecialCasedStyles|null) {
 this._duration = <number>options['duration'];
 this._delay =
 <number>options['delay'] || 0;
 this.time = this._duration + this._delay;
 }

 private _onFinish() {
 if

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(!this._finished) {\n this._finished = true;\n this._onDoneFns.forEach(fn => fn());\n this._onDoneFns =
[];\n };\n }\n\n init(): void {\n this._buildPlayer();\n this._preparePlayerBeforeStart();\n }\n\n private
_buildPlayer(): void {\n if (this._initialized) return;\n this._initialized = true;\n\n const keyframes =
this.keyframes;\n (this as {domPlayer: DOMAnimation}).domPlayer =\n
this._triggerWebAnimation(this.element, keyframes, this.options);\n this._finalKeyframe = keyframes.length ?
keyframes[keyframes.length - 1] : {};\n this.domPlayer.addEventListener('finish', () => this._onFinish());\n }\n\n private
_preparePlayerBeforeStart() {\n // this is required so that the player doesn't start to animate right away\n
if (this._delay) {\n this._resetDomPlayerState();\n } else {\n this.domPlayer.pause();\n }\n }\n\n /**
@internal *\n _triggerWebAnimation(element: any, keyframes: any[], options: any): DOMAnimation {\n //
jscompiler doesn't seem to know animate is a native property because it's not fully\n // supported yet across
common browsers (we polyfill it for Edge/Safari) [CL #143630929]\n return element['animate'](keyframes,
options) as DOMAnimation;\n }\n\n onStart(fn: () => void): void {\n this._onStartFns.push(fn);\n }\n\n onDone(fn: () => void): void {\n this._onDoneFns.push(fn);\n }\n\n onDestroy(fn: () => void): void {\n
this._onDestroyFns.push(fn);\n }\n\n play(): void {\n this._buildPlayer();\n if (!this.hasStarted()) {\n
this._onStartFns.forEach(fn => fn());\n this._onStartFns = [];\n this._started = true;\n if
(this._specialStyles) {\n this._specialStyles.start();\n }\n }\n this.domPlayer.play();\n }\n\n pause(): void
{\n this.init();\n this.domPlayer.pause();\n }\n\n finish(): void {\n this.init();\n if (this._specialStyles) {\n
this._specialStyles.finish();\n }\n this._onFinish();\n this.domPlayer.finish();\n }\n\n reset(): void {\n
this._resetDomPlayerState();\n this._destroyed = false;\n this._finished = false;\n this._started = false;\n }\n\n private
_resetDomPlayerState() {\n if (this.domPlayer) {\n this.domPlayer.cancel();\n }\n }\n\n restart():
void {\n this.reset();\n this.play();\n }\n\n hasStarted(): boolean {\n return this._started;\n }\n\n destroy():
void {\n if (!this._destroyed) {\n this._destroyed = true;\n this._resetDomPlayerState();\n
this._onFinish();\n if (this._specialStyles) {\n this._specialStyles.destroy();\n }\n
this._onDestroyFns.forEach(fn => fn());\n this._onDestroyFns = [];\n }\n }\n\n setPosition(p: number): void
{\n this.domPlayer.currentTime = p * this.time;\n }\n\n getPosition(): number {\n return
this.domPlayer.currentTime / this.time;\n }\n\n get totalTime(): number {\n return this._delay + this._duration;\n
}\n\n beforeDestroy() {\n const styles: {[key: string]: string|number} = {};\n if (this.hasStarted()) {\n
Object.keys(this._finalKeyframe).forEach(prop => {\n if (prop !== 'offset') {\n styles[prop] =\n
this._finished ? this._finalKeyframe[prop] : computeStyle(this.element, prop);\n }\n });\n }\n
this.currentSnapshot = styles;\n }\n\n /** @internal *\n triggerCallback(phaseName: string): void {\n const
methods = phaseName === 'start' ? this._onStartFns : this._onDoneFns;\n methods.forEach(fn => fn());\n
methods.length = 0;\n }\n\n", "/*\n * @license\n * Copyright Google LLC All Rights Reserved.\n * Use of
this source code is governed by an MIT-style license that can be\n * found in the LICENSE file at
https://angular.io/license\n *\nimport {AnimationPlayer, StyleData} from '@angular/animations';\nimport
{allowPreviousPlayerStylesMerge, balancePreviousStylesIntoKeyframes, copyStyles} from '../util';\nimport
{AnimationDriver} from '../animation_driver';\nimport {CssKeyframesDriver} from
'../css_keyframes/css_keyframes_driver';\nimport {containsElement, invokeQuery, isBrowser, matchesElement,
validateStyleProperty} from '../shared';\nimport {packageNonAnimatableStyles} from
'../special_cased_styles';\nimport {WebAnimationsPlayer} from './web_animations_player';\n\nexport class
WebAnimationsDriver implements AnimationDriver {\n private _isNativeImpl =
^{\n\n test(getElementAnimateFn().toString());\n private _cssKeyframesDriver = new
CssKeyframesDriver();\n\n validateStyleProperty(prop: string): boolean {\n return validateStyleProperty(prop);\n
}\n\n matchesElement(element: any, selector: string): boolean {\n return matchesElement(element, selector);\n
}\n\n containsElement(elm1: any, elm2: any): boolean {\n return containsElement(elm1, elm2);\n }\n\n query(element: any, selector: string, multi: boolean): any[] {\n return invokeQuery(element, selector, multi);\n
}\n\n computeStyle(element: any, prop: string, defaultValue?: string): string {\n return
(window.getComputedStyle(element) as any)[prop] as string;\n }\n\n overrideWebAnimationsSupport(supported:
boolean) {\n this._isNativeImpl = supported;\n }\n\n animate(\n element: any, keyframes: StyleData[],

```



```

duration: number, delay: number, easing: string,\n previousPlayers: AnimationPlayer[] = [],
scrubberAccessRequested?: boolean): AnimationPlayer {\n const useKeyframes = !scrubberAccessRequested &&
!this._isNativeImpl;\n if (useKeyframes) {\n return this._cssKeyframesDriver.animate(\n element,
keyframes, duration, delay, easing, previousPlayers);\n }\n const fill = delay == 0 ? 'both' : 'forwards';\n const playerOptions: {[key: string]: string|number} = {duration, delay, fill};\n // we check for this to avoid having
a null|undefined value be present\n // for the easing (which results in an error for certain browsers #9752)\n if
(easing) {\n playerOptions['easing'] = easing;\n }\n const previousStyles: {[key: string]: any} = {};\n const previousWebAnimationPlayers = <WebAnimationsPlayer[]>previousPlayers.filter(\n player => player
instanceof WebAnimationsPlayer);\n if (allowPreviousPlayerStylesMerge(duration, delay)) {\n
previousWebAnimationPlayers.forEach(player => {\n let styles = player.currentSnapshot;\n Object.keys(styles).forEach(prop => previousStyles[prop] = styles[prop]);\n });\n }\n keyframes =
keyframes.map(styles => copyStyles(styles, false));\n keyframes = balancePreviousStylesIntoKeyframes(element,
keyframes, previousStyles);\n const specialStyles = packageNonAnimatableStyles(element, keyframes);\n return
new WebAnimationsPlayer(element, keyframes, playerOptions, specialStyles);\n }\n}\n\nexport function
supportsWebAnimations() {\n return typeof getElementAnimateFn() === 'function';\n}\n\nfunction
getElementAnimateFn(): any {\n return (isBrowser() && (<any>Element).prototype['animate']) || {};\n}\n\n"/**\n *
@license\n * Copyright Google LLC All Rights Reserved.\n * Use of this source code is governed by an MIT-
style license that can be\n * found in the LICENSE file at https://angular.io/license\n */\nexport { Animation as
Animation } from './dsl/animation';\nexport { AnimationStyleNormalizer as AnimationStyleNormalizer,
NoopAnimationStyleNormalizer as NoopAnimationStyleNormalizer } from
'./dsl/style_normalization/animation_style_normalizer';\nexport { WebAnimationsStyleNormalizer as
WebAnimationsStyleNormalizer } from './dsl/style_normalization/web_animations_style_normalizer';\nexport
{ NoopAnimationDriver as NoopAnimationDriver } from './render/animation_driver';\nexport { AnimationEngine as
AnimationEngine } from './render/animation_engine_next';\nexport { CssKeyframesDriver as CssKeyframesDriver }
from './render/css_keyframes/css_keyframes_driver';\nexport { CssKeyframesPlayer as CssKeyframesPlayer } from
'./render/css_keyframes/css_keyframes_player';\nexport { containsElement as containsElement, invokeQuery as
invokeQuery, matchesElement as matchesElement, validateStyleProperty as validateStyleProperty } from
'./render/shared';\nexport { supportsWebAnimations as supportsWebAnimations, WebAnimationsDriver as
WebAnimationsDriver } from './render/web_animations/web_animations_driver';\nexport { WebAnimationsPlayer as
WebAnimationsPlayer } from './render/web_animations/web_animations_player';\nexport
{ allowPreviousPlayerStylesMerge as allowPreviousPlayerStylesMerge } from './util';\n\n"/**\n * @license\n *
Copyright Google LLC All Rights Reserved.\n * Use of this source code is governed by an MIT-style license
that can be\n * found in the LICENSE file at https://angular.io/license\n */\n\n"/**\n * @module\n * @description\n
* Entry point for all animation APIs of the animation browser package.\n */\nexport { AnimationDriver } from
'./render/animation_driver';\nexport * from './private_export';\n\n"/**\n * @license\n * Copyright Google LLC All
Rights Reserved.\n * Use of this source code is governed by an MIT-style license that can be\n * found in the
LICENSE file at https://angular.io/license\n */\n\n"/**\n * @module\n * @description\n * Entry point for all public
APIs of this package.\n */\nexport * from './src/browser';\n\n"/**\n * @license\n * Copyright Google LLC All
Rights Reserved.\n * Use of this source code is governed by an MIT-style license that can be\n * found in the
LICENSE file at https://angular.io/license\n */\n\n// This file is not used to build this module. It is only used during
editing\n// by the TypeScript language service and during build for verification. `ngc`\n// replaces this file with
production index.ts when it rewrites private symbol\n// names.\nexport * from './public_api';\n\n"/**\n * Generated
bundle index. Do not edit.\n */\nexport * from './index';\nexport { SpecialCasedStyles as
angular_packages_animations_browser_browser_a } from
'./src/render/special_cased_styles';\n\n}, "names": ["PRE_STYLE", "AnimationGroupPlayer", "ONE_SECOND"], "mappi
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No license file was found, but licenses were detected in source scan.

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```



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ntent":["\*\*\n \* @license Angular v11.0.2\n \* (c) 2010-2020 Google LLC. https://angular.io/\n \* License: MIT\n \*\n\n(function (global, factory) {\n typeof exports === 'object' && typeof module !== 'undefined' ?



```

code\n *]),\n *])\n *]\n * })\n * class MyComponent {\n * myStatusExp = \"yes-please-
animate\";\n * }\n * ```\n * \n * ### Disabling Animations\n * When true, the special animation control
binding `@.disabled` binding prevents\n * all animations from rendering.\n * Place the `@.disabled` binding
on an element to disable\n * animations on the element itself, as well as any inner animation triggers\n * within
the element.\n * \n * The following example shows how to use this feature:\n * \n * ```typescript\n *
@Component({\n * selector: 'my-component',\n * template: `
\n * <div [@.disabled]=\"isDisabled\">\n
\n * <div [@childAnimation]=\"exp\"></div>\n * </div>\n * `,\n * animations: [\n *
trigger(\"childAnimation\", [\n * // ...
\n *])\n *]\n * })\n * class MyComponent {\n *
isDisabled = true;\n * exp = '..';\n * }\n * ```\n * \n * When `@.disabled` is true, it prevents the
`@childAnimation` trigger from animating,\n * along with any inner animations.\n * \n * ### Disable
animations application-wide\n * When an area of the template is set to have animations disabled,\n * ***all**
inner components have their animations disabled as well.\n * This means that you can disable all animations for
an app\n * by placing a host binding set on `@.disabled` on the topmost Angular component.\n * \n *
```typescript\n * import {Component, HostBinding} from '@angular/core';\n * \n * @Component({\n *
selector: 'app-component',\n *   templateUrl: 'app.component.html',\n * })\n * class AppComponent {\n *
@HostBinding('@.disabled')\n *   public animationsDisabled = true;\n * }\n * ```\n * \n * ###
Overriding disablement of inner animations\n * Despite inner animations being disabled, a parent animation can
`query()`\n * for inner elements located in disabled areas of the template and still animate\n * them if needed.
This is also the case for when a sub animation is\n * queried by a parent and then later animated using
`animateChild()`.\n * \n * ### Detecting when an animation is disabled\n * If a region of the DOM (or the
entire application) has its animations disabled, the animation\n * trigger callbacks still fire, but for zero seconds.
When the callback fires, it provides\n * an instance of an `AnimationEvent`. If animations are disabled,\n * the
`.disabled` flag on the event is true.\n * \n * @publicApi\n * \n * function trigger(name, definitions) {\n
return { type: 7 /* Trigger */, name: name, definitions: definitions, options: {} }; }\n * /**\n * Defines an
animation step that combines styling information with timing information.\n * \n * @param timings Sets
`AnimateTimings` for the parent animation.\n * A string in the format `\"duration [delay] [easing]\"`.\n * -
Duration and delay are expressed as a number and optional time unit,\n * such as `\"1s\"` or `\"10ms\"` for one
second and 10 milliseconds, respectively.\n * - The easing value controls
how the animation accelerates and decelerates\n * during its runtime. Value is one of `ease`, `ease-in`, `ease-
out`,\n * `ease-in-out`, or a `cubic-bezier()` function call.\n * If not supplied, no easing is applied.\n * \n *
For example, the string `\"1s 100ms ease-out\"` specifies a duration of\n * 1000 milliseconds, and delay of 100 ms,
and the `\"ease-out\"` easing style,\n * which decelerates near the end of the duration.\n * @param styles Sets
AnimationStyles for the parent animation.\n * A function call to either `style()` or `keyframes()`\n * that returns
a collection of CSS style entries to be applied to the parent animation.\n * When null, uses the styles from the
destination state.\n * This is useful when describing an animation step that will complete an animation;\n * see
`\"Animating to the final state\"` in `transitions()`.\n * @returns An object that encapsulates the animation step.\n
\n * @usageNotes\n * Call within an animation `sequence()`, `{ @link animations/group group()}`, or\n *
`transition()` call to specify an animation step\n * that applies given style data to the parent animation for a given
amount of time.\n * \n * ### Syntax Examples\n * ***Timing examples***\n * \n * The following
examples show various `timings` specifications.\n * - `animate(500)` : Duration is 500 milliseconds.\n * -
`animate(\"1s\")` : Duration is 1000 milliseconds.\n * - `animate(\"100ms 0.5s\")` : Duration is 100 milliseconds,
delay is 500 milliseconds.\n * - `animate(\"5s ease-in\")` : Duration is 5000 milliseconds, easing in.\n * -
`animate(\"5s 10ms cubic-bezier(.17,.67,.88,.1)\")` : Duration is 5000 milliseconds, delay is 10\n * milliseconds,
easing according to a bezier curve.\n * \n * ***Style examples***\n * \n * The following example calls
`style()` to set a single CSS style.\n * ```typescript\n * animate(500, style({ background: \"red\" }));\n * ```\n *
The following example calls `keyframes()` to set a CSS style\n * to different values for successive keyframes.\n *
```typescript\n * animate(500, keyframes([\n *   [\n *     style({ background: \"blue\" })),\n *   style({
background: \"red\" }));\n *]));\n * ```\n * \n * @publicApi\n * \n * function animate(timings, styles) {\n

```

```

 if (styles === void 0) { styles = null; }
 return { type: 4 /* Animate */, styles: styles, timings: timings };
}

/**
 * @description Defines a list of animation steps to be run in parallel.
 * @param steps An array of animation step objects.
 * - When steps are defined by `style()` or `animate()` function calls, each call within the group is executed instantly.
 * - To specify offset styles to be applied at a later time, define steps with `keyframes()`, or use `animate()` calls with a delay value.
 * For example:
```typescript
group([animate("1s", style({ background: "black" })), animate("2s", style({ color: "white" }))]
)
```
 * @param options An options object containing a delay and developer-defined parameters that provide styling defaults and can be overridden on invocation.
 * @return An object that encapsulates the group data.
 * @usageNotes Grouped animations are useful when a series of styles must be animated at different starting times and closed off at different ending times.
 * When called within a `sequence()` or a `transition()` call, does not continue to the next instruction until all of the inner animation steps have completed.
 * @publicApi
 */
function group(steps, options) {
 if (options === void 0) { options = null; }
 return { type: 3 /* Group */, steps: steps, options: options };
}

/**
 * Defines a list of animation steps to be run sequentially, one by one.
 * @param steps An array of animation step objects.
 * - Steps defined by `style()` calls apply the styling data immediately.
 * - Steps defined by `animate()` calls apply the styling data over time as specified by the timing data.
```typescript
sequence([style({ opacity: 0 }), animate("1s", style({ opacity: 1 })])
)
```
 * @param options An options object containing a delay and developer-defined parameters that provide styling defaults and can be overridden on invocation.
 * @return An object that encapsulates the sequence data.
 * @usageNotes When you pass an array of steps to a `transition()` call, the steps run sequentially by default. Compare this to the `{@link animations/group group()}` call, which runs animation steps in parallel. When a sequence is used within a `{@link animations/group group()}` or a `transition()` call, execution continues to the next instruction only after each of the inner animation steps have completed.
 * @publicApi
 */
function sequence(steps, options) {
 if (options === void 0) { options = null; }
 return { type: 2 /* Sequence */, steps: steps, options: options };
}

/**
 * Declares a key/value object containing CSS properties/styles that can then be used for an animation `state`, within an animation `sequence`, or as styling data for calls to `animate()` and `keyframes()`.
 * @param tokens A set of CSS styles or HTML styles associated with an animation state. The value can be any of the following:
 * - A key-value style pair associating a CSS property with a value.
 * - An array of key-value style pairs.
 * - An asterisk (*), to use auto-styling, where styles are derived from the element being animated and applied to the animation when it starts.
 * Auto-styling can be used to define a state that depends on layout or other environmental factors.
 * @return An object that encapsulates the style data.
 * @usageNotes The following examples create animation styles that collect a set of CSS property values:
```typescript
// string values for CSS properties
style({ background: "red", color: "blue" })
// numerical pixel values
style({ width: 100, height: 0 })
```
 * The following example uses auto-styling to allow a component to animate from a height of 0 up to the height of the parent element:
```typescript
style({ height: 0 }), animate("1s", style({ height: "*" }))
```
 * @publicApi
 */
function style(tokens) {
 return { type: 6 /* Style */, styles: tokens, offset: null };
}

/**
 * Declares an animation state within a trigger attached to an element.
 * @param name One or more names for the defined state in a comma-separated string. The following reserved state names can be supplied to define a style for specific use cases:
 * - `void` You can associate styles with this name to be used when the element is detached from the application. For example, when an `ngIf` evaluates to false, the state of the associated element is void.
 * - `*` (asterisk) Indicates the default state. You can associate styles with this name to be used as the fallback when the state that is being animated is not declared within the trigger.
 * @param styles A set of CSS styles associated with this state, created using the `style()` function. This set of styles persists on the element once the state has been reached.
 * @param options Parameters that can be passed to the state when it is invoked. 0 or more key-value pairs.

```

`@return` An object that encapsulates the new state data.

`* @usageNotes` Use the ``trigger()`` function to register states to an animation trigger.

`* Use the `transition()`` function to animate between states.

`* When a state is active within a component, its associated styles persist on the element, even when the animation ends.`

`* @publicApi`

```
function state(name, styles, options) {
 return { type: 0 /* State */,
 name: name, styles: styles, options: options };
}
```

`/**` Defines a set of animation styles, associating each style with an optional ``offset`` value.

`* @param steps` A set of animation styles with optional offset data.

`* The optional `offset` value for a style specifies a percentage of the total animation time at which that style is applied.`

`* @returns` An object that encapsulates the keyframes data.

`* @usageNotes` Use with the ``animate()`` call. Instead of applying animations from the current state to the destination state, keyframes describe how each style entry is applied and at what point within the animation arc.

`* Compare [CSS Keyframe Animations](https://www.w3schools.com/css/css3_animations.asp).`

`### Usage`

`* In the following example, the offset values describe when each `backgroundColor` value is applied. The color is red at the start, and changes to blue when 20% of the total time has elapsed.`

```
typescript
// the provided offset values
animate("5s", keyframes([
 style({ backgroundColor: "red", offset: 0 }),
 style({ backgroundColor: "blue", offset: 0.2 }),
 style({ backgroundColor: "orange", offset: 0.3 }),
 style({ backgroundColor: "black", offset: 1 })
]))
// If there are no `offset` values specified in the style entries, the offsets are calculated automatically.
typescript
animate("5s", keyframes([
 style({ backgroundColor: "red" }) // offset = 0
 style({ backgroundColor: "blue" }) // offset = 0.33
 style({ backgroundColor: "orange" }) // offset = 0.66
 style({ backgroundColor: "black" }) // offset = 1
]))

```

`* @publicApi`

```
function keyframes(steps) {
 return { type: 5 /* Keyframes */, steps: steps };
}
```

`/**` Declares an animation transition as a sequence of animation steps to run when a given condition is satisfied. The condition is a Boolean expression or function that compares the previous and current animation states, and returns true if this transition should occur.

`* When the state criteria of a defined transition are met, the associated animation is triggered.`

`* @param stateChangeExpr` A Boolean expression or function that compares the previous and current animation states, and returns true if this transition should occur. Note that `"true"` and `"false"` match 1 and 0, respectively. An expression is evaluated each time a state change occurs in the animation trigger element.

`* The animation steps run when the expression evaluates to true.`

- A state-change string takes the form `"state1 => state2"`, where each side is a defined animation state, or an asterisk (\*) to refer to a dynamic start or end state.
- The expression string can contain multiple comma-separated statements; for example `"state1 => state2, state3 => state4"`.
- Special values ``:enter`` and ``:leave`` initiate a transition on the entry and exit states, equivalent to `"void => *"` and `"* => void"`.
- Special values ``:increment`` and ``:decrement`` initiate a transition when a numeric value has increased or decreased in value.
- A function is executed each time a state change occurs in the animation trigger element. The animation steps run when the function returns true.

`* @param steps` One or more animation objects, as returned by the ``animate()`` or ``sequence()`` function, that form a transformation from one state to another.

`* A sequence is used by default when you pass an array.`

`* @param options` An options object that can contain a delay value for the start of the animation, and additional developer-defined parameters. Provided values for additional parameters are used as defaults, and override values can be passed to the caller on invocation.

`* @returns` An object that encapsulates the transition data.

`* @usageNotes` The template associated with a component binds an animation trigger to an element.

```
HTML
<!-- somewhere inside of my-component-tpl.html -->
<div
 [myAnimationTrigger]="myStatusExp">...</div>

```

`/**` All transitions are defined within an animation trigger, along with named states that the transitions change to and from.

```
typescript
trigger("myAnimationTrigger", [
 // define states
 state("on", style({ background: "green" })),
 state("off", style({ background: "grey" })),
 ...
])

```

`/**` Note that when you call the ``sequence()`` function within a `{ @link animations/group group() }` or a ``transition()`` call, execution does not continue to the next instruction until each of the inner animation steps have completed.

`###`

Syntax examples

The following examples define transitions between the two defined states (and default states), using various options:

```

typescript
// Transition occurs when the state value
// bound to "myAnimationTrigger" changes from "on" to "off"
transition("on => off", animate(500))
// Run the same animation for both directions
transition("on <=> off", animate(500))
// Define multiple state-change pairs separated by commas
transition("on => off, off => void", animate(500))
Special values for state-change expressions
- Catch-all state change for when an element is inserted into the page and the destination state is unknown:
typescript
transition("void => *", [
 style({ opacity: 0 }),
 animate(500)
])
- Capture a state change between any states:
transition("* => *", animate("1s 0s"))
- Entry and exit transitions:
typescript
transition(":enter", [
 style({ opacity: 0 }),
 animate(500, style({ opacity: 1 })
)])
transition(":leave", [
 animate(500, style({ opacity: 0
})))
- Use `increment` and `decrement` to initiate transitions:
typescript
transition(":increment", group([
 query(':enter', [
 style({ left: '100%' })
],
 animate('0.5s ease-out', style('*'))
]),
 query(':leave', [
 animate('0.5s ease-out', style({ left: '-100%' })
])
])
transition(":decrement", group([
 query(':enter', [
 style({ left: '100%' })
],
 animate('0.5s ease-out', style('*'))
]),
 query(':leave', [
 animate('0.5s ease-out', style({ left: '-100%' })
])
])
State-change functions
Here is an example of a `fromState` specified as a state-change function that invokes an animation when true:
typescript
transition((fromState, toState) => {
 return fromState === "off"
 && toState === "on";
}, animate("1s 0s"))
Animating to the final state
If the final step in a transition is a call to `animate()` that uses a timing value with no style data, that step is automatically considered the final animation arc for the element to reach the final state. Angular automatically adds or removes CSS styles to ensure that the element is in the correct final state.
The following example defines a transition that starts by hiding the element, then makes sure that it animates properly to whatever state is currently active for trigger:
typescript
transition("void => *", [
 style({ opacity: 0 }),
 animate(500)
])
Boolean value matching
If a trigger binding value is a Boolean, it can be matched using a transition expression that compares true and false or 1 and 0. For example:


```

// in the template
<div [@openClose]="open ? true : false">...</div>
// in the component metadata
trigger('openClose', [
  state('true', style({ height: '*' })),
  state('false', style({ height: '0px' })),
  transition('false <=> true', animate(500))
])
@publicApi
function transition(stateChangeExpr, steps, options) {
  if (options === void 0) {
    options = null;
  }
  return {
    type: 1 /* Transition */,
    expr: stateChangeExpr,
    animation: steps,
    options: options;
  }
}
/* Produces a reusable animation that can be invoked in another animation or sequence, by calling the `useAnimation()` function.
@param steps One or more animation objects, as returned by the `animate()` or `sequence()` function, that form a transformation from one state to another.
A sequence is used by default when you pass an array.
@param options An options object that can contain a delay value for the start of the animation, and additional developer-defined parameters.
Provided values for additional parameters are used as defaults, and override values can be passed to the caller on invocation.
@returns An object that encapsulates the animation data.
@usageNotes
The following example defines a reusable animation, providing some default parameter values.
typescript
var fadeAnimation = animation([
  style({ opacity: '{{ start }}' }),
  animate('{{ time }}',
  style({ opacity: '{{ end }}}')
]), {
  params: {
    time: '1000ms',
    start: 0,
    end: 1
  }
}
The following invokes the defined animation with a call to `useAnimation()`, passing in override parameter values.
js
useAnimation(fadeAnimation, {
  params: {
    time: '2s',
    start: 1,
    end: 0
  }
})
If any of the passed-in parameter values are missing from this call, the default values are used. If one or more parameter values are missing before a step is animated, `useAnimation()` throws an error.
@publicApi
function animation(steps, options) {
  if (options === void 0) {
    options = null;
  }
  return {
    type: 8 /* Reference */,

```


```

```

animation: steps, options: options };
}
/**
 * Executes a queried inner animation element within an
animation sequence.
 * @param options An options object that can contain a delay value for the start of
the animation, and additional override values for developer-defined parameters.
 * @return An object that
encapsulates the child animation data.
 * @usageNotes
 * Each time an animation is triggered in
Angular, the parent animation
 * has priority and any child animations are blocked. In order
 * for a child
animation to run, the parent animation must query each of the elements
 * containing child animations, and run
them using this function.
 * Note that this feature is designed to be used with `query()` and it will only
work
 * with animations that are assigned using the Angular animation library. CSS keyframes
and
 * transitions are not handled by this API.
 * @publicApi
 * function animateChild(options) {
if (options === void 0) { options = null; }
return { type: 9 /* AnimateChild */, options: options };
}
/**
 * Starts a reusable animation that is created using the `animation()` function.
 * @param
animation The reusable animation to start.
 * @param options An options object that can contain a delay value
for the start of
 * the animation, and additional override values for developer-defined parameters.
 * @return
An object that contains the animation parameters.
 * @publicApi
 * function
useAnimation(animation, options) {
if (options === void 0) { options = null; }
return { type: 10 /*
AnimateRef */, animation: animation, options: options };
}
/**
 * Finds one or more inner elements
within the current element that is
 * being animated within a sequence. Use with `animate()`.
 * @param selector The element to query, or a set of elements that contain Angular-specific
 * characteristics,
specified with one or more of the following tokens.
 * - `query(":enter")` or `query(":leave")` : Query for
newly inserted/removed elements.
 * - `query(":animating")` : Query all currently animating elements.
 * -
`query("@triggerName")` : Query elements that contain an animation trigger.
 * - `query("@*")` : Query all
elements that contain an animation triggers.
 * - `query(":self")` : Include the current element into the
animation sequence.
 * @param animation One or more animation steps to apply to the queried element or
elements.
 * An array is treated as an animation sequence.
 * @param options An options object. Use the
'limit' field to limit the total number of
 * items to collect.
 * @return An object that encapsulates the query
data.
 * @usageNotes
 * Tokens can be merged into a combined query selector string. For example:
 * ``typescript
 * query(':self, .record:enter, .record:leave, @subTrigger', [...])
 * ``
 * The
`query()` function collects multiple elements and works internally by using
 * `element.querySelectorAll`. Use
the `limit` field of an options object to limit
 * the total number of items to be collected. For example:
 * ``js
 * query('div', [
 * animate(...),
 * animate(...),
 *], { limit: 1 })
 * ``
 * By
default, throws an error when zero items are found. Set the
 * `optional` flag to ignore this error. For example:
 * ``js
 * query('.some-element-that-may-not-be-there', [
 * animate(...),
 * animate(...),
 *],
{ optional: true })
 * ``
 * #### Usage Example
 * The following example queries for inner
elements and animates them
 * individually using `animate()`.
 * ``typescript
 * @Component({
 * selector: 'inner',
 * template: `
 * <div [@queryAnimation]="exp">
 * <h1>Title</h1>
 * <div class="content">
 * Blah blah blah
 * </div>
 * </div>
 * `,
 * animations: [
 * trigger('queryAnimation', [
 * transition('* => goAnimate', [
 * // hide the inner
elements
 * query('h1', style({ opacity: 0 })),
 * query('.content', style({ opacity: 0 })),
 * // animate the inner elements in, one by one
 * query('h1', animate(1000, style({ opacity: 1 }))),
 * query('.content', animate(1000, style({ opacity: 1 }))),
 *]),
 *]),
 *]),
 * class Cmp {
 * exp = "";
 * goAnimate() {
this.exp = 'goAnimate';
}
}
 * ``
 * @publicApi
 * function query(selector, animation, options) {
if (options === void 0) { options = null;
}
return { type: 11 /* Query */, selector: selector, animation: animation, options: options };
}
/**
 * Use within an animation `query()` call to issue a timing gap after
 * each queried item is animated.
 * @param timings A delay value.
 * @param animation One ore more animation steps.
 * @returns An object
that encapsulates the stagger data.
 * @usageNotes
 * In the following example, a container element
wraps a list of items stamped out
 * by an `ngFor`. The container element contains an animation trigger that will
later be set
 * to query for each of the inner items.
 * Each time items are added, the opacity fade-in

```

```

animation runs,\n * and each removed item is faded out.\n * When either of these animations occur, the stagger
effect is\n * applied after each item's animation is started.\n * \n * ``html\n * <!-- list.component.html --
>\n * <button (click)="toggle()">Show / Hide Items</button>\n * <hr />\n * <div
[@listAnimation]="items.length">\n * <div *ngFor="let item of items">\n * {{ item }}\n * </div>\n
* </div>\n * ``\n * \n * Here is the component code:\n * \n * ``typescript\n * import {trigger,
transition, style, animate, query, stagger} from '@angular/animations';\n * @Component({\n * templateUrl:
'list.component.html',\n * animations: [\n * trigger('listAnimation', [\n * ... \n *])\n *]\n *
})\n * class ListComponent {\n * items = [];\n * \n * showItems() {\n * this.items = [0,1,2,3,4];\n
* }\n * \n * hideItems() {\n * this.items = [];\n * }\n * \n * toggle() {\n * this.items.length
? this.hideItems() : this.showItems();\n * }\n * }\n * ``\n * \n * Here is the animation trigger code:\n
*\n * ``typescript\n * trigger('listAnimation', [\n * transition('* => *', [// each time the binding value
changes\n * query(':leave', [\n * stagger(100, [\n * animate('0.5s', style({ opacity: 0 })))\n *
])\n *]),\n * query(':enter', [\n * style({ opacity: 0 }),\n * stagger(100, [\n *
animate('0.5s', style({ opacity: 1 })))\n *])\n *])\n *])\n *])\n *])\n * ``\n * \n * @publicApi\n
*\n * \n * function stagger(timings, animation) {\n * return { type: 12 /* Stagger */, timings: timings, animation:
animation };\n * }\n * \n * /**\n * @license\n * Copyright Google LLC All Rights Reserved.\n * \n * Use of
this source code is governed by an MIT-style license that can be\n * found in the LICENSE file at
https://angular.io/license\n * \n * function scheduleMicroTask(cb) {\n * Promise.resolve(null).then(cb);\n
}\n * \n * /**\n * @license\n * Copyright Google LLC All Rights Reserved.\n * \n * Use of this source code
is governed by an MIT-style license that can be\n * found in the LICENSE file at https://angular.io/license\n
*\n * \n * /**\n * An empty programmatic controller for reusable animations.\n * Used internally when animations
are disabled, to avoid\n * checking for the null case when an animation player is expected.\n * \n * @see
`animate()`\n * @see `AnimationPlayer`\n * @see `GroupPlayer`\n * \n * @publicApi\n * \n * var
NoopAnimationPlayer = /** @class */ (function () {\n * function NoopAnimationPlayer(duration, delay) {\n
* if (duration === void 0) { duration = 0; }\n * if (delay === void 0) { delay = 0; }\n * this._onDoneFns =
[];\n * this._onStartFns = [];\n * this._onDestroyFns = [];\n * this._started = false;\n
* this._destroyed = false;\n * this._finished = false;\n * this.parentPlayer = null;\n * this.totalTime =
duration + delay;\n * }\n * NoopAnimationPlayer.prototype._onFinish = function () {\n * if
(!this._finished) {\n * this._finished = true;\n * this._onDoneFns.forEach(function (fn) { return fn();
});\n * this._onDoneFns = [];\n * }\n * }\n * NoopAnimationPlayer.prototype.onStart = function
(fn) {\n * this._onStartFns.push(fn);\n * }\n * NoopAnimationPlayer.prototype.onDone = function (fn)
{\n * this._onDoneFns.push(fn);\n * }\n * NoopAnimationPlayer.prototype.onDestroy = function (fn) {\n
* this._onDestroyFns.push(fn);\n * }\n * NoopAnimationPlayer.prototype.hasStarted = function () {\n
* return this._started;\n * }\n * NoopAnimationPlayer.prototype.init = function () { }\n *
NoopAnimationPlayer.prototype.play = function () {\n * if (!this.hasStarted()) {\n * this._onStart();\n
* this.triggerMicrotask();\n * }\n * this._started = true;\n * }\n * /** @internal */\n
NoopAnimationPlayer.prototype.triggerMicrotask = function () {\n * var _this = this;\n
* scheduleMicroTask(function () { return _this._onFinish(); });\n * }\n *
NoopAnimationPlayer.prototype._onStart = function () {\n * this._onStartFns.forEach(function (fn) { return
fn(); });\n * this._onStartFns = [];\n * }\n * NoopAnimationPlayer.prototype.pause = function () { }\n
NoopAnimationPlayer.prototype.restart = function () { }\n * NoopAnimationPlayer.prototype.finish = function ()
{\n * this._onFinish();\n * }\n * NoopAnimationPlayer.prototype.destroy = function () {\n * if
(!this._destroyed) {\n * this._destroyed = true;\n * if (!this.hasStarted()) {\n
* this._onStart();\n * }\n * this.finish();\n * this._onDestroyFns.forEach(function (fn) { return
fn(); });\n * this._onDestroyFns = [];\n * }\n * }\n * NoopAnimationPlayer.prototype.reset =
function () { }\n * NoopAnimationPlayer.prototype.setPosition = function (position) { }\n *
NoopAnimationPlayer.prototype.getPosition = function () {\n * return 0;\n * }\n * /** @internal */\n
NoopAnimationPlayer.prototype.triggerCallback = function (phaseName) {\n * var methods = phaseName ==

```



```

'start' ? this._onStartFns : this._onDoneFns;\n methods.forEach(function (fn) { return fn(); });\n
methods.length = 0;\n });\n return NoopAnimationPlayer;\n }());\n /**\n * @license\n * Copyright Google LLC All Rights Reserved.\n * Use of this source code is governed by an MIT-style\n * license that can be\n * found in the LICENSE file at https://angular.io/license\n */\n * A\n * programmatic controller for a group of reusable animations.\n * Used internally to control animations.\n * @see `AnimationPlayer`\n * @see `{@link animations/group group()}`\n */\n * var\n * AnimationGroupPlayer = /** @class */ (function () {\n * function AnimationGroupPlayer(_players) {\n * var _this = this;\n * this._onDoneFns = [];\n * this._onStartFns = [];\n * this._finished = false;\n * this._started = false;\n * this._destroyed = false;\n * this._onDestroyFns = [];\n * this.parentPlayer =\n * null;\n * this.totalTime = 0;\n * this.players = _players;\n * var doneCount = 0;\n * var\n * destroyCount = 0;\n * var startCount = 0;\n * var total = this.players.length;\n * if (total === 0) {\n * scheduleMicroTask(function () { return _this._onFinish(); });\n * } else {\n * this.players.forEach(function (player) {\n * player.onDone(function () {\n * if (++doneCount\n * == total) {\n * _this._onFinish();\n * }\n * });\n * player.onDestroy(function () {\n * if (++destroyCount == total) {\n * _this._onDestroy();\n * }\n * });\n * player.onStart(function () {\n * if\n * (startCount == total) {\n * _this._onStart();\n * }\n * });\n * this.totalTime = this.players.reduce(function (time, player) { return Math.max(time, player.totalTime);\n * }, 0);\n * }\n * }\n * AnimationGroupPlayer.prototype._onFinish = function () {\n * if (!this._finished) {\n * this._finished = true;\n * this._onDoneFns.forEach(function (fn) { return fn(); });\n * }\n * }\n * AnimationGroupPlayer.prototype.init = function () {\n * this.players.forEach(function (player) { return player.init(); });\n * }\n * AnimationGroupPlayer.prototype.onStart = function (fn) {\n * this._onStartFns.push(fn);\n * }\n * AnimationGroupPlayer.prototype._onStart = function () {\n * if (!this.hasStarted()) {\n * this._started =\n * true;\n * this._onStartFns.forEach(function (fn) { return fn(); });\n * this._onStartFns = [];\n * }\n * }\n * AnimationGroupPlayer.prototype.onDone = function (fn) {\n * this._onDoneFns.push(fn);\n * }\n * AnimationGroupPlayer.prototype.onDestroy = function (fn) {\n * this._onDestroyFns.push(fn);\n * }\n * AnimationGroupPlayer.prototype.hasStarted = function () {\n * return this._started;\n * }\n * AnimationGroupPlayer.prototype.play = function () {\n * if (!this.parentPlayer) {\n * this.init();\n * }\n * this._onStart();\n * this.players.forEach(function (player) { return player.play(); });\n * }\n * AnimationGroupPlayer.prototype.pause = function () {\n * this.players.forEach(function (player) { return\n * player.pause(); });\n * }\n * AnimationGroupPlayer.prototype.restart = function () {\n * this.players.forEach(function (player) { return player.restart(); });\n * }\n * AnimationGroupPlayer.prototype.finish = function () {\n * this._onFinish();\n * this.players.forEach(function (player) { return player.finish(); });\n * }\n * AnimationGroupPlayer.prototype.destroy = function () {\n * this._onDestroy();\n * }\n * AnimationGroupPlayer.prototype._onDestroy = function () {\n * if (!this._destroyed) {\n * this._destroyed = true;\n * this._onFinish();\n * this.players.forEach(function (player) { return\n * player.destroy(); });\n * this._onDestroyFns.forEach(function (fn) { return fn(); });\n * }\n * }\n * AnimationGroupPlayer.prototype.reset = function () {\n * this.players.forEach(function (player) { return player.reset(); });\n * this._destroyed = false;\n * this._finished = false;\n * this._started = false;\n * }\n * AnimationGroupPlayer.prototype.setPosition =\n * function (p) {\n * var timeAtPosition = p * this.totalTime;\n * this.players.forEach(function (player) {\n * var position = player.totalTime ? Math.min(1, timeAtPosition / player.totalTime) : 1;\n * player.setPosition(position);\n * });\n * }\n * AnimationGroupPlayer.prototype.getPosition = function ()\n * {\n * var min = 0;\n * this.players.forEach(function (player) {\n * var p = player.getPosition();\n * min = Math.min(p, min);\n * });\n * return min;\n * }\n * AnimationGroupPlayer.prototype.beforeDestroy = function () {\n * this.players.forEach(function (player) {\n
```





```

finally { if (e) throw e.error; }
}
return ar;
}
export function __spread() {
 for (var ar = [], i = 0; i < arguments.length; i++)
 ar = ar.concat(__read(arguments[i]));
 return ar;
}
export function __spreadArrays() {
 for (var s = 0, i = 0, il = arguments.length; i < il; i++) s += arguments[i].length;
 for (var r = Array(s), k = 0, i = 0; i < il; i++)
 for (var a = arguments[i], j = 0, jl = a.length; j < jl; j++, k++)
 r[k] = a[j];
 return r;
}
export function __await(v) {
 return this instanceof __await ? (this.v = v, this) : new __await(v);
}
export function __asyncGenerator(thisArg, _arguments, generator) {
 if (!Symbol.asyncIterator) throw new TypeError("Symbol.asyncIterator is not defined.");
 var g = generator.apply(thisArg, _arguments || []), i, q = [];
 return i = {}, verb("next"), verb("throw"), verb("return"), i[Symbol.asyncIterator] = function () { return this; }, i;
 function verb(n) {
 if (g[n]) i[n] = function (v) { return new Promise(function (a, b) { q.push([n, v, a, b]) > 1 || resume(n, v); }); };
 }
 function resume(n, v) {
 try { step(g[n](v)); } catch (e) { settle(q[0][3], e); }
 }
 function step(r) {
 r.value instanceof __await ? Promise.resolve(r.value.v).then(fulfill, reject) : settle(q[0][2], r);
 }
 function fulfill(value) { resume("next", value); }
 function reject(value) { resume("throw", value); }
 function settle(f, v) {
 (f(v), q.shift(), q.length) ? resume(q[0][0], q[0][1]);
 }
}
export function __asyncDelegator(o) {
 var i, p;
 return i = {}, verb("next"), verb("throw"), function (e) { throw e; }, verb("return"), i[Symbol.iterator] = function () { return this; }, i;
 function verb(n, f) {
 i[n] = o[n] ? function (v) { return (p = !p) ? { value: __await(o[n](v)), done: n === "return" } : f ? f(v) : v; } : f;
 }
}
export function __asyncValues(o) {
 if (!Symbol.asyncIterator) throw new TypeError("Symbol.asyncIterator is not defined.");
 var m = o[Symbol.asyncIterator], i;
 return m ? m.call(o) : (o = typeof __values === "function" ? __values(o) : o[Symbol.iterator](), i = {}, verb("next"), verb("throw"), verb("return"), i[Symbol.asyncIterator] = function () { return this; }, i);
 function verb(n) {
 i[n] = o[n] && function (v) { return new Promise(function (resolve, reject) {
 v = o[n](v), settle(resolve, reject, v.done, v.value);
 }); };
 }
 function settle(resolve, reject, d, v) {
 Promise.resolve(v).then(function(v) { resolve({ value: v, done: d }); }, reject);
 }
}
export function __makeTemplateObject(cooked, raw) {
 if (Object.defineProperty) {
 Object.defineProperty(cooked, "raw", { value: raw });
 } else {
 cooked.raw = raw;
 }
 return cooked;
}
var __setModuleDefault = Object.create ? (function(o, v) {
 Object.defineProperty(o, "default", { enumerable: true, value: v });
}) : function(o, v) {
 o["default"] = v;
}
export function __importStar(mod) {
 if (mod && mod.__esModule) return mod;
 var result = {};
 if (mod != null) for (var k in mod) if (Object.hasOwnProperty.call(mod, k)) __createBinding(result, mod, k);
 __setModuleDefault(result, mod);
 return result;
}
export function __importDefault(mod) {
 return (mod && mod.__esModule) ? mod : { default: mod };
}
export function __classPrivateFieldGet(receiver, privateMap) {
 if (!privateMap.has(receiver)) throw new TypeError("attempted to get private field on non-instance");
 return privateMap.get(receiver);
}
export function __classPrivateFieldSet(receiver, privateMap, value) {
 if (!privateMap.has(receiver)) throw new TypeError("attempted to set private field on non-instance");
 privateMap.set(receiver, value);
 return value;
}
/**
 * @license
 * Copyright Google LLC
 * All Rights Reserved.
 * Use of this source code is governed by an MIT-style license that can be found in the LICENSE file at https://angular.io/license
 */
import { AnimationPlayer, AUTO_STYLE, NoopAnimationPlayer, StyleData } from '@angular/animations';
import { AnimationDriver, allowPreviousPlayerStylesMerge as allowPreviousPlayerStylesMerge, containsElement as containsElement, invokeQuery as invokeQuery, matchesElement as matchesElement, validateStyleProperty as validateStyleProperty } from '@angular/animations/browser';
/**
 * @publicApi
 */
export class MockAnimationDriver implements AnimationDriver {
 static log: AnimationPlayer[] = [];
 validateStyleProperty(prop: string): boolean {
 return validateStyleProperty(prop);
 }
 matchesElement(element: any, selector: string): boolean {
 return matchesElement(element, selector);
 }
 containsElement(elm1: any, elm2: any): boolean {
 return containsElement(elm1, elm2);
 }
 query(element: any, selector: string, multi: boolean): any[] {
 return invokeQuery(element, selector, multi);
 }
 computeStyle(element: any, prop: string, defaultValue?: string): string {
 return defaultValue || "";
 }
 animate(element: any, keyframes: [{ key: string; string|number }], duration: number, delay: number, easing: string, previousPlayers: any[] = []):

```

```

MockAnimationPlayer {\n const player =\n new MockAnimationPlayer(element, keyframes, duration, delay,
easing, previousPlayers);\n MockAnimationDriver.log.push(<AnimationPlayer>player);\n return player;\n
}\n\n/**\n * @publicApi\n */\nexport class MockAnimationPlayer extends NoopAnimationPlayer {\n private
__finished = false;\n private __started = false;\n public previousStyles: {[key: string]: string|number} = {};\n
private _onInitFns: (() => any)[] = [];\n public currentSnapshot: StyleData = {};\n constructor(\n public
element: any, public keyframes: {[key: string]: string|number}[],\n public duration: number, public delay:
number, public easing: string,\n public previousPlayers: any[]) {\n super(duration, delay);\n\n if
(allowPreviousPlayerStylesMerge(duration, delay)) {\n previousPlayers.forEach(player => {\n if (player
instanceof MockAnimationPlayer) {\n const styles = player.currentSnapshot;\n
Object.keys(styles).forEach(prop => this.previousStyles[prop] = styles[prop]);\n }\n });\n }\n\n /*
@internal */\n onInit(fn: () => any) {\n this._onInitFns.push(fn);\n }\n\n /* @internal */\n init() {\n
super.init();\n this._onInitFns.forEach(fn => fn());\n this._onInitFns = [];\n }\n\n finish(): void {\n
super.finish();\n this.__finished = true;\n}\n\n destroy(): void {\n super.destroy();\n this.__finished = true;\n
}\n\n /* @internal */\n triggerMicrotask() {\n}\n\n play(): void {\n super.play();\n this.__started = true;\n}\n\n
hasStarted() {\n return this.__started;\n}\n\n beforeDestroy() {\n const captures: StyleData = {};\n\n
Object.keys(this.previousStyles).forEach(prop => {\n captures[prop] = this.previousStyles[prop];\n});\n\n if
(this.hasStarted()) {\n // when assembling the captured styles, it's important that\n // we build the keyframe
styles in the following order:\n // {other styles within keyframes, ... previousStyles }\n
this.keyframes.forEach(kf => {\n Object.keys(kf).forEach(prop => {\n if (prop != 'offset') {\n
captures[prop] = this.__finished ? kf[prop] : AUTO_STYLE;\n }\n });\n});\n\n this.currentSnapshot = captures;\n}\n}\n\n", "/*\n * @license\n * Copyright Google LLC All Rights Reserved.\n *\n
* Use of this source code is governed by an MIT-style license that can be\n * found in the LICENSE file at
https://angular.io/license\n */\nexport {MockAnimationDriver, MockAnimationPlayer} from
'./mock_animation_driver';\n", "/*\n * @license\n * Copyright Google LLC All Rights Reserved.\n *\n
* Use of this source code is governed by an MIT-style license that can be\n * found in the LICENSE file at
https://angular.io/license\n */\n\n/**\n * @module\n * @description\n * Entry point for all public APIs of this
package.\n */\nexport * from './src/testing';\n", "/*\n * @license\n * Copyright Google LLC All Rights Reserved.\n *\n
* Use of this source code is governed by an MIT-style license that can be\n * found in the LICENSE file at
https://angular.io/license\n */\n\n// This file is not used to build this module. It is only used during editing\n// by the
TypeScript language service and during build for verification. `ngc` replaces this file with production index.ts
when it rewrites private symbol\n// names.\n\nexport * from './public_api';\n", "/*\n * Generated bundle index. Do
not edit.\n */\nexport * from
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depot

layout\_version 1.0

vendor

tag Firebird

title Firebird Project

description "Firebird Database"

end

product

tag Firebird

title "Firebird Database for HP-UX"

description "Firebird Relational Database Classic"

revision 2.1.0

category database

category\_title Database

preinstall install/scripts/preInstall.sh

postinstall install/scripts/postInstall.sh

preremove install/scripts/preUninstall.sh

postremove install/scripts/postUninstall.sh

#

```

architecture HP-UX_B.11_64
os_name HP-UX
os_release ?.11.*
os_version ?
#
fileset
tag main
file -u 0660 -g firebird -o firebird buildroot@prefix@/security2.fdb @prefix@/security2.fdb
file -u 0644 -g firebird -o firebird buildroot@prefix@/firebird.conf @prefix@/firebird.conf
file -u 0644 -g firebird -o firebird buildroot@prefix@/databases.conf @prefix@/databases.conf
file -u 0644 -g firebird -o firebird buildroot@prefix@/WhatsNew @prefix@/WhatsNew
end
#
fileset
tag include
directory buildroot@prefix@/include=@prefix@/include
file_permissions -u 0644 -g firebird -o firebird
file *
end
#
fileset
tag intl
file -u 0755 -g firebird -o firebird buildroot@prefix@/intl/fbintl @prefix@/intl/fbintl
file -u 0644 -g firebird -o firebird buildroot@prefix@/intl/fbintl.conf @prefix@/intl/fbintl.conf
end
#
fileset
tag UDF
file -u 0755 -g firebird -o firebird buildroot@prefix@/UDF/ib_udf.sl @prefix@/UDF/ib_udf.sl
file -u 0755 -g firebird -o firebird buildroot@prefix@/UDF/fbudf.sl @prefix@/UDF/fbudf.sl
file -u 0644 -g firebird -o firebird buildroot@prefix@/UDF/ib_udf.sql @prefix@/UDF/ib_udf.sql
file -u 0644 -g firebird -o firebird buildroot@prefix@/UDF/ib_udf2.sql @prefix@/UDF/ib_udf2.sql
file -u 0644 -g firebird -o firebird buildroot@prefix@/UDF/fbudf.sql @prefix@/UDF/fbudf.sql
end
#
fileset
tag bin
directory buildroot@prefix@/bin=@prefix@/bin
file_permissions -u 0755 -g firebird -o firebird
file *
end
#
fileset
tag misc
directory buildroot@prefix@/misc=@prefix@/misc
file_permissions -u 0644 -g firebird -o firebird
file *
directory buildroot@prefix@/misc/upgrade/security=@prefix@/misc/upgrade/security

```

```

file_permissions -u 0644 -g firebird -o firebird
file *
end
#
fileset
tag examples
file -u 0644 -g firebird -o firebird firebird/examples/README @prefix@/examples/README
file -u 0644 -g firebird -o firebird firebird/examples/functions.c @prefix@/examples/functions/functions.c
directory firebird/examples/api=@prefix@/examples/api
file_permissions -u 0644 -g firebird -o firebird
file *
directory firebird/examples/dyn=@prefix@/examples/dyn
file_permissions -u 0644 -g firebird -o firebird
file *
directory firebird/examples/empbuild=@prefix@/examples/empbuild
file_permissions -u 0644 -g firebird -o firebird
file *
directory firebird/examples/include=@prefix@/examples/include
file_permissions -u 0644 -g firebird -o firebird
file *
directory firebird/examples/stat=@prefix@/examples/stat
file_permissions -u 0644 -g firebird -o firebird
file *
directory firebird/examples/udf=@prefix@/examples/udf
file_permissions -u 0644 -g firebird -o firebird
file *
end
#
fileset
tag lib
directory buildroot@prefix@/lib=@prefix@/lib
file_permissions -u 0755 -g firebird -o firebird
file *
end
#
fileset
tag help
file -u 0444 -g firebird -o firebird firebird/help/help.fdb @prefix@/help/help.fdb
end
#
fileset
tag messages
file -u 0444 -g firebird -o firebird firebird/firebird.msg @prefix@/firebird.msg
file -u 0444 -g firebird -o firebird firebird/fr_FR.msg @prefix@/fr_FR.msg
file -u 0444 -g firebird -o firebird firebird/de_DE.msg @prefix@/de_DE.msg
end
#
fileset

```



```
tag docs
directory ../doc=@prefix@/doc
file_permissions -u 0644 -g firebird -o firebird
file *
end
end
```

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Version 1.0

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Maintained by Debian Firebird Maintainers

<pkg-firebird-general@lists.aliases.debian.org>

X-Source-Downloaded-From:

<http://www.firebirdsql.org/download/prerelease/source/>

X-Repackaged: Yes

## Table of contents

=====

This file is long, but complete. Here's what's inside:

- \* How to get re-packaged upstream source
- \* What is removed from upstream source and why
- \* The easy part: files under debian/
- \* Upstream licensing summary
- \* Upstream copyright summary
- \* Complete list of the files in the repackaged upstream tarball, grouped by license and copyright holders.
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## How to get re-packaged upstream source

=====

Run 'uscan --force' or debian/rules get-orig-source

That will download from upstream, remove what is to be removed and create an .orig.tar.xz

## What is removed from upstream source and why

=====

### \* Bundled libraries

The following libraries are supplied by upstream in their source tarball. These are present in Debian and using the Debian packages is better because:

- improved security: no need to watch the bundled libraries for security problems -- Debian Security already handles that for the Debian packages
- get fixes and improvements automatically when the Debian library package is upgraded
- the source tarball decreases in size from 13MB to 7.5MB (42% decrease)

Removed library sources:

- extern/editline
- src/include/firebird/impl/boost
- extern/libtommath

### \* Removed sources with non-free/missing licensing

The following files are removed as they contain only copyright information without any license allowing their distribution. Luckily, they are not needed when building on Debian.

- builds/install/arch-specific/solaris/
- src/msgs/templates.sql
- extern/SfIO/

\* Generated files without source

These two files are generated from SGML sources, but the sources are not in the upstream tarball.

- doc/ReleaseNotes.pdf

Other generated files are removed from the source, as listed in debian/prune-upstream-dfsg.lst

\* Generated files and other cruft.

Since we are repackaging, we take the opportunity to also remove the following files, which are generated during the build:

- configure
- builds/make.new/config/config.guess
- builds/make.new/config/config.h.in
- builds/make.new/config/config.sub
- builds/make.new/config/install-sh
- builds/make.new/config/ltmain.sh

Also, the following files are just cruft and are present in the upstream tarball by mistake:

- .cvsignore (in several directories)

The easy part: files under debian/

=====

Files: debian/\*

Copyright: 2006, 2007, 2008, 2009, 2010, 2014, 2017

Damyan Ivanov <dmn@debian.org>

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=====



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autogen.sh  
binreloc.m4  
builds/cmake/\*  
builds/install/arch-specific/aix/classic/rpmfiles.txt.in  
builds/install/arch-specific/aix/classic/rpmheader.txt.in  
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builds/install/misc/plugins.conf  
builds/mac\_os\_x/CS/\*  
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builds/posix/make.android.arm64  
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builds/posix/make.android.x86\_64  
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travis.sh

#### Declared Public Domain

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src/common/sha.cpp  
NIST Secure Hash Algorithm  
heavily modified by Uwe Hollerbach <uh@alumni.caltech.edu>  
from Peter C. Gutmann's implementation as found in  
Applied Cryptography by Bruce Schneier  
This code is in the public domain

src/yvalve/config/os/posix/binreloc.c  
src/yvalve/config/os/posix/binreloc.h  
BinReloc - a library for creating relocatable executables  
Written by: Hongli Lai <h.lai@chello.nl>  
<http://autopackage.org/>

.  
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under whatever license you want.

.  
See <http://autopackage.org/docs/binreloc/> for  
more information and how to use this.

#### Interbase Public License Version 1.0 (IPL)

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Following is the list of files, then a list of contributors, as stated in them.

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src/jrd/JrdStatement.h

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src/common/classes/InternalMessageBuffer.cpp

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src/common/os/fbsyslog.h

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src/include/gen/msg\_facs.h

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src/include/gen/sql\_code.h

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src/burp/OdsDetection.epp

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src/intl/cv\_icu.cpp

src/intl/cv\_icu.h

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src/intl/lc\_icu.h

src/jrd/IntlManager.cpp

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src/jrd/SysFunction.h

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Firebird Open Source RDBMS project, based on work done  
in Yaffil by Oleg Loa <loa@mail.ru> and Alexey Karyakin

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examples/udr/Functions.cpp

examples/udr/Procedures.cpp

examples/udr/Triggers.cpp

src/dsql/DdlNodes.h

src/dsql/Nodes.h

src/dsql/Parser.cpp

src/dsql/Parser.h

src/dsql/StmtNodes.h

src/include/firebird/UdrCppEngine.h

src/jrd/ExtEngineManager.cpp

src/jrd/ExtEngineManager.h

src/jrd/PreparedStatement.cpp

src/jrd/PreparedStatement.h

src/jrd/ResultSet.cpp

src/jrd/ResultSet.h  
src/plugins/udr\_engine/UdrEngine.cpp  
src/yvalve/PluginManager.cpp  
src/yvalve/PluginManager.h

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builds/posix/empty.vers  
examples/package/fbout-body.sql  
examples/package/fbout-header.sql  
examples/package/fbout-test.sql  
src/common/classes/BlrReader.h  
src/common/classes/QualifiedName.h  
src/dsql/PackageNodes.epp  
src/dsql/PackageNodes.h  
src/jrd/recsrc/WindowedStream.cpp

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src/common/classes/ByteChunk.h  
src/common/classes/NestConst.h  
src/common/classes/Nullable.h  
src/dsql/AggNodes.h  
src/dsql/BoolNodes.h  
src/dsql/ExprNodes.h  
src/dsql/WinNodes.cpp  
src/dsql/WinNodes.h

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src/include/firebird/Message.h

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src/common/MsgMetadata.cpp  
src/common/MsgMetadata.h  
src/common/StatementMetadata.cpp  
src/common/StatementMetadata.h

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extern/cloop/src/cloop/Expr.cpp  
extern/cloop/src/cloop/Expr.h  
extern/cloop/src/cloop/Generator.cpp  
extern/cloop/src/cloop/Generator.h  
extern/cloop/src/cloop/Lexer.cpp



extern/cloop/src/cloop/Lexer.h  
extern/cloop/src/cloop/Main.cpp  
extern/cloop/src/cloop/Parser.cpp  
extern/cloop/src/cloop/Parser.h  
extern/cloop/src/tests/test1/CppTest.cpp  
extern/cloop/src/tests/test1/CTest.c  
extern/cloop/src/tests/test1/Interface.idl  
extern/cloop/src/tests/test1/PascalClasses.pas  
extern/cloop/src/tests/test1/PascalLibrary.dpr  
extern/cloop/src/tests/test1/PascalTest.dpr  
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builds/posix/udr\_plugin.vers  
builds/win32/defs/udr\_plugin.def  
examples/udr/UdrCppExample.h

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src/intl/collations/koi8r\_ru.h  
src/intl/collations/koi8u\_ua.h  
src/intl/collations/win1257\_ee.h  
src/intl/collations/win1257\_lt.h  
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project.

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src/common/config/dir\_list.cpp  
src/common/config/dir\_list.h  
src/common/sha.h

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src/common/call\_service.cpp  
src/common/call\_service.h

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src/common/classes/locks.cpp

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src/common/classes/auto.h  
src/common/classes/fb\_pair.h  
src/common/classes/fb\_string.cpp  
src/common/classes/fb\_string.h  
src/common/classes/init.h  
src/common/classes/misc/string\_test.cmd  
src/common/classes/misc/string\_test.cpp

src/common/classes/objects\_array.h

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src/common/classes/MetaName.cpp

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src/burp/main/burpMain.cpp

src/utilities/gsec/main/gsecMain.cpp

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src/auth/SecurityDatabase/LegacyClient.cpp

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src/common/DynamicStrings.h

src/common/Tokens.cpp

src/common/Tokens.h

src/common/classes/misc/lowtab.c

src/common/classes/misc/miditab.c

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src/common/os/posix/os\_utils.cpp

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src/jrd/btn.cpp

src/jrd/btn.h

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src/jrd/Optimizer.h

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src/jrd/Optimizer.cpp

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src/common/classes/fb\_atomic.il

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src/extlib/fbudf/\*

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src/common/utills.cpp

src/common/utills\_proto.h

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src/common/classes/BaseStream.h

src/common/classes/MsgPrint.cpp

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src/common/classes/SafeArg.cpp

src/common/classes/SafeArg.h

src/common/classes/TriState.h

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src/common/classes/UserBlob.h

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src/common/CRC32C.cpp

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src/common/config/config.h

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src/common/config/config\_file.h

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src/common/classes/NoThrowTimeStamp.h

src/common/classes/timestamp.h

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src/common/classes/File.h

src/common/classes/TempFile.cpp

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src/jrd/RecordBuffer.cpp

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src/jrd/VirtualTable.h

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src/jrd/recsrc/BufferedStream.cpp

src/jrd/recsrc/Cursor.cpp  
src/jrd/recsrc/Cursor.h  
src/jrd/recsrc/ExternalTableScan.cpp  
src/jrd/recsrc/FullOuterJoin.cpp  
src/jrd/recsrc/HashJoin.cpp  
src/jrd/recsrc/LockedStream.cpp  
src/jrd/recsrc/RecordSource.cpp  
src/jrd/recsrc/RecordSource.h  
src/jrd/recsrc/VirtualTableScan.cpp  
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src/dsql/DsqlCursor.cpp  
src/dsql/DsqlCursor.h  
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src/jrd/recsrc/FirstRowsStream.cpp  
src/jrd/recsrc/SkipRowsStream.cpp  
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src/common/os/mod\_loader.h  
src/common/os/path\_utils.h  
src/common/os/posix/mod\_loader.cpp  
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src/yvalve/config/os/darwin/config\_root.cpp

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src/common/dllinst.cpp  
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src/jrd/trace/TraceCmdLine.cpp  
src/jrd/trace/TraceConfigStorage.cpp  
src/jrd/trace/TraceConfigStorage.h  
src/jrd/trace/TraceLog.cpp  
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builds/install/arch-specific/linux/Makefile.in

builds/posix/make.rules

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builds/install/arch-specific/aix/misc/postinstall.sh.in

builds/install/arch-specific/freebsd/freebsdLibrary.sh.in

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src/jrd/status.h

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src/include/fb\_types.h

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John Bellardo <bellardo@cs.ucsd.edu>

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src/remote/SockAddr.h

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Vladyslav Khorsun at 2010

builds/posix/fbintl.vers

src/common/classes/ClumpletReader.cpp

src/common/classes/ClumpletReader.h

src/common/classes/ClumpletWriter.cpp

src/common/classes/ClumpletWriter.h

src/common/classes/fb\_atomic.h

src/common/classes/fb\_tls.h

src/common/classes/GenericMap.h

src/common/classes/locks.h

src/common/classes/misc/class\_perf.cpp

src/common/classes/misc/class\_test.cpp

src/common/classes/semaphore.h

src/common/classes/sparse\_bitmap.h

src/common/classes/tree.h

src/common/classes/vector.h

src/common/os/posix/guid.cpp

src/common/os/win32/guid.cpp

src/jrd/evl\_string.h

src/jrd/intl\_classes.h

src/jrd/misc/evl\_string\_test.cpp

src/jrd/RecordNumber.h

src/utilities/ntrace/os/FileObject.h

src/utilities/ntrace/os/platform.h

src/utilities/ntrace/os/posix/misc/FileObject.cpp

src/utilities/ntrace/os/posix/platform.cpp  
src/utilities/ntrace/os/win32/FileObject.cpp  
src/utilities/ntrace/os/win32/platform.cpp  
src/utilities/ntrace/TracePluginConfig.h

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src/common/os/guid.h

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src/common/classes/alloc.cpp

src/common/classes/alloc.h

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builds/posix/ib\_util.vers

src/common/CharSet.h

src/common/CsConvert.h

src/common/intlobj\_new.h

src/common/TextType.h

src/jrd/Collation.h

src/utilities/nbackup/nbackup.cpp

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src/jrd/nbak.h

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src/jrd/GlobalRWLock.cpp  
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src/common/classes/rwlock.h  
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src/jrd/ntrace.h  
src/jrd/trace/TraceManager.cpp  
src/jrd/trace/TraceManager.h  
src/utilities/ntrace/paramtable.h  
src/utilities/ntrace/traceplugin.cpp  
src/utilities/ntrace/TracePluginImpl.cpp  
src/utilities/ntrace/TracePluginImpl.h  
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src/utilities/install/install.cpp  
src/utilities/install/install\_client.cpp  
src/utilities/install/install\_proto.h  
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builds/install/arch-specific/darwin/changeMultiConnectMode  
The Original Code was created by Paul Beach based on the original Posix  
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builds/install/arch-specific/win32/FirebirdInstallEnvironmentChecks.inc  
builds/install/arch-specific/win32/FirebirdInstallSupportFunctions.inc  
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builds/install/arch-specific/win32/FirebirdInstall\_30.iss

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Tilo Muetze, Theo ? and Michael Rimov for improved detection of an existing install directory.

Simon Carter for the WinSock2 detection.

Philippe Makowski for internationalization and french translation

Sergey Nikitin for migrating to ISS v5.

src/utilities/fbcpl/fbdialog.cpp

src/utilities/fbcpl/fbdialog.h

src/utilities/fbcpl/fbpanel.cpp

src/utilities/fbcpl/fbpanel.h

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src/common/SimpleStatusVector.h

src/common/StatusHolder.cpp

src/common/StatusHolder.h

src/jrd/extds/ExtDS.h

src/jrd/extds/IscDS.cpp

src/jrd/extds/IscDS.h

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src/jrd/extds/ExtDS.cpp

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src/common/classes/RefCounted.h

src/jrd/extds/InternalDS.cpp

src/jrd/extds/InternalDS.h

src/jrd/recsrc/RecursiveStream.cpp

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src/jrd/GarbageCollector.cpp

src/jrd/GarbageCollector.h

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builds/install/arch-specific/hpux/classic/makeinstallImage.sh.in

builds/install/arch-specific/hpux/classic/postInstall.sh.in

builds/install/arch-specific/hpux/classic/postUninstall.sh.in

builds/install/arch-specific/hpux/classic/preInstall.sh.in

builds/install/arch-specific/hpux/classic/preUninstall.sh.in

builds/install/arch-specific/hpux/classic/tarInstall.sh.in

builds/install/arch-specific/hpux/classic/tarmainInstall.sh.in

builds/install/arch-specific/hpux/classic/tarmainUninstall.sh.in

builds/install/arch-specific/hpux/classic/tarUninstall.sh.in

builds/install/arch-specific/hpux/Makefile.in

builds/install/arch-specific/hpux/misc/changegdslibrarycompatibleLink.sh.in

builds/install/arch-specific/hpux/misc/createaliasDB.sh.in

builds/install/arch-specific/hpux/misc/firebird.init.d.hpux.in  
builds/install/arch-specific/hpux/misc/hpuxLibrary.sh.in  
builds/install/arch-specific/hpux/super/makeinstallImage.sh.in  
builds/install/arch-specific/hpux/super/tarInstall.sh.in  
builds/install/arch-specific/hpux/super/tarmainInstall.sh.in  
builds/install/arch-specific/hpux/super/tarmainUninstall.sh.in  
builds/install/arch-specific/hpux/super/tarUninstall.sh.in  
builds/posix/make.shared.targets  
builds/posix/Makefile.in.examples  
examples/build\_unix/Makefile.in.v5\_examples  
Created by: Mark O'Donohue <mark.odonohue@ludwig.edu.au>  
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builds/install/arch-specific/aix/classic/makeInstallImage.sh.in  
builds/install/arch-specific/aix/Makefile.in  
builds/install/arch-specific/aix/misc/postuninstall.sh.in  
builds/install/arch-specific/aix/misc/preinstall.sh.in  
builds/install/arch-specific/aix/misc/preuninstall.sh.in  
builds/install/arch-specific/aix/misc/tarinstall.sh.in  
builds/install/arch-specific/aix/misc/tarmaininstall.sh.in  
builds/install/arch-specific/aix/misc/tarmainuninstall.sh.in  
builds/install/arch-specific/aix/misc/taruninstall.sh.in  
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builds/posix/Makefile.in.extern.editline  
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builds/posix/make.defaults

examples/build\_unix/Makefile.in.example5

Created by: Mark O'Donohue <mark.odonohue@ludwig.edu.au>

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license texts
```

```
extern/btyacc/*
```

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## 1.195 python3-idna 2.6-1

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Metadata-Version: 1.1

Name: idna

Version: 2.6

Summary: Internationalized Domain Names in Applications (IDNA)

Home-page: <https://github.com/kjd/idna>

Author: Kim Davies

Author-email: [kim@cynosure.com.au](mailto:kim@cynosure.com.au)

License: BSD-like

Description: Internationalized Domain Names in Applications (IDNA)

=====

Support for the Internationalised Domain Names in Applications

(IDNA) protocol as specified in `RFC 5891 <<http://tools.ietf.org/html/rfc5891>>`\_.

This is the latest version of the protocol and is sometimes referred to as “IDNA 2008”.

This library also provides support for Unicode Technical Standard 46, “Unicode IDNA Compatibility Processing” (<http://unicode.org/reports/tr46/>).

This acts as a suitable replacement for the “encodings.idna” module that comes with the Python standard library, but only supports the old, deprecated IDNA specification (RFC 3490 (<http://tools.ietf.org/html/rfc3490>)).

Basic functions are simply executed:

```
.. code-block:: pycon

Python 3
>>> import idna
>>> idna.encode('.')
b'xn--eckwd4c7c.xn--zckzah'
>>> print(idna.decode('xn--eckwd4c7c.xn--zckzah'))
.

Python 2
>>> import idna
>>> idna.encode(u'.')
'xn--eckwd4c7c.xn--zckzah'
>>> print idna.decode('xn--eckwd4c7c.xn--zckzah')
.
```

## Packages

-----

The latest tagged release version is published in the PyPI repository:

```
.. image:: https://badge.fury.io/py/idna.svg
:target: http://badge.fury.io/py/idna
```

## Installation

-----

To install this library, you can use pip:

```
.. code-block:: bash

$ pip install idna
```

Alternatively, you can install the package using the bundled setup script:

```
.. code-block:: bash
```

```
$ python setup.py install
```

This library works with Python 2.6 or later, and Python 3.3 or later.

## Usage

-----

For typical usage, the `encode` and `decode` functions will take a domain name argument and perform a conversion to A-labels or U-labels respectively.

```
.. code-block:: pycon
```

```
Python 3
>>> import idna
>>> idna.encode('.')
b'xn--eckwd4c7c.xn--zckzah'
>>> print(idna.decode('xn--eckwd4c7c.xn--zckzah'))
.
```

You may use the codec encoding and decoding methods using the `idna.codec` module:

```
.. code-block:: pycon
```

```
Python 2
>>> import idna.codec
>>> print u'.'.encode('idna')
xn--80ahd1agd.xn--80akhbyknj4f
>>> print 'xn--80ahd1agd.xn--80akhbyknj4f'.decode('idna')
.
```

Conversions can be applied at a per-label basis using the `ulabel` or `alabel` functions if necessary:

```
.. code-block:: pycon
```

```
Python 2
>>> idna.alabel(u")
'xn--0zwm56d'
```

## Compatibility Mapping (UTS #46)

```
+++++
```

As described in [RFC 5895](http://tools.ietf.org/html/rfc5895) [`\\_](http://tools.ietf.org/html/rfc5895), the IDNA specification no longer normalizes input from different potential ways a user

may input a domain name. This functionality, known as a “mapping”, is now considered by the specification to be a local user-interface issue distinct from IDNA conversion functionality.

This library provides one such mapping, that was developed by the Unicode Consortium. Known as `Unicode IDNA Compatibility Processing` <<http://unicode.org/reports/tr46/>>`, it provides for both a regular mapping for typical applications, as well as a transitional mapping to help migrate from older IDNA 2003 applications.

For example, “Königsgäßchen” is not a permissible label as \*LATIN CAPITAL LETTER K\* is not allowed (nor are capital letters in general). UTS 46 will convert this into lower case prior to applying the IDNA conversion.

.. code-block:: pycon

```
Python 3
>>> import idna
>>> idna.encode(u'Königsgäßchen')
...
idna.core.InvalidCodepoint: Codepoint U+004B at position 1 of 'Königsgäßchen' not allowed
>>> idna.encode('Königsgäßchen', uts46=True)
b'xn--knigsgchen-b4a3dun'
>>> print(idna.decode('xn--knigsgchen-b4a3dun'))
königsgäßchen
```

Transitional processing provides conversions to help transition from the older 2003 standard to the current standard. For example, in the original IDNA specification, the \*LATIN SMALL LETTER SHARP S\* (ß) was converted into two \*LATIN SMALL LETTER S\* (ss), whereas in the current IDNA specification this conversion is not performed.

.. code-block:: pycon

```
Python 2
>>> idna.encode(u'Königsgäßchen', uts46=True, transitional=True)
'xn--knigsgsschen-lcb0w'
```

Implementors should use transitional processing with caution, only in rare cases where conversion from legacy labels to current labels must be performed (i.e. IDNA implementations that pre-date 2008). For typical applications that just need to convert labels, transitional processing is unlikely to be beneficial and could produce unexpected incompatible results.

```
``encodings.idna`` Compatibility
+++++
```

Function calls from the Python built-in ``encodings.idna`` module are mapped to their IDNA 2008 equivalents using the ``idna.compat`` module.

Simply substitute the `import` clause in your code to refer to the new module name.

## Exceptions

-----

All errors raised during the conversion following the specification should raise an exception derived from the `idna.IDNAError` base class.

More specific exceptions that may be generated as `idna.IDNABidiError` when the error reflects an illegal combination of left-to-right and right-to-left characters in a label; `idna.InvalidCodepoint` when a specific codepoint is an illegal character in an IDN label (i.e. INVALID); and `idna.InvalidCodepointContext` when the codepoint is illegal based on its positional context (i.e. it is CONTEXTO or CONTEXTJ but the contextual requirements are not satisfied.)

## Building and Diagnostics

-----

The IDNA and UTS 46 functionality relies upon pre-calculated lookup tables for performance. These tables are derived from computing against eligibility criteria in the respective standards. These tables are computed using the command-line script `tools/idna-data`.

This tool will fetch relevant tables from the Unicode Consortium and perform the required calculations to identify eligibility. It has three main modes:

\* `idna-data make-libdata`. Generates `idnadata.py` and `uts46data.py`, the pre-calculated lookup tables using for IDNA and UTS 46 conversions. Implementors who wish to track this library against a different Unicode version may use this tool to manually generate a different version of the `idnadata.py` and `uts46data.py` files.

\* `idna-data make-table`. Generate a table of the IDNA disposition (e.g. PVALID, CONTEXTJ, CONTEXTO) in the format found in Appendix B.1 of RFC 5892 and the pre-computed tables published by IANA <<http://iana.org/>>.

\* `idna-data U+0061`. Prints debugging output on the various properties associated with an individual Unicode codepoint (in this case, U+0061), that are used to assess the IDNA and UTS 46 status of a codepoint. This is helpful in debugging or analysis.

The tool accepts a number of arguments, described using `idna-data -h`. Most notably, the `--version` argument allows the specification of the version of Unicode to use in computing the table data. For example, `idna-data --version 9.0.0 make-libdata` will generate library data against Unicode 9.0.0.

Note that this script requires Python 3, but all generated library data will work

in Python 2.6+.

## Testing

-----

The library has a test suite based on each rule of the IDNA specification, as well as tests that are provided as part of the Unicode Technical Standard 46, `Unicode IDNA Compatibility Processing <<http://unicode.org/reports/tr46/>>` \_.

The tests are run automatically on each commit at Travis CI:

```
.. image:: https://travis-ci.org/kjd/idna.svg?branch=master
 :target: https://travis-ci.org/kjd/idna
```

Platform: UNKNOWN

Classifier: Development Status :: 5 - Production/Stable

Classifier: Intended Audience :: Developers

Classifier: Intended Audience :: System Administrators

Classifier: License :: OSI Approved :: BSD License

Classifier: Operating System :: OS Independent

Classifier: Programming Language :: Python

Classifier: Programming Language :: Python :: 2.6

Classifier: Programming Language :: Python :: 2.7

Classifier: Programming Language :: Python :: 3

Classifier: Programming Language :: Python :: 3.3

Classifier: Programming Language :: Python :: 3.4

Classifier: Programming Language :: Python :: 3.5

Classifier: Programming Language :: Python :: 3.6

Classifier: Topic :: Internet :: Name Service (DNS)

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\* /opt/cola/permits/1114240575\_1607457212.69/0/python-idna-2-6-orig-1-tar-gz/idna-2.6/PKG-INFO

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"""

A library to support the Internationalised Domain Names in Applications (IDNA) protocol as specified in RFC 5890 et.al. This new methodology, known as IDNA 2008, can generate materially different results to the previous standard. The library can act as a drop-in replacement for the "encodings.idna" module.

"""

```
import io, sys
```

```
from setuptools import setup
```



```

def main():

 python_version = sys.version_info[:2]
 if python_version < (2,6):
 raise SystemExit("Sorry, Python 2.6 or newer required")

 package_data = {}
 exec(open('idna/package_data.py').read(), package_data)

 arguments = {
 'name': 'idna',
 'packages': ['idna'],
 'version': package_data['__version__'],
 'description': 'Internationalized Domain Names in Applications (IDNA)',
 'long_description': io.open("README.rst", encoding="UTF-8").read(),
 'author': 'Kim Davies',
 'author_email': 'kim@cynosure.com.au',
 'license': 'BSD-like',
 'url': 'https://github.com/kjd/idna',
 'classifiers': [
 'Development Status :: 5 - Production/Stable',
 'Intended Audience :: Developers',
 'Intended Audience :: System Administrators',
 'License :: OSI Approved :: BSD License',
 'Operating System :: OS Independent',
 'Programming Language :: Python',
 'Programming Language :: Python :: 2.6',
 'Programming Language :: Python :: 2.7',
 'Programming Language :: Python :: 3',
 'Programming Language :: Python :: 3.3',
 'Programming Language :: Python :: 3.4',
 'Programming Language :: Python :: 3.5',
 'Programming Language :: Python :: 3.6',
 'Topic :: Internet :: Name Service (DNS)',
 'Topic :: Software Development :: Libraries :: Python Modules',
 'Topic :: Utilities',
],
 'test_suite': 'tests',
 }

 setup(**arguments)

if __name__ == '__main__':
 main()

```

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Libby, Kendall  
Lobbes, Phillip E.  
McIntyre, Jason  
MacKenzie, David J.  
McLaughlin, Tom  
Makey, Jeff  
Marchionna, Michael D.  
Markham, Paul  
Martinian, Emin  
Meskes, Michael  
Michael, David  
Miller, Todd C.  
Minier, Loc  
Moffat, Darren  
Moldung, Jan Thomas  
Morris, Charles  
Mueller, Andreas  
Mller, Dworkin  
Nieusma, Jeff  
Nikitser, Peter A.  
Nussel, Ludwig  
Ouellet, Jean-Philippe  
Paquet, Eric

Paradis, Chantal  
Percival, Ted  
Perera, Andres  
Peron, Christian S.J.  
Peschel, Aaron  
Peslyak, Alexander  
Peterson, Toby  
Petten, Diego Elio  
Pickett, Joel  
Plotnick, Alex  
de Raadt, Theo  
Rasch, Gudleik  
Reid, Steve  
Richards, Matt  
Rossum, Guido van  
Rouillard, John P.  
Rowe, William A., Jr.  
Roy, Alain  
Ruusame, Elan  
Ryabinkin, Eygene  
SATO, Yuichi  
Snchez, Wilfredo  
Saucier, Jean-Francois  
Schoenfeld, Patrick  
Schuring, Arno  
Schwarze, Ingo  
Scott, Dougal  
Sieger, Nick  
Simon, Thor Lancelot  
Slemko, Marc  
Smith, Andy  
Sobrado, Igor  
Soulen, Steven  
Spangler, Aaron  
Spradling, Cloyce D.  
Stier, Matthew  
Stoeckmann, Tobias  
Street, Russell  
Stritzky, Tilo  
Stroucken, Michael  
Tarrall, Robert  
Thomas, Matthew  
Todd, Giles  
Toft, Martin  
Torek, Chris  
Tucker, Darren  
Uhl, Robert  
Uzel, Petr



Valery, Reznic  
Van Dinter, Theo  
Venckus, Martynas  
de Vries, Maarten  
Wagner, Klaus  
Walsh, Dan  
Warburton, John  
Webb, Kirk  
Wetzel, Timm  
Wieringen, Marco van  
Wilk, Jakub  
Winiger, Gary  
Wood, David  
Zacarias, Gustavo  
Zolnowsky, John

The following people have worked to translate sudo into other languages:

Blttermann, Mario  
Bogusz, Jakub  
Casagrande, Milo  
Castro, Felipe  
Cho, Seong-ho  
Chornoivan, Yuri  
Diguez, Francisco  
Ferreira, Rafael  
Garca-Fontes, Walter  
Gezer, Volkan  
Hamasaki, Takeshi  
Hamming, Peter  
Hansen, Joe  
Hantrais, Frdric  
Hein, Jochen  
Hufthammer, Karl Ove  
Jerovek, Damir  
Karvonen, Jorma  
Kazik, Duan  
Kelemen, Gbor  
Koir, Klemen  
Kozlov, Yuri  
Kramer, Jakob  
Krznar, Tomislav  
Marchal, Frdric  
Margeviius, Algimantas  
Maryanov, Pavel  
Nikoli, Miroslav  
Nylander, Daniel

Psa, Petr  
Qun, Trn Ngc  
Regueiro, Leandro  
Sarer, zgr  
Sendn, Abel  
Sikrom, ka  
Spingos, Dimitris  
Taniguchi, Yasuaki  
Tomat, Fbio  
Uranga, Mikel Olasagasti  
Vorotnikov, Artem  
Wang, Wylmer

# 1.199 libiconv postgress

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Ty Coon, President of Vice

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## 1.200 libpcap 1.9.0

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# 1.201 ssh-import-id 5.7 0ubuntu1.1

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# 1.203 tcp-wrappers 7.6.q-27

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# 1.204 jackson 2.10.1

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 */
```

Found in path(s):

```
* /opt/cola/permits/1135902017_1613627678.46/0/javassist-3-19-0-ga-sources-1-
jar/javassist/util/proxy/RuntimeSupport.java
* /opt/cola/permits/1135902017_1613627678.46/0/javassist-3-19-0-ga-sources-1-
jar/javassist/tools/rmi/ObjectNotFoundException.java
* /opt/cola/permits/1135902017_1613627678.46/0/javassist-3-19-0-ga-sources-1-
jar/javassist/compiler/ast/CastExpr.java
* /opt/cola/permits/1135902017_1613627678.46/0/javassist-3-19-0-ga-sources-1-
jar/javassist/convert/TransformBefore.java
* /opt/cola/permits/1135902017_1613627678.46/0/javassist-3-19-0-ga-sources-1-
jar/javassist/convert/TransformFieldAccess.java
* /opt/cola/permits/1135902017_1613627678.46/0/javassist-3-19-0-ga-sources-1-
jar/javassist/bytecode/analysis/IntQueue.java
* /opt/cola/permits/1135902017_1613627678.46/0/javassist-3-19-0-ga-sources-1-
jar/javassist/tools/rmi/AppletServer.java
* /opt/cola/permits/1135902017_1613627678.46/0/javassist-3-19-0-ga-sources-1-jar/javassist/util/HotSwapper.java
* /opt/cola/permits/1135902017_1613627678.46/0/javassist-3-19-0-ga-sources-1-
jar/javassist/tools/reflect/Metalevel.java
* /opt/cola/permits/1135902017_1613627678.46/0/javassist-3-19-0-ga-sources-1-
jar/javassist/bytecode/annotation/AnnotationImpl.java
* /opt/cola/permits/1135902017_1613627678.46/0/javassist-3-19-0-ga-sources-1-
jar/javassist/util/proxy/MethodFilter.java
* /opt/cola/permits/1135902017_1613627678.46/0/javassist-3-19-0-ga-sources-1-
jar/javassist/compiler/ast/DoubleConst.java
* /opt/cola/permits/1135902017_1613627678.46/0/javassist-3-19-0-ga-sources-1-
jar/javassist/bytecode/BadBytecode.java
```

\* /opt/cola/permits/1135902017\_1613627678.46/0/javassist-3-19-0-ga-sources-1-jar/javassist/compiler/TypeChecker.java  
\* /opt/cola/permits/1135902017\_1613627678.46/0/javassist-3-19-0-ga-sources-1-jar/javassist/CtMember.java  
\* /opt/cola/permits/1135902017\_1613627678.46/0/javassist-3-19-0-ga-sources-1-jar/javassist/compiler/JvstCodeGen.java  
\* /opt/cola/permits/1135902017\_1613627678.46/0/javassist-3-19-0-ga-sources-1-jar/javassist/ClassClassPath.java  
\* /opt/cola/permits/1135902017\_1613627678.46/0/javassist-3-19-0-ga-sources-1-jar/javassist/bytecode/Opcodes.java  
\* /opt/cola/permits/1135902017\_1613627678.46/0/javassist-3-19-0-ga-sources-1-jar/javassist/tools/reflect/Sample.java  
\* /opt/cola/permits/1135902017\_1613627678.46/0/javassist-3-19-0-ga-sources-1-jar/javassist/compiler/MemberCodeGen.java  
\* /opt/cola/permits/1135902017\_1613627678.46/0/javassist-3-19-0-ga-sources-1-jar/javassist/CtPrimitiveType.java  
\* /opt/cola/permits/1135902017\_1613627678.46/0/javassist-3-19-0-ga-sources-1-jar/javassist/URLClassPath.java  
\* /opt/cola/permits/1135902017\_1613627678.46/0/javassist-3-19-0-ga-sources-1-jar/javassist/bytecode/SignatureAttribute.java  
\* /opt/cola/permits/1135902017\_1613627678.46/0/javassist-3-19-0-ga-sources-1-jar/javassist/bytecode/CodeIterator.java  
\* /opt/cola/permits/1135902017\_1613627678.46/0/javassist-3-19-0-ga-sources-1-jar/javassist/bytecode/stackmap/Tracer.java  
\* /opt/cola/permits/1135902017\_1613627678.46/0/javassist-3-19-0-ga-sources-1-jar/javassist/util/proxy/MethodHandler.java  
\* /opt/cola/permits/1135902017\_1613627678.46/0/javassist-3-19-0-ga-sources-1-jar/javassist/util/proxy/ProxyObject.java  
\* /opt/cola/permits/1135902017\_1613627678.46/0/javassist-3-19-0-ga-sources-1-jar/javassist/LoaderClassPath.java  
\* /opt/cola/permits/1135902017\_1613627678.46/0/javassist-3-19-0-ga-sources-1-jar/javassist/compiler/ast/MethodDecl.java  
\* /opt/cola/permits/1135902017\_1613627678.46/0/javassist-3-19-0-ga-sources-1-jar/javassist/ByteArrayClassPath.java  
\* /opt/cola/permits/1135902017\_1613627678.46/0/javassist-3-19-0-ga-sources-1-jar/javassist/util/proxy/SecurityActions.java  
\* /opt/cola/permits/1135902017\_1613627678.46/0/javassist-3-19-0-ga-sources-1-jar/javassist/bytecode/annotation/AnnotationsWriter.java  
\* /opt/cola/permits/1135902017\_1613627678.46/0/javassist-3-19-0-ga-sources-1-jar/javassist/CodeConverter.java  
\* /opt/cola/permits/1135902017\_1613627678.46/0/javassist-3-19-0-ga-sources-1-jar/javassist/compiler/ast/BinExpr.java  
\* /opt/cola/permits/1135902017\_1613627678.46/0/javassist-3-19-0-ga-sources-1-jar/javassist/compiler/ast/FieldDecl.java  
\* /opt/cola/permits/1135902017\_1613627678.46/0/javassist-3-19-0-ga-sources-1-jar/javassist/Translator.java  
\* /opt/cola/permits/1135902017\_1613627678.46/0/javassist-3-19-0-ga-sources-1-jar/javassist/bytecode/analysis/Type.java  
\* /opt/cola/permits/1135902017\_1613627678.46/0/javassist-3-19-0-ga-sources-1-jar/javassist/runtime/Cflow.java  
\* /opt/cola/permits/1135902017\_1613627678.46/0/javassist-3-19-0-ga-sources-1-jar/javassist/bytecode/Mnemonic.java  
\* /opt/cola/permits/1135902017\_1613627678.46/0/javassist-3-19-0-ga-sources-1-jar/javassist/compiler/SymbolTable.java  
\* /opt/cola/permits/1135902017\_1613627678.46/0/javassist-3-19-0-ga-sources-1-jar/javassist/convert/TransformCall.java  
\* /opt/cola/permits/1135902017\_1613627678.46/0/javassist-3-19-0-ga-sources-1-

jar/javassist/compiler/ast/AssignExpr.java  
\* /opt/cola/permits/1135902017\_1613627678.46/0/javassist-3-19-0-ga-sources-1-jar/javassist/bytecode/EnclosingMethodAttribute.java  
\* /opt/cola/permits/1135902017\_1613627678.46/0/javassist-3-19-0-ga-sources-1-jar/javassist/CtNewNestedClass.java  
\* /opt/cola/permits/1135902017\_1613627678.46/0/javassist-3-19-0-ga-sources-1-jar/javassist/expr/FieldAccess.java  
\* /opt/cola/permits/1135902017\_1613627678.46/0/javassist-3-19-0-ga-sources-1-jar/javassist/util/proxy/Proxy.java  
\* /opt/cola/permits/1135902017\_1613627678.46/0/javassist-3-19-0-ga-sources-1-jar/javassist/CtNewClass.java  
\* /opt/cola/permits/1135902017\_1613627678.46/0/javassist-3-19-0-ga-sources-1-jar/javassist/bytecode/InnerClassesAttribute.java  
\* /opt/cola/permits/1135902017\_1613627678.46/0/javassist-3-19-0-ga-sources-1-jar/javassist/tools/Dump.java  
\* /opt/cola/permits/1135902017\_1613627678.46/0/javassist-3-19-0-ga-sources-1-jar/javassist/bytecode/stackmap/TypedBlock.java  
\* /opt/cola/permits/1135902017\_1613627678.46/0/javassist-3-19-0-ga-sources-1-jar/javassist/bytecode/analysis/Subroutine.java  
\* /opt/cola/permits/1135902017\_1613627678.46/0/javassist-3-19-0-ga-sources-1-jar/javassist/compiler/Lex.java  
\* /opt/cola/permits/1135902017\_1613627678.46/0/javassist-3-19-0-ga-sources-1-jar/javassist/bytecode/ClassFileWriter.java  
\* /opt/cola/permits/1135902017\_1613627678.46/0/javassist-3-19-0-ga-sources-1-jar/javassist/bytecode/DuplicateMemberException.java  
\* /opt/cola/permits/1135902017\_1613627678.46/0/javassist-3-19-0-ga-sources-1-jar/javassist/tools/reflect/Loader.java  
\* /opt/cola/permits/1135902017\_1613627678.46/0/javassist-3-19-0-ga-sources-1-jar/javassist/compiler/ast/Variable.java  
\* /opt/cola/permits/1135902017\_1613627678.46/0/javassist-3-19-0-ga-sources-1-jar/javassist/bytecode/analysis/ControlFlow.java  
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\* /opt/cola/permits/1135902017\_1613627678.46/0/javassist-3-19-0-ga-sources-1-jar/javassist/compiler/ast/StringL.java  
\* /opt/cola/permits/1135902017\_1613627678.46/0/javassist-3-19-0-ga-sources-1-jar/javassist/compiler/ast/Expr.java  
\* /opt/cola/permits/1135902017\_1613627678.46/0/javassist-3-19-0-ga-sources-1-jar/javassist/bytecode/analysis/Frame.java  
\* /opt/cola/permits/1135902017\_1613627678.46/0/javassist-3-19-0-ga-sources-1-jar/javassist/compiler/ast/Declarator.java  
\* /opt/cola/permits/1135902017\_1613627678.46/0/javassist-3-19-0-ga-sources-1-jar/javassist/NotFoundException.java  
\* /opt/cola/permits/1135902017\_1613627678.46/0/javassist-3-19-0-ga-sources-1-jar/javassist/compiler/ast/Member.java  
\* /opt/cola/permits/1135902017\_1613627678.46/0/javassist-3-19-0-ga-sources-1-jar/javassist/tools/web/Viewer.java  
\* /opt/cola/permits/1135902017\_1613627678.46/0/javassist-3-19-0-ga-sources-1-jar/javassist/CtNewWrappedMethod.java  
\* /opt/cola/permits/1135902017\_1613627678.46/0/javassist-3-19-0-ga-sources-1-jar/javassist/compiler/ast/Symbol.java  
\* /opt/cola/permits/1135902017\_1613627678.46/0/javassist-3-19-0-ga-sources-1-jar/javassist/runtime/DotClass.java  
\* /opt/cola/permits/1135902017\_1613627678.46/0/javassist-3-19-0-ga-sources-1-

jar/javassist/compiler/CodeGen.java  
\* /opt/cola/permits/1135902017\_1613627678.46/0/javassist-3-19-0-ga-sources-1-  
jar/javassist/CtNewConstructor.java  
\* /opt/cola/permits/1135902017\_1613627678.46/0/javassist-3-19-0-ga-sources-1-  
jar/javassist/bytecode/analysis/FramePrinter.java  
\* /opt/cola/permits/1135902017\_1613627678.46/0/javassist-3-19-0-ga-sources-1-jar/javassist/expr/ExprEditor.java  
\* /opt/cola/permits/1135902017\_1613627678.46/0/javassist-3-19-0-ga-sources-1-  
jar/javassist/convert/TransformAccessArrayField.java  
\* /opt/cola/permits/1135902017\_1613627678.46/0/javassist-3-19-0-ga-sources-1-jar/javassist/CtNewMethod.java  
\* /opt/cola/permits/1135902017\_1613627678.46/0/javassist-3-19-0-ga-sources-1-  
jar/javassist/bytecode/AccessFlag.java  
\* /opt/cola/permits/1135902017\_1613627678.46/0/javassist-3-19-0-ga-sources-1-jar/javassist/expr/Expr.java  
\* /opt/cola/permits/1135902017\_1613627678.46/0/javassist-3-19-0-ga-sources-1-  
jar/javassist/bytecode/analysis/Executor.java  
\* /opt/cola/permits/1135902017\_1613627678.46/0/javassist-3-19-0-ga-sources-1-jar/javassist/tools/rmi/Proxy.java  
\* /opt/cola/permits/1135902017\_1613627678.46/0/javassist-3-19-0-ga-sources-1-jar/javassist/CtArray.java  
\* /opt/cola/permits/1135902017\_1613627678.46/0/javassist-3-19-0-ga-sources-1-  
jar/javassist/bytecode/LocalVariableAttribute.java  
\* /opt/cola/permits/1135902017\_1613627678.46/0/javassist-3-19-0-ga-sources-1-  
jar/javassist/compiler/TokenId.java  
\* /opt/cola/permits/1135902017\_1613627678.46/0/javassist-3-19-0-ga-sources-1-  
jar/javassist/scopedpool/ScopedClassPool.java  
\* /opt/cola/permits/1135902017\_1613627678.46/0/javassist-3-19-0-ga-sources-1-  
jar/javassist/bytecode/AttributeInfo.java  
\* /opt/cola/permits/1135902017\_1613627678.46/0/javassist-3-19-0-ga-sources-1-  
jar/javassist/bytecode/CodeAnalyzer.java  
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jar/javassist/util/proxy/ProxyObjectInputStream.java
* /opt/cola/permits/1135902017_1613627678.46/0/javassist-3-19-0-ga-sources-1-jar/javassist/compiler/Javac.java
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```
/*
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```

Found in path(s):

- \* /opt/cola/permits/1135902017\_1613627678.46/0/javassist-3-19-0-ga-sources-1-jar/javassist/bytecode/annotation/ByteMemberValue.java
- \* /opt/cola/permits/1135902017\_1613627678.46/0/javassist-3-19-0-ga-sources-1-jar/javassist/bytecode/annotation/ClassMemberValue.java
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- \* /opt/cola/permits/1135902017\_1613627678.46/0/javassist-3-19-0-ga-sources-1-jar/javassist/bytecode/annotation/AnnotationMemberValue.java
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- \* /opt/cola/permits/1135902017\_1613627678.46/0/javassist-3-19-0-ga-sources-1-jar/javassist/bytecode/annotation/IntegerMemberValue.java

# 1.206 ifupdown 0.7.47.2ubuntu4.4

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```
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## 1.207 json-smart 2.4.8

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Manifest-Version: 1.0

Bnd-LastModified: 1644737862078

Build-Jdk: 11.0.14

Built-By: uriel

Bundle-Description: JSON (JavaScript Object Notation) is a lightweight data-interchange format. It is easy for humans to read and write. It is easy for machines to parse and generate. It is based on a subset of the JavaScript Programming Language, Standard ECMA-262 3rd Edition - December 1999. JSON is a text format that is completely language independent but uses conventions that are familiar to programmers of the C-family of languages, including C, C++, C#, Java, JavaScript, Perl, Python, and many others. These properties make JSON an ideal data-interchange language.

Bundle-DocURL: <https://urielch.github.io/>

Bundle-License: <http://www.apache.org/licenses/LICENSE-2.0.txt>

Bundle-ManifestVersion: 2

Bundle-Name: json-smart

Bundle-SymbolicName: net.minidev.json-smart

Bundle-Vendor: Chemouni Uriel

Bundle-Version: 2.4.8

Created-By: Apache Maven Bundle Plugin

Export-Package: net.minidev.json;uses:="net.minidev.asm,net.minidev.json.parser,net.minidev.json.reader,net.minidev.json.writer";version="2.4.8",net.minidev.json.annotate;version="2.4.8",net.minidev.json.parser;uses:="net.minidev.json.writer";version="2.4.8",net.minidev.json.r

header;uses:="net.minidev.json";version="2.4.8",net.minidev.json.writer;uses:="net.minidev.json,net.minidev.json.parser";version="2.4.8"  
Import-Package: net.minidev.asm;version="[2.4,3)",net.minidev.json,net.minidev.json.annotate,net.minidev.json.parser,net.minidev.json.reader,net.minidev.json.writer  
Require-Capability: osgi.ee;filter="(&(osgi.ee=JavaSE)(version=1.8))"  
Tool: Bnd-5.1.1.202006162103

Found in path(s):

\* /opt/cola/permits/1301894975\_1649303968.12/0/json-smart-2-4-8-1-jar/META-INF/MANIFEST.MF

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\* /opt/cola/permits/1301894975\_1649303968.12/0/json-smart-2-4-8-1-jar/META-INF/maven/net.minidev/json-smart/pom.xml

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## 1.209 failureaccess 1.0.1

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\* /opt/cola/permits/1349013147\_1655879756.6643403/0/failureaccess-1-0-1-sources-4-  
jar/com/google/common/util/concurrent/internal/InternalFutures.java

\* /opt/cola/permits/1349013147\_1655879756.6643403/0/failureaccess-1-0-1-sources-4-  
jar/com/google/common/util/concurrent/internal/InternalFutureFailureAccess.java

## 1.210 aws-java-sdk-core 1.11.553

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```
* /opt/cola/permits/1141636850_1615091536.31/0/aws-java-sdk-core-1-11-553-sources-
jar/com/amazonaws/annotation/Beta.java
* /opt/cola/permits/1141636850_1615091536.31/0/aws-java-sdk-core-1-11-553-sources-
jar/com/amazonaws/annotation/SdkInternalApi.java
* /opt/cola/permits/1141636850_1615091536.31/0/aws-java-sdk-core-1-11-553-sources-
jar/com/amazonaws/annotation/SdkProtectedApi.java
* /opt/cola/permits/1141636850_1615091536.31/0/aws-java-sdk-core-1-11-553-sources-
jar/com/amazonaws/annotation/Immutable.java
* /opt/cola/permits/1141636850_1615091536.31/0/aws-java-sdk-core-1-11-553-sources-
jar/com/amazonaws/annotation/ThreadSafe.java
* /opt/cola/permits/1141636850_1615091536.31/0/aws-java-sdk-core-1-11-553-sources-
jar/com/amazonaws/annotation/NotThreadSafe.java
* /opt/cola/permits/1141636850_1615091536.31/0/aws-java-sdk-core-1-11-553-sources-
jar/com/amazonaws/annotation/SdkTestInternalApi.java
* /opt/cola/permits/1141636850_1615091536.31/0/aws-java-sdk-core-1-11-553-sources-
jar/com/amazonaws/annotation/GuardedBy.java
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- \* /opt/cola/permits/1141636850\_1615091536.31/0/aws-java-sdk-core-1-11-553-sources-jar/com/amazonaws/adapters/types/StringToByteBufferAdapter.java
  - \* /opt/cola/permits/1141636850\_1615091536.31/0/aws-java-sdk-core-1-11-553-sources-jar/com/amazonaws/internal/auth/SignerProvider.java
  - \* /opt/cola/permits/1141636850\_1615091536.31/0/aws-java-sdk-core-1-11-553-sources-jar/com/amazonaws/util/MetadataCache.java
  - \* /opt/cola/permits/1141636850\_1615091536.31/0/aws-java-sdk-core-1-11-553-sources-jar/com/amazonaws/util/NullResponseMetadataCache.java
  - \* /opt/cola/permits/1141636850\_1615091536.31/0/aws-java-sdk-core-1-11-553-sources-jar/com/amazonaws/internal/auth/DefaultSignerProvider.java
  - \* /opt/cola/permits/1141636850\_1615091536.31/0/aws-java-sdk-core-1-11-553-sources-jar/com/amazonaws/adapters/types/StringToInputStreamAdapter.java
  - \* /opt/cola/permits/1141636850\_1615091536.31/0/aws-java-sdk-core-1-11-553-sources-jar/com/amazonaws/internal/auth/NoOpSignerProvider.java
  - \* /opt/cola/permits/1141636850\_1615091536.31/0/aws-java-sdk-core-1-11-553-sources-jar/com/amazonaws/adapters/types/TypeAdapter.java
  - \* /opt/cola/permits/1141636850\_1615091536.31/0/aws-java-sdk-core-1-11-553-sources-jar/com/amazonaws/internal/auth/SignerProviderContext.java
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```
* /opt/cola/permits/1141636850_1615091536.31/0/aws-java-sdk-core-1-11-553-sources-
jar/com/amazonaws/util/CredentialUtils.java
```

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```
* /opt/cola/permits/1141636850_1615091536.31/0/aws-java-sdk-core-1-11-553-sources-
jar/com/amazonaws/protocol/json/SdkStructuredPlainJsonFactory.java
```

```
* /opt/cola/permits/1141636850_1615091536.31/0/aws-java-sdk-core-1-11-553-sources-
jar/com/amazonaws/protocol/json/SdkStructuredCborFactory.java
```

```
* /opt/cola/permits/1141636850_1615091536.31/0/aws-java-sdk-core-1-11-553-sources-
jar/com/amazonaws/protocol/json/SdkJsonProtocolFactory.java
```

\* /opt/cola/permits/1141636850\_1615091536.31/0/aws-java-sdk-core-1-11-553-sources-jar/com/amazonaws/protocol/json/StructuredJsonGenerator.java  
\* /opt/cola/permits/1141636850\_1615091536.31/0/aws-java-sdk-core-1-11-553-sources-jar/com/amazonaws/http/JsonResponseHandler.java  
\* /opt/cola/permits/1141636850\_1615091536.31/0/aws-java-sdk-core-1-11-553-sources-jar/com/amazonaws/protocol/json/SdkCborGenerator.java  
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\* /opt/cola/permits/1141636850\_1615091536.31/0/aws-java-sdk-core-1-11-553-sources-jar/com/amazonaws/util/EC2MetadataUtils.java  
\* /opt/cola/permits/1141636850\_1615091536.31/0/aws-java-sdk-core-1-11-553-sources-jar/com/amazonaws/internal/SdkFilterInputStream.java  
\* /opt/cola/permits/1141636850\_1615091536.31/0/aws-java-sdk-core-1-11-553-sources-jar/com/amazonaws/internal/SdkDigestInputStream.java  
\* /opt/cola/permits/1141636850\_1615091536.31/0/aws-java-sdk-core-1-11-553-sources-jar/com/amazonaws/auth/RegionAwareSigner.java  
\* /opt/cola/permits/1141636850\_1615091536.31/0/aws-java-sdk-core-1-11-553-sources-jar/com/amazonaws/internal/MetricAware.java  
\* /opt/cola/permits/1141636850\_1615091536.31/0/aws-java-sdk-core-1-11-553-sources-jar/com/amazonaws/regions/RegionMetadata.java  
\* /opt/cola/permits/1141636850\_1615091536.31/0/aws-java-sdk-core-1-11-553-sources-jar/com/amazonaws/util/Base32Codec.java  
\* /opt/cola/permits/1141636850\_1615091536.31/0/aws-java-sdk-core-1-11-553-sources-jar/com/amazonaws/util/IOUtils.java  
\* /opt/cola/permits/1141636850\_1615091536.31/0/aws-java-sdk-core-1-11-553-sources-jar/com/amazonaws/util/Throwables.java  
\* /opt/cola/permits/1141636850\_1615091536.31/0/aws-java-sdk-core-1-11-553-sources-jar/com/amazonaws/internal/MetricsInputStream.java  
\* /opt/cola/permits/1141636850\_1615091536.31/0/aws-java-sdk-core-1-11-553-sources-jar/com/amazonaws/util/EncodingSchemeEnum.java  
\* /opt/cola/permits/1141636850\_1615091536.31/0/aws-java-sdk-core-1-11-553-sources-jar/com/amazonaws/util/Base64.java

\* /opt/cola/permits/1141636850\_1615091536.31/0/aws-java-sdk-core-1-11-553-sources-jar/com/amazonaws/util/AbstractBase32Codec.java  
\* /opt/cola/permits/1141636850\_1615091536.31/0/aws-java-sdk-core-1-11-553-sources-jar/com/amazonaws/util/SdkRuntime.java  
\* /opt/cola/permits/1141636850\_1615091536.31/0/aws-java-sdk-core-1-11-553-sources-jar/com/amazonaws/util/CodecUtils.java  
\* /opt/cola/permits/1141636850\_1615091536.31/0/aws-java-sdk-core-1-11-553-sources-jar/com/amazonaws/internal/SdkBufferedInputStream.java  
\* /opt/cola/permits/1141636850\_1615091536.31/0/aws-java-sdk-core-1-11-553-sources-jar/com/amazonaws/auth/ServiceAwareSigner.java  
\* /opt/cola/permits/1141636850\_1615091536.31/0/aws-java-sdk-core-1-11-553-sources-jar/com/amazonaws/util/HttpClientWrappingInputStream.java  
\* /opt/cola/permits/1141636850\_1615091536.31/0/aws-java-sdk-core-1-11-553-sources-jar/com/amazonaws/util/Base64Codec.java  
\* /opt/cola/permits/1141636850\_1615091536.31/0/aws-java-sdk-core-1-11-553-sources-jar/com/amazonaws/util/Base32.java  
\* /opt/cola/permits/1141636850\_1615091536.31/0/aws-java-sdk-core-1-11-553-sources-jar/com/amazonaws/util/Base16.java  
\* /opt/cola/permits/1141636850\_1615091536.31/0/aws-java-sdk-core-1-11-553-sources-jar/com/amazonaws/util/Base16Codec.java  
\* /opt/cola/permits/1141636850\_1615091536.31/0/aws-java-sdk-core-1-11-553-sources-jar/com/amazonaws/regions/Region.java  
\* /opt/cola/permits/1141636850\_1615091536.31/0/aws-java-sdk-core-1-11-553-sources-jar/com/amazonaws/internal/SdkFilterOutputStream.java  
\* /opt/cola/permits/1141636850\_1615091536.31/0/aws-java-sdk-core-1-11-553-sources-jar/com/amazonaws/AbortedException.java  
\* /opt/cola/permits/1141636850\_1615091536.31/0/aws-java-sdk-core-1-11-553-sources-jar/com/amazonaws/auth/AWS4Signer.java  
\* /opt/cola/permits/1141636850\_1615091536.31/0/aws-java-sdk-core-1-11-553-sources-jar/com/amazonaws/regions/RegionUtils.java  
\* /opt/cola/permits/1141636850\_1615091536.31/0/aws-java-sdk-core-1-11-553-sources-jar/com/amazonaws/ResetException.java  
\* /opt/cola/permits/1141636850\_1615091536.31/0/aws-java-sdk-core-1-11-553-sources-jar/com/amazonaws/jmx/MBeans.java  
\* /opt/cola/permits/1141636850\_1615091536.31/0/aws-java-sdk-core-1-11-553-sources-jar/com/amazonaws/internal/ListWithAutoConstructFlag.java  
\* /opt/cola/permits/1141636850\_1615091536.31/0/aws-java-sdk-core-1-11-553-sources-jar/com/amazonaws/util/Codec.java  
\* /opt/cola/permits/1141636850\_1615091536.31/0/aws-java-sdk-core-1-11-553-sources-jar/com/amazonaws/util/EncodingScheme.java  
\* /opt/cola/permits/1141636850\_1615091536.31/0/aws-java-sdk-core-1-11-553-sources-jar/com/amazonaws/regions/RegionMetadataParser.java  
\* /opt/cola/permits/1141636850\_1615091536.31/0/aws-java-sdk-core-1-11-553-sources-jar/com/amazonaws/jmx/SdkMBeanRegistrySupport.java

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\* /opt/cola/permits/1141636850\_1615091536.31/0/aws-java-sdk-core-1-11-553-sources-jar/com/amazonaws/util/UriResourcePathUtils.java  
\* /opt/cola/permits/1141636850\_1615091536.31/0/aws-java-sdk-core-1-11-553-sources-jar/com/amazonaws/internal/http/JsonErrorCodeParser.java  
\* /opt/cola/permits/1141636850\_1615091536.31/0/aws-java-sdk-core-1-11-553-sources-jar/com/amazonaws/http/conn/SdkConnectionKeepAliveStrategy.java  
\* /opt/cola/permits/1141636850\_1615091536.31/0/aws-java-sdk-core-1-11-553-sources-jar/com/amazonaws/internal/SdkThreadLocalsRegistry.java  
\* /opt/cola/permits/1141636850\_1615091536.31/0/aws-java-sdk-core-1-11-553-sources-jar/com/amazonaws/http/timers/request/HttpRequestAbortTaskTracker.java  
\* /opt/cola/permits/1141636850\_1615091536.31/0/aws-java-sdk-core-1-11-553-sources-jar/com/amazonaws/http/timers/client/NoOpClientExecutionAbortTrackerTask.java  
\* /opt/cola/permits/1141636850\_1615091536.31/0/aws-java-sdk-core-1-11-553-sources-jar/com/amazonaws/util/ValidationUtils.java  
\* /opt/cola/permits/1141636850\_1615091536.31/0/aws-java-sdk-core-1-11-553-sources-jar/com/amazonaws/util/NumberUtils.java  
\* /opt/cola/permits/1141636850\_1615091536.31/0/aws-java-sdk-core-1-11-553-sources-jar/com/amazonaws/internal/DelegateInputStream.java  
\* /opt/cola/permits/1141636850\_1615091536.31/0/aws-java-sdk-core-1-11-553-sources-jar/com/amazonaws/http/timers/client/ClientExecutionTimer.java  
\* /opt/cola/permits/1141636850\_1615091536.31/0/aws-java-sdk-core-1-11-553-sources-jar/com/amazonaws/handlers/HandlerContextKey.java  
\* /opt/cola/permits/1141636850\_1615091536.31/0/aws-java-sdk-core-1-11-553-sources-jar/com/amazonaws/http/client/HttpClientFactory.java  
\* /opt/cola/permits/1141636850\_1615091536.31/0/aws-java-sdk-core-1-11-553-sources-jar/com/amazonaws/http/timers/request/HttpRequestAbortTask.java  
\* /opt/cola/permits/1141636850\_1615091536.31/0/aws-java-sdk-core-1-11-553-sources-jar/com/amazonaws/http/DelegatingDnsResolver.java  
\* /opt/cola/permits/1141636850\_1615091536.31/0/aws-java-sdk-core-1-11-553-sources-jar/com/amazonaws/handlers/StackedRequestHandler.java  
\* /opt/cola/permits/1141636850\_1615091536.31/0/aws-java-sdk-core-1-11-553-sources-jar/com/amazonaws/http/timers/request/HttpRequestAbortTaskImpl.java

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\* /opt/cola/permits/1141636850\_1615091536.31/0/aws-java-sdk-core-1-11-553-sources-jar/com/amazonaws/internal/DelegateSocket.java

\* /opt/cola/permits/1141636850\_1615091536.31/0/aws-java-sdk-core-1-11-553-sources-jar/com/amazonaws/internal/SdkIOUtils.java

\* /opt/cola/permits/1141636850\_1615091536.31/0/aws-java-sdk-core-1-11-553-sources-jar/com/amazonaws/SDKGlobalTime.java

\* /opt/cola/permits/1141636850\_1615091536.31/0/aws-java-sdk-core-1-11-553-sources-jar/com/amazonaws/internal/http/JsonErrorMessageParser.java

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\* /opt/cola/permits/1141636850\_1615091536.31/0/aws-java-sdk-core-1-11-553-sources-jar/com/amazonaws/http/timers/client/ClientExecutionAbortTrackerTaskImpl.java

\* /opt/cola/permits/1141636850\_1615091536.31/0/aws-java-sdk-core-1-11-553-sources-jar/com/amazonaws/util/SdkHttpUtils.java

\* /opt/cola/permits/1141636850\_1615091536.31/0/aws-java-sdk-core-1-11-553-sources-jar/com/amazonaws/SystemDefaultDnsResolver.java

\* /opt/cola/permits/1141636850\_1615091536.31/0/aws-java-sdk-core-1-11-553-sources-jar/com/amazonaws/http/JsonErrorResponseHandler.java

\* /opt/cola/permits/1141636850\_1615091536.31/0/aws-java-sdk-core-1-11-553-sources-jar/com/amazonaws/util/JavaVersionParser.java

\* /opt/cola/permits/1141636850\_1615091536.31/0/aws-java-sdk-core-1-11-553-sources-jar/com/amazonaws/http/timers/client/ClientExecutionAbortTrackerTask.java

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\* /opt/cola/permits/1141636850\_1615091536.31/0/aws-java-sdk-core-1-11-553-sources-jar/com/amazonaws/internal/SdkMetricsSocket.java

\* /opt/cola/permits/1141636850\_1615091536.31/0/aws-java-sdk-core-1-11-553-sources-jar/com/amazonaws/http/timers/request/HttpRequestAbortTaskTrackerImpl.java

\* /opt/cola/permits/1141636850\_1615091536.31/0/aws-java-sdk-core-1-11-553-sources-jar/com/amazonaws/DnsResolver.java

\* /opt/cola/permits/1141636850\_1615091536.31/0/aws-java-sdk-core-1-11-553-sources-jar/com/amazonaws/internal/SdkSSLMetricsSocket.java

\* /opt/cola/permits/1141636850\_1615091536.31/0/aws-java-sdk-core-1-11-553-sources-jar/com/amazonaws/internal/SdkInternalMap.java

\* /opt/cola/permits/1141636850\_1615091536.31/0/aws-java-sdk-core-1-11-553-sources-jar/com/amazonaws/http/timers/client/ClientExecutionAbortTaskImpl.java

\* /opt/cola/permits/1141636850\_1615091536.31/0/aws-java-sdk-core-1-11-553-sources-jar/com/amazonaws/ReadLimitInfo.java

\* /opt/cola/permits/1141636850\_1615091536.31/0/aws-java-sdk-core-1-11-553-sources-jar/com/amazonaws/http/timers/TimeoutThreadPoolBuilder.java

\* /opt/cola/permits/1141636850\_1615091536.31/0/aws-java-sdk-core-1-11-553-sources-jar/com/amazonaws/http/conn/ssl/privileged/PrivilegedMasterSecretValidator.java

\* /opt/cola/permits/1141636850\_1615091536.31/0/aws-java-sdk-core-1-11-553-sources-jar/com/amazonaws/log/JulLogFactory.java  
\* /opt/cola/permits/1141636850\_1615091536.31/0/aws-java-sdk-core-1-11-553-sources-jar/com/amazonaws/http/conn/ssl/MasterSecretValidators.java  
\* /opt/cola/permits/1141636850\_1615091536.31/0/aws-java-sdk-core-1-11-553-sources-jar/com/amazonaws/PredefinedClientConfigurations.java  
\* /opt/cola/permits/1141636850\_1615091536.31/0/aws-java-sdk-core-1-11-553-sources-jar/com/amazonaws/http/timers/client/ClientExecutionAbortTask.java  
\* /opt/cola/permits/1141636850\_1615091536.31/0/aws-java-sdk-core-1-11-553-sources-jar/com/amazonaws/http/client/ConnectionManagerFactory.java  
\* /opt/cola/permits/1141636850\_1615091536.31/0/aws-java-sdk-core-1-11-553-sources-jar/com/amazonaws/http/timers/client/ClientExecutionTimeoutException.java  
\* /opt/cola/permits/1141636850\_1615091536.31/0/aws-java-sdk-core-1-11-553-sources-jar/com/amazonaws/log/CommonsLogFactory.java  
\* /opt/cola/permits/1141636850\_1615091536.31/0/aws-java-sdk-core-1-11-553-sources-jar/com/amazonaws/log/InternalLog.java  
\* /opt/cola/permits/1141636850\_1615091536.31/0/aws-java-sdk-core-1-11-553-sources-jar/com/amazonaws/http/exception/HttpRequestTimeoutException.java  
\* /opt/cola/permits/1141636850\_1615091536.31/0/aws-java-sdk-core-1-11-553-sources-jar/com/amazonaws/http/timers/request/NoOpHttpRequestAbortTaskTracker.java  
\* /opt/cola/permits/1141636850\_1615091536.31/0/aws-java-sdk-core-1-11-553-sources-jar/com/amazonaws/SdkThreadLocals.java  
\* /opt/cola/permits/1141636850\_1615091536.31/0/aws-java-sdk-core-1-11-553-sources-jar/com/amazonaws/util/Base16Lower.java  
\* /opt/cola/permits/1141636850\_1615091536.31/0/aws-java-sdk-core-1-11-553-sources-jar/com/amazonaws/util/ComparableUtils.java  
\* /opt/cola/permits/1141636850\_1615091536.31/0/aws-java-sdk-core-1-11-553-sources-jar/com/amazonaws/http/timers/request/HttpRequestTimer.java

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\* Interface for providing AWS region information. Implementations are free to use any strategy for

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\*/

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\* /opt/cola/permits/1141636850\_1615091536.31/0/aws-java-sdk-core-1-11-553-sources-jar/com/amazonaws/http/conn/ssl/SdkTLSSocketFactory.java

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\* /opt/cola/permits/1141636850\_1615091536.31/0/aws-java-sdk-core-1-11-553-sources-jar/com/amazonaws/auth/AWSSessionCredentials.java  
\* /opt/cola/permits/1141636850\_1615091536.31/0/aws-java-sdk-core-1-11-553-sources-jar/com/amazonaws/auth/AWSSessionCredentialsProvider.java  
\* /opt/cola/permits/1141636850\_1615091536.31/0/aws-java-sdk-core-1-11-553-sources-jar/com/amazonaws/util/json/Jackson.java  
\* /opt/cola/permits/1141636850\_1615091536.31/0/aws-java-sdk-core-1-11-553-sources-jar/com/amazonaws/util/ClassLoaderHelper.java  
\* /opt/cola/permits/1141636850\_1615091536.31/0/aws-java-sdk-core-1-11-553-sources-jar/com/amazonaws/util/ServiceClientHolderInputStream.java  
\* /opt/cola/permits/1141636850\_1615091536.31/0/aws-java-sdk-core-1-11-553-sources-jar/com/amazonaws/auth/BasicSessionCredentials.java  
\* /opt/cola/permits/1141636850\_1615091536.31/0/aws-java-sdk-core-1-11-553-sources-jar/com/amazonaws/metrics/MetricAdmin.java  
\* /opt/cola/permits/1141636850\_1615091536.31/0/aws-java-sdk-core-1-11-553-sources-jar/com/amazonaws/jmx/spi/SdkMBeanRegistry.java  
\* /opt/cola/permits/1141636850\_1615091536.31/0/aws-java-sdk-core-1-11-553-sources-jar/com/amazonaws/jmx/spi/JmxInfoProvider.java  
\* /opt/cola/permits/1141636850\_1615091536.31/0/aws-java-sdk-core-1-11-553-sources-jar/com/amazonaws/metrics/MetricAdminMBean.java

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\* /opt/cola/permits/1141636850\_1615091536.31/0/aws-java-sdk-core-1-11-553-sources-jar/com/amazonaws/internal/CustomBackoffStrategy.java

\* /opt/cola/permits/1141636850\_1615091536.31/0/aws-java-sdk-core-1-11-553-sources-jar/com/amazonaws/internal/CRC32MismatchException.java

\* /opt/cola/permits/1141636850\_1615091536.31/0/aws-java-sdk-core-1-11-553-sources-jar/com/amazonaws/auth/ClasspathPropertiesFileCredentialsProvider.java

\* /opt/cola/permits/1141636850\_1615091536.31/0/aws-java-sdk-core-1-11-553-sources-jar/com/amazonaws/auth/AWSCredentialsProviderChain.java



\* /opt/cola/permits/1141636850\_1615091536.31/0/aws-java-sdk-core-1-11-553-sources-jar/com/amazonaws/HandlerContextAware.java  
\* /opt/cola/permits/1141636850\_1615091536.31/0/aws-java-sdk-core-1-11-553-sources-jar/com/amazonaws/internal/EC2MetadataClient.java  
\* /opt/cola/permits/1141636850\_1615091536.31/0/aws-java-sdk-core-1-11-553-sources-jar/com/amazonaws/util/AwsHostNameUtils.java  
\* /opt/cola/permits/1141636850\_1615091536.31/0/aws-java-sdk-core-1-11-553-sources-jar/com/amazonaws/auth/DefaultAWSCredentialsProviderChain.java  
\* /opt/cola/permits/1141636850\_1615091536.31/0/aws-java-sdk-core-1-11-553-sources-jar/com/amazonaws/auth/InstanceProfileCredentialsProvider.java  
\* /opt/cola/permits/1141636850\_1615091536.31/0/aws-java-sdk-core-1-11-553-sources-jar/com/amazonaws/auth/EnvironmentVariableCredentialsProvider.java  
\* /opt/cola/permits/1141636850\_1615091536.31/0/aws-java-sdk-core-1-11-553-sources-jar/com/amazonaws/auth/SystemPropertiesCredentialsProvider.java  
\* /opt/cola/permits/1141636850\_1615091536.31/0/aws-java-sdk-core-1-11-553-sources-jar/com/amazonaws/http/IdleConnectionReaper.java

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\* /opt/cola/permits/1141636850\_1615091536.31/0/aws-java-sdk-core-1-11-553-sources-jar/com/amazonaws/util/ImmutableMapParameter.java

\* /opt/cola/permits/1141636850\_1615091536.31/0/aws-java-sdk-core-1-11-553-sources-jar/com/amazonaws/internal/config/SignerConfigJsonHelper.java

\* /opt/cola/permits/1141636850\_1615091536.31/0/aws-java-sdk-core-1-11-553-sources-jar/com/amazonaws/internal/config/JsonIndex.java

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jar/com/amazonaws/util/JodaTime.java
* /opt/cola/permits/1141636850_1615091536.31/0/aws-java-sdk-core-1-11-553-sources-
jar/com/amazonaws/util/StringMapBuilder.java
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jar/com/amazonaws/protocol/json/JsonFactory.java
* /opt/cola/permits/1141636850_1615091536.31/0/aws-java-sdk-core-1-11-553-sources-
jar/com/amazonaws/transform/SimpleTypeJsonUnmarshaller.java
* /opt/cola/permits/1141636850_1615091536.31/0/aws-java-sdk-core-1-11-553-sources-
jar/com/amazonaws/protocol/json/JsonParser.java
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\* /opt/cola/permits/1141636850\_1615091536.31/0/aws-java-sdk-core-1-11-553-sources-jar/com/amazonaws/util/TimingInfoFullSupport.java  
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\* /opt/cola/permits/1141636850\_1615091536.31/0/aws-java-sdk-core-1-11-553-sources-jar/com/amazonaws/protocol/json/internal/MarshallerRegistry.java  
\* /opt/cola/permits/1141636850\_1615091536.31/0/aws-java-sdk-core-1-11-553-sources-jar/com/amazonaws/auth/presign/PresignerFacade.java  
\* /opt/cola/permits/1141636850\_1615091536.31/0/aws-java-sdk-core-1-11-553-sources-jar/com/amazonaws/profile/path/config/SharedConfigDefaultLocationProvider.java  
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\* /opt/cola/permits/1141636850\_1615091536.31/0/aws-java-sdk-core-1-11-553-sources-jar/com/amazonaws/http/timers/client/SdkInterruptedException.java  
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\* /opt/cola/permits/1141636850\_1615091536.31/0/aws-java-sdk-core-1-11-553-sources-jar/com/amazonaws/protocol/ProtocolRequestMarshaller.java  
\* /opt/cola/permits/1141636850\_1615091536.31/0/aws-java-sdk-core-1-11-553-sources-jar/com/amazonaws/protocol/json/internal/NullAsEmptyBodyProtocolRequestMarshaller.java  
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\* /opt/cola/permits/1141636850\_1615091536.31/0/aws-java-sdk-core-1-11-553-sources-jar/com/amazonaws/protocol/DefaultMarshallingType.java  
\* /opt/cola/permits/1141636850\_1615091536.31/0/aws-java-sdk-core-1-11-553-sources-jar/com/amazonaws/transform/ListUnmarshaller.java  
\* /opt/cola/permits/1141636850\_1615091536.31/0/aws-java-sdk-core-1-11-553-sources-jar/com/amazonaws/http/AwsErrorResponseHandler.java

\* /opt/cola/permits/1141636850\_1615091536.31/0/aws-java-sdk-core-1-11-553-sources-jar/com/amazonaws/ClientConfigurationFactory.java

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\* /opt/cola/permits/1141636850\_1615091536.31/0/aws-java-sdk-core-1-11-553-sources-jar/com/amazonaws/retry/v2/RetryCondition.java

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\* /opt/cola/permits/1141636850\_1615091536.31/0/aws-java-sdk-core-1-11-553-sources-jar/com/amazonaws/retry/v2/RetryOnExceptionsCondition.java

\* /opt/cola/permits/1141636850\_1615091536.31/0/aws-java-sdk-core-1-11-553-sources-jar/com/amazonaws/auth/SdkClock.java

\* /opt/cola/permits/1141636850\_1615091536.31/0/aws-java-sdk-core-1-11-553-sources-jar/com/amazonaws/protocol/json/internal/QueryParamMarshallers.java

\* /opt/cola/permits/1141636850\_1615091536.31/0/aws-java-sdk-core-1-11-553-sources-jar/com/amazonaws/protocol/json/JsonErrorResponseMetadata.java

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\* /opt/cola/permits/1141636850\_1615091536.31/0/aws-java-sdk-core-1-11-553-sources-jar/com/amazonaws/profile/path/AwsDirectoryBasePathProvider.java

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- \* /opt/cola/permits/1141636850\_1615091536.31/0/aws-java-sdk-core-1-11-553-sources-jar/com/amazonaws/event/RequestProgressInputStream.java
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- \* /opt/cola/permits/1141636850\_1615091536.31/0/aws-java-sdk-core-1-11-553-sources-jar/com/amazonaws/auth/profile/ProfileCredentialsProvider.java
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\* /opt/cola/permits/1141636850\_1615091536.31/0/aws-java-sdk-core-1-11-553-sources-  
jar/com/amazonaws/auth/ContainerCredentialsProvider.java  
\* /opt/cola/permits/1141636850\_1615091536.31/0/aws-java-sdk-core-1-11-553-sources-  
jar/com/amazonaws/auth/ContainerCredentialsRetryPolicy.java  
\* /opt/cola/permits/1141636850\_1615091536.31/0/aws-java-sdk-core-1-11-553-sources-  
jar/com/amazonaws/auth/EC2ContainerCredentialsProviderWrapper.java  
\* /opt/cola/permits/1141636850\_1615091536.31/0/aws-java-sdk-core-1-11-553-sources-  
jar/com/amazonaws/retry/internal/CredentialsEndpointRetryPolicy.java  
\* /opt/cola/permits/1141636850\_1615091536.31/0/aws-java-sdk-core-1-11-553-sources-  
jar/com/amazonaws/internal/CredentialsEndpointProvider.java

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jar/com/amazonaws/internal/ReleasableInputStream.java  
\* /opt/cola/permits/1141636850\_1615091536.31/0/aws-java-sdk-core-1-11-553-sources-  
jar/com/amazonaws/internal/ResettableInputStream.java

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jar/com/amazonaws/internal/http/CompositeErrorCodeParser.java

\* /opt/cola/permits/1141636850\_1615091536.31/0/aws-java-sdk-core-1-11-553-sources-  
jar/com/amazonaws/internal/http/IonErrorCodeParser.java

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- \* /opt/cola/permits/1141636850\_1615091536.31/0/aws-java-sdk-core-1-11-553-sources-jar/com/amazonaws/util/URLEncodedUtils.java
- \* /opt/cola/permits/1141636850\_1615091536.31/0/aws-java-sdk-core-1-11-553-sources-jar/com/amazonaws/util/NameValuePair.java

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\* Interface for providing AWS credentials. Implementations are free to use any

\* strategy for providing AWS credentials, such as simply providing static

\* credentials that don't change, or more complicated implementations, such as

\* integrating with existing key management systems.

\*/

Found in path(s):

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\* /opt/cola/permits/1141636850\_1615091536.31/0/aws-java-sdk-core-1-11-553-sources-jar/com/amazonaws/transform/SimpleTypeUnmarshallers.java

\* /opt/cola/permits/1141636850\_1615091536.31/0/aws-java-sdk-core-1-11-553-sources-jar/com/amazonaws/AmazonClientException.java

\* /opt/cola/permits/1141636850\_1615091536.31/0/aws-java-sdk-core-1-11-553-sources-jar/com/amazonaws/http/HttpMethodName.java

\* /opt/cola/permits/1141636850\_1615091536.31/0/aws-java-sdk-core-1-11-553-sources-jar/com/amazonaws/auth/AWSCredentials.java

\* /opt/cola/permits/1141636850\_1615091536.31/0/aws-java-sdk-core-1-11-553-sources-jar/com/amazonaws/auth/SigningAlgorithm.java

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jar/com/amazonaws/partitions/model/CredentialScope.java  
\* /opt/cola/permits/1141636850\_1615091536.31/0/aws-java-sdk-core-1-11-553-sources-  
jar/com/amazonaws/regions/RegionImpl.java  
\* /opt/cola/permits/1141636850\_1615091536.31/0/aws-java-sdk-core-1-11-553-sources-  
jar/com/amazonaws/http/apache/SdkProxyRoutePlanner.java  
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jar/com/amazonaws/regions/InMemoryRegionsProvider.java  
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jar/com/amazonaws/partitions/PartitionRegionImpl.java  
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jar/com/amazonaws/transform/SimpleTypeCborUnmarshallers.java  
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jar/com/amazonaws/partitions/model/Service.java  
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jar/com/amazonaws/protocol/json/SdkStructuredIonFactory.java  
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jar/com/amazonaws/regions/AbstractRegionMetadataProvider.java  
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jar/com/amazonaws/partitions/PartitionsLoader.java  
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jar/com/amazonaws/http/apache/client/impl/CRC32ChecksumResponseInterceptor.java  
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jar/com/amazonaws/partitions/PartitionMetadataProvider.java  
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jar/com/amazonaws/partitions/model/Partition.java  
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jar/com/amazonaws/regions/RegionMetadataProvider.java  
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jar/com/amazonaws/regions/InMemoryRegionImpl.java  
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jar/com/amazonaws/annotation/package-info.java

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jar/com/amazonaws/cache/KeyConverter.java  
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jar/com/amazonaws/event/ProgressEvent.java  
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jar/com/amazonaws/util/AWSRequestMetrics.java  
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\* /opt/cola/permits/1141636850\_1615091536.31/0/aws-java-sdk-core-1-11-553-sources-jar/com/amazonaws/transform/Marshaller.java

\* /opt/cola/permits/1141636850\_1615091536.31/0/aws-java-sdk-core-1-11-553-sources-jar/com/amazonaws/transform/StaxUnmarshallerContext.java

\* /opt/cola/permits/1141636850\_1615091536.31/0/aws-java-sdk-core-1-11-553-sources-jar/com/amazonaws/auth/AnonymousAWSCredentials.java

\* /opt/cola/permits/1141636850\_1615091536.31/0/aws-java-sdk-core-1-11-553-sources-jar/com/amazonaws/auth/policy/Policy.java

\* /opt/cola/permits/1141636850\_1615091536.31/0/aws-java-sdk-core-1-11-553-sources-jar/com/amazonaws/endpointdiscovery/SystemPropertyEndpointDiscoveryProvider.java

\* /opt/cola/permits/1141636850\_1615091536.31/0/aws-java-sdk-core-1-11-553-sources-jar/com/amazonaws/metrics/MetricType.java

\* /opt/cola/permits/1141636850\_1615091536.31/0/aws-java-sdk-core-1-11-553-sources-jar/com/amazonaws/waiters/MaxAttemptsRetryStrategy.java

\* /opt/cola/permits/1141636850\_1615091536.31/0/aws-java-sdk-core-1-11-553-sources-jar/com/amazonaws/http/HttpResponse.java

\* /opt/cola/permits/1141636850\_1615091536.31/0/aws-java-sdk-core-1-11-553-sources-jar/com/amazonaws/auth/policy/conditions/ArnCondition.java

\* /opt/cola/permits/1141636850\_1615091536.31/0/aws-java-sdk-core-1-11-553-sources-jar/com/amazonaws/waiters/WaiterBuilder.java

\* /opt/cola/permits/1141636850\_1615091536.31/0/aws-java-sdk-core-1-11-553-sources-jar/com/amazonaws/retry/RetryPolicy.java

\* /opt/cola/permits/1141636850\_1615091536.31/0/aws-java-sdk-core-1-11-553-sources-jar/com/amazonaws/monitoring/EnvironmentVariableCsmConfigurationProvider.java

\* /opt/cola/permits/1141636850\_1615091536.31/0/aws-java-sdk-core-1-11-553-sources-jar/com/amazonaws/cache/Cache.java

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\* /opt/cola/permits/1141636850\_1615091536.31/0/aws-java-sdk-core-1-11-553-sources-jar/com/amazonaws/metrics/MetricCollector.java  
\* /opt/cola/permits/1141636850\_1615091536.31/0/aws-java-sdk-core-1-11-553-sources-jar/com/amazonaws/http/HttpResponseHandler.java  
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\* /opt/cola/permits/1141636850\_1615091536.31/0/aws-java-sdk-core-1-11-553-sources-jar/com/amazonaws/metrics/ByteThroughputProvider.java

# 1.211 commons-lang3 3.12.0

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## 1.212 ngx-moment 3.4.0



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## 1.215 core-js 2.4.1

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## 1.216 pythonurllib 1.22 1ubuntu0.18.04.2

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# Contributions to the urllib3 project

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## Contributors

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- \* erikcederstrand <<http://code.google.com/u/erikcederstrand/>>
- \* NTLM-authenticated HTTPSConnectionPool
- \* Basic-authenticated HTTPSConnectionPool (merged into make\_headers)
  
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- \* Client-verified SSL certificates for HTTPSConnectionPool
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- \* Support for TLS SNI
- \* API unification of ssl\_version/cert\_reqs
- \* SSL fingerprint and alternative hostname verification
- \* Bugfixes in testsuite
  
- \* Sune Kirkeby <mig@ibofobi.dk>
- \* Optional SNI-support for Python 2 via PyOpenSSL.
  
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- \* Various bugfixes and test improvements.
  
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  - \* Fixed pickle support of some exceptions
  
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  - \* Allowed to skip SSL hostname verification
  
- \* Cory Benfield <<http://lukasa.co.uk/about/>>
  - \* Stream method for Response objects.
  - \* Return native strings in header values.
  - \* Generate 'Host' header when using proxies.
  
- \* Jason Robinson <jaywink@basshero.org>
  - \* Add missing WrappedSocket.fileno method in PyOpenSSL
  
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  - \* Fixed a race condition
  
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  - \* Support for non-ASCII header parameters
  
- \* Kevin Burke <kev@inburke.com> and Pavel Kirichenko <juanych@yandex-team.ru>
  - \* Support for separate connect and request timeouts
  
- \* Peter Waller <p@pwaller.net>
  - \* HTTPResponse.tell() for determining amount received over the wire
  
- \* Nipunn Koorapati <nipunn1313@gmail.com>
  - \* Ignore default ports when comparing hosts for equality
  
- \* Danilo @dbrgn <<http://dbrgn.ch/>>
  - \* Disabled TLS compression by default on Python 3.2+
  - \* Disabled TLS compression in pyopenssl contrib module
  - \* Configurable cipher suites in pyopenssl contrib module
  
- \* Roman Bogorodskiy <roman.bogorodskiy@ericsson.com>
  - \* Account retries on proxy errors
  
- \* Nicolas Delaby <nicolas.delaby@ezeep.com>
  - \* Use the platform-specific CA certificate locations

- \* Josh Schneier <<https://github.com/jschneier>>
  - \* HTTPHeaderDict and associated tests and docs
  - \* Bugfixes, docs, test coverage
  
- \* Tahia Khan <<http://tahia.tk/>>
  - \* Added Timeout examples in docs
  
- \* Arthur Grunseid <<http://grunseid.com>>
  - \* source\_address support and tests (with <https://github.com/bui>)
  
- \* Ian Cordasco <[graffatcolmingov@gmail.com](mailto:graffatcolmingov@gmail.com)>
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  - \* Security Warning Documentation update for proper capture
  
- \* Shivan Sornarajah <[github@sornars.com](mailto:github@sornars.com)>
  - \* Support for using ConnectionPool and PoolManager as context managers.
  
- \* Alex Gaynor <[alex.gaynor@gmail.com](mailto:alex.gaynor@gmail.com)>
  - \* Updates to the default SSL configuration
  
- \* Tomas Tomecek <[ttomecek@redhat.com](mailto:ttomecek@redhat.com)>
  - \* Implemented generator for getting chunks from chunked responses.
  
- \* tlynn <<https://github.com/tlynn>>
  - \* Respect the warning preferences at import.
  
- \* David D. Riddle <[ddriddle@illinois.edu](mailto:ddriddle@illinois.edu)>
  - \* IPv6 bugfixes in testsuite
  
- \* Jon Wayne Parrott <[jonwayne@google.com](mailto:jonwayne@google.com)>
  - \* App Engine environment tests.



- \* John Krauss <<https://github.com/talos>>
  - \* Clues to debugging problems with `cryptography` dependency in docs
  
- \* Disassem <<https://github.com/Disassem>>
  - \* Fix pool-default headers not applying for url-encoded requests like GET.
  
- \* James Atherfold <[jlatherfold@hotmail.com](mailto:jlatherfold@hotmail.com)>
  - \* Bugfixes relating to cleanup of connections during errors.
  
- \* Christian Pedersen <<https://github.com/chripede>>
  - \* IPv6 HTTPS proxy bugfix
  
- \* Jordan Moldow <<https://github.com/jmoldow>>
  - \* Fix low-level exceptions leaking from ``HTTPResponse.stream()``.
  - \* Bugfix for ``ConnectionPool.urlopen(release\_conn=False)``.
  - \* Creation of ``HTTPConnectionPool.ResponseCls``.
  
- \* Predrag Gruevski <<https://github.com/obi1kenobi>>
  - \* Made cert digest comparison use a constant-time algorithm.
  
- \* Adam Talsma <<https://github.com/a-tal>>
  - \* Bugfix to ca\_cert file paths.
  
- \* Evan Meagher <<https://evanmeagher.net>>
  - \* Bugfix related to `memoryview` usage in PyOpenSSL adapter
  
- \* John Vandenberg <[jayvdb@gmail.com](mailto:jayvdb@gmail.com)>
  - \* Python 2.6 fixes; pyflakes and pep8 compliance
  
- \* Andy Caldwell <[andy.m.caldwell@gmail.com](mailto:andy.m.caldwell@gmail.com)>
  - \* Bugfix related to reusing connections in indeterminate states.
  
- \* Ville Skytt <[ville.skytta@iki.fi](mailto:ville.skytta@iki.fi)>
  - \* Logging efficiency improvements, spelling fixes, Travis config.
  
- \* Shige Takeda <[smtakeda@gmail.com](mailto:smtakeda@gmail.com)>
  - \* Started Recipes documentation and added a recipe about handling concatenated gzip data in HTTP response
  
- \* Jesse Shapiro <[jesse@jesseshapiro.net](mailto:jesse@jesseshapiro.net)>
  - \* Various character-encoding fixes/tweaks
  - \* Disabling IPv6 DNS when IPv6 connections not supported
  
- \* David Foster <<http://dafoster.net/>>
  - \* Ensure order of request and response headers are preserved.
  
- \* Jeremy Cline <[jeremy@jcline.org](mailto:jeremy@jcline.org)>
  - \* Added connection pool keys by scheme

- \* Aviv Palivoda <palaviv@gmail.com>
- \* History list to Retry object.
- \* HTTPResponse contains the last Retry object.
  
- \* Nate Prewitt <nate.prewitt@gmail.com>
- \* Ensure timeouts are not booleans and greater than zero.
- \* Fixed infinite loop in ``stream`` when amt=None.
- \* Added length\_remaining to determine remaining data to be read.
- \* Added enforce\_content\_length to raise exception when incorrect content-length received.
  
- \* Seth Michael Larson <sethmichaellarson@protonmail.com>
- \* Created selectors backport that supports PEP 475.
  
- \* Alexandre Dias <alex.dias@smarkets.com>
- \* Don't retry on timeout if method not in whitelist
  
- \* Moinuddin Quadri <moin18@gmail.com>
- \* Lazily load idna package
  
- \* Tom White <s6yg1ez3@mail2tor.com>
- \* Made SOCKS handler differentiate socks5h from socks5 and socks4a from socks4.
  
- \* Tim Burke <tim.burke@gmail.com>
- \* Stop buffering entire deflate-encoded responses.
  
- \* Tuukka Mustonen <tuukka.mustonen@gmail.com>
- \* Add counter for status\_forcelist retries.
  
- \* Erik Rose <erik@mozilla.com>
- \* Bugfix to pyopenssl vendoring
  
- \* [Your name or handle] <[email or website]>
- \* [Brief summary of your changes]

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@node Copyrights and Licenses, , Acknowledgments, Top  
@comment node-name, next, previous, up  
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@item KCM credential cache.

@item HDB LDAP backend.

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@heading Vincent Rijmen, Antoon Bosselaers, Paulo Barreto

AES in libcrypto

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rijndael-alg-fst.c

@version 3.0 (December 2000)

Optimised ANSI C code for the Rijndael cipher (now AES)

@author Vincent Rijmen <vincent.rijmen@esat.kuleuven.ac.be>

@author Antoon Bosselaers <antoon.bosselaers@esat.kuleuven.ac.be>

@author Paulo Barreto <paulo.barreto@terra.com.br>

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DES core in libcrypto

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D3DES (V5.09) -

A portable, public domain, version of the Data Encryption Standard.

Written with Symantec's THINK (Lightspeed) C by Richard Outerbridge.

Thanks to: Dan Hoey for his excellent Initial and Inverse permutation code; Jim Gillogly & Phil Karn for the DES key schedule code; Dennis Ferguson, Eric Young and Dana How for comparing notes; and Ray Lau, for humouring me on.

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Windows support

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lib/hcrypto/test\_dh.c

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ca-bundle.crt -- Bundle of CA Root Certificates

Certificate data from Mozilla as of: Thu Nov 3 19:04:19 2011#

This is a bundle of X.509 certificates of public Certificate Authorities (CA). These were automatically extracted from Mozilla's root certificates file (certdata.txt). This file can be found in the mozilla source tree:

<http://mxr.mozilla.org/mozilla/source/security/nss/lib/ckfw/builtins/certdata.txt?raw=1#>

It contains the certificates in PEM format and therefore can be directly used with curl / libcurl / php\_curl, or with an Apache+mod\_ssl webserver for SSL client authentication.

Just configure this file as the SSLCACertificateFile.#

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@(#) \$RCSfile: certdata.txt,v \$ \$Revision: 1.80 \$ \$Date: 2011/11/03 15:11:58 \$

## 1.221 heimdal 7.5.0+dfsg-1

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@vskip 20pt plus 1fil
@end macro
```

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```

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@end macro
```

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@node Copyrights and Licenses, , Acknowledgments, Top
@comment node-name, next, previous, up
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@heading Vincent Rijmen, Antoon Bosselaers, Paulo Barreto

AES in libcrypto

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rijndael-alg-fst.c

@version 3.0 (December 2000)

Optimised ANSI C code for the Rijndael cipher (now AES)

@author Vincent Rijmen <vincent.rijmen@esat.kuleuven.ac.be>

@author Antoon Bosselaers <antoon.bosselaers@esat.kuleuven.ac.be>

@author Paulo Barreto <paulo.barreto@terra.com.br>

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kdc/announce.c

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DES core in libcrypto

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D3DES (V5.09) -

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lib/hcrypto/test\_dh.c

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## 1.224 python-six 1.11.0-2

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## 1.226 jackson-module-parameter-names

### 2.13.2

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## 1.227 tslint-config-airbnb 5.11.1

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=====

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ckages/router/src/events.ts","../../packages/router/src/shared.ts","../../packages/router/src/utils/collection.t
s","../../packages/router/src/url_tree.ts","../../packages/router/src/utils/tree.ts","../../packages/router/
```





```

o[Symbol.asyncIterator], i);\r\n return m ? m.call(o) : (o = typeof __values === \"function\" ? __values(o) :
o[Symbol.iterator](), i = {}, verb(\"next\"), verb(\"throw\"), verb(\"return\")), i[Symbol.asyncIterator] = function () {
return this; }, i);\r\n function verb(n) { i[n] = o[n] && function (v) { return new Promise(function (resolve, reject)
{ v = o[n](v), settle(resolve, reject, v.done, v.value); }); }; };\r\n function settle(resolve, reject, d, v) {
Promise.resolve(v).then(function(v) { resolve({ value: v, done: d }); }, reject); }\r\n}\r\n\r\n\r\nexport function
__makeTemplateObject(cooked, raw) {\r\n if (Object.defineProperty) { Object.defineProperty(cooked, \"raw\", {
value: raw }); } else { cooked.raw = raw; }\r\n return cooked;\r\n};\r\n\r\n\r\nvar __setModuleDefault = Object.create
? (function(o, v) {\r\n Object.defineProperty(o, \"default\", { enumerable: true, value: v });\r\n}) : function(o, v)
{\r\n o[\"default\"] = v;\r\n};\r\n\r\n\r\nexport function __importStar(mod) {\r\n if (mod && mod.__esModule)
return mod;\r\n var result = {};\r\n if (mod != null) for (var k in mod) if (Object.hasOwnProperty.call(mod, k))
__createBinding(result, mod, k);\r\n __setModuleDefault(result, mod);\r\n return result;\r\n}\r\n\r\n\r\nexport
function __importDefault(mod) {\r\n return (mod && mod.__esModule) ? mod : { default: mod
};\r\n}\r\n\r\n\r\nexport function __classPrivateFieldGet(receiver, privateMap) {\r\n if (!privateMap.has(receiver))
{\r\n throw new TypeError(\"attempted to get private field on non-instance\");\r\n }\r\n return
privateMap.get(receiver);\r\n}\r\n\r\n\r\nexport function __classPrivateFieldSet(receiver, privateMap, value) {\r\n if
(!privateMap.has(receiver)) {\r\n throw new TypeError(\"attempted to set private field on non-instance\");\r\n }\r\n
privateMap.set(receiver, value);\r\n return value;\r\n}\r\n\r\n\", \"**\n * @license\n * Copyright Google LLC
All Rights Reserved.\n * \n * Use of this source code is governed by an MIT-style license that can be\n * found in
the LICENSE file at https://angular.io/license\n *\n\nimport {Route} from './config';\nimport
{ActivatedRouteSnapshot, RouterStateSnapshot} from './router_state';\n\n/**\n * Identifies the call or event that
triggered a navigation.\n * \n * * 'imperative': Triggered by `router.navigateByUrl()` or `router.navigate()`. \n * *
'popstate': Triggered by a `popstate` event. \n * * 'hashchange': Triggered by a `hashchange` event. \n * \n *
\n * @publicApi\n * \n\r\nexport type NavigationTrigger = 'imperative'|'popstate'|'hashchange';\n\n/**\n * Base for events
the router goes through, as opposed to events tied to a specific\n * route. Fired one time for any given navigation.\n
\n * \n * The following code shows how a class subscribes to router events.\n * \n * \n * \n * class MyService {\n *
constructor(public router: Router, logger: Logger) {\n * router.events.pipe(\n * filter((e: Event): e is
RouterEvent => e instanceof RouterEvent)\n *).subscribe((e: RouterEvent) => {\n * logger.log(e.id, e.url);\n
* });\n * } \n * \n * \n * \n * @see `Event`\n * @see [Router events summary](guide/router#router-events)\n *
\n * @publicApi\n * \n\r\nexport class RouterEvent {\n constructor(\n /** A unique ID that the router assigns to every
router navigation. *\n public id: number,\n /** The URL that is the destination for this navigation. *\n public url: string) {\n }\n}\n\n/**\n * An event triggered when a navigation starts.\n * \n * @publicApi\n * \n\r\nexport
class NavigationStart extends RouterEvent {\n /**\n * Identifies the call or event that triggered the navigation.\n
\n * An `imperative` trigger is a call to `router.navigateByUrl()` or `router.navigate()`. \n * \n * @see
`NavigationEnd`\n * @see `NavigationCancel`\n * @see `NavigationError`\n * \n * \n * \n * navigationTrigger?:
'imperative'|'popstate'|'hashchange';\n\n /**\n * The navigation state that was previously supplied to the `pushState`
call,\n * when the navigation is triggered by a `popstate` event. Otherwise null.\n * \n * The state object is
defined by `NavigationExtras`, and contains any\n * developer-defined state value, as well as a unique ID that\n *
the router assigns to every router transition/navigation.\n * \n * From the perspective of the router, the router never
`goes back`. \n * When the user clicks on the back button in the browser,\n * a new navigation ID is created.\n
\n * \n * Use the ID in this previous-state object to differentiate between a newly created\n * state and one returned
to by a `popstate` event, so that you can restore some\n * remembered state, such as scroll position.\n * \n * \n *
\n * restoredState?: {[k: string]: any, navigationId: number}|null;\n\n constructor(\n /** @docsNotRequired *\n id: number,\n /** @docsNotRequired *\n url: string,\n /** @docsNotRequired *\n navigationTrigger:
'imperative'|'popstate'|'hashchange' = 'imperative',\n /** @docsNotRequired *\n restoredState: {[k: string]:
any, navigationId: number}|null = null) {\n super(id, url);\n this.navigationTrigger = navigationTrigger;\n
 this.restoredState = restoredState;\n }\n\n /** @docsNotRequired *\n toString(): string {\n return
`NavigationStart(id: ${this.id}, url: '${this.url}')`; \n }\n}\n\n/**\n * An event triggered when a navigation ends
successfully.\n * \n * @see `NavigationStart`\n * @see `NavigationCancel`\n * @see `NavigationError`\n * \n * \n *

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@publicApi\n *\\nexport class NavigationEnd extends RouterEvent {\n constructor(\n /** @docsNotRequired
*\n id: number,\n /** @docsNotRequired *\n url: string,\n /** @docsNotRequired *\n public
urlAfterRedirects: string) {\n super(id, url);\n }\n\n /** @docsNotRequired *\n toString(): string {\n return
`NavigationEnd(id: ${this.id}, url: '${this.url}', urlAfterRedirects: '${\n this.urlAfterRedirects}')`;\n
}\n}\n\n/**\n * An event triggered when a navigation is canceled, directly or indirectly.\n * This can happen when a
route guard\n * returns `false` or initiates a redirect by returning a `UrlTree`.\n * *\n * @see `NavigationStart`\n *
*\n * @see `NavigationEnd`\n * *\n * @see `NavigationError`\n * *\n * @publicApi\n *\\nexport class NavigationCancel
extends RouterEvent {\n constructor(\n /** @docsNotRequired *\n id: number,\n /** @docsNotRequired
*\n url: string,\n /** @docsNotRequired *\n public reason: string) {\n super(id, url);\n }\n\n /**
*\n toString(): string {\n return `NavigationCancel(id: ${this.id}, url: '${this.url}')`;\n
}\n}\n\n/**\n * An event triggered when a navigation fails due to an unexpected error.\n * *\n * @see
`NavigationStart`\n * *\n * @see `NavigationEnd`\n * *\n * @see `NavigationCancel`\n * *\n * @publicApi\n *\\nexport class
NavigationError extends RouterEvent {\n constructor(\n /** @docsNotRequired *\n id: number,\n /**
*\n @docsNotRequired *\n url: string,\n /** @docsNotRequired *\n public error: any) {\n super(id, url);\n
}\n\n /** @docsNotRequired *\n toString(): string {\n return `NavigationError(id: ${this.id}, url: '${this.url}',
error: ${this.error})`;\n }\n}\n\n/**\n * An event triggered when routes are recognized.\n * *\n * @publicApi\n
*\n *\\nexport class RoutesRecognized extends RouterEvent {\n constructor(\n /** @docsNotRequired *\n id:
number,\n /** @docsNotRequired *\n url: string,\n /** @docsNotRequired *\n public
urlAfterRedirects: string,\n /** @docsNotRequired *\n public state: RouterStateSnapshot) {\n super(id,
url);\n }\n\n /** @docsNotRequired *\n toString(): string {\n return `RoutesRecognized(id: ${this.id}, url:
`${this.url}', urlAfterRedirects: `${\n this.urlAfterRedirects}`, state: ${this.state}`);\n }\n}\n\n/**\n * An event
triggered at the start of the Guard phase of routing.\n * *\n * @see `GuardsCheckEnd`\n * *\n * @publicApi\n
*\n *\\nexport class GuardsCheckStart extends RouterEvent {\n constructor(\n /** @docsNotRequired *\n id:
number,\n /** @docsNotRequired *\n url: string,\n /** @docsNotRequired *\n public
urlAfterRedirects: string,\n /** @docsNotRequired *\n public state: RouterStateSnapshot) {\n super(id,
url);\n }\n\n toString(): string {\n return `GuardsCheckStart(id: ${this.id}, url: '${this.url}', urlAfterRedirects:
`${\n this.urlAfterRedirects}', state: ${this.state}`);\n }\n}\n\n/**\n * An event triggered at the end of the Guard
phase of routing.\n * *\n * @see `GuardsCheckStart`\n * *\n * @publicApi\n *\\nexport class GuardsCheckEnd extends
RouterEvent {\n constructor(\n /** @docsNotRequired *\n id: number,\n /** @docsNotRequired *\n url:
string,\n /** @docsNotRequired *\n public urlAfterRedirects: string,\n /** @docsNotRequired *\n public
state: RouterStateSnapshot,\n /** @docsNotRequired *\n public shouldActivate: boolean) {\n super(id, url);\n
}\n\n toString(): string {\n return `GuardsCheckEnd(id: ${this.id}, url: '${this.url}',
urlAfterRedirects: `${\n this.urlAfterRedirects}', state: ${this.state}, shouldActivate: ${this.shouldActivate}`);\n
}\n}\n\n/**\n * An event triggered at the the start of the Resolve phase of routing.\n * *\n * Runs in the `\"resolve\"`
phase whether or not there is anything to resolve.\n * In future, may change to only run when there are things to be
resolved.\n * *\n * @see `ResolveEnd`\n * *\n * @publicApi\n *\\nexport class ResolveStart extends RouterEvent {\n
constructor(\n /** @docsNotRequired *\n id: number,\n /** @docsNotRequired *\n url: string,\n
 /** @docsNotRequired *\n public urlAfterRedirects: string,\n /** @docsNotRequired *\n public state:
RouterStateSnapshot) {\n super(id, url);\n }\n\n toString(): string {\n return `ResolveStart(id: ${this.id}, url:
`${this.url}', urlAfterRedirects: `${\n this.urlAfterRedirects}', state: ${this.state}`);\n }\n}\n\n/**\n * An event
triggered at the end of the Resolve phase of routing.\n * *\n * @see `ResolveStart`\n * *\n * @publicApi\n *\\nexport class
ResolveEnd extends RouterEvent {\n constructor(\n /** @docsNotRequired *\n id: number,\n /**
*\n @docsNotRequired *\n url: string,\n /** @docsNotRequired *\n public urlAfterRedirects: string,\n
 /** @docsNotRequired *\n @docsNotRequired *\n public state: RouterStateSnapshot) {\n super(id, url);\n
}\n\n toString(): string {\n return `ResolveEnd(id: ${this.id}, url: '${this.url}', urlAfterRedirects: `${\n this.urlAfterRedirects}', state:
${this.state}`);\n }\n}\n\n/**\n * An event triggered before lazy loading a route configuration.\n * *\n * @see
`RouteConfigLoadEnd`\n * *\n * @publicApi\n *\\nexport class RouteConfigLoadStart {\n constructor(\n /**
*\n @docsNotRequired *\n public route: Route) {\n }\n toString(): string {\n return `RouteConfigLoadStart(path:

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 ${this.route.path});\n } }\n\n/**\n * An event triggered when a route has been lazy loaded.\n *\n * @see
`RouteConfigLoadStart`\n *\n * @publicApi\n *\n\nexport class RouteConfigLoadEnd {\n constructor(\n /**
@docsNotRequired *\n public route: Route) {\n }\n toString(): string {\n return `RouteConfigLoadEnd(path:
${this.route.path});\n } }\n\n\n/**\n * An event triggered at the start of the child-activation\n * part of the Resolve
phase of routing.\n * @see `ChildActivationEnd`\n * @see `ResolveStart`\n *\n * @publicApi\n *\n\nexport class
ChildActivationStart {\n constructor(\n /** @docsNotRequired *\n public snapshot:
ActivatedRouteSnapshot) {\n }\n toString(): string {\n const path = this.snapshot.routeConfig &&
this.snapshot.routeConfig.path || ";\n return `ChildActivationStart(path: '${path}')`;\n } }\n\n\n/**\n * An event
triggered at the end of the child-activation part\n * of the Resolve phase of routing.\n * @see
`ChildActivationStart`\n * @see `ResolveStart`\n *\n * @publicApi\n *\n\nexport class ChildActivationEnd {\n
 constructor(\n /** @docsNotRequired *\n public snapshot: ActivatedRouteSnapshot) {\n }\n toString(): string
{\n const path = this.snapshot.routeConfig && this.snapshot.routeConfig.path || ";\n return
`ChildActivationEnd(path: '${path}')`;\n } }\n\n\n/**\n * An event triggered at the start of the activation part\n * of
the Resolve phase of routing.\n * @see `ActivationEnd`\n * @see `ResolveStart`\n *\n * @publicApi\n *\n\nexport
class ActivationStart {\n constructor(\n /** @docsNotRequired *\n public snapshot:
ActivatedRouteSnapshot) {\n }\n toString(): string {\n const path = this.snapshot.routeConfig &&
this.snapshot.routeConfig.path || ";\n return `ActivationStart(path: '${path}')`;\n } }\n\n\n/**\n * An event
triggered at the end of the activation part\n * of the Resolve phase of routing.\n * @see `ActivationStart`\n * @see
`ResolveStart`\n *\n * @publicApi\n *\n\nexport class ActivationEnd {\n constructor(\n /** @docsNotRequired
*\n public snapshot: ActivatedRouteSnapshot) {\n }\n toString(): string {\n const path =
this.snapshot.routeConfig && this.snapshot.routeConfig.path || ";\n return `ActivationEnd(path: '${path}')`;\n
}\n } }\n\n\n/**\n * An event triggered by scrolling.\n *\n * @publicApi\n *\n\nexport class Scroll {\n constructor(\n
 /** @docsNotRequired *\n readonly routerEvent: NavigationEnd,\n /** @docsNotRequired *\n readonly position: [number, number]|null,\n /** @docsNotRequired *\n readonly anchor: string|null) {\n }\n toString(): string {\n const pos = this.position ? `${this.position[0]}, ${this.position[1]}` : null;\n return
`Scroll(anchor: '${this.anchor}', position: '${pos}')`;\n } }\n\n\n/**\n * Router events that allow you to track the
lifecycle of the router.\n *\n * The events occur in the following sequence:\n *\n * *
[NavigationStart](api/router/NavigationStart): Navigation starts.\n *\n * *
[RouteConfigLoadStart](api/router/RouteConfigLoadStart): Before\n * the router [lazy loads](/guide/router#lazy-loading)
a route configuration.\n *\n * * [RouteConfigLoadEnd](api/router/RouteConfigLoadEnd): After a route has
been lazy loaded.\n *\n * * [RoutesRecognized](api/router/RoutesRecognized): When the router parses the URL\n * and
the routes are recognized.\n *\n * * [GuardsCheckStart](api/router/GuardsCheckStart): When the router begins the
guards\n * phase of routing.\n *\n * * [ChildActivationStart](api/router/ChildActivationStart): When the router\n *
begins activating a route's children.\n *\n * * [ActivationStart](api/router/ActivationStart): When the router begins
activating a route.\n *\n * * [GuardsCheckEnd](api/router/GuardsCheckEnd): When the router finishes the *guards*\n *
phase of routing successfully.\n *\n * * [ResolveStart](api/router/ResolveStart): When the router begins the *resolve*\n *
phase of routing.\n *\n * * [ResolveEnd](api/router/ResolveEnd): When the router finishes the *resolve*\n * phase of
routing successfully.\n *\n * * [ChildActivationEnd](api/router/ChildActivationEnd): When the router finishes\n *
activating a route's children.\n *\n * * [ActivationEnd](api/router/ActivationEnd): When the router finishes activating
a route.\n *\n * * [NavigationEnd](api/router/NavigationEnd): When navigation ends successfully.\n *\n * *
[NavigationCancel](api/router/NavigationCancel): When navigation is canceled.\n *\n * *
[NavigationError](api/router/NavigationError): When navigation fails\n * due to an unexpected error.\n *\n * *
[Scroll](api/router/Scroll): When the user scrolls.\n *\n * * @publicApi\n *\n\nexport type Event =
RouterEvent|RouteConfigLoadStart|RouteConfigLoadEnd|ChildActivationStart|\n
ChildActivationEnd|ActivationStart|ActivationEnd|Scroll;\n", "/*\n * @license\n * Copyright Google LLC All
Rights Reserved.\n *\n * Use of this source code is governed by an MIT-style license that can be\n * found in the
LICENSE file at https://angular.io/license\n *\n\nimport {Route, UrlMatchResult} from './config';\nimport
{UrlSegment, UrlSegmentGroup} from './url_tree';\n\n\n/**\n * The primary routing outlet.\n *\n * @publicApi\n

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*\nexport const PRIMARY_OUTLET = 'primary';\n\n/**\n * A collection of matrix and query URL parameters.\n * @see `convertToParamMap()`\n * @see `ParamMap`\n * @publicApi\n */\nexport type Params = {\n [key:\n string]: any;\n};\n\n/**\n * A map that provides access to the required and optional parameters\n * specific to a route.\n * The map supports retrieving a single value with `get()`\n * or multiple values with `getAll()`. \n */\n * @see [URLSearchParams](https://developer.mozilla.org/en-US/docs/Web/API/URLSearchParams)\n */\n * @publicApi\n */\nexport interface ParamMap {\n /**\n * Reports whether the map contains a given parameter.\n * @param name The parameter name.\n * @returns True if the map contains the given parameter, false\n otherwise.\n */\n has(name: string): boolean;\n /**\n * Retrieves a single value for a parameter.\n * @param\n name The parameter name.\n * @return The parameter's single value,\n * or the first value if the parameter has\n multiple values,\n * or `null` when there is no such parameter.\n */\n get(name: string): string|null;\n /**\n * Retrieves multiple values for a parameter.\n * @param name The parameter name.\n * @return An array\n containing one or more values,\n * or an empty array if there is no such parameter.\n */\n getAll(name:\n string): string[];\n\n /** Names of the parameters in the map. *\n readonly keys: string[];\n}\n\n\nclass\n ParamsAsMap implements ParamMap {\n private params: Params;\n\n constructor(params: Params) {\n this.params = params || {};\n }\n\n has(name: string): boolean {\n return\n Object.prototype.hasOwnProperty.call(this.params, name);\n }\n\n get(name: string): string|null {\n if\n (this.has(name)) {\n const v = this.params[name];\n return Array.isArray(v) ? v[0] : v;\n }\n\n return\n null;\n }\n\n getAll(name: string): string[] {\n if (this.has(name)) {\n const v = this.params[name];\n return\n Array.isArray(v) ? v : [v];\n }\n\n return [];\n }\n\n get keys(): string[] {\n return Object.keys(this.params);\n }\n}\n\n/**\n * Converts a `Params` instance to a `ParamMap`. \n * @param params The instance to convert.\n * @returns The new map instance.\n */\n * @publicApi\n */\nexport function convertToParamMap(params: Params):\n ParamMap {\n return new ParamsAsMap(params);\n }\n\n\nconst NAVIGATION_CANCELING_ERROR =\n 'ngNavigationCancelingError';\n\nexport function navigationCancelingError(message: string) {\n const error =\n Error('NavigationCancelingError: ' + message);\n (error as any)[NAVIGATION_CANCELING_ERROR] = true;\n\n return error;\n }\n\nexport function isNavigationCancelingError(error: Error) {\n return error && (error as\n any)[NAVIGATION_CANCELING_ERROR];\n }\n\n// Matches the route configuration (`route`) against the actual\n URL (`segments`).\nexport function defaultUrlMatcher(\n segments: UriSegment[], segmentGroup:\n UriSegmentGroup, route: Route): UriMatchResult|null {\n const parts = route.path!.split('/');\n\n if (parts.length >\n segments.length) {\n // The actual URL is shorter than the config, no match\n return null;\n }\n\n if\n (route.pathMatch === 'full' &&\n (segmentGroup.hasChildren() || parts.length < segments.length)) {\n // The\n config is longer than the actual URL but we are looking for a full match, return null\n return null;\n }\n\n const\n posParams: {[key: string]: UriSegment} = {};\n\n // Check each config part against the actual URL\n for (let index\n = 0; index < parts.length; index++) {\n const part = parts[index];\n const segment = segments[index];\n const\n isParameter = part.startsWith(':');\n if (isParameter) {\n posParams[part.substring(1)] = segment;\n } else if\n (part !== segment.path) {\n // The actual URL part does not match the config, no match\n return null;\n }\n }\n\n return {consumed: segments.slice(0, parts.length), posParams};\n }\n\n\n"/**\n * @license\n * Copyright\n * Google LLC All Rights Reserved.\n * Use of this source code is governed by an MIT-style license that can be\n * found in the LICENSE file at https://angular.io/license\n */\n\nimport {isObservable as isObservable, isPromise as\n isPromise} from '@angular/core';\nimport {from, Observable, of} from 'rxjs';\nimport {concatAll, last as lastValue,\n map} from 'rxjs/operators';\nimport {Params, PRIMARY_OUTLET} from './shared';\n\nexport function\n shallowEqualArrays(a: any[], b: any[]): boolean {\n if (a.length !== b.length) return false;\n for (let i = 0; i <\n a.length; ++i) {\n if (!shallowEqual(a[i], b[i])) return false;\n }\n\n return true;\n }\n\nexport function\n shallowEqual(a: Params, b: Params): boolean {\n // Casting Object.keys return values to include `undefined` as\n there are some cases\n // in IE 11 where this can happen. Cannot provide a test because the behavior only\n // exists\n in certain circumstances in IE 11, therefore doing this cast ensures the\n // logic is correct for when this edge case is\n hit.\n const k1 = Object.keys(a) as string[] | undefined;\n const k2 = Object.keys(b) as string[] | undefined;\n if (!k1\n || !k2 || k1.length !== k2.length) {\n return false;\n }\n\n let key: string;\n for (let i = 0; i < k1.length; i++) {\n key\n = k1[i];\n if (!equalArraysOrString(a[key], b[key])) {\n return false;\n }\n }\n\n return true;\n }\n\n\n/**\n * Test

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equality for arrays of strings or a string.\n */\nexport function equalArraysOrString(a: string|string[], b:
string|string[]) {\n if (Array.isArray(a) && Array.isArray(b)) {\n if (a.length !== b.length) return false;\n const
aSorted = [...a].sort();\n const bSorted = [...b].sort();\n return aSorted.every((val, index) => bSorted[index] ===
val);\n } else {\n return a === b;\n }\n}\n\n/**\n * Flattens single-level nested arrays.\n */\nexport function
flatten<T>(arr: T[][]): T[] {\n return Array.prototype.concat.apply([], arr);\n}\n\n/**\n * Return the last element of
an array.\n */\nexport function last<T>(a: T[]): T|null {\n return a.length > 0 ? a[a.length - 1] : null;\n}\n\n/**\n *
Verifys all booleans in an array are `true`.\n */\nexport function and(bools: boolean[]): boolean {\n return
!bools.some(v => !v);\n}\n\nexport function forEach<K, V>(map: {[key: string]: V}, callback: (v: V, k: string) =>
void): void {\n for (const prop in map) {\n if (map.hasOwnProperty(prop)) {\n callback(map[prop], prop);\n
}\n }\n}\n\nexport function waitForMap<A, B>(\n obj: {[k: string]: A}, fn: (k: string, a: A) => Observable):
Observable<{[k: string]: B}> {\n if (Object.keys(obj).length === 0) {\n return of({});\n }\n\n const waitHead:
Observable[] = [];\n const waitTail: Observable[] = [];\n const res: {[k: string]: B} = {};\n\n forEach(obj,
(a: A, k: string) => {\n const mapped = fn(k, a).pipe(map((r: B) => res[k] = r));\n if (k ===
PRIMARY_OUTLET) {\n waitHead.push(mapped);\n } else {\n waitTail.push(mapped);\n }\n });\n\n //
Closure compiler has problem with using spread operator here. So we use `Array.concat`.\n // Note that we also
need to cast the new promise because TypeScript cannot infer the type\n // when calling the `of` function through
`Function.apply`\n return (of.apply(null, waitHead.concat(waitTail)) as Observable<Observable>)\n
.pipe(concatAll(), lastValue(), map(() => res));\n}\n\nexport function wrapIntoObservable<T>(value:
T|Promise<T>|Observable<T>): Observable<T> {\n if (isObservable(value)) {\n return value;\n }\n\n if
(isPromise(value)) {\n // Use `Promise.resolve()` to wrap promise-like instances.\n // Required ie when a
Resolver returns a AngularJS `$q` promise to correctly trigger the\n // change detection.\n return
from(Promise.resolve(value));\n }\n\n return of(value);\n}\n\n", /**\n * @license\n * Copyright Google LLC All
Rights Reserved.\n * Use of this source code is governed by an MIT-style license that can be\n * found in the
LICENSE file at https://angular.io/license\n */\n\nimport {convertToParamMap, ParamMap, Params,
PRIMARY_OUTLET} from './shared';\nimport {equalArraysOrString, forEach, shallowEqual} from
'./utils/collection';\n\nexport function createEmptyUrlTree() {\n return new UrlTree(new UrlSegmentGroup([], {}),
{}, null);\n}\n\nexport function containsTree(container: UrlTree, containee: UrlTree, exact: boolean): boolean {\n
if (exact) {\n return equalQueryParams(container.queryParams, containee.queryParams) &&\n
equalSegmentGroups(container.root, containee.root);\n }\n\n return containsQueryParams(container.queryParams,
containee.queryParams) &&\n containsSegmentGroup(container.root, containee.root);\n}\n\nfunction
equalQueryParams(container: Params, containee: Params): boolean {\n // TODO: This does not handle array
params correctly.\n return shallowEqual(container, containee);\n}\n\nfunction equalSegmentGroups(container:
UrlSegmentGroup, containee: UrlSegmentGroup): boolean {\n if (!equalPath(container.segments,
containee.segments)) return false;\n if (container.numberOfChildren !== containee.numberOfChildren) return
false;\n for (const c in containee.children) {\n if (!container.children[c]) return false;\n if
(!equalSegmentGroups(container.children[c], containee.children[c])) return false;\n }\n return true;\n}\n\nfunction
containsQueryParams(container: Params, containee: Params): boolean {\n return Object.keys(containee).length <=
Object.keys(container).length &&\n Object.keys(containee).every(key => equalArraysOrString(container[key],
containee[key]));\n}\n\nfunction containsSegmentGroup(container: UrlSegmentGroup, containee:
UrlSegmentGroup): boolean {\n return containsSegmentGroupHelper(container, containee,
containee.segments);\n}\n\nfunction containsSegmentGroupHelper(\n container: UrlSegmentGroup, containee:
UrlSegmentGroup, containeePaths: UrlSegment[]): boolean {\n if (container.segments.length >
containeePaths.length) {\n const current = container.segments.slice(0, containeePaths.length);\n if
(!equalPath(current, containeePaths)) return false;\n if (containee.hasChildren()) return false;\n return true;\n\n }
else if (container.segments.length === containeePaths.length) {\n if (!equalPath(container.segments,
containeePaths)) return false;\n for (const c in containee.children) {\n if (!container.children[c]) return false;\n
if (!containsSegmentGroup(container.children[c], containee.children[c])) return false;\n }\n return true;\n\n }
else {\n const current = containeePaths.slice(0, container.segments.length);\n const next =

```



```

});\n return res;\n}\n\n/**\n * @description\n *\n * Serializes and deserializes a URL string into a URL tree.\n *\n * The url serialization strategy is customizable. You can\n * make all URLs case insensitive by providing a custom\n * UrlSerializer.\n *\n * See `DefaultUrlSerializer` for an example of a URL serializer.\n *\n * @publicApi\n */\nexport abstract class UrlSerializer {\n /** Parse a url into a `UrlTree`\n */\n abstract parse(url: string):\n UrlTree;\n\n /** Converts a `UrlTree` into a url\n */\n abstract serialize(tree: UrlTree): string;\n}\n\n/**\n * @description\n *\n * A default implementation of the `UrlSerializer`.\n *\n * Example URLs:\n *\n * ```\n * /inbox/33(popup:compose)\n * /inbox/33;open=true/messages/44\n * ```\n *\n * DefaultUrlSerializer uses\n * parentheses to serialize secondary segments (e.g., popup:compose), the\n * colon syntax to specify the outlet, and\n * the `;parameter=value` syntax (e.g., open=true) to\n * specify route specific parameters.\n *\n * @publicApi\n */\nexport class DefaultUrlSerializer implements UrlSerializer {\n /** Parses a url into a `UrlTree`\n */\n parse(url:\n string): UrlTree {\n const p = new UrlParser(url);\n return new UrlTree(p.parseRootSegment(),\n p.parseQueryParams(), p.parseFragment());\n }\n\n /** Converts a `UrlTree` into a url\n */\n serialize(tree:\n UrlTree): string {\n const segment = `${serializeSegment(tree.root, true)}`; \n const query =\n serializeQueryParams(tree.queryParams);\n const fragment =\n typeof tree.fragment === `string` ?\n `#${encodeURIComponent(tree.fragment)}` : '';\n\n return `${segment}${query}${fragment}`;\n }\n}\n\nconst\n DEFAULT_SERIALIZER = new DefaultUrlSerializer();\n\nexport function serializePaths(segment:\n UrlSegmentGroup): string {\n return segment.segments.map(p => serializePath(p)).join('/');\n}\n\nfunction\n serializeSegment(segment: UrlSegmentGroup, root: boolean): string {\n if (!segment.hasChildren()) {\n return\n serializePaths(segment);\n }\n\n if (root) {\n const primary = segment.children[PRIMARY_OUTLET] ?\n serializeSegment(segment.children[PRIMARY_OUTLET], false) : '';\n const children: string[] = [];\n\n forEach(segment.children, (v: UrlSegmentGroup, k: string) => {\n if (k !== PRIMARY_OUTLET) {\n children.push(`${k}:${serializeSegment(v, false)}`);\n }\n });\n\n return children.length > 0 ?\n `${primary}${children.join('/')}` : primary;\n } else {\n const children = mapChildrenIntoArray(segment, (v:\n UrlSegmentGroup, k: string) => {\n if (k === PRIMARY_OUTLET) {\n return\n [serializeSegment(segment.children[PRIMARY_OUTLET], false)];\n }\n\n return\n [`${k}:${serializeSegment(v, false)}`];\n });\n\n // use no parenthesis if the only child is a primary outlet route\n if (Object.keys(segment.children).length === 1 && segment.children[PRIMARY_OUTLET] != null) {\n return\n `${serializePaths(segment)}/${children[0]}`;\n }\n\n return\n `${serializePaths(segment)}${children.join('/')}`;\n }\n}\n\n/**\n * Encodes a URI string with the default\n * encoding. This function will only ever be called from\n * `encodeURIComponent` or `encodeUriSegment` as it's the base\n * set of encodings to be used. We need\n * a custom encoding because encodeURIComponent is too aggressive and\n * encodes stuff that doesn't\n * have to be encoded per https://url.spec.whatwg.org.\n */\nfunction encodeUriString(s:\n string): string {\n return encodeURIComponent(s)\n .replace(/%40/g, '@')\n .replace(/%3A/gi, ':')\n .replace(/%24/g, '$')\n .replace(/%2C/gi, ',');\n}\n\n/**\n * This function should be used to encode both keys and\n * values in a query string key/value. In\n * the following URL, you need to call encodeUriQuery on \"k\" and \"v\":\n *\n * http://www.site.org/html;mk=mv?k=v#f\n */\nexport function encodeUriQuery(s: string): string {\n return\n encodeUriString(s).replace(/%3B/gi, ';');\n}\n\n/**\n * This function should be used to encode a URL fragment. In\n * the following URL, you need to call\n * encodeUriFragment on \"f\":\n *\n * http://www.site.org/html;mk=mv?k=v#f\n */\nexport function encodeUriFragment(s: string): string {\n return\n encodeURI(s);\n}\n\n/**\n * This function should be run on any URI segment as well as the key and value in a\n * key/value\n * pair for matrix params. In the following URL, you need to call encodeUriSegment on \"html\", \n * \"mk\", and \"mv\":\n *\n * http://www.site.org/html;mk=mv?k=v#f\n */\nexport function encodeUriSegment(s:\n string): string {\n return encodeUriString(s).replace(/\\/g, '%28').replace(/\\/g, '%29').replace(/%/gi,\n '&');\n}\n\nexport function decode(s: string): string {\n return decodeURIComponent(s);\n}\n\n// Query keys/values\n should have the \"+\" replaced first, as \"+\" in a query string is \" \".\n// decodeURIComponent function will not\n decode \" \" as a space.\nexport function decodeQuery(s: string): string {\n return decode(s.replace(/\\+/g,\n '%20'));\n}\n\nexport function serializePath(path: UrlSegment): string {\n return\n `${encodeURIComponent(path.path)}${serializeMatrixParams(path.parameters)}`;\n}\n\nfunction

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serializeMatrixParams(params: {[key: string]: string}): string {\n return Object.keys(params)\n .map(key =>
`,$${encodeURIComponent(key)}=${encodeURIComponent(params[key])}`)\n .join(");\n}\n\nfunction
serializeQueryParams(params: {[key: string]: any}): string {\n const strParams: string[] =
Object.keys(params).map((name) => {\n const value = params[name];\n return Array.isArray(value) ?\n
value.map(v => `$$${encodeURIComponent(name)}=${encodeURIComponent(v)}`),join('&') :\n
`$$${encodeURIComponent(name)}=${encodeURIComponent(value)}`;\n });\n\n return strParams.length ?
`?${strParams.join('&')}` : ";\n}\n\nconst SEGMENT_RE = /^[^\\|()/?=#]+/;\nfunction matchSegments(str: string):
string {\n const match = str.match(SEGMENT_RE);\n return match ? match[0] : ";\n}\n\nconst
QUERY_PARAM_RE = /^[^=?&#]+/;\n// Return the name of the query param at the start of the string or an empty
string\nfunction matchQueryParams(str: string): string {\n const match = str.match(QUERY_PARAM_RE);\n
return match ? match[0] : ";\n}\n\nconst QUERY_PARAM_VALUE_RE = /^[^?&#]+/;\n// Return the value of the
query param at the start of the string or an empty string\nfunction matchUrlQueryParamValue(str: string): string {\n
const match = str.match(QUERY_PARAM_VALUE_RE);\n return match ? match[0] : ";\n}\n\nclass UriParser {\n
private remaining: string;\n\n constructor(private url: string) {\n this.remaining = url;\n }\n\n
parseRootSegment(): UrlSegmentGroup {\n this.consumeOptional('/');\n\n if (this.remaining === "" ||
this.peekStartsWith('?') || this.peekStartsWith('#')) {\n return new UrlSegmentGroup([], {});\n }\n\n // The
root segment group never has segments\n return new UrlSegmentGroup([], this.parseChildren());\n }\n\n
parseQueryParams(): Params {\n const params: Params = {};\n if (this.consumeOptional('?')) {\n do {\n
this.parseQueryParam(params);\n } while (this.consumeOptional('&'));\n } return params;\n }\n\n
parseFragment(): string|null {\n return this.consumeOptional('#') ? decodeURIComponent(this.remaining) : null;\n
}\n\n private parseChildren(): {[outlet: string]: UrlSegmentGroup} {\n if (this.remaining === "") {\n return
{};\n }\n\n this.consumeOptional('/');\n\n const segments: UrlSegment[] = [];\n if (!this.peekStartsWith('('))
{\n segments.push(this.parseSegment());\n }\n\n while (this.peekStartsWith('/') && !this.peekStartsWith('//')
&& !this.peekStartsWith('/(')) {\n this.capture('/');\n segments.push(this.parseSegment());\n }\n\n let
children: {[outlet: string]: UrlSegmentGroup} = {};\n if (this.peekStartsWith('/(')) {\n this.capture('/');\n
children = this.parseParens(true);\n }\n\n let res: {[outlet: string]: UrlSegmentGroup} = {};\n if
(this.peekStartsWith('(')) {\n res = this.parseParens(false);\n }\n\n if (segments.length > 0 ||
Object.keys(children).length > 0) {\n res[PRIMARY_OUTLET] = new UrlSegmentGroup(segments, children);\n
}\n\n return res;\n }\n\n // parse a segment with its matrix parameters\n // ie `name;k1=v1;k2`\n private
parseSegment(): UrlSegment {\n const path = matchSegments(this.remaining);\n if (path === "" &&
this.peekStartsWith(';')) {\n throw new Error(`Empty path url segment cannot have parameters:
`+this.remaining);`\n }\n\n this.capture(path);\n return new UrlSegment(decode(path),
this.parseMatrixParams());\n }\n\n private parseMatrixParams(): {[key: string]: any} {\n const params: {[key:
string]: any} = {};\n while (this.consumeOptional(';')) {\n this.parseParam(params);\n }\n return params;\n
}\n\n private parseParam(params: {[key: string]: any}): void {\n const key = matchSegments(this.remaining);\n
if (!key) {\n return;\n }\n this.capture(key);\n let value: any = ";\n if (this.consumeOptional('=')) {\n
const valueMatch = matchSegments(this.remaining);\n if (valueMatch) {\n value = valueMatch;\n
this.capture(value);\n }\n }\n\n params[decode(key)] = decode(value);\n }\n\n // Parse a single query
parameter `name[=value]`\n private parseQueryParam(params: Params): void {\n const key =
matchQueryParams(this.remaining);\n if (!key) {\n return;\n }\n this.capture(key);\n let value: any = ";\n
if (this.consumeOptional('=')) {\n const valueMatch = matchUrlQueryParamValue(this.remaining);\n if
(valueMatch) {\n value = valueMatch;\n this.capture(value);\n }\n }\n\n const decodedKey =
decodeQuery(key);\n const decodedVal = decodeQuery(value);\n\n if (params.hasOwnProperty(decodedKey))
{\n // Append to existing values\n let currentVal = params[decodedKey];\n if (!Array.isArray(currentVal))
{\n currentVal = [currentVal];\n params[decodedKey] = currentVal;\n }\n
currentVal.push(decodedVal);\n } else {\n // Create a new value\n params[decodedKey] = decodedVal;\n
}\n }\n\n // parse `(a/b/outlet_name:c/d)`\n private parseParens(allowPrimary: boolean): {[outlet: string]:
UrlSegmentGroup} {\n const segments: {[key: string]: UrlSegmentGroup} = {};\n this.capture('(');\n\n while

```

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(!this.consumeOptional(')') && this.remaining.length > 0) {\n const path = matchSegments(this.remaining);\n const next = this.remaining[path.length];\n // if is is not one of these characters, then the segment was\n unescaped\n // or the group was not closed\n if (next !== '/' && next !== ')' && next !== ';') {\n throw\n new Error(`Cannot parse url '${this.url}'`);\n }\n let outletName: string = undefined!;\n if\n (path.indexOf(':') > -1) {\n outletName = path.substr(0, path.indexOf(':'));\n this.capture(outletName);\n this.capture(':');\n } else if (allowPrimary) {\n outletName = PRIMARY_OUTLET;\n }\n const\n children = this.parseChildren();\n segments[outletName] = Object.keys(children).length === 1 ?\n children[PRIMARY_OUTLET] :\n new UrlSegmentGroup([], children);\n this.consumeOptional('/');\n return segments;\n}\n\nprivate peekStartsWith(str: string): boolean {\n return this.remaining.startsWith(str);\n}\n\n// Consumes the prefix when it is present and returns whether it has\n been consumed\n private consumeOptional(str: string): boolean {\n if (this.peekStartsWith(str)) {\n this.remaining = this.remaining.substring(str.length);\n return true;\n }\n return false;\n }\n\nprivate\n capture(str: string): void {\n if (!this.consumeOptional(str)) {\n throw new Error(`Expected \"${str}\"`);\n }\n }\n}\n\n", "/*\n * @license\n * Copyright Google LLC All Rights Reserved.\n * Use of this source code is\n governed by an MIT-style license that can be\n * found in the LICENSE file at https://angular.io/license\n */\n\nexport class Tree<T> {\n /** @internal */\n _root: TreeNode<T>;\n\n constructor(root: TreeNode<T>) {\n this._root = root;\n }\n\n get root(): T {\n return this._root.value;\n }\n\n /**\n * @internal\n */\n parent(t:\n T): T|null {\n const p = this.pathFromRoot(t);\n return p.length > 1 ? p[p.length - 2] : null;\n }\n\n /**\n * @internal\n */\n children(t: T): T[] {\n const n = findNode(t, this._root);\n return n ? n.children.map(t =>\n t.value) : [];\n }\n\n /**\n * @internal\n */\n firstChild(t: T): T|null {\n const n = findNode(t, this._root);\n return n && n.children.length > 0 ? n.children[0].value : null;\n }\n\n /**\n * @internal\n */\n siblings(t: T): T[]\n {\n const p = findPath(t, this._root);\n if (p.length < 2) return [];\n const c = p[p.length - 2].children.map(c\n => c.value);\n return c.filter(cc => cc !== t);\n }\n\n /**\n * @internal\n */\n pathFromRoot(t: T): T[] {\n return findPath(t, this._root).map(s => s.value);\n }\n}\n\n// DFS for the node matching the value\nfunction\n findNode<T>(value: T, node: TreeNode<T>): TreeNode<T>|null {\n if (value === node.value) return node;\n for (const child of node.children) {\n const node = findNode(value, child);\n if (node) return node;\n }\n return null;\n }\n\n// Return the path to the node with the given value using DFS\nfunction\n findPath<T>(value: T, node: TreeNode<T>): TreeNode<T>[] {\n if (value === node.value) return [node];\n for (const child of\n node.children) {\n const path = findPath(value, child);\n if (path.length) {\n path.unshift(node);\n return\n path;\n }\n }\n return [];\n }\n\nexport class TreeNode<T> {\n constructor(public value: T, public children:\n TreeNode<T>[]) {\n }\n\n toString(): string {\n return `TreeNode(${this.value})`;\n }\n}\n\n// Return the list of T\n indexed by outlet name\nexport function\n nodeChildrenAsMap<T extends {outlet: string}>(node:\n TreeNode<T>|null) {\n const map: {[outlet: string]: TreeNode<T>} = {};\n if (node) {\n node.children.forEach(child => map[child.value.outlet] = child);\n }\n return map;\n }\n\n", "/*\n * @license\n * Copyright Google LLC All Rights Reserved.\n * Use of this source code is governed by an MIT-style license\n that can be\n * found in the LICENSE file at https://angular.io/license\n */\n\nimport {Type} from\n '@angular/core';\nimport {BehaviorSubject, Observable} from 'rxjs';\nimport {map} from 'rxjs/operators';\nimport {Data, ResolveData, Route} from './config';\nimport {convertToParamMap, ParamMap, Params,\n PRIMARY_OUTLET} from './shared';\nimport {equalSegments, UrlSegment, UrlSegmentGroup, UrlTree} from\n './url_tree';\nimport {shallowEqual, shallowEqualArrays} from './utils/collection';\nimport {Tree, TreeNode} from\n './utils/tree';\n\n/**\n * Represents the state of the router as a tree of activated routes.\n * Use the `ActivatedRoute` properties to traverse\n the tree from any node.\n * The following fragment shows how a component gets the root node\n of the\n current state to establish its own route tree:\n * ```\n * @Component({templateUrl:'template.html'})\n * class\n MyComponent {\n * constructor(router: Router) {\n * const state: RouterState = router.routerState;\n * const\n root: ActivatedRoute = state.root;\n * const\n child = root.firstChild;\n * const\n id: Observable<string> =\n child.params.map(p => p.id);\n * //...\n * }\n * }\n * ```\n * @see `ActivatedRoute`\n * @see [Getting route

```

```

information](guide/router#getting-route-information)\n * \n * @publicApi\n * \n\nexport class RouterState extends
Tree<ActivatedRoute> {\n /** @internal *\n constructor(\n root: TreeNode<ActivatedRoute>,\n /** The
current snapshot of the router state *\n public snapshot: RouterStateSnapshot) {\n super(root);\n
setRouterState(<RouterState>this, root);\n }\n\n toString(): string {\n return this.snapshot.toString();\n
}\n}\n\nexport function createState(urlTree: UrlTree, rootComponent: Type<any>|null): RouterState {\n
const snapshot = createStateSnapshot(urlTree, rootComponent);\n const emptyUrl = new
BehaviorSubject([new UrlSegment("", {})]);\n const emptyParams = new BehaviorSubject({});\n const emptyData
= new BehaviorSubject({});\n const emptyQueryParams = new BehaviorSubject({});\n const fragment = new
BehaviorSubject("");\n const activated = new ActivatedRoute(\n emptyUrl, emptyParams, emptyQueryParams,
fragment, emptyData, PRIMARY_OUTLET, rootComponent,\n snapshot.root);\n activated.snapshot =
snapshot.root;\n return new RouterState(new TreeNode<ActivatedRoute>(activated, []), snapshot);\n}\n\nexport
function createStateSnapshot(\n urlTree: UrlTree, rootComponent: Type<any>|null): RouterStateSnapshot
{\n const emptyParams = {};\n const emptyData = {};\n const emptyQueryParams = {};\n const fragment = "";\n
const activated = new ActivatedRouteSnapshot(\n [], emptyParams, emptyQueryParams, fragment, emptyData,
PRIMARY_OUTLET, rootComponent, null,\n urlTree.root, -1, {});\n return new RouterStateSnapshot("", new
TreeNode<ActivatedRouteSnapshot>(activated, []));\n}\n\n/**\n * Provides access to information about a route
associated with a component\n * that is loaded in an outlet.\n * Use to traverse the `RouterState` tree and extract
information from nodes.\n *\n * The following example shows how to construct a component using information
from a\n * currently activated route.\n *\n * { @example router/activated-route/module.ts region=\"activated-
route\"\n * header=\"activated-route.component.ts\" }\n *\n * @see [Getting route
information](guide/router#getting-route-information)\n * \n * @publicApi\n * \n\nexport class ActivatedRoute {\n /**
The current snapshot of this route *\n snapshot!: ActivatedRouteSnapshot;\n /** @internal *\n _futureSnapshot:
ActivatedRouteSnapshot;\n /** @internal *\n _routerState!: RouterState;\n /** @internal *\n _paramMap!:
Observable<ParamMap>;\n /** @internal *\n _queryParamMap!: Observable<ParamMap>;\n\n /** @internal
*\n constructor(\n /** An observable of the URL segments matched by this route. *\n public url:
Observable<UrlSegment[]>,\n /** An observable of the matrix parameters scoped to this route. *\n public
params: Observable<Params>,\n /** An observable of the query parameters shared by all the routes. *\n
public queryParams: Observable<Params>,\n /** An observable of the URL fragment shared by all the routes.
*\n public fragment: Observable<string>,\n /** An observable of the static and resolved data of this route.
*\n public data: Observable<Data>,\n /** The outlet name of the route, a constant. *\n public outlet:
string,\n /** The component of the route, a constant. *\n // TODO(vsavkin): remove |string|\n public
component: Type<any>|string|null, futureSnapshot: ActivatedRouteSnapshot) {\n this._futureSnapshot =
futureSnapshot;\n }\n\n /** The configuration used to match this route. *\n get routeConfig(): Route|null {\n
return this._futureSnapshot.routeConfig;\n }\n\n /** The root of the router state. *\n get root(): ActivatedRoute
{\n return this._routerState.root;\n }\n\n /** The parent of this route in the router state tree. *\n get parent():
ActivatedRoute|null {\n return this._routerState.parent(this);\n }\n\n /** The first child of this route in the router
state tree. *\n get firstChild(): ActivatedRoute|null {\n return this._routerState.firstChild(this);\n }\n\n /** The
children of this route in the router state tree. *\n get children(): ActivatedRoute[] {\n return
this._routerState.children(this);\n }\n\n /** The path from the root of the router state tree to this route. *\n
get pathFromRoot(): ActivatedRoute[] {\n return this._routerState.pathFromRoot(this);\n }\n\n /**\n * An
Observable that contains a map of the required and optional parameters\n * specific to the route.\n * The map
supports retrieving single and multiple values from the same parameter.\n *\n * @n get paramMap():
Observable<ParamMap> {\n if (!this._paramMap) {\n this._paramMap = this.params.pipe(map((p: Params):
ParamMap => convertToParamMap(p)));;\n }\n return this._paramMap;\n }\n\n /**\n * An Observable that
contains a map of the query parameters available to all routes.\n * The map supports retrieving single and multiple
values from the query parameter.\n *\n * @n get queryParamMap(): Observable<ParamMap> {\n if
(!this._queryParamMap) {\n this._queryParamMap =\n this.queryParams.pipe(map((p: Params): ParamMap
=> convertToParamMap(p)));;\n }\n return this._queryParamMap;\n }\n\n toString(): string {\n return

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this.snapshot ? this.snapshot.toString() : `Future(${this._futureSnapshot})`;
}
}
export type
ParamsInheritanceStrategy = 'emptyOnly'|'always';
@internal
export type Inherited = {
 params:
 Params,
 data: Data,
 resolve: Data,
};
Returns the inherited params, data, and resolve for a given
route.
By default, this only inherits values up to the nearest path-less or component-less route.
@internal
export function inheritedParamsDataResolve(
 route: ActivatedRouteSnapshot,
 paramsInheritanceStrategy: ParamsInheritanceStrategy = 'emptyOnly'): Inherited {
 const pathFromRoot =
 route.pathFromRoot;
 let inheritingStartingFrom = 0;
 if (paramsInheritanceStrategy !== 'always') {
 inheritingStartingFrom = pathFromRoot.length - 1;
 while (inheritingStartingFrom >= 1) {
 const current =
 pathFromRoot[inheritingStartingFrom];
 const parent = pathFromRoot[inheritingStartingFrom - 1];
 //
 current route is an empty path => inherits its parent's params and data
 if (current.routeConfig &&
 current.routeConfig.path === "") {
 inheritingStartingFrom--;
 // parent is componentless => current
 route should inherit its params and data
 } else if (!parent.component) {
 inheritingStartingFrom--;
 } else {
 break;
 }
 }
 }
 return
 flattenInherited(pathFromRoot.slice(inheritingStartingFrom));
}
@internal
function
flattenInherited(pathFromRoot: ActivatedRouteSnapshot[]): Inherited {
 return pathFromRoot.reduce((res, curr)
 => {
 const params = {...res.params, ...curr.params};
 const data = {...res.data, ...curr.data};
 const resolve =
 {...res.resolve, ...curr._resolvedData};
 return {params, data, resolve};
 }, <any>{params: {}, data: {}, resolve:
 {}});
}
Contains the information about a route associated with a component loaded
in an
outlet at a particular moment in time. ActivatedRouteSnapshot can also be used to
traverse the router
state tree.
The following example initializes a component with route information extracted
from the
snapshot of the root node at the time of creation.
@Component({templateUrl: './my-
component.html'})
class MyComponent {
 constructor(route: ActivatedRoute) {
 const id: string =
 route.snapshot.params.id;
 const url: string = route.snapshot.url.join("");
 const user =
 route.snapshot.data.user;
 }
}
@publicApi
export class ActivatedRouteSnapshot {
 /**
 The configuration used to match this route
 public readonly routeConfig: Route|null;
 @internal
 _urlSegment: UrlSegmentGroup;
 @internal
 _lastPathIndex: number;
 @internal
 _resolve:
 ResolveData;
 @internal
 // TODO(issue/24571): remove '!'.
 _resolvedData!: Data;
 @internal
 // TODO(issue/24571): remove '!'.
 _routerState!: RouterStateSnapshot;
 @internal
 //
 TODO(issue/24571): remove '!'.
 _paramMap!: ParamMap;
 @internal
 // TODO(issue/24571): remove
 '!'.
 _queryParamMap!: ParamMap;
 @internal
 constructor(
 /** The URL segments matched by
 this route
 public url: UrlSegment[],
 /** The matrix parameters scoped to this route
 public
 params: Params,
 /** The query parameters shared by all the routes
 public queryParams: Params,
 /** The URL fragment shared by all the routes
 public fragment: string,
 /** The static and resolved data
 of this route
 public data: Data,
 /** The outlet name of the route
 public outlet: string,
 /**
 The component of the route
 public component: Type<any>|string|null, routeConfig: Route|null, urlSegment:
 UrlSegmentGroup,
 lastPathIndex: number, resolve: ResolveData) {
 this.routeConfig = routeConfig;
 this._urlSegment = urlSegment;
 this._lastPathIndex = lastPathIndex;
 this._resolve = resolve;
 }
 /**
 The root of the router state
 get root(): ActivatedRouteSnapshot {
 return this._routerState.root;
 }
 /**
 The parent of this route in the router state tree
 get parent(): ActivatedRouteSnapshot|null {
 return
 this._routerState.parent(this);
 }
 /** The first child of this route in the router state tree
 get firstChild():
 ActivatedRouteSnapshot|null {
 return this._routerState.firstChild(this);
 }
 /** The children of this route in
 the router state tree
 get children(): ActivatedRouteSnapshot[] {
 return this._routerState.children(this);
 }
 /** The path from the root of the router state tree to this route
 get pathFromRoot():
 ActivatedRouteSnapshot[] {
 return this._routerState.pathFromRoot(this);
 }
 get paramMap(): ParamMap
 {
 if (!this._paramMap) {
 this._paramMap = convertToParamMap(this.params);
 }
 return
 this._paramMap;
 }
 get queryParamMap(): ParamMap {
 if (!this._queryParamMap) {
 this._queryParamMap = convertToParamMap(this.queryParams);
 }
 return
 this._queryParamMap;
 }
 toString(): string {
 const url = this.url.map(segment => segment.toString()).join('/');
 const matched =

```





```

tree: TreeNode<ActivatedRoute> = detachedRouteHandle.route;\n setFutureSnapshotsOfActivatedRoutes(curr,
tree);\n return tree;\n\n } else {\n const value = createActivatedRoute(curr.value);\n const children =
curr.children.map(c => createNode(routeReuseStrategy, c));\n return new TreeNode<ActivatedRoute>(value,
children);\n }\n}\n\nfunction setFutureSnapshotsOfActivatedRoutes(\n curr:
TreeNode<ActivatedRouteSnapshot>, result: TreeNode<ActivatedRoute>): void {\n if (curr.value.routeConfig !==
result.value.routeConfig) {\n throw new Error('Cannot reattach ActivatedRouteSnapshot created from a different
route');\n }\n if (curr.children.length !== result.children.length) {\n throw new Error('Cannot reattach
ActivatedRouteSnapshot with a different number of children');\n }\n result.value._futureSnapshot = curr.value;\n for (let i = 0; i < curr.children.length; ++i) {\n setFutureSnapshotsOfActivatedRoutes(curr.children[i],
result.children[i]);\n }\n}\n\nfunction createOrReuseChildren(\n routeReuseStrategy: RouteReuseStrategy, curr:
TreeNode<ActivatedRouteSnapshot>,\n prevState: TreeNode<ActivatedRoute>) {\n return
curr.children.map(child => {\n for (const p of prevState.children) {\n if
(routeReuseStrategy.shouldReuseRoute(child.value, p.value.snapshot)) {\n return
createNode(routeReuseStrategy, child, p);\n }\n }\n return createNode(routeReuseStrategy, child);\n });\n}\n\nfunction createActivatedRoute(c: ActivatedRouteSnapshot) {\n return new ActivatedRoute(\n new
BehaviorSubject(c.url), new BehaviorSubject(c.params), new BehaviorSubject(c.queryParams),\n new
BehaviorSubject(c.fragment), new BehaviorSubject(c.data), c.outlet, c.component, c);\n}\n\n"/**\n * @license\n *
Copyright Google LLC All Rights Reserved.\n * Use of this source code is governed by an MIT-style license
that can be\n * found in the LICENSE file at https://angular.io/license\n */\n\nimport { ActivatedRoute } from
'./router_state';\nimport { Params, PRIMARY_OUTLET } from './shared';\nimport { UrlSegment, UrlSegmentGroup,
UrlTree } from './url_tree';\nimport { forEach, last, shallowEqual } from './utils/collection';\n\nexport function
createUrlTree(\n route: ActivatedRoute, urlTree: UrlTree, commands: any[], queryParams: Params,\n fragment:
string): UrlTree {\n if (commands.length === 0) {\n return tree(urlTree.root, urlTree.root, urlTree, queryParams,
fragment);\n }\n\n const nav = computeNavigation(commands);\n\n if (nav.toRoot()) {\n return tree(urlTree.root,
new UrlSegmentGroup([], {}), urlTree, queryParams, fragment);\n }\n\n const startingPosition =
findStartingPosition(nav, urlTree, route);\n\n const segmentGroup = startingPosition.processChildren ?\n updateSegmentGroupChildren(\n startingPosition.segmentGroup, startingPosition.index, nav.commands) :\n updateSegmentGroup(startingPosition.segmentGroup, startingPosition.index, nav.commands);\n return
tree(startingPosition.segmentGroup, segmentGroup, urlTree, queryParams, fragment);\n}\n\nfunction
isMatrixParams(command: any): boolean {\n return typeof command === 'object' && command !== null &&
!command.outlets && !command.segmentPath;\n}\n\n/**\n * Determines if a given command has an `outlets` map.
When we encounter a command\n * with an outlets k/v map, we need to apply each outlet individually to the
existing segment.\n */\nfunction isCommandWithOutlets(command: any): command is {outlets: {[key: string]:
any}} {\n return typeof command === 'object' && command !== null && command.outlets;\n}\n\nfunction tree(\n
oldSegmentGroup: UrlSegmentGroup, newSegmentGroup: UrlSegmentGroup, urlTree: UrlTree,\n queryParams:
Params, fragment: string): UrlTree {\n let qp: any = {};\n if (queryParams) {\n forEach(queryParams, (value:
any, name: any) => {\n qp[name] = Array.isArray(value) ? value.map((v: any) => `${v}`) : `${value}`;\n });\n }\n\n if (urlTree.root === oldSegmentGroup) {\n return new UrlTree(newSegmentGroup, qp, fragment);\n }\n\n return new UrlTree(replaceSegment(urlTree.root, oldSegmentGroup, newSegmentGroup), qp,
fragment);\n}\n\nfunction replaceSegment(\n current: UrlSegmentGroup, oldSegment: UrlSegmentGroup,\n newSegment: UrlSegmentGroup): UrlSegmentGroup {\n const children: {[key: string]: UrlSegmentGroup} = {};\n forEach(current.children, (c: UrlSegmentGroup, outletName: string) => {\n if (c === oldSegment) {\n
children[outletName] = newSegment;\n } else {\n children[outletName] = replaceSegment(c, oldSegment,
newSegment);\n }\n });\n return new UrlSegmentGroup(current.segments, children);\n}\n\n\nclass Navigation {\n
constructor(\n public isAbsolute: boolean, public numberOfDoubleDots: number, public commands: any[]) {\n if (isAbsolute && commands.length > 0 && isMatrixParams(commands[0])) {\n throw new Error('Root segment
cannot have matrix parameters');\n }\n\n const cmdWithOutlet = commands.find(isCommandWithOutlets);\n if (cmdWithOutlet && cmdWithOutlet !== last(commands)) {\n throw new Error('{outlets:{}} has to be the last

```

```

command');\n }\n }\n\n public toRoot(): boolean {\n return this.isAbsolute && this.commands.length === 1
&& this.commands[0] === '/';\n }\n}\n\n/** Transforms commands to a normalized `Navigation` */\nfunction
computeNavigation(commands: any[]): Navigation {\n if ((typeof commands[0] === 'string') && commands.length
=== 1 && commands[0] === '/') {\n return new Navigation(true, 0, commands);\n }\n\n let
numberOfDoubleDots = 0;\n let isAbsolute = false;\n\n const res: any[] = commands.reduce((res, cmd, cmdIdx) =>
{\n if (typeof cmd === 'object' && cmd != null) {\n if (cmd.outlets) {\n const outlets: {[k: string]: any} =
{};\n forEach(cmd.outlets, (commands: any, name: string) => {\n outlets[name] = typeof commands ===
'string' ? commands.split('/') : commands;\n });\n return [...res, {outlets}];\n }\n\n if
(cmd.segmentPath) {\n return [...res, cmd.segmentPath];\n }\n }\n\n if (!(typeof cmd === 'string')) {\n
return [...res, cmd];\n }\n\n if (cmdIdx === 0) {\n cmd.split('/').forEach((urlPart, partIndex) => {\n if
(partIndex === 0 && urlPart === '.') {\n // skip './a'\n } else if (partIndex === 0 && urlPart === "") { // '/a'\n
isAbsolute = true;\n } else if (urlPart === '..') { // './a'\n numberOfDoubleDots++;\n } else if
(urlPart != "") {\n res.push(urlPart);\n });\n return res;\n }\n\n return [...res, cmd];\n },
[]);\n\n return new Navigation(isAbsolute, numberOfDoubleDots, res);\n }\n\n\nclass Position {\n constructor(\n
public segmentGroup: UrlSegmentGroup, public processChildren: boolean, public index: number) {\n
}\n}\n\nfunction findStartingPosition(nav: Navigation, tree: UrlTree, route: ActivatedRoute): Position {\n if
(nav.isAbsolute) {\n return new Position(tree.root, true, 0);\n }\n\n if (route.snapshot._lastPathIndex === -1) {\n
const segmentGroup = route.snapshot._urlSegment;\n // Pathless ActivatedRoute has _lastPathIndex === -1 but
should not process children\n // see issue #26224, #13011, #35687\n // However, if the ActivatedRoute is the
root we should process children like above.\n const processChildren = segmentGroup === tree.root;\n return
new Position(segmentGroup, processChildren, 0);\n }\n\n const modifier = isMatrixParams(nav.commands[0]) ? 0
: 1;\n const index = route.snapshot._lastPathIndex + modifier;\n return createPositionApplyingDoubleDots(\n
route.snapshot._urlSegment, index, nav.numberOfDoubleDots);\n }\n\nfunction
createPositionApplyingDoubleDots(\n group: UrlSegmentGroup, index: number, numberOfDoubleDots: number):
Position {\n let g = group;\n let ci = index;\n let dd = numberOfDoubleDots;\n while (dd > ci) {\n dd -= ci;\n g
= g.parent!;\n if (!g) {\n throw new Error('Invalid number of `./`');\n }\n ci = g.segments.length;\n }\n\n
return new Position(g, false, ci - dd);\n }\n\nfunction getOutlets(commands: any[]): {[k: string]: any[]} {\n if
(isCommandWithOutlets(commands[0])) {\n return commands[0].outlets;\n }\n\n return
{[PRIMARY_OUTLET]: commands};\n }\n\nfunction updateSegmentGroup(\n segmentGroup:
UrlSegmentGroup, startIndex: number, commands: any[]): UrlSegmentGroup {\n if (!segmentGroup) {\n
segmentGroup = new UrlSegmentGroup([], {});\n }\n if (segmentGroup.segments.length === 0 &&
segmentGroup.hasChildren()) {\n return updateSegmentGroupChildren(segmentGroup, startIndex, commands);\n
}\n\n const m = prefixedWith(segmentGroup, startIndex, commands);\n const slicedCommands =
commands.slice(m.commandIndex);\n if (m.match && m.pathIndex < segmentGroup.segments.length) {\n const
g = new UrlSegmentGroup(segmentGroup.segments.slice(0, m.pathIndex), {});\n g.children[PRIMARY_OUTLET] =\n new UrlSegmentGroup(segmentGroup.segments.slice(m.pathIndex),
segmentGroup.children);\n return updateSegmentGroupChildren(g, 0, slicedCommands);\n } else if (m.match &&
slicedCommands.length === 0) {\n return new UrlSegmentGroup(segmentGroup.segments, {});\n } else if
(m.match && !segmentGroup.hasChildren()) {\n return createNewSegmentGroup(segmentGroup, startIndex,
commands);\n } else if (m.match) {\n return updateSegmentGroupChildren(segmentGroup, 0,
slicedCommands);\n } else {\n return createNewSegmentGroup(segmentGroup, startIndex, commands);\n
}\n }\n\nfunction updateSegmentGroupChildren(\n segmentGroup: UrlSegmentGroup, startIndex: number,
commands: any[]): UrlSegmentGroup {\n if (commands.length === 0) {\n return new
UrlSegmentGroup(segmentGroup.segments, {});\n } else {\n const outlets = getOutlets(commands);\n const
children: {[key: string]: UrlSegmentGroup} = {};\n\n forEach(outlets, (commands: any, outlet: string) => {\n if
(commands !== null) {\n children[outlet] = updateSegmentGroup(segmentGroup.children[outlet], startIndex,
commands);\n }\n });\n\n forEach(segmentGroup.children, (child: UrlSegmentGroup, childOutlet: string) =>
{\n if (outlets[childOutlet] === undefined) {\n children[childOutlet] = child;\n }\n });\n return new

```

```

UrlSegmentGroup(segmentGroup.segments, children);\n }\n\nfunction prefixedWith(segmentGroup:
UrlSegmentGroup, startIndex: number, commands: any[]) {\n let currentCommandIndex = 0;\n let
currentPathIndex = startIndex;\n\n const noMatch = {match: false, pathIndex: 0, commandIndex: 0};\n while
(currentPathIndex < segmentGroup.segments.length) {\n if (currentCommandIndex >= commands.length) return
noMatch;\n const path = segmentGroup.segments[currentPathIndex];\n const command =
commands[currentCommandIndex];\n // Do not try to consume command as part of the prefixing if it has outlets
because it can\n // contain outlets other than the one being processed. Consuming the outlets command would\n
// result in other outlets being ignored.\n if (isCommandWithOutlets(command)) {\n break;\n }\n const curr
= `${command}`;\n const next =\n currentCommandIndex < commands.length - 1 ?
commands[currentCommandIndex + 1] : null;\n\n if (currentPathIndex > 0 && curr === undefined) break;\n\n if
(curr && next && (typeof next === 'object') && next.outlets === undefined) {\n if (!compare(curr, next, path))
return noMatch;\n currentCommandIndex += 2;\n } else {\n if (!compare(curr, {}, path)) return noMatch;\n
currentCommandIndex++;\n }\n currentPathIndex++;\n }\n\n return {match: true, pathIndex:
currentPathIndex, commandIndex: currentCommandIndex};\n}\n\nfunction createNewSegmentGroup(\n
segmentGroup: UrlSegmentGroup, startIndex: number, commands: any[]): UrlSegmentGroup {\n const paths =
segmentGroup.segments.slice(0, startIndex);\n let i = 0;\n while (i < commands.length) {\n const command =
commands[i];\n if (isCommandWithOutlets(command)) {\n const children =
createNewSegmentChildren(command.outlets);\n return new UrlSegmentGroup(paths, children);\n }\n\n // if
we start with an object literal, we need to reuse the path part from the segment\n if (i === 0 &&
isMatrixParams(commands[0])) {\n const p = segmentGroup.segments[startIndex];\n paths.push(new
UrlSegment(p.path, commands[0]));\n i++;\n continue;\n }\n\n const curr =
isCommandWithOutlets(command) ? command.outlets[PRIMARY_OUTLET] : `${command}`;\n const next = (i
< commands.length - 1) ? commands[i + 1] : null;\n if (curr && next && isMatrixParams(next)) {\n
paths.push(new UrlSegment(curr, stringify(next)));\n i += 2;\n } else {\n paths.push(new UrlSegment(curr,
{}));\n i++;\n }\n }\n return new UrlSegmentGroup(paths, {});\n}\n\nfunction
createNewSegmentChildren(outlets: {[name: string]: any}): any {\n const children: {[key: string]:
UrlSegmentGroup} = {};\n forEach(outlets, (commands: any, outlet: string) => {\n if (commands !== null) {\n
children[outlet] = createNewSegmentGroup(new UrlSegmentGroup([], {}), 0, commands);\n }\n });\n return
children;\n}\n\nfunction stringify(params: {[key: string]: any}): {[key: string]: string} {\n const res: {[key: string]:
string} = {};\n forEach(params, (v: any, k: string) => res[k] = `${v}`);\n return res;\n}\n\nfunction compare(path:
string, params: {[key: string]: any}, segment: UrlSegment): boolean {\n return path == segment.path &&
shallowEqual(params, segment.parameters);\n}\n\n"/**\n * @license\n * Copyright Google LLC All Rights
Reserved.\n *\n * Use of this source code is governed by an MIT-style license that can be\n * found in the
LICENSE file at https://angular.io/license\n */\n\nimport {MonoTypeOperatorFunction} from 'rxjs';\nimport {map}
from 'rxjs/operators';\nimport {LoadedRouterConfig} from './config';\nimport {ActivationEnd,
ChildActivationEnd, Event} from './events';\nimport {DetachedRouteHandleInternal, RouteReuseStrategy} from
'./route_reuse_strategy';\nimport {NavigationTransition} from './router';\nimport {ChildrenOutletContexts} from
'./router_outlet_context';\nimport {ActivatedRoute, ActivatedRouteSnapshot, advanceActivatedRoute, RouterState}
from './router_state';\nimport {forEach} from './utils/collection';\nimport {nodeChildrenAsMap, TreeNode} from
'./utils/tree';\n\nexport const activateRoutes =\n (rootContexts: ChildrenOutletContexts, routeReuseStrategy:
RouteReuseStrategy,\n forwardEvent: (evt: Event) => void): MonoTypeOperatorFunction<NavigationTransition>
=>\n map(t => {\n new ActivateRoutes(\n routeReuseStrategy, t.targetRouterState!,
t.currentRouterState, forwardEvent)\n .activate(rootContexts);\n return t;\n });\n\nexport class
ActivateRoutes {\n constructor(\n private routeReuseStrategy: RouteReuseStrategy, private futureState:
RouterState,\n private currState: RouterState, private forwardEvent: (evt: Event) => void) {\n\n
activate(parentContexts: ChildrenOutletContexts): void {\n const futureRoot = this.futureState._root;\n const
currRoot = this.currState ? this.currState._root : null;\n\n this.deactivateChildRoutes(futureRoot, currRoot,
parentContexts);\n advanceActivatedRoute(this.futureState.root);\n this.activateChildRoutes(futureRoot,

```

```

currRoot, parentContexts);\n }\n\n // De-activate the child route that are not re-used for the future state\n private
deactivateChildRoutes(\n futureNode: TreeNode<ActivatedRoute>, currNode:
TreeNode<ActivatedRoute>|null,\n contexts: ChildrenOutletContexts): void {\n const children: {[outletName:
string]: TreeNode<ActivatedRoute>} = nodeChildrenAsMap(currNode);\n\n // Recurse on the routes active in the
future state to de-activate deeper children\n futureNode.children.forEach(futureChild => {\n const
childOutletName = futureChild.value.outlet;\n this.deactivateRoutes(futureChild, children[childOutletName],
contexts);\n delete children[childOutletName];\n });\n\n // De-activate the routes that will not be re-used\n
forEach(children, (v: TreeNode<ActivatedRoute>, childName: string) => {\n
this.deactivateRouteAndItsChildren(v, contexts);\n });\n }\n\n private deactivateRoutes(\n futureNode:
TreeNode<ActivatedRoute>, currNode: TreeNode<ActivatedRoute>,\n parentContext: ChildrenOutletContexts):
void {\n const future = futureNode.value;\n const curr = currNode ? currNode.value : null;\n\n if (future ===
curr) {\n // Reusing the node, check to see if the children need to be de-activated\n if (future.component) {\n
// If we have a normal route, we need to go through an outlet.\n const context =
parentContext.getContext(future.outlet);\n if (context) {\n this.deactivateChildRoutes(futureNode,
currNode, context.children);\n } } else {\n // if we have a componentless route, we recurse but keep the
same outlet map.\n this.deactivateChildRoutes(futureNode, currNode, parentContext);\n } } else {\n if
(curr) {\n // Deactivate the current route which will not be re-used\n
this.deactivateRouteAndItsChildren(currNode, parentContext);\n } } } } private
deactivateRouteAndItsChildren(\n route: TreeNode<ActivatedRoute>, parentContexts: ChildrenOutletContexts):
void {\n if (this.routeReuseStrategy.shouldDetach(route.value.snapshot)) {\n
this.detachAndStoreRouteSubtree(route, parentContexts);\n } else {\n this.deactivateRouteAndOutlet(route,
parentContexts);\n } } } private detachAndStoreRouteSubtree(\n route: TreeNode<ActivatedRoute>,
parentContexts: ChildrenOutletContexts): void {\n const context =
parentContexts.getContext(route.value.outlet);\n if (context && context.outlet) {\n const componentRef =
context.outlet.detach();\n const contexts = context.children.onOutletDeactivated();\n
this.routeReuseStrategy.store(route.value.snapshot, {componentRef, route, contexts});\n } } } private
deactivateRouteAndOutlet(\n route: TreeNode<ActivatedRoute>, parentContexts: ChildrenOutletContexts): void
{\n const context = parentContexts.getContext(route.value.outlet);\n\n if (context) {\n const children:
{[outletName: string]: any} = nodeChildrenAsMap(route);\n const contexts = route.value.component ?
context.children : parentContexts;\n\n forEach(children, (v: any, k: string) =>
this.deactivateRouteAndItsChildren(v, contexts));\n\n if (context.outlet) {\n // Destroy the component\n
context.outlet.deactivate();\n // Destroy the contexts for all the outlets that were in the component\n
context.children.onOutletDeactivated();\n } } } } private activateChildRoutes(\n futureNode:
TreeNode<ActivatedRoute>, currNode: TreeNode<ActivatedRoute>|null,\n contexts: ChildrenOutletContexts):
void {\n const children: {[outlet: string]: any} = nodeChildrenAsMap(currNode);\n
futureNode.children.forEach(c => {\n this.activateRoutes(c, children[c.value.outlet], contexts);\n
this.forwardEvent(new ActivationEnd(c.value.snapshot));\n });\n if (futureNode.children.length) {\n
this.forwardEvent(new ChildActivationEnd(futureNode.value.snapshot));\n } } } private activateRoutes(\n
futureNode: TreeNode<ActivatedRoute>, currNode: TreeNode<ActivatedRoute>,\n parentContexts:
ChildrenOutletContexts): void {\n const future = futureNode.value;\n const curr = currNode ? currNode.value :
null;\n\n advanceActivatedRoute(future);\n\n // reusing the node\n if (future === curr) {\n if
(future.component) {\n // If we have a normal route, we need to go through an outlet.\n const context =
parentContexts.getOrCreateContext(future.outlet);\n this.activateChildRoutes(futureNode, currNode,
context.children);\n } } else {\n // if we have a componentless route, we recurse but keep the same outlet
map.\n this.activateChildRoutes(futureNode, currNode, parentContexts);\n } } else {\n if
(future.component) {\n // if we have a normal route, we need to place the component into the outlet and
recurse.\n const context = parentContexts.getOrCreateContext(future.outlet);\n if
(this.routeReuseStrategy.shouldAttach(future.snapshot)) {\n const stored =\n

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(<DetachedRouteHandleInternal>this.routeReuseStrategy.retrieve(future.snapshot));\n
this.routeReuseStrategy.store(future.snapshot, null);\n
context.children.onOutletReAttached(stored.contexts);\n context.attachRef = stored.componentRef;\n
context.route = stored.route.value;\n if (context.outlet) {\n // Attach right away when the outlet has\n
already been instantiated\n // Otherwise attach from `RouterOutlet.ngOnInit` when it is instantiated\n
context.outlet.attach(stored.componentRef, stored.route.value);\n }\n
advanceActivatedRouteNodeAndItsChildren(stored.route);\n } else {\n const config =\n
parentLoadedConfig(future.snapshot);\n const cmpFactoryResolver = config ?\n
config.module.componentFactoryResolver : null;\n\n context.attachRef = null;\n context.route = future;\n
 context.resolver = cmpFactoryResolver;\n if (context.outlet) {\n // Activate the outlet when it has\n
already been instantiated\n // Otherwise it will get activated from its `ngOnInit` when instantiated\n
context.outlet.activateWith(future, cmpFactoryResolver);\n }\n\n this.activateChildRoutes(futureNode,\n
null, context.children);\n }\n } else {\n // if we have a componentless route, we recurse but keep the\n
same outlet map.\n this.activateChildRoutes(futureNode, null, parentContexts);\n }\n }\n}\n\nfunction\n
advanceActivatedRouteNodeAndItsChildren(node: TreeNode<ActivatedRoute>): void {\n
advanceActivatedRoute(node.value);\n
node.children.forEach(advanceActivatedRouteNodeAndItsChildren);\n}\n\nfunction parentLoadedConfig(snapshot:\n
ActivatedRouteSnapshot): LoadedRouterConfig|null {\n
for (let s = snapshot.parent; s; s = s.parent) {\n
const\n
route = s.routeConfig;\n
if (route && route._loadedConfig) return route._loadedConfig;\n
if (route &&\n
route.component) return null;\n
}\n\nreturn null;\n}\n\n"/**\n * @license\n * Copyright Google LLC All Rights\n
Reserved.\n * Use of this source code is governed by an MIT-style license that can be\n * found in the\n
LICENSE file at https://angular.io/license\n */\n\nimport { NgModuleFactory, NgModuleRef, Type } from\n
'@angular/core';\nimport { Observable } from 'rxjs';\nimport { ActivatedRouteSnapshot } from\n
'./router_state';\nimport { UrlSegment, UrlSegmentGroup } from './url_tree';\n\n/**\n * Represents a route\n
configuration for the Router service.\n * An array of `Route` objects, used in `Router.config` and for nested route\n
configurations\n * in `Route.children`.\n * @see `Route`\n * @see `Router`\n * @see [Router configuration\n
guide](guide/router#configuration)\n * @publicApi\n */\nexport type Routes = Route[];\n\n/**\n * Represents the\n
result of matching URLs with a custom matching function.\n * `consumed` is an array of the consumed URL\n
segments.\n * `posParams` is a map of positional parameters.\n * @see `UrlMatcher`\n * @publicApi\n */\nexport type UrlMatchResult = {\n
consumed: UrlSegment[];\n
posParams?: {[name: string]:\n
UrlSegment};\n};\n\n/**\n * A function for matching a route against URLs. Implement a custom URL matcher\n *

for `Route.matcher` when a combination of `path` and `pathMatch`\n * is not expressive enough. Cannot be used

together with `path` and `pathMatch`.\n * The function takes the following arguments and returns a

`UrlMatchResult` object.\n * * `segments`: An array of URL segments.\n * * `group`: A segment group.\n * *

`route`: The route to match against.\n * The following example implementation matches HTML files.\n *

```\n * export function htmlFiles(url: UrlSegment[]) {\n *   return url.length === 1 && url[0].path.endsWith('.html')\n
? ({consumed: url}) : null;\n * }\n * export const routes = [{ matcher: htmlFiles, component: AnyComponent\n
}];\n * ```\n * @publicApi\n */\nexport type UrlMatcher = (segments: UrlSegment[], group: UrlSegmentGroup,\n
route: Route) => UrlMatchResult|null;\n\n/**\n * Represents static data associated with a particular route.\n *  

@see `Route#data`\n * @publicApi\n */\nexport type Data = {\n
[name: string]: any\n};\n\n/**\n * Represents the resolved data associated with a particular route.\n * @see `Route#resolve`\n * @publicApi\n */\nexport type ResolveData = {\n
[name: string]: any\n};\n\n/**\n * A function that is called to resolve a  

collection of lazy-loaded routes.\n * Must be an arrow function of the following form:\n * `() =>\n
import(...).then(mod => mod.MODULE)`\n * For example:\n *  

```\n * [{\n *   path: 'lazy',\n *  

loadChildren: () => import('./lazy-route/lazy.module').then(mod => mod.LazyModule),\n * }];\n * ```\n * @see

[Route.loadChildren](api/router/Route#loadChildren)\n * @publicApi\n */\nexport type LoadChildrenCallback = ()\n
=> Type<any>|NgModuleFactory<any>|Observable<Type<any>>|\n
Promise<NgModuleFactory<any>|Type<any>|any>;\n\n/**\n * A function that returns a set of routes to load.\n

```

\* The string form of `LoadChildren` is deprecated (see `DeprecatedLoadChildren`). The function form (`LoadChildrenCallback`) should be used instead. @see `loadChildrenCallback` @publicApi

\* export type `LoadChildren = LoadChildrenCallback | DeprecatedLoadChildren;`

\* A string of the form `path/to/file#exportName` that acts as a URL for a set of routes to load. @see `loadChildrenCallback` @publicApi

\* @deprecated The `string` form of `loadChildren` is deprecated in favor of the `LoadChildrenCallback` function which uses the ES dynamic `import()` expression. This offers a more natural and standards-based mechanism to dynamically load an ES module at runtime. export type `DeprecatedLoadChildren = string;`

\* How to handle query parameters in a router link. One of: `merge`: Merge new with current parameters. `preserve`: Preserve current parameters. @see `UrlCreationOptions#queryParamsHandling` @see `RouterLink` @publicApi

\* export type `QueryParamsHandling = 'merge'|'preserve';`

\* A policy for when to run guards and resolvers on a route. @see `[Route.runGuardsAndResolvers](api/router/Route#runGuardsAndResolvers)` @publicApi

\* export type `RunGuardsAndResolvers =`

```
'pathParamsChange'|'pathParamsOrQueryParamsChange'|'paramsChange'|'paramsOrQueryParamsChange'|
'always'|((from: ActivatedRouteSnapshot, to: ActivatedRouteSnapshot) => boolean);
```

\* A configuration object that defines a single route. A set of routes are collected in a `Routes` array to define a `Router` configuration. The router attempts to match segments of a given URL against each route, using the configuration options defined in this object. Supports static, parameterized, redirect, and wildcard routes, as well as custom route data and resolve methods. For detailed usage information, see the `[Routing Guide](guide/router)`. @usageNotes

### Simple Configuration

The following route specifies that when navigating to, for example, `/team/11/user/bob`, the router creates the `Team` component with the `User` child component in it.

```
{
 path: 'team/:id',
 component: Team,
 children: [{
 path: 'user/:name',
 component: User
 }]
}
```

### Multiple Outlets

The following route creates sibling components with multiple outlets. When navigating to `/team/11(aux:chat/jim)`, the router creates the `Team` component next to the `Chat` component. The `Chat` component is placed into the `aux` outlet.

```
{
 path: 'team/:id',
 component: Team,
 children: [
 {
 path: 'chat/:user',
 component: Chat,
 outlet: 'aux'
 }
]
}
```

### Wild Cards

The following route uses wild-card notation to specify a component that is always instantiated regardless of where you navigate to.

```
{
 path: '**',
 component: WildcardComponent
}
```

### Redirects

The following route uses the `redirectTo` property to ignore a segment of a given URL when looking for a child path. When navigating to `/team/11/legacy/user/jim`, the router changes the URL segment `/team/11/legacy/user/jim` to `/team/11/user/jim`, and then instantiates the `Team` component with the `User` child component in it.

```
{
 path: 'team/:id',
 component: Team,
 children: [
 {
 path: 'legacy/user/:name',
 redirectTo: 'user/:name',
 component: User
 }
]
}
```

The redirect path can be relative, as shown in this example, or absolute. If we change the `redirectTo` value in the example to the absolute URL segment `/user/:name`, the result URL is also absolute, `/user/jim`.

### Empty Path

Empty-path route configurations can be used to instantiate components that do not consume any URL segments. In the following configuration, when navigating to `/team/11`, the router instantiates the `AllUsers` component.

```
{
 path: 'team/:id',
 component: Team,
 children: [
 {
 path: '',
 component: AllUsers
 },
 {
 path: 'user/:name',
 component: User
 }
]
}
```

Empty-path routes can have children. In the following example, when navigating to `/team/11/user/jim`, the router instantiates the wrapper component with the user component in it. Note that an empty path route inherits its parent's parameters and data.

```
{
 path: 'team/:id',
 component: Team,
 children: [
 {
 path: '',
 component: WrapperCmp,
 children: [
 {
 path: 'user/:name',
 component: User
 }
]
 }
]
}
```

### Matching Strategy

The default path-match strategy is `prefix`, which means that the router checks URL elements from the left to see if the URL matches a specified path. For example, `/team/11/user` matches `team/:id`.

```
{
 path: '',
 pathMatch: 'prefix',
 //default
 redirectTo: 'main',
 path: 'main',
 component: Main
}
```

You

can specify the path-match strategy 'full' to make sure that the path covers the whole unconsumed URL. It is important to do this when redirecting empty-path routes. Otherwise, because an empty path is a prefix of any URL, the router would apply the redirect even when navigating to the redirect destination, creating an endless loop. In the following example, supplying the 'full' pathMatch strategy ensures that the router applies the redirect if and only if navigating to '/. In the following example, supplying the 'full' pathMatch strategy ensures that the router applies the redirect if and only if navigating to '/. In the following example, 'MainChild' and 'AuxChild' are siblings. When navigating to 'parent/10/(a//aux:b)', the route instantiates the main child and aux child components next to each other. For this to work, the application component must have the primary and aux outlets defined. The router merges the parameters, data, and resolve of the componentless parent into the parameters, data, and resolve of the children. This is especially useful when child components are defined with an empty path string, as in the following example. With this configuration, navigating to '/parent/10' creates the main child and aux components. Lazy loading speeds up application load time by splitting the application into multiple bundles and loading them on demand. To use lazy loading, provide the 'loadChildren' property in the 'Route' object, instead of the 'children' property. Given the following example route, the router will lazy load the associated module on demand using the browser native import system. @publicApi export interface Route { path: string; pathMatch?: string; matcher?: UrlMatcher; component?: Type<any>; redirectTo?: string; outlet?: string; canActivate?: any[]; canActivateChild?: any[]; canDeactivate?: any[]; canLoad?: any[]; data?: Data; resolve?: ResolveData; loadChildren?: () => import('./lazy-route/lazy.module').then(mod => mod.LazyModule); }

The path to match against. Cannot be used together with a custom 'matcher' function. A URL string that uses router matching notation. Can be a wild card (\*) that matches any URL (see Usage Notes below). Default is '/' (the root path). pathMatch?: string; The path-matching strategy, one of 'prefix' or 'full'. Default is 'prefix'. By default, the router checks URL elements from the left to see if the URL matches a given path, and stops when there is a match. For example, '/team/11/user' matches 'team/:id'. The path-match strategy 'full' matches against the entire URL. It is important to do this when redirecting empty-path routes. Otherwise, because an empty path is a prefix of any URL, the router would apply the redirect even when navigating to the redirect destination, creating an endless loop. matcher?: UrlMatcher; The component to instantiate when the path matches. Can be empty if child routes specify components. component?: Type<any>; A URL to redirect to when the path matches. Absolute if the URL begins with a slash (/), otherwise relative to the path URL. When not present, router does not redirect. outlet?: string; An array of dependency-injection tokens used to look up 'CanActivate()' handlers, in order to determine if the current user is allowed to activate the component. By default, any user can activate. canActivate?: any[]; An array of DI tokens used to look up 'CanActivateChild()' handlers, in order to determine if the current user is allowed to activate a child of the component. By default, any user can activate a child. canActivateChild?: any[]; An array of DI tokens used to look up 'CanDeactivate()' handlers, in order to determine if the current user is allowed to deactivate the component. By default, any user can deactivate. canDeactivate?: any[]; An array of DI tokens used to look up 'CanLoad()' handlers, in order to determine if the current user is allowed to load the component. By default, any user can load. canLoad?: any[]; Additional developer-defined data provided to the component via 'ActivatedRoute'. By default, no additional data is passed. data?: Data; A map of DI tokens used to look up data resolvers. See 'Resolve'. resolve?: ResolveData; An array of child 'Route'

objects that specifies a nested route configuration.

- `children?: Routes`: An object specifying lazy-loaded child routes.
- `loadChildren?: LoadChildren`: Defines when guards and resolvers will be run. One of:
  - `paramsOrQueryParamsChange``: Run when query parameters change.
  - `always``: Run on every execution.
  - By default, guards and resolvers run only when the matrix parameters of the route change.
- `runGuardsAndResolvers?: RunGuardsAndResolvers`: Filled for routes with `loadChildren`` once the module has been loaded.
- `@internal``: Filled for routes with `_loadedConfig?``.

```
LoadedRouterConfig;
export class LoadedRouterConfig {
 constructor(public routes: Route[], public module: NgModuleRef<any>) {}
}
/**
 * Copyright Google LLC All Rights Reserved.
 * Use of this source code is governed by an MIT-style license that can be found in the LICENSE file at
 https://angular.io/license
 */
import { CanActivate, CanActivateChild, CanDeactivate, CanLoad } from
 './interfaces';
import { UrlTree } from './url_tree';
/**
 * Simple function check, but generic so type inference
 will flow. Example:
 function product(a: number, b: number) {
 return a * b;
 }
 if (isFunction<product>(fn)) {
 return fn(1, 2);
 } else {
 throw `Must provide the `product` function`;
 }
 */
export function isFunction<T>(v: any): v is T {
 return typeof v === 'function';
}
export function isBoolean(v: any): v is boolean {
 return typeof v === 'boolean';
}
export function isUrlTree(v: any): v is
 UrlTree {
 return v instanceof UrlTree;
}
export function isCanLoad(guard: any): guard is CanLoad {
 return guard && isFunction<CanLoad>(guard.canLoad);
}
export function isCanActivate(guard: any): guard is
 CanActivate {
 return guard && isFunction<CanActivate>(guard.canActivate);
}
export function
 isCanActivateChild(guard: any): guard is CanActivateChild {
 return guard &&
 isFunction<CanActivateChild>(guard.canActivateChild);
}
export function isCanDeactivate<T>(guard: any):
 guard is CanDeactivate<T> {
 return guard &&
 isFunction<CanDeactivate<T>>(guard.canDeactivate);
}
/**
 * Copyright Google LLC All
 Rights Reserved.
 * Use of this source code is governed by an MIT-style license that can be found in the
 LICENSE file at https://angular.io/license
 */
import { combineLatest, Observable, OperatorFunction } from
 'rxjs';
import { filter, map, scan, startWith, switchMap, take } from 'rxjs/operators';
import { UrlTree } from
 './url_tree';
import { isUrlTree } from './utils/type_guards';
const INITIAL_VALUE =
 Symbol('INITIAL_VALUE');
declare type INTERIM_VALUES = typeof INITIAL_VALUE | boolean |
 UrlTree;
export function prioritizedGuardValue(): OperatorFunction<Observable<boolean|UrlTree>[],
 boolean|UrlTree> {
 return switchMap(obs => {
 return combineLatest(
 ...obs.map(o =>
 o.pipe(take(1), startWith(INITIAL_VALUE as INTERIM_VALUES)))
 .pipe(
 scan(
 (acc: INTERIM_VALUES, list: INTERIM_VALUES[]) => {
 let isPending = false;
 return list.reduce((innerAcc, val, i: number) => {
 if (innerAcc !== INITIAL_VALUE)
 return innerAcc;
 // Toggle pending flag if any values haven't been set yet
 if (val === INITIAL_VALUE) isPending = true;
 // Any other return values are only valid if we
 haven't yet hit a pending
 // call. This guarantees that in the case of a guard at the bottom of the
 // tree that returns a redirect, we will wait for the higher priority
 // guard at the top to
 finish before performing the redirect.
 if (!isPending) {
 // Early return when we
 hit a `false` value as that should always
 // cancel navigation
 if (val === false)
 return val;
 if (i === list.length - 1 || isUrlTree(val)) {
 return val;
 }
 }
 }, innerAcc);
 }, acc);
 },
 INITIAL_VALUE),
 filter(item => item !== INITIAL_VALUE),
 map(item =>
 isUrlTree(item) ? item : item === true), // take(1) as Observable<boolean|UrlTree>;
));
 });
}
/**
 * Copyright Google LLC All Rights Reserved.
 * Use of this source code is
 governed by an MIT-style license that can be found in the LICENSE file at
 https://angular.io/license
 */
import { Component } from '@angular/core';
/**
 * This component is used internally within the router to
 be a placeholder when an empty router-outlet is needed. For example, with a config such as:
 { path:
 'parent', outlet: 'nav', children: [...] }
 * In order to render, there needs to be a component on this config, which
 will default to this `EmptyOutletComponent`.
 */
@Component({
 template: `<router-outlet></router-`

```



```

outlet>`))\nexport class EmptyOutletComponent {\n}\n\nexport {EmptyOutletComponent as
EmptyOutletComponent};\n", "/*\n * @license\n * Copyright Google LLC All Rights Reserved.\n *\n * Use of this
source code is governed by an MIT-style license that can be\n * found in the LICENSE file at
https://angular.io/license\n */\n\nimport {EmptyOutletComponent} from './components/empty_outlet';\nimport
{Route, Routes} from './config';\nimport {PRIMARY_OUTLET} from './shared';\n\nexport function
validateConfig(config: Routes, parentPath: string = ""): void {\n // forEach doesn't iterate undefined values\n for (let
i = 0; i < config.length; i++) {\n const route: Route = config[i];\n const fullPath: string = getFullPath(parentPath,
route);\n validateNode(route, fullPath);\n } }\n\nfunction validateNode(route: Route, fullPath: string): void {\n
if (typeof ngDevMode === 'undefined' || ngDevMode) {\n if (!route) {\n throw new Error(`\n Invalid
configuration of route '${fullPath}': Encountered undefined route.\n The reason might be an extra comma.\n\n
Example:\n const routes: Routes = [\n { path: '/', redirectTo: '/dashboard', pathMatch: 'full' },\n { path:
'dashboard', component: DashboardComponent },\n << two commas\n { path: 'detail/:id', component:
HeroDetailComponent }\n];\n `);\n }\n if (Array.isArray(route)) {\n throw new Error(` Invalid
configuration of route '${fullPath}': Array cannot be specified`);\n }\n if (!route.component && !route.children
&& !route.loadChildren &&\n (route.outlet && route.outlet !== PRIMARY_OUTLET)) {\n throw new
Error(` Invalid configuration of route '${\n fullPath}': a componentless route without children or loadChildren
cannot have a named outlet set`);\n }\n if (route.redirectTo && route.children) {\n throw new Error(` Invalid
configuration of route '${\n fullPath}': redirectTo and children cannot be used together`);\n }\n if
(route.redirectTo && route.loadChildren) {\n throw new Error(` Invalid configuration of route '${\n fullPath}': redirectTo and loadChildren cannot be used together`);\n }\n if (route.children &&
route.loadChildren) {\n throw new Error(` Invalid configuration of route '${\n fullPath}': children and
loadChildren cannot be used together`);\n }\n if (route.redirectTo && route.component) {\n throw new
Error(` Invalid configuration of route '${\n fullPath}': redirectTo and component cannot be used together`);\n }\n if (route.path && route.matcher) {\n throw new Error(`\n Invalid configuration of route '${fullPath}':
path and matcher cannot be used together`);\n }\n if (route.redirectTo === void 0 && !route.component &&
!route.children && !route.loadChildren) {\n throw new Error(` Invalid configuration of route '${\n fullPath}':
One of the following must be provided: component, redirectTo, children or loadChildren`);\n }\n if
(route.path === void 0 && route.matcher === void 0) {\n throw new Error(` Invalid configuration of route '${\n fullPath}': routes must have either a path or a matcher specified`);\n }\n if (typeof route.path === 'string' &&
route.path.charAt(0) === '/') {\n throw new Error(`\n Invalid configuration of route '${fullPath}': path
cannot start with a slash`);\n }\n if (route.path === "" && route.redirectTo !== void 0 && route.pathMatch ===
void 0) {\n const exp =\n `The default value of 'pathMatch' is 'prefix', but often the intent is to use 'full'.`;\n throw new Error(` Invalid configuration of route '{path: \"${fullPath}\", redirectTo: \"${\n route.redirectTo}\"}': please provide 'pathMatch'. ${exp}`);\n }\n if (route.pathMatch !== void 0 &&
route.pathMatch !== 'full' && route.pathMatch !== 'prefix') {\n throw new Error(` Invalid configuration of route
'${\n fullPath}': pathMatch can only be set to 'prefix' or 'full`);\n }\n }\n if (route.children) {\n validateConfig(route.children, fullPath);\n }\n }\n\nfunction getFullPath(parentPath: string, currentRoute: Route):
string {\n if (!currentRoute) {\n return parentPath;\n }\n if (!parentPath && !currentRoute.path) {\n return "";\n }\n else if (parentPath && !currentRoute.path) {\n return `${parentPath}/`;\n }\n else if (!parentPath &&
currentRoute.path) {\n return currentRoute.path;\n }\n else {\n return `${parentPath}/${currentRoute.path}`;\n }\n }\n}\n\n/**\n * Makes a copy of the config and adds any default required properties.\n */\nexport function
standardizeConfig(r: Route): Route {\n const children = r.children && r.children.map(standardizeConfig);\n const
c = children ? {...r, children} : {...r};\n if (!c.component && (children || c.loadChildren) && (c.outlet && c.outlet
!== PRIMARY_OUTLET)) {\n c.component = EmptyOutletComponent;\n }\n return c;\n }\n\n/** Returns of
`Map` of outlet names to the `Route`s for that outlet. *\nexport function groupRoutesByOutlet(routes: Route[]):
Map<string, Route[]> {\n return routes.reduce((map, route) => {\n const routeOutlet = getOutlet(route);\n if
(map.has(routeOutlet)) {\n map.get(routeOutlet)!.push(route);\n } else {\n map.set(routeOutlet, [route]);\n }\n return map;\n }, new Map<string, Route[]>());\n }\n\n/** Returns the `route.outlet` or PRIMARY_OUTLET if

```

```

none exists. */\nexport function getOutlet(route: Route): string {\n return route.outlet ||
PRIMARY_OUTLET;\n}\n", "/*\n * @license\n * Copyright Google LLC All Rights Reserved.\n *\n * Use of this
source code is governed by an MIT-style license that can be\n * found in the LICENSE file at
https://angular.io/license\n */\n\nimport {Injector, NgModuleRef} from '@angular/core';\nimport {EmptyError,
from, Observable, Observer, of} from 'rxjs';\nimport {catchError, combineAll, concatMap, first, map, mergeMap,
tap} from 'rxjs/operators';\nimport {LoadedRouterConfig, Route, Routes} from './config';\nimport {CanLoadFn}
from './interfaces';\nimport {prioritizedGuardValue} from './operators/prioritized_guard_value';\nimport
{RouterConfigLoader} from './router_config_loader';\nimport {defaultUrlMatcher, navigationCancelingError,
Params, PRIMARY_OUTLET} from './shared';\nimport {UrlSegment, UrlSegmentGroup, UrlSerializer, UrlTree}
from './url_tree';\nimport {forEach, waitForMap, wrapIntoObservable} from './utils/collection';\nimport {getOutlet,
groupRoutesByOutlet} from './utils/config';\nimport {isCanLoad, isFunction, isUrlTree} from
 './utils/type_guards';\n\nclass NoMatch {\n public segmentGroup: UrlSegmentGroup|null;\n\n constructor(segmentGroup?: UrlSegmentGroup) {\n this.segmentGroup = segmentGroup || null;\n }\n}\n\nclass
AbsoluteRedirect {\n constructor(public urlTree: UrlTree) {} }\n\nfunction noMatch(segmentGroup:
UrlSegmentGroup): Observable<UrlSegmentGroup> {\n return new Observable<UrlSegmentGroup>(\n (obs:
Observer<UrlSegmentGroup>) => obs.error(new NoMatch(segmentGroup));\n);\n}\n\nfunction
absoluteRedirect(newTree: UrlTree): Observable<any> {\n return new Observable<UrlSegmentGroup>(\n (obs:
Observer<UrlSegmentGroup>) => obs.error(new AbsoluteRedirect(newTree));\n);\n}\n\nfunction
namedOutletsRedirect(redirectTo: string): Observable<any> {\n return new Observable<UrlSegmentGroup>(\n
(obs: Observer<UrlSegmentGroup>) => obs.error(new Error(\n `Only absolute redirects can have named
outlets. redirectTo: '${redirectTo}'`));\n);\n}\n\nfunction canLoadFails(route: Route):
Observable<LoadedRouterConfig> {\n return new Observable<LoadedRouterConfig>(\n (obs:
Observer<LoadedRouterConfig>) => obs.error(\n navigationCancelingError(`Cannot load children because the
guard of the route \"path: '${\n route.path}\n \" returned false`));\n);\n}\n\n/**\n * Returns the `UrlTree` with the
redirection applied.\n *\n * Lazy modules are loaded along the way.\n */\nexport function applyRedirects(\n
moduleInjector: Injector, configLoader: RouterConfigLoader, urlSerializer: UrlSerializer,\n urlTree: UrlTree,
config: Routes): Observable<UrlTree> {\n return new ApplyRedirects(moduleInjector, configLoader, urlSerializer,
urlTree, config).apply();\n}\n\nclass ApplyRedirects {\n private allowRedirects: boolean = true;\n private
ngModule: NgModuleRef<any>;\n\n constructor(\n moduleInjector: Injector, private configLoader:
RouterConfigLoader,\n private urlSerializer: UrlSerializer, private urlTree: UrlTree, private config: Routes) {\n
this.ngModule = moduleInjector.get(NgModuleRef);\n }\n\n apply(): Observable<UrlTree> {\n const expanded$
=\n this.expandSegmentGroup(this.ngModule, this.config, this.urlTree.root, PRIMARY_OUTLET);\n const
urlTrees$ = expanded$.pipe(\n map((rootSegmentGroup: UrlSegmentGroup) => this.createUrlTree(\n
rootSegmentGroup, this.urlTree.queryParams, this.urlTree.fragment!));\n return urlTrees$.pipe(catchError((e:
any) => {\n if (e instanceof AbsoluteRedirect) {\n // after an absolute redirect we do not apply any more
redirects!\n this.allowRedirects = false;\n // we need to run matching, so we can fetch all lazy-loaded
modules\n return this.match(e.urlTree);\n }\n if (e instanceof NoMatch) {\n throw
this.noMatchError(e);\n }\n throw e;\n }));\n }\n\n private match(tree: UrlTree): Observable<UrlTree>
{\n const expanded$ =\n this.expandSegmentGroup(this.ngModule, this.config, tree.root,
PRIMARY_OUTLET);\n const mapped$ = expanded$.pipe(\n map((rootSegmentGroup: UrlSegmentGroup)
=>\n this.createUrlTree(rootSegmentGroup, tree.queryParams, tree.fragment!));\n return
mapped$.pipe(catchError((e: any): Observable<UrlTree> => {\n if (e instanceof NoMatch) {\n throw
this.noMatchError(e);\n }\n throw e;\n }));\n }\n\n private noMatchError(e: NoMatch): any {\n return
new Error(`Cannot match any routes. URL Segment: '${e.segmentGroup}'`);\n }\n\n private
createUrlTree(rootCandidate: UrlSegmentGroup, queryParams: Params, fragment: string):\n UrlTree {\n const
root = rootCandidate.segments.length > 0 ?\n new UrlSegmentGroup([], [{PRIMARY_OUTLET}:
rootCandidate}) :\n rootCandidate;\n return new UrlTree(root, queryParams, fragment);\n }\n\n private
expandSegmentGroup(\n ngModule: NgModuleRef<any>, routes: Route[], segmentGroup: UrlSegmentGroup,\n

```

```

 outlet: string): Observable<UrlSegmentGroup> {
 if (segmentGroup.segments.length === 0 &&
 segmentGroup.hasChildren()) {
 return this.expandChildren(ngModule, routes, segmentGroup)\n
 .pipe(map((children: any) => new UrlSegmentGroup([], children));\n
 })\n
 return
 this.expandSegment(ngModule, segmentGroup, routes, segmentGroup.segments, outlet, true);\n
 }\n
 //
 Recursively expand segment groups for all the child outlets\n
 private expandChildren(\n
 ngModule:
 NgModuleRef<any>, routes: Route[],\n
 segmentGroup: UrlSegmentGroup): Observable<{[name: string]:
 UrlSegmentGroup}> {
 return waitForMap(\n
 segmentGroup.children,\n
 (childOutlet, child) =>
 this.expandSegment(ngModule, routes, child, childOutlet);\n
)\n
 private expandSegment(\n
 ngModule:
 NgModuleRef<any>, segmentGroup: UrlSegmentGroup, routes: Route[],\n
 segments: UrlSegment[], outlet:
 string,\n
 allowRedirects: boolean): Observable<UrlSegmentGroup> {
 // We need to expand each outlet group
 independently to ensure that we not only load modules\n
 // for routes matching the given `outlet`, but also those
 which will be activated because\n
 // their path is empty string. This can result in multiple outlets being activated at
 once.\n
 const routesByOutlet: Map<string, Route[]> = groupRoutesByOutlet(routes);\n
 if
 (!routesByOutlet.has(outlet)) {\n
 routesByOutlet.set(outlet, []);\n
 }\n
 const expandRoutes = (routes:
 Route[]) => {\n
 return from(routes).pipe(\n
 concatMap((r: Route) => {\n
 const expanded$ =
 this.expandSegmentAgainstRoute(\n
 ngModule, segmentGroup, routes, r, segments, outlet,
 allowRedirects);\n
 return expanded$.pipe(catchError(e => {\n
 if (e instanceof NoMatch) {\n
 return of(null);\n
 }\n
 throw e;\n
 }));\n
 },\n
 first((s: UrlSegmentGroup|null): s is
 UrlSegmentGroup => s !== null),\n
 catchError(e => {\n
 if (e instanceof EmptyError || e.name ===
 'EmptyError') {\n
 if (this.noLeftoversInUrl(segmentGroup, segments, outlet)) {\n
 return of(new
 UrlSegmentGroup([], {}));\n
 }\n
 throw new NoMatch(segmentGroup);\n
 }\n
 throw
 e;\n
 },\n
);\n
 });\n
 const expansions = Array.from(routesByOutlet.entries()).map(([routeOutlet,
 routes]) => {\n
 const expanded = expandRoutes(routes);\n
 // Map all results from outlets we aren't activating
 to `null` so they can be ignored later\n
 return routeOutlet === outlet ? expanded :\n
 expanded.pipe(map(() => null), catchError(() => of(null)));\n
 });\n
 return from(expansions)\n
 .pipe(\n
 combineAll(),\n
 first(),\n
 // Return only the expansion for the route outlet we are trying to activate.\n
 map(results => results.find(result => result !== null)!),\n
);\n
 }\n
 private
 noLeftoversInUrl(segmentGroup: UrlSegmentGroup, segments: UrlSegment[], outlet: string):\n
 boolean {\n
 return segments.length === 0 && !segmentGroup.children[outlet];\n
 }\n
 private expandSegmentAgainstRoute(\n
 ngModule: NgModuleRef<any>, segmentGroup: UrlSegmentGroup, routes: Route[], route: Route,\n
 paths:
 UrlSegment[], outlet: string, allowRedirects: boolean): Observable<UrlSegmentGroup> {
 // Empty string
 segments are special because multiple outlets can match a single path, i.e.\n
 // `[{path: "", component: B}], {path: "",
 loadChildren: () => {}, outlet: "about"}`\n
 if (getOutlet(route) !== outlet && route.path !== "") {\n
 return
 noMatch(segmentGroup);\n
 }\n
 if (route.redirectTo === undefined) {\n
 return
 this.matchSegmentAgainstRoute(ngModule, segmentGroup, route, paths);\n
 }\n
 if (allowRedirects &&
 this.allowRedirects) {\n
 return this.expandSegmentAgainstRouteUsingRedirect(\n
 ngModule,
 segmentGroup, routes, route, paths, outlet);\n
 }\n
 return noMatch(segmentGroup);\n
 }\n
 private
 expandSegmentAgainstRouteUsingRedirect(\n
 ngModule: NgModuleRef<any>, segmentGroup:
 UrlSegmentGroup, routes: Route[], route: Route,\n
 segments: UrlSegment[], outlet: string):
 Observable<UrlSegmentGroup> {
 if (route.path === '**') {\n
 return
 this.expandWildcardWithParamsAgainstRouteUsingRedirect(\n
 ngModule, routes, route, outlet);\n
 }\n
 return this.expandRegularSegmentAgainstRouteUsingRedirect(\n
 ngModule, segmentGroup, routes, route,
 segments, outlet);\n
 }\n
 private expandWildcardWithParamsAgainstRouteUsingRedirect(\n
 ngModule:
 NgModuleRef<any>, routes: Route[], route: Route,\n
 outlet: string): Observable<UrlSegmentGroup> {
 const
 newTree = this.applyRedirectCommands([], route.redirectTo!, {});\n
 if (route.redirectTo!.startsWith('/')) {\n
 return
 absoluteRedirect(newTree);\n
 }\n
 return this.linalizeSegments(route,
 newTree).pipe(mergeMap((newSegments: UrlSegment[]) => {\n
 const group = new
 UrlSegmentGroup(newSegments, {});\n
 return this.expandSegment(ngModule, group, routes, newSegments,

```



```

res.concat(c.segments);\n if (c.numberOfChildren === 0) {\n return of(res);\n }\n\n if (c.numberOfChildren > 1 || !c.children[PRIMARY_OUTLET]) {\n return\n namedOutletsRedirect(route.redirectTo!);\n }\n\n c = c.children[PRIMARY_OUTLET];\n\n }\n\n private\n applyRedirectCommands(\n segments: UrlSegment[], redirectTo: string, posParams: {[k: string]: UrlSegment}):
 UrlTree {\n return this.applyRedirectCreateUrlTree(\n redirectTo, this.urlSerializer.parse(redirectTo),\n segments, posParams);\n }\n\n private applyRedirectCreateUrlTree(\n redirectTo: string, urlTree: UrlTree,\n segments: UrlSegment[],\n posParams: {[k: string]: UrlSegment}): UrlTree {\n const newRoot =\n this.createSegmentGroup(redirectTo, urlTree.root, segments, posParams);\n return new UrlTree(\n newRoot,\n this.createQueryParams(urlTree.queryParams, this.urlTree.queryParams),\n urlTree.fragment);\n }\n\n private\n createQueryParams(redirectToParams: Params, actualParams: Params): Params {\n const res: Params = {};\n forEach(redirectToParams, (v: any, k: string) => {\n const copySourceValue = typeof v === 'string' &&\n v.startsWith(':');\n if (copySourceValue) {\n const sourceName = v.substring(1);\n res[k] =\n actualParams[sourceName];\n } else {\n res[k] = v;\n }\n });\n return res;\n }\n\n private\n createSegmentGroup(\n redirectTo: string, group: UrlSegmentGroup, segments: UrlSegment[],\n posParams: {[k: string]: UrlSegment}): UrlSegmentGroup {\n const updatedSegments = this.createSegments(redirectTo,\n group.segments, segments, posParams);\n\n let children: {[n: string]: UrlSegmentGroup} = {};\n forEach(group.children, (child: UrlSegmentGroup, name: string) => {\n children[name] =\n this.createSegmentGroup(redirectTo, child, segments, posParams);\n });\n\n return new\n UrlSegmentGroup(updatedSegments, children);\n }\n\n private createSegments(\n redirectTo: string,\n redirectToSegments: UrlSegment[], actualSegments: UrlSegment[],\n posParams: {[k: string]: UrlSegment}):
 UrlSegment[] {\n return redirectToSegments.map(\n s => s.path.startsWith(':') ?\n this.findPosParam(redirectTo, s, posParams) :\n this.findOrReturn(s, actualSegments));\n }\n\n private findPosParam(\n redirectTo: string, redirectToUrlSegment: UrlSegment,\n posParams: {[k:
string]: UrlSegment}): UrlSegment {\n const pos = posParams[redirectToUrlSegment.path.substring(1)];\n if (!pos)\n throw new Error(\n `Cannot redirect to '${redirectTo}'. Cannot find\n '${redirectToUrlSegment.path}'.`);\n return pos;\n }\n\n private findOrReturn(redirectToUrlSegment:
 UrlSegment, actualSegments: UrlSegment[]): UrlSegment {\n let idx = 0;\n for (const s of actualSegments) {\n if (s.path === redirectToUrlSegment.path) {\n actualSegments.splice(idx);\n return s;\n }\n idx++;\n }\n return redirectToUrlSegment;\n }\n\n function match(segmentGroup: UrlSegmentGroup, route: Route,\n segments: UrlSegment[]): {\n matched: boolean,\n consumedSegments: UrlSegment[],\n lastChild: number,\n positionalParamSegments: {[k: string]: UrlSegment}\n } {\n if (route.path === '') {\n if ((route.pathMatch ===\n 'full') && (segmentGroup.hasChildren() || segments.length > 0)) {\n return {\n matched: false,\n consumedSegments:
 [],\n lastChild: 0,\n positionalParamSegments: {};\n };\n }\n return {\n matched: true,\n consumedSegments: [],\n lastChild:
 0,\n positionalParamSegments: {};\n };\n }\n\n const matcher = route.matcher || defaultUrlMatcher;\n const res =\n matcher(segments, segmentGroup, route);\n\n if (!res) {\n return {\n matched: false,\n consumedSegments:
 <any[]>[],\n lastChild: 0,\n positionalParamSegments: {},\n };\n }\n\n return {\n matched: true,\n consumedSegments:
 res.consumed!,\n lastChild: res.consumed.length!,\n positionalParamSegments:
 res.posParams!,\n };\n }\n\n function split(\n segmentGroup: UrlSegmentGroup, consumedSegments:
 UrlSegment[], slicedSegments: UrlSegment[],\n config: Route[]) {\n if (slicedSegments.length > 0 &&\n containsEmptyPathRedirectsWithNameOutlets(segmentGroup, slicedSegments, config)) {\n const s = new\n UrlSegmentGroup(\n consumedSegments,\n createChildrenForEmptySegments(\n config, new\n UrlSegmentGroup(slicedSegments, segmentGroup.children));\n return {\n segmentGroup: mergeTrivialChildren(s),\n slicedSegments: [];\n };\n }\n\n if (slicedSegments.length === 0 &&\n containsEmptyPathRedirects(segmentGroup, slicedSegments, config)) {\n const s = new UrlSegmentGroup(\n segmentGroup.segments,\n addEmptySegmentsToChildrenIfNeeded(\n segmentGroup, slicedSegments,\n config, segmentGroup.children));\n return {\n segmentGroup: mergeTrivialChildren(s),\n slicedSegments: [];\n };\n }\n\n return {\n segmentGroup: mergeTrivialChildren(s: UrlSegmentGroup):
 UrlSegmentGroup {\n if (s.numberOfChildren === 1 && s.children[PRIMARY_OUTLET]) {\n const c =

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s.children[PRIMARY_OUTLET];\n return new UrlSegmentGroup(s.segments.concat(c.segments), c.children);\n
}\n\n return s;\n}\n\nfunction addEmptySegmentsToChildrenIfNeeded(\n segmentGroup: UrlSegmentGroup,\n slicedSegments: UrlSegment[], routes: Route[],\n children: {[name: string]: UrlSegmentGroup}): {[name: string]:\n UrlSegmentGroup} {\n const res: {[name: string]: UrlSegmentGroup} = {};\n for (const r of routes) {\n if\n (isEmptyPathRedirect(segmentGroup, slicedSegments, r) && !children[getOutlet(r)]) {\n res[getOutlet(r)] = new\n UrlSegmentGroup([], {});\n }\n }\n return {...children, ...res};\n}\n\nfunction\n createChildrenForEmptySegments(\n routes: Route[], primarySegmentGroup: UrlSegmentGroup): {[name:\n string]: UrlSegmentGroup} {\n const res: {[name: string]: UrlSegmentGroup} = {};\n res[PRIMARY_OUTLET] =\n primarySegmentGroup;\n for (const r of routes) {\n if (r.path === " && getOutlet(r) !== PRIMARY_OUTLET)\n {\n res[getOutlet(r)] = new UrlSegmentGroup([], {});\n }\n }\n return res;\n}\n\nfunction\n containsEmptyPathRedirectsWithNamedOutlets(\n segmentGroup: UrlSegmentGroup, segments: UrlSegment[],\n routes: Route[]): boolean {\n return routes.some(\n r => isEmptyPathRedirect(segmentGroup, segments, r) &&\n getOutlet(r) !== PRIMARY_OUTLET);\n}\n\nfunction containsEmptyPathRedirects(\n segmentGroup:\n UrlSegmentGroup, segments: UrlSegment[], routes: Route[]): boolean {\n return routes.some(r =>\n isEmptyPathRedirect(segmentGroup, segments, r));\n}\n\nfunction isEmptyPathRedirect(\n segmentGroup:\n UrlSegmentGroup, segments: UrlSegment[], r: Route): boolean {\n if ((segmentGroup.hasChildren() ||\n segments.length > 0) && r.pathMatch === 'full') {\n return false;\n }\n return r.path === " && r.redirectTo !==\n undefined;\n}\n\n"/**\n * @license\n * Copyright Google LLC All Rights Reserved.\n * Use of this source code\n is governed by an MIT-style license that can be\n * found in the LICENSE file at https://angular.io/license\n */\n\nimport {Injector} from '@angular/core';\nimport {MonoTypeOperatorFunction, Observable} from\n 'rxjs';\nimport {map, switchMap} from 'rxjs/operators';\n\nimport {applyRedirects as applyRedirectsFn} from\n './apply_redirects';\nimport {Routes} from './config';\nimport {NavigationTransition} from './router';\nimport\n {RouterConfigLoader} from './router_config_loader';\nimport {UrlSerializer} from './url_tree';\n\nexport function\n applyRedirects(\n moduleInjector: Injector, configLoader: RouterConfigLoader, urlSerializer: UrlSerializer,\n config: Routes): MonoTypeOperatorFunction<NavigationTransition> {\n return function(source:\n Observable<NavigationTransition>) {\n return source.pipe(switchMap(\n t =>\n applyRedirectsFn(moduleInjector, configLoader, urlSerializer, t.extractedUrl, config)\n).pipe(map(urlAfterRedirects => ({...t, urlAfterRedirects})))));\n };\n}\n\n"/**\n * @license\n * Copyright Google\n LLC All Rights Reserved.\n * Use of this source code is governed by an MIT-style license that can be\n * found\n in the LICENSE file at https://angular.io/license\n */\n\nimport {Injector} from '@angular/core';\nimport\n {LoadedRouterConfig, RunGuardsAndResolvers} from './config';\nimport {ChildrenOutletContexts,\n OutletContext} from './router_outlet_context';\nimport {ActivatedRouteSnapshot, equalParamsAndUrlSegments,\n RouterStateSnapshot} from './router_state';\nimport {equalPath} from './url_tree';\nimport {forEach, shallowEqual}\n from './utils/collection';\nimport {nodeChildrenAsMap, TreeNode} from './utils/tree';\n\nexport class CanActivate\n {\n readonly route: ActivatedRouteSnapshot;\n constructor(public path: ActivatedRouteSnapshot[]) {\n this.route\n = this.path[this.path.length - 1];\n }\n}\n\nexport class CanDeactivate {\n constructor(public component:\n Object|null, public route: ActivatedRouteSnapshot) {}\n}\n\nexport declare type Checks = {\n canDeactivateChecks: CanDeactivate[],\n canActivateChecks: CanActivate[],\n};\n\nexport function\n getAllRouteGuards(\n future: RouterStateSnapshot, curr: RouterStateSnapshot,\n parentContexts:\n ChildrenOutletContexts) {\n const futureRoot = future._root;\n const currRoot = curr ? curr._root : null;\n return\n getChildRouteGuards(futureRoot, currRoot, parentContexts, [futureRoot.value]);\n}\n\nexport function\n getCanActivateChild(p: ActivatedRouteSnapshot):\n {node: ActivatedRouteSnapshot, guards: any[]}|null {\n const canActivateChild = p.routeConfig ? p.routeConfig.canActivateChild : null;\n if (!canActivateChild ||\n canActivateChild.length === 0) return null;\n return {node: p, guards: canActivateChild};\n}\n\nexport function\n getToken(\n token: any, snapshot: ActivatedRouteSnapshot, moduleInjector: Injector): any {\n const config =\n getClosestLoadedConfig(snapshot);\n const injector = config ? config.module.injector : moduleInjector;\n return\n injector.get(token);\n}\n\nfunction getClosestLoadedConfig(snapshot: ActivatedRouteSnapshot):\n LoadedRouterConfig|null {\n if (!snapshot) return null;\n for (let s = snapshot.parent; s; s = s.parent) {\n const

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route = s.routeConfig;\n if (route && route._loadedConfig) return route._loadedConfig;\n }\n\n return
null;\n}\n\nfunction getChildRouteGuards(\n futureNode: TreeNode<ActivatedRouteSnapshot>, currNode:
TreeNode<ActivatedRouteSnapshot>|null,\n contexts: ChildrenOutletContexts|null, futurePath:
ActivatedRouteSnapshot[], checks: Checks = {\n canDeactivateChecks: [],\n canActivateChecks: []\n }):
Checks {\n const prevChildren = nodeChildrenAsMap(currNode);\n // Process the children of the future route\n
futureNode.children.forEach(c => {\n getRouteGuards(c, prevChildren[c.value.outlet], contexts,
futurePath.concat([c.value]), checks);\n delete prevChildren[c.value.outlet];\n });\n // Process any children left
from the current route (not active for the future route)\n forEach(\n prevChildren,\n (v:
TreeNode<ActivatedRouteSnapshot>, k: string) =>\n deactivateRouteAndItsChildren(v,
contexts!.getContext(k), checks);\n }\n return checks;\n}\n\nfunction getRouteGuards(\n futureNode:
TreeNode<ActivatedRouteSnapshot>, currNode: TreeNode<ActivatedRouteSnapshot>,\n parentContexts:
ChildrenOutletContexts|null, futurePath: ActivatedRouteSnapshot[],\n checks: Checks = {\n
canDeactivateChecks: [],\n canActivateChecks: []\n }): Checks {\n const future = futureNode.value;\n const
curr = currNode ? currNode.value : null;\n const context = parentContexts ?
parentContexts.getContext(futureNode.value.outlet) : null;\n // reusing the node\n if (curr && future.routeConfig
=== curr.routeConfig) {\n const shouldRun =\n shouldRunGuardsAndResolvers(curr, future,
future.routeConfig!.runGuardsAndResolvers);\n if (shouldRun) {\n checks.canActivateChecks.push(new
CanActivate(futurePath));\n } else {\n // we need to set the data\n future.data = curr.data;\n
future._resolvedData = curr._resolvedData;\n }\n // If we have a component, we need to go through an
outlet.\n if (future.component) {\n getChildRouteGuards(\n futureNode, currNode, context ?
context.children : null, futurePath, checks);\n // if we have a componentless route, we recurse but keep the same
outlet map.\n } else {\n getChildRouteGuards(futureNode, currNode, parentContexts, futurePath, checks);\n
}\n if (shouldRun && context && context.outlet && context.outlet.isActivated) {\n
checks.canDeactivateChecks.push(new CanDeactivate(context.outlet.component, curr));\n }\n } else {\n if
(curr) {\n deactivateRouteAndItsChildren(currNode, context, checks);\n }\n checks.canActivateChecks.push(new CanActivate(futurePath));\n // If we have a component, we need to go
through an outlet.\n if (future.component) {\n getChildRouteGuards(futureNode, null, context ?
context.children : null, futurePath, checks);\n // if we have a componentless route, we recurse but keep the same
outlet map.\n } else {\n getChildRouteGuards(futureNode, null, parentContexts, futurePath, checks);\n
}\n }\n return checks;\n}\n\nfunction shouldRunGuardsAndResolvers(\n curr: ActivatedRouteSnapshot, future:
ActivatedRouteSnapshot,\n mode: RunGuardsAndResolvers|undefined): boolean {\n if (typeof mode ===
'function') {\n return mode(curr, future);\n }\n switch (mode) {\n case 'pathParamsChange':\n return
!equalPath(curr.url, future.url);\n case 'pathParamsOrQueryParamsChange':\n return !equalPath(curr.url,
future.url) ||\n !shallowEqual(curr.queryParams, future.queryParams);\n case 'always':\n return true;\n case 'paramsOrQueryParamsChange':\n return !equalParamsAndUrlSegments(curr, future) ||\n !shallowEqual(curr.queryParams, future.queryParams);\n case 'paramsChange':\n default:\n return
!equalParamsAndUrlSegments(curr, future);\n }\n}\n\nfunction deactivateRouteAndItsChildren(\n route:
TreeNode<ActivatedRouteSnapshot>, context: OutletContext|null, checks: Checks): void {\n const children =
nodeChildrenAsMap(route);\n const r = route.value;\n forEach(children, (node:
TreeNode<ActivatedRouteSnapshot>, childName: string) => {\n if (!r.component) {\n
deactivateRouteAndItsChildren(node, context, checks);\n } else if (context) {\n
deactivateRouteAndItsChildren(node, context.children.getContext(childName), checks);\n } else {\n
deactivateRouteAndItsChildren(node, null, checks);\n }\n });\n if (!r.component) {\n
checks.canDeactivateChecks.push(new CanDeactivate(null, r));\n } else if (context && context.outlet &&
context.outlet.isActivated) {\n checks.canDeactivateChecks.push(new CanDeactivate(context.outlet.component,
r));\n } else {\n checks.canDeactivateChecks.push(new CanDeactivate(null, r));\n }\n}\n\n"/**\n * @license\n *
Copyright Google LLC All Rights Reserved.\n * Use of this source code is governed by an MIT-style license
that can be\n * found in the LICENSE file at https://angular.io/license\n */\n\nimport {Injector} from

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'@angular/core';\nimport { defer, from, MonoTypeOperatorFunction, Observable, of } from 'rxjs';\nimport
{ concatAll, concatMap, first, map, mergeMap } from 'rxjs/operators';\nimport { ActivationStart,
ChildActivationStart, Event } from './events';\nimport { CanActivateChildFn, CanActivateFn, CanDeactivateFn }
from './interfaces';\nimport { NavigationTransition } from './router';\nimport { ActivatedRouteSnapshot,
RouterStateSnapshot } from './router_state';\nimport { UrlTree } from './url_tree';\nimport { wrapIntoObservable }
from './utils/collection';\nimport { CanActivate, CanDeactivate, getCanActivateChild, getToken } from
'./utils/preactivation';\nimport { isBoolean, isCanActivate, isCanActivateChild, isCanDeactivate, isFunction } from
'./utils/type_guards';\nimport { prioritizedGuardValue } from './prioritized_guard_value';\n\nexport function
checkGuards(moduleInjector: Injector, forwardEvent?: (evt: Event) => void):\nMonoTypeOperatorFunction<NavigationTransition> {\n return function(source:
Observable<NavigationTransition>) {\n return source.pipe(mergeMap(t => {\n const { targetSnapshot,
currentSnapshot, guards: { canActivateChecks, canDeactivateChecks } } = t;\n if (canDeactivateChecks.length
=== 0 && canActivateChecks.length === 0) {\n return of({ ...t, guardsResult: true });\n }\n return
runCanDeactivateChecks(\n canDeactivateChecks, targetSnapshot!, currentSnapshot, moduleInjector)\n).pipe(\n mergeMap(canDeactivate => {\n return canDeactivate && isBoolean(canDeactivate)
?\n runCanActivateChecks(\n targetSnapshot!, canActivateChecks, moduleInjector,
forwardEvent) :\n of(canDeactivate);\n }),\n map(guardsResult => ({ ...t,
guardsResult }));\n });\n });\n }\n}\n\nfunction runCanDeactivateChecks(\n checks: CanDeactivate[], futureRSS:
RouterStateSnapshot, currRSS: RouterStateSnapshot,\n moduleInjector: Injector) {\n return from(checks).pipe(\n mergeMap(\n check =>\n runCanDeactivate(check.component, check.route, currRSS, futureRSS,
moduleInjector)),\n first(result => {\n return result !== true;\n }, true as boolean |
UrlTree));\n}\n\nfunction runCanActivateChecks(\n futureSnapshot: RouterStateSnapshot, checks: CanActivate[],
moduleInjector: Injector,\n forwardEvent?: (evt: Event) => void) {\n return from(checks).pipe(\n concatMap((check: CanActivate) => {\n return from([\n fireChildActivationStart(check.route.parent,
forwardEvent),\n fireActivationStart(check.route, forwardEvent),\n runCanActivateChild(futureSnapshot, check.path, moduleInjector),\n runCanActivate(futureSnapshot,
check.route, moduleInjector)\n])\n .pipe(concatAll(), first(result => {\n return result !==
true;\n }, true as boolean | UrlTree));\n }),\n first(result => {\n return result !== true;\n },
true as boolean | UrlTree));\n}\n\n/**\n * This should fire off `ActivationStart` events for each route being activated
at this\n * level.\n * In other words, if you're activating `a` and `b` below, `path` will contain the\n *
`ActivatedRouteSnapshot`s for both and we will fire `ActivationStart` for both. Always\n * return\n * `true` so
checks continue to run.\n */\nfunction fireActivationStart(\n snapshot: ActivatedRouteSnapshot|null,\n forwardEvent?: (evt: Event) => void): Observable<boolean> {\n if (snapshot !== null && forwardEvent) {\n forwardEvent(new ActivationStart(snapshot));\n }\n return of(true);\n}\n\n/**\n * This should fire off
`ChildActivationStart` events for each route being activated at this\n * level.\n * In other words, if you're activating
`a` and `b` below, `path` will contain the\n * `ActivatedRouteSnapshot`s for both and we will fire
`ChildActivationStart` for both. Always\n * return\n * `true` so checks continue to run.\n */\nfunction
fireChildActivationStart(\n snapshot: ActivatedRouteSnapshot|null,\n forwardEvent?: (evt: Event) => void):
Observable<boolean> {\n if (snapshot !== null && forwardEvent) {\n forwardEvent(new
ChildActivationStart(snapshot));\n }\n return of(true);\n}\n\nfunction runCanActivate(\n futureRSS:
RouterStateSnapshot, futureARS: ActivatedRouteSnapshot,\n moduleInjector: Injector):
Observable<boolean|UrlTree> {\n const canActivate = futureARS.routeConfig ?
futureARS.routeConfig.canActivate : null;\n if (!canActivate || canActivate.length === 0) return of(true);\n const
canActivateObservables = canActivate.map((c: any) => {\n return defer(() => {\n const guard = getToken(c,
futureARS, moduleInjector);\n let observable;\n if (isCanActivate(guard)) {\n observable =
wrapIntoObservable(guard.canActivate(futureARS, futureRSS));\n } else if (isFunction<CanActivateFn>(guard))
{\n observable = wrapIntoObservable(guard(futureARS, futureRSS));\n } else {\n throw new
Error('Invalid CanActivate guard');\n }\n return observable.pipe(first());\n });\n });\n return

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of(canActivateObservables).pipe(prioritizedGuardValue());\n}\n\nfunction runCanActivateChild(\n futureRSS:
RouterStateSnapshot, path: ActivatedRouteSnapshot[],\n moduleInjector: Injector): Observable<boolean|UrlTree>
{\n const futureARS = path[path.length - 1];\n const canActivateChildGuards = path.slice(0, path.length - 1)\n .reverse()\n .map(p => getCanActivateChild(p))\n .filter(_ => _ !== null);\n const canActivateChildGuardsMapped = canActivateChildGuards.map((d: any) => {\n
return defer(() => {\n const guardsMapped = d.guards.map((c: any) => {\n const guard = getToken(c,
d.node, moduleInjector);\n let observable;\n if (isCanActivateChild(guard)) {\n observable =
wrapIntoObservable(guard.canActivateChild(futureARS, futureRSS));\n } else if
(isFunction<CanActivateChildFn>(guard)) {\n observable = wrapIntoObservable(guard(futureARS,
futureRSS));\n } else {\n throw new Error('Invalid CanActivateChild guard');\n }\n return
observable.pipe(first());\n });\n return of(guardsMapped).pipe(prioritizedGuardValue());\n });\n });\n return
of(canActivateChildGuardsMapped).pipe(prioritizedGuardValue());\n}\n\nfunction runCanDeactivate(\n
component: Object|null, currARS: ActivatedRouteSnapshot, currRSS: RouterStateSnapshot,\n futureRSS:
RouterStateSnapshot, moduleInjector: Injector): Observable<boolean|UrlTree> {\n const canDeactivate = currARS
&& currARS.routeConfig ? currARS.routeConfig.canDeactivate : null;\n if (!canDeactivate || canDeactivate.length
=== 0) return of(true);\n const canDeactivateObservables = canDeactivate.map((c: any) => {\n const guard =
getToken(c, currARS, moduleInjector);\n let observable;\n if (isCanDeactivate(guard)) {\n observable =
wrapIntoObservable(guard.canDeactivate(component!, currARS, currRSS, futureRSS));\n } else if
(isFunction<CanDeactivateFn<any>>(guard)) {\n observable = wrapIntoObservable(guard(component, currARS,
currRSS, futureRSS));\n } else {\n throw new Error('Invalid CanDeactivate guard');\n }\n return
observable.pipe(first());\n });\n return of(canDeactivateObservables).pipe(prioritizedGuardValue());\n}\n\n"/**\n *
@license\n * Copyright Google LLC All Rights Reserved.\n * Use of this source code is governed by an MIT-
style license that can be\n * found in the LICENSE file at https://angular.io/license\n */\n\nimport {Type} from
'@angular/core';\nimport {Observable, Observer, of} from 'rxjs';\nimport {Data, ResolveData, Route, Routes}
from './config';\nimport {ActivatedRouteSnapshot, inheritedParamsDataResolve, ParamsInheritanceStrategy,
RouterStateSnapshot} from './router_state';\nimport {defaultUrlMatcher, PRIMARY_OUTLET} from
'./shared';\nimport {mapChildrenIntoArray, UrlSegment, UrlSegmentGroup, UrlTree} from './url_tree';\nimport
{forEach, last} from './utils/collection';\nimport {TreeNode} from './utils/tree';\n\nclass NoMatch {\n}\n\nexport
function recognize(\n rootComponentType: Type<any>|null, config: Routes, urlTree: UrlTree, url: string,\n paramsInheritanceStrategy: ParamsInheritanceStrategy = 'emptyOnly',\n relativeLinkResolution:
'legacy'|'corrected' = 'legacy'): Observable<RouterStateSnapshot> {\n return new Recognizer(\n
rootComponentType, config, urlTree, url, paramsInheritanceStrategy,\n relativeLinkResolution)\n .recognize();\n}\n\nclass Recognizer {\n constructor(\n private rootComponentType: Type<any>|null, private
config: Routes, private urlTree: UrlTree,\n private url: string, private paramsInheritanceStrategy:
ParamsInheritanceStrategy,\n private relativeLinkResolution: 'legacy'|'corrected') {\n }\n recognize():
Observable<RouterStateSnapshot> {\n try {\n const rootSegmentGroup =\n split(this.urlTree.root, [], [],
this.config, this.relativeLinkResolution).segmentGroup;\n const children =
this.processSegmentGroup(this.config, rootSegmentGroup, PRIMARY_OUTLET);\n const root = new
ActivatedRouteSnapshot(\n [], Object.freeze({}), Object.freeze({...this.urlTree.queryParams}),\n
this.urlTree.fragment!, {}, PRIMARY_OUTLET, this.rootComponentType, null,\n this.urlTree.root, -1,
{});\n const rootNode = new TreeNode<ActivatedRouteSnapshot>(root, children);\n const routeState = new
RouterStateSnapshot(this.url, rootNode);\n this.inheritParamsAndData(routeState._root);\n return
of(routeState);\n } catch (e) {\n return new Observable<RouterStateSnapshot>(\n (obs:
Observer<RouterStateSnapshot>) => obs.error(e));\n })\n }\n inheritParamsAndData(routeNode:
TreeNode<ActivatedRouteSnapshot>): void {\n const route = routeNode.value;\n const i =
inheritedParamsDataResolve(route, this.paramsInheritanceStrategy);\n route.params = Object.freeze(i.params);\n
route.data = Object.freeze(i.data);\n routeNode.children.forEach(n => this.inheritParamsAndData(n));\n }\n processSegmentGroup(config: Route[], segmentGroup: UrlSegmentGroup, outlet: string):\n

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TreeNode<ActivatedRouteSnapshot>[] {\n if (segmentGroup.segments.length === 0 &&
segmentGroup.hasChildren()) {\n return this.processChildren(config, segmentGroup);\n }\n\n return
this.processSegment(config, segmentGroup, segmentGroup.segments, outlet);\n }\n\n processChildren(config:
Route[], segmentGroup: UrlSegmentGroup):\n TreeNode<ActivatedRouteSnapshot>[] {\n const children =
mapChildrenIntoArray(\n segmentGroup, (child, childOutlet) => this.processSegmentGroup(config, child,
childOutlet));\n checkOutletNameUniqueness(children);\n sortActivatedRouteSnapshots(children);\n return
children;\n }\n\n processSegment(\n config: Route[], segmentGroup: UrlSegmentGroup, segments:
UrlSegment[],\n outlet: string): TreeNode<ActivatedRouteSnapshot>[] {\n for (const r of config) {\n try {\n
return this.processSegmentAgainstRoute(r, segmentGroup, segments, outlet);\n } catch (e) {\n if (!(e
instanceof NoMatch)) throw e;\n }\n }\n if (this.noLeftoversInUrl(segmentGroup, segments, outlet)) {\n
return [];\n }\n\n throw new NoMatch();\n }\n\n private noLeftoversInUrl(segmentGroup: UrlSegmentGroup,
segments: UrlSegment[], outlet: string):\n boolean {\n return segments.length === 0 &&
!segmentGroup.children[outlet];\n }\n\n processSegmentAgainstRoute(\n route: Route, rawSegment:
UrlSegmentGroup, segments: UrlSegment[],\n outlet: string): TreeNode<ActivatedRouteSnapshot>[] {\n if
(route.redirectTo) throw new NoMatch();\n\n if ((route.outlet || PRIMARY_OUTLET) !== outlet) throw new
NoMatch();\n\n let snapshot: ActivatedRouteSnapshot;\n let consumedSegments: UrlSegment[] = [];\n let
rawSlicedSegments: UrlSegment[] = [];\n\n if (route.path === '**') {\n const params = segments.length > 0 ?
last(segments)!.parameters : {};\n snapshot = new ActivatedRouteSnapshot(\n segments, params,
Object.freeze({...this.urlTree.queryParams}), this.urlTree.fragment!,\n getData(route), outlet,
route.component!, route, getSourceSegmentGroup(rawSegment),\n getPathIndexShift(rawSegment) +
segments.length, getResolve(route));\n } else {\n const result: MatchResult = match(rawSegment, route,
segments);\n consumedSegments = result.consumedSegments;\n rawSlicedSegments =
segments.slice(result.lastChild);\n\n snapshot = new ActivatedRouteSnapshot(\n consumedSegments,
result.parameters, Object.freeze({...this.urlTree.queryParams}),\n this.urlTree.fragment!, getData(route),
outlet, route.component!, route,\n getSourceSegmentGroup(rawSegment),\n
getPathIndexShift(rawSegment) + consumedSegments.length, getResolve(route));\n }\n\n const childConfig:
Route[] = getChildConfig(route);\n\n const {segmentGroup, slicedSegments} = split(\n rawSegment,
consumedSegments, rawSlicedSegments, childConfig, this.relativeLinkResolution);\n\n if (slicedSegments.length
=== 0 && segmentGroup.hasChildren()) {\n const children = this.processChildren(childConfig,
segmentGroup);\n return [new TreeNode<ActivatedRouteSnapshot>(snapshot, children)];\n }\n\n if
(childConfig.length === 0 && slicedSegments.length === 0) {\n return [new
TreeNode<ActivatedRouteSnapshot>(snapshot, []);\n }\n\n const children = this.processSegment(childConfig,
segmentGroup, slicedSegments, PRIMARY_OUTLET);\n return [new
TreeNode<ActivatedRouteSnapshot>(snapshot, children)];\n }\n\n function sortActivatedRouteSnapshots(nodes:
TreeNode<ActivatedRouteSnapshot>[]): void {\n nodes.sort((a, b) => {\n if (a.value.outlet ===
PRIMARY_OUTLET) return -1;\n if (b.value.outlet === PRIMARY_OUTLET) return 1;\n return
a.value.outlet.localeCompare(b.value.outlet);\n });\n }\n\n function getChildConfig(route: Route): Route[] {\n if
(route.children) {\n return route.children;\n }\n\n if (route.loadChildren) {\n return
route._loadedConfig!.routes;\n }\n\n return [];\n }\n\n interface MatchResult {\n consumedSegments:
UrlSegment[];\n lastChild: number;\n parameters: any;\n }\n\n function match(segmentGroup: UrlSegmentGroup,
route: Route, segments: UrlSegment[]): MatchResult {\n if (route.path === '') {\n if (route.pathMatch === 'full'
&& (segmentGroup.hasChildren() || segments.length > 0)) {\n throw new NoMatch();\n }\n\n return
{consumedSegments: [], lastChild: 0, parameters: {}};\n }\n\n const matcher = route.matcher ||
defaultUrlMatcher;\n const res = matcher(segments, segmentGroup, route);\n if (!res) throw new NoMatch();\n\n const posParams: {[n: string]: string} = {};\n forEach(res.posParams!, (v: UrlSegment, k: string) => {\n
posParams[k] = v.path;\n });\n const parameters = res.consumed.length > 0 ?\n {...posParams,
...res.consumed[res.consumed.length - 1].parameters} :\n posParams;\n\n return {consumedSegments:
res.consumed, lastChild: res.consumed.length, parameters};\n }\n\n function checkOutletNameUniqueness(nodes:

```

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TreeNode<ActivatedRouteSnapshot>[]): void {\n const names: {[k: string]: ActivatedRouteSnapshot} = {};\n nodes.forEach(n => {\n const routeWithSameOutletName = names[n.value.outlet];\n if\n (routeWithSameOutletName) {\n const p = routeWithSameOutletName.url.map(s => s.toString()).join('/');\n const c = n.value.url.map(s => s.toString()).join('/');\n throw new Error(`Two segments cannot have the same\n outlet name: '${p}' and '${c}'.`);\n }\n names[n.value.outlet] = n.value;\n });\n \n function\n getSourceSegmentGroup(segmentGroup: UrlSegmentGroup): UrlSegmentGroup {\n let s = segmentGroup;\n while (s._sourceSegment) {\n s = s._sourceSegment;\n }\n return s;\n }\n \n function\n getPathIndexShift(segmentGroup: UrlSegmentGroup): number {\n let s = segmentGroup;\n let res =\n (s._segmentIndexShift ? s._segmentIndexShift : 0);\n while (s._sourceSegment) {\n s = s._sourceSegment;\n res\n += (s._segmentIndexShift ? s._segmentIndexShift : 0);\n }\n return res - 1;\n }\n \n function split(\n segmentGroup:\n UrlSegmentGroup, consumedSegments: UrlSegment[], slicedSegments: UrlSegment[],\n config: Route[],\n relativeLinkResolution: 'legacy'|'corrected') {\n if (slicedSegments.length > 0 &&\n containsEmptyPathMatchesWithNamedOutlets(segmentGroup, slicedSegments, config)) {\n const s = new\n UrlSegmentGroup(\n consumedSegments,\n createChildrenForEmptyPaths(\n segmentGroup,\n consumedSegments, config,\n new UrlSegmentGroup(slicedSegments, segmentGroup.children));\n s._sourceSegment = segmentGroup;\n s._segmentIndexShift = consumedSegments.length;\n return\n {segmentGroup: s, slicedSegments: []};\n }\n \n if (slicedSegments.length === 0 &&\n containsEmptyPathMatches(segmentGroup, slicedSegments, config)) {\n const s = new UrlSegmentGroup(\n segmentGroup.segments,\n addEmptyPathsToChildrenIfNeeded(\n segmentGroup, consumedSegments,\n slicedSegments, config, segmentGroup.children,\n relativeLinkResolution));\n s._sourceSegment =\n segmentGroup;\n s._segmentIndexShift = consumedSegments.length;\n return {segmentGroup: s,\n slicedSegments};\n }\n \n const s = new UrlSegmentGroup(segmentGroup.segments, segmentGroup.children);\n s._sourceSegment = segmentGroup;\n s._segmentIndexShift = consumedSegments.length;\n return\n {segmentGroup: s, slicedSegments};\n }\n \n function addEmptyPathsToChildrenIfNeeded(\n segmentGroup:\n UrlSegmentGroup, consumedSegments: UrlSegment[], slicedSegments: UrlSegment[],\n routes: Route[], children:\n {[name: string]: UrlSegmentGroup},\n relativeLinkResolution: 'legacy'|'corrected'): {[name: string]:\n UrlSegmentGroup} {\n const res: {[name: string]: UrlSegmentGroup} = {};\n for (const r of routes) {\n if\n (emptyPathMatch(segmentGroup, slicedSegments, r) && !children[getOutlet(r)]) {\n const s = new\n UrlSegmentGroup([], {});\n s._sourceSegment = segmentGroup;\n if (relativeLinkResolution === 'legacy')\n {\n s._segmentIndexShift = segmentGroup.segments.length;\n } else {\n s._segmentIndexShift =\n consumedSegments.length;\n }\n res[getOutlet(r)] = s;\n }\n }\n return {...children, ...res};\n }\n \n function createChildrenForEmptyPaths(\n segmentGroup: UrlSegmentGroup, consumedSegments: UrlSegment[], routes:\n Route[],\n primarySegment: UrlSegmentGroup): {[name: string]: UrlSegmentGroup} {\n const res: {[name:\n string]: UrlSegmentGroup} = {};\n res[PRIMARY_OUTLET] = primarySegment;\n \n primarySegment._sourceSegment = segmentGroup;\n primarySegment._segmentIndexShift =\n consumedSegments.length;\n \n for (const r of routes) {\n if (r.path === " && getOutlet(r) !==\n PRIMARY_OUTLET) {\n const s = new UrlSegmentGroup([], {});\n s._sourceSegment = segmentGroup;\n s._segmentIndexShift = consumedSegments.length;\n res[getOutlet(r)] = s;\n }\n }\n return\n res;\n }\n \n function containsEmptyPathMatchesWithNamedOutlets(\n segmentGroup: UrlSegmentGroup,\n slicedSegments: UrlSegment[], routes: Route[]): boolean {\n return routes.some(\n r =>\n emptyPathMatch(segmentGroup, slicedSegments, r) && getOutlet(r) !== PRIMARY_OUTLET);\n }\n \n function\n containsEmptyPathMatches(\n segmentGroup: UrlSegmentGroup, slicedSegments: UrlSegment[], routes:\n Route[]): boolean {\n return routes.some(r => emptyPathMatch(segmentGroup, slicedSegments, r));\n }\n \n function\n emptyPathMatch(\n segmentGroup: UrlSegmentGroup, slicedSegments: UrlSegment[], r: Route): boolean {\n if\n ((segmentGroup.hasChildren() || slicedSegments.length > 0) && r.pathMatch === 'full')\n {\n return false;\n }\n \n return r.path === " && r.redirectTo === undefined;\n }\n \n function\n getOutlet(route: Route): string {\n return\n route.outlet || PRIMARY_OUTLET;\n }\n \n function\n getData(route: Route): Data {\n return\n route.data ||\n {};\n }\n \n function\n getResolve(route: Route): ResolveData {\n return\n route.resolve ||\n {};\n }\n }\n \n /**\n * @license\n */

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Copyright Google LLC All Rights Reserved.\n *\n * Use of this source code is governed by an MIT-style license
that can be\n * found in the LICENSE file at https://angular.io/license\n *\n\nimport {Type} from
'@angular/core';\nimport {MonoTypeOperatorFunction, Observable} from 'rxjs';\nimport {map, mergeMap} from
'rxjs/operators';\nimport {Route} from './config';\nimport {recognize as recognizeFn} from './recognize';\nimport
{NavigationTransition} from './router';\nimport {UrlTree} from './url_tree';\n\nexport function recognize(\n
rootComponentType: Type<any>|null, config: Route[], serializer: (url: UrlTree) => string,\n
paramsInheritanceStrategy: 'emptyOnly'|'always',\n relativeLinkResolution: 'legacy'|'corrected'):\n
MonoTypeOperatorFunction<NavigationTransition> {\n return function(source:\n
Observable<NavigationTransition>) {\n return source.pipe(mergeMap(\n t => recognizeFn(\n
rootComponentType, config, t.urlAfterRedirects, serializer(t.urlAfterRedirects),\n
paramsInheritanceStrategy, relativeLinkResolution)\n .pipe(map(targetSnapshot => ({...t,\n
targetSnapshot})))));\n };\n}\n\n",/**\n * @license\n * Copyright Google LLC All Rights Reserved.\n *\n * Use of
this source code is governed by an MIT-style license that can be\n * found in the LICENSE file at
https://angular.io/license\n *\n\nimport {Injector} from '@angular/core';\nimport {EMPTY, from,\n
MonoTypeOperatorFunction, Observable, of} from 'rxjs';\nimport {concatMap, map, mergeMap, takeLast, tap}
from 'rxjs/operators';\nimport {ResolveData} from './config';\nimport {NavigationTransition} from
'./router';\nimport {ActivatedRouteSnapshot, inheritedParamsDataResolve, RouterStateSnapshot} from
'./router_state';\nimport {wrapIntoObservable} from './utils/collection';\nimport {getToken} from
'./utils/preactivation';\n\nexport function resolveData(\n paramsInheritanceStrategy: 'emptyOnly'|'always',\n
moduleInjector: Injector): MonoTypeOperatorFunction<NavigationTransition> {\n return function(source:\n
Observable<NavigationTransition>) {\n return source.pipe(mergeMap(t => {\n const {targetSnapshot, guards:\n
{canActivateChecks}} = t;\n if (!canActivateChecks.length) {\n return of(t);\n }\n let
canActivateChecksResolved = 0;\n return from(canActivateChecks)\n .pipe(\n concatMap(\n
 check => runResolve(\n check.route, targetSnapshot!, paramsInheritanceStrategy,\n
moduleInjector),\n tap() => canActivateChecksResolved++),\n takeLast(1),\n
mergeMap(_ => canActivateChecksResolved === canActivateChecks.length ? of(t) : EMPTY),\n);\n }));\n
};\n}\n\nfunction runResolve(\n futureARS: ActivatedRouteSnapshot, futureRSS: RouterStateSnapshot,\n
paramsInheritanceStrategy: 'emptyOnly'|'always', moduleInjector: Injector) {\n const resolve =\n
futureARS._resolve;\n return resolveNode(resolve, futureARS, futureRSS, moduleInjector)\n
.pipe(map((resolvedData: any) => {\n futureARS._resolvedData = resolvedData;\n futureARS.data = {\n
...futureARS.data,\n ...inheritedParamsDataResolve(futureARS, paramsInheritanceStrategy).resolve\n
});\n return null;\n }));\n}\n\nfunction resolveNode(\n resolve: ResolveData, futureARS:\n
ActivatedRouteSnapshot, futureRSS: RouterStateSnapshot,\n moduleInjector: Injector): Observable<any> {\n
const keys = Object.keys(resolve);\n if (keys.length === 0) {\n return of({});\n }\n const data: {[k: string]: any}
= {};\n return from(keys).pipe(\n mergeMap(\n (key: string) => getResolver(resolve[key], futureARS,\n
futureRSS, moduleInjector)\n .pipe(tap((value: any) => {\n data[key] =\n
value;\n }))),\n takeLast(1),\n mergeMap(() => {\n // Ensure all resolvers returned
values, otherwise don't emit any \"next\" and just complete\n // the chain which will cancel navigation\n if
(Object.keys(data).length === keys.length) {\n return of(data);\n }\n return EMPTY;\n })),\n
);\n}\n\nfunction getResolver(\n injectionToken: any, futureARS: ActivatedRouteSnapshot, futureRSS:\n
RouterStateSnapshot,\n moduleInjector: Injector): Observable<any> {\n const resolver =\n
getToken(injectionToken, futureARS, moduleInjector);\n return resolver.resolve ?\n
wrapIntoObservable(resolver.resolve(futureARS, futureRSS)) :\n
wrapIntoObservable(resolver(futureARS, futureRSS));\n}\n\n",/**\n * @license\n * Copyright Google LLC All
Rights Reserved.\n *\n * Use of this source code is governed by an MIT-style license that can be\n * found in the
LICENSE file at https://angular.io/license\n *\n\nimport {from, MonoTypeOperatorFunction, ObservableInput}
from 'rxjs';\nimport {map, switchMap} from 'rxjs/operators';\n\n/**\n * Perform a side effect through a switchMap
for every emission on the source Observable,\n * but return an Observable that is identical to the source. It's

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essentially the same as the `tap` operator, but if the side effectful `next` function returns an ObservableInput, it will wait before continuing with the original value.
export function switchTap<T>(next: (x: T) => void|ObservableInput<any>): MonoTypeOperatorFunction<T> {
 return function(source) {
 return source.pipe(switchMap(v => {
 const nextResult = next(v);
 if (nextResult) {
 return from(nextResult).pipe(map(() => v));
 }
 return from([v]);
 }));
 };
}
/**
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 */
import { ComponentRef } from '@angular/core';
import { OutletContext } from './router_outlet_context';
import { ActivatedRoute, ActivatedRouteSnapshot } from './router_state';
import { TreeNode } from './utils/tree';
/**
 * @description
 * Represents the detached route tree.
 * This is an opaque value the router will give to a custom route reuse strategy to store and retrieve later on.
 * @publicApi
 */
export type DetachedRouteHandle = {};
/**
 * @internal
 */
export type DetachedRouteHandleInternal = {
 contexts: Map<string, OutletContext>,
 componentRef: ComponentRef<any>,
 route: TreeNode<ActivatedRoute>,
};
/**
 * @description
 * Provides a way to customize when activated routes get reused.
 * @publicApi
 */
export abstract class RouteReuseStrategy {
 /**
 * Determines if this route (and its subtree) should be detached to be reused later
 */
 abstract shouldDetach(route: ActivatedRouteSnapshot): boolean;
 /**
 * Stores the detached route.
 * Storing a `null` value should erase the previously stored value.
 */
 abstract store(route: ActivatedRouteSnapshot, handle: DetachedRouteHandle|null): void;
 /**
 * Determines if this route (and its subtree) should be reattached
 */
 abstract shouldAttach(route: ActivatedRouteSnapshot): boolean;
 /**
 * Retrieves the previously stored route
 */
 abstract retrieve(route: ActivatedRouteSnapshot): DetachedRouteHandle|null;
 /**
 * Determines if a route should be reused
 */
 abstract shouldReuseRoute(future: ActivatedRouteSnapshot, curr: ActivatedRouteSnapshot): boolean;
}
/**
 * @description
 * This base route reuse strategy only reuses routes when the matched router configs are identical. This prevents components from being destroyed and recreated when just the fragment or query parameters change (that is, the existing component is `_reused_`). This strategy does not store any routes for later reuse. Angular uses this strategy by default. It can be used as a base class for custom route reuse strategies, i.e. you can create your own class that extends the `BaseRouteReuseStrategy` one.
 * @publicApi
 */
export abstract class BaseRouteReuseStrategy implements RouteReuseStrategy {
 /**
 * Whether the given route should detach for later reuse.
 * Always returns false for `BaseRouteReuseStrategy`.
 */
 abstract shouldDetach(route: ActivatedRouteSnapshot): boolean {
 return false;
 }
 /**
 * A no-op; the route is never stored since this strategy never detaches routes for later re-use.
 */
 abstract store(route: ActivatedRouteSnapshot, detachedTree: DetachedRouteHandle): void {
 // Returns `false`, meaning the route (and its subtree) is never reattached
 }
 /**
 * Returns `false` because this strategy does not store routes for later re-use.
 */
 abstract shouldAttach(route: ActivatedRouteSnapshot): boolean {
 return false;
 }
 /**
 * Returns `null` because this strategy does not store routes for later re-use.
 */
 abstract retrieve(route: ActivatedRouteSnapshot): DetachedRouteHandle|null {
 return null;
 }
 /**
 * Determines if a route should be reused.
 * This strategy returns `true` when the future route config and current route config are identical.
 */
 abstract shouldReuseRoute(future: ActivatedRouteSnapshot, curr: ActivatedRouteSnapshot): boolean {
 return future.routeConfig === curr.routeConfig;
 }
}
export class DefaultRouteReuseStrategy extends BaseRouteReuseStrategy {
 /**
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 */
 import { Compiler, InjectionToken, Injector, NgModuleFactory, NgModuleFactoryLoader } from '@angular/core';
 import { from, Observable, of } from 'rxjs';
 import { map, mergeMap } from 'rxjs/operators';
 import { LoadChildren, LoadedRouterConfig, Route } from './config';
 import { flatten, wrapIntoObservable } from './utils/collection';
 import { standardizeConfig } from './utils/config';
 /**
 * The [DI token](guide/glossary/#di-token) for a router configuration.
 * @see `ROUTES`
 * @publicApi
 */
 export const ROUTES = new InjectionToken<Route[][]>('ROUTES');
 export class RouterConfigLoader {
 constructor(
 private loader: NgModuleFactoryLoader,
 private compiler: Compiler,
 private onLoadStartListener?: (r: Route) => void,
 private onLoadEndListener?: (r: Route) => void
) {}
 }
}

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load(parentInjector: Injector, route: Route): Observable<LoadedRouterConfig> {\n if (this.onLoadStartListener)
 {\n this.onLoadStartListener(route);\n }\n const moduleFactory$ =
 this.loadModuleFactory(route.loadChildren!);\n return moduleFactory$.pipe(map((factory:
 NgModuleFactory<any>) => {\n if (this.onLoadEndListener) {\n this.onLoadEndListener(route);\n }\n const module = factory.create(parentInjector);\n return new LoadedRouterConfig(\n
 flatten(module.injector.get(ROUTES)).map(standardizeConfig, module);\n));\n });\n }\n private
 loadModuleFactory(loadChildren: LoadChildren): Observable<NgModuleFactory<any>> {\n if (typeof
 loadChildren === 'string') {\n return from(this.loader.load(loadChildren));\n } else {\n return
 wrapIntoObservable(loadChildren()).pipe(mergeMap((t: any) => {\n if (t instanceof NgModuleFactory) {\n
 return of(t);\n } else {\n return from(this.compiler.compileModuleAsync(t));\n }\n }));\n }\n })\n }\n }", "/*\n * @license\n * Copyright Google LLC All Rights Reserved.\n * Use of this source code is
 governed by an MIT-style license that can be\n * found in the LICENSE file at https://angular.io/license\n
 *\n\nimport {ComponentFactoryResolver, ComponentRef} from '@angular/core';\nimport {RouterOutlet} from
 './directives/router_outlet';\nimport {ActivatedRoute} from './router_state';\n\n/**\n * Store contextual information
 about a `RouterOutlet`\n * \n * @publicApi\n */\nexport class OutletContext {\n outlet: RouterOutlet|null = null;\n
 route: ActivatedRoute|null = null;\n resolver: ComponentFactoryResolver|null = null;\n children = new
 ChildrenOutletContexts();\n attachRef: ComponentRef<any>|null = null;\n}\n\n/**\n * Store contextual
 information about the children (= nested) `RouterOutlet`\n * \n * @publicApi\n */\nexport class
 ChildrenOutletContexts {\n // contexts for child outlets, by name.\n private contexts = new Map<string,
 OutletContext>();\n /** Called when a `RouterOutlet` directive is instantiated */\n
 onChildOutletCreated(childName: string, outlet: RouterOutlet): void {\n const context =
 this.getOrCreateContext(childName);\n context.outlet = outlet;\n this.contexts.set(childName, context);\n }\n
 /**\n * Called when a `RouterOutlet` directive is destroyed.\n * We need to keep the context as the outlet could
 be destroyed inside a NgIf and might be\n * re-created later.\n */\n onChildOutletDestroyed(childName: string):
 void {\n const context = this.getContext(childName);\n if (context) {\n context.outlet = null;\n }\n }\n
 /**\n * Called when the corresponding route is deactivated during navigation.\n * Because the component get
 destroyed, all children outlet are destroyed.\n */\n onOutletDeactivated(): Map<string, OutletContext> {\n const
 contexts = this.contexts;\n this.contexts = new Map();\n return contexts;\n }\n onOutletReAttached(contexts:
 Map<string, OutletContext>) {\n this.contexts = contexts;\n }\n getOrCreateContext(childName: string):
 OutletContext {\n let context = this.getContext(childName);\n if (!context) {\n context = new
 OutletContext();\n this.contexts.set(childName, context);\n }\n return context;\n }\n
 getContext(childName: string): OutletContext|null {\n return this.contexts.get(childName) || null;\n }\n}\n
 }", "/*\n * @license\n * Copyright Google LLC All Rights Reserved.\n * Use of this source code is governed by an MIT-
 style license that can be\n * found in the LICENSE file at https://angular.io/license\n
 *\n\nimport {UrlTree} from
 './url_tree';\n\n/**\n * @description\n * Provides a way to migrate AngularJS applications to Angular.\n * \n *
 @publicApi\n */\nexport abstract class UrlHandlingStrategy {\n /**\n * Tells the router if this URL should be
 processed.\n * \n * When it returns true, the router will execute the regular navigation.\n * When it returns false,
 the router will set the router state to an empty state.\n * As a result, all the active components will be destroyed.\n
 *\n */\n abstract shouldProcessUrl(url: UrlTree): boolean;\n /**\n * Extracts the part of the URL that should be
 handled by the router.\n * The rest of the URL will remain untouched.\n */\n abstract extract(url: UrlTree):
 UrlTree;\n /**\n * Merges the URL fragment with the rest of the URL.\n */\n abstract merge(newUrlPart:
 UrlTree, rawUrl: UrlTree): UrlTree;\n}\n\n/**\n * @publicApi\n */\nexport class DefaultUrlHandlingStrategy
 implements UrlHandlingStrategy {\n shouldProcessUrl(url: UrlTree): boolean {\n return true;\n }\n extract(url:
 UrlTree): UrlTree {\n return url;\n }\n merge(newUrlPart: UrlTree, wholeUrl: UrlTree): UrlTree {\n return
 newUrlPart;\n }\n}\n }", "/*\n * @license\n * Copyright Google LLC All Rights Reserved.\n * Use of this source
 code is governed by an MIT-style license that can be\n * found in the LICENSE file at https://angular.io/license\n
 *\n\nimport {Location, PopStateEvent} from '@angular/common';\nimport {Compiler, Injectable, Injector,
 NgModuleFactoryLoader, NgModuleRef, NgZone, Type, Console as Console} from '@angular/core';\nimport

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* skipLocationChange?: boolean;
* When true, navigates while replacing the current state in
history.
* // Navigate to /view
* this.router.navigate(['/view'], { replaceUrl: true });
* replaceUrl?: boolean;
* Developer-defined state that can be passed to any navigation.
* Access
this value through the `Navigation.extras` object
* returned from the [Router.getCurrentNavigation()]
* method](api/router/Router#getcurrentnavigation) while a navigation is executing.
* After a navigation
completes, the router writes an object containing this
* value together with a `navigationId` to `history.state`.
* The value is written when `location.go()` or `location.replaceState()`
* is called before activating this route.
* Note that `history.state` does not pass an object equality test because
* the router adds the `navigationId`
on each navigation.
state?: {[k: string]: any};
* @description
* Options that modify
the `Router` navigation strategy.
* Supply an object containing any of these properties to a `Router` navigation
function to
* control how the target URL should be constructed or interpreted.
* @see [Router.navigate()
method](api/router/Router#navigate)
* @see [Router.navigateByUrl() method](api/router/Router#navigatebyurl)
* @see [Router.createUrlTree() method](api/router/Router#createurltree)
* @see [Routing and Navigation
guide](guide/router)
* @see UrlCreationOptions
* @see NavigationBehaviorOptions
* @publicApi
* export interface NavigationExtras extends UrlCreationOptions, NavigationBehaviorOptions {}
* Error
handler that is invoked when a navigation error occurs.
* If the handler returns a value, the navigation Promise
is resolved with this value.
* If the handler throws an exception, the navigation Promise is rejected with
* the
exception.
* @publicApi
* export type ErrorHandler = (error: any) => any;
function
defaultErrorHandler(error: any): any {
 throw error;
}
function defaultMalformedUriErrorHandler(
 error:
 URIError, urlSerializer: UrlSerializer, url: string): UrlTree {
 return urlSerializer.parse('/');
}
* export type
RestoredState = {
 [k: string]: any;
 navigationId: number;
};
* Information about a navigation
operation.
* Retrieve the most recent navigation object with the
* [Router.getCurrentNavigation()
method](api/router/Router#getcurrentnavigation)
* * id*: The unique identifier of the current navigation.
* * *initialUrl*: The target URL passed into the `Router#navigateByUrl()`
call before navigation.
* This is the
value before the router has parsed or applied redirects to it.
* * *extractedUrl*: The initial target URL after being
parsed with `UrlSerializer.extract()`.
* * *finalUrl*: The extracted URL after redirects have been applied.
* This
URL may not be available immediately, therefore this property can be `undefined`.
* It is guaranteed to be set
after the `RoutesRecognized` event fires.
* * *trigger*: Identifies how this navigation was triggered.
* --
'imperative'--Triggered by `router.navigateByUrl` or `router.navigate`.
* -- 'popstate'--Triggered by a popstate
event.
* -- 'hashchange'--Triggered by a hashchange event.
* * *extras*: A `NavigationExtras` options object
that controlled the strategy used for this
* navigation.
* * *previousNavigation*: The previously successful
`Navigation` object. Only one previous
* navigation is available, therefore this previous `Navigation` object has a
`null`
value for its
* own `previousNavigation`.
* @publicApi
* export type Navigation = {
 * The unique identifier of the current navigation.
 * id: number;
 * The target URL passed into the
 `Router#navigateByUrl()` call before navigation. This is
 * the value before the router has parsed or applied
 redirects to it.
 * initialUrl: string | UrlTree;
 * The initial target URL after being parsed with
 `UrlSerializer.extract()`.
 * extractedUrl: UrlTree;
 * The extracted URL after redirects have been
 applied.
 * This URL may not be available immediately, therefore this property can be
 `undefined`.
 * It is
 guaranteed to be set after the `RoutesRecognized` event fires.
 * finalUrl?: UrlTree;
 * Identifies how
 this navigation was triggered.
 * * 'imperative'--Triggered by `router.navigateByUrl` or `router.navigate`.
 * * 'popstate'--Triggered by a popstate event.
 * * 'hashchange'--Triggered by a hashchange event.
 * trigger:
 'imperative' | 'popstate' | 'hashchange';
 * Options that controlled the strategy used for this navigation.
 * See `NavigationExtras`.
 * extras: NavigationExtras;
 * The previously successful `Navigation`
 object. Only one previous navigation
 * is available, therefore this previous `Navigation` object has a `null`
 value
 * for its own `previousNavigation`.
 * previousNavigation: Navigation | null;
}
* export type
NavigationTransition = {
 id: number,
 currentUrlTree: UrlTree,
 currentRawUrl: UrlTree,
 extractedUrl:
 UrlTree,
 urlAfterRedirects: UrlTree,
 rawUrl: UrlTree,
 extras: NavigationExtras,
 resolve: any,
 reject:
 any,
 promise: Promise<boolean>,
 source: NavigationTrigger,
 restoredState: RestoredState|null,

```



```

currentSnapshot: RouterStateSnapshot,\n targetSnapshot: RouterStateSnapshot|null,\n currentRouterState:
RouterState,\n targetRouterState: RouterState|null,\n guards: Checks,\n guardsResult:
boolean|UrlTree|null,\n};\n\n/**\n * @internal\n */\nexport type RouterHook = (snapshot: RouterStateSnapshot,
runExtras: {\n appliedUrlTree: UrlTree,\n rawUrlTree: UrlTree,\n skipLocationChange: boolean,\n replaceUrl:
boolean,\n navigationId: number\n}) => Observable<void>;\n\n/**\n * @internal\n */\nfunction
defaultRouterHook(snapshot: RouterStateSnapshot, runExtras: {\n appliedUrlTree: UrlTree,\n rawUrlTree:
UrlTree,\n skipLocationChange: boolean,\n replaceUrl: boolean,\n navigationId: number\n}): Observable<void>
{\n return of(null) as any;\n}\n\n/**\n * Information related to a location change, necessary for scheduling follow-
up Router navigations.\n */\ntype LocationChangeInfo = {\n source: 'popstate'|'hashchange',\n urlTree: UrlTree,\n
state: RestoredState|null,\n transitionId: number\n};\n\n/**\n * @description\n */\n * A service that provides
navigation among views and URL manipulation capabilities.\n */\n * @see `Route`.\n * @see [Routing and
Navigation Guide](guide/router).\n */\n * @ngModule RouterModule\n */\n * @publicApi\n
*/\n\n@Injectable()\nexport class Router {\n private currentUrlTree: UrlTree;\n private rawUrlTree: UrlTree;\n
private browserUrlTree: UrlTree;\n private readonly transitions: BehaviorSubject<NavigationTransition>;\n
private navigations: Observable<NavigationTransition>;\n private lastSuccessfulNavigation: Navigation|null =
null;\n private currentNavigation: Navigation|null = null;\n\n private locationSubscription?: SubscriptionLike;\n
/**\n * Tracks the previously seen location change from the location subscription so we can compare\n * the two
latest to see if they are duplicates. See setUpLocationChangeListener.\n */\n private lastLocationChangeInfo:
LocationChangeInfo|null = null;\n private navigationId: number = 0;\n private configLoader:
RouterConfigLoader;\n private ngModule: NgModuleRef<any>;\n private console: Console;\n private
isNgZoneEnabled: boolean = false;\n\n /**\n * An event stream for routing events in this NgModule.\n */\n
public readonly events: Observable<Event> = new Subject<Event>();\n /**\n * The current state of routing in this
NgModule.\n */\n public readonly routerState: RouterState;\n\n /**\n * A handler for navigation errors in this
NgModule.\n */\n errorHandler: ErrorHandler = defaultErrorHandler;\n\n /**\n * A handler for errors thrown by
`Router.parseUrl(url)`\n * when `url` contains an invalid character.\n * The most common case is a `%` sign\n *
that's not encoded and is not part of a percent encoded sequence.\n */\n malformedUriErrorHandler: (error:
URLError, urlSerializer: UrlSerializer,\n url: string) => UrlTree = defaultMalformedUriErrorHandler;\n\n /**\n
* True if at least one navigation event has occurred,\n * false otherwise.\n */\n navigated: boolean = false;\n
private lastSuccessfulId: number = -1;\n\n /**\n * Hooks that enable you to pause navigation,\n * either before or
after the preactivation phase.\n * Used by `RouterModule`.\n */\n * @internal\n */\n hooks: {\n
beforePreactivation: RouterHook,\n afterPreactivation: RouterHook\n } = {\n beforePreactivation:
defaultRouterHook, afterPreactivation: defaultRouterHook};\n\n /**\n * A strategy for extracting and merging
URLs.\n * Used for AngularJS to Angular migrations.\n */\n urlHandlingStrategy: UrlHandlingStrategy = new
DefaultUrlHandlingStrategy();\n\n /**\n * A strategy for re-using routes.\n */\n routeReuseStrategy:
RouteReuseStrategy = new DefaultRouteReuseStrategy();\n\n /**\n * How to handle a navigation request to the
current URL. One of:\n * - `ignore`: The router ignores the request.\n * - `reload`: The router reloads the URL.
Use to implement a "refresh" feature.\n */\n onSameUrlNavigation: 'reload'|'ignore' = 'ignore';\n\n /**\n * How
to merge parameters, data, and resolved data from parent to child\n * routes. One of:\n * - `emptyOnly`:
Inherit parent parameters, data, and resolved data\n * for path-less or component-less routes.\n * - `always`:
Inherit parent parameters, data, and resolved data\n * for all child routes.\n */\n paramsInheritanceStrategy:
'emptyOnly'|'always' = 'emptyOnly';\n\n /**\n * Determines when the router updates the browser URL.\n * By
default (`"deferred"`), updates the browser URL after navigation has finished.\n * Set to `eager` to update the
browser URL at the beginning of navigation.\n * You can choose to update early so that, if navigation fails,\n *
you can show an error message with the URL that failed.\n */\n urlUpdateStrategy: 'deferred'|'eager' =
'deferred';\n\n /**\n * Enables a bug fix that corrects relative link resolution in components with empty paths.\n
* @see `RouterModule`\n */\n relativeLinkResolution: 'legacy'|'corrected' = 'corrected';\n\n /**\n * Creates the
router service.\n */\n // TODO: vsavkin make internal after the final is out.\n constructor(\n private
rootComponentType: Type<any>|null, private urlSerializer: UrlSerializer,\n private rootContexts:

```

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ChildrenOutletContexts, private location: Location, injector: Injector,\n loader: NgModuleFactoryLoader,\n compiler: Compiler, public config: Routes) {\n const onLoadStart = (r: Route) => this.triggerEvent(new\n RouteConfigLoadStart(r));\n const onLoadEnd = (r: Route) => this.triggerEvent(new\n RouteConfigLoadEnd(r));\n\n this.ngModule = injector.get(NgModuleRef);\n this.console =\n injector.get(Console);\n const ngZone = injector.get(NgZone);\n this.isNgZoneEnabled = ngZone instanceof\n NgZone;\n\n this.resetConfig(config);\n this.currentUrlTree = createEmptyUrlTree();\n this.rawUrlTree =\n this.currentUrlTree;\n this.browserUrlTree = this.currentUrlTree;\n\n this.configLoader = new\n RouterConfigLoader(loader, compiler, onLoadStart, onLoadEnd);\n this.routerState =\n createEmptyState(this.currentUrlTree, this.rootComponentType);\n this.transitions = new\n BehaviorSubject<NavigationTransition>({\n id: 0,\n currentUrlTree: this.currentUrlTree,\n currentRawUrl:\n this.currentUrlTree,\n extractedUrl: this.urlHandlingStrategy.extract(this.currentUrlTree),\n urlAfterRedirects:\n this.urlHandlingStrategy.extract(this.currentUrlTree),\n rawUrl: this.currentUrlTree,\n extras: {},\n resolve: null,\n reject: null,\n promise: Promise.resolve(true),\n source: 'imperative',\n restoredState:\n null,\n currentSnapshot: this.routerState.snapshot,\n targetSnapshot: null,\n currentRouterState:\n this.routerState,\n targetRouterState: null,\n guards: {canActivateChecks: [], canDeactivateChecks: []},\n guardsResult: null,\n });\n this.navigations = this.setupNavigations(this.transitions);\n\n this.processNavigations();\n } \n\n private setupNavigations(transitions: Observable<NavigationTransition>):\n Observable<NavigationTransition> {\n const eventsSubject = (this.events as Subject<Event>);\n return\n transitions.pipe(\n filter(t => t.id !== 0),\n // Extract URL\n map(t => \n ({...t, extractedUrl: this.urlHandlingStrategy.extract(t.rawUrl)} as\n NavigationTransition)),\n \n // Using switchMap so we cancel executing navigations when a new one comes in\n switchMap(t => {\n let completed = false;\n let errored = false;\n return of(t).pipe(\n // Store the\n Navigation object\n tap(t => {\n this.currentNavigation = {\n id: t.id,\n initialUrl: t.currentRawUrl,\n extractedUrl: t.extractedUrl,\n trigger:\n t.source,\n extras: t.extras,\n previousNavigation: this.lastSuccessfulNavigation ?\n {...this.lastSuccessfulNavigation, previousNavigation: null} :\n null\n });\n \n switchMap(t => {\n const urlTransition = !this.navigated ||\n t.extractedUrl.toString() !== this.browserUrlTree.toString();\n const processCurrentUrl =\n (this.onSameUrlNavigation === 'reload' ? true : urlTransition) &&\n this.urlHandlingStrategy.shouldProcessUrl(t.rawUrl);\n \n if (processCurrentUrl) {\n return of(t).pipe(\n // Fire NavigationStart event\n switchMap(t => {\n const transition = this.transitions.getValue();\n eventsSubject.next(new NavigationStart(\n t.id, this.serializeUrl(t.extractedUrl), t.source,\n t.restoredState));\n \n if (transition !== this.transitions.getValue()) {\n return EMPTY;\n }\n \n return [t];\n },\n // This delay is required to match old\n // behavior that forced navigation\n // to always be async\n switchMap(t =>\n Promise.resolve(t)),\n // ApplyRedirects\n applyRedirects(\n this.ngModule.injector, this.configLoader, this.urlSerializer,\n this.config),\n \n // Update the currentNavigation\n tap(t => {\n this.currentNavigation = {\n ...this.currentNavigation!,\n finalUrl: t.urlAfterRedirects\n });\n \n // Recognize\n recognize(\n this.rootComponentType, this.config,\n (url) => this.serializeUrl(url),\n this.paramsInheritanceStrategy,\n this.relativeLinkResolution),\n \n // Update\n URL if in `eager` update mode\n tap(t => {\n if (this.urlUpdateStrategy ===\n 'eager') {\n if (!t.extras.skipLocationChange) {\n this.setBrowserUrl(\n t.urlAfterRedirects, !!t.extras.replaceUrl, t.id,\n t.extras.state);\n }\n \n this.browserUrlTree = t.urlAfterRedirects;\n });\n \n // Fire RoutesRecognized\n tap(t => {\n const

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routesRecognized = new RoutesRecognized(\n
 this.serializeUrl(t.urlAfterRedirects), t.targetSnapshot!);\n
eventsSubject.next(routesRecognized);\n
processPreviousUrl = urlTransition && this.rawUrlTree &&\n
this.urlHandlingStrategy.shouldProcessUrl(this.rawUrlTree);\n
processed, but the previous one was,\n
previously\n
(processPreviousUrl) {\n
const navStart = new NavigationStart(\n
restoredState);\n
createEmptyState(extractedUrl, this.rootComponentType).snapshot);\n
...t,\n
extras: {...extras, skipLocationChange: false, replaceUrl: false},\n
/* When neither the current or previous URL can be processed, do nothing\n
than update router's internal reference to the current\n
navigation will be coming from the current URL\n
this.rawUrlTree = t.rawUrl;\n
t.resolve(null);\n
// Before Preactivation\n
id: navigationId,\n
rawUrlTree,\n
this.hooks.beforePreactivation(targetSnapshot!,\n
rawUrlTree,\n
!!replaceUrl,\n
const guardsStart = new GuardsCheckStart(\n
this.serializeUrl(t.urlAfterRedirects), t.targetSnapshot!);\n
}),\n
t.targetSnapshot!, t.currentSnapshot, this.rootContexts)\n
checkGuards(this.ngModule.injector, (evt: Event) => this.triggerEvent(evt)),\n
if (isUrlTree(t.guardsResult)) {\n
 `Redirecting to "${this.serializeUrl(t.guardsResult)}";\n
 t.guardsResult;\n
 throw error;\n
 const guardsEnd = new GuardsCheckEnd(\n
 this.serializeUrl(t.urlAfterRedirects), t.targetSnapshot!,\n
 this.triggerEvent(guardsEnd);\n
 this.resetUrlToCurrentUrlTree);\n
 NavigationCancel(t.id, this.serializeUrl(t.extractedUrl),\n
 t.resolve(false);\n
 return false;\n
 filter(t => {\n
 this.resetUrlToCurrentUrlTree);\n
 const navCancel =\n
 new\n
 NavigationCancel(t.id, this.serializeUrl(t.extractedUrl),\n
 eventsSubject.next(navCancel);\n
 return true;\n
 }),\n
 // --- RESOLVE ---\n
 (t.guards.canActivateChecks.length) {\n
 return of(t).pipe(\n
 tap(t => {\n
 const resolveStart = new ResolveStart(\n
 this.serializeUrl(t.urlAfterRedirects), t.targetSnapshot!);\n
 this.triggerEvent(resolveStart);\n
 dataResolved = false;\n
 this.paramsInheritanceStrategy, this.ngModule.injector),\n
 tap({\n
 next: () => dataResolved = true,\n
 (!dataResolved) {\n
 t.id, this.serializeUrl(t.extractedUrl),\n
 `At least one route resolver didn't emit any

```



```

This is only applicable with initial navigation, so setting\n // `navigated` only when not redirecting
resolves this scenario.\n this.navigated = true;\n
this.resetStateAndUrl(t.currentRouterState, t.currentUrlTree, t.rawUrl);\n }\n const
navCancel = new NavigationCancel(\n t.id, this.serializeUrl(t.extractedUrl), e.message);\n
eventsSubject.next(navCancel);\n // When redirecting, we need to delay resolving the
navigation\n // promise and push it to the redirect navigation\n if (!redirecting) {\n
t.resolve(false);\n } else {\n // setTimeout is required so this navigation
finishes with\n // the return EMPTY below. If it isn't allowed to finish\n //
processing, there can be multiple navigations to the same\n // URL.\n setTimeout()
=> {\n const mergedTree =\n this.urlHandlingStrategy.merge(e.url,
this.rawUrlTree);\n const extras = {\n skipLocationChange:
t.extras.skipLocationChange,\n replaceUrl: this.urlUpdateStrategy === 'eager'\n
};\n return this.scheduleNavigation(\n mergedTree, 'imperative', null,
extras,\n {resolve: t.resolve, reject: t.reject, promise: t.promise});\n }, 0);\n
}\n /* All other errors should reset to the router's internal URL reference to\n
* the pre-error state. *\n } else {\n this.resetStateAndUrl(t.currentRouterState,
t.currentUrlTree, t.rawUrl);\n const navError =\n new NavigationError(t.id,
this.serializeUrl(t.extractedUrl), e);\n eventsSubject.next(navError);\n try {\n
t.resolve(this.errorHandler(e));\n } catch (ee) {\n t.reject(ee);\n
}\n }\n return EMPTY;\n }));\n // TODO(jasonaden): remove cast
once g3 is on updated TypeScript\n))) as any as Observable<NavigationTransition>;\n }\n /**\n
* @internal\n
* TODO: this should be removed once the constructor of the router made internal\n
* ^\n
resetRootComponentType(rootComponentType: Type<any>): void {\n this.rootComponentType =
rootComponentType;\n // TODO: vsavkin router 4.0 should make the root component set to null\n
// this will
simplify the lifecycle of the router.\n this.routerState.root.component = this.rootComponentType;\n
}\n private
getTransition(): NavigationTransition {\n const transition = this.transitions.value;\n // This value needs to be set.
Other values such as extractedUrl are set on initial navigation\n // but the urlAfterRedirects may not get set if we
aren't processing the new URL *and* not\n // processing the previous URL.\n transition.urlAfterRedirects =
this.browserUrlTree;\n return transition;\n }\n private setTransition(t: Partial<NavigationTransition>): void {\n
this.transitions.next({...this.getTransition(), ...t});\n }\n /**\n
* Sets up the location change listener and
performs the initial navigation.\n
* ^\n
initialNavigation(): void {\n this.setUpLocationChangeListener();\n if
(this.navigationId === 0) {\n this.navigateByUrl(this.location.path(true), {replaceUrl: true});\n }\n }\n /**\n
* Sets up the location change listener. This listener detects navigations triggered from outside\n
* the Router (the
browser back/forward buttons, for example) and schedules a corresponding Router\n
* navigation so that the
correct events, guards, etc. are triggered.\n
* ^\n
setUpLocationChangeListener(): void {\n // Don't need to use
Zone.wrap any more, because zone.js\n // already patch onPopState, so location change callback will\n // run
into ngZone\n if (!this.locationSubscription) {\n this.locationSubscription = this.location.subscribe(event =>
{\n const currentChange = this.extractLocationChangeInfoFromEvent(event);\n if
(this.shouldScheduleNavigation(this.lastLocationChangeInfo, currentChange)) {\n // The `setTimeout` was
added in #12160 and is likely to support Angular/AngularJS\n // hybrid apps.\n setTimeout(() => {\n
const {source, state, urlTree} = currentChange;\n const extras: NavigationExtras = {replaceUrl: true};\n
if (state) {\n const stateCopy = {...state} as Partial<RestoredState>;\n delete
stateCopy.navigationId;\n if (Object.keys(stateCopy).length !== 0) {\n extras.state = stateCopy;\n
}\n }\n this.scheduleNavigation(urlTree, source, state, extras);\n }, 0);\n }\n
}\n this.lastLocationChangeInfo = currentChange;\n });\n }\n }\n /** Extracts router-related information from a
`PopStateEvent`. *\n
private extractLocationChangeInfoFromEvent(change: PopStateEvent): LocationChangeInfo
{\n return {\n source: change['type'] === 'popstate' ? 'popstate' : 'hashchange',\n urlTree:
this.parseUrl(change['url']),\n // Navigations coming from Angular router have a navigationId state\n //

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property. When this exists, restore the state.\n state: change.state?.navigationId ? change.state : null,\n
transitionId: this.getTransition().id\n } as const;\n }\n\n /**\n * Determines whether two events triggered by the\n
Location subscription are due to the same\n * navigation. The location subscription can fire two events (popstate\n
and hashchange) for a\n * single navigation. The second one should be ignored, that is, we should not schedule\n
another\n * navigation in the Router.\n */\n private shouldScheduleNavigation(previous:\n
LocationChangeInfo|null, current: LocationChangeInfo):\n boolean {\n if (!previous) return true;\n const\n
sameDestination = current.urlTree.toString() === previous.urlTree.toString();\n const\n
eventsOccurredAtSameTime = current.transitionId === previous.transitionId;\n if (!eventsOccurredAtSameTime ||\n
!sameDestination) {\n return true;\n }\n if ((current.source === 'hashchange' && previous.source ===\n
'popstate') ||\n (current.source === 'popstate' && previous.source === 'hashchange')) {\n return false;\n }\n return true;\n }\n\n /** The current URL. */\n get url(): string {\n return\n
this.serializeUrl(this.currentUrlTree);\n }\n\n /** The current Navigation object if one exists */\n
getCurrentNavigation(): Navigation|null {\n return this.currentNavigation;\n }\n\n /** @internal */\n
triggerEvent(event: Event): void {\n (this.events as Subject<Event>).next(event);\n }\n\n /**\n * Resets the\n
route configuration used for navigation and generating links.\n */\n * @param config The route array for the new\n
configuration.\n */\n * @usageNotes\n */\n * ``\n * router.resetConfig([\n * { path: 'team/:id', component:\n
TeamCmp, children: [\n * { path: 'simple', component: SimpleCmp },\n * { path: 'user/:name', component:\n
UserCmp }\n *]}\n *]);\n * ``\n */\n resetConfig(config: Routes): void {\n validateConfig(config);\n
this.config = config.map(standardizeConfig);\n this.navigated = false;\n this.lastSuccessfulId = -1;\n }\n\n /**\n
@nodoc */\n ngOnDestroy(): void {\n this.dispose();\n }\n\n /** Disposes of the router. */\n dispose(): void {\n
if (this.locationSubscription) {\n this.locationSubscription.unsubscribe();\n this.locationSubscription =\n
undefined;\n }\n }\n\n /**\n * Appends URL segments to the current URL tree to create a new URL tree.\n */\n
* @param commands An array of URL fragments with which to construct the new URL tree.\n * If the path is\n
static, can be the literal URL string. For a dynamic path, pass an array of path\n * segments, followed by the\n
parameters for each segment.\n * The fragments are applied to the current URL tree or the one provided in the\n
`relativeTo`\n * property of the options object, if supplied.\n * @param navigationExtras Options that control the\n
navigation strategy.\n * @returns The new URL tree.\n */\n * @usageNotes\n */\n * ``\n * // create\n
/team/33/user/11\n * router.createUrlTree(['/team', 33, 'user', 11]);\n */\n * // create\n
/team/33;expand=true/user/11\n * router.createUrlTree(['/team', 33, {expand: true}, 'user', 11]);\n */\n * // you\n
can collapse static segments like this (this works only with the first passed-in value):\n */\n *\n
router.createUrlTree(['/team/33/user', userId]);\n */\n * // If the first segment can contain slashes, and you do not\n
want the router to split it,\n * // you can do the following:\n */\n * router.createUrlTree([{\n * segmentPath: '/one/two'\n * }]);\n */\n * // create /team/33/(user/11/right:chat)\n */\n * router.createUrlTree(['/team', 33, {\n * outlets: {\n * primary: 'user/11',\n
right: 'chat'\n * } }]);\n */\n * // remove the right secondary node\n */\n * router.createUrlTree(['/team', 33, {\n * outlets:\n
{\n * primary: 'user/11',\n * right: null\n * } }]);\n */\n * // assuming the current url is `/team/33/user/11` and the route points to\n
`user/11`\n */\n * // navigate to /team/33/user/11/details\n */\n * router.createUrlTree(['details'], {\n * relativeTo:\n
route\n * });\n */\n * // navigate to /team/33/user/22\n */\n * router.createUrlTree(['../22'], {\n * relativeTo: route\n * });\n */\n * // navigate to /team/44/user/22\n */\n * router.createUrlTree(['../../team/44/user/22'], {\n * relativeTo: route\n * });\n */\n * ``\n
*/\n *\n */\n * createUrlTree(commands: any[], navigationExtras: UrlCreationOptions = {}): UrlTree {\n const {\n relativeTo,\n
queryParams,\n fragment,\n queryParamsHandling,\n preserveFragment\n } =\n navigationExtras;\n const a =\n
relativeTo || this.routerState.root;\n const f = preserveFragment ? this.currentUrlTree.fragment : fragment;\n let\n
q: Params|null = null;\n switch (queryParamsHandling) {\n case 'merge':\n q =\n
{\n ...this.currentUrlTree.queryParams,\n ...queryParams\n };\n break;\n case 'preserve':\n q =\n
this.currentUrlTree.queryParams;\n break;\n default:\n q = queryParams || null;\n }\n if (q !== null)\n
{\n q = this.removeEmptyProps(q);\n }\n return createUrlTree(a, this.currentUrlTree, commands, q!, f!);\n }\n\n /**\n
* Navigates to a view using an absolute route path.\n */\n * @param url An absolute path for a\n
defined route. The function does not apply any delta to the\n * current URL.\n * @param extras An object\n
containing properties that modify the navigation strategy.\n */\n * @returns A Promise that resolves to 'true' when

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navigation succeeds,\n * to 'false' when navigation fails, or is rejected on error.\n * \n * @usageNotes\n * \n *
The following calls request navigation to an absolute path.\n * \n * ```\n *
router.navigateByUrl(\"/team/33/user/11\");\n * \n * // Navigate without updating the URL\n *
router.navigateByUrl(\"/team/33/user/11\", { skipLocationChange: true });\n * ```\n * \n * @see [Routing and
Navigation guide](guide/router)\n * \n * ^\n * navigateByUrl(url: string|UrlTree, extras: NavigationBehaviorOptions
= {\n * skipLocationChange: false\n * }): Promise<boolean> {\n * if (typeof ngDevMode === 'undefined' ||\n * ngDevMode && this.isNgZoneEnabled && !NgZone.isInAngularZone()) {\n * this.console.warn(\n
`Navigation triggered outside Angular zone, did you forget to call 'ngZone.run()'?`);\n * }\n * \n * const urlTree =
isUrlTree(url) ? url : this.parseUrl(url);\n * const mergedTree = this.urlHandlingStrategy.merge(urlTree,
this.rawUrlTree);\n * \n * return this.scheduleNavigation(mergedTree, 'imperative', null, extras);\n * }\n * \n * /**\n *
Navigate based on the provided array of commands and a starting point.\n * \n * If no starting route is provided, the
navigation is absolute.\n * \n * @param commands An array of URL fragments with which to construct the target
URL.\n * \n * If the path is static, can be the literal URL string. For a dynamic path, pass an array of path\n *
segments, followed by the parameters for each segment.\n * \n * The fragments are applied to the current URL or the
one provided in the `relativeTo` property\n * of the options object, if supplied.\n * \n * @param extras An options
object that determines how the URL should be constructed or\n * interpreted.\n * \n * @returns A Promise that
resolves to `true` when navigation succeeds, to `false` when navigation\n * fails,\n * or is rejected on error.\n * \n *
*\n * @usageNotes\n * \n * The following calls request navigation to a dynamic route path relative to the current
URL.\n * \n * ```\n * router.navigate(['team', 33, 'user', 11], {relativeTo: route});\n * \n * // Navigate without
updating the URL, overriding the default behavior\n * router.navigate(['team', 33, 'user', 11], {relativeTo: route,
skipLocationChange: true});\n * ```\n * \n * @see [Routing and Navigation guide](guide/router)\n * \n * ^\n *
navigate(commands: any[], extras: NavigationExtras = {skipLocationChange: false}):\n * Promise<boolean> {\n *
validateCommands(commands);\n * return this.navigateByUrl(this.createUrlTree(commands, extras), extras);\n *
}\n * \n * /** Serializes a `UrlTree` into a string */\n * serializeUrl(url: UrlTree): string {\n * return
this.urlSerializer.serialize(url);\n * }\n * \n * /** Parses a string into a `UrlTree` */\n * parseUrl(url: string): UrlTree {\n
let urlTree: UrlTree;\n * try {\n * urlTree = this.urlSerializer.parse(url);\n * } catch (e) {\n * urlTree =
this.malformedUriErrorHandler(e, this.urlSerializer, url);\n * }\n * return urlTree;\n * }\n * \n * /** Returns whether the
url is activated */\n * isActive(url: string|UrlTree, exact: boolean): boolean {\n * if (isUrlTree(url)) {\n * return
containsTree(this.currentUrlTree, url, exact);\n * }\n * \n * const urlTree = this.parseUrl(url);\n * return
containsTree(this.currentUrlTree, urlTree, exact);\n * }\n * \n * private removeEmptyProps(params: Params): Params {\n
return Object.keys(params).reduce((result: Params, key: string) => {\n * const value: any = params[key];\n * if
(value !== null && value !== undefined) {\n * result[key] = value;\n * }\n * return result;\n * }, {});\n * }\n * \n *
private processNavigations(): void {\n * this.navigations.subscribe(\n * t => {\n * this.navigated = true;\n *
this.lastSuccessfulId = t.id;\n * (this.events as Subject<Event>)\n * .next(new NavigationEnd(\n * t.id, this.serializeUrl(t.extractedUrl), this.serializeUrl(this.currentUrlTree));\n * this.lastSuccessfulNavigation =
this.currentNavigation;\n * this.currentNavigation = null;\n * t.resolve(true);\n * },\n * e => {\n *
this.console.warn(`Unhandled Navigation Error: `);\n * });\n * }\n * \n * private scheduleNavigation(\n * rawUrl:
UrlTree, source: NavigationTrigger, restoredState: RestoredState|null,\n * extras: NavigationExtras,\n * priorPromise?: {resolve: any, reject: any, promise: Promise<boolean>}): Promise<boolean> {\n * // * Imperative
navigations (router.navigate) might trigger additional navigations to the same\n * // URL via a popstate event and
the locationChangeListener. We should skip these duplicate\n * // navs. Duplicates may also be triggered by
attempts to sync AngularJS and Angular router\n * // states.\n * // * Imperative navigations can be cancelled by
router guards, meaning the URL won't change. If\n * // the user follows that with a navigation using the
back/forward button or manual URL change,\n * // the destination may be the same as the previous imperative
attempt. We should not skip\n * // these navigations because it's a separate case from the one above -- it's not a
duplicate\n * // navigation.\n * const lastNavigation = this.getTransition();\n * // We don't want to skip duplicate
successful navs if they're imperative because\n * // onSameUrlNavigation could be 'reload' (so the duplicate is
intended).\n * const browserNavPrecededByRouterNav =\n * source !== 'imperative' && lastNavigation?.source

```

```

=== 'imperative';\n const lastNavigationSucceeded = this.lastSuccessfulId === lastNavigation.id;\n // If the last
navigation succeeded or is in flight, we can use the rawUrl as the comparison.\n // However, if it failed, we should
compare to the final result (urlAfterRedirects).\n const lastNavigationUrl = (lastNavigationSucceeded ||
this.currentNavigation) ?\n lastNavigation.rawUrl :\n lastNavigation.urlAfterRedirects;\n const
duplicateNav = lastNavigationUrl.toString() === rawUrl.toString();\n if (browserNavPrecededByRouterNav &&
duplicateNav) {\n return Promise.resolve(true); // return value is not used\n }\n let resolve: any;\n let
reject: any;\n let promise: Promise<boolean>;\n if (priorPromise) {\n resolve = priorPromise.resolve;\n
reject = priorPromise.reject;\n promise = priorPromise.promise;\n } else {\n promise = new
Promise<boolean>((res, rej) => {\n resolve = res;\n reject = rej;\n });\n }\n const id =
++this.navigationId;\n this.setTransition({\n id,\n source,\n restoredState,\n currentUrlTree:
this.currentUrlTree,\n currentRawUrl: this.rawUrlTree,\n rawUrl,\n extras,\n resolve,\n reject,\n
promise,\n currentSnapshot: this.routerState.snapshot,\n currentRouterState: this.routerState\n });\n //
Make sure that the error is propagated even though `processNavigations` catch\n // handler does not rethrow\n
return promise.catch((e: any) => {\n return Promise.reject(e);\n });\n }\n private setBrowserUrl(\n url:
UrlTree, replaceUrl: boolean, id: number, state?: {[key: string]: any}) {\n const path =
this.urlSerializer.serialize(url);\n state = state || {};\n if (this.location.isCurrentPathEqualTo(path) || replaceUrl)
{\n // TODO(jasonaden): Remove first `navigationId` and rely on `ng` namespace.\n
this.location.replaceState(path, "{...state, navigationId: id}");\n } else {\n this.location.go(path, "{...state,
navigationId: id}");\n }\n }\n private resetStateAndUrl(storedState: RouterState, storedUrl: UrlTree, rawUrl:
UrlTree): void {\n (this as {routerState: RouterState}).routerState = storedState;\n this.currentUrlTree =
storedUrl;\n this.rawUrlTree = this.urlHandlingStrategy.merge(this.currentUrlTree, rawUrl);\n
this.resetUrlToCurrentUrlTree();\n }\n private resetUrlToCurrentUrlTree(): void {\n
this.location.replaceState(\n this.urlSerializer.serialize(this.rawUrlTree), "{navigationId:
this.lastSuccessfulId}");\n }\n \nfunction validateCommands(commands: string[]): void {\n for (let i = 0; i <
commands.length; i++) {\n const cmd = commands[i];\n if (cmd == null) {\n throw new Error(`The requested
path contains ${cmd} segment at index ${i}`);\n }\n }\n }\n \n\n * @license\n * Copyright Google LLC All
Rights Reserved.\n * Use of this source code is governed by an MIT-style license that can be\n * found in the
LICENSE file at https://angular.io/license\n * \n\nimport {LocationStrategy} from '@angular/common';\nimport
{Attribute, Directive, ElementRef, HostBinding, HostListener, Input, OnChanges, OnDestroy, Renderer2,
SimpleChanges} from '@angular/core';\nimport {Subject, Subscription} from 'rxjs';\nimport
{QueryParamsHandling} from './config';\nimport {Event, NavigationEnd} from './events';\nimport {Router} from
'./router';\nimport {ActivatedRoute} from './router_state';\nimport {Params} from './shared';\nimport {UrlTree}
from './url_tree';\n\n\n * @description\n * \n * When applied to an element in a template, makes that element a
link\n * that initiates navigation to a route. Navigation opens one or more routed components\n * in one or more
`<router-outlet>` locations on the page.\n * \n * Given a route configuration `[{ path: 'user/:name', component:
UserCmp }]`,\n * the following creates a static link to the route:\n * \n * `link to user
component\n * \n * You can use dynamic values to generate the link.\n * For a dynamic link, pass an array of
path segments,\n * followed by the params for each segment.\n * For example, `[team, teamId, 'user', userName,
{details: true}]`\n * generates a link to `/team/11/user/bob;details=true`.\n * \n * Multiple static segments can be
merged into one term and combined with dynamic segments.\n * For example, `[/team/11/user, userName,
{details: true}]`\n * \n * The input that you provide to the link is treated as a delta to the current URL.\n * For
instance, suppose the current URL is `user/(box//aux:team)`.\n * The link `<a
[routerLink]="['/user/jim']">Jim` creates the URL\n * `user/(jim//aux:team)`. See {@link
Router#createUrlTree createUrlTree} for more information.\n * \n * @usageNotes\n * \n * You can use absolute or
relative paths in a link, set query parameters,\n * control how parameters are handled, and keep a history of
navigation states.\n * \n * ### Relative link paths\n * \n * The first segment name can be prepended with `^`, `./`, or
`../`.\n * \n * If the first segment begins with `^`, the router looks up the route from the root of the\n * app.\n * \n * If the
first segment begins with `./`, or doesn't begin with a slash, the router\n * looks in the children of the current

```



activated route.\n \* \* If the first segment begins with `./`, the router goes up one level in the route tree.\n \* \n \* ###  
Setting and handling query params and fragments\n \* \n \* The following link adds a query parameter and a fragment  
to the generated URL:\n \* \n \* ``\n \* <a [routerLink]="['/user/bob']" [queryParams]="{debug: true}"  
fragment="education">\n \* link to user component\n \* </a>\n \* ``\n \* By default, the directive constructs the  
new URL using the given query parameters.\n \* The example generates the link:  
`/user/bob?debug=true#education`.\n \* \n \* You can instruct the directive to handle query parameters differently\n \*  
by specifying the `queryParamsHandling` option in the link.\n \* Allowed values are:\n \* \n \* - `merge`: Merge the  
given `queryParams` into the current query params.\n \* - `preserve`: Preserve the current query params.\n \* \n \* For  
example:\n \* \n \* ``\n \* <a [routerLink]="['/user/bob']" [queryParams]="{debug: true}"  
queryParamsHandling="merge">\n \* link to user component\n \* </a>\n \* ``\n \* \n \* See { @link  
UrlCreationOptions.queryParamsHandling UrlCreationOptions#queryParamsHandling }.\n \* \n \* ### Preserving  
navigation history\n \* \n \* You can provide a `state` value to be persisted to the browser's\n \* [ `History.state`  
property](https://developer.mozilla.org/en-US/docs/Web/API/History#Properties).\n \* For example:\n \* \n \* ``\n \*  
<a [routerLink]="['/user/bob']" [state]="{tracingId: 123}">\n \* link to user component\n \* </a>\n \* ``\n \* \n \*  
Use { @link Router.getCurrentNavigation() Router#getCurrentNavigation } to retrieve a saved\n \* navigation-state  
value. For example, to capture the `tracingId` during the `NavigationStart`\n \* event:\n \* \n \* ``\n \* // Get  
NavigationStart events\n \* router.events.pipe(filter(e => e instanceof NavigationStart)).subscribe(e => {\n \* const  
navigation = router.getCurrentNavigation();\n \* tracingService.trace({id: navigation.extras.state.tracingId});\n \*  
});\n \* ``\n \* \n \* @ngModule RouterModule\n \* \n \* @publicApi\n \* \n \* @Directive({ selector:  
':not(a):not(area)[routerLink]'})\n \* \n \* export class RouterLink implements OnChanges {\n \* // \*\*\n \* Passed to { @link  
Router#createUrlTree Router#createUrlTree } as part of the\n \* `UrlCreationOptions`.\n \* @see { @link  
UrlCreationOptions#queryParams UrlCreationOptions#queryParams }\n \* @see { @link Router#createUrlTree  
Router#createUrlTree }\n \* \n \* @Input() queryParams?: Params|null;\n \* // \*\*\n \* Passed to { @link  
Router#createUrlTree Router#createUrlTree } as part of the\n \* `UrlCreationOptions`.\n \* @see { @link  
UrlCreationOptions#fragment UrlCreationOptions#fragment }\n \* @see { @link Router#createUrlTree  
Router#createUrlTree }\n \* \n \* @Input() fragment?: string;\n \* // \*\*\n \* Passed to { @link Router#createUrlTree  
Router#createUrlTree } as part of the\n \* `UrlCreationOptions`.\n \* @see { @link  
UrlCreationOptions#queryParamsHandling UrlCreationOptions#queryParamsHandling }\n \* @see { @link  
Router#createUrlTree Router#createUrlTree }\n \* \n \* @Input() queryParamsHandling?:  
QueryParamsHandling|null;\n \* // \*\*\n \* Passed to { @link Router#createUrlTree Router#createUrlTree } as part of  
the\n \* `UrlCreationOptions`.\n \* @see { @link UrlCreationOptions#preserveFragment  
UrlCreationOptions#preserveFragment }\n \* @see { @link Router#createUrlTree Router#createUrlTree }\n \* \n \* //  
TODO(issue/24571): remove '!.\n \* @Input() preserveFragment!: boolean;\n \* // \*\*\n \* Passed to { @link  
Router#navigateByUrl Router#navigateByUrl } as part of the\n \* `NavigationBehaviorOptions`.\n \* @see { @link  
NavigationBehaviorOptions#skipLocationChange NavigationBehaviorOptions#skipLocationChange }\n \* @see  
{ @link Router#navigateByUrl Router#navigateByUrl }\n \* \n \* // TODO(issue/24571): remove '!.\n \* @Input()  
skipLocationChange!: boolean;\n \* // \*\*\n \* Passed to { @link Router#navigateByUrl Router#navigateByUrl } as part  
of the\n \* `NavigationBehaviorOptions`.\n \* @see { @link NavigationBehaviorOptions#replaceUrl  
NavigationBehaviorOptions#replaceUrl }\n \* @see { @link Router#navigateByUrl Router#navigateByUrl }\n \* \n \*  
// TODO(issue/24571): remove '!.\n \* @Input() replaceUrl!: boolean;\n \* // \*\*\n \* Passed to { @link  
Router#navigateByUrl Router#navigateByUrl } as part of the\n \* `NavigationBehaviorOptions`.\n \* @see { @link  
NavigationBehaviorOptions#state NavigationBehaviorOptions#state }\n \* @see { @link Router#navigateByUrl  
Router#navigateByUrl }\n \* \n \* @Input() state?: {[k: string]: any};\n \* \n \* private commands: any[] = [];\n \* \n \* private  
preserve!: boolean;\n \* \n \* // \*\* @internal \*\n \* \n \* onChanges = new Subject<RouterLink>();\n \* \n \* constructor(\n \* private  
router: Router, private route: ActivatedRoute,\n \* @Attribute('tabindex') tabIndex: string, renderer: Renderer2, el:  
ElementRef) {\n \* if (tabIndex == null) {\n \* renderer.setAttribute(el.nativeElement, 'tabindex', '0');\n \* }\n \* }\n \* \n \*  
// \*\* @nodoc \*\n \* \n \* ngOnChanges(changes: SimpleChanges) {\n \* // This is subscribed to by `RouterLinkActive` so  
that it knows to update when there are changes\n \* // to the RouterLinks it's tracking.\n



```

Router#createUrlTree}\n *^\n @Input()\n set routerLink(commands: any[]|string|null|undefined) {\n if
(commands != null) {\n this.commands = Array.isArray(commands) ? commands : [commands];\n } else {\n
this.commands = [];\n }\n}\n\n/** @nodoc */^\n ngOnChanges(changes: SimpleChanges): any {\n
this.updateTargetUrlAndHref();\n this.onChanges.next(this);\n}\n\n/** @nodoc */^\n ngOnDestroy(): any {\n
this.subscription.unsubscribe();\n}\n\n/** @nodoc */^\n @HostListener(\n 'click',\n ['$event.button',
'$event.ctrlKey', '$event.shiftKey', '$event.altKey', '$event.metaKey'])\n onClick(button: number, ctrlKey: boolean,
shiftKey: boolean, altKey: boolean, metaKey: boolean):\n boolean {\n if (button !== 0 || ctrlKey || shiftKey ||
altKey || metaKey) {\n return true;\n }\n\n if (typeof this.target === 'string' && this.target !== '_self') {\n
return true;\n }\n\n const extras = {\n skipLocationChange: attrBoolValue(this.skipLocationChange),\n
replaceUrl: attrBoolValue(this.replaceUrl),\n state: this.state\n };\n this.router.navigateByUrl(this.urlTree,
extras);\n return false;\n }\n\n private updateTargetUrlAndHref(): void {\n this.href =
this.locationStrategy.prepareExternalUrl(this.router.serializeUrl(this.urlTree));\n }\n\n get urlTree(): UrlTree {\n
return this.router.createUrlTree(this.commands, {\n relativeTo: this.route,\n queryParams: this.queryParams,\n
fragment: this.fragment,\n queryParamsHandling: this.queryParamsHandling,\n preserveFragment:
attrBoolValue(this.preserveFragment),\n });\n}\n\nfunction attrBoolValue(s: any): boolean {\n return s === ""
|| !!s;\n}\n\n",/**\n * @license\n * Copyright Google LLC All Rights Reserved.\n * Use of this source code is
governed by an MIT-style license that can be\n * found in the LICENSE file at https://angular.io/license\n
*/^\n\nimport {AfterContentInit, ChangeDetectorRef, ContentChildren, Directive, ElementRef, Input, OnChanges,
OnDestroy, Optional, QueryList, Renderer2, SimpleChanges} from '@angular/core';\nimport {from, of,
Subscription} from 'rxjs';\nimport {mergeAll} from 'rxjs/operators';\n\nimport {Event, NavigationEnd} from
'./events';\nimport {Router} from './router';\nimport {RouterLink, RouterLinkWithHref} from
'./router_link';\n\n/**\n *^\n * @description\n *^\n * Tracks whether the linked route of an element is currently
active, and allows you\n * to specify one or more CSS classes to add to the element when the linked route\n * is
active.\n *^\n * Use this directive to create a visual distinction for elements associated with an active route.\n * For
example, the following code highlights the word "Bob" when the the router\n * activates the associated route:\n *^\n *
Bob\n *^\n * Whenever the URL
is either '/user' or '/user/bob', the "active-link" class is\n * added to the anchor tag. If the URL changes, the class is
removed.\n *^\n * You can set more than one class using a space-separated string or an array.\n * For example:\n *^\n *
Bob\n * <a routerLink="/user/bob"
[routerLinkActive]="['class1', 'class2']">Bob\n *^\n * To add the classes only when the URL matches
the link exactly, add the option `exact: true`:\n *^\n * <a routerLink="/user/bob" routerLinkActive="active-
link" [routerLinkActiveOptions]="{exact: true}">Bob\n *^\n * To directly check the `isActive`
status of the link, assign the `RouterLinkActive`\n * instance to a template variable.\n * For example, the following
checks the status without assigning any CSS classes:\n *^\n * <a routerLink="/user/bob" routerLinkActive
#rla="routerLinkActive">\n * Bob {{ rla.isActive ? '(already open)' : '' }}\n * \n *^\n * You can apply
the `RouterLinkActive` directive to an ancestor of linked elements.\n * For example, the following sets the active-
link class on the `<div>` parent tag\n * when the URL is either '/user/jim' or '/user/bob'.\n *^\n * <div
routerLinkActive="active-link" [routerLinkActiveOptions]="{exact: true}">\n * Jim\n * Bob\n * </div>\n *^\n * @ngModule
RouterModule\n *^\n * @publicApi\n */^\n @Directive({\n selector: '[routerLinkActive]',\n exportAs:
'routerLinkActive',\n})\nexport class RouterLinkActive implements OnChanges, OnDestroy, AfterContentInit {\n
 @ContentChildren(RouterLink, {descendants: true}) links!: QueryList<RouterLink>;\n
 @ContentChildren(RouterLinkWithHref, {descendants: true})\n linksWithHrefs!:
 QueryList<RouterLinkWithHref>;\n\n private classes: string[] = [];\n private routerEventsSubscription:
 Subscription;\n private linkInputChangeSubscription?: Subscription;\n public readonly isActive: boolean =
 false;\n\n @Input() routerLinkActiveOptions: {exact: boolean} = {exact: false};\n\n constructor(\n private
router: Router, private element: ElementRef, private renderer: Renderer2,\n private readonly cdr:
 ChangeDetectorRef, @Optional() private link?: RouterLink,\n @Optional() private linkWithHref?:

```





```

does not preload any modules.\n *\n * This strategy is enabled by default.\n *\n * @publicApi\n */\nexport class
NoPreloading implements PreloadingStrategy {\n preload(route: Route, fn: () => Observable<any>):
Observable<any> {\n return of(null);\n }\n}\n\n/**\n * The preloader optimistically loads all router
configurations to\n * make navigations into lazily-loaded sections of the application faster.\n *\n * The preloader
runs in the background. When the router bootstraps, the preloader\n * starts listening to all navigation events. After
every such event, the preloader\n * will check if any configurations can be loaded lazily.\n *\n * If a route is
protected by `canLoad` guards, the preloaded will not load it.\n *\n * @publicApi\n */\n@Injectable()\nexport class
RouterPreloader implements OnDestroy {\n private loader: RouterConfigLoader;\n private subscription?:
Subscription;\n\n constructor(\n private router: Router, moduleLoader: NgModuleFactoryLoader, compiler:
Compiler,\n private injector: Injector, private preloadingStrategy: PreloadingStrategy) {\n const onStartLoad =
(r: Route) => router.triggerEvent(new RouteConfigLoadStart(r));\n const onEndLoad = (r: Route) =>
router.triggerEvent(new RouteConfigLoadEnd(r));\n this.loader = new RouterConfigLoader(moduleLoader,
compiler, onStartLoad, onEndLoad);\n }\n\n setUpPreloading(): void {\n this.subscription =\nthis.router.events\n .pipe(filter((e: Event) => e instanceof NavigationEnd), concatMap(() => this.preload()))\n
 .subscribe(() => {});\n }\n\n preload(): Observable<any> {\n const ngModule =
this.injector.get(NgModuleRef);\n return this.processRoutes(ngModule, this.router.config);\n }\n\n /** @nodoc
*\n ngOnDestroy(): void {\n if (this.subscription) {\n this.subscription.unsubscribe();\n }\n }\n\n private
processRoutes(ngModule: NgModuleRef<any>, routes: Routes): Observable<void> {\n const res:
Observable<any>[] = [];\n for (const route of routes) {\n // we already have the config loaded, just recurse\n
if (route.loadChildren && !route.canLoad && route._loadedConfig) {\n const childConfig =
route._loadedConfig;\n res.push(this.processRoutes(childConfig.module, childConfig.routes));\n }\n // no
config loaded, fetch the config\n } else if (route.loadChildren && !route.canLoad) {\n res.push(this.preloadConfig(ngModule, route));\n // recurse into children\n } else if (route.children) {\n res.push(this.processRoutes(ngModule, route.children));\n }\n }\n\n return from(res).pipe(mergeAll(), map((_)
=> void 0));\n }\n\n private preloadConfig(ngModule: NgModuleRef<any>, route: Route): Observable<void> {\n
return this.preloadingStrategy.preload(route, () => {\n const loaded$ = this.loader.load(ngModule.injector,
route);\n return loaded$.pipe(mergeMap((config: LoadedRouterConfig) => {\n route._loadedConfig =
config;\n return this.processRoutes(config.module, config.routes);\n }));\n });\n }\n}\n\n",/**\n *
@license\n * Copyright Google LLC All Rights Reserved.\n *\n * Use of this source code is governed by an MIT-
style license that can be\n * found in the LICENSE file at https://angular.io/license\n */\nimport
{ViewportScroller} from '@angular/common';\nimport {Injectable, OnDestroy} from '@angular/core';\nimport
{Unsubscribable} from 'rxjs';\n\nimport {NavigationEnd, NavigationStart, Scroll} from './events';\nimport {Router}
from './router';\n\n@Injectable()\nexport class RouterScroller implements OnDestroy {\n // TODO(issue/24571):
remove '!.\n private routerEventsSubscription!: Unsubscribable;\n // TODO(issue/24571): remove '!.\n private
scrollEventsSubscription!: Unsubscribable;\n\n private lastId = 0;\n private lastSource:
'imperative'|'popstate'|'hashchange'|undefined = 'imperative';\n private restoredId = 0;\n private store: {[key: string]:
[number, number]} = {};\n\n constructor(\n private router: Router,\n /** @docsNotRequired */ public
readonly viewportScroller: ViewportScroller, private options: {\n scrollPositionRestoration?:
'disabled'|'enabled'|'top',\n anchorScrolling?: 'disabled'|'enabled'\n }) = {}) {\n // Default both options to
'disabled'\n options.scrollPositionRestoration = options.scrollPositionRestoration || 'disabled';\n
options.anchorScrolling = options.anchorScrolling || 'disabled';\n }\n\n init(): void {\n // we want to disable the
automatic scrolling because having two places\n // responsible for scrolling results race conditions, especially
given\n // that browser don't implement this behavior consistently\n if (this.options.scrollPositionRestoration !==
'disabled') {\n this.viewportScroller.setHistoryScrollRestoration('manual');\n }\n\n this.routerEventsSubscription = this.createScrollEvents();\n this.scrollEventsSubscription =
this.consumeScrollEvents();\n }\n\n private createScrollEvents() {\n return this.router.events.subscribe(e => {\n
if (e instanceof NavigationStart) {\n // store the scroll position of the current stable navigations.\n
this.store[this.lastId] = this.viewportScroller.getScrollPosition();\n this.lastSource = e.navigationTrigger;\n

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this.restoredId = e.restoredState ? e.restoredState.navigationId : 0;\n } else if (e instanceof NavigationEnd) {\n
this.lastId = e.id;\n this.scheduleScrollEvent(e, this.router.parseUrl(e.urlAfterRedirects).fragment);\n }\n
});\n }\n\n private consumeScrollEvents() {\n return this.router.events.subscribe(e => {\n if (!(e instanceof
Scroll)) return;\n // a popstate event. The pop state event will always ignore anchor scrolling.\n if (e.position)
{\n if (this.options.scrollPositionRestoration === 'top') {\n this.viewportScroller.scrollToPosition([0, 0]);\n
} else if (this.options.scrollPositionRestoration === 'enabled') {\n
this.viewportScroller.scrollToPosition(e.position);\n }\n // imperative navigation "forward"\n } else {\n
if (e.anchor && this.options.anchorScrolling === 'enabled') {\n
this.viewportScroller.scrollToAnchor(e.anchor);\n } else if (this.options.scrollPositionRestoration !==
'disabled') {\n this.viewportScroller.scrollToPosition([0, 0]);\n }\n }\n });\n }\n\n private
scheduleScrollEvent(routerEvent: NavigationEnd, anchor: string|null): void {\n this.router.triggerEvent(new
Scroll(\n routerEvent, this.lastSource === 'popstate' ? this.store[this.restoredId] : null, anchor));\n }\n\n /**
@nodoc *\n ngOnDestroy() {\n if (this.routerEventsSubscription) {\n
this.routerEventsSubscription.unsubscribe();\n }\n if (this.scrollEventsSubscription) {\n
this.scrollEventsSubscription.unsubscribe();\n }\n }\n }\n\n", /**\n * @license\n * Copyright Google LLC All
Rights Reserved.\n * Use of this source code is governed by an MIT-style license that can be\n * found in the
LICENSE file at https://angular.io/license\n *\n\nimport {APP_BASE_HREF, HashLocationStrategy, Location,
LOCATION_INITIALIZED, LocationStrategy, PathLocationStrategy, PlatformLocation, ViewportScroller,
getDOM as getDOM} from '@angular/common';\nimport {ANALYZE_FOR_ENTRY_COMPONENTS,
APP_BOOTSTRAP_LISTENER, APP_INITIALIZER, ApplicationRef, Compiler, ComponentRef, Inject,
Injectable, InjectionToken, Injector, ModuleWithProviders, NgModule, NgModuleFactoryLoader, NgProbeToken,
Optional, Provider, SkipSelf, SystemJsNgModuleLoader} from '@angular/core';\nimport {of, Subject} from
'rxjs';\n\nimport {EmptyOutletComponent} from './components/empty_outlet';\nimport {Route, Routes} from
'./config';\nimport {RouterLink, RouterLinkWithHref} from './directives/router_link';\nimport {RouterLinkActive}
from './directives/router_link_active';\nimport {RouterOutlet} from './directives/router_outlet';\nimport {Event}
from './events';\nimport {RouteReuseStrategy} from './route_reuse_strategy';\nimport {ErrorHandler, Router} from
'./router';\nimport {ROUTES} from './router_config_loader';\nimport {ChildrenOutletContexts} from
'./router_outlet_context';\nimport {NoPreloading, PreloadAllModules, PreloadingStrategy, RouterPreloader} from
'./router_preloader';\nimport {RouterScroller} from './router_scroller';\nimport {ActivatedRoute} from
'./router_state';\nimport {UrlHandlingStrategy} from './url_handling_strategy';\nimport {DefaultUrlSerializer,
UrlSerializer, UrlTree} from './url_tree';\nimport {flatten} from './utils/collection';\n\n/**\n * The directives defined
in the `RouterModule`.\n *\nconst ROUTER_DIRECTIVES = [\n RouterOutlet, RouterLink,
RouterLinkWithHref, RouterLinkActive, EmptyOutletComponent];\n\n/**\n * A [DI token](guide/glossary/#di-
token) for the router service.\n *\n * @publicApi\n *\nexport const ROUTER_CONFIGURATION = new
InjectionToken<ExtraOptions>('ROUTER_CONFIGURATION');\n\n/**\n * @docsNotRequired\n *\nexport const
ROUTER_FORROOT_GUARD = new InjectionToken<void>('ROUTER_FORROOT_GUARD');\n\nexport const
ROUTER_PROVIDERS: Provider[] = [\n Location,\n {provide: UrlSerializer, useClass: DefaultUrlSerializer},\n
{\n provide: Router,\n useFactory: setupRouter,\n deps: [\n UrlSerializer, ChildrenOutletContexts,
Location, Injector, NgModuleFactoryLoader, Compiler,\n ROUTES, ROUTER_CONFIGURATION,
[UrlHandlingStrategy, new Optional()],\n [RouteReuseStrategy, new Optional()]\n]\n },\n
ChildrenOutletContexts,\n {provide: ActivatedRoute, useFactory: rootRoute, deps: [Router]},\n {provide:
NgModuleFactoryLoader, useClass: SystemJsNgModuleLoader},\n RouterPreloader,\n NoPreloading,\n
PreloadAllModules,\n {provide: ROUTER_CONFIGURATION, useValue: {enableTracing: false}},\n];\n\nexport
function routerNgProbeToken() {\n return new NgProbeToken('Router', Router);\n }\n\n/**\n * @description\n *\n * Adds directives and providers for in-app navigation among views defined in an application.\n * Use the Angular
`Router` service to declaratively specify application states and manage state\n * transitions.\n *\n * You can import
this NgModule multiple times, once for each lazy-loaded bundle.\n * However, only one `Router` service can be
active.\n * To ensure this, there are two ways to register routes when importing this module:\n *\n * The

```

`forRoot()` method creates an `NgModule` that contains all the directives, the given routes, and the `Router` service itself.

The `forChild()` method creates an `NgModule` that contains all the directives and the given routes, but does not include the `Router` service.

@see [Routing and Navigation guide](guide/router) for an overview of how the `Router` service should be used.

@publicApi

```

@NgModule({
 declarations: ROUTER_DIRECTIVES,
 exports: ROUTER_DIRECTIVES,
 entryComponents:
 [EmptyOutletComponent]
})
export class RouterModule {
 // Note: We are injecting the Router so it gets
 // created eagerly...
 constructor(@Optional() @Inject(ROUTER_FORROOT_GUARD) guard: any, @Optional()
 router: Router) {}
 /**
 * Creates and configures a module with all the router providers and directives.
 * Optionally sets up an application listener to perform an initial navigation.
 * When registering the NgModule
 * at the root, import as follows:
 *
 * @NgModule({
 * imports:
 * [RouterModule.forRoot(ROUTES)]
 * })
 * class MyNgModule {}
 *
 * @param routes An array of `Route` objects that define the navigation paths for the application.
 * @param config An `ExtraOptions` configuration object that controls how navigation is performed.
 * @return The new `NgModule`.
 */
 static forRoot(routes: Routes, config?: ExtraOptions): ModuleWithProviders<RouterModule> {
 return {
 ngModule: RouterModule,
 providers: [
 ROUTER_PROVIDERS,
 provideRoutes(routes),
 {
 provide: ROUTER_FORROOT_GUARD,
 useFactory: provideForRootGuard,
 deps: [[Router,
 new Optional(),
 new SkipSelf()]]
 },
 {
 provide: ROUTER_CONFIGURATION,
 useValue: config ?
 config : {}
 },
 {
 provide: LocationStrategy,
 useFactory: provideLocationStrategy,
 deps: [PlatformLocation,
 [new Inject(APP_BASE_HREF),
 new Optional()],
 ROUTER_CONFIGURATION]
 },
 {
 provide: RouterScroller,
 useFactory: createRouterScroller,
 deps: [Router, ViewportScroller,
 ROUTER_CONFIGURATION]
 },
 {
 provide: PreloadingStrategy,
 useExisting: config && config.preloadingStrategy ?
 config.preloadingStrategy :
 NoPreloading
 },
 {
 provide: NgProbeToken,
 multi: true,
 useFactory: routerNgProbeToken,
 provideRouterInitializer(),
 }
]
 };
 }
 /**
 * Creates a module with all the router directives and a provider registering routes,
 * without creating a new Router service.
 * When registering for submodules and lazy-loaded submodules, create the
 * NgModule as follows:
 *
 * @NgModule({
 * imports: [RouterModule.forChild(ROUTES)]
 * })
 * class MyNgModule {}
 *
 * @param routes An array of `Route` objects that define the navigation paths for the submodule.
 * @return The new NgModule.
 */
 static forChild(routes: Routes): ModuleWithProviders<RouterModule> {
 return {
 ngModule: RouterModule,
 providers:
 [provideRoutes(routes)]
 };
 }
 export function createRouterScroller(
 router: Router, viewportScroller: ViewportScroller,
 config: ExtraOptions): RouterScroller {
 if (config.scrollOffset) {
 viewportScroller.setOffset(config.scrollOffset);
 }
 return new RouterScroller(router, viewportScroller, config);
 }
 export function provideLocationStrategy(
 platformLocationStrategy: PlatformLocation, baseHref: string,
 options: ExtraOptions = {}) {
 return options.useHash ? new HashLocationStrategy(
 platformLocationStrategy, baseHref) :
 new PathLocationStrategy(
 platformLocationStrategy, baseHref);
 }
 export function provideForRootGuard(router: Router): any {
 if ((typeof ngDevMode === 'undefined' || ngDevMode) && router) {
 throw new Error(`RouterModule.forRoot() called twice. Lazy loaded modules should use RouterModule.forChild() instead.`);
 }
 return 'guarded';
 }
 /**
 * Registers a [DI provider](guide/glossary#provider) for a set of routes.
 * @param routes The route configuration to provide.
 * @usageNotes
 *
 * @NgModule({
 * imports:
 * [RouterModule.forChild(ROUTES)],
 * providers: [provideRoutes(EXTRA_ROUTES)]
 * })
 * class MyNgModule {}
 *
 * @publicApi
 */
 export function provideRoutes(routes: Routes): any {
 return [
 {
 provide: ANALYZE_FOR_ENTRY_COMPONENTS,
 multi: true,
 useValue: routes
 },
 {
 provide: ROUTES,
 multi: true,
 useValue: routes
 }
];
 }
 /**
 * Allowed values in an `ExtraOptions` object that configure
 * when the router performs the initial navigation operation.
 *
 * 'enabledNonBlocking' - (default) The initial navigation starts after the
 * root component has been created. The bootstrap is not blocked on the
 * completion of the initial
 * navigation.
 *
 * 'enabledBlocking' - The initial navigation starts before the root

```



component is created.

- `initialNavigation`: `InitialNavigation`; A custom error handler for failed navigations. If the handler returns a value, the navigation Promise is resolved with this value. If the handler throws an exception, the navigation Promise is rejected with the exception.
- `errorHandler`: `ErrorHandler`; Configures a preloading strategy. One of `PreloadAllModules` or `NoPreloading` (the default).
- `preloadingStrategy`: `any`; Define what the router should do if it receives a navigation request to the current URL. Default is `ignore`, which causes the router ignores the navigation. This can disable features such as a "refresh" button. Use this option to configure the behavior when navigating to the current URL. Default is `ignore`.
- `onSameUrlNavigation`: `'reload'|'ignore'`; Configures if the scroll position needs to be restored when navigating back.
  - `'disabled'` - (Default) Does nothing. Scroll position is maintained on navigation.
  - `'top'` - Sets the scroll position to `x = 0, y = 0` on all navigation.
  - `'enabled'` - Restores the previous scroll position on backward navigation, else sets the position to the anchor if one is provided, or sets the scroll position to `[0, 0]` (forward navigation). This option will be the default in the future. You can implement custom scroll restoration behavior by adapting the enabled behavior as in the following example.

```

class AppModule {
 constructor(router: Router, viewportScroller: ViewportScroller) {
 router.events.pipe(
 filter((e: Event): e is Scroll => e instanceof Scroll)
).subscribe(e => {
 if (e.position) {
 // backward navigation
 viewportScroller.scrollToPosition(e.position);
 } else if (e.anchor) {
 // anchor navigation
 viewportScroller.scrollToAnchor(e.anchor);
 } else {
 // forward navigation
 viewportScroller.scrollToPosition([0, 0]);
 }
 });
 }
}

```
- `scrollPositionRestoration`: `'disabled'|'enabled'|'top'`; When set to `'enabled'`, scrolls to the anchor element when the URL has a fragment. Anchor scrolling is disabled by default. Anchor scrolling does not happen on `'popstate'`. Instead, we restore the position that we stored or scroll to the top.
- `anchorScrolling`: `'disabled'|'enabled'`; Configures the scroll offset the router will use when scrolling to an element. When given a tuple with `x` and `y` position value, the router uses that offset each time it scrolls. When given a function, the router invokes the function every time it restores scroll position.
- `scrollOffset`: `[number, number] | (() => [number, number])`; Defines how the router merges parameters, data, and resolved data from parent to child routes. By default (`'emptyOnly'`), inherits parent parameters only for path-less or component-less routes. Set to `'always'` to enable unconditional inheritance of parent parameters.
- `paramsInheritanceStrategy`: `'emptyOnly'|'always'`; A custom handler for

malformed URI errors. The handler is invoked when `encodedURI` contains

- \* invalid character sequences.

The default implementation is to redirect to the root URL, dropping

- \* any path or parameter information.

The function takes three parameters:

- \* - `URIError` - Error thrown when parsing a bad URL.
- \* - `UrlSerializer` - UrlSerializer that's configured with the router.
- \* - `url` - The malformed URL that caused the URIError

```
malformedUriErrorHandler?: (error: URIError, urlSerializer: UrlSerializer, url: string) => UrlTree;
```

Defines when the router updates the browser URL. By default ('deferred'),

- \* update after successful navigation.
- \* Set to 'eager' if prefer to update the URL at the beginning of navigation.
- \* Updating the URL early allows you to handle a failure of navigation by
- \* showing an error message with the URL that failed.

```
urlUpdateStrategy?: 'deferred'|'eager';
```

Enables a bug fix that corrects relative link resolution in components with empty paths.

```
Example:
const routes = [
 { path: 'a', component: AComponent },
 { path: 'b', component: BComponent },
];
```

From the `ContainerComponent`, this will not work:

```
<a [routerLink]="['./a']">Link to A
```

However, this will work:

```
<a [routerLink]="['./a']">Link to A
```

In other words, you're required to use `./` rather than `.`.

The default in v11 is `corrected`.

```
relativeLinkResolution?: 'legacy'|'corrected';
```

export function setupRouter(urlSerializer: UrlSerializer, contexts: ChildrenOutletContexts, location: Location, injector: Injector, loader: NgModuleFactoryLoader, compiler: Compiler, config: Route[], opts: ExtraOptions = {}, urlHandlingStrategy?: UrlHandlingStrategy, routeReuseStrategy?: RouteReuseStrategy) {

```
 const router = new Router(
 null, urlSerializer, contexts,
 location, injector, loader, compiler, flatten(config));
 if (urlHandlingStrategy) {
 router.urlHandlingStrategy = urlHandlingStrategy;
 }
 if (routeReuseStrategy) {
 router.routeReuseStrategy = routeReuseStrategy;
 }
 assignExtraOptionsToRouter(opts, router);
 if (opts.enableTracing) {
 const dom = getDOM();
 router.events.subscribe((e: Event) => {
 dom.logGroup(`Router Event: ${e.constructor.name}`);
 dom.log(e.toString());
 dom.log(e);
 dom.logGroupEnd();
 });
 }
 return router;
}
```

export function assignExtraOptionsToRouter(opts: ExtraOptions, router: Router): void {

```
 if (opts.errorHandler) {
 router.errorHandler = opts.errorHandler;
 }
 if (opts.malformedUriErrorHandler) {
 router.malformedUriErrorHandler = opts.malformedUriErrorHandler;
 }
 if (opts.onSameUrlNavigation) {
 router.onSameUrlNavigation = opts.onSameUrlNavigation;
 }
 if (opts.paramsInheritanceStrategy) {
 router.paramsInheritanceStrategy = opts.paramsInheritanceStrategy;
 }
 if (opts.relativeLinkResolution) {
 router.relativeLinkResolution = opts.relativeLinkResolution;
 }
 if (opts.urlUpdateStrategy) {
 router.urlUpdateStrategy = opts.urlUpdateStrategy;
 }
}
```

export function rootRoute(router: Router): ActivatedRoute {

```
 return router.routerState.root;
}
```

Router initialization requires two steps:

- \* First, we start the navigation in a `APP\_INITIALIZER` to block the bootstrap if a resolver or a guard executes asynchronously.
- \* Next, we actually run activation in a `BOOTSTRAP\_LISTENER`, using the `afterPreactivation` hook provided by the router.

The router navigation starts, reaches the point when preactivation is done, and then pauses. It waits for the hook to be resolved. We then resolve it only in a bootstrap listener.

```
@Injectable()
export class RouterInitializer {
 private initNavigation: boolean = false;
 private resultOfPreactivationDone = new Subject<void>();

 constructor(private injector: Injector) {}

 appInitializer(): Promise<any> {
 const p: Promise<any> = this.injector.get(LOCATION_INITIALIZED, Promise.resolve(null));
 return p.then(() => {
 let resolve: Function = null!;
 const res = new Promise(r => resolve = r);
 const router = this.injector.get(Router);
 const opts = this.injector.get(ROUTER_CONFIGURATION);
 if (opts.initialNavigation === 'disabled') {
 router.setUpLocationChangeListener();
 resolve(true);
 } else {
 // TODO: enabled is deprecated as of v11, can be removed in v13
 opts.initialNavigation === 'enabled' || opts.initialNavigation === 'enabledBlocking'
 } {
 router.hooks.afterPreactivation = () => {
 // only the initial navigation should be delayed
 if (!this.initNavigation) {
 this.initNavigation = true;
 resolve(true);
 return this.resultOfPreactivationDone;
 }
 // subsequent navigations should not be delayed
 } else {
 return of(null) as any;
 }
 }
 router.initialNavigation();
 } else {
 resolve(true);
 }
 }
}
```

```

}\n\n return res;\n });\n }\n\n bootstrapListener(bootstrappedComponentRef: ComponentRef<any>): void {\n
const opts = this.injector.get(ROUTER_CONFIGURATION);\n const preloader =
this.injector.get(RouterPreloader);\n const routerScroller = this.injector.get(RouterScroller);\n const router =
this.injector.get(Router);\n const ref = this.injector.get<ApplicationRef>(ApplicationRef);\n\n if
(bootstrappedComponentRef !== ref.components[0]) {\n return;\n }\n\n // Default case\n if
(opts.initialNavigation === 'enabledNonBlocking' || opts.initialNavigation === undefined) {\n
router.initialNavigation();\n }\n\n preloader.setUpPreloading();\n routerScroller.init();\n
router.resetRootComponentType(ref.componentTypes[0]);\n this.resultOfPreactivationDone.next(null!);\n
this.resultOfPreactivationDone.complete();\n }\n}\n\nexport function getAppInitializer(r: RouterInitializer) {\n
return r.appInitializer.bind(r);\n}\n\nexport function getBootstrapListener(r: RouterInitializer) {\n return
r.bootstrapListener.bind(r);\n}\n\n/**\n * A [DI token](guide/glossary/#di-token) for the router initializer that\n * is
called after the app is bootstrapped.\n *\n * @publicApi\n */\nexport const ROUTER_INITIALIZER =\n new
InjectionToken<(compRef: ComponentRef<any>) => void>('Router Initializer');\n\nexport function
provideRouterInitializer() {\n return [\n RouterInitializer,\n {\n provide: APP_INITIALIZER,\n multi:
true,\n useFactory: getAppInitializer,\n deps: [RouterInitializer]\n },\n {\n provide:
ROUTER_INITIALIZER, useFactory: getBootstrapListener, deps: [RouterInitializer],\n {provide:
APP_BOOTSTRAP_LISTENER, multi: true, useExisting: ROUTER_INITIALIZER},\n];\n}\n\n", "/*\n *
@license\n * Copyright Google LLC All Rights Reserved.\n *\n * Use of this source code is governed by an MIT-
style license that can be\n * found in the LICENSE file at https://angular.io/license\n */\n\n * @module\n *
@description\n * Entry point for all public APIs of the common package.\n */\n\nimport {Version} from
'@angular/core';\n\n/**\n * @publicApi\n */\nexport const VERSION = new Version('11.0.2');\n\n", "/*\n *
@license\n * Copyright Google LLC All Rights Reserved.\n *\n * Use of this source code is governed by an MIT-
style license that can be\n * found in the LICENSE file at https://angular.io/license\n */\n\nexport
{EmptyOutletComponent} from './components/empty_outlet';\nexport {assignExtraOptionsToRouter as
assignExtraOptionsToRouter, ROUTER_PROVIDERS as ROUTER_PROVIDERS} from
'./router_module';\nexport {flatten as flatten} from './utils/collection';\n\n", "/*\n * @license\n * Copyright Google
LLC All Rights Reserved.\n *\n * Use of this source code is governed by an MIT-style license that can be\n * found
in the LICENSE file at https://angular.io/license\n */\n\nexport {Data, DeprecatedLoadChildren, LoadChildren,
LoadChildrenCallback, QueryParamsHandling, ResolveData, Route, Routes, RunGuardsAndResolvers, UrlMatcher,
UrlMatchResult} from './config';\nexport {RouterLink, RouterLinkWithHref} from './directives/router_link';\nexport
{RouterLinkActive} from './directives/router_link_active';\nexport {RouterOutlet} from
'./directives/router_outlet';\nexport {ActivationEnd, ActivationStart, ChildActivationEnd, ChildActivationStart,
Event, GuardsCheckEnd, GuardsCheckStart, NavigationCancel, NavigationEnd, NavigationError, NavigationStart,
ResolveEnd, ResolveStart, RouteConfigLoadEnd, RouteConfigLoadStart, RouterEvent, RoutesRecognized, Scroll}
from './events';\nexport {CanActivate, CanActivateChild, CanDeactivate, CanLoad, Resolve} from
'./interfaces';\nexport {BaseRouteReuseStrategy, DetachedRouteHandle, RouteReuseStrategy} from
'./route_reuse_strategy';\nexport {Navigation, NavigationBehaviorOptions, NavigationExtras, Router,
UrlCreationOptions} from './router';\nexport {ROUTES} from './router_config_loader';\nexport {ExtraOptions,
InitialNavigation, provideRoutes, ROUTER_CONFIGURATION, ROUTER_INITIALIZER, RouterModule} from
'./router_module';\nexport {ChildrenOutletContexts, OutletContext} from './router_outlet_context';\nexport
{NoPreloading, PreloadAllModules, PreloadingStrategy, RouterPreloader} from './router_preloader';\nexport
{ActivatedRoute, ActivatedRouteSnapshot, RouterState, RouterStateSnapshot} from './router_state';\nexport
{convertToParamMap, ParamMap, Params, PRIMARY_OUTLET} from './shared';\nexport {UrlHandlingStrategy}
from './url_handling_strategy';\nexport {DefaultUrlSerializer, UrlSegment, UrlSegmentGroup, UrlSerializer,
UrlTree} from './url_tree';\nexport {VERSION} from './version';\nexport * from './private_export';\n\n", "/*\n *
@license\n * Copyright Google LLC All Rights Reserved.\n *\n * Use of this source code is governed by an MIT-
style license that can be\n * found in the LICENSE file at https://angular.io/license\n */\n\n * @module\n *
@description\n * Entry point for all public APIs of this package.\n */\n\nexport * from './src/index';\n\n// This file

```



AE;gBACpE,IAAI,CAAC,CAAC,OAAO,CAAC,CAAC,CAAC,CAAC,CAAC,CAAC,GAAG,CAAC,IAAI,MAA  
M,CAAC,SAAS,CAAC,oBAAoB,CAAC,IAAI,CAAC,CAAC,EAAE,CAAC,CAAC,CAAC,CAAC,CAAC;  
oBAC1E,CAAC,CAAC,CAAC,CAAC,CAAC,CAAC,CAAC,GAAG,CAAC,CAAC,CAAC,CAAC,CAAC,CAAC,  
CAAC;aACzB;QACL,OAAO,CAAC,CAAC;IACb,CAAC;aAEe,UAAU,CAAC,UAAU,EAAE,MAAM,EAAE,GA  
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,CAAC,CAAC,CAAC,EAAE,EAAE,IAAI,EAAE,EAAE,EAAE,GAAG,EAAE,EAAE,EAAE,CAAC,EAAE  
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AO,IAAI,CAAC,EAAE,CAAC,EAAE,CAAC,CAAC;QACzJ,SAAS,IAAI,CAAC,CAAC,IAAI,OAAO,UAAU,CA  
AC,IAAI,OAAO,IAAI,CAAC,CAAC,CAAC,EAAE,CAAC,CAAC,CAAC,CAAC,EAAE,CAAC,EAAE;QAC1E,S  
AAS,IAAI,CAAC,EAAE;YACZ,IAAI,CAAC;gBAAE,MAAM,IAAI,SAAS,CAAC,iCAAiC,CAAC,CAAC;YAC9  
D,OAAO,CAAC;gBAAE,IAAI;oBACV,IAAI,CAAC,GAAG,CAAC,EAAE,CAAC,KAAC,CAAC,GAAG,EAAE,  
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AAG,CAAC,CAAC,OAAO,CAAC,KAAC,CAAC,CAAC,GAAG,CAAC,CAAC,QAAQ,CAAC,KAAC,CAAC,CA  
AC,IAAI,CAAC,CAAC,CAAC,EAAE,CAAC,CAAC,GAAG,CAAC,CAAC,IAAI,CAAC,IAAI,CAAC,CAAC,CA  
AC,GAAG,CAAC,CAAC,IAAI,CAAC,CAAC,EAAE,EAAE,CAAC,CAAC,CAAC,CAAC,EAAE,IAAI;wBAAE,  
OAAO,CAAC,CAAC;oBAC7J,IAAI,CAAC,GAAG,CAAC,EAAE,CAAC;wBAAE,EAAE,GAAG,CAAC,EAAE,  
CAAC,CAAC,CAAC,GAAG,CAAC,EAAE,CAAC,CAAC,KAAC,CAAC,CAAC;oBACxC,QAAQ,EAAE,CAAC,  
CAAC,CAAC;wBACT,KAAC,CAAC,CAAC;wBAAC,KAAC,CAAC;4BAAE,CAAC,GAAG,EAAE,CAAC;4BA  
AC,MAAM;wBAC9B,KAAC,CAAC;4BAAE,CAAC,CAAC,KAAC,EAAE,CAAC;4BAAC,OAAO,EAAE,KAAC  
,EAAE,EAAE,CAAC,CAAC,CAAC,EAAE,IAAI,EAAE,KAAC,EAAE,CAAC;wBACxD,KAAC,CAAC;4BAAE,

CAAC,CAAC,KAAK,EAAE,CAAC;4BAAC,CAAC,GAAG,EAAE,CAAC,CAAC,CAAC,CAAC;4BAAC,EAAE,  
GAAG,CAAC,CAAC,CAAC,CAAC;4BAAC,SAAS;wBACjD,KAAK,CAAC;4BAAE,EAAE,GAAG,CAAC,CAA  
C,GAAG,CAAC,GAAG,EAAE,CAAC;4BAAC,CAAC,CAAC,IAAI,CAAC,GAAG,EAAE,CAAC;4BAAC,SAAS;  
wBACjD;4BACl,IAAI,EAAE,CAAC,GAAG,CAAC,CAAC,IAAI,EAAE,CAAC,GAAG,CAAC,CAAC,MAAM,G  
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```
(this._stubbedModules[path]) {\n return this._stubbedModules[path];\n } else {\n return
<any>Promise.reject(new Error(`Cannot find module ${path}`));\n }\n }\n }\n\nfunction
isUrlHandlingStrategy(opts: ExtraOptions\n UrlHandlingStrategy): opts is UrlHandlingStrategy
{\n // This property check is needed because UrlHandlingStrategy is an interface and doesn't exist at\n // runtime.\n return 'shouldProcessUrl' in opts;\n}\n\n/**\n * Router setup factory function used for testing.\n */\n * @publicApi\n * ^\nexport function setupTestingRouter(\n urlSerializer: UrlSerializer, contexts: ChildrenOutletContexts, location:
Location,\n loader: NgModuleFactoryLoader, compiler: Compiler, injector: Injector, routes: Route[][],\n opts?:
ExtraOptions, urlHandlingStrategy?: UrlHandlingStrategy): Router;\n\n/**\n * Router setup factory function used
for testing.\n */\n * @deprecated As of v5.2. The 2nd-to-last argument should be `ExtraOptions`, not\n *
`UrlHandlingStrategy`\n * @publicApi\n * ^\nexport function setupTestingRouter(\n urlSerializer: UrlSerializer, contexts: ChildrenOutletContexts, location: Location,\n loader: NgModuleFactoryLoader, compiler: Compiler,
injector: Injector, routes: Route[][],\n urlHandlingStrategy?: UrlHandlingStrategy): Router;\n\n/**\n * Router
setup factory function used for testing.\n */\n * @publicApi\n * ^\nexport function setupTestingRouter(\n urlSerializer: UrlSerializer, contexts: ChildrenOutletContexts, location: Location,\n loader:
NgModuleFactoryLoader, compiler: Compiler, injector: Injector, routes: Route[][],\n opts?:
ExtraOptions|UrlHandlingStrategy, urlHandlingStrategy?: UrlHandlingStrategy) {\n const router = new Router(\n null!, urlSerializer, contexts, location, injector, loader, compiler, flatten(routes));\n if (opts) {\n // Handle
deprecated argument ordering.\n if (isUrlHandlingStrategy(opts)) {\n router.urlHandlingStrategy = opts;\n }
else {\n // Handle ExtraOptions\n assignExtraOptionsToRouter(opts, router);\n }\n }\n if
(urlHandlingStrategy) {\n router.urlHandlingStrategy = urlHandlingStrategy;\n }\n return router;\n}\n\n/**\n *
@description\n */\n * Sets up the router to be used for testing.\n */\n * The modules sets up the router to be used for
testing.\n * It provides spy implementations of `Location`, `LocationStrategy`, and { @link\n *
NgModuleFactoryLoader }.\n */\n * @usageNotes\n * ### Example\n */\n * ``\n * beforeEach(() => {\n *
TestBed.configureTestingModule({\n * imports: [\n * RouterTestingModule.withRoutes(\n * [{path: '',
component: BlankCmp}, {path: 'simple', component: SimpleCmp}]\n *)\n *]\n * });\n * });\n * ``\n * @publicApi\n * ^\n@NgModule({\n exports: [RouterModule],\n providers: [\n ROUTER_PROVIDERS,
{provide: Location, useClass: SpyLocation},\n {provide: LocationStrategy, useClass: MockLocationStrategy},\n {provide: NgModuleFactoryLoader, useClass: SpyNgModuleFactoryLoader},\n {\n provide: Router,\n useFactory: setupTestingRouter,\n deps: [\n UrlSerializer, ChildrenOutletContexts, Location,
NgModuleFactoryLoader, Compiler, Injector,\n ROUTES, ROUTER_CONFIGURATION,
[UrlHandlingStrategy, new Optional()]\n]\n },\n {\n provide: PreloadingStrategy, useExisting: NoPreloading,\n provideRoutes([\n])\n })\n]\n})\nexport class RouterTestingModule {\n static withRoutes(routes: Routes, config?:
ExtraOptions):\n ModuleWithProviders<RouterTestingModule> {\n return {\n ngModule:
RouterTestingModule,\n providers: [\n provideRoutes(routes),\n {\n provide:
ROUTER_CONFIGURATION, useValue: config ? config : {},\n }]\n };\n }\n }\n}\n\n/**\n * @license\n *
Copyright Google LLC All Rights Reserved.\n * Use of this source code is governed by an MIT-style license
that can be\n * found in the LICENSE file at https://angular.io/license\n */\n * @module\n * @description\n * Entry point for all public APIs of the router/testing package.\n */\n * ^\nexport * from
'./router_testing_module';\n\n/**\n * @license\n * Copyright Google LLC All Rights Reserved.\n * Use of this
source code is governed by an MIT-style license that can be\n * found in the LICENSE file at
https://angular.io/license\n */\n * @module\n * @description\n * Entry point for all public APIs of this
package.\n */\n * ^\nexport * from './src/testing';\n\n// This file only reexports content of the `src` folder. Keep it that
way.\n\n/**\n * @license\n * Copyright Google LLC All Rights Reserved.\n * Use of this source code is
governed by an MIT-style license that can be\n * found in the LICENSE file at https://angular.io/license\n */\n * ^\n//
This file is not used to build this module. It is only used during editing\n// by the TypeScript language service and
during build for verification. `ngc` replaces this file with production index.ts when it rewrites private symbol\n// names.\n * ^\nexport * from './public_api';\n\n/**\n * Generated bundle index. Do not edit.\n */\n * ^\nexport * from
'./index';\n\n}, "names": ["flatten", "assignExtraOptionsToRouter", "ROUTER_PROVIDERS"], "mappings": ";;;;;;;;;;A
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\* /opt/cola/permits/1358260535\_1657134905.7370887/0/router-11-0-2-tgz/package/fesm2015/testing.js.map

No license file was found, but licenses were detected in source scan.

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https://angular.io/\n * License: MIT\n *\n\n(function (global, factory) {\n typeof exports === 'object' && typeof
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global.ng.upgrade.static));\n})(this, (function (exports, common, core, router, _static) { 'use strict';\n\n /*\n *
 * @license\n * Copyright Google LLC All Rights Reserved.\n * \n * Use of this source code is governed by an
 MIT-style license that can be\n * found in the LICENSE file at https://angular.io/license\n *\n var 0 =
locationSyncBootstrapListener;\n /**\n * Creates an initializer that sets up `ngRoute` integration\n * along
with setting up the Angular router.\n * \n * @usageNotes\n * \n * <code-example
language="typescript">\n * @NgModule({\n * imports: [\n *
RouterModule.forRoot(SOME_ROUTES),\n * UpgradeModule\n *],\n * providers: [\n *
RouterUpgradeInitializer\n *]\n * })\n * export class AppModule {\n * ngDoBootstrap() {\n * }\n * }\n
 * </code-example>\n * \n * @publicApi\n * \n var RouterUpgradeInitializer = {\n * provide:
core.APP_BOOTSTRAP_LISTENER,\n * multi: true,\n * useFactory: 0,\n * deps:
[_static.UpgradeModule]\n * }; \n /**\n * @internal\n * \n function
locationSyncBootstrapListener(ngUpgrade) {\n * return function () {\n * setUpLocationSync(ngUpgrade);\n
 * };\n * }\n /**\n * Sets up a location change listener to trigger `history.pushState`. \n * Works around the
problem that `onPopState` does not trigger `history.pushState`. \n * Must be called *after* calling
`UpgradeModule.bootstrap`. \n * \n * @param ngUpgrade The upgrade NgModule. \n * @param urlType The
location strategy. \n * @see `HashLocationStrategy` \n * @see `PathLocationStrategy` \n * \n
 * @publicApi\n * \n function setUpLocationSync(ngUpgrade, urlType) {\n * if (urlType === void 0) {\n
 * urlType = 'path';\n * }\n * if (!ngUpgrade.$injector) {\n * throw new Error("\n RouterUpgradeInitializer
can be used only after UpgradeModule.bootstrap has been called.\n Remove RouterUpgradeInitializer and call
setUpLocationSync after UpgradeModule.bootstrap.\n ");\n * }\n * var router$1 =
ngUpgrade.injector.get(router.Router);\n * var location = ngUpgrade.injector.get(common.Location);\n
 * ngUpgrade.$injector.get('$rootScope')\n * .$on('$locationChangeStart', function (_, next, __) {\n * var
url;\n * if (urlType === 'path') {\n * url = resolveUrl(next);\n * }\n * else if (urlType ===
'hash') {\n * // Remove the first hash from the URL\n * var hashIdx = next.indexOf('#');\n
 * url = resolveUrl(next.substring(0, hashIdx) + next.substring(hashIdx + 1));\n * }\n * else {\n
 * throw 'Invalid URLType passed to setUpLocationSync: ' + urlType;\n * }\n * var path =
location.normalize(url.pathname);\n * router$1.navigateByUrl(path + url.search + url.hash);\n * });\n * }\n
 * }\n /**\n * Normalizes and parses a URL. \n * \n * - Normalizing means that a relative URL will be resolved into
an absolute URL in the context of\n * the application document. \n * - Parsing means that the anchor's
`protocol`, `hostname`, `port`, `pathname` and related\n * properties are all populated to reflect the normalized
URL. \n * \n * While this approach has wide compatibility, it doesn't work as expected on IE. On IE,
normalizing\n * happens similar to other browsers, but the parsed components will not be set. (E.g. if you assign\n

```



\*/

Found in path(s):

- \* /opt/cola/permits/1358260535\_1657134905.7370887/0/router-11-0-2-tgz/package/bundles/router.umd.js
- \* /opt/cola/permits/1358260535\_1657134905.7370887/0/router-11-0-2-tgz/package/bundles/router-testing.umd.min.js
- \* /opt/cola/permits/1358260535\_1657134905.7370887/0/router-11-0-2-tgz/package/bundles/router-testing.umd.js
- \* /opt/cola/permits/1358260535\_1657134905.7370887/0/router-11-0-2-tgz/package/bundles/router.umd.min.js

No license file was found, but licenses were detected in source scan.

/\*\*

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- \* (c) 2010-2020 Google LLC. <https://angular.io/>
- \* License: MIT

Found in path(s):

- \* /opt/cola/permits/1358260535\_1657134905.7370887/0/router-11-0-2-tgz/package/testing/testing.d.ts
- \* /opt/cola/permits/1358260535\_1657134905.7370887/0/router-11-0-2-tgz/package/upgrade.d.ts
- \* /opt/cola/permits/1358260535\_1657134905.7370887/0/router-11-0-2-tgz/package/upgrade/upgrade.d.ts
- \* /opt/cola/permits/1358260535\_1657134905.7370887/0/router-11-0-2-tgz/package/testing.d.ts
- \* /opt/cola/permits/1358260535\_1657134905.7370887/0/router-11-0-2-tgz/package/router.d.ts

No license file was found, but licenses were detected in source scan.

```
{ "version":3,"file":"router-testing.umd.js","sources":["../../../../../external/npm/node_modules/tslib/tslib.es6.js","../../../../../packages/router/testing/src/router_testing_module.ts","../../../../../packages/router/testing/src/testing.ts","../../../../../packages/router/testing/public_api.ts","../../../../../packages/router/testing/index.ts","../../../../../packages/router/testing/testing.ts"],"sourcesContent":["/*!
```

```
*****\r\nCopyright (c) Microsoft Corporation.\r\n\r\nPermission to use, copy, modify, and/or distribute this software for any\r\n\r\npurpose with or without fee is hereby granted.\r\n\r\n\r\nTHE SOFTWARE IS PROVIDED \"AS IS\" AND THE AUTHOR DISCLAIMS ALL WARRANTIES WITH\r\n\r\nREGARD TO THIS SOFTWARE INCLUDING ALL IMPLIED WARRANTIES OF MERCHANTABILITY\r\n\r\nAND FITNESS. IN NO EVENT SHALL THE AUTHOR BE LIABLE FOR ANY SPECIAL, DIRECT,\r\n\r\nINDIRECT, OR CONSEQUENTIAL DAMAGES OR ANY DAMAGES WHATSOEVER RESULTING FROM\r\n\r\nLOSS OF USE, DATA OR PROFITS, WHETHER IN AN ACTION OF CONTRACT, NEGLIGENCE OR\r\n\r\nOTHER TORTIOUS ACTION, ARISING OUT OF OR IN CONNECTION WITH THE USE OR\r\n\r\nPERFORMANCE OF THIS SOFTWARE.\r\n*****
```

```
\r\n/ global Reflect, Promise *\r\n\r\nvar extendStatics = function(d, b) {\r\n extendStatics = Object.setPrototypeOf ||\r\n ({ __proto__: [] } instanceof Array && function(d, b) { d.__proto__ = b; }) ||\r\n function(d, b) { for (var p in b) if (b.hasOwnProperty(p)) d[p] = b[p]; }; \r\n return extendStatics(d, b);\r\n};\r\n\r\n\r\nexport function __extends(d, b) {\r\n extendStatics(d, b);\r\n function __() { this.constructor = d; }\r\n d.prototype = b === null ? Object.create(b) : (__.prototype = b.prototype, new __());\r\n}\r\n\r\n\r\nexport var __assign = function() {\r\n __assign = Object.assign || function __assign(t) {\r\n for (var s, i = 1, n = arguments.length; i < n; i++) {\r\n s = arguments[i];\r\n for (var p in s) if (Object.prototype.hasOwnProperty.call(s, p)) t[p] = s[p];\r\n }\r\n return t;\r\n }\r\n return __assign.apply(this, arguments);\r\n}\r\n\r\n\r\nexport function __rest(s, e) {\r\n var t = {};\r\n for (var p in s) if
```

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(Object.prototype.hasOwnProperty.call(s, p) && e.indexOf(p) < 0)\r\n t[p] = s[p];\r\n if (s != null && typeof
Object.getOwnPropertySymbols === "function")\r\n for (var i = 0, p = Object.getOwnPropertySymbols(s); i <
p.length; i++) {\r\n if (e.indexOf(p[i]) < 0 && Object.prototype.propertyIsEnumerable.call(s, p[i]))\r\n
 t[p[i]] = s[p[i];\r\n }\r\n return t;\r\n}\r\n\r\nexport function __decorate(decorators, target, key, desc) {\r\n
var c = arguments.length, r = c < 3 ? target : desc === null ? desc = Object.getOwnPropertyDescriptor(target, key) :
desc, d;\r\n if (typeof Reflect === "object" && typeof Reflect.decorate === "function") r =
Reflect.decorate(decorators, target, key, desc);\r\n else for (var i = decorators.length - 1; i >= 0; i--) if (d =
decorators[i]) r = (c < 3 ? d(r) : c > 3 ? d(target, key, r) : d(target, key)) || r;\r\n return c > 3 && r &&
Object.defineProperty(target, key, r), r;\r\n}\r\n\r\nexport function __param(paramIndex, decorator) {\r\n return
function (target, key) { decorator(target, key, paramIndex); }\r\n}\r\n\r\nexport function __metadata(metadataKey,
metadataValue) {\r\n if (typeof Reflect === "object" && typeof Reflect.metadata === "function") return
Reflect.metadata(metadataKey, metadataValue);\r\n}\r\n\r\nexport function __awaiter(thisArg, _arguments, P,
generator) {\r\n function adopt(value) { return value instanceof P ? value : new P(function (resolve) {
resolve(value); }); }\r\n return new (P || (P = Promise))(function (resolve, reject) {\r\n function fulfilled(value)
{ try { step(generator.next(value)); } catch (e) { reject(e); } }\r\n function rejected(value) { try {
step(generator["throw"](value)); } catch (e) { reject(e); } }\r\n function step(result) { result.done ?
resolve(result.value) : adopt(result.value).then(fulfilled, rejected); }\r\n step((generator =
generator.apply(thisArg, _arguments || [])).next());\r\n });\r\n}\r\n\r\nexport function __generator(thisArg, body)
{\r\n var _ = { label: 0, sent: function() { if (t[0] & 1) throw t[1]; return t[1]; }, trys: [], ops: [] }, f, y, t, g;\r\n
return g = { next: verb(0), "throw": verb(1), "return": verb(2) }, typeof Symbol === "function" &&
(g[Symbol.iterator] = function() { return this; }), g;\r\n function verb(n) { return function (v) { return step([n, v]);
}; }\r\n function step(op) {\r\n if (f) throw new TypeError("Generator is already executing.");\r\n while
(1) try {\r\n if (f = 1, y && (t = op[0] & 2 ? y["return"] : op[0] ? y["throw"] || ((t = y["return"]) &&
t.call(y, 0) : y.next) && !(t = t.call(y, op[1])).done) return t;\r\n if (y = 0, t) op = [op[0] & 2, t.value];\r\n
switch (op[0]) {\r\n case 0: case 1: t = op; break;\r\n case 4: _.label++; return { value: op[1],
done: false }; \r\n case 5: _.label++; y = op[1]; op = [0]; continue;\r\n case 7: op = _.ops.pop();
_.trys.pop(); continue;\r\n default:\r\n if (!(t = _.trys, t = t.length > 0 && t[t.length - 1]) &&
(op[0] === 6 || op[0] === 2)) { _ = 0; continue; }\r\n if (op[0] === 3 && (!t || (op[1] > t[0] && op[1] <
t[3]))) { _.label = op[1]; break; }\r\n if (op[0] === 6 && _.label < t[1]) { _.label = t[1]; t = op; break;
}\r\n if (t && _.label < t[2]) { _.label = t[2]; _.ops.push(op); break; }\r\n if (t[2])
_.ops.pop();\r\n _.trys.pop(); continue;\r\n }\r\n op = body.call(thisArg, _);\r\n } catch
(e) { op = [6, e]; y = 0; } finally { f = t = 0; }\r\n if (op[0] & 5) throw op[1]; return { value: op[0] ? op[1] : void
0, done: true }; }\r\n }\r\n}\r\n\r\nexport var __createBinding = Object.create ? (function(o, m, k, k2) {\r\n if (k2
=== undefined) k2 = k;\r\n Object.defineProperty(o, k2, { enumerable: true, get: function() { return m[k]; }
});\r\n}): (function(o, m, k, k2) {\r\n if (k2 === undefined) k2 = k;\r\n o[k2] = m[k];\r\n});\r\n\r\nexport
function __exportStar(m, exports) {\r\n for (var p in m) if (p !== "default" && !exports.hasOwnProperty(p))
__createBinding(exports, m, p);\r\n}\r\n\r\nexport function __values(o) {\r\n var s = typeof Symbol ===
"function" && Symbol.iterator, m = s && o[s], i = 0;\r\n if (m) return m.call(o);\r\n if (o && typeof o.length
=== "number") return {\r\n next: function () {\r\n if (o && i >= o.length) o = void 0;\r\n return {
value: o && o[i++], done: !o }; \r\n };\r\n };\r\n throw new TypeError(s ? "Object is not iterable." :
"Symbol.iterator is not defined.");\r\n}\r\n\r\nexport function __read(o, n) {\r\n var m = typeof Symbol ===
"function" && o[Symbol.iterator];\r\n if (!m) return o;\r\n var i = m.call(o), r, ar = [], e;\r\n try {\r\n while ((n === void 0 || n-- > 0) && !(r = i.next()).done) ar.push(r.value);\r\n } catch (error) { e = { error:
error }; }\r\n finally {\r\n try {\r\n if (r && !r.done && (m = i["return"])) m.call(i);\r\n } finally
{ if (e) throw e.error; }\r\n }\r\n return ar;\r\n}\r\n\r\nexport function __spread() {\r\n for (var ar = [], i =
0; i < arguments.length; i++)\r\n ar = ar.concat(__read(arguments[i]));\r\n return ar;\r\n}\r\n\r\nexport function
__spreadArrays() {\r\n for (var s = 0, i = 0, il = arguments.length; i < il; i++) s += arguments[i].length;\r\n for
(var r = Array(s), k = 0, i = 0; i < il; i++)\r\n for (var a = arguments[i], j = 0, jl = a.length; j < jl; j++, k++)\r\n

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 r[k] = a[j];\r\n return r;\r\n};\r\n\r\nexport function __await(v) {\r\n return this instanceof __await ? (this.v =
v, this) : new __await(v);\r\n}\r\n\r\nexport function __asyncGenerator(thisArg, _arguments, generator) {\r\n if
(!Symbol.asyncIterator) throw new TypeError("Symbol.asyncIterator is not defined.");\r\n var g =
generator.apply(thisArg, _arguments || []), i, q = [];\r\n return i = {}, verb("next"), verb("throw"),
verb("return"), i[Symbol.asyncIterator] = function () { return this; }, i;\r\n function verb(n) { if (g[n]) i[n] =
function (v) { return new Promise(function (a, b) { q.push([n, v, a, b]) > 1 || resume(n, v); }); }; }\r\n function
resume(n, v) { try { step(g[n](v)); } catch (e) { settle(q[0][3], e); } }\r\n function step(r) { r.value instanceof
__await ? Promise.resolve(r.value.v).then(fulfill, reject) : settle(q[0][2], r); }\r\n function fulfill(value) {
resume("next", value); }\r\n function reject(value) { resume("throw", value); }\r\n function settle(f, v) { if
(f(v), q.shift(), q.length) resume(q[0][0], q[0][1]); }\r\n}\r\n\r\nexport function __asyncDelegator(o) {\r\n var i,
p;\r\n return i = {}, verb("next"), verb("throw"), function (e) { throw e; }, verb("return"), i[Symbol.iterator] =
function () { return this; }, i;\r\n function verb(n, f) { i[n] = o[n] ? function (v) { return (p = !p) ? { value:
__await(o[n](v)), done: n === "return" } : f ? f(v) : v; } : f; }\r\n}\r\n\r\nexport function __asyncValues(o) {\r\n if
(!Symbol.asyncIterator) throw new TypeError("Symbol.asyncIterator is not defined.");\r\n var m =
o[Symbol.asyncIterator], i;\r\n return m ? m.call(o) : (o = typeof __values === "function" ? __values(o) :
o[Symbol.iterator](), i = {}, verb("next"), verb("throw"), verb("return"), i[Symbol.asyncIterator] = function () {
return this; }, i);\r\n function verb(n) { i[n] = o[n] && function (v) { return new Promise(function (resolve, reject)
{ v = o[n](v), settle(resolve, reject, v.done, v.value); }); }; }\r\n function settle(resolve, reject, d, v) {
Promise.resolve(v).then(function(v) { resolve({ value: v, done: d }); }, reject); }\r\n}\r\n\r\nexport function
__makeTemplateObject(cooked, raw) {\r\n if (Object.defineProperty) { Object.defineProperty(cooked, "raw", {
value: raw }); } else { cooked.raw = raw; }\r\n return cooked;\r\n};\r\n\r\nvar __setModuleDefault = Object.create
? (function(o, v) {\r\n Object.defineProperty(o, "default", { enumerable: true, value: v });\r\n}) : function(o, v)
{\r\n o["default"] = v;\r\n};\r\n\r\nexport function __importStar(mod) {\r\n if (mod && mod.__esModule)
return mod;\r\n var result = {};\r\n if (mod != null) for (var k in mod) if (Object.hasOwnProperty.call(mod, k))
__createBinding(result, mod, k);\r\n __setModuleDefault(result, mod);\r\n return result;\r\n}\r\n\r\nexport
function __importDefault(mod) {\r\n return (mod && mod.__esModule) ? mod : { default: mod
};\r\n}\r\n\r\nexport function __classPrivateFieldGet(receiver, privateMap) {\r\n if (!privateMap.has(receiver))
{\r\n throw new TypeError("attempted to get private field on non-instance");\r\n }\r\n return
privateMap.get(receiver);\r\n}\r\n\r\nexport function __classPrivateFieldSet(receiver, privateMap, value) {\r\n if
(!privateMap.has(receiver)) {\r\n throw new TypeError("attempted to set private field on non-instance");\r\n
}\r\n privateMap.set(receiver, value);\r\n return value;\r\n}\r\n\r\n"/**\n * @license\n * Copyright Google LLC
All Rights Reserved.\n *\n * Use of this source code is governed by an MIT-style license that can be\n * found in
the LICENSE file at https://angular.io/license\n */\nimport {Location, LocationStrategy} from
'@angular/common';\nimport {MockLocationStrategy, SpyLocation} from '@angular/common/testing';\nimport
{Compiler, Injectable, Injector, ModuleWithProviders, NgModule, NgModuleFactory, NgModuleFactoryLoader,
Optional} from '@angular/core';\nimport {ChildrenOutletContexts, ExtraOptions, NoPreloading,
PreloadingStrategy, provideRoutes, Route, Router, ROUTER_CONFIGURATION, RouterModule, ROUTES,
Routes, UrlHandlingStrategy, UrlSerializer, assignExtraOptionsToRouter as assignExtraOptionsToRouter, flatten as
flatten, ROUTER_PROVIDERS as ROUTER_PROVIDERS} from '@angular/router';\n\n\n/**\n *
@description\n *\n * Allows to simulate the loading of ng modules in tests.\n *\n * ```\n * const loader =
 TestBed.inject(NgModuleFactoryLoader);\n *\n * @Component({template: 'lazy-loaded'})\n * class
 LazyLoadedComponent {\n *\n * @NgModule({\n *\ declarations: [LazyLoadedComponent],\n *\ imports:
 [RouterModule.forChild([{\n *\ path: 'loaded', component: LazyLoadedComponent\n *\ }])\n *\ })\n *\ class
 LoadedModule {\n *\n *\ // sets up stubbedModules\n *\ loader.stubbedModules = {\n *\ lazyModule: LoadedModule\n *\ };\n *\n *\ router.resetConfig([\n *\ {\n *\ path: 'lazy', loadChildren: 'lazyModule'\n *\ },\n *\]);\n *\n *\ router.navigateByUrl('/lazy/loaded');\n *\ }\n *\n *\ @publicApi\n *\ @Injectable()\n *\ export class
 SpyNgModuleFactoryLoader implements NgModuleFactoryLoader {\n *\n *\ /**\n *\ * @docsNotRequired\n *\ }\n *\n *\ private _stubbedModules: {[path: string]: Promise<NgModuleFactory<any>>} = {};\n *\n *\ /**\n *

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@docsNotRequired\n *\n set stubbedModules(modules: {[path: string]: any}) {\n const res: {[path: string]:\n any} = {};\n for (const t of Object.keys(modules)) {\n res[t] =\n this.compiler.compileModuleAsync(modules[t]);\n }\n this._stubbedModules = res;\n }\n /**\n *\n @docsNotRequired\n *\n get stubbedModules(): {[path: string]: any} {\n return this._stubbedModules;\n }\n }\n constructor(private compiler: Compiler) {\n load(path: string): Promise<NgModuleFactory<any>> {\n if\n (this._stubbedModules[path]) {\n return this._stubbedModules[path];\n } else {\n return\n <any>Promise.reject(new Error(`Cannot find module ${path}`));\n }\n }\n }\n }\n isUrlHandlingStrategy(opts: ExtraOptions|\n UrlHandlingStrategy): opts is UrlHandlingStrategy\n {\n // This property check is needed because UrlHandlingStrategy is an interface and doesn't exist at\n // runtime.\n return 'shouldProcessUrl' in opts;\n }\n }\n /**\n *\n Router setup factory function used for testing.\n *\n @publicApi\n *\n export function setupTestingRouter(\n urlSerializer: UrlSerializer, contexts: ChildrenOutletContexts, location:\n Location,\n loader: NgModuleFactoryLoader, compiler: Compiler, injector: Injector, routes: Route[][],\n opts?:\n ExtraOptions, urlHandlingStrategy?: UrlHandlingStrategy): Router;\n }\n /**\n *\n Router setup factory function used\n for testing.\n *\n @deprecated As of v5.2. The 2nd-to-last argument should be `ExtraOptions`, not\n *\n `UrlHandlingStrategy`\n *\n @publicApi\n *\n export function setupTestingRouter(\n urlSerializer: UrlSerializer,\n contexts: ChildrenOutletContexts, location: Location,\n loader: NgModuleFactoryLoader, compiler: Compiler,\n injector: Injector, routes: Route[][],\n urlHandlingStrategy?: UrlHandlingStrategy): Router;\n }\n /**\n *\n Router\n setup factory function used for testing.\n *\n @publicApi\n *\n export function setupTestingRouter(\n urlSerializer: UrlSerializer, contexts: ChildrenOutletContexts, location: Location,\n loader:\n NgModuleFactoryLoader, compiler: Compiler, injector: Injector, routes: Route[][],\n opts?:\n ExtraOptions|UrlHandlingStrategy, urlHandlingStrategy?: UrlHandlingStrategy) {\n const router = new Router(\n null!, urlSerializer, contexts, location, injector, loader, compiler, flatten(routes));\n if (opts) {\n // Handle\n deprecated argument ordering.\n if (isUrlHandlingStrategy(opts)) {\n router.urlHandlingStrategy = opts;\n }\n else {\n // Handle ExtraOptions\n assignExtraOptionsToRouter(opts, router);\n }\n }\n if\n (urlHandlingStrategy) {\n router.urlHandlingStrategy = urlHandlingStrategy;\n }\n return router;\n }\n }\n /**\n *\n @description\n *\n Sets up the router to be used for testing.\n *\n The modules sets up the router to be used for\n testing.\n *\n It provides spy implementations of `Location`, `LocationStrategy`, and { @link\n *\n NgModuleFactoryLoader }.\n *\n @usageNotes\n *\n ### Example\n *\n ```\n *\n beforeEach(() => {\n *\n TestBed.configureTestingModule({\n *\n imports: [\n *\n RouterTestingModule.withRoutes(\n *\n [{path: "\n component: BlankCmp}, {path: 'simple', component: SimpleCmp}])\n *\n)\n *\n]\n *\n });\n *\n });\n *\n ```\n *\n @publicApi\n *\n @NgModule({\n *\n exports: [RouterModule],\n *\n providers: [\n *\n ROUTER_PROVIDERS,\n *\n {provide: Location, useClass: SpyLocation},\n *\n {provide: LocationStrategy, useClass: MockLocationStrategy},\n *\n {provide: NgModuleFactoryLoader, useClass: SpyNgModuleFactoryLoader},\n *\n {provide: Router,\n *\n useFactory: setupTestingRouter,\n *\n deps: [\n *\n UrlSerializer, ChildrenOutletContexts, Location,\n *\n NgModuleFactoryLoader, Compiler, Injector,\n *\n ROUTES, ROUTER_CONFIGURATION,\n *\n [UrlHandlingStrategy, new Optional()]\n *\n]\n *\n },\n *\n {provide: PreloadingStrategy, useExisting: NoPreloading},\n *\n provideRoutes([])\n *\n]})\n *\n export class RouterTestingModule {\n *\n static withRoutes(routes: Routes, config?:\n *\n ExtraOptions):\n *\n ModuleWithProviders<RouterTestingModule> {\n *\n return {\n *\n ngModule:\n *\n RouterTestingModule,\n *\n providers: [\n *\n provideRoutes(routes),\n *\n {provide:\n *\n ROUTER_CONFIGURATION, useValue: config ? config : {}},\n *\n]\n *\n };\n *\n }\n *\n }\n *\n /**\n *\n @license\n *\n Copyright Google LLC All Rights Reserved.\n *\n Use of this source code is governed by an MIT-style license\n that can be\n *\n found in the LICENSE file at https://angular.io/license\n *\n @module\n *\n @description\n *\n Entry point for all public APIs of the router/testing package.\n *\n export * from\n *\n './router_testing_module';\n *\n }\n *\n /**\n *\n @license\n *\n Copyright Google LLC All Rights Reserved.\n *\n Use of this\n source code is governed by an MIT-style license that can be\n *\n found in the LICENSE file at\n *\n https://angular.io/license\n *\n @module\n *\n @description\n *\n Entry point for all public APIs of this\n package.\n *\n export * from './src/testing';\n *\n }\n *\n /**\n *\n This file only reexports content of the `src` folder. Keep it that\n way.\n *\n }\n *\n @license\n *\n Copyright Google LLC All Rights Reserved.\n *\n Use of this source code is

```

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This file is not used to build this module. It is only used during editing by the TypeScript language service and during build for verification. ngc replaces this file with production index.ts when it rewrites private symbol names.

```
export * from './public_api';
/** Generated bundle index. Do not edit. */
export * from './index';
names: ["Injectable", "Compiler", "router", "Router", "flatten", "assignExtraOptionsToRouter", "provideRoutes", "ROUTER_CONFIGURATION", "NgModule", "RouterModule", "ROUTER_PROVIDERS", "Location", "SpyLocation", "LocationStrategy", "MockLocationStrategy", "NgModuleFactoryLoader", "UrlSerializer", "ChildrenOutletContexts", "Injector", "ROUTES", "UrlHandlingStrategy", "Optional", "PreloadingStrategy", "NoPreloading"], mappings: ";;;;;;;;;;IAAA;;;;;;;;;;IAcA;IAEA,IAAI,aAAa,GAAG,UAAS,CAAC,EAAE,CAAC;QAC7B,aAAa,GAAG,MAAM,CAAC,cAAc;aChC,EAAE,SAAS,EAAE,EAAE,EAAE,YAAY,KAAK,IAAI,UAAU,CAAC,EAAE,CAAC,IAAI,CAAC,CAAC,SAAS,GAAG,CAAC,CAAC,EAAE,CAAC;YAC5E,UAAU,CAAC,EAAE,CAAC,IAAI,KAAK,IAAI,CAAC,IAAI,CAAC;gBAAE,IAAI,CAAC,CAAC,cAAc,CAAC,CAAC,CAAC;oBAAE,CAAC,CAAC,CAAC,CAAC,GAAG,CAAC,CAAC,CAAC,CAAC,EAAE,CAAC;QAC/E,OAAO,aAAa,CAAC,CAAC,EAAE,CAAC,CAAC,CAAC;IAC/B,CAAC,CAAC;aAEc,SAAS,CAAC,CAAC,EAAE,CAAC;QAC1B,aAAa,CAAC,CAAC,EAAE,CAAC,CAAC,CAAC;QACpB,SAAS,EAAE,KAAK,IAAI,CAAC,WAAW,GAAG,CAAC,CAAC,EAAE;QACvC,CAAC,CAAC,SAAS,GAAG,CAAC,KAAK,IAAI,GAAG,MAAM,CAAC,MAAM,CAAC,CAAC,CAAC,IAAI,EAAE,CAAC,SAAS,GAAG,CAAC,CAAC,SAAS,EAAE,IAAI,EAAE,EAAE,CAAC,CAAC;IACzF,CAAC;IAEM,IAAI,QAAQ,GAAG;QACIB,QAAQ,GAAG,MAAM,CAAC,MAAM,IAAI,SAAS,QAAQ,CAAC,CAAC;YAC3C,KAAK,IAAI,CAAC,EAAE,CAAC,GAAG,CAAC,EAAE,CAAC,GAAG,SAAS,CAAC,MAAM,EAAE,CAAC,GAAG,CAAC,EAAE,CAAC,EAAE,EAAE;gBACjD,CAAC,GAAG,SAAS,CAAC,CAAC,CAAC;gBACjB,KAAK,IAAI,CAAC,IAAI,CAAC;oBAAE,IAAI,MAAM,CAAC,SAAS,CAAC,cAAc,CAAC,IAAI,CAAC,CAAC,EAAE,CAAC,CAAC;wBAAE,CAAC,CAAC,CAAC,CAAC,GAAG,CAAC,CAAC,CAAC,CAAC,CAAC;aAChF;YACD,OAAO,CAAC,CAAC;SACZ,CAAA;QACD,OAAO,QAAQ,CAAC,KAAK,CAAC,IAAI,EAAE,SAAS,CAAC,CAAC;IAC3C,CAAC,CAAA;aAEe,MAAM,CAAC,CAAC,EAAE,CAAC;QACvB,IAAI,CAAC,GAAG,EAAE,CAAC;QACX,KAAK,IAAI,CAAC,IAAI,CAAC;YAAE,IAAI,MAAM,CAAC,SAAS,CAAC,cAAc,CAAC,IAAI,CAAC,CAAC,EAAE,CAAC,CAAC,IAAI,CAAC,CAAC,OAAO,CAAC,CAAC,CAAC,GAAG,CAAC;gBAC/E,CAAC,CAAC,CAAC,CAAC,GAAG,CAAC,CAAC,CAAC,CAAC,CAAC;QACkB,IAAI,CAAC,IAAI,IAAI,IAAI,OAAO,MAAM,CAAC,qBAaQB,KAAK,UAAU;YAC/D,KAAK,IAAI,CAAC,GAAG,CAAC,EAAE,CAAC,GAAG,MAAM,CAAC,qBAaQB,CAAC,CAAC,CAAC,EAAE,CAAC,GAAG,CAAC,CAAC,MAAM,EAAE,CAAC,EAAE,EAAE;gBACpE,IAAI,CAAC,CAAC,OAAO,CAAC,CAAC,CAAC,CAAC,CAAC,CAAC,GAAG,CAAC,IAAI,MAAM,CAAC,SAAS,CAAC,oBAAoB,CAAC,IAAI,CAAC,CAAC,EAAE,CAAC,CAAC,CAAC,CAAC,CAAC;oBACIE,CAAC,CAAC,CAAC,CAAC,CAAC,CAAC,CAAC,GAAG,CAAC,CAAC,CAAC,CAAC,CAAC,CAAC,CAAC,CAAC,CAAC,CAAC;AAC,CAAC;aACzB;QACL,OAAO,CAAC,CAAC;IACb,CAAC;aAEe,UAAU,CAAC,UAAU,EAAE,MAAM,EAAE,GAAG,EAAE,IAAI;QACpD,IAAI,CAAC,GAAG,SAAS,CAAC,MAAM,EAAE,CAAC,GAAG,CAAC,GAAG,CAAC,GAAG,MAAM,GAAG,IAAI,KAAK,IAAI,GAAG,IAAI,GAAG,MAAM,CAAC,wBAawB,CAAC,MAAM,EAAE,GAAG,CAAC,GAAG,IAAI,EAAE,CAAC,CAAC;QAC7H,IAAI,OAAO,OAAO,KAAK,QAAQ,IAAI,OAAO,OAAO,CAAC,QAAQ,KAAK,UAAU;YAAE,CAAC,GAAG,OAAO,CAAC,QAAQ,CAAC,UAAU,EAAE,MAAM,EAAE,GAAG,EAAE,IAAI,CAAC,CAAC;;YACIH,KAAK,IAAI,CAAC,GAAG,UAAU,CAAC,MAAM,GAAG,CAAC,EAAE,CAAC,IAAI,CAAC,EAAE,CAAC,EAAE;gBAAE,IAAI,CAAC,GAAG,UAAU,CAAC,CAAC,CAAC;oBAAE,CAAC,GAAG,CAAC,CAAC,GAAG,CAAC,GAAG,CAAC,CAAC,CAAC,CAAC,GAAG,CAAC,GAAG,CAAC,GAAG,CAAC,CAAC,MAAM,EAAE,GAAG,EAAE,CAAC,CAAC,GAAG,CAAC,CAAC,MAAM,EAAE,GAAG,CAAC,KAAK,CAAC,CAAC;QACIJ,OAAO,CAAC,GAAG,CAAC,IAAI,CAAC,IAAI,MAAM,CAAC,cAAc,CAAC,MAAM,EAAE,GAAG,EAAE,CAAC,CAAC,EAAE,CAAC,CAAC;IACIE,CAAC;aAEe,OAAO,CAAC,UAAU,EAAE,SAAS;QACzC,OAAO,UAAU,MAAM,EAAE,GAAG,IAAI,SAAS,CAAC,MAAM,EAAE,GAAG,EAAE,UAAU,CAAC,CAAC,EAAE,CAAA;IACzE,CAAC;aAEe,UAAU,CAAC,WAAW,EAAE,aAAa;QACjD,IAAI,OAAO,OAAO,KAAK,QAAQ,IAAI,OAAO,OAAO,CAAC,QAAQ,KAAK,UAAU;YAAE,OAAO,OAAO,CAAC,QAAQ,CAAC,WAAW,EAAE,aAAa,CAAC,CAAC;IACnI,CAAC;aAEe,SAAS,CAAC,OAAO,EAAE,UAAU,EAAE,CAAC,EAAE,SAAS;QACvD,SAAS,KAAK,CAAC,KAAK,IAAI,OAAO,KAAK,YAAY,CAAC,GAAG,KAAK,
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Found in path(s):

\* /opt/cola/permits/1358260535\_1657134905.7370887/0/router-11-0-2-tgz/package/bundles/router-testing.umd.js.map

No license file was found, but licenses were detected in source scan.

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```



CONNECTION WITH THE USE OR PERFORMANCE OF THIS SOFTWARE.\n

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***** *\n /* global
Reflect, Promise *\n var extendStatics = function (d, b) {\n extendStatics = Object.setPrototypeOf ||\n ({ __proto__: [] } instanceof Array && function (d, b) { d.__proto__ = b; }) ||\n function (d, b) { for (var p in b)\n if (b.hasOwnProperty(p))\n d[p] = b[p]; }\n return extendStatics(d, b);\n };\n function __extends(d, b) {\n extendStatics(d, b);\n function __() { this.constructor = d; }\n d.prototype = b === null ? Object.create(b) : (__proto__ = b.prototype, new __());\n }\n var __assign = function () {\n __assign = Object.assign || function __assign(t) {\n for (var s, i = 1, n = arguments.length; i < n; i++) {\n s = arguments[i];\n for (var p in s)\n if (Object.prototype.hasOwnProperty.call(s, p))\n t[p] = s[p];\n }\n return t;\n };\n return __assign.apply(this, arguments);\n };\n function __rest(s, e) {\n var t = {};\n for (var p in s)\n if (Object.prototype.hasOwnProperty.call(s, p)\n && e.indexOf(p) < 0)\n t[p] = s[p];\n if (s != null && typeof Object.getOwnPropertySymbols ===\n \"function\")\n for (var i = 0, p = Object.getOwnPropertySymbols(s); i < p.length; i++) {\n if\n (e.indexOf(p[i]) < 0 && Object.prototype.propertyIsEnumerable.call(s, p[i]))\n t[p[i]] = s[p[i]];\n }\n return t;\n }\n function __decorate(decorators, target, key, desc) {\n var c = arguments.length, r = c\n < 3 ? target : desc === null ? desc = Object.getOwnPropertyDescriptor(target, key) : desc, d;\n if (typeof Reflect\n === \"object\" && typeof Reflect.decorate === \"function\")\n r = Reflect.decorate(decorators, target, key,\n desc);\n else\n for (var i = decorators.length - 1; i >= 0; i--)\n if (d = decorators[i])\n r = (c < 3 ? d(r) : c > 3 ? d(target, key, r) : d(target, key)) || r;\n return c > 3 && r &&\n Object.defineProperty(target, key, r, r);\n }\n function __param(paramIndex, decorator) {\n return function\n (target, key) { decorator(target, key, paramIndex); }\n }\n function __metadata(metadataKey, metadataValue)\n {\n if (typeof Reflect === \"object\" && typeof Reflect.metadata === \"function\")\n return\n Reflect.metadata(metadataKey, metadataValue);\n }\n function __awaiter(thisArg, _arguments, P, generator) {\n function adopt(value) { return value instanceof P ? value : new P(function (resolve) { resolve(value); }); }\n return new (P || (P = Promise))(function (resolve, reject) {\n function fulfilled(value) { try {\n step(generator.next(value));\n }\n catch (e) {\n reject(e);\n }\n }\n function\n rejected(value) { try {\n step(generator[\"throw\"](value));\n }\n catch (e) {\n reject(e);\n }\n }\n function step(result) { result.done ? resolve(result.value) :\n adopt(result.value).then(fulfilled, rejected); }\n step((generator = generator.apply(thisArg, _arguments ||\n [])).next());\n });\n }\n function __generator(thisArg, body) {\n var _ = { label: 0, sent: function () { if\n (t[0] & 1)\n throw t[1]; return t[1]; }, trys: [], ops: [] }, f, y, t, g;\n return g = { next: verb(0), \"throw\":\n verb(1), \"return\": verb(2) }, typeof Symbol === \"function\" && (g[Symbol.iterator] = function () { return this; }),\n g;\n function verb(n) { return function (v) { return step([n, v]); }; }\n function step(op) {\n if (f)\n throw new TypeError(\"Generator is already executing.\");\n while (!_)\n try {\n if\n (f = 1, y && (t = op[0] & 2 ? y[\"return\"] : op[0] ? y[\"throw\"] || ((t = y[\"return\"])\n && t.call(y, 0) : y.next) &&\n !(t = t.call(y, op[1])).done)\n return t;\n if (y = 0, t)\n op = [op[0] & 2,\n t.value];\n switch (op[0]) {\n case 0:\n t = op;\n break;\n case 4:\n _label++;\n return { value: op[1],\n done: false };\n case 5:\n _label++;\n y = op[1];\n op = [0];\n continue;\n case 7:\n op = _ops.pop();\n _trys.pop();\n continue;\n default:\n if (!(t = _trys, t = t.length > 0\n && t[t.length - 1]) && (op[0] === 6 || op[0] === 2))\n _ = 0;\n continue;\n }\n if (op[0] === 3 && (!t || (op[1] > t[0] && op[1] < t[3])))\n _label = op[1];\n break;\n }\n if (op[0] === 6 && _label <\n t[1]) {\n _label = t[1];\n t = op;\n break;\n }\n if (t && _label < t[2]) {\n _label = t[2];\n _ops.push(op);\n break;\n }\n if (t[2])\n _ops.pop();\n _trys.pop();\n continue;\n }\n }\n op =
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body.call(thisArg, _);\n }\n catch (e) {\n op = [6, e];\n y = 0;\n }\n finally {\n f = t = 0;\n }\n if (op[0] & 5)\n throw op[1];\n return { value: op[0] ? op[1] : void 0, done: true }; }\n }\n }\n var __createBinding = Object.create ? (function\n (o, m, k, k2) {\n if (k2 === undefined)\n k2 = k;\n Object.defineProperty(o, k2, { enumerable: true,\n get: function () { return m[k]; } });\n }) : (function (o, m, k, k2) {\n if (k2 === undefined)\n k2 = k;\n o[k2] = m[k];\n });\n function __exportStar(m, exports) {\n for (var p in m)\n if (p !== \"default\"\n && !exports.hasOwnProperty(p))\n __createBinding(exports, m, p);\n }\n function __values(o) {\n var s = typeof Symbol === \"function\" && Symbol.iterator, m = s && o[s], i = 0;\n if (m)\n return\n m.call(o);\n if (o && typeof o.length === \"number\")\n return {\n next: function () {\n if (o && i >= o.length)\n o = void 0;\n return { value: o && o[i++], done: !o }; }\n }\n }\n throw new TypeError(s ? \"Object is not iterable.\" : \"Symbol.iterator is not defined.\");\n }\n function __read(o, n) {\n var m = typeof Symbol === \"function\" && o[Symbol.iterator];\n if (!m)\n return o;\n var i = m.call(o), r, ar = [], e;\n try {\n while ((n === void 0 || n-- > 0) && !(r =\n i.next()).done)\n ar.push(r.value);\n }\n catch (error) {\n e = { error: error };\n }\n finally {\n try {\n if (r && !r.done && (m = i[\"return\"])\n)\n m.call(i);\n }\n finally {\n if (e)\n throw e.error;\n }\n }\n return ar;\n }\n function\n __spread() {\n for (var ar = [], i = 0; i < arguments.length; i++)\n ar = ar.concat(__read(arguments[i]));\n return ar;\n }\n function __spreadArrays() {\n for (var s = 0, i = 0, il = arguments.length; i < il; i++)\n s += arguments[i].length;\n for (var r = Array(s), k = 0, i = 0; i < il; i++)\n for (var a = arguments[i], j\n = 0, jl = a.length; j < jl; j++, k++)\n r[k] = a[j];\n return r;\n }\n function __await(v) {\n return this instanceof __await ? (this.v = v, this) : new __await(v);\n }\n function __asyncGenerator(thisArg,\n _arguments, generator) {\n if (!Symbol.asyncIterator)\n throw new TypeError(\"Symbol.asyncIterator is\n not defined.\");\n var g = generator.apply(thisArg, _arguments || []), i, q = [];\n return i = { }, verb(\"next\"),\n verb(\"throw\"), verb(\"return\"), i[Symbol.asyncIterator] = function () { return this; }, i;\n function verb(n) { if\n (g[n])\n i[n] = function (v) { return new Promise(function (a, b) { q.push([n, v, a, b]) > 1 || resume(n, v); }); };\n }\n function resume(n, v) { try {\n step(g[n](v));\n }\n catch (e) {\n settle(q[0][3], e);\n }\n }\n function step(r) { r.value instanceof __await ? Promise.resolve(r.value.v).then(fulfill, reject) :\n settle(q[0][2], r); }\n function fulfill(value) { resume(\"next\", value); }\n function reject(value) {\n resume(\"throw\", value); }\n function settle(f, v) { if (f(v), q.shift(), q.length)\n resume(q[0][0], q[0][1]);\n }\n }\n }\n function __asyncDelegator(o) {\n var i, p;\n return i = { }, verb(\"next\"), verb(\"throw\"),\n function (e) { throw e; }, verb(\"return\"), i[Symbol.iterator] = function () { return this; }, i;\n function verb(n,\n f) {\n i[n] = o[n] ? function (v) { return (p = !p) ? { value: __await(o[n](v)), done: n === \"return\" } : f ? f(v) : v; } : f;\n }\n }\n }\n function __asyncValues(o) {\n if (!Symbol.asyncIterator)\n throw new\n TypeError(\"Symbol.asyncIterator is not defined.\");\n var m = o[Symbol.asyncIterator], i;\n return m ?\n m.call(o) : (o = typeof __values === \"function\" ? __values(o) : o[Symbol.iterator](), i = { }, verb(\"next\"),\n verb(\"throw\"), verb(\"return\"), i[Symbol.asyncIterator] = function () { return this; }, i);\n function verb(n) {\n i[n] = o[n] && function (v) { return new Promise(function (resolve, reject) { v = o[n](v), settle(resolve, reject,\n v.done, v.value); }); };\n }\n function settle(resolve, reject, d, v) { Promise.resolve(v).then(function (v) {\n resolve({ value: v, done: d }); }, reject); }\n }\n }\n function __makeTemplateObject(cooked, raw) {\n if\n (Object.defineProperty)\n Object.defineProperty(cooked, \"raw\", { value: raw });\n }\n else {\n cooked.raw = raw;\n }\n return cooked;\n }\n }\n }\n var __setModuleDefault = Object.create ?\n (function (o, v) {\n Object.defineProperty(o, \"default\", { enumerable: true, value: v });\n }) : function (o, v)\n {\n o[\"default\"] = v;\n }\n }\n function __importStar(mod) {\n if (mod && mod.__esModule)\n return mod;\n var result = {};\n if (mod != null)\n for (var k in mod)\n if\n (Object.hasOwnProperty.call(mod, k))\n __createBinding(result, mod, k);\n __setModuleDefault(result, mod);\n return result;\n }\n }\n function __importDefault(mod) {\n return (mod\n && mod.__esModule) ? mod : { default: mod };\n }\n }\n function __classPrivateFieldGet(receiver, privateMap)\n {\n if (!privateMap.has(receiver))\n throw new TypeError(\"attempted to get private field on non-

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instance\");\n }\n return privateMap.get(receiver);\n }\n function __classPrivateFieldSet(receiver,
privateMap, value) {\n if (!privateMap.has(receiver)) {\n throw new TypeError("attempted to set private
field on non-instance");\n }\n privateMap.set(receiver, value);\n return value;\n }\n\n /**\n *
 @description\n * Allows to simulate the loading of ng modules in tests.\n * \n * ```\n * const loader
= TestBed.inject(NgModuleFactoryLoader);\n * \n * @Component({template: 'lazy-loaded'})\n * class
LazyLoadedComponent {\n * @NgModule({\n * declarations: [LazyLoadedComponent],\n * imports:
[RouterModule.forChild({path: 'loaded', component: LazyLoadedComponent})]\n * })\n * \n * class
LoadedModule {\n * \n * // sets up stubbedModules\n * loader.stubbedModules = {lazyModule:
LoadedModule};\n * \n * router.resetConfig([\n * {path: 'lazy', loadChildren: 'lazyModule'},\n *
]);\n * \n * router.navigateByUrl('/lazy/loaded');\n * ```\n * \n * @publicApi\n * \n var
SpyNgModuleFactoryLoader = /** @class */ (function () {\n function SpyNgModuleFactoryLoader(compiler)
{\n this.compiler = compiler;\n /**\n * @docsNotRequired\n * \n
this._stubbedModules = {};\n }\n Object.defineProperty(SpyNgModuleFactoryLoader.prototype,
'stubbedModules', {\n /**\n * @docsNotRequired\n * \n get: function () {\n
return this._stubbedModules;\n },\n /**\n * @docsNotRequired\n * \n set:
function (modules) {\n var e_1, _a;\n var res = {};\n try {\n for (var _b =
__values(Object.keys(modules)), _c = _b.next(); !_c.done; _c = _b.next()) {\n var t = _c.value;\n
 res[t] = this.compiler.compileModuleAsync(modules[t]);\n }\n } catch
(e_1_1) {\n e_1 = { error: e_1_1 }; \n finally {\n try {\n if (_c && !_c.done &&
_a = _b.return)) _a.call(_b);\n } finally {\n if (e_1) throw e_1.error; \n }\n
 this._stubbedModules = res;\n },\n enumerable: false,\n configurable: true\n });\n
SpyNgModuleFactoryLoader.prototype.load = function (path) {\n if (this._stubbedModules[path]) {\n
return this._stubbedModules[path];\n } else {\n return Promise.reject(new Error("Cannot
find module " + path));\n }\n }; \n return SpyNgModuleFactoryLoader;\n }());\n SpyNgModuleFactoryLoader.decorators = [\n { type: core.Injectable }\n];\n SpyNgModuleFactoryLoader.ctorParameters = function () { return [\n { type: core.Compiler }\n]; }; \n function isUrlHandlingStrategy(opts) {\n // This property check is needed because UrlHandlingStrategy is an
interface and doesn't exist at\n // runtime.\n return 'shouldProcessUrl' in opts;\n } \n /**\n * Router
setup factory function used for testing.\n * \n * @publicApi\n * \n function
setupTestingRouter(urlSerializer, contexts, location, loader, compiler, injector, routes, opts, urlHandlingStrategy)
{\n var router$1 = new router.Router(null, urlSerializer, contexts, location, injector, loader, compiler,
router.flatten(routes));\n if (opts) {\n // Handle deprecated argument ordering.\n if
(isUrlHandlingStrategy(opts)) {\n router$1.urlHandlingStrategy = opts;\n } else {\n
// Handle ExtraOptions\n router.assignExtraOptionsToRouter(opts, router$1);\n }\n } \n if
(urlHandlingStrategy) {\n router$1.urlHandlingStrategy = urlHandlingStrategy;\n } \n return
router$1;\n } \n /**\n * @description\n * \n * Sets up the router to be used for testing.\n * \n * The
modules sets up the router to be used for testing.\n * \n * It provides spy implementations of `Location`,
`LocationStrategy`, and {\n * @link\n * NgModuleFactoryLoader}.\n * \n * @usageNotes\n * ### Example\n *
 * ```\n * beforeEach(() => {\n * TestBed.configureTestingModule({\n * imports: [\n *
RouterModule.withRoutes(\n * [{path: "", component: BlankCmp}, {path: 'simple', component:
SimpleCmp}]\n *),\n *]\n * });\n * });\n * ```\n * \n * @publicApi\n * \n var
RouterTestingModule = /** @class */ (function () {\n function RouterTestingModule() {\n }\n RouterTestingModule.withRoutes = function (routes, config) {\n return {\n ngModule:
RouterTestingModule,\n providers: [\n router.provideRoutes(routes),\n { provide:
router.ROUTER_CONFIGURATION, useValue: config ? config : {} },\n]\n });\n }; \n return RouterTestingModule;\n }()); \n RouterTestingModule.decorators = [\n { type: core.NgModule, args:
[{\n exports: [router.RouterModule],\n providers: [\n router.ROUTER_PROVIDERS, { provide: common.Location, useClass: testing.SpyLocation },\n {\n

```





\* /opt/cola/permits/1358260535\_1657134905.7370887/0/router-11-0-2-tgz/package/esm2015/src/create\_router\_state.js  
\* /opt/cola/permits/1358260535\_1657134905.7370887/0/router-11-0-2-tgz/package/esm2015/src/operators/check\_guards.js  
\* /opt/cola/permits/1358260535\_1657134905.7370887/0/router-11-0-2-tgz/package/esm2015/src/url\_handling\_strategy.js  
\* /opt/cola/permits/1358260535\_1657134905.7370887/0/router-11-0-2-tgz/package/esm2015/src/events.js  
\* /opt/cola/permits/1358260535\_1657134905.7370887/0/router-11-0-2-tgz/package/esm2015/src/directives/router\_link\_active.js  
\* /opt/cola/permits/1358260535\_1657134905.7370887/0/router-11-0-2-tgz/package/esm2015/src/operators/switch\_tap.js  
\* /opt/cola/permits/1358260535\_1657134905.7370887/0/router-11-0-2-tgz/package/esm2015/index.js  
\* /opt/cola/permits/1358260535\_1657134905.7370887/0/router-11-0-2-tgz/package/esm2015/src/operators/prioritized\_guard\_value.js  
\* /opt/cola/permits/1358260535\_1657134905.7370887/0/router-11-0-2-tgz/package/esm2015/src/private\_export.js  
\* /opt/cola/permits/1358260535\_1657134905.7370887/0/router-11-0-2-tgz/package/esm2015/src/router\_scroller.js  
\* /opt/cola/permits/1358260535\_1657134905.7370887/0/router-11-0-2-tgz/package/esm2015/src/components/empty\_outlet.js  
\* /opt/cola/permits/1358260535\_1657134905.7370887/0/router-11-0-2-tgz/package/esm2015/public\_api.js  
\* /opt/cola/permits/1358260535\_1657134905.7370887/0/router-11-0-2-tgz/package/esm2015/src/version.js  
\* /opt/cola/permits/1358260535\_1657134905.7370887/0/router-11-0-2-tgz/package/esm2015/src/recognize.js  
\* /opt/cola/permits/1358260535\_1657134905.7370887/0/router-11-0-2-tgz/package/esm2015/src/router\_module.js  
\* /opt/cola/permits/1358260535\_1657134905.7370887/0/router-11-0-2-tgz/package/esm2015/src/index.js  
\* /opt/cola/permits/1358260535\_1657134905.7370887/0/router-11-0-2-tgz/package/esm2015/src/utils/config.js  
\* /opt/cola/permits/1358260535\_1657134905.7370887/0/router-11-0-2-tgz/package/esm2015/upgrade/src/upgrade.js  
\* /opt/cola/permits/1358260535\_1657134905.7370887/0/router-11-0-2-tgz/package/esm2015/src/directives/router\_link.js  
\* /opt/cola/permits/1358260535\_1657134905.7370887/0/router-11-0-2-tgz/package/esm2015/src/router\_config\_loader.js  
\* /opt/cola/permits/1358260535\_1657134905.7370887/0/router-11-0-2-tgz/package/esm2015/upgrade/public\_api.js  
\* /opt/cola/permits/1358260535\_1657134905.7370887/0/router-11-0-2-tgz/package/esm2015/src/operators/recognize.js  
\* /opt/cola/permits/1358260535\_1657134905.7370887/0/router-11-0-2-tgz/package/esm2015/src/router\_outlet\_context.js  
\* /opt/cola/permits/1358260535\_1657134905.7370887/0/router-11-0-2-tgz/package/esm2015/testing/index.js  
\* /opt/cola/permits/1358260535\_1657134905.7370887/0/router-11-0-2-tgz/package/esm2015/src/shared.js  
\* /opt/cola/permits/1358260535\_1657134905.7370887/0/router-11-0-2-tgz/package/esm2015/src/create\_url\_tree.js  
\* /opt/cola/permits/1358260535\_1657134905.7370887/0/router-11-0-2-tgz/package/esm2015/src/config.js  
\* /opt/cola/permits/1358260535\_1657134905.7370887/0/router-11-0-2-tgz/package/esm2015/testing/public\_api.js  
\* /opt/cola/permits/1358260535\_1657134905.7370887/0/router-11-0-2-tgz/package/esm2015/upgrade/index.js  
\* /opt/cola/permits/1358260535\_1657134905.7370887/0/router-11-0-2-tgz/package/esm2015/src/utils/tree.js  
\* /opt/cola/permits/1358260535\_1657134905.7370887/0/router-11-0-2-tgz/package/esm2015/src/apply\_redirects.js  
\* /opt/cola/permits/1358260535\_1657134905.7370887/0/router-11-0-2-tgz/package/esm2015/src/operators/resolve\_data.js  
\* /opt/cola/permits/1358260535\_1657134905.7370887/0/router-11-0-2-tgz/package/esm2015/src/utils/preactivation.js  
\* /opt/cola/permits/1358260535\_1657134905.7370887/0/router-11-0-2-

tgz/package/esm2015/src/directives/router\_outlet.js  
\* /opt/cola/permits/1358260535\_1657134905.7370887/0/router-11-0-2-  
tgz/package/esm2015/src/operators/activate\_routes.js  
No license file was found, but licenses were detected in source scan.

```
{ "version": 3, "file": "router.js", "sources": ["../..../..../packages/router/src/events.ts", "../..../..../packages/router/src/shared.ts", "../..../..../packages/router/src/urls/collection.ts", "../..../..../packages/router/src/urls/tree.ts", "../..../..../packages/router/src/urls/tree.ts", "../..../..../packages/router/src/router_state.ts", "../..../..../packages/router/src/create_router_state.ts", "../..../..../packages/router/src/create_url_tree.ts", "../..../..../packages/router/src/operators/activate_routes.ts", "../..../..../packages/router/src/config.ts", "../..../..../packages/router/src/urls/type_guards.ts", "../..../..../packages/router/src/operators/prioritized_guard_value.ts", "../..../..../packages/router/src/component_s/empty_outlet.ts", "../..../..../packages/router/src/urls/config.ts", "../..../..../packages/router/src/apply_redirects.ts", "../..../..../packages/router/src/operators/apply_redirects.ts", "../..../..../packages/router/src/urls/preactivation.ts", "../..../..../packages/router/src/operators/check_guards.ts", "../..../..../packages/router/src/recognize.ts", "../..../..../packages/router/src/operators/recognize.ts", "../..../..../packages/router/src/operators/resolve_data.ts", "../..../..../packages/router/src/operators/switch_tap.ts", "../..../..../packages/router/src/route_reuse_strategy.ts", "../..../..../packages/router/src/router_config_loader.ts", "../..../..../packages/router/src/router_outlet_context.ts", "../..../..../packages/router/src/urls/handling_strategy.ts", "../..../..../packages/router/src/router.ts", "../..../..../packages/router/src/directives/router_link.ts", "../..../..../packages/router/src/directives/router_link_active.ts", "../..../..../packages/router/src/directives/router_outlet.ts", "../..../..../packages/router/src/router_preloader.ts", "../..../..../packages/router/src/router_scroller.ts", "../..../..../packages/router/src/router_module.ts", "../..../..../packages/router/src/versions.ts", "../..../..../packages/router/src/private_export.ts", "../..../..../packages/router/src/index.ts", "../..../..../packages/router/public_api.ts", "../..../..../packages/router/index.ts", "../..../..../packages/router/router.ts"], "sourcesContent": ["/**\n * @license\n * Copyright Google LLC All Rights Reserved.\n * Use of this source code is governed by an MIT-style license that can be found in the LICENSE file at https://angular.io/license\n *\nimport {Route} from './config';\nimport {ActivatedRouteSnapshot, RouterStateSnapshot} from './router_state';\n\n * Identifies the call or event that triggered a navigation.\n * * 'imperative': Triggered by `router.navigateByUrl()` or `router.navigate()`. \n * * 'popstate': Triggered by a `popstate` event. \n * * 'hashchange': Triggered by a `hashchange` event.\n * * @publicApi\n *\nexport type NavigationTrigger = 'imperative'|'popstate'|'hashchange';\n\n * Base for events the router goes through, as opposed to events tied to a specific\n * route. Fired one time for any given navigation.\n * * The following code shows how a class subscribes to router events.\n * * ``\n * class MyService {\n * constructor(public router: Router, logger: Logger) {\n * router.events.pipe(\n * filter((e: Event): e is RouterEvent => e instanceof RouterEvent)\n *).subscribe((e: RouterEvent) => {\n * logger.log(e.id, e.url);\n * });\n * }\n * }\n * ``\n * * @see `Event`\n * * @see [Router events summary](guide/router#router-events)\n *\n @publicApi\n *\nexport class RouterEvent {\n constructor(\n /** A unique ID that the router assigns to every router navigation. *\n public id: number,\n /** The URL that is the destination for this navigation. *\n public url: string) {\n }\n}\n\n * An event triggered when a navigation starts.\n *\n @publicApi\n *\nexport class NavigationStart extends RouterEvent {\n /**\n * Identifies the call or event that triggered the navigation.\n * * An `imperative` trigger is a call to `router.navigateByUrl()` or `router.navigate()`. \n * * @see `NavigationEnd`\n * * @see `NavigationCancel`\n * * @see `NavigationError`\n * *\n navigationTrigger?: 'imperative'|'popstate'|'hashchange';\n }\n\n * The navigation state that was previously supplied to the `pushState` call,\n * when the navigation is triggered by a `popstate` event. Otherwise null.\n * * The state object is defined by `NavigationExtras`, and contains any\n * developer-defined state value, as well as a unique ID that\n * the router assigns to every router transition/navigation.\n * * From the perspective of the router, the router never \"goes back\".\n * * When the user clicks on the back button in the browser,\n * a new navigation ID is created.\n * * Use the ID in this previous-state object to differentiate between a newly created\n * state and one returned to by a `popstate` event, so that you can restore some\n * remembered state, such as scroll position.\n * *\n * restoredState?: {[k]: string];
```

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any, navigationId: number}|null;\n\n constructor(\n /** @docsNotRequired */\n id: number,\n /** @docsNotRequired */\n url: string,\n /** @docsNotRequired */\n navigationTrigger: 'imperative'|'popstate'|'hashchange' = 'imperative',\n /** @docsNotRequired */\n restoredState: {[k: string]: any, navigationId: number}|null = null) {\n super(id, url);\n this.navigationTrigger = navigationTrigger;\n this.restoredState = restoredState;\n }\n\n /** @docsNotRequired */\n toString(): string {\n return `NavigationStart(id: ${this.id}, url: '${this.url}')`;}\n }\n\n /**\n * An event triggered when a navigation ends successfully.\n */\n @see `NavigationStart`\n @see `NavigationCancel`\n @see `NavigationError`\n @publicApi\n @next export class NavigationEnd extends RouterEvent {\n constructor(\n /** @docsNotRequired */\n id: number,\n /** @docsNotRequired */\n url: string,\n /** @docsNotRequired */\n public urlAfterRedirects: string) {\n super(id, url);\n }\n\n /** @docsNotRequired */\n toString(): string {\n return `NavigationEnd(id: ${this.id}, url: '${this.url}', urlAfterRedirects: '${this.urlAfterRedirects}')`;}\n }\n }\n\n /**\n * An event triggered when a navigation is canceled, directly or indirectly.\n * This can happen when a route guard\n * returns `false` or initiates a redirect by returning a `UrlTree`.\n */\n @see `NavigationStart`\n @see `NavigationEnd`\n @see `NavigationError`\n @publicApi\n @next export class NavigationCancel extends RouterEvent {\n constructor(\n /** @docsNotRequired */\n id: number,\n /** @docsNotRequired */\n url: string,\n /** @docsNotRequired */\n public reason: string) {\n super(id, url);\n }\n\n /** @docsNotRequired */\n toString(): string {\n return `NavigationCancel(id: ${this.id}, url: '${this.url}')`;}\n }\n }\n\n /**\n * An event triggered when a navigation fails due to an unexpected error.\n */\n @see `NavigationStart`\n @see `NavigationEnd`\n @see `NavigationCancel`\n @publicApi\n @next export class NavigationError extends RouterEvent {\n constructor(\n /** @docsNotRequired */\n id: number,\n /** @docsNotRequired */\n url: string,\n /** @docsNotRequired */\n public error: any) {\n super(id, url);\n }\n\n /** @docsNotRequired */\n toString(): string {\n return `NavigationError(id: ${this.id}, url: '${this.url}', error: ${this.error})`;}\n }\n }\n\n /**\n * An event triggered when routes are recognized.\n */\n @publicApi\n @next export class RoutesRecognized extends RouterEvent {\n constructor(\n /** @docsNotRequired */\n id: number,\n /** @docsNotRequired */\n url: string,\n /** @docsNotRequired */\n public urlAfterRedirects: string,\n /** @docsNotRequired */\n public state: RouterStateSnapshot) {\n super(id, url);\n }\n\n /** @docsNotRequired */\n toString(): string {\n return `RoutesRecognized(id: ${this.id}, url: '${this.url}', urlAfterRedirects: '${this.urlAfterRedirects}', state: ${this.state})`;}\n }\n }\n\n /**\n * An event triggered at the start of the Guard phase of routing.\n */\n @see `GuardsCheckEnd`\n @publicApi\n @next export class GuardsCheckStart extends RouterEvent {\n constructor(\n /** @docsNotRequired */\n id: number,\n /** @docsNotRequired */\n url: string,\n /** @docsNotRequired */\n public urlAfterRedirects: string,\n /** @docsNotRequired */\n public state: RouterStateSnapshot) {\n super(id, url);\n }\n\n toString(): string {\n return `GuardsCheckStart(id: ${this.id}, url: '${this.url}', urlAfterRedirects: '${this.urlAfterRedirects}', state: ${this.state})`;}\n }\n }\n\n /**\n * An event triggered at the end of the Guard phase of routing.\n */\n @see `GuardsCheckStart`\n @publicApi\n @next export class GuardsCheckEnd extends RouterEvent {\n constructor(\n /** @docsNotRequired */\n id: number,\n /** @docsNotRequired */\n url: string,\n /** @docsNotRequired */\n public urlAfterRedirects: string,\n /** @docsNotRequired */\n public state: RouterStateSnapshot,\n /** @docsNotRequired */\n public shouldActivate: boolean) {\n super(id, url);\n }\n\n toString(): string {\n return `GuardsCheckEnd(id: ${this.id}, url: '${this.url}', urlAfterRedirects: '${this.urlAfterRedirects}', state: ${this.state}, shouldActivate: ${this.shouldActivate})`;}\n }\n }\n\n /**\n * An event triggered at the the start of the Resolve phase of routing.\n * Runs in the "resolve" phase whether or not there is anything to resolve.\n * In future, may change to only run when there are things to be resolved.\n */\n @see `ResolveEnd`\n @publicApi\n @next export class ResolveStart extends RouterEvent {\n constructor(\n /** @docsNotRequired */\n id: number,\n /** @docsNotRequired */\n url: string,\n /** @docsNotRequired */\n public urlAfterRedirects: string,\n /** @docsNotRequired */\n public state: RouterStateSnapshot) {\n super(id, url);\n }\n\n toString(): string {\n return `ResolveStart(id: ${this.id}, url: '${this.url}', urlAfterRedirects: '${this.urlAfterRedirects}', state: ${this.state})`;}\n }\n }\n\n /**\n * An event triggered at the end of the Resolve phase of routing.\n */\n @see `ResolveStart`\n @publicApi\n @next export class

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ResolveEnd extends RouterEvent {\n constructor(\n /** @docsNotRequired */\n id: number,\n /** @docsNotRequired */\n url: string,\n /** @docsNotRequired */\n public urlAfterRedirects: string,\n /** @docsNotRequired */\n public state: RouterStateSnapshot) {\n super(id, url);\n }\n toString(): string {\n return `ResolveEnd(id: ${this.id}, url: '${this.url}', urlAfterRedirects: '${this.urlAfterRedirects}', state: ${this.state})`; \n }\n}\n\n/**\n * An event triggered before lazy loading a route configuration.\n */\n @see `RouteConfigLoadEnd`\n */\n @publicApi\n */\n export class RouteConfigLoadStart {\n constructor(\n /** @docsNotRequired */\n public route: Route) {\n }\n toString(): string {\n return `RouteConfigLoadStart(path: ${this.route.path})`; \n }\n}\n\n/**\n * An event triggered when a route has been lazy loaded.\n */\n @see `RouteConfigLoadStart`\n */\n @publicApi\n */\n export class RouteConfigLoadEnd {\n constructor(\n /** @docsNotRequired */\n public route: Route) {\n }\n toString(): string {\n return `RouteConfigLoadEnd(path: ${this.route.path})`; \n }\n}\n\n/**\n * An event triggered at the start of the child-activation\n * part of the Resolve phase of routing.\n */\n @see `ChildActivationEnd`\n */\n @see `ResolveStart`\n */\n @publicApi\n */\n export class ChildActivationStart {\n constructor(\n /** @docsNotRequired */\n public snapshot: ActivatedRouteSnapshot) {\n }\n toString(): string {\n const path = this.snapshot.routeConfig && this.snapshot.routeConfig.path || '';\n return `ChildActivationStart(path: '${path}')`; \n }\n}\n\n/**\n * An event triggered at the end of the child-activation part\n * of the Resolve phase of routing.\n */\n @see `ChildActivationStart`\n */\n @see `ResolveStart`\n */\n @publicApi\n */\n export class ChildActivationEnd {\n constructor(\n /** @docsNotRequired */\n public snapshot: ActivatedRouteSnapshot) {\n }\n toString(): string {\n const path = this.snapshot.routeConfig && this.snapshot.routeConfig.path || '';\n return `ChildActivationEnd(path: '${path}')`; \n }\n}\n\n/**\n * An event triggered at the start of the activation part\n * of the Resolve phase of routing.\n */\n @see `ActivationEnd`\n */\n @see `ResolveStart`\n */\n @publicApi\n */\n export class ActivationStart {\n constructor(\n /** @docsNotRequired */\n public snapshot: ActivatedRouteSnapshot) {\n }\n toString(): string {\n const path = this.snapshot.routeConfig && this.snapshot.routeConfig.path || '';\n return `ActivationStart(path: '${path}')`; \n }\n}\n\n/**\n * An event triggered at the end of the activation part\n * of the Resolve phase of routing.\n */\n @see `ActivationStart`\n */\n @see `ResolveStart`\n */\n @publicApi\n */\n export class ActivationEnd {\n constructor(\n /** @docsNotRequired */\n public snapshot: ActivatedRouteSnapshot) {\n }\n toString(): string {\n const path = this.snapshot.routeConfig && this.snapshot.routeConfig.path || '';\n return `ActivationEnd(path: '${path}')`; \n }\n}\n\n/**\n * An event triggered by scrolling.\n */\n @publicApi\n */\n export class Scroll {\n constructor(\n /** @docsNotRequired */\n readonly routerEvent: NavigationEnd,\n /** @docsNotRequired */\n readonly position: [number, number]|null,\n /** @docsNotRequired */\n readonly anchor: string|null) {\n }\n toString(): string {\n const pos = this.position ? `${this.position[0]}, ${this.position[1]}` : null;\n return `Scroll(anchor: '${this.anchor}', position: '${pos}')`; \n }\n}\n\n/**\n * Router events that allow you to track the lifecycle of the router.\n */\n * The events occur in the following sequence:\n */\n\n[NavigationStart](api/router/NavigationStart): Navigation starts.\n\n[RouteConfigLoadStart](api/router/RouteConfigLoadStart): Before\n * the router [lazy loads](/guide/router#lazy-loading) a route configuration.\n\n[RouteConfigLoadEnd](api/router/RouteConfigLoadEnd): After a route has\n * been lazy loaded.\n\n[RoutesRecognized](api/router/RoutesRecognized): When the router parses the URL\n * and the routes are recognized.\n\n[GuardsCheckStart](api/router/GuardsCheckStart): When the router begins the\n *guards*\n * phase of routing.\n\n[ChildActivationStart](api/router/ChildActivationStart): When the router\n * begins activating a route's children.\n\n[ActivationStart](api/router/ActivationStart): When the router begins\n *activating a route.\n\n[GuardsCheckEnd](api/router/GuardsCheckEnd): When the router finishes the\n *guards*\n * phase of routing successfully.\n\n[ResolveStart](api/router/ResolveStart): When the router begins the\n *resolve*\n * phase of routing.\n\n[ResolveEnd](api/router/ResolveEnd): When the router finishes the\n *resolve*\n * phase of routing successfully.\n\n[ChildActivationEnd](api/router/ChildActivationEnd): When the router finishes\n *activating a route's children.\n\n[ActivationEnd](api/router/ActivationEnd): When the router finishes activating a\n *route.\n\n[NavigationEnd](api/router/NavigationEnd): When navigation ends successfully.\n\n[NavigationCancel](api/router/NavigationCancel): When navigation is canceled.\n

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[NavigationError](api/router/NavigationError): When navigation fails\n * due to an unexpected error.\n * *
[Scroll](api/router/Scroll): When the user scrolls.\n * \n * @publicApi\n * ^\nexport type Event =
RouterEvent|RouteConfigLoadStart|RouteConfigLoadEnd|ChildActivationStart\n
ChildActivationEnd|ActivationStart|ActivationEnd|Scroll;\n"/**\n * @license\n * Copyright Google LLC All
Rights Reserved.\n * \n * Use of this source code is governed by an MIT-style license that can be\n * found in the
LICENSE file at https://angular.io/license\n * ^\n\nimport {Route, UrlMatchResult} from './config';\nimport
{UrlSegment, UrlSegmentGroup} from './url_tree';\n\n/**\n * The primary routing outlet.\n * \n * @publicApi\n
* ^\nexport const PRIMARY_OUTLET = 'primary';\n\n/**\n * A collection of matrix and query URL parameters.\n
* @see `convertToParamMap()`\n * @see `ParamMap`\n * \n * @publicApi\n * ^\nexport type Params = {\n [key:
string]: any;\n};\n\n/**\n * A map that provides access to the required and optional parameters\n * specific to a
route.\n * The map supports retrieving a single value with `get()`\n * or multiple values with `getAll()`.\n * \n *
@see [URLSearchParams](https://developer.mozilla.org/en-US/docs/Web/API/URLSearchParams)\n * \n *
@publicApi\n * ^\nexport interface ParamMap {\n /**\n * Reports whether the map contains a given parameter.\n
* @param name The parameter name.\n * @returns True if the map contains the given parameter, false
otherwise.\n * ^\n has(name: string): boolean;\n /**\n * Retrieves a single value for a parameter.\n * @param
name The parameter name.\n * @return The parameter's single value,\n * or the first value if the parameter has
multiple values,\n * or `null` when there is no such parameter.\n * ^\n get(name: string): string|null;\n /**\n
* Retrieves multiple values for a parameter.\n * @param name The parameter name.\n * @return An array
containing one or more values,\n * or an empty array if there is no such parameter.\n * \n * ^\n getAll(name:
string): string[];\n\n /** Names of the parameters in the map. *\n readonly keys: string[];\n}\n\n\nclass
ParamsAsMap implements ParamMap {\n private params: Params;\n\n constructor(params: Params) {\n
this.params = params || {};\n }\n\n has(name: string): boolean {\n return
Object.prototype.hasOwnProperty.call(this.params, name);\n }\n\n get(name: string): string|null {\n if
(this.has(name)) {\n const v = this.params[name];\n return Array.isArray(v) ? v[0] : v;\n }\n\n return
null;\n }\n\n getAll(name: string): string[] {\n if (this.has(name)) {\n const v = this.params[name];\n return
Array.isArray(v) ? v : [v];\n }\n\n return [];\n }\n\n get keys(): string[] {\n return Object.keys(this.params);\n
}\n}\n\n/**\n * Converts a `Params` instance to a `ParamMap`.\n * @param params The instance to convert.\n *
@returns The new map instance.\n * \n * @publicApi\n * ^\nexport function convertToParamMap(params: Params):
ParamMap {\n return new ParamsAsMap(params);\n}\n\nconst NAVIGATION_CANCELING_ERROR =
'ngNavigationCancelingError';\n\nexport function navigationCancelingError(message: string) {\n const error =
Error('NavigationCancelingError: ' + message);\n (error as any)[NAVIGATION_CANCELING_ERROR] = true;\n
return error;\n}\n\nexport function isNavigationCancelingError(error: Error) {\n return error && (error as
any)[NAVIGATION_CANCELING_ERROR];\n}\n\n// Matches the route configuration (`route`) against the actual
URL (`segments`).\nexport function defaultUrlMatcher(\n segments: UrlSegment[], segmentGroup:
UrlSegmentGroup, route: Route): UrlMatchResult|null {\n const parts = route.path!.split('/');\n\n if (parts.length >
segments.length) {\n // The actual URL is shorter than the config, no match\n return null;\n }\n\n if
(route.pathMatch === 'full' && (segmentGroup.hasChildren() || parts.length < segments.length)) {\n // The
config is longer than the actual URL but we are looking for a full match, return null\n return null;\n }\n\n const
posParams: {[key: string]: UrlSegment} = {};\n\n // Check each config part against the actual URL\n for (let index
= 0; index < parts.length; index++) {\n const part = parts[index];\n const segment = segments[index];\n const
isParameter = part.startsWith(':');\n if (isParameter) {\n posParams[part.substring(1)] = segment;\n } else if
(part !== segment.path) {\n // The actual URL part does not match the config, no match\n return null;\n }\n
}\n\n return {consumed: segments.slice(0, parts.length), posParams};\n}\n"/**\n * @license\n * Copyright
Google LLC All Rights Reserved.\n * \n * Use of this source code is governed by an MIT-style license that can be\n
* found in the LICENSE file at https://angular.io/license\n * ^\n\nimport {isObservable as isObservable, isPromise as
isPromise} from '@angular/core';\nimport {from, Observable, of} from 'rxjs';\nimport {concatAll, last as lastValue,
map} from 'rxjs/operators';\nimport {Params, PRIMARY_OUTLET} from './shared';\n\nexport function
shallowEqualArrays(a: any[], b: any[]): boolean {\n if (a.length !== b.length) return false;\n for (let i = 0; i <

```

```

a.length; ++i) {\n if (!shallowEqual(a[i], b[i])) return false;\n } \n return true;\n}\n\nexport function
shallowEqual(a: Params, b: Params): boolean {\n // Casting Object.keys return values to include `undefined` as
there are some cases\n // in IE 11 where this can happen. Cannot provide a test because the behavior only\n // exists
in certain circumstances in IE 11, therefore doing this cast ensures the\n // logic is correct for when this edge case is
hit.\n const k1 = Object.keys(a) as string[] | undefined;\n const k2 = Object.keys(b) as string[] | undefined;\n if (!k1
|| !k2 || k1.length !== k2.length) {\n return false;\n }\n let key: string;\n for (let i = 0; i < k1.length; i++) {\n key
= k1[i];\n if (!equalArraysOrString(a[key], b[key])) {\n return false;\n }\n }\n return true;\n}\n\n/**\n * Test
equality for arrays of strings or a string.\n */\nexport function equalArraysOrString(a: string|string[], b:
string|string[]) {\n if (Array.isArray(a) && Array.isArray(b)) {\n if (a.length !== b.length) return false;\n const
aSorted = [...a].sort();\n const bSorted = [...b].sort();\n return aSorted.every((val, index) => bSorted[index] ===
val);\n } else {\n return a === b;\n }\n}\n\n/**\n * Flattens single-level nested arrays.\n */\nexport function
flatten<T>(arr: T[][]): T[] {\n return Array.prototype.concat.apply([], arr);\n}\n\n/**\n * Return the last element of
an array.\n */\nexport function last<T>(a: T[]): T|null {\n return a.length > 0 ? a[a.length - 1] : null;\n}\n\n/**\n *
Verifys all booleans in an array are `true`.\n */\nexport function and(bools: boolean[]): boolean {\n return
!bools.some(v => !v);\n}\n\nexport function forEach<K, V>(map: {[key: string]: V}, callback: (v: V, k: string) =>
void): void {\n for (const prop in map) {\n if (map.hasOwnProperty(prop)) {\n callback(map[prop], prop);\n }\n }\n}\n\nexport function waitForMap<A, B>(obj: {[k: string]: A}, fn: (k: string, a: A) => Observable):
Observable<{[k: string]: B}> {\n if (Object.keys(obj).length === 0) {\n return of({});\n }\n\n const waitHead:
Observable[] = [];\n const waitTail: Observable[] = [];\n const res: {[k: string]: B} = {};\n\n forEach(obj,
(a: A, k: string) => {\n const mapped = fn(k, a).pipe(map((r: B) => res[k] = r));\n if (k ===
PRIMARY_OUTLET) {\n waitHead.push(mapped);\n } else {\n waitTail.push(mapped);\n }\n });\n\n //
Closure compiler has problem with using spread operator here. So we use `Array.concat`.\n // Note that we also
need to cast the new promise because TypeScript cannot infer the type\n // when calling the `of` function through
`Function.apply`\n return (of.apply(null, waitHead.concat(waitTail)) as Observable<Observable>)\n
.pipe(concatAll(), lastValue(), map(() => res));\n}\n\nexport function wrapIntoObservable<T>(value:
T)|Promise<T>|Observable<T>): Observable<T> {\n if (isObservable(value)) {\n return value;\n }\n\n if
(isPromise(value)) {\n // Use `Promise.resolve()` to wrap promise-like instances.\n // Required ie when a
Resolver returns a AngularJS `$q` promise to correctly trigger the\n // change detection.\n return
from(Promise.resolve(value));\n }\n\n return of(value);\n}\n\n", /**\n * @license\n * Copyright Google LLC All
Rights Reserved.\n * Use of this source code is governed by an MIT-style license that can be\n * found in the
LICENSE file at https://angular.io/license\n */\nimport {convertToParamMap, ParamMap, Params,
PRIMARY_OUTLET} from './shared';\nimport {equalArraysOrString, forEach, shallowEqual} from
 './utils/collection';\n\nexport function createEmptyUrlTree() {\n return new UrlTree(new UrlSegmentGroup([], {}),
 {}, null);\n}\n\nexport function containsTree(container: UrlTree, containee: UrlTree, exact: boolean): boolean {\n if
(exact) {\n return equalQueryParams(container.queryParams, containee.queryParams) &&\n
equalSegmentGroups(container.root, containee.root);\n }\n\n return containsQueryParams(container.queryParams,
containee.queryParams) &&\n containsSegmentGroup(container.root, containee.root);\n}\n\nfunction
equalQueryParams(container: Params, containee: Params): boolean {\n // TODO: This does not handle array
params correctly.\n return shallowEqual(container, containee);\n}\n\nfunction equalSegmentGroups(container:
UrlSegmentGroup, containee: UrlSegmentGroup): boolean {\n if (!equalPath(container.segments,
containee.segments)) return false;\n if (container.numberOfChildren !== containee.numberOfChildren) return
false;\n for (const c in containee.children) {\n if (!container.children[c]) return false;\n if
(!equalSegmentGroups(container.children[c], containee.children[c])) return false;\n }\n return true;\n}\n\nfunction
containsQueryParams(container: Params, containee: Params): boolean {\n return Object.keys(containee).length <=
Object.keys(container).length &&\n Object.keys(containee).every(key => equalArraysOrString(container[key],
containee[key]));\n}\n\nfunction containsSegmentGroup(container: UrlSegmentGroup, containee:
UrlSegmentGroup): boolean {\n return containsSegmentGroupHelper(container, containee,
containee.segments);\n}\n\nfunction containsSegmentGroupHelper(\n container: UrlSegmentGroup, containee:

```



```

&& as.every((a, i) => shallowEqual(a.parameters, bs[i].parameters));\n\n\nexport function equalPath(as:
UrlSegment[], bs: UrlSegment[]): boolean {\n if (as.length !== bs.length) return false;\n return as.every((a, i) =>
a.path === bs[i].path);\n}\n\n\nexport function mapChildrenIntoArray<T>(\n segment: UrlSegmentGroup, fn: (v:
UrlSegmentGroup, k: string) => T[]): T[] {\n let res: T[] = [];\n forEach(segment.children, (child:
UrlSegmentGroup, childOutlet: string) => {\n if (childOutlet === PRIMARY_OUTLET) {\n res =
res.concat(fn(child, childOutlet));\n }\n });\n forEach(segment.children, (child: UrlSegmentGroup, childOutlet:
string) => {\n if (childOutlet !== PRIMARY_OUTLET) {\n res = res.concat(fn(child, childOutlet));\n }\n });\n return res;\n}\n\n\n/**\n * @description\n * \n * Serializes and deserializes a URL string into a URL tree.\n * \n * The url serialization strategy is customizable. You can\n * make all URLs case insensitive by providing a custom
UrlSerializer.\n * \n * See `DefaultUrlSerializer` for an example of a URL serializer.\n * \n * @publicApi\n */\n\nexport abstract class UrlSerializer {\n /** Parse a url into a `UrlTree`\n */\n abstract parse(url: string):
UrlTree;\n\n /** Converts a `UrlTree` into a url\n */\n abstract serialize(tree: UrlTree): string;\n}\n\n\n/**\n * @description\n * \n * A default implementation of the `UrlSerializer`.\n * \n * Example URLs:\n * \n * ```\n * /inbox/33(popup:compose)\n * /inbox/33;open=true/messages/44\n * ```\n * \n * DefaultUrlSerializer uses
parentheses to serialize secondary segments (e.g., popup:compose), the\n * colon syntax to specify the outlet, and
the `;parameter=value` syntax (e.g., open=true) to\n * specify route specific parameters.\n * \n * @publicApi\n */\n\nexport class DefaultUrlSerializer implements UrlSerializer {\n /** Parses a url into a `UrlTree`\n */\n parse(url:
string): UrlTree {\n const p = new UrlParser(url);\n return new UrlTree(p.parseRootSegment(),
p.parseQueryParams(), p.parseFragment());\n }\n\n /** Converts a `UrlTree` into a url\n */\n serialize(tree:
UrlTree): string {\n const segment = `${serializeSegment(tree.root, true)}`;\n const query =
serializeQueryParams(tree.queryParams);\n const fragment =\n typeof tree.fragment === `string` ?
`#${encodeURIComponent(tree.fragment!)}` : '';\n\n return `${segment}${query}${fragment}`;\n }\n}\n\n\nconst
DEFAULT_SERIALIZER = new DefaultUrlSerializer();\n\nexport function serializePaths(segment:
UrlSegmentGroup): string {\n return segment.segments.map(p => serializePath(p)).join('/');\n}\n\n\nfunction
serializeSegment(segment: UrlSegmentGroup, root: boolean): string {\n if (!segment.hasChildren()) {\n return
serializePaths(segment);\n }\n\n if (root) {\n const primary = segment.children[PRIMARY_OUTLET] ?\n serializeSegment(segment.children[PRIMARY_OUTLET], false) : '';\n const children: string[] = [];\n\n forEach(segment.children, (v: UrlSegmentGroup, k: string) => {\n if (k !== PRIMARY_OUTLET) {\n children.push(`${k}:${serializeSegment(v, false)}`);\n }\n });\n\n return children.length > 0 ?
`${primary}${children.join('/')}` : primary;\n } else {\n const children = mapChildrenIntoArray(segment, (v:
UrlSegmentGroup, k: string) => {\n if (k === PRIMARY_OUTLET) {\n return
[serializeSegment(segment.children[PRIMARY_OUTLET], false)];\n }\n\n return
[`${k}:${serializeSegment(v, false)}`];\n });\n\n // use no parenthesis if the only child is a primary outlet route\n if (Object.keys(segment.children).length === 1 && segment.children[PRIMARY_OUTLET] != null) {\n return
`${serializePaths(segment)}/${children[0]}`;\n }\n\n return
`${serializePaths(segment)}/${children.join('/')}`;\n }\n}\n\n\n/**\n * Encodes a URI string with the default
encoding. This function will only ever be called from\n * `encodeURIComponent` or `encodeUriSegment` as it's the base
set of encodings to be used. We need\n * a custom encoding because encodeURIComponent is too aggressive and
encodes stuff that doesn't\n * have to be encoded per https://url.spec.whatwg.org.\n * \n */\n\nfunction encodeUriString(s:
string): string {\n return encodeURIComponent(s)\n .replace(/%40/g, '@')\n .replace(/%3A/gi, ':')\n .replace(/%24/g, '$')\n .replace(/%2C/gi, ',');\n}\n\n\n/**\n * This function should be used to encode both keys and
values in a query string key/value. In\n * the following URL, you need to call encodeUriQuery on `k` and `v`:\n *
\n * http://www.site.org/html;mk=mv?k=v#f\n * \n */\n\nexport function encodeUriQuery(s: string): string {\n return
encodeUriString(s).replace(/%3B/gi, ';');\n}\n\n\n/**\n * This function should be used to encode a URL fragment. In
the following URL, you need to call\n * encodeUriFragment on `f`:\n *
\n * http://www.site.org/html;mk=mv?k=v#f\n * \n */\n\nexport function encodeUriFragment(s: string): string {\n return
encodeURI(s);\n}\n\n\n/**\n * This function should be run on any URI segment as well as the key and value in a
key/value\n * pair for matrix params. In the following URL, you need to call encodeUriSegment on `html`,\n *

```



```

"mk", and "mv":\n *\n * http://www.site.org/html;mk=mv?k=v#\n *\nexport function encodeUriSegment(s:
string): string {\n return encodeURIComponent(s).replace(/\\(/g, '%28').replace(/\\)/g, '%29').replace(/%26/gi,
'&');\n}\n\nexport function decode(s: string): string {\n return decodeURIComponent(s);\n}\n\n// Query keys/values
should have the "+" replaced first, as "+" in a query string is "\n\n// decodeURIComponent function will not
decode "+" as a space.\nexport function decodeQuery(s: string): string {\n return decode(s.replace(/\\+/g,
'%20'));\n}\n\nexport function serializePath(path: UriSegment): string {\n return
`${encodeURIComponent(path.path)}${serializeMatrixParams(path.parameters)}`;}\n\n\nfunction
serializeMatrixParams(params: {[key: string]: string}): string {\n return Object.keys(params)\n .map(key =>
`${encodeURIComponent(key)}=${encodeURIComponent(params[key])}`)\n .join(" ");}\n\n\nfunction
serializeQueryParams(params: {[key: string]: any}): string {\n const strParams: string[] =
Object.keys(params).map((name) => {\n const value = params[name];\n return Array.isArray(value) ?\n value.map(v => `${encodeURIComponent(name)}=${encodeURIComponent(v)}`).join('&') :\n `${encodeURIComponent(name)}=${encodeURIComponent(value)}`;\n });\n\n return strParams.length ?
`${strParams.join('&')} : `;\n}\n\n\nconst SEGMENT_RE = /^[^\\()/?=#]+/;\nfunction matchSegments(str: string):
string {\n const match = str.match(SEGMENT_RE);\n return match ? match[0] : ` `;\n}\n\n\nconst
QUERY_PARAM_RE = /^[^=?&#]+/;\n// Return the name of the query param at the start of the string or an empty
string\nfunction matchQueryParams(str: string): string {\n const match = str.match(QUERY_PARAM_RE);\n
return match ? match[0] : ` `;\n}\n\n\nconst QUERY_PARAM_VALUE_RE = /^[^?&#]+/;\n// Return the value of the
query param at the start of the string or an empty string\nfunction matchUrlQueryParamValue(str: string): string {\n
const match = str.match(QUERY_PARAM_VALUE_RE);\n return match ? match[0] : ` `;\n}\n\n\nclass UriParser {\n
private remaining: string;\n\n constructor(private url: string) {\n this.remaining = url;\n }\n\n
parseRootSegment(): UriSegmentGroup {\n this.consumeOptional('/');\n\n if (this.remaining === " ||
this.peekStartsWith('?') || this.peekStartsWith('#')) {\n return new UriSegmentGroup([], {});\n }\n\n // The
root segment group never has segments\n return new UriSegmentGroup([], this.parseChildren());\n }\n\n
parseQueryParams(): Params {\n const params: Params = {};\n if (this.consumeOptional('?')) {\n do {\n
this.parseQueryParam(params);\n } while (this.consumeOptional('&'));\n }\n return params;\n }\n\n
parseFragment(): string|null {\n return this.consumeOptional('#') ? decodeURIComponent(this.remaining) : null;\n
}\n\n private parseChildren(): {[outlet: string]: UriSegmentGroup} {\n if (this.remaining === ") {\n return
{};\n }\n\n this.consumeOptional('/');\n\n const segments: UriSegment[] = [];\n if (!this.peekStartsWith('('))
{\n segments.push(this.parseSegment());\n }\n\n while (this.peekStartsWith('/') && !this.peekStartsWith('//')
&& !this.peekStartsWith('/(')) {\n this.capture('/');\n segments.push(this.parseSegment());\n }\n\n let
children: {[outlet: string]: UriSegmentGroup} = {};\n if (this.peekStartsWith('/(')) {\n this.capture('/');\n
children = this.parseParens(true);\n }\n\n let res: {[outlet: string]: UriSegmentGroup} = {};\n if
(this.peekStartsWith('(')) {\n res = this.parseParens(false);\n }\n\n if (segments.length > 0 ||
Object.keys(children).length > 0) {\n res[PRIMARY_OUTLET] = new UriSegmentGroup(segments, children);\n
}\n\n return res;\n }\n\n // parse a segment with its matrix parameters\n // ie `name;k1=v1;k2`\n private
parseSegment(): UriSegment {\n const path = matchSegments(this.remaining);\n if (path === " &&
this.peekStartsWith(';')) {\n throw new Error(`Empty path url segment cannot have parameters:
`${this.remaining}``);\n }\n\n this.capture(path);\n return new UriSegment(decode(path),
this.parseMatrixParams());\n }\n\n private parseMatrixParams(): {[key: string]: any} {\n const params: {[key:
string]: any} = {};\n while (this.consumeOptional(';')) {\n this.parseParam(params);\n }\n return params;\n
}\n\n private parseParam(params: {[key: string]: any}): void {\n const key = matchSegments(this.remaining);\n
if (!key) {\n return;\n }\n this.capture(key);\n let value: any = ` `;\n if (this.consumeOptional('=')) {\n
const valueMatch = matchSegments(this.remaining);\n if (valueMatch) {\n value = valueMatch;\n
this.capture(value);\n }\n }\n\n params[decode(key)] = decode(value);\n }\n\n // Parse a single query
parameter `name[=value]`\n private parseQueryParam(params: Params): void {\n const key =
matchQueryParams(this.remaining);\n if (!key) {\n return;\n }\n this.capture(key);\n let value: any = ` `;\n
if (this.consumeOptional('=')) {\n const valueMatch = matchUrlQueryParamValue(this.remaining);\n if

```



\* Every node in the route tree is an `ActivatedRoute` instance that knows about the "consumed" URL segments, the extracted parameters, and the resolved data. Use the `ActivatedRoute` properties to traverse the tree from any node. The following fragment shows how a component gets the root node of the current state to establish its own route tree:

```

@Component({templateUrl:'template.html'})
class MyComponent {
 constructor(router: Router) {
 const state: RouterState = router.routerState;
 const root: ActivatedRoute = state.root;
 const child = root.firstChild;
 const id: Observable<string> = child.params.map(p => p.id);
 //...
 }
}
@see `ActivatedRoute`
@see [Getting route information](guide/router#getting-route-information)
@publicApi
export class RouterState extends Tree<ActivatedRoute> {
 /** @internal */
 constructor(
 root: TreeNode<ActivatedRoute>,
 /** The current snapshot of the router state */
 public snapshot: RouterStateSnapshot) {
 super(root);
 setRouterState(<RouterState>this, root);
 }
 toString(): string {
 return this.snapshot.toString();
 }
}
export function createState(urlTree: UrlTree, rootComponent: Type<any>|null): RouterState {
 const snapshot = createStateSnapshot(urlTree, rootComponent);
 const emptyUrl = new BehaviorSubject([new UrlSegment("", {})]);
 const emptyParams = new BehaviorSubject({});
 const emptyData = new BehaviorSubject({});
 const emptyQueryParams = new BehaviorSubject({});
 const fragment = new BehaviorSubject("");
 const activated = new ActivatedRoute(
 emptyUrl, emptyParams, emptyQueryParams,
 fragment, emptyData, PRIMARY_OUTLET, rootComponent,
 snapshot.root);
 activated.snapshot = snapshot.root;
 return new RouterState(new TreeNode<ActivatedRoute>(activated, []), snapshot);
}
export function createStateSnapshot(
 urlTree: UrlTree, rootComponent: Type<any>|null): RouterStateSnapshot {
 const emptyParams = {};
 const emptyData = {};
 const emptyQueryParams = {};
 const fragment = "";
 const activated = new ActivatedRouteSnapshot(
 [], emptyParams, emptyQueryParams, fragment, emptyData,
 PRIMARY_OUTLET, rootComponent, null,
 urlTree.root, -1, {});
 return new RouterStateSnapshot("", new
 TreeNode<ActivatedRouteSnapshot>(activated, []));
}

```

\* Provides access to information about a route associated with a component that is loaded in an outlet. Use to traverse the `RouterState` tree and extract information from nodes. The following example shows how to construct a component using information from a currently activated route.

```

@example router/activated-route/module.ts region="activated-route"
header="activated-route.component.ts"
@see [Getting route information](guide/router#getting-route-information)
@publicApi
export class ActivatedRoute {
 /** @internal */
 _futureSnapshot: ActivatedRouteSnapshot;
 /** @internal */
 _routerState!: RouterState;
 /** @internal */
 _paramMap!: Observable<ParamMap>;
 /** @internal */
 _queryParamMap!: Observable<ParamMap>;
 /** An observable of the URL segments matched by this route. */
 public url: Observable<UrlSegment[]>;
 /** An observable of the matrix parameters scoped to this route. */
 public params: Observable<Params>;
 /** An observable of the query parameters shared by all the routes. */
 public queryParams: Observable<Params>;
 /** An observable of the URL fragment shared by all the routes. */
 public fragment: Observable<string>;
 /** An observable of the static and resolved data of this route. */
 public data: Observable<Data>;
 /** The outlet name of the route, a constant. */
 public outlet: string;
 /** The component of the route, a constant. */
 // TODO(vsavkin): remove
 public component: Type<any>|string|null, futureSnapshot: ActivatedRouteSnapshot) {
 this._futureSnapshot = futureSnapshot;
 }
 /** The configuration used to match this route. */
 get routeConfig(): Route|null {
 return this._futureSnapshot.routeConfig;
 }
 /** The root of the router state. */
 get root(): ActivatedRoute {
 return this._routerState.root;
 }
 /** The parent of this route in the router state tree. */
 get parent(): ActivatedRoute|null {
 return this._routerState.parent(this);
 }
 /** The first child of this route in the router state tree. */
 get firstChild(): ActivatedRoute|null {
 return this._routerState.firstChild(this);
 }
 /** The children of this route in the router state tree. */
 get children(): ActivatedRoute[] {
 return this._routerState.children(this);
 }
 /** The path from the root of the router state tree to this route. */
 get pathFromRoot(): ActivatedRoute[] {
 return this._routerState.pathFromRoot(this);
 }
}

```

\* An Observable that contains a map of the required and optional parameters specific to the route. The map

```

supports retrieving single and multiple values from the same parameter.\n *^/n get paramMap():
Observable<ParamMap> {\n if (!this._paramMap) {\n this._paramMap = this.params.pipe(map((p: Params):
ParamMap => convertToParamMap(p))); \n } \n return this._paramMap; \n } \n\n /** \n * An Observable that
contains a map of the query parameters available to all routes. \n * The map supports retrieving single and multiple
values from the query parameter.\n *^/n get queryParamMap(): Observable<ParamMap> {\n if
(!this._queryParamMap) {\n this._queryParamMap = \n this.queryParams.pipe(map((p: Params): ParamMap
=> convertToParamMap(p))); \n } \n return this._queryParamMap; \n } \n\n toString(): string {\n return
this.snapshot ? this.snapshot.toString() : `Future(${this._futureSnapshot}`; \n } \n } \n\nexport type
ParamsInheritanceStrategy = 'emptyOnly'|'always'; \n\n/** @internal */ \nexport type Inherited = {\n params:
Params, \n data: Data, \n resolve: Data, \n }; \n\n/** \n * Returns the inherited params, data, and resolve for a given
route. \n * By default, this only inherits values up to the nearest path-less or component-less route. \n * @internal \n
*/ \nexport function inheritedParamsDataResolve(\n route: ActivatedRouteSnapshot, \n
paramsInheritanceStrategy: ParamsInheritanceStrategy = 'emptyOnly'): Inherited {\n const pathFromRoot =
route.pathFromRoot; \n let inheritingStartingFrom = 0; \n if (paramsInheritanceStrategy !== 'always') {\n
inheritingStartingFrom = pathFromRoot.length - 1; \n while (inheritingStartingFrom >= 1) {\n const current =
pathFromRoot[inheritingStartingFrom]; \n const parent = pathFromRoot[inheritingStartingFrom - 1]; \n //
current route is an empty path => inherits its parent's params and data \n if (current.routeConfig &&
current.routeConfig.path === "") {\n inheritingStartingFrom--; \n // parent is componentless => current
route should inherit its params and data \n } else if (!parent.component) {\n inheritingStartingFrom--; \n
} else {\n break; \n } \n } \n } \n return
flattenInherited(pathFromRoot.slice(inheritingStartingFrom)); \n } \n\n/** @internal */ \nfunction
flattenInherited(pathFromRoot: ActivatedRouteSnapshot[]): Inherited {\n return pathFromRoot.reduce((res, curr)
=> {\n const params = {...res.params, ...curr.params}; \n const data = {...res.data, ...curr.data}; \n const resolve =
{...res.resolve, ...curr._resolvedData}; \n return {params, data, resolve}; \n }, <any>{params: {}, data: {}, resolve:
{}}); \n } \n\n/** \n * @description \n * \n * Contains the information about a route associated with a component loaded
in an \n * outlet at a particular moment in time. ActivatedRouteSnapshot can also be used to \n * traverse the router
state tree. \n * \n * The following example initializes a component with route information extracted \n * from the
snapshot of the root node at the time of creation. \n * \n * `` \n * @Component({ templateUrl: './my-
component.html' }) \n * class MyComponent {\n * constructor(route: ActivatedRoute) {\n * const id: string =
route.snapshot.params.id; \n * const url: string = route.snapshot.url.join(""); \n * const user =
route.snapshot.data.user; \n * } \n * } \n * `` \n * \n * @publicApi \n */ \nexport class ActivatedRouteSnapshot {\n /**
The configuration used to match this route */ \n public readonly routeConfig: Route | null; \n /** @internal */ \n
_urlSegment: UrlSegmentGroup; \n /** @internal */ \n _lastPathIndex: number; \n /** @internal */ \n _resolve:
ResolveData; \n /** @internal */ \n // TODO(issue/24571): remove '!'. \n _resolvedData!: Data; \n /** @internal
*/ \n // TODO(issue/24571): remove '!'. \n _routerState!: RouterStateSnapshot; \n /** @internal */ \n //
TODO(issue/24571): remove '!'. \n _paramMap!: ParamMap; \n /** @internal */ \n // TODO(issue/24571): remove
'!. \n _queryParamMap!: ParamMap; \n\n /** @internal */ \n constructor(\n /** The URL segments matched by
this route */ \n public url: UrlSegment[], \n /** The matrix parameters scoped to this route */ \n public
params: Params, \n /** The query parameters shared by all the routes */ \n public queryParams: Params, \n
/** The URL fragment shared by all the routes */ \n public fragment: string, \n /** The static and resolved data
of this route */ \n public data: Data, \n /** The outlet name of the route */ \n public outlet: string, \n /**
The component of the route */ \n public component: Type<any> | string | null, routeConfig: Route | null, urlSegment:
UrlSegmentGroup, \n lastPathIndex: number, resolve: ResolveData) {\n this.routeConfig = routeConfig; \n
this._urlSegment = urlSegment; \n this._lastPathIndex = lastPathIndex; \n this._resolve = resolve; \n } \n\n /**
The root of the router state */ \n get root(): ActivatedRouteSnapshot {\n return this._routerState.root; \n } \n\n /**
The parent of this route in the router state tree */ \n get parent(): ActivatedRouteSnapshot | null {\n return
this._routerState.parent(this); \n } \n\n /** The first child of this route in the router state tree */ \n get
firstChild(): ActivatedRouteSnapshot | null {\n return this._routerState.firstChild(this); \n } \n\n /** The children of this route in

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the router state tree */
 get children(): ActivatedRouteSnapshot[] {
 return this._routerState.children(this);
 }
 /** The path from the root of the router state tree to this route */
 get pathFromRoot(): ActivatedRouteSnapshot[] {
 return this._routerState.pathFromRoot(this);
 }
 get paramMap(): ParamMap {
 if (!this._paramMap) {
 this._paramMap = convertToParamMap(this.params);
 }
 return this._paramMap;
 }
 get queryParamMap(): ParamMap {
 if (!this._queryParamMap) {
 this._queryParamMap = convertToParamMap(this.queryParams);
 }
 return this._queryParamMap;
 }
 toString(): string {
 const url = this.url.map(segment => segment.toString()).join('/');
 const matched = this.routeConfig ? this.routeConfig.path : '';
 return `Route(url:'${url}', path:'${matched}')`;
 }
}
/**
 * Represents the state of the router at a moment in time.
 * This is a tree of activated route snapshots. Every node in this tree knows about
 * the "consumed" URL segments, the extracted parameters, and the resolved data.
 * The following example shows how a component is initialized with information
 * from the snapshot of the root node's state at the time of creation.
 */
@Component({ templateUrl: 'template.html' })
class MyComponent {
 constructor(router: Router) {
 const state: RouterState = router.routerState;
 const snapshot: RouterStateSnapshot = state.snapshot;
 const root: ActivatedRouteSnapshot = snapshot.root;
 const child = root.firstChild;
 const id: Observable<string> = child.params.map(p => p.id);
 // ...
 }
 @publicApi
 export class RouterStateSnapshot extends Tree<ActivatedRouteSnapshot> {
 /** @internal */
 constructor(
 /**
 * The url from which this snapshot was created */
 public url: string,
 root: TreeNode<ActivatedRouteSnapshot>
) {
 super(root);
 setRouterState(<RouterStateSnapshot>this, root);
 }
 toString(): string {
 return serializeNode(this._root);
 }
 function setRouterState<U, T extends { _routerState: U }>(state: U, node: TreeNode<T>): void {
 node.value._routerState = state;
 node.children.forEach(c => setRouterState(state, c));
 }
 function serializeNode(node: TreeNode<ActivatedRouteSnapshot>): string {
 const c = node.children.length > 0 ? ` { ${node.children.map(serializeNode).join(', ')} } ` : '';
 return `${node.value}${c}`;
 }
 }
 /**
 * The expectation is that the activate route is created with the right set of
 * parameters.
 * So we push new values into the observables only when they are not the initial values.
 * And we detect that by checking if the snapshot field is set.
 */
 export function advanceActivatedRoute(
 route: ActivatedRoute): void {
 if (route.snapshot) {
 const currentSnapshot = route.snapshot;
 const nextSnapshot = route._futureSnapshot;
 route.snapshot = nextSnapshot;
 if (!shallowEqual(currentSnapshot.queryParams, nextSnapshot.queryParams)) {
 (<any>route.queryParams).next(nextSnapshot.queryParams);
 }
 if (currentSnapshot.fragment !== nextSnapshot.fragment) {
 (<any>route.fragment).next(nextSnapshot.fragment);
 }
 if (!shallowEqual(currentSnapshot.params, nextSnapshot.params)) {
 (<any>route.params).next(nextSnapshot.params);
 }
 if (!shallowEqualArrays(currentSnapshot.url, nextSnapshot.url)) {
 (<any>route.url).next(nextSnapshot.url);
 }
 if (!shallowEqual(currentSnapshot.data, nextSnapshot.data)) {
 (<any>route.data).next(nextSnapshot.data);
 }
 } else {
 route.snapshot = route._futureSnapshot;
 // this is for resolved data
 (<any>route.data).next(route._futureSnapshot.data);
 }
 }
 export function equalParamsAndUrlSegments(
 a: ActivatedRouteSnapshot, b: ActivatedRouteSnapshot): boolean {
 const equalUrlParams = shallowEqual(a.params, b.params) && equalSegments(a.url, b.url);
 const parentsMismatch = !a.parent !== !b.parent;
 return equalUrlParams && !parentsMismatch && (!a.parent || equalParamsAndUrlSegments(a.parent, b.parent!));
 }
}
/**
 * @license
 * Copyright Google LLC All Rights Reserved.
 * Use of this source code is governed by an MIT-style license that can be
 * found in the LICENSE file at https://angular.io/license
 */
import { BehaviorSubject } from 'rxjs';
import { DetachedRouteHandleInternal, RouteReuseStrategy } from './route_reuse_strategy';
import { ActivatedRoute, ActivatedRouteSnapshot, RouterState, RouterStateSnapshot } from './router_state';
import { TreeNode } from './utils/tree';
export function createRouterState(
 routeReuseStrategy: RouteReuseStrategy,
 curr: RouterStateSnapshot,
 prevState: RouterState): RouterState {
 const root = createNode(routeReuseStrategy, curr._root, prevState ? prevState._root : undefined);
 return new RouterState(root, curr);
}
function createNode(
 routeReuseStrategy: RouteReuseStrategy,
 curr: TreeNode<ActivatedRouteSnapshot>,

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prevState?: TreeNode<ActivatedRoute>): TreeNode<ActivatedRoute> {\n // reuse an activated route that is
currently displayed on the screen\n if (prevState && routeReuseStrategy.shouldReuseRoute(curr.value,
prevState.value.snapshot)) {\n const value = prevState.value;\n value._futureSnapshot = curr.value;\n const
children = createOrReuseChildren(routeReuseStrategy, curr, prevState);\n return new
TreeNode<ActivatedRoute>(value, children);\n\n // retrieve an activated route that is used to be displayed, but is
not currently displayed\n } else {\n const detachedRouteHandle =\n
<DetachedRouteHandleInternal>routeReuseStrategy.retrieve(curr.value);\n if (detachedRouteHandle) {\n const
tree: TreeNode<ActivatedRoute> = detachedRouteHandle.route;\n setFutureSnapshotsOfActivatedRoutes(curr,
tree);\n return tree;\n\n } else {\n const value = createActivatedRoute(curr.value);\n const children =
curr.children.map(c => createNode(routeReuseStrategy, c));\n return new TreeNode<ActivatedRoute>(value,
children);\n }\n }\n}\n\nfunction setFutureSnapshotsOfActivatedRoutes(\n curr:
TreeNode<ActivatedRouteSnapshot>, result: TreeNode<ActivatedRoute>): void {\n if (curr.value.routeConfig !==
result.value.routeConfig) {\n throw new Error('Cannot reattach ActivatedRouteSnapshot created from a different
route');\n }\n if (curr.children.length !== result.children.length) {\n throw new Error('Cannot reattach
ActivatedRouteSnapshot with a different number of children');\n }\n result.value._futureSnapshot = curr.value;\n
for (let i = 0; i < curr.children.length; ++i) {\n setFutureSnapshotsOfActivatedRoutes(curr.children[i],
result.children[i]);\n }\n}\n\nfunction createOrReuseChildren(\n routeReuseStrategy: RouteReuseStrategy, curr:
TreeNode<ActivatedRouteSnapshot>,\n prevState: TreeNode<ActivatedRoute>) {\n return
curr.children.map(child => {\n for (const p of prevState.children) {\n if
(routeReuseStrategy.shouldReuseRoute(child.value, p.value.snapshot)) {\n return
createNode(routeReuseStrategy, child, p);\n }\n }\n return createNode(routeReuseStrategy, child);\n
});\n}\n\nfunction createActivatedRoute(c: ActivatedRouteSnapshot) {\n return new ActivatedRoute(\n new
BehaviorSubject(c.url), new BehaviorSubject(c.params), new BehaviorSubject(c.queryParams),\n new
BehaviorSubject(c.fragment), new BehaviorSubject(c.data), c.outlet, c.component, c);\n}\n\n"/**\n * @license\n *
Copyright Google LLC All Rights Reserved.\n * Use of this source code is governed by an MIT-style license
that can be\n * found in the LICENSE file at https://angular.io/license\n */\n\nimport { ActivatedRoute } from
'./router_state';\nimport { Params, PRIMARY_OUTLET } from './shared';\nimport { UrlSegment, UrlSegmentGroup,
UrlTree } from './url_tree';\nimport { forEach, last, shallowEqual } from './utils/collection';\n\nexport function
createUrlTree(\n route: ActivatedRoute, urlTree: UrlTree, commands: any[], queryParams: Params,\n fragment:
string): UrlTree {\n if (commands.length === 0) {\n return tree(urlTree.root, urlTree.root, urlTree, queryParams,
fragment);\n }\n\n const nav = computeNavigation(commands);\n\n if (nav.toRoot()) {\n return tree(urlTree.root,
new UrlSegmentGroup([], {}), urlTree, queryParams, fragment);\n }\n\n const startingPosition =
findStartingPosition(nav, urlTree, route);\n\n const segmentGroup = startingPosition.processChildren ?\n
updateSegmentGroupChildren(\n startingPosition.segmentGroup, startingPosition.index, nav.commands) :\n
updateSegmentGroup(startingPosition.segmentGroup, startingPosition.index, nav.commands);\n return
tree(startingPosition.segmentGroup, segmentGroup, urlTree, queryParams, fragment);\n}\n\nfunction
isMatrixParams(command: any): boolean {\n return typeof command === 'object' && command !== null &&
!command.outlets && !command.segmentPath;\n}\n\n/**\n * Determines if a given command has an `outlets` map.
When we encounter a command\n * with an outlets k/v map, we need to apply each outlet individually to the
existing segment.\n */\n\nfunction isCommandWithOutlets(command: any): command is { outlets: {[key: string]:
any} } {\n return typeof command === 'object' && command !== null && command.outlets;\n}\n\nfunction tree(\n
oldSegmentGroup: UrlSegmentGroup, newSegmentGroup: UrlSegmentGroup, urlTree: UrlTree,\n queryParams:
Params, fragment: string): UrlTree {\n let qp: any = {};\n if (queryParams) {\n forEach(queryParams, (value:
any, name: any) => {\n qp[name] = Array.isArray(value) ? value.map((v: any) => `${v}`) : `${value}`;\n
});\n }\n\n if (urlTree.root === oldSegmentGroup) {\n return new UrlTree(newSegmentGroup, qp, fragment);\n }\n\n
return new UrlTree(replaceSegment(urlTree.root, oldSegmentGroup, newSegmentGroup), qp,
fragment);\n}\n\nfunction replaceSegment(\n current: UrlSegmentGroup, oldSegment: UrlSegmentGroup,\n newSegment:
UrlSegmentGroup): UrlSegmentGroup {\n const children: {[key: string]: UrlSegmentGroup} = {};\n

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forEach(current.children, (c: UrlSegmentGroup, outletName: string) => {\n if (c === oldSegment) {\n
children[outletName] = newSegment;\n } else {\n children[outletName] = replaceSegment(c, oldSegment,
newSegment);\n }\n });\n return new UrlSegmentGroup(current.segments, children);\n}\n\nclass Navigation {\n
constructor(\n public isAbsolute: boolean, public numberOfDoubleDots: number, public commands: any[]) {\n
if (isAbsolute && commands.length > 0 && isMatrixParams(commands[0])) {\n throw new Error('Root segment
cannot have matrix parameters');\n }\n\n const cmdWithOutlet = commands.find(isCommandWithOutlets);\n
if (cmdWithOutlet && cmdWithOutlet !== last(commands)) {\n throw new Error('{outlets:{}} has to be the last
command');\n }\n }\n\n public toRoot(): boolean {\n return this.isAbsolute && this.commands.length === 1
&& this.commands[0] === '/';\n }\n}\n\n/** Transforms commands to a normalized `Navigation` *\nfunction
computeNavigation(commands: any[]): Navigation {\n if ((typeof commands[0] === 'string') && commands.length
=== 1 && commands[0] === '/') {\n return new Navigation(true, 0, commands);\n }\n\n let
numberOfDoubleDots = 0;\n let isAbsolute = false;\n\n const res: any[] = commands.reduce((res, cmd, cmdIdx) =>
{\n if (typeof cmd === 'object' && cmd != null) {\n if (cmd.outlets) {\n const outlets: {[k: string]: any} =
{};\n forEach(cmd.outlets, (commands: any, name: string) => {\n outlets[name] = typeof commands ===
'string' ? commands.split('/') : commands;\n });\n return [...res, {outlets}];\n }\n\n if
(cmd.segmentPath) {\n return [...res, cmd.segmentPath];\n }\n }\n\n if (!(typeof cmd === 'string')) {\n
return [...res, cmd];\n }\n\n if (cmdIdx === 0) {\n cmd.split('/').forEach((urlPart, partIndex) => {\n if
(partIndex == 0 && urlPart === '.') {\n // skip './a'\n } else if (partIndex == 0 && urlPart === '') { // './a'\n
isAbsolute = true;\n } else if (urlPart === '..') { // '../a'\n numberOfDoubleDots++;\n } else if
(urlPart != '') {\n res.push(urlPart);\n }\n });\n return res;\n }\n\n return [...res, cmd];\n },
[]);\n\n return new Navigation(isAbsolute, numberOfDoubleDots, res);\n}\n\nclass Position {\n constructor(\n
public segmentGroup: UrlSegmentGroup, public processChildren: boolean, public index: number) {\n
}\n}\n\nfunction findStartingPosition(nav: Navigation, tree: UrlTree, route: ActivatedRoute): Position {\n if
(nav.isAbsolute) {\n return new Position(tree.root, true, 0);\n }\n\n if (route.snapshot._lastPathIndex === -1) {\n
const segmentGroup = route.snapshot._urlSegment;\n // Pathless ActivatedRoute has _lastPathIndex === -1 but
should not process children\n // see issue #26224, #13011, #35687\n // However, if the ActivatedRoute is the
root we should process children like above.\n const processChildren = segmentGroup === tree.root;\n return
new Position(segmentGroup, processChildren, 0);\n }\n\n const modifier = isMatrixParams(nav.commands[0]) ? 0
: 1;\n const index = route.snapshot._lastPathIndex + modifier;\n return createPositionApplyingDoubleDots(\n
route.snapshot._urlSegment, index, nav.numberOfDoubleDots);\n}\n\nfunction
createPositionApplyingDoubleDots(\n group: UrlSegmentGroup, index: number, numberOfDoubleDots: number):
Position {\n let g = group;\n let ci = index;\n let dd = numberOfDoubleDots;\n while (dd > ci) {\n dd -= ci;\n g
= g.parent!;\n if (!g) {\n throw new Error('Invalid number of `../`');\n }\n ci = g.segments.length;\n }\n
return new Position(g, false, ci - dd);\n}\n\nfunction getOutlets(commands: any[]): {[k: string]: any[]} {\n if
(isCommandWithOutlets(commands[0])) {\n return commands[0].outlets;\n }\n\n return
{[PRIMARY_OUTLET]: commands};\n}\n\nfunction updateSegmentGroup(\n segmentGroup:
UrlSegmentGroup, startIndex: number, commands: any[]): UrlSegmentGroup {\n if (!segmentGroup) {\n
segmentGroup = new UrlSegmentGroup([], {});\n }\n\n if (segmentGroup.segments.length === 0 &&
segmentGroup.hasChildren()) {\n return updateSegmentGroupChildren(segmentGroup, startIndex, commands);\n
}\n\n const m = prefixedWith(segmentGroup, startIndex, commands);\n const slicedCommands =
commands.slice(m.commandIndex);\n if (m.match && m.pathIndex < segmentGroup.segments.length) {\n const
g = new UrlSegmentGroup(segmentGroup.segments.slice(0, m.pathIndex), {});\n g.children[PRIMARY_OUTLET] =\n
new UrlSegmentGroup(segmentGroup.segments.slice(m.pathIndex),
segmentGroup.children);\n return updateSegmentGroupChildren(g, 0, slicedCommands);\n } else if (m.match &&
slicedCommands.length === 0) {\n return new UrlSegmentGroup(segmentGroup.segments, {});\n } else if
(m.match && !segmentGroup.hasChildren()) {\n return createNewSegmentGroup(segmentGroup, startIndex,
commands);\n } else if (m.match) {\n return updateSegmentGroupChildren(segmentGroup, 0,
slicedCommands);\n } else {\n return createNewSegmentGroup(segmentGroup, startIndex, commands);\n
}

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}\n\nfunction updateSegmentGroupChildren(\n segmentGroup: UrlSegmentGroup, startIndex: number,
 commands: any[]): UrlSegmentGroup {\n if (commands.length === 0) {\n return new
 UrlSegmentGroup(segmentGroup.segments, {});\n } else {\n const outlets = getOutlets(commands);\n const
 children: {[key: string]: UrlSegmentGroup} = {};\n\n forEach(outlets, (commands: any, outlet: string) => {\n if
 (commands !== null) {\n children[outlet] = updateSegmentGroup(segmentGroup.children[outlet], startIndex,
 commands);\n }\n });\n\n forEach(segmentGroup.children, (child: UrlSegmentGroup, childOutlet: string) =>
 {\n if (outlets[childOutlet] === undefined) {\n children[childOutlet] = child;\n }\n });\n return new
 UrlSegmentGroup(segmentGroup.segments, children);\n }\n}\n\nfunction prefixedWith(segmentGroup:
 UrlSegmentGroup, startIndex: number, commands: any[]) {\n let currentCommandIndex = 0;\n let
 currentPathIndex = startIndex;\n\n const noMatch = {match: false, pathIndex: 0, commandIndex: 0};\n while
 (currentPathIndex < segmentGroup.segments.length) {\n if (currentCommandIndex >= commands.length) return
 noMatch;\n const path = segmentGroup.segments[currentPathIndex];\n const command =
 commands[currentCommandIndex];\n // Do not try to consume command as part of the prefixing if it has outlets
 because it can\n // contain outlets other than the one being processed. Consuming the outlets command would\n
 // result in other outlets being ignored.\n if (isCommandWithOutlets(command)) {\n break;\n }\n const curr
 = `${command}`;\n const next =\n currentCommandIndex < commands.length - 1 ?
 commands[currentCommandIndex + 1] : null;\n\n if (currentPathIndex > 0 && curr === undefined) break;\n\n if
 (curr && next && (typeof next === 'object') && next.outlets === undefined) {\n if (!compare(curr, next, path))
 return noMatch;\n currentCommandIndex += 2;\n } else {\n if (!compare(curr, {}, path)) return noMatch;\n
 currentCommandIndex++;\n }\n currentPathIndex++;\n }\n\n return {match: true, pathIndex:
 currentPathIndex, commandIndex: currentCommandIndex};\n}\n\nfunction createNewSegmentGroup(\n
 segmentGroup: UrlSegmentGroup, startIndex: number, commands: any[]): UrlSegmentGroup {\n const paths =
 segmentGroup.segments.slice(0, startIndex);\n\n let i = 0;\n while (i < commands.length) {\n const command =
 commands[i];\n if (isCommandWithOutlets(command)) {\n const children =
 createNewSegmentChildren(command.outlets);\n return new UrlSegmentGroup(paths, children);\n }\n\n // if
 we start with an object literal, we need to reuse the path part from the segment\n if (i === 0 &&
 isMatrixParams(commands[0])) {\n const p = segmentGroup.segments[startIndex];\n paths.push(new
 UrlSegment(p.path, commands[0]));\n i++;\n continue;\n }\n\n const curr =
 isCommandWithOutlets(command) ? command.outlets[PRIMARY_OUTLET] : `${command}`;\n const next = (i
 < commands.length - 1) ? commands[i + 1] : null;\n if (curr && next && isMatrixParams(next)) {\n
 paths.push(new UrlSegment(curr, stringify(next)));\n i += 2;\n } else {\n paths.push(new
 UrlSegment(curr, {}));\n i++;\n }\n }\n return new UrlSegmentGroup(paths, {});\n}\n\nfunction
 createNewSegmentChildren(outlets: {[name: string]: any}): any {\n const children: {[key: string]:
 UrlSegmentGroup} = {};\n forEach(outlets, (commands: any, outlet: string) => {\n if (commands !== null) {\n
 children[outlet] = createNewSegmentGroup(new UrlSegmentGroup([], {}), 0, commands);\n }\n });\n return
 children;\n}\n\nfunction stringify(params: {[key: string]: any}): {[key: string]: string} {\n const res: {[key:
 string]: string} = {};\n forEach(params, (v: any, k: string) => res[k] = `${v}`);\n return res;\n}\n\nfunction
 compare(path: string, params: {[key: string]: any}, segment: UrlSegment): boolean {\n return path ==
 segment.path && shallowEqual(params, segment.parameters);\n}\n\n"/**\n * @license\n * Copyright Google LLC All Rights
 Reserved.\n * Use of this source code is governed by an MIT-style license that can be\n * found in the
 LICENSE file at https://angular.io/license\n */\n\nimport {MonoTypeOperatorFunction} from 'rxjs';\nimport {map}
 from 'rxjs/operators';\nimport {LoadedRouterConfig} from './config';\nimport {ActivationEnd,
 ChildActivationEnd, Event} from './events';\nimport {DetachedRouteHandleInternal, RouteReuseStrategy} from
 './route_reuse_strategy';\nimport {NavigationTransition} from './router';\nimport {ChildrenOutletContexts} from
 './router_outlet_context';\nimport {ActivatedRoute, ActivatedRouteSnapshot, advanceActivatedRoute, RouterState}
 from './router_state';\nimport {forEach} from './utils/collection';\nimport {nodeChildrenAsMap, TreeNode} from
 './utils/tree';\n\nexport const activateRoutes =\n (rootContexts: ChildrenOutletContexts, routeReuseStrategy:
 RouteReuseStrategy,\n forwardEvent: (evt: Event) => void): MonoTypeOperatorFunction<NavigationTransition>

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=>\n map(t => {\n new ActivateRoutes(\n routeReuseStrategy, t.targetRouterState!,
t.currentRouterState, forwardEvent)\n .activate(rootContexts);\n return t;\n });\n\nexport class
ActivateRoutes {\n constructor(\n private routeReuseStrategy: RouteReuseStrategy, private futureState:
RouterState,\n private currState: RouterState, private forwardEvent: (evt: Event) => void) {\n\n
activate(parentContexts: ChildrenOutletContexts): void {\n const futureRoot = this.futureState._root;\n const
currRoot = this.currState ? this.currState._root : null;\n\n this.deactivateChildRoutes(futureRoot, currRoot,
parentContexts);\n advanceActivatedRoute(this.futureState.root);\n this.activateChildRoutes(futureRoot,
currRoot, parentContexts);\n }\n\n // De-activate the child route that are not re-used for the future state\n private
deactivateChildRoutes(\n futureNode: TreeNode<ActivatedRoute>, currNode:
TreeNode<ActivatedRoute>|null,\n contexts: ChildrenOutletContexts): void {\n const children: {[outletName:
string]: TreeNode<ActivatedRoute>} = nodeChildrenAsMap(currNode);\n\n // Recurse on the routes active in the
future state to de-activate deeper children\n futureNode.children.forEach(futureChild => {\n const
childOutletName = futureChild.value.outlet;\n this.deactivateRoutes(futureChild, children[childOutletName],
contexts);\n delete children[childOutletName];\n });\n\n // De-activate the routes that will not be re-used\n
forEach(children, (v: TreeNode<ActivatedRoute>, childName: string) => {\n
this.deactivateRouteAndItsChildren(v, contexts);\n });\n }\n\n private deactivateRoutes(\n futureNode:
TreeNode<ActivatedRoute>, currNode: TreeNode<ActivatedRoute>,\n parentContext: ChildrenOutletContexts):
void {\n const future = futureNode.value;\n const curr = currNode ? currNode.value : null;\n\n if (future ===
curr) {\n // Reusing the node, check to see if the children need to be de-activated\n if (future.component) {\n
 // If we have a normal route, we need to go through an outlet.\n const context =
parentContext.getContext(future.outlet);\n if (context) {\n this.deactivateChildRoutes(futureNode,
currNode, context.children);\n }\n } else {\n // if we have a componentless route, we recurse but keep the
same outlet map.\n this.deactivateChildRoutes(futureNode, currNode, parentContext);\n }\n } else {\n if
(curr) {\n // Deactivate the current route which will not be re-used\n this.deactivateRouteAndItsChildren(currNode, parentContext);\n }\n }\n\n private
deactivateRouteAndItsChildren(\n route: TreeNode<ActivatedRoute>, parentContexts: ChildrenOutletContexts):
void {\n if (this.routeReuseStrategy.shouldDetach(route.value.snapshot)) {\n
 this.detachAndStoreRouteSubtree(route, parentContexts);\n } else {\n this.deactivateRouteAndOutlet(route,
parentContexts);\n }\n }\n\n private detachAndStoreRouteSubtree(\n route: TreeNode<ActivatedRoute>,
parentContexts: ChildrenOutletContexts): void {\n const context =
parentContexts.getContext(route.value.outlet);\n if (context && context.outlet) {\n const componentRef =
context.outlet.detach();\n const contexts = context.children.onOutletDeactivated();\n this.routeReuseStrategy.store(route.value.snapshot, {componentRef, route, contexts});\n }\n }\n\n private
deactivateRouteAndOutlet(\n route: TreeNode<ActivatedRoute>, parentContexts: ChildrenOutletContexts): void {\n
 const context = parentContexts.getContext(route.value.outlet);\n\n if (context) {\n const children:
{[outletName: string]: any} = nodeChildrenAsMap(route);\n const contexts = route.value.component ?
context.children : parentContexts;\n\n forEach(children, (v: any, k: string) =>
this.deactivateRouteAndItsChildren(v, contexts));\n\n if (context.outlet) {\n // Destroy the component\n
context.outlet.deactivate();\n // Destroy the contexts for all the outlets that were in the component\n
context.children.onOutletDeactivated();\n }\n }\n }\n\n private activateChildRoutes(\n futureNode:
TreeNode<ActivatedRoute>, currNode: TreeNode<ActivatedRoute>|null,\n contexts: ChildrenOutletContexts):
void {\n const children: {[outlet: string]: any} = nodeChildrenAsMap(currNode);\n\n futureNode.children.forEach(c => {\n this.activateRoutes(c, children[c.value.outlet], contexts);\n this.forwardEvent(new ActivationEnd(c.value.snapshot));\n });\n if (futureNode.children.length) {\n this.forwardEvent(new ChildActivationEnd(futureNode.value.snapshot));\n }\n }\n\n private activateRoutes(\n futureNode: TreeNode<ActivatedRoute>, currNode: TreeNode<ActivatedRoute>,\n parentContexts:
ChildrenOutletContexts): void {\n const future = futureNode.value;\n const curr = currNode ? currNode.value :
null;\n\n advanceActivatedRoute(future);\n\n // reusing the node\n if (future === curr) {\n if

```

```

(future.component) {\n // If we have a normal route, we need to go through an outlet.\n const context =
parentContexts.getOrCreateContext(future.outlet);\n this.activateChildRoutes(futureNode, currNode,
context.children);\n } else {\n // if we have a componentless route, we recurse but keep the same outlet
map.\n this.activateChildRoutes(futureNode, currNode, parentContexts);\n }\n } else {\n if
(future.component) {\n // if we have a normal route, we need to place the component into the outlet and
recurse.\n const context = parentContexts.getOrCreateContext(future.outlet);\n if
(this.routeReuseStrategy.shouldAttach(future.snapshot)) {\n const stored =\n
(<DetachedRouteHandleInternal>this.routeReuseStrategy.retrieve(future.snapshot));\n
this.routeReuseStrategy.store(future.snapshot, null);\n
context.children.onOutletReAttached(stored.contexts);\n context.attachRef = stored.componentRef;\n
context.route = stored.route.value;\n if (context.outlet) {\n // Attach right away when the outlet has
already been instantiated\n // Otherwise attach from `RouterOutlet.ngOnInit` when it is instantiated\n
context.outlet.attach(stored.componentRef, stored.route.value);\n }\n
advanceActivatedRouteNodeAndItsChildren(stored.route);\n } else {\n const config =
parentLoadedConfig(future.snapshot);\n const cmpFactoryResolver = config ?
config.module.componentFactoryResolver : null;\n context.attachRef = null;\n context.route = future;\n
context.resolver = cmpFactoryResolver;\n if (context.outlet) {\n // Activate the outlet when it has
already been instantiated\n // Otherwise it will get activated from its `ngOnInit` when instantiated\n
context.outlet.activateWith(future, cmpFactoryResolver);\n }\n this.activateChildRoutes(futureNode,
null, context.children);\n }\n } else {\n // if we have a componentless route, we recurse but keep the
same outlet map.\n this.activateChildRoutes(futureNode, null, parentContexts);\n }\n }\n }\n}\n\nfunction
advanceActivatedRouteNodeAndItsChildren(node: TreeNode<ActivatedRoute>): void {\n
advanceActivatedRoute(node.value);\n
node.children.forEach(advanceActivatedRouteNodeAndItsChildren);\n}\n\nfunction parentLoadedConfig(snapshot:
ActivatedRouteSnapshot): LoadedRouterConfig|null {\n for (let s = snapshot.parent; s; s = s.parent) {\n const
route = s.routeConfig;\n if (route && route._loadedConfig) return route._loadedConfig;\n if (route &&
route.component) return null;\n }\n return null;\n }\n\n"/>**\n * @license\n * Copyright Google LLC All Rights
Reserved.\n * Use of this source code is governed by an MIT-style license that can be\n * found in the
LICENSE file at https://angular.io/license\n */\n\nimport {NgModuleFactory, NgModuleRef, Type} from
'@angular/core';\nimport {Observable} from 'rxjs';\nimport {ActivatedRouteSnapshot} from
'./router_state';\nimport {UrlSegment, UrlSegmentGroup} from './url_tree';\n\n/**\n * Represents a route
configuration for the Router service.\n * An array of `Route` objects, used in `Router.config` and for nested route
configurations\n * in `Route.children`.\n * @see `Route`\n * @see `Router`\n * @see [Router configuration
guide](guide/router#configuration)\n * @publicApi\n */\nexport type Routes = Route[];\n\n/**\n * Represents the
result of matching URLs with a custom matching function.\n * `consumed` is an array of the consumed URL
segments.\n * `posParams` is a map of positional parameters.\n * @see `UrlMatcher`\n * @publicApi\n */\nexport type UrlMatchResult = {\n consumed: UrlSegment[];\n posParams?: {[name: string]:
UrlSegment};\n};\n\n/**\n * A function for matching a route against URLs. Implement a custom URL matcher\n *
for `Route.matcher` when a combination of `path` and `pathMatch`\n * is not expressive enough. Cannot be used
together with `path` and `pathMatch`.\n * The function takes the following arguments and returns a
`UrlMatchResult` object.\n * **segments*: An array of URL segments.\n * **group*: A segment group.\n * **
route*: The route to match against.\n * The following example implementation matches HTML files.\n *\n *```\n * export function htmlFiles(url: UrlSegment[]) {\n * return url.length === 1 && url[0].path.endsWith('.html')
? ({consumed: url}) : null;\n * }\n *\n * export const routes = [{ matcher: htmlFiles, component: AnyComponent
}];\n *\n *```\n *\n * @publicApi\n */\nexport type UrlMatcher = (segments: UrlSegment[], group: UrlSegmentGroup,
route: Route) =>\n UrlMatchResult|null;\n\n/**\n * Represents static data associated with a particular route.\n *
*\n * @see `Route#data`\n * @publicApi\n */\nexport type Data = {\n [name: string]: any;\n};\n\n/**\n *
Represents the resolved data associated with a particular route.\n * @see `Route#resolve`\n * @publicApi\n

```

```

*export type ResolveData = {
 [name: string]: any;
}
A function that is called to resolve a
collection of lazy-loaded routes.
Must be an arrow function of the following form:
() =>
import(...).then(mod => mod.MODULE)
For example:
path: 'lazy',
loadChildren: () => import('./lazy-route/lazy.module').then(mod => mod.LazyModule),
}
@see [Route.loadChildren](api/router/Route#loadChildren)
export type LoadChildrenCallback = () => Type<any>|NgModuleFactory<any>|Observable<Type<any>>|
Promise<NgModuleFactory<any>|Type<any>|any>;
A function that returns a set of routes to load.
The string form of `LoadChildren` is deprecated (see `DeprecatedLoadChildren`). The function
form
(LoadChildrenCallback) should be used instead.
@see `loadChildrenCallback`
export type LoadChildren = LoadChildrenCallback|DeprecatedLoadChildren;
A string of the form
`path/to/file#exportName` that acts as a URL for a set of routes to load.
@see `loadChildrenCallback`
@publicApi
@deprecated The `string` form of `loadChildren` is deprecated in favor of the
`LoadChildrenCallback` function which uses the ES dynamic `import()` expression.
This offers a more natural
and standards-based mechanism to dynamically
load an ES module at runtime.
export type
DeprecatedLoadChildren = string;
How to handle query parameters in a router link.
One of:
- `merge` : Merge new with current parameters.
- `preserve` : Preserve current parameters.
@see
`UrlCreationOptions#queryParamsHandling`
@see `RouterLink`
@publicApi
export type
QueryParamsHandling = 'merge'|'preserve';
A policy for when to run guards and resolvers on a
route.
@see [Route.runGuardsAndResolvers](api/router/Route#runGuardsAndResolvers)
@publicApi
export type RunGuardsAndResolvers =
'pathParamsChange'|'pathParamsOrQueryParamsChange'|'paramsChange'|'paramsOrQueryParamsChange'|
'always'|((from: ActivatedRouteSnapshot, to: ActivatedRouteSnapshot) => boolean);
A configuration
object that defines a single route.
A set of routes are collected in a `Routes` array to define a `Router`
configuration.
The router attempts to match segments of a given URL against each route,
using the
configuration options defined in this object.
Supports static, parameterized, redirect, and wildcard routes, as
well as
custom route data and resolve methods.
For detailed usage information, see the [Routing
Guide](guide/router).
@usageNotes
Simple Configuration
The following route specifies
that when navigating to, for example,
`/team/11/user/bob`, the router creates the 'Team' component
with the
'User' child component in it.
path: 'team/:id',
component: Team,
children: [{
 path: 'user/:name',
 component: User
}]
Multiple Outlets
The following
route creates sibling components with multiple outlets.
When navigating to
`/team/11(aux:chat/jim)`, the router
creates the 'Team' component next to
the 'Chat' component. The 'Chat' component is placed into the 'aux'
outlet.
path: 'team/:id',
component: Team,
{
 path: 'chat/:user',
 component:
 Chat
 outlet: 'aux'
}
Wild Cards
The following route uses wild-card notation to
specify a component
that is always instantiated regardless of where you navigate to.
path:
'***',
component: WildcardComponent
}
Redirects
The following route uses the
`redirectTo` property to ignore a segment of
a given URL when looking for a child path.
When
navigating to
`/team/11/legacy/user/jim`, the router changes the URL segment
`/team/11/legacy/user/jim` to
`/team/11/user/jim`, and then instantiates
the Team component with the User child component in it.
path: 'team/:id',
component: Team,
children: [{
 path: 'legacy/user/:name',
 redirectTo:
 'user/:name'
}, {
 path: 'user/:name',
 component: User
}]
The redirect path
can be relative, as shown in this example, or absolute.
If we change the `redirectTo` value in the example to the
absolute URL segment
`/user/:name`, the result URL is also absolute,
`/user/jim`.
Empty Path
Empty-path route configurations can be used to instantiate components that do not
'consume'
any URL
segments.
In the following configuration, when navigating to
`/team/11`, the router instantiates the
'AllUsers' component.
path: 'team/:id',
component: Team,
children: [{
 path:
 "",
 component: AllUsers
}, {
 path: 'user/:name',
 component: User
}]
Empty-path routes can have children. In the following example, when navigating
to
`/team/11/user/jim`, the

```

router instantiates the wrapper component with the user component in it. Note that an empty path route inherits its parent's parameters and data.

```

{
 path: 'team/:id',
 component: Team,
 children: [
 {
 path: '',
 component: WrapperCmp,
 children: [
 {
 path: 'user/:name',
 component: User
 }
]
 }
]
}

```

### Matching Strategy

The default path-match strategy is 'prefix', which means that the router checks URL elements from the left to see if the URL matches a specified path. For example, '/team/11/user' matches 'team/:id'.

```

{
 path: '',
 pathMatch: 'prefix',
 //default redirectTo: 'main',
 {
 path: 'main',
 component: Main
 }
}

```

You can specify the path-match strategy 'full' to make sure that the path covers the whole unconsumed URL. It is important to do this when redirecting empty-path routes. Otherwise, because an empty path is a prefix of any URL, the router would apply the redirect even when navigating to the redirect destination, creating an endless loop.

In the following example, supplying the 'full' pathMatch strategy ensures that the router applies the redirect if and only if navigating to '/.

```

{
 path: '',
 pathMatch: 'full',
 redirectTo: 'main',
 {
 path: 'main',
 component: Main
 }
}

```

### Componentless Routes

You can share parameters between sibling components. For example, suppose that two sibling components should go next to each other, and both of them require an ID parameter. You can accomplish this using a route that does not specify a component at the top level.

In the following example, 'MainChild' and 'AuxChild' are siblings. When navigating to 'parent/10/(a/aux:b)', the route instantiates the main child and aux child components next to each other. For this to work, the application component must have the primary and aux outlets defined.

```

{
 path: 'parent/:id',
 children: [
 { path: 'a', component: MainChild },
 { path: 'b', component: AuxChild, outlet: 'aux' }
]
}

```

The router merges the parameters, data, and resolve of the componentless parent into the parameters, data, and resolve of the children. This is especially useful when child components are defined with an empty path string, as in the following example.

With this configuration, navigating to '/parent/10' creates the main child and aux components.

```

{
 path: 'parent/:id',
 children: [
 { path: '', component: MainChild },
 { path: '', component: AuxChild, outlet: 'aux' }
]
}

```

### Lazy Loading

Lazy loading speeds up application load time by splitting the application into multiple bundles and loading them on demand. To use lazy loading, provide the 'loadChildren' property in the 'Route' object, instead of the 'children' property.

Given the following example route, the router will lazy load the associated module on demand using the browser native import system.

```

{
 path: 'lazy',
 loadChildren: () => import('./lazy-route/lazy.module').then(mod => mod.LazyModule),
}

```

@publicApi

interface Route

```

/**
 * The path to match against. Cannot be used together with a custom `matcher` function.
 * A URL string that uses router matching notation.
 * Can be a wild card (`**`) that matches any URL (see Usage Notes below).
 * Default is `"/` (the root path).
 */
path?: string;
/**
 * The path-matching strategy, one of 'prefix' or 'full'.
 * Default is 'prefix'.
 * By default, the router checks URL elements from the left to see if the URL matches a given path, and stops when there is a match. For example, '/team/11/user' matches 'team/:id'.
 * The path-match strategy 'full' matches against the entire URL.
 * It is important to do this when redirecting empty-path routes.
 * Otherwise, because an empty path is a prefix of any URL, the router would apply the redirect even when navigating to the redirect destination, creating an endless loop.
 */
pathMatch?: string;
/**
 * A custom URL-matching function. Cannot be used together with `path` or `matcher`.
 */
matcher?: UrlMatcher;
/**
 * The component to instantiate when the path matches.
 * Can be empty if child routes specify components.
 */
component?: Type<any>;
/**
 * A URL to redirect to when the path matches.
 * Absolute if the URL begins with a slash (/), otherwise relative to the path URL.
 * When not present, router does not redirect.
 */
redirectTo?: string;
/**
 * Name of a `RouterOutlet` object where the component can be placed when the path matches.
 */
outlet?: string;
/**
 * An array of dependency-injection tokens used to look up `CanActivate()` handlers, in order to determine if the current user is allowed to activate the component. By default, any user can activate.
 */
canActivate?: any[];
/**
 * An array of DI tokens used to look up `CanActivateChild()` handlers, in order to determine if the current user is allowed to activate a child of the component. By default, any user can activate a child.
 */
canActivateChild?:

```



```

isUrlTree(item) ? item : item === true), //\n take(1)) as Observable<boolean|UrlTree>;\n
});\n}\n", "/*\n * @license\n * Copyright Google LLC All Rights Reserved.\n *\n * Use of this source code is
governed by an MIT-style license that can be\n * found in the LICENSE file at https://angular.io/license\n
/\n\nimport {Component} from '@angular/core';\n\n/\n * This component is used internally within the router to
be a placeholder when an empty\n * router-outlet is needed. For example, with a config such as:\n *\n * `{path:
'parent', outlet: 'nav', children: [...]}`\n *\n * In order to render, there needs to be a component on this config, which
will default\n * to this `EmptyOutletComponent`.\n *\n @Component({template: `<router-outlet></router-
outlet>`})\nexport class EmptyOutletComponent {\n}\n\nexport {EmptyOutletComponent as
EmptyOutletComponent};\n", "/*\n * @license\n * Copyright Google LLC All Rights Reserved.\n *\n * Use of this
source code is governed by an MIT-style license that can be\n * found in the LICENSE file at
https://angular.io/license\n *\n\nimport {EmptyOutletComponent} from '../components/empty_outlet';\nimport
{Route, Routes} from './config';\nimport {PRIMARY_OUTLET} from './shared';\n\nexport function
validateConfig(config: Routes, parentPath: string = "): void {\n // forEach doesn't iterate undefined values\n for (let
i = 0; i < config.length; i++) {\n const route: Route = config[i];\n const fullPath: string = getFullPath(parentPath,
route);\n validateNode(route, fullPath);\n } }\n\nfunction validateNode(route: Route, fullPath: string): void {\n
if (typeof ngDevMode === 'undefined' || ngDevMode) {\n if (!route) {\n throw new Error(`\n Invalid
configuration of route '${fullPath}': Encountered undefined route.\n The reason might be an extra comma.\n\n
Example:\n const routes: Routes = [\n { path: '', redirectTo: '/dashboard', pathMatch: 'full' },\n { path:
'dashboard', component: DashboardComponent },\n],\n << two commas\n { path: 'detail/:id', component:
HeroDetailComponent }\n];\n `);\n } \n if (Array.isArray(route)) {\n throw new Error(`Invalid
configuration of route '${fullPath}': Array cannot be specified`);\n } \n if (!route.component && !route.children
&& !route.loadChildren &&\n (route.outlet && route.outlet !== PRIMARY_OUTLET)) {\n throw new
Error(`Invalid configuration of route '${\n fullPath}': a componentless route without children or loadChildren
cannot have a named outlet set`);\n } \n if (route.redirectTo && route.children) {\n throw new Error(`Invalid
configuration of route '${\n fullPath}': redirectTo and children cannot be used together`);\n } \n if
(route.redirectTo && route.loadChildren) {\n throw new Error(`Invalid configuration of route '${\n fullPath}': redirectTo and loadChildren cannot be used together`);\n } \n if (route.children &&
route.loadChildren) {\n throw new Error(`Invalid configuration of route '${\n fullPath}': children and
loadChildren cannot be used together`);\n } \n if (route.redirectTo && route.component) {\n throw new
Error(`Invalid configuration of route '${\n fullPath}': redirectTo and component cannot be used together`);\n } \n
if (route.path && route.matcher) {\n throw new Error(`\n `Invalid configuration of route '${fullPath}':
path and matcher cannot be used together`);\n } \n if (route.redirectTo === void 0 && !route.component &&
!route.children && !route.loadChildren) {\n throw new Error(`Invalid configuration of route '${\n fullPath}':
One of the following must be provided: component, redirectTo, children or loadChildren`);\n } \n if
(route.path === void 0 && route.matcher === void 0) {\n throw new Error(`Invalid configuration of route '${\n fullPath}': routes must have either a path or a matcher specified`);\n } \n if (typeof route.path === 'string' &&
route.path.charAt(0) === '/') {\n throw new Error(`\n `Invalid configuration of route '${fullPath}': path
cannot start with a slash`);\n } \n if (route.path === "" && route.redirectTo !== void 0 && route.pathMatch ===
void 0) {\n const exp =\n `The default value of 'pathMatch' is 'prefix', but often the intent is to use 'full'.`;\n throw new Error(`Invalid configuration of route '{path: \"${fullPath}\", redirectTo: \"${\n route.redirectTo}\"}': please provide 'pathMatch'. ${exp}`);\n } \n if (route.pathMatch !== void 0 &&
route.pathMatch !== 'full' && route.pathMatch !== 'prefix') {\n throw new Error(`Invalid configuration of route
'${\n fullPath}': pathMatch can only be set to 'prefix' or 'full`);\n } \n } \n if (route.children) {\n validateConfig(route.children, fullPath);\n } \n } }\n\nfunction getFullPath(parentPath: string, currentRoute: Route):
string {\n if (!currentRoute) {\n return parentPath;\n } \n if (!parentPath && !currentRoute.path) {\n return "";\n } \n else if (parentPath && !currentRoute.path) {\n return `${parentPath}/`;\n } \n else if (!parentPath &&
currentRoute.path) {\n return currentRoute.path;\n } \n else {\n return `${parentPath}/${currentRoute.path}`;\n } \n }\n}\n\n/*\n * Makes a copy of the config and adds any default required properties.\n *\n @export function

```



```

mapped$.pipe(catchError((e: any): Observable<UrlTree> => {\n if (e instanceof NoMatch) {\n throw
this.noMatchError(e);\n }\n throw e;\n }));\n }\n private noMatchError(e: NoMatch): any {\n return
new Error(`Cannot match any routes. URL Segment: '${e.segmentGroup}'`);\n }\n private
createUrlTree(rootCandidate: UrlSegmentGroup, queryParams: Params, fragment: string):\n UrlTree {\n const
root = rootCandidate.segments.length > 0 ?\n new UrlSegmentGroup([], {[PRIMARY_OUTLET]:
rootCandidate}) :\n rootCandidate;\n return new UrlTree(root, queryParams, fragment);\n }\n private
expandSegmentGroup(\n ngModule: NgModuleRef<any>, routes: Route[], segmentGroup: UrlSegmentGroup,\n outlet: string): Observable<UrlSegmentGroup> {\n if (segmentGroup.segments.length === 0 &&
segmentGroup.hasChildren()) {\n return this.expandChildren(ngModule, routes, segmentGroup)\n
.pipe(map((children: any) => new UrlSegmentGroup([], children)));\n }\n return
this.expandSegment(ngModule, segmentGroup, routes, segmentGroup.segments, outlet, true);\n }\n //
Recursively expand segment groups for all the child outlets\n private expandChildren(\n ngModule:
NgModuleRef<any>, routes: Route[],\n segmentGroup: UrlSegmentGroup): Observable<{[name: string]:
UrlSegmentGroup}> {\n return waitForMap(\n segmentGroup.children,\n (childOutlet, child) =>
this.expandSegmentGroup(ngModule, routes, child, childOutlet));\n }\n private expandSegment(\n ngModule:
NgModuleRef<any>, segmentGroup: UrlSegmentGroup, routes: Route[],\n segments: UrlSegment[], outlet:
string,\n allowRedirects: boolean): Observable<UrlSegmentGroup> {\n // We need to expand each outlet group
independently to ensure that we not only load modules\n // for routes matching the given `outlet`, but also those
which will be activated because\n // their path is empty string. This can result in multiple outlets being activated at
once.\n const routesByOutlet: Map<string, Route[]> = groupRoutesByOutlet(routes);\n if
(!routesByOutlet.has(outlet)) {\n routesByOutlet.set(outlet, []);\n }\n const expandRoutes = (routes:
Route[]) => {\n return from(routes).pipe(\n concatMap((r: Route) => {\n const expanded$ =
this.expandSegmentAgainstRoute(\n ngModule, segmentGroup, routes, r, segments, outlet,
allowRedirects);\n return expanded$.pipe(catchError(e => {\n if (e instanceof NoMatch) {\n
return of(null);\n }\n throw e;\n })),\n first((s: UrlSegmentGroup|null): s is
UrlSegmentGroup => s !== null),\n catchError(e => {\n if (e instanceof EmptyError || e.name ===
'EmptyError') {\n if (this.noLeftoversInUrl(segmentGroup, segments, outlet)) {\n return of(new
UrlSegmentGroup([], {}));\n }\n throw new NoMatch(segmentGroup);\n }\n throw
e;\n })),\n);\n }\n const expansions = Array.from(routesByOutlet.entries()).map(([,routeOutlet,
routes]) => {\n const expanded = expandRoutes(routes);\n // Map all results from outlets we aren't activating
to `null` so they can be ignored later\n return routeOutlet === outlet ? expanded :\n expanded.pipe(map(() => null), catchError(() => of(null)));\n });\n return from(expansions)\n .pipe(\n combineAll(),\n first(),\n // Return only the expansion for the route outlet we are trying to activate.\n map(results => results.find(result => result !== null)!),\n);\n }\n private
noLeftoversInUrl(segmentGroup: UrlSegmentGroup, segments: UrlSegment[], outlet: string):\n boolean {\n return
segments.length === 0 && !segmentGroup.children[outlet];\n }\n private expandSegmentAgainstRoute(\n
 ngModule: NgModuleRef<any>, segmentGroup: UrlSegmentGroup, routes: Route[], route: Route,\n paths:
UrlSegment[], outlet: string, allowRedirects: boolean): Observable<UrlSegmentGroup> {\n // Empty string
segments are special because multiple outlets can match a single path, i.e.\n // `[{path: "", component: B}, {path: "",
loadChildren: () => { }, outlet: "about"}]`\n if (getOutlet(route) !== outlet && route.path !== "") {\n return
noMatch(segmentGroup);\n }\n if (route.redirectTo === undefined) {\n return
this.matchSegmentAgainstRoute(ngModule, segmentGroup, route, paths);\n }\n if (allowRedirects &&
this.allowRedirects) {\n return this.expandSegmentAgainstRouteUsingRedirect(\n ngModule,
segmentGroup, routes, route, paths, outlet);\n }\n return noMatch(segmentGroup);\n }\n private
expandSegmentAgainstRouteUsingRedirect(\n ngModule: NgModuleRef<any>, segmentGroup:
UrlSegmentGroup, routes: Route[], route: Route,\n segments: UrlSegment[], outlet: string):
Observable<UrlSegmentGroup> {\n if (route.path === '**') {\n return
this.expandWildcardWithParamsAgainstRouteUsingRedirect(\n ngModule, routes, route, outlet);\n }\n

```



```

return this.expandRegularSegmentAgainstRouteUsingRedirect(\n ngModule, segmentGroup, routes, route,
segments, outlet);\n }\n\n private expandWildcardWithParamsAgainstRouteUsingRedirect(\n ngModule:
NgModuleRef<any>, routes: Route[], route: Route,\n outlet: string): Observable<UrlSegmentGroup> {\n const
newTree = this.applyRedirectCommands([], route.redirectTo!, {});\n if (route.redirectTo!.startsWith('/')) {\n
return absoluteRedirect(newTree);\n }\n\n return this.linalizeSegments(route,
newTree).pipe(mergeMap((newSegments: UrlSegment[]) => {\n const group = new
UrlSegmentGroup(newSegments, {});\n return this.expandSegment(ngModule, group, routes, newSegments,
outlet, false);\n }));\n }\n\n private expandRegularSegmentAgainstRouteUsingRedirect(\n ngModule:
NgModuleRef<any>, segmentGroup: UrlSegmentGroup, routes: Route[], route: Route,\n segments:
UrlSegment[], outlet: string): Observable<UrlSegmentGroup> {\n const {matched, consumedSegments, lastChild,
positionalParamSegments} =\n match(segmentGroup, route, segments);\n if (!matched) return
noMatch(segmentGroup);\n\n const newTree = this.applyRedirectCommands(\n consumedSegments,
route.redirectTo!, <any>positionalParamSegments);\n if (route.redirectTo!.startsWith('/')) {\n return
absoluteRedirect(newTree);\n }\n\n return this.linalizeSegments(route,
newTree).pipe(mergeMap((newSegments: UrlSegment[]) => {\n return this.expandSegment(\n ngModule,
segmentGroup, routes, newSegments.concat(segments.slice(lastChild)), outlet,\n false);\n }));\n }\n\n private matchSegmentAgainstRoute(\n ngModule: NgModuleRef<any>, rawSegmentGroup: UrlSegmentGroup,
route: Route,\n segments: UrlSegment[]): Observable<UrlSegmentGroup> {\n if (route.path === '**') {\n if
(route.loadChildren) {\n return this.configLoader.load(ngModule.injector, route)\n .pipe(map((cfg:
LoadedRouterConfig) => {\n route._loadedConfig = cfg;\n return new UrlSegmentGroup(segments,
{});\n }));\n }\n\n return of(new UrlSegmentGroup(segments, {}));\n }\n\n const {matched,
consumedSegments, lastChild} = match(rawSegmentGroup, route, segments);\n if (!matched) return
noMatch(rawSegmentGroup);\n\n const rawSlicedSegments = segments.slice(lastChild);\n const childConfig$ =
this.getChildConfig(ngModule, route, segments);\n\n return childConfig$.pipe(mergeMap((routerConfig:
LoadedRouterConfig) => {\n const childModule = routerConfig.module;\n const childConfig =
routerConfig.routes;\n\n const {segmentGroup, slicedSegments} =\n split(rawSegmentGroup,
consumedSegments, rawSlicedSegments, childConfig);\n\n if (slicedSegments.length === 0 &&
segmentGroup.hasChildren()) {\n const expanded$ = this.expandChildren(childModule, childConfig,
segmentGroup);\n return expanded$.pipe(\n map((children: any) => new
UrlSegmentGroup(consumedSegments, children));\n);\n\n if (childConfig.length === 0 &&
slicedSegments.length === 0) {\n return of(new UrlSegmentGroup(consumedSegments, {}));\n }\n\n const expanded$ = this.expandSegment(\n childModule, segmentGroup, childConfig, slicedSegments,
PRIMARY_OUTLET, true);\n return expanded$.pipe(\n map((cs: UrlSegmentGroup) =>\n new
UrlSegmentGroup(consumedSegments.concat(cs.segments), cs.children));\n);\n }\n\n private
getChildConfig(ngModule: NgModuleRef<any>, route: Route, segments: UrlSegment[]):\n Observable<LoadedRouterConfig> {\n if (route.children) {\n // The children belong to the same module\n return of(new LoadedRouterConfig(route.children, ngModule));\n }\n\n if (route.loadChildren) {\n // lazy
children belong to the loaded module\n if (route._loadedConfig !== undefined) {\n return
of(route._loadedConfig);\n }\n\n return this.runCanLoadGuards(ngModule.injector, route, segments)\n .pipe(mergeMap((shouldLoadResult: boolean) => {\n if (shouldLoadResult) {\n return
this.configLoader.load(ngModule.injector, route)\n .pipe(map((cfg: LoadedRouterConfig) => {\n route._loadedConfig = cfg;\n return cfg;\n }));\n }\n\n return
canLoadFails(route);\n }));\n }\n\n return of(new LoadedRouterConfig([], ngModule));\n }\n\n private
runCanLoadGuards(moduleInjector: Injector, route: Route, segments: UrlSegment[]):\n Observable<boolean> {\n const canLoad = route.canLoad;\n if (!canLoad || canLoad.length === 0) return of(true);\n\n const
canLoadObservables = canLoad.map((injectionToken: any) => {\n const guard =
moduleInjector.get(injectionToken);\n let guardVal;\n if (isCanLoad(guard)) {\n guardVal =
guard.canLoad(route, segments);\n } else if (isFunction<CanLoadFn>(guard)) {\n guardVal = guard(route,

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segments);\n } else {\n throw new Error('Invalid CanLoad guard');\n }\n return\n wrapIntoObservable(guardVal);\n });\n\n return of(canLoadObservables)\n .pipe(\n prioritizedGuardValue(),\n tap((result: UrlTree|boolean) => {\n if (!isUrlTree(result)) return;\n\n const error: Error&{url?: UrlTree} = navigationCancelingError(\n `Redirecting to\n \"${this.urlSerializer.serialize(result)}\"`);\n error.url = result;\n throw error;\n })),\n map(result => result === true),\n);\n\n private linearizeSegments(route: Route, urlTree: UrlTree):\n Observable<UrlSegment[]> {\n let res: UrlSegment[] = [];\n let c = urlTree.root;\n while (true) {\n res =\n res.concat(c.segments);\n if (c.numberOfChildren === 0) {\n return of(res);\n }\n\n if\n (c.numberOfChildren > 1 || !c.children[PRIMARY_OUTLET]) {\n return\n namedOutletsRedirect(route.redirectTo!);\n }\n\n c = c.children[PRIMARY_OUTLET];\n }\n }\n\n private\n applyRedirectCommands(\n segments: UrlSegment[], redirectTo: string, posParams: {[k: string]: UrlSegment}):
 UrlTree {\n return this.applyRedirectCreateUrlTree(\n redirectTo, this.urlSerializer.parse(redirectTo),\n segments, posParams);\n }\n\n private applyRedirectCreateUrlTree(\n redirectTo: string, urlTree: UrlTree,\n segments: UrlSegment[],\n posParams: {[k: string]: UrlSegment}): UrlTree {\n const newRoot =\n this.createSegmentGroup(redirectTo, urlTree.root, segments, posParams);\n return new UrlTree(\n newRoot,\n this.createQueryParams(urlTree.queryParams, this.urlTree.queryParams),\n urlTree.fragment);\n }\n\n private\n createQueryParams(redirectToParams: Params, actualParams: Params): Params {\n const res: Params = {};\n forEach(redirectToParams, (v: any, k: string) => {\n const copySourceValue = typeof v === 'string' &&\n v.startsWith(':');\n if (copySourceValue) {\n const sourceName = v.substring(1);\n res[k] =\n actualParams[sourceName];\n } else {\n res[k] = v;\n }\n });\n return res;\n }\n\n private\n createSegmentGroup(\n redirectTo: string, group: UrlSegmentGroup, segments: UrlSegment[],\n posParams: {[k: string]: UrlSegment}): UrlSegmentGroup {\n const updatedSegments = this.createSegments(redirectTo,\n group.segments, segments, posParams);\n\n let children: {[n: string]: UrlSegmentGroup} = {};\n forEach(group.children, (child: UrlSegmentGroup, name: string) => {\n children[name] =\n this.createSegmentGroup(redirectTo, child, segments, posParams);\n });\n\n return new\n UrlSegmentGroup(updatedSegments, children);\n }\n\n private createSegments(\n redirectTo: string,\n redirectToSegments: UrlSegment[], actualSegments: UrlSegment[],\n posParams: {[k: string]: UrlSegment}):
 UrlSegment[] {\n return redirectToSegments.map(\n s => s.path.startsWith(':') ?\n this.findPosParam(redirectTo, s, posParams) :\n this.findOrReturn(s, actualSegments));\n }\n\n private findPosParam(\n redirectTo: string, redirectToUrlSegment: UrlSegment,\n posParams: {[k:
string]: UrlSegment}): UrlSegment {\n const pos = posParams[redirectToUrlSegment.path.substring(1)];\n if\n (!pos)\n throw new Error(\n `Cannot redirect to '${redirectTo}'. Cannot find\n '${redirectToUrlSegment.path}'.`);\n return pos;\n }\n\n private findOrReturn(redirectToUrlSegment:
UrlSegment, actualSegments: UrlSegment[]): UrlSegment {\n let idx = 0;\n for (const s of actualSegments) {\n if (s.path === redirectToUrlSegment.path) {\n actualSegments.splice(idx);\n return s;\n }\n idx++;\n }\n return redirectToUrlSegment;\n }\n\n function match(segmentGroup: UrlSegmentGroup, route: Route,\n segments: UrlSegment[]): {\n matched: boolean,\n consumedSegments: UrlSegment[],\n lastChild: number,\n positionalParamSegments: {[k: string]: UrlSegment}\n } {\n if (route.path === '') {\n if ((route.pathMatch ===\n 'full') && (segmentGroup.hasChildren() || segments.length > 0)) {\n return {\n matched: false,\n consumedSegments:
 [],\n lastChild: 0,\n positionalParamSegments: {};\n };\n }\n\n return {\n matched: true,\n consumedSegments: [],\n lastChild:
 0,\n positionalParamSegments: {};\n };\n }\n\n const matcher = route.matcher || defaultUrlMatcher;\n const res =\n matcher(segments, segmentGroup, route);\n if (!res) {\n return {\n matched: false,\n consumedSegments:
 <any[]>[],\n lastChild: 0,\n positionalParamSegments: {},\n };\n }\n\n return {\n matched: true,\n consumedSegments:
 res.consumed!,\n lastChild: res.consumed.length!,\n positionalParamSegments:
 res.posParams!,\n };\n }\n\n function split(\n segmentGroup: UrlSegmentGroup, consumedSegments:
 UrlSegment[], slicedSegments: UrlSegment[],\n config: Route[]) {\n if (slicedSegments.length > 0 && !\n containsEmptyPathRedirectsNamedOutlets(segmentGroup, slicedSegments, config)) {\n const s = new\n UrlSegmentGroup(\n consumedSegments,\n createChildrenForEmptySegments(\n config, new

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UrlSegmentGroup(slicedSegments, segmentGroup.children));\n return {segmentGroup: mergeTrivialChildren(s,
slicedSegments: []);\n }\n\n if (slicedSegments.length === 0 &&\n
containsEmptyPathRedirects(segmentGroup, slicedSegments, config)) {\n const s = new UrlSegmentGroup(\n
segmentGroup.segments,\n addEmptySegmentsToChildrenIfNeeded(\n segmentGroup, slicedSegments,
config, segmentGroup.children));\n return {segmentGroup: mergeTrivialChildren(s, slicedSegments);\n }\n\n
return {segmentGroup, slicedSegments};\n }\n\nfunction mergeTrivialChildren(s: UrlSegmentGroup):
UrlSegmentGroup {\n if (s.numberOfChildren === 1 && s.children[PRIMARY_OUTLET]) {\n const c =
s.children[PRIMARY_OUTLET];\n return new UrlSegmentGroup(s.segments.concat(c.segments), c.children);\n
}\n\n return s;\n }\n\nfunction addEmptySegmentsToChildrenIfNeeded(\n segmentGroup: UrlSegmentGroup,
slicedSegments: UrlSegment[], routes: Route[],\n children: {[name: string]: UrlSegmentGroup}): {[name: string]:
UrlSegmentGroup} {\n const res: {[name: string]: UrlSegmentGroup} = {};\n for (const r of routes) {\n if
(isEmptyPathRedirect(segmentGroup, slicedSegments, r) && !children[getOutlet(r)]) {\n res[getOutlet(r)] = new
UrlSegmentGroup([], {});\n }\n }\n return {...children, ...res};\n }\n\nfunction
createChildrenForEmptySegments(\n routes: Route[], primarySegmentGroup: UrlSegmentGroup): {[name:
string]: UrlSegmentGroup} {\n const res: {[name: string]: UrlSegmentGroup} = {};\n res[PRIMARY_OUTLET] =
primarySegmentGroup;\n for (const r of routes) {\n if (r.path === " && getOutlet(r) !== PRIMARY_OUTLET)
{\n res[getOutlet(r)] = new UrlSegmentGroup([], {});\n }\n }\n return res;\n }\n\nfunction
containsEmptyPathRedirectsWithNamedOutlets(\n segmentGroup: UrlSegmentGroup, segments: UrlSegment[],
routes: Route[]): boolean {\n return routes.some(\n r => isEmptyPathRedirect(segmentGroup, segments, r) &&
getOutlet(r) !== PRIMARY_OUTLET);\n }\n\nfunction containsEmptyPathRedirects(\n segmentGroup:
UrlSegmentGroup, segments: UrlSegment[], routes: Route[]): boolean {\n return routes.some(r =>
isEmptyPathRedirect(segmentGroup, segments, r));\n }\n\nfunction isEmptyPathRedirect(\n segmentGroup:
UrlSegmentGroup, segments: UrlSegment[], r: Route): boolean {\n if ((segmentGroup.hasChildren() ||
segments.length > 0) && r.pathMatch === 'full') {\n return false;\n }\n return r.path === " && r.redirectTo !==
undefined;\n }\n\n"/**\n * @license\n * Copyright Google LLC All Rights Reserved.\n * Use of this source code
is governed by an MIT-style license that can be\n * found in the LICENSE file at https://angular.io/license\n
*/\n\nimport {Injector} from '@angular/core';\nimport {MonoTypeOperatorFunction, Observable} from
'rxjs';\nimport {map, switchMap} from 'rxjs/operators';\nimport {applyRedirects as applyRedirectsFn} from
'./apply_redirects';\nimport {Routes} from './config';\nimport {NavigationTransition} from './router';\nimport
{RouterConfigLoader} from './router_config_loader';\nimport {UrlSerializer} from './url_tree';\n\nexport function
applyRedirects(\n moduleInjector: Injector, configLoader: RouterConfigLoader, urlSerializer: UrlSerializer,\n config: Routes): MonoTypeOperatorFunction<NavigationTransition> {\n return function(source:
Observable<NavigationTransition>) {\n return source.pipe(switchMap(\n t =>
applyRedirectsFn(moduleInjector, configLoader, urlSerializer, t.extractedUrl, config)\n).pipe(map(urlAfterRedirects => ({...t, urlAfterRedirects}))));\n };
}\n\n"/**\n * @license\n * Copyright Google LLC All Rights Reserved.\n * Use of this source code is governed by an MIT-style license that can be\n * found
in the LICENSE file at https://angular.io/license\n */\n\nimport {Injector} from '@angular/core';\nimport
{LoadedRouterConfig, RunGuardsAndResolvers} from './config';\nimport {ChildrenOutletContexts,
OutletContext} from './router_outlet_context';\nimport {ActivatedRouteSnapshot, equalParamsAndUrlSegments,
RouterStateSnapshot} from './router_state';\nimport {equalPath} from './url_tree';\nimport {forEach, shallowEqual}
from './utils/collection';\nimport {nodeChildrenAsMap, TreeNode} from './utils/tree';\n\nexport class CanActivate
{\n readonly route: ActivatedRouteSnapshot;\n constructor(public path: ActivatedRouteSnapshot[]) {\n this.route
= this.path[this.path.length - 1];\n }\n}\n\nexport class CanDeactivate {\n constructor(public component:
Object|null, public route: ActivatedRouteSnapshot) {}
}\n\nexport declare type Checks = {\n canDeactivateChecks: CanDeactivate[],\n canActivateChecks: CanActivate[],\n};\n\nexport function
getAllRouteGuards(\n future: RouterStateSnapshot, curr: RouterStateSnapshot,\n parentContexts:
ChildrenOutletContexts) {\n const futureRoot = future._root;\n const currRoot = curr ? curr._root : null;\n return
getChildRouteGuards(futureRoot, currRoot, parentContexts, [futureRoot.value]);\n }\n\nexport function

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getCanActivateChild(p: ActivatedRouteSnapshot):\n {node: ActivatedRouteSnapshot, guards: any[]}\nnull {\n
const canActivateChild = p.routeConfig ? p.routeConfig.canActivateChild : null;\n if (!canActivateChild ||
canActivateChild.length === 0) return null;\n return {node: p, guards: canActivateChild};\n}\n\nexport function
getToken(\n token: any, snapshot: ActivatedRouteSnapshot, moduleInjector: Injector): any {\n const config =
getClosestLoadedConfig(snapshot);\n const injector = config ? config.module.injector : moduleInjector;\n return
injector.get(token);\n}\n\nfunction getClosestLoadedConfig(snapshot: ActivatedRouteSnapshot):
LoadedRouterConfig\nnull {\n if (!snapshot) return null;\n\n for (let s = snapshot.parent; s; s = s.parent) {\n const
route = s.routeConfig;\n if (route && route._loadedConfig) return route._loadedConfig;\n }\n\n return
null;\n}\n\nfunction getChildRouteGuards(\n futureNode: TreeNode<ActivatedRouteSnapshot>, currNode:
TreeNode<ActivatedRouteSnapshot>|null,\n contexts: ChildrenOutletContexts\nnull, futurePath:
ActivatedRouteSnapshot[], checks: Checks = {\n canActivateChecks: []\n }):
Checks {\n const prevChildren = nodeChildrenAsMap(currNode);\n\n // Process the children of the future route\n
futureNode.children.forEach(c => {\n getRouteGuards(c, prevChildren[c.value.outlet], contexts,
futurePath.concat([c.value]), checks);\n delete prevChildren[c.value.outlet];\n });\n\n // Process any children left
from the current route (not active for the future route)\n forEach(\n prevChildren,\n (v:
TreeNode<ActivatedRouteSnapshot>, k: string) =>\n deactivateRouteAndItsChildren(v,
contexts!.getContext(k), checks);\n\n return checks;\n}\n\nfunction getRouteGuards(\n futureNode:
TreeNode<ActivatedRouteSnapshot>, currNode: TreeNode<ActivatedRouteSnapshot>,\n parentContexts:
ChildrenOutletContexts\nnull, futurePath: ActivatedRouteSnapshot[],\n checks: Checks = {\n
canDeactivateChecks: [],\n canActivateChecks: []\n }): Checks {\n const future = futureNode.value;\n const
curr = currNode ? currNode.value : null;\n const context = parentContexts ?
parentContexts.getContext(futureNode.value.outlet) : null;\n\n // reusing the node\n if (curr && future.routeConfig
=== curr.routeConfig) {\n const shouldRun =\n shouldRunGuardsAndResolvers(curr, future,
future.routeConfig!.runGuardsAndResolvers);\n if (shouldRun) {\n checks.canActivateChecks.push(new
CanActivate(futurePath));\n } else {\n // we need to set the data\n future.data = curr.data;\n
future._resolvedData = curr._resolvedData;\n }\n\n // If we have a component, we need to go through an
outlet.\n if (future.component) {\n getChildRouteGuards(\n futureNode, currNode, context ?
context.children : null, futurePath, checks);\n\n // if we have a componentless route, we recurse but keep the same
outlet map.\n } else {\n getChildRouteGuards(futureNode, currNode, parentContexts, futurePath, checks);\n
}\n\n if (shouldRun && context && context.outlet && context.outlet.isActivated) {\n
checks.canDeactivateChecks.push(new CanDeactivate(context.outlet.component, curr));\n }\n } else {\n if
(curr) {\n deactivateRouteAndItsChildren(currNode, context, checks);\n }\n\n checks.canActivateChecks.push(new CanActivate(futurePath));\n // If we have a component, we need to go
through an outlet.\n if (future.component) {\n getChildRouteGuards(futureNode, null, context ?
context.children : null, futurePath, checks);\n\n // if we have a componentless route, we recurse but keep the same
outlet map.\n } else {\n getChildRouteGuards(futureNode, null, parentContexts, futurePath, checks);\n }\n
}\n\n return checks;\n}\n\nfunction shouldRunGuardsAndResolvers(\n curr: ActivatedRouteSnapshot, future:
ActivatedRouteSnapshot,\n mode: RunGuardsAndResolvers|undefined): boolean {\n if (typeof mode ===
'function') {\n return mode(curr, future);\n }\n\n switch (mode) {\n case 'pathParamsChange':\n return
!equalPath(curr.url, future.url);\n\n case 'pathParamsOrQueryParamsChange':\n return !equalPath(curr.url,
future.url) ||\n !shallowEqual(curr.queryParams, future.queryParams);\n\n case 'always':\n return true;\n\n
case 'paramsOrQueryParamsChange':\n return !equalParamsAndUrlSegments(curr, future) ||\n
!shallowEqual(curr.queryParams, future.queryParams);\n\n case 'paramsChange':\n default:\n return
!equalParamsAndUrlSegments(curr, future);\n }\n}\n\nfunction deactivateRouteAndItsChildren(\n route:
TreeNode<ActivatedRouteSnapshot>, context: OutletContext\nnull, checks: Checks): void {\n const children =
nodeChildrenAsMap(route);\n const r = route.value;\n\n forEach(children, (node:
TreeNode<ActivatedRouteSnapshot>, childName: string) => {\n if (!r.component) {\n
deactivateRouteAndItsChildren(node, context, checks);\n } else if (context) {\n

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deactivateRouteAndItsChildren(node, context.children.getContext(childName), checks);\n } else {\n
deactivateRouteAndItsChildren(node, null, checks);\n }\n });\n\n if (!r.component) {\n
checks.canDeactivateChecks.push(new CanDeactivate(null, r));\n } else if (context && context.outlet &&
context.outlet.isActivated) {\n checks.canDeactivateChecks.push(new CanDeactivate(context.outlet.component,
r));\n } else {\n checks.canDeactivateChecks.push(new CanDeactivate(null, r));\n }\n}\n"/**\n * @license\n *
Copyright Google LLC All Rights Reserved.\n * Use of this source code is governed by an MIT-style license
that can be\n * found in the LICENSE file at https://angular.io/license\n */\n\nimport { Injector } from
'@angular/core';\nimport { defer, from, MonoTypeOperatorFunction, Observable, of } from 'rxjs';\nimport
{ concatAll, concatMap, first, map, mergeMap } from 'rxjs/operators';\nimport { ActivationStart,
ChildActivationStart, Event } from './events';\nimport { CanActivateChildFn, CanActivateFn, CanDeactivateFn }
from './interfaces';\nimport { NavigationTransition } from './router';\nimport { ActivatedRouteSnapshot,
RouterStateSnapshot } from './router_state';\nimport { UrlTree } from './url_tree';\nimport { wrapIntoObservable }
from './utils/collection';\nimport { CanActivate, CanDeactivate, getCanActivateChild, getToken } from
'./utils/preactivation';\nimport { isBoolean, isCanActivate, isCanActivateChild, isCanDeactivate, isFunction } from
'./utils/type_guards';\n\nimport { prioritizedGuardValue } from './prioritized_guard_value';\n\nexport function
checkGuards(moduleInjector: Injector, forwardEvent?: (evt: Event) => void):\n
MonoTypeOperatorFunction<NavigationTransition> {\n return function(source:\n
Observable<NavigationTransition>) {\n return source.pipe(mergeMap(t => {\n const {targetSnapshot,
currentSnapshot, guards: {canActivateChecks, canDeactivateChecks}} = t;\n if (canDeactivateChecks.length
=== 0 && canActivateChecks.length === 0) {\n return of({...t, guardsResult: true});\n }\n return
runCanDeactivateChecks(\n canActivateChecks, targetSnapshot!, currentSnapshot, moduleInjector)\n .pipe(\n mergeMap(canDeactivate => {\n return canDeactivate && isBoolean(canDeactivate)
?\n runCanActivateChecks(\n targetSnapshot!, canActivateChecks, moduleInjector,
forwardEvent) :\n of(canDeactivate);\n }),\n map(guardsResult => ({...t,
guardsResult}));\n });\n });\n }\n}\n\nfunction runCanDeactivateChecks(\n checks: CanDeactivate[], futureRSS:
RouterStateSnapshot, currRSS: RouterStateSnapshot,\n moduleInjector: Injector) {\n return from(checks).pipe(\n mergeMap(\n check =>\n runCanDeactivate(check.component, check.route, currRSS, futureRSS,
moduleInjector),\n first(result => {\n return result !== true;\n }, true as boolean |
UrlTree));\n }\n}\n\nfunction runCanActivateChecks(\n futureSnapshot: RouterStateSnapshot, checks: CanActivate[],
moduleInjector: Injector,\n forwardEvent?: (evt: Event) => void) {\n return from(checks).pipe(\n concatMap((check: CanActivate) => {\n return from([\n fireChildActivationStart(check.route.parent,
forwardEvent),\n fireActivationStart(check.route, forwardEvent),\n runCanActivateChild(futureSnapshot, check.path, moduleInjector),\n runCanActivate(futureSnapshot,
check.route, moduleInjector)\n])\n .pipe(concatAll(), first(result => {\n return result !==
true;\n }, true as boolean | UrlTree));\n }),\n first(result => {\n return result !== true;\n },
true as boolean | UrlTree));\n }\n}\n\n/**\n * This should fire off `ActivationStart` events for each route being activated
at this\n * level.\n * In other words, if you're activating `a` and `b` below, `path` will contain the\n *
`ActivatedRouteSnapshot`s for both and we will fire `ActivationStart` for both. Always\n * return\n * `true` so
checks continue to run.\n */\nfunction fireActivationStart(\n snapshot: ActivatedRouteSnapshot|null,\n forwardEvent?: (evt: Event) => void): Observable<boolean> {\n if (snapshot !== null && forwardEvent) {\n
forwardEvent(new ActivationStart(snapshot));\n }\n return of(true);\n}\n\n/**\n * This should fire off
`ChildActivationStart` events for each route being activated at this\n * level.\n * In other words, if you're activating
`a` and `b` below, `path` will contain the\n * `ActivatedRouteSnapshot`s for both and we will fire
`ChildActivationStart` for both. Always\n * return\n * `true` so checks continue to run.\n */\nfunction
fireChildActivationStart(\n snapshot: ActivatedRouteSnapshot|null,\n forwardEvent?: (evt: Event) => void):
Observable<boolean> {\n if (snapshot !== null && forwardEvent) {\n forwardEvent(new
ChildActivationStart(snapshot));\n }\n return of(true);\n}\n\nfunction runCanActivate(\n futureRSS:
RouterStateSnapshot, futureARS: ActivatedRouteSnapshot,\n moduleInjector: Injector):

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Observable<boolean|UrlTree> {\n const canActivate = futureARS.routeConfig ?
futureARS.routeConfig.canActivate : null;\n if (!canActivate || canActivate.length === 0) return of(true);\n const
canActivateObservables = canActivate.map((c: any) => {\n return defer(() => {\n const guard = getToken(c,
futureARS, moduleInjector);\n let observable;\n if (isCanActivate(guard)) {\n observable =
wrapIntoObservable(guard.canActivate(futureARS, futureRSS));\n } else if (isFunction<CanActivateFn>(guard))
{\n observable = wrapIntoObservable(guard(futureARS, futureRSS));\n } else {\n throw new
Error('Invalid CanActivate guard');\n }\n return observable.pipe(first());\n });\n });\n return
of(canActivateObservables).pipe(prioritizedGuardValue());\n}\n\nfunction runCanActivateChild(\n futureRSS:
RouterStateSnapshot, path: ActivatedRouteSnapshot[],\n moduleInjector: Injector): Observable<boolean|UrlTree>
{\n const futureARS = path[path.length - 1];\n const canActivateChildGuards = path.slice(0, path.length - 1)\n
.reverse()\n .map(p => getCanActivateChild(p))\n
.filter(_ => _ !== null);\n const canActivateChildGuardsMapped = canActivateChildGuards.map((d: any) => {\n
return defer(() => {\n const guardsMapped = d.guards.map((c: any) => {\n const guard = getToken(c,
d.node, moduleInjector);\n let observable;\n if (isCanActivateChild(guard)) {\n observable =
wrapIntoObservable(guard.canActivateChild(futureARS, futureRSS));\n } else if
(isFunction<CanActivateChildFn>(guard)) {\n observable = wrapIntoObservable(guard(futureARS,
futureRSS));\n } else {\n throw new Error('Invalid CanActivateChild guard');\n }\n return
observable.pipe(first());\n });\n return of(guardsMapped).pipe(prioritizedGuardValue());\n });\n });\n return
of(canActivateChildGuardsMapped).pipe(prioritizedGuardValue());\n}\n\nfunction runCanDeactivate(\n
component: Object|null, currARS: ActivatedRouteSnapshot, currRSS: RouterStateSnapshot,\n futureRSS:
RouterStateSnapshot, moduleInjector: Injector): Observable<boolean|UrlTree> {\n const canDeactivate = currARS
&& currARS.routeConfig ? currARS.routeConfig.canDeactivate : null;\n if (!canDeactivate || canDeactivate.length
=== 0) return of(true);\n const canDeactivateObservables = canDeactivate.map((c: any) => {\n const guard =
getToken(c, currARS, moduleInjector);\n let observable;\n if (isCanDeactivate(guard)) {\n observable =
wrapIntoObservable(guard.canDeactivate(component!, currARS, currRSS, futureRSS));\n } else if
(isFunction<CanDeactivateFn<any>>(guard)) {\n observable = wrapIntoObservable(guard(component, currARS,
currRSS, futureRSS));\n } else {\n throw new Error('Invalid CanDeactivate guard');\n }\n return
observable.pipe(first());\n });\n return of(canDeactivateObservables).pipe(prioritizedGuardValue());\n}\n\n"/**\n *
@license\n * Copyright Google LLC All Rights Reserved.\n * Use of this source code is governed by an MIT-
style license that can be\n * found in the LICENSE file at https://angular.io/license\n */\n\nimport {Type} from
'@angular/core';\nimport {Observable, Observer, of} from 'rxjs';\nimport {Data, ResolveData, Route, Routes}
from './config';\nimport {ActivatedRouteSnapshot, inheritedParamsDataResolve, ParamsInheritanceStrategy,
RouterStateSnapshot} from './router_state';\nimport {defaultUrlMatcher, PRIMARY_OUTLET} from
'./shared';\nimport {mapChildrenIntoArray, UrlSegment, UrlSegmentGroup, UrlTree} from './url_tree';\nimport
{forEach, last} from './utils/collection';\nimport {TreeNode} from './utils/tree';\n\nclass NoMatch {\n}\n\nexport
function recognize(\n rootComponentType: Type<any>|null, config: Routes, urlTree: UrlTree, url: string,\n
paramsInheritanceStrategy: ParamsInheritanceStrategy = 'emptyOnly',\n relativeLinkResolution:
'legacy'|'corrected' = 'legacy'): Observable<RouterStateSnapshot> {\n return new Recognizer(\n
rootComponentType, config, urlTree, url, paramsInheritanceStrategy,\n relativeLinkResolution)\n
.recognize();\n}\n\nclass Recognizer {\n constructor(\n private rootComponentType: Type<any>|null, private
config: Routes, private urlTree: UrlTree,\n private url: string, private paramsInheritanceStrategy:
ParamsInheritanceStrategy,\n private relativeLinkResolution: 'legacy'|'corrected') {\n }\n recognize():
Observable<RouterStateSnapshot> {\n try {\n const rootSegmentGroup =\n split(this.urlTree.root, [], [],
this.config, this.relativeLinkResolution).segmentGroup;\n const children =
this.processSegmentGroup(this.config, rootSegmentGroup, PRIMARY_OUTLET);\n const root = new
ActivatedRouteSnapshot(\n [], Object.freeze({}), Object.freeze({...this.urlTree.queryParams}),\n
this.urlTree.fragment!, {}, PRIMARY_OUTLET, this.rootComponentType, null,\n this.urlTree.root, -1,
{});\n const rootNode = new TreeNode<ActivatedRouteSnapshot>(root, children);\n const routeState = new

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RouterStateSnapshot(this.url, rootNode);\n this.inheritParamsAndData(routeState._root);\n return
of(routeState);\n\n } catch (e) {\n return new Observable<RouterStateSnapshot>(\n (obs:
Observer<RouterStateSnapshot>) => obs.error(e));\n }\n\n\n inheritParamsAndData(routeNode:
TreeNode<ActivatedRouteSnapshot>): void {\n const route = routeNode.value;\n\n const i =
inheritedParamsDataResolve(route, this.paramsInheritanceStrategy);\n route.params = Object.freeze(i.params);\n
route.data = Object.freeze(i.data);\n\n routeNode.children.forEach(n => this.inheritParamsAndData(n));\n } \n\n
processSegmentGroup(config: Route[], segmentGroup: UrlSegmentGroup, outlet: string):\n
TreeNode<ActivatedRouteSnapshot>[] {\n if (segmentGroup.segments.length === 0 &&
segmentGroup.hasChildren()) {\n return this.processChildren(config, segmentGroup);\n }\n\n return
this.processSegment(config, segmentGroup, segmentGroup.segments, outlet);\n }\n\n processChildren(config:
Route[], segmentGroup: UrlSegmentGroup):\n TreeNode<ActivatedRouteSnapshot>[] {\n const children =
mapChildrenIntoArray(\n segmentGroup, (child, childOutlet) => this.processSegmentGroup(config, child,
childOutlet));\n checkOutletNameUniqueness(children);\n sortActivatedRouteSnapshots(children);\n return
children;\n }\n\n processSegment(\n config: Route[], segmentGroup: UrlSegmentGroup, segments:
UrlSegment[],\n outlet: string): TreeNode<ActivatedRouteSnapshot>[] {\n for (const r of config) {\n try {\n
return this.processSegmentAgainstRoute(r, segmentGroup, segments, outlet);\n } catch (e) {\n if (!(e
instanceof NoMatch)) throw e;\n }\n }\n if (this.noLeftoversInUrl(segmentGroup, segments, outlet)) {\n
return [];\n }\n\n throw new NoMatch();\n }\n\n private noLeftoversInUrl(segmentGroup: UrlSegmentGroup,
segments: UrlSegment[], outlet: string):\n boolean {\n return segments.length === 0 &&
!segmentGroup.children[outlet];\n }\n\n processSegmentAgainstRoute(\n route: Route, rawSegment:
UrlSegmentGroup, segments: UrlSegment[],\n outlet: string): TreeNode<ActivatedRouteSnapshot>[] {\n if
(route.redirectTo) throw new NoMatch();\n\n if ((route.outlet || PRIMARY_OUTLET) !== outlet) throw new
NoMatch();\n\n let snapshot: ActivatedRouteSnapshot;\n let consumedSegments: UrlSegment[] = [];\n let
rawSlicedSegments: UrlSegment[] = [];\n\n if (route.path === '**') {\n const params = segments.length > 0 ?
last(segments).parameters : {};\n snapshot = new ActivatedRouteSnapshot(\n segments, params,
Object.freeze({...this.urlTree.queryParams}), this.urlTree.fragment!,\n getData(route), outlet,
route.component!, route, getSourceSegmentGroup(rawSegment),\n getPathIndexShift(rawSegment) +
segments.length, getResolve(route));\n } else {\n const result: MatchResult = match(rawSegment, route,
segments);\n consumedSegments = result.consumedSegments;\n rawSlicedSegments =
segments.slice(result.lastChild);\n\n snapshot = new ActivatedRouteSnapshot(\n consumedSegments,
result.parameters, Object.freeze({...this.urlTree.queryParams}),\n this.urlTree.fragment!, getData(route),
outlet, route.component!, route,\n getSourceSegmentGroup(rawSegment),\n
getPathIndexShift(rawSegment) + consumedSegments.length, getResolve(route));\n }\n\n const childConfig:
Route[] = getChildConfig(route);\n\n const {segmentGroup, slicedSegments} = split(\n rawSegment,
consumedSegments, rawSlicedSegments, childConfig, this.relativeLinkResolution);\n\n if (slicedSegments.length
=== 0 && segmentGroup.hasChildren()) {\n const children = this.processChildren(childConfig,
segmentGroup);\n return [new TreeNode<ActivatedRouteSnapshot>(snapshot, children)];\n }\n\n if
(childConfig.length === 0 && slicedSegments.length === 0) {\n return [new
TreeNode<ActivatedRouteSnapshot>(snapshot, [])];\n }\n\n const children = this.processSegment(childConfig,
segmentGroup, slicedSegments, PRIMARY_OUTLET);\n return [new
TreeNode<ActivatedRouteSnapshot>(snapshot, children)];\n }\n\n\nfunction sortActivatedRouteSnapshots(nodes:
TreeNode<ActivatedRouteSnapshot>[]): void {\n nodes.sort((a, b) => {\n if (a.value.outlet ===
PRIMARY_OUTLET) return -1;\n if (b.value.outlet === PRIMARY_OUTLET) return 1;\n return
a.value.outlet.localeCompare(b.value.outlet);\n });\n }\n\n\nfunction getChildConfig(route: Route): Route[] {\n if
(route.children) {\n return route.children;\n }\n\n if (route.loadChildren) {\n return
route._loadedConfig!.routes;\n }\n\n return [];\n }\n\n\ninterface MatchResult {\n consumedSegments:
UrlSegment[];\n lastChild: number;\n parameters: any;\n }\n\n\nfunction match(segmentGroup: UrlSegmentGroup,
route: Route, segments: UrlSegment[]): MatchResult {\n if (route.path === '') {\n if (route.pathMatch === 'full'

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&& (segmentGroup.hasChildren() || segments.length > 0)) {\n throw new NoMatch();\n }\n\n return
{consumedSegments: [], lastChild: 0, parameters: {}};\n }\n\n const matcher = route.matcher ||
defaultUrlMatcher;\n const res = matcher(segments, segmentGroup, route);\n if (!res) throw new NoMatch();\n\n const posParams: {[n: string]: string} = {};\n forEach(res.posParams!, (v: UrlSegment, k: string) => {\n
posParams[k] = v.path;\n });\n const parameters = res.consumed.length > 0 ?\n {...posParams,
...res.consumed[res.consumed.length - 1].parameters} :\n posParams;\n\n return {consumedSegments:
res.consumed, lastChild: res.consumed.length, parameters};\n }\n\nfunction checkOutletNameUniqueness(nodes:
TreeNode<ActivatedRouteSnapshot>[]): void {\n const names: {[k: string]: ActivatedRouteSnapshot} = {};\n
nodes.forEach(n => {\n const routeWithSameOutletName = names[n.value.outlet];\n if
(routeWithSameOutletName) {\n const p = routeWithSameOutletName.url.map(s => s.toString()).join('/');\n
const c = n.value.url.map(s => s.toString()).join('/');\n throw new Error('Two segments cannot have the same
outlet name: '${p}' and '${c}'.');\n }\n names[n.value.outlet] = n.value;\n });\n }\n\nfunction
getSourceSegmentGroup(segmentGroup: UrlSegmentGroup): UrlSegmentGroup {\n let s = segmentGroup;\n
while (s._sourceSegment) {\n s = s._sourceSegment;\n }\n return s;\n }\n\nfunction
getPathIndexShift(segmentGroup: UrlSegmentGroup): number {\n let s = segmentGroup;\n let res =
(s._segmentIndexShift ? s._segmentIndexShift : 0);\n while (s._sourceSegment) {\n s = s._sourceSegment;\n
res += (s._segmentIndexShift ? s._segmentIndexShift : 0);\n }\n return res - 1;\n }\n\nfunction split(\n segmentGroup:
UrlSegmentGroup, consumedSegments: UrlSegment[], slicedSegments: UrlSegment[],\n config: Route[],
relativeLinkResolution: 'legacy'|'corrected') {\n if (slicedSegments.length > 0 &&\n
containsEmptyPathMatchesWithNamedOutlets(segmentGroup, slicedSegments, config)) {\n const s = new
UrlSegmentGroup(\n consumedSegments,\n createChildrenForEmptyPaths(\n segmentGroup,
consumedSegments, config,\n new UrlSegmentGroup(slicedSegments, segmentGroup.children));\n
s._sourceSegment = segmentGroup;\n s._segmentIndexShift = consumedSegments.length;\n return
{segmentGroup: s, slicedSegments: []};\n }\n\n if (slicedSegments.length === 0 &&\n
containsEmptyPathMatches(segmentGroup, slicedSegments, config)) {\n const s = new UrlSegmentGroup(\n
segmentGroup.segments,\n addEmptyPathsToChildrenIfNeeded(\n segmentGroup, consumedSegments,
slicedSegments, config, segmentGroup.children,\n relativeLinkResolution));\n s._sourceSegment =
segmentGroup;\n s._segmentIndexShift = consumedSegments.length;\n return {segmentGroup: s,
slicedSegments};\n }\n\n const s = new UrlSegmentGroup(segmentGroup.segments, segmentGroup.children);\n
s._sourceSegment = segmentGroup;\n s._segmentIndexShift = consumedSegments.length;\n return
{segmentGroup: s, slicedSegments};\n }\n\nfunction addEmptyPathsToChildrenIfNeeded(\n segmentGroup:
UrlSegmentGroup, consumedSegments: UrlSegment[], slicedSegments: UrlSegment[],\n routes: Route[], children:
{[name: string]: UrlSegmentGroup},\n relativeLinkResolution: 'legacy'|'corrected'): {[name: string]:
UrlSegmentGroup} {\n const res: {[name: string]: UrlSegmentGroup} = {};\n for (const r of routes) {\n if
(emptyPathMatch(segmentGroup, slicedSegments, r) && !children[getOutlet(r)]) {\n const s = new
UrlSegmentGroup([], {});\n s._sourceSegment = segmentGroup;\n if (relativeLinkResolution === 'legacy')
{\n s._segmentIndexShift = segmentGroup.segments.length;\n } else {\n s._segmentIndexShift =
consumedSegments.length;\n }\n res[getOutlet(r)] = s;\n }\n }\n return {...children, ...res};\n }\n\nfunction
createChildrenForEmptyPaths(\n segmentGroup: UrlSegmentGroup, consumedSegments: UrlSegment[], routes:
Route[],\n primarySegment: UrlSegmentGroup): {[name: string]: UrlSegmentGroup} {\n const res: {[name:
string]: UrlSegmentGroup} = {};\n res[PRIMARY_OUTLET] = primarySegment;\n
primarySegment._sourceSegment = segmentGroup;\n primarySegment._segmentIndexShift =
consumedSegments.length;\n\n for (const r of routes) {\n if (r.path === " && getOutlet(r) !==
PRIMARY_OUTLET) {\n const s = new UrlSegmentGroup([], {});\n s._sourceSegment = segmentGroup;\n
s._segmentIndexShift = consumedSegments.length;\n res[getOutlet(r)] = s;\n }\n }\n return
res;\n }\n\nfunction containsEmptyPathMatchesWithNamedOutlets(\n segmentGroup: UrlSegmentGroup,
slicedSegments: UrlSegment[], routes: Route[]): boolean {\n return routes.some(\n r =>
emptyPathMatch(segmentGroup, slicedSegments, r) && getOutlet(r) !== PRIMARY_OUTLET);\n }\n\nfunction

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containsEmptyPathMatches(\n segmentGroup: UrlSegmentGroup, slicedSegments: UrlSegment[], routes:
Route[]): boolean {\n return routes.some(r => emptyPathMatch(segmentGroup, slicedSegments, r));\n}\n\nfunction
emptyPathMatch(\n segmentGroup: UrlSegmentGroup, slicedSegments: UrlSegment[], r: Route): boolean {\n if
((segmentGroup.hasChildren() || slicedSegments.length > 0) && r.pathMatch === 'full') {\n return false;\n }\n return r.path === '' && r.redirectTo === undefined;\n}\n\nfunction getOutlet(route: Route): string {\n return
route.outlet || PRIMARY_OUTLET;\n}\n\nfunction getData(route: Route): Data {\n return route.data ||
{};\n}\n\nfunction getResolve(route: Route): ResolveData {\n return route.resolve || {};\n}\n\n"/**\n * @license\n *
Copyright Google LLC All Rights Reserved.\n * Use of this source code is governed by an MIT-style license
that can be\n * found in the LICENSE file at https://angular.io/license\n */\n\nimport {Type} from
'@angular/core';\nimport {MonoTypeOperatorFunction, Observable} from 'rxjs';\nimport {map, mergeMap} from
'rxjs/operators';\nimport {Route} from './config';\nimport {recognize as recognizeFn} from './recognize';\nimport
{NavigationTransition} from './router';\nimport {UrlTree} from './url_tree';\n\nexport function recognize(\n
rootComponentType: Type<any>|null, config: Route[], serializer: (url: UrlTree) => string,\n
paramsInheritanceStrategy: 'emptyOnly'|'always',\n relativeLinkResolution: 'legacy'|'corrected'):\n
MonoTypeOperatorFunction<NavigationTransition> {\n return function(source:\n
Observable<NavigationTransition>) {\n return source.pipe(mergeMap(\n t => recognizeFn(\n
rootComponentType, config, t.urlAfterRedirects, serializer(t.urlAfterRedirects),\n
paramsInheritanceStrategy, relativeLinkResolution)\n .pipe(map(targetSnapshot => ({...t,\n
targetSnapshot})))));\n };\n}\n\n"/**\n * @license\n * Copyright Google LLC All Rights Reserved.\n * Use of
this source code is governed by an MIT-style license that can be\n * found in the LICENSE file at
https://angular.io/license\n */\n\nimport {Injector} from '@angular/core';\nimport {EMPTY, from,\n
MonoTypeOperatorFunction, Observable, of} from 'rxjs';\nimport {concatMap, map, mergeMap, takeLast, tap}
from 'rxjs/operators';\nimport {ResolveData} from './config';\nimport {NavigationTransition} from
'./router';\nimport {ActivatedRouteSnapshot, inheritedParamsDataResolve, RouterStateSnapshot} from
'./router_state';\nimport {wrapIntoObservable} from './utils/collection';\nimport {getToken} from
'./utils/preactivation';\n\nexport function resolveData(\n paramsInheritanceStrategy: 'emptyOnly'|'always',\n
moduleInjector: Injector): MonoTypeOperatorFunction<NavigationTransition> {\n return function(source:\n
Observable<NavigationTransition>) {\n return source.pipe(mergeMap(t => {\n const {targetSnapshot, guards:\n
{canActivateChecks}} = t;\n if (!canActivateChecks.length) {\n return of(t);\n }\n let
canActivateChecksResolved = 0;\n return from(canActivateChecks)\n .pipe(\n concatMap(\n
 check => runResolve(\n check.route, targetSnapshot!, paramsInheritanceStrategy,\n
moduleInjector),\n tap() => canActivateChecksResolved++),\n takeLast(1),\n
mergeMap(_ => canActivateChecksResolved === canActivateChecks.length ? of(t) : EMPTY),\n));\n };\n }\n\nfunction runResolve(\n futureARS: ActivatedRouteSnapshot, futureRSS: RouterStateSnapshot,\n
paramsInheritanceStrategy: 'emptyOnly'|'always', moduleInjector: Injector) {\n const resolve =
futureARS._resolve;\n return resolveNode(resolve, futureARS, futureRSS, moduleInjector)\n
.pipe(map((resolvedData: any) => {\n futureARS._resolvedData = resolvedData;\n futureARS.data = {\n
...futureARS.data,\n ...inheritedParamsDataResolve(futureARS, paramsInheritanceStrategy).resolve\n
 });\n return null;\n }));\n}\n\nfunction resolveNode(\n resolve: ResolveData, futureARS:\n
ActivatedRouteSnapshot, futureRSS: RouterStateSnapshot,\n moduleInjector: Injector): Observable<any> {\n
const keys = Object.keys(resolve);\n if (keys.length === 0) {\n return of({});\n }\n const data: {[k: string]: any}
= {};\n return from(keys).pipe(\n mergeMap(\n (key: string) => getResolver(resolve[key], futureARS,\n
futureRSS, moduleInjector)\n .pipe(tap((value: any) => {\n data[key] =
value;\n }))),\n takeLast(1),\n mergeMap(() => {\n // Ensure all resolvers returned
values, otherwise don't emit any "next" and just complete\n // the chain which will cancel navigation\n if
(Object.keys(data).length === keys.length) {\n return of(data);\n }\n return EMPTY;\n })),\n);\n}\n\nfunction getResolver(\n injectionToken: any, futureARS: ActivatedRouteSnapshot, futureRSS:\n
RouterStateSnapshot,\n moduleInjector: Injector): Observable<any> {\n const resolver =

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getToken(injectionToken, futureARS, moduleInjector);\n return resolver.resolve ?
wrapIntoObservable(resolver.resolve(futureARS, futureRSS)) :\n
wrapIntoObservable(resolver(futureARS, futureRSS));\n}\n", "/*\n * @license\n * Copyright Google LLC All
Rights Reserved.\n *\n * Use of this source code is governed by an MIT-style license that can be\n * found in the
LICENSE file at https://angular.io/license\n *\n\nimport {from, MonoTypeOperatorFunction, ObservableInput}
from 'rxjs';\nimport {map, switchMap} from 'rxjs/operators';\n\n/**\n * Perform a side effect through a switchMap
for every emission on the source Observable,\n * but return an Observable that is identical to the source. It's
essentially the same as\n * the `tap` operator, but if the side effectful `next` function returns an ObservableInput,\n *
it will wait before continuing with the original value.\n */\nexport function switchTap<T>(next: (x: T) =>
void|ObservableInput<any>):\n MonoTypeOperatorFunction<T> {\n return function(source) {\n return
source.pipe(switchMap(v => {\n const nextResult = next(v);\n if (nextResult) {\n return
from(nextResult).pipe(map(() => v));\n } \n return from([v]);\n }));\n };\n }\n", "/*\n * @license\n *
Copyright Google LLC All Rights Reserved.\n *\n * Use of this source code is governed by an MIT-style license
that can be\n * found in the LICENSE file at https://angular.io/license\n */\n\nimport {ComponentRef} from
'@angular/core';\nimport {OutletContext} from './router_outlet_context';\nimport {ActivatedRoute,
ActivatedRouteSnapshot} from './router_state';\nimport {TreeNode} from './utils/tree';\n\n/**\n * @description\n
*\n * Represents the detached route tree.\n *\n * This is an opaque value the router will give to a custom route reuse
strategy\n * to store and retrieve later on.\n *\n * @publicApi\n */\nexport type DetachedRouteHandle = {};\n\n/**
 * @internal\n */\nexport type DetachedRouteHandleInternal = {\n contexts: Map<string, OutletContext>,\n
componentRef: ComponentRef<any>,\n route: TreeNode<ActivatedRoute>,\n};\n\n/**\n * @description\n *\n *
Provides a way to customize when activated routes get reused.\n *\n * @publicApi\n */\nexport abstract class
RouteReuseStrategy {\n /** Determines if this route (and its subtree) should be detached to be reused later\n */
abstract shouldDetach(route: ActivatedRouteSnapshot): boolean;\n\n /** Stores the detached route.\n *\n *
Storing a `null` value should erase the previously stored value.\n */\n abstract store(route:
ActivatedRouteSnapshot, handle: DetachedRouteHandle|null): void;\n\n /** Determines if this route (and its
subtree) should be reattached\n */\n abstract shouldAttach(route: ActivatedRouteSnapshot): boolean;\n\n /**
Retrieves the previously stored route\n */\n abstract retrieve(route: ActivatedRouteSnapshot):
DetachedRouteHandle|null;\n\n /** Determines if a route should be reused\n */\n abstract shouldReuseRoute(future:
ActivatedRouteSnapshot, curr: ActivatedRouteSnapshot): boolean;\n}\n\n/**\n * @description\n *\n * This base
route reuse strategy only reuses routes when the matched router configs are\n * identical. This prevents components
from being destroyed and recreated\n * when just the fragment or query parameters change\n * (that is, the existing
component is `_reused_`).\n *\n * This strategy does not store any routes for later reuse.\n *\n * Angular uses this
strategy by default.\n *\n * It can be used as a base class for custom route reuse strategies, i.e. you can create
your own\n * class that extends the `BaseRouteReuseStrategy` one.\n */\n @publicApi\n */\nexport abstract class
BaseRouteReuseStrategy implements RouteReuseStrategy {\n /**\n * Whether the given route should detach for
later reuse.\n * Always returns false for `BaseRouteReuseStrategy`.\n */\n */\n abstract shouldDetach(route:
ActivatedRouteSnapshot): boolean {\n return false;\n }\n\n /**\n * A no-op; the route is never stored since this
strategy never detaches routes for later re-use.\n */\n */\n store(route: ActivatedRouteSnapshot, detachedTree:
DetachedRouteHandle): void {\n }\n\n /** Returns `false`, meaning the route (and its subtree) is never reattached\n */
shouldAttach(route: ActivatedRouteSnapshot): boolean {\n return false;\n }\n\n /** Returns `null` because this
strategy does not store routes for later re-use.\n */\n retrieve(route: ActivatedRouteSnapshot):
DetachedRouteHandle|null {\n return null;\n }\n\n /**\n * Determines if a route should be reused.\n *\n * This
strategy returns `true` when the future route config and current route config are\n * identical.\n */\n */\n
shouldReuseRoute(future: ActivatedRouteSnapshot, curr: ActivatedRouteSnapshot): boolean {\n return
future.routeConfig === curr.routeConfig;\n }\n}\n\nexport class DefaultRouteReuseStrategy extends
BaseRouteReuseStrategy {\n}\n", "/*\n * @license\n * Copyright Google LLC All Rights Reserved.\n *\n * Use of
this source code is governed by an MIT-style license that can be\n * found in the LICENSE file at
https://angular.io/license\n */\n\nimport {Compiler, InjectionToken, Injector, NgModuleFactory,

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NgModuleFactoryLoader} from '@angular/core';\nimport {from, Observable, of} from 'rxjs';\nimport {map,
mergeMap} from 'rxjs/operators';\n\nimport {LoadChildren, LoadedRouterConfig, Route} from './config';\nimport
{flatten, wrapIntoObservable} from './utils/collection';\nimport {standardizeConfig} from './utils/config';\n\n/**\n *
The [DI token](guide/glossary/#di-token) for a router configuration.\n * @see `ROUTES`\n * @publicApi\n
*\nexport const ROUTES = new InjectionToken<Route[]>('ROUTES');\n\nexport class RouterConfigLoader {\n
constructor(\n private loader: NgModuleFactoryLoader, private compiler: Compiler,\n private
onLoadStartListener?: (r: Route) => void,\n private onLoadEndListener?: (r: Route) => void) {}\n\n
load(parentInjector: Injector, route: Route): Observable<LoadedRouterConfig> {\n if (this.onLoadStartListener)
{\n this.onLoadStartListener(route);\n }\n\n const moduleFactory$ =
this.loadModuleFactory(route.loadChildren!);\n\n return moduleFactory$.pipe(map((factory:
NgModuleFactory<any>) => {\n if (this.onLoadEndListener) {\n this.onLoadEndListener(route);\n }
}\n\n const module = factory.create(parentInjector);\n return new LoadedRouterConfig(\n
flatten(module.injector.get(ROUTES)).map(standardizeConfig), module);\n }));\n }\n\n private
loadModuleFactory(loadChildren: LoadChildren): Observable<NgModuleFactory<any>> {\n if (typeof
loadChildren === 'string') {\n return from(this.loader.load(loadChildren));\n } else {\n return
wrapIntoObservable(loadChildren()).pipe(mergeMap((t: any) => {\n if (t instanceof NgModuleFactory) {\n
return of(t);\n } else {\n return from(this.compiler.compileModuleAsync(t);\n }\n }));\n }
}\n }\n\n", /**\n * @license\n * Copyright Google LLC All Rights Reserved.\n * Use of this source code is
governed by an MIT-style license that can be\n * found in the LICENSE file at https://angular.io/license\n
*\nimport {ComponentFactoryResolver, ComponentRef} from '@angular/core';\nimport {RouterOutlet} from
'/directives/router_outlet';\nimport {ActivatedRoute} from './router_state';\n\n/**\n * Store contextual information
about a `RouterOutlet`\n * @publicApi\n *\nexport class OutletContext {\n outlet: RouterOutlet|null = null;\n
route: ActivatedRoute|null = null;\n resolver: ComponentFactoryResolver|null = null;\n children = new
ChildrenOutletContexts();\n attachRef: ComponentRef<any>|null = null;\n }\n\n/**\n * Store contextual
information about the children (= nested) `RouterOutlet`\n * @publicApi\n *\nexport class
ChildrenOutletContexts {\n // contexts for child outlets, by name.\n private contexts = new Map<string,
OutletContext>();\n\n /** Called when a `RouterOutlet` directive is instantiated *\n
onChildOutletCreated(childName: string, outlet: RouterOutlet): void {\n const context =
this.getOrCreateContext(childName);\n context.outlet = outlet;\n this.contexts.set(childName, context);\n }\n\n
/**\n * Called when a `RouterOutlet` directive is destroyed.\n * We need to keep the context as the outlet could
be destroyed inside a NgIf and might be\n * re-created later.\n *\n onChildOutletDestroyed(childName: string):
void {\n const context = this.getContext(childName);\n if (context) {\n context.outlet = null;\n }
}\n\n /**\n * Called when the corresponding route is deactivated during navigation.\n * Because the component get
destroyed, all children outlet are destroyed.\n *\n onOutletDeactivated(): Map<string, OutletContext> {\n const
contexts = this.contexts;\n this.contexts = new Map();\n return contexts;\n }\n\n onOutletReAttached(contexts:
Map<string, OutletContext>) {\n this.contexts = contexts;\n }\n\n getOrCreateContext(childName: string):
OutletContext {\n let context = this.getContext(childName);\n\n if (!context) {\n context = new
OutletContext();\n this.contexts.set(childName, context);\n }\n\n return context;\n }\n\n
getContext(childName: string): OutletContext|null {\n return this.contexts.get(childName) || null;\n }\n }\n\n",
/**\n * @license\n * Copyright Google LLC All Rights Reserved.\n * Use of this source code is governed by an MIT-
style license that can be\n * found in the LICENSE file at https://angular.io/license\n *\nimport {UrlTree} from
'/url_tree';\n\n/**\n * @description\n * Provides a way to migrate AngularJS applications to Angular.\n * @publicApi\n
*\nexport abstract class UrlHandlingStrategy {\n /**\n * Tells the router if this URL should be
processed.\n * When it returns true, the router will execute the regular navigation.\n * When it returns false,
the router will set the router state to an empty state.\n * As a result, all the active components will be destroyed.\n
*\n abstract shouldProcessUrl(url: UrlTree): boolean;\n\n /**\n * Extracts the part of the URL that should be
handled by the router.\n * The rest of the URL will remain untouched.\n *\n abstract extract(url: UrlTree):
UrlTree;\n\n /**\n * Merges the URL fragment with the rest of the URL.\n *\n abstract merge(newUrlPart:

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UrlTree, rawUrl: UrlTree): UrlTree;\n\n/**\n * @publicApi\n */\nexport class DefaultUrlHandlingStrategy
implements UrlHandlingStrategy {\n shouldProcessUrl(url: UrlTree): boolean {\n return true;\n }\n extract(url:
UrlTree): UrlTree {\n return url;\n }\n merge(newUrlPart: UrlTree, wholeUrl: UrlTree): UrlTree {\n return
newUrlPart;\n }\n}\n", "/*\n * @license\n * Copyright Google LLC All Rights Reserved.\n * Use of this source
code is governed by an MIT-style license that can be\n * found in the LICENSE file at https://angular.io/license\n
*/\n\nimport {Location, PopStateEvent} from '@angular/common';\nimport {Compiler, Injectable, Injector,
NgModuleFactoryLoader, NgModuleRef, NgZone, Type, Console as Console} from '@angular/core';\nimport
{BehaviorSubject, EMPTY, Observable, of, Subject, SubscriptionLike} from 'rxjs';\nimport {catchError, filter,
finalize, map, switchMap, tap} from 'rxjs/operators';\n\nimport {QueryParamsHandling, Route, Routes} from
'./config';\nimport {createRouterState} from './create_router_state';\nimport {createUrlTree} from
'./create_url_tree';\nimport {Event, GuardsCheckEnd, GuardsCheckStart, NavigationCancel, NavigationEnd,
NavigationError, NavigationStart, NavigationTrigger, ResolveEnd, ResolveStart, RouteConfigLoadEnd,
RouteConfigLoadStart, RoutesRecognized} from './events';\nimport {activateRoutes} from
'./operators/activate_routes';\nimport {applyRedirects} from './operators/apply_redirects';\nimport {checkGuards}
from './operators/check_guards';\nimport {recognize} from './operators/recognize';\nimport {resolveData} from
'./operators/resolve_data';\nimport {switchTap} from './operators/switch_tap';\nimport {DefaultRouteReuseStrategy,
RouteReuseStrategy} from './route_reuse_strategy';\nimport {RouterConfigLoader} from
'./router_config_loader';\nimport {ChildrenOutletContexts} from './router_outlet_context';\nimport {ActivatedRoute,
createEmptyState, RouterState, RouterStateSnapshot} from './router_state';\nimport {isNavigationCancelingError,
navigationCancelingError, Params} from './shared';\nimport {DefaultUrlHandlingStrategy, UrlHandlingStrategy}
from './url_handling_strategy';\nimport {containsTree, createEmptyUrlTree, UrlSerializer, UrlTree} from
'./url_tree';\nimport {standardizeConfig, validateConfig} from './utils/config';\nimport {Checks, getAllRouteGuards}
from './utils/preactivation';\nimport {isUrlTree} from './utils/type_guards';\n\n\n/**\n * @description\n */\n
Options that modify the `Router` URL.\n * Supply an object containing any of these properties to a `Router`
navigation function to\n * control how the target URL should be constructed.\n *\n * @see [Router.navigate()
method](api/router/Router#navigate)\n *\n * @see [Router.createUrlTree() method](api/router/Router#createurltree)\n
*\n * @see [Routing and Navigation guide](guide/router)\n *\n * @publicApi\n */\nexport interface UrlCreationOptions
{\n /**\n * Specifies a root URI to use for relative navigation.\n *\n * For example, consider the following route
configuration where the parent route\n * has two children.\n *\n * ```\n * [{\n * path: 'parent',\n *
component: ParentComponent,\n * children: [{\n * path: 'list',\n * component: ListComponent\n * }, {\n
 * path: 'child',\n * component: ChildComponent\n * }]\n * }]\n * ```\n *\n * The following `go()`
function navigates to the `list` route by\n * interpreting the destination URI as relative to the activated `child`
route\n *\n * ```\n * @Component({...})\n * class ChildComponent {\n * constructor(private router:
Router, private route: ActivatedRoute) {}\n * go() {\n * this.router.navigate(['../list'], { relativeTo:
this.route });\n * }\n * }\n * ```\n *\n * @relativeTo?: ActivatedRoute|null;\n *\n * Sets query parameters
to the URL.\n *\n * ```\n * // Navigate to /results?page=1\n * this.router.navigate(['results'], { queryParams: {
page: 1 } });\n * ```\n *\n * @queryParams?: Params|null;\n *\n * Sets the hash fragment for the URL.\n *\n
 * ```\n * // Navigate to /results#top\n * this.router.navigate(['results'], { fragment: 'top' });\n * ```\n
 *\n * @fragment?: string;\n *\n * How to handle query parameters in the router link for the next navigation.\n
 * One of:\n * * `preserve` : Preserve current parameters.\n * * `merge` : Merge new with current parameters.\n
 *\n * The `preserve` option discards any new query params:\n * ```\n * // from /view1?page=1 to/view2?page=1\n
 * this.router.navigate(['view2'], { queryParams: { page: 2 }, queryParamsHandling: 'preserve'\n * });\n * ```\n
 *\n * The `merge` option appends new query params to the params from the current URL:\n * ```\n * // from
 * /view1?page=1 to/view2?page=1&otherKey=2\n * this.router.navigate(['view2'], { queryParams: { otherKey: 2 },
queryParamsHandling: 'merge'\n * });\n * ```\n *\n * In case of a key collision between current parameters and
those in the `queryParams` object,\n * the new value is used.\n *\n * @queryParamsHandling?:
QueryParamsHandling|null;\n *\n * When true, preserves the URL fragment for the next navigation\n *\n *
 * ```\n * // Preserve fragment from /results#top to /view#top\n * this.router.navigate(['view'], { preserveFragment:

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true });\n * ```\n * ^\n preserveFragment?: boolean;\n}\n\n/**\n * @description\n *\n * Options that modify the\n * `Router` navigation strategy.\n * Supply an object containing any of these properties to a `Router` navigation\n * function to\n * control how the navigation should be handled.\n *\n * @see [Router.navigate()\n * method](api/router/Router#navigate)\n * @see [Router.navigateByUrl() method](api/router/Router#navigatebyurl)\n * @see [Routing and Navigation guide](guide/router)\n *\n * @publicApi\n *\n * ^\nexport interface\n * NavigationBehaviorOptions {\n * // **\n * When true, navigates without pushing a new state into history.\n *\n * // ```\n * // Navigate silently to /view\n * this.router.navigate(['/view'], { skipLocationChange: true });\n * ```\n *\n * // skipLocationChange?: boolean;\n * // **\n * When true, navigates while replacing the current state in\n * history.\n *\n * // ```\n * // Navigate to /view\n * this.router.navigate(['/view'], { replaceUrl: true });\n * ```\n *\n * // replaceUrl?: boolean;\n * // **\n * Developer-defined state that can be passed to any navigation.\n * Access\n * this value through the `Navigation.extras` object\n * returned from the [Router.getCurrentNavigation()\n * method](api/router/Router#getcurrentnavigation) while a navigation is executing.\n *\n * After a navigation\n * completes, the router writes an object containing this\n * value together with a `navigationId` to `history.state`.\n *\n * The value is written when `location.go()` or `location.replaceState()`\n * is called before activating this route.\n *\n * Note that `history.state` does not pass an object equality test because\n * the router adds the `navigationId`\n * on each navigation.\n *\n * state?: {[k: string]: any};\n}\n\n/**\n * @description\n *\n * Options that modify\n * the `Router` navigation strategy.\n * Supply an object containing any of these properties to a `Router` navigation\n * function to\n * control how the target URL should be constructed or interpreted.\n *\n * @see [Router.navigate()\n * method](api/router/Router#navigate)\n * @see [Router.navigateByUrl() method](api/router/Router#navigatebyurl)\n * @see [Router.createUrlTree() method](api/router/Router#createurltree)\n * @see [Routing and Navigation\n * guide](guide/router)\n * @see UrlCreationOptions\n * @see NavigationBehaviorOptions\n *\n * @publicApi\n *\n * ^\nexport interface NavigationExtras extends UrlCreationOptions, NavigationBehaviorOptions {\n * // **\n * Error\n * handler that is invoked when a navigation error occurs.\n *\n * If the handler returns a value, the navigation Promise\n * is resolved with this value.\n * If the handler throws an exception, the navigation Promise is rejected with\n * the\n * exception.\n *\n * @publicApi\n *\n * ^\nexport type ErrorHandler = (error: any) => any;\n\nfunction\n * defaultErrorHandler(error: any): any {\n * throw error;\n * }\n\nfunction defaultMalformedUriErrorHandler(\n * error:\n * URIError, urlSerializer: UrlSerializer, url: string): UrlTree {\n * return urlSerializer.parse('/');\n * }\n\nexport type\n * RestoredState = {\n * [k: string]: any; navigationId: number;\n * };\n\n/**\n * Information about a navigation\n * operation.\n * Retrieve the most recent navigation object with the\n * [Router.getCurrentNavigation()\n * method](api/router/Router#getcurrentnavigation) .\n *\n * * *id* : The unique identifier of the current navigation.\n * * *initialUrl* : The target URL passed into the `Router#navigateByUrl()` call before navigation.\n * This is the\n * value before the router has parsed or applied redirects to it.\n * * *extractedUrl* : The initial target URL after being\n * parsed with `UrlSerializer.extract()`.\n * * *finalUrl* : The extracted URL after redirects have been applied.\n * This\n * URL may not be available immediately, therefore this property can be `undefined`.\n * It is guaranteed to be set\n * after the `RoutesRecognized` event fires.\n * * *trigger* : Identifies how this navigation was triggered.\n * --\n * 'imperative'--Triggered by `router.navigateByUrl` or `router.navigate`.\n * --\n * 'popstate'--Triggered by a popstate\n * event.\n * --\n * 'hashchange'--Triggered by a hashchange event.\n * * *extras* : A `NavigationExtras` options object\n * that controlled the strategy used for this\n * navigation.\n * * *previousNavigation* : The previously successful\n * `Navigation` object. Only one previous\n * navigation is available, therefore this previous `Navigation` object has a\n * `null` value for its\n * own `previousNavigation`.\n *\n * @publicApi\n *\n * ^\nexport type Navigation = {\n * // **\n * The unique identifier of the current navigation.\n * // ^\n * id: number;\n * // **\n * The target URL passed into the\n * `Router#navigateByUrl`\n * call before navigation. This is\n * the value before the router has parsed or applied\n * redirects to it.\n * // ^\n * initialUrl: string | UrlTree;\n * // **\n * The initial target URL after being parsed with\n * `UrlSerializer.extract()`.\n * // ^\n * extractedUrl: UrlTree;\n * // **\n * The extracted URL after redirects have been\n * applied.\n * This URL may not be available immediately, therefore this property can be `undefined`.\n * It is\n * guaranteed to be set after the `RoutesRecognized` event fires.\n * // ^\n * finalUrl?: UrlTree;\n * // **\n * Identifies how\n * this navigation was triggered.\n * // ^\n * trigger: 'imperative' | 'popstate' | 'hashchange';\n * // **\n * 'imperative'--Triggered by `router.navigateByUrl` or `router.navigate`.\n * // ^\n * 'popstate'--Triggered by a popstate event.\n * // ^\n * 'hashchange'--Triggered by a hashchange event.\n * // ^\n * trigger:

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'imperative' | 'popstate' | 'hashchange';\n /**\n * Options that controlled the strategy used for this navigation.\n *
See `NavigationExtras`.\n */\n extras: NavigationExtras;\n /**\n * The previously successful `Navigation`
object. Only one previous navigation\n * is available, therefore this previous `Navigation` object has a `null`
value\n * for its own `previousNavigation`.\n */\n previousNavigation: Navigation | null;\n};\n\nexport type
NavigationTransition = {\n id: number,\n currentUrlTree: UrlTree,\n currentRawUrl: UrlTree,\n extractedUrl:
UrlTree,\n urlAfterRedirects: UrlTree,\n rawUrl: UrlTree,\n extras: NavigationExtras,\n resolve: any,\n reject:
any,\n promise: Promise<boolean>,\n source: NavigationTrigger,\n restoredState: RestoredState|null,\n
currentSnapshot: RouterStateSnapshot,\n targetSnapshot: RouterStateSnapshot|null,\n currentRouterState:
RouterState,\n targetRouterState: RouterState|null,\n guards: Checks,\n guardsResult:
boolean|UrlTree|null,\n};\n\n/**\n * @internal\n */\nexport type RouterHook = (snapshot: RouterStateSnapshot,
runExtras: {\n appliedUrlTree: UrlTree,\n rawUrlTree: UrlTree,\n skipLocationChange: boolean,\n replaceUrl:
boolean,\n navigationId: number\n}) => Observable<void>;\n\n/**\n * @internal\n */\nfunction
defaultRouterHook(snapshot: RouterStateSnapshot, runExtras: {\n appliedUrlTree: UrlTree,\n rawUrlTree:
UrlTree,\n skipLocationChange: boolean,\n replaceUrl: boolean,\n navigationId: number\n}): Observable<void>
{\n return of(null) as any;\n}\n\n/**\n * Information related to a location change, necessary for scheduling follow-
up Router navigations.\n */\ntype LocationChangeInfo = {\n source: 'popstate'|'hashchange',\n urlTree: UrlTree,\n
state: RestoredState|null,\n transitionId: number\n};\n\n/**\n * @description\n */\n * A service that provides
navigation among views and URL manipulation capabilities.\n */\n * @see `Route`.\n * @see [Routing and
Navigation Guide](guide/router).\n */\n * @ngModule RouterModule\n */\n * @publicApi\n
*/\n\n@Injectable()\nexport class Router {\n private currentUrlTree: UrlTree;\n private rawUrlTree: UrlTree;\n
private browserUrlTree: UrlTree;\n private readonly transitions: BehaviorSubject<NavigationTransition>;\n
private navigations: Observable<NavigationTransition>;\n private lastSuccessfulNavigation: Navigation|null =
null;\n private currentNavigation: Navigation|null = null;\n private locationSubscription?: SubscriptionLike;\n
/**\n * Tracks the previously seen location change from the location subscription so we can compare\n * the two
latest to see if they are duplicates. See setUpLocationChangeListener.\n */\n private lastLocationChangeInfo:
LocationChangeInfo|null = null;\n private navigationId: number = 0;\n private configLoader:
RouterConfigLoader;\n private ngModule: NgModuleRef<any>;\n private console: Console;\n private
isNgZoneEnabled: boolean = false;\n\n /**\n * An event stream for routing events in this NgModule.\n */\n
public readonly events: Observable<Event> = new Subject<Event>();\n /**\n * The current state of routing in this
NgModule.\n */\n public readonly routerState: RouterState;\n\n /**\n * A handler for navigation errors in this
NgModule.\n */\n errorHandler: ErrorHandler = defaultErrorHandler;\n\n /**\n * A handler for errors thrown by
`Router.parseUrl(url)`\n * when `url` contains an invalid character.\n * The most common case is a `%` sign\n *
that's not encoded and is not part of a percent encoded sequence.\n */\n malformedUriErrorHandler:\n (error:
URLError, urlSerializer: UrlSerializer,\n url: string) => UrlTree = defaultMalformedUriErrorHandler;\n\n /**\n
* True if at least one navigation event has occurred,\n * false otherwise.\n */\n navigated: boolean = false;\n
private lastSuccessfulId: number = -1;\n\n /**\n * Hooks that enable you to pause navigation,\n * either before or
after the preactivation phase.\n * Used by `RouterModule`.\n */\n * @internal\n */\n hooks: {\n
beforePreactivation: RouterHook,\n afterPreactivation: RouterHook\n } = {\n beforePreactivation:
defaultRouterHook, afterPreactivation: defaultRouterHook};\n\n /**\n * A strategy for extracting and merging
URLs.\n * Used for AngularJS to Angular migrations.\n */\n urlHandlingStrategy: UrlHandlingStrategy = new
DefaultUrlHandlingStrategy();\n\n /**\n * A strategy for re-using routes.\n */\n routeReuseStrategy:
RouteReuseStrategy = new DefaultRouteReuseStrategy();\n\n /**\n * How to handle a navigation request to the
current URL. One of:\n * - `ignore` : The router ignores the request.\n * - `reload` : The router reloads the URL.
Use to implement a "refresh" feature.\n */\n onSameUrlNavigation: 'reload'|'ignore' = 'ignore';\n\n /**\n * How
to merge parameters, data, and resolved data from parent to child\n * routes. One of:\n */\n * - `emptyOnly` :
Inherit parent parameters, data, and resolved data\n * for path-less or component-less routes.\n * - `always` :
Inherit parent parameters, data, and resolved data\n * for all child routes.\n */\n paramsInheritanceStrategy:
'emptyOnly'|'always' = 'emptyOnly';\n\n /**\n * Determines when the router updates the browser URL.\n * By

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default (`deferred`), updates the browser URL after navigation has finished.\n * Set to `eager` to update the
browser URL at the beginning of navigation.\n * You can choose to update early so that, if navigation fails,\n *
you can show an error message with the URL that failed.\n */\n urlUpdateStrategy: 'deferred'|'eager' =
'deferred';\n\n /**\n * Enables a bug fix that corrects relative link resolution in components with empty paths.\n */
@see `RouterModule`\n */\n relativeLinkResolution: 'legacy'|'corrected' = 'corrected';\n\n /**\n * Creates the
router service.\n */\n // TODO: vsavkin make internal after the final is out.\n constructor(\n private
rootComponentType: Type<any>|null, private urlSerializer: UrlSerializer,\n private rootContexts:
ChildrenOutletContexts, private location: Location, injector: Injector,\n loader: NgModuleFactoryLoader,
compiler: Compiler, public config: Routes) {\n const onLoadStart = (r: Route) => this.triggerEvent(new
RouteConfigLoadStart(r));\n const onLoadEnd = (r: Route) => this.triggerEvent(new
RouteConfigLoadEnd(r));\n\n this.ngModule = injector.get(NgModuleRef);\n this.console =
injector.get(Console);\n const ngZone = injector.get(NgZone);\n this.isNgZoneEnabled = ngZone instanceof
NgZone;\n\n this.resetConfig(config);\n this.currentUrlTree = createEmptyUrlTree();\n this.rawUrlTree =
this.currentUrlTree;\n this.browserUrlTree = this.currentUrlTree;\n\n this.configLoader = new
RouterConfigLoader(loader, compiler, onLoadStart, onLoadEnd);\n this.routerState =
createEmptyState(this.currentUrlTree, this.rootComponentType);\n\n this.transitions = new
BehaviorSubject<NavigationTransition>({\n id: 0,\n currentUrlTree: this.currentUrlTree,\n currentRawUrl:
this.currentUrlTree,\n extractedUrl: this.urlHandlingStrategy.extract(this.currentUrlTree),\n urlAfterRedirects:
this.urlHandlingStrategy.extract(this.currentUrlTree),\n rawUrl: this.currentUrlTree,\n extras: {},\n
resolve: null,\n reject: null,\n promise: Promise.resolve(true),\n source: 'imperative',\n restoredState:
null,\n currentSnapshot: this.routerState.snapshot,\n targetSnapshot: null,\n currentRouterState:
this.routerState,\n targetRouterState: null,\n guards: { canActivateChecks: [], canActivateChecks: [] },\n
guardsResult: null,\n });\n this.navigations = this.setupNavigations(this.transitions);\n\n
this.processNavigations();\n }\n\n private setupNavigations(transitions: Observable<NavigationTransition>):\n
Observable<NavigationTransition> {\n const eventsSubject = (this.events as Subject<Event>);\n return
transitions.pipe(\n filter(t => t.id !== 0),\n\n // Extract URL\n map(t =>\n
({...t, extractedUrl: this.urlHandlingStrategy.extract(t.rawUrl)}) as\n\n NavigationTransition)),\n\n
// Using switchMap so we cancel executing navigations when a new one comes in\n switchMap(t => {\n
let completed = false;\n let errored = false;\n return of(t).pipe(\n // Store the
Navigation object\n tap(t => {\n this.currentNavigation = {\n id: t.id,\n
initialUrl: t.currentRawUrl,\n extractedUrl: t.extractedUrl,\n trigger:
t.source,\n extras: t.extras,\n previousNavigation: this.lastSuccessfulNavigation ?\n
this.lastSuccessfulNavigation, previousNavigation: null } :\n null\n
});\n\n switchMap(t => {\n const urlTransition = !this.navigated ||\n
t.extractedUrl.toString() !== this.browserUrlTree.toString();\n const processCurrentUrl =\n
(this.onSameUrlNavigation === 'reload' ? true : urlTransition) &&\n
this.urlHandlingStrategy.shouldProcessUrl(t.rawUrl);\n\n if (processCurrentUrl) {\n
return of(t).pipe(\n // Fire NavigationStart event\n switchMap(t => {\n
const transition = this.transitions.getValue();\n eventsSubject.next(new NavigationStart(\n
t.id, this.serializeUrl(t.extractedUrl), t.source,\n\n t.restoredState));\n\n
if (transition !== this.transitions.getValue()) {\n return EMPTY;\n
}\n\n return [t];\n\n })),\n\n // This delay is required to match old
behavior that forced navigation\n // to always be async\n switchMap(t =>
Promise.resolve(t)),\n\n // Apply Redirects\n applyRedirects(\n
this.ngModule.injector, this.configLoader, this.urlSerializer,\n this.config),\n\n
// Update the currentNavigation\n tap(t => {\n this.currentNavigation = {\n
...this.currentNavigation!,\n finalUrl: t.urlAfterRedirects\n\n });\n\n
}),\n\n // Recognize\n recognize(\n

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this.rootComponentType, this.config,\n (url) => this.serializeUrl(url),
this.paramsInheritanceStrategy,\n this.relativeLinkResolution),\n\n // Update
URL if in `eager` update mode\n tap(t => {\n if (this.urlUpdateStrategy ===
'eager') {\n if (!t.extras.skipLocationChange) {\n this.setBrowserUrl(\n
t.urlAfterRedirects, !!t.extras.replaceUrl, t.id,\n t.extras.state);\n
 }\n this.browserUrlTree = t.urlAfterRedirects;\n }\n
}),\n\n // Fire RoutesRecognized\n tap(t => {\n const
routesRecognized = new RoutesRecognized(\n t.id, this.serializeUrl(t.extractedUrl),\n
 this.serializeUrl(t.urlAfterRedirects), t.targetSnapshot!);\n
eventsSubject.next(routesRecognized);\n }));\n } else {\n const
processPreviousUrl = urlTransition && this.rawUrlTree &&\n
this.urlHandlingStrategy.shouldProcessUrl(this.rawUrlTree);\n /* When the current URL shouldn't be
processed, but the previous one was,\n * we handle this \"error condition\" by navigating to the
previously\n * successful URL, but leaving the URL intact.*^\n if
(processPreviousUrl) {\n const {id, extractedUrl, source, restoredState, extras} = t;\n
const navStart = new NavigationStart(\n id, this.serializeUrl(extractedUrl), source,
restoredState);\n
eventsSubject.next(navStart);\n const targetSnapshot =\n
createEmptyState(extractedUrl, this.rootComponentType).snapshot;\n return of({\n
...t,\n targetSnapshot,\n urlAfterRedirects: extractedUrl,\n
extras: {...extras, skipLocationChange: false, replaceUrl: false},\n });\n } else {\n
/* When neither the current or previous URL can be processed, do nothing\n * other
than update router's internal reference to the current \"settled\"\n * URL. This way the next
navigation will be coming from the current URL\n * in the browser.\n *^\n
 this.rawUrlTree = t.rawUrl;\n this.browserUrlTree = t.urlAfterRedirects;\n
t.resolve(null);\n return EMPTY;\n }\n })),\n\n
// Before Preactivation\n switchTap(t => {\n const {\n targetSnapshot,\n
rawUrlTree,\n extras: {skipLocationChange, replaceUrl}\n } = t;\n return
this.hooks.beforePreactivation(targetSnapshot!, {\n navigationId,\n appliedUrlTree,\n
rawUrlTree,\n skipLocationChange: !!skipLocationChange,\n replaceUrl:
!!replaceUrl,\n });\n })),\n\n // --- GUARDS ---\n tap(t => {\n
const guardsStart = new GuardsCheckStart(\n t.id, this.serializeUrl(t.extractedUrl),\n
 this.serializeUrl(t.urlAfterRedirects), t.targetSnapshot!);\n this.triggerEvent(guardsStart);\n
 })),\n\n map(t => ({\n ...t,\n guards: getAllRouteGuards(\n
 t.targetSnapshot!, t.currentSnapshot, this.rootContexts)\n })),\n\n
checkGuards(this.ngModule.injector, (evt: Event) => this.triggerEvent(evt)),\n tap(t => {\n
if (isUrlTree(t.guardsResult)) {\n const error: Error & {url?: UrlTree} = navigationCancelingError(\n
 `Redirecting to \"${this.serializeUrl(t.guardsResult)}\"`);\n error.url =
t.guardsResult;\n throw error;\n })),\n\n tap(t => {\n
const guardsEnd = new GuardsCheckEnd(\n t.id, this.serializeUrl(t.extractedUrl),\n
 this.serializeUrl(t.urlAfterRedirects), t.targetSnapshot!,\n !!t.guardsResult);\n
this.triggerEvent(guardsEnd);\n })),\n\n filter(t => {\n if (!t.guardsResult) {\n
 this.resetUrlToCurrentUrlTree();\n const navCancel =\n new
NavigationCancel(t.id, this.serializeUrl(t.extractedUrl), ");\n eventsSubject.next(navCancel);\n
 t.resolve(false);\n return false;\n })\n return true;\n
 })),\n\n // --- RESOLVE ---\n switchTap(t => {\n if
(t.guards.canActivateChecks.length) {\n return of(t).pipe(\n tap(t => {\n
 const resolveStart = new ResolveStart(\n t.id, this.serializeUrl(t.extractedUrl),\n

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 this.serializeUrl(t.urlAfterRedirects), t.targetSnapshot!);\n
this.triggerEvent(resolveStart);\n }),\n switchMap(t => {\n let\n
dataResolved = false;\n return of(t).pipe(\n resolveData(\n
 this.paramsInheritanceStrategy, this.ngModule.injector),\n tap({\n
next: () => dataResolved = true,\n complete: () => {\n if\n
(!dataResolved) {\n const navCancel = new NavigationCancel(\n
t.id, this.serializeUrl(t.extractedUrl),\n `At least one route resolver didn't emit any\n
value.`);\n eventsSubject.next(navCancel);\n t.resolve(false);\n
 }\n }\n }),\n);\n
}),\n tap(t => {\n const resolveEnd = new ResolveEnd(\n
t.id, this.serializeUrl(t.extractedUrl),\n this.serializeUrl(t.urlAfterRedirects),\n
t.targetSnapshot!);\n this.triggerEvent(resolveEnd);\n }));\n }\n
 return undefined;\n }),\n // --- AFTER PREACTIVATION ---\n
switchTap((t: NavigationTransition) => {\n const {\n targetSnapshot,\n
id: navigationId,\n extractedUrl: appliedUrlTree,\n rawUrl: rawUrlTree,\n
 extras: {skipLocationChange, replaceUrl}\n } = t;\n return\n
this.hooks.afterPreactivation(targetSnapshot!, {\n navigationId,\n appliedUrlTree,\n
 rawUrlTree,\n skipLocationChange: !!skipLocationChange,\n replaceUrl:\n
!!replaceUrl,\n });\n }),\n map((t: NavigationTransition) => {\n
const targetRouterState = createRouterState(\n this.routeReuseStrategy, t.targetSnapshot!,\n
t.currentRouterState);\n return ({...t, targetRouterState});\n })),\n /* Once\n
here, we are about to activate synchronously. The assumption is this\n will succeed, and user code may\n
read from the Router service. Therefore\n before activation, we need to update router properties\n
storing the current\n URL and the RouterState, as well as updated the browser URL. All this should\n
 happen *before* activating. */\n tap((t: NavigationTransition) => {\n
this.currentUrlTree = t.urlAfterRedirects;\n this.rawUrlTree =\n
this.urlHandlingStrategy.merge(this.currentUrlTree, t.rawUrl);\n (this as {routerState:\n
RouterState}).routerState = t.targetRouterState!;\n if (this.urlUpdateStrategy === 'deferred') {\n
 if (!t.extras.skipLocationChange) {\n this.setBrowserUrl(\n
this.rawUrlTree, !!t.extras.replaceUrl, t.id, t.extras.state);\n }\n this.browserUrlTree =\n
t.urlAfterRedirects;\n }\n })),\n activateRoutes(\n
this.rootContexts, this.routeReuseStrategy,\n (evt: Event) => this.triggerEvent(evt)),\n
tap({\n next() {\n completed = true;\n },\n complete() {\n
 completed = true;\n }\n })),\n finalize(() => {\n /*\n
When the navigation stream finishes either through error or success, we\n * set the `completed` or\n
`errored` flag. However, there are some situations\n * where we could get here without either of those\n
being set. For instance, a\n * redirect during NavigationStart. Therefore, this is a catch-all to make\n
 * sure the NavigationCancel\n * event is fired when a navigation gets cancelled but not\n
caught by other\n * means. */\n if (!completed && !errored) {\n // Must\n
reset to current URL tree here to ensure history.state is set. On a\n // fresh page load, if a new\n
navigation comes in before a successful\n // navigation completes, there will be nothing in\n
 // history.state.navigationId. This can cause sync problems with AngularJS\n // sync code which\n
looks for a value here in order to determine whether or\n // not to handle a given popstate event or to\n
leave it to the Angular\n // router.\n this.resetUrlToCurrentUrlTree();\n
const navCancel = new NavigationCancel(\n t.id, this.serializeUrl(t.extractedUrl),\n
 `Navigation ID ${t.id} is not equal to the current navigation id ${\n this.navigationId}`);\n
 eventsSubject.next(navCancel);\n t.resolve(false);\n }\n } //\n
currentNavigation should always be reset to null here. If navigation was\n // successful,

```

```

lastSuccessfulTransition will have already been set. Therefore // we can safely set currentNavigation
to null here. this.currentNavigation = null; },) catchError((e) => {
 errored = true; /* This error type is issued during Redirect, and is handled as a
 * cancellation rather than an error. */ if (isNavigationCancelingError(e)) { const
 redirecting = isUrlTree(e.url); if (!redirecting) { // Set property only if we're not
 redirecting. If we landed on a page and // redirect to `^` route, the new navigation is going to see
 the `^` // isn't a change from the default currentUrlTree and won't navigate. //
 This is only applicable with initial navigation, so setting // `navigated` only when not redirecting
 resolves this scenario. this.navigated = true;
 this.resetStateAndUrl(t.currentRouterState, t.currentUrlTree, t.rawUrl); } const
 navCancel = new NavigationCancel(\n t.id, this.serializeUrl(t.extractedUrl), e.message);\n
 eventsSubject.next(navCancel); // When redirecting, we need to delay resolving the
 navigation // promise and push it to the redirect navigation if (!redirecting) {\n
 t.resolve(false); } else {\n // setTimeout is required so this navigation
 finishes with\n // the return EMPTY below. If it isn't allowed to finish\n //
 processing, there can be multiple navigations to the same\n // URL.\n setTimeout(()
 => {\n const mergedTree =\n this.urlHandlingStrategy.merge(e.url,
 this.rawUrlTree);\n const extras = {\n skipLocationChange:
 t.extras.skipLocationChange,\n replaceUrl: this.urlUpdateStrategy === 'eager'\n
 });\n return this.scheduleNavigation(\n mergedTree, 'imperative', null,
 extras,\n { resolve: t.resolve, reject: t.reject, promise: t.promise });\n }, 0);\n
 }\n /* All other errors should reset to the router's internal URL reference to\n
 * the pre-error state. */ } else {\n this.resetStateAndUrl(t.currentRouterState,
 t.currentUrlTree, t.rawUrl);\n const navError =\n new NavigationError(t.id,
 this.serializeUrl(t.extractedUrl), e);\n eventsSubject.next(navError);\n try {\n
 t.resolve(this.errorHandler(e));\n } catch (ee) {\n t.reject(ee);\n
 }\n }\n return EMPTY;\n });\n // TODO(jasonaden): remove cast
 once g3 is on updated TypeScript\n))) as any as Observable<NavigationTransition>;\n }\n /**\n
 * @internal\n
 * TODO: this should be removed once the constructor of the router made internal\n
 */\n
 resetRootComponentType(rootComponentType: Type<any>): void {\n this.rootComponentType =
 rootComponentType;\n // TODO: vsavkin router 4.0 should make the root component set to null\n
 // this will
 simplify the lifecycle of the router.\n this.routerState.root.component = this.rootComponentType;\n
 }\n private
 getTransition(): NavigationTransition {\n const transition = this.transitions.value;\n // This value needs to be set.
 Other values such as extractedUrl are set on initial navigation\n // but the urlAfterRedirects may not get set if we
 aren't processing the new URL *and* not\n // processing the previous URL.\n transition.urlAfterRedirects =
 this.browserUrlTree;\n return transition;\n }\n private setTransition(t: Partial<NavigationTransition>): void {\n
 this.transitions.next({...this.getTransition(), ...t});\n }\n /**\n
 * Sets up the location change listener and
 performs the initial navigation.\n
 */\n initialNavigation(): void {\n this.setUpLocationChangeListener();\n if
 (this.navigationId === 0) {\n this.navigateByUrl(this.location.path(true), {replaceUrl: true});\n }\n }\n /**\n
 * Sets up the location change listener. This listener detects navigations triggered from outside\n
 * the Router (the
 browser back/forward buttons, for example) and schedules a corresponding Router\n
 * navigation so that the
 correct events, guards, etc. are triggered.\n
 */\n setUpLocationChangeListener(): void {\n // Don't need to use
 Zone.wrap any more, because zone.js\n // already patch onPopState, so location change callback will\n // run
 into ngZone\n if (!this.locationSubscription) {\n this.locationSubscription = this.location.subscribe(event =>
 {\n const currentChange = this.extractLocationChangeInfoFromEvent(event);\n if
 (this.shouldScheduleNavigation(this.lastLocationChangeInfo, currentChange)) {\n // The `setTimeout` was
 added in #12160 and is likely to support Angular/AngularJS\n // hybrid apps.\n setTimeout(() => {\n
 const { source, state, urlTree } = currentChange;\n const extras: NavigationExtras = {replaceUrl: true};\n

```

```

 if (state) {
 const stateCopy = {...state} as Partial<RestoredState>;
 delete stateCopy.navigationId;
 if (Object.keys(stateCopy).length !== 0) {
 extras.state = stateCopy;
 }
 this.scheduleNavigation(urlTree, source, state, extras, 0);
 }
 this.lastLocationChangeInfo = currentChange;
 });
}

/** Extracts router-related information from a `PopStateEvent`. */
private extractLocationChangeInfoFromEvent(change: PopStateEvent): LocationChangeInfo {
 return {
 source: change['type'] === 'popstate' ? 'popstate' : 'hashchange',
 urlTree: this.parseUrl(change['url']),
 // Navigations coming from Angular router have a navigationId state property.
 // When this exists, restore the state.
 state: change.state?.navigationId ? change.state : null,
 transitionId: this.getTransition().id
 } as const;
}

/** Determines whether two events triggered by the Location subscription are due to the same navigation.
 * The location subscription can fire two events (popstate and hashchange) for a single navigation.
 * The second one should be ignored, that is, we should not schedule another navigation in the Router. */
private shouldScheduleNavigation(previous: LocationChangeInfo | null, current: LocationChangeInfo): boolean {
 if (!previous) return true;
 const sameDestination = current.urlTree.toString() === previous.urlTree.toString();
 const eventsOccurredAtSameTime = current.transitionId === previous.transitionId;
 if (!eventsOccurredAtSameTime || !sameDestination) {
 return true;
 }
 if ((current.source === 'hashchange' && previous.source === 'popstate') ||
 (current.source === 'popstate' && previous.source === 'hashchange')) {
 return false;
 }
 return true;
}

/** The current URL. */
get url(): string {
 return this.serializeUrl(this.currentUrlTree);
}

/** The current Navigation object if one exists */
getCurrentNavigation(): Navigation | null {
 return this.currentNavigation;
}

/** @internal */
triggerEvent(event: Event): void {
 (this.events as Subject<Event>).next(event);
}

/** Resets the route configuration used for navigation and generating links. */
@param config The route array for the new configuration.
@usageNotes
```
router.resetConfig([
  { path: 'team/:id', component: TeamCmp, children: [
    { path: 'simple', component: SimpleCmp },
    { path: 'user/:name', component: UserCmp }
  ]
}]);
```
resetConfig(config: Routes): void {
 validateConfig(config);
 this.config = config.map(standardizeConfig);
 this.navigated = false;
 this.lastSuccessfulId = -1;
}

/** @nodoc */
ngOnDestroy(): void {
 this.dispose();
}

/** Disposes of the router. */
dispose(): void {
 if (this.locationSubscription) {
 this.locationSubscription.unsubscribe();
 this.locationSubscription = undefined;
 }
}

/** Appends URL segments to the current URL tree to create a new URL tree. */
@param commands An array of URL fragments with which to construct the new URL tree.
* If the path is static, can be the literal URL string. For a dynamic path, pass an array of path segments, followed by the parameters for each segment.
* The fragments are applied to the current URL tree or the one provided in the `relativeTo` property of the options object, if supplied.
* @param navigationExtras Options that control the navigation strategy.
* @returns The new URL tree.
@usageNotes
```
router.createUrlTree(['/team', 33, 'user', 11]);
router.createUrlTree(['/team', 33, {expand: true}, 'user', 11]);
// you can collapse static segments like this (this works only with the first passed-in value):
router.createUrlTree(['/team/33/user', userId]);
// If the first segment can contain slashes, and you do not want the router to split it, you can do the following:
router.createUrlTree([segmentPath: '/one/two']);
router.createUrlTree(['/team', 33, {outlets: {primary: 'user/11', right: 'chat'}}]);
// remove the right secondary node
router.createUrlTree(['/team', 33, {outlets: {primary: 'user/11', right: null}}]);
// assuming the current url is `/team/33/user/11` and the route points to `user/11`
router.createUrlTree(['details'], {relativeTo: route});
// navigate to /team/33/user/22
router.createUrlTree(['../22'], {relativeTo: route});
// navigate to /team/44/user/22
router.createUrlTree(['../team/44/user/22'], {relativeTo: route});
```
createUrlTree(commands: any[], navigationExtras: UrlCreationOptions = {}): UrlTree {
 const {relativeTo, queryParams, fragment, queryParamsHandling, preserveFragment} = navigationExtras;
 const a = relativeTo || this.routerState.root;
 const f = preserveFragment ? this.currentUrlTree.fragment : fragment;
 let

```

```

q: Params|null = null;\n switch (queryParamsHandling) {\n case 'merge':\n q =
{...this.currentUrlTree.queryParams, ...queryParams};\n break;\n case 'preserve':\n q =
this.currentUrlTree.queryParams;\n break;\n default:\n q = queryParams || null;\n }\n if (q !== null)
{\n q = this.removeEmptyProps(q);\n }\n return createUrlTree(a, this.currentUrlTree, commands, q!, f!);\n}
\n\n /**\n * Navigates to a view using an absolute route path.\n * @param url An absolute path for a
defined route. The function does not apply any delta to the\n * current URL.\n * @param extras An object
containing properties that modify the navigation strategy.\n * @returns A Promise that resolves to `true` when
navigation succeeds,\n * to `false` when navigation fails, or is rejected on error.\n * @usageNotes\n *
The following calls request navigation to an absolute path.\n *
router.navigateByUrl(`/team/33/user/11`);\n * // Navigate without updating the URL\n *
router.navigateByUrl(`/team/33/user/11`, { skipLocationChange: true });\n *
\n * @see [Routing and
Navigation guide](guide/router)\n *
\n * @param url: string|UrlTree, extras: NavigationBehaviorOptions
= {\n skipLocationChange: false\n }): Promise<boolean> {\n if (typeof ngDevMode === 'undefined' ||\n ngDevMode && this.isNgZoneEnabled && !NgZone.isInAngularZone()) {\n this.console.warn(\n
`Navigation triggered outside Angular zone, did you forget to call `ngZone.run()`?`);\n }\n const urlTree =
isUrlTree(url) ? url : this.parseUrl(url);\n const mergedTree = this.urlHandlingStrategy.merge(urlTree,
this.rawUrlTree);\n return this.scheduleNavigation(mergedTree, 'imperative', null, extras);\n}
\n\n /**\n *
Navigate based on the provided array of commands and a starting point.\n * If no starting route is provided, the
navigation is absolute.\n * @param commands An array of URL fragments with which to construct the target
URL.\n * If the path is static, can be the literal URL string. For a dynamic path, pass an array of path\n *
segments, followed by the parameters for each segment.\n * The fragments are applied to the current URL or the
one provided in the `relativeTo` property\n * of the options object, if supplied.\n * @param extras An options
object that determines how the URL should be constructed or\n * interpreted.\n * @returns A Promise that
resolves to `true` when navigation succeeds, to `false` when navigation\n * fails,\n * or is rejected on error.\n
*\n * @usageNotes\n *
The following calls request navigation to a dynamic route path relative to the current
URL.\n *
router.navigate(['team', 33, 'user', 11], {relativeTo: route});\n * // Navigate without
updating the URL, overriding the default behavior\n * router.navigate(['team', 33, 'user', 11], {relativeTo: route,
skipLocationChange: true});\n *
\n * @see [Routing and Navigation guide](guide/router)\n *
\n * @param commands: any[], extras: NavigationExtras = {skipLocationChange: false};\n Promise<boolean> {\n
validateCommands(commands);\n return this.navigateByUrl(this.createUrlTree(commands, extras), extras);\n}
\n\n /** Serializes a `UrlTree` into a string\n *
serializeUrl(url: UrlTree): string {\n return
this.urlSerializer.serialize(url);\n}\n\n /** Parses a string into a `UrlTree`\n *
parseUrl(url: string): UrlTree {\n
let urlTree: UrlTree;\n try {\n urlTree = this.urlSerializer.parse(url);\n } catch (e) {\n urlTree =
this.malformedUriErrorHandler(e, this.urlSerializer, url);\n }\n return urlTree;\n}\n\n /** Returns whether the
url is activated\n *
isActive(url: string|UrlTree, exact: boolean): boolean {\n if (isUrlTree(url)) {\n return
containsTree(this.currentUrlTree, url, exact);\n }\n\n const urlTree = this.parseUrl(url);\n return
containsTree(this.currentUrlTree, urlTree, exact);\n}\n\n private removeEmptyProps(params: Params): Params {\n
return Object.keys(params).reduce((result: Params, key: string) => {\n const value: any = params[key];\n if
(value !== null && value !== undefined) {\n result[key] = value;\n }\n return result;\n }, {});\n}\n\n private processNavigations(): void {\n this.navigations.subscribe(\n t => {\n this.navigated = true;\n
this.lastSuccessfulId = t.id;\n (this.events as Subject<Event>)\n .next(new NavigationEnd(\n
t.id, this.serializeUrl(t.extractedUrl), this.serializeUrl(this.currentUrlTree));\n this.lastSuccessfulNavigation =
this.currentNavigation;\n this.currentNavigation = null;\n t.resolve(true);\n },\n e => {\n
this.console.warn('Unhandled Navigation Error: `');\n });\n}\n\n private scheduleNavigation(\n rawUrl:
UrlTree, source: NavigationTrigger, restoredState: RestoredState|null,\n extras: NavigationExtras,\n
priorPromise?: {resolve: any, reject: any, promise: Promise<boolean>}): Promise<boolean> {\n // * Imperative
navigations (router.navigate) might trigger additional navigations to the same\n // URL via a popstate event and
the locationChangeListener. We should skip these duplicate\n // navs. Duplicates may also be triggered by

```

```

attempts to sync AngularJS and Angular router\n // states.\n // * Imperative navigations can be cancelled by
router guards, meaning the URL won't change. If\n // the user follows that with a navigation using the
back/forward button or manual URL change,\n // the destination may be the same as the previous imperative
attempt. We should not skip\n // these navigations because it's a separate case from the one above -- it's not a
duplicate\n // navigation.\n const lastNavigation = this.getTransition();\n // We don't want to skip duplicate
successful navs if they're imperative because\n // onSameUrlNavigation could be 'reload' (so the duplicate is
intended).\n const browserNavPrecededByRouterNav =\n source !== 'imperative' && lastNavigation?.source
=== 'imperative';\n const lastNavigationSucceeded = this.lastSuccessfulId === lastNavigation.id;\n // If the last
navigation succeeded or is in flight, we can use the rawUrl as the comparison.\n // However, if it failed, we should
compare to the final result (urlAfterRedirects).\n const lastNavigationUrl = (lastNavigationSucceeded ||
this.currentNavigation) ?\n lastNavigation.rawUrl :\n lastNavigation.urlAfterRedirects;\n const
duplicateNav = lastNavigationUrl.toString() === rawUrl.toString();\n if (browserNavPrecededByRouterNav &&
duplicateNav) {\n return Promise.resolve(true); // return value is not used\n }\n let resolve: any;\n let
reject: any;\n let promise: Promise<boolean>;\n if (priorPromise) {\n resolve = priorPromise.resolve;\n
reject = priorPromise.reject;\n promise = priorPromise.promise;\n } else {\n promise = new
Promise<boolean>((res, rej) => {\n resolve = res;\n reject = rej;\n });\n }\n const id =
++this.navigationId;\n this.setTransition({\n id,\n source,\n restoredState,\n currentUrlTree:
this.currentUrlTree,\n currentRawUrl: this.rawUrlTree,\n rawUrl,\n extras,\n resolve,\n reject,\n
promise,\n currentSnapshot: this.routerState.snapshot,\n currentRouterState: this.routerState\n });\n //
Make sure that the error is propagated even though `processNavigations` catch\n // handler does not rethrow\n
return promise.catch((e: any) => {\n return Promise.reject(e);\n });\n }\n private setBrowserUrl(\n url:
UrlTree, replaceUrl: boolean, id: number, state?: {[key: string]: any}) {\n const path =
this.urlSerializer.serialize(url);\n state = state || {};\n if (this.location.isCurrentPathEqualTo(path) || replaceUrl)
{\n // TODO(jasonaden): Remove first `navigationId` and rely on `ng` namespace.\n
this.location.replaceState(path, "", {...state, navigationId: id});\n } else {\n this.location.go(path, "", {...state,
navigationId: id});\n }\n }\n private resetStateAndUrl(storedState: RouterState, storedUrl: UrlTree, rawUrl:
UrlTree): void {\n (this as {routerState: RouterState}).routerState = storedState;\n this.currentUrlTree =
storedUrl;\n this.rawUrlTree = this.urlHandlingStrategy.merge(this.currentUrlTree, rawUrl);\n
this.resetUrlToCurrentUrlTree();\n }\n private resetUrlToCurrentUrlTree(): void {\n
this.location.replaceState(\n this.urlSerializer.serialize(this.rawUrlTree), "", {navigationId:
this.lastSuccessfulId});\n }\n\nfunction validateCommands(commands: string[]): void {\n for (let i = 0; i <
commands.length; i++) {\n const cmd = commands[i];\n if (cmd == null) {\n throw new Error(`The requested
path contains ${cmd} segment at index ${i}`);\n }\n }\n\n"/**\n * @license\n * Copyright Google LLC All
Rights Reserved.\n * Use of this source code is governed by an MIT-style license that can be\n * found in the
LICENSE file at https://angular.io/license\n */\n\nimport {LocationStrategy} from '@angular/common';\nimport
{Attribute, Directive, ElementRef, HostBinding, HostListener, Input, OnChanges, OnDestroy, Renderer2,
SimpleChanges} from '@angular/core';\nimport {Subject, Subscription} from 'rxjs';\nimport
{QueryParamsHandling} from './config';\nimport {Event, NavigationEnd} from './events';\nimport {Router} from
'./router';\nimport {ActivatedRoute} from './router_state';\nimport {Params} from './shared';\nimport {UrlTree}
from './url_tree';\n\n/**\n * @description\n * When applied to an element in a template, makes that element a
link\n * that initiates navigation to a route. Navigation opens one or more routed components\n * in one or more
`<router-outlet>` locations on the page.\n * Given a route configuration `{ path: 'user/:name', component:
UserCmp }`,\n * the following creates a static link to the route:\n * `link to user
component\n * You can use dynamic values to generate the link.\n * For a dynamic link, pass an array of
path segments,\n * followed by the params for each segment.\n * For example, `['/team', teamId, 'user', userName,
{details: true}]`\n * generates a link to `/team/11/user/bob;details=true`.\n * Multiple static segments can be
merged into one term and combined with dynamic segments.\n * For example, `['/team/11/user', userName,
{details: true}]`\n * The input that you provide to the link is treated as a delta to the current URL.\n * For

```

instance, suppose the current URL is `/user/(box//aux:team)`. The link `<a [routerLink]=["/user/jim"]>Jim</a>` creates the URL `/user/(jim//aux:team)`. See [{@link Router#createUrlTree createUrlTree}](#) for more information.

**@@@ usageNotes**

You can use absolute or relative paths in a link, set query parameters, control how parameters are handled, and keep a history of navigation states.

**@@@ Relative link paths**

The first segment name can be prepended with `^`, `./`, or `../`.

- If the first segment begins with `^`, the router looks up the route from the root of the `app`.
- If the first segment begins with `./`, or doesn't begin with a slash, the router looks in the children of the current activated route.
- If the first segment begins with `../`, the router goes up one level in the route tree.

**@@@ Setting and handling query params and fragments**

The following link adds a query parameter and a fragment to the generated URL:

```
<a [routerLink]=["/user/bob"] [queryParams]={"debug": true} fragment="education"> link to user component
```

By default, the directive constructs the new URL using the given query parameters. The example generates the link:

```
/user/bob?debug=true#education
```

You can instruct the directive to handle query parameters differently by specifying the `queryParamsHandling` option in the link. Allowed values are:

- `merge`: Merge the given `queryParams` into the current query params.
- `preserve`: Preserve the current query params.

For example:

```
<a [routerLink]=["/user/bob"] [queryParams]={"debug": true} queryParamsHandling="merge"> link to user component
```

See [{@link UrlCreationOptions.queryParamsHandling UrlCreationOptions#queryParamsHandling}](#).

**@@@ Preserving navigation history**

You can provide a `state` value to be persisted to the browser's `[History.state` property](https://developer.mozilla.org/en-US/docs/Web/API/History#Properties). For example:

```
<a [routerLink]=["/user/bob"] [state]={"tracingId": 123}> link to user component
```

Use [{@link Router.getCurrentNavigation\(\) Router#getCurrentNavigation}](#) to retrieve a saved navigation-state value. For example, to capture the `tracingId` during the `NavigationStart` event:

```
// Get NavigationStart events
router.events.pipe(filter(e => e instanceof NavigationStart)).subscribe(e => {
 const navigation = router.getCurrentNavigation();
 tracingService.trace({id: navigation.extras.state.tracingId});
});
```

`@NgModule RouterModule` `@publicApi` `@Directive` `{ selector: 'not(a):not(area)[routerLink]'` `export class RouterLink implements OnChanges` `{` `/**` `Passed to` `{ @link Router#createUrlTree Router#createUrlTree}` `as part of the` `UrlCreationOptions` `.` `@see` `{ @link UrlCreationOptions#queryParams UrlCreationOptions#queryParams}` `@see` `{ @link Router#createUrlTree Router#createUrlTree}` `@Input()` `queryParams?: Params|null;` `/**` `Passed to` `{ @link Router#createUrlTree Router#createUrlTree}` `as part of the` `UrlCreationOptions` `.` `@see` `{ @link UrlCreationOptions#fragment UrlCreationOptions#fragment}` `@see` `{ @link Router#createUrlTree Router#createUrlTree}` `@Input()` `fragment?: string;` `/**` `Passed to` `{ @link Router#createUrlTree Router#createUrlTree}` `as part of the` `UrlCreationOptions` `.` `@see` `{ @link UrlCreationOptions#queryParamsHandling UrlCreationOptions#queryParamsHandling}` `@see` `{ @link Router#createUrlTree Router#createUrlTree}` `@Input()` `queryParamsHandling?: QueryParamsHandling|null;` `/**` `Passed to` `{ @link Router#createUrlTree Router#createUrlTree}` `as part of the` `UrlCreationOptions` `.` `@see` `{ @link UrlCreationOptions#preserveFragment UrlCreationOptions#preserveFragment}` `@see` `{ @link Router#createUrlTree Router#createUrlTree}` `@Input()` `preserveFragment!: boolean;` `/**` `Passed to` `{ @link Router#navigateByUrl Router#navigateByUrl}` `as part of the` `NavigationBehaviorOptions` `.` `@see` `{ @link NavigationBehaviorOptions#skipLocationChange NavigationBehaviorOptions#skipLocationChange}` `@see` `{ @link Router#navigateByUrl Router#navigateByUrl}` `@Input()` `skipLocationChange!: boolean;` `/**` `Passed to` `{ @link Router#navigateByUrl Router#navigateByUrl}` `as part of the` `NavigationBehaviorOptions` `.` `@see` `{ @link NavigationBehaviorOptions#replaceUrl NavigationBehaviorOptions#replaceUrl}` `@see` `{ @link Router#navigateByUrl Router#navigateByUrl}` `@Input()` `replaceUrl!: boolean;` `/**` `Passed to` `{ @link Router#navigateByUrl Router#navigateByUrl}` `as part of the` `NavigationBehaviorOptions` `.` `@see` `{ @link`



```

@internal */\n onChanges = new Subject<RouterLinkWithHref>();\n\n constructor(\n private router: Router,\n private route: ActivatedRoute,\n private locationStrategy: LocationStrategy) {\n this.subscription =\n router.events.subscribe((s: Event) => {\n if (s instanceof NavigationEnd) {\n this.updateTargetUrlAndHref();\n }\n });\n\n /**\n * Commands to pass to { @link Router#createUrlTree\n Router#createUrlTree}.\n * - **array**: commands to pass to { @link Router#createUrlTree\n Router#createUrlTree}.\n * - **string**: shorthand for array of commands with just the string, i.e. `['/route']`\n * - **null|undefined**: shorthand for an empty array of commands, i.e. `[]`\n * @see { @link Router#createUrlTree\n Router#createUrlTree}\n */\n @Input()\n set routerLink(commands: any[]|string|null|undefined) {\n if\n (commands != null) {\n this.commands = Array.isArray(commands) ? commands : [commands];\n } else {\n this.commands = [];\n }\n }\n\n /** @nodoc */\n ngOnChanges(changes: SimpleChanges): any {\n this.updateTargetUrlAndHref();\n this.onChanges.next(this);\n }\n\n /** @nodoc */\n ngOnDestroy(): any {\n this.subscription.unsubscribe();\n }\n\n /** @nodoc */\n @HostListener(\n 'click',\n ['$event.button',\n '$event.ctrlKey', '$event.shiftKey', '$event.altKey', '$event.metaKey'])\n onClick(button: number, ctrlKey: boolean,\n shiftKey: boolean, altKey: boolean, metaKey: boolean):\n boolean {\n if (button !== 0 || ctrlKey || shiftKey ||\n altKey || metaKey) {\n return true;\n }\n\n if (typeof this.target === 'string' && this.target !== '_self') {\n return true;\n }\n\n const extras = {\n skipLocationChange: attrBoolValue(this.skipLocationChange),\n replaceUrl: attrBoolValue(this.replaceUrl),\n state: this.state\n };\n this.router.navigateByUrl(this.urlTree,\n extras);\n return false;\n }\n\n private updateTargetUrlAndHref(): void {\n this.href =\n this.locationStrategy.prepareExternalUrl(this.router.serializeUrl(this.urlTree));\n }\n\n get urlTree(): UrlTree {\n return this.router.createUrlTree(this.commands, {\n relativeTo: this.route,\n queryParams: this.queryParams,\n fragment: this.fragment,\n queryParamsHandling: this.queryParamsHandling,\n preserveFragment:\n attrBoolValue(this.preserveFragment),\n });\n }\n\n attrBoolValue(s: any): boolean {\n return s === "\n || !s;\n }\n\n /**\n * @license\n * Copyright Google LLC All Rights Reserved.\n * Use of this source code is\n * governed by an MIT-style license that can be\n * found in the LICENSE file at https://angular.io/license\n */\n\n import { AfterContentInit, ChangeDetectorRef, ContentChildren, Directive, ElementRef, Input, OnChanges,\n OnDestroy, Optional, QueryList, Renderer2, SimpleChanges } from '@angular/core';\n import { from, of,\n Subscription } from 'rxjs';\n import { mergeAll } from 'rxjs/operators';\n import { Event, NavigationEnd } from\n './events';\n import { Router } from './router';\n import { RouterLink, RouterLinkWithHref } from\n './router_link';\n\n /**\n * @description\n * Tracks whether the linked route of an element is currently\n * active, and allows you\n * to specify one or more CSS classes to add to the element when the linked route\n * is active.\n * Use this directive to create a visual distinction for elements associated with an active route.\n * For\n * example, the following code highlights the word "Bob" when the the router\n * activates the associated route:\n\n * ```\n * Bob\n * ```\n * Whenever the URL\n * is either '/user' or '/user/bob', the "active-link" class is\n * added to the anchor tag. If the URL changes, the class is\n * removed.\n * You can set more than one class using a space-separated string or an array.\n * For example:\n\n * ```\n * Bob\n * Bob\n * ```\n * To add the classes only when the URL matches\n * the link exactly, add the option `exact: true`:\n\n * ```\n * Bob\n * ```\n * To directly check the `isActive`\n status of the link, assign the `RouterLinkActive`\n instance to a template variable.\n For example, the following\n checks the status without assigning any CSS classes:\n\n * ```\n * \n * Bob {{ rla.isActive ? '(already open)' : '' }}\n * \n * ```\n * You can apply\n the `RouterLinkActive` directive to an ancestor of linked elements.\n For example, the following sets the active-\n link class on the `<div>` parent tag\n when the URL is either '/user/jim' or '/user/bob'.\n\n * ```\n * <div\n routerLinkActive="active-link" [routerLinkActiveOptions]="{exact: true}">\n * <a\n routerLink="/user/jim">Jim\n * Bob\n * </div>\n * ```\n\n * @ngModule\n RouterModule\n */\n @publicApi\n @Directive({\n selector: '[routerLinkActive]',\n exportAs:\n 'routerLinkActive',\n })\n export class RouterLinkActive implements OnChanges, OnDestroy, AfterContentInit {\n

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@ComponentChildren(RouterLink, {descendants: true}) links!: QueryList<RouterLink>;\n
@ComponentChildren(RouterLinkWithHref, {descendants: true})\n linksWithHrefs!:
QueryList<RouterLinkWithHref>;\n\n private classes: string[] = [];\n private routerEventsSubscription:
Subscription;\n private linkInputChangesSubscription?: Subscription;\n public readonly isActive: boolean =
false;\n\n @Input() routerLinkActiveOptions: {exact: boolean} = {exact: false};\n\n constructor(\n private
router: Router, private element: ElementRef, private renderer: Renderer2,\n private readonly cdr:
ChangeDetectorRef, @Optional() private link?: RouterLink,\n @Optional() private linkWithHref?:
RouterLinkWithHref) {\n this.routerEventsSubscription = router.events.subscribe((s: Event) => {\n if (s
instanceof NavigationEnd) {\n this.update();\n }\n });\n }\n\n /** @nodoc *\n ngAfterContentInit():
void {\n // `of(null)` is used to force subscribe body to execute once immediately (like `startWith`).\n
from([this.links.changes, this.linksWithHrefs.changes, of(null)])\n .pipe(mergeAll())\n .subscribe(_ => {\n
this.update();\n this.subscribeToEachLinkOnChanges();\n });\n }\n\n private
subscribeToEachLinkOnChanges() {\n this.linkInputChangesSubscription?.unsubscribe();\n const
allLinkChanges =\n [...this.links.toArray(), ...this.linksWithHrefs.toArray(), this.link, this.linkWithHref]\n
.filter((link): link is RouterLink|RouterLinkWithHref => !!link)\n .map(link => link.onChanges);\n
this.linkInputChangesSubscription = from(allLinkChanges).pipe(mergeAll()).subscribe(link => {\n if
(this.isActive !== this.isLinkActive(this.router)(link)) {\n this.update();\n }\n });\n }\n\n @Input()\n set
routerLinkActive(data: string[]|string) {\n const classes = Array.isArray(data) ? data : data.split('');\n this.classes
= classes.filter(c => !!c);\n }\n\n /** @nodoc *\n ngOnChanges(changes: SimpleChanges): void {\n
this.update();\n }\n\n /** @nodoc *\n ngOnDestroy(): void {\n this.routerEventsSubscription.unsubscribe();\n
this.linkInputChangesSubscription?.unsubscribe();\n }\n\n private update(): void {\n if (!this.links ||
!this.linksWithHrefs || !this.router.navigated) return;\n Promise.resolve().then(() => {\n const hasActiveLinks =
this.hasActiveLinks();\n if (this.isActive !== hasActiveLinks) {\n (this as any).isActive = hasActiveLinks;\n
this.cdr.markForCheck();\n this.classes.forEach((c) => {\n if (hasActiveLinks) {\n
this.renderer.addClass(this.element.nativeElement, c);\n } else {\n
this.renderer.removeClass(this.element.nativeElement, c);\n }\n });\n }\n });\n }\n\n private
isLinkActive(router: Router): (link: (RouterLink|RouterLinkWithHref)) => boolean {\n return (link:
RouterLink|RouterLinkWithHref) =>\n router.isActive(link.urlTree, this.routerLinkActiveOptions.exact);\n
}\n\n private hasActiveLinks(): boolean {\n const isActiveCheckFn = this.isLinkActive(this.router);\n return
this.link && isActiveCheckFn(this.link) ||\n this.linkWithHref && isActiveCheckFn(this.linkWithHref) ||\n
this.links.some(isActiveCheckFn) || this.linksWithHrefs.some(isActiveCheckFn);\n }\n}\n\n", /**\n * @license\n *
Copyright Google LLC All Rights Reserved.\n * Use of this source code is governed by an MIT-style license
that can be\n * found in the LICENSE file at https://angular.io/license\n */\n\nimport { Attribute,
ChangeDetectorRef, ComponentFactoryResolver, ComponentRef, Directive, EventEmitter, Injector, OnDestroy,
OnInit, Output, ViewContainerRef} from '@angular/core';\n\nimport {Data} from './config';\n\nimport
{ChildrenOutletContexts} from './router_outlet_context';\n\nimport {ActivatedRoute} from './router_state';\n\nimport
{PRIMARY_OUTLET} from './shared';\n\n/**\n * @description\n * Acts as a placeholder that Angular
dynamically fills based on the current router state.\n *\n * Each outlet can have a unique name, determined by the
optional `name` attribute.\n *\n * The name cannot be set or changed dynamically. If not set, default value is
`primary`.\n *\n * <router-outlet></router-outlet>\n *\n * <router-outlet name='left'></router-outlet>\n *\n *
<router-outlet name='right'></router-outlet>\n *\n * Named outlets can be the targets of secondary routes.\n *\n *
The `Route` object for a secondary route has an `outlet` property to identify the target outlet:\n *\n * `{path: <base-
path>, component: <component>, outlet: <target_outlet_name>}`\n *\n * Using named outlets and secondary routes,
you can target multiple outlets in\n * the same `RouterLink` directive.\n *\n * The router keeps track of separate
branches in a navigation tree for each named outlet and\n * generates a representation of that tree in the URL.\n *\n *
The URL for a secondary route uses the following syntax to specify both the primary and secondary\n * routes at the
same time:\n *\n * `http://base-path/primary-route-path(outlet-name:route-path)`\n *\n * A router outlet emits an
activate event when a new component is instantiated,\n * and a deactivate event when a component is destroyed.\n

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*\n * ``*\n * <router-outlet\n * (activate)='onActivate($event)'\n * (deactivate)='onDeactivate($event)'></router-
outlet>\n * ``*\n *\n * @see [Routing tutorial](guide/router-tutorial-toh#named-outlets "Example of a named\n *
outlet and secondary route configuration").\n * @see `RouterLink`\n * @see `Route`\n * @ngModule
RouterModule\n *\n * @publicApi\n */\n @Directive({selector: 'router-outlet', exportAs: 'outlet'})\n export class
RouterOutlet implements OnDestroy, OnInit {\n private activated: ComponentRef<any>|null = null;\n private
_activatedRoute: ActivatedRoute|null = null;\n private name: string;\n @Output('activate') activateEvents = new
EventEmitter<any>();\n @Output('deactivate') deactivateEvents = new EventEmitter<any>();\n\n constructor(\n
private parentContexts: ChildrenOutletContexts, private location: ViewContainerRef,\n private resolver:
ComponentFactoryResolver, @Attribute('name') name: string,\n private changeDetector: ChangeDetectorRef)
{\n this.name = name || PRIMARY_OUTLET;\n parentContexts.onChildOutletCreated(this.name, this);\n }\n\n /**
@nodoc */\n ngOnDestroy(): void {\n this.parentContexts.onChildOutletDestroyed(this.name);\n }\n\n /**
@nodoc */\n ngOnInit(): void {\n if (!this.activated) {\n // If the outlet was not instantiated at the time the
route got activated we need to populate\n // the outlet when it is initialized (ie inside a NgIf)\n const context =
this.parentContexts.getContext(this.name);\n if (context && context.route) {\n if (context.attachRef) {\n
// `attachRef` is populated when there is an existing component to mount\n this.attach(context.attachRef,
context.route);\n } else {\n // otherwise the component defined in the configuration is created\n
this.activateWith(context.route, context.resolver || null);\n }\n }\n }\n\n get isActive(): boolean {\n
return !!this.activated;\n }\n\n get component(): Object {\n if (!this.activated) throw new Error('Outlet is not
activated');\n return this.activated.instance;\n }\n\n get activatedRoute(): ActivatedRoute {\n if (!this.activated)
throw new Error('Outlet is not activated');\n return this._activatedRoute as ActivatedRoute;\n }\n\n get
activatedRouteData(): Data {\n if (this._activatedRoute) {\n return this._activatedRoute.snapshot.data;\n }\n
return {};\n }\n\n /**\n * Called when the `RouteReuseStrategy` instructs to detach the subtree\n */\n detach():
ComponentRef<any> {\n if (!this.activated) throw new Error('Outlet is not activated');\n this.location.detach();\n
const cmp = this.activated;\n this.activated = null;\n this._activatedRoute = null;\n return cmp;\n }\n\n /**\n
* Called when the `RouteReuseStrategy` instructs to re-attach a previously detached subtree\n */\n attach(ref:
ComponentRef<any>, activatedRoute: ActivatedRoute) {\n this.activated = ref;\n this._activatedRoute =
activatedRoute;\n this.location.insert(ref.hostView);\n }\n\n deactivate(): void {\n if (this.activated) {\n
const c = this.component;\n this.activated.destroy();\n this.activated = null;\n this._activatedRoute = null;\n
this.deactivateEvents.emit(c);\n }\n }\n\n activateWith(activatedRoute: ActivatedRoute, resolver:
ComponentFactoryResolver|null) {\n if (this.isActive) {\n throw new Error('Cannot activate an already
activated outlet');\n }\n this._activatedRoute = activatedRoute;\n const snapshot =
activatedRoute._futureSnapshot;\n const component = <any>snapshot.routeConfig!.component;\n resolver =
resolver || this.resolver;\n const factory = resolver.resolveComponentFactory(component);\n const childContexts
= this.parentContexts.getOrCreateContext(this.name).children;\n const injector = new
OutletInjector(activatedRoute, childContexts, this.location.injector);\n this.activated =
this.location.createComponent(factory, this.location.length, injector);\n // Calling `markForCheck` to make sure
we will run the change detection when the\n // `RouterOutlet` is inside a `ChangeDetectionStrategy.OnPush`
component.\n this.changeDetector.markForCheck();\n this.activateEvents.emit(this.activated.instance);\n
}\n\n\n class OutletInjector implements Injector {\n constructor(\n private route: ActivatedRoute, private
childContexts: ChildrenOutletContexts,\n private parent: Injector) {\n }\n\n get(token: any, notFoundValue?: any):
any {\n if (token === ActivatedRoute) {\n return this.route;\n }\n\n if (token === ChildrenOutletContexts)
{\n return this.childContexts;\n }\n\n return this.parent.get(token, notFoundValue);\n }\n\n\n "/*\n
*\n * Copyright Google LLC All Rights Reserved.\n *\n * Use of this source code is governed by an MIT-
style license that can be\n * found in the LICENSE file at https://angular.io/license\n */\n\n import {Compiler,
Injectable, Injector, NgModuleFactoryLoader, NgModuleRef, OnDestroy} from '@angular/core';\n import {from,
Observable, of, Subscription} from 'rxjs';\n import {catchError, concatMap, filter, map, mergeAll, mergeMap} from
'rxjs/operators';\n import {LoadedRouterConfig, Route, Routes} from './config';\n import {Event, NavigationEnd,
RouteConfigLoadEnd, RouteConfigLoadStart} from './events';\n import {Router} from './router';\n import

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{RouterConfigLoader} from './router_config_loader';\n\n/**\n * @description\n *\n * Provides a preloading
strategy.\n *\n * @publicApi\n */\nexport abstract class PreloadingStrategy {\n abstract preload(route: Route, fn: ()
=> Observable<any>): Observable<any>;\n}\n\n/**\n * @description\n *\n * Provides a preloading strategy that
preloads all modules as quickly as possible.\n *\n * RouterModule.forRoot(ROUTES, {preloadingStrategy:
PreloadAllModules})\n *\n * @publicApi\n */\nexport class PreloadAllModules implements
PreloadingStrategy {\n preload(route: Route, fn: () => Observable<any>): Observable<any> {\n return
fn().pipe(catchError(() => of(null)));\n }\n}\n\n/**\n * @description\n *\n * Provides a preloading strategy that
does not preload any modules.\n *\n * This strategy is enabled by default.\n *\n * @publicApi\n */\nexport class
NoPreloading implements PreloadingStrategy {\n preload(route: Route, fn: () => Observable<any>):
Observable<any> {\n return of(null);\n }\n}\n\n/**\n * The preloader optimistically loads all router
configurations to\n * make navigations into lazily-loaded sections of the application faster.\n *\n * The preloader
runs in the background. When the router bootstraps, the preloader\n * starts listening to all navigation events. After
every such event, the preloader\n * will check if any configurations can be loaded lazily.\n *\n * If a route is
protected by `canLoad` guards, the preloaded will not load it.\n *\n * @publicApi\n */\nexport class
RouterPreloader implements OnDestroy {\n private loader: RouterConfigLoader;\n private subscription?:
Subscription;\n\n constructor(\n private router: Router, moduleLoader: NgModuleFactoryLoader, compiler:
Compiler,\n private injector: Injector, private preloadingStrategy: PreloadingStrategy) {\n const onStartLoad =
(r: Route) => router.triggerEvent(new RouteConfigLoadStart(r));\n const onEndLoad = (r: Route) =>
router.triggerEvent(new RouteConfigLoadEnd(r));\n this.loader = new RouterConfigLoader(moduleLoader,
compiler, onStartLoad, onEndLoad);\n }\n\n setUpPreloading(): void {\n this.subscription =\nthis.router.events\n .pipe(filter((e: Event) => e instanceof NavigationEnd), concatMap(() => this.preload()))\n
 .subscribe(() => {});\n }\n\n preload(): Observable<any> {\n const ngModule =
this.injector.get(NgModuleRef);\n return this.processRoutes(ngModule, this.router.config);\n }\n\n /** @nodoc
*/\n ngOnDestroy(): void {\n if (this.subscription) {\n this.subscription.unsubscribe();\n }\n }\n\n private
processRoutes(ngModule: NgModuleRef<any>, routes: Routes): Observable<void> {\n const res:
Observable<any>[] = [];\n for (const route of routes) {\n // we already have the config loaded, just recurse\n
if (route.loadChildren && !route.canLoad && route._loadedConfig) {\n const childConfig =
route._loadedConfig;\n res.push(this.processRoutes(childConfig.module, childConfig.routes));\n } // no
config loaded, fetch the config\n } else if (route.loadChildren && !route.canLoad) {\n res.push(this.preloadConfig(ngModule, route));\n } // recurse into children\n } else if (route.children) {\n res.push(this.processRoutes(ngModule, route.children));\n }\n }\n\n return from(res).pipe(mergeAll(), map((_)
=> void 0));\n}\n\n private preloadConfig(ngModule: NgModuleRef<any>, route: Route): Observable<void> {\n
return this.preloadingStrategy.preload(route, () => {\n const loaded$ = this.loader.load(ngModule.injector,
route);\n return loaded$.pipe(mergeMap((config: LoadedRouterConfig) => {\n route._loadedConfig =
config;\n return this.processRoutes(config.module, config.routes);\n }));\n });\n}\n\n"/**\n *
@license\n * Copyright Google LLC All Rights Reserved.\n *\n * Use of this source code is governed by an MIT-
style license that can be\n * found in the LICENSE file at https://angular.io/license\n */\nimport
{ViewportScroller} from '@angular/common';\nimport {Injectable, OnDestroy} from '@angular/core';\nimport
{Unsubscribable} from 'rxjs';\nimport {NavigationEnd, NavigationStart, Scroll} from './events';\nimport {Router}
from './router';\n\n@Injectable()\nexport class RouterScroller implements OnDestroy {\n // TODO(issue/24571):
remove '!\n private routerEventsSubscription!: Unsubscribable;\n // TODO(issue/24571): remove '!\n private
scrollEventsSubscription!: Unsubscribable;\n\n private lastId = 0;\n private lastSource:
'imperative'|'popstate'|'hashchange'|undefined = 'imperative';\n private restoredId = 0;\n private store: {[key: string]:
[number, number]} = {};\n\n constructor(\n private router: Router,\n /** @docsNotRequired */ public
readonly viewportScroller: ViewportScroller, private options: {\n scrollPositionRestoration?:
'disabled'|'enabled'|'top',\n anchorScrolling?: 'disabled'|'enabled'\n }) = {} {\n // Default both options to
'disabled'\n options.scrollPositionRestoration = options.scrollPositionRestoration || 'disabled';\n options.anchorScrolling = options.anchorScrolling || 'disabled';\n }\n\n init(): void {\n // we want to disable the

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automatic scrolling because having two places\n // responsible for scrolling results race conditions, especially
given\n // that browser don't implement this behavior consistently\n if (this.options.scrollPositionRestoration !==
'disabled') {\n this.viewportScroller.setHistoryScrollRestoration('manual');\n }\n
this.routerEventsSubscription = this.createScrollEvents();\n this.scrollEventsSubscription =
this.consumeScrollEvents();\n }\n\n private createScrollEvents() {\n return this.router.events.subscribe(e => {\n
if (e instanceof NavigationStart) {\n // store the scroll position of the current stable navigations.\n
this.store[this.lastId] = this.viewportScroller.getScrollPosition();\n this.lastSource = e.navigationTrigger;\n
this.restoredId = e.restoredState ? e.restoredState.navigationId : 0;\n } else if (e instanceof NavigationEnd) {\n
this.lastId = e.id;\n this.scheduleScrollEvent(e, this.router.parseUrl(e.urlAfterRedirects).fragment);\n }\n
});\n }\n\n private consumeScrollEvents() {\n return this.router.events.subscribe(e => {\n if (!(e instanceof
Scroll)) return;\n // a popstate event. The pop state event will always ignore anchor scrolling.\n if (e.position)
{\n if (this.options.scrollPositionRestoration === 'top') {\n this.viewportScroller.scrollToPosition([0, 0]);\n
} else if (this.options.scrollPositionRestoration === 'enabled') {\n
this.viewportScroller.scrollToPosition(e.position);\n }\n // imperative navigation \"forward\"\n } else {\n
if (e.anchor && this.options.anchorScrolling === 'enabled') {\n
this.viewportScroller.scrollToAnchor(e.anchor);\n } else if (this.options.scrollPositionRestoration !==
'disabled') {\n this.viewportScroller.scrollToPosition([0, 0]);\n }\n }\n });\n }\n\n private
scheduleScrollEvent(routerEvent: NavigationEnd, anchor: string|null): void {\n this.router.triggerEvent(new
Scroll(\n routerEvent, this.lastSource === 'popstate' ? this.store[this.restoredId] : null, anchor));\n }\n\n /**
@nodoc *\n ngOnDestroy() {\n if (this.routerEventsSubscription) {\n
this.routerEventsSubscription.unsubscribe();\n }\n if (this.scrollEventsSubscription) {\n
this.scrollEventsSubscription.unsubscribe();\n }\n }\n }\n\n\"/>\n * @license\n * Copyright Google LLC All
Rights Reserved.\n * Use of this source code is governed by an MIT-style license that can be\n * found in the
LICENSE file at https://angular.io/license\n *\n\nimport {APP_BASE_HREF, HashLocationStrategy, Location,
LOCATION_INITIALIZED, LocationStrategy, PathLocationStrategy, PlatformLocation, ViewportScroller,
getDOM as getDOM} from '@angular/common';\nimport {ANALYZE_FOR_ENTRY_COMPONENTS,
APP_BOOTSTRAP_LISTENER, APP_INITIALIZER, ApplicationRef, Compiler, ComponentRef, Inject,
Injectable, InjectionToken, Injector, ModuleWithProviders, NgModule, NgModuleFactoryLoader, NgProbeToken,
Optional, Provider, SkipSelf, SystemJsNgModuleLoader} from '@angular/core';\nimport {of, Subject} from
'rxjs';\n\nimport {EmptyOutletComponent} from './components/empty_outlet';\nimport {Route, Routes} from
'./config';\nimport {RouterLink, RouterLinkWithHref} from './directives/router_link';\nimport {RouterLinkActive}
from './directives/router_link_active';\nimport {RouterOutlet} from './directives/router_outlet';\nimport {Event}
from './events';\nimport {RouteReuseStrategy} from './route_reuse_strategy';\nimport {ErrorHandler, Router} from
'./router';\nimport {ROUTES} from './router_config_loader';\nimport {ChildrenOutletContexts} from
'./router_outlet_context';\nimport {NoPreloading, PreloadAllModules, PreloadingStrategy, RouterPreloader} from
'./router_preloader';\nimport {RouterScroller} from './router_scroller';\nimport {ActivatedRoute} from
'./router_state';\nimport {UrlHandlingStrategy} from './url_handling_strategy';\nimport {DefaultUrlSerializer,
UrlSerializer, UrlTree} from './url_tree';\nimport {flatten} from './utils/collection';\n\n/**\n * The directives defined
in the `RouterModule`.\n *\nconst ROUTER_DIRECTIVES = [\n RouterOutlet, RouterLink,
RouterLinkWithHref, RouterLinkActive, EmptyOutletComponent];\n\n/**\n * A [DI token](guide/glossary/#di-
token) for the router service.\n *\n * @publicApi\n *\nexport const ROUTER_CONFIGURATION = new
InjectionToken<ExtraOptions>('ROUTER_CONFIGURATION');\n\n/**\n * @docsNotRequired\n *\nexport const
ROUTER_FORROOT_GUARD = new InjectionToken<void>('ROUTER_FORROOT_GUARD');\n\nexport const
ROUTER_PROVIDERS: Provider[] = [\n Location,\n {provide: UrlSerializer, useClass: DefaultUrlSerializer},\n
{\n provide: Router,\n useFactory: setupRouter,\n deps: [\n UrlSerializer, ChildrenOutletContexts,
Location, Injector, NgModuleFactoryLoader, Compiler,\n ROUTES, ROUTER_CONFIGURATION,
[UrlHandlingStrategy, new Optional()],\n [RouteReuseStrategy, new Optional()] \n]\n },\n
ChildrenOutletContexts,\n {provide: ActivatedRoute, useFactory: rootRoute, deps: [Router]},\n {provide:

```

```

NgModuleFactoryLoader, useClass: SystemJsNgModuleLoader},\n RouterPreloader,\n NoPreloading,\n
PreloadAllModules,\n {provide: ROUTER_CONFIGURATION, useValue: {enableTracing: false}},\n];\n\nexport
function routerNgProbeToken() {\n return new NgProbeToken('Router', Router);\n}\n\n/**\n * @description\n *\n * Adds directives and providers for in-app navigation among views defined in an application.\n * Use the Angular
`Router` service to declaratively specify application states and manage state\n * transitions.\n *\n * You can import
this NgModule multiple times, once for each lazy-loaded bundle.\n * However, only one `Router` service can be
active.\n * To ensure this, there are two ways to register routes when importing this module:\n *\n * The
`forRoot()` method creates an `NgModule` that contains all the directives, the given\n * routes, and the `Router`
service itself.\n *\n * The `forChild()` method creates an `NgModule` that contains all the directives and the given\n *
routes, but does not include the `Router` service.\n *\n * @see [Routing and Navigation guide](guide/router) for
an\n * overview of how the `Router` service should be used.\n *\n * @publicApi\n */\n\n@NgModule({\n
declarations: ROUTER_DIRECTIVES,\n exports: ROUTER_DIRECTIVES,\n entryComponents:
[EmptyOutletComponent]\n})\n\nexport class RouterModule {\n // Note: We are injecting the Router so it gets
created eagerly...\n constructor(@Optional() @Inject(ROUTER_FORROOT_GUARD) guard: any, @Optional()
router: Router) {\n\n /**\n * Creates and configures a module with all the router providers and directives.\n *
Optionally sets up an application listener to perform an initial navigation.\n *\n * When registering the NgModule
at the root, import as follows:\n *\n * ```\n * @NgModule({\n * imports:
[RouterModule.forRoot(ROUTES)]\n * })\n * class MyNgModule {\n * ```\n *\n * @param routes An array
of `Route` objects that define the navigation paths for the application.\n * @param config An `ExtraOptions`
configuration object that controls how navigation is performed.\n * @return The new `NgModule`.\n *\n */\n
static forRoot(routes: Routes, config?: ExtraOptions): ModuleWithProviders<RouterModule> {\n return {\n
ngModule: RouterModule,\n providers: [\n ROUTER_PROVIDERS,\n provideRoutes(routes),\n {\n
provide: ROUTER_FORROOT_GUARD,\n useFactory: provideForRootGuard,\n deps: [[Router,
new Optional(), new SkipSelf()]]\n },\n {provide: ROUTER_CONFIGURATION, useValue: config ?
config : {},\n {\n provide: LocationStrategy,\n useFactory: provideLocationStrategy,\n
deps:\n [PlatformLocation, [new Inject(APP_BASE_HREF), new Optional()],
ROUTER_CONFIGURATION]\n },\n {\n provide: RouterScroller,\n useFactory:
createRouterScroller,\n deps: [Router, ViewportScroller, ROUTER_CONFIGURATION]\n },\n {\n
provide: PreloadingStrategy,\n useExisting: config && config.preloadingStrategy ?
config.preloadingStrategy :\n\n NoPreloading\n },\n {provide:
NgProbeToken, multi: true, useFactory: routerNgProbeToken},\n provideRouterInitializer(),\n],\n };
}\n\n /**\n * Creates a module with all the router directives and a provider registering routes,\n * without
creating a new Router service.\n * When registering for submodules and lazy-loaded submodules, create the
NgModule as follows:\n *\n * ```\n * @NgModule({\n * imports: [RouterModule.forChild(ROUTES)]\n *
})\n * class MyNgModule {\n * ```\n *\n * @param routes An array of `Route` objects that define the
navigation paths for the submodule.\n * @return The new NgModule.\n *\n */\n static forChild(routes: Routes):
ModuleWithProviders<RouterModule> {\n return {ngModule: RouterModule, providers:
[provideRoutes(routes)]};\n }\n}\n\nexport function createRouterScroller(\n router: Router, viewportScroller:
ViewportScroller, config: ExtraOptions): RouterScroller {\n if (config.scrollOffset) {\n
viewportScroller.setOffset(config.scrollOffset);\n }\n return new RouterScroller(router, viewportScroller,
config);\n}\n\nexport function provideLocationStrategy(\n platformLocationStrategy: PlatformLocation, baseHref:
string, options: ExtraOptions = {}) {\n return options.useHash ? new
HashLocationStrategy(platformLocationStrategy, baseHref) :\n\n new
PathLocationStrategy(platformLocationStrategy, baseHref);\n}\n\nexport function provideForRootGuard(router:
Router): any {\n if ((typeof ngDevMode === 'undefined' || ngDevMode) && router) {\n throw new Error(\n
`RouterModule.forRoot() called twice. Lazy loaded modules should use RouterModule.forChild() instead.`);\n }\n
return 'guarded';\n}\n\n/**\n * Registers a [DI provider](guide/glossary#provider) for a set of routes.\n * @param
routes The route configuration to provide.\n *\n * @usageNotes\n *\n * ```\n * @NgModule({\n * imports:

```

[RouterModule.forChild(ROUTES)],\n \* providers: [provideRoutes(EXTRA\_ROUTES)]\n \* })\n \* class MyNgModule {\n \* @publicApi\n \* @next export function provideRoutes(routes: Routes): any {\n \* return {\n \* provide: ANALYZE\_FOR\_ENTRY\_COMPONENTS, multi: true, useValue: routes},\n \* provide: ROUTES, multi: true, useValue: routes},\n \* ];\n \* }\n \* }\n \* Allowed values in an `ExtraOptions` object that configure\n \* when the router performs the initial navigation operation.\n \* \* `enabledNonBlocking` - (default) The initial navigation starts after the\n \* root component has been created. The bootstrap is not blocked on the completion of the initial\n \* navigation.\n \* \* `enabledBlocking` - The initial navigation starts before the root component is created.\n \* The bootstrap is blocked until the initial navigation is complete. This value is required\n \* for [server-side rendering](guide/universal) to work.\n \* \* `disabled` - The initial navigation is not performed. The location listener is set up before\n \* the root component gets created. Use if there is a reason to have\n \* more control over when the router starts its initial navigation due to some complex\n \* initialization logic.\n \* \* The following values have been [deprecated](guide/releases#deprecation-practices) since v11,\n \* and should not be used for new applications.\n \* \* `enabled` - This option is 1:1 replaceable with `enabledNonBlocking`.\n \* \* @see `forRoot()`\n \* \* @publicApi\n \* @next export type InitialNavigation =\n \* 'disabled'|'enabled'|'enabledBlocking'|'enabledNonBlocking';\n \* \* A set of configuration options for a router module, provided in the\n \* `forRoot()` method.\n \* \* @see `forRoot()`\n \* \* @publicApi\n \* @next export interface ExtraOptions {\n \* \* When true, log all internal navigation events to the console.\n \* \* Use for debugging.\n \* \* enableTracing?: boolean;\n \* \* When true, enable the location strategy that uses the URL fragment\n \* instead of the history API.\n \* \* useHash?: boolean;\n \* \* One of `enabled`, `enabledBlocking`, `enabledNonBlocking` or `disabled`.\n \* \* When set to `enabled` or `enabledBlocking`, the initial navigation starts before the root\n \* component is created. The bootstrap is blocked until the initial navigation is complete. This\n \* value is required for [server-side rendering](guide/universal) to work. When set to\n \* `enabledNonBlocking`, the initial navigation starts after the root component has been created.\n \* The bootstrap is not blocked on the completion of the initial navigation. When set to\n \* `disabled`, the initial navigation is not performed. The location listener is set up before the\n \* root component gets created. Use if there is a reason to have more control over when the router\n \* starts its initial navigation due to some complex initialization logic.\n \* \* initialNavigation?: InitialNavigation;\n \* \* A custom error handler for failed navigations.\n \* \* If the handler returns a value, the navigation Promise is resolved with this value.\n \* \* If the handler throws an exception, the navigation Promise is rejected with the exception.\n \* \* errorHandler?: ErrorHandler;\n \* \* Configures a preloading strategy.\n \* \* One of `PreloadAllModules` or `NoPreloading` (the default).\n \* \* preloadingStrategy?: any;\n \* \* Define what the router should do if it receives a navigation request to the current URL.\n \* \* Default is `ignore`, which causes the router ignores the navigation.\n \* \* This can disable features such as a `refresh` button.\n \* \* Use this option to configure the behavior when navigating to the\n \* current URL. Default is `ignore`.\n \* \* onSameUrlNavigation?: 'reload'|'ignore';\n \* \* Configures if the scroll position needs to be restored when navigating back.\n \* \* \* `disabled` - (Default) Does nothing. Scroll position is maintained on navigation.\n \* \* \* `top` - Sets the scroll position to x = 0, y = 0 on all navigation.\n \* \* \* `enabled` - Restores the previous scroll position on backward navigation, else sets the\n \* position to the anchor if one is provided, or sets the scroll position to [0, 0] (forward\n \* navigation). This option will be the default in the future.\n \* \* \* You can implement custom scroll restoration behavior by adapting the enabled behavior as\n \* in the following example.\n \* \* \* typescript\n \* class AppModule {\n \* constructor(router: Router, viewportScroller: ViewportScroller) {\n \* router.events.pipe(\n \* filter((e: Event): e is Scroll => e instanceof Scroll)\n \* ).subscribe(e => {\n \* if (e.position) {\n \* // backward navigation\n \* viewportScroller.scrollToPosition(e.position);\n \* } else if (e.anchor) {\n \* // anchor navigation\n \* viewportScroller.scrollToAnchor(e.anchor);\n \* } else {\n \* // forward navigation\n \* viewportScroller.scrollToPosition([0, 0]);\n \* }\n \* });\n \* }\n \* }\n \* \* scrollPositionRestoration?: 'disabled'|'enabled'|'top';\n \* \* When set to `enabled`, scrolls to the anchor element when the URL has a fragment.\n \* \* Anchor scrolling is disabled by default.\n \* \* Anchor scrolling does not happen on `popstate`. Instead, we restore the position\n \* that we stored or scroll to the top.\n \* \* }

`anchorScrolling?: 'disabled'|'enabled';`  
`/**` \* Configures the scroll offset the router will use when scrolling to an element.  
`*/` \* When given a tuple with x and y position value,  
`*/` \* the router uses that offset each time it scrolls.  
`*/` \* When given a function, the router invokes the function every time  
`*/` \* it restores scroll position.  
`*/`  
`scrollOffset?: [number, number] | ((() => [number, number]));`  
`/**` \* Defines how the router merges parameters, data, and resolved data from parent to child  
`*/` \* routes. By default ('emptyOnly'), inherits parent parameters only for  
`*/` \* path-less or component-less routes.  
`*/` \* Set to 'always' to enable unconditional inheritance of parent parameters.  
`*/`  
`paramsInheritanceStrategy?: 'emptyOnly'|'always';`  
`/**` \* A custom handler for malformed URI errors. The handler is invoked when `encodedURI` contains  
`*/` \* invalid character sequences.  
`*/` \* The default implementation is to redirect to the root URL, dropping  
`*/` \* any path or parameter information. The function takes three parameters:  
`*/` \* - `URIError` - Error thrown when parsing a bad URL.  
`*/` \* - `url` - The malformed URL that caused the URIError  
`*/` \* - `malformedUriErrorHandler` (error: URIError, urlSerializer: UrlSerializer, url: string) => UrlTree;  
`/**` \* Defines when the router updates the browser URL. By default ('deferred'),  
`*/` \* update after successful navigation.  
`*/` \* Set to 'eager' if prefer to update the URL at the beginning of navigation.  
`*/` \* Updating the URL early allows you to handle a failure of navigation by  
`*/` \* showing an error message with the URL that failed.  
`*/`  
`urlUpdateStrategy?: 'deferred'|'eager';`  
`/**` \* Enables a bug fix that corrects relative link resolution in components with empty paths.  
`*/` \* Example:  
`*/` \* ```  
`*/` \* const routes = [  
`*/` \* {  
`*/` \* path:  
`*/` \* component: ContainerComponent,  
`*/` \* children: [  
`*/` \* { path: 'a', component: AComponent },  
`*/` \* { path: 'b', component: BComponent },  
`*/` \* ]  
`*/` \* ];  
`*/` \* ````  
`*/` \* From the `ContainerComponent`, this will not work:  
`*/` \* `
`*/` \* However, this will work:  
`*/` \* `
`*/` \* In other words, you're required to use `./` rather than `.`.  
`*/` \* The default in v11 is `corrected`.  
`*/`  
`relativeLinkResolution?: 'legacy'|'corrected';`  
`*/`  
`export function setupRouter(urlSerializer: UrlSerializer, contexts: ChildrenOutletContexts, location: Location, injector: Injector, loader: NgModuleFactoryLoader, compiler: Compiler, config: Route[][], opts: ExtraOptions = {}, urlHandlingStrategy?: UrlHandlingStrategy, routeReuseStrategy?: RouteReuseStrategy) {  
*/ * const router = new Router(  
*/ * null, urlSerializer, contexts, location, injector, loader, compiler, flatten(config));  
*/  
*/ * if (urlHandlingStrategy) {  
*/ * router.urlHandlingStrategy = urlHandlingStrategy;  
*/ * }  
*/  
*/ * if (routeReuseStrategy) {  
*/ * router.routeReuseStrategy = routeReuseStrategy;  
*/ * }  
*/  
*/ * assignExtraOptionsToRouter(opts, router);  
*/  
*/ * if (opts.enableTracing) {  
*/ * const dom = getDOM();  
*/ * router.events.subscribe((e: Event) => {  
*/ * dom.logGroup(`Router Event: ${(<any>e.constructor).name}`);  
*/ * dom.log(e.toString());  
*/ * dom.log(e);  
*/ * dom.logGroupEnd();  
*/ * });  
*/ * }  
*/  
*/ * return router;  
*/ * }  
*/  
*/ * export function assignExtraOptionsToRouter(opts: ExtraOptions, router: Router): void {  
*/ * if (opts.errorHandler) {  
*/ * router.errorHandler = opts.errorHandler;  
*/ * }  
*/  
*/ * if (opts.malformedUriErrorHandler) {  
*/ * router.malformedUriErrorHandler = opts.malformedUriErrorHandler;  
*/ * }  
*/  
*/ * if (opts.onSameUrlNavigation) {  
*/ * router.onSameUrlNavigation = opts.onSameUrlNavigation;  
*/ * }  
*/  
*/ * if (opts.paramsInheritanceStrategy) {  
*/ * router.paramsInheritanceStrategy = opts.paramsInheritanceStrategy;  
*/ * }  
*/  
*/ * if (opts.relativeLinkResolution) {  
*/ * router.relativeLinkResolution = opts.relativeLinkResolution;  
*/ * }  
*/  
*/ * if (opts.urlUpdateStrategy) {  
*/ * router.urlUpdateStrategy = opts.urlUpdateStrategy;  
*/ * }  
*/ * }  
*/  
*/ * export function rootRoute(router: Router): ActivatedRoute {  
*/ * return router.routerState.root;  
*/ * }  
*/  
*/ * Router initialization requires two steps:  
*/ * First, we start the navigation in a `APP_INITIALIZER` to block the bootstrap if  
*/ * a resolver or a guard executes asynchronously.  
*/ * Next, we actually run activation in a `BOOTSTRAP_LISTENER`, using the  
*/ * `afterPreactivation` hook provided by the router.  
*/ * The router navigation starts, reaches the point when preactivation is done, and then  
*/ * pauses. It waits for the hook to be resolved. We then resolve it only in a bootstrap listener.  
*/  
*/ * @Injectable()  
*/ * export class RouterInitializer {  
*/ * private initNavigation: boolean = false;  
*/ * private resultOfPreactivationDone = new Subject<void>();  
*/ * constructor(private injector: Injector) {}  
*/ * appInitializer(): Promise<any> {  
*/ * const p: Promise<any> = this.injector.get(LOCATION_INITIALIZED, Promise.resolve(null));  
*/ * return p.then(() => {  
*/ * let resolve: Function = null!;  
*/ * const res = new Promise(r => resolve = r);  
*/ * const router = this.injector.get(Router);  
*/ * const opts =`

```

this.injector.get(ROUTER_CONFIGURATION);\n\n if (opts.initialNavigation === 'disabled') {\n
router.setUpLocationChangeListener();\n resolve(true);\n } else if (\n // TODO: enabled is deprecated
as of v11, can be removed in v13\n opts.initialNavigation === 'enabled' || opts.initialNavigation ===
'enabledBlocking') {\n router.hooks.afterPreactivation = () => {\n // only the initial navigation should be
delayed\n if (!this.initNavigation) {\n this.initNavigation = true;\n resolve(true);\n return
this.resultOfPreactivationDone;\n // subsequent navigations should not be delayed\n } else {\n
return of(null) as any;\n }\n };\n router.initialNavigation();\n } else {\n resolve(true);\n
}\n\n return res;\n });\n}\n\nbootstrapListener(bootstrappedComponentRef: ComponentRef<any>): void {\n
const opts = this.injector.get(ROUTER_CONFIGURATION);\n const preloader =
this.injector.get(RouterPreloader);\n const routerScroller = this.injector.get(RouterScroller);\n const router =
this.injector.get(Router);\n const ref = this.injector.get<ApplicationRef>(ApplicationRef);\n\n if
(bootstrappedComponentRef !== ref.components[0]) {\n return;\n }\n\n // Default case\n if
(opts.initialNavigation === 'enabledNonBlocking' || opts.initialNavigation === undefined) {\n
router.initialNavigation();\n }\n\n preloader.setUpPreloading();\n routerScroller.init();\n
router.resetRootComponentType(ref.componentTypes[0]);\n this.resultOfPreactivationDone.next(null!);\n
this.resultOfPreactivationDone.complete();\n }\n}\n\nexport function getAppInitializer(r: RouterInitializer) {\n
return r.appInitializer.bind(r);\n}\n\nexport function getBootstrapListener(r: RouterInitializer) {\n return
r.bootstrapListener.bind(r);\n}\n\n/**\n * A [DI token](guide/glossary/#di-token) for the router initializer that\n * is
called after the app is bootstrapped.\n * @publicApi\n * ^\nexport const ROUTER_INITIALIZER =\n new
InjectionToken<(compRef: ComponentRef<any>) => void>('Router Initializer');\n\nexport function
provideRouterInitializer() {\n return [\n RouterInitializer,\n {\n provide: APP_INITIALIZER,\n multi:
true,\n useFactory: getAppInitializer,\n deps: [RouterInitializer]\n },\n {\n provide:
ROUTER_INITIALIZER, useFactory: getBootstrapListener, deps: [RouterInitializer],\n },\n {\n provide:
APP_BOOTSTRAP_LISTENER, multi: true, useExisting: ROUTER_INITIALIZER,\n }];\n}\n\n",/**\n *
@license\n * Copyright Google LLC All Rights Reserved.\n * Use of this source code is governed by an MIT-
style license that can be\n * found in the LICENSE file at https://angular.io/license\n * ^\n\n/**\n * @module\n *
@description\n * Entry point for all public APIs of the common package.\n * ^\nimport {Version} from
'@angular/core';\n\n/**\n * @publicApi\n * ^\nexport const VERSION = new Version('11.0.2');\n\n",/**\n *
@license\n * Copyright Google LLC All Rights Reserved.\n * Use of this source code is governed by an MIT-
style license that can be\n * found in the LICENSE file at https://angular.io/license\n * ^\n\nexport
{EmptyOutletComponent} from './components/empty_outlet';\nexport {assignExtraOptionsToRouter as
assignExtraOptionsToRouter, ROUTER_PROVIDERS as ROUTER_PROVIDERS} from
'./router_module';\nexport {flatten as flatten} from './utils/collection';\n\n",/**\n * @license\n * Copyright Google
LLC All Rights Reserved.\n * Use of this source code is governed by an MIT-style license that can be\n * found
in the LICENSE file at https://angular.io/license\n * ^\n\nexport {Data, DeprecatedLoadChildren, LoadChildren,
LoadChildrenCallback, QueryParamsHandling, ResolveData, Route, Routes, RunGuardsAndResolvers, UrlMatcher,
UrlMatchResult} from './config';\nexport {RouterLink, RouterLinkWithHref} from './directives/router_link';\nexport
{RouterLinkActive} from './directives/router_link_active';\nexport {RouterOutlet} from
'./directives/router_outlet';\nexport {ActivationEnd, ActivationStart, ChildActivationEnd, ChildActivationStart,
Event, GuardsCheckEnd, GuardsCheckStart, NavigationCancel, NavigationEnd, NavigationError, NavigationStart,
ResolveEnd, ResolveStart, RouteConfigLoadEnd, RouteConfigLoadStart, RouterEvent, RoutesRecognized, Scroll}
from './events';\nexport {CanActivate, CanActivateChild, CanDeactivate, CanLoad, Resolve} from
'./interfaces';\nexport {BaseRouteReuseStrategy, DetachedRouteHandle, RouteReuseStrategy} from
'./route_reuse_strategy';\nexport {Navigation, NavigationBehaviorOptions, NavigationExtras, Router,
UrlCreationOptions} from './router';\nexport {ROUTES} from './router_config_loader';\nexport {ExtraOptions,
InitialNavigation, provideRoutes, ROUTER_CONFIGURATION, ROUTER_INITIALIZER, RouterModule} from
'./router_module';\nexport {ChildrenOutletContexts, OutletContext} from './router_outlet_context';\nexport
{NoPreloading, PreloadAllModules, PreloadingStrategy, RouterPreloader} from './router_preloader';\nexport

```



```
{ ActivatedRoute, ActivatedRouteSnapshot, RouterState, RouterStateSnapshot } from './router_state';\nexport\n{ convertToParamMap, ParamMap, Params, PRIMARY_OUTLET } from './shared';\nexport { UrlHandlingStrategy }\nfrom './url_handling_strategy';\nexport { DefaultUrlSerializer, UrlSegment, UrlSegmentGroup, UrlSerializer,\nUrlTree } from './url_tree';\nexport { VERSION } from './version';\n\nexport * from './private_export';\n\n"/**\n * @license\n * Copyright Google LLC All Rights Reserved.\n * \n * Use of this source code is governed by an MIT-\n * style license that can be\n * found in the LICENSE file at https://angular.io/license\n * \n */\n\n"/**\n * @module\n * @description\n * Entry point for all public APIs of this package.\n * \n */\nexport * from './src/index';\n\n// This file\n * only reexports content of the `src` folder. Keep it that way.\n */\n\n"/**\n * @license\n * Copyright Google LLC All\n * Rights Reserved.\n * \n * Use of this source code is governed by an MIT-style license that can be\n * found in the\n * LICENSE file at https://angular.io/license\n * \n */\n\n// This file is not used to build this module. It is only used during\n * editing\n * by the TypeScript language service and during build for verification. `ngc`\n * replaces this file with\n * production index.ts when it rewrites private symbol\n * names.\n */\nexport * from './public_api';\n\n"/**\n * Generated\n * bundle index. Do not edit.\n * \n */\nexport * from './index';\n\nexport { EmptyOutletComponent as\nangular_packages_router_router_l } from './src/components/empty_outlet';\nexport\n{ ROUTER_FORROOT_GUARD as angular_packages_router_router_a, RouterInitializer as\nangular_packages_router_router_h, createRouterScroller as angular_packages_router_router_c, getAppInitializer as\nangular_packages_router_router_i, getBootstrapListener as angular_packages_router_router_j, provideForRootGuard\nas angular_packages_router_router_e, provideLocationStrategy as\nangular_packages_router_router_d, provideRouterInitializer as angular_packages_router_router_k, rootRoute as\nangular_packages_router_router_g, routerNgProbeToken as angular_packages_router_router_b, setupRouter as\nangular_packages_router_router_f } from './src/router_module';\nexport { RouterScroller as\nangular_packages_router_router_o } from './src/router_scroller';\nexport { Tree as\nangular_packages_router_router_m, TreeNode as angular_packages_router_router_n } from\n './src/utils/tree';\n\n],\n"names": [\n "lastValue",\n "isObservable",\n "isPromise",\n "EmptyOutletComponent",\n "applyRedirects",\n "applyRedirectsFn",\n "NoMatch",\n "split",\n "match",\n "getOutlet",\n "recognize",\n "recognizeFn",\n "Console",\n "getDOM",\n "mappings":\n "AAAA",\n "AAsBa",\n "MAsBa",\n "WAAW",\n "IAcTb",\n "IAEW",\n "EAAU",\n "IAEV",\n "GAAW",\n "QAFx",\n "OAAE",\n "GAAf",\n "EAAE",\n "CAAQ",\n "QAEV",\n "QAAG",\n "GAAH",\n "GAAG",\n "CAAQ",\n "KAAI",\n "CAC3B",\n "AAED",\n "MAKa",\n "eAAgB",\n "SAAQ",\n "WAAW",\n "IA8B9C",\n "IAEL",\n "EAAU",\n "IAEV",\n "GAAW",\n "IAEX",\n "oBAA0D",\n "YAAy",\n "IAEtE",\n "gBAA+D",\n "IAAI",\n "QACrE",\n "KAAK",\n "CAAC",\n "EAAE",\n "EAAE",\n "GAAG",\n "CAAC",\n "CAAC",\n "QACf",\n "IAAI",\n "CAAC",\n "iBAAiB",\n "GAAG",\n "iBAAiB",\n "CAAC",\n "QAC3C",\n "IAAI",\n "CAAC",\n "aAAa",\n "GAAG",\n "aAAa",\n "CAAC",\n "KACpC",\n "IAGD",\n "QAAQ",\n "QACN",\n "OAAO",\n "uBAAuB",\n "IAAI",\n "CAAC",\n "EAAE",\n "WAAW",\n "IAAI",\n "CAAC",\n "GAAG",\n "IAAI",\n "CAAC",\n "KAC9D",\n "CACF",\n "AAED",\n "MASa",\n "aAAc",\n "SAAQ",\n "WAAW",\n "IAC5C",\n "IAEI",\n "EAAU",\n "IAEV",\n "GAAW",\n "IAEJ",\n "iBAAyB",\n "QACIC",\n "KAAK",\n "CAAC",\n "EAAE",\n "EAAE",\n "GAAG",\n "CAAC",\n "CAAC",\n "QADN",\n "sBAAiB",\n "GAAjB",\n "iBAAiB",\n "CAAQ",\n "KAEnC",\n "IAGD",\n "QAAQ",\n "QACN",\n "OAAO",\n "qBAAqB",\n "IAAI",\n "CAAC",\n "EAAE",\n "WAAW",\n "IAAI",\n "CAAC",\n "GAAG",\n "0BACID",\n "IAAI",\n "CAAC",\n "iBAAiB",\n "IAAI",\n "CAAC",\n "KAChC",\n "CACF",\n "AAED",\n "MAWa",\n "gBAAiB",\n "SAAQ",\n "WAAW",\n "IAC/C",\n "IAEI",\n "EAAU",\n "IAEV",\n "GAAW",\n "IAEJ",\n "MAAc",\n "QACvB",\n "KAAK",\n "CAAC",\n "EAAE",\n "EAAE",\n "GAAG",\n "CAAC",\n "CAAC",\n "QADN",\n "WAAW",\n "MAAM",\n "GAAN",\n "MAAM",\n "CAAQ",\n "KAExB",\n "IAGD",\n "QAAQ",\n "QACN",\n "OAAO",\n "wBAAwB",\n "IAAI",\n "CAAC",\n "EAAE",\n "WAAW",\n "IAAI",\n "CAAC",\n "GAAG",\n "IAAI",\n "CAAC",\n "KAC/D",\n "CACF",\n "AAED",\n "MASa",\n "eAAgB",\n "SAAQ",\n "WAAW",\n "IAC9C",\n "IAEI",\n "EAAU",\n "IAEV",\n "GAAW",\n "IAEJ",\n "KAAU",\n "QACnB",\n "KAAK",\n "CAAC",\n "EAAE",\n "EAAE",\n "GAAG",\n "CAAC",\n "CAAC",\n "QADN",\n "UAAK",\n "GAAL",\n "KAAK",\n "CAAK",\n "KAEPb",\n "IAGD",\n "QAAQ",\n "QACN",\n "OAAO",\n "uBAAuB",\n "IAAI",\n "CAAC",\n "EAAE",\n "WAAW",\n "IAAI",\n "CAAC",\n "GAAG",\n "aAAa",\n "IAAI",\n "CAAC",\n "KAAK",\n "GAAG",\n "CAAC",\n "KACpF",\n "CACF",\n "AAED",\n "MAKa",\n "gBAAiB",\n "SAAQ",\n "WAAW",\n "IAC/C",\n "IAEI",\n "EAAU",\n "IAEV",\n "GAAW",\n "IAEJ",\n "iBAAyB",\n "IAEzB",\n "KAA0B",\n "QACnC",\n "KAAK",\n "CAAC",\n "EAAE",\n "EAAE",\n "GAAG",\n "CAAC",\n "CAAC",\n "QAHN",\n "sBAAiB",\n "GAAjB",\n "iBAAiB",\n "CAAQ",\n "QAEzB",\n "UAAK",\n "GAAL",\n "KAAK",\n "CAAqB",\n "KAEPc",\n "IAGD",\n "QAAQ",\n "QACN",\n "OAAO",\n "wBAAwB",\n "IAAI",\n "CAAC",\n "EAAE",\n "WAAW",\n "IAAI",\n "CAAC",\n "GAAG",\n "0BACrD",\n "IAAI",\n "CAAC",\n "iBAAiB",\n "aAAa",\n "IAAI",\n "CAAC",\n "KAAK",\n "GAAG",\n "CAAC",\n "KACtD",\n "CACF",\n "AAED",\n "MAOa",\n "gBAAiB",\n "SAAQ",\n "WAAW",\n "IAC/C",\n "IAEI",\n "EAAU",\n "IAEV",\n "GAAW",\n "IAEJ",\n "iBAAyB",\n "IAEzB",\n "KAA0B",\n "QACnC",\n "KAAK",\n "CAAC",\n "EAAE",\n "EAAE",\n "GAAG",\n "CAAC",\n "CAAC",\n "QAHN",\n "sBAAiB",\n "GAAjB",\n "iBAAiB",\n "CAAQ",\n "QAEzB",\n "UAAK",\n "GAAL",\n "KAAK",\n "CAAqB",\n "KAEPc",\n "IAED",\n "QAAQ",\n "QACN",\n "OAAO",\n "wBAAwB",\n "IAAI",\n "CAAC",\n "EAAE",\n "WAAW",\n "IAAI",\n "CAAC",\n "GAAG",\n "0BACrD",\n "IAAI",\n "CAAC",\n "iBAAiB",\n "aAAa",\n "IAAI",\n "CAAC",\n "KAAK",\n "GAAG",\n "CAAC",\n "KACtD",\n "CACF",\n "AAED",\n "MAOa",\n "cAAe",\n "SAAQ",\n "WAAW",\n "IAC7C",\n "IAEI",\n "EAAU",\n "IAEV",\n "GAAW",\n "IAEJ",\n "iBA
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OAAO, CAAC, GAAG, EAAE, CAAC, CAAI, EAAE, CAAS; QAC3B, MAAM, MAAM, GAAG, EAAE, CAAC, CAAC,  
EAAE, CAAC, CAAC, CAAC, IAAI, CAAC, GAAG, CAAC, CAAC, CAAI, KAAK, GAAG, CAAC, CAAC, CAAC, GA  
AG, CAAC, CAAC, CAAC, CAAC; QACxD, IAAI, CAAC, KAAK, cAAc, EAAE; YACxB, QAAQ, CAAC, IAAI, CAAC,  
MAAM, CAAC, CAAC; SACvB; aAAM; YAcl, QAAQ, CAAC, IAAI, CAAC, MAAM, CAAC, CAAC; SACvB; KACF,  
CAAC, CAAC;;; IAKH, OAAQ, EAAE, CAAC, KAAK, CAAC, IAAI, EAAE, QAAQ, CAAC, MAAM, CAAC, QAAQ, C  
AAC, CAA+B; SAC1E, IAAI, CAAC, SAAS, EAAE, EAAEA, MAAS, EAAE, EAAE, GAAG, CAAC, MAAM, GAAG, C  
AAC, CAAC, CAAC; AACtD, CAAC; SAEe, kBAakB, CAAI, KAAiC; IACrE, IAAIC, aAAy, CAAC, KAAK, CAAC, E  
AAE; QACvB, OAAO, KAAK, CAAC; KACd; IAED, IAAIC, UAAS, CAAC, KAAK, CAAC, EAAE;;; QAIpB, OAAO, I  
AAI, CAAC, OAAO, CAAC, OAAO, CAAC, KAAK, CAAC, CAAC, CAAC; KACrC; IAED, OAAO, EAAE, CAAC, KA  
AK, CAAC, CAAC; AACnB;; AC5HA;;;;; SAWgB, kBAakB; IACHc, OAAO, IAAI, OAAO, CAAC, IAAI, eAAe, CAA  
C, EAAE, EAAE, EAAE, CAAC, EAAE, EAAE, EAAE, IAAI, CAAC, CAAC; AAC5D, CAAC; SAEe, YAAy, CAAC, SA  
AkB, EAAE, SAAkB, EAAE, KAAc; IACjF, IAAI, KAAK, EAAE; QACT, OAAO, gBAAGb, CAAC, SAAS, CAAC, WA  
AW, EAAE, SAAS, CAAC, WAAW, CAAC; YACjE, kBAakB, CAAC, SAAS, CAAC, IAAI, EAAE, SAAS, CAAC, IAAI

,CAAC,CAAC;KACxD;IAED,OAAO,mBAAmB,CAAC,SAAS,CAAC,WAAW,EAAE,SAAS,CAAC,WAAW,CAAC;QACpE,oBAAoB,CAAC,SAAS,CAAC,IAAI,EAAE,SAAS,CAAC,IAAI,CAAC,CAAC;AAC3D,CAAC;AAED,SAAS,gBAAgB,CAAC,SAAiB,EAAE,SAAiB;;IAE5D,OAAO,YAAY,CAAC,SAAS,EAAE,SAAS,CAAC,CAAC;AAC5C,CAAC;AAED,SAAS,kBAAkB,CAAC,SAA0B,EAAE,SAA0B;IACbF,IAAI,CAAC,SAAS,CAAC,SAA S,CAAC,QAAQ,EAAE,SAAS,CAAC,QAAQ,CAAC;QAAE,OAAO,KAAK,CAAC;IACrE,IAAI,SAAS,CAAC,gBAAgB,KAAK,SAAS,CAAC,gBAAgB;QAAE,OAAO,KAAK,CAAC;IAC5E,KAAK,MAAM,CAAC,IAAI,SAAS,CAAC,QAAQ,EAAE;QACiC,IAAI,CAAC,SAAS,CAAC,QAAQ,CAAC,CAAC,CAAC;YAAE,OAAO,KAAK,CAAC;QACzC,IAAI,CAAC,kBAAkB,CAAC,SAAS,CAAC,QAAQ,CAAC,CAAC,CAAC,EAAE,SAAS,CAAC,QAA Q,CAAC,CAAC,CAAC;YAAE,OAAO,KAAK,CAAC;KACrF;IACD,OAAO,IAAI,CAAC;AACd,CAAC;AAED,SAAS,mBAAmB,CAAC,SAAiB,EAAE,SAAiB;IAC/D,OAAO,MAAM,CAAC,IAAI,CAAC,SAAS,CAAC,CAAC,MAAM,IAAI,MAAM,CAAC,IAAI,CAAC,SAAS,CAAC,CAAC,MAAM;QACjE,MAAM,CAAC,IAAI,CAAC,SAAS,CAAC,CAAC,KAAK,CAAC,GAAG,IAAI,mBAAmB,CAAC,SAAS,CAAC,GAAG,CAAC,EAAE,SAAS,CAAC,GAAG,CAAC,CAAC,CAAC;AAC/F,CAAC;AAED,SAAS,oBAAoB,CAAC,SAA0B,EAAE,SAA0 B;IACiF,OAAO,0BAA0B,CAAC,SAAS,EAAE,SAAS,EAAE,SAAS,CAAC,QAAQ,CAAC,CAAC;AAC9E,CAAC ;AAED,SAAS,0BAA0B,CAC/B,SAA0B,EAAE,SAA0B,EAAE,cAA4B;IACtF,IAAI,SAAS,CAAC,QAAQ,CAAC,MAAM,GAAG,cAAc,CAAC,MAAM,EAAE;QACrD,MAAM,OAAO,GAAG,SAAS,CAAC,QAAQ,CAAC,KAAK ,CAAC,CAAC,EAAE,cAAc,CAAC,MAAM,CAAC,CAAC;QACnE,IAAI,CAAC,SAAS,CAAC,OAAO,EAAE,cAAc,CAAC;YAAE,OAAO,KAAK,CAAC;QACtD,IAAI,SAAS,CAAC,WAAW,EAAE;YAAE,OAAO,KAAK,CAA C;QACiC,OAAO,IAAI,CAAC;KAEb;SAAM,IAAI,SAAS,CAAC,QAAQ,CAAC,MAAM,KAAK,cAAc,CAAC,MAAM,EAAE;QAC9D,IAAI,CAAC,SAAS,CAAC,SAAS,CAAC,QAAQ,EAAE,cAAc,CAAC;YAAE,OAAO,KAA K,CAAC;QACjE,KAAK,MAAM,CAAC,IAAI,SAAS,CAAC,QAAQ,EAAE;YACiC,IAAI,CAAC,SAAS,CAAC,QAAQ,CAAC,CAAC,CAAC;gBAAE,OAAO,KAAK,CAAC;YACzC,IAAI,CAAC,oBAAoB,CAAC,SAAS,CAAC, QAAQ,CAAC,CAAC,CAAC,EAAE,SAAS,CAAC,QAAQ,CAAC,CAAC,CAAC,CAAC;gBAAE,OAAO,KAAK,CAAC;SACvF;QACD,OAAO,IAAI,CAAC;KAEb;SAAM;QACL,MAAM,OAAO,GAAG,cAAc,CAAC,KAAK,CAAC,CAAC,EAAE,SAAS,CAAC,QAAQ,CAAC,MAAM,CAAC,CAAC;QACnE,MAAM,IAAI,GAAG,cAAc,CAA C,KAAK,CAAC,SAAS,CAAC,QAAQ,CAAC,MAAM,CAAC,CAAC;QAC7D,IAAI,CAAC,SAAS,CAAC,SAAS,CAAC,QAAQ,EAAE,OAAO,CAAC;YAAE,OAAO,KAAK,CAAC;QAC1D,IAAI,CAAC,SAAS,CAAC,QAAQ,C AAC,cAAc,CAAC;YAAE,OAAO,KAAK,CAAC;QACtD,OAAO,0BAA0B,CAAC,SAAS,CAAC,QAAQ,CAAC,cAAc,CAAC,EAAE,SAAS,EAAE,IAAI,CAAC,CAAC;KACxF;AACH,CAAC;AAED;,,,,,,,,,,,,,,,,,,,,,,,,,,,,;MA8Ba, OAAO;;IAMiB;;IAEW,IAAqB;;IAErB,WAAmB;;IAEnB,QAAqB;QAJrB,SAAI,GAAJ,IAAI,CAAiB;QAErB,gBA AW,GAAX,WAAW,CAAQ;QAEEnB,aAAQ,GAAR,QAAQ,CAAa;KAAI;IAEpC,IAAI,aAAa;QACf,IAAI,CAAC,IAAI,CAAC,cAAc,EAAE;YACxB,IAAI,CAAC,cAAc,GAAG,iBAAiB,CAAC,IAAI,CAAC,WAAW,CAAC,CAAC ;SAC3D;QACD,OAAO,IAAI,CAAC,cAAc,CAAC;KAC5B;;IAGD,QAAQ;QACN,OAAO,kBAAkB,CAAC,SAAS ,CAAC,IAAI,CAAC,CAAC;KAC3C;CACF;AAED;,,,,,,;MASa,eAAe;IAU1B;;IAEW,QAAsB;;IAEtB,QAA0C;QAFiC,aAAQ,GAAR,QAAQ,CAAc;QAEtB,aAAQ,GAAR,QAAQ,CAAc;;QANrD,WAAM,GAAYB,IAAI,CAAC; QAOiC,OAAO,CAAC,QAAQ,EAAE,CAAC,CAAM,EAAE,CAAM,KAAK,CAAC,CAAC,MAAM,GAAG,IAAI,CAAC,CAAC;KACxD;;IAGD,WAAW;QACT,OAAO,IAAI,CAAC,gBAAgB,GAAG,CAAC,CAAC;KACiC;;IAG D,IAAI,gBAAgB;QACiB,OAAO,MAAM,CAAC,IAAI,CAAC,IAAI,CAAC,QAAQ,CAAC,CAAC,MAAM,CAAC ;KACiC;;IAGD,QAAQ;QACN,OAAO,cAAc,CAAC,IAAI,CAAC,CAAC;KAC7B;CACF;AAGD;,,,,,,,,,,,,,,,,,,,,,,,,,,,,;MA0Ba,UAAU;IAKrB;;IAEW,IAAY;;IAGZ,UAAoC;QAHpC,SAAI,GAAJ,IAAI,CAAQ;QAGZ,eAAU,GA AV,UAAU,CAA0B;KAAI;IAEnD,IAAI,YAAY;QACd,IAAI,CAAC,IAAI,CAAC,aAAa,EAAE;YACvB,IAAI,CAAC,aAAa,GAAG,iBAAiB,CAAC,IAAI,CAAC,UAAU,CAAC,CAAC;SACzD;QACD,OAAO,IAAI,CAAC,aAAa,CAAC; KAC3B;;IAGD,QAAQ;QACN,OAAO,aAAa,CAAC,IAAI,CAAC,CAAC;KAC5B;CACF;SAEe,aAAa,CAAC,EAA gB,EAAE,EAAgB;IAC9D,OAAO,SAAS,CAAC,EAAE,EAAE,EAAE,CAAC,IAAI,EAAE,CAAC,KAAK,CAAC,CAAC,CAAC,EAAE,CAAC,KAAK,YAAY,CAAC,CAAC,CAAC,UAAU,EAAE,EAAE,CAAC,CAAC,CAAC,C AAC,UAAU,CAAC,CAAC,CAAC;AAC/F,CAAC;SAEe,SAAS,CAAC,EAAgB,EAAE,EAAgB;IAC1D,IAAI,EAA E,CAAC,MAAM,KAAK,EAAE,CAAC,MAAM;QAAE,OAAO,KAAK,CAAC;IACiC,OAAO,EAAE,CAAC,KAA K,CAAC,CAAC,CAAC,EAAE,CAAC,KAAK,CAAC,CAAC,IAAI,KAAK,EAAE,CAAC,CAAC,CAAC,CAAC,IA

AI,CAAC,CAAC;AACnD,CAAC;SAEe,oBAAoB,CAChC,OAAwB,EAAE,EAAOC;IACtE,IAAI,GAAG,GAAQ,EAAE,CAAC;IACIB,OAAO,CAAC,OAAO,CAAC,QAAQ,EAAE,CAAC,KAAaB,EAAE,WAAmB;QACpE,IAAI,WAAW,KAAK,cAAc,EAAE;YACIC,GAAG,GAAG,GAAG,CAAC,MAAM,CAAC,EAAE,CAAC,KAAK,EAAE,WAAW,CAAC,CAAC,CAAC;SAC1C;KACF,CAAC,CAAC;IACH,OAAO,CAAC,OAAO,CAAC,QAAQ,EAAE,CAAC,KAAaB,EAAE,WAAmB;QACpE,IAAI,WAAW,KAAK,cAAc,EAAE;YACIC,GAAG,GAAG,GAAG,CAAC,MAAM,CAAC,EAAE,CAAC,KAAK,EAAE,WAAW,CAAC,CAAC,CAAC;SAC1C;KACF,CAAC,CAAC;IACH,OAAO,GAAG,CAAC;AACb,CAAC;AAGD;,,,,,;MAYsB,aAAa;CAMIC;AAED;,,,,,;MAkBa,oBAAoB;IAE/B,KAAK,CAAC,GAAW;QACf,MAAM,CAAC,GAAG,IAAI,SAAS,CAAC,GAAG,CAAC,CAAC;QAC7B,OAAO,IAAI,OAAO,CAAC,CAAC,CAAC,gBAAgB,EAAE,EAAE,CAAC,CAAC,gBAAgB,EAAE,EAAE,CAAC,CAAC,aAAa,EAAE,CAAC,CAAC;KACnF;;IAGD,SAAS,CAAC,IAAa;QACrB,MAAM,OAAO,GAAG,IAAI,gBAAgB,CAAC,IAAI,CAAC,IAAI,EAAE,IAAI,CAAC,EAAE,CAAC;QACxD,MAAM,KAAK,GAAG,oBAAoB,CAAC,IAAI,CAAC,WAAW,CAAC,CAAC;QACrD,MAAM,QAAQ,GACV,OAAO,IAAI,CAAC,QAAQ,KAAK,QAAQ,GAAG,IAAI,iBAAiB,CAAC,IAAI,CAAC,QAAS,CAAC,EAAE,GAAG,EAAE,CAAC;QAErF,OAAO,GAAG,OAAO,GAAG,KAAK,GAAG,QAAQ,EAAE,CAAC;KACxC;CACF;AAED,MAAM,kBAAkB,GAAG,IAAI,oBAAoB,EAAE,CAAC;SAEtC,cAAc,CAAC,OAAwB;IACrD,OAAO,OAAO,CAAC,QAAQ,CAAC,GAAG,CAAC,CAAC,IAAI,aAAa,CAAC,CAAC,CAAC,CAAC,IAAI,CAAC,GAAG,CAAC,CAAC;AAC/D,CAAC;AAED,SAAS,gBAAgB,CAAC,OAAwB,EAAE,IAAa;IAC/D,IAAI,CAAC,OAAO,CAAC,WAAW,EAAE,EAAE;QAC1B,OAAO,cAAc,CAAC,OAAO,CAAC,CAAC;KAChC;IAED,IAAI,IAAI,EAAE;QACR,MAAM,OAAO,GAAG,OAAO,CAAC,QAAQ,CAAC,cAAc,CAAC;YAC5C,gBAAgB,CAAC,OAAO,CAAC,QAAQ,CAAC,cAAc,CAAC,EAAE,KAAK,CAAC;YACzD,EAAE,CAAC;QACP,MAAM,QAAQ,GAAa,EAAE,CAAC;QAE9B,OAAO,CAAC,OAAO,CAAC,QAAQ,EAAE,CAAC,CAAkB,EAAE,CAAS;YACtD,IAAI,CAAC,KAAK,cAAc,EAAE;gBACxB,QAAQ,CAAC,IAAI,CAAC,GAAG,CAAC,IAAI,gBAAgB,CAAC,CAAC,EAAE,KAAK,CAAC,EAAE,CAAC,CAAC;aACrD;SACF,CAAC,CAAC;QAEH,OAAO,QAAQ,CAAC,MAAM,GAAG,CAAC,GAAG,GAAG,OAAO,IAAI,QAAQ,CAAC,IAAI,CAAC,IAAI,CAAC,GAAG,GAAG,OAAO,CAAC;KAE7E;SAAM;QACL,MAAM,QAAQ,GAAG,oBAAoB,CAAC,OAAO,EAAE,CAAC,CAAkB,EAAE,CAAS;YAC3E,IAAI,CAAC,KAAK,cAAc,EAAE;gBACxB,OAAO,CAAC,gBAAgB,CAAC,OAAO,CAAC,QAAQ,CAAC,cAAc,CAAC,EAAE,KAAK,CAAC,CAAC,CAAC;aACpE;YAED,OAAO,CAAC,GAAG,CAAC,IAAI,gBAAgB,CAAC,CAAC,EAAE,KAAK,CAAC,EAAE,CAAC,CAAC;SAC/C,CAAC,CAAC;;QAGH,IAAI,MAAM,CAAC,IAAI,CAAC,OAAO,CAAC,QAAQ,CAAC,CAAC,MAAM,KAAK,CAAC,IAAI,OAAO,CAAC,QAAQ,CAAC,cAAc,CAAC,IAAI,IAAI,EAAE;YAC1F,OAAO,GAAG,cAAc,CAAC,OAAO,CAAC,IAAI,QAAQ,CAAC,CAAC,CAAC,EAAE,CAAC;SACpD;QAEED,OAAO,GAAG,cAAc,CAAC,OAAO,CAAC,KAAK,QAAQ,CAAC,IAAI,CAAC,IAAI,CAAC,GAAG,CAAC;KAC9D;AACH,CAAC;AAED;,,,,;AAMA,SAAS,eAAe,CAAC,CAAS;IACHc,OAAO,kBAAkB,CAAC,CAAC,CAAC;SACvB,OAAO,CAAC,MAAM,EAAE,GAAG,CAAC;SACpB,OAAO,CAAC,OAAO,EAAE,GAAG,CAAC;SACrB,OAAO,CAAC,MAAM,EAAE,GAAG,CAAC;SACpB,OAAO,CAAC,OAAO,EAAE,GAAG,CAAC,CAAC;AAC7B,CAAC;AAED;,,,,;SAMgB,cAAc,CAAC,CAAS;IACtC,OAAO,eAAe,CAAC,CAAC,CAAC,CAAC,OAAO,CAAC,OAAO,EAAE,GAAG,CAAC,CAAC;AACID,CAAC;AAED;,,,,;SAMgB,iBAAiB,CAAC,CAAS;IACzC,OAAO,SAAS,CAAC,CAAC,CAAC,CAAC;AACtB,CAAC;AAED;,,,,;SAOgB,gBAAgB,CAAC,CAAS;IACxC,OAAO,eAAe,CAAC,CAAC,CAAC,CAAC,OAAO,CAAC,KAAK,EAAE,KAAK,CAAC,CAAC,OAAO,CAAC,KAAK,EAAE,KAAK,CAAC,CAAC,OAAO,CAAC,OAAO,EAAE,GAAG,CAAC,CAAC;AAC9F,CAAC;SAEe,MAAM,CAAC,CAAS;IAC9B,OAAO,kBAAkB,CAAC,CAAC,CAAC,CAAC;AAC/B,CAAC;AAED;AACa;SACgB,WAAW,CAAC,CAAS;IACnC,OAAO,MAAM,CAAC,CAAC,CAAC,OAAO,CAAC,KAAK,EAAE,KAAK,CAAC,CAAC,CAAC;AACzC,CAAC;SAEe,aAAa,CAAC,IAAgB;IAC5C,OAAO,GAAG,gBAAgB,CAAC,IAAI,CAAC,IAAI,CAAC,GAAG,qBAAqB,CAAC,IAAI,CAAC,UAAU,CAAC,EAAE,CAAC;AACnF,CAAC;AAED,SAAS,qBAAqB,CAAC,MAA+B;IAC5D,OAAO,MAAM,CAAC,IAAI,CAAC,MAAM,CAAC;SACrB,GAAG,CAAC,GAAG,IAAI,IAAI,gBAAgB,CAAC,GAAG,CAAC,IAAI,gBAAgB,CAAC,MAAM,CAAC,GAAG,CAAC,CAAC,EAAE,CAAC;SACxE,IAAI,CAAC,EAAE,CAAC,CAAC;AACbB,CAAC;AAED,SAAS,oBAAoB,CAAC,MAA4B;IACxD,MAAM,SAAS,GAAa,MAAM,CAAC,IAAI,CAAC,MAAM,CAAC,CAAC,GAAG,CAAC,CAAC,IAAI;QACvD,MAAM,KAAK,GAAG,MAAM,CAAC,IAAI,CAAC,CAAC;QAC3B,OAAO,KAAK,CAAC,OAAO,CAAC,KAAK,CAAC;YACvB,KAAK,CAAC,G

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AE,CAAC;KACxD,CAAC,CAAC;IAEH,OAAO,SAAS,CAAC,MAAM,GAAG,IAAI,SAAS,CAAC,IAAI,CAAC,  
GAAG,CAAC,EAAE,GAAG,EAAE,CAAC;AAC3D,CAAC;AAED,MAAM,UAAU,GAAG,eAAe,CAAC;AACnC,  
SAAS,aAAa,CAAC,GAAW;IACHc,MAAM,KAAK,GAAG,GAAG,CAAC,KAAK,CAAC,UAAU,CAAC,CAAC;I  
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Found in path(s):

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No license file was found, but licenses were detected in source scan.

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{"version":3,"file":"upgrade.js","sources":["../../../../../../packages/router/upgrade/src/upgrade.ts","../../../../../../packages/router/upgrade/public_api.ts","../../../../../../packages/router/upgrade/index.ts","../../../../../../packages/router/upgrade/upgrade.ts"],"sourcesContent":["/**\n * @license\n * Copyright Google LLC All Rights Reserved.\n *\n * Use of this source code is governed by an MIT-style license that can be\n * found in the LICENSE file at\n * https://angular.io/license\n *\n * @import {Location} from '@angular/common';\n * @import {APP_BOOTSTRAP_LISTENER, ComponentRef, InjectionToken} from '@angular/core';\n * @import {Router} from '@angular/router';\n * @import {UpgradeModule} from '@angular/upgrade/static';\n *\n * Creates an initializer that sets up `ngRoute` integration\n * along with setting up the Angular router.\n *\n * @usageNotes\n *\n * <code-example language=\\\"typescript\\\">\n * @NgModule({\n * imports: [\n * RouterModule.forRoot(SOME_ROUTES),\n * UpgradeModule\n *],\n * providers: [\n * RouterUpgradeInitializer\n *]\n * })\n * export class AppModule {\n * ngDoBootstrap() {\n * }\n * }\n * </code-example>\n *\n * @publicApi\n */\nexport const RouterUpgradeInitializer = {\n provide: APP_BOOTSTRAP_LISTENER,\n multi: true,\n useFactory: locationSyncBootstrapListener as (ngUpgrade: UpgradeModule) => () => void,\n deps: [UpgradeModule]\n};\n\n/**\n * @internal\n */\nexport function locationSyncBootstrapListener(ngUpgrade: UpgradeModule) {\n return () => {\n setUpLocationSync(ngUpgrade);\n };\n}\n\n/**\n * Sets up a location change listener to trigger `history.pushState`.\n *\n * Works around the problem that `onPopState` does not trigger `history.pushState`.\n *\n * Must be called *after* calling `UpgradeModule.bootstrap`.\n *\n * @param ngUpgrade The upgrade NgModule.\n *\n * @param urlType The location strategy.\n *\n * @see `HashLocationStrategy`\n *\n * @see `PathLocationStrategy`\n *\n * @publicApi\n */\nexport function setUpLocationSync(ngUpgrade: UpgradeModule, urlType: 'path'|'hash' = 'path') {\n if (!ngUpgrade.$injector) {\n throw new Error(`RouterUpgradeInitializer can be used only after UpgradeModule.bootstrap has been called. Remove RouterUpgradeInitializer and call setUpLocationSync after UpgradeModule.bootstrap.`);\n }\n const router: Router = ngUpgrade.injector.get(Router);\n const location: Location = ngUpgrade.injector.get(Location);\n ngUpgrade.$injector.get('$rootScope')\n .$on('$locationChangeStart', (_, next: string, __: string) => {\n let url;\n if (urlType === 'path') {\n url = resolveUrl(next);\n } else if (urlType === 'hash') {\n // Remove the first hash from the URL\n const hashIdx = next.indexOf('#');\n url = resolveUrl(next.substring(0, hashIdx) + next.substring(hashIdx + 1));\n } else {\n throw 'Invalid URLType passed to setUpLocationSync: ' + urlType;\n }\n const path = location.normalize(url.pathname);\n router.navigateByUrl(path + url.search + url.hash);\n });\n}\n\n/**\n * Normalizes and parses a URL.\n *\n * - Normalizing means that a relative URL will be resolved into an absolute URL in the context of the application document.\n *\n * - Parsing means that the anchor's `protocol`, `hostname`, `port`, `pathname` and related\n * properties are all populated to reflect the normalized URL.\n *\n * While this approach has wide compatibility, it doesn't work as expected on IE. On IE, normalizing\n * happens similar to other browsers, but the parsed components will not be set. (E.g. if you assign `a.href = 'foo',
```

then `a.protocol`, `a.host`, etc. will not be correctly updated.)\n \* We work around that by performing the parsing in a 2nd step by taking a previously normalized URL\n \* and assigning it again. This correctly populates all properties.\n \* See\n \*

```
https://github.com/angular/angular.js/blob/2c7400e7d07b0f6cec1817dab40b9250ce8ebce6/src/ng/urlUtils.js#L26-L33\n * for more info.\n *\nlet anchor: HTMLAnchorElement|undefined;\nfunction resolveUrl(url: string): {pathname: string, search: string, hash: string} {\n if (!anchor) {\n anchor = document.createElement('a');\n }\n anchor.setAttribute('href', url);\n anchor.setAttribute('href', anchor.href);\n\n return {\n // IE does not start `pathname` with `^` like other browsers.\n pathname: `/${anchor.pathname.replace(/^\\/|\\/$/, '')}`,\n search: anchor.search,\n hash: anchor.hash\n };}\n}\n"/**\n * @license\n * Copyright Google LLC All Rights Reserved.\n *\n * Use of this source code is governed by an MIT-style license that can be\n * found in the LICENSE file at https://angular.io/license\n *\n\n\n * @module\n * @description\n * Entry point for all public APIs of this package.\n *\n\nexport * from './src/upgrade';\n\n// This file only reexports content of the `src` folder. Keep it that way.\n"/**\n * @license\n * Copyright Google LLC All Rights Reserved.\n *\n * Use of this source code is governed by an MIT-style license that can be\n * found in the LICENSE file at https://angular.io/license\n *\n\n\n// This file is not used to build this module. It is only used during editing\n// by the TypeScript language service and during build for verification. `ngc` replaces this file with production index.ts when it rewrites private symbol\n// names.\n\nexport * from './public_api';\n"/**\n * Generated bundle index. Do not edit.\n *\n\n\nexport * from
```

```
 './index';\n"], "names": [], "mappings": ";;;;;;;;;AAAA;;;;;;;;;WAuCc;AA1Bd;;;;;;;;;MAuBa,wBAAwB,GAA G;IACtC,OAAO,EAAE,sBAAsB;IAC/B,KAAK,EAAE,IAAI;IACX,UAAU,IAA2E;IACrF,IAAI,EAAE,CAAC,aA Aa,CAAC;EACrB;AAEF;;;SAGgB,6BAA6B,CAAC,SAAwB;IACpE,OAAO;QACL,iBAAiB,CAAC,SAAS,CAAC ,CAAC;KAC9B,CAAC;AACJ,CAAC;AAED;;;;;;;;;SAYgB,iBAAiB,CAAC,SAAwB,EAAE,UAAyB,MAAM;IA CzF,IAAI,CAAC,SAAS,CAAC,SAAS,EAAE;QACxB,MAAM,IAAI,KAAK,CAAC;;;OAGb,CAAC,CAAC;KAC N;IAED,MAAM,MAAM,GAAW,SAAS,CAAC,QAAQ,CAAC,GAAG,CAAC,MAAM,CAAC,CAAC;IACtD,MA AM,QAAQ,GAAa,SAAS,CAAC,QAAQ,CAAC,GAAG,CAAC,QAAQ,CAAC,CAAC;IAE5D,SAAS,CAAC,SAAS ,CAAC,GAAG,CAAC,YAAY,CAAC;SACb,CAAC,GAAG,CAAC,sBAAsB,EAAE,CAAC,CAAM,EAAE,IAAY,EAAE, EAAU;QAC5D,IAAI,GAAG,CAAC;QACR,IAAI,OAAO,KAAK,MAAM,EAAE;YACtB,GAAG,GAAG,UAAU,C AAC,IAAI,CAAC,CAAC;SACxB;aAAM,IAAI,OAAO,KAAK,MAAM,EAAE;;YAE7B,MAAM,OAAO,GAAG,I AAI,CAAC,OAAO,CAAC,GAAG,CAAC,CAAC;YACiC,GAAG,GAAG,UAAU,CAAC,IAAI,CAAC,SAAS,CAA C,CAAC,EAAE,OAAO,CAAC,GAAG,IAAI,CAAC,SAAS,CAAC,OAAO,GAAG,CAAC,CAAC,CAAC,CAAC;S AC5E;aAAM;YAcl,MAAM,+CAA+C,GAAG,OAAO,CAAC;SACjE;QACD,MAAM,IAAI,GAAG,QAAQ,CAA C,SAAS,CAAC,GAAG,CAAC,QAAQ,CAAC,CAAC;QAC9C,MAAM,CAAC,aAAa,CAAC,IAAI,GAAG,GAAG, CAAC,MAAM,GAAG,GAAG,CAAC,IAAI,CAAC,CAAC;KACpD,CAAC,CAAC;AACT,CAAC;AAED;;;;;;;;; ;;;AAkBA,IAAI,MAAmC,CAAC;AACxC,SAAS,UAAU,CAAC,GAAW;IAC7B,IAAI,CAAC,MAAM,EAAE;QA CX,MAAM,GAAG,QAAQ,CAAC,aAAa,CAAC,GAAG,CAAC,CAAC;KACiC;IAED,MAAM,CAAC,YAAY,CA AC,MAAM,EAAE,GAAG,CAAC,CAAC;IACjC,MAAM,CAAC,YAAY,CAAC,MAAM,EAAE,MAAM,CAAC,IA AI,CAAC,CAAC;IAEzC,OAAO;;QAEL,QAAQ,EAAE,IAAI,MAAM,CAAC,QAAQ,CAAC,OAAO,CAAC,KAA K,EAAE,EAAE,CAAC,EAAE;QACID,MAAM,EAAE,MAAM,CAAC,MAAM;QACrB,IAAI,EAAE,MAAM,CAA C,IAAI;KACIB,CAAC;AACJ;;AC7HA;;;;;;;;;AAeA;;ACfA;;;;;;;;;ACAA;;;;;;;;;"}\n
```

Found in path(s):

\* /opt/cola/permits/1358260535\_1657134905.7370887/0/router-11-0-2-tgz/package/fesm2015/upgrade.js.map

No license file was found, but licenses were detected in source scan.

/\*\*

\* @license Angular v11.0.2

\* (c) 2010-2020 Google LLC. https://angular.io/

\* License: MIT

```

*/
/**
 * @license
 * Copyright Google LLC All Rights Reserved.
 *
 * Use of this source code is governed by an MIT-style license that can be
 * found in the LICENSE file at https://angular.io/license
 */

```

Found in path(s):

```

* /opt/cola/permits/1358260535_1657134905.7370887/0/router-11-0-2-tgz/package/bundles/router-upgrade.umd.js
* /opt/cola/permits/1358260535_1657134905.7370887/0/router-11-0-2-tgz/package/bundles/router-upgrade.umd.min.js

```

No license file was found, but licenses were detected in source scan.

```

{"version":3,"file":"router-upgrade.umd.js","sources":["../../../../../packages/router/upgrade/src/upgrade.ts","../../../../../packages/router/upgrade/public_api.ts","../../../../../packages/router/upgrade/index.ts","../../../../../packages/router/upgrade/upgrade.ts"],"sourceContent":["/**\n * @license\n * Copyright Google LLC All Rights Reserved.\n *\n * Use of this source code is governed by an MIT-style license that can be\n * found in the LICENSE file at https://angular.io/license\n *\n\nimport {Location} from '@angular/common';\nimport {APP_BOOTSTRAP_LISTENER, ComponentRef, InjectionToken} from '@angular/core';\nimport {Router} from '@angular/router';\nimport {UpgradeModule} from '@angular/upgrade/static';\n\n/**\n * Creates an initializer that sets up `ngRoute` integration\n * along with setting up the Angular router.\n *\n * @usageNotes\n *\n * <code-example language=\\\"typescript\\\">\n * @NgModule({\n * imports: [\n * RouterModule.forRoot(SOME_ROUTES),\n * UpgradeModule\n *],\n * providers: [\n * RouterUpgradeInitializer\n *]\n * })\n * export class AppModule {\n * ngDoBootstrap() {\n * </code-example>\n *\n * @publicApi\n *\nexport const RouterUpgradeInitializer = {\n provide: APP_BOOTSTRAP_LISTENER,\n multi: true,\n useFactory: locationSyncBootstrapListener as (ngUpgrade: UpgradeModule) => () => void,\n deps: [UpgradeModule]\n};\n\n/**\n * @internal\n *\nexport function locationSyncBootstrapListener(ngUpgrade: UpgradeModule) {\n return () => {\n setUpLocationSync(ngUpgrade);\n };\n}\n\n/**\n * Sets up a location change listener to trigger `history.pushState`. \n * Works around the problem that `onPopState` does not trigger `history.pushState`. \n * Must be called *after* calling `UpgradeModule.bootstrap`. \n *\n * @param ngUpgrade The upgrade NgModule.\n * @param urlType The location strategy.\n * @see `HashLocationStrategy`\n * @see `PathLocationStrategy`\n *\n * @publicApi\n *\nexport function setUpLocationSync(ngUpgrade: UpgradeModule, urlType: 'path'|'hash' = 'path') {\n if (!ngUpgrade.$injector) {\n throw new Error(`\n RouterUpgradeInitializer can be used only after UpgradeModule.bootstrap has been called.\n Remove RouterUpgradeInitializer and call setUpLocationSync after UpgradeModule.bootstrap.\n `);\n }\n const router: Router = ngUpgrade.injector.get(Router);\n const location: Location = ngUpgrade.injector.get(Location);\n ngUpgrade.$injector.get('$rootScope')\n .$on('$locationChangeStart', (_, next: string, __: string) => {\n let url;\n if (urlType === 'path') {\n url = resolveUrl(next);\n } else if (urlType === 'hash') {\n // Remove the first hash from the URL\n const hashIdx = next.indexOf('#');\n url = resolveUrl(next.substr(0, hashIdx) + next.substr(hashIdx + 1));\n } else {\n throw 'Invalid URLType passed to setUpLocationSync: ' + urlType;\n }\n const path = location.normalize(url.pathname);\n router.navigateByUrl(path + url.search + url.hash);\n });\n}\n\n/**\n * Normalizes and parses a URL.\n *\n * - Normalizing means that a relative URL will be resolved into an absolute URL in the context of\n * the application document.\n * - Parsing means that the anchor's `protocol`, `hostname`, `port`, `pathname` and related\n * properties are all populated to reflect the normalized URL.\n *\n * While this approach has wide compatibility, it doesn't work as expected on IE. On IE, normalizing\n *

```



happens similar to other browsers, but the parsed components will not be set. (E.g. if you assign `a.href = 'foo'`, then `a.protocol`, `a.host`, etc. will not be correctly updated.) We work around that by performing the parsing in a 2nd step by taking a previously normalized URL and assigning it again. This correctly populates all properties. See

```
https://github.com/angular/angular.js/blob/2c7400e7d07b0f6cec1817dab40b9250ce8ebce6/src/ng/urlUtils.js#L26-L33 for more info.

let anchor: HTMLAnchorElement;
function resolveUrl(url: string):
{pathname: string, search: string, hash: string} {
 if (!anchor) {
 anchor = document.createElement('a');
 }
 anchor.setAttribute('href', url);
 anchor.setAttribute('href', anchor.href);
 return {
 // IE does not start
 `pathname` with `^` like other browsers.
 pathname: `${anchor.pathname.replace(/^\/$/, '')}`,
 search:
 anchor.search,
 hash: anchor.hash
 };
}

/**
 * @license
 * Copyright Google LLC All Rights
 * Reserved.
 * Use of this source code is governed by an MIT-style license that can be
 * found in the
 * LICENSE file at https://angular.io/license
 */
module
 * @description
 * Entry point for all public
 * APIs of this package.
 * @export
 * from './src/upgrade';
// This file only reexports content of the `src` folder.
Keep it that way.
/**
 * @license
 * Copyright Google LLC All Rights Reserved.
 * Use of this source
 * code is governed by an MIT-style license that can be
 * found in the LICENSE file at https://angular.io/license
 */
// This file is not used to build this module. It is only used during editing
// by the TypeScript language
service and during build for verification. `ngc` replaces this file with production index.ts when it rewrites private
symbol names.
export
 * from './public_api';
/**
 * Generated bundle index. Do not edit.
 */
export
 * from
```

```
./index';
], "names": ["APP_BOOTSTRAP_LISTENER", "UpgradeModule", "router", "Router", "Location"], "mappings": ";;;;;;;;;IAAA;;;;;;;;;aAuCc;IA1Bd;;;;;;;;;QAUba,wBAawB,GAAG;QACtC,OAAO,EAAEA,2BAAsB;QAC/B,KAAK,EAAE,IAAI;QACX,UAAU,IAA2E;QACrF,IAAI,EAAE,CAACC,qBAAa,CAAC;MACrB;IAEF; ;aAGgB,6BAA6B,CAAC,SAAwB;QACpE,OAAO;YACL,iBAaiB,CAAC,SAAS,CAAC,CAAC;SAC9B,CAAC;IACJ,CAAC;IAED;;;;;;;;;aAYgB,iBAaiB,CAAC,SAAwB,EAAE,OAA+B;QAA/B,wBAAA,EAAA,gBAA+B;QACzF,IAAI,CAAC,SAAS,CAAC,SAAS,EAAE;YACxB,MAAM,IAAI,KAAK,CAAC,+MAGb,CAAC,CAAC;SACN;QAED,IAAMC,QAAM,GAAW,SAAS,CAAC,QAAQ,CAAC,GAAG,CAACC,aAAM,CAAC,CAAC;QACtD,IAAM,QAAQ,GAAa,SAAS,CAAC,QAAQ,CAAC,GAAG,CAACC,eAAQ,CAAC,CAAC;QAE5D,SAAS,CAAC,SAAS,CAAC,GAAG,CAAC,YAAY,CAAC;aAChC,GAAG,CAAC,sBAAsB,EAAE,UAAC,CAAM,EAAE,IAAY,EA AE,EAAU;YAC5D,IAAI,GAAG,CAAC;YACR,IAAI,OAAO,KAAK,MAAM,EAAE;gBACtB,GAAG,GAAG,UA AU,CAAC,IAAI,CAAC,CAAC;aACxB;iBAAM,IAAI,OAAO,KAAK,MAAM,EAAE;;gBAE7B,IAAM,OAAO,GA AG,IAAI,CAAC,OAAO,CAAC,GAAG,CAAC,CAAC;gBACiC,GAAG,GAAG,UA AU,CAAC,IAAI,CAAC,SAAS ,CAAC,CAAC,EAAE,OAAO,CAAC,GAAG,IAAI,CAAC,SAAS,CAAC,OAAO,GAAG,CAAC,CAAC,CA AC;aAC5E;iBAAM;gBACL,MAAM,+CAA+C,GAAG,OAAO,CAAC;aACjE;YACD,IAAM,IAAI,GAAG,QAAQ, CAAC,SAAS,CAAC,GAAG,CAAC,QAAQ,CAAC,CAAC;YAC9CF,QAAM,CAAC,aAAa,CAAC,IAAI,GAAG,G AAG,CAAC,MAAM,GAAG,GAAG,CAAC,IAAI,CAAC,CAAC;SACpD,CAAC,CAAC;IACT,CAAC;IAED;;;;;;;; ;;;;;;;;;IAkBA,IAAI,MAAmC,CAAC;IACxC,SAAS,UAAU,CAAC,GAAW;QAC7B,IAAI,CAAC,MAAM,EAAE;Y ACX,MAAM,GAAG,QAAQ,CAAC,aAAa,CAAC,GAAG,CAAC,CAAC;SACtC;QAED,MAAM,CAAC,YAAY,C AAC,MAAM,EAAE,GAAG,CAAC,CAAC;QACjC,MAAM,CAAC,YAAY,CAAC,MAAM,EAAE,MAAM,CAAC ,IAAI,CAAC,CAAC;QAEzC,OAAO;;YAEL,QAAQ,EAAE,MAAI,MAAM,CAAC,QAAQ,CAAC,OAAO,CAAC, KAAK,EAAE,EAAE,CAAG;YACID,MAAM,EAAE,MAAM,CAAC,MAAM;YACrB,IAAI,EAAE,MAAM,CAAC ,IAAI;SACIB,CAAC;IACJ;;IC7HA;;;;;;;;;IAeA;;ICfA;;;;;;;;;ICAA;;;;;;;;;"; }
```

Found in path(s):

```
* /opt/cola/permits/1358260535_1657134905.7370887/0/router-11-0-2-tgz/package/bundles/router-upgrade.umd.js.map
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No license file was found, but licenses were detected in source scan.

```
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"evt","guardsEnd","resetUrlToCurrentUrlTree","navCancel","resolveStart","dataResolved","resolveData","canActivateChecksResolved","runResolve","resolveNode","getResolver","takeLast","resolvedData","complete","resolveEnd","createRouterState","prevState","createNode","createOrReuseChildren","detachedRouteHandle","setFutureSnapshotsOfActivatedRoutes","createActivatedRoute","finalize","isNavigationCancelingError","redirecting","resetStateAndUrl","setTimeout","mergedTree","scheduleNavigation","navError","ee","resetRootComponentType","getTransition","setTransition","initialNavigation","setUpLocationChangeListener","navigateByUrl","locationSubscription","subscribe","event","currentChange","extractLocationChangeInfoFromEvent","shouldScheduleNavigation","stateCopy","change","parseUrl","transitionId","previous","sameDestination","getCurrentNavigation","ngOnDestroy","dispose","unsubscribe","navigationExtras","relativeTo","f","preserveFragment","q","queryParamsHandling","removeEmptyParams","nav","computeNavigation","cmd","cmdIdx","outlets\_1","urlPart","partIndex","startingPosition","findStartingPosition","modifier","createPositionApplyingDoubleDots","ci","dd","navigate","validateCommands","isActive","warn","priorPromise","lastNavigation","browserNavPrecededByRouterNav","duplicateNav","rej","catch","isCurrentPathEqualTo","replaceState","go","storedState","storedUrl","Injectable","ctorParameters","Type","Location","Injector","NgModuleFactoryLoader","Compiler","RouterLink","tabIndex","renderer","el","onChanges","setAttribute","nativeElement","ngOnChanges","changes","onClick","attrBoolValue","Directive","selector","String","Attribute","Renderer2","ElementRef","propDecorators","Input","routerLink","HostListener","RouterLinkWithHref","locationStrategy","subscription","updateTargetUrlAndHref","button","ctrlKey","shiftKey","altKey","metaKey","target","href","prepareExternalUrl","LocationStrategy","HostBinding","RouterLinkActive","element","cdr","link","linkWithHref","classes","routerLinkActiveOptions","routerEventsSubscription","update","ngAfterContentInit","links","linksWithHrefs","mergeAll","subscribeToEachLinkOnChanges","linkInputChangesSubscription","allLinkChanges","toArray","isLinkActive","then","hasActiveLinks","markForCheck","addClass","removeClass","isActiveCheckFn","exportAs","ChangeDetectorRef","Optional","ContentChildren","descendants","routerLinkActive","RouterOutlet","changeDetector","\_activatedRoute","activateEvents","EventEmitter","deactivateEvents","ngOnInit","instance","cmp","ref","activatedRoute","insert","hostView","destroy","emit","resolveComponentFactory","childContexts","OutletInjector","createElement","ViewContainerRef","ComponentFactoryResolver","Output","notFoundValue","PreloadingStrategy","PreloadAllModules","preload","NoPreloading","RouterPreloader","moduleLoader","preloadingStrategy","setUpPreloading","processRoutes","preloadConfig","RouterScroller","viewportScroller","options","lastId","lastSource","restoredId","scrollPositionRestoration","anchorScrolling","init","setHistoryScrollRestoration","createScrollEvents","scrollEventsSubscription","consumeScrollEvents","getScrollPosition","scheduleScrollEvent","scrollToPosition","scrollToAnchor","ViewportScroller","ROUTER\_DIRECTIVES","ROUTER\_CONFIGURATION","ROUTER\_FORROOT\_GUARD","ROUTER\_PROVIDERS","provide","useClass","useFactory","setupRouter","deps","rootRoute","SystemJsNgModuleLoader","useValue","enableTracing","routerNgProbeToken","NgProbeToken","RouterModule","forRoot","providers","provideRoutes","provideForRootGuard","SkipSelf","provideLocationStrategy","PlatformLocation","Inject","APP\_BASE\_HREF","createRouterScroller","useExisting","multi","provideRouterInitializer","forChild","scrollOffset","setOffset","platformLocationStrategy","baseHref","useHash","HashLocationStrategy","PathLocationStrategy","ANALYZE\_FOR\_ENTRY\_COMPONENTS","opts","assignExtraOptionsToRouter","dom\_1","getDOM","logGroup","log","logGroupEnd","NgModule","declarations","entryComponents","RouterInitializer","initNavigation","resultOfPreactivationDone","appInitializer","LOCATION\_INITIALIZED","bootstrapListener","bootstrappedComponentRef","preloader","routerScroller","ApplicationRef","components","componentTypes","getAppInitializer","bind","getBootstrapListener","ROUTER\_INITIALIZER","APP\_INITIALIZER","APP\_BOOTSTRAP\_LISTENER","VERSION","Version","PRIMARY\_OUTLET","ROUTER\_PROVIDERS","angular\_packages\_router\_router\_a","angular\_packages\_router\_router\_b","angular\_packages\_router\_router\_c","angular\_packages\_router\_router\_d","angular\_packages\_router\_router\_e","angular\_packages\_router\_router\_f","angular\_packages\_router\_router\_g","angular\_packages\_router\_router\_h","angular\_packages\_router\_router\_i","angular\_packages\_router\_router\_j","angular\_packages\_router\_router\_k","angular\_packages\_router\_router\_l","angular\_packages\_router\_router\_m","angular\_packages\_router\_router\_n","angular\_packages\_router\_router\_o","assignExtraOptionsToRouter","flatten"],"mappings":";;;;CAMC,SAAUA,EAAQC,GACI,iBAAZC,SAA0C,oBAAXC,OAAyBF,EAAQC,QAASE,QAAQ,mBAAoBA,QAAQ,iBAAkBA,QAAQ,QAASA,QAAQ,mBAC7I,mBAAXC,QAAyBA,OAAOC,IAAMD,OAAO,kBAAMb,CAA

C,UAAW,kBAAmB,gBAaIB,OAAQ,kBAAmBJ,GACxHA,IAAzBD,EAASA,GAAUO,MAAsBC,GAACKR,EAAOQ,IAAM,GAAIR,EAAOQ,GAAGC,OAAS,IAAKT,EAAOQ,GAAGE,OAAQV,EAAOQ,GAAGG,KAAMX,EAAOY,KAAMZ,EAAOY,KAAKC,WAHvJ,CAIEC,MAAM,SAAWZ,EAASQ,EAAQC,EAAMC,EAAMC,GAAa;,,,,;,,,,;oFAiBzD,IAAIE,EAAgB,SAAUC,EAAGC,GAM7B,OALAF,EAAgBG,OAAOC,gBACIB,CAAEC,UAAW,cAAgBC,OAAS,SAUL,EAAGC,GAACKD,EAAEI,UAYYH,IACvE,SAAUD,EAAGC,GAACK,IAAK,IAAIK,KAAKL,EACxBA,EAAEM,eAAeD,KACjBN,EAAEM,GAACKL,EAAEK,MACAN,EAAGC,IAE5B,SAASO,EAAUR,EAAAGC,GAEIB,SAASQ,IAAOX,KAAKY,YAAcV,EADnCD,EAAcC,EAAGC,GAEjBD,EAAEW,UAAkB,OAANV,EAAaC,OAAOU,OAAOX,IAAMQ,EAAGE,UAYYV,EAAEU,UAAW,IAAIF,GaiJnF,SAASI,EAASC,GACd,IAAIC,EAAaB,mBAAXC,QAAyBA,OAAOC,SAAUC,EAAIH,GAACKD,EAAEC,GAAII,EAAI,EAC5E,GAAID,EACA,OAAOA,EAAEE,KAAKN,GACIB,GAAIA,GAAyB,iBAaBa,EAAEO,OACd,MAAO,CACHC,KAAM,WAGF,OAFIR,GAACK,GAACKL,EAAEO,SACZP,OAAI,GACD,CAAES,MAAOT,GAACKA,EAAEK,KAAMK,MAAOV,KAGhD,MAAM,IAAIW,UAAUV,EAAI,0BAA4B,mCAExD,SAASW,EAAOZ,EAAgA,GACf,IAAIT,EAAaB,mBAAXF,QAAyBF,EAAEE,OAAOC,UACjD,IAAKC,EACD,OAAOJ,EACX,IAAmBc,EAAyC,EAA3BV,EAAID,EAAEE,KAAKN,GAAOgB,EAAK,GAC3B,IACI,WAAc,IAANH,GAAgBA,KAAM,MAAQC,EAAIT,EAAEG,QAAQE,MACHDM,EAAGC,KAAKH,EAAEL,OAEIB,MAAOS,GACHH,EAAI,CAAEG,MAAOA,GAEjB,QACI,IACQJ,IAAMA,EAAEJ,OAASN,EAAIC,EAAU,SAC/BD,EAAEE,KAAKD,GAEf,QACI,GAAIU,EACA,MAAMA,EAAEG,OAGpB,OAAOF,EAEX,SAASG,IACL,IAAK,IAAIH,EAAK,GAAIX,EAAI,EAAGA,EAAIe,UAAUb,OAAQF,IAC3CW,EAAKA,EAAGK,OAAOT,EAAOQ,UAAUf,KACpC,OAAOW;,,,,;AAsHX,IAAIM,EAgBAC,EAAiC,SAAUC,GAE3C,SAASD,EAETE,EAEAC,EAEAC,EAEAC,QAC8B,IAAtBD,IAAgCA,EAAoB,mBACIC,IAAIBC,IAA4BA,EAAgB,MACHd,IAAIC,EAAQL,EAAOIB,KAAKtB,KAAMyC,EAAIC,IAAQ1C,KAG1C,OAF A6C,EAAMF,kBAAoBA,EAC1BE,EAAMD,cAAgBA,EACfC,EAMX,OArBAnC,EAAU6B,EAAiBC,GakB3BD,EAAgB1B,UAAUic,SAAW,WACjC,MAAO,uBAAyB9C,KAAKyC,GAACK,WAAazC,KAAK0C,IAAM,MAE/DH ,EAAtByB,CahBhCD,EACA,SAASA,EAETG,EAEAC,GACI1C,KAAKyC,GAACKA,EACVzC,KAAK0C,IAAMA,IA0CfK,EAA+B,SAAUP,GAEzC,SAASO,EAETN,EAEAC,EAEAM,GACI,IAAIH,EAAQL,EAAOIB,KAAKtB,KAAAMyC,EAAIC,IAAQ1C,KAE1C,OADA6C,EAAMG,kBAAoBA,EACnBH,EAMX,OAhBAnC,EAAUqC,EAAeP ,GAazBO,EAAcL,UAAUic,SAAW,WAC/B,MAAO,qBAAuB9C,KAAKyC,GAACK,WAAazC,KAAK0C,IAAM,0BAA4B1C,KAAKgD,kBAAoB,MAEIHD,EAjBuB,CakBhCT,GAYEW,EAAkC,SAAUT,GAE5C,SAASS,EAETR ,EAEAC,EAEAQ,GACI,IAAIL,EAAQL,EAAOIB,KAAKtB,KAAMyC,EAAIC,IAAQ1C,KAE1C,OADA6C,EAA MK,OAASA,EACRL,EAMX,OAhBAnC,EAAUuC,EAAkBT,GAa5BS,EAAiBpC,UAAUic,SAAW,WACIC,MAAO,wBAA0B9C,KAAKyC,GAACK,WAAazC,KAAK0C,IAAM,MAEhEO,EAjB0B,CakBnCX,GAUEa,EAAiC,SAAU X,GAE3C,SAASW,EAETV,EAEAC,EAEAR,GACI,IAAIW,EAAQL,EAAOIB,KAAKtB,KAAMyC,EAAIC,IAAQ1C,KAE1C,OADA6C,EAAMX,MAAQA,EACPW,EAMX,OAhBAnC,EAAUyC,EAAiBX,GAa3BW,EAAgBt C,UAAUic,SAAW,WACjC,MAAO,uBAAyB9C,KAAKyC,GAACK,WAAazC,KAAK0C,IAAM,aAAe1C,KAAKk C,MAAQ,KAE3FiB,EAjByB,CakBicb,GAMEc,EAAkC,SAAUZ,GAE5C,SAASY,EAETX,EAEAC,EAEAM,EA EAK,GACI,IAAIR,EAAQL,EAAOIB,KAAKtB,KAAMyC,EAAIC,IAAQ1C,KAG1C,OFA6C,EAAMG,kBAAo BA,EAC1BH,EAAMQ,MAAQA,EACPR,EAMX,OAnBAnC,EAAU0C,EAAkBZ,GAgB5BY,EAAiBvC,UAAUic, SAAW,WACIC,MAAO,wBAA0B9C,KAAKyC,GAACK,WAAazC,KAAK0C,IAAM,0BAA4B1C,KAAKgD,kBAA oB,aAAehD,KAAKqD,MAAQ,KAEjJD,EApB0B,CaqBnCd,GAQEGb,EAAkC,SAAUd,GAE5C,SAASc,EAETb,E AEAC,EAEAM,EAEAK,GACI,IAAIR,EAAQL,EAAOIB,KAAKtB,KAAMyC,EAAIC,IAAQ1C,KAG1C,OFA6 C,EAAMG,kBAAoBA,EAC1BH,EAAMQ,MAAQA,EACPR,EAKX,OAIbAnC,EAAU4C,EAAkBD,GAe5Bc,EAA iBzC,UAAUic,SAAW,WACIC,MAAO,wBAA0B9C,KAAKyC,GAACK,WAAazC,KAAK0C,IAAM,0BAA4B1C,K AAkgD,kBAAoB,aAAehD,KAAKqD,MAAQ,KAEjJC,EAnB0B,CAoBnChB,GAQEiB,EAAgC,SAAUf,GAE1C,S AASe,EAETd,EAEAC,EAEAM,EAEAK,EAEAG,GACI,IAAIX,EAAQL,EAAOIB,KAAKtB,KAAMyC,EAAIC,IAAQ1C,KAI1C,OAHA6C,EAAMG,kBAAoBA,EAC1BH,EAAMQ,MAAQA,EACdR,EAAMW,eAAiBA,EACb X,EAKX,OArBAnC,EAAU6C,EAAgBf,GakB1Be,EAAe1C,UAAUic,SAAW,WACjC,MAAO,sBAAwB9C,KAA KyC,GAACK,WAAazC,KAAK0C,IAAM,0BAA4B1C,KAAKgD,kBAAoB,aAAehD,KAAKqD,MAAQ,qBAABrD ,KAAkwD,eAAiB,KAE5LD,EAAtBwB,CAuBjCjB,GAWEmB,EAA8B,SAAUjB,GAExC,SAASiB,EAETHB,EAEA C,EAEAM,EAEAK,GACI,IAAIR,EAAQL,EAAOIB,KAAKtB,KAAMyC,EAAIC,IAAQ1C,KAG1C,OFA6C,EA

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https://angular.io/\n * License: MIT\n *\n(function (global, factory) {\n typeof exports === 'object' && typeof\n module !== 'undefined' ? factory(exports, require('@angular/common'), require('@angular/core'), require('rxjs'),\n require('rxjs/operators')) :\n typeof define === 'function' && define.amd ? define('@angular/router', ['exports',\n '@angular/common', '@angular/core', 'rxjs', 'rxjs/operators'], factory) :\n (global = global || self, factory((global.ng\n = global.ng || {}, global.ng.router = {})), global.ng.common, global.ng.core, global.rxs,\n global.rxs.operators));\n})(this, (function (exports, common, core, rxjs, operators) {\n 'use strict';\n /*!
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***** *\n /* global Reflect, Promise *\n var extendStatics = function (d, b) {\n extendStatics = Object.setPrototypeOf ||\n ({ __proto__: [] } instanceof Array && function (d, b) { d.__proto__ = b; }) ||\n function (d, b) { for (var p in b)\n if (b.hasOwnProperty(p))\n d[p] = b[p]; }\n return extendStatics(d, b);\n};
```

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function __extends(d, b) {\n extendStatics(d, b);\n function __() { this.constructor = d; }\n d.prototype = b === null ? Object.create(b) : (__.prototype = b.prototype, new __());\n }\n var __assign = function () {\n __assign = Object.assign || function __assign(t) {\n for (var s, i = 1, n = arguments.length; i < n; i++) {\n s = arguments[i];\n for (var p in s)\n if (Object.prototype.hasOwnProperty.call(s, p))\n t[p] = s[p];\n }\n return t;\n }; \n return __assign.apply(this, arguments);\n };\n function __rest(s, e) {\n var t = {};\n for (var p in s)\n if (Object.prototype.hasOwnProperty.call(s, p)\n && e.indexOf(p) < 0)\n t[p] = s[p];\n if (s != null && typeof Object.getPrototypeOf ===\n \"function\")\n for (var i = 0, p = Object.getPrototypeOf(s); i < p.length; i++)\n if (\n e.indexOf(p[i]) < 0 && Object.prototype.propertyIsEnumerable.call(s, p[i]))\n t[p[i]] = s[p[i]];\n }\n return t;\n }\n function __decorate(decorators, target, key, desc) {\n var c = arguments.length, r = c < 3 ? target : desc === null ? desc = Object.getOwnPropertyDescriptor(target, key) : desc, d;\n if (typeof Reflect === \"object\" && typeof Reflect.decorate === \"function\")\n r = Reflect.decorate(decorators, target, key, desc);\n else\n for (var i = decorators.length - 1; i >= 0; i--)\n if (d = decorators[i])\n r = (c < 3 ? d(r) : c > 3 ? d(target, key, r) : d(target, key)) || r;\n return c > 3 && r &&\n Object.defineProperty(target, key, r, r);\n }\n function __param(paramIndex, decorator) {\n return function (target, key) { decorator(target, key, paramIndex); }\n }\n function __metadata(metadataKey, metadataValue) {\n if (typeof Reflect === \"object\" && typeof Reflect.metadata === \"function\")\n return Reflect.metadata(metadataKey, metadataValue);\n }\n function __awaiter(thisArg, _arguments, P, generator) {\n function adopt(value) { return value instanceof P ? value : new P(function (resolve) { resolve(value); }); }\n return new (P || (P = Promise))(function (resolve, reject) {\n function fulfilled(value) { try { step(generator.next(value)); }\n catch (e) { reject(e); }\n }\n function rejected(value) { try { step(generator[\"throw\"](value)); }\n catch (e) { reject(e); }\n }\n function step(result) { result.done ? resolve(result.value) :\n adopt(result.value).then(fulfilled, rejected); }\n step((generator = generator.apply(thisArg, _arguments ||\n [])).next());\n });\n }\n function __generator(thisArg, body) {\n var _ = { label: 0, sent: function () { if (t[0] & 1)\n throw t[1]; return t[1]; }, trys: [], ops: [] }, f, y, t, g;\n return g = { next: verb(0), \"throw\":\n verb(1), \"return\": verb(2) }, typeof Symbol === \"function\" && (g[Symbol.iterator] = function () { return this; }),\n g;\n function verb(n) { return function (v) { return step([n, v]); }\n }\n function step(op) {\n if (f)\n throw new TypeError(\"Generator is already executing.\");\n while (!_)\n try {\n if (f = 1, y && (t = op[0] & 2 ? y[\"return\"] : op[0] ? y[\"throw\"] || ((t = y[\"return\"])\n && t.call(y), 0) : y.next) && !(t = t.call(y, op[1])).done)\n return t;\n if (y = 0, t)\n op = [op[0] & 2,\n t.value];\n switch (op[0]) {\n case 0:\n t = op;\n break;\n case 4:\n _label++;\n return { value: op[1],\n done: false };\n case 5:\n _label++;\n y = op[1];\n op = [0];\n continue;\n case 7:\n op = _ops.pop();\n _trys.pop();\n continue;\n default:\n if (!(t = _trys, t = t.length > 0\n && t[t.length - 1]) && (op[0] === 6 || op[0] === 2))\n _ = 0;\n continue;\n }\n }\n if (op[0] === 3 && (!t || (op[1] > t[0] && op[1] < t[3])))\n _label = op[1];\n break;\n }\n if (op[0] === 6 && _label < t[1])\n _label = t[1];\n t = op;\n break;\n }\n if (t && _label < t[2])\n _label = t[2];\n _ops.push(op);\n break;\n }\n if (t[2])\n _ops.pop();\n _trys.pop();\n continue;\n }\n op =\n body.call(thisArg, _);\n }\n catch (e) {\n op = [6, e];\n y = 0;\n }\n finally {\n f = t = 0;\n }\n if (op[0] & 5)\n throw op[1];\n return { value: op[0] ? op[1] : void 0, done: true };\n }\n }\n var __createBinding = Object.create ? (function (o, m, k, k2) {\n if (k2 === undefined)\n k2 = k;\n Object.defineProperty(o, k2, { enumerable: true,\n get: function () { return m[k]; } });\n }) : (function (o, m, k, k2) {\n if (k2 === undefined)\n k2 = k;\n }

```





Base for events the router goes through, as opposed to events tied to a specific route. Fired one time for any given navigation.

The following code shows how a class subscribes to router events.

```

class MyService {
 constructor(public router: Router, logger: Logger) {
 router.events.pipe(
 filter((e: RouterEvent): e is RouterEvent => e instanceof RouterEvent)
).subscribe((e: RouterEvent) => {
 logger.log(e.id, e.url);
 });
 }
}
@see `Event`
@see [Router events summary](guide/router#router-events)
@publicApi
var RouterEvent = /** @class */
(function () {
 function RouterEvent(
 /** A unique ID that the router assigns to every router navigation. */
 id,
 /** The URL that is the destination for this navigation. */
 url) {
 this.id = id;
 this.url = url;
 }
 return RouterEvent;
})();
/** An event triggered when a navigation starts. */
@publicApi
var NavigationStart = /** @class */ (function (_super) {
 __extends(NavigationStart, _super);
 function NavigationStart(
 /** @docsNotRequired */
 id,
 /** @docsNotRequired */
 url,
 /** @docsNotRequired */
 navigationTrigger,
 /** @docsNotRequired */
 restoredState) {
 if (navigationTrigger === void 0) { navigationTrigger = 'imperative'; }
 if (restoredState === void 0) { restoredState = null; }
 var _this = _super.call(this, id, url) || this;
 _this.navigationTrigger = navigationTrigger;
 _this.restoredState = restoredState;
 return _this;
 }
 /** @docsNotRequired */
 NavigationStart.prototype.toString = function () {
 return `NavigationStart(id: ` + this.id + `, url: ` + this.url + `)`;
 };
 return NavigationStart;
})(RouterEvent);
/** An event triggered when a navigation ends successfully. */
@see `NavigationStart`
@see `NavigationCancel`
@see `NavigationError`
@publicApi
var NavigationEnd = /** @class */ (function (_super) {
 __extends(NavigationEnd, _super);
 function NavigationEnd(
 /** @docsNotRequired */
 id,
 /** @docsNotRequired */
 url,
 /** @docsNotRequired */
 urlAfterRedirects) {
 var _this = _super.call(this, id, url) || this;
 _this.urlAfterRedirects = urlAfterRedirects;
 return _this;
 }
 /** @docsNotRequired */
 NavigationEnd.prototype.toString = function () {
 return `NavigationEnd(id: ` + this.id + `, url: ` + this.url + `, urlAfterRedirects: ` + this.urlAfterRedirects + `)`;
 };
 return NavigationEnd;
})(RouterEvent);
/** An event triggered when a navigation is canceled, directly or indirectly. This can happen when a route guard returns `false` or initiates a redirect by returning a `UrlTree`. */
@see `NavigationStart`
@see `NavigationEnd`
@see `NavigationError`
@publicApi
var NavigationCancel = /** @class */ (function (_super) {
 __extends(NavigationCancel, _super);
 function NavigationCancel(
 /** @docsNotRequired */
 id,
 /** @docsNotRequired */
 url,
 /** @docsNotRequired */
 reason) {
 var _this = _super.call(this, id, url) || this;
 _this.reason = reason;
 return _this;
 }
 /** @docsNotRequired */
 NavigationCancel.prototype.toString = function () {
 return `NavigationCancel(id: ` + this.id + `, url: ` + this.url + `, reason: ` + this.reason + `)`;
 };
 return NavigationCancel;
})(RouterEvent);
/** An event triggered when a navigation fails due to an unexpected error. */
@see `NavigationStart`
@see `NavigationEnd`
@see `NavigationCancel`
@publicApi
var NavigationError = /** @class */ (function (_super) {
 __extends(NavigationError, _super);
 function NavigationError(
 /** @docsNotRequired */
 id,
 /** @docsNotRequired */
 url,
 /** @docsNotRequired */
 error) {
 var _this = _super.call(this, id, url) || this;
 _this.error = error;
 return _this;
 }
 /** @docsNotRequired */
 NavigationError.prototype.toString = function () {
 return `NavigationError(id: ` + this.id + `, url: ` + this.url + `, error: ` + this.error + `)`;
 };
 return NavigationError;
})(RouterEvent);
/** An event triggered when routes are recognized. */
@publicApi
var RoutesRecognized = /** @class */ (function (_super) {
 __extends(RoutesRecognized, _super);
 function RoutesRecognized(
 /** @docsNotRequired */
 id,
 /** @docsNotRequired */
 url,
 /** @docsNotRequired */
 urlAfterRedirects,
 /** @docsNotRequired */
 state) {
 var _this = _super.call(this, id, url) || this;
 _this.urlAfterRedirects = urlAfterRedirects;
 _this.state = state;
 return _this;
 }
 /** @docsNotRequired */
 RoutesRecognized.prototype.toString = function () {
 return `RoutesRecognized(id: ` + this.id + `, url: ` + this.url + `, urlAfterRedirects: ` + this.urlAfterRedirects + `, state: ` + this.state + `)`;
 };
 return RoutesRecognized;
})(RouterEvent);

```

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\"RoutesRecognized(id: \" + this.id + \", url: \" + this.url + \", urlAfterRedirects: \" + this.urlAfterRedirects + \",
state: \" + this.state + \")\";\n });\n return RoutesRecognized;\n }(RouterEvent));\n /**\n * An event
triggered at the start of the Guard phase of routing.\n *\n * @see `GuardsCheckEnd`\n *\n *
@publicApi\n */\n var GuardsCheckStart = /** @class */ (function (_super) {\n
__extends(GuardsCheckStart, _super);\n function GuardsCheckStart(\n /** @docsNotRequired */\n id,\n
 /** @docsNotRequired */\n url, \n /** @docsNotRequired */\n urlAfterRedirects, \n /**
@docsNotRequired */\n state) {\n var _this = _super.call(this, id, url) || this;\n
 _this.urlAfterRedirects = urlAfterRedirects;\n _this.state = state;\n return _this;\n }\n
GuardsCheckStart.prototype.toString = function () {\n return \"GuardsCheckStart(id: \" + this.id + \", url: \" +
this.url + \", urlAfterRedirects: \" + this.urlAfterRedirects + \", state: \" + this.state + \")\";\n };
return GuardsCheckStart;\n }(RouterEvent));\n /**\n * An event triggered at the end of the Guard phase of routing.\n
*\n * @see `GuardsCheckStart`\n *\n * @publicApi\n */\n var GuardsCheckEnd = /** @class */
(function (_super) {\n __extends(GuardsCheckEnd, _super);\n function GuardsCheckEnd(\n /**
@docsNotRequired */\n id, \n /** @docsNotRequired */\n url, \n /** @docsNotRequired */\n
urlAfterRedirects, \n /** @docsNotRequired */\n state, \n /** @docsNotRequired */\n
 shouldActivate) {\n var _this = _super.call(this, id, url) || this;\n _this.urlAfterRedirects =
urlAfterRedirects;\n _this.state = state;\n _this.shouldActivate = shouldActivate;\n return
_this;\n }\n GuardsCheckEnd.prototype.toString = function () {\n return \"GuardsCheckEnd(id: \" +
this.id + \", url: \" + this.url + \", urlAfterRedirects: \" + this.urlAfterRedirects + \", state: \" + this.state + \",
shouldActivate: \" + this.shouldActivate + \")\";\n };
return GuardsCheckEnd;\n }(RouterEvent));\n /**\n * An event triggered at the the start of the Resolve phase of routing.\n
*\n * Runs in the \"resolve\" phase whether or not there is anything to resolve.\n * In future, may change to only run when there are things to
be resolved.\n *\n * @see `ResolveEnd`\n *\n * @publicApi\n */\n var ResolveStart = /** @class */
(function (_super) {\n __extends(ResolveStart, _super);\n function ResolveStart(\n /**
@docsNotRequired */\n id, \n /** @docsNotRequired */\n url, \n /** @docsNotRequired */\n
urlAfterRedirects, \n /** @docsNotRequired */\n state) {\n var _this = _super.call(this, id, url) ||
this;\n _this.urlAfterRedirects = urlAfterRedirects;\n _this.state = state;\n return _this;\n }\n
ResolveStart.prototype.toString = function () {\n return \"ResolveStart(id: \" + this.id + \", url: \" +
this.url + \", urlAfterRedirects: \" + this.urlAfterRedirects + \", state: \" + this.state + \")\";\n };
return ResolveStart;\n }(RouterEvent));\n /**\n * An event triggered at the end of the Resolve phase of routing.\n
*\n * @see `ResolveStart`\n *\n * @publicApi\n */\n var ResolveEnd = /** @class */ (function (_super) {\n
__extends(ResolveEnd, _super);\n function ResolveEnd(\n /** @docsNotRequired */\n id, \n /**
@docsNotRequired */\n url, \n /** @docsNotRequired */\n urlAfterRedirects, \n /**
@docsNotRequired */\n state) {\n var _this = _super.call(this, id, url) || this;\n
 _this.urlAfterRedirects = urlAfterRedirects;\n _this.state = state;\n return _this;\n }\n
ResolveEnd.prototype.toString = function () {\n return \"ResolveEnd(id: \" + this.id + \", url: \" + this.url +
\", urlAfterRedirects: \" + this.urlAfterRedirects + \", state: \" + this.state + \")\";\n };
return ResolveEnd;\n }(RouterEvent));\n /**\n * An event triggered before lazy loading a route configuration.\n
*\n * @see `RouteConfigLoadEnd`\n *\n * @publicApi\n */\n var RouteConfigLoadStart = /** @class */
(function () {\n function RouteConfigLoadStart(\n /** @docsNotRequired */\n route) {\n
this.route = route;\n }\n RouteConfigLoadStart.prototype.toString = function () {\n return
\"RouteConfigLoadStart(path: \" + this.route.path + \")\";\n };
return RouteConfigLoadStart;\n }());\n /**\n * An event triggered when a route has been lazy loaded.\n
*\n * @see `RouteConfigLoadStart`\n *\n * @publicApi\n */\n var RouteConfigLoadEnd = /** @class */ (function () {\n
function RouteConfigLoadEnd(\n /** @docsNotRequired */\n route) {\n this.route = route;\n }\n
RouteConfigLoadEnd.prototype.toString = function () {\n return \"RouteConfigLoadEnd(path: \" +
this.route.path + \")\";\n };
return RouteConfigLoadEnd;\n }());\n /**\n * An event triggered at the
start of the child-activation\n * part of the Resolve phase of routing.\n * @see `ChildActivationEnd`\n *

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@see `ResolveStart`\n * \n * @publicApi\n * \n var ChildActivationStart = /** @class */ (function () {\n
 function ChildActivationStart(\n /** @docsNotRequired */ \n snapshot) {\n this.snapshot =\n snapshot;\n }\n ChildActivationStart.prototype.toString = function () {\n var path =\n this.snapshot.routeConfig && this.snapshot.routeConfig.path || "";\n return `ChildActivationStart(path: ` +\n path + `)`;\n };\n return ChildActivationStart;\n})();\n /** \n * An event triggered at the end of the\n child-activation part\n * of the Resolve phase of routing.\n * @see `ChildActivationStart`\n * @see\n `ResolveStart`\n * @publicApi\n * \n var ChildActivationEnd = /** @class */ (function () {\n function\n ChildActivationEnd(\n /** @docsNotRequired */ \n snapshot) {\n this.snapshot = snapshot;\n }\n ChildActivationEnd.prototype.toString = function () {\n var path = this.snapshot.routeConfig &&\n this.snapshot.routeConfig.path || "";\n return `ChildActivationEnd(path: ` + path + `)`;\n };\n return ChildActivationEnd;\n})();\n /** \n * An event triggered at the start of the activation part\n * of the\n Resolve phase of routing.\n * @see `ActivationEnd`\n * @see `ResolveStart`\n * \n * @publicApi\n * \n var\n ActivationStart = /** @class */ (function () {\n function ActivationStart(\n /** @docsNotRequired\n */ \n snapshot) {\n this.snapshot = snapshot;\n }\n ActivationStart.prototype.toString = function\n () {\n var path = this.snapshot.routeConfig && this.snapshot.routeConfig.path || "";\n return\n `ActivationStart(path: ` + path + `)`;\n };\n return ActivationStart;\n})();\n /** \n * An event\n triggered at the end of the activation part\n * of the Resolve phase of routing.\n * @see `ActivationStart`\n * \n * @see `ResolveStart`\n * \n * @publicApi\n * \n var\n ActivationEnd = /** @class */ (function () {\n function ActivationEnd(\n /** @docsNotRequired\n */ \n snapshot) {\n this.snapshot = snapshot;\n }\n ActivationEnd.prototype.toString = function () {\n var path = this.snapshot.routeConfig &&\n this.snapshot.routeConfig.path || "";\n return `ActivationEnd(path: ` + path + `)`;\n };\n return\n ActivationEnd;\n})();\n /** \n * An event triggered by scrolling.\n * \n * @publicApi\n * \n var\n Scroll = /** @class */ (function () {\n function Scroll(\n /** @docsNotRequired\n */ \n routerEvent, \n /** @docsNotRequired\n */ \n position, \n /** @docsNotRequired\n */ \n anchor) {\n this.routerEvent = routerEvent;\n this.position = position;\n this.anchor = anchor;\n }\n Scroll.prototype.toString = function () {\n var pos = this.position ? this.position[0] + `, ` + this.position[1] :\n null;\n return `Scroll(anchor: ` + this.anchor + `, position: ` + pos + `)`;\n };\n return Scroll;\n\n\n})();\n /** \n * @license\n * Copyright Google LLC All Rights Reserved.\n * \n * Use of this source\n code is governed by an MIT-style license that can be\n * found in the LICENSE file at https://angular.io/license\n * \n * \n * The primary routing outlet.\n * \n * @publicApi\n * \n var PRIMARY_OUTLET =\n 'primary';\n var ParamsAsMap = /** @class */ (function () {\n function ParamsAsMap(params) {\n this.params = params || {};\n }\n ParamsAsMap.prototype.has = function (name) {\n return\n Object.prototype.hasOwnProperty.call(this.params, name);\n };\n ParamsAsMap.prototype.get = function\n (name) {\n if (this.has(name)) {\n var v = this.params[name];\n return Array.isArray(v) ?\n v[0] : v;\n }\n return null;\n };\n ParamsAsMap.prototype.getAll = function (name) {\n if (this.has(name)) {\n var v = this.params[name];\n return Array.isArray(v) ? v : [v];\n }\n return [];\n };\n Object.defineProperty(ParamsAsMap.prototype, `keys`, {\n get: function ()\n {\n return Object.keys(this.params);\n },\n enumerable: false,\n configurable: true\n });\n return ParamsAsMap;\n\n\n})();\n /** \n * Converts a `Params` instance to a `ParamMap`.\n * \n * @param params The instance to convert.\n * @returns The new map instance.\n * \n * @publicApi\n * \n var\n function convertToParamMap(params) {\n return new ParamsAsMap(params);\n }\n var\n NAVIGATION_CANCELING_ERROR = `ngNavigationCancelingError`;\n function\n navigationCancelingError(message) {\n var error = Error(`NavigationCancelingError: ` + message);\n error[NAVIGATION_CANCELING_ERROR] = true;\n return error;\n }\n function\n isNavigationCancelingError(error) {\n return error && error[NAVIGATION_CANCELING_ERROR];\n }\n // Matches the route configuration (`route`) against the actual URL (`segments`).\n function\n defaultUrlMatcher(segments, segmentGroup, route) {\n var parts = route.path.split(`/`);\n if (parts.length >\n segments.length) {\n // The actual URL is shorter than the config, no match\n return null;\n }\n
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if (route.pathMatch === 'full' &&\n (segmentGroup.hasChildren() || parts.length < segments.length)) {\n
 // The config is longer than the actual URL but we are looking for a full match, return null\n return null;\n
}\n var posParams = {};\n // Check each config part against the actual URL\n for (var index = 0; index\n< parts.length; index++) {\n var part = parts[index];\n var segment = segments[index];\n var\nisParameter = part.startsWith(':');\n if (isParameter) {\n posParams[part.substring(1)] = segment;\n }\n else if (part !== segment.path) {\n // The actual URL part does not match the config, no\nmatch\n return null;\n }\n }\n return { consumed: segments.slice(0, parts.length),\nposParams: posParams };\n}\n\nfunction shallowEqualArrays(a, b) {\n if (a.length !== b.length)\nreturn false;\n for (var i = 0; i < a.length; ++i) {\n if (!shallowEqual(a[i], b[i]))\n return false;\n }\n return true;\n}\n\nfunction shallowEqual(a, b) {\n // Casting Object.keys return values to include\n`undefined` as there are some cases\n // in IE 11 where this can happen. Cannot provide a test because the\nbehavior only\n // exists in certain circumstances in IE 11, therefore doing this cast ensures the\n // logic is\n correct for when this edge case is hit.\n var k1 = Object.keys(a);\n var k2 = Object.keys(b);\n if (!k1 ||\n!k2 || k1.length !== k2.length) {\n return false;\n }\n var key;\n for (var i = 0; i < k1.length; i++)\n{\n key = k1[i];\n if (!equalArraysOrString(a[key], b[key])) {\n return false;\n }\n}\n return true;\n}\n\n/**\n * Test equality for arrays of strings or a string.\n */\nfunction\nequalArraysOrString(a, b) {\n if (Array.isArray(a) && Array.isArray(b)) {\n if (a.length !== b.length)\nreturn false;\n var aSorted = __spread(a).sort();\n var bSorted_1 = __spread(b).sort();\nreturn aSorted.every(function (val, index) { return bSorted_1[index] === val; });\n }\n else {\nreturn a === b;\n }\n}\n\n/**\n * Flattens single-level nested arrays.\n */\nfunction flatten(arr) {\nreturn Array.prototype.concat.apply([], arr);\n}\n\n/**\n * Return the last element of an array.\n */\nfunction last(a) {\n return a.length > 0 ? a[a.length - 1] : null;\n}\n\n/**\n * Verifys all booleans in an\narray are `true`.\n */\nfunction and(bools) {\n return !bools.some(function (v) { return !v; });\n}\n\nfunction forEach(map, callback) {\n for (var prop in map) {\n if (map.hasOwnProperty(prop)) {\n callback(map[prop], prop);\n }\n }\n}\n\nfunction waitForMap(obj, fn) {\n if\n(Object.keys(obj).length === 0) {\n return rxjs.of({});\n }\n var waitHead = [];\n var waitTail =\n[];\n var res = {};\n forEach(obj, function (a, k) {\n var mapped = fn(k,\na).pipe(operators.map(function (r) { return res[k] = r; }));\n if (k === PRIMARY_OUTLET) {\n waitHead.push(mapped);\n }\n else {\n waitTail.push(mapped);\n }\n });\n //\n Closure compiler has problem with using spread operator here. So we use `Array.concat`.\n // Note that we\n also need to cast the new promise because TypeScript cannot infer the type\n // when calling the `of` function\n through `Function.apply`\n return rxjs.of.apply(null, waitHead.concat(waitTail))\n}\n\nfunction\nwrapIntoObservable(value) {\n if (core.isObservable(value))\n return value;\n }\n if\n(core.isPromise(value)) {\n // Use `Promise.resolve` to wrap promise-like instances.\n // Required ie\n when a Resolver returns a AngularJS `$q` promise to correctly trigger the\n // change detection.\n return rxjs.from(Promise.resolve(value));\n }\n return rxjs.of(value);\n}\n\n/**\n * @license\n * Copyright Google LLC All Rights Reserved.\n * Use of this source code is governed by an MIT-style\nlicense that can be\n * found in the LICENSE file at https://angular.io/license\n */\nfunction\ncreateEmptyUrlTree() {\n return new UrlTree(new UrlSegmentGroup([], {}), {}, null);\n}\n\nfunction\ncontainsTree(container, containee, exact) {\n if (exact) {\n return\n equalQueryParams(container.queryParams, containee.queryParams) &&\n equalSegmentGroups(container.root, containee.root);\n }\n return\n containsQueryParams(container.queryParams, containee.queryParams) &&\n containsSegmentGroup(container.root, containee.root);\n}\n\nfunction equalQueryParams(container, containee)\n{\n // TODO: This does not handle array params correctly.\n return shallowEqual(container.queryParams, containee.queryParams);\n}\n\nfunction equalSegmentGroups(container, containee) {\n if (!equalPath(container.segments,\ncontainee.segments))\n return false;\n if (container.numberOfChildren !==

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 containee.numberOfChildren)\n return false;\n for (var c in containee.children) {\n if
(!container.children[c])\n return false;\n if (!equalSegmentGroups(container.children[c],
containee.children[c]))\n return false;\n }\n return true;\n }\n function
containsQueryParams(container, containee) {\n return Object.keys(containee).length <=
Object.keys(container).length &&\n Object.keys(containee).every(function (key) { return
equalArraysOrString(container[key], containee[key]); });\n }\n function containsSegmentGroup(container,
containee) {\n return containsSegmentGroupHelper(container, containee, containee.segments);\n }\n
function containsSegmentGroupHelper(container, containee, containeePaths) {\n if (container.segments.length
> containeePaths.length) {\n var current = container.segments.slice(0, containeePaths.length);\n if
(!equalPath(current, containeePaths))\n return false;\n if (containee.hasChildren())\n return
false;\n return true;\n }\n else if (container.segments.length === containeePaths.length) {\n if
(!equalPath(container.segments, containeePaths))\n return false;\n for (var c in containee.children)
{\n if (!container.children[c])\n return false;\n if
(!containsSegmentGroup(container.children[c], containee.children[c]))\n return false;\n }\n
return true;\n }\n else {\n var current = containeePaths.slice(0, container.segments.length);\n
var next = containeePaths.slice(container.segments.length);\n if (!equalPath(container.segments, current))\n
 return false;\n if (!container.children[PRIMARY_OUTLET])\n return false;\n return
containsSegmentGroupHelper(container.children[PRIMARY_OUTLET], containee, next);\n }\n }\n /**\n
* @description\n *\n * Represents the parsed URL.\n *\n * Since a router state is a tree, and the URL is
nothing but a serialized state, the URL is a\n * serialized tree.\n * UrlTree is a data structure that provides a lot
of affordances in dealing with URLs\n *\n * @usageNotes\n * ### Example\n * \n * ```\n *
@Component({templateUrl:'template.html'})\n * class MyComponent {\n * constructor(router: Router) {\n *
const tree: UrlTree =\n * router.parseUrl('/team/33/(user/victor//support:help)?debug=true#fragment');\n *
const f = tree.fragment; // return 'fragment'\n * const q = tree.queryParams; // returns {debug: 'true'}\n *
const g: UrlSegmentGroup = tree.root.children[PRIMARY_OUTLET];\n * const s: UrlSegment[] =
g.segments; // returns 2 segments 'team' and '33'\n * g.children[PRIMARY_OUTLET].segments; // returns 2
segments 'user' and 'victor'\n * g.children['support'].segments; // return 1 segment 'help'\n * }\n * }\n
* \n * ```\n *\n * @publicApi\n * ^\n var UrlTree = /** @class */ (function () {\n /** @internal */\n
function UrlTree(\n /** The root segment group of the URL tree */\n root, \n /** The query params of
the URL */\n queryParams, \n /** The fragment of the URL */\n fragment) {\n this.root =
root;\n this.queryParams = queryParams;\n this.fragment = fragment;\n }\n Object.defineProperty(UrlTree.prototype, "queryParams", {\n get: function () {\n if
(!this._queryParams) {\n this._queryParams = convertToParamMap(this.queryParams);\n }\n
return this._queryParams;\n },\n enumerable: false,\n configurable: true\n });\n /** @docsNotRequired */\n UrlTree.prototype.toString = function () {\n return
DEFAULT_SERIALIZER.serialize(this);\n }; \n return UrlTree;\n }());\n /**\n * @description\n
*\n * Represents the parsed URL segment group.\n *\n * See `UrlTree` for more information.\n *\n *
@publicApi\n * ^\n var UrlSegmentGroup = /** @class */ (function () {\n function UrlSegmentGroup(\n /** The URL segments of this group. See `UrlSegment` for more information */\n segments, \n /** The list
of children of this group */\n children) {\n var _this = this;\n this.segments = segments;\n
this.children = children;\n /** The parent node in the url tree */\n this.parent = null;\n
forEach(children, function (v, k) { return v.parent = _this; });\n }\n /** Whether the segment has child
segments */\n UrlSegmentGroup.prototype.hasChildren = function () {\n return this.numberOfChildren >
0;\n }; \n Object.defineProperty(UrlSegmentGroup.prototype, "numberOfChildren", {\n /** Number
of child segments */\n get: function () {\n return Object.keys(this.children).length;\n },\n
enumerable: false,\n configurable: true\n });\n /** @docsNotRequired */\n UrlSegmentGroup.prototype.toString = function () {\n return serializePaths(this);\n }; \n return
UrlSegmentGroup;\n }());\n /**\n * @description\n *\n * Represents a single URL segment.\n *\n *

```

A `UrlSegment` is a part of a URL between the two slashes. It contains a path and the matrix parameters associated with the segment.

```

 * @usageNotes
 * ### Example
 *
 * @Component({ templateUrl: 'template.html' })
 * class MyComponent {
 * constructor(router: Router) {
 * const tree: UrlTree = router.parseUrl('/team?id=33');
 * const g: UrlSegmentGroup =
 * tree.root.children[PRIMARY_OUTLET];
 * const s: UrlSegment[] = g.segments;
 * s[0].path; // returns 'team'
 * s[0].parameters; // returns {id: 33}
 * }
 * }
 *
 * @publicApi
 *
 * UrlSegment = /** @class */ (function () {
 * function UrlSegment(path: string, parameters: Map<string, string>) {
 * this.path = path;
 * this.parameters = parameters;
 * }
 * Object.defineProperty(UrlSegment.prototype, 'parameterMap', {
 * get: function () {
 * if (!this._parameterMap) {
 * this._parameterMap = convertToParamMap(this.parameters);
 * }
 * return this._parameterMap;
 * },
 * enumerable: false,
 * configurable: true
 * });
 * /** @docsNotRequired */
 * UrlSegment.prototype.toString = function () {
 * return serializePath(this);
 * };
 * return UrlSegment;
 * }());
 *
 * function equalSegments(as: UrlSegment, bs: UrlSegment) {
 * return equalPath(as, bs) && as.every(function (a, i) {
 * return shallowEqual(a.parameters, bs[i].parameters);
 * });
 * }
 *
 * function equalPath(as: UrlSegment, bs: UrlSegment) {
 * if (as.length !== bs.length)
 * return false;
 * return as.every(function (a, i) {
 * return a.path === bs[i].path;
 * });
 * }
 *
 * function mapChildrenIntoArray(segment: UrlSegment, fn: (child: UrlSegment, childOutlet: string) => string) {
 * var res = [];
 * forEach(segment.children, function (child, childOutlet) {
 * if (childOutlet === PRIMARY_OUTLET)
 * res = res.concat(fn(child, childOutlet));
 * });
 * forEach(segment.children, function (child, childOutlet) {
 * if (childOutlet !== PRIMARY_OUTLET)
 * res = res.concat(fn(child, childOutlet));
 * });
 * return res;
 * }
 *
 * @description
 * Serializes and deserializes a URL string into a URL tree.
 *
 * The url serialization strategy is customizable. You can make all URLs case insensitive by providing a custom UrlSerializer. See DefaultUrlSerializer for an example of a URL serializer.
 *
 * @publicApi
 *
 * var UrlSerializer = /** @class */ (function () {
 * function UrlSerializer() {}
 * return UrlSerializer;
 * }());
 *
 * @description
 * A default implementation of the UrlSerializer.
 *
 * Example URLs:
 *
 * /inbox/33(popup:compose)
 * /inbox/33;open=true/messages/44
 *
 * DefaultUrlSerializer uses parentheses to serialize secondary segments (e.g., popup:compose), the colon syntax to specify the outlet, and the 'parameter=value' syntax (e.g., open=true) to specify route specific parameters.
 *
 * @publicApi
 *
 * var DefaultUrlSerializer = /** @class */ (function () {
 * function DefaultUrlSerializer() {}
 * /** Parses a url into a UrlTree */
 * DefaultUrlSerializer.prototype.parse = function (url) {
 * var p = new UrlParser(url);
 * return new UrlTree(p.parseRootSegment(), p.parseQueryParams(), p.parseFragment());
 * };
 * /** Converts a UrlTree into a url */
 * DefaultUrlSerializer.prototype.serialize = function (tree) {
 * var segment = "/" + serializeSegment(tree.root, true);
 * var query = serializeQueryParams(tree.queryParams);
 * var fragment = typeof tree.fragment === "string" ? "#" + encodeURIComponent(tree.fragment) : "";
 * return "/" + segment + query + fragment;
 * };
 * return DefaultUrlSerializer;
 * }());
 *
 * var DEFAULT_SERIALIZER = new DefaultUrlSerializer();
 *
 * function serializePaths(segment: UrlSegment) {
 * return segment.segments.map(function (p) {
 * return serializePath(p);
 * }).join('/');
 * }
 *
 * function serializeSegment(segment: UrlSegment, root: boolean) {
 * if (!segment.hasChildren())
 * return serializePaths(segment);
 * if (root)
 * var primary = segment.children[PRIMARY_OUTLET];
 * ?
 * serializeSegment(segment.children[PRIMARY_OUTLET], false) :
 * "";
 * var children_1 = [];
 * forEach(segment.children, function (v, k) {
 * if (k !== PRIMARY_OUTLET)
 * children_1.push(k + ":" + serializeSegment(v, false));
 * });
 * return children_1.length > 0 ? primary + "(" + children_1.join("/") + ")" : primary;
 * }
 * else {
 * var children = mapChildrenIntoArray(segment, function (v, k) {
 * if (k === PRIMARY_OUTLET)
 * return [serializeSegment(segment.children[PRIMARY_OUTLET], false)];
 * return [k + ":" + serializeSegment(v, false)];
 * });
 * // use no parenthesis if the only child is a primary outlet route
 * if (Object.keys(segment.children).length === 1 && segment.children[PRIMARY_OUTLET] != null)

```

```

 return serializePaths(segment) + "\" + children[0];\n }\n return serializePaths(segment)
+ \"/(\" + children.join(\"/\") + \")\";\n }\n }\n /**\n * Encodes a URI string with the default encoding. This
function will only ever be called from\n * `encodeUriQuery` or `encodeUriSegment` as it's the base set of
encodings to be used. We need\n * a custom encoding because encodeURIComponent is too aggressive and
encodes stuff that doesn't\n * have to be encoded per https://url.spec.whatwg.org.\n * \n function
encodeURIComponent(s) {\n return encodeURIComponent(s)\n .replace(/%40/g, '@')\n
.replace(/%3A/gi, ':')\n .replace(/%24/g, '$')\n .replace(/%2C/gi, ',');\n }\n /**\n * This function
should be used to encode both keys and values in a query string key/value. In\n * the following URL, you need to
call encodeURIComponent on \"k\" and \"v\":\n * \n * http://www.site.org/html;mk=mv?k=v#\n * \n function
encodeURIComponent(s) {\n return encodeURIComponent(s).replace(/%3B/gi, ';');\n }\n /**\n * This function should
be used to encode a URL fragment. In the following URL, you need to call\n * encodeURIComponent on \"f\":\n
*\n * http://www.site.org/html;mk=mv?k=v#\n * \n function encodeURIComponent(s) {\n return
encodeURIComponent(s);\n }\n /**\n * This function should be run on any URI segment as well as the key and value in a
key/value\n * pair for matrix params. In the following URL, you need to call encodeUriSegment on \"html\", \n
* \"mk\", and \"mv\":\n * \n * http://www.site.org/html;mk=mv?k=v#\n * \n function
encodeURIComponent(s) {\n return encodeURIComponent(s).replace(/\(/g, '%28').replace(/\)/g, '%29').replace(/%26/gi,
'&');\n }\n function decode(s) {\n return decodeURIComponent(s);\n }\n // Query keys/values should
have the \"+\" replaced first, as \"+\" in a query string is \" \".\n // decodeURIComponent function will not decode
\"+\" as a space.\n function decodeQuery(s) {\n return decode(s.replace(/\+/g, '%20'));\n }\n function
serializePath(path) {\n return \"\" + encodeUriSegment(path.path) + serializeMatrixParams(path.parameters);\n
}\n function serializeMatrixParams(params) {\n return Object.keys(params)\n .map(function (key) {\n
return \";\" + encodeUriSegment(key) + \"=\" + encodeUriSegment(params[key]);\n });\n }\n function
serializeQueryParams(params) {\n var strParams = Object.keys(params).map(function (name) {\n
var value = params[name];\n return Array.isArray(value) ?\n value.map(function (v) {\n
return\n encodeURIComponent(name) + \"=\" + encodeURIComponent(v);\n }).join('&') :\n encodeURIComponent(name) + \"=\" +\n
encodeURIComponent(value);\n });\n return strParams.length ? \"?\" + strParams.join('&') : \"\";\n }\n var
SEGMENT_RE = /^[^\\|()?;=#]+/;\n function matchSegments(str) {\n var match =
str.match(SEGMENT_RE);\n return match ? match[0] : \"\";\n }\n var QUERY_PARAM_RE =
/^[^=?&#]+/;\n // Return the name of the query param at the start of the string or an empty string\n function
matchQueryParams(str) {\n var match = str.match(QUERY_PARAM_RE);\n return match ? match[0] : \"\";\n
}\n var QUERY_PARAM_VALUE_RE = /^[^?&#]+/;\n // Return the value of the query param at the start of
the string or an empty string\n function matchUrlQueryParamValue(str) {\n var match =
str.match(QUERY_PARAM_VALUE_RE);\n return match ? match[0] : \"\";\n }\n var UrlParser = /** @class
*/ (function () {\n function UrlParser(url) {\n this.url = url;\n this.remaining = url;\n }\n
UrlParser.prototype.parseRootSegment = function () {\n this.consumeOptional('/');\n if (this.remaining
=== \"\" || this.peekStartsWith('?') || this.peekStartsWith('#')) {\n return new UrlSegmentGroup([], {});\n
}\n // The root segment group never has segments\n return new UrlSegmentGroup([],
this.parseChildren());\n }; \n UrlParser.prototype.parseQueryParams = function () {\n var params =
{};\n if (this.consumeOptional('?')) {\n do {\n this.parseQueryParam(params);\n
}\n while (this.consumeOptional('&'));\n }\n return params;\n }; \n
UrlParser.prototype.parseFragment = function () {\n return this.consumeOptional('#') ?\n decodeURIComponent(this.remaining) : null;\n }; \n UrlParser.prototype.parseChildren = function () {\n
if (this.remaining === \"\") {\n return {};\n }\n this.consumeOptional('/');\n var
segments = [];\n if (!this.peekStartsWith('(')) {\n segments.push(this.parseSegment());\n }\n
while (this.peekStartsWith('/') && !this.peekStartsWith('//') && !this.peekStartsWith('/(')) {\n
this.capture('/');\n segments.push(this.parseSegment());\n }\n var children = {};\n if
(this.peekStartsWith('/(')) {\n this.capture('/');\n children = this.parseParens(true);\n }\n
var res = {};\n if (this.peekStartsWith('(')) {\n res = this.parseParens(false);\n }\n if

```

```

(segments.length > 0 || Object.keys(children).length > 0) {\n res[PRIMARY_OUTLET] = new
UrlSegmentGroup(segments, children);\n }\n return res;\n };\n // parse a segment with its
matrix parameters\n // ie `name;k1=v1;k2`\n UrlParser.prototype.parseSegment = function () {\n var
path = matchSegments(this.remaining);\n if (path === "" && this.peekStartsWith(';')) {\n throw new
Error("\u201cEmpty path url segment cannot have parameters: \"" + this.remaining + "\"");\n }\n this.capture(path);\n return new UrlSegment(decode(path), this.parseMatrixParams());\n };\n UrlParser.prototype.parseMatrixParams = function () {\n var params = {};\n while
(this.consumeOptional(';')) {\n this.parseParam(params);\n }\n return params;\n };\n UrlParser.prototype.parseParam = function (params) {\n var key = matchSegments(this.remaining);\n if (!key) {\n return;\n }\n this.capture(key);\n var value = ";\n if
(this.consumeOptional('=')) {\n var valueMatch = matchSegments(this.remaining);\n if
(valueMatch) {\n value = valueMatch;\n this.capture(value);\n }\n }\n params[decode(key)] = decode(value);\n };\n // Parse a single query parameter `name[=value]`\n UrlParser.prototype.parseQueryParam = function (params) {\n var key =
matchQueryParams(this.remaining);\n if (!key) {\n return;\n }\n this.capture(key);\n var value = ";\n if (this.consumeOptional('=')) {\n var valueMatch =
matchUrlQueryParamValue(this.remaining);\n if (valueMatch) {\n value = valueMatch;\n this.capture(value);\n }\n }\n var decodedKey = decodeQuery(key);\n var
decodedVal = decodeQuery(value);\n if (params.hasOwnProperty(decodedKey)) {\n // Append to
existing values\n var currentVal = params[decodedKey];\n if (!Array.isArray(currentVal)) {\n currentVal = [currentVal];\n params[decodedKey] = currentVal;\n }\n currentVal.push(decodedVal);\n }\n else {\n // Create a new value\n params[decodedKey] = decodedVal;\n }\n };\n // parse `(a/b//outlet_name:c/d)`\n UrlParser.prototype.parseParens = function (allowPrimary) {\n var segments = {};\n this.capture('(');\n while (!this.consumeOptional(')') && this.remaining.length > 0) {\n var path =
matchSegments(this.remaining);\n var next = this.remaining[path.length];\n // if is is not one of
these characters, then the segment was unescaped\n // or the group was not closed\n if (next !== '/'
&& next !== ')' && next !== ';') {\n throw new Error("\u201cCannot parse url \"" + this.url + "\"");\n }\n var outletName = undefined;\n if (path.indexOf(':') > -1) {\n outletName =
path.substr(0, path.indexOf(':'));\n this.capture(outletName);\n this.capture(':');\n }\n else if (allowPrimary) {\n outletName = PRIMARY_OUTLET;\n }\n var children = this.parseChildren();\n segments[outletName] = Object.keys(children).length === 1 ?
children[PRIMARY_OUTLET] :\n new UrlSegmentGroup([], children);\n this.consumeOptional('/');\n }\n return segments;\n };\n UrlParser.prototype.peekStartsWith =
function (str) {\n return this.remaining.startsWith(str);\n };\n // Consumes the prefix when it is
present and returns whether it has been consumed\n UrlParser.prototype.consumeOptional = function (str) {\n if (this.peekStartsWith(str)) {\n this.remaining = this.remaining.substring(str.length);\n return
true;\n }\n return false;\n };\n UrlParser.prototype.capture = function (str) {\n if
(!this.consumeOptional(str)) {\n throw new Error("\u201cExpected \\\"\" + str + \\\"\"");\n }\n };\n return UrlParser;\n }());\n /**\n * @license\n * Copyright Google LLC All Rights Reserved.\n *\n * Use of this source code is governed by an MIT-style license that can be\n * found in the LICENSE file at
https://angular.io/license\n */\n var Tree = /** @class */ (function () {\n function Tree(root) {\n this._root = root;\n }\n Object.defineProperty(Tree.prototype, "root", {\n get: function () {\n return this._root.value;\n },\n enumerable: false,\n configurable: true\n });\n /**\n * @internal\n */\n Tree.prototype.parent = function (t) {\n var p = this.pathFromRoot(t);\n return p.length > 1 ? p[p.length - 2] : null;\n };\n /**\n * @internal\n */\n Tree.prototype.children = function (t) {\n var n = findNode(t, this._root);\n return n ?
n.children.map(function (t) { return t.value; }) : [];\n };\n /**\n * @internal\n */

```



```

Tree.prototype.firstChild = function (t) {\n var n = findNode(t, this._root);\n return n &&\n n.children.length > 0 ? n.children[0].value : null;\n };\n /**\n * @internal\n */\nTree.prototype.siblings = function (t) {\n var p = findPath(t, this._root);\n if (p.length < 2)\n return [];\n var c = p[p.length - 2].children.map(function (c) { return c.value; });\n return\n c.filter(function (cc) { return cc !== t; });\n };\n /**\n * @internal\n */\nTree.prototype.pathFromRoot = function (t) {\n return findPath(t, this._root).map(function (s) { return\n s.value; });\n };\n return Tree;\n }());\n // DFS for the node matching the value\n function\n findNode(value, node) {\n var e_1, _a;\n if (value === node.value)\n return node;\n try {\n for (var _b = __values(node.children), _c = _b.next(); !_c.done; _c = _b.next()) {\n var child = _c.value;\n var node_1 = findNode(value, child);\n if (node_1)\n return node_1;\n }\n }\n catch (e_1_1) { e_1 = { error: e_1_1 }; }\n finally {\n try {\n if (_c && !_c.done &&\n (_a = _b.return)) _a.call(_b);\n }\n finally { if (e_1) throw e_1.error; }\n }\n return null;\n }\n // Return the path to the node with the given value using DFS\n function findPath(value, node) {\n var\n e_2, _a;\n if (value === node.value)\n return [node];\n try {\n for (var _b =\n __values(node.children), _c = _b.next(); !_c.done; _c = _b.next()) {\n var child = _c.value;\n var\n path = findPath(value, child);\n if (path.length)\n path.unshift(node);\n return\n path;\n }\n }\n catch (e_2_1) { e_2 = { error: e_2_1 }; }\n finally {\n try {\n if (_c && !_c.done && (_a = _b.return)) _a.call(_b);\n }\n finally { if (e_2) throw e_2.error;\n }\n }\n return [];\n }\n var TreeNode = /** @class */ (function () {\n function TreeNode(value,\n children) {\n this.value = value;\n this.children = children;\n }\n TreeNode.prototype.toString\n = function () {\n return "TreeNode(" + this.value + ")";\n };\n return TreeNode;\n }());\n //\n Return the list of T indexed by outlet name\n function nodeChildrenAsMap(node) {\n var map = {};\n if\n (node) {\n node.children.forEach(function (child) { return map[child.value.outlet] = child; });\n }\n return map;\n }\n /**\n * Represents the state of the router as a tree of activated routes.\n */\n *\n @usageNotes\n * Every node in the route tree is an `ActivatedRoute` instance\n * that knows about the\n * `consumed` URL segments, the extracted parameters,\n * and the resolved data.\n * Use the `ActivatedRoute`\n * properties to traverse the tree from any node.\n * The following fragment shows how a component gets the\n * root node\n * of the current state to establish its own route tree:\n *```\n *\n @Component({ templateUrl: 'template.html' })\n * class MyComponent {\n * constructor(router: Router) {\n * const state: RouterState = router.routerState;\n * const root: ActivatedRoute = state.root;\n * const\n * child = root.firstChild;\n * const id: Observable<string> = child.params.map(p => p.id);\n * //...\n * }\n * ```\n * @see `ActivatedRoute`\n * @see [Getting route\n * information](guide/router#getting-route-information)\n * @publicApi\n * var RouterState = /**\n * @class */ (function (_super) {\n * __extends(RouterState, _super);\n * /** @internal */\n * function\n * RouterState(root, \n * /** The current snapshot of the router state */\n * snapshot) {\n * var _this =\n * _super.call(this, root) || this;\n * _this.snapshot = snapshot;\n * setRouterState(_this, root);\n * return\n * _this;\n * }\n * RouterState.prototype.toString = function () {\n * return this.snapshot.toString();\n * };\n * return RouterState;\n * })(Tree));\n * function createEmptyState(urlTree, rootComponent) {\n * var\n * snapshot = createEmptyStateSnapshot(urlTree, rootComponent);\n * var emptyUrl = new\n * rxjs.BehaviorSubject([new UrlSegment("", {})]);\n * var emptyParams = new rxjs.BehaviorSubject({});\n * var\n * emptyData = new rxjs.BehaviorSubject({});\n * var emptyQueryParams = new rxjs.BehaviorSubject({});\n * var\n * fragment = new rxjs.BehaviorSubject("");\n * var activated = new ActivatedRoute(emptyUrl, emptyParams,\n * emptyQueryParams, fragment, emptyData, PRIMARY_OUTLET, rootComponent, snapshot.root);\n * activated.snapshot = snapshot.root;\n * return new RouterState(new TreeNode(activated, []), snapshot);\n * }\n * function createEmptyStateSnapshot(urlTree, rootComponent) {\n * var\n * emptyParams = {};\n * var emptyData\n * = {};\n * var emptyQueryParams = {};\n * var\n * fragment = ";\n * var activated = new\n * ActivatedRouteSnapshot([], emptyParams, emptyQueryParams, fragment, emptyData, PRIMARY_OUTLET,\n * rootComponent, null, urlTree.root, -1, {});\n * return new RouterStateSnapshot("", new TreeNode(activated, []));\n * }\n *

```

```

}

/**
 * Provides access to information about a route associated with a component
 * that is loaded in an outlet.
 * Use to traverse the `RouterState` tree and extract information from nodes.
 * The following example shows how to construct a component using information from a
 * currently activated route.
 *
 * @example router/activated-route/module.ts region="activated-route"
 * header="activated-route.component.ts"
 *
 * @see [Getting route information](guide/router#getting-route-information)
 *
 * @publicApi
 */
var ActivatedRoute = /** @class */ (function () {
 /** @internal */
 function ActivatedRoute(
 /** An observable of the URL segments matched by this route. */ url,
 /** An observable of the matrix parameters scoped to this route. */ params,
 /** An observable of the query parameters shared by all the routes. */ queryParams,
 /** An observable of the URL fragment shared by all the routes. */ fragment,
 /** An observable of the static and resolved data of this route. */ data,
 /** The outlet name of the route, a constant. */ outlet,
 /** The component of the route, a constant. */ component,
 futureSnapshot: FutureSnapshot) {
 this.url = url;
 this.params = params;
 this.queryParams = queryParams;
 this.fragment = fragment;
 this.data = data;
 this.outlet = outlet;
 this.component = component;
 this._futureSnapshot = futureSnapshot;
 }
 Object.defineProperty(ActivatedRoute.prototype, "routeConfig", {
 /** The configuration used to match this route. */
 get: function () {
 return this._futureSnapshot.routeConfig;
 },
 enumerable: false,
 configurable: true
 });
 Object.defineProperty(ActivatedRoute.prototype, "root", {
 /** The root of the router state. */
 get: function () {
 return this._routerState.root;
 },
 enumerable: false,
 configurable: true
 });
 Object.defineProperty(ActivatedRoute.prototype, "parent", {
 /** The parent of this route in the router state tree. */
 get: function () {
 return this._routerState.parent(this);
 },
 enumerable: false,
 configurable: true
 });
 Object.defineProperty(ActivatedRoute.prototype, "firstChild", {
 /** The first child of this route in the router state tree. */
 get: function () {
 return this._routerState.firstChild(this);
 },
 enumerable: false,
 configurable: true
 });
 Object.defineProperty(ActivatedRoute.prototype, "children", {
 /** The children of this route in the router state tree. */
 get: function () {
 return this._routerState.children(this);
 },
 enumerable: false,
 configurable: true
 });
 Object.defineProperty(ActivatedRoute.prototype, "pathFromRoot", {
 /** The path from the root of the router state tree to this route. */
 get: function () {
 return this._routerState.pathFromRoot(this);
 },
 enumerable: false,
 configurable: true
 });
 Object.defineProperty(ActivatedRoute.prototype, "paramMap", {
 /** An Observable that contains a map of the required and optional parameters
 * specific to the route.
 * The map supports retrieving single and multiple values from the same parameter.
 */
 get: function () {
 if (!this._paramMap) {
 this._paramMap = this.params.pipe(operators.map(function (p) {
 return convertToParamMap(p);
 }));
 }
 return this._paramMap;
 },
 enumerable: false,
 configurable: true
 });
 Object.defineProperty(ActivatedRoute.prototype, "queryParamsMap", {
 /** An Observable that contains a map of the query parameters available
 * to all routes.
 * The map supports retrieving single and multiple values from the query parameter.
 */
 get: function () {
 if (!this._queryParamsMap) {
 this._queryParamsMap = this.queryParams.pipe(operators.map(function (p) {
 return convertToParamMap(p);
 }));
 }
 return this._queryParamsMap;
 },
 enumerable: false,
 configurable: true
 });
 ActivatedRoute.prototype.toString = function () {
 return this.snapshot ? this.snapshot.toString() : "Future(" + this._futureSnapshot + ")";
 };
 /** Returns the inherited params, data, and resolve for a given route.
 * By default, this only inherits values up to the nearest path-less or component-less route.
 *
 * @internal
 */
 function inheritedParamsDataResolve(route, paramsInheritanceStrategy) {
 if (paramsInheritanceStrategy === void 0) {
 paramsInheritanceStrategy = 'emptyOnly';
 }
 var pathFromRoot = route.pathFromRoot;
 var inheritingStartingFrom = 0;
 if (paramsInheritanceStrategy !== 'always') {
 inheritingStartingFrom = pathFromRoot.length - 1;
 }
 }
}

```

```

while (inheritingStartingFrom >= 1) {\n var current = pathFromRoot[inheritingStartingFrom];\n
var parent = pathFromRoot[inheritingStartingFrom - 1];\n // current route is an empty path => inherits its
parent's params and data\n if (current.routeConfig && current.routeConfig.path === "") {\n
inheritingStartingFrom--;\n // parent is componentless => current route should inherit its params and
data\n }\n else if (!parent.component) {\n inheritingStartingFrom--;\n }\n else {\n break;\n }\n }\n }\n return
flattenInherited(pathFromRoot.slice(inheritingStartingFrom));\n }\n /** @internal */\n function
flattenInherited(pathFromRoot) {\n return pathFromRoot.reduce(function (res, curr) {\n var params =
Object.assign(Object.assign({}, res.params), curr.params);\n var data = Object.assign(Object.assign({},
res.data), curr.data);\n var resolve = Object.assign(Object.assign({}, res.resolve), curr._resolvedData);\n
return { params: params, data: data, resolve: resolve };,\n { params: {}, data: {}, resolve: {} });\n }\n
/**\n * @description\n *\n * Contains the information about a route associated with a component loaded in
an\n * outlet at a particular moment in time. ActivatedRouteSnapshot can also be used to\n * traverse the router
state tree.\n *\n * The following example initializes a component with route information extracted\n * from
the snapshot of the root node at the time of creation.\n *\n * ```\n * @Component({ templateUrl: './my-
component.html'})\n * class MyComponent {\n * constructor(route: ActivatedRoute) {\n * const id:
string = route.snapshot.params.id;\n * const url: string = route.snapshot.url.join(");\n * const user =
route.snapshot.data.user;\n * }\n * }\n * ```\n *\n * @publicApi\n */\n var
ActivatedRouteSnapshot = /** @class */ (function () {\n /** @internal */\n function
ActivatedRouteSnapshot(\n /** The URL segments matched by this route */\n url, \n /** The matrix
parameters scoped to this route */\n params, \n /** The query parameters shared by all the routes */\n
queryParams, \n /** The URL fragment shared by all the routes */\n fragment, \n /** The static and
resolved data of this route */\n data, \n /** The outlet name of the route */\n outlet, \n /** The
component of the route */\n component, routeConfig, urlSegment, lastPathIndex, resolve) {\n this.url =
url;\n this.params = params;\n this.queryParams = queryParams;\n this.fragment = fragment;\n
 this.data = data;\n this.outlet = outlet;\n this.component = component;\n this.routeConfig =
routeConfig;\n this._urlSegment = urlSegment;\n this._lastPathIndex = lastPathIndex;\n
 this._resolve = resolve;\n }\n Object.defineProperty(ActivatedRouteSnapshot.prototype, "root", {\n
/** The root of the router state */\n get: function () {\n return this._routerState.root;\n },\n
 enumerable: false,\n configurable: true\n });\n
 Object.defineProperty(ActivatedRouteSnapshot.prototype, "parent", {\n /** The parent of this route in the
router state tree */\n get: function () {\n return this._routerState.parent(this);\n },\n
 enumerable: false,\n configurable: true\n });\n
 Object.defineProperty(ActivatedRouteSnapshot.prototype, "firstChild", {\n /** The first child of this route
in the router state tree */\n get: function () {\n return this._routerState.firstChild(this);\n },\n
 enumerable: false,\n configurable: true\n });\n
 Object.defineProperty(ActivatedRouteSnapshot.prototype, "children", {\n /** The children of this route in
the router state tree */\n get: function () {\n return this._routerState.children(this);\n },\n
 enumerable: false,\n configurable: true\n });\n
 Object.defineProperty(ActivatedRouteSnapshot.prototype, "pathFromRoot", {\n /** The path from the root
of the router state tree to this route */\n get: function () {\n return
this._routerState.pathFromRoot(this);\n },\n enumerable: false,\n configurable: true\n });\n
 Object.defineProperty(ActivatedRouteSnapshot.prototype, "paramMap", {\n get: function () {\n
if (!this._paramMap) {\n this._paramMap = convertToParamMap(this.params);\n }\n
return this._paramMap;\n },\n enumerable: false,\n configurable: true\n });\n
 Object.defineProperty(ActivatedRouteSnapshot.prototype, "queryParamMap", {\n get: function () {\n
if (!this._queryParamMap) {\n this._queryParamMap = convertToParamMap(this.queryParams);\n }\n
return this._queryParamMap;\n },\n enumerable: false,\n configurable: true\n

```

```

});\n ActivatedRouteSnapshot.prototype.toString = function () {\n var url = this.url.map(function
(segment) { return segment.toString(); }).join('/');\n var matched = this.routeConfig ? this.routeConfig.path :
";\n return \"Route(url:'\" + url + \"', path:'\" + matched + \"')\";\n };\n return
ActivatedRouteSnapshot;\n }());\n /**\n * @description\n * \n * Represents the state of the router at a
moment in time.\n * \n * This is a tree of activated route snapshots. Every node in this tree knows about\n *
the \"consumed\" URL segments, the extracted parameters, and the resolved data.\n * \n * The following
example shows how a component is initialized with information\n * from the snapshot of the root node's state at
the time of creation.\n * \n * ```\n * @Component({ templateUrl: 'template.html'})\n * class MyComponent
{\n * constructor(router: Router) {\n * const state: RouterState = router.routerState;\n * const snapshot:
RouterStateSnapshot = state.snapshot;\n * const root: ActivatedRouteSnapshot = snapshot.root;\n * const
child = root.firstChild;\n * const id: Observable<string> = child.params.map(p => p.id);\n * //...\n *
}\n * }```\n * \n * @publicApi\n * \n * @class */ (function (_super)
{\n __extends(RouterStateSnapshot, _super);\n /** @internal */\n function RouterStateSnapshot(\n
/** The url from which this snapshot was created */\n url, root) {\n var _this = _super.call(this, root) ||
this;\n _this.url = url;\n setRouterState(_this, root);\n return _this;\n }\n RouterStateSnapshot.prototype.toString = function () {\n return serializeNode(this._root);\n };\n
return RouterStateSnapshot;\n }(Tree));\n function setRouterState(state, node) {\n node.value._routerState =
state;\n node.children.forEach(function (c) { return setRouterState(state, c); });\n }\n function
serializeNode(node) {\n var c = node.children.length > 0 ? \" { \" + node.children.map(serializeNode).join(', ') +
\" } \" : \"\";\n return \"\" + node.value + c;\n } \n /**\n * The expectation is that the activate route is created
with the right set of parameters.\n * So we push new values into the observables only when they are not the initial
values.\n * And we detect that by checking if the snapshot field is set.\n * \n * function
advanceActivatedRoute(route) {\n if (route.snapshot) {\n var currentSnapshot = route.snapshot;\n var nextSnapshot = route._futureSnapshot;\n route.snapshot = nextSnapshot;\n if
(!shallowEqual(currentSnapshot.queryParams, nextSnapshot.queryParams)) {\n route.queryParams.next(nextSnapshot.queryParams);\n }\n if (currentSnapshot.fragment !==
nextSnapshot.fragment) {\n route.fragment.next(nextSnapshot.fragment);\n }\n if
(!shallowEqual(currentSnapshot.params, nextSnapshot.params)) {\n route.params.next(nextSnapshot.params);\n }\n if (!shallowEqualArrays(currentSnapshot.url,
nextSnapshot.url)) {\n route.url.next(nextSnapshot.url);\n }\n if
(!shallowEqual(currentSnapshot.data, nextSnapshot.data)) {\n route.data.next(nextSnapshot.data);\n }\n }\n else {\n route.snapshot = route._futureSnapshot;\n // this is for resolved data\n
route.data.next(route._futureSnapshot.data);\n }\n }\n function equalParamsAndUrlSegments(a, b) {\n
var equalUrlParams = shallowEqual(a.params, b.params) && equalSegments(a.url, b.url);\n var
parentsMismatch = !a.parent !== !b.parent;\n return equalUrlParams && !parentsMismatch &&\n
(!a.parent || equalParamsAndUrlSegments(a.parent, b.parent));\n }\n\n function
createRouterState(routeReuseStrategy, curr, prevState) {\n var root = createNode(routeReuseStrategy,
curr._root, prevState ? prevState._root : undefined);\n return new RouterState(root, curr);\n }\n function
createNode(routeReuseStrategy, curr, prevState) {\n // reuse an activated route that is currently displayed on the
screen\n if (prevState && routeReuseStrategy.shouldReuseRoute(curr.value, prevState.value.snapshot)) {\n
var value = prevState.value;\n value._futureSnapshot = curr.value;\n var children =
createOrReuseChildren(routeReuseStrategy, curr, prevState);\n return new TreeNode(value, children);\n
// retrieve an activated route that is used to be displayed, but is not currently displayed\n }\n else {\n
var detachedRouteHandle = routeReuseStrategy.retrieve(curr.value);\n if (detachedRouteHandle) {\n
var tree = detachedRouteHandle.route;\n setFutureSnapshotsOfActivatedRoutes(curr, tree);\n
return tree;\n }\n else {\n var value = createActivatedRoute(curr.value);\n var
children = curr.children.map(function (c) { return createNode(routeReuseStrategy, c); });\n return new
TreeNode(value, children);\n }\n }\n }\n function setFutureSnapshotsOfActivatedRoutes(curr, result)

```

```

{\n if (curr.value.routeConfig !== result.value.routeConfig) {\n throw new Error('Cannot reattach
ActivatedRouteSnapshot created from a different route');\n }\n if (curr.children.length !==
result.children.length) {\n throw new Error('Cannot reattach ActivatedRouteSnapshot with a different number
of children');\n }\n result.value._futureSnapshot = curr.value;\n for (var i = 0; i < curr.children.length;
++i) {\n setFutureSnapshotsOfActivatedRoutes(curr.children[i], result.children[i]);\n }\n}\n function
createOrReuseChildren(routeReuseStrategy, curr, prevState) {\n return curr.children.map(function (child) {\n
 var e_1, _a;\n try {\n for (var _b = __values(prevState.children), _c = _b.next(); !_c.done; _c =
_b.next()) {\n var p = _c.value;\n if (routeReuseStrategy.shouldReuseRoute(child.value,
p.value.snapshot)) {\n return createNode(routeReuseStrategy, child, p);\n }\n }\n
 }\n catch (e_1_1) { e_1 = { error: e_1_1 }; }\n finally {\n try {\n if (_c &&
!_c.done && (_a = _b.return)) _a.call(_b);\n }\n finally { if (e_1) throw e_1.error; }\n }\n
 return createNode(routeReuseStrategy, child);\n });\n}\n function createActivatedRoute(c) {\n
return new ActivatedRoute(new rxjs.BehaviorSubject(c.url), new rxjs.BehaviorSubject(c.params), new
rxjs.BehaviorSubject(c.queryParams), new rxjs.BehaviorSubject(c.fragment), new rxjs.BehaviorSubject(c.data),
c.outlet, c.component, c);\n}\n\n function createUrlTree(route, urlTree, commands, queryParams, fragment) {\n
 if (commands.length === 0) {\n return tree(urlTree.root, urlTree.root, urlTree, queryParams, fragment);\n
 }\n var nav = computeNavigation(commands);\n if (nav.toRoot()) {\n return tree(urlTree.root,
new UrlSegmentGroup([], {}), urlTree, queryParams, fragment);\n }\n var startingPosition =
findStartingPosition(nav, urlTree, route);\n var segmentGroup = startingPosition.processChildren ?\n
updateSegmentGroupChildren(startingPosition.segmentGroup, startingPosition.index, nav.commands) :\n
updateSegmentGroup(startingPosition.segmentGroup, startingPosition.index, nav.commands);\n return
tree(startingPosition.segmentGroup, segmentGroup, urlTree, queryParams, fragment);\n}\n function
isMatrixParams(command) {\n return typeof command === 'object' && command !== null &&
!command.outlets && !command.segmentPath;\n}\n\n /**\n * Determines if a given command has an `outlets`
map. When we encounter a command\n * with an outlets k/v map, we need to apply each outlet individually to the
existing segment.\n */\n function isCommandWithOutlets(command) {\n return typeof command ===
'object' && command !== null && command.outlets;\n}\n\n function tree(oldSegmentGroup, newSegmentGroup,
urlTree, queryParams, fragment) {\n var qp = {};\n if (queryParams) {\n forEach(queryParams,
function (value, name) {\n qp[name] = Array.isArray(value) ? value.map(function (v) { return "\"" + v; }) :
 "\"" + value;\n });\n }\n if (urlTree.root === oldSegmentGroup) {\n return new
UrlTree(newSegmentGroup, qp, fragment);\n }\n return new UrlTree(replaceSegment(urlTree.root,
oldSegmentGroup, newSegmentGroup), qp, fragment);\n}\n\n function replaceSegment(current, oldSegment,
newSegment) {\n var children = {};\n forEach(current.children, function (c, outletName) {\n if (c
=== oldSegment) {\n children[outletName] = newSegment;\n }\n else {\n
 children[outletName] = replaceSegment(c, oldSegment, newSegment);\n }\n });\n return new
UrlSegmentGroup(current.segments, children);\n}\n\n var Navigation = /** @class */ (function () {\n
function Navigation(isAbsolute, numberOfDoubleDots, commands) {\n this.isAbsolute = isAbsolute;\n
this.numberOfDoubleDots = numberOfDoubleDots;\n this.commands = commands;\n if (isAbsolute
&& commands.length > 0 && isMatrixParams(commands[0])) {\n throw new Error('Root segment cannot
have matrix parameters');\n }\n var cmdWithOutlet = commands.find(isCommandWithOutlets);\n
 if (cmdWithOutlet && cmdWithOutlet !== last(commands)) {\n throw new Error('{outlets:{}} has to be
the last command');\n }\n }\n Navigation.prototype.toRoot = function () {\n return
this.isAbsolute && this.commands.length === 1 && this.commands[0] === '/';\n };\n return Navigation;\n
})();\n\n /** Transforms commands to a normalized `Navigation` */\n function computeNavigation(commands)
{\n if ((typeof commands[0] === 'string') && commands.length === 1 && commands[0] === '/') {\n
return new Navigation(true, 0, commands);\n }\n var numberOfDoubleDots = 0;\n var isAbsolute =
false;\n var res = commands.reduce(function (res, cmd, cmdIdx) {\n if (typeof cmd === 'object' && cmd
!== null) {\n if (cmd.outlets) {\n var outlets_1 = {};\n forEach(cmd.outlets, function

```

```

(commands, name) {\n
 outlets_1[name] = typeof commands === 'string' ? commands.split('/') :
 commands;\n
 });\n
 return __spread(res, [{ outlets: outlets_1 }]);\n
 }\n
 if
(cmd.segmentPath) {\n
 return __spread(res, [cmd.segmentPath]);\n
 }\n
 }\n
 if
(! (typeof cmd === 'string')) {\n
 return __spread(res, [cmd]);\n
 }\n
 if (cmdIdx === 0) {\n
 cmd.split('/').forEach(function (urlPart, partIndex) {\n
 if (partIndex === 0 && urlPart === '/') {\n
 // skip './a'\n
 }\n
 else if (partIndex === 0 && urlPart === '') { // './a'\n
 isAbsolute = true;\n
 }\n
 else if (urlPart === '..') { // './a'\n
 numberOfDoubleDots++;\n
 }\n
 else if (urlPart !== '') {\n
 res.push(urlPart);\n
 }\n
 });\n
 return res;\n
 }\n
 return __spread(res, [cmd]);\n
 }, []);\n
 return new Navigation(isAbsolute, numberOfDoubleDots, res);\n
 }\n
 var Position = /** @class */ (function ()
{\n
 function Position(segmentGroup, processChildren, index) {\n
 this.segmentGroup = segmentGroup;\n
 this.processChildren = processChildren;\n
 this.index = index;\n
 }\n
 return Position;\n
 }());\n
 function findStartingPosition(nav, tree, route) {\n
 if (nav.isAbsolute) {\n
 return new Position(tree.root,
true, 0);\n
 }\n
 if (route.snapshot._lastPathIndex === -1) {\n
 var segmentGroup =
route.snapshot._urlSegment;\n
 // Pathless ActivatedRoute has _lastPathIndex === -1 but should not process
children\n
 // see issue #26224, #13011, #35687\n
 // However, if the ActivatedRoute is the root we
should process children like above.\n
 var processChildren = segmentGroup === tree.root;\n
 return new
Position(segmentGroup, processChildren, 0);\n
 }\n
 var modifier = isMatrixParams(nav.commands[0]) ? 0 :
1;\n
 var index = route.snapshot._lastPathIndex + modifier;\n
 return
createPositionApplyingDoubleDots(route.snapshot._urlSegment, index, nav.numberOfDoubleDots);\n
 }\n
 function createPositionApplyingDoubleDots(group, index, numberOfDoubleDots) {\n
 var g = group;\n
 var
ci = index;\n
 var dd = numberOfDoubleDots;\n
 while (dd > ci) {\n
 dd -= ci;\n
 g = g.parent;\n
 if (!g) {\n
 throw new Error('Invalid number of \\.\/');\n
 }\n
 ci = g.segments.length;\n
 }\n
 return new Position(g, false, ci - dd);\n
 }\n
 function getOutlets(commands) {\n
 var _a;\n
 if
(isCommandWithOutlets(commands[0])) {\n
 return commands[0].outlets;\n
 }\n
 return _a = {},
_a[PRIMARY_OUTLET] = commands, _a;\n
 }\n
 function updateSegmentGroup(segmentGroup, startIndex,
commands) {\n
 if (!segmentGroup) {\n
 segmentGroup = new UrlSegmentGroup([], {});\n
 }\n
 if
(segmentGroup.segments.length === 0 && segmentGroup.hasChildren()) {\n
 return
updateSegmentGroupChildren(segmentGroup, startIndex, commands);\n
 }\n
 var m =
prefixedWith(segmentGroup, startIndex, commands);\n
 var slicedCommands =
commands.slice(m.commandIndex);\n
 if (m.match && m.pathIndex < segmentGroup.segments.length) {\n
 var g = new UrlSegmentGroup(segmentGroup.segments.slice(0, m.pathIndex), {});\n
 g.children[PRIMARY_OUTLET] =\n
 new UrlSegmentGroup(segmentGroup.segments.slice(m.pathIndex),
segmentGroup.children);\n
 return updateSegmentGroupChildren(g, 0, slicedCommands);\n
 }\n
 else
if (m.match && slicedCommands.length === 0) {\n
 return new UrlSegmentGroup(segmentGroup.segments,
{});\n
 }\n
 else if (m.match && !segmentGroup.hasChildren()) {\n
 return
createNewSegmentGroup(segmentGroup, startIndex, commands);\n
 }\n
 else if (m.match) {\n
 return
updateSegmentGroupChildren(segmentGroup, 0, slicedCommands);\n
 }\n
 else {\n
 return
createNewSegmentGroup(segmentGroup, startIndex, commands);\n
 }\n
 }\n
 function
updateSegmentGroupChildren(segmentGroup, startIndex, commands) {\n
 if (commands.length === 0) {\n
 return new UrlSegmentGroup(segmentGroup.segments, {});\n
 }\n
 else {\n
 var outlets_2 =
getOutlets(commands);\n
 var children_1 = {};\n
 forEach(outlets_2, function (commands, outlet) {\n
 if (commands !== null) {\n
 children_1[outlet] =
updateSegmentGroup(segmentGroup.children[outlet], startIndex, commands);\n
 }\n
 });\n
 }\n
 forEach(segmentGroup.children, function (child, childOutlet) {\n
 if (outlets_2[childOutlet] === undefined) {\n
 children_1[childOutlet] = child;\n
 }\n
 });\n
 return new
UrlSegmentGroup(segmentGroup.segments, children_1);\n
 }\n
 }\n
 function prefixedWith(segmentGroup,
startIndex, commands) {\n
 var currentCommandIndex = 0;\n
 var currentPathIndex = startIndex;\n
 var

```



```

_this.deactivateRouteAndItsChildren(v, contexts);\n });\n };\n
ActivateRoutes.prototype.deactivateRoutes = function (futureNode, currNode, parentContext) {\n var future
= futureNode.value;\n var curr = currNode ? currNode.value : null;\n if (future === curr) {\n
// Reusing the node, check to see if the children need to be de-activated\n if (future.component) {\n
 // If we have a normal route, we need to go through an outlet.\n var context =
parentContext.getContext(future.outlet);\n if (context) {\n
this.deactivateChildRoutes(futureNode, currNode, context.children);\n }\n }\n else
{\n
 // if we have a componentless route, we recurse but keep the same outlet map.\n
this.deactivateChildRoutes(futureNode, currNode, parentContext);\n }\n }\n else {\n
if (curr) {\n
 // Deactivate the current route which will not be re-used\n
this.deactivateRouteAndItsChildren(currNode, parentContext);\n }\n }\n };\n
ActivateRoutes.prototype.deactivateRouteAndItsChildren = function (route, parentContexts) {\n if
(this.routeReuseStrategy.shouldDetach(route.value.snapshot)) {\n this.detachAndStoreRouteSubtree(route,
parentContexts);\n }\n else {\n this.deactivateRouteAndOutlet(route, parentContexts);\n
}\n };\n
ActivateRoutes.prototype.detachAndStoreRouteSubtree = function (route, parentContexts) {\n
var context = parentContexts.getContext(route.value.outlet);\n if (context && context.outlet) {\n
var componentRef = context.outlet.detach();\n var contexts = context.children.onOutletDeactivated();\n
this.routeReuseStrategy.store(route.value.snapshot, { componentRef: componentRef, route: route, contexts:
contexts });\n }\n };\n
ActivateRoutes.prototype.deactivateRouteAndOutlet = function (route,
parentContexts) {\n var _this = this;\n var context = parentContexts.getContext(route.value.outlet);\n
if (context) {\n var children = nodeChildrenAsMap(route);\n var contexts_1 =
route.value.component ? context.children : parentContexts;\n forEach(children, function (v, k) { return
_this.deactivateRouteAndItsChildren(v, contexts_1); });\n if (context.outlet) {\n // Destroy the
component\n context.outlet.deactivate();\n // Destroy the contexts for all the outlets that were
in the component\n context.children.onOutletDeactivated();\n }\n }\n };\n
ActivateRoutes.prototype.activateChildRoutes = function (futureNode, currNode, contexts) {\n var _this =
this;\n var children = nodeChildrenAsMap(currNode);\n futureNode.children.forEach(function (c) {\n
_this.activateRoutes(c, children[c.value.outlet], contexts);\n _this.forwardEvent(new
ActivationEnd(c.value.snapshot));\n });\n if (futureNode.children.length) {\n
this.forwardEvent(new ChildActivationEnd(futureNode.value.snapshot));\n }\n };\n
ActivateRoutes.prototype.activateRoutes = function (futureNode, currNode, parentContexts) {\n var future =
futureNode.value;\n var curr = currNode ? currNode.value : null;\n advanceActivatedRoute(future);\n
// reusing the node\n if (future === curr) {\n if (future.component) {\n // If we have
a normal route, we need to go through an outlet.\n var context =
parentContexts.getOrCreateContext(future.outlet);\n this.activateChildRoutes(futureNode, currNode,
context.children);\n }\n else {\n // if we have a componentless route, we recurse but
keep the same outlet map.\n this.activateChildRoutes(futureNode, currNode, parentContexts);\n
}\n }\n else {\n if (future.component) {\n // if we have a normal route, we need to
place the component into the outlet and recurse.\n var context =
parentContexts.getOrCreateContext(future.outlet);\n if
(this.routeReuseStrategy.shouldAttach(future.snapshot)) {\n var stored =
this.routeReuseStrategy.retrieve(future.snapshot);\n this.routeReuseStrategy.store(future.snapshot,
null);\n context.children.onOutletReAttached(stored.contexts);\n context.attachRef =
stored.componentRef;\n context.route = stored.route.value;\n if (context.outlet) {\n
// Attach right away when the outlet has already been instantiated\n // Otherwise attach
from `RouterOutlet.ngOnInit` when it is instantiated\n context.outlet.attach(stored.componentRef,
stored.route.value);\n }\n advanceActivatedRouteNodeAndItsChildren(stored.route);\n
}\n else {\n var config = parentLoadedConfig(future.snapshot);\n

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var cmpFactoryResolver = config ? config.module.componentFactoryResolver : null;\n
context.attachRef = null;\n context.route = future;\n context.resolver =\n
cmpFactoryResolver;\n if (context.outlet) {\n // Activate the outlet when it has\n
already been instantiated\n // Otherwise it will get activated from its `ngOnInit` when instantiated\n
 context.outlet.activateWith(future, cmpFactoryResolver);\n }\n
this.activateChildRoutes(futureNode, null, context.children);\n }\n }\n else {\n
// if we have a componentless route, we recurse but keep the same outlet map.\n
this.activateChildRoutes(futureNode, null, parentContexts);\n }\n }\n };\n return\n
ActivateRoutes;\n }());\n function advanceActivatedRouteNodeAndItsChildren(node) {\n
advanceActivatedRoute(node.value);\n node.children.forEach(advanceActivatedRouteNodeAndItsChildren);\n
}\n function parentLoadedConfig(snapshot) {\n for (var s = snapshot.parent; s; s = s.parent) {\n var\n
route = s.routeConfig;\n if (route && route._loadedConfig)\n return route._loadedConfig;\n
if (route && route.component)\n return null;\n }\n return null;\n }\n /**\n * @license\n
* Copyright Google LLC All Rights Reserved.\n *\n * Use of this source code is governed by an MIT-style\n
license that can be\n * found in the LICENSE file at https://angular.io/license\n */\n var LoadedRouterConfig\n
= /** @class */ (function () {\n function LoadedRouterConfig(routes, module) {\n this.routes = routes;\n
this.module = module;\n }\n return LoadedRouterConfig;\n }());\n /**\n * @license\n
* Copyright Google LLC All Rights Reserved.\n *\n * Use of this source code is governed by an MIT-style\n
license that can be\n * found in the LICENSE file at https://angular.io/license\n */\n /**\n * Simple\n
function check, but generic so type inference will flow. Example:\n *\n * function product(a: number, b:\n
number) {\n * return a * b;\n * }\n *\n * if (isFunction<product>(fn)) {\n * return fn(1, 2);\n * }\n
else {\n * throw `Must provide the `product` function`;\n * }\n */\n function isFunction(v) {\n
return typeof v === 'function';\n }\n function isBoolean(v) {\n return typeof v === 'boolean';\n }\n
function isUrlTree(v) {\n return v instanceof UrlTree;\n }\n function isCanLoad(guard) {\n return guard\n
&& isFunction(guard.canLoad);\n }\n function isCanActivate(guard) {\n return guard &&\n
isFunction(guard.canActivate);\n }\n function isCanActivateChild(guard) {\n return guard &&\n
isFunction(guard.canActivateChild);\n }\n function isCanDeactivate(guard) {\n return guard &&\n
isFunction(guard.canDeactivate);\n }\n }\n var INITIAL_VALUE = Symbol('INITIAL_VALUE');\n function\n
prioritizedGuardValue() {\n return operators.switchMap(function (obs) {\n return\n
rxjs.combineLatest.apply(void 0, __spread(obs.map(function (o) { return o.pipe(operators.take(1),\n
operators.startWith(INITIAL_VALUE)); }))).pipe(operators.scan(function (acc, list) {\n var isPending =\n
false;\n return list.reduce(function (innerAcc, val, i) {\n if (innerAcc !== INITIAL_VALUE)\n
return innerAcc;\n // Toggle pending flag if any values haven't been set yet\n if\n
(val === INITIAL_VALUE)\n isPending = true;\n // Any other return values are only\n
valid if we haven't yet hit a pending\n // call. This guarantees that in the case of a guard at the bottom of\n
the\n // tree that returns a redirect, we will wait for the higher priority\n // guard at the top to\n
finish before performing the redirect.\n if (!isPending) {\n // Early return when we hit a\n
`false` value as that should always\n // cancel navigation\n if (val === false)\n
return val;\n if (i === list.length - 1 || isUrlTree(val)) {\n return val;\n
}\n }\n return innerAcc;\n }, acc);\n }, INITIAL_VALUE),\n
operators.filter(function (item) { return item !== INITIAL_VALUE; }), operators.map(function (item) { return\n
isUrlTree(item) ? item : item === true; })), //\n operators.take(1));\n });\n }\n /**\n * @license\n
* Copyright Google LLC All Rights Reserved.\n *\n * Use of this source code is governed by an MIT-style\n
license that can be\n * found in the LICENSE file at https://angular.io/license\n */\n /**\n * This\n
component is used internally within the router to be a placeholder when an empty\n * router-outlet is needed. For\n
example, with a config such as:\n *\n * `{path: 'parent', outlet: 'nav', children: [...]}`\n *\n * In order to\n
render, there needs to be a component on this config, which will default\n * to this `EmptyOutletComponent`.\n
*/\n var EmptyOutletComponent = /** @class */ (function () {\n function EmptyOutletComponent() {\n

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}\n return EmptyOutletComponent;\n }());\n EmptyOutletComponent.decorators = [\n { type:
core.Component, args: [{ template: '<router-outlet></router-outlet>' },] }\n];\n\n /**\n * @license\n * Copyright Google LLC All Rights Reserved.\n * Use of this source code is governed by an MIT-style
license that can be\n * found in the LICENSE file at https://angular.io/license\n */\n function
validateConfig(config, parentPath) {\n if (parentPath === void 0) { parentPath = ''; }\n // forEach doesn't
iterate undefined values\n for (var i = 0; i < config.length; i++) {\n var route = config[i];\n var
fullPath = getFullPath(parentPath, route);\n validateNode(route, fullPath);\n }\n }\n function
validateNode(route, fullPath) {\n if (typeof ngDevMode === 'undefined' || ngDevMode) {\n if (!route)
{\n throw new Error("\n Invalid configuration of route \"" + fullPath + "\": Encountered undefined
route.\n The reason might be an extra comma.\n\n Example:\n const routes: Routes = [\n { path: '
',\n redirectTo: '/dashboard', pathMatch: 'full' },\n { path: 'dashboard', component: DashboardComponent },, <<
two commas\n { path: 'detail/:id', component: HeroDetailComponent }\n];\n\n ");\n }\n if
(Array.isArray(route)) {\n throw new Error("\n Invalid configuration of route \"" + fullPath + "\": Array
cannot be specified");\n }\n if (!route.component && !route.children && !route.loadChildren &&\n
(route.outlet && route.outlet !== PRIMARY_OUTLET)) {\n throw new Error("\n Invalid
configuration of route \"" + fullPath + "\": a componentless route without children or loadChildren cannot have a
named outlet set");\n }\n if (route.redirectTo && route.children) {\n throw new
Error("\n Invalid configuration of route \"" + fullPath + "\": redirectTo and children cannot be used together");\n
}\n if (route.redirectTo && route.loadChildren) {\n throw new Error("\n Invalid configuration of
route \"" + fullPath + "\": redirectTo and loadChildren cannot be used together");\n }\n if
(route.children && route.loadChildren) {\n throw new Error("\n Invalid configuration of route \"" + fullPath
+ "\": children and loadChildren cannot be used together");\n }\n if (route.redirectTo &&
route.component) {\n throw new Error("\n Invalid configuration of route \"" + fullPath + "\": redirectTo and
component cannot be used together");\n }\n if (route.path && route.matcher) {\n throw new
Error("\n Invalid configuration of route \"" + fullPath + "\": path and matcher cannot be used together");\n }\n
if (route.redirectTo === void 0 && !route.component && !route.children && !route.loadChildren) {\n
throw new Error("\n Invalid configuration of route \"" + fullPath + "\": One of the following must be provided:
component, redirectTo, children or loadChildren");\n }\n if (route.path === void 0 && route.matcher
=== void 0) {\n throw new Error("\n Invalid configuration of route \"" + fullPath + "\": routes must have
either a path or a matcher specified");\n }\n if (typeof route.path === 'string' && route.path.charAt(0)
=== '/') {\n throw new Error("\n Invalid configuration of route \"" + fullPath + "\": path cannot start with a
slash");\n }\n if (route.path === "" && route.redirectTo !== void 0 && route.pathMatch === void 0)
{\n var exp = "\n The default value of 'pathMatch' is 'prefix', but often the intent is to use 'full'.\n";\n
throw new Error("\n Invalid configuration of route '{path: \\\"\" + fullPath + \\\"\", redirectTo: \\\"\" + route.redirectTo
+ \\\"\": please provide 'pathMatch'.\n ' + exp);\n }\n if (route.pathMatch !== void 0 &&
route.pathMatch !== 'full' && route.pathMatch !== 'prefix') {\n throw new Error("\n Invalid configuration of
route \"" + fullPath + "\": pathMatch can only be set to 'prefix' or 'full'");\n }\n if (route.children)
{\n validateConfig(route.children, fullPath);\n }\n }\n function getFullPath(parentPath, currentRoute)
{\n if (!currentRoute) {\n return parentPath;\n }\n if (!parentPath && !currentRoute.path) {\n
return "";\n }\n else if (parentPath && !currentRoute.path) {\n return parentPath + "/";\n }\n
else if (!parentPath && currentRoute.path) {\n return currentRoute.path;\n }\n else {\n
return parentPath + "/" + currentRoute.path;\n }\n }\n\n /**\n * Makes a copy of the config and adds any
default required properties.\n */\n function standardizeConfig(r) {\n var children = r.children &&
r.children.map(standardizeConfig);\n var c = children ? Object.assign(Object.assign({}, r), { children: children
}): Object.assign({}, r);\n if (!c.component && (children || c.loadChildren) && (c.outlet && c.outlet !==
PRIMARY_OUTLET)) {\n c.component = EmptyOutletComponent;\n }\n return c;\n }\n\n /**
Returns of `Map` of outlet names to the `Route`s for that outlet.\n */\n function groupRoutesByOutlet(routes) {\n
return routes.reduce(function (map, route) {\n var routeOutlet = getOutlet(route);\n if

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(map.has(routeOutlet)) {\n map.get(routeOutlet).push(route);\n }\n else {\n map.set(routeOutlet, [route]);\n }\n return map;\n }, new Map());\n}\n /** Returns the
`route.outlet` or PRIMARY_OUTLET if none exists. */\n function getOutlet(route) {\n return route.outlet ||
PRIMARY_OUTLET;\n }\n\n var NoMatch = /** @class */ (function () {\n function
NoMatch(segmentGroup) {\n this.segmentGroup = segmentGroup || null;\n }\n return NoMatch;\n
})();\n var AbsoluteRedirect = /** @class */ (function () {\n function AbsoluteRedirect(urlTree) {\n
this.urlTree = urlTree;\n }\n return AbsoluteRedirect;\n})();\n function noMatch(segmentGroup) {\n
return new rxjs.Observable(function (obs) { return obs.error(new NoMatch(segmentGroup)); });\n }\n function
absoluteRedirect(newTree) {\n return new rxjs.Observable(function (obs) { return obs.error(new
AbsoluteRedirect(newTree)); });\n }\n function namedOutletsRedirect(redirectTo) {\n return new
rxjs.Observable(function (obs) { return obs.error(new Error("Only absolute redirects can have named outlets.
redirectTo: \"" + redirectTo + "\"")); });\n }\n function canLoadFails(route) {\n return new
rxjs.Observable(function (obs) { return obs.error(navigationCancelingError("Cannot load children because the
guard of the route \\\\\"path: \"" + route.path + \\\\\" returned false")); });\n }\n /**\n * Returns the `UrlTree`
with the redirection applied.\n *\n * Lazy modules are loaded along the way.\n */\n function
applyRedirects(moduleInjector, configLoader, urlSerializer, urlTree, config) {\n return new
ApplyRedirects(moduleInjector, configLoader, urlSerializer, urlTree, config).apply();\n }\n var ApplyRedirects
= /** @class */ (function () {\n function ApplyRedirects(moduleInjector, configLoader, urlSerializer, urlTree,
config) {\n this.configLoader = configLoader;\n this.urlSerializer = urlSerializer;\n this.urlTree
= urlTree;\n this.config = config;\n this.allowRedirects = true;\n this.ngModule =
moduleInjector.get(core.NgModuleRef);\n }\n ApplyRedirects.prototype.apply = function () {\n var
_this = this;\n var expanded$ = this.expandSegmentGroup(this.ngModule, this.config, this.urlTree.root,
PRIMARY_OUTLET);\n var urlTrees$ = expanded$.pipe(operators.map(function (rootSegmentGroup) {\n
return _this.createUrlTree(rootSegmentGroup, _this.urlTree.queryParams, _this.urlTree.fragment); }));\n
return urlTrees$.pipe(operators.catchError(function (e) {\n if (e instanceof AbsoluteRedirect) {\n
// after an absolute redirect we do not apply any more redirects!\n _this.allowRedirects = false;\n
// we need to run matching, so we can fetch all lazy-loaded modules\n return
_this.match(e.urlTree);\n }\n if (e instanceof NoMatch) {\n throw
_this.noMatchError(e);\n }\n throw e;\n }));\n });\n ApplyRedirects.prototype.match = function (tree) {\n var _this = this;\n var expanded$ =
this.expandSegmentGroup(this.ngModule, this.config, tree.root, PRIMARY_OUTLET);\n var mapped$ =
expanded$.pipe(operators.map(function (rootSegmentGroup) { return _this.createUrlTree(rootSegmentGroup,
tree.queryParams, tree.fragment); }));\n return mapped$.pipe(operators.catchError(function (e) {\n
if (e instanceof NoMatch) {\n throw _this.noMatchError(e);\n }\n throw e;\n
}));\n });\n ApplyRedirects.prototype.noMatchError = function (e) {\n return new Error("Cannot
match any routes. URL Segment: \"" + e.segmentGroup + "\"");\n };\n ApplyRedirects.prototype.createUrlTree = function (rootCandidate, queryParams, fragment) {\n var _a;\n
var root = rootCandidate.segments.length > 0 ?\n new UrlSegmentGroup([], (_a = {},
_a[PRIMARY_OUTLET] = rootCandidate, _a)) :\n rootCandidate;\n return new UrlTree(root,
queryParams, fragment);\n };\n ApplyRedirects.prototype.expandSegmentGroup = function (ngModule,
routes, segmentGroup, outlet) {\n if (segmentGroup.segments.length === 0 &&
segmentGroup.hasChildren()) {\n return this.expandChildren(ngModule, routes, segmentGroup)\n
.pipe(operators.map(function (children) { return new UrlSegmentGroup([], children); }));\n }\n
return this.expandSegment(ngModule, segmentGroup, routes, segmentGroup.segments, outlet, true);\n };\n
// Recursively expand segment groups for all the child outlets\n ApplyRedirects.prototype.expandChildren =
function (ngModule, routes, segmentGroup) {\n var _this = this;\n return
waitForMap(segmentGroup.children, function (childOutlet, child) { return _this.expandSegmentGroup(ngModule,
routes, child, childOutlet); });\n };\n ApplyRedirects.prototype.expandSegment = function (ngModule,

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segmentGroup, routes, segments, outlet, allowRedirects) {\n var _this = this;\n // We need to expand
each outlet group independently to ensure that we not only load modules\n // for routes matching the given
`outlet`, but also those which will be activated because\n // their path is empty string. This can result in
multiple outlets being activated at once.\n var routesByOutlet = groupRoutesByOutlet(routes);\n if
(!routesByOutlet.has(outlet)) {\n routesByOutlet.set(outlet, []);\n }\n var expandRoutes =
function (routes) {\n return rxjs.from(routes).pipe(operators.concatMap(function (r) {\n var
expanded$ = _this.expandSegmentAgainstRoute(ngModule, segmentGroup, routes, r, segments, outlet,
allowRedirects);\n return expanded$.pipe(operators.catchError(function (e) {\n if (e
instanceof NoMatch) {\n return rxjs.of(null);\n }\n throw e;\n
 }));\n })), operators.first(function (s) { return s !== null; }), operators.catchError(function (e) {\n
 if (e instanceof rxjs.EmptyError || e.name === 'EmptyError') {\n if
(_this.noLeftoversInUrl(segmentGroup, segments, outlet)) {\n return rxjs.of(new
UrlSegmentGroup([], {}));\n }\n throw new NoMatch(segmentGroup);\n
 }\n throw e;\n }));\n });\n var expansions =
Array.from(routesByOutlet.entries()).map(function (_a) {\n var _b = __read(_a, 2), routeOutlet = _b[0],
routes = _b[1];\n var expanded = expandRoutes(routes);\n // Map all results from outlets we aren't
activating to `null` so they can be ignored later\n return routeOutlet === outlet ? expanded :\n
expanded.pipe(operators.map(function () { return null; }), operators.catchError(function () { return rxjs.of(null);
}));\n });\n return rxjs.from(expansions)\n .pipe(operators.combineAll(), operators.first(), \n
 // Return only the expansion for the route outlet we are trying to activate.\n operators.map(function
(results) { return results.find(function (result) { return result !== null; }); }));\n });\n
ApplyRedirects.prototype.noLeftoversInUrl = function (segmentGroup, segments, outlet) {\n return
segments.length === 0 && !segmentGroup.children[outlet];\n });\n
ApplyRedirects.prototype.expandSegmentAgainstRoute = function (ngModule, segmentGroup, routes, route, paths,
outlet, allowRedirects) {\n // Empty string segments are special because multiple outlets can match a single
path, i.e.\n // `[{path: "", component: B}, {path: "", loadChildren: () => {}}, outlet: "about"]`\n if
(getOutlet(route) !== outlet && route.path !== "") {\n return noMatch(segmentGroup);\n }\n
if (route.redirectTo === undefined) {\n return this.matchSegmentAgainstRoute(ngModule, segmentGroup,
route, paths);\n }\n if (allowRedirects && this.allowRedirects) {\n return
this.expandSegmentAgainstRouteUsingRedirect(ngModule, segmentGroup, routes, route, paths, outlet);\n }\n
 return noMatch(segmentGroup);\n });\n
ApplyRedirects.prototype.expandSegmentAgainstRouteUsingRedirect = function (ngModule, segmentGroup,
routes, route, segments, outlet) {\n if (route.path === '**') {\n return
this.expandWildcardWithParamsAgainstRouteUsingRedirect(ngModule, routes, route, outlet);\n }\n
 return this.expandRegularSegmentAgainstRouteUsingRedirect(ngModule, segmentGroup, routes, route, segments,
outlet);\n });\n
ApplyRedirects.prototype.expandWildcardWithParamsAgainstRouteUsingRedirect =
function (ngModule, routes, route, outlet) {\n var _this = this;\n var newTree =
this.applyRedirectCommands([], route.redirectTo, {});\n if (route.redirectTo.startsWith('/')) {\n
return absoluteRedirect(newTree);\n }\n return this.linalizeSegments(route,
newTree).pipe(operators.mergeMap(function (newSegments) {\n var group = new
UrlSegmentGroup(newSegments, {});\n return _this.expandSegment(ngModule, group, routes,
newSegments, outlet, false);\n }));\n });\n
ApplyRedirects.prototype.expandRegularSegmentAgainstRouteUsingRedirect = function (ngModule,
segmentGroup, routes, route, segments, outlet) {\n var _this = this;\n var _a = match(segmentGroup,
route, segments), matched = _a.matched, consumedSegments = _a.consumedSegments, lastChild = _a.lastChild,
positionalParamSegments = _a.positionalParamSegments;\n if (!matched)\n return
noMatch(segmentGroup);\n var newTree = this.applyRedirectCommands(consumedSegments,
route.redirectTo, positionalParamSegments);\n if (route.redirectTo.startsWith('/')) {\n return

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absoluteRedirect(newTree);\n }\n return this.linalizeSegments(route,
newTree).pipe(operators.mergeMap(function (newSegments) {\n return _this.expandSegment(ngModule,
segmentGroup, routes, newSegments.concat(segments.slice(lastChild)), outlet, false);\n }));\n });\n
ApplyRedirects.prototype.matchSegmentAgainstRoute = function (ngModule, rawSegmentGroup, route, segments)
{\n var _this = this;\n if (route.path === '**') {\n if (route.loadChildren) {\n
return this.configLoader.load(ngModule.injector, route)\n .pipe(operators.map(function (cfg) {\n
 route._loadedConfig = cfg;\n return new UrlSegmentGroup(segments, {});\n
}));\n }\n return rxjs.of(new UrlSegmentGroup(segments, {}));\n }\n var _a =
match(rawSegmentGroup, route, segments), matched = _a.matched, consumedSegments = _a.consumedSegments,
lastChild = _a.lastChild;\n if (!matched)\n return noMatch(rawSegmentGroup);\n var
rawSlicedSegments = segments.slice(lastChild);\n var childConfig$ = this.getChildConfig(ngModule, route,
segments);\n return childConfig$.pipe(operators.mergeMap(function (routerConfig) {\n var
childModule = routerConfig.module;\n var childConfig = routerConfig.routes;\n var _a =
split(rawSegmentGroup, consumedSegments, rawSlicedSegments, childConfig), segmentGroup =
_a.segmentGroup, slicedSegments = _a.slicedSegments;\n if (slicedSegments.length === 0 &&
segmentGroup.hasChildren()) {\n var expanded$_1 = _this.expandChildren(childModule, childConfig,
segmentGroup);\n return expanded$_1.pipe(operators.map(function (children) { return new
UrlSegmentGroup(consumedSegments, children); }));\n }\n if (childConfig.length === 0 &&
slicedSegments.length === 0) {\n return rxjs.of(new UrlSegmentGroup(consumedSegments, {}));\n
 }\n var expanded$ = _this.expandSegment(childModule, segmentGroup, childConfig, slicedSegments,
PRIMARY_OUTLET, true);\n return expanded$.pipe(operators.map(function (cs) { return new
UrlSegmentGroup(consumedSegments.concat(cs.segments), cs.children); }));\n }));\n });\n
ApplyRedirects.prototype.getChildConfig = function (ngModule, route, segments) {\n var _this = this;\n
if (route.children) {\n // The children belong to the same module\n return rxjs.of(new
LoadedRouterConfig(route.children, ngModule));\n }\n if (route.loadChildren) {\n // lazy
children belong to the loaded module\n if (route._loadedConfig !== undefined) {\n return
rxjs.of(route._loadedConfig);\n }\n return this.runCanLoadGuards(ngModule.injector, route,
segments)\n .pipe(operators.mergeMap(function (shouldLoadResult) {\n if
(shouldLoadResult) {\n return _this.configLoader.load(ngModule.injector, route)\n
 .pipe(operators.map(function (cfg) {\n route._loadedConfig = cfg;\n return cfg;\n
 }));\n }\n return canLoadFails(route);\n }));\n }\n return
rxjs.of(new LoadedRouterConfig([], ngModule));\n });\n
ApplyRedirects.prototype.runCanLoadGuards =
function (moduleInjector, route, segments) {\n var _this = this;\n var canLoad = route.canLoad;\n
if (!canLoad || canLoad.length === 0)\n return rxjs.of(true);\n var canLoadObservables =
canLoad.map(function (injectionToken) {\n var guard = moduleInjector.get(injectionToken);\n var
guardVal;\n if (isCanLoad(guard)) {\n guardVal = guard.canLoad(route, segments);\n
 }\n else if (isFunction(guard)) {\n guardVal = guard(route, segments);\n }\n
 else {\n throw new Error('Invalid CanLoad guard');\n }\n return
wrapIntoObservable(guardVal);\n });\n return rxjs.of(canLoadObservables)\n
 .pipe(prioritizedGuardValue(), operators.tap(function (result) {\n if (!isUrlTree(result))\n
return;\n var error = navigationCancelingError("Redirecting to \\\\\" + _this.urlSerializer.serialize(result) +
\\"\\");\n error.url = result;\n throw error;\n })), operators.map(function (result) { return
result === true; }));\n });\n
ApplyRedirects.prototype.linalizeSegments = function (route, urlTree) {\n
 var res = [];\n var c = urlTree.root;\n while (true) {\n res = res.concat(c.segments);\n
 }\n if (c.numberOfChildren === 0) {\n return rxjs.of(res);\n }\n if (c.numberOfChildren
> 1 || !c.children[PRIMARY_OUTLET]) {\n return namedOutletsRedirect(route.redirectTo);\n }\n
 c = c.children[PRIMARY_OUTLET];\n }\n });\n
ApplyRedirects.prototype.applyRedirectCommands = function (segments, redirectTo, posParams) {\n return

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this.applyRedirectCreateUrlTree(redirectTo, this.urlSerializer.parse(redirectTo), segments, posParams);
};
ApplyRedirects.prototype.applyRedirectCreateUrlTree = function (redirectTo, urlTree, segments, posParams)
{
 var newRoot = this.createSegmentGroup(redirectTo, urlTree.root, segments, posParams);
 return new UrlTree(newRoot, this.createQueryParams(urlTree.queryParams, this.urlTree.queryParams), urlTree.fragment);
};
ApplyRedirects.prototype.createQueryParams = function (redirectToParams, actualParams) {
 var res = {};
 forEach(redirectToParams, function (v, k) {
 var copySourceValue = typeof v === 'string' && v.startsWith(':');
 if (copySourceValue) {
 var sourceName = v.substring(1);
 res[k] = actualParams[sourceName];
 } else {
 res[k] = v;
 }
 });
 return res;
};
ApplyRedirects.prototype.createSegmentGroup = function (redirectTo, group, segments, posParams) {
 var _this = this;
 var updatedSegments = this.createSegments(redirectTo, group.segments, segments, posParams);
 var children = {};
 forEach(group.children, function (child, name) {
 children[name] = _this.createSegmentGroup(redirectTo, child, segments, posParams);
 });
 return new UrlSegmentGroup(updatedSegments, children);
};
ApplyRedirects.prototype.createSegments = function (redirectTo, redirectToSegments, actualSegments, posParams) {
 var _this = this;
 return redirectToSegments.map(function (s) {
 return s.path.startsWith(':') ? _this.findPosParam(redirectTo, s, posParams) : _this.findOrReturn(s, actualSegments);
 });
};
ApplyRedirects.prototype.findPosParam = function (redirectTo, redirectToUrlSegment, posParams) {
 var pos = posParams[redirectToUrlSegment.path.substring(1)];
 if (!pos) {
 throw new Error("Cannot redirect to \"" + redirectTo + "\". Cannot find \"" + redirectToUrlSegment.path + "\".");
 }
 return pos;
};
ApplyRedirects.prototype.findOrReturn = function (redirectToUrlSegment, actualSegments) {
 var e_1, _a;
 var idx = 0;
 try {
 for (var actualSegments_1 = __values(actualSegments), actualSegments_1_1 = actualSegments_1.next(); !actualSegments_1_1.done; actualSegments_1_1 = actualSegments_1.next()) {
 var s = actualSegments_1_1.value;
 if (s.path === redirectToUrlSegment.path) {
 actualSegments.splice(idx);
 return s;
 }
 idx++;
 }
 } catch (e_1_1) {
 e_1 = { error: e_1_1 };
 } finally {
 try {
 if (actualSegments_1_1 && !actualSegments_1_1.done && (_a = actualSegments_1.return)) _a.call(actualSegments_1);
 } finally {
 if (e_1) throw e_1.error;
 }
 }
 return redirectToUrlSegment;
};
return ApplyRedirects;
};
function match(segmentGroup, route, segments) {
 if (route.path === "") {
 if ((route.pathMatch === 'full') && (segmentGroup.hasChildren() || segments.length > 0)) {
 return { matched: false, consumedSegments: [], lastChild: 0, positionalParamSegments: {} };
 }
 return { matched: true, consumedSegments: [], lastChild: 0, positionalParamSegments: {} };
 }
 var matcher = route.matcher || defaultUrlMatcher;
 var res = matcher(segments, segmentGroup, route);
 if (!res) {
 return { matched: false, consumedSegments: [], lastChild: 0, positionalParamSegments: {} };
 }
 return { matched: true, consumedSegments: res.consumed, lastChild: res.consumed.length, positionalParamSegments: res.posParams };
};
function split(segmentGroup, consumedSegments, slicedSegments, config) {
 if (slicedSegments.length > 0 && containsEmptyPathRedirectsWithNamedOutlets(segmentGroup, slicedSegments, config)) {
 var s = new UrlSegmentGroup(consumedSegments, createChildrenForEmptySegments(config, new UrlSegmentGroup(slicedSegments, segmentGroup.children)));
 return { segmentGroup: mergeTrivialChildren(s), slicedSegments: [] };
 }
 if (slicedSegments.length === 0 && containsEmptyPathRedirects(segmentGroup, slicedSegments, config)) {
 var s = new UrlSegmentGroup(segmentGroup.segments, addEmptySegmentsToChildrenIfNeeded(segmentGroup, slicedSegments, config, segmentGroup.children));
 return { segmentGroup: mergeTrivialChildren(s), slicedSegments: slicedSegments };
 }
 return { segmentGroup: segmentGroup, slicedSegments: slicedSegments };
};
function mergeTrivialChildren(s) {
 if (s.numberOfChildren === 1 && s.children[PRIMARY_OUTLET]) {
 var c = s.children[PRIMARY_OUTLET];
 return new

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UrlSegmentGroup(s.segments.concat(c.segments), c.children);\n }\n return s;\n }\n function
addEmptySegmentsToChildrenIfNeeded(segmentGroup, slicedSegments, routes, children) {\n var e_2, _a;\n var res = {};\n try {\n for (var routes_1 = __values(routes), routes_1_1 = routes_1.next();
!routes_1_1.done; routes_1_1 = routes_1.next()) {\n var r = routes_1_1.value;\n if
(isEmptyPathRedirect(segmentGroup, slicedSegments, r) && !children[getOutlet(r)]) {\n
res[getOutlet(r)] = new UrlSegmentGroup([], {});\n }\n }\n } catch (e_2_1) { e_2 = {
error: e_2_1 }; }\n finally {\n try {\n if (routes_1_1 && !routes_1_1.done && (_a =
routes_1.return)) _a.call(routes_1);\n }\n finally { if (e_2) throw e_2.error; }\n }\n return
Object.assign(Object.assign({}, children), res);\n }\n function createChildrenForEmptySegments(routes,
primarySegmentGroup) {\n var e_3, _a;\n var res = {};\n res[PRIMARY_OUTLET] =
primarySegmentGroup;\n try {\n for (var routes_2 = __values(routes), routes_2_1 = routes_2.next();
!routes_2_1.done; routes_2_1 = routes_2.next()) {\n var r = routes_2_1.value;\n if (r.path === "
&& getOutlet(r) !== PRIMARY_OUTLET) {\n res[getOutlet(r)] = new UrlSegmentGroup([], {});\n
 }\n }\n } catch (e_3_1) { e_3 = { error: e_3_1 }; }\n finally {\n try {\n if
(routes_2_1 && !routes_2_1.done && (_a = routes_2.return)) _a.call(routes_2);\n }\n finally { if
(e_3) throw e_3.error; }\n }\n return res;\n }\n function
containsEmptyPathRedirectsWithNamedOutlets(segmentGroup, segments, routes) {\n return
routes.some(function (r) { return isEmptyPathRedirect(segmentGroup, segments, r) && getOutlet(r) !==
PRIMARY_OUTLET; });\n }\n function containsEmptyPathRedirects(segmentGroup, segments, routes) {\n
return routes.some(function (r) { return isEmptyPathRedirect(segmentGroup, segments, r); });\n }\n function
isEmptyPathRedirect(segmentGroup, segments, r) {\n if ((segmentGroup.hasChildren() || segments.length > 0)
&& r.pathMatch === 'full') {\n return false;\n }\n return r.path === " && r.redirectTo !==
undefined;\n }\n /**\n * @license\n * Copyright Google LLC All Rights Reserved.\n * \n * Use of
this source code is governed by an MIT-style license that can be\n * found in the LICENSE file at
https://angular.io/license\n *\n function applyRedirects$1(moduleInjector, configLoader, urlSerializer, config)
{\n return function (source) {\n return source.pipe(operators.switchMap(function (t) { return
applyRedirects(moduleInjector, configLoader, urlSerializer, t.extractedUrl, config)\n
 .pipe(operators.map(function (urlAfterRedirects) { return (Object.assign(Object.assign({}, t), { urlAfterRedirects:
urlAfterRedirects })); })); }));\n });\n }\n /**\n * @license\n * Copyright Google LLC All Rights
Reserved.\n * \n * Use of this source code is governed by an MIT-style license that can be\n * found in the
LICENSE file at https://angular.io/license\n *\n var CanActivate = /** @class */ (function () {\n function
CanActivate(path) {\n this.path = path;\n this.route = this.path[this.path.length - 1];\n }\n
return CanActivate;\n }());\n var CanDeactivate = /** @class */ (function () {\n function
CanDeactivate(component, route) {\n this.component = component;\n this.route = route;\n }\n
return CanDeactivate;\n }());\n function getAllRouteGuards(future, curr, parentContexts) {\n var futureRoot
= future._root;\n var currRoot = curr ? curr._root : null;\n return getChildRouteGuards(futureRoot,
currRoot, parentContexts, [futureRoot.value]);\n }\n function getCanActivateChild(p) {\n var
canActivateChild = p.routeConfig ? p.routeConfig.canActivateChild : null;\n if (!canActivateChild ||
canActivateChild.length === 0)\n return null;\n return { node: p, guards: canActivateChild };\n }\n function getToken(token, snapshot, moduleInjector) {\n var config = getClosestLoadedConfig(snapshot);\n var injector = config ? config.module.injector : moduleInjector;\n return injector.get(token);\n }\n function
getClosestLoadedConfig(snapshot) {\n if (!snapshot)\n return null;\n for (var s = snapshot.parent; s;
s = s.parent) {\n var route = s.routeConfig;\n if (route && route._loadedConfig)\n return
route._loadedConfig;\n }\n return null;\n }\n function getChildRouteGuards(futureNode, currNode,
contexts, futurePath, checks) {\n if (checks === void 0) { checks = {\n canDeactivateChecks: [],\n
canActivateChecks: []\n }; }\n var prevChildren = nodeChildrenAsMap(currNode);\n // Process the
children of the future route\n futureNode.children.forEach(function (c) {\n getRouteGuards(c,
prevChildren[c.value.outlet], contexts, futurePath.concat([c.value]), checks);\n delete

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prevChildren[c.value.outlet];\n });\n // Process any children left from the current route (not active for the
future route)\n forEach(prevChildren, function (v, k) { return deactivateRouteAndItsChildren(v,
contexts.getContext(k), checks); });\n return checks;\n }\n function getRouteGuards(futureNode, currNode,
parentContexts, futurePath, checks) {\n if (checks === void 0) { checks = {\n canDeactivateChecks: [],\n canActivateChecks: []\n }; }\n var future = futureNode.value;\n var curr = currNode ?
currNode.value : null;\n var context = parentContexts ? parentContexts.getContext(futureNode.value.outlet) :
null;\n // reusing the node\n if (curr && future.routeConfig === curr.routeConfig) {\n var shouldRun
= shouldRunGuardsAndResolvers(curr, future, future.routeConfig.runGuardsAndResolvers);\n if
(shouldRun) {\n checks.canActivateChecks.push(new CanActivate(futurePath));\n }\n else
{\n // we need to set the data\n future.data = curr.data;\n future._resolvedData =
curr._resolvedData;\n }\n // If we have a component, we need to go through an outlet.\n if
(future.component) {\n getChildRouteGuards(futureNode, currNode, context ? context.children : null,
futurePath, checks);\n }\n // if we have a componentless route, we recurse but keep the same outlet map.\n
 }\n else {\n getChildRouteGuards(futureNode, currNode, parentContexts, futurePath, checks);\n
 }\n if (shouldRun && context && context.outlet && context.outlet.isActivated) {\n
checks.canDeactivateChecks.push(new CanDeactivate(context.outlet.component, curr));\n }\n }\n
else {\n if (curr) {\n deactivateRouteAndItsChildren(currNode, context, checks);\n }\n
checks.canActivateChecks.push(new CanActivate(futurePath));\n // If we have a component, we need to go
through an outlet.\n if (future.component) {\n getChildRouteGuards(futureNode, null, context ?
context.children : null, futurePath, checks);\n }\n // if we have a componentless route, we recurse but keep the
same outlet map.\n }\n else {\n getChildRouteGuards(futureNode, null, parentContexts,
futurePath, checks);\n }\n }\n return checks;\n}\nfunction shouldRunGuardsAndResolvers(curr,
future, mode) {\n if (typeof mode === 'function') {\n return mode(curr, future);\n }\n switch
(mode) {\n case 'pathParamsChange':\n return !equalPath(curr.url, future.url);\n case
'pathParamsOrQueryParamsChange':\n return !equalPath(curr.url, future.url) ||\n
!shallowEqual(curr.queryParams, future.queryParams);\n case 'always':\n return true;\n case
'paramsOrQueryParamsChange':\n return !equalParamsAndUrlSegments(curr, future) ||\n
!shallowEqual(curr.queryParams, future.queryParams);\n case 'paramsChange':\n default:\n
return !equalParamsAndUrlSegments(curr, future);\n }\n}\nfunction deactivateRouteAndItsChildren(route,
context, checks) {\n var children = nodeChildrenAsMap(route);\n var r = route.value;\n forEach(children, function (node, childName) {\n if (!r.component) {\n
deactivateRouteAndItsChildren(node, context, checks);\n }\n else if (context) {\n
deactivateRouteAndItsChildren(node, context.children.getContext(childName), checks);\n }\n else {\n
deactivateRouteAndItsChildren(node, null, checks);\n }\n });\n if (!r.component) {\n
checks.canDeactivateChecks.push(new CanDeactivate(null, r));\n }\n else if (context && context.outlet
&& context.outlet.isActivated) {\n checks.canDeactivateChecks.push(new
CanDeactivate(context.outlet.component, r));\n }\n else {\n checks.canDeactivateChecks.push(new
CanDeactivate(null, r));\n }\n}\n\n/**\n * @license\n * Copyright Google LLC All Rights
Reserved.\n * Use of this source code is governed by an MIT-style license that can be\n * found in the
LICENSE file at https://angular.io/license\n */\nfunction checkGuards(moduleInjector, forwardEvent) {\n
return function (source) {\n return source.pipe(operators.mergeMap(function (t) {\n var
targetSnapshot = t.targetSnapshot, currentSnapshot = t.currentSnapshot, _a = t.guards, canActivateChecks =
_a.canActivateChecks, canDeactivateChecks = _a.canDeactivateChecks;\n if (canDeactivateChecks.length
=== 0 && canActivateChecks.length === 0) {\n return rxjs.of(Object.assign(Object.assign({}, t), {
guardsResult: true }));\n }\n return runCanDeactivateChecks(canDeactivateChecks,
targetSnapshot, currentSnapshot, moduleInjector)\n .pipe(operators.mergeMap(function (canDeactivate)
{\n return canDeactivate && isBoolean(canDeactivate) ?\n
runCanActivateChecks(targetSnapshot, canActivateChecks, moduleInjector, forwardEvent) :

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rxjs.of(canDeactivate);\n }, operators.map(function (guardsResult) { return
(Object.assign(Object.assign({}, t), { guardsResult: guardsResult })); }));\n });\n }\n }\n }\n }\n function
runCanDeactivateChecks(checks, futureRSS, currRSS, moduleInjector) {\n return
rxjs.from(checks).pipe(operators.mergeMap(function (check) { return runCanDeactivate(check.component,
check.route, currRSS, futureRSS, moduleInjector); }), operators.first(function (result) {\n return result !==
true;\n }, true));\n }\n function runCanActivateChecks(futureSnapshot, checks, moduleInjector,
forwardEvent) {\n return rxjs.from(checks).pipe(operators.concatMap(function (check) {\n return
rxjs.from([\n fireChildActivationStart(check.route.parent, forwardEvent),\n fireActivationStart(check.route, forwardEvent),\n runCanActivateChild(futureSnapshot, check.path,
moduleInjector),\n runCanActivate(futureSnapshot, check.route, moduleInjector)\n])\n .pipe(operators.concatAll(), operators.first(function (result) {\n return result !== true;\n }, true));\n }, operators.first(function (result) {\n return result !== true;\n }, true));\n }\n /**\n * This should
fire off `ActivationStart` events for each route being activated at this\n * level.\n * In other words, if you're
activating `a` and `b` below, `path` will contain the\n * `ActivatedRouteSnapshot`s for both and we will fire
`ActivationStart` for both. Always\n * return\n * `true` so checks continue to run.\n */\n function
fireActivationStart(snapshot, forwardEvent) {\n if (snapshot !== null && forwardEvent) {\n forwardEvent(new
ActivationStart(snapshot));\n }\n return rxjs.of(true);\n }\n /**\n * This should
fire off `ChildActivationStart` events for each route being activated at this\n * level.\n * In other words, if
you're activating `a` and `b` below, `path` will contain the\n * `ActivatedRouteSnapshot`s for both and we will
fire `ChildActivationStart` for both. Always\n * return\n * `true` so checks continue to run.\n */\n function
fireChildActivationStart(snapshot, forwardEvent) {\n if (snapshot !== null && forwardEvent) {\n forwardEvent(new
ChildActivationStart(snapshot));\n }\n return rxjs.of(true);\n }\n function
runCanActivate(futureRSS, futureARS, moduleInjector) {\n var canActivate = futureARS.routeConfig ?
futureARS.routeConfig.canActivate : null;\n if (!canActivate || canActivate.length === 0)\n return
rxjs.of(true);\n var canActivateObservables = canActivate.map(function (c) {\n return rxjs.defer(function
() {\n var guard = getToken(c, futureARS, moduleInjector);\n var observable;\n if
(isCanActivate(guard)) {\n observable = wrapIntoObservable(guard.canActivate(futureARS,
futureRSS));\n }\n else if (isFunction(guard)) {\n observable =
wrapIntoObservable(guard(futureARS, futureRSS));\n }\n else {\n throw new
Error('Invalid CanActivate guard');\n }\n return observable.pipe(operators.first());\n });\n });\n return rxjs.of(canActivateObservables).pipe(prioritizedGuardValue());\n }\n function
runCanActivateChild(futureRSS, path, moduleInjector) {\n var futureARS = path[path.length - 1];\n var
canActivateChildGuards = path.slice(0, path.length - 1)\n .reverse()\n .map(function (p) { return
getCanActivateChild(p); })\n .filter(function (_) { return _ !== null; });\n var
canActivateChildGuardsMapped = canActivateChildGuards.map(function (d) {\n return rxjs.defer(function ()
{\n var guardsMapped = d.guards.map(function (c) {\n var guard = getToken(c, d.node,
moduleInjector);\n var observable;\n if (isCanActivateChild(guard)) {\n observable =
wrapIntoObservable(guard.canActivateChild(futureARS, futureRSS));\n }\n else if (isFunction(guard)) {\n observable = wrapIntoObservable(guard(futureARS, futureRSS));\n }\n else {\n throw new
Error('Invalid CanActivateChild guard');\n }\n return observable.pipe(operators.first());\n });\n });\n });\n return
rxjs.of(guardsMapped).pipe(prioritizedGuardValue());\n }\n function
runCanDeactivate(component, currARS, currRSS, futureRSS, moduleInjector) {\n var canDeactivate =
currARS && currARS.routeConfig ? currARS.routeConfig.canDeactivate : null;\n if (!canDeactivate ||
canDeactivate.length === 0)\n return rxjs.of(true);\n var canDeactivateObservables =
canDeactivate.map(function (c) {\n var guard = getToken(c, currARS, moduleInjector);\n var
observable;\n if (isCanDeactivate(guard)) {\n observable =

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wrapIntoObservable(guard.canDeactivate(component, currARS, currRSS, futureRSS));\n }\n else if
(isFunction(guard)) {\n observable = wrapIntoObservable(guard(component, currARS, currRSS,
futureRSS));\n }\n else {\n throw new Error('Invalid CanDeactivate guard');\n }\n return observable.pipe(operators.first());\n });\n return
rxjs.of(canDeactivateObservables).pipe(prioritizedGuardValue());\n }\n\n var NoMatch$1 = /** @class */
(function () {\n function NoMatch() {\n }\n return NoMatch;\n }());\n function
recognize(rootComponentType, config, urlTree, url, paramsInheritanceStrategy, relativeLinkResolution) {\n if
(paramsInheritanceStrategy === void 0) { paramsInheritanceStrategy = 'emptyOnly'; }\n if
(relativeLinkResolution === void 0) { relativeLinkResolution = 'legacy'; }\n return new
Recognizer(rootComponentType, config, urlTree, url, paramsInheritanceStrategy, relativeLinkResolution)\n .recognize();\n }\n var Recognizer = /** @class */ (function () {\n function
Recognizer(rootComponentType, config, urlTree, url, paramsInheritanceStrategy, relativeLinkResolution) {\n
this.rootComponentType = rootComponentType;\n this.config = config;\n this.urlTree = urlTree;\n
this.url = url;\n this.paramsInheritanceStrategy = paramsInheritanceStrategy;\n
this.relativeLinkResolution = relativeLinkResolution;\n }\n Recognizer.prototype.recognize = function ()
{\n try {\n var rootSegmentGroup = split$1(this.urlTree.root, [], [], this.config,
this.relativeLinkResolution).segmentGroup;\n var children = this.processSegmentGroup(this.config,
rootSegmentGroup, PRIMARY_OUTLET);\n var root = new ActivatedRouteSnapshot([],
Object.freeze({}), Object.freeze(Object.assign({}, this.urlTree.queryParams)), this.urlTree.fragment, {},
PRIMARY_OUTLET, this.rootComponentType, null, this.urlTree.root, -1, {});\n var rootNode = new
TreeNode(root, children);\n var routeState = new RouterStateSnapshot(this.url, rootNode);\n
this.inheritParamsAndData(routeState._root);\n return rxjs.of(routeState);\n }\n catch (e) {\n
return new rxjs.Observable(function (obs) { return obs.error(e); });\n }\n });\n Recognizer.prototype.inheritParamsAndData = function (routeNode) {\n var _this = this;\n var route =
routeNode.value;\n var i = inheritedParamsDataResolve(route, this.paramsInheritanceStrategy);\n
route.params = Object.freeze(i.params);\n route.data = Object.freeze(i.data);\n
routeNode.children.forEach(function (n) { return _this.inheritParamsAndData(n); });\n });\n Recognizer.prototype.processSegmentGroup = function (config, segmentGroup, outlet) {\n if
(segmentGroup.segments.length === 0 && segmentGroup.hasChildren()) {\n return
this.processChildren(config, segmentGroup);\n }\n return this.processSegment(config, segmentGroup,
segmentGroup.segments, outlet);\n });\n Recognizer.prototype.processChildren = function (config,
segmentGroup) {\n var _this = this;\n var children = mapChildrenIntoArray(segmentGroup, function
(child, childOutlet) { return _this.processSegmentGroup(config, child, childOutlet); });\n
checkOutletNameUniqueness(children);\n sortActivatedRouteSnapshots(children);\n return children;\n
 });\n Recognizer.prototype.processSegment = function (config, segmentGroup, segments, outlet) {\n
var e_1, _a;\n try {\n for (var config_1 = __values(config), config_1_1 = config_1.next();
!config_1_1.done; config_1_1 = config_1.next()) {\n var r = config_1_1.value;\n try {\n
return this.processSegmentAgainstRoute(r, segmentGroup, segments, outlet);\n }\n
catch (e) {\n if (!(e instanceof NoMatch$1))\n throw e;\n }\n }\n
 }\n catch (e_1_1) { e_1 = { error: e_1_1 }; }\n finally {\n try {\n if
(config_1_1 && !config_1_1.done && (_a = config_1.return)) _a.call(config_1);\n }\n finally {\n
if (e_1) throw e_1.error; }\n }\n if (this.noLeftoversInUrl(segmentGroup, segments, outlet)) {\n
return [];\n }\n throw new NoMatch$1();\n }\n }\n Recognizer.prototype.noLeftoversInUrl =
function (segmentGroup, segments, outlet) {\n return segments.length === 0 &&
!segmentGroup.children[outlet];\n });\n Recognizer.prototype.processSegmentAgainstRoute = function
(route, rawSegment, segments, outlet) {\n if (route.redirectTo)\n throw new NoMatch$1();\n if ((route.outlet || PRIMARY_OUTLET) !== outlet)\n throw new NoMatch$1();\n var snapshot;\n var consumedSegments = [];\n var rawSlicedSegments = [];\n if (route.path === '**') {\n

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var params = segments.length > 0 ? last(segments).parameters : {};
snapshot = new
ActivatedRouteSnapshot(segments, params, Object.freeze(Object.assign({}, this.urlTree.queryParams)),
this.urlTree.fragment, getData(route), outlet, route.component, route, getSourceSegmentGroup(rawSegment),
getPathIndexShift(rawSegment) + segments.length, getResolve(route));
}
else {
var
result = match$(rawSegment, route, segments);
consumedSegments = result.consumedSegments;
rawSlicedSegments = segments.slice(result.lastChild);
snapshot = new
ActivatedRouteSnapshot(consumedSegments, result.parameters, Object.freeze(Object.assign({},
this.urlTree.queryParams)), this.urlTree.fragment, getData(route), outlet, route.component, route,
getSourceSegmentGroup(rawSegment), getPathIndexShift(rawSegment) + consumedSegments.length,
getResolve(route));
}
var childConfig = getChildConfig(route);
var _a =
split$(rawSegment, consumedSegments, rawSlicedSegments, childConfig, this.relativeLinkResolution),
segmentGroup = _a.segmentGroup, slicedSegments = _a.slicedSegments;
if (slicedSegments.length === 0
&& segmentGroup.hasChildren()) {
var children_1 = this.processChildren(childConfig,
segmentGroup);
return [new TreeNode(snapshot, children_1)];
}
if (childConfig.length
=== 0 && slicedSegments.length === 0) {
return [new TreeNode(snapshot, [])];
}
var
children = this.processSegment(childConfig, segmentGroup, slicedSegments, PRIMARY_OUTLET);
return [new TreeNode(snapshot, children)];
}
return Recognizer;
})();
function
sortActivatedRouteSnapshots(nodes) {
nodes.sort(function (a, b) {
if (a.value.outlet ===
PRIMARY_OUTLET)
return -1;
if (b.value.outlet === PRIMARY_OUTLET)
return 1;
return a.value.outlet.localeCompare(b.value.outlet);
});
}
function
getChildConfig(route) {
if (route.children)
return route.children;
}
if
(route.loadChildren)
return route._loadedConfig.routes;
}
return [];
}
function
match$(segmentGroup, route, segments) {
if (route.path === "")
if (route.pathMatch === 'full' &&
(segmentGroup.hasChildren() || segments.length > 0))
throw new NoMatch$1();
}
return { consumedSegments: [], lastChild: 0, parameters: {} };
}
var matcher = route.matcher ||
defaultUrlMatcher;
var res = matcher(segments, segmentGroup, route);
if (!res)
throw new
NoMatch$1();
var posParams = {};
forEach(res.posParams, function (v, k) {
posParams[k] =
v.path;
});
var parameters = res.consumed.length > 0 ? Object.assign(Object.assign({}, posParams),
res.consumed[res.consumed.length - 1].parameters) :
posParams;
return { consumedSegments:
res.consumed, lastChild: res.consumed.length, parameters: parameters };
}
function
checkOutletNameUniqueness(nodes) {
var names = {};
nodes.forEach(function (n) {
var
routeWithSameOutletName = names[n.value.outlet];
if (routeWithSameOutletName)
var p =
routeWithSameOutletName.url.map(function (s) { return s.toString(); }).join('/');
var c =
n.value.url.map(function (s) { return s.toString(); }).join('/');
throw new Error("\nTwo segments cannot
have the same outlet name: \" + p + \" and \" + c + \"\");
}
names[n.value.outlet] = n.value;
});
}
function getSourceSegmentGroup(segmentGroup) {
var s = segmentGroup;
while
(s._sourceSegment)
s = s._sourceSegment;
}
return s;
}
function
getPathIndexShift(segmentGroup) {
var s = segmentGroup;
var res = (s._segmentIndexShift ?
s._segmentIndexShift : 0);
while (s._sourceSegment)
s = s._sourceSegment;
res +=
(s._segmentIndexShift ? s._segmentIndexShift : 0);
}
return res - 1;
}
function
split$(segmentGroup, consumedSegments, slicedSegments, config, relativeLinkResolution) {
if
(slicedSegments.length > 0 &&
containsEmptyPathMatchesWithNamedOutlets(segmentGroup,
slicedSegments, config))
var s_1 = new UrlSegmentGroup(consumedSegments,
createChildrenForEmptyPaths(segmentGroup, consumedSegments, config, new UrlSegmentGroup(slicedSegments,
segmentGroup.children)));
s_1._sourceSegment = segmentGroup;
s_1._segmentIndexShift =
consumedSegments.length;
return { segmentGroup: s_1, slicedSegments: [] };
}
if
(slicedSegments.length === 0 &&
containsEmptyPathMatches(segmentGroup, slicedSegments, config))
{
var s_2 = new UrlSegmentGroup(segmentGroup.segments,

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addEmptyPathsToChildrenIfNeeded(segmentGroup, consumedSegments, slicedSegments, config,
segmentGroup.children, relativeLinkResolution));\n s_2._sourceSegment = segmentGroup;\n
s_2._segmentIndexShift = consumedSegments.length;\n return { segmentGroup: s_2, slicedSegments:
slicedSegments };\n }\n var s = new UrlSegmentGroup(segmentGroup.segments,
segmentGroup.children);\n s._sourceSegment = segmentGroup;\n s._segmentIndexShift =
consumedSegments.length;\n return { segmentGroup: s, slicedSegments: slicedSegments };\n }\n function
addEmptyPathsToChildrenIfNeeded(segmentGroup, consumedSegments, slicedSegments, routes, children,
relativeLinkResolution) {\n var e_2, _a;\n var res = {};\n try {\n for (var routes_1 =
__values(routes), routes_1_1 = routes_1.next(); !routes_1_1.done; routes_1_1 = routes_1.next()) {\n var r
= routes_1_1.value;\n if (emptyPathMatch(segmentGroup, slicedSegments, r) &&
!children[getOutlet$1(r)]) {\n var s = new UrlSegmentGroup([], {});\n s._sourceSegment =
segmentGroup;\n if (relativeLinkResolution === 'legacy') {\n s._segmentIndexShift =
segmentGroup.segments.length;\n }\n else {\n s._segmentIndexShift =
consumedSegments.length;\n }\n res[getOutlet$1(r)] = s;\n }\n }\n }
catch (e_2_1) { e_2 = { error: e_2_1 }; }\n finally {\n try {\n if (routes_1_1 &&
!routes_1_1.done && (_a = routes_1.return)) _a.call(routes_1);\n }\n finally { if (e_2) throw e_2.error;
}\n }\n return Object.assign(Object.assign({}, children), res);\n }\n function
createChildrenForEmptyPaths(segmentGroup, consumedSegments, routes, primarySegment) {\n var e_3, _a;\n var
res = {};\n res[PRIMARY_OUTLET] = primarySegment;\n primarySegment._sourceSegment =
segmentGroup;\n primarySegment._segmentIndexShift = consumedSegments.length;\n try {\n for
(var routes_2 = __values(routes), routes_2_1 = routes_2.next(); !routes_2_1.done; routes_2_1 = routes_2.next()) {\n
 var r = routes_2_1.value;\n if (r.path === " && getOutlet$1(r) !== PRIMARY_OUTLET) {\n
 var s = new UrlSegmentGroup([], {});\n s._sourceSegment = segmentGroup;\n
 s._segmentIndexShift = consumedSegments.length;\n res[getOutlet$1(r)] = s;\n }\n }
 } catch (e_3_1) { e_3 = { error: e_3_1 }; }\n finally {\n try {\n if (routes_2_1 &&
!routes_2_1.done && (_a = routes_2.return)) _a.call(routes_2);\n }\n finally { if (e_3) throw e_3.error;
}\n }\n return res;\n }\n function containsEmptyPathMatchesWithNamedOutlets(segmentGroup,
slicedSegments, routes) {\n return routes.some(function (r) { return emptyPathMatch(segmentGroup,
slicedSegments, r) && getOutlet$1(r) !== PRIMARY_OUTLET; });\n }\n function
containsEmptyPathMatches(segmentGroup, slicedSegments, routes) {\n return routes.some(function (r) { return
emptyPathMatch(segmentGroup, slicedSegments, r); });\n }\n function emptyPathMatch(segmentGroup,
slicedSegments, r) {\n if ((segmentGroup.hasChildren() || slicedSegments.length > 0) && r.pathMatch ===
'full') {\n return false;\n }\n return r.path === " && r.redirectTo === undefined;\n }\n function
getOutlet$1(route) {\n return route.outlet || PRIMARY_OUTLET;\n }\n function getData(route) {\n
return route.data || {};\n }\n function getResolve(route) {\n return route.resolve || {};\n }\n /**\n *
@license\n * Copyright Google LLC All Rights Reserved.\n * Use of this source code is governed by an
MIT-style license that can be\n * found in the LICENSE file at https://angular.io/license\n */\n function
recognize$1(rootComponentType, config, serializer, paramsInheritanceStrategy, relativeLinkResolution) {\n
return function (source) {\n return source.pipe(operators.mergeMap(function (t) { return
recognize(rootComponentType, config, t.urlAfterRedirects, serializer(t.urlAfterRedirects),
paramsInheritanceStrategy, relativeLinkResolution)\n .pipe(operators.map(function (targetSnapshot) {
return (Object.assign(Object.assign({}, t), { targetSnapshot: targetSnapshot })); })); }));\n });\n }\n /**\n *
@license\n * Copyright Google LLC All Rights Reserved.\n * Use of this source code is governed by an
MIT-style license that can be\n * found in the LICENSE file at https://angular.io/license\n */\n function
resolveData(paramsInheritanceStrategy, moduleInjector) {\n return function (source) {\n return
source.pipe(operators.mergeMap(function (t) {\n var targetSnapshot = t.targetSnapshot,\n canActivateChecks = t.guards.canActivateChecks;\n if (!canActivateChecks.length) {\n return
rxjs.of(t);\n }\n var canActivateChecksResolved = 0;\n return

```

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rxjs.from(canActivateChecks)\n .pipe(operators.concatMap(function (check) { return
runResolve(check.route, targetSnapshot, paramsInheritanceStrategy, moduleInjector); })), operators.tap(function () {
return canActivateChecksResolved++; })), operators.takeLast(1), operators.mergeMap(function (_) { return
canActivateChecksResolved === canActivateChecks.length ? rxjs.of(t) : rxjs.EMPTY; }));\n });\n }\n }\n function runResolve(futureARS, futureRSS, paramsInheritanceStrategy, moduleInjector) {\n var resolve =
futureARS._resolve;\n return resolveNode(resolve, futureARS, futureRSS, moduleInjector)\n }\n .pipe(operators.map(function (resolvedData) {\n futureARS._resolvedData = resolvedData;\n futureARS.data = Object.assign(Object.assign({}, futureARS.data), inheritedParamsDataResolve(futureARS,
paramsInheritanceStrategy).resolve);\n return null;\n }));\n }\n function resolveNode(resolve,
futureARS, futureRSS, moduleInjector) {\n var keys = Object.keys(resolve);\n if (keys.length === 0) {\n return rxjs.of({});\n }\n var data = {};\n return rxjs.from(keys).pipe(operators.mergeMap(function
(key) { return getResolver(resolve[key], futureARS, futureRSS, moduleInjector)\n }\n .pipe(operators.tap(function (value) {\n data[key] = value;\n })); })), operators.takeLast(1),
operators.mergeMap(function () {\n // Ensure all resolvers returned values, otherwise don't emit any `next`\n and just complete\n // the chain which will cancel navigation\n if (Object.keys(data).length ===
keys.length) {\n return rxjs.of(data);\n }\n return rxjs.EMPTY;\n }));\n }\n function
getResolver(injectionToken, futureARS, futureRSS, moduleInjector) {\n var resolver =
getToken(injectionToken, futureARS, moduleInjector);\n return resolver.resolve ?
wrapIntoObservable(resolver.resolve(futureARS, futureRSS)) :\n wrapIntoObservable(resolver(futureARS,
futureRSS));\n }\n /**\n * @license\n * Copyright Google LLC All Rights Reserved.\n *\n * Use of
this source code is governed by an MIT-style license that can be\n * found in the LICENSE file at
https://angular.io/license\n *\n * Perform a side effect through a switchMap for every emission on the
source Observable,\n * but return an Observable that is identical to the source. It's essentially the same as\n *
the `tap` operator, but if the side effectful `next` function returns an ObservableInput,\n * it will wait before
continuing with the original value.\n *\n * function switchTap(next) {\n return function (source) {\n
return source.pipe(operators.switchMap(function (v) {\n var nextResult = next(v);\n if
(nextResult) {\n return rxjs.from(nextResult).pipe(operators.map(function () { return v; }));\n }\n
return rxjs.from([v]);\n }));\n }\n }\n /**\n * @license\n * Copyright Google
LLC All Rights Reserved.\n *\n * Use of this source code is governed by an MIT-style license that can be\n
* found in the LICENSE file at https://angular.io/license\n *\n * @description\n *\n * Provides a
way to customize when activated routes get reused.\n *\n * @publicApi\n *\n * var RouteReuseStrategy =
/** @class */ (function () {\n function RouteReuseStrategy() {\n }\n return RouteReuseStrategy;\n
})();\n /**\n * @description\n *\n * This base route reuse strategy only reuses routes when the matched
router configs are\n * identical. This prevents components from being destroyed and recreated\n * when just the
fragment or query parameters change\n * (that is, the existing component is _reused_).\n *\n * This strategy
does not store any routes for later reuse.\n *\n * Angular uses this strategy by default.\n *\n * It can
be used as a base class for custom route reuse strategies, i.e. you can create your own\n * class that extends the
`BaseRouteReuseStrategy` one.\n * @publicApi\n *\n * var BaseRouteReuseStrategy = /** @class */
(function () {\n function BaseRouteReuseStrategy() {\n }\n /**\n * Whether the given route
should detach for later reuse.\n * Always returns false for `BaseRouteReuseStrategy`.\n *\n *\n
BaseRouteReuseStrategy.prototype.shouldDetach = function (route) {\n return false;\n }; \n /**\n
* A no-op; the route is never stored since this strategy never detaches routes for later re-use.\n *\n
BaseRouteReuseStrategy.prototype.store = function (route, detachedTree) { }; \n /** Returns `false`, meaning
the route (and its subtree) is never reattached *\n * BaseRouteReuseStrategy.prototype.shouldAttach = function
(route) {\n return false;\n }; \n /** Returns `null` because this strategy does not store routes for later
re-use. *\n * BaseRouteReuseStrategy.prototype.retrieve = function (route) {\n return null;\n }; \n
**\n * Determines if a route should be reused.\n * This strategy returns `true` when the future route
config and current route config are\n * identical.\n *\n */

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BaseRouteReuseStrategy.prototype.shouldReuseRoute = function (future, curr) {\n return future.routeConfig
=== curr.routeConfig;\n };\n return BaseRouteReuseStrategy;\n });\n var DefaultRouteReuseStrategy
= /** @class */ (function (_super) {\n __extends(DefaultRouteReuseStrategy, _super);\n function
DefaultRouteReuseStrategy()\n return _super !== null && _super.apply(this, arguments) || this;\n }\n return DefaultRouteReuseStrategy;\n })(BaseRouteReuseStrategy);\n\n /**\n * @license\n * Copyright
Google LLC All Rights Reserved.\n * Use of this source code is governed by an MIT-style license that can
be\n * found in the LICENSE file at https://angular.io/license\n * \n * The [DI
token](guide/glossary/#di-token) for a router configuration.\n * @see `ROUTES`\n * @publicApi\n * \n
var ROUTES = new core.InjectionToken('ROUTES');\n var RouterConfigLoader = /** @class */ (function () {\n
 function RouterConfigLoader(loader, compiler, onLoadStartListener, onLoadEndListener) {\n this.loader
= loader;\n this.compiler = compiler;\n this.onLoadStartListener = onLoadStartListener;\n
this.onLoadEndListener = onLoadEndListener;\n }\n RouterConfigLoader.prototype.load = function
(parentInjector, route) {\n var _this = this;\n if (this.onLoadStartListener) {\n
this.onLoadStartListener(route);\n }\n var moduleFactory$ =
this.loadModuleFactory(route.loadChildren);\n return moduleFactory$.pipe(operators.map(function (factory)
{\n if (_this.onLoadEndListener) {\n _this.onLoadEndListener(route);\n }\n
var module = factory.create(parentInjector);\n return new
LoadedRouterConfig(flatten(module.injector.get(ROUTES)).map(standardizeConfig), module);\n }));\n
};\n RouterConfigLoader.prototype.loadModuleFactory = function (loadChildren) {\n var _this = this;\n
if (typeof loadChildren === 'string') {\n return rxjs.from(this.loader.load(loadChildren));\n }\n
else {\n return wrapIntoObservable(loadChildren()).pipe(operators.mergeMap(function (t) {\n
if (t instanceof core.NgModuleFactory) {\n return rxjs.of(t);\n }\n else {\n
return rxjs.from(_this.compiler.compileModuleAsync(t));\n }\n }));\n }\n };\n return RouterConfigLoader;\n });\n\n /**\n * @license\n * Copyright Google LLC All Rights
Reserved.\n * Use of this source code is governed by an MIT-style license that can be\n * found in the
LICENSE file at https://angular.io/license\n * \n * Store contextual information about a
`RouterOutlet`\n * \n * @publicApi\n * \n * \n * var OutletContext = /** @class */ (function () {\n
function OutletContext()\n this.outlet = null;\n this.route = null;\n this.resolver = null;\n
this.children = new ChildrenOutletContexts();\n this.attachRef = null;\n }\n return OutletContext;\n
})();\n\n /**\n * Store contextual information about the children (= nested) `RouterOutlet`\n * \n *
@publicApi\n * \n * var ChildrenOutletContexts = /** @class */ (function () {\n function
ChildrenOutletContexts()\n // contexts for child outlets, by name.\n this.contexts = new Map();\n
}\n\n /** Called when a `RouterOutlet` directive is instantiated *\n\n ChildrenOutletContexts.prototype.onChildOutletCreated = function (childName, outlet) {\n var context =
this.getOrCreateContext(childName);\n context.outlet = outlet;\n this.contexts.set(childName,
context);\n };\n\n /**\n * Called when a `RouterOutlet` directive is destroyed.\n * We need to keep
the context as the outlet could be destroyed inside a NgIf and might be\n * re-created later.\n * \n
ChildrenOutletContexts.prototype.onChildOutletDestroyed = function (childName) {\n var context =
this.getContext(childName);\n if (context) {\n context.outlet = null;\n }\n };\n\n /**\n * Called when the corresponding route is deactivated during navigation.\n * Because the component get
destroyed, all children outlet are destroyed.\n * \n * ChildrenOutletContexts.prototype.onOutletDeactivated
= function () {\n var contexts = this.contexts;\n this.contexts = new Map();\n return contexts;\n
};\n\n ChildrenOutletContexts.prototype.onOutletReAttached = function (contexts) {\n this.contexts =
contexts;\n };\n\n ChildrenOutletContexts.prototype.getOrCreateContext = function (childName) {\n
var context = this.getContext(childName);\n if (!context) {\n context = new OutletContext();\n
this.contexts.set(childName, context);\n }\n return context;\n };\n\n ChildrenOutletContexts.prototype.getContext = function (childName) {\n return this.contexts.get(childName)
|| null;\n };\n\n return ChildrenOutletContexts;\n });\n\n /**\n * @license\n * Copyright Google

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LLC All Rights Reserved.\n *\n * Use of this source code is governed by an MIT-style license that can be\n
* found in the LICENSE file at https://angular.io/license\n *\n /**\n * @description\n * Provides a way to migrate AngularJS applications to Angular.\n *\n * @publicApi\n *\n var UrlHandlingStrategy =\n /** @class */ (function () {\n function UrlHandlingStrategy() {\n }\n return UrlHandlingStrategy;\n }());\n /**\n * @publicApi\n *\n var DefaultUrlHandlingStrategy = /** @class */ (function () {\n function DefaultUrlHandlingStrategy() {\n }\n DefaultUrlHandlingStrategy.prototype.shouldProcessUrl =\n function (url) {\n return true;\n }; \n DefaultUrlHandlingStrategy.prototype.extract = function (url)\n {\n return url;\n }; \n DefaultUrlHandlingStrategy.prototype.merge = function (newUrlPart,\n wholeUrl) {\n return newUrlPart;\n }; \n return DefaultUrlHandlingStrategy;\n }());\n\n /**\n * @license\n * Copyright Google LLC All Rights Reserved.\n *\n * Use of this source code is governed by an MIT-style license that can be\n * found in the LICENSE file at https://angular.io/license\n *\n function\n defaultErrorHandler(error) {\n throw error;\n }\n function defaultMalformedUriErrorHandler(error,\n urlSerializer, url) {\n return urlSerializer.parse('/');\n }\n /**\n * @internal\n *\n function\n defaultRouterHook(snapshot, runExtras) {\n return rxjs.of(null);\n }\n /**\n * @description\n *\n * A service that provides navigation among views and URL manipulation capabilities.\n *\n * @see `Route`\n *\n * @see [Routing and Navigation Guide](guide/router).\n *\n * @ngModule RouterModule\n *\n * @publicApi\n *\n var Router = /** @class */ (function () {\n /**\n * Creates the router service.\n *\n * // TODO: vsavkin make internal after the final is out.\n function Router(rootComponentType,\n urlSerializer, rootContexts, location, injector, loader, compiler, config) {\n var _this = this;\n this.rootComponentType = rootComponentType;\n this.urlSerializer = urlSerializer;\n this.rootContexts = rootContexts;\n this.location = location;\n this.config = config;\n this.lastSuccessfulNavigation = null;\n this.currentNavigation = null;\n /**\n * Tracks the\n previously seen location change from the location subscription so we can compare\n * the two latest to see if\n they are duplicates. See setUpLocationChangeListener.\n *\n this.lastLocationChangeInfo = null;\n this.navigationId = 0;\n this.isNgZoneEnabled = false;\n /**\n * An event stream for\n routing events in this NgModule.\n *\n this.events = new rxjs.Subject();\n /**\n * A\n handler for navigation errors in this NgModule.\n *\n this.errorHandler = defaultErrorHandler;\n /**\n * A handler for errors thrown by `Router.parseUrl(url)`\n * when `url` contains an invalid\n character.\n * The most common case is a `%` sign\n * that's not encoded and is not part of a percent\n encoded sequence.\n *\n this.malformedUriErrorHandler = defaultMalformedUriErrorHandler;\n /**\n * True if at least one navigation event has occurred,\n * false otherwise.\n *\n this.navigated = false;\n this.lastSuccessfulId = -1;\n /**\n * Hooks that enable you to pause\n navigation,\n * either before or after the preactivation phase.\n * Used by `RouterModule`.\n *\n * @internal\n *\n this.hooks = { beforePreactivation: defaultRouterHook,\n afterPreactivation: defaultRouterHook }; \n /**\n * A strategy for extracting and merging URLs.\n * Used for AngularJS to Angular migrations.\n *\n this.urlHandlingStrategy = new\n DefaultUrlHandlingStrategy();\n /**\n * A strategy for re-using routes.\n *\n this.routeReuseStrategy = new DefaultRouteReuseStrategy();\n /**\n * How to handle a navigation\n request to the current URL. One of:\n * - `ignore` : The router ignores the request.\n * - `reload` : The router reloads the URL. Use to implement a `refresh` feature.\n *\n this.onSameUrlNavigation\n = 'ignore';\n /**\n * How to merge parameters, data, and resolved data from parent to child\n *\n * routes. One of:\n * - `emptyOnly` : Inherit parent parameters, data, and resolved data\n * for path-less or component-less routes.\n * - `always` : Inherit parent parameters, data, and resolved data\n * for all child routes.\n *\n this.paramsInheritanceStrategy = 'emptyOnly';\n /**\n *\n * Determines when the router updates the browser URL.\n * By default (`"deferred"`), updates the browser\n URL after navigation has finished.\n * Set to `eager` to update the browser URL at the beginning of\n navigation.\n * You can choose to update early so that, if navigation fails,\n * you can show an error\n message with the URL that failed.\n *\n this.urlUpdateStrategy = 'deferred';\n *\n
```

```

Enables a bug fix that corrects relative link resolution in components with empty paths.\n * @see
`RouterModule`\n *^\n this.relativeLinkResolution = 'corrected';\n var onLoadStart = function
(r) { return _this.triggerEvent(new RouteConfigLoadStart(r)); };\n var onLoadEnd = function (r) { return
_this.triggerEvent(new RouteConfigLoadEnd(r)); };\n this.ngModule = injector.get(core.NgModuleRef);\n this.console = injector.get(core.Console);\n var ngZone = injector.get(core.NgZone);\n this.isNgZoneEnabled = ngZone instanceof core.NgZone;\n this.resetConfig(config);\n this.currentUrlTree = createEmptyUrlTree();\n this.rawUrlTree = this.currentUrlTree;\n this.browserUrlTree = this.currentUrlTree;\n this.configLoader = new RouterConfigLoader(loader, compiler,
onLoadStart, onLoadEnd);\n this.routerState = createEmptyState(this.currentUrlTree,
this.rootComponentType);\n this.transitions = new rxjs.BehaviorSubject({\n id: 0,\n currentUrlTree: this.currentUrlTree,\n currentRawUrl: this.currentUrlTree,\n extractedUrl:
this.urlHandlingStrategy.extract(this.currentUrlTree),\n urlAfterRedirects:
this.urlHandlingStrategy.extract(this.currentUrlTree),\n rawUrl: this.currentUrlTree,\n extras:
{}},\n resolve: null,\n reject: null,\n promise: Promise.resolve(true),\n source:
'imperative',\n restoredState: null,\n currentSnapshot: this.routerState.snapshot,\n targetSnapshot: null,\n currentRouterState: this.routerState,\n targetRouterState: null,\n guards: { canActivateChecks: [], canDeactivateChecks: [] },\n guardsResult: null,\n });\n this.navigations = this.setupNavigations(this.transitions);\n this.processNavigations();\n }\n Router.prototype.setupNavigations = function (transitions) {\n var _this = this;\n var eventsSubject =
this.events;\n return transitions.pipe(operators.filter(function (t) { return t.id !== 0; })), \n // Extract
URL\n operators.map(function (t) { return (Object.assign(Object.assign({}, t), { extractedUrl:
_this.urlHandlingStrategy.extract(t.rawUrl) })); })), \n // Using switchMap so we cancel executing navigations
when a new one comes in\n operators.switchMap(function (t) {\n var completed = false;\n var errored = false;\n return rxjs.of(t).pipe(\n // Store the Navigation object\n operators.tap(function (t) {\n _this.currentNavigation = {\n id: t.id,\n initialUrl: t.currentRawUrl,\n extractedUrl: t.extractedUrl,\n trigger: t.source,\n extras: t.extras,\n previousNavigation: _this.lastSuccessfulNavigation ?
Object.assign(Object.assign({}, _this.lastSuccessfulNavigation), { previousNavigation: null }) :\n null\n });\n })), operators.switchMap(function (t) {\n var urlTransition =
!_this.navigated ||\n t.extractedUrl.toString() !== _this.browserUrlTree.toString();\n var
processCurrentUrl = (_this.onSameUrlNavigation === 'reload' ? true : urlTransition) &&\n _this.urlHandlingStrategy.shouldProcessUrl(t.rawUrl);\n if (processCurrentUrl) {\n return
rxjs.of(t).pipe(\n // Fire NavigationStart event\n operators.switchMap(function (t) {\n var transition = _this.transitions.getValue();\n eventsSubject.next(new
NavigationStart(t.id, _this.serializeUrl(t.extractedUrl), t.source, t.restoredState));\n if (transition
!== _this.transitions.getValue()) {\n return rxjs.EMPTY;\n }\n })),\n return [t];\n })), \n // This delay is required to match old behavior that forced
navigation\n // to always be async\n operators.switchMap(function (t) { return
Promise.resolve(t); })), \n // ApplyRedirects\n applyRedirects$1(_this.ngModule.injector, _this.configLoader, _this.urlSerializer, _this.config), \n //
Update the currentNavigation\n operators.tap(function (t) {\n _this.currentNavigation
= Object.assign(Object.assign({}, _this.currentNavigation), { finalUrl: t.urlAfterRedirects }));\n })), \n // Recognize\n recognize$1(_this.rootComponentType, _this.config, function (url) {
return _this.serializeUrl(url); }}, _this.paramsInheritanceStrategy, _this.relativeLinkResolution), \n //
Update URL if in `eager` update mode\n operators.tap(function (t) {\n if
(_this.urlUpdateStrategy === 'eager') {\n if (!t.extras.skipLocationChange) {\n _this.setBrowserUrl(t.urlAfterRedirects, !!t.extras.replaceUrl, t.id, t.extras.state);\n }\n _this.browserUrlTree = t.urlAfterRedirects;\n })), \n //

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```

Fire RoutesRecognized\n operators.tap(function (t) {\n var routesRecognized = new
RoutesRecognized(t.id, _this.serializeUrl(t.extractedUrl), _this.serializeUrl(t.urlAfterRedirects), t.targetSnapshot);\n eventsSubject.next(routesRecognized);\n });\n }\n else {\n var processPreviousUrl = urlTransition && _this.rawUrlTree &&\n _this.urlHandlingStrategy.shouldProcessUrl(_this.rawUrlTree);\n /* When the current URL shouldn't\n be processed, but the previous one was,\n * we handle this \"error condition\" by navigating to the\n previously\n * successful URL, but leaving the URL intact.*\n if (processPreviousUrl)\n {\n var id = t.id, extractedUrl = t.extractedUrl, source = t.source, restoredState = t.restoredState,\n extras = t.extras;\n var navStart = new NavigationStart(id, _this.serializeUrl(extractedUrl), source,\n restoredState);\n eventsSubject.next(navStart);\n var targetSnapshot =\n createEmptyState(extractedUrl, _this.rootComponentType).snapshot;\n return\n rxjs.of(Object.assign(Object.assign({}, t), { targetSnapshot: targetSnapshot, urlAfterRedirects: extractedUrl, extras:\n Object.assign(Object.assign({}, extras), { skipLocationChange: false, replaceUrl: false })));\n }\n else {\n /* When neither the current or previous URL can be processed, do nothing\n * other than update router's internal reference to the current \"settled\"\n * URL. This\n way the next navigation will be coming from the current URL\n * in the browser.\n *\n _this.rawUrlTree = t.rawUrl;\n _this.browserUrlTree = t.urlAfterRedirects;\n t.resolve(null);\n return rxjs.EMPTY;\n }\n }\n },\n // Before Preactivation\n switchTap(function (t) {\n var targetSnapshot =\n t.targetSnapshot, navigationId = t.id, appliedUrlTree = t.extractedUrl, rawUrlTree = t.rawUrl, _b = t.extras,\n skipLocationChange = _b.skipLocationChange, replaceUrl = _b.replaceUrl;\n return\n _this.hooks.beforePreactivation(targetSnapshot, {\n navigationId: navigationId,\n appliedUrlTree: appliedUrlTree,\n rawUrlTree: rawUrlTree,\n skipLocationChange:\n !!skipLocationChange,\n replaceUrl: !!replaceUrl,\n });\n },\n // ---\n GUARDS ---\n operators.tap(function (t) {\n var guardsStart = new GuardsCheckStart(t.id,\n _this.serializeUrl(t.extractedUrl), _this.serializeUrl(t.urlAfterRedirects), t.targetSnapshot);\n _this.triggerEvent(guardsStart);\n }), operators.map(function (t) { return (Object.assign(Object.assign({},\n t), { guards: getAllRouteGuards(t.targetSnapshot, t.currentSnapshot, _this.rootContexts) })); },\n checkGuards(_this.ngModule.injector, function (evt) { return _this.triggerEvent(evt); }, operators.tap(function (t)\n {\n if (isUrlTree(t.guardsResult)) {\n var error = navigationCancelingError(\"Redirecting\n to \" + _this.serializeUrl(t.guardsResult) + \"\");\n error.url = t.guardsResult;\n throw error;\n }\n })), operators.tap(function (t) {\n var guardsEnd = new\n GuardsCheckEnd(t.id, _this.serializeUrl(t.extractedUrl), _this.serializeUrl(t.urlAfterRedirects), t.targetSnapshot,\n !!t.guardsResult);\n _this.triggerEvent(guardsEnd);\n }), operators.filter(function (t) {\n if (!t.guardsResult) {\n _this.resetUrlToCurrentUrlTree();\n var navCancel = new\n NavigationCancel(t.id, _this.serializeUrl(t.extractedUrl), \");\n eventsSubject.next(navCancel);\n t.resolve(false);\n return false;\n }\n return true;\n })),\n // --- RESOLVE ---\n switchTap(function (t) {\n if (t.guards.canActivateChecks.length) {\n return rxjs.of(t).pipe(operators.tap(function (t) {\n var resolveStart = new\n ResolveStart(t.id, _this.serializeUrl(t.extractedUrl), _this.serializeUrl(t.urlAfterRedirects), t.targetSnapshot);\n _this.triggerEvent(resolveStart);\n })), operators.switchMap(function (t) {\n var dataResolved = false;\n return rxjs.of(t).pipe(resolveData(_this.paramsInheritanceStrategy,\n _this.ngModule.injector), operators.tap({\n next: function () { return dataResolved = true; },\n complete: function () {\n if (!dataResolved) {\n var\n navCancel = new NavigationCancel(t.id, _this.serializeUrl(t.extractedUrl), \"At least one route resolver didn't emit\n any value.\");\n eventsSubject.next(navCancel);\n t.resolve(false);\n }\n }));\n })), operators.tap(function (t)\n {\n var resolveEnd = new ResolveEnd(t.id, _this.serializeUrl(t.extractedUrl),

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_this.serializeUrl(t.urlAfterRedirects), t.targetSnapshot);\n
 _this.triggerEvent(resolveEnd);\n
 });\n }\n return undefined;\n }, \n // --- AFTER
PREACTIVATION ---\n switchTap(function (t) {\n var targetSnapshot = t.targetSnapshot,\n navigationId = t.id, appliedUrlTree = t.extractedUrl, rawUrlTree = t.rawUrl, _b = t.extras, skipLocationChange =\n _b.skipLocationChange, replaceUrl = _b.replaceUrl;\n return\n _this.hooks.afterPreactivation(targetSnapshot, {\n navigationId: navigationId,\n appliedUrlTree: appliedUrlTree,\n rawUrlTree: rawUrlTree,\n skipLocationChange:\n !!skipLocationChange,\n replaceUrl: !!replaceUrl,\n });\n },\n operators.map(function (t) {\n var targetRouterState = createRouterState(_this.routeReuseStrategy,\n t.targetSnapshot, t.currentRouterState);\n return (Object.assign(Object.assign({}, t), { targetRouterState:\n targetRouterState }));\n }, \n /* Once here, we are about to activate synchronously. The\n assumption is this\n will succeed, and user code may read from the Router service. Therefore\n before activation, we need to update router properties storing the current\n URL and the RouterState, as\n well as updated the browser URL. All this should\n happen *before* activating. */\n operators.tap(function (t) {\n _this.currentUrlTree = t.urlAfterRedirects;\n _this.rawUrlTree\n =\n _this.urlHandlingStrategy.merge(_this.currentUrlTree, t.rawUrl);\n _this.routerState =\n t.targetRouterState;\n if (_this.urlUpdateStrategy === 'deferred') {\n if\n (!t.extras.skipLocationChange) {\n _this.setBrowserUrl(_this.rawUrlTree, !!t.extras.replaceUrl, t.id,\n t.extras.state);\n }\n _this.browserUrlTree = t.urlAfterRedirects;\n }\n }, activateRoutes(_this.rootContexts, _this.routeReuseStrategy, function (evt) { return _this.triggerEvent(evt); })),\n operators.tap({\n next: function () {\n completed = true;\n },\n complete: function () {\n completed = true;\n }, operators.finalize(function\n () {\n /* When the navigation stream finishes either through error or success, we\n * set the\n `completed` or `errored` flag. However, there are some situations\n * where we could get here without\n either of those being set. For instance, a\n * redirect during NavigationStart. Therefore, this is a catch-\n all to make\n * sure the NavigationCancel\n * event is fired when a navigation gets\n cancelled but not caught by other\n * means. */\n if (!completed && !errored) {\n // Must reset to current URL tree here to ensure history.state is set. On a\n // fresh page load, if a\n new navigation comes in before a successful\n // navigation completes, there will be nothing in\n // history.state.navigationId. This can cause sync problems with AngularJS\n // sync code\n which looks for a value here in order to determine whether or\n // not to handle a given popstate event\n or to leave it to the Angual\n // router.\n _this.resetUrlToCurrentUrlTree();\n var navCancel = new NavigationCancel(t.id, _this.serializeUrl(t.extractedUrl), "Navigation ID " + t.id + " is\n not equal to the current navigation id " + _this.navigationId);\n eventsSubject.next(navCancel);\n t.resolve(false);\n }\n // currentNavigation should always be reset to null here. If\n navigation was\n // successful, lastSuccessfulTransition will have already been set. Therefore\n // we can safely set currentNavigation to null here.\n _this.currentNavigation = null;\n },\n operators.catchError(function (e) {\n errored = true;\n /* This error type is issued during\n Redirect, and is handled as a\n * cancellation rather than an error. */\n if\n (isNavigationCancelingError(e)) {\n var redirecting = isUrlTree(e.url);\n if\n (!redirecting) {\n // Set property only if we're not redirecting. If we landed on a page and\n // redirect to `^` route, the new navigation is going to see the `^`\n // isn't a change from the\n default currentUrlTree and won't navigate.\n // This is only applicable with initial navigation, so\n setting\n // `navigated` only when not redirecting resolves this scenario.\n _this.navigated = true;\n _this.resetStateAndUrl(t.currentRouterState, t.currentUrlTree, t.rawUrl);\n }\n var navCancel = new NavigationCancel(t.id, _this.serializeUrl(t.extractedUrl),\n e.message);\n eventsSubject.next(navCancel);\n // When redirecting, we need to delay\n resolving the navigation\n // promise and push it to the redirect navigation\n if

```

```

(!redirecting) {\n
 t.resolve(false);\n
}\n
else {\n
 //
setTimeout is required so this navigation finishes with\n
 // the return EMPTY below. If it isn't
allowed to finish\n
 // processing, there can be multiple navigations to the same\n
 //
URL.\n
 setTimeout(function () {\n
 var mergedTree =
 _this.urlHandlingStrategy.merge(e.url, _this.rawUrlTree);\n
 var extras = {\n
skipLocationChange: t.extras.skipLocationChange,\n
 replaceUrl: _this.urlUpdateStrategy ===
'eager'\n
 });\n
 return _this.scheduleNavigation(mergedTree, 'imperative', null,
extras, { resolve: t.resolve, reject: t.reject, promise: t.promise });\n
 }, 0);\n
}\n
/* All other errors should reset to the router's internal URL reference to\n
 * the pre-error state.
*/\n
}\n
else {\n
 _this.resetStateAndUrl(t.currentRouterState, t.currentUrlTree,\n
t.rawUrl);\n
 var navError = new NavigationError(t.id, _this.serializeUrl(t.extractedUrl), e);\n
 eventsSubject.next(navError);\n
 try {\n
 t.resolve(_this.errorHandler(e));\n
 }\n
 catch (ee) {\n
 t.reject(ee);\n
 }\n
}\n
return rxjs.EMPTY;\n
});\n
// TODO(jasonaden): remove cast once g3 is on updated
TypeScript\n
});\n
};\n
/**\n
 * @internal\n
 * TODO: this should be removed once the
constructor of the router made internal\n
*/\n
Router.prototype.resetRootComponentType = function
(rootComponentType) {\n
 this.rootComponentType = rootComponentType;\n
 // TODO: vsavkin
router 4.0 should make the root component set to null\n
 // this will simplify the lifecycle of the router.\n
this.routerState.root.component = this.rootComponentType;\n
};\n
Router.prototype.getTransition =
function () {\n
 var transition = this.transitions.value;\n
 // This value needs to be set. Other values such
as extractedUrl are set on initial navigation\n
 // but the urlAfterRedirects may not get set if we aren't
processing the new URL *and* not\n
 // processing the previous URL.\n
 transition.urlAfterRedirects =
this.browserUrlTree;\n
 return transition;\n
};\n
Router.prototype.setTransition = function (t) {\n
 this.transitions.next(Object.assign(Object.assign({}, this.getTransition()), t));\n
};\n
/**\n
 * Sets up
the location change listener and performs the initial navigation.\n
*/\n
Router.prototype.initialNavigation =
function () {\n
 this.setUpLocationChangeListener();\n
 if (this.navigationId === 0) {\n
this.navigateByUrl(this.location.path(true), { replaceUrl: true });\n
 }\n
};\n
/**\n
 * Sets up the
location change listener. This listener detects navigations triggered from outside\n
 * the Router (the browser
back/forward buttons, for example) and schedules a corresponding Router\n
 * navigation so that the correct
events, guards, etc. are triggered.\n
*/\n
Router.prototype.setUpLocationChangeListener = function () {\n
 var _this = this;\n
 // Don't need to use Zone.wrap any more, because zone.js\n
 // already patch
onPopState, so location change callback will\n
 // run into ngZone\n
 if (!this.locationSubscription) {\n
 this.locationSubscription = this.location.subscribe(function (event) {\n
 var currentChange =
 _this.extractLocationChangeInfoFromEvent(event);\n
 if
 (_this.shouldScheduleNavigation(_this.lastLocationChangeInfo, currentChange)) {\n
 // The
 `setTimeout` was added in #12160 and is likely to support Angular/AngularJS\n
 // hybrid apps.\n
 setTimeout(function () {\n
 var source = currentChange.source, state = currentChange.state,\n
 urlTree = currentChange.urlTree;\n
 var extras = { replaceUrl: true }; \n
 if (state)
 {\n
 var stateCopy = Object.assign({}, state);\n
 delete
 stateCopy.navigationId;\n
 if (Object.keys(stateCopy).length !== 0) {\n
 extras.state = stateCopy;\n
 }\n
 }\n
 _this.scheduleNavigation(urlTree, source, state, extras);\n
 }, 0);\n
 }\n
 _this.lastLocationChangeInfo = currentChange;\n
 });\n
 }\n
};\n
/** Extracts router-related
information from a `PopStateEvent`. */\n
Router.prototype.extractLocationChangeInfoFromEvent = function
(change) {\n
 var _a;\n
 return {\n
 source: change['type'] === 'popstate' ? 'popstate' :
 'hashchange',\n
 urlTree: this.parseUrl(change['url']),\n
 // Navigations coming from Angular router
 // have a navigationId state\n
 // property. When this exists, restore the state.\n
 state: ((_a =
 change.state) === null || _a === void 0 ? void 0 : _a.navigationId) ? change.state : null,\n
 transitionId:

```

```

this.getTransition().id\n }\n }\n /*\n * Determines whether two events triggered by the
Location subscription are due to the same\n * navigation. The location subscription can fire two events
(popstate and hashchange) for a\n * single navigation. The second one should be ignored, that is, we should not
schedule another\n * navigation in the Router.\n */\n Router.prototype.shouldScheduleNavigation =
function (previous, current) {\n if (!previous)\n return true;\n var sameDestination =
current.urlTree.toString() === previous.urlTree.toString();\n var eventsOccurredAtSameTime =
current.transitionId === previous.transitionId;\n if (eventsOccurredAtSameTime || !sameDestination) {\n
return true;\n }\n if ((current.source === 'hashchange' && previous.source === 'popstate') ||\n
(current.source === 'popstate' && previous.source === 'hashchange')) {\n return false;\n }\n
return true;\n }\n Object.defineProperty(Router.prototype, 'url', {\n /** The current URL. */\n
get: function () {\n return this.serializeUrl(this.currentUrlTree);\n },\n enumerable:
false,\n configurable: true\n });\n /** The current Navigation object if one exists */\n
Router.prototype.getCurrentNavigation = function () {\n return this.currentNavigation;\n };\n /**
@internal */\n Router.prototype.triggerEvent = function (event) {\n this.events.next(event);\n };\n
/**\n * Resets the route configuration used for navigation and generating links.\n */\n @param
config The route array for the new configuration.\n */\n @usageNotes\n * ``\n *
router.resetConfig([\n * { path: 'team/:id', component: TeamCmp, children: [\n * { path: 'simple',
component: SimpleCmp },\n * { path: 'user/:name', component: UserCmp }\n *]}\n *]);\n *
``\n */\n Router.prototype.resetConfig = function (config) {\n validateConfig(config);\n
this.config = config.map(standardizeConfig);\n this.navigated = false;\n this.lastSuccessfulId = -1;\n
};\n /** @nodoc */\n Router.prototype.ngOnDestroy = function () {\n this.dispose();\n };\n
/** Disposes of the router. */\n Router.prototype.dispose = function () {\n if (this.locationSubscription)\n
{\n this.locationSubscription.unsubscribe();\n this.locationSubscription = undefined;\n }\n
};\n /**\n * Appends URL segments to the current URL tree to create a new URL tree.\n */\n *
@param commands An array of URL fragments with which to construct the new URL tree.\n * If the path is
static, can be the literal URL string. For a dynamic path, pass an array of path\n * segments, followed by the
parameters for each segment.\n * The fragments are applied to the current URL tree or the one provided in the
`relativeTo`\n * property of the options object, if supplied.\n * @param navigationExtras Options that
control the navigation strategy.\n * @returns The new URL tree.\n */\n @usageNotes\n *
``\n * // create /team/33/user/11\n * router.createUrlTree(['/team', 33, 'user', 11]);\n * //
create /team/33;expand=true/user/11\n * router.createUrlTree(['/team', 33, {expand: true}, 'user', 11]);\n
*\n * // you can collapse static segments like this (this works only with the first passed-in value):\n *
router.createUrlTree(['/team/33/user', userId]);\n * // If the first segment can contain slashes, and you
do not want the router to split it,\n * // you can do the following:\n * router.createUrlTree([{\n
segmentPath: 'one/two'}]);\n * // create /team/33/(user/11/right:chat)\n * router.createUrlTree(['/team', 33,\n
{outlets: {primary: 'user/11', right: 'chat'}}]);\n * // remove the right secondary node\n *
router.createUrlTree(['/team', 33, {outlets: {primary: 'user/11', right: null}}]);\n * // assuming the
current url is `team/33/user/11` and the route points to `user/11`\n * // navigate to
/team/33/user/11/details\n * router.createUrlTree(['details'], {relativeTo: route});\n * // navigate
to /team/33/user/22\n * router.createUrlTree(['../22'], {relativeTo: route});\n * // navigate to
/team/44/user/22\n * router.createUrlTree(['../../team/44/user/22'], {relativeTo: route});\n * ``\n */\n
Router.prototype.createUrlTree = function (commands, navigationExtras) {\n if (navigationExtras ===
void 0) {\n navigationExtras = {};\n }\n var relativeTo = navigationExtras.relativeTo, queryParams =
navigationExtras.queryParams, fragment = navigationExtras.fragment, queryParamsHandling =
navigationExtras.queryParamsHandling, preserveFragment = navigationExtras.preserveFragment;\n var a =
relativeTo || this.routerState.root;\n var f = preserveFragment ? this.currentUrlTree.fragment : fragment;\n
var q = null;\n switch (queryParamsHandling) {\n case 'merge':\n q =
Object.assign(Object.assign({}, this.currentUrlTree.queryParams), queryParams);\n break;\n

```

```

case 'preserve':\n q = this.currentUrlTree.queryParams;\n break;\n default:\n q = queryParams || null;\n }\n if (q !== null) {\n q = this.removeEmptyProps(q);\n }\n return createUrlTree(a, this.currentUrlTree, commands, q, f);\n };\n /**\n * Navigates to a view using an absolute route path.\n * @param url An absolute path for a defined route. The function does not apply any delta to the\n * current URL.\n * @param extras An object containing properties that modify the navigation strategy.\n * @returns A Promise that resolves to 'true' when navigation succeeds,\n * to 'false' when navigation fails, or is rejected on error.\n * @usageNotes\n * The following calls request navigation to an absolute path.\n * ```\n * router.navigateByUrl("/team/33/user/11");\n * // Navigate without updating the URL\n * router.navigateByUrl("/team/33/user/11", { skipLocationChange: true });\n * ```\n * @see [Routing and Navigation guide](guide/router)\n * Router.prototype.navigateByUrl = function (url, extras) {\n if (extras === void 0) { extras = {\n skipLocationChange: false\n }; }\n if (typeof ngDevMode === 'undefined' ||\n ngDevMode && this.isNgZoneEnabled && !core.NgZone.isInAngularZone()) {\n this.console.warn("Navigation triggered outside Angular zone, did you forget to call 'ngZone.run('?");\n }\n var urlTree = isUrlTree(url) ? url : this.parseUrl(url);\n var mergedTree = this.urlHandlingStrategy.merge(urlTree, this.rawUrlTree);\n return this.scheduleNavigation(mergedTree, 'imperative', null, extras);\n };\n /**\n * Navigate based on the provided array of commands and a starting point.\n * If no starting route is provided, the navigation is absolute.\n * @param commands An array of URL fragments with which to construct the target URL.\n * If the path is static, can be the literal URL string. For a dynamic path, pass an array of path\n * segments, followed by the parameters for each segment.\n * The fragments are applied to the current URL or the one provided in the `relativeTo` property\n * of the options object, if supplied.\n * @param extras An options object that determines how the URL should be constructed or\n * interpreted.\n * @returns A Promise that resolves to `true` when navigation succeeds, to `false` when navigation\n * fails,\n * or is rejected on error.\n * @usageNotes\n * The following calls request navigation to a dynamic route path relative to the current URL.\n * ```\n * router.navigate(['team', 33, 'user', 11], { relativeTo: route});\n * // Navigate without updating the URL, overriding the default behavior\n * router.navigate(['team', 33, 'user', 11], { relativeTo: route, skipLocationChange: true});\n * ```\n * @see [Routing and Navigation guide](guide/router)\n * Router.prototype.navigate = function (commands, extras) {\n if (extras === void 0) { extras = { skipLocationChange: false }; }\n validateCommands(commands);\n return this.navigateByUrl(this.createUrlTree(commands, extras), extras);\n };\n /** Serializes a `UrlTree` into a string */\n Router.prototype.serializeUrl = function (url) {\n return this.urlSerializer.serialize(url);\n };\n /** Parses a string into a `UrlTree` */\n Router.prototype.parseUrl = function (url) {\n var urlTree;\n try {\n urlTree = this.urlSerializer.parse(url);\n }\n catch (e) {\n urlTree = this.malformedUriErrorHandler(e, this.urlSerializer, url);\n }\n return urlTree;\n };\n /** Returns whether the url is activated */\n Router.prototype.isActive = function (url, exact) {\n if (isUrlTree(url)) {\n return containsTree(this.currentUrlTree, url, exact);\n }\n var urlTree = this.parseUrl(url);\n return containsTree(this.currentUrlTree, urlTree, exact);\n };\n Router.prototype.removeEmptyProps = function (params) {\n return Object.keys(params).reduce(function (result, key) {\n var value = params[key];\n if (value !== null && value !== undefined) {\n result[key] = value;\n }\n return result;\n }, {});\n };\n Router.prototype.processNavigations = function () {\n var _this = this;\n this.navigations.subscribe(function (t) {\n _this.navigated = true;\n _this.lastSuccessfulId = t.id;\n _this.events\n .next(new NavigationEnd(t.id, _this.serializeUrl(t.extractedUrl), _this.serializeUrl(_this.currentUrlTree)));\n _this.lastSuccessfulNavigation = _this.currentNavigation;\n _this.currentNavigation = null;\n t.resolve(true);\n }, function (e) {\n _this.console.warn("Unhandled Navigation Error: ");\n });\n Router.prototype.scheduleNavigation = function (rawUrl, source, restoredState, extras,

```

```

priorPromise) {\n // * Imperative navigations (router.navigate) might trigger additional navigations to the
same\n // URL via a popstate event and the locationChangeListener. We should skip these duplicate\n
// navs. Duplicates may also be triggered by attempts to sync AngularJS and Angular router\n // states.\n
// * Imperative navigations can be cancelled by router guards, meaning the URL won't change. If\n // the
user follows that with a navigation using the back/forward button or manual URL change,\n // the
destination may be the same as the previous imperative attempt. We should not skip\n // these navigations
because it's a separate case from the one above -- it's not a duplicate\n // navigation.\n var
lastNavigation = this.getTransition();\n // We don't want to skip duplicate successful navs if they're
imperative because\n // onSameUrlNavigation could be 'reload' (so the duplicate is intended).\n var
browserNavPrecededByRouterNav = source !== 'imperative' && (lastNavigation === null || lastNavigation ===
void 0 ? void 0 : lastNavigation.source) === 'imperative';\n var lastNavigationSucceeded =
this.lastSuccessfulId === lastNavigation.id;\n // If the last navigation succeeded or is in flight, we can use the
rawUrl as the comparison.\n // However, if it failed, we should compare to the final result
(urlAfterRedirects).\n var lastNavigationUrl = (lastNavigationSucceeded || this.currentNavigation) ?\n
lastNavigation.rawUrl :\n lastNavigation.urlAfterRedirects;\n var duplicateNav =
lastNavigationUrl.toString() === rawUrl.toString();\n if (browserNavPrecededByRouterNav &&
duplicateNav) {\n return Promise.resolve(true); // return value is not used\n }\n var resolve;\n
var reject;\n var promise;\n if (priorPromise) {\n resolve = priorPromise.resolve;\n
reject = priorPromise.reject;\n promise = priorPromise.promise;\n }\n else {\n
promise = new Promise(function (res, rej) {\n resolve = res;\n reject = rej;\n });\n
}\n var id = ++this.navigationId;\n this.setTransition({\n id: id,\n source:
source,\n restoredState: restoredState,\n currentUrlTree: this.currentUrlTree,\n
currentRawUrl: this.rawUrlTree,\n rawUrl: rawUrl,\n extras: extras,\n resolve: resolve,\n
reject: reject,\n promise: promise,\n currentSnapshot: this.routerState.snapshot,\n
currentRouterState: this.routerState\n });\n // Make sure that the error is propagated even though
`processNavigations` catch\n // handler does not rethrow\n return promise.catch(function (e) {\n
return Promise.reject(e);\n });\n });\n Router.prototype.setBrowserUrl = function (url, replaceUrl,
id, state) {\n var path = this.urlSerializer.serialize(url);\n state = state || {};\n if
(this.location.isCurrentPathEqualTo(path) || replaceUrl) {\n // TODO(jasonaden): Remove first
`navigationId` and rely on `ng` namespace.\n this.location.replaceState(path, "",
Object.assign(Object.assign({}, state), { navigationId: id }));\n }\n else {\n
this.location.go(path, "", Object.assign(Object.assign({}, state), { navigationId: id }));\n }\n };\n
Router.prototype.resetStateAndUrl = function (storedState, storedUrl, rawUrl) {\n this.routerState =
storedState;\n this.currentUrlTree = storedUrl;\n this.rawUrlTree =
this.urlHandlingStrategy.merge(this.currentUrlTree, rawUrl);\n this.resetUrlToCurrentUrlTree();\n };\n
Router.prototype.resetUrlToCurrentUrlTree = function () {\n
this.location.replaceState(this.urlSerializer.serialize(this.rawUrlTree), "", { navigationId: this.lastSuccessfulId });\n
};\n return Router;\n }());\n Router.decorators = [\n { type: core.Injectable }\n];\n
Router.ctorParameters = function () { return [\n { type: core.Type },\n { type: UrlSerializer },\n { type:
ChildrenOutletContexts },\n { type: common.Location },\n { type: core.Injector },\n { type:
core.NgModuleFactoryLoader },\n { type: core.Compiler },\n { type: undefined }\n]; }; function
validateCommands(commands) {\n for (var i = 0; i < commands.length; i++) {\n var cmd =
commands[i];\n if (cmd == null) {\n throw new Error("The requested path contains \" + cmd + \"
segment at index \" + i);\n }\n }\n }\n /**\n * @license\n * Copyright Google LLC All Rights
Reserved.\n * Use of this source code is governed by an MIT-style license that can be\n * found in the
LICENSE file at https://angular.io/license\n *\n /**\n * @description\n * When applied to an
element in a template, makes that element a link\n * that initiates navigation to a route. Navigation opens one or
more routed components\n * in one or more `<router-outlet>` locations on the page.\n * Given a route

```

configuration `{ path: 'user/:name', component: UserCmp }`, the following creates a static link to the route:

```
link to user component
```

You can use dynamic values to generate the link. For a dynamic link, pass an array of path segments, followed by the params for each segment. For example, `['/team', teamId, 'user', userName, {details: true}]` generates a link to `/team/11/user/bob;details=true`. Multiple static segments can be merged into one term and combined with dynamic segments. For example, `['/team/11/user', userName, {details: true}]`. The input that you provide to the link is treated as a delta to the current URL. For instance, suppose the current URL is `/user/(box//aux:team)`. The link `<a [routerLink]="['/user/jim']">Jim</a>` creates the URL `/user/(jim//aux:team)`. See `@link Router#createUrlTree createUrlTree` for more information. See `@usageNotes`. You can use absolute or relative paths in a link, set query parameters, control how parameters are handled, and keep a history of navigation states.

### Relative link paths

The first segment name can be prepended with `^`, `./`, or `../`. If the first segment begins with `^`, the router looks up the route from the root of the app. If the first segment begins with `./`, or doesn't begin with a slash, the router looks in the children of the current activated route. If the first segment begins with `../`, the router goes up one level in the route tree.

### Setting and handling query params and fragments

The following link adds a query parameter and a fragment to the generated URL:

```
<a [routerLink]="['/user/bob']" [queryParams]="{debug: true}" fragment="education">link to user component
```

By default, the directive constructs the new URL using the given query parameters. The example generates the link: `/user/bob?debug=true#education`. You can instruct the directive to handle query parameters differently by specifying the `queryParamsHandling` option in the link. Allowed values are:

- `'merge'`: Merge the given `queryParams` into the current query params.
- `'preserve'`: Preserve the current query params.

For example:

```
<a [routerLink]="['/user/bob']" [queryParams]="{debug: true}" queryParamsHandling="merge">link to user component
```

See `@link UrlCreationOptions.queryParamsHandling UrlCreationOptions#queryParamsHandling`.

### Preserving navigation history

You can provide a `state` value to be persisted to the browser's `History.state` property (<https://developer.mozilla.org/en-US/docs/Web/API/History#Properties>). For example:

```
<a [routerLink]="['/user/bob']" [state]="{tracingId: 123}">link to user component
```

Use `@link Router.getCurrentNavigation() Router#getCurrentNavigation` to retrieve a saved navigation-state value. For example, to capture the `tracingId` during the `NavigationStart` event:

```
// Get NavigationStart events
router.events.pipe(filter(e => e instanceof NavigationStart)).subscribe(e => {
 const navigation = router.getCurrentNavigation();
 tracingService.trace({id: navigation.extras.state.tracingId});
});
```

`@NgModule`

```
RouterModule
 @publicApi
 ^
 var RouterLink = /** @class */ (function () {
 function RouterLink(router, route, tabIndex, renderer, el) {
 this.router = router;
 this.route = route;
 this.commands = [];
 /** @internal */
 this.onChanges = new rxjs.Subject();
 if (tabIndex == null) {
 renderer.setAttribute(el.nativeElement, 'tabindex', '0');
 }
 /** @nodoc */
 RouterLink.prototype.ngOnChanges = function (changes) {
 // This is subscribed to by
 `RouterLinkActive` so that it knows to update when there are changes
 // to the RouterLinks it's tracking.
 this.onChanges.next(this);
 };
 Object.defineProperty(RouterLink.prototype, 'routerLink', {
 /**
 * Commands to pass to {@link Router#createUrlTree Router#createUrlTree}.
 * -
 array: commands to pass to {@link Router#createUrlTree Router#createUrlTree}.
 * - **string**: shorthand for array of commands with just the string, i.e. `['/route']`
 * - **null|undefined**: shorthand for an empty array of commands, i.e. `[]`
 * @see {@link Router#createUrlTree Router#createUrlTree}
 */
 set: function (commands) {
 if (commands != null) {
 this.commands = Array.isArray(commands) ? commands : [commands];
 } else {
 this.commands = [];
 }
 },
 enumerable: false,
 configurable: true
 });
 /** @nodoc */
 RouterLink.prototype.onClick = function () {
 var extras = {
 skipLocationChange:

```

```

attrBoolValue(this.skipLocationChange),\n replaceUrl: attrBoolValue(this.replaceUrl),\n state:
this.state,\n });\n this.router.navigateByUrl(this.urlTree, extras);\n return true;\n });\n Object.defineProperty(RouterLink.prototype, 'urlTree', {\n get: function () {\n return
this.router.createUrlTree(this.commands, {\n relativeTo: this.route,\n queryParams:
this.queryParams,\n fragment: this.fragment,\n queryParamsHandling:
this.queryParamsHandling,\n preserveFragment: attrBoolValue(this.preserveFragment),\n });\n },\n enumerable: false,\n configurable: true\n });\n return RouterLink;\n})(\n RouterLink.decorators = [\n { type: core.Directive, args: [{ selector: ':not(a):not(area)[routerLink]' },] }\n];\n RouterLink.ctorParameters = function () { return [\n { type: Router },\n { type: ActivatedRoute },\n {
type: String, decorators: [{ type: core.Attribute, args: ['tabindex',] }],\n { type: core.Renderer2 },\n { type:
core.ElementRef }\n] }; \n RouterLink.propDecorators = {\n queryParams: [{ type: core.Input }],\n fragment: [{ type: core.Input }],\n queryParamsHandling: [{ type: core.Input }],\n preserveFragment: [{
type: core.Input }],\n skipLocationChange: [{ type: core.Input }],\n replaceUrl: [{ type: core.Input }],\n state: [{ type: core.Input }],\n routerLink: [{ type: core.Input }],\n onClick: [{ type: core.HostListener, args:
['click',] }]\n }; \n /**\n * @description\n * Lets you link to specific routes in your app.\n * See `RouterLink` for more information.\n * @ngModule RouterModule\n * @publicApi\n */\n var RouterLinkWithHref = /** @class */ (function () {\n function RouterLinkWithHref(router, route,
locationStrategy) {\n var _this = this;\n this.router = router;\n this.route = route;\n this.locationStrategy = locationStrategy;\n this.commands = [];\n /** @internal */\n this.onChanges = new rxjs.Subject();\n this.subscription = router.events.subscribe(function (s) {\n if
(s instanceof NavigationEnd) {\n _this.updateTargetUrlAndHref();\n }\n });\n }\n Object.defineProperty(RouterLinkWithHref.prototype, 'routerLink', {\n /**\n * Commands to pass
to { @link Router#createUrlTree Router#createUrlTree }. \n * - **array**: commands to pass to { @link
Router#createUrlTree Router#createUrlTree }. \n * - **string**: shorthand for array of commands with just
the string, i.e. `['/route']` \n * - **null|undefined**: shorthand for an empty array of commands, i.e. `[]` \n
 * @see { @link Router#createUrlTree Router#createUrlTree } \n */\n set: function (commands) {\n
 if (commands != null) {\n this.commands = Array.isArray(commands) ? commands :
[commands];\n } else {\n this.commands = [];\n }\n },\n enumerable: false,\n configurable: true\n });\n /** @nodoc */\n RouterLinkWithHref.prototype.ngOnChanges = function (changes) {\n this.updateTargetUrlAndHref();\n this.onChanges.next(this);\n }; \n /** @nodoc */\n RouterLinkWithHref.prototype.ngOnDestroy =
function () {\n this.subscription.unsubscribe();\n }; \n /** @nodoc */\n RouterLinkWithHref.prototype.onClick = function (button, ctrlKey, shiftKey, altKey, metaKey) {\n if (button
!== 0 || ctrlKey || shiftKey || altKey || metaKey) {\n return true;\n }\n if (typeof this.target ===
'string' && this.target !== '_self') {\n return true;\n }\n var extras = {\n skipLocationChange: attrBoolValue(this.skipLocationChange),\n replaceUrl:
attrBoolValue(this.replaceUrl),\n state: this.state\n };\n this.router.navigateByUrl(this.urlTree, extras);\n return false;\n };\n RouterLinkWithHref.prototype.updateTargetUrlAndHref = function () {\n this.href =
this.locationStrategy.prepareExternalUrl(this.router.serializeUrl(this.urlTree));\n };\n Object.defineProperty(RouterLinkWithHref.prototype, 'urlTree', {\n get: function () {\n return
this.router.createUrlTree(this.commands, {\n relativeTo: this.route,\n queryParams:
this.queryParams,\n fragment: this.fragment,\n queryParamsHandling:
this.queryParamsHandling,\n preserveFragment: attrBoolValue(this.preserveFragment),\n });\n },\n enumerable: false,\n configurable: true\n });\n return RouterLinkWithHref;\n })();\n RouterLinkWithHref.decorators = [\n { type: core.Directive, args: [{ selector:
'a[routerLink],area[routerLink]' },] }\n];\n RouterLinkWithHref.ctorParameters = function () { return [\n {
type: Router },\n { type: ActivatedRoute },\n { type: common.LocationStrategy }\n] }; \n

```



```

RouterLinkWithHref.propDecorators = {\n
 target: [{ type: core.HostBinding, args: ['attr.target'], }, { type:
core.Input }],\n
 queryParams: [{ type: core.Input }],\n
 fragment: [{ type: core.Input }],\n
 queryParamsHandling: [{ type: core.Input }],\n
 preserveFragment: [{ type: core.Input }],\n
 skipLocationChange: [{ type: core.Input }],\n
 replaceUrl: [{ type: core.Input }],\n
 state: [{ type: core.Input
}],\n
 href: [{ type: core.HostBinding }],\n
 routerLink: [{ type: core.Input }],\n
 onClick: [{ type:
core.HostListener, args: ['click'],\n
 ['$event.button', '$event.ctrlKey', '$event.shiftKey', '$event.altKey',
'$event.metaKey'],] }]\n
};\n
function attrBoolValue(s) {\n
 return s === " || !!s;\n
}\n
/**\n
 * \n
 * @description\n
 * \n
 * Tracks whether the linked route of an element is currently active, and allows you\n
 * to specify one or more CSS classes to add to the element when the linked route\n
 * is active.\n
 * \n
 * Use this directive to create a visual distinction for elements associated with an active route.\n
 * For example, the following code highlights the word 'Bob' when the the router\n
 * activates the associated route:\n
 * \n
 * ``\n
 * <a\n
routerLink="/user/bob" routerLinkActive="active-link">Bob\n
 * ``\n
 * \n
 * Whenever the URL is either 'user' or 'user/bob', the 'active-link' class is\n
 * added to the anchor tag. If the URL changes, the class is removed.\n
 * \n
 * You can set more than one class using a space-separated string or an array.\n
 * For\n
example:\n
 * \n
 * ``\n
 * Bob\n
 * <a\n
routerLink="/user/bob" [routerLinkActive]="['class1', 'class2']">Bob\n
 * ``\n
 * \n
 * To add the classes only when the URL matches the link exactly, add the option `exact: true`:\n
 * \n
 * ``\n
 * <a\n
routerLink="/user/bob" routerLinkActive="active-link" [routerLinkActiveOptions]="{exact:\n
 * true}">Bob\n
 * ``\n
 * \n
 * To directly check the `isActive` status of the link, assign the\n
`RouterLinkActive`\n
 * instance to a template variable.\n
 * For example, the following checks the status\n
without assigning any CSS classes:\n
 * \n
 * ``\n
 * <a routerLink="/user/bob" routerLinkActive\n
#rla="routerLinkActive">\n
 * Bob {{ rla.isActive ? '(already open)' : '' }}\n
 * \n
 * ``\n
 * \n
 * You can apply the `RouterLinkActive` directive to an ancestor of linked elements.\n
 * For example, the following sets\n
the active-link class on the `<div>` parent tag\n
 * when the URL is either 'user/jim' or 'user/bob'.\n
 * \n
 * ``\n
 * <div routerLinkActive="active-link" [routerLinkActiveOptions]="{exact: true}">\n
 * <a\n
routerLink="/user/jim">Jim\n
 * Bob\n
 * </div>\n
 * ``\n
 * \n
 * @ngModule RouterModule\n
 * \n
 * @publicApi\n
 * \n
 * var RouterLinkActive = /** @class */ (function ()\n
{\n
 function RouterLinkActive(router, element, renderer, cdr, link, linkWithHref) {\n
 var _this = this;\n
 this.router = router;\n
 this.element = element;\n
 this.renderer = renderer;\n
 this.cdr = cdr;\n
 this.link = link;\n
 this.linkWithHref = linkWithHref;\n
 this.classes = [];\n
 this.isActive =\n
false;\n
 this.routerLinkActiveOptions = { exact: false }; \n
 this.routerEventsSubscription =\n
router.events.subscribe(function (s) {\n
 if (s instanceof NavigationEnd) {\n
 _this.update();\n
 }\n
 });\n
 }\n
 /** @nodoc */\n
 RouterLinkActive.prototype.ngAfterContentInit = function\n
() {\n
 var _this = this;\n
 // `of(null)` is used to force subscribe body to execute once immediately (like\n
`startWith`).\n
 rxjs.from([this.links.changes, this.linksWithHrefs.changes, rxjs.of(null)])\n
.pipe(operators.mergeAll())\n
.subscribe(function (_) {\n
 _this.update();\n
 });\n
 });\n
 RouterLinkActive.prototype.subscribeToEachLinkOnChanges = function () {\n
 var _this = this;\n
 var\n
_a;\n
 (_a = this.linkInputChangesSubscription) === null || _a === void 0 ? void 0 : _a.unsubscribe();\n
var allLinkChanges = __spread(this.links.toArray(), this.linksWithHrefs.toArray(), [this.link,\n
this.linkWithHref]).filter(function (link) { return !!link; });\n
 .map(function (link) { return link.onChanges;\n
});\n
 this.linkInputChangesSubscription =\n
rxjs.from(allLinkChanges).pipe(operators.mergeAll()).subscribe(function (link) {\n
 if (_this.isActive !==\n
_this.isLinkActive(_this.router)(link)) {\n
 _this.update();\n
 }\n
 });\n
 });\n
 Object.defineProperty(RouterLinkActive.prototype, 'routerLinkActive', {\n
 set: function (data) {\n
var classes = Array.isArray(data) ? data : data.split(' ');\n
 this.classes = classes.filter(function (c) { return\n
!!c; });\n
 },\n
 enumerable: false,\n
 configurable: true\n
 });\n
 /** @nodoc */\n
 RouterLinkActive.prototype.ngOnChanges = function (changes) {\n
 this.update();\n
 }; \n
 /**

```



```

RouterOutlet.prototype.ngOnInit = function () {
 if (!this.activated) {
 // If the outlet was not
 // instantiated at the time the route got activated we need to populate
 // the outlet when it is initialized (ie
 // inside a NgIf)
 var context = this.parentContexts.getContext(this.name);
 if (context &&
 context.route) {
 if (context.attachRef) {
 // `attachRef` is populated when there is an
 // existing component to mount
 this.attach(context.attachRef, context.route);
 }
 else {
 // otherwise the component defined in the configuration is created
 this.activateWith(context.route, context.resolver || null);
 }
 }
 }
 Object.defineProperty(RouterOutlet.prototype, 'isActivated', {
 get: function () {
 return
 !!this.activated;
 },
 enumerable: false,
 configurable: true
 });
 Object.defineProperty(RouterOutlet.prototype, 'component', {
 get: function () {
 if
 (!this.activated)
 throw new Error('Outlet is not activated');
 return this.activated.instance;
 },
 enumerable: false,
 configurable: true
 });
 Object.defineProperty(RouterOutlet.prototype, 'activatedRoute', {
 get: function () {
 if
 (!this.activated)
 throw new Error('Outlet is not activated');
 return this._activatedRoute;
 },
 enumerable: false,
 configurable: true
 });
 Object.defineProperty(RouterOutlet.prototype, 'activatedRouteData', {
 get: function () {
 if
 (this._activatedRoute) {
 return this._activatedRoute.snapshot.data;
 }
 return
 {};
 },
 enumerable: false,
 configurable: true
 });
 /**
 * Called when the
 * `RouteReuseStrategy` instructs to detach the subtree
 */
 RouterOutlet.prototype.detach = function () {
 if (!this.activated)
 throw new Error('Outlet is not activated');
 this.location.detach();
 var cmp = this.activated;
 this.activated = null;
 this._activatedRoute = null;
 return cmp;
 };
 /**
 * Called when the `RouteReuseStrategy` instructs to re-attach a previously detached subtree
 */
 RouterOutlet.prototype.attach = function (ref, activatedRoute) {
 this.activated = ref;
 this._activatedRoute = activatedRoute;
 this.location.insert(ref.hostView);
 };
 RouterOutlet.prototype.deactivate = function () {
 if (this.activated) {
 var c = this.component;
 this.activated.destroy();
 this.activated = null;
 this._activatedRoute = null;
 this.deactivateEvents.emit(c);
 }
 };
 RouterOutlet.prototype.activateWith = function
 (activatedRoute, resolver) {
 if (this.isActivated)
 throw new Error('Cannot activate an already
 activated outlet');
 this._activatedRoute = activatedRoute;
 var snapshot =
 activatedRoute._futureSnapshot;
 var component = snapshot.routeConfig.component;
 resolver =
 resolver || this.resolver;
 var factory = resolver.resolveComponentFactory(component);
 var
 childContexts = this.parentContexts.getOrCreateContext(this.name).children;
 var injector = new
 OutletInjector(activatedRoute, childContexts, this.location.injector);
 this.activated =
 this.location.createComponent(factory, this.location.length, injector);
 // Calling `markForCheck` to make
 // sure we will run the change detection when the
 // `RouterOutlet` is inside a
 // `ChangeDetectionStrategy.OnPush` component.
 this.changeDetector.markForCheck();
 this.activateEvents.emit(this.activated.instance);
 };
 return RouterOutlet;
}();

RouterOutlet.decorators = [
 { type: core.Directive, args: [{ selector: 'router-outlet', exportAs: 'outlet' }] }
];
RouterOutlet.ctorParameters = function () {
 return [
 { type: ChildrenOutletContexts },
 { type:
 core.ViewContainerRef },
 { type: core.ComponentFactoryResolver },
 { type: String, decorators: [
 { type: core.Attribute, args: ['name'] }] }
];
};
RouterOutlet.propDecorators = {
 activateEvents: [
 { type: core.Output, args: ['activate'] }
],
 deactivateEvents: [
 { type: core.Output, args: ['deactivate'] }
]
};
var OutletInjector = /** @class */ (function
() {
 function OutletInjector(route, childContexts, parent) {
 this.route = route;
 this.childContexts = childContexts;
 this.parent = parent;
 }
 OutletInjector.prototype.get =
 function (token, notFoundValue) {
 if (token === ActivatedRoute)
 return this.route;
 }
 if (token === ChildrenOutletContexts)
 return this.childContexts;
 return
 this.parent.get(token, notFoundValue);
 };
 return OutletInjector;
}());
/**
 * @description

```

```

*\n * Provides a preloading strategy.\n *\n * @publicApi\n */\n var PreloadingStrategy = /** @class */\n */ (function () {\n function PreloadingStrategy() {\n }\n return PreloadingStrategy;\n }());\n /**\n * @description\n *\n * Provides a preloading strategy that preloads all modules as quickly as possible.\n *\n * ```\n * RouterModule.forRoot(ROUTES, {preloadingStrategy: PreloadAllModules})\n * ```\n *\n * @publicApi\n */\n var PreloadAllModules = /** @class */ (function () {\n function PreloadAllModules()\n {\n }\n PreloadAllModules.prototype.preload = function (route, fn) {\n return\n fn().pipe(operators.catchError(function () { return rxjs.of(null); }));\n }; \n return PreloadAllModules;\n }());\n /**\n * @description\n *\n * Provides a preloading strategy that does not preload any modules.\n *\n * This strategy is enabled by default.\n *\n * @publicApi\n */\n var NoPreloading = /** @class */\n */ (function () {\n function NoPreloading() {\n }\n NoPreloading.prototype.preload = function (route, fn)\n {\n return rxjs.of(null);\n }; \n return NoPreloading;\n }());\n /**\n * The preloader\n * optimistically loads all router configurations to\n * make navigations into lazily-loaded sections of the application\n * faster.\n *\n * The preloader runs in the background. When the router bootstraps, the preloader\n * starts\n * listening to all navigation events. After every such event, the preloader\n * will check if any configurations can be\n * loaded lazily.\n *\n * If a route is protected by `canLoad` guards, the preloaded will not load it.\n *\n * @publicApi\n */\n var RouterPreloader = /** @class */ (function () {\n function RouterPreloader(router,\n moduleLoader, compiler, injector, preloadingStrategy) {\n this.router = router;\n this.injector =\n injector;\n this.preloadingStrategy = preloadingStrategy;\n var onStartLoad = function (r) { return\n router.triggerEvent(new RouteConfigLoadStart(r)); }; \n var onEndLoad = function (r) { return\n router.triggerEvent(new RouteConfigLoadEnd(r)); }; \n this.loader = new\n RouterConfigLoader(moduleLoader, compiler, onStartLoad, onEndLoad);\n }\n RouterPreloader.prototype.setUpPreloading = function () {\n var _this = this;\n this.subscription =\n this.router.events\n .pipe(operators.filter(function (e) { return e instanceof NavigationEnd; }),\n operators.concatMap(function () { return _this.preload(); }));\n this.loader\n .subscribe(function () { });\n }; \n RouterPreloader.prototype.preload = function () {\n var ngModule = this.injector.get(core.NgModuleRef);\n return this.processRoutes(ngModule, this.router.config);\n }; \n /** @nodoc */\n RouterPreloader.prototype.ngOnDestroy = function () {\n if (this.subscription) {\n this.subscription.unsubscribe();\n }\n }; \n RouterPreloader.prototype.processRoutes = function\n (ngModule, routes) {\n var e_1, _a;\n var res = [];\n try {\n for (var routes_1 =\n __values(routes), routes_1_1 = routes_1.next(); !routes_1_1.done; routes_1_1 = routes_1.next()) {\n var\n route = routes_1_1.value;\n // we already have the config loaded, just recurse\n if\n (route.loadChildren && !route.canLoad && route._loadedConfig) {\n var childConfig =\n route._loadedConfig;\n res.push(this.processRoutes(childConfig.module, childConfig.routes));\n }\n // no config loaded, fetch the config\n else if (route.loadChildren &&\n !route.canLoad) {\n res.push(this.preloadConfig(ngModule, route));\n // recurse into\n children\n }\n else if (route.children) {\n res.push(this.processRoutes(ngModule, route.children));\n }\n }\n } catch\n (e_1_1) { e_1 = { error: e_1_1 }; }\n finally {\n try {\n if (routes_1_1 &&\n !routes_1_1.done && (_a = routes_1.return)) _a.call(routes_1);\n }\n finally { if (e_1) throw\n e_1.error; }\n }\n return rxjs.from(res).pipe(operators.mergeAll(), operators.map(function (_) { return\n void 0; }));\n }; \n RouterPreloader.prototype.preloadConfig = function (ngModule, route) {\n var\n _this = this;\n return this.preloadingStrategy.preload(route, function () {\n var loaded$ =\n _this.loader.load(ngModule.injector, route);\n return loaded$.pipe(operators.mergeMap(function (config)\n {\n route._loadedConfig = config;\n return _this.processRoutes(config.module,\n config.routes);\n }));\n });\n }; \n return RouterPreloader;\n }());\n RouterPreloader.decorators = [\n { type: core.Injectable }\n]; \n RouterPreloader.ctorParameters = function\n () {\n return [\n { type: Router },\n { type: core.NgModuleFactoryLoader },\n { type: core.Compiler },\n { type: core.Injector },\n { type: PreloadingStrategy }\n];\n }; \n /**\n * @license\n * Copyright

```

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Google LLC All Rights Reserved.\n *\n * Use of this source code is governed by an MIT-style license that can
be\n * found in the LICENSE file at https://angular.io/license\n */\n var RouterScroller = /** @class */
(function () {\n function RouterScroller(router, \n /** @docsNotRequired */ viewportScroller, options) {\n if (options === void 0) { options = {}; }\n this.router = router;\n this.viewportScroller =
viewportScroller;\n this.options = options;\n this.lastId = 0;\n this.lastSource = 'imperative';\n this.restoredId = 0;\n this.store = {};\n // Default both options to 'disabled'\n options.scrollPositionRestoration = options.scrollPositionRestoration || 'disabled';\n options.anchorScrolling =
options.anchorScrolling || 'disabled';\n }\n RouterScroller.prototype.init = function () {\n // we want
to disable the automatic scrolling because having two places\n // responsible for scrolling results race
conditions, especially given\n // that browser don't implement this behavior consistently\n if
(this.options.scrollPositionRestoration !== 'disabled') {\n this.viewportScroller.setHistoryScrollRestoration('manual');\n }\n this.routerEventsSubscription =
this.createScrollEvents();\n this.scrollEventsSubscription = this.consumeScrollEvents();\n };\n RouterScroller.prototype.createScrollEvents = function () {\n var _this = this;\n return
this.router.events.subscribe(function (e) {\n if (e instanceof NavigationStart) {\n // store the
scroll position of the current stable navigations.\n _this.store[_this.lastId] =
_this.viewportScroller.getScrollPosition();\n _this.lastSource = e.navigationTrigger;\n _this.restoredId = e.restoredState ? e.restoredState.navigationId : 0;\n }\n else if (e instanceof
NavigationEnd) {\n _this.lastId = e.id;\n _this.scheduleScrollEvent(e,
_this.router.parseUrl(e.urlAfterRedirects).fragment);\n }\n });\n };\n RouterScroller.prototype.consumeScrollEvents = function () {\n var _this = this;\n return
this.router.events.subscribe(function (e) {\n if (!(e instanceof Scroll))\n return;\n // a
popstate event. The pop state event will always ignore anchor scrolling.\n if (e.position) {\n if
(_this.options.scrollPositionRestoration === 'top') {\n _this.viewportScroller.scrollToPosition([0,
0]);\n }\n else if (_this.options.scrollPositionRestoration === 'enabled') {\n _this.viewportScroller.scrollToPosition(e.position);\n }\n // imperative navigation
\n if (e.anchor && _this.options.anchorScrolling ===
'enabled') {\n _this.viewportScroller.scrollToAnchor(e.anchor);\n }\n else if
(_this.options.scrollPositionRestoration !== 'disabled') {\n _this.viewportScroller.scrollToPosition([0,
0]);\n }\n }\n });\n };\n RouterScroller.prototype.scheduleScrollEvent =
function (routerEvent, anchor) {\n this.router.triggerEvent(new Scroll(routerEvent, this.lastSource ===
'popstate' ? this.store[this.restoredId] : null, anchor));\n };\n /** @nodoc */\n RouterScroller.prototype.ngOnDestroy = function () {\n if (this.routerEventsSubscription) {\n this.routerEventsSubscription.unsubscribe();\n }\n if (this.scrollEventsSubscription) {\n this.scrollEventsSubscription.unsubscribe();\n }\n return RouterScroller;\n };\n RouterScroller.decorators = [\n { type: core.Injectable }\n];\n RouterScroller.ctorParameters = function () {\n return [\n { type: Router },\n { type: common.ViewportScroller },\n { type: undefined }\n];\n };\n /**\n * @license\n * Copyright Google LLC All Rights Reserved.\n * Use of this source code is
governed by an MIT-style license that can be\n * found in the LICENSE file at https://angular.io/license\n */\n /**\n * The directives defined in the `RouterModule`.\n */\n var ROUTER_DIRECTIVES = [RouterOutlet,
RouterLink, RouterLinkWithHref, RouterLinkActive, EmptyOutletComponent];\n /**\n * A [DI
token](guide/glossary/#di-token) for the router service.\n */\n @publicApi\n var
ROUTER_CONFIGURATION = new core.InjectionToken('ROUTER_CONFIGURATION');\n /**\n *
@docsNotRequired\n */\n var ROUTER_FORROOT_GUARD = new
core.InjectionToken('ROUTER_FORROOT_GUARD');\n var 0 = { enableTracing: false };\n var
ROUTER_PROVIDERS = [\n common.Location,\n { provide: UrlSerializer, useClass: DefaultUrlSerializer
},\n {\n provide: Router,\n useFactory: setupRouter,\n deps: [\n UrlSerializer,
ChildrenOutletContexts, common.Location, core.Injector, core.NgModuleFactoryLoader, core.Compiler,\n

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```

ROUTES, ROUTER_CONFIGURATION, [UrlHandlingStrategy, new core.Optional()],\n
[RouteReuseStrategy, new core.Optional()]\n]\n },\n ChildrenOutletContexts,\n { provide:
ActivatedRoute, useFactory: rootRoute, deps: [Router] },\n { provide: core.NgModuleFactoryLoader, useClass:
core.SystemJsNgModuleLoader },\n RouterPreloader,\n NoPreloading,\n PreloadAllModules,\n {
provide: ROUTER_CONFIGURATION, useValue: 0 },\n];\n function routerNgProbeToken() {\n return
new core.NgProbeToken('Router', Router);\n }\n /**\n * @description\n * \n * Adds directives and
providers for in-app navigation among views defined in an application.\n * Use the Angular `Router` service to
declaratively specify application states and manage state\n * transitions.\n * \n * You can import this
NgModule multiple times, once for each lazy-loaded bundle.\n * However, only one `Router` service can be
active.\n * To ensure this, there are two ways to register routes when importing this module:\n * \n * * The
`forRoot()` method creates an `NgModule` that contains all the directives, the given\n * routes, and the `Router`
service itself.\n * * The `forChild()` method creates an `NgModule` that contains all the directives and the given\n
 * routes, but does not include the `Router` service.\n * \n * @see [Routing and Navigation
guide](guide/router) for an\n * overview of how the `Router` service should be used.\n * \n * @publicApi\n
 */\n var RouterModule = /** @class */(function () {\n // Note: We are injecting the Router so it gets created
eagerly...\n function RouterModule(guard, router) {\n }\n /**\n * \n * Creates and configures a module
with all the router providers and directives.\n * \n * Optionally sets up an application listener to perform an initial
navigation.\n * \n * When registering the NgModule at the root, import as follows:\n * \n * ```\n
 * @NgModule({\n * imports: [RouterModule.forRoot(ROUTES)]\n * })\n * class MyNgModule
{\n * }\n * ```\n * \n * @param routes An array of `Route` objects that define the navigation paths for the
application.\n * @param config An `ExtraOptions` configuration object that controls how navigation is
performed.\n * @return The new `NgModule`.\n * \n * \n */\n RouterModule.forRoot = function
(routes, config) {\n return {\n ngModule: RouterModule,\n providers: [\n
ROUTER_PROVIDERS,\n provideRoutes(routes),\n {\n provide:
ROUTER_FORROOT_GUARD,\n useFactory: provideForRootGuard,\n deps:
[[Router, new core.Optional(), new core.SkipSelf()]]\n },\n { provide:
ROUTER_CONFIGURATION, useValue: config ? config : {} },\n {\n provide:
common.LocationStrategy,\n useFactory: provideLocationStrategy,\n deps:
[common.PlatformLocation, [new core.Inject(common.APP_BASE_HREF), new core.Optional()],
ROUTER_CONFIGURATION]\n },\n {\n provide: RouterScroller,\n
useFactory: createRouterScroller,\n deps: [Router, common.ViewportScroller,
ROUTER_CONFIGURATION]\n },\n {\n provide: PreloadingStrategy,\n
useExisting: config && config.preloadingStrategy ? config.preloadingStrategy :\n
NoPreloading\n },\n { provide: core.NgProbeToken, multi: true, useFactory:
routerNgProbeToken },\n provideRouterInitializer(),\n],\n };\n };\n /**\n
 * \n * Creates a module with all the router directives and a provider registering routes,\n * without creating a new
Router service.\n * \n * When registering for submodules and lazy-loaded submodules, create the NgModule as
follows:\n * \n * ```\n * @NgModule({\n * imports: [RouterModule.forChild(ROUTES)]\n
 * })\n * class MyNgModule {\n * }\n * ```\n * \n * @param routes An array of `Route` objects that
define the navigation paths for the submodule.\n * @return The new NgModule.\n * \n * \n */\n
 RouterModule.forChild = function (routes) {\n return { ngModule: RouterModule, providers:
[provideRoutes(routes)] };;\n };\n return RouterModule;\n }());\n RouterModule.decorators = [\n {
type: core.NgModule, args: [{\n declarations: ROUTER_DIRECTIVES,\n exports:
ROUTER_DIRECTIVES,\n entryComponents: [EmptyOutletComponent]\n },]\n];\n RouterModule.ctorParameters = function () { return [\n { type: undefined, decorators: [{ type: core.Optional }, {
type: core.Inject, args: [ROUTER_FORROOT_GUARD,] }] },\n { type: Router, decorators: [{ type:
core.Optional }] }];;\n function createRouterScroller(router, viewportScroller, config) {\n if
(config.scrollOffset) {\n viewportScroller.setOffset(config.scrollOffset);\n }\n return new

```

```

RouterScroller(router, viewportScroller, config);\n } \n function
provideLocationStrategy(platformLocationStrategy, baseHref, options) {\n if (options === void 0) { options =
{}; } \n return options.useHash ? new common.HashLocationStrategy(platformLocationStrategy, baseHref) :\n new common.PathLocationStrategy(platformLocationStrategy, baseHref);\n } \n function
provideForRootGuard(router) {\n if ((typeof ngDevMode === 'undefined' || ngDevMode) && router) {\n throw new Error("RouterModule.forRoot() called twice. Lazy loaded modules should use RouterModule.forChild()
instead.");\n } \n return 'guarded';\n } \n /** \n * Registers a [DI provider](guide/glossary#provider)
for a set of routes. \n * @param routes The route configuration to provide. \n * @usageNotes \n * \n * \n * @NgModule({ \n * imports: [RouterModule.forChild(ROUTES)], \n * providers:
[provideRoutes(EXTRA_ROUTES)] \n * }) \n * class MyNgModule { \n * \n * \n * @publicApi \n
*/ \n function provideRoutes(routes) {\n return [\n { provide:
core.ANALYZE_FOR_ENTRY_COMPONENTS, multi: true, useValue: routes }, \n { provide: ROUTES,
multi: true, useValue: routes }, \n]; \n } \n function setupRouter(urlSerializer, contexts, location, injector,
loader, compiler, config, opts, urlHandlingStrategy, routeReuseStrategy) {\n if (opts === void 0) { opts = {};\n } \n var router = new Router(null, urlSerializer, contexts, location, injector, loader, compiler, flatten(config)); \n if (urlHandlingStrategy) {\n router.urlHandlingStrategy = urlHandlingStrategy;\n } \n if
(routeReuseStrategy) {\n router.routeReuseStrategy = routeReuseStrategy;\n } \n assignExtraOptionsToRouter(opts, router);\n if (opts.enableTracing) {\n var dom_1 =
common.getDOM(); \n router.events.subscribe(function (e) {\n dom_1.logGroup("Router Event: "
+ e.constructor.name);\n dom_1.log(e.toString());\n dom_1.log(e);\n }); \n dom_1.logGroupEnd(); \n }); \n return router;\n } \n function
assignExtraOptionsToRouter(opts, router) {\n if (opts.errorHandler) {\n router.errorHandler =
opts.errorHandler;\n } \n if (opts.malformedUriErrorHandler) {\n router.malformedUriErrorHandler
= opts.malformedUriErrorHandler;\n } \n if (opts.onSameUrlNavigation) {\n router.onSameUrlNavigation = opts.onSameUrlNavigation;\n } \n if (opts.paramsInheritanceStrategy) {\n router.paramsInheritanceStrategy = opts.paramsInheritanceStrategy;\n } \n if
(opts.relativeLinkResolution) {\n router.relativeLinkResolution = opts.relativeLinkResolution;\n } \n if (opts.urlUpdateStrategy) {\n router.urlUpdateStrategy = opts.urlUpdateStrategy;\n } \n } \n function
rootRoute(router) {\n return router.routerState.root;\n } \n /** \n * Router initialization requires two
steps: \n * \n * First, we start the navigation in a `APP_INITIALIZER` to block the bootstrap if \n * a resolver
or a guard executes asynchronously. \n * \n * Next, we actually run activation in a `BOOTSTRAP_LISTENER`,
using the \n * `afterPreactivation` hook provided by the router. \n * The router navigation starts, reaches the
point when preactivation is done, and then \n * pauses. It waits for the hook to be resolved. We then resolve it only
in a bootstrap listener. \n */ \n var RouterInitializer = /** @class */ (function () { \n function
RouterInitializer(injector) {\n this.injector = injector;\n this.initNavigation = false;\n this.resultOfPreactivationDone = new rxjs.Subject(); \n } \n RouterInitializer.prototype.appInitializer =
function () {\n var _this = this;\n var p = this.injector.get(common.LOCATION_INITIALIZED,
Promise.resolve(null)); \n return p.then(function () {\n var resolve = null;\n var res = new
Promise(function (r) { return resolve = r; }); \n var router = _this.injector.get(Router);\n var opts =
_this.injector.get(ROUTER_CONFIGURATION);\n if (opts.initialNavigation === 'disabled') {\n router.setUpLocationChangeListener();\n resolve(true);\n } \n else if (\n //
TODO: enabled is deprecated as of v11, can be removed in v13 \n opts.initialNavigation === 'enabled' ||
opts.initialNavigation === 'enabledBlocking') {\n router.hooks.afterPreactivation = function () {\n // only the initial navigation should be delayed \n if (!_this.initNavigation) {\n _this.initNavigation = true;\n resolve(true);\n return
_this.resultOfPreactivationDone;\n } \n // subsequent navigations should not be delayed \n
}\n else {\n return rxjs.of(null);\n } \n }); \n }); \n router.initialNavigation(); \n } \n else {\n return rxjs.resolve(true);\n } \n } \n return

```

```

res;
});
});
RouterInitializer.prototype.bootstrapListener = function
(bootstrappedComponentRef) {
 var opts = this.injector.get(ROUTER_CONFIGURATION);
 var
 preloader = this.injector.get(RouterPreloader);
 var routerScroller = this.injector.get(RouterScroller);
 var router = this.injector.get(Router);
 var ref = this.injector.get(core.ApplicationRef);
 if
 (bootstrappedComponentRef !== ref.components[0]) {
 return;
 }
 // Default case
 if (opts.initialNavigation === 'enabledNonBlocking' || opts.initialNavigation === undefined) {
 router.initialNavigation();
 }
 preloader.setUpPreloading();
 routerScroller.init();
 router.resetRootComponentType(ref.componentTypes[0]);
 this.resultOfPreactivationDone.next(null);
 this.resultOfPreactivationDone.complete();
};
return RouterInitializer;
})();
RouterInitializer.decorators = [
 { type: core.Injectable }
];
RouterInitializer.ctorParameters = function
() {
 return [
 { type: core.Injector }
];
};
function getAppInitializer(r) {
 return
 r.appInitializer.bind(r);
}
function getBootstrapListener(r) {
 return r.bootstrapListener.bind(r);
}
/**
 * A [DI token](guide/glossary/#di-token) for the router initializer that
 * is called after the app is
 bootstrapped.
 *
 * @publicApi
 */
var ROUTER_INITIALIZER = new core.InjectionToken('Router
Initializer');
function provideRouterInitializer() {
 return [
 RouterInitializer,
 {
 provide: core.APP_INITIALIZER,
 multi: true,
 useFactory: getAppInitializer,
 deps: [RouterInitializer],
 },
 {
 provide: ROUTER_INITIALIZER, useFactory: getBootstrapListener,
 deps: [RouterInitializer],
 },
 {
 provide: core.APP_BOOTSTRAP_LISTENER, multi: true, useExisting:
 ROUTER_INITIALIZER },
];
}
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 */
/**
 * Generated bundle index. Do not edit.
 */
exports.ActivatedRoute = ActivatedRoute;
exports.ActivatedRouteSnapshot = ActivatedRouteSnapshot;
exports.ActivationEnd = ActivationEnd;
exports.ActivationStart = ActivationStart;
exports.BaseRouteReuseStrategy = BaseRouteReuseStrategy;
exports.ChildActivationEnd = ChildActivationEnd;
exports.ChildActivationStart = ChildActivationStart;
exports.ChildrenOutletContexts = ChildrenOutletContexts;
exports.DefaultUrlSerializer =
DefaultUrlSerializer;
exports.GuardsCheckEnd = GuardsCheckEnd;
exports.GuardsCheckStart =
GuardsCheckStart;
exports.NavigationCancel = NavigationCancel;
exports.NavigationEnd =
NavigationEnd;
exports.NavigationError = NavigationError;
exports.NavigationStart = NavigationStart;
exports.NoPreloading = NoPreloading;
exports.OutletContext = OutletContext;
exports.PRIMARY_OUTLET = PRIMARY_OUTLET;
exports.PreloadAllModules = PreloadAllModules;
exports.PreloadingStrategy = PreloadingStrategy;
exports.ROUTER_CONFIGURATION =
ROUTER_CONFIGURATION;
exports.ROUTER_INITIALIZER = ROUTER_INITIALIZER;
exports.ROUTES = ROUTES;
exports.ResolveEnd = ResolveEnd;
exports.ResolveStart = ResolveStart;
exports.RouteConfigLoadEnd = RouteConfigLoadEnd;
exports.RouteConfigLoadStart =
RouteConfigLoadStart;
exports.RouteReuseStrategy = RouteReuseStrategy;
exports.Router = Router;
exports.RouterEvent = RouterEvent;
exports.RouterLink = RouterLink;
exports.RouterLinkActive =
RouterLinkActive;
exports.RouterLinkWithHref = RouterLinkWithHref;
exports.RouterModule =
RouterModule;
exports.RouterOutlet = RouterOutlet;
exports.RouterPreloader = RouterPreloader;

```





So there.

\*\*\*\*\*

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GSS-API mechglue layer.

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Fortuna in libhcrypto

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@heading Vincent Rijmen, Antoon Bosselaers, Paulo Barreto

AES in libcrypto

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rijndael-alg-fst.c



@version 3.0 (December 2000)

Optimised ANSI C code for the Rijndael cipher (now AES)

@author Vincent Rijmen <vincent.rijmen@esat.kuleuven.ac.be>

@author Antoon Bosselaers <antoon.bosselaers@esat.kuleuven.ac.be>

@author Paulo Barreto <paulo.barreto@terra.com.br>

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kdc/announce.c

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DES core in libcrypto

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D3DES (V5.09) -

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Thanks to: Dan Hoey for his excellent Initial and Inverse permutation code; Jim Gillogly & Phil Karn for the DES key schedule code; Dennis Ferguson, Eric Young and Dana How for comparing notes; and Ray Lau, for humouring me on.

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Windows support

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lib/hcrypto/test\_dh.c

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```

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```
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```

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## 1.246 asm 9.1

### 1.246.1 Available under license :

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Found in path(s):

```
* /opt/cola/permits/1146079232_1616457494.45/0/asm-9-1-sources-
jar/org/objectweb/asm/signature/SignatureWriter.java
* /opt/cola/permits/1146079232_1616457494.45/0/asm-9-1-sources-jar/org/objectweb/asm/TypePath.java
* /opt/cola/permits/1146079232_1616457494.45/0/asm-9-1-sources-
jar/org/objectweb/asm/RecordComponentVisitor.java
* /opt/cola/permits/1146079232_1616457494.45/0/asm-9-1-sources-
jar/org/objectweb/asm/signature/SignatureReader.java
* /opt/cola/permits/1146079232_1616457494.45/0/asm-9-1-sources-jar/org/objectweb/asm/Context.java
* /opt/cola/permits/1146079232_1616457494.45/0/asm-9-1-sources-jar/org/objectweb/asm/TypeReference.java
* /opt/cola/permits/1146079232_1616457494.45/0/asm-9-1-sources-jar/org/objectweb/asm/FieldVisitor.java
* /opt/cola/permits/1146079232_1616457494.45/0/asm-9-1-sources-
jar/org/objectweb/asm/MethodTooLargeException.java
* /opt/cola/permits/1146079232_1616457494.45/0/asm-9-1-sources-jar/org/objectweb/asm/ModuleVisitor.java
* /opt/cola/permits/1146079232_1616457494.45/0/asm-9-1-sources-
jar/org/objectweb/asm/ClassTooLargeException.java
* /opt/cola/permits/1146079232_1616457494.45/0/asm-9-1-sources-jar/org/objectweb/asm/ClassWriter.java
* /opt/cola/permits/1146079232_1616457494.45/0/asm-9-1-sources-jar/org/objectweb/asm/Attribute.java
* /opt/cola/permits/1146079232_1616457494.45/0/asm-9-1-sources-jar/org/objectweb/asm/ClassVisitor.java
* /opt/cola/permits/1146079232_1616457494.45/0/asm-9-1-sources-jar/org/objectweb/asm/Handler.java
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* /opt/cola/permits/1146079232_1616457494.45/0/asm-9-1-sources-jar/org/objectweb/asm/Type.java
* /opt/cola/permits/1146079232_1616457494.45/0/asm-9-1-sources-jar/org/objectweb/asm/AnnotationWriter.java
```



\* /opt/cola/permits/1146079232\_1616457494.45/0/asm-9-1-sources-jar/org/objectweb/asm/Edge.java  
\* /opt/cola/permits/1146079232\_1616457494.45/0/asm-9-1-sources-jar/org/objectweb/asm/MethodWriter.java  
\* /opt/cola/permits/1146079232\_1616457494.45/0/asm-9-1-sources-jar/org/objectweb/asm/ByteVector.java  
\* /opt/cola/permits/1146079232\_1616457494.45/0/asm-9-1-sources-jar/org/objectweb/asm/Constants.java  
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\* /opt/cola/permits/1146079232\_1616457494.45/0/asm-9-1-sources-jar/org/objectweb/asm/ClassReader.java  
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\* /opt/cola/permits/1146079232\_1616457494.45/0/asm-9-1-sources-jar/org/objectweb/asm/ModuleWriter.java  
\* /opt/cola/permits/1146079232\_1616457494.45/0/asm-9-1-sources-jar/org/objectweb/asm/MethodVisitor.java  
\* /opt/cola/permits/1146079232\_1616457494.45/0/asm-9-1-sources-jar/org/objectweb/asm/RecordComponentWriter.java  
\* /opt/cola/permits/1146079232\_1616457494.45/0/asm-9-1-sources-jar/org/objectweb/asm/Symbol.java  
\* /opt/cola/permits/1146079232\_1616457494.45/0/asm-9-1-sources-jar/org/objectweb/asm/CurrentFrame.java  
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Found in path(s):

\* /opt/cola/permits/1146079232\_1616457494.45/0/asm-9-1-sources-jar/org/objectweb/asm/package.html

\* /opt/cola/permits/1146079232\_1616457494.45/0/asm-9-1-sources-jar/org/objectweb/asm/signature/package.html

# 1.247 ng-circle-progress 1.6.0

## 1.247.1 Available under license :

No license file was found, but licenses were detected in source scan.

```
{"version":3,"file":"ng-circle-progress.umd.js","sources":["../../node_modules/tslib/tslib.es6.js","../../projects/ng-circle-progress/src/lib/ng-circle-progress.component.ts","../../projects/ng-circle-progress/src/lib/ng-circle-progress.module.ts","../../projects/ng-circle-progress/src/public-api.ts","../../projects/ng-circle-progress/src/ng-circle-progress.ts"],"sourcesContent":["/*!
```

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```
\r\n\r\n / \r\n\r\n* global Reflect, Promise *\r\n\r\n\r\nvar extendStatics = function(d, b) {\r\n extendStatics = Object.setPrototypeOf ||\r\n ({ __proto__: [] } instanceof Array && function(d, b) { d.__proto__ = b; }) ||\r\n function(d, b) { for (var p in b) if (Object.prototype.hasOwnProperty.call(b, p)) d[p] = b[p]; }; \r\n return extendStatics(d, b); \r\n}; \r\n\r\n\r\n\r\nexport function __extends(d, b) {\r\n extendStatics(d, b); \r\n function __() {\r\n this.constructor = d; \r\n } \r\n d.prototype = b === null ? Object.create(b) : (__.prototype = b.prototype, new __()); \r\n} \r\n\r\n\r\n\r\nexport var __assign = function() {\r\n __assign = Object.assign || function __assign(t) {\r\n for (var s, i = 1, n = arguments.length; i < n; i++) {\r\n s = arguments[i]; \r\n for (var p in s) if (Object.prototype.hasOwnProperty.call(s, p)) t[p] = s[p]; \r\n } \r\n return t; \r\n } \r\n return __assign.apply(this, arguments); \r\n} \r\n\r\n\r\n\r\nexport function __rest(s, e) {\r\n var t = {};\r\n for (var p in s) if (Object.prototype.hasOwnProperty.call(s, p) && e.indexOf(p) < 0)\r\n t[p] = s[p]; \r\n if (s != null && typeof Object.getOwnPropertySymbols === \"function\")\r\n for (var i = 0, p = Object.getOwnPropertySymbols(s); i < p.length; i++)\r\n if (e.indexOf(p[i]) < 0 && Object.prototype.propertyIsEnumerable.call(s, p[i]))\r\n t[p[i]] = s[p[i]]; \r\n return t; \r\n} \r\n\r\n\r\n\r\nexport function __decorate(decorators, target, key, desc) {\r\n var c = arguments.length, r = c < 3 ? target : desc === null ? desc = Object.getOwnPropertyDescriptor(target, key) : desc, d;\r\n if (typeof Reflect === \"object\" && typeof Reflect.decorate === \"function\") r = Reflect.decorate(decorators, target, key, desc); \r\n else for (var i = decorators.length - 1; i >= 0; i--) if (d = decorators[i]) r = (c < 3 ? d(r) : c > 3 ? d(target, key, r) : d(target, key)) || r; \r\n return c > 3 && r && Object.defineProperty(target, key, r, r); \r\n} \r\n\r\n\r\n\r\nexport function __param(paramIndex, decorator) {\r\n return function(target, key) { decorator(target, key, paramIndex); } \r\n} \r\n\r\n\r\n\r\nexport function __metadata(metadataKey, metadataValue) {\r\n if (typeof Reflect === \"object\" && typeof Reflect.metadata === \"function\") return Reflect.metadata(metadataKey, metadataValue); \r\n} \r\n\r\n\r\n\r\nexport function __awaiter(thisArg, _arguments, P, generator) {\r\n function adopt(value) { return value instanceof P ? value : new P(function(resolve) { resolve(value); }); } \r\n return new (P || (P = Promise))(function(resolve, reject) {\r\n function fulfilled(value) {
```



```

o[Symbol.asyncIterator], i;\r\n return m ? m.call(o) : (o = typeof __values === "function" ? __values(o) :
o[Symbol.iterator](), i = {}, verb("next"), verb("throw"), verb("return"), i[Symbol.asyncIterator] = function () {
return this; }, i);\r\n function verb(n) { i[n] = o[n] && function (v) { return new Promise(function (resolve, reject)
{ v = o[n](v), settle(resolve, reject, v.done, v.value); }); }; };\r\n function settle(resolve, reject, d, v) {
Promise.resolve(v).then(function(v) { resolve({ value: v, done: d }); }, reject); }\r\n}\r\n\r\n\r\nexport function
__makeTemplateObject(cooked, raw) {\r\n if (Object.defineProperty) { Object.defineProperty(cooked, "raw", {
value: raw }); } else { cooked.raw = raw; }\r\n return cooked;\r\n};\r\n\r\n\r\nvar __setModuleDefault = Object.create
? (function(o, v) {\r\n Object.defineProperty(o, "default", { enumerable: true, value: v });\r\n}) : function(o, v)
{\r\n o["default"] = v;\r\n};\r\n\r\n\r\nexport function __importStar(mod) {\r\n if (mod && mod.__esModule)
return mod;\r\n var result = {};\r\n if (mod != null) for (var k in mod) if (k !== "default" &&
Object.prototype.hasOwnProperty.call(mod, k)) __createBinding(result, mod, k);\r\n __setModuleDefault(result,
mod);\r\n return result;\r\n}\r\n\r\n\r\nexport function __importDefault(mod) {\r\n return (mod &&
mod.__esModule) ? mod : { default: mod };\r\n}\r\n\r\n\r\nexport function __classPrivateFieldGet(receiver,
privateMap) {\r\n if (!privateMap.has(receiver)) {\r\n throw new TypeError("attempted to get private field on
non-instance");\r\n };\r\n return privateMap.get(receiver);\r\n}\r\n\r\n\r\nexport function
__classPrivateFieldSet(receiver, privateMap, value) {\r\n if (!privateMap.has(receiver)) {\r\n throw new
TypeError("attempted to set private field on non-instance");\r\n };\r\n privateMap.set(receiver, value);\r\n
return value;\r\n}\r\n"}\r\n", "import { Component, EventEmitter, Input, OnChanges, Output, Inject, OnInit, OnDestroy,
ElementRef, SimpleChanges } from '@angular/core';\r\nimport { DOCUMENT } from '@angular/common';\r\nimport
{ Subscription, timer } from 'rxjs';\r\n\r\nexport interface CircleProgressOptionsInterface {\n class?: string;\n
backgroundGradient?: boolean;\n backgroundColor?: string;\n backgroundGradientStopColor?: string;\n
backgroundOpacity?: number;\n backgroundStroke?: string;\n backgroundStrokeWidth?: number;\n
backgroundPadding?: number;\n percent?: number;\n radius?: number;\n space?: number;\n toFixed?:
number;\n maxPercent?: number;\n renderOnClick?: boolean;\n units?: string;\n unitsFontSize?: string;\n
unitsFontWeight?: string;\n unitsColor?: string;\n outerStrokeGradient?: boolean;\n outerStrokeWidth?:
number;\n outerStrokeColor?: string;\n outerStrokeGradientStopColor?: string;\n outerStrokeLinecap?:
string;\n innerStrokeColor?: string;\n innerStrokeWidth?: number;\n titleFormat?: Function;\n title?: string |
Array<String>;\n titleColor?: string;\n titleFontSize?: string;\n titleFontWeight?: string;\n subtitleFormat?:
Function;\n subtitle?: string | Array<String>;\n subtitleColor?: string;\n subtitleFontSize?: string;\n
subtitleFontWeight?: string;\n imageSrc?: string;\n imageHeight?: number;\n imageWidth?: number;\n
animation?: boolean;\n animateTitle?: boolean;\n animateSubtitle?: boolean;\n animationDuration?: number;\n
showTitle?: boolean;\n showSubtitle?: boolean;\n showUnits?: boolean;\n showImage?: boolean;\n
showBackground?: boolean;\n showInnerStroke?: boolean;\n clockwise?: boolean;\n responsive?: boolean;\n
startFromZero?: boolean;\n showZeroOuterStroke?: boolean;\n lazy?: boolean;\n}\n\r\nexport class
CircleProgressOptions implements CircleProgressOptionsInterface {\n class = "";\n backgroundGradient =
false;\n backgroundColor = 'transparent';\n backgroundGradientStopColor = 'transparent';\n
backgroundOpacity = 1;\n backgroundStroke = 'transparent';\n backgroundStrokeWidth = 0;\n
backgroundPadding = 5;\n percent = 0;\n radius = 90;\n space = 4;\n toFixed = 0;\n maxPercent = 1000;\n
renderOnClick = true;\n units = '%';\n unitsFontSize = '10';\n unitsFontWeight = 'normal';\n unitsColor =
'#444444';\n outerStrokeGradient = false;\n outerStrokeWidth = 8;\n outerStrokeColor = '#78C000';\n
outerStrokeGradientStopColor = 'transparent';\n outerStrokeLinecap = 'round';\n innerStrokeColor =
'#C7E596';\n innerStrokeWidth = 4;\n titleFormat = undefined;\n title: string | Array<String> = 'auto';\n
titleColor = '#444444';\n titleFontSize = '20';\n titleFontWeight = 'normal';\n subtitleFormat = undefined;\n
subtitle: string | Array<String> = 'progress';\n subtitleColor = '#A9A9A9';\n subtitleFontSize = '10';\n
subtitleFontWeight = 'normal';\n imageSrc = undefined;\n imageHeight = undefined;\n imageWidth =
undefined;\n animation = true;\n animateTitle = true;\n animateSubtitle = false;\n animationDuration =
500;\n showTitle = true;\n showSubtitle = true;\n showUnits = true;\n showImage = false;\n
showBackground = true;\n showInnerStroke = true;\n clockwise = true;\n responsive = false;\n

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startFromZero = true;\n showZeroOuterStroke = true;\n lazy = false;\n}\n\n/** @dynamic Prevent compiling
error when using type `Document` https://github.com/angular/angular/issues/20351 */\n@Component({\n selector:
'circle-progress',\n template: `
<svg xmlns="http://www.w3.org/2000/svg" *ngIf="svg"\n
[attr.viewBox]="svg.viewBox" preserveAspectRatio="xMidYMid meet"\n [attr.height]="svg.height"\n
[attr.width]="svg.width" (click)="emitClickEvent($event)" [attr.class]="options.class">\n <defs>\n
<linearGradient *ngIf="options.outerStrokeGradient" [attr.id]="svg.outerLinearGradient.id">\n
<stop offset="5%" [attr.stop-color]="svg.outerLinearGradient.colorStop1" [attr.stop-opacity]="1"/>\n
<stop offset="95%" [attr.stop-color]="svg.outerLinearGradient.colorStop2" [attr.stop-opacity]="1"/>\n
</linearGradient>\n <radialGradient *ngIf="options.backgroundGradient"
[attr.id]="svg.radialGradient.id">\n <stop offset="5%" [attr.stop-
color]="svg.radialGradient.colorStop1" [attr.stop-opacity]="1"/>\n <stop offset="95%" [attr.stop-
color]="svg.radialGradient.colorStop2" [attr.stop-opacity]="1"/>\n </radialGradient>\n </defs>\n
<ng-container *ngIf="options.showBackground">\n <circle
*ngIf="!options.backgroundGradient"\n [attr.cx]="svg.backgroundCircle.cx"\n
[attr.cy]="svg.backgroundCircle.cy"\n [attr.r]="svg.backgroundCircle.r"\n
[attr.fill]="svg.backgroundCircle.fill"\n [attr.fill-opacity]="svg.backgroundCircle.fillOpacity"\n
[attr.stroke]="svg.backgroundCircle.stroke"\n [attr.stroke-
width]="svg.backgroundCircle.strokeWidth"/>\n <circle *ngIf="options.backgroundGradient"\n
[attr.cx]="svg.backgroundCircle.cx"\n [attr.cy]="svg.backgroundCircle.cy"\n
[attr.r]="svg.backgroundCircle.r"\n [attr.fill]="url(#{{svg.radialGradient.id}})"\n
[attr.fill-opacity]="svg.backgroundCircle.fillOpacity"\n
[attr.stroke]="svg.backgroundCircle.stroke"\n [attr.stroke-
width]="svg.backgroundCircle.strokeWidth"/>\n </ng-container> \n <circle
*ngIf="options.showInnerStroke"\n [attr.cx]="svg.circle.cx"\n
[attr.cy]="svg.circle.cy"\n [attr.r]="svg.circle.r"\n [attr.fill]="svg.circle.fill"\n
[attr.stroke]="svg.circle.stroke"\n [attr.stroke-width]="svg.circle.strokeWidth"/>\n <ng-
container *ngIf="+options.percent!==0 || options.showZeroOuterStroke">\n <path
*ngIf="!options.outerStrokeGradient"\n [attr.d]="svg.path.d"\n
[attr.stroke]="svg.path.stroke"\n [attr.stroke-width]="svg.path.strokeWidth"\n
[attr.stroke-linecap]="svg.path.strokeLinecap"\n [attr.fill]="svg.path.fill"/>\n <path
*ngIf="options.outerStrokeGradient"\n [attr.d]="svg.path.d"\n
[attr.stroke]="url(#{{svg.outerLinearGradient.id}})"\n [attr.stroke-width]="svg.path.strokeWidth"\n
[attr.stroke-linecap]="svg.path.strokeLinecap"\n [attr.fill]="svg.path.fill"/>\n
</ng-container>\n <text *ngIf="!options.showImage && (options.showTitle || options.showUnits ||
options.showSubtitle)"\n alignment-baseline="baseline"\n [attr.x]="svg.circle.cx"\n
[attr.y]="svg.circle.cy"\n [attr.text-anchor]="svg.title.textAnchor">\n <ng-container
*ngIf="options.showTitle">\n <tspan *ngFor="let tspan of svg.title.tspans"\n
[attr.x]="svg.title.x"\n [attr.y]="svg.title.y"\n [attr.dy]="tspan.dy"\n
[attr.font-size]="svg.title.fontSize"\n [attr.font-weight]="svg.title.fontWeight"\n
[attr.fill]="svg.title.color">{{tspan.span}}</tspan>\n </ng-container>\n <tspan
*ngIf="options.showUnits"\n [attr.font-size]="svg.units.fontSize"\n [attr.font-
weight]="svg.units.fontWeight"\n [attr.fill]="svg.units.color">{{svg.units.text}}</tspan>\n
<ng-container *ngIf="options.showSubtitle">\n <tspan *ngFor="let tspan of svg.subtitle.tspans"\n
[attr.x]="svg.subtitle.x"\n [attr.y]="svg.subtitle.y"\n
[attr.dy]="tspan.dy"\n [attr.font-size]="svg.subtitle.fontSize"\n [attr.font-
weight]="svg.subtitle.fontWeight"\n [attr.fill]="svg.subtitle.color">{{tspan.span}}</tspan>\n
</ng-container>\n </text>\n <image *ngIf="options.showImage" preserveAspectRatio="none"
\n [attr.height]="svg.image.height"\n [attr.width]="svg.image.width"

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[attr.xlink:href]=\'svg.image.src\' \n [attr.x]=\'svg.image.x\' \n [attr.y]=\'svg.image.y\' \n
/> \n </svg> \n ` \n}) \n export class CircleProgressComponent implements OnChanges, OnInit, OnDestroy { \n
 @Output() onClick: EventEmitter<any> = new EventEmitter(); \n \n @Input() name: string; \n @Input() class:
string; \n @Input() backgroundGradient: boolean; \n @Input() backgroundColor: string; \n @Input()
backgroundGradientStopColor: String; \n @Input() backgroundOpacity: number; \n @Input() backgroundStroke:
string; \n @Input() backgroundStrokeWidth: number; \n @Input() backgroundPadding: number; \n \n @Input()
radius: number; \n @Input() space: number; \n @Input() percent: number; \n @Input() toFixed: number; \n
 @Input() maxPercent: number; \n @Input() renderOnClick: boolean; \n \n @Input() units: string; \n @Input()
unitsFontSize: string; \n @Input() unitsFontWeight: string; \n @Input() unitsColor: string; \n \n @Input()
outerStrokeGradient: boolean; \n @Input() outerStrokeWidth: number; \n @Input() outerStrokeColor: string; \n
 @Input() outerStrokeGradientStopColor: String; \n @Input() outerStrokeLinecap: string; \n \n @Input()
innerStrokeColor: string; \n @Input() innerStrokeWidth: string | number; \n \n @Input() titleFormat: Function; \n
 @Input() title: string | Array<String>; \n @Input() titleColor: string; \n @Input() titleFontSize: string; \n
 @Input() titleFontWeight: string; \n \n @Input() subtitleFormat: Function; \n @Input() subtitle: string | string[]; \n
 @Input() subtitleColor: string; \n @Input() subtitleFontSize: string; \n @Input() subtitleFontWeight: string; \n \n
 @Input() imageSrc: string; \n @Input() imageHeight: number; \n @Input() imageWidth: number; \n \n @Input()
animation: boolean; \n @Input() animateTitle: boolean; \n @Input() animateSubtitle: boolean; \n @Input()
animationDuration: number; \n \n @Input() showTitle: boolean; \n @Input() showSubtitle: boolean; \n @Input()
showUnits: boolean; \n @Input() showImage: boolean; \n @Input() showBackground: boolean; \n @Input()
showInnerStroke: boolean; \n @Input() clockwise: boolean; \n @Input() responsive: boolean; \n @Input()
startFromZero: boolean; \n @Input() showZeroOuterStroke: boolean; \n \n @Input() lazy: boolean; \n \n
 @Input('options') templateOptions: CircleProgressOptions; \n \n // <svg> of component \n svgElement:
HTMLElement = null; \n // whether <svg> is in viewport \n isInViewport: Boolean = false; \n // event for
notifying viewport change caused by scrolling or resizing \n onViewportChanged: EventEmitter<{ oldValue:
Boolean, newValue: Boolean }> = new EventEmitter(); \n window: Window; \n _viewportChangedSubscriber:
Subscription = null; \n \n svg: any; \n \n options: CircleProgressOptions = new CircleProgressOptions(); \n
 defaultOptions: CircleProgressOptions = new CircleProgressOptions(); \n _lastPercent: number = 0; \n
 _gradientUUID: string = null; \n render = () => { \n \n this.applyOptions(); \n \n if (this.options.lazy) { \n
 // Draw svg if it doesn't exist \n this.svgElement === null && this.draw(this._lastPercent); \n // Draw
it only when it's in the viewport \n if (this.isInViewport) { \n // Draw it at the latest position when I
am in. \n if (this.options.animation && this.options.animationDuration > 0) { \n
 this.animate(this._lastPercent, this.options.percent); \n } else { \n
 this.draw(this.options.percent); \n } \n this._lastPercent = this.options.percent; \n } \n
 } else { \n if (this.options.animation && this.options.animationDuration > 0) { \n
 this.animate(this._lastPercent, this.options.percent); \n } else { \n this.draw(this.options.percent); \n
 } \n this._lastPercent = this.options.percent; \n } \n }; \n polarToCartesian = (centerX: number,
centerY: number, radius: number, angleInDegrees: number) => { \n let angleInRadius = angleInDegrees *
Math.PI / 180; \n let x = centerX + Math.sin(angleInRadius) * radius; \n let y = centerY -
Math.cos(angleInRadius) * radius; \n return { x: x, y: y }; \n }; \n draw = (percent: number) => { \n //
make percent reasonable \n percent = (percent === undefined) ? this.options.percent : Math.abs(percent); \n
 // circle percent shouldn't be greater than 100%. \n let circlePercent = (percent > 100) ? 100 : percent; \n //
determine box size \n let boxSize = this.options.radius * 2 + this.options.outerStrokeWidth * 2; \n if
(this.options.showBackground) { \n boxSize += (this.options.backgroundStrokeWidth * 2 + this.max(0,
this.options.backgroundPadding * 2)); \n } \n // the centre of the circle \n let centre = { x: boxSize / 2, y:
boxSize / 2 }; \n // the start point of the arc \n let startPoint = { x: centre.x, y: centre.y - this.options.radius
}; \n // get the end point of the arc \n let endPoint = this.polarToCartesian(centre.x, centre.y,
this.options.radius, 360 * (this.options.clockwise ? \n circlePercent : \n (100 - circlePercent)) / 100); \n
 ##### \n // We'll get an end point with the same [x, y] as the start point when percent is 100%,

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so move x a little bit.\n if (circlePercent === 100) {\n endPoint.x = endPoint.x + (this.options.clockwise
? -0.01 : +0.01);\n }\n // largeArcFlag and sweepFlag\n let largeArcFlag: any, sweepFlag: any;\n if
(circlePercent > 50) {\n [largeArcFlag, sweepFlag] = this.options.clockwise ? [1, 1] : [1, 0];\n } else {\n
 [largeArcFlag, sweepFlag] = this.options.clockwise ? [0, 1] : [0, 0];\n }\n // percent may not equal the
actual percent\n let titlePercent = this.options.animateTitle ? percent : this.options.percent;\n let
titleTextPercent = titlePercent > this.options.maxPercent ?\n
`${this.options.maxPercent.toFixed(this.options.toFixed)}+` : titlePercent.toFixed(this.options.toFixed);\n let
subtitlePercent = this.options.animateSubtitle ? percent : this.options.percent;\n // get title object\n let title =
{\n x: centre.x,\n y: centre.y,\n textAnchor: 'middle',\n color: this.options.titleColor,\n
 fontSize: this.options.titleFontSize,\n fontWeight: this.options.titleFontWeight,\n texts: [],\n
tspans: []\n };\n // from v0.9.9, both title and titleFormat(...) may be an array of string.\n if
(this.options.titleFormat !== undefined && this.options.titleFormat.constructor.name === 'Function') {\n let
formatted = this.options.titleFormat(titlePercent);\n if (formatted instanceof Array) {\n title.texts =
[...formatted];\n } else {\n title.texts.push(formatted.toString());\n }\n } else {\n if
(this.options.title === 'auto') {\n title.texts.push(titleTextPercent);\n } else {\n if
(this.options.title instanceof Array) {\n title.texts = [...this.options.title]\n } else {\n
 title.texts.push(this.options.title.toString());\n }\n }\n }\n // get subtitle object\n let
subtitle = {\n x: centre.x,\n y: centre.y,\n textAnchor: 'middle',\n color:
this.options.subtitleColor,\n fontSize: this.options.subtitleFontSize,\n fontWeight:
this.options.subtitleFontWeight,\n texts: [],\n tspans: []\n };\n // from v0.9.9, both subtitle and
subtitleFormat(...) may be an array of string.\n if (this.options.subtitleFormat !== undefined &&
this.options.subtitleFormat.constructor.name === 'Function') {\n let formatted =
this.options.subtitleFormat(subtitlePercent);\n if (formatted instanceof Array) {\n subtitle.texts =
[...formatted];\n } else {\n subtitle.texts.push(formatted.toString());\n }\n } else {\n
 if (this.options.subtitle instanceof Array) {\n subtitle.texts = [...this.options.subtitle]\n } else {\n
 subtitle.texts.push(this.options.subtitle.toString());\n }\n }\n // get units object\n let units =
{\n text: `${this.options.units}`,\n fontSize: this.options.unitsFontSize,\n fontWeight:
this.options.unitsFontWeight,\n color: this.options.unitsColor\n };\n // get total count of text lines to
be shown\n let rowCount = 0, rowNum = 1;\n this.options.showTitle && (rowCount +=
title.texts.length);\n this.options.showSubtitle && (rowCount += subtitle.texts.length);\n // calc dy for each
tspan for title\n if (this.options.showTitle) {\n for (let span of title.texts) {\n title.tspans.push({
span: span, dy: this.getRelativeY(rowNum, rowCount) });\n rowNum++;\n }\n }\n // calc
dy for each tspan for subtitle\n if (this.options.showSubtitle) {\n for (let span of subtitle.texts) {\n
 subtitle.tspans.push({ span: span, dy: this.getRelativeY(rowNum, rowCount) });\n rowNum++;\n
 }\n }\n // create ID for gradient element\n if (null === this._gradientUUID) {\n
this._gradientUUID = this.uuid();\n }\n // Bring it all together\n this.svg = {\n viewBox: `0 0
${boxSize} ${boxSize}`,\n // Set both width and height to '100%' if it's responsive\n width:
this.options.responsive ? '100%' : boxSize,\n height: this.options.responsive ? '100%' : boxSize,\n
backgroundCircle: {\n cx: centre.x,\n cy: centre.y,\n r: this.options.radius +
this.options.outerStrokeWidth / 2 + this.options.backgroundPadding,\n fill:
this.options.backgroundColor,\n fillOpacity: this.options.backgroundOpacity,\n stroke:
this.options.backgroundStroke,\n strokeWidth: this.options.backgroundStrokeWidth,\n },\n path: {\n // A rx ry x-axis-rotation large-arc-flag sweep-flag x y
(https://developer.mozilla.org/en/docs/Web/SVG/Tutorial/Paths#Arcs)\n d: `M ${startPoint.x}
${startPoint.y}\n A ${this.options.radius} ${this.options.radius} 0 ${largeArcFlag} ${sweepFlag}
${endPoint.x} ${endPoint.y}`,\n stroke: this.options.outerStrokeColor,\n strokeWidth:
this.options.outerStrokeWidth,\n strokeLinecap: this.options.outerStrokeLinecap,\n fill: 'none'\n
 },\n circle: {\n cx: centre.x,\n cy: centre.y,\n r: this.options.radius -

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this.options.space - this.options.outerStrokeWidth / 2 - this.options.innerStrokeWidth / 2,\n fill: 'none',\n stroke: this.options.innerStrokeColor,\n strokeWidth: this.options.innerStrokeWidth,\n },\n title: title,\n units: units,\n subtitle: subtitle,\n image: {\n x: centre.x -\n this.options.imageWidth / 2,\n y: centre.y - this.options.imageHeight / 2,\n src:\n this.options.imageSrc,\n width: this.options.imageWidth,\n height: this.options.imageHeight,\n },\n outerLinearGradient: {\n id: 'outer-linear-' + this._gradientUUID,\n colorStop1:\n this.options.outerStrokeColor,\n colorStop2: this.options.outerStrokeGradientStopColor === 'transparent' ?\n '#FFF' : this.options.outerStrokeGradientStopColor,\n },\n radialGradient: {\n id: 'radial-' +\n this._gradientUUID,\n colorStop1: this.options.backgroundColor,\n colorStop2:\n this.options.backgroundGradientStopColor === 'transparent' ? '#FFF' : this.options.backgroundGradientStopColor,\n },\n };\n getAnimationParameters = (previousPercent: number, currentPercent: number) => {\n const MIN_INTERVAL = 10;\n let times: number, step: number, interval: number;\n let fromPercent =\n this.options.startFromZero ? 0 : (previousPercent < 0 ? 0 : previousPercent);\n let toPercent = currentPercent < 0\n ? 0 : this.min(currentPercent, this.options.maxPercent);\n let delta = Math.abs(Math.round(toPercent -\n fromPercent));\n if (delta >= 100) {\n // we will finish animation in 100 times\n times = 100;\n if (!this.options.animateTitle && !this.options.animateSubtitle) {\n step = 1;\n } else {\n // show title or subtitle animation even if the arc is full, we also need to finish it in 100 times.\n step =\n Math.round(delta / times);\n }\n } else {\n // we will finish in as many times as the number of\n percent.\n times = delta;\n step = 1;\n }\n // Get the interval of timer\n interval =\n Math.round(this.options.animationDuration / times);\n // Readjust all values if the interval of timer is extremely\n small.\n if (interval < MIN_INTERVAL) {\n interval = MIN_INTERVAL;\n times =\n this.options.animationDuration / interval;\n if (!this.options.animateTitle && !this.options.animateSubtitle\n && delta > 100) {\n step = Math.round(100 / times);\n } else {\n step = Math.round(delta /\n times);\n }\n }\n // step must be greater than 0.\n if (step < 1) {\n step = 1;\n }\n return { times: times, step: step, interval: interval };\n };\n animate = (previousPercent: number, currentPercent:\n number) => {\n if (this._timerSubscription && !this._timerSubscription.closed) {\n this._timerSubscription.unsubscribe();\n }\n let fromPercent = this.options.startFromZero ? 0 :\n previousPercent;\n let toPercent = currentPercent;\n let { step: step, interval: interval } =\n this.getAnimationParameters(fromPercent, toPercent);\n let count = fromPercent;\n if (fromPercent <\n toPercent) {\n this._timerSubscription = timer(0, interval).subscribe(() => {\n count += step;\n if (count <= toPercent) {\n if (!this.options.animateTitle && !this.options.animateSubtitle && count\n >= 100) {\n this.draw(toPercent);\n this._timerSubscription.unsubscribe();\n } else {\n this.draw(count);\n }\n } else {\n this.draw(toPercent);\n }\n this._timerSubscription.unsubscribe();\n });\n } else {\n this._timerSubscription = timer(0, interval).subscribe(() => {\n count -= step;\n if (count >=\n toPercent) {\n if (!this.options.animateTitle && !this.options.animateSubtitle && toPercent >= 100) {\n this.draw(toPercent);\n this._timerSubscription.unsubscribe();\n } else {\n this.draw(count);\n }\n } else {\n this.draw(toPercent);\n }\n this._timerSubscription.unsubscribe();\n });\n }\n };\n emitClickEvent = (event: any) =>\n {\n if (this.options.renderOnClick) {\n this.animate(0, this.options.percent);\n }\n this.onClick.emit(event);\n };\n private _timerSubscription: Subscription;\n private applyOptions = () => {\n // the options of <circle-progress> may change already\n for (let name of Object.keys(this.options)) {\n if (this.hasOwnProperty(name) && this[name] !== undefined) {\n this.options[name] = this[name];\n } else if (this.templateOptions && this.templateOptions[name] !== undefined) {\n this.options[name] =\n this.templateOptions[name];\n }\n }\n // make sure key options valid\n this.options.radius =\n Math.abs(+this.options.radius);\n this.options.space = +this.options.space;\n this.options.percent =\n +this.options.percent > 0 ? +this.options.percent : 0;\n this.options.maxPercent =\n Math.abs(+this.options.maxPercent);\n this.options.animationDuration =

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Math.abs(this.options.animationDuration);\n this.options.outerStrokeWidth =
Math.abs(+this.options.outerStrokeWidth);\n this.options.innerStrokeWidth =
Math.abs(+this.options.innerStrokeWidth);\n this.options.backgroundPadding =
+this.options.backgroundPadding;\n };\n private getRelativeY = (rowNum: number, rowCount: number): string
=> {\n // why '-0.18em'? It's a magic number when property 'alignment-baseline' equals 'baseline'. :)\n let
initialOffset = -0.18, offset = 1;\n return (initialOffset + offset * (rowNum - rowCount / 2)).toFixed(2) + 'em';\n
 };\n\n private min = (a: number, b: number) => {\n return a < b ? a : b;\n };\n\n private max = (a: number,
b: number) => {\n return a > b ? a : b;\n };\n\n private uuid = () => {\n //
https://www.w3resource.com/javascript-exercises/javascript-math-exercise-23.php\n var dt = new
Date().getTime();\n var uuid = 'xxxxxxxx-xxxx-4xxx-yxxx-xxxxxxxxxxxx'.replace(/[xy]/g, function (c) {\n
 var r = (dt + Math.random() * 16) % 16 | 0;\n dt = Math.floor(dt / 16);\n return (c === 'x' ? r : (r & 0x3
| 0x8)).toString(16);\n });\n return uuid;\n };\n\n public isDrawing(): boolean {\n return
(this._timerSubscription && !this._timerSubscription.closed);\n };\n\n public findSvgElement = function () {\n
 if (this.svgElement === null) {\n let tags = this.elRef.nativeElement.getElementsByTagName('svg');\n
 if (tags.length > 0) {\n this.svgElement = tags[0];\n }\n };\n\n private
isElementInViewPort(el): Boolean {\n // Return false if el has not been created in page.\n if (el === null || el
=== undefined) return false;\n // Check if the element is out of view due to a container scrolling\n let rect =
el.getBoundingClientRect(), parent = el.parentNode, parentRect;\n do {\n parentRect =
parent.getBoundingClientRect();\n if (rect.top >= parentRect.bottom) return false;\n if (rect.bottom <=
parentRect.top) return false;\n if (rect.left >= parentRect.right) return false;\n if (rect.right <=
parentRect.left) return false;\n parent = parent.parentNode;\n } while (parent != this.document.body);\n
 // Check its within the document viewport\n if (rect.top >= (this.window.innerHeight ||
this.document.documentElement.clientHeight)) return false;\n if (rect.bottom <= 0) return false;\n if
(rect.left >= (this.window.innerWidth || this.document.documentElement.clientWidth)) return false;\n if
(rect.right <= 0) return false;\n return true;\n };\n\n checkViewport = () => {\n this.findSvgElement();\n
 let previousValue = this.isInViewPort;\n this.isInViewPort = this.isElementInViewPort(this.svgElement);\n
 if (previousValue !== this.isInViewPort) {\n this.onViewPortChanged.emit({ oldValue: previousValue,
newValue: this.isInViewPort });\n }\n };\n\n onScroll = (event: Event) => {\n this.checkViewport();\n
 };\n\n loadEventsForLazyMode = () => {\n if (this.options.lazy) {\n
this.document.addEventListener('scroll', this.onScroll, true);\n this.window.addEventListener('resize',
this.onScroll, true);\n if (this._viewportChangedSubscriber === null) {\n
this._viewportChangedSubscriber = this.onViewPortChanged.subscribe(({ oldValue, newValue }) => {\n
newValue ? this.render() : null;\n });\n }\n // svgElement must be created in DOM before
being checked.\n // Is there a better way to check the existence of svgElement?\n let _timer = timer(0,
50).subscribe(() => {\n this.svgElement === null ? this.checkViewport() : _timer.unsubscribe();\n
 });\n };\n\n unloadEventsForLazyMode = () => {\n // Remove event listeners\n
this.document.removeEventListener('scroll', this.onScroll, true);\n this.window.removeEventListener('resize',
this.onScroll, true);\n // Unsubscribe onViewPortChanged\n if (this._viewportChangedSubscriber !== null)
{\n this._viewportChangedSubscriber.unsubscribe();\n this._viewportChangedSubscriber = null;\n
 }\n };\n\n ngOnInit() {\n this.loadEventsForLazyMode();\n };\n\n ngOnDestroy() {\n
this.unloadEventsForLazyMode();\n };\n\n ngOnChanges(changes: SimpleChanges) {\n this.render();\n
 if ('lazy' in changes) {\n changes.lazy.currentValue ? this.loadEventsForLazyMode() :
this.unloadEventsForLazyMode();\n }\n };\n\n constructor(defaultOptions: CircleProgressOptions, private
elRef: ElementRef, @Inject(DOCUMENT) private document: any) {\n this.document = document;\n
this.window = this.document.defaultView;\n Object.assign(this.options, defaultOptions);\n
Object.assign(this.defaultOptions, defaultOptions);\n };\n\n "import { NgModule, ModuleWithProviders }
from '@angular/core';\n @import { CommonModule } from '@angular/common';\n @import { CircleProgressComponent,
CircleProgressOptionsInterface, CircleProgressOptions } from './ng-circle-
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progress.component';\n\n@NgModule({\n declarations: [CircleProgressComponent],\n imports: [\n CommonModule\n],\n exports: [CircleProgressComponent]\n})\nexport class NgCircleProgressModule {\n static\n forRoot(options: CircleProgressOptionsInterface = {}): ModuleWithProviders<NgCircleProgressModule> {\n return {\n ngModule: NgCircleProgressModule,\n providers: [\n { provide: CircleProgressOptions,\n useValue: options }\n]\n };\n }\n}\n\n/**\n * Public API Surface of ng-circle-progress\n */\nexport * from\n './lib/ng-circle-progress.component';\nexport * from './lib/ng-circle-progress.module';\n\n/**\n * Generated bundle\n index. Do not edit.\n */\nexport * from './public-\napi';\n},\n"names":["EventEmitter","timer","Component","ElementRef","Inject","DOCUMENT","Output","Input","\nNgModule","CommonModule"],\n"mappings":";;;;;;IAAA;,,,,,,,,,,,,;IACa;IAEA,IAAI,aAAa,GAAG,UAAS,CAAC,EA\nAAE,CAAC;QAC7B,aAAa,GAAG,MAAM,CAAC,cAAc;aAChC,EAAE,SAAS,EAAE,EAAE,EAAE,YAAy,KAA\nK,IAAI,UAU,CAAC,EAAE,CAAC,IAAI,CAAC,CAAC,SAAS,GAAG,CAAC,CAAC,EAAE,CAAC;YAC5E,UA\nAU,CAAC,EAAE,CAAC,IAAI,KAAK,IAAI,CAAC,IAAI,CAAC;gBAAE,IAAI,MAAM,CAAC,SAAS,CAAC,cA\nAc,CAAC,IAAI,CAAC,CAAC,EAAE,CAAC,CAAC;oBAAE,CAAC,CAAC,CAAC,CAAC,GAAG,CAAC,CAAC,\nCAAC,CAAC,CAAC,EAAE,CAAC;QACtG,OAAO,aAAa,CAAC,CAAC,EAAE,CAAC,CAAC,CAAC;IAC/B,CA\nAC,CAAC;aAEc,SAAS,CAAC,CAAC,EAAE,CAAC;QAC1B,aAAa,CAAC,CAAC,EAAE,CAAC,CAAC,CAAC;\nQACpB,SAAS,EAAE,KAAK,IAAI,CAAC,WAAW,GAAG,CAAC,CAAC,EAAE;QACvC,CAAC,CAAC,SAAS,G\nAAG,CAAC,KAAK,IAAI,GAAG,MAAM,CAAC,MAAM,CAAC,CAAC,CAAC,IAAI,EAAE,CAAC,SAAS,GAA\nG,CAAC,CAAC,SAAS,EAAE,IAAI,EAAE,EAAE,CAAC,CAAC;IACzF,CAAC;IAEM,IAAI,QAAQ,GAAG;QAC\nIB,QAAQ,GAAG,MAAM,CAAC,MAAM,IAAI,SAAS,QAAQ,CAAC,CAAC;YAC3C,KAAK,IAAI,CAAC,EAAE\n,CAAC,GAAG,CAAC,EAAE,CAAC,GAAG,SAAS,CAAC,MAAM,EAAE,CAAC,GAAG,CAAC,EAAE,CAAC,E\nAAE,EAAE;gBACjD,CAAC,GAAG,SAAS,CAAC,CAAC,CAAC;gBACjB,KAAK,IAAI,CAAC,IAAI,CA\nAC;oBAAE,IAAI,MAAM,CAAC,SAAS,CAAC,cAAc,CAAC,IAAI,CAAC,CAAC,EAAE,CAAC,CAAC;wBAAE,\nCAAC,CAAC,CAAC,CAAC,GAAG,CAAC,CAAC,CAAC,CAAC,CAAC; aAChF;YACD,OAAO,CAAC,CAAC;S\nACZ,CAAA;QACD,OAAO,QAAQ,CAAC,KAAK,CAAC,IAAI,EAAE,SAAS,CAAC,CAAC;IAC3C,CAAC,CAA\nA;aAEe,MAAM,CAAC,CAAC,EAAE,CAAC;QACvB,IAAI,CAAC,GAAG,EAAE,CAAC;QACX,KAAK,IAAI,C\nAAC,IAAI,CAAC;YAAE,IAAI,MAAM,CAAC,SAAS,CAAC,cAAc,CAAC,IAAI,CAAC,CAAC,EAAE,CAAC,C\nAAC,IAAI,CAAC,CAAC,OAAO,CAAC,CAAC,CAAC,GAAG,CAAC;gBAC/E,CAAC,CAAC,CAAC,CAAC,GA\nAG,CAAC,CAAC,CAAC,CAAC,CAAC;QACb,IAAI,CAAC,IAAI,IAAI,IAAI,OAAO,MAAM,CAAC,qBAAqB,\nKAAK,UAU;YAC/D,KAAK,IAAI,CAAC,GAAG,CAAC,EAAE,CAAC,GAAG,MAAM,CAAC,qBAAqB,CAAC\n,CAAC,CAAC,EAAE,CAAC,GAAG,CAAC,CAAC,MAAM,EAAE,CAAC,EAAE,EAAE;gBACpE,IAAI,CAAC,C\nAAC,OAAO,CAAC,CAAC,CAAC,CAAC,CAAC,CAAC,GAAG,CAAC,IAAI,MAAM,CAAC,SAAS,CAAC,oBA\nAoB,CAAC,IAAI,CAAC,CAAC,EAAE,CAAC,CAAC,CAAC,CAAC,CAAC;oBAC1E,CAAC,CAAC,CAAC,CAA\nC,CAAC,CAAC,CAAC,GAAG,CAAC,CAAC,CAAC,CAAC,CAAC,CAAC,CAAC,CAAC; aACzB;QACL,OAAO,\nCAAC,CAAC;IACb,CAAC;aAEe,UAU,CAAC,UAU,EAAE,MAAM,EAAE,GAAG,EAAE,IAAI;QACpD,IAA\nI,CAAC,GAAG,SAAS,CAAC,MAAM,EAAE,CAAC,GAAG,CAAC,GAAG,CAAC,GAAG,MAAM,GAAG,IAAI,\nKAAK,IAAI,GAAG,IAAI,GAAG,MAAM,CAAC,wBAwB,CAAC,MAAM,EAAE,GAAG,CAAC,GAAG,IAAI,E\nAAE,CAAC,CAAC;QAC7H,IAAI,OAAO,OAAO,KAAK,QAAQ,IAAI,OAAO,OAAO,CAAC,QAAQ,KAAK,UA\nAU;YAAE,CAAC,GAAG,OAAO,CAAC,QAAQ,CAAC,UAU,EAAE,MAAM,EAAE,GAAG,EAAE,IAAI,CAA\nC,CAAC;;YAC1H,KAAK,IAAI,CAAC,GAAG,UAU,CAAC,MAAM,GAAG,CAAC,EAAE,CAAC,IAAI,CAAC,\nEAAE,CAAC,EAAE;gBAAE,IAAI,CAAC,GAAG,UAU,CAAC,CAAC,CAAC;oBAAE,CAAC,GAAG,CAAC,C\nAAC,GAAG,CAAC,GAAG,CAAC,CAAC,CAAC,GAAG,CAAC,GAAG,CAAC,GAAG,CAAC,CAAC,MA\nAM,EAAE,GAAG,EAAE,CAAC,CAAC,GAAG,CAAC,CAAC,MAAM,EAAE,GAAG,CAAC,KAAK,CAAC,C\nAAC;QACIJ,OAAO,CAAC,GAAG,CAAC,IAAI,CAAC,IAAI,MAAM,CAAC,cAAc,CAAC,MAAM,EAAE,GAA\nG,EAAE,CAAC,CAAC,EAAE,CAAC,CAAC;IACIE,CAAC;aAEe,OAAO,CAAC,UAU,EAAE,SAAS;QACzC,O\nAAO,UAU,MAAM,EAAE,GAAG,IAAI,SAAS,CAAC,MAAM,EAAE,GAAG,EAAE,UAU,CAAC,CAAC,EA\nAE,CAAA;IACzE,CAAC;aAEe,UAU,CAAC,WAAW,EAAE,aAAa;QACjD,IAAI,OAAO,OAAO,KAAK,QAAQ,\nIAAI,OAAO,OAAO,CAAC,QAAQ,KAAK,UAU;YAAE,OAAO,OAAO,CAAC,QAAQ,CAAC,WAAW,EAAE,a\nAAa,CAAC,CAAC;IACnI,CAAC;aAEe,SAAS,CAAC,OAAO,EAAE,UAU,EAAE,CAAC,EAAE,SAAS;QACvD
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C,CAAC;4BAAC,SAAS;wBACjD,KAAK,CAAC;4BAAE,EAAE,GAAG,CAAC,CAAC,GAAG,CAAC,GAAG,EA  
AE,CAAC;4BAAC,CAAC,CAAC,IAAI,CAAC,GAAG,EAAE,CAAC;4BAAC,SAAS;wBACjD;4BACI,IAAI,EA  
E,CAAC,GAAG,CAAC,CAAC,IAAI,EAAE,CAAC,GAAG,CAAC,CAAC,MAAM,GAAG,CAAC,IAAI,CAAC,C  
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AG,CAAC,CAAC,CAAC,CAAC,EAAE;gCAAE,CAAC,CAAC,KAAK,GAAG,CAAC,CAAC,CAAC,CAAC,CAA  
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AI,CAAC,OAAO,EAAE,CAAC,CAAC,CAAC;iBAC9B;gBAAC,OAAO,CAAC,EAAE;oBAAE,EAAE,GAAG,C  
AAC,CAAC,EAAE,CAAC,CAAC,CAAC;oBAAC,CAAC,GAAG,CAAC,CAAC;iBAAE;wBAAS;oBAAE,CAAC,

GAAG,CAAC,GAAG,CAAC,CAAC;iBAAE;YAC1D,IAAI,EAAE,CAAC,CAAC,CAAC,GAAG,CAAC;gBAAE,MAAM,EAAE,CAAC,CAAC,CAAC,CAAC;YAAC,OAAO,EAAE,KAAC,EAAE,EAAE,CAAC,CAAC,CAAC,G AAG,EAAE,CAAC,CAAC,CAAC,GAAG,KAAC,CAAC,EAAE,IAAI,EAAE,IAAI,EAAE,CAAC;SACpF;IACL,CAAC;IAEM,IAAI,eAAe,GAAG,MAAM,CAAC,MAAM,IAAI,UAAU,CAAC,EAAE,CAAC,EAAE,CAAC,EAAE, EAAE;QAC9D,IAAI,EAAE,KAAC,SAAS;YAAE,EAAE,GAAG,CAAC,CAAC;QAC7B,MAAM,CAAC,cAAc,C AAC,CAAC,EAAE,EAAE,EAAE,UAAU,EAAE,IAAI,EAAE,GAAG,EAAE,cAAa,OAAO,CAAC,CAAC, CAAC,CAAC,CAAC,EAAE,EAAE,CAAC,CAAC;IACzF,CAAC,KAAC,UAAU,CAAC,EAAE,CAAC,EAAE,CA AC,EAAE,EAAE;QACtB,IAAI,EAAE,KAAC,SAAS;YAAE,EAAE,GAAG,CAAC,CAAC;QAC7B,CAAC,CAAC ,EAAE,CAAC,GAAG,CAAC,CAAC,CAAC,CAAC;IACjB,CAAC,CAAC,CAAC;aAEa,YAAY,CAAC,CA AC,EAAE,CAAC;QAC7B,KAAC,IAAI,CAAC,IAAI,CAAC;YAAE,IAAI,CAAC,KAAC,SAAS,IAAI,CAAC,MA AM,CAAC,SAAS,CAAC,cAAc,CAAC,IAAI,CAAC,CAAC,EAAE,CAAC,CAAC;gBAAE,eAAe,CAAC,CAAC,E AAE,CAAC,EAAE,CAAC,CAAC,CAAC;IACiH,CAAC;aAEe,QAAQ,CAAC,CAAC;QACtB,IAAI,CAAC,GAAG ,OAAO,MAAM,KAAC,UAAU,IAAI,MAAM,CAAC,QAAQ,EAAE,CAAC,GAAG,CAAC,IAAI,CAAC,CAAC,C AAC,CAAC,EAAE,CAAC,GAAG,CAAC,CAAC;QAC9E,IAAI,CAAC;YAAE,OAAO,CAAC,CAAC,IAAI,CAA C,CAAC,CAAC,CAAC;QACxB,IAAI,CAAC,IAAI,OAAO,CAAC,CAAC,MAAM,KAAC,QAAQ;YAAE,OAAO; gBAC1C,IAAI,EAAE;oBACF,IAAI,CAAC,IAAI,CAAC,IAAI,CAAC,CAAC,MAAM;wBAAE,CAAC,GAAG,KA AK,CAAC,CAAC;oBACnC,OAAO,EAAE,KAAC,EAAE,CAAC,IAAI,CAAC,CAAC,CAAC,EAAE,CAAC,EAA E,IAAI,EAAE,CAAC,CAAC,EAAE,CAAC;iBAC3C;aACJ,CAAC;QACF,MAAM,IAAI,SAAS,CAAC,CAAC,GA AG,yBAAyB,GAAG,iCAAiC,CAAC,CAAC;IAC3F,CAAC;aAEe,MAAM,CAAC,CAAC,EAAE,CAAC;QACvB,I AAI,CAAC,GAAG,OAAO,MAAM,KAAC,UAAU,IAAI,CAAC,CAAC,MAAM,CAAC,QAAQ,CAAC,CAAC;QA C3D,IAAI,CAAC,CAAC;YAAE,OAAO,CAAC,CAAC;QACjB,IAAI,CAAC,GAAG,CAAC,CAAC,IAAI,CAAC,C AAC,CAAC,EAAE,CAAC,EAAE,EAAE,GAAG,EAAE,EAAE,CAAC,CAAC;QACjC,IAAI;YACA,OAAO,CAA C,CAAC,KAAC,KAAC,CAAC,IAAI,CAAC,EAAE,GAAG,CAAC,KAAC,CAAC,CAAC,GAAG,CAAC,C AAC,IAAI,EAAE,EAAE,IAAI;gBAAE,EAAE,CAAC,IAAI,CAAC,CAAC,CAAC,KAAC,CAAC,CAAC;SAC9E; QACD,OAAO,KAAC,EAAE;YAAE,CAAC,GAAG,EAAE,KAAC,EAAE,KAAC,EAAE,CAAC;SAAE;gBAC/B; YACJ,IAAI;gBACA,IAAI,CAAC,IAAI,CAAC,CAAC,CAAC,IAAI,KAAC,CAAC,GAAG,CAAC,CAAC,QAAQ, CAAC,CAAC;oBAAE,CAAC,CAAC,IAAI,CAAC,CAAC,CAAC,CAAC;aACpD;oBACO;gBAAE,IAAI,CAAC;o BAAE,MAAM,CAAC,CAAC,KAAC,CAAC;aAAE;SACpC;QACD,OAAO,EAAE,CAAC;IACd,CAAC;aAEe,QA AQ;QACpB,KAAC,IAAI,EAAE,GAAG,EAAE,EAAE,CAAC,GAAG,CAAC,EAAE,CAAC,GAAG,SAAS,CAAC, MAAM,EAAE,CAAC,EAAE;YAC9C,EAAE,GAAG,EAAE,CAAC,MAAM,CAAC,MAAM,CAAC,SAAS,CAAC, CAAC,CAAC,CAAC,CAAC,CAAC;QACzC,OAAO,EAAE,CAAC;IACd,CAAC;aAEe,cAAc;QAC1B,KAAC,IA AI,CAAC,GAAG,CAAC,EAAE,CAAC,GAAG,CAAC,EAAE,EAAE,GAAG,SAAS,CAAC,MAAM,EAAE,CAAC ,GAAG,EAAE,EAAE,CAAC,EAAE;YAAE,CAAC,IAAI,SAAS,CAAC,CAAC,CAAC,CAAC,MAAM,CAAC;QA CpF,KAAC,IAAI,CAAC,GAAG,KAAC,CAAC,CAAC,CAAC,EAAE,CAAC,GAAG,CAAC,EAAE,CAAC,GAA G,CAAC,EAAE,CAAC,GAAG,EAAE,EAAE,CAAC,EAAE;YAC5C,KAAC,IAAI,CAAC,GAAG,SAAS,CAAC,C AAC,CAAC,EAAE,CAAC,GAAG,CAAC,EAAE,EAAE,GAAG,CAAC,CAAC,MAAM,EAAE,CAAC,GAAG,EA AE,EAAE,CAAC,EAAE,EAAE,CAAC,EAAE;gBAC7D,CAAC,CAAC,CAAC,CAAC,GAAG,CAAC,CAAC,CAA C,CAAC,CAAC;QACpB,OAAO,CAAC,CAAC;IACb,CAAC;IAAA,CAAC;aAEc,OAAO,CAAC,CAAC;QACrB, OAAO,IAAI,YAAY,OAAO,IAAI,IAAI,CAAC,CAAC,GAAG,CAAC,EAAE,IAAI,IAAI,IAAI,OAAO,CAAC,CA AC,CAAC,CAAC;IACzE,CAAC;aAEe,gBAAGB,CAAC,OAAO,EAAE,UAAU,EAAE,SAAS;QAC3D,IAAI,CAA C,MAAM,CAAC,aAAa;YAAE,MAAM,IAAI,SAAS,CAAC,sCAAsC,CAAC,CAAC;QACvF,IAAI,CAAC,GAAG, SAAS,CAAC,KAAC,CAAC,OAAO,EAAE,UAAU,IAAI,EAAE,CAAC,EAAE,CAAC,EAAE,CAAC,GAAG,EAA E,CAAC;QAC9D,OAAO,CAAC,GAAG,EAAE,EAAE,IAAI,CAAC,MAAM,CAAC,EAAE,IAAI,CAAC,OAAO,C AAC,EAAE,IAAI,CAAC,QAAQ,CAAC,EAAE,CAAC,CAAC,MAAM,CAAC,aAAa,CAAC,GAAG,cAAc,OAAO, IAAI,CAAC,EAAE,EAAE,CAAC,CAAC;QACtH,SAAS,IAAI,CAAC,CAAC,IAAI,IAAI,CAAC,CAAC,CAAC,C AAC;YAAE,CAAC,CAAC,CAAC,CAAC,GAAG,UAAU,CAAC,IAAI,OAAO,IAAI,OAAO,CAAC,UAAU,CAAC ,EAAE,CAAC,IAAI,CAAC,CAAC,IAAI,CAAC,CAAC,EAAE,CAAC,EAAE,CAAC,EAAE,CAAC,CAAC ,CAAC,GAAG,CAAC,IAAI,MAAM,CAAC,CAAC,EAAE,CAAC,CAAC,CAAC,EAAE,CAAC,CAAC,EAAE,CA

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No license file was found, but licenses were detected in source scan.

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```
/\r\n/ global Reflect, Promise */\r\n\r\nvar extendStatics = function(d, b) {\r\n extendStatics = Object.setPrototypeOf ||\r\n ({ __proto__: [] } instanceof Array && function(d, b) { d.__proto__ = b; }) ||\r\n function(d, b) { for (var p in b) if (Object.prototype.hasOwnProperty.call(b, p)) d[p] = b[p]; }; \r\n return extendStatics(d, b);\r\n}; \r\n\r\nexport function __extends(d, b) {\r\n extendStatics(d, b); \r\n function __() { this.constructor = d; } \r\n d.prototype = b === null ? Object.create(b) : (__.prototype = b.prototype, new
```

```

__());\r\n\r\n\r\nexport var __assign = function() {\r\n __assign = Object.assign || function __assign(t) {\r\n
for (var s, i = 1, n = arguments.length; i < n; i++) {\r\n s = arguments[i];\r\n for (var p in s) if
(Object.prototype.hasOwnProperty.call(s, p)) t[p] = s[p];\r\n }\r\n return t;\r\n }\r\n return
__assign.apply(this, arguments);\r\n}\r\n\r\n\r\nexport function __rest(s, e) {\r\n var t = {};\r\n for (var p in s) if
(Object.prototype.hasOwnProperty.call(s, p) && e.indexOf(p) < 0)\r\n t[p] = s[p];\r\n if (s != null && typeof
Object.getOwnPropertySymbols === "function")\r\n for (var i = 0, p = Object.getOwnPropertySymbols(s); i <
p.length; i++) {\r\n if (e.indexOf(p[i]) < 0 && Object.prototype.propertyIsEnumerable.call(s, p[i]))\r\n
t[p[i]] = s[p[i]];\r\n }\r\n return t;\r\n}\r\n\r\n\r\nexport function __decorate(decorators, target, key, desc) {\r\n
var c = arguments.length, r = c < 3 ? target : desc === null ? desc = Object.getOwnPropertyDescriptor(target, key) :
desc, d;\r\n if (typeof Reflect === "object" && typeof Reflect.decorate === "function") r =
Reflect.decorate(decorators, target, key, desc);\r\n else for (var i = decorators.length - 1; i >= 0; i--) if (d =
decorators[i]) r = (c < 3 ? d(r) : c > 3 ? d(target, key, r) : d(target, key)) || r;\r\n return c > 3 && r &&
Object.defineProperty(target, key, r, r);\r\n}\r\n\r\n\r\nexport function __param(paramIndex, decorator) {\r\n return
function (target, key) { decorator(target, key, paramIndex); }\r\n}\r\n\r\n\r\nexport function __metadata(metadataKey,
metadataValue) {\r\n if (typeof Reflect === "object" && typeof Reflect.metadata === "function") return
Reflect.metadata(metadataKey, metadataValue);\r\n}\r\n\r\n\r\nexport function __awaiter(thisArg, _arguments, P,
generator) {\r\n function adopt(value) { return value instanceof P ? value : new P(function (resolve) {
resolve(value); }); }\r\n return new (P || (P = Promise))(function (resolve, reject) {\r\n function fulfilled(value)
{ try { step(generator.next(value)); } catch (e) { reject(e); } }\r\n function rejected(value) { try {
step(generator["throw"](value)); } catch (e) { reject(e); } }\r\n function step(result) { result.done ?
resolve(result.value) : adopt(result.value).then(fulfilled, rejected); }\r\n step((generator =
generator.apply(thisArg, _arguments || [])).next());\r\n });\r\n}\r\n\r\n\r\nexport function __generator(thisArg, body)
{\r\n var _ = { label: 0, sent: function() { if (t[0] & 1) throw t[1]; return t[1]; }, trys: [], ops: [] }, f, y, t, g;\r\n
return g = { next: verb(0), "throw": verb(1), "return": verb(2) }, typeof Symbol === "function" &&
(g[Symbol.iterator] = function() { return this; }), g;\r\n function verb(n) { return function (v) { return step([n, v]);
}; }\r\n function step(op) {\r\n if (f) throw new TypeError("Generator is already executing.");\r\n while
(_) try {\r\n if (f = 1, y && (t = op[0] & 2 ? y["return"] : op[0] ? y["throw"] || ((t = y["return"]) &&
t.call(y), 0) : y.next) && !(t = t.call(y, op[1])).done) return t;\r\n if (y = 0, t) op = [op[0] & 2, t.value];\r\n
switch (op[0]) {\r\n case 0: case 1: t = op; break;\r\n case 4: _.label++; return { value: op[1],
done: false }; \r\n case 5: _.label++; y = op[1]; op = [0]; continue;\r\n case 7: op = _.ops.pop();
_.trys.pop(); continue;\r\n default:\r\n if (!(t = _.trys, t = t.length > 0 && t[t.length - 1]) &&
(op[0] === 6 || op[0] === 2)) { _ = 0; continue; }\r\n if (op[0] === 3 && (!t || (op[1] > t[0] && op[1] <
t[3]))) { _.label = op[1]; break; }\r\n if (op[0] === 6 && _.label < t[1]) { _.label = t[1]; t = op; break;
}\r\n if (t && _.label < t[2]) { _.label = t[2]; _.ops.push(op); break; }\r\n if (t[2])
_.ops.pop();\r\n _.trys.pop(); continue;\r\n }\r\n op = body.call(thisArg, _);\r\n } catch
(e) { op = [6, e]; y = 0; } finally { f = t = 0; }\r\n if (op[0] & 5) throw op[1]; return { value: op[0] ? op[1] : void
0, done: true }; }\r\n }\r\n}\r\n\r\n\r\nexport var __createBinding = Object.create ? (function(o, m, k, k2) {\r\n if (k2
=== undefined) k2 = k;\r\n Object.defineProperty(o, k2, { enumerable: true, get: function() { return m[k]; }
});\r\n}) : (function(o, m, k, k2) {\r\n if (k2 === undefined) k2 = k;\r\n o[k2] = m[k];\r\n});\r\n\r\n\r\nexport
function __exportStar(m, o) {\r\n for (var p in m) if (p !== "default" &&
!Object.prototype.hasOwnProperty.call(o, p)) __createBinding(o, m, p);\r\n}\r\n\r\n\r\nexport function __values(o) {\r\n
var s = typeof Symbol === "function" && Symbol.iterator, m = s && o[s], i = 0;\r\n if (m) return m.call(o);\r\n
if (o && typeof o.length === "number") return {\r\n next: function () {\r\n if (o && i >= o.length) o =
void 0;\r\n return { value: o && o[i++], done: !o }; \r\n } \r\n };\r\n throw new TypeError(s ? "Object
is not iterable." : "Symbol.iterator is not defined.");\r\n}\r\n\r\n\r\nexport function __read(o, n) {\r\n var m = typeof
Symbol === "function" && o[Symbol.iterator];\r\n if (!m) return o;\r\n var i = m.call(o), r, ar = [], e;\r\n try
{\r\n while ((n === void 0 || n-- > 0) && !(r = i.next()).done) ar.push(r.value);\r\n } \r\n catch (error) { e = {
error: error }; }\r\n finally {\r\n try {\r\n if (r && !r.done && (m = i["return"])) m.call(i);\r\n } \r\n
}

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 finally { if (e) throw e.error; }
 }
 return ar;
}

export function __spread() {
 for (var ar = [], i = 0; i < arguments.length; i++)
 ar = ar.concat(__read(arguments[i]));
 return ar;
}

export function __spreadArrays() {
 for (var s = 0, i = 0, il = arguments.length; i < il; i++) s += arguments[i].length;
 for (var r = Array(s), k = 0, i = 0; i < il; i++)
 for (var a = arguments[i], j = 0, jl = a.length; j < jl; j++, k++)
 r[k] = a[j];
 return r;
}

export function __await(v) {
 return this instanceof __await ? (this.v = v, this) : new __await(v);
}

export function __asyncGenerator(thisArg, _arguments, generator) {
 if (!Symbol.asyncIterator) throw new TypeError("Symbol.asyncIterator is not defined.");
 var g = generator.apply(thisArg, _arguments || []), i, q = [];
 return i = {
 verb("next"), verb("throw"), verb("return"),
 i[Symbol.asyncIterator] = function () { return this; }, i;
 }, function verb(n) {
 if (g[n]) i[n] = function (v) { return new Promise(function (a, b) { q.push([n, v, a, b]) > 1 || resume(n, v); }); };
 }, function resume(n, v) {
 try { step(g[n](v)); } catch (e) { settle(q[0][3], e); }
 }, function step(r) {
 r.value instanceof __await ? Promise.resolve(r.value.v).then(fulfill, reject) : settle(q[0][2], r);
 }, function fulfill(value) { resume("next", value); }, function reject(value) { resume("throw", value); }, function settle(f, v) {
 (f(v), q.shift(), q.length) resume(q[0][0], q[0][1]);
 });
}

export function __asyncDelegator(o) {
 var i, p;
 return i = {
 verb("next"), verb("throw"), function (e) { throw e; }, verb("return"),
 i[Symbol.iterator] = function () { return this; }, i;
 }, function verb(n, f) {
 i[n] = o[n] ? function (v) { return (p = !p) ? { value: __await(o[n](v)), done: n === "return" } : f ? f(v) : v; } : f;
 };
}

export function __asyncValues(o) {
 if (!Symbol.asyncIterator) throw new TypeError("Symbol.asyncIterator is not defined.");
 var m = o[Symbol.asyncIterator], i;
 return m ? m.call(o) : (o = typeof __values === "function" ? __values(o) : o[Symbol.iterator](), i = {
 verb("next"), verb("throw"), verb("return"),
 i[Symbol.asyncIterator] = function () { return this; }, i;
 }, function verb(n) {
 i[n] = o[n] && function (v) { return new Promise(function (resolve, reject) {
 v = o[n](v), settle(resolve, reject, v.done, v.value);
 }); });
 }, function settle(resolve, reject, d, v) {
 Promise.resolve(v).then(function(v) { resolve({ value: v, done: d }); }, reject);
 });
}

export function __makeTemplateObject(cooked, raw) {
 if (Object.defineProperty) {
 Object.defineProperty(cooked, "raw", { value: raw });
 } else {
 cooked.raw = raw;
 }
 return cooked;
}

var __setModuleDefault = Object.create ? (function(o, v) {
 Object.defineProperty(o, "default", { enumerable: true, value: v });
}) : function(o, v) {
 o["default"] = v;
};

export function __importStar(mod) {
 if (mod && mod.__esModule) return mod;
 var result = {};
 if (mod != null) for (var k in mod) if (k !== "default" && Object.prototype.hasOwnProperty.call(mod, k)) __createBinding(result, mod, k);
 __setModuleDefault(result, mod);
 return result;
}

export function __importDefault(mod) {
 return (mod && mod.__esModule) ? mod : { default: mod };
}

export function __classPrivateFieldGet(receiver, privateMap) {
 if (!privateMap.has(receiver)) {
 throw new TypeError("attempted to get private field on non-instance");
 }
 return privateMap.get(receiver);
}

export function __classPrivateFieldSet(receiver, privateMap, value) {
 if (!privateMap.has(receiver)) {
 throw new TypeError("attempted to set private field on non-instance");
 }
 privateMap.set(receiver, value);
 return value;
}

"import { Component, EventEmitter, Input, OnChanges, Output, Inject, OnInit, OnDestroy, ElementRef, SimpleChanges } from '@angular/core';
import { DOCUMENT } from '@angular/common';
import { Subscription, timer } from 'rxjs';

export interface CircleProgressOptionsInterface {
 class?: string;
 backgroundGradient?: boolean;
 backgroundColor?: string;
 backgroundGradientStopColor?: string;
 backgroundOpacity?: number;
 backgroundStroke?: string;
 backgroundStrokeWidth?: number;
 backgroundPadding?: number;
 percent?: number;
 radius?: number;
 space?: number;
 toFixed?: number;
 maxPercent?: number;
 renderOnClick?: boolean;
 units?: string;
 unitsFontSize?: string;
 unitsFontWeight?: string;
 unitsColor?: string;
 outerStrokeGradient?: boolean;
 outerStrokeWidth?: number;
 outerStrokeColor?: string;
 outerStrokeGradientStopColor?: string;
 outerStrokeLinecap?: string;
 innerStrokeColor?: string;
 innerStrokeWidth?: number;
 titleFormat?: Function;
 title?: string | Array<String>;
 titleColor?: string;
 titleFontSize?: string;
 titleFontWeight?: string;
 subtitleFormat?: Function;
 subtitle?: string | Array<String>;
 subtitleColor?: string;
 subtitleFontSize?: string;
 subtitleFontWeight?: string;
 imageSrc?: string;
 imageHeight?: number;
 imageWidth?: number;
}

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animation?: boolean;\n animateTitle?: boolean;\n animateSubtitle?: boolean;\n animationDuration?: number;\n showTitle?: boolean;\n showSubtitle?: boolean;\n showUnits?: boolean;\n showImage?: boolean;\n showBackground?: boolean;\n showInnerStroke?: boolean;\n clockwise?: boolean;\n responsive?: boolean;\n startFromZero?: boolean;\n showZeroOuterStroke?: boolean;\n lazy?: boolean;\n}\n\nexport class\nCircleProgressOptions implements CircleProgressOptionsInterface {\n class = ";\n backgroundGradient =\nfalse;\n backgroundColor = 'transparent';\n backgroundGradientStopColor = 'transparent';\n backgroundOpacity = 1;\n backgroundStroke = 'transparent';\n backgroundStrokeWidth = 0;\n backgroundPadding = 5;\n percent = 0;\n radius = 90;\n space = 4;\n toFixed = 0;\n maxPercent = 1000;\n renderOnClick = true;\n units = '%';\n unitsFontSize = '10';\n unitsFontWeight = 'normal';\n unitsColor =\n'#444444';\n outerStrokeGradient = false;\n outerStrokeWidth = 8;\n outerStrokeColor = '#78C000';\n outerStrokeGradientStopColor = 'transparent';\n outerStrokeLinecap = 'round';\n innerStrokeColor =\n'#C7E596';\n innerStrokeWidth = 4;\n titleFormat = undefined;\n title: string | Array<String> = 'auto';\n titleColor = '#444444';\n titleFontSize = '20';\n titleFontWeight = 'normal';\n subtitleFormat = undefined;\n subtitle: string | Array<String> = 'progress';\n subtitleColor = '#A9A9A9';\n subtitleFontSize = '10';\n subtitleFontWeight = 'normal';\n imageSrc = undefined;\n imageHeight = undefined;\n imageWidth =\nundefined;\n animation = true;\n animateTitle = true;\n animateSubtitle = false;\n animationDuration =\n500;\n showTitle = true;\n showSubtitle = true;\n showUnits = true;\n showImage = false;\n showBackground = true;\n showInnerStroke = true;\n clockwise = true;\n responsive = false;\n startFromZero = true;\n showZeroOuterStroke = true;\n lazy = false;\n}\n\n/** @dynamic Prevent compiling\nerror when using type `Document` https://github.com/angular/angular/issues/20351 */\n@Component({\n selector:\n'circle-progress',\n template: `\n <svg xmlns="http://www.w3.org/2000/svg" *ngIf="svg"\n[atr.viewBox]="svg.viewBox" preserveAspectRatio="xMidYMid meet" [atr.height]="svg.height"\n[atr.width]="svg.width" (click)="emitClickEvent($event)" [atr.class]="options.class">\n <defs>\n <linearGradient *ngIf="options.outerStrokeGradient" [atr.id]="svg.outerLinearGradient.id">\n<stop offset="5%" [atr.stop-color]="svg.outerLinearGradient.colorStop1" [atr.stop-opacity]="1"/>\n <stop offset="95%" [atr.stop-color]="svg.outerLinearGradient.colorStop2" [atr.stop-opacity]="1"/>\n </linearGradient>\n <radialGradient *ngIf="options.backgroundGradient"\n[atr.id]="svg.radialGradient.id">\n <stop offset="5%" [atr.stop-\ncolor]="svg.radialGradient.colorStop1" [atr.stop-opacity]="1"/>\n <stop offset="95%" [atr.stop-\ncolor]="svg.radialGradient.colorStop2" [atr.stop-opacity]="1"/>\n </radialGradient>\n </defs>\n <ng-container *ngIf="options.showBackground">\n <circle\n*ngIf="!options.backgroundGradient"\n[atr.cx]="svg.backgroundCircle.cx"\n[atr.cy]="svg.backgroundCircle.cy"\n[atr.r]="svg.backgroundCircle.r"\n[atr.fill]="svg.backgroundCircle.fill"\n[atr.fill-opacity]="svg.backgroundCircle.fillOpacity"\n[atr.stroke]="svg.backgroundCircle.stroke"\n[atr.stroke-\nwidth]="svg.backgroundCircle.strokeWidth"/>\n <circle *ngIf="options.backgroundGradient"\n[atr.cx]="svg.backgroundCircle.cx"\n[atr.cy]="svg.backgroundCircle.cy"\n[atr.r]="svg.backgroundCircle.r"\n[atr.fill]="url("#{svg.radialGradient.id}")"\n[atr.fill-opacity]="svg.backgroundCircle.fillOpacity"\n[atr.stroke]="svg.backgroundCircle.stroke"\n[atr.stroke-\nwidth]="svg.backgroundCircle.strokeWidth"/>\n </ng-container>\n <circle\n*ngIf="options.showInnerStroke"\n[atr.cx]="svg.circle.cx"\n[atr.cy]="svg.circle.cy"\n[atr.r]="svg.circle.r"\n[atr.fill]="svg.circle.fill"\n[atr.stroke]="svg.circle.stroke"\n[atr.stroke-width]="svg.circle.strokeWidth"/>\n <ng-\ncontainer *ngIf="+options.percent!==0 || options.showZeroOuterStroke">\n <path\n*ngIf="!options.outerStrokeGradient"\n[atr.d]="svg.path.d"\n[atr.stroke]="svg.path.stroke"\n[atr.stroke-width]="svg.path.strokeWidth"\n[atr.stroke-linecap]="svg.path.strokeLinecap"\n[atr.fill]="svg.path.fill"/>\n </path>\n `

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*ngIf="options.outerStrokeGradient"\n [attr.d]="svg.path.d"\n
attr.stroke="url(#{{svg.outerLinearGradient.id}})"\n [attr.stroke-width]="svg.path.strokeWidth"\n
 [attr.stroke-linecap]="svg.path.strokeLinecap"\n [attr.fill]="svg.path.fill"/>\n
</ng-container>\n <text *ngIf="!options.showImage && (options.showTitle || options.showUnits ||
options.showSubtitle)"\n alignment-baseline="baseline"\n [attr.x]="svg.circle.cx"\n
 [attr.y]="svg.circle.cy"\n [attr.text-anchor]="svg.title.textAnchor">\n <ng-container
*ngIf="options.showTitle">\n <tspan *ngFor="let tspan of svg.title.tspans"\n
[attr.x]="svg.title.x"\n [attr.y]="svg.title.y"\n [attr.dy]="tspan.dy"\n
 [attr.font-size]="svg.title.fontSize"\n [attr.font-weight]="svg.title.fontWeight"\n
 [attr.fill]="svg.title.color">{{tspan.span}}</tspan>\n </ng-container>\n <tspan
*ngIf="options.showUnits"\n [attr.font-size]="svg.units.fontSize"\n [attr.font-
weight]="svg.units.fontWeight"\n [attr.fill]="svg.units.color">{{svg.units.text}}</tspan>\n
<ng-container *ngIf="options.showSubtitle">\n <tspan *ngFor="let tspan of svg.subtitle.tspans"\n
 [attr.x]="svg.subtitle.x"\n [attr.y]="svg.subtitle.y"\n
[attr.dy]="tspan.dy"\n [attr.font-size]="svg.subtitle.fontSize"\n [attr.font-
weight]="svg.subtitle.fontWeight"\n [attr.fill]="svg.subtitle.color">{{tspan.span}}</tspan>\n
 </ng-container>\n </text>\n <image *ngIf="options.showImage" preserveAspectRatio="none"
\n [attr.height]="svg.image.height"\n [attr.width]="svg.image.width"\n
[attr xlink:href]="svg.image.src"\n [attr.x]="svg.image.x"\n [attr.y]="svg.image.y"\n
/>\n </svg>\n `)\n}}\nexport class CircleProgressComponent implements OnChanges, OnInit, OnDestroy {\n
 @Output() onClick: EventEmitter<any> = new EventEmitter();\n @Input() name: string;\n @Input() class:
string;\n @Input() backgroundGradient: boolean;\n @Input() backgroundColor: string;\n @Input()
backgroundGradientStopColor: String;\n @Input() backgroundOpacity: number;\n @Input() backgroundStroke:
string;\n @Input() backgroundStrokeWidth: number;\n @Input() backgroundPadding: number;\n\n @Input()
radius: number;\n @Input() space: number;\n @Input() percent: number;\n @Input() toFixed: number;\n
 @Input() maxPercent: number;\n @Input() renderOnClick: boolean;\n\n @Input() units: string;\n @Input()
unitsFontSize: string;\n @Input() unitsFontWeight: string;\n @Input() unitsColor: string;\n\n @Input()
outerStrokeGradient: boolean;\n @Input() outerStrokeWidth: number;\n @Input() outerStrokeColor: string;\n
 @Input() outerStrokeGradientStopColor: String;\n @Input() outerStrokeLinecap: string;\n\n @Input()
innerStrokeColor: string;\n @Input() innerStrokeWidth: string | number;\n\n @Input() titleFormat: Function;\n
 @Input() title: string | Array<String>;\n @Input() titleColor: string;\n @Input() titleFontSize: string;\n
 @Input() titleFontWeight: string;\n\n @Input() subtitleFormat: Function;\n @Input() subtitle: string | string[];\n
 @Input() subtitleColor: string;\n @Input() subtitleFontSize: string;\n @Input() subtitleFontWeight: string;\n\n
 @Input() imageSrc: string;\n @Input() imageHeight: number;\n @Input() imageWidth: number;\n\n @Input()
animation: boolean;\n @Input() animateTitle: boolean;\n @Input() animateSubtitle: boolean;\n @Input()
animationDuration: number;\n\n @Input() showTitle: boolean;\n @Input() showSubtitle: boolean;\n @Input()
showUnits: boolean;\n @Input() showImage: boolean;\n @Input() showBackground: boolean;\n @Input()
showInnerStroke: boolean;\n @Input() clockwise: boolean;\n @Input() responsive: boolean;\n @Input()
startFromZero: boolean;\n @Input() showZeroOuterStroke: boolean;\n\n @Input() lazy: boolean;\n\n @Input('options') templateOptions: CircleProgressOptions;\n\n // <svg> of component\n svgElement:
HTMLElement = null;\n // whether <svg> is in viewport\n isInViewport: Boolean = false;\n // event for
notifying viewport change caused by scrolling or resizing\n onViewportChanged: EventEmitter<{ oldValue:
Boolean, newValue: Boolean }> = new EventEmitter();\n window: Window;\n _viewportChangedSubscriber:
Subscription = null;\n\n svg: any;\n\n options: CircleProgressOptions = new CircleProgressOptions();\n
 defaultOptions: CircleProgressOptions = new CircleProgressOptions();\n _lastPercent: number = 0;\n
 _gradientUUID: string = null;\n render = () => {\n\n this.applyOptions();\n\n if (this.options.lazy) {\n
 // Draw svg if it doesn't exist\n this.svgElement === null && this.draw(this._lastPercent);\n // Draw
it only when it's in the viewport\n if (this.isInViewport) {\n // Draw it at the latest position when I

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am in.\n if (this.options.animation && this.options.animationDuration > 0) {\n
this.animate(this._lastPercent, this.options.percent);\n } else {\n
this.draw(this.options.percent);\n }\n this._lastPercent = this.options.percent;\n }\n } else {\n if (this.options.animation && this.options.animationDuration > 0) {\n
this.animate(this._lastPercent, this.options.percent);\n } else {\n this.draw(this.options.percent);\n }\n this._lastPercent = this.options.percent;\n }\n }; \n polarToCartesian = (centerX: number,
centerY: number, radius: number, angleInDegrees: number) => {\n let angleInRadius = angleInDegrees *
Math.PI / 180;\n let x = centerX + Math.sin(angleInRadius) * radius;\n let y = centerY -
Math.cos(angleInRadius) * radius;\n return { x: x, y: y };\n }; \n draw = (percent: number) => {\n //
make percent reasonable\n percent = (percent === undefined) ? this.options.percent : Math.abs(percent);\n
// circle percent shouldn't be greater than 100%.\n let circlePercent = (percent > 100) ? 100 : percent;\n //
determine box size\n let boxSize = this.options.radius * 2 + this.options.outerStrokeWidth * 2;\n if
(this.options.showBackground) {\n boxSize += (this.options.backgroundStrokeWidth * 2 + this.max(0,
this.options.backgroundPadding * 2));\n }\n // the centre of the circle\n let centre = { x: boxSize / 2, y:
boxSize / 2 };\n // the start point of the arc\n let startPoint = { x: centre.x, y: centre.y - this.options.radius
};\n // get the end point of the arc\n let endPoint = this.polarToCartesian(centre.x, centre.y,
this.options.radius, 360 * (this.options.clockwise ? \n circlePercent : \n (100 - circlePercent)) / 100); //
#####\n // We'll get an end point with the same [x, y] as the start point when percent is 100%,
so move x a little bit.\n if (circlePercent === 100) {\n endPoint.x = endPoint.x + (this.options.clockwise
? -0.01 : +0.01);\n }\n // largeArcFlag and sweepFlag\n let largeArcFlag: any, sweepFlag: any;\n if
(circlePercent > 50) {\n [largeArcFlag, sweepFlag] = this.options.clockwise ? [1, 1] : [1, 0];\n } else {\n
[largeArcFlag, sweepFlag] = this.options.clockwise ? [0, 1] : [0, 0];\n }\n // percent may not equal the
actual percent\n let titlePercent = this.options.animateTitle ? percent : this.options.percent;\n let
titleTextPercent = titlePercent > this.options.maxPercent ? \n
`${this.options.maxPercent.toFixed(this.options.toFixed)}+` : titlePercent.toFixed(this.options.toFixed);\n let
subtitlePercent = this.options.animateSubtitle ? percent : this.options.percent;\n // get title object\n let title =
{\n x: centre.x,\n y: centre.y,\n textAnchor: 'middle',\n color: this.options.titleColor,\n
fontSize: this.options.titleFontSize,\n fontWeight: this.options.titleFontWeight,\n texts: [],\n
tspans: []\n };\n // from v0.9.9, both title and titleFormat(...) may be an array of string.\n if
(this.options.titleFormat !== undefined && this.options.titleFormat.constructor.name === 'Function') {\n let
formatted = this.options.titleFormat(titlePercent);\n if (formatted instanceof Array) {\n title.texts =
[...formatted];\n } else {\n title.texts.push(formatted.toString());\n }\n } else {\n if
(this.options.title === 'auto') {\n title.texts.push(titleTextPercent);\n } else {\n if
(this.options.title instanceof Array) {\n title.texts = [...this.options.title]\n } else {\n
title.texts.push(this.options.title.toString());\n }\n }\n }\n // get subtitle object\n let
subtitle = {\n x: centre.x,\n y: centre.y,\n textAnchor: 'middle',\n color:
this.options.subtitleColor,\n fontSize: this.options.subtitleFontSize,\n fontWeight:
this.options.subtitleFontWeight,\n texts: [],\n tspans: []\n }\n // from v0.9.9, both subtitle and
subtitleFormat(...) may be an array of string.\n if (this.options.subtitleFormat !== undefined &&
this.options.subtitleFormat.constructor.name === 'Function') {\n let formatted =
this.options.subtitleFormat(subtitlePercent);\n if (formatted instanceof Array) {\n subtitle.texts =
[...formatted];\n } else {\n subtitle.texts.push(formatted.toString());\n }\n } else {\n
if (this.options.subtitle instanceof Array) {\n subtitle.texts = [...this.options.subtitle]\n } else {\n
subtitle.texts.push(this.options.subtitle.toString());\n }\n }\n }\n // get units object\n let units =
{\n text: `${this.options.units}`,\n fontSize: this.options.unitsFontSize,\n fontWeight:
this.options.unitsFontWeight,\n color: this.options.unitsColor\n };\n // get total count of text lines to
be shown\n let rowCount = 0, rowNum = 1;\n this.options.showTitle && (rowCount +=
title.texts.length);\n this.options.showSubtitle && (rowCount += subtitle.texts.length);\n // calc dy for each

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tspan for title\n if (this.options.showTitle) {\n for (let span of title.texts) {\n title.tspans.push({
span: span, dy: this.getRelativeY(rowNum, rowCount) });\n rowNum++;\n }\n }\n // calc
dy for each tspan for subtitle\n if (this.options.showSubtitle) {\n for (let span of subtitle.texts) {\n
subtitle.tspans.push({ span: span, dy: this.getRelativeY(rowNum, rowCount) })\n rowNum++;\n
 }\n }\n // create ID for gradient element\n if (null === this._gradientUUID) {\n
this._gradientUUID = this.uuid();\n }\n // Bring it all together\n this.svg = {\n viewBox: `0 0
${boxSize} ${boxSize}`,\n // Set both width and height to '100%' if it's responsive\n width:
this.options.responsive ? '100%' : boxSize,\n height: this.options.responsive ? '100%' : boxSize,\n
backgroundCircle: {\n cx: centre.x,\n cy: centre.y,\n r: this.options.radius +
this.options.outerStrokeWidth / 2 + this.options.backgroundPadding,\n fill:
this.options.backgroundColor,\n fillOpacity: this.options.backgroundOpacity,\n stroke:
this.options.backgroundStroke,\n strokeWidth: this.options.backgroundStrokeWidth,\n },\n
path: {\n // A rx ry x-axis-rotation large-arc-flag sweep-flag x y
(https://developer.mozilla.org/en/docs/Web/SVG/Tutorial/Paths#Arcs)\n d: `M ${startPoint.x}
${startPoint.y}\n A ${this.options.radius} ${this.options.radius} 0 ${largeArcFlag} ${sweepFlag}
${endPoint.x} ${endPoint.y}`,\n stroke: this.options.outerStrokeColor,\n strokeWidth:
this.options.outerStrokeWidth,\n strokeLinecap: this.options.outerStrokeLinecap,\n fill: 'none'\n
 },\n circle: {\n cx: centre.x,\n cy: centre.y,\n r: this.options.radius -
this.options.space - this.options.outerStrokeWidth / 2 - this.options.innerStrokeWidth / 2,\n fill: 'none',\n
 stroke: this.options.innerStrokeColor,\n strokeWidth: this.options.innerStrokeWidth,\n },\n
 title: title,\n units: units,\n subtitle: subtitle,\n image: {\n x: centre.x -
this.options.imageWidth / 2,\n y: centre.y - this.options.imageHeight / 2,\n src:
this.options.imageSrc,\n width: this.options.imageWidth,\n height: this.options.imageHeight,\n
 },\n outerLinearGradient: {\n id: 'outer-linear-' + this._gradientUUID,\n colorStop1:
this.options.outerStrokeColor,\n colorStop2: this.options.outerStrokeGradientStopColor === 'transparent' ?
'#FFF' : this.options.outerStrokeGradientStopColor,\n },\n radialGradient: {\n id: 'radial-' +
this._gradientUUID,\n colorStop1: this.options.backgroundColor,\n colorStop2:
this.options.backgroundGradientStopColor === 'transparent' ? '#FFF' : this.options.backgroundGradientStopColor,\n
 }\n };\n };
getAnimationParameters = (previousPercent: number, currentPercent: number) => {\n
const MIN_INTERVAL = 10;\n let times: number, step: number, interval: number;\n let fromPercent =
this.options.startFromZero ? 0 : (previousPercent < 0 ? 0 : previousPercent);\n let toPercent = currentPercent < 0
? 0 : this.min(currentPercent, this.options.maxPercent);\n let delta = Math.abs(Math.round(toPercent -
fromPercent));\n if (delta >= 100) {\n // we will finish animation in 100 times\n times = 100;\n
 if (!this.options.animateTitle && !this.options.animateSubtitle) {\n step = 1;\n } else {\n
 // show title or subtitle animation even if the arc is full, we also need to finish it in 100 times.\n step =
Math.round(delta / times);\n }\n } else {\n // we will finish in as many times as the number of
percent.\n times = delta;\n step = 1;\n }\n // Get the interval of timer\n interval =
Math.round(this.options.animationDuration / times);\n // Readjust all values if the interval of timer is extremely
small.\n if (interval < MIN_INTERVAL) {\n interval = MIN_INTERVAL;\n times =
this.options.animationDuration / interval;\n if (!this.options.animateTitle && !this.options.animateSubtitle
&& delta > 100) {\n step = Math.round(100 / times);\n } else {\n step = Math.round(delta /
times);\n }\n }\n // step must be greater than 0.\n if (step < 1) {\n step = 1;\n }\n
return { times: times, step: step, interval: interval };\n };
animate = (previousPercent: number, currentPercent:
number) => {\n if (this._timerSubscription && !this._timerSubscription.closed) {\n
this._timerSubscription.unsubscribe();\n }\n let fromPercent = this.options.startFromZero ? 0 :
previousPercent;\n let toPercent = currentPercent;\n let { step: step, interval: interval } =
this.getAnimationParameters(fromPercent, toPercent);\n let count = fromPercent;\n if (fromPercent <
toPercent) {\n this._timerSubscription = timer(0, interval).subscribe(() => {\n count += step;\n

```

```

 if (count <= toPercent) {\n if (!this.options.animateTitle && !this.options.animateSubtitle && count
 >= 100) {\n this.draw(toPercent);\n this._timerSubscription.unsubscribe();\n
 } else {\n this.draw(count);\n }\n } else {\n this.draw(toPercent);\n
 this._timerSubscription.unsubscribe();\n });\n } else {\n
 this._timerSubscription = timer(0, interval).subscribe(() => {\n count -= step;\n if (count >=
 toPercent) {\n if (!this.options.animateTitle && !this.options.animateSubtitle && toPercent >= 100) {\n
 this.draw(toPercent);\n this._timerSubscription.unsubscribe();\n } else {\n
 this.draw(count);\n }\n } else {\n this.draw(toPercent);\n
 this._timerSubscription.unsubscribe();\n });\n });\n emitClickEvent = (event: any) =>
 {\n if (this.options.renderOnClick) {\n this.animate(0, this.options.percent);\n }\n
 this.onClick.emit(event);\n };\n private _timerSubscription: Subscription;\n private applyOptions = () => {\n
 // the options of <circle-progress> may change already\n for (let name of Object.keys(this.options)) {\n
 if (this.hasOwnProperty(name) && this[name] !== undefined) {\n this.options[name] = this[name];\n
 } else if (this.templateOptions && this.templateOptions[name] !== undefined) {\n this.options[name] =
 this.templateOptions[name];\n }\n }\n // make sure key options valid\n this.options.radius =
 Math.abs(+this.options.radius);\n this.options.space = +this.options.space;\n this.options.percent =
 +this.options.percent > 0 ? +this.options.percent : 0;\n this.options.maxPercent =
 Math.abs(+this.options.maxPercent);\n this.options.animationDuration =
 Math.abs(this.options.animationDuration);\n this.options.outerStrokeWidth =
 Math.abs(+this.options.outerStrokeWidth);\n this.options.innerStrokeWidth =
 Math.abs(+this.options.innerStrokeWidth);\n this.options.backgroundPadding =
 +this.options.backgroundPadding;\n };\n private getRelativeY = (rowNum: number, rowCount: number): string
 => {\n // why '-0.18em'? It's a magic number when property 'alignment-baseline' equals 'baseline'. :)\n let
 initialOffset = -0.18, offset = 1;\n return (initialOffset + offset * (rowNum - rowCount / 2)).toFixed(2) + 'em';\n
 };\n private min = (a: number, b: number) => {\n return a < b ? a : b;\n };\n private max = (a: number,
 b: number) => {\n return a > b ? a : b;\n };\n private uuid = () => {\n //
 https://www.w3resource.com/javascript-exercises/javascript-math-exercise-23.php\n var dt = new
 Date().getTime();\n var uuid = 'xxxxxxxx-xxxx-4xxx-yxxx-xxxxxxxxxxxx'.replace(/[xy]/g, function (c) {\n
 var r = (dt + Math.random() * 16) % 16 | 0;\n dt = Math.floor(dt / 16);\n return (c === 'x' ? r : (r & 0x3
 | 0x8)).toString(16);\n });\n return uuid;\n };\n public isDrawing(): boolean {\n return
 (this._timerSubscription && !this._timerSubscription.closed);\n }\n public findSvgElement = function () {\n
 if (this.svgElement === null) {\n let tags = this.elRef.nativeElement.getElementsByTagName('svg');\n
 if (tags.length > 0) {\n this.svgElement = tags[0];\n }\n }\n }\n private
 isElementInViewport(el): Boolean {\n // Return false if el has not been created in page.\n if (el === null || el
 === undefined) return false;\n // Check if the element is out of view due to a container scrolling\n let rect =
 el.getBoundingClientRect(), parent = el.parentNode, parentRect;\n do {\n parentRect =
 parent.getBoundingClientRect();\n if (rect.top >= parentRect.bottom) return false;\n if (rect.bottom <=
 parentRect.top) return false;\n if (rect.left >= parentRect.right) return false;\n if (rect.right <=
 parentRect.left) return false;\n parent = parent.parentNode;\n } while (parent != this.document.body);\n
 // Check its within the document viewport\n if (rect.top >= (this.window.innerHeight ||
 this.document.documentElement.clientHeight)) return false;\n if (rect.bottom <= 0) return false;\n if
 (rect.left >= (this.window.innerWidth || this.document.documentElement.clientWidth)) return false;\n if
 (rect.right <= 0) return false;\n return true;\n };\n checkViewport = () => {\n this.findSvgElement();\n
 let previousValue = this.isInViewport;\n this.isInViewport = this.isElementInViewport(this.svgElement);\n
 if (previousValue !== this.isInViewport) {\n this.onViewportChanged.emit({ oldValue: previousValue,
 newValue: this.isInViewport });\n }\n }\n onScroll = (event: Event) => {\n this.checkViewport();\n
 }\n loadEventsForLazyMode = () => {\n if (this.options.lazy) {\n
 this.document.addEventListener('scroll', this.onScroll, true);\n this.window.addEventListener('resize',

```



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# 1.249 e2fsprogs 1.44.1 1ubuntu1.3

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\*/

Index: tdbsa/tdb.c

=====

--- tdbsa.orig/tdb.c

+++ tdbsa/tdb.c

@@ -4,11 +4,11 @@ Rev: 23371

Last Changed Date: 2007-06-06 20:14:06 -0400 (Wed, 06 Jun 2007)

\*/

/\*

- Unix SMB/CIFS implementation.
- + trivial database library - standalone version
  
- trivial database library - private includes
- 
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Theodore Ts'o  
23-June-2007

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<signature of Ty Coon>, 1 April 1990  
Ty Coon, President of Vice

That's all there is to it!

This package was added to the e2fsprogs debian source package by Theodore Ts'o <tytso@mit.edu> on Sat Mar 15 15:33:37 EST 2003

It is part of the main e2fsprogs distribution, which can be found at:

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Upstream Author: Theodore Ts'o <tytso@mit.edu>

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This is the Debian GNU/Linux prepackaged version of the `ss` command-line interface parsing library. It is currently distributed together with the EXT2 file system utilities, which are otherwise packaged as "e2fsprogs".

This package was put together by Yann Dirson <dirson@debian.org>, from sources obtained from a mirror of:  
[tsx-11.mit.edu:/pub/linux/packages/ext2fs/](http://tsx-11.mit.edu/pub/linux/packages/ext2fs/)

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#

# This is a Makefile stub which handles the creation of BSD shared  
# libraries.

#

# In order to use this stub, the following makefile variables must be defined.

#

# BSDLIB\_VERSION = 1.0

# BSDLIB\_IMAGE = libce

# BSDLIB\_MYDIR = et

# BSDLIB\_INSTALL\_DIR = \$(SHLIBDIR)

#

all:: image

real-subdirs:: Makefile

@echo " MKDIR pic"

@mkdir -p pic

BSD\_LIB = \$(BSDLIB\_IMAGE).so.\$(BSDLIB\_VERSION)

BSDLIB\_PIC\_FLAG = -fpic

image: \$(BSD\_LIB)

\$(BSD\_LIB): \$(OBJS)

(cd pic; ld -Bshareable -o \$(BSD\_LIB) \$(LDFLAGS\_SHLIB) \$(OBJS))

\$(MV) pic/\$(BSD\_LIB) .

\$(RM) -f ../\$(BSD\_LIB)

(cd ..; \$(LN) \$(LINK\_BUILD\_FLAGS) \

`echo \$(my\_dir) | sed -e 's;lib/;;'"/\$(BSD\_LIB) \$(BSD\_LIB))

install-shlibs install:: \$(BSD\_LIB)

@echo " INSTALL\_PROGRAM \$(BSDLIB\_INSTALL\_DIR)/\$(BSD\_LIB)"

@\$(INSTALL\_PROGRAM) \$(BSD\_LIB) \

\$(DESTDIR)\$\$(BSDLIB\_INSTALL\_DIR)/\$(BSD\_LIB)

@-\$(LDCONFIG)

install-strip: install

install-shlibs-strip: install-shlibs

```
uninstall-shlibs uninstall::
$(RM) -f $(DESTDIR)$ (BSDLIB_INSTALL_DIR)/$(BSD_LIB)
```

```
clean::
$(RM) -rf pic
$(RM) -f $(BSD_LIB)
$(RM) -f ../$(BSD_LIB)
```

This is the Debian GNU/Linux prepackaged version of the Common Error Description library. It is currently distributed together with the EXT2 file system utilities, which are otherwise packaged as "e2fsprogs".

This package was put together by Yann Dirson <dirson@debian.org>, from sources obtained from a mirror of:  
tsx-11.mit.edu:/pub/linux/packages/ext2fs/

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Gadi Oxman, August 1995

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man/tree.3bsd

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include/bsd/err.h  
include/bsd/stdlib.h  
include/bsd/unistd.h  
src/bsd\_getopt.c  
src/err.c  
src/fgetln.c  
src/progname.c

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include/bsd/netinet/ip\_icmp.h  
include/bsd/sys/bitstring.h  
include/bsd/sys/queue.h  
include/bsd/sys/time.h  
include/bsd/timeconv.h  
include/bsd/vis.h

man/bitstring.3bsd  
man/errc.3bsd  
man/explicit\_bzero.3bsd  
man/fgetln.3bsd  
man/fgetwln.3bsd  
man/fpurge.3bsd  
man/funopen.3bsd  
man/getbsize.3bsd  
man/heapsort.3bsd  
man/nlist.3bsd  
man/queue.3bsd  
man/radixsort.3bsd  
man/reallocarray.3bsd  
man/reallocf.3bsd  
man/setmode.3bsd  
man/strmode.3bsd  
man/strnstr.3bsd  
man/unvis.3bsd  
man/vis.3bsd  
man/wcsncpy.3bsd  
src/getbsize.c  
src/heapsort.c  
src/merge.c  
src/nlist.c  
src/radixsort.c  
src/setmode.c  
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Files:

include/bsd/stringlist.h

man/fmtcheck.3bsd

man/humanize\_number.3bsd

man/stringlist.3bsd

man/timeval.3bsd

src/fmtcheck.c

src/humanize\_number.c

src/stringlist.c

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man/closefrom.3bsd  
man/expand\_number.3bsd  
man/flopen.3bsd  
man/getpeereid.3bsd  
man/pidfile.3bsd  
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man/fparseln.3bsd

src/fparseln.c

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man/readpassphrase.3bsd

man/strncpy.3bsd

man/strtonum.3bsd

src/arc4random.c

src/arc4random\_openbsd.h  
src/arc4random\_uniform.c  
src/arc4random\_unix.h  
src/closefrom.c  
src/getentropy\_aix.c  
src/getentropy\_bsd.c  
src/getentropy\_hpux.c  
src/getentropy\_hurd.c  
src/getentropy\_linux.c  
src/getentropy\_osx.c  
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src/inet\_net\_pton.c

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src/hash/md5.c

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src/chacha\_private.h

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@table @asis

@item GSS-API CFX, SPNEGO, naming extensions, API extensions.

@item KCM credential cache.

@item HDB LDAP backend.

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@heading Vincent Rijmen, Antoon Bosselaers, Paulo Barreto

AES in libcrypto

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rijndael-alg-fst.c

@version 3.0 (December 2000)

Optimised ANSI C code for the Rijndael cipher (now AES)

@author Vincent Rijmen <vincent.rijmen@esat.kuleuven.ac.be>

@author Antoon Bosselaers <antoon.bosselaers@esat.kuleuven.ac.be>

@author Paulo Barreto <paulo.barreto@terra.com.br>

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DES core in libcrypto

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D3DES (V5.09) -

A portable, public domain, version of the Data Encryption Standard.

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# 1.265 scala 2.11.12

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not-a-legal-formal-parameter-tuple.scala:2: error: not a legal formal parameter.

Note: Tuples cannot be directly destructured in method or function parameters.

Either create a single parameter accepting the Tuple2,

or consider a pattern matching anonymous function: `{ case (a, b) => ... }`

```
val x: ((Int, Int) => Int) = (((a, b)) => a)
```

^

not-a-legal-formal-parameter-tuple.scala:3: error: not a legal formal parameter.

Note: Tuples cannot be directly destructured in method or function parameters.

Either create a single parameter accepting the Tuple2,

or consider a pattern matching anonymous function: `{ case (param1, param2) => ... }`

```
val y: ((Int, Int, Int) => Int) = (((a, !)) => a)
```

^

not-a-legal-formal-parameter-tuple.scala:4: error: not a legal formal parameter.

Note: Tuples cannot be directly destructured in method or function parameters.

Either create a single parameter accepting the Tuple3,

or consider a pattern matching anonymous function: `{ case (param1, ..., param3) => ... }`

```
val z: ((Int, Int, Int) => Int) = (((a, NotAPatternVariableName, c)) => a)
```

^

three errors found

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## 1.268 multiarch-support 2.27-3ubuntu1.6

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Files: `girepository/*.ch` `giscanner/giscannermodule.c` `giscanner/sourcescanner.ch` `tools/compiler.c` `tools/generate.c`

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Files: `giscanner/scannerlexer.l` `giscanner/scannerparser.y`

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Files: misc/pep8.py misc/pyflakes.py

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\* /opt/cola/permits/1135863767\_1613617914.89/0/asm-5-0-4-sources-6-jar/org/objectweb/asm/xml/Processor.java

\* /opt/cola/permits/1135863767\_1613617914.89/0/asm-5-0-4-sources-6-  
 jar/org/objectweb/asm/xml/SAXFieldAdapter.java

\* /opt/cola/permits/1135863767\_1613617914.89/0/asm-5-0-4-sources-6-  
 jar/org/objectweb/asm/xml/ASMContentHandler.java

\* /opt/cola/permits/1135863767\_1613617914.89/0/asm-5-0-4-sources-6-  
 jar/org/objectweb/asm/xml/SAXCodeAdapter.java

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\*/

/\*\*

- \* Creates a new JSRInliner. *<i>Subclasses must not use this*
- \* constructor</i>. Instead, they must use the
- \* {[@link #JSRInlinerAdapter\(int, MethodVisitor, int, String, String, String, String\[\]\)](#)}
- \* version.
- \*
- \* [@param mv](#)
- \* the `MethodVisitor` to send the resulting inlined
- \* method code to (use `null` for none).
- \* [@param access](#)
- \* the method's access flags (see {[@link Opcodes](#)}). This
- \* parameter also indicates if the method is synthetic and/or
- \* deprecated.
- \* [@param name](#)
- \* the method's name.
- \* [@param desc](#)
- \* the method's descriptor (see {[@link Type](#)}).
- \* [@param signature](#)
- \* the method's signature. May be `null`.
- \* [@param exceptions](#)
- \* the internal names of the method's exception classes (see
- \* {[@link Type#getInternalName\(\) getInternalName](#)}). May be
- \* `null`.
- \* [@throws IllegalStateException](#)



\* If a subclass calls this constructor.

\*/

Found in path(s):

\* /opt/cola/permits/1135863767\_1613617914.89/0/asm-5-0-4-sources-6-jar/org/objectweb/asm/commons/JSRInlinerAdapter.java

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Found in path(s):

\* /opt/cola/permits/1135863767\_1613617914.89/0/asm-5-0-4-sources-6-jar/org/objectweb/asm/xml/asm-xml.dtd

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\* Creates a new {[@link GeneratorAdapter](#)}. *<i>Subclasses must not use this constructor</i>. Instead, they must use the*

\* {[@link #GeneratorAdapter\(int, MethodVisitor, int, String, String\)](#)}

\* version.

\*

\* [@param mv](#)

\* the method visitor to which this adapter delegates calls.

\* [@param access](#)

\* the method's access flags (see {[@link Opcodes](#)}).

\* [@param name](#)

\* the method's name.

\* [@param desc](#)

\* the method's descriptor (see {[@link Type Type](#)}).

\* [@throws IllegalStateException](#)

\* If a subclass calls this constructor.

\*/

Found in path(s):

\* /opt/cola/permits/1135863767\_1613617914.89/0/asm-5-0-4-sources-6-jar/org/objectweb/asm/commons/GeneratorAdapter.java

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*/
/**
 * Constructs a new {@link Textifier}. <i>Subclasses must not use this
 * constructor</i>. Instead, they must use the {@link #Textifier(int)}
 * version.
 *
 * @throws IllegalStateException
 * If a subclass calls this constructor.
 */

```

Found in path(s):

```

* /opt/cola/permits/1135863767_1613617914.89/0/asm-5-0-4-sources-6-jar/org/objectweb/asm/util/Textifier.java
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\* Constructs a new {@link ClassNode}. <i>Subclasses must not use this  
\* constructor</i>. Instead, they must use the {@link #ClassNode(int)}  
\* version.

\*

\* @throws IllegalStateException

\* If a subclass calls this constructor.

\*/

Found in path(s):

\* /opt/cola/permits/1135863767\_1613617914.89/0/asm-5-0-4-sources-6-jar/org/objectweb/asm/tree/ClassNode.java

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\* Constructs a new {[@link LocalVariableAnnotationNode](#)}. *<i>*Subclasses must  
\* not use this constructor*</i>*. Instead, they must use the  
\* {[@link #LocalVariableAnnotationNode\(int, TypePath, LabelNode\[\], LabelNode\[\], int\[\], String\)](#)}  
\* version.

\*

\* [@param typeRef](#)  
\* a reference to the annotated type. See {[@link TypeReference](#)}.

\* [@param typePath](#)  
\* the path to the annotated type argument, wildcard bound, array  
\* element type, or static inner type within 'typeRef'. May be  
\* `<tt>null</tt>` if the annotation targets 'typeRef' as a whole.

\* [@param start](#)  
\* the first instructions corresponding to the continuous ranges  
\* that make the scope of this local variable (inclusive).

\* [@param end](#)  
\* the last instructions corresponding to the continuous ranges  
\* that make the scope of this local variable (exclusive). This  
\* array must have the same size as the 'start' array.

\* [@param index](#)  
\* the local variable's index in each range. This array must have  
\* the same size as the 'start' array.

\* [@param desc](#)  
\* the class descriptor of the annotation class.

\*/

Found in path(s):

\* /opt/cola/permits/1135863767\_1613617914.89/0/asm-5-0-4-sources-6-  
jar/org/objectweb/asm/tree/LocalVariableAnnotationNode.java

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- \* /opt/cola/permits/1135863767\_1613617914.89/0/asm-5-0-4-sources-6-jar/org/objectweb/asm/Label.java
- \* /opt/cola/permits/1135863767\_1613617914.89/0/asm-5-0-4-sources-6-jar/org/objectweb/asm/Type.java
- \* /opt/cola/permits/1135863767\_1613617914.89/0/asm-5-0-4-sources-6-jar/org/objectweb/asm/AnnotationWriter.java
- \* /opt/cola/permits/1135863767\_1613617914.89/0/asm-5-0-4-sources-6-jar/org/objectweb/asm/tree/analysis/SimpleVerifier.java
- \* /opt/cola/permits/1135863767\_1613617914.89/0/asm-5-0-4-sources-6-jar/org/objectweb/asm/optimizer/NameMapping.java
- \* /opt/cola/permits/1135863767\_1613617914.89/0/asm-5-0-4-sources-6-jar/org/objectweb/asm/util/Printer.java
- \* /opt/cola/permits/1135863767\_1613617914.89/0/asm-5-0-4-sources-6-jar/org/objectweb/asm/optimizer/Shrinker.java
- \* /opt/cola/permits/1135863767\_1613617914.89/0/asm-5-0-4-sources-6-jar/org/objectweb/asm/commons/Method.java
- \* /opt/cola/permits/1135863767\_1613617914.89/0/asm-5-0-4-sources-6-jar/org/objectweb/asm/util/CheckAnnotationAdapter.java
- \* /opt/cola/permits/1135863767\_1613617914.89/0/asm-5-0-4-sources-6-jar/org/objectweb/asm/commons/RemappingSignatureAdapter.java
- \* /opt/cola/permits/1135863767\_1613617914.89/0/asm-5-0-4-sources-6-jar/org/objectweb/asm/commons/RemappingFieldAdapter.java
- \* /opt/cola/permits/1135863767\_1613617914.89/0/asm-5-0-4-sources-6-jar/org/objectweb/asm/ClassWriter.java
- \* /opt/cola/permits/1135863767\_1613617914.89/0/asm-5-0-4-sources-6-jar/org/objectweb/asm/Attribute.java
- \* /opt/cola/permits/1135863767\_1613617914.89/0/asm-5-0-4-sources-6-

jar/org/objectweb/asm/tree/analysis/SourceInterpreter.java  
\* /opt/cola/permits/1135863767\_1613617914.89/0/asm-5-0-4-sources-6-  
jar/org/objectweb/asm/tree/MethodInsnNode.java  
\* /opt/cola/permits/1135863767\_1613617914.89/0/asm-5-0-4-sources-6-jar/org/objectweb/asm/MethodVisitor.java  
\* /opt/cola/permits/1135863767\_1613617914.89/0/asm-5-0-4-sources-6-  
jar/org/objectweb/asm/util/TraceFieldVisitor.java  
\* /opt/cola/permits/1135863767\_1613617914.89/0/asm-5-0-4-sources-6-  
jar/org/objectweb/asm/tree/analysis/SourceValue.java  
\* /opt/cola/permits/1135863767\_1613617914.89/0/asm-5-0-4-sources-6-  
jar/org/objectweb/asm/commons/AdviceAdapter.java  
\* /opt/cola/permits/1135863767\_1613617914.89/0/asm-5-0-4-sources-6-  
jar/org/objectweb/asm/commons/Remapper.java  
\* /opt/cola/permits/1135863767\_1613617914.89/0/asm-5-0-4-sources-6-  
jar/org/objectweb/asm/tree/analysis/BasicValue.java  
\* /opt/cola/permits/1135863767\_1613617914.89/0/asm-5-0-4-sources-6-jar/org/objectweb/asm/FieldWriter.java  
\* /opt/cola/permits/1135863767\_1613617914.89/0/asm-5-0-4-sources-6-jar/org/objectweb/asm/ByteVector.java  
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jar/org/objectweb/asm/tree/AbstractInsnNode.java  
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jar/org/objectweb/asm/tree/analysis/Interpreter.java  
\* /opt/cola/permits/1135863767\_1613617914.89/0/asm-5-0-4-sources-6-  
jar/org/objectweb/asm/tree/JumpInsnNode.java  
\* /opt/cola/permits/1135863767\_1613617914.89/0/asm-5-0-4-sources-6-  
jar/org/objectweb/asm/commons/TableSwitchGenerator.java  
\* /opt/cola/permits/1135863767\_1613617914.89/0/asm-5-0-4-sources-6-jar/org/objectweb/asm/tree/FieldNode.java  
\* /opt/cola/permits/1135863767\_1613617914.89/0/asm-5-0-4-sources-6-  
jar/org/objectweb/asm/tree/FieldInsnNode.java  
\* /opt/cola/permits/1135863767\_1613617914.89/0/asm-5-0-4-sources-6-jar/org/objectweb/asm/tree/LabelNode.java  
\* /opt/cola/permits/1135863767\_1613617914.89/0/asm-5-0-4-sources-6-  
jar/org/objectweb/asm/optimizer/ClassConstantsCollector.java  
\* /opt/cola/permits/1135863767\_1613617914.89/0/asm-5-0-4-sources-6-  
jar/org/objectweb/asm/util/CheckSignatureAdapter.java  
\* /opt/cola/permits/1135863767\_1613617914.89/0/asm-5-0-4-sources-6-  
jar/org/objectweb/asm/tree/analysis/BasicVerifier.java  
\* /opt/cola/permits/1135863767\_1613617914.89/0/asm-5-0-4-sources-6-  
jar/org/objectweb/asm/commons/CodeSizeEvaluator.java  
\* /opt/cola/permits/1135863767\_1613617914.89/0/asm-5-0-4-sources-6-  
jar/org/objectweb/asm/commons/InstructionAdapter.java  
\* /opt/cola/permits/1135863767\_1613617914.89/0/asm-5-0-4-sources-6-  
jar/org/objectweb/asm/tree/IntInsnNode.java  
\* /opt/cola/permits/1135863767\_1613617914.89/0/asm-5-0-4-sources-6-  
jar/org/objectweb/asm/commons/RemappingClassAdapter.java  
\* /opt/cola/permits/1135863767\_1613617914.89/0/asm-5-0-4-sources-6-  
jar/org/objectweb/asm/tree/MultiANewArrayInsnNode.java  
\* /opt/cola/permits/1135863767\_1613617914.89/0/asm-5-0-4-sources-6-jar/org/objectweb/asm/ClassReader.java  
\* /opt/cola/permits/1135863767\_1613617914.89/0/asm-5-0-4-sources-6-  
jar/org/objectweb/asm/tree/VarInsnNode.java  
\* /opt/cola/permits/1135863767\_1613617914.89/0/asm-5-0-4-sources-6-

jar/org/objectweb/asm/commons/RemappingMethodAdapter.java  
\* /opt/cola/permits/1135863767\_1613617914.89/0/asm-5-0-4-sources-6-  
jar/org/objectweb/asm/tree/analysis/Value.java  
\* /opt/cola/permits/1135863767\_1613617914.89/0/asm-5-0-4-sources-6-  
jar/org/objectweb/asm/commons/StaticInitMerger.java  
\* /opt/cola/permits/1135863767\_1613617914.89/0/asm-5-0-4-sources-6-  
jar/org/objectweb/asm/optimizer/AnnotationConstantsCollector.java  
\* /opt/cola/permits/1135863767\_1613617914.89/0/asm-5-0-4-sources-6-  
jar/org/objectweb/asm/AnnotationVisitor.java  
\* /opt/cola/permits/1135863767\_1613617914.89/0/asm-5-0-4-sources-6-jar/org/objectweb/asm/tree/InsnNode.java  
\* /opt/cola/permits/1135863767\_1613617914.89/0/asm-5-0-4-sources-6-  
jar/org/objectweb/asm/signature/SignatureReader.java  
\* /opt/cola/permits/1135863767\_1613617914.89/0/asm-5-0-4-sources-6-  
jar/org/objectweb/asm/tree/LdcInsnNode.java  
\* /opt/cola/permits/1135863767\_1613617914.89/0/asm-5-0-4-sources-6-  
jar/org/objectweb/asm/tree/LookupSwitchInsnNode.java  
\* /opt/cola/permits/1135863767\_1613617914.89/0/asm-5-0-4-sources-6-  
jar/org/objectweb/asm/tree/LineNumberNode.java  
\* /opt/cola/permits/1135863767\_1613617914.89/0/asm-5-0-4-sources-6-  
jar/org/objectweb/asm/optimizer/JarOptimizer.java  
\* /opt/cola/permits/1135863767\_1613617914.89/0/asm-5-0-4-sources-6-  
jar/org/objectweb/asm/commons/LocalVariablesSorter.java  
\* /opt/cola/permits/1135863767\_1613617914.89/0/asm-5-0-4-sources-6-  
jar/org/objectweb/asm/util/TraceAnnotationVisitor.java  
\* /opt/cola/permits/1135863767\_1613617914.89/0/asm-5-0-4-sources-6-  
jar/org/objectweb/asm/optimizer/Constant.java  
\* /opt/cola/permits/1135863767\_1613617914.89/0/asm-5-0-4-sources-6-  
jar/org/objectweb/asm/tree/TypeAnnotationNode.java  
\* /opt/cola/permits/1135863767\_1613617914.89/0/asm-5-0-4-sources-6-jar/org/objectweb/asm/Handle.java  
\* /opt/cola/permits/1135863767\_1613617914.89/0/asm-5-0-4-sources-6-  
jar/org/objectweb/asm/tree/TryCatchBlockNode.java  
\* /opt/cola/permits/1135863767\_1613617914.89/0/asm-5-0-4-sources-6-  
jar/org/objectweb/asm/optimizer/ClassOptimizer.java  
\* /opt/cola/permits/1135863767\_1613617914.89/0/asm-5-0-4-sources-6-jar/org/objectweb/asm/util/ASMifier.java  
\* /opt/cola/permits/1135863767\_1613617914.89/0/asm-5-0-4-sources-6-  
jar/org/objectweb/asm/util/TraceClassVisitor.java  
\* /opt/cola/permits/1135863767\_1613617914.89/0/asm-5-0-4-sources-6-  
jar/org/objectweb/asm/tree/TableSwitchInsnNode.java  
\* /opt/cola/permits/1135863767\_1613617914.89/0/asm-5-0-4-sources-6-  
jar/org/objectweb/asm/tree/analysis/Frame.java  
\* /opt/cola/permits/1135863767\_1613617914.89/0/asm-5-0-4-sources-6-  
jar/org/objectweb/asm/tree/InvokeDynamicInsnNode.java  
\* /opt/cola/permits/1135863767\_1613617914.89/0/asm-5-0-4-sources-6-  
jar/org/objectweb/asm/tree/analysis/AnalyzerException.java  
\* /opt/cola/permits/1135863767\_1613617914.89/0/asm-5-0-4-sources-6-  
jar/org/objectweb/asm/tree/analysis/Subroutine.java  
\* /opt/cola/permits/1135863767\_1613617914.89/0/asm-5-0-4-sources-6-  
jar/org/objectweb/asm/commons/SerialVersionUIDAdder.java



\* /opt/cola/permits/1135863767\_1613617914.89/0/asm-5-0-4-sources-6-jar/org/objectweb/asm/tree/InnerClassNode.java  
\* /opt/cola/permits/1135863767\_1613617914.89/0/asm-5-0-4-sources-6-jar/org/objectweb/asm/tree/ParameterNode.java  
\* /opt/cola/permits/1135863767\_1613617914.89/0/asm-5-0-4-sources-6-jar/org/objectweb/asm/tree/LocalVariableNode.java  
\* /opt/cola/permits/1135863767\_1613617914.89/0/asm-5-0-4-sources-6-jar/org/objectweb/asm/tree/analysis/Analyzer.java  
\* /opt/cola/permits/1135863767\_1613617914.89/0/asm-5-0-4-sources-6-jar/org/objectweb/asm/tree/analysis/SmallSet.java  
\* /opt/cola/permits/1135863767\_1613617914.89/0/asm-5-0-4-sources-6-jar/org/objectweb/asm/commons/RemappingAnnotationAdapter.java  
\* /opt/cola/permits/1135863767\_1613617914.89/0/asm-5-0-4-sources-6-jar/org/objectweb/asm/tree/TypeInsnNode.java  
\* /opt/cola/permits/1135863767\_1613617914.89/0/asm-5-0-4-sources-6-jar/org/objectweb/asm/util/TraceSignatureVisitor.java  
\* /opt/cola/permits/1135863767\_1613617914.89/0/asm-5-0-4-sources-6-jar/org/objectweb/asm/tree/InsnNode.java  
\* /opt/cola/permits/1135863767\_1613617914.89/0/asm-5-0-4-sources-6-jar/org/objectweb/asm/optimizer/MethodOptimizer.java  
\* /opt/cola/permits/1135863767\_1613617914.89/0/asm-5-0-4-sources-6-jar/org/objectweb/asm/util/CheckFieldAdapter.java  
\* /opt/cola/permits/1135863767\_1613617914.89/0/asm-5-0-4-sources-6-jar/org/objectweb/asm/Frame.java  
\* /opt/cola/permits/1135863767\_1613617914.89/0/asm-5-0-4-sources-6-jar/org/objectweb/asm/util/CheckMethodAdapter.java  
\* /opt/cola/permits/1135863767\_1613617914.89/0/asm-5-0-4-sources-6-jar/org/objectweb/asm/commons/SimpleRemapper.java  
\* /opt/cola/permits/1135863767\_1613617914.89/0/asm-5-0-4-sources-6-jar/org/objectweb/asm/tree/AnnotationNode.java  
\* /opt/cola/permits/1135863767\_1613617914.89/0/asm-5-0-4-sources-6-jar/org/objectweb/asm/FieldVisitor.java  
\* /opt/cola/permits/1135863767\_1613617914.89/0/asm-5-0-4-sources-6-jar/org/objectweb/asm/Context.java  
\* /opt/cola/permits/1135863767\_1613617914.89/0/asm-5-0-4-sources-6-jar/org/objectweb/asm/util/TraceMethodVisitor.java  
\* /opt/cola/permits/1135863767\_1613617914.89/0/asm-5-0-4-sources-6-jar/org/objectweb/asm/optimizer/MethodConstantsCollector.java  
\* /opt/cola/permits/1135863767\_1613617914.89/0/asm-5-0-4-sources-6-jar/org/objectweb/asm/Handler.java  
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\* /opt/cola/permits/1135863767\_1613617914.89/0/asm-5-0-4-sources-6-jar/org/objectweb/asm/optimizer/FieldConstantsCollector.java  
\* /opt/cola/permits/1135863767\_1613617914.89/0/asm-5-0-4-sources-6-jar/org/objectweb/asm/MethodWriter.java  
\* /opt/cola/permits/1135863767\_1613617914.89/0/asm-5-0-4-sources-6-jar/org/objectweb/asm/tree/analysis/BasicInterpreter.java  
\* /opt/cola/permits/1135863767\_1613617914.89/0/asm-5-0-4-sources-6-jar/org/objectweb/asm/signature/SignatureWriter.java  
\* /opt/cola/permits/1135863767\_1613617914.89/0/asm-5-0-4-sources-6-jar/org/objectweb/asm/commons/TryCatchBlockSorter.java

\* /opt/cola/permits/1135863767\_1613617914.89/0/asm-5-0-4-sources-6-jar/org/objectweb/asm/Item.java  
\* /opt/cola/permits/1135863767\_1613617914.89/0/asm-5-0-4-sources-6-jar/org/objectweb/asm/Edge.java  
\* /opt/cola/permits/1135863767\_1613617914.89/0/asm-5-0-4-sources-6-jar/org/objectweb/asm/ClassVisitor.java  
\* /opt/cola/permits/1135863767\_1613617914.89/0/asm-5-0-4-sources-6-jar/org/objectweb/asm/tree/FrameNode.java  
\* /opt/cola/permits/1135863767\_1613617914.89/0/asm-5-0-4-sources-6-jar/org/objectweb/asm/optimizer/ConstantPool.java  
\* /opt/cola/permits/1135863767\_1613617914.89/0/asm-5-0-4-sources-6-jar/org/objectweb/asm/Opcodes.java  
\* /opt/cola/permits/1135863767\_1613617914.89/0/asm-5-0-4-sources-6-jar/org/objectweb/asm/util/CheckClassAdapter.java  
\* /opt/cola/permits/1135863767\_1613617914.89/0/asm-5-0-4-sources-6-jar/org/objectweb/asm/signature/SignatureVisitor.java  
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\* /opt/cola/permits/1135863767\_1613617914.89/0/asm-5-0-4-sources-6-jar/org/objectweb/asm/util/ASMifiable.java

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\*/

/\*\*

\* Creates a new { @link AnalyzerAdapter}. *Subclasses must not use this  
\* constructor*. Instead, they must use the  
\* { @link #AnalyzerAdapter(int, String, int, String, String, MethodVisitor)}  
\* version.  
\*  
\* @param owner  
\* the owner's class name.  
\* @param access  
\* the method's access flags (see { @link Opcodes}).  
\* @param name  
\* the method's name.  
\* @param desc  
\* the method's descriptor (see { @link Type Type}).  
\* @param mv  
\* the method visitor to which this adapter delegates calls. May  
\* be `null`.

```
* @throws IllegalStateException
* If a subclass calls this constructor.
*/
```

Found in path(s):

```
*/opt/cola/permits/1135863767_1613617914.89/0/asm-5-0-4-sources-6-
jar/org/objectweb/asm/commons/AnalyzerAdapter.java
```

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*
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*
```

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\* /opt/cola/permits/1135863767\_1613617914.89/0/asm-5-0-4-sources-6-jar/org/objectweb/asm/optimizer/shrink-resize.properties

\* /opt/cola/permits/1135863767\_1613617914.89/0/asm-5-0-4-sources-6-jar/org/objectweb/asm/optimizer/shrink-signatures.properties

\* /opt/cola/permits/1135863767\_1613617914.89/0/asm-5-0-4-sources-6-jar/org/objectweb/asm/optimizer/shrink.properties

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\* /opt/cola/permits/1135863767\_1613617914.89/0/asm-5-0-4-sources-6-jar/org/objectweb/asm/TypeReference.java

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## 1.281 bzip2 1.0.6-5

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bzip2/libbzip2 version 1.0.6 of 6 September 2010

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# 1.282 aws-java-sdk-core 1.12.86

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jar/com/amazonaws/internal/config/SignerConfigJsonHelper.java
* /opt/cola/permits/1273483836_1645114014.57/0/aws-java-sdk-core-1-12-86-sources-
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jar/com/amazonaws/Protocol.java
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\* /opt/cola/permits/1273483836\_1645114014.57/0/aws-java-sdk-core-1-12-86-sources-jar/com/amazonaws/annotation/SdkProtectedApi.java

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jar/com/amazonaws/http/conn/ssl/TLSProtocol.java
* /opt/cola/permits/1273483836_1645114014.57/0/aws-java-sdk-core-1-12-86-sources-
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\* /opt/cola/permits/1273483836\_1645114014.57/0/aws-java-sdk-core-1-12-86-sources-jar/com/amazonaws/util/NameValuePair.java

\* /opt/cola/permits/1273483836\_1645114014.57/0/aws-java-sdk-core-1-12-86-sources-jar/com/amazonaws/util/URLEncodedUtils.java

\* /opt/cola/permits/1273483836\_1645114014.57/0/aws-java-sdk-core-1-12-86-sources-jar/com/amazonaws/util/BasicNameValuePair.java

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/\*\*

- \* Interface for providing AWS credentials. Implementations are free to use any
- \* strategy for providing AWS credentials, such as simply providing static
- \* credentials that don't change, or more complicated implementations, such as
- \* integrating with existing key management systems.

\*/

Found in path(s):

\* /opt/cola/permits/1273483836\_1645114014.57/0/aws-java-sdk-core-1-12-86-sources-jar/com/amazonaws/auth/AWSCredentialsProvider.java

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\* /opt/cola/permits/1273483836\_1645114014.57/0/aws-java-sdk-core-1-12-86-sources-jar/com/amazonaws/util/endpoint/DefaultRegionFromEndpointResolver.java

\* /opt/cola/permits/1273483836\_1645114014.57/0/aws-java-sdk-core-1-12-86-sources-jar/com/amazonaws/auth/RegionFromEndpointResolverAwareSigner.java

\* /opt/cola/permits/1273483836\_1645114014.57/0/aws-java-sdk-core-1-12-86-sources-jar/com/amazonaws/util/endpoint/RegionFromEndpointResolver.java

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jar/com/amazonaws/internal/DynamoDBBackoffStrategy.java  
\* /opt/cola/permits/1273483836\_1645114014.57/0/aws-java-sdk-core-1-12-86-sources-  
jar/com/amazonaws/internal/CRC32MismatchException.java  
\* /opt/cola/permits/1273483836\_1645114014.57/0/aws-java-sdk-core-1-12-86-sources-  
jar/com/amazonaws/auth/EnvironmentVariableCredentialsProvider.java  
\* /opt/cola/permits/1273483836\_1645114014.57/0/aws-java-sdk-core-1-12-86-sources-  
jar/com/amazonaws/auth/AWSCredentialsProviderChain.java  
\* /opt/cola/permits/1273483836\_1645114014.57/0/aws-java-sdk-core-1-12-86-sources-  
jar/com/amazonaws/auth/SystemPropertiesCredentialsProvider.java  
\* /opt/cola/permits/1273483836\_1645114014.57/0/aws-java-sdk-core-1-12-86-sources-  
jar/com/amazonaws/internal/EC2MetadataClient.java  
\* /opt/cola/permits/1273483836\_1645114014.57/0/aws-java-sdk-core-1-12-86-sources-  
jar/com/amazonaws/internal/CustomBackoffStrategy.java  
\* /opt/cola/permits/1273483836\_1645114014.57/0/aws-java-sdk-core-1-12-86-sources-  
jar/com/amazonaws/util/AwsHostNameUtils.java  
\* /opt/cola/permits/1273483836\_1645114014.57/0/aws-java-sdk-core-1-12-86-sources-  
jar/com/amazonaws/HandlerContextAware.java  
\* /opt/cola/permits/1273483836\_1645114014.57/0/aws-java-sdk-core-1-12-86-sources-  
jar/com/amazonaws/auth/ClasspathPropertiesFileCredentialsProvider.java  
\* /opt/cola/permits/1273483836\_1645114014.57/0/aws-java-sdk-core-1-12-86-sources-  
jar/com/amazonaws/http/IdleConnectionReaper.java  
\* /opt/cola/permits/1273483836\_1645114014.57/0/aws-java-sdk-core-1-12-86-sources-  
jar/com/amazonaws/auth/InstanceProfileCredentialsProvider.java  
\* /opt/cola/permits/1273483836\_1645114014.57/0/aws-java-sdk-core-1-12-86-sources-  
jar/com/amazonaws/auth/DefaultAWSCredentialsProviderChain.java  
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\* /opt/cola/permits/1273483836\_1645114014.57/0/aws-java-sdk-core-1-12-86-sources-jar/com/amazonaws/http/apache/request/impl/HttpRequestFactory.java

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\* /opt/cola/permits/1273483836\_1645114014.57/0/aws-java-sdk-core-1-12-86-sources-jar/com/amazonaws/internal/SdkFilterOutputStream.java

\* /opt/cola/permits/1273483836\_1645114014.57/0/aws-java-sdk-core-1-12-86-sources-

jar/com/amazonaws/util/IOUtils.java  
\* /opt/cola/permits/1273483836\_1645114014.57/0/aws-java-sdk-core-1-12-86-sources-  
jar/com/amazonaws/util/CodecUtils.java  
\* /opt/cola/permits/1273483836\_1645114014.57/0/aws-java-sdk-core-1-12-86-sources-  
jar/com/amazonaws/internal/ListWithAutoConstructFlag.java  
\* /opt/cola/permits/1273483836\_1645114014.57/0/aws-java-sdk-core-1-12-86-sources-  
jar/com/amazonaws/regions/Region.java  
\* /opt/cola/permits/1273483836\_1645114014.57/0/aws-java-sdk-core-1-12-86-sources-  
jar/com/amazonaws/util/AbstractBase32Codec.java  
\* /opt/cola/permits/1273483836\_1645114014.57/0/aws-java-sdk-core-1-12-86-sources-  
jar/com/amazonaws/util/Base16.java  
\* /opt/cola/permits/1273483836\_1645114014.57/0/aws-java-sdk-core-1-12-86-sources-  
jar/com/amazonaws/regions/RegionMetadata.java  
\* /opt/cola/permits/1273483836\_1645114014.57/0/aws-java-sdk-core-1-12-86-sources-  
jar/com/amazonaws/util/Codec.java  
\* /opt/cola/permits/1273483836\_1645114014.57/0/aws-java-sdk-core-1-12-86-sources-  
jar/com/amazonaws/internal/SdkBufferedInputStream.java  
\* /opt/cola/permits/1273483836\_1645114014.57/0/aws-java-sdk-core-1-12-86-sources-  
jar/com/amazonaws/util/Throwables.java  
\* /opt/cola/permits/1273483836\_1645114014.57/0/aws-java-sdk-core-1-12-86-sources-  
jar/com/amazonaws/auth/AWS4Signer.java  
\* /opt/cola/permits/1273483836\_1645114014.57/0/aws-java-sdk-core-1-12-86-sources-  
jar/com/amazonaws/ResetException.java  
\* /opt/cola/permits/1273483836\_1645114014.57/0/aws-java-sdk-core-1-12-86-sources-  
jar/com/amazonaws/internal/SdkDigestInputStream.java  
\* /opt/cola/permits/1273483836\_1645114014.57/0/aws-java-sdk-core-1-12-86-sources-  
jar/com/amazonaws/regions/RegionMetadataParser.java  
\* /opt/cola/permits/1273483836\_1645114014.57/0/aws-java-sdk-core-1-12-86-sources-  
jar/com/amazonaws/regions/RegionUtils.java  
\* /opt/cola/permits/1273483836\_1645114014.57/0/aws-java-sdk-core-1-12-86-sources-  
jar/com/amazonaws/internal/MetricAware.java  
\* /opt/cola/permits/1273483836\_1645114014.57/0/aws-java-sdk-core-1-12-86-sources-  
jar/com/amazonaws/util/Base32.java  
\* /opt/cola/permits/1273483836\_1645114014.57/0/aws-java-sdk-core-1-12-86-sources-  
jar/com/amazonaws/jmx/SdkMBeanRegistrySupport.java  
\* /opt/cola/permits/1273483836\_1645114014.57/0/aws-java-sdk-core-1-12-86-sources-  
jar/com/amazonaws/util/EC2MetadataUtils.java  
\* /opt/cola/permits/1273483836\_1645114014.57/0/aws-java-sdk-core-1-12-86-sources-  
jar/com/amazonaws/util/Base32Codec.java  
\* /opt/cola/permits/1273483836\_1645114014.57/0/aws-java-sdk-core-1-12-86-sources-  
jar/com/amazonaws/internal/MetricsInputStream.java  
\* /opt/cola/permits/1273483836\_1645114014.57/0/aws-java-sdk-core-1-12-86-sources-  
jar/com/amazonaws/util/EncodingScheme.java  
\* /opt/cola/permits/1273483836\_1645114014.57/0/aws-java-sdk-core-1-12-86-sources-  
jar/com/amazonaws/util/HttpClientWrappingInputStream.java  
\* /opt/cola/permits/1273483836\_1645114014.57/0/aws-java-sdk-core-1-12-86-sources-  
jar/com/amazonaws/util/EncodingSchemeEnum.java  
\* /opt/cola/permits/1273483836\_1645114014.57/0/aws-java-sdk-core-1-12-86-sources-



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jar/com/amazonaws/internal/SdkFilterInputStream.java
* /opt/cola/permits/1273483836_1645114014.57/0/aws-java-sdk-core-1-12-86-sources-
jar/com/amazonaws/util/Base64Codec.java
* /opt/cola/permits/1273483836_1645114014.57/0/aws-java-sdk-core-1-12-86-sources-
jar/com/amazonaws/AbortedException.java
* /opt/cola/permits/1273483836_1645114014.57/0/aws-java-sdk-core-1-12-86-sources-
jar/com/amazonaws/auth/ServiceAwareSigner.java
* /opt/cola/permits/1273483836_1645114014.57/0/aws-java-sdk-core-1-12-86-sources-
jar/com/amazonaws/util/Base16Codec.java
* /opt/cola/permits/1273483836_1645114014.57/0/aws-java-sdk-core-1-12-86-sources-
jar/com/amazonaws/jmx/MBeans.java
* /opt/cola/permits/1273483836_1645114014.57/0/aws-java-sdk-core-1-12-86-sources-
jar/com/amazonaws/util/Base64.java
* /opt/cola/permits/1273483836_1645114014.57/0/aws-java-sdk-core-1-12-86-sources-
jar/com/amazonaws/util/SdkRuntime.java
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jar/com/amazonaws/auth/ContainerCredentialsFetcher.java
* /opt/cola/permits/1273483836_1645114014.57/0/aws-java-sdk-core-1-12-86-sources-
jar/com/amazonaws/internal/ConnectionUtils.java
* /opt/cola/permits/1273483836_1645114014.57/0/aws-java-sdk-core-1-12-86-sources-
jar/com/amazonaws/internal/EC2ResourceFetcher.java
* /opt/cola/permits/1273483836_1645114014.57/0/aws-java-sdk-core-1-12-86-sources-
jar/com/amazonaws/auth/EC2ContainerCredentialsProviderWrapper.java
* /opt/cola/permits/1273483836_1645114014.57/0/aws-java-sdk-core-1-12-86-sources-
jar/com/amazonaws/auth/InstanceMetadataServiceCredentialsFetcher.java
* /opt/cola/permits/1273483836_1645114014.57/0/aws-java-sdk-core-1-12-86-sources-
jar/com/amazonaws/internal/TokenBucket.java
* /opt/cola/permits/1273483836_1645114014.57/0/aws-java-sdk-core-1-12-86-sources-
jar/com/amazonaws/auth/EndpointPrefixAwareSigner.java
* /opt/cola/permits/1273483836_1645114014.57/0/aws-java-sdk-core-1-12-86-sources-
```

jar/com/amazonaws/auth/BaseCredentialsFetcher.java  
\* /opt/cola/permits/1273483836\_1645114014.57/0/aws-java-sdk-core-1-12-86-sources-  
jar/com/amazonaws/auth/ContainerCredentialsRetryPolicy.java  
\* /opt/cola/permits/1273483836\_1645114014.57/0/aws-java-sdk-core-1-12-86-sources-  
jar/com/amazonaws/auth/ContainerCredentialsProvider.java  
\* /opt/cola/permits/1273483836\_1645114014.57/0/aws-java-sdk-core-1-12-86-sources-  
jar/com/amazonaws/internal/InstanceMetadataServiceResourceFetcher.java  
\* /opt/cola/permits/1273483836\_1645114014.57/0/aws-java-sdk-core-1-12-86-sources-  
jar/com/amazonaws/retry/RetryMode.java  
\* /opt/cola/permits/1273483836\_1645114014.57/0/aws-java-sdk-core-1-12-86-sources-  
jar/com/amazonaws/internal/CredentialsEndpointProvider.java  
\* /opt/cola/permits/1273483836\_1645114014.57/0/aws-java-sdk-core-1-12-86-sources-  
jar/com/amazonaws/retry/internal/CredentialsEndpointRetryParameters.java  
\* /opt/cola/permits/1273483836\_1645114014.57/0/aws-java-sdk-core-1-12-86-sources-  
jar/com/amazonaws/retry/internal/CredentialsEndpointRetryPolicy.java  
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jar/com/amazonaws/util/NamedDefaultThreadFactory.java  
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jar/com/amazonaws/waiters/WaiterExecutorServiceFactory.java  
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*/
/**
* Interface for providing AWS region information. Implementations are free to use any strategy for
* providing region information.
*/
```

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```
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jar/com/amazonaws/regions/AwsRegionProvider.java
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jar/com/amazonaws/util/CredentialUtils.java
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jar/com/amazonaws/internal/http/CompositeErrorCodeParser.java  
\* /opt/cola/permits/1273483836\_1645114014.57/0/aws-java-sdk-core-1-12-86-sources-  
jar/com/amazonaws/internal/http/ErrorCodeParser.java  
\* /opt/cola/permits/1273483836\_1645114014.57/0/aws-java-sdk-core-1-12-86-sources-  
jar/com/amazonaws/internal/http/IonErrorCodeParser.java  
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jar/com/amazonaws/adapters/types/StringToInputStreamAdapter.java  
\* /opt/cola/permits/1273483836\_1645114014.57/0/aws-java-sdk-core-1-12-86-sources-  
jar/com/amazonaws/internal/auth/NoOpSignerProvider.java  
\* /opt/cola/permits/1273483836\_1645114014.57/0/aws-java-sdk-core-1-12-86-sources-  
jar/com/amazonaws/util/MetadataCache.java  
\* /opt/cola/permits/1273483836\_1645114014.57/0/aws-java-sdk-core-1-12-86-sources-  
jar/com/amazonaws/util/NullResponseMetadataCache.java  
\* /opt/cola/permits/1273483836\_1645114014.57/0/aws-java-sdk-core-1-12-86-sources-  
jar/com/amazonaws/internal/auth/SignerProviderContext.java  
\* /opt/cola/permits/1273483836\_1645114014.57/0/aws-java-sdk-core-1-12-86-sources-  
jar/com/amazonaws/adapters/types/TypeAdapter.java  
\* /opt/cola/permits/1273483836\_1645114014.57/0/aws-java-sdk-core-1-12-86-sources-  
jar/com/amazonaws/internal/auth/SignerProvider.java  
\* /opt/cola/permits/1273483836\_1645114014.57/0/aws-java-sdk-core-1-12-86-sources-  
jar/com/amazonaws/internal/auth/DefaultSignerProvider.java

\* /opt/cola/permits/1273483836\_1645114014.57/0/aws-java-sdk-core-1-12-86-sources-jar/com/amazonaws/adapters/types/StringToByteBufferAdapter.java

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\* /opt/cola/permits/1273483836\_1645114014.57/0/aws-java-sdk-core-1-12-86-sources-jar/com/amazonaws/metrics/MetricAdmin.java

\* /opt/cola/permits/1273483836\_1645114014.57/0/aws-java-sdk-core-1-12-86-sources-jar/com/amazonaws/metrics/MetricAdminMBean.java  
\* /opt/cola/permits/1273483836\_1645114014.57/0/aws-java-sdk-core-1-12-86-sources-jar/com/amazonaws/auth/AWSSessionCredentials.java  
\* /opt/cola/permits/1273483836\_1645114014.57/0/aws-java-sdk-core-1-12-86-sources-jar/com/amazonaws/util/ServiceClientHolderInputStream.java  
\* /opt/cola/permits/1273483836\_1645114014.57/0/aws-java-sdk-core-1-12-86-sources-jar/com/amazonaws/util/json/Jackson.java  
\* /opt/cola/permits/1273483836\_1645114014.57/0/aws-java-sdk-core-1-12-86-sources-jar/com/amazonaws/jmx/JmxInfoProviderSupport.java  
\* /opt/cola/permits/1273483836\_1645114014.57/0/aws-java-sdk-core-1-12-86-sources-jar/com/amazonaws/auth/BasicSessionCredentials.java  
\* /opt/cola/permits/1273483836\_1645114014.57/0/aws-java-sdk-core-1-12-86-sources-jar/com/amazonaws/RequestClientOptions.java  
\* /opt/cola/permits/1273483836\_1645114014.57/0/aws-java-sdk-core-1-12-86-sources-jar/com/amazonaws/jmx/spi/JmxInfoProvider.java  
\* /opt/cola/permits/1273483836\_1645114014.57/0/aws-java-sdk-core-1-12-86-sources-jar/com/amazonaws/jmx/spi/SdkMBeanRegistry.java

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\* /opt/cola/permits/1273483836\_1645114014.57/0/aws-java-sdk-core-1-12-86-sources-jar/com/amazonaws/internal/SdkRequestRetryHeaderProvider.java

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jar/com/amazonaws/transform/VoidUnmarshaller.java  
\* /opt/cola/permits/1273483836\_1645114014.57/0/aws-java-sdk-core-1-12-86-sources-  
jar/com/amazonaws/transform/SimpleTypeUnmarshallers.java  
\* /opt/cola/permits/1273483836\_1645114014.57/0/aws-java-sdk-core-1-12-86-sources-  
jar/com/amazonaws/auth/SigningAlgorithm.java  
\* /opt/cola/permits/1273483836\_1645114014.57/0/aws-java-sdk-core-1-12-86-sources-  
jar/com/amazonaws/transform/Unmarshaller.java  
\* /opt/cola/permits/1273483836\_1645114014.57/0/aws-java-sdk-core-1-12-86-sources-  
jar/com/amazonaws/AmazonClientException.java  
\* /opt/cola/permits/1273483836\_1645114014.57/0/aws-java-sdk-core-1-12-86-sources-  
jar/com/amazonaws/transform/LegacyErrorUnmarshaller.java  
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jar/com/amazonaws/auth/SignatureVersion.java  
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jar/com/amazonaws/util/XmlUtils.java  
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jar/com/amazonaws/auth/AWSCredentials.java  
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jar/com/amazonaws/http/HttpMethodName.java

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\* /opt/cola/permits/1273483836\_1645114014.57/0/aws-java-sdk-core-1-12-86-sources-jar/com/amazonaws/partitions/model/Endpoint.java  
\* /opt/cola/permits/1273483836\_1645114014.57/0/aws-java-sdk-core-1-12-86-sources-jar/com/amazonaws/partitions/PartitionMetadataProvider.java  
\* /opt/cola/permits/1273483836\_1645114014.57/0/aws-java-sdk-core-1-12-86-sources-jar/com/amazonaws/regions/LegacyRegionXmlMetadataBuilder.java  
\* /opt/cola/permits/1273483836\_1645114014.57/0/aws-java-sdk-core-1-12-86-sources-jar/com/amazonaws/regions/RegionImpl.java  
\* /opt/cola/permits/1273483836\_1645114014.57/0/aws-java-sdk-core-1-12-86-sources-jar/com/amazonaws/regions/InMemoryRegionsProvider.java  
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\* /opt/cola/permits/1273483836\_1645114014.57/0/aws-java-sdk-core-1-12-86-sources-jar/com/amazonaws/regions/RegionMetadataFactory.java  
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\* /opt/cola/permits/1273483836\_1645114014.57/0/aws-java-sdk-core-1-12-86-sources-jar/com/amazonaws/regions/RegionMetadataProvider.java  
\* /opt/cola/permits/1273483836\_1645114014.57/0/aws-java-sdk-core-1-12-86-sources-jar/com/amazonaws/partitions/model/Region.java  
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jar/com/amazonaws/protocol/json/SdkIonGenerator.java  
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jar/com/amazonaws/partitions/model/Partition.java  
\* /opt/cola/permits/1273483836\_1645114014.57/0/aws-java-sdk-core-1-12-86-sources-  
jar/com/amazonaws/regions/AbstractRegionMetadataProvider.java  
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jar/com/amazonaws/auth/CanHandleNullCredentials.java  
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jar/com/amazonaws/util/CapacityManager.java  
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jar/com/amazonaws/util/FakeIOException.java  
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jar/com/amazonaws/http/apache/client/impl/ApacheConnectionFactory.java  
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jar/com/amazonaws/internal/DateTimeJsonSerializer.java  
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jar/com/amazonaws/util/IdempotentUtils.java  
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jar/com/amazonaws/http/JsonResponseHandler.java  
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jar/com/amazonaws/util/Classes.java

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jar/com/amazonaws/util/DateUtils.java

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jar/com/amazonaws/util/JodaTime.java

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jar/com/amazonaws/http/timers/request/NoOpHttpRequestAbortTaskTracker.java

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jar/com/amazonaws/internal/SdkThreadLocalsRegistry.java

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jar/com/amazonaws/transform/JsonErrorUnmarshaller.java

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jar/com/amazonaws/util/JavaVersionParser.java

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jar/com/amazonaws/DnsResolver.java

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jar/com/amazonaws/http/timers/client/ClientExecutionAbortTask.java

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* /opt/cola/permits/1273483836_1645114014.57/0/aws-java-sdk-core-1-12-86-sources-
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jar/com/amazonaws/internal/FIFOCache.java

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jar/com/amazonaws/protocol/json/JsonFactory.java
* /opt/cola/permits/1273483836_1645114014.57/0/aws-java-sdk-core-1-12-86-sources-
jar/com/amazonaws/transform/JsonUnmarshallers.java
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* /opt/cola/permits/1273483836_1645114014.57/0/aws-java-sdk-core-1-12-86-sources-
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\* /opt/cola/permits/1273483836\_1645114014.57/0/aws-java-sdk-core-1-12-86-sources-jar/com/amazonaws/protocol/MarshallingInfo.java

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\* /opt/cola/permits/1273483836\_1645114014.57/0/aws-java-sdk-core-1-12-86-sources-jar/com/amazonaws/client/builder/AwsAsyncClientBuilder.java  
\* /opt/cola/permits/1273483836\_1645114014.57/0/aws-java-sdk-core-1-12-86-sources-jar/com/amazonaws/protocol/json/internal/NullAsEmptyBodyProtocolRequestMarshaller.java  
\* /opt/cola/permits/1273483836\_1645114014.57/0/aws-java-sdk-core-1-12-86-sources-jar/com/amazonaws/protocol/json/JsonClientMetadata.java  
\* /opt/cola/permits/1273483836\_1645114014.57/0/aws-java-sdk-core-1-12-86-sources-jar/com/amazonaws/http/timers/client/SdkInterruptedException.java



```
* /opt/cola/permits/1273483836_1645114014.57/0/aws-java-sdk-core-1-12-86-sources-
jar/com/amazonaws/auth/presigner/PresignerParams.java
* /opt/cola/permits/1273483836_1645114014.57/0/aws-java-sdk-core-1-12-86-sources-
jar/com/amazonaws/client/ClientHandlerImpl.java
* /opt/cola/permits/1273483836_1645114014.57/0/aws-java-sdk-core-1-12-86-sources-
jar/com/amazonaws/internal/SdkFunction.java
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jar/com/amazonaws/regions/DefaultAwsRegionProviderChain.java
* /opt/cola/permits/1273483836_1645114014.57/0/aws-java-sdk-core-1-12-86-sources-
jar/com/amazonaws/protocol/json/SdkJsonGenerator.java
* /opt/cola/permits/1273483836_1645114014.57/0/aws-java-sdk-core-1-12-86-sources-
jar/com/amazonaws/retry/V2CompatibleBackoffStrategyAdapter.java
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```

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Found in path(s):

```
* /opt/cola/permits/1273483836_1645114014.57/0/aws-java-sdk-core-1-12-86-sources-
jar/com/amazonaws/transform/EnhancedJsonErrorUnmarshaller.java
* /opt/cola/permits/1273483836_1645114014.57/0/aws-java-sdk-core-1-12-86-sources-
jar/com/amazonaws/util/ReflectionMethodInvoker.java
```

## 1.283 libcryptoheimdal 7.5.0+dfsg-1

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Upstream-Name: heimdal

Upstream-Contact: heimdal@h5l.org

Source: <https://github.com/heimdal/heimdal>

Files-Excluded: doc/doxyout

lib/wind/rfc3490.txt

lib/wind/rfc3491.txt

lib/wind/rfc4013.txt

lib/wind/rfc4518.txt

Files: \*

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AES in libcrypto

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rijndael-alg-fst.c

@version 3.0 (December 2000)

Optimised ANSI C code for the Rijndael cipher (now AES)

@author Vincent Rijmen <vincent.rijmen@esat.kuleuven.ac.be>

@author Antoon Bosselaers <antoon.bosselaers@esat.kuleuven.ac.be>

@author Paulo Barreto <paulo.barreto@terra.com.br>

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# 1.288 tar 1.29b 2ubuntu0.3

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## 1.290 python-requests 2.18.4

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- javaee\_6.xsd
- javaee\_web\_services\_1\_3.xsd
- javaee\_web\_services\_client\_1\_3.xsd
- jsp\_2\_2.xsd
- web-app\_3\_0.xsd
- web-common\_3\_0.xsd
- web-fragment\_3\_0.xsd
- javaee\_7.xsd
- javaee\_web\_services\_1\_4.xsd
- javaee\_web\_services\_client\_1\_4.xsd
- jsp\_2\_3.xsd
- web-app\_3\_1.xsd
- web-common\_3\_1.xsd
- web-fragment\_3\_1.xsd
- javaee\_8.xsd
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may be obtained from:

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- jsp\_2\_2.xsd
- web-app\_3\_0.xsd
- web-common\_3\_0.xsd
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\* /opt/cola/permits/1000890861\_1651084689.86/0/j2objc-annotations-1-3-sources-jar/com/google/j2objc/annotations/RetainedWith.java

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* /opt/cola/permits/1000890861_1651084689.86/0/j2objc-annotations-1-3-sources-
jar/com/google/j2objc/annotations/ReflectionSupport.java
* /opt/cola/permits/1000890861_1651084689.86/0/j2objc-annotations-1-3-sources-
jar/com/google/j2objc/annotations/RetainedLocalRef.java
* /opt/cola/permits/1000890861_1651084689.86/0/j2objc-annotations-1-3-sources-
jar/com/google/j2objc/annotations/Property.java
* /opt/cola/permits/1000890861_1651084689.86/0/j2objc-annotations-1-3-sources-
jar/com/google/j2objc/annotations/LoopTranslation.java
* /opt/cola/permits/1000890861_1651084689.86/0/j2objc-annotations-1-3-sources-
jar/com/google/j2objc/annotations/J2ObjCIncompatible.java
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```
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jar/com/google/j2objc/annotations/Weak.java
* /opt/cola/permits/1000890861_1651084689.86/0/j2objc-annotations-1-3-sources-
jar/com/google/j2objc/annotations/AutoreleasePool.java
* /opt/cola/permits/1000890861_1651084689.86/0/j2objc-annotations-1-3-sources-
jar/com/google/j2objc/annotations/WeakOuter.java
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## 1.301 joda-time 2.8.1

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# 1.302 urllib3 1.22

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# Contributions to the urllib3 project

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\* HTTPS patch (which inspired HTTPSConnectionPool)



- \* erikcederstrand <<http://code.google.com/u/erikcederstrand/>>
- \* NTLM-authenticated HTTPSConnectionPool
- \* Basic-authenticated HTTPSConnectionPool (merged into make\_headers)
  
- \* niphlod <niphlod@gmail.com>
- \* Client-verified SSL certificates for HTTPSConnectionPool
- \* Response gzip and deflate encoding support
- \* Better unicode support for filepost using StringIO buffers
  
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- \* Support for TLS SNI
- \* API unification of ssl\_version/cert\_reqs
- \* SSL fingerprint and alternative hostname verification
- \* Bugfixes in testsuite
  
- \* Sune Kirkeby <mig@ibofobi.dk>
- \* Optional SNI-support for Python 2 via PyOpenSSL.
  
- \* Marc Schlaich <marc.schlaich@gmail.com>
- \* Various bugfixes and test improvements.

- \* Bryce Boe <bbzbryce@gmail.com>
- \* Correct six.moves conflict
- \* Fixed pickle support of some exceptions
  
- \* Boris Figovsky <boris.figovsky@ravellosystems.com>
- \* Allowed to skip SSL hostname verification
  
- \* Cory Benfield <<http://lukasa.co.uk/about/>>
- \* Stream method for Response objects.
- \* Return native strings in header values.
- \* Generate 'Host' header when using proxies.
  
- \* Jason Robinson <jaywink@basshero.org>
- \* Add missing WrappedSocket.fileno method in PyOpenSSL
  
- \* Audrius Butkevicius <audrius.butkevicius@elastichosts.com>
- \* Fixed a race condition
  
- \* Stanislav Vitkovskiy <stas.vitkovsky@gmail.com>
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- \* Support for separate connect and request timeouts
  
- \* Peter Waller <p@pwaller.net>
- \* HTTPResponse.tell() for determining amount received over the wire
  
- \* Nipunn Koorapati <nipunn1313@gmail.com>
- \* Ignore default ports when comparing hosts for equality
  
- \* Danilo @dbrgn <<http://dbrgn.ch/>>
- \* Disabled TLS compression by default on Python 3.2+
- \* Disabled TLS compression in pyopenssl contrib module
- \* Configurable cipher suites in pyopenssl contrib module
  
- \* Roman Bogorodskiy <roman.bogorodskiy@ericsson.com>
- \* Account retries on proxy errors
  
- \* Nicolas Delaby <nicolas.delaby@ezeep.com>
- \* Use the platform-specific CA certificate locations
  
- \* Josh Schneier <<https://github.com/jschneier>>

- \* HTTPHeaderDict and associated tests and docs
- \* Bugfixes, docs, test coverage
  
- \* Tahia Khan <<http://tahia.tk/>>
- \* Added Timeout examples in docs
  
- \* Arthur Grunseid <<http://grunseid.com>>
- \* source\_address support and tests (with <https://github.com/bui>)
  
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- \* PEP8 Compliance and Linting
- \* Add ability to pass socket options to an HTTP Connection
  
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- \* Security Warning Documentation update for proper capture
  
- \* Shivan Sornarajah <[github@sornars.com](mailto:github@sornars.com)>
- \* Support for using ConnectionPool and PoolManager as context managers.
  
- \* Alex Gaynor <[alex.gaynor@gmail.com](mailto:alex.gaynor@gmail.com)>
- \* Updates to the default SSL configuration
  
- \* Tomas Tomecek <[ttomecek@redhat.com](mailto:ttomecek@redhat.com)>
- \* Implemented generator for getting chunks from chunked responses.
  
- \* tlynn <<https://github.com/tlynn>>
- \* Respect the warning preferences at import.
  
- \* David D. Riddle <[ddriddle@illinois.edu](mailto:ddriddle@illinois.edu)>
- \* IPv6 bugfixes in testsuite
  
- \* Jon Wayne Parrott <[jonwayne@google.com](mailto:jonwayne@google.com)>
- \* App Engine environment tests.
  
- \* John Krauss <<https://github.com/talos>>
- \* Clues to debugging problems with `cryptography` dependency in docs

- \* Disassem <<https://github.com/Disassem>>
- \* Fix pool-default headers not applying for url-encoded requests like GET.
  
- \* James Atherfold <[jlatherfold@hotmail.com](mailto:jlatherfold@hotmail.com)>
- \* Bugfixes relating to cleanup of connections during errors.
  
- \* Christian Pedersen <<https://github.com/chripede>>
- \* IPv6 HTTPS proxy bugfix
  
- \* Jordan Moldow <<https://github.com/jmoldow>>
- \* Fix low-level exceptions leaking from ``HTTPResponse.stream()``.
- \* Bugfix for ``ConnectionPool.urlopen(release\_conn=False)``.
- \* Creation of ``HTTPConnectionPool.ResponseCls``.
  
- \* Predrag Gruevski <<https://github.com/obi1kenobi>>
- \* Made cert digest comparison use a constant-time algorithm.
  
- \* Adam Talsma <<https://github.com/a-tal>>
- \* Bugfix to ca\_cert file paths.
  
- \* Evan Meagher <<https://evanmeagher.net>>
- \* Bugfix related to `memoryview` usage in PyOpenSSL adapter
  
- \* John Vandenberg <[jayvdb@gmail.com](mailto:jayvdb@gmail.com)>
- \* Python 2.6 fixes; pyflakes and pep8 compliance
  
- \* Andy Caldwell <[andy.m.caldwell@googlemail.com](mailto:andy.m.caldwell@googlemail.com)>
- \* Bugfix related to reusing connections in indeterminate states.
  
- \* Ville Skytt <[ville.skytta@iki.fi](mailto:ville.skytta@iki.fi)>
- \* Logging efficiency improvements, spelling fixes, Travis config.
  
- \* Shige Takeda <[smtakeda@gmail.com](mailto:smtakeda@gmail.com)>
- \* Started Recipes documentation and added a recipe about handling concatenated gzip data in HTTP response
  
- \* Jesse Shapiro <[jesse@jesseshapiro.net](mailto:jesse@jesseshapiro.net)>
- \* Various character-encoding fixes/tweaks
- \* Disabling IPv6 DNS when IPv6 connections not supported
  
- \* David Foster <<http://dafoster.net/>>
- \* Ensure order of request and response headers are preserved.
  
- \* Jeremy Cline <[jeremy@jcline.org](mailto:jeremy@jcline.org)>
- \* Added connection pool keys by scheme
  
- \* Aviv Palivoda <[palaviv@gmail.com](mailto:palaviv@gmail.com)>
- \* History list to Retry object.

- \* HTTPResponse contains the last Retry object.
- \* Nate Prewitt <nate.prewitt@gmail.com>
  - \* Ensure timeouts are not booleans and greater than zero.
  - \* Fixed infinite loop in ``stream`` when amt=None.
  - \* Added length\_remaining to determine remaining data to be read.
  - \* Added enforce\_content\_length to raise exception when incorrect content-length received.
- \* Seth Michael Larson <sethmichaellarson@protonmail.com>
  - \* Created selectors backport that supports PEP 475.
- \* Alexandre Dias <alex.dias@smarkets.com>
  - \* Don't retry on timeout if method not in whitelist
- \* Moinuddin Quadri <moin18@gmail.com>
  - \* Lazily load idna package
- \* Tom White <s6yg1ez3@mail2tor.com>
  - \* Made SOCKS handler differentiate socks5h from socks5 and socks4a from socks4.
- \* Tim Burke <tim.burke@gmail.com>
  - \* Stop buffering entire deflate-encoded responses.
- \* Tuukka Mustonen <tuukka.mustonen@gmail.com>
  - \* Add counter for status\_forcelist retries.
- \* Erik Rose <erik@mozilla.com>
  - \* Bugfix to pyopenssl vendoring

\* [Your name or handle] <[email or website]>

\* [Brief summary of your changes]

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# 1.303 spring-expression 5.3.18

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## 1.305 libxmu 1.1.2-2

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```
--- libxmu-1.1.2.orig/autogen.sh
+++ libxmu-1.1.2/autogen.sh
@@ -0,0 +1,14 @@
+#!/bin/sh
+
+srcdir=`dirname $0`
+test -z "$srcdir" && srcdir=.
+
+ORIGDIR=`pwd`
+cd $srcdir
+
+autoreconf -v --install || exit 1
+cd $ORIGDIR || exit $?
+
+if test -z "$NOCONFIGURE"; then
+ $srcdir/configure "$@"
+fi
--- libxmu-1.1.2.orig/debian/changelog
+++ libxmu-1.1.2/debian/changelog
@@ -0,0 +1,219 @@
+libxmu (2:1.1.2-2) unstable; urgency=medium
+
+ [Andreas Boll]
+ * Switch to dh with the autoreconf and quilt addons, fixing possible FTBFS
+ when building in parallel (closes: #801059). Thanks, Matthias Klose!
+
+ [Julien Cristau]
+ * Remove Cyril from Uploaders.
+ * Bump Standards-Version to 3.9.6, update Vcs-* control fields.
+
```

+ -- Julien Cristau <jcristau@debian.org> Sat, 14 Nov 2015 10:04:44 +0100  
+  
+libxmu (2:1.1.2-1) unstable; urgency=low  
+  
+ \* New upstream release.  
+ \* Add \${misc:Depends} to libxmu-headers.  
+ \* Use /usr/share/quilt/quilt.make instead of xsfbs for patching.  
+ \* Add build-`{arch,indep}` debian/rules targets.  
+ \* Bump debhelper compat level from 5 to 7.  
+  
+ -- Julien Cristau <jcristau@debian.org> Mon, 05 May 2014 14:13:01 +0200  
+  
+libxmu (2:1.1.1-1) unstable; urgency=low  
+  
+ \* New upstream release.  
+ \* Don't require (fake)root for debian/rules clean.  
+ \* Bump build-deps on xutils-dev, xmlto and xorg-sgml-doctools per  
+ configure.ac.  
+ \* Xmu.html no longer hardcodes the full path to xlogo.svg, drop sed call  
+ from debian/rules.  
+ \* Remove David Nusinow from Uploaders.  
+ \* Bump debhelper build-dep for \${misc:Pre-Depends} usage.  
+  
+ -- Julien Cristau <jcristau@debian.org> Sat, 21 Apr 2012 10:50:11 +0200  
+  
+libxmu (2:1.1.0-3) unstable; urgency=low  
+  
+ \* Build for multiarch.  
+  
+ -- Steve Langasek <vorlon@debian.org> Fri, 21 Oct 2011 14:47:59 -0700  
+  
+libxmu (2:1.1.0-2) unstable; urgency=low  
+  
+ [ Christopher James Halse Rogers ]  
+ \* debian/patches/01\_dont\_export\_private\_deps.patch:  
+ - The Xmu.h header uses libXt symbols in a #define, so libXt is not a  
+ private dep. With binutils-gold, the indirect dependency on Xt is not  
+ considered when linking with Xmu so this causes build failures.  
+  
+ [ Julien Cristau ]  
+ \* Drop Pre-Depends on x11-common, only needed for upgrades from the  
+ monolith.  
+  
+ -- Julien Cristau <jcristau@debian.org> Thu, 28 Apr 2011 14:10:11 +0200  
+  
+libxmu (2:1.1.0-1) unstable; urgency=low  
+  
+ \* New upstream release.

+ \* Bump xutils-dev build-dep for new macros.  
+ \* Add xmlto, xorg-sgml-doctools, and w3m build-dep for the doc.  
+ \* Pass --with-xmlto and --without-fop (we want html and txt only).  
+ \* Pass --docdir=/usr/share/doc/libxmu-headers and add this directory to  
+ libxmu-headers.install file.  
+ \* Remove the hardcoded path to the X logo in the Xmu.html file.  
+ \* Kill \*.xml in the doc directory, no point in shipping them.  
+ \* Switch from --list-missing to --fail-missing for additional safety.  
+  
+ -- Cyril Brulebois <kibi@debian.org> Fri, 19 Nov 2010 08:42:29 +0100  
+  
+libxmu (2:1.0.5-2) unstable; urgency=high  
+  
+ [ Julien Cristau ]  
+ \* Rename the build directory to not include DEB\_BUILD\_GNU\_TYPE for no  
+ good reason. Thanks, Colin Watson!  
+ \* Remove myself from Uploaders  
+ \* Don't pass both -s and -Nfoo/-pfoo to dh\_strip. This resulted in an empty  
+ libxmu1-dbg (Closes: #594500). Thanks to Luca Falavigna for the report.  
+  
+ [ Cyril Brulebois ]  
+ \* Add myself to Uploaders.  
+ \* Bump urgency to high for the RC bugfix. Thanks to Jakub Wilk as well  
+ for the report.  
+  
+ -- Cyril Brulebois <kibi@debian.org> Sat, 04 Sep 2010 14:32:30 +0200  
+  
+libxmu (2:1.0.5-1) unstable; urgency=low  
+  
+ [ Timo Aaltonen ]  
+ \* New upstream release.  
+ + Fix 64bit support (closes: #521887)  
+  
+ [ Julien Cristau ]  
+ \* Bump Standards-Version to 3.8.3.  
+  
+ -- Julien Cristau <jcristau@debian.org> Wed, 25 Nov 2009 19:20:17 +0100  
+  
+libxmu (2:1.0.4-2) unstable; urgency=low  
+  
+ [ Julien Cristau ]  
+ \* Drop -1 debian revisions from build-deps.  
+ \* libxmu6{,-dbg}, libxmu-dev, libxmu1{,-dbg} and libxmu-dev don't need a  
+ dependency on x11-common.  
+ \* Build libxmu-headers in binary-indep instead of binary-arch  
+ (closes: #486418). Thanks, Martin Koeppe!  
+ \* Run autoreconf on build; build-depend on automake, libtool, xutils-dev.  
+ \* Handle parallel builds.

+  
 + [ Brice Goglin ]  
 + \* Add a link to [www.X.org](http://www.X.org) and a reference to the upstream module  
 + in the long description.  
 + \* Add upstream URL to `debian/copyright`.  
 + \* Add `README.source`, bump `Standards-Version` to 3.8.2.  
 + \* Use updated `xsfb`s, closes: #538587.  
 + \* Move `-dbg` packages to section `debug`.  
 +  
 + -- Julien Cristau <jcristau@debian.org> Fri, 07 Aug 2009 14:30:36 +0200  
 +  
 +libxmu (2:1.0.4-1) unstable; urgency=low  
 +  
 + [ Julien Cristau ]  
 + \* New upstream release.  
 + \* Make `libxmu*-dev` depend on `libxmu-headers` (= `${source:Version}`). Thanks,  
 + Josh Triplett.  
 + \* Don't export private dependencies in `xmu.pc` and `xmuu.pc`. These  
 + dependencies are handled by `Requires.private`.  
 + \* Due to the above, build-depend on `quilt` and apply the `xsfb` patch rules.  
 + \* Update `xsfb`s to the latest version as of 2008-01-06.  
 + \* Add myself to `Uploaders`, and remove Branden and Fabio with their  
 + permission.  
 + \* Bump `Standards-Version` to 3.7.3 (no changes).  
 + \* `s/^XS-Vcs/Vcs/`  
 +  
 + [ Timo Aaltonen ]  
 + \* Bump the epoch so that this can be synced to Ubuntu in the future.  
 +  
 + -- Julien Cristau <jcristau@debian.org> Thu, 17 Jan 2008 14:57:47 +0100  
 +  
 +libxmu (1:1.0.3-1) unstable; urgency=low  
 +  
 + \* New upstream release.  
 + \* Install the upstream changelog.  
 + \* Remove outdated CVS information from the package descriptions, and add  
 + `XS-Vcs-Git` and `XS-Vcs-Browser`.  
 + \* Fix package sections (libraries in `libs`, development stuff in `libdevel`).  
 + \* Use `${binary:Version}` instead of `${Source-Version}`.  
 +  
 + -- Julien Cristau <jcristau@debian.org> Thu, 12 Apr 2007 13:40:07 +0200  
 +  
 +libxmu (1:1.0.2-2) unstable; urgency=low  
 +  
 + [ Andres Salomon ]  
 + \* Test for `obj-$(DEB_BUILD_GNU_TYPE)` before creating it during build;  
 + idempotency fix.  
 +

+ [ Drew Parsons ]  
+ \* dbg package has priority extra.  
+  
+ -- David Nusinow <dnusinow@debian.org> Wed, 30 Aug 2006 16:53:25 -0400  
+  
+libxmu (1:1.0.2-1) experimental; urgency=low  
+  
+ \* New upstream release  
+ \* Bump debhelper compat to 5  
+ \* Run dh\_install with --list-missing  
+ \* Version the -headers package's x11-common pre-dep to use version 1:7.0.0  
+ to match the rest of Debian and shut lintian up  
+ \* Bump standards version to 3.7.2.0  
+  
+ -- David Nusinow <dnusinow@debian.org> Mon, 3 Jul 2006 18:43:32 -0400  
+  
+libxmu (1:1.0.1-3) unstable; urgency=low  
+  
+ \* Reorder makeshlib command in rules file so that ldconfig is run  
+ properly. Thanks Drew Parsons and Steve Langasek.  
+  
+ -- David Nusinow <dnusinow@debian.org> Tue, 18 Apr 2006 21:49:59 -0400  
+  
+libxmu (1:1.0.1-2) unstable; urgency=low  
+  
+ \* Upload to unstable  
+  
+ -- David Nusinow <dnusinow@debian.org> Thu, 23 Mar 2006 22:44:59 -0500  
+  
+libxmu (1:1.0.1-1) experimental; urgency=low  
+  
+ \* First upload to Debian  
+  
+ -- David Nusinow <dnusinow@debian.org> Thu, 29 Dec 2005 20:53:53 -0500  
+  
+libxmu (1:6.2.3-5) breezy; urgency=low  
+  
+ \* Also, libxmu-dev needs to depend on libxt-dev too.  
+  
+ -- Adam Conrad <adconrad@ubuntu.com> Mon, 25 Jul 2005 09:43:47 +0000  
+  
+libxmu (1:6.2.3-4) breezy; urgency=low  
+  
+ \* Bump libxt-dev build-dep once more, \_XOPEN\_SOURCE begone!  
+  
+ -- Adam Conrad <adconrad@ubuntu.com> Sun, 24 Jul 2005 10:48:14 +0000  
+  
+libxmu (1:6.2.3-3) breezy; urgency=low

```
+
+ * Make libxmu-dev depend on libxext-dev, since libxmu links to it.
+
+ -- Adam Conrad <adconrad@ubuntu.com> Sun, 24 Jul 2005 07:56:02 +0000
+
+libxmu (1:6.2.3-2) breezy; urgency=low
+
+ * Bump Build-Depends on libx11-dev, libxext-dev and libxt-dev to avoid
+ _XOPEN_SOURCE.
+
+ -- Daniel Stone <daniel.stone@ubuntu.com> Sat, 23 Jul 2005 00:20:50 +1000
+
+libxmu (1:6.2.3-1) breezy; urgency=low
+
+ * First libxmu release.
+
+ -- Daniel Stone <daniel.stone@ubuntu.com> Mon, 16 May 2005 22:10:17 +1000
--- libxmu-1.1.2.orig/debian/compat
+++ libxmu-1.1.2/debian/compat
@@ -0,0 +1 @@
+9
--- libxmu-1.1.2.orig/debian/control
+++ libxmu-1.1.2/debian/control
@@ -0,0 +1,155 @@
+Source: libxmu
+Section: x11
+Priority: optional
+Maintainer: Debian X Strike Force <debian-x@lists.debian.org>
+Build-Depends:
+ debhelper (>= 9),
+ dh-autoreconf,
+ libx11-dev (>= 1:0.99.2),
+ libxt-dev (>= 1:0.99.1),
+ libxext-dev (>= 1:0.99.1),
+ pkg-config,
+ quilt,
+ automake,
+ libtool,
+ xutils-dev (>= 1:7.6+2),
+# devel-docs:
+ xmlto (>= 0.0.22),
+ xorg-sgml-doctools (>= 1:1.8),
+ w3m,
+Standards-Version: 3.9.6
+Vcs-Git: git://anonscm.debian.org/git/pkg-xorg/lib/libxmu
+Vcs-Browser: https://anonscm.debian.org/cgit/pkg-xorg/lib/libxmu.git
+
+Package: libxmu6
```

+Section: libs  
 +Architecture: any  
 +Multi-Arch: same  
 +Pre-Depends: \${misc:Pre-Depends}  
 +Depends: \${shlibs:Depends}, \${misc:Depends}  
 +Description: X11 miscellaneous utility library  
 + libXmu provides a set of miscellaneous utility convenience functions for X  
 + libraries to use. libXmuu is a lighter-weight version that does not depend  
 + on libXt or libXext; for more information, see libxmu1.  
 + .  
 + More information about X.Org can be found at:  
 + <URL:http://www.X.org>  
 + .  
 + This module can be found at  
 + git://anongit.freedesktop.org/git/xorg/lib/libXmu  
 +  
 +Package: libxmu6-dbg  
 +Section: debug  
 +Architecture: any  
 +Multi-Arch: same  
 +Priority: extra  
 +Depends: \${shlibs:Depends}, \${misc:Depends}, libxmu6 (= \${binary:Version})  
 +Description: X11 miscellaneous utility library (debug package)  
 + libXmu provides a set of miscellaneous utility convenience functions for X  
 + libraries to use. libXmuu is a lighter-weight version that does not depend  
 + on libXt or libXext; for more information, see libxmu1.  
 + .  
 + This package contains the debug versions of the library found in libxmu6.  
 + Non-developers likely have little use for this package.  
 + .  
 + More information about X.Org can be found at:  
 + <URL:http://www.X.org>  
 + .  
 + This module can be found at  
 + git://anongit.freedesktop.org/git/xorg/lib/libXmu  
 +  
 +Package: libxmu-dev  
 +Section: libdevel  
 +Architecture: any  
 +Multi-Arch: same  
 +Depends: \${shlibs:Depends}, \${misc:Depends}, libxext-dev, libxt-dev, libxmu6 (= \${binary:Version}), libxmu-headers (= \${source:Version})  
 +Description: X11 miscellaneous utility library (development headers)  
 + libXmu provides a set of miscellaneous utility convenience functions for X  
 + libraries to use. libXmuu is a lighter-weight version that does not depend  
 + on libXt or libXext; for more information, see libxmu1.  
 + .  
 + This package contains the development headers for the library found in

+ libxmu6. Non-developers likely have little use for this package.

+ .

+ More information about X.Org can be found at:

+ <URL:http://www.X.org>

+ .

+ This module can be found at

+ [git://anongit.freedesktop.org/git/xorg/lib/libXmu](https://anongit.freedesktop.org/git/xorg/lib/libXmu)

+ .

+Package: libxmu1

+Section: libs

+Architecture: any

+Multi-Arch: same

+Pre-Depends: \${misc:Pre-Depends}

+Depends: \${shlibs:Depends}, \${misc:Depends}

+Description: X11 miscellaneous micro-utility library

+ libXmu provides a set of miscellaneous utility convenience functions for X

+ libraries to use. It is a lighter version of libXmu that does not depend

+ on libXt or libXext; for more information on libXmu, see libxmu6.

+ .

+ More information about X.Org can be found at:

+ <URL:http://www.X.org>

+ .

+ This module can be found at

+ [git://anongit.freedesktop.org/git/xorg/lib/libXmu](https://anongit.freedesktop.org/git/xorg/lib/libXmu)

+ .

+Package: libxmu1-dbg

+Section: debug

+Architecture: any

+Multi-Arch: same

+Priority: extra

+Depends: \${shlibs:Depends}, \${misc:Depends}, libxmu1 (= \${binary:Version})

+Description: X11 miscellaneous micro-utility library (debug package)

+ libXmu provides a set of miscellaneous utility convenience functions for X

+ libraries to use. It is a lighter version of libXmu that does not depend

+ on libXt or libXext; for more information on libXmu, see libxmu6.

+ .

+ This package contains the debug versions of the library found in libxmu1.

+ Non-developers likely have little use for this package.

+ .

+ More information about X.Org can be found at:

+ <URL:http://www.X.org>

+ .

+ This module can be found at

+ [git://anongit.freedesktop.org/git/xorg/lib/libXmu](https://anongit.freedesktop.org/git/xorg/lib/libXmu)

+ .

+Package: libxmu-dev

+Section: libdevel

+Architecture: any



+Multi-Arch: same

+Depends: `$(shlibs:Depends)`, `$(misc:Depends)`, `libxmu1 (= $(binary:Version))`, `libxmu-headers (= $(source:Version))`

+Description: X11 miscellaneous micro-utility library (development headers)

+ libXmu provides a set of miscellaneous utility convenience functions for X libraries to use. It is a lighter version of libXmu that does not depend on libXt or libXext; for more information on libXmu, see libxmu6.

+ .

+ This package contains the development headers for the library found in libxmu1. Non-developers likely have little use for this package.

+ .

+ More information about X.Org can be found at:

+ `<URL:http://www.X.org>`

+ .

+ This module can be found at

+ `git://anongit.freedesktop.org/git/xorg/lib/libXmu`

+ .

+Package: libxmu-headers

+Section: libdevel

+Architecture: all

+Multi-Arch: foreign

+Depends:

+ `libx11-dev`,

+ `x11proto-core-dev`,

+ `$(misc:Depends)`,

+Description: X11 miscellaneous utility library headers

+ libXmu and libXmuu are miscellaneous utility libraries for X library developers to abstract some common functions. This package provides the headers for both libraries (as libXmuu is a subset of libXmu), and is depended upon by both. For more information, please see libxmu-dev or libxmuu-dev.

+ .

+ More information about X.Org can be found at:

+ `<URL:http://www.X.org>`

+ .

+ This module can be found at

+ `git://anongit.freedesktop.org/git/xorg/lib/libXmu`

--- `libxmu-1.1.2.orig/debian/copyright`

+++ `libxmu-1.1.2/debian/copyright`

`@@ -0,0 +1,77 @@`

+This package was downloaded from

+`http://xorg.freedesktop.org/releases/individual/lib/`

+ .

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+ .

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+  
+-----  
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+-----  
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--- libxmu-1.1.2.orig/debian/libxmu-dev.install  
+++ libxmu-1.1.2/debian/libxmu-dev.install  
@@ -0,0 +1,3 @@  
+usr/lib/\*/libXmu.a  
+usr/lib/\*/libXmu.so  
+usr/lib/\*/pkgconfig/xmu.pc  
--- libxmu-1.1.2.orig/debian/libxmu-headers.install  
+++ libxmu-1.1.2/debian/libxmu-headers.install  
@@ -0,0 +1,2 @@  
+usr/include/X11/\*  
+usr/share/doc/libxmu-headers  
--- libxmu-1.1.2.orig/debian/libxmu6.install  
+++ libxmu-1.1.2/debian/libxmu6.install  
@@ -0,0 +1 @@  
+usr/lib/\*/libXmu.so.6\*  
--- libxmu-1.1.2.orig/debian/libxmu-dev.install  
+++ libxmu-1.1.2/debian/libxmu-dev.install  
@@ -0,0 +1,3 @@  
+usr/lib/\*/libXmu.a  
+usr/lib/\*/libXmu.so  
+usr/lib/\*/pkgconfig/xmu.pc  
--- libxmu-1.1.2.orig/debian/libxmu1.install  
+++ libxmu-1.1.2/debian/libxmu1.install  
@@ -0,0 +1 @@  
+usr/lib/\*/libXmu.so.1\*  
--- libxmu-1.1.2.orig/debian/patches/01\_dont\_export\_private\_deps.diff  
+++ libxmu-1.1.2/debian/patches/01\_dont\_export\_private\_deps.diff

```

@@ -0,0 +1,26 @@
+diff --git a/xmu.pc.in b/xmu.pc.in
+index a086f83..15dabff 100644
+--- a/xmu.pc.in
++++ b/xmu.pc.in
+@@ -6,7 +6,7 @@ includedir=@includedir@
+ Name: Xmu
+ Description: Xmu Library
+ Version: @PACKAGE_VERSION@
+-Requires: xproto x11 xt
++Requires: xproto xt
+ Requires.private: x11 xt xext
+ Cflags: -I${includedir}
+ Libs: -L${libdir} -lXmu
+diff --git a/xmuu.pc.in b/xmuu.pc.in
+index 1e91ac4..72fa5f9 100644
+--- a/xmuu.pc.in
++++ b/xmuu.pc.in
+@@ -6,7 +6,7 @@ includedir=@includedir@
+ Name: Xmuu
+ Description: Mini Xmu Library
+ Version: @PACKAGE_VERSION@
+-Requires: xproto x11
++Requires: xproto
+ Requires.private: x11
+ Cflags: -I${includedir}
+ Libs: -L${libdir} -lXmuu
--- libxmu-1.1.2.orig/debian/patches/series
+++ libxmu-1.1.2/debian/patches/series
@@ -0,0 +1 @@
+01_dont_export_private_deps.diff
--- libxmu-1.1.2.orig/debian/rules
+++ libxmu-1.1.2/debian/rules
@@ -0,0 +1,34 @@
+#!/usr/bin/make -f
+# debian/rules for the Debian libxmu package.
+# Copyright 2004 Scott James Remnant <scott@netsplit.com>
+# Copyright 2005 Daniel Stone <daniel@fooishbar.org>
+# Copyright 2005 David Nusinow <dnusinow@debian.org>
+
+# Uncomment this to turn on verbose mode.
+#export DH_VERBOSE=1
+
+.PHONY: build
+build:
+ dh build --with quilt,autoreconf --builddirectory=build/ --parallel
+
+%:

```

```

+ dh $@ --with quilt,autoreconf --builddirectory=build/ --parallel
+
+override_dh_auto_configure:
+ dh_auto_configure -- \
+ --disable-silent-rules \
+ --docdir=\${prefix}/share/doc/libxmu-headers \
+ --with-xmlto \
+ --without-fop
+
+override_dh_auto_install:
+ dh_auto_install
+ find debian/tmp/usr/share/doc/libxmu-headers -name '*.xml' -delete
+
+override_dh_install-arch:
+ dh_install --fail-missing -Xusr/include -X.la
+
+override_dh_strip:
+ dh_strip -Nlibxmu6 -Nlibxmu1
+ dh_strip -plibxmu6 --dbg-package=libxmu6-dbg
+ dh_strip -plibxmu1 --dbg-package=libxmu1-dbg
--- libxmu-1.1.2.orig/debian/watch
+++ libxmu-1.1.2/debian/watch
@@ -0,0 +1,3 @@
+#git=git://anongit.freedesktop.org/xorg/lib/libXmu
+version=3
+http://xorg.freedesktop.org/releases/individual/lib/ libXmu-(.*)\tar\gz

```

Found in path(s):

\* /opt/ws\_local/PERMITS\_SQL/1013987576\_1591897387.78/0/libxmu-1-1-2-2-diff-gz/libxmu\_1.1.2-2.diff

## 1.306 spring-security-config 5.6.2

### 1.306.1 Available under license :

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## 1.307 jackson-dataformat-cbor 2.13.2

### 1.307.1 Available under license :

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## 1.308 python-setuptools 39.0.1-2

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## 1.309 libjson-c3 0.12.1-1.3ubuntu0.3

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## 1.310 packaging 16.8

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## 1.311 chill-java 0.7.6

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\* <p>Encodes and decodes to and from Base64 notation.</p>

\* <p>Homepage: <a href="http://iharder.net/base64">http://iharder.net/base64</a>.</p>

\*

\* <p>Example:</p>

\*

\* <code>String encoded = Base64.encode( myByteArray );</code>

\* <br>

\* <code>byte[] myByteArray = Base64.decode( encoded );</code>

\*

\* <p>The <tt>options</tt> parameter, which appears in a few places, is used to pass

\* several pieces of information to the encoder. In the "higher level" methods such as

\* encodeBytes( bytes, options ) the options parameter can be used to indicate such

\* things as first gzipping the bytes before encoding them, not inserting linefeeds,

\* and encoding using the URL-safe and Ordered dialects.</p>

\*

\* <p>Note, according to <a href="http://www.faqs.org/rfcs/rfc3548.html">RFC3548</a>,</p>

\* Section 2.1, implementations should not add line feeds unless explicitly told

\* to do so. I've got Base64 set to this behavior now, although earlier versions

\* broke lines by default.</p>

\*

\* <p>The constants defined in Base64 can be OR-ed together to combine options, so you

\* might make a call like this:</p>

\*

\* <code>String encoded = Base64.encodeBytes( mybytes, Base64.GZIP | Base64.DO\_BREAK\_LINES );</code>

\* <p>to compress the data before encoding it and then making the output have newline characters.</p>

\* <p>Also...</p>

\* <code>String encoded = Base64.encodeBytes( crazyString.getBytes() );</code>

\*

\*

\*

\* <p>

\* Change Log:

\* </p>

- \* <ul>
- \* <li>v2.3.7 - Fixed subtle bug when base 64 input stream contained the value 01111111, which is an invalid base 64 character but should not throw an ArrayIndexOutOfBoundsException either. Led to discovery of mishandling (or potential for better handling) of other bad input characters. You should now get an IOException if you try decoding something that has bad characters in it.</li>
- \* <li>v2.3.6 - Fixed bug when breaking lines and the final byte of the encoded string ended in the last column; the buffer was not properly shrunk and contained an extra (null) byte that made it into the string.</li>
- \* <li>v2.3.5 - Fixed bug in { @link #encodeFromFile } where estimated buffer size was wrong for files of size 31, 34, and 37 bytes.</li>
- \* <li>v2.3.4 - Fixed bug when working with gzipped streams whereby flushing the Base64.OutputStream closed the Base64 encoding (by padding with equals signs) too soon. Also added an option to suppress the automatic decoding of gzipped streams. Also added experimental support for specifying a class loader when using the { @link #decodeToObject(java.lang.String, int, java.lang.ClassLoader) } method.</li>
- \* <li>v2.3.3 - Changed default char encoding to US-ASCII which reduces the internal Java footprint with its CharEncoders and so forth. Fixed some javadocs that were inconsistent. Removed imports and specified things like java.io.IOException explicitly inline.</li>
- \* <li>v2.3.2 - Reduced memory footprint! Finally refined the "guessing" of how big the final encoded data will be so that the code doesn't have to create two output arrays: an oversized initial one and then a final, exact-sized one. Big win when using the { @link #encodeBytesToBytes(byte[]) } family of methods (and not using the gzip options which uses a different mechanism with streams and stuff).</li>
- \* <li>v2.3.1 - Added { @link #encodeBytesToBytes(byte[], int, int, int) } and some similar helper methods to be more efficient with memory by not returning a String but just a byte array.</li>
- \* <li>v2.3 - <strong>This is not a drop-in replacement!</strong> This is two years of comments and bug fixes queued up and finally executed. Thanks to everyone who sent me stuff, and I'm sorry I wasn't able to distribute your fixes to everyone else. Much bad coding was cleaned up including throwing exceptions where necessary instead of returning null values or something similar. Here are some changes that may affect you:
- \* <ul>
- \* <li><em>Does not break lines, by default.</em> This is to keep in compliance with <a href="http://www.faqs.org/rfcs/rfc3548.html">RFC3548</a>.</li>
- \* <li><em>Throws exceptions instead of returning null values.</em> Because some operations (especially those that may permit the GZIP option) use IO streams, there is a possibility of an java.io.IOException being thrown. After some discussion and thought, I've changed the behavior of the methods to throw java.io.IOExceptions rather than return null if ever there's an error. I think this is more appropriate, though it will require some changes to your code. Sorry, it should have been done this way to begin with.</li>

- \* <li><em>Removed all references to System.out, System.err, and the like.</em>
- \* Shame on me. All I can say is sorry they were ever there.</li>
- \* <li><em>Throws NullPointerExceptions and IllegalArgumentExceptions</em> as needed
- \* such as when passed arrays are null or offsets are invalid.</li>
- \* <li>Cleaned up as much javadoc as I could to avoid any javadoc warnings.
- \* This was especially annoying before for people who were thorough in their
- \* own projects and then had gobs of javadoc warnings on this file.</li>
- \* </ul>
- \* <li>v2.2.1 - Fixed bug using URL\_SAFE and ORDERED encodings. Fixed bug
- \* when using very small files (~&lt; 40 bytes).</li>
- \* <li>v2.2 - Added some helper methods for encoding/decoding directly from
- \* one file to the next. Also added a main() method to support command line
- \* encoding/decoding from one file to the next. Also added these Base64 dialects:
- \* <ol>
- \* <li>The default is RFC3548 format.</li>
- \* <li>Calling Base64.setFormat(Base64.BASE64\_FORMAT.URLSAFE\_FORMAT) generates
- \* URL and file name friendly format as described in Section 4 of RFC3548.
- \* <http://www.faqs.org/rfcs/rfc3548.html></li>
- \* <li>Calling Base64.setFormat(Base64.BASE64\_FORMAT.ORDERED\_FORMAT) generates
- \* URL and file name friendly format that preserves lexical ordering as described
- \* in <http://www.faqs.org/qa/rfcc-1940.html></li>
- \* </ol>
- \* Special thanks to Jim Kellerman at <a href="http://www.powerset.com/">http://www.powerset.com/</a>
- \* for contributing the new Base64 dialects.
- \* </li>
- \* </ul>
- \* <li>v2.1 - Cleaned up javadoc comments and unused variables and methods. Added
- \* some convenience methods for reading and writing to and from files.</li>
- \* <li>v2.0.2 - Now specifies UTF-8 encoding in places where the code fails on systems
- \* with other encodings (like EBCDIC).</li>
- \* <li>v2.0.1 - Fixed an error when decoding a single byte, that is, when the
- \* encoded data was a single byte.</li>
- \* <li>v2.0 - I got rid of methods that used booleans to set options.
- \* Now everything is more consolidated and cleaner. The code now detects
- \* when data that's being decoded is gzip-compressed and will decompress it
- \* automatically. Generally things are cleaner. You'll probably have to
- \* change some method calls that you were making to support the new
- \* options format (<tt>int</tt>s that you "OR" together).</li>
- \* <li>v1.5.1 - Fixed bug when decompressing and decoding to a
- \* byte[] using <tt>decode( String s, boolean gzipCompressed )</tt>.
- \* Added the ability to "suspend" encoding in the Output Stream so
- \* you can turn on and off the encoding if you need to embed base64
- \* data in an otherwise "normal" stream (like an XML file).</li>
- \* <li>v1.5 - Output stream passes on flush() command but doesn't do anything itself.
- \* This helps when using GZIP streams.
- \* Added the ability to GZip-compress objects before encoding them.</li>
- \* <li>v1.4 - Added helper methods to read/write files.</li>
- \* <li>v1.3.6 - Fixed OutputStream.flush() so that 'position' is reset.</li>

- \* <li>v1.3.5 - Added flag to turn on and off line breaks. Fixed bug in input stream
- \* where last buffer being read, if not completely full, was not returned.</li>
- \* <li>v1.3.4 - Fixed when "improperly padded stream" error was thrown at the wrong time.</li>
- \* <li>v1.3.3 - Fixed I/O streams which were totally messed up.</li>

</ul>

<p>

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Please visit <a href="http://iharder.net/base64">http://iharder.net/base64</a> periodically to check for updates or to contribute improvements.

</p>

@author Robert Harder

@author rob@iharder.net

@version 2.3.7

/

Found in path(s):

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- \* /opt/cola/permits/1112810415\_1607255970.47/0/chill-java-0-7-6-sources-2-jar/com/twitter/chill/java/IterableRegistrarSerializer.java
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- \* /opt/cola/permits/1112810415\_1607255970.47/0/chill-java-0-7-6-sources-2-



jar/com/twitter/chill/java/BitSetSerializer.java  
\* /opt/cola/permits/1112810415\_1607255970.47/0/chill-java-0-7-6-sources-2-  
jar/com/twitter/chill/java/InetAddressSerializer.java  
\* /opt/cola/permits/1112810415\_1607255970.47/0/chill-java-0-7-6-sources-2-  
jar/com/twitter/chill/config/ConfiguredInstantiator.java  
\* /opt/cola/permits/1112810415\_1607255970.47/0/chill-java-0-7-6-sources-2-  
jar/com/twitter/chill/SingleRegistrar.java  
\* /opt/cola/permits/1112810415\_1607255970.47/0/chill-java-0-7-6-sources-2-  
jar/com/twitter/chill/ReflectingRegistrar.java  
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jar/com/twitter/chill/IKryoRegistrar.java  
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jar/com/twitter/chill/java/LocaleSerializer.java  
\* /opt/cola/permits/1112810415\_1607255970.47/0/chill-java-0-7-6-sources-2-  
jar/com/twitter/chill/ReflectingDefaultRegistrar.java  
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jar/com/twitter/chill/ClassRegistrar.java  
\* /opt/cola/permits/1112810415\_1607255970.47/0/chill-java-0-7-6-sources-2-  
jar/com/twitter/chill/java/UUIDSerializer.java  
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\* /opt/cola/permits/1112810415\_1607255970.47/0/chill-java-0-7-6-sources-2-jar/com/twitter/chill/java/UnmodifiableCollectionSerializer.java

\* /opt/cola/permits/1112810415\_1607255970.47/0/chill-java-0-7-6-sources-2-jar/com/twitter/chill/java/UnmodifiableSortedSetSerializer.java

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```
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jar/org/reactivestreams/Publisher.java
* /opt/cola/permits/1135840663_1613613063.73/0/reactive-streams-1-0-3-sources-3-
jar/org/reactivestreams/FlowAdapters.java
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jar/org/reactivestreams/Subscription.java
* /opt/cola/permits/1135840663_1613613063.73/0/reactive-streams-1-0-3-sources-3-
jar/org/reactivestreams/Subscriber.java
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# 1.314 berkeley-db 5.3.28-13.1ubuntu1

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\* /opt/cola/permits/1236287209\_1638499843.9/0/evo-inflector-1-3-jar/META-INF/maven/org.atteo/evo-inflector/pom.xml

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Source: <https://github.com/P-H-C/phc-winner-argon2>

Upstream-Contact: <https://github.com/P-H-C/phc-winner-argon2/issues>

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@heading Vincent Rijmen, Antoon Bosselaers, Paulo Barreto

AES in libcrypto

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rijndael-alg-fst.c

@version 3.0 (December 2000)

Optimised ANSI C code for the Rijndael cipher (now AES)

@author Vincent Rijmen <vincent.rijmen@esat.kuleuven.ac.be>

@author Antoon Bosselaers <antoon.bosselaers@esat.kuleuven.ac.be>

@author Paulo Barreto <paulo.barreto@terra.com.br>

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DES core in libcrypto

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D3DES (V5.09) -

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lib/hcrypto/test\_dh.c

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```
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```

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## 1.328 pcre 8.39-9

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## 1.329 inetutils 1.9.4-3ubuntu0.1

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## 1.331 wsgiref 0.1.2

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\* /opt/cola/permits/1110631633\_1606842249.91/0/wsgiref-0-1-2-2-zip/wsgiref-0.1.2/wsgiref/validate.py

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Metadata-Version: 1.0

Name: wsgiref

Version: 0.1.2

Summary: WSGI (PEP 333) Reference Library

Home-page: <http://cheeseshop.python.org/pypi/wsgiref>

Author: Phillip J. Eby

Author-email: [web-sig@python.org](mailto:web-sig@python.org)

License: PSF or ZPL

Description: This is a standalone release of the ```wsgiref``` library to be included in Python 2.5. For the standalone version's documentation, see:

HTML

[http://peak.telecommunity.com/wsgiref\\_docs/](http://peak.telecommunity.com/wsgiref_docs/)

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Platform: UNKNOWN

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\* /opt/cola/permits/1110631633\_1606842249.91/0/wsgiref-0-1-2-2-zip/wsgiref-0.1.2/wsgiref.egg-info/PKG-INFO

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# 1.332 mina 2.0.4

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Source: <https://github.com/heimdal/heimdal>  
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lib/wind/rfc3491.txt  
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```
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@vskip 20pt plus 1fil
@end macro
```

```
@macro copyrightstart{ }
@end macro
```

```
@macro copyrightend{ }
@end macro
```

```
@node Copyrights and Licenses, , Acknowledgments, Top
@comment node-name, next, previous, up
@appendix Copyrights and Licenses
```

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@heading Kungliga Tekniska Hgskolan
```

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@copyrightstart
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GSS-API mechlue layer.

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@table @asis

@item GSS-API CFX, SPNEGO, naming extensions, API extensions.

@item KCM credential cache.

@item HDB LDAP backend.

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@heading Vincent Rijmen, Antoon Bosselaers, Paulo Barreto

AES in libcrypto

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rijndael-alg-fst.c

@version 3.0 (December 2000)

Optimised ANSI C code for the Rijndael cipher (now AES)

@author Vincent Rijmen <vincent.rijmen@esat.kuleuven.ac.be>

@author Antoon Bosselaers <antoon.bosselaers@esat.kuleuven.ac.be>

@author Paulo Barreto <paulo.barreto@terra.com.br>

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DES core in libcrypto

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## 1.335 libjpeg 6b

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The Independent JPEG Group's JPEG software

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README for release 6b of 27-Mar-1998

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This software is the work of Tom Lane, Philip Gladstone, Jim Boucher, Lee Crocker, Julian Minguillon, Luis Ortiz, George Phillips, Davide Rossi, Guido Vollbeding, Ge' Weijers, and other members of the Independent JPEG Group.

IJG is not affiliated with the official ISO JPEG standards committee.

## DOCUMENTATION ROADMAP

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This file contains the following sections:

OVERVIEW        General description of JPEG and the IJG software.  
LEGAL ISSUES    Copyright, lack of warranty, terms of distribution.  
REFERENCES     Where to learn more about JPEG.  
ARCHIVE LOCATIONS Where to find newer versions of this software.  
RELATED SOFTWARE Other stuff you should get.  
FILE FORMAT WARS Software \*not\* to get.  
TO DO           Plans for future IJG releases.

Other documentation files in the distribution are:

User documentation:

install.doc    How to configure and install the IJG software.  
usage.doc      Usage instructions for cjpeg, djpeg, jpegtran,  
                 rdjpgcom, and wrjpgcom.  
\*.1            Unix-style man pages for programs (same info as usage.doc).  
wizard.doc     Advanced usage instructions for JPEG wizards only.  
change.log     Version-to-version change highlights.

Programmer and internal documentation:

libjpeg.doc    How to use the JPEG library in your own programs.  
example.c      Sample code for calling the JPEG library.  
structure.doc   Overview of the JPEG library's internal structure.  
filelist.doc   Road map of IJG files.  
coderules.doc  Coding style rules --- please read if you contribute code.

Please read at least the files install.doc and usage.doc. Useful information can also be found in the JPEG FAQ (Frequently Asked Questions) article. See ARCHIVE LOCATIONS below to find out where to obtain the FAQ article.

If you want to understand how the JPEG code works, we suggest reading one or more of the REFERENCES, then looking at the documentation files (in roughly the order listed) before diving into the code.

## OVERVIEW

=====

This package contains C software to implement JPEG image compression and decompression. JPEG (pronounced "jay-peg") is a standardized compression method for full-color and gray-scale images. JPEG is intended for compressing "real-world" scenes; line drawings, cartoons and other non-realistic images

are not its strong suit. JPEG is lossy, meaning that the output image is not exactly identical to the input image. Hence you must not use JPEG if you have to have identical output bits. However, on typical photographic images, very good compression levels can be obtained with no visible change, and remarkably high compression levels are possible if you can tolerate a low-quality image. For more details, see the references, or just experiment with various compression settings.

This software implements JPEG baseline, extended-sequential, and progressive compression processes. Provision is made for supporting all variants of these processes, although some uncommon parameter settings aren't implemented yet. For legal reasons, we are not distributing code for the arithmetic-coding variants of JPEG; see LEGAL ISSUES. We have made no provision for supporting the hierarchical or lossless processes defined in the standard.

We provide a set of library routines for reading and writing JPEG image files, plus two sample applications "cjpeg" and "djpeg", which use the library to perform conversion between JPEG and some other popular image file formats. The library is intended to be reused in other applications.

In order to support file conversion and viewing software, we have included considerable functionality beyond the bare JPEG coding/decoding capability; for example, the color quantization modules are not strictly part of JPEG decoding, but they are essential for output to colormapped file formats or colormapped displays. These extra functions can be compiled out of the library if not required for a particular application. We have also included "jpegtran", a utility for lossless transcoding between different JPEG processes, and "rdjpgcom" and "wrjpgcom", two simple applications for inserting and extracting textual comments in JFIF files.

The emphasis in designing this software has been on achieving portability and flexibility, while also making it fast enough to be useful. In particular, the software is not intended to be read as a tutorial on JPEG. (See the REFERENCES section for introductory material.) Rather, it is intended to be reliable, portable, industrial-strength code. We do not claim to have achieved that goal in every aspect of the software, but we strive for it.

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that you must include source code if you redistribute it. (See the file ansi2knr.c for full details.) However, since ansi2knr.c is not needed as part of any program generated from the IJG code, this does not limit you more than the foregoing paragraphs do.

The Unix configuration script "configure" was produced with GNU Autoconf. It is copyright by the Free Software Foundation but is freely distributable. The same holds for its supporting scripts (config.guess, config.sub, ltconfig, ltmain.sh). Another support script, install-sh, is copyright by M.I.T. but is also freely distributable.

It appears that the arithmetic coding option of the JPEG spec is covered by patents owned by IBM, AT&T, and Mitsubishi. Hence arithmetic coding cannot legally be used without obtaining one or more licenses. For this reason, support for arithmetic coding has been removed from the free JPEG software. (Since arithmetic coding provides only a marginal gain over the unpatented Huffman mode, it is unlikely that very many implementations will support it.) So far as we are aware, there are no patent restrictions on the remaining code.

The IJG distribution formerly included code to read and write GIF files. To avoid entanglement with the Unisys LZW patent, GIF reading support has been removed altogether, and the GIF writer has been simplified to produce "uncompressed GIFs". This technique does not use the LZW algorithm; the resulting GIF files are larger than usual, but are readable by all standard GIF decoders.

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## REFERENCES

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We highly recommend reading one or more of these references before trying to understand the innards of the JPEG software.

The best short technical introduction to the JPEG compression algorithm is Wallace, Gregory K. "The JPEG Still Picture Compression Standard", Communications of the ACM, April 1991 (vol. 34 no. 4), pp. 30-44. (Adjacent articles in that issue discuss MPEG motion picture compression, applications of JPEG, and related topics.) If you don't have the CACM issue handy, a PostScript file containing a revised version of Wallace's article is available at <ftp://ftp.uu.net/graphics/jpeg/wallace.ps.gz>. The file (actually a preprint for an article that appeared in IEEE Trans. Consumer Electronics) omits the sample images that appeared in CACM, but it includes corrections

and some added material. Note: the Wallace article is copyright ACM and IEEE, and it may not be used for commercial purposes.

A somewhat less technical, more leisurely introduction to JPEG can be found in "The Data Compression Book" by Mark Nelson and Jean-loup Gailly, published by M&T Books (New York), 2nd ed. 1996, ISBN 1-55851-434-1. This book provides good explanations and example C code for a multitude of compression methods including JPEG. It is an excellent source if you are comfortable reading C code but don't know much about data compression in general. The book's JPEG sample code is far from industrial-strength, but when you are ready to look at a full implementation, you've got one here...

The best full description of JPEG is the textbook "JPEG Still Image Data Compression Standard" by William B. Pennebaker and Joan L. Mitchell, published by Van Nostrand Reinhold, 1993, ISBN 0-442-01272-1. Price US\$59.95, 638 pp. The book includes the complete text of the ISO JPEG standards (DIS 10918-1 and draft DIS 10918-2). This is by far the most complete exposition of JPEG in existence, and we highly recommend it.

The JPEG standard itself is not available electronically; you must order a paper copy through ISO or ITU. (Unless you feel a need to own a certified official copy, we recommend buying the Pennebaker and Mitchell book instead; it's much cheaper and includes a great deal of useful explanatory material.) In the USA, copies of the standard may be ordered from ANSI Sales at (212) 642-4900, or from Global Engineering Documents at (800) 854-7179. (ANSI doesn't take credit card orders, but Global does.) It's not cheap: as of 1992, ANSI was charging \$95 for Part 1 and \$47 for Part 2, plus 7% shipping/handling. The standard is divided into two parts, Part 1 being the actual specification, while Part 2 covers compliance testing methods. Part 1 is titled "Digital Compression and Coding of Continuous-tone Still Images, Part 1: Requirements and guidelines" and has document numbers ISO/IEC IS 10918-1, ITU-T T.81. Part 2 is titled "Digital Compression and Coding of Continuous-tone Still Images, Part 2: Compliance testing" and has document numbers ISO/IEC IS 10918-2, ITU-T T.83.

Some extensions to the original JPEG standard are defined in JPEG Part 3, a newer ISO standard numbered ISO/IEC IS 10918-3 and ITU-T T.84. IJG currently does not support any Part 3 extensions.

The JPEG standard does not specify all details of an interchangeable file format. For the omitted details we follow the "JFIF" conventions, revision 1.02. A copy of the JFIF spec is available from:

Literature Department  
C-Cube Microsystems, Inc.  
1778 McCarthy Blvd.  
Milpitas, CA 95035  
phone (408) 944-6300, fax (408) 944-6314

A PostScript version of this document is available by FTP at

<ftp://ftp.uu.net/graphics/jpeg/jfif.ps.gz>. There is also a plain text version at <ftp://ftp.uu.net/graphics/jpeg/jfif.txt.gz>, but it is missing the figures.

The TIFF 6.0 file format specification can be obtained by FTP from <ftp://ftp.sgi.com/graphics/tiff/TIFF6.ps.gz>. The JPEG incorporation scheme found in the TIFF 6.0 spec of 3-June-92 has a number of serious problems. IJG does not recommend use of the TIFF 6.0 design (TIFF Compression tag 6). Instead, we recommend the JPEG design proposed by TIFF Technical Note #2 (Compression tag 7). Copies of this Note can be obtained from <ftp.sgi.com> or from <ftp://ftp.uu.net/graphics/jpeg/>. It is expected that the next revision of the TIFF spec will replace the 6.0 JPEG design with the Note's design. Although IJG's own code does not support TIFF/JPEG, the free libtiff library uses our library to implement TIFF/JPEG per the Note. libtiff is available from <ftp://ftp.sgi.com/graphics/tiff/>.

## ARCHIVE LOCATIONS

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The "official" archive site for this software is <ftp.uu.net> (Internet address 192.48.96.9). The most recent released version can always be found there in directory <graphics/jpeg>. This particular version will be archived as <ftp://ftp.uu.net/graphics/jpeg/jpegsrc.v6b.tar.gz>. If you don't have direct Internet access, UUNET's archives are also available via UUCP; contact [help@uunet.uu.net](mailto:help@uunet.uu.net) for information on retrieving files that way.

Numerous Internet sites maintain copies of the UUNET files. However, only <ftp.uu.net> is guaranteed to have the latest official version.

You can also obtain this software in DOS-compatible "zip" archive format from the SimTel archives (<ftp://ftp.simtel.net/pub/simtelnet/msdos/graphics/>), or on CompuServe in the Graphics Support forum (GO CIS:GRAPHSUP), library 12 "JPEG Tools". Again, these versions may sometimes lag behind the <ftp.uu.net> release.

The JPEG FAQ (Frequently Asked Questions) article is a useful source of general information about JPEG. It is updated constantly and therefore is not included in this distribution. The FAQ is posted every two weeks to Usenet newsgroups <comp.graphics.misc>, <news.answers>, and other groups. It is available on the World Wide Web at <http://www.faqs.org/faqs/jpeg-faq/> and other <news.answers> archive sites, including the official <news.answers> archive at <rtfm.mit.edu>: <ftp://rtfm.mit.edu/pub/usenet/news.answers/jpeg-faq/>. If you don't have Web or FTP access, send e-mail to [mail-server@rtfm.mit.edu](mailto:mail-server@rtfm.mit.edu) with body

send usenet/news.answers/jpeg-faq/part1

send usenet/news.answers/jpeg-faq/part2

## RELATED SOFTWARE

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Numerous viewing and image manipulation programs now support JPEG. (Quite a few of them use this library to do so.) The JPEG FAQ described above lists some of the more popular free and shareware viewers, and tells where to obtain them on Internet.

If you are on a Unix machine, we highly recommend Jef Poskanzer's free PBPLUS software, which provides many useful operations on PPM-format image files. In particular, it can convert PPM images to and from a wide range of other formats, thus making cjpeg/djpeg considerably more useful. The latest version is distributed by the NetPBM group, and is available from numerous sites, notably <ftp://wuarchive.wustl.edu/graphics/graphics/packages/NetPBM/>. Unfortunately PBPLUS/NETPBM is not nearly as portable as the IJG software is; you are likely to have difficulty making it work on any non-Unix machine.

A different free JPEG implementation, written by the PVRG group at Stanford, is available from <ftp://havefun.stanford.edu/pub/jpeg/>. This program is designed for research and experimentation rather than production use; it is slower, harder to use, and less portable than the IJG code, but it is easier to read and modify. Also, the PVRG code supports lossless JPEG, which we do not. (On the other hand, it doesn't do progressive JPEG.)

## FILE FORMAT WARS

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Some JPEG programs produce files that are not compatible with our library. The root of the problem is that the ISO JPEG committee failed to specify a concrete file format. Some vendors "filled in the blanks" on their own, creating proprietary formats that no one else could read. (For example, none of the early commercial JPEG implementations for the Macintosh were able to exchange compressed files.)

The file format we have adopted is called JFIF (see REFERENCES). This format has been agreed to by a number of major commercial JPEG vendors, and it has become the de facto standard. JFIF is a minimal or "low end" representation. We recommend the use of TIFF/JPEG (TIFF revision 6.0 as modified by TIFF Technical Note #2) for "high end" applications that need to record a lot of additional data about an image. TIFF/JPEG is fairly new and not yet widely supported, unfortunately.

The upcoming JPEG Part 3 standard defines a file format called SPIFF. SPIFF is interoperable with JFIF, in the sense that most JFIF decoders should be able to read the most common variant of SPIFF. SPIFF has some technical advantages over JFIF, but its major claim to fame is simply that it is an



official standard rather than an informal one. At this point it is unclear whether SPIFF will supersede JFIF or whether JFIF will remain the de-facto standard. IJG intends to support SPIFF once the standard is frozen, but we have not decided whether it should become our default output format or not. (In any case, our decoder will remain capable of reading JFIF indefinitely.)

Various proprietary file formats incorporating JPEG compression also exist. We have little or no sympathy for the existence of these formats. Indeed, one of the original reasons for developing this free software was to help force convergence on common, open format standards for JPEG files. Don't use a proprietary file format!

TO DO

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The major thrust for v7 will probably be improvement of visual quality. The current method for scaling the quantization tables is known not to be very good at low Q values. We also intend to investigate block boundary smoothing, "poor man's variable quantization", and other means of improving quality-vs-file-size performance without sacrificing compatibility.

In future versions, we are considering supporting some of the upcoming JPEG Part 3 extensions --- principally, variable quantization and the SPIFF file format.

As always, speeding things up is of great interest.

Please send bug reports, offers of help, etc. to [jpeg-info@uunet.uu.net](mailto:jpeg-info@uunet.uu.net).

## 1.336 jakarta-ws-rs-api 2.1.6

### 1.336.1 Available under license :

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\* Project home: <https://projects.eclipse.org/projects/ee4j.jaxrs>

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## ## Source Code

The project maintains the following source code repositories:

\* <https://github.com/eclipse-ee4j/jaxrs-api>

## ## Third-party Content

This project leverages the following third party content.

javaee-api (7.0)

\* License: Apache-2.0 AND W3C

JUnit (4.11)

\* License: Common Public License 1.0

Mockito (2.16.0)

\* Project: <http://site.mockito.org>

\* Source: <https://github.com/mockito/mockito/releases/tag/v2.16.0>

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## 1.337 mime-support 3.60ubuntu1

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\* /opt/cola/permits/1003294990\_1606873229.71/0/kryo-serializers-0-41-sources-jar/de/javakaffee/kryoserializers/SynchronizedCollectionsSerializer.java  
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\* /opt/cola/permits/1003294990\_1606873229.71/0/kryo-serializers-0-41-sources-jar/de/javakaffee/kryoserializers/CollectionsEmptyMapSerializer.java  
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\* /opt/cola/permits/1003294990\_1606873229.71/0/kryo-serializers-0-41-sources-

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jar/de/javakaffee/kryoserializers/GregorianCalendarSerializer.java
* /opt/cola/permits/1003294990_1606873229.71/0/kryo-serializers-0-41-sources-
jar/de/javakaffee/kryoserializers/KryoReflectionFactorySupport.java
* /opt/cola/permits/1003294990_1606873229.71/0/kryo-serializers-0-41-sources-
jar/de/javakaffee/kryoserializers/EnumSetSerializer.java
* /opt/cola/permits/1003294990_1606873229.71/0/kryo-serializers-0-41-sources-
jar/de/javakaffee/kryoserializers/cglib/CGLibProxySerializer.java
* /opt/cola/permits/1003294990_1606873229.71/0/kryo-serializers-0-41-sources-
jar/de/javakaffee/kryoserializers/CollectionsSingletonListSerializer.java
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jar/de/javakaffee/kryoserializers/UnmodifiableCollectionsSerializer.java
* /opt/cola/permits/1003294990_1606873229.71/0/kryo-serializers-0-41-sources-
jar/de/javakaffee/kryoserializers/CollectionsSingletonMapSerializer.java
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/**
* <p>
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* </p>
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* </p>
* <p>
* For example:
* </p>
*
```

```

*
* <p>
* Key ID: <code>1234abcd-12ab-34cd-56ef-1234567890ab</code>
* </p>
*
*
* <p>
* Key ARN: <code>arn:aws:kms:us-east-2:111122223333:key/1234abcd-12ab-34cd-56ef-1234567890ab</code>
* </p>
*
*
* <p>
* To get the key ID and key ARN for a KMS key, use <a>ListKeys or <a>DescribeKey.
* </p>
*/
/**
* <p>
* The principal that has permission to use the <a>RetireGrant operation to retire the grant.
* </p>
* <p>
* To specify the principal, use the <a
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* (root), IAM users, federated users, and assumed role users. For examples of the ARN syntax to use for
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* href="https://docs.aws.amazon.com/kms/latest/developerguide/grant-manage.html#grant-delete">Retiring and
revoking
* grants in the <i>Key Management Service Developer Guide</i>.
* </p>
*/
/**
* <p>
* Identifies the KMS key for the grant. The grant gives principals permission to use this KMS key.
* </p>
* <p>
* Specify the key ID or key ARN of the KMS key. To specify a KMS key in a different Amazon Web Services

```

account,

\* you must use the key ARN.

\* </p>

\* <p>

\* For example:

\* </p>

\* <ul>

\* <li>

\* <p>

\* Key ID: <code>1234abcd-12ab-34cd-56ef-1234567890ab</code>

\* </p>

\* </li>

\* <li>

\* <p>

\* Key ARN: <code>arn:aws:kms:us-east-2:111122223333:key/1234abcd-12ab-34cd-56ef-1234567890ab</code>

\* </p>

\* </li>

\* </ul>

\* <p>

\* To get the key ID and key ARN for a KMS key, use <a>ListKeys</a> or <a>DescribeKey</a>.

\* </p>

\*

\* @param keyId

\* Identifies the KMS key for the grant. The grant gives principals permission to use this KMS key.</p>

\* <p>

\* Specify the key ID or key ARN of the KMS key. To specify a KMS key in a different Amazon Web

Services

\* account, you must use the key ARN.

\* </p>

\* <p>

\* For example:

\* </p>

\* <ul>

\* <li>

\* <p>

\* Key ID: <code>1234abcd-12ab-34cd-56ef-1234567890ab</code>

\* </p>

\* </li>

\* <li>

\* <p>

\* Key ARN: <code>arn:aws:kms:us-east-2:111122223333:key/1234abcd-12ab-34cd-56ef-

1234567890ab</code>

\* </p>

\* </li>

\* </ul>

\* <p>

\* To get the key ID and key ARN for a KMS key, use <a>ListKeys</a> or <a>DescribeKey</a>.

\*/

```

/**
 * <p>
 * Identifies the KMS key for the grant. The grant gives principals permission to use this KMS key.
 * </p>
 * <p>
 * Specify the key ID or key ARN of the KMS key. To specify a KMS key in a different Amazon Web Services
account,
 * you must use the key ARN.
 * </p>
 * <p>
 * For example:
 * </p>
 *
 *
 * <p>
 * Key ID: <code>1234abcd-12ab-34cd-56ef-1234567890ab</code>
 * </p>
 *
 *
 * <p>
 * Key ARN: <code>arn:aws:kms:us-east-2:111122223333:key/1234abcd-12ab-34cd-56ef-1234567890ab</code>
 * </p>
 *
 *
 * <p>
 * To get the key ID and key ARN for a KMS key, use <a>ListKeys or <a>DescribeKey.
 * </p>
 *
 * @return Identifies the KMS key for the grant. The grant gives principals permission to use this KMS key.</p>
 * <p>
 * Specify the key ID or key ARN of the KMS key. To specify a KMS key in a different Amazon Web
Services
 * account, you must use the key ARN.
 * </p>
 * <p>
 * For example:
 * </p>
 *
 *
 * <p>
 * Key ID: <code>1234abcd-12ab-34cd-56ef-1234567890ab</code>
 * </p>
 *
 *
 * <p>
 * Key ARN: <code>arn:aws:kms:us-east-2:111122223333:key/1234abcd-12ab-34cd-56ef-
1234567890ab</code>
 * </p>

```

```

*
*
* <p>
* To get the key ID and key ARN for a KMS key, use <a>ListKeys or <a>DescribeKey.
*/
/**
* <p>
* The principal that has permission to use the <a>RetireGrant operation to retire the grant.
* </p>
* <p>
* To specify the principal, use the <a
* href="https://docs.aws.amazon.com/general/latest/gr/aws-arns-and-namespaces.html">Amazon Resource Name
(ARN)
* of an Amazon Web Services principal. Valid Amazon Web Services principals include Amazon Web Services
accounts
* (root), IAM users, federated users, and assumed role users. For examples of the ARN syntax to use for
specifying
* a principal, see <a
* href="https://docs.aws.amazon.com/general/latest/gr/aws-arns-and-namespaces.html#arn-syntax-iam">Amazon
Web
* Services Identity and Access Management (IAM) in the Example ARNs section of the <i>Amazon Web
Services
* General Reference</i>.
* </p>
* <p>
* The grant determines the retiring principal. Other principals might have permission to retire the grant or revoke
* the grant. For details, see <a>RevokeGrant and <a
* href="https://docs.aws.amazon.com/kms/latest/developerguide/grant-manage.html#grant-delete">Retiring and
revoking
* grants in the <i>Key Management Service Developer Guide</i>.
* </p>
*
* @param retiringPrincipal
* The principal that has permission to use the <a>RetireGrant operation to retire the grant. </p>
* <p>
* To specify the principal, use the <a
* href="https://docs.aws.amazon.com/general/latest/gr/aws-arns-and-namespaces.html">Amazon Resource
Name
* (ARN) of an Amazon Web Services principal. Valid Amazon Web Services principals include Amazon
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iam">Amazon
* Web Services Identity and Access Management (IAM) in the Example ARNs section of the
<i>Amazon Web
* Services General Reference</i>.
* </p>

```

```

* <p>
* The grant determines the retiring principal. Other principals might have permission to retire the grant or
* revoke the grant. For details, see <a>RevokeGrant and <a
* href="https://docs.aws.amazon.com/kms/latest/developerguide/grant-manage.html#grant-delete">Retiring
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* revoking grants in the <i>Key Management Service Developer Guide</i>.
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* a principal, see <a
* href="https://docs.aws.amazon.com/general/latest/gr/aws-arns-and-namespaces.html#arn-syntax-iam">Amazon
Web
* Services Identity and Access Management (IAM) in the Example ARNs section of the <i>Amazon Web
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* General Reference</i>.
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* <p>
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* href="https://docs.aws.amazon.com/kms/latest/developerguide/grant-manage.html#grant-delete">Retiring and
revoking
* grants in the <i>Key Management Service Developer Guide</i>.
* </p>
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* @return The principal that has permission to use the <a>RetireGrant operation to retire the grant. </p>
* <p>
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* href="https://docs.aws.amazon.com/general/latest/gr/aws-arns-and-namespaces.html">Amazon Resource
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* (ARN) of an Amazon Web Services principal. Valid Amazon Web Services principals include
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* syntax to use for specifying a principal, see <a
* href="https://docs.aws.amazon.com/general/latest/gr/aws-arns-and-namespaces.html#arn-syntax-
iam">Amazon
* Web Services Identity and Access Management (IAM) in the Example ARNs section of the
<i>Amazon Web
* Services General Reference</i>.

```



```
* </p>
* <p>
* The grant determines the retiring principal. Other principals might have permission to retire the grant
* or revoke the grant. For details, see <a>RevokeGrant and <a
* href="https://docs.aws.amazon.com/kms/latest/developerguide/grant-manage.html#grant-delete">Retiring
and
* revoking grants in the <i>Key Management Service Developer Guide</i>.
*/
```

Found in path(s):

```
* /opt/cola/permits/1273483844_1645114020.93/0/aws-java-sdk-kms-1-12-86-sources-
jar/com/amazonaws/services/kms/model/CreateGrantRequest.java
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*/
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```
* /opt/cola/permits/1273483844_1645114020.93/0/aws-java-sdk-kms-1-12-86-sources-
jar/com/amazonaws/services/kms/model/transform/ExpiredImportTokenExceptionUnmarshaller.java
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* /opt/cola/permits/1273483844_1645114020.93/0/aws-java-sdk-kms-1-12-86-sources-
jar/com/amazonaws/services/kms/model/transform/DeleteCustomKeyStoreRequestProtocolMarshaller.java
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* /opt/cola/permits/1273483844_1645114020.93/0/aws-java-sdk-kms-1-12-86-sources-
jar/com/amazonaws/services/kms/model/transform/DependencyTimeoutExceptionUnmarshaller.java
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* /opt/cola/permits/1273483844_1645114020.93/0/aws-java-sdk-kms-1-12-86-sources-
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* /opt/cola/permits/1273483844_1645114020.93/0/aws-java-sdk-kms-1-12-86-sources-
jar/com/amazonaws/services/kms/model/NotFoundException.java
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* /opt/cola/permits/1273483844_1645114020.93/0/aws-java-sdk-kms-1-12-86-sources-
jar/com/amazonaws/services/kms/model/transform/GrantListEntryJsonUnmarshaller.java
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* /opt/cola/permits/1273483844_1645114020.93/0/aws-java-sdk-kms-1-12-86-sources-
jar/com/amazonaws/services/kms/model/KeyUsageType.java
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* /opt/cola/permits/1273483844_1645114020.93/0/aws-java-sdk-kms-1-12-86-sources-
jar/com/amazonaws/services/kms/model/AliasListEntry.java
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* /opt/cola/permits/1273483844_1645114020.93/0/aws-java-sdk-kms-1-12-86-sources-
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jar/com/amazonaws/services/kms/model/transform/GrantListEntryMarshaller.java  
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\* /opt/cola/permits/1273483844\_1645114020.93/0/aws-java-sdk-kms-1-12-86-sources-  
jar/com/amazonaws/services/kms/model/transform/CloudHsmClusterNotRelatedExceptionUnmarshaller.java  
\* /opt/cola/permits/1273483844\_1645114020.93/0/aws-java-sdk-kms-1-12-86-sources-  
jar/com/amazonaws/services/kms/model/GrantListEntry.java  
\* /opt/cola/permits/1273483844\_1645114020.93/0/aws-java-sdk-kms-1-12-86-sources-  
jar/com/amazonaws/services/kms/model/transform/ListGrantsRequestProtocolMarshaller.java  
\* /opt/cola/permits/1273483844\_1645114020.93/0/aws-java-sdk-kms-1-12-86-sources-  
jar/com/amazonaws/services/kms/model/CreateKeyRequest.java  
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jar/com/amazonaws/services/kms/model/transform/UpdateAliasResultJsonUnmarshaller.java  
\* /opt/cola/permits/1273483844\_1645114020.93/0/aws-java-sdk-kms-1-12-86-sources-  
jar/com/amazonaws/services/kms/model/transform/CreateKeyRequestProtocolMarshaller.java  
\* /opt/cola/permits/1273483844\_1645114020.93/0/aws-java-sdk-kms-1-12-86-sources-  
jar/com/amazonaws/services/kms/model/RevokeGrantRequest.java  
\* /opt/cola/permits/1273483844\_1645114020.93/0/aws-java-sdk-kms-1-12-86-sources-  
jar/com/amazonaws/services/kms/model/transform/DisableKeyRotationRequestProtocolMarshaller.java  
\* /opt/cola/permits/1273483844\_1645114020.93/0/aws-java-sdk-kms-1-12-86-sources-  
jar/com/amazonaws/services/kms/model/transform/DisconnectCustomKeyStoreResultJsonUnmarshaller.java  
\* /opt/cola/permits/1273483844\_1645114020.93/0/aws-java-sdk-kms-1-12-86-sources-  
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\* /opt/cola/permits/1273483844\_1645114020.93/0/aws-java-sdk-kms-1-12-86-sources-  
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\* /opt/cola/permits/1273483844\_1645114020.93/0/aws-java-sdk-kms-1-12-86-sources-  
jar/com/amazonaws/services/kms/model/CustomKeyStoreNameInUseException.java  
\* /opt/cola/permits/1273483844\_1645114020.93/0/aws-java-sdk-kms-1-12-86-sources-  
jar/com/amazonaws/services/kms/model/RetireGrantRequest.java  
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jar/com/amazonaws/services/kms/model/transform/ListResourceTagsRequestMarshaller.java  
\* /opt/cola/permits/1273483844\_1645114020.93/0/aws-java-sdk-kms-1-12-86-sources-  
jar/com/amazonaws/services/kms/model/transform/TagResourceRequestMarshaller.java  
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\* /opt/cola/permits/1273483844\_1645114020.93/0/aws-java-sdk-kms-1-12-86-sources-  
jar/com/amazonaws/services/kms/model/transform/SignRequestMarshaller.java  
\* /opt/cola/permits/1273483844\_1645114020.93/0/aws-java-sdk-kms-1-12-86-sources-  
jar/com/amazonaws/services/kms/model/transform/GenerateDataKeyWithoutPlaintextRequestProtocolMarshaller.java  
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\* /opt/cola/permits/1273483844\_1645114020.93/0/aws-java-sdk-kms-1-12-86-sources-  
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\* /opt/cola/permits/1273483844\_1645114020.93/0/aws-java-sdk-kms-1-12-86-sources-jar/com/amazonaws/services/kms/model/DeleteImportedKeyMaterialResult.java  
\* /opt/cola/permits/1273483844\_1645114020.93/0/aws-java-sdk-kms-1-12-86-sources-jar/com/amazonaws/services/kms/model/GetKeyRotationStatusRequest.java  
\* /opt/cola/permits/1273483844\_1645114020.93/0/aws-java-sdk-kms-1-12-86-sources-jar/com/amazonaws/services/kms/model/transform/CancelKeyDeletionResultJsonUnmarshaller.java  
\* /opt/cola/permits/1273483844\_1645114020.93/0/aws-java-sdk-kms-1-12-86-sources-jar/com/amazonaws/services/kms/model/transform/GenerateDataKeyWithoutPlaintextRequestMarshaller.java  
\* /opt/cola/permits/1273483844\_1645114020.93/0/aws-java-sdk-kms-1-12-86-sources-jar/com/amazonaws/services/kms/model/MultiRegionKeyType.java  
\* /opt/cola/permits/1273483844\_1645114020.93/0/aws-java-sdk-kms-1-12-86-sources-jar/com/amazonaws/services/kms/model/transform/GetPublicKeyResultJsonUnmarshaller.java  
\* /opt/cola/permits/1273483844\_1645114020.93/0/aws-java-sdk-kms-1-12-86-sources-jar/com/amazonaws/services/kms/model/UpdatePrimaryRegionResult.java  
\* /opt/cola/permits/1273483844\_1645114020.93/0/aws-java-sdk-kms-1-12-86-sources-jar/com/amazonaws/services/kms/model/TagResourceRequest.java  
\* /opt/cola/permits/1273483844\_1645114020.93/0/aws-java-sdk-kms-1-12-86-sources-jar/com/amazonaws/services/kms/model/transform/DeleteImportedKeyMaterialResultJsonUnmarshaller.java  
\* /opt/cola/permits/1273483844\_1645114020.93/0/aws-java-sdk-kms-1-12-86-sources-jar/com/amazonaws/services/kms/model/transform/KeyMetadataMarshaller.java  
\* /opt/cola/permits/1273483844\_1645114020.93/0/aws-java-sdk-kms-1-12-86-sources-jar/com/amazonaws/services/kms/model/transform/DisableKeyRequestProtocolMarshaller.java  
\* /opt/cola/permits/1273483844\_1645114020.93/0/aws-java-sdk-kms-1-12-86-sources-jar/com/amazonaws/services/kms/model/AWSKMSEException.java  
\* /opt/cola/permits/1273483844\_1645114020.93/0/aws-java-sdk-kms-1-12-86-sources-jar/com/amazonaws/services/kms/model/transform/CreateCustomKeyStoreResultJsonUnmarshaller.java  
\* /opt/cola/permits/1273483844\_1645114020.93/0/aws-java-sdk-kms-1-12-86-sources-jar/com/amazonaws/services/kms/model/transform/DeleteAliasResultJsonUnmarshaller.java  
\* /opt/cola/permits/1273483844\_1645114020.93/0/aws-java-sdk-kms-1-12-86-sources-jar/com/amazonaws/services/kms/model/transform/GenerateRandomResultJsonUnmarshaller.java  
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\* /opt/cola/permits/1273483844\_1645114020.93/0/aws-java-sdk-kms-1-12-86-sources-jar/com/amazonaws/services/kms/model/GetPublicKeyRequest.java  
\* /opt/cola/permits/1273483844\_1645114020.93/0/aws-java-sdk-kms-1-12-86-sources-jar/com/amazonaws/services/kms/model/DependencyTimeoutException.java  
\* /opt/cola/permits/1273483844\_1645114020.93/0/aws-java-sdk-kms-1-12-86-sources-jar/com/amazonaws/services/kms/model/transform/InvalidGrantIdExceptionUnmarshaller.java  
\* /opt/cola/permits/1273483844\_1645114020.93/0/aws-java-sdk-kms-1-12-86-sources-jar/com/amazonaws/services/kms/model/DisableKeyResult.java

\* /opt/cola/permits/1273483844\_1645114020.93/0/aws-java-sdk-kms-1-12-86-sources-jar/com/amazonaws/services/kms/model/transform/GenerateDataKeyPairWithoutPlaintextResultJsonUnmarshaller.java

\* /opt/cola/permits/1273483844\_1645114020.93/0/aws-java-sdk-kms-1-12-86-sources-jar/com/amazonaws/services/kms/model/ScheduleKeyDeletionRequest.java

\* /opt/cola/permits/1273483844\_1645114020.93/0/aws-java-sdk-kms-1-12-86-sources-jar/com/amazonaws/services/kms/model/transform/DisableKeyRotationResultJsonUnmarshaller.java

\* /opt/cola/permits/1273483844\_1645114020.93/0/aws-java-sdk-kms-1-12-86-sources-jar/com/amazonaws/services/kms/model/GrantOperation.java

\* /opt/cola/permits/1273483844\_1645114020.93/0/aws-java-sdk-kms-1-12-86-sources-jar/com/amazonaws/services/kms/model/transform/GetPublicKeyRequestProtocolMarshaller.java

\* /opt/cola/permits/1273483844\_1645114020.93/0/aws-java-sdk-kms-1-12-86-sources-jar/com/amazonaws/services/kms/model/transform/DecryptRequestMarshaller.java

\* /opt/cola/permits/1273483844\_1645114020.93/0/aws-java-sdk-kms-1-12-86-sources-jar/com/amazonaws/services/kms/model/transform/ReplicateKeyRequestMarshaller.java

\* /opt/cola/permits/1273483844\_1645114020.93/0/aws-java-sdk-kms-1-12-86-sources-jar/com/amazonaws/services/kms/model/AlreadyExistsException.java

\* /opt/cola/permits/1273483844\_1645114020.93/0/aws-java-sdk-kms-1-12-86-sources-jar/com/amazonaws/services/kms/model/PutKeyPolicyRequest.java

\* /opt/cola/permits/1273483844\_1645114020.93/0/aws-java-sdk-kms-1-12-86-sources-jar/com/amazonaws/services/kms/model/transform/RetireGrantRequestProtocolMarshaller.java

\* /opt/cola/permits/1273483844\_1645114020.93/0/aws-java-sdk-kms-1-12-86-sources-jar/com/amazonaws/services/kms/model/GetParametersForImportResult.java

\* /opt/cola/permits/1273483844\_1645114020.93/0/aws-java-sdk-kms-1-12-86-sources-jar/com/amazonaws/services/kms/model/transform/DeleteAliasRequestMarshaller.java

\* /opt/cola/permits/1273483844\_1645114020.93/0/aws-java-sdk-kms-1-12-86-sources-jar/com/amazonaws/services/kms/model/transform/TagMarshaller.java

\* /opt/cola/permits/1273483844\_1645114020.93/0/aws-java-sdk-kms-1-12-86-sources-jar/com/amazonaws/services/kms/model/SignRequest.java

\* /opt/cola/permits/1273483844\_1645114020.93/0/aws-java-sdk-kms-1-12-86-sources-jar/com/amazonaws/services/kms/model/transform/KMSInvalidSignatureExceptionUnmarshaller.java

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## 1.340 libxext 1.3.3-1

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Upstream-Contact: heimdal@h5l.org

Source: <https://github.com/heimdal/heimdal>

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lib/wind/rfc3491.txt

lib/wind/rfc4013.txt

lib/wind/rfc4518.txt

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@heading Vincent Rijmen, Antoon Bosselaers, Paulo Barreto

AES in libcrypto

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rijndael-alg-fst.c

@version 3.0 (December 2000)

Optimised ANSI C code for the Rijndael cipher (now AES)

@author Vincent Rijmen <vincent.rijmen@esat.kuleuven.ac.be>

@author Antoon Bosselaers <antoon.bosselaers@esat.kuleuven.ac.be>

@author Paulo Barreto <paulo.barreto@terra.com.br>

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DES core in libcrypto

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D3DES (V5.09) -

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-- vile: txtmode file-encoding=utf-8

This is the Debian prepackaged version of the ncurses library and terminfo utilities. ncurses/terminfo was originally written by Pavel Curtis and Zeyd M. Ben-Halim <zmbenhal@netcom.com>, and is currently held by the Free Software Foundation.

This package was put together by Vaidhyanathan G Mayilrangam

<voidhy@debian.org> and Joel Klecker <espy@debian.org>, using sources obtained from ftp://ftp.gnu.org/gnu/ncurses/ncurses-5.0.tar.gz. Current versions of the ncurses sources are found at ftp://invisible-island.net/ncurses/.

It is based somewhat on work done by Bruce Perens <Bruce@Pixar.com>, David Engel <david@elo.ods.com>. Michael Alan Dorman <mdorman@debian.org>, Richard Braakman <dark@xs4all.nl>, James Troup <jjtroup@comp.brad.ac.uk>, J.H.M. Dassen (Ray) <jdassen@wi.LeidenUniv.nl>, and Galen Hazelwood <galenh@micron.net> over various years.

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-- vile:txtmode fc=72

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Upstream source <https://invisible-island.net/ncurses/ncurses.html>

This package is used for testing builds of ncurses.

Current ncurses maintainer: Thomas Dickey <[dickey@invisible-island.net](mailto:dickey@invisible-island.net)>

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Upstream source <https://invisible-island.net/ncurses/ncurses-examples.html>

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## 1.349 sensible-utils 0.0.12

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Upstream-Name: sensible-utils

Upstream-Contact: Anibal Monsalve Salazar <[anibal@debian.org](mailto:anibal@debian.org)>

Source: <https://alioth.debian.org/projects/collab-maint/sensible-utils.git>

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## 1.370 jackson 2.8.9

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- \* Small optimizations to Python serialization.

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- \* VI syntax highlighting tweaks.
- \* Fix compiler to not make output executable.

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- \* Heuristic detection of sub-messages when printing unknown fields in text format.

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- \* Slicing support for repeated scalar fields for the Python API.

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- \* MS Visual Studio error format option.
- \* Detect unordered\_map in stl\_hash.m4.

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- \* gzip/zlib I/O support.

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- \* Fixed warnings about generated constructors not explicitly initializing all fields (only present with certain compiler settings).
- \* Added generation of field number constants.

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- \* Fixed initialization ordering problem in logging code.

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- \* Small patch improving performance of in Python serialization.

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- \* Emacs mode for Protocol Buffers (editors/protobuf-mode.el).

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- \* Added Swap(), SwapElements(), and RemoveLast() to Reflection interface.

Alexander Melnikov <alm@sibmail.ru>

- \* HPUX support.

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- \* Detect whether zlib is new enough in configure script.
- \* Fixes for Solaris 10 32/64-bit confusion.

Evan Jones <evanj@mit.edu>

- \* Optimize Java serialization code when writing a small message to a stream.
- \* Optimize Java serialization of strings so that UTF-8 encoding happens only once per string per serialization call.
- \* Clean up some Java warnings.
- \* Fix bug with permanent callbacks that delete themselves when run.

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- \* Added CodedInputStream.getTotalBytesRead().

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- \* Fixed m4/acx\_pthread.m4 problem for some Linux distributions.

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- \* Fixed detection of sched\_yield on Solaris.
- \* Added atomicops for Solaris

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This file contains a list of people who have contributed code and effort to the memcached project. If you don't see your name mentioned send email to the memcached mailing list so you can be immortalized.

Also see the ChangeLog for even more people who have helped over the years by submitting fixes, patches and reporting bugs.

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MySQL 5.7.28 (and later)

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dtoa.c

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Janson

Janson 2.6

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jemalloc

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Version 3.1, 31 March 2009

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libssh v0.7.3

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md5 (Message-Digest Algorithm 5)

md5 (Message-Digest Algorithm 5)

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The code has been modified by Mikael Ronstroem to handle calculating a hash value of a key that is always a multiple of 4 bytes long. Word 0 of the calculated 4-word hash value is returned as the hash value.

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MeCab

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memcached

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nt\_servc (Windows NT Service class library)

Windows NT Service class library

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Percona Multiple I/O Threads Patch

Percona Multiple I/O threads patch

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SHA-1 in C

SHA-1 in C

SHA-1 in C

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#
Diagnostic weight ranges
Primary weight range: 0200..3ACA (14539)
Secondary weight range: 0020..0192 (371)
Variant secondaries: 0159..015E (6)
Digit secondaries: 015F..0192 (52)
Tertiary weight range: 0002..001F (30)
#
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zlib

zlib

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## 1.374 angular-platform-browser 11.0.2

## 1.374.1 Available under license :

No license file was found, but licenses were detected in source scan.

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AAe/L,KAE9D,OAJAU,EAAUmL,EAA2BzJ,GAI9ByJ,EALmC,CAM5C/L,EAAQ6I,kBASV,SAASqD,IACL,OA  
AOIM,EAAQmM,yBAA2B,IAAIInM,EAAQoM,qBAAYB,IAAIpM,EAAQqM,oBAE/F,SAASC,IACL,OAAO,IAA  
ItM,EAAQuM,8BAEvB,SAASC,EAA2BrG,EAAUI,EAAQkG,GACID,OAAO,IAAIpG,EAAyBF,EAAUI,EAAQk  
G,GAf1DV,EAA0BII,WAAa,CACnC,CAAEC,KAAM/D,EAAKgE,aAEjBgI,EAA0B/H,eAAiB,WAAc,MAAO,CA  
C5D,CAAEF,UAAAMI,EAAWL,WAAy,CAAC,CAAEC,KAAM/D,EAAKoE,OAAQC,KAAM,CAACnE,EAAOoE  
,aACnE,CAAEP,KAAM9D,EAAQ0M,iBACHb,CAAEE5I,KAAM9D,EAAQ2M,6BAcpB,IAuCiC,EAEAC,EAtdAC  
,EAAwB,IAAI/M,EAAKgN,eAAe,uBACHdC,EAA6B,CAC7B,CAAEC,QAASnN,EAAW8D,iBAaKbSj,SAAU7K  
,GACID,CAAEE4K,QAASjN,EAAQ2M,0BAA2BQ,WAAyB,GAC1D,CAAEW,QAASjN,EAAQ6I,iBAaKbQE,SA  
AUUnB,GAA6B,CACxEkB,QAASIN,EAAKkE,iBACdkJ,WAAyX,EACZY,KAAM,CAACvN,EAAgBwN,qBAAs  
BrN,EAAQ6I,iBAaKb9I,EAAK+I,UAOhFwE,EAA+BrL,EAAS,CACxC,CAAEGl,QAASjN,EAAQ0M,gBAaiBS  
,WAAyJB,GACHd,CAAEEe,QAASH,EAAuBS,SAAU,sBAC7CP,GAKCQ,EAAoCvL,EAAS,CAC7C,CAAEGl,Q  
AASjN,EAAQ0M,gBAaiBQ,SAAUIN,EAAQyN,sBACtD,CAAER,QAASH,EAAuBS,SAAU,mBAC7CP,IACcJ,E  
ACA,SAASA,OAIW/I,WAAa,CACjC,CAAEC,KAAM/D,EAAK2N,SAAUtJ,KAAM,CAAC,CACIB9E,QAAS,CA  
ACO,EAAgB8N,eAC1BC,UAAWN,OAovBT,EACA,SAASA,OAIQhJ,WAAa,CAC9B,CAAEC,KAAM/D,EAAK  
2N,SAAUtJ,KAAM,CAAC,CACIB9E,QAAS,CAACO,EAAgB8N,eAC1BC,UAAWJ;::::::::::AAwC3B  
IO,EAAQwN,sBAawBA,EACHCxN,EAAQsN,wBAA0BA,EACICtN,EAAQuN,qBAAuBA,EAC/BvN,EAAQuO,  
mBAAqB7F,EAC7B1I,EAAQwO,0BAA4BzH,EACpC/G,EAAQyO,yBAA2B1L,EACnC/C,EAAQ0O,yBAA2BrK,  
EACnCrE,EAAQ2O,2BAA6BIC,EACrCzM,EAAQ4O,2DAA6DhC,EACrE5M,EAAQ6O,2DAA6D7B,EACrEhN,  
EAAQ8O,2DAA6D5B,EACrElN,EAAQ+O,2DAA6Df,EACrEhO,EAAQgP,2DAA6Dd,EACrElO,EAAQIP,2DAA  
6DhH,EAERejH,OAAO0I,eAAe1J,EAAS,aAAc,CAAeyC,OAAO","sourcesContent":["/\*\*\n \* @license Angular  
v11.0.2\n \* (c) 2010-2020 Google LLC. https://angular.io/\n \* License: MIT\n \*/\n\n(function (global, factory) {\n typeof exports === 'object' && typeof module !== 'undefined' ? factory(exports, require('@angular/core'),  
require('@angular/platform-browser'), require('@angular/animations'), require('@angular/animations/browser'),  
require('@angular/common')) :\n typeof define === 'function' && define.amd ? define('@angular/platform-  
browser/animations', ['exports', '@angular/core', '@angular/platform-browser', '@angular/animations',  
'@angular/animations/browser', '@angular/common'], factory) :\n (global = global || self, factory((global.ng =  
global.ng || {}, global.ng.platformBrowser = global.ng.platformBrowser || {}, global.ng.platformBrowser.animations  
= {}), global.ng.core, global.ng.platformBrowser, global.ng.animations, global.ng.animations.browser,  
global.ng.common));\n})(this, (function (exports, core, platformBrowser, animations, browser, common) {\n 'use  
strict';\n\n /\* \*\*\*\*\*\n\n Copyright (c) Microsoft Corporation.\n\n Permission to use, copy, modify, and/or distribute this software for any\n purpose with or without fee is hereby granted.\n\n THE SOFTWARE IS PROVIDED \"AS IS\" AND THE  
AUTHOR DISCLAIMS ALL WARRANTIES WITH\n REGARD TO THIS SOFTWARE INCLUDING ALL  
IMPLIED WARRANTIES OF MERCHANTABILITY\n AND FITNESS. IN NO EVENT SHALL THE  
AUTHOR BE LIABLE FOR ANY SPECIAL, DIRECT,\n INDIRECT, OR CONSEQUENTIAL DAMAGES OR  
ANY DAMAGES WHATSOEVER RESULTING FROM\n LOSS OF USE, DATA OR PROFITS, WHETHER  
IN AN ACTION OF CONTRACT, NEGLIGENCE OR\n OTHER TORTIOUS ACTION, ARISING OUT OF OR  
IN CONNECTION WITH THE USE OR\n PERFORMANCE OF THIS SOFTWARE.\n\n \*\*\*\*\*\n\n \*/\n\n global\n } global

```

Reflect, Promise *\n var extendStatics = function (d, b) {\n extendStatics = Object.setPrototypeOf ||\n ({ __proto__: [] } instanceof Array && function (d, b) { d.__proto__ = b; }) ||\n function (d, b) { for (var p in b)\n if (b.hasOwnProperty(p))\n d[p] = b[p]; }; return extendStatics(d, b);\n };\n function __extends(d, b) {\n extendStatics(d, b);\n function __() { this.constructor = d; }\n d.prototype = b === null ? Object.create(b) : (__proto__ = b.prototype, new __());\n }\n var __assign = function () {\n __assign = Object.assign || function __assign(t) {\n for (var s, i = 1, n = arguments.length; i < n; i++) {\n s = arguments[i];\n for (var p in s)\n if (Object.prototype.hasOwnProperty.call(s, p))\n t[p] = s[p];\n }\n return t;\n };\n return __assign.apply(this, arguments);\n };\n function __rest(s, e) {\n var t = {};\n for (var p in s)\n if (Object.prototype.hasOwnProperty.call(s, p)\n && e.indexOf(p) < 0)\n t[p] = s[p];\n if (s != null && typeof Object.getPrototypeOfSymbols ===\n \"function\")\n for (var i = 0, p = Object.getPrototypeOfSymbols(s); i < p.length; i++) {\n if\n (e.indexOf(p[i]) < 0 && Object.prototype.propertyIsEnumerable.call(s, p[i]))\n t[p[i]] = s[p[i]];\n }\n return t;\n }\n function __decorate(decorators, target, key, desc) {\n var c = arguments.length, r = c\n < 3 ? target : desc === null ? desc = Object.getOwnPropertyDescriptor(target, key) : desc, d;\n if (typeof Reflect === \"object\" && typeof Reflect.decorate === \"function\")\n r = Reflect.decorate(decorators, target, key, desc);\n else\n for (var i = decorators.length - 1; i >= 0; i--)\n if (d = decorators[i])\n r = (c < 3 ? d(r) : c > 3 ? d(target, key, r) : d(target, key)) || r;\n return c > 3 && r &&\n Object.defineProperty(target, key, r, r);\n }\n function __param(paramIndex, decorator) {\n return function\n (target, key) { decorator(target, key, paramIndex); }; }\n function __metadata(metadataKey, metadataValue)\n {\n if (typeof Reflect === \"object\" && typeof Reflect.metadata === \"function\")\n return\n Reflect.metadata(metadataKey, metadataValue);\n }\n function __awaiter(thisArg, _arguments, P, generator) {\n function adopt(value) { return value instanceof P ? value : new P(function (resolve) { resolve(value); }); }\n return new (P || (P = Promise))(function (resolve, reject) {\n function fulfilled(value) { try {\n step(generator.next(value));\n }\n catch (e) {\n reject(e);\n }\n function\n rejected(value) { try {\n step(generator[\"throw\"](value));\n }\n catch (e) {\n reject(e);\n }\n function step(result) { result.done ? resolve(result.value) :\n adopt(result.value).then(fulfilled, rejected); }\n step((generator = generator.apply(thisArg, _arguments ||\n [])).next());\n });\n }\n function __generator(thisArg, body) {\n var _ = { label: 0, sent: function () { if\n (t[0] & 1)\n throw t[1]; return t[1]; }, trys: [], ops: [] }, f, y, t, g;\n return g = { next: verb(0), \"throw\":\n verb(1), \"return\": verb(2) }, typeof Symbol === \"function\" && (g[Symbol.iterator] = function () { return this; }),\n g;\n function verb(n) { return function (v) { return step([n, v]); }; }\n function step(op) {\n if (f)\n throw new TypeError(\"Generator is already executing.\");\n while (!_)\n try {\n if\n (f = 1, y && (t = op[0] & 2 ? y[\"return\"] : op[0] ? y[\"throw\"] || ((t = y[\"return\"])\n && t.call(y, 0) : y.next) &&\n !(t = t.call(y, op[1])).done)\n return t;\n if (y = 0, t)\n op = [op[0] & 2,\n t.value];\n switch (op[0]) {\n case 0:\n case 1:\n t = op;\n break;\n case 4:\n _label++;\n return { value: op[1],\n done: false }; \n case 5:\n _label++;\n y = op[1];\n op = [0];\n case 7:\n op = _ops.pop();\n _trys.pop();\n continue;\n default:\n if (!(t = _trys, t = t.length > 0\n && t[t.length - 1]) && (op[0] === 6 || op[0] === 2)) {\n _ = 0;\n continue;\n }\n if (op[0] === 3 && (!t || (op[1] > t[0] && op[1] < t[3]))) {\n _label = op[1];\n break;\n }\n if (op[0] === 6 && _label <\n t[1]) {\n _label = t[1];\n t = op;\n break;\n }\n if (t && _label < t[2]) {\n _label = t[2];\n _ops.push(op);\n break;\n }\n if (t[2])\n _ops.pop();\n _trys.pop();\n continue;\n }\n op =\n body.call(thisArg, _);\n }\n catch (e) {\n op = [6, e];\n y = 0;\n }\n finally {\n f = t = 0;\n if (op[0] & 5)\n throw op[1];\n }\n }\n }\n }

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return { value: op[0] ? op[1] : void 0, done: true };
}
}
var __createBinding = Object.create ? (function
(o, m, k, k2) {
 if (k2 === undefined) k2 = k;
 Object.defineProperty(o, k2, { enumerable: true,
get: function () { return m[k]; } });
}) : (function (o, m, k, k2) {
 if (k2 === undefined) k2 = k;
 o[k2] = m[k];
});
function __exportStar(m, exports) {
 for (var p in m)
 if (p !== "default"
&& !exports.hasOwnProperty(p))
 __createBinding(exports, m, p);
}
function __values(o) {
 var s = typeof Symbol === "function" && Symbol.iterator, m = s && o[s], i = 0;
 if (m)
 return
m.call(o);
 if (o && typeof o.length === "number")
 return {
 next: function () {
 if (o && i >= o.length)
 o = void 0;
 return { value: o && o[i++], done: !o };
 }
 };
 throw new TypeError(s ? "Object is not iterable." : "Symbol.iterator is not defined.");
}
function __read(o, n) {
 var m = typeof Symbol === "function" && o[Symbol.iterator];
 if (!m)
 return o;
 var i = m.call(o), r, ar = [], e;
 try {
 while ((n === void 0 || n-- > 0) && !(r =
i.next()).done)
 ar.push(r.value);
 }
 catch (error) {
 e = { error: error };
 }
 finally {
 try {
 if (r && !r.done && (m = i["return"]))
 m.call(i);
 }
 finally {
 if (e)
 throw e.error;
 }
 }
 return ar;
}
function __spread() {
 for (var ar = [], i = 0; i < arguments.length; i++)
 ar = ar.concat(__read(arguments[i]));
 return ar;
}
function __spreadArrays() {
 for (var s = 0, i = 0, il = arguments.length; i < il; i++)
 s += arguments[i].length;
 for (var r = Array(s), k = 0, i = 0; i < il; i++)
 for (var a = arguments[i], j = 0, jl = a.length; j < jl; j++, k++)
 r[k] = a[j];
 return r;
}
function __await(v) {
return this instanceof __await ? (this.v = v, this) : new __await(v);
}
function __asyncGenerator(thisArg,
_arguments, generator) {
 if (!Symbol.asyncIterator)
 throw new TypeError("Symbol.asyncIterator is
not defined.");
 var g = generator.apply(thisArg, _arguments || []), i, q = [];
 return i = { }, verb("next"),
verb("throw"), verb("return"), i[Symbol.asyncIterator] = function () { return this; }, i;
function verb(n) {
 if (g[n])
 i[n] = function (v) { return new Promise(function (a, b) { q.push([n, v, a, b]) > 1 || resume(n, v); }); };
}
function resume(n, v) {
 try {
 step(g[n](v));
 }
 catch (e) {
 settle(q[0][3], e);
 }
}
function step(r) {
 r.value instanceof __await ? Promise.resolve(r.value.v).then(fulfill, reject) :
settle(q[0][2], r);
}
function fulfill(value) {
 resume("next", value);
}
function reject(value) {
 resume("throw", value);
}
function settle(f, v) {
 if (f(v), q.shift(), q.length)
 resume(q[0][0], q[0][1]);
}
}
function __asyncDelegator(o) {
 var i, p;
 return i = { }, verb("next"), verb("throw"),
function (e) { throw e; }, verb("return"), i[Symbol.iterator] = function () { return this; }, i;
function verb(n,
f) {
 i[n] = o[n] ? function (v) { return (p = !p) ? { value: __await(o[n](v)), done: n === "return" } : f ? f(v) : v; } : f;
}
}
function __asyncValues(o) {
 if (!Symbol.asyncIterator)
 throw new
TypeError("Symbol.asyncIterator is not defined.");
 var m = o[Symbol.asyncIterator], i;
 return m ?
m.call(o) : (o = typeof __values === "function" ? __values(o) : o[Symbol.iterator](), i = { }, verb("next"),
verb("throw"), verb("return"), i[Symbol.asyncIterator] = function () { return this; }, i);
function verb(n) {
 i[n] = o[n] && function (v) { return new Promise(function (resolve, reject) { v = o[n](v), settle(resolve, reject,
v.done, v.value); }); };
}
function settle(resolve, reject, d, v) {
 Promise.resolve(v).then(function (v) {
 resolve({ value: v, done: d });
 }, reject);
}
}
function __makeTemplateObject(cooked, raw) {
 if (Object.defineProperty)
 Object.defineProperty(cooked, "raw", { value: raw });
 else {
 cooked.raw = raw;
 }
 return cooked;
}
var __setModuleDefault = Object.create ?
(function (o, v) {
 Object.defineProperty(o, "default", { enumerable: true, value: v });
}) : function (o, v) {
 o["default"] = v;
};
function __importStar(mod) {
 if (mod && mod.__esModule)
 return mod;
 var result = {};
 if (mod != null)
 for (var k in mod)
 if (Object.hasOwnProperty.call(mod, k))
 __createBinding(result, mod, k);
 __setModuleDefault(result, mod);
 return result;
}
function __importDefault(mod) {
 return (mod
&& mod.__esModule) ? mod : { default: mod };
}
function __classPrivateFieldGet(receiver, privateMap) {
 if (!privateMap.has(receiver))
 throw new TypeError("attempted to get private field on non-
instance");
 return privateMap.get(receiver);
}
function __classPrivateFieldSet(receiver,
privateMap, value) {
 if (!privateMap.has(receiver))
 throw new TypeError("attempted to set private

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field on non-instance\");\n }\n privateMap.set(receiver, value);\n return value;\n }\n\n var
BrowserAnimationBuilder = /** @class */ (function (_super) {\n __extends(BrowserAnimationBuilder,
_super);\n function BrowserAnimationBuilder(rootRenderer, doc) {\n var _this = _super.call(this) ||
this;\n _this._nextAnimationId = 0;\n var typeData = { id: '0', encapsulation:
core.ViewEncapsulation.None, styles: [], data: { animation: [] } }; \n _this._renderer =
rootRenderer.createRenderer(doc.body, typeData);\n return _this;\n }\n BrowserAnimationBuilder.prototype.build = function (animation) {\n var id =
this._nextAnimationId.toString();\n this._nextAnimationId++;\n var entry = Array.isArray(animation)
? animations.sequence(animation) : animation;\n issueAnimationCommand(this._renderer, null, id, 'register',
[entry]);\n return new BrowserAnimationFactory(id, this._renderer);\n }; \n return
BrowserAnimationBuilder;\n })(animations.AnimationBuilder);\n BrowserAnimationBuilder.decorators = [\n
{ type: core.Injectable } \n]; \n BrowserAnimationBuilder.ctorParameters = function () { return [\n
{ type:
core.RendererFactory2 }, \n { type: undefined, decorators: [{ type: core.Inject, args: [common.DOCUMENT,] }]
}\n]; }; \n var BrowserAnimationFactory = /** @class */ (function (_super) {\n
__extends(BrowserAnimationFactory, _super);\n function BrowserAnimationFactory(_id, _renderer) {\n
var _this = _super.call(this) || this;\n _this._id = _id;\n _this._renderer = _renderer;\n return
_this;\n } \n BrowserAnimationFactory.prototype.create = function (element, options) {\n return new
RendererAnimationPlayer(this._id, element, options || {}, this._renderer);\n }; \n return
BrowserAnimationFactory;\n })(animations.AnimationFactory);\n var RendererAnimationPlayer = /** @class */
(function () {\n function RendererAnimationPlayer(id, element, options, _renderer) {\n this.id = id;\n
 this.element = element;\n this._renderer = _renderer;\n this.parentPlayer = null;\n this._started
= false;\n this.totalTime = 0;\n this._command('create', options);\n } \n RendererAnimationPlayer.prototype._listen = function (eventName, callback) {\n return
this._renderer.listen(this.element, "@" + this.id + ":" + eventName, callback);\n }; \n RendererAnimationPlayer.prototype._command = function (command) {\n var args = [];\n for (var _i
= 1; _i < arguments.length; _i++) {\n args[_i - 1] = arguments[_i];\n } \n return
issueAnimationCommand(this._renderer, this.element, this.id, command, args);\n }; \n RendererAnimationPlayer.prototype.onDone = function (fn) {\n this._listen('done', fn);\n }; \n RendererAnimationPlayer.prototype.onStart = function (fn) {\n this._listen('start', fn);\n }; \n RendererAnimationPlayer.prototype.onDestroy = function (fn) {\n this._listen('destroy', fn);\n }; \n RendererAnimationPlayer.prototype.init = function () {\n this._command('init');\n }; \n RendererAnimationPlayer.prototype.hasStarted = function () {\n return this._started;\n }; \n RendererAnimationPlayer.prototype.play = function () {\n this._command('play');\n this._started =
true;\n }; \n RendererAnimationPlayer.prototype.pause = function () {\n this._command('pause');\n }; \n RendererAnimationPlayer.prototype.restart = function () {\n this._command('restart');\n }; \n RendererAnimationPlayer.prototype.finish = function () {\n this._command('finish');\n }; \n RendererAnimationPlayer.prototype.destroy = function () {\n this._command('destroy');\n }; \n RendererAnimationPlayer.prototype.reset = function () {\n this._command('reset');\n }; \n RendererAnimationPlayer.prototype.setPosition = function (p) {\n this._command('setPosition', p);\n }; \n RendererAnimationPlayer.prototype.getPosition = function () {\n return 0;\n }; \n return
RendererAnimationPlayer;\n })(); \n function issueAnimationCommand(renderer, element, id, command, args)
{\n return renderer.setProperty(element, "@" + id + ":" + command, args);\n } \n var
ANIMATION_PREFIX = '@'; \n var DISABLE_ANIMATIONS_FLAG = '@.disabled'; \n var
AnimationRendererFactory = /** @class */ (function () {\n function AnimationRendererFactory(delegate,
engine, _zone) {\n this.delegate = delegate;\n this.engine = engine;\n this._zone = _zone;\n
 this._currentId = 0;\n this._microtaskId = 1;\n this._animationCallbacksBuffer = [];\n
 this._rendererCache = new Map();\n this._cdRecurDepth = 0;\n this.promise = Promise.resolve(0);\n
 engine.onRemovalComplete = function (element, delegate) {\n // Note: if an component element has a

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leave animation, and the component\n // a host leave animation, the view engine will call `removeChild`
for the parent\n // component renderer as well as for the child component renderer.\n // Therefore,
we need to check if we already removed the element.\n if (delegate && delegate.parentNode(element)) {\n
 delegate.removeChild(element.parentNode, element);\n }\n };\n }\n
AnimationRendererFactory.prototype.createRenderer = function (hostElement, type) {\n var _this = this;\n
 var EMPTY_NAMESPACE_ID = ";\n // cache the delegates to find out which cached delegate can\n
 // be used by which cached renderer\n var delegate = this.delegate.createRenderer(hostElement, type);\n
 if (!hostElement || !type || !type.data || !type.data['animation']) {\n var renderer =
this._rendererCache.get(delegate);\n if (!renderer) {\n renderer = new
BaseAnimationRenderer(EMPTY_NAMESPACE_ID, delegate, this.engine);\n // only cache this result
when the base renderer is used\n this._rendererCache.set(delegate, renderer);\n }\n
 return renderer;\n }\n var componentId = type.id;\n var namespaceId = type.id + '-' +
this._currentId;\n this._currentId++;\n this.engine.register(namespaceId, hostElement);\n var
registerTrigger = function (trigger) {\n if (Array.isArray(trigger)) {\n
 trigger.forEach(registerTrigger);\n }\n else {\n
 _this.engine.registerTrigger(componentId, namespaceId, hostElement, trigger.name, trigger);\n }\n
};\n var animationTriggers = type.data['animation'];\n animationTriggers.forEach(registerTrigger);\n
 return new AnimationRenderer(this, namespaceId, delegate, this.engine);\n };\n
AnimationRendererFactory.prototype.begin = function () {\n this._cdRecurDepth++;\n if
(this.delegate.begin) {\n this.delegate.begin();\n }\n };\n
AnimationRendererFactory.prototype._scheduleCountTask = function () {\n var _this = this;\n //
always use promise to schedule microtask instead of use Zone\n this.promise.then(function () {\n
 _this._microtaskId++;\n });\n };\n /** @internal */\n
AnimationRendererFactory.prototype.scheduleListenerCallback = function (count, fn, data) {\n var _this =
this;\n if (count >= 0 && count < this._microtaskId) {\n this._zone.run(function () { return fn(data);
});\n return;\n }\n if (this._animationCallbacksBuffer.length == 0) {\n
 Promise.resolve(null).then(function () {\n _this._zone.run(function () {\n
 _this._animationCallbacksBuffer.forEach(function (tuple) {\n var _a = __read(tuple, 2), fn = _a[0],
data = _a[1];\n fn(data);\n });\n _this._animationCallbacksBuffer =
[];\n });\n });\n }\n this._animationCallbacksBuffer.push([fn, data]);\n };\n
 AnimationRendererFactory.prototype.end = function () {\n var _this = this;\n this._cdRecurDepth--;\n
 // this is to prevent animations from running twice when an inner\n // component does CD when a
parent component instead has inserted it\n if (this._cdRecurDepth == 0) {\n
 this._zone.runOutsideAngular(function () {\n _this._scheduleCountTask();\n
 _this.engine.flush(_this._microtaskId);\n });\n }\n if (this.delegate.end) {\n
 this.delegate.end();\n }\n };\n AnimationRendererFactory.prototype.whenRenderingDone = function
() {\n return this.engine.whenRenderingDone();\n };\n return AnimationRendererFactory;\n }();\n
 AnimationRendererFactory.decorators = [\n { type: core.Injectable }\n];\n
 AnimationRendererFactory.ctorParameters = function () { return [\n { type: core.RendererFactory2 },\n {
type: browser.AnimationEngine },\n { type: core.NgZone }\n]; }; \n var BaseAnimationRenderer = /**
@class */ (function () {\n function BaseAnimationRenderer(namespaceId, delegate, engine) {\n
 this.namespaceId = namespaceId;\n this.delegate = delegate;\n this.engine = engine;\n
 this.destroyNode = this.delegate.destroyNode ? function (n) { return delegate.destroyNode(n); } : null;\n }\n
 Object.defineProperty(BaseAnimationRenderer.prototype, "data", {\n get: function () {\n return
this.delegate.data;\n },\n enumerable: false,\n configurable: true\n });\n
 BaseAnimationRenderer.prototype.destroy = function () {\n this.engine.destroy(this.namespaceId,
this.delegate);\n this.delegate.destroy();\n };\n BaseAnimationRenderer.prototype.createElement =
function (name, namespace) {\n return this.delegate.createElement(name, namespace);\n };\n

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BaseAnimationRenderer.prototype.createComment = function (value) {\n return
this.delegate.createComment(value);\n }; \n BaseAnimationRenderer.prototype.createText = function
(value) {\n return this.delegate.createText(value);\n }; \n
BaseAnimationRenderer.prototype.appendChild = function (parent, newChild) {\n
this.delegate.appendChild(parent, newChild);\n this.engine.onInsert(this.namespaceId, newChild, parent,
false);\n }; \n BaseAnimationRenderer.prototype.insertBefore = function (parent, newChild, refChild,
isMove) {\n if (isMove === void 0) { isMove = true; } \n this.delegate.insertBefore(parent, newChild,
refChild);\n // If `isMove` true than we should animate this insert.\n
this.engine.onInsert(this.namespaceId, newChild, parent, isMove);\n }; \n
BaseAnimationRenderer.prototype.removeChild = function (parent, oldChild, isHostElement) {\n
this.engine.onRemove(this.namespaceId, oldChild, this.delegate, isHostElement);\n }; \n
BaseAnimationRenderer.prototype.selectRootElement = function (selectorOrNode, preserveContent) {\n
return this.delegate.selectRootElement(selectorOrNode, preserveContent);\n }; \n
BaseAnimationRenderer.prototype.parentNode = function (node) {\n return
this.delegate.parentNode(node);\n }; \n BaseAnimationRenderer.prototype.nextSibling = function (node) {\n
return this.delegate.nextSibling(node);\n }; \n BaseAnimationRenderer.prototype.setAttribute =
function (el, name, value, namespace) {\n this.delegate.setAttribute(el, name, value, namespace);\n }; \n
BaseAnimationRenderer.prototype.removeAttribute = function (el, name, namespace) {\n
this.delegate.removeAttribute(el, name, namespace);\n }; \n BaseAnimationRenderer.prototype.addClass =
function (el, name) {\n this.delegate.addClass(el, name);\n }; \n
BaseAnimationRenderer.prototype.removeClass = function (el, name) {\n this.delegate.removeClass(el,
name);\n }; \n BaseAnimationRenderer.prototype.setStyle = function (el, style, value, flags) {\n
this.delegate.setStyle(el, style, value, flags);\n }; \n BaseAnimationRenderer.prototype.removeStyle =
function (el, style, flags) {\n this.delegate.removeStyle(el, style, flags);\n }; \n
BaseAnimationRenderer.prototype.setProperty = function (el, name, value) {\n if (name.charAt(0) ==
ANIMATION_PREFIX && name == DISABLE_ANIMATIONS_FLAG) {\n this.disableAnimations(el,
!!value);\n } \n else {\n this.delegate.setProperty(el, name, value);\n } \n }; \n
BaseAnimationRenderer.prototype.setValue = function (node, value) {\n this.delegate.setValue(node,
value);\n }; \n BaseAnimationRenderer.prototype.listen = function (target, eventName, callback) {\n
return this.delegate.listen(target, eventName, callback);\n }; \n
BaseAnimationRenderer.prototype.disableAnimations = function (element, value) {\n
this.engine.disableAnimations(element, value);\n }; \n return BaseAnimationRenderer;\n }()); \n var
AnimationRenderer = /** @class */ (function (_super) {\n __extends(AnimationRenderer, _super);\n
function AnimationRenderer(factory, namespaceId, delegate, engine) {\n var _this = _super.call(this,
namespaceId, delegate, engine) || this;\n _this.factory = factory;\n _this.namespaceId = namespaceId;\n
return _this;\n } \n AnimationRenderer.prototype.setProperty = function (el, name, value) {\n if
(name.charAt(0) == ANIMATION_PREFIX) {\n if (name.charAt(1) == '.' && name ==
DISABLE_ANIMATIONS_FLAG) {\n value = value === undefined ? true : !!value;\n
this.disableAnimations(el, value);\n } \n else {\n this.engine.process(this.namespaceId,
el, name.substr(1), value);\n } \n } \n else {\n this.delegate.setProperty(el, name,
value);\n } \n }; \n AnimationRenderer.prototype.listen = function (target, eventName, callback) {\n
var _a;\n var _this = this;\n if (eventName.charAt(0) == ANIMATION_PREFIX) {\n var
element = resolveElementFromTarget(target);\n var name = eventName.substr(1);\n var phase =
'';\n // @listener.phase is for trigger animation callbacks\n // @@listener is for animation builder
callbacks\n if (name.charAt(0) != ANIMATION_PREFIX) {\n _a =
__read(parseTriggerCallbackName(name), 2), name = _a[0], phase = _a[1];\n } \n return
this.engine.listen(this.namespaceId, element, name, phase, function (event) {\n var countId =
event['_data'] || -1;\n _this.factory.scheduleListenerCallback(countId, callback, event);\n }
)); \n

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 }\n return this.delegate.listen(target, eventName, callback);\n };\n return AnimationRenderer;\n }\n (BaseAnimationRenderer));\n function resolveElementFromTarget(target) {\n switch (target) {\n case\n'body':\n return document.body;\n case 'document':\n return document;\n case\n'window':\n return window;\n default:\n return target;\n }\n }\n function\nparseTriggerCallbackName(triggerName) {\n var dotIndex = triggerName.indexOf('.');\n var trigger =\ntriggerName.substr(0, dotIndex);\n var phase = triggerName.substr(dotIndex + 1);\n return [trigger,\nphase];\n }\n var InjectableAnimationEngine = /** @class */ (function (_super) {\n __extends(InjectableAnimationEngine, _super);\n function InjectableAnimationEngine(doc, driver, normalizer)\n{\n return _super.call(this, doc.body, driver, normalizer) || this;\n }\n return\nInjectableAnimationEngine;\n })(browser.AnimationEngine));\n InjectableAnimationEngine.decorators = [\n{\n type: core.Injectable }\n];\n InjectableAnimationEngine.ctorParameters = function () { return [\n { type:\nundefined, decorators: [{ type: core.Inject, args: [common.DOCUMENT,] }]},\n { type:\nbrowser.AnimationDriver },\n { type: browser.AnimationStyleNormalizer }\n]; };\n function\ninstantiateSupportedAnimationDriver() {\n return browser.supportsWebAnimations() ? new\nbrowser.WebAnimationsDriver() : new browser.CssKeyframesDriver();\n }\n function\ninstantiateDefaultStyleNormalizer() {\n return new browser.WebAnimationsStyleNormalizer();\n }\n function instantiateRendererFactory(renderer, engine, zone) {\n return new\nAnimationRendererFactory(renderer, engine, zone);\n }\n /**\n * @publicApi\n */\n var\nANIMATION_MODULE_TYPE = new core.InjectionToken('AnimationModuleType');\n var\nSHARED_ANIMATION_PROVIDERS = [\n { provide: animations.AnimationBuilder, useClass:\nBrowserAnimationBuilder },\n { provide: browser.AnimationStyleNormalizer, useFactory:\ninstantiateDefaultStyleNormalizer },\n { provide: browser.AnimationEngine, useClass:\nInjectableAnimationEngine },\n { provide: core.RendererFactory2,\n useFactory:\ninstantiateRendererFactory,\n deps: [platformBrowser.DomRendererFactory2, browser.AnimationEngine,\ncore.NgZone]\n }]\n];\n /**\n * Separate providers from the actual module so that we can do a local\nmodification in Google3 to\n * include them in the BrowserModule.\n */\n var\nBROWSER_ANIMATIONS_PROVIDERS = __spread([\n { provide: browser.AnimationDriver, useFactory:\ninstantiateSupportedAnimationDriver },\n { provide: ANIMATION_MODULE_TYPE, useValue:\n'BrowserAnimations' }\n], SHARED_ANIMATION_PROVIDERS);\n /**\n * Separate providers from the\nactual module so that we can do a local modification in Google3 to\n * include them in the\nBrowserTestingModule.\n */\n var BROWSER_NOOP_ANIMATIONS_PROVIDERS = __spread([\n { provide:\nbrowser.AnimationDriver, useClass: browser.NoopAnimationDriver },\n { provide:\nANIMATION_MODULE_TYPE, useValue: 'NoopAnimations' }\n],\nSHARED_ANIMATION_PROVIDERS);\n /**\n * @license\n * Copyright Google LLC All Rights\nReserved.\n * Use of this source code is governed by an MIT-style license that can be\n * found in the\nLICENSE file at https://angular.io/license\n */\n /**\n * Exports `BrowserModule` with additional\n[dependency-injection providers](guide/glossary#provider)\n * for use with animations. See\n[Animations](guide/animations).\n */\n @publicApi\n *^\n var BrowserAnimationsModule = /** @class */\n(function () {\n function BrowserAnimationsModule() {\n }\n return BrowserAnimationsModule;\n })();\n BrowserAnimationsModule.decorators = [\n { type: core.NgModule, args: [{\n exports:\n[platformBrowser.BrowserModule],\n providers: BROWSER_ANIMATIONS_PROVIDERS,\n },] }\n];\n /**\n * A null player that must be imported to allow disabling of animations.\n */\n @publicApi\n *^\n var NoopAnimationsModule = /** @class */ (function () {\n function NoopAnimationsModule() {\n }\n return NoopAnimationsModule;\n })();\n NoopAnimationsModule.decorators = [\n { type:\ncore.NgModule, args: [{\n exports: [platformBrowser.BrowserModule],\n providers:\nBROWSER_NOOP_ANIMATIONS_PROVIDERS,\n },] }\n];\n /**\n * @license\n *\nCopyright Google LLC All Rights Reserved.\n * Use of this source code is governed by an MIT-style\nlicense that can be\n * found in the LICENSE file at https://angular.io/license\n */\n /**\n * @license\n
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BK,UAAW,YAAa,CAC3DC,IAAK,WACD,OAAOP,KAAKa,IAAIC,QAAQ,gBAaKB,GAAKd,KAAKa,IAAIC,Q  
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B,OAAO,KAO7GC,EAAGf,GAMLI,EACA,SAASA,OAIQY,WAAa,CAC9B,CAAEC,KAAMhD,EAAGiD,SAAU  
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DAAuDzB,EAE/DzB,OAAOC,eAAehB,EAAS,aAAc,CAAEKE,OAAO","sourcesContent":["/\*\n \* @license  
Angular v11.0.2\n \* (c) 2010-2020 Google LLC. https://angular.io\n \* License: MIT\n \*/(function (global,  
factory) {\n typeof exports === 'object' && typeof module !== 'undefined' ? factory(exports,  
require('@angular/core'), require('@angular/platform-browser'), require('@angular/common')) :\n typeof define  
=== 'function' && define.amd ? define('@angular/platform-browser/testing', ['exports', '@angular/core',  
 '@angular/platform-browser', '@angular/common'], factory) :\n (global = global || self, factory((global.ng =  
global.ng || {}, global.ng.platformBrowser = global.ng.platformBrowser || {}, global.ng.platformBrowser.testing =  
{}), global.ng.core, global.ng.platformBrowser, global.ng.common));\n})(this, (function (exports, core,  
platformBrowser, common) { 'use strict';\n\n /\*!  
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CONNECTION WITH THE USE OR\n PERFORMANCE OF THIS SOFTWARE.\n\n

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***** *\n /* global
Reflect, Promise *\n var extendStatics = function (d, b) {\n extendStatics = Object.setPrototypeOf ||\n ({ __proto__: [] } instanceof Array && function (d, b) { d.__proto__ = b; }) ||\n function (d, b) { for (var p in b)\n if (b.hasOwnProperty(p))\n d[p] = b[p]; }; return extendStatics(d, b);\n };\n function __extends(d, b) {\n extendStatics(d, b);\n function __() { this.constructor = d; } \n d.prototype = b === null ? Object.create(b) : (__proto__ = b.prototype, new __());\n }\n var __assign = function () {\n __assign = Object.assign || function __assign(t) {\n for (var s, i = 1, n = arguments.length; i < n; i++) {\n s = arguments[i];\n for (var p in s)\n if (Object.prototype.hasOwnProperty.call(s, p))\n t[p] = s[p];\n }\n return t;\n }; return __assign.apply(this, arguments);\n };\n function __rest(s, e) {\n var t = {};\n for (var p in s)\n if (Object.prototype.hasOwnProperty.call(s, p)\n && e.indexOf(p) < 0)\n t[p] = s[p];\n if (s != null && typeof Object.getOwnPropertySymbols ===\n \"function\")\n for (var i = 0, p = Object.getOwnPropertySymbols(s); i < p.length; i++) {\n if\n (e.indexOf(p[i]) < 0 && Object.prototype.propertyIsEnumerable.call(s, p[i]))\n t[p[i]] = s[p[i]];\n }\n return t;\n }\n function __decorate(decorators, target, key, desc) {\n var c = arguments.length, r = c\n < 3 ? target : desc === null ? desc = Object.getOwnPropertyDescriptor(target, key) : desc, d;\n if (typeof Reflect === \"object\" && typeof Reflect.decorate === \"function\")\n r = Reflect.decorate(decorators, target, key,\n desc);\n else\n for (var i = decorators.length - 1; i >= 0; i--)\n if (d = decorators[i])\n r = (c < 3 ? d(r) : c > 3 ? d(target, key, r) : d(target, key)) || r;\n return c > 3 && r &&\n Object.defineProperty(target, key, r, r);\n }\n function __param(paramIndex, decorator) {\n return function\n (target, key) { decorator(target, key, paramIndex); }\n }\n function __metadata(metadataKey, metadataValue)\n {\n if (typeof Reflect === \"object\" && typeof Reflect.metadata === \"function\")\n return\n Reflect.metadata(metadataKey, metadataValue);\n }\n function __awaiter(thisArg, _arguments, P, generator) {\n function adopt(value) { return value instanceof P ? value : new P(function (resolve) { resolve(value); }); }\n return new (P || (P = Promise))(function (resolve, reject) {\n function fulfilled(value) { try { step(generator.next(value)); }\n step(generator.next(value)); }\n catch (e) { reject(e); }\n function\n rejected(value) { try { step(generator[\"throw\"](value)); }\n catch (e) {\n reject(e); }\n function step(result) { result.done ? resolve(result.value) :\n adopt(result.value).then(fulfilled, rejected); }\n step((generator = generator.apply(thisArg, _arguments ||\n [])).next()); }\n });\n }\n function __generator(thisArg, body) {\n var _ = { label: 0, sent: function () { if\n (t[0] & 1)\n throw t[1]; return t[1]; }, trys: [], ops: [] }, f, y, t, g;\n return g = { next: verb(0), \"throw\":\n verb(1), \"return\": verb(2) }, typeof Symbol === \"function\" && (g[Symbol.iterator] = function () { return this; }),\n g;\n function verb(n) { return function (v) { return step([n, v]); }\n }\n function step(op) {\n if (f)\n throw new TypeError(\"Generator is already executing.\");\n while (!_)\n try {\n if\n (f = 1, y && (t = op[0] & 2 ? y[\"return\"] : op[0] ? y[\"throw\"] || ((t = y[\"return\"])\n && t.call(y), 0) : y.next) &&\n !(t = t.call(y, op[1])).done)\n return t;\n if (y = 0, t)\n op = [op[0] & 2,\n t.value];\n switch (op[0]) {\n case 0:\n t = op;\n break;\n case 4:\n _label++;\n return { value: op[1],\n done: false };\n case 5:\n _label++;\n y = op[1];\n op = [0];\n continue;\n case 7:\n op = _ops.pop();\n _trys.pop();\n continue;\n default:\n if (!(t = _trys, t = t.length > 0\n && t[t.length - 1]) && (op[0] === 6 || op[0] === 2))\n _ = 0;\n continue;\n }\n }\n if (op[0] === 3 && (!t || (op[1] > t[0] && op[1] < t[3])))\n {\n _label = op[1];\n break;\n }\n if (op[0] === 6 && _label <\n t[1]) {\n _label = t[1];\n t = op;\n break;\n }\n if (t && _label < t[2])\n _label = t[2];\n _ops.push(op);\n break;\n }\n if (t[2])\n _ops.pop();\n _trys.pop();\n continue;\n }\n body.call(thisArg, _)\n catch (e) {\n op = [6, e];\n y = 0;\n }\n }\n}

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}\n finally {\n f = t = 0;\n }\n if (op[0] & 5)\n throw op[1];\nreturn { value: op[0] ? op[1] : void 0, done: true };\n }\n }\n var __createBinding = Object.create ? (function\n(o, m, k, k2) {\n if (k2 === undefined)\n k2 = k;\n Object.defineProperty(o, k2, { enumerable: true,\nget: function () { return m[k]; } });\n }): (function (o, m, k, k2) {\n if (k2 === undefined)\n k2 = k;\n o[k2] = m[k];\n });\n function __exportStar(m, exports) {\n for (var p in m)\n if (p !== \"default\" && !exports.hasOwnProperty(p))\n __createBinding(exports, m, p);\n }\n function __values(o) {\n var s = typeof Symbol === \"function\" && Symbol.iterator, m = s && o[s], i = 0;\n if (m)\n return\nm.call(o);\n if (o && typeof o.length === \"number\")\n return {\n next: function () {\n if (o && i >= o.length)\n o = void 0;\n return { value: o && o[i++], done: !o }; \n }\n };\n throw new TypeError(s ? \"Object is not iterable.\" : \"Symbol.iterator is not defined.\");\n }\n function __read(o, n) {\n var m = typeof Symbol === \"function\" && o[Symbol.iterator];\n if (!m)\n return o;\n var i = m.call(o), r, ar = [], e;\n try {\n while ((n === void 0 || n-- > 0) && !(r =\ni.next()).done)\n ar.push(r.value);\n } catch (error) {\n e = { error: error };\n }\n finally {\n try {\n if (r && !r.done && (m = i[\"return\"])\n m.call(i);\n }\n }\n finally {\n if (e)\n throw e.error;\n }\n return ar;\n }\n function\n__spread() {\n for (var ar = [], i = 0; i < arguments.length; i++)\n ar = ar.concat(__read(arguments[i]));\n return ar;\n }\n function __spreadArrays() {\n for (var s = 0, i = 0, il = arguments.length; i < il; i++)\n s += arguments[i].length;\n for (var r = Array(s), k = 0, i = 0; i < il; i++)\n for (var a = arguments[i], j\n= 0, jl = a.length; j < jl; j++, k++)\n r[k] = a[j];\n return r;\n }\n function __await(v) {\nreturn this instanceof __await ? (this.v = v, this) : new __await(v);\n }\n function __asyncGenerator(thisArg,\n_arguments, generator) {\n if (!Symbol.asyncIterator)\n throw new TypeError(\"Symbol.asyncIterator is\nnot defined.\");\n var g = generator.apply(thisArg, _arguments || []), i, q = [];\n return i = { }, verb(\"next\"),\n verb(\"throw\"), verb(\"return\"), i[Symbol.asyncIterator] = function () { return this; }, i;\n function verb(n) { if\n(g[n])\n i[n] = function (v) { return new Promise(function (a, b) { q.push([n, v, a, b]) > 1 || resume(n, v); }); };\n }\n function resume(n, v) { try {\n step(g[n](v));\n } catch (e) {\n settle(q[0][3], e);\n }\n }\n function step(r) { r.value instanceof __await ? Promise.resolve(r.value.v).then(fulfill, reject) :\nsettle(q[0][2], r); }\n function fulfill(value) { resume(\"next\", value); }\n function reject(value) {\nresume(\"throw\", value); }\n function settle(f, v) { if (f(v), q.shift(), q.length)\n resume(q[0][0], q[0][1]);\n }\n }\n function __asyncDelegator(o) {\n var i, p;\n return i = { }, verb(\"next\"), verb(\"throw\"),\n function (e) { throw e; }, verb(\"return\"), i[Symbol.iterator] = function () { return this; }, i;\n function verb(n,\nf) { i[n] = o[n] ? function (v) { return (p = !p) ? { value: __await(o[n](v)), done: n === \"return\" } : f ? f(v) : v; } : f;\n }\n }\n function __asyncValues(o) {\n if (!Symbol.asyncIterator)\n throw new\nTypeError(\"Symbol.asyncIterator is not defined.\");\n var m = o[Symbol.asyncIterator], i;\n return m ?\nm.call(o) : (o = typeof __values === \"function\" ? __values(o) : o[Symbol.iterator](), i = { }, verb(\"next\"),\n verb(\"throw\"), verb(\"return\"), i[Symbol.asyncIterator] = function () { return this; }, i);\n function verb(n) {\ni[n] = o[n] && function (v) { return new Promise(function (resolve, reject) { v = o[n](v), settle(resolve, reject,\nv.done, v.value); }); };\n }\n function settle(resolve, reject, d, v) { Promise.resolve(v).then(function (v) {\n resolve({ value: v, done: d }); }, reject); }\n }\n }\n function __makeTemplateObject(cooked, raw) {\n if\n(Object.defineProperty) {\n Object.defineProperty(cooked, \"raw\", { value: raw });\n }\n else {\n cooked.raw = raw;\n }\n return cooked;\n }\n }\n var __setModuleDefault = Object.create ?\n(function (o, v) {\n Object.defineProperty(o, \"default\", { enumerable: true, value: v });\n }): function (o, v)\n{\n o[\"default\"] = v;\n };\n function __importStar(mod) {\n if (mod && mod.__esModule)\n return mod;\n var result = {};\n if (mod != null)\n for (var k in mod)\n if\n(Object.hasOwnProperty.call(mod, k))\n __createBinding(result, mod, k);\n __setModuleDefault(result, mod);\n return result;\n }\n function __importDefault(mod) {\n return (mod\n&& mod.__esModule) ? mod : { default: mod };\n }\n function __classPrivateFieldGet(receiver, privateMap)\n{\n if (!privateMap.has(receiver))\n throw new TypeError(\"attempted to get private field on non-\ninstance\");\n return privateMap.get(receiver);\n }\n function __classPrivateFieldSet(receiver,\n
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privateMap, value) {\n if (!privateMap.has(receiver)) {\n throw new TypeError("attempted to set private
field on non-instance");\n }\n privateMap.set(receiver, value);\n return value;\n }\n\n var
BrowserDetection = /** @class */(function () {\n function BrowserDetection(ua) {\n this._overrideUa =
ua;\n }\n Object.defineProperty(BrowserDetection.prototype, \"_ua\", {\n get: function () {\n
if (typeof this._overrideUa === 'string') {\n return this._overrideUa;\n }\n return
common.getDOM() ? common.getDOM().getUserAgent() : \";\n },\n enumerable: false,\n
configurable: true\n });\n BrowserDetection.setup = function () {\n return new
BrowserDetection(null);\n };\n Object.defineProperty(BrowserDetection.prototype, \"isFirefox\", {\n
get: function () {\n return this._ua.indexOf('Firefox') > -1;\n },\n enumerable: false,\n
configurable: true\n });\n Object.defineProperty(BrowserDetection.prototype, \"isAndroid\", {\n get:
function () {\n return this._ua.indexOf('Mozilla/5.0') > -1 && this._ua.indexOf('Android') > -1 &&\n
this._ua.indexOf('AppleWebKit') > -1 && this._ua.indexOf('Chrome') == -1 &&\n
this._ua.indexOf('IEMobile') == -1;\n },\n enumerable: false,\n configurable: true\n });\n
 Object.defineProperty(BrowserDetection.prototype, \"isEdge\", {\n get: function () {\n return
this._ua.indexOf('Edge') > -1;\n },\n enumerable: false,\n configurable: true\n });\n
 Object.defineProperty(BrowserDetection.prototype, \"isIE\", {\n get: function () {\n return
this._ua.indexOf('Trident') > -1;\n },\n enumerable: false,\n configurable: true\n });\n
 Object.defineProperty(BrowserDetection.prototype, \"isWebkit\", {\n get: function () {\n return
this._ua.indexOf('AppleWebKit') > -1 && this._ua.indexOf('Edge') == -1 &&\n
this._ua.indexOf('IEMobile') == -1;\n },\n enumerable: false,\n configurable: true\n });\n
 Object.defineProperty(BrowserDetection.prototype, \"isIOS7\", {\n get: function () {\n return
(this._ua.indexOf('iPhone OS 7') > -1 || this._ua.indexOf('iPad OS 7') > -1) &&\n
this._ua.indexOf('IEMobile') == -1;\n },\n enumerable: false,\n configurable: true\n });\n
 Object.defineProperty(BrowserDetection.prototype, \"isSlow\", {\n get: function () {\n return
this.isAndroid || this.isIE || this.isIOS7;\n },\n enumerable: false,\n configurable: true\n });\n
 Object.defineProperty(BrowserDetection.prototype, \"supportsNativeIntlApi\", {\n // The Intl API is only
natively supported in Chrome, Firefox, IE11 and Edge.\n // This detector is needed in tests to make the
difference between:\n // 1) IE11/Edge: they have a native Intl API, but with some discrepancies\n // 2)
IE9/IE10: they use the polyfill, and so no discrepancies\n get: function () {\n return
!!core.global.Intl && core.global.Intl !== core.global.IntlPolyfill;\n },\n enumerable: false,\n
configurable: true\n });\n Object.defineProperty(BrowserDetection.prototype, \"isChromeDesktop\", {\n
get: function () {\n return this._ua.indexOf('Chrome') > -1 && this._ua.indexOf('Mobile Safari') == -1
&&\n this._ua.indexOf('Edge') == -1;\n },\n enumerable: false,\n configurable:
true\n });\n Object.defineProperty(BrowserDetection.prototype, \"isOldChrome\", {\n // \"Old
Chrome\" means Chrome 3X, where there are some discrepancies in the Intl API.\n // Android 4.4 and 5.X
have such browsers by default (respectively 30 and 39).\n get: function () {\n return
this._ua.indexOf('Chrome') > -1 && this._ua.indexOf('Chrome/3') > -1 &&\n this._ua.indexOf('Edge')
== -1;\n },\n enumerable: false,\n configurable: true\n });\n Object.defineProperty(BrowserDetection.prototype, \"supportsCustomElements\", {\n
get: function () {\n return (typeof core.global.customElements !== 'undefined');\n },\n enumerable: false,\n
configurable: true\n });\n Object.defineProperty(BrowserDetection.prototype,
\"supportsDeprecatedCustomCustomElementsV0\", {\n get: function () {\n return (typeof
document.registerElement !== 'undefined');\n },\n enumerable: false,\n configurable: true\n
 });\n Object.defineProperty(BrowserDetection.prototype, \"supportsRegexUnicodeFlag\", {\n get:
function () {\n return RegExp.prototype.hasOwnProperty('unicode');\n },\n enumerable:
false,\n configurable: true\n });\n Object.defineProperty(BrowserDetection.prototype,
\"supportsShadowDom\", {\n get: function () {\n var testEl = document.createElement('div');\n
 return (typeof testEl.attachShadow !== 'undefined');\n },\n enumerable: false,\n

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configurable: true\n });\n Object.defineProperty(BrowserDetection.prototype,
\"supportsDeprecatedShadowDomV0\", {\n get: function () {\n var testEl =
document.createElement('div');\n return (typeof testEl.createShadowRoot !== 'undefined');\n },\n enumerable: false,\n configurable: true\n });\n return BrowserDetection;\n }());\n var
browserDetection = BrowserDetection.setup();\n function dispatchEvent(element, eventType) {\n var evt =
common.getDOM().getDefaultDocument().createEvent('Event');\n evt.initEvent(eventType, true, true);\n common.getDOM().dispatchEvent(element, evt);\n }\n function createMouseEvent(eventType) {\n var evt =
common.getDOM().getDefaultDocument().createEvent('MouseEvent');\n evt.initEvent(eventType, true, true);\n return evt;\n }\n function el(html) {\n return getContent(createTemplate(html)).firstChild;\n }\n
function normalizeCSS(css) {\n return css.replace(/\\s+/g, ' ')\n .replace(/:/g, ':')\n .replace(/\\/g, '\\')\n .replace(/ }/g, '}')\n .replace(/url\\(\\(\\(\\|\\s)(.+)(\\|\\s)\\)\\(\\s*)/g, function () {\n var match
= [];\n for (var _i = 0; _i < arguments.length; _i++) {\n match[_i] = arguments[_i];\n }\n return \"url(\\\"\" + match[2] + \"\\\")\";\n })\n .replace(/\\[[.+(\\^\"\\\\\\\\)+]\\]/g, function () {\n var
match = [];\n for (var _i = 0; _i < arguments.length; _i++) {\n match[_i] = arguments[_i];\n }\n return \"[\" + match[1] + \"=\\\"\" + match[2] + \"\\\"]\";\n });\n }\n function
getAttributeMap(element) {\n var res = new Map();\n var elAttrs = element.attributes;\n for (var i = 0; i
< elAttrs.length; i++) {\n var attrib = elAttrs.item(i);\n res.set(attrib.name, attrib.value);\n }\n return res;\n }\n var _selfClosingTags = ['br', 'hr', 'input'];\n function stringifyElement(el /** TODO #9100 */)
{\n var e_1, _a;\n var result = \"\";\n if (common.getDOM().isElementNode(el)) {\n var tagName =
el.tagName.toLowerCase();\n // Opening tag\n result += \"<\" + tagName;\n // Attributes in an
ordered way\n var attributeMap = getAttributeMap(el);\n var sortedKeys =
Array.from(attributeMap.keys()).sort();\n try {\n for (var sortedKeys_1 = __values(sortedKeys),
sortedKeys_1_1 = sortedKeys_1.next(); !sortedKeys_1_1.done; sortedKeys_1_1 = sortedKeys_1.next()) {\n var key = sortedKeys_1_1.value;\n var lowerCaseKey = key.toLowerCase();\n var
attValue = attributeMap.get(key);\n if (typeof attValue !== 'string') {\n result += \" \" +
lowerCaseKey;\n }\n else {\n // Browsers order style rules differently. Order
them alphabetically for consistency.\n if (lowerCaseKey === 'style') {\n attValue =
attValue.split(/; ?/).filter(function (s) { return !!s; }).sort().map(function (s) { return s + \";\"; }).join('');\n }\n result += \" \" + lowerCaseKey + \"=\\\"\" + attValue + \"\\\"\";\n }\n }\n } catch (e_1_1) { e_1 = { error: e_1_1 }; }\n finally {\n try {\n if
(sortedKeys_1_1 && !sortedKeys_1_1.done && (_a = sortedKeys_1.return)) _a.call(sortedKeys_1);\n }\n finally { if (e_1) throw e_1.error; }\n }\n result += \">\";\n // Children\n var
childrenRoot = templateAwareRoot(el);\n var children = childrenRoot ? childrenRoot.childNodes : [];\n for (var j = 0; j < children.length; j++) {\n result += stringifyElement(children[j]);\n }\n //
Closing tag\n if (_selfClosingTags.indexOf(tagName) === -1) {\n result += \"<\" + tagName +
\">\";\n }\n else if (isCommentNode(el)) {\n result += \"<!--\" + el.nodeValue + \"-->\";\n }\n else {\n result += el.textContent;\n }\n return result;\n }\n }\n function createNgZone()
{\n return new core.NgZone({ enableLongStackTrace: true, shouldCoalesceEventChangeDetection: false });\n }\n function isCommentNode(node) {\n return node.nodeType === Node.COMMENT_NODE;\n }\n function
isTextNode(node) {\n return node.nodeType === Node.TEXT_NODE;\n }\n function
getContent(node) {\n if ('content' in node) {\n return node.content;\n }\n else {\n return
node;\n }\n }\n function templateAwareRoot(el) {\n return common.getDOM().isElementNode(el) &&
el.nodeName === 'TEMPLATE' ? getContent(el) : el;\n }\n function setCookie(name, value) {\n //
document.cookie is magical, assigning into it assigns/overrides one cookie value, but does\n // not clear other
cookies.\n document.cookie = encodeURIComponent(name) + '=' + encodeURIComponent(value);\n }\n function supportsWebAnimation() {\n return typeof Element.prototype['animate'] === 'function';\n }\n function
hasStyle(element, styleName, styleValue) {\n var value = element.style[styleName] || \"\";\n return
styleValue ? value === styleValue : value.length > 0;\n }\n function hasClass(element, className) {\n return

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{\n return this._ua.indexOf('Mozilla/5.0') > -1 && this._ua.indexOf('Android') > -1 &&\n
this._ua.indexOf('AppleWebKit') > -1 && this._ua.indexOf('Chrome') === -1 &&\n this._ua.indexOf('IEMobile')
=== -1;\n }\n\n get isEdge(): boolean {\n return this._ua.indexOf('Edge') > -1;\n }\n\n get isIE(): boolean {\n
return this._ua.indexOf('Trident') > -1;\n }\n\n get isWebkit(): boolean {\n return
this._ua.indexOf('AppleWebKit') > -1 && this._ua.indexOf('Edge') === -1 &&\n this._ua.indexOf('IEMobile')
=== -1;\n }\n\n get isIOS7(): boolean {\n return (this._ua.indexOf('iPhone OS 7') > -1 || this._ua.indexOf('iPad OS
7') > -1) &&\n this._ua.indexOf('IEMobile') === -1;\n }\n\n get isSlow(): boolean {\n return this.isAndroid ||
this.isIE || this.isIOS7;\n }\n\n // The Intl API is only natively supported in Chrome, Firefox, IE11 and Edge.\n //
This detector is needed in tests to make the difference between:\n // 1) IE11/Edge: they have a native Intl API, but
with some discrepancies\n // 2) IE9/IE10: they use the polyfill, and so no discrepancies\n get
supportsNativeIntlApi(): boolean {\n return !!(<any>global).Intl && (<any>global).Intl !==
(<any>global).IntlPolyfill;\n }\n\n get isChromeDesktop(): boolean {\n return this._ua.indexOf('Chrome') > -1
&& this._ua.indexOf('Mobile Safari') === -1 &&\n this._ua.indexOf('Edge') === -1;\n }\n\n // \"Old Chrome\"
means Chrome 3X, where there are some discrepancies in the Intl API.\n // Android 4.4 and 5.X have such
browsers by default (respectively 30 and 39).\n get isOldChrome(): boolean {\n return this._ua.indexOf('Chrome')
> -1 && this._ua.indexOf('Chrome/3') > -1 &&\n this._ua.indexOf('Edge') === -1;\n }\n\n get
supportsCustomElements() {\n return (typeof (<any>global).customElements !== 'undefined');\n }\n\n get
supportsDeprecatedCustomCustomElementsV0() {\n return (typeof (document as any).registerElement !==
'undefined');\n }\n\n get supportsRegExUnicodeFlag(): boolean {\n return
RegExp.prototype.hasOwnProperty('unicode');\n }\n\n get supportsShadowDom() {\n const testEl =
document.createElement('div');\n return (typeof testEl.attachShadow !== 'undefined');\n }\n\n get
supportsDeprecatedShadowDomV0() {\n const testEl = document.createElement('div') as any;\n return (typeof
testEl.createShadowRoot !== 'undefined');\n }\n}\n\nexport const browserDetection: BrowserDetection =
BrowserDetection.setup();\n\nexport function dispatchEvent(element: any, eventType: any): void {\n const evt:
Event = getDOM().getDefaultDocument().createEvent('Event');\n evt.initEvent(eventType, true, true);\n getDOM().dispatchEvent(element, evt);\n}\n\nexport function createMouseEvent(eventType: string): MouseEvent
{\n const evt: MouseEvent = getDOM().getDefaultDocument().createEvent('MouseEvent');\n evt.initEvent(eventType, true, true);\n return evt;\n}\n\nexport function el(html: string): HTMLElement {\n return
<HTMLElement>getContent(createTemplate(html)).firstChild;\n}\n\nexport function normalizeCSS(css: string):
string {\n return css.replace(/\\s+/g, ' ')\n .replace(/:/g, ':')\n .replace(/"/g, '\"')\n .replace(/'/g, '')\n .replace(/url\\((\\|\"|\\s|\\s*)\\)/g, (...match: string[]) => `url("${match[2]}")`\n)
.replace(/\\[(.+)=([^\"]|\\]|\\)/g, (...match: string[]) => `[${match[1]}="${match[2]}"]`);\n}\n\nfunction
getAttributeMap(element: any): Map<string, string> {\n const res = new Map<string, string>();\n const elAttrs =
element.attributes;\n for (let i = 0; i < elAttrs.length; i++) {\n const attrib = elAttrs.item(i);\n res.set(attrib.name,
attrib.value);\n }\n return res;\n}\n\nconst _selfClosingTags = ['br', 'hr', 'input'];\nexport function
stringifyElement(el: any /** TODO #9100 */): string {\n let result = '';\n if (getDOM().isElementNode(el)) {\n const tagName = el.tagName.toLowerCase();\n // Opening tag\n result += `<${tagName}`;\n // Attributes
in an ordered way\n const attributeMap = getAttributeMap(el);\n const sortedKeys =
Array.from(attributeMap.keys()).sort();\n for (const key of sortedKeys) {\n const lowerCaseKey =
key.toLowerCase();\n let attValue = attributeMap.get(key);\n if (typeof attValue !== 'string') {\n result
+= ` ${lowerCaseKey}`;\n } else {\n // Browsers order style rules differently. Order them alphabetically for
consistency.\n if (lowerCaseKey === 'style') {\n attValue = attValue.split(/ ?/).filter(s => !!s).sort().map(s
=> ` ${s}`);.join(' ');\n }\n result += ` ${lowerCaseKey}="${attValue}"`;\n }\n }\n result +=
'>';\n // Children\n const childrenRoot = templateAwareRoot(el);\n const children = childrenRoot ?
childrenRoot.childNodes : [];\n for (let j = 0; j < children.length; j++) {\n result +=
stringifyElement(children[j]);\n }\n // Closing tag\n if (_selfClosingTags.indexOf(tagName) === -1) {\n result
+= `</${tagName}>`;\n }\n } else if (isCommentNode(el)) {\n result += `<!--${el.nodeValue}-->`;\n }
else {\n result += el.textContent;\n }\n return result;\n}\n\nexport function createNgZone(): NgZone {\n return

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```
new NgZone({enableLongStackTrace: true, shouldCoalesceEventChangeDetection: false});\n\n\nexport function
isCommentNode(node: Node): boolean {\n return node.nodeType === Node.COMMENT_NODE;\n}\n\n\nexport
function isTextNode(node: Node): boolean {\n return node.nodeType === Node.TEXT_NODE;\n}\n\n\nexport
function getContent(node: Node): Node {\n if ('content' in node) {\n return (<any>node).content;\n } else {\n return node;\n }\n}\n\n\nexport function templateAwareRoot(el: Node): any {\n return getDOM().isElementNode(el)
&& el.nodeName === 'TEMPLATE' ? getContent(el) : el;\n}\n\n\nexport function setCookie(name: string, value:
string) {\n // document.cookie is magical, assigning into it assigns/overrides one cookie value, but does\n // not
clear other cookies.\n document.cookie = encodeURIComponent(name) + '=' +
encodeURIComponent(value);\n}\n\n\nexport function supportsWebAnimation(): boolean {\n return typeof
(<any>Element).prototype['animate'] === 'function';\n}\n\n\nexport function hasStyle(element: any, styleName:
string, styleValue?: string|null): boolean {\n const value = element.style[styleName] || '';\n return styleValue ? value
=== styleValue : value.length > 0;\n}\n\n\nexport function hasClass(element: any, className: string): boolean {\n
return element.classList.contains(className);\n}\n\n\nexport function sortedClassList(element: any): any[] {\n return
Array.prototype.slice.call(element.classList, 0).sort();\n}\n\n\nexport function createTemplate(html: any):
HTMLElement {\n const t = getDOM().getDefaultDocument().createElement('template');\n t.innerHTML = html;\n return t;\n}\n\n\nexport function childNodesAsList(el: Node): any[] {\n const childNodes = el.childNodes;\n const
res = [];\n for (let i = 0; i < childNodes.length; i++) {\n res[i] = childNodes[i];\n }\n return res;\n}\n\n\n\"/>
/**\n *
@license\n * Copyright Google LLC All Rights Reserved.\n *\n * Use of this source code is governed by an MIT-
style license that can be\n * found in the LICENSE file at https://angular.io/license\n */\n\nimport {APP_ID,
createPlatformFactory, NgModule, NgZone, PLATFORM_INITIALIZER, platformCore, PlatformRef,
StaticProvider} from '@angular/core';\nimport {BrowserModule, BrowserDomAdapter as BrowserDomAdapter,
ELEMENT_PROBE_PROVIDERS as ELEMENT_PROBE_PROVIDERS} from '@angular/platform-
browser';\nimport {BrowserDetection, createNgZone} from './browser_util';\n\nfunction initBrowserTests() {\n BrowserDomAdapter.makeCurrent();\n BrowserDetection.setup();\n}\n\nconst
_TEST_BROWSER_PLATFORM_PROVIDERS: StaticProvider[] =\n [{provide: PLATFORM_INITIALIZER,
useValue: initBrowserTests, multi: true}];\n\n/**\n * Platform for testing\n */\n\n@publicApi\n\nexport const
platformBrowserTesting =\n createPlatformFactory(platformCore, 'browserTesting',
_TEST_BROWSER_PLATFORM_PROVIDERS);\n\n/**\n * NgModule for testing.\n */\n\n@publicApi\n\n/**\n *\n * @ngModule({\n * exports: [BrowserModule],\n * providers: [\n * {provide: APP_ID, useValue: 'a'},\n * ELEMENT_PROBE_PROVIDERS,\n * {provide: NgZone, useFactory: createNgZone},\n *]\n * })\n *\n */\nexport class
BrowserTestingModule {\n}\n\n/**\n *\n * @license\n * Copyright Google LLC All Rights Reserved.\n *\n * Use of
this source code is governed by an MIT-style license that can be\n * found in the LICENSE file at
https://angular.io/license\n *\n * @module\n * @description\n * Entry point for all public APIs of the
platform-browser/testing package.\n */\n\nexport * from './browser';\n\n/**\n *\n * @license\n * Copyright Google LLC
All Rights Reserved.\n *\n * Use of this source code is governed by an MIT-style license that can be\n * found in
the LICENSE file at https://angular.io/license\n *\n * <reference types="jasmine" />\n *\n * @module\n *
@description\n * Entry point for all public APIs of this package.\n */\n\nexport * from './src/testing';\n\n/**\n *\n * @license\n * Copyright Google LLC All Rights Reserved.\n *\n * Use of this source code is governed by an MIT-
style license that can be\n * found in the LICENSE file at https://angular.io/license\n *\n * This file is not used to
build this module. It is only used during editing\n * by the TypeScript language service and during build for
verification. `ngc` replaces this file with production index.ts when it rewrites private symbol\n * names.\n */\n\nexport
* from './public_api';\n\n/**\n * Generated bundle index. Do not edit.\n */\n\nexport * from './index';\n\nexport
{createNgZone as angular_packages_platform_browser_testing_testing_a} from
'./src/browser_util';\n\n}, {"names": ["getDOM", "global", "BrowserDomAdapter", "ELEMENT_PROBE_PROVIDERS"], "
mappings": ";;;;;;AAAAA;;;;;;MAWa,gBAAgB;IAc3B,YAAY,EAAe;QACzB,IAAI,CAAC,WAAW,GAAG,EAA
E,CAAC;KACvB;IAdD,IAAY,GAAG;QACb,IAAI,OAAO,IAAI,CAAC,WAAW,KAAK,QAAQ,EAAE;YACx,C
O
AAO,IAAI,CAAC,WAAW,CAAC;SACzB;QAED,OAAOA,OAAO,EAAE,GAAGA,OAAO,EAAE,CAAC,YAA
Y,EAAE,GAAG,EAAE,CAAC;KAChD;IAED,OAAO,KAAK;QACV,OAAO,IAAI,gBAAgB,CAAC,IAAI,CAAC,
```

CAAC;KACnC;IAMD,IAAI,SAAS;QACX,OAAO,IAAI,CAAC,GAAG,CAAC,OAAO,CAAC,SAAS,CAAC,GAA  
G,CAAC,CAAC,CAAC;KACzC;IAED,IAAI,SAAS;QACX,OAAO,IAAI,CAAC,GAAG,CAAC,OAAO,CAAC,aA  
Aa,CAAC,GAAG,CAAC,CAAC,IAAI,IAAI,CAAC,GAAG,CAAC,OAAO,CAAC,SAAS,CAAC,GAAG,CAAC,C  
AAC;YAC3E,IAAI,CAAC,GAAG,CAAC,OAAO,CAAC,aAAa,CAAC,GAAG,CAAC,CAAC,IAAI,IAAI,CAAC,  
GAAG,CAAC,OAAO,CAAC,QAAQ,CAAC,IAAI,CAAC,CAAC;YACxE,IAAI,CAAC,GAAG,CAAC,OAAO,CA  
AC,UAAU,CAAC,IAAI,CAAC,CAAC,CAAC;KACxC;IAED,IAAI,MAAM;QACR,OAAO,IAAI,CAAC,GAAG,C  
AAC,OAAO,CAAC,MAAM,CAAC,GAAG,CAAC,CAAC,CAAC;KACtC;IAED,IAAI,IAAI;QACN,OAAO,IAAI,  
CAAC,GAAG,CAAC,OAAO,CAAC,SAAS,CAAC,GAAG,CAAC,CAAC,CAAC;KACzC;IAED,IAAI,QAAQ;QA  
CV,OAAO,IAAI,CAAC,GAAG,CAAC,OAAO,CAAC,aAAa,CAAC,GAAG,CAAC,CAAC,IAAI,IAAI,CAAC,GA  
AG,CAAC,OAAO,CAAC,MAAM,CAAC,IAAI,CAAC,CAAC;YACzE,IAAI,CAAC,GAAG,CAAC,OAAO,CAAC  
,UAAU,CAAC,IAAI,CAAC,CAAC,CAAC;KACxC;IAED,IAAI,MAAM;QACR,OAAO,CAAC,IAAI,CAAC,GAA  
G,CAAC,OAAO,CAAC,aAAa,CAAC,GAAG,CAAC,CAAC,IAAI,IAAI,CAAC,GAAG,CAAC,OAAO,CAAC,WA  
AW,CAAC,GAAG,CAAC,CAAC;YAC9E,IAAI,CAAC,GAAG,CAAC,OAAO,CAAC,UAAU,CAAC,IAAI,CAAC  
,CAAC,CAAC;KACxC;IAED,IAAI,MAAM;QACR,OAAO,IAAI,CAAC,SAAS,IAAI,IAAI,CAAC,IAAI,IAAI,IA  
AI,CAAC,MAAM,CAAC;KACnD;;;;IAMD,IAAI,qBAAqB;QACvB,OAAO,CAAC,CAAOC,OAAO,CAAC,IAAI  
,IAUA,OAAO,CAAC,IAAI,KAAWA,OAAO,CAAC,YAAY,CAAC;KACIF;IAED,IAAI,eAAe;QACjB,OAAO,I  
AAI,CAAC,GAAG,CAAC,OAAO,CAAC,QAAQ,CAAC,GAAG,CAAC,CAAC,IAAI,IAAI,CAAC,GAAG,CAAC,  
OAAO,CAAC,eAAe,CAAC,IAAI,CAAC,CAAC;YAC7E,IAAI,CAAC,GAAG,CAAC,OAAO,CAAC,MAAM,CA  
AC,IAAI,CAAC,CAAC,CAAC;KACpC;;;IAID,IAAI,WAAW;QACb,OAAO,IAAI,CAAC,GAAG,CAAC,OAAO,  
CAAC,QAAQ,CAAC,GAAG,CAAC,CAAC,IAAI,IAAI,CAAC,GAAG,CAAC,OAAO,CAAC,UAAU,CAAC,GA  
AG,CAAC,CAAC;YACvE,IAAI,CAAC,GAAG,CAAC,OAAO,CAAC,MAAM,CAAC,IAAI,CAAC,CAAC,CAAC  
;KACpC;IAED,IAAI,sBAAsB;QACxB,QAAQ,OAAaA,OAAO,CAAC,cAAc,KAAK,WAAW,EAAE;KAC9D;IAE  
D,IAAI,wCAAwC;QACIC,QAAQ,OAAQ,QAAgB,CAAC,eAAe,KAAK,WAAW,EAAE;KACnE;IAED,IAAI,wB  
AAwB;QACIB,OAAO,MAAM,CAAC,SAAS,CAAC,cAAc,CAAC,SAAS,CAAC,CAAC;KACnD;IAED,IAAI,iB  
AAiB;QACnB,MAAM,MAAM,GAAG,QAAQ,CAAC,aAAa,CAAC,KAAK,CAAC,CAAC;QAC7C,QAAQ,OAA  
O,MAAM,CAAC,YAAY,KAAK,WAAW,EAAE;KACrD;IAED,IAAI,6BAA6B;QAC/B,MAAM,MAAM,GAAG,  
QAAQ,CAAC,aAAa,CAAC,KAAK,CAAQ,CAAC;QACpD,QAAQ,OAAO,MAAM,CAAC,gBAAgB,KAAK,WA  
AW,EAAE;KACzD;CACF;AAEM,MAAM,gBAAgB,GAAqB,gBAAgB,CAAC,KAAK,EAAE,CAAC;SAE3D,aA  
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Found in path(s):

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No license file was found, but licenses were detected in source scan.



```
/**
 * @license Angular v11.0.2
 * (c) 2010-2020 Google LLC. https://angular.io/
 * License: MIT
 */
```

Found in path(s):

- \* /opt/cola/permits/1358260668\_1657134840.805252/0/platform-browser-11-0-2-tgz/package/testing.d.ts
  - \* /opt/cola/permits/1358260668\_1657134840.805252/0/platform-browser-11-0-2-tgz/package/testing/testing.d.ts
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  - \* /opt/cola/permits/1358260668\_1657134840.805252/0/platform-browser-11-0-2-tgz/package/animations.d.ts
- No license file was found, but licenses were detected in source scan.

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*****\r\nCopyright (c)
Microsoft Corporation.\r\n\r\nPermission to use, copy, modify, and/or distribute this software for any\r\n\r\npurpose
with or without fee is hereby granted.\r\n\r\n\r\nTHE SOFTWARE IS PROVIDED \"AS IS\" AND THE AUTHOR
DISCLAIMS ALL WARRANTIES WITH\r\n\r\nREGARD TO THIS SOFTWARE INCLUDING ALL IMPLIED
WARRANTIES OF MERCHANTABILITY\r\n\r\nAND FITNESS. IN NO EVENT SHALL THE AUTHOR BE
LIABLE FOR ANY SPECIAL, DIRECT,\r\n\r\nINDIRECT, OR CONSEQUENTIAL DAMAGES OR ANY
DAMAGES WHATSOEVER RESULTING FROM\r\n\r\nLOSS OF USE, DATA OR PROFITS, WHETHER IN AN
ACTION OF CONTRACT, NEGLIGENCE OR\r\n\r\nOTHER TORTIOUS ACTION, ARISING OUT OF OR IN
```

## CONNECTION WITH THE USE OR PERFORMANCE OF THIS

SOFTWARE.

```
global Reflect, Promise
var extendStatics = function(d, b) {
 extendStatics =
Object.setPrototypeOf ||
 ({ __proto__: [] } instanceof Array && function(d, b) { d.__proto__ = b; }) ||
 function(d, b) { for (var p in b) if (b.hasOwnProperty(p)) d[p] = b[p]; };
 return extendStatics(d, b);
};
export function __extends(d, b) {
 extendStatics(d, b);
 function __() { this.constructor = d; }
 d.prototype = b === null ? Object.create(b) : (Object.prototype = b.prototype, new __());
}
export var __assign = function() {
 __assign = Object.assign || function(t) {
 for (var s, i = 1, n = arguments.length; i < n; i++) {
 s = arguments[i];
 for (var p in s) if (Object.prototype.hasOwnProperty.call(s, p)) t[p] = s[p];
 }
 return t;
 };
 return __assign.apply(this, arguments);
}
export function __rest(s, e) {
 var t = {};
 for (var p in s) (Object.prototype.hasOwnProperty.call(s, p) && e.indexOf(p) < 0) t[p] = s[p];
 if (s != null && typeof Object.getOwnPropertySymbols === "function")
 for (var i = 0, p = Object.getOwnPropertySymbols(s); i < p.length; i++) {
 if (e.indexOf(p[i]) < 0 && Object.prototype.propertyIsEnumerable.call(s, p[i])) t[p[i]] = s[p[i]];
 }
 return t;
}
export function __decorate(decorators, target, key, desc) {
 var c = arguments.length, r = c < 3 ? target : desc === null ? desc = Object.getOwnPropertyDescriptor(target, key) : desc, d;
 if (typeof Reflect === "object" && typeof Reflect.decorate === "function") r = Reflect.decorate(decorators, target, key, desc);
 else for (var i = decorators.length - 1; i >= 0; i--) if (d = decorators[i]) r = (c > 3 ? d(r) : c > 2 ? d(target, key, r) : d(target, key)) || r;
 return c > 3 && r && Object.defineProperty(target, key, r, r);
}
export function __param(paramIndex, decorator) {
 return function(target, key) { decorator(target, key, paramIndex); };
}
export function __metadata(metadataKey, metadataValue) {
 if (typeof Reflect === "object" && typeof Reflect.metadata === "function") return Reflect.metadata(metadataKey, metadataValue);
}
export function __awaiter(thisArg, _arguments, P, generator) {
 function adopt(value) { return value instanceof P ? value : new P(function(resolve) { resolve(value); }); }
 return new (P || (P = Promise))(function(resolve, reject) {
 function fulfilled(value) { try { step(generator.next(value)); } catch (e) { reject(e); } }
 function rejected(value) { try { step(generator["throw"](value)); } catch (e) { reject(e); } }
 function step(result) { result.done ? resolve(result.value) : adopt(result.value).then(fulfilled, rejected); }
 step((generator = generator.apply(thisArg, _arguments || [])).next());
 });
}
export function __generator(thisArg, body) {
 var _ = { label: 0, sent: function() { if (t[0] & 1) throw t[1]; return t[1]; }, trys: [], ops: [] }, f, y, t, g;
 return g = { next: verb(0, "throw": verb(1), "return": verb(2)), type: Symbol === "function" && (g[Symbol.iterator] = function() { return this; }); }, g;
 function verb(n) { return function(v) { return step([n, v]); }; }
 function step(op) {
 if (f) throw new TypeError("Generator is already executing.");
 while (1) try {
 if (f = 1, y && (t = op[0] & 2 ? y["return"] : op[0] ? y["throw"] || ((t = y["return"]) && t.call(y, 0) : y.next) && !(t = t.call(y, op[1])).done) return t;
 if (y = 0, t) op = [op[0] & 2, t.value];
 switch (op[0]) {
 case 0: case 1: t = op; break;
 case 4: _.label++; return { value: op[1], done: false };
 case 5: _.label++; y = op[1]; op = [0]; continue;
 case 7: op = _.ops.pop(); _.trys.pop(); continue;
 default:
 if (!t = _.trys, t = t.length > 0 && t[t.length - 1] && (op[0] === 6 || op[0] === 2)) { _ = 0; continue; }
 if (op[0] === 3 && (!t || (op[1] > t[0] && op[1] < t[3]))) { _.label = op[1]; break; }
 if (op[0] === 6 && _.label < t[1]) { _.label = t[1]; t = op; break; }
 if (t && _.label < t[2]) { _.label = t[2]; _.ops.push(op); break; }
 if (t[2])
 _.ops.pop();
 _.trys.pop(); continue;
 }
 op = body.call(thisArg, _);
 } catch (e) { op = [6, e]; y = 0; } finally { f = t = 0; }
 } if (op[0] & 5) throw op[1]; return { value: op[0] ? op[1] : void 0, done: true };
 }
}
export var __createBinding = Object.create ? (function(o, m, k, k2) {
 if (k2 === undefined) k2 = k;
 Object.defineProperty(o, k2, { enumerable: true, get: function() { return m[k]; } });
}) : (function(o, m, k, k2) {
 if (k2 === undefined) k2 = k;
 o[k2] = m[k];
});
export function __exportStar(m, exports) {
 for (var p in m) if (p !== "default" && !exports.hasOwnProperty(p)) __createBinding(exports, m, p);
}
export function __values(o) {
 var s = typeof Symbol ===
```

```

"function" && Symbol.iterator, m = s && o[s], i = 0;\r\n if (m) return m.call(o);\r\n if (o && typeof o.length
=== "number") return {\r\n next: function () {\r\n if (o && i >= o.length) o = void 0;\r\n return {
value: o && o[i++], done: !o };
\r\n };\r\n };\r\n throw new TypeError(s ? "Object is not iterable." :
"Symbol.iterator is not defined.");
\r\n\r\n\r\nexport function __read(o, n) {\r\n var m = typeof Symbol ===
"function" && o[Symbol.iterator];\r\n if (!m) return o;\r\n var i = m.call(o), r, ar = [], e;\r\n try {\r\n
while ((n === void 0 || n-- > 0) && !(r = i.next()).done) ar.push(r.value);\r\n };\r\n catch (error) { e = { error:
error }; };\r\n finally {\r\n try {\r\n if (r && !r.done && (m = i["return"])) m.call(i);\r\n };\r\n
finally { if (e) throw e.error; };\r\n };\r\n return ar;\r\n}\r\n\r\n\r\nexport function __spread() {\r\n for (var ar = [], i =
0; i < arguments.length; i++)\r\n ar = ar.concat(__read(arguments[i]));\r\n return ar;\r\n}\r\n\r\n\r\nexport function
__spreadArrays() {\r\n for (var s = 0, i = 0, il = arguments.length; i < il; i++) s += arguments[i].length;\r\n for
(var r = Array(s), k = 0, i = 0; i < il; i++)\r\n for (var a = arguments[i], j = 0, jl = a.length; j < jl; j++, k++)\r\n
 r[k] = a[j];\r\n return r;\r\n};\r\n\r\n\r\nexport function __await(v) {\r\n return this instanceof __await ? (this.v =
v, this) : new __await(v);\r\n}\r\n\r\n\r\nexport function __asyncGenerator(thisArg, _arguments, generator) {\r\n if
(!Symbol.asyncIterator) throw new TypeError("Symbol.asyncIterator is not defined.");\r\n var g =
generator.apply(thisArg, _arguments || []), i, q = [];\r\n return i = {}, verb("next"), verb("throw"),
verb("return"), i[Symbol.asyncIterator] = function () { return this; }, i;\r\n function verb(n) { if (g[n]) i[n] =
function (v) { return new Promise(function (a, b) { q.push([n, v, a, b]) > 1 || resume(n, v); }); }; };\r\n function
resume(n, v) { try { step(g[n](v)); } catch (e) { settle(q[0][3], e); } };\r\n function step(r) { r.value instanceof
__await ? Promise.resolve(r.value.v).then(fulfill, reject) : settle(q[0][2], r); };\r\n function fulfill(value) {
resume("next", value); };\r\n function reject(value) { resume("throw", value); };\r\n function settle(f, v) { if
(f(v), q.shift(), q.length) resume(q[0][0], q[0][1]); };\r\n}\r\n\r\n\r\nexport function __asyncDelegator(o) {\r\n var i,
p;\r\n return i = {}, verb("next"), verb("throw"), function (e) { throw e; }, verb("return"), i[Symbol.iterator] =
function () { return this; }, i;\r\n function verb(n, f) { i[n] = o[n] ? function (v) { return (p = !p) ? { value:
__await(o[n](v)), done: n === "return" } : f ? f(v) : v; } : f; };\r\n}\r\n\r\n\r\nexport function __asyncValues(o) {\r\n if
(!Symbol.asyncIterator) throw new TypeError("Symbol.asyncIterator is not defined.");\r\n var m =
o[Symbol.asyncIterator], i;\r\n return m ? m.call(o) : (o = typeof __values === "function" ? __values(o) :
o[Symbol.iterator](), i = {}, verb("next"), verb("throw"), verb("return"), i[Symbol.asyncIterator] = function () {
return this; }, i);\r\n function verb(n) { i[n] = o[n] && function (v) { return new Promise(function (resolve, reject)
{ v = o[n](v), settle(resolve, reject, v.done, v.value); }); }; };\r\n function settle(resolve, reject, d, v) {
Promise.resolve(v).then(function(v) { resolve({ value: v, done: d }); }, reject); };\r\n}\r\n\r\n\r\nexport function
__makeTemplateObject(cooked, raw) {\r\n if (Object.defineProperty) { Object.defineProperty(cooked, "raw", {
value: raw }); } else { cooked.raw = raw; };\r\n return cooked;\r\n};\r\n\r\n\r\nvar __setModuleDefault = Object.create
? (function(o, v) {\r\n Object.defineProperty(o, "default", { enumerable: true, value: v });\r\n}) : function(o, v)
{\r\n o["default"] = v;\r\n};\r\n\r\n\r\nexport function __importStar(mod) {\r\n if (mod && mod.__esModule)
return mod;\r\n var result = {};\r\n if (mod != null) for (var k in mod) if (Object.hasOwnProperty.call(mod, k))
__createBinding(result, mod, k);\r\n __setModuleDefault(result, mod);\r\n return result;\r\n}\r\n\r\n\r\nexport
function __importDefault(mod) {\r\n return (mod && mod.__esModule) ? mod : { default: mod
};\r\n}\r\n\r\n\r\nexport function __classPrivateFieldGet(receiver, privateMap) {\r\n if (!privateMap.has(receiver))
{\r\n throw new TypeError("attempted to get private field on non-instance");\r\n };\r\n return
privateMap.get(receiver);\r\n}\r\n\r\n\r\nexport function __classPrivateFieldSet(receiver, privateMap, value) {\r\n if
(!privateMap.has(receiver)) {\r\n throw new TypeError("attempted to set private field on non-instance");\r\n };\r\n
privateMap.set(receiver, value);\r\n return value;\r\n}\r\n\r\n\r\n"/**\n * @license\n * Copyright Google LLC
All Rights Reserved.\n * Use of this source code is governed by an MIT-style license that can be\n * found in
the LICENSE file at https://angular.io/license\n */\nimport { DomAdapter as DomAdapter } from
'@angular/common';\n\n\n/**\n * Provides DOM operations in any browser environment.\n *\n * @security Tread
carefully! Interacting with the DOM directly is dangerous and\n * can introduce XSS risks.\n */\nexport abstract
class GenericBrowserDomAdapter extends DomAdapter {\n constructor() {\n super();\n }\n\n supportsDOMEvents(): boolean {\n return true;\n }\n}\n"/**\n * @license\n * Copyright Google LLC All

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Rights Reserved.\n *\n * Use of this source code is governed by an MIT-style license that can be\n * found in the LICENSE file at https://angular.io/license\n *\nimport {parseCookieValue as parseCookieValue, setRootDomAdapter as setRootDomAdapter} from '@angular/common';\nimport {global as global} from '@angular/core';\nimport {GenericBrowserDomAdapter} from './generic_browser_adapter';\nconst nodeContains: (this: Node, other: Node) => boolean = (() => {\n if (global['Node']) {\n return global['Node'].prototype.contains || function(this: Node, node: any) {\n return !!(this.compareDocumentPosition(node) & 16);\n }; \n }\n return undefined as any;\n})();\n\n/**\n * A `DomAdapter` powered by full browser DOM APIs.\n *\n * @security Tread carefully! Interacting with the DOM directly is dangerous and\n * can introduce XSS risks.\n */\n tslint:disable:requireParameterType no-console\n\nexport class BrowserDomAdapter extends GenericBrowserDomAdapter {\n static makeCurrent() {\n setRootDomAdapter(new BrowserDomAdapter());\n }\n\n getProperty(el: Node, name: string): any {\n return (<any>el)[name];\n }\n\n log(error: string): void {\n if (window.console) {\n window.console.log && window.console.log(error);\n }\n }\n\n logGroup(error: string): void {\n if (window.console) {\n window.console.group && window.console.group(error);\n }\n }\n\n logGroupEnd(): void {\n if (window.console) {\n window.console.groupEnd && window.console.groupEnd();\n }\n }\n\n onAndCancel(el: Node, evt: any, listener: any): Function {\n el.addEventListener(evt, listener, false);\n // Needed to follow Dart's subscription semantic, until fix of\n // https://code.google.com/p/dart/issues/detail?id=17406\n return () => {\n el.removeEventListener(evt, listener, false);\n }; \n }\n\n dispatchEvent(el: Node, evt: any) {\n el.dispatchEvent(evt);\n }\n\n remove(node: Node): Node {\n if (node.parentNode) {\n node.parentNode.removeChild(node);\n }\n return node;\n }\n\n getValue(el: any): string {\n return el.value;\n }\n\n createElement(tagName: string, doc?: Document): HTMLElement {\n doc = doc || this.getDefaultDocument();\n return doc.createElement(tagName);\n }\n\n createHtmlDocument(): HTMLDocument {\n return document.implementation.createHTMLDocument('fakeTitle');\n }\n\n getDefaultDocument(): Document {\n return document;\n }\n\n isElementNode(node: Node): boolean {\n return node.nodeType === Node.ELEMENT_NODE;\n }\n\n isShadowRoot(node: any): boolean {\n return node instanceof DocumentFragment;\n }\n\n getGlobalEventTarget(doc: Document, target: string): EventTarget|null {\n if (target === 'window') {\n return window;\n }\n if (target === 'document') {\n return doc;\n }\n if (target === 'body') {\n return doc.body;\n }\n return null;\n }\n\n getHistory(): History {\n return window.history;\n }\n\n getLocation(): Location {\n return window.location;\n }\n\n getBaseHref(doc: Document): string|null {\n const href = getBaseElementHref();\n return href == null ? null : relativePath(href);\n }\n\n resetBaseElement(): void {\n baseElement = null;\n }\n\n getUserAgent(): string {\n return window.navigator.userAgent;\n }\n\n performanceNow(): number {\n // performance.now() is not available in all browsers, see\n // http://caniuse.com/#search=performance.now\n return window.performance && window.performance.now ? window.performance.now() :\n new Date().getTime();\n }\n\n supportsCookies(): boolean {\n return true;\n }\n\n getCookie(name: string): string|null {\n return parseCookieValue(document.cookie, name);\n }\n\n let baseElement: HTMLElement|null = null;\n\n getBaseElementHref(): string|null {\n if (!baseElement) {\n baseElement = document.querySelector('base');\n }\n if (!baseElement) {\n return null;\n }\n return baseElement.getAttribute('href');\n }\n\n // based on urlUtils.js in AngularJS\n let urlParsingNode: any;\n\n relativePath(url: any): string {\n if (!urlParsingNode) {\n urlParsingNode = document.createElement('a');\n urlParsingNode.setAttribute('href', url);\n return (urlParsingNode.pathname.charAt(0) === '/') ? urlParsingNode.pathname :\n '/' + urlParsingNode.pathname;\n }\n }\n\n /**\n *\n * @license\n * Copyright Google LLC All Rights Reserved.\n *\n * Use of this source code is governed by an MIT-style license that can be\n * found in the LICENSE file at https://angular.io/license\n *\nimport {DOCUMENT, getDOM as getDOM} from '@angular/common';\nimport {APP_INITIALIZER, ApplicationInitStatus, Inject, InjectionToken, Injector, StaticProvider} from '@angular/core';\n\n/**\n * An id that identifies a particular application being bootstrapped, that should\n * match across the client/server boundary.\n */\nexport const TRANSITION_ID = new
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InjectionToken('TRANSITION_ID');\n\nexport function appInitializerFactory(transitionId: string, document: any,
injector: Injector) {\n return () => {\n // Wait for all application initializers to be completed before removing the
styles set by\n // the server.\n injector.get(ApplicationInitStatus).donePromise.then(() => {\n const dom =
getDOM();\n const styles: any[] =\n Array.prototype.slice.apply(document.querySelectorAll(`style[ng-
transition]`));\n styles.filter(el => el.getAttribute('ng-transition') === transitionId)\n .forEach(el =>
dom.remove(el));\n });\n });\n}\n\nexport const SERVER_TRANSITION_PROVIDERS: StaticProvider[] = [\n
{\n provide: APP_INITIALIZER,\n useFactory: appInitializerFactory,\n deps: [TRANSITION_ID,
DOCUMENT, Injector],\n multi: true\n },\n];\n\n"/**\n * @license\n * Copyright Google LLC All Rights
Reserved.\n * Use of this source code is governed by an MIT-style license that can be\n * found in the
LICENSE file at https://angular.io/license\n */\n\nimport {getDOM as getDOM} from '@angular/common';\nimport
{GetTestability, setTestabilityGetter, Testability, TestabilityRegistry, global as global} from
'@angular/core';\n\nexport class BrowserGetTestability implements GetTestability {\n static init() {\n
setTestabilityGetter(new BrowserGetTestability());\n }\n\n addToWindow(registry: TestabilityRegistry): void {\n
global['getAngularTestability'] = (elem: any, findInAncestors: boolean = true) => {\n const testability =
registry.findTestabilityInTree(elem, findInAncestors);\n if (testability == null) {\n throw new Error('Could
not find testability for element.);\n }\n return testability;\n });\n\n global['getAllAngularTestabilities'] = ()
=> registry.getAllTestabilities();\n\n global['getAllAngularRootElement'] = () =>
registry.getAllRootElement();\n\n const whenAllStable = (callback: any /** TODO #9100 */) => {\n const
testabilities = global['getAllAngularTestabilities'];\n let count = testabilities.length;\n let didWork = false;\n
 const decrement = function(didWork_: any /** TODO #9100 */) {\n didWork = didWork || didWork_;\n
count--;\n if (count == 0) {\n callback(didWork);\n }\n };\n
testabilities.forEach(function(testability: any /** TODO #9100 */) {\n testability.whenStable(decrement);\n
});\n });\n\n if (!global['frameworkStabilizers']) {\n global['frameworkStabilizers'] = [];\n }\n
global['frameworkStabilizers'].push(whenAllStable);\n}\n\n findTestabilityInTree(registry: TestabilityRegistry,
elem: any, findInAncestors: boolean):\n Testability|null {\n if (elem == null) {\n return null;\n }\n
const t = registry.getTestability(elem);\n if (t != null) {\n return t;\n } else if (!findInAncestors) {\n
return null;\n }\n if (getDOM().isShadowRoot(elem)) {\n return this.findTestabilityInTree(registry, (<any>elem).host,
true);\n }\n return this.findTestabilityInTree(registry, elem.parentElement, true);\n }\n}\n\n"/**\n * @license\n *
Copyright Google LLC All Rights Reserved.\n * Use of this source code is governed by an MIT-style license
that can be\n * found in the LICENSE file at https://angular.io/license\n */\n\nimport {global as global} from
'@angular/core';\n\nconst CAMEL_CASE_REGEXP = /[A-Z]/g;\nconst DASH_CASE_REGEXP = /-([a-z])/g;\n\nexport function camelCaseToDashCase(input: string): string {\n return
input.replace(CAMEL_CASE_REGEXP, (...m: string[]) => '-' + m[1].toLowerCase());\n}\n\nexport function
dashCaseToCamelCase(input: string): string {\n return input.replace(DASH_CASE_REGEXP, (...m: string[]) =>
m[1].toUpperCase());\n}\n\n/**\n * Exports the value under a given `name` in the global property `ng`. For example
`ng.probe` if\n * `name` is `probe`.\n * @param name Name under which it will be exported. Keep in mind this
will be a property of the\n * global `ng` object.\n * @param value The value to export.\n */\n\nexport function
exportNgVar(name: string, value: any): void {\n if (typeof COMPILED === 'undefined' || !COMPILED) {\n //
Note: we can't export `ng` when using closure enhanced optimization as:\n // - closure declares globals itself for
minified names, which sometimes clobber our `ng` global\n // - we can't declare a closure extern as the namespace
`ng` is already used within Google\n // for typings for angularJS (via `goog.provide('ng...')`).\n const ng =
global['ng'] = (global['ng'] as {[key: string]: any} | undefined) || {};\n ng[name] = value;\n }\n}\n\n"/**\n *
@license\n * Copyright Google LLC All Rights Reserved.\n * Use of this source code is governed by an MIT-
style license that can be\n * found in the LICENSE file at https://angular.io/license\n */\n\nimport
{APP_INITIALIZER, ApplicationRef, DebugNode, NgProbeToken, NgZone, Optional, Provider,
getDebugNodeR2} from '@angular/core';\n\nimport {exportNgVar} from './util';\n\nconst CORE_TOKENS = ()
=> ({\n 'ApplicationRef': ApplicationRef,\n 'NgZone': NgZone,\n
})\n\nconst INSPECT_GLOBAL_NAME = 'probe';\nconst CORE_TOKENS_GLOBAL_NAME =

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'coreTokens';\n\n/**\n * Returns a {@link DebugElement} for the given native DOM element, or\n * null if the given native element does not have an Angular view associated\n * with it.\n */\nexport function inspectNativeElementR2(element: any): DebugNode|null {\n return getDebugNodeR2(element);\n}\n\nexport function _createNgProbeR2(coreTokens: NgProbeToken[]): any {\n exportNgVar(INSPECT_GLOBAL_NAME, inspectNativeElementR2);\n exportNgVar(CORE_TOKENS_GLOBAL_NAME, {...CORE_TOKENS, ..._ngProbeTokensToMap(coreTokens || [])});\n return () => inspectNativeElementR2;\n}\n\nfunction _ngProbeTokensToMap(tokens: NgProbeToken[]): {[name: string]: any} {\n return tokens.reduce((prev: any, t: any) => (prev[t.name] = t.token, prev), {});\n}\n\n/**\n * In Ivy, we don't support NgProbe because we have our own set of testing utilities\n * with more robust functionality.\n */\n * We shouldn't bring in NgProbe because it prevents DebugNode and friends from\n * tree-shaking properly.\n */\nexport const ELEMENT_PROBE_PROVIDERS__POST_R3__ = [];\n\n/**\n * Providers which support debugging Angular applications (e.g. via `ng.probe`).\n */\nexport const ELEMENT_PROBE_PROVIDERS__PRE_R3__: Provider[] = [\n {\n provide: APP_INITIALIZER,\n useFactory: _createNgProbeR2,\n deps: [\n [NgProbeToken, new Optional()],\n],\n multi: true,\n },\n];\n\nexport const ELEMENT_PROBE_PROVIDERS = ELEMENT_PROBE_PROVIDERS__PRE_R3__;\n\n"/**\n * @license\n * Copyright Google LLC All Rights Reserved.\n */\n * Use of this source code is governed by an MIT-style license that can be\n * found in the LICENSE file at https://angular.io/license\n */\nimport {getDOM as getDOM} from '@angular/common';\nimport {Inject, Injectable, InjectionToken, NgZone} from '@angular/core';\n\n/**\n * The injection token for the event-manager plug-in service.\n */\n * @publicApi\n */\nexport const EVENT_MANAGER_PLUGINS =\n new InjectionToken<EventManagerPlugin[]>('EventManagerPlugins');\n\n/**\n * An injectable service that provides event management for Angular\n * through a browser plug-in.\n */\n * @publicApi\n */\n@Injectable()\nexport class EventManager {\n private _plugins: EventManagerPlugin[];\n private _eventNameToPlugin = new Map<string, EventManagerPlugin>();\n\n /**\n * Initializes an instance of the event-manager service.\n */\n constructor(@Inject(EVENT_MANAGER_PLUGINS) plugins: EventManagerPlugin[], private _zone: NgZone) {\n plugins.forEach(p => p.manager = this);\n this._plugins = plugins.slice().reverse();\n }\n\n /**\n * Registers a handler for a specific element and event.\n */\n * @param element The HTML element to receive event notifications.\n * @param eventName The name of the event to listen for.\n * @param handler A function to call when the notification occurs. Receives the\n * event object as an argument.\n * @returns A callback function that can be used to remove the handler.\n */\n addEventListener(element: HTMLElement, eventName: string, handler: Function): Function {\n const plugin = this._findPluginFor(eventName);\n return plugin.addEventListener(element, eventName, handler);\n }\n\n /**\n * Registers a global handler for an event in a target view.\n */\n * @param target A target for global event notifications. One of `"window"`, `"document"`, or `"body"`. \n * @param eventName The name of the event to listen for.\n * @param handler A function to call when the notification occurs. Receives the\n * event object as an argument.\n * @returns A callback function that can be used to remove the handler.\n */\n addGlobalEventListener(target: string, eventName: string, handler: Function): Function {\n const plugin = this._findPluginFor(eventName);\n return plugin.addGlobalEventListener(target, eventName, handler);\n }\n\n /**\n * Retrieves the compilation zone in which event listeners are registered.\n */\n getZone(): NgZone {\n return this._zone;\n }\n\n /**\n * @internal\n */\n _findPluginFor(eventName: string): EventManagerPlugin {\n const plugin = this._eventNameToPlugin.get(eventName);\n if (plugin) {\n return plugin;\n }\n\n const plugins = this._plugins;\n for (let i = 0; i < plugins.length; i++) {\n const plugin = plugins[i];\n if (plugin.supports(eventName)) {\n this._eventNameToPlugin.set(eventName, plugin);\n return plugin;\n }\n }\n\n throw new Error(`No event manager plugin found for event ${eventName}`);\n }\n}\n\nexport abstract class EventManagerPlugin {\n constructor(private _doc: any) {} // TODO(issue/24571): remove '!'.\n\n manager!: EventManager;\n\n abstract supports(eventName: string): boolean;\n\n abstract addEventListener(element: HTMLElement, eventName: string, handler: Function): Function;\n\n abstract addGlobalEventListener(element: string, eventName: string, handler: Function): Function {\n const target: HTMLElement = getDOM().getGlobalEventTarget(this._doc, element);\n if (!target) {\n throw new

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Error(`Unsupported event target ${target} for event ${eventName}`);\n }\n return this.addEventListener(target,
eventName, handler);\n }\n}\n", "/*\n * @license\n * Copyright Google LLC All Rights Reserved.\n *\n * Use of
this source code is governed by an MIT-style license that can be\n * found in the LICENSE file at
https://angular.io/license\n */\n\nimport {DOCUMENT, getDOM as getDOM} from '@angular/common';\nimport
{Inject, Injectable, OnDestroy} from '@angular/core';\n\n@Injectable()\nexport class SharedStylesHost {\n /**
@internal */\n protected _stylesSet = new Set<string>();\n\n addStyles(styles: string[]): void {\n const additions
= new Set<string>();\n styles.forEach(style => {\n if (!this._stylesSet.has(style)) {\n
this._stylesSet.add(style);\n additions.add(style);\n });\n this.onStylesAdded(additions);\n }\n\n onStylesAdded(additions: Set<string>): void {\n return
Array.from(this._stylesSet);\n }\n}\n\n@Injectable()\nexport class DomSharedStylesHost extends
SharedStylesHost implements OnDestroy {\n private _hostNodes = new Set<Node>();\n private _styleNodes =
new Set<Node>();\n constructor(@Inject(DOCUMENT) private _doc: any) {\n super();\n
this._hostNodes.add(_doc.head);\n }\n\n private _addStylesToHost(styles: Set<string>, host: Node): void {\n
styles.forEach((style: string) => {\n const styleEl = this._doc.createElement('style');\n styleEl.textContent =
style;\n this._styleNodes.add(host.appendChild(styleEl));\n });\n}\n\n addHost(hostNode: Node): void {\n
this._addStylesToHost(this._stylesSet, hostNode);\n this._hostNodes.add(hostNode);\n}\n\n removeHost(hostNode: Node): void {\n
this._hostNodes.delete(hostNode);\n}\n\n onStylesAdded(additions:
Set<string>): void {\n this._hostNodes.forEach(hostNode => this._addStylesToHost(additions, hostNode));\n
}\n\n ngOnDestroy(): void {\n this._styleNodes.forEach(styleNode => getDOM().remove(styleNode));\n
}\n}\n", "/*\n * @license\n * Copyright Google LLC All Rights Reserved.\n *\n * Use of this source code is
governed by an MIT-style license that can be\n * found in the LICENSE file at https://angular.io/license\n
*/\n\nimport {APP_ID, Inject, Injectable, Renderer2, RendererFactory2, RendererStyleFlags2, RendererType2,
ViewEncapsulation} from '@angular/core';\nimport {EventManager} from './events/event_manager';\nimport
{DomSharedStylesHost} from './shared_styles_host';\n\nexport const NAMESPACE_URIS: {[ns: string]: string} =
{\n 'svg': 'http://www.w3.org/2000/svg',\n 'xhtml': 'http://www.w3.org/1999/xhtml',\n 'xlink':
'http://www.w3.org/1999/xlink',\n 'xml': 'http://www.w3.org/XML/1998/namespace',\n 'xmlns':
'http://www.w3.org/2000/xmlns/',\n};\n\nconst COMPONENT_REGEX = /%COMP%/g;\nconst NG_DEV_MODE
= typeof ngDevMode === 'undefined' || !!ngDevMode;\n\nexport const COMPONENT_VARIABLE =
'%COMP%';\nexport const HOST_ATTR = `_ngghost-${COMPONENT_VARIABLE}`;\nexport const
CONTENT_ATTR = `_ngcontent-${COMPONENT_VARIABLE}`;\n\nexport function
shimContentAttribute(componentShortId: string): string {\n return
CONTENT_ATTR.replace(COMPONENT_REGEX, componentShortId);\n}\n\nexport function
shimHostAttribute(componentShortId: string): string {\n return HOST_ATTR.replace(COMPONENT_REGEX,
componentShortId);\n}\n\nexport function flattenStyles(\n compId: string, styles: Array<any|any[]>, target:
string[]): string[] {\n for (let i = 0; i < styles.length; i++) {\n let style = styles[i];\n\n if (Array.isArray(style)) {\n
flattenStyles(compId, style, target);\n } else {\n style = style.replace(COMPONENT_REGEX, compId);\n
target.push(style);\n }\n }\n return target;\n}\n\nfunction decoratePreventDefault(eventHandler: Function):
Function {\n // `DebugNode.triggerEventHandler` needs to know if the listener was created with\n //
decoratePreventDefault or is a listener added outside the Angular context so it can handle the\n // two differently. In
the first case, the special `__ngUnwrap__` token is passed to the unwrap\n // the listener (see below).\n return
(event: any) => {\n // Ivy uses `__ngUnwrap__` as a special token that allows us to unwrap the function\n // so
that it can be invoked programmatically by `DebugNode.triggerEventHandler`. The debug_node\n // can inspect
the listener toString contents for the existence of this special token. Because\n // the token is a string literal, it is
ensured to not be modified by compiled code.\n if (event === `__ngUnwrap__`) {\n return eventHandler;\n
}\n\n const allowDefaultBehavior = eventHandler(event);\n if (allowDefaultBehavior === false) {\n //
TODO(tbosch): move preventDefault into event plugins...\n event.preventDefault();\n event.returnValue =
false;\n }\n }\n}\n\nlet hasLoggedNativeEncapsulationWarning =
false;\n\n@Injectable()\nexport class DomRendererFactory2 implements RendererFactory2 {\n private

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rendererByCompId = new Map<string, Renderer2>();\n private defaultRenderer: Renderer2;\n\n constructor(\n private eventManager: EventManager, private sharedStylesHost: DomSharedStylesHost,\n @Inject(APP_ID)\n private appId: string) {\n this.defaultRenderer = new DefaultDomRenderer2(eventManager);\n }\n\n createRenderer(element: any, type: RendererType2|null): Renderer2 {\n if (!element || !type) {\n return\n this.defaultRenderer;\n }\n switch (type.encapsulation) {\n case ViewEncapsulation.Emulated: {\n let\n renderer = this.rendererByCompId.get(type.id);\n if (!renderer) {\n renderer = new\n EmulatedEncapsulationDomRenderer2(\n this.eventManager, this.sharedStylesHost, type, this.appId);\n this.rendererByCompId.set(type.id, renderer);\n }\n (<EmulatedEncapsulationDomRenderer2>renderer).applyToHost(element);\n return renderer;\n }\n case\n 1:\n case ViewEncapsulation.ShadowDom: {\n // TODO(FW-2290): remove the `case 1:` fallback logic and\n the warning in v12.\n if ((typeof ngDevMode === 'undefined' || ngDevMode) &&\n !hasLoggedNativeEncapsulationWarning && type.encapsulation === 1) {\n hasLoggedNativeEncapsulationWarning = true;\n console.warn(\n 'ViewEncapsulation.Native is no\n longer supported. Falling back to ViewEncapsulation.ShadowDom. The fallback will be removed in v12.);\n }\n\n return new ShadowDomRenderer(this.eventManager, this.sharedStylesHost, element, type);\n default:\n {\n if (!this.rendererByCompId.has(type.id)) {\n const styles = flattenStyles(type.id, type.styles, []);\n this.sharedStylesHost.addStyles(styles);\n this.rendererByCompId.set(type.id, this.defaultRenderer);\n }\n\n return this.defaultRenderer;\n }\n }\n }\n\n begin() {\n end() {\n }\n }\n\n class DefaultDomRenderer2\n implements Renderer2 {\n data: {[key: string]: any} = Object.create(null);\n\n constructor(private eventManager:\n EventManager) {\n\n destroy(): void {\n\n destroyNode: null;\n\n createElement(name: string, namespace?:\n string): any {\n if (namespace) {\n // In cases where Ivy (not ViewEngine) is giving us the actual namespace,\n the look up by key\n // will result in undefined, so we just return the namespace here.\n return\n document.createElementNS(NAMESPACE_URIS[namespace] || namespace, name);\n }\n\n return\n document.createElement(name);\n }\n\n createComment(value: string): any {\n return\n document.createComment(value);\n }\n\n createText(value: string): any {\n return\n document.createTextNode(value);\n }\n\n appendChild(parent: any, newChild: any): void {\n\n parent.appendChild(newChild);\n }\n\n insertBefore(parent: any, newChild: any, refChild: any): void {\n if\n (parent) {\n parent.insertBefore(newChild, refChild);\n }\n }\n\n removeChild(parent: any, oldChild: any):\n void {\n if (parent) {\n parent.removeChild(oldChild);\n }\n }\n\n selectRootElement(selectorOrNode:\n string|any, preserveContent?: boolean): any {\n let el: any = typeof selectorOrNode === 'string' ?\n document.querySelector(selectorOrNode) :\n selectorOrNode;\n if (!el) {\n throw new Error(`The selector "${selectorOrNode}" did not match any elements`);\n }\n if (!preserveContent)\n {\n el.textContent = "";\n }\n return el;\n }\n\n parentNode(node: any): any {\n return node.parentNode;\n }\n\n nextSibling(node: any): any {\n return node.nextSibling;\n }\n\n setAttribute(el: any, name: string, value:\n string, namespace?: string): void {\n if (namespace) {\n name = namespace + ':' + name;\n // TODO(FW-\n 811): Ivy may cause issues here because it's passing around\n // full URIs for namespaces, therefore this lookup\n will fail.\n const namespaceUri = NAMESPACE_URIS[namespace];\n if (namespaceUri) {\n el.setAttributeNS(namespaceUri, name, value);\n }\n } else {\n el.setAttribute(name, value);\n }\n }\n\n removeAttribute(el: any, name: string, namespace?: string): void\n {\n if (namespace) {\n // TODO(FW-811): Ivy may cause issues here because it's passing around\n // full\n URIs for namespaces, therefore this lookup will fail.\n const namespaceUri =\n NAMESPACE_URIS[namespace];\n if (namespaceUri) {\n el.removeAttributeNS(namespaceUri, name);\n }\n } else {\n // TODO(FW-811): Since ivy is passing around full URIs for namespaces\n // this could result in\n properties like `http://www.w3.org/2000/svg:cx="123"`,\n // which is wrong.\n el.removeAttribute(`${namespace}:${name}`);\n }\n }\n\n } else {\n el.removeAttribute(name);\n }\n }\n\n\n addClass(el: any, name: string): void {\n el.classList.add(name);\n }\n\n removeClass(el: any, name: string): void\n {\n el.classList.remove(name);\n }\n\n setStyle(el: any, style: string, value: any, flags: RendererStyleFlags2):\n void {\n if (flags & (RendererStyleFlags2.DashCase | RendererStyleFlags2.Important)) {\n

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el.style.setProperty(style, value, flags & RendererStyleFlags2.Important ? 'important' : '');\n } else {\n
el.style[style] = value;\n }\n}\n\nremoveStyle(el: any, style: string, flags: RendererStyleFlags2): void {\n if
(flags & RendererStyleFlags2.DashCase) {\n el.style.removeProperty(style);\n } else {\n // IE requires "
instead of null\n // see https://github.com/angular/angular/issues/7916\n el.style[style] = "";\n }\n}\n\n
setProperty(el: any, name: string, value: any): void {\n NG_DEV_MODE && checkNoSyntheticProp(name,
'property');\n el[name] = value;\n}\n\nsetValue(node: any, value: string): void {\n node.nodeValue = value;\n
}\n\nlisten(target: 'window'|'document'|'body'|any, event: string, callback: (event: any) => boolean):\n () => void
{\n NG_DEV_MODE && checkNoSyntheticProp(event, 'listener');\n if (typeof target === 'string') {\n return
<() => void>this.eventManager.addGlobalEventListener(\n target, event, decoratePreventDefault(callback));\n
 }\n return <() => void>this.eventManager.addEventListener(\n target, event,
decoratePreventDefault(callback)) as () => void;\n }\n}\n\nconst AT_CHARCODE = (() =>
'@'.charCodeAt(0));\nfunction checkNoSyntheticProp(name: string, nameKind: string) {\n if
(name.charCodeAt(0) === AT_CHARCODE) {\n throw new Error(`Found the synthetic ${nameKind} ${\n
name}. Please include either "BrowserAnimationsModule" or "NoopAnimationsModule" in your application.`);\n
 }\n}\n\n\nclass EmulatedEncapsulationDomRenderer2 extends DefaultDomRenderer2 {\n private contentAttr:
string;\n private hostAttr: string;\n\n constructor(\n eventManager: EventManager, sharedStylesHost:
DomSharedStylesHost,\n private component: RendererType2, appId: string) {\n super(eventManager);\n
 }\n\n const styles = flattenStyles(appId + '-' + component.id, component.styles, []);\n
 sharedStylesHost.addStyles(styles);\n\n this.contentAttr = shimContentAttribute(appId + '-' + component.id);\n
 this.hostAttr = shimHostAttribute(appId + '-' + component.id);\n }\n\n applyToHost(element: any) {\n
 super.setAttribute(element, this.hostAttr, "");\n }\n\n createElement(parent: any, name: string): Element {\n
 const el = super.createElement(parent, name);\n super.setAttribute(el, this.contentAttr, "");\n return el;\n
}\n}\n\n\nclass ShadowDomRenderer extends DefaultDomRenderer2 {\n private shadowRoot: any;\n\n constructor(\n
 eventManager: EventManager, private sharedStylesHost: DomSharedStylesHost,\n private hostEl: any,
component: RendererType2) {\n super(eventManager);\n this.shadowRoot = (hostEl as
any).attachShadow({mode: 'open'});\n this.sharedStylesHost.addHost(this.shadowRoot);\n const styles =
flattenStyles(component.id, component.styles, []);\n for (let i = 0; i < styles.length; i++) {\n const styleEl =
document.createElement('style');\n styleEl.textContent = styles[i];\n this.shadowRoot.appendChild(styleEl);\n
 }\n }\n\n private nodeOrShadowRoot(node: any): any {\n return node === this.hostEl ? this.shadowRoot :
node;\n }\n\n destroy() {\n this.sharedStylesHost.removeHost(this.shadowRoot);\n }\n\n appendChild(parent:
any, newChild: any): void {\n return super.appendChild(this.nodeOrShadowRoot(parent), newChild);\n }\n\n
insertBefore(parent: any, newChild: any, refChild: any): void {\n return
super.insertBefore(this.nodeOrShadowRoot(parent), newChild, refChild);\n }\n\n removeChild(parent: any,
oldChild: any): void {\n return super.removeChild(this.nodeOrShadowRoot(parent), oldChild);\n }\n\n
parentNode(node: any): any {\n return
this.nodeOrShadowRoot(super.parentNode(this.nodeOrShadowRoot(node)));\n }\n}\n\n"/**\n * @license\n *
Copyright Google LLC All Rights Reserved.\n * Use of this source code is governed by an MIT-style license
that can be\n * found in the LICENSE file at https://angular.io/license\n */\n\nimport {DOCUMENT} from
'@angular/common';\nimport {Inject, Injectable} from '@angular/core';\nimport {EventManagerPlugin} from
'./event_manager';\n\n@Injectable()\nexport class DomEventsPlugin extends EventManagerPlugin {\n
 constructor(@Inject(DOCUMENT) doc: any) {\n super(doc);\n }\n\n // This plugin should come last in the list of
plugins, because it accepts all\n // events.\n supports(eventName: string): boolean {\n return true;\n }\n\n
 addEventListener(element: HTMLInputElement, eventName: string, handler: Function): Function {\n
 element.addEventListener(eventName, handler as EventListener, false);\n return () =>
this.removeEventListener(element, eventName, handler as EventListener);\n }\n\n removeEventListener(target:
any, eventName: string, callback: Function): void {\n return target.removeEventListener(eventName, callback as
EventListener);\n }\n}\n\n"/**\n * @license\n * Copyright Google LLC All Rights Reserved.\n * Use of this
source code is governed by an MIT-style license that can be\n * found in the LICENSE file at

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https://angular.io/license\n *\n\nimport { DOCUMENT } from '@angular/common';\nimport { Inject, Injectable,
InjectionToken, NgModule, Optional, Provider, Console as Console } from '@angular/core';\n\nimport
{ EVENT_MANAGER_PLUGINS, EventManagerPlugin } from './event_manager';\n\n\n/**\n * Supported
HammerJS recognizer event names.\n *\nconst EVENT_NAMES = {\n // pan\n 'pan': true,\n 'panstart': true,\n
'panmove': true,\n 'panend': true,\n 'pancel': true,\n 'panleft': true,\n 'panright': true,\n 'panup': true,\n
'pandown': true,\n // pinch\n 'pinch': true,\n 'pinchstart': true,\n 'pinchmove': true,\n 'pinchend': true,\n
'pinchcancel': true,\n 'pinchin': true,\n 'pinchout': true,\n // press\n 'press': true,\n 'pressup': true,\n // rotate\n
'rotate': true,\n 'rotatestart': true,\n 'rotatemove': true,\n 'rotateend': true,\n 'rotatecancel': true,\n // swipe\n 'swipe':
true,\n 'swipeleft': true,\n 'swiperight': true,\n 'swipeup': true,\n 'swipedown': true,\n // tap\n 'tap':
true,\n};\n\n/**\n * DI token for providing [HammerJS](http://hammerjs.github.io/) support to Angular.\n * @see
`HammerGestureConfig`\n *\n * @ngModule HammerModule\n * @publicApi\n *\nexport const
HAMMER_GESTURE_CONFIG = new
InjectionToken<HammerGestureConfig>('HammerGestureConfig');\n\n\n/**\n * Function that loads HammerJS,
returning a promise that is resolved once HammerJs is loaded.\n *\n * @publicApi\n *\nexport type
HammerLoader = () => Promise<void>;\n\n\n/**\n * Injection token used to provide a { @link HammerLoader } to
Angular.\n *\n * @publicApi\n *\nexport const HAMMER_LOADER = new
InjectionToken<HammerLoader>('HammerLoader');\n\n\nexport interface HammerInstance {\n on(eventName:
string, callback?: Function): void;\n off(eventName: string, callback?: Function): void;\n destroy?():
void;\n}\n\n\n/**\n * An injectable [HammerJS Manager](http://hammerjs.github.io/api/#hammer.manager)\n * for
gesture recognition. Configures specific event recognition.\n * @publicApi\n *\n@Injectable()\nexport class
HammerGestureConfig {\n /**\n * A set of supported event names for gestures to be used in Angular.\n *
Angular supports all built-in recognizers, as listed in\n * [HammerJS documentation](http://hammerjs.github.io/).\n
*\n * ^\n events: string[] = [];\n\n /**\n * Maps gesture event names to a set of configuration options\n * that specify
overrides to the default values for specific properties.\n *\n * The key is a supported event name to be
configured,\n * and the options object contains a set of properties, with override values\n * to be applied to the
named recognizer event.\n * For example, to disable recognition of the rotate event, specify\n * `{"rotate":
{"enable": false}}`\n *\n * Properties that are not present take the HammerJS default values.\n * For
information about which properties are supported for which events,\n * and their allowed and default values, see\n
* [HammerJS documentation](http://hammerjs.github.io/).\n *\n * ^\n overrides: {[key: string]: Object} = {};\n\n
/**\n * Properties whose default values can be overridden for a given event.\n * Different sets of properties apply
to different events.\n * For information about which properties are supported for which events,\n * and their
allowed and default values, see\n * [HammerJS documentation](http://hammerjs.github.io/).\n *\n * ^\n options?: {\n
cssProps?: any;\n domEvents?: boolean;\n enable?: boolean | ((manager: any) => boolean);\n preset?: any[];\n
touchAction?: string;\n recognizers?: any[];\n inputClass?: any;\n inputTarget?: EventTarget;\n};\n\n\n /**\n
* Creates a [HammerJS Manager](http://hammerjs.github.io/api/#hammer.manager)\n * and attaches it to a given
HTML element.\n * @param element The element that will recognize gestures.\n * @returns A HammerJS event-
manager object.\n *\n * ^\n buildHammer(element: HTMLElement): HammerInstance {\n const mc = new
Hammer!(element, this.options);\n\n mc.get('pinch').set({enable: true});\n mc.get('rotate').set({enable:
true});\n\n for (const eventName in this.overrides) {\n mc.get(eventName).set(this.overrides[eventName]);\n
}\n\n return mc;\n }\n}\n\n\n/**\n * Event plugin that adds Hammer support to an application.\n *\n * @ngModule
HammerModule\n *\n@Injectable()\nexport class HammerGesturesPlugin extends EventManagerPlugin {\n
constructor(\n @Inject(DOCUMENT) doc: any,\n @Inject(HAMMER_GESTURE_CONFIG) private
_config: HammerGestureConfig, private console: Console,\n @Optional() @Inject(HAMMER_LOADER)
private loader?: HammerLoader|null) {\n super(doc);\n }\n\n supports(eventName: string): boolean {\n if
(!EVENT_NAMES.hasOwnProperty(eventName.toLowerCase()) && !this.isCustomEvent(eventName)) {\n
return false;\n }\n\n if (!(window as any).Hammer && !this.loader) {\n this.console.warn(`The
`${eventName}` event cannot be bound because Hammer.JS is not `+n `loaded and no custom loader has
been specified.`);\n return false;\n }\n\n return true;\n }\n\n addEventListener(element: HTMLElement,

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eventName: string, handler: Function): Function {\n const zone = this.manager.getZone();\n eventName =
eventName.toLowerCase();\n // If Hammer is not present but a loader is specified, we defer adding the event
listener\n // until Hammer is loaded.\n if (!(window as any).Hammer && this.loader) {\n // This
`addEventListener` method returns a function to remove the added listener.\n // Until Hammer is loaded, the
returned function needs to *cancel* the registration rather\n // than remove anything.\n let cancelRegistration
= false;\n let deregister: Function = () => {\n cancelRegistration = true;\n }; \n\n this.loader()\n
.then(() => {\n // If Hammer isn't actually loaded when the custom loader resolves, give up.\n if
(!!(window as any).Hammer) {\n this.console.warn(\n `The custom HAMMER_LOADER
completed, but Hammer.JS is not present.`);\n deregister = () => {};\n return;\n }\n\n
if (!cancelRegistration) {\n // Now that Hammer is loaded and the listener is being loaded for real,\n
// the deregistration function changes from canceling registration to removal.\n deregister =
this.addEventListener(element, eventName, handler);\n }\n })\n .catch(() => {\n
this.console.warn(\n `The \`${eventName}` event cannot be bound because the custom `+
Hammer.JS loader failed.`);\n deregister = () => {};\n });\n\n // Return a function that *executes*
`deregister` (and not `deregister` itself) so that we\n // can change the behavior of `deregister` once the listener is
added. Using a closure in\n // this way allows us to avoid any additional data structures to track listener
removal.\n return () => {\n deregister();\n }; \n }\n\n return zone.runOutsideAngular(() => {\n
//
Creating the manager bind events, must be done outside of angular\n const mc =
this._config.buildHammer(element);\n const callback = function(eventObj: HammerInput) {\n
zone.runGuarded(function() {\n handler(eventObj);\n });\n }; \n mc.on(eventName, callback);\n
return () => {\n mc.off(eventName, callback);\n // destroy mc to prevent memory leak\n if (typeof
mc.destroy === 'function') {\n mc.destroy();\n } \n }); \n }\n\n isCustomEvent(eventName:
string): boolean {\n return this._config.events.indexOf(eventName) > -1;\n }\n}\n\n/**\n * In Ivy, support for
Hammer gestures is optional, so applications must\n * import the `HammerModule` at root to turn on support. This
means that\n * Hammer-specific code can be tree-shaken away if not needed.\n */\nexport const
HAMMER_PROVIDERS__POST_R3__ = [];\n\n/**\n * In View Engine, support for Hammer gestures is built-in
by default.\n */\nexport const HAMMER_PROVIDERS__PRE_R3__: Provider[] = [\n {\n provide:
EVENT_MANAGER_PLUGINS,\n useClass: HammerGesturesPlugin,\n multi: true,\n deps: [DOCUMENT,
HAMMER_GESTURE_CONFIG, Console, [new Optional(), HAMMER_LOADER]]\n },\n {\n provide:
HAMMER_GESTURE_CONFIG,\n useClass: HammerGestureConfig,\n deps: [],\n },\n];\n\nexport const
HAMMER_PROVIDERS = HAMMER_PROVIDERS__PRE_R3__;\n\n/**\n * Adds support for HammerJS.\n */\n
* Import this module at the root of your application so that Angular can work with\n * HammerJS to detect gesture
events.\n */\n * Note that applications still need to include the HammerJS script itself. This module\n * simply sets
up the coordination layer between HammerJS and Angular's EventManager.\n */\n * @publicApi\n
*/\n@NgModule({\n providers: HAMMER_PROVIDERS__PRE_R3__\n})\nexport class HammerModule\n{\n}\n\n",\n/**\n * @license\n * Copyright Google LLC All Rights Reserved.\n */\n * Use of this source code is
governed by an MIT-style license that can be\n * found in the LICENSE file at https://angular.io/license\n
*/\n\nimport {DOCUMENT, getDOM as getDOM} from '@angular/common';\nimport {Inject, Injectable, NgZone}
from '@angular/core';\nimport {EventManagerPlugin} from './event_manager';\n\n/**\n * Defines supported
modifiers for key events.\n */\nconst MODIFIER_KEYS = ['alt', 'control', 'meta', 'shift'];\n\nconst
DOM_KEY_LOCATION_NUMPAD = 3;\n\n// Map to convert some key or keyIdentifier values to what will be
returned by getEventKey\nconst _keyMap: {[k: string]: string} = {\n // The following values are here for cross-
browser compatibility and to match the W3C standard\n // cf http://www.w3.org/TR/DOM-Level-3-Events-key\n
 '\\b': 'Backspace',\n '\\t': 'Tab',\n '\\x7F': 'Delete',\n '\\x1B': 'Escape',\n 'Del': 'Delete',\n 'Esc': 'Escape',\n 'Left':
'ArrowLeft',\n 'Right': 'ArrowRight',\n 'Up': 'ArrowUp',\n 'Down': 'ArrowDown',\n 'Menu': 'ContextMenu',\n
'Scroll': 'ScrollLock',\n 'Win': 'OS'\n};\n\n// There is a bug in Chrome for numeric keypad keys:\n//
https://code.google.com/p/chromium/issues/detail?id=155654\n// 1, 2, 3 ... are reported as A, B, C ...\nconst
_chromeNumKeyPadMap = {\n 'A': '1',\n 'B': '2',\n 'C': '3',\n 'D': '4',\n 'E': '5',\n 'F': '6',\n 'G': '7',\n 'H': '8',\n 'I':

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'9';\n 'J': '*',\n 'K': '+',\n 'M': '-',\n 'N': '.',\n 'O': '/',\n '\x60': '0',\n '\x90': 'NumLock'\n};\n\n\n/**\n * Retrieves modifiers from key-event objects.\n */\nconst MODIFIER_KEY_GETTERS: {[key: string]: (event: KeyboardEvent) => boolean} = {\n 'alt': (event: KeyboardEvent) => event.altKey,\n 'control': (event: KeyboardEvent) => event.ctrlKey,\n 'meta': (event: KeyboardEvent) => event.metaKey,\n 'shift': (event: KeyboardEvent) => event.shiftKey\n};\n\n\n/**\n * @publicApi\n * A browser plug-in that provides support for handling of key events in Angular.\n */\n@Injectable()\nexport class KeyEventsPlugin extends\n EventManagerPlugin {\n /**\n * Initializes an instance of the browser plug-in.\n * @param doc The document in which key events will be detected.\n */\n constructor(@Inject(DOCUMENT) doc: any) {\n super(doc);\n }\n\n /**\n * Reports whether a named key event is supported.\n * @param eventName The event name to query.\n * @return True if the named key event is supported.\n */\n supports(eventName: string): boolean {\n return\n KeyEventsPlugin.parseEventName(eventName) != null;\n }\n\n /**\n * Registers a handler for a specific element and key event.\n * @param element The HTML element to receive event notifications.\n * @param eventName The name of the key event to listen for.\n * @param handler A function to call when the notification occurs. Receives the\n * event object as an argument.\n * @returns The key event that was registered.\n */\n addEventListener(element: HTMLElement, eventName: string, handler: Function): Function {\n const\n parsedEvent = KeyEventsPlugin.parseEventName(eventName);\n\n const outsideHandler =\n KeyEventsPlugin.eventCallback(parsedEvent['fullKey'], handler, this.manager.getZone());\n\n return\n this.manager.getZone().runOutsideAngular(() => {\n return\n getDOM().onAndCancel(element,\n parsedEvent['domEventName'], outsideHandler);\n });\n }\n\n static parseEventName(eventName: string):\n {fullKey: string, domEventName: string}|null {\n const parts: string[] = eventName.toLowerCase().split('.');\n\n const domEventName = parts.shift();\n if ((parts.length === 0) || !(domEventName === 'keydown' ||\n domEventName === 'keyup')) {\n return null;\n }\n\n const key =\n KeyEventsPlugin._normalizeKey(parts.pop());\n\n let fullKey = "";\n\n MODIFIER_KEYS.forEach(modifierName => {\n const index: number = parts.indexOf(modifierName);\n if\n (index > -1) {\n parts.splice(index, 1);\n fullKey += modifierName + '.';\n }\n });\n\n fullKey +=\n key;\n\n if (parts.length != 0 || key.length === 0) {\n // returning null instead of throwing to let another plugin\n process the event\n return null;\n }\n\n // NOTE: Please don't rewrite this as so, as it will break JSCompiler\n property renaming.\n // The code must remain in the `result['domEventName']` form.\n // return\n {domEventName, fullKey};\n\n const result: {fullKey: string, domEventName: string} = {} as any;\n\n result['domEventName'] = domEventName;\n result['fullKey'] = fullKey;\n\n return result;\n }\n\n static\n getEventFullKey(event: KeyboardEvent): string {\n let fullKey = "";\n let key = getEventKey(event);\n key =\n key.toLowerCase();\n if (key === ' ') {\n key = 'space'; // for readability\n } else if (key === '.') {\n key =\n 'dot'; // because '.' is used as a separator in event names\n }\n\n MODIFIER_KEYS.forEach(modifierName => {\n if\n (modifierName != key) {\n const modifierGetter = MODIFIER_KEY_GETTERS[modifierName];\n if\n (modifierGetter(event)) {\n fullKey += modifierName + '.';\n }\n }\n });\n\n fullKey +=\n key;\n\n return fullKey;\n }\n\n /**\n * Configures a handler callback for a key event.\n * @param fullKey The event name that combines all simultaneous keystrokes.\n * @param handler The function that responds to the key event.\n * @param zone The zone in which the event occurred.\n * @returns A callback function.\n */\n static\n eventCallback(fullKey: any, handler: Function, zone: NgZone): Function {\n return\n (event: any /** TODO #9100 */)\n => {\n if\n (KeyEventsPlugin.getEventFullKey(event) === fullKey)\n {\n zone.runGuarded(() =>\n handler(event));\n }\n }\n }\n\n /**\n * @internal\n */\n static\n _normalizeKey(keyName: string): string {\n // TODO: switch to a Map if the mapping grows too much\n switch (keyName) {\n case 'esc':\n return\n 'escape';\n default:\n return\n keyName;\n }\n }\n\n static\n getEventKey(event: any): string {\n let key =\n event.key;\n if (key == null) {\n key =\n event.keyIdentifier;\n // keyIdentifier is defined in the old draft of\n DOM Level 3 Events implemented by Chrome and\n // Safari cf\n // http://www.w3.org/TR/2007/WD-DOM-Level-3-Events-20071221/events.html#Events-KeyboardEvents-Interfaces\n if (key == null) {\n return\n 'Unidentified';\n }\n if (key.startsWith('U+')) {\n key =\n String.fromCharCode(parseInt(key.substring(2),\n 16));\n if (event.location === DOM_KEY_LOCATION_NUMPAD &&

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_chromeNumKeyPadMap.hasOwnProperty(key)) {\n // There is a bug in Chrome for numeric keypad keys:\n
// https://code.google.com/p/chromium/issues/detail?id=155654\n // 1, 2, 3 ... are reported as A, B, C ...\n
key = (_chromeNumKeyPadMap as any)[key];\n }\n }\n }\n\n return _keyMap[key] || key;\n}\n\n", /*\n *
@license\n * Copyright Google LLC All Rights Reserved.\n * Use of this source code is governed by an MIT-\n
style license that can be\n * found in the LICENSE file at https://angular.io/license\n *\n\nimport {DOCUMENT}
from '@angular/common';\nimport {forwardRef, Inject, Injectable, Injector, Sanitizer, SecurityContext,
_sanitizeHtml as _sanitizeHtml, _sanitizeUrl as _sanitizeUrl, allowSanitizationBypassAndThrow as
allowSanitizationBypassOrThrow, bypassSanitizationTrustHtml as bypassSanitizationTrustHtml,
bypassSanitizationTrustResourceUrl as bypassSanitizationTrustResourceUrl, bypassSanitizationTrustScript as
bypassSanitizationTrustScript, bypassSanitizationTrustStyle as bypassSanitizationTrustStyle,
bypassSanitizationTrustUrl as bypassSanitizationTrustUrl, BypassType as BypassType, getSanitizationBypassType
as getSanitizationBypassType, unwrapSafeValue as unwrapSafeValue} from '@angular/core';\n\nexport
{SecurityContext};\n\n\n/**\n * Marker interface for a value that's safe to use in a particular context.\n *\n *
@publicApi\n */\nexport interface SafeValue {} \n\n\n/**\n * Marker interface for a value that's safe to use as
HTML.\n *\n * @publicApi\n */\nexport interface SafeHtml extends SafeValue {} \n\n\n/**\n * Marker interface for a
value that's safe to use as style (CSS).\n *\n * @publicApi\n */\nexport interface SafeStyle extends SafeValue
{} \n\n\n/**\n * Marker interface for a value that's safe to use as JavaScript.\n *\n * @publicApi\n */\nexport interface
SafeScript extends SafeValue {} \n\n\n/**\n * Marker interface for a value that's safe to use as a URL linking to a
document.\n *\n * @publicApi\n */\nexport interface SafeUrl extends SafeValue {} \n\n\n/**\n * Marker interface for
a value that's safe to use as a URL to load executable code from.\n *\n * @publicApi\n */\nexport interface
SafeResourceUrl extends SafeValue {} \n\n\n/**\n * DomSanitizer helps preventing Cross Site Scripting Security bugs
(XSS) by sanitizing\n * values to be safe to use in the different DOM contexts.\n *\n * For example, when binding a
URL in an `<a [href]="someValue">` hyperlink, `someValue` will be\n * sanitized so that an attacker cannot inject
e.g. a `javascript:` URL that would execute code on\n * the website.\n *\n * In specific situations, it might be
necessary to disable sanitization, for example if the\n * application genuinely needs to produce a `javascript:` style
link with a dynamic value in it.\n * Users can bypass security by constructing a value with one of the
`bypassSecurityTrust...`\n * methods, and then binding to that value from the template.\n *\n * These situations
should be very rare, and extraordinary care must be taken to avoid creating a\n * Cross Site Scripting (XSS) security
bug!\n *\n * When using `bypassSecurityTrust...`, make sure to call the method as early as possible and as\n * close
as possible to the source of the value, to make it easy to verify no security bug is\n * created by its use.\n *\n * It
is not required (and not recommended) to bypass security if the value is safe, e.g. a URL that\n * does not start with a
suspicious protocol, or an HTML snippet that does not contain dangerous\n * code. The sanitizer leaves safe values
intact.\n *\n * @security Calling any of the `bypassSecurityTrust...` APIs disables Angular's built-in\n * sanitization
for the value passed in. Carefully check and audit all values and code paths going\n * into this call. Make sure any
user data is appropriately escaped for this security context.\n * For more detail, see the [Security
Guide](http://g.co/ng/security).\n *\n * @publicApi\n */\n@Injectable({providedIn: 'root', useExisting:
forwardRef(() => DomSanitizerImpl)})\nexport abstract class DomSanitizer implements Sanitizer {\n /*\n *
Sanitizes a value for use in the given SecurityContext.\n *\n * If value is trusted for the context, this method will
unwrap the contained safe value and use\n * it directly. Otherwise, value will be sanitized to be safe in the given
context, for example\n * by replacing URLs that have an unsafe protocol part (such as `javascript:`). The
implementation\n * is responsible to make sure that the value can definitely be safely used in the given context.\n
/\n abstract sanitize(context: SecurityContext, value: SafeValue|string|null): string|null;\n\n /\n * Bypass
security and trust the given value to be safe HTML. Only use this when the bound HTML\n * is unsafe (e.g.
contains `<script>` tags) and the code should be executed. The sanitizer will\n * leave safe HTML intact, so in
most situations this method should not be used.\n *\n * ***WARNING:** calling this method with untrusted user
data exposes your application to XSS\n * security risks!\n */\n abstract bypassSecurityTrustHtml(value: string):
SafeHtml;\n\n /*\n * Bypass security and trust the given value to be safe style value (CSS).\n *\n *
***WARNING:** calling this method with untrusted user data exposes your application to XSS\n * security

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risks!\n */\n abstract bypassSecurityTrustStyle(value: string): SafeStyle;\n\n /**\n * Bypass security and trust the
given value to be safe JavaScript.\n */\n * **WARNING:** calling this method with untrusted user data exposes
your application to XSS\n * security risks!\n */\n abstract bypassSecurityTrustScript(value: string):
SafeScript;\n\n /**\n * Bypass security and trust the given value to be a safe style URL, i.e. a value that can be
used\n * in hyperlinks or ``.\n */\n * **WARNING:** calling this method with untrusted user data
exposes your application to XSS\n * security risks!\n */\n abstract bypassSecurityTrustUrl(value: string):
SafeUrl;\n\n /**\n * Bypass security and trust the given value to be a safe resource URL, i.e. a location that may\n
* be used to load executable code from, like `<script src>`, or `<iframe src>`.\n */\n * **WARNING:** calling
this method with untrusted user data exposes your application to XSS\n * security risks!\n */\n abstract
bypassSecurityTrustResourceUrl(value: string): SafeResourceUrl;\n}\n\nexport function
domSanitizerImplFactory(injector: Injector) {\n return new
DomSanitizerImpl(injector.get(DOCUMENT));\n}\n\n@Injectable({providedIn: 'root', useFactory:
domSanitizerImplFactory, deps: [Injector]})\nexport class DomSanitizerImpl extends DomSanitizer {\n
constructor(@Inject(DOCUMENT) private _doc: any) {\n super();\n }\n\n sanitize(ctx: SecurityContext, value:
SafeValue|string|null): string|null {\n if (value == null) return null;\n switch (ctx) {\n case
SecurityContext.NONE:\n return value as string;\n case SecurityContext.HTML:\n if
(allowSanitizationBypassOrThrow(value, BypassType.Html)) {\n return unwrapSafeValue(value);\n }\n
return _sanitizeHtml(this._doc, String(value));\n case SecurityContext.STYLE:\n if
(allowSanitizationBypassOrThrow(value, BypassType.Style)) {\n return unwrapSafeValue(value);\n }\n
return value as string;\n case SecurityContext.SCRIPT:\n if (allowSanitizationBypassOrThrow(value,
BypassType.Script)) {\n return unwrapSafeValue(value);\n }\n throw new Error('unsafe value used in
a script context');\n case SecurityContext.URL:\n const type = getSanitizationBypassType(value);\n if
(allowSanitizationBypassOrThrow(value, BypassType.Url)) {\n return unwrapSafeValue(value);\n }\n
return _sanitizeUrl(String(value));\n case SecurityContext.RESOURCE_URL:\n if
(allowSanitizationBypassOrThrow(value, BypassType.ResourceUrl)) {\n return unwrapSafeValue(value);\n
}\n throw new Error(\n 'unsafe value used in a resource URL context (see
http://g.co/ng/security#xss)');\n default:\n throw new Error(`Unexpected SecurityContext ${ctx} (see
http://g.co/ng/security#xss)`);\n }\n }\n\n bypassSecurityTrustHtml(value: string): SafeHtml {\n return
bypassSanitizationTrustHtml(value);\n }\n bypassSecurityTrustStyle(value: string): SafeStyle {\n return
bypassSanitizationTrustStyle(value);\n }\n bypassSecurityTrustScript(value: string): SafeScript {\n return
bypassSanitizationTrustScript(value);\n }\n bypassSecurityTrustUrl(value: string): SafeUrl {\n return
bypassSanitizationTrustUrl(value);\n }\n bypassSecurityTrustResourceUrl(value: string): SafeResourceUrl {\n
return bypassSanitizationTrustResourceUrl(value);\n }\n}\n\n"/**\n * @license\n * Copyright Google LLC All
Rights Reserved.\n */\n * Use of this source code is governed by an MIT-style license that can be\n * found in the
LICENSE file at https://angular.io/license\n */\n\nimport {CommonModule, DOCUMENT,
PLATFORM_BROWSER_ID as PLATFORM_BROWSER_ID} from '@angular/common';\nimport {APP_ID,
ApplicationModule, createPlatformFactory, ErrorHandler, Inject, ModuleWithProviders, NgModule, NgZone,
Optional, PLATFORM_ID, PLATFORM_INITIALIZER, platformCore, PlatformRef, RendererFactory2, Sanitizer,
SkipSelf, StaticProvider, Testability, Console as Console, INJECTOR_SCOPE as INJECTOR_SCOPE,
setDocument} from '@angular/core';\n\nimport {BrowserDomAdapter} from './browser/browser_adapter';\nimport
{SERVER_TRANSITION_PROVIDERS, TRANSITION_ID} from './browser/server-transition';\nimport
{BrowserGetTestability} from './browser/testability';\nimport {ELEMENT_PROBE_PROVIDERS} from
'./dom/debug/ng_probe';\nimport {DomRendererFactory2} from './dom/dom_renderer';\nimport
{DomEventsPlugin} from './dom/events/dom_events';\nimport {EVENT_MANAGER_PLUGINS, EventManager}
from './dom/events/event_manager';\nimport {HAMMER_PROVIDERS} from
'./dom/events/hammer_gestures';\nimport {KeyEventsPlugin} from './dom/events/key_events';\nimport
{DomSharedStylesHost, SharedStylesHost} from './dom/shared_styles_host';\nimport {DomSanitizer,
DomSanitizerImpl} from './security/dom_sanitization_service';\n\nexport function initDomAdapter() {\n

```

```

BrowserDomAdapter.makeCurrent();\n BrowserGetTestability.init();\n}\n\nexport function errorHandler():
ErrorHandler {\n return new ErrorHandler();\n}\n\nexport function _document(): any {\n // Tell ivy about the
global document\n setDocument(document);\n return document;\n}\n\nexport const
INTERNAL_BROWSER_PLATFORM_PROVIDERS: StaticProvider[] = [\n {provide: PLATFORM_ID,
useValue: PLATFORM_BROWSER_ID},\n {provide: PLATFORM_INITIALIZER, useValue: initDomAdapter,
multi: true},\n {provide: DOCUMENT, useFactory: _document, deps: []},\n];\n\nconst
BROWSER_SANITIZATION_PROVIDERS__PRE_R3__: StaticProvider[] = [\n {provide: Sanitizer, useExisting:
DomSanitizer},\n {provide: DomSanitizer, useClass: DomSanitizerImpl, deps: [DOCUMENT]},\n];\n\nexport
const BROWSER_SANITIZATION_PROVIDERS__POST_R3__ = [];\n\n/**\n * @security Replacing built-in
sanitization providers exposes the application to XSS risks.\n * Attacker-controlled data introduced by an
unsanitized provider could expose your\n * application to XSS risks. For more detail, see the [Security
Guide](http://g.co/ng/security).\n * @publicApi\n */\nexport const BROWSER_SANITIZATION_PROVIDERS =
BROWSER_SANITIZATION_PROVIDERS__PRE_R3__;\n\n/**\n * A factory function that returns a
`PlatformRef` instance associated with browser service\n * providers.\n */\n * @publicApi\n */\nexport const
platformBrowser: (extraProviders?: StaticProvider[]) => PlatformRef =\n createPlatformFactory(platformCore,
'browser', INTERNAL_BROWSER_PLATFORM_PROVIDERS);\n\nexport const
BROWSER_MODULE_PROVIDERS: StaticProvider[] = [\n BROWSER_SANITIZATION_PROVIDERS,\n
{provide: INJECTOR_SCOPE, useValue: 'root'},\n {provide: ErrorHandler, useFactory: errorHandler, deps: []},\n
{\n provide: EVENT_MANAGER_PLUGINS,\n useClass: DomEventsPlugin,\n multi: true,\n deps:
[DOCUMENT, NgZone, PLATFORM_ID]\n },\n {provide: EVENT_MANAGER_PLUGINS, useClass:
KeyEventsPlugin, multi: true, deps: [DOCUMENT]},\n HAMMER_PROVIDERS,\n {\n provide:
DomRendererFactory2,\n useClass: DomRendererFactory2,\n deps: [EventManager, DomSharedStylesHost,
APP_ID]\n },\n {\n provide: RendererFactory2, useExisting: DomRendererFactory2},\n {\n provide:
SharedStylesHost, useExisting: DomSharedStylesHost},\n {\n provide: DomSharedStylesHost, useClass:
DomSharedStylesHost, deps: [DOCUMENT]},\n {\n provide: Testability, useClass: Testability, deps: [NgZone]},\n
{\n provide: EventManager, useClass: EventManager, deps: [EVENT_MANAGER_PLUGINS, NgZone]},\n
ELEMENT_PROBE_PROVIDERS,\n];\n\n/**\n * Exports required infrastructure for all Angular apps.\n *
Included by default in all Angular apps created with the CLI\n * `new` command.\n * Re-exports `CommonModule`
and `ApplicationModule`, making their\n * exports and providers available to all apps.\n */\n * @publicApi\n
*/\n * @ngModule({providers: BROWSER_MODULE_PROVIDERS, exports: [CommonModule,
ApplicationModule]})\nexport class BrowserModule {\n constructor(@Optional() @SkipSelf()
@Inject(BrowserModule) parentModule: BrowserModule|null) {\n if (parentModule) {\n throw new Error(\n
`BrowserModule has already been loaded. If you need access to common directives such as NgIf and NgFor from
a lazy loaded module, import CommonModule instead.`);\n } }\n\n /**\n * Configures a browser-based app to
transition from a server-rendered app, if\n * one is present on the page.\n */\n * @param params An object
containing an identifier for the app to transition.\n * The ID must match between the client and server versions of
the app.\n * @returns The reconfigured `BrowserModule` to import into the app's root `AppModule`.\n */\n static
withServerTransition(params: {appId: string}): ModuleWithProviders<BrowserModule> {\n return {\n
ngModule: BrowserModule,\n providers: [\n {provide: APP_ID, useValue: params.appId},\n {provide:
TRANSITION_ID, useExisting: APP_ID},\n SERVER_TRANSITION_PROVIDERS,\n],\n }; }\n\n } }\n\n",\n /**\n * @license\n * Copyright Google LLC All Rights Reserved.\n * Use of this source code is
governed by an MIT-style license that can be\n * found in the LICENSE file at https://angular.io/license\n
*/\n\nimport {DOCUMENT, DomAdapter as DomAdapter, getDOM as getDOM} from
'@angular/common';\nimport {Inject, Injectable, inject} from '@angular/core';\n\n/**\n * Represents the attributes
of an HTML `` element. The element itself is\n * represented by the internal `HTMLMetaElement`.\n */\n *
@see [HTML meta tag](https://developer.mozilla.org/docs/Web/HTML/Element/meta)\n * @see `Meta`\n */\n *
@publicApi\n */\nexport type MetaDefinition = {\n charset?: string;\n content?: string;\n httpEquiv?: string;\n
id?: string;\n itemprop?: string;\n name?: string;\n property?: string;\n scheme?: string;\n url?: string;\n}&{\n //

```

TODO(IgorMinar): this type looks wrong

```

[prop: string]: string;
}

export function createMeta() {
 return new
 Meta(inject(DOCUMENT));
}

export class Meta {
 /**
 * A service for managing HTML <meta> tags.
 * Properties of the
 * `MetaDefinition` object match the attributes of the
 * HTML <meta> tag. These tags define document metadata
 * that is important for
 * things like configuring a Content Security Policy, defining browser compatibility
 * and security settings, setting HTTP Headers, defining rich content for social sharing,
 * and Search Engine Optimization (SEO).
 * To identify specific <meta> tags in a document, use an attribute selection
 * string in the format `tag_attribute='value string'`.
 * For example, an `attrSelector` value of `name='description'`
 * matches a tag
 * whose `name` attribute has the value `description`.
 * Selectors are used with the
 * `querySelector` Document method,
 * in the format `meta[{attrSelector}]`.
 * @see [HTML meta tag](https://developer.mozilla.org/docs/Web/HTML/Element/meta)
 * @see [Document.querySelector](https://developer.mozilla.org/docs/Web/API/Document/querySelector)
 */
 constructor(@Inject(DOCUMENT) private _doc: any) {
 this._dom = getDOM();
 }

 /**
 * Retrieves or creates a specific <meta> tag element in the current HTML document.
 * In searching for an existing tag, Angular attempts to match the `name` or `property` attribute
 * values in the provided tag definition, and verifies that all other attribute values are equal.
 * If an existing element is found, it is returned and is not modified in any way.
 * @param tag The definition of a <meta> element to match or create.
 * @param forceCreation True to create a new element without checking whether one already exists.
 * @returns The existing element with the same attributes and values if found,
 * the new element if no match is found, or `null` if the tag parameter is not defined.
 */
 addTag(tag: MetaDefinition, forceCreation: boolean = false): HTMLMetaElement | null {
 if (!tag) return null;
 return this._getOrCreateElement(tag, forceCreation);
 }

 /**
 * Retrieves or creates a set of <meta> tag elements in the current HTML document.
 * In searching for an existing tag, Angular attempts to match the `name` or `property` attribute
 * values in the provided tag definition, and verifies that all other attribute values are equal.
 * @param tags An array of tag definitions to match or create.
 * @param forceCreation True to create new elements without checking whether they already exist.
 * @returns The matching elements if found, or the new elements.
 */
 addTags(tags: MetaDefinition[], forceCreation: boolean = false): HTMLMetaElement[] {
 if (!tags) return [];
 return tags.reduce((result: HTMLMetaElement[], tag: MetaDefinition) => {
 if (tag) {
 result.push(this._getOrCreateElement(tag, forceCreation));
 }
 return result;
 }, []);
 }

 /**
 * Retrieves a <meta> tag element in the current HTML document.
 * @param attrSelector The tag attribute and value to match against, in the format
 * `tag_attribute='value string'`.
 * @returns The matching element, if any.
 */
 getTag(attrSelector: string): HTMLMetaElement | null {
 if (!attrSelector) return null;
 return this._doc.querySelector(`meta[${attrSelector}]`) || null;
 }

 /**
 * Retrieves a set of <meta> tag elements in the current HTML document.
 * @param attrSelector The tag attribute and value to match against, in the format
 * `tag_attribute='value string'`.
 * @returns The matching elements, if any.
 */
 getTags(attrSelector: string): HTMLMetaElement[] {
 if (!attrSelector) return [];
 const list /*NodeList*/ = this._doc.querySelectorAll(`meta[${attrSelector}]`);
 return list ? [].slice.call(list) : [];
 }

 /**
 * Modifies an existing <meta> tag element in the current HTML document.
 * @param tag The tag description with which to replace the existing tag content.
 * @param selector A tag attribute and value to match against, to identify
 * an existing tag. A string in the format `tag_attribute='value string'`.
 * If not supplied, matches a tag with the same `name` or `property` attribute value as the
 * replacement tag.
 * @return The modified element.
 */
 updateTag(tag: MetaDefinition, selector?: string): HTMLMetaElement | null {
 if (!tag) return null;
 selector = selector || this._parseSelector(tag);
 const meta: HTMLMetaElement = this.getTag(selector)!;
 if (meta) {
 return this._setMetaElementAttributes(tag, meta);
 }
 return this._getOrCreateElement(tag, true);
 }

 /**
 * Removes an existing <meta> tag element from the current HTML document.
 * @param attrSelector A tag attribute and value to match against, to identify
 * an existing tag. A string in the format
 * `tag_attribute='value string'`.
 */
 removeTag(attrSelector: string): void {

```



```

this.removeTagElement(this.getTag(attrsSelector)!);\n }\n\n /**\n * Removes an existing `<meta>` tag element
from the current HTML document.\n * @param meta The tag definition to match against to identify an existing
tag.\n */\n removeTagElement(meta: HTMLMetaElement): void {\n if (meta) {\n this._dom.remove(meta);\n
}\n }\n\n private _getOrCreateElement(meta: MetaDefinition, forceCreation: boolean = false):\n
HTMLMetaElement {\n if (!forceCreation) {\n const selector: string = this._parseSelector(meta);\n const
elem: HTMLMetaElement = this.getTag(selector!);\n // It's allowed to have multiple elements with the same
name so it's not enough to\n // just check that element with the same name already present on the page. We also
need to\n // check if element has tag attributes\n if (elem && this._containsAttributes(meta, elem)) return
elem;\n }\n const element: HTMLMetaElement = this._dom.createElement('meta') as HTMLMetaElement;\n
this._setMetaElementAttributes(meta, element);\n const head = this._doc.getElementsByTagName('head')[0];\n
head.appendChild(element);\n return element;\n }\n\n private _setMetaElementAttributes(tag: MetaDefinition,
el: HTMLMetaElement): HTMLMetaElement {\n Object.keys(tag).forEach((prop: string) => el.setAttribute(prop,
tag[prop]));\n return el;\n }\n\n private _parseSelector(tag: MetaDefinition): string {\n const attr: string =
tag.name ? 'name' : 'property';\n return `${attr}=${tag[attr]}";\n }\n\n private _containsAttributes(tag:
MetaDefinition, elem: HTMLMetaElement): boolean {\n return Object.keys(tag).every((key: string) =>
elem.getAttribute(key) === tag[key]);\n }\n}\n\n", /**\n * @license\n * Copyright Google LLC All Rights
Reserved.\n *\n * Use of this source code is governed by an MIT-style license that can be\n * found in the
LICENSE file at https://angular.io/license\n */\n\nimport {DOCUMENT, getDOM as getDOM} from
'@angular/common';\nimport {Inject, Injectable, inject} from '@angular/core';\n\n/**\n * Factory to create Title
service.\n */\nexport function createTitle() {\n return new Title(inject(DOCUMENT));\n }\n\n/**\n * A service that
can be used to get and set the title of a current HTML document.\n *\n * Since an Angular application can't be
bootstrapped on the entire HTML document (<html> tag)\n * it is not possible to bind to the `text` property of the
`HTMLTitleElement` elements\n * (representing the `<title>` tag). Instead, this service can be used to set and get
the current\n * title value.\n *\n * @publicApi\n */\n@Injectable({providedIn: 'root', useFactory: createTitle, deps:
[]})\nexport class Title {\n constructor(@Inject(DOCUMENT) private _doc: any) {\n /**\n * Get the title of the
current HTML document.\n */\n getTitle(): string {\n return this._doc.title;\n }\n\n /**\n * Set the title of the
current HTML document.\n * @param newTitle\n */\n setTitle(newTitle: string) {\n this._doc.title = newTitle\n
};\n }\n}\n\n", /**\n * @license\n * Copyright Google LLC All Rights Reserved.\n *\n * Use of this source code is
governed by an MIT-style license that can be\n * found in the LICENSE file at https://angular.io/license\n
*/\n\nconst win = typeof window !== 'undefined' && window || <any>{};\nexport {win as window};\n\n", /**\n *
@license\n * Copyright Google LLC All Rights Reserved.\n *\n * Use of this source code is governed by an MIT-
style license that can be\n * found in the LICENSE file at https://angular.io/license\n */\n\nimport {getDOM as
getDOM} from '@angular/common';\nimport {ApplicationRef, ComponentRef} from '@angular/core';\nimport
{window} from './browser';\n\nexport class ChangeDetectionPerfRecord {\n constructor(public msPerTick:
number, public numTicks: number) {\n }\n}\n\n/**\n * Entry point for all Angular profiling-related debug tools. This
object\n * corresponds to the `ng.profiler` in the dev console.\n */\nexport class AngularProfiler {\n appRef:
ApplicationRef;\n\n constructor(ref: ComponentRef<any>) {\n this.appRef = ref.injector.get(ApplicationRef);\n
}\n\n // tslint:disable:no-console\n /**\n * Exercises change detection in a loop and then prints the average
amount of\n * time in milliseconds how long a single round of change detection takes for\n * the current state of
the UI. It runs a minimum of 5 rounds for a minimum\n * of 500 milliseconds.\n *\n * Optionally, a user may
pass a `config` parameter containing a map of\n * options. Supported options are:\n *\n * `record` (boolean) -
causes the profiler to record a CPU profile while\n * it exercises the change detector. Example:\n *\n * ```\n *
ng.profiler.timeChangeDetection({record: true})\n * ```\n */\n timeChangeDetection(config: any):
ChangeDetectionPerfRecord {\n const record = config && config['record'];\n const profileName = 'Change
Detection';\n // Profiler is not available in Android browsers without dev tools opened\n const
isProfilerAvailable = window.console.profile !== null;\n if (record && isProfilerAvailable) {\n
window.console.profile(profileName);\n }\n const start = getDOM().performanceNow();\n let numTicks = 0;\n
while (numTicks < 5 || (getDOM().performanceNow() - start) < 500) {\n this.appRef.tick();\n numTicks++;\n
}

```

```

 }
 const end = getDOM().performanceNow();
 if (record && isProfilerAvailable) {
 window.console.profileEnd(profileName);
 }
 const msPerTick = (end - start) / numTicks;
 window.console.log(`ran ${numTicks} change detection cycles`);
 window.console.log(`${msPerTick.toFixed(2)} ms per check`);
 return new
ChangeDetectionPerfRecord(msPerTick, numTicks);
}

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 * found in the
LICENSE file at https://angular.io/license
 */
import {ComponentRef} from '@angular/core';
import {exportNgVar} from '../dom/util';
import {AngularProfiler} from './common_tools';
const
PROFILER_GLOBAL_NAME = 'profiler';
 * Enabled Angular debug tools that are accessible via your
browser's
 * developer console.
 * Usage:
 * 1. Open developer console (e.g. in Chrome Ctrl + Shift +
j)
 * 1. Type `ng.` (usually the console will show auto-complete suggestion)
 * 1. Try the change detection profiler
`ng.profiler.timeChangeDetection()`
 * then hit Enter.
 * @publicApi
 */
export function
enableDebugTools<T>(ref: ComponentRef<T>): ComponentRef<T> {
 exportNgVar(PROFILER_GLOBAL_NAME, new AngularProfiler(ref));
 return ref;
}

/**
 * Disables
Angular tools.
 * @publicApi
 */
export function
disableDebugTools(): void {
 exportNgVar(PROFILER_GLOBAL_NAME, null);
}

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Reserved.
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 * found in the
LICENSE file at https://angular.io/license
 */
import {DOCUMENT} from '@angular/common';
import {APP_ID, Injectable, NgModule} from '@angular/core';
export function
escapeHtml(text: string): string {
 const escapedText: {[k: string]: string} = {
 '&': '&',
 '\\': '\\',
 ''': ''',
 '<': '<',
 '>': '>',
 };
 return text.replace(/&["<>]/g, s => escapedText[s]);
}

export function
unescapeHtml(text: string): string {
 const unescapedText: {[k: string]: string} = {
 ''': ''',
 '"': '"',
 '&': '&',
 ''': ''',
 '"': '"',
 '&': '&',
 };
 return text.replace(/&["<>];/g, s => unescapedText[s]);
}

/**
 * A type-safe key to use with
`TransferState`.
 * Example:
 * ```
 * const COUNTER_KEY = makeStateKey<number>('counter');
 * let value = 10;
 * transferState.set(COUNTER_KEY, value);
 * ```
 * @publicApi
 */
export type
StateKey<T> = string & {__not_a_string: never};

/**
 * Create a `StateKey<T>` that can be used to store value
of type T with `TransferState`.
 * Example:
 * ```
 * const COUNTER_KEY =
makeStateKey<number>('counter');
 * let value = 10;
 * transferState.set(COUNTER_KEY, value);
 * ```
 * @publicApi
 */
export function
makeStateKey<T = void>(key: string): StateKey<T> {
 return key as
StateKey<T>;
}

/**
 * A key value store that is transferred from the application on the server side to the
application
 * on the client side.
 * `TransferState` will be available as an injectable token. To use it import
 * `ServerTransferStateModule` on the server and `BrowserTransferStateModule` on the client.
 * The values in
the store are serialized/deserialized using JSON.stringify/JSON.parse. So only
 * boolean, number, string, null and
non-class objects will be serialized and deserialized in a
 * non-lossy manner.
 * @publicApi
 */
@injectable()
export class
TransferState {
 private store: {[k: string]: {} | undefined} = {};
 private
onSerializeCallbacks: {[k: string]: () => {} | undefined} = {};

 /**
 * @internal
 */
 static
init(initState: {}) {
 const transferState = new TransferState();
 transferState.store = initState;
 return transferState;
 }

 /**
 * Get the value corresponding to a key. Return `defaultValue` if key is not found.
 */
 get<T>(key:
StateKey<T>, defaultValue: T): T {
 return this.store[key] !== undefined ? this.store[key] as T : defaultValue;
 }

 /**
 * Set the value corresponding to a key.
 */
 set<T>(key: StateKey<T>, value: T): void {
 this.store[key] = value;
 }

 /**
 * Remove a key from the store.
 */
 remove<T>(key: StateKey<T>):
void {
 delete this.store[key];
 }

 /**
 * Test whether a key exists in the store.
 */
 hasKey<T>(key:
StateKey<T>): boolean {
 return this.store.hasOwnProperty(key);
 }

 /**
 * Register a callback to provide the
value for a key when `toJson` is called.
 */
 onSerialize<T>(key: StateKey<T>, callback: () => T): void {
 this.onSerializeCallbacks[key] = callback;
 }

 /**
 * Serialize the current state of the store to JSON.
 */
 toJson(): string {
 // Call the onSerialize callbacks and put those values into the store.
 for (const key in
this.onSerializeCallbacks) {
 if (this.onSerializeCallbacks.hasOwnProperty(key)) {
 try {
 this.store[key] = this.onSerializeCallbacks[key]();
 } catch (e) {
 console.warn('Exception in onSerialize

```

```

callback: ', e);\n }\n }\n }\n return JSON.stringify(this.store);\n }\n}\n\nexport function
initTransferState(doc: Document, appId: string) {\n // Locate the script tag with the JSON data transferred from the
server.\n // The id of the script tag is set to the Angular appId + 'state'.\n const script = doc.getElementById(appId +
'-state');\n let initialState = {};\n if (script && script.textContent) {\n try {\n initialState =
JSON.parse(unescapeHtml(script.textContent));\n } catch (e) {\n console.warn('Exception while restoring
TransferState for app ' + appId, e);\n } }\n return TransferState.init(initialState);\n }\n\n/**\n * NgModule to
install on the client side while using the `TransferState` to transfer state from\n * server to client.\n *\n *
@publicApi\n */\n@NgModule({\n providers: [{provide: TransferState, useFactory: initTransferState, deps:
[DOCUMENT, APP_ID]}],\n})\nexport class BrowserTransferStateModule {\n}\n\n"/**\n * @license\n *
Copyright Google LLC All Rights Reserved.\n *\n * Use of this source code is governed by an MIT-style license
that can be\n * found in the LICENSE file at https://angular.io/license\n */\n\nimport {getDOM as getDOM} from
'@angular/common';\nimport {DebugElement, DebugNode, Predicate, Type} from '@angular/core';\n\n\n/**\n *
Predicates for use with { @link DebugElement}'s query functions.\n *\n * @publicApi\n */\nexport class By {\n
/**\n * Match all nodes.\n *\n * @usageNotes\n * ### Example\n *\n * {@example platform-
browser/dom/debug/ts/by/by.ts region='by_all'}\n *\n static all(): Predicate<DebugNode> {\n return () =>
true;\n }\n\n /**\n * Match elements by the given CSS selector.\n *\n * @usageNotes\n * ### Example\n *\n
* {@example platform-browser/dom/debug/ts/by/by.ts region='by_css'}\n *\n static css(selector: string):
Predicate<DebugElement> {\n return (debugElement) => {\n return debugElement.nativeElement != null ?\n
elementMatches(debugElement.nativeElement, selector) :\n false;\n };\n }\n\n /**\n * Match nodes that
have the given directive present.\n *\n * @usageNotes\n * ### Example\n *\n * {@example platform-
browser/dom/debug/ts/by/by.ts region='by_directive'}\n *\n static directive(type: Type<any>):
Predicate<DebugNode> {\n return (debugNode) => debugNode.providerTokens!.indexOf(type) !== -1;\n
}\n}\n\nfunction elementMatches(n: any, selector: string): boolean {\n if (getDOM().isElementNode(n)) {\n
return n.matches && n.matches(selector) ||\n n.msMatchesSelector && n.msMatchesSelector(selector) ||\n
n.webkitMatchesSelector && n.webkitMatchesSelector(selector);\n }\n\n return false;\n }\n\n"/**\n * @license\n *
Copyright Google LLC All Rights Reserved.\n *\n * Use of this source code is governed by an MIT-style license
that can be\n * found in the LICENSE file at https://angular.io/license\n */\n\nexport {getDOM} from
'@angular/common';\nexport {BROWSER_SANITIZATION_PROVIDERS as
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shimHostAttribute as shimHostAttribute} from './dom/dom_renderer';\nexport {DomEventsPlugin as
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from './dom/events/hammer_gestures';\nexport {KeyEventsPlugin as KeyEventsPlugin} from
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SharedStylesHost} from './dom/shared_styles_host';\nexport {DomSanitizerImpl as DomSanitizerImpl} from
'./security/dom_sanitization_service';\n\n"/**\n * @license\n * Copyright Google LLC All Rights Reserved.\n *\n
* Use of this source code is governed by an MIT-style license that can be\n * found in the LICENSE file at
https://angular.io/license\n */\n\n/**\n * @module\n * @description\n * Entry point for all public APIs of the
common package.\n *\n */\nimport {Version} from '@angular/core';\n\n/**\n * @publicApi\n */\nexport const
VERSION = new Version('11.0.2');\n\n"/**\n * @license\n * Copyright Google LLC All Rights Reserved.\n *\n
* Use of this source code is governed by an MIT-style license that can be\n * found in the LICENSE file at

```

```

https://angular.io/license\n */\n\nexport {BrowserModule, platformBrowser} from './browser';\nexport {Meta,
MetaDefinition} from './browser/meta';\nexport {Title} from './browser/title';\nexport {disableDebugTools,
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{VERSION} from './version';\n// This must be exported so it doesn't get tree-shaken away prematurely\nexport
{ELEMENT_PROBE_PROVIDERS__POST_R3__ as ELEMENT_PROBE_PROVIDERS__POST_R3__} from
'./dom/debug/ng_probe';\n", "/*\n * @license\n * Copyright Google LLC All Rights Reserved.\n *\n * Use of this
source code is governed by an MIT-style license that can be\n * found in the LICENSE file at
https://angular.io/license\n */\n\n/*\n * @module\n * @description\n * Entry point for all public APIs of this
package.\n *\nexport * from './src/platform-browser';\n// This file only reexports content of the `src` folder. Keep it
that way.\n", "/*\n * @license\n * Copyright Google LLC All Rights Reserved.\n *\n * Use of this source code is
governed by an MIT-style license that can be\n * found in the LICENSE file at https://angular.io/license\n */\n\n//
This file is not used to build this module. It is only used during editing\n// by the TypeScript language service and
during build for verification. `ngc`\n// replaces this file with production index.ts when it rewrites private symbol\n//
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'./src/dom/events/event_manager';\nexport {HAMMER_PROVIDERS as
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 * License: MIT
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Angular

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The sources for this package are in the main [Angular](<https://github.com/angular/angular>) repo. Please file issues and pull requests against that repo.

Usage information and reference details can be found in [Angular documentation](<https://angular.io/docs>).

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Found in path(s):

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* /opt/cola/permits/1358260668_1657134840.805252/0/platform-browser-11-0-2-tgz/package/fesm2015/testing.js
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No license file was found, but licenses were detected in source scan.

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O, GACvC, IAAI+O, EAAQ/O, EAAU4K, cAAcoE, MAAM, KACtCC, EAAeF, EAAMP, QACzB, GAAsB, IAAjBO, EA  
AMtR, QAAoC, YAAjBwR, GAA+C, UAAjBA, EACxD, OAAO, KAEX, IAAIC, EAAMR, EAAGBS, cAAcJ, EAAMK,  
OAC1CC, EAAU, GASd, GARApD, EAAClQ, SAAQ, SAAUuT, GAC5B, IAAIC, EAAQR, EAAMvD, QAAQ8D, GACt  
BC, GAAS, IACTR, EAAMS, OAAOD, EAAO, GACpBF, GAAWC, EAAe, QAGICD, GAAWH, EACS, GAAhBH, EA  
AMtR, QAA8B, IAAfyR, EAALzR, OAEzB, OAAO, KAKX, IAAIgS, EAAS, GAGb, OAFAA, EAAqB, aAAIR, EACzBQ,  
EAAGB, QAAIJ, EACbI, GAEXf, EAAGBgB, gBAakB, SAAU7L, GACxC, IAAIwL, EAAU, GACVH, EAmDZ, SAASS  
, EAAy9L, GACjB, IAAIqL, EAAMrL, EAAMqL, IACb, GAAW, MAAPA, EAAa, CAKb, GAAW, OAJXA, EAAMrL,  
EAAM+L, eAKR, MAAO, eAEPV, EAAIW, WAAW, QACfX, EAAM/J, OAAO2K, aAAaC, SAASb, EAAIc, UAAU, G  
AAI, KAILnC, IAmLdnM, EAAMrK, UAAwCwT, EAAoBpX, eAAesZ, KAIjFA, EAAMIC, EAAoBkC, KAIc, OAAOh  
D, EAAQgD, IAAQA, EAvETS, CAAY9L, GAIbTB, MafY, OADZqL, EAAMA, EAAItE, eAENsE, EAAM, QAEQ, MA  
ARA, IACLA, EAAM, OAEVjD, EAAClQ, SAAQ, SAAUuT, GACxBA, GAAGBJ, IAEZe, EADiBhC, EAAqBqB, IACv  
BzL, KACfwL, GAAWC, EAAe, QAIcD, GAAWH, GAUfR, EAAGBI, cAAgB, SAAUO, EAASpP, EAAS8K, GACxD,  
OAAO, SAAUIH, GACT6K, EAAGBgB, gBAAGB7L, KAAWwL, GAC3CtE, EAAKM, YAAW, WAAc, OAAOpL, EA  
AQ4D, QAKzD6K, EAAGBS, cAAgB, SAAUe, GAETC, OAAQA, GACJ, IAAK, MACD, MAAO, SACX, QACI, OAAO  
A, IAGZxB, EAzGyB, CA0GIC1N, GAsEF, SAASmP, EAAwB9U, GAC7B, OAAO, IAAI+U, EAAiB/U, EAASC, IAAIt  
G, EAAOqH, WAtEpDqS, EAAGBhO, WAAa, CACzB, CAAEC, KAAMxL, EAAGyL, aAEf8N, EAAGB7N, eAAiB, WA  
Ac, MAAO, CACID, CAAEF, UAAMiC, EAAWIC, WAAY, CAAC, CAAEC, KAAMxL, EAAG2L, OAAQC, KAAM, C  
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, IAAyB, OAAOpb, EAAGqb, SAASJ, IAAsBnR, MAAO+M, EAACyE, WAAY, SACIKzE, EAAatL, WAAa, CACtB, CA  
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, OAAOP, SAKxG, IAAIA, EAAKc, SAAUha, GAE5C, SAASga, EAAiBnP, GACTb, IAAIvB, EAAQJ, EAAOC, KAAK  
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b, iCAAiC9Y, EAAO, QACpChD, EAAG+b, iBAAiB/Y, GAExBhD, EAAGgc, eAAejc, KAAK+L, KAAMkE, OAAOh  
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D, EAAGqc, cAAcrM, OAAOhN, IACnC, KAAKhD, EAAG2b, gBAAGBW, aACpB, GAAItc, EAAG8b, iCAAiC9Y, EA  
AO, eAC3C, OAAOhD, EAAG+b, iBAAiB/Y, GAE/B, MAAM, IAAI+E, MAAM, iFACpB, QACI, MAAM, IAAIA, MA  
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pa, UAAU8b, 0BAA4B, SAAU3Z, GAC7D, OAAOhD, EAAG4c, +BAA+B5Z, IAE7CiY, EAAiBpa, UAAUgc, uBAAyB  
, SAAU7Z, GAC1D, OAAOhD, EAAG8c, 4BAA4B9Z, IAE1CiY, EAAiBpa, UAAUkc, +BAAiC, SAAU/Z, GACIE, OA  
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EAAsBC, OAE1B, SAAS4V, IACL, OAAO, IAAIId, EAAGmd, aAEIB, SAASC, IAGL, OADApd, EAAGqd, aAAa/Z, U  
ACTA, SAzBX2X, EAAiBC, MAAQIb, EAAGmb, mBAAmB, CAAE/b, QAAS, SAASke, IAA6B, OAAOtC, EAAwBhb  
, EAAGqb, SAASrb, EAAGud, YAAezT, MAAOmR, EAAkBK, WAAY, SACIML, EAAiB1P, WAAa, CAC1B, CAAEC,  
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EAAGmH, cAEvG8T, EAAiBvP, eAAiB, WAAc, MAAO, CACnD, CAAEF, UAAMiC, EAAWIC, WAAY, CAAC, CAA  
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G, EAAGyd, YAAaC, SAFpB7d, EAAO8d, sBAGd, CAAE7W, QAAS9G, EAAG4d, qBAAsBF, SAAUT, EAAGB7V, O  
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BP,EAAQslB,gCAAKC9G,GAC1Cxe,EAAQulB,2CA7rBwC,GA8rBhDvlB,EAAQwlB,mBAAqBxjB,EAC7BhC,E  
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,EAAQsmB,eAAiB7f,EACzBzG,EAAQumB,sDAAwD1I,EACHe7d,EAAQwmB,sDAAwDzI,EACHe/d,EAAQym  
B,sDAAwD7H,GACHe5e,EAAQ0mB,sDAAwDrH,GACHeRf,EAAQ2mB,sDAAwD1F,GACHeJhB,EAAQ4mB,sD  
AAwDxD,GACHepjB,EAAQ6mB,sDAAwDra,EACHExM,EAAQ8mB,sDAAwD3P,EACHEnX,EAAQ+mB,sDAA

```

wD1P,EACHeR,X,EAAQgnB,sDAAwDrL,EACHe3b,EAAQinB,sDAAwDtgB,EACHe3G,EAAQknB,sDAAwD1f,E
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,MACNC,IAAK,MACLC,IAAK,OAET,OOAOnE,EAAS5U,QAAQ,YAAY,SAAUmV,GAAC,OOAOuD,EAAYv
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C5O,EAAQioB,mBAAqBlZ,EAE7BhO,OOAOkkB,eAAejlB,EAAS,aAAc,CAAE2D,OOAO","sourcesContent":["/
**\n * @license Angular v11.0.2\n * (c) 2010-2020 Google LLC. https://angular.io\n * License: MIT\n
*/\n\n(function (global, factory) {\n typeof exports === 'object' && typeof module !== 'undefined' ?
factory(exports, require('@angular/common'), require('@angular/core')) :\n typeof define === 'function' &&
define.amd ? define('@angular/platform-browser', ['exports', '@angular/common', '@angular/core'], factory) :\n (global = global || self, factory((global.ng = global.ng || {}), global.ng.platformBrowser = {}), global.ng.common,
global.ng.core));\n})(this, (function (exports, common, i0) { 'use strict';\n\n /*!
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with or without fee is hereby granted.\n\n THE SOFTWARE IS PROVIDED \"AS IS\" AND THE AUTHOR
DISCLAIMS ALL WARRANTIES WITH\n REGARD TO THIS SOFTWARE INCLUDING ALL IMPLIED
WARRANTIES OF MERCHANTABILITY\n AND FITNESS. IN NO EVENT SHALL THE AUTHOR BE
LIABLE FOR ANY SPECIAL, DIRECT,\n INDIRECT, OR CONSEQUENTIAL DAMAGES OR ANY
DAMAGES WHATSOEVER RESULTING FROM\n LOSS OF USE, DATA OR PROFITS, WHETHER IN AN
ACTION OF CONTRACT, NEGLIGENCE OR\n OTHER TORTIOUS ACTION, ARISING OUT OF OR IN
CONNECTION WITH THE USE OR\n PERFORMANCE OF THIS SOFTWARE.\n\n
*****\n */\n\n /* global
Reflect, Promise */\n\n var extendStatics = function (d, b) {\n extendStatics = Object.setPrototypeOf ||\n ({ __proto__: [] } instanceof Array && function (d, b) { d.__proto__ = b; }) ||\n function (d, b) { for (var p in b)\n if (b.hasOwnProperty(p))\n d[p] = b[p]; }\n return extendStatics(d, b);\n };\n\n function __extends(d, b) {\n extendStatics(d, b);\n function __() { this.constructor = d; }\n d.prototype = b === null ? Object.create(b) : (__proto__ = b.prototype, new __());\n }\n\n var __assign = function () {\n __assign = Object.assign || function __assign(t) {\n for (var s, i = 1, n = arguments.length; i < n; i++) {\n s = arguments[i];\n for (var p in s)\n if (Object.prototype.hasOwnProperty.call(s, p))\n t[p] = s[p];\n }\n return t;\n };\n return __assign.apply(this, arguments);\n };\n\n function __rest(s, e) {\n var t = {};\n for (var p in s)\n if (Object.prototype.hasOwnProperty.call(s, p)\n && e.indexOf(p) < 0)\n t[p] = s[p];\n if (s != null && typeof Object.getOwnPropertySymbols ===\n \"function\")\n for (var i = 0, p = Object.getOwnPropertySymbols(s); i < p.length; i++) {\n if
(e.indexOf(p[i]) < 0 && Object.prototype.propertyIsEnumerable.call(s, p[i]))\n t[p[i]] = s[p[i]];\n }\n return t;\n }\n\n function __decorate(decorators, target, key, desc) {\n var c = arguments.length, r = c
< 3 ? target : desc === null ? desc = Object.getOwnPropertyDescriptor(target, key) : desc, d;\n if (typeof Reflect
=== \"object\" && typeof Reflect.decorate === \"function\")\n r = Reflect.decorate(decorators, target, key, desc);\n else\n for (var i = decorators.length - 1; i >= 0; i--)\n if (d = decorators[i])\n r = (c < 3 ? d(r) : c > 3 ? d(target, key, r) : d(target, key)) || r;\n return c > 3 && r &&
Object.defineProperty(target, key, r), r;\n }\n\n function __param(paramIndex, decorator) {\n return function
(target, key) { decorator(target, key, paramIndex); }\n }\n\n function __metadata(metadataKey, metadataValue)
{\n if (typeof Reflect === \"object\" && typeof Reflect.metadata === \"function\")\n return
Reflect.metadata(metadataKey, metadataValue);\n }\n\n function __awaiter(thisArg, _arguments, P, generator) {\n\n function adopt(value) { return value instanceof P ? value : new P(function (resolve) { resolve(value); }); }\n\n return new (P || (P = Promise))(function (resolve, reject) {\n function fulfilled(value) { try {\n step(generator.next(value));\n }\n catch (e) {\n reject(e);\n }\n })\n function
rejected(value) { try {\n step(generator[\"throw\"](value));\n }\n catch (e) {\n reject(e);\n }\n })\n function step(result) { result.done ? resolve(result.value) :

```



```

adopt(result.value).then(fulfilled, rejected); }
step((generator = generator.apply(thisArg, _arguments ||
[])).next());
});
function __generator(thisArg, body) {
var _ = { label: 0, sent: function () { if
(t[0] & 1)
throw t[1]; return t[1]; }, trys: [], ops: [] }, f, y, t, g;
return g = { next: verb(0), "throw":
verb(1), "return": verb(2) }, typeof Symbol === "function" && (g[Symbol.iterator] = function () { return this; }),
g;
function verb(n) { return function (v) { return step([n, v]); }; }
function step(op) {
if (f)
throw new TypeError("Generator is already executing.");
while (_)
try {
if (f = 1, y && (t = op[0] & 2 ? y["return"] : op[0] ? y["throw"] || ((t = y["return"]) && t.call(y, 0) : y.next) &&
!(t = t.call(y, op[1])).done)
return t;
if (y = 0, t)
op = [op[0] & 2,
t.value];
switch (op[0]) {
case 0:
t = op;
break;
case 4:
_label++;
return { value: op[1],
done: false };
case 5:
_label++;
y = op[1];
op = [0];
continue;
case 7:
op = _ops.pop();
continue;
default:
if (!(t = _trys, t = t.length > 0
&& t[t.length - 1] && (op[0] === 6 || op[0] === 2)))
_ = 0;
continue;
}
if (op[0] === 3 && (!t || (op[1] > t[0] && op[1] < t[3])))
_label = op[1];
break;
}
if (op[0] === 6 && _label <
t[1])
_label = t[1];
t = op;
break;
}
if (t && _label < t[2])
_label = t[2];
_ops.push(op);
break;
}
if (t[2])
_ops.pop();
_trys.pop();
continue;
}
op =
body.call(thisArg, _);
}
catch (e) {
op = [6, e];
y = 0;
}
finally {
f = t = 0;
}
if (op[0] & 5)
throw op[1];
return { value: op[0] ? op[1] : void 0, done: true };
}
}
var __createBinding = Object.create ? (function
(o, m, k, k2) {
if (k2 === undefined)
k2 = k;
Object.defineProperty(o, k2, { enumerable: true,
get: function () { return m[k]; } });
})(o, m, k, k2) : (function (o, m, k, k2) {
if (k2 === undefined)
k2 = k;
o[k2] = m[k];
});
function __exportStar(m, exports) {
for (var p in m)
if (p !== "default"
&& !exports.hasOwnProperty(p))
__createBinding(exports, m, p);
}
function __values(o) {
var s = typeof Symbol === "function" && Symbol.iterator, m = s && o[s], i = 0;
if (m)
return
m.call(o);
if (o && typeof o.length === "number")
return {
next: function () {
if (o && i >= o.length)
o = void 0;
return { value: o && o[i++], done: !o };
}
};
throw new TypeError(s ? "Object is not iterable." : "Symbol.iterator is not defined.");
}
function __read(o, n) {
var m = typeof Symbol === "function" && o[Symbol.iterator];
if (!m)
return o;
var i = m.call(o), r, ar = [], e;
try {
while ((n === void 0 || n-- > 0) && !(r =
i.next()).done)
ar.push(r.value);
}
catch (error) {
e = { error: error };
}
finally {
try {
if (r && !r.done && (m = i["return"]))
m.call(i);
}
}
}
if (e)
throw e.error;
return ar;
}
function
__spread() {
for (var ar = [], i = 0; i < arguments.length; i++)
ar = ar.concat(__read(arguments[i]));
return ar;
}
function __spreadArrays() {
for (var s = 0, i = 0, il = arguments.length; i < il; i++)
s += arguments[i].length;
for (var r = Array(s), k = 0, i = 0; i < il; i++)
for (var a = arguments[i], j
= 0, jl = a.length; j < jl; j++, k++)
r[k] = a[j];
return r;
}
function __await(v) {
return this instanceof __await ? (this.v = v, this) : new __await(v);
}
function __asyncGenerator(thisArg,
_arguments, generator) {
if (!Symbol.asyncIterator)
throw new TypeError("Symbol.asyncIterator is
not defined.");
var g = generator.apply(thisArg, _arguments || []), i, q = [];
return i = { }, verb("next"),
verb("throw"), verb("return"), i[Symbol.asyncIterator] = function () { return this; }, i;
function verb(n) {
if (g[n])
i[n] = function (v) { return new Promise(function (a, b) { q.push([n, v, a, b]) > 1 || resume(n, v); }); };
}
function resume(n, v) {
try {
step(g[n](v));
}
catch (e) {
settle(q[0][3], e);
}
}
function step(r) {
r.value instanceof __await ? Promise.resolve(r.value.v).then(fulfill, reject) :
settle(q[0][2], r);
}
function fulfill(value) {
resume("next", value);
}
function reject(value) {
}
}

```

```

resume("throw", value); }
function settle(f, v) { if (f(v), q.shift(), q.length) resume(q[0][0], q[0][1]);
}
function __asyncDelegator(o) {
 var i, p;
 return i = {}, verb("next"), verb("throw"),
 function (e) { throw e; }, verb("return"), i[Symbol.iterator] = function () { return this; }, i;
 function verb(n, f) { i[n] = o[n] ? function (v) { return (p = !p) ? { value: __await(o[n](v)), done: n === "return" } : f ? f(v) : v; } : f; }
}
function __asyncValues(o) {
 if (!Symbol.asyncIterator) throw new
 TypeError("Symbol.asyncIterator is not defined.");
 var m = o[Symbol.asyncIterator], i;
 return m ?
 m.call(o) : (o = typeof __values === "function" ? __values(o) : o[Symbol.iterator](), i = {}, verb("next"),
 verb("throw"), verb("return"), i[Symbol.asyncIterator] = function () { return this; }, i);
 function verb(n) {
 i[n] = o[n] && function (v) { return new Promise(function (resolve, reject) { v = o[n](v), settle(resolve, reject,
 v.done, v.value); }); });
 }
 function settle(resolve, reject, d, v) { Promise.resolve(v).then(function (v) {
 resolve({ value: v, done: d }); }, reject); }
}
function __makeTemplateObject(cooked, raw) {
 if
 (Object.defineProperty) {
 Object.defineProperty(cooked, "raw", { value: raw });
 }
 else {
 cooked.raw = raw;
 }
 return cooked;
}
var __setModuleDefault = Object.create ?
(function (o, v) {
 Object.defineProperty(o, "default", { enumerable: true, value: v });
}) : function (o, v) {
 o["default"] = v;
};
function __importStar(mod) {
 if (mod && mod.__esModule)
 return mod;
 var result = {};
 if (mod != null)
 for (var k in mod)
 if
 (Object.hasOwnProperty.call(mod, k))
 __createBinding(result, mod, k);
 __setModuleDefault(result, mod);
 return result;
}
function __importDefault(mod) {
 return (mod
 && mod.__esModule) ? mod : { default: mod };
}
function __classPrivateFieldGet(receiver, privateMap) {
 if (!privateMap.has(receiver))
 throw new TypeError("attempted to get private field on non-
 instance");
 return privateMap.get(receiver);
}
function __classPrivateFieldSet(receiver, privateMap, value) {
 if (!privateMap.has(receiver))
 throw new TypeError("attempted to set private
 field on non-instance");
 privateMap.set(receiver, value);
 return value;
}
/**
 *
 * Provides DOM operations in any browser environment.
 *
 * @security Tread carefully! Interacting with the
 DOM directly is dangerous and
 * can introduce XSS risks.
 */
var GenericBrowserDomAdapter = /**
 @class */ (function (_super) {
 __extends(GenericBrowserDomAdapter, _super);
 function
 GenericBrowserDomAdapter() {
 return _super.call(this) || this;
 }
 GenericBrowserDomAdapter.prototype.supportsDOMEvents = function () {
 return true;
 };
 return
 GenericBrowserDomAdapter;
})(common.DomAdapter);
var 0 = function () {
 if
 (i0.global['Node'])
 return i0.global['Node'].prototype.contains || function (node) {
 return
 !(this.compareDocumentPosition(node) & 16);
 };
 return
 undefined;
};
var
nodeContains = (0)();
/**
 * A `DomAdapter` powered by full browser DOM APIs.
 *
 * @security
 Tread carefully! Interacting with the DOM directly is dangerous and
 * can introduce XSS risks.
 */
/*
 tslint:disable:requireParameterType no-console
 */
var BrowserDomAdapter = /**
 @class */ (function (_super) {
 __extends(BrowserDomAdapter, _super);
 function
 BrowserDomAdapter() {
 return _super
 !== null && _super.apply(this, arguments) || this;
 }
 BrowserDomAdapter.makeCurrent = function () {
 common.setRootDomAdapter(new BrowserDomAdapter());
 };
 BrowserDomAdapter.prototype.getProperty = function (el, name) {
 return
 el[name];
 };
 BrowserDomAdapter.prototype.log = function (error) {
 if
 (window.console) {
 window.console.log && window.console.log(error);
 }
 };
 BrowserDomAdapter.prototype.logGroup = function (error) {
 if
 (window.console) {
 window.console.group && window.console.group(error);
 }
 };
 BrowserDomAdapter.prototype.logGroupEnd = function () {
 if
 (window.console) {
 window.console.groupEnd && window.console.groupEnd();
 }
 };
 BrowserDomAdapter.prototype.onAndCancel = function (el, evt, listener) {
 el.addEventListener(evt,
 listener, false);
 // Needed to follow Dart's subscription semantic, until fix of
 https://code.google.com/p/dart/issues/detail?id=17406
 return
 function () {
 el.removeEventListener(evt, listener, false);
 };
 };
}

```

```

BrowserDomAdapter.prototype.dispatchEvent = function (el, evt) {\n el.dispatchEvent(evt);\n };\n
BrowserDomAdapter.prototype.remove = function (node) {\n if (node.parentNode) {\n node.parentNode.removeChild(node);\n }\n return node;\n };\n
BrowserDomAdapter.prototype.getValue = function (el) {\n return el.value;\n };\n
BrowserDomAdapter.prototype.createElement = function (tagName, doc) {\n doc = doc ||\n this.getDefaultDocument();\n return doc.createElement(tagName);\n };\n
BrowserDomAdapter.prototype.createHtmlDocument = function () {\n return\n document.implementation.createHTMLDocument('fakeTitle');\n };\n
BrowserDomAdapter.prototype.getDefaultDocument = function () {\n return document;\n };\n
BrowserDomAdapter.prototype.isElementNode = function (node) {\n return node.nodeType ===\n Node.ELEMENT_NODE;\n };\n
BrowserDomAdapter.prototype.isShadowRoot = function (node) {\n return node instanceof DocumentFragment;\n };\n
BrowserDomAdapter.prototype.getGlobalEventTarget =\nfunction (doc, target) {\n if (target === 'window') {\n return window;\n }\n if (target\n === 'document') {\n return doc;\n }\n if (target === 'body') {\n return doc.body;\n }\n return null;\n };\n
BrowserDomAdapter.prototype.getHistory = function () {\n return\n window.history;\n };\n
BrowserDomAdapter.prototype.getLocation = function () {\n return\n window.location;\n };\n
BrowserDomAdapter.prototype.getBaseHref = function (doc) {\n var href =\n getBaseElementHref();\n return href == null ? null : relativePath(href);\n };\n
BrowserDomAdapter.prototype.resetBaseElement = function () {\n baseElement = null;\n };\n
BrowserDomAdapter.prototype.getUserAgent = function () {\n return window.navigator.userAgent;\n };\n
BrowserDomAdapter.prototype.performanceNow = function () {\n // performance.now() is not\n available in all browsers, see\n // http://caniuse.com/#search=performance.now\n return\n window.performance && window.performance.now ? window.performance.now() :\n new\n Date().getTime();\n };\n
BrowserDomAdapter.prototype.supportsCookies = function () {\n return\n true;\n };\n
BrowserDomAdapter.prototype.getCookie = function (name) {\n return\n common.parseCookieValue(document.cookie, name);\n };\n
return BrowserDomAdapter;\n\n})(GenericBrowserDomAdapter);\n
var baseElement = null;\n
function getBaseElementHref() {\n if\n (!baseElement) {\n baseElement = document.querySelector('base');\n if (!baseElement) {\n return null;\n }\n }\n return baseElement.getAttribute('href');\n } // based on urlUtils.js in\n AngularJS\n
var urlParsingNode;\n
function relativePath(url) {\n if (!urlParsingNode) {\n urlParsingNode = document.createElement('a');\n }\n urlParsingNode.setAttribute('href', url);\n return\n (urlParsingNode.pathname.charAt(0) === '/') ? urlParsingNode.pathname :\n '/' +\n urlParsingNode.pathname;\n }\n
/**\n * @license\n * Copyright Google LLC All Rights Reserved.\n * Use of this source code is governed by an MIT-style license that can be\n * found in the LICENSE file at\n https://angular.io/license\n */\n
An id that identifies a particular application being bootstrapped, that\n should\n * match across the client/server boundary.\n
var TRANSITION_ID = new\n i0.InjectionToken('TRANSITION_ID');\n
function appInitializerFactory(transitionId, document, injector) {\n return\n function () {\n // Wait for all application initializers to be completed before removing the styles set\n by\n // the server.\n injector.get(i0.ApplicationInitStatus).donePromise.then(function () {\n var dom = common.getDOM();\n var styles =\n Array.prototype.slice.apply(document.querySelectorAll('style[ng-transition]'));\n styles.filter(function\n (el) {\n return el.getAttribute('ng-transition') === transitionId;\n })\n .forEach(function (el) {\n return\n dom.remove(el);\n });\n });\n }\n };\n
var SERVER_TRANSITION_PROVIDERS = [\n {\n provide: i0.APP_INITIALIZER,\n useFactory: appInitializerFactory,\n deps: [TRANSITION_ID,\n common.DOCUMENT, i0.Injector],\n multi: true\n },\n];\n
/**\n * @license\n * Copyright\n Google LLC All Rights Reserved.\n * Use of this source code is governed by an MIT-style license that can\n be\n * found in the LICENSE file at\n https://angular.io/license\n */\n
var BrowserGetTestability = /** @class\n */\n(function () {\n function BrowserGetTestability() {\n }\n BrowserGetTestability.init = function () {\n

```

```

 i0.setTestabilityGetter(new BrowserGetTestability());\n };\n
BrowserGetTestability.prototype.addToWindow = function (registry) {\n i0.global['getAngularTestability'] =\nfunction (elem, findInAncestors) {\n if (findInAncestors === void 0) { findInAncestors = true; }\nvar testability = registry.findTestabilityInTree(elem, findInAncestors);\n if (testability == null) {\n throw new Error('Could not find testability for element.);\n }\n return testability;\n };\n i0.global['getAllAngularTestabilities'] = function () { return registry.getAllTestabilities(); };\n
i0.global['getAllAngularRootElement'] = function () { return registry.getAllRootElement(); };\n var\nwhenAllStable = function (callback /** TODO #9100 */) {\n var testabilities =\ni0.global['getAllAngularTestabilities']();\n var count = testabilities.length;\n var didWork =\false;\n var decrement = function (didWork_ /** TODO #9100 */) {\n didWork = didWork ||\didWork_;\n count--;\n if (count == 0) {\n callback(didWork);\n }\n };\n testabilities.forEach(function (testability /** TODO #9100 */) {\n testability.whenStable(decrement);\n });\n if (!i0.global['frameworkStabilizers']) {\n i0.global['frameworkStabilizers'] = [];\n }\n i0.global['frameworkStabilizers'].push(whenAllStable);\n };\n
BrowserGetTestability.prototype.findTestabilityInTree = function (registry, elem, findInAncestors) {\n if\n(elem == null) {\n return null;\n }\n var t = registry.getTestability(elem);\n if (t !=\null) {\n return t;\n }\n else if (!findInAncestors) {\n return null;\n }\n if (common.getDOM().isShadowRoot(elem)) {\n return this.findTestabilityInTree(registry, elem.host,\true);\n }\n return this.findTestabilityInTree(registry, elem.parentElement, true);\n };\n return\nBrowserGetTestability;\n });\n\n /**\n * @license\n * Copyright Google LLC All Rights Reserved.\n *\n * Use of this source code is governed by an MIT-style license that can be\n * found in the LICENSE file at\nhttps://angular.io/license\n *\n var CAMEL_CASE_REGEXP = /([A-Z])/g;\n var DASH_CASE_REGEXP =\n/-([a-z])/g;\n function camelCaseToDashCase(input) {\n return input.replace(CAMEL_CASE_REGEXP,\nfunction () {\n var m = [];\n for (var _i = 0; _i < arguments.length; _i++) {\n m[_i] =\narguments[_i];\n }\n return '-' + m[1].toLowerCase();\n });\n }\n function\ndashCaseToCamelCase(input) {\n return input.replace(DASH_CASE_REGEXP, function () {\n var m =\n[];\n for (var _i = 0; _i < arguments.length; _i++) {\n m[_i] = arguments[_i];\n }\n return m[1].toUpperCase();\n });\n }\n\n /**\n * Exports the value under a given `name` in the global\nproperty `ng`. For example `ng.probe` if\n * `name` is `probe`.\n * @param name Name under which it will be\nexported. Keep in mind this will be a property of the\n * global `ng` object.\n * @param value The value to\nexport.\n *\n function exportNgVar(name, value) {\n if (typeof COMPILED === 'undefined' ||\n!COMPILED) {\n // Note: we can't export `ng` when using closure enhanced optimization as:\n // -\nclosure declares globals itself for minified names, which sometimes clobber our `ng` global\n // - we can't\ndeclare a closure extern as the namespace `ng` is already used within Google\n // for typings for angularJS\n(via `goog.provide('ng...')`).\n var ng = i0.global['ng'] = i0.global['ng'] || {};\n ng[name] = value;\n }\n }\n\n /**\n * @license\n * Copyright Google LLC All Rights Reserved.\n *\n * Use of this source\ncode is governed by an MIT-style license that can be\n * found in the LICENSE file at https://angular.io/license\n *\n var 0$1 = function () { return ({\n 'ApplicationRef': i0.ApplicationRef,\n 'NgZone': i0.NgZone,\n}); };\n var CORE_TOKENS = (0$1)();\n var INSPECT_GLOBAL_NAME = 'probe';\n var\nCORE_TOKENS_GLOBAL_NAME = 'coreTokens';\n /**\n * Returns a {@link DebugElement} for the given\nnative DOM element, or\n * null if the given native element does not have an Angular view associated\n * with\nit.\n *\n function inspectNativeElementR2(element) {\n return i0.getDebugNodeR2(element);\n }\n\n function _createNgProbeR2(coreTokens) {\n exportNgVar(INSPECT_GLOBAL_NAME,\ninspectNativeElementR2);\n exportNgVar(CORE_TOKENS_GLOBAL_NAME,\nObject.assign(Object.assign({}, CORE_TOKENS), _ngProbeTokensToMap(coreTokens || [])));\n return\nfunction () { return inspectNativeElementR2; };\n }\n\n function _ngProbeTokensToMap(tokens) {\n return\ntokens.reduce(function (prev, t) { return (prev[t.name] = t.token, prev); }, {});\n }\n\n /**\n * In Ivy, we don't

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support NgProbe because we have our own set of testing utilities\n * with more robust functionality.\n *\n *
We shouldn't bring in NgProbe because it prevents DebugNode and friends from\n * tree-shaking properly.\n
*/\n var ELEMENT_PROBE_PROVIDERS__POST_R3__ = [];\n /**\n * Providers which support debugging
Angular applications (e.g. via `ng.probe`).\n *\n var ELEMENT_PROBE_PROVIDERS__PRE_R3__ = [\n
{\n provide: i0.APP_INITIALIZER,\n useFactory: _createNgProbe2,\n deps: [\n
[i0.NgProbeToken, new i0.Optional()],\n],\n multi: true,\n },\n];\n var
ELEMENT_PROBE_PROVIDERS = ELEMENT_PROBE_PROVIDERS__PRE_R3__;\n\n /**\n *
@license\n * Copyright Google LLC All Rights Reserved.\n *\n * Use of this source code is governed by an
MIT-style license that can be\n * found in the LICENSE file at https://angular.io/license\n */\n *\n * The
injection token for the event-manager plug-in service.\n *\n * @publicApi\n */\n var
EVENT_MANAGER_PLUGINS = new i0.InjectionToken('EventManagerPlugins');\n /**\n * An injectable
service that provides event management for Angular\n * through a browser plug-in.\n *\n * @publicApi\n
*/\n var EventManager = /** @class */ (function () {\n /**\n * Initializes an instance of the event-
manager service.\n *\n * function EventManager(plugins, _zone) {\n var _this = this;\n
this._zone = _zone;\n this._eventNameToPlugin = new Map();\n plugins.forEach(function (p) { return
p.manager = _this; });\n this._plugins = plugins.slice().reverse();\n }\n /**\n * Registers a
handler for a specific element and event.\n *\n * @param element The HTML element to receive event
notifications.\n * @param eventName The name of the event to listen for.\n * @param handler A function
to call when the notification occurs. Receives the\n * event object as an argument.\n * @returns A
callback function that can be used to remove the handler.\n *\n EventManager.prototype.addEventListener
= function (element, eventName, handler) {\n var plugin = this._findPluginFor(eventName);\n return
plugin.addEventListener(element, eventName, handler);\n };\n /**\n * Registers a global handler for
an event in a target view.\n *\n * @param target A target for global event notifications. One of
`"window"`, `"document"`, or `"body"`.\n * @param eventName The name of the event to listen for.\n *
@param handler A function to call when the notification occurs. Receives the\n * event object as an
argument.\n * @returns A callback function that can be used to remove the handler.\n *\n EventManager.prototype.addGlobalEventListener = function (target, eventName, handler) {\n var plugin =
this._findPluginFor(eventName);\n return plugin.addGlobalEventListener(target, eventName, handler);\n
};\n /**\n * Retrieves the compilation zone in which event listeners are registered.\n *\n EventManager.prototype.getZone = function () {\n return this._zone;\n };\n /** @internal */\n
EventManager.prototype._findPluginFor = function (eventName) {\n var plugin =
this._eventNameToPlugin.get(eventName);\n if (plugin) {\n return plugin;\n }\n var
plugins = this._plugins;\n for (var i = 0; i < plugins.length; i++) {\n var plugin_1 = plugins[i];\n
if (plugin_1.supports(eventName)) {\n this._eventNameToPlugin.set(eventName, plugin_1);\n
return plugin_1;\n }\n }\n throw new Error("No event manager plugin found for event
\"" + eventName);\n };\n return EventManager;\n }());\n EventManager.decorators = [\n { type:
i0.Injectable }\n];\n EventManager.ctorParameters = function () { return [\n { type: Array, decorators: [{
type: i0.Inject, args: [EVENT_MANAGER_PLUGINS,] }] },\n { type: i0.NgZone }\n];\n };\n var
EventManagerPlugin = /** @class */ (function () {\n function EventManagerPlugin(_doc) {\n this._doc
= _doc;\n }\n EventManagerPlugin.prototype.addGlobalEventListener = function (element, eventName,
handler) {\n var target = common.getDOM().getGlobalEventTarget(this._doc, element);\n if (!target)
{\n throw new Error("Unsupported event target \"" + target + "\" for event \"" + eventName);\n }\n
return this.addEventListener(target, eventName, handler);\n };\n return EventManagerPlugin;\n
}());\n var SharedStylesHost = /** @class */ (function () {\n function SharedStylesHost() {\n /**
@internal */\n this._stylesSet = new Set();\n }\n SharedStylesHost.prototype.addStyles = function
(styles) {\n var _this = this;\n var additions = new Set();\n styles.forEach(function (style) {\n
if (!_this._stylesSet.has(style)) {\n _this._stylesSet.add(style);\n additions.add(style);\n
}\n });\n this.onStylesAdded(additions);\n };\n

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SharedStylesHost.prototype.onStylesAdded = function (additions) { };
SharedStylesHost.prototype.getAllStyles = function () {
 return Array.from(this._stylesSet);
};
return SharedStylesHost;
});
SharedStylesHost.decorators = [
 { type: i0.Injectable }
];
var DomSharedStylesHost = /** @class */ (function (_super) {
 __extends(DomSharedStylesHost, _super);
 function DomSharedStylesHost(_doc) {
 var _this = _super.call(this) || this;
 _this._doc = _doc;
 _this._hostNodes = new Set();
 _this._styleNodes = new Set();
 _this._hostNodes.add(_doc.head);
 return _this;
 }
 DomSharedStylesHost.prototype._addStylesToHost = function (styles, host) {
 var _this = this;
 styles.forEach(function (style) {
 var styleEl = _this._doc.createElement('style');
 styleEl.textContent = style;
 _this._styleNodes.add(host.appendChild(styleEl));
 });
 };
 DomSharedStylesHost.prototype.addHost = function (hostNode) {
 this._addStylesToHost(this._stylesSet, hostNode);
 this._hostNodes.add(hostNode);
 };
 DomSharedStylesHost.prototype.removeHost = function (hostNode) {
 this._hostNodes.delete(hostNode);
 };
 DomSharedStylesHost.prototype.onStylesAdded = function (additions) {
 var _this = this;
 this._hostNodes.forEach(function (hostNode) {
 return _this._addStylesToHost(additions, hostNode);
 });
 };
 DomSharedStylesHost.prototype.ngOnDestroy = function () {
 this._styleNodes.forEach(function (styleNode) {
 return common.getDOM().remove(styleNode);
 });
 return DomSharedStylesHost;
 };
 DomSharedStylesHost.decorators = [
 { type: i0.Injectable }
];
 DomSharedStylesHost.ctorParameters = function () {
 return [
 { type: undefined, decorators: [
 { type: i0.Inject, args: [common.DOCUMENT,] }
]
 };
];
 var NAMESPACE_URI = {
 'svg': 'http://www.w3.org/2000/svg',
 'xhtml': 'http://www.w3.org/1999/xhtml',
 'xlink': 'http://www.w3.org/1999/xlink',
 'xml': 'http://www.w3.org/XML/1998/namespace',
 'xmlns': 'http://www.w3.org/2000/xmlns/'
 };
 var COMPONENT_REGEX = /%COMP%/g;
 var NG_DEV_MODE = typeof ngDevMode === 'undefined' || !ngDevMode;
 var COMPONENT_VARIABLE = '%COMP%';
 var HOST_ATTR = "_ngghost-" + COMPONENT_VARIABLE;
 var CONTENT_ATTR = "_ngcontent-" + COMPONENT_VARIABLE;
 function shimContentAttribute(componentShortId) {
 return CONTENT_ATTR.replace(COMPONENT_REGEX, componentShortId);
 }
 function shimHostAttribute(componentShortId) {
 return HOST_ATTR.replace(COMPONENT_REGEX, componentShortId);
 }
 function flattenStyles(compId, styles, target) {
 for (var i = 0; i < styles.length; i++) {
 var style = styles[i];
 if (Array.isArray(style)) {
 flattenStyles(compId, style, target);
 } else {
 style = style.replace(COMPONENT_REGEX, compId);
 target.push(style);
 }
 }
 return target;
 }
 function decoratePreventDefault(eventHandler) {
 // `DebugNode.triggerEventHandler` needs to know if the listener was created with
 // decoratePreventDefault or is a listener added outside the Angular context so it can handle the
 // two differently. In the first case, the special `__ngUnwrap__` token is passed to the unwrap
 // the listener (see below).
 // Ivy uses `__ngUnwrap__` as a special token that allows us to
 // so that it can be invoked programmatically by `DebugNode.triggerEventHandler`.
 // The debug_node
 // can inspect the listener toString contents for the existence of this special token.
 // Because
 // the token is a string literal, it is ensured to not be modified by compiled code.
 if (event === '__ngUnwrap__') {
 return eventHandler;
 }
 var allowDefaultBehavior = eventHandler(event);
 if (allowDefaultBehavior === false) {
 // TODO(tbosch): move preventDefault into event plugins...
 event.preventDefault();
 event.returnValue = false;
 }
 return undefined;
 };
 var hasLoggedNativeEncapsulationWarning = false;
 var DomRendererFactory2 = /** @class */ (function () {
 function DomRendererFactory2(eventManager, sharedStylesHost, appId) {
 this.eventManager = eventManager;
 this.sharedStylesHost = sharedStylesHost;
 this.appId = appId;
 this.rendererByCompId = new Map();
 this.defaultRenderer = new DefaultDomRenderer2(eventManager);
 }
 DomRendererFactory2.prototype.createRenderer = function (element, type) {
 if (!element || !type) {
 return null;
 }
 }
 });

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 return this.defaultRenderer;\n }\n switch (type.encapsulation) {\n case
i0.ViewEncapsulation.Emulated: {\n var renderer = this.rendererByCompId.get(type.id);\n if
(!renderer) {\n renderer = new EmulatedEncapsulationDomRenderer2(this.eventManager,
this.sharedStylesHost, type, this.appId);\n this.rendererByCompId.set(type.id, renderer);\n
}\n renderer.applyToHost(element);\n return renderer;\n }\n case 1:\n case i0.ViewEncapsulation.ShadowDom:\n // TODO(FW-2290): remove the `case 1:` fallback logic
and the warning in v12.\n if ((typeof ngDevMode === 'undefined' || ngDevMode) &&\n
!hasLoggedNativeEncapsulationWarning && type.encapsulation === 1) {\n
hasLoggedNativeEncapsulationWarning = true;\n console.warn('ViewEncapsulation.Native is no
longer supported. Falling back to ViewEncapsulation.ShadowDom. The fallback will be removed in v12.);\n
}\n return new ShadowDomRenderer(this.eventManager, this.sharedStylesHost, element, type);\n
 default: {\n if (!this.rendererByCompId.has(type.id)) {\n var styles =
flattenStyles(type.id, type.styles, []);\n this.sharedStylesHost.addStyles(styles);\n
this.rendererByCompId.set(type.id, this.defaultRenderer);\n }\n return
this.defaultRenderer;\n }\n }\n};\n DomRendererFactory2.prototype.begin = function () {\n
};\n DomRendererFactory2.prototype.end = function () {\n return DomRendererFactory2;\n });\n
DomRendererFactory2.decorators = [\n { type: i0.Injectable }\n];\n DomRendererFactory2.ctorParameters
= function () { return [\n { type: EventManager },\n { type: DomSharedStylesHost },\n { type: String,
decorators: [{ type: i0.Inject, args: [i0.APP_ID,] }] }\n];\n};\n var DefaultDomRenderer2 = /** @class */
(function () {\n function DefaultDomRenderer2(eventManager) {\n this.eventManager =
eventManager;\n this.data = Object.create(null);\n }\n DefaultDomRenderer2.prototype.destroy =
function () {\n};\n DefaultDomRenderer2.prototype.createElement = function (name, namespace) {\n if
(namespace) {\n // In cases where Ivy (not ViewEngine) is giving us the actual namespace, the look up by
key\n // will result in undefined, so we just return the namespace here.\n return
document.createElementNS(NAMESPACE_URIS[namespace] || namespace, name);\n }\n return
document.createElement(name);\n }\n DefaultDomRenderer2.prototype.createComment = function (value) {\n
return document.createComment(value);\n }\n DefaultDomRenderer2.prototype.createText =
function (value) {\n return document.createTextNode(value);\n }\n DefaultDomRenderer2.prototype.appendChild = function (parent, newChild) {\n
parent.appendChild(newChild);\n }\n DefaultDomRenderer2.prototype.insertBefore = function (parent,
newChild, refChild) {\n if (parent) {\n parent.insertBefore(newChild, refChild);\n }\n
}\n DefaultDomRenderer2.prototype.removeChild = function (parent, oldChild) {\n if (parent) {\n
parent.removeChild(oldChild);\n }\n }\n DefaultDomRenderer2.prototype.selectRootElement =
function (selectorOrNode, preserveContent) {\n var el = typeof selectorOrNode === 'string' ?
document.querySelector(selectorOrNode) : selectorOrNode;\n if (!el) {\n throw new
Error("The selector '\\\\\\" + selectorOrNode + "\\\" did not match any elements");\n }\n if
(!preserveContent) {\n el.textContent = "";\n }\n return el;\n }\n DefaultDomRenderer2.prototype.parentNode = function (node) {\n return node.parentNode;\n }\n
DefaultDomRenderer2.prototype.nextSibling = function (node) {\n return node.nextSibling;\n }\n
DefaultDomRenderer2.prototype.setAttribute = function (el, name, value, namespace) {\n if (namespace) {\n
name = namespace + ':' + name;\n // TODO(FW-811): Ivy may cause issues here because it's
passing around\n // full URIs for namespaces, therefore this lookup will fail.\n var namespaceUri
= NAMESPACE_URIS[namespace];\n if (namespaceUri) {\n el.setAttributeNS(namespaceUri,
name, value);\n }\n }\n else {\n el.setAttribute(name, value);\n }\n
}\n else {\n el.setAttribute(name, value);\n }\n }\n DefaultDomRenderer2.prototype.removeAttribute = function (el, name, namespace) {\n if (namespace) {\n
// TODO(FW-811): Ivy may cause issues here because it's passing around\n // full URIs for
namespaces, therefore this lookup will fail.\n var namespaceUri = NAMESPACE_URIS[namespace];\n

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 if (namespaceUri) {\n el.removeAttributeNS(namespaceUri, name);\n }\n else\n {\n // TODO(FW-811): Since ivy is passing around full URIs for namespaces\n // this could\n result in properties like `http://www.w3.org/2000/svg:cx="123"`,\n // which is wrong.\n el.removeAttribute(namespace + ":" + name);\n }\n else {\n el.removeAttribute(name);\n }\n }; \n DefaultDomRenderer2.prototype.addClass = function (el,\n name) {\n el.classList.add(name);\n }; \n DefaultDomRenderer2.prototype.removeClass = function\n (el, name) {\n el.classList.remove(name);\n }; \n DefaultDomRenderer2.prototype.setStyle = function\n (el, style, value, flags) {\n if (flags & (i0.RendererStyleFlags2.DashCase | i0.RendererStyleFlags2.Important))\n {\n el.style.setProperty(style, value, flags & i0.RendererStyleFlags2.Important ? 'important' : '');\n }\n else {\n el.style[style] = value;\n }\n }; \n DefaultDomRenderer2.prototype.removeStyle = function (el, style, flags) {\n if (flags &\n i0.RendererStyleFlags2.DashCase) {\n el.style.removeProperty(style);\n }\n else {\n // IE requires " instead of null\n // see https://github.com/angular/angular/issues/7916\n el.style[style] = "";\n }\n }; \n DefaultDomRenderer2.prototype.setProperty = function (el, name,\n value) {\n NG_DEV_MODE && checkNoSyntheticProp(name, 'property');\n el[name] = value;\n }; \n DefaultDomRenderer2.prototype.setValue = function (node, value) {\n node.nodeValue = value;\n }; \n DefaultDomRenderer2.prototype.listen = function (target, event, callback) {\n NG_DEV_MODE\n && checkNoSyntheticProp(event, 'listener');\n if (typeof target === 'string') {\n return\n this.eventManager.addGlobalEventListener(target, event, decoratePreventDefault(callback));\n }\n return this.eventManager.addEventListener(target, event, decoratePreventDefault(callback));\n }; \n return\n DefaultDomRenderer2;\n });\n var $2 = function () { return '@'.charCodeAt(0); }; \n var AT_CHARCODE\n = ($2)();\n function checkNoSyntheticProp(name, nameKind) {\n if (name.charCodeAt(0) ===\n AT_CHARCODE) {\n throw new Error("Found the synthetic '" + nameKind + "' + name + "'. Please\n include either \"\"BrowserAnimationsModule\"\" or \"\"NoopAnimationsModule\"\" in your application.");\n }\n }\n var EmulatedEncapsulationDomRenderer2 = /** @class */ (function (_super) {\n __extends(EmulatedEncapsulationDomRenderer2, _super);\n function\n EmulatedEncapsulationDomRenderer2(eventManager, sharedStylesHost, component, appId) {\n var _this =\n _super.call(this, eventManager) || this;\n _this.component = component;\n var styles =\n flattenStyles(appId + '-' + component.id, component.styles, []);\n sharedStylesHost.addStyles(styles);\n _this.contentAttr = shimContentAttribute(appId + '-' + component.id);\n _this.hostAttr =\n shimHostAttribute(appId + '-' + component.id);\n return _this;\n }\n EmulatedEncapsulationDomRenderer2.prototype.applyToHost = function (element) {\n _super.prototype.setAttribute.call(this, element, this.hostAttr, "");\n }; \n EmulatedEncapsulationDomRenderer2.prototype.createElement = function (parent, name) {\n var el =\n _super.prototype.createElement.call(this, parent, name);\n _super.prototype.setAttribute.call(this, el,\n this.contentAttr, "");\n return el;\n }; \n return EmulatedEncapsulationDomRenderer2;\n }(DefaultDomRenderer2));\n var ShadowDomRenderer = /** @class */ (function (_super) {\n __extends(ShadowDomRenderer, _super);\n function ShadowDomRenderer(eventManager, sharedStylesHost,\n hostEl, component) {\n var _this = _super.call(this, eventManager) || this;\n _this.sharedStylesHost =\n sharedStylesHost;\n _this.hostEl = hostEl;\n _this.shadowRoot = hostEl.attachShadow({ mode: 'open'\n });\n _this.sharedStylesHost.addHost(_this.shadowRoot);\n var styles = flattenStyles(component.id,\n component.styles, []);\n for (var i = 0; i < styles.length; i++) {\n var styleEl =\n document.createElement('style');\n styleEl.textContent = styles[i];\n _this.shadowRoot.appendChild(styleEl);\n }\n return _this;\n }\n ShadowDomRenderer.prototype.nodeOrShadowRoot = function (node) {\n return node === this.hostEl ?\n this.shadowRoot : node;\n }; \n ShadowDomRenderer.prototype.destroy = function () {\n this.sharedStylesHost.removeHost(this.shadowRoot);\n }; \n ShadowDomRenderer.prototype.appendChild\n = function (parent, newChild) {\n return _super.prototype.appendChild.call(this,\n
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this.nodeOrShadowRoot(parent, newChild);\n });\n ShadowDomRenderer.prototype.insertBefore =
function (parent, newChild, refChild) {\n return _super.prototype.insertBefore.call(this,
this.nodeOrShadowRoot(parent, newChild, refChild);\n });\n ShadowDomRenderer.prototype.removeChild
= function (parent, oldChild) {\n return _super.prototype.removeChild.call(this,
this.nodeOrShadowRoot(parent, oldChild);\n });\n ShadowDomRenderer.prototype.parentNode = function
(node) {\n return this.nodeOrShadowRoot(_super.prototype.parentNode.call(this,
this.nodeOrShadowRoot(node)));\n });\n return ShadowDomRenderer;\n }(DefaultDomRenderer2));\n\nvar DomEventsPlugin = /** @class */ (function (_super) {\n __extends(DomEventsPlugin, _super);\n function DomEventsPlugin(doc) {\n return _super.call(this, doc) || this;\n }\n // This plugin should
come last in the list of plugins, because it accepts all\n // events.\n DomEventsPlugin.prototype.supports =
function (eventName) {\n return true;\n };\n DomEventsPlugin.prototype.addEventListener =
function (element, eventName, handler) {\n var _this = this;\n element.addEventListener(eventName,
handler, false);\n return function () { return _this.removeEventListener(element, eventName, handler); };\n };\n DomEventsPlugin.prototype.removeEventListener = function (target, eventName, callback) {\n
return target.removeEventListener(eventName, callback);\n };\n return DomEventsPlugin;\n
}(EventManagerPlugin));\n DomEventsPlugin.decorators = [\n { type: i0.Injectable }\n];\n DomEventsPlugin.ctorParameters = function () { return [\n { type: undefined, decorators: [{ type: i0.Inject,
args: [common.DOCUMENT,] }] }\n];\n }\n\n /**\n * Supported HammerJS recognizer event names.\n */\n var EVENT_NAMES = {\n // pan\n 'pan': true,\n 'panstart': true,\n 'panmove': true,\n 'panend': true,\n 'pancancel': true,\n 'panleft': true,\n 'panright': true,\n 'panup': true,\n 'pandown': true,\n // pinch\n 'pinch': true,\n 'pinchstart': true,\n 'pinchmove': true,\n 'pinchend':
true,\n 'pinchcancel': true,\n 'pinchin': true,\n 'pinchout': true,\n // press\n 'press': true,\n 'pressup': true,\n // rotate\n 'rotate': true,\n 'rotatestart': true,\n 'rotatemove': true,\n 'rotateend':
true,\n 'rotatecancel': true,\n // swipe\n 'swipe': true,\n 'swipeleft': true,\n 'swiperight': true,\n 'swipeup': true,\n 'swipedown': true,\n // tap\n 'tap': true,\n };\n\n /**\n * DI token for providing
[HammerJS](http://hammerjs.github.io/) support to Angular.\n * @see `HammerGestureConfig`\n */\n *
@ngModule HammerModule\n * @publicApi\n */\n var HAMMER_GESTURE_CONFIG = new
i0.InjectionToken('HammerGestureConfig');\n\n /**\n * Injection token used to provide a { @link
HammerLoader} to Angular.\n */\n * @publicApi\n */\n var HAMMER_LOADER = new
i0.InjectionToken('HammerLoader');\n\n /**\n * An injectable [HammerJS
Manager](http://hammerjs.github.io/api/#hammer.manager)\n * for gesture recognition. Configures specific event
recognition.\n * @publicApi\n */\n var HammerGestureConfig = /** @class */ (function () {\n function
HammerGestureConfig() {\n /**\n * A set of supported event names for gestures to be used in
Angular.\n * Angular supports all built-in recognizers, as listed in\n * [HammerJS
documentation](http://hammerjs.github.io/).\n */\n this.events = [];\n /**\n * Maps
gesture event names to a set of configuration options\n * that specify overrides to the default values for
specific properties.\n */\n * The key is a supported event name to be configured,\n * and the
options object contains a set of properties, with override values\n * to be applied to the named recognizer
event.\n * For example, to disable recognition of the rotate event, specify\n * `{"rotate":
{"enable": false}}`.\n */\n * Properties that are not present take the HammerJS default values.\n * For information about which properties are supported for which events,\n * and their allowed and default
values, see\n * [HammerJS documentation](http://hammerjs.github.io/).\n */\n *\n */\n this.overrides = {};\n }\n\n /**\n * Creates a [HammerJS
Manager](http://hammerjs.github.io/api/#hammer.manager)\n * and attaches it to a given HTML element.\n *
@param element The element that will recognize gestures.\n * @returns A HammerJS event-manager
object.\n */\n HammerGestureConfig.prototype.buildHammer = function (element) {\n var mc =
new Hammer(element, this.options);\n mc.get('pinch').set({ enable: true });\n mc.get('rotate').set({
enable: true });\n for (var eventName in this.overrides) {\n

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mc.get(eventName).set(this.overrides[eventName]);\n }\n return mc;\n });\n return
HammerGestureConfig;\n });\n HammerGestureConfig.decorators = [\n { type: i0.Injectable }\n];\n /**\n * Event plugin that adds Hammer support to an application.\n *\n * @ngModule HammerModule\n */\n var HammerGesturesPlugin = /** @class */ (function (_super) {\n __extends(HammerGesturesPlugin,\n _super);\n function HammerGesturesPlugin(doc, _config, console, loader) {\n var _this =\n _super.call(this, doc) || this;\n _this._config = _config;\n _this.console = console;\n _this.loader\n = loader;\n return _this;\n }\n HammerGesturesPlugin.prototype.supports = function (eventName)\n {\n if (!EVENT_NAMES.hasOwnProperty(eventName.toLowerCase()) &&\n !this.isCustomEvent(eventName)) {\n return false;\n }\n if (!window.Hammer &&\n !this.loader) {\n this.console.warn("The \"" + eventName + "\" event cannot be bound because\n Hammer.JS is not " +\n "\n \"loaded and no custom loader has been specified.\");\n return false;\n }\n return true;\n });\n HammerGesturesPlugin.prototype.addEventListener = function (element,\n eventName, handler) {\n var _this = this;\n var zone = this.manager.getZone();\n eventName =\n eventName.toLowerCase();\n // If Hammer is not present but a loader is specified, we defer adding the event\n listener\n // until Hammer is loaded.\n if (!window.Hammer && this.loader) {\n // This\n `addEventListener` method returns a function to remove the added listener.\n // Until Hammer is loaded,\n the returned function needs to `cancel` the registration rather\n // than remove anything.\n var\n cancelRegistration_1 = false;\n var deregister_1 = function () {\n cancelRegistration_1 =\n true;\n };\n this.loader()\n .then(function () {\n // If Hammer isn't actually\n loaded when the custom loader resolves, give up.\n if (!window.Hammer) {\n _this.console.warn("The custom HAMMER_LOADER completed, but Hammer.JS is not present.");\n deregister_1 = function () {\n return;\n };\n if (!cancelRegistration_1) {\n // Now that Hammer is loaded and the listener is being loaded for real,\n // the\n deregistration function changes from canceling registration to removal.\n deregister_1 =\n _this.addEventListener(element, eventName, handler);\n }\n })\n .catch(function ()\n {\n _this.console.warn("The \"" + eventName + "\" event cannot be bound because the custom "\n +\n "\n \"Hammer.JS loader failed.\");\n deregister_1 = function () {\n };\n });\n // Return a function that `executes` `deregister` (and not `deregister` itself) so that we\n // can change the\n behavior of `deregister` once the listener is added. Using a closure in\n // this way allows us to avoid any\n additional data structures to track listener removal.\n return function () {\n deregister_1();\n };\n }\n }\n return zone.runOutsideAngular(function () {\n // Creating the manager bind\n events, must be done outside of angular\n var mc = _this._config.buildHammer(element);\n var\n callback = function (eventObj) {\n zone.runGuarded(function () {\n handler(eventObj);\n });\n };\n mc.on(eventName, callback);\n return function () {\n mc.off(eventName, callback);\n // destroy mc to prevent memory leak\n if (typeof\n mc.destroy === 'function') {\n mc.destroy();\n }\n };\n });\n });\n HammerGesturesPlugin.prototype.isCustomEvent = function (eventName) {\n return\n this._config.events.indexOf(eventName) > -1;\n };\n return HammerGesturesPlugin;\n})(EventManagerPlugin);\n HammerGesturesPlugin.decorators = [\n { type: i0.Injectable }\n];\n HammerGesturesPlugin.ctorParameters = function () { return [\n { type: undefined, decorators: [{ type:\n i0.Inject, args: [common.DOCUMENT,] }]},\n { type: HammerGestureConfig, decorators: [{ type: i0.Inject,\n args: [HAMMER_GESTURE_CONFIG,] }]},\n { type: i0.Console },\n { type: undefined, decorators: [{\n type: i0.Optional }, { type: i0.Inject, args: [HAMMER_LOADER,] }]}\n]; }; /**\n * In Ivy, support for\n Hammer gestures is optional, so applications must\n * import the `HammerModule` at root to turn on support.\n This means that\n * Hammer-specific code can be tree-shaken away if not needed.\n */\n var\n HAMMER_PROVIDERS__POST_R3__ = [];\n /**\n * In View Engine, support for Hammer gestures is built-\n in by default.\n */\n var HAMMER_PROVIDERS__PRE_R3__ = [\n {\n provide:\n EVENT_MANAGER_PLUGINS,\n useClass: HammerGesturesPlugin,\n multi: true,\n deps:

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[common.DOCUMENT, HAMMER_GESTURE_CONFIG, i0.Console, [new i0.Optional(),
HAMMER_LOADER]]\n },\n { provide: HAMMER_GESTURE_CONFIG, useClass:
HammerGestureConfig, deps: [] },\n];\n var HAMMER_PROVIDERS =
HAMMER_PROVIDERS_PRE_R3__;\n /**\n * Adds support for HammerJS.\n * \n * Import this
module at the root of your application so that Angular can work with\n * HammerJS to detect gesture events.\n
*\n * Note that applications still need to include the HammerJS script itself. This module\n * simply sets up the
coordination layer between HammerJS and Angular's EventManager.\n * \n * @publicApi\n */\n var
HammerModule = /** @class */ (function () {\n function HammerModule() {\n }\n return
HammerModule;\n }());\n HammerModule.decorators = [\n { type: i0 NgModule, args: [{ providers:
HAMMER_PROVIDERS_PRE_R3__ },] }\n];\n /**\n * Defines supported modifiers for key events.\n
*\n * \n * var MODIFIER_KEYS = ['alt', 'control', 'meta', 'shift'];\n * var DOM_KEY_LOCATION_NUMPAD = 3;\n
// Map to convert some key or keyIdentifier values to what will be returned by getEventKey\n * \n * var _keyMap = {\n
// The following values are here for cross-browser compatibility and to match the W3C standard\n * \n * cf
http://www.w3.org/TR/DOM-Level-3-Events-key/\n * \n * \b: 'Backspace',\n * \t: 'Tab',\n * \x7F: 'Delete',\n
*\n * \x1B: 'Escape',\n * \Del: 'Delete',\n * \Esc: 'Escape',\n * \Left: 'ArrowLeft',\n * \Right:
'\n * \ArrowRight',\n * \Up: 'ArrowUp',\n * \Down: 'ArrowDown',\n * \Menu: 'ContextMenu',\n * \Scroll:
'\n * \ScrollLock',\n * \Win: 'OS'\n * }; \n * // There is a bug in Chrome for numeric keypad keys:\n * //
https://code.google.com/p/chromium/issues/detail?id=155654\n * // 1, 2, 3 ... are reported as A, B, C ...\n * \n * var
_chromeNumKeyPadMap = {\n * \n * 'A': '1',\n * \n * 'B': '2',\n * \n * 'C': '3',\n * \n * 'D': '4',\n * \n * 'E': '5',\n * \n * 'F': '6',\n
*\n * 'G': '7',\n * \n * 'H': '8',\n * \n * 'I': '9',\n * \n * 'J': '*',\n * \n * 'K': '+',\n * \n * 'M': '-',\n * \n * 'N': '.',\n * \n * 'O': '/',\n * \n * \x60:
'\n * \n * '0',\n * \n * \x90: 'NumLock'\n * }; \n * \n * var O$3 = function (event) { return event.altKey; }, 1 = function (event) {
return event.ctrlKey; }, 2 = function (event) { return event.metaKey; }, 3 = function (event) { return event.shiftKey;
};\n * \n * /**\n * \n * Retrieves modifiers from key-event objects.\n * \n * \n * var MODIFIER_KEY_GETTERS = {\n
*\n * 'alt': O$3,\n * \n * 'control': 1,\n * \n * 'meta': 2,\n * \n * 'shift': 3\n * }; \n * \n * /**\n * \n * @publicApi\n * \n * A browser plug-in
that provides support for handling of key events in Angular.\n * \n * \n * var KeyEventsPlugin = /** @class */
(function (_super) {\n * \n * __extends(KeyEventsPlugin, _super);\n * \n * /**\n * \n * Initializes an instance of the
browser plug-in.\n * \n * \n * @param doc The document in which key events will be detected.\n * \n * \n * function
KeyEventsPlugin(doc) {\n * \n * return _super.call(this, doc) || this;\n * \n * }\n * \n * /**\n * \n * Reports whether a
named key event is supported.\n * \n * \n * @param eventName The event name to query.\n * \n * \n * @return True if the
named key event is supported.\n * \n * \n * \n * KeyEventsPlugin.prototype.supports = function (eventName) {\n
*\n * return KeyEventsPlugin.parseEventName(eventName) != null;\n * \n * }; \n * \n * /**\n * \n * Registers a handler for
a specific element and key event.\n * \n * \n * @param element The HTML element to receive event notifications.\n * \n
*\n * @param eventName The name of the key event to listen for.\n * \n * \n * @param handler A function to call when
the notification occurs. Receives the\n * \n * \n * event object as an argument.\n * \n * \n * @returns The key event that was
registered.\n * \n * \n * \n * KeyEventsPlugin.prototype.addEventListener = function (element, eventName, handler)
{\n * \n * var parsedEvent = KeyEventsPlugin.parseEventName(eventName);\n * \n * var outsideHandler =
KeyEventsPlugin.eventCallback(parsedEvent['fullKey'], handler, this.manager.getZone());\n * \n * return
this.manager.getZone().runOutsideAngular(function () {\n * \n * return
common.getDOM().onAndCancel(element, parsedEvent['domEventName'], outsideHandler);\n * \n * });\n * \n * });\n
*\n * \n * KeyEventsPlugin.parseEventName = function (eventName) {\n * \n * var parts =
eventName.toLowerCase().split('.');\n * \n * var domEventName = parts.shift();\n * \n * if ((parts.length === 0) ||
!(domEventName === 'keydown' || domEventName === 'keyup')) {\n * \n * return null;\n * \n * }\n * \n * var
key = KeyEventsPlugin._normalizeKey(parts.pop());\n * \n * var fullKey = '';\n * \n * MODIFIER_KEYS.forEach(function (modifierName) {\n * \n
*\n * var index = parts.indexOf(modifierName);\n * \n * if (index > -1) {\n * \n * parts.splice(index, 1);\n * \n * fullKey += modifierName + '.';\n
*\n * }\n * \n * });\n * \n * fullKey += key;\n * \n * if (parts.length != 0 || key.length === 0) {\n * \n * // returning
null instead of throwing to let another plugin process the event\n * \n * return null;\n * \n * }\n * \n * // NOTE:
Please don't rewrite this as so, as it will break JSCompiler property renaming.\n * \n * // The code must remain

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in the `result['domEventName']` form.\n // return {domEventName, fullKey};\n var result = {};\n result['domEventName'] = domEventName;\n result['fullKey'] = fullKey;\n return result;\n });\n KeyEventsPlugin.getEventFullKey = function (event) {\n var fullKey = "";\n var key =\n getEventKey(event);\n key = key.toLowerCase();\n if (key === ' ') {\n key = 'space'; // for\n readability\n }\n else if (key === '.') {\n key = 'dot'; // because '.' is used as a separator in\n event names\n }\n MODIFIER_KEYS.forEach(function (modifierName) {\n if\n (modifierName !== key) {\n var modifierGetter = MODIFIER_KEY_GETTERS[modifierName];\n if (modifierGetter(event)) {\n fullKey += modifierName + '.';\n }\n }\n });\n fullKey += key;\n return fullKey;\n }; //**\n * Configures a handler callback for\n a key event.\n * @param fullKey The event name that combines all simultaneous keystrokes.\n * @param\n handler The function that responds to the key event.\n * @param zone The zone in which the event occurred.\n * @returns A callback function.\n */\n KeyEventsPlugin.eventCallback = function (fullKey, handler,\n zone) {\n return function (event /** TODO #9100 */) {\n if\n (KeyEventsPlugin.getEventFullKey(event) === fullKey) {\n zone.runGuarded(function () { return\n handler(event); });\n }\n }; //**\n @internal\n KeyEventsPlugin._normalizeKey\n = function (keyName) {\n // TODO: switch to a Map if the mapping grows too much\n switch\n (keyName) {\n case 'esc':\n return 'escape';\n default:\n return keyName;\n }\n }; return KeyEventsPlugin;\n }(EventManagerPlugin));\n KeyEventsPlugin.decorators = [\n {\n type: i0.Injectable\n }];\n KeyEventsPlugin.ctorParameters = function () { return [\n {\n type:\n undefined, decorators: [{\n type: i0.Inject, args: [common.DOCUMENT,]\n }]\n }];\n function\n getEventKey(event) {\n var key = event.key;\n if (key == null) {\n key = event.keyIdentifier;\n // keyIdentifier is defined in the old draft of DOM Level 3 Events implemented by Chrome and\n // Safari\n cf\n // http://www.w3.org/TR/2007/WD-DOM-Level-3-Events-20071221/events.html#Events-\n KeyboardEvents-Interfaces\n if (key == null) {\n return 'Unidentified';\n }\n if\n (key.startsWith('U+')) {\n key = String.fromCharCode(parseInt(key.substring(2), 16));\n if\n (event.location === DOM_KEY_LOCATION_NUMPAD && _chromeNumKeyPadMap.hasOwnProperty(key))\n {\n // There is a bug in Chrome for numeric keypad keys:\n //\n https://code.google.com/p/chromium/issues/detail?id=155654\n // 1, 2, 3 ... are reported as A, B, C ...\n key = _chromeNumKeyPadMap[key];\n }\n }\n return _keyMap[key] || key;\n }\n }]\n /**\n * DomSanitizer helps preventing Cross Site Scripting Security bugs (XSS) by sanitizing\n * values to be safe to use in the different DOM contexts.\n * For example, when binding a URL in an <a\n [href]="someValue">` hyperlink, `someValue` will be\n * sanitized so that an attacker cannot inject e.g. a\n `javascript:` URL that would execute code on\n * the website.\n * In specific situations, it might be\n necessary to disable sanitization, for example if the\n * application genuinely needs to produce a `javascript:`\n style link with a dynamic value in it.\n * Users can bypass security by constructing a value with one of the\n `bypassSecurityTrust...`\n * methods, and then binding to that value from the template.\n * These\n situations should be very rare, and extraordinary care must be taken to avoid creating a\n * Cross Site Scripting\n (XSS) security bug!\n * When using `bypassSecurityTrust...`, make sure to call the method as early as\n possible and as\n * close as possible to the source of the value, to make it easy to verify no security bug is\n * created by its use.\n * It is not required (and not recommended) to bypass security if the value is safe, e.g. a\n URL that\n * does not start with a suspicious protocol, or an HTML snippet that does not contain dangerous\n * code. The sanitizer leaves safe values intact.\n * @security Calling any of the `bypassSecurityTrust...` APIs\n disables Angular's built-in\n * sanitization for the value passed in. Carefully check and audit all values and code\n paths going\n * into this call. Make sure any user data is appropriately escaped for this security context.\n * For\n more detail, see the [Security Guide](http://g.co/ng/security).\n * @publicApi\n */\n var DomSanitizer\n = /** @class */ (function () {\n function DomSanitizer() {\n }\n return DomSanitizer;\n })();\n DomSanitizer.prototype = i0.defineInjectable({\n factory: function DomSanitizer_Factory() { return\n i0.inject(DomSanitizerImpl); },\n token: DomSanitizer,\n providedIn: "root"\n });\n DomSanitizer.decorators = [\n
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{ type: i0.Injectable, args: [{ providedIn: 'root', useExisting: i0.forwardRef(function () { return DomSanitizerImpl;
}) },] }\n];\n function domSanitizerImplFactory(injector) {\n return new
DomSanitizerImpl(injector.get(common.DOCUMENT));\n } \n var DomSanitizerImpl = /** @class */ (function
(_super) {\n __extends(DomSanitizerImpl, _super);\n function DomSanitizerImpl(_doc) {\n var
_this = _super.call(this) || this;\n _this._doc = _doc;\n return _this;\n }\n DomSanitizerImpl.prototype.sanitize = function (ctx, value) {\n if (value == null)\n return null;\n switch (ctx) {\n case i0.SecurityContext.NONE:\n return value;\n case
i0.SecurityContext.HTML:\n if (i0.allowSanitizationBypassAndThrow(value, \"HTML\" /* Html */))\n {\n return i0.unwrapSafeValue(value);\n }\n return i0._sanitizeHtml(this._doc,
String(value));\n case i0.SecurityContext.STYLE:\n if
(i0.allowSanitizationBypassAndThrow(value, \"Style\" /* Style */)) {\n return
i0.unwrapSafeValue(value);\n }\n return value;\n case
i0.SecurityContext.SCRIPT:\n if (i0.allowSanitizationBypassAndThrow(value, \"Script\" /* Script */))\n {\n return i0.unwrapSafeValue(value);\n }\n throw new Error('unsafe value
used in a script context');\n case i0.SecurityContext.URL:\n var type =
i0.getSanitizationBypassType(value);\n if (i0.allowSanitizationBypassAndThrow(value, \"URL\" /* Url
*/)) {\n return i0.unwrapSafeValue(value);\n }\n return
i0._sanitizeUrl(String(value));\n case i0.SecurityContext.RESOURCE_URL:\n if
(i0.allowSanitizationBypassAndThrow(value, \"ResourceURL\" /* ResourceUrl */)) {\n return
i0.unwrapSafeValue(value);\n }\n throw new Error('unsafe value used in a resource URL
context (see http://g.co/ng/security#xss)');\n default:\n throw new Error(\"Unexpected
SecurityContext \" + ctx + \" (see http://g.co/ng/security#xss)\");\n }\n };\n DomSanitizerImpl.prototype.bypassSecurityTrustHtml = function (value) {\n return
i0.bypassSanitizationTrustHtml(value);\n };\n DomSanitizerImpl.prototype.bypassSecurityTrustStyle =
function (value) {\n return i0.bypassSanitizationTrustStyle(value);\n };\n DomSanitizerImpl.prototype.bypassSecurityTrustScript = function (value) {\n return
i0.bypassSanitizationTrustScript(value);\n };\n DomSanitizerImpl.prototype.bypassSecurityTrustUrl =
function (value) {\n return i0.bypassSanitizationTrustUrl(value);\n };\n DomSanitizerImpl.prototype.bypassSecurityTrustResourceUrl = function (value) {\n return
i0.bypassSanitizationTrustResourceUrl(value);\n };\n return DomSanitizerImpl;\n } (DomSanitizer));\n DomSanitizerImpl.prototype = i0.defineInjectable({ factory: function DomSanitizerImpl_Factory() { return
domSanitizerImplFactory(i0.inject(i0.INJECTOR)); }, token: DomSanitizerImpl, providedIn: \"root\" });\n DomSanitizerImpl.decorators = [\n { type: i0.Injectable, args: [{ providedIn: 'root', useFactory:
domSanitizerImplFactory, deps: [i0.Injector] },] }\n];\n DomSanitizerImpl.ctorParameters = function () { return
[\n { type: undefined, decorators: [{ type: i0.Inject, args: [common.DOCUMENT,] }] }\n];\n /**\n *
@license\n * Copyright Google LLC All Rights Reserved.\n * Use of this source code is governed by an
MIT-style license that can be\n * found in the LICENSE file at https://angular.io/license\n */\n function
initDomAdapter() {\n BrowserDomAdapter.makeCurrent();\n BrowserGetTestability.init();\n }\n function errorHandler() {\n return new i0.ErrorHandler();\n }\n function _document() {\n // Tell ivy
about the global document\n i0.setDocument(document);\n return document;\n }\n var 0$4 =
common.PLATFORM_BROWSER_ID;\n var INTERNAL_BROWSER_PLATFORM_PROVIDERS = [\n { provide: i0.PLATFORM_ID, useValue: 0$4 },\n { provide: i0.PLATFORM_INITIALIZER, useValue:
initDomAdapter, multi: true },\n { provide: common.DOCUMENT, useFactory: _document, deps: [] },\n];\n var BROWSER_SANITIZATION_PROVIDERS__PRE_R3__ = [\n { provide: i0.Sanitizer, useExisting:
DomSanitizer },\n { provide: DomSanitizer, useClass: DomSanitizerImpl, deps: [common.DOCUMENT] },\n];\n var BROWSER_SANITIZATION_PROVIDERS__POST_R3__ = [];\n /**\n * @security Replacing
built-in sanitization providers exposes the application to XSS risks.\n * Attacker-controlled data introduced by an
unsanitized provider could expose your\n * application to XSS risks. For more detail, see the [Security

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Guide](http://g.co/ng/security).\n * @publicApi\n */\n var BROWSER_SANITIZATION_PROVIDERS =
BROWSER_SANITIZATION_PROVIDERS__PRE_R3__;\n /**\n * A factory function that returns a
`PlatformRef` instance associated with browser service\n * providers.\n */\n * @publicApi\n */\n var
platformBrowser = i0.createPlatformFactory(i0.platformCore, 'browser',
INTERNAL_BROWSER_PLATFORM_PROVIDERS);\n var BROWSER_MODULE_PROVIDERS = [\n
BROWSER_SANITIZATION_PROVIDERS,\n { provide: i0.INJECTOR_SCOPE, useValue: 'root' },\n {
provide: i0.ErrorHandler, useFactory: errorHandler, deps: [] },\n { provide:
EVENT_MANAGER_PLUGINS,\n useClass: DomEventsPlugin,\n multi: true,\n deps:
[common.DOCUMENT, i0.NgZone, i0.PLATFORM_ID] },\n { provide:
EVENT_MANAGER_PLUGINS, useClass: KeyEventsPlugin, multi: true, deps: [common.DOCUMENT] },\n
HAMMER_PROVIDERS,\n { provide: DomRendererFactory2,\n useClass:
DomRendererFactory2,\n deps: [EventManager, DomSharedStylesHost, i0.APP_ID] },\n {
provide: i0.RendererFactory2, useExisting: DomRendererFactory2 },\n { provide: SharedStylesHost,
useExisting: DomSharedStylesHost },\n { provide: DomSharedStylesHost, useClass: DomSharedStylesHost,
deps: [common.DOCUMENT] },\n { provide: i0.Testability, useClass: i0.Testability, deps: [i0.NgZone] },\n
{ provide: EventManager, useClass: EventManager, deps: [EVENT_MANAGER_PLUGINS, i0.NgZone] },\n
ELEMENT_PROBE_PROVIDERS,\n];\n /**\n * Exports required infrastructure for all Angular apps.\n *
Included by default in all Angular apps created with the CLI\n * `new` command.\n * Re-exports
`CommonModule` and `ApplicationModule`, making their\n * exports and providers available to all apps.\n */\n
* @publicApi\n */\n var BrowserModule = /** @class */ (function () {\n function
BrowserModule(parentModule) {\n if (parentModule) {\n throw new Error(`BrowserModule has
already been loaded. If you need access to common directives such as NgIf and NgFor from a lazy loaded module,
import CommonModule instead.`);\n }\n }\n /**\n * Configures a browser-based app to
transition from a server-rendered app, if\n * one is present on the page.\n */\n * @param params An
object containing an identifier for the app to transition.\n * The ID must match between the client and server
versions of the app.\n * @returns The reconfigured `BrowserModule` to import into the app's root
`AppModule`.\n */\n BrowserModule.withServerTransition = function (params) {\n return {\n
ngModule: BrowserModule,\n providers: [\n { provide: i0.APP_ID, useValue: params.appId
},\n { provide: TRANSITION_ID, useExisting: i0.APP_ID },\n
SERVER_TRANSITION_PROVIDERS,\n],\n };;\n return BrowserModule;\n }());\n
BrowserModule.decorators = [\n { type: i0.NgModule, args: [{ providers:
BROWSER_MODULE_PROVIDERS, exports: [common.CommonModule, i0.ApplicationModule] },] }]\n];\n
BrowserModule.ctorParameters = function () { return [\n { type: BrowserModule, decorators: [{ type:
i0.Optional }, { type: i0.SkipSelf }, { type: i0.Inject, args: [BrowserModule,] }] }\n]; };\n\n /**\n
* @license\n * Copyright Google LLC All Rights Reserved.\n * Use of this source code is governed by an
MIT-style license that can be\n * found in the LICENSE file at https://angular.io/license\n */\n *
Factory to create a `Meta` service instance for the current DOM document.\n */\n function createMeta() {\n
return new Meta(i0.inject(common.DOCUMENT));\n }\n /**\n * A service for managing HTML ``
tags.\n * Properties of the `MetaDefinition` object match the attributes of the\n * HTML `` tag.
These tags define document metadata that is important for\n * things like configuring a Content Security Policy,
defining browser compatibility\n * and security settings, setting HTTP Headers, defining rich content for social
sharing,\n * and Search Engine Optimization (SEO).\n * To identify specific `` tags in a
document, use an attribute selection\n * string in the format `"tag_attribute=value string"`. For example,
an `attrSelector` value of `"name='description'"` matches a tag\n * whose `name` attribute has the value
`"description"`. Selectors are used with the `querySelector()` Document method,\n * in the format
`meta[]`. @see [HTML meta
tag](https://developer.mozilla.org/docs/Web/HTML/Element/meta)\n * @see
[Document.querySelector()](https://developer.mozilla.org/docs/Web/API/Document/querySelector)\n *
*\n */

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* @publicApi\n */\n var Meta = /** @class */ (function () {\n function Meta(_doc) {\n this._doc =\n _doc;\n this._dom = common.getDOM();\n }\n /**\n * Retrieves or creates a specific ``\n tag element in the current HTML document.\n * In searching for an existing tag, Angular attempts to match the\n `name` or `property` attribute\n * values in the provided tag definition, and verifies that all other attribute\n values are equal.\n * If an existing element is found, it is returned and is not modified in any way.\n * @param tag The definition of a `` element to match or create.\n * @param forceCreation True to create\n a new element without checking whether one already exists.\n * @returns The existing element with the same\n attributes and values if found,\n * the new element if no match is found, or `null` if the tag parameter is not\n defined.\n */\n Meta.prototype.addTag = function (tag, forceCreation) {\n if (forceCreation ===\n void 0) { forceCreation = false; }\n if (!tag)\n return null;\n return\n this._getOrCreateElement(tag, forceCreation);\n };\n /**\n * Retrieves or creates a set of `` tag\n elements in the current HTML document.\n * In searching for an existing tag, Angular attempts to match the\n `name` or `property` attribute\n * values in the provided tag definition, and verifies that all other attribute\n values are equal.\n * @param tags An array of tag definitions to match or create.\n * @param\n forceCreation True to create new elements without checking whether they already exist.\n * @returns The\n matching elements if found, or the new elements.\n */\n Meta.prototype.addTags = function (tags,\n forceCreation) {\n var _this = this;\n if (forceCreation === void 0) { forceCreation = false; }\n if (!tags)\n return [];\n return tags.reduce(function (result, tag) {\n if (tag) {\n result.push(_this._getOrCreateElement(tag, forceCreation));\n }\n return result;\n }, []);\n };\n /**\n * Retrieves a `` tag element in the current HTML document.\n * @param\n attrSelector The tag attribute and value to match against, in the format\n * `"tag_attribute='value string'"`.\n * @returns The matching element, if any.\n */\n Meta.prototype.getTag = function (attrSelector) {\n if (!attrSelector)\n return null;\n return this._doc.querySelector("meta[" + attrSelector + "]") ||\n null;\n };\n /**\n * Retrieves a set of `` tag elements in the current HTML document.\n * @param\n attrSelector The tag attribute and value to match against, in the format\n * `"tag_attribute='value\n string'"`.\n * @returns The matching elements, if any.\n */\n Meta.prototype.getTags = function\n (attrSelector) {\n if (!attrSelector)\n return [];\n var list /*NodeList*/ =\n this._doc.querySelectorAll("meta[" + attrSelector + "]");\n return list ? [].slice.call(list) : [];\n };\n /**\n * Modifies an existing `` tag element in the current HTML document.\n * @param tag The\n tag description with which to replace the existing tag content.\n * @param selector A tag attribute and value to\n match against, to identify\n * an existing tag. A string in the format `"tag_attribute='value string'"`.\n * If not supplied, matches a tag with the same `name` or `property` attribute value as the\n * replacement tag.\n * @return The modified element.\n */\n Meta.prototype.updateTag = function (tag, selector) {\n if\n (!tag)\n return null;\n selector = selector || this._parseSelector(tag);\n var meta =\n this.getTag(selector);\n if (meta) {\n return this._setMetaElementAttributes(tag, meta);\n }\n return this._getOrCreateElement(tag, true);\n };\n /**\n * Removes an existing `` tag\n element from the current HTML document.\n * @param attrSelector A tag attribute and value to match against,\n to identify\n * an existing tag. A string in the format `"tag_attribute='value string'"`.\n */\n Meta.prototype.removeTag = function (attrSelector) {\n this.removeTagElement(this.getTag(attrSelector));\n };\n /**\n * Removes an existing `` tag element from the current HTML document.\n * @param\n meta The tag definition to match against to identify an existing tag.\n */\n Meta.prototype.removeTagElement = function (meta) {\n if (meta) {\n this._dom.remove(meta);\n }\n };\n Meta.prototype._getOrCreateElement = function (meta, forceCreation) {\n if\n (forceCreation === void 0) { forceCreation = false; }\n if (!forceCreation) {\n var selector =\n this._parseSelector(meta);\n var elem = this.getTag(selector);\n // It's allowed to have multiple\n elements with the same name so it's not enough to\n // just check that element with the same name already\n present on the page. We also need to\n // check if element has tag attributes\n if (elem &&\n this._containsAttributes(meta, elem))\n return elem;\n }\n var element =

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this._dom.createElement('meta');\n this._setMetaElementAttributes(meta, element);\n var head =
this._doc.getElementsByTagName('head')[0];\n head.appendChild(element);\n return element;\n
};\n Meta.prototype._setMetaElementAttributes = function (tag, el) {\n
Object.keys(tag).forEach(function (prop) { return el.setAttribute(prop, tag[prop]); });\n return el;\n });\n
 Meta.prototype._parseSelector = function (tag) {\n var attr = tag.name ? 'name' : 'property';\n return
attr + "=" + tag[attr] + "\"";\n });\n Meta.prototype._containsAttributes = function (tag, elem) {\n
return Object.keys(tag).every(function (key) { return elem.getAttribute(key) === tag[key]; });\n });\n
return Meta;\n
})();\n
Meta.prov = i0.defineInjectable({ factory: createMeta, token: Meta, providedIn: \"root\"
});\n
Meta.decorators = [\n { type: i0.Injectable, args: [{ providedIn: 'root', useFactory: createMeta, deps: []
}], }\n];\n
Meta.ctorParameters = function () { return [\n { type: undefined, decorators: [{ type: i0.Inject,
args: [common.DOCUMENT,] }] }\n];\n};\n\n
/**\n * @license\n * Copyright Google LLC All Rights
Reserved.\n * Use of this source code is governed by an MIT-style license that can be\n * found in the
LICENSE file at https://angular.io/license\n * ^\n */\n
/**\n * Factory to create Title service.\n * ^\n function
createTitle() {\n return new Title(i0.inject(common.DOCUMENT));\n }\n\n
/**\n * A service that can be
used to get and set the title of a current HTML document.\n * Since an Angular application can't be
bootstrapped on the entire HTML document (<html> tag)\n * it is not possible to bind to the `text` property of
the `HTMLTitleElement` elements\n * (representing the <title> tag). Instead, this service can be used to set and
get the current\n * title value.\n * ^\n\n
/**\n * @publicApi\n * ^\n var Title = /** @class */ (function () {\n
function Title(_doc) {\n this._doc = _doc;\n }\n\n
/**\n * Get the title of the current HTML
document.\n * ^\n Title.prototype.getTitle = function () {\n return this._doc.title;\n };
\n\n
/**\n * Set the title of the current HTML document.\n * ^\n\n
/**\n * @param newTitle\n * ^\n\n
Title.prototype.setTitle = function (newTitle) {\n this._doc.title = newTitle || \"\";\n };
\n\n
return Title;\n
})();\n
Title.prov = i0.defineInjectable({ factory: createTitle, token: Title, providedIn: \"root\" });\n
Title.decorators = [\n { type: i0.Injectable, args: [{ providedIn: 'root', useFactory: createTitle, deps: []
}], }\n];\n
Title.ctorParameters = function () { return [\n { type: undefined, decorators: [{ type: i0.Inject,
args: [common.DOCUMENT,] }] }\n];\n};\n\n
/**\n * @license\n * Copyright Google LLC All Rights
Reserved.\n * Use of this source code is governed by an MIT-style license that can be\n * found in the
LICENSE file at https://angular.io/license\n * ^\n var win = typeof window !== 'undefined' && window || {};\n\n
/**\n * @license\n * Copyright Google LLC All Rights Reserved.\n * Use of this source code is
governed by an MIT-style license that can be\n * found in the LICENSE file at https://angular.io/license\n * ^\n
var ChangeDetectionPerfRecord = /** @class */ (function () { function
ChangeDetectionPerfRecord(msPerTick, numTicks) {\n this.msPerTick = msPerTick;\n this.numTicks
= numTicks;\n }\n return ChangeDetectionPerfRecord;\n })();\n\n
/**\n * Entry point for all Angular
profiling-related debug tools. This object\n * corresponds to the `ng.profiler` in the dev console.\n * ^\n var
AngularProfiler = /** @class */ (function () { function AngularProfiler(ref) {\n this.appRef =
ref.injector.get(i0.ApplicationRef);\n }\n\n
// tslint:disable:no-console\n\n
/**\n * Exercises change
detection in a loop and then prints the average amount of\n * time in milliseconds how long a single round of
change detection takes for\n * the current state of the UI. It runs a minimum of 5 rounds for a minimum\n
* of 500 milliseconds.\n * ^\n\n
/**\n * Optionally, a user may pass a `config` parameter containing a map of\n
* options. Supported options are:\n * ^\n\n
/**\n * `record` (boolean) - causes the profiler to record a CPU profile
while\n * it exercises the change detector. Example:\n * ^\n\n
/**\n * ^\n\n
ng.profiler.timeChangeDetection({record: true})\n\n
/**\n * ^\n\n
AngularProfiler.prototype.timeChangeDetection = function (config) {\n var record = config &&
config[record];\n var profileName = 'Change Detection';\n // Profiler is not available in Android
browsers without dev tools opened\n var isProfilerAvailable = win.console.profile !== null;\n if (record
&& isProfilerAvailable) {\n win.console.profile(profileName);\n }\n var start =
common.getDOM().performanceNow();\n var numTicks = 0;\n while (numTicks < 5 ||
(common.getDOM().performanceNow() - start) < 500) {\n this.appRef.tick();\n numTicks++;\n

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 }\n var end = common.getDOM().performanceNow();\n if (record && isProfilerAvailable) {\n win.console.profileEnd(profileName);\n }\n var msPerTick = (end - start) / numTicks;\n win.console.log(`ran \`${numTicks} + \`` change detection cycles`);\n win.console.log(msPerTick.toFixed(2) + \`\nms per check`);\n return new ChangeDetectionPerfRecord(msPerTick, numTicks);\n };\n return\n AngularProfiler;\n }());\n\n /**\n * @license\n * Copyright Google LLC All Rights Reserved.\n *\n * Use of this source code is governed by an MIT-style license that can be\n * found in the LICENSE file at\n * https://angular.io/license\n *\n * \n * var PROFILER_GLOBAL_NAME = 'profiler';\n * /**\n * Enabled Angular\n * debug tools that are accessible via your browser's\n * developer console.\n *\n * Usage:\n *\n * 1. Open\n * developer console (e.g. in Chrome Ctrl + Shift + j)\n * 1. Type `ng.` (usually the console will show auto-complete\n * suggestion)\n * 1. Try the change detection profiler `ng.profiler.timeChangeDetection()`\n * then hit Enter.\n *\n * @publicApi\n */\n function enableDebugTools(ref) {\n exportNgVar(PROFILER_GLOBAL_NAME, new AngularProfiler(ref));\n return ref;\n }\n\n /**\n * Disables Angular tools.\n *\n * @publicApi\n */\n function disableDebugTools() {\n exportNgVar(PROFILER_GLOBAL_NAME, null);\n }\n\n /**\n * @license\n * Copyright Google LLC\n * All Rights Reserved.\n *\n * Use of this source code is governed by an MIT-style license that can be\n * found in the LICENSE file at https://angular.io/license\n *\n * \n * function escapeHtml(text) {\n * var\n * escapedText = {\n * '&': '&',\n * '\\': '\\u005C',\n * '\\\"': '\\u0022',\n * '\\\\': '\\u005C',\n * '<': '<',\n * '>': '>',\n * };\n * return text.replace(/&["'<>]/g, function (s) { return escapedText[s]; });\n * }\n * function\n * unescapeHtml(text) {\n * var unescapedText = {\n * '&': '&',\n * '\\u005C': '\\',\n * '\\u0022': '\\\"',\n * '\\u005C': '\\\\',\n * '<': '<',\n * '>': '>',\n * };\n * return text.replace(/&[#^];+/g, function (s) { return unescapedText[s];\n * });\n * }\n * /**\n * Create a `StateKey<T>` that can be used to store value of type T with `TransferState`.\n *\n * Example:\n *\n * ```\n * const COUNTER_KEY = makeStateKey<number>('counter');\n * let\n * value = 10;\n * transferState.set(COUNTER_KEY, value);\n * ```\n *\n * @publicApi\n */\n function makeStateKey(key) {\n return key;\n }\n\n /**\n * A key value store that is transferred from the\n * application on the server side to the application\n * on the client side.\n *\n * `TransferState` will be\n * available as an injectable token. To use it import\n * `ServerTransferStateModule` on the server and\n * `BrowserTransferStateModule` on the client.\n *\n * The values in the store are serialized/deserialized using\n * JSON.stringify/JSON.parse. So only\n * boolean, number, string, null and non-class objects will be serialized and\n * deserialzied in a\n * non-lossy manner.\n *\n * @publicApi\n */\n var TransferState = /** @class */\n (function () {\n function TransferState() {\n this.store = {};\n this.onSerializeCallbacks = {};\n }\n\n /** @internal */\n TransferState.init = function (initState) {\n var transferState = new\n TransferState();\n transferState.store = initState;\n return transferState;\n };\n\n /**\n * Get\n * the value corresponding to a key. Return `defaultValue` if key is not found.\n */\n TransferState.prototype.get = function (key, defaultValue) {\n return this.store[key] !== undefined ?\n this.store[key] : defaultValue;\n };\n\n /**\n * Set the value corresponding to a key.\n */\n TransferState.prototype.set = function (key, value) {\n this.store[key] = value;\n };\n\n /**\n * Remove a key from the store.\n */\n TransferState.prototype.remove = function (key) {\n delete\n this.store[key];\n };\n\n /**\n * Test whether a key exists in the store.\n */\n TransferState.prototype.hasKey = function (key) {\n return this.store.hasOwnProperty(key);\n };\n\n /**\n * Register a callback to provide the value for a key when `toJson` is called.\n */\n TransferState.prototype.onSerialize = function (key, callback) {\n this.onSerializeCallbacks[key] =\n callback;\n };\n\n /**\n * Serialize the current state of the store to JSON.\n */\n TransferState.prototype.toJson = function () {\n // Call the onSerialize callbacks and put those values into the\n store.\n for (var key in this.onSerializeCallbacks) {\n if\n (this.onSerializeCallbacks.hasOwnProperty(key)) {\n try {\n this.store[key] =\n this.onSerializeCallbacks[key]();\n }\n catch (e) {\n console.warn('Exception\nin onSerialize callback: ', e);\n }\n }\n }\n return JSON.stringify(this.store);\n };\n\n return TransferState;\n }());\n\n TransferState.decorators = [\n { type: i0.Injectable }\n];\n
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function initState(doc, appId) {\n // Locate the script tag with the JSON data transferred from the
server.\n // The id of the script tag is set to the Angular appId + 'state'.\n var script =
doc.getElementById(appId + '-state');\n var initialState = {};\n if (script && script.textContent) {\n
try {\n initialState = JSON.parse(unescapeHtml(script.textContent));\n } catch (e) {\n
console.warn('Exception while restoring TransferState for app ' + appId, e);\n }\n }\n return
TransferState.init(initialState);\n } \n /**\n * NgModule to install on the client side while using the
`TransferState` to transfer state from\n * server to client.\n *\n * @publicApi\n */\n var
BrowserTransferStateModule = /** @class */ (function () {\n function BrowserTransferStateModule() {\n
}\n return BrowserTransferStateModule;\n }());\n BrowserTransferStateModule.decorators = [\n { type:
i0 NgModule, args: [{\n providers: [{ provide: TransferState, useFactory: initState, deps:
[common.DOCUMENT, i0.APP_ID] }],\n },]\n },]\n };\n /**\n * @license\n * Copyright Google
LLC All Rights Reserved.\n *\n * Use of this source code is governed by an MIT-style license that can be\n
* found in the LICENSE file at https://angular.io/license\n */\n /**\n * Predicates for use with { @link
DebugElement}'s query functions.\n *\n * @publicApi\n */\n var By = /** @class */ (function () {\n
function By() {\n }\n /**\n * Match all nodes.\n *\n * @usageNotes\n * ### Example\n
 *\n * { @example platform-browser/dom/debug/ts/by/by.ts region='by_all'}\n */\n By.all =
function () {\n return function () { return true; };;\n };;\n /**\n * Match elements by the given
CSS selector.\n *\n * @usageNotes\n * ### Example\n *\n * { @example platform-
browser/dom/debug/ts/by/by.ts region='by_css'}\n */\n By.css = function (selector) {\n return
function (debugElement) {\n return debugElement.nativeElement != null ?\n
elementMatches(debugElement.nativeElement, selector) :\n false;\n };;\n };;\n /**\n *
Match nodes that have the given directive present.\n *\n * @usageNotes\n * ### Example\n *\n
 * { @example platform-browser/dom/debug/ts/by/by.ts region='by_directive'}\n */\n By.directive =
function (type) {\n return function (debugNode) { return debugNode.providerTokens.indexOf(type) !== -1;
};;\n };;\n return By;\n }());\n function elementMatches(n, selector) {\n if
(common.getDocument().isElementNode(n)) {\n return n.matches && n.matches(selector) ||\n
n.msMatchesSelector && n.msMatchesSelector(selector) ||\n n.webkitMatchesSelector &&
n.webkitMatchesSelector(selector);\n }\n return false;\n };\n /**\n * @license\n * Copyright
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be\n * found in the LICENSE file at https://angular.io/license\n */\n /**\n * @license\n * Copyright
Google LLC All Rights Reserved.\n *\n * Use of this source code is governed by an MIT-style license that can
be\n * found in the LICENSE file at https://angular.io/license\n */\n /**\n * @publicApi\n */\n var
VERSION = new i0.Version('11.0.2');\n /**\n * @license\n * Copyright Google LLC All Rights
Reserved.\n *\n * Use of this source code is governed by an MIT-style license that can be\n * found in the
LICENSE file at https://angular.io/license\n */\n /**\n * @license\n * Copyright Google LLC All Rights
Reserved.\n *\n * Use of this source code is governed by an MIT-style license that can be\n * found in the
LICENSE file at https://angular.io/license\n */\n // This file only reexports content of the `src` folder. Keep it
that way.\n /**\n * @license\n * Copyright Google LLC All Rights Reserved.\n *\n * Use of this
source code is governed by an MIT-style license that can be\n * found in the LICENSE file at
https://angular.io/license\n */\n /**\n * Generated bundle index. Do not edit.\n */\n Object.defineProperty(exports, 'getDOM', {\n enumerable: true,\n get: function () {\n return
common.getDOM;\n }\n });\n exports.BrowserModule = BrowserModule;\n
exports.BrowserTransferStateModule = BrowserTransferStateModule;\n exports.By = By;\n
exports.DomSanitizer = DomSanitizer;\n exports.EVENT_MANAGER_PLUGINS =
EVENT_MANAGER_PLUGINS;\n exports.EventManager = EventManager;\n
exports.HAMMER_GESTURE_CONFIG = HAMMER_GESTURE_CONFIG;\n exports.HAMMER_LOADER
= HAMMER_LOADER;\n exports.HammerGestureConfig = HammerGestureConfig;\n
exports.HammerModule = HammerModule;\n exports.Meta = Meta;\n exports.Title = Title;\n

```



browser/animations/src/module.ts", "../..../packages/platform-  
browser/animations/src/private\_export.ts", "../..../packages/platform-  
browser/animations/src/animations.ts", "../..../packages/platform-  
browser/animations/public\_api.ts", "../..../packages/platform-  
browser/animations/index.ts", "../..../packages/platform-  
browser/animations/animations.ts"], "sourcesContent": ["/\*!

```
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WARRANTIES OF MERCHANTABILITY\r\nAND FITNESS. IN NO EVENT SHALL THE AUTHOR BE
LIABLE FOR ANY SPECIAL, DIRECT,\r\nINDIRECT, OR CONSEQUENTIAL DAMAGES OR ANY
DAMAGES WHATSOEVER RESULTING FROM\r\nLOSS OF USE, DATA OR PROFITS, WHETHER IN AN
ACTION OF CONTRACT, NEGLIGENCE OR\r\nOTHER TORTIOUS ACTION, ARISING OUT OF OR IN
CONNECTION WITH THE USE OR\r\nPERFORMANCE OF THIS
SOFTWARE.\r\n*****
\r\n/ global Reflect, Promise *\r\nvar extendStatics = function(d, b) {\r\n extendStatics =
Object.setPrototypeOf ||\r\n ({ __proto__: [] } instanceof Array && function (d, b) { d.__proto__ = b; }) ||\r\n function (d, b) { for (var p in b) if (b.hasOwnProperty(p)) d[p] = b[p]; }; \r\n return extendStatics(d,
b);\r\n};\r\n\r\nexport function __extends(d, b) {\r\n extendStatics(d, b);\r\n function __() { this.constructor = d;
}\r\n d.prototype = b === null ? Object.create(b) : (__.prototype = b.prototype, new __());\r\n}\r\n\r\nexport var
__assign = function() {\r\n __assign = Object.assign || function __assign(t) {\r\n for (var s, i = 1, n =
arguments.length; i < n; i++) {\r\n s = arguments[i];\r\n for (var p in s) if
(Object.prototype.hasOwnProperty.call(s, p)) t[p] = s[p];\r\n }\r\n return t;\r\n }\r\n return
__assign.apply(this, arguments);\r\n}\r\n\r\nexport function __rest(s, e) {\r\n var t = {};\r\n for (var p in s) if
(Object.prototype.hasOwnProperty.call(s, p) && e.indexOf(p) < 0)\r\n t[p] = s[p];\r\n if (s != null && typeof
Object.getPrototypeOf === \"function\")\r\n for (var i = 0, p = Object.getPrototypeOf(s); i <
p.length; i++) {\r\n if (e.indexOf(p[i]) < 0 && Object.prototype.propertyIsEnumerable.call(s, p[i]))\r\n t[p[i]] = s[p[i]];\r\n }\r\n return t;\r\n}\r\n\r\nexport function __decorate(decorators, target, key, desc) {\r\n var c = arguments.length, r = c < 3 ? target : desc === null ? desc = Object.getPrototypeOfDescriptor(target, key) :
desc, d;\r\n if (typeof Reflect === \"object\" && typeof Reflect.decorate === \"function\") r =
Reflect.decorate(decorators, target, key, desc);\r\n else for (var i = decorators.length - 1; i >= 0; i--) if (d =
decorators[i]) r = (c < 3 ? d(r) : c > 3 ? d(target, key, r) : d(target, key)) || r;\r\n return c > 3 && r &&
Object.defineProperty(target, key, r, r);\r\n}\r\n\r\nexport function __param(paramIndex, decorator) {\r\n return
function (target, key) { decorator(target, key, paramIndex); }\r\n}\r\n\r\nexport function __metadata(metadataKey,
metadataValue) {\r\n if (typeof Reflect === \"object\" && typeof Reflect.metadata === \"function\") return
Reflect.metadata(metadataKey, metadataValue);\r\n}\r\n\r\nexport function __awaiter(thisArg, _arguments, P,
generator) {\r\n function adopt(value) { return value instanceof P ? value : new P(function (resolve) {
resolve(value); }); }\r\n return new (P || (P = Promise))(function (resolve, reject) {\r\n function fulfilled(value) { try {
step(generator[\"throw\"](value)); } catch (e) { reject(e); } }\r\n function rejected(value) { try {
step(generator[\"throw\"](value)); } catch (e) { reject(e); } }\r\n function step(result) { result.done ?
resolve(result.value) : adopt(result.value).then(fulfilled, rejected); }\r\n step((generator =
generator.apply(thisArg, _arguments || [])).next());\r\n });\r\n}\r\n\r\nexport function __generator(thisArg, body)
{\r\n var _ = { label: 0, sent: function() { if (t[0] & 1) throw t[1]; return t[1]; }, trys: [], ops: [] }, f, y, t, g;\r\n return g = { next: verb(0), \"throw\": verb(1), \"return\": verb(2) }, typeof Symbol === \"function\" &&
(g[Symbol.iterator] = function() { return this; }), g;\r\n function verb(n) { return function (v) { return step([n, v]);
}; }\r\n function step(op) {\r\n if (f) throw new TypeError(\"Generator is already executing.\");\r\n while
(_) try {\r\n if (f = 1, y && (t = op[0] & 2 ? y[\"return\"] : op[0] ? y[\"throw\"] || ((t = y[\"return\"])) &&
```



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return mod;\r\n var result = {};\r\n if (mod != null) for (var k in mod) if (Object.hasOwnProperty.call(mod, k))
__createBinding(result, mod, k);\r\n __setModuleDefault(result, mod);\r\n return result;\r\n}\r\n\r\nexport
function __importDefault(mod) {\r\n return (mod && mod.__esModule) ? mod : { default: mod
};\r\n}\r\n\r\nexport function __classPrivateFieldGet(receiver, privateMap) {\r\n if (!privateMap.has(receiver))
{\r\n throw new TypeError("attempted to get private field on non-instance");\r\n }\r\n return
privateMap.get(receiver);\r\n}\r\n\r\nexport function __classPrivateFieldSet(receiver, privateMap, value) {\r\n if
(!privateMap.has(receiver)) {\r\n throw new TypeError("attempted to set private field on non-instance");\r\n
}\r\n privateMap.set(receiver, value);\r\n return value;\r\n}\r\n\r\n"/**\n * @license\n * Copyright Google LLC
All Rights Reserved.\n *\n * Use of this source code is governed by an MIT-style license that can be\n * found in
the LICENSE file at https://angular.io/license\n */\nimport { AnimationBuilder, AnimationFactory,
AnimationMetadata, AnimationOptions, AnimationPlayer, sequence } from '@angular/animations';\nimport
{ DOCUMENT } from '@angular/common';\nimport { Inject, Injectable, RendererFactory2, RendererType2,
ViewEncapsulation } from '@angular/core';\nimport { AnimationRenderer } from
'./animation_renderer';\n\n@Injectable()\nexport class BrowserAnimationBuilder extends AnimationBuilder {\n
private _nextAnimationId = 0;\n private _renderer: AnimationRenderer;\n\n constructor(rootRenderer:
RendererFactory2, @Inject(DOCUMENT) doc: any) {\n super();\n const typeData =\n {id: '0',
encapsulation: ViewEncapsulation.None, styles: [], data: {animation: []}} as\n RendererType2;\n this._renderer = rootRenderer.createRenderer(doc.body, typeData) as AnimationRenderer;\n }\n\n build(animation:
AnimationMetadata|AnimationMetadata[]): AnimationFactory {\n const id = this._nextAnimationId.toString();\n this._nextAnimationId++;\n const entry = Array.isArray(animation) ? sequence(animation) : animation;\n issueAnimationCommand(this._renderer, null, id, 'register', [entry]);\n return new BrowserAnimationFactory(id,
this._renderer);\n }\n}\n\nexport class BrowserAnimationFactory extends AnimationFactory {\n
constructor(private _id: string, private _renderer: AnimationRenderer) {\n super();\n }\n\n create(element: any,
options?: AnimationOptions): AnimationPlayer {\n return new RendererAnimationPlayer(this._id, element,
options || {}, this._renderer);\n }\n}\n\nexport class RendererAnimationPlayer implements AnimationPlayer {\n
public parentPlayer: AnimationPlayer|null = null;\n private _started = false;\n\n constructor(\n public id: string,
public element: any, options: AnimationOptions,\n private _renderer: AnimationRenderer) {\n
this._command('create', options);\n }\n\n private _listen(eventName: string, callback: (event: any) => any): () =>
void {\n return this._renderer.listen(this.element, `@@${this.id}:${eventName}`, callback);\n }\n\n private
_command(command: string, ...args: any[]) {\n return issueAnimationCommand(this._renderer, this.element,
this.id, command, args);\n }\n\n onDone(fn: () => void): void {\n this._listen('done', fn);\n }\n\n onStart(fn: ()
=> void): void {\n this._listen('start', fn);\n }\n\n onDestroy(fn: () => void): void {\n this._listen('destroy', fn);\n
}\n\n init(): void {\n this._command('init');\n }\n\n hasStarted(): boolean {\n return this._started;\n }\n\n
play(): void {\n this._command('play');\n this._started = true;\n }\n\n pause(): void {\n
this._command('pause');\n }\n\n restart(): void {\n this._command('restart');\n }\n\n finish(): void {\n
this._command('finish');\n }\n\n destroy(): void {\n this._command('destroy');\n }\n\n reset(): void {\n
this._command('reset');\n }\n\n setPosition(p: number): void {\n this._command('setPosition', p);\n }\n\n
getPosition(): number {\n return 0;\n }\n\n public totalTime = 0;\n}\n\nfunction issueAnimationCommand(\n
renderer: AnimationRenderer, element: any, id: string, command: string, args: any[]): any {\n return
renderer.setProperty(element, `@@${id}:${command}`, args);\n}\n"/**\n * @license\n * Copyright Google LLC
All Rights Reserved.\n *\n * Use of this source code is governed by an MIT-style license that can be\n * found in
the LICENSE file at https://angular.io/license\n */\nimport { AnimationTriggerMetadata } from
'@angular/animations';\nimport { AnimationEngine as AnimationEngine } from
'@angular/animations/browser';\nimport { Injectable, NgZone, Renderer2, RendererFactory2, RendererStyleFlags2,
RendererType2 } from '@angular/core';\n\nconst ANIMATION_PREFIX = '@';\nconst
DISABLE_ANIMATIONS_FLAG = '@.disabled';\n\n// Define a recursive type to allow for nested arrays of
`AnimationTriggerMetadata`. Note that an\n// interface declaration is used as TypeScript prior to 3.7 does not
support recursive type\n// references, see https://github.com/microsoft/TypeScript/pull/33050 for details.\n

```

```

NestedAnimationTriggerMetadata = AnimationTriggerMetadata|RecursiveAnimationTriggerMetadata;\ninterface
RecursiveAnimationTriggerMetadata extends Array<NestedAnimationTriggerMetadata>
{\n\n@Injectable()\nexport class AnimationRendererFactory implements RendererFactory2 {\n private _currentId:
number = 0;\n private _microtaskId: number = 1;\n private _animationCallbacksBuffer: [(e: any) => any, any][] =
[];\n private _rendererCache = new Map<Renderer2, BaseAnimationRenderer>();\n private _cdRecurDepth = 0;\n
private promise: Promise<any> = Promise.resolve(0);\n\n constructor(\n private delegate: RendererFactory2,
private engine: AnimationEngine, private _zone: NgZone) {\n engine.onRemovalComplete = (element: any,
delegate: Renderer2) => {\n // Note: if an component element has a leave animation, and the component\n // a
host leave animation, the view engine will call `removeChild` for the parent\n // component renderer as well as
for the child component renderer.\n // Therefore, we need to check if we already removed the element.\n if
(delegate && delegate.parentNode(element)) {\n delegate.removeChild(element.parentNode, element);\n }\n
};\n }\n\n createRenderer(hostElement: any, type: RendererType2): Renderer2 {\n const
EMPTY_NAMESPACE_ID = ";\n\n // cache the delegates to find out which cached delegate can\n // be used by
which cached renderer\n const delegate = this.delegate.createRenderer(hostElement, type);\n if (!hostElement ||
!type || !type.data || !type.data['animation']) {\n let renderer: BaseAnimationRenderer|undefined =
this._rendererCache.get(delegate);\n if (!renderer) {\n renderer = new
BaseAnimationRenderer(EMPTY_NAMESPACE_ID, delegate, this.engine);\n // only cache this result when
the base renderer is used\n this._rendererCache.set(delegate, renderer);\n }\n return renderer;\n }\n\n
const componentId = type.id;\n const namespaceId = type.id + '-' + this._currentId;\n this._currentId++;\n\n
this.engine.register(namespaceId, hostElement);\n\n const registerTrigger = (trigger:
NestedAnimationTriggerMetadata) => {\n if (Array.isArray(trigger)) {\n trigger.forEach(registerTrigger);\n
} else {\n this.engine.registerTrigger(componentId, namespaceId, hostElement, trigger.name, trigger);\n
}\n\n }; \n\n const animationTriggers = type.data['animation'] as NestedAnimationTriggerMetadata[];\n\n
animationTriggers.forEach(registerTrigger);\n\n return new AnimationRenderer(this, namespaceId, delegate,
this.engine);\n }\n\n begin() {\n this._cdRecurDepth++;\n if (this.delegate.begin) {\n this.delegate.begin();\n
}\n }\n\n private _scheduleCountTask() {\n // always use promise to schedule microtask instead of use Zone\n
this.promise.then(() => {\n this._microtaskId++;\n });\n }\n\n /** @internal */\n
scheduleListenerCallback(count: number, fn: (e: any) => any, data: any) {\n if (count >= 0 && count <
this._microtaskId) {\n this._zone.run(() => fn(data));\n return;\n }\n\n if
(this._animationCallbacksBuffer.length == 0) {\n Promise.resolve(null).then(() => {\n this._zone.run(() =>
{\n this._animationCallbacksBuffer.forEach(tuple => {\n const [fn, data] = tuple;\n fn(data);\n
});\n this._animationCallbacksBuffer = [];\n });\n });\n }\n\n
this._animationCallbacksBuffer.push([fn, data]);\n }\n\n end() {\n this._cdRecurDepth--;\n\n // this is to
prevent animations from running twice when an inner\n // component does CD when a parent component instead
has inserted it\n if (this._cdRecurDepth == 0) {\n this._zone.runOutsideAngular(() => {\n
this._scheduleCountTask();\n this.engine.flush(this._microtaskId);\n });\n }\n\n if (this.delegate.end) {\n
this.delegate.end();\n }\n }\n\n whenRenderingDone(): Promise<any> {\n return
this.engine.whenRenderingDone();\n }\n}\n\nexport class BaseAnimationRenderer implements Renderer2 {\n
constructor(\n protected namespaceId: string, public delegate: Renderer2, public engine: AnimationEngine) {\n
this.destroyNode = this.delegate.destroyNode ? (n) => delegate.destroyNode!(n) : null;\n }\n\n get data() {\n
return this.delegate.data;\n }\n\n destroyNode: ((n: any) => void)|null;\n\n destroy(): void {\n
this.engine.destroy(this.namespaceId, this.delegate);\n this.delegate.destroy();\n }\n\n createElement(name:
string, namespace?: string|null|undefined) {\n return this.delegate.createElement(name, namespace);\n }\n\n
createComment(value: string) {\n return this.delegate.createComment(value);\n }\n\n createText(value: string)
{\n return this.delegate.createText(value);\n }\n\n appendChild(parent: any, newChild: any): void {\n
this.delegate.appendChild(parent, newChild);\n this.engine.onInsert(this.namespaceId, newChild, parent, false);\n
}\n\n insertBefore(parent: any, newChild: any, refChild: any, isMove: boolean = true): void {\n
this.delegate.insertBefore(parent, newChild, refChild);\n // If `isMove` true than we should animate this insert.\n
}

```

```

this.engine.onInsert(this.namespaceId, newChild, parent, isMove);\n }\n\n removeChild(parent: any, oldChild: any,
isHostElement: boolean): void {\n this.engine.onRemove(this.namespaceId, oldChild, this.delegate,
isHostElement);\n }\n\n selectRootElement(selectorOrNode: any, preserveContent?: boolean) {\n return
this.delegate.selectRootElement(selectorOrNode, preserveContent);\n }\n\n parentNode(node: any) {\n return
this.delegate.parentNode(node);\n }\n\n nextSibling(node: any) {\n return this.delegate.nextSibling(node);\n
}\n\n setAttribute(el: any, name: string, value: string, namespace?: string|null|undefined): void {\n
this.delegate.setAttribute(el, name, value, namespace);\n }\n\n removeAttribute(el: any, name: string, namespace?:
string|null|undefined): void {\n this.delegate.removeAttribute(el, name, namespace);\n }\n\n\n addClass(el: any,
name: string): void {\n this.delegate.addClass(el, name);\n }\n\n removeClass(el: any, name: string): void {\n
this.delegate.removeClass(el, name);\n }\n\n\n setStyle(el: any, style: string, value: any, flags?:
RendererStyleFlags2|undefined): void {\n this.delegate.setStyle(el, style, value, flags);\n }\n\n\n removeStyle(el:
any, style: string, flags?: RendererStyleFlags2|undefined): void {\n this.delegate.removeStyle(el, style, flags);\n
}\n\n\n setProperty(el: any, name: string, value: any): void {\n if (name.charAt(0) == ANIMATION_PREFIX &&
name == DISABLE_ANIMATIONS_FLAG) {\n this.disableAnimations(el, !!value);\n } else {\n
this.delegate.setProperty(el, name, value);\n }\n }\n\n\n setValue(node: any, value: string): void {\n
this.delegate.setValue(node, value);\n }\n\n\n listen(target: any, eventName: string, callback: (event: any) => boolean
| void): () => void {\n return this.delegate.listen(target, eventName, callback);\n }\n\n\n protected
disableAnimations(element: any, value: boolean) {\n this.engine.disableAnimations(element, value);\n
}\n}\n\n\nexport class AnimationRenderer extends BaseAnimationRenderer implements Renderer2 {\n constructor(\n
 public factory: AnimationRendererFactory, namespaceId: string, delegate: Renderer2,\n engine:
AnimationEngine) {\n super(namespaceId, delegate, engine);\n this.namespaceId = namespaceId;\n }\n\n\n
setProperty(el: any, name: string, value: any): void {\n if (name.charAt(0) == ANIMATION_PREFIX) {\n if
(name.charAt(1) == '.' && name == DISABLE_ANIMATIONS_FLAG) {\n value = value === undefined ?
true : !!value;\n this.disableAnimations(el, value as boolean);\n } else {\n
this.engine.process(this.namespaceId, el, name.substr(1), value);\n }\n } else {\n this.delegate.setProperty(el,
name, value);\n }\n }\n\n\n listen(target: 'window'|'document'|'body'|any, eventName: string, callback: (event: any)
=> any):\n () => void {\n if (eventName.charAt(0) == ANIMATION_PREFIX) {\n const element =
resolveElementFromTarget(target);\n let name = eventName.substr(1);\n let phase = ";\n // @listener.phase
is for trigger animation callbacks\n // @@listener is for animation builder callbacks\n if (name.charAt(0) !=
ANIMATION_PREFIX) {\n [name, phase] = parseTriggerCallbackName(name);\n }\n return
this.engine.listen(this.namespaceId, element, name, phase, event => {\n const countId = (event as any)['_data'] ||
-1;\n this.factory.scheduleListenerCallback(countId, callback, event);\n });\n }\n }\n\n\n return
this.delegate.listen(target, eventName, callback);\n }\n}\n\n\nfunction resolveElementFromTarget(target:
'window'|'document'|'body'|any): any {\n switch (target) {\n case 'body':\n return document.body;\n case
'document':\n return document;\n case 'window':\n return window;\n default:\n return target;\n
}\n }\n\n\nfunction parseTriggerCallbackName(triggerName: string) {\n const dotIndex = triggerName.indexOf('.');\n
const trigger = triggerName.substring(0, dotIndex);\n const phase = triggerName.substr(dotIndex + 1);\n return
[trigger, phase];\n }\n\n\n", "/*\n * @license\n * Copyright Google LLC All Rights Reserved.\n * Use of this source
code is governed by an MIT-style license that can be\n * found in the LICENSE file at https://angular.io/license\n
*/\n\nimport { AnimationBuilder } from '@angular/animations';\nimport { AnimationDriver, AnimationEngine as
AnimationEngine, AnimationStyleNormalizer as AnimationStyleNormalizer, CssKeyframesDriver as
CssKeyframesDriver, NoopAnimationDriver as NoopAnimationDriver, supportsWebAnimations as
supportsWebAnimations, WebAnimationsDriver as WebAnimationsDriver, WebAnimationsStyleNormalizer as
WebAnimationsStyleNormalizer } from '@angular/animations/browser';\nimport { DOCUMENT } from
'@angular/common';\nimport { Inject, Injectable, InjectionToken, NgZone, Provider, RendererFactory2 } from
'@angular/core';\nimport { DomRendererFactory2 as DomRendererFactory2 } from '@angular/platform-
browser';\nimport { BrowserAnimationBuilder } from './animation_builder';\nimport { AnimationRendererFactory }
from './animation_renderer';\n\n@Inject()\nexport class InjectableAnimationEngine extends AnimationEngine

```



```

{\n constructor(\n @Inject(DOCUMENT) doc: any, driver: AnimationDriver, normalizer:
AnimationStyleNormalizer) {\n super(doc.body, driver, normalizer);\n } }\n\n\nexport function
instantiateSupportedAnimationDriver() {\n return supportsWebAnimations() ? new WebAnimationsDriver() : new
CssKeyframesDriver();\n }\n\n\nexport function instantiateDefaultStyleNormalizer() {\n return new
WebAnimationsStyleNormalizer();\n }\n\n\nexport function instantiateRendererFactory(\n renderer:
DomRendererFactory2, engine: AnimationEngine, zone: NgZone) {\n return new
AnimationRendererFactory(renderer, engine, zone);\n }\n\n\n/**\n * @publicApi\n */\nexport const
ANIMATION_MODULE_TYPE =\n new
InjectionToken<'NoopAnimations'|'BrowserAnimations'>('AnimationModuleType');\n\n\nconst
SHARED_ANIMATION_PROVIDERS: Provider[] = [\n {provide: AnimationBuilder, useClass:
BrowserAnimationBuilder},\n {provide: AnimationStyleNormalizer, useFactory:
instantiateDefaultStyleNormalizer},\n {provide: AnimationEngine, useClass: InjectableAnimationEngine}, {\n
provide: RendererFactory2,\n useFactory: instantiateRendererFactory,\n deps: [DomRendererFactory2,
AnimationEngine, NgZone]\n }];\n\n\n/**\n * Separate providers from the actual module so that we can do a local
modification in Google3 to\n * include them in the BrowserModule.\n */\nexport const
BROWSER_ANIMATIONS_PROVIDERS: Provider[] = [\n {provide: AnimationDriver, useFactory:
instantiateSupportedAnimationDriver},\n {provide: ANIMATION_MODULE_TYPE, useValue:
'BrowserAnimations'}, ...SHARED_ANIMATION_PROVIDERS];\n\n\n/**\n * Separate providers from the actual
module so that we can do a local modification in Google3 to\n * include them in the BrowserTestingModule.\n
*/\nexport const BROWSER_NOOP_ANIMATIONS_PROVIDERS: Provider[] = [\n {provide: AnimationDriver,
useClass: NoopAnimationDriver},\n {provide: ANIMATION_MODULE_TYPE, useValue: 'NoopAnimations'},
...SHARED_ANIMATION_PROVIDERS];\n\n\n"/**\n * @license\n * Copyright Google LLC All Rights
Reserved.\n *\n * Use of this source code is governed by an MIT-style license that can be\n * found in the
LICENSE file at https://angular.io/license\n */\nimport {NgModule} from '@angular/core';\nimport
{BrowserModule} from '@angular/platform-browser';\n\nimport {BROWSER_ANIMATIONS_PROVIDERS,
BROWSER_NOOP_ANIMATIONS_PROVIDERS} from './providers';\n\n/**\n * Exports `BrowserModule` with
additional [dependency-injection providers](guide/glossary#provider)\n * for use with animations. See
[Animations](guide/animations).\n */\nexport class BrowserAnimationsModule {\n }\n\n/**\n * A null
player that must be imported to allow disabling of animations.\n */\nexport class
NoopAnimationsModule {\n }\n\n"/**\n * @license\n * Copyright Google LLC All Rights Reserved.\n *\n * Use of
this source code is governed by an MIT-style license that can be\n * found in the LICENSE file at
https://angular.io/license\n */\nexport {BrowserAnimationBuilder as BrowserAnimationBuilder,
BrowserAnimationFactory as BrowserAnimationFactory} from './animation_builder';\nexport {AnimationRenderer
as AnimationRenderer, AnimationRendererFactory as AnimationRendererFactory} from
'./animation_renderer';\nexport {InjectableAnimationEngine as InjectableAnimationEngine} from
'./providers';\n\n"/**\n * @license\n * Copyright Google LLC All Rights Reserved.\n *\n * Use of this source code
is governed by an MIT-style license that can be\n * found in the LICENSE file at https://angular.io/license\n
*/\n\n/**\n * @module\n * @description\n * Entry point for all animation APIs of the animation browser package.\n
*/\nexport {BrowserAnimationsModule, NoopAnimationsModule} from './module';\n\nexport
{ANIMATION_MODULE_TYPE} from './providers';\n\nexport * from './private_export';\n\n"/**\n * @license\n *
Copyright Google LLC All Rights Reserved.\n *\n * Use of this source code is governed by an MIT-style license
that can be\n * found in the LICENSE file at https://angular.io/license\n */\n\n/**\n * @module\n * @description\n
* Entry point for all public APIs of this package.\n */\nexport * from './src/animations';\n\n"/**\n * @license\n *
Copyright Google LLC All Rights Reserved.\n *\n * Use of this source code is governed by an MIT-style license
that can be\n * found in the LICENSE file at https://angular.io/license\n */\n\n// This file is not used to build this
module. It is only used during editing\n// by the TypeScript language service and during build for verification.

```

```
`ngc`\n// replaces this file with production index.ts when it rewrites private symbol\n// names.\n\nexport * from './public_api';\n"/**\n * Generated bundle index. Do not edit.\n */\nexport * from './index';\n\nexport {BaseAnimationRenderer as angular_packages_platform_browser_animations_animations_f} from './src/animation_renderer';\nexport {BROWSER_ANIMATIONS_PROVIDERS as angular_packages_platform_browser_animations_animations_d,BROWSER_NOOP_ANIMATIONS_PROVIDER S as angular_packages_platform_browser_animations_animations_e,instantiateDefaultStyleNormalizer as angular_packages_platform_browser_animations_animations_b,instantiateRendererFactory as angular_packages_platform_browser_animations_animations_c,instantiateSupportedAnimationDriver as angular_packages_platform_browser_animations_animations_a} from './src/providers';\n},\n\nnames":["ViewEncapsulation","sequence","AnimationBuilder","Injectable","RendererFactory2","Inject","DOCUMENT","AnimationFactory","AnimationEngine","NgZone","AnimationDriver","AnimationStyleNormalizer","supportsWebAnimations","WebAnimationsDriver","CssKeyframesDriver","WebAnimationsStyleNormalizer","InjectionToken","DomRendererFactory2","NoopAnimationDriver","NgModule","BrowserModule"],\n\nmappings":":;;;;;;;;;IAAA;;;;;;;;;IAcA;IAEA,IAAI,aAAa,GAAG,UAAS,CAAC,EAAE,CAAC;QAC7B,aAAa,GAAG,MAAM,CAAC,cAAc;aAChC,EAAE,SAAS,EAAE,EAAE,EAAE,YAAY,KAAK,IAAI,UAUU,CAAC,EAAE,CAAC,IAAI,CAAC,CAAC,SAAS,GAAG,CAAC,CAAC,EAAE,CAAC;YAC5E,UAUU,CAAC,EAAE,CAAC,IAAI,KAAK,IAAI,CAAC,IAAI,CAAC;gBAAE,IAAI,CAAC,CAAC,cAAc,CAAC,CAAC,CAAC;oBAAE,CAAC,CAAC,CAAC,CAAC,GAAG,CAAC,CAAC,CAAC,CAAC,CAAC,EAAE,CAAC;QAC/E,OAAO,aAAa,CAAC,CAAC,EAAE,CAAC,CAAC,CAAC;IAC/B,CAAC,CAAC;aAEc,SAAS,CAAC,CAAC,EAAE,CAAC;QAC1B,aAAa,CAAC,CAAC,EAAE,CAAC,CAAC,CAAC;QACpB,SAAS,EAAE,KAAK,IAAI,CAAC,WAAW,GAAG,CAAC,CAAC,EAAE;QACvC,CAAC,CAAC,SAAS,GAAG,CAAC,KAAK,IAAI,GAAG,MAAM,CAAC,MAAM,CAAC,CAAC,CAAC,IAAI,EAAE,CAAC,SAAS,GAAG,CAAC,CAAC,SAAS,EAAE,IAAI,EAAE,EAAE,CAAC,CAAC;IACzF,CAAC;IAEM,IAAI,QAAQ,GAAG;QACIB,QAAQ,GAAG,MAAM,CAAC,MAAM,IAAI,SAAS,QAAQ,CAAC,CAAC;YAC3C,KAAK,IAAI,CAAC,EAAE,CAAC,GAAG,CAAC,EAAE,CAAC,GAAG,SAAS,CAAC,MAAM,EAAE,CAAC,GAAG,CAAC,EAAE,CAAC,EAAE,EAAE;gBACjD,CAAC,GAAG,SAAS,CAAC,CAAC,CAAC;gBACjB,KAAK,IAAI,CAAC,IAAI,CAAC;oBAAE,IAAI,MAAM,CAAC,SAAS,CAAC,cAAc,CAAC,IAAI,CAAC,CAAC,EAAE,CAAC,CAAC;wBAAE,CAAC,CAAC,CAAC,CAAC,GAAG,CAAC,CAAC,CAAC,CAAC,CAAC;aAChF;YACD,OAAO,CAAC,CAAC;SACZ,CAAA;QACD,OAAO,QAAQ,CAAC,KAAK,CAAC,IAAI,EAAE,SAAS,CAAC,CAAC;IAC3C,CAAC,CAAA;aAEe,MAAM,CAAC,CAAC,EAAE,CAAC;QACvB,IAAI,CAAC,GAAG,EAAE,CAAC;QACX,KAAK,IAAI,CAAC,IAAI,CAAC;YAAE,IAAI,MAAM,CAAC,SAAS,CAAC,cAAc,CAAC,IAAI,CAAC,CAAC,EAAE,CAAC,CAAC,IAAI,CAAC,CAAC,OAAO,CAAC,CAAC,CAAC,GAAG,CAAC;gBAC/E,CAAC,CAAC,CAAC,CAAC,GAAG,CAAC,CAAC,CAAC,CAAC,CAAC;QACkB,IAAI,CAAC,IAAI,IAAI,IAAI,OAAO,MAAM,CAAC,qBAAqB,KAAK,UAUU;YAC/D,KAAK,IAAI,CAAC,GAAG,CAAC,EAAE,CAAC,GAAG,MAAM,CAAC,qBAAqB,CAAC,CAAC,CAAC,EAAE,CAAC,GAAG,CAAC,CAAC,MAAM,EAAE,CAAC,EAAE,EAAE;gBACpE,IAAI,CAAC,CAAC,OAAO,CAAC,CAAC,CAAC,CAAC,CAAC,GAAG,CAAC,IAAI,MAAM,CAAC,SAAS,CAAC,oBAAoB,CAAC,IAAI,CAAC,CAAC,EAAE,CAAC,CAAC,CAAC,CAAC,CAAC;oBACIE,CAAC,CAAC,CAAC,CAAC,CAAC,CAAC,GAAG,CAAC,CAAC,CAAC,CAAC,CAAC,CAAC,CAAC,CAAC,CAAC,CAAC;AACzB;QACL,OAAO,CAAC,CAAC;IACb,CAAC;aAEe,UAUU,CAAC,UAUU,EAAE,MAAM,EAAE,GAAG,EAAE,IAAI;QACpD,IAAI,CAAC,GAAG,SAAS,CAAC,MAAM,EAAE,CAAC,GAAG,CAAC,GAAG,CAAC,GAAG,MAAM,GAAG,IAAI,KAAK,IAAI,GAAG,IAAI,GAAG,MAAM,CAAC,wBAwB,CAAC,MAAM,EAAE,GAAG,CAAC,GAAG,IAAI,EAAE,CAAC,CAAC;QAC7H,IAAI,OAAO,OAAO,KAAK,QAAQ,IAAI,OAAO,OAAO,CAAC,QAAQ,KAAK,UAUU;YAAE,CAAC,GAAG,OAAO,CAAC,QAAQ,CAAC,UAUU,EAAE,MAAM,EAAE,GAAG,EAAE,IAAI,CAAC,CAAC;;YACIH,KAAK,IAAI,CAAC,GAAG,UAUU,CAAC,MAAM,GAAG,CAAC,EAAE,CAAC,IAAI,CAAC,EAAE,CAAC,EAAE;gBAAE,IAAI,CAAC,GAAG,UAUU,CAAC,CAAC,CAAC;oBAAE,CAAC,GAAG,CAAC,CAAC,GAAG,CAAC,GAAG,CAAC,CAAC,CAAC,CAAC,GAAG,CAAC,GAAG,CAAC,GAAG,CAAC,CAAC,MAAM,EAAE,GAAG,EAAE,CAAC,CAAC,GAAG,CAAC,CAAC,MAAM,EAAE,GAAG,CAAC,KAAK,CAAC,CAAC;QACIJ,OAAO,CAAC,GAAG,CAAC,IAAI,CAAC,IAAI,MAAM,CAAC,cAAc,CAAC,MAAM,EAAE,GAAG,EAAE,CAAC,CAAC,EAAE,CAAC,CAAC;IACIE,CAAC;aAEe,OAAO,CAAC,
```

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No license file was found, but licenses were detected in source scan.

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CONNECTION WITH THE USE OR\r\n\r\nPERFORMANCE OF THIS
SOFTWARE.\r\n*****

```

```

/\r\n\r\n global Reflect, Promise *
\r\n\r\nvar extendStatics = function(d, b) {
\r\n extendStatics =
Object.setPrototypeOf ||
 ({} instanceof Array && function(d, b) { d.__proto__ = b; }) ||
 function(d, b) { for (var p in b) if (b.hasOwnProperty(p)) d[p] = b[p]; };
\r\n return extendStatics(d,
b);
\r\n};
\r\n\r\nexport function __extends(d, b) {
\r\n extendStatics(d, b);
\r\n function __() { this.constructor = d; }
\r\n d.prototype = b === null ? Object.create(b) : (Object.prototype = b.prototype, new __());
\r\n};
\r\n\r\nexport var
__assign = function() {
\r\n __assign = Object.assign || function __assign(t) {
\r\n for (var s, i = 1, n =
arguments.length; i < n; i++) {
\r\n s = arguments[i];
\r\n for (var p in s) if
(Object.prototype.hasOwnProperty.call(s, p)) t[p] = s[p];
\r\n }
\r\n return t;
\r\n };
\r\n return
__assign.apply(this, arguments);
\r\n};
\r\n\r\nexport function __rest(s, e) {
\r\n var t = {};
\r\n for (var p in s) if

```

```

(Object.prototype.hasOwnProperty.call(s, p) && e.indexOf(p) < 0)\r\n t[p] = s[p];\r\n if (s != null && typeof
Object.getOwnPropertySymbols === "function")\r\n for (var i = 0, p = Object.getOwnPropertySymbols(s); i <
p.length; i++) {\r\n if (e.indexOf(p[i]) < 0 && Object.prototype.propertyIsEnumerable.call(s, p[i]))\r\n
t[p[i]] = s[p[i];\r\n }\r\n return t;\r\n}\r\n\r\nexport function __decorate(decorators, target, key, desc) {\r\n
var c = arguments.length, r = c < 3 ? target : desc === null ? desc = Object.getOwnPropertyDescriptor(target, key) :
desc, d;\r\n if (typeof Reflect === "object" && typeof Reflect.decorate === "function") r =
Reflect.decorate(decorators, target, key, desc);\r\n else for (var i = decorators.length - 1; i >= 0; i--) if (d =
decorators[i]) r = (c < 3 ? d(r) : c > 3 ? d(target, key, r) : d(target, key)) || r;\r\n return c > 3 && r &&
Object.defineProperty(target, key, r), r;\r\n}\r\n\r\nexport function __param(paramIndex, decorator) {\r\n return
function (target, key) { decorator(target, key, paramIndex); }\r\n}\r\n\r\nexport function __metadata(metadataKey,
metadataValue) {\r\n if (typeof Reflect === "object" && typeof Reflect.metadata === "function") return
Reflect.metadata(metadataKey, metadataValue);\r\n}\r\n\r\nexport function __awaiter(thisArg, _arguments, P,
generator) {\r\n function adopt(value) { return value instanceof P ? value : new P(function (resolve) {
resolve(value); }); }\r\n return new (P || (P = Promise))(function (resolve, reject) {\r\n function fulfilled(value)
{ try { step(generator.next(value)); } catch (e) { reject(e); } }\r\n function rejected(value) { try {
step(generator["throw"](value)); } catch (e) { reject(e); } }\r\n function step(result) { result.done ?
resolve(result.value) : adopt(result.value).then(fulfilled, rejected); }\r\n step((generator =
generator.apply(thisArg, _arguments || [])).next());\r\n });\r\n}\r\n\r\nexport function __generator(thisArg, body)
{\r\n var _ = { label: 0, sent: function() { if (t[0] & 1) throw t[1]; return t[1]; }, trys: [], ops: [] }, f, y, t, g;\r\n
return g = { next: verb(0), "throw": verb(1), "return": verb(2) }, typeof Symbol === "function" &&
(g[Symbol.iterator] = function() { return this; }), g;\r\n function verb(n) { return function (v) { return step([n, v]);
}; }\r\n function step(op) {\r\n if (f) throw new TypeError("Generator is already executing.");\r\n while
(1) try {\r\n if (f = 1, y && (t = op[0] & 2 ? y["return"] : op[0] ? y["throw"] || ((t = y["return"]) &&
t.call(y), 0) : y.next) && !(t = t.call(y, op[1])).done) return t;\r\n if (y = 0, t) op = [op[0] & 2, t.value];\r\n
switch (op[0]) {\r\n case 0: case 1: t = op; break;\r\n case 4: _.label++; return { value: op[1],
done: false }; \r\n case 5: _.label++; y = op[1]; op = [0]; continue;\r\n case 7: op = _.ops.pop();
_.trys.pop(); continue;\r\n default:\r\n if (!(t = _.trys, t = t.length > 0 && t[t.length - 1]) &&
(op[0] === 6 || op[0] === 2)) { _ = 0; continue; }\r\n if (op[0] === 3 && (!t || (op[1] > t[0] && op[1] <
t[3]))) { _.label = op[1]; break; }\r\n if (op[0] === 6 && _.label < t[1]) { _.label = t[1]; t = op; break;
}\r\n if (t && _.label < t[2]) { _.label = t[2]; _.ops.push(op); break; }\r\n if (t[2])
_.ops.pop();\r\n _.trys.pop(); continue;\r\n }\r\n op = body.call(thisArg, _);\r\n } catch
(e) { op = [6, e]; y = 0; } finally { f = t = 0; }\r\n if (op[0] & 5) throw op[1]; return { value: op[0] ? op[1] : void
0, done: true }; }\r\n }\r\n}\r\n\r\nexport var __createBinding = Object.create ? (function(o, m, k, k2) {\r\n if (k2
=== undefined) k2 = k;\r\n Object.defineProperty(o, k2, { enumerable: true, get: function() { return m[k]; }
});\r\n}) : (function(o, m, k, k2) {\r\n if (k2 === undefined) k2 = k;\r\n o[k2] = m[k];\r\n});\r\n\r\nexport
function __exportStar(m, exports) {\r\n for (var p in m) if (p !== "default" && !exports.hasOwnProperty(p))
__createBinding(exports, m, p);\r\n}\r\n\r\nexport function __values(o) {\r\n var s = typeof Symbol ===
"function" && Symbol.iterator, m = s && o[s], i = 0;\r\n if (m) return m.call(o);\r\n if (o && typeof o.length
=== "number") return {\r\n next: function () {\r\n if (o && i >= o.length) o = void 0;\r\n return {
value: o && o[i++], done: !o }; \r\n };\r\n };\r\n throw new TypeError(s ? "Object is not iterable." :
"Symbol.iterator is not defined.");\r\n}\r\n\r\nexport function __read(o, n) {\r\n var m = typeof Symbol ===
"function" && o[Symbol.iterator];\r\n if (!m) return o;\r\n var i = m.call(o), r, ar = [], e;\r\n try {\r\n while ((n === void 0 || n-- > 0) && !(r = i.next()).done) ar.push(r.value);\r\n } catch (error) { e = { error:
error }; }\r\n finally {\r\n try {\r\n if (r && !r.done && (m = i["return"])) m.call(i);\r\n } finally
{ if (e) throw e.error; }\r\n }\r\n return ar;\r\n}\r\n\r\nexport function __spread() {\r\n for (var ar = [], i =
0; i < arguments.length; i++)\r\n ar = ar.concat(__read(arguments[i]));\r\n return ar;\r\n}\r\n\r\nexport function
__spreadArrays() {\r\n for (var s = 0, i = 0, il = arguments.length; i < il; i++) s += arguments[i].length;\r\n for
(var r = Array(s), k = 0, i = 0; i < il; i++)\r\n for (var a = arguments[i], j = 0, jl = a.length; j < jl; j++, k++)\r\n

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 r[k] = a[j];\r\n return r;\r\n};\r\n\r\nexport function __await(v) {\r\n return this instanceof __await ? (this.v =
v, this) : new __await(v);\r\n}\r\n\r\nexport function __asyncGenerator(thisArg, _arguments, generator) {\r\n if
(!Symbol.asyncIterator) throw new TypeError("Symbol.asyncIterator is not defined.");\r\n var g =
generator.apply(thisArg, _arguments || []), i, q = [];\r\n return i = {}, verb("next"), verb("throw"),
verb("return"), i[Symbol.asyncIterator] = function () { return this; }, i;\r\n function verb(n) { if (g[n]) i[n] =
function (v) { return new Promise(function (a, b) { q.push([n, v, a, b]) > 1 || resume(n, v); }); }; }\r\n function
resume(n, v) { try { step(g[n](v)); } catch (e) { settle(q[0][3], e); }}\r\n function step(r) { r.value instanceof
__await ? Promise.resolve(r.value.v).then(fulfill, reject) : settle(q[0][2], r); }\r\n function fulfill(value) {
resume("next", value); }\r\n function reject(value) { resume("throw", value); }\r\n function settle(f, v) { if
(f(v), q.shift(), q.length) resume(q[0][0], q[0][1]); }\r\n}\r\n\r\nexport function __asyncDelegator(o) {\r\n var i,
p;\r\n return i = {}, verb("next"), verb("throw"), function (e) { throw e; }, verb("return"), i[Symbol.iterator] =
function () { return this; }, i;\r\n function verb(n, f) { i[n] = o[n] ? function (v) { return (p = !p) ? { value:
__await(o[n](v)), done: n === "return" } : f ? f(v) : v; } : f; }\r\n}\r\n\r\nexport function __asyncValues(o) {\r\n if
(!Symbol.asyncIterator) throw new TypeError("Symbol.asyncIterator is not defined.");\r\n var m =
o[Symbol.asyncIterator], i;\r\n return m ? m.call(o) : (o = typeof __values === "function" ? __values(o) :
o[Symbol.iterator](), i = {}, verb("next"), verb("throw"), verb("return"), i[Symbol.asyncIterator] = function () {
return this; }, i);\r\n function verb(n) { i[n] = o[n] && function (v) { return new Promise(function (resolve, reject)
{ v = o[n](v), settle(resolve, reject, v.done, v.value); }); }; }\r\n function settle(resolve, reject, d, v) {
Promise.resolve(v).then(function(v) { resolve({ value: v, done: d }); }, reject); }\r\n}\r\n\r\nexport function
__makeTemplateObject(cooked, raw) {\r\n if (Object.defineProperty) { Object.defineProperty(cooked, "raw", {
value: raw }); } else { cooked.raw = raw; }\r\n return cooked;\r\n};\r\n\r\nvar __setModuleDefault = Object.create
? (function(o, v) {\r\n Object.defineProperty(o, "default", { enumerable: true, value: v });\r\n}) : function(o, v)
{\r\n o["default"] = v;\r\n};\r\n\r\nexport function __importStar(mod) {\r\n if (mod && mod.__esModule)
return mod;\r\n var result = {};\r\n if (mod != null) for (var k in mod) if (Object.hasOwnProperty.call(mod, k))
__createBinding(result, mod, k);\r\n __setModuleDefault(result, mod);\r\n return result;\r\n}\r\n\r\nexport
function __importDefault(mod) {\r\n return (mod && mod.__esModule) ? mod : { default: mod
};\r\n}\r\n\r\nexport function __classPrivateFieldGet(receiver, privateMap) {\r\n if (!privateMap.has(receiver))
{\r\n throw new TypeError("attempted to get private field on non-instance");\r\n }\r\n return
privateMap.get(receiver);\r\n}\r\n\r\nexport function __classPrivateFieldSet(receiver, privateMap, value) {\r\n if
(!privateMap.has(receiver)) {\r\n throw new TypeError("attempted to set private field on non-instance");\r\n
}\r\n privateMap.set(receiver, value);\r\n return value;\r\n}\r\n\r\n"/**\n * @license\n * Copyright Google LLC
All Rights Reserved.\n *\n * Use of this source code is governed by an MIT-style license that can be\n * found in
the LICENSE file at https://angular.io/license\n */\nimport {getDOM as getDOM} from
'@angular/common';\nimport {NgZone, global as global} from '@angular/core';\nexport class BrowserDetection
{\n private _overrideUa: string|null;\n private get _ua(): string {\n if (typeof this._overrideUa === 'string') {\n
return this._overrideUa;\n }\n return getDOM() ? getDOM().getUserAgent() : "";\n }\n\n static setup() {\n
return new BrowserDetection(null);\n }\n\n constructor(ua: string|null) {\n this._overrideUa = ua;\n }\n\n get
isFirefox(): boolean {\n return this._ua.indexOf('Firefox') > -1;\n }\n\n get isAndroid(): boolean {\n return
this._ua.indexOf('Mozilla/5.0') > -1 && this._ua.indexOf('Android') > -1 &&\n
this._ua.indexOf('AppleWebKit') > -1 && this._ua.indexOf('Chrome') == -1 &&\n
this._ua.indexOf('IEMobile')
== -1;\n }\n\n get isEdge(): boolean {\n return this._ua.indexOf('Edge') > -1;\n }\n\n get isIE(): boolean {\n
return this._ua.indexOf('Trident') > -1;\n }\n\n get isWebkit(): boolean {\n return
this._ua.indexOf('AppleWebKit') > -1 && this._ua.indexOf('Edge') == -1 &&\n
this._ua.indexOf('IEMobile')
== -1;\n }\n\n get isIOS7(): boolean {\n return (this._ua.indexOf('iPhone OS 7') > -1 || this._ua.indexOf('iPad OS
7') > -1) &&\n
this._ua.indexOf('IEMobile') == -1;\n }\n\n get isSlow(): boolean {\n return this.isAndroid ||
this.isIE || this.isIOS7;\n }\n\n // The Intl API is only natively supported in Chrome, Firefox, IE11 and Edge.\n //
This detector is needed in tests to make the difference between:\n // 1) IE11/Edge: they have a native Intl API, but
with some discrepancies\n // 2) IE9/IE10: they use the polyfill, and so no discrepancies\n get

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supportsNativeIntlApi(): boolean {
 return !(<any>global).Intl && (<any>global).Intl !==
 (<any>global).IntlPolyfill;
}
get isChromeDesktop(): boolean {
 return this._ua.indexOf('Chrome') > -1
 && this._ua.indexOf('Mobile Safari') === -1 &&
 this._ua.indexOf('Edge') === -1;
}
// "Old Chrome"
means Chrome 3X, where there are some discrepancies in the Intl API.
// Android 4.4 and 5.X have such
browsers by default (respectively 30 and 39).
get isOldChrome(): boolean {
 return this._ua.indexOf('Chrome')
 > -1 && this._ua.indexOf('Chrome/3') > -1 &&
 this._ua.indexOf('Edge') === -1;
}
get supportsCustomElements() {
 return (typeof (<any>global).customElements !== 'undefined');
}
get supportsDeprecatedCustomCustomElementsV0() {
 return (typeof (document as any).registerElement !==
 'undefined');
}
get supportsRegExUnicodeFlag(): boolean {
 return
 RegExp.prototype.hasOwnProperty('unicode');
}
get supportsShadowDom() {
 const testEl =
 document.createElement('div');
 return (typeof testEl.attachShadow !== 'undefined');
}
get supportsDeprecatedShadowDomV0() {
 const testEl = document.createElement('div') as any;
 return (typeof
 testEl.createShadowRoot !== 'undefined');
}
}
export const browserDetection: BrowserDetection =
BrowserDetection.setup();
export function dispatchEvent(element: any, eventType: any): void {
 const evt:
 Event = getDOM().getDefaultDocument().createEvent('Event');
 evt.initEvent(eventType, true, true);
 getDOM().dispatchEvent(element, evt);
}
export function createMouseEvent(eventType: string): MouseEvent {
 const evt:
 MouseEvent = getDOM().getDefaultDocument().createEvent('MouseEvent');
 evt.initEvent(eventType, true, true);
 return evt;
}
export function el(html: string): HTMLElement {
 return
 <HTMLElement>getContent(createTemplate(html)).firstChild;
}
export function normalizeCSS(css: string):
string {
 return css.replace(/\\s+/g, ' ')
 .replace(/:/g, ':')
 .replace(/"/g, '"')
 .replace(/'/g, '')
 .replace(/url\\(\\(\\|\\s)(+)(\\|\\s)\\(\\s*)/g, (...match: string[]) => `url("${match[2]}")`)
 .replace(/\\[\\(\\+)=\\[\\^"\\]]+\\]/g, (...match: string[]) => `[${match[1]}="${match[2]}"]`);
}
function
getAttributeMap(element: any): Map<string, string> {
 const res = new Map<string, string>();
 const elAttrs =
 element.attributes;
 for (let i = 0; i < elAttrs.length; i++) {
 const attrib = elAttrs.item(i);
 res.set(attrib.name,
 attrib.value);
 }
 return res;
}
const _selfClosingTags = ['br', 'hr', 'input'];
export function
stringifyElement(el: any /** TODO #9100 */): string {
 let result = '';
 if (getDOM().isElementNode(el)) {
 const tagName = el.tagName.toLowerCase();
 // Opening tag
 result += `<${tagName}`;
 // Attributes
 in an ordered way
 const attributeMap = getAttributeMap(el);
 const sortedKeys =
 Array.from(attributeMap.keys()).sort();
 for (const key of sortedKeys) {
 const lowerCaseKey =
 key.toLowerCase();
 let attValue = attributeMap.get(key);
 if (typeof attValue !== 'string') {
 result
 += ` ${lowerCaseKey}`;
 } else {
 // Browsers order style rules differently. Order them alphabetically for
 consistency.
 if (lowerCaseKey === 'style') {
 attValue = attValue.split(/; ?/).filter(s => !!s).sort().map(s
 => `${s};`).join(' ');
 }
 result += ` ${lowerCaseKey}="${attValue}"`;
 }
 }
 result +=
 '>';
 // Children
 const childrenRoot = templateAwareRoot(el);
 const children = childrenRoot ?
 childrenRoot.childNodes : [];
 for (let j = 0; j < children.length; j++) {
 result +=
 stringifyElement(children[j]);
 }
 // Closing tag
 if (_selfClosingTags.indexOf(tagName) === -1) {
 result += `</${tagName}>`;
 } else if (isCommentNode(el)) {
 result += `<!--${el.nodeValue}-->`;
 } else {
 result += el.textContent;
 }
 }
 return result;
}
export function createNgZone(): NgZone {
 return
 new NgZone({enableLongStackTrace: true, shouldCoalesceEventChangeDetection: false});
}
export function
isCommentNode(node: Node): boolean {
 return node.nodeType === Node.COMMENT_NODE;
}
export
function isTextNode(node: Node): boolean {
 return node.nodeType === Node.TEXT_NODE;
}
export
function getContent(node: Node): Node {
 if ('content' in node) {
 return (<any>node).content;
 } else {
 return
 node;
 }
}
export function templateAwareRoot(el: Node): any {
 return
 getDOM().isElementNode(el) && el.nodeName === 'TEMPLATE' ? getContent(el) : el;
}
export function setCookie(name: string, value:
string) {
 // document.cookie is magical, assigning into it assigns/overrides one cookie value, but does
 // not
 // clear other cookies.
 document.cookie = encodeURIComponent(name) + '=' +
 encodeURIComponent(value);
}
export function supportsWebAnimation(): boolean {
 return
 typeof (<any>Element).prototype['animate'] === 'function';
}
export function hasStyle(element: any, styleName:

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string, styleValue?: string|null): boolean {\n const value = element.style[styleName] || '';\n return styleValue ? value\n === styleValue : value.length > 0;\n}\n\nexport function hasClass(element: any, className: string): boolean {\n return element.classList.contains(className);\n}\n\nexport function sortedClassList(element: any): any[] {\n return\n Array.prototype.slice.call(element.classList, 0).sort();\n}\n\nexport function createTemplate(html: any):\n HTMLElement {\n const t = getDOM().getDefaultDocument().createElement('template');\n t.innerHTML = html;\n return t;\n}\n\nexport function childNodesAsList(el: Node): any[] {\n const childNodes = el.childNodes;\n const\n res = [];\n for (let i = 0; i < childNodes.length; i++) {\n res[i] = childNodes[i];\n }\n return res;\n}\n\n"/**\n * @license\n * Copyright Google LLC All Rights Reserved.\n * Use of this source code is governed by an MIT-\n * style license that can be\n * found in the LICENSE file at https://angular.io/license\n */\n\nimport {APP_ID,\n createPlatformFactory, NgModule, NgZone, PLATFORM_INITIALIZER, platformCore, PlatformRef,\n StaticProvider} from '@angular/core';\nimport {BrowserModule, BrowserDomAdapter as BrowserDomAdapter,\n ELEMENT_PROBE_PROVIDERS as ELEMENT_PROBE_PROVIDERS} from '@angular/platform-\n browser';\nimport {BrowserDetection, createNgZone} from './browser_util';\n\nfunction initBrowserTests() {\n BrowserDomAdapter.makeCurrent();\n BrowserDetection.setup();\n}\n\nconst\n _TEST_BROWSER_PLATFORM_PROVIDERS: StaticProvider[] = [\n {provide: PLATFORM_INITIALIZER,\n useValue: initBrowserTests, multi: true};\n];\n\n"/**\n * Platform for testing\n */\n\n@publicApi\nexport const\n platformBrowserTesting =\n createPlatformFactory(platformCore, 'browserTesting',\n _TEST_BROWSER_PLATFORM_PROVIDERS);\n\n"/**\n * NgModule for testing.\n */\n\n@publicApi\nexport\n class\n BrowserTestingModule {\n constructor(\n @NgModule({\n exports: [BrowserModule],\n providers: [\n {provide: APP_ID, useValue: 'a'},\n ELEMENT_PROBE_PROVIDERS,\n {provide: NgZone, useFactory: createNgZone},\n],\n })\n)\n }\n}\n\n"/**\n * @license\n * Copyright Google LLC All Rights Reserved.\n * Use of\n * this source code is governed by an MIT-style license that can be\n * found in the LICENSE file at\n * https://angular.io/license\n */\n\n@module\n@description\nEntry point for all public APIs of the\nplatform-browser/testing package.\n\nexport * from './browser';\n\n"/**\n * @license\n * Copyright Google LLC\n * All Rights Reserved.\n * Use of this source code is governed by an MIT-style license that can be\n * found in\n * the LICENSE file at https://angular.io/license\n */\n\n// <reference types="jasmine" />\n\n@module\n@description\nEntry point for all public APIs of this package.\n\nexport * from './src/testing';\n\n"/**\n * @license\n * Copyright Google LLC All Rights Reserved.\n * Use of this source code is governed by an MIT-\n * style license that can be\n * found in the LICENSE file at https://angular.io/license\n */\n\n// This file is not used to\n// build this module. It is only used during editing\n// by the TypeScript language service and during build for\n// verification. `ngc` replaces this file with production index.ts when it rewrites private symbol\n// names.\n\nexport\n * from './public_api';\n\n"/**\n * Generated bundle index. Do not edit.\n */\n\nexport\n * from './index';\n\nexport\n {createNgZone as angular_packages_platform_browser_testing_testing_a} from\n './src/browser_util';\n\nnames: ["getDOM", "global", "NgZone", "BrowserDomAdapter", "PLATFORM_INITIALIZE\nR", "createPlatformFactory", "platformCore", "NgModule", "BrowserModule", "APP_ID", "ELEMENT_PROBE_PRO\nVIDERS"], "mappings": ";;;;;;;;;;IAAA;;;;;;;;;;IAcA;IAEA,IAAI,aAAa,GAAG,UAAS,CAAC,EAAE,CAAC;QA\nC7B,aAAa,GAAG,MAAM,CAAC,cAAc;aAChC,EAAE,SAAS,EAAE,EAAE,EAAE,YAAY,KAAK,IAAI,UAAU,\nCAAC,EAAE,CAAC,IAAI,CAAC,CAAC,SAAS,GAAG,CAAC,CAAC,EAAE,CAAC;YAC5E,UAAU,CAAC,EA\nAE,CAAC,IAAI,KAAK,IAAI,CAAC,IAAI,CAAC;gBAAE,IAAI,CAAC,CAAC,cAAc,CAAC,CAAC,CAAC;oBA\nAE,CAAC,CAAC,CAAC,CAAC,GAAG,CAAC,CAAC,CAAC,CAAC,EAAE,CAAC;QAC/E,OAAO,aAAa\n,CAAC,CAAC,EAAE,CAAC,CAAC,CAAC;IAC/B,CAAC,CAAC;aAEc,SAAS,CAAC,CAAC,EAAE,CAAC;QAC\n1B,aAAa,CAAC,CAAC,EAAE,CAAC,CAAC,CAAC;QACpB,SAAS,EAAE,KAAK,IAAI,CAAC,WAAW,GAAG,\nCAAC,CAAC,EAAE;QACvC,CAAC,CAAC,SAAS,GAAG,CAAC,KAAK,IAAI,GAAG,MAAM,CAAC,MAAM,\nCAAC,CAAC,CAAC,IAAI,EAAE,CAAC,SAAS,GAAG,CAAC,CAAC,SAAS,EAAE,IAAI,EAAE,EAAE,CAAC,\nCAAC;IACzF,CAAC;IAEM,IAAI,QAAQ,GAAG;QACIB,QAAQ,GAAG,MAAM,CAAC,MAAM,IAAI,SAAS,QA\nAQ,CAAC,CAAC;YAC3C,KAAK,IAAI,CAAC,EAAE,CAAC,GAAG,CAAC,EAAE,CAAC,GAAG,SAAS,CAAC\n,MAAM,EAAE,CAAC,GAAG,CAAC,EAAE,CAAC,EAAE,EAAE;gBACjD,CAAC,GAAG,SAAS,CAAC,CAAC,\nCAAC,CAAC;gBACjB,KAAK,IAAI,CAAC,IAAI,CAAC;oBAAE,IAAI,MAAM,CAAC,SAAS,CAAC,cAAc,CAA
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B,EAAE,UAAwB;QACf,IAAM,KAAK,GAAG,OAAO,CAAC,KAAK,CAAC,SAAS,CAAC,IAAI,EAAE,CAAC;  
QAC7C,OAAO,UAAU,GAAG,KAAK,IAAI,UAAU,GAAG,KAAK,CAAC,MAAM,GAAG,CAAC,CAAC;IAC7D,  
CAAC;aAEe,QAAQ,CAAC,OAAy,EAAE,SAAiB;QACtD,OAAO,OAAO,CAAC,SAAS,CAAC,QAAQ,CAAC,S  
AAS,CAAC,CAAC;IAC/C,CAAC;aAEe,eAAe,CAAC,OAAy;QAC1C,OAAO,KAAK,CAAC,SAAS,CAAC,KAA  
K,CAAC,IAAI,CAAC,OAAO,CAAC,SAAS,EAAE,CAAC,CAAC,CAAC,IAAI,EAAE,CAAC;IACjE,CAAC;aAE  
e,cAAc,CAAC,IAAS;QACtC,IAAM,CAAC,GAAGA,cAAM,EAAE,CAAC,kBAaKB,EAAE,CAAC,aAAa,CAAC,  
UAAU,CAAC,CAAC;QACIE,CAAC,CAAC,SAAS,GAAG,IAAI,CAAC;QACnB,OAAO,CAAC,CAAC;IACX,CA  
AC;aAEe,gBAaGB,CAAC,EAAQ;QACvC,IAAM,UAAU,GAAG,EAAE,CAAC,UAAU,CAAC;QACjC,IAAM,GA  
AG,GAAG,EAAE,CAAC;QACf,KAAK,IAAI,CAAC,GAAG,CAAC,EAAE,CAAC,GAAG,UAAU,CAAC,MAAM  
,EAAE,CAAC,EAAE,EAAE;YAC1C,GAAG,CAAC,CAAC,CAAC,GAAG,UAAU,CAAC,CAAC,CAAC,CAAC;S  
ACxB;QACD,OAAO,GAAG,CAAC;IACb;;;IC1PA;;;;;IAYA,SAAS,gBAaGB;QACvBG,kCAAiB,CAAC,WAAW  
,EAAE,CAAC;QACChC,gBAaGB,CAAC,KAAK,EAAE,CAAC;IAC3B,CAAC;IAED,IAAM,gCAAgC,GACIC,CA  
AC,EAAC,OAAO,EAAEC,yBAAoB,EAAE,QAAQ,EAAE,gBAaGB,EAAE,KAAK,EAAE,IAAI,EAAC,CAAC,C  
AAC;IAE/E;;;;QAKa,sBAAsB,GAC/BC,0BAAqB,CAACC,iBAAY,EAAE,gBAaGB,EAAE,gCAAgC,EAAE;aAY  
1D;IAVIC;;;;;QAaA;;;;;gBARCC,aAAQ,SAAC;oBACR,OAAO,EAAE,CAACC,6BAAa,CAAC;oBACxB,SAAS,  
EAAE;wBACT,EAAC,OAAO,EAAEC,WAAM,EAAE,QAAQ,EAAE,GAAG,EAAC;wBACChCC,wCAAuB;wBA  
CvB,EAAC,OAAO,EAAER,WAAM,EAAE,UAAU,IAAc,EAAC;qBAC5C;iBACF;;;ICxCD;;;;;;ICAA;;;;;;;ICAA  
;;;;;;;ICAA;;;;;;;}

Found in path(s):

\* /opt/cola/permits/1358260668\_1657134840.805252/0/platform-browser-11-0-2-tgz/package/bundles/platform-browser-testing.umd.js.map

No license file was found, but licenses were detected in source scan.

```
{"version":3,"file":"platform-browser.js","sources":["../../../../packages/platform-browser/src/browser/generic_browser_adapter.ts", "../../../../packages/platform-browser/src/browser/browser_adapter.ts", "../../../../packages/platform-browser/src/browser/server-transition.ts", "../../../../packages/platform-browser/src/browser/testability.ts", "../../../../packages/platform-browser/src/dom/util.ts", "../../../../packages/platform-browser/src/dom/debug/ng_probe.ts", "../../../../packages/platform-browser/src/dom/events/event_manager.ts", "../../../../packages/platform-browser/src/dom/shared_styles_host.ts", "../../../../packages/platform-browser/src/dom/dom_renderer.ts", "../../../../packages/platform-browser/src/dom/events/dom_events.ts", "../../../../packages/platform-browser/src/dom/events/hammer_gestures.ts", "../../../../packages/platform-browser/src/dom/events/key_events.ts", "../../../../packages/platform-
```

```

browser/src/security/dom_sanitization_service.ts","../../../../../../packages/platform-
browser/src/browser.ts","../../../../../../packages/platform-
browser/src/browser/meta.ts","../../../../../../packages/platform-
browser/src/browser/title.ts","../../../../../../packages/platform-
browser/src/browser/tools/browser.ts","../../../../../../packages/platform-
browser/src/browser/tools/common_tools.ts","../../../../../../packages/platform-
browser/src/browser/tools/tools.ts","../../../../../../packages/platform-
browser/src/browser/transfer_state.ts","../../../../../../packages/platform-
browser/src/dom/debug/by.ts","../../../../../../packages/platform-
browser/src/private_export.ts","../../../../../../packages/platform-
browser/src/version.ts","../../../../../../packages/platform-browser/src/platform-
browser.ts","../../../../../../packages/platform-browser/public_api.ts","../../../../../../packages/platform-
browser/index.ts","../../../../../../packages/platform-browser/platform-browser.ts"],"sourcesContent":["/**\n *
 * @license\n * Copyright Google LLC All Rights Reserved.\n *\n * Use of this source code is governed by an MIT-
 * style license that can be\n * found in the LICENSE file at https://angular.io/license\n *\n\nimport {DomAdapter as
 * DomAdapter} from '@angular/common';\n\n\n/**\n * Provides DOM operations in any browser environment.\n
 * \n * @security Tread carefully! Interacting with the DOM directly is dangerous and\n * can introduce XSS risks.\n
 * \n * \nexport abstract class GenericBrowserDomAdapter extends DomAdapter {\n constructor() {\n super();\n }\n
 * supportsDOMEvents(): boolean {\n return true;\n }\n}\n\n","/**\n * @license\n * Copyright Google LLC All
 * Rights Reserved.\n *\n * Use of this source code is governed by an MIT-style license that can be\n * found in the
 * LICENSE file at https://angular.io/license\n *\n\nimport {parseCookieValue as parseCookieValue,
 * setRootDomAdapter as setRootDomAdapter} from '@angular/common';\nimport {global as global} from
 * '@angular/core';\nimport {GenericBrowserDomAdapter} from './generic_browser_adapter';\n\nconst
 * nodeContains: (this: Node, other: Node) => boolean = (() => {\n if (global['Node']) {\n return
 * global['Node'].prototype.contains || function(this: Node, node: any) {\n return
 * !(this.compareDocumentPosition(node) & 16);\n }; \n }\n \n return undefined as any;\n})();\n\n\n/**\n * A
 * `DomAdapter` powered by full browser DOM APIs.\n *\n * @security Tread carefully! Interacting with the DOM
 * directly is dangerous and\n * can introduce XSS risks.\n *\n * \n * tslint:disable:requireParameterType no-console
 * \n\nexport class BrowserDomAdapter extends GenericBrowserDomAdapter {\n static makeCurrent() {\n
 * setRootDomAdapter(new BrowserDomAdapter());\n }\n getProperty(el: Node, name: string): any {\n return
 * (<any>el)[name];\n }\n log(error: string): void {\n if (window.console) {\n window.console.log &&
 * window.console.log(error);\n }\n }\n logGroup(error: string): void {\n if (window.console) {\n
 * window.console.group && window.console.group(error);\n }\n }\n logGroupEnd(): void {\n if
 * (window.console) {\n window.console.groupEnd && window.console.groupEnd();\n }\n }\n onAndCancel(el: Node, evt: any, listener: any): Function {\n
 * el.addEventListener(evt, listener, false);\n //
 * Needed to follow Dart's subscription semantic, until fix of\n //
 * https://code.google.com/p/dart/issues/detail?id=17406\n return () => {\n el.removeEventListener(evt, listener,
 * false);\n }; \n }\n dispatchEvent(el: Node, evt: any) {\n el.dispatchEvent(evt);\n }\n remove(node: Node):
 * Node {\n if (node.parentNode) {\n node.parentNode.removeChild(node);\n }\n return node;\n }\n
 * getValue(el: any): string {\n return el.value;\n }\n createElement(tagName: string, doc?: Document):
 * HTMLElement {\n doc = doc || this.getDefaultDocument();\n return doc.createElement(tagName);\n }\n
 * createHtmlDocument(): HTMLDocument {\n return
 * document.implementation.createHTMLDocument('fakeTitle');\n }\n getDefaultDocument(): Document {\n return
 * document;\n }\n isElementNode(node: Node): boolean {\n return node.nodeType ===
 * Node.ELEMENT_NODE;\n }\n isShadowRoot(node: any): boolean {\n return node instanceof
 * DocumentFragment;\n }\n getGlobalEventTarget(doc: Document, target: string): EventTarget|null {\n if (target
 * === 'window') {\n return window;\n }\n if (target === 'document') {\n return doc;\n }\n if (target ===
 * 'body') {\n return doc.body;\n }\n return null;\n }\n getHistory(): History {\n return window.history;\n }\n

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getLocation(): Location {\n return window.location;\n }\n getBaseHref(doc: Document): string|null {\n const
href = getBaseElementHref();\n return href == null ? null : relativePath(href);\n }\n resetBaseElement(): void {\n
baseElement = null;\n }\n getUserAgent(): string {\n return window.navigator.userAgent;\n }\n
performanceNow(): number {\n // performance.now() is not available in all browsers, see\n //
http://caniuse.com/#search=performance.now\n return window.performance && window.performance.now ?
window.performance.now() :\n
 new Date().getTime();\n }\n\n
supportsCookies(): boolean {\n return true;\n }\n\n getCookie(name: string): string|null {\n return
parseCookieValue(document.cookie, name);\n }\n\n\nlet baseElement: HTMLElement|null = null;\n\nfunction
getBaseElementHref(): string|null {\n if (!baseElement) {\n baseElement = document.querySelector('base');\n }
if (!baseElement) {\n return null;\n }\n return baseElement.getAttribute('href');\n }\n\n\n// based on urlUtils.js
in AngularJS\n\nlet urlParsingNode: any;\n\nfunction relativePath(url: any): string {\n if (!urlParsingNode) {\n
urlParsingNode = document.createElement('a');\n }\n urlParsingNode.setAttribute('href', url);\n return
(urlParsingNode.pathname.charAt(0) === '/') ? urlParsingNode.pathname :\n
 '/' +
urlParsingNode.pathname;\n }\n\n\n"/**\n * @license\n * Copyright Google LLC All Rights Reserved.\n * \n * Use of
this source code is governed by an MIT-style license that can be\n * found in the LICENSE file at
https://angular.io/license\n */\n\nimport {DOCUMENT, getDOM as getDOM} from '@angular/common';\nimport
{APP_INITIALIZER, ApplicationInitStatus, Inject, InjectionToken, Injector, StaticProvider} from
'@angular/core';\n\n\n/**\n * An id that identifies a particular application being bootstrapped, that should\n * match
across the client/server boundary.\n */\n\nexport const TRANSITION_ID = new
InjectionToken('TRANSITION_ID');\n\n\nexport function appInitializerFactory(transitionId: string, document: any,
injector: Injector) {\n return () => {\n // Wait for all application initializers to be completed before removing the
styles set by\n // the server.\n injector.get(ApplicationInitStatus).donePromise.then(() => {\n const dom =
getDOM();\n const styles: any[] =\n
 Array.prototype.slice.apply(document.querySelectorAll(`style[ng-
transition]`));\n styles.filter(el => el.getAttribute('ng-transition') === transitionId)\n
 .forEach(el =>
dom.remove(el);\n });\n });\n }\n\n\nexport const SERVER_TRANSITION_PROVIDERS: StaticProvider[] = [\n
{\n provide: APP_INITIALIZER,\n useFactory: appInitializerFactory,\n deps: [TRANSITION_ID,
DOCUMENT, Injector],\n multi: true\n },\n];\n\n\n"/**\n * @license\n * Copyright Google LLC All Rights
Reserved.\n * \n * Use of this source code is governed by an MIT-style license that can be\n * found in the
LICENSE file at https://angular.io/license\n */\n\nimport {getDOM as getDOM} from '@angular/common';\nimport
{GetTestability, setTestabilityGetter, Testability, TestabilityRegistry, global as global} from
'@angular/core';\n\n\nexport class BrowserGetTestability implements GetTestability {\n static init() {\n
setTestabilityGetter(new BrowserGetTestability());\n }\n\n addToWindow(registry: TestabilityRegistry): void {\n
global['getAngularTestability'] = (elem: any, findInAncestors: boolean = true) => {\n const testability =
registry.findTestabilityInTree(elem, findInAncestors);\n if (testability == null) {\n throw new Error('Could
not find testability for element.);\n }\n return testability;\n });\n\n global['getAllAngularTestabilities'] = ()
=> registry.getAllTestabilities();\n\n global['getAllAngularRootElements'] = () =>
registry.getAllRootElements();\n\n const whenAllStable = (callback: any /** TODO #9100 */) => {\n const
testabilities = global['getAllAngularTestabilities']();\n let count = testabilities.length;\n let didWork = false;\n
 const decrement = function(didWork_: any /** TODO #9100 */) {\n didWork = didWork || didWork_;\n
count--;\n if (count == 0) {\n callback(didWork);\n }\n };\n
testabilities.forEach(function(testability: any /** TODO #9100 */) {\n testability.whenStable(decrement);\n
});\n });\n\n if (!global['frameworkStabilizers']) {\n global['frameworkStabilizers'] = [];\n }\n
global['frameworkStabilizers'].push(whenAllStable);\n }\n\n findTestabilityInTree(registry: TestabilityRegistry,
elem: any, findInAncestors: boolean): Testability|null {\n if (elem == null) {\n return null;\n }\n const t
= registry.getTestability(elem);\n if (t != null) {\n return t;\n } else if (!findInAncestors) {\n return
null;\n }\n if (getDOM().isShadowRoot(elem)) {\n return this.findTestabilityInTree(registry, (<any>elem).host,
true);\n }\n return this.findTestabilityInTree(registry, elem.parentElement, true);\n }\n }\n\n\n"/**\n * @license\n *
Copyright Google LLC All Rights Reserved.\n * \n * Use of this source code is governed by an MIT-style license

```

```

that can be
 * found in the LICENSE file at https://angular.io/license
 *
 *import { global as global } from
 '@angular/core';
const CAMEL_CASE_REGEXP = /([A-Z])/g;
const DASH_CASE_REGEXP = /-([a-z])/g;
export function camelCaseToDashCase(input: string): string {
 return
 input.replace(CAMEL_CASE_REGEXP, (...m: string[]) => '-' + m[1].toLowerCase());
}
export function
dashCaseToCamelCase(input: string): string {
 return input.replace(DASH_CASE_REGEXP, (...m: string[]) =>
 m[1].toUpperCase());
}
 * Exports the value under a given `name` in the global property `ng`. For example
 `ng.probe` if
 * `name` is `probe`.
 * @param name Name under which it will be exported. Keep in mind this
 will be a property of the
 * global `ng` object.
 * @param value The value to export.
 *
 *export function
exportNgVar(name: string, value: any): void {
 if (typeof COMPILED === 'undefined' || !COMPILED) {
 //
 Note: we can't export `ng` when using closure enhanced optimization as:
 // - closure declares globals itself for
 minified names, which sometimes clobber our `ng` global
 // - we can't declare a closure extern as the namespace
 `ng` is already used within Google
 // for typings for angularJS (via `goog.provide('ng...')`).
 const ng =
 global['ng'] = (global['ng'] as {[key: string]: any} | undefined) || {};
 ng[name] = value;
 }
}
 *
 * @license
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 * Use of this source code is governed by an MIT-
style license that can be
 * found in the LICENSE file at https://angular.io/license
 *
 *import
{APP_INITIALIZER, ApplicationRef, DebugNode, NgProbeToken, NgZone, Optional, Provider,
getDebugNodeR2} from '@angular/core';
import {exportNgVar} from './util';
const CORE_TOKENS = ()
=> ({
 'ApplicationRef': ApplicationRef,
 'NgZone': NgZone,
})
);
const INSPECT_GLOBAL_NAME = 'probe';
const CORE_TOKENS_GLOBAL_NAME =
'coreTokens';
 * Returns a {@link DebugElement} for the given native DOM element, or
 * null if the
given native element does not have an Angular view associated
 * with it.
 *
 *export function
inspectNativeElementR2(element: any): DebugNode|null {
 return getDebugNodeR2(element);
}
 *export
function _createNgProbeR2(coreTokens: NgProbeToken[]): any {
 exportNgVar(INSPECT_GLOBAL_NAME,
inspectNativeElementR2);
 exportNgVar(CORE_TOKENS_GLOBAL_NAME, {...CORE_TOKENS,
..._ngProbeTokensToMap(coreTokens || [])});
 return () => inspectNativeElementR2;
}
 *function
_ngProbeTokensToMap(tokens: NgProbeToken[]): {[name: string]: any} {
 return tokens.reduce((prev: any, t:
any) => (prev[t.name] = t.token, prev), {});
}
 * In Ivy, we don't support NgProbe because we have our
own set of testing utilities
 * with more robust functionality.
 * We shouldn't bring in NgProbe because it
prevents DebugNode and friends from
 * tree-shaking properly.
 *
 *export const
ELEMENT_PROBE_PROVIDERS__POST_R3__ = [];
 * Providers which support debugging Angular
applications (e.g. via `ng.probe`).
 *
 *export const ELEMENT_PROBE_PROVIDERS__PRE_R3__: Provider[] =
[
 {
 provide: APP_INITIALIZER,
 useFactory: _createNgProbeR2,
 deps: [
 NgProbeToken, new
Optional(),
],
 multi: true,
 },
];
 *export const ELEMENT_PROBE_PROVIDERS =
ELEMENT_PROBE_PROVIDERS__PRE_R3__;
 *
 * @license
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Reserved.
 * Use of this source code is governed by an MIT-style license that can be
 * found in the
LICENSE file at https://angular.io/license
 *
 *import {getDOM as getDOM} from '@angular/common';
import
{Inject, Injectable, InjectionToken, NgZone} from '@angular/core';
 * The injection token for the event-
manager plug-in service.
 *
 * @publicApi
 *
 *export const EVENT_MANAGER_PLUGINS =
new
InjectionToken<EventManagerPlugin[]>('EventManagerPlugins');
 * An injectable service that provides
event management for Angular
 * through a browser plug-in.
 *
 * @publicApi
 *
 * @Injectable()
 *export class
EventManager {
 private _plugins: EventManagerPlugin[];
 private _eventNameToPlugin = new Map<string,
EventManagerPlugin>();
 /**
 * Initializes an instance of the event-manager service.
 *
 *
 *constructor(@Inject(EVENT_MANAGER_PLUGINS) plugins: EventManagerPlugin[], private _zone: NgZone) {
 plugins.forEach(p => p.manager = this);
 this._plugins = plugins.slice().reverse();
 }
 /**
 * Registers a
handler for a specific element and event.
 *
 * @param element The HTML element to receive event
notifications.
 *
 * @param eventName The name of the event to listen for.
 *
 * @param handler A function to call
when the notification occurs. Receives the
 * event object as an argument.
 *
 * @returns A callback function that
can be used to remove the handler.
 *
 *
 *addEventListener(element: HTMLInputElement, eventName: string, handler:

```

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Function): Function {\n const plugin = this._findPluginFor(eventName);\n return
plugin.addEventListener(element, eventName, handler);\n }\n\n /**\n * Registers a global handler for an event in
a target view.\n *\n * @param target A target for global event notifications. One of \"window\", \"document\", or
\"body\".\n * @param eventName The name of the event to listen for.\n * @param handler A function to call
when the notification occurs. Receives the\n * event object as an argument.\n * @returns A callback function that
can be used to remove the handler.\n */\n addGlobalEventListener(target: string, eventName: string, handler:
Function): Function {\n const plugin = this._findPluginFor(eventName);\n return
plugin.addGlobalEventListener(target, eventName, handler);\n }\n\n /**\n * Retrieves the compilation zone in
which event listeners are registered.\n */\n getZone(): NgZone {\n return this._zone;\n }\n\n /** @internal */\n
_findPluginFor(eventName: string): EventManagerPlugin {\n const plugin =
this._eventNameToPlugin.get(eventName);\n if (plugin) {\n return plugin;\n }\n\n const plugins =
this._plugins;\n for (let i = 0; i < plugins.length; i++) {\n const plugin = plugins[i];\n if
(plugin.supports(eventName)) {\n this._eventNameToPlugin.set(eventName, plugin);\n return plugin;\n
 }\n }\n throw new Error(`No event manager plugin found for event ${eventName}`);\n }\n\n\nexport abstract
class EventManagerPlugin {\n constructor(private _doc: any) {\n }\n\n // TODO(issue/24571): remove '!'.\n
manager!: EventManager;\n\n abstract supports(eventName: string): boolean;\n\n abstract
addEventListener(element: HTMLInputElement, eventName: string, handler: Function): Function;\n\n
addGlobalEventListener(element: string, eventName: string, handler: Function): Function {\n const target:
HTMLInputElement = getDOM().getGlobalEventTarget(this._doc, element);\n if (!target) {\n throw new
Error(`Unsupported event target ${target} for event ${eventName}`);\n }\n return this.addEventListener(target,
eventName, handler);\n }\n}\n\n", /**\n * @license\n * Copyright Google LLC All Rights Reserved.\n *\n * Use of
this source code is governed by an MIT-style license that can be\n * found in the LICENSE file at
https://angular.io/license\n */\n\nimport {DOCUMENT, getDOM as getDOM} from '@angular/common';\nimport
{Inject, Injectable, OnDestroy} from '@angular/core';\n\n@Injectable()\nexport class SharedStylesHost {\n /**
@internal */\n protected _stylesSet = new Set<string>();\n\n addStyles(styles: string[]): void {\n const additions
= new Set<string>();\n styles.forEach(style => {\n if (!this._stylesSet.has(style)) {\n
this._stylesSet.add(style);\n additions.add(style);\n });\n this.onStylesAdded(additions);\n }\n\n
onStylesAdded(additions: Set<string>): void {\n }\n\n getAllStyles(): string[] {\n return
Array.from(this._stylesSet);\n }\n}\n\n@Injectable()\nexport class DomSharedStylesHost extends
SharedStylesHost implements OnDestroy {\n private _hostNodes = new Set<Node>();\n private _styleNodes =
new Set<Node>();\n constructor(@Inject(DOCUMENT) private _doc: any) {\n super();\n
this._hostNodes.add(_doc.head);\n }\n\n private _addStylesToHost(styles: Set<string>, host: Node): void {\n
styles.forEach((style: string) => {\n const styleEl = this._doc.createElement('style');\n styleEl.textContent =
style;\n this._styleNodes.add(host.appendChild(styleEl));\n });\n }\n\n addHost(hostNode: Node): void {\n
this._addStylesToHost(this._stylesSet, hostNode);\n this._hostNodes.add(hostNode);\n }\n\n
removeHost(hostNode: Node): void {\n this._hostNodes.delete(hostNode);\n }\n\n onStylesAdded(additions:
Set<string>): void {\n this._hostNodes.forEach(hostNode => this._addStylesToHost(additions, hostNode));\n
 }\n\n ngOnDestroy(): void {\n this._styleNodes.forEach(styleNode => getDOM().remove(styleNode));\n
 }\n}\n\n", /**\n * @license\n * Copyright Google LLC All Rights Reserved.\n *\n * Use of this source code is
governed by an MIT-style license that can be\n * found in the LICENSE file at https://angular.io/license\n */\n
*\n\nimport {APP_ID, Inject, Injectable, Renderer2, RendererFactory2, RendererStyleFlags2, RendererType2,
ViewEncapsulation} from '@angular/core';\nimport {EventManager} from './events/event_manager';\nimport
{DomSharedStylesHost} from './shared_styles_host';\n\nexport const NAMESPACE_URIS: {[ns: string]: string} =
{\n 'svg': 'http://www.w3.org/2000/svg',\n 'xhtml': 'http://www.w3.org/1999/xhtml',\n 'xlink':
'http://www.w3.org/1999/xlink',\n 'xml': 'http://www.w3.org/XML/1998/namespace',\n 'xmlns':
'http://www.w3.org/2000/xmlns/',\n};\n\nconst COMPONENT_REGEX = /%COMP%/g;\nconst NG_DEV_MODE
= typeof ngDevMode === 'undefined' || !!ngDevMode;\n\nexport const COMPONENT_VARIABLE =
'%COMP%';\n\nexport const HOST_ATTR = `_ngHost-${COMPONENT_VARIABLE}`;\n\nexport const

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CONTENT_ATTR = `__ngcontent-${COMPONENT_VARIABLE}`;\n\nexport function
shimContentAttribute(componentShortId: string): string {\n return
CONTENT_ATTR.replace(COMPONENT_REGEX, componentShortId);\n}\n\nexport function
shimHostAttribute(componentShortId: string): string {\n return HOST_ATTR.replace(COMPONENT_REGEX,
componentShortId);\n}\n\nexport function flattenStyles(\n compId: string, styles: Array<any|any[]>, target:
string[]): string[] {\n for (let i = 0; i < styles.length; i++) {\n let style = styles[i];\n\n if (Array.isArray(style)) {\n
 flattenStyles(compId, style, target);\n } else {\n style = style.replace(COMPONENT_REGEX, compId);\n
target.push(style);\n }\n }\n\n return target;\n}\n\nfunction decoratePreventDefault(eventHandler: Function):
Function {\n // `DebugNode.triggerEventHandler` needs to know if the listener was created with\n //
decoratePreventDefault or is a listener added outside the Angular context so it can handle the\n // two differently. In
the first case, the special `__ngUnwrap__` token is passed to the unwrap\n // the listener (see below).\n return
(event: any) => {\n // Ivy uses `__ngUnwrap__` as a special token that allows us to unwrap the function\n // so
that it can be invoked programmatically by `DebugNode.triggerEventHandler`. The debug_node\n // can inspect
the listener toString contents for the existence of this special token. Because\n // the token is a string literal, it is
ensured to not be modified by compiled code.\n if (event === `__ngUnwrap__`) {\n return eventHandler;\n
}\n\n const allowDefaultBehavior = eventHandler(event);\n if (allowDefaultBehavior === false) {\n //
TODO(tbosch): move preventDefault into event plugins...\n event.preventDefault();\n event.returnValue =
false;\n }\n\n return undefined;\n };}\n\nlet hasLoggedNativeEncapsulationWarning =
false;\n\n@Inject()nexport class DomRendererFactory2 implements RendererFactory2 {\n private
rendererByCompId = new Map<string, Renderer2>();\n private defaultRenderer: Renderer2;\n\n constructor(\n
private eventManager: EventManager, private sharedStylesHost: DomSharedStylesHost,\n @Inject(APP_ID)
private appId: string) {\n this.defaultRenderer = new DefaultDomRenderer2(eventManager);\n }\n\n
createRenderer(element: any, type: RendererType2|null): Renderer2 {\n if (!element || !type) {\n return
this.defaultRenderer;\n }\n switch (type.encapsulation) {\n case ViewEncapsulation.Emulated: {\n let
renderer = this.rendererByCompId.get(type.id);\n if (!renderer) {\n renderer = new
EmulatedEncapsulationDomRenderer2(\n this.eventManager, this.sharedStylesHost, type, this.appId);\n
this.rendererByCompId.set(type.id, renderer);\n }\n
(<EmulatedEncapsulationDomRenderer2>renderer).applyToHost(element);\n return renderer;\n }\n case
1:\n case ViewEncapsulation.ShadowDom:\n // TODO(FW-2290): remove the `case 1:` fallback logic and
the warning in v12.\n if ((typeof ngDevMode === 'undefined' || ngDevMode) &&\n
!hasLoggedNativeEncapsulationWarning && type.encapsulation === 1) {\n
hasLoggedNativeEncapsulationWarning = true;\n console.warn(\n 'ViewEncapsulation.Native is no
longer supported. Falling back to ViewEncapsulation.ShadowDom. The fallback will be removed in v12.);\n
}\n\n return new ShadowDomRenderer(this.eventManager, this.sharedStylesHost, element, type);\n default:
{\n if (!this.rendererByCompId.has(type.id)) {\n const styles = flattenStyles(type.id, type.styles, []);\n
this.sharedStylesHost.addStyles(styles);\n this.rendererByCompId.set(type.id, this.defaultRenderer);\n
}\n\n return this.defaultRenderer;\n }\n }\n }\n\n begin() {\n end() {\n}\n\nnclass DefaultDomRenderer2
implements Renderer2 {\n data: {[key: string]: any} = Object.create(null);\n\n constructor(private eventManager:
EventManager) {\n\n destroy(): void {\n\n destroyNode: null;\n\n createElement(name: string, namespace?:
string): any {\n if (namespace) {\n // In cases where Ivy (not ViewEngine) is giving us the actual namespace,
the look up by key\n // will result in undefined, so we just return the namespace here.\n return
document.createElementNS(NAMESPACE_URI[namespace] || namespace, name);\n }\n\n return
document.createElement(name);\n }\n\n createComment(value: string): any {\n return
document.createComment(value);\n }\n\n createText(value: string): any {\n return
document.createTextNode(value);\n }\n\n appendChild(parent: any, newChild: any): void {\n
parent.appendChild(newChild);\n }\n\n insertBefore(parent: any, newChild: any, refChild: any): void {\n if
(parent) {\n parent.insertBefore(newChild, refChild);\n }\n }\n\n removeChild(parent: any, oldChild: any):
void {\n if (parent) {\n parent.removeChild(oldChild);\n }\n }\n\n selectRootElement(selectorOrNode:

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string|any, preserveContent?: boolean): any {\n let el: any = typeof selectorOrNode === 'string' ?
document.querySelector(selectorOrNode) : \n selectorOrNode;\n if (!el) {\n
throw new Error(`The selector \"${selectorOrNode}\" did not match any elements`);\n }\n if (!preserveContent)
{\n el.textContent = \";\n }\n return el;\n }\n\n parentNode(node: any): any {\n return node.parentNode;\n
}\n\n nextSibling(node: any): any {\n return node.nextSibling;\n }\n\n setAttribute(el: any, name: string, value:
string, namespace?: string): void {\n if (namespace) {\n name = namespace + ':' + name;\n // TODO(FW-
811): Ivy may cause issues here because it's passing around\n // full URIs for namespaces, therefore this lookup
will fail.\n const namespaceUri = NAMESPACE_URIS[namespace];\n if (namespaceUri) {\n
el.setAttributeNS(namespaceUri, name, value);\n } else {\n el.setAttribute(name, value);\n }\n } else
{\n el.setAttribute(name, value);\n }\n}\n\n removeAttribute(el: any, name: string, namespace?: string): void
{\n if (namespace) {\n // TODO(FW-811): Ivy may cause issues here because it's passing around\n // full
URIs for namespaces, therefore this lookup will fail.\n const namespaceUri =
NAMESPACE_URIS[namespace];\n if (namespaceUri) {\n el.removeAttributeNS(namespaceUri, name);\n
 } else {\n // TODO(FW-811): Since ivy is passing around full URIs for namespaces\n // this could result in
properties like `http://www.w3.org/2000/svg:cx=\"123\"`,\n // which is wrong.\n el.removeAttribute(`${namespace}:${name}`);\n }\n } else {\n el.removeAttribute(name);\n }\n}\n\n
addClass(el: any, name: string): void {\n el.classList.add(name);\n }\n\n removeClass(el: any, name: string): void
{\n el.classList.remove(name);\n }\n\n setStyle(el: any, style: string, value: any, flags: RendererStyleFlags2):
void {\n if (flags & (RendererStyleFlags2.DashCase | RendererStyleFlags2.Important)) {\n
el.style.setProperty(style, value, flags & RendererStyleFlags2.Important ? 'important' : '');\n } else {\n
el.style[style] = value;\n }\n}\n\n removeStyle(el: any, style: string, flags: RendererStyleFlags2): void {\n if
(flags & RendererStyleFlags2.DashCase) {\n el.style.removeProperty(style);\n } else {\n // IE requires \"
instead of null\n // see https://github.com/angular/angular/issues/7916\n el.style[style] = \";\n }\n}\n\n
setProperty(el: any, name: string, value: any): void {\n NG_DEV_MODE && checkNoSyntheticProp(name,
'property');\n el[name] = value;\n }\n\n setValue(node: any, value: string): void {\n node.nodeValue = value;\n
}\n\n listen(target: 'window'|'document'|'body'|any, event: string, callback: (event: any) => boolean): \n () => void
{\n NG_DEV_MODE && checkNoSyntheticProp(event, 'listener');\n if (typeof target === 'string') {\n return
<() => void>this.eventManager.addGlobalEventListener(\n target, event, decoratePreventDefault(callback));\n
}\n return <() => void>this.eventManager.addEventListener(\n target, event,
decoratePreventDefault(callback)) as () => void;\n }\n}\n\nconst AT_CHARCODE = ((() =>
'@'.charCodeAt(0)));\nfunction checkNoSyntheticProp(name: string, nameKind: string) {\n if
(name.charCodeAt(0) === AT_CHARCODE) {\n throw new Error(`Found the synthetic ${nameKind} ${\n
name}. Please include either \"BrowserAnimationsModule\" or \"NoopAnimationsModule\" in your application.`);\n
}\n}\n\n\nclass EmulatedEncapsulationDomRenderer2 extends DefaultDomRenderer2 {\n private contentAttr:
string;\n private hostAttr: string;\n\n constructor(\n eventManager: EventManager, sharedStylesHost:
DomSharedStylesHost,\n private component: RendererType2, appId: string) {\n super(eventManager);\n
const styles = flattenStyles(appId + '-' + component.id, component.styles, []);\n
sharedStylesHost.addStyles(styles);\n this.contentAttr = shimContentAttribute(appId + '-' + component.id);\n
this.hostAttr = shimHostAttribute(appId + '-' + component.id);\n }\n\n applyToHost(element: any) {\n
super.setAttribute(element, this.hostAttr, \");\n }\n\n createElement(parent: any, name: string): Element {\n const
el = super.createElement(parent, name);\n super.setAttribute(el, this.contentAttr, \");\n return el;\n }\n}\n\n\nclass
ShadowDomRenderer extends DefaultDomRenderer2 {\n private shadowRoot: any;\n\n constructor(\n
eventManager: EventManager, private sharedStylesHost: DomSharedStylesHost,\n private hostEl: any,
component: RendererType2) {\n super(eventManager);\n this.shadowRoot = (hostEl as
any).attachShadow({mode: 'open'});\n this.sharedStylesHost.addHost(this.shadowRoot);\n const styles =
flattenStyles(component.id, component.styles, []);\n for (let i = 0; i < styles.length; i++) {\n const styleEl =
document.createElement('style');\n styleEl.textContent = styles[i];\n this.shadowRoot.appendChild(styleEl);\n
}\n }\n\n private nodeOrShadowRoot(node: any): any {\n return node === this.hostEl ? this.shadowRoot :

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node;\n }\n\n destroy() {\n this.sharedStylesHost.removeHost(this.shadowRoot);\n }\n\n appendChild(parent:
any, newChild: any): void {\n return super.appendChild(this.nodeOrShadowRoot(parent), newChild);\n }\n
insertBefore(parent: any, newChild: any, refChild: any): void {\n return
super.insertBefore(this.nodeOrShadowRoot(parent), newChild, refChild);\n }\n removeChild(parent: any,
oldChild: any): void {\n return super.removeChild(this.nodeOrShadowRoot(parent), oldChild);\n }\n
parentNode(node: any): any {\n return
this.nodeOrShadowRoot(super.parentNode(this.nodeOrShadowRoot(node)));\n }\n}\n\n",/**\n * @license\n *
Copyright Google LLC All Rights Reserved.\n *\n * Use of this source code is governed by an MIT-style license
that can be\n * found in the LICENSE file at https://angular.io/license\n */\n\nimport {DOCUMENT} from
'@angular/common';\nimport {Inject, Injectable} from '@angular/core';\nimport {EventManagerPlugin} from
'./event_manager';\n\n@Injectable()\nexport class DomEventsPlugin extends EventManagerPlugin {\n
constructor(@Inject(DOCUMENT) doc: any) {\n super(doc);\n }\n\n // This plugin should come last in the list of
plugins, because it accepts all\n // events.\n supports(eventName: string): boolean {\n return true;\n }\n\n
addEventListener(element: HTMLInputElement, eventName: string, handler: Function): Function {\n
element.addEventListener(eventName, handler as EventListener, false);\n return () =>
this.removeEventListener(element, eventName, handler as EventListener);\n }\n\n removeEventListener(target:
any, eventName: string, callback: Function): void {\n return target.removeEventListener(eventName, callback as
EventListener);\n }\n}\n\n",/**\n * @license\n * Copyright Google LLC All Rights Reserved.\n *\n * Use of this
source code is governed by an MIT-style license that can be\n * found in the LICENSE file at
https://angular.io/license\n */\n\nimport {DOCUMENT} from '@angular/common';\nimport {Inject, Injectable,
InjectionToken, NgModule, Optional, Provider, Console as Console} from '@angular/core';\nimport
{EVENT_MANAGER_PLUGINS, EventManagerPlugin} from './event_manager';\n\n\n/**\n * Supported
HammerJS recognizer event names.\n */\nconst EVENT_NAMES = {\n // pan\n 'pan': true,\n 'panstart': true,\n
'panmove': true,\n 'panend': true,\n 'pancancel': true,\n 'panleft': true,\n 'panright': true,\n 'panup': true,\n
'pandown': true,\n // pinch\n 'pinch': true,\n 'pinchstart': true,\n 'pinchmove': true,\n 'pinchend': true,\n
'pinchcancel': true,\n 'pinchin': true,\n 'pinchout': true,\n // press\n 'press': true,\n 'pressup': true,\n // rotate\n
'rotate': true,\n 'rotatestart': true,\n 'rotatemove': true,\n 'rotateend': true,\n 'rotatecancel': true,\n // swipe\n
'swipe': true,\n 'swipeleft': true,\n 'swiperight': true,\n 'swipeup': true,\n 'swipedown': true,\n // tap\n 'tap':
true,\n};\n\n/**\n * DI token for providing [HammerJS](http://hammerjs.github.io/) support to Angular.\n * @see
`HammerGestureConfig`\n *\n * @ngModule HammerModule\n *\n * @publicApi\n */\nexport const
HAMMER_GESTURE_CONFIG = new
InjectionToken<HammerGestureConfig>('HammerGestureConfig');\n\n\n/**\n * Function that loads HammerJS,
returning a promise that is resolved once HammerJs is loaded.\n *\n * @publicApi\n */\nexport type
HammerLoader = () => Promise<void>;\n\n\n/**\n * Injection token used to provide a { @link HammerLoader} to
Angular.\n *\n * @publicApi\n */\nexport const HAMMER_LOADER = new
InjectionToken<HammerLoader>('HammerLoader');\n\n\nexport interface HammerInstance {\n on(eventName:
string, callback?: Function): void;\n off(eventName: string, callback?: Function): void;\n destroy?():
void;\n}\n\n\n/**\n * An injectable [HammerJS Manager](http://hammerjs.github.io/api/#hammer.manager)\n * for
gesture recognition. Configures specific event recognition.\n *\n * @publicApi\n */\n@Injectable()\nexport class
HammerGestureConfig {\n /**\n * A set of supported event names for gestures to be used in Angular.\n *
Angular supports all built-in recognizers, as listed in\n * [HammerJS documentation](http://hammerjs.github.io/).\n
*/\n events: string[] = [];\n\n /**\n * Maps gesture event names to a set of configuration options\n * that specify
overrides to the default values for specific properties.\n *\n * The key is a supported event name to be
configured,\n * and the options object contains a set of properties, with override values\n * to be applied to the
named recognizer event.\n * For example, to disable recognition of the rotate event, specify\n * `{"rotate":
{"enable": false}}`\n *\n * Properties that are not present take the HammerJS default values.\n * For
information about which properties are supported for which events,\n * and their allowed and default values, see\n
* [HammerJS documentation](http://hammerjs.github.io/).\n *\n */\n overrides: {[key: string]: Object} = {};\n\n

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/**\n * Properties whose default values can be overridden for a given event.\n * Different sets of properties apply
to different events.\n * For information about which properties are supported for which events,\n * and their
allowed and default values, see\n * [HammerJS documentation](http://hammerjs.github.io).\n *\n options?: {\n
cssProps?: any;\n domEvents?: boolean;\n enable?: boolean | ((manager: any) => boolean);\n preset?: any[];\n
touchAction?: string;\n recognizers?: any[];\n inputClass?: any;\n inputTarget?: EventTarget;\n };\n\n /**\n
* Creates a [HammerJS Manager](http://hammerjs.github.io/api/#hammer.manager)\n * and attaches it to a given
HTML element.\n * @param element The element that will recognize gestures.\n * @returns A HammerJS event-
manager object.\n */\n buildHammer(element: HTMLElement): HammerInstance {\n const mc = new
Hammer!(element, this.options);\n\n mc.get('pinch').set({enable: true});\n mc.get('rotate').set({enable:
true});\n\n for (const eventName in this.overrides) {\n mc.get(eventName).set(this.overrides[eventName]);\n
}\n\n return mc;\n }\n}\n\n/**\n * Event plugin that adds Hammer support to an application.\n *\n * @ngModule
HammerModule\n */\n @Injectable()\nexport class HammerGesturesPlugin extends EventManagerPlugin {\n
constructor(\n @Inject(DOCUMENT) doc: any,\n @Inject(HAMMER_GESTURE_CONFIG) private
_config: HammerGestureConfig, private console: Console,\n @Optional() @Inject(HAMMER_LOADER)
private loader?: HammerLoader|null) {\n super(doc);\n }\n\n supports(eventName: string): boolean {\n if
(!EVENT_NAMES.hasOwnProperty(eventName.toLowerCase()) && !this.isCustomEvent(eventName)) {\n
return false;\n }\n\n if (!(window as any).Hammer && !this.loader) {\n this.console.warn(\n `The
\`${eventName}\` event cannot be bound because Hammer.JS is not ` +\n `loaded and no custom loader has
been specified.`);\n return false;\n }\n\n return true;\n }\n\n addEventListener(element: HTMLElement,
eventName: string, handler: Function): Function {\n const zone = this.manager.getZone();\n eventName =
eventName.toLowerCase();\n\n // If Hammer is not present but a loader is specified, we defer adding the event
listener\n // until Hammer is loaded.\n if (!(window as any).Hammer && this.loader) {\n // This
`addEventListener` method returns a function to remove the added listener.\n // Until Hammer is loaded, the
returned function needs to `cancel` the registration rather\n // than remove anything.\n let cancelRegistration
= false;\n let deregister: Function = () => {\n cancelRegistration = true;\n }; \n\n this.loader().
then(() => {\n // If Hammer isn't actually loaded when the custom loader resolves, give up.\n if
(!(window as any).Hammer) {\n this.console.warn(\n `The custom HAMMER_LOADER
completed, but Hammer.JS is not present.`);\n deregister = () => {};\n return;\n }\n\n if
(!cancelRegistration) {\n // Now that Hammer is loaded and the listener is being loaded for real,\n
// the deregistration function changes from canceling registration to removal.\n deregister =
this.addEventListener(element, eventName, handler);\n }\n\n }).catch(() => {\n
this.console.warn(\n `The \`${eventName}\` event cannot be bound because the custom ` +\n
`Hammer.JS loader failed.`);\n deregister = () => {};\n });\n\n // Return a function that `executes`
`deregister` (and not `deregister` itself) so that we\n // can change the behavior of `deregister` once the listener is
added. Using a closure in\n // this way allows us to avoid any additional data structures to track listener
removal.\n return () => {\n deregister();\n }; \n\n }\n\n return zone.runOutsideAngular(() => {\n //
Creating the manager bind events, must be done outside of angular\n const mc =
this._config.buildHammer(element);\n const callback = function(eventObj: HammerInput) {\n
zone.runGuarded(function() {\n handler(eventObj);\n });\n });\n mc.on(eventName, callback);\n
return () => {\n mc.off(eventName, callback);\n // destroy mc to prevent memory leak\n if (typeof
mc.destroy === 'function') {\n mc.destroy();\n }\n });\n\n isCustomEvent(eventName:
string): boolean {\n return this._config.events.indexOf(eventName) > -1;\n }\n}\n\n/**\n * In Ivy, support for
Hammer gestures is optional, so applications must\n * import the `HammerModule` at root to turn on support. This
means that\n * Hammer-specific code can be tree-shaken away if not needed.\n */\n export const
HAMMER_PROVIDERS__POST_R3__ = [];\n\n/**\n * In View Engine, support for Hammer gestures is built-in
by default.\n */\n export const HAMMER_PROVIDERS__PRE_R3__: Provider[] = [\n {\n provide:
EVENT_MANAGER_PLUGINS,\n useClass: HammerGesturesPlugin,\n multi: true,\n deps: [DOCUMENT,
HAMMER_GESTURE_CONFIG, Console, [new Optional(), HAMMER_LOADER]]\n },\n {\n provide:

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HAMMER_GESTURE_CONFIG, useClass: HammerGestureConfig, deps: [],\n);\n\nexport const
HAMMER_PROVIDERS = HAMMER_PROVIDERS__PRE_R3__;\n\n/**\n * Adds support for HammerJS.\n *\n * Import this module at the root of your application so that Angular can work with\n * HammerJS to detect gesture events.\n *\n * Note that applications still need to include the HammerJS script itself. This module\n * simply sets up the coordination layer between HammerJS and Angular's EventManager.\n *\n * @publicApi\n */\n\n@NgModule({providers: HAMMER_PROVIDERS__PRE_R3__})\nexport class HammerModule\n{\n}\n\n"/**\n * @license\n * Copyright Google LLC All Rights Reserved.\n *\n * Use of this source code is governed by an MIT-style license that can be\n * found in the LICENSE file at https://angular.io/license\n */\n\nimport {DOCUMENT, getDOM as getDOM} from '@angular/common';\nimport {Inject, Injectable, NgZone}\nfrom '@angular/core';\nimport {EventManagerPlugin} from './event_manager';\n\n/**\n * Defines supported modifiers for key events.\n */\nconst MODIFIER_KEYS = ['alt', 'control', 'meta', 'shift'];\n\nconst\nDOM_KEY_LOCATION_NUMPAD = 3;\n\n// Map to convert some key or keyIdentifier values to what will be\n// returned by getEventKey\nconst _keyMap: {[k: string]: string} = {\n // The following values are here for cross-browser compatibility and to match the W3C standard\n // cf http://www.w3.org/TR/DOM-Level-3-Events-key/\n 'b': 'Backspace',\n 't': 'Tab',\n 'x7F': 'Delete',\n 'x1B': 'Escape',\n 'Del': 'Delete',\n 'Esc': 'Escape',\n 'Left': 'ArrowLeft',\n 'Right': 'ArrowRight',\n 'Up': 'ArrowUp',\n 'Down': 'ArrowDown',\n 'Menu': 'ContextMenu',\n 'Scroll': 'ScrollLock',\n 'Win': 'OS',\n};\n\n// There is a bug in Chrome for numeric keypad keys:\n// https://code.google.com/p/chromium/issues/detail?id=155654\n// 1, 2, 3 ... are reported as A, B, C ...\nconst\n_chromeNumKeyPadMap = {\n 'A': '1',\n 'B': '2',\n 'C': '3',\n 'D': '4',\n 'E': '5',\n 'F': '6',\n 'G': '7',\n 'H': '8',\n 'I': '9',\n 'J': '*',\n 'K': '+',\n 'M': '-',\n 'N': '.',\n 'O': '/',\n '0': '0',\n 'x90': 'NumLock',\n};\n\n/**\n * Retrieves modifiers from key-event objects.\n */\nconst MODIFIER_KEY_GETTERS: {[key: string]: (event: KeyboardEvent) => boolean} = {\n 'alt': (event: KeyboardEvent) => event.altKey,\n 'control': (event: KeyboardEvent) => event.ctrlKey,\n 'meta': (event: KeyboardEvent) => event.metaKey,\n 'shift': (event: KeyboardEvent) => event.shiftKey,\n};\n\n/**\n * @publicApi\n * A browser plug-in that provides support for handling of key events in Angular.\n */\n@Injectable()\nexport class KeyEventsPlugin extends\nEventManagerPlugin {\n /**\n * Initializes an instance of the browser plug-in.\n *\n * @param doc The document in which key events will be detected.\n */\n constructor(@Inject(DOCUMENT) doc: any) {\n super(doc);\n }\n\n /**\n * Reports whether a named key event is supported.\n *\n * @param eventName The event name to query.\n *\n * @return True if the named key event is supported.\n */\n supports(eventName: string): boolean {\n return\n KeyEventsPlugin.parseEventName(eventName) != null;\n }\n\n /**\n * Registers a handler for a specific element and key event.\n *\n * @param element The HTML element to receive event notifications.\n * @param eventName The name of the key event to listen for.\n * @param handler A function to call when the notification occurs. Receives the\n * event object as an argument.\n * @returns The key event that was registered.\n */\n addEventListener(element: HTMLElement, eventName: string, handler: Function): Function {\n const\n parsedEvent = KeyEventsPlugin.parseEventName(eventName);\n\n const\n outsideHandler =\n KeyEventsPlugin.eventCallback(parsedEvent['fullKey'], handler, this.manager.getZone());\n\n return\n this.manager.getZone().runOutsideAngular(() => {\n return\n getDOM().onAndCancel(element, parsedEvent['domEventName'], outsideHandler);\n });\n }\n\n static\n parseEventName(eventName: string):\n {fullKey: string, domEventName: string}|null {\n const\n parts: string[] = eventName.toLowerCase().split('.');\n\n const\n domEventName = parts.shift();\n\n if\n ((parts.length === 0) ||\n !(domEventName === 'keydown' ||\n domEventName === 'keyup')) {\n return\n null;\n }\n\n const\n key =\n KeyEventsPlugin._normalizeKey(parts.pop());\n\n let\n fullKey =\n MODIFIER_KEYS.forEach(modifierName => {\n const\n index: number = parts.indexOf(modifierName);\n\n if\n (index > -1) {\n parts.splice(index, 1);\n fullKey += modifierName + '.';\n }\n });\n\n fullKey +=\n key;\n\n if\n (parts.length != 0 || key.length === 0) {\n // returning null instead of throwing to let another plugin process the event\n return\n null;\n }\n\n // NOTE: Please don't rewrite this as so, as it will break JSCompiler property renaming.\n // The code must remain in the `result['domEventName']` form.\n // return\n {domEventName, fullKey};\n\n const\n result: {fullKey: string, domEventName: string} = {} as any;\n }

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result['domEventName'] = domEventName;\n result['fullKey'] = fullKey;\n return result;\n }\n\n static
getEventFullKey(event: KeyboardEvent): string {\n let fullKey = "";\n let key = getEventKey(event);\n key =
key.toLowerCase();\n if (key === ' ') {\n key = 'space'; // for readability\n } else if (key === '.') {\n key =
'dot'; // because '.' is used as a separator in event names\n }\n MODIFIER_KEYS.forEach(modifierName => {\n
 if (modifierName !== key) {\n const modifierGetter = MODIFIER_KEY_GETTERS[modifierName];\n if
(modifierGetter(event)) {\n fullKey += modifierName + '.';\n }\n });\n fullKey += key;\n
return fullKey;\n }\n\n /**\n * Configures a handler callback for a key event.\n * @param fullKey The event
name that combines all simultaneous keystrokes.\n * @param handler The function that responds to the key
event.\n * @param zone The zone in which the event occurred.\n * @returns A callback function.\n */\n static
eventCallback(fullKey: any, handler: Function, zone: NgZone): Function {\n return (event: any /** TODO #9100
*/) => {\n if (KeyEventsPlugin.getEventFullKey(event) === fullKey) {\n zone.runGuarded(() =>
handler(event));\n }\n }; \n }\n\n /** @internal */\n static _normalizeKey(keyName: string): string {\n //
TODO: switch to a Map if the mapping grows too much\n switch (keyName) {\n case 'esc':\n return
'escape';\n default:\n return keyName;\n }\n }\n\n function getEventKey(event: any): string {\n let key
= event.key;\n if (key == null) {\n key = event.keyIdentifier;\n // keyIdentifier is defined in the old draft of
DOM Level 3 Events implemented by Chrome and\n // Safari cf\n // http://www.w3.org/TR/2007/WD-DOM-
Level-3-Events-20071221/events.html#Events-KeyboardEvents-Interfaces\n if (key == null) {\n return
'Unidentified';\n }\n if (key.startsWith('U+')) {\n key = String.fromCharCode(parseInt(key.substring(2),
16));\n if (event.location === DOM_KEY_LOCATION_NUMPAD &&
_chromeNumKeyPadMap.hasOwnProperty(key)) {\n // There is a bug in Chrome for numeric keypad keys:\n
// https://code.google.com/p/chromium/issues/detail?id=155654\n // 1, 2, 3 ... are reported as A, B, C ...
\n key = (_chromeNumKeyPadMap as any)[key];\n }\n }\n }\n\n return _keyMap[key] || key;\n }\n\n
/**\n * @license\n * Copyright Google LLC All Rights Reserved.\n * Use of this source code is governed by an MIT-
style license that can be\n * found in the LICENSE file at https://angular.io/license\n */\n\n import {DOCUMENT}
from '@angular/common';\n import {forwardRef, Inject, Injectable, Injector, Sanitizer, SecurityContext,
_sanitizeHtml as _sanitizeHtml, _sanitizeUrl as _sanitizeUrl, allowSanitizationBypassAndThrow as
allowSanitizationBypassOrThrow, bypassSanitizationTrustHtml as bypassSanitizationTrustHtml,
bypassSanitizationTrustResourceUrl as bypassSanitizationTrustResourceUrl, bypassSanitizationTrustScript as
bypassSanitizationTrustScript, bypassSanitizationTrustStyle as bypassSanitizationTrustStyle,
bypassSanitizationTrustUrl as bypassSanitizationTrustUrl, BypassType as BypassType, getSanitizationBypassType
as getSanitizationBypassType, unwrapSafeValue as unwrapSafeValue} from '@angular/core';\n\n export
{SecurityContext};\n\n\n /**\n * Marker interface for a value that's safe to use in a particular context.\n */\n *
@publicApi\n */\n export interface SafeValue {} \n\n /**\n * Marker interface for a value that's safe to use as
HTML.\n */\n * @publicApi\n */\n export interface SafeHtml extends SafeValue {} \n\n /**\n * Marker interface for a
value that's safe to use as style (CSS).\n */\n * @publicApi\n */\n export interface SafeStyle extends SafeValue
{} \n\n /**\n * Marker interface for a value that's safe to use as JavaScript.\n */\n * @publicApi\n */\n export
interface SafeScript extends SafeValue {} \n\n /**\n * Marker interface for a value that's safe to use as a URL linking to a
document.\n */\n * @publicApi\n */\n export interface SafeUrl extends SafeValue {} \n\n /**\n * Marker interface for
a value that's safe to use as a URL to load executable code from.\n */\n * @publicApi\n */\n export interface
SafeResourceUrl extends SafeValue {} \n\n /**\n * DomSanitizer helps preventing Cross Site Scripting Security bugs
(XSS) by sanitizing\n * values to be safe to use in the different DOM contexts.\n */\n * For example, when binding a
URL in an `

```

as possible to the source of the value, to make it easy to verify no security bug is created by its use. It is not required (and not recommended) to bypass security if the value is safe, e.g. a URL that does not start with a suspicious protocol, or an HTML snippet that does not contain dangerous code. The sanitizer leaves safe values intact.

**@security** Calling any of the `bypassSecurityTrust...` APIs disables Angular's built-in sanitization for the value passed in. Carefully check and audit all values and code paths going into this call. Make sure any user data is appropriately escaped for this security context. For more detail, see the [Security Guide](http://g.co/ng/security).

**@publicApi**

```

@injectable({providedIn: 'root', useExisting:
forwardRef(() => DomSanitizerImpl)})
export abstract class DomSanitizer implements Sanitizer {
 /**
 * Sanitizes a value for use in the given SecurityContext.
 * If value is trusted for the context, this method will
 * unwrap the contained safe value and use it directly. Otherwise, value will be sanitized to be safe in the given
 * context, for example by replacing URLs that have an unsafe protocol part (such as `javascript:`). The
 * implementation is responsible to make sure that the value can definitely be safely used in the given context.
 */
 abstract sanitize(context: SecurityContext, value: SafeValue|string|null): string|null;

 /**
 * Bypass security and trust the given value to be safe HTML. Only use this when the bound HTML is unsafe (e.g.
 * contains `
```

```

bypassSanitizationTrustStyle(value);\n }\n bypassSecurityTrustScript(value: string): SafeScript {\n return
bypassSanitizationTrustScript(value);\n }\n bypassSecurityTrustUrl(value: string): SafeUrl {\n return
bypassSanitizationTrustUrl(value);\n }\n bypassSecurityTrustResourceUrl(value: string): SafeResourceUrl {\n
return bypassSanitizationTrustResourceUrl(value);\n }\n}\n", "/*\n * @license\n * Copyright Google LLC All
Rights Reserved.\n *\n * Use of this source code is governed by an MIT-style license that can be\n * found in the
LICENSE file at https://angular.io/license\n *\n\nimport { CommonModule, DOCUMENT,
PLATFORM_BROWSER_ID as PLATFORM_BROWSER_ID } from '@angular/common';\nimport { APP_ID,
ApplicationModule, createPlatformFactory, ErrorHandler, Inject, ModuleWithProviders, NgModule, NgZone,
Optional, PLATFORM_ID, PLATFORM_INITIALIZER, platformCore, PlatformRef, RendererFactory2, Sanitizer,
SkipSelf, StaticProvider, Testability, Console as Console, INJECTOR_SCOPE as INJECTOR_SCOPE,
setDocument } from '@angular/core';\n\nimport { BrowserDomAdapter } from './browser/browser_adapter';\nimport
{ SERVER_TRANSITION_PROVIDERS, TRANSITION_ID } from './browser/server-transition';\nimport
{ BrowserGetTestability } from './browser/testability';\nimport { ELEMENT_PROBE_PROVIDERS } from
 './dom/debug/ng_probe';\nimport { DomRendererFactory2 } from './dom/dom_renderer';\nimport
{ DomEventsPlugin } from './dom/events/dom_events';\nimport { EVENT_MANAGER_PLUGINS, EventManager }
from './dom/events/event_manager';\nimport { HAMMER_PROVIDERS } from
 './dom/events/hammer_gestures';\nimport { KeyEventsPlugin } from './dom/events/key_events';\nimport
{ DomSharedStylesHost, SharedStylesHost } from './dom/shared_styles_host';\nimport { DomSanitizer,
DomSanitizerImpl } from './security/dom_sanitization_service';\n\nexport function initDomAdapter() {\n
BrowserDomAdapter.makeCurrent();\n BrowserGetTestability.init();\n }\n\nexport function errorHandler():
ErrorHandler {\n return new ErrorHandler();\n }\n\nexport function _document(): any {\n // Tell ivy about the
global document\n setDocument(document);\n return document;\n }\n\nexport const
INTERNAL_BROWSER_PLATFORM_PROVIDERS: StaticProvider[] = [\n { provide: PLATFORM_ID,
useValue: PLATFORM_BROWSER_ID },\n { provide: PLATFORM_INITIALIZER, useValue: initDomAdapter,
multi: true },\n { provide: DOCUMENT, useFactory: _document, deps: [] },\n];\n\nconst
BROWSER_SANITIZATION_PROVIDERS__PRE_R3__: StaticProvider[] = [\n { provide: Sanitizer, useExisting:
DomSanitizer },\n { provide: DomSanitizer, useClass: DomSanitizerImpl, deps: [DOCUMENT] },\n];\n\nexport
const BROWSER_SANITIZATION_PROVIDERS__POST_R3__ = [];\n\n/**\n * @security Replacing built-in
sanitization providers exposes the application to XSS risks.\n * Attacker-controlled data introduced by an
unsanitized provider could expose your\n * application to XSS risks. For more detail, see the [Security
Guide](http://g.co/ng/security).\n * @publicApi\n *\nexport const BROWSER_SANITIZATION_PROVIDERS =
BROWSER_SANITIZATION_PROVIDERS__PRE_R3__;\n\n/**\n * A factory function that returns a
`PlatformRef` instance associated with browser service\n * providers.\n *\n * @publicApi\n *\nexport const
platformBrowser: (extraProviders?: StaticProvider[]) => PlatformRef =\n createPlatformFactory(platformCore,
'browser', INTERNAL_BROWSER_PLATFORM_PROVIDERS);\n\nexport const
BROWSER_MODULE_PROVIDERS: StaticProvider[] = [\n BROWSER_SANITIZATION_PROVIDERS,\n
{ provide: INJECTOR_SCOPE, useValue: 'root' },\n { provide: ErrorHandler, useFactory: errorHandler, deps: [] },\n
{\n provide: EVENT_MANAGER_PLUGINS,\n useClass: DomEventsPlugin,\n multi: true,\n deps:
[DOCUMENT, NgZone, PLATFORM_ID]\n },\n { provide: EVENT_MANAGER_PLUGINS, useClass:
KeyEventsPlugin, multi: true, deps: [DOCUMENT] },\n HAMMER_PROVIDERS,\n {\n provide:
DomRendererFactory2,\n useClass: DomRendererFactory2,\n deps: [EventManager, DomSharedStylesHost,
APP_ID]\n },\n { provide: RendererFactory2, useExisting: DomRendererFactory2 },\n { provide: SharedStylesHost,
useExisting: DomSharedStylesHost },\n { provide: DomSharedStylesHost, useClass: DomSharedStylesHost, deps:
[DOCUMENT] },\n { provide: Testability, useClass: Testability, deps: [NgZone] },\n { provide: EventManager,
useClass: EventManager, deps: [EVENT_MANAGER_PLUGINS, NgZone] },\n
ELEMENT_PROBE_PROVIDERS,\n];\n\n/**\n * Exports required infrastructure for all Angular apps.\n *
Included by default in all Angular apps created with the CLI\n * `new` command.\n * Re-exports `CommonModule`
and `ApplicationModule`, making their\n * exports and providers available to all apps.\n *\n * @publicApi\n

```

```

*^@NgModule({providers: BROWSER_MODULE_PROVIDERS, exports: [CommonModule,
ApplicationModule]})\nexport class BrowserModule {\n constructor(@Optional() @SkipSelf()
@Inject(BrowserModule) parentModule: BrowserModule|null) {\n if (parentModule) {\n throw new Error(\n
`BrowserModule has already been loaded. If you need access to common directives such as NgIf and NgFor from
a lazy loaded module, import CommonModule instead.`);\n }\n }\n /**\n * Configures a browser-based app to
transition from a server-rendered app, if\n * one is present on the page.\n * @param params An object
containing an identifier for the app to transition.\n * The ID must match between the client and server versions of
the app.\n * @returns The reconfigured `BrowserModule` to import into the app's root `AppModule`.\n *^ static
withServerTransition(params: {appId: string}): ModuleWithProviders<BrowserModule> {\n return {\n
ngModule: BrowserModule,\n providers: [\n {provide: APP_ID, useValue: params.appId},\n {provide:
TRANSITION_ID, useExisting: APP_ID},\n SERVER_TRANSITION_PROVIDERS,\n],\n };
}\n }\n}"/**\n * @license\n * Copyright Google LLC All Rights Reserved.\n * Use of this source code is
governed by an MIT-style license that can be\n * found in the LICENSE file at https://angular.io/license\n
*^import {DOCUMENT, DomAdapter as DomAdapter, getDOM as getDOM} from
'@angular/common';\nimport {Inject, Injectable, inject} from '@angular/core';\n/**\n * Represents the attributes
of an HTML `` element. The element itself is\n * represented by the internal `HTMLMetaElement`.\n *^
@see [HTML meta tag](https://developer.mozilla.org/docs/Web/HTML/Element/meta)\n * @see `Meta`\n *^
@publicApi\n *^export type MetaDefinition = {\n charset?: string;\n content?: string;\n httpEquiv?: string;\n
id?: string;\n itemprop?: string;\n name?: string;\n property?: string;\n scheme?: string;\n url?: string;\n}&{\n //
TODO(IgorMinar): this type looks wrong\n [prop: string]: string;\n};\n/**\n * Factory to create a `Meta` service
instance for the current DOM document.\n *^export function createMeta() {\n return new
Meta(inject(DOCUMENT));\n}\n/**\n * A service for managing HTML `` tags.\n *^ Properties of the
`MetaDefinition` object match the attributes of the\n * HTML `` tag. These tags define document metadata
that is important for\n * things like configuring a Content Security Policy, defining browser compatibility\n * and
security settings, setting HTTP Headers, defining rich content for social sharing,\n * and Search Engine
Optimization (SEO).\n *^ To identify specific `` tags in a document, use an attribute selection\n * string in
the format `\"tag_attribute=value string\"`.\n * For example, an `attrSelector` value of `\"name='description'\"`
matches a tag\n * whose `name` attribute has the value `\"description\"`.\n * Selectors are used with the
`querySelector` Document method,\n * in the format `meta[{attrSelector}]`.\n *^ @see [HTML meta
tag](https://developer.mozilla.org/docs/Web/HTML/Element/meta)\n * @see
[Document.querySelector](https://developer.mozilla.org/docs/Web/API/Document/querySelector)\n *^
@publicApi\n *^@Injectable({providedIn: 'root', useFactory: createMeta, deps: []})\nexport class Meta {\n
 private _dom: DomAdapter;\n constructor(@Inject(DOCUMENT) private _doc: any) {\n this._dom =
getDOM();\n }\n /**\n * Retrieves or creates a specific `` tag element in the current HTML document.\n
 * In searching for an existing tag, Angular attempts to match the `name` or `property` attribute\n * values in
the provided tag definition, and verifies that all other attribute values are equal.\n * If an existing element is
found, it is returned and is not modified in any way.\n * @param tag The definition of a `` element to
match or create.\n * @param forceCreation True to create a new element without checking whether one already
exists.\n * @returns The existing element with the same attributes and values if found,\n * the new element if
no match is found, or `null` if the tag parameter is not defined.\n *^ addTag(tag: MetaDefinition, forceCreation:
boolean = false): HTMLMetaElement|null {\n if (!tag) return null;\n return this._getOrCreateElement(tag,
forceCreation);\n }\n /**\n * Retrieves or creates a set of `` tag elements in the current HTML
document.\n * In searching for an existing tag, Angular attempts to match the `name` or `property` attribute\n
 * values in the provided tag definition, and verifies that all other attribute values are equal.\n * @param
tags An array of tag definitions to match or create.\n * @param forceCreation True to create new elements
without checking whether they already exist.\n * @returns The matching elements if found, or the new elements.\n
 *^ addTags(tags: MetaDefinition[], forceCreation: boolean = false): HTMLMetaElement[] {\n if (!tags)
return [];\n return tags.reduce((result: HTMLMetaElement[], tag: MetaDefinition) => {\n if (tag) {\n

```



```

result.push(this._getOrCreateElement(tag, forceCreation));\n }\n return result;\n }, []);\n }\n\n /**\n *
Retrieves a `<meta>` tag element in the current HTML document.\n * @param attrSelector The tag attribute and
value to match against, in the format\n * `"tag_attribute='value string'".\n * @returns The matching element, if
any.\n */\n getTag(attrSelector: string): HTMLMetaElement|null {\n if (!attrSelector) return null;\n return
this._doc.querySelector(`meta[${attrSelector}]`) || null;\n }\n\n /**\n * Retrieves a set of `<meta>` tag elements in
the current HTML document.\n * @param attrSelector The tag attribute and value to match against, in the format\n
* `"tag_attribute='value string'".\n * @returns The matching elements, if any.\n */\n getTags(attrSelector:
string): HTMLMetaElement[] {\n if (!attrSelector) return [];\n const list /*NodeList*/ =
this._doc.querySelectorAll(`meta[${attrSelector}]`);\n return list ? [].slice.call(list) : [];\n }\n\n /**\n * Modifies
an existing `<meta>` tag element in the current HTML document.\n * @param tag The tag description with which
to replace the existing tag content.\n * @param selector A tag attribute and value to match against, to identify\n
* an existing tag. A string in the format `"tag_attribute='value string'".\n * If not supplied, matches a tag with the
same `name` or `property` attribute value as the\n * replacement tag.\n * @return The modified element.\n */\n
updateTag(tag: MetaDefinition, selector?: string): HTMLMetaElement|null {\n if (!tag) return null;\n selector =
selector || this._parseSelector(tag);\n const meta: HTMLMetaElement = this.getTag(selector!);\n if (meta) {\n
return this._setMetaElementAttributes(tag, meta);\n }\n return this._getOrCreateElement(tag, true);\n }\n\n
/**\n * Removes an existing `<meta>` tag element from the current HTML document.\n * @param attrSelector A
tag attribute and value to match against, to identify\n * an existing tag. A string in the format
`"tag_attribute='value string'".\n */\n removeTag(attrSelector: string): void {\n
this.removeTagElement(this.getTag(attrSelector!));\n }\n\n /**\n * Removes an existing `<meta>` tag element
from the current HTML document.\n * @param meta The tag definition to match against to identify an existing
tag.\n */\n removeTagElement(meta: HTMLMetaElement): void {\n if (meta) {\n this._dom.remove(meta);\n
 }\n }\n\n private _getOrCreateElement(meta: MetaDefinition, forceCreation: boolean = false):\n
HTMLMetaElement {\n if (!forceCreation) {\n const selector: string = this._parseSelector(meta);\n const
elem: HTMLMetaElement = this.getTag(selector!);\n // It's allowed to have multiple elements with the same
name so it's not enough to\n // just check that element with the same name already present on the page. We also
need to\n // check if element has tag attributes\n if (elem && this._containsAttributes(meta, elem)) return
elem;\n }\n const element: HTMLMetaElement = this._dom.createElement('meta') as HTMLMetaElement;\n
this._setMetaElementAttributes(meta, element);\n const head = this._doc.getElementsByTagName('head')[0];\n
head.appendChild(element);\n return element;\n }\n\n private _setMetaElementAttributes(tag: MetaDefinition,
el: HTMLMetaElement): HTMLMetaElement {\n Object.keys(tag).forEach((prop: string) => el.setAttribute(prop,
tag[prop]));\n return el;\n }\n\n private _parseSelector(tag: MetaDefinition): string {\n const attr: string =
tag.name ? 'name' : 'property';\n return `${attr}=${tag[attr]}";\n }\n\n private _containsAttributes(tag:
MetaDefinition, elem: HTMLMetaElement): boolean {\n return Object.keys(tag).every((key: string) =>
elem.getAttribute(key) === tag[key]);\n }\n}\n\n", /**\n * @license\n * Copyright Google LLC All Rights
Reserved.\n * Use of this source code is governed by an MIT-style license that can be\n * found in the
LICENSE file at https://angular.io/license\n */\n\nimport {DOCUMENT, getDOM as getDOM} from
'@angular/common';\nimport {Inject, Injectable, inject} from '@angular/core';\n\n /**\n * Factory to create Title
service.\n */\nexport function createTitle() {\n return new Title(inject(DOCUMENT));\n }\n\n /**\n * A service that
can be used to get and set the title of a current HTML document.\n * Since an Angular application can't be
bootstrapped on the entire HTML document (`<html>` tag)\n * it is not possible to bind to the `text` property of the
`HTMLTitleElement` elements\n * (representing the `<title>` tag). Instead, this service can be used to set and get
the current\n * title value.\n */\n * @publicApi\n */\n@Injectable({providedIn: 'root', useFactory: createTitle, deps:
[]})\nexport class Title {\n constructor(@Inject(DOCUMENT) private _doc: any) {\n }\n\n /**\n * Get the title of the
current HTML document.\n */\n getTitle(): string {\n return this._doc.title;\n }\n\n /**\n * Set the title of the
current HTML document.\n * @param newTitle\n */\n setTitle(newTitle: string) {\n this._doc.title = newTitle ||
"";\n }\n }\n\n", /**\n * @license\n * Copyright Google LLC All Rights Reserved.\n * Use of this source code is
governed by an MIT-style license that can be\n * found in the LICENSE file at https://angular.io/license\n

```

```

*/\n\nconst win = typeof window !== 'undefined' && window || <any>{};\nexport { win as window};\n"/**\n *
@license\n * Copyright Google LLC All Rights Reserved.\n *\n * Use of this source code is governed by an MIT-
style license that can be\n * found in the LICENSE file at https://angular.io/license\n *\n\nimport {getDOM as
getDOM} from '@angular/common';\nimport {ApplicationRef, ComponentRef} from '@angular/core';\nimport
{window} from './browser';\n\nexport class ChangeDetectionPerfRecord {\n constructor(public msPerTick:
number, public numTicks: number) {} }\n\n/**\n * Entry point for all Angular profiling-related debug tools. This
object\n * corresponds to the `ng.profiler` in the dev console.\n *\n\nexport class AngularProfiler {\n appRef:
ApplicationRef;\n\n constructor(ref: ComponentRef<any>) {\n this.appRef = ref.injector.get(ApplicationRef);\n
 }\n\n // tslint:disable:no-console\n /**\n * Exercises change detection in a loop and then prints the average
amount of\n * time in milliseconds how long a single round of change detection takes for\n * the current state of
the UI. It runs a minimum of 5 rounds for a minimum\n * of 500 milliseconds.\n *\n * Optionally, a user may
pass a `config` parameter containing a map of\n * options. Supported options are:\n *\n * `record` (boolean) -
causes the profiler to record a CPU profile while\n * it exercises the change detector. Example:\n *\n * ```\n *
ng.profiler.timeChangeDetection({record: true})\n * ```\n *\n\n timeChangeDetection(config: any):
ChangeDetectionPerfRecord {\n const record = config && config['record'];\n const profileName = 'Change
Detection';\n // Profiler is not available in Android browsers without dev tools opened\n const
isProfilerAvailable = window.console.profile !== null;\n if (record && isProfilerAvailable) {\n
window.console.profile(profileName);\n }\n const start = getDOM().performanceNow();\n let numTicks = 0;\n
while (numTicks < 5 || (getDOM().performanceNow() - start) < 500) {\n this.appRef.tick();\n numTicks++;\n
 }\n const end = getDOM().performanceNow();\n if (record && isProfilerAvailable) {\n
window.console.profileEnd(profileName);\n }\n const msPerTick = (end - start) / numTicks;\n
window.console.log(`ran ${numTicks} change detection cycles`);\n
window.console.log(`${msPerTick.toFixed(2)} ms per check`);\n\n return new
ChangeDetectionPerfRecord(msPerTick, numTicks);\n }\n}\n"/**\n * @license\n * Copyright Google LLC All
Rights Reserved.\n *\n * Use of this source code is governed by an MIT-style license that can be\n * found in the
LICENSE file at https://angular.io/license\n *\n\nimport {ComponentRef} from '@angular/core';\nimport
{exportNgVar} from '../dom/util';\nimport {AngularProfiler} from './common_tools';\n\nconst
PROFILER_GLOBAL_NAME = 'profiler';\n\n/**\n * Enabled Angular debug tools that are accessible via your
browser's\n * developer console.\n *\n * Usage:\n *\n * 1. Open developer console (e.g. in Chrome Ctrl + Shift +
j)\n * 1. Type `ng.` (usually the console will show auto-complete suggestion)\n * 1. Try the change detection profiler
`ng.profiler.timeChangeDetection()`\n * then hit Enter.\n *\n * @publicApi\n *\n\nexport function
enableDebugTools<T>(ref: ComponentRef<T>): ComponentRef<T> {\n
exportNgVar(PROFILER_GLOBAL_NAME, new AngularProfiler(ref));\n return ref;\n}\n\n/**\n * Disables
Angular tools.\n *\n * @publicApi\n *\n\nexport function disableDebugTools(): void {\n
exportNgVar(PROFILER_GLOBAL_NAME, null);\n}\n"/**\n * @license\n * Copyright Google LLC All Rights
Reserved.\n *\n * Use of this source code is governed by an MIT-style license that can be\n * found in the
LICENSE file at https://angular.io/license\n *\n\nimport {DOCUMENT} from '@angular/common';\nimport
{APP_ID, Injectable, NgModule} from '@angular/core';\n\nexport function escapeHtml(text: string): string {\n
const escapedText: {[k: string]: string} = {\n '&': '&',\n '"': '&q;',\n '\\': '&s;',\n '<': '&l;',\n '>': '&g;',\n
};\n return text.replace(/&["<>]/g, s => escapedText[s]);\n}\n\nexport function unescapeHtml(text: string): string
{\n const unescapedText: {[k: string]: string} = {\n '&': '&',\n '&q;': '\\',\n '&s;': '\\',\n '&l;': '<',\n '&g;':
'>',\n }; \n return text.replace(/&[^\s;]+;/g, s => unescapedText[s]);\n}\n\n/**\n * A type-safe key to use with
`TransferState`.\n *\n * Example:\n *\n * ```\n * const COUNTER_KEY = makeStateKey<number>('counter');\n *
let value = 10;\n * transferState.set(COUNTER_KEY, value);\n * ```\n *\n * @publicApi\n *\n\nexport type
StateKey<T> = string & {__not_a_string: never};\n\n/**\n * Create a `StateKey<T>` that can be used to store value
of type T with `TransferState`.\n *\n * Example:\n *\n * ```\n * const COUNTER_KEY =
makeStateKey<number>('counter');\n * let value = 10;\n * transferState.set(COUNTER_KEY, value);\n * ```\n
*\n * @publicApi\n *\n\nexport function makeStateKey<T = void>(key: string): StateKey<T> {\n return key as

```

```

StateKey<T>;\n\n/**\n * A key value store that is transferred from the application on the server side to the
application\n * on the client side.\n * `TransferState` will be available as an injectable token. To use it import
 * `ServerTransferStateModule` on the server and `BrowserTransferStateModule` on the client.\n * The values in
the store are serialized/deserialized using JSON.stringify/JSON.parse. So only\n * boolean, number, string, null and
non-class objects will be serialized and deserialized in a\n * non-lossy manner.\n * @publicApi\n
*\n\n@injectable()\nexport class TransferState {\n private store: {[k: string]: {}|undefined} = {};\n private
onSerializeCallbacks: {[k: string]: () => {} | undefined} = {};\n\n /** @internal *\n static init(initState: {}) {\n
const transferState = new TransferState();\n transferState.store = initState;\n return transferState;\n }\n\n /**\n
 * Get the value corresponding to a key. Return `defaultValue` if key is not found.\n *\n get<T>(key:
StateKey<T>, defaultValue: T): T {\n return this.store[key] !== undefined ? this.store[key] as T : defaultValue;\n
}\n\n /**\n * Set the value corresponding to a key.\n *\n set<T>(key: StateKey<T>, value: T): void {\n
this.store[key] = value;\n }\n\n /**\n * Remove a key from the store.\n *\n remove<T>(key: StateKey<T>):
void {\n delete this.store[key];\n }\n\n /**\n * Test whether a key exists in the store.\n *\n hasKey<T>(key:
StateKey<T>) {\n return this.store.hasOwnProperty(key);\n }\n\n /**\n * Register a callback to provide the
value for a key when `toJson` is called.\n *\n onSerialize<T>(key: StateKey<T>, callback: () => T): void {\n
this.onSerializeCallbacks[key] = callback;\n }\n\n /**\n * Serialize the current state of the store to JSON.\n *\n
toJson(): string {\n // Call the onSerialize callbacks and put those values into the store.\n for (const key in
this.onSerializeCallbacks) {\n if (this.onSerializeCallbacks.hasOwnProperty(key)) {\n try {\n
this.store[key] = this.onSerializeCallbacks[key]();\n } catch (e) {\n console.warn('Exception in onSerialize
callback: ', e);\n }\n }\n }\n return JSON.stringify(this.store);\n }\n\n\nexport function
initTransferState(doc: Document, appId: string) {\n // Locate the script tag with the JSON data transferred from the
server.\n // The id of the script tag is set to the Angular appId + 'state'.\n const script = doc.getElementById(appId +
'-state');\n let initialState = {};\n if (script && script.textContent) {\n try {\n initialState =
JSON.parse(unescapeHtml(script.textContent));\n } catch (e) {\n console.warn('Exception while restoring
TransferState for app ' + appId, e);\n }\n }\n return TransferState.init(initialState);\n }\n\n\n/**\n * NgModule to
install on the client side while using the `TransferState` to transfer state from\n * server to client.\n * @publicApi\n
*\n\n@ngModule({\n providers: [{provide: TransferState, useFactory: initTransferState, deps:
[DOCUMENT, APP_ID]}],\n})\nexport class BrowserTransferStateModule {\n\n /**\n * @license\n *
Copyright Google LLC All Rights Reserved.\n * Use of this source code is governed by an MIT-style license
that can be\n * found in the LICENSE file at https://angular.io/license\n *\n\nimport {getDOM as getDOM} from
 '@angular/common';\nimport {DebugElement, DebugNode, Predicate, Type} from '@angular/core';\n\n\n/**\n *
Predicates for use with {@link DebugElement}'s query functions.\n * @publicApi\n *\n\nexport class By {\n
\n /**\n * Match all nodes.\n *\n * @usageNotes\n * ### Example\n * {\n * @example platform-
browser/dom/debug/ts/by/by.ts region='by_all'}\n *\n static all(): Predicate<DebugNode> {\n return () =>
true;\n }\n\n /**\n * Match elements by the given CSS selector.\n *\n * @usageNotes\n * ### Example\n *
{\n * @example platform-browser/dom/debug/ts/by/by.ts region='by_css'}\n *\n static css(selector: string):
Predicate<DebugElement> {\n return (debugElement) => {\n return debugElement.nativeElement != null ?\n
elementMatches(debugElement.nativeElement, selector) : false;\n };\n }\n\n /**\n * Match nodes that
have the given directive present.\n *\n * @usageNotes\n * ### Example\n * {\n * @example platform-
browser/dom/debug/ts/by/by.ts region='by_directive'}\n *\n static directive(type: Type<any>):
Predicate<DebugNode> {\n return (debugNode) => debugNode.providerTokens!.indexOf(type) !== -1;\n
}\n\n\nfunction elementMatches(n: any, selector: string): boolean {\n if (getDOM().isElementNode(n)) {\n
return n.matches && n.matches(selector) ||\n n.msMatchesSelector && n.msMatchesSelector(selector) ||\n
n.webkitMatchesSelector && n.webkitMatchesSelector(selector);\n }\n\n return false;\n }\n\n\n", /**\n *
@license\n *
Copyright Google LLC All Rights Reserved.\n * Use of this source code is governed by an MIT-style license
that can be\n * found in the LICENSE file at https://angular.io/license\n *\n\nexport {getDOM} from
 '@angular/common';\nexport {BROWSER_SANITIZATION_PROVIDERS as
BROWSER_SANITIZATION_PROVIDERS, BROWSER_SANITIZATION_PROVIDERS__POST_R3__ as

```

```

BROWSER_SANITIZATION_PROVIDERS__POST_R3__, initDomAdapter as initDomAdapter,
INTERNAL_BROWSER_PLATFORM_PROVIDERS as INTERNAL_BROWSER_PLATFORM_PROVIDERS }
from './browser';\nextport {BrowserDomAdapter as BrowserDomAdapter} from './browser/browser_adapter';\nextport
{TRANSITION_ID as TRANSITION_ID} from './browser/server-transition';\nextport {BrowserGetTestability as
BrowserGetTestability} from './browser/testability';\nextport {escapeHtml as escapeHtml} from
'/browser/transfer_state';\nextport {ELEMENT_PROBE_PROVIDERS as ELEMENT_PROBE_PROVIDERS}
from './dom/debug/ng_probe';\nextport {DomRendererFactory2 as DomRendererFactory2, flattenStyles as
flattenStyles, NAMESPACE_URIS as NAMESPACE_URIS, shimContentAttribute as shimContentAttribute,
shimHostAttribute as shimHostAttribute} from './dom/dom_renderer';\nextport {DomEventsPlugin as
DomEventsPlugin} from './dom/events/dom_events';\nextport {HammerGesturesPlugin as HammerGesturesPlugin}
from './dom/events/hammer_gestures';\nextport {KeyEventsPlugin as KeyEventsPlugin} from
'/dom/events/key_events';\nextport {DomSharedStylesHost as DomSharedStylesHost, SharedStylesHost as
SharedStylesHost} from './dom/shared_styles_host';\nextport {DomSanitizerImpl as DomSanitizerImpl} from
'/security/dom_sanitization_service';\n", "/*\n * @license\n * Copyright Google LLC All Rights Reserved.\n *\n *
Use of this source code is governed by an MIT-style license that can be\n * found in the LICENSE file at
https://angular.io/license\n *\n\n*\n * @module\n * @description\n * Entry point for all public APIs of the
common package.\n *\n\nimport {Version} from '@angular/core';\n\n*\n * @publicApi\n *\n\nexport const
VERSION = new Version('11.0.2');\n", "/*\n * @license\n * Copyright Google LLC All Rights Reserved.\n *\n *
Use of this source code is governed by an MIT-style license that can be\n * found in the LICENSE file at
https://angular.io/license\n *\n\nexport {BrowserModule, platformBrowser} from './browser';\nextport {Meta,
MetaDefinition} from './browser/meta';\nextport {Title} from './browser/title';\nextport {disableDebugTools,
enableDebugTools} from './browser/tools/tools';\nextport {BrowserTransferStateModule, makeStateKey, StateKey,
TransferState} from './browser/transfer_state';\nextport {By} from './dom/debug/by';\nextport
{EVENT_MANAGER_PLUGINS, EventManager} from './dom/events/event_manager';\nextport
{HAMMER_GESTURE_CONFIG, HAMMER_LOADER, HAMMER_PROVIDERS__POST_R3__ as
HAMMER_PROVIDERS__POST_R3__, HammerGestureConfig, HammerLoader, HammerModule} from
'/dom/events/hammer_gestures';\nextport {DomSanitizer, SafeHtml, SafeResourceUrl, SafeScript, SafeStyle,
SafeUrl, SafeValue} from './security/dom_sanitization_service';\n\nexport * from './private_export';\nextport
{VERSION} from './version';\n// This must be exported so it doesn't get tree-shaken away prematurely\nexport
{ELEMENT_PROBE_PROVIDERS__POST_R3__ as ELEMENT_PROBE_PROVIDERS__POST_R3__} from
'/dom/debug/ng_probe';\n", "/*\n * @license\n * Copyright Google LLC All Rights Reserved.\n *\n * Use of this
source code is governed by an MIT-style license that can be\n * found in the LICENSE file at
https://angular.io/license\n *\n\n*\n * @module\n * @description\n * Entry point for all public APIs of this
package.\n *\n\nexport * from './src/platform-browser';\n// This file only reexports content of the `src` folder. Keep it
that way.\n", "/*\n * @license\n * Copyright Google LLC All Rights Reserved.\n *\n * Use of this source code is
governed by an MIT-style license that can be\n * found in the LICENSE file at https://angular.io/license\n *\n\n//
This file is not used to build this module. It is only used during editing\n// by the TypeScript language service and
during build for verification. `ngc`\n// replaces this file with production index.ts when it rewrites private symbol\n//
names.\n\nexport * from './public_api';\n", "/*\n * Generated bundle index. Do not edit.\n *\n\nexport * from
'/index';\n\nexport {BROWSER_MODULE_PROVIDERS as
angular_packages_platform_browser_platform_browser_c_document as
angular_packages_platform_browser_platform_browser_b_errorHandler as
angular_packages_platform_browser_platform_browser_a} from './src/browser';\nextport
{GenericBrowserDomAdapter as angular_packages_platform_browser_platform_browser_o} from
'/src/browser/generic_browser_adapter';\nextport {createMeta as
angular_packages_platform_browser_platform_browser_d} from './src/browser/meta';\nextport
{SERVER_TRANSITION_PROVIDERS as
angular_packages_platform_browser_platform_browser_l_appInitializerFactory as

```

```
angular_packages_platform_browser_platform_browser_k} from './src/browser/server-transition';\nextport
{createTitle as angular_packages_platform_browser_platform_browser_e} from './src/browser/title';\nextport
{initTransferState as angular_packages_platform_browser_platform_browser_f} from
'/src/browser/transfer_state';\nextport {ELEMENT_PROBE_PROVIDERS__PRE_R3__ as
angular_packages_platform_browser_platform_browser_n,_createNgProbeR2 as
angular_packages_platform_browser_platform_browser_m} from './src/dom/debug/ng_probe';\nextport
{EventManagerPlugin as angular_packages_platform_browser_platform_browser_g} from
'/src/dom/events/event_manager';\nextport {HAMMER_PROVIDERS as
angular_packages_platform_browser_platform_browser_i,HAMMER_PROVIDERS__PRE_R3__ as
angular_packages_platform_browser_platform_browser_h} from './src/dom/events/hammer_gestures';\nextport
{domSanitizerImplFactory as angular_packages_platform_browser_platform_browser_j} from
'/src/security/dom_sanitization_service';"],"names":["DomAdapter","global","setRootDomAdapter","parseCookieV
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ustScript","bypassSanitizationTrustUrl","bypassSanitizationTrustResourceUrl","PLATFORM_BROWSER_ID","IN
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CAAC;KACxB;IAED, WAAW, CAAC, IAAS; QACnB, OAAO, IAAI, CAAC, WAAW, CAAC; KACzB; IAED, YAA Y, CAAC, EAAO, EAAE, IAAY, EAAE, KAAa, EAAE, SAAkB; QACnE, IAAI, SAAS, EAAE; YACb, IAAI, GAAG, SAAS, GAAG, GAAG, GAAG, IAAI, CAAC;;; YAG9B, MAAM, YAA Y, GAAG, cAAc, CAAC, SAAS, CAAC, CAAC; YAC/C, IAAI, YAA Y, EAAE; gBACHb, EAAE, CAAC, cAAc, CAAC, YAA Y, EAAE, IAAI, EAAE, KAAK, CAAC, CAAC; aAC 9C; iBAAM; gBACL, EAAE, CAAC, YAA Y, CAAC, IAAI, EAAE, KAAK, CAAC, CAAC; aAC9B; SACF; aAAM; YAC L, EAAE, CAAC, YAA Y, CAAC, IAAI, EAAE, KAAK, CAAC, CAAC; SAC9B; KACF; IAED, eAAe, CAAC, EAAO, EA AE, IAAY, EAAE, SAAkB; QACvD, IAAI, SAAS, EAAE;;; YAGb, MAAM, YAA Y, GAAG, cAAc, CAAC, SAAS, CAA C, CAAC; YAC/C, IAAI, YAA Y, EAAE; gBACHb, EAAE, CAAC, iBAAiB, CAAC, YAA Y, EAAE, IAAI, CAAC, CAAC; aAC1C; iBAAM;;;; gBAIL, EAAE, CAAC, eAAe, CAAC, GAAG, SAAS, IAAI, IAAI, EAAE, CAAC, CAAC; aAC5C; SA CF; aAAM; YACL, EAAE, CAAC, eAAe, CAAC, IAAI, CAAC, CAAC; SAC1B; KACF; IAED, QAAQ, CAAC, EAAO, EA AE, IAAY; QAC5B, EAAE, CAAC, SAAS, CAAC, GAAG, CAAC, IAAI, CAAC, CAAC; KACxB; IAED, WAAW, CA AC, EAAO, EAAE, IAAY; QAC/B, EAAE, CAAC, SAAS, CAAC, MAAM, CAAC, IAAI, CAAC, CAAC; KAC3B; IAED, QAAQ, CAAC, EAAO, EAAE, KAAa, EAAE, KAAU, EAAE, KAA0B; QACrE, IAAI, KAAK, IAAI, mBAAmB, CAAC, QAAQ, GAAG, mBAAmB, CAAC, SAAS, CAAC, EAAE; YAC1E, EAAE, CAAC, KAAK, CAAC, WAAW, CAAC, KA AK, EAAE, KAAK, EAAE, KAAK, GAAG, mBAAmB, CAAC, SAAS, GAAG, WAAW, GAAG, EAAE, CAAC, CAAC; S AC9F; aAAM; YACL, EAAE, CAAC, KAAK, CAAC, KAAK, CAAC, GAAG, KAAK, CAAC; SACzB; KACF; IAED, W AAW, CAAC, EAAO, EAAE, KAAa, EAAE, KAA0B; QAC5D, IAAI, KAAK, GAAG, mBAAmB, CAAC, QAAQ, EAAE ; YACxC, EAAE, CAAC, KAAK, CAAC, cAAc, CAAC, KAAK, CAAC, CAAC; SACHc; aAAM;;; YAGL, EAAE, CAAC, KAAK, CAAC, KAAK, CAAC, GAAG, EAAE, CAAC; SACtB; KACF; IAED, WAAW, CAAC, EAAO, EAAE, IAAY, E AAE, KAAU; QAC3C, WAAW, IAAI, oBAAoB, CAAC, IAAI, EAAE, UAAU, CAAC, CAAC; QACtD, EAAE, CAAC, I AAI, CAAC, GAAG, KAAK, CAAC; KACIB; IAED, QAAQ, CAAC, IAAS, EAAE, KAAa; QAC/B, IAAI, CAAC, SAAS, GAAG, KAAK, CAAC; KACxB; IAED, MAAM, CAAC, MAAsC, EAAE, KAAa, EAAE, QAAiC; QAE7F, WAAW, IAAI ,oBAAoB, CAAC, KAAK, EAAE, UAAU, CAAC, CAAC; QACvD, IAAI, OAAO, MAAM, KAAK, QAAQ, EAAE; YAC 9B, OAAmB, IAAI, CAAC, YAA Y, CAAC, sBAAsB, CACvD, MAAM, EAAE, KAAK, EAAE, sBAAsB, CAAC, QAAQ, CAAC, CAAC, CAAC; SACtD; QACD, OAAmB, IAAI, CAAC, YAA Y, CAAC, gBAAgB, CAC1C, MAAM, EAAE, KA AK, EAAE, sBAAsB, CAAC, QAAQ, CAAC, CA Ae, CAAC; KAC3E; CACF; aAEoB, MAAM, GAAG, CAAC, UAAU, C AAC, CAAC, CAAC; AAA5C, MAAM, WAAW, GAAG, QAA2B, CAAC; AACHD, SAAS, oBAAoB, CAAC, IAAY, EA AE, QAAgB; IAC1D, IAAI, IAAI, CAAC, UAAU, CAAC, CAAC, CAAC, KAAK, WAAW, EAAE; QACtC, MAAM, IAA I, KAAK, CAAC, uBAAuB, QAAQ, IAC3C, IAAI, kGAakG, CAAC, CAAC; KAC7G; AACH, CAAC; AAED, MAAM, i CAakC, SAAQ, mBAAmB; IAIjE, YACI, YAA0B, EAAE, gBAAqC, EACzD, SAAwB, EAAE, KAAa; QACjD, KAAK, CAAC, YAA Y, CAAC, CAAC; QADV, cAAS, GAAT, SAAS, CA Ae; QAEIC, MAAM, MAAM, GAAG, aAAa, CAAC, K AAK, GAAG, GAAG, GAAG, SAAS, CAAC, EAAE, EAAE, SAAS, CAAC, MAAM, EAAE, EAAE, CAAC, CAAC; QA C/E, gBAAgB, CAAC, SAAS, CAAC, MAAM, CAAC, CAAC; QAEnc, IAAI, CAAC, WAAW, GAAG, oBAAoB, CAAC , KAAK, GAAG, GAAG, GAAG, SAAS, CAAC, EAAE, CAAC, CAAC; QACpE, IAAI, CAAC, QAAQ, GAAG, iBAAiB, CAAC, KAAK, GAAG, GAAG, GAAG, SAAS, CAAC, EAAE, CAAC, CAAC; KAC/D; IAED, WAAW, CAAC, OAA Y; QACtB, KAAK, CAAC, YAA Y, CAAC, OAAO, EAAE, IAAI, CAAC, QAAQ, EAAE, EAAE, CAAC, CAAC; KACHD; I AED, aAAa, CAAC, MAAW, EAAE, IAAY; QACrC, MAAM, EAAE, GAAG, KAAK, CAAC, aAAa, CAAC, MAAM, EA AE, IAAI, CAAC, CAAC; QAC7C, KAAK, CAAC, YAA Y, CAAC, EAAE, EAAE, IAAI, CAAC, WAAW, EAAE, EAAE, CAAC, CAAC; QAC7C, OAAO, EAAE, CAAC; KACX; CACF; AAED, MAAM, iBAakB, SAAQ, mBAAmB; IAGjD, Y ACI, YAA0B, EAAU, gBAAqC, EACjE, MAAW, EAAE, SAAwB; QAC/C, KAAK, CAAC, YAA Y, CAAC, CAAC; QAF kB, qBAAgB, GAAhB, gBAAgB, CAAqB; QACjE, WAAM, GAAN, MAAM, CAAK; QAErB, IAAI, CAAC, UAAU, GA AI, MAAC, CAAC, YAA Y, CAAC, EAAC, IAAI, EAAE, MAAM, EAAC, CAAC, CAAC; QAC/D, IAAI, CAAC, gBAAg B, CAAC, OAAO, CAAC, IAAI, CAAC, UAAU, CAAC, CAAC; QAC/C, MAAM, MAAM, GAAG, aAAa, CAAC, SAAS, CAAC, EAAE, EAAE, SAAS, CAAC, MAAM, EAAE, EAAE, CAAC, CAAC; QACjE, KAAK, IAAI, CAAC, GAAG, CA AC, EAAE, CAAC, GAAG, MAAM, CAAC, MAAM, EAAE, CAAC, EAAE, EAAE; YACtC, MAAM, OAAO, GAAG, Q AAQ, CAAC, aAAa, CAAC, OAAO, CAAC, CAAC; YACHD, OAAO, CAAC, WAAW, GAAG, MAAM, CAAC, CAAC, CAAC, CAAC; YACHc, IAAI, CAAC, UAAU, CAAC, WAAW, CAAC, OAAO, CAAC, CAAC; SACtC; KACF; IAEO, g BAAGB, CAAC, IAAS; QACHc, OAAO, IAAI, KAAK, IAAI, CAAC, MAAM, GAAG, IAAI, CAAC, UAAU, GAAG, IAA

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C;gBACR,SAAS,EAAE,CAAC,EAAC,OAAO,EAAE,aAAa,EAAE,UAAU,EAAE,iBAAiB,EAAE,IAAI,EAAE,C  
AAC,QAAQ,EAAE,MAAM,CAAC,EAAC,CAAC;aAC/F;;ACxKD;;;;;AAaA;;;;;MAKa,EAAE;;;;;IASb,OAA  
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;ACpEA;;;;;ACAA;;;;;AAgBA;;MAGa,OAAO,GAAG,IAAI,OAAO,CAAC,mBAAmB;;ACnBtD;;;;;ACAA;;  
;;;;;AAcA;;ACdA;;;;;ACAA;;;;;"}

Found in path(s):

\* /opt/cola/permits/1358260668\_1657134840.805252/0/platform-browser-11-0-2-tgz/package/fesm2015/platform-browser.js.map

No license file was found, but licenses were detected in source scan.

```
{"version":3,"file":"animations.js","sources":["../../../../packages/platform-
browser/animations/src/animation_builder.ts","../../../../packages/platform-
browser/animations/src/animation_renderer.ts","../../../../packages/platform-
browser/animations/src/providers.ts","../../../../packages/platform-
browser/animations/src/module.ts","../../../../packages/platform-
browser/animations/src/private_export.ts","../../../../packages/platform-
browser/animations/src/animations.ts","../../../../packages/platform-
browser/animations/public_api.ts","../../../../packages/platform-
browser/animations/index.ts","../../../../packages/platform-
browser/animations/animations.ts"],"sourcesContent":["/**\n * @license\n * Copyright Google LLC All Rights
Reserved.\n *\n * Use of this source code is governed by an MIT-style license that can be\n * found in the
LICENSE file at https://angular.io/license\n *\nimport { AnimationBuilder, AnimationFactory, AnimationMetadata,
AnimationOptions, AnimationPlayer, sequence } from '@angular/animations';
import { DOCUMENT } from '@angular/common';
import { Inject, Injectable, RendererFactory2, RendererType2, ViewEncapsulation } from '@angular/core';
import { AnimationRenderer } from './animation_renderer';
@Injectable()\nexport class BrowserAnimationBuilder extends AnimationBuilder {\n private _nextAnimationId = 0;\n private _renderer: AnimationRenderer;\n\n constructor(rootRenderer: RendererFactory2, @Inject(DOCUMENT) doc: any) {\n super();
 const typeData = {\n id: '0', encapsulation: ViewEncapsulation.None, styles: [], data: { animation: [] }
 } as\n RendererType2;\n this._renderer = rootRenderer.createRenderer(doc.body, typeData) as AnimationRenderer;\n }\n\n build(animation: AnimationMetadata|AnimationMetadata[]): AnimationFactory {\n const id = this._nextAnimationId.toString();
 this._nextAnimationId++;
 const entry = Array.isArray(animation) ? sequence(animation) : animation;\n issueAnimationCommand(this._renderer, null, id, 'register', [entry]);
 return new BrowserAnimationFactory(id, this._renderer);\n }\n}\n\nexport class BrowserAnimationFactory extends AnimationFactory {\n constructor(private _id: string, private _renderer: AnimationRenderer) {\n super();
 }\n\n create(element: any, options?: AnimationOptions): AnimationPlayer {\n return new RendererAnimationPlayer(this._id, element, options || {}, this._renderer);\n }\n}
```

```

RendererAnimationPlayer implements AnimationPlayer {\n public parentPlayer: AnimationPlayer|null = null;\n private _started = false;\n\n constructor(\n public id: string, public element: any, options: AnimationOptions,\n private _renderer: AnimationRenderer) {\n this._command('create', options);\n }\n\n private _listen(eventName: string, callback: (event: any) => any): () => void {\n return this._renderer.listen(this.element, `@$${this.id}:${eventName}`, callback);\n }\n\n private _command(command: string, ...args: any[]) {\n return issueAnimationCommand(this._renderer, this.element, this.id, command, args);\n }\n\n onDone(fn: () => void): void {\n this._listen('done', fn);\n }\n\n onStart(fn: () => void): void {\n this._listen('start', fn);\n }\n\n onDestroy(fn: () => void): void {\n this._listen('destroy', fn);\n }\n\n init(): void {\n this._command('init');\n }\n\n hasStarted(): boolean {\n return this._started;\n }\n\n play(): void {\n this._command('play');\n this._started = true;\n }\n\n pause(): void {\n this._command('pause');\n }\n\n restart(): void {\n this._command('restart');\n }\n\n finish(): void {\n this._command('finish');\n }\n\n destroy(): void {\n this._command('destroy');\n }\n\n reset(): void {\n this._command('reset');\n }\n\n setPosition(p: number): void {\n this._command('setPosition', p);\n }\n\n getPosition(): number {\n return 0;\n }\n\n public totalTime = 0;\n\n function issueAnimationCommand(\n renderer: AnimationRenderer, element: any, id: string, command: string, args: any[]): any {\n return renderer.setProperty(element, `@$${id}:${command}`, args);\n }\n"/**\n * @license\n * Copyright Google LLC All Rights Reserved.\n * Use of this source code is governed by an MIT-style license that can be\n * found in the LICENSE file at https://angular.io/license\n */\n\nimport {AnimationTriggerMetadata} from '@angular/animations';\nimport {AnimationEngine as AnimationEngine} from '@angular/animations/browser';\nimport {Injectable, NgZone, Renderer2, RendererFactory2, RendererStyleFlags2, RendererType2} from '@angular/core';\n\nconst ANIMATION_PREFIX = '@';\nconst DISABLE_ANIMATIONS_FLAG = '@.disabled';\n\n// Define a recursive type to allow for nested arrays of `AnimationTriggerMetadata`. Note that an interface declaration is used as TypeScript prior to 3.7 does not support recursive type references, see https://github.com/microsoft/TypeScript/pull/33050 for details.\n\ninterface NestedAnimationTriggerMetadata = AnimationTriggerMetadata | RecursiveAnimationTriggerMetadata;\n\ninterface RecursiveAnimationTriggerMetadata extends Array<NestedAnimationTriggerMetadata> {\n}\n\n@Injectable()\nexport class AnimationRendererFactory implements RendererFactory2 {\n private _currentId: number = 0;\n private _microtaskId: number = 1;\n private _animationCallbacksBuffer: [(e: any) => any, any][] = [];\n private _rendererCache = new Map<Renderer2, BaseAnimationRenderer>();\n private _cdRecurDepth = 0;\n private promise: Promise<any> = Promise.resolve(0);\n\n constructor(\n private delegate: RendererFactory2,\n private engine: AnimationEngine, private _zone: NgZone) {\n engine.onRemovalComplete = (element: any, delegate: Renderer2) => {\n // Note: if an component element has a leave animation, and the component host leave animation, the view engine will call `removeChild` for the parent component renderer as well as for the child component renderer. Therefore, we need to check if we already removed the element.\n if (delegate && delegate.parentNode(element)) {\n delegate.removeChild(element.parentNode, element);\n }\n }\n\n createRenderer(hostElement: any, type: RendererType2): Renderer2 {\n const EMPTY_NAMESPACE_ID = '';\n // cache the delegates to find out which cached delegate can be used by which cached renderer\n const delegate = this.delegate.createRenderer(hostElement, type);\n if (!hostElement || !type || !type.data || !type.data['animation']) {\n let renderer: BaseAnimationRenderer|undefined = this._rendererCache.get(delegate);\n if (!renderer) {\n renderer = new BaseAnimationRenderer(EMPTY_NAMESPACE_ID, delegate, this.engine);\n // only cache this result when the base renderer is used\n this._rendererCache.set(delegate, renderer);\n }\n return renderer;\n }\n\n const componentId = type.id;\n const namespaceId = type.id + '-' + this._currentId;\n this._currentId++;\n\n this.engine.register(namespaceId, hostElement);\n const registerTrigger = (trigger: NestedAnimationTriggerMetadata) => {\n if (Array.isArray(trigger)) {\n trigger.forEach(registerTrigger);\n } else {\n this.engine.registerTrigger(componentId, namespaceId, hostElement, trigger.name, trigger);\n }\n }\n const animationTriggers = type.data['animation'] as NestedAnimationTriggerMetadata[];\n animationTriggers.forEach(registerTrigger);\n\n return new AnimationRenderer(this, namespaceId, delegate, this.engine);\n }\n\n begin() {\n this._cdRecurDepth++;\n if (this.delegate.begin()) {\n this.delegate.begin();\n }\n }\n }\n}

```



```

 }
 }
 private _scheduleCountTask() {
 // always use promise to schedule microtask instead of use Zone
 this.promise.then(() => {
 this._microtaskId++;
 });
 }
 /** @internal */
 scheduleListenerCallback(count: number, fn: (e: any) => any, data: any) {
 if (count >= 0 && count <
 this._microtaskId) {
 this._zone.run(() => fn(data));
 return;
 }
 if (this._animationCallbacksBuffer.length == 0) {
 Promise.resolve(null).then(() => {
 this._zone.run(() => {
 this._animationCallbacksBuffer.forEach(tuple => {
 const [fn, data] = tuple;
 fn(data);
 });
 this._animationCallbacksBuffer = [];
 });
 });
 }
 this._animationCallbacksBuffer.push([fn, data]);
 }
 end() {
 this._cdRecurDepth--;
 // this is to prevent animations from running twice when an inner
 // component does CD when a parent component instead has inserted it
 if (this._cdRecurDepth == 0) {
 this._zone.runOutsideAngular(() => {
 this._scheduleCountTask();
 this.engine.flush(this._microtaskId);
 });
 }
 if (this.delegate.end) {
 this.delegate.end();
 }
 }
 whenRenderingDone(): Promise<any> {
 return this.engine.whenRenderingDone();
 }
}
export class BaseAnimationRenderer implements Renderer2 {
 constructor(
 protected namespaceId: string,
 public delegate: Renderer2,
 public engine: AnimationEngine
) {
 this.destroyNode = this.delegate.destroyNode ? (n) => delegate.destroyNode!(n) : null;
 }
 get data() {
 return this.delegate.data;
 }
 destroyNode: ((n: any) => void)|null;
 destroy(): void {
 this.engine.destroy(this.namespaceId, this.delegate);
 this.delegate.destroy();
 }
 createElement(name: string, namespace?: string|null|undefined) {
 return this.delegate.createElement(name, namespace);
 }
 createComment(value: string) {
 return this.delegate.createComment(value);
 }
 createText(value: string) {
 return this.delegate.createText(value);
 }
 appendChild(parent: any, newChild: any): void {
 this.delegate.appendChild(parent, newChild);
 this.engine.onInsert(this.namespaceId, newChild, parent, false);
 }
 insertBefore(parent: any, newChild: any, refChild: any, isMove: boolean = true): void {
 this.delegate.insertBefore(parent, newChild, refChild);
 // If `isMove` true than we should animate this insert.
 this.engine.onInsert(this.namespaceId, newChild, parent, isMove);
 }
 removeChild(parent: any, oldChild: any, isHostElement: boolean): void {
 this.engine.onRemove(this.namespaceId, oldChild, this.delegate, isHostElement);
 }
 selectRootElement(selectorOrNode: any, preserveContent?: boolean) {
 return this.delegate.selectRootElement(selectorOrNode, preserveContent);
 }
 parentNode(node: any) {
 return this.delegate.parentNode(node);
 }
 nextSibling(node: any) {
 return this.delegate.nextSibling(node);
 }
 setAttribute(el: any, name: string, value: string, namespace?: string|null|undefined): void {
 this.delegate.setAttribute(el, name, value, namespace);
 }
 removeAttribute(el: any, name: string, namespace?: string|null|undefined): void {
 this.delegate.removeAttribute(el, name, namespace);
 }
 addClass(el: any, name: string): void {
 this.delegate.addClass(el, name);
 }
 removeClass(el: any, name: string): void {
 this.delegate.removeClass(el, name);
 }
 setStyle(el: any, style: string, value: any, flags?: RendererStyleFlags2|undefined): void {
 this.delegate.setStyle(el, style, value, flags);
 }
 removeStyle(el: any, style: string, flags?: RendererStyleFlags2|undefined): void {
 this.delegate.removeStyle(el, style, flags);
 }
 setProperty(el: any, name: string, value: any): void {
 if (name.charAt(0) == ANIMATION_PREFIX && name == DISABLE_ANIMATIONS_FLAG) {
 this.disableAnimations(el, !!value);
 } else {
 this.delegate.setProperty(el, name, value);
 }
 }
 setValue(node: any, value: string): void {
 this.delegate.setValue(node, value);
 }
 listen(target: any, eventName: string, callback: (event: any) => boolean | void): () => void {
 return this.delegate.listen(target, eventName, callback);
 }
 protected disableAnimations(element: any, value: boolean) {
 this.engine.disableAnimations(element, value);
 }
}
export class AnimationRenderer extends BaseAnimationRenderer implements Renderer2 {
 constructor(
 public factory: AnimationRendererFactory,
 namespaceId: string,
 delegate: Renderer2,
 engine: AnimationEngine
) {
 super(namespaceId, delegate, engine);
 this.namespaceId = namespaceId;
 }
 setProperty(el: any, name: string, value: any): void {
 if (name.charAt(0) == ANIMATION_PREFIX) {
 if (name.charAt(1) == '.' && name == DISABLE_ANIMATIONS_FLAG) {
 value = value === undefined ? true : !!value;
 this.disableAnimations(el, value as boolean);
 } else {
 this.engine.process(this.namespaceId, el, name.substr(1), value);
 }
 } else {
 this.delegate.setProperty(el,

```

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name, value);\n }\n }\n\n listen(target: 'window'|'document'|'body'|any, eventName: string, callback: (event: any)
=> any):\n () => void {\n if (eventName.charAt(0) == ANIMATION_PREFIX) {\n const element =
resolveElementFromTarget(target);\n let name = eventName.substr(1);\n let phase = ";\n // @listener.phase
is for trigger animation callbacks\n // @@listener is for animation builder callbacks\n if (name.charAt(0) !=
ANIMATION_PREFIX) {\n [name, phase] = parseTriggerCallbackName(name);\n }\n return
this.engine.listen(this.namespaceId, element, name, phase, event => {\n const countId = (event as any)['_data'] ||
-1;\n this.factory.scheduleListenerCallback(countId, callback, event);\n });\n }\n }\n return
this.delegate.listen(target, eventName, callback);\n }\n }\n\nfunction resolveElementFromTarget(target:
'window'|'document'|'body'|any): any {\n switch (target) {\n case 'body':\n return document.body;\n case
'document':\n return document;\n case 'window':\n return window;\n default:\n return target;\n
}\n }\n\nfunction parseTriggerCallbackName(triggerName: string) {\n const dotIndex = triggerName.indexOf('.');\n const
trigger = triggerName.substring(0, dotIndex);\n const phase = triggerName.substr(dotIndex + 1);\n return
[trigger, phase];\n }\n\n"/**\n * @license\n * Copyright Google LLC All Rights Reserved.\n *\n * Use of this source
code is governed by an MIT-style license that can be\n * found in the LICENSE file at https://angular.io/license\n
*\n\nimport { AnimationBuilder } from '@angular/animations';\nimport { AnimationDriver, AnimationEngine as
AnimationEngine, AnimationStyleNormalizer as AnimationStyleNormalizer, CssKeyframesDriver as
CssKeyframesDriver, NoopAnimationDriver as NoopAnimationDriver, supportsWebAnimations as
supportsWebAnimations, WebAnimationsDriver as WebAnimationsDriver, WebAnimationsStyleNormalizer as
WebAnimationsStyleNormalizer } from '@angular/animations/browser';\nimport { DOCUMENT } from
'@angular/common';\nimport { Inject, Injectable, InjectionToken, NgZone, Provider, RendererFactory2 } from
'@angular/core';\nimport { DomRendererFactory2 as DomRendererFactory2 } from '@angular/platform-
browser';\nimport { BrowserAnimationBuilder } from './animation_builder';\nimport { AnimationRendererFactory }
from './animation_renderer';\n\n@Injectable()\nexport class InjectableAnimationEngine extends AnimationEngine
{\n constructor(\n @Inject(DOCUMENT) doc: any, driver: AnimationDriver, normalizer:
AnimationStyleNormalizer) {\n super(doc.body, driver, normalizer);\n }\n }\n\nexport function
instantiateSupportedAnimationDriver() {\n return supportsWebAnimations() ? new WebAnimationsDriver() : new
CssKeyframesDriver();\n }\n\nexport function instantiateDefaultStyleNormalizer() {\n return new
WebAnimationsStyleNormalizer();\n }\n\nexport function instantiateRendererFactory(\n renderer:
DomRendererFactory2, engine: AnimationEngine, zone: NgZone) {\n return new
AnimationRendererFactory(renderer, engine, zone);\n }\n\n/**\n * @publicApi\n */\nexport const
ANIMATION_MODULE_TYPE =\n new
InjectionToken<'NoopAnimations'|'BrowserAnimations'>('AnimationModuleType');\n\nconst
SHARED_ANIMATION_PROVIDERS: Provider[] = [\n { provide: AnimationBuilder, useClass:
BrowserAnimationBuilder },\n { provide: AnimationStyleNormalizer, useFactory:
instantiateDefaultStyleNormalizer },\n { provide: AnimationEngine, useClass: InjectableAnimationEngine }, {\n
provide: RendererFactory2,\n useFactory: instantiateRendererFactory,\n deps: [DomRendererFactory2,
AnimationEngine, NgZone]\n }];\n\n/**\n * Separate providers from the actual module so that we can do a local
modification in Google3 to\n * include them in the BrowserModule.\n */\nexport const
BROWSER_ANIMATIONS_PROVIDERS: Provider[] = [\n { provide: AnimationDriver, useFactory:
instantiateSupportedAnimationDriver },\n { provide: ANIMATION_MODULE_TYPE, useValue:
'BrowserAnimations' }, ...SHARED_ANIMATION_PROVIDERS];\n\n/**\n * Separate providers from the actual
module so that we can do a local modification in Google3 to\n * include them in the BrowserTestingModule.\n
*/\nexport const BROWSER_NOOP_ANIMATIONS_PROVIDERS: Provider[] = [\n { provide: AnimationDriver,
useClass: NoopAnimationDriver },\n { provide: ANIMATION_MODULE_TYPE, useValue: 'NoopAnimations' },
...SHARED_ANIMATION_PROVIDERS];\n\n"/**\n * @license\n * Copyright Google LLC All Rights
Reserved.\n *\n * Use of this source code is governed by an MIT-style license that can be\n * found in the
LICENSE file at https://angular.io/license\n *\nimport { NgModule } from '@angular/core';\nimport
{ BrowserModule } from '@angular/platform-browser';\nimport { BROWSER_ANIMATIONS_PROVIDERS,

```

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BROWSER_NOOP_ANIMATIONS_PROVIDERS} from './providers';\n\n/**\n * Exports `BrowserModule` with
additional [dependency-injection providers](guide/glossary#provider)\n * for use with animations. See
[Animations](guide/animations).\n * @publicApi\n */\n@NgModule({\n exports: [BrowserModule],\n providers:
BROWSER_ANIMATIONS_PROVIDERS,\n})\nexport class BrowserAnimationsModule {\n}\n\n/**\n * A null
player that must be imported to allow disabling of animations.\n * @publicApi\n */\n@NgModule({\n exports:
[BrowserModule],\n providers: BROWSER_NOOP_ANIMATIONS_PROVIDERS,\n})\nexport class
NoopAnimationsModule {\n}\n", "/*\n * @license\n * Copyright Google LLC All Rights Reserved.\n */\n * Use of
this source code is governed by an MIT-style license\n * found in the LICENSE file at
https://angular.io/license\n */\nexport {BrowserAnimationBuilder as BrowserAnimationBuilder,
BrowserAnimationFactory as BrowserAnimationFactory} from './animation_builder';\nexport {AnimationRenderer
as AnimationRenderer, AnimationRendererFactory as AnimationRendererFactory} from
'./animation_renderer';\nexport {InjectableAnimationEngine as InjectableAnimationEngine} from
'./providers';\n", "/*\n * @license\n * Copyright Google LLC All Rights Reserved.\n */\n * Use of this source code
is governed by an MIT-style license that can be\n * found in the LICENSE file at https://angular.io/license\n
*/\n\n/**\n * @module\n * @description\n * Entry point for all animation APIs of the animation browser package.\n
*/\nexport {BrowserAnimationsModule, NoopAnimationsModule} from './module';\n\nexport
{ANIMATION_MODULE_TYPE} from './providers';\n\nexport * from './private_export';\n", "/*\n * @license\n *
Copyright Google LLC All Rights Reserved.\n */\n * Use of this source code is governed by an MIT-style license
that can be\n * found in the LICENSE file at https://angular.io/license\n */\n\n/**\n * @module\n * @description\n
* Entry point for all public APIs of this package.\n */\nexport * from './src/animations';\n", "/*\n * @license\n *
Copyright Google LLC All Rights Reserved.\n */\n * Use of this source code is governed by an MIT-style license
that can be\n * found in the LICENSE file at https://angular.io/license\n */\n\n// This file is not used to build this
module. It is only used during editing\n// by the TypeScript language service and during build for verification.
`ngc`\n// replaces this file with production index.ts when it rewrites private symbol\n// names.\n\nexport * from
'./public_api';\n", "/*\n * Generated bundle index. Do not edit.\n */\n\nexport * from './index';\n\nexport
{BaseAnimationRenderer as angular_packages_platform_browser_animations_animations_f} from
'./src/animation_renderer';\nexport {BROWSER_ANIMATIONS_PROVIDERS as
angular_packages_platform_browser_animations_animations_d,BROWSER_NOOP_ANIMATIONS_PROVIDER
S as angular_packages_platform_browser_animations_animations_e,instantiateDefaultStyleNormalizer as
angular_packages_platform_browser_animations_animations_b,instantiateRendererFactory as
angular_packages_platform_browser_animations_animations_c,instantiateSupportedAnimationDriver as
angular_packages_platform_browser_animations_animations_a} from
'./src/providers';\n], "names": ["AnimationEngine", "AnimationStyleNormalizer", "supportsWebAnimations", "WebAni
mationsDriver", "CssKeyframesDriver", "WebAnimationsStyleNormalizer", "DomRendererFactory2", "NoopAnimati
onDriver"], "mappings": ";;;;;;;;;;AAAA;;;;;;;;;MAcA,uBAAwB,SAAQ,gBAAgB;IAI3D,YAAY,YAA8B,EAAoB,GA
AQ;QACpE,KAAK,EAAE,CAAC;QAJF,qBAAGB,GAAG,CAAC,CAAC;QAK3B,MAAM,QAAQ,GACV,EAAC,
EAAE,EAAE,GAAG,EAAE,aAAa,EAAE,iBAAiB,CAAC,IAAI,EAAE,MAAM,EAAE,EAAE,EAAE,IAAI,EAAE,
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CAAC;KACHc;IAED, WAAW, CAAC, EAAO, EAAE, IAAY, EAAE, KAAU; QAC3C, IAAI, IAAI, CAAC, MAAM, CAAC, CAAC, CAAC, IAAI, gBAAGB, EAAE; YACtC, IAAI, IAAI, CAAC, MAAM, CAAC, CAAC, CAAC, IAAI, GAAG, IAAI, IAAI, IAAI, uBAAuB, EAAE; gBAC5D, KAAK, GAAG, KAAK, KAAK, SAAS, GAAG, IAAI, GAAG, CAAC, CAAC, KAAK, CAAC; gBAC7C, IAAI, CAAC, iBAAiB, CAAC, EAAE, EAAE, KAAgB, CAAC, CAAC; aAC9C; iBAAM; gBACL, IAAI, CAAC, MAAM, CAAC, OAAO, CAAC, IAAI, CAAC, WAAW, EAAE, EAAE, EAAE, IAAI, CAAC, MAAM, CAAC, CAAC, CAAC, EAAE, KAAK, CAAC, CAAC; aACIE; SACF; aAAM; YACL, IAAI, CAAC, QAAQ, CAAC, WAAW, CAAC, EAAE, EAAE, IAAI, EAAE, KAAK, CAAC, CAAC; SAC5C; KACF; IAED, MAAM, CAAC, MAAsC, EAAE, SAAiB, EAAE, QAA6B; QAE7F, IAAI, SAAS, CAAC, MAAM, CAAC, CAAC, CAAC, IAAI, gBAAGB, EAAE; YAC3C, MAAM, OAAO, GAAG, wBAAwB, CAAC, MAAM, CAAC, CAAC; YACjD, IAAI, IAAI, GAAG, SAAS, CAAC, MAAM, CAAC, CAAC, CAAC, CAAC; YAC/B, IAAI, KAAK, GAAG, EAAE, CAAC;;; YAGf, IAAI, IAAI, CAAC, MAAM, CAAC, CAAC, CAAC, IAAI, gBAAGB, EAAE; gBACtC, CAAC, IAAI, EAAE, KAAK, CAAC, GAAG, wBAAwB, CAAC, IAAI, CAAC, CAAC; aACHd; YACD, OAAO, IAAI, CAAC, MAAM, CAAC, MAAM, CAAC, IAAI, CAAC, WAAW, EAAE, OAAO, EAAE, IAAI, EAAE, KAAK, EAAE, KAAK; gBACrE, MAAM, OAAO, GAAI, KAAa, CAAC, OAAO, CAAC, IAAI, CAAC, CAAC, CAAC; gBAC9C, IAAI, CAAC, OAAO, CAAC, wBAAwB, CAAC, OAAO, EAAE, QAAQ, EAAE, KAAK, CAAC, CAAC; aACjE, CAAC, CAAC; SACJ; QACD, OAAO, IAAI, CAAC, QAAQ, CAAC, MAAM, CAAC, MAAM, EAAE, SAAS, EAAE, QAAQ, CAAC, CAAC; KAC1D; CACF; AAED, SAAS, wBAAwB, CAAC, MAAsC; IACtE, QAAQ, MAAM; QACZ, KAAK, MAAM; YACT, OAAO, QAAQ, CAAC, IAAI, CAAC; QACvB, KAAK, UAAU; YACb, OAAO, QAAQ, CAAC; QACIB, KAAK, QAAQ; YACX, OAAO, MAAM, CAAC; QACbB; YACE, OAAO, MAAM, CAAC; KACjB; AACH, CAAC; AAED, SAAS, wBAAwB, CAAC, WAAmB; IACnD, MAAM, QAAQ, GAAG, WAAW, CAAC, OAAO, CAAC, GAAG, CAAC, CAAC; IAC1C, MAAM, OAAO, GAAG, WAAW, CAAC, SAAS, CAAC, CAAC, EAAE, QAAQ, CAAC, CAAC; IACnD, MAAM, KAAK, GAAG, WAAW, CAAC, MAAM, CAAC, QAAQ, GAAG, CAAC, CAAC, CAAC; IAC/C, OAAO, CAAC, OAAO, EAAE, KAAK, CAAC, CAAC; AAC1B;;; ACtSA;;; MakBa, yBAA0B, SAAQA, gBAAE; IAC5D, YACsB, GAAQ, EAAE, MAAuB, EAAE, UAAoC; QAC3F, KAAK, CAAC, GAAG, CAAC, IAAI, EAAE, MAAM, EAAE, UAAU, CAAC, CAAC; KACrC;;; YALF, UAAU;;; 4CAGJ, MAAM, SAAC, QAAQ; YAXd, eAAe; YAAoEC, yBAAwB;;; SAgBnG, mCAAmC; IACjD, OAAOC, sBAAqB, EAAE, GAAG, IAAIC, oBAAmB, EAAE, GAAG, IAAIC, mBAAkB, EAAE, CAAC; AACxF, CAAC; SAEe, iCAAiC; IAC/C, OAAO, IAAIC, 6BAA4B, EAAE, CAAC; AAC5C, CAAC; SAEe, 0BAA0B, CACtC, QAA6B, EAAE, MAAuB, EAAE, IAAY; IACtE, OAAO, IAAI, wBAAwB, CAAC, QAAQ, EAAE, MAAM, EAAE, IAAI, CAAC, CAAC; AAC9D, CAAC; AAED;;; MAGa, qBAAqB, GAC9B, IAAI, cAAc, CAAC, qBAAqB, EAAE; AAEPf, MAAM, 0BAA0B, GAAe; IAC7C, EAAC, OAAO, EAAE, gBAAGB, EAAE, QAAQ, EAAE, uBAAuB, EAAC; IAC9D, EAAC, OAAO, EAAE, yBAAwB, EAAE, UAAU, EAAE, iCAAiC, EAAC; IACIF, EAAC, OAAO, EAAED, gBAAE, EAAE, QAAQ, EAAE, yBAAyB, EAAC, EAAE; QAC/D, OAAO, EAAE, gBAAGB; QACzB, UAAU, EAAE, 0BAA0B; QACtC, IAAI, EAAE, CAACM, oBAAmB, EAAEN, gBAAE, EAAE, MAAM, CAAC; KACrD; CACF, CAAC; AAEF;;; MAIa, 4BAA4B, GAAe; IACtD, EAAC, OAAO, EAAE, eAAe, EAAE, UAAU, EAAE, mCAAmC, EAAC; IAC3E, EAAC, OAAO, EAAE, qBAAqB, EAAE, QAAQ, EAAE, mBAAmB, EAAC, EAAE, GAAG, 0BAA0B; EAC9F; AAEF;;; MAIa, iCAAiC, GAAe; IAC3D, EAAC, OAAO, EAAE, eAAe, EAAE, QAAQ, EAEO, oBAAmB, EAAC; IACzD, EAAC, OAAO, EAAE, qBAAqB, EAAE, QAAQ, EAAE, gBAAGB, EAAC, EAAE, GAAG, 0BAA0B;;; ACrE7F;;; AAYA;;; MASa, uBAAuB;;; YAJnC, QAAQ, SAAC; gBACR, OAAO, EAAE, CAAC, aAAa, CAAC; gBACxB, SAAS, EAAE, 4BAA4B; aACxC;;; AAID;;; MAQa, oBAAoB;;; YAJhC, QAAQ, SAAC; gBACR, OAAO, EAAE, CAAC, aAAa, CAAC; gBACxB, SAAS, EAAE, iCAAiC; aAC7C;;; AC/BD;;; ACAA;;; ACAA;;; ACAA;;; ACAA;;; ACAA;;; ACAA;;; " }

Found in path(s):

\* /opt/cola/permits/1358260668\_1657134840.805252/0/platform-browser-11-0-2-tgz/package/fesm2015/animations.js.map

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Build-Jdk: 11.0.14

Built-By: uriel

Bundle-Description: Java reflect give poor performance on getter setter  
r an constructor calls, accessors-smart use ASM to speed up those calls.

Bundle-DocURL: <https://urielch.github.io/>

Bundle-License: <http://www.apache.org/licenses/LICENSE-2.0.txt>

Bundle-ManifestVersion: 2

Bundle-Name: accessors-smart

Bundle-SymbolicName: net.minidev.accessors-smart

Bundle-Vendor: Chemouni Uriel

Bundle-Version: 2.4.8

Created-By: Apache Maven Bundle Plugin

Export-Package: net.minidev.asm;uses:="org.objectweb.asm";version="2.4.8",net.minidev.asm.ex;version="2.4.8"

Import-Package: org.objectweb.asm;version="[8.0,10)",net.minidev.asm.ex

Require-Capability: osgi.ee;filter="(&(osgi.ee=JavaSE)(version=1.8))"

Tool: Bnd-5.1.1.202006162103

Found in path(s):

\* /opt/cola/permits/1301894995\_1649303844.26/0/accessors-smart-2-4-8-1-jar/META-INF/MANIFEST.MF

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# 1.378 karma 5.0.0

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scriptversion=2005-07-09.11

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This package was put together by Matthias Klose <doko@debian.org>.

Upstream source:  
<ftp.gnu.org/pub/gnu/readline/readline-4.3.tar.gz>.

Author: Per Bothner

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```
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*/
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\* @author Antoon Bosselaers <antoon.bosselaers@esat.kuleuven.ac.be>

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```
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Version 2, June 1991

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This package was put together by Klee Dienes <klee@debian.org> from sources from ftp.python.org:/pub/python, based on the Debianization by the previous maintainers Bernd S. Brentrup <bsb@uni-muenster.de> and Bruce Perens.

Current maintainer is Matthias Klose <doko@debian.org> until the final 2.3 version is released.

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### A. HISTORY OF THE SOFTWARE

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Python was created in the early 1990s by Guido van Rossum at Stichting Mathematisch Centrum (CWI, see <http://www.cwi.nl>) in the Netherlands as a successor of a language called ABC. Guido remains Python's principal author, although it includes many contributions from others.

In 1995, Guido continued his work on Python at the Corporation for National Research Initiatives (CNRI, see <http://www.cnri.reston.va.us>) in Reston, Virginia where he released several versions of the software.

In May 2000, Guido and the Python core development team moved to BeOpen.com to form the BeOpen PythonLabs team. In October of the same year, the PythonLabs team moved to Digital Creations (now Zope Corporation, see <http://www.zope.com>). In 2001, the Python Software Foundation (PSF, see <http://www.python.org/psf/>) was formed, a non-profit organization created specifically to own Python-related Intellectual Property. Zope Corporation is a sponsoring member of the PSF.

All Python releases are Open Source (see <http://www.opensource.org> for the Open Source Definition). Historically, most, but not all, Python releases have also been GPL-compatible; the table below summarizes the various releases.

Release	Derived from	Year	Owner	GPL-compatible? (1)
0.9.0 thru 1.2		1991-1995	CWI	yes
1.3 thru 1.5.2	1.2	1995-1999	CNRI	yes
1.6	1.5.2	2000	CNRI	no
2.0	1.6	2000	BeOpen.com	no
1.6.1	1.6	2001	CNRI	yes (2)
2.1	2.0+1.6.1	2001	PSF	no
2.0.1	2.0+1.6.1	2001	PSF	yes
2.1.1	2.1+2.0.1	2001	PSF	yes
2.2	2.1.1	2001	PSF	yes
2.1.2	2.1.1	2002	PSF	yes
2.1.3	2.1.2	2002	PSF	yes
2.2.1	2.2	2002	PSF	yes
2.2.2	2.2.1	2002	PSF	yes
2.2.3	2.2.2	2003	PSF	yes
2.3	2.2.2	2002-2003	PSF	yes
2.3.1	2.3	2002-2003	PSF	yes
2.3.2	2.3.1	2002-2003	PSF	yes
2.3.3	2.3.2	2002-2003	PSF	yes
2.3.4	2.3.3	2004	PSF	yes
2.3.5	2.3.4	2005	PSF	yes
2.4	2.3	2004	PSF	yes
2.4.1	2.4	2005	PSF	yes
2.4.2	2.4.1	2005	PSF	yes
2.4.3	2.4.2	2006	PSF	yes
2.4.4	2.4.3	2006	PSF	yes
2.5	2.4	2006	PSF	yes
2.5.1	2.5	2007	PSF	yes
2.5.2	2.5.1	2008	PSF	yes
2.5.3	2.5.2	2008	PSF	yes
2.6	2.5	2008	PSF	yes
2.6.1	2.6	2008	PSF	yes
2.6.2	2.6.1	2009	PSF	yes
2.6.3	2.6.2	2009	PSF	yes
2.6.4	2.6.3	2009	PSF	yes
2.6.5	2.6.4	2010	PSF	yes

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dh\_python2, pycompile, pyclean and debpython module:

=====  
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## 1.388 multiregexp 0.5.1\_8

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```
<project xmlns="http://maven.apache.org/POM/4.0.0" xmlns:xsi="http://www.w3.org/2001/XMLSchema-instance"
xsi:schemaLocation="http://maven.apache.org/POM/4.0.0 http://maven.apache.org/xsd/maven-4.0.0.xsd">
```



```

<modelVersion>4.0.0</modelVersion>
<groupId>com.fulmicoton</groupId>
<artifactId>multiregexp</artifactId>
<description>
 Library to search/match/tokenize using many regular expression all
 at once with greater performance.
</description>

<version>0.5.1</version>
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</licenses>
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</scm>
<developers>
 <developer>
 <name>Paul Masurel</name>
 <email>paul.masurel@gmail.com</email>
 <url>http://fulmicoton.com</url>
 </developer>
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<dependencies>
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</distributionManagement>

```

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</snapshotRepository>
</distributionManagement>
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 <version>1.6.3</version>
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 </configuration>
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 <plugin>
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 <artifactId>maven-javadoc-plugin</artifactId>
 <version>2.9.1</version>
 <executions>
 <execution>

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</plugin>
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</build>
</project>

```

Found in path(s):

```

* /opt/cola/permits/1260754126_1643213329.59/0/multiregexp-0-5-1-jar/META-
INF/maven/com.fulmicoton/multiregexp/pom.xml

```

## 1.389 Icms 2.11

### 1.389.1 Available under license :

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## 1.390 activation-api 1.2.0

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## 1.391 networkd-dispatcher 1.7-0ubuntu3.5

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## 1.392 python-pkg-resources 39.0.1-2

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```
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From strings/apr\_strnatcmp.c, include/apr\_strings.h:

strnatcmp.c -- Perform 'natural order' comparisons of strings in C.

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Found in path(s):

\* /opt/ws\_local/PERMITS\_SQL/1046144868\_1591004764.45/0/jna-5-4-0-sources-  
jar/com/sun/jna/NativeLibrary.java

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\*/opt/ws\_local/PERMITS\_SQL/1046144868\_1591004764.45/0/jna-5-4-0-sources-jar/com/sun/jna/CallbackThreadInitializer.java

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\*/opt/ws\_local/PERMITS\_SQL/1046144868\_1591004764.45/0/jna-5-4-0-sources-jar/com/sun/jna/Structure.java

\*/opt/ws\_local/PERMITS\_SQL/1046144868\_1591004764.45/0/jna-5-4-0-sources-jar/com/sun/jna/CallbackReference.java

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\* /opt/ws\_local/PERMITS\_SQL/1046144868\_1591004764.45/0/jna-5-4-0-sources-jar/com/sun/jna/AltCallingConvention.java

\* /opt/ws\_local/PERMITS\_SQL/1046144868\_1591004764.45/0/jna-5-4-0-sources-

jar/com/sun/jna/ptr/ByteByReference.java  
\* /opt/ws\_local/PERMITS\_SQL/1046144868\_1591004764.45/0/jna-5-4-0-sources-  
jar/com/sun/jna/win32/StdCall.java  
\* /opt/ws\_local/PERMITS\_SQL/1046144868\_1591004764.45/0/jna-5-4-0-sources-  
jar/com/sun/jna/FunctionMapper.java  
\* /opt/ws\_local/PERMITS\_SQL/1046144868\_1591004764.45/0/jna-5-4-0-sources-  
jar/com/sun/jna/win32/StdCallLibrary.java  
\* /opt/ws\_local/PERMITS\_SQL/1046144868\_1591004764.45/0/jna-5-4-0-sources-  
jar/com/sun/jna/FunctionResultContext.java  
\* /opt/ws\_local/PERMITS\_SQL/1046144868\_1591004764.45/0/jna-5-4-0-sources-  
jar/com/sun/jna/ptr/NativeLongByReference.java  
\* /opt/ws\_local/PERMITS\_SQL/1046144868\_1591004764.45/0/jna-5-4-0-sources-  
jar/com/sun/jna/ptr/ByReference.java  
\* /opt/ws\_local/PERMITS\_SQL/1046144868\_1591004764.45/0/jna-5-4-0-sources-  
jar/com/sun/jna/ptr/ShortByReference.java  
\* /opt/ws\_local/PERMITS\_SQL/1046144868\_1591004764.45/0/jna-5-4-0-sources-  
jar/com/sun/jna/win32/W32APIFunctionMapper.java  
\* /opt/ws\_local/PERMITS\_SQL/1046144868\_1591004764.45/0/jna-5-4-0-sources-  
jar/com/sun/jna/TypeMapper.java  
\* /opt/ws\_local/PERMITS\_SQL/1046144868\_1591004764.45/0/jna-5-4-0-sources-  
jar/com/sun/jna/PointerType.java  
\* /opt/ws\_local/PERMITS\_SQL/1046144868\_1591004764.45/0/jna-5-4-0-sources-  
jar/com/sun/jna/FromNativeContext.java  
\* /opt/ws\_local/PERMITS\_SQL/1046144868\_1591004764.45/0/jna-5-4-0-sources-  
jar/com/sun/jna/win32/W32APITypeMapper.java  
\* /opt/ws\_local/PERMITS\_SQL/1046144868\_1591004764.45/0/jna-5-4-0-sources-  
jar/com/sun/jna/StructureReadContext.java  
\* /opt/ws\_local/PERMITS\_SQL/1046144868\_1591004764.45/0/jna-5-4-0-sources-  
jar/com/sun/jna/ptr/PointerByReference.java  
\* /opt/ws\_local/PERMITS\_SQL/1046144868\_1591004764.45/0/jna-5-4-0-sources-jar/com/sun/jna/WString.java  
\* /opt/ws\_local/PERMITS\_SQL/1046144868\_1591004764.45/0/jna-5-4-0-sources-  
jar/com/sun/jna/NativeMappedConverter.java  
\* /opt/ws\_local/PERMITS\_SQL/1046144868\_1591004764.45/0/jna-5-4-0-sources-  
jar/com/sun/jna/CallbackParameterContext.java  
\* /opt/ws\_local/PERMITS\_SQL/1046144868\_1591004764.45/0/jna-5-4-0-sources-jar/com/sun/jna/Callback.java  
\* /opt/ws\_local/PERMITS\_SQL/1046144868\_1591004764.45/0/jna-5-4-0-sources-  
jar/com/sun/jna/ptr/DoubleByReference.java  
\* /opt/ws\_local/PERMITS\_SQL/1046144868\_1591004764.45/0/jna-5-4-0-sources-  
jar/com/sun/jna/ptr/LongByReference.java  
\* /opt/ws\_local/PERMITS\_SQL/1046144868\_1591004764.45/0/jna-5-4-0-sources-  
jar/com/sun/jna/ptr/FloatByReference.java  
\* /opt/ws\_local/PERMITS\_SQL/1046144868\_1591004764.45/0/jna-5-4-0-sources-  
jar/com/sun/jna/TypeConverter.java  
\* /opt/ws\_local/PERMITS\_SQL/1046144868\_1591004764.45/0/jna-5-4-0-sources-  
jar/com/sun/jna/win32/StdCallFunctionMapper.java  
\* /opt/ws\_local/PERMITS\_SQL/1046144868\_1591004764.45/0/jna-5-4-0-sources-  
jar/com/sun/jna/ptr/IntByReference.java

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jar/com/sun/jna/CallbackProxy.java
* /opt/ws_local/PERMITS_SQL/1046144868_1591004764.45/0/jna-5-4-0-sources-
jar/com/sun/jna/ToNativeContext.java
* /opt/ws_local/PERMITS_SQL/1046144868_1591004764.45/0/jna-5-4-0-sources-
jar/com/sun/jna/IntegerType.java
* /opt/ws_local/PERMITS_SQL/1046144868_1591004764.45/0/jna-5-4-0-sources-
jar/com/sun/jna/StructureWriteContext.java
* /opt/ws_local/PERMITS_SQL/1046144868_1591004764.45/0/jna-5-4-0-sources-
jar/com/sun/jna/MethodParameterContext.java
* /opt/ws_local/PERMITS_SQL/1046144868_1591004764.45/0/jna-5-4-0-sources-
jar/com/sun/jna/NativeMapped.java
* /opt/ws_local/PERMITS_SQL/1046144868_1591004764.45/0/jna-5-4-0-sources-jar/com/sun/jna/NativeLong.java
* /opt/ws_local/PERMITS_SQL/1046144868_1591004764.45/0/jna-5-4-0-sources-
jar/com/sun/jna/FunctionParameterContext.java
* /opt/ws_local/PERMITS_SQL/1046144868_1591004764.45/0/jna-5-4-0-sources-
jar/com/sun/jna/MethodResultContext.java
* /opt/ws_local/PERMITS_SQL/1046144868_1591004764.45/0/jna-5-4-0-sources-
jar/com/sun/jna/DefaultTypeMapper.java
* /opt/ws_local/PERMITS_SQL/1046144868_1591004764.45/0/jna-5-4-0-sources-
jar/com/sun/jna/FromNativeConverter.java
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*/opt/ws_local/PERMITS_SQL/1046144868_1591004764.45/0/jna-5-4-0-sources-jar/com/sun/jna/Klass.java
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<li>Type mapping behavior may be customized by providing a { @link com.sun.jna.TypeMapper} for the { @link com.sun.jna.Library#OPTION\_TYPE\_MAPPER} option when initializing a library interface. See { @link com.sun.jna.win32.W32APITypeMapper} for an example which provides custom conversion of boolean and String types. You are free to use whatever types are convenient in your defined interfaces, but all custom types <em>must</em> provide a mapping to one of the basic or derived types listed above.

Found in path(s):

- \* /opt/ws\_local/PERMITS\_SQL/1046144868\_1591004764.45/0/jna-5-4-0-sources-jar/com/sun/jna/overview.html

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- \* /opt/ws\_local/PERMITS\_SQL/1046144868\_1591004764.45/0/jna-5-4-0-sources-

# 1.396 libunistring 0.9.9 0ubuntu2

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```
* /opt/cola/permits/1273483859_1645114016.74/0/jmespath-java-1-12-86-sources-
jar/com/amazonaws/jmespath/JmesPathFlatten.java
* /opt/cola/permits/1273483859_1645114016.74/0/jmespath-java-1-12-86-sources-
jar/com/amazonaws/jmespath/OpNotEquals.java
* /opt/cola/permits/1273483859_1645114016.74/0/jmespath-java-1-12-86-sources-
jar/com/amazonaws/jmespath/OpLessThanOrEqualTo.java
* /opt/cola/permits/1273483859_1645114016.74/0/jmespath-java-1-12-86-sources-
jar/com/amazonaws/jmespath/JmesPathIdentity.java
* /opt/cola/permits/1273483859_1645114016.74/0/jmespath-java-1-12-86-sources-
jar/com/amazonaws/jmespath/JmesPathValueProjection.java
* /opt/cola/permits/1273483859_1645114016.74/0/jmespath-java-1-12-86-sources-
jar/com/amazonaws/jmespath/NumericComparator.java
* /opt/cola/permits/1273483859_1645114016.74/0/jmespath-java-1-12-86-sources-
jar/com/amazonaws/jmespath/JmesPathMultiSelectList.java
* /opt/cola/permits/1273483859_1645114016.74/0/jmespath-java-1-12-86-sources-
jar/com/amazonaws/jmespath/JmesPathLengthFunction.java
* /opt/cola/permits/1273483859_1645114016.74/0/jmespath-java-1-12-86-sources-
jar/com/amazonaws/jmespath/JmesPathSubExpression.java
* /opt/cola/permits/1273483859_1645114016.74/0/jmespath-java-1-12-86-sources-
```



jar/com/amazonaws/jmespath/JmesPathFunction.java  
\* /opt/cola/permits/1273483859\_1645114016.74/0/jmespath-java-1-12-86-sources-jar/com/amazonaws/jmespath/Comparator.java  
\* /opt/cola/permits/1273483859\_1645114016.74/0/jmespath-java-1-12-86-sources-jar/com/amazonaws/jmespath/JmesPathVisitor.java  
\* /opt/cola/permits/1273483859\_1645114016.74/0/jmespath-java-1-12-86-sources-jar/com/amazonaws/jmespath/OpGreaterThanOrEqualTo.java  
\* /opt/cola/permits/1273483859\_1645114016.74/0/jmespath-java-1-12-86-sources-jar/com/amazonaws/jmespath/JmesPathContainsFunction.java  
\* /opt/cola/permits/1273483859\_1645114016.74/0/jmespath-java-1-12-86-sources-jar/com/amazonaws/jmespath/JmesPathFilter.java  
\* /opt/cola/permits/1273483859\_1645114016.74/0/jmespath-java-1-12-86-sources-jar/com/amazonaws/jmespath/JmesPathNotExpression.java  
\* /opt/cola/permits/1273483859\_1645114016.74/0/jmespath-java-1-12-86-sources-jar/com/amazonaws/jmespath/JmesPathField.java  
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\* /opt/cola/permits/1273483859\_1645114016.74/0/jmespath-java-1-12-86-sources-jar/com/amazonaws/jmespath/JmesPathAndExpression.java  
\* /opt/cola/permits/1273483859\_1645114016.74/0/jmespath-java-1-12-86-sources-jar/com/amazonaws/jmespath/OpEquals.java  
\* /opt/cola/permits/1273483859\_1645114016.74/0/jmespath-java-1-12-86-sources-jar/com/amazonaws/jmespath/JmesPathLiteral.java  
\* /opt/cola/permits/1273483859\_1645114016.74/0/jmespath-java-1-12-86-sources-jar/com/amazonaws/jmespath/JmesPathExpression.java  
\* /opt/cola/permits/1273483859\_1645114016.74/0/jmespath-java-1-12-86-sources-jar/com/amazonaws/jmespath/OpLessThan.java

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Ty Coon, President of Vice
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## 1.405 libsepol 2.7-1ubuntu0.1

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Ty Coon, President of Vice
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  - \* /opt/cola/permits/1306894532\_1649861341.97/0/spring-data-rest-core-3-6-3-sources-jar/org/springframework/data/rest/core/Path.java
  - \* /opt/cola/permits/1306894532\_1649861341.97/0/spring-data-rest-core-3-6-3-sources-jar/org/springframework/data/rest/core/mapping/RepositoryAwareResourceMetadata.java
  - \* /opt/cola/permits/1306894532\_1649861341.97/0/spring-data-rest-core-3-6-3-sources-jar/org/springframework/data/rest/core/config/ResourceMappingConfiguration.java
  - \* /opt/cola/permits/1306894532\_1649861341.97/0/spring-data-rest-core-3-6-3-sources-jar/org/springframework/data/rest/core/mapping/SearchResourceMappings.java
  - \* /opt/cola/permits/1306894532\_1649861341.97/0/spring-data-rest-core-3-6-3-sources-jar/org/springframework/data/rest/core/mapping/TypeBasedCollectionResourceMapping.java
  - \* /opt/cola/permits/1306894532\_1649861341.97/0/spring-data-rest-core-3-6-3-sources-jar/org/springframework/data/rest/core/mapping/RepositoryCollectionResourceMapping.java
  - \* /opt/cola/permits/1306894532\_1649861341.97/0/spring-data-rest-core-3-6-3-sources-jar/org/springframework/data/rest/core/mapping/RepositoryMethodResourceMapping.java
  - \* /opt/cola/permits/1306894532\_1649861341.97/0/spring-data-rest-core-3-6-3-sources-jar/org/springframework/data/rest/core/mapping/CollectionResourceMapping.java
  - \* /opt/cola/permits/1306894532\_1649861341.97/0/spring-data-rest-core-3-6-3-sources-jar/org/springframework/data/rest/core/support/SimpleRelProvider.java
  - \* /opt/cola/permits/1306894532\_1649861341.97/0/spring-data-rest-core-3-6-3-sources-jar/org/springframework/data/rest/core/mapping/MethodResourceMapping.java
  - \* /opt/cola/permits/1306894532\_1649861341.97/0/spring-data-rest-core-3-6-3-sources-jar/org/springframework/data/rest/core/mapping/ResourceMetadata.java
  - \* /opt/cola/permits/1306894532\_1649861341.97/0/spring-data-rest-core-3-6-3-sources-jar/org/springframework/data/rest/core/config/ResourceMapping.java
  - \* /opt/cola/permits/1306894532\_1649861341.97/0/spring-data-rest-core-3-6-3-sources-jar/org/springframework/data/rest/core/mapping/RepositoryResourceMappings.java
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jar/org/springframework/data/rest/core/mapping/ConfigurableHttpMethods.java
 * /opt/cola/permits/1306894532_1649861341.97/0/spring-data-rest-core-3-6-3-sources-
jar/org/springframework/data/rest/core/mapping/ConfigurationApplyingSupportedHttpMethodsAdapter.java
 * /opt/cola/permits/1306894532_1649861341.97/0/spring-data-rest-core-3-6-3-sources-
jar/org/springframework/data/rest/core/mapping/ExposureConfigurer.java
 * /opt/cola/permits/1306894532_1649861341.97/0/spring-data-rest-core-3-6-3-sources-
jar/org/springframework/data/rest/core/StringToLdapNameConverter.java
 * /opt/cola/permits/1306894532_1649861341.97/0/spring-data-rest-core-3-6-3-sources-
jar/org/springframework/data/rest/core/mapping/ComposableFilter.java
 * /opt/cola/permits/1306894532_1649861341.97/0/spring-data-rest-core-3-6-3-sources-
jar/org/springframework/data/rest/core/mapping/ExposureConfiguration.java
 * /opt/cola/permits/1306894532_1649861341.97/0/spring-data-rest-core-3-6-3-sources-
jar/org/springframework/data/rest/core/mapping/HttpMethods.java
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- \* /opt/cola/permits/1306894532\_1649861341.97/0/spring-data-rest-core-3-6-3-sources-jar/org/springframework/data/rest/core/annotation/HandleBeforeCreate.java
- \* /opt/cola/permits/1306894532\_1649861341.97/0/spring-data-rest-core-3-6-3-sources-jar/org/springframework/data/rest/core/annotation/RepositoryEventHandler.java
- \* /opt/cola/permits/1306894532\_1649861341.97/0/spring-data-rest-core-3-6-3-sources-jar/org/springframework/data/rest/core/annotation/HandleBeforeDelete.java
- \* /opt/cola/permits/1306894532\_1649861341.97/0/spring-data-rest-core-3-6-3-sources-jar/org/springframework/data/rest/core/annotation/HandleBeforeLinkSave.java
- \* /opt/cola/permits/1306894532\_1649861341.97/0/spring-data-rest-core-3-6-3-sources-jar/org/springframework/data/rest/core/annotation/HandleAfterDelete.java
- \* /opt/cola/permits/1306894532\_1649861341.97/0/spring-data-rest-core-3-6-3-sources-jar/org/springframework/data/rest/core/config/RepositoryRestConfiguration.java
- \* /opt/cola/permits/1306894532\_1649861341.97/0/spring-data-rest-core-3-6-3-sources-jar/org/springframework/data/rest/core/annotation/HandleAfterSave.java
- \* /opt/cola/permits/1306894532\_1649861341.97/0/spring-data-rest-core-3-6-3-sources-jar/org/springframework/data/rest/core/UriToEntityConverter.java
- \* /opt/cola/permits/1306894532\_1649861341.97/0/spring-data-rest-core-3-6-3-sources-jar/org/springframework/data/rest/core/annotation/HandleBeforeLinkDelete.java
- \* /opt/cola/permits/1306894532\_1649861341.97/0/spring-data-rest-core-3-6-3-sources-jar/org/springframework/data/rest/core/event/AbstractRepositoryEventListener.java
- \* /opt/cola/permits/1306894532\_1649861341.97/0/spring-data-rest-core-3-6-3-sources-jar/org/springframework/data/rest/core/annotation/HandleAfterLinkSave.java
- \* /opt/cola/permits/1306894532\_1649861341.97/0/spring-data-rest-core-3-6-3-sources-jar/org/springframework/data/rest/core/ValidationErrors.java
- \* /opt/cola/permits/1306894532\_1649861341.97/0/spring-data-rest-core-3-6-3-sources-jar/org/springframework/data/rest/core/event/ValidatingRepositoryEventListener.java
- \* /opt/cola/permits/1306894532\_1649861341.97/0/spring-data-rest-core-3-6-3-sources-jar/org/springframework/data/rest/core/annotation/Description.java
- \* /opt/cola/permits/1306894532\_1649861341.97/0/spring-data-rest-core-3-6-3-sources-jar/org/springframework/data/rest/core/support/ResourceMappingUtils.java
- \* /opt/cola/permits/1306894532\_1649861341.97/0/spring-data-rest-core-3-6-3-sources-jar/org/springframework/data/rest/core/annotation/RestResource.java
- \* /opt/cola/permits/1306894532\_1649861341.97/0/spring-data-rest-core-3-6-3-sources-jar/org/springframework/data/rest/core/event/AnnotatedEventHandlerInvoker.java
- \* /opt/cola/permits/1306894532\_1649861341.97/0/spring-data-rest-core-3-6-3-sources-jar/org/springframework/data/rest/core/annotation/HandleAfterCreate.java
- \* /opt/cola/permits/1306894532\_1649861341.97/0/spring-data-rest-core-3-6-3-sources-jar/org/springframework/data/rest/core/annotation/HandleBeforeSave.java
- \* /opt/cola/permits/1306894532\_1649861341.97/0/spring-data-rest-core-3-6-3-sources-jar/org/springframework/data/rest/core/event/LinkedEntityEvent.java

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\* /opt/cola/permits/1306894532\_1649861341.97/0/spring-data-rest-core-3-6-3-sources-jar/org/springframework/data/rest/core/mapping/PersistentEntitiesResourceMappings.java  
\* /opt/cola/permits/1306894532\_1649861341.97/0/spring-data-rest-core-3-6-3-sources-jar/org/springframework/data/rest/core/support/DefaultSelfLinkProvider.java  
\* /opt/cola/permits/1306894532\_1649861341.97/0/spring-data-rest-core-3-6-3-sources-jar/org/springframework/data/rest/core/config/EntityLookupConfiguration.java  
\* /opt/cola/permits/1306894532\_1649861341.97/0/spring-data-rest-core-3-6-3-sources-jar/org/springframework/data/rest/core/support/UnwrappingRepositoryInvokerFactory.java  
\* /opt/cola/permits/1306894532\_1649861341.97/0/spring-data-rest-core-3-6-3-sources-jar/org/springframework/data/rest/core/mapping/RepositoryDetectionStrategy.java  
\* /opt/cola/permits/1306894532\_1649861341.97/0/spring-data-rest-core-3-6-3-sources-jar/org/springframework/data/rest/core/mapping/PersistentPropertyResourceMapping.java  
\* /opt/cola/permits/1306894532\_1649861341.97/0/spring-data-rest-core-3-6-3-sources-jar/org/springframework/data/rest/core/config/EntityLookupRegistrar.java  
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\* /opt/cola/permits/1306894532\_1649861341.97/0/spring-data-rest-core-3-6-3-sources-jar/org/springframework/data/rest/core/support/SelfLinkProvider.java  
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- \* /opt/cola/permits/1306894532\_1649861341.97/0/spring-data-rest-core-3-6-3-sources-jar/org/springframework/data/rest/core/mapping/ResolvableResourceDescriptionSupport.java
- \* /opt/cola/permits/1306894532\_1649861341.97/0/spring-data-rest-core-3-6-3-sources-jar/org/springframework/data/rest/core/mapping/ResourceDescription.java
- \* /opt/cola/permits/1306894532\_1649861341.97/0/spring-data-rest-core-3-6-3-sources-jar/org/springframework/data/rest/core/mapping/TypedResourceDescription.java
- \* /opt/cola/permits/1306894532\_1649861341.97/0/spring-data-rest-core-3-6-3-sources-jar/org/springframework/data/rest/core/mapping/ResourceMappings.java
- \* /opt/cola/permits/1306894532\_1649861341.97/0/spring-data-rest-core-3-6-3-sources-jar/org/springframework/data/rest/core/mapping/MappingResourceMetadata.java
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- \* /opt/cola/permits/1306894532\_1649861341.97/0/spring-data-rest-core-3-6-3-sources-jar/org/springframework/data/rest/core/config/ProjectionDefinitionConfiguration.java
- \* /opt/cola/permits/1306894532\_1649861341.97/0/spring-data-rest-core-3-6-3-sources-jar/org/springframework/data/rest/core/mapping/SimpleResourceDescription.java
- \* /opt/cola/permits/1306894532\_1649861341.97/0/spring-data-rest-core-3-6-3-sources-jar/org/springframework/data/rest/core/config/Projection.java
- \* /opt/cola/permits/1306894532\_1649861341.97/0/spring-data-rest-core-3-6-3-sources-jar/org/springframework/data/rest/core/annotation/RepositoryRestResource.java
- \* /opt/cola/permits/1306894532\_1649861341.97/0/spring-data-rest-core-3-6-3-sources-jar/org/springframework/data/rest/core/projection/ProjectionDefinitions.java
- \* /opt/cola/permits/1306894532\_1649861341.97/0/spring-data-rest-core-3-6-3-sources-jar/org/springframework/data/rest/core/mapping/AnnotationBasedResourceDescription.java
- \* /opt/cola/permits/1306894532\_1649861341.97/0/spring-data-rest-core-3-6-3-sources-jar/org/springframework/data/rest/core/mapping/SupportedHttpMethods.java
- \* /opt/cola/permits/1306894532\_1649861341.97/0/spring-data-rest-core-3-6-3-sources-jar/org/springframework/data/rest/core/config/MetadataConfiguration.java
- \* /opt/cola/permits/1306894532\_1649861341.97/0/spring-data-rest-core-3-6-3-sources-jar/org/springframework/data/rest/core/mapping/CrudMethodsSupportedHttpMethods.java
- \* /opt/cola/permits/1306894532\_1649861341.97/0/spring-data-rest-core-3-6-3-sources-jar/org/springframework/data/rest/core/mapping/ResourceType.java



```

string};\nexport interface IDirectiveCompileFn {\n (templateElement: IAugmentedJQuery, templateAttributes:
IAttributes,\n transclude: ITranscludeFunction): IDirectivePrePost;\n}\nexport interface IDirectivePrePost {\n
pre?: IDirectiveLinkFn;\n post?: IDirectiveLinkFn;\n}\nexport interface IDirectiveLinkFn {\n (scope: IScope,
instanceElement: IAugmentedJQuery, instanceAttributes: IAttributes,\n controller: any, transclude:
ITranscludeFunction): void;\n}\nexport interface IComponent {\n bindings?: {[key: string]: string};\n controller?:
string|IInjectable;\n controllerAs?: string;\n require?: DirectiveRequireProperty;\n template?: string|Function;\n
templateUrl?: string|Function;\n transclude?: DirectiveTranscludeProperty;\n}\nexport interface IAttributes {\n
$observe(attr: string, fn: (v: string) => void): void;\n [key: string]: any;\n}\nexport interface ITranscludeFunction
{\n // If the scope is provided, then the cloneAttachFn must be as well.\n (scope: IScope, cloneAttachFn:
ICloneAttachFunction): IAugmentedJQuery;\n // If one argument is provided, then it's assumed to be the
cloneAttachFn.\n (cloneAttachFn?: ICloneAttachFunction): IAugmentedJQuery;\n}\nexport interface
ICloneAttachFunction {\n (clonedElement: IAugmentedJQuery, scope: IScope): any;\n}\nexport type
IAugmentedJQuery = Node[]&{\n on?: (name: string, fn: () => void) => void;\n data?: (name: string, value?: any)
=> any;\n text?: () => string;\n inheritedData?: (name: string, value?: any) => any;\n contents?: () =>
IAugmentedJQuery;\n parent?: () => IAugmentedJQuery;\n empty?: () => void;\n append?: (content:
IAugmentedJQuery|string) => IAugmentedJQuery;\n controller?: (name: string) => any;\n isolateScope?: () =>
IScope;\n injector?: () => IInjectorService;\n triggerHandler?: (eventTypeOrObject: string|Event, extraParameters?:
any[]) => IAugmentedJQuery;\n remove?: () => void;\n removeData?: () => void;\n};\nexport interface IProvider
{\n $get: IInjectable;\n}\nexport interface IProvideService {\n provider(token: NgIToken, provider: IProvider):
IProvider;\n factory(token: NgIToken, factory: IInjectable): IProvider;\n service(token: NgIToken, type:
IInjectable): IProvider;\n value(token: NgIToken, value: any): IProvider;\n constant(token: NgIToken, value: any):
void;\n decorator(token: NgIToken, factory: IInjectable): void;\n}\nexport interface IParseService {\n (expression:
string): ICompiledExpression;\n}\nexport interface ICompiledExpression {\n (context: any, locals: any): any;\n
assign?: (context: any, value: any) => any;\n}\nexport interface IHttpBackendService {\n (method: string, url:
string, post?: any, callback?: Function, headers?: any, timeout?: number,\n withCredentials?: boolean):
void;\n}\nexport interface ICacheObject {\n put<T>(key: string, value?: T): T;\n get(key: string): any;\n}\nexport
interface ITemplateCacheService extends ICacheObject {}\nexport interface ITemplateRequestService {\n
(template: string|any /* TrustedResourceUrl */, ignoreRequestError?: boolean): Promise<string>;\n
totalPendingRequests: number;\n}\nexport type IController = string|IInjectable;\nexport interface IControllerService
{\n (controllerConstructor: IController, locals?: any, later?: any, ident?: any): any;\n (controllerName: string,
locals?: any): any;\n}\nexport interface IInjectorService {\n get(key: string): any;\n has(key: string):
boolean;\n}\nexport interface IIntervalService {\n (func: Function, delay: number, count?: number,
invokeApply?: boolean,\n ...args: any[]): Promise<any>;\n cancel(promise: Promise<any>): boolean;\n}\nexport
interface ITestabilityService {\n findBindings(element: Element, expression: string, opt_exactMatch?: boolean):
Element[];\n findModels(element: Element, expression: string, opt_exactMatch?: boolean): Element[];\n
getLocation(): string;\n setLocation(url: string): void;\n whenStable(callback: Function): void;\n}\nexport
interface INgModelController {\n $render(): void;\n $isEmpty(value: any): boolean;\n
$setValidity(validationErrorKey: string, isValid: boolean): void;\n $setPristine(): void;\n $setDirty(): void;\n
$setUntouched(): void;\n $setTouched(): void;\n $rollbackViewValue(): void;\n $validate(): void;\n
$commitViewValue(): void;\n $setViewValue(value: any, trigger: string): void;\n\n $viewValue: any;\n
$modelValue: any;\n $parsers: Function[];\n $formatters: Function[];\n $validators: {[key: string]: Function};\n
$asyncValidators: {[key: string]: Function};\n $viewChangeListeners: Function[];\n $error: Object;\n $pending:
Object;\n $untouched: boolean;\n $touched: boolean;\n $pristine: boolean;\n $dirty: boolean;\n $valid: boolean;\n
$invalid: boolean;\n $name: string;\n}\n\nfunction noNg(): never {\n throw new Error('AngularJS v1.x is not
loaded!');\n}\n\nconst noNgElement: typeof angular.element = ((() => noNg()) as any);\nnoNgElement.cleanData =
noNg;\n\nlet angular: {\n bootstrap: (e: Element, modules: (string|IInjectable)[], config?: IAngularBootstrapConfig)
=>{\n IInjectorService,\n module: (prefix: string, dependencies?: string[]) => IModule,\n element: {\n (e:
string|Element|Document|IAugmentedJQuery): IAugmentedJQuery;\n cleanData: (nodes: Node[]|NodeList) =>

```



```

* found in the LICENSE file at https://angular.io/license\n *\n\nimport { Injector, Type } from
'@angular/core';\n\nimport { IInjectorService, INgModelController } from './angular1';\n\nimport
{ DOWNGRADED_MODULE_COUNT_KEY, UPGRADE_APP_TYPE_KEY } from './constants';\n\nconst
DIRECTIVE_PREFIX_REGEXP = /^(?:x|data)[:|-_]/i;\n\nconst DIRECTIVE_SPECIAL_CHARS_REGEXP = /[:|\\-
_]+(\\.|/|g);
\n\nexport function onError(e: any) {\n // TODO: (misko): We seem to not have a stack trace here!\n if
(console.error) {\n console.error(e, e.stack);\n } else {\n // tslint:disable-next-line:no-console\n console.log(e,
e.stack);\n }\n throw e;\n}\n\nexport function controllerKey(name: string): string {\n return '$' + name +
'Controller';\n}\n\nexport function directiveNormalize(name: string): string {\n return
name.replace(DIRECTIVE_PREFIX_REGEXP, "")\n .replace(DIRECTIVE_SPECIAL_CHARS_REGEXP, (_,
letter) => letter.toUpperCase());\n}\n\nexport function getTypeName(type: Type<any>): string {\n // Return the
name of the type or the first line of its stringified version.\n return (type as any).overriddenName || type.name ||
type.toString().split("\\n")[0];\n}\n\nexport function getDowngradedModuleCount($injector: IInjectorService):
number {\n return $injector.has(DOWNGRADED_MODULE_COUNT_KEY) ?
$injector.get(DOWNGRADED_MODULE_COUNT_KEY) : 0;\n}\n\nexport
function getUpgradeAppType($injector: IInjectorService): UpgradeAppType {\n return
$injector.has(UPGRADE_APP_TYPE_KEY) ? $injector.get(UPGRADE_APP_TYPE_KEY) :\n
UpgradeAppType.None;\n}\n\nexport function isFunction(value: any): value is Function {\n return typeof
value === 'function';\n}\n\nexport function validateInjectionKey(\n $injector: IInjectorService,
downgradedModule: string, injectionKey: string,\n attemptedAction: string): void {\n const upgradeAppType =
getUpgradeAppType($injector);\n const downgradedModuleCount = getDowngradedModuleCount($injector);\n
// Check for common errors.\n switch (upgradeAppType) {\n case UpgradeAppType.Dynamic:\n case
UpgradeAppType.Static:\n if (downgradedModule) {\n throw new Error(\n `Error while
${attemptedAction}: 'downgradedModule' unexpectedly specified.\\n` +\n `You should not specify a value for
\\'downgradedModule\\', unless you are downgrading ' +\n `more than one Angular module (via
\\'downgradeModule()\\').`);\n } break;\n case UpgradeAppType.Lite:\n if (!downgradedModule &&
(downgradedModuleCount >= 2)) {\n throw new Error(\n `Error while ${attemptedAction}:
'downgradedModule' not specified.\\n` +\n `This application contains more than one downgraded Angular
module, thus you need to ' +\n `always specify \\'downgradedModule\\' when downgrading components and
injectables.`);\n }\n if (!$injector.has(injectionKey)) {\n throw new Error(\n `Error while
${attemptedAction}: Unable to find the specified downgraded module.\\n` +\n `Did you forget to downgrade
an Angular module or include it in the AngularJS ' +\n `application?`);\n }\n break;\n default:\n throw new Error(\n `Error while ${attemptedAction}: Not a valid '@angular/upgrade' application.\\n` +\n
`Did you forget to downgrade an Angular module or include it in the AngularJS ' +\n `application?`);\n
}\n}\n\nexport class Deferred<R> {\n promise: Promise<R>;\n // TODO(issue/24571): remove '!.\n resolve!:
(value?: R|PromiseLike<R>) => void;\n // TODO(issue/24571): remove '!.\n reject!: (error?: any) => void;\n\n
constructor() {\n this.promise = new Promise((res, rej) => {\n this.resolve = res;\n this.reject = rej;\n
});\n}\n}\n\nexport interface LazyModuleRef {\n injector?: Injector;\n promise?: Promise<Injector>;\n}\n\nexport
const enum UpgradeAppType {\n // App NOT using `@angular/upgrade`. (This should never happen in an
`ngUpgrade` app.)\n None,\n // App using the deprecated `@angular/upgrade` APIs (a.k.a. dynamic
`ngUpgrade`).\n Dynamic,\n // App using `@angular/upgrade/static` with `UpgradeModule`. \n Static,\n // App
using `@angular/upgrade/static` with `downgradeModule` (a.k.a `ngUpgrade-lite`).\n Lite,\n}\n\n/**\n * @return
Whether the passed-in component implements the subset of the\n * `ControlValueAccessor` interface needed for
AngularJS `ng-model`\n * compatibility.\n */\nfunction supportsNgModel(component: any) {\n return typeof
component.writeValue === 'function' &&\n typeof component.registerOnChange === 'function';\n}\n\n/**\n *
Glue the AngularJS `NgModelController` (if it exists) to the component\n * (if it implements the needed subset of
the `ControlValueAccessor` interface).\n */\nfunction hookupNgModel(ngModel: INgModelController,
component: any) {\n if (ngModel && supportsNgModel(component)) {\n ngModel.$render = () => {\n
component.writeValue(ngModel.$viewValue);\n };\n}

```



```

component.registerOnChange(ngModel.$setViewValue.bind(ngModel));\n if (typeof
component.registerOnTouched === 'function') {\n
component.registerOnTouched(ngModel.$setTouched.bind(ngModel));\n }\n }\n\n/**\n * Test two values for
strict equality, accounting for the fact that `NaN !== NaN`.\n */\nexport function strictEquals(val1: any, val2: any):
boolean {\n return val1 === val2 || (val1 !== val1 && val2 !== val2);\n}\n\n"/**\n * @license\n * Copyright
Google LLC All Rights Reserved.\n * Use of this source code is governed by an MIT-style license that can be\n
* found in the LICENSE file at https://angular.io/license\n */\n\nimport { ApplicationRef, ChangeDetectorRef,
ComponentFactory, ComponentRef, EventEmitter, Injector, OnChanges, SimpleChange, SimpleChanges,
StaticProvider, Testability, TestabilityRegistry, Type } from '@angular/core';\n\nimport { IAttributes,
IAugmentedJQuery, ICompileService, IInjectorService, INgModelController, IParseService, IScope } from
'./angular1';\n\nimport { PropertyBinding } from './component_info';\n\nimport { $$SCOPE } from './constants';\n\nimport
{ getTypeName, hookupNgModel, strictEquals } from './util';\n\nconst INITIAL_VALUE = {\n
__UNINITIALIZED__: true\n};\n\nexport class DowngradeComponentAdapter {\n private implementsOnChanges
= false;\n private inputChangeCount: number = 0;\n private inputChanges: SimpleChanges = {};\n private
componentScope: IScope;\n // TODO(issue/24571): remove '!.\n private componentRef!: ComponentRef<any>;\n
private component: any;\n // TODO(issue/24571): remove '!.\n private changeDetector!: ChangeDetectorRef;\n //
TODO(issue/24571): remove '!.\n private viewChangeDetector!: ChangeDetectorRef;\n\n constructor(\n private
element: IAugmentedJQuery, private attrs: IAttributes, private scope: IScope,\n private ngModel:
INgModelController, private parentInjector: Injector,\n private $injector: IInjectorService, private $compile:
ICompileService,\n private $parse: IParseService, private componentFactory: ComponentFactory<any>,\n
private wrapCallback: <T>(cb: () => T) => () => T) {\n this.componentScope = scope.$new();\n }\n\n
compileContents(): Node[][] {\n const compiledProjectableNodes: Node[][] = [];\n const projectableNodes:
Node[][] = this.groupProjectableNodes();\n const linkFns = projectableNodes.map(nodes =>
this.$compile(nodes));\n\n this.element.empty!();\n\n linkFns.forEach(linkFn => {\n linkFn(this.scope,
(clone: Node[]) => {\n compiledProjectableNodes.push(clone);\n this.element.append!(clone);\n });\n
});\n\n return compiledProjectableNodes;\n }\n\n createComponent(projectableNodes: Node[][]): {\n const
providers: StaticProvider[] = [{ provide: $$SCOPE, useValue: this.componentScope }];\n const childInjector =
Injector.create(\n { providers: providers, parent: this.parentInjector, name:
'DowngradeComponentAdapter' });\n\n this.componentRef =\n this.componentFactory.create(childInjector,
projectableNodes, this.element[0]);\n this.viewChangeDetector =
this.componentRef.injector.get(ChangeDetectorRef);\n this.changeDetector =
this.componentRef.changeDetectorRef;\n this.component = this.componentRef.instance;\n\n // testability hook is
commonly added during component bootstrap in\n // packages/core/src/application_ref.bootstrap()\n // in
downgraded application, component creation will take place here as well as adding the\n // testability hook.\n
const testability = this.componentRef.injector.get(Testability, null);\n if (testability) {\n
this.componentRef.injector.get(TestabilityRegistry)\n
.registerApplication(this.componentRef.location.nativeElement, testability);\n }\n\n
hookupNgModel(this.ngModel, this.component);\n }\n\n setupInputs(manuallyAttachView: boolean,
propagateDigest = true): void {\n const attrs = this.attrs;\n const inputs = this.componentFactory.inputs || [];\n
for (let i = 0; i < inputs.length; i++) {\n const input = new PropertyBinding(inputs[i].propName,
inputs[i].templateName);\n let expr: string|null = null;\n if (attrs.hasOwnProperty(input.attr)) {\n const
observeFn = (prop => {\n let prevValue = INITIAL_VALUE;\n return (currValue: any) => {\n //
Initially, both `$observe()` and `$watch()` will call this function.\n if (!strictEquals(prevValue, currValue))
{\n if (prevValue === INITIAL_VALUE) {\n prevValue = currValue;\n }\n
this.updateInput(prop, prevValue, currValue);\n prevValue = currValue;\n }\n });\n
})(input.prop);\n attrs.$observe(input.attr, observeFn);\n // Use `$watch()` (in addition to `$observe()`) in
order to initialize the input in time\n // for `ngOnChanges()`. This is necessary if we are already in a `$digest`,
which means that\n // `ngOnChanges()` (which is called by a watcher) will run before the `$observe()

```

```

callback.\n let unwatch: Function|null = this.componentScope.$watch(() => {\n unwatch!();\n
unwatch = null;\n observeFn(attrs[input.attr]);\n });\n\n } else if (attrs.hasOwnProperty(input.bindAttr))
{\n expr = attrs[input.bindAttr];\n } else if (attrs.hasOwnProperty(input.bracketAttr)) {\n expr =
attrs[input.bracketAttr];\n } else if (attrs.hasOwnProperty(input.bindonAttr)) {\n expr =
attrs[input.bindonAttr];\n } else if (attrs.hasOwnProperty(input.bracketParenAttr)) {\n expr =
attrs[input.bracketParenAttr];\n }\n if (expr != null) {\n const watchFn =\n (prop => (currValue:
any, prevValue: any) =>\n this.updateInput(prop, prevValue, currValue))(input.prop);\n
this.componentScope.$watch(expr, watchFn);\n }\n\n // Invoke `ngOnChanges()` and Change Detection
(when necessary)\n const detectChanges = () => this.changeDetector.detectChanges();\n const prototype =
this.componentFactory.componentType.prototype;\n this.implementsOnChanges = !(prototype &&
(<OnChanges>prototype).ngOnChanges);\n\n this.componentScope.$watch(() => this.inputChangeCount,
this.wrapCallback(() => {\n // Invoke `ngOnChanges()`\n if (this.implementsOnChanges) {\n const
inputChanges = this.inputChanges;\n this.inputChanges = {};\n
(<OnChanges>this.component).ngOnChanges(inputChanges!);\n }\n\n
this.viewChangeDetector.markForCheck();\n\n // If opted out of propagating digests, invoke change detection
when inputs change.\n if (!propagateDigest) {\n detectChanges();\n }\n });\n\n // If not opted out of
propagating digests, invoke change detection on every digest\n if (propagateDigest) {\n
this.componentScope.$watch(this.wrapCallback(detectChanges));\n }\n\n // If necessary, attach the view so that
it will be dirty-checked.\n // (Allow time for the initial input values to be set and `ngOnChanges()` to be called.)\n
if (manuallyAttachView || !propagateDigest) {\n let unwatch: Function|null = this.componentScope.$watch(() =>
{\n unwatch!();\n unwatch = null;\n\n const appRef =
this.parentInjector.get<ApplicationRef>(ApplicationRef);\n
appRef.attachView(this.componentRef.hostView);\n });\n }\n\n setupOutputs() {\n const attrs =
this.attrs;\n const outputs = this.componentFactory.outputs || [];\n for (let j = 0; j < outputs.length; j++) {\n
const output = new PropertyBinding(outputs[j].propName, outputs[j].templateName);\n const bindonAttr =
output.bindonAttr.substring(0, output.bindonAttr.length - 6);\n const bracketParenAttr =\n `[$${output.bracketParenAttr.substring(2, output.bracketParenAttr.length - 8)}]`;
\n // order below is important -
first update bindings then evaluate expressions\n if (attrs.hasOwnProperty(bindonAttr)) {\n
this.subscribeToOutput(output, attrs[bindonAttr], true);\n }\n if (attrs.hasOwnProperty(bracketParenAttr)) {\n
this.subscribeToOutput(output, attrs[bracketParenAttr], true);\n }\n if
(attrs.hasOwnProperty(output.onAttr)) {\n this.subscribeToOutput(output, attrs[output.onAttr]);\n }\n if
(attrs.hasOwnProperty(output.parenAttr)) {\n this.subscribeToOutput(output, attrs[output.parenAttr]);\n }\n
}\n\n private subscribeToOutput(output: PropertyBinding, expr: string, isAssignment: boolean = false) {\n
const getter = this.$parse(expr);\n const setter = getter.assign;\n if (isAssignment && !setter) {\n throw new
Error(`Expression '${expr}' is not assignable!`);\n }\n const emitter = this.component[output.prop] as
EventEmitter<any>;\n if (emitter) {\n emitter.subscribe({\n next: isAssignment ? (v: any) =>
setter!(this.scope, v) : \n (v: any) => getter(this.scope, {'$event': v})\n });\n } else {\n throw
new Error(`Missing emitter '${output.prop}' on component '${\n
 getTypeName(this.componentFactory.componentType)}'`);\n }\n }\n\n registerCleanup() {\n const
testabilityRegistry = this.componentRef.injector.get(TestabilityRegistry);\n const destroyComponentRef =
this.wrapCallback(() => this.componentRef.destroy());\n let destroyed = false;\n\n this.element.on!('$destroy', ()
=> this.componentScope.$destroy());\n this.componentScope.$on('$destroy', () => {\n if (!destroyed) {\n
destroyed = true;\n testabilityRegistry.unregisterApplication(this.componentRef.location.nativeElement);\n
destroyComponentRef();\n }\n });\n\n getInjector(): Injector {\n return this.componentRef.injector;\n
}\n\n private updateInput(prop: string, prevValue: any, currValue: any) {\n if (this.implementsOnChanges) {\n
this.inputChanges[prop] = new SimpleChange(prevValue, currValue, prevValue === currValue);\n }\n\n
this.inputChangeCount++;\n this.component[prop] = currValue;\n }\n\n groupProjectableNodes() {\n let
ngContentSelectors = this.componentFactory.ngContentSelectors;\n return

```

```

groupNodesBySelector(ngContentSelectors, this.element.contents!());\n } }\n\n/**\n * Group a set of DOM nodes
into `ngContent` groups, based on the given content selectors.\n */\nexport function
groupNodesBySelector(ngContentSelectors: string[], nodes: Node[]): Node[][] {\n const projectableNodes:
Node[][] = [];\n let wildcardNgContentIndex: number;\n\n for (let i = 0, ii = ngContentSelectors.length; i < ii; ++i)
{\n projectableNodes[i] = [];\n }\n\n for (let j = 0, jj = nodes.length; j < jj; ++j) {\n const node = nodes[j];\n const ngContentIndex = findMatchingNgContentIndex(node, ngContentSelectors);\n if (ngContentIndex != null)
{\n projectableNodes[ngContentIndex].push(node);\n }\n }\n\n return projectableNodes;\n}\n\nfunction
findMatchingNgContentIndex(element: any, ngContentSelectors: string[]): number|null {\n const ngContentIndices:
number[] = [];\n let wildcardNgContentIndex: number = -1;\n for (let i = 0; i < ngContentSelectors.length; i++) {\n const selector = ngContentSelectors[i];\n if (selector === '*') {\n wildcardNgContentIndex = i;\n } else {\n if (matchesSelector(element, selector)) {\n ngContentIndices.push(i);\n }\n }\n }\n\n ngContentIndices.sort();\n\n if (wildcardNgContentIndex !== -1) {\n ngContentIndices.push(wildcardNgContentIndex);\n }\n return ngContentIndices.length ? ngContentIndices[0] :
null;\n}\n\nlet _matches: (this: any, selector: string) => boolean;\n\nfunction matchesSelector(el: any, selector:
string): boolean {\n if (!_matches) {\n const elProto = <any>Element.prototype;\n _matches = elProto.matches ||
elProto.matchesSelector || elProto.mozMatchesSelector ||\n elProto.msMatchesSelector ||\n elProto.oMatchesSelector || elProto.webkitMatchesSelector;\n }\n return el.nodeType ===
Node.ELEMENT_NODE ? _matches.call(el, selector) : false;\n}\n\n", "/*\n * @license\n * Copyright Google LLC
All Rights Reserved.\n *\n * Use of this source code is governed by an MIT-style license that can be\n * found in
the LICENSE file at https://angular.io/license\n */\n\nimport {isFunction} from './util';\n\nexport interface
Thenable<T> {\n then(callback: (value: T) => any): any;\n}\n\nexport function isThenable<T>(obj: unknown): obj
is Thenable<T> {\n return !!obj && isFunction((obj as any).then);\n}\n\n/**\n * Synchronous, promise-like
object.\n */\nexport class SyncPromise<T> {\n protected value: T|undefined;\n private resolved = false;\n private
callbacks: ((value: T) => unknown)[] = [];\n\n static all<T>(valuesOrPromises: (T|Thenable<T>)[]):
SyncPromise<T[]> {\n const aggrPromise = new SyncPromise<T[]>();\n\n let resolvedCount = 0;\n const
results: T[] = [];\n const resolve = (idx: number, value: T) => {\n results[idx] = value;\n if (++resolvedCount
=== valuesOrPromises.length) aggrPromise.resolve(results);\n };\n\n valuesOrPromises.forEach((p, idx) => {\n
 if (isThenable(p)) {\n p.then(v => resolve(idx, v));\n } else {\n resolve(idx, p);\n }\n });\n\n return aggrPromise;\n }\n\n resolve(value: T): void {\n // Do nothing, if already resolved.\n if (this.resolved)
return;\n\n this.value = value;\n this.resolved = true;\n\n // Run the queued callbacks.\n this.callbacks.forEach(callback => callback(value));\n this.callbacks.length = 0;\n }\n\n then(callback: (value: T)
=> unknown): void {\n if (this.resolved) {\n callback(this.value!);\n } else {\n this.callbacks.push(callback);\n }\n }\n}\n\n", "/*\n * @license\n * Copyright Google LLC All Rights Reserved.\n *\n * Use of this source code is governed by an MIT-style license that can be\n * found in the LICENSE file at
https://angular.io/license\n */\n\nimport {ComponentFactory, ComponentFactoryResolver, Injector, NgZone, Type}
from '@angular/core';\n\nimport {IAnnotatedFunction, IAttributes, IAugmentedJQuery, ICompileService,
IDirective, IInjectorService, INgModelController, IParseService, IScope} from './angular1';\n\nimport {$COMPILE,
$INJECTOR, $PARSE, INJECTOR_KEY, LAZY_MODULE_REF, REQUIRE_INJECTOR,
REQUIRE_NG_MODEL} from './constants';\n\nimport {DowngradeComponentAdapter} from
'./downgrade_component_adapter';\n\nimport {SyncPromise, Thenable} from './promise_util';\n\nimport {controllerKey,
getDowngradedModuleCount, getTypeName, getUpgradeAppType, LazyModuleRef, UpgradeAppType,
validateInjectionKey} from './util';\n\n\n/**\n * @description\n *\n * A helper function that allows an Angular
component to be used from AngularJS.\n *\n * Part of the [upgrade/static](api?query=upgrade%2Fstatic)\n *\n * library for hybrid upgrade apps that support AOT compilation*\n *\n * This helper function returns a factory
function to be used for registering\n *\n * an AngularJS wrapper directive for "downgrading" an Angular
component.\n *\n * @usageNotes\n * ### Examples\n *\n * Let's assume that you have an Angular component
called `ng2Heroes` that needs\n *\n * to be made available in AngularJS templates.\n *\n * { @example
upgrade/static/ts/full/module.ts region="ng2-heroes"}\n *\n * We must create an AngularJS

```



```

injector.))\n /\n // There are basically three cases:\n // - If there is no parent component (thus no
`parentInjector`), we bootstrap the downgraded\n // `NgModule` and use its injector as both
`finalModuleInjector` and\n // `finalParentInjector`.\n // - If there is a parent component (and thus a
`parentInjector`) and we are sure that it\n // belongs to the same `NgModule` as this downgraded component
(e.g. because there is only\n // one downgraded module, we use that `parentInjector` as both
`finalModuleInjector` and\n // `finalParentInjector`.\n // - If there is a parent component, but it may belong
to a different `NgModule`, then we\n // use the `parentInjector` as `finalParentInjector` and this downgraded
component's\n // declaring `NgModule`'s injector as `finalModuleInjector`.\n // Note 1: If the
`NgModule` is already bootstrapped, we just get its injector (we don't\n // bootstrap again).\n // Note
2: It is possible that (while there are multiple downgraded modules) this\n // downgraded component and
its parent component both belong to the same NgModule.\n // In that case, we could have used the
`parentInjector` as both\n // `finalModuleInjector` and `finalParentInjector`, but (for simplicity) we are\n
 // treating this case as if they belong to different `NgModule`s. That doesn't\n // really affect
anything, since `parentInjector` has `moduleInjector` as ancestor\n // and trying to resolve
`ComponentFactoryResolver` from either one will return\n // the same instance.\n\n // If there is a
parent component, use its injector as parent injector.\n // If this is a "top-level" Angular component, use the
module injector.\n const finalParentInjector = parentInjector || moduleInjector!;\n\n // If this is a "top-
level" Angular component or the parent component may belong to a\n // different `NgModule`, use the module
injector for module-specific dependencies.\n // If there is a parent component that belongs to the same
`NgModule`, use its injector.\n const finalModuleInjector = moduleInjector || parentInjector!;\n\n const
doDowngrade = (injector: Injector, moduleInjector: Injector) => {\n // Retrieve `ComponentFactoryResolver`
from the injector tied to the `NgModule` this\n // component belongs to.\n const
componentFactoryResolver: ComponentFactoryResolver =\n
moduleInjector.get(ComponentFactoryResolver);\n const componentFactory: ComponentFactory<any> =\n
componentFactoryResolver.resolveComponentFactory(info.component!);\n if (!componentFactory) {\n
throw new Error(`Expecting ComponentFactory for: ${getTypeName(info.component)}`);\n }\n\n
const injectorPromise = new ParentInjectorPromise(element);\n const facade = new
DowngradeComponentAdapter(\n element, attrs, scope, ngModel, injector, $injector, $compile, $parse,\n
componentFactory, wrapCallback);\n\n const projectableNodes = facade.compileContents();\n
facade.createComponent(projectableNodes);\n facade.setupInputs(isNgUpgradeLite, info.propagateDigest);\n
facade.setupOutputs();\n facade.registerCleanup();\n\n
injectorPromise.resolve(facade.getInjector());\n\n if (ranAsync) {\n // If this is run async, it is possible
that it is not run inside a\n // digest and initial input values will not be detected.\n scope.$evalAsync(()
=> {});\n }\n }; \n\n const downgradeFn =\n !isNgUpgradeLite ? doDowngrade : (pInjector:
Injector, mInjector: Injector) => {\n if (!ngZone) {\n ngZone = pInjector.get(NgZone);\n
}\n\n wrapCallback(() => doDowngrade(pInjector, mInjector));\n }; \n\n // NOTE:\n // Not
using `ParentInjectorPromise.all()` (which is inherited from `SyncPromise`), because\n // Closure Compiler (or
some related tool) complains:\n // `TypeError: ...srcdowngrade_component_ParentInjectorPromise.all is not a
function`\n SyncPromise.all([finalParentInjector, finalModuleInjector])\n .then(([pInjector, mInjector])
=> downgradeFn(pInjector, mInjector));\n\n ranAsync = true;\n }\n }; \n\n // bracket-notation because
of closure - see #14441\n directiveFactory['$inject'] = [$COMPILE, $INJECTOR, $PARSE];\n return
directiveFactory;\n }\n\n /**\n * Synchronous promise-like object to wrap parent injectors,\n * to preserve the
synchronous nature of AngularJS's `$compile`.\n */\n class ParentInjectorPromise extends SyncPromise<Injector>
{\n private injectorKey: string = controllerKey(INJECTOR_KEY);\n\n constructor(private element:
IAugmentedJQuery) {\n super();\n\n // Store the promise on the element.\n element.data!(this.injectorKey,
this);\n }\n\n resolve(injector: Injector): void {\n // Store the real injector on the element.\n
this.element.data!(this.injectorKey, injector);\n\n // Release the element to prevent memory leaks.\n this.element
= null!;\n\n // Resolve the promise.\n super.resolve(injector);\n }\n }\n\n "/**\n * @license\n * Copyright Google

```

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```

import {Injector} from '@angular/core';
import {IInjectorService} from './angular1';
import {$INJECTOR, INJECTOR_KEY} from './constants';
import {getTypeName, isFunction, validateInjectionKey} from './util';

/**
 * A helper function to allow an Angular service to be accessible from AngularJS.
 * Part of the [upgrade/static](api?query=upgrade%2Fstatic) library for hybrid upgrade apps that support AOT compilation.
 * This helper function returns a factory function that provides access to the Angular service identified by the `token` parameter.
 * @usageNotes
 * ### Examples
 * First ensure that the service to be downgraded is provided in an `NgModule` that will be part of the upgrade application. For example, let's assume we have defined `HeroesService`
 * and that we have included this in our upgrade app `NgModule`
 * @example upgrade/static/ts/full/module.ts region="ng2-heroes-service"
 * Now we can register the `downgradeInjectable` factory function for the service on an AngularJS module.
 * @example upgrade/static/ts/full/module.ts region="downgrade-ng2-heroes-service"
 * Inside an AngularJS component's controller we can get hold of the downgraded service via the name we gave when downgrading.
 * @example upgrade/static/ts/full/module.ts region="example-app"
 * <div class="alert is-important">
 * When using `downgradeModule()`, downgraded injectables will not be available until the Angular module that provides them is instantiated. In order to be safe, you need to ensure that the downgraded injectables are not used anywhere _outside_ the part of the app where it is guaranteed that their module has been instantiated.
 * For example, it is _OK_ to use a downgraded service in an upgraded component that is only used from a downgraded Angular component provided by the same Angular module as the injectable, but it is _not OK_ to use it in an AngularJS component that may be used independently of Angular or use it in a downgraded Angular component from a different module.
 * </div>
 * @param token an `InjectionToken` that identifies a service provided from Angular.
 * @param downgradedModule the name of the downgraded module (if any) that the injectable "belongs to", as returned by a call to `downgradeModule()`. It is the module, whose injector will be used for instantiating the injectable.
 * (This option is only necessary when using `downgradeModule()` to downgrade more than one Angular module.)
 * @returns a [factory function](https://docs.angularjs.org/guide/di) that can be used to register the service on an AngularJS module.
 * @publicApi
 */
export function downgradeInjectable(token: any, downgradedModule: string = "): Function {
 const factory = function($injector: IInjectorService) {
 const injectorKey = `${INJECTOR_KEY}${downgradedModule}`;
 const injectableName = isFunction(token) ? getTypeName(token) : String(token);
 const attemptedAction = `instantiating injectable '${injectableName}'`;
 validateInjectionKey($injector, downgradedModule, injectorKey, attemptedAction);

 try {
 const injector: Injector = $injector.get(injectorKey);
 return injector.get(token);
 } catch (err) {
 throw new Error(`Error while ${attemptedAction}: ${err.message || err}`);
 }
 };
 (factory as any) ['$inject'] = [$INJECTOR];
 return factory;
}

/**
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 */
import {ElementRef, Injector, SimpleChanges} from '@angular/core';
import {DirectiveRequireProperty, element as angularElement, IAugmentedJQuery, ICloneAttachFunction, ICompileService, IController, IControllerService, IDirective, IHttpBackendService, IInjectorService, ILinkFn, IScope, ITemplateCacheService, SingleOrListOrMap} from './angular1';
import {$COMPILE, $CONTROLLER, $HTTP_BACKEND, $INJECTOR, $TEMPLATE_CACHE} from './constants';
import {controllerKey, directiveNormalize, isFunction} from './util';

// Constants
const REQUIRE_PREFIX_RE = /^(\\^\\^)?(\\?)?(\\^\\^)?/;
// Interfaces
export interface IBindingDestination {
 [key: string]: any;
 $onChanges?: (changes: SimpleChanges) => void;
}
export interface IControllerInstance extends IBindingDestination {
 $doCheck?: () => void;
 $onDestroy?: () => void;
 $onInit?: () => void;
 $postLink?: () => void;
}
// Classes
export class UpgradeHelper {
 public readonly $injector: IInjectorService;
 public readonly element: ElementRef;
 public readonly $element: IAugmentedJQuery;
 public readonly directive: IDirective;
 private readonly $compile: ICompileService;
 private readonly $controller:

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IControllerService;\n\n constructor(\n private injector: Injector, private name: string, elementRef: ElementRef,\n directive?: IDirective) {\n this.$injector = injector.get($INJECTOR);\n this.$compile =\n this.$injector.get($COMPILE);\n this.$controller = this.$injector.get($CONTROLLER);\n\n this.element =\n elementRef.nativeElement;\n this.$element = angularElement(this.element);\n\n this.directive = directive ||\n UpgradeHelper.getDirective(this.$injector, name);\n }\n\n static getDirective($injector: IInjectorService, name:\n string): IDirective {\n const directives: IDirective[] = $injector.get(name + 'Directive');\n if (directives.length >\n 1) {\n throw new Error(`Only support single directive definition for: ${name}`);\n }\n\n const directive =\n directives[0];\n\n // AngularJS will transform `link: xyz` to `compile: () => xyz`. So we can only tell there was a\n // user-defined `compile` if there is no `link`. In other cases, we will just ignore `compile`.\n if (directive.compile\n && !directive.link) notSupported(name, 'compile');\n if (directive.replace) notSupported(name, 'replace');\n if\n (directive.terminal) notSupported(name, 'terminal');\n\n return directive;\n }\n\n static getTemplate(\n $injector: IInjectorService, directive: IDirective, fetchRemoteTemplate = false,\n $element?:\n IAugmentedJQuery): string|Promise<string> {\n if (directive.template !== undefined) {\n return\n getOrCall<string>(directive.template, $element);\n } else if (directive.templateUrl) {\n const $templateCache =\n $injector.get($TEMPLATE_CACHE) as ITemplateCacheService;\n const url =\n getOrCall<string>(directive.templateUrl, $element);\n const template = $templateCache.get(url);\n\n if\n (template !== undefined) {\n return template;\n } else if (!fetchRemoteTemplate) {\n throw new\n Error('loading directive templates asynchronously is not supported');\n }\n\n return new Promise((resolve,\n reject) => {\n const $httpBackend = $injector.get($HTTP_BACKEND) as IHttpBackendService;\n $httpBackend('GET', url, null, (status: number, response: string) => {\n if (status === 200) {\n\n resolve($templateCache.put(url, response));\n } else {\n reject(`GET component template from '${url}'\n returned '${status}: ${response}'`);\n }\n });\n } else {\n throw new Error(`Directive\n '${directive.name}' is not a component, it is missing template.`);\n }\n }\n }\n\n buildController(controllerType:\n IController, $scope: IScope) {\n // TODO: Document that we do not pre-assign bindings on the controller\n instance.\n // Quoted properties below so that this code can be optimized with Closure Compiler.\n const locals =\n {'$scope': $scope, '$element': this.$element};\n const controller = this.$controller(controllerType, locals, null,\n this.directive.controllerAs);\n\n this.$element.data!(controllerKey(this.directive.name!), controller);\n\n return\n controller;\n }\n\n compileTemplate(template?: string): ILinkFn {\n if (template === undefined) {\n template\n =\n UpgradeHelper.getTemplate(this.$injector, this.directive, false, this.$element) as string;\n }\n\n return\n this.compileHtml(template);\n }\n\n onDestroy($scope: IScope, controllerInstance?: any) {\n if\n (controllerInstance && isFunction(controllerInstance.$onDestroy)) {\n controllerInstance.$onDestroy();\n }\n\n $scope.$destroy();\n\n // Clean the jQuery/jqLite data on the component+child elements.\n // Equivalent to how\n jQuery/jqLite invoke `cleanData` on an Element (this.element)\n //\n https://github.com/jquery/jquery/blob/e743cbd28553267f955f71ea7248377915613fd9/src/manipulation.js#L223\n // https://github.com/angular/angular.js/blob/26ddc5f830f902a3d22f4b2aab70d86d4d688c82/src/jqLite.js#L306-\n L312\n // `cleanData` will invoke the AngularJS `$destroy` DOM event\n //\n https://github.com/angular/angular.js/blob/26ddc5f830f902a3d22f4b2aab70d86d4d688c82/src/Angular.js#L1911-\n L1924\n angularElement.cleanData([this.element]);\n\n angularElement.cleanData(this.element.querySelectorAll('*'));\n }\n\n prepareTransclusion(): ILinkFn|undefined\n {\n const transclude = this.directive.transclude;\n const contentChildNodes = this.extractChildNodes();\n const\n attachChildrenFn: ILinkFn = (scope, cloneAttachFn) => {\n // Since AngularJS v1.5.8, `cloneAttachFn` will try\n to destroy the transclusion scope if\n // `template` is empty. Since the transcluded content comes from Angular,\n not AngularJS,\n // there will be no transclusion scope here.\n // Provide a dummy `scope.$destroy()` method\n to prevent `cloneAttachFn` from throwing.\n scope = scope || {$destroy: () => undefined};\n return\n cloneAttachFn!($template, scope);\n }; \n let $template = contentChildNodes;\n\n if (transclude) {\n const\n slots = Object.create(null);\n\n if (typeof transclude === 'object') {\n $template = [];\n\n const slotMap =\n Object.create(null);\n const filledSlots = Object.create(null);\n\n // Parse the element selectors.\n Object.keys(transclude).forEach(slotName => {\n let selector = transclude[slotName];\n const optional =

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selector.charAt(0) === '?';\n selector = optional ? selector.substring(1) : selector;\n\n slotMap[selector] =\n slotName;\n slots[slotName] = null; // `null`: Defined but not yet filled.\n filledSlots[slotName] =\n optional; // Consider optional slots as filled.\n });\n\n // Add the matching elements into their slot.\n contentChildNodes.forEach(node => {\n const slotName =\n slotMap[directiveNormalize(node.nodeName.toLowerCase)];\n if (slotName) {\n filledSlots[slotName] = true;\n slots[slotName] = slots[slotName] || [];\n slots[slotName].push(node);\n } else {\n $template.push(node);\n }\n });\n\n // Check for required slots that were not\n filled.\n Object.keys(filledSlots).forEach(slotName => {\n if (!filledSlots[slotName]) {\n throw\n new Error(`Required transclusion slot '${slotName}' on directive: ${this.name}`);\n }\n });\n\n Object.keys(slots).filter(slotName => slots[slotName]).forEach(slotName => {\n const nodes =\n slots[slotName];\n slots[slotName] = (scope: IScope, cloneAttach: ICloneAttachFunction) => {\n return\n cloneAttach!(nodes, scope);\n };\n });\n\n // Attach `$$slots` to default slot transclude fn.\n attachChildrenFn.$$slots = slots;\n\n // AngularJS v1.6+ ignores empty or whitespace-only transcluded text\n nodes. But Angular\n // removes all text content after the first interpolation and updates it later, after\n // evaluating the expressions. This would result in AngularJS failing to recognize text\n // nodes that start with an\n interpolation as transcluded content and use the fallback\n // content instead.\n // To avoid this issue, we add\n a\n // [zero-width non-joiner character](https://en.wikipedia.org/wiki/Zero-width_non-joiner)\n // to empty\n text nodes (which can only be a result of Angular removing their initial content).\n // NOTE: Transcluded text\n content that starts with whitespace followed by an interpolation\n // will still fail to be detected by AngularJS\n v1.6+\n $template.forEach(node => {\n if (node.nodeType === Node.TEXT_NODE && !node.nodeValue)\n {\n node.nodeValue = '\\u200C';\n }\n });\n\n return attachChildrenFn;\n }\n\n resolveAndBindRequiredControllers(controllerInstance: IControllerInstance|null) {\n const directiveRequire =\n this.getDirectiveRequire();\n const requiredControllers = this.resolveRequire(directiveRequire);\n\n if\n (controllerInstance && this.directive.bindToController && isMap(directiveRequire)) {\n const\n requiredControllersMap = requiredControllers as {[key: string]: IControllerInstance};\n Object.keys(requiredControllersMap).forEach(key => {\n controllerInstance[key] =\n requiredControllersMap[key];\n });\n }\n\n return requiredControllers;\n }\n\n private compileHtml(html:\n string): ILinkFn {\n this.element.innerHTML = html;\n return this.$compile(this.element.childNodes);\n }\n\n private extractChildNodes(): Node[] {\n const childNodes: Node[] = [];\n let childNode: Node|null;\n\n while\n (childNode = this.element.firstChild) {\n this.element.removeChild(childNode);\n\n childNodes.push(childNode);\n }\n\n return childNodes;\n }\n\n private getDirectiveRequire():\n DirectiveRequireProperty {\n const require = this.directive.require || (this.directive.controller &&\n this.directive.name!);\n\n if (isMap(require)) {\n Object.keys(require).forEach(key => {\n const value =\n require[key];\n const match = value.match(REQUIRE_PREFIX_RE!);\n const name =\n value.substring(match[0].length);\n\n if (!name) {\n require[key] = match[0] + key;\n }\n });\n }\n\n return require;\n }\n\n private resolveRequire(require: DirectiveRequireProperty, controllerInstance?:\n any):\n SingleOrListOrMap<IControllerInstance>|null {\n if (!require) {\n return null;\n } else if\n (Array.isArray(require)) {\n return require.map(req => this.resolveRequire(req));\n } else if (typeof require\n === 'object') {\n const value: {[key: string]: IControllerInstance} = {};\n Object.keys(require).forEach(key =>\n value[key] = this.resolveRequire(require[key]));\n return value;\n } else if (typeof require === 'string') {\n const match = require.match(REQUIRE_PREFIX_RE!);\n const inheritType = match[1] || match[3];\n const\n name = require.substring(match[0].length);\n const isOptional = !!match[2];\n const searchParents =\n !!inheritType;\n const startOnParent = inheritType === '^';\n const ctrlKey = controllerKey(name);\n const elem = startOnParent ? this.$element.parent!() : this.$element;\n const value = searchParents ?\n elem.inheritedData!(ctrlKey) : elem.data!(ctrlKey);\n\n if (!value && !isOptional) {\n throw new Error(\n `Unable to find required '${require}' in upgraded directive '${this.name}'.`);\n }\n\n return value;\n } else\n {\n throw new Error(\n `Unrecognized 'require' syntax on upgraded directive '${this.name}': ${require}`);\n }\n }\n\n function getOrCall<T>(property: T|Function, ...args: any[]): T {\n return isFunction(property) ?

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property(...args) : property;\n\n// NOTE: Only works for `typeof T !== 'object'`.\nfunction isMap<T>(value: SingleOrListOrMap<T>): value is {[key: string]: T} {\n return value && !Array.isArray(value) && typeof value === 'object';\n}\n\nfunction notSupported(name: string, feature: string) {\n throw new Error(`Upgraded directive '${name}' contains unsupported feature: '${feature}'.`);\n}\n\n"/**\n * @license\n * Copyright Google LLC All Rights Reserved.\n * Use of this source code is governed by an MIT-style license that can be\n * found in the LICENSE file at https://angular.io/license\n */\nimport {Directive, DoCheck, ElementRef, EventEmitter, Inject, Injector, OnChanges, OnDestroy, OnInit, SimpleChange, SimpleChanges, Type} from '@angular/core';\nimport {IAttributes, IDirective, IDirectivePrePost, IInjectorService, ILinkFn, IScope, ITranscludeFunction} from './../common/src/angular1';\nimport {$SCOPE} from './../common/src/constants';\nimport {IBindingDestination, IControllerInstance, UpgradeHelper} from './../common/src/upgrade_helper';\nimport {isFunction, strictEquals} from './../common/src/util';\n\nconst CAMEL_CASE = /([A-Z])/g;\nconst INITIAL_VALUE = {\n __UNINITIALIZED__: true\n};\nconst NOT_SUPPORTED: any = 'NOT_SUPPORTED';\n\nexport class UpgradeNg1ComponentAdapterBuilder {\n // TODO(issue/24571): remove '!'.\n type!: Type<any>;\n inputs: string[] = [];\n inputsRename: string[] = [];\n outputs: string[] = [];\n outputsRename: string[] = [];\n propertyOutputs: string[] = [];\n checkProperties: string[] = [];\n propertyMap: {[name: string]: string} = {};\n directive: IDirective|null = null;\n // TODO(issue/24571): remove '!'.\n template!: string;\n\n constructor(public name: string) {\n const selector =\n name.replace(CAMEL_CASE, (all: string, next: string) => '-' + next.toLowerCase());\n const self = this;\n\n // Note: There is a bug in TS 2.4 that prevents us from\n // inlining this into @Directive\n // TODO(tbosch): find or file a bug against TypeScript for this.\n const directive =\n {selector: selector, inputs: this.inputsRename, outputs: this.outputsRename};\n\n @Directive({jit: true, ...directive})\n class MyClass extends UpgradeNg1ComponentAdapter implements OnInit, OnChanges, DoCheck,\n OnDestroy {\n constructor(@Inject($SCOPE) scope: IScope, injector: Injector, elementRef: ElementRef) {\n super(\n new UpgradeHelper(injector, name, elementRef, self.directive || undefined), scope,\n self.template, self.inputs, self.outputs, self.propertyOutputs, self.checkProperties,\n self.propertyMap) as any;\n }\n\n this.type = MyClass;\n\n extractBindings() {\n const btcIsObject = typeof this.directive!.bindToController === 'object';\n if (btcIsObject && Object.keys(this.directive!.scope!).length) {\n throw new Error(`Binding definitions on scope and controller at the same time are not supported.`);\n }\n\n const context = (btcIsObject) ?\n this.directive!.bindToController : this.directive!.scope;\n\n if (typeof context === 'object') {\n Object.keys(context).forEach(propName => {\n const definition = context[propName];\n const bindingType = definition.charAt(0);\n const bindingOptions = definition.charAt(1);\n const attrName = definition.substring(bindingOptions === '?' ? 2 : 1) || propName;\n\n // QUESTION: What about `=*`? Ignore? Throw? Support?\n const inputName = `input_${attrName}`;\n const inputNameRename = `${inputName}: ${attrName}`;\n const outputName = `output_${attrName}`;\n const outputNameRename = `${outputName}: ${attrName}`;\n const outputNameRenameChange = `${outputNameRename}Change`;\n\n switch (bindingType) {\n case '@':\n this.inputs.push(inputName);\n this.inputsRename.push(inputNameRename);\n this.propertyMap[inputName] = propName;\n break;\n case '=':\n this.inputs.push(inputName);\n this.inputsRename.push(inputNameRename);\n this.propertyMap[inputName] = propName;\n this.outputs.push(outputName);\n this.outputsRename.push(outputNameRenameChange);\n this.propertyMap[outputName] = propName;\n this.checkProperties.push(propName);\n this.propertyOutputs.push(outputName);\n break;\n case '&':\n this.outputs.push(outputName);\n this.outputsRename.push(outputNameRename);\n this.propertyMap[outputName] = propName;\n break;\n default:\n let json = JSON.stringify(context);\n throw new Error(`Unexpected mapping '${bindingType}' in '${json}' in '${this.name}' directive.`);\n }\n });\n }\n }\n\n /**\n * Upgrade ng1 components into Angular.\n *\n * @static\n * resolve(\n * exportedComponents: {[name: string]: UpgradeNg1ComponentAdapterBuilder},\n * $injector: IInjectorService): Promise<string[]> {\n * const promises = Object.keys(exportedComponents).map(name => {\n * const exportedComponent = exportedComponents[name];\n * exportedComponent.directive =

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UpgradeHelper.getDirective($injector, name);\n exportedComponent.extractBindings();\n\n return Promise\n .resolve(UpgradeHelper.getTemplate($injector, exportedComponent.directive, true))\n .then(template =>\n exportedComponent.template = template);\n });\n\n return Promise.all(promises);\n} }\n\n@Directive()\nnclass\n UpgradeNg1ComponentAdapter implements OnInit, OnChanges, DoCheck {\n private controllerInstance:\n IControllerInstance|null = null;\n destinationObj: IBindingDestination|null = null;\n checkLastValues: any[] = [];\n directive: IDirective;\n element: Element;\n $element: any = null;\n componentScope: IScope;\n\n constructor(\n private helper: UpgradeHelper, scope: IScope, private template: string,\n private inputs: string[], private outputs:\n string[], private propOuts: string[],\n private checkProperties: string[], private propertyMap: {[key: string]:\n string}) {\n this.directive = helper.directive;\n this.element = helper.element;\n this.$element =\n helper.$element;\n this.componentScope = scope.$new(!this.directive.scope);\n\n const controllerType =\n this.directive.controller;\n\n if (this.directive.bindToController && controllerType) {\n this.controllerInstance\n = this.helper.buildController(controllerType, this.componentScope);\n this.destinationObj =\n this.controllerInstance;\n } else {\n this.destinationObj = this.componentScope;\n }\n\n for (let i = 0; i <\n inputs.length; i++) {\n (this as any)[inputs[i]] = null;\n }\n\n for (let j = 0; j < outputs.length; j++) {\n const\n emitter = (this as any)[outputs[j]] = new EventEmitter<any>();\n if (this.propOuts.indexOf(outputs[j]) === -1)\n {\n this.setComponentProperty(\n outputs[j], (emitter => (value: any) =>\n emitter.emit(value))(emitter));\n }\n }\n\n for (let k = 0; k < propOuts.length; k++) {\n this.checkLastValues.push(INITIAL_VALUE);\n }\n }\n\n ngOnInit() {\n // Collect contents, insert and\n compile template\n const attachChildNodes: ILinkFn|undefined = this.helper.prepareTransclusion();\n const\n linkFn = this.helper.compileTemplate(this.template);\n\n // Instantiate controller (if not already done so)\n const\n controllerType = this.directive.controller;\n const bindToController = this.directive.bindToController;\n if\n (controllerType && !bindToController) {\n this.controllerInstance = this.helper.buildController(controllerType,\n this.componentScope);\n }\n\n // Require other controllers\n const requiredControllers =\n this.helper.resolveAndBindRequiredControllers(this.controllerInstance);\n\n // Hook: $onInit\n if\n (this.controllerInstance && isFunction(this.controllerInstance.$onInit)) {\n this.controllerInstance.$onInit();\n }\n\n // Linking\n const link = this.directive.link;\n const preLink = typeof link === 'object' && link.pre;\n const postLink = typeof link === 'object' ? link.post : link;\n const attrs: IAttributes = NOT_SUPPORTED;\n const transcludeFn: ITranscludeFunction = NOT_SUPPORTED;\n if (preLink) {\n preLink(this.componentScope, this.$element, attrs, requiredControllers, transcludeFn);\n }\n\n linkFn(this.componentScope, null!, {parentBoundTranscludeFn: attachChildNodes});\n\n if (postLink) {\n postLink(this.componentScope, this.$element, attrs, requiredControllers, transcludeFn);\n }\n\n // Hook:\n $postLink\n if (this.controllerInstance && isFunction(this.controllerInstance.$postLink)) {\n this.controllerInstance.$postLink();\n }\n }\n\n ngOnChanges(changes: SimpleChanges) {\n const ng1Changes:\n any = {};\n Object.keys(changes).forEach(name => {\n const change: SimpleChange = changes[name];\n this.setComponentProperty(name, change.currentValue);\n ng1Changes[this.propertyMap[name]] = change;\n });\n\n if (isFunction(this.destinationObj!.$onChanges)) {\n this.destinationObj!.$onChanges!(ng1Changes);\n }\n }\n\n ngDoCheck() {\n const destinationObj = this.destinationObj;\n const lastValues =\n this.checkLastValues;\n const checkProperties = this.checkProperties;\n const propOuts = this.propOuts;\n\n checkProperties.forEach((propName, i) => {\n const value = destinationObj![propName];\n const last =\n lastValues[i];\n if (!strictEquals(last, value)) {\n const eventEmitter: EventEmitter<any> = (this as\n any)[propOuts[i];\n eventEmitter.emit(lastValues[i] = value);\n }\n });\n\n if (this.controllerInstance &&\n isFunction(this.controllerInstance.$doCheck)) {\n this.controllerInstance.$doCheck();\n }\n }\n\n ngOnDestroy() {\n this.helper.onDestroy(this.componentScope, this.controllerInstance);\n }\n\n setComponentProperty(name: string, value: any) {\n this.destinationObj![this.propertyMap[name]] = value;\n }\n}\n\n"/**\n * @license\n * Copyright Google LLC All Rights Reserved.\n * Use of this source code is\n governed by an MIT-style license that can be\n found in the LICENSE file at https://angular.io/license\n */\n\nimport {Compiler, CompilerOptions, Injector, isDevMode, NgModule, NgModuleRef, NgZone,\n resolveForwardRef, StaticProvider, Testability, Type} from '@angular/core';\nimport {platformBrowserDynamic}

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from '@angular/platform-browser-dynamic';
import { bootstrap, element as angularElement,
IAngularBootstrapConfig, IAugmentedJQuery, IInjectorService, IModule, IProvideService, IRootScopeService,
ITestabilityService, module_ as angularModule } from './../common/src/angular1';
import { $TESTABILITY, $COMPILE, $INJECTOR, $ROOT_SCOPE, COMPILER_KEY, INJECTOR_KEY, LAZY_MODULE_REF,
NG_ZONE_KEY, UPGRADE_APP_TYPE_KEY } from './../common/src/constants';
import { downgradeComponent } from './../common/src/downgrade_component';
import { downgradeInjectable } from './../common/src/downgrade_injectable';
import { controllerKey, Deferred, LazyModuleRef, onError, UpgradeAppType } from './../common/src/util';
import { UpgradeNg1ComponentAdapterBuilder } from './upgrade_ng1_adapter';
let upgradeCount: number = 0;
/**
 * Use `UpgradeAdapter` to allow AngularJS and Angular to coexist in a single application.
 * The `UpgradeAdapter` allows:
 * 1. creation of Angular component from AngularJS component directive
 * (See [UpgradeAdapter#upgradeNg1Component()])
 * 2. creation of AngularJS directive from Angular component.
 * (See [UpgradeAdapter#downgradeNg2Component()])
 * 3. Bootstrapping of a hybrid Angular application which contains both of the frameworks coexisting in a single application.
 * @usageNotes
 * ### Mental Model
 * When reasoning about how a hybrid application works it is useful to have a mental model which describes what is happening and explains what is happening at the lowest level.
 * 1. There are two independent frameworks running in a single application, each framework treats the other as a black box.
 * 2. Each DOM element on the page is owned exactly by one framework. Whichever framework instantiated the element is the owner. Each framework only updates/interacts with its own DOM elements and ignores others.
 * 3. AngularJS directives always execute inside AngularJS framework codebase regardless of where they are instantiated.
 * 4. Angular components always execute inside Angular framework codebase regardless of where they are instantiated.
 * 5. An AngularJS component can be upgraded to an Angular component. This creates an Angular directive, which bootstraps the AngularJS component directive in that location.
 * 6. An Angular component can be downgraded to an AngularJS component directive. This creates an AngularJS directive, which bootstraps the Angular component in that location.
 * 7. Whenever an adapter component is instantiated the host element is owned by the framework doing the instantiation. The other framework then instantiates and owns the view for that component. This implies that component bindings will always follow the semantics of the instantiation framework. The syntax is always that of Angular syntax.
 * 8. AngularJS is always bootstrapped first and owns the bottom most view.
 * 9. The new application is running in Angular zone, and therefore it no longer needs calls to `$.apply()`.
 * ### Example
 * ```
 * const adapter = new UpgradeAdapter(forwardRef(() => MyNg2Module), myCompilerOptions);
 * const module = angular.module('myExample', []);
 * module.directive('ng2Comp', adapter.downgradeNg2Component(Ng2Component));
 * module.directive('ng1Hello', function() {
 * return {
 * scope: { title: '=' },
 * template: 'ng1[Hello {{title}}]()'
 * };
 * });
 * @Component({
 * selector: 'ng2-comp',
 * inputs: ['name'],
 * template: 'ng2[<ng1-hello [title]="name">transclude</ng1-hello>(<ng-content></ng-content>)',
 * directives: []
 * })
 * class Ng2Component {}
 * @NgModule({
 * declarations: [Ng2Component, adapter.upgradeNg1Component('ng1Hello')],
 * imports: [BrowserModule]
 * })
 * class MyNg2Module {}
 * document.body.innerHTML = '<ng2-comp name="World">project</ng2-comp>';
 * adapter.bootstrap(document.body, ['myExample']).ready(function() {
 * expect(document.body.textContent).toEqual('ng2[ng1[Hello World!](transclude)](project)');
 * });
 * @deprecated Deprecated since v5. Use `upgrade/static` instead, which also supports [Ahead-of-Time compilation](guide/aot-compiler).
 * @publicApi
 * \nexport class UpgradeAdapter {
 * private idPrefix: string = `NG2_UPGRADE_${upgradeCount++}`;
 * private downgradedComponents: Type<any>[] = [];
 * /**
 * * An internal map of ng1 components which need to be upgraded to ng2.
 * * We can't upgrade until injector is instantiated and we can retrieve the component metadata.
 * * For this reason we keep a list of components to upgrade until ng1 injector is bootstrapped.
 * * @internal
 * * \n private ng1ComponentsToBeUpgraded: {[name: string]: UpgradeNg1ComponentAdapterBuilder} = {};
 * * \n private upgradedProviders: StaticProvider[] =

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[];\n // TODO(issue/24571): remove '!.\n private ngZone!: NgZone;\n // TODO(issue/24571): remove '!.\n
private ng1Module!: IModule;\n private moduleRef: NgModuleRef<any>|null = null;\n // TODO(issue/24571):
remove '!.\n private ng2BootstrapDeferred!: Deferred<IInjectorService>;\n\n constructor(private ng2AppModule:
Type<any>, private compilerOptions?: CompilerOptions) {\n if (!ng2AppModule) {\n throw new Error(\n
'UpgradeAdapter cannot be instantiated without an NgModule of the Angular app.);\n } }\n\n /**\n * Allows
Angular Component to be used from AngularJS.\n * \n * Use `downgradeNg2Component` to create an AngularJS
Directive Definition Factory from\n * Angular Component. The adapter will bootstrap Angular component from
within the\n * AngularJS template.\n * \n * @usageNotes\n * ### Mental Model\n * \n * 1. The component is
instantiated by being listed in AngularJS template. This means that the\n * host element is controlled by
AngularJS, but the component's view will be controlled by\n * Angular.\n * \n * 2. Even though the component is
instantiated in AngularJS, it will be using Angular\n * syntax. This has to be done, this way because we must
follow Angular components do not\n * declare how the attributes should be interpreted.\n * \n * 3. `ng-model` is
controlled by AngularJS and communicates with the downgraded Angular component\n * by way of the
`ControlValueAccessor` interface from @angular/forms. Only components that\n * implement this interface are
eligible.\n * \n * ### Supported Features\n * \n * - Bindings:\n * - Attribute: `<comp name="World">\n *
- Interpolation: `<comp greeting="Hello {{name}}!">\n * - Expression: `<comp [name]="username">\n *
- Event: `<comp (close)="doSomething()">\n * - ng-model: `<comp ng-model="name">\n * - Content
projection: yes\n * \n * ### Example\n * \n * ``\n * const adapter = new UpgradeAdapter(forwardRef(() =>
MyNg2Module));\n * const module = angular.module('myExample', []);\n * module.directive('greet',
adapter.downgradeNg2Component(Greeter));\n * \n * @Component({\n * selector: 'greet',\n * template:
'{{salutation}} {{name}}! -<ng-content></ng-content>\n * }})\n * class Greeter {\n * @Input() salutation:
string;\n * @Input() name: string;\n * }}\n * \n * @NgModule({\n * declarations: [Greeter],\n * imports:
[BrowserModule]\n * }})\n * class MyNg2Module {\n * \n * document.body.innerHTML =\n * 'ng1
template: <greet salutation="Hello" [name]="world">text</greet>;\n * \n * adapter.bootstrap(document.body,
['myExample']).ready(function() {\n * expect(document.body.textContent).toEqual('ng1 template: Hello world! -
text');\n * });\n * ``\n * \n * ^\n * downgradeNg2Component(component: Type<any>): Function {\n
this.downgradedComponents.push(component);\n\n return downgradeComponent({component});\n }}\n\n /**\n
* Allows AngularJS Component to be used from Angular.\n * \n * Use `upgradeNg1Component` to create an
Angular component from AngularJS Component\n * directive. The adapter will bootstrap AngularJS component
from within the Angular\n * template.\n * \n * @usageNotes\n * ### Mental Model\n * \n * 1. The
component is instantiated by being listed in Angular template. This means that the\n * host element is controlled
by Angular, but the component's view will be controlled by\n * AngularJS.\n * \n * ### Supported Features\n
*\n * - Bindings:\n * - Attribute: `<comp name="World">\n * - Interpolation: `<comp greeting="Hello
{{name}}!">\n * - Expression: `<comp [name]="username">\n * - Event: `<comp
(close)="doSomething()">\n * - Transclusion: yes\n * - Only some of the features of\n * [Directive
Definition Object](https://docs.angularjs.org/api/ng/service/$compile) are\n * supported:\n * - `compile`: not
supported because the host element is owned by Angular, which does\n * not allow modifying DOM structure
during compilation.\n * - `controller`: supported. (NOTE: injection of `$attrs` and `$transclude` is not
supported.)\n * - `controllerAs`: supported.\n * - `bindToController`: supported.\n * - `link`: supported.
(NOTE: only pre-link function is supported.)\n * - `name`: supported.\n * - `priority`: ignored.\n * -
`replace`: not supported.\n * - `require`: supported.\n * - `restrict`: must be set to 'E'.\n * - `scope`:
supported.\n * - `template`: supported.\n * - `templateUrl`: supported.\n * - `terminal`: ignored.\n * -
`transclude`: supported.\n * \n * \n * ### Example\n * \n * ``\n * const adapter = new
UpgradeAdapter(forwardRef(() => MyNg2Module));\n * const module = angular.module('myExample', []);\n *
module.directive('greet', function() {\n * return {\n * scope: {salutation: '=', name: '=' },\n * template:
'{{salutation}} {{name}}! -\n * }};\n * });\n * \n * module.directive('ng2',
adapter.downgradeNg2Component(Ng2Component));\n * \n * @Component({\n * selector: 'ng2',\n *
template: 'ng2 template: <greet salutation="Hello" [name]="world">text</greet>\n * }})\n * class

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Ng2Component {\n * }\n *\n * @NgModule({\n * declarations: [Ng2Component,
adapter.upgradeNg1Component('greet')],\n * imports: [BrowserModule]\n * })\n * class MyNg2Module {\n
*\n * document.body.innerHTML = '<ng2></ng2>';\n *\n * adapter.bootstrap(document.body,
['myExample']).ready(function() {\n * expect(document.body.textContent).toEqual("\ng2 template: Hello world! -
text");\n * });\n * ``\n * ^\n upgradeNg1Component(name: string): Type<any> {\n if
((<any>this.ng1ComponentsToBeUpgraded).hasOwnProperty(name)) {\n return
this.ng1ComponentsToBeUpgraded[name].type;\n } else {\n return (this.ng1ComponentsToBeUpgraded[name]
= new UpgradeNg1ComponentAdapterBuilder(name)).type;\n }\n }\n\n /**\n * Registers the adapter's
AngularJS upgrade module for unit testing in AngularJS.\n * Use this instead of `angular.mock.module()` to load
the upgrade module into\n * the AngularJS testing injector.\n *\n * @usageNotes\n * ### Example\n *\n *
``\n * const upgradeAdapter = new UpgradeAdapter(MyNg2Module);\n *\n * // configure the adapter with
upgrade/downgrade components and services\n * upgradeAdapter.downgradeNg2Component(MyComponent);\n
*\n * let upgradeAdapterRef: UpgradeAdapterRef;\n * let $compile, $rootScope;\n *\n * // We must register
the adapter before any calls to `inject()`\n * beforeEach(() => {\n * upgradeAdapterRef =
upgradeAdapter.registerForNg1Tests(['heroApp']);\n * });\n *\n * beforeEach(inject((_ $compile_,
$rootScope) => {\n * $compile = _$compile_;\n * $rootScope = _$rootScope_;\n * }));\n *\n * it("says
hello", (done) => {\n * upgradeAdapterRef.ready() => {\n * const element = $compile("<my-
component></my-component>")(rootScope);\n * $rootScope.$apply();\n *
expect(element.html()).toContain("Hello World");\n * done();\n * });\n * });\n *\n * ``\n *\n *
@param modules any AngularJS modules that the upgrade module should depend upon\n * @returns an
`UpgradeAdapterRef`, which lets you register a `ready()` callback to\n * run assertions once the Angular
components are ready to test through AngularJS.\n * ^\n registerForNg1Tests(modules?: string[]):
UpgradeAdapterRef {\n const windowNgMock = (window as any)['angular'].mock;\n if (!windowNgMock ||
!windowNgMock.module) {\n throw new Error('Failed to find `angular.mock.module`');\n }\n
this.declareNg1Module(modules);\n windowNgMock.module(this.ng1Module.name);\n const upgrade = new
UpgradeAdapterRef();\n this.ng2BootstrapDeferred.promise.then((ng1Injector) => {\n
(<any>upgrade)._bootstrapDone(this.moduleRef, ng1Injector);\n }, onError);\n return upgrade;\n }\n\n /**\n
* Bootstrap a hybrid AngularJS / Angular application.\n *\n * This `bootstrap` method is a direct replacement
(takes same arguments) for AngularJS\n *
[bootstrap](https://docs.angularjs.org/api/ng/function/angular.bootstrap) method. Unlike\n * AngularJS, this
bootstrap is asynchronous.\n *\n * @usageNotes\n * ### Example\n *\n * ``\n * const adapter = new
UpgradeAdapter(MyNg2Module);\n * const module = angular.module('myExample', []);\n *
module.directive('ng2', adapter.downgradeNg2Component(Ng2));\n *\n * module.directive('ng1', function() {\n
* return {\n * scope: { title: '=' },\n * template: 'ng1[Hello {{title}}!]'\n
* });\n * });\n *\n * @Component({\n * selector: 'ng2',\n * inputs: ['name'],\n * template: 'ng2[<ng1
[title]="name">transclude</ng1><ng-content></ng-content>'\n *]}\n * class Ng2 {\n * }\n *\n *
@NgModule({\n * declarations: [Ng2, adapter.upgradeNg1Component('ng1')],\n * imports:
[BrowserModule]\n * })\n * class MyNg2Module {\n *\n * document.body.innerHTML = '<ng2
name="World">project</ng2>';\n *\n * adapter.bootstrap(document.body, ['myExample']).ready(function() {\n
* expect(document.body.textContent).toEqual(\n * "\ng2[ng1[Hello World!](transclude)](project)");\n *
});\n * ``\n *\n * ^\n bootstrap(element: Element, modules?: any[], config?: IAngularBootstrapConfig):\n
UpgradeAdapterRef {\n this.declareNg1Module(modules);\n\n const upgrade = new UpgradeAdapterRef();\n\n
// Make sure resumeBootstrap() only exists if the current bootstrap is deferred\n const windowAngular = (window
as any /** TODO #???? */)['angular'];\n windowAngular.resumeBootstrap = undefined;\n\n this.ngZone.run(()
=> {\n bootstrap(element, [this.ng1Module.name], config!);\n });\n const ng1BootstrapPromise = new
Promise((resolve) => {\n if (windowAngular.resumeBootstrap) {\n const originalResumeBootstrap: () =>
void = windowAngular.resumeBootstrap;\n windowAngular.resumeBootstrap = function() {\n
windowAngular.resumeBootstrap = originalResumeBootstrap;\n const r =

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windowAngular.resumeBootstrap.apply(this, arguments);\n resolve();\n return r;\n });\n } else {\n resolve();\n }\n});\n\n Promise.all([this.ng2BootstrapDeferred.promise,\nng1BootstrapPromise]).then(([ng1Injector]) => {\n angularElement(element).data!(controllerKey(INJECTOR_KEY), this.moduleRef!.injector);\n this.moduleRef!.injector.get<NgZone>(NgZone).run(() => {\n (<any>upgrade)._bootstrapDone(this.moduleRef, ng1Injector);\n });\n }, onError);\n return upgrade;\n }\n\n/**\n * Allows AngularJS service to be accessible from Angular.\n * @usageNotes\n * ### Example\n *\n * ```\n * class Login { ... }\n * class Server { ... }\n *\n * @Injectable()\n * class Example {\n * constructor(@Inject('server') server, login: Login) {\n * ... \n * }\n * }\n *\n * const module =\nangular.module('myExample', []);\n * module.service('server', Server);\n * module.service('login', Login);\n *\n * const adapter = new UpgradeAdapter(MyNg2Module);\n * adapter.upgradeNg1Provider('server');\n * adapter.upgradeNg1Provider('login', {asToken: Login});\n *\n * adapter.bootstrap(document.body,\n ['myExample']).ready((ref) => {\n * const example: Example = ref.ng2Injector.get(Example);\n * });\n *\n * ```\n */\n * ^/\n upgradeNg1Provider(name: string, options?: {asToken: any}) {\n const token = options &&\noptions.asToken || name;\n this.upgradedProviders.push({\n provide: token,\n useFactory: ($injector:\nIInjectorService) => $injector.get(name),\n deps: [$INJECTOR]\n });\n}\n\n/**\n * Allows Angular service\n to be accessible from AngularJS.\n * @usageNotes\n * ### Example\n *\n * ```\n * class Example {\n *\n * }\n *\n * const adapter = new UpgradeAdapter(MyNg2Module);\n *\n * const module =\nangular.module('myExample', []);\n * module.factory('example', adapter.downgradeNg2Provider(Example));\n *\n * adapter.bootstrap(document.body, ['myExample']).ready((ref) => {\n * const example: Example =\nref.ng1Injector.get('example');\n * });\n *\n * ```\n */\n * ^/\n downgradeNg2Provider(token: any): Function {\n return downgradeInjectable(token);\n}\n\n/**\n * Declare the AngularJS upgrade module for this adapter\n without bootstrapping the whole\n * hybrid application.\n *\n * This method is automatically called by\n `bootstrap()` and `registerForNg1Tests()`.\n *\n * @param modules The AngularJS modules that this upgrade\n module should depend upon.\n *\n * @returns The AngularJS upgrade module that is declared by this method\n *\n * @usageNotes\n * ### Example\n *\n * ```\n * const upgradeAdapter = new\nUpgradeAdapter(MyNg2Module);\n * upgradeAdapter.declareNg1Module(['heroApp']);\n *\n * ```\n */\n * ^/\n private\n declareNg1Module(modules: string[] = []): IModule {\n const delayApplyExps: Function[] = [];\n let\noriginal$applyFn: Function;\n let rootScopePrototype: any;\n let rootScope: IRootScopeService;\n const\nupgradeAdapter = this;\n const ng1Module = this.ng1Module = angularModule(this.idPrefix, modules);\n const\nplatformRef = platformBrowserDynamic();\n\n this.ngZone = new NgZone({enableLongStackTrace:\nZone.hasOwnProperty('longStackTraceZoneSpec')});\n this.ng2BootstrapDeferred = new Deferred();\n\n ng1Module.constant(UPGRADE_APP_TYPE_KEY, UpgradeAppType.Dynamic)\n .factory(INJECTOR_KEY, () => this.moduleRef!.injector.get(Injector))\n .factory(\nLAZY_MODULE_REF, [INJECTOR_KEY, (injector: Injector) => ({injector} as LazyModuleRef)])\n .constant(NG_ZONE_KEY, this.ngZone)\n .factory(COMPILER_KEY, () =>\nthis.moduleRef!.injector.get(Compiler))\n .config([\n '$provide', '$injector',\n (provide:\nIProvideService, ng1Injector: IInjectorService) => {\n provide.decorator($ROOT_SCOPE, [\n '$delegate',\n function(rootScopeDelegate: IRootScopeService) {\n // Capture the root apply so that\nwe can delay first call to $apply until we\n // bootstrap Angular and then we replay and restore the\n$apply.\n rootScopePrototype = rootScopeDelegate.constructor.prototype;\n if\n(rootScopePrototype.hasOwnProperty('$apply')) {\n original$applyFn = rootScopePrototype.$apply;\n rootScopePrototype.$apply = (exp: any) => delayApplyExps.push(exp);\n } else {\n throw\nnew Error('Failed to find `'$apply`' on `'$rootScope`!');\n }\n return rootScope =\nrootScopeDelegate;\n }\n]);\n if (ng1Injector.has($$TESTABILITY)) {\n provide.decorator($$TESTABILITY, [\n '$delegate',\n function(testabilityDelegate:\nITestabilityService) {\n const originalWhenStable: Function = testabilityDelegate.whenStable;\n // Cannot use arrow function below because we need the context\nconst newWhenStable = function(this:

```







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CAAC,yCAAyC,CAAC,CAAC;SAC5D;QACD,IAAI,CAAC,gBAAgB,CAAC,OAAO,CAAC,CAAC;QAC/B,YA  
AY,CAAC,MAAM,CAAC,IAAI,CAAC,SAAS,CAAC,IAAI,CAAC,CAAC;QACzC,MAAM,OAAO,GAAG,IAAI,i  
BAAiB,EAAE,CAAC;QACxC,IAAI,CAAC,oBAAoB,CAAC,OAAO,CAAC,IAAI,CAAC,CAAC,WAAW;YAC3C  
,OAAQ,CAAC,cAAc,CAAC,IAAI,CAAC,SAAS,EAAE,WAAW,CAAC,CAAC;SAC5D,EAAE,OAAO,CAAC,CA  
AC;QACZ,OAAO,OAAO,CAAC;KACHb;::;IA+CD,SAAS,CAACC,SAAgB,EAAE,  
OAAe,EAAE,MAAgC;QAE3E,IAAI,CAAC,gBAAgB,CAAC,OAAO,CAAC,CAAC;QAE/B,MAAM,OAAO,GAA  
G,IAAI,iBAAiB,EAAE,CAAC;;QAGxC,MAAM,aAAa,GAAL,MAAa,mBAAoB,SAAS,CAAC,CAAC;QACnE,aA



CACZ,sBAAsB,EAAE,CAAC,IAAI,CAAC,eAAgB,EAAE,EAAC,MAAM,EAAE,IAAI,CAAC,MAAM,EAAC,C  
AAC,CAAC;yBAC1E,IAAI,CAAC,CAAC,GAAqB;wBAC1B,IAAI,CAAC,SAAS,GAAG,GAAG,CAAC;wBACr  
B,IAAI,CAAC,MAAM,CAAC,GAAG,CAAC;4BACd,IAAI,kBAakB,EAAE;gCACtB,kBAakB,CAAC,MAAM,G  
AAG,gBAAgB,CAAC;gCAC7C,OAAO,cAAc,CAAC,MAAM,EAAE;oCAC5B,SAAS,CAAC,MAAM,CAAC,cA  
Ac,CAAC,KAAK,EAAE,CAAC,CAAC;iCAC1C;gCACD,kBAakB,GAAG,IAAI,CAAC;6BAC3B;yBACF,CAAC  
,CAAC;qBACJ,CAAC;yBACD,IAAI,CAAC,MAAM,IAAI,CAAC,oBAAoB,CAAC,OAAO,CAAC,WAAW,CAA  
C,EAAE,OAAO,CAAC;yBACnE,IAAI,CAAC;wBACJ,IAAI,YAAY,GAAG,IAAI,CAAC,MAAM,CAAC,gBAAg  
B,CAAC,SAAS,CAAC;4BACxD,IAAI,EAAE;gCACJ,IAAI,SAAS,CAAC,OAAO,EAAE;oCACrB,IAAI,SAAS,E  
AAE,EAAE;wCACf,OAAO,CAAC,IAAI,CACR,wIAAwI,CAAC,CAAC;qCAC/I;oCAED,OAAO,SAAS,CAAC,U  
AAU,CAAC,SAAQ,CAAC,CAAC;iCACvC;gCAED,OAAO,SAAS,CAAC,OAAO,EAAE,CAAC;6BAC5B;yBAC  
F,CAAC,CAAC;wBACH,SAAS,CAAC,GAAG,CAAC,UAAU,EAAE;4BACxB,YAAY,CAAC,WAAW,EAAE,CA  
AC;yBAC5B,CAAC,CAAC;qBACJ,CAAC,CAAC;iBACR,CAAC;qBACD,KAAK,CAAC,CAAC,CAAC,KAAK,I  
AAI,CAAC,oBAAoB,CAAC,MAAM,CAAC,CAAC,CAAC,CAAC,CAAC;aACxD;SACF,CAAC,CAAC;QAEH,O  
AAO,SAAS,CAAC;KACIB;CACF;AAED;;;AAIA,MAAMC,uBAAqB;IAKzB,YAAoB,OAAyB;QAAzB,YAAO,  
GAAP,OAAO,CAakB;QAFrC,cAAS,GAAoC,EAAE,CAAC;;QAItD,OAAO,CAAC,IAAK,CAAC,aAAa,CAAC,Y  
AAY,CAAC,EAAE,IAAI,CAAC,CAAC;KACID;IAED,IAAI,CAAC,QAAqC;QACxC,IAAI,IAAI,CAAC,QAAQ,  
EAAE;YACjB,QAAQ,CAAC,IAAI,CAAC,QAAQ,CAAC,CAAC;SACzB;aAAM;YACL,IAAI,CAAC,SAAS,CAA  
C,IAAI,CAAC,QAAQ,CAAC,CAAC;SAC/B;KACF;IAED,OAAO,CAAC,QAAkB;QACxB,IAAI,CAAC,QAAQ,  
GAAG,QAAQ,CAAC;;QAGzB,IAAI,CAAC,OAAO,CAAC,IAAK,CAAC,aAAa,CAAC,YAAY,CAAC,EAAE,QA  
AQ,CAAC,CAAC;;QAG1D,IAAI,CAAC,OAAO,GAAG,IAAK,CAAC;;QAGrB,IAAI,CAAC,SAAS,CAAC,OAA  
O,CAAC,CAAC,QAAQ,KAAK,QAAQ,CAAC,QAAQ,CAAC,CAAC,CAAC;QACzD,IAAI,CAAC,SAAS,CAAC,  
MAAM,GAAG,CAAC,CAAC;KAC3B;CACF;AAGD;;;;;;MAOa,iBAaiB;IAA9B;;QAEU,aAAQ,GAA0D,IAAI,C  
AAC;QAExE,iBAAY,GAAsB,IAAK,CAAC;QACxC,gBAAW,GAAqB,IAAK,CAAC;QACtC,iBAAY,GAAqB,IA  
AK,CAAC;QACvC,gBAAW,GAAa,IAAK,CAAC;KA6BtC;;IA1BS,cAAc,CAAC,WAA6B,EAAE,WAA6B;QACj  
F,IAAI,CAAC,YAAY,GAAG,WAAW,CAAC;QACHC,IAAI,CAAC,WAAW,GAAG,WAAW,CAAC,QAAQ,CAA  
C;QACxC,IAAI,CAAC,WAAW,GAAG,WAAW,CAAC;QAC/B,IAAI,CAAC,YAAY,GAAG,WAAW,CAAC,GA  
AG,CAAC,WAAW,CAAC,CAAC;QACjD,IAAI,CAAC,QAAQ,IAAI,IAAI,CAAC,QAAQ,CAAC,IAAI,CAAC,C  
AAC;KACtC;;;;;;IASM,KAAK,CAAC,EAAkD;QAC7D,IAAI,CAAC,QAAQ,GAAG,EAAE,CAAC;KACpB;;;I  
AKM,OAAO;QACZ,IAAI,CAAC,WAAW,CAAC,GAAG,CAAC,WAAW,CAAC,CAAC,QAAQ,EAAE,CAAC;Q  
AC9C,IAAI,CAAC,YAAa,CAAC,OAAO,EAAE,CAAC;KAC9B;;;ACxsBH;;;;;;AAiBA;;ACjBA;;;;;;ACAA;;;;;"  
}

Found in path(s):

\* /opt/cola/permits/1358260707\_1657134860.914432/0/upgrade-11-0-2-tgz/package/fesm2015/upgrade.js.map

No license file was found, but licenses were detected in source scan.

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\*

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\*/



```

function (target, key) { decorator(target, key, paramIndex); }
export function __metadata(metadataKey, metadataValue) {
 if (typeof Reflect === "object" && typeof Reflect.metadata === "function") return Reflect.metadata(metadataKey, metadataValue);
}
export function __awaiter(thisArg, _arguments, P, generator) {
 function adopt(value) { return value instanceof P ? value : new P(function (resolve) { resolve(value); }); }
 return new (P || (P = Promise))(function (resolve, reject) {
 function fulfilled(value) { try { step(generator.next(value)); } catch (e) { reject(e); } }
 function rejected(value) { try { step(generator["throw"](value)); } catch (e) { reject(e); } }
 function step(result) { result.done ? resolve(result.value) : adopt(result.value).then(fulfilled, rejected); }
 step((generator = generator.apply(thisArg, _arguments || [])).next());
 });
}
export function __generator(thisArg, body) {
 var _ = { label: 0, sent: function() { if (t[0] & 1) throw t[1]; return t[1]; }, trys: [], ops: [] }, f, y, t, g;
 return g = { next: verb(0), "throw": verb(1), "return": verb(2) }, typeof Symbol === "function" && (g[Symbol.iterator] = function() { return this; });
 function verb(n) { return function (v) { return step([n, v]); }; }
 function step(op) {
 if (f) throw new TypeError("Generator is already executing.");
 while (true) try {
 if (f = 1, y && (t = op[0] & 2 ? y["return"] : op[0] ? y["throw"] || ((t = y["return"]) && t.call(y, 0) : y.next) && !(t = t.call(y, op[1])).done) return t;
 if (y = 0, t) op = [op[0] & 2, t.value];
 switch (op[0]) {
 case 0: case 1: t = op; break;
 case 4: _label++; return { value: op[1], done: false };
 case 5: _label++; y = op[1]; op = [0]; continue;
 case 7: op = _ops.pop(); _trys.pop(); continue;
 default:
 if (!t = _trys, t = t.length > 0 && t[t.length - 1] && (op[0] === 6 || op[0] === 2)) { _ = 0; continue; }
 if (op[0] === 3 && (!t || (op[1] > t[0] && op[1] < t[3]))) { _label = op[1]; break; }
 if (op[0] === 6 && _label < t[1]) { _label = t[1]; t = op; break; }
 if (t && _label < t[2]) { _label = t[2]; _ops.push(op); break; }
 if (t[2]) _ops.pop();
 _trys.pop(); continue;
 }
 op = body.call(thisArg, _);
 } catch (e) { op = [6, e]; y = 0; } finally { f = t = 0; }
 if (op[0] & 5) throw op[1]; return { value: op[0] ? op[1] : void 0, done: true };
 }
 }
}
export var __createBinding = Object.create ? (function(o, m, k, k2) {
 if (k2 === undefined) k2 = k;
 Object.defineProperty(o, k2, { enumerable: true, get: function() { return m[k]; } });
}) : (function(o, m, k, k2) {
 if (k2 === undefined) k2 = k;
 o[k2] = m[k];
});
export function __exportStar(m, exports) {
 for (var p in m) if (p !== "default" && !exports.hasOwnProperty(p)) __createBinding(exports, m, p);
}
export function __values(o) {
 var s = typeof Symbol === "function" && Symbol.iterator, m = s && o[s], i = 0;
 if (m) return m.call(o);
 if (o && typeof o.length === "number") return {
 next: function () {
 if (o && i >= o.length) o = void 0;
 return { value: o && o[i++], done: !o };
 }
 };
 throw new TypeError(s ? "Object is not iterable." : "Symbol.iterator is not defined.");
}
export function __read(o, n) {
 var m = typeof Symbol === "function" && o[Symbol.iterator];
 if (!m) return o;
 var i = m.call(o), r, ar = [], e;
 try {
 while ((n === void 0 || n-- > 0) && !(r = i.next()).done) ar.push(r.value);
 } catch (error) { e = { error: error }; }
 finally {
 try {
 if (r && !r.done && (m = i["return"])) m.call(i);
 } finally {
 if (e) throw e.error;
 }
 }
 return ar;
}
export function __spread() {
 for (var ar = [], i = 0; i < arguments.length; i++) ar = ar.concat(__read(arguments[i]));
 return ar;
}
export function __spreadArrays() {
 for (var s = 0, i = 0, il = arguments.length; i < il; i++) s += arguments[i].length;
 for (var r = Array(s), k = 0, i = 0; i < il; i++)
 for (var a = arguments[i], j = 0, jl = a.length; j < jl; j++, k++)
 r[k] = a[j];
 return r;
}
export function __await(v) {
 return this instanceof __await ? (this.v = v, this) : new __await(v);
}
export function __asyncGenerator(thisArg, _arguments, generator) {
 if (!Symbol.asyncIterator) throw new TypeError("Symbol.asyncIterator is not defined.");
 var g = generator.apply(thisArg, _arguments || []), i, q = [];
 return i = {}, verb("next"), verb("throw"), verb("return"), i[Symbol.asyncIterator] = function () { return this; };
 function verb(n) { if (g[n]) i[n] = function (v) { return new Promise(function (a, b) { q.push([n, v, a, b]) > 1 || resume(n, v); }); }; }
 function resume(n, v) { try { step(g[n](v)); } catch (e) { settle(q[0][3], e); } }
 function step(r) { r.value instanceof __await ? Promise.resolve(r.value.v).then(fulfill, reject) : settle(q[0][2], r); }
 function fulfill(value) { resume("next", value); }
 function reject(value) { resume("throw", value); }
 function settle(f, v) { if

```



```

string|Function;\n templateUrl?: string|Function;\n templateNamespace?: string;\n terminal?: boolean;\n
transclude?: DirectiveTranscludeProperty;\n}\n\nexport type DirectiveRequireProperty =
SingleOrListOrMap<string>;\n\nexport type DirectiveTranscludeProperty = boolean|'element'|{[key: string]:
string};\n\nexport interface IDirectiveCompileFn {\n (templateElement: IAugmentedJQuery, templateAttributes:
IAttributes,\n transclude: ITranscludeFunction): IDirectivePrePost;\n}\n\nexport interface IDirectivePrePost {\n
pre?: IDirectiveLinkFn;\n post?: IDirectiveLinkFn;\n}\n\nexport interface IDirectiveLinkFn {\n (scope: IScope,
instanceElement: IAugmentedJQuery, instanceAttributes: IAttributes,\n controller: any, transclude:
ITranscludeFunction): void;\n}\n\nexport interface IComponent {\n bindings?: {[key: string]: string};\n controller?:
string|IInjectable;\n controllerAs?: string;\n require?: DirectiveRequireProperty;\n template?: string|Function;\n
templateUrl?: string|Function;\n transclude?: DirectiveTranscludeProperty;\n}\n\nexport interface IAttributes {\n
$observe(attr: string, fn: (v: string) => void): void;\n [key: string]: any;\n}\n\nexport interface ITranscludeFunction
{\n // If the scope is provided, then the cloneAttachFn must be as well.\n (scope: IScope, cloneAttachFn:
ICloneAttachFunction): IAugmentedJQuery;\n // If one argument is provided, then it's assumed to be the
cloneAttachFn.\n (cloneAttachFn?: ICloneAttachFunction): IAugmentedJQuery;\n}\n\nexport interface
ICloneAttachFunction {\n (clonedElement: IAugmentedJQuery, scope: IScope): any;\n}\n\nexport type
IAugmentedJQuery = Node[]&{\n on?: (name: string, fn: () => void) => void;\n data?: (name: string, value?: any)
=> any;\n text?: () => string;\n inheritedData?: (name: string, value?: any) => any;\n contents?: () =>
IAugmentedJQuery;\n parent?: () => IAugmentedJQuery;\n empty?: () => void;\n append?: (content:
IAugmentedJQuery|string) => IAugmentedJQuery;\n controller?: (name: string) => any;\n isolateScope?: () =>
IScope;\n injector?: () => IInjectorService;\n triggerHandler?: (eventTypeOrObject: string|Event, extraParameters?:
any[]) => IAugmentedJQuery;\n remove?: () => void;\n removeData?: () => void;\n};\n\nexport interface IProvider
{\n $get: IInjectable;\n}\n\nexport interface IProvideService {\n provider(token: NgIToken, provider: IProvider):
IProvider;\n factory(token: NgIToken, factory: IInjectable): IProvider;\n service(token: NgIToken, type:
IInjectable): IProvider;\n value(token: NgIToken, value: any): IProvider;\n constant(token: NgIToken, value: any):
void;\n decorator(token: NgIToken, factory: IInjectable): void;\n}\n\nexport interface IParseService {\n (expression:
string): ICompiledExpression;\n}\n\nexport interface ICompiledExpression {\n (context: any, locals: any): any;\n
assign?: (context: any, value: any) => any;\n}\n\nexport interface IHttpBackendService {\n (method: string, url:
string, post?: any, callback?: Function, headers?: any, timeout?: number,\n withCredentials?: boolean):
void;\n}\n\nexport interface ICacheObject {\n put<T>(key: string, value?: T): T;\n get(key: string): any;\n}\n\nexport
interface ITemplateCacheService extends ICacheObject {}\n\nexport interface ITemplateRequestService {\n
(template: string|any /* TrustedResourceUrl */, ignoreRequestError?: boolean): Promise<string>;\n
totalPendingRequests: number;\n}\n\nexport type IController = string|IInjectable;\n\nexport interface IControllerService
{\n (controllerConstructor: IController, locals?: any, later?: any, ident?: any): any;\n (controllerName: string,
locals?: any): any;\n}\n\nexport interface IInjectorService {\n get(key: string): any;\n has(key: string):
boolean;\n}\n\nexport interface IIntervalService {\n (func: Function, delay: number, count?: number,
invokeApply?: boolean,\n ...args: any[]): Promise<any>;\n cancel(promise: Promise<any>): boolean;\n}\n\nexport
interface ITestabilityService {\n findBindings(element: Element, expression: string, opt_exactMatch?: boolean):
Element[];\n findModels(element: Element, expression: string, opt_exactMatch?: boolean): Element[];\n
getLocation(): string;\n setLocation(url: string): void;\n whenStable(callback: Function): void;\n}\n\nexport
interface INgModelController {\n $render(): void;\n $isEmpty(value: any): boolean;\n
$setValidity(validationErrorKey: string, isValid: boolean): void;\n $setPristine(): void;\n $setDirty(): void;\n
$setUntouched(): void;\n $setTouched(): void;\n $rollbackViewValue(): void;\n $validate(): void;\n
$commitViewValue(): void;\n $setViewValue(value: any, trigger: string): void;\n\n $viewValue: any;\n
$modelValue: any;\n $parsers: Function[];\n $formatters: Function[];\n $validators: {[key: string]: Function};\n
$sasyncValidators: {[key: string]: Function};\n $viewChangeListeners: Function[];\n $error: Object;\n $pending:
Object;\n $untouched: boolean;\n $touched: boolean;\n $pristine: boolean;\n $dirty: boolean;\n $valid: boolean;\n
$invalid: boolean;\n $name: string;\n}\n\nfunction noNg(): never {\n throw new Error('AngularJS v1.x is not
loaded!');\n}\n\nconst noNgElement: typeof angular.element = ((() => noNg()) as any);\n\nnoNgElement.cleanData =

```

```

noNg;\n\nlet angular: {\n bootstrap: (e: Element, modules: (string|Injectable)[], config?: IAngularBootstrapConfig)
=>\n InjectorService,\n module: (prefix: string, dependencies?: string[]) => IModule,\n element: {\n (e:
string|Element|Document|IAugmentedJQuery): IAugmentedJQuery;\n cleanData: (nodes: Node[]|NodeList) =>
void;\n },\n injector: (modules: Array<string|Injectable>, strictDi?: boolean) => IInjectorService,\n version:
{major: number},\n resumeBootstrap: () => void,\n getTestability: (e: Element) => ITestabilityService\n} = {\n
bootstrap: noNg,\n module: noNg,\n element: noNgElement,\n injector: noNg,\n version: undefined as any,\n
resumeBootstrap: noNg,\n getTestability: noNg\n};\n\ntry {\n if (window.hasOwnProperty('angular')) {\n angular
= (<any>window).angular;\n }\n} catch {\n // ignore in CJS mode.\n}\n\n/**\n * @deprecated Use
`setAngularJSGlobal` instead.\n *\n * @publicApi\n */\nexport function setAngularLib(ng: any): void {\n
setAngularJSGlobal(ng);\n}\n\n/**\n * @deprecated Use `getAngularJSGlobal` instead.\n *\n * @publicApi\n
*/\nexport function getAngularLib(): any {\n return getAngularJSGlobal();\n}\n\n/**\n * Resets the AngularJS
global.\n *\n * Used when AngularJS is loaded lazily, and not available on `window`.\n *\n * @publicApi\n
*/\nexport function setAngularJSGlobal(ng: any): void {\n angular = ng;\n}\n\n/**\n * Returns the current
AngularJS global.\n *\n * @publicApi\n */\nexport function getAngularJSGlobal(): any {\n return
angular;\n}\n\nexport const bootstrap: typeof angular.bootstrap = (e, modules, config?) =>\n angular.bootstrap(e,
modules, config);\n\n// Do not declare as `module` to avoid webpack bug\n// (see
https://github.com/angular/angular/issues/30050).\nexport const module_: typeof angular.module = (prefix,
dependencies?) =>\n angular.module(prefix, dependencies);\n\nexport const element: typeof angular.element = (e
=> angular.element(e)) as typeof angular.element;\nelement.cleanData = nodes =>
angular.element.cleanData(nodes);\n\nexport const injector: typeof angular.injector = (\n (modules:
Array<string|Injectable>, strictDi?: boolean) => angular.injector(modules, strictDi);\n\nexport const
resumeBootstrap: typeof angular.resumeBootstrap = () => angular.resumeBootstrap);\n\nexport const
getTestability: typeof angular.getTestability = e => angular.getTestability(e);\n\n", "/*\n * @license\n * Copyright
Google LLC All Rights Reserved.\n *\n * Use of this source code is governed by an MIT-style license that can be\n
* found in the LICENSE file at https://angular.io/license\n */\n\nexport const $COMPILE = '$compile';\nexport
const $CONTROLLER = '$controller';\nexport const $DELEGATE = '$delegate';\nexport const
$EXCEPTION_HANDLER = '$exceptionHandler';\nexport const $HTTP_BACKEND = '$httpBackend';\nexport
const $INJECTOR = '$injector';\nexport const $INTERVAL = '$interval';\nexport const $PARSE = '$parse';\nexport
const $PROVIDE = '$provide';\nexport const $ROOT_SCOPE = '$rootScope';\nexport const $SCOPE =
'$scope';\nexport const $TEMPLATE_CACHE = '$templateCache';\nexport const $TEMPLATE_REQUEST =
'$templateRequest';\n\nexport const $TESTABILITY = '$$testability';\n\nexport const COMPILER_KEY =
'$$angularCompiler';\nexport const DOWNGRADED_MODULE_COUNT_KEY =
'$$angularDowngradedModuleCount';\nexport const GROUP_PROJECTABLE_NODES_KEY =
'$$angularGroupProjectableNodes';\nexport const INJECTOR_KEY = '$$angularInjector';\nexport const
LAZY_MODULE_REF = '$$angularLazyModuleRef';\nexport const NG_ZONE_KEY =
'$$angularNgZone';\nexport const UPGRADE_APP_TYPE_KEY = '$$angularUpgradeAppType';\n\nexport const
REQUIRE_INJECTOR = '?^' + INJECTOR_KEY;\nexport const REQUIRE_NG_MODEL =
'?ngModel';\n\nexport const UPGRADE_MODULE_NAME = '$$UpgradeModule';\n\n", "/*\n * @license\n *
Copyright Google LLC All Rights Reserved.\n *\n * Use of this source code is governed by an MIT-style license
that can be\n * found in the LICENSE file at https://angular.io/license\n */\n\nA `PropertyBinding`
represents a mapping between a property name\n * and an attribute name. It is parsed from a string of the form\n *
`\"prop: attr\"`; or simply `\"propAndAttr\"` where the property\n * and attribute have the same identifier.\n
*/\n\nexport class PropertyBinding {\n // TODO(issue/24571): remove '!.\n bracketAttr!: string;\n //
TODO(issue/24571): remove '!.\n bracketParenAttr!: string;\n // TODO(issue/24571): remove '!.\n parenAttr!:
string;\n // TODO(issue/24571): remove '!.\n onAttr!: string;\n // TODO(issue/24571): remove '!.\n bindAttr!:
string;\n // TODO(issue/24571): remove '!.\n bindonAttr!: string;\n\n constructor(public prop: string, public attr:
string) {\n this.parseBinding();\n }\n\n private parseBinding() {\n this.bracketAttr = `[$${this.attr}]`;\n
this.parenAttr = `(${this.attr})`; this.bracketParenAttr = `[$${this.attr}]`; const capitalAttr =

```



```

this.attr.charAt(0).toUpperCase() + this.attr.substr(1);\n this.onAttr = `on${capitalAttr}`;\n this.bindAttr =
`bind${capitalAttr}`;\n this.bindonAttr = `bindon${capitalAttr}`;\n } }\n", "/*\n * @license\n * Copyright
Google LLC All Rights Reserved.\n *\n * Use of this source code is governed by an MIT-style license that can be\n
* found in the LICENSE file at https://angular.io/license\n */\n\nimport { Injector, Type } from
'@angular/core';\n\nimport { IInjectorService, INgModelController } from './angular1';\n\nimport
{ DOWNGRADED_MODULE_COUNT_KEY, UPGRADE_APP_TYPE_KEY } from './constants';\n\nconst
DIRECTIVE_PREFIX_REGEXP = /^(?:x|data)[:|-_]i;\nconst DIRECTIVE_SPECIAL_CHARS_REGEXP = /[:|-
_]+(.)\/g;\n\nexport function onError(e: any) {\n // TODO: (misko): We seem to not have a stack trace here!\n if
(console.error) {\n console.error(e, e.stack);\n } else {\n // tslint:disable-next-line:no-console\n console.log(e,
e.stack);\n }\n throw e;\n}\n\nexport function controllerKey(name: string): string {\n return '$' + name +
'Controller';\n}\n\nexport function directiveNormalize(name: string): string {\n return
name.replace(DIRECTIVE_PREFIX_REGEXP, '')\n .replace(DIRECTIVE_SPECIAL_CHARS_REGEXP, (_,
letter) => letter.toUpperCase());\n}\n\nexport function getTypeName(type: Type<any>): string {\n // Return the
name of the type or the first line of its stringified version.\n return (type as any).overriddenName || type.name ||
type.toString().split("\\n")[0];\n}\n\nexport function getDowngradedModuleCount($injector: IInjectorService):
number {\n return $injector.has(DOWNGRADED_MODULE_COUNT_KEY) ?
$injector.get(DOWNGRADED_MODULE_COUNT_KEY) : 0;\n}\n\nexport
function getUpgradeAppType($injector: IInjectorService): UpgradeAppType {\n return
$injector.has(UPGRADE_APP_TYPE_KEY) ? $injector.get(UPGRADE_APP_TYPE_KEY) :
UpgradeAppType.None;\n}\n\nexport function isFunction(value: any): value is Function {\n return typeof
value === 'function';\n}\n\nexport function validateInjectionKey(\n $injector: IInjectorService,
downgradedModule: string, injectionKey: string,\n attemptedAction: string): void {\n const upgradeAppType =
getUpgradeAppType($injector);\n const downgradedModuleCount = getDowngradedModuleCount($injector);\n
// Check for common errors.\n switch (upgradeAppType) {\n case UpgradeAppType.Dynamic:\n case
UpgradeAppType.Static:\n if (downgradedModule) {\n throw new Error(\n `Error while
${attemptedAction}: 'downgradedModule' unexpectedly specified.\\n` +\n `You should not specify a value for
\\'downgradedModule\\', unless you are downgrading ' +\n `more than one Angular module (via
\\'downgradeModule()\\').`);\n } break;\n case UpgradeAppType.Lite:\n if (!downgradedModule &&
(downgradedModuleCount >= 2)) {\n throw new Error(\n `Error while ${attemptedAction}:
'downgradedModule' not specified.\\n` +\n `This application contains more than one downgraded Angular
module, thus you need to ' +\n `always specify \\'downgradedModule\\' when downgrading components and
injectables.`);\n }\n if (!$injector.has(injectionKey)) {\n throw new Error(\n `Error while
${attemptedAction}: Unable to find the specified downgraded module.\\n` +\n `Did you forget to downgrade
an Angular module or include it in the AngularJS ' +\n `application?`);\n }\n break;\n default:\n throw new Error(\n `Error while ${attemptedAction}: Not a valid '@angular/upgrade' application.\\n` +\n
`Did you forget to downgrade an Angular module or include it in the AngularJS ' +\n `application?`);\n
}\n}\n\nexport class Deferred<R> {\n promise: Promise<R>;\n // TODO(issue/24571): remove '!'.\n resolve!:
(value?: R|PromiseLike<R>) => void;\n // TODO(issue/24571): remove '!'.\n reject!: (error?: any) => void;\n\n
constructor() {\n this.promise = new Promise((res, rej) => {\n this.resolve = res;\n this.reject = rej;\n });\n
}\n}\n\nexport interface LazyModuleRef {\n injector?: Injector;\n promise?: Promise<Injector>;\n}\n\nexport
const enum UpgradeAppType {\n // App NOT using `@angular/upgrade`. (This should never happen in an
`ngUpgrade` app.)\n None,\n // App using the deprecated `@angular/upgrade` APIs (a.k.a. dynamic
`ngUpgrade`).\n Dynamic,\n // App using `@angular/upgrade/static` with `UpgradeModule`.\n Static,\n // App
using `@angular/upgrade/static` with `downgradeModule()` (a.k.a `ngUpgrade`-lite).\n Lite,\n}\n\n/**\n * @return
Whether the passed-in component implements the subset of the\n * `ControlValueAccessor` interface needed for
AngularJS `ng-model`\n * compatibility.\n */\nfunction supportsNgModel(component: any) {\n return typeof
component.writeValue === 'function' &&\n typeof component.registerOnChange === 'function';\n}\n\n/**\n *
Glue the AngularJS `NgModelController` (if it exists) to the component\n * (if it implements the needed subset of

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the `ControlValueAccessor` interface).\n */\nexport function hookupNgModel(ngModel: INgModelController,
component: any) {\n if (ngModel && supportsNgModel(component)) {\n ngModel.$render = () => {\n
component.writeValue(ngModel.$viewValue);\n };\n
component.registerOnChange(ngModel.$setViewValue.bind(ngModel));\n if (typeof
component.registerOnTouched === 'function') {\n
component.registerOnTouched(ngModel.$setTouched.bind(ngModel));\n }\n }\n\n/**\n * Test two values for
strict equality, accounting for the fact that `NaN !== NaN`.\n */\nexport function strictEquals(val1: any, val2: any):
boolean {\n return val1 === val2 || (val1 !== val1 && val2 !== val2);\n }\n\n",/**\n * @license\n * Copyright
Google LLC All Rights Reserved.\n *\n * Use of this source code is governed by an MIT-style license that can be\n
* found in the LICENSE file at https://angular.io/license\n */\n\nimport { ApplicationRef, ChangeDetectorRef,
ComponentFactory, ComponentRef, EventEmitter, Injector, OnChanges, SimpleChange, SimpleChanges,
StaticProvider, Testability, TestabilityRegistry, Type } from '@angular/core';\n\nimport { IAttributes,
IAugmentedJQuery, ICompileService, IInjectorService, INgModelController, IParseService, IScope } from
'./angular1';\n\nimport { PropertyBinding } from './component_info';\n\nimport { $SCOPE } from './constants';\n\nimport
{ getTypeName, hookupNgModel, strictEquals } from './util';\n\nconst INITIAL_VALUE = {\n
__UNINITIALIZED__: true\n};\n\nexport class DowngradeComponentAdapter {\n private implementsOnChanges
= false;\n private inputChangeCount: number = 0;\n private inputChanges: SimpleChanges = {};\n private
componentScope: IScope;\n // TODO(issue/24571): remove '!.\n private componentRef!: ComponentRef<any>;\n
private component: any;\n // TODO(issue/24571): remove '!.\n private changeDetector!: ChangeDetectorRef;\n //
TODO(issue/24571): remove '!.\n private viewChangeDetector!: ChangeDetectorRef;\n\n constructor(\n private
element: IAugmentedJQuery, private attrs: IAttributes, private scope: IScope,\n private ngModel:
INgModelController, private parentInjector: Injector,\n private $injector: IInjectorService, private $compile:
ICompileService,\n private $parse: IParseService, private componentFactory: ComponentFactory<any>,\n
private wrapCallback: <T>(cb: () => T) => () => T) {\n this.componentScope = scope.$new();\n }\n\n
compileContents(): Node[][] {\n const compiledProjectableNodes: Node[][] = [];\n const projectableNodes:
Node[][] = this.groupProjectableNodes();\n const linkFns = projectableNodes.map(nodes =>
this.$compile(nodes));\n\n this.element.empty!();\n\n linkFns.forEach(linkFn => {\n linkFn(this.scope,
(clone: Node[]) => {\n compiledProjectableNodes.push(clone);\n this.element.append!(clone);\n });\n
});\n\n return compiledProjectableNodes;\n }\n\n createComponent(projectableNodes: Node[][]): {\n const
providers: StaticProvider[] = [{ provide: $SCOPE, useValue: this.componentScope }];\n const childInjector =
Injector.create(\n { providers: providers, parent: this.parentInjector, name:
'DowngradeComponentAdapter' });\n\n this.componentRef =\n this.componentFactory.create(childInjector,
projectableNodes, this.element[0]);\n this.viewChangeDetector =
this.componentRef.injector.get(ChangeDetectorRef);\n this.changeDetector =
this.componentRef.changeDetectorRef;\n this.component = this.componentRef.instance;\n\n // testability hook is
commonly added during component bootstrap in\n // packages/core/src/application_ref.bootstrap()\n // in
downgraded application, component creation will take place here as well as adding the\n // testability hook.\n
const testability = this.componentRef.injector.get(Testability, null);\n if (testability) {\n
this.componentRef.injector.get(TestabilityRegistry)\n
.registerApplication(this.componentRef.location.nativeElement, testability);\n }\n\n
hookupNgModel(this.ngModel, this.component);\n }\n\n setupInputs(attachView: boolean,
propagateDigest = true): void {\n const attrs = this.attrs;\n const inputs = this.componentFactory.inputs || [];\n
for (let i = 0; i < inputs.length; i++) {\n const input = new PropertyBinding(inputs[i].propName,
inputs[i].templateName);\n let expr: string|null = null;\n if (attrs.hasOwnProperty(input.attr)) {\n const
observeFn = (prop => {\n let prevValue = INITIAL_VALUE;\n return (currValue: any) => {\n //
Initially, both `observe()` and `watch()` will call this function.\n if (!strictEquals(prevValue, currValue))
{\n if (prevValue === INITIAL_VALUE) {\n prevValue = currValue;\n }\n
this.updateInput(prop, prevValue, currValue);\n prevValue = currValue;\n }\n });\n
}

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})(input.prop);\n attrs.$observe(input.attr, observeFn);\n\n // Use `$.watch()` (in addition to `$.observe()`) in
order to initialize the input in time\n // for `ngOnChanges()`. This is necessary if we are already in a `$.digest`,
which means that\n // `ngOnChanges()` (which is called by a watcher) will run before the `$.observe()`
callback.\n let unwatch: Function|null = this.componentScope.$watch(() => {\n unwatch!();\n });\n unwatch = null;\n observeFn(attrs[input.attr]);\n\n } else if (attrs.hasOwnProperty(input.bindAttr))\n {\n expr = attrs[input.bindAttr];\n } else if (attrs.hasOwnProperty(input.bracketAttr)) {\n expr =
attrs[input.bracketAttr];\n } else if (attrs.hasOwnProperty(input.bindonAttr)) {\n expr =
attrs[input.bindonAttr];\n } else if (attrs.hasOwnProperty(input.bracketParenAttr)) {\n expr =
attrs[input.bracketParenAttr];\n }\n if (expr != null) {\n const watchFn =\n (prop => (currValue:
any, prevValue: any) =>\n this.updateInput(prop, prevValue, currValue))(input.prop);\n this.componentScope.$watch(expr, watchFn);\n }\n\n // Invoke `ngOnChanges()` and Change Detection
(when necessary)\n const detectChanges = () => this.changeDetector.detectChanges();\n const prototype =
this.componentFactory.componentType.prototype;\n this.implementsOnChanges = !(prototype &&
(<OnChanges>prototype).ngOnChanges);\n\n this.componentScope.$watch(() => this.inputChangeCount,
this.wrapCallback(() => {\n // Invoke `ngOnChanges()`\n if (this.implementsOnChanges) {\n const
inputChanges = this.inputChanges;\n this.inputChanges = {};\n (<OnChanges>this.component).ngOnChanges(inputChanges!);\n }\n\n this.viewChangeDetector.markForCheck();\n\n // If opted out of propagating digests, invoke change detection
when inputs change.\n if (!propagateDigest) {\n detectChanges();\n }\n\n // If not opted out of
propagating digests, invoke change detection on every digest\n if (propagateDigest) {\n this.componentScope.$watch(this.wrapCallback(detectChanges));\n }\n\n // If necessary, attach the view so that
it will be dirty-checked.\n // (Allow time for the initial input values to be set and `ngOnChanges()` to be called.)\n if (manuallyAttachView || !propagateDigest) {\n let unwatch: Function|null = this.componentScope.$watch(() =>
{\n unwatch!();\n unwatch = null;\n });\n const appRef =
this.parentInjector.get<ApplicationRef>(ApplicationRef);\n appRef.attachView(this.componentRef.hostView);\n }\n });\n\n } }\n\n setupOutputs() {\n const attrs =
this.attrs;\n const outputs = this.componentFactory.outputs || [];\n for (let j = 0; j < outputs.length; j++) {\n const output = new PropertyBinding(outputs[j].propName, outputs[j].templateName);\n const bindonAttr =
output.bindonAttr.substring(0, output.bindonAttr.length - 6);\n const bracketParenAttr =\n `((${output.bracketParenAttr.substring(2, output.bracketParenAttr.length - 8)})`;\n // order below is important -
first update bindings then evaluate expressions\n if (attrs.hasOwnProperty(bindonAttr)) {\n this.subscribeToOutput(output, attrs[bindonAttr], true);\n }\n if (attrs.hasOwnProperty(bracketParenAttr)) {\n this.subscribeToOutput(output, attrs[bracketParenAttr], true);\n }\n if
(attrs.hasOwnProperty(output.onAttr)) {\n this.subscribeToOutput(output, attrs[output.onAttr]);\n }\n if
(attrs.hasOwnProperty(output.parenAttr)) {\n this.subscribeToOutput(output, attrs[output.parenAttr]);\n }\n }\n }\n\n private subscribeToOutput(output: PropertyBinding, expr: string, isAssignment: boolean = false) {\n const getter = this.$parse(expr);\n const setter = getter.assign;\n if (isAssignment && !setter) {\n throw new
Error(`Expression '${expr}' is not assignable!`);\n }\n const emitter = this.component[output.prop] as
EventEmitter<any>;\n if (emitter) {\n emitter.subscribe({\n next: isAssignment ? (v: any) =>
setter!(this.scope, v) :\n (v: any) => getter(this.scope, {'$event': v})\n });\n } else {\n throw
new Error(`Missing emitter '${output.prop}' on component '${\n getTypeName(this.componentFactory.componentType)}'`);\n }\n }\n\n registerCleanup() {\n const
testabilityRegistry = this.componentRef.injector.get(TestabilityRegistry);\n const destroyComponentRef =
this.wrapCallback(() => this.componentRef.destroy());\n let destroyed = false;\n this.element.on!('$destroy', ()
=> this.componentScope.$destroy());\n this.componentScope.$on('$destroy', () => {\n if (!destroyed) {\n destroyed = true;\n testabilityRegistry.unregisterApplication(this.componentRef.location.nativeElement);\n destroyComponentRef();\n }\n });\n }\n\n getInjector(): Injector {\n return this.componentRef.injector;\n }\n\n private updateInput(prop: string, prevValue: any, currValue: any) {\n if (this.implementsOnChanges) {\n

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this.inputChanges[prop] = new SimpleChange(prevValue, currValue, prevValue === currValue);\n }\n\n
this.inputChangeCount++;\n this.component[prop] = currValue;\n }\n\n groupProjectableNodes() {\n let
ngContentSelectors = this.componentFactory.ngContentSelectors;\n return
groupNodesBySelector(ngContentSelectors, this.element.contents!());\n }\n}\n\n/**\n * Group a set of DOM nodes
into `ngContent` groups, based on the given content selectors.\n */\nexport function
groupNodesBySelector(ngContentSelectors: string[], nodes: Node[]): Node[][] {\n const projectableNodes:
Node[][] = [];\n let wildcardNgContentIndex: number;\n\n for (let i = 0, ii = ngContentSelectors.length; i < ii; ++i)
{\n projectableNodes[i] = [];\n }\n\n for (let j = 0, jj = nodes.length; j < jj; ++j) {\n const node = nodes[j];\n
const ngContentIndex = findMatchingNgContentIndex(node, ngContentSelectors);\n if (ngContentIndex != null)
{\n projectableNodes[ngContentIndex].push(node);\n }\n }\n\n return projectableNodes;\n}\n\nfunction
findMatchingNgContentIndex(element: any, ngContentSelectors: string[]): number|null {\n const ngContentIndices:
number[] = [];\n let wildcardNgContentIndex: number = -1;\n for (let i = 0; i < ngContentSelectors.length; i++) {\n
const selector = ngContentSelectors[i];\n if (selector === '*') {\n wildcardNgContentIndex = i;\n } else {\n
if (matchesSelector(element, selector)) {\n ngContentIndices.push(i);\n }\n }\n}\n\n
ngContentIndices.sort();\n\n if (wildcardNgContentIndex !== -1) {\n
ngContentIndices.push(wildcardNgContentIndex);\n }\n return ngContentIndices.length ? ngContentIndices[0] :
null;\n}\n\nlet _matches: (this: any, selector: string) => boolean;\n\nfunction matchesSelector(el: any, selector:
string): boolean {\n if (!_matches) {\n const elProto = <any>Element.prototype;\n _matches = elProto.matches ||
elProto.matchesSelector || elProto.mozMatchesSelector ||\n elProto.msMatchesSelector ||
elProto.oMatchesSelector || elProto.webkitMatchesSelector;\n }\n return el.nodeType ===
Node.ELEMENT_NODE ? _matches.call(el, selector) : false;\n}\n\n", "/*\n * @license\n * Copyright Google LLC
All Rights Reserved.\n * Use of this source code is governed by an MIT-style license that can be\n * found in
the LICENSE file at https://angular.io/license\n */\n\nimport {isFunction} from './util';\n\nexport interface
Thenable<T> {\n then(callback: (value: T) => any): any;\n}\n\nexport function isThenable<T>(obj: unknown): obj
is Thenable<T> {\n return !!obj && isFunction((obj as any).then);\n}\n\n/**\n * Synchronous, promise-like
object.\n */\nexport class SyncPromise<T> {\n protected value: T|undefined;\n private resolved = false;\n private
callbacks: ((value: T) => unknown)[] = [];\n\n static all<T>(valuesOrPromises: (T|Thenable<T>)[]):
SyncPromise<T[]> {\n const aggrPromise = new SyncPromise<T[]>();\n\n let resolvedCount = 0;\n const
results: T[] = [];\n const resolve = (idx: number, value: T) => {\n results[idx] = value;\n if (++resolvedCount
=== valuesOrPromises.length) aggrPromise.resolve(results);\n };\n\n valuesOrPromises.forEach((p, idx) => {\n
if (isThenable(p)) {\n p.then(v => resolve(idx, v));\n } else {\n resolve(idx, p);\n }\n });\n\n
return aggrPromise;\n}\n\n resolve(value: T): void {\n // Do nothing, if already resolved.\n if (this.resolved)
return;\n\n this.value = value;\n this.resolved = true;\n\n // Run the queued callbacks.\n
this.callbacks.forEach(callback => callback(value));\n this.callbacks.length = 0;\n }\n\n then(callback: (value: T)
=> unknown): void {\n if (this.resolved) {\n callback(this.value!);\n } else {\n
this.callbacks.push(callback);\n }\n }\n}\n\n", "/*\n * @license\n * Copyright Google LLC All Rights Reserved.\n
*\n * Use of this source code is governed by an MIT-style license that can be\n * found in the LICENSE file at
https://angular.io/license\n */\n\nimport {ComponentFactory, ComponentFactoryResolver, Injector, NgZone, Type}
from '@angular/core';\n\nimport {IAnnotatedFunction, IAttributes, IAugmentedJQuery, ICompileService,
IDirective, IInjectorService, INgModelController, IParseService, IScope} from './angular1';\n\nimport {$COMPILE,
$INJECTOR, $PARSE, INJECTOR_KEY, LAZY_MODULE_REF, REQUIRE_INJECTOR,
REQUIRE_NG_MODEL} from './constants';\n\nimport {DowngradeComponentAdapter} from
'./downgrade_component_adapter';\n\nimport {SyncPromise, Thenable} from './promise_util';\n\nimport {controllerKey,
getDowngradedModuleCount, getTypeName, getUpgradeAppType, LazyModuleRef, UpgradeAppType,
validateInjectionKey} from './util';\n\n\n/**\n * @description\n * A helper function that allows an Angular
component to be used from AngularJS.\n *\n * Part of the [upgrade/static](api?query=upgrade%2Fstatic)\n *
library for hybrid upgrade apps that support AOT compilation*\n *\n * This helper function returns a factory
function to be used for registering\n * an AngularJS wrapper directive for \"downgrading\" an Angular

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component.

```

@usageNotes
Examples
Let's assume that you have an Angular component called `ng2Heroes` that needs to be made available in AngularJS templates.
@example
upgrade/static/ts/full/module.ts region="ng2-heroes"
We must create an AngularJS [directive](https://docs.angularjs.org/guide/directive) that will make this Angular component available inside AngularJS templates.
The `downgradeComponent()` function returns a factory function that we can use to define the AngularJS directive that wraps the "downgraded" component.
@example
upgrade/static/ts/full/module.ts region="ng2-heroes-wrapper"
For more details and examples on downgrading Angular components to AngularJS components please visit the [Upgrade guide](guide/upgrade#using-angular-components-from-angularjs-code).
@param info contains information about the Component that is being downgraded:
- `component: Type<any>`: The type of the Component that will be downgraded
- `downgradedModule?: string`: The name of the downgraded module (if any) that the component "belongs to", as returned by a call to `downgradeModule()`. It is the module, whose corresponding Angular module will be bootstrapped, when the component needs to be instantiated.
- `propagateDigest?: boolean`: Whether to perform { @link ChangeDetectorRef#detectChanges change detection } on the component on every
[$digest](https://docs.angularjs.org/api/ng/type/$rootScope.Scope#$digest). If set to `false`, change detection will still be performed when any of the component's inputs changes. (Default: true)
@returns a factory function that can be used to register the component in an AngularJS module.
@publicApi
^next export function downgradeComponent(info: {
 component: Type<any>;
 downgradedModule?: string;
 propagateDigest?: boolean;
 /** @deprecated since v4. This parameter is no longer used */
 inputs?: string[];
 /** @deprecated since v4. This parameter is no longer used */
 outputs?: string[];
 /** @deprecated since v4. This parameter is no longer used */
 selectors?: string[];
}): any /* angular.IInjectable */ {
 const directiveFactory: IAnnotatedFunction = function(
 $compile: ICompileService, $injector: IInjectorService, $parse: IParseService): IDirective {
 // When using `downgradeModule()`, we need to handle certain things specially. For example:
 // - We always need to attach the component view to the `ApplicationRef` for it to be dirty-checked.
 // - We need to ensure callbacks to Angular APIs (e.g. change detection) are run inside the Angular zone.
 // NOTE: This is not needed, when using `UpgradeModule`, because `digest()` will be run inside the Angular zone (except if explicitly escaped, in which case we shouldn't force it back in).
 const isNgUpgradeLite = getUpgradeAppType($injector) === UpgradeAppType.Lite;
 const wrapCallback: <T>(cb: () => T) => typeOf cb = isNgUpgradeLite ? cb => cb : cb => () => NgZone.isInAngularZone() ? cb() : ngZone.run(cb);
 let ngZone: NgZone;
 // When downgrading multiple modules, special handling is needed wrt injectors.
 const hasMultipleDowngradedModules = isNgUpgradeLite && (getDowngradedModuleCount($injector) > 1);
 return {
 restrict: 'E',
 terminal: true,
 require: [REQUIRE_INJECTOR, REQUIRE_NG_MODEL],
 link: (scope: IScope, element: IAugmentedJQuery, attrs: IAttributes, required: any[]) => {
 // We might have to compile the contents asynchronously, because this might have been triggered by `UpgradeNg1ComponentAdapterBuilder`, before the Angular templates have been compiled.
 const ngModel: INgModelController = required[1];
 const parentInjector: Injector|Thenable<Injector>|undefined = required[0];
 let moduleInjector: Injector|Thenable<Injector>|undefined = undefined;
 let ranAsync = false;
 if (!parentInjector || hasMultipleDowngradedModules) {
 const downgradedModule = info.downgradedModule || "";
 const lazyModuleRefKey = `${LAZY_MODULE_REF}${downgradedModule}`;
 const attemptedAction = `instantiating component '${getTypeName(info.component)}';`
 validateInjectionKey($injector, downgradedModule, lazyModuleRefKey, attemptedAction);
 const lazyModuleRef = $injector.get(lazyModuleRefKey) as LazyModuleRef;
 moduleInjector = lazyModuleRef.injector || lazyModuleRef.promise as Promise<Injector>;
 }
 // Notes:
 // There are two injectors: `finalModuleInjector` and `finalParentInjector` (they might be the same instance, but that is irrelevant):
 // - `finalModuleInjector` is used to retrieve `ComponentFactoryResolver`, thus it must

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be\n // on the same tree as the `NgModule` that declares this downgraded component.\n // -
`finalParentInjector` is used for all other injection purposes.\n // (Note that Angular knows to only traverse the
component-tree part of that injector,\n // when looking for an injectable and then switch to the module
injector.)\n //\n // There are basically three cases:\n // - If there is no parent component (thus no
`parentInjector`), we bootstrap the downgraded\n // `NgModule` and use its injector as both
`finalModuleInjector` and\n // `finalParentInjector`.\n // - If there is a parent component (and thus a
`parentInjector`) and we are sure that it\n // belongs to the same `NgModule` as this downgraded component
(e.g. because there is only\n // one downgraded module, we use that `parentInjector` as both
`finalModuleInjector` and\n // `finalParentInjector`.\n // - If there is a parent component, but it may belong
to a different `NgModule`, then we\n // use the `parentInjector` as `finalParentInjector` and this downgraded
component's\n // declaring `NgModule`'s injector as `finalModuleInjector`.\n // Note 1: If the
`NgModule` is already bootstrapped, we just get its injector (we don't\n // bootstrap again).\n // Note
2: It is possible that (while there are multiple downgraded modules) this\n // downgraded component and
its parent component both belong to the same NgModule.\n // In that case, we could have used the
`parentInjector` as both\n // `finalModuleInjector` and `finalParentInjector`, but (for simplicity) we are\n
 // treating this case as if they belong to different `NgModule`s. That doesn't\n // really affect
anything, since `parentInjector` has `moduleInjector` as ancestor\n // and trying to resolve
`ComponentFactoryResolver` from either one will return\n // the same instance.\n\n // If there is a
parent component, use its injector as parent injector.\n // If this is a "top-level" Angular component, use the
module injector.\n const finalParentInjector = parentInjector || moduleInjector!;\n // If this is a "top-
level" Angular component or the parent component may belong to a\n // different `NgModule`, use the module
injector for module-specific dependencies.\n // If there is a parent component that belongs to the same
`NgModule`, use its injector.\n const finalModuleInjector = moduleInjector || parentInjector!;\n\n const
doDowngrade = (injector: Injector, moduleInjector: Injector) => {\n // Retrieve `ComponentFactoryResolver`
from the injector tied to the `NgModule` this\n // component belongs to.\n const
componentFactoryResolver: ComponentFactoryResolver =\n
moduleInjector.get(ComponentFactoryResolver);\n const componentFactory: ComponentFactory<any> =\n
componentFactoryResolver.resolveComponentFactory(info.component!);\n\n if (!componentFactory) {\n
throw new Error(`Expecting ComponentFactory for: ${getTypeName(info.component)}`);\n }\n\n
const injectorPromise = new ParentInjectorPromise(element);\n const facade = new
DowngradeComponentAdapter(\n element, attrs, scope, ngModel, injector, $injector, $compile, $parse,\n
componentFactory, wrapCallback);\n\n const projectableNodes = facade.compileContents();\n
facade.createComponent(projectableNodes);\n facade.setupInputs(isNgUpgradeLite, info.propagateDigest);\n
facade.setupOutputs();\n facade.registerCleanup();\n\n
injectorPromise.resolve(facade.getInjector());\n\n if (ranAsync) {\n // If this is run async, it is possible
that it is not run inside a\n // digest and initial input values will not be detected.\n scope.$evalAsync(()
=> {});\n }\n }; \n\n const downgradeFn =\n !isNgUpgradeLite ? doDowngrade : (pInjector:
Injector, mInjector: Injector) => {\n if (!ngZone) {\n ngZone = pInjector.get(NgZone);\n
}\n\n wrapCallback(() => doDowngrade(pInjector, mInjector));\n }; \n\n // NOTE:\n // Not
using `ParentInjectorPromise.all()` (which is inherited from `SyncPromise`), because\n // Closure Compiler (or
some related tool) complains:\n // `TypeError: ...srcdowngrade_component_ParentInjectorPromise.all is not a
function`\n SyncPromise.all([finalParentInjector, finalModuleInjector])\n .then(([pInjector, mInjector])
=> downgradeFn(pInjector, mInjector));\n\n ranAsync = true;\n }\n }; \n\n // bracket-notation because
of closure - see #14441\n directiveFactory['$inject'] = [$COMPILE, $INJECTOR, $PARSE];\n return
directiveFactory;\n}\n\n/**\n * Synchronous promise-like object to wrap parent injectors,\n * to preserve the
synchronous nature of AngularJS's `$compile`.\n * ^\n * class ParentInjectorPromise extends SyncPromise<Injector>
{\n private injectorKey: string = controllerKey(INJECTOR_KEY);\n\n constructor(private element:
IAugmentedJQuery) {\n super();\n\n // Store the promise on the element.\n element.data!(this.injectorKey,

```

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this);
}

resolve(injector: Injector): void {
 // Store the real injector on the element.
 this.element.data!(this.injectorKey, injector);
 // Release the element to prevent memory leaks.
 this.element = null!;
 // Resolve the promise.
 super.resolve(injector);
}

}

"/*
 * @license
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 * found in the LICENSE file at https://angular.io/license
 */

import {Injector} from '@angular/core';
import {IInjectorService} from './angular1';
import {$INJECTOR, INJECTOR_KEY} from './constants';
import {getTypeName, isFunction, validateInjectionKey} from './util';

/**
 * @description
 * A helper function to allow an Angular service to be accessible from AngularJS.
 * Part of the [upgrade/static](api?query=upgrade%2Fstatic) library for hybrid upgrade apps that support AOT compilation.
 * This helper function returns a factory function that provides access to the Angular service identified by the `token` parameter.
 * @usageNotes
 * ### Examples
 * First ensure that the service to be downgraded is provided in an `NgModule` that will be part of the upgrade application. For example, let's assume we have defined `HeroesService`
 *
 * { @example upgrade/static/ts/full/module.ts region="ng2-heroes-service" }
 *
 * and that we have included this in our upgrade app `NgModule`
 *
 * { @example upgrade/static/ts/full/module.ts region="ng2-module" }
 *
 * Now we can register the `downgradeInjectable` factory function for the service on an AngularJS module.
 *
 * { @example upgrade/static/ts/full/module.ts region="downgrade-ng2-heroes-service" }
 *
 * Inside an AngularJS component's controller we can get hold of the downgraded service via the name we gave when downgrading.
 *
 * { @example upgrade/static/ts/full/module.ts region="example-app" }
 *
 * <div class="alert is-important">
 * When using `downgradeModule()`, downgraded injectables will not be available until the Angular module that provides them is instantiated. In order to be safe, you need to ensure that the downgraded injectables are not used anywhere _outside_ the part of the app where it is guaranteed that their module has been instantiated.
 * For example, it is _OK_ to use a downgraded service in an upgraded component that is only used from a downgraded Angular component provided by the same Angular module as the injectable, but it is _not OK_ to use it in an AngularJS component that may be used independently of Angular or use it in a downgraded Angular component from a different module.
 * </div>
 * @param token an `InjectionToken` that identifies a service provided from Angular.
 * @param downgradedModule the name of the downgraded module (if any) that the injectable "belongs to", as returned by a call to `downgradeModule()`. It is the module, whose injector will be used for instantiating the injectable.
 * (This option is only necessary when using `downgradeModule()` to downgrade more than one Angular module.)
 * @returns a [factory function](https://docs.angularjs.org/guide/di) that can be used to register the service on an AngularJS module.
 * @publicApi
 */
export function downgradeInjectable(token: any, downgradedModule: string = "): Function {
 const factory = function($injector: IInjectorService) {
 const injectorKey = `${INJECTOR_KEY}${downgradedModule}`;
 const injectableName = isFunction(token) ? getTypeName(token) : String(token);
 const attemptedAction = `instantiating injectable '${injectableName}'`;
 validateInjectionKey($injector, downgradedModule, injectorKey, attemptedAction);
 try {
 const injector: Injector = $injector.get(injectorKey);
 return injector.get(token);
 } catch (err) {
 throw new Error(`Error while ${attemptedAction}: ${err.message || err}`);
 }
 };
 (factory as any)['$inject'] = [$INJECTOR];
 return factory;
}

"/*
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 * found in the LICENSE file at https://angular.io/license
 */

import {ElementRef, Injector, SimpleChanges} from '@angular/core';
import {DirectiveRequireProperty, element as angularElement, IAugmentedJQuery, ICloneAttachFunction, ICompileService, IController, IControllerService, IDirective, IHttpBackendService, IInjectorService, ILinkFn, IScope, ITemplateCacheService, SingleOrListOrMap} from './angular1';
import {$COMPILE, $CONTROLLER, $HTTP_BACKEND, $INJECTOR, $TEMPLATE_CACHE} from './constants';
import {controllerKey, directiveNormalize, isFunction} from './util';

// Constants
const REQUIRE_PREFIX_RE = /^(\\|\\^)?(\\|\\^)?(\\|\\^)?/;

// Interfaces
export interface IBindingDestination {
 [key: string]: any;
 $onChanges?: (changes: SimpleChanges) => void;
}

export interface IControllerInstance extends IBindingDestination {
 $doCheck?: () => void;
 $onDestroy?: () => void;
 $onInit?: () => void;
}

```

```

$postLink?: () => void;\n}\n\n// Classes\nexport class UpgradeHelper {\n public readonly $injector:
InjectorService;\n public readonly element: Element;\n public readonly $element: IAugmentedJQuery;\n public
readonly directive: IDirective;\n\n private readonly $compile: ICompileService;\n private readonly $controller:
IControllerService;\n\n constructor(\n private injector: Injector, private name: string, elementRef: ElementRef,\n directive?: IDirective) {\n this.$injector = injector.get($INJECTOR);\n this.$compile =
this.$injector.get($COMPILE);\n this.$controller = this.$injector.get($CONTROLLER);\n\n this.element =
elementRef.nativeElement;\n this.$element = angularElement(this.element);\n\n this.directive = directive ||
UpgradeHelper.getDirective(this.$injector, name);\n }\n\n static getDirective($injector: IInjectorService, name:
string): IDirective {\n const directives: IDirective[] = $injector.get(name + 'Directive');\n if (directives.length >
1) {\n throw new Error(`Only support single directive definition for: ${name}`);\n }\n\n const directive =
directives[0];\n\n // AngularJS will transform `link: xyz` to `compile: () => xyz`. So we can only tell there was a\n
// user-defined `compile` if there is no `link`. In other cases, we will just ignore `compile`.\n if (directive.compile
&& !directive.link) notSupported(name, 'compile');\n if (directive.replace) notSupported(name, 'replace');\n if
(directive.terminal) notSupported(name, 'terminal');\n\n return directive;\n }\n\n static getTemplate(\n
$injector: IInjectorService, directive: IDirective, fetchRemoteTemplate = false,\n $element?:
IAugmentedJQuery): string|Promise<string> {\n if (directive.template !== undefined) {\n return
getOrCall<string>(directive.template, $element);\n } else if (directive.templateUrl) {\n const $templateCache =
$injector.get($TEMPLATE_CACHE) as ITemplateCacheService;\n const url =
getOrCall<string>(directive.templateUrl, $element);\n const template = $templateCache.get(url);\n\n if
(template !== undefined) {\n return template;\n } else if (!fetchRemoteTemplate) {\n throw new
Error('loading directive templates asynchronously is not supported');\n }\n\n return new Promise((resolve,
reject) => {\n const $httpBackend = $injector.get($HTTP_BACKEND) as IHttpBackendService;\n
$httpBackend('GET', url, null, (status: number, response: string) => {\n if (status === 200) {\n
resolve($templateCache.put(url, response));\n } else {\n reject(`GET component template from '${url}'
returned '${status}: ${response}'`);\n }\n });\n } else {\n throw new Error(`Directive
'${directive.name}' is not a component, it is missing template.`);\n }\n }\n\n buildController(controllerType:
IController, $scope: IScope) {\n // TODO: Document that we do not pre-assign bindings on the controller
instance.\n // Quoted properties below so that this code can be optimized with Closure Compiler.\n const locals =
{'$scope': $scope, '$element': this.$element};\n const controller = this.$controller(controllerType, locals, null,
this.directive.controllerAs);\n\n this.$element.data!(controllerKey(this.directive.name!), controller);\n\n return
controller;\n }\n\n compileTemplate(template?: string): ILinkFn {\n if (template === undefined) {\n template
= UpgradeHelper.getTemplate(this.$injector, this.directive, false, this.$element) as string;\n }\n\n return
this.compileHtml(template);\n }\n\n onDestroy($scope: IScope, controllerInstance?: any) {\n if
(controllerInstance && isFunction(controllerInstance.$onDestroy)) {\n controllerInstance.$onDestroy();\n }\n
$scope.$destroy();\n\n // Clean the jQuery/jqLite data on the component+child elements.\n // Equivelent to how
jQuery/jqLite invoke `cleanData` on an Element (this.element)\n //
https://github.com/jquery/jquery/blob/e743cbd28553267f955f71ea7248377915613fd9/src/manipulation.js#L223\n
// https://github.com/angular/angular.js/blob/26ddc5f830f902a3d22f4b2aab70d86d4d688c82/src/jqLite.js#L306-L312\n
// `cleanData` will invoke the AngularJS `$destroy` DOM event\n //
https://github.com/angular/angular.js/blob/26ddc5f830f902a3d22f4b2aab70d86d4d688c82/src/Angular.js#L1911-L1924\n
 angularElement.cleanData([this.element]);\n\n angularElement.cleanData(this.element.querySelectorAll('*'));\n }\n\n prepareTransclusion(): ILinkFn|undefined
{\n const transclude = this.directive.transclude;\n const contentChildNodes = this.extractChildNodes();\n const
attachChildrenFn: ILinkFn = (scope, cloneAttachFn) => {\n // Since AngularJS v1.5.8, `cloneAttachFn` will try
to destroy the transclusion scope if\n // `template` is empty. Since the transcluded content comes from Angular,
not AngularJS,\n // there will be no transclusion scope here.\n // Provide a dummy `scope.$destroy()` method
to prevent `cloneAttachFn` from throwing.\n scope = scope || {$destroy: () => undefined};\n return
cloneAttachFn!($template, scope);\n };\n let $template = contentChildNodes;\n\n if (transclude) {\n const

```



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slots = Object.create(null);\n\n if (typeof transclude === 'object') {\n $template = [];\n const slotMap = Object.create(null);\n const filledSlots = Object.create(null);\n // Parse the element selectors.\n Object.keys(transclude).forEach(slotName => {\n let selector = transclude[slotName];\n const optional = selector.charAt(0) === '?';\n selector = optional ? selector.substring(1) : selector;\n slotMap[selector] = slotName;\n slots[slotName] = null; // `null`: Defined but not yet filled.\n filledSlots[slotName] = optional; // Consider optional slots as filled.\n });\n // Add the matching elements into their slot.\n contentChildNodes.forEach(node => {\n const slotName = slotMap[directiveNormalize(node.nodeName.toLowerCase)];\n if (slotName) {\n filledSlots[slotName] = true;\n slots[slotName] = slots[slotName] || [];\n slots[slotName].push(node);\n } else {\n $template.push(node);\n }\n });\n // Check for required slots that were not filled.\n Object.keys(filledSlots).forEach(slotName => {\n if (!filledSlots[slotName]) {\n throw new Error(`Required transclusion slot '${slotName}' on directive: ${this.name}`);\n }\n });\n Object.keys(slots).filter(slotName => slots[slotName]).forEach(slotName => {\n const nodes = slots[slotName];\n slots[slotName] = (scope: IScope, cloneAttach: ICloneAttachFunction) => {\n return cloneAttach!(nodes, scope);\n };\n });\n // Attach `$$slots` to default slot transclude fn.\n attachChildrenFn.$$slots = slots;\n // AngularJS v1.6+ ignores empty or whitespace-only transcluded text nodes. But Angular\n // removes all text content after the first interpolation and updates it later, after\n // evaluating the expressions. This would result in AngularJS failing to recognize text\n // nodes that start with an interpolation as transcluded content and use the fallback\n // content instead.\n // To avoid this issue, we add\n a\n // [zero-width non-joiner character](https://en.wikipedia.org/wiki/Zero-width_non-joiner)\n // to empty text nodes (which can only be a result of Angular removing their initial content).\n // NOTE: Transcluded text content that starts with whitespace followed by an interpolation\n // will still fail to be detected by AngularJS v1.6+\n $template.forEach(node => {\n if (node.nodeType === Node.TEXT_NODE && !node.nodeValue)\n {\n node.nodeValue = "\\u200C";\n }\n });\n return attachChildrenFn;\n }\n\n resolveAndBindRequiredControllers(controllerInstance: IControllerInstance|null) {\n const directiveRequire = this.getDirectiveRequire();\n const requiredControllers = this.resolveRequire(directiveRequire);\n if (controllerInstance && this.directive.bindToController && isMap(directiveRequire)) {\n const requiredControllersMap = requiredControllers as {[key: string]: IControllerInstance};\n Object.keys(requiredControllersMap).forEach(key => {\n controllerInstance[key] = requiredControllersMap[key];\n });\n }\n return requiredControllers;\n }\n\n private compileHtml(html: string): ILinkFn {\n this.element.innerHTML = html;\n return this.$compile(this.element.childNodes);\n }\n\n private extractChildNodes(): Node[] {\n const childNodes: Node[] = [];\n let childNode: Node|null;\n while (childNode = this.element.firstChild) {\n this.element.removeChild(childNode);\n childNodes.push(childNode);\n }\n return childNodes;\n }\n\n private getDirectiveRequire(): DirectiveRequireProperty {\n const require = this.directive.require || (this.directive.controller && this.directive.name);\n if (isMap(require)) {\n Object.keys(require).forEach(key => {\n const value = require[key];\n const match = value.match(REQUIRE_PREFIX_RE);\n const name = value.substring(match[0].length);\n if (!name) {\n require[key] = match[0] + key;\n }\n });\n }\n return require;\n }\n\n private resolveRequire(require: DirectiveRequireProperty, controllerInstance?: any): SingleOrListOrMap<IControllerInstance>|null {\n if (!require) {\n return null;\n } else if (Array.isArray(require)) {\n return require.map(req => this.resolveRequire(req));\n } else if (typeof require === 'object') {\n const value: {[key: string]: IControllerInstance} = {};\n Object.keys(require).forEach(key => {\n value[key] = this.resolveRequire(require[key]);\n });\n return value;\n } else if (typeof require === 'string') {\n const match = require.match(REQUIRE_PREFIX_RE);\n const inheritType = match[1] || match[3];\n const name = require.substring(match[0].length);\n const isOptional = !!match[2];\n const searchParents = !!inheritType;\n const startOnParent = inheritType === '^';\n const ctrlKey = controllerKey(name);\n const elem = startOnParent ? this.$element.parent() : this.$element;\n const value = searchParents ? elem.inheritedData!(ctrlKey) : elem.data!(ctrlKey);\n if (!value && !isOptional) {\n throw new Error(\n
```

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 `Unable to find required '${require}' in upgraded directive '${this.name}');\n }\n\n return value;\n } else
 {\n throw new Error(\n `Unrecognized 'require' syntax on upgraded directive '${this.name}': ${require}`);\n }\n }\n}\n\nfunction getOrCall<T>(property: T|Function, ...args: any[]): T {\n return isFunction(property) ?
 property(...args) : property;\n}\n\n// NOTE: Only works for `typeof T !== 'object'.\nfunction isMap<T>(value:
 SingleOrListOrMap<T>): value is {[key: string]: T} {\n return value && !Array.isArray(value) && typeof value
 === 'object';\n}\n\nfunction notSupported(name: string, feature: string) {\n throw new Error(`Upgraded directive
 '${name}' contains unsupported feature: '${feature}'.`);\n}\n\n"/**\n * @license\n * Copyright Google LLC All
 Rights Reserved.\n * Use of this source code is governed by an MIT-style license that can be\n * found in the
 LICENSE file at https://angular.io/license\n */\n\nimport {Directive, DoCheck, ElementRef, EventEmitter, Inject,
 Injector, OnChanges, OnDestroy, OnInit, SimpleChange, SimpleChanges, Type} from '@angular/core';\n\nimport
 {IAttributes, IDirective, IDirectivePrePost, IInjectorService, ILinkFn, IScope, ITranscludeFunction} from
 './../common/src/angular1';\n\nimport {$SCOPE} from './../common/src/constants';\n\nimport {IBindingDestination,
 IControllerInstance, UpgradeHelper} from './../common/src/upgrade_helper';\n\nimport {isFunction, strictEquals}
 from './../common/src/util';\n\nconst CAMEL_CASE = /[A-Z]/g;\nconst INITIAL_VALUE = {\n
 __UNINITIALIZED__: true\n};\nconst NOT_SUPPORTED: any = 'NOT_SUPPORTED';\n\nexport class
 UpgradeNg1ComponentAdapterBuilder {\n // TODO(issue/24571): remove '!.\n type!: Type<any>;\n inputs:
 string[] = [];\n inputsRename: string[] = [];\n outputs: string[] = [];\n outputsRename: string[] = [];\n
 propertyOutputs: string[] = [];\n checkProperties: string[] = [];\n propertyMap: {[name: string]: string} = {};\n
 directive: IDirective|null = null;\n // TODO(issue/24571): remove '!.\n template!: string;\n\n constructor(public
 name: string) {\n const selector =\n name.replace(CAMEL_CASE, (all: string, next: string) => '-' +
 next.toLowerCase());\n const self = this;\n\n // Note: There is a bug in TS 2.4 that prevents us from\n
 // inlining this into @Directive\n // TODO(tbosch): find or file a bug against TypeScript for this.\n const directive
 = {selector: selector, inputs: this.inputsRename, outputs: this.outputsRename};\n\n @Directive({jit: true,
 ...directive})\n class MyClass extends UpgradeNg1ComponentAdapter implements OnInit, OnChanges,
 DoCheck,\n\n OnDestroy {\n constructor(@Inject($SCOPE) scope: IScope,
 injector: Injector, elementRef: ElementRef) {\n super(\n new UpgradeHelper(injector, name, elementRef,
 self.directive || undefined), scope,\n self.template, self.inputs, self.outputs, self.propertyOutputs,
 self.checkProperties,\n self.propertyMap) as any;\n }\n\n this.type = MyClass;\n }\n\n extractBindings() {\n const btcIsObject = typeof this.directive!.bindToController === 'object';\n if (btcIsObject
 && Object.keys(this.directive!.scope!).length) {\n throw new Error(\n `Binding definitions on scope and
 controller at the same time are not supported.`);\n }\n\n const context = (btcIsObject) ?
 this.directive!.bindToController : this.directive!.scope;\n\n if (typeof context === 'object') {\n
 Object.keys(context).forEach(propName => {\n const definition = context[propName];\n const
 bindingType = definition.charAt(0);\n const bindingOptions = definition.charAt(1);\n const attrName =
 definition.substring(bindingOptions === '?' ? 2 : 1) || propName;\n\n // QUESTION: What about `=*`? Ignore?
 Throw? Support?\n const inputName = `input_${attrName}`;\n const inputNameRename =
 `${inputName}: ${attrName}`;\n const outputName = `output_${attrName}`;\n const outputNameRename
 = `${outputName}: ${attrName}`;\n const outputNameRenameChange = `${outputNameRename}Change`;\n\n switch (bindingType) {\n case '@':\n case '<':\n this.inputs.push(inputName);\n
 this.inputsRename.push(inputNameRename);\n this.propertyMap[inputName] = propName;\n break;\n
 case '=':\n this.inputs.push(inputName);\n this.inputsRename.push(inputNameRename);\n
 this.propertyMap[inputName] = propName;\n\n this.outputs.push(outputName);\n this.outputsRename.push(outputNameRenameChange);\n this.propertyMap[outputName] = propName;\n\n this.checkProperties.push(propName);\n this.propertyOutputs.push(outputName);\n break;\n
 case '&':\n this.outputs.push(outputName);\n this.outputsRename.push(outputNameRename);\n
 this.propertyMap[outputName] = propName;\n break;\n default:\n let json =
 JSON.stringify(context);\n throw new Error(\n `Unexpected mapping '${bindingType}' in '${json}'
 in '${this.name}' directive.`);\n }\n }\n }\n }\n }\n}\n\n/**\n * Upgrade ng1 components into Angular.\n

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*/\n static resolve(\n exportedComponents: {[name: string]: UpgradeNg1ComponentAdapterBuilder},\n $injector: IInjectorService): Promise<string[]> {\n const promises = Object.keys(exportedComponents).map(name => {\n const exportedComponent = exportedComponents[name];\n exportedComponent.directive = UpgradeHelper.getDirective($injector, name);\n exportedComponent.extractBindings();\n\n return Promise\n .resolve(UpgradeHelper.getTemplate($injector, exportedComponent.directive, true))\n .then(template => exportedComponent.template = template);\n });\n\n return Promise.all(promises);\n }\n}\n\n@Directive()\n\nUpgradeNg1ComponentAdapter implements OnInit, OnChanges, DoCheck {\n private controllerInstance: IControllerInstance|null = null;\n destinationObj: IBindingDestination|null = null;\n checkLastValues: any[] = [];\n directive: IDirective;\n element: Element;\n $element: any = null;\n componentScope: IScope;\n\n constructor(\n private helper: UpgradeHelper, scope: IScope, private template: string,\n private inputs: string[], private outputs: string[], private propOuts: string[],\n private checkProperties: string[], private propertyMap: {[key: string]: string}) {\n this.directive = helper.directive;\n this.element = helper.element;\n this.$element = helper.$element;\n this.componentScope = scope.$new(!this.directive.scope);\n\n const controllerType = this.directive.controller;\n\n if (this.directive.bindToController && controllerType) {\n this.controllerInstance = this.helper.buildController(controllerType, this.componentScope);\n this.destinationObj = this.controllerInstance;\n } else {\n this.destinationObj = this.componentScope;\n }\n\n for (let i = 0; i < inputs.length; i++) {\n (this as any)[inputs[i]] = null;\n }\n for (let j = 0; j < outputs.length; j++) {\n const emitter = (this as any)[outputs[j]] = new EventEmitter<any>();\n if (this.propOuts.indexOf(outputs[j]) === -1) {\n this.setComponentProperty(\n outputs[j], (emitter => (value: any) => emitter.emit(value))(emitter));\n }\n }\n for (let k = 0; k < propOuts.length; k++) {\n this.checkLastValues.push(INITIAL_VALUE);\n }\n }\n\n ngOnInit() {\n // Collect contents, insert and compile template\n const attachChildNodes: ILinkFn|undefined = this.helper.prepareTransclusion();\n const linkFn = this.helper.compileTemplate(this.template);\n\n // Instantiate controller (if not already done so)\n const controllerType = this.directive.controller;\n const bindToController = this.directive.bindToController;\n if (controllerType && !bindToController) {\n this.controllerInstance = this.helper.buildController(controllerType, this.componentScope);\n }\n\n // Require other controllers\n const requiredControllers =\n this.helper.resolveAndBindRequiredControllers(this.controllerInstance);\n\n // Hook: $onInit\n if (this.controllerInstance && isFunction(this.controllerInstance.$onInit)) {\n this.controllerInstance.$onInit();\n }\n\n // Linking\n const link = this.directive.link;\n const preLink = typeof link === 'object' && link.pre;\n const postLink = typeof link === 'object' ? link.post : link;\n const attrs: IAttributes = NOT_SUPPORTED;\n const transcludeFn: ITranscludeFunction = NOT_SUPPORTED;\n if (preLink) {\n preLink(this.componentScope, this.$element, attrs, requiredControllers, transcludeFn);\n }\n linkFn(this.componentScope, null!, {parentBoundTranscludeFn: attachChildNodes});\n if (postLink) {\n postLink(this.componentScope, this.$element, attrs, requiredControllers, transcludeFn);\n }\n\n // Hook: $postLink\n if (this.controllerInstance && isFunction(this.controllerInstance.$postLink)) {\n this.controllerInstance.$postLink();\n }\n }\n\n ngOnChanges(changes: SimpleChanges) {\n const ng1Changes: any = {};\n Object.keys(changes).forEach(name => {\n const change: SimpleChange = changes[name];\n this.setComponentProperty(name, change.currentValue);\n ng1Changes[this.propertyMap[name]] = change;\n });\n\n if (isFunction(this.destinationObj!.$onChanges)) {\n this.destinationObj!.$onChanges!(ng1Changes);\n }\n }\n\n ngDoCheck() {\n const destinationObj = this.destinationObj;\n const lastValues = this.checkLastValues;\n const checkProperties = this.checkProperties;\n const propOuts = this.propOuts;\n checkProperties.forEach((propName, i) => {\n const value = destinationObj![propName];\n const last = lastValues[i];\n if (!strictEquals(last, value)) {\n const eventEmitter: EventEmitter<any> = (this as any)[propOuts[i]];\n eventEmitter.emit(lastValues[i] = value);\n }\n });\n\n if (this.controllerInstance && isFunction(this.controllerInstance.$doCheck)) {\n this.controllerInstance.$doCheck();\n }\n }\n\n ngOnDestroy() {\n this.helper.onDestroy(this.componentScope, this.controllerInstance);\n }\n\n setComponentProperty(name: string, value: any) {\n this.destinationObj![this.propertyMap[name]] = value;\n }\n}\n\n"/**\n * @license\n * Copyright Google LLC All Rights Reserved.\n * Use of this source code is

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```

import { Compiler, CompilerOptions, Injector, isDevMode, NgModule, NgModuleRef, NgZone,
 resolveForwardRef, StaticProvider, Testability, Type } from '@angular/core';
import { platformBrowserDynamic } from '@angular/platform-browser-dynamic';
import { bootstrap, element as angularElement,
 IAngularBootstrapConfig, IAugmentedJQuery, IInjectorService, IModule, IProvideService, IRootScopeService,
 ITestabilityService, module_ as angularModule } from '../common/src/angular1';
import { $TESTABILITY, $COMPILE, $INJECTOR, $ROOT_SCOPE, COMPILER_KEY, INJECTOR_KEY, LAZY_MODULE_REF,
 NG_ZONE_KEY, UPGRADE_APP_TYPE_KEY } from '../common/src/constants';
import { downgradeComponent } from '../common/src/downgrade_component';
import { downgradeInjectable } from '../common/src/downgrade_injectable';
import { controllerKey, Deferred, LazyModuleRef, onError, UpgradeAppType } from '../common/src/util';
import { UpgradeNg1ComponentAdapterBuilder } from './upgrade_ng1_adapter';
let upgradeCount: number = 0;
Use `UpgradeAdapter` to allow AngularJS and Angular to coexist in a single application.
The `UpgradeAdapter` allows:
1. creation of Angular component from AngularJS component directive (See [UpgradeAdapter#upgradeNg1Component()])
2. creation of AngularJS directive from Angular component (See [UpgradeAdapter#downgradeNg2Component()])
3. Bootstrapping of a hybrid Angular application which contains both of the frameworks coexisting in a single application.
@usageNotes
Mental Model
When reasoning about how a hybrid application works it is useful to have a mental model which describes what is happening and explains what is happening at the lowest level.
1. There are two independent frameworks running in a single application, each framework treats the other as a black box.
2. Each DOM element on the page is owned exactly by one framework. Whichever framework instantiated the element is the owner. Each framework only updates/interacts with its own DOM elements and ignores others.
3. AngularJS directives always execute inside AngularJS framework codebase regardless of where they are instantiated.
4. Angular components always execute inside Angular framework codebase regardless of where they are instantiated.
5. An AngularJS component can be upgraded to an Angular component. This creates an Angular directive, which bootstraps the AngularJS component directive in that location.
6. An Angular component can be downgraded to an AngularJS component directive. This creates an AngularJS directive, which bootstraps the Angular component in that location.
7. Whenever an adapter component is instantiated the host element is owned by the framework doing the instantiation. The other framework then instantiates and owns the view for that component. This implies that component bindings will always follow the semantics of the instantiation framework. The syntax is always that of Angular syntax.
8. AngularJS is always bootstrapped first and owns the bottom most view.
9. The new application is running in Angular zone, and therefore it no longer needs calls to `$.apply()`.
Example
```
const adapter = new UpgradeAdapter(forwardRef(() => MyNg2Module), myCompilerOptions);
const module = angular.module('myExample', []);
module.directive('ng2Comp', adapter.downgradeNg2Component(Ng2Component));
module.directive('ng1Hello', function() {
  return {
    scope: { title: '=' },
    template: 'ng1[Hello {{title}}](<span ng-transclude></span>)'
  };
});
@Component({
  selector: 'ng2-comp',
  inputs: ['name'],
  template: 'ng2[<ng1-hello [title]="name">transclude</ng1-hello>(<ng-content></ng-content>)',
  directives: []
})
class Ng2Component {
}
@NgModule({
  declarations: [Ng2Component, adapter.upgradeNg1Component('ng1Hello')],
  imports: [BrowserModule]
})
class MyNg2Module {
}
document.body.innerHTML = '<ng2-comp name="World">project</ng2-comp>';
adapter.bootstrap(document.body, ['myExample']).ready(function() {
  expect(document.body.textContent).toEqual('ng2[ng1[Hello World!](transclude)](project)');
});
```
@deprecated Deprecated since v5. Use `upgrade/static` instead, which also supports [Ahead-of-Time compilation](guide/aot-compiler).
@publicApi
export class UpgradeAdapter {
 private idPrefix: string = `NG2_UPGRADE_${upgradeCount++}`;
 private downgradedComponents: Type<any>[] = [];
 /** An internal map of ng1 components which need to up upgraded to ng2.
 We can't upgrade until injector

```

is instantiated and we can retrieve the component metadata.

- \* For this reason we keep a list of components to upgrade until ng1 injector is bootstrapped.

```

 * @internal
 * private ng1ComponentsToBeUpgraded:
 {[name: string]: UpgradeNg1ComponentAdapterBuilder} = {};
 * private upgradedProviders: StaticProvider[] =
 [];
 // TODO(issue/24571): remove '!'.
 * private ngZone!: NgZone;
 // TODO(issue/24571): remove '!'.
 * private ng1Module!: IModule;
 * private moduleRef: NgModuleRef<any>|null = null;
 // TODO(issue/24571):
 remove '!'.
 * private ng2BootstrapDeferred!: Deferred<IInjectorService>;
 * constructor(private ng2AppModule:
 Type<any>, private compilerOptions?: CompilerOptions) {
 if (!ng2AppModule) {
 throw new Error(
 'UpgradeAdapter cannot be instantiated without an NgModule of the Angular app.');
 }
 }
 /**
 * Allows
 Angular Component to be used from AngularJS.
 * Use `downgradeNg2Component` to create an AngularJS
 Directive Definition Factory from
 * Angular Component. The adapter will bootstrap Angular component from
 within the
 * AngularJS template.
 * @usageNotes
 * ### Mental Model
 * 1. The component is
 instantiated by being listed in AngularJS template. This means that the
 * host element is controlled by
 AngularJS, but the component's view will be controlled by
 * Angular.
 * 2. Even though the component is
 instantiated in AngularJS, it will be using Angular
 * syntax. This has to be done, this way because we must
 follow Angular components do not
 * declare how the attributes should be interpreted.
 * 3. `ng-model` is
 controlled by AngularJS and communicates with the downgraded Angular component
 * by way of the
 `ControlValueAccessor` interface from @angular/forms. Only components that
 * implement this interface are
 eligible.
 * ### Supported Features
 * - Bindings:
 * - Attribute: `<comp name="World">`
 * - Interpolation: `<comp greeting="Hello {{name}}!">`
 * - Expression: `<comp [name]="username">`
 * - Event: `<comp (close)="doSomething()">`
 * - ng-model: `<comp ng-model="name">`
 * - Content
 projection: yes
 * ### Example
 * ```
 * const adapter = new UpgradeAdapter(forwardRef(() =>
 MyNg2Module));
 * const module = angular.module('myExample', []);
 * module.directive('greet',
 adapter.downgradeNg2Component(Greeter));
 * @Component({
 * selector: 'greet',
 * template:
 '{{salutation}} {{name}}! <ng-content></ng-content>'
 * })
 * class Greeter {
 * @Input() salutation:
 string;
 * @Input() name: string;
 * }
 * @NgModule({
 * declarations: [Greeter],
 * imports:
 [BrowserModule]
 * })
 * class MyNg2Module {}
 * document.body.innerHTML = `
 ng1
 template: <greet salutation="Hello" [name]="world">text</greet>`;
 * adapter.bootstrap(document.body,
 ['myExample']).ready(function() {
 * expect(document.body.textContent).toEqual(`
 ng1 template: Hello world! -
 text`);
 * });
 * ```
 * \n
 * downgradeNg2Component(component: Type<any>): Function {
 this.downgradedComponents.push(component);
 * return downgradeComponent({component});
 * }
 /**
 * Allows AngularJS Component to be used from Angular.
 * Use `upgradeNg1Component` to create an
 Angular component from AngularJS Component
 * directive. The adapter will bootstrap AngularJS component
 from within the Angular
 * template.
 * @usageNotes
 * ### Mental Model
 * 1. The
 component is instantiated by being listed in Angular template. This means that the
 * host element is controlled
 by Angular, but the component's view will be controlled by
 * AngularJS.
 * ### Supported Features
 * - Bindings:
 * - Attribute: `<comp name="World">`
 * - Interpolation: `<comp greeting="Hello
 {{name}}!">`
 * - Expression: `<comp [name]="username">`
 * - Event: `<comp
 (close)="doSomething()">`
 * - Transclusion: yes
 * - Only some of the features of
 * [Directive
 Definition Object](https://docs.angularjs.org/api/ng/service/$compile) are
 * supported:
 * - `compile`: not
 supported because the host element is owned by Angular, which does
 * not allow modifying DOM structure
 during compilation.
 * - `controller`: supported. (NOTE: injection of `$attrs` and `$transclude` is not
 supported.)
 * - `controllerAs`: supported.
 * - `bindToController`: supported.
 * - `link`: supported.
 (NOTE: only pre-link function is supported.)
 * - `name`: supported.
 * - `priority`: ignored.
 * -
 `replace`: not supported.
 * - `require`: supported.
 * - `restrict`: must be set to 'E'.
 * - `scope`:
 supported.
 * - `template`: supported.
 * - `templateUrl`: supported.
 * - `terminal`: ignored.
 * -
 `transclude`: supported.
 * ### Example
 * ```
 * const adapter = new
 UpgradeAdapter(forwardRef(() => MyNg2Module));
 * const module = angular.module('myExample', []);
 * module.directive('greet', function() {
 * return {
 * scope: {salutation: '=', name: '='},
 * template:

```

```

'{{salutation}} {{name}}! - \n * }; \n * }); \n * \n * module.directive('ng2',
adapter.downgradeNg2Component(Ng2Component)); \n * \n * @Component({ \n * selector: 'ng2', \n *
template: 'ng2 template: <greet salutation="Hello" [name]="world">text</greet>\n * }) \n * class
Ng2Component { \n * } \n * \n * @NgModule({ \n * declarations: [Ng2Component,
adapter.upgradeNg1Component('greet')], \n * imports: [BrowserModule] \n * }) \n * class MyNg2Module { \n
*\n * document.body.innerHTML = '<ng2></ng2>'; \n * \n * adapter.bootstrap(document.body,
['myExample']).ready(function() { \n * expect(document.body.textContent).toEqual("\n2 template: Hello world! -
text"); \n * }); \n * ``\n * \n * ^\n * upgradeNg1Component(name: string): Type<any> { \n * if
((<any>this.ng1ComponentsToBeUpgraded).hasOwnProperty(name)) { \n * return
this.ng1ComponentsToBeUpgraded[name].type; \n * } else { \n * return (this.ng1ComponentsToBeUpgraded[name]
= new UpgradeNg1ComponentAdapterBuilder(name)).type; \n * } \n * } \n * \n * /** \n * Registers the adapter's
AngularJS upgrade module for unit testing in AngularJS. \n * Use this instead of `angular.mock.module()` to load
the upgrade module into \n * the AngularJS testing injector. \n * \n * @usageNotes \n * ### Example \n * \n *
`` \n * const upgradeAdapter = new UpgradeAdapter(MyNg2Module); \n * \n * // configure the adapter with
upgrade/downgrade components and services \n * upgradeAdapter.downgradeNg2Component(MyComponent); \n
*\n * let upgradeAdapterRef: UpgradeAdapterRef; \n * let $compile, $rootScope; \n * \n * // We must register
the adapter before any calls to `inject()` \n * beforeEach(() => { \n * upgradeAdapterRef =
upgradeAdapter.registerForNg1Tests(['heroApp']); \n * }); \n * \n * beforeEach(inject((_ $compile_,
_ $rootScope_) => { \n * $compile = _ $compile_; \n * $rootScope = _ $rootScope_; \n * })); \n * \n * it("says
hello", (done) => { \n * upgradeAdapterRef.ready() => { \n * const element = $compile("<my-
component></my-component>")(rootScope); \n * $rootScope.$apply(); \n *
expect(element.html()).toContain("Hello World"); \n * done(); \n * } \n * }); \n * \n * `` \n * \n *
@param modules any AngularJS modules that the upgrade module should depend upon \n * @returns an
`UpgradeAdapterRef`, which lets you register a `ready()` callback to \n * run assertions once the Angular
components are ready to test through AngularJS. \n * \n * ^ \n * registerForNg1Tests(modules?: string[]):
UpgradeAdapterRef { \n * const windowNgMock = (window as any)['angular'].mock; \n * if (!windowNgMock ||
!windowNgMock.module) { \n * throw new Error('Failed to find `angular.mock.module`.'); \n * } \n
*\n * this.declareNg1Module(modules); \n * windowNgMock.module(this.ng1Module.name); \n * const upgrade = new
UpgradeAdapterRef(); \n * this.ng2BootstrapDeferred.promise.then((ng1Injector) => { \n
* (<any>upgrade)._bootstrapDone(this.moduleRef, ng1Injector); \n * }, onError); \n * return upgrade; \n * } \n * \n *
/** \n * Bootstrap a hybrid AngularJS / Angular application. \n * \n * This `bootstrap` method is a direct replacement
(takes same arguments) for AngularJS \n *
[`bootstrap`](https://docs.angularjs.org/api/ng/function/angular.bootstrap) method. Unlike \n * AngularJS, this
bootstrap is asynchronous. \n * \n * @usageNotes \n * ### Example \n * \n * `` \n * const adapter = new
UpgradeAdapter(MyNg2Module); \n * const module = angular.module('myExample', []); \n *
module.directive('ng2', adapter.downgradeNg2Component(Ng2)); \n * \n * module.directive('ng1', function() { \n
*\n * return { \n * scope: { title: '=' }, \n * template: 'ng1[Hello {{title}}]()\n *
}; \n * }); \n * \n * \n * @Component({ \n * selector: 'ng2', \n * inputs: ['name'], \n * template: 'ng2[<ng1
[title]="name">transclude</ng1>(<ng-content></ng-content>)\n *] \n * } \n * class Ng2 { \n * } \n * \n *
@NgModule({ \n * declarations: [Ng2, adapter.upgradeNg1Component('ng1')], \n * imports:
[BrowserModule] \n * }) \n * class MyNg2Module { \n * \n * document.body.innerHTML = '<ng2
name="World">project</ng2>'; \n * \n * adapter.bootstrap(document.body, ['myExample']).ready(function() { \n
*\n * expect(document.body.textContent).toEqual(\n * "\n2[ng1[Hello World!](transclude)](project)"); \n *
}); \n * `` \n * \n * ^ \n * bootstrap(element: Element, modules?: any[], config?: IAngularBootstrapConfig): \n
UpgradeAdapterRef { \n * this.declareNg1Module(modules); \n * \n * const upgrade = new UpgradeAdapterRef(); \n *
// Make sure resumeBootstrap() only exists if the current bootstrap is deferred \n * const windowAngular = (window
as any /** TODO #???? */)['angular']; \n * windowAngular.resumeBootstrap = undefined; \n * \n * this.ngZone.run(()
=> { \n * bootstrap(element, [this.ng1Module.name], config!); \n * }); \n * const ng1BootstrapPromise = new

```

```

Promise((resolve) => {\n if (windowAngular.resumeBootstrap) {\n const originalResumeBootstrap: () =>
void = windowAngular.resumeBootstrap;\n windowAngular.resumeBootstrap = function() {\n
windowAngular.resumeBootstrap = originalResumeBootstrap;\n const r =
windowAngular.resumeBootstrap.apply(this, arguments);\n resolve();\n return r;\n }; \n } else {\n
 resolve();\n }\n});\n\n Promise.all([this.ng2BootstrapDeferred.promise,
ng1BootstrapPromise]).then(([ng1Injector]) => {\n
angularElement(element).data!(controllerKey(INJECTOR_KEY), this.moduleRef!.injector);\n
this.moduleRef!.injector.get<NgZone>(NgZone).run(() => {\n
(<any>upgrade)._bootstrapDone(this.moduleRef, ng1Injector);\n });\n }, onError);\n return upgrade;\n }\n\n
/**\n * Allows AngularJS service to be accessible from Angular.\n * @usageNotes\n * ### Example\n *
*\n * class Login { ... }\n * class Server { ... }\n * @Injectable()\n * class Example {\n *
constructor(@Inject('server') server, login: Login) {\n * ... \n * }\n * }\n * const module =
angular.module('myExample', []);\n * module.service('server', Server);\n * module.service('login', Login);\n *
*\n * const adapter = new UpgradeAdapter(MyNg2Module);\n * adapter.upgradeNg1Provider('server');\n *
adapter.upgradeNg1Provider('login', {asToken: Login});\n * adapter.bootstrap(document.body,
['myExample']).ready((ref) => {\n * const example: Example = ref.ng2Injector.get(Example);\n * });\n *
*\n *
*\n * ^\n upgradeNg1Provider(name: string, options?: {asToken: any}) {\n const token = options &&
options.asToken || name;\n this.upgradedProviders.push({\n provide: token,\n useFactory: ($injector:
InjectorService) => $injector.get(name),\n deps: [$INJECTOR]\n });\n }\n\n /**\n * Allows Angular service
to be accessible from AngularJS.\n * @usageNotes\n * ### Example\n *
*\n * class Example {\n *
}\n *
*\n * const adapter = new UpgradeAdapter(MyNg2Module);\n *
*\n * const module =
angular.module('myExample', []);\n * module.factory('example', adapter.downgradeNg2Provider(Example));\n
*\n * adapter.bootstrap(document.body, ['myExample']).ready((ref) => {\n * const example: Example =
ref.ng1Injector.get('example');\n * });\n *
*\n *
*\n * ^\n downgradeNg2Provider(token: any): Function {\n
return downgradeInjectable(token);\n }\n\n /**\n * Declare the AngularJS upgrade module for this adapter
without bootstrapping the whole\n * hybrid application.\n * @param modules The AngularJS modules that this upgrade
module should depend upon.\n * @returns The AngularJS upgrade module that is declared by this method\n *
*\n * @usageNotes\n * ### Example\n *
*\n * const upgradeAdapter = new
UpgradeAdapter(MyNg2Module);\n * upgradeAdapter.declareNg1Module(['heroApp']);\n *
*\n * ^\n private
declareNg1Module(modules: string[] = []): IModule {\n const delayApplyExps: Function[] = [];\n let
original$applyFn: Function;\n let rootScopePrototype: any;\n let rootScope: IRootScopeService;\n const
upgradeAdapter = this;\n const ng1Module = this.ng1Module = angularModule(this.idPrefix, modules);\n const
platformRef = platformBrowserDynamic();\n\n this.ngZone = new NgZone({enableLongStackTrace:
Zone.hasOwnProperty('longStackTraceZoneSpec')});\n this.ng2BootstrapDeferred = new Deferred();\n
ng1Module.constant(UPGRADE_APP_TYPE_KEY, UpgradeAppType.Dynamic)\n
.factory(INJECTOR_KEY, () => this.moduleRef!.injector.get(Injector))\n .factory(\n
LAZY_MODULE_REF, [INJECTOR_KEY, (injector: Injector) => ({injector} as LazyModuleRef)])\n
.constant(NG_ZONE_KEY, this.ngZone)\n .factory(COMPILER_KEY, () =>
this.moduleRef!.injector.get(Compiler))\n .config([\n '$provide', '$injector',\n (provide:
IProvideService, ng1Injector: IInjectorService) => {\n provide.decorator($ROOT_SCOPE, [\n
'$delegate',\n function(rootScopeDelegate: IRootScopeService) {\n // Capture the root apply so that
we can delay first call to $apply until we\n // bootstrap Angular and then we replay and restore the
$apply.\n rootScopePrototype = rootScopeDelegate.constructor.prototype;\n if
(rootScopePrototype.hasOwnProperty('$apply')) {\n original$applyFn = rootScopePrototype.$apply;\n
 rootScopePrototype.$apply = (exp: any) => delayApplyExps.push(exp);\n } else {\n throw
new Error('Failed to find `'$apply`' on `'$rootScope`!');\n }\n return rootScope =
rootScopeDelegate;\n }\n]);\n if (ng1Injector.has($$TESTABILITY)) {\n

```





```

InjectorService) {\n this.ng2ModuleRef = ngModuleRef;\n this.ng2Injector = ngModuleRef.injector;\n this.ng1Injector = ng1Injector;\n this.ng1RootScope = ng1Injector.get($ROOT_SCOPE);\n this._readyFn &&\n this._readyFn(this);\n }\n\n /**\n * Register a callback function which is notified upon successful hybrid\n * AngularJS / Angular\n * application has been bootstrapped.\n *\n * The `ready` callback function is invoked\n * inside the Angular zone, therefore it does not\n * require a call to `$apply()`. \n *\n * public ready(fn:\n * (upgradeAdapterRef: UpgradeAdapterRef) => void) {\n * this._readyFn = fn;\n * }\n\n /**\n * Dispose of running\n * hybrid AngularJS / Angular application.\n *\n * public dispose() {\n * this.ng1Injector!.get($ROOT_SCOPE).$destroy();\n * this.ng2ModuleRef!.destroy();\n * }\n\n",/**\n * @license\n * Copyright Google LLC All Rights Reserved.\n *\n * Use of this source code is governed by an MIT-style license\n * that can be\n * found in the LICENSE file at https://angular.io/license\n *\n\n /**\n * @module\n * @description\n * Entry point for all public APIs of this package. allowing\n * Angular 1 and Angular 2+ to run side by side in the\n * same application.\n *\n * export { VERSION } from './src/common/src/version';\n * export { UpgradeAdapter,\n * UpgradeAdapterRef } from './src/dynamic/src/upgrade_adapter';\n\n// This file only re-exports content of the `src`\n// folder. Keep it that way.\n",/**\n * @license\n * Copyright Google LLC All Rights Reserved.\n *\n * Use of this\n * source code is governed by an MIT-style license that can be\n * found in the LICENSE file at\n * https://angular.io/license\n *\n\n// This file is not used to build this module. It is only used during editing\n// by the\n// TypeScript language service and during build for verification. `ngc`\n// replaces this file with production index.ts\n// when it rewrites private symbol\n// names.\n\nexport * from './public_api';\n",/**\n * Generated bundle index. Do\n * not edit.\n *\n * export * from\n * './index';\n\n", "names": ["Version", "Injector", "ChangeDetectorRef", "Testability", "TestabilityRegistry", "ApplicationR\n ef", "SimpleChange", "NgZone", "ComponentFactoryResolver", "angularElement", "INITIAL_VALUE", "Directive", "I\n nject", "ElementRef", "EventEmitter", "element", "angularModule", "platformBrowserDynamic", "Compiler", "resolveF\n orwardRef", "NgModule", "isDevMode"], "mappings": ";;;;;;;;;;IAAA;;;;;;;;;IAGBA;;;QAGa,OAAO,GAAG,IAAIA,Y\n AAO,CAAC,mBAAMb;;ICnBtD;;;;;;;;;;IACa;IAEA,IAAI,aAAa,GAAG,UAAS,CAAC,EAAE,CAAC;QAC7B,a\n AAa,GAAG,MAAM,CAAC,cAAc;aAChC,EAAE,SAAS,EAAE,EAAE,EAAE,YAAY,KAAK,IAAI,UAAU,CAAC\n ,EAAE,CAAC,IAAI,CAAC,CAAC,SAAS,GAAG,CAAC,CAAC,EAAE,CAAC;YAC5E,UAAU,CAAC,EAAE,CA\n AC,IAAI,KAAK,IAAI,CAAC,IAAI,CAAC;gBAAE,IAAI,CAAC,CAAC,cAAc,CAAC,CAAC,CAAC;oBAAE,CA\n AC,CAAC,CAAC,CAAC,GAAG,CAAC,CAAC,CAAC,CAAC,CAAC,EAAE,CAAC;QAC/E,OAAO,aAAa,CAAC\n ,CAAC,EAAE,CAAC,CAAC,CAAC;IAC/B,CAAC,CAAC;aAEc,SAAS,CAAC,CAAC,EAAE,CAAC;QAC1B,aA\n Aa,CAAC,CAAC,EAAE,CAAC,CAAC,CAAC;QACpB,SAAS,EAAE,KAAK,IAAI,CAAC,WAAW,GAAG,CAAC\n ,CAAC,EAAE;QACvC,CAAC,CAAC,SAAS,GAAG,CAAC,KAAK,IAAI,GAAG,MAAM,CAAC,MAAM,CAAC,\n CAAC,CAAC,IAAI,EAAE,CAAC,SAAS,GAAG,CAAC,CAAC,SAAS,EAAE,IAAI,EAAE,EAAE,CAAC,CAAC;I\n ACzF,CAAC;IAEM,IAAI,QAAQ,GAAG;QACIB,QAAQ,GAAG,MAAM,CAAC,MAAM,IAAI,SAAS,QAAQ,CA\n AC,CAAC;YAC3C,KAAK,IAAI,CAAC,EAAE,CAAC,GAAG,CAAC,EAAE,CAAC,GAAG,SAAS,CAAC,MAA\n M,EAAE,CAAC,GAAG,CAAC,EAAE,CAAC,EAAE,EAAE;gBACjD,CAAC,GAAG,SAAS,CAAC,CAAC,CAAC\n ,CAAC;gBACjB,KAAK,IAAI,CAAC,IAAI,CAAC;oBAAE,IAAI,MAAM,CAAC,SAAS,CAAC,cAAc,CAAC,IAA\n I,CAAC,CAAC,EAAE,CAAC,CAAC;wBAAE,CAAC,CAAC,CAAC,CAAC,GAAG,CAAC,CAAC,CAAC,CAAC,\n CAAC;aAChF;YACD,OAAO,CAAC,CAAC;SACZ,CAAA;QACD,OAAO,QAAQ,CAAC,KAAK,CAAC,IAAI,EA\n AE,SAAS,CAAC,CAAC;IAC3C,CAAC,CAAA;aAEe,MAAM,CAAC,CAAC,EAAE,CAAC;QACvB,IAAI,CAAC,\n GAAG,EAAE,CAAC;QACX,KAAK,IAAI,CAAC,IAAI,CAAC;YAAE,IAAI,MAAM,CAAC,SAAS,CAAC,cAAc,\n CAAC,IAAI,CAAC,CAAC,EAAE,CAAC,CAAC,IAAI,CAAC,CAAC,OAAO,CAAC,CAAC,CAAC,GAAG,CAA\n C;gBAC/E,CAAC,CAAC,CAAC,CAAC,GAAG,CAAC,CAAC,CAAC,CAAC,CAAC;QACbB,IAAI,CAAC,IAAI,I\n AAI,IAAI,OAAO,MAAM,CAAC,qBAAqB,KAAK,UAAU;YAC/D,KAAK,IAAI,CAAC,GAAG,CAAC,EAAE,CA\n AC,GAAG,MAAM,CAAC,qBAAqB,CAAC,CAAC,CAAC,EAAE,CAAC,GAAG,CAAC,CAAC,MAAM,EAAE,C\n AAC,EAAE,EAAE;gBACpE,IAAI,CAAC,CAAC,OAAO,CAAC,CAAC,CAAC,CAAC,CAAC,CAAC,GAAG,CA\n AC,IAAI,MAAM,CAAC,SAAS,CAAC,oBAAoB,CAAC,IAAI,CAAC,CAAC,EAAE,CAAC,CAAC,CAAC,\n CAAC;oBAC1E,CAAC,CAAC,CAAC,CAAC,CAAC,CAAC,GAAG,CAAC,CAAC,CAAC,CAAC,CAAC,\n CAAC,CAAC,CAAC;aAcZB;QACL,OAAO,CAAC,CAAC;IACb,CAAC;aAEe,UAAU,CAAC,UAAU,EAAE,MA

```

AM,EAAE,GAAG,EAAE,IAAI;QACpD,IAAI,CAAC,GAAG,SAAS,CAAC,MAAM,EAAE,CAAC,GAAG,CAAC,  
GAAG,CAAC,GAAG,MAAM,GAAG,IAAI,KAAK,IAAI,GAAG,IAAI,GAAG,MAAM,CAAC,wBAAwB,CAAC,  
MAAM,EAAE,GAAG,CAAC,GAAG,IAAI,EAAE,CAAC,CAAC;QAC7H,IAAI,OAAO,OAAO,KAAK,QAAQ,IA  
AI,OAAO,OAAO,CAAC,QAAQ,KAAK,UAAU;YAAE,CAAC,GAAG,OAAO,CAAC,QAAQ,CAAC,UAAU,EAA  
E,MAAM,EAAE,GAAG,EAAE,IAAI,CAAC,CAAC;;YAC1H,KAAK,IAAI,CAAC,GAAG,UAAU,CAAC,MAAM  
,GAAG,CAAC,EAAE,CAAC,IAAI,CAAC,EAAE,CAAC,EAAE;gBAAE,IAAI,CAAC,GAAG,UAAU,CAAC,CA  
AC,CAAC;oBAAE,CAAC,GAAG,CAAC,CAAC,GAAG,CAAC,GAAG,CAAC,CAAC,CAAC,CAAC,GAAG,CA  
AC,GAAG,CAAC,GAAG,CAAC,CAAC,MAAM,EAAE,GAAG,EAAE,CAAC,CAAC,GAAG,CAAC,CAAC,MA  
AM,EAAE,GAAG,CAAC,KAAK,CAAC,CAAC;QACIJ,OAAO,CAAC,GAAG,CAAC,IAAI,CAAC,IAAI,MAAM,  
CAAC,cAAc,CAAC,MAAM,EAAE,GAAG,EAAE,CAAC,CAAC,EAAE,CAAC,CAAC;IACIE,CAAC;aAEe,OAA  
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GAAG,EAAE,UAAU,CAAC,CAAC,EAAE,CAAA;IACzE,CAAC;aAEe,UAAU,CAAC,WAAW,EAAE,aAAa;QA  
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AE;gBAC3E,IAAI,CAAC,kBAaKB,CAAC,QAAQ,EAAE,CAAC;aACpC;SACF;QAED,gDAAW,GAAX;YACE,I  
AAI,CAAC,MAAM,CAAC,SAAS,CAAC,IAAI,CAAC,cAAc,EAAE,IAAI,CAAC,kBAaKB,CAAC,CAAC;SACrE  
;QAED,yDAAoB,GAAPB,UAAqB,IAAY,EAAE,KAAU;YAC3C,IAAI,CAAC,cAAe,CAAC,IAAI,CAAC,WAAW  
,CAAC,IAAI,CAAC,CAAC,GAAG,KAAK,CAAC;SACtD;;;gBA5HFC,cAAS;;;gBA7HwC,aAAa;;;;ICO/D,I  
AAI,YAAY,GAAW,CAAC,CAAC;IAE7B;;;;QAuGE,wBA  
AoB,YAAuB,EAAU,eAAiC;YAAIE,iBAAY,GAAZ,YAAY,CAAW;YAAU,oBAAe,GAaf,eAAe,CAAKB;YApB9  
E,aAAQ,GAAW,iBAAe,YAAY,EAAE,MAAG,CAAC;YACpD,yBAAoB,GAAGB,EAAE,CAAC;YASvC,8B  
AAyB,GAAWD,EAAE,CAAC;YACpF,sBAAiB,GAAGB,EAAE,CAAC;YAKzC,cAAS,GAA0B,IAAI,CAAC;YAK  
9C,IAAI,CAAC,YAAY,EAAE;gBACjB,MAAM,IAAI,KAAK,CACX,+EAA+E,CAAC,CAAC;aACtF;SACF;YAC  
;QA8DD,8CAAqB,GAARb,UAAaB,SAAoB;YACxC,IAAI,CAAC,oBAAoB,CA  
AC,IAAI,CAAC,SAAS,CAAC,CAAC;YAE1C,OAAO,kBAaKB,CAAC,EAAC,SAAS,WAAA,EAAC,CAAC,CA  
AC;SACxC;QA9FD,4CAAmB,GAAnB,UAAoB,IAAY;YAC  
9B,IAAU,IAAI,CAAC,yBAA0B,CAAC,cAAc,CAAC,IAAI,CAAC,EAAE;gBAC9D,OAAO,IAAI,CAAC,yBAAy  
B,CAAC,IAAI,CAAC,CAAC,IAAI,CAAC;aACID;iBAAM;gBACL,OAAO,CAAC,IAAI,CAAC,yBAAyB,CAAC,  
IAAI,CAAC,GAAG,IAAI,iCAAiC,CAAC,IAAI,CAAC;qBACrF,IAAI,CAAC;aACX;SACF;QA4CD,4CAAmB,GAAnB,UAAoB,OAaKB;YAAiC,iBAYC;YAXC,IAAM,YAAY,GAAL,MAAc,CAAC,S  
AAS,CAAC,CAAC,IAAI,CAAC;YACrD,IAAI,CAAC,YAAY,IAAI,CAAC,YAAY,CAAC,MAAM,EAAE;gBACz



C,CAAC;yCAC/D;qCACF,CAAC,CAAC;iCACJ,CAAC;gCAEF,mBAAmB,CAAC,UAAU,GAAG,aAAa,CAAC;gCAC/C,OAAO,mBAAmB,CAAC;6BAC5B;yBACF,CAAC,CAAC;qBACJ;iBACF;aACF,CAAC,CAAC;YAEP,SAAS,CAAC,GAAG,CAAC;gBACZ,WAAW,EAAE,YAAy;gBACzB,UAAU,WAA6B,EAAE,SAA4B;oBAC1D,iCAAI,CAAC,OAAO,CAAC,KAAI,CAAC,yBAAYB,EAAE,WAAW,CAAC;yBACjF,IAAI,CAAC;;;wBAIJ,IAAM,QAAQ,GAAG;4BACf,SAAS,EAAE;gCACT,EAAC,OAAO,EAAE,SAAS,EAAE,UAAU,EAAE,cAAM,OAAA,WAAW,GAAA,EAAC;gCACnD,EAAC,OAAO,EAAE,QAAQ,EAAE,UAAU,EAAE,cAAM,OAAA,WAAW,CAAC,GAAG,CAAC,QAAQ,CAAC,GAAA,EAAC;gCACHE,KAAI,CAAC,iBAAiB;6BACvB;4BACD,OAAO,EAAE,CAACgB,sBAAiB,CAAC,KAAI,CAAC,YAAy,CAAC,CAAC;4BAC/C,eAAe,EAAE,KAAI,CAAC,oBAAoB;yBAC3C,CAAC;;;wBAGF;4BAEE;6BAAgB;4BACHb,8CAAA,GAAb,eAAkB;;;oCAHnBC,aAAQ,yBAAE,GAAG,EAAE,IAAI,IAAK,QAAQ;;;wBAKjC,WAAW;6BACN,eAAe,CACZ,sBAAsB,EAAE,CAAC,KAAI,CAAC,eAAgB,EA AE,EAAC,MAAM,EAAE,KAAI,CAAC,MAAM,EAAC,CAAC,CAAC;6BAC1E,IAAI,CAAC,UAAU,GAAqB;4BAC1B,KAAI,CAAC,SAAS,GAAG,GAAG,CAAC;4BACrB,KAAI,CAAC,MAAM,CAAC,GAAG,CAAC;gCACd,I AAI,kBAaKB,EAAE;oCACtB,kBAaKB,CAAC,MAAM,GAAG,gBAAgB,CAAC;oCAC7C,OAAO,cAAc,CAAC,MAAM,EAAE;wCAC5B,SAAS,CAAC,MAAM,CAAC,cAAc,CAAC,KAAK,EAAE,CAAC,CAAC;qCAC1C;oCA CD,kBAaKB,GAAG,IAAI,CAAC;iCAC3B;6BACF,CAAC,CAAC;yBACJ,CAAC;6BACD,IAAI,CAAC,cAAM,O AAA,KAAI,CAAC,oBAAoB,CAAC,OAAO,CAAC,WAAW,CAAC,GAAA,EAAE,OAAO,CAAC;6BACnE,IAAI, CAAC;4BACJ,IAAI,YAAy,GAAG,KAAI,CAAC,MAAM,CAAC,gBAAgB,CAAC,SAAS,CAAC;gCACxD,IAAI, EAAE;oCACJ,IAAI,SAAS,CAAC,OAAO,EAAE;wCACrB,IAAI,cAAS,EAAE,EAAE;4CACf,OAAO,CAAC,IA AI,CACR,wIAAwI,CAAC,CAAC;yCAC/I;wCAED,OAAO,SAAS,CAAC,UAAU,CAAC,eAAQ,CAAC,CAAC;qC ACvC;oCAED,OAAO,SAAS,CAAC,OAAO,EAAE,CAAC;iCAC5B;6BACF,CAAC,CAAC;4BACH,SAAS,CAAC ,GAAG,CAAC,UAAU,EAAE;gCACxB,YAAy,CAAC,WAAW,EAAE,CAAC;6BAC5B,CAAC,CAAC;yBACJ,C AAC,CAAC;qBACR,CAAC;yBACD,KAAK,CAAC,UAAU,CAAC,IAAK,OAAA,KAAI,CAAC,oBAAoB,CAAC, MAAM,CAAC,CAAC,CAAC,GAAA,CAAC,CAAC;iBACxD;aACF,CAAC,CAAC;YAEH,OAAO,SAAS,CAAC; SAC1B;6BACF;KAAA,IAAA;IAED;;;IAIA;QAKE,+BAAoB,OAAyB;YAAzB,YAAO,GAAP,OAAO,CAAKB;Y AFrC,cAAS,GAAoC,EAAE,CAAC;;YAItd,OAAO,CAAC,IAAK,CAAC,aAAa,CAAC,YAAy,CAAC,EAAE,IAA I,CAAC,CAAC;SAC1D;QAED,oCAAI,GAAJ,UAAK,QAAqC;YACxC,IAAI,IAAI,CAAC,QAAQ,EAAE;gBACjB, QAAQ,CAAC,IAAI,CAAC,QAAQ,CAAC,CAAC;aACzB;iBAAM;gBACL,IAAI,CAAC,SAAS,CAAC,IAAI,CAA C,QAAQ,CAAC,CAAC;aAC/B;SACF;QAED,uCAAO,GAAP,UAAQ,QAaKB;YACxB,IAAI,CAAC,QAAQ,GAA G,QAAQ,CAAC;;YAGzB,IAAI,CAAC,OAAO,CAAC,IAAK,CAAC,aAAa,CAAC,YAAy,CAAC,EAAE,QAAQ,C AAC,CAAC;;YAG1D,IAAI,CAAC,OAAO,GAAG,IAAK,CAAC;;YAGrB,IAAI,CAAC,SAAS,CAAC,OAAO,CA AC,UAAU,QAAQ,IAAK,OAAA,QAAQ,CAAC,QAAQ,CAAC,GAAA,CAAC,CAAC;YACzD,IAAI,CAAC,SAAS ,CAAC,MAAM,GAAG,CAAC,CAAC;SAC3B;oCACF;KAAA,IAAA;IAGD;;;;QAOA;;YAEU,aAAQ,GAA0D,I AAI,CAAC;YAExE,iBAAY,GAAsB,IAAK,CAAC;YACxC,gBAAW,GAAqB,IAAK,CAAC;YACtC,iBAAY,GAA qB,IAAK,CAAC;YACvC,gBAAW,GAAa,IAAK,CAAC;SA6BtC;;QA1BS,0CAAc,GAAd,UAAe,WAA6B,EAAE, WAA6B;YACjF,IAAI,CAAC,YAAy,GAAG,WAAW,CAAC;YAChC,IAAI,CAAC,WAAW,GAAG,WAAW,CAA C,QAAQ,CAAC;YACxC,IAAI,CAAC,WAAW,GAAG,WAAW,CAAC;YAC/B,IAAI,CAAC,YAAy,GAAG,WAA W,CAAC,GAAG,CAAC,WAAW,CAAC,CAAC;YACjD,IAAI,CAAC,QAAQ,IAAI,IAAI,CAAC,QAAQ,CAAC,I AAI,CAAC,CAAC;SACtC;;;;QASM,iCAAK,GAAL,UAAAM,EAaKD;YAC7D,IAAI,CAAC,QAAQ,GAAG,EA AE,CAAC;SACpB;;;QAKM,mCAAO,GAAP;YACL,IAAI,CAAC,WAAy,CAAC,GAAG,CAAC,WAAW,CAAC, CAAC,QAAQ,EAAE,CAAC;YAC9C,IAAI,CAAC,YAAa,CAAC,OAAO,EAAE,CAAC;SAC9B;gCACF;KAAA;;I CzsBD;;;;IAiBA;;ICjBA;;;;ICAA;;;;" }

Found in path(s):

\* /opt/cola/permits/1358260707\_1657134860.914432/0/upgrade-11-0-2-tgz/package/bundles/upgrade.umd.js.map

No license file was found, but licenses were detected in source scan.

```
{"version":3,"file":"upgrade-static-testing.umd.js","sources":["../../../../../packages/upgrade/src/common/src/angular1.ts","../../../../../packages/upgrade/sr
```



```

c/common/src/constants.ts","../../../../../packages/upgrade/static/testing/src/create_angular_testing_module.ts","../../../../../packages/upgrade/static/testing/src/create_angularjs_testing_module.ts","../../../../../packages/upgrade/static/testing/public_api.ts","../../../../../packages/upgrade/static/testing/index.ts","../../../../../packages/upgrade/static/testing/testing.ts"],"sourcesContent":["/**\n * @license\n * Copyright Google LLC All Rights Reserved.\n *\n * Use of this source code is governed by an MIT-style license that can be\n * found in the LICENSE file at\n https://angular.io/license\n *\n\nexport type Ng1Token = string;\n\nexport type Ng1Expression = string|Function;\n\nexport interface IAnnotatedFunction extends Function {\n // Older versions of `@types/angular` typings extend the global `Function` interface with\n // `$.inject?: string[]`, which is not compatible with `$.inject?: ReadonlyArray<string>` (used in\n // latest versions).\n $.inject?: Function extends {$$.inject?: string[]}?
Ng1Token[]: ReadonlyArray<Ng1Token>;\n}\n\nexport type IInjectable = (Ng1Token|Function)[]|IAnnotatedFunction;\n\nexport type SingleOrListOrMap<T> = T|T[]|{[key: string]: T};\n\nexport interface IModule {\n name: string;\n requires: (string|IInjectable)[];\n config(fn: IInjectable): IModule;\n directive(selector: string, factory: IInjectable): IModule;\n component(selector: string, component: IComponent): IModule;\n controller(name: string, type: IInjectable): IModule;\n factory(key: Ng1Token, factoryFn: IInjectable): IModule;\n value(key: Ng1Token, value: any): IModule;\n constant(token: Ng1Token, value: any): IModule;\n run(a: IInjectable): IModule;\n}\n\nexport interface ICompileService {\n (element: Element|NodeList|Node[]|string, transclude?: Function): ILinkFn;\n}\n\nexport interface ILinkFn {\n (scope: IScope, cloneAttachFn?: ICloneAttachFunction, options?: ILinkFnOptions): IAugmentedJQuery;\n $$slots?: {[slotName: string]: ILinkFn};\n}\n\nexport interface ILinkFnOptions {\n parentBoundTranscludeFn?: Function;\n transcludeControllers?: {[key: string]: any};\n futureParentElement?: Node;\n}\n\nexport interface IRootScopeService {\n $new(isolate?: boolean): IScope;\n $id: string;\n $parent: IScope;\n $root: IScope;\n $watch(exp: Ng1Expression, fn?: (a1?: any, a2?: any) => void): Function;\n $on(event: string, fn?: (event?: any, ...args: any[]) => void): Function;\n $destroy(): any;\n $apply(exp?: Ng1Expression): any;\n $digest(): any;\n $evalAsync(exp: Ng1Expression, locals?: any): void;\n $on(event: string, fn?: (event?: any, ...args: any[]) => void): Function;\n $$childTail: IScope;\n $$childHead: IScope;\n $$nextSibling: IScope;\n [key: string]: any;\n}\n\nexport interface IScope extends IRootScopeService {\n}\n\nexport interface IAngularBootstrapConfig {\n strictDi?: boolean;\n}\n\nexport interface IDirective {\n compile?: IDirectiveCompileFn;\n controller?: IController;\n controllerAs?: string;\n bindToController?: boolean|{[key: string]: string};\n link?: IDirectiveLinkFn|IDirectivePrePost;\n name?: string;\n priority?: number;\n replace?: boolean;\n require?: DirectiveRequireProperty;\n restrict?: string;\n scope?: boolean|{[key: string]: string};\n template?: string|Function;\n templateUrl?: string|Function;\n templateNamespace?: string;\n terminal?: boolean;\n transclude?: DirectiveTranscludeProperty;\n}\n\nexport type DirectiveRequireProperty = SingleOrListOrMap<string>;\n\nexport type DirectiveTranscludeProperty = boolean|'element'|{[key: string]: string};\n\nexport interface IDirectiveCompileFn {\n (templateElement: IAugmentedJQuery, templateAttributes: IAttributes,\n transclude: ITranscludeFunction): IDirectivePrePost;\n}\n\nexport interface IDirectivePrePost {\n pre?: IDirectiveLinkFn;\n post?: IDirectiveLinkFn;\n}\n\nexport interface IDirectiveLinkFn {\n (scope: IScope, instanceElement: IAugmentedJQuery, instanceAttributes: IAttributes,\n controller: any, transclude: ITranscludeFunction): void;\n}\n\nexport interface IComponent {\n bindings?: {[key: string]: string};\n controller?: string|IInjectable;\n controllerAs?: string;\n require?: DirectiveRequireProperty;\n template?: string|Function;\n templateUrl?: string|Function;\n transclude?: DirectiveTranscludeProperty;\n}\n\nexport interface IAttributes {\n $observe(attr: string, fn: (v: string) => void): void;\n [key: string]: any;\n}\n\nexport interface ITranscludeFunction {\n // If the scope is provided, then the cloneAttachFn must be as well.\n (scope: IScope, cloneAttachFn: ICloneAttachFunction): IAugmentedJQuery;\n // If one argument is provided, then it's assumed to be the cloneAttachFn.\n (cloneAttachFn?: ICloneAttachFunction): IAugmentedJQuery;\n}\n\nexport interface ICloneAttachFunction {\n (clonedElement: IAugmentedJQuery, scope: IScope): any;\n}\n\nexport type IAugmentedJQuery = Node[]&{\n on?: (name: string, fn: () => void) => void;\n data?: (name: string, value?: any) => any;\n text?: () => string;\n inheritedData?: (name: string, value?: any) => any;\n contents?: () => IAugmentedJQuery;\n parent?: () => IAugmentedJQuery;\n empty?: () => void;\n append?: (content:

```

```

IAugmentedJQuery|string) => IAugmentedJQuery;\n controller?: (name: string) => any;\n isolateScope?: () =>
IScope;\n injector?: () => IInjectorService;\n triggerHandler?: (eventTypeOrObject: string|Event, extraParameters?:
any[]) => IAugmentedJQuery;\n remove?: () => void;\n removeData?: () => void;\n};\nexport interface IProvider
{\n $get: IInjectable;\n}\nexport interface IProvideService {\n provider(token: Ng1Token, provider: IProvider):
IProvider;\n factory(token: Ng1Token, factory: IInjectable): IProvider;\n service(token: Ng1Token, type:
IInjectable): IProvider;\n value(token: Ng1Token, value: any): IProvider;\n constant(token: Ng1Token, value: any):
void;\n decorator(token: Ng1Token, factory: IInjectable): void;\n}\nexport interface IParseService {\n (expression:
string): ICompiledExpression;\n}\nexport interface ICompiledExpression {\n (context: any, locals: any): any;\n
assign?: (context: any, value: any) => any;\n}\nexport interface IHttpBackendService {\n (method: string, url:
string, post?: any, callback?: Function, headers?: any, timeout?: number,\n withCredentials?: boolean):
void;\n}\nexport interface ICacheObject {\n put<T>(key: string, value?: T): T;\n get(key: string): any;\n}\nexport
interface ITemplateCacheService extends ICacheObject {\n}\nexport interface ITemplateRequestService {\n
(template: string|any /* TrustedResourceUrl */, ignoreRequestError?: boolean): Promise<string>;\n
totalPendingRequests: number;\n}\nexport type IController = string|IInjectable;\nexport interface IControllerService
{\n (controllerConstructor: IController, locals?: any, later?: any, ident?: any): any;\n (controllerName: string,
locals?: any): any;\n}\nexport interface IInjectorService {\n get(key: string): any;\n has(key: string):
boolean;\n}\nexport interface IIntervalService {\n (func: Function, delay: number, count?: number,
invokeApply?: boolean,\n ...args: any[]): Promise<any>;\n cancel(promise: Promise<any>): boolean;\n}\nexport
interface ITestabilityService {\n findBindings(element: Element, expression: string, opt_exactMatch?: boolean):
Element[];\n findModels(element: Element, expression: string, opt_exactMatch?: boolean): Element[];\n
getLocation(): string;\n setLocation(url: string): void;\n whenStable(callback: Function): void;\n}\nexport
interface INgModelController {\n $render(): void;\n $isEmpty(value: any): boolean;\n
$setValidity(validationErrorKey: string, isValid: boolean): void;\n $setPristine(): void;\n $setDirty(): void;\n
$setUntouched(): void;\n $setTouched(): void;\n $rollbackViewValue(): void;\n $validate(): void;\n
$commitViewValue(): void;\n $setViewValue(value: any, trigger: string): void;\n\n $viewValue: any;\n
$modelValue: any;\n $parsers: Function[];\n $formatters: Function[];\n $validators: {[key: string]: Function};\n
$asyncValidators: {[key: string]: Function};\n $viewChangeListeners: Function[];\n $error: Object;\n $pending:
Object;\n $untouched: boolean;\n $touched: boolean;\n $pristine: boolean;\n $dirty: boolean;\n $valid: boolean;\n
$invalid: boolean;\n $name: string;\n}\n\nfunction noNg(): never {\n throw new Error('AngularJS v1.x is not
loaded!');\n}\n\nconst noNgElement: typeof angular.element = ((=> noNg()) as any);\nnoNgElement.cleanData =
noNg;\n\nlet angular: {\n bootstrap: (e: Element, modules: (string|IInjectable)[], config?: IAngularBootstrapConfig)
=>{\n IInjectorService,\n module: (prefix: string, dependencies?: string[]) => IModule,\n element: {\n (e:
string|Element|Document|IAugmentedJQuery): IAugmentedJQuery;\n cleanData: (nodes: Node[]|NodeList) =>
void;\n },\n injector: (modules: Array<string|IInjectable>, strictDi?: boolean) => IInjectorService,\n version:
{major: number},\n resumeBootstrap: () => void,\n getTestability: (e: Element) => ITestabilityService\n} = {\n
bootstrap: noNg,\n module: noNg,\n element: noNgElement,\n injector: noNg,\n version: undefined as any,\n
resumeBootstrap: noNg,\n getTestability: noNg\n};\n\ntry {\n if (window.hasOwnProperty('angular')) {\n angular
= (<any>window).angular;\n }\n} catch {\n // ignore in CJS mode.\n}\n\n/**\n * @deprecated Use
`setAngularJSGlobal` instead.\n *\n * @publicApi\n */\nexport function setAngularLib(ng: any): void {\n
setAngularJSGlobal(ng);\n}\n\n/**\n * @deprecated Use `getAngularJSGlobal` instead.\n *\n * @publicApi\n
*/\nexport function getAngularLib(): any {\n return getAngularJSGlobal();\n}\n\n/**\n * Resets the AngularJS
global.\n *\n * Used when AngularJS is loaded lazily, and not available on `window`.\n *\n * @publicApi\n
*/\nexport function setAngularJSGlobal(ng: any): void {\n angular = ng;\n}\n\n/**\n * Returns the current
AngularJS global.\n *\n * @publicApi\n */\nexport function getAngularJSGlobal(): any {\n return
angular;\n}\n\nexport const bootstrap: typeof angular.bootstrap = (e, modules, config) =>{\n angular.bootstrap(e,
modules, config);\n}\n\n// Do not declare as `module` to avoid webpack bug\n// (see
https://github.com/angular/angular/issues/30050).\nexport const module_: typeof angular.module = (prefix,
dependencies?) =>{\n angular.module(prefix, dependencies);\n}\n\nexport const element: typeof angular.element = (e

```

```

=> angular.element(e) as typeof angular.element; \nelement.cleanData = nodes =>
angular.element.cleanData(nodes); \n \nexport const injector: typeof angular.injector = \n (modules:
Array<string|IInjectable>, strictDi?: boolean) => angular.injector(modules, strictDi); \n \nexport const
resumeBootstrap: typeof angular.resumeBootstrap = () => angular.resumeBootstrap(); \n \nexport const
getTestability: typeof angular.getTestability = e => angular.getTestability(e); \n", "/*\n * @license\n * Copyright
Google LLC All Rights Reserved.\n *\n * Use of this source code is governed by an MIT-style license that can be\n
* found in the LICENSE file at https://angular.io/license\n *\n \nexport const $COMPILE = '$compile'; \nexport
const $CONTROLLER = '$controller'; \nexport const $DELEGATE = '$delegate'; \nexport const
$EXCEPTION_HANDLER = '$exceptionHandler'; \nexport const $HTTP_BACKEND = '$httpBackend'; \nexport
const $INJECTOR = '$injector'; \nexport const $INTERVAL = '$interval'; \nexport const $PARSE = '$parse'; \nexport
const $PROVIDE = '$provide'; \nexport const $ROOT_SCOPE = '$rootScope'; \nexport const $SCOPE =
$scope'; \nexport const $TEMPLATE_CACHE = '$templateCache'; \nexport const $TEMPLATE_REQUEST =
$templateRequest'; \n \nexport const $TESTABILITY = '$$testability'; \n \nexport const COMPILER_KEY =
'$angularCompiler'; \nexport const DOWNGRADED_MODULE_COUNT_KEY =
'$angularDowngradedModuleCount'; \nexport const GROUP_PROJECTABLE_NODES_KEY =
'$angularGroupProjectableNodes'; \nexport const INJECTOR_KEY = '$angularInjector'; \nexport const
LAZY_MODULE_REF = '$angularLazyModuleRef'; \nexport const NG_ZONE_KEY =
'$angularNgZone'; \nexport const UPGRADE_APP_TYPE_KEY = '$angularUpgradeAppType'; \n \nexport const
REQUIRE_INJECTOR = '?^^' + INJECTOR_KEY; \nexport const REQUIRE_NG_MODEL =
'ngModel'; \n \nexport const UPGRADE_MODULE_NAME = '$$UpgradeModule'; \n", "/*\n * @license\n *
Copyright Google LLC All Rights Reserved.\n *\n * Use of this source code is governed by an MIT-style license
that can be\n * found in the LICENSE file at https://angular.io/license\n *\n \nimport { Injector, NgModule, Type }
from '@angular/core'; \n \nimport * as angular from '../..../src/common/src/angular1'; \nimport { $INJECTOR,
INJECTOR_KEY, UPGRADE_APP_TYPE_KEY } from '../..../src/common/src/constants'; \nimport
{ UpgradeAppType } from '../..../src/common/src/util'; \n \nlet $injector: angular.IInjectorService | null = null; \nlet
injector: Injector; \n \nexport function $injectorFactory() { \n return $injector; \n } \n \n @NgModule({ providers:
[{ provide: $INJECTOR, useFactory: $injectorFactory }] }) \nexport class AngularTestingModule { \n constructor(i:
Injector) { \n injector = i; \n } \n } \n \n /**\n * A helper function to use when unit testing Angular services that
depend upon upgraded AngularJS\n * services.\n *\n * This function returns an `NgModule` decorated class that is
configured to wire up the Angular\n * and AngularJS injectors without the need to actually bootstrap a hybrid
application.\n * This makes it simpler and faster to unit test services.\n *\n * Use the returned class as an "import"
when configuring the `TestBed`.\n *\n * In the following code snippet, we are configuring the TestBed with two
imports.\n * The `Ng2AppModule` is the Angular part of our hybrid application and the `ng1AppModule` is the\n *
AngularJS part.\n *\n * <code-example path="upgrade/static/ts/full/module.spec.ts" region="angular-setup"></code-example>\n *\n * Once this is done we can get hold of services via the Angular `Injector` as
normal.\n * Services that are (or have dependencies on) an upgraded AngularJS service, will be instantiated\n * as
needed by the AngularJS `injector`.\n *\n * In the following code snippet, `HeroesService` is an Angular service
that depends upon an\n * AngularJS service, `titleCase`.\n *\n * <code-example
path="upgrade/static/ts/full/module.spec.ts" region="angular-spec"></code-example>\n *\n * <div class="alert
is-important">\n *\n * This helper is for testing services not Components.\n * For Component testing you must still
bootstrap a hybrid app. See `UpgradeModule` or\n * `downgradeModule` for more information.\n *\n * </div>\n *\n
* <div class="alert is-important">\n *\n * The resulting configuration does not wire up AngularJS digests to Zone
hooks. It is the\n * responsibility of the test writer to call `$rootScope.$apply`, as necessary, to trigger\n *
AngularJS handlers of async events from Angular.\n *\n * </div>\n *\n * <div class="alert is-important">\n *\n * The helper
sets up global variables to hold the shared Angular and AngularJS injectors.\n *\n * * Only call this helper once per
spec.\n * * Do not use `createAngularTestingModule` in the same spec as `createAngularJSTestingModule`.\n *\n *
</div>\n *\n * Here is the example application and its unit tests that use `createAngularTestingModule` \n * and
`createAngularJSTestingModule`.\n *\n * <code-tabs>\n * <code-pane header="module.spec.ts"

```

```

path="upgrade/static/ts/full/module.spec.ts"></code-pane>\n * <code-pane header="module.ts"
path="upgrade/static/ts/full/module.ts"></code-pane>\n * </code-tabs>\n *\n * @param angularJSMODULES a
collection of the names of AngularJS modules to include in the\n * configuration.\n * @param [strictDi] whether the
AngularJS injector should have `strictDI` enabled.\n *\n * @publicApi\n * ^\nexport function
createAngularTestingModule(\n angularJSMODULES: string[], strictDi?: boolean): Type<any> {\n
angular.module_('$angularJSTestingModule', angularJSMODULES)\n .constant(UPGRADE_APP_TYPE_KEY,
UpgradeAppType.Static)\n .factory(INJECTOR_KEY, () => injector);\n $injector = angular.injector(['ng',
'$angularJSTestingModule'], strictDi);\n return AngularTestingModule;\n}\n\n",/**\n * @license\n * Copyright
Google LLC All Rights Reserved.\n *\n * Use of this source code is governed by an MIT-style license that can be\n
* found in the LICENSE file at https://angular.io/license\n *\n\nimport {Injector} from '@angular/core';\nimport
{TestBed} from '@angular/core/testing';\nimport * as ng from './../src/common/src/angular1';\nimport
{$INJECTOR, INJECTOR_KEY, UPGRADE_APP_TYPE_KEY} from './../src/common/src/constants';\nimport
{UpgradeAppType} from './../src/common/src/util';\n\n\n/**\n * A helper function to use when unit testing
AngularJS services that depend upon downgraded Angular\n * services.\n *\n * This function returns an AngularJS
module that is configured to wire up the AngularJS and Angular\n * injectors without the need to actually bootstrap
a hybrid application.\n *\n * This makes it simpler and faster to unit test services.\n *\n * Use the returned AngularJS
module in a call to\n *
[angular.mocks.module`](https://docs.angularjs.org/api/ngMock/function/angular.mock.module) to\n * include this
module in the unit test injector.\n *\n * In the following code snippet, we are configuring the `$injector` with two
modules:\n * The AngularJS `ng1AppModule`, which is the AngularJS part of our hybrid application and the\n *
`Ng2AppModule`, which is the Angular part.\n *\n * <code-example path="upgrade/static/ts/full/module.spec.ts"\n
* region="angularjs-setup"></code-example>\n *\n * Once this is done we can get hold of services via the
AngularJS `$injector` as normal.\n * Services that are (or have dependencies on) a downgraded Angular service,
will be instantiated as\n * needed by the Angular root `Injector`.\n *\n * In the following code snippet,
`heroesService` is a downgraded Angular service that we are\n * accessing from AngularJS.\n *\n * <code-example
path="upgrade/static/ts/full/module.spec.ts"\n * region="angularjs-spec"></code-example>\n *\n * <div
class="alert is-important">\n *\n * This helper is for testing services not components.\n * For Component testing
you must still bootstrap a hybrid app. See `UpgradeModule` or\n * `downgradeModule` for more information.\n *\n
* </div>\n *\n * <div class="alert is-important">\n *\n * The resulting configuration does not wire up AngularJS
digests to Zone hooks. It is the\n * responsibility of the test writer to call `$rootScope.$apply`, as necessary, to
trigger\n * AngularJS handlers of async events from Angular.\n *\n * </div>\n *\n * <div class="alert is-
important">\n *\n * The helper sets up global variables to hold the shared Angular and AngularJS injectors.\n *\n
*\n * Only call this helper once per spec.\n * Do not use `createAngularJSTestingModule` in the same spec as
`createAngularTestingModule`.\n *\n * </div>\n *\n * Here is the example application and its unit tests that use
`createAngularTestingModule`\n * and `createAngularJSTestingModule`.\n *\n * <code-tabs>\n * <code-pane
header="module.spec.ts" path="upgrade/static/ts/full/module.spec.ts"></code-pane>\n * <code-pane
header="module.ts" path="upgrade/static/ts/full/module.ts"></code-pane>\n * </code-tabs>\n *\n *\n * @param
angularModules a collection of Angular modules to include in the configuration.\n *\n * @publicApi\n * ^\nexport
function createAngularJSTestingModule(angularModules: any[]): string {\n return
ng.module_('$angularJSTestingModule', [])\n .constant(UPGRADE_APP_TYPE_KEY,
UpgradeAppType.Static)\n .factory(\n INJECTOR_KEY,\n [\n $INJECTOR,\n
($injector: ng.IInjectorService) => {\n TestBed.configureTestingModule({\n imports:\n
angularModules,\n providers: [{provide: $INJECTOR, useValue: $injector}]\n });\n return
TestBed.inject(Injector);\n }\n)\n).name;\n}\n\n",/**\n * @license\n * Copyright Google LLC All
Rights Reserved.\n *\n * Use of this source code is governed by an MIT-style license that can be\n * found in the
LICENSE file at https://angular.io/license\n *\n\nexport {createAngularTestingModule} from
'./src/create_angular_testing_module';\nexport {createAngularJSTestingModule} from
'./src/create_angularjs_testing_module';\n\n",/**\n * @license\n * Copyright Google LLC All Rights Reserved.\n *\n

```

\* Use of this source code is governed by an MIT-style license that can be found in the LICENSE file at <https://angular.io/license>

```
export * from './public_api';
export * from './index';
export { module_ as angular_packages_upgrade_static_testing_testing_a } from './src/common/src/angular1';
export { INJECTOR_KEY as angular_packages_upgrade_static_testing_testing_d, UPGRADE_APP_TYPE_KEY as angular_packages_upgrade_static_testing_testing_b } from './src/common/src/constants';
export { UpgradeAppType as angular_packages_upgrade_static_testing_testing_c } from './src/common/src/util';
export { "names": ["injector", "NgModule", "Injector", "angular.module_", "angular.injector", "ng.module_", "TestBed"], "mappings": "IAAA;IAkOA,SAAS,IAAI;QACX,MAAM,IAAI,KAAK,CAAC,+BAA+B,CAAC,CAAC;IACnD,CAAC;IAED,IAAM,WAAW,IAA4B,cAAM,OAAA,IAAI,EAAE,GAAA,CAAQ,CAAC;IACIE,WAAW,CAAC,SAAS,GAAG,IAAI,CAAC;IAE7B,IAAI,OAAO,GAYP;QACF,SAAS,EAAE,IAAI;QACf,MAAM,EAAE,IAAI;QACZ,OAAO,EAAE,WAAW;QACpB,QAAQ,EAAE,IAAI;QACd,OAAO,EAAE,SAAGB;QACzB,eAAe,EAAE,IAAI;QACrB,cAAc,EAAE,IAAI;KACrB,CAAC;IAEF,IAAI;QACF,IAAI,MAAM,CAAC,cAAc,CAAC,SAAS,CAAC,EAAE;YACpC,OAAO,GAAS,MAAO,CAAC,OAAO,CAAC;SACjC;KACF;IAAC,WAAW;KAEP;IAED;IAKGB,aAAa,CAAC,EAAO;QACnC,kBAaKB,CAAC,EAAE,CAAC,CAAC;IACzB,CAAC;IAED;IAKGB,aAAa;QAC3B,OAAO,kBAaKB,EAAE,CAAC;IAC9B,CAAC;IAED;IAOGB,kBAaKB,CAAC,EAAO;QACxC,OAAO,GAAG,EAAE,CAAC;IACf,CAAC;IAED;IAKGB,kBAaKB;QAChC,OAAO,OAAO,CAAC;IACjB,CAAC;IAEM,IAAM,SAAS,GAA6B,UAAO,CAAC,EAAE,OAAO,EAAE,MAAO,IACnE,OAAA,OAAO,CAAC,SAAS,CAAC,CAAC,EAAE,OAAO,EAAE,MAAM,CAAC,GAAA,CAAC;IAE1C;IACA;QACa,OAAO,GAA0B,UAAO,MAAM,EAAE,YAAa,IACHE,OAAA,OAAO,CAAC,MAAM,CAAC,MAAM,EAAE,YAAY,CAAC,IAAC;IAEIC,IAAM,OAAO,IAA4B,UAAA,CAAC,IAAI,OAAA,OAAO,CAAC,OAAO,CAAC,CAAC,CAAC,GAAA,CAA2B,CAAC;IACnG,OAAO,CAAC,SAAS,GAAG,UAAA,KAAK,IAAI,OAAA,OAAO,CAAC,OAAO,CAAC,SAAS,CAAC,KAAK,CAAC,GAAA,CAAC;IAEvD,IAAM,QAAQ,GACjB,UAAO,OAaK,EAAE,QAaKB,IAAK,OAAA,OAAO,CAAC,QAAQ,CAAC,OAAO,EAAE,QAAQ,CAAC,GAAA,CAAC;IAE7F,IAAM,eAAe,GAAmC,cAAM,OAAA,OAAO,CAAC,eAAe,EAAE,GAAA,CAAC;IAExF,IAAM,cAAc,GAaK,UAAA,CAAC,IAAI,OAAA,OAAO,CAAC,cAAc,CAAC,CAAC,CAAC,GAAA;IC7T3F;IAQO,IAAM,QAAQ,GAAG,UAAU,CAAC;IAC5B,IAAM,WAAW,GAAG,aAAa,CAAC;IACIC,IAAM,SAAS,GAAG,WAAW,CAAC;IAC9B,IAAM,kBAaKB,GAAG,mBAaMB,CAAC;IAC/C,IAAM,aAAa,GAAG,cAAc,CAAC;IACrC,IAAM,SAAS,GAAG,WAAW,CAAC;IAC9B,IAAM,SAAS,GAAG,WAAW,CAAC;IAC9B,IAAM,MAAM,GAAG,QAAQ,CAAC;IACxB,IAAM,QA AQ,GAAG,UAAU,CAAC;IAC5B,IAAM,WAAW,GAAG,YAAY,CAAC;IACjC,IAAM,MAAM,GAAG,QAAQ,CAAC;IACxB,IAAM,eAAe,GAAG,gBAaGB,CAAC;IACzC,IAAM,iBAaIB,GAAG,kBAaKB,CAAC;IAE7C,IAAM,aAAa,GAAG,eAAe,CAAC;IAEtC,IAAM,YAAY,GAAG,mBAaMB,CAAC;IACzC,IAAM,2BAA2B,GAAG,gCAAgC,CAAC;IACrE,IAAM,2BAA2B,GAAG,gCAAgC,CAAC;QAC/D,YAAY,GAAG,oBAAoB;IACzC,IAAM,eAAe,GAAG,wBAaWB,CAAC;IACjD,IAAM,WAAW,GAAG,iBAaIB,CAAC;QAChC,oBAAoB,GAAG,0BAA0B;IAEvD,IAAM,gBAaGB,GAAG,KAAK,GAAG,YAAY,CAAC;IAC9C,IAAM,gBAaGB,GAAG,UAAU,CAAC;IAEpC,IAAM,mBAaMB,GAAG,iBAaIB;ICnCpD;IACa,IAAI,SAAS,GAaK,IAAI,CAAC;IACpD,IAAIA,UA AkB,CAAC;aAEP,gBAaGB;QAC9B,OAAO,SAAS,CAAC;IACnB,CAAC;IAGD;QACE,8BAAAY,CAAW;YACrBA,UAAQ,GAAG,CAAC,CAAC;SACd;gBAJFC,aAAQ,SAAC,EAAC,SAAS,EAAE,CAAC,EAAC,OAAO,EAAE,SAAS,EAAE,UAAU,EAAE,gBAaGB,EAAC,CAAC,EAAC;gBAbnEC,aAAQ;IAoBhB;IAiEgB,0BAA0B,CACc,gBAA0B,EAAE,QAaKB;QAChDC,OAAe,CAAC,0BAA0B,EAAE,gBAaGB,CAAC;aACxD,QAAQ,CAAC,oBAAoB,iBAaWB;aACrD,OAAO,CAAC,YAAY,EAAE,cAAM,OAAH,UAAQ,GAAA,CAAC,CAAC;QAC3C,SAAS,GAAGI,QAAGB,CAAC,CAAC,IAAI,EAAE,0BAA0B,CAAC,EA AE,QAAQ,CAAC,CAAC;QAC3E,OAAO,oBAAoB,CAAC;IAC9B;ICpGA;IAGBA;IAmEgB,4BAA4B,CAAC,cAAqB;QACHe,OAAOC,OAAU,CAAC,0BAA0B,EAAE,EAAE,C AAC;aAC5C,QAAQ,CAAC,oBAAoB,iBAaWB;aACrD,OAAO,CACJ,YAAY,EACZ;YACE,SAAS;YACT,UAAO,SAAS;gBAC7BC,eAAO,CAAC,sBAAsB,CAAC;oBAC7B,OAAO,EAAE,cAAc;oBACvB,SAAS,EAAE,CAAC,EAAC,OAAO,EAAE,SAAS,EAAE,QAAQ,EAAE,SAAS,EAAC,CAAC;iBACvD,CAAC,CAAC;gBACH,OAAOA,eAAO,CAAC,MAAM,CAACJ,aAAQ,CAAC,CAAC;aACjC;SACF,CAAC;aACL,IAAI,CAAC;IACZ;ICnGA;
```

;ICAA,,,,,,,,;ICAA,,,,,,,,,,,,,,,,,,,,};

Found in path(s):

\* /opt/cola/permits/1358260707\_1657134860.914432/0/upgrade-11-0-2-tgz/package/bundles/upgrade-static-testing.umd.js.map

No license file was found, but licenses were detected in source scan.

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```

eAttach","\$\$slots","TEXT\_NODE","nodeValue","resolveAndBindRequiredControllers","directiveRequire","getDirectiveRequire","requiredControllers","resolveRequire","bindToController","isMap","requiredControllersMap\_1","key","html","innerHTML","childNodes","childNodes","firstChild","removeChild","match","isArray","req","value\_1","inheritType","isOptional","searchParents","startOnParent","ctrlKey","elem","inheritedData","property","args","\_i","apply","feature","INITIAL\_VALUES\$1","Bindings","twoWayBoundProperties","twoWayBoundLastValues","expressionBoundProperties","propertyToOutputMap","UpgradeComponent","helper","bindings","initializeBindings","\$parentScope","\$componentScope","initializeOutputs","ngOnInit","attachChildNodes","bindingDestination","bindOutputs","pendingChanges","forwardChanges","\$onInit","\$doCheck","callDoCheck","unregisterDoCheckWatcher","\$parent","preLink","pre","postLink","post","parentBoundTranscludeFn","\$postLink","changes","ngDoCheck","newValue","is","emit","ngOnDestroy","btclsObject","context","bindingType","json","JSON","stringify","EventEmitter","currentValue","\$onChanges","decorators","Directive","ctorParameters","String","ElementRef","UpgradeModule","ngZone","element\$1","modules","config","INIT\_MODULE\_NAME","UPGRADE\_MODULE\_NAME","upgradeModule","constant","\$provide","decorator","testabilityDelegate","originalWhenStable","whenStable","newWhenStable","ng2Testability","isStable","intervalDelegate","wrappedInterval","fn","delay","count","invokeApply","pass","runOutsideAngular","setTimeout","run","cancel","\$rootScope","subscription","onMicrotaskEmpty","\$\$phase","isDevMode","console","warn","\$evalAsync","\$digest","unsubscribe","windowAngular","originalResumeBootstrap\_1","ngZone\_1","NgModule","NgZone","downgradeComponent","info","directiveFactory","isNgUpgradeLite","cb","isInAngularZone","hasMultipleDowngradedModules","restrict","required","moduleInjector","ranAsync","lazyModuleRefKey","lazyModuleRef","promise","doDowngrade","ComponentFactoryResolver","resolveComponentFactory","injectorPromise","facade","downgradeFn","pInjector","mInjector","\_b","downgradeInjectable","err","message","downgradeModule","moduleFactoryOrBootstrapFn","lazyModuleName","lazyInjectorKey","bootstrapFn","extraProviders","bootstrapModuleFactory","result","ref","getAngularLib","setAngularLib","angular\_packages\_upgrade\_static\_static\_a","angular\_packages\_upgrade\_static\_static\_b","angular\_packages\_upgrade\_static\_static\_c","angular\_packages\_upgrade\_static\_static\_d","angular\_packages\_upgrade\_static\_static\_e","defineProperty"],"mappings":"::;;;CAMC,SAUA,EAQC,GACI,iBAZC,SAAOC,oBAAXC,OAAyBF,EAQC,QAASE,QAAQ,iBAaKBA,QAAQ,8BAChG,mBAAXC,QAAyBA,OAAOC,IAAMD,OAAO,0BAA2B,CAAC,UAAW,gBAAiB,6BAA8BJ,GACHHA,IAAzBD,EAASA,GAAUO,MAAsBC,GAACK,EAQOQ,IAAM,GAAIR,EAQOQ,GAAGC,QAAUT,EAQOQ,GAAGC,SAAW,GAAIT,EAQOQ,GAAGC,QAAQC,OAAS,IAAKV,EAQOQ,GAAGG,KAAMX,EAQOQ,GAAGI,iBAH3K,CAIEC,MAAM,SAAWX,EAASS,EAAMC,GAAMb;::;::;OASjD,SAASE,IACL,MAAM,IAAIC,MAAM,iCAEpB,IAAIC,EAAC,WAAE,OAAOF,KACxCE,EAAYC,UAAyH,EACxB,IAAII,EAUU,CACVC,UAAWL,EACXX,OAAQW,EACRM,QAAAJ,EACTK,SAAUP,EACVQ,aAASC,EACTC,gBAAiBV,EACjBW,eAAgBX,GAEPB,IACQY,OAAOC,eAAe,aActBT,EAUUQ,OAAOR,SAGzB,MAAOU,IA0BP,SAASC,EAAMbRb,GACxBU,EAUUUV,EAOD,SAASb,IACL,OAAOZ,EAEX,IAGIa,EAUU,SAAUC,EAQC,GAAgB,OAAOf,EAQf,OAAO6B,EAQC,IACIEb,EAUU,SAAWc,GAACK,OAAOhB,EAQE,QAAQc,IACrDd,EAQH,UAAy,SAAUkB,GAAS,OAAOjB,EAQAE,QAAQH,UAAUkB,IACxE,IAMbIC,EAAGB,SAAUC,EAAGC,GAM7B,OALAF,EAAGBG,OAAOC,gBACIB,CAAEC,UAAW,cAAgBC,OAAS,SAAUL,EAAGC,GAACK,EAEEI,UAAyH,IACvE,SAAUD,EAAGC,GAACK,IAAK,IAAIK,KAAKL,EACxBA,EAEX,eAAegB,KACjBN,EAEM,GAACK,EAEEK,MACAN,EAAGC,IAOK5B,SAASM,EAOC,EAAGC,GACf,IAAIC,EAASb,mBAAXC,QAAyBH,EAEG,OAAOC,UACjD,IAAKF,EACD,OAAOF,EACX,IAAMbK,EAAYhB,EA3BiB,EAII,EAEEK,KAAKP,GAAOQ,EAACK,GAC3B,IACI,WAAc,IAANP,GAAgBA,KAAM,MAAQI,EAIC,EAEG,QAAQC,MACHDF,EAAGG,KAAKN,EAEO,OAEB,MAAOC,GACHxB,EAII,CAAEwB,MAAOA,GAejB,QACI,IACQR,IAAMA,EAEEK,OAASR,EAII,EAUU,SAC/BJ,EAEEK,KAAKD,GAef,QACI,GAAIjB,EACA,MAAMA,EAEEwB,OAGpB,OAAOL,EAEX,SAASM,IACL,IAAK,IAAIN,EAACK,GAEIF,EAII,EAAGA,EAAS,UAAUC,OAAQV,IAC3CE,EAACA,EAAGS,OAAOIB,EAAGbB,UAAUT,KACpC,OAAOE;::;::;AAgGX,IAiBIU,EAEE,oBAqBfC,EAAC,WACjC,SAASA,EAAGBC,EAAMC,GAC3BrD,KAAKoD,KAAOA,EACZpD,KAAKqD,KAAOA,EACZrD,KAAKsD,eAWT,OATAH,EAAGBI,UAAUD,aAAe,WACrCtD,KAAKwD,YAAc,IAAMxD,KAAKqD,KAAO,IACrCrD,KAAKyD,UAAy,IAAMzD,KAAKqD,KAAO,IACnCrD,KAAK0D,iBAAMb,KAAO1D,KAAKqD,KAAO,KAC3C,IAAIM,EAAC3D,KAAKqD,KAAKO,OAAO,GAAGC,cAAgB7D,KAAKqD,KAAKS,OAAO,GACvE9D,KAAK+D,OAAS,KAAOJ,EACrB3D,KAAKGE

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M8S,OAAO6B,iBAAiBzP,WAAU,WACvD,OAAIuP,EAAWG,SACPvb,EAAKwb,aACLC,QAAQC,KAAK,0IAE  
VN,EAAWO,cAEfP,EAAWQ,aAEtBR,EAAW7O,IAAI,YAAy,WACvB8O,EAAaQ,mBAEIB,MAGSza,EA3rDF,k  
BA2rD+B,CAACyY,GAakB1W,OAAOWW,KAevEmC,EAAGB/a,OAAGB,QAOPC,GANA+a,EAACjb,qBAakB  
D,EAehCV,KAAKuZ,OAAOyB,KAAI,YArhER,SAAU3Z,EAAGoY,EAASC,GAAiBrZ,EAAQC,UAAUe,EAAG  
oY,EAASC,GASHezEpZ,CAAUkZ,EAAW,CAACK,EAACxV,MAAOqV,MAG3CkC,EAACjb,gBAAiB,CAC/B,IA  
Alkb,EA4BD,EAACjb,gBAC1Cmb,EAAW9b,KAAKuZ,OACpBqC,EAACjb,gBAakB,WAC5B,IAAI8F,EAAQz  
G,KACRgW,EAAOjT,UAEX,OADA6Y,EAACjb,gBAakBkb,EACzBC,EAASd,KAAI,WAAc,OAAOY,EAACjb,g  
BAAgBuV,MAAMzP,EAAOuP,SAIzFsD,EAItuB,GAwIICA,EAACl,WAAa,CACvB,CAAE1U,KAAMzE,EAAKi  
c,SAAU/F,KAAM,CAAC,CAAExO,UAAW,CAACsI,OAehDwJ,EAAcH,eAAiB,WAAc,MAAO,CACHD,CAAE5  
U,KAAMzE,EAakwH,UACb,CAAE/C,KAAMzE,EAakKc;;;;;;;;;;;;;AAwBjB3c,EAAQqX,iBAAMBA,EAC3Br  
X,EAAQia,cAAGBA,EACxBja,EAAQiQ,QAAUA,EAClBjQ,EAAQ4c,mBA3uCR,SAASA,EAAMBC,GACxB,IA

AIC,EAAMb,SAAUw,EAUnB,EAAWoB,GASID,IAEIuT,EAFA6C,EAAMd,IAAjCrX,EAakBH,GACpCsB,EAAGBkW,EAaiD,SAAUc,GAAM,OAAO,WAAC,OAAOvc,EAakKc,OAAOM,kBAaOB,IAAO9C,EAAYb,IAAIqB,KAA7H,SAUA,GAAM,OAAOA,GAGzDE,EAABH,GAAoBzX,EAAYBC,GAAa,EAC7F,MAAO,CACH4X,SAAU,IACVnL,UAAU,EACV9R,QAAS,CA1hBE,uBACA,YA0hBX2R,KAAM,SAAUtL,EAORf,EAASoF,EAao8W,GAInC,IAAI5W,EAau4W,EAAS,GACnB3W,EAaiB2W,EAAS,GAC1BC,OAAiBhc,EACjBic,GAAW,EACf,IAAK7W,GAakByW,EAa8B,CACjD,IAAIrX,EAAMBgX,EAAKhX,kBAaOB,GAC5C0X,EAxiBF,yBawiB4C1X,EAC1CE,EAakB,4BAA8Bd,EAAY4X,EAakjU,WAAa,IACIFhD,EAaqBL,EAawm,EAakB0X,EAakBxX,GACpE,IAAIyX,EAAGbJY,EAaUE,IAAI8X,GACICF,EAaiBG,EAacrc,UAYYqc,EAAC,QAmC7D,IAKIC,EAAC,SAAUvc,EAaukc,GAGlC,IACIzW,EAD2ByW,EAae5X,IAAIhF,EAakkd,0BACPC,wBAawBf,EAakjU,WAC7E,IAAKhC,EACD,MAAM,IAAI/F,MAAM,mCAAqCoE,EAAY4X,EAakjU,YAE1E,IAAIv,EAakB,IAAIInO,EAASbXO,GAC5C4c,EAAS,IAAIzX,EAa0BnF,EAASoF,EAaOC,EAaOC,EAASrF,EAauoE,EAawmB,EAaUC,EAaQC,EAakBC,GACIkB,EAAMb+V,EAao3W,kBAC9B2W,EAaOhW,gBAAGBC,GACvB+V,EAaOhU,YAAYiT,EAaiBF,EAak7S,iBACzC8T,EAaOnS,eACPmS,EAaOrR,kBACPoR,EAAGbZ0,QAAQ00,EAao5Q,eAC3BoQ,GAGA/W,EAAM6V,YAAW,gBAGrB2B,EAaehB,EAAGC,SAAUiB,EAawC,GAC/D/D,IACDA,EAAS8D,EAauvY,IAAIhF,EAakKc,SAEHc9V,GAAa,WAAC,OAAO6W,EAAYM,EAawC,KAAzDpX,IAJiC6W,EAUrC9O,EAAYG,IAAI,CarCuI,GAakB4W,EAIIbA,GAakB5W,IAkCvC+I,MAAK,SAAU9N,GACbB,IAAIwc,EAakxb,EAaOhB,EAai,GACpB,OAAOqc,EAD6BG,EAAG,GAAgBA,EAAG,OAG9DZ,GAaw,KAMvB,OADAR,EAaOB,QAai,CAhpBnB,WAKC,YAEH,UA0oBFA,GawnCX9c,EAaQme;,,,,;AA1hCR,SAASA,EAaObRn,EAaOjL,QACP,IAArBA,IAA+BA,EAAMb,IACTd,IAAI9F,EAau,SAAUwF,GACpB,IAAIqK,EAAC,GAakL,EAaegC,EAeICE,EAakB,8BADDJ,EAawmL,GAAS7L,EAAY6L,GAASiJ,OAAOjJ,IACC,IACtEIL,EAaqBL,EAawm,EAakB+J,EAa7J,GAC/D,IAEI,OADeR,EAaUE,IAAIImK,GACbnK,IAAIqL,GAExB,MAAOsN,GACH,MAAM,IAAIvd,MAAM,eAAiBkF,EAakB,MAAQyY,EAaIC,SAAWD,MAIIF,OADAre,EAaiB,QAai,CazvBT,aA0vBLA;,,,,;QA2gCXC,EAaQse,gBAp0BR,SAASA,EAAGBC,GACrB,IAMIpd,EAaNaqd,EAaiBjE,0BAAkCtJ,EACnDsM,EA7Bc,yBAs7B4BiB,EAC1CC,EAakB,GAak5a,EAae2a,EACtCE,EAAC/Y,EAaw4Y,GACzBA,EACA,SAAU,GAakB,OAAOje,EAAGBA,gBAAGBie,GAAGBC,uBAauBL,IAkC9G,OA/BA1c,EAaQ2c,EAAGB,IACnB/D,SA57BkB,0BA47Ba,GAC/B1a,QAAQ8D,EAAC,CAAC4a,EAaiBvN,IACxCnR,QAAQ0e,GAAiB,WAC1B,IAAKtd,EACD,MAAM,IAAIN,MAAM,6FAGpB,OAAOM,KAENpB,QAav8Ba,yBAu8BY,CAACwd,EAakBrM,IAC5CnR,QAAQwd,EAakB,Car9BnB,YAu9BR,SAAUhY,GACn6K,EAAMb7K,GACnB,IAAIsZ,EAAS,CACTpB,QAASiB,EAAYjO,GAAMbJB,MAAK,SAAUsp,GAGnD,OAFa3d,EAaw0d,EAao1d,SAAW,IAAIyP,EAakBkO,EAai3d,WAC9CsE,IA59Bb,aA69BwTE,MAGf,OAAO0d,KAGVxE,OAAO,CAN+BA,YAGD,WAK+BP,SAAU9U,EAawmV,GACjBA,EAASD,SA59Ba,iCA49ByBnV,EAAYBC,GAAa,MAGtFiZ,GA6xBXxe,EAaQ4B,mBAaqBA,EAC7B5B,EAaQ+e,cA/IER,SAASA,IACL,OAAOnd,KA+IEX5B,EAaQ2B,mBAaqBA,EAAC7B3B,EAaQgf,cAzmER,SAASA,GAAC1e,GACnBqB,EAAMbrB,IAYmEvBN,EAaQif,0CAA4C5O,EACpDrQ,EAaQkf,0CAA4C5O,EACpDtQ,EAaQmf,0CAA4C5O,EACpDvQ,EAaQof,0CAA4C5O,EACpDxQ,EAaQqf,0CAA4C5O,EAepDpO,OAAOid,eAAetf,EAAS,aAac,CAAEuD,OAAO","sourcesContent":["/\*\*\n \* @license\n Angular v11.0.2\n \* (c) 2010-2020 Google LLC. https://angular.io\n \* License: MIT\n \*/\n\n(function (global,\n factory) {\n typeof exports === 'object' && typeof module !== 'undefined' ? factory(exports,\n require('@angular/core'), require('@angular/platform-browser')) :\n typeof define === 'function' && define.amd ?\n define('@angular/upgrade/static', ['exports', '@angular/core', '@angular/platform-browser'], factory) :\n (global =\n global || self, factory((global.ng = global.ng || {}), global.ng.upgrade = global.ng.upgrade || {}),\n global.ng.upgrade.static = {}), global.ng.core, global.ng.platformBrowser));\n}(this, (function (exports, core,\n platformBrowser) {\n 'use strict';\n\n /\*\*\n \* @license\n \* Copyright Google LLC All Rights Reserved.\n \*\n \* Use of this source code is governed by an MIT-style license that can be\n \* found in the LICENSE file at\n \* https://angular.io/license\n \*/\n\n function noNg() {\n throw new Error('AngularJS v1.x is not loaded!');\n }\n\n var noNgElement = (function () {\n return noNg();\n });\n noNgElement.cleanData = noNg;\n var angular =\n {\n bootstrap: noNg,\n module: noNg,\n element: noNgElement,\n injector: noNg,\n version:\n undefined,\n resumeBootstrap: noNg,\n getTestability: noNg\n };\n try {\n if\n (window.hasOwnProperty('angular')) {\n angular = window.angular;\n }\n } catch (\_a) {\n //\n }\n\n return angular;\n})\n\n

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ignore in CJS mode.\n } \n /**\n * @deprecated Use `setAngularJSGlobal` instead.\n *\n * @publicApi\n */\n function setAngularLib(ng) {\n setAngularJSGlobal(ng);\n } \n /**\n * @deprecated Use\n `getAngularJSGlobal` instead.\n *\n * @publicApi\n */\n function getAngularLib() {\n return\n getAngularJSGlobal();\n } \n /**\n * Resets the AngularJS global.\n *\n * Used when AngularJS is\n loaded lazily, and not available on `window`.\n *\n * @publicApi\n */\n function setAngularJSGlobal(ng)\n {\n angular = ng;\n } \n /**\n * Returns the current AngularJS global.\n *\n * @publicApi\n */\n function getAngularJSGlobal() {\n return angular;\n } \n var bootstrap = function (e, modules, config) {\n return angular.bootstrap(e, modules, config); }\n // Do not declare as `module` to avoid webpack bug\n // (see\n https://github.com/angular/angular/issues/30050).\n var module_ = function (prefix, dependencies) {\n return\n angular.module(prefix, dependencies); }\n var element = (function (e) {\n return angular.element(e); })\n element.cleanData = function (nodes) {\n return angular.element.cleanData(nodes); }\n var injector = function\n (modules, strictDi) {\n return angular.injector(modules, strictDi); }\n var resumeBootstrap = function () {\n return\n angular.resumeBootstrap(); }\n var getTestability = function (e) {\n return\n angular.getTestability(e); }\n\n /*!\n *****\n Copyright (c)\n Microsoft Corporation.\n\n Permission to use, copy, modify, and/or distribute this software for any\n purpose\n with or without fee is hereby granted.\n\n THE SOFTWARE IS PROVIDED "AS IS" AND THE AUTHOR\n DISCLAIMS ALL WARRANTIES WITH\n REGARD TO THIS SOFTWARE INCLUDING ALL IMPLIED\n WARRANTIES OF MERCHANTABILITY\n AND FITNESS. IN NO EVENT SHALL THE AUTHOR BE\n LIABLE FOR ANY SPECIAL, DIRECT,\n INDIRECT, OR CONSEQUENTIAL DAMAGES OR ANY\n DAMAGES WHATSOEVER RESULTING FROM\n LOSS OF USE, DATA OR PROFITS, WHETHER IN AN\n ACTION OF CONTRACT, NEGLIGENCE OR\n OTHER TORTIOUS ACTION, ARISING OUT OF OR IN\n CONNECTION WITH THE USE OR\n PERFORMANCE OF THIS SOFTWARE.\n\n *****\n */\n\n /* global\n Reflect, Promise */\n var extendStatics = function (d, b) {\n extendStatics = Object.setPrototypeOf ||\n ({ __proto__: [] } instanceof Array && function (d, b) {\n d.__proto__ = b; }) ||\n function (d, b) {\n for (var p in\n b)\n if (b.hasOwnProperty(p))\n d[p] = b[p];\n return extendStatics(d, b);\n };\n function __extends(d, b) {\n extendStatics(d, b);\n function __() {\n this.constructor = d;\n }\n d.prototype =\n b === null ? Object.create(b) :\n (__proto__ = b.prototype, new __());\n }\n var __assign = function () {\n __assign = Object.assign ||\n function __assign(t) {\n for (var s, i = 1, n = arguments.length;\n i < n; i++) {\n s = arguments[i];\n for (var p in\n s)\n if (Object.prototype.hasOwnProperty.call(s, p))\n t[p] = s[p];\n }\n return t;\n };\n return __assign.apply(this, arguments);\n };\n function __rest(s, e) {\n var t = {};\n for (var p in s)\n if (Object.prototype.hasOwnProperty.call(s, p)\n && e.indexOf(p) < 0)\n t[p] = s[p];\n if (s != null && typeof Object.getOwnPropertySymbols ===\n \"function\")\n for (var i = 0, p = Object.getOwnPropertySymbols(s);\n i < p.length; i++)\n if (e.indexOf(p[i]) < 0 && Object.prototype.propertyIsEnumerable.call(s, p[i]))\n t[p[i]] = s[p[i]];\n return t;\n }\n function __decorate(decorators, target, key, desc) {\n var c = arguments.length, r =\n c < 3 ? target : desc === null ? desc =\n Object.getOwnPropertyDescriptor(target, key) : desc, d;\n if (typeof Reflect === \"object\" &&\n typeof Reflect.decorate === \"function\")\n r = Reflect.decorate(decorators, target, key,\n desc);\n else\n for (var i = decorators.length - 1;\n i >= 0; i--)\n if (d = decorators[i])\n r = (c < 3 ? d(r) : c > 3 ?\n d(target, key, r) : d(target, key)) || r;\n return c > 3 && r &&\n Object.defineProperty(target, key, r, r);\n }\n function __param(paramIndex, decorator) {\n return function\n (target, key) {\n decorator(target, key, paramIndex);\n };\n }\n function __metadata(metadataKey, metadataValue)\n {\n if (typeof Reflect === \"object\" &&\n typeof Reflect.metadata === \"function\")\n return\n Reflect.metadata(metadataKey, metadataValue);\n }\n function __awaiter(thisArg, _arguments, P, generator)\n {\n function adopt(value) {\n return value instanceof P ? value :\n new P(function (resolve) {\n resolve(value);\n });\n }\n return new (P || (P = Promise))(function (resolve,\n reject) {\n function fulfilled(value) {\n try {\n step(generator.next(value));\n }\n catch (e) {\n reject(e);\n }\n }\n function\n rejected(value) {\n try {\n step(generator[\"throw\"](value));\n }\n catch (e) {\n

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reject(e);\n } }\n function step(result) { result.done ? resolve(result.value) :
adopt(result.value).then(fulfilled, rejected); }\n step((generator = generator.apply(thisArg, _arguments ||
[])).next());\n });\n }\n function __generator(thisArg, body) {\n var _ = { label: 0, sent: function () { if
(t[0] & 1)\n throw t[1]; return t[1]; }, trys: [], ops: [] }, f, y, t, g;\n return g = { next: verb(0), "throw":
verb(1), "return": verb(2) }, typeof Symbol === "function" && (g[Symbol.iterator] = function () { return this; }),
g;\n function verb(n) { return function (v) { return step([n, v]); }; }\n function step(op) {\n if (f)\n throw new TypeError("Generator is already executing.");\n while (_)\n try {\n if
(f = 1, y && (t = op[0] & 2 ? y["return"] : op[0] ? y["throw"] || ((t = y["return"]) && t.call(y, 0) : y.next) &&
!(t = t.call(y, op[1])).done)\n return t;\n if (y = 0, t)\n op = [op[0] & 2,
t.value];\n switch (op[0]) {\n case 0:\n case 1:\n t = op;\n break;\n case 4:\n _label++;\n return { value: op[1],
done: false };}\n case 5:\n _label++;\n y = op[1];\n op = [0];\n continue;\n case 7:\n op = _ops.pop();\n _trys.pop();\n continue;\n default:\n if (!(t = _trys, t = t.length > 0
&& t[t.length - 1]) && (op[0] === 6 || op[0] === 2)) {\n _ = 0;\n continue;\n }\n if (op[0] === 3 && (!t || (op[1] > t[0] && op[1] < t[3]))) {\n
_label = op[1];\n break;\n }\n if (op[0] === 6 && _label <
t[1]) {\n _label = t[1];\n t = op;\n break;\n }\n if (t && _label < t[2]) {\n _label = t[2];\n _ops.push(op);\n break;\n }\n if (t[2])\n _ops.pop();\n _trys.pop();\n continue;\n }\n op =
body.call(thisArg, _);\n }\n catch (e) {\n op = [6, e];\n y = 0;\n }\n finally {\n f = t = 0;\n }\n if (op[0] & 5)\n throw op[1];\n return { value: op[0] ? op[1] : void 0, done: true }; }\n }\n }\n var __createBinding = Object.create ? (function
(o, m, k, k2) {\n if (k2 === undefined)\n k2 = k;\n Object.defineProperty(o, k2, { enumerable: true,
get: function () { return m[k]; } });\n }) : (function (o, m, k, k2) {\n if (k2 === undefined)\n k2 = k;\n o[k2] = m[k];\n });\n function __exportStar(m, exports) {\n for (var p in m)\n if (p !== "default"
&& !exports.hasOwnProperty(p))\n __createBinding(exports, m, p);\n }\n function __values(o) {\n var s = typeof Symbol === "function" && Symbol.iterator, m = s && o[s], i = 0;\n if (m)\n return
m.call(o);\n if (o && typeof o.length === "number")\n return {\n next: function () {\n
if (o && i <= o.length)\n o = void 0;\n return { value: o && o[i++], done: !o };}\n }\n }\n throw new TypeError(s ? "Object is not iterable." : "Symbol.iterator is not defined.");\n
}\n function __read(o, n) {\n var m = typeof Symbol === "function" && o[Symbol.iterator];\n if (!m)\n return o;\n var i = m.call(o), ar = [], e;\n try {\n while ((n === void 0 || n-- > 0) && !(r =
i.next()).done)\n ar.push(r.value);\n }\n catch (error) {\n e = { error: error }; }\n }\n finally {\n try {\n if (r && !r.done && (m = i["return"]))\n m.call(i);\n }\n finally {\n if (e)\n throw e.error;\n }\n }\n return ar;\n }\n function
__spread() {\n for (var ar = [], i = 0; i < arguments.length; i++)\n ar = ar.concat(__read(arguments[i]));\n return ar;\n }\n function __spreadArrays() {\n for (var s = 0, i = 0, il = arguments.length; i < il; i++)\n s += arguments[i].length;\n for (var r = Array(s), k = 0, i = 0; i < il; i++)\n for (var a = arguments[i], j
= 0, jl = a.length; j < jl; j++, k++)\n r[k] = a[j];\n return r;\n }\n }\n function __await(v) {\n return this instanceof __await ? (this.v = v, this) : new __await(v);\n }\n function __asyncGenerator(thisArg,
_arguments, generator) {\n if (!Symbol.asyncIterator)\n throw new TypeError("Symbol.asyncIterator is
not defined.");\n var g = generator.apply(thisArg, _arguments || []), i, q = [];\n return i = { }, verb("next"),
verb("throw"), verb("return"), i[Symbol.asyncIterator] = function () { return this; }, i;\n function verb(n) { if
(g[n])\n i[n] = function (v) { return new Promise(function (a, b) { q.push([n, v, a, b]) > 1 || resume(n, v); }); };\n }\n function resume(n, v) { try {\n step(g[n](v));\n }\n catch (e) {\n settle(q[0][3], e);\n }\n }\n function step(r) { r.value instanceof __await ? Promise.resolve(r.value.v).then(fulfill, reject) :

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@license\n * Copyright Google LLC All Rights Reserved.\n * \n * Use of this source code is governed by an
MIT-style license that can be\n * found in the LICENSE file at https://angular.io/license\n * \n var
DIRECTIVE_PREFIX_REGEXP = /^(?:x|data)[:|-_]i;\n var DIRECTIVE_SPECIAL_CHARS_REGEXP = /[:|-
_]+(.)\/g;\n function onError(e) {\n // TODO: (misko): We seem to not have a stack trace here!\n if
(console.error) {\n console.error(e, e.stack);\n } \n else {\n // tslint:disable-next-line:no-
console\n console.log(e, e.stack);\n } \n throw e;\n } \n function controllerKey(name) {\n
return '$' + name + 'Controller';\n } \n function directiveNormalize(name) {\n return
name.replace(DIRECTIVE_PREFIX_REGEXP, '')\n .replace(DIRECTIVE_SPECIAL_CHARS_REGEXP,
function (_, letter) { return letter.toUpperCase(); });\n } \n function getTypeName(type) {\n // Return the
name of the type or the first line of its stringified version.\n return type.overriddenName || type.name ||
type.toString().split("\n")[0];\n } \n function getDowngradedModuleCount($injector) {\n return
$injector.has(DOWNGRADED_MODULE_COUNT_KEY) ?
$injector.get(DOWNGRADED_MODULE_COUNT_KEY) : \n 0;\n } \n function
getUpgradeAppType($injector) {\n return $injector.has(UPGRADE_APP_TYPE_KEY) ?
$injector.get(UPGRADE_APP_TYPE_KEY) : \n 0 /* None */;\n } \n function isFunction(value) {\n
return typeof value === 'function';\n } \n function validateInjectionKey($injector, downgradedModule,
injectionKey, attemptedAction) {\n var upgradeAppType = getUpgradeAppType($injector);\n var
downgradedModuleCount = getDowngradedModuleCount($injector);\n // Check for common errors.\n
switch (upgradeAppType) {\n case 1 /* Dynamic */:\n case 2 /* Static */:\n if
(downgradedModule) {\n throw new Error("Error while " + attemptedAction + "\": 'downgradedModule'
unexpectedly specified.\n" + \n 'You should not specify a value for \'' + downgradedModule + '\', unless
you are downgrading ' + \n 'more than one Angular module (via \'' + downgradedModule + '\').');\n
} \n break;\n case 3 /* Lite */:\n if (!downgradedModule && (downgradedModuleCount
>= 2)) {\n throw new Error("Error while " + attemptedAction + "\": 'downgradedModule' not
specified.\n" + \n 'This application contains more than one downgraded Angular module, thus you
need to ' + \n 'always specify \'' + downgradedModule + '\' when downgrading components and
injectables.');

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{\n __UNINITIALIZED__: true\n };\n var DowngradeComponentAdapter = /** @class */ (function () {\n
 function DowngradeComponentAdapter(element, attrs, scope, ngModel, parentInjector, $injector, $compile,
 $parse, componentFactory, wrapCallback) {\n this.element = element;\n this.attrs = attrs;\n
 this.scope = scope;\n this.ngModel = ngModel;\n this.parentInjector = parentInjector;\n
 this.$injector = $injector;\n this.$compile = $compile;\n this.$parse = $parse;\n
 this.componentFactory = componentFactory;\n this.wrapCallback = wrapCallback;\n
 this.implementsOnChanges = false;\n this.inputChangeCount = 0;\n this.inputChanges = {};\n
 this.componentScope = scope.$new();\n }\n DowngradeComponentAdapter.prototype.compileContents =
 function () {\n var _this = this;\n var compiledProjectableNodes = [];\n var projectableNodes =
 this.groupProjectableNodes();\n var linkFns = projectableNodes.map(function (nodes) { return
 _this.$compile(nodes); });\n this.element.empty();\n linkFns.forEach(function (linkFn) {\n
 linkFn(_this.scope, function (clone) {\n compiledProjectableNodes.push(clone);\n
 _this.element.append(clone);\n });\n });\n return compiledProjectableNodes;\n });\n
 DowngradeComponentAdapter.prototype.createComponent = function (projectableNodes) {\n var providers
 = [{ provide: $$SCOPE, useValue: this.componentScope }];\n var childInjector = core.Injector.create({
 providers: providers, parent: this.parentInjector, name: 'DowngradeComponentAdapter' });\n
 this.componentRef =\n this.componentFactory.create(childInjector, projectableNodes, this.element[0]);\n
 this.viewChangeDetector = this.componentRef.injector.get(core.ChangeDetectorRef);\n
 this.changeDetector = this.componentRef.changeDetectorRef;\n this.component =
 this.componentRef.instance;\n // testability hook is commonly added during component bootstrap in\n
 // packages/core/src/application_ref.bootstrap()\n // in downgraded application, component creation will take
 place here as well as adding the\n // testability hook.\n var testability =
 this.componentRef.injector.get(core.Testability, null);\n if (testability) {\n
 this.componentRef.injector.get(core.TestabilityRegistry)\n
 .registerApplication(this.componentRef.location.nativeElement, testability);\n }\n
 hookupNgModel(this.ngModel, this.component);\n });\n
 DowngradeComponentAdapter.prototype.setupInputs = function (manuallyAttachView, propagateDigest) {\n
 var _this = this;\n if (propagateDigest === void 0) { propagateDigest = true; }\n var attrs = this.attrs;\n
 var inputs = this.componentFactory.inputs || [];\n var _loop_1 = function (i) {\n var input =
 new PropertyBinding(inputs[i].propName, inputs[i].templateName);\n var expr = null;\n if
 (attrs.hasOwnProperty(input.attr)) {\n var observeFn_1 = (function (prop) {\n var
 prevValue = INITIAL_VALUE;\n return function (currValue) {\n // Initially, both
 `$observe()` and `$watch()` will call this function.\n if (!strictEquals(prevValue, currValue)) {\n
 if (prevValue === INITIAL_VALUE) {\n prevValue = currValue;\n
 }\n _this.updateInput(prop, prevValue, currValue);\n prevValue =
 currValue;\n }\n });\n })(input.prop);\n
 attrs.$observe(input.attr, observeFn_1);\n // Use `$watch()` (in addition to `$observe()`) in order to
 initialize the input in time\n // for `ngOnChanges()`. This is necessary if we are already in a `$digest`,
 which means that\n // `ngOnChanges()` (which is called by a watcher) will run before the `$observe()``
 callback.\n var unwatch_1 = this._1.componentScope.$watch(function () {\n
 unwatch_1();\n unwatch_1 = null;\n observeFn_1(attrs[input.attr]);\n });\n
 }\n else if (attrs.hasOwnProperty(input.bindAttr)) {\n expr = attrs[input.bindAttr];\n
 }\n else if (attrs.hasOwnProperty(input.bracketAttr)) {\n expr = attrs[input.bracketAttr];\n
 }\n else if (attrs.hasOwnProperty(input.bindonAttr)) {\n expr =
 attrs[input.bindonAttr];\n }\n else if (attrs.hasOwnProperty(input.bracketParenAttr)) {\n
 expr = attrs[input.bracketParenAttr];\n }\n if (expr != null) {\n var watchFn =
 (function (prop) { return function (currValue, prevValue) { return _this.updateInput(prop, prevValue, currValue); }
 })(input.prop);\n this._1.componentScope.$watch(expr, watchFn);\n }\n });\n var

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this_1 = this;\n for (var i = 0; i < inputs.length; i++) {\n _loop_1(i);\n }\n // Invoke
`ngOnChanges()` and Change Detection (when necessary)\n var detectChanges = function () { return
_this.changeDetector.detectChanges(); };\n var prototype =
this.componentFactory.componentType.prototype;\n this.implementsOnChanges = !(prototype &&
prototype.ngOnChanges);\n this.componentScope.$watch(function () { return _this.inputChangeCount; },
this.wrapCallback(function () {\n // Invoke `ngOnChanges()`\n if (_this.implementsOnChanges)
{\n var inputChanges = _this.inputChanges;\n _this.inputChanges = {};\n _this.component.ngOnChanges(inputChanges);\n }\n _this.viewChangeDetector.markForCheck();\n // If opted out of propagating digests, invoke change
detection when inputs change.\n if (!propagateDigest) {\n detectChanges();\n }\n }));\n // If not opted out of propagating digests, invoke change detection on every digest\n if
(propagateDigest) {\n this.componentScope.$watch(this.wrapCallback(detectChanges));\n }\n // If necessary, attach the view so that it will be dirty-checked.\n // (Allow time for the initial input values to
be set and `ngOnChanges()` to be called.)\n if (manuallyAttachView || !propagateDigest) {\n var
unwatch_2 = this.componentScope.$watch(function () {\n unwatch_2();\n }, unwatch_2 =
null);\n var appRef = _this.parentInjector.get(core.ApplicationRef);\n appRef.attachView(_this.componentRef.hostView);\n }\n }\n }\n }\n DowngradeComponentAdapter.prototype.setupOutputs = function () {\n var attrs = this.attrs;\n var
outputs = this.componentFactory.outputs || [];\n for (var j = 0; j < outputs.length; j++) {\n var output
= new PropertyBinding(outputs[j].propName, outputs[j].templateName);\n var bindonAttr =
output.bindonAttr.substring(0, output.bindonAttr.length - 6);\n var bracketParenAttr = "(" +
output.bracketParenAttr.substring(2, output.bracketParenAttr.length - 8) + ")";\n // order below is
important - first update bindings then evaluate expressions\n if (attrs.hasOwnProperty(bindonAttr)) {\n
 this.subscribeToOutput(output, attrs[bindonAttr], true);\n }\n if
(attrs.hasOwnProperty(bracketParenAttr)) {\n this.subscribeToOutput(output, attrs[bracketParenAttr],
true);\n }\n if (attrs.hasOwnProperty(output.onAttr)) {\n this.subscribeToOutput(output, attrs[output.onAttr]);\n }\n if
(attrs.hasOwnProperty(output.parenAttr)) {\n this.subscribeToOutput(output, attrs[output.parenAttr]);\n }\n }\n }\n }\n }\n DowngradeComponentAdapter.prototype.subscribeToOutput = function (output,
expr, isAssignment) {\n var _this = this;\n if (isAssignment === void 0) { isAssignment = false; }\n var
getter = this.$parse(expr);\n var setter = getter.assign;\n if (isAssignment && !setter) {\n throw new Error("Expression \"" + expr + "\" is not assignable!");\n }\n var emitter =
this.component[output.prop];\n if (emitter) {\n emitter.subscribe({\n next: isAssignment
? function (v) { return setter(_this.scope, v); } : \n function (v) { return getter(_this.scope, { '$event': v
}); }\n });\n }\n else {\n throw new Error("Missing emitter \"" + output.prop + "\" on
component \"" + getTypeName(this.componentFactory.componentType) + "\"!");\n }\n }\n }\n DowngradeComponentAdapter.prototype.registerCleanup = function () {\n var _this = this;\n var
testabilityRegistry = this.componentRef.injector.get(core.TestabilityRegistry);\n var destroyComponentRef =
this.wrapCallback(function () { return _this.componentRef.destroy(); });\n var destroyed = false;\n this.element.on('$destroy', function () { return _this.componentScope.$destroy(); });\n this.componentScope.$on('$destroy', function () {\n if (!destroyed) {\n destroyed = true;\n testabilityRegistry.unregisterApplication(_this.componentRef.location.nativeElement);\n }\n });\n destroyComponentRef();\n }\n }\n }\n DowngradeComponentAdapter.prototype.getInjector = function () {\n return this.componentRef.injector;\n }\n }\n DowngradeComponentAdapter.prototype.updateInput = function (prop, prevValue, currValue) {\n if (this.implementsOnChanges) {\n this.inputChanges[prop] = new core.SimpleChange(prevValue,
currValue, prevValue === currValue);\n }\n this.inputChangeCount++;\n this.component[prop]
= currValue;\n }\n }\n DowngradeComponentAdapter.prototype.groupProjectableNodes = function () {\n

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var ngContentSelectors = this.componentFactory.ngContentSelectors;\n return
groupNodesBySelector(ngContentSelectors, this.element.contents());\n };\n return
DowngradeComponentAdapter;\n }());\n /**\n * Group a set of DOM nodes into `ngContent` groups, based
on the given content selectors.\n *\n * function groupNodesBySelector(ngContentSelectors, nodes) {\n var
projectableNodes = [];\n var wildcardNgContentIndex;\n for (var i = 0, ii = ngContentSelectors.length; i <
ii; ++i) {\n projectableNodes[i] = [];\n }\n for (var j = 0, jj = nodes.length; j < jj; ++j) {\n var
node = nodes[j];\n var ngContentIndex = findMatchingNgContentIndex(node, ngContentSelectors);\n if (ngContentIndex != null) {\n projectableNodes[ngContentIndex].push(node);\n }\n }\n return projectableNodes;\n }\n function findMatchingNgContentIndex(element, ngContentSelectors) {\n var
ngContentIndices = [];\n var wildcardNgContentIndex = -1;\n for (var i = 0; i < ngContentSelectors.length;
i++) {\n var selector = ngContentSelectors[i];\n if (selector === '*') {\n
wildcardNgContentIndex = i;\n }\n else {\n if (matchesSelector(element, selector)) {\n
ngContentIndices.push(i);\n }\n }\n }\n ngContentIndices.sort();\n if
(wildcardNgContentIndex !== -1) {\n ngContentIndices.push(wildcardNgContentIndex);\n }\n return ngContentIndices.length ? ngContentIndices[0] : null;\n }\n var _matches;\n function
matchesSelector(el, selector) {\n if (!_matches) {\n var elProto = Element.prototype;\n _matches =
elProto.matches || elProto.matchesSelector || elProto.mozMatchesSelector ||\n elProto.msMatchesSelector ||
elProto.oMatchesSelector || elProto.webkitMatchesSelector;\n }\n return el.nodeType ===
Node.ELEMENT_NODE ? _matches.call(el, selector) : false;\n }\n /**\n * @license\n * Copyright
Google LLC All Rights Reserved.\n * Use of this source code is governed by an MIT-style license that can
be\n * found in the LICENSE file at https://angular.io/license\n *\n * function isThenable(obj) {\n return
!!obj && isFunction(obj.then);\n }\n /**\n * Synchronous, promise-like object.\n *\n * var SyncPromise =
/** @class */ (function () {\n function SyncPromise() {\n this.resolved = false;\n this.callbacks =
[];\n }\n SyncPromise.all = function (valuesOrPromises) {\n var aggrPromise = new
SyncPromise();\n var resolvedCount = 0;\n var results = [];\n var resolve = function (idx, value)
{\n results[idx] = value;\n if (++resolvedCount === valuesOrPromises.length)\n aggrPromise.resolve(results);\n };\n valuesOrPromises.forEach(function (p, idx) {\n if
(isThenable(p)) {\n p.then(function (v) { return resolve(idx, v); });\n }\n else {\n
resolve(idx, p);\n }\n });\n return aggrPromise;\n };\n SyncPromise.prototype.resolve = function (value) {\n // Do nothing, if already resolved.\n if
(this.resolved)\n return;\n this.value = value;\n this.resolved = true;\n // Run the
queued callbacks.\n this.callbacks.forEach(function (callback) { return callback(value); });\n }\n this.callbacks.length = 0;\n SyncPromise.prototype.then = function (callback) {\n if
(this.resolved) {\n callback(this.value);\n }\n else {\n
this.callbacks.push(callback);\n }\n };\n return SyncPromise;\n }());\n /**\n *
@description\n * A helper function that allows an Angular component to be used from AngularJS.\n *\n * Part of the [upgrade/static](api?query=upgrade%2Fstatic)\n * library for hybrid upgrade apps that support
AOT compilation*\n * This helper function returns a factory function to be used for registering\n * an
AngularJS wrapper directive for `"downgrading"` an Angular component.\n *\n * @usageNotes\n * ###
Examples\n * Let's assume that you have an Angular component called `ng2Heroes` that needs\n * to be
made available in AngularJS templates.\n * \n * { @example upgrade/static/ts/full/module.ts region="ng2-
heroes"}\n * We must create an AngularJS [directive](https://docs.angularjs.org/guide/directive)\n * that
will make this Angular component available inside AngularJS templates.\n * The `downgradeComponent()`
function returns a factory function that we\n * can use to define the AngularJS directive that wraps the
`"downgraded"` component.\n * \n * { @example upgrade/static/ts/full/module.ts region="ng2-heroes-
wrapper"}\n * For more details and examples on downgrading Angular components to AngularJS
components please\n * visit the [Upgrade guide](guide/upgrade#using-angular-components-from-angularjs-
code).\n * \n * @param info contains information about the Component that is being downgraded:\n * \n * -

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`component: Type<any>`: The type of the Component that will be downgraded\n
 * - `downgradedModule?`:
string`: The name of the downgraded module (if any) that the component\n
 * belongs to`, as returned by a call
to `downgradeModule()`. It is the module, whose\n
 * corresponding Angular module will be bootstrapped, when
the component needs to be instantiated.\n
 *
\n
 * (This option is only necessary when using
`downgradeModule()` to downgrade more than one\n
 * Angular module.)\n
 * - `propagateDigest?: boolean`:
Whether to perform { @link ChangeDetectorRef#detectChanges\n
 * change detection } on the component on
every\n
 * [$digest](https://docs.angularjs.org/api/ng/type/$rootScope.Scope#$digest). If set to `false`,\n
 * change detection will still be performed when any of the component's inputs changes.\n
 * (Default: true)\n
 * \n
 * @returns a factory function that can be used to register the component in an\n
 * AngularJS module.\n
 * \n
 * @publicApi\n
 * \n
function downgradeComponent(info) {\n
 var directiveFactory = function ($compile,
 $injector, $parse) {\n
 // When using `downgradeModule()`, we need to handle certain things specially. For
 example:\n
 // - We always need to attach the component view to the `ApplicationRef` for it to be\n
 // dirty-checked.\n
 // - We need to ensure callbacks to Angular APIs (e.g. change detection) are run inside the\n
 // Angular zone.\n
 // NOTE: This is not needed, when using `UpgradeModule`, because `$digest()`
 will be run\n
 // inside the Angular zone (except if explicitly escaped, in which case we shouldn't\n
 // force it back in).\n
 var isNgUpgradeLite = getUpgradeAppType($injector) === 3 /* Lite */;\n
 var wrapCallback = !isNgUpgradeLite ? function (cb) { return cb; } : function (cb) { return
 core.NgZone.isInAngularZone() ? cb() : ngZone.run(cb); };;\n
 var ngZone;\n
 // When downgrading
 multiple modules, special handling is needed wrt injectors.\n
 var hasMultipleDowngradedModules =
 isNgUpgradeLite && (getDowngradedModuleCount($injector) > 1);\n
 return {\n
 restrict: 'E',\n
 terminal: true,\n
 require: [REQUIRE_INJECTOR, REQUIRE_NG_MODEL],\n
 link:
 function (scope, element, attrs, required) {\n
 // We might have to compile the contents asynchronously,
 because this might have been\n
 // triggered by `UpgradeNg1ComponentAdapterBuilder`, before the
 Angular templates have\n
 // been compiled.\n
 var ngModel = required[1];\n
 var
 parentInjector = required[0];\n
 var moduleInjector = undefined;\n
 var ranAsync = false;\n
 if (!parentInjector || hasMultipleDowngradedModules) {\n
 var downgradedModule =
 info.downgradedModule || ";\n
 var lazyModuleRefKey = "\"" + LAZY_MODULE_REF +
 downgradedModule;\n
 var attemptedAction = "instantiating component " +
 getTypeName(info.component) + "\";\n
 validateInjectionKey($injector, downgradedModule,
 lazyModuleRefKey, attemptedAction);\n
 var lazyModuleRef = $injector.get(lazyModuleRefKey);\n
 moduleInjector = lazyModuleRef.injector || lazyModuleRef.promise;\n
 }\n
 //
 Notes:\n
 // \n
 // There are two injectors: `finalModuleInjector` and `finalParentInjector` (they
 might be\n
 // the same instance, but that is irrelevant);\n
 // - `finalModuleInjector` is used to
 retrieve `ComponentFactoryResolver`, thus it must be\n
 // on the same tree as the `NgModule` that
 declares this downgraded component.\n
 // - `finalParentInjector` is used for all other injection
 purposes.\n
 // (Note that Angular knows to only traverse the component-tree part of that injector,\n
 // when looking for an injectable and then switch to the module injector.)\n
 // \n
 // \n
 There are basically three cases:\n
 // - If there is no parent component (thus no `parentInjector`), we
 bootstrap the downgraded\n
 // `NgModule` and use its injector as both `finalModuleInjector` and\n
 // `finalParentInjector`.\n
 // - If there is a parent component (and thus a `parentInjector`) and we
 are sure that it\n
 // belongs to the same `NgModule` as this downgraded component (e.g. because there
 is only\n
 // one downgraded module, we use that `parentInjector` as both `finalModuleInjector` and\n
 // `finalParentInjector`.\n
 // - If there is a parent component, but it may belong to a different
 `NgModule`, then we\n
 // use the `parentInjector` as `finalParentInjector` and this downgraded
 component's\n
 // declaring `NgModule`'s injector as `finalModuleInjector`.\n
 // Note 1: If
 the `NgModule` is already bootstrapped, we just get its injector (we don't\n
 // bootstrap again).\n
 // Note 2: It is possible that (while there are multiple downgraded modules) this\n
 // \n
 // \n
 downgraded component and its parent component both belong to the same NgModule.\n
 // \n
 // In that

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case, we could have used the `parentInjector` as both\n // `finalModuleInjector` and
`finalParentInjector`, but (for simplicity) we are\n // treating this case as if they belong to different
`NgModule`s. That doesn't\n // really affect anything, since `parentInjector` has `moduleInjector`
as ancestor\n // and trying to resolve `ComponentFactoryResolver` from either one will return\n
 // the same instance.\n // If there is a parent component, use its injector as parent
injector.\n // If this is a \"top-level\" Angular component, use the module injector.\n var
finalParentInjector = parentInjector || moduleInjector;\n // If this is a \"top-level\" Angular component or
the parent component may belong to a\n // different `NgModule`, use the module injector for module-
specific dependencies.\n // If there is a parent component that belongs to the same `NgModule`, use its
injector.\n var finalModuleInjector = moduleInjector || parentInjector;\n var doDowngrade =
function (injector, moduleInjector) {\n // Retrieve `ComponentFactoryResolver` from the injector tied
to the `NgModule` this\n // component belongs to.\n var componentFactoryResolver =
moduleInjector.get(core.ComponentFactoryResolver);\n var componentFactory =
componentFactoryResolver.resolveComponentFactory(info.component);\n if (!componentFactory)
{\n throw new Error(\"Expecting ComponentFactory for: \" + getTypeName(info.component));\n
 }\n var injectorPromise = new ParentInjectorPromise(element);\n var facade
= new DowngradeComponentAdapter(element, attrs, scope, ngModel, injector, $injector, $compile, $parse,
componentFactory, wrapCallback);\n var projectableNodes = facade.compileContents();\n
facade.createComponent(projectableNodes);\n facade.setupInputs(isNgUpgradeLite,
info.propagateDigest);\n facade.setupOutputs();\n facade.registerCleanup();\n
injectorPromise.resolve(facade.getInjector());\n if (ranAsync) {\n // If this is run
async, it is possible that it is not run inside a\n // digest and initial input values will not be
detected.\n scope.$evalAsync(function () { });\n }\n }; \n var
downgradeFn = !isNgUpgradeLite ? doDowngrade : function (pInjector, mInjector) {\n if (!ngZone)
{\n ngZone = pInjector.get(core.NgZone);\n }\n
wrapCallback(function () { return doDowngrade(pInjector, mInjector); }());\n }; \n //
NOTE:\n // Not using `ParentInjectorPromise.all()` (which is inherited from `SyncPromise`), because\n
 // Closure Compiler (or some related tool) complains:\n // `TypeError:
...srcdowngrade_component_ParentInjectorPromise.all is not a function`\n
SyncPromise.all([finalParentInjector, finalModuleInjector])\n .then(function (_a) {\n
var _b = __read(_a, 2), pInjector = _b[0], mInjector = _b[1];\n return downgradeFn(pInjector,
mInjector);\n });\n ranAsync = true;\n }\n }; \n // bracket-
notation because of closure - see #14441\n directiveFactory['$inject'] = [$COMPILE, $INJECTOR,
$PARSE];\n return directiveFactory;\n } \n /**\n * Synchronous promise-like object to wrap parent
injectors,\n * to preserve the synchronous nature of AngularJS's `$compile`.\n */\n var ParentInjectorPromise
= /** @class */ (function (_super) {\n __extends(ParentInjectorPromise, _super);\n function
ParentInjectorPromise(element) {\n var _this = _super.call(this) || this;\n _this.element = element;\n
 _this.injectorKey = controllerKey(INJECTOR_KEY);\n // Store the promise on the element.\n
 element.data(_this.injectorKey, _this);\n return _this;\n }\n ParentInjectorPromise.prototype.resolve
= function (injector) {\n // Store the real injector on the element.\n this.element.data(this.injectorKey,
injector);\n // Release the element to prevent memory leaks.\n this.element = null;\n // Resolve
the promise.\n _super.prototype.resolve.call(this, injector);\n }; \n return ParentInjectorPromise;\n
}(SyncPromise));\n /**\n * @license\n * Copyright Google LLC All Rights Reserved.\n *\n * Use of
this source code is governed by an MIT-style license that can be\n * found in the LICENSE file at
https://angular.io/license\n *\n * @description\n *\n * A helper function to allow an Angular
service to be accessible from AngularJS.\n *\n * Part of the [upgrade/static](api?query=upgrade%2Fstatic)\n
 * library for hybrid upgrade apps that support AOT compilation*\n *\n * This helper function returns a factory
function that provides access to the Angular\n * service identified by the `token` parameter.\n *\n *

```

@usageNotes\n \* ### Examples\n \*\n \* First ensure that the service to be downgraded is provided in an `NgModule`\n \* that will be part of the upgrade application. For example, let's assume we have\n \* defined `HeroesService`\n \*\n \* {@example upgrade/static/ts/full/module.ts region="ng2-heroes-service"}\n \*\n \* and that we have included this in our upgrade app `NgModule`\n \*\n \* {@example upgrade/static/ts/full/module.ts region="ng2-module"}\n \*\n \* Now we can register the `downgradeInjectable` factory function for the service\n \* on an AngularJS module.\n \*\n \* {@example upgrade/static/ts/full/module.ts region="downgrade-ng2-heroes-service"}\n \*\n \* Inside an AngularJS component's controller we can get hold of the\n \* downgraded service via the name we gave when downgrading.\n \*\n \* {@example upgrade/static/ts/full/module.ts region="example-app"}\n \*\n \* <div class="alert is-important">\n \*\n \* When using `downgradeModule()`, downgraded injectables will not be available until the Angular\n \* module that provides them is instantiated. In order to be safe, you need to ensure that the\n \* downgraded injectables are not used anywhere `_outside_` the part of the app where it is\n \* guaranteed that their module has been instantiated.\n \*\n \* For example, it is `_OK_` to use a downgraded service in an upgraded component that is only used\n \* from a downgraded Angular component provided by the same Angular module as the injectable, but\n \* it is `_not OK_` to use it in an AngularJS component that may be used independently of Angular or\n \* use it in a downgraded Angular component from a different module.\n \*\n \* </div>\n \*\n \* @param token an `InjectionToken` that identifies a service provided from Angular.\n \* @param downgradeModule the name of the downgraded module (if any) that the injectable\n \* "belongs to", as returned by a call to `downgradeModule()`. It is the module, whose injector will\n \* be used for instantiating the injectable.<br />\n \* (This option is only necessary when using `downgradeModule()` to downgrade more than one Angular\n \* module.)\n \* @returns a [factory function](https://docs.angularjs.org/guide/di) that can be\n \* used to register the service on an AngularJS module.\n \* @publicApi\n \*/\n function downgradeInjectable(token, downgradeModule) {\n if (downgradeModule === void 0) { downgradeModule = ""; }\n var factory = function (\$injector) {\n var injectorKey = "" + INJECTOR\_KEY + downgradeModule;\n var injectableName = isFunction(token) ? getTypeName(token) : String(token);\n var attemptedAction = "instantiating injectable " + injectableName + "";\n validateInjectionKey(\$injector, downgradeModule, injectorKey, attemptedAction);\n try {\n var injector = \$injector.get(injectorKey);\n return injector.get(token);\n } catch (err) {\n throw new Error("Error while " + attemptedAction + ": " + (err.message || err));\n }\n }\n factory['\$inject'] = [\$INJECTOR];\n return factory;\n }\n\n /\*\*\n \* @license\n \* Copyright Google LLC All Rights Reserved.\n \*\n \* Use of this source code is governed by an MIT-style license that can be\n \* found in the LICENSE file at https://angular.io/license\n \*/\n\n /\*\*\n \* @publicApi\n \*/\n var VERSION = new core.Version('11.0.2');\n\n /\*\*\n \* @license\n \* Copyright Google LLC All Rights Reserved.\n \*\n \* Use of this source code is governed by an MIT-style license that can be\n \* found in the LICENSE file at https://angular.io/license\n \*/\n\n // We have to do a little dance to get the ng1 injector into the module injector.\n // We store the ng1 injector so that the provider in the module injector can access it\n // Then we "get" the ng1 injector from the module injector, which triggers the provider to read\n // the stored injector and release the reference to it.\n var tempInjectorRef = null;\n function setTempInjectorRef(injector) {\n tempInjectorRef = injector;\n }\n function injectorFactory() {\n if (!tempInjectorRef) {\n throw new Error("Trying to get the AngularJS injector before it being set.");\n }\n var injector = tempInjectorRef;\n tempInjectorRef = null;\n // clear the value to prevent memory leaks\n return injector;\n }\n function rootScopeFactory(i) {\n return i.get('\$rootScope');\n }\n function compileFactory(i) {\n return i.get('\$compile');\n }\n function parseFactory(i) {\n return i.get('\$parse');\n }\n\n var angular1Providers = [\n // We must use exported named functions for the ng2 factories to keep the compiler happy:\n // > Metadata collected contains an error that will be reported at runtime:\n // > Function calls are not supported.\n // > Consider replacing the function or lambda with a reference to an exported function\n { provide: '\$injector', useFactory: injectorFactory, deps: [] },\n { provide: '\$rootScope', useFactory: rootScopeFactory, deps: ['\$injector'] },\n { provide: '\$compile', useFactory: compileFactory, deps: ['\$injector'] },\n { provide: '\$parse', useFactory: parseFactory,

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deps: ['$injector'] } \n]; \n \n /** \n * @license \n * Copyright Google LLC All Rights Reserved. \n * \n *
Use of this source code is governed by an MIT-style license that can be \n * found in the LICENSE file at
https://angular.io/license \n * \n var NgAdapterInjector = /** @class */ (function () { \n function
NgAdapterInjector(modInjector) { \n this.modInjector = modInjector; \n } \n // When Angular locate a
service in the component injector tree, the not found value is set to \n //
`NOT_FOUND_CHECK_ONLY_ELEMENT_INJECTOR`. In such a case we should not walk up to the module \n
// injector. \n // AngularJS only supports a single tree and should always check the module injector. \n
NgAdapterInjector.prototype.get = function (token, notFoundValue) { \n if (notFoundValue ===
core.NOT_FOUND_CHECK_ONLY_ELEMENT_INJECTOR) { \n return notFoundValue; \n } \n
return this.modInjector.get(token, notFoundValue); \n }; \n return NgAdapterInjector; \n }()); \n \n /** \n
* @license \n * Copyright Google LLC All Rights Reserved. \n * \n * Use of this source code is governed by
an MIT-style license that can be \n * found in the LICENSE file at https://angular.io/license \n * \n var
moduleId = 0; \n /** \n * @description \n * \n * A helper function for creating an AngularJS module that
can bootstrap an Angular module \n * `"on-demand"` (possibly lazily) when a { @link downgradeComponent
downgraded component} needs to be \n * instantiated. \n * \n * *Part of the
[upgrade/static](api?query=upgrade/static) library for hybrid upgrade apps that \n * support AOT compilation. \n
* \n * It allows loading/bootstrapping the Angular part of a hybrid application lazily and not having to \n * pay
the cost up-front. For example, you can have an AngularJS application that uses Angular for \n * specific routes
and only instantiate the Angular modules if/when the user visits one of these \n * routes. \n * \n * The Angular
module will be bootstrapped once (when requested for the first time) and the same \n * reference will be used from
that point onwards. \n * \n * `downgradeModule()` requires either an `NgModuleFactory` or a function: \n * -
`NgModuleFactory`: If you pass an `NgModuleFactory`, it will be used to instantiate a module \n * using
`platformBrowser`'s { @link PlatformRef#bootstrapModuleFactory bootstrapModuleFactory()}. \n * - `Function`:
If you pass a function, it is expected to return a promise resolving to an \n * `NgModuleRef`. The function is
called with an array of extra { @link StaticProvider Providers} \n * that are expected to be available from the
returned `NgModuleRef`'s `Injector`. \n * \n * `downgradeModule()` returns the name of the created AngularJS
wrapper module. You can use it to \n * declare a dependency in your main AngularJS module. \n * \n *
{ @example upgrade/static/ts/lite/module.ts region=`basic-how-to`} \n * \n * For more details on how to use
`downgradeModule()` see \n * [Upgrading for Performance](guide/upgrade-performance). \n * \n *
@usageNotes \n * \n * Apart from `UpgradeModule`, you can use the rest of the `upgrade/static` helpers as
usual to \n * build a hybrid application. Note that the Angular pieces (e.g. downgraded services) will not be \n *
available until the downgraded module has been bootstrapped, i.e. by instantiating a downgraded \n *
component. \n * \n * <div class=`alert is-important`> \n * \n * You cannot use `downgradeModule()` and
`UpgradeModule` in the same hybrid application.
 \n * \n * Use one or the other. \n * \n * </div> \n * \n
* ### Differences with `UpgradeModule` \n * \n * Besides their different API, there are two important internal
differences between \n * `downgradeModule()` and `UpgradeModule` that affect the behavior of hybrid
applications: \n * \n * 1. Unlike `UpgradeModule`, `downgradeModule()` does not bootstrap the main AngularJS
module \n * inside the { @link NgZone Angular zone}. \n * 2. Unlike `UpgradeModule`,
`downgradeModule()` does not automatically run a \n *
[$digest()](https://docs.angularjs.org/api/ng/type/$rootScope.Scope#$digest) when changes are \n * detected in
the Angular part of the application. \n * \n * What this means is that applications using `UpgradeModule` will
run change detection more \n * frequently in order to ensure that both frameworks are properly notified about
possible changes. \n * This will inevitably result in more change detection runs than necessary. \n * \n *
`downgradeModule()`, on the other side, does not try to tie the two change detection systems as \n * tightly,
restricting the explicit change detection runs only to cases where it knows it is \n * necessary (e.g. when the inputs
of a downgraded component change). This improves performance, \n * especially in change-detection-heavy
applications, but leaves it up to the developer to manually \n * notify each framework as needed. \n * \n * For a
more detailed discussion of the differences and their implications, see \n * [Upgrading for

```



Performance](guide/upgrade-performance).\n \* <div class="alert is-helpful">\n \* You can manually trigger a change detection run in AngularJS using\n \* [scope.\$apply(...)](https://docs.angularjs.org/api/ng/type/\$rootScope.Scope#\$apply) or\n \* [\$rootScope.\$digest()](https://docs.angularjs.org/api/ng/type/\$rootScope.Scope#\$digest).\n \* You can manually trigger a change detection run in Angular using { @link NgZone#run\n \* ngZone.run(...)}.\n \* </div>\n \* ### Downgrading multiple modules\n \* It is possible to downgrade multiple modules and include them in an AngularJS application. In\n \* that case, each downgraded module will be bootstrapped when an associated downgraded component or\n \* injectable needs to be instantiated.\n \* Things to keep in mind, when downgrading multiple modules:\n \* - Each downgraded component/injectable needs to be explicitly associated with a downgraded\n \* module. See `downgradeComponent()` and `downgradeInjectable()` for more details.\n \* - If you want some injectables to be shared among all downgraded modules, you can provide them as\n \* `StaticProvider`s, when creating the `PlatformRef` (e.g. via `platformBrowser` or\n \* `platformBrowserDynamic`).\n \* - When using { @link PlatformRef#bootstrapModule\n \* bootstrapModule() } or\n \* { @link PlatformRef#bootstrapModuleFactory\n \* bootstrapModuleFactory() } to bootstrap the\n \* downgraded modules, each one is considered a `root` module. As a consequence, a new instance\n \* will be created for every injectable provided in `root` (via\n \* { @link Injectable#providedIn\n \* providedIn }).\n \* If this is not your intention, you can have a shared module (that will act as the\n \* `root`\n \* module) and create all downgraded modules using that module's injector:\n \* @example\n \* upgrade/static/ts/lite-multi-shared/module.ts region="shared-root-module"\n \* @publicApi\n \*/\n \* function downgradeModule(moduleFactoryOrBootstrapFn) {\n \* var lazyModuleName =\n \* UPGRADE\_MODULE\_NAME + ".lazy" + ++moduleUid;\n \* var lazyModuleRefKey = "" +\n \* LAZY\_MODULE\_REF + lazyModuleName;\n \* var lazyInjectorKey = "" + INJECTOR\_KEY +\n \* lazyModuleName;\n \* var bootstrapFn = isFunction(moduleFactoryOrBootstrapFn) ?\n \* moduleFactoryOrBootstrapFn :\n \* function (extraProviders) {\n \* return\n \* platformBrowser.platformBrowser(extraProviders).bootstrapModuleFactory(moduleFactoryOrBootstrapFn);\n \* };\n \* var injector;\n \* // Create an ng1 module to bootstrap.\n \* module\_(lazyModuleName, [])\n \* .constant(UPGRADE\_APP\_TYPE\_KEY, 3 /\* Lite \*/) \n \* .factory(INJECTOR\_KEY, [lazyInjectorKey,\n \* identity])\n \* .factory(lazyInjectorKey, function () {\n \* if (!injector) {\n \* throw new\n \* Error("Trying to get the Angular injector before bootstrapping the corresponding '\n \* 'Angular\n \* module.");\n \* }\n \* return injector;\n \* })\n \* .factory(LAZY\_MODULE\_REF,\n \* [lazyModuleRefKey, identity])\n \* .factory(lazyModuleRefKey, [\n \* \$INJECTOR,\n \* function\n \* (\$injector) {\n \* setTempInjectorRef(\$injector);\n \* var result = {\n \* promise:\n \* bootstrapFn(angular1Providers).then(function (ref) {\n \* injector = result.injector = new\n \* NgAdapterInjector(ref.injector);\n \* injector.get(\$INJECTOR);\n \* return injector;\n \* })\n \* };\n \* return result;\n \* }]\n \* ).config([\n \* \$INJECTOR,\n \* \$PROVIDE,\n \* function (\$injector, \$provide) {\n \* \$provide.constant(DOWNGRADED\_MODULE\_COUNT\_KEY, getDowngradedModuleCount(\$injector) + 1);\n \* }\n \* ]);\n \* return lazyModuleName;\n \* }\n \* function identity(x) {\n \* return x;\n \* }\n \* // Constants\n \* var REQUIRE\_PREFIX\_RE = /^(\\|\\^|\\^)?(\\|\\|)?(\\|\\^|\\^)?/;\n \* // Classes\n \* var UpgradeHelper = /\*\*\n \* @class \*/ (function () {\n \* function UpgradeHelper(injector, name, elementRef, directive) {\n \* this.injector\n \* = injector;\n \* this.name = name;\n \* this.\$injector = injector.get(\$INJECTOR);\n \* this.\$compile =\n \* this.\$injector.get(\$COMPILE);\n \* this.\$controller = this.\$injector.get(\$CONTROLLER);\n \* this.element = elementRef.nativeElement;\n \* this.\$element = element(this.element);\n \* this.directive =\n \* directive || UpgradeHelper.getDirective(this.\$injector, name);\n \* }\n \* UpgradeHelper.getDirective = function\n \* (\$injector, name) {\n \* var directives = \$injector.get(name + 'Directive');\n \* if (directives.length > 1) {\n \* throw new Error("Only support single directive definition for: " + name);\n \* }\n \* var directive =\n \* directives[0];\n \* // AngularJS will transform `link: xyz` to `compile: () => xyz`. So we can only tell there was\n \* a\n \* // user-defined `compile` if there is no `link`. In other cases, we will just ignore `compile`.\n \* if

```

(directive.compile && !directive.link)\n notSupported(name, 'compile');\n if (directive.replace)\n notSupported(name, 'replace');\n if (directive.terminal)\n notSupported(name, 'terminal');\n return directive;\n };\n UpgradeHelper.getTemplate = function ($injector, directive,\n fetchRemoteTemplate, $element) {\n if (fetchRemoteTemplate === void 0) { fetchRemoteTemplate = false;\n }\n if (directive.template !== undefined) {\n return getOrCall(directive.template, $element);\n }\n else if (directive.templateUrl) {\n var $templateCache_1 =\n $injector.get($TEMPLATE_CACHE);\n var url_1 = getOrCall(directive.templateUrl, $element);\n var template = $templateCache_1.get(url_1);\n if (template !== undefined) {\n return\n template;\n }\n else if (!fetchRemoteTemplate) {\n throw new Error('loading directive\n templates asynchronously is not supported');\n }\n return new Promise(function (resolve, reject)\n {\n var $httpBackend = $injector.get($HTTP_BACKEND);\n $httpBackend('GET', url_1,\n null, function (status, response) {\n if (status === 200) {\n resolve($templateCache_1.put(url_1, response));\n }\n else {\n reject(\"GET component template from \"" + url_1 + "\" returned \"" + status + \": \"" + response + "\"");\n }\n });\n });\n else {\n throw new Error(\"Directive \"" +\n directive.name + "\" is not a component, it is missing template.\");\n }\n };\n UpgradeHelper.prototype.buildController = function (controllerType, $scope) {\n // TODO: Document that\n we do not pre-assign bindings on the controller instance.\n // Quoted properties below so that this code can be\n optimized with Closure Compiler.\n var locals = { '$scope': $scope, '$element': this.$element };\n var\n controller = this.$controller(controllerType, locals, null, this.directive.controllerAs);\n this.$element.data(controllerKey(this.directive.name), controller);\n return controller;\n };\n UpgradeHelper.prototype.compileTemplate = function (template) {\n if (template === undefined) {\n template =\n UpgradeHelper.getTemplate(this.$injector, this.directive, false, this.$element);\n }\n return this.compileHtml(template);\n };\n UpgradeHelper.prototype.onDestroy = function\n ($scope, controllerInstance) {\n if (controllerInstance && isFunction(controllerInstance.$onDestroy)) {\n controllerInstance.$onDestroy();\n }\n $scope.$destroy();\n // Clean the jQuery/jqLite data\n on the component+child elements.\n // Equivalent to how jQuery/jqLite invoke `cleanData` on an Element\n (this.element)\n //\n https://github.com/jquery/jquery/blob/e743cbd28553267f955f71ea7248377915613fd9/src/manipulation.js#L223\n //\n https://github.com/angular/angular.js/blob/26ddc5f830f902a3d22f4b2aab70d86d4d688c82/src/jqLite.js#L306-\n L312\n // `cleanData` will invoke the AngularJS `$destroy` DOM event\n //\n https://github.com/angular/angular.js/blob/26ddc5f830f902a3d22f4b2aab70d86d4d688c82/src/Angular.js#L1911-\n L1924\n element.cleanData([this.element]);\n element.cleanData(this.element.querySelectorAll('*'));\n };\n UpgradeHelper.prototype.prepareTransclusion = function () {\n var _this = this;\n var\n transclude = this.directive.transclude;\n var contentChildNodes = this.extractChildNodes();\n var\n attachChildrenFn = function (scope, cloneAttachFn) {\n // Since AngularJS v1.5.8, `cloneAttachFn` will\n try to destroy the transclusion scope if\n // `$template` is empty. Since the transcluded content comes from\n Angular, not AngularJS,\n // there will be no transclusion scope here.\n // Provide a dummy\n `scope.$destroy()` method to prevent `cloneAttachFn` from throwing.\n scope = scope || { $destroy:\n function () { return undefined; } };\n return cloneAttachFn($template, scope);\n };\n var\n $template = contentChildNodes;\n if (transclude) {\n var slots_1 = Object.create(null);\n if\n (typeof transclude === 'object') {\n $template = [];\n var slotMap_1 = Object.create(null);\n var filledSlots_1 = Object.create(null);\n // Parse the element selectors.\n Object.keys(transclude).forEach(function (slotName) {\n var selector = transclude[slotName];\n var optional = selector.charAt(0) === '?';\n selector = optional ? selector.substring(1) :\n selector;\n slotMap_1[selector] = slotName;\n slots_1[slotName] = null; // `null` :\n Defined but not yet filled.\n filledSlots_1[slotName] = optional; // Consider optional slots as filled.\n });\n }\n }\n };\n}

```

```

 });\n // Add the matching elements into their slot.\ncontentChildNodes.forEach(function (node) {\n var slotName =\nslotMap_1[directiveNormalize(node.nodeName.toLowerCase())];\n if (slotName) {\n filledSlots_1[slotName] = true;\n slots_1[slotName] = slots_1[slotName] || [];\n slots_1[slotName].push(node);\n }\n else {\n $template.push(node);\n }\n });\n // Check for required slots that were not filled.\nObject.keys(filledSlots_1).forEach(function (slotName) {\n if (!filledSlots_1[slotName]) {\n throw new Error("Required transclusion slot \"" + slotName + "\" on directive: \"" + _this.name);\n }\n });\n Object.keys(slots_1).filter(function (slotName) { return slots_1[slotName];\n}).forEach(function (slotName) {\n var nodes = slots_1[slotName];\n slots_1[slotName]\n= function (scope, cloneAttach) {\n return cloneAttach(nodes, scope);\n };\n });\n }\n // Attach `$$slots` to default slot transclude fn.\n attachChildrenFn.$$slots =\nslots_1;\n // AngularJS v1.6+ ignores empty or whitespace-only transcluded text nodes. But Angular\n // removes all text content after the first interpolation and updates it later, after\n // evaluating the\n expressions. This would result in AngularJS failing to recognize text\n // nodes that start with an\n interpolation as transcluded content and use the fallback\n // content instead.\n // To avoid this\n issue, we add a\n // [zero-width non-joiner character](https://en.wikipedia.org/wiki/Zero-width_non-\n joiner)\n // to empty text nodes (which can only be a result of Angular removing their initial content).\n // NOTE: Transcluded text content that starts with whitespace followed by an interpolation\n // will still fail to be detected by AngularJS v1.6+\n $template.forEach(function (node) {\n if\n (node.nodeType === Node.TEXT_NODE && !node.nodeValue) {\n node.nodeValue = "\\u200C";\n }\n });\n }\n return attachChildrenFn;\n };\nUpgradeHelper.prototype.resolveAndBindRequiredControllers = function (controllerInstance) {\n var\n directiveRequire = this.getDirectiveRequire();\n var requiredControllers =\n this.resolveRequire(directiveRequire);\n if (controllerInstance && this.directive.bindToController &&\n isMap(directiveRequire)) {\n var requiredControllersMap_1 = requiredControllers;\n Object.keys(requiredControllersMap_1).forEach(function (key) {\n controllerInstance[key] =\n requiredControllersMap_1[key];\n });\n }\n return requiredControllers;\n };\nUpgradeHelper.prototype.compileHtml = function (html) {\n this.element.innerHTML = html;\n return\n this.$compile(this.element.childNodes);\n };\n UpgradeHelper.prototype.extractChildNodes = function (\n {\n var childNodes = [];\n var childNode;\n while (childNode = this.element.firstChild) {\n this.element.removeChild(childNode);\n childNodes.push(childNode);\n }\n return\n childNodes;\n };\n UpgradeHelper.prototype.getDirectiveRequire = function () {\n var require =\n this.directive.require || (this.directive.controller && this.directive.name);\n if (isMap(require)) {\n Object.keys(require).forEach(function (key) {\n var value = require[key];\n var match =\n value.match(REQUIRE_PREFIX_RE);\n var name = value.substring(match[0].length);\n if\n (!name) {\n require[key] = match[0] + key;\n }\n });\n }\n return\n require;\n };\n UpgradeHelper.prototype.resolveRequire = function (require, controllerInstance) {\n var _this = this;\n if (!require) {\n return null;\n }\n else if (Array.isArray(require)) {\n return require.map(function (req) { return _this.resolveRequire(req); });\n }\n else if (typeof\n require === 'object') {\n var value_1 = {};\n Object.keys(require).forEach(function (key) { return\n value_1[key] = _this.resolveRequire(require[key]); });\n return value_1;\n }\n else if (typeof\n require === 'string') {\n var match = require.match(REQUIRE_PREFIX_RE);\n var inheritType\n = match[1] || match[3];\n var name = require.substring(match[0].length);\n var isOptional =\n !!match[2];\n var searchParents = !!inheritType;\n var startOnParent = inheritType === '^';\n var ctrlKey = controllerKey(name);\n var elem = startOnParent ? this.$element.parent() :\n this.$element;\n var value = searchParents ? elem.inheritedData(ctrlKey) : elem.data(ctrlKey);\n if (!value && !isOptional) {\n throw new Error("Unable to find required \"" + require + "\" in upgraded

```

```

directive "\"" + this.name + "\".");
 }
 return value;
 } else {
 throw
new Error("Unrecognized 'require' syntax on upgraded directive \"" + this.name + "\": \"" + require);
 }
};
return UpgradeHelper;
})();
function getOrCall(property) {
 var args = [];
 for (var _i =
1; _i < arguments.length; _i++) {
 args[_i - 1] = arguments[_i];
 }
 return isFunction(property) ?
property.apply(void 0, __spread(args)) : property;
}
// NOTE: Only works for `typeof T !== 'object`.
function isMap(value) {
 return value && !Array.isArray(value) && typeof value === 'object';
}
function notSupported(name, feature) {
 throw new Error("Upgraded directive \"" + name + "\" contains
unsupported feature: \"" + feature + "\".");
}
/**
 * @license
 * Copyright Google LLC All Rights
Reserved.
 *
 * Use of this source code is governed by an MIT-style license that can be
 * found in the
LICENSE file at https://angular.io/license
 *
var NOT_SUPPORTEDED = 'NOT_SUPPORTEDED';
var
INITIAL_VALUE$1 = {
 __UNINITIALIZED__: true
};
var Bindings = /** @class */ (function () {
function Bindings() {
 this.twoWayBoundProperties = [];
 this.twoWayBoundLastValues = [];
 this.expressionBoundProperties = [];
 this.propertyToOutputMap = {};
}
return
Bindings;
})();
/**
 * @description
 *
 * A helper class that allows an AngularJS component to be
used from Angular.
 *
 * Part of the [upgrade/static](api?query=upgrade%2Fstatic)
 * library for hybrid
upgrade apps that support AOT compilation.
 *
 * This helper class should be used as a base class for
creating Angular directives
 * that wrap AngularJS components that need to be "upgraded".
 *
 * @usageNotes
 * ### Examples
 *
 * Let's assume that you have an AngularJS component called
`ng1Hero` that needs
 * to be made available in Angular templates.
 *
 * @example
upgrade/static/ts/full/module.ts region="ng1-hero"}
 *
 * We must create a `Directive` that will make this
AngularJS component
 * available inside Angular templates.
 *
 * @example
upgrade/static/ts/full/module.ts region="ng1-hero-wrapper"}
 *
 * In this example you can see that we must
derive from the `UpgradeComponent`
 * base class but also provide an `@link Directive` `@Directive`
decorator. This is
 * because the AOT compiler requires that this information is statically available at
 * compile time.
 *
 * Note that we must do the following:
 *
 * * specify the directive's selector (`ng1-hero`)
 *
 * * specify all inputs and outputs that the AngularJS component expects
 *
 * * derive from
`UpgradeComponent`
 *
 * * call the base class from the constructor, passing
 *
 * * the AngularJS name of the
component (`ng1Hero`)
 *
 * * the `ElementRef` and `Injector` for the component wrapper
 *
 *
 * @publicApi
 *
var UpgradeComponent = /** @class */ (function () {
/**
 * Create a new
`UpgradeComponent` instance. You should not normally need to do this.
 *
 * Instead you should derive a new
class from this one and call the super constructor
 *
 * from the base class.
 *
 * @example
upgrade/static/ts/full/module.ts region="ng1-hero-wrapper"}
 *
 * * The `name` parameter should be
the name of the AngularJS directive.
 *
 * * The `elementRef` and `injector` parameters should be acquired from
Angular by dependency
 * injection into the base class constructor.
 *
 */
function
UpgradeComponent(name, elementRef, injector) {
 this.name = name;
 this.elementRef =
elementRef;
 this.injector = injector;
 this.helper = new UpgradeHelper(injector, name,
elementRef);
 this.$injector = this.helper.$injector;
 this.element = this.helper.element;
 this.$element = this.helper.$element;
 this.directive = this.helper.directive;
 this.bindings =
this.initializeBindings(this.directive);
 // We ask for the AngularJS scope from the Angular injector, since
 // we will put the new component scope onto the new injector for each component
 var $parentScope =
injector.get($SCOPE);
 // QUESTION 1: Should we create an isolated scope if the scope is only true?
 // QUESTION 2: Should we make the scope accessible through `$.element.scope()/isolateScope()`?
 this.$componentScope = $parentScope.$new(!this.directive.scope);
 this.initializeOutputs();
}
UpgradeComponent.prototype.ngOnInit = function () {
 var _this = this;
 // Collect contents, insert
and compile template
 var attachChildNodes = this.helper.prepareTransclusion();
 var linkFn =
this.helper.compileTemplate();
 // Instantiate controller
 var controllerType =
this.directive.controller;
 var bindToController = this.directive.bindToController;
 if
(controllerType) {
 this.controllerInstance = this.helper.buildController(controllerType,

```

```

this.$componentScope);
}
else if (bindToController) {
 throw new Error("Upgraded
directive \"" + this.directive.name + "\" specifies 'bindToController' but no controller.");
}
// Set up
outputs
this.bindingDestination = bindToController ? this.controllerInstance : this.$componentScope;
this.bindOutputs();
// Require other controllers
var requiredControllers =
this.helper.resolveAndBindRequiredControllers(this.controllerInstance);
// Hook: $onChanges
if
(this.pendingChanges) {
 this.forwardChanges(this.pendingChanges);
 this.pendingChanges =
null;
}
// Hook: $onInit
if (this.controllerInstance &&
isFunction(this.controllerInstance.$onInit)) {
 this.controllerInstance.$onInit();
}
//
Hook: $doCheck
if (this.controllerInstance && isFunction(this.controllerInstance.$doCheck)) {
var callDoCheck = function () { return _this.controllerInstance.$doCheck(); };
this.unregisterDoCheckWatcher = this.$componentScope.$parent.$watch(callDoCheck);
callDoCheck();
}
// Linking
var link = this.directive.link;
var preLink = typeof
link == 'object' && link.pre;
var postLink = typeof link == 'object' ? link.post : link;
var attrs =
NOT_SUPPORTED;
var transcludeFn = NOT_SUPPORTED;
if (preLink) {
preLink(this.$componentScope, this.$element, attrs, requiredControllers, transcludeFn);
}
linkFn(this.$componentScope, null, { parentBoundTranscludeFn: attachChildNodes });
if (postLink) {
postLink(this.$componentScope, this.$element, attrs, requiredControllers, transcludeFn);
}
//
Hook: $postLink
if (this.controllerInstance && isFunction(this.controllerInstance.$postLink)) {
this.controllerInstance.$postLink();
}
};
UpgradeComponent.prototype.ngOnChanges =
function (changes) {
 if (!this.bindingDestination) {
 this.pendingChanges = changes;
 }
 else {
 this.forwardChanges(changes);
 }
};
UpgradeComponent.prototype.ngDoCheck = function () {
 var _this = this;
 var
twoWayBoundProperties = this.bindings.twoWayBoundProperties;
var twoWayBoundLastValues =
this.bindings.twoWayBoundLastValues;
var propertyToOutputMap =
this.bindings.propertyToOutputMap;
twoWayBoundProperties.forEach(function (propName, idx) {
 var newValue = _this.bindingDestination[propName];
 var oldValue =
twoWayBoundLastValues[idx];
 if (!Object.is(newValue, oldValue)) {
 var outputName =
propertyToOutputMap[propName];
 var eventEmitter = _this[outputName];
 eventEmitter.emit(newValue);
 twoWayBoundLastValues[idx] = newValue;
 }
});
};
UpgradeComponent.prototype.ngOnDestroy = function () {
 if
(isFunction(this.unregisterDoCheckWatcher)) {
 this.unregisterDoCheckWatcher();
 }
this.helper.onDestroy(this.$componentScope, this.controllerInstance);
};
UpgradeComponent.prototype.initializeBindings = function (directive) {
 var _this = this;
 var
btcIsObject = typeof directive.bindToController === 'object';
if (btcIsObject &&
Object.keys(directive.scope).length) {
 throw new Error("Binding definitions on scope and controller at
the same time is not supported.");
}
var context = btcIsObject ? directive.bindToController :
directive.scope;
var bindings = new Bindings();
if (typeof context === 'object') {
Object.keys(context).forEach(function (propName) {
 var definition = context[propName];
 var bindingType = definition.charAt(0);
 // QUESTION: What about `=*`? Ignore? Throw? Support?
 switch (bindingType) {
 case '@':
 // We don't
 // need to do anything special. They will be defined as inputs on the
 // upgraded component facade
 // and the change propagation will be handled by
 // `ngOnChanges()`
 break;
 case '=':
 bindings.twoWayBoundProperties.push(propName);
 bindings.twoWayBoundLastValues.push(INITIAL_VALUE$1);
 bindings.propertyToOutputMap[propName] = propName + 'Change';
 break;
 case '&':
 bindings.expressionBoundProperties.push(propName);
 bindings.propertyToOutputMap[propName] = propName;
 break;
 default:
 var json = JSON.stringify(context);
 throw new Error("Unexpected mapping \"" +

```

```

bindingType + \' in \' + json + \' in \' + _this.name + \' directive.\');\n
 return bindings;\n
 UpgradeComponent.prototype.initializeOutputs = function () {\n
_this = this;\n
 // Initialize the outputs for `=` and `&` bindings\n
this.bindings.twoWayBoundProperties.concat(this.bindings.expressionBoundProperties)\n
.forEach(function (propName) {\n
 _this[outputName] = new core.EventEmitter();\n
UpgradeComponent.prototype.bindOutputs = function () {\n
 var _this = this;\n
 // Bind `&` bindings to\n
the corresponding outputs\n
 this.bindings.expressionBoundProperties.forEach(function (propName) {\n
 var outputName = _this.bindings.propertyToOutputMap[propName];\n
 var emitter =\n
_this[outputName];\n
 _this.bindingDestination[propName] = function (value) { return emitter.emit(value);\n
};\n
});\n
});\n
UpgradeComponent.prototype.forwardChanges = function (changes) {\n
 var\n
_this = this;\n
 // Forward input changes to `bindingDestination`\n
Object.keys(changes).forEach(function (propName) { return _this.bindingDestination[propName] =\n
changes[propName].currentValue; });\n
 if (isFunction(this.bindingDestination.$onChanges)) {\n
this.bindingDestination.$onChanges(changes);\n
 }\n
};\n
return UpgradeComponent;\n
})();\n
UpgradeComponent.decorators = [\n
 { type: core.Directive }\n
];\n
UpgradeComponent.ctorParameters =\n
function () { return [\n
 { type: String },\n
 { type: core.ElementRef },\n
 { type: core.Injector }\n
];\n
};\n
/**\n
 * @description\n
 * An `NgModule`, which you import to provide AngularJS core\n
services,\n
 * and has an instance method used to bootstrap the hybrid upgrade application.\n
 * Part of\n
the [upgrade/static](api?query=upgrade/static)\n
 * library for hybrid upgrade apps that support AOT\n
compilation*\n
 * The `upgrade/static` package contains helpers that allow AngularJS and Angular\n
components*\n
 * to be used together inside a hybrid upgrade application, which supports AOT compilation.\n
 *\n
 * Specifically, the classes and functions in the `upgrade/static` module allow the following:\n
 * 1.\n
Creation of an Angular directive that wraps and exposes an AngularJS component so*\n
 * that it can be used in\n
an Angular template. See `UpgradeComponent`.\n
 * 2. Creation of an AngularJS directive that wraps and exposes\n
an Angular component so*\n
 * that it can be used in an AngularJS template. See `downgradeComponent`.\n
 * 3.\n
Creation of an Angular root injector provider that wraps and exposes an AngularJS*\n
 * service so that it can\n
be injected into an Angular context. See*\n
 * {@link UpgradeModule#upgrading-an-angular-1-service\n
Upgrading an AngularJS service} below.\n
 * 4. Creation of an AngularJS service that wraps and exposes an\n
Angular injectable*\n
 * so that it can be injected into an AngularJS context. See `downgradeInjectable`.\n
 * 3.\n
Bootstrapping of a hybrid Angular application which contains both of the frameworks*\n
 * coexisting in a single\n
application.\n
 * @usageNotes\n
 * ``ts\n
 * import { UpgradeModule } from\n
'@angular/upgrade/static';\n
 * ``\n
 * See also the {@link UpgradeModule#examples examples}\n
below.\n
 * ### Mental Model\n
 * When reasoning about how a hybrid application works it is\n
useful to have a mental model which*\n
 * describes what is happening and explains what is happening at the\n
lowest level.\n
 * 1. There are two independent frameworks running in a single application, each framework\n
treats*\n
 * the other as a black box.\n
 * 2. Each DOM element on the page is owned exactly by one\n
framework. Whichever framework*\n
 * instantiated the element is the owner. Each framework only\n
updates/interacts with its own*\n
 * DOM elements and ignores others.\n
 * 3. AngularJS directives always\n
execute inside the AngularJS framework codebase regardless of*\n
 * where they are instantiated.\n
 * 4.\n
Angular components always execute inside the Angular framework codebase regardless of*\n
 * where they are\n
instantiated.\n
 * 5. An AngularJS component can be `upgraded` to an Angular component. This is achieved\n
by*\n
 * defining an Angular directive, which bootstraps the AngularJS component at its location*\n
 * in the\n
DOM. See `UpgradeComponent`.\n
 * 6. An Angular component can be `downgraded` to an AngularJS\n
component. This is achieved by*\n
 * defining an AngularJS directive, which bootstraps the Angular component\n
at its location*\n
 * in the DOM. See `downgradeComponent`.\n
 * 7. Whenever an\n
`upgraded`/`downgraded`\n
component is instantiated the host element is owned by*\n
 * the framework doing\n
the instantiation. The other framework then instantiates and owns the*\n
 * view for that component.\n
 * 1.

```

This implies that the component bindings will always follow the semantics of the instantiation framework.

- The DOM attributes are parsed by the framework that owns the current template. So attributes in AngularJS templates must use kebab-case, while AngularJS templates must use camelCase.
- However the template binding syntax will always use the Angular style, e.g. square brackets ([...]) for property binding.
- Angular is bootstrapped first; AngularJS is bootstrapped second. Angular always owns the root component of the application.
- The new application is running in an Angular zone, and therefore it no longer needs calls to \$apply().

### The `UpgradeModule` class

This class is an `NgModule`, which you import to provide AngularJS core services, and has an instance method used to bootstrap the hybrid upgrade application.

Core AngularJS services

Importing this `NgModule` will add providers for the core [AngularJS services](https://docs.angularjs.org/api/ng/service) to the root injector.

Bootstrap

The runtime instance of this class contains a `@link UpgradeModule#bootstrap bootstrap()` method, which you use to bootstrap the top level AngularJS module onto an element in the DOM for the hybrid upgrade app.

It also contains properties to access the `@link UpgradeModule#injector root injector`, the `bootstrap `NgZone`` and the `[AngularJS $injector](https://docs.angularjs.org/api/auto/service/$injector)`.

### Examples

Import the `UpgradeModule` into your top level `@link NgModule Angular `NgModule``.

`@example upgrade/static/ts/full/module.ts region='ng2-module'`

Then inject `UpgradeModule` into your Angular `NgModule` and use it to bootstrap the top level `[AngularJS module](https://docs.angularjs.org/api/ng/type/angular.Module)` in the ``ngDoBootstrap()`` method.

`@example upgrade/static/ts/full/module.ts region='bootstrap-ng1'`

Finally, kick off the whole process, by bootstrapping your top level Angular `NgModule`.

`@example upgrade/static/ts/full/module.ts region='bootstrap-ng2'`

`@a upgrading-an-angular-1-service`

### Upgrading an AngularJS service

There is no specific API for upgrading an AngularJS service. Instead you should just follow the following recipe:

Let's say you have an AngularJS service:

`@example upgrade/static/ts/full/module.ts region='ng1-text-formatter-service'`

Then you should define an Angular provider to be included in your `NgModule`'s `providers`` property.

`@example upgrade/static/ts/full/module.ts region='upgrade-ng1-service'`

Then you can use the "upgraded" AngularJS service by injecting it into an Angular component or service.

`@example upgrade/static/ts/full/module.ts region='use-ng1-upgraded-service'`

`@publicApi`

```

var
UpgradeModule = /** @class */ (function () {
function UpgradeModule(injector, ngZone) {
/** The root `Injector` for the upgrade application. */
this.injector = injector;
/** The bootstrap zone for the upgrade application */
this.ngZone = ngZone;
}
/** Bootstrap an AngularJS application from this NgModule
@param element the element on which to bootstrap the AngularJS application
@param [modules] the AngularJS modules to bootstrap for this application
@param [config] optional extra AngularJS bootstrap configuration */
UpgradeModule.prototype.bootstrap = function (element$1, modules, config /*angular.IAngularBootstrapConfig*/) {
var _this = this;
if (modules === void 0) { modules = []; }
var INIT_MODULE_NAME = UPGRADE_MODULE_NAME + '.init';
// Create an ng1 module to bootstrap
var initModule = module_(INIT_MODULE_NAME, []).constant(UPGRADE_APP_TYPE_KEY, 2 /* Static */).value(INJECTOR_KEY, this.injector).factory(LAZY_MODULE_REF, [INJECTOR_KEY, function (injector) { return ({ injector: injector }); }]).config([
$PROVIDE, $INJECTOR,
function ($provide, $injector) {
if ($injector.has($$TESTABILITY)) {
$provide.decorator($$TESTABILITY, [
$DELEGATE,
function (testabilityDelegate) {
var originalWhenStable = testabilityDelegate.whenStable;
var injector = _this.injector;
// Cannot use arrow function below because we need the context
var newWhenStable = function (callback) {
originalWhenStable.call(testabilityDelegate, function () {
var ng2Testability = injector.get(core.Testability);
if (ng2Testability.isStable()) {

```

```

callback();\n }\n else {\nng2Testability.whenStable(newWhenStable.bind(testabilityDelegate, callback));\n }\n });\n }\n testabilityDelegate.whenStable = newWhenStable;\n return testabilityDelegate;\n }\n });\n }\n if\n($injector.has($INTERVAL)) {\n $provide.decorator($INTERVAL, [\n$DELEGATE,\n function (intervalDelegate) {\n // Wrap the $interval service so\nthat setInterval is called outside NgZone,\n // but the callback is still invoked within it. This is so\nthat $interval\n // won't block stability, which preserves the behavior from AngularJS.\n var wrappedInterval = function (fn, delay, count, invokeApply) {\n var pass = [];\n for (var _i = 4; _i < arguments.length; _i++) {\n pass[_i - 4] =\narguments[_i];\n }\n return _this.ngZone.runOutsideAngular(function ()\n{\n return intervalDelegate.apply(void 0, __spread([function () {\n var args = [];\n for (var _i = 0; _i < arguments.length; _i++) {\n args[_i] = arguments[_i];\n }\n // Run callback\nin the next VM turn - $interval calls\n // $rootScope.$apply, and running the callback\nin NgZone will\n // cause a '$digest already in progress' error if it's in the\n // same vm turn.\n setTimeout(function () {\n _this.ngZone.run(function () { return fn.apply(void 0, __spread(args)); });\n });\n }, delay, count, invokeApply), pass);\n });\n });\n wrappedInterval['cancel'] = intervalDelegate.cancel;\n return\nwrappedInterval;\n }\n });\n }\n }\n })\n .run([\n $INJECTOR,\n function ($injector) {\n _this.$injector = $injector;\n //\nInitialize the ng1 $injector provider\n setTempInjectorRef($injector);\n _this.injector.get($INJECTOR);\n // Put the injector on the DOM, so that it can be \"required\"\n element(element$1).data(controllerKey(INJECTOR_KEY), _this.injector);\n // Wire up the ng1\nrootScope to run a digest cycle whenever the zone settles\n // We need to do this in the next tick so that\nwe don't prevent the bootstrap\n // stabilizing\n setTimeout(function () {\n var\n$rootScope = $injector.get('$rootScope');\n var subscription =\n _this.ngZone.onMicrotaskEmpty.subscribe(function () {\n if ($rootScope.$$phase) {\n if (core.isDevMode()) {\n console.warn('A digest was triggered while one was already in\nprogress. This may mean that something is triggering digests outside the Angular zone.);\n }\n return $rootScope.$evalAsync();\n }\n return\n$rootScope.$digest();\n });\n $rootScope.$on('$destroy', function () {\n subscription.unsubscribe();\n });\n }, 0);\n }\n });\n var\nupgradeModule = module_(UPGRADE_MODULE_NAME, [INIT_MODULE_NAME].concat(modules));\n // Make sure resumeBootstrap() only exists if the current bootstrap is deferred\n var windowAngular =\nwindow['angular'];\n windowAngular.resumeBootstrap = undefined;\n // Bootstrap the AngularJS\napplication inside our zone\n this.ngZone.run(function () {\n bootstrap(element$1,\n[upgradeModule.name], config);\n });\n // Patch resumeBootstrap() to run inside the ngZone\nif (windowAngular.resumeBootstrap) {\n var originalResumeBootstrap_1 =\nwindowAngular.resumeBootstrap;\n var ngZone_1 = this.ngZone;\n windowAngular.resumeBootstrap = function () {\n var _this = this;\n var args =\narguments;\n windowAngular.resumeBootstrap = originalResumeBootstrap_1;\n return\nngZone_1.run(function () { return windowAngular.resumeBootstrap.apply(_this, args); });\n });\n }\n });\n return UpgradeModule;\n }());\n UpgradeModule.decorators = [\n { type: core.NgModule,\nargs: [{ providers: [angular1Providers] },] }\n];\n UpgradeModule.ctorParameters = function () { return [\n { type: core.Injector },\n { type: core.NgZone }\n];\n };\n /**\n * @license\n * Copyright Google LLC\n All Rights Reserved.\n *\n * Use of this source code is governed by an MIT-style license that can be\n *

```



```

found in the LICENSE file at https://angular.io/license\n *^n // This file only re-exports items to appear in the
public api. Keep it that way.\n\n /**\n * @license\n * Copyright Google LLC All Rights Reserved.\n *\n * Use of this source code is governed by an MIT-style license that can be\n * found in the LICENSE file at
https://angular.io/license\n *^n\n /**\n * Generated bundle index. Do not edit.\n *^n\n
exports.UpgradeComponent = UpgradeComponent;\n exports.UpgradeModule = UpgradeModule;\n
exports.VERSION = VERSION;\n exports.downgradeComponent = downgradeComponent;\n
exports.downgradeInjectable = downgradeInjectable;\n exports.downgradeModule = downgradeModule;\n
exports.getAngularJSGlobal = getAngularJSGlobal;\n exports.getAngularLib = getAngularLib;\n
exports.setAngularJSGlobal = setAngularJSGlobal;\n exports.setAngularLib = setAngularLib;\n
exports.angular_packages_upgrade_static_static_a = injectorFactory;\n
exports.angular_packages_upgrade_static_static_b = rootScopeFactory;\n
exports.angular_packages_upgrade_static_static_c = compileFactory;\n
exports.angular_packages_upgrade_static_static_d = parseFactory;\n
exports.angular_packages_upgrade_static_static_e = angularProviders;\n\n Object.defineProperty(exports,
'__esModule', { value: true });\n\n\n));\n\n/# sourceMappingURL=upgrade-static.umd.js.map\n"]

```

Found in path(s):

```

* /opt/cola/permits/1358260707_1657134860.914432/0/upgrade-11-0-2-tgz/package/bundles/upgrade-
static.umd.min.js.map

```

No license file was found, but licenses were detected in source scan.

```

{"version":3,"file":"static.js","sources":["../../../../packages/upgrade/src/common/src/angular1.ts","../../../../pa
ckages/upgrade/src/common/src/constants.ts","../../../../packages/upgrade/src/common/src/component_info.ts","..
../../../../packages/upgrade/src/common/src/util.ts","../../../../packages/upgrade/src/common/src/downgrade_co
mponent_adapter.ts","../../../../packages/upgrade/src/common/src/promise_util.ts","../../../../packages/upgrade
/src/common/src/downgrade_component.ts","../../../../packages/upgrade/src/common/src/downgrade_injectable.t
s","../../../../packages/upgrade/src/common/src/version.ts","../../../../packages/upgrade/static/src/angular1_pro
viders.ts","../../../../packages/upgrade/static/src/util.ts","../../../../packages/upgrade/static/src/downgrade_mod
ule.ts","../../../../packages/upgrade/src/common/src/upgrade_helper.ts","../../../../packages/upgrade/static/src/u
pgrade_component.ts","../../../../packages/upgrade/static/src/upgrade_module.ts","../../../../packages/upgrade/s
tatic/public_api.ts","../../../../packages/upgrade/static/index.ts","../../../../packages/upgrade/static/static.ts"],"so
urcesContent":["/**\n * @license\n * Copyright Google LLC All Rights Reserved.\n *\n * Use of this source code is
governed by an MIT-style license that can be\n * found in the LICENSE file at https://angular.io/license\n
*^n\nexport type Ng1Token = string;\nexport type Ng1Expression = string|Function;\n\nexport interface
IAnnotatedFunction extends Function {\n // Older versions of `@types/angular` typings extend the global
`Function` interface with\n // `$inject?: string[]`, which is not compatible with `$inject?: ReadonlyArray<string>`
(used in\n // latest versions).\n $inject?: Function extends {$inject?: string[]}? Ng1Token[]:
ReadonlyArray<Ng1Token>;\n}\n\nexport type IInjectable = (Ng1Token|Function)[]|IAnnotatedFunction;\n\nexport
type SingleOrListOrMap<T> = T|T[]|{[key: string]: T};\n\nexport interface IModule {\n name: string;\n requires:
(string|IInjectable)[];\n config(fn: IInjectable): IModule;\n directive(selector: string, factory: IInjectable):
IModule;\n component(selector: string, component: IComponent): IModule;\n controller(name: string, type:
IInjectable): IModule;\n factory(key: Ng1Token, factoryFn: IInjectable): IModule;\n value(key: Ng1Token, value:
any): IModule;\n constant(token: Ng1Token, value: any): IModule;\n run(a: IInjectable): IModule;\n}\n\nexport
interface ICompileService {\n (element: Element|NodeList|Node[]|string, transclude?: Function):
ILinkFn;\n}\n\nexport interface ILinkFn {\n (scope: IScope, cloneAttachFn?: ICloneAttachFunction, options?:
ILinkFnOptions): IAugmentedJQuery;\n $slots?: {[slotName: string]: ILinkFn};\n}\n\nexport interface
ILinkFnOptions {\n parentBoundTranscludeFn?: Function;\n transcludeControllers?: {[key: string]: any};\n
futureParentElement?: Node;\n}\n\nexport interface IRootScopeService {\n $new(isolate?: boolean): IScope;\n $id:

```

```

string;\n $parent: IScope;\n $root: IScope;\n $watch(exp: Ng1Expression, fn?: (a1?: any, a2?: any) => void):
Function;\n $on(event: string, fn?: (event?: any, ...args: any[]) => void): Function;\n $destroy(): any;\n
$apply(exp?: Ng1Expression): any;\n $digest(): any;\n $evalAsync(exp: Ng1Expression, locals?: any): void;\n
$on(event: string, fn?: (event?: any, ...args: any[]) => void): Function;\n $$childTail: IScope;\n $$childHead:
IScope;\n $$nextSibling: IScope;\n [key: string]: any;\n}\nexport interface IScope extends IRootScopeService
{\n}\nexport interface IAngularBootstrapConfig {\n strictDi?: boolean;\n}\nexport interface IDirective {\n
compile?: IDirectiveCompileFn;\n controller?: IController;\n controllerAs?: string;\n bindToController?:
boolean|{[key: string]: string};\n link?: IDirectiveLinkFn|IDirectivePrePost;\n name?: string;\n priority?:
number;\n replace?: boolean;\n require?: DirectiveRequireProperty;\n restrict?: string;\n scope?: boolean|{[key:
string]: string};\n template?: string|Function;\n templateUrl?: string|Function;\n templateNamespace?: string;\n
terminal?: boolean;\n transclude?: DirectiveTranscludeProperty;\n}\nexport type DirectiveRequireProperty =
SingleOrListOrMap<string>;\nexport type DirectiveTranscludeProperty = boolean|'element'|{[key: string]:
string};\nexport interface IDirectiveCompileFn {\n (templateElement: IAugmentedJQuery, templateAttributes:
IAttributes,\n transclude: ITranscludeFunction): IDirectivePrePost;\n}\nexport interface IDirectivePrePost {\n
pre?: IDirectiveLinkFn;\n post?: IDirectiveLinkFn;\n}\nexport interface IDirectiveLinkFn {\n (scope: IScope,
instanceElement: IAugmentedJQuery, instanceAttributes: IAttributes,\n controller: any, transclude:
ITranscludeFunction): void;\n}\nexport interface IComponent {\n bindings?: {[key: string]: string};\n controller?:
string|IInjectable;\n controllerAs?: string;\n require?: DirectiveRequireProperty;\n template?: string|Function;\n
templateUrl?: string|Function;\n transclude?: DirectiveTranscludeProperty;\n}\nexport interface IAttributes {\n
$observe(attr: string, fn: (v: string) => void): void;\n [key: string]: any;\n}\nexport interface ITranscludeFunction
{\n // If the scope is provided, then the cloneAttachFn must be as well.\n (scope: IScope, cloneAttachFn:
ICloneAttachFunction): IAugmentedJQuery;\n // If one argument is provided, then it's assumed to be the
cloneAttachFn.\n (cloneAttachFn?: ICloneAttachFunction): IAugmentedJQuery;\n}\nexport interface
ICloneAttachFunction {\n (clonedElement: IAugmentedJQuery, scope: IScope): any;\n}\nexport type
IAugmentedJQuery = Node[]&{\n on?: (name: string, fn: () => void) => void;\n data?: (name: string, value?: any)
=> any;\n text?: () => string;\n inheritedData?: (name: string, value?: any) => any;\n contents?: () =>
IAugmentedJQuery;\n parent?: () => IAugmentedJQuery;\n empty?: () => void;\n append?: (content:
IAugmentedJQuery|string) => IAugmentedJQuery;\n controller?: (name: string) => any;\n isolateScope?: () =>
IScope;\n injector?: () => IInjectorService;\n triggerHandler?: (eventTypeOrObject: string|Event, extraParameters?:
any[]) => IAugmentedJQuery;\n remove?: () => void;\n removeData?: () => void;\n};\nexport interface IProvider
{\n $get: IInjectable;\n}\nexport interface IProvideService {\n provider(token: Ng1Token, provider: IProvider):
IProvider;\n factory(token: Ng1Token, factory: IInjectable): IProvider;\n service(token: Ng1Token, type:
IInjectable): IProvider;\n value(token: Ng1Token, value: any): IProvider;\n constant(token: Ng1Token, value: any):
void;\n decorator(token: Ng1Token, factory: IInjectable): void;\n}\nexport interface IParseService {\n (expression:
string): ICompiledExpression;\n}\nexport interface ICompiledExpression {\n (context: any, locals: any): any;\n
assign?: (context: any, value: any) => any;\n}\nexport interface IHttpBackendService {\n (method: string, url:
string, post?: any, callback?: Function, headers?: any, timeout?: number,\n withCredentials?: boolean):
void;\n}\nexport interface ICacheObject {\n put<T>(key: string, value?: T): T;\n get(key: string): any;\n}\nexport
interface ITemplateCacheService extends ICacheObject {\n}\nexport interface ITemplateRequestService {\n
(template: string|any /* TrustedResourceUrl */, ignoreRequestError?: boolean): Promise<string>;\n
totalPendingRequests: number;\n}\nexport type IController = string|IInjectable;\nexport interface IControllerService
{\n (controllerConstructor: IController, locals?: any, later?: any, ident?: any): any;\n (controllerName: string,
locals?: any): any;\n}\nexport interface IInjectorService {\n get(key: string): any;\n has(key: string):
boolean;\n}\nexport interface IIntervalService {\n (func: Function, delay: number, count?: number,
invokeApply?: boolean,\n ...args: any[]): Promise<any>;\n cancel(promise: Promise<any>): boolean;\n}\nexport
interface ITestabilityService {\n findBindings(element: Element, expression: string, opt_exactMatch?: boolean):
Element[];\n findModels(element: Element, expression: string, opt_exactMatch?: boolean): Element[];\n
getLocation(): string;\n setLocation(url: string): void;\n whenStable(callback: Function): void;\n}\n}\nexport

```

```

interface INgModelController {
 $render(): void;
 $isEmpty(value: any): boolean;
 $setValidity(validationErrorKey: string, isValid: boolean): void;
 $setPristine(): void;
 $setDirty(): void;
 $setUntouched(): void;
 $setTouched(): void;
 $rollbackViewValue(): void;
 $validate(): void;
 $commitViewValue(): void;
 $setViewValue(value: any, trigger: string): void;
 $viewValue: any;
 $modelValue: any;
 $parsers: Function[];
 $formatters: Function[];
 $validators: {[key: string]: Function};
 $asyncValidators: {[key: string]: Function};
 $viewChangeListeners: Function[];
 $error: Object;
 $pending: Object;
 $untouched: boolean;
 $touched: boolean;
 $pristine: boolean;
 $dirty: boolean;
 $valid: boolean;
 $invalid: boolean;
 $name: string;
}

function noNg(): never {
 throw new Error('AngularJS v1.x is not loaded!');
}

const noNgElement: typeOf angular.element = ((e) => noNg()) as any;
noNgElement.cleanData = noNg;

let angular: {
 bootstrap: (e: Element, modules: (string|IInjectable)[], config?: IAngularBootstrapConfig) => InjectorService,
 module: (prefix: string, dependencies?: string[]) => IModule,
 element: (e: string|Element|Document|IAugmentedJQuery): IAugmentedJQuery,
 cleanData: (nodes: Node[]|NodeList) => void,
 injector: (modules: Array<string|IInjectable>, strictDi?: boolean) => InjectorService,
 version: {major: number},
 resumeBootstrap: () => void,
 getTestability: (e: Element) => ITestabilityService
} = {
 bootstrap: noNg,
 module: noNg,
 element: noNgElement,
 injector: noNg,
 version: undefined as any,
 resumeBootstrap: noNg,
 getTestability: noNg
};

if (window.hasOwnProperty('angular')) {
 angular = (<any>window).angular;
} catch {
 // ignore in CJS mode.
}

@deprecated Use `setAngularJSGlobal` instead.
* @publicApi
* ^\nexport function setAngularLib(ng: any): void {
 setAngularJSGlobal(ng);
}

@deprecated Use `getAngularJSGlobal` instead.
* @publicApi
* ^\nexport function getAngularLib(): any {
 return getAngularJSGlobal();
}

* Resets the AngularJS global.
* @publicApi
* ^\nexport function setAngularJSGlobal(ng: any): void {
 angular = ng;
}

* Returns the current AngularJS global.
* @publicApi
* ^\nexport function getAngularJSGlobal(): any {
 return angular;
}

export const bootstrap: typeOf angular.bootstrap = (e, modules, config?) => angular.bootstrap(e, modules, config);

// Do not declare as `module` to avoid webpack bug (see https://github.com/angular/angular/issues/30050).
export const module_: typeOf angular.module = (prefix, dependencies?) => angular.module(prefix, dependencies);

export const element: typeOf angular.element = (e => angular.element(e)) as typeOf angular.element;
element.cleanData = nodes => angular.element.cleanData(nodes);

export const injector: typeOf angular.injector = (modules: Array<string|IInjectable>, strictDi?: boolean) => angular.injector(modules, strictDi);

export const resumeBootstrap: typeOf angular.resumeBootstrap = () => angular.resumeBootstrap();

export const getTestability: typeOf angular.getTestability = e => angular.getTestability(e);

"/**
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 * found in the LICENSE file at https://angular.io/license
 */

export const $COMPILE = '$compile';
export const $CONTROLLER = '$controller';
export const $DELEGATE = '$delegate';
export const $EXCEPTION_HANDLER = '$exceptionHandler';
export const $HTTP_BACKEND = '$httpBackend';
export const $INJECTOR = '$injector';
export const $INTERVAL = '$interval';
export const $PARSE = '$parse';
export const $PROVIDE = '$provide';
export const $ROOT_SCOPE = '$rootScope';
export const $SCOPE = '$scope';
export const $TEMPLATE_CACHE = '$templateCache';
export const $TEMPLATE_REQUEST = '$templateRequest';
export const $TESTABILITY = '$$testability';
export const COMPILER_KEY = '$$angularCompiler';
export const DOWNGRADED_MODULE_COUNT_KEY = '$$angularDowngradedModuleCount';
export const GROUP_PROJECTABLE_NODES_KEY = '$$angularGroupProjectableNodes';
export const INJECTOR_KEY = '$$angularInjector';
export const LAZY_MODULE_REF = '$$angularLazyModuleRef';
export const NG_ZONE_KEY = '$$angularNgZone';
export const UPGRADE_APP_TYPE_KEY = '$$angularUpgradeAppType';

export const REQUIRE_INJECTOR = '?^^' + INJECTOR_KEY;
export const REQUIRE_NG_MODEL = '?ngModel';

export const UPGRADE_MODULE_NAME = '$$UpgradeModule';

"/**
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```

that can be found in the LICENSE file at <https://angular.io/license>

```

 * A `PropertyBinding`
 represents a mapping between a property name and an attribute name. It is parsed from a string of the form
 `"prop: attr";` or simply `"propAndAttr"` where the property and attribute have the same identifier.
 *
 * export class PropertyBinding {
 // TODO(issue/24571): remove '!'.
 bracketAttr!: string;
 //
 TODO(issue/24571): remove '!'.
 bracketParenAttr!: string;
 // TODO(issue/24571): remove '!'.
 parenAttr!:
 string;
 // TODO(issue/24571): remove '!'.
 onAttr!: string;
 // TODO(issue/24571): remove '!'.
 bindAttr!:
 string;
 // TODO(issue/24571): remove '!'.
 bindonAttr!: string;
 constructor(public prop: string, public attr:
 string) {
 this.parseBinding();
 }
 private parseBinding() {
 this.bracketAttr = `[${this.attr}]`;
 this.parenAttr = `(${this.attr})`;
 this.bracketParenAttr = `[(${this.attr})]`;
 const capitalAttr =
 this.attr.charAt(0).toUpperCase() + this.attr.substr(1);
 this.onAttr = `on${capitalAttr}`;
 this.bindAttr =
 `bind${capitalAttr}`;
 this.bindonAttr = `bindon${capitalAttr}`;
 }
 }
 * @license
 * Copyright
 Google LLC All Rights Reserved.
 * Use of this source code is governed by an MIT-style license that can be
 * found in the LICENSE file at https://angular.io/license
 import { Injector, Type } from
 '@angular/core';
 import { IInjectorService, INgModelController } from './angular1';
 import
 { DOWNGRADED_MODULE_COUNT_KEY, UPGRADE_APP_TYPE_KEY } from './constants';
 const
 DIRECTIVE_PREFIX_REGEXP = /^(?:x|data)[:-_]/i;
 const DIRECTIVE_SPECIAL_CHARS_REGEXP = /[:\-_]+(\.)/g;
 export function onError(e: any) {
 // TODO: (misko): We seem to not have a stack trace here!
 if
 (console.error) {
 console.error(e, e.stack);
 } else {
 // tslint:disable-next-line:no-console
 console.log(e,
 e.stack);
 }
 throw e;
 }
 export function controllerKey(name: string): string {
 return '$' + name +
 'Controller';
 }
 export function directiveNormalize(name: string): string {
 return
 name.replace(DIRECTIVE_PREFIX_REGEXP, "")
 .replace(DIRECTIVE_SPECIAL_CHARS_REGEXP, (_,
 letter) => letter.toUpperCase());
 }
 export function getTypeName(type: Type<any>): string {
 // Return the
 name of the type or the first line of its stringified version.
 return (type as any).overriddenName || type.name ||
 type.toString().split("\n")[0];
 }
 export function getDowngradedModuleCount($injector: IInjectorService):
 number {
 return $injector.has(DOWNGRADED_MODULE_COUNT_KEY) ?
 $injector.get(DOWNGRADED_MODULE_COUNT_KEY) : 0;
 }
 export
 function getUpgradeAppType($injector: IInjectorService): UpgradeAppType {
 return
 $injector.has(UPGRADE_APP_TYPE_KEY) ? $injector.get(UPGRADE_APP_TYPE_KEY) :
 UpgradeAppType.None;
 }
 export function isFunction(value: any): value is Function {
 return typeof
 value === 'function';
 }
 export function validateInjectionKey(
 $injector: IInjectorService,
 downgradedModule: string, injectionKey: string,
 attemptedAction: string): void {
 const upgradeAppType =
 getUpgradeAppType($injector);
 const downgradedModuleCount = getDowngradedModuleCount($injector);
 // Check for common errors.
 switch (upgradeAppType) {
 case UpgradeAppType.Dynamic:
 case
 UpgradeAppType.Static:
 if (downgradedModule) {
 throw new Error(
 `Error while
 ${attemptedAction}: 'downgradedModule' unexpectedly specified.
 ` +
 `You should not specify a value for
 \`${downgradedModule}\`, unless you are downgrading '
 ` +
 `more than one Angular module (via
 \`${downgradeModule()}\`.)`);
 }
 break;
 case UpgradeAppType.Lite:
 if (!downgradedModule &&
 (downgradedModuleCount >= 2)) {
 throw new Error(
 `Error while
 ${attemptedAction}:
 'downgradedModule' not specified.
 ` +
 `This application contains more than one downgraded Angular
 module, thus you need to '
 ` +
 `always specify \`${downgradedModule}\` when downgrading components and
 injectables.`);
 }
 }
 if (!$injector.has(injectionKey)) {
 throw new Error(
 `Error while
 ${attemptedAction}: Unable to find the specified downgraded module.
 ` +
 `Did you forget to downgrade
 an Angular module or include it in the AngularJS '
 ` +
 `application?`);
 }
 }
 break;
 default:
 throw new Error(
 `Error while
 ${attemptedAction}: Not a valid '@angular/upgrade' application.
 ` +
 `Did you forget to downgrade an Angular module or include it in the AngularJS '
 ` +
 `application?`);
 }
 }
 }
 export class Deferred<R> {
 promise: Promise<R>;
 // TODO(issue/24571): remove '!'.
 resolve!:
 (value?: R|PromiseLike<R>) => void;
 // TODO(issue/24571): remove '!'.
 reject!: (error?: any) => void;
 constructor() {
 this.promise = new Promise((res, rej) => {
 this.resolve = res;
 this.reject = rej;
 });
 }
 }

```

```

}\n}\n\nexport interface LazyModuleRef {\n injector?: Injector;\n promise?: Promise<Injector>;\n}\n\nexport
const enum UpgradeAppType {\n // App NOT using `@angular/upgrade`. (This should never happen in an
`ngUpgrade` app.)\n None,\n\n // App using the deprecated `@angular/upgrade` APIs (a.k.a. dynamic
`ngUpgrade`).\n Dynamic,\n\n // App using `@angular/upgrade/static` with `UpgradeModule`.\n Static,\n\n // App
using `@angular/upgrade/static` with `downgradeModule()` (a.k.a. `ngUpgrade-lite`).\n Lite,\n}\n\n/**\n * @return
Whether the passed-in component implements the subset of the\n * `ControlValueAccessor` interface needed for
AngularJS `ng-model`\n * compatibility.\n */\nfunction supportsNgModel(component: any) {\n return typeof
component.writeValue === 'function' &&\n typeof component.registerOnChange === 'function';\n}\n\n/**\n *
Glue the AngularJS `NgModelController` (if it exists) to the component\n * (if it implements the needed subset of
the `ControlValueAccessor` interface).\n */\nexport function hookupNgModel(ngModel: INgModelController,
component: any) {\n if (ngModel && supportsNgModel(component)) {\n ngModel.$render = () => {\n
component.writeValue(ngModel.$viewValue);\n };\n component.registerOnChange(ngModel.$setViewValue.bind(ngModel));\n if (typeof
component.registerOnTouched === 'function') {\n
component.registerOnTouched(ngModel.$setTouched.bind(ngModel));\n }\n }\n}\n\n/**\n * Test two values for
strict equality, accounting for the fact that `NaN !== NaN`.\n */\nexport function strictEquals(val1: any, val2: any):
boolean {\n return val1 === val2 || (val1 !== val1 && val2 !== val2);\n}\n\n"/**\n * @license\n * Copyright
Google LLC All Rights Reserved.\n * Use of this source code is governed by an MIT-style license that can be\n
* found in the LICENSE file at https://angular.io/license\n */\n\nimport { ApplicationRef, ChangeDetectorRef,
ComponentFactory, ComponentRef, EventEmitter, Injector, OnChanges, SimpleChange, SimpleChanges,
StaticProvider, Testability, TestabilityRegistry, Type } from '@angular/core';\n\nimport { IAttributes,
IAugmentedJQuery, ICompileService, IInjectorService, INgModelController, IParseService, IScope } from
'./angular1';\n\nimport { PropertyBinding } from './component_info';\n\nimport { $$SCOPE } from './constants';\n\nimport
{ getTypeName, hookupNgModel, strictEquals } from './util';\n\nconst INITIAL_VALUE = {\n
__UNINITIALIZED__: true\n};\n\nexport class DowngradeComponentAdapter {\n private implementsOnChanges
= false;\n private inputChangeCount: number = 0;\n private inputChanges: SimpleChanges = {};\n private
componentScope: IScope;\n // TODO(issue/24571): remove '!.\n private componentRef!: ComponentRef<any>;\n
private component: any;\n // TODO(issue/24571): remove '!.\n private changeDetector!: ChangeDetectorRef;\n //
TODO(issue/24571): remove '!.\n private viewChangeDetector!: ChangeDetectorRef;\n\n constructor(\n private
element: IAugmentedJQuery, private attrs: IAttributes, private scope: IScope,\n private ngModel:
INgModelController, private parentInjector: Injector,\n private $injector: IInjectorService, private $compile:
ICompileService,\n private $parse: IParseService, private componentFactory: ComponentFactory<any>,\n
private wrapCallback: <T>(cb: () => T) => () => T) {\n this.componentScope = scope.$new();\n }\n\n
compileContents(): Node[][] {\n const compiledProjectableNodes: Node[][] = [];\n const projectableNodes:
Node[][] = this.groupProjectableNodes();\n const linkFns = projectableNodes.map(nodes =>
this.$compile(nodes));\n\n this.element.empty!();\n\n linkFns.forEach(linkFn => {\n linkFn(this.scope,
(clone: Node[]) => {\n compiledProjectableNodes.push(clone);\n this.element.append!(clone);\n });\n
});\n\n return compiledProjectableNodes;\n }\n\n createComponent(projectableNodes: Node[][]) {\n const
providers: StaticProvider[] = [{ provide: $$SCOPE, useValue: this.componentScope }];\n const childInjector =
Injector.create(\n { providers: providers, parent: this.parentInjector, name:
'DowngradeComponentAdapter' });\n\n this.componentRef =\n this.componentFactory.create(childInjector,
projectableNodes, this.element[0]);\n this.viewChangeDetector =
this.componentRef.injector.get(ChangeDetectorRef);\n this.changeDetector =
this.componentRef.changeDetectorRef;\n this.component = this.componentRef.instance;\n\n // testability hook is
commonly added during component bootstrap in\n // packages/core/src/application_ref.bootstrap()\n // in
downgraded application, component creation will take place here as well as adding the\n // testability hook.\n
const testability = this.componentRef.injector.get(Testability, null);\n if (testability) {\n
this.componentRef.injector.get(TestabilityRegistry)\n

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.registerApplication(this.componentRef.location.nativeElement, testability);\n } \n\n
lookupNgModel(this.ngModel, this.component);\n } \n\n setupInputs(manuallyAttachView: boolean,
propagateDigest = true): void {\n const attrs = this.attrs;\n const inputs = this.componentFactory.inputs || [];\n for (let i = 0; i < inputs.length; i++) {\n const input = new PropertyBinding(inputs[i].propName,
inputs[i].templateName);\n let expr: string|null = null;\n if (attrs.hasOwnProperty(input.attr)) {\n const
observeFn = (prop => {\n let prevValue = INITIAL_VALUE;\n return (currValue: any) => {\n //
Initially, both `observeFn` and `watchFn` will call this function.\n if (!strictEquals(prevValue, currValue))
{\n if (prevValue === INITIAL_VALUE) {\n prevValue = currValue;\n }\n this.updateInput(prop, prevValue, currValue);\n prevValue = currValue;\n }\n });\n })(input.prop);\n attrs.$observe(input.attr, observeFn);\n // Use `watchFn` (in addition to `observeFn`) in
order to initialize the input in time\n // for `ngOnChanges()`. This is necessary if we are already in a `digest`,
which means that\n // `ngOnChanges()` (which is called by a watcher) will run before the `observeFn`
callback.\n let unwatch: Function|null = this.componentScope.$watch(() => {\n unwatch!();\n });\n unwatch = null;\n observeFn(attrs[input.attr]);\n } else if (attrs.hasOwnProperty(input.bindAttr))
{\n expr = attrs[input.bindAttr];\n } else if (attrs.hasOwnProperty(input.bracketAttr)) {\n expr =
attrs[input.bracketAttr];\n } else if (attrs.hasOwnProperty(input.bindonAttr)) {\n expr =
attrs[input.bindonAttr];\n } else if (attrs.hasOwnProperty(input.bracketParenAttr)) {\n expr =
attrs[input.bracketParenAttr];\n }\n if (expr != null) {\n const watchFn =\n (prop => (currValue:
any, prevValue: any) =>\n this.updateInput(prop, prevValue, currValue))(input.prop);\n this.componentScope.$watch(expr, watchFn);\n }\n }\n // Invoke `ngOnChanges()` and Change Detection
(when necessary)\n const detectChanges = () => this.changeDetector.detectChanges();\n const prototype =
this.componentFactory.componentType.prototype;\n this.implementsOnChanges = !!((prototype &&
(<OnChanges>prototype).ngOnChanges));\n this.componentScope.$watch(() => this.inputChangeCount,
this.wrapCallback(() => {\n // Invoke `ngOnChanges()`\n if (this.implementsOnChanges) {\n const
inputChanges = this.inputChanges;\n this.inputChanges = {};\n (<OnChanges>this.component).ngOnChanges(inputChanges!);\n }\n }));\n this.viewChangeDetector.markForCheck();\n // If opted out of propagating digests, invoke change detection
when inputs change.\n if (!propagateDigest) {\n detectChanges();\n }\n // If not opted out of
propagating digests, invoke change detection on every digest\n if (propagateDigest) {\n this.componentScope.$watch(this.wrapCallback(detectChanges));\n }\n // If necessary, attach the view so that
it will be dirty-checked.\n // (Allow time for the initial input values to be set and `ngOnChanges()` to be called.)\n if (manuallyAttachView || !propagateDigest) {\n let unwatch: Function|null = this.componentScope.$watch(() =>
{\n unwatch!();\n unwatch = null;\n });\n const appRef =
this.parentInjector.get<ApplicationRef>(ApplicationRef);\n appRef.attachView(this.componentRef.hostView);\n }\n setupOutputs() {\n const attrs =
this.attrs;\n const outputs = this.componentFactory.outputs || [];\n for (let j = 0; j < outputs.length; j++) {\n const output = new PropertyBinding(outputs[j].propName, outputs[j].templateName);\n const bindonAttr =
output.bindonAttr.substring(0, output.bindonAttr.length - 6);\n const bracketParenAttr =\n `(${output.bracketParenAttr.substring(2, output.bracketParenAttr.length - 8)})`;\n // order below is important -
first update bindings then evaluate expressions\n if (attrs.hasOwnProperty(bindonAttr)) {\n this.subscribeToOutput(output, attrs[bindonAttr], true);\n }\n if (attrs.hasOwnProperty(bracketParenAttr)) {\n this.subscribeToOutput(output, attrs[bracketParenAttr], true);\n }\n if
(attrs.hasOwnProperty(output.onAttr)) {\n this.subscribeToOutput(output, attrs[output.onAttr]);\n }\n if
(attrs.hasOwnProperty(output.parenAttr)) {\n this.subscribeToOutput(output, attrs[output.parenAttr]);\n }\n }\n }\n private subscribeToOutput(output: PropertyBinding, expr: string, isAssignment: boolean = false) {\n const getter = this.$parse(expr);\n const setter = getter.assign;\n if (isAssignment && !setter) {\n throw new
Error(`Expression '${expr}' is not assignable!`);\n }\n const emitter = this.component[output.prop] as
EventEmitter<any>;\n if (emitter) {\n emitter.subscribe({\n next: isAssignment ? (v: any) =>

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setter!(this.scope, v) : \n (v: any) => getter(this.scope, {'$event': v}) \n }); \n } else { \n throw
new Error('Missing emitter '${output.prop}' on component '${\n
getTypeName(this.componentFactory.componentType)}'); \n } \n } \n\n registerCleanup() { \n const
testabilityRegistry = this.componentRef.injector.get(TestabilityRegistry); \n const destroyComponentRef =
this.wrapCallback(() => this.componentRef.destroy()); \n let destroyed = false; \n\n this.element.on('$destroy', ()
=> this.componentScope.$destroy()); \n this.componentScope.$on('$destroy', () => { \n if (!destroyed) { \n
destroyed = true; \n testabilityRegistry.unregisterApplication(this.componentRef.location.nativeElement); \n
destroyComponentRef(); \n } \n }); \n } \n\n getInjector(): Injector { \n return this.componentRef.injector; \n
} \n\n private updateInput(prop: string, prevValue: any, currValue: any) { \n if (this.implementsOnChanges) { \n
this.inputChanges[prop] = new SimpleChange(prevValue, currValue, prevValue === currValue); \n } \n\n
this.inputChangeCount++; \n this.component[prop] = currValue; \n } \n\n groupProjectableNodes() { \n let
ngContentSelectors = this.componentFactory.ngContentSelectors; \n return
groupNodesBySelector(ngContentSelectors, this.element.contents()); \n } \n } \n\n /** \n * Group a set of DOM nodes
into `ngContent` groups, based on the given content selectors. \n */ \n\n export function
groupNodesBySelector(ngContentSelectors: string[], nodes: Node[]): Node[][] { \n const projectableNodes:
Node[][] = []; \n let wildcardNgContentIndex: number; \n\n for (let i = 0, ii = ngContentSelectors.length; i < ii; ++i)
{ \n projectableNodes[i] = []; \n } \n\n for (let j = 0, jj = nodes.length; j < jj; ++j) { \n const node = nodes[j]; \n
const ngContentIndex = findMatchingNgContentIndex(node, ngContentSelectors); \n if (ngContentIndex != null)
{ \n projectableNodes[ngContentIndex].push(node); \n } \n } \n\n return projectableNodes; \n } \n\n function
findMatchingNgContentIndex(element: any, ngContentSelectors: string[]): number | null { \n const ngContentIndices:
number[] = []; \n let wildcardNgContentIndex: number = -1; \n for (let i = 0; i < ngContentSelectors.length; i++) { \n
const selector = ngContentSelectors[i]; \n if (selector === '*') { \n wildcardNgContentIndex = i; \n } else { \n
if (matchesSelector(element, selector)) { \n ngContentIndices.push(i); \n } \n } \n } \n\n
ngContentIndices.sort(); \n if (wildcardNgContentIndex !== -1) { \n
ngContentIndices.push(wildcardNgContentIndex); \n } \n return ngContentIndices.length ? ngContentIndices[0] :
null; \n } \n\n let _matches: (this: any, selector: string) => boolean; \n\n function matchesSelector(el: any, selector:
string): boolean { \n if (!_matches) { \n const elProto = <any>Element.prototype; \n _matches = elProto.matches ||
elProto.matchesSelector || elProto.mozMatchesSelector || \n elProto.msMatchesSelector ||
elProto.oMatchesSelector || elProto.webkitMatchesSelector; \n } \n return el.nodeType ===
Node.ELEMENT_NODE ? _matches.call(el, selector) : false; \n } \n } \n\n /** \n * @license \n * Copyright Google LLC
All Rights Reserved. \n * \n * Use of this source code is governed by an MIT-style license that can be \n * found in
the LICENSE file at https://angular.io/license \n */ \n\n import { isFunction } from './util'; \n\n export interface
Thenable<T> { \n then(callback: (value: T) => any): any; \n } \n\n export function isThenable<T>(obj: unknown): obj
is Thenable<T> { \n return !!obj && isFunction((obj as any).then); \n } \n\n /** \n * Synchronous, promise-like
object. \n */ \n\n export class SyncPromise<T> { \n protected value: T | undefined; \n private resolved = false; \n private
callbacks: ((value: T) => unknown)[] = []; \n\n static all<T>(valuesOrPromises: (T | Thenable<T>)[]):
SyncPromise<T[]> { \n const aggrPromise = new SyncPromise<T[]>(); \n\n let resolvedCount = 0; \n const
results: T[] = []; \n const resolve = (idx: number, value: T) => { \n results[idx] = value; \n if (++resolvedCount
=== valuesOrPromises.length) aggrPromise.resolve(results); \n }; \n\n valuesOrPromises.forEach((p, idx) => { \n
if (isThenable(p)) { \n p.then(v => resolve(idx, v)); \n } else { \n resolve(idx, p); \n } \n }); \n\n
return aggrPromise; \n } \n\n resolve(value: T): void { \n // Do nothing, if already resolved. \n if (this.resolved)
return; \n\n this.value = value; \n this.resolved = true; \n\n // Run the queued callbacks. \n
this.callbacks.forEach(callback => callback(value)); \n this.callbacks.length = 0; \n } \n\n then(callback: (value: T)
=> unknown): void { \n if (this.resolved) { \n callback(this.value!); \n } else { \n
this.callbacks.push(callback); \n } \n } \n } \n\n /** \n * @license \n * Copyright Google LLC All Rights Reserved. \n
* \n * Use of this source code is governed by an MIT-style license that can be \n * found in the LICENSE file at
https://angular.io/license \n */ \n\n import { ComponentFactory, ComponentFactoryResolver, Injector, NgZone, Type }
from '@angular/core'; \n\n import { IAnnotatedFunction, IAttributes, IAugmentedJQuery, ICompileService,

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IDirective, IInjectorService, INgModelController, IParseService, IScope} from './angular1';\nimport {$COMPILE,
$INJECTOR, $PARSE, INJECTOR_KEY, LAZY_MODULE_REF, REQUIRE_INJECTOR,
REQUIRE_NG_MODEL} from './constants';\nimport {DowngradeComponentAdapter} from
'./downgrade_component_adapter';\nimport {SyncPromise, Thenable} from './promise_util';\nimport {controllerKey,
getDowngradedModuleCount, getTypeName, getUpgradeAppType, LazyModuleRef, UpgradeAppType,
validateInjectionKey} from './util';\n\n/**\n * @description\n * \n * A helper function that allows an Angular
component to be used from AngularJS.\n * \n * Part of the [upgrade/static](api?query=upgrade%2Fstatic)\n *
library for hybrid upgrade apps that support AOT compilation*\n * \n * This helper function returns a factory
function to be used for registering\n * an AngularJS wrapper directive for `downgrading` an Angular
component.\n * \n * @usageNotes\n * ### Examples\n * \n * Let's assume that you have an Angular component
called `ng2Heroes` that needs\n * to be made available in AngularJS templates.\n * \n * { @example
upgrade/static/ts/full/module.ts region="ng2-heroes"}\n * \n * We must create an AngularJS
[directive](https://docs.angularjs.org/guide/directive)\n * that will make this Angular component available inside
AngularJS templates.\n * \n * The `downgradeComponent()` function returns a factory function that we\n * can use to
define the AngularJS directive that wraps the `downgraded` component.\n * \n * { @example
upgrade/static/ts/full/module.ts region="ng2-heroes-wrapper"}\n * \n * For more details and examples on
downgrading Angular components to AngularJS components please\n * visit the [Upgrade
guide](guide/upgrade#using-angular-components-from-angularjs-code).\n * \n * @param info contains information
about the Component that is being downgraded:\n * \n * - `component: Type<any>`: The type of the Component that
will be downgraded\n * \n * - `downgradedModule?: string`: The name of the downgraded module (if any) that the
component\n * \n * belongs to`, as returned by a call to `downgradeModule()`. It is the module, whose\n *
corresponding Angular module will be bootstrapped, when the component needs to be instantiated.\n * \n *
\n *
(This option is only necessary when using `downgradeModule()` to downgrade more than one\n * \n * Angular
module.)\n * \n * - `propagateDigest?: boolean`: Whether to perform { @link ChangeDetectorRef#detectChanges\n *
change detection} on the component on every\n * \n *
[$digest](https://docs.angularjs.org/api/ng/type/$rootScope.Scope#$digest). If set to `false`,\n * \n * change
detection will still be performed when any of the component's inputs changes.\n * \n * (Default: true)\n * \n * @returns a factory
function that can be used to register the component in an\n * \n * AngularJS module.\n * \n * @publicApi\n * \n * ^nextport
function downgradeComponent(info: {\n * \n * component: Type<any>;\n * \n * downgradedModule?: string;\n *
propagateDigest?: boolean;\n * \n * /** @deprecated since v4. This parameter is no longer used */\n * \n * inputs?: string[];\n *
\n * /** @deprecated since v4. This parameter is no longer used */\n * \n * outputs?: string[];\n * \n * /** @deprecated since v4.
This parameter is no longer used */\n * \n * selectors?: string[];\n * \n * }): any /* angular.IInjectable */ {\n * \n * const
directiveFactory: IAnnotatedFunction = function(\n * \n * $compile: ICompileService, $injector: IInjectorService,
$parse: IParseService): IDirective {\n * \n * // When using `downgradeModule()`, we need to handle certain things
specially. For example:\n * \n * // - We always need to attach the component view to the `ApplicationRef` for it to be\n *
\n * // dirty-checked.\n * \n * // - We need to ensure callbacks to Angular APIs (e.g. change detection) are run inside the\n *
\n * // Angular zone.\n * \n * // NOTE: This is not needed, when using `UpgradeModule`, because `digest()` will be run\n *
\n * // inside the Angular zone (except if explicitly escaped, in which case we shouldn't\n * \n * // force it back
in).\n * \n * const isNgUpgradeLite = getUpgradeAppType($injector) === UpgradeAppType.Lite;\n * \n * const
wrapCallback: <T>(cb: () => T) => typeof cb =\n * \n * isNgUpgradeLite ? cb => cb : cb => () =>
NgZone.isInAngularZone() ? cb() : ngZone.run(cb);\n * \n * let ngZone: NgZone;\n * \n * // When downgrading multiple
modules, special handling is needed wrt injectors.\n * \n * const hasMultipleDowngradedModules =\n * \n * isNgUpgradeLite && (getDowngradedModuleCount($injector) > 1);\n * \n * \n * return {\n * \n * restrict: 'E',\n * \n * terminal:
true,\n * \n * require: [REQUIRE_INJECTOR, REQUIRE_NG_MODEL],\n * \n * link: (scope: IScope, element:
IAugmentedJQuery, attrs: IAttributes, required: any[]) => {\n * \n * // We might have to compile the contents
asynchronously, because this might have been\n * \n * // triggered by `UpgradeNgIComponentAdapterBuilder`,
before the Angular templates have\n * \n * // been compiled.\n * \n * \n * const ngModel: INgModelController =
required[1];\n * \n * const parentInjector: Injector|Thenable<Injector>|undefined = required[0];\n * \n * let

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moduleInjector: Injector|Thenable<Injector>|undefined = undefined;\n let ranAsync = false;\n\n if
(!parentInjector || hasMultipleDowngradedModules) {\n const downgradedModule = info.downgradedModule
|| "";\n const lazyModuleRefKey = `${LAZY_MODULE_REF}${downgradedModule}`;\n const
attemptedAction = `instantiating component '${getTypeName(info.component)}';\n\n
validateInjectionKey($injector, downgradedModule, lazyModuleRefKey, attemptedAction);\n\n const
lazyModuleRef = $injector.get(lazyModuleRefKey) as LazyModuleRef;\n moduleInjector =
lazyModuleRef.injector || lazyModuleRef.promise as Promise<Injector>;\n }\n\n // Notes:\n /\n //
There are two injectors: `finalModuleInjector` and `finalParentInjector` (they might be\n // the same instance,
but that is irrelevant):\n // - `finalModuleInjector` is used to retrieve `ComponentFactoryResolver`, thus it must
be\n // on the same tree as the `NgModule` that declares this downgraded component.\n // -
`finalParentInjector` is used for all other injection purposes.\n // (Note that Angular knows to only traverse the
component-tree part of that injector,\n // when looking for an injectable and then switch to the module
injector.)\n /\n // There are basically three cases:\n // - If there is no parent component (thus no
`parentInjector`), we bootstrap the downgraded\n // `NgModule` and use its injector as both
`finalModuleInjector` and\n // `finalParentInjector`.\n // - If there is a parent component (and thus a
`parentInjector`) and we are sure that it\n // belongs to the same `NgModule` as this downgraded component
(e.g. because there is only\n // one downgraded module, we use that `parentInjector` as both
`finalModuleInjector` and\n // `finalParentInjector`.\n // - If there is a parent component, but it may belong
to a different `NgModule`, then we\n // use the `parentInjector` as `finalParentInjector` and this downgraded
component's\n // declaring `NgModule`'s injector as `finalModuleInjector`.\n // Note 1: If the
`NgModule` is already bootstrapped, we just get its injector (we don't\n // bootstrap again).\n // Note
2: It is possible that (while there are multiple downgraded modules) this\n // downgraded component and
its parent component both belong to the same NgModule.\n // In that case, we could have used the
`parentInjector` as both\n // `finalModuleInjector` and `finalParentInjector`, but (for simplicity) we are\n
 // treating this case as if they belong to different `NgModule`s. That doesn't\n // really affect
anything, since `parentInjector` has `moduleInjector` as ancestor\n // and trying to resolve
`ComponentFactoryResolver` from either one will return\n // the same instance.\n\n // If there is a
parent component, use its injector as parent injector.\n // If this is a "top-level" Angular component, use the
module injector.\n const finalParentInjector = parentInjector || moduleInjector!;\n\n // If this is a "top-
level" Angular component or the parent component may belong to a\n // different `NgModule`, use the module
injector for module-specific dependencies.\n // If there is a parent component that belongs to the same
`NgModule`, use its injector.\n const finalModuleInjector = moduleInjector || parentInjector!;\n\n const
doDowngrade = (injector: Injector, moduleInjector: Injector) => {\n // Retrieve `ComponentFactoryResolver`
from the injector tied to the `NgModule` this\n // component belongs to.\n const
componentFactoryResolver: ComponentFactoryResolver =\n
moduleInjector.get(ComponentFactoryResolver);\n const componentFactory: ComponentFactory<any> =\n
componentFactoryResolver.resolveComponentFactory(info.component!);\n\n if (!componentFactory) {\n
throw new Error(`Expecting ComponentFactory for: ${getTypeName(info.component)}`);\n }\n\n
const injectorPromise = new ParentInjectorPromise(element);\n const facade = new
DowngradeComponentAdapter(\n element, attrs, scope, ngModel, injector, $injector, $compile, $parse,\n
componentFactory, wrapCallback);\n\n const projectableNodes = facade.compileContents();\n
facade.createComponent(projectableNodes);\n facade.setupInputs(isNgUpgradeLite, info.propagateDigest);\n
facade.setupOutputs();\n facade.registerCleanup();\n\n
injectorPromise.resolve(facade.getInjector());\n\n if (ranAsync) {\n // If this is run async, it is possible
that it is not run inside a\n // digest and initial input values will not be detected.\n scope.$evalAsync(()
=> {});\n }\n }\n\n const downgradeFn =\n !isNgUpgradeLite ? doDowngrade : (pInjector:
Injector, mInjector: Injector) => {\n if (!ngZone) {\n ngZone = pInjector.get(NgZone);\n
}\n\n wrapCallback(() => doDowngrade(pInjector, mInjector));\n };\n\n // NOTE:\n // Not

```





`NgModuleFactory``: If you pass an `NgModuleFactory``, it will be used to instantiate a module using `platformBrowser``'s `{ @link PlatformRef#bootstrapModuleFactory bootstrapModuleFactory() }`. If you pass a function, it is expected to return a promise resolving to an `NgModuleRef``. The function is called with an array of extra `{ @link StaticProvider Providers }` that are expected to be available from the returned `NgModuleRef``'s `Injector``. `downgradeModule()`` returns the name of the created AngularJS wrapper module. You can use it to declare a dependency in your main AngularJS module. For more details on how to use `downgradeModule()`` see [\[Upgrading for Performance\]\(guide/upgrade-performance\)](#). Apart from `UpgradeModule``, you can use the rest of the `upgrade/static`` helpers as usual to build a hybrid application. Note that the Angular pieces (e.g. downgraded services) will not be available until the downgraded module has been bootstrapped, i.e. by instantiating a downgraded component. You cannot use `downgradeModule()`` and `UpgradeModule`` in the same hybrid application. Use one or the other.

#### Differences with `UpgradeModule``

Besides their different API, there are two important internal differences between `downgradeModule()`` and `UpgradeModule`` that affect the behavior of hybrid applications:

1. Unlike `UpgradeModule``, `downgradeModule()`` does not bootstrap the main AngularJS module inside the `{ @link NgZone Angular zone }`.
2. Unlike `UpgradeModule``, `downgradeModule()`` does not automatically run `$digest()` ([https://docs.angularjs.org/api/ng/type/\\$rootScope.Scope#\\$digest](https://docs.angularjs.org/api/ng/type/$rootScope.Scope#$digest)) when changes are detected in the Angular part of the application. What this means is that applications using `UpgradeModule`` will run change detection more frequently in order to ensure that both frameworks are properly notified about possible changes. This will inevitably result in more change detection runs than necessary. `downgradeModule()``, on the other side, does not try to tie the two change detection systems as tightly, restricting the explicit change detection runs only to cases where it knows it is necessary (e.g. when the inputs of a downgraded component change). This improves performance, especially in change-detection-heavy applications, but leaves it up to the developer to manually notify each framework as needed. For a more detailed discussion of the differences and their implications, see [\[Upgrading for Performance\]\(guide/upgrade-performance\)](#).

You can manually trigger a change detection run in AngularJS using `$scope.$apply(...)` ([https://docs.angularjs.org/api/ng/type/\\$rootScope.Scope#\\$apply](https://docs.angularjs.org/api/ng/type/$rootScope.Scope#$apply)) or `$rootScope.$digest()` ([https://docs.angularjs.org/api/ng/type/\\$rootScope.Scope#\\$digest](https://docs.angularjs.org/api/ng/type/$rootScope.Scope#$digest)). You can manually trigger a change detection run in Angular using `{ @link NgZone#run ngZone.run(...) }`.

#### Downgrading multiple modules

It is possible to downgrade multiple modules and include them in an AngularJS application. In that case, each downgraded module will be bootstrapped when an associated downgraded component or injectable needs to be instantiated. Things to keep in mind, when downgrading multiple modules:

- Each downgraded component/injectable needs to be explicitly associated with a downgraded module. See `downgradeComponent()`` and `downgradeInjectable()`` for more details.
- If you want some injectables to be shared among all downgraded modules, you can provide them as `StaticProvider``'s, when creating the `PlatformRef`` (e.g. via `platformBrowser`` or `platformBrowserDynamic``).
- When using `{ @link PlatformRef#bootstrapModule bootstrapModule() }` or `{ @link PlatformRef#bootstrapModuleFactory bootstrapModuleFactory() }` to bootstrap the downgraded modules, each one is considered a `"root"` module. As a consequence, a new instance will be created for every injectable provided in `"root"` (via `{ @link Injectable#providedIn providedIn }`). If this is not your intention, you can have a shared module (that will act as the `"root"` module) and create all downgraded modules using that module's injector: `{ @example upgrade/static/ts/lite-multi-shared/module.ts region="shared-root-module" }` `@publicApi` `export function downgradeModule<T>(moduleFactoryOrBootstrapFn: NgModuleFactory<T>|( (extraProviders: StaticProvider[]) => Promise<NgModuleRef<T>>)): string { const lazyModuleName = `${UPGRADE_MODULE_NAME}.lazy${++moduleId}`; const lazyModuleRefKey = `${LAZY_MODULE_REF}${lazyModuleName}`; const lazyInjectorKey =`

```

`_${INJECTOR_KEY}${lazyModuleName}`;\n\n const bootstrapFn = isFunction(moduleFactoryOrBootstrapFn)
?\n moduleFactoryOrBootstrapFn :\n (extraProviders: StaticProvider[]) =>\n
platformBrowser(extraProviders).bootstrapModuleFactory(moduleFactoryOrBootstrapFn);\n\n let injector:
Injector;\n\n // Create an ng1 module to bootstrap.\n angularModule(lazyModuleName, [])\n
.constant(UPGRADE_APP_TYPE_KEY, UpgradeAppType.Lite)\n .factory(INJECTOR_KEY,
[lazyInjectorKey, identity])\n .factory(\n lazyInjectorKey,\n () => {\n if (!injector) {\n
throw new Error(\n Trying to get the Angular injector before bootstrapping the corresponding ' +\n
Angular module.);\n })\n return injector;\n })\n .factory(LAZY_MODULE_REF,
[lazyModuleRefKey, identity])\n .factory(\n lazyModuleRefKey,\n [\n $INJECTOR,\n
($injector: IInjectorService) => {\n setTempInjectorRef($injector);\n const result: LazyModuleRef
= {\n promise: bootstrapFn(angular1Providers).then(ref => {\n injector = result.injector = new
NgAdapterInjector(ref.injector);\n injector.get($INJECTOR);\n return injector;\n
})\n });\n return result;\n })\n]) .config([\n $INJECTOR, $PROVIDE,\n
($injector: IInjectorService, $provide: IProvideService) => {\n
$provide.constant(DOWNGRADED_MODULE_COUNT_KEY, getDowngradedModuleCount($injector) + 1);\n
})\n]);\n\n return lazyModuleName;\n}\n\nfunction identity<T = any>(x: T): T {\n return x;\n}\n\n", "/*\n *
@license\n * Copyright Google LLC All Rights Reserved.\n * Use of this source code is governed by an MIT-
style license that can be\n * found in the LICENSE file at https://angular.io/license\n */\n\nimport {ElementRef,
Injector, SimpleChanges} from '@angular/core';\n\nimport {DirectiveRequireProperty, element as angularElement,
IAugmentedJQuery, ICloneAttachFunction, ICompileService, IController, IControllerService, IDirective,
IHttpBackendService, IInjectorService, ILinkFn, IScope, ITemplateCacheService, SingleOrListOrMap} from
'./angular!';\n\nimport {$COMPILE, $CONTROLLER, $HTTP_BACKEND, $INJECTOR, $TEMPLATE_CACHE}
from './constants';\n\nimport {controllerKey, directiveNormalize, isFunction} from './util';\n\n\n// Constants\nconst
REQUIRE_PREFIX_RE = /^(\\^\\^)?(\\|)?(\\^\\^)?;\n\n// Interfaces\nexport interface IBindingDestination {\n
[key: string]: any;\n $onChanges?: (changes: SimpleChanges) => void;\n}\n\nexport interface IControllerInstance
extends IBindingDestination {\n $doCheck?: () => void;\n $onDestroy?: () => void;\n $onInit?: () => void;\n
$postLink?: () => void;\n}\n\n// Classes\nexport class UpgradeHelper {\n public readonly $injector:
IInjectorService;\n public readonly element: Element;\n public readonly $element: IAugmentedJQuery;\n public
readonly directive: IDirective;\n private readonly $compile: ICompileService;\n private readonly $controller:
IControllerService;\n\n constructor(\n private injector: Injector, private name: string, elementRef: ElementRef,\n
directive?: IDirective) {\n this.$injector = injector.get($INJECTOR);\n this.$compile =
this.$injector.get($COMPILE);\n this.$controller = this.$injector.get($CONTROLLER);\n\n this.element =
elementRef.nativeElement;\n this.$element = angularElement(this.element);\n\n this.directive = directive ||
UpgradeHelper.getDirective(this.$injector, name);\n }\n\n static getDirective($injector: IInjectorService, name:
string): IDirective {\n const directives: IDirective[] = $injector.get(name + 'Directive');\n if (directives.length >
1) {\n throw new Error('Only support single directive definition for: ${name}');\n }\n\n const directive =
directives[0];\n\n // AngularJS will transform `link: xyz` to `compile: () => xyz`. So we can only tell there was a\n
// user-defined `compile` if there is no `link`. In other cases, we will just ignore `compile`.\n if (directive.compile
&& !directive.link) notSupported(name, 'compile');\n if (directive.replace) notSupported(name, 'replace');\n if
(directive.terminal) notSupported(name, 'terminal');\n\n return directive;\n }\n\n static getTemplate(\n
$injector: IInjectorService, directive: IDirective, fetchRemoteTemplate = false,\n $element?:
IAugmentedJQuery): string|Promise<string> {\n if (directive.template !== undefined) {\n return
getOrCall<string>(directive.template, $element);\n } else if (directive.templateUrl) {\n const $templateCache =
$injector.get($TEMPLATE_CACHE) as ITemplateCacheService;\n const url =
getOrCall<string>(directive.templateUrl, $element);\n const template = $templateCache.get(url);\n\n if
(template !== undefined) {\n return template;\n } else if (!fetchRemoteTemplate) {\n throw new
Error('loading directive templates asynchronously is not supported');\n }\n\n return new Promise((resolve,
reject) => {\n const $httpBackend = $injector.get($HTTP_BACKEND) as IHttpBackendService;\n

```

```

$httpBackend('GET', url, null, (status: number, response: string) => {\n if (status === 200) {\n
resolve($templateCache.put(url, response));\n } else {\n reject(`GET component template from '${url}'
returned '${status}: ${response}');\n }\n });\n });\n } else {\n throw new Error(`Directive
'${directive.name}' is not a component, it is missing template.`);\n }\n }\n\n buildController(controllerType:
IController, $scope: IScope) {\n // TODO: Document that we do not pre-assign bindings on the controller
instance.\n // Quoted properties below so that this code can be optimized with Closure Compiler.\n const locals =
{'$scope': $scope, '$element': this.$element};\n const controller = this.$controller(controllerType, locals, null,
this.directive.controllerAs);\n\n this.$element.data!(controllerKey(this.directive.name!), controller);\n\n return
controller;\n }\n\n compileTemplate(template?: string): ILinkFn {\n if (template === undefined) {\n template
= \n UpgradeHelper.getTemplate(this.$injector, this.directive, false, this.$element) as string;\n }\n\n return
this.compileHtml(template);\n }\n\n onDestroy($scope: IScope, controllerInstance?: any) {\n if
(controllerInstance && isFunction(controllerInstance.$onDestroy)) {\n controllerInstance.$onDestroy();\n }\n
$scope.$destroy();\n\n // Clean the jQuery/jqLite data on the component+child elements.\n // Equivalent to how
jQuery/jqLite invoke `cleanData` on an Element (this.element)\n //
https://github.com/jquery/jquery/blob/e743cbd28553267f955f71ea7248377915613fd9/src/manipulation.js#L223\n
// https://github.com/angular/angular.js/blob/26ddc5f830f902a3d22f4b2aab70d86d4d688c82/src/jqLite.js#L306-L312\n
// `cleanData` will invoke the AngularJS `$destroy` DOM event\n //
https://github.com/angular/angular.js/blob/26ddc5f830f902a3d22f4b2aab70d86d4d688c82/src/Angular.js#L1911-L1924\n
angularElement.cleanData([this.element]);\n
angularElement.cleanData(this.element.querySelectorAll('*'));\n }\n\n prepareTransclusion(): ILinkFn|undefined
{\n const transclude = this.directive.transclude;\n const contentChildNodes = this.extractChildNodes();\n const
attachChildrenFn: ILinkFn = (scope, cloneAttachFn) => {\n // Since AngularJS v1.5.8, `cloneAttachFn` will try
to destroy the transclusion scope if\n // ` $template` is empty. Since the transcluded content comes from Angular,
not AngularJS,\n // there will be no transclusion scope here.\n // Provide a dummy `scope.$destroy()` method
to prevent `cloneAttachFn` from throwing.\n scope = scope || {$destroy: () => undefined};\n return
cloneAttachFn!($template, scope);\n };\n let $template = contentChildNodes;\n\n if (transclude) {\n const
slots = Object.create(null);\n\n if (typeof transclude === 'object') {\n $template = [];\n\n const slotMap =
Object.create(null);\n const filledSlots = Object.create(null);\n\n // Parse the element selectors.\n
Object.keys(transclude).forEach(slotName => {\n let selector = transclude[slotName];\n const optional =
selector.charAt(0) === '?';\n selector = optional ? selector.substr(1) : selector;\n\n slotMap[selector] =
slotName;\n slots[slotName] = null; // `null`: Defined but not yet filled.\n filledSlots[slotName] =
optional; // Consider optional slots as filled.\n });\n\n // Add the matching elements into their slot.\n
contentChildNodes.forEach(node => {\n const slotName =
slotMap[directiveNormalize(node.nodeName.toLowerCase)];\n if (slotName) {\n
filledSlots[slotName] = true;\n slots[slotName] = slots[slotName] || [];\n slots[slotName].push(node);\n
} else {\n $template.push(node);\n }\n });\n\n // Check for required slots that were not
filled.\n Object.keys(filledSlots).forEach(slotName => {\n if (!filledSlots[slotName]) {\n throw
new Error(`Required transclusion slot '${slotName}' on directive: ${this.name}`);\n }\n });\n\n
Object.keys(slots).filter(slotName => slots[slotName]).forEach(slotName => {\n const nodes =
slots[slotName];\n slots[slotName] = (scope: IScope, cloneAttach: ICloneAttachFunction) => {\n return
cloneAttach!(nodes, scope);\n };\n });\n }\n\n // Attach `$$slots` to default slot transclude fn.\n
attachChildrenFn.$$slots = slots;\n\n // AngularJS v1.6+ ignores empty or whitespace-only transcluded text
nodes. But Angular\n // removes all text content after the first interpolation and updates it later, after\n //
evaluating the expressions. This would result in AngularJS failing to recognize text\n // nodes that start with an
interpolation as transcluded content and use the fallback\n // content instead.\n // To avoid this issue, we add
a\n // [zero-width non-joiner character](https://en.wikipedia.org/wiki/Zero-width_non-joiner)\n // to empty
text nodes (which can only be a result of Angular removing their initial content).\n // NOTE: Transcluded text
content that starts with whitespace followed by an interpolation\n // will still fail to be detected by AngularJS

```

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v1.6+\n $template.forEach(node => {\n if (node.nodeType === Node.TEXT_NODE && !node.nodeValue)
{\n node.nodeValue = '\u200C';\n }\n });\n }\n\n return attachChildrenFn;\n }\n\n resolveAndBindRequiredControllers(controllerInstance: IControllerInstance|null) {\n const directiveRequire =
this.getDirectiveRequire();\n const requiredControllers = this.resolveRequire(directiveRequire);\n\n if
(controllerInstance && this.directive.bindToController && isMap(directiveRequire)) {\n const
requiredControllersMap = requiredControllers as {[key: string]: IControllerInstance};\n
Object.keys(requiredControllersMap).forEach(key => {\n controllerInstance[key] =
requiredControllersMap[key];\n });\n }\n\n return requiredControllers;\n }\n\n private compileHtml(html:
string): ILinkFn {\n this.element.innerHTML = html;\n return this.$compile(this.element.childNodes);\n }\n\n private extractChildNodes(): Node[] {\n const childNodes: Node[] = [];\n let childNode: Node|null;\n\n while
(childNode = this.element.firstChild) {\n this.element.removeChild(childNode);\n
childNodes.push(childNode);\n }\n\n return childNodes;\n }\n\n private getDirectiveRequire():
DirectiveRequireProperty {\n const require = this.directive.require || (this.directive.controller &&
this.directive.name);\n\n if (isMap(require)) {\n Object.keys(require).forEach(key => {\n const value =
require[key];\n const match = value.match(REQUIRE_PREFIX_RE);\n const name =
value.substring(match[0].length);\n\n if (!name) {\n require[key] = match[0] + key;\n }\n });\n
\n return require;\n }\n\n private resolveRequire(require: DirectiveRequireProperty, controllerInstance?:
any): SingleOrListOrMap<IControllerInstance>|null {\n if (!require) {\n return null;\n } else if
(Array.isArray(require)) {\n return require.map(req => this.resolveRequire(req));\n } else if (typeof require
=== 'object') {\n const value: {[key: string]: IControllerInstance} = {};\n Object.keys(require).forEach(key =>
value[key] = this.resolveRequire(require[key]));\n return value;\n } else if (typeof require === 'string') {\n
const match = require.match(REQUIRE_PREFIX_RE);\n const inheritType = match[1] || match[3];\n\n const
name = require.substring(match[0].length);\n const isOptional = !!match[2];\n const searchParents =
!!inheritType;\n const startOnParent = inheritType === '^';\n\n const ctrlKey = controllerKey(name);\n
const elem = startOnParent ? this.$element.parent() : this.$element;\n const value = searchParents ?
elem.inheritedData!(ctrlKey) : elem.data!(ctrlKey);\n\n if (!value && !isOptional) {\n throw new Error(\n
`Unable to find required '${require}' in upgraded directive '${this.name}'.`);\n }\n\n return value;\n } else
{\n throw new Error(\n `Unrecognized 'require' syntax on upgraded directive '${this.name}': ${require}`);\n }\n
 }\n\n\nfunction getOrCall<T>(property: T|Function, ...args: any[]): T {\n return isFunction(property) ?
property(...args) : property;\n }\n\n// NOTE: Only works for `typeof T !== 'object'.\nfunction isMap<T>(value:
SingleOrListOrMap<T>): value is {[key: string]: T} {\n return value && !Array.isArray(value) && typeof value
=== 'object';\n }\n\nfunction notSupported(name: string, feature: string) {\n throw new Error(`Upgraded directive
'${name}' contains unsupported feature: '${feature}'.`);\n }\n\n"/**\n * @license\n * Copyright Google LLC All
Rights Reserved.\n *\n * Use of this source code is governed by an MIT-style license that can be\n * found in the
LICENSE file at https://angular.io/license\n */\n\nimport {Directive, DoCheck, ElementRef, EventEmitter, Injector,
OnChanges, OnDestroy, OnInit, SimpleChanges} from '@angular/core';\n\nimport {IAAttributes,
IAugmentedJQuery, IDirective, IInjectorService, ILinkFn, IScope, ITranscludeFunction} from
'../src/common/src/angular1';\n\nimport {$SCOPE} from '../src/common/src/constants';\n\nimport
{IBindingDestination, IControllerInstance, UpgradeHelper} from '../src/common/src/upgrade_helper';\n\nimport
{isFunction} from '../src/common/src/util';\n\nconst NOT_SUPPORTED: any = 'NOT_SUPPORTED';\n\nconst
INITIAL_VALUE = {\n __UNINITIALIZED__: true;\n }\n\nclass Bindings {\n twoWayBoundProperties: string[]
= [];\n twoWayBoundLastValues: any[] = [];\n\n expressionBoundProperties: string[] = [];\n\n propertyToOutputMap: {[propName: string]: string} = {};\n }\n\n/**\n * @description\n *\n * A helper class that
allows an AngularJS component to be used from Angular.\n *\n * Part of the
[upgrade/static](api?query=upgrade%2Fstatic)\n * library for hybrid upgrade apps that support AOT
compilation.\n *\n * This helper class should be used as a base class for creating Angular directives\n * that wrap
AngularJS components that need to be `upgraded`.\n *\n * @usageNotes\n * ### Examples\n *\n * Let's assume
that you have an AngularJS component called `ng1Hero` that needs\n * to be made available in Angular templates.\n

```

```

*\n * { @example upgrade/static/ts/full/module.ts region="ng1-hero"}\n *\n * We must create a `Directive` that
will make this AngularJS component\n * available inside Angular templates.\n *\n * { @example
upgrade/static/ts/full/module.ts region="ng1-hero-wrapper"}\n *\n * In this example you can see that we must
derive from the `UpgradeComponent`\n * base class but also provide an {@link Directive `@Directive`} decorator.
This is\n * because the AOT compiler requires that this information is statically available at\n * compile time.\n *\n
* Note that we must do the following:\n * * specify the directive's selector (`ng1-hero`)\n * * specify all inputs and
outputs that the AngularJS component expects\n * * derive from `UpgradeComponent`\n * * call the base class from
the constructor, passing\n * * the AngularJS name of the component (`ng1Hero`)\n * * the `ElementRef` and
`Injector` for the component wrapper\n *\n * @publicApi\n */\n\nexport class UpgradeComponent
implements OnInit, OnChanges, DoCheck, OnDestroy {\n private helper: UpgradeHelper;\n\n private $injector:
InjectorService;\n\n private element: Element;\n private $element: IAugmentedJQuery;\n private
$scopeScope: IScope;\n\n private directive: IDirective;\n private bindings: Bindings;\n\n //
TODO(issue/24571): remove '!\n private controllerInstance!: IControllerInstance;\n // TODO(issue/24571):
remove '!\n private bindingDestination!: IBindingDestination;\n\n // We will be instantiating the controller in the
`ngOnInit` hook, when the\n // first `ngOnChanges` will have been already triggered. We store the\n //
`SimpleChanges` and `"play them back"` later.\n // TODO(issue/24571): remove '!\n private pendingChanges!:
SimpleChanges|null;\n\n // TODO(issue/24571): remove '!\n private unregisterDoCheckWatcher!: Function;\n\n
/**\n * Create a new `UpgradeComponent` instance. You should not normally need to do this.\n * Instead you
should derive a new class from this one and call the super constructor\n * from the base class.\n *\n *
{@example upgrade/static/ts/full/module.ts region="ng1-hero-wrapper"}\n *\n * * The `name` parameter
should be the name of the AngularJS directive.\n * * The `elementRef` and `injector` parameters should be
acquired from Angular by dependency\n * injection into the base class constructor.\n */\n constructor(private
name: string, private elementRef: ElementRef, private injector: Injector) {\n this.helper = new
UpgradeHelper(injector, name, elementRef);\n\n this.$injector = this.helper.$injector;\n\n this.element =
this.helper.element;\n this.$element = this.helper.$element;\n\n this.directive = this.helper.directive;\n
this.bindings = this.initializeBindings(this.directive);\n\n // We ask for the AngularJS scope from the Angular
injector, since\n // we will put the new component scope onto the new injector for each component\n const
$scopeParent = injector.get($SCOPE);\n // QUESTION 1: Should we create an isolated scope if the scope is only
true?\n // QUESTION 2: Should we make the scope accessible through `$element.scope()/isolateScope()`?\n
this.$componentScope = $scopeParent.$new(!this.directive.scope);\n\n this.initializeOutputs();\n }\n\n
ngOnInit() {\n // Collect contents, insert and compile template\n const attachChildNodes: ILinkFn|undefined =
this.helper.prepareTransclusion();\n const linkFn = this.helper.compileTemplate();\n\n // Instantiate controller\n
const controllerType = this.directive.controller;\n const bindToController = this.directive.bindToController;\n if
(controllerType) {\n this.controllerInstance = this.helper.buildController(controllerType,
this.$componentScope);\n } else if (bindToController) {\n throw new Error(`Upgraded directive '${this
.directive.name}' specifies 'bindToController' but no controller.`);\n }\n\n // Set up outputs\n
this.bindingDestination = bindToController ? this.controllerInstance : this.$componentScope;\n
this.bindOutputs();\n\n // Require other controllers\n const requiredControllers =\n
this.helper.resolveAndBindRequiredControllers(this.controllerInstance);\n\n // Hook: $onChanges\n if
(this.pendingChanges) {\n this.forwardChanges(this.pendingChanges);\n this.pendingChanges = null;\n
}\n\n // Hook: $onInit\n if (this.controllerInstance && isFunction(this.controllerInstance.$onInit)) {\n
this.controllerInstance.$onInit();\n }\n\n // Hook: $doCheck\n if (this.controllerInstance &&
isFunction(this.controllerInstance.$doCheck)) {\n const callDoCheck = () =>\n
this.controllerInstance.$doCheck!();\n\n this.unregisterDoCheckWatcher =\n
this.$componentScope.$parent.$watch(callDoCheck);\n callDoCheck();\n }\n\n // Linking\n const link =
this.directive.link;\n const preLink = typeof link === 'object' && link.pre;\n const postLink = typeof link ===
'object' ? link.post : link;\n const attrs: IAttributes = NOT_SUPPORTED;\n const transcludeFn:
ITranscludeFunction = NOT_SUPPORTED;\n if (preLink) {\n preLink(this.$componentScope, this.$element,

```



```

attrs, requiredControllers, transcludeFn);\n }\n\n linkFn(this.$componentScope, null!,\n {parentBoundTranscludeFn: attachChildNodes});\n\n if (postLink) {\n postLink(this.$componentScope,\n this.$element, attrs, requiredControllers, transcludeFn);\n }\n\n // Hook: $postLink\n if (this.controllerInstance\n && isFunction(this.controllerInstance.$postLink)) {\n this.controllerInstance.$postLink();\n }\n\n ngOnChanges(changes: SimpleChanges) {\n if (!this.bindingDestination) {\n this.pendingChanges = changes;\n } else {\n this.forwardChanges(changes);\n }\n }\n\n ngDoCheck() {\n const twoWayBoundProperties =\n this.bindings.twoWayBoundProperties;\n const twoWayBoundLastValues =\n this.bindings.twoWayBoundLastValues;\n const propertyToOutputMap =\n this.bindings.propertyToOutputMap;\n\n twoWayBoundProperties.forEach((propName, idx) => {\n const\n newValue = this.bindingDestination[propName];\n const oldValue = twoWayBoundLastValues[idx];\n\n if\n (!Object.is(newValue, oldValue)) {\n const outputName = propertyToOutputMap[propName];\n const\n eventEmitter: EventEmitter<any> = (this as any)[outputName];\n eventEmitter.emit(newValue);\n\n twoWayBoundLastValues[idx] = newValue;\n }\n });\n }\n\n ngOnDestroy() {\n if\n (isFunction(this.unregisterDoCheckWatcher)) {\n this.unregisterDoCheckWatcher();\n }\n\n this.helper.onDestroy(this.$componentScope, this.controllerInstance);\n }\n\n private initializeBindings(directive:\n IDirective) {\n const btcIsObject = typeof directive.bindToController === 'object';\n if (btcIsObject &&\n Object.keys(directive.scope!).length) {\n throw new Error(`\n `Binding definitions on scope and controller at\n the same time is not supported.`);\n }\n\n const context = btcIsObject ? directive.bindToController :\n directive.scope;\n const bindings = new Bindings();\n\n if (typeof context === 'object') {\n Object.keys(context).forEach(propName => {\n const definition = context[propName];\n const\n bindingType = definition.charAt(0);\n\n // QUESTION: What about `=*`? Ignore? Throw? Support?\n\n switch (bindingType) {\n case '@':\n // We don't need to do anything special. They will\n // be defined as inputs on the\n // upgraded component facade and the change propagation will be handled by\n // `ngOnChanges`.\n break;\n case '<':\n // We don't need to do anything special. They will\n // be defined as inputs on the\n // upgraded component facade and the change propagation will be handled by\n // `ngOnChanges`.\n break;\n case '=':\n bindings.twoWayBoundProperties.push(propName);\n bindings.twoWayBoundLastValues.push(INITIAL_VALUE);\n bindings.propertyToOutputMap[propName]\n = propName + 'Change';\n break;\n case '&':\n bindings.expressionBoundProperties.push(propName);\n bindings.propertyToOutputMap[propName] =\n propName;\n break;\n default:\n let json = JSON.stringify(context);\n throw new Error(`\n `Unexpected mapping '${bindingType}' in '${json}' in\n '${this.name}' directive.`);\n }\n });\n }\n\n return bindings;\n }\n\n private initializeOutputs() {\n // Initialize the outputs for `=` and `&` bindings\n this.bindings.twoWayBoundProperties.concat(this.bindings.expressionBoundProperties)\n .forEach(propName\n => {\n const outputName = this.bindings.propertyToOutputMap[propName];\n (this as\n any)[outputName] = new EventEmitter();\n });\n }\n\n private bindOutputs() {\n // Bind `&` bindings to the\n corresponding outputs\n this.bindings.expressionBoundProperties.forEach(propName => {\n const outputName\n = this.bindings.propertyToOutputMap[propName];\n const emitter = (this as any)[outputName];\n\n this.bindingDestination[propName] = (value: any) => emitter.emit(value);\n });\n }\n\n private\n forwardChanges(changes: SimpleChanges) {\n // Forward input changes to `bindingDestination`\n Object.keys(changes).forEach(\n propName => this.bindingDestination[propName] =\n changes[propName].currentValue);\n\n if (isFunction(this.bindingDestination.$onChanges)) {\n this.bindingDestination.$onChanges(changes);\n }\n }\n }\n\n /**\n * @license\n * Copyright Google LLC All\n * Rights Reserved.\n * Use of this source code is governed by an MIT-style license that can be\n * found in the\n * LICENSE file at https://angular.io/license\n */\n import {Injector, isDevMode, NgModule, NgZone, Testability}\n from '@angular/core';\n import {bootstrap, element as angularElement, IInjectorService, IIntervalService,\n IProvideService, ITestabilityService, module_ as angularModule} from '../src/common/src/angular1';\n import\n {$$TESTABILITY, $DELEGATE, $INJECTOR, $INTERVAL, $PROVIDE, INJECTOR_KEY,\n LAZY_MODULE_REF, UPGRADE_APP_TYPE_KEY, UPGRADE_MODULE_NAME} from\n '../src/common/src/constants';\n import {controllerKey, LazyModuleRef, UpgradeAppType} from

```

```

'././src/common/src/util';\n\nimport {angular1Providers, setTempInjectorRef} from './angular1_providers';\nimport
{NgAdapterInjector} from './util';\n\n\n\n*\n * @description\n *\n * An `NgModule`, which you import to provide
AngularJS core services,\n * and has an instance method used to bootstrap the hybrid upgrade application.\n *\n *
*\n * Part of the [upgrade/static](api?query=upgrade/static)\n * library for hybrid upgrade apps that support AOT
compilation*\n *\n * The `upgrade/static` package contains helpers that allow AngularJS and Angular components\n
* to be used together inside a hybrid upgrade application, which supports AOT compilation.\n *\n * Specifically, the
classes and functions in the `upgrade/static` module allow the following:\n *\n * 1. Creation of an Angular directive
that wraps and exposes an AngularJS component so\n * that it can be used in an Angular template. See
`UpgradeComponent`.\n * 2. Creation of an AngularJS directive that wraps and exposes an Angular component so\n
* that it can be used in an AngularJS template. See `downgradeComponent`.\n * 3. Creation of an Angular root
injector provider that wraps and exposes an AngularJS\n * service so that it can be injected into an Angular
context. See\n * {@link UpgradeModule#upgrading-an-angular-1-service Upgrading an AngularJS service}
below.\n * 4. Creation of an AngularJS service that wraps and exposes an Angular injectable\n * so that it can be
injected into an AngularJS context. See `downgradeInjectable`.\n * 3. Bootstrapping of a hybrid Angular application
which contains both of the frameworks\n * coexisting in a single application.\n *\n * @usageNotes\n *\n * ```ts\n
* import {UpgradeModule} from '@angular/upgrade/static';\n * ```\n *\n * See also the {@link
UpgradeModule#examples examples} below.\n *\n * ### Mental Model\n *\n * When reasoning about how a
hybrid application works it is useful to have a mental model which\n * describes what is happening and explains
what is happening at the lowest level.\n *\n * 1. There are two independent frameworks running in a single
application, each framework treats\n * the other as a black box.\n * 2. Each DOM element on the page is owned
exactly by one framework. Whichever framework\n * instantiated the element is the owner. Each framework only
updates/interacts with its own\n * DOM elements and ignores others.\n * 3. AngularJS directives always execute
inside the AngularJS framework codebase regardless of\n * where they are instantiated.\n * 4. Angular
components always execute inside the Angular framework codebase regardless of\n * where they are
instantiated.\n * 5. An AngularJS component can be "upgraded" to an Angular component. This is achieved by\n
* defining an Angular directive, which bootstraps the AngularJS component at its location\n * in the DOM. See
`UpgradeComponent`.\n * 6. An Angular component can be "downgraded" to an AngularJS component. This is
achieved by\n * defining an AngularJS directive, which bootstraps the Angular component at its location\n * in
the DOM. See `downgradeComponent`.\n * 7. Whenever an "upgraded"/"downgraded" component is instantiated
the host element is owned by\n * the framework doing the instantiation. The other framework then instantiates and
owns the\n * view for that component.\n * 1. This implies that the component bindings will always follow the
semantics of the\n * instantiation framework.\n * 2. The DOM attributes are parsed by the framework that
owns the current template. So\n * attributes in AngularJS templates must use kebab-case, while AngularJS
templates must use\n * camelCase.\n * 3. However the template binding syntax will always use the Angular
style, e.g. square\n * brackets ([...]) for property binding.\n * 8. Angular is bootstrapped first; AngularJS is
bootstrapped second. AngularJS always owns the\n * root component of the application.\n * 9. The new
application is running in an Angular zone, and therefore it no longer needs calls to\n * `$apply()`.\n *\n * ### The
`UpgradeModule` class\n *\n * This class is an `NgModule`, which you import to provide AngularJS core
services,\n * and has an instance method used to bootstrap the hybrid upgrade application.\n *\n * * Core AngularJS
services\n * Importing this `NgModule` will add providers for the core\n * [AngularJS
services](https://docs.angularjs.org/api/ng/service) to the root injector.\n *\n * * Bootstrap\n * The runtime
instance of this class contains a {@link UpgradeModule#bootstrap `bootstrap()`} method, which you use to
bootstrap the top level AngularJS module onto an element in the\n * DOM for the hybrid upgrade app.\n *\n * It
also contains properties to access the {@link UpgradeModule#injector root injector}, the\n * bootstrap `NgZone`
and the\n * [AngularJS $injector](https://docs.angularjs.org/api/auto/service/$injector).\n *\n * ### Examples\n
*\n * Import the `UpgradeModule` into your top level {@link NgModule Angular `NgModule`}.\n *\n * {@example
upgrade/static/ts/full/module.ts region='ng2-module'}\n *\n * Then inject `UpgradeModule` into your Angular
`NgModule` and use it to bootstrap the top level\n * [AngularJS

```

module](https://docs.angularjs.org/api/ng/type/angular.Module) in the `ngDoBootstrap()` method.

`@example upgrade/static/ts/full/module.ts region='bootstrap-ng1'`

Finally, kick off the whole process, by bootstrapping your top level Angular `NgModule`.

`@example upgrade/static/ts/full/module.ts region='bootstrap-ng2'`

`@a upgrading-an-angular-1-service`

### Upgrading an AngularJS service

There is no specific API for upgrading an AngularJS service. Instead you should just follow the following recipe:

Let's say you have an AngularJS service:

`@example upgrade/static/ts/full/module.ts region='ng1-text-formatter-service'`

Then you should define an Angular provider to be included in your `NgModule` providers`` property.

`@example upgrade/static/ts/full/module.ts region='upgrade-ng1-service'`

Then you can use the `'upgraded'` AngularJS service by injecting it into an Angular component or service.

`@example upgrade/static/ts/full/module.ts region='use-ng1-upgraded-service'`

```

@publicApi
@NgModule({providers: [angular1Providers]})
export class UpgradeModule {
 /**
 * The AngularJS `injector` for the upgrade application.
 */
 public $injector: any /*angular.IInjectorService*/;
 /**
 * The Angular Injector
 */
 public injector: Injector;
 /**
 * The root `Injector` for the upgrade application.
 */
 injector: Injector;
 /**
 * The bootstrap zone for the upgrade application
 */
 public ngZone: NgZone) {
 this.injector = new NgAdapterInjector(injector);
}
 /**
 * Bootstrap an AngularJS application from this NgModule
 * @param element the element on which to bootstrap the AngularJS application
 * @param [modules] the AngularJS modules to bootstrap for this application
 * @param [config] optional extra AngularJS bootstrap configuration
 */
 bootstrap(element: Element, modules: string[] = [], config?: any /*angular.IAngularBootstrapConfig*/) {
 const INIT_MODULE_NAME = UPGRADE_MODULE_NAME + '.init';
 // Create an ng1 module to bootstrap
 const initModule = new angularModule(INIT_MODULE_NAME, []).constant(UPGRADE_APP_TYPE_KEY, UpgradeAppType.Static).value(INJECTOR_KEY, this.injector).factory(LAZY_MODULE_REF, [INJECTOR_KEY, (injector: Injector) => ({injector} as LazyModuleRef)])
 .config([
 $PROVIDE, $INJECTOR,
 ($provide: IProvideService, $injector: IInjectorService) => {
 if ($injector.has($$TESTABILITY)) {
 $provide.decorator($$TESTABILITY, [
 $DELEGATE,
 (testabilityDelegate: ITestabilityService) => {
 const originalWhenStable: Function = testabilityDelegate.whenStable;
 const injector = this.injector;
 // Cannot use arrow function below because we need the context
 const newWhenStable = function(callback: Function) {
 originalWhenStable.call(testabilityDelegate, function() {
 const ng2Testability: Testability = injector.get(Testability);
 if (ng2Testability.isStable()) {
 callback();
 } else {
 ng2Testability.whenStable(newWhenStable.bind(testabilityDelegate, callback));
 }
 });
 }
 testabilityDelegate.whenStable = newWhenStable;
 return testabilityDelegate;
 }
]);
 }
 if ($injector.has($INTERVAL)) {
 $provide.decorator($INTERVAL, [
 $DELEGATE,
 (intervalDelegate: IIntervalService) => {
 // Wrap the $interval service so that setInterval is called outside NgZone, but the callback is still invoked within it. This is so that $interval won't block stability, which preserves the behavior from AngularJS.
 let wrappedInterval = (fn: Function, delay: number, count?: number, invokeApply?: boolean, ...pass: any[]) => {
 return this.ngZone.runOutsideAngular(() => {
 return intervalDelegate(...args) => {
 // Run callback in the next VM turn - $interval calls // $rootScope.$apply, and running the callback in NgZone will // cause a '$digest already in progress' error if it's in the // same vm turn.
 setTimeout(() => {
 this.ngZone.run(() => fn(...args));
 }, delay, count, invokeApply, ...pass);
 }
 });
 }
 (wrappedInterval as any)['cancel'] = intervalDelegate.cancel;
 return wrappedInterval;
 }
]);
 }
 }
], $INJECTOR, ($injector: IInjectorService) => {
 this.$injector = $injector;
 }
);
 }
}

```

```

Initialize the ng1 $injector provider\n setTempInjectorRef($injector);\n
this.injector.get($INJECTOR);\n // Put the injector on the DOM, so that it can be \"required\"\n
angularElement(element).data!(controllerKey(INJECTOR_KEY), this.injector);\n // Wire up the ng1
rootScope to run a digest cycle whenever the zone settles\n // We need to do this in the next tick so that we
don't prevent the bootstrap\n // stabilizing\n setTimeout(() => {\n const $rootScope =
$injector.get('$rootScope');\n const subscription = this.ngZone.onMicrotaskEmpty.subscribe(() => {\n
 if ($rootScope.$$phase) {\n if (isDevMode()) {\n console.warn(\n
'A digest was triggered while one was already in progress. This may mean that something is triggering digests
outside the Angular zone.);\n }\n return $rootScope.$evalAsync();\n }\n return $rootScope.$digest();\n });\n $rootScope.$on('$destroy', () => {\n
subscription.unsubscribe();\n });\n }, 0);\n }\n });\n const upgradeModule =
angularModule(UPGRADE_MODULE_NAME, [INIT_MODULE_NAME].concat(modules));\n // Make sure
resumeBootstrap() only exists if the current bootstrap is deferred\n const windowAngular = (window as
any)['angular'];\n windowAngular.resumeBootstrap = undefined;\n // Bootstrap the AngularJS application
inside our zone\n this.ngZone.run(() => {\n bootstrap(element, [upgradeModule.name], config);\n });\n //
Patch resumeBootstrap() to run inside the ngZone\n if (windowAngular.resumeBootstrap) {\n const
originalResumeBootstrap: () => void = windowAngular.resumeBootstrap;\n const ngZone = this.ngZone;\n
windowAngular.resumeBootstrap = function() {\n let args = arguments;\n
windowAngular.resumeBootstrap = originalResumeBootstrap;\n return ngZone.run(() =>
windowAngular.resumeBootstrap.apply(this, args));\n }; \n }\n }\n }", "/**\n * @license\n * Copyright
Google LLC All Rights Reserved.\n * Use of this source code is governed by an MIT-style license that can be\n
* found in the LICENSE file at https://angular.io/license\n */\n\nexport { getAngularJSGlobal, getAngularLib,
setAngularJSGlobal, setAngularLib } from './src/common/src/angular1';\nexport { downgradeComponent } from
'./src/common/src/downgrade_component';\nexport { downgradeInjectable } from
'./src/common/src/downgrade_injectable';\nexport { VERSION } from './src/common/src/version';\nexport
{ downgradeModule } from './src/downgrade_module';\nexport { UpgradeComponent } from
'./src/upgrade_component';\nexport { UpgradeModule } from './src/upgrade_module';\n\n// This file only re-exports
items to appear in the public api. Keep it that way.\n", "/**\n * @license\n * Copyright Google LLC All Rights
Reserved.\n * Use of this source code is governed by an MIT-style license that can be\n * found in the
LICENSE file at https://angular.io/license\n */\n\n// This file is not used to build this module. It is only used during
editing\n// by the TypeScript language service and during build for verification. `ngc`\n// replaces this file with
production index.ts when it rewrites private symbol\n// names.\n\nexport * from './public_api';\n", "/**\n * Generated
bundle index. Do not edit.\n */\n\nexport * from './index';\n\nexport { angular1Providers as
angular_packages_upgrade_static_static_e, compileFactory as
angular_packages_upgrade_static_static_c, injectorFactory as
angular_packages_upgrade_static_static_a, parseFactory as
angular_packages_upgrade_static_static_d, rootScopeFactory as angular_packages_upgrade_static_static_b } from
'./src/angular1_providers';\n\n], "names": ["NOT_FOUND_CHECK_ONLY_ELEMENT_INJECTOR", "angularModule",
"angularElement", "INITIAL_VALUE", "element"], "mappings": ";;;;;;;;;AAAA;;;;;;;;;AAkOA,SAAS,IAAI;IACX,M
AAM,IAAI,KAAK,CAAC,+BAA+B,CAAC,CAAC;AACnD,CAAC;AAED,MAAM,WAAW,IAA4B,MAAM,IAA
I,EAAE,CAAQ,CAAC;AACIE,WAAW,CAAC,SAAS,GAAG,IAAI,CAAC;AAE7B,IAAI,OAAO,GAYP;IACF,SA
AS,EAAE,IAAI;IACf,MAAM,EAAE,IAAI;IACZ,OAAO,EAAE,WAAW;IACpB,QAAQ,EAAE,IAAI;IACd,OAA
O,EAAE,SAAGB;IACzB,eAAe,EAAE,IAAI;IACrB,cAAc,EAAE,IAAI;CACrB,CAAC;AAEF,IAAI;IACF,IAAI,M
AAM,CAAC,cAAc,CAAC,SAAS,CAAC,EAAE;QACpC,OAAO,GAAS,MAAO,CAAC,OAAO,CAAC;KACjC;C
ACF;AAAC,WAAM;;CAEP;AAED;;;;;SAKgB,aAAa,CAAC,EAAO;IACnC,kBAaAkB,CAAC,EAAE,CAAC,CAA
C;AACzB,CAAC;AAED;;;;;SAKgB,aAAa;IAC3B,OAAO,kBAaAkB,EAAE,CAAC;AAC9B,CAAC;AAED;;;;;SA
OgB,kBAaAkB,CAAC,EAAO;IACxC,OAAO,GAAG,EAAE,CAAC;AACf,CAAC;AAED;;;;;SAKgB,kBAaAkB;IAC
hC,OAAO,OAAO,CAAC;AACjB,CAAC;AAEM,MAAM,SAAS,GAA6B,CAAC,CAAC,EAAE,OAAO,EAAE,M

```

AAO,KACnE,OAAO,CAAC,SAAS,CAAC,CAAC,EAAE,OAAO,EAAE,MAAM,CAAC,CAAC;AAE1C;AACA;A  
ACO,MAAM,OAAO,GAA0B,CAAC,MAAM,EAAE,YAAa,KACHe,OAAO,CAAC,MAAM,CAAC,MAAM,EAA  
E,YAAY,CAAC,CAAC;AAE1C,MAAM,OAAO,IAA4B,CAAC,IAAI,OAAO,CAAC,OAAO,CAAC,CAAC,CAAC  
,CAA2B,CAAC;AACnG,OAAO,CAAC,SAAS,GAAG,KAAK,IAAI,OAAO,CAAC,OAAO,CAAC,SAAS,CAAC,  
KAAK,CAAC,CAAC;AAEvD,MAAM,QAAQ,GACjB,CAAC,OAakC,EAAE,QAAkB,KAAK,OAAO,CAAC,QA  
AQ,CAAC,OAAO,EAAE,QAAQ,CAAC,CAAC;AAE7F,MAAM,eAAe,GAAMC,MAAM,OAAO,CAAC,eAAe,E  
AAE,CAAC;AAExF,MAAM,cAAc,GAakC,CAAC,IAAI,OAAO,CAAC,cAAc,CAAC,CAAC,CAAC;;AC7T3F;;;  
;;AAQO,MAAM,QAAQ,GAAG,UAAU,CAAC;AAC5B,MAAM,WAAW,GAAG,aAAa,CAAC;AAC1C,MAAM,S  
AAS,GAAG,WAAW,CAAC;AAC9B,MAAM,kBAakB,GAAG,mBAAmB,CAAC;AAC/C,MAAM,aAAa,GAAG,c  
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W,GAAG,YAAY,CAAC;AACjC,MAAM,MAAM,GAAG,QAAQ,CAAC;AACxB,MAAM,eAAe,GAAG,gBAAgB  
,CAAC;AACzC,MAAM,iBAaiB,GAAG,kBAakB,CAAC;AAE7C,MAAM,aAAa,GAAG,eAAe,CAAC;AAEtC,M  
AAM,YAAY,GAAG,mBAAmB,CAAC;AACzC,MAAM,2BAA2B,GAAG,gCAAgC,CAAC;AACrE,MAAM,2BA  
A2B,GAAG,gCAAgC,CAAC;AACrE,MAAM,YAAY,GAAG,mBAAmB,CAAC;AACzC,MAAM,eAAe,GAAG,w  
BAAwB,CAAC;AACjD,MAAM,WAAW,GAAG,iBAaiB,CAAC;AACtC,MAAM,oBAaOB,GAAG,yBAayB,CA  
AC;AAEvD,MAAM,gBAAgB,GAAG,KAAK,GAAG,YAAY,CAAC;AAC9C,MAAM,gBAAgB,GAAG,UAAU,C  
AAC;AAEpC,MAAM,mBAAmB,GAAG,iBAaiB;;ACnCPD;;;;;AAQA;;;;;MAMa,eAAe;IAc1B,YAAMB,IAAY,  
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QACpC,IAAI,CAAC,SAAS,GAAG,IAAI,IAAI,CAAC,IAAI,GAAG,CAAC;QAC1C,IAAI,CAAC,gBAAgB,GAAG  
,KAAK,IAAI,CAAC,IAAI,IAAI,CAAC;QAC3C,MAAM,WAAW,GAAG,IAAI,CAAC,IAAI,CAAC,MAAM,CAA  
C,CAAC,CAAC,CAAC,WAAW,EAAE,GAAG,IAAI,CAAC,IAAI,CAAC,MAAM,CAAC,CAAC,CAAC,CAAC;Q  
AC5E,IAAI,CAAC,MAAM,GAAG,KAAK,WAAW,EAAE,CAAC;QACjC,IAAI,CAAC,QAAQ,GAAG,OAAO,W  
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aA,MAAM,uBAauB,GAAG,oBAaOB,CAAC;AACrD,MAAM,8BAA8B,GAAG,aAAa,CAAC;SAErC,OAAO,CA  
AC,CAAM;;IAE5B,IAAI,OAAO,CAAC,KAAK,EAAE;QACjB,OAAO,CAAC,KAAK,CAAC,CAAC,EAAE,CAA  
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C,KAAK,CAAC,CAAC;KACzB;IACD,MAAM,CAAC,CAAC;AACV,CAAC;SAEe,aAAa,CAAC,IAAY;IACxC,  
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;IAEzC,OAAQ,IAAY,CAAC,cAAc,IAAI,IAAI,CAAC,IAAI,IAAI,IAAI,CAAC,QAAQ,EAAE,CAAC,KAAK,CA  
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AS,CAAC,GAAG,CAAC,2BAA2B,CAAC,GAAG,SAAS,CAAC,GAAG,CAAC,2BAA2B,CAAC;QAC1C,CAAC,  
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AC,CAAC,CAAC;qCACxD;iCACF,CAAC,CAAC;6BACJ,CAAC;4BAEF,mBAAmB,CAAC,UAAU,GAAG,aAAa  
,CAAC;4BAC/C,OAAO,mBAAmB,CAAC;yBAC5B;qBACF,CAAC,CAAC;iBACJ;gBAED,IAAI,SAAS,CAAC,G  
AAG,CAAC,SAAS,CAAC,EAAE;oBAC5B,QAAQ,CAAC,SAAS,CAAC,SAAS,EAAE;wBAC5B,SAAS;wBACT,  
CAAC,gBAaKB;;;4BAIjC,IAAI,eAAe,GACf,CAAC,EAAY,EAAE,KAAa,EAAE,KAAc,EAAE,WAAqB,EACIE,  
GAAG,IAAW;gCACb,OAAO,IAAI,CAAC,MAAM,CAAC,iBAaIB,CAAC;oCACnC,OAAO,gBAAGB,CAAC,CA  
AC,GAAG,IAAW;;;;;wCAKrC,UAAU,CAAC;4CACT,IAAI,CAAC,MAAM,CAAC,GAAG,CAAC,MAAM,EAAE  
,CAAC,GAAG,IAAI,CAAC,CAAC,CAAC;yCACpC,CAAC,CAAC;qCACJ,EAAE,KAAK,EAAE,KAAK,EAAE,  
WAAW,EAAE,GAAG,IAAI,CAAC,CAAC;iCACxC,CAAC,CAAC;6BACJ,CAAC;4BAEL,eAAuB,CAAC,QAAQ  
,CAAC,GAAG,gBAAGB,CAAC,MAAM,CAAC;4BAC7D,OAAO,eAAe,CAAC;yBACxB;qBACF,CAAC,CAAC;i  
BACJ;aACF;SACF,CAAC;aAED,GAAG,CAAC;YACH,SAAS;YACT,CAAC,SAA2B;gBAC1B,IAAI,CAAC,SA  
AS,GAAG,SAAS,CAAC;;gBAG3B,kBAaKB,CAAC,SAAS,CAAC,CAAC;gBAC9B,IAAI,CAAC,QAAQ,CAAC,  
GAAG,CAAC,SAAS,CAAC,CAAC;;gBAG7BC,OAAc,CAACE,SAAO,CAAC,CAAC,IAAK,CAAC,aAAa,CAAC  
,YAAY,CAAC,EAAE,IAAI,CAAC,QAAQ,CAAC,CAAC;;;;gBAK1E,UAAU,CAAC;oBACT,MAAM,UAAU,GA  
AG,SAAS,CAAC,GAAG,CAAC,YAAY,CAAC,CAAC;oBAC/C,MAAM,YAAY,GAAG,IAAI,CAAC,MAAM,CA  
AC,gBAAGB,CAAC,SAAS,CAAC;wBAC1D,IAAI,UAAU,CAAC,OAAO,EAAE;4BACtB,IAAI,SAAS,EAAE,EA  
AE;gCACf,OAAO,CAAC,IAAI,CACR,wIAAwI,CAAC,CAAC;6BAC/I;4BAED,OAAO,UAAU,CAAC,UAAU,E  
AAE,CAAC;yBAChC;wBAED,OAAO,UAAU,CAAC,OAAO,EAAE,CAAC;qBAC7B,CAAC,CAAC;oBACH,UA  
AU,CAAC,GAAG,CAAC,UAAU,EAAE;wBACzB,YAAY,CAAC,WAAW,EAAE,CAAC;qBAC5B,CAAC,CAAC  
;iBACJ,EAAE,CAAC,CAAC,CAAC;aACP;SACF,CAAC,CAAC;QAEX,MAAM,aAAa,GAAGH,OAAa,CAAC,m  
BAAmB,EAAE,CAAC,gBAAGB,CAAC,CAAC,MAAM,CAAC,OAAO,CAAC,CAAC,CAAC;;QAG7F,MAAM,a  
AAa,GAAG,MAAc,CAAC,SAAS,CAAC,CAAC;QACjD,aAAa,CAAC,eAAe,GAAG,SAAS,CAAC;;QAG1C,IAAI,  
CAAC,MAAM,CAAC,GAAG,CAAC;YACd,SAAS,CAACG,SAAO,EAAE,CAAC,aAAa,CAAC,IAAI,CAAC,EA  
AE,MAAM,CAAC,CAAC;SACID,CAAC,CAAC;;QAGH,IAAI,aAAa,CAAC,eAAe,EAAE;YACjC,MAAM,uBAA  
uB,GAAe,aAAa,CAAC,eAAe,CAAC;YAC1E,MAAM,MAAM,GAAG,IAAI,CAAC,MAAM,CAAC;YAC3B,aAA  
a,CAAC,eAAe,GAAG;gBAC9B,IAAI,IAAI,GAAG,SAAS,CAAC;gBACrB,aAAa,CAAC,eAAe,GAAG,uBAAuB,  
CAAC;gBACxD,OAAO,MAAM,CAAC,GAAG,CAAC,MAAM,aAAa,CAAC,eAAe,CAAC,KAAK,CAAC,IAAI,E  
AAE,IAAI,CAAC,CAAC,CAAC;aAC1E,CAAC;SACH;KACF;;;YA3JF,QAAQ,SAAC,EAAC,SAAS,EAAE,CAA

C,iBAAiB,CAAC,EAAC;;;YAxiIC,QAAQ;YAAuB,MAAM;;;ACR7C;;;;;;AAiBA;;ACjBA;;;;;;ACAA;;;;;;"}

Found in path(s):

\* /opt/cola/permits/1358260707\_1657134860.914432/0/upgrade-11-0-2-tgz/package/fesm2015/static.js.map  
No license file was found, but licenses were detected in source scan.

```
/**
 * @license Angular v11.0.2
 * (c) 2010-2020 Google LLC. https://angular.io/
 * License: MIT
 */
/**
 * @license
 * Copyright Google LLC All Rights Reserved.
 *
 * Use of this source code is governed by an MIT-style license that can be
 * found in the LICENSE file at https://angular.io/license
 */
```

Found in path(s):

\* /opt/cola/permits/1358260707\_1657134860.914432/0/upgrade-11-0-2-tgz/package/bundles/upgrade-static-testing.umd.min.js  
\* /opt/cola/permits/1358260707\_1657134860.914432/0/upgrade-11-0-2-tgz/package/bundles/upgrade-static-testing.umd.js  
\* /opt/cola/permits/1358260707\_1657134860.914432/0/upgrade-11-0-2-tgz/package/bundles/upgrade-static.umd.min.js  
No license file was found, but licenses were detected in source scan.

```
{"version":3,"file":"upgrade-static.umd.js","sources":["../../../../packages/upgrade/src/common/src/angular1.ts","../../../../external/npm/node_modules/tslib/tslib.es6.js","../../../../packages/upgrade/src/common/src/constants.ts","../../../../packages/upgrade/src/common/src/component_info.ts","../../../../packages/upgrade/src/common/src/util.ts","../../../../packages/upgrade/src/common/src/downgrade_component_adapter.ts","../../../../packages/upgrade/src/common/src/promise_util.ts","../../../../packages/upgrade/src/common/src/downgrade_component.ts","../../../../packages/upgrade/src/common/src/downgrade_injectable.ts","../../../../packages/upgrade/src/common/src/version.ts","../../../../packages/upgrade/static/src/angular1_providers.ts","../../../../packages/upgrade/static/src/util.ts","../../../../packages/upgrade/static/src/downgrade_module.ts","../../../../packages/upgrade/src/common/src/upgrade_helper.ts","../../../../packages/upgrade/static/src/upgrade_component.ts","../../../../packages/upgrade/static/src/upgrade_module.ts","../../../../packages/upgrade/static/public_api.ts","../../../../packages/upgrade/static/index.ts","../../../../packages/upgrade/static/static.ts"],"sourcesContent":["/**\n * @license\n * Copyright Google LLC All Rights Reserved.\n *\n * Use of this source code is governed by an MIT-style license that can be\n * found in the LICENSE file at https://angular.io/license\n *\n * export type Ng1Token = string;\n * export type Ng1Expression = string|Function;\n * export interface IAnnotatedFunction extends Function {\n * // Older versions of `@types/angular` typings extend the global `Function` interface with\n * // `$inject?: string[]`, which is not compatible with `$inject?: ReadonlyArray<string>` (used in\n * // latest versions).\n * $inject?: Function extends {$inject?: string[]}? Ng1Token[];\n * ReadonlyArray<Ng1Token>;\n * }\n * export type IInjectable = (Ng1Token|Function)[]|IAnnotatedFunction;\n * export type SingleOrListOrMap<T> = T|T[]|{[key: string]: T};\n * export interface IModule {\n * name: string;\n * requires: (string|IInjectable)[];\n * config(fn: IInjectable): IModule;\n * directive(selector: string, factory: IInjectable):
```

```

IModule;\n component(selector: string, component: IComponent): IModule;\n controller(name: string, type:
IInjectable): IModule;\n factory(key: Ng1Token, factoryFn: IInjectable): IModule;\n value(key: Ng1Token, value:
any): IModule;\n constant(token: Ng1Token, value: any): IModule;\n run(a: IInjectable): IModule;\n}\nexport
interface ICompileService {\n (element: Element|NodeList|Node[]|string, transclude?: Function):
ILinkFn;\n}\nexport interface ILinkFn {\n (scope: IScope, cloneAttachFn?: ICloneAttachFunction, options?:
ILinkFnOptions): IAugmentedJQuery;\n $$slots?: {[slotName: string]: ILinkFn};\n}\nexport interface
ILinkFnOptions {\n parentBoundTranscludeFn?: Function;\n transcludeControllers?: {[key: string]: any};\n
futureParentElement?: Node;\n}\nexport interface IRootScopeService {\n $new(isolate?: boolean): IScope;\n $id:
string;\n $parent: IScope;\n $root: IScope;\n $watch(exp: Ng1Expression, fn?: (a1?: any, a2?: any) => void):
Function;\n $on(event: string, fn?: (event?: any, ...args: any[]) => void): Function;\n $destroy(): any;\n
$apply(exp?: Ng1Expression): any;\n $digest(): any;\n $evalAsync(exp: Ng1Expression, locals?: any): void;\n
$on(event: string, fn?: (event?: any, ...args: any[]) => void): Function;\n $$childTail: IScope;\n $$childHead:
IScope;\n $$nextSibling: IScope;\n [key: string]: any;\n}\nexport interface IScope extends IRootScopeService
{\n}\nexport interface IAngularBootstrapConfig {\n strictDi?: boolean;\n}\nexport interface IDirective {\n
compile?: IDirectiveCompileFn;\n controller?: IController;\n controllerAs?: string;\n bindToController?:
boolean|[key: string]: string;\n link?: IDirectiveLinkFn|IDirectivePrePost;\n name?: string;\n priority?:
number;\n replace?: boolean;\n require?: DirectiveRequireProperty;\n restrict?: string;\n scope?: boolean|[key:
string]: string;\n template?: string|Function;\n templateUrl?: string|Function;\n templateNamespace?: string;\n
terminal?: boolean;\n transclude?: DirectiveTranscludeProperty;\n}\nexport type DirectiveRequireProperty =
SingleOrListOrMap<string>;\nexport type DirectiveTranscludeProperty = boolean|'element'|[key: string]:
string};\nexport interface IDirectiveCompileFn {\n (templateElement: IAugmentedJQuery, templateAttributes:
IAttributes,\n transclude: ITranscludeFunction): IDirectivePrePost;\n}\nexport interface IDirectivePrePost {\n
pre?: IDirectiveLinkFn;\n post?: IDirectiveLinkFn;\n}\nexport interface IDirectiveLinkFn {\n (scope: IScope,
instanceElement: IAugmentedJQuery, instanceAttributes: IAttributes,\n controller: any, transclude:
ITranscludeFunction): void;\n}\nexport interface IComponent {\n bindings?: {[key: string]: string};\n controller?:
string|IInjectable;\n controllerAs?: string;\n require?: DirectiveRequireProperty;\n template?: string|Function;\n
templateUrl?: string|Function;\n transclude?: DirectiveTranscludeProperty;\n}\nexport interface IAttributes {\n
$observe(attr: string, fn: (v: string) => void): void;\n [key: string]: any;\n}\nexport interface ITranscludeFunction
{\n // If the scope is provided, then the cloneAttachFn must be as well.\n (scope: IScope, cloneAttachFn:
ICloneAttachFunction): IAugmentedJQuery;\n // If one argument is provided, then it's assumed to be the
cloneAttachFn.\n (cloneAttachFn?: ICloneAttachFunction): IAugmentedJQuery;\n}\nexport interface
ICloneAttachFunction {\n (clonedElement: IAugmentedJQuery, scope: IScope): any;\n}\nexport type
IAugmentedJQuery = Node[]&{\n on?: (name: string, fn: () => void) => void;\n data?: (name: string, value?: any)
=> any;\n text?: () => string;\n inheritedData?: (name: string, value?: any) => any;\n contents?: () =>
IAugmentedJQuery;\n parent?: () => IAugmentedJQuery;\n empty?: () => void;\n append?: (content:
IAugmentedJQuery|string) => IAugmentedJQuery;\n controller?: (name: string) => any;\n isolateScope?: () =>
IScope;\n injector?: () => IInjectorService;\n triggerHandler?: (eventTypeOrObject: string|Event, extraParameters?:
any[]) => IAugmentedJQuery;\n remove?: () => void;\n removeData?: () => void;\n};\nexport interface IProvider
{\n $get: IInjectable;\n}\nexport interface IProvideService {\n provider(token: Ng1Token, provider: IProvider):
IProvider;\n factory(token: Ng1Token, factory: IInjectable): IProvider;\n service(token: Ng1Token, type:
IInjectable): IProvider;\n value(token: Ng1Token, value: any): IProvider;\n constant(token: Ng1Token, value: any):
void;\n decorator(token: Ng1Token, factory: IInjectable): void;\n}\nexport interface IParseService {\n (expression:
string): ICompiledExpression;\n}\nexport interface ICompiledExpression {\n (context: any, locals: any): any;\n
assign?: (context: any, value: any) => any;\n}\nexport interface IHttpBackendService {\n (method: string, url:
string, post?: any, callback?: Function, headers?: any, timeout?: number,\n withCredentials?: boolean):
void;\n}\nexport interface ICacheObject {\n put<T>(key: string, value?: T): T;\n get(key: string): any;\n}\nexport
interface ITemplateCacheService extends ICacheObject {\n}\nexport interface ITemplateRequestService {\n
(template: string|any /* TrustedResourceUrl */, ignoreRequestError?: boolean): Promise<string>;\n

```



```

totalPendingRequests: number;\n}\nexport type IController = string|IInjectable;\nexport interface IControllerService
{\n (controllerConstructor: IController, locals?: any, later?: any, ident?: any): any;\n (controllerName: string,
locals?: any): any;\n}\n\nexport interface IInjectorService {\n get(key: string): any;\n has(key: string):
boolean;\n}\n\nexport interface IIntervalService {\n (func: Function, delay: number, count?: number,
invokeApply?: boolean,\n ...args: any[]): Promise<any>;\n cancel(promise: Promise<any>): boolean;\n}\n\nexport
interface ITestabilityService {\n findBindings(element: Element, expression: string, opt_exactMatch?: boolean):
Element[];\n findModels(element: Element, expression: string, opt_exactMatch?: boolean): Element[];\n
getLocation(): string;\n setLocation(url: string): void;\n whenStable(callback: Function): void;\n}\n\nexport
interface INgModelController {\n $render(): void;\n $isEmpty(value: any): boolean;\n
$setValidity(validationErrorKey: string, isValid: boolean): void;\n $setPristine(): void;\n $setDirty(): void;\n
$setUntouched(): void;\n $setTouched(): void;\n $rollbackViewValue(): void;\n $validate(): void;\n
$commitViewValue(): void;\n $setViewValue(value: any, trigger: string): void;\n\n $viewValue: any;\n
$modelValue: any;\n $parsers: Function[];\n $formatters: Function[];\n $validators: {[key: string]: Function};\n
$asyncValidators: {[key: string]: Function};\n $viewChangeListeners: Function[];\n $error: Object;\n $pending:
Object;\n $untouched: boolean;\n $touched: boolean;\n $pristine: boolean;\n $dirty: boolean;\n $valid: boolean;\n
$invalid: boolean;\n $name: string;\n}\n\nfunction noNg(): never {\n throw new Error('AngularJS v1.x is not
loaded!');\n}\n\nconst noNgElement: typeof angular.element = ((e) => noNg()) as any;\nnoNgElement.cleanData =
noNg;\n\nlet angular: {\n bootstrap: (e: Element, modules: (string|IInjectable)[], config?: IAngularBootstrapConfig)
=>{\n IInjectorService,\n module: (prefix: string, dependencies?: string[]) => IModule,\n element: {\n (e:
string|Element|Document|IAugmentedJQuery): IAugmentedJQuery;\n cleanData: (nodes: Node[]|NodeList) =>
void;\n },\n injector: (modules: Array<string|IInjectable>, strictDi?: boolean) => IInjectorService,\n version:
{major: number},\n resumeBootstrap: () => void,\n getTestability: (e: Element) => ITestabilityService\n } = {\n
bootstrap: noNg,\n module: noNg,\n element: noNgElement,\n injector: noNg,\n version: undefined as any,\n
resumeBootstrap: noNg,\n getTestability: noNg\n};\n\ntry {\n if (window.hasOwnProperty('angular')) {\n angular
= (<any>window).angular;\n }\n } catch {\n // ignore in CJS mode.\n }\n\n/**\n * @deprecated Use
`setAngularJSGlobal` instead.\n *\n * @publicApi\n *\nexport function setAngularLib(ng: any): void {\n
setAngularJSGlobal(ng);\n}\n\n/**\n * @deprecated Use `getAngularJSGlobal` instead.\n *\n * @publicApi\n
*\nexport function getAngularLib(): any {\n return getAngularJSGlobal();\n}\n\n/**\n * Resets the AngularJS
global.\n *\n * Used when AngularJS is loaded lazily, and not available on `window`.\n *\n * @publicApi\n
*\nexport function setAngularJSGlobal(ng: any): void {\n angular = ng;\n}\n\n/**\n * Returns the current
AngularJS global.\n *\n * @publicApi\n *\nexport function getAngularJSGlobal(): any {\n return
angular;\n}\n\nexport const bootstrap: typeof angular.bootstrap = (e, modules, config?) =>{\n angular.bootstrap(e,
modules, config);\n\n// Do not declare as `module` to avoid webpack bug\n// (see
https://github.com/angular/angular/issues/30050).\nexport const module_: typeof angular.module = (prefix,
dependencies?) =>{\n angular.module(prefix, dependencies);\n\nexport const element: typeof angular.element = (e
=> angular.element(e)) as typeof angular.element;\nelement.cleanData = nodes =>
angular.element.cleanData(nodes);\n\nexport const injector: typeof angular.injector ={\n (modules:
Array<string|IInjectable>, strictDi?: boolean) => angular.injector(modules, strictDi);\n\nexport const
resumeBootstrap: typeof angular.resumeBootstrap = () => angular.resumeBootstrap();\n\nexport const
getTestability: typeof angular.getTestability = e => angular.getTestability(e);\n", "/*!

```

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LIABLE FOR ANY SPECIAL, DIRECT,\r\n\r\nINDIRECT, OR CONSEQUENTIAL DAMAGES OR ANY
DAMAGES WHATSOEVER RESULTING FROM\r\n\r\nLOSS OF USE, DATA OR PROFITS, WHETHER IN AN
ACTION OF CONTRACT, NEGLIGENCE OR\r\n\r\nOTHER TORTIOUS ACTION, ARISING OUT OF OR IN

## CONNECTION WITH THE USE OR PERFORMANCE OF THIS

SOFTWARE.

```
global Reflect, Promise
var extendStatics = function(d, b) {
 extendStatics =
Object.setPrototypeOf ||
 ({ __proto__: [] } instanceof Array && function(d, b) { d.__proto__ = b; }) ||
 function(d, b) { for (var p in b) if (b.hasOwnProperty(p)) d[p] = b[p]; };
 return extendStatics(d, b);
};
export function __extends(d, b) {
 extendStatics(d, b);
 function __() { this.constructor = d; }
 d.prototype = b === null ? Object.create(b) : (Object.prototype = b.prototype, new __());
}
export var __assign = function() {
 __assign = Object.assign || function(t) {
 for (var s, i = 1, n = arguments.length; i < n; i++) {
 s = arguments[i];
 for (var p in s) if (Object.prototype.hasOwnProperty.call(s, p)) t[p] = s[p];
 }
 return t;
 };
 return __assign.apply(this, arguments);
}
export function __rest(s, e) {
 var t = {};
 for (var p in s) if (Object.prototype.hasOwnProperty.call(s, p) && e.indexOf(p) < 0) t[p] = s[p];
 if (s != null && typeof Object.getOwnPropertySymbols === "function")
 for (var i = 0, p = Object.getOwnPropertySymbols(s); i < p.length; i++) {
 if (e.indexOf(p[i]) < 0 && Object.prototype.propertyIsEnumerable.call(s, p[i])) t[p[i]] = s[p[i]];
 }
 return t;
}
export function __decorate(decorators, target, key, desc) {
 var c = arguments.length, r = c < 3 ? target : desc === null ? desc = Object.getOwnPropertyDescriptor(target, key) : desc, d;
 if (typeof Reflect === "object" && typeof Reflect.decorate === "function") r = Reflect.decorate(decorators, target, key, desc);
 else for (var i = decorators.length - 1; i >= 0; i--) if (d = decorators[i]) r = (c < 3 ? d(r) : c > 3 ? d(target, key, r) : d(target, key)) || r;
 return c > 3 && r && Object.defineProperty(target, key, r, r);
}
export function __param(paramIndex, decorator) {
 return function(target, key) { decorator(target, key, paramIndex); };
}
export function __metadata(metadataKey, metadataValue) {
 if (typeof Reflect === "object" && typeof Reflect.metadata === "function") return Reflect.metadata(metadataKey, metadataValue);
}
export function __awaiter(thisArg, _arguments, P, generator) {
 function adopt(value) { return value instanceof P ? value : new P(function(resolve) { resolve(value); }); }
 return new (P || (P = Promise))(function(resolve, reject) {
 function fulfilled(value) { try { step(generator.next(value)); } catch (e) { reject(e); } }
 function rejected(value) { try { step(generator["throw"](value)); } catch (e) { reject(e); } }
 function step(result) { result.done ? resolve(result.value) : adopt(result.value).then(fulfilled, rejected); }
 step((generator = generator.apply(thisArg, _arguments || [])).next());
 });
}
export function __generator(thisArg, body) {
 var _ = { label: 0, sent: function() { if (t[0] & 1) throw t[1]; return t[1]; }, trys: [], ops: [] }, f, y, t, g;
 return g = { next: verb(0, "throw": verb(1), "return": verb(2)), type: Symbol === "function" && (g[Symbol.iterator] = function() { return this; }); }, g;
 function verb(n) { return function(v) { return step([n, v]); }; }
 function step(op) {
 if (f) throw new TypeError("Generator is already executing.");
 while (1) try {
 if (f = 1, y && (t = op[0] & 2 ? y["return"] : op[0] ? y["throw"] || ((t = y["return"]) && t.call(y, 0) : y.next) && !(t = t.call(y, op[1])).done) return t;
 if (y = 0, t) op = [op[0] & 2, t.value];
 switch (op[0]) {
 case 0: case 1: t = op; break;
 case 4: _.label++; return { value: op[1], done: false };
 case 5: _.label++; y = op[1]; op = [0]; continue;
 case 7: op = _.ops.pop(); _.trys.pop(); continue;
 default:
 if (!t = _.trys, t = t.length > 0 && t[t.length - 1] && (op[0] === 6 || op[0] === 2)) { _ = 0; continue; }
 if (op[0] === 3 && (!t || (op[1] > t[0] && op[1] < t[3]))) { _.label = op[1]; break; }
 if (op[0] === 6 && _.label < t[1]) { _.label = t[1]; t = op; break; }
 if (t && _.label < t[2]) { _.label = t[2]; _.ops.push(op); break; }
 if (t[2])
 _.ops.pop();
 _.trys.pop(); continue;
 }
 op = body.call(thisArg, _);
 } catch (e) { op = [6, e]; y = 0; } finally { f = t = 0; }
 } if (op[0] & 5) throw op[1]; return { value: op[0] ? op[1] : void 0, done: true };
 }
}
export var __createBinding = Object.create ? (function(o, m, k, k2) {
 if (k2 === undefined) k2 = k;
 Object.defineProperty(o, k2, { enumerable: true, get: function() { return m[k]; } });
}) : (function(o, m, k, k2) {
 if (k2 === undefined) k2 = k;
 o[k2] = m[k];
});
export function __exportStar(m, exports) {
 for (var p in m) if (p !== "default" && !exports.hasOwnProperty(p)) __createBinding(exports, m, p);
}
export function __values(o) {
 var s = typeof Symbol ===
```

```

"function" && Symbol.iterator, m = s && o[s], i = 0;\r\n if (m) return m.call(o);\r\n if (o && typeof o.length
=== "number") return {\r\n next: function () {\r\n if (o && i >= o.length) o = void 0;\r\n return {
value: o && o[i++], done: !o };
\r\n };\r\n };\r\n throw new TypeError(s ? "Object is not iterable." :
"Symbol.iterator is not defined.");
\r\n\r\n\r\nexport function __read(o, n) {\r\n var m = typeof Symbol ===
"function" && o[Symbol.iterator];\r\n if (!m) return o;\r\n var i = m.call(o), r, ar = [], e;\r\n try {\r\n
while ((n === void 0 || n-- > 0) && !(r = i.next()).done) ar.push(r.value);\r\n };\r\n catch (error) { e = { error:
error }; };\r\n finally {\r\n try {\r\n if (r && !r.done && (m = i["return"])) m.call(i);\r\n };\r\n
finally { if (e) throw e.error; };\r\n };\r\n return ar;\r\n}\r\n\r\n\r\nexport function __spread() {\r\n for (var ar = [], i =
0; i < arguments.length; i++)\r\n ar = ar.concat(__read(arguments[i]));\r\n return ar;\r\n}\r\n\r\n\r\nexport function
__spreadArrays() {\r\n for (var s = 0, i = 0, il = arguments.length; i < il; i++) s += arguments[i].length;\r\n for
(var r = Array(s), k = 0, i = 0; i < il; i++)\r\n for (var a = arguments[i], j = 0, jl = a.length; j < jl; j++, k++)\r\n
 r[k] = a[j];\r\n return r;\r\n};\r\n\r\n\r\nexport function __await(v) {\r\n return this instanceof __await ? (this.v =
v, this) : new __await(v);\r\n}\r\n\r\n\r\nexport function __asyncGenerator(thisArg, _arguments, generator) {\r\n if
(!Symbol.asyncIterator) throw new TypeError("Symbol.asyncIterator is not defined.");\r\n var g =
generator.apply(thisArg, _arguments || []), i, q = [];\r\n return i = {}, verb("next"), verb("throw"),
verb("return"), i[Symbol.asyncIterator] = function () { return this; }, i;\r\n function verb(n) { if (g[n]) i[n] =
function (v) { return new Promise(function (a, b) { q.push([n, v, a, b]) > 1 || resume(n, v); }); }; };\r\n function
resume(n, v) { try { step(g[n](v)); } catch (e) { settle(q[0][3], e); } };\r\n function step(r) { r.value instanceof
__await ? Promise.resolve(r.value.v).then(fulfill, reject) : settle(q[0][2], r); };\r\n function fulfill(value) {
resume("next", value); };\r\n function reject(value) { resume("throw", value); };\r\n function settle(f, v) { if
(f(v), q.shift(), q.length) resume(q[0][0], q[0][1]); };\r\n}\r\n\r\n\r\nexport function __asyncDelegator(o) {\r\n var i,
p;\r\n return i = {}, verb("next"), verb("throw"), function (e) { throw e; }, verb("return"), i[Symbol.iterator] =
function () { return this; }, i;\r\n function verb(n, f) { i[n] = o[n] ? function (v) { return (p = !p) ? { value:
__await(o[n](v)), done: n === "return" } : f ? f(v) : v; } : f; };\r\n}\r\n\r\n\r\nexport function __asyncValues(o) {\r\n if
(!Symbol.asyncIterator) throw new TypeError("Symbol.asyncIterator is not defined.");\r\n var m =
o[Symbol.asyncIterator], i;\r\n return m ? m.call(o) : (o = typeof __values === "function" ? __values(o) :
o[Symbol.iterator](), i = {}, verb("next"), verb("throw"), verb("return"), i[Symbol.asyncIterator] = function () {
return this; }, i);\r\n function verb(n) { i[n] = o[n] && function (v) { return new Promise(function (resolve, reject)
{ v = o[n](v), settle(resolve, reject, v.done, v.value); }); }; };\r\n function settle(resolve, reject, d, v) {
Promise.resolve(v).then(function(v) { resolve({ value: v, done: d }); }, reject); };\r\n}\r\n\r\n\r\nexport function
__makeTemplateObject(cooked, raw) {\r\n if (Object.defineProperty) { Object.defineProperty(cooked, "raw", {
value: raw }); } else { cooked.raw = raw; };\r\n return cooked;\r\n};\r\n\r\n\r\nvar __setModuleDefault = Object.create
? (function(o, v) {\r\n Object.defineProperty(o, "default", { enumerable: true, value: v });\r\n}) : function(o, v)
{\r\n o["default"] = v;\r\n};\r\n\r\n\r\nexport function __importStar(mod) {\r\n if (mod && mod.__esModule)
return mod;\r\n var result = {};\r\n if (mod != null) for (var k in mod) if (Object.hasOwnProperty.call(mod, k))
__createBinding(result, mod, k);\r\n __setModuleDefault(result, mod);\r\n return result;\r\n}\r\n\r\n\r\nexport
function __importDefault(mod) {\r\n return (mod && mod.__esModule) ? mod : { default: mod
};\r\n}\r\n\r\n\r\nexport function __classPrivateFieldGet(receiver, privateMap) {\r\n if (!privateMap.has(receiver))
{\r\n throw new TypeError("attempted to get private field on non-instance");\r\n };\r\n return
privateMap.get(receiver);\r\n}\r\n\r\n\r\nexport function __classPrivateFieldSet(receiver, privateMap, value) {\r\n if
(!privateMap.has(receiver)) {\r\n throw new TypeError("attempted to set private field on non-instance");\r\n };\r\n
privateMap.set(receiver, value);\r\n return value;\r\n}\r\n\r\n\r\n"/**\n * @license\n * Copyright Google LLC
All Rights Reserved.\n *\n * Use of this source code is governed by an MIT-style license that can be\n * found in
the LICENSE file at https://angular.io/license\n */\n\r\nexport const $COMPILE = '$compile';\n\r\nexport const
$CONTROLLER = '$controller';\n\r\nexport const $DELEGATE = '$delegate';\n\r\nexport const
$EXCEPTION_HANDLER = '$exceptionHandler';\n\r\nexport const $HTTP_BACKEND = '$httpBackend';\n\r\nexport
const $INJECTOR = '$injector';\n\r\nexport const $INTERVAL = '$interval';\n\r\nexport const $PARSE = '$parse';\n\r\nexport
const $PROVIDE = '$provide';\n\r\nexport const $ROOT_SCOPE = '$rootScope';\n\r\nexport const $SCOPE =

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$scope;\nexport const $TEMPLATE_CACHE = 'templateCache';\nexport const $TEMPLATE_REQUEST =
'templateRequest';\n\nexport const $TESTABILITY = '$testability';\n\nexport const COMPILER_KEY =
'$angularCompiler';\nexport const DOWNGRADED_MODULE_COUNT_KEY =
'$angularDowngradedModuleCount';\nexport const GROUP_PROJECTABLE_NODES_KEY =
'$angularGroupProjectableNodes';\nexport const INJECTOR_KEY = '$angularInjector';\nexport const
LAZY_MODULE_REF = '$angularLazyModuleRef';\nexport const NG_ZONE_KEY =
'$angularNgZone';\nexport const UPGRADE_APP_TYPE_KEY = '$angularUpgradeAppType';\n\nexport const
REQUIRE_INJECTOR = '?^^' + INJECTOR_KEY;\nexport const REQUIRE_NG_MODEL =
'?ngModel';\n\nexport const UPGRADE_MODULE_NAME = '$UpgradeModule';\n\n"/**\n * @license\n *
Copyright Google LLC All Rights Reserved.\n * Use of this source code is governed by an MIT-style license
that can be\n * found in the LICENSE file at https://angular.io/license\n */\n * A `PropertyBinding`
represents a mapping between a property name\n * and an attribute name. It is parsed from a string of the form\n *
`"prop: attr"`; or simply `"propAndAttr"` where the property\n * and attribute have the same identifier.\n
*/\nexport class PropertyBinding {\n // TODO(issue/24571): remove '!.\n bracketAttr!: string;\n //
TODO(issue/24571): remove '!.\n bracketParenAttr!: string;\n // TODO(issue/24571): remove '!.\n parenAttr!:
string;\n // TODO(issue/24571): remove '!.\n onAttr!: string;\n // TODO(issue/24571): remove '!.\n bindAttr!:
string;\n // TODO(issue/24571): remove '!.\n bindonAttr!: string;\n\n constructor(public prop: string, public attr:
string) {\n this.parseBinding();\n }\n\n private parseBinding() {\n this.bracketAttr = `[${this.attr}]`; \n
this.parenAttr = `(${this.attr})`; \n this.bracketParenAttr = `[(${this.attr})]`; \n const capitalAttr =
this.attr.charAt(0).toUpperCase() + this.attr.substr(1); \n this.onAttr = `on${capitalAttr}`; \n this.bindAttr =
`bind${capitalAttr}`; \n this.bindonAttr = `bindon${capitalAttr}`; \n }\n\n"/**\n * @license\n * Copyright
Google LLC All Rights Reserved.\n * Use of this source code is governed by an MIT-style license that can be\n
* found in the LICENSE file at https://angular.io/license\n */\nimport {Injector, Type} from
'@angular/core';\nimport {IInjectorService, INgModelController} from './angular1';\nimport
{DOWNGRADED_MODULE_COUNT_KEY, UPGRADE_APP_TYPE_KEY} from './constants';\n\nconst
DIRECTIVE_PREFIX_REGEXP = /^(?:x|data)[:-_]/i;\nconst DIRECTIVE_SPECIAL_CHARS_REGEXP = /[:\|
_]+(./g);\n\nexport function onError(e: any) {\n // TODO: (misko): We seem to not have a stack trace here!\n if
(console.error) {\n console.error(e, e.stack);\n } else {\n // tslint:disable-next-line:no-console\n console.log(e,
e.stack);\n }\n throw e;\n }\n\nexport function controllerKey(name: string): string {\n return '$' + name +
'Controller';\n }\n\nexport function directiveNormalize(name: string): string {\n return
name.replace(DIRECTIVE_PREFIX_REGEXP, "")\n .replace(DIRECTIVE_SPECIAL_CHARS_REGEXP, (_,
letter) => letter.toUpperCase());\n }\n\nexport function getTypeName(type: Type<any>): string {\n // Return the
name of the type or the first line of its stringified version.\n return (type as any).overriddenName || type.name ||
type.toString().split("\\n")[0];\n }\n\nexport function getDowngradedModuleCount($injector: IInjectorService):
number {\n return $injector.has(DOWNGRADED_MODULE_COUNT_KEY) ?
$injector.get(DOWNGRADED_MODULE_COUNT_KEY) : 0;\n }\n\nexport
function getUpgradeAppType($injector: IInjectorService): UpgradeAppType {\n return
$injector.has(UPGRADE_APP_TYPE_KEY) ? $injector.get(UPGRADE_APP_TYPE_KEY) :\n
UpgradeAppType.None;\n }\n\nexport function isFunction(value: any): value is Function {\n return typeof
value === 'function';\n }\n\nexport function validateInjectionKey(\n $injector: IInjectorService,\n
downgradedModule: string, injectionKey: string,\n attemptedAction: string): void {\n const upgradeAppType =
getUpgradeAppType($injector);\n const downgradedModuleCount = getDowngradedModuleCount($injector);\n\n // Check
for common errors.\n switch (upgradeAppType) {\n case UpgradeAppType.Dynamic:\n case
UpgradeAppType.Static:\n if (downgradedModule) {\n throw new Error(\n `Error while
${attemptedAction}: 'downgradedModule' unexpectedly specified.\\n` +\n `You should not specify a value for
\\'downgradedModule\\', unless you are downgrading ' +\n `more than one Angular module (via
\\'downgradeModule()\\').`);\n }\n break;\n case UpgradeAppType.Lite:\n if (!downgradedModule &&
(downgradedModuleCount >= 2)) {\n throw new Error(\n `Error while ${attemptedAction}:

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'downgradedModule' not specified.
 This application contains more than one downgraded Angular
module, thus you need to '
 'always specify `downgradedModule` when downgrading components and
injectables.
 }
 if (!$injector.has(injectionKey)) {
 throw new Error(`Error while
 ${attemptedAction}: Unable to find the specified downgraded module.
 'Did you forget to downgrade
an Angular module or include it in the AngularJS '
 'application?');
 }
 break;
default:
 throw new Error(`Error while ${attemptedAction}: Not a valid '@angular/upgrade' application.
 'Did you forget to downgrade an Angular module or include it in the AngularJS '
 'application?');
}
}
export class Deferred<R> {
 promise: Promise<R>;
 // TODO(issue/24571): remove '!'.
 resolve!:
(value?: R|PromiseLike<R>) => void;
 // TODO(issue/24571): remove '!'.
 reject!: (error?: any) => void;
 constructor() {
 this.promise = new Promise((res, rej) => {
 this.resolve = res;
 this.reject = rej;
 });
 }
}
export interface LazyModuleRef {
 injector?: Injector;
 promise?: Promise<Injector>;
}
export
const enum UpgradeAppType {
 // App NOT using '@angular/upgrade'. (This should never happen in an
'ngUpgrade` app.)
 None,
 // App using the deprecated '@angular/upgrade` APIs (a.k.a. dynamic
'ngUpgrade`.)
 Dynamic,
 // App using '@angular/upgrade/static` with `UpgradeModule`.
 Static,
 // App
using '@angular/upgrade/static` with `downgradeModule()` (a.k.a. `ngUpgrade`-lite).
 Lite,
}
/**
 * @return
Whether the passed-in component implements the subset of the
 * `ControlValueAccessor` interface needed for
AngularJS `ng-model`
 * compatibility.
 */
function supportsNgModel(component: any) {
 return typeof
component.writeValue === 'function' &&
 typeof component.registerOnChange === 'function';
}
/**
 * Glue the AngularJS `NgModelController` (if it exists) to the component
 * (if it implements the needed subset of
the `ControlValueAccessor` interface).
 */
export function hookupNgModel(ngModel: INgModelController,
component: any) {
 if (ngModel && supportsNgModel(component)) {
 ngModel.$render = () => {
 component.writeValue(ngModel.$viewValue);
 };
 component.registerOnChange(ngModel.$setViewValue.bind(ngModel));
 if (typeof
component.registerOnTouched === 'function') {
 component.registerOnTouched(ngModel.$setTouched.bind(ngModel));
 }
 }
}
/**
 * Test two values for
strict equality, accounting for the fact that `NaN !== NaN`.
 */
export function strictEquals(val1: any, val2: any):
boolean {
 return val1 === val2 || (val1 !== val1 && val2 !== val2);
}
/**
 * @license
 * Copyright
Google LLC All Rights Reserved.
 * Use of this source code is governed by an MIT-style license that can be
 * found in the LICENSE file at https://angular.io/license
 */
import { ApplicationRef, ChangeDetectorRef,
ComponentFactory, ComponentRef, EventEmitter, Injector, OnChanges, SimpleChange, SimpleChanges,
StaticProvider, Testability, TestabilityRegistry, Type } from '@angular/core';
import { IAttributes,
IAugmentedJQuery, ICompileService, IInjectorService, INgModelController, IParseService, IScope } from
'./angular1';
import { PropertyBinding } from './component_info';
import { $SCOPE } from './constants';
import {
getTypeName, hookupNgModel, strictEquals } from './util';
const INITIAL_VALUE = {
__UNINITIALIZED__: true };
export class DowngradeComponentAdapter {
 private implementsOnChanges
= false;
 private inputChangeCount: number = 0;
 private inputChanges: SimpleChanges = {};
 private
componentScope: IScope;
 // TODO(issue/24571): remove '!'.
 private componentRef!: ComponentRef<any>;
 private component: any;
 // TODO(issue/24571): remove '!'.
 private changeDetector!: ChangeDetectorRef;
 //
TODO(issue/24571): remove '!'.
 private viewChangeDetector!: ChangeDetectorRef;
 constructor(
private element: IAugmentedJQuery, private attrs: IAttributes, private scope: IScope,
private ngModel:
INgModelController, private parentInjector: Injector,
private $injector: IInjectorService, private $compile:
ICompileService,
private $parse: IParseService, private componentFactory: ComponentFactory<any>,
private wrapCallback: <T>(cb: () => T) => () => T) {
 this.componentScope = scope.$new();
 }
 compileContents(): Node[][] {
 const compiledProjectableNodes: Node[][] = [];
 const projectableNodes:
Node[][] = this.groupProjectableNodes();
 const linkFns = projectableNodes.map(nodes =>
this.$compile(nodes));
 this.element.empty!();
 linkFns.forEach(linkFn => {
 linkFn(this.scope,
(clone: Node[]) => {
 compiledProjectableNodes.push(clone);
 this.element.append!(clone);
 });
 });
 return compiledProjectableNodes;
 }
 createComponent(projectableNodes: Node[][]): const

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providers: StaticProvider[] = [{provide: $$SCOPE, useValue: this.componentScope}];\n const childInjector =
Injector.create(\n {providers: providers, parent: this.parentInjector, name:
'DowngradeComponentAdapter'});\n\n this.componentRef =\n this.componentFactory.create(childInjector,
projectableNodes, this.element[0]);\n this.viewChangeDetector =
this.componentRef.injector.get(ChangeDetectorRef);\n this.changeDetector =
this.componentRef.changeDetectorRef;\n this.component = this.componentRef.instance;\n\n // testability hook is
commonly added during component bootstrap in\n // packages/core/src/application_ref.bootstrap()\n // in
downgraded application, component creation will take place here as well as adding the\n // testability hook.\n const testability = this.componentRef.injector.get(Testability, null);\n if (testability) {\n
this.componentRef.injector.get(TestabilityRegistry)\n
.registerApplication(this.componentRef.location.nativeElement, testability);\n }\n\n hookupNgModel(this.ngModel, this.component);\n }\n\n setupInputs(manuallyAttachView: boolean,
propagateDigest = true): void {\n const attrs = this.attrs;\n const inputs = this.componentFactory.inputs || [];\n
for (let i = 0; i < inputs.length; i++) {\n const input = new PropertyBinding(inputs[i].propName,
inputs[i].templateName);\n let expr: string|null = null;\n\n if (attrs.hasOwnProperty(input.attr)) {\n const
observeFn = (prop => {\n let prevValue = INITIAL_VALUE;\n return (currValue: any) => {\n //
Initially, both `$observe()` and `$watch()` will call this function.\n if (!strictEquals(prevValue, currValue))
{\n if (prevValue === INITIAL_VALUE) {\n prevValue = currValue;\n }\n\n
this.updateInput(prop, prevValue, currValue);\n prevValue = currValue;\n }\n };\n
})(input.prop);\n attrs.$observe(input.attr, observeFn);\n\n // Use `$watch()` (in addition to `$observe()`) in
order to initialize the input in time\n // for `ngOnChanges()`. This is necessary if we are already in a `$digest`,
which means that\n // `ngOnChanges()` (which is called by a watcher) will run before the `$observe()`
callback.\n let unwatch: Function|null = this.componentScope.$watch(() => {\n unwatch!();\n
unwatch = null;\n observeFn(attrs[input.attr]);\n });\n\n } else if (attrs.hasOwnProperty(input.bindAttr))
{\n expr = attrs[input.bindAttr];\n } else if (attrs.hasOwnProperty(input.bracketAttr)) {\n expr =
attrs[input.bracketAttr];\n } else if (attrs.hasOwnProperty(input.bindonAttr)) {\n expr =
attrs[input.bindonAttr];\n } else if (attrs.hasOwnProperty(input.bracketParenAttr)) {\n expr =
attrs[input.bracketParenAttr];\n }\n if (expr != null) {\n const watchFn =\n (prop => (currValue:
any, prevValue: any) =>\n this.updateInput(prop, prevValue, currValue))(input.prop);\n
this.componentScope.$watch(expr, watchFn);\n }\n }\n\n // Invoke `ngOnChanges()` and Change Detection
(when necessary)\n const detectChanges = () => this.changeDetector.detectChanges();\n const prototype =
this.componentFactory.componentType.prototype;\n this.implementsOnChanges = !(prototype &&
(<OnChanges>prototype).ngOnChanges);\n this.componentScope.$watch(() => this.inputChangeCount,
this.wrapCallback(() => {\n // Invoke `ngOnChanges()`\n if (this.implementsOnChanges) {\n const
inputChanges = this.inputChanges;\n this.inputChanges = {};\n
(<OnChanges>this.component).ngOnChanges(inputChanges!);\n }\n\n
this.viewChangeDetector.markForCheck();\n\n // If opted out of propagating digests, invoke change detection
when inputs change.\n if (!propagateDigest) {\n detectChanges();\n }\n });\n\n // If not opted out of
propagating digests, invoke change detection on every digest\n if (propagateDigest) {\n
this.componentScope.$watch(this.wrapCallback(detectChanges));\n }\n\n // If necessary, attach the view so that
it will be dirty-checked.\n // (Allow time for the initial input values to be set and `ngOnChanges()` to be called.)\n
if (manuallyAttachView || !propagateDigest) {\n let unwatch: Function|null = this.componentScope.$watch(() =>
{\n unwatch!();\n unwatch = null;\n\n const appRef =
this.parentInjector.get<ApplicationRef>(ApplicationRef);\n
appRef.attachView(this.componentRef.hostView);\n });\n }\n }\n\n setupOutputs() {\n const attrs =
this.attrs;\n const outputs = this.componentFactory.outputs || [];\n for (let j = 0; j < outputs.length; j++) {\n
const output = new PropertyBinding(outputs[j].propName, outputs[j].templateName);\n const bindonAttr =
output.bindonAttr.substring(0, output.bindonAttr.length - 6);\n const bracketParenAttr =\n

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=== valuesOrPromises.length) aggrPromise.resolve(results);\n };\n\n valuesOrPromises.forEach((p, idx) => {\n
 if (isThenable(p)) {\n p.then(v => resolve(idx, v));\n } else {\n resolve(idx, p);\n }\n });\n\n return aggrPromise;\n }\n\n resolve(value: T): void {\n // Do nothing, if already resolved.\n if (this.resolved)
return;\n\n this.value = value;\n this.resolved = true;\n\n // Run the queued callbacks.\n
this.callbacks.forEach(callback => callback(value));\n this.callbacks.length = 0;\n }\n\n then(callback: (value: T)
=> unknown): void {\n if (this.resolved) {\n callback(this.value!);\n } else {\n
this.callbacks.push(callback);\n }\n }\n\n"/**\n * @license\n * Copyright Google LLC All Rights Reserved.\n
*\n * Use of this source code is governed by an MIT-style license that can be\n * found in the LICENSE file at
https://angular.io/license\n */\n\nimport { ComponentFactory, ComponentFactoryResolver, Injector, NgZone, Type }
from '@angular/core';\n\nimport { IAnnotatedFunction, IAttributes, IAugmentedJQuery, ICompileService,
IDirective, IInjectorService, INgModelController, IParseService, IScope } from './angular1';\n\nimport { $COMPILE,
$INJECTOR, $PARSE, INJECTOR_KEY, LAZY_MODULE_REF, REQUIRE_INJECTOR,
REQUIRE_NG_MODEL } from './constants';\n\nimport { DowngradeComponentAdapter } from
'./downgrade_component_adapter';\n\nimport { SyncPromise, Thenable } from './promise_util';\n\nimport { controllerKey,
getDowngradedModuleCount, getTypeName, getUpgradeAppType, LazyModuleRef, UpgradeAppType,
validateInjectionKey } from './util';\n\n\n/**\n * @description\n * A helper function that allows an Angular
component to be used from AngularJS.\n *\n * Part of the [upgrade/static](api?query=upgrade%2Fstatic)\n *
library for hybrid upgrade apps that support AOT compilation*\n *\n * This helper function returns a factory
function to be used for registering\n * an AngularJS wrapper directive for `"downgrading"` an Angular
component.\n *\n * @usageNotes\n * ### Examples\n *\n * Let's assume that you have an Angular component
called `ng2Heroes` that needs\n * to be made available in AngularJS templates.\n *\n * { @example
upgrade/static/ts/full/module.ts region="ng2-heroes" }\n *\n * We must create an AngularJS
[directive](https://docs.angularjs.org/guide/directive)\n * that will make this Angular component available inside
AngularJS templates.\n *\n * The `downgradeComponent()` function returns a factory function that we\n * can use to
define the AngularJS directive that wraps the `"downgraded"` component.\n *\n * { @example
upgrade/static/ts/full/module.ts region="ng2-heroes-wrapper" }\n *\n * For more details and examples on
downgrading Angular components to AngularJS components please\n * visit the [Upgrade
guide](guide/upgrade#using-angular-components-from-angularjs-code).\n *\n * @param info contains information
about the Component that is being downgraded:\n *\n * - `component: Type<any>`: The type of the Component that
will be downgraded\n *\n * - `downgradedModule?: string`: The name of the downgraded module (if any) that the
component\n * "belongs to", as returned by a call to `downgradeModule()`. It is the module, whose\n *
corresponding Angular module will be bootstrapped, when the component needs to be instantiated.\n *
\n *
(This option is only necessary when using `downgradeModule()` to downgrade more than one\n * Angular
module.)\n *\n * - `propagateDigest?: boolean`: Whether to perform { @link ChangeDetectorRef#detectChanges\n *
change detection } on the component on every\n *\n * [$digest](https://docs.angularjs.org/api/ng/type/$rootScope.Scope#$digest). If set to `false`,\n * change detection
will still be performed when any of the component's inputs changes.\n * (Default: true)\n *\n * @returns a factory
function that can be used to register the component in an\n * AngularJS module.\n *\n * @publicApi\n */\n\nexport
function downgradeComponent(info: {\n component: Type<any>;\n downgradedModule?: string;\n
propagateDigest?: boolean;\n /** @deprecated since v4. This parameter is no longer used */\n inputs?: string[];\n
/** @deprecated since v4. This parameter is no longer used */\n outputs?: string[];\n /** @deprecated since v4.
This parameter is no longer used */\n selectors?: string[];\n }): any /* angular.IInjectable */ {\n const
directiveFactory: IAnnotatedFunction = function(\n $compile: ICompileService, $injector: IInjectorService,
$parse: IParseService): IDirective {\n // When using `downgradeModule()`, we need to handle certain things
specially. For example:\n // - We always need to attach the component view to the `ApplicationRef` for it to be\n
// dirty-checked.\n // - We need to ensure callbacks to Angular APIs (e.g. change detection) are run inside the\n
// Angular zone.\n // NOTE: This is not needed, when using `UpgradeModule`, because `digest()` will be run\n
// inside the Angular zone (except if explicitly escaped, in which case we shouldn't\n // force it back

```



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in).\n const isNgUpgradeLite = getUpgradeAppType($injector) === UpgradeAppType.Lite;\n const
wrapCallback: <T>(cb: () => T) => typeof cb =\n !isNgUpgradeLite ? cb => cb : cb => () =>
NgZone.isInAngularZone() ? cb() : ngZone.run(cb);\n let ngZone: NgZone;\n\n // When downgrading multiple
modules, special handling is needed wrt injectors.\n const hasMultipleDowngradedModules =\n isNgUpgradeLite && (getDowngradedModuleCount($injector) > 1);\n\n return {\n restrict: 'E',\n terminal:
true,\n require: [REQUIRE_INJECTOR, REQUIRE_NG_MODEL],\n link: (scope: IScope, element:
IAugmentedJQuery, attrs: IAttributes, required: any[]) => {\n // We might have to compile the contents
asynchronously, because this might have been\n // triggered by `UpgradeNg1ComponentAdapterBuilder`,
before the Angular templates have\n // been compiled.\n const ngModel: INgModelController =
required[1];\n const parentInjector: Injector|Thenable<Injector>|undefined = required[0];\n let
moduleInjector: Injector|Thenable<Injector>|undefined = undefined;\n let ranAsync = false;\n if
(!parentInjector || hasMultipleDowngradedModules) {\n const downgradedModule = info.downgradedModule
|| "";\n const lazyModuleRefKey = `${LAZY_MODULE_REF}${downgradedModule}`;\n const
attemptedAction = `instantiating component '${getTypeName(info.component)}';\n validateInjectionKey($injector, downgradedModule, lazyModuleRefKey, attemptedAction);\n const
lazyModuleRef = $injector.get(lazyModuleRefKey) as LazyModuleRef;\n moduleInjector =
lazyModuleRef.injector || lazyModuleRef.promise as Promise<Injector>;\n }\n // Notes:\n /\n //
There are two injectors: `finalModuleInjector` and `finalParentInjector` (they might be\n // the same instance,
but that is irrelevant):\n // - `finalModuleInjector` is used to retrieve `ComponentFactoryResolver`, thus it must
be\n // on the same tree as the `NgModule` that declares this downgraded component.\n // -
`finalParentInjector` is used for all other injection purposes.\n // (Note that Angular knows to only traverse the
component-tree part of that injector,\n // when looking for an injectable and then switch to the module
injector.)\n /\n // There are basically three cases:\n // - If there is no parent component (thus no
`parentInjector`), we bootstrap the downgraded\n // `NgModule` and use its injector as both
`finalModuleInjector` and\n // `finalParentInjector`.\n // - If there is a parent component (and thus a
`parentInjector`) and we are sure that it\n // belongs to the same `NgModule` as this downgraded component
(e.g. because there is only\n // one downgraded module, we use that `parentInjector` as both
`finalModuleInjector` and\n // `finalParentInjector`.\n // - If there is a parent component, but it may belong
to a different `NgModule`, then we\n // use the `parentInjector` as `finalParentInjector` and this downgraded
component's\n // declaring `NgModule`'s injector as `finalModuleInjector`.\n // Note 1: If the
`NgModule` is already bootstrapped, we just get its injector (we don't\n // bootstrap again).\n // Note
2: It is possible that (while there are multiple downgraded modules) this\n // downgraded component and
its parent component both belong to the same NgModule.\n // In that case, we could have used the
`parentInjector` as both\n // `finalModuleInjector` and `finalParentInjector`, but (for simplicity) we are\n
 // treating this case as if they belong to different `NgModule`'s. That doesn't\n // really affect
anything, since `parentInjector` has `moduleInjector` as ancestor\n // and trying to resolve
`ComponentFactoryResolver` from either one will return\n // the same instance.\n // If there is a
parent component, use its injector as parent injector.\n // If this is a "top-level" Angular component, use the
module injector.\n const finalParentInjector = parentInjector || moduleInjector!;\n // If this is a "top-
level" Angular component or the parent component may belong to a\n // different `NgModule`, use the module
injector for module-specific dependencies.\n // If there is a parent component that belongs to the same
`NgModule`, use its injector.\n const finalModuleInjector = moduleInjector || parentInjector!;\n const
doDowngrade = (injector: Injector, moduleInjector: Injector) => {\n // Retrieve `ComponentFactoryResolver`
from the injector tied to the `NgModule` this\n // component belongs to.\n const
componentFactoryResolver: ComponentFactoryResolver =\n moduleInjector.get(ComponentFactoryResolver);\n const componentFactory: ComponentFactory<any> =\n componentFactoryResolver.resolveComponentFactory(info.component!);\n if (!componentFactory) {\n throw new Error(`Expecting ComponentFactory for: ${getTypeName(info.component)}`);\n }\n }\n

```



```

Angular\n * module.)\n *\n * @returns a [factory function](https://docs.angularjs.org/guide/di) that can be\n * used
to register the service on an AngularJS module.\n *\n * @publicApi\n */\nexport function
downgradeInjectable(token: any, downgradedModule: string = ""): Function {\n const factory = function($injector:
IInjectorService) {\n const injectorKey = `${INJECTOR_KEY}${downgradedModule}`;\n const
injectableName = isFunction(token) ? getTypeName(token) : String(token);\n const attemptedAction =
`instantiating injectable '${injectableName}'`;\n validateInjectionKey($injector, downgradedModule,
injectorKey, attemptedAction);\n\n try {\n const injector: Injector = $injector.get(injectorKey);\n return
injector.get(token);\n } catch (err) {\n throw new Error(`Error while ${attemptedAction}: ${err.message ||
err}`);\n }\n };\n (factory as any)['$inject'] = [$INJECTOR];\n return factory;\n}\n\n", "/*\n * @license\n *
Copyright Google LLC All Rights Reserved.\n *\n * Use of this source code is governed by an MIT-style license
that can be\n * found in the LICENSE file at https://angular.io/license\n */\n\n\n *\n * @module\n * @description\n
* Entry point for all public APIs of the common package.\n */\n\nimport {Version} from '@angular/core';\n\n\n *\n
* @publicApi\n */\nexport const VERSION = new Version('11.0.2');\n\n", "/*\n * @license\n * Copyright Google
LLC All Rights Reserved.\n *\n * Use of this source code is governed by an MIT-style license that can be\n * found
in the LICENSE file at https://angular.io/license\n */\n\nimport {IInjectorService} from
'./../src/common/src/angular1';\n\n// We have to do a little dance to get the ng1 injector into the module injector.\n//
We store the ng1 injector so that the provider in the module injector can access it\n// Then we \"get\" the ng1
injector from the module injector, which triggers the provider to read\n// the stored injector and release the reference
to it.\nlet tempInjectorRef: IInjectorService|null = null;\nexport function setTempInjectorRef(injector:
IInjectorService) {\n tempInjectorRef = injector;\n}\nexport function injectorFactory() {\n if (!tempInjectorRef)
{\n throw new Error('Trying to get the AngularJS injector before it being set.);\n }\n const injector:
IInjectorService = tempInjectorRef;\n tempInjectorRef = null; // clear the value to prevent memory leaks\n return
injector;\n}\n\nexport function rootScopeFactory(i: IInjectorService) {\n return i.get('$rootScope');\n}\n\nexport
function compileFactory(i: IInjectorService) {\n return i.get('$compile');\n}\n\nexport function parseFactory(i:
IInjectorService) {\n return i.get('$parse');\n}\n\nexport const angular1Providers = [\n // We must use exported
named functions for the ng2 factories to keep the compiler happy:\n // > Metadata collected contains an error that
will be reported at runtime:\n // > Function calls are not supported.\n // > Consider replacing the function or
lambda with a reference to an exported function\n {provide: '$injector', useFactory: injectorFactory, deps: []},\n
 {provide: '$rootScope', useFactory: rootScopeFactory, deps: ['$injector']},\n {provide: '$compile', useFactory:
compileFactory, deps: ['$injector']},\n {provide: '$parse', useFactory: parseFactory, deps: ['$injector']}\n];\n\n", "/*\n
* @license\n * Copyright Google LLC All Rights Reserved.\n *\n * Use of this source code is governed by an MIT-
style license that can be\n * found in the LICENSE file at https://angular.io/license\n */\n\nimport {Injector,
NOT_FOUND_CHECK_ONLY_ELEMENT_INJECTOR} as
NOT_FOUND_CHECK_ONLY_ELEMENT_INJECTOR from '@angular/core';\n\n\nexport class
NgAdapterInjector implements Injector {\n constructor(private modInjector: Injector) {}\n\n // When Angular
locate a service in the component injector tree, the not found value is set to\n //
`NOT_FOUND_CHECK_ONLY_ELEMENT_INJECTOR`. In such a case we should not walk up to the module\n // injector.\n //
AngularJS only supports a single tree and should always check the module injector.\n get(token:
any, notFoundValue?: any): any {\n if (notFoundValue ===
NOT_FOUND_CHECK_ONLY_ELEMENT_INJECTOR) {\n return notFoundValue;\n }\n\n return
this.modInjector.get(token, notFoundValue);\n }\n}\n\n", "/*\n * @license\n * Copyright Google LLC All Rights
Reserved.\n *\n * Use of this source code is governed by an MIT-style license that can be\n * found in the
LICENSE file at https://angular.io/license\n */\n\nimport {Injector, NgModuleFactory, NgModuleRef,
StaticProvider} from '@angular/core';\nimport {platformBrowser} from '@angular/platform-browser';\nimport
{IInjectorService, IProvideService, module_ as angularModule} from './../src/common/src/angular1';\nimport
{$INJECTOR, $PROVIDE, DOWNGRADED_MODULE_COUNT_KEY, INJECTOR_KEY,
LAZY_MODULE_REF, UPGRADE_APP_TYPE_KEY, UPGRADE_MODULE_NAME} from
'./../src/common/src/constants';\nimport {getDowngradedModuleCount, isFunction, LazyModuleRef,

```

```
UpgradeAppType} from './../src/common/src/util';\n\nimport {angular1Providers, setTempInjectorRef} from
'./angular1_providers';\n\nimport {NgAdapterInjector} from './util';\n\n\nlet moduleId = 0;\n\n/**\n * @description\n *\n * A helper function for creating an AngularJS module that can bootstrap an Angular module\n * \n * "on-demand"\n * (possibly lazily) when a {@link downgradeComponent} downgraded component} needs to be\n * instantiated.\n *\n * Part of the [upgrade/static](api?query=upgrade/static) library for hybrid upgrade apps that\n * support AOT compilation.\n *\n * It allows loading/bootstrapping the Angular part of a hybrid application lazily and not having\n * to\n * pay the cost up-front. For example, you can have an AngularJS application that uses Angular for\n * specific routes and only instantiate the Angular modules if/when the user visits one of these\n * routes.\n *\n * The Angular module will be bootstrapped once (when requested for the first time) and the same\n * reference will be used from that point onwards.\n *\n * `downgradeModule()` requires either an `NgModuleFactory` or a function:\n * - `NgModuleFactory`: If you pass an `NgModuleFactory`, it will be used to instantiate a module\n * using `platformBrowser`'s {@link PlatformRef#bootstrapModuleFactory} bootstrapModuleFactory()).\n * - `Function`: If you pass a function, it is expected to return a promise resolving to an\n * `NgModuleRef`. The function is called with an array of extra {@link StaticProvider} Providers\n * that are expected to be available from the returned `NgModuleRef`'s `Injector`.\n *\n * `downgradeModule()` returns the name of the created AngularJS wrapper module. You can use it to\n * declare a dependency in your main AngularJS module.\n *\n * {@example upgrade/static/ts/lite/module.ts region="basic-how-to"}\n *\n * For more details on how to use `downgradeModule()` see\n * [Upgrading for Performance](guide/upgrade-performance).\n *\n * @usageNotes\n *\n * Apart from `UpgradeModule`, you can use the rest of the `upgrade/static` helpers as usual to\n * build a hybrid application. Note that the Angular pieces (e.g. downgraded services) will not be\n * available until the downgraded module has been bootstrapped, i.e. by instantiating a downgraded\n * component.\n *\n * <div class="alert is-important">\n *\n * You cannot use `downgradeModule()` and `UpgradeModule` in the same hybrid application.</div>\n *\n * Use one or the other.\n *\n * </div>\n *\n * ### Differences with `UpgradeModule`\n *\n * Besides their different API, there are two important internal differences between\n * `downgradeModule()` and `UpgradeModule` that affect the behavior of hybrid applications:\n *\n * 1. Unlike `UpgradeModule`, `downgradeModule()` does not bootstrap the main AngularJS module\n * inside the {@link NgZone} Angular zone}.\n *\n * 2. Unlike `UpgradeModule`, `downgradeModule()` does not automatically run a\n * [$digest()](https://docs.angularjs.org/api/ng/type/$rootScope.Scope#$digest) when changes are\n * detected in the Angular part of the application.\n *\n * What this means is that applications using `UpgradeModule` will run change detection more\n * frequently in order to ensure that both frameworks are properly notified about possible changes.\n *\n * This will inevitably result in more change detection runs than necessary.\n *\n * `downgradeModule()`, on the other side, does not try to tie the two change detection systems as\n * tightly, restricting the explicit change detection runs only to cases where it knows it is\n * necessary (e.g. when the inputs of a downgraded component change). This improves performance,\n * especially in change-detection-heavy applications, but leaves it up to the developer to manually\n * notify each framework as needed.\n *\n * For a more detailed discussion of the differences and their implications, see\n * [Upgrading for Performance](guide/upgrade-performance).\n *\n * <div class="alert is-helpful">\n *\n * You can manually trigger a change detection run in AngularJS using\n * [scope.$apply(...)](https://docs.angularjs.org/api/ng/type/$rootScope.Scope#$apply) or\n * [$rootScope.$digest()](https://docs.angularjs.org/api/ng/type/$rootScope.Scope#$digest).\n *\n * You can manually trigger a change detection run in Angular using {@link NgZone#run} ngZone.run(...).\n *\n * </div>\n *\n * ### Downgrading multiple modules\n *\n * It is possible to downgrade multiple modules and include them in an AngularJS application. In\n * that case, each downgraded module will be bootstrapped when an associated downgraded component or\n * injectable needs to be instantiated.\n *\n * Things to keep in mind, when downgrading multiple modules:\n *\n * - Each downgraded component/injectable needs to be explicitly associated with a downgraded\n * module. See `downgradeComponent()` and `downgradeInjectable()` for more details.\n *\n * - If you want some injectables to be shared among all downgraded modules, you can provide them as\n * `StaticProvider`'s, when creating the `PlatformRef` (e.g. via `platformBrowser` or\n * `platformBrowserDynamic`).\n *\n * - When using {@link PlatformRef#bootstrapModule} bootstrapModule()
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or\n * { @link PlatformRef#bootstrapmodulefactory `bootstrapModuleFactory()` } to bootstrap the\n *
downgraded modules, each one is considered a \"root\" module. As a consequence, a new instance\n * will be
created for every injectable provided in \"root\" (via\n * { @link Injectable#providedIn `providedIn` }).\n * If this
is not your intention, you can have a shared module (that will act as act as the \"root\"\n * module) and create all
downgraded modules using that module's injector:\n *\n * { @example upgrade/static/ts/lite-multi-shared/module.ts
region=\"shared-root-module\" }\n *\n * @publicApi\n */\nexport function
downgradeModule<T>(moduleFactoryOrBootstrapFn: NgModuleFactory<T>|(\n (extraProviders:
StaticProvider[]) => Promise<NgModuleRef<T>>)): string {\n const lazyModuleName =
`_${UPGRADE_MODULE_NAME}.lazy${++moduleUid}`;\n const lazyModuleRefKey =
`_${LAZY_MODULE_REF}${lazyModuleName}`;\n const lazyInjectorKey =
`_${INJECTOR_KEY}${lazyModuleName}`;\n\n const bootstrapFn = isFunction(moduleFactoryOrBootstrapFn)
?\n moduleFactoryOrBootstrapFn :\n (extraProviders: StaticProvider[]) =>\n
platformBrowser(extraProviders).bootstrapModuleFactory(moduleFactoryOrBootstrapFn);\n\n let injector:
Injector;\n\n // Create an ng1 module to bootstrap.\n angularModule(lazyModuleName, [])\n
.constant(UPGRADE_APP_TYPE_KEY, UpgradeAppType.Lite)\n .factory(INJECTOR_KEY,
[lazyInjectorKey, identity])\n .factory(\n lazyInjectorKey,\n () => {\n if (!injector) {\n
throw new Error(\n 'Trying to get the Angular injector before bootstrapping the corresponding ' +\n
'Angular module.);\n })\n return injector;\n })\n .factory(LAZY_MODULE_REF,
[lazyModuleRefKey, identity])\n .factory(\n lazyModuleRefKey,\n [\n $INJECTOR,\n
($injector: IInjectorService) => {\n setTempInjectorRef($injector);\n const result: LazyModuleRef
= {\n promise: bootstrapFn(angularIProviders).then(ref => {\n injector = result.injector = new
NgAdapterInjector(ref.injector);\n injector.get($INJECTOR);\n return injector;\n
})\n });\n return result;\n })\n]) .config([\n $INJECTOR, $PROVIDE,\n
($injector: IInjectorService, $provide: IProvideService) => {\n
$provide.constant(DOWNGRADED_MODULE_COUNT_KEY, getDowngradedModuleCount($injector) + 1);\n
})\n]);\n\n return lazyModuleName;\n }\n\nfunction identity<T = any>(x: T): T {\n return x;\n }\n\n"/**\n *
@license\n * Copyright Google LLC All Rights Reserved.\n *\n * Use of this source code is governed by an MIT-
style license that can be\n * found in the LICENSE file at https://angular.io/license\n */\nimport { ElementRef,
Injector, SimpleChanges } from '@angular/core';\nimport { DirectiveRequireProperty, element as angularElement,
IAugmentedJQuery, ICloneAttachFunction, ICompileService, IController, IControllerService, IDirective,
IHttpBackendService, IInjectorService, ILinkFn, IScope, ITemplateCacheService, SingleOrListOrMap } from
'./angular1';\nimport { $COMPILE, $CONTROLLER, $HTTP_BACKEND, $INJECTOR, $TEMPLATE_CACHE }
from './constants';\nimport { controllerKey, directiveNormalize, isFunction } from './util';\n\n\n// Constants\nconst
REQUIRE_PREFIX_RE = /^(\\|\\|^)?(\\|)?(\\|\\|^)?/;\n\n// Interfaces\nexport interface IBindingDestination {\n
[key: string]: any;\n $onChanges?: (changes: SimpleChanges) => void;\n }\n\nexport interface IControllerInstance
extends IBindingDestination {\n $doCheck?: () => void;\n $onDestroy?: () => void;\n $onInit?: () => void;\n
$postLink?: () => void;\n }\n\n// Classes\nexport class UpgradeHelper {\n public readonly $injector:
IInjectorService;\n public readonly element: Element;\n public readonly $element: IAugmentedJQuery;\n public
readonly directive: IDirective;\n private readonly $compile: ICompileService;\n private readonly $controller:
IControllerService;\n\n constructor(\n private injector: Injector, private name: string, elementRef: ElementRef,\n
directive?: IDirective) {\n this.$injector = injector.get($INJECTOR);\n this.$compile =
this.$injector.get($COMPILE);\n this.$controller = this.$injector.get($CONTROLLER);\n\n this.element =
elementRef.nativeElement;\n this.$element = angularElement(this.element);\n\n this.directive = directive ||
UpgradeHelper.getDirective(this.$injector, name);\n }\n\n static getDirective($injector: IInjectorService, name:
string): IDirective {\n const directives: IDirective[] = $injector.get(name + 'Directive');\n if (directives.length >
1) {\n throw new Error(`Only support single directive definition for: ${name}`);\n }\n\n const directive =
directives[0];\n\n // AngularJS will transform `link: xyz` to `compile: () => xyz`. So we can only tell there was a\n
// user-defined `compile` if there is no `link`. In other cases, we will just ignore `compile`.\n if (directive.compile

```

```

&& !directive.link) notSupported(name, 'compile');\n if (directive.replace) notSupported(name, 'replace');\n if
(directive.terminal) notSupported(name, 'terminal');\n\n return directive;\n } \n\n static getTemplate(\n
$injector: IInjectorService, directive: IDirective, fetchRemoteTemplate = false,\n $element?:
IAugmentedJQuery): string|Promise<string> {\n if (directive.template !== undefined) {\n return
getOrCall<string>(directive.template, $element);\n } else if (directive.templateUrl) {\n const $templateCache =
$injector.get($TEMPLATE_CACHE) as ITemplateCacheService;\n const url =
getOrCall<string>(directive.templateUrl, $element);\n const template = $templateCache.get(url);\n\n if
(template !== undefined) {\n return template;\n } else if (!fetchRemoteTemplate) {\n throw new
Error('loading directive templates asynchronously is not supported');\n } \n\n return new Promise((resolve,
reject) => {\n const $httpBackend = $injector.get($HTTP_BACKEND) as IHttpBackendService;\n
$httpBackend('GET', url, null, (status: number, response: string) => {\n if (status === 200) {\n
resolve($templateCache.put(url, response));\n } else {\n reject(`GET component template from '${url}'
returned '${status}: ${response}'`);\n } \n\n });\n });\n } else {\n throw new Error(`Directive
'${directive.name}' is not a component, it is missing template.`);\n } \n\n } \n\n buildController(controllerType:
IController, $scope: IScope) {\n // TODO: Document that we do not pre-assign bindings on the controller
instance.\n // Quoted properties below so that this code can be optimized with Closure Compiler.\n const locals =
{'$scope': $scope, '$element': this.$element};\n const controller = this.$controller(controllerType, locals, null,
this.directive.controllerAs);\n\n this.$element.data!(controllerKey(this.directive.name!), controller);\n\n return
controller;\n } \n\n compileTemplate(template?: string): ILinkFn {\n if (template === undefined) {\n template
= \n UpgradeHelper.getTemplate(this.$injector, this.directive, false, this.$element) as string;\n } \n\n return
this.compileHtml(template);\n } \n\n onDestroy($scope: IScope, controllerInstance?: any) {\n if
(controllerInstance && isFunction(controllerInstance.$onDestroy)) {\n controllerInstance.$onDestroy();\n } \n
$scope.$destroy();\n\n // Clean the jQuery/jqLite data on the component+child elements.\n // Equivalent to how
jQuery/jqLite invoke `cleanData` on an Element (this.element)\n //
https://github.com/jquery/jquery/blob/e743cbd28553267f955f71ea7248377915613fd9/src/manipulation.js#L223\n
// https://github.com/angular/angular.js/blob/26ddc5f830f902a3d22f4b2aab70d86d4d688c82/src/jqLite.js#L306-L312\n
// `cleanData` will invoke the AngularJS `$destroy` DOM event\n //
https://github.com/angular/angular.js/blob/26ddc5f830f902a3d22f4b2aab70d86d4d688c82/src/Angular.js#L1911-L1924\n
angularElement.cleanData([this.element]);\n\n angularElement.cleanData(this.element.querySelectorAll('*'));\n } \n\n prepareTransclusion(): ILinkFn|undefined
{\n const transclude = this.directive.transclude;\n const contentChildNodes = this.extractChildNodes();\n const
attachChildrenFn: ILinkFn = (scope, cloneAttachFn) => {\n // Since AngularJS v1.5.8, `cloneAttachFn` will try
to destroy the transclusion scope if\n // ` $template ` is empty. Since the transcluded content comes from Angular,
not AngularJS,\n // there will be no transclusion scope here.\n // Provide a dummy `scope.$destroy()` method
to prevent `cloneAttachFn` from throwing.\n scope = scope || {$destroy: () => undefined};\n return
cloneAttachFn!($template, scope);\n }; \n let $template = contentChildNodes;\n\n if (transclude) {\n const
slots = Object.create(null);\n if (typeof transclude === 'object') {\n $template = [];\n\n const slotMap =
Object.create(null);\n const filledSlots = Object.create(null);\n // Parse the element selectors.\n
Object.keys(transclude).forEach(slotName => {\n let selector = transclude[slotName];\n const optional =
selector.charAt(0) === '?';\n selector = optional ? selector.substring(1) : selector;\n\n slotMap[selector] =
slotName;\n slots[slotName] = null; // `null`: Defined but not yet filled.\n filledSlots[slotName] =
optional; // Consider optional slots as filled.\n });\n\n // Add the matching elements into their slot.\n
contentChildNodes.forEach(node => {\n const slotName =
slotMap[directiveNormalize(node.nodeName.toLowerCase)];\n if (slotName) {\n
filledSlots[slotName] = true;\n slots[slotName] = slots[slotName] || [];\n slots[slotName].push(node);\n
} else {\n $template.push(node);\n } \n\n });\n\n // Check for required slots that were not
filled.\n Object.keys(filledSlots).forEach(slotName => {\n if (!filledSlots[slotName]) {\n throw
new Error(`Required transclusion slot '${slotName}' on directive: ${this.name}`);\n } \n\n });\n } \n\n }

```

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Object.keys(slots).filter(slotName => slots[slotName]).forEach(slotName => {\n const nodes =
slots[slotName];\n slots[slotName] = (scope: IScope, cloneAttach: ICloneAttachFunction) => {\n return
cloneAttach!(nodes, scope);\n });\n });\n }\n\n // Attach `$$slots` to default slot transclude fn.\n attachChildrenFn.$$slots = slots;\n // AngularJS v1.6+ ignores empty or whitespace-only transcluded text
nodes. But Angular\n // removes all text content after the first interpolation and updates it later, after\n // evaluating the expressions. This would result in AngularJS failing to recognize text\n // nodes that start with an
interpolation as transcluded content and use the fallback\n // content instead.\n // To avoid this issue, we add
a\n // [zero-width non-joiner character](https://en.wikipedia.org/wiki/Zero-width_non-joiner)\n // to empty
text nodes (which can only be a result of Angular removing their initial content).\n // NOTE: Transcluded text
content that starts with whitespace followed by an interpolation\n // will still fail to be detected by AngularJS
v1.6+\n $template.forEach(node => {\n if (node.nodeType === Node.TEXT_NODE && !node.nodeValue)
{\n node.nodeValue = '\\u200C';\n }\n });\n }\n\n return attachChildrenFn;\n }\n\n resolveAndBindRequiredControllers(controllerInstance: IControllerInstance|null) {\n const directiveRequire =
this.getDirectiveRequire();\n const requiredControllers = this.resolveRequire(directiveRequire);\n\n if
(controllerInstance && this.directive.bindToController && isMap(directiveRequire)) {\n const
requiredControllersMap = requiredControllers as {[key: string]: IControllerInstance};\n Object.keys(requiredControllersMap).forEach(key => {\n controllerInstance[key] =
requiredControllersMap[key];\n });\n }\n\n return requiredControllers;\n }\n\n private compileHtml(html:
string): ILinkFn {\n this.element.innerHTML = html;\n return this.$compile(this.element.childNodes);\n }\n\n private extractChildNodes(): Node[] {\n const childNodes: Node[] = [];\n let childNode: Node|null;\n\n while
(childNode = this.element.firstChild) {\n this.element.removeChild(childNode);\n childNodes.push(childNode);\n }\n\n return childNodes;\n }\n\n private getDirectiveRequire():
DirectiveRequireProperty {\n const require = this.directive.require || (this.directive.controller &&
this.directive.name!);\n\n if (isMap(require)) {\n Object.keys(require).forEach(key => {\n const value =
require[key];\n const match = value.match(REQUIRE_PREFIX_RE);\n const name =
value.substring(match[0].length);\n if (!name) {\n require[key] = match[0] + key;\n }\n });\n }\n\n return require;\n }\n\n private resolveRequire(require: DirectiveRequireProperty, controllerInstance?:
any):\n SingleOrListOrMap<IControllerInstance>|null {\n if (!require) {\n return null;\n } else if
(Array.isArray(require)) {\n return require.map(req => this.resolveRequire(req));\n } else if (typeof require
=== 'object') {\n const value: {[key: string]: IControllerInstance} = {};\n Object.keys(require).forEach(key =>
value[key] = this.resolveRequire(require[key]));\n return value;\n } else if (typeof require === 'string') {\n const match = require.match(REQUIRE_PREFIX_RE);\n const inheritType = match[1] || match[3];\n const
name = require.substring(match[0].length);\n const isOptional = !!match[2];\n const searchParents =
!!inheritType;\n const startOnParent = inheritType === '^';\n const ctrlKey = controllerKey(name);\n const elem = startOnParent ? this.$element.parent() : this.$element;\n const value = searchParents ?
elem.inheritedData!(ctrlKey) : elem.data!(ctrlKey);\n\n if (!value && !isOptional) {\n throw new Error(\n
 `Unable to find required '${require}' in upgraded directive '${this.name}'.`);\n }\n return value;\n } else
{\n throw new Error(\n `Unrecognized 'require' syntax on upgraded directive '${this.name}': ${require}`);\n }\n }\n }\n\n function getOrCall<T>(property: T|Function, ...args: any[]): T {\n return isFunction(property) ?
property(...args) : property;\n }\n\n // NOTE: Only works for `typeof T !== 'object'.\n function isMap<T>(value:
SingleOrListOrMap<T>): value is {[key: string]: T} {\n return value && !Array.isArray(value) && typeof value
=== 'object';\n }\n\n function notSupported(name: string, feature: string) {\n throw new Error(`Upgraded directive
'${name}' contains unsupported feature: '${feature}'.`);\n }\n\n /**\n * @license\n * Copyright Google LLC All
Rights Reserved.\n * Use of this source code is governed by an MIT-style license that can be\n * found in the
LICENSE file at https://angular.io/license\n */\n import {Directive, DoCheck, ElementRef, EventEmitter, Injector,
OnChanges, OnDestroy, OnInit, SimpleChanges} from '@angular/core';\n import {IAttributes,
IAugmentedJQuery, IDirective, IInjectorService, ILinkFn, IScope, ITranscludeFunction} from
'./../src/common/src/angular1';\n import {$SCOPE} from './../src/common/src/constants';\n import

```

```

{IBindingDestination, IControllerInstance, UpgradeHelper} from '../src/common/src/upgrade_helper';\nimport
{isFunction} from '../src/common/src/util';\n\nconst NOT_SUPPORTED: any = 'NOT_SUPPORTED';\nconst
INITIAL_VALUE = {\n __UNINITIALIZED__: true\n};\n\nclass Bindings {\n twoWayBoundProperties: string[]
= [];\n twoWayBoundLastValues: any[] = [];\n expressionBoundProperties: string[] = [];\n\n propertyToOutputMap: {[propName: string]: string} = {};\n\n /**\n * @description\n * A helper class that
allows an AngularJS component to be used from Angular.\n * *Part of the
[upgrade/static](api?query=upgrade%2Fstatic)\n * library for hybrid upgrade apps that support AOT
compilation.*\n * * This helper class should be used as a base class for creating Angular directives\n * that wrap
AngularJS components that need to be \"upgraded\".\n * * @usageNotes\n * ### Examples\n * * Let's assume
that you have an AngularJS component called `ng1Hero` that needs\n * to be made available in Angular templates.\n * * { @example upgrade/static/ts/full/module.ts region=\"ng1-hero\" }\n * * We must create a `Directive` that
will make this AngularJS component\n * available inside Angular templates.\n * * { @example
upgrade/static/ts/full/module.ts region=\"ng1-hero-wrapper\" }\n * * In this example you can see that we must
derive from the `UpgradeComponent`\n * base class but also provide an { @link Directive `@Directive` } decorator.
This is\n * because the AOT compiler requires that this information is statically available at\n * compile time.\n * * Note that we must do the following:\n * * specify the directive's selector (`ng1-hero`)\n * * specify all inputs and
outputs that the AngularJS component expects\n * * derive from `UpgradeComponent`\n * * call the base class from
the constructor, passing\n * * the AngularJS name of the component (`ng1Hero`)\n * * the `ElementRef` and
`Injector` for the component wrapper\n * * @publicApi\n */\n @Directive()\n export class UpgradeComponent
implements OnInit, OnChanges, DoCheck, OnDestroy {\n private helper: UpgradeHelper;\n\n private $injector:
InjectorService;\n\n private element: Element;\n private $element: IAugmentedJQuery;\n private
$scopeScope: IScope;\n\n private directive: IDirective;\n private bindings: Bindings;\n\n //
TODO(issue/24571): remove '!\n private controllerInstance!: IControllerInstance;\n // TODO(issue/24571):
remove '!\n private bindingDestination!: IBindingDestination;\n\n // We will be instantiating the controller in the
`ngOnInit` hook, when the\n // first `ngOnChanges` will have been already triggered. We store the\n //
`SimpleChanges` and `play them back` later.\n // TODO(issue/24571): remove '!\n private pendingChanges!:
SimpleChanges|null;\n\n // TODO(issue/24571): remove '!\n private unregisterDoCheckWatcher!: Function;\n\n
/**\n * Create a new `UpgradeComponent` instance. You should not normally need to do this.\n * Instead you
should derive a new class from this one and call the super constructor\n * from the base class.\n * *\n *
{ @example upgrade/static/ts/full/module.ts region=\"ng1-hero-wrapper\" }\n * * The `name` parameter
should be the name of the AngularJS directive.\n * * The `elementRef` and `injector` parameters should be
acquired from Angular by dependency\n * injection into the base class constructor.\n */\n constructor(private
name: string, private elementRef: ElementRef, private injector: Injector) {\n this.helper = new
UpgradeHelper(injector, name, elementRef);\n this.$injector = this.helper.$injector;\n this.element =
this.helper.element;\n this.$element = this.helper.$element;\n this.directive = this.helper.directive;\n
 this.bindings = this.initializeBindings(this.directive);\n\n // We ask for the AngularJS scope from the Angular
injector, since\n // we will put the new component scope onto the new injector for each component\n const
$scopeParent = injector.get($SCOPE);\n // QUESTION 1: Should we create an isolated scope if the scope is only
true?\n // QUESTION 2: Should we make the scope accessible through `$element.scope()/isolateScope()`?\n this.$componentScope = $scopeParent.$new(!this.directive.scope);\n this.initializeOutputs();\n }\n\n ngOnInit() {\n // Collect contents, insert and compile template\n const attachChildNodes: ILinkFn|undefined =
this.helper.prepareTransclusion();\n const linkFn = this.helper.compileTemplate();\n // Instantiate controller\n
 const controllerType = this.directive.controller;\n const bindToController = this.directive.bindToController;\n if
(controllerType) {\n this.controllerInstance = this.helper.buildController(controllerType,
this.$componentScope);\n } else if (bindToController) {\n throw new Error(`Upgraded directive '${this.directive.name}' specifies 'bindToController' but no controller.`);\n }\n // Set up outputs\n
 this.bindingDestination = bindToController ? this.controllerInstance : this.$componentScope;\n
 this.bindOutputs();\n\n // Require other controllers\n const requiredControllers =\n

```



```

this.helper.resolveAndBindRequiredControllers(this.controllerInstance);\n\n // Hook: $onChanges\n if
(this.pendingChanges) {\n this.forwardChanges(this.pendingChanges);\n this.pendingChanges = null;\n
}\n\n // Hook: $onInit\n if (this.controllerInstance && isFunction(this.controllerInstance.$onInit)) {\n
this.controllerInstance.$onInit();\n }\n\n // Hook: $doCheck\n if (this.controllerInstance &&
isFunction(this.controllerInstance.$doCheck)) {\n const callDoCheck = () =>
this.controllerInstance.$doCheck!();\n this.unregisterDoCheckWatcher =
this.$componentScope.$parent.$watch(callDoCheck);\n callDoCheck();\n }\n\n // Linking\n const link =
this.directive.link;\n const preLink = typeof link === 'object' && link.pre;\n const postLink = typeof link ===
'object' ? link.post : link;\n const attrs: IAttributes = NOT_SUPPORTED;\n const transcludeFn:
ITranscludeFunction = NOT_SUPPORTED;\n if (preLink) {\n preLink(this.$componentScope, this.$element,
attrs, requiredControllers, transcludeFn);\n }\n\n linkFn(this.$componentScope, null!,
{parentBoundTranscludeFn: attachChildNodes});\n\n if (postLink) {\n postLink(this.$componentScope,
this.$element, attrs, requiredControllers, transcludeFn);\n }\n\n // Hook: $postLink\n if (this.controllerInstance
&& isFunction(this.controllerInstance.$postLink)) {\n this.controllerInstance.$postLink();\n }\n}\n\n
ngOnChanges(changes: SimpleChanges) {\n if (!this.bindingDestination) {\n this.pendingChanges = changes;\n
 } else {\n this.forwardChanges(changes);\n }\n}\n\n ngDoCheck() {\n const twoWayBoundProperties =
this.bindings.twoWayBoundProperties;\n const twoWayBoundLastValues =
this.bindings.twoWayBoundLastValues;\n const propertyToOutputMap =
this.bindings.propertyToOutputMap;\n\n twoWayBoundProperties.forEach((propName, idx) => {\n const
newValue = this.bindingDestination[propName];\n const oldValue = twoWayBoundLastValues[idx];\n if
(!Object.is(newValue, oldValue)) {\n const outputName = propertyToOutputMap[propName];\n const
eventEmitter: EventEmitter<any> = (this as any)[outputName];\n eventEmitter.emit(newValue);\n
twoWayBoundLastValues[idx] = newValue;\n }\n });\n}\n\n ngOnDestroy() {\n if
(isFunction(this.unregisterDoCheckWatcher)) {\n this.unregisterDoCheckWatcher();\n }\n
this.helper.onDestroy(this.$componentScope, this.controllerInstance);\n }\n\n private initializeBindings(directive:
IDirective) {\n const btcIsObject = typeof directive.bindToController === 'object';\n if (btcIsObject &&
Object.keys(directive.scope!).length) {\n throw new Error(\n `Binding definitions on scope and controller at
the same time is not supported.`);\n }\n\n const context = btcIsObject ? directive.bindToController :
directive.scope;\n const bindings = new Bindings();\n\n if (typeof context === 'object') {\n
Object.keys(context).forEach(propName => {\n const definition = context[propName];\n const
bindingType = definition.charAt(0);\n\n // QUESTION: What about `=*`? Ignore? Throw? Support?\n\n
switch (bindingType) {\n case '@':\n case '<':\n // We don't need to do anything special. They will
be defined as inputs on the\n // upgraded component facade and the change propagation will be handled by\n
 // `ngOnChanges()`.\n break;\n case '=':\n bindings.twoWayBoundProperties.push(propName);\n
bindings.twoWayBoundLastValues.push(INITIAL_VALUE);\n bindings.propertyToOutputMap[propName]
= propName + 'Change';\n break;\n case '&':\n bindings.expressionBoundProperties.push(propName);\n
bindings.propertyToOutputMap[propName] =
propName;\n break;\n default:\n let json = JSON.stringify(context);\n throw new Error(\n
 `Unexpected mapping '${bindingType}' in '${json}' in '${this.name}' directive.`);\n }\n });\n}\n\n
return bindings;\n}\n\n private initializeOutputs() {\n // Initialize the outputs for `=` and `&` bindings\n
this.bindings.twoWayBoundProperties.concat(this.bindings.expressionBoundProperties)\n .forEach(propName
=> {\n const outputName = this.bindings.propertyToOutputMap[propName];\n (this as
any)[outputName] = new EventEmitter();\n });\n}\n\n private bindOutputs() {\n // Bind `&` bindings to the
corresponding outputs\n this.bindings.expressionBoundProperties.forEach(propName => {\n const outputName
= this.bindings.propertyToOutputMap[propName];\n const emitter = (this as any)[outputName];\n\n
this.bindingDestination[propName] = (value: any) => emitter.emit(value);\n });\n}\n\n private
forwardChanges(changes: SimpleChanges) {\n // Forward input changes to `bindingDestination`\n

```



services, and has an instance method used to bootstrap the hybrid upgrade application. Core AngularJS services Importing this `NgModule` will add providers for the core services(<https://docs.angularjs.org/api/ng/service>) to the root injector. Bootstrap The runtime instance of this class contains a `{ @link UpgradeModule#bootstrap `bootstrap() }` method, which you use to bootstrap the top level AngularJS module onto an element in the DOM for the hybrid upgrade app. It also contains properties to access the `{ @link UpgradeModule#injector root injector }`, the `bootstrap `NgZone`` and the `{ @link $injector }(https://docs.angularjs.org/api/auto/service/\$injector)`.

### Examples

Import the `UpgradeModule` into your top level `{ @link NgModule Angular `NgModule` }`.

`@example upgrade/static/ts/full/module.ts region='ng2-module'`

Then inject `UpgradeModule` into your Angular `NgModule` and use it to bootstrap the top level `{ @link NgModule Angular `NgModule` }` in the `ngDoBootstrap()` method.

`@example upgrade/static/ts/full/module.ts region='bootstrap-ng1'`

Finally, kick off the whole process, by bootstrapping your top level Angular `NgModule`.

`@example upgrade/static/ts/full/module.ts region='bootstrap-ng2'`

### Upgrading an AngularJS service

There is no specific API for upgrading an AngularJS service. Instead you should just follow the following recipe:

Let's say you have an AngularJS service:

`@example upgrade/static/ts/full/module.ts region='ng1-text-formatter-service'`

Then you should define an Angular provider to be included in your `NgModule` providers property.

`@example upgrade/static/ts/full/module.ts region='upgrade-ng1-service'`

Then you can use the "upgraded" AngularJS service by injecting it into an Angular component or service.

`@example upgrade/static/ts/full/module.ts region='use-ng1-upgraded-service'`

```

@publicApi
@NgModule({ providers: [angular1Providers] })
export class UpgradeModule {
 /** The AngularJS $injector for the upgrade application.
 *
 * The Angular Injector
 */
 public injector: Injector;

 /** The root `Injector` for the upgrade application.
 *
 * The bootstrap zone for the upgrade application
 */
 public ngZone: NgZone;

 /** Bootstrap an AngularJS application from this NgModule
 *
 * @param element the element on which to bootstrap the AngularJS application
 * @param [modules] the AngularJS modules to bootstrap for this application
 * @param [config] optional extra AngularJS bootstrap configuration
 */
 bootstrap(
 element: Element,
 modules: string[] = [],
 config?: any /*angular.IAngularBootstrapConfig*/) {
 const INIT_MODULE_NAME = UPGRADE_MODULE_NAME + '.init';
 // Create an ng1 module to bootstrap
 const initModule = angularModule(INIT_MODULE_NAME, [])
 .constant(UPGRADE_APP_TYPE_KEY, UpgradeAppType.Static)
 .value(INJECTOR_KEY, this.injector)
 .factory(LAZY_MODULE_REF, [INJECTOR_KEY, (injector: Injector) => ({injector} as LazyModuleRef)])
 .config([
 $PROVIDE, $INJECTOR,
 ($provide: IProvideService, $injector: IInjectorService) => {
 if ($injector.has($$TESTABILITY)) {
 $provide.decorator($$TESTABILITY, [
 $DELEGATE,
 (testabilityDelegate: ITestabilityService) => {
 const originalWhenStable: Function = testabilityDelegate.whenStable;
 const injector = this.injector;
 // Cannot use arrow function below because we need the context
 const newWhenStable = function(callback: Function) {
 originalWhenStable.call(testabilityDelegate, function() {
 const ng2Testability: Testability = injector.get(Testability);
 if (ng2Testability.isStable()) {
 callback();
 } else {
 ng2Testability.whenStable(
 newWhenStable.bind(testabilityDelegate, callback));
 }
 });
 };
 testabilityDelegate.whenStable = newWhenStable;
 return testabilityDelegate;
 }
]);
 }
 if ($injector.has($$INTERVAL)) {
 $provide.decorator($$INTERVAL, [
 $DELEGATE,
 (intervalDelegate: IIntervalService) => {
 // Wrap the $interval service so that setInterval is called outside NgZone,
 // but the callback is still invoked within it. This is so that $interval
 // won't block stability, which preserves

```

```

the behavior from AngularJS.\n
count?: number, invokeApply?: boolean,\n
this.ngZone.runOutsideAngular() => {\n
 // Run callback in the next VM turn - $interval calls\n
 // the callback in NgZone will\n
 // same vm turn.\n
 fn(...args);\n
});\n
});\n
return wrappedInterval;\n
$INJECTOR,\n
Initialize the ng1 $injector provider\n
this.injector.get($INJECTOR);\n
angularElement(element).data!(controllerKey(INJECTOR_KEY), this.injector);\n
rootScope to run a digest cycle whenever the zone settles\n
don't prevent the bootstrap\n
$injector.get('$rootScope');\n
'A digest was triggered while one was already in progress. This may mean that something is triggering digests\n
outside the Angular zone.);\n
return $rootScope.$digest();\n
subscription.unsubscribe();\n
angularModule(UPGRADE_MODULE_NAME, [INIT_MODULE_NAME].concat(modules));\n
resumeBootstrap() only exists if the current bootstrap is deferred\n
any)['angular'];\n
inside our zone\n
Patch resumeBootstrap() to run inside the ngZone\n
originalResumeBootstrap: () => void = windowAngular.resumeBootstrap;\n
windowAngular.resumeBootstrap = function() {\n
windowAngular.resumeBootstrap = originalResumeBootstrap;\n
windowAngular.resumeBootstrap.apply(this, args);\n
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* found in the LICENSE file at https://angular.io/license\n
setAngularJSGlobal, setAngularLib} from './src/common/src/angular1';\n
'./src/common/src/downgrade_component';\n
'./src/common/src/downgrade_injectable';\n
'./src/common/src/downgrade_injectable';\n
'./src/upgrade_component';\n
items to appear in the public api. Keep it that way.\n
Reserved.\n
LICENSE file at https://angular.io/license\n
editing\n
production index.ts when it rewrites private symbol\n
bundle index. Do not edit.\n
'./src/angular1_providers';\n
let wrappedInterval =\n
(fn: Function, delay: number,\n
...pass: any[]) => {\n
return intervalDelegate((...args: any[]) => {\n
// $rootScope.$apply, and running\n
// cause a '$digest already in progress' error if it's in the\n
setTimeout() => {\n
this.ngZone.run() =>\n
}, delay, count, invokeApply, ...pass);\n
(wrappedInterval as any)['cancel'] = intervalDelegate.cancel;\n
});\n
});\n
return wrappedInterval;\n
$INJECTOR,\n
(Sinjector: IInjectorService) => {\n
this.$injector = $injector;\n
//\n
setTempInjectorRef($injector);\n
// Put the injector on the DOM, so that it can be \"required\"\n
angularElement(element).data!(controllerKey(INJECTOR_KEY), this.injector);\n
// Wire up the ng1\n
rootScope to run a digest cycle whenever the zone settles\n
// We need to do this in the next tick so that we\n
don't prevent the bootstrap\n
// stabilizing\n
setTimeout() => {\n
const $rootScope =\n
$injector.get('$rootScope');\n
const subscription = this.ngZone.onMicrotaskEmpty.subscribe() => {\n
if ($rootScope.$$phase) {\n
if (isDevMode()) {\n
console.warn(\n
'A digest was triggered while one was already in progress. This may mean that something is triggering digests\n
outside the Angular zone.);\n
return $rootScope.$evalAsync();\n
}\n
return $rootScope.$digest();\n
});\n
subscription.unsubscribe();\n
}, 0);\n
});\n
const upgradeModule =\n
angularModule(UPGRADE_MODULE_NAME, [INIT_MODULE_NAME].concat(modules));\n
// Make sure\n
resumeBootstrap() only exists if the current bootstrap is deferred\n
const windowAngular = (window as\n
any)['angular'];\n
windowAngular.resumeBootstrap = undefined;\n
// Bootstrap the AngularJS application\n
inside our zone\n
this.ngZone.run() => {\n
bootstrap(element, [upgradeModule.name], config);\n
});\n
//\n
Patch resumeBootstrap() to run inside the ngZone\n
if (windowAngular.resumeBootstrap) {\n
const\n
originalResumeBootstrap: () => void = windowAngular.resumeBootstrap;\n
const ngZone = this.ngZone;\n
windowAngular.resumeBootstrap = function() {\n
let args = arguments;\n
windowAngular.resumeBootstrap = originalResumeBootstrap;\n
return ngZone.run() =>\n
windowAngular.resumeBootstrap.apply(this, args);\n
};\n
}\n
}n\";/*\n
* @license\n
* Copyright\n
Google LLC All Rights Reserved.\n
*\n
* Use of this source code is governed by an MIT-style license that can be\n
* found in the LICENSE file at https://angular.io/license\n
*\n
nexport { getAngularJSGlobal, getAngularLib,\n
setAngularJSGlobal, setAngularLib} from './src/common/src/angular1';\n
nexport { downgradeComponent} from\n
'./src/common/src/downgrade_component';\n
nexport { downgradeInjectable} from\n
'./src/common/src/downgrade_injectable';\n
nexport { VERSION} from './src/common/src/version';\n
nexport\n
{ downgradeModule} from './src/downgrade_module';\n
nexport { UpgradeComponent} from\n
'./src/upgrade_component';\n
nexport { UpgradeModule} from './src/upgrade_module';\n
n\n
n// This file only re-exports\n
items to appear in the public api. Keep it that way.\n
/*\n
* @license\n
* Copyright Google LLC All Rights\n
Reserved.\n
*\n
* Use of this source code is governed by an MIT-style license that can be\n
* found in the\n
LICENSE file at https://angular.io/license\n
*\n
n\n
// This file is not used to build this module. It is only used during\n
editing\n
// by the TypeScript language service and during build for verification. `ngc`\n
replaces this file with\n
production index.ts when it rewrites private symbol\n
names.\n
nexport * from './public_api';\n
/*\n
* Generated\n
bundle index. Do not edit.\n
*\n
nexport * from './index';\n
nexport { angular1Providers as\n
angular_packages_upgrade_static_static_e, compileFactory as\n
angular_packages_upgrade_static_static_c, injectorFactory as\n
angular_packages_upgrade_static_static_a, parseFactory as\n
angular_packages_upgrade_static_static_d, rootScopeFactory as angular_packages_upgrade_static_static_b} from\n
'./src/angular1_providers';\n
}], \"names\": [\"Injector\", \"ChangeDetectorRef\", \"Testability\", \"TestabilityRegistry\", \"Applicati

```

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- No license file was found, but licenses were detected in source scan.

```
/**
 * @license
 * Copyright Google LLC All Rights Reserved.
 *
 * Use of this source code is governed by an MIT-style license that can be
 * found in the LICENSE file at https://angular.io/license
 */
```

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No license file was found, but licenses were detected in source scan.

## Angular

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The sources for this package are in the main [Angular](<https://github.com/angular/angular>) repo. Please file issues and pull requests against that repo.

Usage information and reference details can be found in [Angular documentation](<https://angular.io/docs>).

License: MIT

Found in path(s):

\* /opt/cola/permits/1358260707\_1657134860.914432/0/upgrade-11-0-2-tgz/package/README.md

No license file was found, but licenses were detected in source scan.

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```

../../packages/upgrade/static/testing/public_api.ts", "../../packages/upgrade/static/testing/index.ts", "../../packages/upgrade/static/testing/testing.ts"], "sourcesContent": ["/**\n * @license\n * Copyright Google LLC All Rights Reserved.\n *\n * Use of this source code is governed by an MIT-style license that can be\n * found in the LICENSE file at https://angular.io/license\n *\n\nexport type Ng1Token = string;\n\nexport type Ng1Expression = string|Function;\n\nexport interface IAnnotatedFunction extends Function {\n // Older versions of `@types/angular` typings extend the global `Function` interface with\n // `$inject?: string[]`, which is not compatible with `$inject?: ReadonlyArray<string>` (used in\n // latest versions).\n $inject?: Function extends {$inject?: string[]}?
Ng1Token[]: ReadonlyArray<Ng1Token>;\n}\n\nexport type IInjectable = (Ng1Token|Function)[]|IAnnotatedFunction;\n\nexport type SingleOrListOrMap<T> = T|T[]|{[key: string]: T};\n\nexport interface IModule {\n name: string;\n requires: (string|IInjectable)[];\n config(fn: IInjectable): IModule;\n directive(selector: string, factory: IInjectable): IModule;\n component(selector: string, component: IComponent): IModule;\n controller(name: string, type: IInjectable): IModule;\n factory(key: Ng1Token, factoryFn: IInjectable): IModule;\n value(key: Ng1Token, value: any): IModule;\n constant(token: Ng1Token, value: any): IModule;\n run(a: IInjectable): IModule;\n}\n\nexport interface ICompileService {\n (element: Element|NodeList|Node[]|string, transclude?: Function): ILinkFn;\n}\n\nexport interface ILinkFn {\n (scope: IScope, cloneAttachFn?: ICloneAttachFunction, options?: ILinkFnOptions): IAugmentedJQuery;\n $$slots?: {[slotName: string]: ILinkFn};\n}\n\nexport interface ILinkFnOptions {\n parentBoundTranscludeFn?: Function;\n transcludeControllers?: {[key: string]: any};\n futureParentElement?: Node;\n}\n\nexport interface IRootScopeService {\n $new(isolate?: boolean): IScope;\n $id: string;\n $parent: IScope;\n $root: IScope;\n $watch(exp: Ng1Expression, fn?: (a1?: any, a2?: any) => void): Function;\n $on(event: string, fn?: (event?: any, ...args: any[]) => void): Function;\n $destroy(): any;\n $apply(exp?: Ng1Expression): any;\n $digest(): any;\n $evalAsync(exp: Ng1Expression, locals?: any): void;\n $on(event: string, fn?: (event?: any, ...args: any[]) => void): Function;\n $$childTail: IScope;\n $$childHead: IScope;\n $$nextSibling: IScope;\n [key: string]: any;\n}\n\nexport interface IScope extends IRootScopeService {\n}\n\nexport interface IAngularBootstrapConfig {\n strictDi?: boolean;\n}\n\nexport interface IDirective {\n compile?: IDirectiveCompileFn;\n controller?: IController;\n controllerAs?: string;\n bindToController?: boolean|{[key: string]: string};\n link?: IDirectiveLinkFn|IDirectivePrePost;\n name?: string;\n priority?: number;\n replace?: boolean;\n require?: DirectiveRequireProperty;\n restrict?: string;\n scope?: boolean|{[key: string]: string};\n template?: string|Function;\n templateUrl?: string|Function;\n templateNamespace?: string;\n terminal?: boolean;\n transclude?: DirectiveTranscludeProperty;\n}\n\nexport type DirectiveRequireProperty = SingleOrListOrMap<string>;\n\nexport type DirectiveTranscludeProperty = boolean|'element'|{[key: string]: string};\n\nexport interface IDirectiveCompileFn {\n (templateElement: IAugmentedJQuery, templateAttributes: IAttributes,\n transclude: ITranscludeFunction): IDirectivePrePost;\n}\n\nexport interface IDirectivePrePost {\n pre?: IDirectiveLinkFn;\n post?: IDirectiveLinkFn;\n}\n\nexport interface IDirectiveLinkFn {\n (scope: IScope, instanceElement: IAugmentedJQuery, instanceAttributes: IAttributes,\n controller: any, transclude: ITranscludeFunction): void;\n}\n\nexport interface IComponent {\n bindings?: {[key: string]: string};\n controller?: string|IInjectable;\n controllerAs?: string;\n require?: DirectiveRequireProperty;\n template?: string|Function;\n templateUrl?: string|Function;\n transclude?: DirectiveTranscludeProperty;\n}\n\nexport interface IAttributes {\n $observe(attr: string, fn: (v: string) => void): void;\n [key: string]: any;\n}\n\nexport interface ITranscludeFunction {\n // If the scope is provided, then the cloneAttachFn must be as well.\n (scope: IScope, cloneAttachFn: ICloneAttachFunction): IAugmentedJQuery;\n // If one argument is provided, then it's assumed to be the cloneAttachFn.\n (cloneAttachFn?: ICloneAttachFunction): IAugmentedJQuery;\n}\n\nexport interface ICloneAttachFunction {\n (clonedElement: IAugmentedJQuery, scope: IScope): any;\n}\n\nexport type IAugmentedJQuery = Node[]&{\n on?: (name: string, fn: () => void) => void;\n data?: (name: string, value?: any) => any;\n text?: () => string;\n inheritedData?: (name: string, value?: any) => any;\n contents?: () => IAugmentedJQuery;\n parent?: () => IAugmentedJQuery;\n empty?: () => void;\n append?: (content: IAugmentedJQuery|string) => IAugmentedJQuery;\n controller?: (name: string) => any;\n isolateScope?: () => IScope;\n injector?: () => IInjectorService;\n triggerHandler?: (eventTypeOrObject: string|Event, extraParameters?:

```

```

any[]) => IAugmentedJQuery;\n remove?: () => void;\n removeData?: () => void;\n};\nexport interface IProvider
{\n $get: IInjectable;\n}\nexport interface IProvideService {\n provider(token: NgIToken, provider: IProvider):
IProvider;\n factory(token: NgIToken, factory: IInjectable): IProvider;\n service(token: NgIToken, type:
IInjectable): IProvider;\n value(token: NgIToken, value: any): IProvider;\n constant(token: NgIToken, value: any):
void;\n decorator(token: NgIToken, factory: IInjectable): void;\n}\nexport interface IParseService {\n (expression:
string): ICompiledExpression;\n}\nexport interface ICompiledExpression {\n (context: any, locals: any): any;\n
assign?: (context: any, value: any) => any;\n}\nexport interface IHttpBackendService {\n (method: string, url:
string, post?: any, callback?: Function, headers?: any, timeout?: number,\n withCredentials?: boolean):
void;\n}\nexport interface ICacheObject {\n put<T>(key: string, value?: T): T;\n get(key: string): any;\n}\nexport
interface ITemplateCacheService extends ICacheObject {}\nexport interface ITemplateRequestService {\n
(template: string|any /* TrustedResourceUrl */, ignoreRequestError?: boolean): Promise<string>;\n
totalPendingRequests: number;\n}\nexport type IController = string|IInjectable;\nexport interface IControllerService
{\n (controllerConstructor: IController, locals?: any, later?: any, ident?: any): any;\n (controllerName: string,
locals?: any): any;\n}\nexport interface IInjectorService {\n get(key: string): any;\n has(key: string):
boolean;\n}\nexport interface IIntervalService {\n (func: Function, delay: number, count?: number,
invokeApply?: boolean,\n ...args: any[]): Promise<any>;\n cancel(promise: Promise<any>): boolean;\n}\nexport
interface ITestabilityService {\n findBindings(element: Element, expression: string, opt_exactMatch?: boolean):
Element[];\n findModels(element: Element, expression: string, opt_exactMatch?: boolean): Element[];\n
getLocation(): string;\n setLocation(url: string): void;\n whenStable(callback: Function): void;\n}\nexport
interface INgModelController {\n $render(): void;\n $isEmpty(value: any): boolean;\n
$setValidity(validationErrorKey: string, isValid: boolean): void;\n $setPristine(): void;\n $setDirty(): void;\n
$setUntouched(): void;\n $setTouched(): void;\n $rollbackViewValue(): void;\n $validate(): void;\n
$commitViewValue(): void;\n $setViewValue(value: any, trigger: string): void;\n\n $viewValue: any;\n
$modelValue: any;\n $parsers: Function[];\n $formatters: Function[];\n $validators: {[key: string]: Function};\n
$asyncValidators: {[key: string]: Function};\n $viewChangeListeners: Function[];\n $error: Object;\n $pending:
Object;\n $untouched: boolean;\n $touched: boolean;\n $pristine: boolean;\n $dirty: boolean;\n $valid: boolean;\n
$invalid: boolean;\n $name: string;\n}\n\nfunction noNg(): never {\n throw new Error('AngularJS v1.x is not
loaded!');\n}\n\nconst noNgElement: typeof angular.element = ((() => noNg()) as any);\nnoNgElement.cleanData =
noNg;\n\nlet angular: {\n bootstrap: (e: Element, modules: (string|IInjectable)[], config?: IAngularBootstrapConfig)
=>{\n IInjectorService,\n module: (prefix: string, dependencies?: string[]) => IModule,\n element: {\n (e:
string|Element|Document|IAugmentedJQuery): IAugmentedJQuery;\n cleanData: (nodes: Node[]|NodeList) =>
void;\n },\n injector: (modules: Array<string|IInjectable>, strictDi?: boolean) => IInjectorService,\n version:
{major: number},\n resumeBootstrap: () => void,\n getTestability: (e: Element) => ITestabilityService\n} = {\n
bootstrap: noNg,\n module: noNg,\n element: noNgElement,\n injector: noNg,\n version: undefined as any,\n
resumeBootstrap: noNg,\n getTestability: noNg\n};\n\nentry {\n if (window.hasOwnProperty('angular')) {\n angular
= (<any>window).angular;\n }\n} catch {\n // ignore in CJS mode.\n}\n\n/**\n * @deprecated Use
`setAngularJSGlobal` instead.\n *\n * @publicApi\n */\nexport function setAngularLib(ng: any): void {\n
setAngularJSGlobal(ng);\n}\n\n/**\n * @deprecated Use `getAngularJSGlobal` instead.\n *\n * @publicApi\n
*/\nexport function getAngularLib(): any {\n return getAngularJSGlobal();\n}\n\n/**\n * Resets the AngularJS
global.\n *\n * Used when AngularJS is loaded lazily, and not available on `window`.\n *\n * @publicApi\n
*/\nexport function setAngularJSGlobal(ng: any): void {\n angular = ng;\n}\n\n/**\n * Returns the current
AngularJS global.\n *\n * @publicApi\n */\nexport function getAngularJSGlobal(): any {\n return
angular;\n}\n}\n\nexport const bootstrap: typeof angular.bootstrap = (e, modules, config?) =>\n angular.bootstrap(e,
modules, config);\n\n// Do not declare as `module` to avoid webpack bug\n// (see
https://github.com/angular/angular/issues/30050).\nexport const module_: typeof angular.module = (prefix,
dependencies?) =>\n angular.module(prefix, dependencies);\n\nexport const element: typeof angular.element = (e
=> angular.element(e)) as typeof angular.element;\n\nexport const injector: typeof angular.injector =\n (modules:

```

```

Array<string|Injectable>, strictDi?: boolean) => angular.injector(modules, strictDi);\n\nexport const
resumeBootstrap: typeof angular.resumeBootstrap = () => angular.resumeBootstrap();\n\nexport const
getTestability: typeof angular.getTestability = e => angular.getTestability(e);\n", "/*\n * @license\n * Copyright
Google LLC All Rights Reserved.\n *\n * Use of this source code is governed by an MIT-style license that can be\n
* found in the LICENSE file at https://angular.io/license\n */\n\nexport const $COMPILE = '$compile';\nexport
const $CONTROLLER = '$controller';\nexport const $DELEGATE = '$delegate';\nexport const
$EXCEPTION_HANDLER = '$exceptionHandler';\nexport const $HTTP_BACKEND = '$httpBackend';\nexport
const $INJECTOR = '$injector';\nexport const $INTERVAL = '$interval';\nexport const $PARSE = '$parse';\nexport
const $PROVIDE = '$provide';\nexport const $ROOT_SCOPE = '$rootScope';\nexport const $$SCOPE =
$scope';\nexport const $TEMPLATE_CACHE = '$templateCache';\nexport const $TEMPLATE_REQUEST =
$templateRequest';\n\nexport const $$TESTABILITY = '$$testability';\n\nexport const COMPILER_KEY =
$$angularCompiler';\nexport const DOWNGRADED_MODULE_COUNT_KEY =
$$angularDowngradedModuleCount';\nexport const GROUP_PROJECTABLE_NODES_KEY =
$$angularGroupProjectableNodes';\nexport const INJECTOR_KEY = $$angularInjector';\nexport const
LAZY_MODULE_REF = $$angularLazyModuleRef';\nexport const NG_ZONE_KEY =
$$angularNgZone';\nexport const UPGRADE_APP_TYPE_KEY = $$angularUpgradeAppType';\n\nexport const
REQUIRE_INJECTOR = '?^^' + INJECTOR_KEY;\nexport const REQUIRE_NG_MODEL =
'?ngModel';\n\nexport const UPGRADE_MODULE_NAME = '$$UpgradeModule';\n", "/*\n * @license\n *
Copyright Google LLC All Rights Reserved.\n *\n * Use of this source code is governed by an MIT-style license
that can be\n * found in the LICENSE file at https://angular.io/license\n */\n\nimport {Injector, NgModule, Type}
from '@angular/core';\n\nimport * as angular from '../..../src/common/src/angular1';\n\nimport {$INJECTOR,
INJECTOR_KEY, UPGRADE_APP_TYPE_KEY} from '../..../src/common/src/constants';\n\nimport
{UpgradeAppType} from '../..../src/common/src/util';\n\nlet $injector: angular.IInjectorService|null = null;\n\nlet
injector: Injector;\n\nexport function $injectorFactory() {\n return $injector;\n}\n\n@NgModule({providers:
[provide: $INJECTOR, useFactory: $injectorFactory]}])\nexport class AngularTestingModule {\n constructor(i:
Injector) {\n injector = i;\n }\n\n /**\n * A helper function to use when unit testing Angular services that
depend upon upgraded AngularJS\n * services.\n * This function returns an `NgModule` decorated class that is
configured to wire up the Angular\n * and AngularJS injectors without the need to actually bootstrap a hybrid
application.\n * This makes it simpler and faster to unit test services.\n * Use the returned class as an `import`
when configuring the `TestBed`.\n * In the following code snippet, we are configuring the TestBed with two
imports.\n * The `Ng2AppModule` is the Angular part of our hybrid application and the `ng1AppModule` is the\n *
AngularJS part.\n * <code-example path="upgrade/static/ts/full/module.spec.ts" region="angular-setup"></code-example>\n * Once this is done we can get hold of services via the Angular `Injector` as
normal.\n * Services that are (or have dependencies on) an upgraded AngularJS service, will be instantiated\n * as
needed by the AngularJS `injector`.\n * In the following code snippet, `HeroesService` is an Angular service
that depends upon an\n * AngularJS service, `titleCase`.\n * <code-example
path="upgrade/static/ts/full/module.spec.ts" region="angular-spec"></code-example>\n * <div class="alert
is-important">\n * This helper is for testing services not Components.\n * For Component testing you must still
bootstrap a hybrid app. See `UpgradeModule` or\n * `downgradeModule` for more information.\n * </div>\n *
<div class="alert is-important">\n * The resulting configuration does not wire up AngularJS digests to Zone
hooks. It is the\n * responsibility of the test writer to call `$rootScope.$apply`, as necessary, to trigger\n *
AngularJS handlers of async events from Angular.\n * </div>\n * <div class="alert is-important">\n * The helper
sets up global variables to hold the shared Angular and AngularJS injectors.\n * * Only call this helper once per
spec.\n * * Do not use `createAngularTestingModule` in the same spec as `createAngularJSTestingModule`.\n *
</div>\n * Here is the example application and its unit tests that use `createAngularTestingModule`\n * and
`createAngularJSTestingModule`.\n * <code-tabs>\n * <code-pane header="module.spec.ts"
path="upgrade/static/ts/full/module.spec.ts"></code-pane>\n * <code-pane header="module.ts"
path="upgrade/static/ts/full/module.ts"></code-pane>\n * </code-tabs>\n * @param angularJSMODULES a

```

collection of the names of AngularJS modules to include in the configuration. @param [strictDi] whether the AngularJS injector should have strictDI enabled. @publicApi\n \* ^next function

```
createAngularTestingModule(angularJSMODULES: string[], strictDi?: boolean): Type<any> {
 angular.module('$angularJSTestingModule', angularJSMODULES)
 .constant(UPGRADE_APP_TYPE_KEY, UpgradeAppType.Static)
 .factory(INJECTOR_KEY, () => injector);
 $injector = angular.injector(['ng', '$angularJSTestingModule'], strictDi);
 return AngularTestingModule;
}
```

Google LLC All Rights Reserved. Use of this source code is governed by an MIT-style license that can be found in the LICENSE file at https://angular.io/license\n \* ^next {Injector} from '@angular/core';\n \* ^next { TestBed } from '@angular/core/testing';\n \* ^next as ng from '../src/common/src/angular1';\n \* ^next { \$INJECTOR, INJECTOR\_KEY, UPGRADE\_APP\_TYPE\_KEY } from '../src/common/src/constants';\n \* ^next { UpgradeAppType } from '../src/common/src/util';\n \* ^next A helper function to use when unit testing AngularJS services that depend upon downgraded Angular services. This function returns an AngularJS module that is configured to wire up the AngularJS and Angular injectors without the need to actually bootstrap a hybrid application. This makes it simpler and faster to unit test services. Use the returned AngularJS module in a call to

```
angular.mock.module('angular.mock.module')(https://docs.angularjs.org/api/ngMock/function/angular.mock.module) to include this module in the unit test injector. In the following code snippet, we are configuring the $injector with two modules: The AngularJS ng1AppModule, which is the AngularJS part of our hybrid application and the Ng2AppModule, which is the Angular part. <code-example path="upgrade/static/ts/full/module.spec.ts" region="angularjs-setup"></code-example> Once this is done we can get hold of services via the AngularJS $injector as normal. Services that are (or have dependencies on) a downgraded Angular service, will be instantiated as needed by the Angular root Injector. In the following code snippet, heroesService is a downgraded Angular service that we are accessing from AngularJS. <code-example path="upgrade/static/ts/full/module.spec.ts" region="angularjs-spec"></code-example> <div class="alert is-important"> This helper is for testing services not components. For Component testing you must still bootstrap a hybrid app. See UpgradeModule or downgradeModule for more information. </div> <div class="alert is-important"> The resulting configuration does not wire up AngularJS digests to Zone hooks. It is the responsibility of the test writer to call $rootScope.$apply, as necessary, to trigger AngularJS handlers of async events from Angular. </div> <div class="alert is-important"> The helper sets up global variables to hold the shared Angular and AngularJS injectors. Only call this helper once per spec. Do not use createAngularJSTestingModule in the same spec as createAngularTestingModule. </div> Here is the example application and its unit tests that use createAngularTestingModule and createAngularJSTestingModule. <code-tabs> <code-pane header="module.spec.ts" path="upgrade/static/ts/full/module.spec.ts"></code-pane> <code-pane header="module.ts" path="upgrade/static/ts/full/module.ts"></code-pane> </code-tabs> @param angularModules a collection of Angular modules to include in the configuration. @publicApi\n * ^next function createAngularJSTestingModule(angularModules: any[]): string {
 return ng.module('$angularJSTestingModule', [])
 .constant(UPGRADE_APP_TYPE_KEY, UpgradeAppType.Static)
 .factory(INJECTOR_KEY, [$INJECTOR, ($injector: ng.IInjectorService) => {
 TestBed.configureTestingModule({
 imports: angularModules,
 providers: [{ provide: $INJECTOR, useValue: $injector }]
 });
 return TestBed.inject(Injector);
 }]);
 .name();
}
```

Google LLC All Rights Reserved. Use of this source code is governed by an MIT-style license that can be found in the LICENSE file at https://angular.io/license\n \* ^next { createAngularTestingModule } from './src/create\_angular\_testing\_module';\n \* ^next { createAngularJSTestingModule } from './src/create\_angularjs\_testing\_module';\n \* ^next Copyright Google LLC All Rights Reserved. Use of this source code is governed by an MIT-style license that can be found in the LICENSE file at https://angular.io/license\n \* ^next from './public\_api';\n \* ^next Generated bundle index. Do not edit.



```
*/\n\nexport * from './index';\n\nexport { module_ as angular_packages_upgrade_static_testing_testing_a } from './../src/common/src/angular1';\n\nexport { INJECTOR_KEY as angular_packages_upgrade_static_testing_testing_d,UPGRADE_APP_TYPE_KEY as angular_packages_upgrade_static_testing_testing_b } from './../src/common/src/constants';\n\nexport { UpgradeAppType as angular_packages_upgrade_static_testing_testing_c } from './../src/common/src/util';\n\nexport { "names":["injector","angular.module_","angular.injector","ng.module_"],"mappings":";;;;AAAA;AaKOA,SAAS,IAAI;IACX,MAAM,IAAI,KAAK,CAAC,+BAA+B,CAAC,CAAC;AACnD,CAAC;AAED,MAAM,WAAW,IAA4B,MAAM,IAAI,EAAE,CAAQ,CAAC;AACIE,WAAW,CAAC,SAAS,GAAG,IAA I,CAAC;AAE7B,IAAI,OAAO,GAYP;IACF,SAAS,EAAE,IAAI;IACf,MAAM,EAAE,IAAI;IACZ,OAAO,EAAE, WAAW;IACpB,QAAQ,EAAE,IAAI;IACd,OAAO,EAAE,SAAgB;IACzB,eAAe,EAAE,IAAI;IACrB,cAAc,EAAE, IAAI;CACrB,CAAC;AAEF,IAAI;IACF,IAAI,MAAM,CAAC,cAAc,CAAC,SAAS,CAAC,EAAE;QACpC,OAAO, GAAS,MAAO,CAAC,OAAO,CAAC;KACjC;CACF;AAAC,WAAM;;CAEP;AAED;SAGkG,aAAa,CAAC,EAA O;IACnC,kBAakB,CAAC,EAAE,CAAC,CAAC;AACzB,CAAC;AAED;SAGkG,aAAa;IAC3B,OAAO,kBAak B,EAAE,CAAC;AAC9B,CAAC;AAED;SAOGb,kBAakB,CAAC,EAAO;IACxC,OAAO,GAAG,EAAE,CAA C;AACf,CAAC;AAED;SAGkG,kBAakB;IAChC,OAAO,OAAO,CAAC;AACjB,CAAC;AAEM,MAAM,SAAS, GAA6B,CAAC,CAAC,EAAE,OAAO,EAAE,MAAO,KACnE,OAAO,CAAC,SAAS,CAAC,CAAC,EAAE,OAAO, EAAE,MAAM,CAAC,CAAC;AAE1C;ACA;MACa,OAAO,GAA0B,CAAC,MAAM,EAAE,YAAa,KAChE,OAA O,CAAC,MAAM,CAAC,MAAM,EAAE,YAAY,EAAE;AAE1C,MAAM,OAAO,IAA4B,CAAC,IAAI,OAAO,CAA C,OAAO,CAAC,CAAC,CAA2B,CAAC;AACnG,OAAO,CAAC,SAAS,GAAG,KAAK,IAAI,OAAO,CAA C,OAAO,CAAC,SAAS,CAAC,KAAK,CAAC,CAAC;AAEvD,MAAM,QAAQ,GACjB,CAAC,OAakC,EAAE,QA AkB,KAAK,OAAO,CAAC,QAAQ,CAAC,OAAO,EAAE,QAAQ,CAAC,CAAC;AAE7F,MAAM,eAAe,GAAMc, MAAM,OAAO,CAAC,eAAe,EAAE,CAAC;AAExF,MAAM,cAAc,GAakC,CAAC,IAAI,OAAO,CAAC,cAAc,CA AC,CAAC,CAAC;AC7T3F;AAQO,MAAM,QAAQ,GAAG,UAAU,CAAC;AAC5B,MAAM,WAAW,GAAG,a AAa,CAAC;AACIC,MAAM,SAAS,GAAG,WAAW,CAAC;AAC9B,MAAM,kBAakB,GAAG,mBAAmB,CAAC; AAC/C,MAAM,aAAa,GAAG,cAAc,CAAC;AACrC,MAAM,SAAS,GAAG,WAAW,CAAC;AAC9B,MAAM,SAAS,GAAG,WAAW,CAAC;AAC9B,MAAM,MAAM,GAAG,QAAQ,CAAC;AACxB,MAAM,QAAQ,GAAG,UAAU ,CAAC;AAC5B,MAAM,WAAW,GAAG,YAAY,CAAC;AACjC,MAAM,MAAM,GAAG,QAAQ,CAAC;AACxB, MAAM,eAAe,GAAG,gBAAgB,CAAC;AACzC,MAAM,iBAaiB,GAAG,kBAakB,CAAC;AAE7C,MAAM,aAAa, GAAG,eAAe,CAAC;AAEtC,MAAM,YAAY,GAAG,mBAAmB,CAAC;AACzC,MAAM,2BAA2B,GAAG,gCAA gC,CAAC;AACrE,MAAM,2BAA2B,GAAG,gCAA gC,CAAC;MAC/D,YAAY,GAAG,oBAAoB;AACzC,MAAM,e AAe,GAAG,wBAawB,CAAC;AACjD,MAAM,WAAW,GAAG,iBAaiB,CAAC;MAChC,oBAAoB,GAAG,0BAA 0B;AAEvD,MAAM,gBAAgB,GAAG,KAAK,GAAG,YAAY,CAAC;AAC9C,MAAM,gBAAgB,GAAG,UAAU,CA AC;AAEpC,MAAM,mBAAmB,GAAG,iBAaiB;;ACnCpD;AAcA,IAAI,SAAS,GAakC,IAAI,CAAC;AACpD, IAAIA,UAAkB,CAAC;SAEP,gBAAgB;IAC9B,OAAO,SAAS,CAAC;AACnB,CAAC;MAGY,oBAAoB;IAC/B,Y AAY,CAAW;QACrBA,UAAQ,GAAG,CAAC,CAAC;KACd;;YAJF,QAAQ,SAAC,EAAC,SAAS,EAAE,CAAC,E AAC,OAAO,EAAE,SAAS,EAAE,UAAU,EAAE,gBAAgB,EAAC,CAAC,EAAC;;YAbnE,QAAQ;AAoBhB;SaiEgB,0BAA0B,CACtC,gBAA0B,EAAE,QAAkB;IACDC,OAAe,CAAC ,0BAA0B,EAAE,gBAAgB,CAAC;SACxD,QAAQ,CAAC,oBAAoB,iBAawB;SACrD,OAAO,CAAC,YAAY,EAA E,MAAMD,UAAQ,CAAC,CAAC;IAC3C,SAAS,GAAGE,QAAgB,CAAC,CAAC,IAAI,EAAE,0BAA0B,CAAC,E AAE,QAAQ,CAAC,CAAC;IAC3E,OAAO,oBAAoB,CAAC;AAC9B;;ACpGA;AAgBA;SAmEgB,4BAA4B,CAAC,cAAqB;IACHe,OAAOC,OAAU,CAAC,0BAA0B,EAAE,EAAE, CAAC;SAC5C,QAAQ,CAAC,oBAAoB,iBAawB;SACrD,OAAO,CACJ,YAAY,EACZ;QACE,SAAS;QACT,CAA C,SAAS8B;YAC7B,OAAO,CAAC,sBAAsB,CAAC;gBAC7B,OAAO,EAAE,cAAc;gBACvB,SAAS,EAAE,CAAC, EAAC,OAAO,EAAE,SAAS,EAAE,QAAQ,EAAE,SAAS,EAAC,CAAC;aACvD,CAAC,CAAC;YACH,OAAO,OA AO,CAAC,MAAM,CAAC,QAAQ,CAAC,CAAC;SACjC;KACF,CAAC;SACL,IAAI,CAAC;AACZ;;ACnGA;ACAA;ACAA;ACAA;"}\n\n
```

Found in path(s):

\* /opt/cola/permits/1358260707\_1657134860.914432/0/upgrade-11-0-2-tgz/package/fesm2015/static/testing.js.map  
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\* /opt/cola/permits/1358260707\_1657134860.914432/0/upgrade-11-0-2-tgz/package/bundles/upgrade.umd.min.js  
\* /opt/cola/permits/1358260707\_1657134860.914432/0/upgrade-11-0-2-tgz/package/bundles/upgrade.umd.js  
\* /opt/cola/permits/1358260707\_1657134860.914432/0/upgrade-11-0-2-tgz/package/bundles/upgrade-static.umd.js

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\* /opt/cola/permits/1358260707\_1657134860.914432/0/upgrade-11-0-2-tgz/package/static/testing/testing.d.ts  
\* /opt/cola/permits/1358260707\_1657134860.914432/0/upgrade-11-0-2-tgz/package/static/static.d.ts  
\* /opt/cola/permits/1358260707\_1657134860.914432/0/upgrade-11-0-2-tgz/package/static.d.ts

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```
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testing.umd.js"],"names":["global","factory","exports","module","require","define","amd","self","ng","upgrade","sta
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version","undefined","resumeBootstrap","getTestability","window","hasOwnProperty","_a","injector$1","AngularT
estingModule","module_","prefix","dependencies","$injector","i","decorators","type","NgModule","args","provider
s","provide","useFactory","$injectorFactory","ctorParameters","Injector","createAngularJSTestingModule","angular
Modules","constant","TestBed","configureTestingModule","imports","useValue","inject","name","createAngularTe
stingModule","angularJSMODULES","strictDi","modules","angular_packages_upgrade_static_testing_testing_a","ang
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AOQ,GAAGI,KAACKD,SAHnP,CAIEE,MAAM,SAAWX,EAASU,EAAMD,GAAW;;;;;;OASzC,SAASG,IACL,M
AAM,IAAIC,MAAM,iCAEpB,IAAIC,EAAC,WAAE,OAAOF,KACxCE,EAAYC,UAAyH,EACxB,IAAII,EAAU,
CACVC,UAAWL,EACXX,OAAQW,EACRM,QAASJ,EACTK,SAAUP,EACVQ,aAASC,EACTC,gBAAiBV,EA
CjBW,eAAgBX,GAEPB,IACQY,OAAOC,eAAE,aACtBT,EAAUQ,OAAOR,SAGzB,MAAOU,IAqCP,IAkDIC,EA
IAC,EAnDAC,EAAU,SAAUC,EAAQC,GAAgB,OAAOf,EAAQf,OAAO6B,EAAQC,IA8C1EC,EAAY,MAKZJ,E
ACA,SAASA,EAAqBK,GAC1BN,EAAaM,IAIAC,WAAa,CAC9B,CAAEC,KAAMzB,EAAK0B,SAAUC,KAAM,
CAAC,CAAEC,UAAW,CAAC,CAAEC,QAvCIC,YAuCsDC,WAVtE,SAASC,IACL,OAAOT,SAWXJ,EAAqBc,e
AAiB,WAAc,MAAO,CACvD,CAAEP,KAAMzB,EAAKiC;;;;;;;;;;;;;AAyLjB3C,EAAQ4C;;;;;;;;;AApCR,SAASA,
EAA6BC,GACIC,OAAOhB,EAAQ,2BAA4B,IACtCiB,SAILkB,0BAkLa,GAC/B/C,QAtLU,oBAsLY,CAIMf,YAo
MR,SAAUic,GAKN,OAJAvB,EAAQsC,QAAQC,uBAAuB,CACnCC,QAASJ,EACTP,UAAW,CAAC,CAAEC,Q
AvMd,YAuMkCW,SAAUIB,MAEzCvB,EAAQsC,QAAQI,OAAOzC,EAAKiC,aAGtCS,MAwBTpD,EAAQqD,2B
AvHR,SAASA,EAA2BC,EAAkBC,GAKID,OAJA1B,EAAQ,2BAA4BByB,GAC/BR,SAhGkB,0BAgGa,GAC/B/C,
QApGU,qBAoGY,WAAc,OAAO4B,KACHDK,EAjIW,SAAUwB,EAASD,GAAY,OAAOvC,EAAQG,SAiIpC,CA
AC,KAAM,4BAjI+CoC,GAiI/DpC,CAAS,EAAoCoC,GACID3B,GAmHX5B,EAAQyD,mDAAqD5B,EAC7D7B,
EAAQ0D,mDAvNmB,0BAwN3B1D,EAAQ2D,mDA3NW,oBA6NnBC,OAAOC,eAAe7D,EAAS,aAAc,CAAE8D,
OAAO","sourcesContent":["/**\n * @license Angular v11.0.2\n * (c) 2010-2020 Google LLC. https://angular.io/\n
 * License: MIT\n *\n\n(function (global, factory) {\n typeof exports === 'object' && typeof module !==
'undefined' ? factory(exports, require('@angular/core'), require('@angular/core/testing')) :\n typeof define ===
'function' && define.amd ? define('@angular/upgrade/static/testing', ['exports', '@angular/core',
 '@angular/core/testing'], factory) :\n (global = global || self, factory((global.ng = global.ng || {}), global.ng.upgrade
 = global.ng.upgrade || {}, global.ng.upgrade.static = global.ng.upgrade.static || {}, global.ng.upgrade.static.testing =
 {}), global.ng.core, global.ng.core.testing));\n})(this, (function (exports, core, testing) { 'use strict';\n\n /**\n *
 @license\n * Copyright Google LLC All Rights Reserved.\n * \n * Use of this source code is governed by an
 MIT-style license that can be\n * found in the LICENSE file at https://angular.io/license\n * \n\n function
 noNg() {\n throw new Error('AngularJS v1.x is not loaded!');\n }\n var noNgElement = (function () { return
 noNg(); });\n noNgElement.cleanData = noNg;\n var angular = {\n bootstrap: noNg,\n module: noNg,\n
 element: noNgElement,\n injector: noNg,\n version: undefined,\n resumeBootstrap: noNg,\n
 getTestability: noNg\n };\n try {\n if (window.hasOwnProperty('angular')) {\n angular =
 window.angular;\n }\n } catch (_a) {\n // ignore in CJS mode.\n }\n /**\n * @deprecated Use
 `setAngularJSGlobal` instead.\n * \n * @publicApi\n * \n\n function setAngularLib(ng) {\n
 setAngularJSGlobal(ng);\n }\n /**\n * @deprecated Use `getAngularJSGlobal` instead.\n * \n *
 @publicApi\n * \n\n function getAngularLib() {\n return getAngularJSGlobal();\n }\n /**\n * Resets
```

```

the AngularJS global.\n * \n * Used when AngularJS is loaded lazily, and not available on `window`.\n * \n
* @publicApi\n * \n function setAngularJSGlobal(ng) {\n angular = ng;\n }\n /**\n * Returns the
current AngularJS global.\n * \n * @publicApi\n * \n function getAngularJSGlobal() {\n return
angular;\n }\n var bootstrap = function (e, modules, config) { return angular.bootstrap(e, modules, config); }; \n
// Do not declare as `module` to avoid webpack bug\n // (see https://github.com/angular/angular/issues/30050).\n
var module_ = function (prefix, dependencies) { return angular.module(prefix, dependencies); }; \n var element =
(function (e) { return angular.element(e); }); \n element.cleanData = function (nodes) { return
angular.element.cleanData(nodes); }; \n var injector = function (modules, strictDi) { return
angular.injector(modules, strictDi); }; \n var resumeBootstrap = function () { return angular.resumeBootstrap();
}; \n var getTestability = function (e) { return angular.getTestability(e); }; \n \n /**\n * @license\n *
Copyright Google LLC All Rights Reserved.\n * \n * Use of this source code is governed by an MIT-style
license that can be\n * found in the LICENSE file at https://angular.io/license\n * \n var $COMPILE =
'$compile'; \n var $CONTROLLER = '$controller'; \n var $DELEGATE = '$delegate'; \n var
$EXCEPTION_HANDLER = '$exceptionHandler'; \n var $HTTP_BACKEND = '$httpBackend'; \n var
$INJECTOR = '$injector'; \n var $INTERVAL = '$interval'; \n var $PARSE = '$parse'; \n var $PROVIDE =
'$provide'; \n var $ROOT_SCOPE = '$rootScope'; \n var $SCOPE = '$scope'; \n var $TEMPLATE_CACHE =
'$templateCache'; \n var $TEMPLATE_REQUEST = '$templateRequest'; \n var $$TESTABILITY =
'$testability'; \n var COMPILER_KEY = '$$angularCompiler'; \n var
DOWNGRADED_MODULE_COUNT_KEY = '$$angularDowngradedModuleCount'; \n var
GROUP_PROJECTABLE_NODES_KEY = '$$angularGroupProjectableNodes'; \n var INJECTOR_KEY =
'$$angularInjector'; \n var LAZY_MODULE_REF = '$$angularLazyModuleRef'; \n var NG_ZONE_KEY =
'$$angularNgZone'; \n var UPGRADE_APP_TYPE_KEY = '$$angularUpgradeAppType'; \n var
REQUIRE_INJECTOR = '?^^' + INJECTOR_KEY; \n var REQUIRE_NG_MODEL = '?ngModel'; \n var
UPGRADE_MODULE_NAME = '$$UpgradeModule'; \n \n /**\n * @license\n * Copyright Google LLC All
Rights Reserved.\n * \n * Use of this source code is governed by an MIT-style license that can be\n * found
in the LICENSE file at https://angular.io/license\n * \n var $injector = null; \n var injector$1; \n function
$injectorFactory() {\n return $injector; \n }\n var AngularTestingModule = /** @class */ (function () {\n
function AngularTestingModule(i) {\n injector$1 = i; \n }\n return AngularTestingModule; \n
})(); \n AngularTestingModule.decorators = [\n { type: core.NgModule, args: [{ providers: [{ provide: $INJECTOR,
useFactory: $injectorFactory }] },] \n]; \n AngularTestingModule.ctorParameters = function () { return [\n
{ type: core.Injector } \n]; }; \n /**\n * A helper function to use when unit testing Angular services that depend
upon upgraded AngularJS\n * services.\n * \n * This function returns an `NgModule` decorated class that is
configured to wire up the Angular\n * and AngularJS injectors without the need to actually bootstrap a hybrid
application.\n * This makes it simpler and faster to unit test services.\n * \n * Use the returned class as an
`import` when configuring the `TestBed`.\n * \n * In the following code snippet, we are configuring the
TestBed with two imports.\n * The `Ng2AppModule` is the Angular part of our hybrid application and the
`ng1AppModule` is the\n * AngularJS part.\n * \n * <code-example
path="upgrade/static/ts/full/module.spec.ts" region="angular-setup"></code-example>\n * \n * Once this is
done we can get hold of services via the Angular `Injector` as normal.\n * Services that are (or have dependencies
on) an upgraded AngularJS service, will be instantiated\n * as needed by the AngularJS `$injector`.\n * \n *
In the following code snippet, `HeroesService` is an Angular service that depends upon an\n * AngularJS service,
`titleCase`.\n * \n * <code-example path="upgrade/static/ts/full/module.spec.ts" region="angular-
spec"></code-example>\n * \n * <div class="alert is-important">\n * \n * This helper is for testing
services not Components.\n * For Component testing you must still bootstrap a hybrid app. See `UpgradeModule`
or\n * `downgradeModule` for more information.\n * \n * </div>\n * \n * <div class="alert is-
important">\n * \n * The resulting configuration does not wire up AngularJS digests to Zone hooks. It is the\n
* responsibility of the test writer to call `$rootScope.$apply`, as necessary, to trigger\n * AngularJS handlers of
async events from Angular.\n * \n * </div>\n * \n * <div class="alert is-important">\n * \n * The

```

helper sets up global variables to hold the shared Angular and AngularJS injectors.

```

 * Only call this helper once per spec.
 * Do not use `createAngularTestingModule` in the same spec as
`createAngularJSTestingModule`.

```

Here is the example application and its unit tests that use `createAngularTestingModule` and `createAngularJSTestingModule`.

```

<code-pane header="module.spec.ts" path="upgrade/static/ts/full/module.spec.ts">
<code-pane header="module.ts" path="upgrade/static/ts/full/module.ts">

```

```

 * @param angularJSMODULES a collection of the names of AngularJS modules to include in the
configuration.
 * @param [strictDi] whether the AngularJS injector should have `strictDI` enabled.
 * @publicApi
 * ^\n function createAngularTestingModule(angularJSMODULES, strictDi) {
module_('$angularJSTestingModule', angularJSMODULES)
 .constant(UPGRADE_APP_TYPE_KEY, 2 /*
Static */)
 .factory(INJECTOR_KEY, function () { return injector$1; });
 $injector = injector(['ng',
'$angularJSTestingModule'], strictDi);
 return AngularTestingModule;
}

```

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A helper function to use when unit testing AngularJS services that depend upon downgraded Angular services. This function returns an AngularJS module that is configured to wire up the AngularJS and Angular injectors without the need to actually bootstrap a hybrid application. This makes it simpler and faster to unit test services. Use the returned AngularJS module in a call to `angular.mock.module` (<https://docs.angularjs.org/api/ngMock/function/angular.mock.module>) to include this module in the unit test injector. In the following code snippet, we are configuring the `$injector` with two modules: `ng1AppModule`, which is the AngularJS part of our hybrid application and the `Ng2AppModule`, which is the Angular part.

```

<code-example path="upgrade/static/ts/full/module.spec.ts" region="angularjs-setup">

```

Once this is done we can get hold of services via the AngularJS `$injector` as normal. Services that are (or have dependencies on) a downgraded Angular service, will be instantiated as needed by the Angular root `Injector`. In the following code snippet, `heroesService` is a downgraded Angular service that we are accessing from AngularJS.

```

<code-example path="upgrade/static/ts/full/module.spec.ts" region="angularjs-spec">

```

**Alert is important**

This helper is for testing services not components. For Component testing you must still bootstrap a hybrid app. See `UpgradeModule` or `downgradeModule` for more information.

**Alert is important**

The resulting configuration does not wire up AngularJS digests to Zone hooks. It is the responsibility of the test writer to call `$rootScope.$apply`, as necessary, to trigger AngularJS handlers of async events from Angular.

**Alert is important**

The helper sets up global variables to hold the shared Angular and AngularJS injectors.

```

 * Only call this helper once per spec.
 * Do not use `createAngularJSTestingModule` in the same spec
as `createAngularTestingModule`.

```

Here is the example application and its unit tests that use `createAngularTestingModule` and `createAngularJSTestingModule`.

```

<code-pane header="module.spec.ts" path="upgrade/static/ts/full/module.spec.ts">
<code-pane header="module.ts" path="upgrade/static/ts/full/module.ts">

```

```

 * @param angularMODULES a collection of Angular modules to include in the configuration.
 * @publicApi
 * ^\n function createAngularJSTestingModule(angularMODULES) {
return
module_('$angularJSTestingModule', [])
 .constant(UPGRADE_APP_TYPE_KEY, 2 /* Static */)
 .factory(INJECTOR_KEY, [
 $INJECTOR,
 function ($injector) {
testing.TestBed.configureTestingModule({
 imports: angularMODULES,
 providers: [
provide: $INJECTOR, useValue: $injector
]
 });
 return
testing.TestBed.inject(core.Injector);
 }
]
).name;
}

```

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,"templateUrl","\$templateCache\_1","url\_1","\$httpBackend","status","response","put","buildController","controllerType","\$scope","controller","controllerAs","compileTemplate","compileHtml","onDestroy","controllerInstance","\$onDestroy","querySelectorAll","prepareTransclusion","transclude","contentChildNodes","extractChildNodes","attachChildrenFn","cloneAttachFn","\$template","slots\_1","slotMap\_1","filledSlots\_1","keys","slotName","optional","directiveNormalize","\_","letter","nodeName","toLowerCase","filter","cloneAttach","\$\$slots","TEXT\_NODE","nodeValue","resolveAndBindRequiredControllers","directiveRequire","getDirectiveRequire","requiredControllers","resolveRequire","bindToController","isMap","requiredControllersMap\_1","key","html","innerHTML","childNodes","childNodes","firstChild","removeChild","match","isArray","req","value\_1","inheritType","isOptional","searchParents","startOnParent","ctrlKey","elem","inheritedData","property","args","\_i","apply","feature","CAMEL\_CASE","INITIAL\_VALUE\$1","UpgradeNg1ComponentAdapterBuilder","inputsRename","outputsRename","propertyOutputs","checkProperties","propertyMap","MyClass","UpgradeNg1ComponentAdapter","decorators","Directive","jit","ctorParameters","Inject","ElementRef","extractBindings","btcIsObject","context","definition","bindingType","bindingOptions","attrName","inputName","inputNameRename","outputName","outputNameRename","outputNameRenameChange","json","JSON","stringify","exportedComponents","promises","exportedComponent","helper","propOuts","destinationObj","checkLastValues","EventEmitter","indexOf","setComponentProperty","emit","k","ngOnInit","attachChildNodes","\$onInit","preLink","pre","postLink","post","parentBoundTranscludeFn","\$postLink","changes","ng1Changes","change","currentValue","\$onChanges","ngDoCheck","lastValues","\$doCheck","ngOnDestroy","String","upgradeCount","UpgradeAdapter","ng2AppModule","compilerOptions","idPrefix","downgradedComponents","ng1ComponentsToBeUpgraded","upgradedProviders","moduleRef","downgradeNg2Component","downgradeComponent","info","directiveFactory","ngZone","isNgUpgradeLite","cb","NgZone","isInAngularZone","run","hasMultipleDowngradedModules","restrict","required","moduleInjector","ranAsync","lazyModuleRefKey","lazyModuleRef","doDowngrade","ComponentFactoryResolver","resolveComponentFactory","injectorPromise","facade","\$evalAsync","downgradeFn","pInjector","mInjector","\_b","upgradeNg1Component","registerForNg1Tests","modules","windowNgMock","mock","declareNg1Module","ng1Module","UpgradeAdapterRef","ng2BootstrapDeferred","ng1Injector","\_bootstrapDone","element\$1","config","windowAngular","ng1BootstrapPromise","originalResumeBootstrap\_1","upgradeNg1Provider","options","asToken","useFactory","deps","downgradeNg2Provider","token","downgradeInjectable","err","message","original\$applyFn","rootScopePrototype","delayApplyExps","upgradeAdapter","platformRef","enableLongStackTrace","Zone","constant","Compiler","decorator","rootScopeDelegate","\$apply","exp","testabilityDelegate","originalWhenStable","whenStable","newWhenStable","ng2Testability","isStable","rootScope","ngModule","imports","resolveForwardRef","entryComponents","DynamicNgUpgradeModule","ngDoBootstrap","NgModule","bootstrapModule","ref","shift","subscription","onMicrotaskEmpty","\$\$phase","isDevMode","warn","\$digest","unsubscribe","catch","\_readyFn","ng1RootScope","ng2ModuleRef","ng2Injector","ngModuleRef","ready","fn","dispose","defineProperty"],"mappings":":;;;;;CAMC,SAUA,EAQC,GACi,iBAAZC,SAAC,oBAAXC,OAAyBF,EAQC,QAAAE,QAAQ,iBAaKBA,QAAQ,sCACHg,mBAAXC,QAAyBA,OAAOC,IAAMD,OAAO,mBAaOB,CAAC,UAAW,gBAAiB,qCAAsCJ,GACjHA,IAAzBD,EAASA,GAAUO,MAAsBC,GAACKR,EAAOQ,IAAM,GAAIR,EAAOQ,GAAGC,QAAU,IAAKT,EAAOQ,GAAGE,KAAMV,EAAOQ,GAAGG,wBAHvH,CAIEC,MAAM,SAAWV,EAASQ,EAAMC,GAAOB;;;;;;OAYxD,IAAIE,EAAU,IAAIH,EAAKI,QAAQ,qBAiB3BC,EAAgB,SAAUC,EAAAGC,GAM7B,OALAF,EAAgBG,OAAOC,gBACIB,CAAEC,UAAW,cAAgBC,OAAAS,SAAUL,EAAGC,GAACKD,EAAEI,UAAyH,IACvE,SAAUD,EAAGC,GAACK,IAAK,IAAIK,KAAKL,EACxBA,EAAEM,eAAeD,KACjBN,EAAEM,GAACKL,EAAEK,MACAN,EAAGC;;;;;;oFAE5B,SAASO,EAAUR,EAAGC,GAEIB,SAASQ,IAAOB,KAAKc,YAAcV,EADnCD,EAACc,EAAGC,GAEjBD,EAAEW,UAAkB,OAANV,EAAaC,OAAOU,OAAOX,IAAMQ,EAAGE,UAAyV,EAAEU,UAAW,IAAIF,GA+JnF,SAASI,EAAOC,EAAGC,GACf,IAAIC,EAAsB,mBAAXC,QAAyBH,EAAEG,OAAOC,UACjD,IAAKF,EACD,OAAOF,EACX,IAAmBK,EAAYC,EAA3BC,EAAIL,EAAM,KAAKR,GAAOS,EAACK,GAC3B,IACI,WAAc,IAANR,GAAgBA,KAAM,MAAQI,EAAIE,EAAEG,QAAQC,MACHDF,EAAGG,KAAKP,EAAEQ,OAEIB,MAAOC,GACHR,EAAI,CAAEQ,MAAOA,GAEjB,QACI,IACQT,IAAMA,EAAEM,OAAS,T,EAAIK,EAAU,SAC/BL,EAAEM,KAAKD,GAEf,QACI,GAAID,EACA,MAAMA,EA AEQ,OAGpB,OAAOL,EAEX,SAASM,IACL,IAAK,IAAIN,EAACK,GAAIF,EAAI,EAAGA,EAAIS,UAAUC,OAAQV,IAC3CE,EAAKA,EAAGS,OAAOnB,EAAOiB,UAAUT,KACpC,OAAOE;;;;;;AAgGX,SAASU,IACL,MAA

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,GAAa,EAC7F,MAAO,CACHuV,SAAU,IACV/J,UAAU,EACVjR,QAAS,CA1hBE,uBACA,YA0hBX8Q,KAAM,

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EAAoBE,WAEzCC,EAAGb,SAAU1O,GAC1BwO,EAAMbTc,KAAK1B,MAAM,WAC1B,IAAIme,EAaiBd,EAAezD,UAAUhX,SAASuC,IAAIrF,EAAKoJ,aAC5DiV,EAAeC,WACf5O,EAAS4F,MAAMpV,KAAMkC,WAGrBic,EAAeF,WAAWC,EAACpU,KAAK9J,KAAMwP,QAK/D,OADAuO,EAAoBE,WAAaC,EAC1BH,QAM3BjC,EAAUxB,IAAI,CACV,YAAa,aACb,SAAU2B,EAAaoC,GACnB7I,EAakCtP,QAAQL,EAAM6T,0BAA2BuC,GACtE1M,MAAK,WAIN,IAAI+O,EAAW,CACXhW,UAAW,CACP,CAAEC,QArvDd,YAqvDkCoU,WAAy,WAAc,OA AOV,IACvD,CAAET,QA3vDf,WA2vDkCoU,WAAy,WAAc,OA AOV,EAAy9W,IA3vD/E,cA4vDaU,EAAM8T,mBAEV4E,QAAS,CAACze,EAAK0e,kBAaKb3Y,EAAMyT,eACvCmF,gBAaiB5Y,EAAM4T,sBAIvBiF,EAawC,WACxS,SAASA,KAGT,OADAA,EAauB3d,UAAU4d,cAAgB,aAC1CD,EAJgC,GAM3CA,EAauBII,WAAa,C AChC,CAAEpR,KAAM9E,EAAK8e,SAAU1J,KAAM,CAAC5U,OOAO8L,OOAO,CAAe8J,KAAK,GAAQoI,MA E/DI,EAauBvI,eAAiB,WAAc,MAAO,IAC7DmH,EACKuB,gBAaAgBH,EAawB,CAAC7Y,EAAM0T,gBAaiB,C AAEU,OAQpU,EAAMoU,UACHf1K,MAAK,SAAUuP,GACHBjZ,EAAM+T,UAYkF,EACiBjZ,EAAMoU,OA AOK,KAAI,WACb,GAai6C,EAAoB,CAEpB,IADAA,EAAMBU,OAASX,EACrBE,EAaejb,QACiBkc,EAaur,O AAOT,EAae2B,SAEpC5B,EAaqB,YAI5B5N,MAAK,WAAc,OOAO1J,EAAMmW,qBAaqB9V,QAAQ+V,KAAi B5X,GAC9EkL,MAAK,WACn,IAAIyP,EAAenZ,EAAMoU,OOAOgF,iBAaiB3S,UAAU,CACvD1K,KAAM,WA CF,OAaiyc,EAaua,SACNpf,EAAKqf,aACL7a,QAAQ8a,KAAK,0IAEVf,EAauID,YAAW,gBAezBkD,EAaug B,aAGzBhB,EAaurR,IAAI,YAAy,WACtBgS,EAaam,uBAIpBC,OAAM,SAAU/d,GAak,OAQoE,EAAMmW, qBAaqB7V,OOAO3E,SAGpEsa,GAEJzC,EAhgBwB,GAWiB/B0C,GAiCyC,WACzC,SAAStM,EAAsB9M,GAC3 B3C,KAAK2C,QAAUA,EACf3C,KAAK8O,UAAy,GAEjBnM,EAAQiN,KAAKnL,EAacrB,GAAepD,MAE9CyP ,EAAsB1O,UAAUwO,KAAO,SAAUc,GACzCxP,KAAK4C,SACL4M,EAASxP,KAAK4C,UAGd5C,KAAK8O,U AAUhN,KAAK0N,IAG5BC,EAAsB1O,UAAUmF,QAAU,SAAUtD,GACHD5C,KAAK4C,SAAWA,EAehB5C,K AAK2C,QAAQiN,KAAKnL,EAacrB,GAAeR,GAE/C5C,KAAK2C,QAAU,KAef3C,KAAK8O,UAAUhH,SAAQ, SAAU0H,GAAY,OOAOA,EAAS5M,MAC7D5C,KAAK8O,UAAU3M,OAAS,GAvBY,GakCL,WACnC,SAAS4Z ,IAEL/b,KAAKwf,SAAW,KACHBxf,KAAKyf,aAAe,KACpBzf,KAAKic,YAAc,KACnBjC,KAAK0f,aAAe,KACp B1f,KAAK2f,YAAc,KA2BvB,OAxBA5D,EAakBhb,UAAUmb,eAAiB,SAAU0D,EAaA3D,GACHejc,KAAK0f,a AAeE,EACpB5f,KAAK2f,YAAcC,EAAYhd,SAC/B5C,KAAKic,YAAcA,EACnBjC,KAAKyf,aAAexD,EAAY9W, IA/1DtB,cAg2DVnF,KAAKwf,UAAyxf,KAAKwf,SAASxf,OAASn+c,EAakBhb,UAAU8e,MAAQ,SAAUc,GAC 1C9f,KAAKwf,SAAWM,GAKpB/D,EAakBhb,UAAUgf,QAAU,WACiC/f,KAAKic,YAAy9W,IAh3DP,cAg3Dw B4H,WACiC/M,KAAK0f,aAAa9S,WAEfmP,EAIc2B;::::::::::AA0DtCzc,EAAQ+Z,eAAiBA,EACzB/Z,EAAQy c,kBAAoBA,EAC5Bzc,EAAQW,QAAUA,EAeiBK,OOAO0f,eAAe1gB,EAAS,aAAc,CAAEyC,OOAO","sources Content":["/\*\n \* @license Angular v11.0.2\n \* (c) 2010-2020 Google LLC. https://angular.io/\n \* License: MIT\n\n \*\n\n(function (global, factory) {\n typeof exports === 'object' && typeof module !== 'undefined' ?\n factory(exports, require('@angular/core'), require('@angular/platform-browser-dynamic')) :\n typeof define ===\n 'function' && define.amd ? define('@angular/upgrade', ['exports', '@angular/core', '@angular/platform-browser-dynamic'], factory) :\n (global = global || self, factory((global.ng = global.ng || {}), global.ng.upgrade = {}),\n global.ng.core, global.ng.platformBrowserDynamic));\n})(this, (function (exports, core, platformBrowserDynamic) {\n 'use strict';\n\n /\*\n \* @license\n \* Copyright Google LLC All Rights Reserved.\n \*\n \* Use of this\n source code is governed by an MIT-style license that can be\n \* found in the LICENSE file at\n https://angular.io/license\n \*\n \* @publicApi\n \*\n var VERSION = new\n core.Version('11.0.2');\n \*/\n\n \*\*\*\*\*\n Copyright (c)\n Microsoft Corporation.\n\n Permission to use, copy, modify, and/or distribute this software for any\n purpose\n with or without fee is hereby granted.\n\n THE SOFTWARE IS PROVIDED "AS IS" AND THE AUTHOR\n DISCLAIMS ALL WARRANTIES WITH\n REGARD TO THIS SOFTWARE INCLUDING ALL IMPLIED\n WARRANTIES OF MERCHANTABILITY\n AND FITNESS. IN NO EVENT SHALL THE AUTHOR BE\n LIABLE FOR ANY SPECIAL, DIRECT,\n INDIRECT, OR CONSEQUENTIAL DAMAGES OR ANY\n DAMAGES WHATSOEVER RESULTING FROM\n LOSS OF USE, DATA OR PROFITS, WHETHER IN AN\n ACTION OF CONTRACT, NEGLIGENCE OR\n OTHER TORTIOUS ACTION, ARISING OUT OF OR IN\n CONNECTION WITH THE USE OR\n PERFORMANCE OF THIS SOFTWARE.\n\n



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}\n finally {\n f = t = 0;\n }\n if (op[0] & 5)\n throw op[1];\nreturn { value: op[0] ? op[1] : void 0, done: true };\n }\n }\n var __createBinding = Object.create ? (function\n(o, m, k, k2) {\n if (k2 === undefined)\n k2 = k;\n Object.defineProperty(o, k2, { enumerable: true,\nget: function () { return m[k]; } });\n }): (function (o, m, k, k2) {\n if (k2 === undefined)\n k2 = k;\n o[k2] = m[k];\n });\n function __exportStar(m, exports) {\n for (var p in m)\n if (p !== \"default\" && !exports.hasOwnProperty(p))\n __createBinding(exports, m, p);\n }\n function __values(o) {\n var s = typeof Symbol === \"function\" && Symbol.iterator, m = s && o[s], i = 0;\n if (m)\n return\nm.call(o);\n if (o && typeof o.length === \"number\")\n return {\n next: function () {\n if (o && i >= o.length)\n o = void 0;\n return { value: o && o[i++], done: !o }; \n }\n };\n throw new TypeError(s ? \"Object is not iterable.\" : \"Symbol.iterator is not defined.\");\n }\n function __read(o, n) {\n var m = typeof Symbol === \"function\" && o[Symbol.iterator];\n if (!m)\n return o;\n var i = m.call(o), r, ar = [], e;\n try {\n while ((n === void 0 || n-- > 0) && !(r =\ni.next()).done)\n ar.push(r.value);\n } catch (error) {\n e = { error: error };\n }\n finally {\n try {\n if (r && !r.done && (m = i[\"return\"])\n m.call(i);\n }\n }\n finally {\n if (e)\n throw e.error;\n }\n return ar;\n }\n function\n__spread() {\n for (var ar = [], i = 0; i < arguments.length; i++)\n ar = ar.concat(__read(arguments[i]));\n return ar;\n }\n function __spreadArrays() {\n for (var s = 0, i = 0, il = arguments.length; i < il; i++)\n s += arguments[i].length;\n for (var r = Array(s), k = 0, i = 0; i < il; i++)\n for (var a = arguments[i], j\n= 0, jl = a.length; j < jl; j++, k++)\n r[k] = a[j];\n return r;\n }\n function __await(v) {\nreturn this instanceof __await ? (this.v = v, this) : new __await(v);\n }\n function __asyncGenerator(thisArg,\n_arguments, generator) {\n if (!Symbol.asyncIterator)\n throw new TypeError(\"Symbol.asyncIterator is\nnot defined.\");\n var g = generator.apply(thisArg, _arguments || []), i, q = [];\n return i = { }, verb(\"next\"),\n verb(\"throw\"), verb(\"return\"), i[Symbol.asyncIterator] = function () { return this; }, i;\n function verb(n) { if\n(g[n])\n i[n] = function (v) { return new Promise(function (a, b) { q.push([n, v, a, b]) > 1 || resume(n, v); }); };\n }\n function resume(n, v) { try {\n step(g[n](v));\n } catch (e) {\n settle(q[0][3], e);\n }\n }\n function step(r) { r.value instanceof __await ? Promise.resolve(r.value.v).then(fulfill, reject) :\nsettle(q[0][2], r); }\n function fulfill(value) { resume(\"next\", value); }\n function reject(value) {\nresume(\"throw\", value); }\n function settle(f, v) { if (f(v), q.shift(), q.length)\n resume(q[0][0], q[0][1]);\n }\n }\n function __asyncDelegator(o) {\n var i, p;\n return i = { }, verb(\"next\"), verb(\"throw\"),\n function (e) { throw e; }, verb(\"return\"), i[Symbol.iterator] = function () { return this; }, i;\n function verb(n,\nf) { i[n] = o[n] ? function (v) { return (p = !p) ? { value: __await(o[n](v)), done: n === \"return\" } : f ? f(v) : v; } : f;\n }\n }\n function __asyncValues(o) {\n if (!Symbol.asyncIterator)\n throw new\nTypeError(\"Symbol.asyncIterator is not defined.\");\n var m = o[Symbol.asyncIterator], i;\n return m ?\nm.call(o) : (o = typeof __values === \"function\" ? __values(o) : o[Symbol.iterator](), i = { }, verb(\"next\"),\n verb(\"throw\"), verb(\"return\"), i[Symbol.asyncIterator] = function () { return this; }, i);\n function verb(n) {\ni[n] = o[n] && function (v) { return new Promise(function (resolve, reject) { v = o[n](v), settle(resolve, reject,\nv.done, v.value); }); };\n }\n function settle(resolve, reject, d, v) { Promise.resolve(v).then(function (v) {\n resolve({ value: v, done: d }); }, reject); }\n }\n }\n function __makeTemplateObject(cooked, raw) {\n if\n(Object.defineProperty) {\n Object.defineProperty(cooked, \"raw\", { value: raw });\n }\n else {\n cooked.raw = raw;\n }\n return cooked;\n }\n }\n var __setModuleDefault = Object.create ?\n(function (o, v) {\n Object.defineProperty(o, \"default\", { enumerable: true, value: v });\n }): function (o, v)\n{\n o[\"default\"] = v;\n };\n function __importStar(mod) {\n if (mod && mod.__esModule)\n return mod;\n var result = {};\n if (mod != null)\n for (var k in mod)\n if\n(Object.hasOwnProperty.call(mod, k))\n __createBinding(result, mod, k);\n __setModuleDefault(result, mod);\n return result;\n }\n }\n function __importDefault(mod) {\n return (mod\n&& mod.__esModule) ? mod : { default: mod };\n }\n }\n function __classPrivateFieldGet(receiver, privateMap)\n{\n if (!privateMap.has(receiver))\n throw new TypeError(\"attempted to get private field on non-\ninstance\");\n return privateMap.get(receiver);\n }\n }\n function __classPrivateFieldSet(receiver,\n
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privateMap, value) {\n if (!privateMap.has(receiver)) {\n throw new TypeError("attempted to set private
field on non-instance");\n }\n privateMap.set(receiver, value);\n return value;\n }\n\n /**\n *
@license\n * Copyright Google LLC All Rights Reserved.\n * Use of this source code is governed by an
MIT-style license that can be\n * found in the LICENSE file at https://angular.io/license\n */\n function
noNg() {\n throw new Error('AngularJS v1.x is not loaded!');\n }\n var noNgElement = (function () { return
noNg(); });\n noNgElement.cleanData = noNg;\n var angular = {\n bootstrap: noNg,\n module: noNg,\n element: noNgElement,\n injector: noNg,\n version: undefined,\n resumeBootstrap: noNg,\n getTestability: noNg\n };\n try {\n if (window.hasOwnProperty('angular')) {\n angular =
window.angular;\n }\n } catch (_a) {\n // ignore in CJS mode.\n }\n /**\n * @deprecated Use
`setAngularJSGlobal` instead.\n *\n * @publicApi\n */\n function setAngularLib(ng) {\n
setAngularJSGlobal(ng);\n }\n /**\n * @deprecated Use `getAngularJSGlobal` instead.\n *\n *
@publicApi\n */\n function getAngularLib() {\n return getAngularJSGlobal();\n }\n /**\n * Resets
the AngularJS global.\n *\n * Used when AngularJS is loaded lazily, and not available on `window`.\n *\n
* @publicApi\n */\n function setAngularJSGlobal(ng) {\n angular = ng;\n }\n /**\n * Returns the
current AngularJS global.\n *\n * @publicApi\n */\n function getAngularJSGlobal() {\n return
angular;\n }\n var bootstrap = function (e, modules, config) { return angular.bootstrap(e, modules, config); };\n
// Do not declare as `module` to avoid webpack bug\n // (see https://github.com/angular/angular/issues/30050).\n
var module_ = function (prefix, dependencies) { return angular.module(prefix, dependencies); };\n var element =
(function (e) { return angular.element(e); });\n element.cleanData = function (nodes) { return
angular.element.cleanData(nodes); };\n var injector = function (modules, strictDi) { return
angular.injector(modules, strictDi); };\n var resumeBootstrap = function () { return angular.resumeBootstrap();
};\n var getTestability = function (e) { return angular.getTestability(e); };\n\n /**\n * @license\n *
Copyright Google LLC All Rights Reserved.\n * Use of this source code is governed by an MIT-style
license that can be\n * found in the LICENSE file at https://angular.io/license\n */\n var $COMPILE =
'$compile';\n var $CONTROLLER = '$controller';\n var $DELEGATE = '$delegate';\n var
$EXCEPTION_HANDLER = '$exceptionHandler';\n var $HTTP_BACKEND = '$httpBackend';\n var
$INJECTOR = '$injector';\n var $INTERVAL = '$interval';\n var $PARSE = '$parse';\n var $PROVIDE =
'$provide';\n var $ROOT_SCOPE = '$rootScope';\n var $SCOPE = '$scope';\n var $TEMPLATE_CACHE =
'$templateCache';\n var $TEMPLATE_REQUEST = '$templateRequest';\n var $TESTABILITY =
'$testability';\n var COMPILER_KEY = '$$angularCompiler';\n var
DOWNGRADED_MODULE_COUNT_KEY = '$$angularDowngradedModuleCount';\n var
GROUP_PROJECTABLE_NODES_KEY = '$$angularGroupProjectableNodes';\n var INJECTOR_KEY =
'$$angularInjector';\n var LAZY_MODULE_REF = '$$angularLazyModuleRef';\n var NG_ZONE_KEY =
'$$angularNgZone';\n var UPGRADE_APP_TYPE_KEY = '$$angularUpgradeAppType';\n var
REQUIRE_INJECTOR = '?^^' + INJECTOR_KEY;\n var REQUIRE_NG_MODEL = '?ngModel';\n var
UPGRADE_MODULE_NAME = '$$UpgradeModule';\n\n /**\n * @license\n * Copyright Google LLC All
Rights Reserved.\n * Use of this source code is governed by an MIT-style license that can be\n * found
in the LICENSE file at https://angular.io/license\n */\n\n /**\n * A `PropertyBinding` represents a mapping
between a property name\n * and an attribute name. It is parsed from a string of the form\n * `\"prop: attr\"` or
simply `\"propAndAttr\"` where the property\n * and attribute have the same identifier.\n */\n var
PropertyBinding = /** @class */ (function () {\n function PropertyBinding(prop, attr) {\n this.prop =
prop;\n this.attr = attr;\n this.parseBinding();\n }\n PropertyBinding.prototype.parseBinding =
function () {\n this.bracketAttr = \"[\" + this.attr + \"]\";\n this.parenAttr = \"(\" + this.attr + \")\";\n
 this.bracketParenAttr = \"[(\" + this.attr + \")]\";\n var capitalAttr = this.attr.charAt(0).toUpperCase() +
this.attr.substr(1);\n this.onAttr = \"on\" + capitalAttr;\n this.bindAttr = \"bind\" + capitalAttr;\n
 this.bindonAttr = \"bindon\" + capitalAttr;\n }; \n return PropertyBinding;\n }());\n\n /**\n *
@license\n * Copyright Google LLC All Rights Reserved.\n * Use of this source code is governed by an
MIT-style license that can be\n * found in the LICENSE file at https://angular.io/license\n */\n var

```

```

DIRECTIVE_PREFIX_REGEXP = /^(?:x|data)[:\-_/i; \n var DIRECTIVE_SPECIAL_CHARS_REGEXP = /[:\-_]+(\.)/g; \n function onError(e) { \n // TODO: (misko): We seem to not have a stack trace here! \n if (console.error) { \n console.error(e, e.stack); \n } \n else { \n // tslint:disable-next-line:no-console \n console.log(e, e.stack); \n } \n throw e; \n } \n function controllerKey(name) { \n return '$' + name + 'Controller'; \n } \n function directiveNormalize(name) { \n return name.replace(DIRECTIVE_PREFIX_REGEXP, '') \n .replace(DIRECTIVE_SPECIAL_CHARS_REGEXP, function (_, letter) { return letter.toUpperCase(); }); \n } \n function getTypeName(type) { \n // Return the name of the type or the first line of its stringified version. \n return type.overriddenName || type.name || type.toString().split("\n")[0]; \n } \n function getDowngradedModuleCount($injector) { \n return $injector.has(DOWNGRADED_MODULE_COUNT_KEY) ? $injector.get(DOWNGRADED_MODULE_COUNT_KEY) : 0; \n } \n function getUpgradeAppType($injector) { \n return $injector.has(UPGRADE_APP_TYPE_KEY) ? $injector.get(UPGRADE_APP_TYPE_KEY) : 0 /* None */; \n } \n function isFunction(value) { \n return typeof value === 'function'; \n } \n function validateInjectionKey($injector, downgradedModule, injectionKey, attemptedAction) { \n var upgradeAppType = getUpgradeAppType($injector); \n var downgradedModuleCount = getDowngradedModuleCount($injector); \n // Check for common errors. \n switch (upgradeAppType) { \n case 1 /* Dynamic */: \n case 2 /* Static */: \n if (downgradedModule) { \n throw new Error("Error while " + attemptedAction + ": 'downgradedModule' unexpectedly specified.\n" + \n 'You should not specify a value for \'' + downgradedModule + '\', unless you are downgrading ' + \n 'more than one Angular module (via \'' + downgradedModule + '\').'); \n } \n break; \n case 3 /* Lite */: \n if (!downgradedModule && (downgradedModuleCount >= 2)) { \n throw new Error("Error while " + attemptedAction + ": 'downgradedModule' not specified.\n" + \n 'This application contains more than one downgraded Angular module, thus you need to ' + \n 'always specify \'' + downgradedModule + '\' when downgrading components and injectables.');

```





```

DowngradeComponentAdapter;
 }());
 /**
 * Group a set of DOM nodes into `ngContent` groups, based
 on the given content selectors.
 */
 function groupNodesBySelector(ngContentSelectors, nodes) {
 var
 projectableNodes = [];
 var wildcardNgContentIndex;
 for (var i = 0, ii = ngContentSelectors.length; i <
 ii; ++i) {
 projectableNodes[i] = [];
 for (var j = 0, jj = nodes.length; j < jj; ++j) {
 var
 node = nodes[j];
 var ngContentIndex = findMatchingNgContentIndex(node, ngContentSelectors);
 if (ngContentIndex != null) {
 projectableNodes[ngContentIndex].push(node);
 }
 }
 }
 return projectableNodes;
 }
 function findMatchingNgContentIndex(element, ngContentSelectors) {
 var
 ngContentIndices = [];
 var wildcardNgContentIndex = -1;
 for (var i = 0; i < ngContentSelectors.length;
 i++) {
 var selector = ngContentSelectors[i];
 if (selector === '*') {
 wildcardNgContentIndex = i;
 } else {
 if (matchesSelector(element, selector)) {
 ngContentIndices.push(i);
 }
 }
 }
 ngContentIndices.sort();
 if
 (wildcardNgContentIndex !== -1) {
 ngContentIndices.push(wildcardNgContentIndex);
 }
 return ngContentIndices.length ? ngContentIndices[0] : null;
 }
 var _matches;
 function
 matchesSelector(el, selector) {
 if (!_matches) {
 var elProto = Element.prototype;
 _matches =
 elProto.matches || elProto.matchesSelector || elProto.mozMatchesSelector ||
 elProto.msMatchesSelector || elProto.oMatchesSelector || elProto.webkitMatchesSelector;
 }
 return el.nodeType ===
 Node.ELEMENT_NODE ? _matches.call(el, selector) : false;
 }
 /**
 * @license
 * Copyright
 Google LLC All Rights Reserved.
 * Use of this source code is governed by an MIT-style license that can
 be
 * found in the LICENSE file at https://angular.io/license
 */
 function isThenable(obj) {
 return
 !!obj && isFunction(obj.then);
 }
 /**
 * Synchronous, promise-like object.
 */
 var SyncPromise =
 /** @class */ (function () {
 function SyncPromise() {
 this.resolved = false;
 this.callbacks =
 [];
 }
 SyncPromise.all = function (valuesOrPromises) {
 var
 aggrPromise = new
 SyncPromise();
 var resolvedCount = 0;
 var results = [];
 var resolve = function (idx, value) {
 results[idx] = value;
 if (++resolvedCount === valuesOrPromises.length) {
 aggrPromise.resolve(results);
 }
 valuesOrPromises.forEach(function (p, idx) {
 if
 (isThenable(p)) {
 p.then(function (v) { return resolve(idx, v); });
 } else {
 resolve(idx, p);
 }
 });
 return aggrPromise;
 };
 SyncPromise.prototype.resolve = function (value) {
 // Do nothing, if already resolved.
 if
 (this.resolved) {
 return;
 }
 this.value = value;
 this.resolved = true;
 // Run the
 queued callbacks.
 this.callbacks.forEach(function (callback) { return callback(value); });
 this.callbacks.length = 0;
 };
 SyncPromise.prototype.then = function (callback) {
 if
 (this.resolved) {
 callback(this.value);
 } else {
 this.callbacks.push(callback);
 }
 return SyncPromise;
 }());
 }
 /**
 *
 * @description
 * A helper function that allows an Angular component to be used from AngularJS.
 * Part of the [upgrade/static](api?query=upgrade%2Fstatic) library for hybrid upgrade apps that support
 AOT compilation.
 * This helper function returns a factory function to be used for registering an
 AngularJS wrapper directive for "downgrading" an Angular component.
 * @usageNotes
 ###
 Examples
 * Let's assume that you have an Angular component called `ng2Heroes` that needs to be
 made available in AngularJS templates.
 * {@example upgrade/static/ts/full/module.ts region="ng2-
 heroes"}
 * We must create an AngularJS [directive](https://docs.angularjs.org/guide/directive) that
 will make this Angular component available inside AngularJS templates.
 * The `downgradeComponent()`
 function returns a factory function that we can use to define the AngularJS directive that wraps the
 "downgraded" component.
 * {@example upgrade/static/ts/full/module.ts region="ng2-heroes-
 wrapper"}
 * For more details and examples on downgrading Angular components to AngularJS
 components please
 * visit the [Upgrade guide](guide/upgrade#using-angular-components-from-angularjs-
 code).
 * @param info contains information about the Component that is being downgraded:
 * - `component: Type<any>`: The type of the Component that will be downgraded
 * - `downgradedModule?:
 string`: The name of the downgraded module (if any) that the component "belongs to", as returned by a call

```

```

to `downgradeModule()`. It is the module, whose
* corresponding Angular module will be bootstrapped, when
the component needs to be instantiated.
*

* (This option is only necessary when using
`downgradeModule()` to downgrade more than one
* Angular module.)
* - `propagateDigest?: boolean`:
Whether to perform { @link ChangeDetectorRef#detectChanges
* change detection} on the component on
every
* [$digest](https://docs.angularjs.org/api/ng/type/$rootScope.Scope#$digest). If set to `false`,
* change detection will still be performed when any of the component's inputs changes.
* (Default: true)
*
* @returns a factory function that can be used to register the component in an
* AngularJS module.
*
* @publicApi
*/
function downgradeComponent(info) {
 var directiveFactory = function ($compile,
 $injector, $parse) {
 // When using `downgradeModule()`, we need to handle certain things specially. For
 example:
 // - We always need to attach the component view to the `ApplicationRef` for it to be
 // dirty-checked.
 // - We need to ensure callbacks to Angular APIs (e.g. change detection) are run inside the
 // Angular zone.
 // NOTE: This is not needed, when using `UpgradeModule`, because `$digest()`
 will be run
 // inside the Angular zone (except if explicitly escaped, in which case we shouldn't
 // force it back in).
 var isNgUpgradeLite = getUpgradeAppType($injector) === 3 /* Lite */;
 var wrapCallback = isNgUpgradeLite ? function (cb) { return cb; } : function (cb) { return
 core.NgZone.isInAngularZone() ? cb() : ngZone.run(cb); };
 var ngZone;
 // When downgrading
 multiple modules, special handling is needed wrt injectors.
 var hasMultipleDowngradedModules =
 isNgUpgradeLite && (getDowngradedModuleCount($injector) > 1);
 return {
 restrict: 'E',
 terminal: true,
 require: [REQUIRE_INJECTOR, REQUIRE_NG_MODEL],
 link:
 function (scope, element, attrs, required) {
 // We might have to compile the contents asynchronously,
 because this might have been
 // triggered by `UpgradeNg1ComponentAdapterBuilder`, before the
 Angular templates have
 // been compiled.
 var ngModel = required[1];
 var
 parentInjector = required[0];
 var moduleInjector = undefined;
 var ranAsync = false;
 if (!parentInjector || hasMultipleDowngradedModules) {
 var downgradedModule =
 info.downgradedModule || ";
 var lazyModuleRefKey = "\"" + LAZY_MODULE_REF +
 downgradedModule;
 var attemptedAction = "instantiating component " +
 getTypeName(info.component) + "\";
 validateInjectionKey($injector, downgradedModule,
 lazyModuleRefKey, attemptedAction);
 var lazyModuleRef = $injector.get(lazyModuleRefKey);
 moduleInjector = lazyModuleRef.injector || lazyModuleRef.promise;
 }
 }
 };
 };
}
Notes:
//
// There are two injectors: `finalModuleInjector` and `finalParentInjector` (they
might be
// the same instance, but that is irrelevant);
// - `finalModuleInjector` is used to
retrieve `ComponentFactoryResolver`, thus it must be
// on the same tree as the `NgModule` that
declares this downgraded component.
// - `finalParentInjector` is used for all other injection
purposes.
// (Note that Angular knows to only traverse the component-tree part of that injector,
// when looking for an injectable and then switch to the module injector.)
//
There are basically three cases:
// - If there is no parent component (thus no `parentInjector`), we
bootstrap the downgraded
// `NgModule` and use its injector as both `finalModuleInjector` and
// `finalParentInjector`.
// - If there is a parent component (and thus a `parentInjector`) and we
are sure that it
// belongs to the same `NgModule` as this downgraded component (e.g. because there
is only
// one downgraded module, we use that `parentInjector` as both `finalModuleInjector` and
// `finalParentInjector`.
// - If there is a parent component, but it may belong to a different
`NgModule`, then we
// use the `parentInjector` as `finalParentInjector` and this downgraded
component's
// declaring `NgModule`'s injector as `finalModuleInjector`.
// Note 1: If
the `NgModule` is already bootstrapped, we just get its injector (we don't
// bootstrap again).
// Note 2: It is possible that (while there are multiple downgraded modules) this
//
downgraded component and its parent component both belong to the same NgModule.
// In that
case, we could have used the `parentInjector` as both
// `finalModuleInjector` and
`finalParentInjector`, but (for simplicity) we are
// treating this case as if they belong to different

```

```

`NgModule`s. That doesn't\n // really affect anything, since `parentInjector` has `moduleInjector`
as ancestor\n // and trying to resolve `ComponentFactoryResolver` from either one will return\n
// the same instance.\n // If there is a parent component, use its injector as parent
injector.\n // If this is a "top-level" Angular component, use the module injector.\n var
finalParentInjector = parentInjector || moduleInjector;\n // If this is a "top-level" Angular component or
the parent component may belong to a\n // different `NgModule`, use the module injector for module-
specific dependencies.\n // If there is a parent component that belongs to the same `NgModule`, use its
injector.\n var finalModuleInjector = moduleInjector || parentInjector;\n var doDowngrade =
function (injector, moduleInjector) {\n // Retrieve `ComponentFactoryResolver` from the injector tied
to the `NgModule` this\n // component belongs to.\n var componentFactoryResolver =
moduleInjector.get(core.ComponentFactoryResolver);\n var componentFactory =
componentFactoryResolver.resolveComponentFactory(info.component);\n if (!componentFactory)
{\n throw new Error("Expecting ComponentFactory for: " + getTypeName(info.component));\n
}\n var injectorPromise = new ParentInjectorPromise(element);\n var facade
= new DowngradeComponentAdapter(element, attrs, scope, ngModel, injector, $injector, $compile, $parse,
componentFactory, wrapCallback);\n var projectableNodes = facade.compileContents();\n
facade.createComponent(projectableNodes);\n facade.setupInputs(isNgUpgradeLite,
info.propagateDigest);\n facade.setupOutputs();\n facade.registerCleanup();\n
injectorPromise.resolve(facade.getInjector());\n if (ranAsync) {\n // If this is run
async, it is possible that it is not run inside a\n // digest and initial input values will not be
detected.\n scope.$evalAsync(function () { });\n });\n var
downgradeFn = !isNgUpgradeLite ? doDowngrade : function (pInjector, mInjector) {\n if (!ngZone)
{\n ngZone = pInjector.get(core.NgZone);\n }\n
wrapCallback(function () { return doDowngrade(pInjector, mInjector); })();\n });\n //
NOTE:\n // Not using `ParentInjectorPromise.all()` (which is inherited from `SyncPromise`), because\n
// Closure Compiler (or some related tool) complains:\n // `TypeError:
...srcdoDowngrade_component_ParentInjectorPromise.all is not a function`\n
SyncPromise.all([finalParentInjector, finalModuleInjector])\n .then(function (_a) {\n
var _b = __read(_a, 2), pInjector = _b[0], mInjector = _b[1];\n return downgradeFn(pInjector,
mInjector);\n });\n ranAsync = true;\n });\n // bracket-
notation because of closure - see #14441\n directiveFactory['$inject'] = [$COMPILER, $INJECTOR,
$PARSE];\n return directiveFactory;\n }\n /**\n * Synchronous promise-like object to wrap parent
injectors,\n * to preserve the synchronous nature of AngularJS's `$compile`.\n */\n var ParentInjectorPromise
= /** @class */ (function (_super) {\n __extends(ParentInjectorPromise, _super);\n function
ParentInjectorPromise(element) {\n var _this = _super.call(this) || this;\n _this.element = element;\n
_this.injectorKey = controllerKey(INJECTOR_KEY);\n // Store the promise on the element.\n
element.data(_this.injectorKey, _this);\n return _this;\n }\n ParentInjectorPromise.prototype.resolve
= function (injector) {\n // Store the real injector on the element.\n this.element.data(this.injectorKey,
injector);\n // Release the element to prevent memory leaks.\n this.element = null;\n // Resolve
the promise.\n _super.prototype.resolve.call(this, injector);\n }; return ParentInjectorPromise;\n
})(SyncPromise);\n /**\n * @license\n * Copyright Google LLC All Rights Reserved.\n *\n * Use of
this source code is governed by an MIT-style license that can be\n * found in the LICENSE file at
https://angular.io/license\n *\n * @description\n *\n * A helper function to allow an Angular
service to be accessible from AngularJS.\n *\n * Part of the [upgrade/static](api?query=upgrade%2Fstatic)\n * library for hybrid upgrade apps that support AOT compilation*\n *\n * This helper function returns a factory
function that provides access to the Angular\n * service identified by the `token` parameter.\n *\n *
@usageNotes\n * ### Examples\n *\n * First ensure that the service to be downgraded is provided in an
`NgModule`\n * that will be part of the upgrade application. For example, let's assume we have\n * defined

```

```

`HeroesService`\n * \n * {@example upgrade/static/ts/full/module.ts region=\"ng2-heroes-service\"}\n * \n
* and that we have included this in our upgrade app `NgModule`\n * \n * {@example
upgrade/static/ts/full/module.ts region=\"ng2-module\"}\n * \n * Now we can register the `downgradeInjectable`
factory function for the service\n * on an AngularJS module.\n * \n * {@example
upgrade/static/ts/full/module.ts region=\"downgrade-ng2-heroes-service\"}\n * \n * Inside an AngularJS
component's controller we can get hold of the\n * downgraded service via the name we gave when
downgrading.\n * \n * {@example upgrade/static/ts/full/module.ts region=\"example-app\"}\n * \n * <div
class=\"alert is-important\">\n * \n * When using `downgradeModule()`, downgraded injectables will not be
available until the Angular\n * module that provides them is instantiated. In order to be safe, you need to ensure
that the\n * downgraded injectables are not used anywhere _outside_ the part of the app where it is\n *
guaranteed that their module has been instantiated.\n * \n * For example, it is _OK_ to use a downgraded
service in an upgraded component that is only used\n * from a downgraded Angular component provided by the
same Angular module as the injectable, but\n * it is _not OK_ to use it in an AngularJS component that may be
used independently of Angular or\n * use it in a downgraded Angular component from a different module.\n
*\n * </div>\n * \n * @param token an `InjectionToken` that identifies a service provided from Angular.\n
* @param downgradedModule the name of the downgraded module (if any) that the injectable\n * \"belongs to\",
as returned by a call to `downgradeModule()`. It is the module, whose injector will\n * be used for instantiating
the injectable.
\n * (This option is only necessary when using `downgradeModule()` to downgrade more
than one Angular\n * module.)\n * \n * @returns a [factory function](https://docs.angularjs.org/guide/di) that
can be\n * used to register the service on an AngularJS module.\n * \n * @publicApi\n * \n function
downgradeInjectable(token, downgradedModule) {\n if (downgradedModule === void 0) { downgradedModule
= \"\"; }\n var factory = function ($injector) {\n var injectorKey = \"\" + INJECTOR_KEY +
downgradedModule;\n var injectableName = isFunction(token) ? getTypeName(token) : String(token);\n
 var attemptedAction = \"instantiating injectable \" + injectableName + \"\";\n
validateInjectionKey($injector, downgradedModule, injectorKey, attemptedAction);\n try {\n var
injector = $injector.get(injectorKey);\n return injector.get(token);\n } catch (err) {\n
 throw new Error(\"Error while \" + attemptedAction + \": \" + (err.message || err));\n }\n
 }\n factory['$inject'] = [$INJECTOR];\n return factory;\n }\n\n // Constants\n var REQUIRE_PREFIX_RE =
/^(\\|^\\^)?(\\|)??(\\|^\\^)?/;\n // Classes\n var UpgradeHelper = /** @class */ (function () {\n function
UpgradeHelper(injector, name, elementRef, directive) {\n this.injector = injector;\n this.name =
name;\n this.$injector = injector.get($INJECTOR);\n this.$compile =
this.$injector.get($COMPILE);\n this.$controller = this.$injector.get($CONTROLLER);\n
 this.element = elementRef.nativeElement;\n this.$element = element(this.element);\n this.directive =
directive || UpgradeHelper.getDirective(this.$injector, name);\n }\n UpgradeHelper.getDirective = function
($injector, name) {\n var directives = $injector.get(name + 'Directive');\n if (directives.length > 1) {\n
 throw new Error(\"Only support single directive definition for: \" + name);\n }\n var directive =
directives[0];\n // AngularJS will transform `link: xyz` to `compile: () => xyz`. So we can only tell there was
a\n // user-defined `compile` if there is no `link`. In other cases, we will just ignore `compile`.\n if
(directive.compile && !directive.link)\n notSupported(name, 'compile');\n if (directive.replace)\n
 notSupported(name, 'replace');\n if (directive.terminal)\n notSupported(name, 'terminal');\n
 return directive;\n }; \n UpgradeHelper.getTemplate = function ($injector, directive,
fetchRemoteTemplate, $element) {\n if (fetchRemoteTemplate === void 0) { fetchRemoteTemplate = false;\n
 }\n if (directive.template !== undefined) {\n return getOrCall(directive.template, $element);\n
 }\n else if (directive.templateUrl) {\n var $templateCache_1 =
$injector.get($TEMPLATE_CACHE);\n var url_1 = getOrCall(directive.templateUrl, $element);\n var
template = $templateCache_1.get(url_1);\n if (template !== undefined) {\n return
template;\n }\n else if (!fetchRemoteTemplate) {\n throw new Error('loading directive
templates asynchronously is not supported');\n }\n return new Promise(function (resolve, reject)

```



```

{\n var $httpBackend = $injector.get($HTTP_BACKEND);\n $httpBackend('GET', url_1,\n null, function (status, response) {\n if (status === 200) {\n resolve($templateCache_1.put(url_1, response));\n }\n else {\n reject("GET component template from \"" + url_1 + "\" returned \"" + status + \":\" + response + "\"");\n }\n });\n });\n });\n });\n else {\n throw new Error("Directive \"" +\n directive.name + "\" is not a component, it is missing template.");\n }\n });\n });\n UpgradeHelper.prototype.buildController = function (controllerType, $scope) {\n // TODO: Document that\n we do not pre-assign bindings on the controller instance.\n // Quoted properties below so that this code can be\n optimized with Closure Compiler.\n var locals = { '$scope': $scope, '$element': this.$element }; \n var\n controller = this.$controller(controllerType, locals, null, this.directive.controllerAs);\n this.$element.data(controllerKey(this.directive.name), controller);\n return controller;\n };\n });\n UpgradeHelper.prototype.compileTemplate = function (template) {\n if (template === undefined) {\n template =\n UpgradeHelper.getTemplate(this.$injector, this.directive, false, this.$element);\n }\n return this.compileHtml(template);\n };\n });\n UpgradeHelper.prototype.onDestroy = function\n ($scope, controllerInstance) {\n if (controllerInstance && isFunction(controllerInstance.$onDestroy)) {\n controllerInstance.$onDestroy();\n }\n $scope.$destroy();\n // Clean the jQuery/jqLite data\n on the component+child elements.\n // Equivalent to how jQuery/jqLite invoke `cleanData` on an Element\n (this.element)\n //\n https://github.com/jquery/jquery/blob/e743cbd28553267f955f71ea7248377915613fd9/src/manipulation.js#L223\n //\n https://github.com/angular/angular.js/blob/26ddc5f830f902a3d22f4b2aab70d86d4d688c82/src/jqLite.js#L306-\n L312\n // `cleanData` will invoke the AngularJS `$destroy` DOM event\n //\n https://github.com/angular/angular.js/blob/26ddc5f830f902a3d22f4b2aab70d86d4d688c82/src/Angular.js#L1911-\n L1924\n element.cleanData([this.element]);\n element.cleanData(this.element.querySelectorAll("*"));\n });\n UpgradeHelper.prototype.prepareTransclusion = function () {\n var _this = this;\n var\n transclude = this.directive.transclude;\n var contentChildNodes = this.extractChildNodes();\n var\n attachChildrenFn = function (scope, cloneAttachFn) {\n // Since AngularJS v1.5.8, `cloneAttachFn` will\n try to destroy the transclusion scope if\n // `template` is empty. Since the transcluded content comes from\n Angular, not AngularJS,\n // there will be no transclusion scope here.\n // Provide a dummy\n `scope.$destroy()` method to prevent `cloneAttachFn` from throwing.\n scope = scope || { $destroy:\n function () { return undefined; } };\n return cloneAttachFn($template, scope);\n };\n var\n $template = contentChildNodes;\n if (transclude) {\n var slots_1 = Object.create(null);\n if\n (typeof transclude === 'object') {\n $template = [];\n var slotMap_1 = Object.create(null);\n var filledSlots_1 = Object.create(null);\n // Parse the element selectors.\n Object.keys(transclude).forEach(function (slotName) {\n var selector = transclude[slotName];\n var optional = selector.charAt(0) === '?';\n selector = optional ? selector.substring(1) :\n selector;\n slotMap_1[selector] = slotName;\n slots_1[slotName] = null; // `null`:\n Defined but not yet filled.\n filledSlots_1[slotName] = optional; // Consider optional slots as filled.\n });\n // Add the matching elements into their slot.\n contentChildNodes.forEach(function (node) {\n var slotName =\n slotMap_1[directiveNormalize(node.nodeName.toLowerCase)];\n if (slotName) {\n filledSlots_1[slotName] = true;\n slots_1[slotName] = slots_1[slotName] || [];\n slots_1[slotName].push(node);\n }\n else {\n $template.push(node);\n }\n });\n // Check for required slots that were not filled.\n Object.keys(filledSlots_1).forEach(function (slotName) {\n if (!filledSlots_1[slotName]) {\n throw new Error("Required transclusion slot \"" + slotName + "\" on directive: \"" + _this.name);\n }\n });\n Object.keys(slots_1).filter(function (slotName) { return slots_1[slotName];\n }).forEach(function (slotName) {\n var nodes = slots_1[slotName];\n slots_1[slotName]

```

```

= function (scope, cloneAttach) {\n
 return cloneAttach(nodes, scope);\n
};\n
});\n
}\n
// Attach `$$slots` to default slot transclude fn.\n
attachChildrenFn.$$slots =
slots_1;\n
// AngularJS v1.6+ ignores empty or whitespace-only transcluded text nodes. But Angular\n
// removes all text content after the first interpolation and updates it later, after\n
// evaluating the
expressions. This would result in AngularJS failing to recognize text\n
// nodes that start with an
interpolation as transcluded content and use the fallback\n
// content instead.\n
// To avoid this
issue, we add a\n
// [zero-width non-joiner character](https://en.wikipedia.org/wiki/Zero-width_non-
joiner)\n
// to empty text nodes (which can only be a result of Angular removing their initial content).\n
// NOTE: Transcluded text content that starts with whitespace followed by an interpolation\n
// will still fail to be detected by AngularJS v1.6+\n
$template.forEach(function (node) {\n
 if
(node.nodeType === Node.TEXT_NODE && !node.nodeValue) {\n
 node.nodeValue = "\u200C";\n
 }\n
});\n
}\n
return attachChildrenFn;\n
};\n
UpgradeHelper.prototype.resolveAndBindRequiredControllers = function (controllerInstance) {\n
 var
directiveRequire = this.getDirectiveRequire();\n
 var requiredControllers =
this.resolveRequire(directiveRequire);\n
 if (controllerInstance && this.directive.bindToController &&
isMap(directiveRequire)) {\n
 var requiredControllersMap_1 = requiredControllers;\n
Object.keys(requiredControllersMap_1).forEach(function (key) {\n
 controllerInstance[key] =
requiredControllersMap_1[key];\n
 });\n
}\n
return requiredControllers;\n
};\n
UpgradeHelper.prototype.compileHtml = function (html) {\n
 this.element.innerHTML = html;\n
return
this.$compile(this.element.childNodes);\n
};\n
UpgradeHelper.prototype.extractChildNodes = function ()
{\n
 var childNodes = [];\n
 var childNode;\n
 while (childNode = this.element.firstChild) {\n
 this.element.removeChild(childNode);\n
 childNodes.push(childNode);\n
 }\n
return
childNodes;\n
};\n
UpgradeHelper.prototype.getDirectiveRequire = function () {\n
 var require =
this.directive.require || (this.directive.controller && this.directive.name);\n
 if (isMap(require)) {\n
Object.keys(require).forEach(function (key) {\n
 var value = require[key];\n
 var match =
value.match(REQUIRE_PREFIX_RE);\n
 var name = value.substring(match[0].length);\n
 if
(!name) {\n
 require[key] = match[0] + key;\n
 }\n
 });\n
}\n
return
require;\n
};\n
UpgradeHelper.prototype.resolveRequire = function (require, controllerInstance) {\n
var _this = this;\n
 if (!require) {\n
 return null;\n
 }\n
 else if (Array.isArray(require)) {\n
 return require.map(function (req) { return _this.resolveRequire(req); });\n
 }\n
 else if (typeof
require === 'object') {\n
 var value_1 = {};\n
 Object.keys(require).forEach(function (key) { return
value_1[key] = _this.resolveRequire(require[key]); });\n
 return value_1;\n
 }\n
 else if (typeof
require === 'string') {\n
 var match = require.match(REQUIRE_PREFIX_RE);\n
 var inheritType
= match[1] || match[3];\n
 var name = require.substring(match[0].length);\n
 var isOptional =
!!match[2];\n
 var searchParents = !!inheritType;\n
 var startOnParent = inheritType === '^';\n
 var ctrlKey = controllerKey(name);\n
 var elem = startOnParent ? this.$element.parent() :
this.$element;\n
 var value = searchParents ? elem.inheritedData(ctrlKey) : elem.data(ctrlKey);\n
if (!value && !isOptional) {\n
 throw new Error("\nUnable to find required \"" + require + "\" in upgraded
directive \"" + this.name + "\".");\n
 }\n
 return value;\n
 }\n
 else {\n
 throw
new Error("\nUnrecognized 'require' syntax on upgraded directive \"" + this.name + "\": \"" + require);\n
 }\n
};\n
return UpgradeHelper;\n
}());\n
function getOrCall(property) {\n
 var args = [];\n
 for (var _i =
1; _i < arguments.length; _i++) {\n
 args[_i - 1] = arguments[_i];\n
 }\n
return isFunction(property) ?
property.apply(void 0, __spread(args)) : property;\n
}\n
// NOTE: Only works for `typeof T !== 'object'.\n
function isMap(value) {\n
 return value && !Array.isArray(value) && typeof value === 'object';\n
}\n
function notSupported(name, feature) {\n
 throw new Error("\nUpgraded directive \"" + name + "\" contains
unsupported feature: \"" + feature + "\".");\n
}\n
var CAMEL_CASE = /[A-Z]/g;\n
var
INITIAL_VALUE$1 = {\n
 __UNINITIALIZED__: true\n
};\n
var NOT_SUPPORTED =
'NOT_SUPPORTED';\n
var UpgradeNg1ComponentAdapterBuilder = /** @class */ (function () {\n
 function

```

```

UpgradeNg1ComponentAdapterBuilder(name) {\n this.name = name;\n this.inputs = [];\n this.inputsRename = [];\n this.outputs = [];\n this.outputsRename = [];\n this.propertyOutputs = [];\n this.checkProperties = [];\n this.propertyMap = {};\n this.directive = null;\n var selector = name.replace(CAMEL_CASE, function (all, next) { return '-' + next.toLowerCase(); });\n var self = this;\n // Note: There is a bug in TS 2.4 that prevents us from\n // inlining this into @Directive\n // TODO(tbosch): find or file a bug against TypeScript for this.\n var directive = { selector: selector, inputs: this.inputsRename, outputs: this.outputsRename };\n var MyClass = /** @class */ (function (_super) {\n __extends(MyClass, _super);\n function MyClass(scope, injector, elementRef) {\n return _super.call(this, new UpgradeHelper(injector, name, elementRef, self.directive || undefined), scope, self.template, self.inputs, self.outputs, self.propertyOutputs, self.checkProperties, self.propertyMap) || this;\n }\n return MyClass;\n })(UpgradeNg1ComponentAdapter);\n MyClass.decorators = [\n { type: core.Directive, args: [Object.assign({ jit: true }, directive),] }\n];\n MyClass.ctorParameters = function () { return [\n { type: undefined, decorators: [{ type: core.Inject, args: [$SCOPE,] }],\n { type: core.Injector },\n { type: core.ElementRef }\n]};\n this.type = MyClass;\n }\n UpgradeNg1ComponentAdapterBuilder.prototype.extractBindings = function () {\n var _this = this;\n var btcIsObject = typeof this.directive.bindToController === 'object';\n if (btcIsObject && Object.keys(this.directive.scope).length) {\n throw new Error("Binding definitions on scope and controller at the same time are not supported.");\n }\n var context = (btcIsObject ? this.directive.bindToController : this.directive.scope);\n if (typeof context === 'object') {\n Object.keys(context).forEach(function (propName) {\n var definition = context[propName];\n var bindingType = definition.charAt(0);\n var bindingOptions = definition.charAt(1);\n var attrName = definition.substring(bindingOptions === '?' ? 2 : 1) || propName;\n // QUESTION: What about `=*`? Ignore? Throw? Support?\n var inputName = "input_" + attrName;\n var inputNameRename = inputName + ":" + attrName;\n var outputName = "output_" + attrName;\n var outputNameRename = outputName + ":" + attrName;\n var outputNameRenameChange = outputNameRename + "Change";\n switch (bindingType) {\n case '@':\n _this.inputs.push(inputName);\n _this.inputsRename.push(inputNameRename);\n break;\n case '=':\n _this.inputs.push(inputName);\n _this.inputsRename.push(inputNameRename);\n _this.outputs.push(outputName);\n _this.outputsRename.push(outputNameRenameChange);\n _this.propertyMap[outputName] = propName;\n case '&':\n _this.outputs.push(outputName);\n _this.outputsRename.push(outputNameRename);\n _this.propertyMap[outputName] = propName;\n break;\n default:\n var json = JSON.stringify(context);\n throw new Error("Unexpected mapping '" + bindingType + "' in '" + json + "' in '" + _this.name + "' directive.");\n }\n });\n }\n }\n /**\n * Upgrade ng1 components into Angular.\n */\n UpgradeNg1ComponentAdapterBuilder.resolve = function (exportedComponents, $injector) {\n var promises = Object.keys(exportedComponents).map(function (name) {\n var exportedComponent = exportedComponents[name];\n exportedComponent.directive = UpgradeHelper.getDirective($injector, name);\n exportedComponent.extractBindings();\n return Promise\n .resolve(UpgradeHelper.getTemplate($injector, exportedComponent.directive, true))\n .then(function (template) { return exportedComponent.template = template; });\n });\n return Promise.all(promises);\n };\n return UpgradeNg1ComponentAdapterBuilder;\n }());\n var UpgradeNg1ComponentAdapter = /** @class */ (function () {\n function UpgradeNg1ComponentAdapter(helper, scope, template, inputs, outputs, propOuts, checkProperties, propertyMap)

```

```

{\n this.helper = helper;\n this.template = template;\n this.inputs = inputs;\n this.outputs
= outputs;\n this.propOuts = propOuts;\n this.checkProperties = checkProperties;\n
this.propertyMap = propertyMap;\n this.controllerInstance = null;\n this.destinationObj = null;\n
this.checkLastValues = [];\n this.$element = null;\n this.directive = helper.directive;\n
this.element = helper.element;\n this.$element = helper.$element;\n this.componentScope =
scope.$new(!this.directive.scope);\n var controllerType = this.directive.controller;\n if
(this.directive.bindToController && controllerType) {\n this.controllerInstance =
this.helper.buildController(controllerType, this.componentScope);\n this.destinationObj =
this.controllerInstance;\n }\n else {\n this.destinationObj = this.componentScope;\n
}\n for (var i = 0; i < inputs.length; i++) {\n this[inputs[i]] = null;\n }\n for (var j = 0; j
< outputs.length; j++) {\n var emitter = this[outputs[j]] = new core.EventEmitter();\n if
(this.propOuts.indexOf(outputs[j]) === -1) {\n this.setComponentProperty(outputs[j], (function (emitter)
{ return function (value) { return emitter.emit(value); }; })(emitter));\n }\n }\n for (var k = 0;
k < propOuts.length; k++) {\n this.checkLastValues.push(INITIAL_VALUE$1);\n }\n }\n
UpgradeNg1ComponentAdapter.prototype.ngOnInit = function () {\n // Collect contents, insert and compile
template\n var attachChildNodes = this.helper.prepareTransclusion();\n var linkFn =
this.helper.compileTemplate(this.template);\n // Instantiate controller (if not already done so)\n var
controllerType = this.directive.controller;\n var bindToController = this.directive.bindToController;\n
if (controllerType && !bindToController) {\n this.controllerInstance =
this.helper.buildController(controllerType, this.componentScope);\n }\n // Require other controllers\n
 var requiredControllers = this.helper.resolveAndBindRequiredControllers(this.controllerInstance);\n //
Hook: $onInit\n if (this.controllerInstance && isFunction(this.controllerInstance.$onInit)) {\n
this.controllerInstance.$onInit();\n }\n // Linking\n var link = this.directive.link;\n var
preLink = typeof link == 'object' && link.pre;\n var postLink = typeof link == 'object' ? link.post : link;\n
 var attrs = NOT_SUPPORTED;\n var transcludeFn = NOT_SUPPORTED;\n if (preLink) {\n
preLink(this.componentScope, this.$element, attrs, requiredControllers, transcludeFn);\n }\n
linkFn(this.componentScope, null, { parentBoundTranscludeFn: attachChildNodes });\n if (postLink) {\n
postLink(this.componentScope, this.$element, attrs, requiredControllers, transcludeFn);\n }\n //
Hook: $postLink\n if (this.controllerInstance && isFunction(this.controllerInstance.$postLink)) {\n
this.controllerInstance.$postLink();\n }\n };\n
UpgradeNg1ComponentAdapter.prototype.ngOnChanges = function (changes) {\n var _this = this;\n
var ng1Changes = {};\n Object.keys(changes).forEach(function (name) {\n var change =
changes[name];\n _this.setComponentProperty(name, change.currentValue);\n
ng1Changes[_this.propertyMap[name]] = change;\n });\n if
(isFunction(this.destinationObj.$onChanges)) {\n this.destinationObj.$onChanges(ng1Changes);\n
}\n };\n UpgradeNg1ComponentAdapter.prototype.ngDoCheck = function () {\n var _this = this;\n
 var destinationObj = this.destinationObj;\n var lastValues = this.checkLastValues;\n var
checkProperties = this.checkProperties;\n var propOuts = this.propOuts;\n
checkProperties.forEach(function (propName, i) {\n var value = destinationObj[propName];\n var
last = lastValues[i];\n if (!strictEquals(last, value)) {\n var eventEmitter = _this[propOuts[i]];\n
eventEmitter.emit(lastValues[i] = value);\n }\n });\n if (this.controllerInstance &&
isFunction(this.controllerInstance.$doCheck)) {\n this.controllerInstance.$doCheck();\n }\n };\n
 UpgradeNg1ComponentAdapter.prototype.ngOnDestroy = function () {\n
this.helper.onDestroy(this.componentScope, this.controllerInstance);\n };\n
UpgradeNg1ComponentAdapter.prototype.setComponentProperty = function (name, value) {\n
this.destinationObj[this.propertyMap[name]] = value;\n };\n return UpgradeNg1ComponentAdapter;\n
}());\n UpgradeNg1ComponentAdapter.decorators = [\n { type: core.Directive }\n];\n
UpgradeNg1ComponentAdapter.ctorParameters = function () { return [\n { type: UpgradeHelper },\n {

```

```

type: undefined },\n { type: String },\n { type: Array },\n { type: Array },\n { type: Array },\n { type: Array },\n { type: undefined } }\n];\n\n var upgradeCount = 0;\n /**\n * Use `UpgradeAdapter`

to allow AngularJS and Angular to coexist in a single application.\n * The `UpgradeAdapter` allows:\n * 1. creation of Angular component from AngularJS component directive\n * (See [UpgradeAdapter#upgradeNg1Component()])\n * 2. creation of AngularJS directive from Angular component.\n * (See [UpgradeAdapter#downgradeNg2Component()])\n * 3. Bootstrapping of a hybrid Angular application

which contains both of the frameworks\n * coexisting in a single application.\n * @usageNotes\n * ### Mental Model\n * When reasoning about how a hybrid application works it is useful to have a mental

model which\n * describes what is happening and explains what is happening at the lowest level.\n * 1. There are two independent frameworks running in a single application, each framework treats\n * the other as a black box.\n * 2. Each DOM element on the page is owned exactly by one framework. Whichever framework\n * instantiated the element is the owner. Each framework only updates/interacts with its own\n * DOM elements and ignores others.\n * 3. AngularJS directives always execute inside AngularJS framework codebase

regardless of\n * where they are instantiated.\n * 4. Angular components always execute inside Angular

framework codebase regardless of\n * where they are instantiated.\n * 5. An AngularJS component can be

upgraded to an Angular component. This creates an\n * Angular directive, which bootstraps the AngularJS

component directive in that location.\n * 6. An Angular component can be downgraded to an AngularJS

component directive. This creates\n * an AngularJS directive, which bootstraps the Angular component in that

location.\n * 7. Whenever an adapter component is instantiated the host element is owned by the framework\n * doing the instantiation. The other framework then instantiates and owns the view for that\n * component. This implies that component bindings will always follow the semantics of the\n * instantiation framework. The syntax is always that of Angular syntax.\n * 8. AngularJS is always bootstrapped first and owns the bottom most

view.\n * 9. The new application is running in Angular zone, and therefore it no longer needs calls to\n * `$apply()`.\n * ### Example\n * ```\n * const adapter = new UpgradeAdapter(forwardRef(() =>

MyNg2Module), myCompilerOptions);\n * const module = angular.module('myExample', []);\n * module.directive('ng2Comp', adapter.downgradeNg2Component(Ng2Component));\n * module.directive('ng1Hello', function() {\n * return {\n * scope: { title: '=' },\n * template: 'ng1[Hello

{{title}}]()\n * };\n * });\n * @Component({\n * selector:

'ng2-comp',\n * inputs: ['name'],\n * template: 'ng2[<ng1-hello [title]="name">transclude</ng1-

hello>](<ng-content></ng-content>)',\n * directives:\n * })\n * class Ng2Component {\n * }\n * @NgModule({\n * declarations: [Ng2Component, adapter.upgradeNg1Component('ng1Hello')],\n * imports:

[BrowserModule]\n * })\n * class MyNg2Module {\n * }\n * document.body.innerHTML = '<ng2-

comp name="World">project</ng2-comp>';\n * adapter.bootstrap(document.body,

['myExample']).ready(function() {\n * expect(document.body.textContent).toEqual(\n * 'ng2[ng1[Hello

World!](transclude)](project)');\n * });\n * ```\n * @deprecated Deprecated since v5. Use

`upgrade/static` instead, which also supports\n * [Ahead-of-Time compilation](guide/aot-compiler).\n * @publicApi\n * ^\n * var UpgradeAdapter = /** @class */ (function () {\n * function

UpgradeAdapter(ng2AppModule, compilerOptions) {\n * this.ng2AppModule = ng2AppModule;\n * this.compilerOptions = compilerOptions;\n * this.idPrefix = `NG2_UPGRADE_${` + upgradeCount++ +

`_`};\n * this.downgradedComponents = [];\n * /**\n * * An internal map of ng1 components which

need to up upgraded to ng2.\n * * We can't upgrade until injector is instantiated and we can retrieve

the component metadata.\n * * For this reason we keep a list of components to upgrade until ng1 injector is

bootstrapped.\n * * @internal\n * * ^\n * * this.ng1ComponentsToBeUpgraded = {\n * * this.upgradedProviders = [];\n * * this.moduleRef = null;\n * * if (!ng2AppModule) {\n * * throw new

Error('UpgradeAdapter cannot be instantiated without an NgModule of the Angular app.);\n * * }\n * * }\n * * Allows Angular Component to be used from AngularJS.\n * * Use

`downgradeNg2Component` to create an AngularJS Directive Definition Factory from\n * * Angular

Component. The adapter will bootstrap Angular component from within the\n * * AngularJS template.\n * * }\n * }

```

```

 * @usageNotes\n * ### Mental Model\n * \n * 1. The component is instantiated by being listed in
AngularJS template. This means that the\n * host element is controlled by AngularJS, but the component's
view will be controlled by\n * Angular.\n * 2. Even though the component is instantiated in AngularJS,
it will be using Angular\n * syntax. This has to be done, this way because we must follow Angular
components do not\n * declare how the attributes should be interpreted.\n * 3. `ng-model` is controlled
by AngularJS and communicates with the downgraded Angular component\n * by way of the
`ControlValueAccessor` interface from @angular/forms. Only components that\n * implement this interface
are eligible.\n * \n * ### Supported Features\n * \n * - Bindings:\n * - Attribute: `

```

```

adapter.bootstrap(document.body, ['myExample']).ready(function() {
 *
 expect(document.body.textContent).toEqual("ng2 template: Hello world! - text");
 * });
 *
 * UpgradeAdapter.prototype.upgradeNg1Component = function (name) {
 * if
 * (this.ng1ComponentsToBeUpgraded.hasOwnProperty(name)) {
 * return
 * this.ng1ComponentsToBeUpgraded[name].type;
 * }
 * else {
 * return
 * (this.ng1ComponentsToBeUpgraded[name] = new UpgradeNg1ComponentAdapterBuilder(name))
 * .type;
 * }
 * };
 *
 * Registers the adapter's AngularJS upgrade module for unit testing in
 * AngularJS.
 * Use this instead of `angular.mock.module()` to load the upgrade module into
 * the
 * AngularJS testing injector.
 *
 * @usageNotes
 * ### Example
 *
 *
 * const upgradeAdapter = new UpgradeAdapter(MyNg2Module);
 *
 * // configure the adapter with
 * upgrade/downgrade components and services
 *
 * upgradeAdapter.downgradeNg2Component(MyComponent);
 *
 * let upgradeAdapterRef:
 * UpgradeAdapterRef;
 *
 * let $compile, $rootScope;
 *
 * // We must register the adapter before any
 * calls to `inject()`
 *
 * beforeEach(() => {
 * * upgradeAdapterRef =
 * upgradeAdapter.registerForNg1Tests(['heroApp']);
 * * });
 * *
 * * beforeEach(inject((_ $compile_,
 * * _ $rootScope_) => {
 * * $compile = _ $compile_;
 * * $rootScope = _ $rootScope_;
 * * });
 *
 * * it("says hello", (done) => {
 * * upgradeAdapterRef.ready(() => {
 * * const element =
 * $compile("<my-component></my-component>")($rootScope);
 * * $rootScope.$apply();
 *
 * * expect(element.html()).toContain("Hello World");
 * * done();
 * * });
 * * });
 *
 * *
 * * @param modules any AngularJS modules that the upgrade module should depend upon
 *
 * * @returns an `UpgradeAdapterRef`, which lets you register a `ready()` callback to
 * * run assertions once the
 * * Angular components are ready to test through AngularJS.
 *
 * *
 * * UpgradeAdapter.prototype.registerForNg1Tests = function (modules) {
 * * var _this = this;
 * * var
 * * windowNgMock = window['angular'].mock;
 * * if (!windowNgMock || !windowNgMock.module) {
 * *
 * * throw new Error('Failed to find `angular.mock.module`');
 * * }
 * * this.declareNg1Module(modules);
 * *
 * * windowNgMock.module(this.ng1Module.name);
 * * var upgrade = new UpgradeAdapterRef();
 *
 * * this.ng2BootstrapDeferred.promise.then(function (ng1Injector) {
 * *
 * * upgrade._bootstrapDone(_this.moduleRef, ng1Injector);
 * * }, onError);
 * * return upgrade;
 * * });
 *
 * *
 * * Bootstrap a hybrid AngularJS / Angular application.
 * *
 * * This `bootstrap` method is a
 * * direct replacement (takes same arguments) for AngularJS
 * *
 * *
 * * [`bootstrap`](https://docs.angularjs.org/api/ng/function/angular.bootstrap) method. Unlike
 * * AngularJS, this
 * * bootstrap is asynchronous.
 * *
 * * @usageNotes
 * * ### Example
 * *
 * *
 * * const
 * * adapter = new UpgradeAdapter(MyNg2Module);
 * * const module = angular.module('myExample', []);
 * *
 * * module.directive('ng2', adapter.downgradeNg2Component(Ng2));
 * *
 * * module.directive('ng1',
 * * function() {
 * * * return {
 * * * scope: { title: '=' },
 * * * template: 'ng1[Hello {{ title }}!]<span ng-
 * * * transclude>'
 * * };
 * * *
 * * * @Component({
 * * * selector: 'ng2',
 * * * inputs: ['name'],
 * * * template: 'ng2[<ng1 [title]="name">transclude</ng1>]<ng-content></ng-
 * * * content>'
 * * })
 * * * class Ng2 {
 * * * }
 * * * @NgModule({
 * * * declarations: [Ng2,
 * * * adapter.upgradeNg1Component('ng1')],
 * * * imports: [BrowserModule]
 * * })
 * * * class
 * * * MyNg2Module {}
 * *
 * * * document.body.innerHTML = '<ng2 name="World">project</ng2>';
 * *
 * * * adapter.bootstrap(document.body, ['myExample']).ready(function() {
 * * *
 * * * expect(document.body.textContent).toEqual("
 * * * ng2[ng1[Hello World!]<transclude>](project)");
 * * *
 * * *
 * * * UpgradeAdapter.prototype.bootstrap = function (element$1, modules, config) {
 * * * var _this = this;
 * * * this.declareNg1Module(modules);
 * * * var upgrade = new UpgradeAdapterRef();
 *
 * * * // Make sure resumeBootstrap() only exists if the current bootstrap is deferred
 * * * var windowAngular =
 * * * window /** TODO #???? */['angular'];
 * * * windowAngular.resumeBootstrap = undefined;
 *
 * * * this.ngZone.run(function () {
 * * * bootstrap(element$1, [_this.ng1Module.name], config);
 * * * });
 * *
 * * * var ng1BootstrapPromise = new Promise(function (resolve) {
 * * * if (windowAngular.resumeBootstrap) {
 *

```

```

var originalResumeBootstrap_1 = windowAngular.resumeBootstrap;\n
windowAngular.resumeBootstrap = function () {\n
originalResumeBootstrap_1;\n
 resolve();\n
 return r;\n
};\n
 }\n
 else {\n
resolve();\n
 }\n
});\n
 Promise.all([this.ng2BootstrapDeferred.promise,\nng1BootstrapPromise]).then(function (_a) {\n
 var _b = __read(_a, 1), ng1Injector = _b[0];\n
 element(element$1).data(controllerKey(INJECTOR_KEY), _this.moduleRef.injector);\n
 _this.moduleRef.injector.get(core.NgZone).run(function () {\n
upgrade._bootstrapDone(_this.moduleRef, ng1Injector);\n
 });\n
 }, onError);\n
 return\nupgrade;\n
});\n
 /**\n
 * Allows AngularJS service to be accessible from Angular.\n
 *\n
 * @usageNotes\n
 * ### Example\n
 *\n
 * ```\n
 * class Login { ... }\n
 * class Server { ... }\n
 *\n
 * @Injectable()\n
 * class Example {\n
 * constructor(@Inject('server') server, login: Login) {\n
 * ...\n
 * }\n
 * }\n
 *\n
 * const module = angular.module('myExample', []);\n
 * module.service('server', Server);\n
 * module.service('login', Login);\n
 *\n
 * const adapter = new\nUpgradeAdapter(MyNg2Module);\n
 * adapter.upgradeNg1Provider('server');\n
 *\n
 * adapter.upgradeNg1Provider('login', {asToken: Login});\n
 *\n
 * adapter.bootstrap(document.body,\n['myExample']).ready((ref) => {\n
 * const example: Example = ref.ng2Injector.get(Example);\n
 * });\n
 *\n
 * ```\n
 */\n
 UpgradeAdapter.prototype.upgradeNg1Provider = function (name, options) {\n
 var token = options && options.asToken || name;\n
 this.upgradedProviders.push({\n
 provide:\n
token,\n
 useFactory: function ($injector) { return $injector.get(name); },\n
 deps: [$INJECTOR]\n
});\n
 });\n
 /**\n
 * Allows Angular service to be accessible from AngularJS.\n
 *\n
 * @usageNotes\n
 * ### Example\n
 *\n
 * ```\n
 * class Example {\n
 * }\n
 *\n
 * const adapter = new UpgradeAdapter(MyNg2Module);\n
 * const module =\nangular.module('myExample', []);\n
 * module.factory('example', adapter.downgradeNg2Provider(Example));\n
 *\n
 * adapter.bootstrap(document.body, ['myExample']).ready((ref) => {\n
 * const example: Example\n= ref.ng1Injector.get('example');\n
 * });\n
 *\n
 * ```\n
 */\n
 UpgradeAdapter.prototype.downgradeNg2Provider = function (token) {\n
 return\ndowngradeInjectable(token);\n
 });\n
 /**\n
 * Declare the AngularJS upgrade module for this adapter\n
 * without bootstrapping the whole\n
 * hybrid application.\n
 *\n
 * This method is automatically called\n
 * by `bootstrap()` and `registerForNg1Tests()`.\n
 *\n
 * @param modules The AngularJS modules that this\n
 * upgrade module should depend upon.\n
 * @returns The AngularJS upgrade module that is declared by this\n
 * method\n
 * @usageNotes\n
 * ### Example\n
 *\n
 * ```\n
 * const upgradeAdapter =\nnew UpgradeAdapter(MyNg2Module);\n
 * upgradeAdapter.declareNg1Module(['heroApp']);\n
 * ```\n
 */\n
 UpgradeAdapter.prototype.declareNg1Module = function (modules) {\n
 var _this = this;\n
 if\n(modules === void 0) { modules = []; }\n
 var delayApplyExps = [];\n
 var original$applyFn;\n
 var rootScopePrototype;\n
 var rootScope;\n
 var upgradeAdapter = this;\n
 var ng1Module =\nthis.ng1Module = module_(this.idPrefix, modules);\n
 var platformRef =\nplatformBrowserDynamic.platformBrowserDynamic();\n
 this.ngZone = new core.NgZone({\nenableLongStackTrace: Zone.hasOwnProperty('longStackTraceZoneSpec') });\n
 this.ng2BootstrapDeferred =\nnew Deferred();\n
 ng1Module.constant(UPGRADE_APP_TYPE_KEY, 1 /* Dynamic */)\n
.factory(INJECTOR_KEY, function () { return _this.moduleRef.injector.get(core.Injector); })\n
.factory(LAZY_MODULE_REF, [INJECTOR_KEY, function (injector) { return ({ injector: injector }); }])\n
.constant(NG_ZONE_KEY, this.ngZone)\n
.factory(COMPILER_KEY, function () { return\n_this.moduleRef.injector.get(core.Compiler); })\n
.config([\n
 '$provide', '$injector',\n
function (provide, ng1Injector) {\n
 provide.decorator($ROOT_SCOPE, [\n
 '$delegate',\n
function (rootScopeDelegate) {\n
 // Capture the root apply so that we can delay first\n
call to $apply until we\n
 // bootstrap Angular and then we replay and restore the $apply.\n
 rootScopePrototype = rootScopeDelegate.constructor.prototype;\n
 if

```



```

(rootScopePrototype.hasOwnProperty('$apply')) {\n
 original$applyFn =\n
 rootScopePrototype.$apply;\n
 rootScopePrototype.$apply = function (exp) { return\n
 delayApplyExps.push(exp); };\n
 }\n
 else {\n
 throw new\n
 Error('Failed to find \\'$apply\\' on \\'$rootScope\\');\n
 }\n
 return rootScope =\n
 rootScopeDelegate;\n
 }\n
);\n
 if (ng1Injector.has($$TESTABILITY)) {\n
 provide.decorator($$TESTABILITY, [\n
 '$delegate',\n
 function\n
 (testabilityDelegate) {\n
 var originalWhenStable = testabilityDelegate.whenStable;\n
 // Cannot use arrow function below because we need the context\n
 var newWhenStable =\n
 function (callback) {\n
 originalWhenStable.call(this, function () {\n
 var ng2Testability = upgradeAdapter.moduleRef.injector.get(core.Testability);\n
 if\n
 (ng2Testability.isStable()) {\n
 callback.apply(this, arguments);\n
 }\n
 else {\n
 ng2Testability.whenStable(newWhenStable.bind(this, callback));\n
 }\n
 });\n
 }\n
 testabilityDelegate.whenStable = newWhenStable;\n
 return testabilityDelegate;\n
 }\n
);\n
 }\n
);\n
 }\n
 ng1Module.run([\n
 '$injector', '$rootScope',\n
 function (ng1Injector, rootScope) {\n
 UpgradeNg1ComponentAdapterBuilder.resolve(_this.ng1ComponentsToBeUpgraded, ng1Injector)\n
 .then(function () {\n
 // Note: There is a bug in TS 2.4 that prevents us from\n
 // inlining\n
 this into @NgModule\n
 // TODO(tbosch): find or file a bug against TypeScript for this.\n
 var ngModule = {\n
 providers: [\n
 { provide: $INJECTOR, useFactory:\n
 function () { return ng1Injector; } },\n
 { provide: $COMPILE, useFactory: function () { return\n
 ng1Injector.get($COMPILE); } },\n
 _this.upgradedProviders\n
],\n
 imports: [core.resolveForwardRef(_this.ng2AppModule)],\n
 entryComponents:\n
 _this.downgradedComponents\n
];\n
 // At this point we have ng1 injector and we have\n
 prepared\n
 // ng1 components to be upgraded, we now can bootstrap ng2.\n
 var\n
 DynamicNgUpgradeModule = /** @class */ (function () {\n
 function\n
 DynamicNgUpgradeModule() {\n
 }\n
 DynamicNgUpgradeModule.prototype.ngDoBootstrap = function () { };\n
 return\n
 DynamicNgUpgradeModule;\n
 }());\n
 DynamicNgUpgradeModule.decorators = [\n
 { type: core.NgModule, args: [Object.assign({ jit: true }, ngModule),] }\n
];\n
 DynamicNgUpgradeModule.ctorParameters = function () { return []; };\n
 platformRef\n
 .bootstrapModule(DynamicNgUpgradeModule, [_this.compilerOptions, { ngZone: _this.ngZone }])\n
 .then(function (ref) {\n
 _this.moduleRef = ref;\n
 _this.ngZone.run(function ()\n
 {\n
 if (rootScopePrototype) {\n
 rootScopePrototype.$apply =\n
 original$applyFn; // restore original $apply\n
 while (delayApplyExps.length) {\n
 rootScope.$apply(delayApplyExps.shift());\n
 }\n
 }\n
 rootScopePrototype = null;\n
 }\n
 });\n
 });\n
 .then(function () { return _this.ng2BootstrapDeferred.resolve(ng1Injector); }, onError)\n
 .then(function () {\n
 var subscription = _this.ngZone.onMicrotaskEmpty.subscribe({\n
 next: function () {\n
 if (rootScope.$$phase) {\n
 if\n
 (core.isDevMode()) {\n
 console.warn('A digest was triggered while one was already in\n
 progress. This may mean that something is triggering digests outside the Angular zone.);\n
 }\n
 return rootScope.$evalAsync(function () { });\n
 }\n
 }\n
 return rootScope.$digest();\n
 }\n
 });\n
 });\n
 rootScope.$on('$destroy', function () {\n
 subscription.unsubscribe();\n
 });\n
 });\n
 .catch(function (e) { return _this.ng2BootstrapDeferred.reject(e); });\n
 });\n
 });\n
 return ng1Module;\n
 });\n
 return UpgradeAdapter;\n
 }());\n
 /**\n
 * Synchronous promise-like object to wrap parent injectors.\n
 * * to preserve the synchronous nature of AngularJS's

```

```

$compile.\n *\n var ParentInjectorPromise$1 = /** @class */ (function () {\n function
ParentInjectorPromise(element) {\n this.element = element;\n this.callbacks = [];\n // store the
promise on the element\n element.data(controllerKey(INJECTOR_KEY), this);\n }\n ParentInjectorPromise.prototype.then = function (callback) {\n if (this.injector) {\n callback(this.injector);\n }\n else {\n this.callbacks.push(callback);\n }\n };\n ParentInjectorPromise.prototype.resolve = function (injector) {\n this.injector = injector;\n // reset the
element data to point to the real injector\n this.element.data(controllerKey(INJECTOR_KEY), injector);\n // clean out the element to prevent memory leaks\n this.element = null;\n // run all the queued
callbacks\n this.callbacks.forEach(function (callback) { return callback(injector); });\n this.callbacks.length = 0;\n };\n return ParentInjectorPromise;\n }());\n /**\n * Use
`UpgradeAdapterRef` to control a hybrid AngularJS / Angular application.\n *\n * @deprecated Deprecated
since v5. Use `upgrade/static` instead, which also supports\n * [Ahead-of-Time compilation](guide/aot-
compiler).\n * @publicApi\n */\n var UpgradeAdapterRef = /** @class */ (function () {\n function
UpgradeAdapterRef() {\n /* @internal */\n this._readyFn = null;\n this.ng1RootScope = null;\n this.ng1Injector = null;\n this.ng2ModuleRef = null;\n this.ng2Injector = null;\n }\n /*
@internal */\n UpgradeAdapterRef.prototype._bootstrapDone = function (ngModuleRef, ng1Injector) {\n this.ng2ModuleRef = ngModuleRef;\n this.ng2Injector = ngModuleRef.injector;\n this.ng1Injector =
ng1Injector;\n this.ng1RootScope = ng1Injector.get($ROOT_SCOPE);\n this._readyFn &&
this._readyFn(this);\n };\n /**\n * Register a callback function which is notified upon successful
hybrid AngularJS / Angular\n * application has been bootstrapped.\n *\n * The `ready` callback
function is invoked inside the Angular zone, therefore it does not\n * require a call to `$apply()`. \n */\n UpgradeAdapterRef.prototype.ready = function (fn) {\n this._readyFn = fn;\n };\n /**\n *
Dispose of running hybrid AngularJS / Angular application.\n */\n UpgradeAdapterRef.prototype.dispose
= function () {\n this.ng1Injector.get($ROOT_SCOPE).$destroy();\n this.ng2ModuleRef.destroy();\n };\n return UpgradeAdapterRef;\n }());\n /**\n * @license\n * Copyright Google LLC All Rights
Reserved.\n *\n * Use of this source code is governed by an MIT-style license that can be\n * found in the
LICENSE file at https://angular.io/license\n */\n // This file only re-exports content of the `src` folder. Keep it
that way.\n /**\n * @license\n * Copyright Google LLC All Rights Reserved.\n *\n * Use of this
source code is governed by an MIT-style license that can be\n * found in the LICENSE file at
https://angular.io/license\n */\n // Generated bundle index. Do not edit.\n exports.UpgradeAdapter = UpgradeAdapter;\n exports.UpgradeAdapterRef = UpgradeAdapterRef;\n exports.VERSION = VERSION;\n Object.defineProperty(exports, '__esModule', { value: true });\n //\n sourceMappingURL=upgrade.umd.js.map\n"}

```

Found in path(s):

```

* /opt/cola/permits/1358260707_1657134860.914432/0/upgrade-11-0-2-
tgz/package/bundles/upgrade.umd.min.js.map

```

# 1.408 checker-qual 3.5.0

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* /opt/cola/permits/1258847893_1643112599.64/0/jandex-2-4-2-final-sources-jar/org/jboss/jandex/DotName.java
* /opt/cola/permits/1258847893_1643112599.64/0/jandex-2-4-2-final-sources-jar/org/jboss/jandex/Type.java
* /opt/cola/permits/1258847893_1643112599.64/0/jandex-2-4-2-final-sources-jar/org/jboss/jandex/FieldInternal.java
* /opt/cola/permits/1258847893_1643112599.64/0/jandex-2-4-2-final-sources-
```

jar/org/jboss/jandex/UnsupportedVersion.java  
\* /opt/cola/permits/1258847893\_1643112599.64/0/jandex-2-4-2-final-sources-  
jar/org/jboss/jandex/AnnotationTarget.java  
\* /opt/cola/permits/1258847893\_1643112599.64/0/jandex-2-4-2-final-sources-jar/org/jboss/jandex/NameTable.java  
\* /opt/cola/permits/1258847893\_1643112599.64/0/jandex-2-4-2-final-sources-jar/org/jboss/jandex/JarIndexer.java  
\* /opt/cola/permits/1258847893\_1643112599.64/0/jandex-2-4-2-final-sources-  
jar/org/jboss/jandex/AnnotationValue.java  
\* /opt/cola/permits/1258847893\_1643112599.64/0/jandex-2-4-2-final-sources-jar/org/jboss/jandex/IndexView.java  
\* /opt/cola/permits/1258847893\_1643112599.64/0/jandex-2-4-2-final-sources-  
jar/org/jboss/jandex/AnnotationInstance.java  
\* /opt/cola/permits/1258847893\_1643112599.64/0/jandex-2-4-2-final-sources-  
jar/org/jboss/jandex/CompositeIndex.java  
\* /opt/cola/permits/1258847893\_1643112599.64/0/jandex-2-4-2-final-sources-jar/org/jboss/jandex/Main.java  
\* /opt/cola/permits/1258847893\_1643112599.64/0/jandex-2-4-2-final-sources-jar/org/jboss/jandex/Result.java  
\* /opt/cola/permits/1258847893\_1643112599.64/0/jandex-2-4-2-final-sources-jar/org/jboss/jandex/IndexWriter.java  
\* /opt/cola/permits/1258847893\_1643112599.64/0/jandex-2-4-2-final-sources-  
jar/org/jboss/jandex/JandexAntTask.java  
\* /opt/cola/permits/1258847893\_1643112599.64/0/jandex-2-4-2-final-sources-jar/org/jboss/jandex/ClassInfo.java  
\* /opt/cola/permits/1258847893\_1643112599.64/0/jandex-2-4-2-final-sources-  
jar/org/jboss/jandex/IndexReader.java  
\* /opt/cola/permits/1258847893\_1643112599.64/0/jandex-2-4-2-final-sources-  
jar/org/jboss/jandex/IndexReaderV1.java  
\* /opt/cola/permits/1258847893\_1643112599.64/0/jandex-2-4-2-final-sources-jar/org/jboss/jandex/ClassType.java  
\* /opt/cola/permits/1258847893\_1643112599.64/0/jandex-2-4-2-final-sources-  
jar/org/jboss/jandex/PackedDataOutputStream.java  
\* /opt/cola/permits/1258847893\_1643112599.64/0/jandex-2-4-2-final-sources-jar/org/jboss/jandex/Index.java  
\* /opt/cola/permits/1258847893\_1643112599.64/0/jandex-2-4-2-final-sources-  
jar/org/jboss/jandex/MethodParameterInfo.java  
\* /opt/cola/permits/1258847893\_1643112599.64/0/jandex-2-4-2-final-sources-jar/org/jboss/jandex/FieldInfo.java  
\* /opt/cola/permits/1258847893\_1643112599.64/0/jandex-2-4-2-final-sources-  
jar/org/jboss/jandex/IndexWriterV1.java  
\* /opt/cola/permits/1258847893\_1643112599.64/0/jandex-2-4-2-final-sources-  
jar/org/jboss/jandex/PackedDataInputStream.java  
\* /opt/cola/permits/1258847893\_1643112599.64/0/jandex-2-4-2-final-sources-  
jar/org/jboss/jandex/PrimitiveType.java  
\* /opt/cola/permits/1258847893\_1643112599.64/0/jandex-2-4-2-final-sources-  
jar/org/jboss/jandex/StrongInternPool.java  
\* /opt/cola/permits/1258847893\_1643112599.64/0/jandex-2-4-2-final-sources-jar/org/jboss/jandex/Indexer.java  
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\* /opt/cola/permits/1258847893\_1643112599.64/0/jandex-2-4-2-final-sources-jar/org/jboss/jandex/RecordComponentInfo.java  
\* /opt/cola/permits/1258847893\_1643112599.64/0/jandex-2-4-2-final-sources-jar/org/jboss/jandex/RecordComponentInternal.java  
\* /opt/cola/permits/1258847893\_1643112599.64/0/jandex-2-4-2-final-sources-jar/org/jboss/jandex/RecordComponentInfoGenerator.java

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\* /opt/cola/permits/1258847893\_1643112599.64/0/jandex-2-4-2-final-sources-jar/org/jboss/jandex/IndexWriterV2.java  
\* /opt/cola/permits/1258847893\_1643112599.64/0/jandex-2-4-2-final-sources-jar/org/jboss/jandex/VoidType.java  
\* /opt/cola/permits/1258847893\_1643112599.64/0/jandex-2-4-2-final-sources-jar/org/jboss/jandex/MethodInfoGenerator.java  
\* /opt/cola/permits/1258847893\_1643112599.64/0/jandex-2-4-2-final-sources-jar/org/jboss/jandex/MethodParameterTypeTarget.java

\* /opt/cola/permits/1258847893\_1643112599.64/0/jandex-2-4-2-final-sources-  
 jar/org/jboss/jandex/FieldInfoGenerator.java  
 \* /opt/cola/permits/1258847893\_1643112599.64/0/jandex-2-4-2-final-sources-  
 jar/org/jboss/jandex/ThrowsTypeTarget.java  
 \* /opt/cola/permits/1258847893\_1643112599.64/0/jandex-2-4-2-final-sources-jar/org/jboss/jandex/ArrayType.java  
 \* /opt/cola/permits/1258847893\_1643112599.64/0/jandex-2-4-2-final-sources-  
 jar/org/jboss/jandex/WildcardType.java  
 \* /opt/cola/permits/1258847893\_1643112599.64/0/jandex-2-4-2-final-sources-  
 jar/org/jboss/jandex/ParameterizedType.java  
 \* /opt/cola/permits/1258847893\_1643112599.64/0/jandex-2-4-2-final-sources-  
 jar/org/jboss/jandex/TypeVariable.java  
 \* /opt/cola/permits/1258847893\_1643112599.64/0/jandex-2-4-2-final-sources-  
 jar/org/jboss/jandex/TypeParameterTypeTarget.java  
 \* /opt/cola/permits/1258847893\_1643112599.64/0/jandex-2-4-2-final-sources-  
 jar/org/jboss/jandex/GenericSignatureParser.java  
 \* /opt/cola/permits/1258847893\_1643112599.64/0/jandex-2-4-2-final-sources-  
 jar/org/jboss/jandex/MethodInternal.java  
 \* /opt/cola/permits/1258847893\_1643112599.64/0/jandex-2-4-2-final-sources-  
 jar/org/jboss/jandex/IndexWriterImpl.java  
 \* /opt/cola/permits/1258847893\_1643112599.64/0/jandex-2-4-2-final-sources-jar/org/jboss/jandex/TypeTarget.java  
 \* /opt/cola/permits/1258847893\_1643112599.64/0/jandex-2-4-2-final-sources-  
 jar/org/jboss/jandex/IndexReaderImpl.java  
 \* /opt/cola/permits/1258847893\_1643112599.64/0/jandex-2-4-2-final-sources-  
 jar/org/jboss/jandex/ClassExtendsTypeTarget.java  
 \* /opt/cola/permits/1258847893\_1643112599.64/0/jandex-2-4-2-final-sources-  
 jar/org/jboss/jandex/UnresolvedTypeVariable.java  
 \* /opt/cola/permits/1258847893\_1643112599.64/0/jandex-2-4-2-final-sources-  
 jar/org/jboss/jandex/TypeParameterBoundTypeTarget.java  
 \* /opt/cola/permits/1258847893\_1643112599.64/0/jandex-2-4-2-final-sources-  
 jar/org/jboss/jandex/AnnotationTargetFilterCollection.java  
 \* /opt/cola/permits/1258847893\_1643112599.64/0/jandex-2-4-2-final-sources-  
 jar/org/jboss/jandex/PositionBasedTypeTarget.java  
 \* /opt/cola/permits/1258847893\_1643112599.64/0/jandex-2-4-2-final-sources-jar/org/jboss/jandex/Utils.java  
 \* /opt/cola/permits/1258847893\_1643112599.64/0/jandex-2-4-2-final-sources-  
 jar/org/jboss/jandex/EmptyTypeTarget.java  
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\* /opt/cola/permits/1258847893\_1643112599.64/0/jandex-2-4-2-final-sources-jar/org/jboss/jandex/Modifiers.java

## 1.410 angular 1.5.9

### 1.410.1 Available under license :

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## 1.411 codelyzer 6.0.0

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## 1.412 tcpdump 4.9.2-0ubuntu0.14.04.1

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It was downloaded from <http://www.tcpcdump.org/>

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jar/com/lexicalscope/jewel/cli/ValidationFailureUnexpectedTrailingValue.java
* /opt/cola/permits/1136415751_1613765238.7/0/jewelcli-0-8-2-sources-
jar/com/lexicalscope/jewel/cli/AbstractConvertMethodToOptionSpecification.java
* /opt/cola/permits/1136415751_1613765238.7/0/jewelcli-0-8-2-sources-
jar/com/lexicalscope/jewel/cli/ValidationFailureWrongNumberOfValues.java
* /opt/cola/permits/1136415751_1613765238.7/0/jewelcli-0-8-2-sources-
jar/uk/co/flamingpenguin/jewel/cli/OptionHelpMessage.java
* /opt/cola/permits/1136415751_1613765238.7/0/jewelcli-0-8-2-sources-
jar/com/lexicalscope/jewel/cli/ArgumentValidationExceptionFactory.java
* /opt/cola/permits/1136415751_1613765238.7/0/jewelcli-0-8-2-sources-
jar/com/lexicalscope/jewel/cli/ValidationFailureType.java
* /opt/cola/permits/1136415751_1613765238.7/0/jewelcli-0-8-2-sources-
jar/com/lexicalscope/jewel/cli/UnparsedAnnotationAdapter.java
* /opt/cola/permits/1136415751_1613765238.7/0/jewelcli-0-8-2-sources-
jar/com/lexicalscope/jewel/cli/InstanceArgumentPresentingStrategy.java
* /opt/cola/permits/1136415751_1613765238.7/0/jewelcli-0-8-2-sources-
jar/com/lexicalscope/jewel/cli/ConvertTypeOfObject.java
* /opt/cola/permits/1136415751_1613765238.7/0/jewelcli-0-8-2-sources-
jar/uk/co/flamingpenguin/jewel/cli/HelpMessage.java
* /opt/cola/permits/1136415751_1613765238.7/0/jewelcli-0-8-2-sources-
jar/com/lexicalscope/jewel/cli/OptionAnnotationAdapter.java
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\* /opt/cola/permits/1136415751\_1613765238.7/0/jewelcli-0-8-2-sources-jar/uk/co/flamingpenguin/jewel/cli/AbstractConvertMethodToOptionSpecification.java  
\* /opt/cola/permits/1136415751\_1613765238.7/0/jewelcli-0-8-2-sources-jar/com/lexicalscope/jewel/cli/OptionAdapter.java  
\* /opt/cola/permits/1136415751\_1613765238.7/0/jewelcli-0-8-2-sources-jar/com/lexicalscope/jewel/cli/ParsedOptionSpecification.java  
\* /opt/cola/permits/1136415751\_1613765238.7/0/jewelcli-0-8-2-sources-jar/com/lexicalscope/jewel/cli/ValidationFailureUnexpectedValue.java  
\* /opt/cola/permits/1136415751\_1613765238.7/0/jewelcli-0-8-2-sources-jar/com/lexicalscope/jewel/cli/ValidationFailure.java  
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\* /opt/cola/permits/1136415751\_1613765238.7/0/jewelcli-0-8-2-sources-jar/uk/co/flamingpenguin/jewel/cli/UnparsedOptionSpecificationBuilder.java  
\* /opt/cola/permits/1136415751\_1613765238.7/0/jewelcli-0-8-2-sources-jar/com/lexicalscope/jewel/cli/InterfaceOptionsSpecificationParser.java  
\* /opt/cola/permits/1136415751\_1613765238.7/0/jewelcli-0-8-2-sources-jar/uk/co/flamingpenguin/jewel/cli/InterfaceOptionsSpecificationParser.java  
\* /opt/cola/permits/1136415751\_1613765238.7/0/jewelcli-0-8-2-sources-jar/uk/co/flamingpenguin/jewel/cli/HelpValidationErrorImpl.java  
\* /opt/cola/permits/1136415751\_1613765238.7/0/jewelcli-0-8-2-sources-jar/uk/co/flamingpenguin/jewel/cli/ConvertUnparsedGetterMethodToUnparsedOptionSpecification.java  
\* /opt/cola/permits/1136415751\_1613765238.7/0/jewelcli-0-8-2-sources-jar/uk/co/flamingpenguin/jewel/cli/OptionUtils.java  
\* /opt/cola/permits/1136415751\_1613765238.7/0/jewelcli-0-8-2-sources-jar/com/lexicalscope/jewel/cli/InstanceOptionsSpecificationParser.java  
\* /opt/cola/permits/1136415751\_1613765238.7/0/jewelcli-0-8-2-sources-jar/com/lexicalscope/jewel/cli/CliSpecification.java  
\* /opt/cola/permits/1136415751\_1613765238.7/0/jewelcli-0-8-2-sources-jar/com/lexicalscope/jewel/cli/OptionUtils.java  
\* /opt/cola/permits/1136415751\_1613765238.7/0/jewelcli-0-8-2-sources-

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jar/com/lexicalscope/jewel/cli/ConvertUnparsedSetterMethodToUnparsedOptionSpecification.java
* /opt/cola/permits/1136415751_1613765238.7/0/jewelcli-0-8-2-sources-
jar/uk/co/flamingpenguin/jewel/cli/OptionName.java
* /opt/cola/permits/1136415751_1613765238.7/0/jewelcli-0-8-2-sources-
jar/uk/co/flamingpenguin/jewel/cli/OptionContext.java
* /opt/cola/permits/1136415751_1613765238.7/0/jewelcli-0-8-2-sources-
jar/com/lexicalscope/jewel/cli/ConvertSetterMethodToParsedOptionSpecification.java
* /opt/cola/permits/1136415751_1613765238.7/0/jewelcli-0-8-2-sources-
jar/com/lexicalscope/jewel/cli/HelpRequestedException.java
* /opt/cola/permits/1136415751_1613765238.7/0/jewelcli-0-8-2-sources-
jar/uk/co/flamingpenguin/jewel/cli/CliSpecification.java
* /opt/cola/permits/1136415751_1613765238.7/0/jewelcli-0-8-2-sources-
jar/uk/co/flamingpenguin/jewel/cli/UnparsedOptionSummary.java
* /opt/cola/permits/1136415751_1613765238.7/0/jewelcli-0-8-2-sources-
jar/uk/co/flamingpenguin/jewel/cli/InstanceOptionsSpecificationParser.java
* /opt/cola/permits/1136415751_1613765238.7/0/jewelcli-0-8-2-sources-
jar/com/lexicalscope/jewel/cli/UnparsedOptionSummary.java
* /opt/cola/permits/1136415751_1613765238.7/0/jewelcli-0-8-2-sources-
jar/uk/co/flamingpenguin/jewel/cli/ParsedOptionSummary.java
* /opt/cola/permits/1136415751_1613765238.7/0/jewelcli-0-8-2-sources-
jar/com/lexicalscope/jewel/cli/ParsedOptionSummary.java
* /opt/cola/permits/1136415751_1613765238.7/0/jewelcli-0-8-2-sources-
jar/uk/co/flamingpenguin/jewel/cli/ConvertUnparsedSetterMethodToUnparsedOptionSpecification.java
* /opt/cola/permits/1136415751_1613765238.7/0/jewelcli-0-8-2-sources-
jar/com/lexicalscope/jewel/cli/ConvertUnparsedGetterMethodToUnparsedOptionSpecification.java
* /opt/cola/permits/1136415751_1613765238.7/0/jewelcli-0-8-2-sources-
jar/com/lexicalscope/jewel/cli/ConvertGetterMethodToParsedOptionSpecification.java
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\* /opt/cola/permits/1136415751\_1613765238.7/0/jewelcli-0-8-2-sources-jar/uk/co/flamingpenguin/jewel/cli/CliInstanceImpl.java  
\* /opt/cola/permits/1136415751\_1613765238.7/0/jewelcli-0-8-2-sources-jar/com/lexicalescope/jewel/cli/CliInstanceImpl.java  
\* /opt/cola/permits/1136415751\_1613765238.7/0/jewelcli-0-8-2-sources-jar/uk/co/flamingpenguin/jewel/cli/CliInterfaceImpl.java  
\* /opt/cola/permits/1136415751\_1613765238.7/0/jewelcli-0-8-2-sources-jar/uk/co/flamingpenguin/jewel/cli/ArgumentValidatorImpl.java  
\* /opt/cola/permits/1136415751\_1613765238.7/0/jewelcli-0-8-2-sources-jar/com/lexicalescope/jewel/cli/CliInterfaceImpl.java  
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\* /opt/cola/permits/1136415751\_1613765238.7/0/jewelcli-0-8-2-sources-jar/uk/co/flamingpenguin/jewel/cli/OptionsSpecificationImpl.java  
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\* /opt/cola/permits/1136415751\_1613765238.7/0/jewelcli-0-8-2-sources-jar/com/lexicalescope/jewel/cli/ArgumentCollectionBuilder.java

\* /opt/cola/permits/1136415751\_1613765238.7/0/jewelcli-0-8-2-sources-jar/com/lexicalescope/jewel/cli/ArgumentPresentingStrategy.java

\* /opt/cola/permits/1136415751\_1613765238.7/0/jewelcli-0-8-2-sources-jar/com/lexicalescope/jewel/cli/OptionHelpMessage.java  
\* /opt/cola/permits/1136415751\_1613765238.7/0/jewelcli-0-8-2-sources-jar/com/lexicalescope/jewel/cli/ValidationFailureMissingOption.java  
\* /opt/cola/permits/1136415751\_1613765238.7/0/jewelcli-0-8-2-sources-jar/uk/co/flamingpenguin/jewel/cli/InstanceArgumentPresentingStrategy.java  
\* /opt/cola/permits/1136415751\_1613765238.7/0/jewelcli-0-8-2-sources-jar/com/lexicalescope/jewel/cli/ValidationFailurePatternMismatch.java  
\* /opt/cola/permits/1136415751\_1613765238.7/0/jewelcli-0-8-2-sources-jar/com/lexicalescope/jewel/cli/ValidationFailureUnableToConstructType.java  
\* /opt/cola/permits/1136415751\_1613765238.7/0/jewelcli-0-8-2-sources-jar/uk/co/flamingpenguin/jewel/cli/AbstractOptionAdapter.java  
\* /opt/cola/permits/1136415751\_1613765238.7/0/jewelcli-0-8-2-sources-jar/com/lexicalescope/jewel/cli/ValidationFailureUnexpectedOption.java  
\* /opt/cola/permits/1136415751\_1613765238.7/0/jewelcli-0-8-2-sources-jar/uk/co/flamingpenguin/jewel/cli/HelpMessageOptionSummaryBuilderImpl.java  
\* /opt/cola/permits/1136415751\_1613765238.7/0/jewelcli-0-8-2-sources-jar/uk/co/flamingpenguin/jewel/cli/AbstractOptionSpecificationBuilder.java  
\* /opt/cola/permits/1136415751\_1613765238.7/0/jewelcli-0-8-2-sources-jar/com/lexicalescope/jewel/cli/ValidationFailureHelpRequested.java  
\* /opt/cola/permits/1136415751\_1613765238.7/0/jewelcli-0-8-2-sources-jar/uk/co/flamingpenguin/jewel/cli/OptionAdapter.java  
\* /opt/cola/permits/1136415751\_1613765238.7/0/jewelcli-0-8-2-sources-jar/com/lexicalescope/jewel/cli/AbstractCliImpl.java  
\* /opt/cola/permits/1136415751\_1613765238.7/0/jewelcli-0-8-2-sources-jar/com/lexicalescope/jewel/cli/InterfaceArgumentPresentingStrategy.java  
\* /opt/cola/permits/1136415751\_1613765238.7/0/jewelcli-0-8-2-sources-jar/uk/co/flamingpenguin/jewel/cli/AbstractCliImpl.java  
\* /opt/cola/permits/1136415751\_1613765238.7/0/jewelcli-0-8-2-sources-jar/com/lexicalescope/jewel/cli/UnparsedOptionSpecification.java  
\* /opt/cola/permits/1136415751\_1613765238.7/0/jewelcli-0-8-2-sources-jar/uk/co/flamingpenguin/jewel/cli/InterfaceArgumentPresentingStrategy.java  
\* /opt/cola/permits/1136415751\_1613765238.7/0/jewelcli-0-8-2-sources-jar/com/lexicalescope/jewel/cli/ValidationFailureImpl.java  
\* /opt/cola/permits/1136415751\_1613765238.7/0/jewelcli-0-8-2-sources-jar/uk/co/flamingpenguin/jewel/cli/UnparsedAnnotationAdapter.java  
\* /opt/cola/permits/1136415751\_1613765238.7/0/jewelcli-0-8-2-sources-jar/com/lexicalescope/jewel/cli/HelpMessageOptionSummaryBuilderImpl.java  
\* /opt/cola/permits/1136415751\_1613765238.7/0/jewelcli-0-8-2-sources-jar/uk/co/flamingpenguin/jewel/cli/OptionSpecificationBuilder.java  
\* /opt/cola/permits/1136415751\_1613765238.7/0/jewelcli-0-8-2-sources-jar/com/lexicalescope/jewel/cli/ValidationFailureMissingValue.java  
\* /opt/cola/permits/1136415751\_1613765238.7/0/jewelcli-0-8-2-sources-jar/uk/co/flamingpenguin/jewel/cli/ConvertTypeOfObject.java  
\* /opt/cola/permits/1136415751\_1613765238.7/0/jewelcli-0-8-2-sources-jar/com/lexicalescope/jewel/cli/ValidationFailureInvalidValueForType.java  
\* /opt/cola/permits/1136415751\_1613765238.7/0/jewelcli-0-8-2-sources-jar/com/lexicalescope/jewel/cli/HelpMessageBuilderImpl.java

\* /opt/cola/permits/1136415751\_1613765238.7/0/jewelcli-0-8-2-sources-jar/uk/co/flamingpenguin/jewel/cli/HelpMessageBuilderImpl.java  
\* /opt/cola/permits/1136415751\_1613765238.7/0/jewelcli-0-8-2-sources-jar/com/lexicalscope/jewel/cli/HelpMessage.java  
\* /opt/cola/permits/1136415751\_1613765238.7/0/jewelcli-0-8-2-sources-jar/uk/co/flamingpenguin/jewel/cli/ArgumentPresentingStrategy.java  
\* /opt/cola/permits/1136415751\_1613765238.7/0/jewelcli-0-8-2-sources-jar/uk/co/flamingpenguin/jewel/cli/ParsedOptionSpecification.java  
\* /opt/cola/permits/1136415751\_1613765238.7/0/jewelcli-0-8-2-sources-jar/com/lexicalscope/jewel/cli/ValidationFailureMisplacedOption.java  
\* /opt/cola/permits/1136415751\_1613765238.7/0/jewelcli-0-8-2-sources-jar/uk/co/flamingpenguin/jewel/cli/OptionAnnotationAdapter.java  
\* /opt/cola/permits/1136415751\_1613765238.7/0/jewelcli-0-8-2-sources-jar/uk/co/flamingpenguin/jewel/cli/UnparsedOptionSpecification.java  
\* /opt/cola/permits/1136415751\_1613765238.7/0/jewelcli-0-8-2-sources-jar/uk/co/flamingpenguin/jewel/cli/ArgumentCollectionBuilder.java  
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Found in path(s):

\* /opt/cola/permits/1136415751\_1613765238.7/0/jewelcli-0-8-2-sources-jar/uk/co/flamingpenguin/jewel/cli/Argument.java  
\* /opt/cola/permits/1136415751\_1613765238.7/0/jewelcli-0-8-2-sources-jar/com/lexicalscope/jewel/cli/Argument.java  
\* /opt/cola/permits/1136415751\_1613765238.7/0/jewelcli-0-8-2-sources-jar/com/lexicalscope/jewel/cli/ArgumentImpl.java  
\* /opt/cola/permits/1136415751\_1613765238.7/0/jewelcli-0-8-2-sources-jar/uk/co/flamingpenguin/jewel/cli/ArgumentImpl.java  
\* /opt/cola/permits/1136415751\_1613765238.7/0/jewelcli-0-8-2-sources-jar/uk/co/flamingpenguin/jewel/cli/OptionSpecification.java  
\* /opt/cola/permits/1136415751\_1613765238.7/0/jewelcli-0-8-2-sources-jar/com/lexicalscope/jewel/cli/OptionSpecification.java  
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- \* /opt/cola/permits/1136415751\_1613765238.7/0/jewelcli-0-8-2-sources-jar/uk/co/flamingpenguin/jewel/cli/UnparsedOptionSpecificationImpl.java
- \* /opt/cola/permits/1136415751\_1613765238.7/0/jewelcli-0-8-2-sources-jar/uk/co/flamingpenguin/jewel/cli/OptionType.java
- \* /opt/cola/permits/1136415751\_1613765238.7/0/jewelcli-0-8-2-sources-jar/com/lexicalscope/jewel/cli/UnparsedOptionSpecificationImpl.java
- \* /opt/cola/permits/1136415751\_1613765238.7/0/jewelcli-0-8-2-sources-jar/uk/co/flamingpenguin/jewel/cli/ParsedOptionSpecificationImpl.java
- \* /opt/cola/permits/1136415751\_1613765238.7/0/jewelcli-0-8-2-sources-jar/com/lexicalscope/jewel/cli/ParsedOptionSpecificationImpl.java

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- \* /opt/cola/permits/1136415751\_1613765238.7/0/jewelcli-0-8-2-sources-jar/com/lexicalscope/jewel/cli/AbstractOptionSpecification.java
- \* /opt/cola/permits/1136415751\_1613765238.7/0/jewelcli-0-8-2-sources-jar/com/lexicalscope/jewel/cli/SpecificationMultiplicity.java

## 1.414 kerberos 1.12

### 1.414.1 Available under license :

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```
cmd/krb5/iproplib/iproplib.x
cmd/krb5/iproplib/iproplib_hdr.h
cmd/krb5/kadmin/server/iproplib_svc.c
cmd/krb5/kproplog/kproplog.c
cmd/krb5/slave/kpropd_rpc.c
lib/gss_mechs/mech_krb5/et/kdb5_err.c
lib/gss_mechs/mech_spnego/mech/gssapiP_spnego.h
lib/gss_mechs/mech_spnego/mech/spnego_mech.c
lib/krb5/kadm5/kadm_host_srv_names.c
lib/krb5/kdb/kdb_convert.c
lib/krb5/kdb/kdb_hdr.h
lib/krb5/kdb/kdb_log.c
lib/krb5/kdb/kdb_log.h
lib/libgss/g_accept_sec_context.c
lib/libgss/g_acquire_cred.c
lib/libgss/g_canon_name.c
lib/libgss/g_compare_name.c
lib/libgss/g_context_time.c
lib/libgss/g_delete_sec_context.c
lib/libgss/g_dsp_name.c
lib/libgss/g_dsp_status.c
lib/libgss/g_dup_name.c
lib/libgss/g_exp_sec_context.c
lib/libgss/g_export_name.c
lib/libgss/g_glue.c
lib/libgss/g_imp_name.c
lib/libgss/g_imp_sec_context.c
lib/libgss/g_init_sec_context.c
lib/libgss/g_initialize.c
lib/libgss/g_inquire_context.c
lib/libgss/g_inquire_cred.c
lib/libgss/g_inquire_names.c
lib/libgss/g_process_context.c
lib/libgss/g_rel_buffer.c
lib/libgss/g_rel_cred.c
lib/libgss/g_rel_name.c
```

lib/libgss/g\_rel\_oid\_set.c  
lib/libgss/g\_seal.c  
lib/libgss/g\_sign.c  
lib/libgss/g\_store\_cred.c  
lib/libgss/g\_unseal.c  
lib/libgss/g\_userok.c  
lib/libgss/g\_utils.c  
lib/libgss/g\_verify.c  
lib/libgss/gssd\_pname\_to\_uid.c  
uts/common/gssapi/include/gssapi\_err\_generic.h  
uts/common/gssapi/include/mechglueP.h

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lib/gssapi/generic/gssapi\_err\_generic.et  
lib/gssapi/mechglue/g\_accept\_sec\_context.c  
lib/gssapi/mechglue/g\_acquire\_cred.c  
lib/gssapi/mechglue/g\_canon\_name.c  
lib/gssapi/mechglue/g\_compare\_name.c  
lib/gssapi/mechglue/g\_context\_time.c  
lib/gssapi/mechglue/g\_delete\_sec\_context.c  
lib/gssapi/mechglue/g\_dsp\_name.c  
lib/gssapi/mechglue/g\_dsp\_status.c  
lib/gssapi/mechglue/g\_dup\_name.c  
lib/gssapi/mechglue/g\_exp\_sec\_context.c  
lib/gssapi/mechglue/g\_export\_name.c  
lib/gssapi/mechglue/g\_glue.c  
lib/gssapi/mechglue/g\_imp\_name.c  
lib/gssapi/mechglue/g\_imp\_sec\_context.c  
lib/gssapi/mechglue/g\_init\_sec\_context.c  
lib/gssapi/mechglue/g\_initialize.c  
lib/gssapi/mechglue/g\_inquire\_context.c  
lib/gssapi/mechglue/g\_inquire\_cred.c  
lib/gssapi/mechglue/g\_inquire\_names.c  
lib/gssapi/mechglue/g\_process\_context.c  
lib/gssapi/mechglue/g\_rel\_buffer.c  
lib/gssapi/mechglue/g\_rel\_cred.c  
lib/gssapi/mechglue/g\_rel\_name.c  
lib/gssapi/mechglue/g\_rel\_oid\_set.c  
lib/gssapi/mechglue/g\_seal.c  
lib/gssapi/mechglue/g\_sign.c  
lib/gssapi/mechglue/g\_store\_cred.c  
lib/gssapi/mechglue/g\_unseal.c  
lib/gssapi/mechglue/g\_userok.c  
lib/gssapi/mechglue/g\_utils.c  
lib/gssapi/mechglue/g\_verify.c  
lib/gssapi/mechglue/gssd\_pname\_to\_uid.c  
lib/gssapi/mechglue/mglueP.h  
lib/gssapi/mechglue/oid\_ops.c  
lib/gssapi/spnego/gssapiP\_spnego.h

lib/gssapi/spnego/spnego\_mech.c

and the initial implementation of incremental propagation, including the following new or changed files:

include/ipropr\_hdr.h  
kadmin/server/ipropr\_svc.c  
lib/kdb/ipropr.x  
lib/kdb/kdb\_convert.c  
lib/kdb/kdb\_log.c  
lib/kdb/kdb\_log.h  
lib/krb5/error\_tables/kdb5\_err.et  
kprop/kpropd\_rpc.c  
kprop/kproplog.c

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## 1.421 libxdmcp 1.1.2-3

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## 1.422 ng-zorro-antd 9.3.0

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```
{"version":3,"file":"index.js","sourceRoot":"","sources":["../../schematics/demo/calendar-notice-calendar/index.ts"],"names":[],"mappings":":;AAAA,2DAGoC;AACpC,iEAA6D;AAI7D,mBAAwB,OAAe;IACrC,OAAO,kBAAK,CAAC;QACX,gCAAc,mBACP,OAAO,GACZ;YACE,QAAQ,EAAE,kFAAkF;YAC5F,UAAU,EA AE,uFAAuF;SACpG,CACF;KACF,CAAC,CAAC;AACL,CAAC;AAVD,4BAUC" }
```

```
<nz-calendar>
<ul *nzDateCell="let date" class="events">
 <ng-container [ngSwitch]="date.getDate()">
 <ng-container *ngSwitchCase="8">
 <li *ngFor="let item of listDataMap.eight">
 <nz-badge [nzStatus]="item.type" [nzText]="item.content"></nz-badge>

 </ng-container>
 </ng-container>

```

```

</ng-container>
<ng-container *ngSwitchCase="10">
 <li *ngFor="let item of listDataMap.ten">
 <nz-badge [nzStatus]="item.type" [nzText]="item.content"></nz-badge>

</ng-container>
<ng-container *ngSwitchCase="11">
 <li *ngFor="let item of listDataMap.eleven">
 <nz-badge [nzStatus]="item.type" [nzText]="item.content"></nz-badge>

</ng-container>
</ng-container>

<ng-container *nzMonthCell="let month">
 <div *ngIf="getMonthData(month) as monthData" class="notes-month">
 <section>{{ monthData }}</section>
 Backlog number
 </div>
</ng-container>
</nz-calendar>

```

```

import { fakeAsync, ComponentFixture, TestBed } from '@angular/core/testing';
import { <%= classify(name) %>Component } from './<%= dasherize(name) %>.component';

```

```

describe('<%= classify(name) %>Component', () => {
 let component: <%= classify(name) %>Component;
 let fixture: ComponentFixture<<%= classify(name) %>Component>;

```

```

 beforeEach(fakeAsync(() => {
 TestBed.configureTestingModule({
 declarations: [<%= classify(name) %>Component]
 })
 .compileComponents();

```

```

 fixture = TestBed.createComponent(<%= classify(name) %>Component);
 component = fixture.componentInstance;
 fixture.detectChanges();
 }));

```

```

 it('should compile', () => {
 expect(component).toBeTruthy();
 });
});

```

```

import { Component } from '@angular/core';

```

```

@Component({
 selector: '<%= selector %>',
 <% if(inlineTemplate) { %>template: `

```

```

<nz-calendar>
 <ul *nzDateCell="let date" class="events">
 <ng-container [ngSwitch]="date.getDate()">
 <ng-container *ngSwitchCase="8">
 <li *ngFor="let item of listDataMap.eight">
 <nz-badge [nzStatus]="item.type" [nzText]="item.content"></nz-badge>

 </ng-container>
 <ng-container *ngSwitchCase="10">
 <li *ngFor="let item of listDataMap.ten">
 <nz-badge [nzStatus]="item.type" [nzText]="item.content"></nz-badge>

 </ng-container>
 <ng-container *ngSwitchCase="11">
 <li *ngFor="let item of listDataMap.eleven">
 <nz-badge [nzStatus]="item.type" [nzText]="item.content"></nz-badge>

 </ng-container>
 </ng-container>

 <ng-container *nzMonthCell="let month">
 <div *ngIf="getMonthData(month) as monthData" class="notes-month">
 <section>{{ monthData }}</section>
 Backlog number
 </div>
 </ng-container>
</nz-calendar>
`<% } else { %>templateUrl: './<%= dasherize(name) %>.component.html'<% } %>,
<% if(inlineStyle) { %>styles: [
 .events {
 list-style: none;
 margin: 0;
 padding: 0;
 }

 .events .ant-badge-status {
 overflow: hidden;
 white-space: nowrap;
 width: 100%;
 text-overflow: ellipsis;
 font-size: 12px;
 }

 .notes-month {
 text-align: center;
 font-size: 28px;
 }

```

```

 .notes-month section {
 font-size: 28px;
 }
 `]<% } else { %>styleUrls: ['./<%= dasherize(name) %>.component.<%= style %>']<% } %>
))
export class <%= classify(name) %>Component {
 listDataMap = {
 eight: [
 { type: 'warning', content: 'This is warning event.' },
 { type: 'success', content: 'This is usual event.' }
],
 ten: [
 { type: 'warning', content: 'This is warning event.' },
 { type: 'success', content: 'This is usual event.' },
 { type: 'error', content: 'This is error event.' }
],
 eleven: [
 { type: 'warning', content: 'This is warning event' },
 { type: 'success', content: 'This is very long usual event.....' },
 { type: 'error', content: 'This is error event 1.' },
 { type: 'error', content: 'This is error event 2.' },
 { type: 'error', content: 'This is error event 3.' },
 { type: 'error', content: 'This is error event 4.' }
]
 };

 getMonthData(date: Date): number | null {
 if (date.getMonth() === 8) {
 return 1394;
 }
 return null;
 }
}
{"version":3,"file":"schema.js","sourceRoot":"","sources":["../../../../../schematics/demo/calendar-notice-calendar/schema.ts"],"names":[],"mappings":""}

```

## 1.423 json-formatter-js 2.2.0

### 1.423.1 Available under license :

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# 1.425 jre 11.0.11

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Pako v1.0
```

```
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```

```
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```

```
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```
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xwd v1.0.7

xwd utility
<pre>
```

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include/GL/glxext.h  
include/GL/wglxext.h :

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```

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## 1.429 activation-api 1.2.2

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# 1.431 spring-hateoas 1.4.1

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```

\* /opt/cola/permits/1358260431\_1657134847.3311746/0/forms-11-0-2-tgz/package/esm2015/src/directives/reactive\_directives/form\_control\_name.js  
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\* /opt/cola/permits/1358260431\_1657134847.3311746/0/forms-11-0-2-tgz/package/esm2015/src/directives/select\_control\_value\_accessor.js  
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\* /opt/cola/permits/1358260431\_1657134847.3311746/0/forms-11-0-2-tgz/package/esm2015/src/directives/error\_examples.js  
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\* /opt/cola/permits/1358260431\_1657134847.3311746/0/forms-11-0-2-tgz/package/esm2015/src/directives/abstract\_control\_directive.js  
\* /opt/cola/permits/1358260431\_1657134847.3311746/0/forms-11-0-2-tgz/package/esm2015/src/directives/reactive\_directives/form\_group\_directive.js  
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\* /opt/cola/permits/1358260431\_1657134847.3311746/0/forms-11-0-2-tgz/package/esm2015/src/directives/default\_value\_accessor.js

```
* /opt/cola/permits/1358260431_1657134847.3311746/0/forms-11-0-2-
tgz/package/esm2015/src/directives/ng_control_status.js
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Found in path(s):

```
* /opt/cola/permits/1358260431_1657134847.3311746/0/forms-11-0-2-tgz/package/forms.d.ts
No license file was found, but licenses were detected in source scan.
```

```
{"version":3,"file":"forms.umd.js","sources":["../../../../packages/forms/src/directives/control_value_accessor.ts","..
../../../../packages/forms/src/directives/checkbox_value_accessor.ts","../../../../packages/forms/src/directives/default
_value_accessor.ts","../../../../external/npm/node_modules/tslib/tslib.es6.js","../../../../packages/forms/src/validato
rs.ts","../../../../packages/forms/src/directives/abstract_control_directive.ts","../../../../packages/forms/src/directive
s/control_container.ts","../../../../packages/forms/src/directives/ng_control.ts","../../../../packages/forms/src/directi
ves/ng_control_status.ts","../../../../packages/forms/src/directives/number_value_accessor.ts","../../../../packages/f
orms/src/directives/radio_control_value_accessor.ts","../../../../packages/forms/src/directives/range_value_accessor
.ts","../../../../packages/forms/src/directives/error_examples.ts","../../../../packages/forms/src/directives/reactive_er
rors.ts","../../../../packages/forms/src/directives/select_control_value_accessor.ts","../../../../packages/forms/src/dir
ectives/select_multiple_control_value_accessor.ts","../../../../packages/forms/src/directives/shared.ts","../../../../pa
ckages/forms/src/model.ts","../../../../packages/forms/src/directives/ng_form.ts","../../../../packages/forms/src/dire
ctives/abstract_form_group_directive.ts","../../../../packages/forms/src/directives/template_driven_errors.ts","../../../../
../packages/forms/src/directives/ng_model_group.ts","../../../../packages/forms/src/directives/ng_model.ts","../../../../
../../../../packages/forms/src/directives/ng_no_validate_directive.ts","../../../../packages/forms/src/directives/reactive_di
rectives/form_control_directive.ts","../../../../packages/forms/src/directives/reactive_directives/form_group_directi
ve.ts","../../../../packages/forms/src/directives/reactive_directives/form_group_name.ts","../../../../packages/forms/
src/directives/reactive_directives/form_control_name.ts","../../../../packages/forms/src/directives/validators.ts","../..
../../../../packages/forms/src/directives.ts","../../../../packages/forms/src/form_builder.ts","../../../../packages/forms/sr
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ckages/forms/public_api.ts","../../../../packages/forms/index.ts","../../../../packages/forms/forms.ts"],"sourcesCont
ent":["/**\n * @license\n * Copyright Google LLC All Rights Reserved.\n *\n * Use of this source code is governed
by an MIT-style license that can be\n * found in the LICENSE file at https://angular.io/license\n */\nimport
{InjectionToken} from '@angular/core';\n\n/**\n * @description\n * Defines an interface that acts as a bridge
between the Angular forms API and a\n * native element in the DOM.\n *\n * Implement this interface to create a
custom form control directive\n * that integrates with Angular forms.\n *\n * @see DefaultValueAccessor\n *\n *
@publicApi\n */\nexport interface ControlValueAccessor {\n /**\n * @description\n * Writes a new value to the
element.\n *\n * This method is called by the forms API to write to the view when programmatic\n * changes
from model to view are requested.\n *\n * @usageNotes\n * ### Write a value to the element\n *\n * The
following example writes a value to the native DOM element.\n *\n * ```ts\n * writeValue(value: any): void {\n
* this._renderer.setProperty(this._elementRef.nativeElement, 'value', value);\n * }\n * ```\n *\n * @param obj
The new value for the element\n */\n writeValue(obj: any): void;\n /**\n * @description\n * Registers a
callback function that is called when the control's value\n * changes in the UI.\n *\n * This method is called by
```

```

the forms API on initialization to update the form model when values propagate from the view to the model.
When implementing the `registerOnChange` method in your own value accessor, save the given
function so your class calls it at the appropriate time.
@usageNotes
Store the change function
The following example stores the provided function as an internal method.
registerOnChange(fn: (_: any) => void): void {
 this._onChange = fn;
}
When the value
changes in the UI, call the registered function to allow the forms API to update itself:
host:
{
 '(change)': '_onChange($event.target.value)'
}
@param fn The callback function to
register
registerOnChange(fn: any): void;
/**
 * @description
 * Registers a callback function that
is called by the forms API on initialization to update the form model on blur.
When implementing
`registerOnTouched` in your own value accessor, save the given function so your class calls it when the control
should be considered blurred or `touched`.
@usageNotes
Store the callback function
The following example stores the provided function as an internal method.
registerOnTouched(fn: any): void {
 this._onTouched = fn;
}
On blur (or equivalent),
your class should call the registered function to allow the forms API to update itself:
host:
{
 '(blur)': '_onTouched()'
}
@param fn The callback function to register
registerOnTouched(fn: any): void;
/**
 * @description
 * Function that is called by the forms API when
the control status changes to or from `DISABLED`. Depending on the status, it enables or disables the
appropriate DOM element.
@usageNotes
The following is an example of writing the disabled
property to a native DOM element:
setDisabledState(isDisabled: boolean): void {
 this._renderer.setProperty(this._elementRef.nativeElement, 'disabled', isDisabled);
}
@param
isDisabled The disabled status to set on the element
setDisabledState?(isDisabled: boolean):
void;
}
/**
 * Used to provide a `ControlValueAccessor` for form controls. See
`DefaultValueAccessor` for how to implement one.
 * @publicApi
 */
export const
NG_VALUE_ACCESSOR = new
InjectionToken<ReadonlyArray<ControlValueAccessor>>('NgValueAccessor');
/**
 * @license
 * Copyright
Google LLC All Rights Reserved.
Use of this source code is governed by an MIT-style license that can be
found in the LICENSE file at https://angular.io/license
 */
import { Directive, ElementRef, forwardRef,
Renderer2 } from '@angular/core';
import { ControlValueAccessor, NG_VALUE_ACCESSOR } from
'/control_value_accessor';
export const CHECKBOX_VALUE_ACCESSOR: any = {
 provide:
NG_VALUE_ACCESSOR,
 useExisting: forwardRef(() => CheckboxControlValueAccessor),
 multi:
true,
};
/**
 * @description
 * A `ControlValueAccessor` for writing a value and listening to changes on a
checkbox input element.
@usageNotes
Using a checkbox with a reactive form.
The
following example shows how to use a checkbox with a reactive form.
const
rememberLoginControl = new FormControl();
<input type="checkbox"
[formControl]=rememberLoginControl >
 * @ngModule ReactiveFormsModule
 * @ngModule
FormsModule
 * @publicApi
 */
@Directive({
 selector:
'input[type=checkbox][formControlName],input[type=checkbox][formControl],input[type=checkbox][ngModel]',
 host: {
 '(change)': 'onChange($event.target.checked)',
 '(blur)': 'onTouched()',
 },
 providers:
[CHECKBOX_VALUE_ACCESSOR]
})
export class CheckboxControlValueAccessor implements
ControlValueAccessor {
 /**
 * The registered callback function called when a change event occurs on the input
element.
 * @nodoc
 */
 onChange = (_: any) => {};
 /**
 * The registered callback function called
when a blur event occurs on the input element.
 * @nodoc
 */
 onTouched = () => {};
 constructor(private
_renderer: Renderer2, private _elementRef: ElementRef) {}
 /**
 * Sets the `checked` property on the input
element.
 * @nodoc
 */
 writeValue(value: any): void {
 this._renderer.setProperty(this._elementRef.nativeElement, 'checked', value);
 }
 /**
 * Registers a function
called when the control value changes.
 * @nodoc
 */
 registerOnChange(fn: (_: any) => {}): void {
 this.onChange = fn;
 }
 /**
 * Registers a function called when the control is touched.
 * @nodoc
 */
 registerOnTouched(fn: () => {}): void {
 this.onTouched = fn;
 }
 /**
 * Sets the `disabled` property on

```

```

the input element.\n * @nodoc\n * ^\n setDisabledState(isDisabled: boolean): void {\n
this._renderer.setProperty(this._elementRef.nativeElement, 'disabled', isDisabled);\n }\n\n"/**\n * @license\n *
Copyright Google LLC All Rights Reserved.\n * Use of this source code is governed by an MIT-style license
that can be\n * found in the LICENSE file at https://angular.io/license\n * ^\n\nimport {getDOM as getDOM} from
'@angular/common';\nimport {Directive, ElementRef, forwardRef, Inject, InjectionToken, Optional, Renderer2}
from '@angular/core';\nimport {ControlValueAccessor, NG_VALUE_ACCESSOR} from
'./control_value_accessor';\n\nexport const DEFAULT_VALUE_ACCESSOR: any = {\n provide:
NG_VALUE_ACCESSOR,\n useExisting: forwardRef(() => DefaultValueAccessor),\n multi: true\n};\n\n/**\n *
We must check whether the agent is Android because composition events\n * behave differently between iOS and
Android.\n * ^\nfunction _isAndroid(): boolean {\n const userAgent = getDOM() ? getDOM().getUserAgent() : ";
\n return /android (\\d+)/.test(userAgent.toLowerCase());\n }\n\n/**\n * @description\n * Provide this token to control
if form directives buffer IME input until\n * the "compositionend" event occurs.\n * @publicApi\n * ^\nexport
const COMPOSITION_BUFFER_MODE = new InjectionToken<boolean>('CompositionEventMode');\n\n/**\n *
@description\n * { @searchKeywords ngDefaultControl}\n * The default `ControlValueAccessor` for
writing a value and listening to changes on input\n * elements. The accessor is used by the `FormControlDirective`,
`FormControlName`, and\n * `NgModel` directives.\n * ^\n * @usageNotes\n * ### Using the default value
accessor\n * The following example shows how to use an input element that activates the default value
accessor\n * (in this case, a text field).\n * ```\n * const firstNameControl = new FormControl();\n * ```\n *
This value accessor is used by
default for `

```





```

(op[0] === 6 || op[0] === 2) { _ = 0; continue; }
if (op[0] === 3 && (!t || (op[1] > t[0] && op[1] <
t[3]))) { _label = op[1]; break; }
if (op[0] === 6 && _label < t[1]) { _label = t[1]; t = op; break; }
if (t && _label < t[2]) { _label = t[2]; _ops.push(op); break; }
if (t[2])
_ops.pop();
_trys.pop(); continue; }
op = body.call(thisArg, _); } catch
(e) { op = [6, e]; y = 0; } finally { f = t = 0; }
if (op[0] & 5) throw op[1]; return { value: op[0] ? op[1] : void
0, done: true }; }
__createBinding = Object.create ? (function(o, m, k, k2) {
if (k2
=== undefined) k2 = k;
Object.defineProperty(o, k2, { enumerable: true, get: function() { return m[k]; }
});
}): (function(o, m, k, k2) {
if (k2 === undefined) k2 = k;
o[k2] = m[k];
});
__exportStar(m, exports) {
for (var p in m) if (p !== "default" && !exports.hasOwnProperty(p))
__createBinding(exports, m, p);
}
__values(o) {
var s = typeof Symbol ===
"function" && Symbol.iterator, m = s && o[s], i = 0;
if (m) return m.call(o);
if (o && typeof o.length
=== "number") return {
next: function () {
if (o && i >= o.length) o = void 0;
return {
value: o && o[i++], done: !o };
};
}
throw new TypeError(s ? "Object is not iterable." :
"Symbol.iterator is not defined.");
}
__read(o, n) {
var m = typeof Symbol ===
"function" && o[Symbol.iterator];
if (!m) return o;
var i = m.call(o), r, ar = [], e;
try {
while ((n === void 0 || n-- > 0) && !(r = i.next()).done) ar.push(r.value);
} catch (error) { e = { error: error }; }
finally {
try {
if (r && !r.done && (m = i["return"])) m.call(i);
}
}
return ar;
}
__spread() {
for (var ar = [], i = 0; i < arguments.length; i++)
ar = ar.concat(__read(arguments[i]));
return ar;
}
__spreadArrays() {
for (var s = 0, i = 0, il = arguments.length; i < il; i++) s += arguments[i].length;
for (var r = Array(s), k = 0, i = 0; i < il; i++)
for (var a = arguments[i], j = 0, jl = a.length; j < jl; j++, k++)
r[k] = a[j];
return r;
}
__await(v) {
return this instanceof __await ? (this.v = v, this) : new __await(v);
}
__asyncGenerator(thisArg, _arguments, generator) {
if (!Symbol.asyncIterator) throw new TypeError("Symbol.asyncIterator is not defined.");
var g = generator.apply(thisArg, _arguments || []), i, q = [];
return i = {}, verb("next"), verb("throw"), verb("return"), i[Symbol.asyncIterator] = function () { return this; }, i;
function verb(n) {
if (g[n]) i[n] = function (v) { return new Promise(function (a, b) { q.push([n, v, a, b]) > 1 || resume(n, v); }); };
}
function resume(n, v) {
try { step(g[n](v)); } catch (e) { settle(q[0][3], e); }
}
function step(r) {
r.value instanceof __await ? Promise.resolve(r.value.v).then(fulfill, reject) : settle(q[0][2], r);
}
function fulfill(value) {
resume("next", value);
}
function reject(value) {
resume("throw", value);
}
function settle(f, v) {
if (f(v), q.shift(), q.length) resume(q[0][0], q[0][1]);
}
}
__asyncDelegator(o) {
var i, p;
return i = {}, verb("next"), verb("throw"), function (e) { throw e; }, verb("return"), i[Symbol.iterator] = function () { return this; }, i;
function verb(n, f) {
i[n] = o[n] ? function (v) { return (p = !p) ? { value: __await(o[n](v)), done: n === "return" } : f ? f(v) : v; } : f;
}
}
__asyncValues(o) {
if (!Symbol.asyncIterator) throw new TypeError("Symbol.asyncIterator is not defined.");
var m = o[Symbol.asyncIterator], i;
return m ? m.call(o) : (o = typeof __values === "function" ? __values(o) : o[Symbol.iterator](), i = {}, verb("next"), verb("throw"), verb("return"), i[Symbol.asyncIterator] = function () { return this; }, i);
function verb(n) {
i[n] = o[n] && function (v) { return new Promise(function (resolve, reject) {
v = o[n](v), settle(resolve, reject, v.done, v.value);
}); };
}
}
function settle(resolve, reject, d, v) {
Promise.resolve(v).then(function(v) { resolve({ value: v, done: d }); }, reject);
}
}
__makeTemplateObject(cooked, raw) {
if (Object.defineProperty) { Object.defineProperty(cooked, "raw", { value: raw }); } else { cooked.raw = raw; }
return cooked;
}
__setModuleDefault = Object.create ? (function(o, v) {
Object.defineProperty(o, "default", { enumerable: true, value: v });
}): function(o, v) {
o["default"] = v;
}
__importStar(mod) {
if (mod && mod.__esModule) return mod;
var result = {};
if (mod != null) for (var k in mod) if (Object.hasOwnProperty.call(mod, k)) __createBinding(result, mod, k);
__setModuleDefault(result, mod);
return result;
}
__importDefault(mod) {
return (mod && mod.__esModule) ? mod : { default: mod };
}
__classPrivateFieldGet(receiver, privateMap) {
if (!privateMap.has(receiver))

```



```

returns an error map with the `min` property if the validation check fails, otherwise `null`.
 * @see `updateValueAndValidity()`
 * /n static min(min: number): ValidatorFn {
 * /n return (control: AbstractControl): ValidationErrors|null => {
 * /n if (isEmptyInputValue(control.value) || isEmptyInputValue(min))
 * /n return null; // don't validate empty values to allow optional controls
 * /n const value = parseFloat(control.value);
 * /n // Controls with NaN values after parsing should be treated as not having a
 * /n // minimum, per the HTML forms spec: https://www.w3.org/TR/html5/forms.html#attr-input-min
 * /n return !isNaN(value) && value < min ? {min: {min: min, 'actual': control.value}} : null;
 * /n };
 * /n }
 * /n /**
 * /n * @description
 * /n * Validator that requires the control's value to be less than or equal to the provided number.
 * /n * The validator exists only as a function and not as a directive.
 * /n * @usageNotes
 * /n * ### Validate against a maximum of 15
 * /n * ```typescript
 * /n * const control = new FormControl(16, Validators.max(15));
 * /n * console.log(control.errors); // {max: {max: 15, actual: 16}}
 * /n * ```
 * /n * @returns A validator function that returns an error map with the `max` property if the validation check fails, otherwise `null`.
 * /n * @see `updateValueAndValidity()`
 * /n static max(max: number): ValidatorFn {
 * /n return (control: AbstractControl): ValidationErrors|null => {
 * /n if (isEmptyInputValue(control.value) || isEmptyInputValue(max))
 * /n return null; // don't validate empty values to allow optional controls
 * /n const value = parseFloat(control.value);
 * /n // Controls with NaN values after parsing should be treated as not having a
 * /n // maximum, per the HTML forms spec: https://www.w3.org/TR/html5/forms.html#attr-input-max
 * /n return !isNaN(value) && value > max ? {max: {max: max, 'actual': control.value}} : null;
 * /n };
 * /n }
 * /n /**
 * /n * @description
 * /n * Validator that requires the control have a non-empty value.
 * /n * @usageNotes
 * /n * ### Validate that the field is non-empty
 * /n * ```typescript
 * /n * const control = new FormControl("", Validators.required);
 * /n * console.log(control.errors); // {required: true}
 * /n * ```
 * /n * @returns An error map with the `required` property if the validation check fails, otherwise `null`.
 * /n * @see `updateValueAndValidity()`
 * /n static required(control: AbstractControl): ValidationErrors|null {
 * /n return isEmptyInputValue(control.value) ? {required: true} : null;
 * /n }
 * /n /**
 * /n * @description
 * /n * Validator that requires the control's value be true. This validator is commonly used for required checkboxes.
 * /n * @usageNotes
 * /n * ### Validate that the field value is true
 * /n * ```typescript
 * /n * const control = new FormControl("", Validators.requiredTrue);
 * /n * console.log(control.errors); // {required: true}
 * /n * ```
 * /n * @returns An error map that contains the `required` property set to `true` if the validation check fails, otherwise `null`.
 * /n * @see `updateValueAndValidity()`
 * /n static requiredTrue(control: AbstractControl): ValidationErrors|null {
 * /n return control.value === true ? null : {required: true};
 * /n }
 * /n /**
 * /n * @description
 * /n * Validator that requires the control's value pass an email validation test.
 * /n * Tests the value using a [regular expression](https://developer.mozilla.org/en-US/docs/Web/JavaScript/Guide/Regular_Expressions) pattern suitable for common usecases. The pattern is based on the definition of a valid email address in the [WHATWG HTML specification](https://html.spec.whatwg.org/multipage/input.html#valid-e-mail-address) with some enhancements to incorporate more RFC rules (such as rules related to domain names and the lengths of different parts of the address).
 * /n * The differences from the WHATWG version include:
 * /n * - Disallow `local-part` (the part before the `@` symbol) to begin or end with a period (`.`).
 * /n * - Disallow `local-part` to be longer than 64 characters.
 * /n * - Disallow the whole address to be longer than 254 characters.
 * /n * If this pattern does not satisfy your business needs, you can use `Validators.pattern()` to validate the value against a different pattern.
 * /n * @usageNotes
 * /n * ### Validate that the field matches a valid email pattern
 * /n * ```typescript
 * /n * const control = new FormControl('bad@', Validators.email);
 * /n * console.log(control.errors); // {email: true}
 * /n * ```
 * /n * @returns An error map with the `email` property if the validation check fails, otherwise `null`.
 * /n * @see `updateValueAndValidity()`
 * /n static email(control: AbstractControl): ValidationErrors|null {
 * /n if (isEmptyInputValue(control.value))
 * /n return null; // don't validate empty values to allow optional controls
 * /n return EMAIL_REGEXP.test(control.value) ? null : {email: true};
 * /n }
 * /n /**
 * /n * @description
 * /n * Validator that requires the length of the control's value to be greater than or equal to the provided minimum length. This validator is also provided by default if you use the `minlength` attribute. Note that the `minLength` validator is intended to be used only

```

for types that have a numeric `length` property, such as strings or arrays. The `minLength` validator logic is also not invoked for values when their `length` property is 0 (for example in case of an empty string or an empty array), to support optional controls. You can use the standard `required` validator if empty values should not be considered valid.

```

@usageNotes
Validate that the field has a minimum of 3 characters
typescript
const control = new FormControl('ng', Validators.minLength(3));
console.log(control.errors); // {minlength: {requiredLength: 3, actualLength: 2}}
html
<input minlength="5">
returns A validator function that returns an error map with the `minlength` if the validation check fails, otherwise `null`.
see `updateValueAndValidity()`
static minLength(minLength: number): ValidatorFn {
 return (control: AbstractControl): ValidationErrors | null => {
 if (isEmptyInputValue(control.value) || !hasValidLength(control.value)) {
 // don't validate empty values to allow optional controls
 // don't validate values without `length` property
 return null;
 }
 return control.value.length < minLength ? {
 'minlength': {
 'requiredLength': minLength,
 'actualLength': control.value.length
 }
 } : null;
 };
}
description
Validator that requires the length of the control's value to be less than or equal to the provided maximum length. This validator is also provided by default if you use the HTML5 `maxlength` attribute. Note that the `maxLength` validator is intended to be used only for types that have a numeric `length` property, such as strings or arrays.
usageNotes
Validate that the field has maximum of 5 characters
typescript
const control = new FormControl('Angular', Validators.maxLength(5));
console.log(control.errors); // {maxlength: {requiredLength: 5, actualLength: 7}}
html
<input maxlength="5">
returns A validator function that returns an error map with the `maxlength` property if the validation check fails, otherwise `null`.
see `updateValueAndValidity()`
static maxLength(maxLength: number): ValidatorFn {
 return (control: AbstractControl): ValidationErrors | null => {
 return hasValidLength(control.value) && control.value.length > maxLength ? {
 'maxlength': {
 'requiredLength': maxLength,
 'actualLength': control.value.length
 }
 } : null;
 };
}
description
Validator that requires the control's value to match a regex pattern. This validator is also provided by default if you use the HTML5 `pattern` attribute.
usageNotes
Validate that the field only contains letters or spaces
typescript
const control = new FormControl('1', Validators.pattern('[a-zA-Z]*'));
console.log(control.errors); // {pattern: {requiredPattern: '^[a-zA-Z]*$', actualValue: '1'}}
html
<input pattern="[a-zA-Z]*">
Pattern matching with the global or sticky flag
RegExp objects created with the `g` or `y` flags that are passed into `Validators.pattern` can produce different results on the same input when validations are run consecutively. This is due to how the behavior of `RegExp.prototype.test` is specified in [ECMA-262](https://tc39.es/ecma262/#sec-regexpbuiltinexec) (`RegExp` preserves the index of the last match when the global or sticky flag is used).
Due to this behavior, it is recommended that when using `Validators.pattern` you do not pass in a `RegExp` object with either the global or sticky flag enabled.
typescript
// Not recommended (since the `g` flag is used)
const controlOne = new FormControl('1', Validators.pattern(/foo/g));
// Good
const controlTwo = new FormControl('1', Validators.pattern(foo));
param pattern
A regular expression to be used as is to test the values, or a string. If a string is passed, the `^` character is prepended and the `$` character is appended to the provided string (if not already present), and the resulting regular expression is used to test the values.
returns A validator function that returns an error map with the `pattern` property if the validation check fails, otherwise `null`.
see `updateValueAndValidity()`
static pattern(pattern: string | RegExp): ValidatorFn {
 if (!pattern) return Validators.nullValidator;
 let regex: RegExp;
 let regexStr: string;
 if (typeof pattern === 'string') {
 regexStr = "";
 if (pattern.charAt(0) !== '^') regexStr += '^';
 regexStr += pattern;
 if (pattern.charAt(pattern.length - 1) !== '$') regexStr += '$';
 regex = new RegExp(regexStr);
 } else {
 regexStr = pattern.toString();
 regex = pattern;
 }
 return (control: AbstractControl): ValidationErrors | null => {
 if (isEmptyInputValue(control.value)) {
 return null; // don't validate empty values to allow optional controls
 }
 const value: string = control.value;
 return regex.test(value) ? null :

```



synchronous validators attached to a given control.

```

 *^/next export function getControlValidators(control:
 AbstractControl): ValidatorFn|ValidatorFn[]|null {
 return (control as any)._rawValidators as ValidatorFn |
 ValidatorFn[] | null;
 }
 *^/next * Retrieves the list of raw asynchronous validators attached to a given control.
 *^/next export function getControlAsyncValidators(control: AbstractControl): AsyncValidatorFn|
 AsyncValidatorFn[]|null {
 return (control as any)._rawAsyncValidators as AsyncValidatorFn |
 AsyncValidatorFn[] | null;
 }
 "/*
 * @license
 * Copyright Google LLC All Rights Reserved.
 * Use of
 this source code is governed by an MIT-style license that can be
 * found in the LICENSE file at
 https://angular.io/license
 */
 *^/next import {Observable} from 'rxjs';
 *^/next import {AbstractControl} from
 './model';
 *^/next import {composeAsyncValidators, composeValidators} from './validators';
 *^/next import {AsyncValidator,
 AsyncValidatorFn, ValidationErrors, Validator, ValidatorFn} from './validators';
 *^/next * @description
 * Base
 class for control directives.
 *^/next * This class is only used internally in the `ReactiveFormsModule` and the
 `FormsModule`.
 *^/next * @publicApi
 *^/next abstract class AbstractControlDirective {
 /*
 * @description
 * A reference to the underlying control.
 *^/next * @returns the control that backs this directive.
 Most properties fall through to that instance.
 *^/next abstract get control(): AbstractControl|null;
 /*
 * @description
 * Reports the value of the control if it is present, otherwise null.
 *^/next get value(): any {
 return this.control ? this.control.value : null;
 }
 /*
 * @description
 * Reports whether the control is
 valid. A control is considered valid if no
 * validation errors exist with the current value.
 *^/next * If the control is not
 present, null is returned.
 *^/next get valid(): boolean|null {
 return this.control ? this.control.valid : null;
 }
 /*
 * @description
 * Reports whether the control is invalid, meaning that an error exists in the input value.
 *^/next * If the control is not present, null is returned.
 *^/next get invalid(): boolean|null {
 return this.control ?
 this.control.invalid : null;
 }
 /*
 * @description
 * Reports whether a control is pending, meaning that
 that async validation is occurring and
 * errors are not yet available for the input value. If the control is not
 present, null is
 * returned.
 *^/next get pending(): boolean|null {
 return this.control ? this.control.pending :
 null;
 }
 /*
 * @description
 * Reports whether the control is disabled, meaning that the control is
 disabled
 * in the UI and is exempt from validation checks and excluded from aggregate
 * values of ancestor
 controls. If the control is not present, null is returned.
 *^/next get disabled(): boolean|null {
 return this.control ?
 this.control.disabled : null;
 }
 /*
 * @description
 * Reports whether the control is enabled, meaning
 that the control is included in ancestor
 * calculations of validity or value. If the control is not present, null is
 returned.
 *^/next get enabled(): boolean|null {
 return this.control ? this.control.enabled : null;
 }
 /*
 * @description
 * Reports the control's validation errors. If the control is not present, null is returned.
 *^/next get
 errors(): ValidationErrors|null {
 return this.control ? this.control.errors : null;
 }
 /*
 * @description
 * Reports whether the control is pristine, meaning that the user has not yet changed
 * the value in the UI. If the
 control is not present, null is returned.
 *^/next get pristine(): boolean|null {
 return this.control ?
 this.control.pristine : null;
 }
 /*
 * @description
 * Reports whether the control is dirty, meaning that the
 user has changed
 * the value in the UI. If the control is not present, null is returned.
 *^/next get dirty():
 boolean|null {
 return this.control ? this.control.dirty : null;
 }
 /*
 * @description
 * Reports whether
 the control is touched, meaning that the user has triggered
 * a `blur` event on it. If the control is not present, null
 is returned.
 *^/next get touched(): boolean|null {
 return this.control ? this.control.touched : null;
 }
 /*
 * @description
 * Reports the validation status of the control. Possible values include:
 * `VALID`, `INVALID`,
 `DISABLED`, and `PENDING`.
 *^/next * If the control is not present, null is returned.
 *^/next get status(): string|null {
 return this.control ? this.control.status : null;
 }
 /*
 * @description
 * Reports whether the control is
 untouched, meaning that the user has not yet triggered
 * a `blur` event on it. If the control is not present, null is
 returned.
 *^/next get untouched(): boolean|null {
 return this.control ? this.control.untouched : null;
 }
 /*
 * @description
 * Returns a multicasting observable that emits a validation status whenever it is
 * calculated for the control. If the control is not present, null is returned.
 *^/next get statusChanges():
 Observable<any>|null {
 return this.control ? this.control.statusChanges : null;
 }
 /*
 * @description
 * Returns a multicasting observable of value changes for the control that emits every time the
 * value of the
 control changes in the UI or programmatically.
 *^/next * If the control is not present, null is returned.
 *^/next get

```

```

valueChanges(): Observable<any>|null {\n return this.control ? this.control.valueChanges : null;\n }\n\n /**\n *
 @description\n * Returns an array that represents the path from the top-level form to this control.\n * Each index
 is the string name of the control on that level.\n */\n get path(): string[]|null {\n return null;\n }\n\n /**\n *
 Contains the result of merging synchronous validators into a single validator function\n * (combined using
 `Validators.compose`).\n */\n private _composedValidatorFn: ValidatorFn|null|undefined;\n\n /**\n * Contains
 the result of merging asynchronous validators into a single validator function\n * (combined using
 `Validators.composeAsync`).\n */\n private _composedAsyncValidatorFn: AsyncValidatorFn|null|undefined;\n\n
 /**\n * Set of synchronous validators as they were provided while calling `setValidators` function.\n *
 @internal\n */\n _rawValidators: Array<Validator|ValidatorFn> = [];\n\n /**\n * Set of asynchronous validators
 as they were provided while calling `setAsyncValidators`\n * function.\n * @internal\n */\n
 _rawAsyncValidators: Array<AsyncValidator|AsyncValidatorFn> = [];\n\n /**\n * Sets synchronous validators
 for this directive.\n * @internal\n */\n _setValidators(validators: Array<Validator|ValidatorFn>|undefined): void
 {\n this._rawValidators = validators || [];\n this._composedValidatorFn =
 composeValidators(this._rawValidators);\n }\n\n /**\n * Sets asynchronous validators for this directive.\n *
 @internal\n */\n _setAsyncValidators(validators: Array<AsyncValidator|AsyncValidatorFn>|undefined): void {\n
 this._rawAsyncValidators = validators || [];\n this._composedAsyncValidatorFn =
 composeAsyncValidators(this._rawAsyncValidators);\n }\n\n /**\n * @description\n * Synchronous validator
 function composed of all the synchronous validators registered with this\n * directive.\n */\n get validator():
 ValidatorFn|null {\n return this._composedValidatorFn || null;\n }\n\n /**\n * @description\n * Asynchronous
 validator function composed of all the asynchronous validators registered with\n * this directive.\n */\n get
 asyncValidator(): AsyncValidatorFn|null {\n return this._composedAsyncValidatorFn || null;\n }\n\n /**\n * The
 set of callbacks to be invoked when directive instance is being destroyed.\n */\n private _onDestroyCallbacks: (()
 => void)[] = [];\n\n /**\n * Internal function to register callbacks that should be invoked\n * when directive
 instance is being destroyed.\n * @internal\n */\n _registerOnDestroy(fn: () => void): void {\n
 this._onDestroyCallbacks.push(fn);\n }\n\n /**\n * Internal function to invoke all registered "on destroy"\n
 callbacks.\n * Note: calling this function also clears the list of callbacks.\n * @internal\n */\n
 _invokeOnDestroyCallbacks(): void {\n this._onDestroyCallbacks.forEach(fn => fn());\n }\n\n
 this._onDestroyCallbacks = [];\n }\n\n /**\n * @description\n * Resets the control with the provided value if the
 control is present.\n */\n reset(value: any = undefined): void {\n if (this.control) this.control.reset(value);\n
 }\n\n /**\n * @description\n * Reports whether the control with the given path has the error specified.\n */\n
 @param errorCode The code of the error to check\n * @param path A list of control names that designates how to
 move from the current control\n * to the control that should be queried for errors.\n */\n * @usageNotes\n * For
 example, for the following `FormGroup`:\n * \n * \n * form = new FormGroup({\n * address: new
 FormGroup({\n * street: new FormControl() })\n * });\n * \n * \n * The path to the 'street' control from the root
 form would be 'address' -> 'street'.\n * \n * It can be provided to this method in one of two formats:\n * \n * 1.
 An array of string control names, e.g. `['address', 'street']`\n * \n * 1. A period-delimited list of control names in one
 string, e.g. `address.street`\n * \n * If no path is given, this method checks for the error on the current control.\n
 *\n * @returns whether the given error is present in the control at the given path.\n * \n * If the control is not
 present, false is returned.\n */\n * ^\n hasError(errorCode: string, path?: Array<string|number>|string): boolean {\n
 return this.control ? this.control.hasError(errorCode, path) : false;\n }\n\n /**\n * @description\n * Reports error
 data for the control with the given path.\n * \n * @param errorCode The code of the error to check\n * @param
 path A list of control names that designates how to move from the current control\n * to the control that should be
 queried for errors.\n * \n * @usageNotes\n * For example, for the following `FormGroup`:\n * \n * \n * form = new
 FormGroup({\n * address: new FormGroup({\n * street: new FormControl() })\n * });\n * \n * \n * The path to the
 'street' control from the root form would be 'address' -> 'street'.\n * \n * It can be provided to this
 method in one of two formats:\n * \n * 1. An array of string control names, e.g. `['address', 'street']`\n * \n * 1. A
 period-delimited list of control names in one string, e.g. `address.street`\n * \n * @returns error data for that
 particular error. If the control or error is not present,\n * null is returned.\n */\n getError(errorCode: string, path?:

```



```

Array<string|number>|string): any {\n return this.control ? this.control.getError(errorCode, path) : null;\n
}\n}\n", "/*\n * @license\n * Copyright Google LLC All Rights Reserved.\n *\n * Use of this source code is
governed by an MIT-style license that can be\n * found in the LICENSE file at https://angular.io/license\n
*/\n\nimport { AbstractControlDirective } from './abstract_control_directive';\nimport { Form } from
 './form_interface';\n\n\n/*\n * @description\n * A base class for directives that contain multiple registered instances
of `NgControl`.\n * Only used by the forms module.\n *\n * @publicApi\n */\nexport abstract class
ControlContainer extends AbstractControlDirective {\n /**\n * @description\n * The name for the control\n
*/\n // TODO(issue/24571): remove '!.\n name!: string|number|null;\n\n /**\n * @description\n * The top-level
form directive for the control.\n */\n get formDirective(): Form|null {\n return null;\n }\n\n /**\n *
@description\n * The path to this group.\n */\n get path(): string[]|null {\n return null;\n }\n}\n", "/*\n *
@license\n * Copyright Google LLC All Rights Reserved.\n *\n * Use of this source code is governed by an MIT-
style license that can be\n * found in the LICENSE file at https://angular.io/license\n */\n\nimport
{ AbstractControlDirective } from './abstract_control_directive';\nimport { ControlContainer } from
 './control_container';\nimport { ControlValueAccessor } from './control_value_accessor';\n\n\n/*\n * @description\n
* A base class that all `FormControl`-based directives extend. It binds a `FormControl`\n * object to a DOM
element.\n *\n * @publicApi\n */\nexport abstract class FormControl extends AbstractControlDirective {\n /**\n *
@description\n * The parent form for the control.\n *\n * @internal\n */\n _parent: ControlContainer|null =
null;\n\n /**\n * @description\n * The name for the control\n */\n name: string|number|null = null;\n\n /**\n
* @description\n * The value accessor for the control\n */\n valueAccessor: ControlValueAccessor|null =
null;\n\n /**\n * @description\n * The callback method to update the model from the view when requested\n
*\n * @param newValue The new value for the view\n */\n abstract viewToModelUpdate(newValue: any):
void;\n}\n", "/*\n * @license\n * Copyright Google LLC All Rights Reserved.\n *\n * Use of this source code is
governed by an MIT-style license that can be\n * found in the LICENSE file at https://angular.io/license\n
*/\n\nimport { Directive, Self } from '@angular/core';\nimport { AbstractControlDirective } from
 './abstract_control_directive';\nimport { ControlContainer } from './control_container';\nimport { NgControl } from
 './ng_control';\n\nexport class AbstractControlStatus {\n private _cd: AbstractControlDirective;\n\n constructor(cd:
AbstractControlDirective) {\n this._cd = cd;\n }\n\n get ngClassUntouched(): boolean {\n return
this._cd.control ? this._cd.control.untouched : false;\n }\n\n get ngClassTouched(): boolean {\n return
this._cd.control ? this._cd.control.touched : false;\n }\n\n get ngClassPristine(): boolean {\n return this._cd.control
? this._cd.control.pristine : false;\n }\n\n get ngClassDirty(): boolean {\n return this._cd.control ?
this._cd.control.dirty : false;\n }\n\n get ngClassValid(): boolean {\n return this._cd.control ? this._cd.control.valid
: false;\n }\n\n get ngClassInvalid(): boolean {\n return this._cd.control ? this._cd.control.invalid : false;\n }\n get
ngClassPending(): boolean {\n return this._cd.control ? this._cd.control.pending : false;\n }\n}\n\nexport const
ngControlStatusHost = {\n [class.ng-untouched]: 'ngClassUntouched',\n [class.ng-touched]: 'ngClassTouched',\n
[class.ng-pristine]: 'ngClassPristine',\n [class.ng-dirty]: 'ngClassDirty',\n [class.ng-valid]: 'ngClassValid',\n
[class.ng-invalid]: 'ngClassInvalid',\n [class.ng-pending]: 'ngClassPending',\n};\n\n\n/*\n * @description\n *
Directive automatically applied to Angular form controls that sets CSS classes\n * based on control status.\n *\n *
@usageNotes\n *\n * ### CSS classes applied\n *\n * The following classes are applied as the properties become
true:\n *\n * * ng-valid\n * * ng-invalid\n * * ng-pending\n * * ng-pristine\n * * ng-dirty\n * * ng-untouched\n * *
ng-touched\n *\n * @ngModule ReactiveFormsModule\n * @ngModule FormsModule\n * @publicApi\n
*/\n\n@Directive({ selector: '[formControlName],[ngModel],[formControl]', host: ngControlStatusHost })\nexport
class NgControlStatus extends AbstractControlStatus {\n constructor(@Self() cd: NgControl) {\n super(cd);\n }\n}\n\n\n/*\n *
@description\n * Directive automatically applied to Angular form groups that sets CSS classes\n * based on control status (valid/invalid/dirty/etc).\n *\n * @see `NgControlStatus`\n *\n * @ngModule
ReactiveFormsModule\n * @ngModule FormsModule\n * @publicApi\n */\n\n@Directive({\n selector: '[formGroupName],[formArrayName],[ngModelGroup],[formGroup],form:not([ngNoForm]),[ngForm]',\n host:
ngControlStatusHost\n})\nexport class NgControlStatusGroup extends AbstractControlStatus {\n constructor(@Self() cd: ControlContainer) {\n super(cd);\n }\n}\n", "/*\n * @license\n * Copyright Google LLC

```

```

All Rights Reserved.\n * Use of this source code is governed by an MIT-style license that can be\n * found in
the LICENSE file at https://angular.io/license\n */\n\nimport {Directive, ElementRef, forwardRef, Renderer2} from
'@angular/core';\n\nimport {ControlValueAccessor, NG_VALUE_ACCESSOR} from
'./control_value_accessor';\n\nexport const NUMBER_VALUE_ACCESSOR: any = {\n provide:
NG_VALUE_ACCESSOR,\n useExisting: forwardRef(() => NumberValueAccessor),\n multi: true\n};\n\n/**\n *
 @description\n * The `ControlValueAccessor` for writing a number value and listening to number input changes.\n
 * The value accessor is used by the `FormControlDirective`, `FormControlName`, and `NgModel`\n * directives.\n
 * \n * @usageNotes\n * \n * ### Using a number input with a reactive form.\n * \n * The following example shows
how to use a number input with a reactive form.\n * \n * ```ts\n * const totalCountControl = new FormControl();\n *
```.\n * \n * <input type="number" [formControl]="totalCountControl">\n * \n * \n * @ngModule
ReactiveFormsModule\n * @ngModule FormsModule\n * @publicApi\n */\n\n@Directive({\n selector:\n
'input[type=number][formControlName],input[type=number][formControl],input[type=number][ngModel]',\n host:
{'(input)': 'onChange($event.target.value)', '(blur)': 'onTouched()'},\n providers:
[NUMBER_VALUE_ACCESSOR]})\n\nexport class NumberValueAccessor implements ControlValueAccessor
{\n /**\n * The registered callback function called when a change or input event occurs on the input\n *
element.\n * @nodoc\n */\n onChange = (_: any) => {};\n /**\n * The registered callback function called
when a blur event occurs on the input element.\n * @nodoc\n */\n onTouched = () => {};\n\n constructor(private
_renderer: Renderer2, private _elementRef: ElementRef) {\n /**\n * Sets the "value" property on the input
element.\n * @nodoc\n */\n writeValue(value: number): void {\n // The value needs to be normalized for IE9,
otherwise it is set to 'null' when null\n const normalizedValue = value == null ? " : value;\n
this._renderer.setProperty(this._elementRef.nativeElement, 'value', normalizedValue);\n }\n\n /**\n * Registers a
function called when the control value changes.\n * @nodoc\n */\n registerOnChange(fn: (_: number|null) =>
void): void {\n this.onChange = (value) => {\n fn(value == " ? null : parseFloat(value));\n };
}\n\n /**\n * Registers a function called when the control is touched.\n * @nodoc\n */\n registerOnTouched(fn: () => void):
void {\n this.onTouched = fn;\n }\n\n /**\n * Sets the "disabled" property on the input element.\n *
 @nodoc\n */\n setDisabledState(isDisabled: boolean): void {\n
this._renderer.setProperty(this._elementRef.nativeElement, 'disabled', isDisabled);\n }\n}\n\n"/**\n * @license\n *
Copyright Google LLC All Rights Reserved.\n * Use of this source code is governed by an MIT-style license
that can be\n * found in the LICENSE file at https://angular.io/license\n */\n\nimport {Directive, ElementRef,
forwardRef, Injectable, Injector, Input, OnDestroy, OnInit, Renderer2} from '@angular/core';\n\nimport
{ControlValueAccessor, NG_VALUE_ACCESSOR} from './control_value_accessor';\n\nimport {NgControl} from
'./ng_control';\n\nexport const RADIO_VALUE_ACCESSOR: any = {\n provide: NG_VALUE_ACCESSOR,\n
useExisting: forwardRef(() => RadioControlValueAccessor),\n multi: true\n};\n\nfunction throwError() {\n
throw new Error(`\n If you define both a name and a formControlName attribute on your radio button, their
values\n must match. Ex: <input type="radio" formControlName="food" name="food">\n `);\n }\n\n /**\n *
 @description\n * Class used by Angular to track radio buttons. For internal use only.\n */\n\n@Injectable()\n\nexport
class RadioControlRegistry {\n private _accessors: any[] = [];\n\n /**\n * @description\n * Adds a control to the
internal registry. For internal use only.\n */\n add(control: NgControl, accessor: RadioControlValueAccessor) {\n
this._accessors.push([control, accessor]);\n }\n\n /**\n * @description\n * Removes a control from the internal
registry. For internal use only.\n */\n remove(accessor: RadioControlValueAccessor) {\n for (let i =
this._accessors.length - 1; i >= 0; --i) {\n if (this._accessors[i][1] === accessor) {\n this._accessors.splice(i,
1);\n return;\n }\n }\n }\n\n /**\n * @description\n * Selects a radio button. For internal use only.\n
 */\n select(accessor: RadioControlValueAccessor) {\n this._accessors.forEach((c) => {\n if
(this._isSameGroup(c, accessor) && c[1] !== accessor) {\n c[1].fireUncheck(accessor.value);\n }\n });\n
}\n\n private _isSameGroup(\n controlPair: [NgControl, RadioControlValueAccessor],\n accessor:
RadioControlValueAccessor): boolean {\n if (!controlPair[0].control) return false;\n return
controlPair[0]._parent === accessor._control._parent &&\n controlPair[1].name === accessor.name;\n
}\n}\n\n /**\n * @description\n * The `ControlValueAccessor` for writing radio control values and listening to radio

```

control changes. The value accessor is used by the `FormControlDirective`, `FormControlName`, and `NgModel` directives.

Using radio buttons with reactive form directives

The following example shows how to use radio buttons in a reactive form. When using radio buttons in a reactive form, radio buttons in the same group should have the same `formControlName`. Providing a `name` attribute is optional.

```

@angular/forms/ts/reactiveRadioButtons/reactive_radio_button_example.ts region='Reactive'
import { NgModule, ReactiveFormsModule } from '@angular/core';
import { FormBuilder, FormControl, FormGroup, FormArray, Validators } from '@angular/forms';
import { Component } from '@angular/core';

@Component({
  selector: 'reactive-radio-button-example',
  host: {
    '(change)': 'onChange()',
    '(blur)': 'onTouched()',
  },
  providers: [RADIO_VALUE_ACCESSOR],
})
export class RadioControlValueAccessor implements ControlValueAccessor, OnDestroy, OnInit {
  /** @internal */
  // TODO(issue/24571): remove '!'.
  _state!: boolean;
  /** @internal */
  // TODO(issue/24571): remove '!'.
  _control!: FormControl;
  /** @internal */
  // TODO(issue/24571): remove '!'.
  _fn!: Function;

  /** The registered callback function called when a change event occurs on the input element. */
  onChange = () => {};

  /** The registered callback function called when a blur event occurs on the input element. */
  onTouched = () => {};

  /** @description Tracks the name of the radio input element. */
  // TODO(issue/24571): remove '!'.
  @Input() name!: string;

  /** @description Tracks the name of the `FormControl` bound to the directive. The name corresponds to a key in the parent `FormGroup` or `FormArray`. */
  // TODO(issue/24571): remove '!'.
  @Input() formControlName!: string;

  /** @description Tracks the value of the radio input element. */
  @Input() value: any;

  constructor(
    private _renderer: Renderer2,
    private _elementRef: ElementRef,
    private _registry: RadioControlRegistry,
    private _injector: Injector
  ) {}

  /** @nodoc */
  ngOnInit(): void {
    this._control = this._injector.get(FormControl);
    this._checkName();
    this._registry.add(this._control, this);
  }

  /** @nodoc */
  ngOnDestroy(): void {
    this._registry.remove(this);
  }

  /** Sets the "checked" property value on the radio input element. */
  @nodoc
  writeValue(value: any): void {
    this._state = value === this.value;
    this._renderer.setProperty(this._elementRef.nativeElement, 'checked', this._state);
  }

  /** Registers a function called when the control value changes. */
  @nodoc
  registerOnChange(fn: (_: any) => {}): void {
    this._fn = fn;
    this.onChange = () => {
      fn(this.value);
      this._registry.select(this);
    };
  }

  /** Sets the "value" on the radio input element and unchecks it. */
  @param value
  fireUncheck(value: any): void {
    this.writeValue(value);
  }

  /** Registers a function called when the control is touched. */
  @nodoc
  registerOnTouched(fn: () => {}): void {
    this.onTouched = fn;
  }

  /** Sets the "disabled" property on the input element. */
  @nodoc
  setDisabledState(isDisabled: boolean): void {
    this._renderer.setProperty(this._elementRef.nativeElement, 'disabled', isDisabled);
  }

  private _checkName(): void {
    if (this.name && this.formControlName && this.name !== this.formControlName && (typeof ngDevMode === 'undefined' || ngDevMode)) {
      throw new Error();
    }
    if (!this.name && this.formControlName) {
      this.name = this.formControlName;
    }
  }
}

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import { Directive, ElementRef, forwardRef, Renderer2, StaticProvider } from '@angular/core';
import { ControlValueAccessor, NG_VALUE_ACCESSOR } from './control_value_accessor';
export const RANGE_VALUE_ACCESSOR: StaticProvider = {
  provide: NG_VALUE_ACCESSOR,
  useExisting: forwardRef(() => RangeValueAccessor),
  multi: true,
};

/** @description The `ControlValueAccessor` for writing a range value and listening to range input changes. The value accessor is used by the `FormControlDirective`, `FormControlName`, and `NgModel` directives. */
### Using a range input with a reactive form
The following example shows how to use a range input with a reactive form.


```

const ageControl = new FormControl();
<input type="range" [formControl]="ageControl" >
import { NgModule, ReactiveFormsModule } from '@angular/core';
import { FormBuilder, FormControl, FormGroup, FormArray, Validators } from '@angular/forms';
import { Component } from '@angular/core';

@Component({
 selector: 'reactive-range-input-example',
 host: {
 '(change)': 'onChange($event.target.value)',
 '(input)': 'onChange($event.target.value)',
 '(blur)':

```


```


using this approach to avoid 'changed after checked' errors.

Example:

```

form = new FormGroup({
  first: new FormControl({value: 'Nancy', disabled: true}, Validators.required),
  last: new FormControl('Drew', Validators.required)
});

```

static ngModelWarning(directiveName: string): void {
 console.warn(`It looks like you're using ngModel on the same form field as \${directiveName}. Support for using the ngModel input property and ngModelChange event with reactive form directives has been deprecated in Angular v6 and will be removed in a future version of Angular.`);
}

For more information on this, see our API docs here: <https://angular.io/api/forms/FormControlDirective>

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```

import {Directive, ElementRef, forwardRef, Host, Input, OnDestroy, Optional, Renderer2, StaticProvider} from '@angular/core';
import {ControlValueAccessor, NG_VALUE_ACCESSOR} from './control_value_accessor';
export const SELECT_VALUE_ACCESSOR: StaticProvider = {
  provide: NG_VALUE_ACCESSOR,
  useExisting: forwardRef(() => SelectControlValueAccessor),
  multi: true
};
function _buildValueString(id: string|null, value: any): string {
  if (id == null) return `${value}`;
  if (value && typeof value === 'object') value = 'Object';
  return `${id}: ${value}`.slice(0, 50);
}
function _extractId(valueString: string): string {
  return valueString.split(':')[0];
}

```

@description The `ControlValueAccessor` for writing select control values and listening to select control changes. The value accessor is used by the `FormControlDirective`, `FormControlName`, and `NgModel` directives.

@usageNotes ### Using select controls in a reactive form

The following examples show how to use a select control in a reactive form.

@example forms/ts/reactiveSelectControl/reactive_select_control_example.ts region='Component'

Using select controls in a template-driven form

To use a select in a template-driven form, simply add an `ngModel` and a `name` attribute to the main `<select>` tag.

@example forms/ts/selectControl/select_control_example.ts region='Component'

Customizing option selection

Angular uses object identity to select option. It's possible for the identities of items to change while the data does not. This can happen, for example, if the items are produced from an RPC to the server, and that RPC is re-run. Even if the data hasn't changed, the second response will produce objects with different identities.

To customize the default option comparison algorithm, `<select>` supports `compareWith` input.

`compareWith` takes a `function` which has two arguments: `option1` and `option2`.

If `compareWith` is given, Angular selects option by the return value of the function.

```

ts
const selectedCountriesControl = new FormControl();
<select [compareWith]="compareFn" [formControl]=selectedCountriesControl">
  <option *ngFor="let country of countries" [ngValue]="country"> {{country.name}} </option>
</select>
compareFn(c1: Country, c2: Country): boolean {
  return c1 && c2 ? c1.id === c2.id : c1 === c2;
}

```

Note: We listen to the 'change' event because 'input' events aren't fired for selects in Firefox and IE.

https://bugzilla.mozilla.org/show_bug.cgi?id=1024350 <https://developer.microsoft.com/en-us/microsoft-edge/platform/issues/4660045/>

```

@ngModule ReactiveFormsModule
@ngModule FormsModule
@publicApi
@Directive({
  selector: 'select:not([multiple])[formControlName],select:not([multiple])[formControl],select:not([multiple])[ngModel]',
  host: {
    '(change)': 'onChange($event.target.value)',
    '(blur)': 'onTouched()'
  },
  providers: [SELECT_VALUE_ACCESSOR]
})
export class SelectControlValueAccessor implements ControlValueAccessor {
  /** @nodoc */
  value: any;
  /** @internal */
  _optionMap: Map<string, any> = new Map<string, any>();
  /** @internal */
  _idCounter: number = 0;
  /**
   * The registered callback function called when a change event occurs on the input element.
   */
  @nodoc
  onChange = (_: any) => {};
  /**
   * The registered callback function called when a blur event occurs on the input element.
   */
  @nodoc
  onTouched = () => {};
  /**
   * @description
   * Tracks the option comparison algorithm for tracking identities when checking for changes.
   */
  @Input()
  set compareWith(fn: (o1: any, o2: any) => boolean) {
    if (typeof fn !== 'function' && (typeof ngDevMode === 'undefined' || ngDevMode)) {
      throw
    }
  }
}

```

```

new Error(`compareWith must be a function, but received ${JSON.stringify(fn)}`);
}
this._compareWith =
fn;
}
private _compareWith: (o1: any, o2: any) => boolean = Object.is;
constructor(private _renderer:
Renderer2, private _elementRef: ElementRef) {}
/**
 * Sets the `value` property on the input element. The
`selectedIndex` property is also set if an ID is provided on the option element.
 * @nodoc
 */
writeValue(value: any): void {
  this.value = value;
  const id: string|null = this._getOptionId(value);
  if (id
== null) {
    this._renderer.setProperty(this._elementRef.nativeElement, 'selectedIndex', -1);
  }
  const
valueString = _buildValueString(id, value);
  this._renderer.setProperty(this._elementRef.nativeElement, 'value',
valueString);
}
/**
 * Registers a function called when the control value changes.
 * @nodoc
 */
registerOnChange(fn: (value: any) => any): void {
  this.onChange = (valueString: string) => {
    this.value =
this._getOptionValue(valueString);
    fn(this.value);
  };
}
/**
 * Registers a function called when the
control is touched.
 * @nodoc
 */
registerOnTouched(fn: () => any): void {
  this.onTouched = fn;
}
/**
 * Sets the `disabled` property on the select input element.
 * @nodoc
 */
setDisabledState(isDisabled: boolean): void {
  this._renderer.setProperty(this._elementRef.nativeElement,
'disabled', isDisabled);
}
}
/** @internal */
_registerOption(): string {
  return
(this._idCounter++).toString();
}
/** @internal */
_getOptionId(value: any): string|null {
  for (const id
of Array.from(this._optionMap.keys())) {
    if (this._compareWith(this._optionMap.get(id), value)) return id;
  }
  return null;
}
/** @internal */
_getOptionValue(valueString: string): any {
  const id: string =
_extractId(valueString);
  return this._optionMap.has(id) ? this._optionMap.get(id) : valueString;
}
}
}
/**
 * @description
 * Marks `<option>` as dynamic, so Angular can be notified when options change.
 * @see
`SelectControlValueAccessor`
 * @ngModule ReactiveFormsModule
 * @ngModule FormsModule
 *
 * @publicApi
 */
export class NgSelectOption implements OnDestroy {
  /**
 * @description
 * ID of the option element
 * @todo(issue/24571): remove `!`
 */
  id!: string;
  constructor(
    private _element: ElementRef, private _renderer: Renderer2,
    @Optional() @Host() private
_select: SelectControlValueAccessor) {
    if (this._select) this.id = this._select._registerOption();
  }
  /**
 * @description
 * Tracks the value bound to the option element. Unlike the value binding,
 * ngValue supports
binding to objects.
 * @Input('ngValue')
 */
  set ngValue(value: any) {
    if (this._select == null) return;
    this._select._optionMap.set(this.id, value);
    this._setElementValue(_buildValueString(this.id, value));
    this._select.writeValue(this._select.value);
  }
  /**
 * @description
 * Tracks simple string values bound to
the option element.
 * For objects, use the `ngValue` input binding.
 * @Input('value')
 */
  set value(value:
any) {
    this._setElementValue(value);
    if (this._select) this._select.writeValue(this._select.value);
  }
  /**
 * @internal
 */
  _setElementValue(value: string): void {
    this._renderer.setProperty(this._element.nativeElement,
'value', value);
  }
  /** @nodoc
 */
  ngOnDestroy(): void {
    if (this._select) {
      this._select._optionMap.delete(this.id);
      this._select.writeValue(this._select.value);
    }
  }
}
}
}
/**
 * @license
 * Copyright Google LLC All Rights Reserved.
 * Use of this source code is governed by an MIT-
style license that can be
 * found in the LICENSE file at https://angular.io/license
 */
import {Directive,
ElementRef, forwardRef, Host, Input, OnDestroy, Optional, Renderer2, StaticProvider} from
'@angular/core';
import {ControlValueAccessor, NG_VALUE_ACCESSOR} from
'./control_value_accessor';
export const SELECT_MULTIPLE_VALUE_ACCESSOR: StaticProvider = {
  provide: NG_VALUE_ACCESSOR,
  useExisting: forwardRef(() => SelectMultipleControlValueAccessor),
  multi: true
};
function _buildValueString(id: string, value: any): string {
  if (id == null) return `${value}`;
  if
(typeof value === 'string') value = `${value}`;
  if (value && typeof value === 'object') value = 'Object';
  return
`${id}: ${value}`.slice(0, 50);
}
function _extractId(valueString: string): string {
  return
valueString.split(':')[0];
}
/** Mock interface for HTML Options */
interface HTMLOption {
  value:
string;
  selected: boolean;
}
/** Mock interface for HTMLCollection */
abstract class HTMLCollection {
  // TODO(issue/24571): remove `!`
  length!: number;
  abstract item(_: number): HTMLOption;
}
/**
 * @description
 * The `ControlValueAccessor` for writing multi-select control values and listening to multi-select
 * control changes. The value accessor is used by the `FormControlDirective`, `FormControlName`, and
 * `NgModel` directives.
 * @see `SelectControlValueAccessor`
 * @usageNotes
 * ### Using a multi-

```



```

@Optional() @Host() private _select: SelectMultipleControlValueAccessor) {\n  if (this._select) {\n    this.id =
this._select._registerOption(this);\n  }\n}\n\n/**\n * @description\n * Tracks the value bound to the option
element. Unlike the value binding,\n * ngValue supports binding to objects.\n */\n @Input('ngValue')\n set
ngValue(value: any) {\n  if (this._select == null) return;\n  this._value = value;\n
this._setElementValue(_buildValueString(this.id, value));\n  this._select.writeValue(this._select.value);\n }\n\n
/**\n * @description\n * Tracks simple string values bound to the option element.\n * For objects, use the
`ngValue` input binding.\n */\n @Input('value')\n set value(value: any) {\n  if (this._select) {\n    this._value =
value;\n    this._setElementValue(_buildValueString(this.id, value));\n
this._select.writeValue(this._select.value);\n  } else {\n    this._setElementValue(value);\n  }\n}\n\n /**
@internal */\n _setElementValue(value: string): void {\n  this._renderer.setProperty(this._element.nativeElement,
'value', value);\n }\n\n /** @internal */\n _setSelected(selected: boolean) {\n
this._renderer.setProperty(this._element.nativeElement, 'selected', selected);\n }\n\n /** @nodoc */\n
ngOnDestroy(): void {\n  if (this._select) {\n    this._select._optionMap.delete(this.id);\n
this._select.writeValue(this._select.value);\n  }\n}\n\nexport {NgSelectMultipleOption as
NgSelectMultipleOption};\n\n"/**\n * @license\n * Copyright Google LLC All Rights Reserved.\n *\n * Use of this
source code is governed by an MIT-style license that can be\n * found in the LICENSE file at
https://angular.io/license\n */\n\nimport {isDevMode} from '@angular/core';\nimport {AbstractControl,
FormArray, FormControl, FormGroup} from './model';\nimport {getControlAsyncValidators, getControlValidators,
mergeValidators} from './validators';\nimport {AbstractControlDirective} from
'./abstract_control_directive';\nimport {AbstractFormGroupDirective} from
'./abstract_form_group_directive';\nimport {CheckboxControlValueAccessor} from
'./checkbox_value_accessor';\nimport {ControlContainer} from './control_container';\nimport
{ControlValueAccessor} from './control_value_accessor';\nimport {DefaultValueAccessor} from
'./default_value_accessor';\nimport {NgControl} from './ng_control';\nimport {NumberValueAccessor} from
'./number_value_accessor';\nimport {RadioControlValueAccessor} from './radio_control_value_accessor';\nimport
{RangeValueAccessor} from './range_value_accessor';\nimport {FormArrayName} from
'./reactive_directives/form_group_name';\nimport {ReactiveErrors} from './reactive_errors';\nimport
{SelectControlValueAccessor} from './select_control_value_accessor';\nimport
{SelectMultipleControlValueAccessor} from './select_multiple_control_value_accessor';\nimport
{AsyncValidatorFn, Validator, ValidatorFn} from './validators';\n\nexport function controlPath(name: string|null,
parent: ControlContainer): string[] {\n  return [...parent.path!, name!];\n}\n\nexport function setUpControl(control:
FormControl, dir: NgControl): void {\n  if (typeof ngDevMode === 'undefined' || ngDevMode) {\n    if (!control)
_throwError(dir, 'Cannot find control with');\n    if (!dir.valueAccessor) _throwError(dir, 'No value accessor for form
control with');\n  }\n\n  setUpValidators(control, dir, /* handleOnValidatorChange */ true);\n\n  dir.valueAccessor!.writeValue(control.value);\n\n  setUpViewChangePipeline(control, dir);\n
setUpModelChangePipeline(control, dir);\n\n  setUpBlurPipeline(control, dir);\n\n
setUpDisabledChangeHandler(control, dir);\n}\n\nexport function cleanUpControl(control: FormControl|null, dir:
NgControl) {\n  const noop = () => {\n    if (typeof ngDevMode === 'undefined' || ngDevMode) {\n
_noControlError(dir);\n    }\n  };\n\n  dir.valueAccessor!.registerOnChange(noop);\n
dir.valueAccessor!.registerOnTouched(noop);\n\n  cleanUpValidators(control, dir, /* handleOnValidatorChange */
true);\n\n  if (control) {\n    dir._invokeOnDestroyCallbacks();\n    control._registerOnCollectionChange(() => {});\n
}\n}\n\nfunction registerOnValidatorChange<V>(validators: (V|Validator)[], onChange: () => void): void {\n
validators.forEach((validator: (V|Validator)) => {\n  if ((<Validator>validator).registerOnValidatorChange)\n
(<Validator>validator).registerOnValidatorChange!(onChange);\n });\n}\n\n/**\n * Sets up disabled change
handler function on a given form control if ControlValueAccessor\n * associated with a given directive instance
supports the `setDisabledState` call.\n *\n * @param control Form control where disabled change handler should be
setup.\n *\n * @param dir Corresponding directive instance associated with this control.\n */\nexport function
setUpDisabledChangeHandler(control: FormControl, dir: NgControl): void {\n  if

```



```

(control._pendingDirty) control.markAsDirty();\n control.setValue(control._pendingValue,\n {emitModelToViewChange: false});\n dir.viewToModelUpdate(control._pendingValue);\n control._pendingChange = false;\n\nfunction setUpModelChangePipeline(control: FormControl, dir: NgControl):\n void {\n const onChange = (newValue: any, emitModelEvent: boolean) => {\n // control -> view\n dir.valueAccessor!.writeValue(newValue);\n // control -> ngModel\n if (emitModelEvent)\n dir.viewToModelUpdate(newValue);\n }; \n control.registerOnChange(onChange);\n // Register a callback\n function to cleanup onChange handler\n // from a control instance when a directive is destroyed.\n dir._registerOnDestroy(() => {\n control._unregisterOnChange(onChange);\n });\n\nexport function\n setUpFormContainer(\n control: FormGroup|FormArray, dir: AbstractFormGroupDirective|FormArrayName) {\n if (control == null && (typeof ngDevMode === 'undefined' || ngDevMode))\n _throwError(dir, 'Cannot find\n control with');\n setUpValidators(control, dir, /* handleOnValidatorChange */ false);\n\nfunction\n _noControlError(dir: NgControl) {\n return _throwError(dir, 'There is no FormControl instance attached to form\n control element with');\n}\n\nfunction _throwError(dir: AbstractControlDirective, message: string): void {\n let\n messageEnd: string;\n if (dir.path!.length > 1) {\n messageEnd = `path: '${dir.path!.join(' -> ')}';\n } else if\n (dir.path![0]) {\n messageEnd = `name: '${dir.path}'`; \n } else {\n messageEnd = 'unspecified name attribute';\n }\n throw new Error(`${message} ${messageEnd}`);\n}\n\nexport function isPropertyUpdated(changes: {[key:\n string]: any}, viewModel: any): boolean {\n if (!changes.hasOwnProperty('model')) return false;\n const change =\n changes['model'];\n if (change.isFirstChange()) return true;\n return !Object.is(viewModel,\n change.currentValue);\n}\n\nconst BUILTIN_ACCESSORS = [\n CheckboxControlValueAccessor,\n RangeValueAccessor,\n NumberValueAccessor,\n SelectControlValueAccessor,\n SelectMultipleControlValueAccessor,\n RadioControlValueAccessor,];\n\nexport function\n isBuiltinAccessor(valueAccessor: ControlValueAccessor): boolean {\n return BUILTIN_ACCESSORS.some(a =>\n valueAccessor.constructor === a);\n}\n\nexport function syncPendingControls(form: FormGroup, directives:\n NgControl[]): void {\n form._syncPendingControls();\n directives.forEach(dir => {\n const control = dir.control\n as FormControl;\n if (control.updateOn === 'submit' && control._pendingChange) {\n dir.viewToModelUpdate(control._pendingValue);\n control._pendingChange = false;\n }\n });\n\n// TODO:\n vsavkin remove it once https://github.com/angular/angular/issues/3011 is implemented\nexport function\n selectValueAccessor(\n dir: NgControl, valueAccessors: ControlValueAccessor[]): ControlValueAccessor|null {\n if (!valueAccessors) return null;\n if (!Array.isArray(valueAccessors) && (typeof ngDevMode === 'undefined' ||\n ngDevMode))\n _throwError(dir, 'Value accessor was not provided as an array for form control with');\n let\n defaultAccessor: ControlValueAccessor|undefined = undefined;\n let builtinAccessor:\n ControlValueAccessor|undefined = undefined;\n let customAccessor: ControlValueAccessor|undefined =\n undefined;\n\n valueAccessors.forEach((v: ControlValueAccessor) => {\n if (v.constructor ===\n DefaultValueAccessor) {\n defaultAccessor = v;\n } else if (isBuiltinAccessor(v)) {\n if (builtinAccessor\n && (typeof ngDevMode === 'undefined' || ngDevMode))\n _throwError(dir, 'More than one built-in value\n accessor matches form control with');\n builtinAccessor = v;\n } else {\n if (customAccessor && (typeof\n ngDevMode === 'undefined' || ngDevMode))\n _throwError(dir, 'More than one custom value accessor matches\n form control with');\n customAccessor = v;\n }\n });\n\n if (customAccessor) return customAccessor;\n if\n (builtinAccessor) return builtinAccessor;\n if (defaultAccessor) return defaultAccessor;\n\n if (typeof ngDevMode\n === 'undefined' || ngDevMode) {\n _throwError(dir, 'No valid value accessor for form control with');\n }\n return\n null;\n}\n\nexport function removeListItem<T>(list: T[], el: T): void {\n const index = list.indexOf(el);\n if (index\n > -1) list.splice(index, 1);\n\n// TODO(kara): remove after deprecation period\nexport function\n _ngModelWarning(\n name: string, type: {_ngModelWarningSentOnce: boolean},\n instance:\n {_ngModelWarningSent: boolean}, warningConfig: string|null) {\n if (!isDevMode() || warningConfig === 'never')\n return;\n if (((warningConfig === null || warningConfig === 'once') && !type._ngModelWarningSentOnce) ||\n (warningConfig === 'always' && !instance._ngModelWarningSent)) {\n if (typeof ngDevMode === 'undefined' ||\n ngDevMode) {\n ReactiveErrors.ngModelWarning(name);\n }\n type._ngModelWarningSentOnce = true;\n instance._ngModelWarningSent = true;\n }\n }\n\n", "/*\n * @license\n * Copyright Google LLC All Rights

```

```

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LICENSE file at https://angular.io/license

import { EventEmitter } from '@angular/core';
import { Observable } from 'rxjs';
import { removeListItem } from './directives/shared';
import { AsyncValidatorFn, ValidationErrors, ValidatorFn } from './directives/validators';
import { composeAsyncValidators, composeValidators, toObservable } from './validators';

Reports that a FormControl is valid, meaning that no errors exist in the input value.
@see `status`
export const VALID = 'VALID';

Reports that a FormControl is invalid, meaning that an error exists in the input value.
@see `status`
export const INVALID = 'INVALID';

Reports that a FormControl is pending, meaning that that async validation is occurring and errors are not yet available for the input value.
@see `markAsPending`
@see `status`
export const PENDING = 'PENDING';

Reports that a FormControl is disabled, meaning that the control is exempt from ancestor calculations of validity or value.
@see `markAsDisabled`
@see `status`
export const DISABLED = 'DISABLED';

function _find(control: AbstractControl, path: Array<string|number>|string, delimiter: string) {
  if (path == null) return null;
  if (!Array.isArray(path)) {
    path = path.split(delimiter);
  }
  if (Array.isArray(path) && path.length === 0) return null;
  // Not using Array.reduce here due to a Chrome 80 bug
  // https://bugs.chromium.org/p/chromium/issues/detail?id=1049982
  let controlToFind: AbstractControl|null = control;
  path.forEach((name: string|number) => {
    if (controlToFind instanceof FormGroup) {
      controlToFind = controlToFind.controls.hasOwnProperty(name as string) ?
        controlToFind.controls[name] : null;
    } else if (controlToFind instanceof FormArray) {
      controlToFind = controlToFind.at(<number>name) || null;
    } else {
      controlToFind = null;
    }
  });
  return controlToFind;
}

Gets validators from either an options object or given validators.
function pickValidators(validatorOrOpts?: ValidatorFn|ValidatorFn[]|AbstractControlOptions|null):
  ValidatorFn|ValidatorFn[]|null {
  return (isOptionsObj(validatorOrOpts) ? validatorOrOpts.validators :
    validatorOrOpts) || null;
}

Creates validator function by combining provided validators.
function coerceToValidator(validator: ValidatorFn|ValidatorFn[]|null): ValidatorFn|null {
  return Array.isArray(validator) ?
    composeValidators(validator) : validator || null;
}

Gets async validators from either an options object or given validators.
function pickAsyncValidators(asyncValidator?:
  AsyncValidatorFn|AsyncValidatorFn[]|null,
  validatorOrOpts?:
  ValidatorFn|ValidatorFn[]|AbstractControlOptions|null): AsyncValidatorFn|
  AsyncValidatorFn[]|null {
  return (isOptionsObj(validatorOrOpts) ? validatorOrOpts.asyncValidators :
    asyncValidator) || null;
}

Creates async validator function by combining provided async validators.
function coerceToAsyncValidator(asyncValidator?: AsyncValidatorFn|AsyncValidatorFn[]|
  null): AsyncValidatorFn|null {
  return Array.isArray(asyncValidator) ? composeAsyncValidators(asyncValidator) :
    asyncValidator || null;
}

export type FormHooks = 'change'|'blur'|'submit';

Interface for options provided to an `AbstractControl`.
@publicApi
export interface AbstractControlOptions {
  /**
   * The list of validators applied to a control.
   */
  validators?: ValidatorFn|ValidatorFn[]|null;
  /**
   * The list of async validators applied to control.
   */
  asyncValidators?: AsyncValidatorFn|AsyncValidatorFn[]|null;
  /**
   * The event name for control to update upon.
   */
  updateOn?: 'change'|'blur'|'submit';
}

function isOptionsObj(validatorOrOpts?: ValidatorFn|ValidatorFn[]|AbstractControlOptions|
  null):
  validatorOrOpts is AbstractControlOptions {
  return validatorOrOpts != null && !Array.isArray(validatorOrOpts) &&
    typeof validatorOrOpts === 'object';
}

This is the base class for `FormControl`, `FormGroup`, and `FormArray`.
It provides some of the shared behavior that all controls and groups of controls have, like running validators, calculating status, and resetting state.
It also defines the properties that are shared between all sub-classes, like `value`, `valid`, and `dirty`.
It shouldn't be instantiated directly.

@see [Forms Guide](/guide/forms)
@see [Reactive Forms Guide](/guide/reactive-forms)
@see [Dynamic Forms Guide](/guide/dynamic-form)
@publicApi
export abstract class AbstractControl {
  /**
   * Indicates that a control has its own pending asynchronous validation in progress.
   */
  @internal
  _pendingDirty!: boolean;
}

```

```

_hasOwnPendingAsyncValidator = false;\n\n /** @internal */\n // TODO(issue/24571): remove '!.\n
_pendingTouched!: boolean;\n\n /** @internal */\n _onCollectionChange = () => {};\n\n /** @internal */\n //
TODO(issue/24571): remove '!.\n _updateOn!: FormHooks;\n\n private _parent: FormGroup|FormArray|null =
null;\n private _asyncValidationSubscription: any;\n\n /**\n * Contains the result of merging synchronous
validators into a single validator function\n * (combined using `Validators.compose`).\n */\n * @internal\n */\n
private _composedValidatorFn: ValidatorFn|null;\n\n /**\n * Contains the result of merging asynchronous
validators into a single validator function\n * (combined using `Validators.composeAsync`).\n */\n * @internal\n
*/\n private _composedAsyncValidatorFn: AsyncValidatorFn|null;\n\n /**\n * Synchronous validators as they
were provided:\n * - in `AbstractControl` constructor\n * - as an argument while calling `setValidators`
function\n * - while calling the setter on the `validator` field (e.g. `control.validator = validatorFn`)\n */\n *
@internal\n */\n private _rawValidators: ValidatorFn|ValidatorFn[]|null;\n\n /**\n * Asynchronous validators as
they were provided:\n * - in `AbstractControl` constructor\n * - as an argument while calling
`setAsyncValidators` function\n * - while calling the setter on the `asyncValidator` field (e.g.
`control.asyncValidator =\n * asyncValidatorFn`)\n */\n * @internal\n */\n private _rawAsyncValidators:
AsyncValidatorFn|AsyncValidatorFn[]|null;\n\n /**\n * The current value of the control.\n */\n * * For a
`FormControl`, the current value.\n * * For an enabled `FormGroup`, the values of enabled controls as an object\n
* with a key-value pair for each member of the group.\n * * For a disabled `FormGroup`, the values of all controls
as an object\n * with a key-value pair for each member of the group.\n * * For a `FormArray`, the values of
enabled controls as an array.\n */\n */\n public readonly value: any;\n\n /**\n * Initialize the AbstractControl
instance.\n */\n * @param validators The function or array of functions that is used to determine the validity of\n
* this control synchronously.\n * @param asyncValidators The function or array of functions that is used to
determine validity of\n * this control asynchronously.\n */\n constructor(\n validators:
ValidatorFn|ValidatorFn[]|null,\n asyncValidators: AsyncValidatorFn|AsyncValidatorFn[]|null) {\n
this._rawValidators = validators;\n this._rawAsyncValidators = asyncValidators;\n this._composedValidatorFn =
coerceToValidator(this._rawValidators);\n this._composedAsyncValidatorFn =
coerceToAsyncValidator(this._rawAsyncValidators);\n }\n\n /**\n * The function that is used to determine the
validity of this control synchronously.\n */\n get validator(): ValidatorFn|null {\n return
this._composedValidatorFn;\n }\n set validator(validatorFn: ValidatorFn|null) {\n this._rawValidators =
this._composedValidatorFn = validatorFn;\n }\n\n /**\n * The function that is used to determine the validity of
this control asynchronously.\n */\n get asyncValidator(): AsyncValidatorFn|null {\n return
this._composedAsyncValidatorFn;\n }\n set asyncValidator(asyncValidatorFn: AsyncValidatorFn|null) {\n
this._rawAsyncValidators = this._composedAsyncValidatorFn = asyncValidatorFn;\n }\n\n /**\n * The parent
control.\n */\n get parent(): FormGroup|FormArray|null {\n return this._parent;\n }\n\n /**\n * The validation
status of the control. There are four possible\n * validation status values:\n * * **VALID**: This control has
passed all validation checks.\n * * **INVALID**: This control has failed at least one validation check.\n * *
**PENDING**: This control is in the midst of conducting a validation check.\n * * **DISABLED**: This control
is exempt from validation checks.\n */\n * These status values are mutually exclusive, so a control cannot be\n
* both valid AND invalid or invalid AND disabled.\n */\n // TODO(issue/24571): remove '!.\n public readonly
status!: string;\n\n /**\n * A control is `valid` when its `status` is `VALID`.\n */\n * @see {@link
AbstractControl.status}\n */\n * @returns True if the control has passed all of its validation tests,\n * false
otherwise.\n */\n get valid(): boolean {\n return this.status === VALID;\n }\n\n /**\n * A control is `invalid`
when its `status` is `INVALID`.\n */\n * @see {@link AbstractControl.status}\n */\n * @returns True if this
control has failed one or more of its validation checks,\n * false otherwise.\n */\n get invalid(): boolean {\n
return this.status === INVALID;\n }\n\n /**\n * A control is `pending` when its `status` is `PENDING`.\n */\n
* @see {@link AbstractControl.status}\n */\n * @returns True if this control is in the process of conducting a
validation check,\n * false otherwise.\n */\n get pending(): boolean {\n return this.status === PENDING;\n
}\n\n /**\n * A control is `disabled` when its `status` is `DISABLED`.\n */\n * Disabled controls are exempt from
validation checks and\n * are not included in the aggregate value of their ancestor\n * controls.\n */\n * @see

```

```

{@link AbstractControl.status}\n * \n * @returns True if the control is disabled, false otherwise.\n * \n get
disabled(): boolean {\n return this.status === DISABLED;\n }\n\n /** \n * A control is `enabled` as long as its
`status` is not `DISABLED`.\n * \n * @returns True if the control has any status other than `DISABLED`,\n *
false if the status is `DISABLED`.\n * \n * @see {@link AbstractControl.status}\n * \n * \n get enabled():
boolean {\n return this.status !== DISABLED;\n }\n\n /** \n * An object containing any errors generated by
failing validation,\n * or null if there are no errors.\n * \n // TODO(issue/24571): remove '!.\n public readonly
errors!: ValidationErrors|null;\n\n /** \n * A control is `pristine` if the user has not yet changed\n * the value in
the UI.\n * \n * @returns True if the user has not yet changed the value in the UI; compare `dirty`.\n *
Programmatic changes to a control's value do not mark it dirty.\n * \n public readonly pristine: boolean = true;\n\n
/** \n * A control is `dirty` if the user has changed the value\n * in the UI.\n * \n * @returns True if the user has
changed the value of this control in the UI; compare `pristine`.\n * Programmatic changes to a control's value do
not mark it dirty.\n * \n get dirty(): boolean {\n return !this.pristine;\n }\n\n /** \n * True if the control is
marked as `touched`.\n * \n * A control is marked `touched` once the user has triggered\n * a `blur` event on it.\n
* \n public readonly touched: boolean = false;\n\n /** \n * True if the control has not been marked as touched\n
* \n * A control is `untouched` if the user has not yet triggered\n * a `blur` event on it.\n * \n get untouched():
boolean {\n return !this.touched;\n }\n\n /** \n * A multicasting observable that emits an event every time the
value of the control changes, in\n * the UI or programmatically. It also emits an event each time you call enable()
or disable()\n * without passing along {emitEvent: false} as a function argument.\n * \n // TODO(issue/24571):
remove '!.\n public readonly valueChanges!: Observable<any>;\n\n /** \n * A multicasting observable that emits
an event every time the validation `status` of the control\n * recalculates.\n * \n * @see {@link
AbstractControl.status}\n * \n * \n // TODO(issue/24571): remove '!.\n public readonly statusChanges!:
Observable<any>;\n\n /** \n * Reports the update strategy of the `AbstractControl` (meaning\n * the event on
which the control updates itself).\n * Possible values: `change` | `blur` | `submit`\n * Default value: `change`\n
* \n get updateOn(): FormHooks {\n return this._updateOn ? this._updateOn : (this.parent ? this.parent.updateOn
: 'change');\n }\n\n /** \n * Sets the synchronous validators that are active on this control. Calling\n * this
overwrites any existing sync validators.\n * \n * When you add or remove a validator at run time, you must call\n
* `updateValueAndValidity()` for the new validation to take effect.\n * \n * \n setValidators(newValidator:
ValidatorFn|ValidatorFn[]|null): void {\n this._rawValidators = newValidator;\n this._composedValidatorFn =
coerceToValidator(newValidator);\n }\n\n /** \n * Sets the async validators that are active on this control. Calling
this\n * overwrites any existing async validators.\n * \n * When you add or remove a validator at run time, you
must call\n * `updateValueAndValidity()` for the new validation to take effect.\n * \n * \n setAsyncValidators(newValidator: AsyncValidatorFn|AsyncValidatorFn[]|null): void {\n
this._rawAsyncValidators = newValidator;\n this._composedAsyncValidatorFn =
coerceToAsyncValidator(newValidator);\n }\n\n /** \n * Empties out the sync validator list.\n * \n * When you
add or remove a validator at run time, you must call\n * `updateValueAndValidity()` for the new validation to take
effect.\n * \n * \n clearValidators(): void {\n this.validator = null;\n }\n\n /** \n * Empties out the async
validator list.\n * \n * When you add or remove a validator at run time, you must call\n *
`updateValueAndValidity()` for the new validation to take effect.\n * \n * \n clearAsyncValidators(): void {\n
this.asyncValidator = null;\n }\n\n /** \n * Marks the control as `touched`. A control is touched by focus and\n *
blur events that do not change the value.\n * \n * @see `markAsUntouched()`\n * @see `markAsDirty()`\n *
@see `markAsPristine()`\n * \n * @param opts Configuration options that determine how the control propagates
changes\n * and emits events after marking is applied.\n * * `onlySelf`: When true, mark only this control. When
false or not supplied,\n * marks all direct ancestors. Default is false.\n * \n markAsTouched(opts: {onlySelf?:
boolean} = {}): void {\n (this as {touched: boolean}).touched = true;\n\n if (this._parent && !opts.onlySelf) {\n
this._parent.markAsTouched(opts);\n }\n }\n\n /** \n * Marks the control and all its descendant controls as
`touched`.\n * @see `markAsTouched()`\n * \n markAllAsTouched(): void {\n this.markAsTouched({onlySelf:
true});\n\n this._forEachChild((control: AbstractControl) => control.markAllAsTouched());\n }\n\n /** \n *
Marks the control as `untouched`.\n * \n * If the control has any children, also marks all children as `untouched`\n

```

```

* and recalculates the `touched` status of all parent controls.\n * \n * @see `markAsTouched()`\n * @see\n
`markAsDirty()`\n * @see `markAsPristine()`\n * \n * @param opts Configuration options that determine how\n
the control propagates changes\n * and emits events after the marking is applied.\n * * `onlySelf`: When true,\n
mark only this control. When false or not supplied,\n * marks all direct ancestors. Default is false.\n */\n
markAsUntouched(opts: {onlySelf?: boolean} = {}): void {\n  (this as {touched: boolean}).touched = false;\n
this._pendingTouched = false;\n  this._forEachChild((control: AbstractControl) => {\n\n
control.markAsUntouched({onlySelf: true});\n  });\n  if (this._parent && !opts.onlySelf) {\n\n
this._parent._updateTouched(opts);\n  }\n  }\n  /**\n * Marks the control as `dirty`. A control becomes dirty\n
when\n * the control's value is changed through the UI; compare `markAsTouched`.\n * \n * @see\n
`markAsTouched()`\n * @see `markAsUntouched()`\n * @see `markAsPristine()`\n * \n * @param opts\n
Configuration options that determine how the control propagates changes\n * and emits events after marking is\n
applied.\n * * `onlySelf`: When true, mark only this control. When false or not supplied,\n * marks all direct\n
ancestors. Default is false.\n */\n
markAsDirty(opts: {onlySelf?: boolean} = {}): void {\n  (this as {pristine:\n
boolean}).pristine = false;\n  if (this._parent && !opts.onlySelf) {\n\n
this._parent.markAsDirty(opts);\n  }\n  }\n  /**\n * Marks the control as `pristine`.\n * \n * If the control has any children, marks all children as\n
`pristine`,\n * and recalculates the `pristine` status of all parent\n * controls.\n * \n * @see\n
`markAsTouched()`\n * @see `markAsUntouched()`\n * @see `markAsDirty()`\n * \n * @param opts\n
Configuration options that determine how the control emits events after\n * marking is applied.\n * * `onlySelf`:\n
When true, mark only this control. When false or not supplied,\n * marks all direct ancestors. Default is false.\n
*/\n
markAsPristine(opts: {onlySelf?: boolean} = {}): void {\n  (this as {pristine: boolean}).pristine = true;\n
this._pendingDirty = false;\n  this._forEachChild((control: AbstractControl) => {\n\n
control.markAsPristine({onlySelf: true});\n  });\n  if (this._parent && !opts.onlySelf) {\n\n
this._parent._updatePristine(opts);\n  }\n  }\n  /**\n * Marks the control as `pending`.\n * \n * A control is\n
pending while the control performs async validation.\n * \n * @see {@link AbstractControl.status}\n * \n *\n
@param opts Configuration options that determine how the control propagates changes and\n * emits events after\n
marking is applied.\n * * `onlySelf`: When true, mark only this control. When false or not supplied,\n * marks all\n
direct ancestors. Default is false.\n * * `emitEvent`: When true or not supplied (the default), the `statusChanges`\n
observable emits an event with the latest status the control is marked pending.\n * When false, no events are\n
emitted.\n * \n */\n
markAsPending(opts: {onlySelf?: boolean, emitEvent?: boolean} = {}): void {\n  (this as\n
{status: string}).status = PENDING;\n  if (opts.emitEvent !== false) {\n    (this.statusChanges as\n
EventEmitter<any>).emit(this.status);\n  }\n  if (this._parent && !opts.onlySelf) {\n\n
this._parent.markAsPending(opts);\n  }\n  }\n  /**\n * Disables the control. This means the control is exempt\n
from validation checks and\n * excluded from the aggregate value of any parent. Its status is `DISABLED`.\n * \n *\n
If the control has children, all children are also disabled.\n * \n * @see {@link AbstractControl.status}\n * \n *\n
@param opts Configuration options that determine how the control propagates\n * changes and emits events after\n
the control is disabled.\n * * `onlySelf`: When true, mark only this control. When false or not supplied,\n * marks\n
all direct ancestors. Default is false.\n * * `emitEvent`: When true or not supplied (the default), both the\n
`statusChanges` and\n * `valueChanges` observables emit events with the latest status and value when the\n
control is disabled.\n * When false, no events are emitted.\n */\n
disable(opts: {onlySelf?: boolean, emitEvent?:\n
boolean} = {}): void {\n  // If parent has been marked artificially dirty we don't want to re-calculate the\n
//\n
parent's dirtiness based on the children.\n  const skipPristineCheck = this._parentMarkedDirty(opts.onlySelf);\n
(this as {status: string}).status = DISABLED;\n  (this as {errors: ValidationErrors | null}).errors = null;\n
this._forEachChild((control: AbstractControl) => {\n    control.disable({...opts, onlySelf: true});\n  });\n
this._updateValue();\n  if (opts.emitEvent !== false) {\n    (this.valueChanges as\n
EventEmitter<any>).emit(this.value);\n    (this.statusChanges as EventEmitter<string>).emit(this.status);\n  }\n
this._updateAncestors({...opts, skipPristineCheck});\n  this._onDisabledChange.forEach((changeFn) =>\n
changeFn(true));\n  }\n  /**\n * Enables the control. This means the control is included in validation checks and\n
* the aggregate value of its parent. Its status recalculates based on its value and\n * its validators.\n * \n * By

```

```

default, if the control has children, all children are enabled.\n * \n * @see {@link AbstractControl.status}\n * \n
* @param opts Configure options that control how the control propagates changes and \n * emits events when
marked as untouched\n * * `onlySelf`: When true, mark only this control. When false or not supplied,\n * marks
all direct ancestors. Default is false.\n * * `emitEvent`: When true or not supplied (the default), both the
`statusChanges` and\n * `valueChanges`\n * observables emit events with the latest status and value when the
control is enabled.\n * When false, no events are emitted.\n * \n enable(opts: {onlySelf?: boolean, emitEvent?:
boolean} = {}): void {\n // If parent has been marked artificially dirty we don't want to re-calculate the\n //
parent's dirtiness based on the children.\n const skipPristineCheck = this._parentMarkedDirty(opts.onlySelf);\n
(this as {status: string}).status = VALID;\n this._forEachChild((control: AbstractControl) => {\n
control.enable({...opts, onlySelf: true});\n });\n this.updateValueAndValidity({onlySelf: true, emitEvent:
opts.emitEvent});\n\n this._updateAncestors({...opts, skipPristineCheck});\n
this._onDisabledChange.forEach((changeFn) => changeFn(false));\n }\n\n private _updateAncestors(\n opts:
{onlySelf?: boolean, emitEvent?: boolean, skipPristineCheck?: boolean}) {\n if (this._parent && !opts.onlySelf)
{\n this._parent.updateValueAndValidity(opts);\n if (!opts.skipPristineCheck) {\n
this._parent._updatePristine();\n }\n this._parent._updateTouched();\n }\n }\n\n /**\n * @param parent
Sets the parent of the control\n * \n setParent(parent: FormGroup|FormArray): void {\n this._parent = parent;\n
}\n\n /**\n * Sets the value of the control. Abstract method (implemented in sub-classes).\n * \n abstract
setValue(value: any, options?: Object): void;\n\n /**\n * Patches the value of the control. Abstract method
(implemented in sub-classes).\n * \n abstract patchValue(value: any, options?: Object): void;\n\n /**\n * Resets
the control. Abstract method (implemented in sub-classes).\n * \n abstract reset(value?: any, options?: Object):
void;\n\n /**\n * Recalculates the value and validation status of the control.\n * \n * By default, it also updates
the value and validity of its ancestors.\n * \n * @param opts Configuration options determine how the control
propagates changes and emits events\n * after updates and validity checks are applied.\n * * `onlySelf`: When
true, only update this control. When false or not supplied,\n * update all direct ancestors. Default is false.\n * *
`emitEvent`: When true or not supplied (the default), both the `statusChanges` and\n * `valueChanges`\n *
observables emit events with the latest status and value when the control is updated.\n * When false, no events are
emitted.\n * \n updateValueAndValidity(opts: {onlySelf?: boolean, emitEvent?: boolean} = {}): void {\n
this._setInitialStatus();\n this._updateValue();\n\n if (this.enabled) {\n this._cancelExistingSubscription();\n
(this as {errors: ValidationErrors | null}).errors = this._runValidator();\n (this as {status: string}).status =
this._calculateStatus();\n\n if (this.status === VALID || this.status === PENDING) {\n
this._runAsyncValidator(opts.emitEvent);\n }\n }\n\n if (opts.emitEvent !== false) {\n (this.valueChanges
as EventEmitter<any>).emit(this.value);\n (this.statusChanges as EventEmitter<string>).emit(this.status);\n
}\n\n if (this._parent && !opts.onlySelf) {\n this._parent.updateValueAndValidity(opts);\n }\n }\n\n /**
@internal\n * \n _updateTreeValidity(opts: {emitEvent?: boolean} = {emitEvent: true}) {\n
this._forEachChild((ctrl: AbstractControl) => ctrl._updateTreeValidity(opts));\n
this.updateValueAndValidity({onlySelf: true, emitEvent: opts.emitEvent});\n }\n\n private _setInitialStatus() {\n
(this as {status: string}).status = this._allControlsDisabled() ? DISABLED : VALID;\n }\n\n private
_runValidator(): ValidationErrors|null {\n return this.validator ? this.validator(this) : null;\n }\n\n private
_runAsyncValidator(emitEvent?: boolean): void {\n if (this.asyncValidator) {\n (this as {status: string}).status
= PENDING;\n this._hasOwnPendingAsyncValidator = true;\n const obs =
toObservable(this.asyncValidator(this));\n this._asyncValidationSubscription = obs.subscribe((errors:
ValidationErrors|null) => {\n this._hasOwnPendingAsyncValidator = false;\n // This will trigger the
recalculation of the validation status, which depends on\n // the state of the asynchronous validation (whether it
is in progress or not). So, it is\n // necessary that we have updated the `_hasOwnPendingAsyncValidator`
boolean flag first.\n this.setErrors(errors, {emitEvent});\n });\n }\n }\n\n private
_cancelExistingSubscription(): void {\n if (this._asyncValidationSubscription) {\n
this._asyncValidationSubscription.unsubscribe();\n this._hasOwnPendingAsyncValidator = false;\n }\n }\n\n
/**\n * Sets errors on a form control when running validations manually, rather than automatically.\n * \n *

```

Calling `setErrors` also updates the validity of the parent control.

```

 * @usageNotes
 * ### Manually
 * set the errors for a control
 * ```
 * const login = new FormControl('someLogin');
 * login.setErrors({
 *   notUnique: true
 * });
 * expect(login.valid).toEqual(false);
 * expect(login.errors).toEqual({
 *   notUnique: true
 * });
 * login.setValue('someOtherLogin');
 * expect(login.valid).toEqual(true);
 * ```
 * /n setErrors(errors: ValidationErrors|null, opts: {emitEvent?: boolean} = {}): void {
 *   (this as {errors: ValidationErrors | null}).errors = errors;
 *   this._updateControlsErrors(opts.emitEvent !== false);
 * }
 * /n
 * Retrieves a child control given the control's name or path.
 * @param path A dot-delimited string or array of
 * string/number values that define the path to the
 * control.
 * @usageNotes
 * ### Retrieve a nested
 * control
 * For example, to get a `name` control nested within a `person`
 * sub-group:
 * ```
 * this.form.get('person.name');
 * -OR-
 * this.form.get(['person', 'name']);
 * /n
 * get(path:
 * Array<string|number>|string): AbstractControl|null {
 *   return _find(this, path, '.');
 * }
 * /n
 * @description
 * Reports error data for the control with the given path.
 * @param errorCode The code of
 * the error to check
 * @param path A list of control names that designates how to
 * move from the current control
 * to the control that should be queried for errors.
 * @usageNotes
 * For example, for the following
 * `FormGroup`:
 * ```
 * form = new FormGroup({
 *   address: new FormGroup({
 *     street: new
 *     FormControl()
 *   })
 * });
 * ```
 * The path to the 'street' control from the root form would be
 * 'address' ->
 * 'street'.
 * It can be provided to this method in one of two formats:
 * 1. An array of string control
 * names, e.g. `['address', 'street']`
 * 1. A period-delimited list of control names in one string,
 * e.g. `address.street`
 * @returns error data for that particular error. If the control
 * or error is not present,
 * null is returned.
 * /n
 * getError(errorCode: string, path?: Array<string|number>|string):
 * any {
 *   const control = path ? this.get(path) :
 *   this;
 *   return control && control.errors ? control.errors[errorCode] :
 *   null;
 * }
 * /n
 * @description
 * Reports whether the control with the given path has the error
 * specified.
 * @param errorCode The code of
 * the error to check
 * @param path A list of control names that designates how to
 * move from the current control
 * to the control that should be queried for errors.
 * @usageNotes
 * For example, for the following
 * `FormGroup`:
 * ```
 * form = new FormGroup({
 *   address: new FormGroup({
 *     street: new
 *     FormControl()
 *   })
 * });
 * ```
 * The path to the 'street' control from the root form would be
 * 'address' ->
 * 'street'.
 * It can be provided to this method in one of two formats:
 * 1. An array of string control
 * names, e.g. `['address', 'street']`
 * 1. A period-delimited list of control names in one string,
 * e.g. `address.street`
 * If no path is given, this method checks for the error on the
 * current control.
 * @returns whether the
 * given error is present in the control at the given path.
 * If the control is not present, false is returned.
 * /n
 * hasError(errorCode: string, path?: Array<string|number>|string):
 * boolean {
 *   return !!this.getError(errorCode,
 *   path);
 * }
 * /n
 * Retrieves the top-level ancestor of this control.
 * /n
 * get root(): AbstractControl {
 *   let
 *   x: AbstractControl = this;
 *   while (x._parent) {
 *     x = x._parent;
 *   }
 *   return x;
 * }
 * /n
 * @internal
 * /n
 * _updateControlsErrors(emitEvent: boolean): void {
 *   (this as {status: string}).status =
 *   this._calculateStatus();
 *   if (emitEvent) {
 *     (this.statusChanges as EventEmitter<string>).emit(this.status);
 *   }
 *   if (this._parent) {
 *     this._parent._updateControlsErrors(emitEvent);
 *   }
 * }
 * /n
 * @internal
 * /n
 * _initObservables() {
 *   (this as {valueChanges: Observable<any>}).valueChanges =
 *   new EventEmitter();
 *   (this
 *   as {statusChanges: Observable<any>}).statusChanges =
 *   new EventEmitter();
 * }
 * /n
 * private _calculateStatus():
 * string {
 *   if (this._allControlsDisabled()) return DISABLED;
 *   if (this.errors) return INVALID;
 *   if
 *   (this._hasOwnPendingAsyncValidator || this._anyControlsHaveStatus(PENDING))
 *   return PENDING;
 *   if
 *   (this._anyControlsHaveStatus(INVALID)) return INVALID;
 *   return VALID;
 * }
 * /n
 * @internal
 * /n
 * abstract _updateValue(): void;
 * /n
 * @internal
 * /n
 * abstract _forEachChild(cb: Function): void;
 * /n
 * @internal
 * /n
 * abstract _anyControls(condition: Function): boolean;
 * /n
 * @internal
 * /n
 * abstract
 * _allControlsDisabled(): boolean;
 * /n
 * @internal
 * /n
 * abstract
 * _syncPendingControls(): boolean;
 * /n
 * @internal
 * /n
 * _anyControlsHaveStatus(status: string): boolean {
 *   return this._anyControls((control:
 *   AbstractControl) => control.status === status);
 * }
 * /n
 * @internal
 * /n
 * _anyControlsDirty(): boolean {
 *   return this._anyControls((control:
 *   AbstractControl) => control.dirty);
 * }
 * /n
 * @internal
 * /n
 * _anyControlsTouched(): boolean {
 *   return this._anyControls((control:
 *   AbstractControl) => control.touched);
 * }

```



```

}\n\n /** @internal *\n _updatePristine(opts: {onlySelf?: boolean} = {}): void {\n  (this as {pristine:
boolean}).pristine = !this._anyControlsDirty();\n\n  if (this._parent && !opts.onlySelf) {\n
this._parent._updatePristine(opts);\n  }\n\n\n\n /** @internal *\n _updateTouched(opts: {onlySelf?: boolean} =
{}): void {\n  (this as {touched: boolean}).touched = this._anyControlsTouched();\n\n  if (this._parent &&
!opts.onlySelf) {\n    this._parent._updateTouched(opts);\n  }\n\n\n\n /** @internal *\n _onDisabledChange:
Function[] = [];\n\n\n /** @internal *\n _isBoxedValue(formState: any): boolean {\n  return typeof formState ===
'object' && formState !== null &&\n    Object.keys(formState).length === 2 && 'value' in formState &&
'disabled' in formState;\n  }\n\n\n /** @internal *\n _registerOnCollectionChange(fn: () => void): void {\n
this._onCollectionChange = fn;\n  }\n\n\n /** @internal *\n _setUpdateStrategy(opts?:
ValidatorFn|ValidatorFn[]|AbstractControlOptions|null): void {\n  if (isOptionsObj(opts) && opts.updateOn !=
null) {\n    this._updateOn = opts.updateOn!;\n  }\n\n\n\n\n /**\n * Check to see if parent has been marked
artificially dirty.\n * *\n * @internal\n * *\n * private _parentMarkedDirty(onlySelf?: boolean): boolean {\n  const
parentDirty = this._parent && this._parent.dirty;\n  return !onlySelf && !!parentDirty &&
!this._parent!._anyControlsDirty();\n  }\n}\n\n\n\n\n /**\n * Tracks the value and validation status of an individual form
control.\n * *\n * This is one of the three fundamental building blocks of Angular forms, along with\n * `FormGroup`
and `FormArray`. It extends the `AbstractControl` class that\n * implements most of the base functionality for
accessing the value, validation status,\n * user interactions and events. See [usage examples below](#usage-notes).\n
*\n * @see `AbstractControl`\n * @see [Reactive Forms Guide](guide/reactive-forms)\n * @see [Usage
Notes](#usage-notes)\n * *\n * @usageNotes\n * *\n * ### Initializing Form Controls\n * *\n * Instantiate a
`FormControl`, with an initial value.\n * *\n * ```ts\n * const control = new FormControl('some value');\n *
console.log(control.value); // 'some value'\n * ```\n * *\n * The following example initializes the control with a form
state object. The `value`\n * and `disabled` keys are required in this case.\n * *\n * ```ts\n * const control = new
FormControl({ value: 'n/a', disabled: true });\n * console.log(control.value); // 'n/a'\n * console.log(control.status);
// 'DISABLED'\n * ```\n * *\n * The following example initializes the control with a sync validator.\n * *\n * ```ts\n *
const control = new FormControl("", Validators.required);\n * console.log(control.value); // ""\n *
console.log(control.status); // 'INVALID'\n * ```\n * *\n * The following example initializes the control using an
options object.\n * *\n * ```ts\n * const control = new FormControl("", {\n *   validators: Validators.required,\n *
  asyncValidators: myAsyncValidator\n * });\n * ```\n * *\n * ### Configure the control to update on a blur event\n * *\n
* Set the `updateOn` option to `blur` to update on the blur `event`.\n * *\n * ```ts\n * const control = new
FormControl("", { updateOn: 'blur' });\n * ```\n * *\n * ### Configure the control to update on a submit event\n * *\n
* Set the `updateOn` option to `submit` to update on a submit `event`.\n * *\n * ```ts\n * const control = new
FormControl("", { updateOn: 'submit' });\n * ```\n * *\n * ### Reset the control back to an initial value\n * *\n * You
reset to a specific form state by passing through a standalone\n * value or a form state object that contains both a
value and a disabled state\n * (these are the only two properties that cannot be calculated).\n * *\n * ```ts\n * const
control = new FormControl('Nancy');\n * console.log(control.value); // 'Nancy'\n * control.reset('Drew');\n *
console.log(control.value); // 'Drew'\n * ```\n * *\n * ### Reset the control back to an initial value and disabled\n
*\n * *\n * ```ts\n * const control = new FormControl('Nancy');\n * console.log(control.value); // 'Nancy'\n *
console.log(control.status); // 'VALID'\n * control.reset({ value: 'Drew', disabled: true });\n * console.log(control.value); // 'Drew'\n * console.log(control.status); // 'DISABLED'\n * ```\n * *\n * @publicApi\n
*\n * @export class FormControl extends AbstractControl {\n  /** @internal *\n  _onChange: Function[] = [];\n  /**
*\n  @internal *\n  _pendingValue: any;\n  /** @internal *\n  _pendingChange: any;\n  /**\n * Creates a new
`FormControl` instance.\n * *\n * @param formState Initializes the control with an initial value,\n * or an object
that defines the initial value and disabled state.\n * *\n * @param validatorOrOpts A synchronous validator
function, or an array of\n * such functions, or an `AbstractControlOptions` object that contains validation
functions\n * and a validation trigger.\n * *\n * @param asyncValidator A single async validator or array of async
validator functions\n * *\n * ^\n * constructor(\n  formState: any = null,\n  validatorOrOpts?:
ValidatorFn|ValidatorFn[]|AbstractControlOptions|null,\n  asyncValidator?:
AsyncValidatorFn|AsyncValidatorFn[]|null) {\n    super(pickValidators(validatorOrOpts),

```

```

pickAsyncValidators(asyncValidator, validatorOrOpts));\n this._applyFormState(formState);\n
this._setUpUpdateStrategy(validatorOrOpts);\n this._initObservables();\n this.updateValueAndValidity({\n
onlySelf: true,\n // If `asyncValidator` is present, it will trigger control status change from `PENDING` to\n //
`VALID` or `INVALID`.\n // The status should be broadcasted via the `statusChanges` observable, so we set
`emitEvent`\n // to `true` to allow that during the control creation process.\n emitEvent: !!asyncValidator\n
});\n }\n\n /**\n * Sets a new value for the form control.\n *\n * @param value The new value for the
control.\n * @param options Configuration options that determine how the control propagates changes\n * and
emits events when the value changes.\n * The configuration options are passed to the {@link
AbstractControl#updateValueAndValidity\n * updateValueAndValidity} method.\n *\n * * `onlySelf`: When
true, each change only affects this control, and not its parent. Default is\n * false.\n * * `emitEvent`: When true or not supplied (the default), both the `statusChanges` and\n * `valueChanges`\n * observables emit events with the
latest status and value when the control value is updated.\n * When false, no events are emitted.\n * *
`emitModelToViewChange`: When true or not supplied (the default), each change triggers an\n * `onChange`
event to\n * update the view.\n * * `emitViewToModelChange`: When true or not supplied (the default), each
change triggers an\n * `ngModelChange`\n * event to update the model.\n *\n * /\n setValue(value: any,
options: {\n onlySelf?: boolean,\n emitEvent?: boolean,\n emitModelToViewChange?: boolean,\n
emitViewToModelChange?: boolean\n }) = {}): void {\n (this as {value: any}).value = this._pendingValue =
value;\n if (this._onChange.length && options.emitModelToViewChange !== false) {\n
this._onChange.forEach(\n (changeFn) => changeFn(this.value, options.emitViewToModelChange !==
false));\n }\n this.updateValueAndValidity(options);\n }\n\n /**\n * Patches the value of a control.\n *\n *
This function is functionally the same as {@link FormControl#setValue setValue} at this level.\n * It exists for
symmetry with {@link FormGroup#patchValue patchValue} on `FormGroups` and\n * `FormArrays`, where it
does behave differently.\n *\n * @see `setValue` for options\n *\n patchValue(value: any, options: {\n
onlySelf?: boolean,\n emitEvent?: boolean,\n emitModelToViewChange?: boolean,\n
emitViewToModelChange?: boolean\n }) = {}): void {\n this.setValue(value, options);\n }\n\n /**\n * Resets
the form control, marking it `pristine` and `untouched`, and setting\n * the value to null.\n *\n * @param
formState Resets the control with an initial value,\n * or an object that defines the initial value and disabled state.\n
*\n * @param options Configuration options that determine how the control propagates changes\n * and emits
events after the value changes.\n *\n * * `onlySelf`: When true, each change only affects this control, and not its
parent. Default is\n * false.\n * * `emitEvent`: When true or not supplied (the default), both the `statusChanges`
and\n * `valueChanges`\n * observables emit events with the latest status and value when the control is reset.\n *
When false, no events are emitted.\n *\n * /\n reset(formState: any = null, options: {onlySelf?: boolean,
emitEvent?: boolean} = {}): void {\n this._applyFormState(formState);\n this.markAsPristine(options);\n
this.markAsUntouched(options);\n this.setValue(this.value, options);\n this._pendingChange = false;\n }\n\n
/**\n * @internal\n *\n _updateValue() {\n }\n\n /**\n * @internal\n *\n _anyControls(condition: Function):
boolean {\n return false;\n }\n\n /**\n * @internal\n *\n _allControlsDisabled(): boolean {\n return
this.disabled;\n }\n\n /**\n * Register a listener for change events.\n *\n * @param fn The method that is called
when the value changes\n *\n registerOnChange(fn: Function): void {\n this._onChange.push(fn);\n }\n\n
/**\n * Internal function to unregister a change events listener.\n * @internal\n *\n _unregisterOnChange(fn:
Function): void {\n removeListItem(this._onChange, fn);\n }\n\n /**\n * Register a listener for disabled
events.\n *\n * @param fn The method that is called when the disabled status changes.\n *\n
registerOnDisabledChange(fn: (isDisabled: boolean) => void): void {\n this._onDisabledChange.push(fn);\n }\n\n
/**\n * Internal function to unregister a disabled event listener.\n * @internal\n *\n
_unregisterOnDisabledChange(fn: (isDisabled: boolean) => void): void {\n
removeListItem(this._onDisabledChange, fn);\n }\n\n /**\n * @internal\n *\n _forEachChild(cb: Function):
void {\n }\n\n /**\n * @internal\n *\n _syncPendingControls(): boolean {\n if (this.updateOn === 'submit') {\n if
(this._pendingDirty) this.markAsDirty();\n if (this._pendingTouched) this.markAsTouched();\n if
(this._pendingChange) {\n this.setValue(this._pendingValue, {onlySelf: true, emitModelToViewChange:

```

```

false});\n    return true;\n  }\n }\n return false;\n }\n\n private _applyFormState(formState: any) {\n if
(this._isBoxedValue(formState)) {\n  (this as {value: any}).value = this._pendingValue = formState.value;\n
formState.disabled ? this.disable({onlySelf: true, emitEvent: false}) :\n                                     this.enable({onlySelf: true,
emitEvent: false});\n  } else {\n  (this as {value: any}).value = this._pendingValue = formState;\n  }\n }\n\n/n/n/**\n * Tracks the value and validity state of a group of `FormControl` instances.\n *\n * A `FormGroup`
aggregates the values of each child `FormControl` into one object,\n * with each control name as the key. It
calculates its status by reducing the status values\n * of its children. For example, if one of the controls in a group is
invalid, the entire\n * group becomes invalid.\n *\n * `FormGroup` is one of the three fundamental building blocks
used to define forms in Angular,\n * along with `FormControl` and `FormArray`.\n *\n * When instantiating a
`FormGroup`, pass in a collection of child controls as the first\n * argument. The key for each child registers the
name for the control.\n *\n * @usageNotes\n *\n * ### Create a form group with 2 controls\n *\n * ```\n * const
form = new FormGroup({\n *   first: new FormControl('Nancy', Validators.minLength(2)),\n *   last: new
FormControl('Drew'),\n * });\n *\n * console.log(form.value); // {first: 'Nancy', last: 'Drew'}\n *\n *
console.log(form.status); // 'VALID'\n * ```\n *\n * ### Create a form group with a group-level validator\n *\n *
You include group-level validators as the second arg, or group-level async\n * validators as the third arg. These
come in handy when you want to perform validation\n * that considers the value of more than one child control.\n *\n *
```\n * const form = new FormGroup({\n *   password: new FormControl("", Validators.minLength(2)),\n *
passwordConfirm: new FormControl("", Validators.minLength(2)),\n * }, passwordMatchValidator);\n *\n *\n *
function passwordMatchValidator(g: FormGroup) {\n * return g.get('password').value ===
g.get('passwordConfirm').value\n * ? null : {'mismatch': true};\n * }\n * ```\n *\n * Like `FormControl`
instances, you choose to pass in\n * validators and async validators as part of an options object.\n *\n * ```\n * const
form = new FormGroup({\n * password: new FormControl(""),\n * passwordConfirm: new FormControl(""),\n * }, {\n *
validators: passwordMatchValidator, asyncValidators: otherValidator });\n * ```\n *\n * ### Set the updateOn
property for all controls in a form group\n *\n * The options object is used to set a default value for each child\n *
control's `updateOn` property. If you set `updateOn` to `blur` at the\n * group level, all child controls default to
`blur`, unless the child\n * has explicitly specified a different `updateOn` value.\n *\n * ```ts\n * const c = new
FormGroup({\n * one: new FormControl(),\n * }, { updateOn: 'blur' });\n * ```\n *\n * @publicApi\n *\n * export
class FormGroup extends AbstractControl {\n * /**\n * Creates a new `FormGroup` instance.\n *\n * @param
controls A collection of child controls. The key for each child is the name\n * under which it is registered.\n *\n *
@param validatorOrOpts A synchronous validator function, or an array of\n * such functions, or an
`AbstractControlOptions` object that contains validation functions\n * and a validation trigger.\n *\n * @param
asyncValidator A single async validator or array of async validator functions\n *\n * ^\n * constructor(\n * public
controls: {[key: string]: AbstractControl},\n * validatorOrOpts?:
ValidatorFn|ValidatorFn[]|AbstractControlOptions|null,\n * asyncValidator?:
AsyncValidatorFn|AsyncValidatorFn[]|null) {\n * super(pickValidators(validatorOrOpts),
pickAsyncValidators(asyncValidator, validatorOrOpts));\n * this._initObservables();\n * this._setUpdateStrategy(validatorOrOpts);\n * this._setUpControls();\n * this.updateValueAndValidity({\n * onlySelf: true,\n * // If `asyncValidator` is present, it will trigger control status change from `PENDING` to\n * `VALID` or `INVALID`. The status should be broadcasted via the `statusChanges` observable,\n * // so we set
`emitEvent` to `true` to allow that during the control creation process.\n * emitEvent: !!asyncValidator\n * });\n * }\n *\n * /**\n * Registers a control with the group's list of controls.\n *\n * This method does not update the value
or validity of the control.\n * Use {@link FormGroup#addControl addControl} instead.\n *\n * @param name
The control name to register in the collection\n * @param control Provides the control for the given name\n * ^\n *
registerControl(name: string, control: AbstractControl): AbstractControl {\n * if (this.controls[name]) return
this.controls[name];\n * this.controls[name] = control;\n * control.setParent(this);\n * control._registerOnCollectionChange(this._onCollectionChange);\n * return control;\n * }\n *\n * /**\n * Add a control
to this group.\n *\n * This method also updates the value and validity of the control.\n *\n * @param name The
control name to add to the collection\n * @param control Provides the control for the given name\n * ^\n *

```

```

addControl(name: string, control: AbstractControl): void {\n this.registerControl(name, control);\n
this.updateValueAndValidity();\n this._onCollectionChange();\n }\n\n /**\n * Remove a control from this
group.\n * \n * @param name The control name to remove from the collection\n * \n removeControl(name:
string): void {\n if (this.controls[name]) this.controls[name]._registerOnCollectionChange(() => {});\n delete
(this.controls[name]);\n this.updateValueAndValidity();\n this._onCollectionChange();\n }\n\n /**\n *
Replace an existing control.\n * \n * @param name The control name to replace in the collection\n * @param
control Provides the control for the given name\n * \n setControl(name: string, control: AbstractControl): void {\n
if (this.controls[name]) this.controls[name]._registerOnCollectionChange(() => {});\n delete
(this.controls[name]);\n if (control) this.registerControl(name, control);\n this.updateValueAndValidity();\n
this._onCollectionChange();\n }\n\n /**\n * Check whether there is an enabled control with the given name in the
group.\n * \n * Reports false for disabled controls. If you'd like to check for existence in the group\n * only, use
{@link AbstractControl#get get} instead.\n * \n * @param controlName The control name to check for existence
in the collection\n * \n * @returns false for disabled controls, true otherwise.\n * \n contains(controlName:
string): boolean {\n return this.controls.hasOwnProperty(controlName) && this.controls[controlName].enabled;\n
}\n\n /**\n * Sets the value of the `FormGroup`. It accepts an object that matches\n * the structure of the group,
with control names as keys.\n * \n * @usageNotes\n * ### Set the complete value for the form group\n * \n *
```\n * const form = new FormGroup({\n *   first: new FormControl(),\n *   last: new FormControl()\n * });\n *
console.log(form.value); // {first: null, last: null}\n * \n * form.setValue({first: 'Nancy', last: 'Drew'});\n *
console.log(form.value); // {first: 'Nancy', last: 'Drew'}\n * ```\n * \n * @throws When strict checks fail, such
as setting the value of a control\n * that doesn't exist or if you exclude a value of a control that does exist.\n * \n *
@param value The new value for the control that matches the structure of the group.\n * @param options
Configuration options that determine how the control propagates changes\n * and emits events after the value
changes.\n * The configuration options are passed to the {@link AbstractControl#updateValueAndValidity\n *
updateValueAndValidity} method.\n * \n * * `onlySelf`: When true, each change only affects this control, and not
its parent. Default is\n * false.\n * * `emitEvent`: When true or not supplied (the default), both the
`statusChanges` and\n * `valueChanges`\n * observables emit events with the latest status and value when the
control value is updated.\n * When false, no events are emitted.\n * \n setValue(value: {[key: string]: any},
options: {onlySelf?: boolean, emitEvent?: boolean} = {}): void {\n  this._checkAllValuesPresent(value);\n
Object.keys(value).forEach(name => {\n  this._throwIfControlMissing(name);\n
this.controls[name].setValue(value[name], {onlySelf: true, emitEvent: options.emitEvent});\n  });\n
this.updateValueAndValidity(options);\n }\n\n /**\n * Patches the value of the `FormGroup`. It accepts an object
with control\n * names as keys, and does its best to match the values to the correct controls\n * in the group.\n *
\n * It accepts both super-sets and sub-sets of the group without throwing an error.\n * \n * @usageNotes\n *
### Patch the value for a form group\n * \n * ```\n * const form = new FormGroup({\n *   first: new
FormControl(),\n *   last: new FormControl()\n * });\n * console.log(form.value); // {first: null, last: null}\n *
\n * form.patchValue({first: 'Nancy'});\n * console.log(form.value); // {first: 'Nancy', last: null}\n * ```\n *
\n * @param value The object that matches the structure of the group.\n * @param options Configuration options that
determine how the control propagates changes and\n * emits events after the value is patched.\n * * `onlySelf`:
When true, each change only affects this control and not its parent. Default is\n * true.\n * * `emitEvent`: When
true or not supplied (the default), both the `statusChanges` and\n * `valueChanges`\n * observables emit events
with the latest status and value when the control value is updated.\n * When false, no events are emitted.\n * The
configuration options are passed to the {@link AbstractControl#updateValueAndValidity\n *
updateValueAndValidity} method.\n * \n patchValue(value: {[key: string]: any}, options: {onlySelf?: boolean,
emitEvent?: boolean} = {}): void {\n  Object.keys(value).forEach(name => {\n  if (this.controls[name]) {\n
this.controls[name].patchValue(value[name], {onlySelf: true, emitEvent: options.emitEvent});\n  }\n  });\n
this.updateValueAndValidity(options);\n }\n\n /**\n * Resets the `FormGroup`, marks all descendants `pristine`
and `untouched` and sets\n * the value of all descendants to null.\n * \n * You reset to a specific form state by
passing in a map of states\n * that matches the structure of your form, with control names as keys. The state\n * is

```

a standalone value or a form state object with both a value and a disabled status. @param value Resets the control with an initial value, or an object that defines the initial value and disabled state. @param options Configuration options that determine how the control propagates changes and emits events when the group is reset. onlySelf: When true, each change only affects this control, and not its parent. Default is false. emitEvent: When true or not supplied (the default), both the statusChanges and valueChanges observables emit events with the latest status and value when the control is reset. When false, no events are emitted. The configuration options are passed to the {@link AbstractControl#updateValueAndValidity} method. @usageNotes

```

### Reset the form group values
const form = new FormGroup({
  first: new FormControl('first name'),
  last: new FormControl('last name')
});
console.log(form.value); // {first: 'first name', last: 'last name'}
form.reset({ first: 'name', last: 'last name' });
console.log(form.value); // {first: 'name', last: 'last name'}

### Reset the form group values and disabled status
const form = new FormGroup({
  first: new FormControl('first name'),
  last: new FormControl('last name')
});
form.reset({ first: { value: 'name', disabled: true }, last: 'last' });
console.log(this.form.value); // {first: 'name', last: 'last name'}
console.log(this.form.get('first').status); // 'DISABLED'

^ reset(value: any = {}, options: { onlySelf?: boolean, emitEvent?: boolean } = {}): void
  this._forEachChild((control: AbstractControl, name: string) => {
    control.reset(value[name], { onlySelf: true, emitEvent: options.emitEvent });
  });
  this._updatePristine(options);
  this._updateTouched(options);
  this.updateValueAndValidity(options);
}

/** The aggregate value of the `FormGroup`, including any disabled controls.
  Retrieves all values regardless of disabled status.
  The `value` property is the best way to get the value of the group, because it excludes disabled controls in the `FormGroup`.
  ^ getRawValue(): any
    return this._reduceChildren({}, (acc: {[k: string]: AbstractControl}, control: AbstractControl, name: string) => {
      acc[name] = control instanceof FormControl ? control.value : (<any>control).getRawValue();
      return acc;
    });

@internal ^ _syncPendingControls(): boolean
  let subtreeUpdated = this._reduceChildren(false, (updated: boolean, child: AbstractControl) => {
    return child._syncPendingControls() ? true : updated;
  });
  if (subtreeUpdated) this.updateValueAndValidity({ onlySelf: true });
  return subtreeUpdated;

@internal ^ _throwIfControlMissing(name: string): void
  if (!Object.keys(this.controls).length) {
    throw new Error(`There are no form controls registered with this group yet. If you're using ngModel, you may want to check next tick (e.g. use setTimeout).`);
  }
  if (!this.controls[name]) {
    throw new Error(`Cannot find form control with name: ${name}.`);
  }

@internal ^ _forEachChild(cb: (v: any, k: string) => void): void
  Object.keys(this.controls).forEach(k => cb(this.controls[k], k));

@internal ^ _setUpControls(): void
  this._forEachChild((control: AbstractControl) => {
    control.setParent(this);
    control._registerOnCollectionChange(this._onCollectionChange);
  });

@internal ^ _updateValue(): void
  (this as { value: any }).value = this._reduceValue();

@internal ^ _anyControls(condition: Function): boolean
  for (const controlName of Object.keys(this.controls)) {
    const control = this.controls[controlName];
    if (this.contains(controlName) && condition(control)) {
      return true;
    }
  }
  return false;

@internal ^ _reduceValue()
  return this._reduceChildren({}, (acc: {[k: string]: AbstractControl}, control: AbstractControl, name: string) => {
    if (control.enabled || this.disabled) {
      acc[name] = control.value;
    }
    return acc;
  });

@internal ^ _reduceChildren(initValue: any, fn: Function)
  let res = initValue;
  this._forEachChild((control: AbstractControl, name: string) => {
    res = fn(res, control, name);
  });
  return res;

@internal ^ _allControlsDisabled(): boolean
  for (const controlName of Object.keys(this.controls)) {
    if (this.controls[controlName].enabled) {
      return false;
    }
  }
  return Object.keys(this.controls).length > 0 || this.disabled;

@internal ^ _checkAllValuesPresent(value: any): void
  this._forEachChild((control: AbstractControl, name: string) => {
    if (value[name] === undefined) {
      throw new Error(`Must supply a value for form control with name: '${name}'.`);
    }
  });

* Tracks the value and validity state of an array of `FormControl`

```

`FormGroup` or `FormArray` instances.

 A `FormArray` aggregates the values of each child `FormControl` into an array.

 It calculates its status by reducing the status values of its children. For example, if one of the controls in a `FormArray` is invalid, the entire array becomes invalid.

`FormArray` is one of the three fundamental building blocks used to define forms in Angular, along with `FormControl` and `FormGroup`.

```

@usageNotes
### Create an array of form controls
const arr = new FormArray([
  new FormControl('Nancy', Validators.minLength(2)),
  new FormControl('Drew')
]);
console.log(arr.value); // ['Nancy', 'Drew']
console.log(arr.status); // 'VALID'

### Create a form array with array-level validators
You include array-level validators and async validators. These come in handy when you want to perform validation that considers the value of more than one child control.
The two types of validators are passed in separately as the second and third arg respectively, or together as part of an options object.
const arr = new FormArray([
  new FormControl('Nancy'),
  new FormControl('Drew')
], { validators: myValidator, asyncValidators: myAsyncValidator });

### Set the updateOn property for all controls in a form array
The options object is used to set a default value for each child control's `updateOn` property. If you set `updateOn` to `blur` at the array level, all child controls default to `blur`, unless the child has explicitly specified a different `updateOn` value.
const arr = new FormArray([
  new FormControl(),
], { updateOn: 'blur' });

### Adding or removing controls from a form array
To change the controls in the array, use the `push`, `insert`, `removeAt` or `clear` methods in `FormArray` itself. These methods ensure the controls are properly tracked in the form's hierarchy. Do not modify the array of `AbstractControl`s used to instantiate the `FormArray` directly, as that result in strange and unexpected behavior such as broken change detection.

@publicApi
export class FormArray extends AbstractControl {
  /**
   * Creates a new `FormArray` instance.
   * @param controls An array of child controls. Each child control is given an index where it is registered.
   * @param validatorOrOpts A synchronous validator function, or an array of such functions, or an `AbstractControlOptions` object that contains validation functions and a validation trigger.
   * @param asyncValidator A single async validator or array of async validator functions
   */
  constructor(
    public controls: AbstractControl[],
    validatorOrOpts?: ValidatorFn|ValidatorFn[]|AbstractControlOptions|null,
    asyncValidator?: AsyncValidatorFn|AsyncValidatorFn[]|null
  ) {
    super(pickValidators(validatorOrOpts), pickAsyncValidators(asyncValidator, validatorOrOpts));
    this._initObservables();
    this._setUpdateStrategy(validatorOrOpts);
    this._setUpControls();
    this.updateValueAndValidity({
      onlySelf: true,
      // If `asyncValidator` is present, it will trigger control status change from `PENDING` to `VALID` or `INVALID`.
      // The status should be broadcasted via the `statusChanges` observable, so we set `emitEvent` to `true` to allow that during the control creation process.
    });
  }

  /**
   * Get the `AbstractControl` at the given `index` in the array.
   * @param index Index in the array to retrieve the control
   */
  at(index: number): AbstractControl {
    return this.controls[index];
  }

  /**
   * Insert a new `AbstractControl` at the end of the array.
   * @param control Form control to be inserted
   */
  push(control: AbstractControl): void {
    this.controls.push(control);
    this._registerControl(control);
    this.updateValueAndValidity();
    this._onCollectionChange();
  }

  /**
   * Insert a new `AbstractControl` at the given `index` in the array.
   * @param index Index in the array to insert the control
   * @param control Form control to be inserted
   */
  insert(index: number, control: AbstractControl): void {
    this.controls.splice(index, 0, control);
    this._registerControl(control);
    this.updateValueAndValidity();
  }

  /**
   * Remove the control at the given `index` in the array.
   * @param index Index in the array to remove the control
   */
  removeAt(index: number): void {
    if (this.controls[index]) this.controls[index]._registerOnCollectionChange(() => {});
    this.controls.splice(index, 1);
    this.updateValueAndValidity();
  }

  /**
   * Replace an existing control.
   * @param index Index in the array to replace the control
   * @param control The `AbstractControl` control to replace the existing control
   */
  setControl(index: number, control: AbstractControl): void {
    if (this.controls[index]) this.controls[index]._registerOnCollectionChange(() => {});
    this.controls.splice(index, 1);
    if (control) {
      this.controls.splice(index, 0, control);
      this._registerControl(control);
    }
  }
}
  
```

```

this.updateValueAndValidity();\n  this._onCollectionChange();\n }\n\n /**\n  * Length of the control array.\n  *\n  * get length(): number {\n  *   return this.controls.length;\n  * }\n\n /**\n  * Sets the value of the `FormArray`. It\n  * accepts an array that matches\n  * the structure of the control.\n  *\n  * This method performs strict checks, and\n  * throws an error if you try\n  * to set the value of a control that doesn't exist or if you exclude the\n  * value of a\n  * control.\n  *\n  * @usageNotes\n  * ### Set the values for the controls in the form array\n  *\n  * ```\n  * const\n  * arr = new FormArray([\n  *   new FormControl(),\n  *   new FormControl()\n  * ]);\n  * console.log(arr.value); //\n  * [null, null]\n  *\n  * arr.setValue(['Nancy', 'Drew']);\n  * console.log(arr.value); // ['Nancy', 'Drew']\n  *\n  * ```\n  *\n  * @param value Array of values for the controls\n  * @param options Configure options that determine how the\n  * control propagates changes and\n  * emits events after the value changes\n  *\n  * * `onlySelf`: When true, each\n  * change only affects this control, and not its parent. Default\n  * is false.\n  * * `emitEvent`: When true or not\n  * supplied (the default), both the `statusChanges` and\n  * `valueChanges`\n  * observables emit events with the\n  * latest status and value when the control value is updated.\n  * When false, no events are emitted.\n  * The\n  * configuration options are passed to the {@link\n  * AbstractControl#updateValueAndValidity\n  * updateValueAndValidity} method.\n  *\n  * set value(value: any[], options: {onlySelf?: boolean, emitEvent?:\n  * boolean} = {}): void {\n  *   this._checkAllValuesPresent(value);\n  *   value.forEach((newValue: any, index: number)\n  * => {\n  *     this._throwIfControlMissing(index);\n  *     this.at(index).setValue(newValue, {onlySelf: true, emitEvent:\n  * options.emitEvent});\n  *   });\n  *   this.updateValueAndValidity(options);\n  * }\n\n /**\n  * Patches the value of the\n  * `FormArray`. It accepts an array that matches the\n  * structure of the control, and does its best to match the values\n  * to the correct\n  * controls in the group.\n  *\n  * It accepts both super-sets and sub-sets of the array without\n  * throwing an error.\n  *\n  * @usageNotes\n  * ### Patch the values for controls in a form array\n  *\n  * ```\n  * const\n  * arr = new FormArray([\n  *   new FormControl(),\n  *   new FormControl()\n  * ]);\n  *\n  * console.log(arr.value); // [null, null]\n  *\n  * arr.patchValue(['Nancy']);\n  * console.log(arr.value); // ['Nancy',\n  * null]\n  *\n  * ```\n  *\n  * @param value Array of latest values for the controls\n  * @param options Configure\n  * options that determine how the control propagates changes and\n  * emits events after the value changes\n  *\n  * * `onlySelf`: When true, each change only affects this control, and not its parent. Default\n  * is false.\n  * * `emitEvent`: When true or not supplied (the default), both the `statusChanges` and\n  * `valueChanges`\n  * observables emit events with the latest status and value when the control value is updated.\n  * When false, no\n  * events are emitted.\n  * The configuration options are passed to the {@link\n  * AbstractControl#updateValueAndValidity\n  * updateValueAndValidity} method.\n  *\n  * patch value(value:\n  * any[], options: {onlySelf?: boolean, emitEvent?: boolean} = {}): void {\n  *   value.forEach((newValue: any, index:\n  * number) => {\n  *     if (this.at(index)) {\n  *       this.at(index).patchValue(newValue, {onlySelf: true, emitEvent:\n  * options.emitEvent});\n  *     }\n  *   });\n  *   this.updateValueAndValidity(options);\n  * }\n\n /**\n  * Resets the\n  * `FormArray` and all descendants are marked `pristine` and `untouched`, and the\n  * value of all descendants to null\n  * or null maps.\n  *\n  * You reset to a specific form state by passing in an array of states\n  * that matches the\n  * structure of the control. The state is a standalone value\n  * or a form state object with both a value and a disabled\n  * status.\n  *\n  * @usageNotes\n  * ### Reset the values in a form array\n  *\n  * ```ts\n  * const\n  * arr = new\n  * FormArray([\n  *   new FormControl(),\n  *   new FormControl()\n  * ]);\n  * arr.reset(['name', 'last name']);\n  *\n  * console.log(this.arr.value); // ['name', 'last name']\n  *\n  * ### Reset the values in a form array and\n  * the disabled status for the first control\n  *\n  * ```\n  * this.arr.reset([\n  *   {value: 'name', disabled: true},\n  *   'last\n  *   ']);\n  * console.log(this.arr.value); // ['name', 'last name']\n  * console.log(this.arr.get(0).status); //\n  * 'DISABLED'\n  *\n  * @param value Array of values for the controls\n  * @param options Configure\n  * options that determine how the control propagates changes and\n  * emits events after the value changes\n  *\n  * * `onlySelf`: When true, each change only affects this control, and not its parent. Default\n  * is false.\n  * * `emitEvent`: When true or not supplied (the default), both the `statusChanges` and\n  * `valueChanges`\n  * observables emit events with the latest status and value when the control is reset.\n  * When false, no events are\n  * emitted.\n  * The configuration options are passed to the {@link\n  * AbstractControl#updateValueAndValidity\n  * updateValueAndValidity} method.\n  *\n  * reset(value: any = [], options: {onlySelf?: boolean, emitEvent?:\n  * boolean} = {}): void {\n  *   this._forEachChild((control: AbstractControl, index: number) => {\n  *

```

```

control.reset(value[index], {onlySelf: true, emitEvent: options.emitEvent});\n  });\n
this._updatePristine(options);\n  this._updateTouched(options);\n  this.updateValueAndValidity(options);\n }\n\n
/**\n * The aggregate value of the array, including any disabled controls.\n * @returns {any} Reports all values regardless of disabled status.\n * For enabled controls only, the `value` property is the best way to get the value of the array.\n */\n
getRawValue(): any[] {\n  return this.controls.map((control: AbstractControl) => {\n    return control instanceof FormControl ? control.value : (<any>control).getRawValue();\n  });\n }\n\n
/**\n * Remove all controls in the `FormArray`.\n * @usageNotes\n * ### Remove all elements from a FormArray\n * ```ts\n * const arr = new FormArray([\n *   new FormControl(),\n *   new FormControl()\n * ]);\n * console.log(arr.length); // 2\n * arr.clear();\n * console.log(arr.length); // 0\n * ```\n * It's a simpler and more efficient alternative to removing all elements one by one:\n * ```ts\n * const arr = new FormArray([\n *   new FormControl(),\n *   new FormControl()\n * ]);\n * while (arr.length) {\n *   arr.removeAt(0);\n * }\n * arr.clear();\n */\n
clear(): void {\n  if (this.controls.length < 1) return;\n  this._forEachChild((control: AbstractControl) => control._registerOnCollectionChange(() => {}));\n  this.controls.splice(0);\n  this.updateValueAndValidity();\n }\n\n
/** @internal */\n
_syncPendingControls(): boolean {\n  let subtreeUpdated = this.controls.reduce((updated: boolean, child: AbstractControl) => {\n    return child._syncPendingControls() ? true : updated;\n  }, false);\n  if (subtreeUpdated) this.updateValueAndValidity({onlySelf: true});\n  return subtreeUpdated;\n }\n\n
/** @internal */\n
_throwIfControlMissing(index: number): void {\n  if (!this.controls.length) {\n    throw new Error(`There are no form controls registered with this array yet. If you're using ngModel, you may want to check next tick (e.g. use setTimeout).`);\n  }\n  if (!this.at(index)) {\n    throw new Error(`Cannot find form control at index ${index}`);\n  }\n }\n\n
/** @internal */\n
_forEachChild(cb: Function): void {\n  this.controls.forEach((control: AbstractControl, index: number) => {\n    cb(control, index);\n  });\n }\n\n
/** @internal */\n
_updateValue(): void {\n  (this as {value: any}).value =\n    this.controls.filter((control) => control.enabled || this.disabled)\n      .map((control) => control.value);\n }\n\n
/** @internal */\n
_anyControls(condition: Function): boolean {\n  return this.controls.some((control: AbstractControl) => control.enabled && condition(control));\n }\n\n
/** @internal */\n
_setupControls(): void {\n  this._forEachChild((control: AbstractControl) => this._registerControl(control));\n }\n\n
/** @internal */\n
_checkAllValuesPresent(value: any): void {\n  this._forEachChild((control: AbstractControl, i: number) => {\n    if (value[i] === undefined) {\n      throw new Error(`Must supply a value for form control at index: ${i}.`);\n    }\n  });\n }\n\n
/** @internal */\n
_allControlsDisabled(): boolean {\n  for (const control of this.controls) {\n    if (control.enabled) return false;\n  }\n  return this.controls.length > 0 || this.disabled;\n }\n\n
private\n
_registerControl(control: AbstractControl) {\n  control.setParent(this);\n  control._registerOnCollectionChange(this._onCollectionChange);\n }\n}\n\n
"/**\n * @license\n * Copyright Google LLC All Rights Reserved.\n * Use of this source code is governed by an MIT-style license that can be found in the LICENSE file at https://angular.io/license\n */\n\n
import {AfterViewInit, Directive, EventEmitter, forwardRef, Inject, Input, Optional, Self} from '@angular/core';\n
import {AbstractControl, FormControl, FormGroup, FormHooks} from './model';\n
import {composeAsyncValidators, composeValidators, NG_ASYNC_VALIDATORS, NG_VALIDATORS} from './validators';\n
import {ControlContainer} from './control_container';\n
import {Form} from './form_interface';\n
import {NgControl} from './ng_control';\n
import {NgModel} from './ng_model';\n
import {NgModelGroup} from './ng_model_group';\n
import {removeListItem, setUpControl, setUpFormContainer, syncPendingControls} from './shared';\n
import {AsyncValidator, AsyncValidatorFn, Validator, ValidatorFn} from './validators';\n\n
export const formDirectiveProvider: any = {\n  provide: ControlContainer,\n  useExisting: forwardRef(() => NgForm);\n};\n\n
const resolvedPromise = (() => Promise.resolve(null))();\n\n
/**\n * @description\n * Creates a top-level `FormGroup` instance and binds it to a form\n * to track aggregate form value and validation status.\n * As soon as you import the `FormsModule`, this directive becomes active by default on all `` tags. You don't need to add a special selector.\n * You optionally export the directive into a local template variable using `ngForm` as the key\n * (ex: `#myForm="ngForm"`). This is optional, but useful. Many properties from the underlying\n * `FormGroup`

```


instance are duplicated on the directive itself, so a reference to it gives you access to the aggregate value and validity status of the form, as well as user interaction properties like `dirty` and `touched`. To register child controls with the form, use `NgModel` with a `name` attribute. You may use `NgModelGroup` to create sub-groups within the form. If necessary, listen to the directive's `ngSubmit` event to be notified when the user has triggered a form submission. The `ngSubmit` event emits the original form submission event. In template driven forms, all `` tags are automatically tagged as `NgForm`. To import the `FormsModule` but skip its usage in some forms, for example, to use native HTML5 validation, add the `ngNoForm` and the `` tags won't create an `NgForm` directive. In reactive forms, using `ngNoForm` is unnecessary because the `` tags are inert. In that case, you would refrain from using the `formGroup` directive.

@usageNotes

Listening for form submission

The following example shows how to capture the form values from the `ngSubmit` event.

@example

```
forms/ts/simpleForm/simple_form_example.ts region='Component'
```

Setting the update options

The following example shows you how to change the `updateOn` option from its default using `ngFormOptions`.

```
html
<form [ngFormOptions]="{updateOn: 'blur'}">
  <input name="one"
  ngModel> <!-- this ngModel will update on blur -->
</form>
```

Native DOM validation UI

In order to prevent the native DOM form validation UI from interfering with Angular's form validation, Angular automatically adds the `novalidate` attribute on any `` whenever `FormModule` or `ReactiveFormModule` are imported into the application. If you want to explicitly enable native DOM validation UI with Angular forms, you can add the `ngNativeValidate` attribute to the `` element.

```
html
<form ngNativeValidate>
  ...
</form>
```

@ngModule FormsModule

```
@publicApi
@Directive({
  selector: 'form:not([ngNoForm]):not([formGroup]),ng-form,[ngForm]',
  providers: [formDirectiveProvider],
  host: {'(submit)': 'onSubmit($event)', '(reset)': 'onReset()'},
  outputs: ['ngSubmit'],
  exportAs: 'ngForm'})
export class NgForm extends ControlContainer implements Form,
  AfterViewInit {
  /**
   * Returns whether the form submission has been triggered.
   */
  public readonly submitted: boolean = false;
  private _directives: NgModel[] = [];
  /**
   * The `FormGroup` instance created for this form.
   */
  form: FormGroup;
  /**
   * The `EventEmitter` for the `ngSubmit` event.
   */
  ngSubmit = new EventEmitter();
  /**
   * Tracks options for the `NgForm` instance.
   * **updateOn**: Sets the default `updateOn` value for all child
   * `NgModels` below it (unless explicitly set by a child `NgModel` using `ngModelOptions`). Defaults to
   * 'change'. Possible values: 'change' | 'blur' | 'submit'.
   */
  // TODO(issue/24571): remove '!'.
  @Input('ngFormOptions') options!: {updateOn?: FormHooks};
  constructor(
    @Optional() @Self()
    @Inject(NG_VALIDATORS) validators: (Validator|ValidatorFn)[],
    @Optional() @Self()
    @Inject(NG_ASYNC_VALIDATORS) asyncValidators: (AsyncValidator|AsyncValidatorFn)[],
    super():
    this.form = new FormGroup({}, composeValidators(validators),
      composeAsyncValidators(asyncValidators));
  }
  /** @nodoc */
  ngAfterViewInit() {
    this._setUpUpdateStrategy();
  }
  /**
   * The directive instance.
   */
  get formDirective(): Form {
    return this;
  }
  /**
   * The internal `FormGroup` instance.
   */
  get control(): FormGroup {
    return this.form;
  }
  /**
   * Returns an array representing the path to this group. Because this directive always lives at the top level of a form, it is always an empty array.
   */
  get path(): string[] {
    return [];
  }
  /**
   * Returns a map of the controls in this group.
   */
  get controls(): {[key: string]: AbstractControl} {
    return this.form.controls;
  }
  /**
   * Method that sets up the control directive in this group, re-calculates its value and validity, and adds the instance to the internal list of directives.
   * @param dir The `NgModel` directive instance.
   */
  addControl(dir: NgModel): void {
    resolvedPromise.then(() => {
      const container = this._findContainer(dir.path);
      (dir as {control: FormControl}).control =
        <FormControl>container.registerControl(dir.name, dir.control);
      setUpControl(dir.control, dir);
      dir.control.updateValueAndValidity({emitEvent: false});
      this._directives.push(dir);
    });
  }
  /**
   * Retrieves the `FormControl` instance from the provided `NgModel` directive.
   * @param

```

```

dir The `NgModel` directive instance.\n */\n getControl(dir: NgModel): FormControl {\n  return
<FormControl>this.form.get(dir.path);\n }\n\n /**\n  * @description\n  * Removes the `NgModel` instance from
the internal list of directives\n  *\n  * @param dir The `NgModel` directive instance.\n  */\n removeControl(dir:
NgModel): void {\n  resolvedPromise.then(() => {\n    const container = this._findContainer(dir.path);\n    if
(container) {\n      container.removeControl(dir.name);\n    }\n    removeListItem(this._directives, dir);\n  });\n }\n\n /**\n  * @description\n  * Adds a new `NgModelGroup` directive instance to the form.\n  *\n  * @param
dir The `NgModelGroup` directive instance.\n  */\n addFormGroup(dir: NgModelGroup): void {\n
  resolvedPromise.then(() => {\n    const container = this._findContainer(dir.path);\n    const group = new
FormGroup({});\n    setUpFormContainer(group, dir);\n    container.registerControl(dir.name, group);\n
group.updateValueAndValidity({emitEvent: false});\n  });\n }\n\n /**\n  * @description\n  * Removes the
`NgModelGroup` directive instance from the form.\n  *\n  * @param dir The `NgModelGroup` directive
instance.\n  */\n removeFormGroup(dir: NgModelGroup): void {\n  resolvedPromise.then(() => {\n    const
container = this._findContainer(dir.path);\n    if (container) {\n      container.removeControl(dir.name);\n    }\n
});\n }\n\n /**\n  * @description\n  * Retrieves the `FormGroup` for a provided `NgModelGroup` directive
instance\n  *\n  * @param dir The `NgModelGroup` directive instance.\n  */\n getFormGroup(dir:
NgModelGroup): FormGroup {\n  return <FormGroup>this.form.get(dir.path);\n }\n\n /**\n  * Sets the new
value for the provided `NgControl` directive.\n  *\n  * @param dir The `NgControl` directive instance.\n  *\n
* @param value The new value for the directive's control.\n  */\n updateModel(dir: NgControl, value: any): void {\n
  resolvedPromise.then(() => {\n    const ctrl = <FormControl>this.form.get(dir.path!);\n    ctrl.setValue(value);\n
  });\n }\n\n /**\n  * @description\n  * Sets the value for this `FormGroup`.\n  *\n  * @param value The new
value\n  */\n setValue(value: {[key: string]: any}): void {\n  this.control.setValue(value);\n }\n\n /**\n  *
@description\n  * Method called when the "submit" event is triggered on the form.\n  * Triggers the `ngSubmit`
emitter to emit the "submit" event as its payload.\n  *\n  * @param $event The "submit" event object\n  */\n
onSubmit($event: Event): boolean {\n  (this as {submitted: boolean}).submitted = true;\n
  syncPendingControls(this.form, this._directives);\n  this.ngSubmit.emit($event);\n  return false;\n }\n\n /**\n  *
@description\n  * Method called when the "reset" event is triggered on the form.\n  */\n onReset(): void {\n
  this.resetForm();\n }\n\n /**\n  * @description\n  * Resets the form to an initial value and resets its submitted
status.\n  *\n  * @param value The new value for the form.\n  */\n resetForm(value: any = undefined): void {\n
  this.form.reset(value);\n  (this as {submitted: boolean}).submitted = false;\n }\n\n private _setUpdateStrategy()\n
{\n  if (this.options && this.options.updateOn != null) {\n    this.form._updateOn = this.options.updateOn;\n  }\n
}\n\n /**\n  * @internal */\n _findContainer(path: string[]): FormGroup {\n  path.pop();\n  return path.length ?
<FormGroup>this.form.get(path) : this.form;\n }\n}\n\n", /**\n  * @license\n  * Copyright Google LLC All Rights
Reserved.\n  *\n  * Use of this source code is governed by an MIT-style license that can be\n  * found in the
LICENSE file at https://angular.io/license\n  */\n\nimport {Directive, OnDestroy, OnInit} from
'@angular/core';\nimport {FormGroup} from './model';\nimport {ControlContainer} from
'./control_container';\nimport {Form} from './form_interface';\nimport {controlPath} from './shared';\n\n\n/**\n  *
@description\n  * A base class for code shared between the `NgModelGroup` and `FormGroupName` directives.\n  *\n
* @publicApi\n  */\n@Directive()\nexport class AbstractFormGroupDirective extends ControlContainer\nimplements OnInit, OnDestroy {\n  /**\n  * @description\n  * The parent control for the group\n  *\n  *
* @internal\n  * // TODO(issue/24571): remove '!'.\n  _parent!: ControlContainer;\n\n  /**\n  * @nodoc\n  */\n
ngOnInit(): void {\n  this._checkParentType();\n  // Register the group with its parent group.\n
  this.formDirective!.addFormGroup(this);\n }\n\n  /**\n  * @nodoc\n  */\n ngOnDestroy(): void {\n  if
(this.formDirective) {\n    // Remove the group from its parent group.\n
    this.formDirective.removeFormGroup(this);\n  }\n }\n\n /**\n  * @description\n  * The `FormGroup` bound to
this directive.\n  */\n get control(): FormGroup {\n  return this.formDirective!.getFormGroup(this);\n }\n\n /**\n
* @description\n  * The path to this group from the top-level directive.\n  */\n get path(): string[] {\n  return
controlPath(this.name == null ? this.name : this.name.toString(), this._parent);\n }\n\n /**\n  * @description\n  *
The top-level directive for this group if present, otherwise null.\n  */\n get formDirective(): Form|null {\n  return

```

```

this._parent ? this._parent.formDirective : null;\n })\n\n /** @internal */\n _checkParentType(): void
{\n}\n\n", "/*\n * @license\n * Copyright Google LLC All Rights Reserved.\n *\n * Use of this source code is
governed by an MIT-style license that can be\n * found in the LICENSE file at https://angular.io/license\n
*/\n\nimport {FormErrorExamples as Examples} from './error_examples';\n\nexport class TemplateDrivenErrors {\n
static modelParentException(): void {\n  throw new Error`\n    ngModel cannot be used to register form controls
with a parent formGroup directive. Try using\n    formGroup's partner directive \"formControlName\" instead.
Example:\n\n    ${Examples.formControlName}\n\n    Or, if you'd like to avoid registering this form control,
indicate that it's standalone in ngModelOptions:\n\n    Example:\n\n    ${Examples.ngModelWithFormGroup}`);\n }\n\n static formGroupNameException(): void {\n  throw new
Error`\n    ngModel cannot be used to register form controls with a parent formGroupName or formArrayName
directive.\n\n    Option 1: Use formControlName instead of ngModel (reactive strategy):\n\n    ${Examples.formGroupName}\n\n    Option 2: Update ngModel's parent be ngModelGroup (template-driven
strategy):\n\n    ${Examples.ngModelGroup}`);\n }\n\n static missingNameException() {\n  throw new Error`\n
  `If ngModel is used within a form tag, either the name attribute must be set or the form\n    control must be
defined as 'standalone' in ngModelOptions.\n\n    Example 1: <input [(ngModel)]="person.firstName"\n
name="first">\n    Example 2: <input [(ngModel)]="person.firstName" [ngModelOptions]="{standalone:
true}">);\n }\n\n static modelGroupParentException() {\n  throw new Error`\n    ngModelGroup cannot be
used with a parent formGroup directive.\n\n    Option 1: Use formGroupName instead of ngModelGroup (reactive
strategy):\n\n    ${Examples.formGroupName}\n\n    Option 2: Use a regular form tag instead of the formGroup
directive (template-driven strategy):\n\n    ${Examples.ngModelGroup}`);\n }\n}\n\n", "/*\n * @license\n *
Copyright Google LLC All Rights Reserved.\n *\n * Use of this source code is governed by an MIT-style license
that can be\n * found in the LICENSE file at https://angular.io/license\n */\n\nimport {Directive, forwardRef, Host,
Inject, Input, OnDestroy, OnInit, Optional, Self, SkipSelf} from '@angular/core';\n\nimport
{NG_ASYNC_VALIDATORS, NG_VALIDATORS} from './validators';\n\nimport
{AbstractFormGroupDirective} from './abstract_form_group_directive';\n\nimport {ControlContainer} from
 './control_container';\n\nimport {NgForm} from './ng_form';\n\nimport {TemplateDrivenErrors} from
 './template_driven_errors';\n\nimport {AsyncValidator, AsyncValidatorFn, Validator, ValidatorFn} from
 './validators';\n\nexport const modelGroupProvider: any = {\n  provide: ControlContainer,\n  useExisting:
forwardRef(() => NgModelGroup);\n};\n\n/**\n * @description\n * Creates and binds a `FormGroup` instance to a
DOM element.\n *\n * This directive can only be used as a child of `NgForm` (within `<form>` tags).\n *\n * Use
this directive to validate a sub-group of your form separately from the\n * rest of your form, or if some values in
your domain model make more sense\n * to consume together in a nested object.\n *\n * Provide a name for the sub-
group and it will become the key\n * for the sub-group in the form's full value. If you need direct access, export the
directive into\n * a local template variable using `ngModelGroup` (ex: `#myGroup="ngModelGroup"`).\n *\n *
@usageNotes\n *\n * ### Consuming controls in a grouping\n *\n * The following example shows you how to
combine controls together in a sub-group\n * of the form.\n *\n * @example
forms/ts/ngModelGroup/ng_model_group_example.ts region='Component'\n *\n * @ngModule FormsModule\n *
@publicApi\n */\n @Directive({selector: '[ngModelGroup]', providers: [modelGroupProvider], exportAs:
'ngModelGroup'})\n export class NgModelGroup extends AbstractFormGroupDirective implements OnInit,
OnDestroy {\n  /**\n   * @description\n   * Tracks the name of the `NgModelGroup` bound to the directive. The
name corresponds\n   * to a key in the parent `NgForm`.\n   */\n   // TODO(issue/24571): remove '!'.\n   @Input('ngModelGroup') name!: string;\n\n   constructor(\n     @Host() @SkipSelf() parent: ControlContainer,\n     @Optional() @Self() @Inject(NG_VALIDATORS) validators: (Validator|ValidatorFn)[],\n     @Optional()
@Self() @Inject(NG_ASYNC_VALIDATORS) asyncValidators: (AsyncValidator|AsyncValidatorFn)[])\n     {\n     super();\n     this._parent = parent;\n     this._setValidators(validators);\n     this._setAsyncValidators(asyncValidators);\n   }\n\n   /** @internal */\n   _checkParentType(): void {\n     if
(!!(this._parent instanceof NgModelGroup) && !(this._parent instanceof NgForm) &&\n     (typeof ngDevMode
=== 'undefined' || ngDevMode)) {\n       TemplateDrivenErrors.modelGroupParentException();\n     }\n   }\n }

```


The following example shows you an alternate way to set the name attribute. Here, an attribute identified as name is used within a custom form control component. To still be able to specify the NgModel's name, you must specify it using the `ngModelOptions` input instead.

```

<html>
<form>
<my-custom-form-control
name="Nancy" ngModel [ngModelOptions]="{name: 'user'}">
</my-custom-form-control>
</form>
<!-- form value: {user: } -->
@ngModule FormsModule
@publicApi
^@Directive({
selector: '[ngModel]:not([formControlName]):not([formControl])',
providers: [formControlBinding],
exportAs: 'ngModel'})
export class NgModel extends NgControl implements OnChanges, OnDestroy {
public readonly
control: FormControl = new FormControl();

// At runtime we coerce arbitrary values assigned to the
'disabled' input to a 'boolean'.
// This is not reflected in the type of the property because outside of templates,
consumers
// should only deal with booleans. In templates, a string is allowed for convenience and to
// match
the native 'disabled attribute' semantics which can be observed on input elements.
// This static member tells the
compiler that values of type 'string' can also be assigned
// to the input in a template.
/** @nodoc */
static
ngAcceptInputType_isDisabled: boolean|string;

/** @internal */
_registered = false;

/** Internal
reference to the view model value.
*/
viewModel: any;

/** @description
Tracks
the name bound to the directive. If a parent form exists, it
uses this name as a key to retrieve this control's
value.
*/
// TODO(issue/24571): remove '!'.
name!: string;

/** @description
Tracks
whether the control is disabled.
*/
// TODO(issue/24571): remove '!'.
disabled!:
boolean;

/** @description
Tracks the value bound to this directive.
*/
value!: any;

/** @description
Tracks the configuration options for this `ngModel` instance.
*/
options!:
NgModelOptions;

/** @description
An alternative to setting the name attribute on the form control element. See the
[example](api/forms/NgModel#using-ngmodel-on-a-standalone-control) for using `NgModel` as a standalone
control.
*/
standalone!:
boolean;

/** @description
Defines the event upon which the form control value and validity update.
Defaults to 'change'.
Possible values: `change` | `blur` | `submit`.
*/
updateOn!:
string;

// TODO(issue/24571): remove '!'.
@Input('ngModelOptions') options!: {name?: string, standalone?: boolean, updateOn?: FormHooks};

/** @description
Event emitter for producing the `ngModelChange` event after
the view model updates.
*/
update!: EventEmitter<any>;

@Output('ngModelChange') update = new EventEmitter();

constructor(
@Optional() @Host() parent:
ControlContainer,
@Optional() @Self() @Inject(NG_VALIDATORS) validators: (Validator|ValidatorFn)[],
@Optional() @Self() @Inject(NG_ASYNC_VALIDATORS) asyncValidators:
(AsyncValidator|AsyncValidatorFn)[],
@Optional() @Self() @Inject(NG_VALUE_ACCESSOR)
valueAccessors: ControlValueAccessor[]) {
super();
this._parent = parent;
this._setValidators(validators);
this._setAsyncValidators(asyncValidators);
this.valueAccessor =
selectValueAccessor(this, valueAccessors);
}

/** @nodoc */
ngOnChanges(changes: SimpleChanges) {
this._checkForErrors();
if (!this._registered) this._setUpControl();
if ('isDisabled' in changes) {
this._updateDisabled(changes);
}
if (isPropertyUpdated(changes, this.viewModel)) {
this._updateValue(this.model);
this.viewModel = this.model;
}
}

/** @nodoc */
ngOnDestroy():
void {
this.formDirective && this.formDirective.removeControl(this);
}

/** @description
Returns an array that represents the path from the top-level form to this control.
Each index is the string name
of the control on that level.
*/
getPath(): string[] {
return this._parent ? controlPath(this.name,
this._parent) : [this.name];
}

/** @description
The top-level directive for this control if present,
otherwise null.
*/
get formDirective(): any {
return this._parent ? this._parent.formDirective : null;
}

/** @description
Sets the new value for the view model and emits an `ngModelChange` event.
*/
update(newValue: any):
void {
this.viewModel = newValue;
this.update.emit(newValue);
}

private _setUpControl(): void {
this._setUpdateStrategy();
this._isStandalone() ? this._setUpStandalone() :
this.formDirective.addControl(this);
this._registered = true;
}

private _setUpdateStrategy(): void {
if
(this.options && this.options.updateOn != null) {
this.control.updateOn = this.options.updateOn;
}
}
}

```

```

}\n\n private _isStandalone(): boolean {\n  return !this._parent || !(this.options && this.options.standalone);\n}\n\n private _setUpStandalone(): void {\n  setUpControl(this.control, this);\n}\n\n this.control.updateValueAndValidity({emitEvent: false});\n }\n\n private _checkForErrors(): void {\n  if (!this._isStandalone()) {\n    this._checkParentType();\n  }\n  this._checkName();\n }\n\n private _checkParentType(): void {\n  if (typeof ngDevMode === 'undefined' || ngDevMode) {\n    if (!(this._parent instanceof NgModelGroup) && this._parent instanceof AbstractFormGroupDirective) {\n      TemplateDrivenErrors.formGroupNameException();\n    } else if (!(this._parent instanceof NgModelGroup) && !(this._parent instanceof NgForm)) {\n      TemplateDrivenErrors.modelParentException();\n    }\n  }\n }\n\n private _checkName(): void {\n  if (this.options && this.options.name) this.name = this.options.name;\n  if (!this._isStandalone() && !this.name && (typeof ngDevMode === 'undefined' || ngDevMode)) {\n    TemplateDrivenErrors.missingNameException();\n  }\n }\n\n private _updateValue(value: any): void {\n  resolvedPromise.then(() => {\n    this.control.setValue(value, {emitViewToModelChange: false});\n  });\n }\n\n private _updateDisabled(changes: SimpleChanges) {\n  const disabledValue = changes['isDisabled'].currentValue;\n  const isDisabled = disabledValue === " || (disabledValue && disabledValue !== 'false');\n  resolvedPromise.then(() => {\n    if (isDisabled && !this.control.disabled) {\n      this.control.disable();\n    } else if (!isDisabled && this.control.disabled) {\n      this.control.enable();\n    }\n  });\n }\n}\n\n"/**\n * @license\n * Copyright Google LLC All Rights Reserved.\n * Use of this source code is governed by an MIT-style license that can be\n * found in the LICENSE file at https://angular.io/license\n */\n\nimport {Directive} from '@angular/core';\n\n/**\n * @description\n * Adds `novalidate` attribute to all forms by default.\n * `novalidate` is used to disable browser's native form validation.\n * If you want to use native validation with Angular forms, just add `ngNativeValidate` attribute:\n * ```\n * <form ngNativeValidate></form>\n * ```\n * @publicApi\n * @ngModule ReactiveFormsModule\n * @ngModule FormsModule\n */\n@Directive({\n  selector: 'form:not([ngNoForm]):not([ngNativeValidate])',\n  host: {\n    'novalidate': '',\n  },\n})\nexport class NgNoValidate {\n}\n\nexport {NgNoValidate as NgNoValidate};\n"/**\n * @license\n * Copyright Google LLC All Rights Reserved.\n * Use of this source code is governed by an MIT-style license that can be\n * found in the LICENSE file at https://angular.io/license\n */\n\nimport {Directive, EventEmitter, forwardRef, Inject, InjectionToken, Input, OnChanges, Optional, Output, Self, SimpleChanges} from '@angular/core';\nimport {FormControl} from '../model';\nimport {NG_ASYNC_VALIDATORS, NG_VALIDATORS} from '../validators';\nimport {ControlValueAccessor, NG_VALUE_ACCESSOR} from './control_value_accessor';\nimport {NgControl} from './ng_control';\nimport {ReactiveErrors} from './reactive_errors';\nimport {_ngModelWarning, isPropertyUpdated, selectValueAccessor, setUpControl} from './shared';\nimport {AsyncValidator, AsyncValidatorFn, Validator, ValidatorFn} from '../validators';\n\n/**\n * Token to provide to turn off the ngModel warning on FormControl and FormControlName.\n */\nexport const NG_MODEL_WITH_FORM_CONTROL_WARNING =\n  new InjectionToken('NgModelWithFormControlWarning');\n\nexport const formControlBinding: any = {\n  provide: NgControl,\n  useExisting: forwardRef(() => FormControlDirective)\n};\n\n/**\n * @description\n * Synchronizes a standalone `FormControl` instance to a form control element.\n * Note that support for using the `ngModel` input property and `ngModelChange` event with reactive form directives was deprecated in Angular v6 and is scheduled for removal in a future version of Angular.\n * For details, see [Deprecated features](guide/deprecations#ngmodel-with-reactive-forms).\n * @see [Reactive Forms Guide](guide/reactive-forms)\n * @see `FormControl`\n * @see `AbstractControl`\n * @usageNotes\n * The following example shows how to register a standalone control and set its value.\n * @example\n */\nforms/ts/simpleFormControl/simple_form_control_example.ts region='Component'\n\n/**\n * @ngModule ReactiveFormsModule\n * @publicApi\n */\n@Directive({selector: '[formControl]', providers: [formControlBinding], exportAs: 'ngForm'})\nexport class FormControlDirective extends NgControl implements OnChanges {\n  /**\n   * Internal reference to the view model value.\n   * @nodoc\n   */\n  viewModel: any;\n\n  /**\n   * @description\n   * Tracks the `FormControl` instance bound to the directive.\n   */\n  //\n  TODO(issue/24571): remove '!'\n  @Input('formControl') form!: FormControl;\n\n  /**\n   * @description\n   *

```

```

Triggers a warning in dev mode that this input should not be used with reactive forms.\n  *^n  @Input('disabled')\n
set isDisabled(isDisabled: boolean) {\n  if (typeof ngDevMode === 'undefined' || ngDevMode) {\n
ReactiveErrors.disabledAttrWarning();\n  }\n }\n\n // TODO(kara): remove next 4 properties once deprecation
period is over\n\n /** @deprecated as of v6 */\n  @Input('ngModel') model: any;\n\n /** @deprecated as of v6 */\n
@Output('ngModelChange') update = new EventEmitter();\n\n /**\n  * @description\n  * Static property used to
track whether any ngModel warnings have been sent across\n  * all instances of FormControlDirective. Used to
support warning config of \"once\".\n  *\n  * @internal\n  */\n  static _ngModelWarningSentOnce = false;\n\n
/**\n  * @description\n  * Instance property used to track whether an ngModel warning has been sent out for this\n
  * particular `FormControlDirective` instance. Used to support warning config of \"always\".\n  *\n  * @internal\n
  */\n  _ngModelWarningSent = false;\n\n  constructor(\n    @Optional() @Self() @Inject(NG_VALIDATORS)
validators: (Validator|ValidatorFn)[],\n    @Optional() @Self() @Inject(NG_ASYNC_VALIDATORS)
asyncValidators: (AsyncValidator|AsyncValidatorFn)[],\n    @Optional() @Self()
@Inject(NG_VALUE_ACCESSOR) valueAccessors: ControlValueAccessor[],\n    @Optional()
@Inject(NG_MODEL_WITH_FORM_CONTROL_WARNING) private _ngModelWarningConfig: string|\n
null) {\n    super();\n    this._setValidators(validators);\n    this._setAsyncValidators(asyncValidators);\n
    this.valueAccessor = selectValueAccessor(this, valueAccessors);\n  }\n\n  /** @nodoc */\n  ngOnChanges(changes:
SimpleChanges): void {\n    if (this._isControlChanged(changes)) {\n      setUpControl(this.form, this);\n      if
(this.control.disabled && this.valueAccessor!.setDisabledState) {\n
        this.valueAccessor!.setDisabledState!(true);\n      }\n      this.form.updateValueAndValidity({emitEvent: false});\n
    }\n    if (isPropertyUpdated(changes, this.viewModel)) {\n      _ngModelWarning('formControl',
FormControlDirective, this, this._ngModelWarningConfig);\n      this.form.setValue(this.model);\n
      this.viewModel = this.model;\n    }\n  }\n\n  /**\n  * @description\n  * Returns an array that represents the path
from the top-level form to this control.\n  * Each index is the string name of the control on that level.\n  */\n  get
path(): string[] {\n    return [];\n  }\n\n  /**\n  * @description\n  * The `FormControl` bound to this directive.\n
  */\n  get control(): FormControl {\n    return this.form;\n  }\n\n  /**\n  * @description\n  * Sets the new value for
the view model and emits an `ngModelChange` event.\n  *\n  * @param newValue The new value for the view
model.\n  */\n  viewToModelUpdate(newValue: any): void {\n    this.viewModel = newValue;\n
    this.update.emit(newValue);\n  }\n\n  private _isControlChanged(changes: {[key: string]: any}): boolean {\n
    return changes.hasOwnProperty('form');\n  }\n}\n\n", "*/\n  * @license\n  * Copyright Google LLC All Rights
Reserved.\n  *\n  * Use of this source code is governed by an MIT-style license that can be\n  * found in the
LICENSE file at https://angular.io/license\n  */\n\nimport {Directive, EventEmitter, forwardRef, Inject, Input,
OnChanges, Optional, Output, Self, SimpleChanges} from '@angular/core';\n\nimport {FormArray, FormControl,
FormGroup} from './model';\n\nimport {NG_ASYNC_VALIDATORS, NG_VALIDATORS} from
'../validators';\n\nimport {ControlContainer} from './control_container';\n\nimport {Form} from
'./form_interface';\n\nimport {ReactiveErrors} from './reactive_errors';\n\nimport {cleanUpControl, cleanUpValidators,
removeListItem, setUpControl, setUpFormContainer, setUpValidators, syncPendingControls} from
'./shared';\n\nimport {AsyncValidator, AsyncValidatorFn, Validator, ValidatorFn} from './validators';\n\nimport
{FormControlName} from './form_control_name';\n\nimport {FormArrayName, FormGroupName} from
'./form_group_name';\n\nexport const formDirectiveProvider: any = {\n  provide: ControlContainer,\n  useExisting:
forwardRef(() => FormGroupDirective)\n};\n\n/**\n  * @description\n  * Binds an existing `FormGroup` to a
DOM element.\n  *\n  * This directive accepts an existing `FormGroup` instance. It will then use this\n  *
`FormGroup` instance to match any child `FormControl`, `FormGroup`,\n  * and `FormArray` instances to child
`FormControlName`, `FormGroupName`,\n  * and `FormArrayName` directives.\n  *\n  * @see [Reactive Forms
Guide](guide/reactive-forms)\n  * @see `AbstractControl`\n  */\n  * ### Register Form Group\n  *\n  * The following
example registers a `FormGroup` with first name and last name controls,\n  * and listens for the *ngSubmit* event
when the button is clicked.\n  *\n  * { @example forms/ts/simpleFormGroup/simple_form_group_example.ts
region='Component'}\n  *\n  * @ngModule ReactiveFormsModule\n  * @publicApi\n  */\n  @Directive({\n    selector:
'[formGroup]',\n    providers: [formDirectiveProvider],\n    host: {\n      '(submit)': 'onSubmit($event)',\n      '(reset)':

```

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'onReset()'},\n exportAs: 'ngForm'\n}}\nexport class FormGroupDirective extends ControlContainer implements
Form, OnChanges {\n /**\n * @description\n * Reports whether the form submission has been triggered.\n */\n
public readonly submitted: boolean = false;\n\n /**\n * Reference to an old form group input value, which is
needed to cleanup old instance in case it\n * was replaced with a new one.\n */\n private _oldForm:
FormGroup|undefined;\n\n /**\n * @description\n * Tracks the list of added `FormControlName` instances\n
*/\n directives: FormControlName[] = [];\n\n /**\n * @description\n * Tracks the `FormGroup` bound to this
directive.\n */\n @Input('formGroup') form: FormGroup = null!;\n\n /**\n * @description\n * Emits an event
when the form submission has been triggered.\n */\n @Output() ngSubmit = new EventEmitter();\n\n
constructor(\n @Optional() @Self() @Inject(NG_VALIDATORS) private validators:
(Validator|ValidatorFn)[],\n @Optional() @Self() @Inject(NG_ASYNC_VALIDATORS) private
asyncValidators:\n (AsyncValidator|AsyncValidatorFn[]) {\n super();\n this._setValidators(validators);\n
this._setAsyncValidators(asyncValidators);\n }\n\n /** @nodoc */\n ngOnChanges(changes: SimpleChanges):
void {\n this._checkFormPresent();\n if (changes.hasOwnProperty('form')) {\n this._updateValidators();\n
this._updateDomValue();\n this._updateRegistrations();\n this._oldForm = this.form;\n }\n }\n\n /**\n *
@description\n * Returns this directive's instance.\n */\n get formDirective(): Form {\n return this;\n }\n\n
/**\n * @description\n * Returns the `FormGroup` bound to this directive.\n */\n get control(): FormGroup {\n
return this.form;\n }\n\n /**\n * @description\n * Returns an array representing the path to this group. Because
this directive\n * always lives at the top level of a form, it always an empty array.\n */\n get path(): string[] {\n
return [];\n }\n\n /**\n * @description\n * Method that sets up the control directive in this group, re-calculates
its value\n * and validity, and adds the instance to the internal list of directives.\n */\n * @param dir The
`FormControlName` directive instance.\n */\n addControl(dir: FormControlName): FormControl {\n const ctrl:
any = this.form.get(dir.path);\n setUpControl(ctrl, dir);\n ctrl.updateValueAndValidity({emitEvent: false});\n
this.directives.push(dir);\n return ctrl;\n }\n\n /**\n * @description\n * Retrieves the `FormControl` instance
from the provided `FormControlName` directive\n */\n * @param dir The `FormControlName` directive
instance.\n */\n getControl(dir: FormControlName): FormControl {\n return
<FormControl>this.form.get(dir.path);\n }\n\n /**\n * @description\n * Removes the `FormControlName`
instance from the internal list of directives\n */\n * @param dir The `FormControlName` directive instance.\n
*/\n removeControl(dir: FormControlName): void {\n removeListItem(this.directives, dir);\n }\n\n /**\n *
Adds a new `FormGroupName` directive instance to the form.\n */\n * @param dir The `FormGroupName`
directive instance.\n */\n addFormGroup(dir: FormGroupName): void {\n const ctrl: any =
this.form.get(dir.path);\n setUpFormContainer(ctrl, dir);\n ctrl.updateValueAndValidity({emitEvent: false});\n
}\n\n /**\n * No-op method to remove the form group.\n */\n * @param dir The `FormGroupName` directive
instance.\n */\n removeFormGroup(dir: FormGroupName): void {\n }\n\n /**\n * @description\n * Retrieves the
`FormGroup` for a provided `FormGroupName` directive instance\n */\n * @param dir The `FormGroupName`
directive instance.\n */\n getFormGroup(dir: FormGroupName): FormGroup {\n return
<FormGroup>this.form.get(dir.path);\n }\n\n /**\n * Adds a new `FormArrayName` directive instance to the
form.\n */\n * @param dir The `FormArrayName` directive instance.\n */\n addFormArray(dir:
FormArrayName): void {\n const ctrl: any = this.form.get(dir.path);\n setUpFormContainer(ctrl, dir);\n
ctrl.updateValueAndValidity({emitEvent: false});\n }\n\n /**\n * No-op method to remove the form array.\n */\n
* @param dir The `FormArrayName` directive instance.\n */\n removeFormArray(dir: FormArrayName): void
{\n }\n\n /**\n * @description\n * Retrieves the `FormArray` for a provided `FormArrayName` directive
instance.\n */\n * @param dir The `FormArrayName` directive instance.\n */\n getFormArray(dir:
FormArrayName): FormArray {\n return <FormArray>this.form.get(dir.path);\n }\n\n /**\n * Sets the new
value for the provided `FormControlName` directive.\n */\n * @param dir The `FormControlName` directive
instance.\n * @param value The new value for the directive's control.\n */\n updateModel(dir:
FormControlName, value: any): void {\n const ctrl = <FormControl>this.form.get(dir.path);\n
ctrl.setValue(value);\n }\n\n /**\n * @description\n * Method called with the \"submit\" event is triggered on the
form.\n */\n * Triggers the `ngSubmit` emitter to emit the \"submit\" event as its payload.\n */\n * @param $event

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The `submit` event object
 */\n onSubmit($event: Event): boolean {\n (this as {submitted:
boolean}).submitted = true;\n syncPendingControls(this.form, this.directives);\n this.ngSubmit.emit($event);\n
return false;\n }\n\n /**\n * @description\n * Method called when the `reset` event is triggered on the form.\n
*/\n\n onSubmit(): void {\n this.resetForm();\n }\n\n /**\n * @description\n * Resets the form to an initial value
and resets its submitted status.\n * \n * @param value The new value for the form.\n */\n\n resetForm(value: any =
undefined): void {\n this.form.reset(value);\n (this as {submitted: boolean}).submitted = false;\n }\n\n\n /**
*\n * @internal\n */\n\n _updateDomValue() {\n this.directives.forEach(dir => {\n const newCtrl: any =
this.form.get(dir.path);\n if (dir.control !== newCtrl) {\n // Note: the value of the `dir.control` may not be
defined, for example when it's a first\n // `FormControl` that is added to a `FormGroup` instance (via
`addControl` call).\n cleanupControl(dir.control || null, dir);\n if (newCtrl) setUpControl(newCtrl, dir);\n
(dir as {control: FormControl}).control = newCtrl;\n }\n });\n\n this.form._updateTreeValidity({ emitEvent:
false});\n }\n\n\n private _updateRegistrations() {\n this.form._registerOnCollectionChange(() =>
this._updateDomValue());\n if (this._oldForm) {\n this._oldForm._registerOnCollectionChange(() => {});\n
}\n }\n\n private _updateValidators() {\n setUpValidators(this.form, this, /* handleOnValidatorChange */
false);\n if (this._oldForm) {\n cleanupValidators(this._oldForm, this, /* handleOnValidatorChange */ false);\n
}\n }\n\n private _checkFormPresent() {\n if (!this.form && (typeof ngDevMode === 'undefined' ||
ngDevMode)) {\n ReactiveErrors.missingFormException();\n }\n }\n\n\n", /**\n * @license\n * Copyright
Google LLC All Rights Reserved.\n * \n * Use of this source code is governed by an MIT-style license that can be\n
*\n * found in the LICENSE file at https://angular.io/license\n */\n\nimport {Directive, forwardRef, Host, Inject, Input,
OnDestroy, OnInit, Optional, Self, SkipSelf} from '@angular/core';\n\nimport {FormArray} from
'./../model';\n\nimport {NG_ASYNC_VALIDATORS, NG_VALIDATORS} from './../validators';\n\nimport
{AbstractFormGroupDirective} from './abstract_form_group_directive';\n\nimport {ControlContainer} from
'./control_container';\n\nimport {ReactiveErrors} from './reactive_errors';\n\nimport {controlPath} from
'./shared';\n\nimport {AsyncValidator, AsyncValidatorFn, Validator, ValidatorFn} from './validators';\n\nimport
{FormGroupDirective} from './form_group_directive';\n\nexport const formGroupNameProvider: any = {\n
provide: ControlContainer,\n useExisting: forwardRef(() => FormGroupName)\n};\n\n\n /**\n * @description\n * \n *
Synchs a nested `FormGroup` to a DOM element.\n * \n * This directive can only be used with a parent
`FormGroupDirective`.\n * \n * It accepts the string name of the nested `FormGroup` to link, and\n * looks for a
`FormGroup` registered with that name in the parent\n * `FormGroup` instance you passed into
`FormGroupDirective`.\n * \n * Use nested form groups to validate a sub-group of a\n * form separately from the rest
or to group the values of certain\n * controls into their own nested object.\n * \n * @see [Reactive Forms
Guide](guide/reactive-forms)\n * \n * @usageNotes\n * \n * ### Access the group by name\n * \n * The following
example uses the {@link AbstractControl#get get} method to access the\n * associated `FormGroup`\n * \n * ``\n * this.form.get('name');\n * ``\n * \n * ### Access individual controls in the group\n * \n * The following example
uses the {@link AbstractControl#get get} method to access\n * individual controls within the group using dot
syntax.\n * \n * ``\n * this.form.get('name.first');\n * ``\n * \n * ### Register a nested `FormGroup`\n * \n * The
following example registers a nested *name* `FormGroup` within an existing `FormGroup`,\n * and provides
methods to retrieve the nested `FormGroup` and individual controls.\n * \n * {@example
forms/ts/nestedFormGroup/nested_form_group_example.ts region='Component'}\n * \n * @ngModule
ReactiveFormsModule\n * \n * @publicApi\n */\n\n@Directive({selector: '[formGroupName]', providers:
[formGroupNameProvider]})\n\nexport class FormGroupName extends AbstractFormGroupDirective implements
OnInit, OnDestroy {\n\n /**\n * @description\n * Tracks the name of the `FormGroup` bound to the directive. The
name corresponds\n * to a key in the parent `FormGroup` or `FormArray`.\n * \n * Accepts a name as a string or a
number.\n * \n * The name in the form of a string is useful for individual forms,\n * while the numerical form allows
for form groups to be bound\n * to indices when iterating over groups in a `FormArray`.\n * \n */\n\n //
TODO(issue/24571): remove '!'.\n\n @Input('formGroupName') name!: string|number|null;\n\n constructor(\n
@Optional() @Host() @SkipSelf() parent: ControlContainer,\n @Optional() @Self()\n @Inject(NG_VALIDATORS) validators: (Validator|ValidatorFn)[],\n @Optional() @Self()

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@Inject(NG_ASYNC_VALIDATORS) asyncValidators: (AsyncValidator|AsyncValidatorFn[]) {
  super();
  this._parent = parent;
  this._setValidators(validators);
  this._setAsyncValidators(asyncValidators);
}

/** @internal */
_checkParentType(): void {
  if (_hasInvalidParent(this._parent) && (typeof ngDevMode === 'undefined' || ngDevMode)) {
    ReactiveErrors.groupParentException();
  }
}

export const formArrayNameProvider: any = {
  provide: ControlContainer,
  useExisting: forwardRef(() => FormArrayName),
};

/**
 * @description
 * Syncs a nested `FormArray` to a DOM element.
 * This directive is designed to be used with a parent `FormGroupDirective` (selector: `[formGroup]`).
 * It accepts the string name of the nested `FormArray` you want to link, and
 * will look for a `FormArray` registered with that name in the parent `FormGroup` instance you passed into `FormGroupDirective`.
 * @see [Reactive Forms Guide](guide/reactive-forms)
 * @see `AbstractControl`
 * @usageNotes
 * ### Example
 * {
 * @example
 forms/ts/nestedFormArray/nested_form_array_example.ts region='Component'
 }
 * @ngModule
 ReactiveFormsModule
 * @publicApi
 */
@Directive({
  selector: '[formArrayName]',
  providers: [formArrayNameProvider]
})
export class FormArrayName extends ControlContainer implements OnInit, OnDestroy {
  /** @internal */
  _parent: ControlContainer;

  /**
   * @description
   * Tracks the name of the `FormArray` bound to the directive. The name corresponds
   * to a key in the parent `FormGroup` or `FormArray`.
   * Accepts a name as a string or a number.
   * The name in the form of a string is useful for individual forms,
   * while the numerical form allows for form arrays to be bound
   * to indices when iterating over arrays in a `FormArray`.
   * // TODO(issue/24571): remove '!'.
   */
  @Input('formArrayName') name!: string|number|null;

  constructor(
    @Optional() @Host() @SkipSelf() parent: ControlContainer,
    @Optional() @Self() @Inject(NG_VALIDATORS) validators: (Validator|ValidatorFn)[],
    @Optional() @Self() @Inject(NG_ASYNC_VALIDATORS) asyncValidators: (AsyncValidator|AsyncValidatorFn[])
  ) {
    super();
    this._parent = parent;
    this._setValidators(validators);
    this._setAsyncValidators(asyncValidators);
  }

  /**
   * A lifecycle method called when the directive's inputs are initialized. For internal use only.
   * @throws If the directive does not have a valid parent.
   */
  @nodoc
  * ngOnInit(): void {
    this._checkParentType();
    this.formDirective!.addFormArray(this);
  }

  /**
   * A lifecycle method called before the directive's instance is destroyed. For internal use only.
   */
  @nodoc
  * ngOnDestroy(): void {
    if (this.formDirective) {
      this.formDirective.removeFormArray(this);
    }
  }

  /**
   * @description
   * The `FormArray` bound to this directive.
   */
  get control(): FormArray {
    return this.formDirective!.getFormArray(this);
  }

  /**
   * @description
   * The top-level directive for this group if present, otherwise null.
   */
  get formDirective(): FormGroupDirective|null {
    return this._parent ? <FormGroupDirective>this._parent.formDirective : null;
  }

  /**
   * @description
   * Returns an array that represents the path from the top-level form to this control.
   * Each index is the string name of the control on that level.
   */
  get path(): string[] {
    return controlPath(this.name == null ? this.name : this.name.toString(), this._parent);
  }

  private _checkParentType(): void {
    if (_hasInvalidParent(this._parent) && (typeof ngDevMode === 'undefined' || ngDevMode)) {
      ReactiveErrors.arrayParentException();
    }
  }

  function _hasInvalidParent(parent: ControlContainer): boolean {
    return !(parent instanceof FormGroupName) && !(parent instanceof FormGroupDirective) && !(parent instanceof FormArrayName);
  }
}

"/**
 * @license
 * Copyright Google LLC All Rights Reserved.
 * Use of this source code is governed by an MIT-style license that can be
 * found in the LICENSE file at
 * https://angular.io/license
 */
import {Directive, EventEmitter, forwardRef, Host, Inject, Input, OnChanges, OnDestroy, Optional, Output, Self, SimpleChanges, SkipSelf} from '@angular/core';
import {FormControl} from '../model';
import {NG_ASYNC_VALIDATORS, NG_VALIDATORS} from '../validators';
import {AbstractFormGroupDirective} from './abstract_form_group_directive';
import {ControlContainer} from './control_container';
import {ControlValueAccessor, NG_VALUE_ACCESSOR} from './control_value_accessor';
import {NgControl} from './ng_control';
import {ReactiveErrors} from './reactive_errors';
import {_ngModelWarning, controlPath, isPropertyUpdated, selectValueAccessor} from './shared';
import {AsyncValidator, AsyncValidatorFn, Validator, ValidatorFn} from './validators';

```

```

{NG_MODEL_WITH_FORM_CONTROL_WARNING} from './form_control_directive';\nimport
{FormGroupDirective} from './form_group_directive';\nimport {FormArrayName, FormGroupName} from
'./form_group_name';\n\nexport const controlNameBinding: any = {\n  provide: NgControl,\n  useExisting:
forwardRef(() => FormControlName)\n};\n\n/**\n * @description\n * Syncs a `FormControl` in an existing
`FormGroup` to a form control\n * element by name.\n *\n * @see [Reactive Forms Guide](guide/reactive-forms)\n
* @see `FormControl`\n * @see `AbstractControl`\n *\n * @usageNotes\n *\n * ### Register `FormControl` within
a group\n *\n * The following example shows how to register multiple form controls within a form group\n * and set
their value.\n *\n * { @example forms/ts/simpleFormGroup/simple_form_group_example.ts region='Component'}\n
*\n * To see `FormControl` examples with different form control types, see:\n *\n * * Radio buttons:
`RadioControlValueAccessor`\n * * Selects: `SelectControlValueAccessor`\n *\n * ### Use with ngModel is
deprecated\n *\n * Support for using the `ngModel` input property and `ngModelChange` event with reactive\n *
form directives has been deprecated in Angular v6 and is scheduled for removal in\n * a future version of Angular.\n
*\n * For details, see [Deprecated features](guide/deprecations#ngmodel-with-reactive-forms).\n *\n * @ngModule
ReactiveFormsModule\n * @publicApi\n */\n\n@Directive({selector: '[formControlName]', providers:
[controlNameBinding]})\nexport class FormControlName extends NgControl implements OnChanges, OnDestroy
{\n  private _added = false;\n\n  /**\n   * Internal reference to the view model value.\n   *\n   * @internal\n   */\n  viewModel: any;\n\n  /**\n   * @description\n   * Tracks the `FormControl` instance bound to the directive.\n   */\n  // TODO(issue/24571): remove '!.\n  readonly control!: FormControl;\n\n  /**\n   * @description\n   * Tracks the
name of the `FormControl` bound to the directive. The name corresponds\n   * to a key in the parent `FormGroup`
or `FormArray`.\n   * Accepts a name as a string or a number.\n   * The name in the form of a string is useful for
individual forms,\n   * while the numerical form allows for form controls to be bound\n   * to indices when iterating
over controls in a `FormArray`.\n   */\n  // TODO(issue/24571): remove '!.\n  @Input('formControlName') name!:
string|number|null;\n\n  /**\n   * @description\n   * Triggers a warning in dev mode that this input should not be
used with reactive forms.\n   */\n  @Input('disabled')\n  set isDisabled(isDisabled: boolean) {\n    if (typeof
ngDevMode === 'undefined' || ngDevMode) {\n      ReactiveErrors.disabledAttrWarning();\n    }\n  }\n\n  //
TODO(kara): remove next 4 properties once deprecation period is over\n\n  /** @deprecated as of v6 */\n  @Input('ngModel') model: any;\n\n  /** @deprecated as of v6 */\n  @Output('ngModelChange') update = new
EventEmitter();\n\n  /**\n   * @description\n   * Static property used to track whether any ngModel warnings have
been sent across\n   * all instances of FormControlName. Used to support warning config of `"once"`. \n   *\n   *
@internal\n   */\n  static _ngModelWarningSentOnce = false;\n\n  /**\n   * @description\n   * Instance property
used to track whether an ngModel warning has been sent out for this\n   * particular FormControlName instance.
Used to support warning config of `"always"`. \n   *\n   * @internal\n   */\n  _ngModelWarningSent = false;\n\n  constructor(\n    @Optional() @Host() @SkipSelf() parent: ControlContainer,\n    @Optional() @Self()
@Inject(NG_VALIDATORS) validators: (Validator|ValidatorFn)[],\n    @Optional() @Self()
@Inject(NG_ASYNC_VALIDATORS) asyncValidators: (AsyncValidator|AsyncValidatorFn)[],\n    @Optional() @Self() @Inject(NG_VALUE_ACCESSOR) valueAccessors: ControlValueAccessor[],\n    @Optional() @Inject(NG_MODEL_WITH_FORM_CONTROL_WARNING) private _ngModelWarningConfig:
string|\n    null) {\n    super();\n    this._parent = parent;\n    this._setValidators(validators);\n\n    this._setAsyncValidators(asyncValidators);\n    this.valueAccessor = selectValueAccessor(this, valueAccessors);\n  }\n\n  /** @nodoc */\n  ngOnChanges(changes: SimpleChanges) {\n    if (!this._added) this._setUpControl();\n    if
(isPropertyUpdated(changes, this.viewModel)) {\n      _ngModelWarning('formControlName', FormControlName,
this, this._ngModelWarningConfig);\n      this.viewModel = this.model;\n      this.formDirective.updateModel(this,
this.model);\n    }\n  }\n\n  /** @nodoc */\n  ngOnDestroy(): void {\n    if (this.formDirective) {\n      this.formDirective.removeControl(this);\n    }\n  }\n\n  /**\n   * @description\n   * Sets the new value for the view
model and emits an `ngModelChange` event.\n   *\n   * @param newValue The new value for the view model.\n   */\n  viewToModelUpdate(newValue: any): void {\n    this.viewModel = newValue;\n\n    this.update.emit(newValue);\n  }\n\n  /**\n   * @description\n   * Returns an array that represents the path from the
top-level form to this control.\n   * Each index is the string name of the control on that level.\n   */\n  get path():

```

```

string[] {\n  return controlPath(this.name == null ? this.name : this.name.toString(), this._parent!);\n }\n\n /**\n * @description\n * The top-level directive for this group if present, otherwise null.\n */\n get formDirective():\n any {\n  return this._parent ? this._parent.formDirective : null;\n }\n\n private _checkParentType(): void {\n  if\n  (typeof ngDevMode === 'undefined' || ngDevMode) {\n    if (!(this._parent instanceof FormGroupName) &&\n    this._parent instanceof AbstractFormGroupDirective) {\n      ReactiveErrors.ngModelGroupException();\n    }\n  }\n  else if (\n    !(this._parent instanceof FormGroupName) &&\n    !(this._parent instanceof\n    FormGroupDirective) &&\n    !(this._parent instanceof FormArrayName)) {\n    ReactiveErrors.controlParentException();\n  }\n }\n\n private _setUpControl() {\n  this._checkParentType();\n  (this as {control: FormControl}).control = this.formDirective.addControl(this);\n  if\n  (this.control.disabled && this.valueAccessor!.setDisabledState) {\n    this.valueAccessor!.setDisabledState!(true);\n  }\n  this._added = true;\n }\n\n"/**\n * @license\n * Copyright\n * Google LLC All Rights Reserved.\n * Use of this source code is governed by an MIT-style license that can be\n * found in the LICENSE file at https://angular.io/license\n */\n\nimport { Directive, forwardRef, Input, OnChanges,\n SimpleChanges, StaticProvider } from '@angular/core';\nimport { Observable } from 'rxjs';\nimport\n { AbstractControl } from './model';\nimport { NG_VALIDATORS, Validators } from './validators';\n\n/**\n * @description\n * Defines the map of errors returned from failed validation checks.\n */\n * @publicApi\n */\nexport\n type ValidationErrors = {\n  [key: string]: any\n};\n\n/**\n * @description\n * An interface implemented by classes\n that perform synchronous validation.\n */\n * @usageNotes\n * ### Provide a custom validator\n * The\n following example implements the `Validator` interface to create a\n * validator directive with a custom error key.\n */\n * ```typescript\n * @Directive({\n *   selector: '[customValidator]',\n *   providers: [{provide:\n NG_VALIDATORS, useExisting: CustomValidatorDirective, multi: true}]\n * })\n * class\n CustomValidatorDirective implements Validator {\n *   validate(control: AbstractControl): ValidationErrors|null {\n *     return {'custom': true};\n *   }\n * }\n * ```\n */\n * @publicApi\n */\nexport interface Validator {\n /**\n * @description\n * Method that performs synchronous validation against the provided control.\n */\n * @param\n control The control to validate against.\n */\n * @returns A map of validation errors if validation fails,\n * otherwise null.\n */\n validate(control: AbstractControl): ValidationErrors|null;\n\n /**\n * @description\n * Registers a callback function to call when the validator inputs change.\n */\n * @param fn The callback function\n */\n registerOnValidatorChange?(fn: () => void): void;\n }\n\n/**\n * @description\n * An interface implemented\n by classes that perform asynchronous validation.\n */\n * @usageNotes\n * ### Provide a custom async validator\n directive\n * The following example implements the `AsyncValidator` interface to create an\n * async validator\n directive with a custom error key.\n */\n * ```typescript\n * import { of } from 'rxjs';\n * @Directive({\n *   selector: '[customAsyncValidator]',\n *   providers: [{provide: NG_ASYNC_VALIDATORS, useExisting:\n CustomAsyncValidatorDirective, multi:\n * true}]\n * })\n * class CustomAsyncValidatorDirective implements\n AsyncValidator {\n *   validate(control: AbstractControl): Observable<ValidationErrors|null> {\n *     return\n of({'custom': true});\n *   }\n * }\n * ```\n */\n * @publicApi\n */\nexport interface AsyncValidator extends\n Validator {\n /**\n * @description\n * Method that performs async validation against the provided control.\n */\n * @param\n control The control to validate against.\n */\n * @returns A promise or observable that resolves a\n map of validation errors\n * if validation fails, otherwise null.\n */\n validate(control: AbstractControl):\n Promise<ValidationErrors|null>|Observable<ValidationErrors|null>;\n }\n\n/**\n * @description\n * Provider which\n adds `RequiredValidator` to the `NG_VALIDATORS` multi-provider list.\n */\nexport const\n REQUIRED_VALIDATOR: StaticProvider = {\n  provide: NG_VALIDATORS,\n  useExisting: forwardRef(() =>\n RequiredValidator),\n  multi: true\n};\n\n/**\n * @description\n * Provider which adds\n `CheckboxRequiredValidator` to the `NG_VALIDATORS` multi-provider list.\n */\nexport const\n CHECKBOX_REQUIRED_VALIDATOR: StaticProvider = {\n  provide: NG_VALIDATORS,\n  useExisting:\n forwardRef(() => CheckboxRequiredValidator),\n  multi: true\n};\n\n/**\n * @description\n * A directive that\n adds the `required` validator to any controls marked with the\n * `required` attribute. The directive is provided with\n the `NG_VALIDATORS` multi-provider list.\n */\n * @see [Form Validation](guide/form-validation)\n */\n * @usageNotes\n * ### Adding a required validator using template-driven forms\n * ```\n * <input

```

```

name="fullName" ngModel required>
 * ``
 * @ngModule FormsModule
 * @ngModule
ReactiveFormsModule
 * @publicApi
 * ^@Directive({
 selector:
'not([type=checkbox])[required][formControlName],:not([type=checkbox])[required][formControl],:not([type=checkbox])[required][ngModel]',
 providers: [REQUIRED_VALIDATOR],
 host: {'[attr.required]': 'required ? \'\' : null'}
})
export class RequiredValidator implements Validator {
 private _required = false;
 private _onChange?: () => void;
 /**
 * @description
 * Tracks changes to the required attribute bound to this directive.
 * ^ @Input()
 get required(): boolean|string {
 return this._required;
 }
 set required(value: boolean|string) {
 this._required = value != null && value !== false && `${value}` !== 'false';
 if (this._onChange) this._onChange();
 }
 /**
 * Method that validates whether the control is empty.
 * Returns the validation result if enabled, otherwise null.
 * @nodoc
 * ^ validate(control: AbstractControl):
ValidationErrors|null {
 return this.required ? Validators.required(control) : null;
 }
 /**
 * Registers a callback function to call when the validator inputs change.
 * @nodoc
 * ^ registerOnChange(fn: () => void): void {
 this._onChange = fn;
 }
}
 * A Directive that adds the `required` validator to checkbox controls marked with the `required` attribute. The directive is provided with the `NG_VALIDATORS` multi-provider list.
 * ^ @see [Form Validation](guide/form-validation)
 * ^ @usageNotes
 * ^ ### Adding a required checkbox validator using template-driven forms
 * ^ The following example shows how to add a checkbox required validator to an input attached to an ngModel binding.
 * ``
 * <input type="checkbox" name="active" ngModel required>
 * ``
 * @publicApi
 * @ngModule FormsModule
 * @ngModule ReactiveFormsModule
 * ^ @Directive({
 selector:
'input[type=checkbox][required][formControlName],input[type=checkbox][required][formControl],input[type=checkbox][required][ngModel]',
 providers: [CHECKBOX_REQUIRED_VALIDATOR],
 host: {'[attr.required]': 'required ? \'\' : null'}
})
export class CheckboxRequiredValidator extends RequiredValidator {
 /**
 * Method that validates whether or not the checkbox has been checked.
 * Returns the validation result if enabled, otherwise null.
 * @nodoc
 * ^ validate(control: AbstractControl): ValidationErrors|null {
 return this.required ? Validators.requiredTrue(control) : null;
 }
}
 * @description
 * Provider which adds `EmailValidator` to the `NG_VALIDATORS` multi-provider list.
 * ^ export const EMAIL_VALIDATOR: any = {
 provide: NG_VALIDATORS,
 useExisting: forwardRef(() => EmailValidator),
 multi: true
};
 * ^ A directive that adds the `email` validator to controls marked with the `email` attribute. The directive is provided with the `NG_VALIDATORS` multi-provider list.
 * ^ @see [Form Validation](guide/form-validation)
 * ^ @usageNotes
 * ^ ### Adding an email validator
 * ^ The following example shows how to add an email validator to an input attached to an ngModel binding.
 * ``
 * <input type="email" name="email" ngModel email>
 * <input type="email" name="email" ngModel email="true">
 * <input type="email" name="email" ngModel [email]="true">
 * ``
 * @publicApi
 * @ngModule FormsModule
 * @ngModule ReactiveFormsModule
 * ^ @Directive({
 selector:
'[email][formControlName],[email][formControl],[email][ngModel]',
 providers:
[EMAIL_VALIDATOR]
})
export class EmailValidator implements Validator {
 private _enabled = false;
 private _onChange?: () => void;
 /**
 * @description
 * Tracks changes to the email attribute bound to this directive.
 * ^ @Input()
 set email(value: boolean|string) {
 this._enabled = value === '' || value === true || value === 'true';
 if (this._onChange) this._onChange();
 }
 /**
 * Method that validates whether an email address is valid.
 * Returns the validation result if enabled, otherwise null.
 * @nodoc
 * ^ validate(control: AbstractControl): ValidationErrors|null {
 return this._enabled ? Validators.email(control) : null;
 }
 /**
 * Registers a callback function to call when the validator inputs change.
 * @nodoc
 * ^ registerOnChange(fn: () => void): void {
 this._onChange = fn;
 }
}
 * @description
 * A function that receives a control and synchronously returns a map of validation errors if present, otherwise null.
 * ^ @publicApi
 * ^ export interface ValidatorFn {
 (control: AbstractControl):
ValidationErrors|null;
 }
 * @description
 * A function that receives a control and returns a Promise or observable that emits validation errors if present, otherwise null.
 * ^ @publicApi
 * ^ export interface AsyncValidatorFn {
 (control: AbstractControl):

```

```

Promise<ValidationErrors|null>|Observable<ValidationErrors|null>;\n\n/**\n * @description\n * Provider which
adds `MinLengthValidator` to the `NG_VALIDATORS` multi-provider list.\n */\nexport const
MIN_LENGTH_VALIDATOR: any = {\n  provide: NG_VALIDATORS,\n  useExisting: forwardRef(() =>
MinLengthValidator),\n  multi: true\n};\n\n/**\n * A directive that adds minimum length validation to controls
marked with the\n * `minlength` attribute. The directive is provided with the `NG_VALIDATORS` multi-provider
list.\n *\n * @see [Form Validation](guide/form-validation)\n *\n * @usageNotes\n *\n * ### Adding a minimum
length validator\n *\n * The following example shows how to add a minimum length validator to an input attached
to an\n * ngModel binding.\n *\n * ```html\n * <input name="firstName" ngModel minlength="4">\n * ```\n *\n * @ngModule ReactiveFormsModule\n * @ngModule FormsModule\n * @publicApi\n */\n@Directive({\n  selector: '[minlength][formControlName],[minlength][formControl],[minlength][ngModel]',\n  providers:
[MIN_LENGTH_VALIDATOR],\n  host: {'[attr.minlength]': 'minlength ? minlength : null'}\n})\nexport class
MinLengthValidator implements Validator, OnChanges {\n  private _validator: ValidatorFn =
Validators.nullValidator;\n  private _onChange?: () => void;\n\n  /**\n   * @description\n   * Tracks changes to the
the minimum length bound to this directive.\n   *\n   * @Input()\n   * minlength!: string|number; // This input is always
defined, since the name matches selector.\n\n   ** @nodoc */\n   ngOnChanges(changes: SimpleChanges): void {\n     if ('minlength' in changes) {\n       this._createValidator();\n       if (this._onChange) this._onChange();\n     }\n   }\n\n   /**\n   * Method that validates whether the value meets a minimum length requirement.\n   * Returns the validation
result if enabled, otherwise null.\n   * @nodoc\n   */\n   validate(control: AbstractControl): ValidationErrors|null {\n     return this.minlength == null ? null : this._validator(control);\n   }\n\n   /**\n   * Registers a callback function to call
when the validator inputs change.\n   * @nodoc\n   */\n   registerOnValidatorChange(fn: () => void): void {\n     this._onChange = fn;\n   }\n\n   private _createValidator(): void {\n     this._validator = Validators.minLength(\n     typeof this.minlength === 'number' ? this.minlength : parseInt(this.minlength, 10));\n   }\n\n  /**\n   * @description\n   * Provider which adds `MaxLengthValidator` to the `NG_VALIDATORS` multi-provider list.\n   */\n  export const
MAX_LENGTH_VALIDATOR: any = {\n    provide: NG_VALIDATORS,\n    useExisting:
forwardRef(() => MaxLengthValidator),\n    multi: true\n};\n\n  /**\n   * A directive that adds max length validation to
controls marked with the\n   * `maxlength` attribute. The directive is provided with the `NG_VALIDATORS` multi-
provider list.\n   *\n   * @see [Form Validation](guide/form-validation)\n   *\n   * @usageNotes\n   *\n   * ### Adding a
maximum length validator\n   *\n   * The following example shows how to add a maximum length validator to an input
attached to an\n   * ngModel binding.\n   *\n   * ```html\n   * <input name="firstName" ngModel maxlength="25">\n   * ```\n   *\n   * @ngModule ReactiveFormsModule\n   * @ngModule FormsModule\n   * @publicApi\n   */\n  @Directive({\n    selector: '[maxlength][formControlName],[maxlength][formControl],[maxlength][ngModel]',\n    providers: [MAX_LENGTH_VALIDATOR],\n    host: {'[attr.maxlength]': 'maxlength ? maxlength :
null'}\n  })\n  export class MaxLengthValidator implements Validator, OnChanges {\n    private _validator: ValidatorFn =
Validators.nullValidator;\n    private _onChange?: () => void;\n\n    /**\n     * @description\n     * Tracks changes to
the the maximum length bound to this directive.\n     *\n     * @Input()\n     * maxlength!: string|number; // This input is
always defined, since the name matches selector.\n\n     ** @nodoc */\n     ngOnChanges(changes: SimpleChanges):
void {\n       if ('maxlength' in changes) {\n         this._createValidator();\n         if (this._onChange) this._onChange();\n       }\n     }\n\n     /**\n     * Method that validates whether the value exceeds the maximum length requirement.\n     * @nodoc\n     */\n     validate(control: AbstractControl): ValidationErrors|null {\n       return this.maxlength != null ?
this._validator(control) : null;\n     }\n\n     /**\n     * Registers a callback function to call when the validator inputs
change.\n     * @nodoc\n     */\n     registerOnValidatorChange(fn: () => void): void {\n       this._onChange = fn;\n     }\n\n     private _createValidator(): void {\n       this._validator = Validators.maxLength(\n       typeof this.maxlength ===
'number' ? this.maxlength : parseInt(this.maxlength, 10));\n     }\n   }\n\n  /**\n   * @description\n   * Provider which adds
`PatternValidator` to the `NG_VALIDATORS` multi-provider list.\n   */\n  export const PATTERN_VALIDATOR:
any = {\n    provide: NG_VALIDATORS,\n    useExisting: forwardRef(() => PatternValidator),\n    multi:
true\n};\n\n  /**\n   * @description\n   * A directive that adds regex pattern validation to controls marked with the\n   *
`pattern` attribute. The regex must match the entire control value.\n   * The directive is provided with the
`NG_VALIDATORS` multi-provider list.\n   *\n   * @see [Form Validation](guide/form-validation)\n   *\n   *

```

```

@usageNotes\n *\n * ### Adding a pattern validator\n *\n * The following example shows how to add a pattern
validator to an input attached to an\n * ngModel binding.\n *\n * ```html\n * <input name=\'firstName\' ngModel
pattern=\'[a-zA-Z]*\'>\n * ```\n *\n * @ngModule ReactiveFormsModule\n * @ngModule FormsModule\n *
@publicApi\n *\n @Directive({\n selector:
'[pattern][formControlName],[pattern][formControl],[pattern][ngModel]',\n providers:
[PATTERN_VALIDATOR],\n host: {[attr.pattern]: 'pattern ? pattern : null'}\n})\nexport class PatternValidator
implements Validator, OnChanges {\n private _validator: ValidatorFn = Validators.nullValidator;\n private
_onChange?: () => void;\n\n /**\n * @description\n * Tracks changes to the pattern bound to this directive.\n
*\n * @Input()\n * pattern!: string|RegExp; // This input is always defined, since the name matches selector.\n\n /**
*\n * @nodoc *\n ngOnChanges(changes: SimpleChanges): void {\n if ('pattern' in changes) {\n
this._createValidator();\n if (this._onChange) this._onChange();\n }\n }\n\n /**\n * Method that validates
whether the value matches the the pattern requirement.\n * @nodoc\n *\n validate(control: AbstractControl):
ValidationErrors|null {\n return this._validator(control);\n }\n\n /**\n * Registers a callback function to call
when the validator inputs change.\n * @nodoc\n *\n registerOnValidatorChange(fn: () => void): void {\n
this._onChange = fn;\n }\n\n private _createValidator(): void {\n this._validator =
Validators.pattern(this.pattern);\n }\n}\n"/**\n * @license\n * Copyright Google LLC All Rights Reserved.\n *\n
* Use of this source code is governed by an MIT-style license that can be\n * found in the LICENSE file at
https://angular.io/license\n *\n\nimport {NgModule, Type} from '@angular/core';\nimport
{CheckboxControlValueAccessor} from './directives/checkbox_value_accessor';\nimport {DefaultValueAccessor}
from './directives/default_value_accessor';\nimport {NgControlStatus, NgControlStatusGroup} from
'./directives/ng_control_status';\nimport {NgForm} from './directives/ng_form';\nimport {NgModel} from
'./directives/ng_model';\nimport {NgModelGroup} from './directives/ng_model_group';\nimport {NgNoValidate}
from './directives/ng_no_validate_directive';\nimport {NumberValueAccessor} from
'./directives/number_value_accessor';\nimport {RadioControlValueAccessor} from
'./directives/radio_control_value_accessor';\nimport {RangeValueAccessor} from
'./directives/range_value_accessor';\nimport {FormControlDirective} from
'./directives/reactive_directives/form_control_directive';\nimport {FormControlName} from
'./directives/reactive_directives/form_control_name';\nimport {FormGroupDirective} from
'./directives/reactive_directives/form_group_directive';\nimport {FormArrayName, FormGroupName} from
'./directives/reactive_directives/form_group_name';\nimport {NgSelectOption, SelectControlValueAccessor} from
'./directives/select_control_value_accessor';\nimport {NgSelectMultipleOption,
SelectMultipleControlValueAccessor} from './directives/select_multiple_control_value_accessor';\nimport
{CheckboxRequiredValidator, EmailValidator, MaxLengthValidator, MinLengthValidator, PatternValidator,
RequiredValidator} from './directives/validators';\n\nexport {CheckboxControlValueAccessor} from
'./directives/checkbox_value_accessor';\nexport {ControlValueAccessor} from
'./directives/control_value_accessor';\nexport {DefaultValueAccessor} from
'./directives/default_value_accessor';\nexport {NgControl} from './directives/ng_control';\nexport {NgControlStatus,
NgControlStatusGroup} from './directives/ng_control_status';\nexport {NgForm} from
'./directives/ng_form';\nexport {NgModel} from './directives/ng_model';\nexport {NgModelGroup} from
'./directives/ng_model_group';\nexport {NumberValueAccessor} from './directives/number_value_accessor';\nexport
{RadioControlValueAccessor} from './directives/radio_control_value_accessor';\nexport {RangeValueAccessor}
from './directives/range_value_accessor';\nexport {FormControlDirective,
NG_MODEL_WITH_FORM_CONTROL_WARNING} from
'./directives/reactive_directives/form_control_directive';\nexport {FormControlName} from
'./directives/reactive_directives/form_control_name';\nexport {FormGroupDirective} from
'./directives/reactive_directives/form_group_directive';\nexport {FormArrayName, FormGroupName} from
'./directives/reactive_directives/form_group_name';\nexport {NgSelectOption, SelectControlValueAccessor} from
'./directives/select_control_value_accessor';\nexport {NgSelectMultipleOption,

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SelectMultipleControlValueAccessor} from './directives/select_multiple_control_value_accessor';\n\nexport const
SHARED_FORM_DIRECTIVES: Type<any>[] = [\n  NgNoValidate,\n  NgSelectOption,\n  NgSelectMultipleOption,\n  DefaultValueAccessor,\n  NumberValueAccessor,\n  RangeValueAccessor,\n  CheckboxControlValueAccessor,\n  SelectControlValueAccessor,\n  SelectMultipleControlValueAccessor,\n  RadioControlValueAccessor,\n  NgControlStatus,\n  NgControlStatusGroup,\n  RequiredValidator,\n  MinLengthValidator,\n  MaxLengthValidator,\n  PatternValidator,\n  CheckboxRequiredValidator,\n  EmailValidator,\n];\n\nexport const TEMPLATE_DRIVEN_DIRECTIVES: Type<any>[] = [NgModel,\n  NgModelGroup, NgForm];\n\nexport const REACTIVE_DRIVEN_DIRECTIVES: Type<any>[] =\n  [FormControlDirective, FormGroupDirective, FormControlName, FormGroupName, FormArrayName];\n\n/**\n * Internal module used for sharing directives between FormsModule and ReactiveFormsModule\n */\n@NgModule({\n  declarations: SHARED_FORM_DIRECTIVES,\n  exports:\n    SHARED_FORM_DIRECTIVES,\n})\nexport class InternalFormsSharedModule {\n}\n\nexport\n  {InternalFormsSharedModule as InternalFormsSharedModule};\n", "/*\n * @license\n * Copyright Google LLC\n * All Rights Reserved.\n * Use of this source code is governed by an MIT-style license that can be\n * found in\n * the LICENSE file at https://angular.io/license\n */\n\nimport {Injectable} from '@angular/core';\n\nimport\n  {AsyncValidatorFn, ValidatorFn} from './directives/validators';\n\nimport {AbstractControl, AbstractControlOptions,\n  FormArray, FormControl, FormGroup, FormHooks} from './model';\n\nfunction isAbstractControlOptions(options:\n  AbstractControlOptions\n    {[key: string]: any}): options is AbstractControlOptions {\n  return\n    (<AbstractControlOptions>options).asyncValidators !== undefined ||\n    (<AbstractControlOptions>options).validators !== undefined ||\n    (<AbstractControlOptions>options).updateOn\n    !== undefined;\n}\n\n/**\n * @description\n * Creates an `AbstractControl` from a user-specified configuration.\n *\n * The `FormBuilder` provides syntactic sugar that shortens creating instances of a `FormControl`,\n * `FormGroup`, or `FormArray`. It reduces the amount of boilerplate needed to build complex\n * forms.\n *\n * @see [Reactive Forms Guide](/guide/reactive-forms)\n *\n * @publicApi\n */\n@Injectable()\nexport class\n  FormBuilder {\n  /**\n   * @description\n   * Construct a new `FormGroup` instance.\n   *\n   * @param\n   * controlsConfig A collection of child controls. The key for each child is the name\n   * under which it is registered.\n   *\n   * @param\n   * options Configuration options object for the `FormGroup`. The object can\n   * have two shapes:\n   *\n   * 1) `AbstractControlOptions` object (preferred), which consists of:\n   *   * `validators`: A synchronous\n   *   validator function, or an array of validator functions\n   *   * `asyncValidators`: A single async validator or array of\n   *   async validator functions\n   *   * `updateOn`: The event upon which the control should be updated (options: 'change'\n   * | 'blur' | 'submit')\n   *   * 2) Legacy configuration object, which consists of:\n   *   * `validator`: A synchronous\n   *   validator function, or an array of validator functions\n   *   * `asyncValidator`: A single async validator or array of\n   *   async validator functions\n   *\n   *\n   group(\n    controlsConfig: {[key: string]: any},\n    options:\n      AbstractControlOptions|[key: string]: any|null = null): FormGroup {\n    const controls =\n      this._reduceControls(controlsConfig);\n\n    let validators: ValidatorFn|ValidatorFn[]|null = null;\n    let\n      asyncValidators: AsyncValidatorFn|AsyncValidatorFn[]|null = null;\n    let\n      updateOn: FormHooks|undefined =\n      undefined;\n\n    if (options != null) {\n      if (isAbstractControlOptions(options)) {\n        // `options` are\n        `AbstractControlOptions`\n        validators = options.validators != null ? options.validators : null;\n       \n        asyncValidators = options.asyncValidators != null ? options.asyncValidators : null;\n       \n        updateOn =\n          options.updateOn != null ? options.updateOn : undefined;\n      } else {\n        // `options` are legacy form group\n        options\n        validators = options['validator'] != null ? options['validator'] : null;\n       \n        asyncValidators =\n          options['asyncValidator'] != null ? options['asyncValidator'] : null;\n      }\n    }\n\n    return new\n      FormGroup(controls, {asyncValidators, updateOn, validators});\n  }\n\n  /**\n   * @description\n   * Construct a\n   * new `FormControl` with the given state, validators and options.\n   *\n   * @param\n   * formState Initializes the control\n   * with an initial state value, or\n   * with an object that contains both a value and a disabled status.\n   *\n   * @param\n   * validatorOrOpts A synchronous validator function, or an array of\n   * such functions, or an\n   * `AbstractControlOptions` object that contains\n   * validation functions and a validation trigger.\n   *\n   * @param\n   * asyncValidator A single async validator or array of async validator\n   * functions.\n   *\n   * @usageNotes\n   *\n
```



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opts.warnOnNgModelWithFormControl}\n  ]\n  };\n  }\n}\n", "/*\n * @license\n * Copyright Google LLC All
Rights Reserved.\n *\n * Use of this source code is governed by an MIT-style license that can be\n * found in the
LICENSE file at https://angular.io/license\n *\n\n/*\n * @module\n * @description\n * This module is used for
handling user input, by defining and building a `FormGroup` that\n * consists of `FormControl` objects, and
mapping them onto the DOM. `FormControl`\n * objects can then be used to read information from the form DOM
elements.\n *\n * Forms providers are not included in default providers; you must import these providers\n *
explicitly.\n *\n\n\nexport { InternalFormsSharedModule } from './directives';\nexport { AbstractControlDirective }
from './directives/abstract_control_directive';\nexport { AbstractFormGroupDirective } from
 './directives/abstract_form_group_directive';\nexport { CheckboxControlValueAccessor } from
 './directives/checkbox_value_accessor';\nexport { ControlContainer } from './directives/control_container';\nexport
{ ControlValueAccessor, NG_VALUE_ACCESSOR } from './directives/control_value_accessor';\nexport
{ COMPOSITION_BUFFER_MODE, DefaultValueAccessor } from './directives/default_value_accessor';\nexport
{ Form } from './directives/form_interface';\nexport { NgControl } from './directives/ng_control';\nexport
{ NgControlStatus, NgControlStatusGroup } from './directives/ng_control_status';\nexport { NgForm } from
 './directives/ng_form';\nexport { NgModel } from './directives/ng_model';\nexport { NgModelGroup } from
 './directives/ng_model_group';\nexport { NgNoValidate } from './directives/ng_no_validate_directive';\nexport
{ NumberValueAccessor } from './directives/number_value_accessor';\nexport { RadioControlValueAccessor } from
 './directives/radio_control_value_accessor';\nexport { RangeValueAccessor } from
 './directives/range_value_accessor';\nexport { FormControlDirective } from
 './directives/reactive_directives/form_control_directive';\nexport { FormControlName } from
 './directives/reactive_directives/form_control_name';\nexport { FormGroupDirective } from
 './directives/reactive_directives/form_group_directive';\nexport { FormGroupName } from
 './directives/reactive_directives/form_group_name';\nexport { FormGroupName } from
 './directives/reactive_directives/form_group_name';\nexport { NgSelectOption, SelectControlValueAccessor } from
 './directives/select_control_value_accessor';\nexport { SelectMultipleControlValueAccessor } from
 './directives/select_multiple_control_value_accessor';\nexport { NgSelectMultipleOption } from
 './directives/select_multiple_control_value_accessor';\nexport { AsyncValidator, AsyncValidatorFn,
CheckboxRequiredValidator, EmailValidator, MaxLengthValidator, MinLengthValidator, PatternValidator,
RequiredValidator, ValidationErrors, Validator, ValidatorFn } from './directives/validators';\nexport { FormBuilder }
from './form_builder';\nexport { AbstractControl, AbstractControlOptions, FormArray, FormControl, FormGroup }
from './model';\nexport { NG_ASYNC_VALIDATORS, NG_VALIDATORS, Validators } from
 './validators';\nexport { VERSION } from './version';\n\nexport * from './form_providers';\n", "/*\n * @license\n *
Copyright Google LLC All Rights Reserved.\n *\n * Use of this source code is governed by an MIT-style license
that can be\n * found in the LICENSE file at https://angular.io/license\n *\n\n\n/*\n * @module\n * @description\n
* Entry point for all public APIs of this package.\n *\n\nexport * from './src/forms';\n\n// This file only reexports
content of the `src` folder. Keep it that way.\n", "/*\n * @license\n * Copyright Google LLC All Rights Reserved.\n
*\n * Use of this source code is governed by an MIT-style license that can be\n * found in the LICENSE file at
https://angular.io/license\n *\n\n\n// This file is not used to build this module. It is only used during editing\n//
by the TypeScript language service and during build for verification. `ngc`\n// replaces this file with production
index.ts when it rewrites private symbol\n// names.\n\nexport * from './public_api';\n", "/*\n * Generated bundle
index. Do not edit.\n *\n\nexport * from './index';\n\nexport { InternalFormsSharedModule as
angular_packages_forms_forms_d, REACTIVE_DRIVEN_DIRECTIVES as
angular_packages_forms_forms_c, SHARED_FORM_DIRECTIVES as
angular_packages_forms_forms_a, TEMPLATE_DRIVEN_DIRECTIVES as angular_packages_forms_forms_b }
from './src/directives';\nexport { CHECKBOX_VALUE_ACCESSOR as angular_packages_forms_forms_e } from
 './src/directives/checkbox_value_accessor';\nexport { DEFAULT_VALUE_ACCESSOR as
angular_packages_forms_forms_f } from './src/directives/default_value_accessor';\nexport { AbstractControlStatus as
angular_packages_forms_forms_g, ngControlStatusHost as angular_packages_forms_forms_h } from

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AAM;YA CL,UA AU,GA AG,4BAA4B,CAAC;SAC3C;QACD,MAAM,IAAI,KAAK,CAAI,OAAO,SAAI,UAAY,C AAC,CAAC;IAC9C,CAAC;aAEe,iBA AiB,CAAC,OAA6B,EAAE,SAAC;QAC7E,IAAI,CAAC,OAAO,CAAC,cA Ac,CAAC,OAAO,CAAC;YAAE,OAAO,KAAK,CAAC;QACnD,IAAM,MAAM,GAAG,OAAO,CAAC,OAAO,CA AC,CAAC;QAEhC,IAAI,MAAM,CAAC,aAAa,EAAE;YAAE,OAAO,IAAI,CAAC;QACxC,OAAO,CAAC,MAA M,CAAC,EAAE,CAAC,SAAS,EAAE,MAAM,CAAC,YAAY,CAAC,CAAC;IACpD,CAAC;IAED,IAAM,iBA AiB ,GAAG;QACxB,4BAA4B;QAC5B,kBAa kB;QACIB,mBAAmB;QACnB,0BAA0B;QAC1B,kCAa kC;QACIC,yB AAYB;KAC1B,CAAC;aAEc,iBA AiB,CAAC,aAAmC;QACnE,OAAO,iBA AiB,CAAC,IAAI,CAAC,UAAA,CAAC ,IAAI,OAAA,aAAa,CAAC,WAAW,KAAK,CAAC,GAAA,CAAC,CAAC;IACtE,CAAC;aAEe,mBAAmB,CAAC,I AAe,EAAE,UAAuB;QAC1E,IAAI,CAAC,oBAAoB,EAAE,CAAC;QAC5B,UAAU,CAAC,OAAO,CAAC,UAAA, GAAG;YACpB,IAAM,OAAO,GAAG,GAAG,CAAC,OAA sB,CAAC;YAC3C,IAAI,OAAO,CAAC,QAAQ,KAAK ,QAAQ,IAAI,OAAO,CAAC,cAAc,EAAE;gBAC3D,GAAG,CAAC,iBA AiB,CAAC,OAAO,CAAC,aAAa,CAAC,C AAC;gBAC7C,OAAO,CAAC,cAAc,GAAG,KAAK,CAAC;aAC hC;SACF,CAAC,CAAC;IACL,CAAC;IAED;aAC gB,mBAAmB,CAC/B,GAAC,EAAE,cAA sC;QACxD,IAAI,CAAC,cAAc;YAAE,OAAO,IAAI,CAAC;QAEjC,IAAI ,CAAC,KAAK,CAAC,OAAO,CAAC,cAAc,CAAC,KAAK,OAAO,SAAS,KAAK,WAAW,IAAI,SAAS,CAAC;YA CnF,WAAW,CAAC,GAAG,EAAE,mEAAmE,CAAC,CAAC;QAExF,IAAI,eAAe,GAAmC,SAAS,CAAC;QAC hE, IAAI,eAAe,GAAmC,SAAS,CAAC;QAC hE,IAAI,cAAc,GAAmC,SAAS,CAAC;QAE/D,cAAc,CAAC,OAAO,CA AC,UAAU,CAAuB;YAC7C,IAAI,CAAC,CAAC,WAAW,KAAK,oBAAoB,EAAE;gBAC1C,eAAe,GAAG,CAAC, CAAC;aAErB;iBAAM,IAAI,iBA AiB,CAAC,CAAC,CAAC,EAAE;gBAC/B,IAAI,eAAe,KAAK,OAAO,SAAS,K AAK,WAAW,IAAI,SAAS,CAAC;oBACpE,WAAW,CAAC,GAAG,EAAE,iEAAiE,CAAC,CAAC;gBACtF,eAAe, GAAG,CAAC,CAAC;aAErB;iBAAM;gBACL,IAAI,cAAc,KAAK,OAAO,SAAS,KAAK,WAAW,IAAI,SAAS,CA AC;oBACnE,WAAW,CAAC,GAAG,EAAE,+DAA+D,CAAC,CAAC;gBACpF,cAAc,GAAG,CAAC,CAAC;aACp B;SACF,CAAC,CAAC;QAEH,IAAI,cAAc;YAAE,OAAO,cAAc,CAAC;QAC1C,IAAI,eAAe;YAAE,OAAO,eAAe ,CAAC;QAC5C,IAAI,eAAe;YAAE,OAAO,eAAe,CAAC;QAE5C,IAAI,OAAO,SAAS,KAAK,WAAW,IAAI,SAAS,EAAE;YACjD,WAAW,CAAC,GAAG,EAAE,+CAA+C,CAAC,CAAC;SACnE;QACD,OAAO,IAAI,CAAC;IAC d,CAAC;aAEe,cAAc,CAAI,IAAS,EAAE,EAAK;QAC hD,IAAM,KAAK,GAAG,IAAI,CAAC,OAAO,CAAC,EAA E,CAAC,CAAC;QAC/B,IAAI,KAAK,GAAG,CAAC,CAAC;YAAE,IAAI,CAAC,MAAM,CAAC,KAAK,EAAE,C AAC,CAAC,CAAC;IACxC,CAAC;IAED;aACgB,eAAe,CAC3B,IAAY,EAAE,IAAwC,EACtD,QAAwC,EAAE,a AA0B;QACtE,IAAI,CAACK,cAAS,EAAE,IAAI,aAAa,KAAK,OAAO;YAAE,OAAO;QAEtD,IAAI,CAAC,CAAC ,aAAa,KAAK,IAAI,IAAI,aAAa,KAAK,MAAM,KAAK,CAAC,IAAI,CAAC,uBA AuB;aACrF,aAAa,KAAK,QAA Q,IAAI,CAAC,QAAQ,CAAC,mBAAmB,CAAC,EAAE;YACjE,IAAI,OAAO,SAAS,KAAK,WAAW,IAAI,SAAS, EAAE;gBACjD,cAAc,CAAC,cAAc,CAAC,IAAI,CAAC,CAAC;aACrC;YACD,IAAI,CAAC,uBA AuB,GAAG,IA AI,CAAC;YACpC,QAAQ,CAAC,mBAAmB,GAAG,IAAI,CAAC;SACrC;IACH;;ICjUA;;;;;IAKO,IAAM,KAAK, GAAG,OAAO,CAAC;IAE7B;;;;;IAKO,IAAM,OAAO,GAAG,SAAS,CAAC;IAEjC;;;;;IAOO,IAAM,OAAO,GA AG,SAAS,CAAC;IAEjC;;;;;IAOO,IAAM,QAAQ,GAAG,UAAU,CAAC;IAEnC,SAAS,KAAK,CAAC,OAAwB,E AAe,IAAiC,EAAE,SAAiB;QAC3F,IAAI,IAAI,IAAI,IAAI;YAAE,OAAO,IAAI,CAAC;QAE9B,IAAI,CAAC,KA AK,CAAC,OAAO,CAAC,IAAI,CAAC,EAAE;YACxB,IAAI,GAAG,IAAI,CAAC,KAAK,CAAC,SAAS,CAAC,C AAC;SAC9B;QACD,IAAI,KAAK,CAAC,OAAO,CAAC,IAAI,CAAC,IAAI,IAAI,CAAC,MAAM,KAAK,CAAC; YAAE,OAAO,IAAI,CAAC;;;QAI1D,IAAI,aAAa,GAAYB,OAAO,CAAC;QACID,IAAI,CAAC,OAAO,CAAC,UA AC,IAAmB;YAC/B,IAAI,aAAa,YAAY,SAAS,EAAE;gBACtC,aAAa,GAAG,aAAa,CAAC,QAAQ,CAAC,cAAc,C AAC,IAAc,CAAC;oBACjE,aAAa,CAAC,QAAQ,CAAC,IAAI,CAAC;oBAC5B,IAAI,CAAC;aACV;iBAAM,IAAI ,aAAa,YAAY,SAAS,EAAE;gBAC7C,aAAa,GAAG,aAAa,CAAC,EAAE,CAAS,IAAI,CAAC,IAAI,IAAI,CAAC;a ACxD;iBAAM;gBACL,aAAa,GAAG,IAAI,CAAC;aACtB;SACF,CAAC,CAAC;QACH,OAAO,aAAa,CAAC;IAC vB,CAAC;IAED;;;IAGA,SAAS,cAAc,CAAC,eACI;QAC1B,OAAO,CAAC,YAAY,CAAC,eAAe,CAAC,GAAG,e AAe,CAAC,UAAU,GAAG,eAAe,KAAK,IAAI,CAAC;IACHg,CAAC;IAED;;;IAGA,SAAS,iBA AiB,CAAC,SAAY C;QACIE,OAAO,KAAK,CAAC,OAAO,CAAC,SAAS,CAAC,GAAG,iBA AiB,CAAC,SAAS,CAAC,GAAG,SAAS ,IAAI,IAAI,CAAC;IACrF,CAAC;IAED;;;IAGA,SAAS,mBAAmB,CACxB,cAAyD,EACzD,eAAuE;QAEzE,OAA O,CAAC,YAAY,CAAC,eAAe,CAAC,GAAG,eAAe,CAAC,eAAe,GAAG,cAAc,KAAK,IAAI,CAAC;IACpG,CAA C;IAED;;;IAGA,SAAS,sBAAsB,CAAC,cACI;QACIC,OAAO,KAAK,CAAC,OAAO,CAAC,cAAc,CAAC,GAAG,

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;;;;;QAcA;;;;;QASS,8BAAU,GAAG,UAAB,IAEjB;YACC,OOAO;gBACL,QAAQ,EAAE,mBAAmB;gBA
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CAAC;iBACjE;;IC5CD;;;;;ICAA;;;;;IAeA;;ICfA;;;;;ICAA;;;;;.....
;;;;;....." }

Found in path(s):

* /opt/cola/permits/1358260431_1657134847.3311746/0/forms-11-0-2-tgz/package/bundles/forms.umd.js.map

No license file was found, but licenses were detected in source scan.

```
/**
 * @license Angular v11.0.2
 * (c) 2010-2020 Google LLC. https://angular.io/
 * License: MIT
 */
/**
 * @license
 * Copyright Google LLC All Rights Reserved.
 *
 * Use of this source code is governed by an MIT-style license that can be
 * found in the LICENSE file at https://angular.io/license
 */
```

Found in path(s):

* /opt/cola/permits/1358260431_1657134847.3311746/0/forms-11-0-2-tgz/package/fesm2015/forms.js

No license file was found, but licenses were detected in source scan.

```
{ "version": 3, "file": "forms.js", "sources": [ "../..../..../packages/forms/src/directives/control_value_accessor.ts", "../..../..../packages/forms/src/directives/checkbox_value_accessor.ts", "../..../..../packages/forms/src/directives/default_value_accessor.ts", "../..../..../packages/forms/src/validators.ts", "../..../..../packages/forms/src/directives/abstract_control_directive.ts", "../..../..../packages/forms/src/directives/control_container.ts", "../..../..../packages/forms/src/directives/ng_control.ts", "../..../..../packages/forms/src/directives/ng_control_status.ts", "../..../..../packages/forms/src/directives/number_value_accessor.ts", "../..../..../packages/forms/src/directives/radio_control_value_accessor.ts", "../..../..../packages/forms/src/directives/range_value_accessor.ts", "../..../..../packages/forms/src/directives/error_examples.ts", "../..../..../packages/forms/src/directives/reactive_errors.ts", "../..../..../packages/forms/src/directives/select_control_value_accessor.ts", "../..../..../packages/forms/src/directives/select_multiple_control_value_accessor.ts", "../..../..../packages/forms/src/directives/shared.ts", "../..../..../packages/forms/src/model.ts", "../..../..../packages/forms/src/directives/ng_form.ts", "../..../..../packages/forms/src/directives/abstract_form_gr
```

```

oup_directive.ts","../..../..../packages/forms/src/directives/template_driven_errors.ts","../..../..../packages/forms
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c/version.ts","../..../..../packages/forms/src/form_providers.ts","../..../..../packages/forms/src/forms.ts","../..../..
../..../packages/forms/public_api.ts","../..../..../packages/forms/index.ts","../..../..../packages/forms/forms.ts"],"so
urcesContent":["/**\n * @license\n * Copyright Google LLC All Rights Reserved.\n *\n * Use of this source code is
governed by an MIT-style license that can be\n * found in the LICENSE file at https://angular.io/license\n
*\n\nimport {InjectionToken} from '@angular/core';\n\n/**\n * @description\n * Defines an interface that acts as a
bridge between the Angular forms API and a\n * native element in the DOM.\n *\n * Implement this interface to
create a custom form control directive\n * that integrates with Angular forms.\n *\n * @see DefaultValueAccessor\n
*\n * @publicApi\n */\nexport interface ControlValueAccessor {\n /**\n * @description\n * Writes a new value
to the element.\n *\n * This method is called by the forms API to write to the view when programmatic\n *
changes from model to view are requested.\n *\n * @usageNotes\n * ### Write a value to the element\n *\n *
The following example writes a value to the native DOM element.\n *\n * ```ts\n * writeValue(value: any): void
{\n *   this._renderer.setProperty(this._elementRef.nativeElement, 'value', value);\n * }\n * ```\n *\n *
@param obj The new value for the element\n */\n writeValue(obj: any): void;\n\n /**\n * @description\n *
Registers a callback function that is called when the control's value\n * changes in the UI.\n *\n * This method is
called by the forms API on initialization to update the form\n * model when values propagate from the view to the
model.\n *\n * When implementing the `registerOnChange` method in your own value accessor,\n * save the
given function so your class calls it at the appropriate time.\n *\n * @usageNotes\n * ### Store the change
function\n *\n * The following example stores the provided function as an internal method.\n *\n * ```ts\n *
registerOnChange(fn: (_: any) => void): void {\n *   this._onChange = fn;\n * }\n * ```\n *\n * When the value
changes in the UI, call the registered\n * function to allow the forms API to update itself:\n *\n * ```ts\n * host:
{\n *   '(change)': '_onChange($event.target.value)\n * }\n * ```\n *\n * @param fn The callback function to
register\n */\n registerOnChange(fn: any): void;\n\n /**\n * @description\n * Registers a callback function that
is called by the forms API on initialization\n * to update the form model on blur.\n *\n * When implementing
`registerOnTouched` in your own value accessor, save the given\n * function so your class calls it when the control
should be considered\n * blurred or `\"touched\"`.\n *\n * @usageNotes\n * ### Store the callback function\n
*\n * The following example stores the provided function as an internal method.\n *\n * ```ts\n *
registerOnTouched(fn: any): void {\n *   this._onTouched = fn;\n * }\n * ```\n *\n * On blur (or equivalent),
your class should call the registered function to allow\n * the forms API to update itself:\n *\n * ```ts\n * host:
{\n *   '(blur)': '_onTouched()\n * }\n * ```\n *\n * @param fn The callback function to register\n */\n
registerOnTouched(fn: any): void;\n\n /**\n * @description\n * Function that is called by the forms API when
the control status changes to\n * or from 'DISABLED'. Depending on the status, it enables or disables the\n *
appropriate DOM element.\n *\n * @usageNotes\n * The following is an example of writing the disabled
property to a native DOM element:\n *\n * ```ts\n * setDisabledState(isDisabled: boolean): void {\n *
this._renderer.setProperty(this._elementRef.nativeElement, 'disabled', isDisabled);\n * }\n * ```\n *\n * @param
isDisabled The disabled status to set on the element\n */\n setDisabledState?(isDisabled: boolean):
void;\n}\n\n/**\n * Used to provide a `ControlValueAccessor` for form controls.\n *\n * See
`DefaultValueAccessor` for how to implement one.\n *\n * @publicApi\n */\nexport const
NG_VALUE_ACCESSOR =\n new
InjectionToken<ReadonlyArray<ControlValueAccessor>>('NgValueAccessor');\n\n /**\n * @license\n * Copyright
Google LLC All Rights Reserved.\n *\n * Use of this source code is governed by an MIT-style license that can be\n
* found in the LICENSE file at https://angular.io/license\n */\nimport {Directive, ElementRef, forwardRef,

```

```

Renderer2} from '@angular/core';\n\nimport {ControlValueAccessor, NG_VALUE_ACCESSOR} from
'./control_value_accessor';\n\nexport const CHECKBOX_VALUE_ACCESSOR: any = {\n provide:
NG_VALUE_ACCESSOR,\n useExisting: forwardRef(() => CheckboxControlValueAccessor),\n multi:
true,\n};\n\n/**\n * @description\n * A `ControlValueAccessor` for writing a value and listening to changes on a
checkbox input\n * element.\n * @usageNotes\n * ### Using a checkbox with a reactive form.\n * The
following example shows how to use a checkbox with a reactive form.\n * ```\n * const
rememberLoginControl = new FormControl();\n * ```\n * <input type="checkbox"\n
[formControl]="rememberLoginControl">\n * ```\n * @ngModule ReactiveFormsModule\n * @ngModule
FormsModule\n * @publicApi\n * @Directive({\n selector:\n
'input[type=checkbox][formControlName],input[type=checkbox][formControl],input[type=checkbox][ngModel]',\n
host: {'(change)': 'onChange($event.target.checked)', '(blur)': 'onTouched()' },\n providers:
[CHECKBOX_VALUE_ACCESSOR]})\n})\n\nexport class CheckboxControlValueAccessor implements
ControlValueAccessor {\n /**\n * The registered callback function called when a change event occurs on the input
element.\n * @nodoc\n * ^\n onChange = (_: any) => {};\n /**\n * The registered callback function called
when a blur event occurs on the input element.\n * @nodoc\n * ^\n onTouched = () => {};\n\n constructor(private
_renderer: Renderer2, private _elementRef: ElementRef) {\n /**\n * Sets the "checked" property on the input
element.\n * @nodoc\n * ^\n writeValue(value: any): void {\n
this._renderer.setProperty(this._elementRef.nativeElement, 'checked', value);\n }\n /**\n * Registers a function
called when the control value changes.\n * @nodoc\n * ^\n registerOnChange(fn: (_: any) => {}): void {\n
this.onChange = fn;\n }\n /**\n * Registers a function called when the control is touched.\n * @nodoc\n * ^\n
registerOnTouched(fn: () => {}): void {\n this.onTouched = fn;\n }\n /**\n * Sets the "disabled" property on
the input element.\n * @nodoc\n * ^\n setDisabledState(isDisabled: boolean): void {\n
this._renderer.setProperty(this._elementRef.nativeElement, 'disabled', isDisabled);\n }\n}\n\n"/**\n * @license\n *
Copyright Google LLC All Rights Reserved.\n * Use of this source code is governed by an MIT-style license
that can be\n * found in the LICENSE file at https://angular.io/license\n * ^\n\nimport {getDOM as getDOM} from
'@angular/common';\n\nimport {Directive, ElementRef, forwardRef, Inject, InjectionToken, Optional, Renderer2}
from '@angular/core';\n\nimport {ControlValueAccessor, NG_VALUE_ACCESSOR} from
'./control_value_accessor';\n\nexport const DEFAULT_VALUE_ACCESSOR: any = {\n provide:
NG_VALUE_ACCESSOR,\n useExisting: forwardRef(() => DefaultValueAccessor),\n multi: true,\n};\n\n/**\n *
We must check whether the agent is Android because composition events\n * behave differently between iOS and
Android.\n * ^\n\nfunction _isAndroid(): boolean {\n const userAgent = getDOM() ? getDOM().getUserAgent() : "";\n
return /android (\\d+)/.test(userAgent.toLowerCase());\n }\n\n/**\n * @description\n * Provide this token to control
if form directives buffer IME input until\n * the "compositionend" event occurs.\n * @publicApi\n * ^\n\nexport
const COMPOSITION_BUFFER_MODE = new InjectionToken<boolean>('CompositionEventMode');\n\n/**\n *
@description\n * ^\n * @searchKeywords ngDefaultControl\n * The default `ControlValueAccessor` for
writing a value and listening to changes on input\n * elements. The accessor is used by the `FormControlDirective`,
`FormControlName`, and\n * `NgModel` directives.\n * @usageNotes\n * ### Using the default value
accessor\n * The following example shows how to use an input element that activates the default value
accessor\n * (in this case, a text field).\n * ```\n * const firstNameControl = new FormControl();\n * ```\n *
<input type="text" [formControl]="firstNameControl">\n * ```\n * This value accessor is used by
default for `<input type="text">` and `<textarea>` elements, but\n * you could also use it for custom components
that have similar behavior and do not require special\n * processing. In order to attach the default value accessor to a
custom element, add the\n * `ngDefaultControl` attribute as shown below.\n * ```\n * <custom-input-component
ngDefaultControl [(ngModel)]="value"></custom-input-component>\n * ```\n * @ngModule
ReactiveFormsModule\n * @ngModule FormsModule\n * @publicApi\n * ^\n * @Directive({\n selector:\n
'input:not([type=checkbox])[formControlName],textarea[formControlName],input:not([type=checkbox])[formContr
ol],textarea[formControl],input:not([type=checkbox])[ngModel],textarea[ngModel],[ngDefaultControl]',\n //
TODO: vsavkin replace the above selector with the one below it once\n //

```


periods (`. `).\n * - A `label` cannot begin or end with a dash (`. `).\n * - A `label` cannot be longer than 63 characters.\n * - The whole address cannot be longer than 254 characters.\n * \n * ## Implementation background\n * This regexp was ported over from AngularJS (see there for git history):\n * <https://github.com/angular/angular.js/blob/c133ef836/src/ng/directive/input.js#L27>\n * It is based on the\n * [WHATWG version](<https://html.spec.whatwg.org/multipage/input.html#valid-e-mail-address>) with\n * some enhancements to incorporate more RFC rules (such as rules related to domain names and the\n * lengths of different parts of the address). The main differences from the WHATWG version are:\n * - Disallow `local-part` to begin or end with a period (`. `).\n * - Disallow `local-part` length to exceed 64 characters.\n * - Disallow total address length to exceed 254 characters.\n * \n * See [this commit](<https://github.com/angular/angular.js/commit/f3f5cf72e>) for more details.\n * \n * const EMAIL_REGEXP = /\^(?=.{1,254}\$)(?=.{1,64}@)[a-zA-Z0-9!#\$%&'*/+=?^_`{|}~]+(?:\\.[a-zA-Z0-9!#\$%&'*/+=?^_`{|}~]+)*@[a-zA-Z0-9](?:[a-zA-Z0-9-]{0,61}[a-zA-Z0-9])?(?:\\.[a-zA-Z0-9](?:[a-zA-Z0-9-]{0,61}[a-zA-Z0-9])?)*\$;\n * \n * @description\n * Provides a set of built-in validators that can be used by form controls.\n * \n * A validator is a function that processes a `FormControl` or collection of\n * controls and returns an error map or null. A null map means that validation has passed.\n * \n * @see [Form Validation](/guide/form-validation)\n * \n * @publicApi\n * \n * export class Validators {\n * \n * \n * @description\n * Validator that requires the control's value to be greater than or equal to the provided number.\n * \n * The validator exists only as a function and not as a directive.\n * \n * @usageNotes\n * \n * ### Validate against a minimum of 3\n * \n * ```typescript\n * const control = new FormControl(2, Validators.min(3));\n * console.log(control.errors); // {min: {min: 3, actual: 2}}\n * \n * @returns A validator function that returns an error map with the\n * `min` property if the validation check fails, otherwise `null`.\n * \n * @see `updateValueAndValidity()`\n * \n * \n * static min(min: number): ValidatorFn {\n * \n * \n * return (control: AbstractControl): ValidationErrors|null => {\n * \n * \n * if (isEmptyInputValue(control.value) || isEmptyInputValue(min)) {\n * \n * \n * return null; // don't validate empty values to allow optional controls\n * \n * \n * } const value = parseFloat(control.value);\n * \n * // Controls with NaN values after parsing should be treated as not having a\n * \n * // minimum, per the HTML forms spec: <https://www.w3.org/TR/html5/forms.html#attr-input-min>\n * \n * \n * return !isNaN(value) && value < min ? {'min': {'min': min, 'actual': control.value}} : null;\n * \n * \n * };\n * \n * \n * }\n * \n * \n * @description\n * Validator that requires the control's value to be less than or equal to the provided number.\n * \n * The validator exists only as a function and not as a directive.\n * \n * @usageNotes\n * \n * ### Validate against a maximum of 15\n * \n * ```typescript\n * const control = new FormControl(16, Validators.max(15));\n * console.log(control.errors); // {max: {max: 15, actual: 16}}\n * \n * \n * @returns A validator function that returns an error map with the\n * `max` property if the validation check fails, otherwise `null`.\n * \n * @see `updateValueAndValidity()`\n * \n * \n * static max(max: number): ValidatorFn {\n * \n * \n * return (control: AbstractControl): ValidationErrors|null => {\n * \n * \n * if (isEmptyInputValue(control.value) || isEmptyInputValue(max)) {\n * \n * \n * return null; // don't validate empty values to allow optional controls\n * \n * \n * } const value = parseFloat(control.value);\n * \n * // Controls with NaN values after parsing should be treated as not having a\n * \n * // maximum, per the HTML forms spec: <https://www.w3.org/TR/html5/forms.html#attr-input-max>\n * \n * \n * return !isNaN(value) && value > max ? {'max': {'max': max, 'actual': control.value}} : null;\n * \n * \n * };\n * \n * \n * }\n * \n * \n * @description\n * Validator that requires the control have a non-empty value.\n * \n * @usageNotes\n * \n * ### Validate that the field is non-empty\n * \n * ```typescript\n * const control = new FormControl("", Validators.required);\n * console.log(control.errors); // {required: true}\n * \n * \n * @returns An error map with the `required` property\n * if the validation check fails, otherwise `null`.\n * \n * @see `updateValueAndValidity()`\n * \n * \n * static required(control: AbstractControl): ValidationErrors|null {\n * \n * \n * return isEmptyInputValue(control.value) ? {'required': true} : null;\n * \n * \n * }\n * \n * \n * @description\n * Validator that requires the control's value be true. This validator is commonly\n * used for required checkboxes.\n * \n * @usageNotes\n * \n * ### Validate that the field value is true\n * \n * ```typescript\n * const control = new FormControl("", Validators.requiredTrue);\n * console.log(control.errors); // {required: true}\n * \n * \n * @returns An error map that contains the `required` property\n * set to `true` if the validation check fails, otherwise `null`.\n * \n * @see `updateValueAndValidity()`\n * \n * \n * static requiredTrue(control: AbstractControl):

```

ValidationErrors|null {\n  return control.value === true ? null : {'required': true};\n }\n\n /**\n  * @description\n  * Validator that requires the control's value pass an email validation test.\n  *\n  * Tests the value using a [regular\n  * expression](https://developer.mozilla.org/en-US/docs/Web/JavaScript/Guide/Regular_Expressions)\n  * pattern suitable for common usecases. The pattern is based on the definition of a valid email\n  * address in the [WHATWG HTML\n  * specification](https://html.spec.whatwg.org/multipage/input.html#valid-e-mail-address)\n  * with\n  * some enhancements to incorporate more RFC rules (such as rules related to domain names and the\n  * lengths of different parts of the address).\n  *\n  * The differences from the WHATWG version include:\n  * - Disallow `local-part` (the part before the `@` symbol) to begin or end with a period (`.`).\n  * - Disallow `local-part` to be longer than 64 characters.\n  * - Disallow the whole address to be longer than 254 characters.\n  *\n  * If this pattern does not satisfy your business needs, you can use `Validators.pattern()` to\n  * validate the value against a different pattern.\n  *\n  * @usageNotes\n  *\n  * ### Validate that the field matches a valid email pattern\n  *\n  * ```typescript\n  * const control = new FormControl('bad@', Validators.email);\n  *\n  * console.log(control.errors); // {email: true}\n  *\n  * @returns An error map with the `email` property\n  * if the validation check fails, otherwise `null`.\n  *\n  * @see `updateValueAndValidity()`\n  *\n  */\n  static email(control: AbstractControl): ValidationErrors|null {\n    if (isEmptyInputValue(control.value)) {\n      return null; // don't validate empty values to allow optional controls\n    }\n    return EMAIL_REGEXP.test(control.value)\n      ? null : {'email': true};\n  }\n\n /**\n  * @description\n  * Validator that requires the length of the control's value to be greater than or equal\n  * to the provided minimum length. This validator is also provided by default if you use the\n  * the HTML5 `minlength` attribute. Note that the `minLength` validator is intended to be used\n  * only for types that have a numeric `length` property, such as strings or arrays. The\n  * `minLength` validator logic is also not invoked for values when their `length` property is 0\n  * (for example in case of an empty string or an empty array), to support optional controls. You\n  * can use the standard `required` validator if empty values should not be considered valid.\n  *\n  * @usageNotes\n  *\n  * ### Validate that the field has a minimum of 3 characters\n  *\n  * ```typescript\n  * const control = new FormControl('ng', Validators.minLength(3));\n  *\n  * console.log(control.errors); // {minlength: {requiredLength: 3, actualLength: 2}}\n  *\n  * ```html\n  * <input minlength="5">\n  *\n  * @returns A validator function that returns an error map with the\n  * `minlength` if the validation check fails, otherwise `null`.\n  *\n  * @see `updateValueAndValidity()`\n  *\n  */\n  static minLength(minLength: number): ValidatorFn {\n    return (control: AbstractControl): ValidationErrors|=> {\n      if (isEmptyInputValue(control.value) || !hasValidLength(control.value)) {\n        // don't validate empty values to allow optional controls\n        // don't validate values without `length` property\n        return null;\n      }\n      return control.value.length < minLength ?\n        {'minlength': {requiredLength: minLength, 'actualLength': control.value.length}} :\n        null;\n    };\n  }\n\n /**\n  * @description\n  * Validator that requires the length of the control's value to be less than or equal\n  * to the provided maximum length. This validator is also provided by default if you use the\n  * the HTML5 `maxlength` attribute. Note that the `maxLength` validator is intended to be used\n  * only for types that have a numeric `length` property, such as strings or arrays.\n  *\n  * @usageNotes\n  *\n  * ### Validate that the field has maximum of 5 characters\n  *\n  * ```typescript\n  * const control = new FormControl('Angular', Validators.maxLength(5));\n  *\n  * console.log(control.errors); // {maxlength: {requiredLength: 5, actualLength: 7}}\n  *\n  * ```html\n  * <input maxlength="5">\n  *\n  * @returns A validator function that returns an error map with the\n  * `maxlength` property if the validation check fails, otherwise `null`.\n  *\n  * @see `updateValueAndValidity()`\n  *\n  */\n  static maxLength(maxLength: number): ValidatorFn {\n    return (control: AbstractControl): ValidationErrors|=> {\n      return hasValidLength(control.value) && control.value.length > maxLength ?\n        {'maxlength': {requiredLength: maxLength, 'actualLength': control.value.length}} :\n        null;\n    };\n  }\n\n /**\n  * @description\n  * Validator that requires the control's value to match a regex pattern. This validator is also\n  * provided by default if you use the HTML5 `pattern` attribute.\n  *\n  * @usageNotes\n  *\n  * ### Validate that the field only contains letters or spaces\n  *\n  * ```typescript\n  * const control = new FormControl('1', Validators.pattern('[a-zA-Z ]*'));\n  *\n  * console.log(control.errors); // {pattern: {requiredPattern: '^[a-zA-Z ]*$', actualValue: '1'}}\n  *\n  * ```html\n  * <input pattern="[a-zA-Z ]*">\n  *\n  * ### Pattern matching with the global or sticky

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```
flag\n *\n * `RegExp` objects created with the `g` or `y` flags that are passed into `Validators.pattern`\n * can\n * produce different results on the same input when validations are run consecutively. This is\n * due to how the behavior of `RegExp.prototype.test` is\n * specified in [ECMA-262](https://tc39.es/ecma262/#sec-regexpbuiltinexec)\n * (`RegExp` preserves the index of the last match when the global or sticky flag is used).\n * Due to this behavior, it is recommended that when using\n * `Validators.pattern` you **do not** pass in a\n * `RegExp` object with either the global or sticky\n * flag enabled.\n *\n * ```typescript\n * // Not recommended (since the `g` flag is used)\n * const controlOne = new FormControl('1', Validators.pattern(/foo/g));\n *\n * // Good\n * const controlTwo = new FormControl('1', Validators.pattern(/foo/));\n * ```\n *\n * @param pattern A regular expression to be used as is to test the values, or a string.\n * If a string is passed, the `^` character is prepended and the `$` character is appended to the provided string (if not already present), and the resulting regular\n * expression is used to test the values.\n *\n * @returns A validator function that returns an error map with the\n * `pattern` property if the validation check fails, otherwise `null`.\n *\n * @see\n * `updateValueAndValidity()`\n *\n * /static pattern(pattern: string|RegExp): ValidatorFn {\n *   if (!pattern)\n *     return Validators.nullValidator;\n *   let regex: RegExp;\n *   let regexStr: string;\n *   if (typeof pattern === 'string') {\n *     regexStr = \"\";\n *     if (pattern.charAt(0) !== '^') regexStr += '^';\n *     regexStr += pattern;\n *     if (pattern.charAt(pattern.length - 1) !== '$') regexStr += '$';\n *     regex = new RegExp(regexStr);\n *   } else {\n *     regexStr = pattern.toString();\n *     regex = pattern;\n *   }\n *   return (control: AbstractControl): ValidationErrors|null => {\n *     if (isEmptyInputValue(control.value))\n *       return null; // don't validate empty values to allow optional controls\n *     const value: string = control.value;\n *     return regex.test(value) ? null :\n *     {'pattern': {'requiredPattern': regexStr, 'actualValue': value}};\n *   };\n * }\n * /**\n * @description\n * Validator that performs no operation.\n *\n * @see `updateValueAndValidity()`\n *\n * /static nullValidator(control: AbstractControl): ValidationErrors|null {\n *   return null;\n * }\n * /**\n * @description\n * Compose multiple validators into a single function that returns the union\n * of the individual error maps for the provided control.\n *\n * @returns A validator function that returns an error map with the\n * merged error maps of the validators if the validation check fails, otherwise `null`.\n *\n * @see `updateValueAndValidity()`\n *\n * /static\n * compose(validators: null): null;\n * /static compose(validators: (ValidatorFn|null|undefined][]): ValidatorFn|null;\n * /static compose(validators: (ValidatorFn|null|undefined)[], null): ValidatorFn|null {\n *   if (!validators)\n *     return null;\n *   const presentValidators: ValidatorFn[] = validators.filter(isPresent) as any;\n *   if (presentValidators.length === 0)\n *     return null;\n *   return function(control: AbstractControl) {\n *     return\n *     mergeErrors(executeValidators<ValidatorFn>(control, presentValidators));\n *   };\n * }\n * /**\n * @description\n * Compose multiple async validators into a single function that returns the union\n * of the individual error objects for the provided control.\n *\n * @returns A validator function that returns an error map with the\n * merged error objects of the async validators if the validation check fails, otherwise `null`.\n *\n * @see\n * `updateValueAndValidity()`\n *\n * /static composeAsync(validators: (AsyncValidatorFn|null][]):\n * AsyncValidatorFn|null {\n *   if (!validators)\n *     return null;\n *   const presentValidators: AsyncValidatorFn[] =\n *   validators.filter(isPresent) as any;\n *   if (presentValidators.length === 0)\n *     return null;\n *   return function(control:\n *   AbstractControl) {\n *     const observables =\n *     executeValidators<AsyncValidatorFn>(control,\n *     presentValidators).map(toObservable);\n *     return forkJoin(observables).pipe(map(mergeErrors));\n *   };\n * }\n * }\n * /function isPresent(o: any): boolean {\n *   return o != null;\n * }\n * /nexport function toObservable(r: any):\n * Observable<any> {\n *   const obs = isPromise(r) ? from(r) : r;\n *   if (!(isObservable(obs)) && (typeof ngDevMode\n *   === 'undefined' || ngDevMode))\n *     throw new Error(`Expected validator to return Promise or Observable.`);\n *   return obs;\n * }\n * /function mergeErrors(arrayOfErrors: (ValidationErrors|null][]): ValidationErrors|null {\n *   let\n *   res: {[key: string]: any} = {};\n *   // Not using Array.reduce here due to a Chrome 80 bug\n *   //\n *   https://bugs.chromium.org/p/chromium/issues/detail?id=1049982\n *   arrayOfErrors.forEach((errors:\n *   ValidationErrors|null) => {\n *     res = errors != null ? {...res!, ...errors} : res!;\n *   });\n *   return\n *   Object.keys(res).length === 0 ? null : res;\n * }\n * /ntype GenericValidatorFn = (control: AbstractControl) =>\n * any;\n * /function executeValidators<V extends GenericValidatorFn>(\n *   control: AbstractControl, validators: V[]):\n *   Return Type<V>[] {\n *   return validators.map(validator => validator(control));\n * }\n * /function
```

```

isValidatorFn<V>(validator: V|Validator|AsyncValidator): validator is V {\n return !(validator as
Validator).validate;\n}\n\n/**\n * Given the list of validators that may contain both functions as well as classes,
return the list\n * of validator functions (convert validator classes into validator functions). This is needed to\n * have consistent structure in validators list before composing them.\n *\n * @param validators The set of validators
that may contain validators both in plain function form\n * as well as represented as a validator class.\n */\n\nexport
function normalizeValidators<V>(validators: (V|Validator|AsyncValidator)[]): V[] {\n return
validators.map(validator => {\n return isValidatorFn<V>(validator) ?\n validator :\n ((c: AbstractControl)
=> validator.validate(c)) as unknown as V;\n });\n}\n\n/**\n * Merges synchronous validators into a single
validator function (combined using\n * `Validators.compose`).\n */\n\nexport function composeValidators(validators:
Array<Validator|ValidatorFn>): ValidatorFn|null {\n return validators != null ?
Validators.compose(normalizeValidators<ValidatorFn>(validators)) :\n null;\n}\n\n/**\n * Merges asynchronous validators into a single validator function (combined using\n * `Validators.composeAsync`).\n */\n\nexport function composeAsyncValidators(validators: Array<AsyncValidator|AsyncValidatorFn>):\n AsyncValidatorFn|null {\n return validators != null ?\n Validators.composeAsync(normalizeValidators<AsyncValidatorFn>(validators)) :\n null;\n}\n\n/**\n * Merges raw control validators with a given directive validator and returns the combined list of\n * validators as an array.\n */\n\nexport function mergeValidators<V>(controlValidators: V|V[]|null, dirValidator: V): V[] {\n if
(controlValidators === null) return [dirValidator];\n return Array.isArray(controlValidators) ? [...controlValidators,
dirValidator] :\n [controlValidators, dirValidator];\n}\n\n/**\n * Retrieves the list of raw synchronous validators attached to a given control.\n */\n\nexport function getControlValidators(control:
AbstractControl): ValidatorFn|ValidatorFn[]|null {\n return (control as any)._rawValidators as ValidatorFn |
ValidatorFn[] | null;\n}\n\n/**\n * Retrieves the list of raw asynchronous validators attached to a given control.\n */\n\nexport function getControlAsyncValidators(control: AbstractControl): AsyncValidatorFn|\n AsyncValidatorFn[]|null {\n return (control as any)._rawAsyncValidators as AsyncValidatorFn |
AsyncValidatorFn[] | null;\n}\n\n"/**\n * @license\n * Copyright Google LLC All Rights Reserved.\n *\n * Use of
this source code is governed by an MIT-style license that can be\n * found in the LICENSE file at
https://angular.io/license\n */\n\nimport {Observable} from 'rxjs';\nimport {AbstractControl} from
'./model';\nimport {composeAsyncValidators, composeValidators} from './validators';\nimport {AsyncValidator,
AsyncValidatorFn, ValidationErrors, Validator, ValidatorFn} from './validators';\n\n\n/**\n * @description\n * Base
class for control directives.\n *\n * This class is only used internally in the `ReactiveFormsModule` and the
`FormsModule`.\n *\n * @publicApi\n */\n\nexport abstract class AbstractControlDirective {\n /**\n *
@description\n * A reference to the underlying control.\n *\n * @returns the control that backs this directive.
Most properties fall through to that instance.\n */\n abstract get control(): AbstractControl|null;\n\n /**\n *
@description\n * Reports the value of the control if it is present, otherwise null.\n */\n get value(): any {\n
return this.control ? this.control.value : null;\n }\n\n /**\n * @description\n * Reports whether the control is
valid. A control is considered valid if no\n * validation errors exist with the current value.\n * If the control is not
present, null is returned.\n */\n get valid(): boolean|null {\n return this.control ? this.control.valid : null;\n }\n\n
/**\n * @description\n * Reports whether the control is invalid, meaning that an error exists in the input value.\n
* If the control is not present, null is returned.\n */\n get invalid(): boolean|null {\n return this.control ?
this.control.invalid : null;\n }\n\n /**\n * @description\n * Reports whether a control is pending, meaning that
that async validation is occurring and\n * errors are not yet available for the input value. If the control is not
present, null is\n * returned.\n */\n get pending(): boolean|null {\n return this.control ? this.control.pending :
null;\n }\n\n /**\n * @description\n * Reports whether the control is disabled, meaning that the control is
disabled\n * in the UI and is exempt from validation checks and excluded from aggregate\n * values of ancestor
controls. If the control is not present, null is returned.\n */\n get disabled(): boolean|null {\n return this.control ?
this.control.disabled : null;\n }\n\n /**\n * @description\n * Reports whether the control is enabled, meaning
that the control is included in ancestor\n * calculations of validity or value. If the control is not present, null is
returned.\n */\n get enabled(): boolean|null {\n return this.control ? this.control.enabled : null;\n }\n\n /**\n *

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@description\n * Reports the control's validation errors. If the control is not present, null is returned.\n */\n get
errors(): ValidationErrors|null {\n return this.control ? this.control.errors : null;\n }\n\n /**\n * @description\n
* Reports whether the control is pristine, meaning that the user has not yet changed\n * the value in the UI. If the
control is not present, null is returned.\n */\n get pristine(): boolean|null {\n return this.control ?
this.control.pristine : null;\n }\n\n /**\n * @description\n * Reports whether the control is dirty, meaning that the
user has changed\n * the value in the UI. If the control is not present, null is returned.\n */\n get dirty():
boolean|null {\n return this.control ? this.control.dirty : null;\n }\n\n /**\n * @description\n * Reports whether
the control is touched, meaning that the user has triggered\n * a `blur` event on it. If the control is not present, null
is returned.\n */\n get touched(): boolean|null {\n return this.control ? this.control.touched : null;\n }\n\n /**\n
* @description\n * Reports the validation status of the control. Possible values include:\n * 'VALID', 'INVALID',
'DISABLED', and 'PENDING'.\n * If the control is not present, null is returned.\n */\n get status(): string|null {\n
return this.control ? this.control.status : null;\n }\n\n /**\n * @description\n * Reports whether the control is
untouched, meaning that the user has not yet triggered\n * a `blur` event on it. If the control is not present, null is
returned.\n */\n get untouched(): boolean|null {\n return this.control ? this.control.untouched : null;\n }\n\n
/**\n * @description\n * Returns a multicasting observable that emits a validation status whenever it is\n *
calculated for the control. If the control is not present, null is returned.\n */\n get statusChanges():
Observable<any>|null {\n return this.control ? this.control.statusChanges : null;\n }\n\n /**\n * @description\n
* Returns a multicasting observable of value changes for the control that emits every time the\n * value of the
control changes in the UI or programmatically.\n * If the control is not present, null is returned.\n */\n get
valueChanges(): Observable<any>|null {\n return this.control ? this.control.valueChanges : null;\n }\n\n /**\n
* @description\n * Returns an array that represents the path from the top-level form to this control.\n * Each index
is the string name of the control on that level.\n */\n get path(): string[]|null {\n return null;\n }\n\n /**\n
* Contains the result of merging synchronous validators into a single validator function\n * (combined using
`Validators.compose`).\n */\n private _composedValidatorFn: ValidatorFn|null|undefined;\n\n /**\n * Contains
the result of merging asynchronous validators into a single validator function\n * (combined using
`Validators.composeAsync`).\n */\n private _composedAsyncValidatorFn: AsyncValidatorFn|null|undefined;\n\n
/**\n * Set of synchronous validators as they were provided while calling `setValidators` function.\n */\n
@internal\n */\n _rawValidators: Array<Validator|ValidatorFn> = [];\n\n /**\n * Set of asynchronous validators
as they were provided while calling `setAsyncValidators`\n * function.\n */\n @internal\n */\n
_rawAsyncValidators: Array<AsyncValidator|AsyncValidatorFn> = [];\n\n /**\n * Sets synchronous validators
for this directive.\n */\n @internal\n */\n _setValidators(validators: Array<Validator|ValidatorFn>|undefined): void
{\n this._rawValidators = validators || [];\n this._composedValidatorFn =
composeValidators(this._rawValidators);\n }\n\n /**\n * Sets asynchronous validators for this directive.\n */\n
@internal\n */\n _setAsyncValidators(validators: Array<AsyncValidator|AsyncValidatorFn>|undefined): void {\n
this._rawAsyncValidators = validators || [];\n this._composedAsyncValidatorFn =
composeAsyncValidators(this._rawAsyncValidators);\n }\n\n /**\n * @description\n * Synchronous validator
function composed of all the synchronous validators registered with this\n * directive.\n */\n get validator():
ValidatorFn|null {\n return this._composedValidatorFn || null;\n }\n\n /**\n * @description\n * Asynchronous
validator function composed of all the asynchronous validators registered with\n * this directive.\n */\n get
asyncValidator(): AsyncValidatorFn|null {\n return this._composedAsyncValidatorFn || null;\n }\n\n /**\n * The
set of callbacks to be invoked when directive instance is being destroyed.\n */\n private _onDestroyCallbacks: (()
=> void)[] = [];\n\n /**\n * Internal function to register callbacks that should be invoked\n * when directive
instance is being destroyed.\n */\n @internal\n */\n _registerOnDestroy(fn: () => void): void {\n
this._onDestroyCallbacks.push(fn);\n }\n\n /**\n * Internal function to invoke all registered\n * "on destroy"\n
callbacks.\n * Note: calling this function also clears the list of callbacks.\n */\n @internal\n */\n
_invokeOnDestroyCallbacks(): void {\n this._onDestroyCallbacks.forEach(fn => fn());\n
this._onDestroyCallbacks = [];\n }\n\n /**\n * @description\n * Resets the control with the provided value if the
control is present.\n */\n reset(value: any = undefined): void {\n if (this.control) this.control.reset(value);\n
}\n\n

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/**\n * @description\n * Reports whether the control with the given path has the error specified.\n *\n *  

@param errorCode The code of the error to check\n * @param path A list of control names that designates how to  

move from the current control\n * to the control that should be queried for errors.\n *\n * @usageNotes\n * For  

example, for the following `FormGroup`: \n *\n * ```\n * form = new FormGroup({\n * address: new  

FormGroup({ street: new FormControl() })\n * });\n * ```\n *\n * The path to the 'street' control from the root  

form would be 'address' -> 'street'.\n *\n * It can be provided to this method in one of two formats:\n *\n * 1.  

An array of string control names, e.g. `['address', 'street']`\n * 1. A period-delimited list of control names in one  

string, e.g. `address.street`\n *\n * If no path is given, this method checks for the error on the current control.\n *\n *  

@returns whether the given error is present in the control at the given path.\n *\n * If the control is not  

present, false is returned.\n */\n\n hasError(errorCode: string, path?: Array<string|number>|string): boolean {\n  

return this.control ? this.control.hasError(errorCode, path) : false;\n }\n\n /**\n * @description\n * Reports error  

data for the control with the given path.\n *\n * @param errorCode The code of the error to check\n * @param  

path A list of control names that designates how to move from the current control\n * to the control that should be  

queried for errors.\n *\n * @usageNotes\n * For example, for the following `FormGroup`: \n *\n * ```\n *  

form = new FormGroup({\n * address: new FormGroup({ street: new FormControl() })\n * });\n * ```\n *\n * The  

path to the 'street' control from the root form would be 'address' -> 'street'.\n *\n * It can be provided to this  

method in one of two formats:\n *\n * 1. An array of string control names, e.g. `['address', 'street']`\n * 1. A  

period-delimited list of control names in one string, e.g. `address.street`\n *\n * @returns error data for that  

particular error. If the control or error is not present,\n * null is returned.\n */\n\n getError(errorCode: string, path?:  

Array<string|number>|string): any {\n  

return this.control ? this.control.getError(errorCode, path) : null;\n }\n\n };\n\n /**\n * @license\n * Copyright Google LLC All Rights Reserved.\n *\n * Use of this source code is  

governed by an MIT-style license that can be\n * found in the LICENSE file at https://angular.io/license\n */\n\nimport { AbstractControlDirective } from './abstract_control_directive';\nimport { Form } from  

'/form_interface';\n\n /**\n * @description\n * A base class for directives that contain multiple registered instances  

of `NgControl`.\n * Only used by the forms module.\n *\n * @publicApi\n */\n\nexport abstract class  

ControlContainer extends AbstractControlDirective {\n\n /**\n * @description\n * The name for the control\n *\n *  

// TODO(issue/24571): remove '!'.\n name!: string|number|null;\n\n /**\n * @description\n * The top-level  

form directive for the control.\n *\n *  

get formDirective(): Form|null {\n  

return null;\n }\n\n /**\n *\br/>
@description\n * The path to this group.\n *\n *  

get path(): string[]|null {\n  

return null;\n }\n\n };\n\n /**\n *  

@license\n * Copyright Google LLC All Rights Reserved.\n *\n * Use of this source code is governed by an MIT-  

style license that can be\n * found in the LICENSE file at https://angular.io/license\n */\n\nimport  

{ AbstractControlDirective } from './abstract_control_directive';\nimport { ControlContainer } from  

'/control_container';\nimport { ControlValueAccessor } from './control_value_accessor';\n\n /**\n * @description\n *\br/>
* A base class that all `FormControl`-based directives extend. It binds a `FormControl`\n * object to a DOM  

element.\n *\n * @publicApi\n */\n\nexport abstract class NgControl extends AbstractControlDirective {\n\n /**\n *  

@description\n * The parent form for the control.\n *\n *  

@internal\n */\n * _parent: ControlContainer|null =  

null;\n\n /**\n * @description\n * The name for the control\n *\n *  

name: string|number|null = null;\n\n /**\n *  

@description\n * The value accessor for the control\n *\n *  

valueAccessor: ControlValueAccessor|null =  

null;\n\n /**\n * @description\n * The callback method to update the model from the view when requested\n *\n *  

@param newValue The new value for the view\n *\n *  

abstract viewToModelUpdate(newValue: any):  

void;\n\n };\n\n /**\n * @license\n * Copyright Google LLC All Rights Reserved.\n *\n * Use of this source code is  

governed by an MIT-style license that can be\n * found in the LICENSE file at https://angular.io/license\n */\n\nimport { Directive, Self } from '@angular/core';\nimport { AbstractControlDirective } from  

'/abstract_control_directive';\nimport { ControlContainer } from './control_container';\nimport { NgControl } from  

'/ng_control';\n\nexport class AbstractControlStatus {\n\n private _cd: AbstractControlDirective;\n\n constructor(cd:  

AbstractControlDirective) {\n  

this._cd = cd;\n }\n\n get ngClassUntouched(): boolean {\n  

return  

this._cd.control ? this._cd.control.untouched : false;\n }\n\n get ngClassTouched(): boolean {\n  

return  

this._cd.control ? this._cd.control.touched : false;\n }\n\n get ngClassPristine(): boolean {\n  

return this._cd.control

```

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? this._cd.control.pristine : false;\n }\n get ngClassDirty(): boolean {\n return this._cd.control ?
this._cd.control.dirty : false;\n }\n get ngClassValid(): boolean {\n return this._cd.control ? this._cd.control.valid
: false;\n }\n get ngClassInvalid(): boolean {\n return this._cd.control ? this._cd.control.invalid : false;\n }\n get
ngClassPending(): boolean {\n return this._cd.control ? this._cd.control.pending : false;\n }\n}\n\nexport const
ngControlStatusHost = {\n '[class.ng-untouched]': 'ngClassUntouched',\n '[class.ng-touched]': 'ngClassTouched',\n
[class.ng-pristine]': 'ngClassPristine',\n '[class.ng-dirty]': 'ngClassDirty',\n '[class.ng-valid]': 'ngClassValid',\n
[class.ng-invalid]': 'ngClassInvalid',\n '[class.ng-pending]': 'ngClassPending',\n};\n\n/**\n * @description\n *
Directive automatically applied to Angular form controls that sets CSS classes\n * based on control status.\n *\n *
@usageNotes\n *\n * ### CSS classes applied\n *\n * The following classes are applied as the properties become
true:\n *\n * * ng-valid\n * * ng-invalid\n * * ng-pending\n * * ng-pristine\n * * ng-dirty\n * * ng-untouched\n * *
ng-touched\n *\n * @ngModule ReactiveFormsModule\n * @ngModule FormsModule\n * @publicApi\n
*/\n\n@Directive({selector: '[formControlName],[ngModel],[formControl]', host: ngControlStatusHost})\nexport
class NgControlStatus extends AbstractControlStatus {\n constructor(@Self() cd: NgControl) {\n super(cd);\n
}\n}\n\n/**\n * @description\n * Directive automatically applied to Angular form groups that sets CSS classes\n *
based on control status (valid/invalid/dirty/etc).\n *\n * @see `NgControlStatus`\n *\n * @ngModule
ReactiveFormsModule\n * @ngModule FormsModule\n * @publicApi\n
*/\n\n@Directive({\n selector:\n '[formGroupName],[formArrayName],[ngModelGroup],[formGroup],form:not([ngNoForm]),[ngForm]',\n host:
ngControlStatusHost\n})\nexport class NgControlStatusGroup extends AbstractControlStatus {\n
constructor(@Self() cd: ControlContainer) {\n super(cd);\n }\n}\n\n"/**\n * @license\n * Copyright Google LLC
All Rights Reserved.\n *\n * Use of this source code is governed by an MIT-style license that can be\n * found in
the LICENSE file at https://angular.io/license\n */\n\nimport {Directive, ElementRef, forwardRef, Renderer2} from
'@angular/core';\n\nimport {ControlValueAccessor, NG_VALUE_ACCESSOR} from
'./control_value_accessor';\n\nexport const NUMBER_VALUE_ACCESSOR: any = {\n provide:
NG_VALUE_ACCESSOR,\n useExisting: forwardRef(() => NumberValueAccessor),\n multi: true\n};\n\n/**\n *
@description\n * The `ControlValueAccessor` for writing a number value and listening to number input changes.\n
*\n * The value accessor is used by the `FormControlDirective`, `FormControlName`, and `NgModel`\n * directives.\n
*\n * @usageNotes\n *\n * ### Using a number input with a reactive form.\n *\n * The following example shows
how to use a number input with a reactive form.\n *\n * ```ts\n * const totalCountControl = new FormControl();\n *
```\n *\n * ```\n * <input type="number" [formControl]="totalCountControl">\n * ```\n *\n * @ngModule
ReactiveFormsModule\n * @ngModule FormsModule\n * @publicApi\n
*/\n\n@Directive({\n selector:\n 'input[type=number][formControlName],input[type=number][formControl],input[type=number][ngModel]',\n host:
{'(input)': 'onChange($event.target.value)', '(blur)': 'onTouched()'},\n providers:
[NUMBER_VALUE_ACCESSOR]\n})\nexport class NumberValueAccessor implements ControlValueAccessor {\n
/**\n * The registered callback function called when a change or input event occurs on the input\n *
element.\n * @nodoc\n */\n onChange = (_: any) => {};\n\n /**\n * The registered callback function called
when a blur event occurs on the input element.\n * @nodoc\n */\n onTouched = () => {};\n\n constructor(private
_renderer: Renderer2, private_elementRef: ElementRef) {\n /**\n * Sets the "value" property on the input
element.\n * @nodoc\n */\n writeValue(value: number): void {\n // The value needs to be normalized for IE9,
otherwise it is set to 'null' when null\n const normalizedValue = value == null ? " : value;\n
this._renderer.setProperty(this._elementRef.nativeElement, 'value', normalizedValue);\n }\n\n /**\n * Registers a
function called when the control value changes.\n * @nodoc\n */\n registerOnChange(fn: (_: number|null) =>
void): void {\n this.onChange = (value) => {\n fn(value == " ? null : parseFloat(value));\n };
}\n\n /**\n * Registers a function called when the control is touched.\n * @nodoc\n */\n registerOnTouched(fn: () => void):
void {\n this.onTouched = fn;\n }\n\n /**\n * Sets the "disabled" property on the input element.\n *
@nodoc\n */\n setDisabledState(isDisabled: boolean): void {\n
this._renderer.setProperty(this._elementRef.nativeElement, 'disabled', isDisabled);\n }\n}\n\n"/**\n * @license\n *
Copyright Google LLC All Rights Reserved.\n *\n * Use of this source code is governed by an MIT-style license
that can be\n * found in the LICENSE file at https://angular.io/license\n */\n\nimport {Directive, ElementRef,

```



```

forwardRef, Injectable, Injector, Input, OnDestroy, OnInit, Renderer2} from '@angular/core';\n\nimport
{ControlValueAccessor, NG_VALUE_ACCESSOR} from './control_value_accessor';\n\nimport {NgControl} from
'./ng_control';\n\nexport const RADIO_VALUE_ACCESSOR: any = {\n provide: NG_VALUE_ACCESSOR,\n useExisting: forwardRef(() => RadioControlValueAccessor),\n multi: true\n};\n\nfunction throwError() {\n
throw new Error(`\n If you define both a name and a FormControlName attribute on your radio button, their
values\n must match. Ex: <input type="radio" FormControlName="food" name="food">\n `);\n}\n\n/**\n *
@description\n * Class used by Angular to track radio buttons. For internal use only.\n */\n@Injectable()\nexport
class RadioControlRegistry {\n private _accessors: any[] = [];\n\n /**\n * @description\n * Adds a control to the
internal registry. For internal use only.\n */\n add(control: NgControl, accessor: RadioControlValueAccessor) {\n
this._accessors.push([control, accessor]);\n }\n\n /**\n * @description\n * Removes a control from the internal
registry. For internal use only.\n */\n remove(accessor: RadioControlValueAccessor) {\n for (let i =
this._accessors.length - 1; i >= 0; --i) {\n if (this._accessors[i][1] === accessor) {\n this._accessors.splice(i,
1);\n return;\n }\n }\n }\n\n /**\n * @description\n * Selects a radio button. For internal use only.\n
*/\n select(accessor: RadioControlValueAccessor) {\n this._accessors.forEach((c) => {\n if
(this._isSameGroup(c, accessor) && c[1] !== accessor) {\n c[1].fireUncheck(accessor.value);\n }\n });\n
\n private _isSameGroup(\n controlPair: [NgControl, RadioControlValueAccessor],\n accessor:
RadioControlValueAccessor): boolean {\n if (!controlPair[0].control) return false;\n return
controlPair[0]._parent === accessor._control._parent &&\n controlPair[1].name === accessor.name;\n }\n
\n /**\n * @description\n * The `ControlValueAccessor` for writing radio control values and listening to radio
control\n * changes. The value accessor is used by the `FormControlDirective`, `FormControlName`, and\n *
`NgModel` directives.\n */\n * @usageNotes\n * ### Using radio buttons with reactive form directives\n *\n *
The follow example shows how to use radio buttons in a reactive form. When using radio buttons in\n * a reactive
form, radio buttons in the same group should have the same `FormControlName`.\n * Providing a `name` attribute is
optional.\n */\n * { @example forms/ts/reactiveRadioButtons/reactive_radio_button_example.ts region='Reactive'}\n
\n * @ngModule ReactiveFormsModule\n * @ngModule FormsModule\n * @publicApi\n */\n @Directive({\n selector:\n 'input[type=radio][formControlName],input[type=radio][formControl],input[type=radio][ngModel]',\n host:
{'(change)': 'onChange()', '(blur)': 'onTouched()' },\n providers: [RADIO_VALUE_ACCESSOR]\n })\n export
class RadioControlValueAccessor implements ControlValueAccessor, OnDestroy, OnInit {\n /** @internal */\n //
TODO(issue/24571): remove '!'\n _state!: boolean;\n /** @internal */\n // TODO(issue/24571): remove '!'\n
 _control!: NgControl;\n /** @internal */\n // TODO(issue/24571): remove '!'\n _fn!: Function;\n\n /**\n * The
registered callback function called when a change event occurs on the input element.\n */\n @nodoc\n _\n
 onChange = () => {};\n\n /**\n * The registered callback function called when a blur event occurs on the input
element.\n */\n @nodoc\n _\n onTouched = () => {};\n\n /**\n * @description\n * Tracks the name of the radio
input element.\n */\n // TODO(issue/24571): remove '!'\n @Input() name!: string;\n\n /**\n * @description\n
 * Tracks the name of the `FormControl` bound to the directive. The name corresponds\n * to a key in the parent
`FormGroup` or `FormArray`.\n */\n // TODO(issue/24571): remove '!'\n @Input() FormControlName!:
string;\n\n /**\n * @description\n * Tracks the value of the radio input element\n */\n @Input() value: any;\n\n
 constructor(\n private _renderer: Renderer2, private _elementRef: ElementRef,\n private _registry:
RadioControlRegistry, private _injector: Injector) {\n }\n\n /** @nodoc */\n ngOnInit(): void {\n this._control =
this._injector.get(NgControl);\n this._checkName();\n this._registry.add(this._control, this);\n }\n\n /**
@nodoc */\n ngOnDestroy(): void {\n this._registry.remove(this);\n }\n\n /**\n * Sets the `checked` property
value on the radio input element.\n */\n @nodoc\n _\n writeValue(value: any): void {\n this._state = value ===
this.value;\n this._renderer.setProperty(this._elementRef.nativeElement, 'checked', this._state);\n }\n\n /**\n *
Registers a function called when the control value changes.\n */\n @nodoc\n _\n registerOnChange(fn: (_: any) =>
{}): void {\n this._fn = fn;\n this.onChange = () => {\n fn(this.value);\n this._registry.select(this);\n };\n
 }\n\n /**\n * Sets the `value` on the radio input element and unchecks it.\n */\n * @param value\n */\n
 fireUncheck(value: any): void {\n this.writeValue(value);\n }\n\n /**\n * Registers a function called when the
control is touched.\n */\n @nodoc\n _\n registerOnTouched(fn: () => {}): void {\n this.onTouched = fn;\n }\n
 }

```

```

/**\n * Sets the \"disabled\" property on the input element.\n * @nodoc\n */\n setDisabledState(isDisabled:
boolean): void {\n this._renderer.setProperty(this._elementRef.nativeElement, 'disabled', isDisabled);\n }\n\n
private _checkName(): void {\n if (this.name && this.formControlName && this.name !==
this.formControlName &&\n (typeof ngDevMode === 'undefined' || ngDevMode)) {\n throwNameError();\n
}\n if (!this.name && this.formControlName) this.name = this.formControlName;\n }\n}\n", /**\n * @license\n
* Copyright Google LLC All Rights Reserved.\n *\n * Use of this source code is governed by an MIT-style license
that can be\n * found in the LICENSE file at https://angular.io/license\n */\n\nimport { Directive, ElementRef,
forwardRef, Renderer2, StaticProvider } from '@angular/core';\n\nimport { ControlValueAccessor,
NG_VALUE_ACCESSOR } from './control_value_accessor';\n\nexport const RANGE_VALUE_ACCESSOR:
StaticProvider = {\n provide: NG_VALUE_ACCESSOR,\n useExisting: forwardRef(() =>
RangeValueAccessor),\n multi: true\n};\n\n/**\n * @description\n * The `ControlValueAccessor` for writing a
range value and listening to range input changes.\n * The value accessor is used by the `FormControlDirective`,
`FormControlName`, and `NgModel`\n * directives.\n *\n * @usageNotes\n *\n * ### Using a range input with a
reactive form\n *\n * The following example shows how to use a range input with a reactive form.\n *\n * ```ts\n
const ageControl = new FormControl();\n * ```\n *\n * ```\n * <input type=\"range\"\n
[formControl]=\"ageControl\">\n * ```\n *\n * @ngModule ReactiveFormsModule\n * @ngModule FormsModule\n
* @publicApi\n */\n@Directive({\n selector:\n
'input[type=range][formControlName],input[type=range][formControl],input[type=range][ngModel]',\n host: {\n
(change)': 'onChange($event.target.value)',\n '(input)': 'onChange($event.target.value)',\n '(blur)':
'onTouched()\n },\n providers: [RANGE_VALUE_ACCESSOR]\n})\nexport class RangeValueAccessor
implements ControlValueAccessor {\n /**\n * The registered callback function called when a change or input
event occurs on the input\n * element.\n * @nodoc\n */\n onChange = (_: any) => {};\n\n /**\n * The
registered callback function called when a blur event occurs on the input element.\n * @nodoc\n */\n onTouched
= () => {};\n\n constructor(private _renderer: Renderer2, private _elementRef: ElementRef) {\n\n /**\n * Sets
the \"value\" property on the input element.\n * @nodoc\n */\n writeValue(value: any): void {\n
this._renderer.setProperty(this._elementRef.nativeElement, 'value', parseFloat(value));\n }\n\n /**\n * Registers a
function called when the control value changes.\n * @nodoc\n */\n registerOnChange(fn: (_: number|null) =>
void): void {\n this.onChange = (value) => {\n fn(value == \" ? null : parseFloat(value));\n
};\n }\n\n /**\n * Registers a function called when the control is touched.\n * @nodoc\n */\n registerOnTouched(fn: () => void):
void {\n this.onTouched = fn;\n }\n\n /**\n * Sets the \"disabled\" property on the range input element.\n *
@nodoc\n */\n setDisabledState(isDisabled: boolean): void {\n
this._renderer.setProperty(this._elementRef.nativeElement, 'disabled', isDisabled);\n }\n}\n", /**\n * @license\n
* Copyright Google LLC All Rights Reserved.\n *\n * Use of this source code is governed by an MIT-style license
that can be\n * found in the LICENSE file at https://angular.io/license\n */\n\nexport const FormErrorExamples =
{\n formControlName: `\n <div [formGroup]=\"myGroup\">\n <input formControlName=\"firstName\">\n
</div>\n\n In your class:\n\n this.myGroup = new FormGroup({\n firstName: new FormControl()\n
});`,\n\n formGroupName: `\n <div [formGroup]=\"myGroup\">\n <div formGroupName=\"person\">\n
<input formControlName=\"firstName\">\n </div>\n </div>\n\n In your class:\n\n this.myGroup = new
FormGroup({\n person: new FormGroup({ firstName: new FormControl() })\n });`,\n\n formArrayName: `\n
<div [formGroup]=\"myGroup\">\n <div formArrayName=\"cities\">\n <div *ngFor=\"let city of
cityArray.controls; index as i\">\n <input [formControlName]=\"i\">\n </div>\n </div>\n </div>\n\n
In your class:\n\n this.cityArray = new FormArray([new FormControl('SF')]);\n this.myGroup = new
FormGroup({\n cities: this.cityArray\n });`,\n\n ngModelGroup: `\n <form>\n <div
ngModelGroup=\"person\">\n <input [(ngModel)]=\"person.name\" name=\"firstName\">\n </div>\n
</form>`,\n\n ngModelWithFormGroup: `\n <div [formGroup]=\"myGroup\">\n <input
formControlName=\"firstName\">\n <input [(ngModel)]=\"showMoreControls\"\n
[ngModelOptions]=\"{standalone: true}\">\n </div>\n \n`;\n}\n", /**\n * @license\n
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that can be\n * found in the

```

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```

import {FormErrorExamples as Examples} from
'./error_examples';
export class ReactiveErrors {
 static controlParentException(): void {
 throw new
 Error(`formControlName must be used with a parent formGroup directive. You'll want to add a formGroup
 directive and pass it an existing FormGroup instance (you can create one in your class).
 Example:
 ${Examples.formControlName}`);
 }
 static ngModelGroupException(): void {
 throw new Error(`
 formControlName cannot be used with an ngModelGroup parent. It is only compatible with parents
 that also
 have a "form" prefix: formGroupName, formArrayName, or formGroup.
 Option 1: Update the parent to be
 formGroupName (reactive form strategy)
 ${Examples.formGroupName}
 Option 2: Use ngModel
 instead of formControlName (template-driven strategy)
 ${Examples.ngModelGroup}`);
 }
 static missingFormException(): void {
 throw new Error(`formGroup expects a FormGroup instance. Please pass one
 in.
 Example:
 ${Examples.formControlName}`);
 }
 static groupParentException(): void {
 throw new Error(`
 formGroupName must be used with a parent formGroup directive. You'll want to add a
 formGroup
 directive and pass it an existing FormGroup instance (you can create one in your class).
 Example:
 ${Examples.formGroupName}`);
 }
 static arrayParentException(): void {
 throw new
 Error(`formArrayName must be used with a parent formGroup directive. You'll want to add a formGroup
 directive and pass it an existing FormGroup instance (you can create one in your class).
 Example:
 ${Examples.formArrayName}`);
 }
 static disabledAttrWarning(): void {
 console.warn(`
 It looks like
 you're using the disabled attribute with a reactive form directive. If you set disabled to true
 when you set up this
 control in your component class, the disabled attribute will actually be set in the DOM for
 you. We recommend
 using this approach to avoid 'changed after checked' errors.
 Example:
 form = new FormGroup({
 first: new FormControl({value: 'Nancy', disabled: true}, Validators.required),
 last: new FormControl('Drew',
 Validators.required)
 });
 `);
 }
 static ngModelWarning.directiveName: string): void {
 console.warn(`
 It looks like you're using ngModel on the same form field as ${directiveName}.
 Support for
 using the ngModel input property and ngModelChange event with
 reactive form directives has been deprecated
 in Angular v6 and will be removed
 in a future version of Angular.
 For more information on this, see our
 API docs here:
 https://angular.io/api/forms/${
 directiveName === 'formControl' ? 'FormControlDirective'
 :
 'FormControlName'}#use-with-ngmodel
 `);
 }
}

```

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```

import {Directive, ElementRef,
forwardRef, Host, Input, OnDestroy, Optional, Renderer2, StaticProvider} from '@angular/core';
import
{ControlValueAccessor, NG_VALUE_ACCESSOR} from './control_value_accessor';
export const
SELECT_VALUE_ACCESSOR: StaticProvider = {
 provide: NG_VALUE_ACCESSOR,
 useExisting:
forwardRef(() => SelectControlValueAccessor),
 multi: true
};
function _buildValueString(id: string|null,
value: any): string {
 if (id == null) return `${value}`;
 if (value && typeof value === 'object') value = 'Object';
 return `${id}: ${value}`.slice(0, 50);
}
function _extractId(valueString: string): string {
 return
valueString.split(':')[0];
}
/**
 * @description
 * The `ControlValueAccessor` for writing select control
values and listening to select control
 * changes. The value accessor is used by the `FormControlDirective`,
`FormControlName`, and
 * `NgModel` directives.
 * @usageNotes
 * ### Using select controls in a
reactive form
 * The following examples show how to use a select control in a reactive form.
 * @example forms/ts/reactiveSelectControl/reactive_select_control_example.ts region='Component'
 * ###
Using select controls in a template-driven form
 * To use a select in a template-driven form, simply add an
`ngModel` and a `name`
 * attribute to the main `<select>` tag.
 * @example
forms/ts/selectControl/select_control_example.ts region='Component'
 * ### Customizing option selection
 * Angular uses object identity to select option. It's possible for the identities of items
 * to change while the
data does not. This can happen, for example, if the items are produced
 * from an RPC to the server, and that RPC
is re-run. Even if the data hasn't changed, the
 * second response will produce objects with different identities.
 * To customize the default option comparison algorithm, `<select>` supports `compareWith` input.
 * If `compareWith` is

```

given, Angular selects option by the return value of the function.

```

const selectedCountriesControl =
new FormControl();
<select [compareWith]="compareFn"
[formControl]="selectedCountriesControl">
 <option *ngFor="let country of countries"
[ngValue]="country">
 {{country.name}}
 </option>
</select>
compareFn(c1: Country,
c2: Country): boolean {
 return c1 && c2 ? c1.id === c2.id : c1 !== c2;
}

```

**Note:** We listen to the 'change' event because 'input' events aren't fired for selects in Firefox and IE:

[https://bugzilla.mozilla.org/show\\_bug.cgi?id=1024350](https://bugzilla.mozilla.org/show_bug.cgi?id=1024350) <https://developer.microsoft.com/en-us/microsoft-edge/platform/issues/4660045/>

```

@ngModule ReactiveFormsModule
@ngModule FormsModule
@publicApi
@Directive({
 selector: 'select:not([multiple])[formControlName],select:not([multiple])[formControl],select:not([multiple])[ngModel]',
 host: {
 '(change)': 'onChange($event.target.value)',
 '(blur)': 'onTouched()',
 },
 providers: [
 SELECT_VALUE_ACCESSOR
]
})
export class SelectControlValueAccessor implements
ControlValueAccessor {
 /** @nodoc */
 value: any;
 /** @internal */
 _optionMap: Map<string, any> =
 new Map<string, any>();
 /** @internal */
 _idCounter: number = 0;
 /**
 * The registered callback
 function called when a change event occurs on the input element.
 */
 @nodoc
 onChange = (_: any) =>
 {};
 /**
 * The registered callback function called when a blur event occurs on the input element.
 */
 @nodoc
 onTouched = () => {};
 /**
 * @description
 * Tracks the option comparison algorithm for
 tracking identities when
 * checking for changes.
 */
 @Input()
 set compareWith(fn: (o1: any, o2: any) =>
 boolean) {
 if (typeof fn !== 'function' && (typeof ngDevMode === 'undefined' || ngDevMode))
 throw
 new Error('compareWith must be a function, but received ${JSON.stringify(fn)}');
 this._compareWith =
 fn;
 }
 private _compareWith: (o1: any, o2: any) => boolean = Object.is;
 constructor(private _renderer:
 Renderer2, private _elementRef: ElementRef) {}
 /**
 * Sets the "value" property on the input element. The
 "selectedIndex" property is also set if an ID is provided on the option element.
 */
 @nodoc
 writeValue(value: any): void {
 this.value = value;
 const id: string | null = this._getOptionId(value);
 if (id
 == null)
 this._renderer.setProperty(this._elementRef.nativeElement, 'selectedIndex', -1);
 const
 valueString = _buildValueString(id, value);
 this._renderer.setProperty(this._elementRef.nativeElement, 'value',
 valueString);
 }
 /**
 * Registers a function called when the control value changes.
 */
 @nodoc
 registerOnChange(fn: (value: any) => any): void {
 this.onChange = (valueString: string) => {
 this.value =
 this._getOptionValue(valueString);
 fn(this.value);
 };
 }
 /**
 * Registers a function called when the
 control is touched.
 */
 @nodoc
 registerOnTouched(fn: () => any): void {
 this.onTouched = fn;
 }
 /**
 * Sets the "disabled" property on the select input element.
 */
 @nodoc
 setDisabledState(isDisabled: boolean): void {
 this._renderer.setProperty(this._elementRef.nativeElement,
 'disabled', isDisabled);
 }
 /** @internal */
 _registerOption(): string {
 return
 (this._idCounter++).toString();
 }
 /** @internal */
 _getOptionId(value: any): string | null {
 for (const id
 of Array.from(this._optionMap.keys()))
 if (this._compareWith(this._optionMap.get(id), value))
 return id;
 return null;
 }
 /** @internal */
 _getOptionValue(valueString: string): any {
 const id: string =
 _extractId(valueString);
 return this._optionMap.has(id) ? this._optionMap.get(id) : valueString;
 }
 /**
 * @description
 * Marks `<option>` as dynamic, so Angular can be notified when options change.
 */
 @see
 `SelectControlValueAccessor`
 @ngModule ReactiveFormsModule
 @ngModule FormsModule
 @publicApi
 @Directive({
 selector: 'option'
 })
 export class NgSelectOption implements OnDestroy {
 /**
 * @description
 * ID of the option element
 */
 // TODO(issue/24571): remove '!'.
 id!: string;
 constructor(
 private _element: ElementRef,
 private _renderer: Renderer2,
 @Optional() @Host() private
 _select: SelectControlValueAccessor
) {
 if (this._select)
 this.id = this._select._registerOption();
 }
 /**
 * @description
 * Tracks the value bound to the option element. Unlike the value binding,
 * ngValue supports
 binding to objects.
 */
 @Input('ngValue')
 set ngValue(value: any) {
 if (this._select == null)
 return;
 this._select._optionMap.set(this.id, value);
 this._setElementValue(_buildValueString(this.id, value));
 this._select.writeValue(this._select.value);
 }
 /**
 * @description
 * Tracks simple string values bound to
 the option element.
 * For objects, use the `ngValue` input binding.
 */
 @Input('value')
 set value(value:

```

```

any) {\n this._setElementValue(value);\n if (this._select) this._select.writeValue(this._select.value);\n } \n\n /**
@internal */\n _setElementValue(value: string): void {\n this._renderer.setProperty(this._element.nativeElement,
'value', value);\n } \n\n /** @nodoc */\n ngOnDestroy(): void {\n if (this._select) {\n
this._select._optionMap.delete(this.id);\n this._select.writeValue(this._select.value);\n } \n } \n\n", /**\n *
@license\n * Copyright Google LLC All Rights Reserved.\n * \n * Use of this source code is governed by an MIT-
style license that can be\n * found in the LICENSE file at https://angular.io/license\n */\n\nimport {Directive,
ElementRef, forwardRef, Host, Input, OnDestroy, Optional, Renderer2, StaticProvider} from
'@angular/core';\n\nimport {ControlValueAccessor, NG_VALUE_ACCESSOR} from
'./control_value_accessor';\n\nexport const SELECT_MULTIPLE_VALUE_ACCESSOR: StaticProvider = {\n
provide: NG_VALUE_ACCESSOR,\n useExisting: forwardRef(() => SelectMultipleControlValueAccessor),\n
multi: true\n};\n\nfunction _buildValueString(id: string, value: any): string {\n if (id == null) return `${value}`;\n if
(typeof value === 'string') value = `${value}`;\n if (value && typeof value === 'object') value = 'Object';\n return
`${id}: ${value}`.slice(0, 50);\n}\n\nfunction _extractId(valueString: string): string {\n return
valueString.split(':')[0];\n}\n\n/** Mock interface for HTML Options */\ninterface HTMLOption {\n value:
string;\n selected: boolean;\n}\n\n/** Mock interface for HTMLCollection */\nabstract class HTMLCollection {\n
// TODO(issue/24571): remove '!.\n length!: number;\n abstract item(_: number): HTMLOption;\n}\n\n/**\n *
@description\n * The `ControlValueAccessor` for writing multi-select control values and listening to multi-select\n
* control changes. The value accessor is used by the `FormControlDirective`, `FormControlName`, and\n *
`NgModel` directives.\n * \n * @see `SelectControlValueAccessor`\n * \n * @usageNotes\n * \n * ### Using a multi-
select control\n * \n * The follow example shows you how to use a multi-select control with a reactive form.\n * \n *
```\n * const countryControl = new FormControl();\n * <<\n * <select multiple name="countries"
[formControl]="countryControl">\n *   <option *ngFor="let country of countries" [ngValue]="country">\n *
{{ country.name }}\n * </option>\n * </select>\n * <<\n * \n * ### Customizing option selection\n * \n * To
customize the default option comparison algorithm, `<select>` supports `compareWith` input.\n * See the
`SelectControlValueAccessor` for usage.\n * \n * @ngModule ReactiveFormsModule\n * @ngModule
FormsModule\n * @publicApi\n */\n@Directive({\n  selector:\n
'select[multiple][formControlName],select[multiple][formControl],select[multiple][ngModel]',\n  host: {'(change)':
'onChange($event.target)', '(blur)': 'onTouched()' },\n  providers:
[[SELECT_MULTIPLE_VALUE_ACCESSOR]]\n})\nexport class SelectMultipleControlValueAccessor implements
ControlValueAccessor {\n  /**\n * The current value.\n * @nodoc\n */\n  value: any;\n\n  /** @internal */\n
_optionMap: Map<string, NgSelectMultipleOption> = new Map<string, NgSelectMultipleOption>();\n\n  /**
@internal */\n  _idCounter: number = 0;\n\n  /**\n * The registered callback function called when a change event
occurs on the input element.\n * @nodoc\n */\n  onChange = (_: any) => {};\n\n  /**\n * The registered callback
function called when a blur event occurs on the input element.\n * @nodoc\n */\n  onTouch = () => {};\n\n  /**\n *
@description\n * Tracks the option comparison algorithm for tracking identities when\n * checking for
changes.\n * \n * @Input()\n set compareWith(fn: (o1: any, o2: any) => boolean) {\n  if (typeof fn !== 'function'
&& (typeof ngDevMode === 'undefined' || ngDevMode)) {\n    throw new Error('compareWith must be a function,
but received ${JSON.stringify(fn)}');\n  }\n  this._compareWith = fn;\n }\n\n private _compareWith: (o1: any,
o2: any) => boolean = Object.is;\n\n constructor(private _renderer: Renderer2, private _elementRef: ElementRef)
{\n }\n\n /**\n * Sets the "value" property on one or of more of the select's options.\n * @nodoc\n */\n
writeValue(value: any): void {\n  this.value = value;\n  let optionSelectedStateSetter: (opt:
NgSelectMultipleOption, o: any) => void;\n  if (Array.isArray(value)) {\n    // convert values to ids\n    const ids
= value.map((v) => this._getOptionId(v));\n    optionSelectedStateSetter = (opt, o) => {\n
opt._setSelected(ids.indexOf(o.toString()) > -1);\n    }; \n  } else {\n    optionSelectedStateSetter = (opt, o) => {\n
opt._setSelected(false);\n    }; \n  }\n  this._optionMap.forEach(optionSelectedStateSetter);\n }\n\n /**\n *
Registers a function called when the control value changes\n * and writes an array of the selected options.\n *
@nodoc\n */\n registerOnChange(fn: (value: any) => any): void {\n  this.onChange = (_: any) => {\n    const
selected: Array<any> = [];\n    if (_.selectedOptions !== undefined) {\n      const options: HTMLCollection =

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_selectedOptions;\n    for (let i = 0; i < options.length; i++) {\n        const opt: any = options.item(i);\n        const val: any = this._getOptionValue(opt.value);\n        selected.push(val);\n    }\n    }\n    // Degrade on IE\n    else {\n        const options: HTMLCollection = <HTMLCollection>_options;\n        for (let i = 0; i <\n        options.length; i++) {\n            const opt: HTMLOption = options.item(i);\n            if (opt.selected) {\n                const\n                val: any = this._getOptionValue(opt.value);\n                selected.push(val);\n            }\n        }\n        this.value =\n        selected;\n        fn(selected);\n    };\n    }\n    /**\n     * Registers a function called when the control is touched.\n     * @nodoc\n     */\n    registerOnTouched(fn: () => any): void {\n        this.onTouched = fn;\n    }\n    /**\n     * Sets the\n     * `disabled` property on the select input element.\n     * @nodoc\n     */\n    setDisabledState(isDisabled: boolean): void\n    {\n        this._renderer.setProperty(this._elementRef.nativeElement, 'disabled', isDisabled);\n    }\n    /** @internal */\n    _registerOption(value: NgSelectMultipleOption): string {\n        const id: string = (this._idCounter++).toString();\n        this._optionMap.set(id, value);\n        return id;\n    }\n    /** @internal */\n    _getOptionId(value: any): string|null {\n        for (const id of Array.from(this._optionMap.keys())) {\n            if (this._compareWith(this._optionMap.get(id)!._value,\n            value)) return id;\n        }\n        return null;\n    }\n    /** @internal */\n    _getOptionValue(valueString: string): any {\n        const id: string = _extractId(valueString);\n        return this._optionMap.has(id) ? this._optionMap.get(id)!._value :\n        valueString;\n    }\n    /**\n     * @description\n     * Marks `<option>` as dynamic, so Angular can be notified when\n     * options change.\n     * @see `SelectMultipleControlValueAccessor`\n     * @ngModule ReactiveFormsModule\n     * @ngModule FormsModule\n     * @publicApi\n     */\n    @Directive({selector: 'option'})\n    export class\n    NgSelectMultipleOption implements OnDestroy {\n        // TODO(issue/24571): remove '!'.\n        id!: string;\n        /**\n         * @internal\n         */\n        _value: any;\n        constructor(\n            private _element: ElementRef, private _renderer: Renderer2,\n            @Optional() @Host() private _select: SelectMultipleControlValueAccessor) {\n            if (this._select) {\n                this.id =\n                this._select._registerOption(this);\n            }\n        }\n        /**\n         * @description\n         * Tracks the value bound to the option\n         * element. Unlike the value binding,\n         * ngValue supports binding to objects.\n         * @Input('ngValue')\n         */\n        set\n        ngValue(value: any) {\n            if (this._select == null) return;\n            this._value = value;\n            this._setElementValue(_buildValueString(this.id, value));\n            this._select.writeValue(this._select.value);\n        }\n        /**\n         * @description\n         * Tracks simple string values bound to the option element.\n         * For objects, use the\n         * `ngValue` input binding.\n         * @Input('value')\n         */\n        set\n        value(value: any) {\n            if (this._select) {\n                this._value =\n                value;\n                this._setElementValue(_buildValueString(this.id, value));\n            }\n            this._select.writeValue(this._select.value);\n        } else {\n            this._setElementValue(value);\n        }\n    }\n    /**\n     * @internal\n     */\n    _setElementValue(value: string): void {\n        this._renderer.setProperty(this._element.nativeElement,\n        'value', value);\n    }\n    /** @internal */\n    _setSelected(selected: boolean) {\n        this._renderer.setProperty(this._element.nativeElement, 'selected', selected);\n    }\n    /** @nodoc */\n    ngOnDestroy(): void {\n        if (this._select) {\n            this._select._optionMap.delete(this.id);\n            this._select.writeValue(this._select.value);\n        }\n    }\n    export {NgSelectMultipleOption as\n    NgSelectMultipleOption};\n    /**\n     * @license\n     * Copyright Google LLC All Rights Reserved.\n     * Use of this\n     * source code is governed by an MIT-style license that can be\n     * found in the LICENSE file at\n     * https://angular.io/license\n     */\n    import {isDevMode} from '@angular/core';\n    import {AbstractControl,\n    FormArray, FormControl, FormGroup} from './model';\n    import {getControlAsyncValidators, getControlValidators,\n    mergeValidators} from './validators';\n    import {AbstractControlDirective} from\n    './abstract_control_directive';\n    import {AbstractFormGroupDirective} from\n    './abstract_form_group_directive';\n    import {CheckboxControlValueAccessor} from\n    './checkbox_value_accessor';\n    import {ControlContainer} from './control_container';\n    import\n    {ControlValueAccessor} from './control_value_accessor';\n    import {DefaultValueAccessor} from\n    './default_value_accessor';\n    import {NgControl} from './ng_control';\n    import {NumberValueAccessor} from\n    './number_value_accessor';\n    import {RadioControlValueAccessor} from\n    './radio_control_value_accessor';\n    import\n    {RangeValueAccessor} from './range_value_accessor';\n    import {FormArrayName} from\n    './reactive_directives/form_group_name';\n    import {ReactiveErrors} from './reactive_errors';\n    import\n    {SelectControlValueAccessor} from './select_control_value_accessor';\n    import\n    {SelectMultipleControlValueAccessor} from './select_multiple_control_value_accessor';\n    import

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{ AsyncValidatorFn, Validator, ValidatorFn } from './validators';\n\n\nexport function controlPath(name: string|null,
parent: ControlContainer): string[] {\n  return [...parent.path!, name!];\n}\n\n\nexport function setUpControl(control:
FormControl, dir: NgControl): void {\n  if (typeof ngDevMode === 'undefined' || ngDevMode) {\n    if (!control)
_throwError(dir, 'Cannot find control with');\n    if (!dir.valueAccessor) _throwError(dir, 'No value accessor for form
control with');\n  }\n  setUpValidators(control, dir, /* handleOnValidatorChange */ true);\n  dir.valueAccessor!.writeValue(control.value);\n  setUpViewChangePipeline(control, dir);\n  setUpModelChangePipeline(control, dir);\n  setUpBlurPipeline(control, dir);\n  setUpDisabledChangeHandler(control, dir);\n}\n\n\nexport function cleanUpControl(control: FormControl|null, dir:
NgControl) {\n  const noop = () => {\n    if (typeof ngDevMode === 'undefined' || ngDevMode) {\n      _noControlError(dir);\n    }\n  };\n  dir.valueAccessor!.registerOnChange(noop);\n  dir.valueAccessor!.registerOnTouched(noop);\n  cleanUpValidators(control, dir, /* handleOnValidatorChange */
true);\n  if (control) {\n    dir._invokeOnDestroyCallbacks();\n    control._registerOnCollectionChange(() => {});\n  }\n}\n\n\nfunction registerOnValidatorChange<V>(validators: (V|Validator)[], onChange: () => void): void {\n  validators.forEach((validator: (V|Validator)) => {\n    if ((<Validator>validator).registerOnValidatorChange)\n    (<Validator>validator).registerOnValidatorChange!(onChange);\n  });\n}\n\n\n/**\n * Sets up disabled change handler function on a given form control if ControlValueAccessor\n * associated with a given directive instance supports the `setDisabledState` call.\n * @param control Form control where disabled change handler should be
setup.\n * @param dir Corresponding directive instance associated with this control.\n */\n\nexport function
setUpDisabledChangeHandler(control: FormControl, dir: NgControl): void {\n  if
(dir.valueAccessor!.setDisabledState) {\n    const onDisabledChange = (isDisabled: boolean) => {\n      dir.valueAccessor!.setDisabledState!(isDisabled);\n    };\n    control.registerOnDisabledChange(onDisabledChange);\n  }\n  // Register a callback function to cleanup disabled
change handler\n  // from a control instance when a directive is destroyed.\n  dir._registerOnDestroy(() => {\n    control._unregisterOnDisabledChange(onDisabledChange);\n  });\n}\n\n\n/**\n * Sets up sync and async directive validators on provided form control.\n * This function merges validators from the directive into the
validators of the control.\n * @param control Form control where directive validators should be setup.\n *
@param dir Directive instance that contains validators to be setup.\n * @param handleOnValidatorChange Flag that
determines whether directive validators should be setup\n * to handle validator input change.\n */\n\nexport
function setUpValidators(\n  control: AbstractControl, dir: AbstractControlDirective,\n  handleOnValidatorChange: boolean): void {\n  const validators = getControlValidators(control);\n  if (dir.validator
!== null) {\n    control.setValidators(mergeValidators<ValidatorFn>(validators, dir.validator));\n  } else if (typeof
validators === 'function') {\n    // If sync validators are represented by a single validator function, we force the\n    //
`Validators.compose` call to happen by executing the `setValidators` function with\n    // an array that contains that
function. We need this to avoid possible discrepancies in\n    // validators behavior, so sync validators are always
processed by the `Validators.compose`.\n    // Note: we should consider moving this logic inside the `setValidators`\n
function itself, so we\n    // have consistent behavior on AbstractControl API level. The same applies to the async\n
// validators logic below.\n    control.setValidators([validators]);\n  }\n  const asyncValidators =
getControlAsyncValidators(control);\n  if (dir.asyncValidator !== null) {\n    control.setAsyncValidators(\n      mergeValidators<AsyncValidatorFn>(asyncValidators, dir.asyncValidator));\n    } else if (typeof asyncValidators
=== 'function') {\n    control.setAsyncValidators([asyncValidators]);\n  }\n  // Re-run validation when validator
binding changes, e.g. minlength=3 -> minlength=4\n  if (handleOnValidatorChange) {\n    const onValidatorChange
= () => control.updateValueAndValidity();\n    registerOnValidatorChange<ValidatorFn>(dir._rawValidators,
onValidatorChange);\n    registerOnValidatorChange<AsyncValidatorFn>(dir._rawAsyncValidators,
onValidatorChange);\n  }\n}\n\n\n/**\n * Cleans up sync and async directive validators on provided form control.\n *
This function reverts the setup performed by the `setUpValidators` function, i.e.\n * removes directive-specific
validators from a given control instance.\n * @param control Form control from where directive validators
should be removed.\n * @param dir Directive instance that contains validators to be removed.\n * @param
handleOnValidatorChange Flag that determines whether directive validators should also be\n * cleaned up to stop

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handling validator input change (if previously configured to do so).\n */\nexport function cleanUpValidators(\n
control: AbstractControl|null, dir: AbstractControlDirective,\n  handleOnValidatorChange: boolean): void {\n  if
(control !== null) {\n    if (dir.validator !== null) {\n      const validators = getControlValidators(control);\n      if
(Array.isArray(validators) && validators.length > 0) {\n        // Filter out directive validator function.\n
control.setValidators(validators.filter(validator => validator !== dir.validator));\n      }\n    }\n    if
(dir.asyncValidator !== null) {\n      const asyncValidators = getControlAsyncValidators(control);\n      if
(Array.isArray(asyncValidators) && asyncValidators.length > 0) {\n        // Filter out directive async validator
function.\n        control.setAsyncValidators(\n          asyncValidators.filter(asyncValidator => asyncValidator !==
dir.asyncValidator));\n      }\n    }\n  }\n  if (handleOnValidatorChange) {\n    // Clear onValidatorChange
callbacks by providing a noop function.\n    const noop = () => {};\n    registerOnValidatorChange<ValidatorFn>(dir._rawValidators, noop);\n
registerOnValidatorChange<AsyncValidatorFn>(dir._rawAsyncValidators, noop);\n  }\n}\n\nfunction
setUpViewChangePipeline(control: FormControl, dir: NgControl): void {\n
dir.valueAccessor!.registerOnChange((newValue: any) => {\n  control._pendingValue = newValue;\n
control._pendingChange = true;\n  control._pendingDirty = true;\n  if (control.updateOn === 'change')
updateControl(control, dir);\n  });\n}\n\nfunction setUpBlurPipeline(control: FormControl, dir: NgControl): void {\n
dir.valueAccessor!.registerOnTouched(() => {\n  control._pendingTouched = true;\n  if (control.updateOn ===
'blur' && control._pendingChange) updateControl(control, dir);\n  if (control.updateOn !== 'submit')
control.markAsTouched();\n  });\n}\n\nfunction updateControl(control: FormControl, dir: NgControl): void {\n  if
(control._pendingDirty) control.markAsDirty();\n  control.setValue(control._pendingValue,\n    {emitModelToViewChange: false});\n  dir.viewToModelUpdate(control._pendingValue);\n
control._pendingChange = false;\n}\n\nfunction setUpModelChangePipeline(control: FormControl, dir: NgControl):
void {\n  const onChange = (newValue: any, emitModelEvent: boolean) => {\n    // control -> view\n
dir.valueAccessor!.writeValue(newValue);\n    // control -> ngModel\n    if (emitModelEvent)\n      dir.viewToModelUpdate(newValue);\n  }; \n  control.registerOnChange(onChange);\n  // Register a callback
function to cleanup onChange handler\n  // from a control instance when a directive is destroyed.\n
dir._registerOnDestroy(() => {\n  control._unregisterOnChange(onChange);\n  });\n}\n\nexport function
setUpFormContainer(\n  control: FormGroup|FormArray, dir: AbstractFormGroupDirective|FormArrayName) {\n
if (control === null && (typeof ngDevMode === 'undefined' || ngDevMode))\n  _throwError(dir, 'Cannot find
control with');\n  setUpValidators(control, dir, /* handleOnValidatorChange */ false);\n}\n\nfunction
_noControlError(dir: NgControl) {\n  return _throwError(dir, 'There is no FormControl instance attached to form
control element with');\n}\n\nfunction _throwError(dir: AbstractControlDirective, message: string): void {\n  let
messageEnd: string;\n  if (dir.path!.length > 1) {\n    messageEnd = `path: '${dir.path!.join(' -> ')}';\n  } else if
(dir.path![0]) {\n    messageEnd = `name: '${dir.path}'`; \n  } else {\n    messageEnd = 'unspecified name attribute';\n
  }\n  throw new Error(`${message} ${messageEnd}`);\n}\n\nexport function isPropertyUpdated(changes: {[key:
string]: any}, viewModel: any): boolean {\n  if (!changes.hasOwnProperty('model')) return false;\n  const change =
changes['model'];\n  if (change.isFirstChange()) return true;\n  return !Object.is(viewModel,\n    change.currentValue);\n}\n\nconst BUILTIN_ACCESSORS = [\n  CheckboxControlValueAccessor,\n
RangeValueAccessor,\n  NumberValueAccessor,\n  SelectControlValueAccessor,\n
SelectMultipleControlValueAccessor,\n  RadioControlValueAccessor,\n];\n\nexport function
isBuiltInAccessor(valueAccessor: ControlValueAccessor): boolean {\n  return BUILTIN_ACCESSORS.some(a =>
valueAccessor.constructor === a);\n}\n\nexport function syncPendingControls(form: FormGroup, directives:
NgControl[]): void {\n  form._syncPendingControls();\n  directives.forEach(dir => {\n    const control = dir.control
as FormControl;\n    if (control.updateOn === 'submit' && control._pendingChange) {\n
dir.viewToModelUpdate(control._pendingValue);\n    control._pendingChange = false;\n  }\n  });\n}\n\n// TODO:
vsavkin remove it once https://github.com/angular/angular/issues/3011 is implemented\nexport function
selectValueAccessor(\n  dir: NgControl, valueAccessors: ControlValueAccessor[]): ControlValueAccessor|null {\n
if (!valueAccessors) return null;\n  if (!Array.isArray(valueAccessors) && (typeof ngDevMode === 'undefined' ||

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ngDevMode))\n  _throwError(dir, 'Value accessor was not provided as an array for form control with');\n\n let
defaultAccessor: ControlValueAccessor|undefined = undefined;\n let builtinAccessor:
ControlValueAccessor|undefined = undefined;\n let customAccessor: ControlValueAccessor|undefined =
undefined;\n\n valueAccessors.forEach((v: ControlValueAccessor) => {\n  if (v.constructor ===
DefaultValidatorFn) {\n    defaultAccessor = v;\n\n  } else if (isBuiltinAccessor(v)) {\n    if (builtinAccessor
&& (typeof ngDevMode === 'undefined' || ngDevMode))\n      _throwError(dir, 'More than one built-in value
accessor matches form control with');\n    builtinAccessor = v;\n\n  } else {\n    if (customAccessor && (typeof
ngDevMode === 'undefined' || ngDevMode))\n      _throwError(dir, 'More than one custom value accessor matches
form control with');\n    customAccessor = v;\n  }\n});\n\n if (customAccessor) return customAccessor;\n if
(builtinAccessor) return builtinAccessor;\n if (defaultAccessor) return defaultAccessor;\n\n if (typeof ngDevMode
=== 'undefined' || ngDevMode) {\n  _throwError(dir, 'No valid value accessor for form control with');\n }\n return
null;\n}\n\nexport function removeListItem<T>(list: T[], el: T): void {\n  const index = list.indexOf(el);\n  if (index
> -1) list.splice(index, 1);\n}\n\n// TODO(kara): remove after deprecation period\nexport function
_ngModelWarning(\n  name: string, type: { _ngModelWarningSentOnce: boolean },\n  instance:
{ _ngModelWarningSent: boolean }, warningConfig: string|null) {\n  if (!isDevMode() || warningConfig === 'never')
return;\n  if (((warningConfig === null || warningConfig === 'once') && !type._ngModelWarningSentOnce) ||\n  (warningConfig === 'always' && !instance._ngModelWarningSent)) {\n    if (typeof ngDevMode === 'undefined' ||
ngDevMode) {\n      ReactiveErrors.ngModelWarning(name);\n    }\n    type._ngModelWarningSentOnce = true;\n  }\n  instance._ngModelWarningSent = true;\n }\n}\n\n"/**\n * @license\n * Copyright Google LLC All Rights
Reserved.\n * Use of this source code is governed by an MIT-style license that can be\n * found in the
LICENSE file at https://angular.io/license\n */\n\nimport {EventEmitter} from '@angular/core';\nimport
{Observable} from 'rxjs';\nimport {removeListItem} from './directives/shared';\nimport {AsyncValidatorFn,
ValidationErrors, ValidatorFn} from './directives/validators';\nimport {composeAsyncValidators,
composeValidators, toObservable} from './validators';\n\n/**\n * Reports that a FormControl is valid, meaning that
no errors exist in the input value.\n * @see `status`\n */\nexport const VALID = 'VALID';\n\n/**\n * Reports
that a FormControl is invalid, meaning that an error exists in the input value.\n * @see `status`\n */\nexport
const INVALID = 'INVALID';\n\n/**\n * Reports that a FormControl is pending, meaning that that async validation
is occurring and\n * errors are not yet available for the input value.\n * @see `markAsPending`\n * @see
`status`\n */\nexport const PENDING = 'PENDING';\n\n/**\n * Reports that a FormControl is disabled, meaning
that the control is exempt from ancestor\n * calculations of validity or value.\n * @see `markAsDisabled`\n *
@see `status`\n */\nexport const DISABLED = 'DISABLED';\n\nfunction _find(control: AbstractControl, path:
Array<string|number>|string, delimiter: string) {\n  if (path === null) return null;\n  if (!Array.isArray(path)) {\n
  path = path.split(delimiter);\n  }\n  if (Array.isArray(path) && path.length === 0) return null;\n  // Not using
Array.reduce here due to a Chrome 80 bug\n  // https://bugs.chromium.org/p/chromium/issues/detail?id=1049982\n
let controlToFind: AbstractControl|null = control;\n  path.forEach((name: string|number) => {\n    if (controlToFind
instanceof FormGroup) {\n      controlToFind = controlToFind.controls.hasOwnProperty(name as string) ?\n
      controlToFind.controls[name] :\n      null;\n    } else if (controlToFind instanceof FormArray) {\n
      controlToFind = controlToFind.at(<number>name) || null;\n    } else {\n      controlToFind = null;\n    }\n  });\n
return controlToFind;\n}\n\n/**\n * Gets validators from either an options object or given validators.\n */\nfunction
pickValidators(validatorOrOpts?: ValidatorFn|ValidatorFn[]|AbstractControlOptions|\n  null):
ValidatorFn|ValidatorFn[]|null {\n  return (isOptionsObj(validatorOrOpts) ? validatorOrOpts.validators :\n  validatorOrOpts) || null;\n}\n\n/**\n * Creates validator function by combining provided validators.\n */\nfunction
coerceToValidator(validator: ValidatorFn|ValidatorFn[]|null): ValidatorFn|null {\n  return Array.isArray(validator) ?
composeValidators(validator) : validator || null;\n}\n\n/**\n * Gets async validators from either an options object or
given validators.\n */\nfunction pickAsyncValidators(\n  asyncValidator?:
AsyncValidatorFn|AsyncValidatorFn[]|null,\n  validatorOrOpts?:
ValidatorFn|ValidatorFn[]|AbstractControlOptions|null): AsyncValidatorFn|\n  AsyncValidatorFn[]|null {\n  return
(isOptionsObj(validatorOrOpts) ? validatorOrOpts.asyncValidators : asyncValidator) || null;\n}\n\n/**\n * Creates

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async validator function by combining provided async validators.\n */\nfunction
coerceToAsyncValidator(asyncValidator?: AsyncValidatorFn|AsyncValidatorFn[]|null):
AsyncValidatorFn|null {\n  return Array.isArray(asyncValidator) ? composeAsyncValidators(asyncValidator) :\n    asyncValidator || null;\n}\n\nexport type FormHooks = 'change'|'blur'|'submit';\n\n/**\n *
Interface for options provided to an `AbstractControl`.\n */\n * @publicApi\n */\nexport interface
AbstractControlOptions {\n  /**\n   * @description\n   * The list of validators applied to a control.\n   */\n  validators?: ValidatorFn|ValidatorFn[]|null;\n  /**\n   * @description\n   * The list of async validators applied to
control.\n   */\n  asyncValidators?: AsyncValidatorFn|AsyncValidatorFn[]|null;\n  /**\n   * @description\n   * The
event name for control to update upon.\n   */\n  updateOn?: 'change'|'blur'|'submit';\n}\n\nfunction
isOptionsObj(validatorOrOpts?: ValidatorFn|ValidatorFn[]|AbstractControlOptions|
null):
validatorOrOpts is AbstractControlOptions {\n  return validatorOrOpts != null && !Array.isArray(validatorOrOpts)
&&\n  typeof validatorOrOpts === 'object';\n}\n\n/**\n * This is the base class for `FormControl`,
`FormGroup`, and `FormArray`.\n */\n * It provides some of the shared behavior that all controls and groups of
controls have, like\n * running validators, calculating status, and resetting state. It also defines the properties\n * that
are shared between all sub-classes, like `value`, `valid`, and `dirty`. It shouldn't be\n * instantiated directly.\n */\n *
@see [Forms Guide](/guide/forms)\n * @see [Reactive Forms Guide](/guide/reactive-forms)\n * @see [Dynamic
Forms Guide](/guide/dynamic-form)\n */\n * @publicApi\n */\nexport abstract class AbstractControl {\n  /**
@internal */\n  // TODO(issue/24571): remove '!.\n  _pendingDirty!: boolean;\n\n  /**\n   * Indicates that a control
has its own pending asynchronous validation in progress.\n   */\n   * @internal\n   */\n  _hasOwnPendingAsyncValidator = false;\n\n  /**\n   * @internal */\n  // TODO(issue/24571): remove '!.\n  _pendingTouched!: boolean;\n\n  /**\n   * @internal */\n  _onCollectionChange = () => {};\n\n  /**\n   * @internal */\n  //
TODO(issue/24571): remove '!.\n  _updateOn!: FormHooks;\n\n  private _parent: FormGroup|FormArray|null =
null;\n  private _asyncValidationSubscription: any;\n\n  /**\n   * Contains the result of merging synchronous
validators into a single validator function\n   * (combined using `Validators.compose`).\n   */\n   * @internal\n   */\n  private _composedValidatorFn: ValidatorFn|null;\n\n  /**\n   * Contains the result of merging asynchronous
validators into a single validator function\n   * (combined using `Validators.composeAsync`).\n   */\n   * @internal\n   */\n  private _composedAsyncValidatorFn: AsyncValidatorFn|null;\n\n  /**\n   * Synchronous validators as they
were provided:\n   * - in `AbstractControl` constructor\n   * - as an argument while calling `setValidators`\n   *
function\n   * - while calling the setter on the `validator` field (e.g. `control.validator = validatorFn`)\n   */\n   *
@internal\n   */\n  private _rawValidators: ValidatorFn|ValidatorFn[]|null;\n\n  /**\n   * Asynchronous validators as
they were provided:\n   * - in `AbstractControl` constructor\n   * - as an argument while calling
`setAsyncValidators`\n   * function\n   * - while calling the setter on the `asyncValidator` field (e.g.
`control.asyncValidator =\n   * asyncValidatorFn`)\n   */\n   * @internal\n   */\n  private _rawAsyncValidators:
AsyncValidatorFn|AsyncValidatorFn[]|null;\n\n  /**\n   * The current value of the control.\n   */\n   * * For a
`FormControl`, the current value.\n   * * For an enabled `FormGroup`, the values of enabled controls as an object\n
* with a key-value pair for each member of the group.\n   * * For a disabled `FormGroup`, the values of all controls
as an object\n   * with a key-value pair for each member of the group.\n   * * For a `FormArray`, the values of
enabled controls as an array.\n   */\n   */\n  public readonly value: any;\n\n  /**\n   * Initialize the AbstractControl
instance.\n   */\n   * @param validators The function or array of functions that is used to determine the validity of\n
* this control synchronously.\n   * @param asyncValidators The function or array of functions that is used to
determine validity of\n   * this control asynchronously.\n   */\n  constructor(\n    validators:
ValidatorFn|ValidatorFn[]|null,\n    asyncValidators: AsyncValidatorFn|AsyncValidatorFn[]|null) {\n
this._rawValidators = validators;\n  this._rawAsyncValidators = asyncValidators;\n  this._composedValidatorFn =
coerceToValidator(this._rawValidators);\n  this._composedAsyncValidatorFn =
coerceToAsyncValidator(this._rawAsyncValidators);\n  }\n\n  /**\n   * The function that is used to determine the
validity of this control synchronously.\n   */\n  get validator(): ValidatorFn|null {\n    return
this._composedValidatorFn;\n  }\n  set validator(validatorFn: ValidatorFn|null) {\n    this._rawValidators =
this._composedValidatorFn = validatorFn;\n  }\n\n  /**\n   * The function that is used to determine the validity of

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this control asynchronously.\n *^/n get asyncValidator(): AsyncValidatorFn|null {\n return
this._composedAsyncValidatorFn;\n }\n set asyncValidator(asyncValidatorFn: AsyncValidatorFn|null) {\n
this._rawAsyncValidators = this._composedAsyncValidatorFn = asyncValidatorFn;\n }\n\n /**\n * The parent
control.\n *^/n get parent(): FormGroup|FormArray|null {\n return this._parent;\n }\n\n /**\n * The validation
status of the control. There are four possible\n * validation status values:\n * \n * **VALID**: This control has
passed all validation checks.\n * **INVALID**: This control has failed at least one validation check.\n * \n
* **PENDING**: This control is in the midst of conducting a validation check.\n * **DISABLED**: This control
is exempt from validation checks.\n * \n * These status values are mutually exclusive, so a control cannot be\n *
both valid AND invalid or invalid AND disabled.\n *^/n // TODO(issue/24571): remove '!.\n public readonly
status!: string;\n\n /**\n * A control is `valid` when its `status` is `VALID`.\n * \n * @see {@link
AbstractControl.status}\n * \n * @returns True if the control has passed all of its validation tests,\n * false
otherwise.\n *^/n get valid(): boolean {\n return this.status === VALID;\n }\n\n /**\n * A control is `invalid`
when its `status` is `INVALID`.\n * \n * @see {@link AbstractControl.status}\n * \n * @returns True if this
control has failed one or more of its validation checks,\n * false otherwise.\n *^/n get invalid(): boolean {\n
return this.status === INVALID;\n }\n\n /**\n * A control is `pending` when its `status` is `PENDING`.\n * \n
* @see {@link AbstractControl.status}\n * \n * @returns True if this control is in the process of conducting a
validation check,\n * false otherwise.\n *^/n get pending(): boolean {\n return this.status === PENDING;\n }\n\n
/**\n * A control is `disabled` when its `status` is `DISABLED`.\n * \n * Disabled controls are exempt from
validation checks and\n * are not included in the aggregate value of their ancestor\n * controls.\n * \n * @see
{@link AbstractControl.status}\n * \n * @returns True if the control is disabled, false otherwise.\n *^/n get
disabled(): boolean {\n return this.status === DISABLED;\n }\n\n /**\n * A control is `enabled` as long as its
`status` is not `DISABLED`.\n * \n * @returns True if the control has any status other than `DISABLED`,\n *
false if the status is `DISABLED`.\n * \n * @see {@link AbstractControl.status}\n * \n *^/n get enabled():
boolean {\n return this.status !== DISABLED;\n }\n\n /**\n * An object containing any errors generated by
failing validation,\n * or null if there are no errors.\n *^/n // TODO(issue/24571): remove '!.\n public readonly
errors!: ValidationErrors|null;\n\n /**\n * A control is `pristine` if the user has not yet changed\n * the value in
the UI.\n * \n * @returns True if the user has not yet changed the value in the UI; compare `dirty`.\n * \n
* Programmatic changes to a control's value do not mark it dirty.\n *^/n public readonly pristine: boolean = true;\n\n
/**\n * A control is `dirty` if the user has changed the value\n * in the UI.\n * \n * @returns True if the user has
changed the value of this control in the UI; compare `pristine`.\n * \n * Programmatic changes to a control's value do
not mark it dirty.\n *^/n get dirty(): boolean {\n return !this.pristine;\n }\n\n /**\n * True if the control is
marked as `touched`.\n * \n * A control is marked `touched` once the user has triggered\n * a `blur` event on it.\n
*^/n public readonly touched: boolean = false;\n\n /**\n * True if the control has not been marked as touched\n
* \n * A control is `untouched` if the user has not yet triggered\n * a `blur` event on it.\n *^/n get untouched():
boolean {\n return !this.touched;\n }\n\n /**\n * A multicasting observable that emits an event every time the
value of the control changes, in\n * the UI or programmatically. It also emits an event each time you call enable()
or disable()\n * without passing along {emitEvent: false} as a function argument.\n *^/n // TODO(issue/24571):
remove '!.\n public readonly valueChanges!: Observable<any>;\n\n /**\n * A multicasting observable that emits
an event every time the validation `status` of the control\n * recalculates.\n * \n * @see {@link
AbstractControl.status}\n * \n *^/n // TODO(issue/24571): remove '!.\n public readonly statusChanges!:
Observable<any>;\n\n /**\n * Reports the update strategy of the `AbstractControl` (meaning\n * the event on
which the control updates itself).\n * \n * Possible values: `change` | `blur` | `submit`\n * \n * Default value: `change`\n
*^/n get updateOn(): FormHooks {\n return this._updateOn ? this._updateOn : (this.parent ? this.parent.updateOn
: 'change');\n }\n\n /**\n * Sets the synchronous validators that are active on this control. Calling\n * this
overwrites any existing sync validators.\n * \n * When you add or remove a validator at run time, you must call\n
* `updateValueAndValidity()` for the new validation to take effect.\n * \n *^/n setValidators(newValidator:
ValidatorFn|ValidatorFn[]|null): void {\n this._rawValidators = newValidator;\n this._composedValidatorFn =
coerceToValidator(newValidator);\n }\n\n /**\n * Sets the async validators that are active on this control. Calling

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this\n * overwrites any existing async validators.\n *\n * When you add or remove a validator at run time, you
must call\n * `updateValueAndValidity()` for the new validation to take effect.\n *\n *\n
setAsyncValidators(newValidator: AsyncValidatorFn|AsyncValidatorFn[]|null): void {\n
this._rawAsyncValidators = newValidator;\n this._composedAsyncValidatorFn =
coerceToAsyncValidator(newValidator);\n }\n\n /**\n * Empties out the sync validator list.\n *\n * When you
add or remove a validator at run time, you must call\n * `updateValueAndValidity()` for the new validation to take
effect.\n *\n *\n clearValidators(): void {\n this.validator = null;\n }\n\n /**\n * Empties out the async
validator list.\n *\n * When you add or remove a validator at run time, you must call\n *
`updateValueAndValidity()` for the new validation to take effect.\n *\n *\n clearAsyncValidators(): void {\n
this.asyncValidator = null;\n }\n\n /**\n * Marks the control as `touched`. A control is touched by focus and\n *
blur events that do not change the value.\n *\n * @see `markAsUntouched()`\n * @see `markAsDirty()`\n *
@see `markAsPristine()`\n *\n * @param opts Configuration options that determine how the control propagates
changes\n * and emits events after marking is applied.\n * * `onlySelf`: When true, mark only this control. When
false or not supplied,\n * marks all direct ancestors. Default is false.\n */\n markAsTouched(opts: {onlySelf?:
boolean} = {}): void {\n (this as {touched: boolean}).touched = true;\n\n if (this._parent && !opts.onlySelf) {\n
this._parent.markAsTouched(opts);\n }\n }\n\n /**\n * Marks the control and all its descendant controls as
`touched`.\n * @see `markAsTouched()`\n */\n markAllAsTouched(): void {\n this.markAsTouched({onlySelf:
true});\n\n this._forEachChild((control: AbstractControl) => control.markAllAsTouched());\n }\n\n /**\n *
Marks the control as `untouched`.\n *\n * If the control has any children, also marks all children as `untouched`\n
* and recalculates the `touched` status of all parent controls.\n *\n * @see `markAsTouched()`\n * @see
`markAsDirty()`\n * @see `markAsPristine()`\n *\n * @param opts Configuration options that determine how
the control propagates changes\n * and emits events after the marking is applied.\n * * `onlySelf`: When true,
mark only this control. When false or not supplied,\n * marks all direct ancestors. Default is false.\n */\n
markAsUntouched(opts: {onlySelf?: boolean} = {}): void {\n (this as {touched: boolean}).touched = false;\n
this._pendingTouched = false;\n\n this._forEachChild((control: AbstractControl) => {\n
control.markAsUntouched({onlySelf: true});\n });\n\n if (this._parent && !opts.onlySelf) {\n
this._parent._updateTouched(opts);\n }\n }\n\n /**\n * Marks the control as `dirty`. A control becomes dirty
when\n * the control's value is changed through the UI; compare `markAsTouched`.\n *\n * @see
`markAsTouched()`\n * @see `markAsUntouched()`\n * @see `markAsPristine()`\n *\n * @param opts
Configuration options that determine how the control propagates changes\n * and emits events after marking is
applied.\n * * `onlySelf`: When true, mark only this control. When false or not supplied,\n * marks all direct
ancestors. Default is false.\n */\n markAsDirty(opts: {onlySelf?: boolean} = {}): void {\n (this as {pristine:
boolean}).pristine = false;\n\n if (this._parent && !opts.onlySelf) {\n this._parent.markAsDirty(opts);\n }\n
}\n\n /**\n * Marks the control as `pristine`.\n *\n * If the control has any children, marks all children as
`pristine`,\n * and recalculates the `pristine` status of all parent\n * controls.\n *\n * @see
`markAsTouched()`\n * @see `markAsUntouched()`\n * @see `markAsDirty()`\n *\n * @param opts
Configuration options that determine how the control emits events after\n * marking is applied.\n * * `onlySelf`:
When true, mark only this control. When false or not supplied,\n * marks all direct ancestors. Default is false.\n
*/\n markAsPristine(opts: {onlySelf?: boolean} = {}): void {\n (this as {pristine: boolean}).pristine = true;\n
this._pendingDirty = false;\n\n this._forEachChild((control: AbstractControl) => {\n
control.markAsPristine({onlySelf: true});\n });\n\n if (this._parent && !opts.onlySelf) {\n
this._parent._updatePristine(opts);\n }\n }\n\n /**\n * Marks the control as `pending`.\n *\n * A control is
pending while the control performs async validation.\n *\n * @see {@link AbstractControl.status}\n *\n *
@param opts Configuration options that determine how the control propagates changes and\n * emits events after
marking is applied.\n * * `onlySelf`: When true, mark only this control. When false or not supplied,\n * marks all
direct ancestors. Default is false.\n * * `emitEvent`: When true or not supplied (the default), the `statusChanges`\n
* observable emits an event with the latest status the control is marked pending.\n * When false, no events are
emitted.\n *\n */\n markAsPending(opts: {onlySelf?: boolean, emitEvent?: boolean} = {}): void {\n (this as

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{status: string}).status = PENDING;\n\n  if (opts.emitEvent !== false) {\n    (this.statusChanges as
EventEmitter<any>).emit(this.status);\n  }\n\n  if (this._parent && !opts.onlySelf) {\n
this._parent.markAsPending(opts);\n  }\n}\n\n/**\n * Disables the control. This means the control is exempt
from validation checks and\n * excluded from the aggregate value of any parent. Its status is `DISABLED`.\n *\n * If the control has children, all children are also disabled.\n *\n * @see {@link AbstractControl.status}\n *\n * @param opts Configuration options that determine how the control propagates\n * changes and emits events after
the control is disabled.\n * * `onlySelf`: When true, mark only this control. When false or not supplied,\n * marks all direct ancestors. Default is false.\n * * `emitEvent`: When true or not supplied (the default), both the
`statusChanges` and\n * `valueChanges`\n * observables emit events with the latest status and value when the
control is disabled.\n * When false, no events are emitted.\n */\n  disable(opts: {onlySelf?: boolean, emitEvent?:
boolean} = {}): void {\n    // If parent has been marked artificially dirty we don't want to re-calculate the\n    //
parent's dirtiness based on the children.\n    const skipPristineCheck = this._parentMarkedDirty(opts.onlySelf);\n
(this as {status: string}).status = DISABLED;\n    (this as {errors: ValidationErrors | null}).errors = null;\n
this._forEachChild((control: AbstractControl) => {\n    control.disable({...opts, onlySelf: true});\n  });\n
this._updateValue();\n\n  if (opts.emitEvent !== false) {\n    (this.valueChanges as
EventEmitter<any>).emit(this.value);\n    (this.statusChanges as EventEmitter<string>).emit(this.status);\n  }\n
this._updateAncestors({...opts, skipPristineCheck});\n  this._onDisabledChange.forEach((changeFn =>
changeFn(true));\n  }\n}\n\n/**\n * Enables the control. This means the control is included in validation checks and\n
* the aggregate value of its parent. Its status recalculates based on its value and\n * its validators.\n *\n * By
default, if the control has children, all children are enabled.\n *\n * @see {@link AbstractControl.status}\n *\n * @param opts Configure options that control how the control propagates changes and\n * emits events when
marked as untouched\n * * `onlySelf`: When true, mark only this control. When false or not supplied,\n * marks all direct ancestors. Default is false.\n * * `emitEvent`: When true or not supplied (the default), both the
`statusChanges` and\n * `valueChanges`\n * observables emit events with the latest status and value when the
control is enabled.\n * When false, no events are emitted.\n */\n  enable(opts: {onlySelf?: boolean, emitEvent?:
boolean} = {}): void {\n    // If parent has been marked artificially dirty we don't want to re-calculate the\n    //
parent's dirtiness based on the children.\n    const skipPristineCheck = this._parentMarkedDirty(opts.onlySelf);\n
(this as {status: string}).status = VALID;\n    this._forEachChild((control: AbstractControl) => {\n
control.enable({...opts, onlySelf: true});\n  });\n    this.updateValueAndValidity({onlySelf: true, emitEvent:
opts.emitEvent});\n    this._updateAncestors({...opts, skipPristineCheck});\n
this._onDisabledChange.forEach((changeFn => changeFn(false));\n  }\n}\n\n  private _updateAncestors(\n    opts:
{onlySelf?: boolean, emitEvent?: boolean, skipPristineCheck?: boolean}) {\n    if (this._parent && !opts.onlySelf)
{\n      this._parent.updateValueAndValidity(opts);\n      if (!opts.skipPristineCheck) {\n
this._parent._updatePristine();\n      }\n      this._parent._updateTouched();\n    }\n  }\n}\n\n/**\n * @param parent
Sets the parent of the control\n *\n setParent(parent: FormGroup|FormArray): void {\n  this._parent = parent;\n
}\n\n/**\n * Sets the value of the control. Abstract method (implemented in sub-classes).\n *\n abstract
setValue(value: any, options?: Object): void;\n\n/**\n * Patches the value of the control. Abstract method
(implemented in sub-classes).\n *\n abstract patchValue(value: any, options?: Object): void;\n\n/**\n * Resets
the control. Abstract method (implemented in sub-classes).\n *\n abstract reset(value?: any, options?: Object):
void;\n\n/**\n * Recalculates the value and validation status of the control.\n *\n * By default, it also updates
the value and validity of its ancestors.\n *\n * @param opts Configuration options determine how the control
propagates changes and emits events\n * after updates and validity checks are applied.\n * * `onlySelf`: When
true, only update this control. When false or not supplied,\n * update all direct ancestors. Default is false.\n * *
`emitEvent`: When true or not supplied (the default), both the `statusChanges` and\n * `valueChanges`\n *
observables emit events with the latest status and value when the control is updated.\n * When false, no events are
emitted.\n */\n  updateValueAndValidity(opts: {onlySelf?: boolean, emitEvent?: boolean} = {}): void {\n
this._setInitialStatus();\n  this._updateValue();\n\n  if (this.enabled) {\n    this._cancelExistingSubscription();\n
(this as {errors: ValidationErrors | null}).errors = this._runValidator();\n    (this as {status: string}).status =

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this._calculateStatus();\n\n    if (this.status === VALID || this.status === PENDING) {\n
this._runAsyncValidator(opts.emitEvent);\n    }\n\n    if (opts.emitEvent !== false) {\n    (this.valueChanges
as EventEmitter<any>).emit(this.value);\n    (this.statusChanges as EventEmitter<string>).emit(this.status);\n
}\n\n    if (this._parent && !opts.onlySelf) {\n    this._parent.updateValueAndValidity(opts);\n    }\n\n    /**
@internal *\n    _updateTreeValidity(opts: {emitEvent?: boolean} = {emitEvent: true}) {\n
this._forEachChild((ctrl: AbstractControl) => ctrl._updateTreeValidity(opts));\n
this.updateValueAndValidity({onlySelf: true, emitEvent: opts.emitEvent});\n    }\n\n    private _setInitialStatus() {\n
(this as {status: string}).status = this._allControlsDisabled() ? DISABLED : VALID;\n    }\n\n    private
_runValidator(): ValidationErrors|null {\n    return this.validator ? this.validator(this) : null;\n    }\n\n    private
_runAsyncValidator(emitEvent?: boolean): void {\n    if (this.asyncValidator) {\n    (this as {status: string}).status
= PENDING;\n    this._hasOwnPendingAsyncValidator = true;\n    const obs =
toObservable(this.asyncValidator(this));\n    this._asyncValidationSubscription = obs.subscribe((errors:
ValidationErrors|null) => {\n    this._hasOwnPendingAsyncValidator = false;\n    // This will trigger the
recalculation of the validation status, which depends on\n    // the state of the asynchronous validation (whether it
is in progress or not). So, it is\n    // necessary that we have updated the `_hasOwnPendingAsyncValidator`
boolean flag first.\n    this.setErrors(errors, {emitEvent});\n    });\n    }\n\n    private
_cancelExistingSubscription(): void {\n    if (this._asyncValidationSubscription) {\n
this._asyncValidationSubscription.unsubscribe();\n    this._hasOwnPendingAsyncValidator = false;\n    }\n\n    /**\n    * Sets errors on a form control when running validations manually, rather than automatically.\n    *\n    *
Calling `setErrors` also updates the validity of the parent control.\n    *\n    * @usageNotes\n    *\n    * ### Manually
set the errors for a control\n    *\n    * ```\n    * const login = new FormControl('someLogin');\n    * login.setErrors({\n
* notUnique: true\n    * });\n    *\n    * expect(login.valid).toEqual(false);\n    * expect(login.errors).toEqual({\n
* notUnique: true\n    * });\n    *\n    * login.setValue('someOtherLogin');\n    *\n    * expect(login.valid).toEqual(true);\n    *
```*\n    */\n    setErrors(errors: ValidationErrors|null, opts: {emitEvent?: boolean} = {}): void {\n    (this as {errors:
ValidationErrors | null}).errors = errors;\n this._updateControlsErrors(opts.emitEvent !== false);\n }\n\n /**\n *
Retrieves a child control given the control's name or path.\n *\n * @param path A dot-delimited string or array of
string/number values that define the path to the\n * control.\n *\n * @usageNotes\n * ### Retrieve a nested
control\n *\n * For example, to get a `name` control nested within a `person` sub-group:\n *\n * *
`\n * this.form.get('person.name');`\n *\n * -OR-\n *\n * *`\n * this.form.get(['person', 'name']);`\n *\n */\n get(path:
Array<string|number>|string): AbstractControl|null {\n return _find(this, path, '.');\n }\n\n /**\n *
@description\n * Reports error data for the control with the given path.\n *\n * @param errorCode The code of
the error to check\n * @param path A list of control names that designates how to move from the current control\n
* to the control that should be queried for errors.\n *\n * @usageNotes\n * For example, for the following
`FormGroup`:\n *\n * ```\n * form = new FormGroup({\n * address: new FormGroup({ street: new
FormControl() })\n * });\n * ```*\n */\n The path to the 'street' control from the root form would be 'address' ->
'street'.\n *\n * It can be provided to this method in one of two formats:\n *\n * 1. An array of string control
names, e.g. `['address', 'street']`\n * 1. A period-delimited list of control names in one string, e.g. `address.street`\n
*\n * @returns error data for that particular error. If the control or error is not present,\n * null is returned.\n */\n getError(errorCode: string, path?: Array<string|number>|string): any {\n const control = path ? this.get(path) :
this;\n return control && control.errors ? control.errors[errorCode] : null;\n }\n\n /**\n *
@description\n * Reports whether the control with the given path has the error specified.\n *\n * @param errorCode The code of
the error to check\n * @param path A list of control names that designates how to move from the current control\n
* to the control that should be queried for errors.\n *\n * @usageNotes\n * For example, for the following
`FormGroup`:\n *\n * ```\n * form = new FormGroup({\n * address: new FormGroup({ street: new
FormControl() })\n * });\n * ```*\n */\n The path to the 'street' control from the root form would be 'address' ->
'street'.\n *\n * It can be provided to this method in one of two formats:\n *\n * 1. An array of string control
names, e.g. `['address', 'street']`\n * 1. A period-delimited list of control names in one string, e.g. `address.street`\n
*\n * If no path is given, this method checks for the error on the current control.\n *\n * @returns whether the

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given error is present in the control at the given path.\n * \n * If the control is not present, false is returned.\n * \n
hasError(errorCode: string, path?: Array<string|number>|string): boolean {\n return !!this.getError(errorCode,
path);\n }\n\n /** \n * Retrieves the top-level ancestor of this control.\n * \n get root(): AbstractControl {\n let
x: AbstractControl = this;\n\n while (x._parent) {\n x = x._parent;\n }\n\n return x;\n }\n\n /** @internal
*\n _updateControlsErrors(emitEvent: boolean): void {\n (this as {status: string}).status =
this._calculateStatus();\n\n if (emitEvent) {\n (this.statusChanges as EventEmitter<string>).emit(this.status);\n
}\n\n if (this._parent) {\n this._parent._updateControlsErrors(emitEvent);\n }\n }\n\n /** @internal *\n
_initObservables() {\n (this as {valueChanges: Observable<any>}).valueChanges = new EventEmitter();\n (this
as {statusChanges: Observable<any>}).statusChanges = new EventEmitter();\n }\n\n\n private _calculateStatus():
string {\n if (this._allControlsDisabled()) return DISABLED;\n if (this.errors) return INVALID;\n if
(this._hasOwnPendingAsyncValidator || this._anyControlsHaveStatus(PENDING)) return PENDING;\n if
(this._anyControlsHaveStatus(INVALID)) return INVALID;\n return VALID;\n }\n\n /** @internal *\n
abstract _updateValue(): void;\n\n /** @internal *\n abstract _forEachChild(cb: Function): void;\n\n /**
@internal *\n abstract _anyControls(condition: Function): boolean;\n\n /** @internal *\n abstract
_allControlsDisabled(): boolean;\n\n /** @internal *\n abstract _syncPendingControls(): boolean;\n\n /**
@internal *\n _anyControlsHaveStatus(status: string): boolean {\n return this._anyControls((control:
AbstractControl) => control.status === status);\n }\n\n /** @internal *\n _anyControlsDirty(): boolean {\n
return this._anyControls((control: AbstractControl) => control.dirty);\n }\n\n /** @internal *\n
_anyControlsTouched(): boolean {\n return this._anyControls((control: AbstractControl) => control.touched);\n
}\n\n /** @internal *\n _updatePristine(opts: {onlySelf?: boolean} = {}): void {\n (this as {pristine:
boolean}).pristine = !this._anyControlsDirty();\n\n if (this._parent && !opts.onlySelf) {\n
this._parent._updatePristine(opts);\n }\n }\n\n /** @internal *\n _updateTouched(opts: {onlySelf?: boolean} =
{}): void {\n (this as {touched: boolean}).touched = this._anyControlsTouched();\n\n if (this._parent &&
!opts.onlySelf) {\n this._parent._updateTouched(opts);\n }\n }\n\n /** @internal *\n _onDisabledChange:
Function[] = [];\n\n /** @internal *\n _isBoxedValue(formState: any): boolean {\n return typeof formState ===
'object' && formState !== null &&\n Object.keys(formState).length === 2 && 'value' in formState &&
'disabled' in formState;\n }\n\n /** @internal *\n _registerOnCollectionChange(fn: () => void): void {\n
this._onCollectionChange = fn;\n }\n\n /** @internal *\n _setUpdateStrategy(opts?:
ValidatorFn|ValidatorFn[]|AbstractControlOptions|null): void {\n if (isOptionsObj(opts) && opts.updateOn !=
null) {\n this._updateOn = opts.updateOn!;\n }\n }\n\n /** \n * Check to see if parent has been marked
artificially dirty.\n * \n * @internal \n * \n private _parentMarkedDirty(onlySelf?: boolean): boolean {\n const
parentDirty = this._parent && this._parent.dirty;\n return !onlySelf && !!parentDirty &&
!this._parent!._anyControlsDirty();\n }\n\n\n /** \n * Tracks the value and validation status of an individual form
control.\n * \n * This is one of the three fundamental building blocks of Angular forms, along with \n * `FormGroup`
and `FormArray`. It extends the `AbstractControl` class that \n * implements most of the base functionality for
accessing the value, validation status, \n * user interactions and events. See [usage examples below](#usage-notes).\n
*\n * @see `AbstractControl` \n * @see [Reactive Forms Guide](guide/reactive-forms) \n * @see [Usage
Notes](#usage-notes) \n * @usageNotes \n * \n * ### Initializing Form Controls \n * \n * Instantiate a
`FormControl`, with an initial value.\n * \n * ```ts \n * const control = new FormControl('some value'); \n *
console.log(control.value); // 'some value' \n * \n * The following example initializes the control with a form
state object. The `value` \n * and `disabled` keys are required in this case.\n * \n * ```ts \n * const control = new
FormControl({ value: 'a', disabled: true }); \n * console.log(control.value); // 'a' \n * console.log(control.status);
// 'DISABLED' \n * \n * The following example initializes the control with a sync validator.\n * \n * ```ts \n *
const control = new FormControl("", Validators.required); \n * console.log(control.value); // "" \n *
console.log(control.status); // 'INVALID' \n * \n * The following example initializes the control using an
options object.\n * \n * ```ts \n * const control = new FormControl("", {\n * validators: Validators.required,\n *
asyncValidators: myAsyncValidator \n * }); \n * \n * \n * ### Configure the control to update on a blur event \n *
\n * Set the `updateOn` option to `blur` to update on the blur `event`.\n * \n * ```ts \n * const control = new

```

```

FormControl(", { updateOn: 'blur' });\n * ````\n *\n * #### Configure the control to update on a submit event\n *\n * Set the `updateOn` option to `submit` to update on a submit `event`.\n *\n * ````ts\n * const control = new
FormControl(", { updateOn: 'submit' });\n * ````\n *\n * #### Reset the control back to an initial value\n *\n * You
reset to a specific form state by passing through a standalone\n * value or a form state object that contains both a
value and a disabled state\n * (these are the only two properties that cannot be calculated).\n *\n * ````ts\n * const
control = new FormControl('Nancy');\n *\n * console.log(control.value); // 'Nancy'\n *\n * control.reset('Drew');\n
*\n * console.log(control.value); // 'Drew'\n * ````\n *\n * #### Reset the control back to an initial value and disabled\n
*\n * ````\n * const control = new FormControl('Nancy');\n *\n * console.log(control.value); // 'Nancy'\n *\n
console.log(control.status); // 'VALID'\n *\n * control.reset({ value: 'Drew', disabled: true });\n *\n *
console.log(control.value); // 'Drew'\n * console.log(control.status); // 'DISABLED'\n * ````\n *\n * @publicApi\n
*\/nexport class FormControl extends AbstractControl {\n * /** @internal *\n * _onChange: Function[] = [];\n * /**
* @internal *\n * _pendingValue: any;\n * /** @internal *\n * _pendingChange: any;\n * /**\n * Creates a new
`FormControl` instance.\n * \n * @param formState Initializes the control with an initial value,\n * or an object
that defines the initial value and disabled state.\n * \n * @param validatorOrOpts A synchronous validator
function, or an array of\n * such functions, or an `AbstractControlOptions` object that contains validation
functions\n * and a validation trigger.\n * \n * @param asyncValidator A single async validator or array of async
validator functions\n * \n *\/n constructor(\n * formState: any = null,\n * validatorOrOpts?:
ValidatorFn|ValidatorFn[]|AbstractControlOptions|null,\n * asyncValidator?:
AsyncValidatorFn|AsyncValidatorFn[]|null) {\n * super(pickValidators(validatorOrOpts),
pickAsyncValidators(asyncValidator, validatorOrOpts));\n * this._applyFormState(formState);\n * this._setUpdateStrategy(validatorOrOpts);\n * this._initObservables();\n * this.updateValueAndValidity({\n * onlySelf: true,\n * // If `asyncValidator` is present, it will trigger control status change from `PENDING` to\n * // `VALID` or `INVALID`.\n * // The status should be broadcasted via the `statusChanges` observable, so we set
`emitEvent`\n * // to `true` to allow that during the control creation process.\n * emitEvent: !!asyncValidator\n * });\n * }\n * /**\n * Sets a new value for the form control.\n * \n * @param value The new value for the
control.\n * \n * @param options Configuration options that determine how the control propagates changes\n * and
emits events when the value changes.\n * \n * The configuration options are passed to the { @link
AbstractControl#updateValueAndValidity\n * updateValueAndValidity } method.\n * \n * * `onlySelf`: When
true, each change only affects this control, and not its parent. Default is\n * false.\n * \n * * `emitEvent`: When true or
not supplied (the default), both the `statusChanges` and\n * `valueChanges`\n * observables emit events with the
latest status and value when the control value is updated.\n * \n * When false, no events are emitted.\n * \n * *
`emitModelToViewChange`: When true or not supplied (the default), each change triggers an\n * `onChange`\n
event to\n * update the view.\n * \n * * `emitViewToModelChange`: When true or not supplied (the default), each
change triggers an\n * `ngModelChange`\n * event to update the model.\n * \n *\/n setValue(value: any,
options: {\n * onlySelf?: boolean,\n * emitEvent?: boolean,\n * emitModelToViewChange?: boolean,\n * emitViewToModelChange?: boolean\n * } = {}): void {\n * (this as {value: any}).value = this._pendingValue =
value;\n * if (this._onChange.length && options.emitModelToViewChange !== false) {\n * this._onChange.forEach(\n * (changeFn) => changeFn(this.value, options.emitViewToModelChange !==
false));\n * }\n * this.updateValueAndValidity(options);\n * }\n * /**\n * Patches the value of a control.\n * \n * This function is functionally the same as { @link FormControl#setValue setValue } at this level.\n * \n * It exists for
symmetry with { @link FormGroup#patchValue patchValue } on `FormGroups` and\n * `FormArrays`, where it
does behave differently.\n * \n * @see `setValue` for options\n *\/n patchValue(value: any, options: {\n * onlySelf?: boolean,\n * emitEvent?: boolean,\n * emitModelToViewChange?: boolean,\n * emitViewToModelChange?: boolean\n * } = {}): void {\n * this.setValue(value, options);\n * }\n * /**\n * Resets
the form control, marking it `pristine` and `untouched`, and setting\n * the value to null.\n * \n * @param
formState Resets the control with an initial value,\n * or an object that defines the initial value and disabled state.\n *
*\n * @param options Configuration options that determine how the control propagates changes\n * and emits
events after the value changes.\n * \n * * `onlySelf`: When true, each change only affects this control, and not its

```



parent. Default is

```

 * false.
 * `emitEvent`: When true or not supplied (the default), both the `statusChanges`
 and `valueChanges` observables emit events with the latest status and value when the control is reset.
 When false, no events are emitted.
 * `reset(formState: any = null, options: {onlySelf?: boolean, emitEvent?: boolean}) = {}): void {
 this._applyFormState(formState);
 this.markAsPristine(options);
 this.markAsUntouched(options);
 this.setValue(this.value, options);
 this._pendingChange = false;
 }
 * @internal
 * `_updateValue() {}`
 * @internal
 * `_anyControls(condition: Function): boolean {
 return false;
 }`
 * @internal
 * `_allControlsDisabled(): boolean {
 return this.disabled;
 }`
 * Register a listener for change events.
 * @param fn The method that is called when the value changes
 * `_registerOnChange(fn: Function): void {
 this._onChange.push(fn);
 }`
 * Internal function to unregister a change events listener.
 * @internal
 * `_unregisterOnChange(fn: Function): void {
 removeListItem(this._onChange, fn);
 }`
 * Register a listener for disabled events.
 * @param fn The method that is called when the disabled status changes.
 * `_registerOnDisabledChange(fn: (isDisabled: boolean) => void): void {
 this._onDisabledChange.push(fn);
 }`
 * Internal function to unregister a disabled event listener.
 * @internal
 * `_unregisterOnDisabledChange(fn: (isDisabled: boolean) => void): void {
 removeListItem(this._onDisabledChange, fn);
 }`
 * @internal
 * `_forEachChild(cb: Function): void {
 if (this.updateOn === 'submit') {
 if (this._pendingDirty) this.markAsDirty();
 if (this._pendingTouched) this.markAsTouched();
 if (this._pendingChange) {
 this.setValue(this._pendingValue, {onlySelf: true, emitModelToViewChange: false});
 return true;
 }
 }
 return false;
 }`
 private _applyFormState(formState: any) {
 if (this._isBoxedValue(formState)) {
 (this as {value: any}).value = this._pendingValue = formState.value;
 formState.disabled ? this.disable({onlySelf: true, emitEvent: false}) : this.enable({onlySelf: true, emitEvent: false});
 } else {
 (this as {value: any}).value = this._pendingValue = formState;
 }
 }
 * Tracks the value and validity state of a group of `FormControl` instances.
 * A `FormGroup` aggregates the values of each child `FormControl` into one object, with each control name as the key. It calculates its status by reducing the status values of its children. For example, if one of the controls in a group is invalid, the entire group becomes invalid.
 * `FormGroup` is one of the three fundamental building blocks used to define forms in Angular, along with `FormControl` and `FormArray`.
 * When instantiating a `FormGroup`, pass in a collection of child controls as the first argument. The key for each child registers the name for the control.
 * @usageNotes
 * ### Create a form group with 2 controls
 * ```
 * const form = new FormGroup({
 * first: new FormControl('Nancy', Validators.minLength(2)),
 * last: new FormControl('Drew'),
 * });
 * console.log(form.value); // {first: 'Nancy', last: 'Drew'}
 * console.log(form.status); // 'VALID'
 * ### Create a form group with a group-level validator
 * You include group-level validators as the second arg, or group-level async validators as the third arg. These come in handy when you want to perform validation that considers the value of more than one child control.
 * ```
 * const form = new FormGroup({
 * password: new FormControl("", Validators.minLength(2)),
 * passwordConfirm: new FormControl("", Validators.minLength(2)),
 * }, passwordMatchValidator);
 * function passwordMatchValidator(g: FormGroup) {
 * return g.get('password').value === g.get('passwordConfirm').value
 * ? null : {'mismatch': true};
 * }
 * Like `FormControl` instances, you choose to pass in validators and async validators as part of an options object.
 * ```
 * const form = new FormGroup({
 * password: new FormControl(""),
 * passwordConfirm: new FormControl(""),
 * }, {
 * validators: passwordMatchValidator,
 * asyncValidators: otherValidator
 * });
 * ### Set the updateOn property for all controls in a form group
 * The options object is used to set a default value for each child control's `updateOn` property. If you set `updateOn` to `blur` at the group level, all child controls default to `blur`, unless the child has explicitly specified a different `updateOn` value.
 * ```
 * const c = new FormGroup({
 * one: new FormControl(),
 * }, { updateOn: 'blur' });
 * @publicApi
 * @next
 * class FormGroup extends AbstractControl {
 * * Creates a new `FormGroup` instance.
 * * @param controls A collection of child controls. The key for each child is the name under which it is registered.
 *
```

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* @param validatorOrOpts A synchronous validator function, or an array of
* such functions, or an
`AbstractControlOptions` object that contains validation functions
* and a validation trigger.
*\n * @param
asyncValidator A single async validator or array of async validator functions
*\n * ^\n constructor(\n public
controls: {[key: string]: AbstractControl},\n validatorOrOpts?:
ValidatorFn|ValidatorFn[]|AbstractControlOptions|null,\n asyncValidator?:
AsyncValidatorFn|AsyncValidatorFn[]|null) {\n super(pickValidators(validatorOrOpts),
pickAsyncValidators(asyncValidator, validatorOrOpts));\n this._initObservables();\n
this._setUpdateStrategy(validatorOrOpts);\n this._setUpControls();\n this.updateValueAndValidity({\n
onlySelf: true,\n // If `asyncValidator` is present, it will trigger control status change from `PENDING` to\n //
`VALID` or `INVALID`. The status should be broadcasted via the `statusChanges` observable,\n // so we set
`emitEvent` to `true` to allow that during the control creation process.\n emitEvent: !!asyncValidator\n });\n
}\n\n /**\n * Registers a control with the group's list of controls.\n *\n * This method does not update the value
or validity of the control.\n * Use {@link FormGroup#addControl addControl} instead.\n *\n * @param name
The control name to register in the collection\n * @param control Provides the control for the given name\n * ^\n
registerControl(name: string, control: AbstractControl): AbstractControl {\n if (this.controls[name]) return
this.controls[name];\n this.controls[name] = control;\n control.setParent(this);\n
control._registerOnCollectionChange(this._onCollectionChange);\n return control;\n }\n\n /**\n * Add a control
to this group.\n *\n * This method also updates the value and validity of the control.\n *\n * @param name The
control name to add to the collection\n * @param control Provides the control for the given name\n * ^\n
addControl(name: string, control: AbstractControl): void {\n this.registerControl(name, control);\n
this.updateValueAndValidity();\n this._onCollectionChange();\n }\n\n /**\n * Remove a control from this
group.\n *\n * @param name The control name to remove from the collection\n * ^\n removeControl(name:
string): void {\n if (this.controls[name]) this.controls[name]._registerOnCollectionChange(() => {});\n delete
(this.controls[name]);\n this.updateValueAndValidity();\n this._onCollectionChange();\n }\n\n /**\n *
Replace an existing control.\n *\n * @param name The control name to replace in the collection\n * @param
control Provides the control for the given name\n * ^\n setControl(name: string, control: AbstractControl): void {\n
if (this.controls[name]) this.controls[name]._registerOnCollectionChange(() => {});\n delete
(this.controls[name]);\n if (control) this.registerControl(name, control);\n this.updateValueAndValidity();\n
this._onCollectionChange();\n }\n\n /**\n * Check whether there is an enabled control with the given name in the
group.\n *\n * Reports false for disabled controls. If you'd like to check for existence in the group\n * only, use
{@link AbstractControl#get get} instead.\n *\n * @param controlName The control name to check for existence
in the collection\n *\n * @returns false for disabled controls, true otherwise.\n * ^\n contains(controlName:
string): boolean {\n return this.controls.hasOwnProperty(controlName) && this.controls[controlName].enabled;\n
}\n\n /**\n * Sets the value of the `FormGroup`. It accepts an object that matches\n * the structure of the group,
with control names as keys.\n *\n * @usageNotes\n * ### Set the complete value for the form group\n *\n *
```\n * const form = new FormGroup({\n * first: new FormControl(),\n * last: new FormControl()\n * });\n *
console.log(form.value); // {first: null, last: null}\n *\n * form.setValue({first: 'Nancy', last: 'Drew'});\n *
console.log(form.value); // {first: 'Nancy', last: 'Drew'}\n * ```\n *\n * @throws When strict checks fail, such
as setting the value of a control\n * that doesn't exist or if you exclude a value of a control that does exist.\n *\n *
@param value The new value for the control that matches the structure of the group.\n * @param options
Configuration options that determine how the control propagates changes\n * and emits events after the value
changes.\n * The configuration options are passed to the {@link AbstractControl#updateValueAndValidity\n *
updateValueAndValidity} method.\n *\n * * `onlySelf`: When true, each change only affects this control, and not
its parent. Default is\n * false.\n * * `emitEvent`: When true or not supplied (the default), both the
`statusChanges` and\n * `valueChanges`\n * observables emit events with the latest status and value when the
control value is updated.\n * When false, no events are emitted.\n * ^\n setValue(value: {[key: string]: any},
options: {onlySelf?: boolean, emitEvent?: boolean} = {}):\n void {\n this._checkAllValuesPresent(value);\n
Object.keys(value).forEach(name => {\n this._throwIfControlMissing(name);\n

```

```

this.controls[name].setValue(value[name], {onlySelf: true, emitEvent: options.emitEvent});\n });\n
this.updateValueAndValidity(options);\n }\n\n /**\n * Patches the value of the `FormGroup`. It accepts an object
with control\n * names as keys, and does its best to match the values to the correct controls\n * in the group.\n
*\n * It accepts both super-sets and sub-sets of the group without throwing an error.\n *\n * @usageNotes\n *
### Patch the value for a form group\n *\n * ```\n * const form = new FormGroup({\n *   first: new
FormControl(),\n *   last: new FormControl()\n * });\n * console.log(form.value); // {first: null, last: null}\n
*\n * form.patchValue({first: 'Nancy'});\n * console.log(form.value); // {first: 'Nancy', last: null}\n * ```\n *\n
* @param value The object that matches the structure of the group.\n * @param options Configuration options that
determine how the control propagates changes and\n * emits events after the value is patched.\n * * `onlySelf` :
When true, each change only affects this control and not its parent. Default is\n * true.\n * * `emitEvent` : When
true or not supplied (the default), both the `statusChanges` and\n * `valueChanges`\n * observables emit events
with the latest status and value when the control value is updated.\n * When false, no events are emitted.\n * The
configuration options are passed to the {@link AbstractControl#updateValueAndValidity\n *
updateValueAndValidity} method.\n */\n patchValue(value: {[key: string]: any}, options: {onlySelf?: boolean,
emitEvent?: boolean} = {}): void {\n   Object.keys(value).forEach(name => {\n     if (this.controls[name]) {\n
       this.controls[name].patchValue(value[name], {onlySelf: true, emitEvent: options.emitEvent});\n     }\n   });\n
this.updateValueAndValidity(options);\n }\n\n /**\n * Resets the `FormGroup`, marks all descendants `pristine`
and `untouched` and sets\n * the value of all descendants to null.\n *\n * You reset to a specific form state by
passing in a map of states\n * that matches the structure of your form, with control names as keys. The state\n * is
a standalone value or a form state object with both a value and a disabled\n * status.\n *\n * @param value
Resets the control with an initial value,\n * or an object that defines the initial value and disabled state.\n *\n *
@param options Configuration options that determine how the control propagates changes\n * and emits events
when the group is reset.\n * * `onlySelf` : When true, each change only affects this control, and not its parent.
Default is\n * false.\n * * `emitEvent` : When true or not supplied (the default), both the `statusChanges` and\n
* `valueChanges`\n * observables emit events with the latest status and value when the control is reset.\n * When
false, no events are emitted.\n * The configuration options are passed to the {@link
AbstractControl#updateValueAndValidity\n * updateValueAndValidity} method.\n *\n * @usageNotes\n *\n
* ### Reset the form group values\n *\n * ```ts\n * const form = new FormGroup({\n *   first: new
FormControl('first name'),\n *   last: new FormControl('last name')\n * });\n *\n * console.log(form.value); //
{first: 'first name', last: 'last name'}\n *\n * form.reset({ first: 'name', last: 'last name' });\n *\n *
console.log(form.value); // {first: 'name', last: 'last name'}\n * ```\n *\n * ### Reset the form group values and
disabled status\n *\n * ```\n * const form = new FormGroup({\n *   first: new FormControl('first name'),\n *
last: new FormControl('last name')\n * });\n *\n * form.reset({\n *   first: {value: 'name', disabled: true},\n *
last: 'last'\n * });\n *\n * console.log(this.form.value); // {first: 'name', last: 'last name'}\n *\n
console.log(this.form.get('first').status); // 'DISABLED'\n * ```\n *\n * @param value any = {}, options: {onlySelf?:
boolean, emitEvent?: boolean} = {}): void {\n   this._forEachChild((control: AbstractControl, name: string) => {\n
     control.reset(value[name], {onlySelf: true, emitEvent: options.emitEvent});\n   });\n
this._updatePristine(options);\n this._updateTouched(options);\n this.updateValueAndValidity(options);\n }\n\n /**\n
* The aggregate value of the `FormGroup`, including any disabled controls.\n *\n * Retrieves all values
regardless of disabled status.\n * The `value` property is the best way to get the value of the group, because\n
it excludes disabled controls in the `FormGroup`.\n */\n getRawValue(): any {\n   return this._reduceChildren(\n
    {}, (acc: {[k: string]: AbstractControl}, control: AbstractControl, name: string) => {\n     acc[name] = control
instanceof FormControl ? control.value : (<any>control).getRawValue();\n     return acc;\n   });\n }\n\n /**\n
* @internal\n */\n _syncPendingControls(): boolean {\n   let subtreeUpdated = this._reduceChildren(false, (updated:
boolean, child: AbstractControl) => {\n     return child._syncPendingControls() ? true : updated;\n   });\n   if
(subtreeUpdated) this.updateValueAndValidity({onlySelf: true});\n   return subtreeUpdated;\n }\n\n /**\n * @internal\n
*/\n _throwIfControlMissing(name: string): void {\n   if (!Object.keys(this.controls).length) {\n     throw new
Error`\n     There are no form controls registered with this group yet. If you're using ngModel,\n     you may

```

```

want to check next tick (e.g. use setTimeout).\n    `);\n    }\n    if (!this.controls[name]) {\n      throw new
Error(`Cannot find form control with name: ${name}.`);\n    }\n  }\n\n  /** @internal */\n  _forEachChild(cb: (v:
any, k: string) => void): void {\n    Object.keys(this.controls).forEach(k => cb(this.controls[k], k));\n  }\n\n  /**
@internal */\n  _setUpControls(): void {\n    this._forEachChild((control: AbstractControl) => {\n
control.setParent(this);\n    control._registerOnCollectionChange(this._onCollectionChange);\n  });\n  }\n\n  /**
@internal */\n  _updateValue(): void {\n    (this as {value: any}).value = this._reduceValue();\n  }\n\n  /**
@internal */\n  _anyControls(condition: Function): boolean {\n    for (const controlName of
Object.keys(this.controls)) {\n      const control = this.controls[controlName];\n      if (this.contains(controlName)
&& condition(control)) {\n        return true;\n      }\n    }\n    return false;\n  }\n\n  /** @internal */\n
_reduceValue() {\n    return this._reduceChildren(\n      {}, (acc: {[k: string]: AbstractControl}, control:
AbstractControl, name: string) => {\n      if (control.enabled || this.disabled) {\n        acc[name] =
control.value;\n      }\n      return acc;\n    });\n  }\n\n  /** @internal */\n  _reduceChildren(initValue: any, fn:
Function) {\n    let res = initValue;\n    this._forEachChild((control: AbstractControl, name: string) => {\n      res =
fn(res, control, name);\n    });\n    return res;\n  }\n\n  /** @internal */\n  _allControlsDisabled(): boolean {\n    for
(const controlName of Object.keys(this.controls)) {\n      if (this.controls[controlName].enabled) {\n        return
false;\n      }\n    }\n    return Object.keys(this.controls).length > 0 || this.disabled;\n  }\n\n  /** @internal */\n
_checkAllValuesPresent(value: any): void {\n    this._forEachChild((control: AbstractControl, name: string) => {\n
if (value[name] === undefined) {\n      throw new Error(`Must supply a value for form control with name:
`${name}`.);\n    }\n  });\n  }\n\n  /**\n   * Tracks the value and validity state of an array of `FormControl`,\n   *
`FormGroup` or `FormArray` instances.\n   * A `FormArray` aggregates the values of each child `FormControl`\n
into an array.\n   * It calculates its status by reducing the status values of its children. For example, if one of\n
the controls in a `FormArray` is invalid, the entire array becomes invalid.\n   * `FormArray` is one of the three
fundamental building blocks used to define forms in Angular,\n   * along with `FormControl` and `FormGroup`.\n   *\n
 * @usageNotes\n   * ### Create an array of form controls\n   * ```\n   * const arr = new FormArray([\n   *   new
FormControl('Nancy', Validators.minLength(2)),\n   *   new FormControl('Drew'),\n   * ]);\n   *\n   * console.log(arr.value); // ['Nancy', 'Drew']\n   * console.log(arr.status); // 'VALID'\n   * ```\n   *\n   * ### Create a form
array with array-level validators\n   * You include array-level validators and async validators. These come in
handy\n   * when you want to perform validation that considers the value of more than one child\n   * control.\n   *\n
The two types of validators are passed in separately as the second and third arg\n   * respectively, or together as part
of an options object.\n   * ```\n   * const arr = new FormArray([\n   *   new FormControl('Nancy'),\n   *   new
FormControl('Drew')\n   * ], { validators: myValidator, asyncValidators: myAsyncValidator });\n   * ```\n   *\n
 * ### Set the updateOn property for all controls in a form array\n   * The options object is used to set a default value for
each child\n   * control's `updateOn` property. If you set `updateOn` to `blur` at the\n   * array level, all child controls
default to `blur`, unless the child\n   * has explicitly specified a different `updateOn` value.\n   * ```ts\n   * const arr =
new FormArray([\n   *   new FormControl(),\n   * ], { updateOn: 'blur'});\n   * ```\n   *\n   * ### Adding or removing
controls from a form array\n   * To change the controls in the array, use the `push`, `insert`, `removeAt` or `clear`\n
methods\n   * in `FormArray` itself. These methods ensure the controls are properly tracked in the\n   * form's
hierarchy. Do not modify the array of `AbstractControl`s used to instantiate\n   * the `FormArray` directly, as that
result in strange and unexpected behavior such\n   * as broken change detection.\n   *\n   * @publicApi\n   */\n  export
class FormArray extends AbstractControl {\n    /**\n     * Creates a new `FormArray` instance.\n     * @param
controls An array of child controls. Each child control is given an index\n     * where it is registered.\n     * @param
validatorOrOpts A synchronous validator function, or an array of\n     * such functions, or an
`AbstractControlOptions` object that contains validation functions\n     * and a validation trigger.\n     * @param
asyncValidator A single async validator or array of async validator functions\n     *\n     */\n    constructor(\n      public
controls: AbstractControl[],\n      validatorOrOpts?: ValidatorFn|ValidatorFn[]|AbstractControlOptions|null,\n      asyncValidator?: AsyncValidatorFn|AsyncValidatorFn[]|null) {\n      super(pickValidators(validatorOrOpts),
pickAsyncValidators(asyncValidator, validatorOrOpts));\n      this._initObservables();\n      this._setUpUpdateStrategy(validatorOrOpts);\n      this._setUpControls();\n      this.updateValueAndValidity({\n

```

```

onlySelf: true,\n    // If `asyncValidator` is present, it will trigger control status change from `PENDING` to\n    // `VALID` or `INVALID`.\n    // The status should be broadcasted via the `statusChanges` observable, so we set\n    `emitEvent`\n    // to `true` to allow that during the control creation process.\n    emitEvent: !!asyncValidator\n  });\n  }\n  /**\n   * Get the `AbstractControl` at the given `index` in the array.\n   * @param index Index in the array to retrieve the control\n   */\n  at(index: number): AbstractControl {\n    return this.controls[index];\n  }\n  /**\n   * Insert a new `AbstractControl` at the end of the array.\n   * @param control Form control to be inserted\n   */\n  push(control: AbstractControl): void {\n    this.controls.push(control);\n    this._registerControl(control);\n    this.updateValueAndValidity();\n    this._onCollectionChange();\n  }\n  /**\n   * Insert a new `AbstractControl` at the given `index` in the array.\n   * @param index Index in the array to insert the control\n   * @param control Form control to be inserted\n   */\n  insert(index: number, control: AbstractControl): void {\n    this.controls.splice(index, 0, control);\n    this._registerControl(control);\n    this.updateValueAndValidity();\n  }\n  /**\n   * Remove the control at the given `index` in the array.\n   * @param index Index in the array to remove the control\n   */\n  removeAt(index: number): void {\n    if (this.controls[index]) this.controls[index]._registerOnCollectionChange(() => {});\n    this.controls.splice(index, 1);\n    this.updateValueAndValidity();\n  }\n  /**\n   * Replace an existing control.\n   * @param index Index in the array to replace the control\n   * @param control The `AbstractControl` control to replace the existing control\n   */\n  setControl(index: number, control: AbstractControl): void {\n    if (this.controls[index]) this.controls[index]._registerOnCollectionChange(() => {});\n    this.controls.splice(index, 1);\n    if (control) {\n      this.controls.splice(index, 0, control);\n      this._registerControl(control);\n    }\n    this.updateValueAndValidity();\n    this._onCollectionChange();\n  }\n  /**\n   * Length of the control array.\n   */\n  get length(): number {\n    return this.controls.length;\n  }\n  /**\n   * Sets the value of the `FormArray`. It accepts an array that matches\n   * the structure of the control.\n   * This method performs strict checks, and throws an error if you try\n   * to set the value of a control that doesn't exist or if you exclude the\n   * value of a control.\n   * @usageNotes\n   * ### Set the values for the controls in the form array\n   * ```\n   * const arr = new FormArray([\n   *   new FormControl(),\n   *   new FormControl()\n   * ]);\n   * console.log(arr.value); // [null, null]\n   * arr.setValue(['Nancy', 'Drew']);\n   * console.log(arr.value); // ['Nancy', 'Drew']\n   * ```\n   * @param value Array of values for the controls\n   * @param options Configure options that determine how the control propagates changes and\n   * emits events after the value changes\n   * `onlySelf`: When true, each change only affects this control, and not its parent. Default\n   * is false.\n   * `emitEvent`: When true or not supplied (the default), both the `statusChanges` and\n   * `valueChanges` observables emit events with the latest status and value when the control value is updated.\n   * When false, no events are emitted.\n   * The configuration options are passed to the {@link AbstractControl#updateValueAndValidity}\n   * updateValueAndValidity} method.\n   */\n  setValue(value: any[], options: {onlySelf?: boolean, emitEvent?: boolean} = {}): void {\n    this._checkAllValuesPresent(value);\n    value.forEach((newValue: any, index: number) => {\n      this._throwIfControlMissing(index);\n      this.at(index).setValue(newValue, {onlySelf: true, emitEvent: options.emitEvent});\n    });\n    this.updateValueAndValidity(options);\n  }\n  /**\n   * Patches the value of the `FormArray`. It accepts an array that matches the\n   * structure of the control, and does its best to match the values to the correct\n   * controls in the group.\n   * It accepts both super-sets and sub-sets of the array without throwing an error.\n   * @usageNotes\n   * ### Patch the values for controls in a form array\n   * ```\n   * const arr = new FormArray([\n   *   new FormControl(),\n   *   new FormControl()\n   * ]);\n   * console.log(arr.value); // [null, null]\n   * arr.patchValue(['Nancy']);\n   * console.log(arr.value); // ['Nancy', null]\n   * ```\n   * @param value Array of latest values for the controls\n   * @param options Configure options that determine how the control propagates changes and\n   * emits events after the value changes\n   * `onlySelf`: When true, each change only affects this control, and not its parent. Default\n   * is false.\n   * `emitEvent`: When true or not supplied (the default), both the `statusChanges` and\n   * `valueChanges` observables emit events with the latest status and value when the control value is updated.\n   * When false, no events are emitted.\n   * The configuration options are passed to the {@link AbstractControl#updateValueAndValidity}\n   * updateValueAndValidity} method.\n   */\n  patchValue(value:

```

```

any[], options: {onlySelf?: boolean, emitEvent?: boolean} = {}): void {\n  value.forEach((newValue: any, index:
number) => {\n    if (this.at(index)) {\n      this.at(index).patchValue(newValue, {onlySelf: true, emitEvent:
options.emitEvent});\n    }\n  });\n  this.updateValueAndValidity(options);\n }\n\n /**\n  * Resets the
`FormArray` and all descendants are marked `pristine` and `untouched`, and the\n  * value of all descendants to null
or null maps.\n  *\n  * You reset to a specific form state by passing in an array of states\n  * that matches the
structure of the control. The state is a standalone value\n  * or a form state object with both a value and a disabled
status.\n  *\n  * @usageNotes\n  * ### Reset the values in a form array\n  *\n  * ```ts\n  * const arr = new
FormArray([\n  *   new FormControl(),\n  *   new FormControl()\n  * ]);\n  * arr.reset(['name', 'last name']);\n
*\n  * console.log(this.arr.value); // ['name', 'last name']\n  * ```\n  *\n  * ### Reset the values in a form array and
the disabled status for the first control\n  *\n  * ```\n  * this.arr.reset([\n  *   {value: 'name', disabled: true},\n  *
'last'\n  * ]);\n  *\n  * console.log(this.arr.value); // ['name', 'last name']\n  * console.log(this.arr.get(0).status); //
'DISABLED'\n  * ```\n  *\n  * @param value Array of values for the controls\n  * @param options Configure
options that determine how the control propagates changes and\n  * emits events after the value changes\n  *\n  * *
`onlySelf`: When true, each change only affects this control, and not its parent. Default\n  * is false.\n  * *
`emitEvent`: When true or not supplied (the default), both the `statusChanges` and\n  * `valueChanges`\n  *
observables emit events with the latest status and value when the control is reset.\n  * When false, no events are
emitted.\n  * The configuration options are passed to the {@link AbstractControl#updateValueAndValidity\n  *
updateValueAndValidity} method.\n  */\n  reset(value: any = [], options: {onlySelf?: boolean, emitEvent?:
boolean} = {}): void {\n    this._forEachChild((control: AbstractControl, index: number) => {\n
control.reset(value[index], {onlySelf: true, emitEvent: options.emitEvent});\n    });\n
this._updatePristine(options);\n    this._updateTouched(options);\n    this.updateValueAndValidity(options);\n }\n\n
/**\n  * The aggregate value of the array, including any disabled controls.\n  *\n  * Reports all values regardless of
disabled status.\n  *\n  * For enabled controls only, the `value` property is the best way to get the value of the array.\n
*\n  */\n  getRawValue(): any[] {\n    return this.controls.map((control: AbstractControl) => {\n      return control
instanceof FormControl ? control.value : (<any>control).getRawValue();\n    });\n  }\n\n /**\n  * Remove all
controls in the `FormArray`.\n  *\n  * @usageNotes\n  * ### Remove all elements from a FormArray\n  *\n  *
```ts\n  * const arr = new FormArray([\n  *   new FormControl(),\n  *   new FormControl()\n  * ]);\n  *
console.log(arr.length); // 2\n *\n * arr.clear();\n * console.log(arr.length); // 0\n * ```\n *\n * It's a simpler
and more efficient alternative to removing all elements one by one:\n *\n * ```ts\n * const arr = new
FormArray([\n * new FormControl(),\n * new FormControl()\n *]);\n *\n * while (arr.length) {\n *
arr.removeAt(0);\n * }\n * ```\n */\n clear(): void {\n if (this.controls.length < 1) return;\n
this._forEachChild((control: AbstractControl) => control._registerOnCollectionChange(() => {}));\n
this.controls.splice(0);\n this.updateValueAndValidity();\n }\n\n /** @internal *\n */\n _syncPendingControls():
boolean {\n let subtreeUpdated = this.controls.reduce((updated: boolean, child: AbstractControl) => {\n return
child._syncPendingControls() ? true : updated;\n }, false);\n if (subtreeUpdated)\n this.updateValueAndValidity({onlySelf: true});\n return subtreeUpdated;\n }\n\n /** @internal *\n */\n _throwIfControlMissing(index: number): void {\n if (!this.controls.length) {\n throw new Error(`\n There
are no form controls registered with this array yet. If you're using ngModel,\n you may want to check next tick
(e.g. use setTimeout).\n `);\n }\n if (!this.at(index)) {\n throw new Error(`Cannot find form control at
index ${index}`);\n }\n }\n\n /** @internal *\n */\n _forEachChild(cb: Function): void {\n
this.controls.forEach((control: AbstractControl, index: number) => {\n cb(control, index);\n });\n }\n\n /**
@internal *\n */\n _updateValue(): void {\n (this as {value: any}).value =\n this.controls.filter((control) =>
control.enabled || this.disabled)\n .map((control) => control.value);\n }\n\n /** @internal *\n */\n _anyControls(condition: Function): boolean {\n return this.controls.some((control: AbstractControl) =>
control.enabled && condition(control));\n }\n\n /** @internal *\n */\n _setUpControls(): void {\n
this._forEachChild((control: AbstractControl) => this._registerControl(control));\n }\n\n /** @internal *\n */\n _checkAllValuesPresent(value: any): void {\n this._forEachChild((control: AbstractControl, i: number) => {\n
if (value[i] === undefined) {\n throw new Error(`Must supply a value for form control at index: ${i}.`);\n

```

```

})\n });\n }\n\n /** @internal *\n _allControlsDisabled(): boolean {\n for (const control of this.controls) {\n if (control.enabled) return false;\n }\n return this.controls.length > 0 || this.disabled;\n }\n\n private\n _registerControl(control: AbstractControl) {\n control.setParent(this);\n control._registerOnCollectionChange(this._onCollectionChange);\n }\n}\n", /**\n * @license\n * Copyright\n * Google LLC All Rights Reserved.\n * Use of this source code is governed by an MIT-style license that can be\n * found in the LICENSE file at https://angular.io/license\n */\n\nimport { AfterViewInit, Directive, EventEmitter,\n forwardRef, Inject, Input, Optional, Self } from '@angular/core';\nimport { AbstractControl, FormControl,\n FormGroup, FormHooks } from './model';\nimport { composeAsyncValidators, composeValidators,\n NG_ASYNC_VALIDATORS, NG_VALIDATORS } from './validators';\nimport { ControlContainer } from\n './control_container';\nimport { Form } from './form_interface';\nimport { NgControl } from './ng_control';\nimport\n { NgModel } from './ng_model';\nimport { NgModelGroup } from './ng_model_group';\nimport { removeListItem,\n setUpControl, setUpFormContainer, syncPendingControls } from './shared';\nimport { AsyncValidator,\n AsyncValidatorFn, Validator, ValidatorFn } from './validators';\n\nexport const formDirectiveProvider: any = {\n provide: ControlContainer,\n useExisting: forwardRef(() => NgForm)\n};\n\nconst resolvedPromise = (() =>\n Promise.resolve(null))();\n\n /**\n * @description\n * Creates a top-level `FormGroup` instance and binds it to a\n form\n * to track aggregate form value and validation status.\n * As soon as you import the `FormsModule`, this\n directive becomes active by default on\n * all `` tags. You don't need to add a special selector.\n * You\n optionally export the directive into a local template variable using `ngForm` as the key\n * (ex:\n `#myForm="ngForm"`). This is optional, but useful. Many properties from the underlying\n * `FormGroup`\n instance are duplicated on the directive itself, so a reference to it\n * gives you access to the aggregate value and\n validity status of the form, as well as\n * user interaction properties like `dirty` and `touched`.\n * To register\n child controls with the form, use `NgModel` with a `name` attribute. You may use `NgModelGroup` to create\n sub-groups within the form.\n * If necessary, listen to the directive's `ngSubmit` event to be notified when the\n user has\n * triggered a form submission. The `ngSubmit` event emits the original form\n * submission event.\n *\n * In template driven forms, all `` tags are automatically tagged as `NgForm`.\n * To import the\n `FormsModule` but skip its usage in some forms,\n * for example, to use native HTML5 validation, add the\n `ngNoForm` and the `` tags won't create an `NgForm` directive. In reactive forms, using `ngNoForm`\n is\n * unnecessary because the `` tags are inert. In that case, you would\n * refrain from using the\n `formGroup` directive.\n *\n * @usageNotes\n * ### Listening for form submission\n * The following\n example shows how to capture the form values from the `ngSubmit` event.\n *\n * @example\n forms/ts/simpleForm/simple_form_example.ts region='Component'\n *\n * ### Setting the update options\n *\n * The following example shows you how to change the `updateOn` option from its default using\n *\n ngFormOptions.\n *\n * ```html\n * <form [ngFormOptions]="{updateOn: 'blur'}">\n * <input name="one"\n ngModel> <!-- this ngModel will update on blur -->\n * </form>\n * ```\n *\n * ### Native DOM validation UI\n *\n * In order to prevent the native DOM form validation UI from interfering with Angular's form\n * validation,\n Angular automatically adds the `novalidate` attribute on any `` whenever `FormsModule` or\n `ReactiveFormsModule` are imported into the application.\n *\n * If you want to explicitly enable native DOM\n validation UI with Angular forms, you can add the `ngNativeValidate` attribute to the `` element:\n *\n * ```html\n * <form ngNativeValidate>\n * ...</form>\n * ```\n *\n * @ngModule\n FormsModule\n *\n * @publicApi\n *\n * @Directive({\n selector: 'form:not([ngNoForm]):not([formGroup]),ng-form,[ngForm]',\n providers: [formDirectiveProvider],\n host: {'(submit)': 'onSubmit($event)', '(reset)': 'onReset()'},\n outputs:\n [ngSubmit],\n exportAs: 'ngForm'\n})\nexport class NgForm extends ControlContainer implements Form,\n AfterViewInit {\n /**\n * @description\n * Returns whether the form submission has been triggered.\n *\n * @\n public readonly submitted: boolean = false;\n\n private _directives: NgModel[] = [];\n\n /**\n * @description\n * The `FormGroup` instance created for this form.\n *\n * @\n form: FormGroup;\n\n /**\n * @description\n * Event emitter for the `ngSubmit` event.\n *\n * @\n ngSubmit = new EventEmitter();\n\n /**\n * @description\n * Tracks options for the `NgForm` instance.\n *\n * **updateOn**: Sets the default `updateOn` value for all child\n `NgModels` below it\n * unless explicitly set by a child `NgModel` using `ngModelOptions`). Defaults to

```

```

'change'.\n * Possible values: `change` | `blur` | `submit`. \n * \n * \n // TODO(issue/24571): remove '!.\n
@Input('ngFormOptions') options!: {updateOn?: FormHooks};\n\n constructor(\n @Optional() @Self()
@Inject(NG_VALIDATORS) validators: (Validator|ValidatorFn)[],\n @Optional() @Self()
@Inject(NG_ASYNC_VALIDATORS) asyncValidators:\n (AsyncValidator|AsyncValidatorFn[]) {\n
super();\n this.form =\n new FormGroup({}, composeValidators(validators),
composeAsyncValidators(asyncValidators));\n }\n\n /** @nodoc */\n ngAfterViewInit() {\n
this._setUpdateStrategy();\n }\n\n /**\n * @description\n * The directive instance.\n */\n get formDirective():
Form {\n return this;\n }\n\n /**\n * @description\n * The internal `FormGroup` instance.\n */\n get
control(): FormGroup {\n return this.form;\n }\n\n /**\n * @description\n * Returns an array representing the
path to this group. Because this directive\n * always lives at the top level of a form, it is always an empty array.\n
*/\n get path(): string[] {\n return [];\n }\n\n /**\n * @description\n * Returns a map of the controls in this
group.\n */\n get controls(): {[key: string]: AbstractControl} {\n return this.form.controls;\n }\n\n /**\n *
@description\n * Method that sets up the control directive in this group, re-calculates its value\n * and validity,
and adds the instance to the internal list of directives.\n */\n * @param dir The `NgModel` directive instance.\n
*/\n addControl(dir: NgModel): void {\n resolvedPromise.then(() => {\n const container =
this._findContainer(dir.path);\n (dir as {control: FormControl}).control =\n
<FormControl>container.registerControl(dir.name, dir.control);\n setUpControl(dir.control, dir);\n
dir.control.updateValueAndValidity({emitEvent: false});\n this._directives.push(dir);\n });\n }\n\n /**\n *
@description\n * Retrieves the `FormControl` instance from the provided `NgModel` directive.\n */\n * @param
dir The `NgModel` directive instance.\n */\n getControl(dir: NgModel): FormControl {\n return
<FormControl>this.form.get(dir.path);\n }\n\n /**\n * @description\n * Removes the `NgModel` instance from
the internal list of directives\n */\n * @param dir The `NgModel` directive instance.\n */\n removeControl(dir:
NgModel): void {\n resolvedPromise.then(() => {\n const container = this._findContainer(dir.path);\n if
(container) {\n container.removeControl(dir.name);\n }\n removeListItem(this._directives, dir);\n });\n }\n\n /**\n *
@description\n * Adds a new `NgModelGroup` directive instance to the form.\n */\n * @param
dir The `NgModelGroup` directive instance.\n */\n addFormGroup(dir: NgModelGroup): void {\n
resolvedPromise.then(() => {\n const container = this._findContainer(dir.path);\n const group = new
FormGroup({});\n setUpFormContainer(group, dir);\n container.registerControl(dir.name, group);\n
group.updateValueAndValidity({emitEvent: false});\n });\n }\n\n /**\n * @description\n * Removes the
`NgModelGroup` directive instance from the form.\n */\n * @param dir The `NgModelGroup` directive
instance.\n */\n removeFormGroup(dir: NgModelGroup): void {\n resolvedPromise.then(() => {\n const
container = this._findContainer(dir.path);\n if (container) {\n container.removeControl(dir.name);\n }\n
});\n }\n\n /**\n * @description\n * Retrieves the `FormGroup` for a provided `NgModelGroup` directive
instance\n */\n * @param dir The `NgModelGroup` directive instance.\n */\n getFormGroup(dir:
NgModelGroup): FormGroup {\n return <FormGroup>this.form.get(dir.path);\n }\n\n /**\n * Sets the new
value for the provided `NgControl` directive.\n */\n * @param dir The `NgControl` directive instance.\n *
@param value The new value for the directive's control.\n */\n updateModel(dir: NgControl, value: any): void {\n
resolvedPromise.then(() => {\n const ctrl = <FormControl>this.form.get(dir.path!);\n ctrl.setValue(value);\n
});\n }\n\n /**\n * @description\n * Sets the value for this `FormGroup`. \n */\n * @param value The new
value\n */\n setValue(value: {[key: string]: any}): void {\n this.control.setValue(value);\n }\n\n /**\n *
@description\n * Method called when the `submit` event is triggered on the form.\n * Triggers the `ngSubmit`
emitter to emit the `submit` event as its payload.\n */\n * @param $event The `submit` event object\n */\n
onSubmit($event: Event): boolean {\n (this as {submitted: boolean}).submitted = true;\n
syncPendingControls(this.form, this._directives);\n this.ngSubmit.emit($event);\n return false;\n }\n\n /**\n *
@description\n * Method called when the `reset` event is triggered on the form.\n */\n onReset(): void {\n
this.resetForm();\n }\n\n /**\n * @description\n * Resets the form to an initial value and resets its submitted
status.\n */\n * @param value The new value for the form.\n */\n resetForm(value: any = undefined): void {\n
this.form.reset(value);\n (this as {submitted: boolean}).submitted = false;\n }\n\n private _setUpdateStrategy()

```





DOM element. This directive can only be used as a child of `NgForm` (within `` tags). Use this directive to validate a sub-group of your form separately from the rest of your form, or if some values in your domain model make more sense to consume together in a nested object. Provide a name for the sub-group and it will become the key for the sub-group in the form's full value. If you need direct access, export the directive into a local template variable using `ngModelGroup` (ex: `#myGroup="ngModelGroup"`).

**Usage Notes**

- Consuming controls in a grouping
- The following example shows you how to combine controls together in a sub-group of the form.

```

@ngModule FormsModule
@publicApi
@Directive({ selector: '[ngModelGroup]', providers: [modelGroupProvider], exportAs: 'ngModelGroup' })
export class NgModelGroup extends AbstractFormGroupDirective implements OnInit, OnDestroy {
 @description
 * Tracks the name of the `NgModelGroup` bound to the directive. The name corresponds to a key in the parent `NgForm`.
 // TODO(issue/24571): remove '!'.
 @Input('ngModelGroup') name!: string;
 constructor(@Host() @SkipSelf() parent: ControlContainer, @Optional() @Self() @Inject(NG_VALIDATORS) validators: (Validator|ValidatorFn)[], @Optional() @Self() @Inject(NG_ASYNC_VALIDATORS) asyncValidators: (AsyncValidator|AsyncValidatorFn)[]) {
 super();
 this._parent = parent;
 this._setValidators(validators);
 this._setAsyncValidators(asyncValidators);
 }
 /** @internal */
 _checkParentType(): void {
 if (!(this._parent instanceof NgModelGroup) && !(this._parent instanceof NgForm) && (typeof ngDevMode === 'undefined' || ngDevMode)) {
 TemplateDrivenErrors.modelGroupParentException();
 }
 }
}

```

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```

import { Directive, EventEmitter, forwardRef, Host, Inject, Input, OnChanges, OnDestroy, Optional, Output, Self, SimpleChanges } from '@angular/core';
import { FormControl, FormHooks } from './model';
import { NG_ASYNC_VALIDATORS, NG_VALIDATORS } from './validators';
import { AbstractFormGroupDirective } from './abstract_form_group_directive';
import { ControlContainer } from './control_container';
import { ControlValueAccessor, NG_VALUE_ACCESSOR } from './control_value_accessor';
import { NgControl } from './ng_control';
import { NgForm } from './ng_form';
import { NgModelGroup } from './ng_model_group';
import { controlPath, isPropertyUpdated, selectValueAccessor, setUpControl } from './shared';
import { TemplateDrivenErrors } from './template_driven_errors';
import { AsyncValidator, AsyncValidatorFn, Validator, ValidatorFn } from './validators';
export const formControlBinding: any = {
 provide: NgControl,
 useExisting: forwardRef(() => NgModel),
};

```

**ngModel** forces an additional change detection run when its inputs change. E.g.:

```

<div>{{ myModel.valid }}</div>
<input [(ngModel)]="myValue" #myModel="ngModel">

```

I.e. **ngModel** can export itself on the element and then be used in the template. Normally, this would result in expressions before the `<input>` that use the exported directive to have an old value as they have been dirty checked before. As this is a very common case for **ngModel**, we added this second change detection run.

**Notes**

- this is just one extra run no matter how many **ngModel**'s have been changed.
- this is a general problem when using `exportAs` for directives!

```

const resolvedPromise = (() => Promise.resolve(null))();

```

**ngModelGroup** Creates a `FormControl` instance from a domain model and binds it to a form control element. The `FormControl` instance tracks the value, user interaction, and validation status of the control and keeps the view synced with the model. If used within a parent form, the directive also registers itself with the form as a child control. This directive is used by itself or as part of a larger form. Use the `ngModel` selector to activate it. It accepts a domain model as an optional `Input`. If you have a one-way binding to `ngModel` with `[]` syntax, changing the domain model's value in the component class sets the value in the view. If you have a two-way binding with `[( )]` syntax (also known as 'banana-in-a-box syntax'), the value in the UI always syncs back to the domain model in your class. To inspect the properties of the associated `FormControl` (like the validity state), export the directive into a local template variable using `ngModel` as the key (ex: `#myVar="ngModel"`). You can then access the control

using the directive's `control` property. However, the most commonly used properties (like `valid` and `dirty`) also exist on the control for direct access. See a full list of properties directly available in `AbstractControlDirective``.

@see `RadioControlValueAccessor`` @see `SelectControlValueAccessor`` @usageNotes

### Using ngModel on a standalone control

The following examples show a simple standalone control using `ngModel``:

```
{ @example forms/ts/simpleNgModel/simple_ng_model_example.ts region='Component'}
```

When using the `ngModel`` within `<form>` tags, you'll also need to supply a `name`` attribute so that the control can be registered with the parent form under that name.

In the context of a parent form, it's often unnecessary to include one-way or two-way binding, as the parent form syncs the value for you. You access its properties by exporting it into a local template variable using `ngForm`` such as (`#f="ngForm"`). Use the variable where needed on form submission.

If you do need to populate initial values into your form, using a one-way binding for `ngModel`` tends to be sufficient as long as you use the exported form's value rather than the domain model's value on submit.

### Using ngModel within a form

The following example shows controls using `ngModel`` within a form:

```
{ @example forms/ts/simpleForm/simple_form_example.ts region='Component'}
```

### Using a standalone ngModel within a group

The following example shows you how to use a standalone `ngModel`` control within a form. This controls the display of the form, but doesn't contain form data.

```
html <form> <input name="login" ngModel placeholder="Login"> <input type="checkbox" ngModel [ngModelOptions]="{standalone: true}"> Show more options? </form>
```

!-- form value: {login: " } --

### Setting the ngModel `name` attribute through options

The following example shows you an alternate way to set the name attribute. Here, an attribute identified as name is used within a custom form control component. To still be able to specify the `NgModel``'s name, you must specify it using the `ngModelOptions`` input instead.

```
html <form> <my-custom-form-control name="Nancy" ngModel [ngModelOptions]="{name: 'user'}"> </my-custom-form-control> </form>
```

!-- form value: {user: " } --

@ngModule FormsModule @publicApi

```
@Directive({ selector: '[ngModel]:not([formControlName]):not([formControl])', providers: [formControlBinding], exportAs: 'ngModel'}) @export class NgModel extends NgControl implements OnChanges, OnDestroy { public readonly control: FormControl = new FormControl(); // At runtime we coerce arbitrary values assigned to the 'disabled' input to a 'boolean'. // This is not reflected in the type of the property because outside of templates, consumers // should only deal with booleans. In templates, a string is allowed for convenience and to // match the native 'disabled attribute' semantics which can be observed on input elements. // This static member tells the compiler that values of type 'string' can also be assigned // to the input in a template. /** @nodoc */ static ngAcceptInputType_isDisabled: boolean|string; /** @internal */ _registered = false; /** Internal reference to the view model value. */ viewModel: any; /** @description Tracks the name bound to the directive. If a parent form exists, it uses this name as a key to retrieve this control's value. */ name: string; /** @description Tracks whether the control is disabled. */ disabled: boolean; /** @description Tracks the value bound to this directive. */ value: any; /** @description Tracks the configuration options for this 'ngModel' instance. */ options: NgModelOptions; /** An alternative to setting the name attribute on the form control element. See the [example](api/forms/NgModel#using-ngmodel-on-a-standalone-control) for using 'NgModel' as a standalone control. */ standalone: boolean; /** When set to true, the 'ngModel' will not register itself with its parent form, and acts as if it's not in the form. Defaults to false. If no parent form exists, this option has no effect. */ updateOn: string; Possible values: 'change' | 'blur' | 'submit'. */ @Input() options!: { name?: string, standalone?: boolean, updateOn?: string }; /** @description Event emitter for producing the 'ngModelChange' event after the view model updates. */ @Output() update = new EventEmitter(); constructor(@Optional() @Host() parent: ControlContainer, @Optional() @Self() @Inject(NG_VALIDATORS) validators: (Validator|ValidatorFn)[],
```

```

 @Optional() @Self() @Inject(NG_ASYNC_VALIDATORS) asyncValidators:\n
 (AsyncValidator|AsyncValidatorFn)[],\n @Optional() @Self() @Inject(NG_VALUE_ACCESSOR)\n
 valueAccessors: ControlValueAccessor[] {\n super();\n this._parent = parent;\n
 this._setValidators(validators);\n this._setAsyncValidators(asyncValidators);\n this.valueAccessor =\n
 selectValueAccessor(this, valueAccessors);\n }\n\n /** @nodoc */\n ngOnChanges(changes: SimpleChanges) {\n
 this._checkForErrors();\n if (!this._registered) this._setUpControl();\n if ('isDisabled' in changes) {\n
 this._updateDisabled(changes);\n }\n\n if (isPropertyUpdated(changes, this.viewModel)) {\n
 this._updateValue(this.model);\n this.viewModel = this.model;\n }\n }\n\n /** @nodoc */\n ngOnDestroy():\n
 void {\n this.formDirective && this.formDirective.removeControl(this);\n }\n\n /**\n * @description\n *\n
 Returns an array that represents the path from the top-level form to this control.\n * Each index is the string name\n
 of the control on that level.\n */\n get path(): string[] {\n return this._parent ? controlPath(this.name,\n
 this._parent) : [this.name];\n }\n\n /**\n * @description\n *\n
 The top-level directive for this control if present,\n * otherwise null.\n */\n get formDirective(): any {\n
 return this._parent ? this._parent.formDirective : null;\n }\n\n /**\n * @description\n *\n
 Sets the new value for the view model and emits an `ngModelChange` event.\n */\n *\n
 @param newValue The new value emitted by `ngModelChange`.\n */\n viewToModelUpdate(newValue: any):\n
 void {\n this.viewModel = newValue;\n this.update.emit(newValue);\n }\n\n private _setUpControl(): void {\n
 this._setUpdateStrategy();\n this._isStandalone() ? this._setUpStandalone() :\n
 this.formDirective.addControl(this);\n this._registered = true;\n }\n\n private _setUpdateStrategy(): void {\n
 if\n
 (this.options && this.options.updateOn != null) {\n this.control._updateOn = this.options.updateOn;\n }\n
 }\n\n private _isStandalone(): boolean {\n return !this._parent || !(this.options && this.options.standalone);\n
 }\n\n private _setUpStandalone(): void {\n setUpControl(this.control, this);\n
 }\n\n this.control.updateValueAndValidity({emitEvent: false});\n }\n\n private _checkForErrors(): void {\n
 if\n
 (!this._isStandalone()) {\n this._checkParentType();\n }\n this._checkName();\n }\n\n private\n
 _checkParentType(): void {\n if (typeof ngDevMode === 'undefined' || ngDevMode) {\n if (!(this._parent\n
 instanceof NgModelGroup) &&\n
 this._parent instanceof AbstractFormGroupDirective) {\n
 TemplateDrivenErrors.formGroupNameException();\n } else if (!(this._parent instanceof NgModelGroup) &&\n
 !(this._parent instanceof NgForm)) {\n TemplateDrivenErrors.modelParentException();\n }\n }\n }\n\n private\n
 _checkName(): void {\n if (this.options && this.options.name) this.name = this.options.name;\n\n if\n
 (!this._isStandalone() && !this.name && (typeof ngDevMode === 'undefined' || ngDevMode)) {\n
 TemplateDrivenErrors.missingNameException();\n }\n }\n\n private _updateValue(value: any): void {\n
 resolvedPromise.then(() => {\n this.control.setValue(value, {emitViewToModelChange: false});\n });\n }\n\n
 private _updateDisabled(changes: SimpleChanges) {\n const disabledValue =\n
 changes['isDisabled'].currentValue;\n\n const isDisabled = disabledValue === "" || (disabledValue &&\n
 disabledValue !== 'false');\n\n resolvedPromise.then(() => {\n if (isDisabled && !this.control.disabled) {\n
 this.control.disable();\n } else if (!isDisabled && this.control.disabled) {\n this.control.enable();\n }\n
 });\n }\n }\n\n /**\n *\n * Copyright Google LLC All Rights Reserved.\n *\n * Use of this source code is\n
 governed by an MIT-style license that can be\n * found in the LICENSE file at https://angular.io/license\n
 */\n\n import {Directive} from '@angular/core';\n\n /**\n * @description\n *\n * Adds `novalidate` attribute to all\n
 forms by default.\n * `novalidate` is used to disable browser's native form validation.\n * If you want to use\n
 native validation with Angular forms, just add `ngNativeValidate` attribute:\n * <form\n
 ngNativeValidate></form>\n */\n *\n @publicApi\n @ngModule ReactiveFormsModule\n @ngModule\n
 FormsModule\n @Directive({\n selector: 'form:not([ngNoForm]):not([ngNativeValidate])',\n host:\n
 {'novalidate': ''},\n })\n export class NgNoValidate {\n }\n\n export {NgNoValidate as NgNoValidate};\n }\n\n /**\n *\n * Copyright Google LLC All Rights Reserved.\n *\n * Use of this source code is governed by an MIT-\n
 style license that can be\n * found in the LICENSE file at https://angular.io/license\n */\n\n import {Directive,\n
 EventEmitter, forwardRef, Inject, InjectionToken, Input, OnChanges, Optional, Output, Self, SimpleChanges} from\n
 '@angular/core';\n\n import {FormControl} from '../model';\n\n import {NG_ASYNC_VALIDATORS,\n
 NG_VALIDATORS} from '../validators';\n\n import {ControlValueAccessor, NG_VALUE_ACCESSOR} from

```

```

'./control_value_accessor';\nimport {NgControl} from './ng_control';\nimport {ReactiveErrors} from
'./reactive_errors';\nimport {_ngModelWarning, isPropertyUpdated, selectValueAccessor, setUpControl} from
'./shared';\nimport {AsyncValidator, AsyncValidatorFn, Validator, ValidatorFn} from './validators';\n\n/**\n *
Token to provide to turn off the ngModel warning on FormControl and FormControlName.\n */\nexport const
NG_MODEL_WITH_FORM_CONTROL_WARNING =\n new
InjectionToken('NgModelWithFormControlWarning');\n\nexport const FormControlBinding: any = {\n provide:
NgControl,\n useExisting: forwardRef(() => FormControlDirective)\n};\n\n/**\n * @description\n * Synchronizes
a standalone `FormControl` instance to a form control element.\n *\n * Note that support for using the `ngModel`
input property and `ngModelChange` event with reactive\n * form directives was deprecated in Angular v6 and is
scheduled for removal in\n * a future version of Angular.\n * For details, see [Deprecated
features](guide/deprecations#ngmodel-with-reactive-forms).\n *\n * @see [Reactive Forms Guide](guide/reactive-
forms)\n * @see `FormControl`\n * @see `AbstractControl`\n *\n * @usageNotes\n *\n * The following example
shows how to register a standalone control and set its value.\n *\n * @example
forms/ts/simpleFormControl/simple_form_control_example.ts region='Component'}\n *\n * @ngModule
ReactiveFormsModule\n * @publicApi\n */\n@Directive({selector: '[formControl]', providers:
[FormControlBinding], exportAs: 'ngForm'})\nexport class FormControlDirective extends NgControl implements
OnChanges {\n /**\n * Internal reference to the view model value.\n * @nodoc\n */\n viewModel: any;\n\n /**\n * @description\n * Tracks the `FormControl` instance bound to the directive.\n */\n //
TODO(issue/24571): remove '!.\n @Input('formControl') form!: FormControl;\n\n /**\n * @description\n *
Triggers a warning in dev mode that this input should not be used with reactive forms.\n */\n @Input('disabled')\n set isDisabled(isDisabled: boolean) {\n if (typeof ngDevMode === 'undefined' || ngDevMode) {\n
ReactiveErrors.disabledAttrWarning();\n }\n }\n\n // TODO(kara): remove next 4 properties once deprecation
period is over\n /** @deprecated as of v6 */\n @Input('ngModel') model: any;\n\n /** @deprecated as of v6 */\n
 @Output('ngModelChange') update = new EventEmitter();\n\n /**\n * @description\n * Static property used to
track whether any ngModel warnings have been sent across\n * all instances of FormControlDirective. Used to
support warning config of `\"once\"`.\n */\n @internal\n static _ngModelWarningSentOnce = false;\n\n /**\n * @description\n * Instance property used to track whether an ngModel warning has been sent out for this\n
 * particular `FormControlDirective` instance. Used to support warning config of `\"always\"`.\n */\n @internal\n _ngModelWarningSent = false;\n\n constructor(\n @Optional() @Self() @Inject(NG_VALIDATORS)
validators: (Validator|ValidatorFn)[],\n @Optional() @Self() @Inject(NG_ASYNC_VALIDATORS)
asyncValidators: (AsyncValidator|AsyncValidatorFn)[],\n @Optional() @Self()
@Inject(NG_VALUE_ACCESSOR) valueAccessors: ControlValueAccessor[],\n @Optional()
@Inject(NG_MODEL_WITH_FORM_CONTROL_WARNING) private _ngModelWarningConfig: string|\n null) {\n super();\n this._setValidators(validators);\n this._setAsyncValidators(asyncValidators);\n
 this.valueAccessor = selectValueAccessor(this, valueAccessors);\n }\n\n /** @nodoc */\n ngOnChanges(changes:
SimpleChanges): void {\n if (this._isControlChanged(changes)) {\n setUpControl(this.form, this);\n if
(this.control.disabled && this.valueAccessor!.setDisabledState) {\n
 this.valueAccessor!.setDisabledState!(true);\n }\n this.form.updateValueAndValidity({emitEvent: false});\n
 }\n if (isPropertyUpdated(changes, this.viewModel)) {\n _ngModelWarning('formControl',
FormControlDirective, this, this._ngModelWarningConfig);\n this.form.setValue(this.model);\n
 this.viewModel = this.model;\n }\n }\n\n /**\n * @description\n * Returns an array that represents the path
from the top-level form to this control.\n * Each index is the string name of the control on that level.\n */\n get
path(): string[] {\n return [];\n }\n\n /**\n * @description\n * The `FormControl` bound to this directive.\n
 */\n get control(): FormControl {\n return this.form;\n }\n\n /**\n * @description\n * Sets the new value for
the view model and emits an `ngModelChange` event.\n */\n @param newValue The new value for the view
model.\n */\n viewToModelUpdate(newValue: any): void {\n this.viewModel = newValue;\n
 this.update.emit(newValue);\n }\n\n private _isControlChanged(changes: {[key: string]: any}): boolean {\n
 return changes.hasOwnProperty('form');\n }\n}\n",\n /**\n * @license\n * Copyright Google LLC All Rights

```

```

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LICENSE file at https://angular.io/license

import {Directive, EventEmitter, forwardRef, Inject, Input,
OnChanges, Optional, Output, Self, SimpleChanges} from '@angular/core';
import {FormArray, FormControl,
FormGroup} from '../model';
import {NG_ASYNC_VALIDATORS, NG_VALIDATORS} from
'../validators';
import {ControlContainer} from './control_container';
import {Form} from
'./form_interface';
import {ReactiveErrors} from './reactive_errors';
import {cleanupControl, cleanupValidators,
removeListItem, setUpControl, setUpFormContainer, setUpValidators, syncPendingControls} from
'./shared';
import {AsyncValidator, AsyncValidatorFn, Validator, ValidatorFn} from './validators';

import {FormControlName} from './form_control_name';
import {FormArrayName, FormGroupName} from
'./form_group_name';

export const formDirectiveProvider: any = {
 provide: ControlContainer,
 useExisting:
forwardRef(() => FormGroupDirective)
};

 * @description
 * Binds an existing `FormGroup` to a
DOM element.
 * This directive accepts an existing `FormGroup` instance. It will then use this
`FormGroup` instance to match any child `FormControl`, `FormGroup`,
 * and `FormArray` instances to child
`FormControlName`, `FormGroupName`,
 * and `FormArrayName` directives.
 * @see [Reactive Forms
Guide](guide/reactive-forms)
 * @see `AbstractControl`
 * ### Register Form Group
 * The following
example registers a `FormGroup` with first name and last name controls,
 * and listens for the *ngSubmit* event
when the button is clicked.
 * { @example forms/ts/simpleFormGroup/simple_form_group_example.ts
region='Component'}
 * @ngModule ReactiveFormsModule
 * @publicApi
 * @Directive({
 selector:
'formGroup',
 providers: [formDirectiveProvider],
 host: {
 '(submit)': 'onSubmit($event)',
 '(reset)':
'onReset()',
 },
 exportAs: 'ngForm'
})
export class FormGroupDirective extends ControlContainer implements
Form, OnChanges {
 /**
 * @description
 * Reports whether the form submission has been triggered.
 */
 public readonly submitted: boolean = false;
 /**
 * Reference to an old form group input value, which is
needed to cleanup old instance in case it
 * was replaced with a new one.
 */
 private _oldForm:
FormGroup|undefined;
 /**
 * @description
 * Tracks the list of added `FormControlName` instances
 */
 directives: FormControlName[] = [];
 /**
 * @description
 * Tracks the `FormGroup` bound to this
directive.
 */
 @Input('formGroup') form: FormGroup = null!;
 /**
 * @description
 * Emits an event
when the form submission has been triggered.
 */
 @Output() ngSubmit = new EventEmitter();

 constructor(
 @Optional() @Self() @Inject(NG_VALIDATORS) private validators:
(Validator|ValidatorFn)[],
 @Optional() @Self() @Inject(NG_ASYNC_VALIDATORS) private
asyncValidators:
(AsyncValidator|AsyncValidatorFn[]) {
 super();
 this._setValidators(validators);
 this._setAsyncValidators(asyncValidators);
 }

 ngOnChanges(changes: SimpleChanges):
void {
 this._checkFormPresent();
 if (changes.hasOwnProperty('form')) {
 this._updateValidators();
 this._updateDomValue();
 this._updateRegistrations();
 this._oldForm = this.form;
 }
 }

 /**
 * @description
 * Returns this directive's instance.
 */
 get formDirective(): Form {
 return this;
 }

 /**
 * @description
 * Returns the `FormGroup` bound to this directive.
 */
 get control(): FormGroup {
 return this.form;
 }

 /**
 * @description
 * Returns an array representing the path to this group. Because
this directive
 * always lives at the top level of a form, it always an empty array.
 */
 get path(): string[] {
 return [];
 }

 /**
 * @description
 * Method that sets up the control directive in this group, re-calculates
its value
 * and validity, and adds the instance to the internal list of directives.
 */
 @param dir The
`FormControlName` directive instance.
 */
 addControl(dir: FormControlName): FormControl {
 const ctrl:
any = this.form.get(dir.path);
 setUpControl(ctrl, dir);
 ctrl.updateValueAndValidity({emitEvent: false});
 this.directives.push(dir);
 return ctrl;
 }

 /**
 * @description
 * Retrieves the `FormControl` instance
from the provided `FormControlName` directive
 */
 @param dir The `FormControlName` directive
instance.
 */
 getControl(dir: FormControlName): FormControl {
 return
<FormControl>this.form.get(dir.path);
 }

 /**
 * @description
 * Removes the `FormControlName`
instance from the internal list of directives
 */
 @param dir The `FormControlName` directive instance.
 */
 removeControl(dir: FormControlName): void {
 removeListItem(this.directives, dir);
 }

 /**
 *
Adds a new `FormGroupName` directive instance to the form.
 */
 @param dir The `FormGroupName`

```

```

directive instance.\n *\n addFormGroup(dir: FormGroupName): void {\n const ctrl: any =
this.form.get(dir.path);\n setUpFormContainer(ctrl, dir);\n ctrl.updateValueAndValidity({emitEvent: false});\n
}\n\n /**\n * No-op method to remove the form group.\n * \n * @param dir The `FormGroupName` directive
instance.\n * \n */\n removeFormGroup(dir: FormGroupName): void {\n\n\n /**\n * @description\n * Retrieves the
`FormGroup` for a provided `FormGroupName` directive instance\n * \n * @param dir The `FormGroupName`
directive instance.\n * \n */\n getFormGroup(dir: FormGroupName): FormGroup {\n return
<FormGroup>this.form.get(dir.path);\n }\n\n /**\n * Adds a new `FormArrayName` directive instance to the
form.\n * \n * @param dir The `FormArrayName` directive instance.\n * \n */\n addFormArray(dir:
FormArrayName): void {\n const ctrl: any = this.form.get(dir.path);\n setUpFormContainer(ctrl, dir);\n
ctrl.updateValueAndValidity({emitEvent: false});\n }\n\n /**\n * No-op method to remove the form array.\n * \n
* @param dir The `FormArrayName` directive instance.\n * \n */\n removeFormArray(dir: FormArrayName): void
{\n\n\n /**\n * @description\n * Retrieves the `FormArray` for a provided `FormArrayName` directive
instance.\n * \n * @param dir The `FormArrayName` directive instance.\n * \n */\n getFormArray(dir:
FormArrayName): FormArray {\n return <FormArray>this.form.get(dir.path);\n }\n\n /**\n * Sets the new
value for the provided `FormControlName` directive.\n * \n * @param dir The `FormControlName` directive
instance.\n * \n * @param value The new value for the directive's control.\n * \n */\n updateModel(dir:
FormControlName, value: any): void {\n const ctrl = <FormControl>this.form.get(dir.path);\n
ctrl.setValue(value);\n }\n\n /**\n * @description\n * Method called with the "submit" event is triggered on the
form.\n * \n * Triggers the `ngSubmit` emitter to emit the "submit" event as its payload.\n * \n * @param $event
The "submit" event object\n * \n */\n onSubmit($event: Event): boolean {\n (this as {submitted:
boolean}).submitted = true;\n syncPendingControls(this.form, this.directives);\n this.ngSubmit.emit($event);\n
return false;\n }\n\n /**\n * @description\n * Method called when the "reset" event is triggered on the form.\n
* \n * \n */\n onReset(): void {\n this.resetForm();\n }\n\n /**\n * @description\n * Resets the form to an initial value
and resets its submitted status.\n * \n * @param value The new value for the form.\n * \n */\n resetForm(value: any =
undefined): void {\n this.form.reset(value);\n (this as {submitted: boolean}).submitted = false;\n }\n\n\n /**
* @internal\n */\n _updateDomValue() {\n this.directives.forEach(dir => {\n const newCtrl: any =
this.form.get(dir.path);\n if (dir.control !== newCtrl) {\n // Note: the value of the `dir.control` may not be
defined, for example when it's a first\n // `FormControl` that is added to a `FormGroup` instance (via
`addControl` call).\n cleanUpControl(dir.control || null, dir);\n if (newCtrl) setUpControl(newCtrl, dir);\n
(dir as {control: FormControl}).control = newCtrl;\n }\n });\n\n this.form._updateTreeValidity({emitEvent:
false});\n }\n\n private _updateRegistrations() {\n this.form._registerOnCollectionChange(() =>
this._updateDomValue());\n if (this._oldForm) {\n this._oldForm._registerOnCollectionChange(() => {});\n
}\n }\n\n private _updateValidators() {\n setUpValidators(this.form, this, /* handleOnValidatorChange */
false);\n if (this._oldForm) {\n cleanUpValidators(this._oldForm, this, /* handleOnValidatorChange */ false);\n
}\n }\n\n private _checkFormPresent() {\n if (!this.form && (typeof ngDevMode === 'undefined' ||
ngDevMode)) {\n ReactiveErrors.missingFormException();\n }\n }\n\n\n",/**\n * @license\n * Copyright
Google LLC All Rights Reserved.\n * \n * Use of this source code is governed by an MIT-style license that can be\n
* found in the LICENSE file at https://angular.io/license\n * \n\n\nimport {Directive, forwardRef, Host, Inject, Input,
OnDestroy, OnInit, Optional, Self, SkipSelf} from '@angular/core';\n\nimport {FormArray} from
'./../model';\n\nimport {NG_ASYNC_VALIDATORS, NG_VALIDATORS} from './../validators';\n\nimport
{AbstractFormGroupDirective} from './abstract_form_group_directive';\n\nimport {ControlContainer} from
'./control_container';\n\nimport {ReactiveErrors} from './reactive_errors';\n\nimport {controlPath} from
'./shared';\n\nimport {AsyncValidator, AsyncValidatorFn, Validator, ValidatorFn} from './validators';\n\nimport
{FormGroupDirective} from './form_group_directive';\n\n\nexport const formGroupNameProvider: any = {\n
provide: ControlContainer,\n useExisting: forwardRef(() => FormGroupName)\n};\n\n/**\n * @description\n * \n
* \n */\n Syncs a nested `FormGroup` to a DOM element.\n * \n * This directive can only be used with a parent
`FormGroupDirective`.\n * \n * It accepts the string name of the nested `FormGroup` to link, and\n * looks for a
`FormGroup` registered with that name in the parent\n * `FormGroup` instance you passed into

```





```

this.formDirective!.getFormArray(this);\n }\n\n /**\n * @description\n * The top-level directive for this group if
present, otherwise null.\n */\n get formDirective(): FormGroupDirective|null {\n return this._parent ?
<FormGroupDirective>this._parent.formDirective : null;\n }\n\n /**\n * @description\n * Returns an array that
represents the path from the top-level form to this control.\n * Each index is the string name of the control on that
level.\n */\n get path(): string[] {\n return controlPath(this.name === null ? this.name : this.name.toString(),
this._parent);\n }\n\n private _checkParentType(): void {\n if (_hasInvalidParent(this._parent) && (typeof
ngDevMode === 'undefined' || ngDevMode)) {\n ReactiveErrors.arrayParentException();\n }\n
}\n\nfunction _hasInvalidParent(parent: ControlContainer): boolean {\n return !(parent instanceof
FormGroupName) && !(parent instanceof FormGroupDirective) &&\n !(parent instanceof
FormArrayName);\n }\n\n", /**\n * @license\n * Copyright Google LLC All Rights Reserved.\n *\n * Use of this
source code is governed by an MIT-style license that can be\n * found in the LICENSE file at
https://angular.io/license\n */\n\nimport {Directive, EventEmitter, forwardRef, Host, Inject, Input, OnChanges,
OnDestroy, Optional, Output, Self, SimpleChanges, SkipSelf} from '@angular/core';\n\nimport {FormControl}
from '../model';\nimport {NG_ASYNC_VALIDATORS, NG_VALIDATORS} from '../validators';\nimport
{AbstractFormGroupDirective} from './abstract_form_group_directive';\nimport {ControlContainer} from
'./control_container';\nimport {ControlValueAccessor, NG_VALUE_ACCESSOR} from
'./control_value_accessor';\nimport {NgControl} from './ng_control';\nimport {ReactiveErrors} from
'./reactive_errors';\nimport {_ngModelWarning, controlPath, isPropertyUpdated, selectValueAccessor} from
'./shared';\nimport {AsyncValidator, AsyncValidatorFn, Validator, ValidatorFn} from './validators';\n\nimport
{NG_MODEL_WITH_FORM_CONTROL_WARNING} from './form_control_directive';\nimport
{FormGroupDirective} from './form_group_directive';\nimport {FormArrayName, FormGroupName} from
'./form_group_name';\n\nexport const controlNameBinding: any = {\n provide: NgControl,\n useExisting:
forwardRef(() => FormControlName)\n};\n\n /**\n * @description\n * Syncs a `FormControl` in an existing
`FormGroup` to a form control\n * element by name.\n *\n * @see [Reactive Forms Guide](guide/reactive-forms)\n
*\n * @see `FormControl`\n *\n * @see `AbstractControl`\n *\n * @usageNotes\n *\n * ### Register `FormControl` within
a group\n *\n * The following example shows how to register multiple form controls within a form group\n * and
their value.\n *\n * { @example forms/ts/simpleFormGroup/simple_form_group_example.ts region='Component' }\n
*\n * To see `formControlName` examples with different form control types, see:\n *\n * * Radio buttons:
`RadioControlValueAccessor`\n *\n * * Selects: `SelectControlValueAccessor`\n *\n * ### Use with ngModel is
deprecated\n *\n * Support for using the `ngModel` input property and `ngModelChange` event with reactive\n *
form directives has been deprecated in Angular v6 and is scheduled for removal in\n * a future version of Angular.\n
*\n * For details, see [Deprecated features](guide/deprecations#ngmodel-with-reactive-forms).\n *\n * @ngModule
ReactiveFormsModule\n *\n * @publicApi\n */\n\n@Directive({selector: '[formControlName]', providers:
[controlNameBinding]})\n\nexport class FormControlName extends NgControl implements OnChanges, OnDestroy
{\n private _added = false;\n /**\n * Internal reference to the view model value.\n * @internal\n */\n
viewModel: any;\n\n /**\n * @description\n * Tracks the `FormControl` instance bound to the directive.\n */\n
// TODO(issue/24571): remove '!.\n readonly control!: FormControl;\n\n /**\n * @description\n * Tracks the
name of the `FormControl` bound to the directive. The name corresponds\n * to a key in the parent `FormGroup`
or `FormArray`.\n * Accepts a name as a string or a number.\n * The name in the form of a string is useful for
individual forms,\n * while the numerical form allows for form controls to be bound\n * to indices when iterating
over controls in a `FormArray`.\n */\n // TODO(issue/24571): remove '!.\n @Input('formControlName') name!:
string|number|null;\n\n /**\n * @description\n * Triggers a warning in dev mode that this input should not be
used with reactive forms.\n */\n @Input('disabled')\n set isDisabled(isDisabled: boolean) {\n if (typeof
ngDevMode === 'undefined' || ngDevMode) {\n ReactiveErrors.disabledAttrWarning();\n }\n }\n\n //
TODO(kara): remove next 4 properties once deprecation period is over\n\n /** @deprecated as of v6 */\n
@Input('ngModel') model: any;\n\n /** @deprecated as of v6 */\n @Output('ngModelChange') update = new
EventEmitter();\n\n /**\n * @description\n * Static property used to track whether any ngModel warnings have
been sent across\n * all instances of FormControlName. Used to support warning config of `\"once\"`.\n *\n *

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directive\n * The following example implements the `AsyncValidator` interface to create an\n * async validator
directive with a custom error key.\n * ``typescript\n * import { of } from 'rxjs';\n * @Directive({\n *
selector: '[customAsyncValidator]',\n * providers: [{provide: NG_ASYNC_VALIDATORS, useExisting:
CustomAsyncValidatorDirective, multi:\n * true}]\n * })\n * class CustomAsyncValidatorDirective implements
AsyncValidator {\n * validate(control: AbstractControl): Observable<ValidationErrors|null> {\n * return
of({'custom': true});\n * }\n * }\n * ``\n * @publicApi\n * ^\n * export interface AsyncValidator extends
Validator {\n /**\n * @description\n * Method that performs async validation against the provided control.\n
*\n * @param control The control to validate against.\n *\n * @returns A promise or observable that resolves a
map of validation errors\n * if validation fails, otherwise null.\n * ^\n * validate(control: AbstractControl):\n
Promise<ValidationErrors|null>|Observable<ValidationErrors|null>;\n }\n /**\n * @description\n * Provider which
adds `RequiredValidator` to the `NG_VALIDATORS` multi-provider list.\n * ^\n * export const
REQUIRED_VALIDATOR: StaticProvider = {\n provide: NG_VALIDATORS,\n useExisting: forwardRef(() =>
RequiredValidator),\n multi: true\n};\n /**\n * @description\n * Provider which adds
`CheckboxRequiredValidator` to the `NG_VALIDATORS` multi-provider list.\n * ^\n * export const
CHECKBOX_REQUIRED_VALIDATOR: StaticProvider = {\n provide: NG_VALIDATORS,\n useExisting:
forwardRef(() => CheckboxRequiredValidator),\n multi: true\n};\n /**\n * @description\n * A directive that
adds the `required` validator to any controls marked with the\n * `required` attribute. The directive is provided with
the `NG_VALIDATORS` multi-provider list.\n * @see [Form Validation](guide/form-validation)\n *\n * @usageNotes\n *\n * ### Adding a required validator using template-driven forms\n *\n * ``\n * <input
name="fullName" ngModel required>\n * ``\n *\n * @ngModule FormsModule\n * @ngModule
ReactiveFormsModule\n * @publicApi\n * ^\n * @Directive({\n selector:\n
':not([type=checkbox])[required][formControlName],:not([type=checkbox])[required][formControl],:not([type=chec
kbox])[required][ngModel]',\n providers: [REQUIRED_VALIDATOR],\n host: {'[attr.required]': 'required ? \'"\n *
null'\n *}')\n *})\n * export class RequiredValidator implements Validator {\n private _required = false;\n private
_onChange?: () => void;\n /**\n * @description\n * Tracks changes to the required attribute bound to this
directive.\n * ^\n * @Input()\n * get required(): boolean|string {\n return this._required;\n }\n * set required(value:
boolean|string) {\n this._required = value !== null && value !== false && `${value}` !== 'false';\n if
(this._onChange) this._onChange();\n }\n /**\n * Method that validates whether the control is empty.\n *
Returns the validation result if enabled, otherwise null.\n * @nodoc\n * ^\n * validate(control: AbstractControl):
ValidationErrors|null {\n return this.required ? Validators.required(control) : null;\n }\n /**\n * Registers a
callback function to call when the validator inputs change.\n * @nodoc\n * ^\n * registerOnValidatorChange(fn: ()
=> void): void {\n this._onChange = fn;\n }\n }\n /**\n * A Directive that adds the `required` validator to
checkbox controls marked with the\n * `required` attribute. The directive is provided with the `NG_VALIDATORS`
multi-provider list.\n * @see [Form Validation](guide/form-validation)\n *\n * @usageNotes\n *\n * ###
Adding a required checkbox validator using template-driven forms\n *\n * The following example shows how to
add a checkbox required validator to an input attached to an\n * ngModel binding.\n *\n * ``\n * <input
type="checkbox" name="active" ngModel required>\n * ``\n *\n * @publicApi\n * @ngModule FormsModule\n
*\n * @ngModule ReactiveFormsModule\n * ^\n * @Directive({\n selector:\n
'input[type=checkbox][required][formControlName],input[type=checkbox][required][formControl],input[type=chec
kbox][required][ngModel]',\n providers: [CHECKBOX_REQUIRED_VALIDATOR],\n host: {'[attr.required]':
'required ? \'"\n * null'\n *}')\n *})\n * export class CheckboxRequiredValidator extends RequiredValidator {\n /**\n *
Method that validates whether or not the checkbox has been checked.\n * Returns the validation result if enabled,
otherwise null.\n * @nodoc\n * ^\n * validate(control: AbstractControl): ValidationErrors|null {\n return
this.required ? Validators.requiredTrue(control) : null;\n }\n }\n /**\n * @description\n * Provider which adds
`EmailValidator` to the `NG_VALIDATORS` multi-provider list.\n * ^\n * export const EMAIL_VALIDATOR: any =
{\n provide: NG_VALIDATORS,\n useExisting: forwardRef(() => EmailValidator),\n multi: true\n};\n /**\n * A
directive that adds the `email` validator to controls marked with the\n * `email` attribute. The directive is provided
with the `NG_VALIDATORS` multi-provider list.\n * @see [Form Validation](guide/form-validation)\n *\n *

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@usageNotes\n * \n * ### Adding an email validator\n * \n * The following example shows how to add an email
validator to an input attached to an ngModel\n * binding.\n * \n * \n * <input type="email" name="email"
ngModel email>\n * <input type="email" name="email" ngModel email="true">\n * <input type="email"
name="email" ngModel [email]="true">\n * \n * \n * @publicApi\n * @ngModule FormsModule\n *
@ngModule ReactiveFormsModule\n * \n @Directive({\n selector:
'[email][formControlName],[email][formControl],[email][ngModel]',\n providers:
[EMAIL_VALIDATOR]\n})\n\nexport class EmailValidator implements Validator {\n private _enabled = false;\n
private _onChange?: () => void;\n\n /**\n * @description\n * Tracks changes to the email attribute bound to this
directive.\n * \n * @Input()\n set email(value: boolean|string) {\n this._enabled = value === " || value === true ||
value === 'true';\n if (this._onChange) this._onChange();\n }\n\n /**\n * Method that validates whether an email
address is valid.\n * \n * Returns the validation result if enabled, otherwise null.\n * \n * @nodoc\n * \n validate(control:
AbstractControl): ValidationErrors|null {\n return this._enabled ? Validators.email(control) : null;\n }\n\n /**\n
* Registers a callback function to call when the validator inputs change.\n * \n * @nodoc\n * \n
registerOnValidatorChange(fn: () => void): void {\n this._onChange = fn;\n }\n}\n\n/**\n * @description\n * A
function that receives a control and synchronously returns a map of\n * validation errors if present, otherwise null.\n
*\n * \n * @publicApi\n * \n\nexport interface ValidatorFn {\n (control: AbstractControl):
ValidationErrors|null;\n}\n\n/**\n * @description\n * A function that receives a control and returns a Promise or
observable\n * that emits validation errors if present, otherwise null.\n * \n * \n * @publicApi\n * \n\nexport interface
AsyncValidatorFn {\n (control: AbstractControl):
Promise<ValidationErrors|null>|Observable<ValidationErrors|null>;\n}\n\n/**\n * @description\n * Provider which
adds `MinLengthValidator` to the `NG_VALIDATORS` multi-provider list.\n * \n\nexport const
MIN_LENGTH_VALIDATOR: any = {\n provide: NG_VALIDATORS,\n useExisting: forwardRef(() =>
MinLengthValidator),\n multi: true\n};\n\n/**\n * A directive that adds minimum length validation to controls
marked with the\n * `minlength` attribute. The directive is provided with the `NG_VALIDATORS` multi-provider
list.\n * \n * @see [Form Validation](guide/form-validation)\n * \n * @usageNotes\n * \n * ### Adding a minimum
length validator\n * \n * The following example shows how to add a minimum length validator to an input attached
to an\n * ngModel binding.\n * \n * \n * \n * <input name="firstName" ngModel minlength="4">\n * \n * \n * \n *
@ngModule ReactiveFormsModule\n * @ngModule FormsModule\n * @publicApi\n * \n @Directive({\n selector:
'[minlength][formControlName],[minlength][formControl],[minlength][ngModel]',\n providers:
[MIN_LENGTH_VALIDATOR],\n host: {'[attr.minlength]': 'minlength ? minlength : null'}\n})\n\nexport class
MinLengthValidator implements Validator, OnChanges {\n private _validator: ValidatorFn =
Validators.nullValidator;\n private _onChange?: () => void;\n\n /**\n * @description\n * Tracks changes to the
the minimum length bound to this directive.\n * \n * @Input()\n minlength!: string|number; // This input is always
defined, since the name matches selector.\n\n /**\n * @nodoc\n * \n ngOnChanges(changes: SimpleChanges): void {\n
if ('minlength' in changes) {\n this._createValidator();\n if (this._onChange) this._onChange();\n }\n }\n\n
/**\n * Method that validates whether the value meets a minimum length requirement.\n * \n * Returns the validation
result if enabled, otherwise null.\n * \n * @nodoc\n * \n validate(control: AbstractControl): ValidationErrors|null {\n
return this.minlength == null ? null : this._validator(control);\n }\n\n /**\n * Registers a callback function to call
when the validator inputs change.\n * \n * @nodoc\n * \n registerOnValidatorChange(fn: () => void): void {\n
this._onChange = fn;\n }\n\n private _createValidator(): void {\n this._validator = Validators.minLength(\n
typeof this.minlength === 'number' ? this.minlength : parseInt(this.minlength, 10));\n }\n}\n\n/**\n *
@description\n * Provider which adds `MaxLengthValidator` to the `NG_VALIDATORS` multi-provider list.\n * \n\n
export const MAX_LENGTH_VALIDATOR: any = {\n provide: NG_VALIDATORS,\n useExisting:
forwardRef(() => MaxLengthValidator),\n multi: true\n};\n\n/**\n * A directive that adds max length validation to
controls marked with the\n * `maxlength` attribute. The directive is provided with the `NG_VALIDATORS` multi-
provider list.\n * \n * @see [Form Validation](guide/form-validation)\n * \n * @usageNotes\n * \n * ### Adding a
maximum length validator\n * \n * The following example shows how to add a maximum length validator to an input
attached to an\n * ngModel binding.\n * \n * \n * \n * <input name="firstName" ngModel maxlength="25">\n *

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```n *n * @ngModule ReactiveFormsModule\n * @ngModule FormsModule\n * @publicApi\n
*^n@Directive({n selector: '[maxlength][formControlName],[maxlength][formControl],[maxlength][ngModel]',\n
providers: [MAX_LENGTH_VALIDATOR],\n host: {'[attr.maxlength]': 'maxlength ? maxlength :
null'}\n}))\nexport class MaxLengthValidator implements Validator, OnChanges {\n private _validator: ValidatorFn
= Validators.nullValidator;\n private _onChange?: () => void;\n\n /**\n * @description\n * Tracks changes to
the the maximum length bound to this directive.\n *^n @Input()\n maxlength!: string|number; // This input is
always defined, since the name matches selector.\n\n /** @nodoc *\n ngOnChanges(changes: SimpleChanges):
void {\n if ('maxlength' in changes) {\n this._createValidator();\n if (this._onChange) this._onChange();\n
}\n }\n\n /**\n * Method that validates whether the value exceeds the maximum length requirement.\n *
@nodoc\n *^n validate(control: AbstractControl): ValidationErrors|null {\n return this.maxlength != null ?
this._validator(control) : null;\n }\n\n /**\n * Registers a callback function to call when the validator inputs
change.\n * @nodoc\n *^n registerOnValidatorChange(fn: () => void): void {\n this._onChange = fn;\n }\n\n
private _createValidator(): void {\n this._validator = Validators.maxLength(\n typeof this.maxlength ===
'number' ? this.maxlength : parseInt(this.maxlength, 10));\n }\n}\n\n/**\n * @description\n * Provider which adds
`PatternValidator` to the `NG_VALIDATORS` multi-provider list.\n *^nexport const PATTERN_VALIDATOR:
any = {\n provide: NG_VALIDATORS,\n useExisting: forwardRef(() => PatternValidator),\n multi:
true\n};\n\n/**\n * @description\n * A directive that adds regex pattern validation to controls marked with the\n *
`pattern` attribute. The regex must match the entire control value.\n * The directive is provided with the
`NG_VALIDATORS` multi-provider list.\n *^n * @see [Form Validation](guide/form-validation)\n *^n *
@usageNotes\n *^n * ### Adding a pattern validator\n *^n * The following example shows how to add a pattern
validator to an input attached to an\n * ngModel binding.\n *^n * ``html\n * <input name=\"firstName\" ngModel
pattern=\"[a-zA-Z]*\">\n * ``\n *^n * @ngModule ReactiveFormsModule\n * @ngModule FormsModule\n *
@publicApi\n *^n@Directive({n selector:
'[pattern][formControlName],[pattern][formControl],[pattern][ngModel]',\n
providers:
[PATTERN_VALIDATOR],\n host: {'[attr.pattern]': 'pattern ? pattern : null'}\n}))\nexport class PatternValidator
implements Validator, OnChanges {\n private _validator: ValidatorFn = Validators.nullValidator;\n private
_onChange?: () => void;\n\n /**\n * @description\n * Tracks changes to the pattern bound to this directive.\n
*^n @Input()\n pattern!: string|RegExp; // This input is always defined, since the name matches selector.\n\n /**
@nodoc *\n ngOnChanges(changes: SimpleChanges): void {\n if ('pattern' in changes) {\n
this._createValidator();\n if (this._onChange) this._onChange();\n }\n }\n\n /**\n * Method that validates
whether the value matches the the pattern requirement.\n * @nodoc\n *^n validate(control: AbstractControl):
ValidationErrors|null {\n return this._validator(control);\n }\n\n /**\n * Registers a callback function to call
when the validator inputs change.\n * @nodoc\n *^n registerOnValidatorChange(fn: () => void): void {\n
this._onChange = fn;\n }\n\n private _createValidator(): void {\n this._validator =
Validators.pattern(this.pattern);\n }\n}\n\n"/**\n * @license\n * Copyright Google LLC All Rights Reserved.\n *^n
* Use of this source code is governed by an MIT-style license that can be\n * found in the LICENSE file at
https://angular.io/license\n *^n\nimport {NgModule, Type} from '@angular/core';\nimport
{CheckboxControlValueAccessor} from './directives/checkbox_value_accessor';\nimport {DefaultValueAccessor}
from './directives/default_value_accessor';\nimport {NgControlStatus, NgControlStatusGroup} from
 './directives/ng_control_status';\nimport {NgForm} from './directives/ng_form';\nimport {NgModel} from
 './directives/ng_model';\nimport {NgModelGroup} from './directives/ng_model_group';\nimport {NgNoValidate}
from './directives/ng_no_validate_directive';\nimport {NumberValueAccessor} from
 './directives/number_value_accessor';\nimport {RadioControlValueAccessor} from
 './directives/radio_control_value_accessor';\nimport {RangeValueAccessor} from
 './directives/range_value_accessor';\nimport {FormControlDirective} from
 './directives/reactive_directives/form_control_directive';\nimport {FormControlName} from
 './directives/reactive_directives/form_control_name';\nimport {FormGroupDirective} from
 './directives/reactive_directives/form_group_directive';\nimport {FormArrayName, FormGroupName} from

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./directives/reactive_directives/form_group_name';\nimport {NgSelectOption, SelectControlValueAccessor} from
./directives/select_control_value_accessor';\nimport {NgSelectMultipleOption,
SelectMultipleControlValueAccessor} from './directives/select_multiple_control_value_accessor';\nimport
{CheckboxRequiredValidator, EmailValidator, MaxLengthValidator, MinLengthValidator, PatternValidator,
RequiredValidator} from './directives/validators';\n\nexport {CheckboxControlValueAccessor} from
./directives/checkbox_value_accessor';\nexport {ControlValueAccessor} from
./directives/control_value_accessor';\nexport {DefaultValueAccessor} from
./directives/default_value_accessor';\nexport {NgControl} from './directives/ng_control';\nexport {NgControlStatus,
NgControlStatusGroup} from './directives/ng_control_status';\nexport {NgForm} from
./directives/ng_form';\nexport {NgModel} from './directives/ng_model';\nexport {NgModelGroup} from
./directives/ng_model_group';\nexport {NumberValueAccessor} from './directives/number_value_accessor';\nexport
{RadioControlValueAccessor} from './directives/radio_control_value_accessor';\nexport {RangeValueAccessor}
from './directives/range_value_accessor';\nexport {FormControlDirective,
NG_MODEL_WITH_FORM_CONTROL_WARNING} from
./directives/reactive_directives/form_control_directive';\nexport {FormControlName} from
./directives/reactive_directives/form_control_name';\nexport {FormGroupDirective} from
./directives/reactive_directives/form_group_directive';\nexport {FormArrayName, FormGroupName} from
./directives/reactive_directives/form_group_name';\nexport {NgSelectOption, SelectControlValueAccessor} from
./directives/select_control_value_accessor';\nexport {NgSelectMultipleOption,
SelectMultipleControlValueAccessor} from './directives/select_multiple_control_value_accessor';\n\nexport const
SHARED_FORM_DIRECTIVES: Type<any>[] = [\n NgNoValidate,\n NgSelectOption,\n
NgSelectMultipleOption,\n DefaultValueAccessor,\n NumberValueAccessor,\n RangeValueAccessor,\n
CheckboxControlValueAccessor,\n SelectControlValueAccessor,\n SelectMultipleControlValueAccessor,\n
RadioControlValueAccessor,\n NgControlStatus,\n NgControlStatusGroup,\n RequiredValidator,\n
MinLengthValidator,\n MaxLengthValidator,\n PatternValidator,\n CheckboxRequiredValidator,\n
EmailValidator,\n];\n\nexport const TEMPLATE_DRIVEN_DIRECTIVES: Type<any>[] = [NgModel,
NgModelGroup, NgForm];\n\nexport const REACTIVE_DRIVEN_DIRECTIVES: Type<any>[] =[\n
[FormControlDirective, FormGroupDirective, FormControlName, FormGroupName, FormArrayName];\n\n/**\n *
Internal module used for sharing directives between FormsModule and ReactiveFormsModule\n
*\n @NgModule({\n declarations: SHARED_FORM_DIRECTIVES,\n exports:
SHARED_FORM_DIRECTIVES,\n})\nexport class InternalFormsSharedModule {\n}\n\nexport
{InternalFormsSharedModule as InternalFormsSharedModule};\n", "/*\n * @license\n * Copyright Google LLC
All Rights Reserved.\n *\n * Use of this source code is governed by an MIT-style license that can be\n * found in
the LICENSE file at https://angular.io/license\n *\n\nimport {Injectable} from '@angular/core';\n\nimport
{AsyncValidatorFn, ValidatorFn} from './directives/validators';\nimport {AbstractControl, AbstractControlOptions,
FormArray, FormControl, FormGroup, FormHooks} from './model';\n\nfunction isAbstractControlOptions(options:
AbstractControlOptions|\n { [key: string]: any }): options is AbstractControlOptions {\n return
(<AbstractControlOptions>options).asyncValidators !== undefined ||\n
(<AbstractControlOptions>options).validators !== undefined ||\n
(<AbstractControlOptions>options).updateOn
!== undefined;\n}\n\n/**\n * @description\n * Creates an `AbstractControl` from a user-specified configuration.\n
*\n * The `FormBuilder` provides syntactic sugar that shortens creating instances of a `FormControl`,\n *
`FormGroup`, or `FormArray`. It reduces the amount of boilerplate needed to build complex\n * forms.\n *\n *
@see [Reactive Forms Guide](/guide/reactive-forms)\n *\n * @publicApi\n *\n @Injectable()\nexport class
FormBuilder {\n /**\n * @description\n * Construct a new `FormGroup` instance.\n *\n * @param
controlsConfig A collection of child controls. The key for each child is the name\n * under which it is registered.\n
*\n * @param options Configuration options object for the `FormGroup`. The object can\n * have two shapes:\n
*\n * 1) `AbstractControlOptions` object (preferred), which consists of:\n * * `validators`: A synchronous
validator function, or an array of validator functions\n * * `asyncValidators`: A single async validator or array of

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async validator functions\n * * `updateOn`: The event upon which the control should be updated (options: 'change'
| 'blur' |\n * submit')\n * * 2) Legacy configuration object, which consists of:\n * * `validator`: A synchronous
validator function, or an array of validator functions\n * * `asyncValidator`: A single async validator or array of
async validator functions\n * \n * \n group(\n   controlsConfig: {[key: string]: any},\n   options:
AbstractControlOptions|[key: string]: any}|null = null): FormGroup {\n   const controls =
this._reduceControls(controlsConfig);\n\n   let validators: ValidatorFn|ValidatorFn[]|null = null;\n   let
asyncValidators: AsyncValidatorFn|AsyncValidatorFn[]|null = null;\n   let updateOn: FormHooks|undefined =
undefined;\n\n   if (options != null) {\n     if (isAbstractControlOptions(options)) {\n       // `options` are
`AbstractControlOptions`\n       validators = options.validators != null ? options.validators : null;\n
asyncValidators = options.asyncValidators != null ? options.asyncValidators : null;\n       updateOn =
options.updateOn != null ? options.updateOn : undefined;\n     } else {\n       // `options` are legacy form group
options\n       validators = options['validator'] != null ? options['validator'] : null;\n       asyncValidators =
options['asyncValidator'] != null ? options['asyncValidator'] : null;\n     }\n   }\n\n   return new
FormGroup(controls, {asyncValidators, updateOn, validators});\n } \n\n /**\n * @description\n * Construct a
new `FormControl` with the given state, validators and options.\n * \n * @param formState Initializes the control
with an initial state value, or\n * with an object that contains both a value and a disabled status.\n * \n * @param
validatorOrOpts A synchronous validator function, or an array of\n * such functions, or an
`AbstractControlOptions` object that contains\n * validation functions and a validation trigger.\n * \n * @param
asyncValidator A single async validator or array of async validator\n * functions.\n * \n * @usageNotes\n * \n
* ### Initialize a control as disabled\n * \n * The following example returns a control with an initial value in a
disabled state.\n * \n * <code-example path="forms/ts/formBuilder/form_builder_example.ts" region="disabled-
control">\n * </code-example>\n * \n control(\n   formState: any, validatorOrOpts?:
ValidatorFn|ValidatorFn[]|AbstractControlOptions|null,\n   asyncValidator?:
AsyncValidatorFn|AsyncValidatorFn[]|null): FormControl {\n   return new FormControl(formState,
validatorOrOpts, asyncValidator);\n } \n\n /**\n * Constructs a new `FormArray` from the given array of
configurations,\n * validators and options.\n * \n * @param controlsConfig An array of child controls or control
configs. Each\n * child control is given an index when it is registered.\n * \n * @param validatorOrOpts A
synchronous validator function, or an array of\n * such functions, or an `AbstractControlOptions` object that
contains\n * validation functions and a validation trigger.\n * \n * @param asyncValidator A single async
validator or array of async validator\n * functions.\n * \n * \n array(\n   controlsConfig: any[],\n
validatorOrOpts?: ValidatorFn|ValidatorFn[]|AbstractControlOptions|null,\n   asyncValidator?:
AsyncValidatorFn|AsyncValidatorFn[]|null): FormArray {\n   const controls = controlsConfig.map(c =>
this._createControl(c));\n   return new FormArray(controls, validatorOrOpts, asyncValidator);\n } \n\n /**
*\n * @internal *\n * _reduceControls(controlsConfig: {[k: string]: any}): {[key: string]: AbstractControl} {\n   const
controls: {[key: string]: AbstractControl} = {};\n   Object.keys(controlsConfig).forEach(controlName => {\n
controls[controlName] = this._createControl(controlsConfig[controlName]);\n });\n   return controls;\n } \n\n /**
*\n * @internal *\n * _createControl(controlConfig: any): AbstractControl {\n   if (controlConfig instanceof FormControl
|| controlConfig instanceof FormGroup ||\n   controlConfig instanceof FormArray) {\n     return
controlConfig;\n   }\n   } else if (Array.isArray(controlConfig)) {\n     const value = controlConfig[0];\n     const
validator: ValidatorFn = controlConfig.length > 1 ? controlConfig[1] : null;\n     const asyncValidator:
AsyncValidatorFn = controlConfig.length > 2 ? controlConfig[2] : null;\n     return this.control(value, validator,
asyncValidator);\n   }\n   } else {\n     return this.control(controlConfig);\n   }\n } \n\n } \n\n /**\n * @license\n *
Copyright Google LLC All Rights Reserved.\n * \n * Use of this source code is governed by an MIT-style license
that can be\n * found in the LICENSE file at https://angular.io/license\n * \n\n /**\n * @module\n * @description\n
*\n * Entry point for all public APIs of the common package.\n * \n\n import {Version} from '@angular/core';\n\n /**\n *
@publicApi\n * \n\n export const VERSION = new Version('11.0.2');\n\n /**\n * @license\n * Copyright Google LLC
All Rights Reserved.\n * \n * Use of this source code is governed by an MIT-style license that can be\n * found in
the LICENSE file at https://angular.io/license\n * \n\n import {ModuleWithProviders, NgModule} from

```

```
'@angular/core';\n\nimport { InternalFormsSharedModule, NG_MODEL_WITH_FORM_CONTROL_WARNING, REACTIVE_DRIVEN_DIRECTIVES, TEMPLATE_DRIVEN_DIRECTIVES } from './directives';\nimport { RadioControlRegistry } from './directives/radio_control_value_accessor';\nimport { FormBuilder } from './form_builder';\n\n/**\n * Exports the required providers and directives for template-driven forms,\n * making them available for import by NgModules that import this module.\n * @see [Forms Overview](/guide/forms-overview)\n * @see [Template-driven Forms Guide](/guide/forms)\n * @publicApi\n */\n@NgModule({\n  declarations: [TEMPLATE_DRIVEN_DIRECTIVES],\n  providers: [RadioControlRegistry],\n  exports: [InternalFormsSharedModule, TEMPLATE_DRIVEN_DIRECTIVES]\n})\nexport class FormsModule {\n\n  /**\n   * Exports the required infrastructure and directives for reactive forms,\n   * making them available for import by NgModules that import this module.\n   * @see [Forms Overview](guide/forms-overview)\n   * @see [Reactive Forms Guide](guide/reactive-forms)\n   * @publicApi\n   */\n  @NgModule({\n    declarations: [REACTIVE_DRIVEN_DIRECTIVES],\n    providers: [FormBuilder, RadioControlRegistry],\n    exports: [InternalFormsSharedModule, REACTIVE_DRIVEN_DIRECTIVES]\n  })\n  export class ReactiveFormsModule {\n\n    /**\n     * @description\n     * Provides options for configuring the reactive forms module.\n     * @param opts An object of configuration options\n     * * `warnOnNgModelWithFormControl` Configures when to emit a warning when an `ngModel` binding is used with reactive form directives.\n     * @static withConfig(opts: {\n     * @deprecated as of v6 */ warnOnNgModelWithFormControl: 'never'|'once'|'always'\n     * }): ModuleWithProviders<ReactiveFormsModule> {\n     * return {\n     *   ngModule: ReactiveFormsModule,\n     *   providers: [\n     *     { provide: NG_MODEL_WITH_FORM_CONTROL_WARNING, useValue: opts.warnOnNgModelWithFormControl }\n     *   ],\n     *   }\n     * }\n     * @license\n     * Copyright Google LLC All Rights Reserved.\n     * Use of this source code is governed by an MIT-style license that can be found in the LICENSE file at https://angular.io/license\n     * @module\n     * @description\n     * This module is used for handling user input, by defining and building a `FormGroup` that consists of `FormControl` objects, and mapping them onto the DOM. `FormControl` objects can then be used to read information from the form DOM elements.\n     * Forms providers are not included in default providers; you must import these providers explicitly.\n     */\n    @NgModule({\n      imports: [InternalFormsSharedModule],\n      exports: [AbstractControlDirective, AbstractFormGroupDirective, CheckboxControlValueAccessor, ControlContainer, ControlValueAccessor, NG_VALUE_ACCESSOR, COMPOSITION_BUFFER_MODE, DefaultValueAccessor, Form, NgControl, NgControlStatus, NgControlStatusGroup, NgForm, NgModel, NgModelGroup, NgNoValidate, NumberValueAccessor, RadioControlValueAccessor, RangeValueAccessor, FormControlDirective, FormControlName, FormGroupDirective, FormGroupName, FormGroupArrayName, NgSelectOption, SelectControlValueAccessor, SelectMultipleControlValueAccessor, NgSelectMultipleOption, AsyncValidator, AsyncValidatorFn, CheckboxRequiredValidator, EmailValidator, MaxLengthValidator, MinLengthValidator, PatternValidator, RequiredValidator, ValidationErrors, Validator, ValidatorFn],\n      exports: [FormBuilder]
```



```
from './form_builder';\nextport {AbstractControl, AbstractControlOptions, FormArray, FormControl, FormGroup}
from './model';\nextport {NG_ASYNC_VALIDATORS, NG_VALIDATORS, Validators} from
 './validators';\nextport {VERSION} from './version';\n\nexport * from './form_providers';\n","/**\n *
Copyright Google LLC All Rights Reserved.\n *\n * Use of this source code is governed by an MIT-style license
that can be\n * found in the LICENSE file at https://angular.io/license\n *\n\n/**\n * @module\n * @description\n
 * Entry point for all public APIs of this package.\n *\n\nexport * from './src/forms';\n\n// This file only reexports
content of the `src` folder. Keep it that way.\n","/**\n * @license\n * Copyright Google LLC All Rights Reserved.\n
*\n * Use of this source code is governed by an MIT-style license that can be\n * found in the LICENSE file at
https://angular.io/license\n *\n\n// This file is not used to build this module. It is only used during editing\n// by the
TypeScript language service and during build for verification. `ngc`\n// replaces this file with production index.ts
when it rewrites private symbol\n// names.\n\nexport * from './public_api';\n","/**\n * Generated bundle index. Do
not edit.\n *\n\nexport * from './index';\n\n\nexport {InternalFormsSharedModule as
angular_packages_forms_forms_d,REACTIVE_DRIVEN_DIRECTIVES as
angular_packages_forms_forms_c,SHARED_FORM_DIRECTIVES as
angular_packages_forms_forms_a,TEMPLATE_DRIVEN_DIRECTIVES as angular_packages_forms_forms_b}
from './src/directives';\nextport {CHECKBOX_VALUE_ACCESSOR as angular_packages_forms_forms_e} from
 './src/directives/checkbox_value_accessor';\nextport {DEFAULT_VALUE_ACCESSOR as
angular_packages_forms_forms_f} from './src/directives/default_value_accessor';\nextport {AbstractControlStatus as
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angular_packages_forms_forms_bd,MIN_LENGTH_VALIDATOR as
angular_packages_forms_forms_bc,PATTERN_VALIDATOR as
angular_packages_forms_forms_be,REQUIRED_VALIDATOR as angular_packages_forms_forms_z} from
 './src/directives/validators';\n],\n\nnames":["getDOM","isPromise","isObservable","Examples","_buildValueString","_e
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No license file was found, but licenses were detected in source scan.

Angular

=====

The sources for this package are in the main [Angular](https://github.com/angular/angular) repo. Please file issues and pull requests against that repo.

Usage information and reference details can be found in [Angular documentation](https://angular.io/docs).

License: MIT

Found in path(s):

* /opt/cola/permits/1358260431_1657134847.3311746/0/forms-11-0-2-tgz/package/README.md

No license file was found, but licenses were detected in source scan.

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/**
 * @license Angular v11.0.2
 * (c) 2010-2020 Google LLC. https://angular.io/
 * License: MIT
 */
/**
 * @license
 * Copyright Google LLC All Rights Reserved.
 *
 * Use of this source code is governed by an MIT-style license that can be
 * found in the LICENSE file at https://angular.io/license
 */
/*! *****
Copyright (c) Microsoft Corporation.
```

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ol","removeControl","setControl","contains","controlName","_checkAllValuesPresent","_throwIfControlMissing","getRawValue","_reduceChildren","acc","subtreeUpdated","updated","child","k","_reduceValue","initValue","e_2","e_2_1","_registerControl","insert","removeAt","clear","reduce","e_3","e_3_1","formDirectiveProvider","NgForm","resolvedPromise","Promise","resolve","submitted","_directives","ngSubmit","ngAfterViewInit","then","container","_findContainer","getControl","addFormGroup","group","removeFormGroup","getFormGroup","updateModel","onSubmit","\$event","onReset","resetForm","pop","(submit)","(reset)","outputs","exportAs","AbstractFormGroupDirective","_checkParentType","formDirective","TemplateDrivenErrors","modelParentException","formGroupNameException","missingNameException","modelGroupParentException","modelGroupProvider","NgModelGroup","SkipSelf","NgNoValidate","formControlBinding","NgModel","resolvedPromise\$1","_registered","update","ngOnChanges","_checkForErrors","_setUpControl","_updateDisabled","model","_isStandalone","_setUpStandalone","standalone","disabledValue","Output","novalidate","NG_MODEL_WITH_FORM_CONTROL_WARNING","formControlBinding\$1","FormControlDirective","_ngModelWarningConfig","_isControlChanged","String","formDirectiveProvider\$1","FormGroupDirective","_checkFormPresent","_updateValidators","_updateDomValue","_updateRegistrations","_oldForm","addFormArray","removeFormArray","getFormArray","newCtrl","cleanupControl","formGroupNameProvider","FormGroupName","_hasInvalidParent","formArrayNameProvider","FormArrayName","controlNameBinding","FormControlName","_added","REQUIRED_VALIDATOR","RequiredValidator","CHECKBOX_REQUIRED_VALIDATOR","CheckboxRequiredValidator","_required","[attr.required]","EMAIL_VALIDATOR","EmailValidator","_enabled","MIN_LENGTH_VALIDATOR","MinLengthValidator","_validator","_createValidator","parseInt","[attr.minlength]","MAX_LENGTH_VALIDATOR","MaxLengthValidator","[attr.maxlength]","PATTERN_VALIDATOR","PatternValidator","[attr.pattern]","InternalFormsSharedModule","SHARED_FORM_DIRECTIVES","TEMPLATE_DRIVEN_DIRECTIVES","REACTIVE_DRIVEN_DIRECTIVES","NgModule","declarations","FormBuilder","controlsConfig","_reduceControls","isAbstractControlOptions","array","_createControl","controlConfig","FormsModule","VERSION","Version","ReactiveFormsModule","withConfig","ngModule","useValue","warnOnNgModelWithFormControl","angular_packages_forms_forms_a","angular_packages_forms_forms_b","angular_packages_forms_forms_ba","angular_packages_forms_forms_bb","angular_packages_forms_forms_bc","angular_packages_forms_forms_bd","angular_packages_forms_forms_be","angular_packages_forms_forms_c","angular_packages_forms_forms_d","angular_packages_forms_forms_e","angular_packages_forms_forms_f","angular_packages_forms_forms_g","angular_packages_forms_forms_h","angular_packages_forms_forms_i","angular_packages_forms_forms_j","angular_packages_forms_forms_k","angular_packages_forms_forms_l","angular_packages_forms_forms_m","angular_packages_forms_forms_n","angular_packages_forms_forms_o","angular_packages_forms_forms_p","angular_packages_forms_forms_q","angular_packages_forms_forms_r","angular_packages_forms_forms_s","angular_packages_forms_forms_t","angular_packages_forms_forms_u","angular_packages_forms_forms_v","angular_packages_forms_forms_w","angular_packages_forms_forms_x","angular_packages_forms_forms_y","angular_packages_forms_forms_z"],"mappings":":;::;:CAMC,SAAUA,EAAQC,GACI,iBAAZC,SAAOC,oBAAXC,OAAyBF,EAAQC,QAASE,QAAQ,iBAAkBA,QAAQ,mBAAoBA,QAAQ,QAASA,QAAQ,mBAC7I,mBAAXC,QAAyBA,OAAOC,IAAMD,OAAO,iBAAkB,CAAC,UAAW,gBAAiB,kBAAmB,OAAQ,kBAAmBJ,GACvHA,IAAzBD,EAASA,GAAUO,MAAsBC,GAACK,EAAOQ,IAAM,GAAIR,EAAOQ,GAAGC,MAAQ,IAAKT,EAAOQ,GAAGE,KAAAMV,EAAOQ,GAAGG,OAAQX,EAAOY,KAAMZ,EAAOY,KAAKC,WAHJ,CAIEC,MAAM,SAAWZ,EAASQ,EAAMC,EAAQC,EAAMC,GAAa;::;:OAgBzD,IAAIE,EAAoB,IAAIL,EAAKM,eAAe,mBAS5CC,EAA0B,CAC1BC,QAASH,EACTI,YAAaT,EAAKU,YAAW,WAAc,OAAOC,KACIDC,OAAO,GAYBPD,EAA8C,WAC9C,SAAASA,EAA6BE,EAAWC,GAC7CV,KAAKS,UAYYA,EACjBT,KAAKU,YAAcA,EAKnBV,KAAKW,SAAW,SAAUC,KAK1BZ,KAAKa,UAYY,aA8BrB,OxBAN,EAA6BO,UAAUC,WAAa,SAAUC,GAC1DhB,KAAKS,UAAUQ,YAAyJB,KAAKU,YAAyQ,cAAe,UAAWF,IAM1ET,EAA6BO,UAAUK,iBAAmB,SAAUC,GACHEpB,KAAKW,SAAWS,GAMpBb,EAA6BO,UAAUO,kBAAoB,SAAUD,GACjEpB,KAAKa,UAYYO,GAMrBb,EAA6BO,UAAUQ,iBAAmB,SAAUC,GACHEvB,KAAKS,UAAUQ,YAAyJB,KAAKU,YAAyQ,cAAe,WAAyK,IAEpEhB,EAA3CsC;::;:OAcjDA,EAA6BiB,WAAa,CACtC,CAAEC,KAAM7B,EAAK8B,UAAWC,KAAM,CAAC,CACnBC,SAAU,wGACVC,KAAM,CAAEC,WAAy,kCAAmCC,SAAU,eACjEC,UAAW,CAAC7B,OAG5BI,EAA6B0B,eAAiB,WAAc,MAAO,CAC/D,CAAER,KAAM7B,EAAKsC,WACb,CAAET,KAAM7B,EAAKuC;::;:AAUjB,IA

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A+B,MAApBhB,EAAQgB,SAAmBhB,EAAQgB,cAAWhI,IAIzD9D,EAAqC,MAAxB8K,EAAmB,UAAyA,EA
mB,UAAI,KACnEgC,EAA+C,MAA7BhC,EAAwB,eAAYA,EAAwB,eAAI,OAGnF,IAAI2H,GAAUC,EAAU,CA

AE5F,gBAAiBA,EAAiBhB,SAAU,AAAU9L,WAAYA,KAyBvGsc,EAAyljB,UAAUoF,QAAU,SAAU6U,EAAW9D,EAAiBxC,GACIE,OAAO,IAAIyG,GAAYH,EAAW9D,EAAiBxC,IAGBvDuP,EAAyljB,UAAUsjB,MAAQ,SAAUH,EAAGbhN,EAAiBxC,GACrE,IAAIxI,EAAQjM,KACRoa,EAAW6J,EAAe/b,KAAI,SAAUkB,GAAG,OA06C,EAAMoY,eAAejb,MAC7E,OAAO,IAAIr,GAAUD,EAAUnD,EAAiBxC,IAGpDuP,EAAyljB,UAAUojB,gBAAkB,SAAUD,GAC9C,IAAIhY,EAAQjM,KACRoa,EAAW,GAIf,OAHAzW,OAAOoF,KAAKkb,GAAGBrb,SAAQ,SAAUmT,GAC1C3B,EAAS2B,GAAG9P,EAAMoY,eAAeJ,EAaeI,OAEzD3B,GAGX4J,EAAyljB,UAAUujB,eAAiB,SAAUC,GAC7C,OAAIA,aAAyBpJ,IAAeoJ,aAAyBnK,IACjEmK,aAAyBjK,GACiBiK,EAefxgB,MAAM4F,QAAQ4a,GAIZtkB,KAAKkG,QAHAoe,EAAC,GACVA,EAACzf,OAAS,EAAIyf,EAAC,GAAG,KACzCA,EAACzf,OAAS,EAAIyf,EAAC,GAAG,MAI5DtK,KAAKkG,QAAQoe,IAGrBN,EAnHqB,GAqHhCA,GAAYxiB,WAAa,CACrB,CAAEC,KAAM7B,EAAKsO;;;;;;;AAajB,IakBIqW,GAIBAC,GAAU,IAAI5kB,EAAG6kB,QAAQ;;;;;;;QakB3BF,GACA,SAASA,QAID/iB,WAAa,CACrB,CAAEC,KAAM7B,EAAGkkB,SAAUniB,KAAM,CAAC,CACiBoiB,aAAcH,GACd5hB,UAAW,CAACuL,GACZnO,QAAS,CAACskB,GAA4BE,QAYtD,IAAIc,GAAGqC,WACrC,SAASA,KakBT,ORAA,EAAoBC,WAAa,SAAU3M,GACvC,MAAO,CACH4M,SAAUf,EACVliB,UAAW,CACP,CAAESB,QAAUGb,GAAGoCkE,SAAU7M,EAAG8M,iCAInEJ,EAnB6B,GAAGbxC,GAAGoBljB,WAAa,CAC7B,CAAEC,KAAM7B,EAAGkkB,SAAUniB,KAAM,CAAC,CACiBoiB,aAAc,CAACF,IACf7hB,UAAW,CAACgiB,GAAGzW,GACzBnO,QAAS,CAACskB,GAA4BG;;;;;;;AAiCtDzkB,EAAGqY,gBAAkBA,GACiBly,EAAG2K,yBAA2BA,EACn3K,EAAG2f,2BAA6BA,GACrC3f,EAAGkD,wBAA0BA,EACiCID,EAAGmB,6BAA+BA,EACvCnB,EAAGojB,0BAA4BA,GACpCpjB,EAAGyM,iBAAmBA,EAC3BzM,EAAGiD,qBAAuBA,EAC/BjD,EAAGwjB,eAAiBA,GACzBxjB,EAAGqib,UAAyA,GACpBjb,EAAG6iB,cAAgBA,GACxB7iB,EAAG4kB,YAAcA,GACtB5kB,EAAG8b,YAAcA,GACtB9b,EAAGyhB,qBAAuBA,GAC/BzhB,EAAG+iB,gBAAkBA,GACiB/iB,EAAG+a,UAAyA,GACpB/a,EAAG8hB,mBAAqBA,GAC7B9hB,EAAG0iB,cAAgBA,GACxBliB,EAAGmlB,YAAcA,GACtBnB,EAAGikB,mBAAqBA,GAC7BjkB,EAAG2jB,mBAAqBA,GAC7B3jB,EAAG0G,oBAAsBA,EAC9B1G,EAAGyG,cAAgBA,EACxBzG,EAAGa,kBAAoBA,EAC5Bb,EAAG4M,UAAyA,EACpB5M,EAAG4N,gBAAkBA,EACiB5N,EAAG8N,qBAAuBA,EAC/B9N,EAAGie,OAASA,GACjBje,EAAGwgB,QAAUA,GACiBxgB,EAAGogB,aAAeA,GACvBpgB,EAAGkS,eAAiBA,EACzBis,EAAGqO,oBAAsBA,EAC9BhO,EAAGokB,iBAAmBA,GAC3BpkB,EAAGkO,0BAA4BA,EACpCio,EAAG2P,mBAAqBA,EAC7B3P,EAAGslB,oBAAsBA,GAC9BtlB,EAAGkjB,kBAAoBA,GAC5BljB,EAAG0Q,2BAA6BA,EACrC1Q,EAAG0S,mCAAqCA,GAC7C1S,EAAGolB,QAAUA,GACiBplB,EAAG4G,WAAaA,EACrB5G,EAAGskB,2BAA6BA,GACrCtkB,EAAGsgB,cAAgBA,GACxBtgB,EAAGyT,wBAA0BA,GACiCzT,EAAG2IB,gCAAkCpB,GACiCvkB,EAAG4IB,gCAAkCpB,GACiCxB,EAAG6IB,iCAAmC1C,GAC3CnjB,EAAG8IB,iCAAmCvC,GAC3CvjB,EAAG+IB,iCAAmCrC,GAC3C1jB,EAAGqmB,iCAAmChC,GAC3ChkB,EAAGimB,iCAAmC9B,GAC3CnkB,EAAGkmB,gCAAkCzB,GACiCzkB,EAAGmmB,gCAAkC7B,GACiCtkB,EAAGomB,gCAAkCrlB,EACiCf,EAAGqmB,gCAAkCrjB,EACiChD,EAAGsmB,gCAAkCrZ,EACiCjN,EAAGumB,gCAAkCnZ,EACiCpN,EAAGwmB,gCAAkCxI,GACiChe,EAAGymB,gCAAkCiG,GACiCvgB,EAAG0mB,gCAAkCvG,GACiCngB,EAAG2mB,gCAAkC5Y,EACiC/N,EAAG4mB,gCAAkC3Y,EACiCjO,EAAG6mB,gCAAkC1Y,EACiCnO,EAAG8mB,gCAAkCpX,EACiC1P,EAAG+mB,gCAAkCxF,GACiCvhB,EAAGgnB,gCAAkCxF,GACiCxhB,EAAGinB,gCAAkCnE,GACiC9iB,EAAGknB,gCAAkCrF,GACiC7hB,EAAGmnB,gCAAkC1E,GACiCziB,EAAGonB,gCAAkCxE,GACiC5iB,EAAGqnB,gCAAkCxX,EACiC7P,EAAGsnB,gCAAkC7U,EACiCzS,EAAGunB,gCAAkC9T,GACiCzT,EAAGwnB,gCAAkCiH,GACiCtgB,EAAGqnB,gCAAkCxE,GAe1C1e,OAAOSg,eAAe7K,EAAS,aAAc,CAAe4B,OAAO","sourcesContent":["/*\n * @license Angular v11.0.2\n * (c) 2010-2020 Google LLC. https://angular.io/\n * License: MIT\n */\n\n(function (global, factory) {\n typeof exports === 'object' && typeof module !== 'undefined' ? factory(exports, require('@angular/core'), require('@angular/common'), require('rxjs'), require('rxjs/operators')) :\n typeof define === 'function' && define.amd ? define('@angular/forms', ['exports', '@angular/core', '@angular/common', 'rxjs', 'rxjs/operators'], factory) :\n (global = global || self, factory((global.ng = global.ng || {}), global.ng.forms = {}), global.ng.core, global.ng.common, global.rxs, global.rxs.operators));\n})(this, (function (exports, core, common, rxjs, operators) {\n 'use strict';\n\n /**\n * @license\n * Copyright Google LLC All Rights Reserved.\n *\n * Use of this source code is governed by an MIT-style license that can be found in the LICENSE file at\n * https://angular.io/license\n *\n * Used to provide a `ControlValueAccessor` for form controls.\n */

```

* See `DefaultValueAccessor` for how to implement one.\n
*\n
* @publicApi\n
*/\n
var
NG_VALUE_ACCESSOR = new core.InjectionToken('NgValueAccessor');\n\n
/**\n
* @license\n
* Copyright Google LLC All Rights Reserved.\n
*\n
* Use of this source code is governed by an MIT-style
license that can be\n
* found in the LICENSE file at https://angular.io/license\n
*/\n
var
CHECKBOX_VALUE_ACCESSOR = {\n
  provide: NG_VALUE_ACCESSOR,\n
  useExisting:
core.forwardRef(function () { return CheckboxControlValueAccessor; }),\n
  multi: true,\n
};\n
/**\n
* @description\n
* A `ControlValueAccessor` for writing a value and listening to changes on a checkbox input\n
* element.\n
*\n
* @usageNotes\n
*\n
* ### Using a checkbox with a reactive form.\n
*\n
* The
following example shows how to use a checkbox with a reactive form.\n
*\n
* ```ts\n
* const
rememberLoginControl = new FormControl();\n
* ```\n
*\n
* ```\n
* <input type="checkbox"\n
[formControl]="rememberLoginControl">\n
* ```\n
*\n
* @ngModule ReactiveFormsModule\n
* @ngModule FormsModule\n
* @publicApi\n
*/\n
var CheckboxControlValueAccessor = /** @class */
(function () {\n
  function CheckboxControlValueAccessor(_renderer, _elementRef) {\n
    this._renderer =
_renderer;\n
    this._elementRef = _elementRef;\n
    /**\n
* The registered callback function called
when a change event occurs on the input element.\n
* @nodoc\n
*/\n
    this.onChange = function
(_) {\n
    /**\n
* The registered callback function called when a blur event occurs on the input
element.\n
* @nodoc\n
*/\n
    this.onTouched = function () { };;\n
  }\n
  /**\n
* Sets
the "checked" property on the input element.\n
* @nodoc\n
*/\n
  CheckboxControlValueAccessor.prototype.writeValue = function (value) {\n
this._renderer.setProperty(this._elementRef.nativeElement, 'checked', value);\n
};;\n
  /**\n
* Registers a
function called when the control value changes.\n
* @nodoc\n
*/\n
  CheckboxControlValueAccessor.prototype.registerOnChange = function (fn) {\n
this.onChange = fn;\n
};;\n
  /**\n
* Registers a function called when the control is touched.\n
* @nodoc\n
*/\n
  CheckboxControlValueAccessor.prototype.registerOnTouched = function (fn) {\n
this.onTouched = fn;\n
};;\n
  /**\n
* Sets the "disabled" property on the input element.\n
* @nodoc\n
*/\n
  CheckboxControlValueAccessor.prototype.setDisabledState = function (isDisabled) {\n
this._renderer.setProperty(this._elementRef.nativeElement, 'disabled', isDisabled);\n
};;\n
  return
CheckboxControlValueAccessor;\n
})();\n
CheckboxControlValueAccessor.decorators = [\n
  { type:
core.Directive, args: [{\n
    selector:
'input[type=checkbox][formControlName],input[type=checkbox][formControl],input[type=checkbox][ngModel]',\n
    host: {\n
      '(change)': 'onChange($event.target.checked)',\n
      '(blur)': 'onTouched()',\n
    },\n
    providers:
[CHECKBOX_VALUE_ACCESSOR]\n
  }],\n
};;\n
  CheckboxControlValueAccessor.ctorParameters =
function () { return [\n
  { type: core.Renderer2 },\n
  { type: core.ElementRef }\n
]; };;\n\n
/**\n
*
@license\n
* Copyright Google LLC All Rights Reserved.\n
*\n
* Use of this source code is governed by an
MIT-style license that can be\n
* found in the LICENSE file at https://angular.io/license\n
*/\n
var
DEFAULT_VALUE_ACCESSOR = {\n
  provide: NG_VALUE_ACCESSOR,\n
  useExisting:
core.forwardRef(function () { return DefaultValueAccessor; }),\n
  multi: true\n
};;\n
/**\n
* We must
check whether the agent is Android because composition events\n
* behave differently between iOS and
Android.\n
*/\n
function _isAndroid() {\n
  var userAgent = common.getDOM() ?
common.getDOM().getUserAgent() : '';\n
  return /android (\d+)/.test(userAgent.toLowerCase());\n
}\n
/**\n
*
* @description\n
* Provide this token to control if form directives buffer IME input until\n
* the
"compositionend" event occurs.\n
* @publicApi\n
*/\n
var COMPOSITION_BUFFER_MODE = new
core.InjectionToken('CompositionEventMode');\n
/**\n
* @description\n
*\n
* { @searchKeywords
ngDefaultControl}\n
*\n
* The default `ControlValueAccessor` for writing a value and listening to changes on
input\n
* elements. The accessor is used by the `FormControlDirective`, `FormControlName`, and\n
*
`NgModel` directives.\n
*\n
* @usageNotes\n
*\n
* ### Using the default value accessor\n
*\n
* The
following example shows how to use an input element that activates the default value accessor\n
* (in this case, a
text field).\n
*\n
* ```ts\n
* const firstNameControl = new FormControl();\n
* ```\n
*\n
* ```\n
*\n

```

```

<input type="text" [formControl]="firstNameControl">\n * ```\n *\n * This value accessor is used by
default for `<input type="text">` and `<textarea>` elements, but\n * you could also use it for custom
components that have similar behavior and do not require special\n * processing. In order to attach the default
value accessor to a custom element, add the\n * `ngDefaultControl` attribute as shown below.\n *\n * ```\n
* <custom-input-component ngDefaultControl [(ngModel)]="value"></custom-input-component>\n * ```\n
*\n * @ngModule ReactiveFormsModule\n * @ngModule FormsModule\n * @publicApi\n */\n var
DefaultValueAccessor = /** @class */ (function () {\n    function DefaultValueAccessor(_renderer, _elementRef,
_compositionMode) {\n        this._renderer = _renderer;\n        this._elementRef = _elementRef;\n        this._compositionMode = _compositionMode;\n        /**\n         * The registered callback function called when
an input event occurs on the input element.\n         * @nodoc\n         */\n        this.onChange = function (_) {\n
};\n        /**\n         * The registered callback function called when a blur event occurs on the input element.\n
         * @nodoc\n         */\n        this.onTouched = function () {\n};\n        /** Whether the user is creating a
composition string (IME events). *\n        this._composing = false;\n        if (this._compositionMode === null)
{\n            this._compositionMode = !_isAndroid();\n        }\n        /**\n         * Sets the "value"
property on the input element.\n         * @nodoc\n         */\n        DefaultValueAccessor.prototype.writeValue =
function (value) {\n            var normalizedValue = value == null ? '' : value;\n            this._renderer.setProperty(this._elementRef.nativeElement, 'value', normalizedValue);\n        };
        /**\n         * Registers a function called when the control value changes.\n         * @nodoc\n         */\n        DefaultValueAccessor.prototype.registerOnChange = function (fn) {\n            this.onChange = fn;\n        };
        /**\n         * Registers a function called when the control is touched.\n         * @nodoc\n         */\n        DefaultValueAccessor.prototype.registerOnTouched = function (fn) {\n            this.onTouched = fn;\n        };
        /**\n         * Sets the "disabled" property on the input element.\n         * @nodoc\n         */\n        DefaultValueAccessor.prototype.setDisabledState = function (isDisabled) {\n            this._renderer.setProperty(this._elementRef.nativeElement, 'disabled', isDisabled);\n        };
        /** @internal */\n        DefaultValueAccessor.prototype._handleInput = function (value) {\n            if (!this._compositionMode ||
(this._compositionMode && !this._composing)) {\n                this.onChange(value);\n            }\n        };
        /** @internal */\n        DefaultValueAccessor.prototype._compositionStart = function () {\n            this._composing =
true;\n        };
        /** @internal */\n        DefaultValueAccessor.prototype._compositionEnd = function (value) {\n            this._composing = false;\n            this._compositionMode && this.onChange(value);\n        };
        return DefaultValueAccessor;\n    }());\n    DefaultValueAccessor.decorators = [\n        { type: core.Directive, args:
[\n            selector:
'input:not([type=checkbox])[formControlName],textarea[formControlName],input:not([type=checkbox])[formContr
ol],textarea[formControl],input:not([type=checkbox])[ngModel],textarea[ngModel],[ngDefaultControl]',\n
            // TODO: vsavkin replace the above selector with the one below it once\n            //
https://github.com/angular/angular/issues/3011 is implemented\n            // selector:
'[ngModel],[formControl],[formControlName]',\n            host: {\n                '(input)':
'$any(this)._handleInput($event.target.value)',\n                '(blur)': 'onTouched()',\n                '(compositionstart)': '$any(this)._compositionStart()',\n                '(compositionend)':
'$any(this)._compositionEnd($event.target.value)'\n            },\n            providers:
[DEFAULT_VALUE_ACCESSOR]\n        },]\n    ];\n    DefaultValueAccessor.ctorParameters = function ()
{\n        return [\n            { type: core.Renderer2 },\n            { type: core.ElementRef },\n            { type: Boolean, decorators: [{\n                type: core.Optional }, { type: core.Inject, args: [COMPOSITION_BUFFER_MODE,] } ]\n        ];\n    };
}
\n *!\n
*****\n Copyright (c)
Microsoft Corporation.\n\n Permission to use, copy, modify, and/or distribute this software for any\n purpose
with or without fee is hereby granted.\n\n THE SOFTWARE IS PROVIDED "AS IS" AND THE AUTHOR
DISCLAIMS ALL WARRANTIES WITH\n REGARD TO THIS SOFTWARE INCLUDING ALL IMPLIED
WARRANTIES OF MERCHANTABILITY\n AND FITNESS. IN NO EVENT SHALL THE AUTHOR BE
LIABLE FOR ANY SPECIAL, DIRECT,\n INDIRECT, OR CONSEQUENTIAL DAMAGES OR ANY

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```
*****  
Reflect, Promise */n var extendStatics = function (d, b) {n extendStatics = Object.setPrototypeOf ||n  
({ __proto__: [] } instanceof Array && function (d, b) { d.__proto__ = b; }) ||n function (d, b) { for (var p in  
b)n if (b.hasOwnProperty(p))n d[p] = b[p]; }n return extendStatics(d, b); }n  
function __extends(d, b) {n extendStatics(d, b);n function __() { this.constructor = d; }n d.prototype  
= b === null ? Object.create(b) : (__proto__ = b.prototype, new __());n }n var __assign = function () {n  
__assign = Object.assign || function __assign(t) {n for (var s, i = 1, n = arguments.length; i < n; i++) {n  
s = arguments[i];n for (var p in s)n if (Object.prototype.hasOwnProperty.call(s, p))n  
t[p] = s[p];n }n return t; }n };n return __assign.apply(this, arguments); }n  
function __rest(s, e) {n var t = {}n for (var p in s)n if (Object.prototype.hasOwnProperty.call(s, p)  
&& e.indexOf(p) < 0)n t[p] = s[p];n if (s != null && typeof Object.getPrototypeOfSymbols ===  
"function")n for (var i = 0, p = Object.getPrototypeOfSymbols(s); i < p.length; i++) {n if  
(e.indexOf(p[i]) < 0 && Object.prototype.propertyIsEnumerable.call(s, p[i]))n t[p[i]] = s[p[i]];n  
}n return t; }n }n function __decorate(decorators, target, key, desc) {n var c = arguments.length, r = c  
< 3 ? target : desc === null ? desc = Object.getPrototypeOfDescriptor(target, key) : desc, d;n if (typeof Reflect  
=== "object" && typeof Reflect.decorate === "function")n r = Reflect.decorate(decorators, target, key,  
desc);n elsen for (var i = decorators.length - 1; i >= 0; i--)n if (d = decorators[i])n  
r = (c < 3 ? d(r) : c > 3 ? d(target, key, r) : d(target, key)) || r;n return c > 3 && r &&  
Object.defineProperty(target, key, r, r); }n function __param(paramIndex, decorator) {n return function  
(target, key) { decorator(target, key, paramIndex); }n }n function __metadata(metadataKey, metadataValue)  
{n if (typeof Reflect === "object" && typeof Reflect.metadata === "function")n return  
Reflect.metadata(metadataKey, metadataValue); }n function __awaiter(thisArg, _arguments, P, generator) {n  
function adopt(value) { return value instanceof P ? value : new P(function (resolve) { resolve(value); }); }n  
return new (P || (P = Promise))(function (resolve, reject) {n function fulfilled(value) { try {n  
step(generator.next(value));n }n catch (e) {n reject(e);n } }n function  
rejected(value) { try {n step(generator["throw"](value));n }n catch (e) {n  
reject(e);n } }n function step(result) { result.done ? resolve(result.value) :  
adopt(result.value).then(fulfilled, rejected); }n step((generator = generator.apply(thisArg, _arguments ||  
[])).next());n }); }n }n function __generator(thisArg, body) {n var _ = { label: 0, sent: function () { if  
(t[0] & 1)n throw t[1]; return t[1]; }, trys: [], ops: [] }, f, y, t, g;n return g = { next: verb(0), "throw":  
verb(1), "return": verb(2) }, typeof Symbol === "function" && (g[Symbol.iterator] = function () { return this; } ),  
g;n function verb(n) { return function (v) { return step([n, v]); }; }n function step(op) {n if (f)n  
throw new TypeError("Generator is already executing.");n while (_n try {n if  
(f = 1, y && (t = op[0] & 2 ? y["return"] : op[0] ? y["throw"] || ((t = y["return"]) && t.call(y), 0) : y.next) &&  
!(t = t.call(y, op[1])).done)n return t;n if (y = 0, t)n op = [op[0] & 2,  
t.value];n switch (op[0]) {n case 0:n case 1:n t = op;n  
break;n case 4:n _label++;n return { value: op[1],  
done: false };n case 5:n _label++;n y = op[1];n  
op = [0];n continue;n case 7:n op = _ops.pop();n  
_trys.pop();n continue;n default:n if (!(t = _trys, t = t.length > 0  
&& t[t.length - 1]) && (op[0] === 6 || op[0] === 2)) {n _ = 0;n continue;n  
}n if (op[0] === 3 && (!t || (op[1] > t[0] && op[1] < t[3]))) {n  
_label = op[1];n break;n }n if (op[0] === 6 && _label <  
t[1]) {n _label = t[1];n t = op;n break;n  
}n if (t && _label < t[2]) {n _label = t[2];n
```

```

_ops.push(op);\n                break;\n                }\n                if (t[2])\n_ops.pop();\n                _trys.pop();\n                continue;\n                }\n                op =\nbody.call(thisArg, _);\n                }\n                catch (e) {\n                op = [6, e];\n                y = 0;\n}\n                finally {\n                f = t = 0;\n                }\n                if (op[0] & 5)\n                throw op[1];\nreturn { value: op[0] ? op[1] : void 0, done: true }; }\n                }\n                var __createBinding = Object.create ? (function\n(o, m, k, k2) {\n                if (k2 === undefined)\n                k2 = k;\n                Object.defineProperty(o, k2, { enumerable: true,\nget: function () { return m[k]; } });\n                }) : (function (o, m, k, k2) {\n                if (k2 === undefined)\n                k2 = k;\n                o[k2] = m[k];\n                });\n                function __exportStar(m, exports) {\n                for (var p in m)\n                if (p !== \"default\"\n&& !exports.hasOwnProperty(p))\n                __createBinding(exports, m, p);\n                }\n                function __values(o) {\n                var s = typeof Symbol === \"function\" && Symbol.iterator, m = s && o[s], i = 0;\n                if (m)\n                return\nm.call(o);\n                if (o && typeof o.length === \"number\")\n                return {\n                next: function () {\n                if (o && i >= o.length)\n                o = void 0;\n                return { value: o && o[i++], done: !o }; }\n                }\n                }\n                throw new TypeError(s ? \"Object is not iterable.\" : \"Symbol.iterator is not defined.\");\n}\n                function __read(o, n) {\n                var m = typeof Symbol === \"function\" && o[Symbol.iterator];\n                if (!m)\n                return o;\n                var i = m.call(o), r, ar = [], e;\n                try {\n                while ((n === void 0 || n-- > 0) && !(r =\ni.next()).done)\n                ar.push(r.value);\n                }\n                catch (error) {\n                e = { error: error };\n                }\n                finally {\n                try {\n                if (r && !r.done && (m = i[\"return\"])\n                m.call(i);\n                }\n                finally {\n                if (e)\n                throw e.error;\n                }\n                }\n                return ar;\n                }\n                function\n__spread() {\n                for (var ar = [], i = 0; i < arguments.length; i++)\n                ar = ar.concat(__read(arguments[i]));\n                return ar;\n                }\n                function __spreadArrays() {\n                for (var s = 0, i = 0, il = arguments.length; i < il; i++)\n                s += arguments[i].length;\n                for (var r = Array(s), k = 0, i = 0; i < il; i++)\n                for (var a = arguments[i], j\n= 0, jl = a.length; j < jl; j++, k++)\n                r[k] = a[j];\n                return r;\n                }\n                }\n                function __await(v) {\n                return this instanceof __await ? (this.v = v, this) : new __await(v);\n                }\n                function __asyncGenerator(thisArg,\n_arguments, generator) {\n                if (!Symbol.asyncIterator)\n                throw new TypeError(\"Symbol.asyncIterator is\nnot defined.\");\n                var g = generator.apply(thisArg, _arguments || []), i, q = [];\n                return i = { }, verb(\"next\"),\nverb(\"throw\"), verb(\"return\"), i[Symbol.asyncIterator] = function () { return this; }, i;\n                function verb(n) { if\n(g[n])\n                i[n] = function (v) { return new Promise(function (a, b) { q.push([n, v, a, b]) > 1 || resume(n, v); }); };\n                }\n                function resume(n, v) { try {\n                step(g[n](v));\n                }\n                catch (e) {\n                settle(q[0][3], e);\n                }\n                }\n                function step(r) { r.value instanceof __await ? Promise.resolve(r.value.v).then(fulfill, reject) :\nsettle(q[0][2], r); }\n                function fulfill(value) { resume(\"next\", value); }\n                function reject(value) {\nresume(\"throw\", value); }\n                function settle(f, v) { if (f(v), q.shift(), q.length)\n                resume(q[0][0], q[0][1]);\n                }\n                }\n                function __asyncDelegator(o) {\n                var i, p;\n                return i = { }, verb(\"next\"), verb(\"throw\"),\nfunction (e) { throw e; }, verb(\"return\"), i[Symbol.iterator] = function () { return this; }, i;\n                function verb(n,\nf) { i[n] = o[n] ? function (v) { return (p = !p) ? { value: __await(o[n](v)), done: n === \"return\" } : f ? f(v) : v; } : f;\n                }\n                }\n                function __asyncValues(o) {\n                if (!Symbol.asyncIterator)\n                throw new\nTypeError(\"Symbol.asyncIterator is not defined.\");\n                var m = o[Symbol.asyncIterator], i;\n                return m ?\nm.call(o) : (o = typeof __values === \"function\" ? __values(o) : o[Symbol.iterator](), i = { }, verb(\"next\"),\nverb(\"throw\"), verb(\"return\"), i[Symbol.asyncIterator] = function () { return this; }, i);\n                function verb(n) {\ni[n] = o[n] && function (v) { return new Promise(function (resolve, reject) { v = o[n](v), settle(resolve, reject,\nv.done, v.value); }); };\n                }\n                function settle(resolve, reject, d, v) { Promise.resolve(v).then(function (v) {\nresolve({ value: v, done: d }); }, reject); }\n                }\n                }\n                function __makeTemplateObject(cooked, raw) {\n                if\n(Object.defineProperty)\n                Object.defineProperty(cooked, \"raw\", { value: raw });\n                }\n                else {\n                cooked.raw = raw;\n                }\n                return cooked;\n                }\n                }\n                var __setModuleDefault = Object.create ?\n(function (o, v) {\n                Object.defineProperty(o, \"default\", { enumerable: true, value: v });\n                }) : function (o, v)\n{\n                o[\"default\"] = v;\n                }\n                function __importStar(mod) {\n                if (mod && mod.__esModule)\n                return mod;\n                var result = {};\n                if (mod != null)\n                for (var k in mod)\n                if\n(Object.hasOwnProperty.call(mod, k))\n                __createBinding(result, mod, k);\n                __setModuleDefault(result, mod);\n                return result;\n                }\n                }\n                function __importDefault(mod) {\n                return (mod\n

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&& mod.__esModule) ? mod : { default: mod };\n  }\n  function __classPrivateFieldGet(receiver, privateMap)
{\n    if (!privateMap.has(receiver)) {\n      throw new TypeError("attempted to get private field on non-
instance");\n    }\n    return privateMap.get(receiver);\n  }\n  function __classPrivateFieldSet(receiver,
privateMap, value) {\n    if (!privateMap.has(receiver)) {\n      throw new TypeError("attempted to set private
field on non-instance");\n    }\n    privateMap.set(receiver, value);\n    return value;\n  }\n\n  function
isEmptyInputValue(value) {\n    // we don't check for string here so it also works with arrays\n    return value
== null || value.length === 0;\n  }\n  function isValidLength(value) {\n    // non-strict comparison is
intentional, to check for both `null` and `undefined` values\n    return value != null && typeof value.length ===
'number';\n  }\n  /**\n   * @description\n   * An `InjectionToken` for registering additional synchronous
validators used with\n   * `AbstractControl`s.\n   * @see `NG_ASYNC_VALIDATORS`\n   * @usageNotes\n   * ### Providing a custom validator\n   * The following example registers a custom
validator directive. Adding the validator to the\n   * existing collection of validators requires the `multi: true`
option.\n   * @Directive({\n   * selector: '[customValidator]',\n   * providers:
[{\n   * provide: NG_VALIDATORS, useExisting: CustomValidatorDirective, multi: true}],\n   * })\n   * class
CustomValidatorDirective implements Validator {\n   * validate(control: AbstractControl): ValidationErrors | null
{\n   * return { 'custom': true };}\n   * }\n   * @publicApi\n   * @var
NG_VALIDATORS = new core.InjectionToken('NgValidators');\n   * @description\n   * An
`InjectionToken` for registering additional asynchronous validators used with\n   * `AbstractControl`s.\n   * @see `NG_VALIDATORS`\n   * @publicApi\n   * @var NG_ASYNC_VALIDATORS = new
core.InjectionToken('NgAsyncValidators');\n   * A regular expression that matches valid e-mail
addresses.\n   * At a high level, this regexp matches e-mail addresses of the format `local-part@tld`,
where:\n   * - `local-part` consists of one or more of the allowed characters (alphanumeric and some\n   *
punctuation symbols).\n   * - `local-part` cannot begin or end with a period (`.`).\n   * - `local-part` cannot be
longer than 64 characters.\n   * - `tld` consists of one or more `labels` separated by periods (`.`). For example
`localhost` or\n   * `foo.com`.\n   * - A `label` consists of one or more of the allowed characters (alphanumeric,
dashes (`-`) and\n   * periods (`.`)).\n   * - A `label` cannot begin or end with a dash (`-`) or a period (`.`).\n   *
- A `label` cannot be longer than 63 characters.\n   * - The whole address cannot be longer than 254 characters.\n
   * ## Implementation background\n   * This regexp was ported over from AngularJS (see there for git
history):\n   * https://github.com/angular/angular.js/blob/c133ef836/src/ng/directive/input.js#L27\n   * It is based
on the\n   * [WHATWG version](https://html.spec.whatwg.org/multipage/input.html#valid-e-mail-address) with\n
   * some enhancements to incorporate more RFC rules (such as rules related to domain names and the\n   * lengths
of different parts of the address). The main differences from the WHATWG version are:\n   * - Disallow `local-
part` to begin or end with a period (`.`).\n   * - Disallow `local-part` length to exceed 64 characters.\n   * -
Disallow total address length to exceed 254 characters.\n   * See [this
commit](https://github.com/angular/angular.js/commit/f3f5cf72e) for more details.\n   * @var
EMAIL_REGEXP = /^(?=. {1,254}$)(?=.{1,64}@)[a-zA-Z0-9!#$%&'*/+=?^_{}~]+(?:\.[a-zA-Z0-
9!#$%&'*/+=?^_{}~]+)*@[a-zA-Z0-9](?:[a-zA-Z0-9-]{0,61}[a-zA-Z0-9])?(?:\.[a-zA-Z0-9](?:[a-zA-Z0-9-
]{0,61}[a-zA-Z0-9])?)*$;\n   * @description\n   * Provides a set of built-in validators that can be used by
form controls.\n   * A validator is a function that processes a `FormControl` or collection of\n   * controls
and returns an error map or null. A null map means that validation has passed.\n   * @see [Form
Validation](/guide/form-validation)\n   * @publicApi\n   * @var Validators = /** @class */ (function ()
{\n   * function Validators() {\n   * }\n   * @description\n   * Validator that requires the control's
value to be greater than or equal to the provided number.\n   * The validator exists only as a function and not as a
directive.\n   * @usageNotes\n   * ### Validate against a minimum of 3\n   * @returns A validator function
that returns an error map with the\n   * `min` property if the validation check fails, otherwise `null`.\n   * @see `updateValueAndValidity`\n   * @var
Validators.min = function (min) {\n   * return

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function (control) {\n          if (isEmptyInputValue(control.value) || isEmptyInputValue(min)) {\n
return null; // don't validate empty values to allow optional controls\n          }\n          var value =
parseFloat(control.value);\n          // Controls with NaN values after parsing should be treated as not having a\n
// minimum, per the HTML forms spec: https://www.w3.org/TR/html5/forms.html#attr-input-min\n
return !isNaN(value) && value < min ? { 'min': { 'min': min, 'actual': control.value } } : null;\n          };\n          };\n
/**\n     * @description\n     * Validator that requires the control's value to be less than or equal to the
provided number.\n     * The validator exists only as a function and not as a directive.\n     *\n     *
@usageNotes\n     *\n     * ### Validate against a maximum of 15\n     *\n     * ```typescript\n     * const
control = new FormControl(16, Validators.max(15));\n     *\n     * console.log(control.errors); // {max: {max:
15, actual: 16}}\n     * ```\n     *\n     * @returns A validator function that returns an error map with the\n
* `max` property if the validation check fails, otherwise `null`.\n     *\n     * @see
`updateValueAndValidity()`\n     *\n     * ^\n     * Validators.max = function (max) {\n     *     return function
(control) {\n     *         if (isEmptyInputValue(control.value) || isEmptyInputValue(max)) {\n     *             return null;
// don't validate empty values to allow optional controls\n     *         }\n     *         var value =
parseFloat(control.value);\n     *         // Controls with NaN values after parsing should be treated as not having a\n
// maximum, per the HTML forms spec: https://www.w3.org/TR/html5/forms.html#attr-input-max\n
return !isNaN(value) && value > max ? { 'max': { 'max': max, 'actual': control.value } } : null;\n     *     };
\n     *     };\n     *     /**\n     *     * @description\n     *     * Validator that requires the control have a non-empty value.\n     *     *\n     *
@usageNotes\n     *     *\n     *     * ### Validate that the field is non-empty\n     *     *\n     *     * ```typescript\n     *     *
const control = new FormControl("", Validators.required);\n     *     *\n     *     * console.log(control.errors); // {required:
true}\n     *     *     *     * @returns An error map with the `required` property\n     *     *     * if the validation
check fails, otherwise `null`.\n     *     *     * @see `updateValueAndValidity()`\n     *     *     * ^\n
Validators.required = function (control) {\n     *     *     *     * return isEmptyInputValue(control.value) ? { 'required': true } :
null;\n     *     *     *     * };\n     *     *     *     * /**\n     *     *     * @description\n     *     *     * Validator that requires the control's value be true. This
validator is commonly\n     *     *     * used for required checkboxes.\n     *     *     *     * @usageNotes\n     *     *     *     * ###
Validate that the field value is true\n     *     *     *     * ```typescript\n     *     *     *     * const control = new FormControl("",
Validators.requiredTrue);\n     *     *     *     * console.log(control.errors); // {required: true}\n     *     *     *     * @returns An error map that contains the `required` property\n
     *     *     *     * set to `true` if the validation check fails,\n     *     *     *     * otherwise `null`.\n     *     *     *     * @see `updateValueAndValidity()`\n     *     *     *     * ^\n
Validators.requiredTrue = function (control) {\n     *     *     *     *     * return control.value === true ? null : { 'required': true };
\n     *     *     *     *     * };\n     *     *     *     *     * /**\n     *     *     *     * @description\n     *     *     *     * Validator that requires the control's value pass an email validation
test.\n     *     *     *     *     * Tests the value using a [regular\n     *     *     *     * expression](https://developer.mozilla.org/en-US/docs/Web/JavaScript/Guide/Regular_Expressions)\n
     *     *     *     *     * pattern suitable for common usecases. The pattern is
based on the definition of a valid email\n     *     *     *     *     * address in the [WHATWG HTML\n     *     *     *     *     * specification](https://html.spec.whatwg.org/multipage/input.html#valid-e-mail-address) with\n     *     *     *     *     * some
enhancements to incorporate more RFC rules (such as rules related to domain names and the\n     *     *     *     *     * lengths of
different parts of the address).\n     *     *     *     *     * The differences from the WHATWG version include:\n     *     *     *     *     * -
Disallow `local-part` (the part before the `@` symbol) to begin or end with a period (`.`).\n     *     *     *     *     * - Disallow `local-part` to be longer than 64 characters.\n
     *     *     *     *     * - Disallow the whole address to be longer than 254 characters.\n     *     *     *     *     * \n     *     *     *     * If this pattern does not satisfy your business needs, you can use `Validators.pattern()` to\n
     *     *     *     *     * validate the value against a different pattern.\n     *     *     *     *     * @usageNotes\n     *     *     *     *     * ### Validate that the field
matches a valid email pattern\n     *     *     *     *     * ```typescript\n     *     *     *     *     * const control = new FormControl('bad@',
Validators.email);\n     *     *     *     *     * console.log(control.errors); // {email: true}\n     *     *     *     *     * @returns An error map with the `email` property\n
     *     *     *     *     * if the validation check fails, otherwise `null`.\n     *     *     *     *     * @see `updateValueAndValidity()`\n     *     *     *     *     * ^\n
Validators.email = function (control) {\n     *     *     *     *     * if
(isEmptyInputValue(control.value)) {\n     *     *     *     *     *     * return null; // don't validate empty values to allow optional
controls\n     *     *     *     *     *     * }\n     *     *     *     *     *     * return EMAIL_REGEXP.test(control.value) ? null : { 'email': true };
\n     *     *     *     *     *     * };\n     *     *     *     *     *     * /**\n     *     *     *     *     * @description\n     *     *     *     *     * Validator that requires the length of the control's value to be greater than or

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equal to the provided minimum length. This validator is also provided by default if you use the HTML5 `minlength` attribute. Note that the `minLength` validator is intended to be used only for types that have a numeric `length` property, such as strings or arrays. The `minLength` validator logic is also not invoked for values when their `length` property is 0 (for example in case of an empty string or an empty array), to support optional controls. You can use the standard `required` validator if empty values should not be considered valid.

```

@usageNotes
### Validate that the field has a minimum
of 3 characters
typescript
const control = new FormControl('ng',
Validators.minLength(3));
console.log(control.errors); // {minlength: {requiredLength: 3,
actualLength: 2}}
html
<input minlength="5">
@returns A validator function that returns an error map with the `minlength` if the validation check fails,
otherwise `null`.
@see `updateValueAndValidity()`
Validators.minLength
= function (minLength) {
return function (control) {
if (isEmptyInputValue(control.value) ||
!hasValidLength(control.value)) // don't validate empty values to allow optional controls
// don't validate values without `length` property
return null;
return
control.value.length < minLength ? { 'minlength': { 'requiredLength': minLength, 'actualLength':
control.value.length } } : null;
};
};
/**
 * @description
 * Validator
that requires the length of the control's value to be less than or equal to the provided maximum length. This
validator is also provided by default if you use the HTML5 `maxlength` attribute. Note that the
`maxLength` validator is intended to be used only for types that have a numeric `length` property, such as
strings or arrays.
@usageNotes
### Validate that the field has maximum of 5
characters
typescript
const control = new FormControl('Angular',
Validators.maxLength(5));
console.log(control.errors); // {maxlength: {requiredLength: 5,
actualLength: 7}}
html
<input maxlength="5">
@returns A validator function that returns an error map with the `maxlength` property if the validation
check fails, otherwise `null`.
@see `updateValueAndValidity()`
Validators.maxLength
= function (maxLength) {
return function (control) {
return
hasValidLength(control.value) && control.value.length > maxLength ? { 'maxlength': {
'requiredLength': maxLength, 'actualLength': control.value.length } } : null;
};
};
/**
 * @description
 * Validator that requires the control's value to match a regex pattern. This validator
is also provided by default if you use the HTML5 `pattern` attribute.
@usageNotes
### Validate that the field only contains letters or spaces
typescript
const
control = new FormControl('1', Validators.pattern('[a-zA-Z ]*'));
console.log(control.errors); //
{pattern: {requiredPattern: '^[a-zA-Z ]*$', actualValue: '1'}}
html
<input
pattern="[a-zA-Z ]*">
### Pattern matching with the global or sticky flag
* `RegExp` objects created with the `g` or `y` flags that are passed into `Validators.pattern` can produce
different results on the same input when validations are run consecutively. This is due to how the behavior
of `RegExp.prototype.test` is specified in [ECMA-262](https://tc39.es/ecma262/#sec-regexpbuiltinexec)
(`RegExp` preserves the index of the last match when the global or sticky flag is used). Due to this
behavior, it is recommended that when using `Validators.pattern` you do not pass in a `RegExp` object
with either the global or sticky flag enabled.
typescript
// Not recommended
(since the `g` flag is used)
const controlOne = new FormControl('1', Validators.pattern(/foo/g));
// Good
const controlTwo = new FormControl('1', Validators.pattern(foo));
@param pattern A regular expression to be used as is to test the values, or a string. If a string is passed,
the `^` character is prepended and the `$` character is appended to the provided string (if not already
present), and the resulting regular expression is used to test the values.
@returns A
validator function that returns an error map with the `pattern` property if the validation check fails,
otherwise `null`.
@see `updateValueAndValidity()`
Validators.pattern
= function (pattern) {
if (!pattern)
return Validators.nullValidator;
var regex;
var

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regexStr;\n      if (typeof pattern === 'string') {\n          regexStr = ";\n          if (pattern.charAt(0) !== '^')\n              regexStr += '^';\n          regexStr += pattern;\n          if (pattern.charAt(pattern.length - 1) !== '$')\n              regexStr += '$';\n          regex = new RegExp(regexStr);\n      }\n      else {\n          regexStr\n      }\n      return function (control) {\n          if\n      (isEmptyInputValue(control.value)) {\n          return null; // don't validate empty values to allow optional\n      controls\n      }\n      var value = control.value;\n      return regex.test(value) ? null :\n      {\n      'pattern': {\n      'requiredPattern': regexStr,\n      'actualValue': value\n      };\n      }\n      };\n      /**\n      *\n      * @description\n      * Validator that performs no operation.\n      *\n      * @see `updateValueAndValidity()`\n      *\n      * ^\n      Validators.nullValidator = function (control) {\n          return null;\n      };\n      Validators.compose = function (validators) {\n          if (!validators)\n              return null;\n          var\n      presentValidators = validators.filter(isPresent);\n          if (presentValidators.length === 0)\n              return null;\n          return function (control) {\n              return mergeErrors(executeValidators(control, presentValidators));\n          }\n      };\n      /**\n      * @description\n      * Compose multiple async validators into a single function that\n      returns the union\n      * of the individual error objects for the provided control.\n      *\n      * @returns A\n      validator function that returns an error map with the\n      * merged error objects of the async validators if the\n      validation check fails, otherwise `null`.\n      *\n      * @see `updateValueAndValidity()`\n      *\n      * ^\n      Validators.composeAsync = function (validators) {\n          if (!validators)\n              return null;\n          var\n      presentValidators = validators.filter(isPresent);\n          if (presentValidators.length === 0)\n              return null;\n          return function (control) {\n              var observables = executeValidators(control,\n      presentValidators).map(toObservable);\n              return\n      rxjs.forkJoin(observables).pipe(operators.map(mergeErrors));\n          }\n      };\n      return Validators;\n      }();\n      function isPresent(o) {\n          return o !== null;\n      }\n      function toObservable(r) {\n          var obs =\n      core.isPromise(r) ? rxjs.from(r) : r;\n          if (!(core.isObservable(obs)) && (typeof ngDevMode === 'undefined' ||\n      ngDevMode)) {\n              throw new Error("Expected validator to return Promise or Observable.");\n          }\n          return obs;\n      }\n      function mergeErrors(arrayOfErrors) {\n          var res = {};\n          // Not using Array.reduce here\n      due to a Chrome 80 bug\n          // https://bugs.chromium.org/p/chromium/issues/detail?id=1049982\n      arrayOfErrors.forEach(function (errors) {\n          res = errors !== null ? Object.assign(Object.assign({}, res), errors)\n      : res;\n      });\n          return Object.keys(res).length === 0 ? null : res;\n      }\n      function executeValidators(control,\n      validators) {\n          return validators.map(function (validator) {\n              return validator(control);\n          });\n      }\n      function\n      isValidatorFn(validator) {\n          return !validator.validate;\n      }\n      /**\n      * Given the list of validators that may\n      contain both functions as well as classes, return the list\n      * of validator functions (convert validator classes into\n      validator functions). This is needed to\n      * have consistent structure in validators list before composing them.\n      *\n      * @param validators The set of validators that may contain validators both in plain function form\n      * as\n      well as represented as a validator class.\n      * ^\n      function normalizeValidators(validators) {\n          return\n      validators.map(function (validator) {\n              return isValidatorFn(validator) ?\n          validator :\n      (function (c) {\n              return validator.validate(c);\n          });\n      });\n      }\n      /**\n      * Merges synchronous validators into a\n      single validator function (combined using\n      * `Validators.compose`).\n      * ^\n      function\n      composeValidators(validators) {\n          return validators !== null ?\n      Validators.compose(normalizeValidators(validators)) :\n      null;\n      }\n      /**\n      * Merges asynchronous\n      validators into a single validator function (combined using\n      * `Validators.composeAsync`).\n      * ^\n      function\n      composeAsyncValidators(validators) {\n          return validators !== null ?\n      Validators.composeAsync(normalizeValidators(validators)) :\n      null;\n      }\n      /**\n      * Merges raw control\n      validators with a given directive validator and returns the combined list of\n      * validators as an array.\n      * ^\n      function mergeValidators(controlValidators, dirValidator) {\n          if (controlValidators === null)\n              return\n      [dirValidator];\n          return Array.isArray(controlValidators) ? __spread(controlValidators, [dirValidator]) :\n      [controlValidators, dirValidator];\n      }\n      /**\n      * Retrieves the list of raw synchronous validators attached to a\n      given control.\n      * ^\n      function getControlValidators(control) {\n          return control._rawValidators;\n      }\n      /**\n      * Retrieves the list of raw asynchronous validators attached to a given control.\n      * ^\n      function

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```

getControlAsyncValidators(control) {\n    return control._rawAsyncValidators;\n  }\n\n  /**\n   * @license\n   * Copyright Google LLC All Rights Reserved.\n   * Use of this source code is governed by an MIT-style\n   * license that can be\n   * found in the LICENSE file at https://angular.io/license\n   */\n  /**\n   * @description\n   * Base class for control directives.\n   * This class is only used internally in the `ReactiveFormsModule`\n   * and the `FormsModule`.\n   */\n  /**\n   * @publicApi\n   */\n  var AbstractControlDirective = /** @class */ (function\n  () {\n    function AbstractControlDirective() {\n      /**\n       * Set of synchronous validators as they were\n       * provided while calling `setValidators` function.\n       */\n      @internal\n      this._rawValidators =\n      [];\n      /**\n       * Set of asynchronous validators as they were provided while calling\n       * `setAsyncValidators`\n       */\n      @internal\n      this._rawAsyncValidators =\n      [];\n      /**\n       * The set of callbacks to be invoked when directive instance is being destroyed.\n       */\n      @internal\n      this._onDestroyCallbacks = [];\n    }\n\n    Object.defineProperty(AbstractControlDirective.prototype,\n    \"value\", {\n      /**\n       * @description\n       * Reports the value of the control if it is present,\n       * otherwise null.\n       */\n      @internal\n      get: function () {\n        return this.control ? this.control.value : null;\n      },\n      enumerable: false,\n      configurable: true\n    });\n\n    Object.defineProperty(AbstractControlDirective.prototype, \"valid\", {\n      /**\n       * @description\n       * Reports whether the control is valid. A control is considered valid if no\n       * validation errors exist with the\n       * current value.\n       * If the control is not present, null is returned.\n       */\n      @internal\n      get: function () {\n        return this.control ? this.control.valid : null;\n      },\n      enumerable: false,\n      configurable: true\n    });\n\n    Object.defineProperty(AbstractControlDirective.prototype, \"invalid\", {\n      /**\n       * @description\n       * Reports whether the control is invalid, meaning that an error exists in the input value.\n       * If the control is not present, null is returned.\n       */\n      @internal\n      get: function () {\n        return\n        this.control ? this.control.invalid : null;\n      },\n      enumerable: false,\n      configurable: true\n    });\n\n    Object.defineProperty(AbstractControlDirective.prototype, \"pending\", {\n      /**\n       * @description\n       * Reports whether a control is pending, meaning that that async validation is occurring and\n       * errors are not yet available for the input value. If the control is not present, null is\n       * returned.\n       */\n      @internal\n      get: function () {\n        return this.control ? this.control.pending : null;\n      },\n      enumerable: false,\n      configurable: true\n    });\n\n    Object.defineProperty(AbstractControlDirective.prototype, \"disabled\", {\n      /**\n       * @description\n       * Reports whether the control is disabled, meaning that the control is disabled\n       * in the UI and is\n       * exempt from validation checks and excluded from aggregate\n       * values of ancestor controls. If the control is\n       * not present, null is returned.\n       */\n      @internal\n      get: function () {\n        return this.control ?\n        this.control.disabled : null;\n      },\n      enumerable: false,\n      configurable: true\n    });\n\n    Object.defineProperty(AbstractControlDirective.prototype, \"enabled\", {\n      /**\n       * @description\n       * Reports whether the control is enabled, meaning that the control is included in ancestor\n       * calculations\n       * of validity or value. If the control is not present, null is returned.\n       */\n      @internal\n      get: function () {\n        return this.control ? this.control.enabled : null;\n      },\n      enumerable: false,\n      configurable: true\n    });\n\n    Object.defineProperty(AbstractControlDirective.prototype, \"errors\", {\n      /**\n       * @description\n       * Reports the control's validation errors. If the control is not present, null is returned.\n       */\n      @internal\n      get: function () {\n        return this.control ? this.control.errors : null;\n      },\n      enumerable: false,\n      configurable: true\n    });\n\n    Object.defineProperty(AbstractControlDirective.prototype, \"pristine\", {\n      /**\n       * @description\n       * Reports whether the control is pristine, meaning that the user has not yet changed\n       * the value in the\n       * UI. If the control is not present, null is returned.\n       */\n      @internal\n      get: function () {\n        return this.control\n        ? this.control.pristine : null;\n      },\n      enumerable: false,\n      configurable: true\n    });\n\n    Object.defineProperty(AbstractControlDirective.prototype, \"dirty\", {\n      /**\n       * @description\n       * Reports whether the control is dirty, meaning that the user has changed\n       * the value in the UI. If the\n       * control is not present, null is returned.\n       */\n      @internal\n      get: function () {\n        return this.control ?\n        this.control.dirty : null;\n      },\n      enumerable: false,\n      configurable: true\n    });\n  });\n
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Object.defineProperty(AbstractControlDirective.prototype, "touched", {
  /**
   * @description
   * Reports whether the control is touched, meaning that the user has triggered
   * a `blur` event on it. If the control is not present, null is returned.
   */
  get: function () {
    return this.control ? this.control.touched : null;
  },
  enumerable: false,
  configurable: true
});
Object.defineProperty(AbstractControlDirective.prototype, "status", {
  /**
   * @description
   * Reports the validation status of the control. Possible values include:
   * 'VALID', 'INVALID', 'DISABLED', and 'PENDING'.
   * If the control is not present, null is returned.
   */
  get: function () {
    return this.control ? this.control.status : null;
  },
  enumerable: false,
  configurable: true
});
Object.defineProperty(AbstractControlDirective.prototype, "untouched", {
  /**
   * @description
   * Reports whether the control is untouched, meaning that the user has not
   * yet triggered
   * a `blur` event on it. If the control is not present, null is returned.
   */
  get: function () {
    return this.control ? this.control.untouched : null;
  },
  enumerable: false,
  configurable: true
});
Object.defineProperty(AbstractControlDirective.prototype, "statusChanges", {
  /**
   * @description
   * Returns a multicasting observable that emits a
   * validation status whenever it is
   * calculated for the control. If the control is not present, null is returned.
   */
  get: function () {
    return this.control ? this.control.statusChanges : null;
  },
  enumerable: false,
  configurable: true
});
Object.defineProperty(AbstractControlDirective.prototype, "valueChanges", {
  /**
   * @description
   * Returns a multicasting observable of value changes for the control that emits every time
   * the
   * value of the control changes in the UI or programmatically.
   * If the control is not present,
   * null is returned.
   */
  get: function () {
    return this.control ? this.control.valueChanges : null;
  },
  enumerable: false,
  configurable: true
});
Object.defineProperty(AbstractControlDirective.prototype, "path", {
  /**
   * @description
   * Returns an array that represents the path from the top-level form to this control.
   * Each index is the string
   * name of the control on that level.
   */
  get: function () {
    return null;
  },
  enumerable: false,
  configurable: true
});
/**
 * Sets synchronous validators for this
 * directive.
 * @internal
 */
AbstractControlDirective.prototype._setValidators = function (
  validators) {
  this._rawValidators = validators || [];
  this._composedValidatorFn =
  composeValidators(this._rawValidators);
};
/**
 * Sets asynchronous validators for this
 * directive.
 * @internal
 */
AbstractControlDirective.prototype._setAsyncValidators = function (
  validators) {
  this._rawAsyncValidators = validators || [];
  this._composedAsyncValidatorFn =
  composeAsyncValidators(this._rawAsyncValidators);
};
Object.defineProperty(AbstractControlDirective.prototype, "validator", {
  /**
   * @description
   * Synchronous validator function composed of all the synchronous validators registered with this
   * directive.
   */
  get: function () {
    return this._composedValidatorFn || null;
  },
  enumerable: false,
  configurable: true
});
Object.defineProperty(AbstractControlDirective.prototype, "asyncValidator", {
  /**
   * @description
   * Asynchronous validator function composed of all the asynchronous validators registered
   * with
   * this directive.
   */
  get: function () {
    return
    this._composedAsyncValidatorFn || null;
  },
  enumerable: false,
  configurable: true
});
/**
 * Internal function to register callbacks that should be invoked
 * when directive instance
 * is being destroyed.
 * @internal
 */
AbstractControlDirective.prototype._registerOnDestroy = function (fn) {
  this._onDestroyCallbacks.push(fn);
};
/**
 * Internal function to invoke
 * all registered "on destroy" callbacks.
 * Note: calling this function also clears the list of callbacks.
 * @internal
 */
AbstractControlDirective.prototype._invokeOnDestroyCallbacks = function () {
  this._onDestroyCallbacks.forEach(function (fn) {
    return fn();
  });
  this._onDestroyCallbacks = [];
};
/**
 * @description
 * Resets the control with the provided value if the control is present.
 */
AbstractControlDirective.prototype.reset = function (value) {
  if (value === void 0) {
    value = undefined;
  }
};

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```
}
    if (this.control)
        this.control.reset(value);
    };
    /**
     * @description
     * Reports whether the control with the given path has the error specified.
     * @param errorCode The code of the error to check
     * @param path A list of control names that designates how to move from the current control
     * to the control that should be queried for errors.
     * @usageNotes
     * For example, for the following `FormGroup`:
     * form = new FormGroup({
     *   address:
     *     new FormGroup({
     *       street: new FormControl()
     *     })
     * });
     * The path to the 'street' control from the root form would be 'address' -> 'street'.
     * It can be provided to this method in one of two formats:
     * 1. An array of string control names, e.g. `['address', 'street']`
     * 1. A period-delimited list of control names in one string, e.g. `address.street`
     * If no path is given, this method checks for the error on the current control.
     * @returns whether the given error is present in the control at the given path.
     * If the control is not present, false is returned.
     */
    AbstractControlDirective.prototype.hasError = function (errorCode, path) {
        return this.control ?
            this.control.hasError(errorCode, path) : false;
    };
    /**
     * @description
     * Reports error data for the control with the given path.
     * @param errorCode The code of the error to check
     * @param path A list of control names that designates how to move from the current control
     * to the control that should be queried for errors.
     * @usageNotes
     * For example, for the following `FormGroup`:
     * form = new FormGroup({
     *   address: new FormGroup({
     *     street: new FormControl()
     *   })
     * });
     * The path to the 'street' control from the root form would be 'address' -> 'street'.
     * It can be provided to this method in one of two formats:
     * 1. An array of string control names, e.g. `['address', 'street']`
     * 1. A period-delimited list of control names in one string, e.g. `address.street`
     * @returns error data for that particular error. If the control or error is not present,
     * null is returned.
     */
    AbstractControlDirective.prototype.getError = function (errorCode, path) {
        return this.control ?
            this.control.getError(errorCode, path) : null;
    };
    return AbstractControlDirective;
})();
/**
 * @description
 * A base class for directives that contain multiple registered instances of `NgControl`.
 * Only used by the forms module.
 * @publicApi
 */
var ControlContainer = /** @class */ (function (_super) {
    __extends(ControlContainer, _super);
    function ControlContainer() {
        return _super !== null && _super.apply(this, arguments) || this;
    }
    Object.defineProperty(ControlContainer.prototype, "formDirective", {
        /**
         * @description
         * The top-level form directive for the control.
         */
        get: function () {
            return null;
        },
        enumerable: false,
        configurable: true
    });
    Object.defineProperty(ControlContainer.prototype, "path", {
        /**
         * @description
         * The path to this group.
         */
        get: function () {
            return null;
        },
        enumerable: false,
        configurable: true
    });
    return ControlContainer;
})(AbstractControlDirective);
/**
 * @description
 * A base class that all `FormControl`-based directives extend. It binds a `FormControl`
 * object to a DOM element.
 * @publicApi
 */
var NgControl = /** @class */ (function (_super) {
    __extends(NgControl, _super);
    function NgControl() {
        var _this = _super.apply(this, __spread(arguments)) || this;
        /**
         * @description
         * The parent form for the control.
         */
        /**
         * @internal
         */
        _this._parent = null;
        /**
         * @description
         * The name for the control
         */
        _this.name = null;
        /**
         * @description
         * The value accessor for the control
         */
        _this.valueAccessor = null;
        return _this;
    }
    return NgControl;
})(AbstractControlDirective);
var AbstractControlStatus = /** @class */ (function () {
    function AbstractControlStatus(cd) {
        this._cd = cd;
    }
    Object.defineProperty(AbstractControlStatus.prototype, "ngClassUntouched", {
        get: function () {
            return this._cd.control ? this._cd.control.untouched : false;
        },
        enumerable: false,
        configurable: true
    });
    Object.defineProperty(AbstractControlStatus.prototype, "ngClassTouched", {
        get: function () {
            return this._cd.control ? this._cd.control.touched : false;
        },
        enumerable: false,
        configurable: true
    });
    Object.defineProperty(AbstractControlStatus.prototype, "ngClassPristine", {
        get: function () {
            return this._cd.control ? this._cd.control.pristine : false;
        },
        enumerable: false,
        configurable: true
    });
    Object.defineProperty(AbstractControlStatus.prototype, "ngClassValid", {
        get: function () {
            return this._cd.control ? this._cd.control.valid : false;
        },
        enumerable: false,
        configurable: true
    });
    Object.defineProperty(AbstractControlStatus.prototype, "ngClassInvalid", {
        get: function () {
            return this._cd.control ? this._cd.control.invalid : false;
        },
        enumerable: false,
        configurable: true
    });
    return AbstractControlStatus;
})();
```

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return this._cd.control ? this._cd.control.pristine : false;\n      },\n      enumerable: false,\n      configurable: true\n    });\n    Object.defineProperty(AbstractControlStatus.prototype, \"ngClassDirty\", {\n      get: function () {\n        return this._cd.control ? this._cd.control.dirty : false;\n      },\n      enumerable: false,\n      configurable: true\n    });\n    Object.defineProperty(AbstractControlStatus.prototype, \"ngClassValid\", {\n      get: function () {\n        return this._cd.control ? this._cd.control.valid : false;\n      },\n      enumerable: false,\n      configurable: true\n    });\n    Object.defineProperty(AbstractControlStatus.prototype, \"ngClassInvalid\", {\n      get: function () {\n        return this._cd.control ? this._cd.control.invalid : false;\n      },\n      enumerable: false,\n      configurable: true\n    });\n    Object.defineProperty(AbstractControlStatus.prototype, \"ngClassPending\", {\n      get: function () {\n        return this._cd.control ? this._cd.control.pending : false;\n      },\n      enumerable: false,\n      configurable: true\n    });\n    return AbstractControlStatus;\n  }());\n  var NgControlStatusHost = {\n    '[class.ng-untouched]': 'ngClassUntouched',\n    '[class.ng-touched]': 'ngClassTouched',\n    '[class.ng-pristine]': 'ngClassPristine',\n    '[class.ng-dirty]': 'ngClassDirty',\n    '[class.ng-valid]': 'ngClassValid',\n    '[class.ng-invalid]': 'ngClassInvalid',\n    '[class.ng-pending]': 'ngClassPending',\n  }; \n  /**\n   * @description\n   * Directive automatically applied to Angular form controls that sets CSS classes\n   * based on control status.\n   * @usageNotes\n   * ### CSS classes applied\n   * The following classes are applied as the properties become true:\n   * ng-valid\n   * ng-invalid\n   * ng-pending\n   * ng-pristine\n   * ng-dirty\n   * ng-untouched\n   * ng-touched\n   * @ngModule\n   ReactiveFormsModule\n   * @ngModule FormsModule\n   * @publicApi\n   */\n  var NgControlStatus = /**\n   @class */ (function (_super) {\n    __extends(NgControlStatus, _super);\n    function NgControlStatus(cd) {\n      return _super.call(this, cd) || this;\n    }\n    return NgControlStatus;\n  })(AbstractControlStatus);\n  NgControlStatus.decorators = [\n    { type: core.Directive, args: [{ selector: '[formControlName],[ngModel],[formControl]', host: ngControlStatusHost }, ] }\n  ];\n  NgControlStatus.ctorParameters = function () { return [\n    { type: NgControl, decorators: [{ type: core.Self } ] }\n  ]; }; \n  /**\n   * @description\n   * Directive automatically applied to Angular form groups that sets CSS classes\n   * based on control status (valid/invalid/dirty/etc).\n   * @see `NgControlStatus`\n   * @ngModule ReactiveFormsModule\n   * @ngModule FormsModule\n   * @publicApi\n   */\n  var NgControlStatusGroup = /**\n   @class */ (function (_super) {\n    __extends(NgControlStatusGroup, _super);\n    function NgControlStatusGroup(cd) {\n      return _super.call(this, cd) || this;\n    }\n    return NgControlStatusGroup;\n  })(AbstractControlStatus);\n  NgControlStatusGroup.decorators = [\n    { type: core.Directive, args: [\n      {\n        selector: '[formGroupName],[formArrayName],[ngModelGroup],[formGroup],form:not([ngNoForm]),[ngForm]',\n        host: ngControlStatusHost\n      },\n    ] }\n  ]; \n  NgControlStatusGroup.ctorParameters = function () { return [\n    { type: ControlContainer, decorators: [{ type: core.Self } ] }\n  ]; }; \n  /**\n   * @license\n   * Copyright Google LLC All Rights Reserved.\n   * Use of this source code is governed by an MIT-style license that can be\n   * found in the LICENSE file at https://angular.io/license\n   */\n  var NUMBER_VALUE_ACCESSOR = {\n    provide: NG_VALUE_ACCESSOR,\n    useExisting: core.forwardRef(function () { return NumberValueAccessor; }),\n    multi: true\n  }; \n  /**\n   * @description\n   * The `ControlValueAccessor` for writing a number value and listening to number input changes.\n   * The value accessor is used by the `FormControlDirective`, `FormControlName`, and `NgModel`\n   * directives.\n   * @usageNotes\n   * ### Using a number input with a reactive form.\n   * The following example shows how to use a number input with a reactive form.\n   * ```ts\n   * const totalCountControl = new FormControl();\n   * ```\n   * ```\n   * <input type=\"number\" [formControl]=\"totalCountControl\">\n   * ```\n   * @ngModule ReactiveFormsModule\n   * @ngModule FormsModule\n   * @publicApi\n   */\n  var NumberValueAccessor = /**\n   @class */ (function () {\n    function NumberValueAccessor(_renderer, _elementRef) {\n      this._renderer = _renderer;\n      this._elementRef = _elementRef;\n      /**\n       * The registered callback function called when a change or input event occurs on the input\n       * element.\n       * @nodoc\n       */\n      this.onChange =

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function (_) { };\n      /**\n      * The registered callback function called when a blur event occurs on the
input element.\n      * @nodoc\n      */\n      this.onTouched = function () { };\n    }\n  /**\n  * Sets the \"value\" property on the input element.\n  * @nodoc\n  */\n  NumberValueAccessor.prototype.writeValue = function (value) {\n    // The value needs to be normalized for
IE9, otherwise it is set to 'null' when null\n    var normalizedValue = value === null ? '' : value;\n    this._renderer.setProperty(this._elementRef.nativeElement, 'value', normalizedValue);\n  };\n  /**\n  * Registers a function called when the control value changes.\n  * @nodoc\n  */\n  NumberValueAccessor.prototype.registerOnChange = function (fn) {\n    this.onChange = function (value) {\n      fn(value === '' ? null : parseFloat(value));\n    };\n  };\n  /**\n  * Registers a function called
when the control is touched.\n  * @nodoc\n  */\n  NumberValueAccessor.prototype.registerOnTouched
= function (fn) {\n    this.onTouched = fn;\n  };\n  /**\n  * Sets the \"disabled\" property on the
input element.\n  * @nodoc\n  */\n  NumberValueAccessor.prototype.setDisabledState = function
(isDisabled) {\n    this._renderer.setProperty(this._elementRef.nativeElement, 'disabled', isDisabled);\n  };\n
return NumberValueAccessor;\n }());\n NumberValueAccessor.decorators = [\n   { type: core.Directive,
args: [{\n     selector:
'input[type=number][formControlName],input[type=number][formControl],input[type=number][ngModel]',\n
host: { '(input)': 'onChange($event.target.value)', '(blur)': 'onTouched()' },\n     providers:
[NUMBER_VALUE_ACCESSOR]\n   },]\n ];\n NumberValueAccessor.ctorParameters = function ()
{ return [\n   { type: core.Renderer2 },\n   { type: core.ElementRef }\n ];\n };\n /**\n * @license\n *
Copyright Google LLC All Rights Reserved.\n * Use of this source code is governed by an MIT-style
license that can be\n * found in the LICENSE file at https://angular.io/license\n */\n var
RADIO_VALUE_ACCESSOR = {\n   provide: NG_VALUE_ACCESSOR,\n   useExisting:
core.forwardRef(function () { return RadioControlValueAccessor; }),\n   multi: true\n };\n function
throwNameError() {\n   throw new Error(`\n   If you define both a name and a formControlName attribute on
your radio button, their values\n   must match. Ex: <input type=\\\"radio\\\" formControlName=\\\"food\\\"
name=\\\"food\\\">\n   `);\n }\n /**\n * @description\n * Class used by Angular to track radio buttons.
For internal use only.\n */\n var RadioControlRegistry = /** @class */ (function () {\n   function
RadioControlRegistry() {\n     this._accessors = [];\n   }\n   /**\n   * @description\n   * Adds a
control to the internal registry. For internal use only.\n   */\n   RadioControlRegistry.prototype.add = function
(control, accessor) {\n     this._accessors.push([control, accessor]);\n   };\n   /**\n   * @description\n
   * Removes a control from the internal registry. For internal use only.\n   */\n   RadioControlRegistry.prototype.remove = function (accessor) {\n     for (var i = this._accessors.length - 1; i >=
0; --i) {\n       if (this._accessors[i][1] === accessor) {\n         this._accessors.splice(i, 1);\n
return;\n       }\n     }\n   };\n   /**\n   * @description\n   * Selects a radio button. For internal
use only.\n   */\n   RadioControlRegistry.prototype.select = function (accessor) {\n     var _this = this;\n
this._accessors.forEach(function (c) {\n       if (!_this._isSameGroup(c, accessor) && c[1] !== accessor)
{\n         c[1].fireUncheck(accessor.value);\n       }\n     });\n   };\n   RadioControlRegistry.prototype._isSameGroup = function (controlPair, accessor) {\n     if
(!controlPair[0].control)\n       return false;\n     return controlPair[0]._parent ===
accessor._control._parent &&\n       controlPair[1].name === accessor.name;\n   };\n   return
RadioControlRegistry;\n }());\n RadioControlRegistry.decorators = [\n   { type: core.Injectable }\n ];\n
/**\n * @description\n * The `ControlValueAccessor` for writing radio control values and listening to radio
control\n * changes. The value accessor is used by the `FormControlDirective`, `FormControlName`, and\n *
`NgModel` directives.\n * @usageNotes\n * ### Using radio buttons with reactive form
directives\n * The follow example shows how to use radio buttons in a reactive form. When using radio
buttons in\n * a reactive form, radio buttons in the same group should have the same `formControlName`.\n *
Providing a `name` attribute is optional.\n * @example
forms/ts/reactiveRadioButtons/reactive_radio_button_example.ts region='Reactive'})\n */\n * @ngModule

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ReactiveFormsModule\n  * @ngModule FormsModule\n  * @publicApi\n  *^\n  var
RadioControlValueAccessor = /** @class */ (function () {\n    function RadioControlValueAccessor(_renderer,
_elementRef, _registry, _injector) {\n      this._renderer = _renderer;\n      this._elementRef = _elementRef;\n      this._registry = _registry;\n      this._injector = _injector;\n      /**\n      * The registered callback
function called when a change event occurs on the input element.\n      * @nodoc\n      */^\n      this.onChange = function () {};\n      /**\n      * The registered callback function called when a blur event
occurs on the input element.\n      * @nodoc\n      */^\n      this.onTouched = function () {};\n    }\n    /** @nodoc */^\n    RadioControlValueAccessor.prototype.ngOnInit = function () {\n      this._control =
this._injector.get(NgControl);\n      this._checkName();\n      this._registry.add(this._control, this);\n    };\n    /** @nodoc */^\n    RadioControlValueAccessor.prototype.ngOnDestroy = function () {\n      this._registry.remove(this);\n    };\n    /**\n    * Sets the `checked` property value on the radio input
element.\n    * @nodoc\n    */^\n    RadioControlValueAccessor.prototype.writeValue = function (value) {\n      this._state = value === this.value;\n      this._renderer.setProperty(this._elementRef.nativeElement,
'checked', this._state);\n    };\n    /**\n    * Registers a function called when the control value changes.\n    * @nodoc\n    */^\n    RadioControlValueAccessor.prototype.registerOnChange = function (fn) {\n      var
_this = this;\n      this._fn = fn;\n      this.onChange = function () {\n        fn(_this.value);\n      };\n      this._registry.select(_this);\n    };\n    /**\n    * Sets the `value` on the radio input element and
unchecks it.\n    * @param value\n    */^\n    RadioControlValueAccessor.prototype.fireUncheck =
function (value) {\n      this.writeValue(value);\n    };\n    /**\n    * Registers a function called when the
control is touched.\n    * @nodoc\n    */^\n    RadioControlValueAccessor.prototype.registerOnTouched =
function (fn) {\n      this.onTouched = fn;\n    };\n    /**\n    * Sets the `disabled` property on the input
element.\n    * @nodoc\n    */^\n    RadioControlValueAccessor.prototype.setDisabledState = function
(isDisabled) {\n      this._renderer.setProperty(this._elementRef.nativeElement, 'disabled', isDisabled);\n    };\n    RadioControlValueAccessor.prototype._checkName = function () {\n      if (this.name &&
this.formControlName && this.name !== this.formControlName &&
(typeof ngDevMode ===
'undefined' || ngDevMode)) {\n        throwNameError();\n      }\n      if (!this.name &&
this.formControlName)\n        this.name = this.formControlName;\n    };\n    return
RadioControlValueAccessor;\n  }());\n  RadioControlValueAccessor.decorators = [\n    { type: core.Directive,
args: [\n      selector:
'input[type=radio][formControlName],input[type=radio][formControl],input[type=radio][ngModel]',\n
host: { '(change)': 'onChange()', '(blur)': 'onTouched()' },\n      providers:
[RADIO_VALUE_ACCESSOR]\n    }, ]\n  ];\n  RadioControlValueAccessor.ctorParameters = function
() {\n    return [\n      { type: core.Renderer2 },\n      { type: core.ElementRef },\n      { type: RadioControlRegistry
},\n      { type: core.Injector }\n    ];\n  };\n  RadioControlValueAccessor.propDecorators = {\n    name: [{ type:
core.Input }],\n    formControlName: [{ type: core.Input }],\n    value: [{ type: core.Input }]\n  };\n  /**\n  * @license\n  * Copyright Google LLC All Rights Reserved.\n  * Use of this source code is governed by
an MIT-style license that can be\n  * found in the LICENSE file at https://angular.io/license\n  */^\n  var
RANGE_VALUE_ACCESSOR = {\n    provide: NG_VALUE_ACCESSOR,\n    useExisting:
core.forwardRef(function () {\n      return RangeValueAccessor;\n    }),\n    multi: true\n  };\n  /**\n  * @description\n
* The `ControlValueAccessor` for writing a range value and listening to range input changes.\n  * The value
accessor is used by the `FormControlDirective`, `FormControlName`, and `NgModel`\n  * directives.\n  */^\n  *
@usageNotes\n  * ### Using a range input with a reactive form\n  * The following example shows
how to use a range input with a reactive form.\n  * ```ts\n  * const ageControl = new FormControl();\n  *
```\n  * ```\n  * <input type="range" [formControl]=ageControl">\n  * ```\n  */^\n  * @ngModule
ReactiveFormsModule\n * @ngModule FormsModule\n * @publicApi\n *^\n var RangeValueAccessor =
/** @class */ (function () {\n function RangeValueAccessor(_renderer, _elementRef) {\n this._renderer
= _renderer;\n this._elementRef = _elementRef;\n /**\n * The registered callback function
called when a change or input event occurs on the input\n * element.\n * @nodoc\n */^\n

```

```

this.onChange = function (_) { };
/**
 * The registered callback function called when a blur event
occurs on the input element.
 * @nodoc
 */
this.onTouched = function () { };
/**
 * Sets the "value" property on the input element.
 * @nodoc
 */
RangeValueAccessor.prototype.writeValue = function (value) {
this._renderer.setProperty(this._elementRef.nativeElement, 'value', parseFloat(value));
};
/**
 * Registers a function called when the control value changes.
 * @nodoc
 */
RangeValueAccessor.prototype.registerOnChange = function (fn) {
this.onChange = function (value) {
fn(value == null ? null : parseFloat(value));
};
};
/**
 * Registers a function called
when the control is touched.
 * @nodoc
 */
RangeValueAccessor.prototype.registerOnTouched =
function (fn) {
this.onTouched = fn;
};
/**
 * Sets the "disabled" property on the range
input element.
 * @nodoc
 */
RangeValueAccessor.prototype.setDisabledState = function
(isDisabled) {
this._renderer.setProperty(this._elementRef.nativeElement, 'disabled', isDisabled);
};
return RangeValueAccessor;
})();
RangeValueAccessor.decorators = [
{ type: core.Directive, args:
[
selector:
'input[type=range][formControlName],input[type=range][formControl],input[type=range][ngModel]',
host: {
'(change)': 'onChange($event.target.value)',
'(input)':
'onChange($event.target.value)',
'(blur)': 'onTouched()'
},
providers:
[RANGE_VALUE_ACCESSOR]
}],
}
];
RangeValueAccessor.ctorParameters = function () {
return [
{ type: core.Renderer2 },
{ type: core.ElementRef }
];
};
/**
 * @license
 * Copyright Google LLC All Rights Reserved.
 * Use of this source code is governed by an MIT-style
license that can be found in the LICENSE file at https://angular.io/license
 */
var FormErrorExamples = {
formControlName: `
<div [formGroup]=myGroup>
<input
formControlName=firstName>
</div>
In your class:
this.myGroup = new FormGroup({
firstName: new FormControl()
});
formGroupName: `
<div [formGroup]=myGroup>
<div formGroupName=person>
<input formControlName=firstName>
</div>
</div>
In your class:
this.myGroup = new FormGroup({
person: new FormGroup({
firstName:
new FormControl()
})
});
formArrayName: `
<div [formGroup]=myGroup>
<div
formArrayName=cities>
<div *ngFor=let city of cityArray.controls; index as i>
<input
[formControlName]=i>
</div>
</div>
</div>
In your class:
this.cityArray =
new FormArray([new FormControl('SF')]);
this.myGroup = new FormGroup({
cities: this.cityArray
});
ngModelGroup: `
<form>
<div ngModelGroup=person>
<input
[(ngModel)]=person.name name=firstName>
</div>
</form>
ngModelWithFormGroup: `
<div [formGroup]=myGroup>
<input
formControlName=firstName>
<input [(ngModel)]=showMoreControls>
[ngModelOptions]={standalone: true}>
</div>
`;
/**
 * @license
 * Copyright
Google LLC All Rights Reserved.
 * Use of this source code is governed by an MIT-style license that can
be found in the LICENSE file at https://angular.io/license
 */
var ReactiveErrors = /** @class */
(function () {
function ReactiveErrors() {}
ReactiveErrors.controlParentException = function ()
{
throw new Error("formControlName must be used with a parent formGroup directive. You'll want to
add a formGroup directive and pass it an existing FormGroup instance (you can create one in your
class).
Example:
" + FormErrorExamples.formControlName);
};
ReactiveErrors.ngModelGroupException = function () {
throw new Error("formControlName cannot be
used with an ngModelGroup parent. It is only compatible with parents that also have a "form" prefix:
formGroupName, formArrayName, or FormGroup.
Option 1: Update the parent to be formGroupName
(reactive form strategy)
" + FormErrorExamples.formGroupName + "\n\n
Option 2: Use ngModel
instead of formControlName (template-driven strategy)
" + FormErrorExamples.ngModelGroup);
};
ReactiveErrors.missingFormException = function () {
throw new Error("formGroup expects a
FormGroup instance. Please pass one in.
Example:
" +

```

```

FormErrorExamples.formControlName);
 };
 ReactiveErrors.groupParentException = function () {
 throw new Error("formGroupName must be used with a parent formGroup directive. You'll want to add a
 formGroup directive and pass it an existing FormGroup instance (you can create one in your class).
 Example:
 " + FormErrorExamples.formGroupName);
 };
 ReactiveErrors.arrayParentException = function () {
 throw new Error("formArrayName must be used with a parent formGroup directive. You'll
 want to add a formGroup directive and pass it an existing FormGroup instance (you can create one in your
 class).
 Example:
 " + FormErrorExamples.formArrayName);
 };
 ReactiveErrors.disabledAttrWarning = function () {
 console.warn("It looks like you're using the
 disabled attribute with a reactive form directive. If you set disabled to true when you set up this control in your
 component class, the disabled attribute will actually be set in the DOM for you. We recommend using this
 approach to avoid 'changed after checked' errors.
 Example:
 form = new FormGroup({
 first:
 new FormControl({value: 'Nancy', disabled: true}, Validators.required),
 last: new FormControl('Drew',
 Validators.required)
 });
 ReactiveErrors.ngModelWarning = function (directiveName) {
 console.warn("It looks like you're using ngModel on the same form field as " + directiveName +
 ". Support for using the ngModel input property and ngModelChange event with reactive form directives
 has been deprecated in Angular v6 and will be removed in a future version of Angular.
 For more
 information on this, see our API docs here:
 https://angular.io/api/forms/" + (directiveName === 'formControl' ?
 'FormControlDirective' :
 'FormControlName') + "#use-with-ngmodel");
 };
 return
 ReactiveErrors;
 });
 var SELECT_VALUE_ACCESSOR = {
 provide:
 NG_VALUE_ACCESSOR,
 useExisting: core.forwardRef(function () { return SelectControlValueAccessor;
 }),
 multi: true
 };
 function _buildValueString(id, value) {
 if (id == null)
 return "" +
 value;
 if (value && typeof value === 'object')
 value = 'Object';
 return (id + ": " +
 value).slice(0, 50);
 }
 function _extractId(valueString) {
 return valueString.split(':')[0];
 }
 /**
 * @description
 * The `ControlValueAccessor` for writing select control values and listening to select control
 * changes. The value accessor is used by the `FormControlDirective`, `FormControlName`, and `NgModel`
 * directives.
 *
 * @usageNotes
 *
 * ### Using select controls in a reactive form
 *
 * The
 * following examples show how to use a select control in a reactive form.
 *
 * { @example
 * forms/ts/reactiveSelectControl/reactive_select_control_example.ts region='Component' }
 *
 * ### Using
 * select controls in a template-driven form
 *
 * To use a select in a template-driven form, simply add an
 * `ngModel` and a `name` attribute to the main `<select>` tag.
 *
 * { @example
 * forms/ts/selectControl/select_control_example.ts region='Component' }
 *
 * ### Customizing option
 * selection
 *
 * Angular uses object identity to select option. It's possible for the identities of items to
 * change while the data does not. This can happen, for example, if the items are produced from an RPC to the
 * server, and that RPC is re-run. Even if the data hasn't changed, the second response will produce objects with
 * different identities.
 *
 * To customize the default option comparison algorithm, `<select>` supports
 * `compareWith` input.
 *
 * `compareWith` takes a **function** which has two arguments: `option1` and
 * `option2`.
 *
 * If `compareWith` is given, Angular selects option by the return value of the function.
 *
 *
 *
 * ts
 * const selectedCountriesControl = new FormControl();
 *
 *
 *
 * <select
 * [compareWith]="compareFn" [formControl]="selectedCountriesControl">
 * <option *ngFor="let
 * country of countries" [ngValue]="country">
 * {{country.name}}
 * </option>
 * </select>
 *
 * compareFn(c1: Country, c2: Country): boolean {
 * return c1 && c2 ? c1.id === c2.id : c1 === c2;
 * }
 *
 *
 *
 * **Note:** We listen to the 'change' event because 'input' events aren't fired for
 * selects in Firefox and IE:
 * https://bugzilla.mozilla.org/show_bug.cgi?id=1024350
 *
 *
 * https://developer.microsoft.com/en-us/microsoft-edge/platform/issues/4660045/
 *
 * @ngModule
 * ReactiveFormsModule
 * @ngModule FormsModule
 * @publicApi
 *
 * var
 * SelectControlValueAccessor = /** @class */ (function () {
 * function SelectControlValueAccessor(_renderer,
 * _elementRef) {
 * this._renderer = _renderer;
 * this._elementRef = _elementRef;
 * /**
 * @internal
 *
 * this._optionMap = new Map();
 *
 * /** @internal
 *
 * this._idCounter = 0;
 *

```

```

/**\n * The registered callback function called when a change event occurs on the input element.\n *\n * @nodoc\n * ^\n * this.onChange = function (_) { }; \n * /**\n * The registered callback function called when a blur event occurs on the input element.\n * @nodoc\n * ^\n * this.onTouched = function () { }; \n * this._compareWith = Object.is; \n * }\n * Object.defineProperty(SelectControlValueAccessor.prototype, 'compareWith', {\n * /**\n * @description\n * * Tracks the option comparison algorithm for tracking identities when\n * * checking for changes.\n * * ^\n * set: function (fn) {\n * if (typeof fn !== 'function' && (typeof ngDevMode === 'undefined' || ngDevMode)) {\n * throw new Error('"compareWith must be a function, but received \'' +\n * JSON.stringify(fn));\n * }\n * this._compareWith = fn;\n * },\n * enumerable: false,\n * configurable: true\n * }); \n * /**\n * * Sets the 'value' property on the input element. The 'selectedIndex'\n * * property is also set if an ID is provided on the option element.\n * * @nodoc\n * ^\n * SelectControlValueAccessor.prototype.writeValue = function (value) {\n * this.value = value;\n * var id = this._getOptionId(value);\n * if (id == null) {\n * this._renderer.setProperty(this._elementRef.nativeElement, 'selectedIndex', -1);\n * }\n * var valueString = _buildValueString(id, value);\n * this._renderer.setProperty(this._elementRef.nativeElement, 'value',\n * valueString);\n * }; \n * /**\n * * Registers a function called when the control value changes.\n * * @nodoc\n * ^\n * SelectControlValueAccessor.prototype.registerOnChange = function (fn) {\n * var _this = this;\n * this.onChange = function (valueString) {\n * _this.value = _this._getOptionValue(valueString);\n * fn(_this.value);\n * }; \n * }; \n * /**\n * * Registers a function called when the control is touched.\n * * @nodoc\n * ^\n * SelectControlValueAccessor.prototype.registerOnTouched = function (fn) {\n * this.onTouched = fn;\n * }; \n * /**\n * * Sets the 'disabled' property on the select input element.\n * * @nodoc\n * ^\n * SelectControlValueAccessor.prototype.setDisabledState = function (isDisabled) {\n * this._renderer.setProperty(this._elementRef.nativeElement, 'disabled', isDisabled);\n * }; \n * /** @internal *\n * ^\n * SelectControlValueAccessor.prototype._registerOption = function () {\n * return (this._idCounter++).toString();\n * }; \n * /** @internal *\n * ^\n * SelectControlValueAccessor.prototype._getOptionId = function (value) {\n * var e_1, _a; \n * try {\n * for (var _b = __values(Array.from(this._optionMap.keys())), _c = _b.next(); !_c.done; _c = _b.next()) {\n * var id = _c.value;\n * if (this._compareWith(this._optionMap.get(id), value)) \n * return id;\n * }\n * }\n * catch (e_1_1) { e_1 = { error: e_1_1 }; } \n * finally {\n * try {\n * if (_c && !_c.done && (_a = _b.return)) _a.call(_b);\n * }\n * finally { if (e_1) throw e_1.error; }\n * }\n * return null;\n * }; \n * /** @internal *\n * ^\n * SelectControlValueAccessor.prototype._getOptionValue = function (valueString) {\n * var id = _extractId(valueString);\n * return this._optionMap.has(id) ? this._optionMap.get(id) : valueString;\n * }; \n * return SelectControlValueAccessor;\n * }()); \n * SelectControlValueAccessor.decorators = [\n * { type: core.Directive, args: [{\n * selector: 'select:not([multiple])[formControlName],select:not([multiple])[formControl],select:not([multiple])[ngModel]',\n * host: { '(change)': 'onChange($event.target.value)', '(blur)': 'onTouched()' },\n * providers: [SELECT_VALUE_ACCESSOR]\n * },]\n * }; \n * SelectControlValueAccessor.ctorParameters = function () { return [\n * { type: core.Renderer2 },\n * { type: core.ElementRef }\n *]; \n * }\n * SelectControlValueAccessor.propDecorators = {\n * compareWith: [{ type: core.Input }]\n * }; \n * /**\n * * @description\n * * Marks <option> as dynamic, so Angular can be notified when options change.\n * * ^\n * * @see `SelectControlValueAccessor`\n * * ^\n * * @ngModule ReactiveFormsModule\n * * @ngModule FormsModule\n * * @publicApi\n * * ^\n * var NgSelectOption = /** @class */ (function () {\n * function NgSelectOption(_element, _renderer, _select) {\n * this._element = _element;\n * this._renderer = _renderer;\n * this._select = _select;\n * if (this._select)\n * this.id = this._select._registerOption();\n * }\n * Object.defineProperty(NgSelectOption.prototype, 'ngValue', {\n * /**\n * * @description\n * * Tracks the value bound to the option element. Unlike the value binding,\n
```

```

 * ngValue supports binding to objects.\n */\n set: function (value) {\n if (this._select\n == null)\n return;\n this._select._optionMap.set(this.id, value);\n this._setElementValue(_buildValueString(this.id, value));\n this._select.writeValue(this._select.value);\n },\n enumerable: false,\n configurable: true\n });\n Object.defineProperty(NgSelectOption.prototype, 'value', {\n /**\n * @description\n * Tracks simple string values bound to the option element.\n * For objects, use the `ngValue` input binding.\n */\n set: function (value) {\n this._setElementValue(value);\n if (this._select)\n this._select.writeValue(this._select.value);\n },\n enumerable: false,\n configurable: true\n });\n /** @internal */\n NgSelectOption.prototype._setElementValue = function (value) {\n this._renderer.setProperty(this._element.nativeElement, 'value', value);\n }; \n /** @nodoc */\n NgSelectOption.prototype.ngOnDestroy = function () {\n if (this._select) {\n this._select._optionMap.delete(this.id);\n this._select.writeValue(this._select.value);\n }\n }; \n return NgSelectOption;\n }());\n NgSelectOption.decorators = [\n { type: core.Directive, args: [{ selector:\n 'option' },] }\n];\n NgSelectOption.ctorParameters = function () { return [\n { type: core.ElementRef },\n { type: core.Renderer2 },\n { type: SelectControlValueAccessor, decorators: [{ type: core.Optional }, { type:\n core.Host }] }\n]; }; \n NgSelectOption.propDecorators = {\n ngValue: [{ type: core.Input, args: ['ngValue',]\n }],\n value: [{ type: core.Input, args: ['value',] }\n];\n\n var SELECT_MULTIPLE_VALUE_ACCESSOR\n = {\n provide: NG_VALUE_ACCESSOR,\n useExisting: core.forwardRef(function () { return\n SelectMultipleControlValueAccessor; }),\n multi: true\n }; \n function _buildValueString$(id, value) {\n if (id == null)\n return "\"" + value;\n if (typeof value === 'string')\n value = "\"" + value + "\";\n if (value && typeof value === 'object')\n value = 'Object';\n return (id + ': ' + value).slice(0, 50);\n }\n function _extractId$(valueString) {\n return valueString.split(':')[0];\n }\n /** Mock interface for\n HTMLCollection */\n var HTMLCollection = /** @class */ (function () {\n function HTMLCollection() {\n }\n return HTMLCollection;\n }());\n /**\n * @description\n * The `ControlValueAccessor` for\n writing multi-select control values and listening to multi-select\n * control changes. The value accessor is used by\n the `FormControlDirective`, `FormControlName`, and\n * `NgModel` directives.\n *\n * @see\n `SelectControlValueAccessor`\n *\n * @usageNotes\n * ### Using a multi-select control\n *\n * The follow example shows you how to use a multi-select control with a reactive form.\n *\n * ```ts\n * const\n countryControl = new FormControl();\n * \n * \n * <select multiple name=\"countries\"\n [formControl]=\"countryControl\">\n * <option *ngFor=\"let country of countries\" [ngValue]=\"country\">\n * {{ country.name }}\n * </option>\n * </select>\n * \n * \n * ### Customizing option selection\n *\n * To customize the default option comparison algorithm, `<select>` supports `compareWith` input.\n *\n See the `SelectControlValueAccessor` for usage.\n *\n * @ngModule ReactiveFormsModule\n *\n * @ngModule FormsModule\n * @publicApi\n */\n var SelectMultipleControlValueAccessor = /** @class */\n (function () {\n function SelectMultipleControlValueAccessor(_renderer, _elementRef) {\n this._renderer = _renderer;\n this._elementRef = _elementRef;\n /** @internal */\n this._optionMap = new Map();\n /** @internal */\n this._idCounter = 0;\n /**\n * The\n registered callback function called when a change event occurs on the input element.\n *\n * @nodoc\n */\n this.onChange = function (_) { }; \n /**\n * The registered callback function called when a\n blur event occurs on the input element.\n *\n * @nodoc\n */\n this.onTouched = function () { }; \n this._compareWith = Object.is;\n }\n Object.defineProperty(SelectMultipleControlValueAccessor.prototype, 'compareWith', {\n /**\n * @description\n * Tracks the option comparison algorithm for tracking identities when\n * checking\n for changes.\n */\n set: function (fn) {\n if (typeof fn !== 'function' && (typeof ngDevMode\n === 'undefined' || ngDevMode))\n throw new Error(\"compareWith must be a function, but received \"" +\n JSON.stringify(fn));\n this._compareWith = fn;\n },\n enumerable: false,\n configurable: true\n });\n /**\n * Sets the \"value\" property on one or of more of the select's\n options.\n *\n * @nodoc\n */\n SelectMultipleControlValueAccessor.prototype.writeValue = function

```

```

(value) {\n var _this = this;\n this.value = value;\n var optionSelectedStateSetter;\n if
(Array.isArray(value)) {\n // convert values to ids\n var ids_1 = value.map(function (v) { return
_this._getOptionId(v); });\n optionSelectedStateSetter = function (opt, o) {\n
opt._setSelected(ids_1.indexOf(o.toString()) > -1);\n }; \n } \n else {\n
optionSelectedStateSetter = function (opt, o) {\n opt._setSelected(false);\n }; \n } \n
this._optionMap.forEach(optionSelectedStateSetter);\n }; \n /** \n * Registers a function called when
the control value changes \n * and writes an array of the selected options. \n * @nodoc \n */ \n
SelectMultipleControlValueAccessor.prototype.registerOnChange = function (fn) {\n var _this = this;\n
this.onChange = function (_) {\n var selected = [];\n if (_.selectedOptions !== undefined) {\n
var options = _.selectedOptions;\n for (var i = 0; i < options.length; i++) {\n var opt
= options.item(i);\n var val = _this._getOptionValue(opt.value);\n selected.push(val);\n
 } \n } \n // Degrade on IE \n else {\n var options = _.options;\n
for (var i = 0; i < options.length; i++) {\n var opt = options.item(i);\n if
(opt.selected) {\n var val = _this._getOptionValue(opt.value);\n
selected.push(val);\n } \n } \n } \n _this.value = selected;\n
fn(selected);\n }; \n }; \n /** \n * Registers a function called when the control is touched. \n *
@nodoc \n */ \n SelectMultipleControlValueAccessor.prototype.registerOnTouched = function (fn) {\n
this.onTouched = fn;\n }; \n /** \n * Sets the "disabled" property on the select input element. \n *
@nodoc \n */ \n SelectMultipleControlValueAccessor.prototype.setDisabledState = function (isDisabled)
{\n this._renderer.setProperty(this._elementRef.nativeElement, 'disabled', isDisabled);\n }; \n /**
@internal */ \n SelectMultipleControlValueAccessor.prototype._registerOption = function (value) {\n var
id = (this._idCounter++).toString();\n this._optionMap.set(id, value);\n return id;\n }; \n /**
@internal */ \n SelectMultipleControlValueAccessor.prototype._getOptionId = function (value) {\n var
e_1, _a;\n try {\n for (var _b = __values(Array.from(this._optionMap.keys())), _c = _b.next();
!_c.done; _c = _b.next()) {\n var id = _c.value;\n if
(this._compareWith(this._optionMap.get(id)._value, value))\n return id;\n } \n } \n } \n catch (e_1_1) { e_1 = { error: e_1_1 }; } \n finally {\n try {\n if (_c && !_c.done &&
(_a = _b.return)) _a.call(_b);\n } \n } \n finally { if (e_1) throw e_1.error; } \n } \n return
null;\n }; \n /** @internal */ \n SelectMultipleControlValueAccessor.prototype._getOptionValue =
function (valueString) {\n var id = _extractId$1(valueString);\n return this._optionMap.has(id) ?
this._optionMap.get(id)._value : valueString;\n }; \n return SelectMultipleControlValueAccessor;\n }());\n
SelectMultipleControlValueAccessor.decorators = [\n { type: core.Directive, args: [{\n selector:
'select[multiple][formControlName],select[multiple][formControl],select[multiple][ngModel]',\n host: {\n
(change)': 'onChange($event.target)', '(blur)': 'onTouched()' },\n providers:
[SELECT_MULTIPLE_VALUE_ACCESSOR]\n },] } \n]; \n
SelectMultipleControlValueAccessor.ctorParameters = function () { return [\n { type: core.Renderer2 }, \n {
type: core.ElementRef } \n]; }; \n SelectMultipleControlValueAccessor.propDecorators = {\n compareWith:
[{\n type: core.Input }] \n }; \n /** \n * @description \n * Marks <option> as dynamic, so Angular can be
notified when options change. \n * \n * @see `SelectMultipleControlValueAccessor` \n * \n * @ngModule
ReactiveFormsModule \n * @ngModule FormsModule \n * @publicApi \n */ \n var NgSelectMultipleOption
= /** @class */ (function () {\n function NgSelectMultipleOption(_element, _renderer, _select) {\n
this._element = _element;\n this._renderer = _renderer;\n this._select = _select;\n if
(this._select) {\n this.id = this._select._registerOption(this);\n } \n } \n } \n Object.defineProperty(NgSelectMultipleOption.prototype, "ngValue", {\n /** \n * @description \n * Tracks the value bound to the option element. Unlike the value binding, \n * ngValue supports binding
to objects. \n * \n * @ngModule ReactiveFormsModule \n * @publicApi \n */ \n set: function (value) {\n if (this._select == null)\n return;\n this._value = value;\n this._setElementValue(_buildValueString$1(this.id, value));\n
this._select.writeValue(this._select.value);\n }, \n enumerable: false, \n configurable: true \n });

```

```

});\n Object.defineProperty(NgSelectMultipleOption.prototype, 'value', {\n /**\n *
 @description\n * Tracks simple string values bound to the option element.\n * For objects, use the
`ngValue` input binding.\n */\n set: function (value) {\n if (this._select) {\n
this._value = value;\n this._setElementValue(_buildValueString$(this.id, value));\n
this._select.writeValue(this._select.value);\n } else {\n
this._setElementValue(value);\n }\n },\n enumerable: false,\n configurable: true\n
});\n /** @internal */\n NgSelectMultipleOption.prototype._setElementValue = function (value) {\n
this._renderer.setProperty(this._element.nativeElement, 'value', value);\n }; \n /** @internal */\n
NgSelectMultipleOption.prototype._setSelected = function (selected) {\n
this._renderer.setProperty(this._element.nativeElement, 'selected', selected);\n }; \n /** @nodoc */\n
NgSelectMultipleOption.prototype.ngOnDestroy = function () {\n if (this._select) {\n
this._select._optionMap.delete(this.id);\n this._select.writeValue(this._select.value);\n }\n }; \n
 return NgSelectMultipleOption;\n }());\n NgSelectMultipleOption.decorators = [\n { type: core.Directive,\n
args: [{ selector: 'option' },]]\n]; \n NgSelectMultipleOption.ctorParameters = function () { return [\n {\n
type: core.ElementRef },\n { type: core.Renderer2 },\n { type: SelectMultipleControlValueAccessor,\n
decorators: [{ type: core.Optional }, { type: core.Host }]\n }]; \n NgSelectMultipleOption.propDecorators =
{\n ngValue: [{ type: core.Input, args: ['ngValue',] }],\n value: [{ type: core.Input, args: ['value',] }]\n
}; \n\n function controlPath(name, parent) {\n return __spread(parent.path, [name]);\n }\n function
setUpControl(control, dir) {\n if (typeof ngDevMode === 'undefined' || ngDevMode) {\n if (!control)\n
 _throwError(dir, 'Cannot find control with');\n if (!dir.valueAccessor)\n
 _throwError(dir, 'No\n
value accessor for form control with');\n }\n setUpValidators(control, dir, /* handleOnValidatorChange */\n
true);\n dir.valueAccessor.writeValue(control.value);\n setUpViewChangePipeline(control, dir);\n
setUpModelChangePipeline(control, dir);\n setUpBlurPipeline(control, dir);\n
setUpDisabledChangeHandler(control, dir);\n }\n function cleanUpControl(control, dir) {\n var noop =\n
function () {\n if (typeof ngDevMode === 'undefined' || ngDevMode) {\n
 _noControlError(dir);\n }\n };\n dir.valueAccessor.registerOnChange(noop);\n
dir.valueAccessor.registerOnTouched(noop);\n cleanUpValidators(control, dir, /* handleOnValidatorChange */\n
true);\n if (control) {\n dir._invokeOnDestroyCallbacks();\n
control._registerOnCollectionChange(function () { });\n }\n }\n function\n
registerOnValidatorChange(validators, onChange) {\n validators.forEach(function (validator) {\n if\n
(validator.registerOnValidatorChange)\n validator.registerOnValidatorChange(onChange);\n });\n
}\n /**\n * Sets up disabled change handler function on a given form control if ControlValueAccessor\n *
associated with a given directive instance supports the `setDisabledState` call.\n * @param control Form\n
control where disabled change handler should be setup.\n * @param dir Corresponding directive instance\n
associated with this control.\n */\n function setUpDisabledChangeHandler(control, dir) {\n if\n
(dir.valueAccessor.setDisabledState) {\n var onDisabledChange_1 = function (isDisabled) {\n
dir.valueAccessor.setDisabledState(isDisabled);\n };\n
control.registerOnDisabledChange(onDisabledChange_1);\n // Register a callback function to cleanup\n
disabled change handler\n // from a control instance when a directive is destroyed.\n
dir._registerOnDestroy(function () {\n control._unregisterOnDisabledChange(onDisabledChange_1);\n
 });\n }\n }\n /**\n * Sets up sync and async directive validators on provided form control.\n * This\n
function merges validators from the directive into the validators of the control.\n * @param control Form\n
control where directive validators should be setup.\n * @param dir Directive instance that contains validators to\n
be setup.\n * @param handleOnValidatorChange Flag that determines whether directive validators should be\n
setup\n * to handle validator input change.\n */\n function setUpValidators(control, dir,\n
handleOnValidatorChange) {\n var validators = getControlValidators(control);\n if (dir.validator !== null)\n
{\n control.setValidators(mergeValidators(validators, dir.validator));\n } else if (typeof validators\n
=== 'function') {\n // If sync validators are represented by a single validator function, we force the\n

```



```

`Validators.compose` call to happen by executing the `setValidators` function with
// an array that contains
that function. We need this to avoid possible discrepancies in
// validators behavior, so sync validators are
always processed by the `Validators.compose`.
// Note: we should consider moving this logic inside the
`setValidators` function itself, so we
// have consistent behavior on AbstractControl API level. The same
applies to the async
// validators logic below.
control.setValidators([validators]);
}
var
asyncValidators = getControlAsyncValidators(control);
if (dir.asyncValidator !== null) {
control.setAsyncValidators(mergeValidators(asyncValidators, dir.asyncValidator));
}
else if (typeof
asyncValidators === 'function') {
control.setAsyncValidators([asyncValidators]);
}
// Re-run
validation when validator binding changes, e.g. minlength=3 -> minlength=4
if (handleOnValidatorChange)
{
var onValidatorChange = function () { return control.updateValueAndValidity(); };
registerOnValidatorChange(dir._rawValidators, onValidatorChange);
registerOnValidatorChange(dir._rawAsyncValidators, onValidatorChange);
}
}
/**
 * Cleans up
sync and async directive validators on provided form control.
 * This function reverts the setup performed by the
`setUpValidators` function, i.e.
 * removes directive-specific validators from a given control instance.
 *
 * @param control Form control from where directive validators should be removed.
 * @param dir Directive
instance that contains validators to be removed.
 * @param handleOnValidatorChange Flag that determines
whether directive validators should also be
 * cleaned up to stop handling validator input change (if previously
configured to do so).
 */
function cleanUpValidators(control, dir, handleOnValidatorChange) {
if
(control !== null) {
if (dir.validator !== null) {
var validators = getControlValidators(control);
if (Array.isArray(validators) && validators.length > 0) {
// Filter out directive validator
function.
control.setValidators(validators.filter(function (validator) { return validator !== dir.validator;
}));
}
}
if (dir.asyncValidator !== null) {
var asyncValidators =
getControlAsyncValidators(control);
if (Array.isArray(asyncValidators) && asyncValidators.length > 0)
{
// Filter out directive async validator function.
control.setAsyncValidators(asyncValidators.filter(function (asyncValidator) { return asyncValidator !==
dir.asyncValidator; }));
}
}
if (handleOnValidatorChange) {
// Clear
onValidatorChange callbacks by providing a noop function.
var noop = function () { };
registerOnValidatorChange(dir._rawValidators, noop);
registerOnValidatorChange(dir._rawAsyncValidators, noop);
}
}
function
setUpViewChangePipeline(control, dir) {
dir.valueAccessor.registerOnChange(function (newValue) {
control._pendingValue = newValue;
control._pendingChange = true;
control._pendingDirty =
true;
if (control.updateOn === 'change')
updateControl(control, dir);
});
}
function
setUpBlurPipeline(control, dir) {
dir.valueAccessor.registerOnTouched(function () {
control._pendingTouched = true;
if (control.updateOn === 'blur' && control._pendingChange)
updateControl(control, dir);
if (control.updateOn !== 'submit')
control.markAsTouched();
});
}
function updateControl(control, dir) {
if (control._pendingDirty)
control.markAsDirty();
control.setValue(control._pendingValue, { emitModelToViewChange: false });
dir.viewToModelUpdate(control._pendingValue);
control._pendingChange = false;
}
function
setUpModelChangePipeline(control, dir) {
var onChange = function (newValue, emitModelEvent) {
// control -> view
dir.valueAccessor.writeValue(newValue);
// control -> ngModel
if
(emitModelEvent)
dir.viewToModelUpdate(newValue);
};
control.registerOnChange(onChange);
// Register a callback function to cleanup onChange handler
//
from a control instance when a directive is destroyed.
dir._registerOnDestroy(function () {
control._unregisterOnChange(onChange);
});
}
function setUpFormContainer(control, dir) {
if
(control == null && (typeof ngDevMode === 'undefined' || ngDevMode))
_throwError(dir, 'Cannot find
control with');
setUpValidators(control, dir, /* handleOnValidatorChange */ false);
}
function
_noControlError(dir) {
return _throwError(dir, 'There is no FormControl instance attached to form control
element with');
}
function _throwError(dir, message) {
var messageEnd;
if (dir.path.length > 1)

```

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{\n messageEnd = \"path: \" + dir.path.join(' -> ') + \"\";\n }\n else if (dir.path[0]) {\n
messageEnd = \"name: \" + dir.path + \"\";\n }\n else {\n messageEnd = 'unspecified name
attribute';\n }\n throw new Error(message + \" \" + messageEnd);\n }\n function
isPropertyUpdated(changes, viewModel) {\n if (!changes.hasOwnProperty('model'))\n return false;\n
var change = changes['model'];\n if (change.isFirstChange())\n return true;\n return
!Object.is(viewModel, change.currentValue);\n }\n var BUILTIN_ACCESSORS = [\n
CheckboxControlValueAccessor,\n RangeValueAccessor,\n NumberValueAccessor,\n
SelectControlValueAccessor,\n SelectMultipleControlValueAccessor,\n RadioControlValueAccessor,\n
];\n function isBuiltInAccessor(valueAccessor) {\n return BUILTIN_ACCESSORS.some(function (a) { return
valueAccessor.constructor === a; });\n }\n function syncPendingControls(form, directives) {\n
form._syncPendingControls();\n directives.forEach(function (dir) {\n var control = dir.control;\n if
(control.updateOn === 'submit' && control._pendingChange) {\n
dir.viewToModelUpdate(control._pendingValue);\n control._pendingChange = false;\n }\n
});\n }\n // TODO: vsavkin remove it once https://github.com/angular/angular/issues/3011 is implemented\n
function selectValueAccessor(dir, valueAccessors) {\n if (!valueAccessors)\n return null;\n if
(!Array.isArray(valueAccessors) && (typeof ngDevMode === 'undefined' || ngDevMode))\n
_throwError(dir, 'Value accessor was not provided as an array for form control with');\n var defaultAccessor =
undefined;\n var builtinAccessor = undefined;\n var customAccessor = undefined;\n
valueAccessors.forEach(function (v) {\n if (v.constructor === DefaultValueAccessor) {\n
defaultAccessor = v;\n }\n else if (isBuiltInAccessor(v)) {\n if (builtinAccessor && (typeof
ngDevMode === 'undefined' || ngDevMode))\n _throwError(dir, 'More than one built-in value accessor
matches form control with');\n builtinAccessor = v;\n }\n else {\n if
(customAccessor && (typeof ngDevMode === 'undefined' || ngDevMode))\n _throwError(dir, 'More
than one custom value accessor matches form control with');\n customAccessor = v;\n }\n
});\n if (customAccessor)\n return customAccessor;\n if (builtinAccessor)\n return
builtinAccessor;\n if (defaultAccessor)\n return defaultAccessor;\n if (typeof ngDevMode ===
'undefined' || ngDevMode) {\n _throwError(dir, 'No valid value accessor for form control with');\n }\n
return null;\n }\n function removeListItem(list, el) {\n var index = list.indexOf(el);\n if (index > -1)\n
list.splice(index, 1);\n }\n // TODO(kara): remove after deprecation period\n function
_ngModelWarning(name, type, instance, warningConfig) {\n if (!core.isDevMode() || warningConfig ===
'never')\n return;\n if (((warningConfig === null || warningConfig === 'once') &&
!type._ngModelWarningSentOnce) ||\n (warningConfig === 'always' && !instance._ngModelWarningSent))\n
{\n if (typeof ngDevMode === 'undefined' || ngDevMode) {\n
ReactiveErrors.ngModelWarning(name);\n }\n type._ngModelWarningSentOnce = true;\n
instance._ngModelWarningSent = true;\n }\n }\n /**\n * Reports that a FormControl is valid, meaning
that no errors exist in the input value.\n * @see `status`\n */\n var VALID = 'VALID';\n /**\n *
Reports that a FormControl is invalid, meaning that an error exists in the input value.\n * @see `status`\n
*/\n var INVALID = 'INVALID';\n /**\n * Reports that a FormControl is pending, meaning that that async
validation is occurring and\n * errors are not yet available for the input value.\n * @see
`markAsPending`\n * @see `status`\n */\n var PENDING = 'PENDING';\n /**\n * Reports that a
FormControl is disabled, meaning that the control is exempt from ancestor\n * calculations of validity or value.\n
*/\n * @see `markAsDisabled`\n * @see `status`\n */\n var DISABLED = 'DISABLED';\n function
_find(control, path, delimiter) {\n if (path == null)\n return null;\n if (!Array.isArray(path)) {\n
path = path.split(delimiter);\n }\n if (Array.isArray(path) && path.length === 0)\n return null;\n
// Not using Array.reduce here due to a Chrome 80 bug\n //
https://bugs.chromium.org/p/chromium/issues/detail?id=1049982\n var controlToFind = control;\n
path.forEach(function (name) {\n if (controlToFind instanceof FormGroup) {\n controlToFind =
controlToFind.controls.hasOwnProperty(name) ?\n controlToFind.controls[name] :\n null;\n

```

```

 }\n else if (controlToFind instanceof FormArray) {\n controlToFind = controlToFind.at(name)
|| null;\n }\n else {\n controlToFind = null;\n }\n });\n return controlToFind;\n}\n /**\n * Gets validators from either an options object or given validators.\n */\n function
pickValidators(validatorOrOpts) {\n return (isOptionsObj(validatorOrOpts) ? validatorOrOpts.validators :
validatorOrOpts) || null;\n }\n /**\n * Creates validator function by combining provided validators.\n */\n
function coerceToValidator(validator) {\n return Array.isArray(validator) ? composeValidators(validator) :
validator || null;\n }\n /**\n * Gets async validators from either an options object or given validators.\n */\n
function pickAsyncValidators(asyncValidator, validatorOrOpts) {\n return (isOptionsObj(validatorOrOpts) ?
validatorOrOpts.asyncValidators : asyncValidator) || null;\n }\n /**\n * Creates async validator function by
combining provided async validators.\n */\n function coerceToAsyncValidator(asyncValidator) {\n return
Array.isArray(asyncValidator) ? composeAsyncValidators(asyncValidator) :\n asyncValidator || null;\n }\n
function isOptionsObj(validatorOrOpts) {\n return validatorOrOpts != null &&
!Array.isArray(validatorOrOpts) &&\n typeof validatorOrOpts === 'object';\n }\n /**\n * This is the
base class for `FormControl`, `FormGroup`, and `FormArray`.\n * It provides some of the shared behavior
that all controls and groups of controls have, like\n * running validators, calculating status, and resetting state. It
also defines the properties\n * that are shared between all sub-classes, like `value`, `valid`, and `dirty`. It shouldn't
be\n * instantiated directly.\n * @see [Forms Guide](/guide/forms)\n * @see [Reactive Forms
Guide](/guide/reactive-forms)\n * @see [Dynamic Forms Guide](/guide/dynamic-form)\n *
@publicApi\n */\n var AbstractControl = /** @class */ (function () {\n /**\n * Initialize the
AbstractControl instance.\n * @param validators The function or array of functions that is used to
determine the validity of\n * this control synchronously.\n * @param asyncValidators The function or
array of functions that is used to determine validity of\n * this control asynchronously.\n */\n
function AbstractControl(validators, asyncValidators) {\n /**\n * Indicates that a control has its own
pending asynchronous validation in progress.\n * @internal\n */\n
this._hasOwnPendingAsyncValidator = false;\n /** @internal */\n this._onCollectionChange =
function () { };\n this._parent = null;\n /**\n * A control is `pristine` if the user has not yet
changed\n * the value in the UI.\n * @returns True if the user has not yet changed the
value in the UI; compare `dirty`.\n * Programmatic changes to a control's value do not mark it dirty.\n
*/\n this.pristine = true;\n /**\n * True if the control is marked as `touched`.\n * A control is marked `touched` once the user has triggered\n * a `blur` event on it.\n */\n
this.touched = false;\n /** @internal */\n this._onDisabledChange = [];\n this._rawValidators =
validators;\n this._rawAsyncValidators = asyncValidators;\n this._composedValidatorFn =
coerceToValidator(this._rawValidators);\n this._composedAsyncValidatorFn =
coerceToAsyncValidator(this._rawAsyncValidators);\n }\n
Object.defineProperty(AbstractControl.prototype, "validator", {\n /**\n * The function that is used
to determine the validity of this control synchronously.\n */\n get: function () {\n return
this._composedValidatorFn;\n },\n set: function (validatorFn) {\n this._rawValidators =
this._composedValidatorFn = validatorFn;\n },\n enumerable: false,\n configurable: true\n
});\n Object.defineProperty(AbstractControl.prototype, "asyncValidator", {\n /**\n * The
function that is used to determine the validity of this control asynchronously.\n */\n get: function ()
{\n return this._composedAsyncValidatorFn;\n },\n set: function (asyncValidatorFn) {\n
this._rawAsyncValidators = this._composedAsyncValidatorFn = asyncValidatorFn;\n },\n
enumerable: false,\n configurable: true\n });\n Object.defineProperty(AbstractControl.prototype,
"parent", {\n /**\n * The parent control.\n */\n get: function () {\n return
this._parent;\n },\n enumerable: false,\n configurable: true\n });\n
Object.defineProperty(AbstractControl.prototype, "valid", {\n /**\n * A control is `valid` when its
`status` is `VALID`.\n * @see {@link AbstractControl.status}\n * @returns
True if the control has passed all of its validation tests,\n * false otherwise.\n */\n get: function

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```

() {\n
 return this.status === VALID;\n
},\n
enumerable: false,\n
configurable: true\n
});\n
Object.defineProperty(FormControl.prototype, \"invalid\", {\n
 /**\n
 * A control is `invalid` when its `status` is `INVALID`.\n
 * @see {@link FormControl.status}\n
 * @returns True if this control has failed one or more of its validation checks,\n
 * false otherwise.\n
 */\n
 get: function () {\n
 return this.status === INVALID;\n
 },\n
 enumerable: false,\n
 configurable: true\n
});\n
Object.defineProperty(FormControl.prototype, \"pending\", {\n
 /**\n
 * A control is `pending` when its `status` is `PENDING`.\n
 * @see {@link FormControl.status}\n
 * @returns True if this control is in the process of conducting a validation check,\n
 * false otherwise.\n
 */\n
 get: function () {\n
 return this.status === PENDING;\n
 },\n
 enumerable: false,\n
 configurable: true\n
});\n
Object.defineProperty(FormControl.prototype, \"disabled\", {\n
 /**\n
 * A control is `disabled` when its `status` is `DISABLED`.\n
 * Disabled controls are exempt from validation checks and\n
 * are not included in the aggregate value of their ancestor\n
 * controls.\n
 * @see {@link FormControl.status}\n
 * @returns True if the control is disabled, false otherwise.\n
 */\n
 get: function () {\n
 return this.status === DISABLED;\n
 },\n
 enumerable: false,\n
 configurable: true\n
});\n
Object.defineProperty(FormControl.prototype, \"enabled\", {\n
 /**\n
 * A control is `enabled` as long as its `status` is not `DISABLED`.\n
 * @returns True if the control has any status other than `DISABLED`,\n
 * false if the status is `DISABLED`.\n
 * @see {@link FormControl.status}\n
 */\n
 get: function () {\n
 return this.status !== DISABLED;\n
 },\n
 enumerable: false,\n
 configurable: true\n
});\n
Object.defineProperty(FormControl.prototype, \"dirty\", {\n
 /**\n
 * A control is `dirty` if the user has changed the value\n
 * in the UI.\n
 * @returns True if the user has changed the value of this control in the UI; compare `pristine`.\n
 * Programmatic changes to a control's value do not mark it dirty.\n
 */\n
 get: function () {\n
 return !this.pristine;\n
 },\n
 enumerable: false,\n
 configurable: true\n
});\n
Object.defineProperty(FormControl.prototype, \"untouched\", {\n
 /**\n
 * True if the control has not been marked as touched\n
 * by the user. A control is `untouched` if the user has not yet triggered\n
 * a `blur` event on it.\n
 */\n
 get: function () {\n
 return !this.touched;\n
 },\n
 enumerable: false,\n
 configurable: true\n
});\n
Object.defineProperty(FormControl.prototype, \"updateOn\", {\n
 /**\n
 * Reports the update strategy of the `FormControl` (meaning\n
 * the event on which the control updates itself).\n
 * Possible values: `change` | `blur` | `submit`\n
 * Default value: `change`\n
 */\n
 get: function () {\n
 return this._updateOn ? this._updateOn : (this.parent ? this.parent.updateOn : 'change');\n
 },\n
 enumerable: false,\n
 configurable: true\n
});\n
/**\n
 * Sets the synchronous validators that are active on this control. Calling\n
 * this overwrites any existing sync validators.\n
 * When you add or remove a validator at run time, you must call\n
 * `updateValueAndValidity()` for the new validation to take effect.\n
 */\n
FormControl.prototype.setValidators = function (newValidator) {\n
 this._rawValidators = newValidator;\n
 this._composedValidatorFn = coerceToValidator(newValidator);\n
};\n
/**\n
 * Sets the async validators that are active on this control. Calling this\n
 * overwrites any existing async validators.\n
 * When you add or remove a validator at run time, you must call\n
 * `updateValueAndValidity()` for the new validation to take effect.\n
 */\n
FormControl.prototype.setAsyncValidators = function (newValidator) {\n
 this._rawAsyncValidators = newValidator;\n
 this._composedAsyncValidatorFn = coerceToAsyncValidator(newValidator);\n
};\n
/**\n
 * Empties out the sync validator list.\n
 * When you add or remove a validator at run time, you must call\n
 * `updateValueAndValidity()` for the new validation to take effect.\n
 */\n
FormControl.prototype.clearValidators = function () {\n
 this.validator = null;\n
};\n
/**\n
 * Empties out the async validator list.\n
 * When you add or remove a validator at run time, you must call\n
 * `updateValueAndValidity()` for the new validation to take effect.\n
 */\n
FormControl.prototype.clearAsyncValidators = function () {\n
 this.asyncValidator = null;\n
};\n

```

```

/**\n
 * Marks the control as `touched`. A control is touched by focus and\n
 * blur events that do not\n
 * change the value.\n
 * @see `markAsUntouched()`\n
 * @see `markAsDirty()`\n
 * @see\n
 * `markAsPristine()`\n
 * @param opts Configuration options that determine how the control propagates\n
 * changes\n
 * and emits events after marking is applied.\n
 * ** `onlySelf`: When true, mark only this control.\n
 * When false or not supplied,\n
 * marks all direct ancestors. Default is false.\n
 */\n
AbstractControl.prototype.markAsTouched = function (opts) {\n
 if (opts === void 0) { opts = {}; }\n
 this.touched = true;\n
 if (this._parent && !opts.onlySelf) {\n
 this._parent.markAsTouched(opts);\n
 }\n
};\n
/**\n
 * Marks the control and all its descendant controls as `touched`.\n
 * @see\n
 * `markAsTouched()`\n
 */\n
AbstractControl.prototype.markAllAsTouched = function () {\n
 this.markAsTouched({ onlySelf: true });\n
 this._forEachChild(function (control) { return\n
 control.markAllAsTouched(); });\n
};\n
/**\n
 * Marks the control as `untouched`.\n
 * If\n
 * the control has any children, also marks all children as `untouched`\n
 * and recalculates the `touched` status of\n
 * all parent controls.\n
 * @see `markAsTouched()`\n
 * @see `markAsDirty()`\n
 * @see\n
 * `markAsPristine()`\n
 * @param opts Configuration options that determine how the control propagates\n
 * changes\n
 * and emits events after the marking is applied.\n
 * ** `onlySelf`: When true, mark only this\n
 * control. When false or not supplied,\n
 * marks all direct ancestors. Default is false.\n
 */\n
AbstractControl.prototype.markAsUntouched = function (opts) {\n
 if (opts === void 0) { opts = {}; }\n
 this.touched = false;\n
 this._pendingTouched = false;\n
 this._forEachChild(function (control) {\n
 control.markAsUntouched({ onlySelf: true });\n
 });\n
 if (this._parent && !opts.onlySelf) {\n
 this._parent._updateTouched(opts);\n
 }\n
};\n
/**\n
 * Marks the control as `dirty`. A control\n
 * becomes dirty when\n
 * the control's value is changed through the UI; compare `markAsTouched`.\n
 * @see `markAsTouched()`\n
 * @see `markAsUntouched()`\n
 * @see `markAsPristine()`\n
 * @param opts Configuration options that determine how the control propagates changes\n
 * and emits events\n
 * after marking is applied.\n
 * ** `onlySelf`: When true, mark only this control. When false or not supplied,\n
 * marks all direct ancestors. Default is false.\n
 */\n
AbstractControl.prototype.markAsDirty = function\n
(opts) {\n
 if (opts === void 0) { opts = {}; }\n
 this.pristine = false;\n
 if (this._parent &&\n
!opts.onlySelf) {\n
 this._parent.markAsDirty(opts);\n
 }\n
};\n
/**\n
 * Marks the\n
 * control as `pristine`.\n
 * If the control has any children, marks all children as `pristine`,\n
 * and\n
 * recalculates the `pristine` status of all parent\n
 * controls.\n
 * @see `markAsTouched()`\n
 * @see `markAsUntouched()`\n
 * @see `markAsDirty()`\n
 * @param opts Configuration options\n
 * that determine how the control emits events after\n
 * marking is applied.\n
 * ** `onlySelf`: When true,\n
 * mark only this control. When false or not supplied,\n
 * marks all direct ancestors. Default is false.\n
 */\n
AbstractControl.prototype.markAsPristine = function (opts) {\n
 if (opts === void 0) { opts = {}; }\n
 this.pristine = true;\n
 this._pendingDirty = false;\n
 this._forEachChild(function (control) {\n
 control.markAsPristine({ onlySelf: true });\n
 });\n
 if (this._parent && !opts.onlySelf) {\n
 this._parent._updatePristine(opts);\n
 }\n
};\n
/**\n
 * Marks the control as `pending`.\n
 * A control is pending while the control performs async validation.\n
 * @see {@link\n
AbstractControl.status}\n
 * @param opts Configuration options that determine how the control\n
 * propagates changes and\n
 * emits events after marking is applied.\n
 * ** `onlySelf`: When true, mark only\n
 * this control. When false or not supplied,\n
 * marks all direct ancestors. Default is false.\n
 * ** `emitEvent`:\n
 * When true or not supplied (the default), the `statusChanges`\n
 * observable emits an event with the latest status\n
 * the control is marked pending.\n
 * When false, no events are emitted.\n
 */\n
AbstractControl.prototype.markAsPending = function (opts) {\n
 if (opts === void 0) { opts = {}; }\n
 this.status = PENDING;\n
 if (opts.emitEvent !== false) {\n
 this.statusChanges.emit(this.status);\n
 }\n
 if (this._parent && !opts.onlySelf) {\n
 this._parent.markAsPending(opts);\n
 }\n
};\n
/**\n
 * Disables the control. This means the control is exempt from validation checks and\n
 * excluded from the aggregate value of any parent. Its status is `DISABLED`.\n
 * If the control has\n
 * children, all children are also disabled.\n
 * @see {@link AbstractControl.status}\n

```

```

@param opts Configuration options that determine how the control propagates
* changes and emits events
after the control is disabled.
** `onlySelf`: When true, mark only this control. When false or not supplied,
* marks all direct ancestors. Default is false.
** `emitEvent`: When true or not supplied (the default), both
the `statusChanges` and
* `valueChanges`
* observables emit events with the latest status and value
when the control is disabled.
* When false, no events are emitted.
*/
AbstractControl.prototype.disable = function (opts) {
 if (opts === void 0) { opts = {}; }
 // If parent
 has been marked artificially dirty we don't want to re-calculate the
 // parent's dirtiness based on the
 children.
 var skipPristineCheck = this._parentMarkedDirty(opts.onlySelf);
 this.status =
 DISABLED;
 this.errors = null;
 this._forEachChild(function (control) {
 control.disable(Object.assign(Object.assign({}, opts), { onlySelf: true }));
 });
 this._updateValue();
 if (opts.emitEvent !== false) {
 this.valueChanges.emit(this.value);
 this.statusChanges.emit(this.status);
 }
 this._updateAncestors(Object.assign(Object.assign({},
 opts), { skipPristineCheck: skipPristineCheck }));
 this._onDisabledChange.forEach(function (changeFn) {
 return changeFn(true);
 });
 /**
 * Enables the control. This means the control is included in
 validation checks and
 * the aggregate value of its parent. Its status recalculates based on its value and
 * its validators.
 *
 * By default, if the control has children, all children are enabled.
 */
}
@see { @link AbstractControl.status }
*
@param opts Configure options that control how the control
propagates changes and
* emits events when marked as untouched
** `onlySelf`: When true, mark
only this control. When false or not supplied,
* marks all direct ancestors. Default is false.
**
`emitEvent`: When true or not supplied (the default), both the `statusChanges` and
* `valueChanges`
*
observables emit events with the latest status and value when the control is enabled.
* When false, no events
are emitted.
*/
AbstractControl.prototype.enable = function (opts) {
 if (opts === void 0) { opts = {}; }
 // If parent has been marked artificially dirty we don't want to re-calculate the
 // parent's
 dirtiness based on the children.
 var skipPristineCheck = this._parentMarkedDirty(opts.onlySelf);
 this.status = VALID;
 this._forEachChild(function (control) {
 control.enable(Object.assign(Object.assign({}, opts), { onlySelf: true }));
 });
 this.updateValueAndValidity({ onlySelf: true, emitEvent: opts.emitEvent });
 this._updateAncestors(Object.assign(Object.assign({}, opts), { skipPristineCheck: skipPristineCheck }));
 this._onDisabledChange.forEach(function (changeFn) { return changeFn(false); });
}
AbstractControl.prototype._updateAncestors = function (opts) {
 if (this._parent && !opts.onlySelf) {
 this._parent.updateValueAndValidity(opts);
 if (!opts.skipPristineCheck) {
 this._parent._updatePristine();
 }
 this._parent._updateTouched();
 }
}
/**
* @param parent Sets the parent of the control
*/
AbstractControl.prototype.setParent =
function (parent) {
 this._parent = parent;
}
/**
* Recalculates the value and validation
status of the control.
*
* By default, it also updates the value and validity of its ancestors.
*
* @param opts Configuration options determine how the control propagates changes and emits events
*
after updates and validity checks are applied.
** `onlySelf`: When true, only update this control. When false
or not supplied,
* update all direct ancestors. Default is false.
** `emitEvent`: When true or not
supplied (the default), both the `statusChanges` and
* `valueChanges`
*
observables emit events with
the latest status and value when the control is updated.
* When false, no events are emitted.
*/
AbstractControl.prototype.updateValueAndValidity = function (opts) {
 if (opts === void 0) { opts = {}; }
 this._setInitialStatus();
 this._updateValue();
 if (this.enabled) {
 this._cancelExistingSubscription();
 this.errors = this._runValidator();
 this.status =
 this._calculateStatus();
 if (this.status === VALID || this.status === PENDING) {
 this._runAsyncValidator(opts.emitEvent);
 }
 if (opts.emitEvent !== false) {
 this.valueChanges.emit(this.value);
 this.statusChanges.emit(this.status);
 }
 if
 (this._parent && !opts.onlySelf) {
 this._parent.updateValueAndValidity(opts);
 }
 }
}
/** @internal */
AbstractControl.prototype._updateTreeValidity = function (opts) {
 if (opts === void

```

```

0) { opts = { emitEvent: true }; }
 this._forEachChild(function (ctrl) { return ctrl._updateTreeValidity(opts);
});
 this.updateValueAndValidity({ onlySelf: true, emitEvent: opts.emitEvent });
});
AbstractControl.prototype._setInitialStatus = function () {
 this.status = this._allControlsDisabled() ?
DISABLED : VALID;
};
AbstractControl.prototype._runValidator = function () {
 return
this.validator ? this.validator(this) : null;
};
AbstractControl.prototype._runAsyncValidator = function
(emitEvent) {
 var _this = this;
 if (this.asyncValidator) {
 this.status = PENDING;
 this._hasOwnPendingAsyncValidator = true;
 var obs = toObservable(this.asyncValidator(this));
 this._asyncValidationSubscription = obs.subscribe(function (errors) {
 _this._hasOwnPendingAsyncValidator = false;
 // This will trigger the recalculation of the validation
 status, which depends on
 // the state of the asynchronous validation (whether it is in progress or not).
 So, it is
 // necessary that we have updated the `_hasOwnPendingAsyncValidator` boolean flag first.
 _this.setErrors(errors, { emitEvent: emitEvent });
 });
 }
};
AbstractControl.prototype._cancelExistingSubscription = function () {
 if
(this._asyncValidationSubscription) {
 this._asyncValidationSubscription.unsubscribe();
 this._hasOwnPendingAsyncValidator = false;
 }
};
/**
 * Sets errors on a form control
when running validations manually, rather than automatically.
 *
 * Calling `setErrors` also updates the
validity of the parent control.
 *
 * @usageNotes
 *
 * ### Manually set the errors for a
control
 *
 * ```
 * const login = new FormControl('someLogin');
 * login.setErrors({
 * notUnique: true
 * });
 * expect(login.valid).toEqual(false);
 *
 * expect(login.errors).toEqual({ notUnique: true });
 * login.setValue('someOtherLogin');
 * expect(login.valid).toEqual(true);
 * ```
 */
AbstractControl.prototype.setErrors = function
(errors, opts) {
 if (opts === void 0) { opts = {}; }
 this.errors = errors;
 this._updateControlsErrors(opts.emitEvent !== false);
};
/**
 * Retrieves a child control given the
control's name or path.
 *
 * @param path A dot-delimited string or array of string/number values that
define the path to the
 * control.
 *
 * @usageNotes
 *
 * ### Retrieve a nested control
 *
 * For example, to get a `name` control nested within a `person` sub-group:
 *
 * `this.form.get('person.name');`
 *
 * -OR-
 *
 * `this.form.get(['person', 'name']);`
 */
AbstractControl.prototype.get = function (path) {
 return _find(this, path, '.');
};
/**
 * @description
 * Reports error data for the control with the given path.
 *
 * @param
errorCode The code of the error to check
 *
 * @param path A list of control names that designates how to move
from the current control
 * to the control that should be queried for errors.
 *
 * @usageNotes
 *
 * For example, for the following `FormGroup`:
 *
 * ```
 * form = new FormGroup({
 * address: new FormGroup({ street: new FormControl() })
 * });
 * ```
 *
 * The path to the
'street' control from the root form would be 'address' -> 'street'.
 *
 * It can be provided to this method in
one of two formats:
 *
 * 1. An array of string control names, e.g. `['address', 'street']`
 *
 * 1. A
period-delimited list of control names in one string, e.g. `address.street`
 *
 * @returns error data for
that particular error. If the control or error is not present,
 * null is returned.
 */
AbstractControl.prototype.getError = function (errorCode, path) {
 var control = path ? this.get(path) :
this;
 return control && control.errors ? control.errors[errorCode] : null;
};
/**
 *
 * @description
 * Reports whether the control with the given path has the error specified.
 *
 *
 * @param errorCode The code of the error to check
 *
 * @param path A list of control names that designates how
to move from the current control
 * to the control that should be queried for errors.
 *
 *
 * @usageNotes
 *
 * For example, for the following `FormGroup`:
 *
 * ```
 * form = new
FormGroup({
 * address: new FormGroup({ street: new FormControl() })
 * });
 * ```
 *
 * The path to the
'street' control from the root form would be 'address' -> 'street'.
 *
 * It can be
provided to this method in one of two formats:
 *
 * 1. An array of string control names, e.g. `['address',
'street']`
 *
 * 1. A
period-delimited list of control names in one string, e.g. `address.street`
 *
 * If
no path is given, this method checks for the error on the current control.
 *
 * @returns whether the

```

```

given error is present in the control at the given path.\n *\n * If the control is not present, false is
returned.\n *^\n AbstractControl.prototype.hasError = function (errorCode, path) {\n return
!!this.getError(errorCode, path);\n };\n Object.defineProperty(AbstractControl.prototype, \"root\", {\n
/**\n * Retrieves the top-level ancestor of this control.\n *^\n get: function () {\n var
x = this;\n while (x._parent) {\n x = x._parent;\n }\n return x;\n },\n
enumerable: false,\n configurable: true\n });\n /** @internal */^\n
AbstractControl.prototype._updateControlsErrors = function (emitEvent) {\n this.status =
this._calculateStatus();\n if (emitEvent) {\n this.statusChanges.emit(this.status);\n }\n
if (this._parent) {\n this._parent._updateControlsErrors(emitEvent);\n }\n };\n /**
@internal */^\n AbstractControl.prototype._initObservables = function () {\n this.valueChanges = new
core.EventEmitter();\n this.statusChanges = new core.EventEmitter();\n };\n
AbstractControl.prototype._calculateStatus = function () {\n if (this._allControlsDisabled())\n return
DISABLED;\n if (this.errors)\n return INVALID;\n if (this._hasOwnPendingAsyncValidator
|| this._anyControlsHaveStatus(PENDING))\n return PENDING;\n if
(this._anyControlsHaveStatus(INVALID))\n return INVALID;\n return VALID;\n };\n /**
@internal */^\n AbstractControl.prototype._anyControlsHaveStatus = function (status) {\n return
this._anyControls(function (control) { return control.status === status; });\n };\n /** @internal */^\n
AbstractControl.prototype._anyControlsDirty = function () {\n return this._anyControls(function (control) {\n
return control.dirty; });\n };\n /** @internal */^\n AbstractControl.prototype._anyControlsTouched =
function () {\n return this._anyControls(function (control) { return control.touched; });\n };\n /**
@internal */^\n AbstractControl.prototype._updatePristine = function (opts) {\n if (opts === void 0) {\n
opts = {};\n }\n this.pristine = !this._anyControlsDirty();\n if (this._parent && !opts.onlySelf) {\n
this._parent._updatePristine(opts);\n }\n };\n /** @internal */^\n
AbstractControl.prototype._updateTouched = function (opts) {\n if (opts === void 0) {\n opts = {};\n }\n
this.touched = this._anyControlsTouched();\n if (this._parent && !opts.onlySelf) {\n
this._parent._updateTouched(opts);\n }\n };\n /** @internal */^\n
AbstractControl.prototype._isBoxedValue = function (formState) {\n return typeof formState === 'object'
&& formState !== null &&\n Object.keys(formState).length === 2 && 'value' in formState && 'disabled'
in formState;\n };\n /** @internal */^\n AbstractControl.prototype._registerOnCollectionChange =
function (fn) {\n this._onCollectionChange = fn;\n };\n /** @internal */^\n
AbstractControl.prototype._setUpdateStrategy = function (opts) {\n if (isOptionsObj(opts) &&
opts.updateOn !== null) {\n this._updateOn = opts.updateOn;\n }\n };\n /**\n * Check
to see if parent has been marked artificially dirty.\n *\n * @internal\n *^\n
AbstractControl.prototype._parentMarkedDirty = function (onlySelf) {\n var parentDirty = this._parent &&
this._parent.dirty;\n return !onlySelf && !parentDirty && !this._parent._anyControlsDirty();\n };\n
return AbstractControl;\n }());\n /**\n * Tracks the value and validation status of an individual form control.\n
*\n * This is one of the three fundamental building blocks of Angular forms, along with\n * `FormGroup` and
`FormArray`. It extends the `AbstractControl` class that\n * implements most of the base functionality for
accessing the value, validation status,\n * user interactions and events. See [usage examples below](#usage-
notes).\n *\n * @see `AbstractControl`\n * @see [Reactive Forms Guide](guide/reactive-forms)\n * @see
[Usage Notes](#usage-notes)\n *\n * @usageNotes\n *\n * ### Initializing Form Controls\n *\n *
Instantiate a `FormControl`, with an initial value.\n *\n * ```ts\n * const control = new FormControl('some
value');\n * console.log(control.value); // 'some value'\n * ```\n *\n * The following example initializes
the control with a form state object. The `value`\n * and `disabled` keys are required in this case.\n *\n *
```ts\n      * const control = new FormControl({ value: 'n/a', disabled: true });\n      * console.log(control.value); //
'n/a'\n      * console.log(control.status); // 'DISABLED'\n      * ```\n      *\n      * The following example initializes
the control with a sync validator.\n      *\n      * ```ts\n      * const control = new FormControl("", Validators.required);\n
* console.log(control.value); // ""\n      * console.log(control.status); // 'INVALID'\n      * ```\n      *\n      * The

```



```

following example initializes the control using an options object.
const control = new FormControl("", {
  validators: Validators.required,
  asyncValidators: myAsyncValidator
});
### Configure the control to update on a blur event
Set the `updateOn` option to `blur` to update on the blur `event`.
const control = new FormControl("", {
  updateOn: 'blur'
});
### Configure the control to update on a submit event
Set the `updateOn` option to `submit` to update on a submit `event`.
const control = new FormControl("", {
  updateOn: 'submit'
});
### Reset the control back to an initial value
You reset to a specific form state by passing through a standalone value or a form state object that contains both a value and a disabled state (these are the only two properties that cannot be calculated).
const control = new FormControl('Nancy');
console.log(control.value); // 'Nancy'
control.reset('Drew');
console.log(control.value); // 'Drew'
### Reset the control back to an initial value and disabled
const control = new FormControl('Nancy');
console.log(control.value); // 'Nancy'
console.log(control.status); // 'VALID'
control.reset({ value: 'Drew', disabled: true });
console.log(control.value); // 'Drew'
console.log(control.status); // 'DISABLED'
@api
var FormControl = /** @class */ (function (_super) {
  __extends(FormControl, _super);
  /**
   * Creates a new `FormControl` instance.
   * @param formState Initializes the control with an initial value, or an object that defines the initial value and disabled state.
   * @param validatorOrOpts A synchronous validator function, or an array of such functions, or an `AbstractControlOptions` object that contains validation functions and a validation trigger.
   * @param asyncValidator A single async validator or array of async validator functions.
   */
  function FormControl(formState, validatorOrOpts, asyncValidator) {
    if (formState === void 0) { formState = null; }
    var _this = _super.call(this, pickValidators(validatorOrOpts), pickAsyncValidators(asyncValidator, validatorOrOpts)) || this;
    /** @internal */
    _this._onChange = [];
    _this._applyFormState(formState);
    _this._setUpUpdateStrategy(validatorOrOpts);
    _this._initObservables();
    _this.updateValueAndValidity({ onlySelf: true, // If `asyncValidator` is present, it will trigger control status change from `PENDING` to `VALID` or `INVALID`.
    // The status should be broadcasted via the `statusChanges` observable, so we set `emitEvent` to `true` to allow that during the control creation process.
    emitEvent: !!asyncValidator });
    return _this;
  }
  /**
   * Sets a new value for the form control.
   * @param value The new value for the control.
   * @param options Configuration options that determine how the control propagates changes and emits events when the value changes.
   * The configuration options are passed to the {@link AbstractControl#updateValueAndValidity} method.
   * * `onlySelf`: When true, each change only affects this control, and not its parent. Default is false.
   * * `emitEvent`: When true or not supplied (the default), both the `statusChanges` and `valueChanges` observables emit events with the latest status and value when the control value is updated. When false, no events are emitted.
   * * `emitModelToViewChange`: When true or not supplied (the default), each change triggers an `onChange` event to update the view.
   * * `emitViewToModelChange`: When true or not supplied (the default), each change triggers an `ngModelChange` event to update the model.
   */
  FormControl.prototype.setValue = function (value, options) {
    var _this = this;
    if (options === void 0) { options = {}; }
    this.value = this._pendingValue = value;
    if (this._onChange.length && options.emitModelToViewChange !== false) {
      this._onChange.forEach(function (changeFn) { return changeFn(_this.value, options.emitViewToModelChange !== false); });
    }
    this.updateValueAndValidity(options);
  };
  /**
   * Patches the value of a control.
   * This function is functionally the same as {@link FormControl#setValue} at this level.
   * It exists for symmetry with {@link FormGroup#patchValue} on `FormGroups` and `FormArrays`, where it does behave differently.
   * @see `setValue` for options.
   */
  FormControl.prototype.patchValue = function (value, options) {
    if (options === void 0) { options = {}; }
    this.setValue(value,

```

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options);\n    };\n    /**\n     * Resets the form control, marking it `pristine` and `untouched`, and setting\n     * the value to null.\n     * @param formState Resets the control with an initial value,\n     * or an object that defines the initial value and disabled state.\n     * @param options Configuration options that determine how the control propagates changes\n     * and emits events after the value changes.\n     * @internal\n     * `onlySelf`: When true, each change only affects this control, and not its parent. Default is\n     * false.\n     * `emitEvent`: When true or not supplied (the default), both the `statusChanges` and\n     * `valueChanges` observables emit events with the latest status and value when the control is reset.\n     * When false, no events are emitted.\n     */\n    FormControl.prototype.reset = function (formState, options) {\n      if\n      (formState === void 0) { formState = null; }\n      if (options === void 0) { options = {}; }\n      this._applyFormState(formState);\n      this.markAsPristine(options);\n      this.markAsUntouched(options);\n      this.setValue(this.value, options);\n      this._pendingChange = false;\n    }; \n    /**\n     * @internal\n     */\n    FormControl.prototype._updateValue = function () {};\n    /**\n     * @internal\n     */\n    FormControl.prototype._anyControls = function (condition) {\n      return false;\n    }; \n    /**\n     * @internal\n     */\n    FormControl.prototype._allControlsDisabled = function () {\n      return\n      this.disabled;\n    }; \n    /**\n     * Register a listener for change events.\n     * @param fn The method that is called when the value changes\n     */\n    FormControl.prototype.registerOnChange = function\n    (fn) {\n      this._onChange.push(fn);\n    }; \n    /**\n     * Internal function to unregister a change events\n     * listener.\n     * @internal\n     */\n    FormControl.prototype._unregisterOnChange = function (fn) {\n      removeListItem(this._onChange, fn);\n    }; \n    /**\n     * Register a listener for disabled events.\n     * @param fn The method that is called when the disabled status changes.\n     */\n    FormControl.prototype.registerOnDisabledChange = function (fn) {\n      this._onDisabledChange.push(fn);\n    }; \n    /**\n     * Internal function to unregister a disabled event listener.\n     * @internal\n     */\n    FormControl.prototype._unregisterOnDisabledChange = function (fn) {\n      removeListItem(this._onDisabledChange, fn);\n    }; \n    /**\n     * @internal\n     */\n    FormControl.prototype._forEachChild = function (cb) {};\n    /**\n     * @internal\n     */\n    FormControl.prototype._syncPendingControls = function () {\n      if (this.updateOn === 'submit') {\n        if (this._pendingDirty)\n          this.markAsDirty();\n        if (this._pendingTouched)\n          this.markAsTouched();\n        if (this._pendingChange) {\n          this.setValue(this._pendingValue, {\n            onlySelf: true, emitModelToViewChange: false });\n          return true;\n        }\n      }\n      return\n      false;\n    }; \n    FormControl.prototype._applyFormState = function (formState) {\n      if\n      (this._isBoxedValue(formState)) {\n        this.value = this._pendingValue = formState.value;\n        formState.disabled ? this.disable({ onlySelf: true, emitEvent: false }) : this.enable({ onlySelf: true,\n          emitEvent: false });\n      } else {\n        this.value = this._pendingValue = formState;\n      }\n    }; \n    return FormControl;\n  } (AbstractControl)); \n  /**\n   * Tracks the value and validity state of a group of `FormControl` instances.\n   * @internal\n   * A `FormGroup` aggregates the values of each child `FormControl` into one object,\n   * with each control name as the key. It calculates its status by reducing the status values\n   * of its children. For example, if one of the controls in a group is invalid, the entire\n   * group becomes invalid.\n   * @internal\n   * `FormGroup` is one of the three fundamental building blocks used to define forms in Angular,\n   * along with `FormControl` and `FormArray`.\n   * @internal\n   * When instantiating a `FormGroup`, pass in a collection of child controls as the first\n   * argument. The key for each child registers the name for the control.\n   * @usageNotes\n   * ### Create a form group with 2 controls\n   * ```\n   * const form = new\n   * FormGroup({\n   *   first: new FormControl('Nancy', Validators.minLength(2)),\n   *   last: new\n   * FormControl('Drew'),\n   * });\n   * console.log(form.value); // {first: 'Nancy', last: 'Drew'}\n   * console.log(form.status); // 'VALID'\n   * ```\n   * ### Create a form group with a group-level validator\n   * You include group-level validators as the second arg, or group-level async\n   * validators as the third arg. These come in handy when you want to perform validation\n   * that considers the value of more than one child control.\n   * ```\n   * const form = new FormGroup({\n   *   password: new FormControl(",\n   * Validators.minLength(2)),\n   *   passwordConfirm: new FormControl(" ,

```

```

passwordMatchValidator);\n * \n * \n * function passwordMatchValidator(g: FormGroup) {\n * return
g.get('password').value === g.get('passwordConfirm').value\n * ? null : {'mismatch': true};\n * }\n * ```\n
*\n * Like `FormControl` instances, you choose to pass in\n * validators and async validators as part of an
options object.\n * \n * ```\n * const form = new FormGroup({\n * password: new FormControl(")\n *
passwordConfirm: new FormControl(")\n * }, { validators: passwordMatchValidator, asyncValidators:
otherValidator });\n * ```\n * \n * ### Set the updateOn property for all controls in a form group\n * \n *
The options object is used to set a default value for each child\n * control's `updateOn` property. If you set
`updateOn` to `blur` at the\n * group level, all child controls default to `blur`, unless the child\n * has explicitly
specified a different `updateOn` value.\n * \n * ```\n * const c = new FormGroup({\n * one: new
FormControl()\n * }, { updateOn: 'blur' });\n * ```\n * \n * @publicApi\n * \n * ^\n * var FormGroup = /**
@class */ (function (_super) {\n * __extends(FormGroup, _super);\n * /**\n * * Creates a new
`FormGroup` instance.\n * \n * @param controls A collection of child controls. The key for each child is
the name\n * * under which it is registered.\n * \n * @param validatorOrOpts A synchronous validator
function, or an array of\n * * such functions, or an `AbstractControlOptions` object that contains validation
functions\n * * and a validation trigger.\n * \n * @param asyncValidator A single async validator or
array of async validator functions\n * \n * ^\n * function FormGroup(controls, validatorOrOpts,
asyncValidator) {\n * var _this = _super.call(this, pickValidators(validatorOrOpts),
pickAsyncValidators(asyncValidator, validatorOrOpts)) || this;\n * _this.controls = controls;\n
_this._initObservables();\n * _this._setUpdateStrategy(validatorOrOpts);\n * _this._setUpControls();\n
_this.updateValueAndValidity({\n * onlySelf: true,\n * // If `asyncValidator` is present, it will
trigger control status change from `PENDING` to\n * // `VALID` or `INVALID`. The status should be
broadcasted via the `statusChanges` observable,\n * // so we set `emitEvent` to `true` to allow that during the
control creation process.\n * emitEvent: !!asyncValidator\n * });\n * return _this;\n * }\n
/**\n * * Registers a control with the group's list of controls.\n * \n * * This method does not update the
value or validity of the control.\n * * Use { @link FormGroup#addControl addControl } instead.\n * \n * *
@param name The control name to register in the collection\n * * @param control Provides the control for the
given name\n * * ^\n * FormGroup.prototype.registerControl = function (name, control) {\n * if
(this.controls[name])\n * return this.controls[name];\n * this.controls[name] = control;\n
control.setParent(this);\n * control._registerOnCollectionChange(this._onCollectionChange);\n * return
control;\n * };\n * /**\n * * Add a control to this group.\n * \n * * This method also updates the
value and validity of the control.\n * \n * * @param name The control name to add to the collection\n * *
@param control Provides the control for the given name\n * * ^\n * FormGroup.prototype.addControl =
function (name, control) {\n * this.registerControl(name, control);\n * this.updateValueAndValidity();\n
this._onCollectionChange();\n * };\n * /**\n * * Remove a control from this group.\n * \n * *
@param name The control name to remove from the collection\n * * ^\n *
FormGroup.prototype.removeControl = function (name) {\n * if (this.controls[name])\n *
this.controls[name]._registerOnCollectionChange(function () { });\n * delete (this.controls[name]);\n
this.updateValueAndValidity();\n * this._onCollectionChange();\n * };\n * /**\n * * Replace an
existing control.\n * \n * * @param name The control name to replace in the collection\n * * @param
control Provides the control for the given name\n * * ^\n * FormGroup.prototype.setControl = function (name,
control) {\n * if (this.controls[name])\n * this.controls[name]._registerOnCollectionChange(function ()
{ });\n * delete (this.controls[name]);\n * if (control)\n * this.registerControl(name, control);\n
this.updateValueAndValidity();\n * this._onCollectionChange();\n * };\n * /**\n * * Check whether
there is an enabled control with the given name in the group.\n * \n * * Reports false for disabled controls. If
you'd like to check for existence in the group\n * * only, use { @link AbstractControl#get get } instead.\n * \n *
@param controlName The control name to check for existence in the collection\n * * ^\n * @returns
false for disabled controls, true otherwise.\n * * ^\n * FormGroup.prototype.contains = function (controlName)
{\n * return this.controls.hasOwnProperty(controlName) && this.controls[controlName].enabled;\n * };\n

```

```
/**\n      * Sets the value of the `FormGroup`. It accepts an object that matches\n      * the structure of the group,\n      * with control names as keys.\n      *\n      * @usageNotes\n      * ### Set the complete value for the form\n      * group\n      *\n      * ```\n      * const form = new FormGroup({\n      *   first: new FormControl(),\n      *   last: new FormControl()\n      * });\n      *\n      * console.log(form.value); // {first: null, last: null}\n      *\n      * form.setValue({first: 'Nancy', last: 'Drew'});\n      * console.log(form.value); // {first: 'Nancy', last: 'Drew'}\n      *\n      * ```\n      *\n      * @throws When strict checks fail, such as setting the value of a control\n      * that\n      * doesn't exist or if you exclude a value of a control that does exist.\n      *\n      * @param value The new value\n      * for the control that matches the structure of the group.\n      *\n      * @param options Configuration options that\n      * determine how the control propagates changes\n      * and emits events after the value changes.\n      *\n      * The\n      * configuration options are passed to the {@link\n      * AbstractControl#updateValueAndValidity\n      * updateValueAndValidity} method.\n      *\n      * ** `onlySelf`: When true, each change only affects this control,\n      * and not its parent. Default is\n      * false.\n      * ** `emitEvent`: When true or not supplied (the default), both the\n      * `statusChanges` and\n      * `valueChanges`\n      * observables emit events with the latest status and value when\n      * the control value is updated.\n      * When false, no events are emitted.\n      */\n\nFormGroup.prototype.setValue = function (value, options) {\n  var _this = this;\n  if (options === void 0) { options = {}; }\n  this._checkAllValuesPresent(value);\n  Object.keys(value).forEach(function (name) {\n    _this._throwIfControlMissing(name);\n    _this.controls[name].setValue(value[name], {\n      onlySelf: true, emitEvent: options.emitEvent\n    });\n    this.updateValueAndValidity(options);\n  });\n  /**\n      * Patches the value of the `FormGroup`. It accepts an object with control\n      * names as keys,\n      * and does its best to match the values to the correct controls\n      * in the group.\n      *\n      * It accepts both\n      * super-sets and sub-sets of the group without throwing an error.\n      *\n      * @usageNotes\n      * ### Patch\n      * the value for a form group\n      *\n      * ```\n      * const form = new FormGroup({\n      *   first: new\n      *   FormControl(),\n      *   last: new FormControl()\n      * });\n      *\n      * console.log(form.value); // {first: null,\n      * last: null}\n      *\n      * form.patchValue({first: 'Nancy'});\n      * console.log(form.value); // {first: 'Nancy',\n      * last: null}\n      *\n      * ```\n      *\n      * @param value The object that matches the structure of the group.\n      *\n      * @param options Configuration options that determine how the control propagates changes and\n      * emits events\n      * after the value is patched.\n      * ** `onlySelf`: When true, each change only affects this control and not its parent.\n      * Default is\n      * true.\n      * ** `emitEvent`: When true or not supplied (the default), both the `statusChanges`\n      * and\n      * `valueChanges`\n      * observables emit events with the latest status and value when the control value\n      * is updated.\n      * When false, no events are emitted.\n      * The configuration options are passed to the {@link\n      * AbstractControl#updateValueAndValidity\n      * updateValueAndValidity} method.\n      */\n\nFormGroup.prototype.patchValue = function (value, options) {\n  var _this = this;\n  if (options ===\n  void 0) { options = {}; }\n  Object.keys(value).forEach(function (name) {\n    if (_this.controls[name])\n    {\n      _this.controls[name].patchValue(value[name], {\n        onlySelf: true, emitEvent: options.emitEvent\n      });\n      this.updateValueAndValidity(options);\n    }\n  });\n  /**\n      * Resets the\n      * `FormGroup`, marks all descendants `pristine` and `untouched` and sets\n      * the value of all descendants to\n      * null.\n      *\n      * You reset to a specific form state by passing in a map of states\n      * that matches the\n      * structure of your form, with control names as keys. The state\n      * is a standalone value or a form state object\n      * with both a value and a disabled\n      * status.\n      *\n      * @param value Resets the control with an initial\n      * value,\n      * or an object that defines the initial value and disabled state.\n      *\n      * @param options\n      * Configuration options that determine how the control propagates changes\n      * and emits events when the group\n      * is reset.\n      * ** `onlySelf`: When true, each change only affects this control, and not its parent. Default is\n      * false.\n      * ** `emitEvent`: When true or not supplied (the default), both the `statusChanges` and\n      * `valueChanges`\n      * observables emit events with the latest status and value when the control is reset.\n      * When false, no events are emitted.\n      * The configuration options are passed to the {@link\n      * AbstractControl#updateValueAndValidity\n      * updateValueAndValidity} method.\n      *\n      * @usageNotes\n      * ### Reset the form group values\n      *\n      * ```\n      * const form = new\n      * FormGroup({\n      *   first: new FormControl('first name'),\n      *   last: new FormControl('last name')\n      *\n      */
```

```

});\n
 * \n
 * console.log(form.value); // {first: 'first name', last: 'last name'}\n
 * \n
 * form.reset({\n
first: 'name', last: 'last name' });\n
 * \n
 * console.log(form.value); // {first: 'name', last: 'last name'}\n
 * \n
 * \n
 * \n
 * ### Reset the form group values and disabled status\n
 * \n
 * \n
 * const form\n
= new FormGroup({\n
 * \n
 * first: new FormControl('first name'),\n
 * \n
 * last: new FormControl('last name')\n
 * \n
 * });\n
 * \n
 * form.reset({\n
 * \n
 * first: {value: 'name', disabled: true},\n
 * \n
 * last: 'last'\n
 * \n
 * });\n
 * \n
 * console.log(this.form.value); // {first: 'name', last: 'last name'}\n
 * \n
 * console.log(this.form.get('first').status); // 'DISABLED'\n
 * \n
 * \n
 * \n
 * FormGroup.prototype.reset =\n
function (value, options) {\n
 * \n
 * if (value === void 0) { value = {}; }\n
 * \n
 * if (options === void 0) { options =\n
{}; }\n
 * \n
 * this._forEachChild(function (control, name) {\n
 * \n
 * control.reset(value[name], { onlySelf: true,\n
emitEvent: options.emitEvent });\n
 * \n
 * });\n
 * \n
 * this._updatePristine(options);\n
 * \n
 * this._updateTouched(options);\n
 * \n
 * this.updateValueAndValidity(options);\n
 * \n
 * });\n
 * \n
 * /**\n
 * \n
 * * The\n
 * \n
 * aggregate value of the `FormGroup`, including any disabled controls.\n
 * \n
 * * Retrieves all values\n
 * \n
 * regardless of disabled status.\n
 * \n
 * * The `value` property is the best way to get the value of the group, because\n
 * \n
 * * it excludes disabled controls in the `FormGroup`.\n
 * \n
 * * \n
 * \n
 * FormGroup.prototype.getRawValue = function\n
() {\n
 * \n
 * return this._reduceChildren({}, function (acc, control, name) {\n
 * \n
 * acc[name] = control\n
instanceof FormControl ? control.value : control.getRawValue();\n
 * \n
 * return acc;\n
 * \n
 * });\n
 * \n
 * });\n
 * \n
 * /**\n
 * \n
 * @internal *\n
 * \n
 * FormGroup.prototype._syncPendingControls = function () {\n
 * \n
 * var subtreeUpdated =\n
this._reduceChildren(false, function (updated, child) {\n
 * \n
 * return child._syncPendingControls() ? true :\n
updated;\n
 * \n
 * });\n
 * \n
 * if (subtreeUpdated)\n
 * \n
 * this.updateValueAndValidity({ onlySelf: true });\n
 * \n
 * return subtreeUpdated;\n
 * \n
 * });\n
 * \n
 * /**\n
 * \n
 * @internal *\n
 * \n
 * FormGroup.prototype._throwIfControlMissing =\n
function (name) {\n
 * \n
 * if (!Object.keys(this.controls).length) {\n
 * \n
 * throw new Error("\n
 * \n
 * There are\n
 * \n
 * no form controls registered with this group yet. If you're using ngModel,\n
 * \n
 * you may want to check next tick\n
 * \n
 * (e.g. use setTimeout).\n
 * \n
 * ");\n
 * \n
 * }\n
 * \n
 * if (!this.controls[name]) {\n
 * \n
 * throw new Error("Cannot\n
 * \n
 * find form control with name: '" + name + "'.");\n
 * \n
 * }\n
 * \n
 * });\n
 * \n
 * /**\n
 * \n
 * @internal *\n
 * \n
 * FormGroup.prototype._forEachChild = function (cb) {\n
 * \n
 * var _this = this;\n
 * \n
 * Object.keys(this.controls).forEach(function (k) { return cb(_this.controls[k], k); });\n
 * \n
 * });\n
 * \n
 * /**\n
 * \n
 * @internal\n
 * \n
 * *\n
 * \n
 * FormGroup.prototype._setUpControls = function () {\n
 * \n
 * var _this = this;\n
 * \n
 * this._forEachChild(function (control) {\n
 * \n
 * control.setParent(_this);\n
 * \n
 * control._registerOnCollectionChange(_this._onCollectionChange);\n
 * \n
 * });\n
 * \n
 * });\n
 * \n
 * /**\n
 * \n
 * @internal *\n
 * \n
 * FormGroup.prototype._updateValue = function () {\n
 * \n
 * this.value = this._reduceValue();\n
 * \n
 * });\n
 * \n
 * /**\n
 * \n
 * @internal *\n
 * \n
 * FormGroup.prototype._anyControls = function (condition) {\n
 * \n
 * var e_1, _a;\n
 * \n
 * try\n
 * \n
 * {\n
 * \n
 * for (var _b = __values(Object.keys(this.controls)), _c = _b.next(); !_c.done; _c = _b.next()) {\n
 * \n
 * var controlName = _c.value;\n
 * \n
 * var control = this.controls[controlName];\n
 * \n
 * if\n
 * \n
 * (this.contains(controlName) && condition(control)) {\n
 * \n
 * return true;\n
 * \n
 * }\n
 * \n
 * }\n
 * \n
 * catch (e_1_1) { e_1 = { error: e_1_1 }; }\n
 * \n
 * finally {\n
 * \n
 * try {\n
 * \n
 * if (_c &&\n
 * \n
 * !_c.done && (_a = _b.return)) _a.call(_b);\n
 * \n
 * }\n
 * \n
 * finally { if (e_1) throw e_1.error; }\n
 * \n
 * }\n
 * \n
 * return false;\n
 * \n
 * });\n
 * \n
 * /**\n
 * \n
 * @internal *\n
 * \n
 * FormGroup.prototype._reduceValue = function () {\n
 * \n
 * var _this = this;\n
 * \n
 * return this._reduceChildren({}, function (acc, control, name) {\n
 * \n
 * if\n
 * \n
 * (control.enabled || !_this.disabled) {\n
 * \n
 * acc[name] = control.value;\n
 * \n
 * }\n
 * \n
 * return acc;\n
 * \n
 * });\n
 * \n
 * });\n
 * \n
 * /**\n
 * \n
 * @internal *\n
 * \n
 * FormGroup.prototype._reduceChildren = function (initValue, fn) {\n
 * \n
 * var res = initValue;\n
 * \n
 * this._forEachChild(function (control, name) {\n
 * \n
 * res = fn(res, control,\n
 * \n
 * name);\n
 * \n
 * });\n
 * \n
 * return res;\n
 * \n
 * });\n
 * \n
 * /**\n
 * \n
 * @internal *\n
 * \n
 * FormGroup.prototype._allControlsDisabled = function () {\n
 * \n
 * var e_2, _a;\n
 * \n
 * try {\n
 * \n
 * for (var _b\n
 * \n
 * = __values(Object.keys(this.controls)), _c = _b.next(); !_c.done; _c = _b.next()) {\n
 * \n
 * var controlName =\n
 * \n
 * _c.value;\n
 * \n
 * if (this.controls[controlName].enabled) {\n
 * \n
 * return false;\n
 * \n
 * }\n
 * \n
 * }\n
 * \n
 * }\n
 * \n
 * catch (e_2_1) { e_2 = { error: e_2_1 }; }\n
 * \n
 * finally {\n
 * \n
 * try {\n
 * \n
 * if\n
 * \n
 * (_c && !_c.done && (_a = _b.return)) _a.call(_b);\n
 * \n
 * }\n
 * \n
 * finally { if (e_2) throw e_2.error; }\n
 * \n
 * }\n
 * \n
 * return Object.keys(this.controls).length > 0 || this.disabled;\n
 * \n
 * });\n
 * \n
 * /**\n
 * \n
 * @internal *\n
 * \n

```

```

FormGroup.prototype._checkAllValuesPresent = function (value) {\n      this._forEachChild(function (control,\n
name) {\n          if (value[name] === undefined) {\n              throw new Error("Must supply a value for form\n
control with name: \"" + name + "\".");\n          }\n      });\n      return FormGroup;\n
})(AbstractControl);\n /**\n  * Tracks the value and validity state of an array of `FormControl`,\n  *\n  * `FormGroup` or `FormArray` instances.\n  *\n  * A `FormArray` aggregates the values of each child\n  *\n  * `FormControl` into an array.\n  *\n  * It calculates its status by reducing the status values of its children. For example,\n  *\n  * if one of\n  *\n  * the controls in a `FormArray` is invalid, the entire array becomes invalid.\n  *\n  * `FormArray`\n  *\n  * is one of the three fundamental building blocks used to define forms in Angular,\n  *\n  * along with `FormControl`\n  *\n  * and `FormGroup`.\n  *\n  * @usageNotes\n  *\n  * ### Create an array of form controls\n  *\n  * ```\n  * const arr = new FormArray([\n  *   new FormControl('Nancy', Validators.minLength(2)),\n  *   new\n
FormControl('Drew'),\n  * ]);\n  *\n  * console.log(arr.value); // ['Nancy', 'Drew']\n  *\n
console.log(arr.status); // `VALID`\n  * ```\n  *\n  * ### Create a form array with array-level validators\n  *\n
  * You include array-level validators and async validators. These come in handy\n  *\n  * when you want to perform\n  *\n  * validation that considers the value of more than one child\n  *\n  * control.\n  *\n  * The two types of validators are\n  *\n  * passed in separately as the second and third arg\n  *\n  * respectively, or together as part of an options object.\n  *\n  *\n
  * ```\n  * const arr = new FormArray([\n  *   new FormControl('Nancy'),\n  *   new FormControl('Drew')\n  * ],\n
  * { validators: myValidator, asyncValidators: myAsyncValidator});\n  * ```\n  *\n  * ### Set the updateOn\n
  * property for all controls in a form array\n  *\n  * The options object is used to set a default value for each child\n
  *\n  * control's `updateOn` property. If you set `updateOn` to `blur` at the\n  *\n  * array level, all child controls default\n  *\n  * to `blur`, unless the child\n  *\n  * has explicitly specified a different `updateOn` value.\n  *\n  * ```ts\n  * const arr\n
= new FormArray([\n  *   new FormControl(),\n  * ], {updateOn: 'blur'});\n  * ```\n  *\n  * ### Adding or\n
  * removing controls from a form array\n  *\n  * To change the controls in the array, use the `push`, `insert`,\n
  * `removeAt` or `clear` methods\n  *\n  * in `FormArray` itself. These methods ensure the controls are properly tracked\n
  * in the\n  *\n  * form's hierarchy. Do not modify the array of `AbstractControl`s used to instantiate\n  *\n  * the\n
  * `FormArray` directly, as that result in strange and unexpected behavior such\n  *\n  * as broken change detection.\n
  *\n  * @publicApi\n  */\n var FormArray = /** @class */ (function (_super) {\n    __extends(FormArray,\n
    _super);\n    /**\n     * Creates a new `FormArray` instance.\n     *\n     * @param controls An array of\n
     * child controls. Each child control is given an index\n     * where it is registered.\n     *\n     * @param\n
     * validatorOrOpts A synchronous validator function, or an array of\n     * such functions, or an\n
     * `AbstractControlOptions` object that contains validation functions\n     * and a validation trigger.\n     *\n
     * @param asyncValidator A single async validator or array of async validator functions\n     *\n     */\n    function FormArray(controls, validatorOrOpts, asyncValidator) {\n        var _this = _super.call(this,\n
        pickValidators(validatorOrOpts), pickAsyncValidators(asyncValidator, validatorOrOpts)) || this;\n        _this.controls = controls;\n        _this._initObservables();\n        _this._setUpdateStrategy(validatorOrOpts);\n        _this._setUpControls();\n        _this.updateValueAndValidity({\n            onlySelf: true,\n            // If\n
`asyncValidator` is present, it will trigger control status change from `PENDING` to\n            // `VALID` or\n
`INVALID`.\n            // The status should be broadcasted via the `statusChanges` observable, so we set\n
            `emitEvent`\n            // to `true` to allow that during the control creation process.\n            emitEvent:\n
            !!asyncValidator\n        });\n        return _this;\n    } \n    /**\n     * Get the `AbstractControl` at the given\n
     * `index` in the array.\n     *\n     * @param index Index in the array to retrieve the control\n     */\n    FormArray.prototype.at = function (index) {\n        return this.controls[index];\n    }; \n    /**\n     * Insert a\n
     * new `AbstractControl` at the end of the array.\n     *\n     * @param control Form control to be inserted\n
     */\n    FormArray.prototype.push = function (control) {\n        this.controls.push(control);\n        this._registerControl(control);\n        this.updateValueAndValidity();\n        this._onCollectionChange();\n    }; \n    /**\n     * Insert a new `AbstractControl` at the given `index` in the array.\n     *\n     * @param\n
     * index Index in the array to insert the control\n     * @param control Form control to be inserted\n     */\n    FormArray.prototype.insert = function (index, control) {\n        this.controls.splice(index, 0, control);\n        this._registerControl(control);\n        this.updateValueAndValidity();\n    }; \n    /**\n     * Remove the

```

```

control at the given `index` in the array.\n
    *\n
    * @param index Index in the array to remove the control\n
    *\n
    FormArray.prototype.removeAt = function (index) {\n
        if (this.controls[index])\n
this.controls[index]._registerOnCollectionChange(function () { });\n
        this.controls.splice(index, 1);\n
this.updateValueAndValidity();\n
    };\n
    /**\n
    * Replace an existing control.\n
    *\n
    * @param\n
index Index in the array to replace the control\n
    * @param control The `AbstractControl` control to replace the\n
existing control\n
    *\n
    FormArray.prototype.setControl = function (index, control) {\n
        if\n
(this.controls[index])\n
        this.controls[index]._registerOnCollectionChange(function () { });\n
this.controls.splice(index, 1);\n
        if (control) {\n
            this.controls.splice(index, 0, control);\n
this._registerControl(control);\n
        };\n
        this.updateValueAndValidity();\n
this._onCollectionChange();\n
    };\n
    Object.defineProperty(FormArray.prototype, "length", {\n
        /**\n
        * Length of the control array.\n
        *\n
        get: function () {\n
            return this.controls.length;\n
        },\n
        enumerable: false,\n
        configurable: true\n
    });\n
    /**\n
    * Sets the value of the\n
`FormArray`. It accepts an array that matches\n
    * the structure of the control.\n
    *\n
    * This method\n
performs strict checks, and throws an error if you try\n
    * to set the value of a control that doesn't exist or if you\n
exclude the\n
    * value of a control.\n
    *\n
    * @usageNotes\n
    * ### Set the values for the controls\n
in the form array\n
    *\n
    * ```\n
    * const arr = new FormArray([\n
    *     new FormControl(),\n
    *     new FormControl()\n
    * ]);\n
    * console.log(arr.value); // [null, null]\n
    *\n
    * arr.setValue(['Nancy', 'Drew']);\n
    * console.log(arr.value); // ['Nancy', 'Drew']\n
    * ```\n
    *\n
    * @param value Array of values for the controls\n
    * @param options Configure options that determine how the\n
control propagates changes and\n
    * emits events after the value changes\n
    *\n
    * * `onlySelf`: When\n
true, each change only affects this control, and not its parent. Default\n
    * is false.\n
    * * `emitEvent`: When\n
true or not supplied (the default), both the `statusChanges` and\n
    * `valueChanges`\n
    * observables emit\n
events with the latest status and value when the control value is updated.\n
    * When false, no events are\n
emitted.\n
    * The configuration options are passed to the {@link AbstractControl#updateValueAndValidity\n
    * updateValueAndValidity} method.\n
    *\n
    FormArray.prototype.setValue = function (value, options) {\n
        var _this = this;\n
        if (options === void 0) { options = {}; }\n
this._checkAllValuesPresent(value);\n
        value.forEach(function (newValue, index) {\n
            _this._throwIfControlMissing(index);\n
            _this.at(index).setValue(newValue, { onlySelf: true, emitEvent:\n
options.emitEvent });\n
        });\n
        this.updateValueAndValidity(options);\n
    };\n
    /**\n
    * Patches the value of the `FormArray`. It accepts an array that matches the\n
    * structure of the control, and does\n
its best to match the values to the correct\n
    * controls in the group.\n
    *\n
    * It accepts both super-sets\n
and sub-sets of the array without throwing an error.\n
    *\n
    * @usageNotes\n
    * ### Patch the values\n
for controls in a form array\n
    *\n
    * ```\n
    * const arr = new FormArray([\n
    *     new\n
FormControl(),\n
    *     new FormControl()\n
    * ]);\n
    * console.log(arr.value); // [null, null]\n
    *\n
    * arr.patchValue(['Nancy']);\n
    * console.log(arr.value); // ['Nancy', null]\n
    * ```\n
    *\n
    * @param value Array of latest values for the controls\n
    * @param options Configure options that determine\n
how the control propagates changes and\n
    * emits events after the value changes\n
    *\n
    * * `onlySelf`:\n
When true, each change only affects this control, and not its parent. Default\n
    * is false.\n
    * * `emitEvent`:\n
When true or not supplied (the default), both the `statusChanges` and\n
    * `valueChanges`\n
    * observables\n
emit events with the latest status and value when the control value is updated.\n
    * When false, no events are\n
emitted.\n
    * The configuration options are passed to the {@link AbstractControl#updateValueAndValidity\n
    * updateValueAndValidity} method.\n
    *\n
    FormArray.prototype.patchValue = function (value, options)\n
{\n
        var _this = this;\n
        if (options === void 0) { options = {}; }\n
        value.forEach(function\n
(newValue, index) {\n
            if (_this.at(index)) {\n
                _this.at(index).patchValue(newValue, { onlySelf:\n
true, emitEvent: options.emitEvent });\n
            }\n
        });\n
        this.updateValueAndValidity(options);\n
    };\n
    /**\n
    * Resets the `FormArray` and all descendants are marked `pristine` and `untouched`, and the\n
    * value of all descendants to null or null maps.\n
    *\n
    * You reset to a specific form state by passing in\n
an array of states\n
    * that matches the structure of the control. The state is a standalone value\n
    * or a form

```

```

state object with both a value and a disabled status.\n      *\n      * @usageNotes\n      * ### Reset the values in
a form array\n      *\n      * ```ts\n      * const arr = new FormArray([\n      *   new FormControl(),\n      *   new FormControl()\n      * ]);\n      * arr.reset(['name', 'last name']);\n      *\n      * console.log(this.arr.value);\n      // ['name', 'last name']\n      * ```\n      *\n      * ### Reset the values in a form array and the disabled status for
the first control\n      *\n      * ```\n      * this.arr.reset([\n      *   { value: 'name', disabled: true },\n      *   'last'\n      * ]);\n      *\n      * console.log(this.arr.value); // ['name', 'last name']\n      *\n      console.log(this.arr.get(0).status); // 'DISABLED'\n      * ```\n      *\n      * @param value Array of values for
the controls\n      * @param options Configure options that determine how the control propagates changes and\n
      * emits events after the value changes\n      *\n      * * `onlySelf`: When true, each change only affects this
control, and not its parent. Default\n      * is false.\n      * * `emitEvent`: When true or not supplied (the default),
both the `statusChanges` and\n      * `valueChanges`\n      * observables emit events with the latest status and
value when the control is reset.\n      * When false, no events are emitted.\n      * The configuration options are
passed to the {@link AbstractControl#updateValueAndValidity\n      * updateValueAndValidity} method.\n
      *\n      * FormArray.prototype.reset = function (value, options) {\n      *   if (value === void 0) { value = []; }\n      *   if (options === void 0) { options = {}; }\n      *   this._forEachChild(function (control, index) {\n
      *     control.reset(value[index], { onlySelf: true, emitEvent: options.emitEvent });\n      *   });\n      *   this._updatePristine(options);\n      *   this._updateTouched(options);\n      *   this.updateValueAndValidity(options);\n      * }; \n      * /**\n      * The aggregate value of the array, including any
disabled controls.\n      *\n      * Reports all values regardless of disabled status.\n      * For enabled controls
only, the `value` property is the best way to get the value of the array.\n      *\n      * FormArray.prototype.getRawValue = function () {\n      *   return this.controls.map(function (control) {\n
      *     return control instanceof FormControl ? control.value : control.getRawValue();\n      *   });\n      * }; \n      * /**\n
      * Remove all controls in the `FormArray`.\n      *\n      * @usageNotes\n      * ### Remove all elements from a
FormArray\n      *\n      * ```ts\n      * const arr = new FormArray([\n      *   new FormControl(),\n      *   new FormControl()\n      * ]);\n      * console.log(arr.length); // 2\n      *\n      * arr.clear();\n      *\n      * console.log(arr.length); // 0\n      * ```\n      *\n      * It's a simpler and more efficient alternative to removing
all elements one by one:\n      *\n      * ```ts\n      * const arr = new FormArray([\n      *   new
      *   FormControl(),\n      *   new FormControl()\n      * ]);\n      *\n      * while (arr.length) {\n      *   arr.removeAt(0);\n      * }\n      * ```\n      *\n      * FormArray.prototype.clear = function () {\n      *   if
      *   (this.controls.length < 1)\n      *     return;\n      *   this._forEachChild(function (control) { return
      *     control._registerOnCollectionChange(function () { }); });\n      *   this.controls.splice(0);\n      *   this.updateValueAndValidity();\n      * }; \n      * /** @internal *\n
      * FormArray.prototype._syncPendingControls
= function () {\n      *   var subtreeUpdated = this.controls.reduce(function (updated, child) {\n      *     return
      *     child._syncPendingControls() ? true : updated;\n      *   }, false);\n      *   if (subtreeUpdated)\n      *     this.updateValueAndValidity({ onlySelf: true });\n      *   return subtreeUpdated;\n      * }; \n      * /** @internal *\n
      * FormArray.prototype._throwIfControlMissing = function (index) {\n      *   if (!this.controls.length) {\n
      *     throw new Error(`\n      *       There are no form controls registered with this array yet. If you're using ngModel,\n
      *       you may want to check next tick (e.g. use setTimeout).\n      *     `);\n      *   }\n      *   if (!this.at(index)) {\n
      *     throw new Error(`Cannot find form control at index ` + index);\n      *   }\n      * }; \n      * /** @internal *\n
      * FormArray.prototype._forEachChild = function (cb) {\n      *   this.controls.forEach(function (control, index) {\n
      *     cb(control, index);\n      *   });\n      * }; \n      * /** @internal *\n      * FormArray.prototype._updateValue =
function () {\n      *   var _this = this;\n      *   this.value =\n      *     this.controls.filter(function (control) { return
      *     control.enabled || !_this.disabled; })\n      *     .map(function (control) { return control.value; });\n      * }; \n      * /** @internal *\n
      * FormArray.prototype._anyControls = function (condition) {\n      *   return
      *   this.controls.some(function (control) { return control.enabled && condition(control); });\n      * }; \n      * /**
      * @internal *\n      * FormArray.prototype._setUpControls = function () {\n      *   var _this = this;\n
      *   this._forEachChild(function (control) { return _this._registerControl(control); });\n      * }; \n      * /** @internal *\n
      * FormArray.prototype._checkAllValuesPresent = function (value) {\n      *   this._forEachChild(function (control,

```



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i) {\n
    if (value[i] === undefined) {\n
        throw new Error("Must supply a value for form control
at index: \" + i + \".\");\n
    }\n
};\n
/** @internal */\n
FormArray.prototype._allControlsDisabled = function () {\n
    var e_3, _a;\n
    try {\n
        for (var _b
= __values(this.controls), _c = _b.next(); !_c.done; _c = _b.next()) {\n
            var control = _c.value;\n
            if (control.enabled)\n
                return false;\n
        }\n
    } catch (e_3_1) { e_3 = { error:
e_3_1 }; }\n
    finally {\n
        try {\n
            if (_c && !_c.done && (_a = _b.return)) _a.call(_b);\n
        }\n
    } finally { if (e_3) throw e_3.error; }\n
    return this.controls.length > 0 ||
this.disabled;\n
};\n
FormArray.prototype._registerControl = function (control) {\n
    control.setParent(this);\n
    control._registerOnCollectionChange(this._onCollectionChange);\n
};\n
return FormArray;\n
})(AbstractControl));\n
var formDirectiveProvider = {\n
    provide: ControlContainer,\n
    useExisting: core.forwardRef(function () { return NgForm; })\n
};\n
var 0 = function () { return
Promise.resolve(null); }\n
var resolvedPromise = (0);\n
/**\n
 * @description\n
 * Creates a top-level
`FormGroup` instance and binds it to a form\n
 * to track aggregate form value and validation status.\n
 *\n
 * As soon as you import the `FormsModule`, this directive becomes active by default on\n
 * all `<form>` tags. You
don't need to add a special selector.\n
 *\n
 * You optionally export the directive into a local template variable
using `ngForm` as the key\n
 * (ex: `#myForm="ngForm"`). This is optional, but useful. Many properties from
the underlying\n
 * `FormGroup` instance are duplicated on the directive itself, so a reference to it\n
 * gives you
access to the aggregate value and validity status of the form, as well as\n
 * user interaction properties like `dirty`
and `touched`.\n
 *\n
 * To register child controls with the form, use `NgModel` with a `name`\n
 * attribute.
You may use `NgModelGroup` to create sub-groups within the form.\n
 *\n
 * If necessary, listen to the
directive's `ngSubmit` event to be notified when the user has\n
 * triggered a form submission. The `ngSubmit`
event emits the original form\n
 * submission event.\n
 *\n
 * In template driven forms, all `<form>` tags are
automatically tagged as `NgForm`.\n
 * To import the `FormsModule` but skip its usage in some forms,\n
 * for
example, to use native HTML5 validation, add the `ngNoForm` and the `<form>`\n
 * tags won't create an
`NgForm` directive. In reactive forms, using `ngNoForm` is\n
 * unnecessary because the `<form>` tags are inert.
In that case, you would\n
 * refrain from using the `formGroup` directive.\n
 *\n
 * @usageNotes\n
 *\n
 * ### Listening for form submission\n
 *\n
 * The following example shows how to capture the form values from
the `ngSubmit` event.\n
 *\n
 * {@example forms/ts/simpleForm/simple_form_example.ts
region='Component'}\n
 *\n
 * ### Setting the update options\n
 *\n
 * The following example shows you
how to change the `updateOn` option from its default using\n
 * ngFormOptions.\n
 *\n
 * ```html\n
 * <form [ngFormOptions]="{updateOn: 'blur'}">\n
 *   <input name="one" ngModel> <!-- this ngModel will
update on blur -->\n
 * </form>\n
 * ```\n
 *\n
 * ### Native DOM validation UI\n
 *\n
 * In order to
prevent the native DOM form validation UI from interfering with Angular's form\n
 * validation, Angular
automatically adds the `novalidate` attribute on any `<form>` whenever\n
 * `FormsModule` or
`ReactiveFormsModule` are imported into the application.\n
 * If you want to explicitly enable native DOM
validation UI with Angular forms, you can add the\n
 * `ngNativeValidate` attribute to the `<form>` element:\n
 *\n
 * ```html\n
 * <form ngNativeValidate>\n
 *   ...\n
 * </form>\n
 * ```\n
 *\n
 * @ngModule
FormsModule\n
 * @publicApi\n
 */\n
var NgForm = /** @class */ (function (_super) {\n
__extends(NgForm, _super);\n
function NgForm(validators, asyncValidators) {\n
    var _this =
_super.call(this) || this;\n
    /**\n
     * @description\n
     * Returns whether the form submission has
been triggered.\n
     */\n
    _this.submitted = false;\n
    _this._directives = [];\n
    /**\n
     *
@description\n
     * Event emitter for the `ngSubmit` event\n
     */\n
    _this.ngSubmit = new
core.EventEmitter();\n
    _this.form =\n
        new FormGroup({}, composeValidators(validators),
composeAsyncValidators(asyncValidators));\n
    return _this;\n
}\n
/** @nodoc */\n
NgForm.prototype.ngAfterViewInit = function () {\n
    this._setUpdateStrategy();\n
};\n
Object.defineProperty(NgForm.prototype, "formDirective", {\n
    /**\n
     * @description\n
     * The
directive instance.\n
     */\n
    get: function () {\n
        return this;\n
    },\n
    enumerable:
false,\n
    configurable: true\n
});\n
Object.defineProperty(NgForm.prototype, "control", {\n

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/**\n      * @description\n      * The internal `FormGroup` instance.\n      */\n      get: function () {\n        return this.form;\n      },\n      enumerable: false,\n      configurable: true\n    });\n    Object.defineProperty(NgForm.prototype, `path`, {\n      /**\n      * @description\n      * Returns an array representing the path to this group. Because this directive\n      * always lives at the top level of a form, it is always an empty array.\n      */\n      get: function () {\n        return [];\n      },\n      enumerable: false,\n      configurable: true\n    });\n    Object.defineProperty(NgForm.prototype, `controls`, {\n      /**\n      * @description\n      * Returns a map of the controls in this group.\n      */\n      get: function () {\n        return this.form.controls;\n      },\n      enumerable: false,\n      configurable: true\n    });\n    /**\n    * @description\n    * Method that sets up the control directive in this group, re-calculates its value\n    * and validity, and adds the instance to the internal list of directives.\n    */\n    * @param dir The `NgModel` directive instance.\n    */\n    NgForm.prototype.addControl = function (dir) {\n      var _this = this;\n      resolvedPromise.then(function () {\n        var container = _this._findContainer(dir.path);\n        dir.control =\n          container.registerControl(dir.name, dir.control);\n        setUpControl(dir.control, dir);\n        dir.control.updateValueAndValidity({ emitEvent: false });\n        _this._directives.push(dir);\n      });\n    });\n    /**\n    * @description\n    * Retrieves the `FormControl` instance from the provided `NgModel` directive.\n    */\n    * @param dir The `NgModel` directive instance.\n    */\n    NgForm.prototype.getControl = function (dir) {\n      return this.form.get(dir.path);\n    });\n    /**\n    * @description\n    * Removes the `NgModel` instance from the internal list of directives\n    */\n    * @param dir The `NgModel` directive instance.\n    */\n    NgForm.prototype.removeControl = function (dir) {\n      var _this = this;\n      resolvedPromise.then(function () {\n        var container = _this._findContainer(dir.path);\n        if (container) {\n          container.removeControl(dir.name);\n        }\n        removeListItem(_this._directives, dir);\n      });\n    });\n    /**\n    * @description\n    * Adds a new `NgModelGroup` directive instance to the form.\n    */\n    * @param dir The `NgModelGroup` directive instance.\n    */\n    NgForm.prototype.addFormGroup = function (dir) {\n      var _this = this;\n      resolvedPromise.then(function () {\n        var container = _this._findContainer(dir.path);\n        var group = new FormGroup({});\n        setUpFormContainer(group, dir);\n        container.registerControl(dir.name, group);\n        group.updateValueAndValidity({ emitEvent: false });\n      });\n    });\n    /**\n    * @description\n    * Removes the `NgModelGroup` directive instance from the form.\n    */\n    * @param dir The `NgModelGroup` directive instance.\n    */\n    NgForm.prototype.removeFormGroup = function (dir) {\n      var _this = this;\n      resolvedPromise.then(function () {\n        var container = _this._findContainer(dir.path);\n        if (container) {\n          container.removeControl(dir.name);\n        }\n      });\n    });\n    /**\n    * @description\n    * Retrieves the `FormGroup` for a provided `NgModelGroup` directive instance\n    */\n    * @param dir The `NgModelGroup` directive instance.\n    */\n    NgForm.prototype.getFormGroup = function (dir) {\n      return this.form.get(dir.path);\n    });\n    /**\n    * Sets the new value for the provided `NgControl` directive.\n    */\n    * @param dir The `NgControl` directive instance.\n    * @param value The new value for the directive's control.\n    */\n    NgForm.prototype.updateModel = function (dir, value) {\n      var _this = this;\n      resolvedPromise.then(function () {\n        var ctrl = _this.form.get(dir.path);\n        ctrl.setValue(value);\n      });\n    });\n    /**\n    * @description\n    * Sets the value for this `FormGroup`.\n    */\n    * @param value The new value\n    */\n    NgForm.prototype.setValue = function (value) {\n      this.control.setValue(value);\n    });\n    /**\n    * @description\n    * Method called when the `submit` event is triggered on the form.\n    * Triggers the `ngSubmit` emitter to emit the `submit` event as its payload.\n    */\n    * @param $event The `submit` event object\n    */\n    NgForm.prototype.onSubmit = function ($event) {\n      this.submitted = true;\n      syncPendingControls(this.form, this._directives);\n      this.ngSubmit.emit($event);\n      return false;\n    });\n    /**\n    * @description\n    * Method called when the `reset` event is triggered on the form.\n    */\n    NgForm.prototype.onReset = function () {\n      this.resetForm();\n    });\n    /**\n    * @description\n    * Resets the form to an initial value and resets its

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submitted status;\n    *\n    * @param value The new value for the form.\n    */\n
NgForm.prototype.resetForm = function (value) {\n    if (value === void 0) { value = undefined; }\n    this.form.reset(value);\n    this.submitted = false;\n  };\n  NgForm.prototype._setUpdateStrategy =\n  function () {\n    if (this.options && this.options.updateOn !== null) {\n      this.form._updateOn =\n      this.options.updateOn;\n    }\n  };\n  /** @internal */\n  NgForm.prototype._findContainer =\n  function (path) {\n    path.pop();\n    return path.length ? this.form.get(path) : this.form;\n  };\n  return NgForm;\n  }(ControlContainer));\n  NgForm.decorators = [\n    { type: core.Directive, args: [{\n      selector: 'form:not([ngNoForm]):not([formGroup]),ng-form,[ngForm]'\n    },\n      providers:\n      [formDirectiveProvider],\n      host: { '(submit)': 'onSubmit($event)', '(reset)': 'onReset()' },\n      outputs: ['ngSubmit'],\n      exportAs: 'ngForm'\n    },\n  ]\n  ];\n  NgForm.ctorParameters =\n  function () { return [\n    { type: Array, decorators: [{ type: core.Optional }, { type: core.Self }, { type: core.Inject,\n      args: [NG_VALIDATORS,] } ] },\n    { type: Array, decorators: [{ type: core.Optional }, { type: core.Self }, { type: core.Inject,\n      args: [NG_ASYNC_VALIDATORS,] } ] }\n  ]; }; NgForm.propDecorators = {\n  options:\n  [{ type: core.Input, args: ['ngFormOptions,'] } ]\n  };\n\n  /**\n   * @description\n   * A base class for code shared between the `NgModelGroup` and `FormGroupName` directives.\n   *\n   * @publicApi\n   */\n  var AbstractFormGroupDirective = /** @class */ (function (_super) {\n    __extends(AbstractFormGroupDirective, _super);\n    function AbstractFormGroupDirective() {\n      return _super !== null && _super.apply(this, arguments) || this;\n    }\n    /** @nodoc */\n    AbstractFormGroupDirective.prototype.ngOnInit = function () {\n      this._checkParentType();\n      // Register the group with its parent group.\n      this.formDirective.addFormGroup(this);\n    };\n    /** @nodoc */\n    AbstractFormGroupDirective.prototype.ngOnDestroy = function () {\n      if (this.formDirective) {\n        // Remove the group from its parent group.\n        this.formDirective.removeFormGroup(this);\n      }\n      Object.defineProperty(AbstractFormGroupDirective.prototype, 'control', {\n        /**\n         * @description\n         * The `FormGroup` bound to this directive.\n         *\n         * @get: function () {\n         * return this.formDirective.getFormGroup(this);\n         * },\n         * enumerable: false,\n         * configurable: true\n         * });\n        Object.defineProperty(AbstractFormGroupDirective.prototype, 'path', {\n        /**\n         * @description\n         * The path to this group from the top-level directive.\n         *\n         * @get: function () {\n         * return controlPath(this.name == null ? this.name : this.name.toString(), this._parent);\n         * },\n         * enumerable: false,\n         * configurable: true\n         * });\n        Object.defineProperty(AbstractFormGroupDirective.prototype, 'formDirective', {\n        /**\n         * @description\n         * The top-level directive for this group if present, otherwise null.\n         *\n         * @get: function () {\n         * return this._parent ? this._parent.formDirective : null;\n         * },\n         * enumerable: false,\n         * configurable: true\n         * });\n        /** @internal */\n        AbstractFormGroupDirective.prototype._checkParentType = function () {\n          return\n          AbstractFormGroupDirective;\n        }(ControlContainer));\n        AbstractFormGroupDirective.decorators = [\n          {\n            type: core.Directive\n          }]\n        ;\n        /**\n         * @license\n         * Copyright Google LLC All Rights Reserved.\n         *\n         * Use of this source code is governed by an MIT-style license that can be\n         * found in the LICENSE file at\n         * https://angular.io/license\n         */\n        var TemplateDrivenErrors = /** @class */ (function () {\n          function TemplateDrivenErrors() {\n            TemplateDrivenErrors.modelParentException = function () {\n              throw new Error("\\n ngModel cannot be used to register form controls with a parent formGroup directive. Try\n              using \\n formGroup's partner directive '\\n \"formControlName\"' instead. Example:\\n\n              \\n \\n |\" +\n              FormErrorExamples.formControlName + \" \\n\n              Or, if you'd like to avoid registering this form control, indicate\n              that it's standalone in ngModelOptions:\\n\n              Example:\\n\n              |\" +\n              FormErrorExamples.ngModelWithFormGroup);\n            };\n            TemplateDrivenErrors.formGroupNameException =\n            function () {\n              throw new Error("\\n ngModel cannot be used to register form controls with a parent\n              formGroupName or formArrayName directive.\\n\n              Option 1: Use formControlName instead of ngModel\n              (reactive strategy):\\n\n              |\" + FormErrorExamples.formGroupName + \" \\n\n              Option 2: Update ngModel's\n              parent be ngModelGroup (template-driven strategy):\\n\n              |\" + FormErrorExamples.ngModelGroup);\n            };\n          }\n        })\n      );\n    }\n  })();\n
```

```

TemplateDrivenErrors.missingNameException = function () {
  throw new Error("If ngModel is used
within a form tag, either the name attribute must be set or the form control must be defined as 'standalone' in
ngModelOptions.
Example 1: <input [(ngModel)]='\"person.firstName\"' name='\"first\">
Example 2: <input [(ngModel)]='\"person.firstName\"' [ngModelOptions]='\"{standalone: true}\">");
};
TemplateDrivenErrors.modelGroupParentException = function () {
  throw new Error("ngModelGroup
cannot be used with a parent formGroup directive.
Option 1: Use formGroupName instead
of ngModelGroup (reactive strategy);
Option 2:
Use a regular form tag instead of the formGroup directive (template-driven strategy);
FormErrorExamples.ngModelGroup);
return TemplateDrivenErrors;
});
var
modelGroupProvider = {
  provide: ControlContainer,
  useExisting: core.forwardRef(function () { return
NgModelGroup; })
};
/**
 * @description
 * Creates and binds a `FormGroup` instance to a DOM
element.
 * This directive can only be used as a child of `NgForm` (within `<form>` tags).
 * Use this directive to validate a sub-group of your form separately from the
 * rest of your form, or if some values
in your domain model make more sense
 * to consume together in a nested object.
 * Provide a name
for the sub-group and it will become the key
 * for the sub-group in the form's full value. If you need direct
access, export the directive into
 * a local template variable using `ngModelGroup` (ex:
`#myGroup="ngModelGroup")`.
 * @usageNotes
 * ### Consuming controls in a grouping
 * The following example shows you how to combine controls together in a sub-group
 * of the form.
 * { @example forms/ts/ngModelGroup/ng_model_group_example.ts region='Component' }
 * @ngModule FormsModule
 * @publicApi
 * /
var NgModelGroup = /** @class */ (function (_super) {
  __extends(NgModelGroup, _super);
  function NgModelGroup(parent, validators, asyncValidators) {
    var _this = _super.call(this) || this;
    _this._parent = parent;
    _this._setValidators(validators);
    _this._setAsyncValidators(asyncValidators);
    return _this;
  }
  /** @internal */
  NgModelGroup.prototype._checkParentType = function () {
    if (!(this._parent instanceof NgModelGroup)
&& !(this._parent instanceof NgForm) &&
    (typeof ngDevMode === 'undefined' || ngDevMode)) {
      TemplateDrivenErrors.modelGroupParentException();
    }
    return NgModelGroup;
  }
  (AbstractFormGroupDirective));
  NgModelGroup.decorators = [
    { type: core.Directive, args: [{ selector:
'ngModelGroup' }, { providers: [modelGroupProvider], exportAs: 'ngModelGroup' }] }
];
  NgModelGroup.ctorParameters = function () { return [
    { type: ControlContainer, decorators: [{ type:
core.Host }, { type: core.SkipSelf }] },
    { type: Array, decorators: [{ type: core.Optional }, { type: core.Self },
{ type: core.Inject, args: [NG_VALIDATORS,] }] },
    { type: Array, decorators: [{ type: core.Optional }, {
type: core.Self }, { type: core.Inject, args: [NG_ASYNC_VALIDATORS,] }] }
];
  };
  NgModelGroup.propDecorators = {
    name: [{ type: core.Input, args: ['ngModelGroup,'] }];
  };
  var
formControlBinding = {
  provide: NgControl,
  useExisting: core.forwardRef(function () { return
NgModel; })
};
var $1 = function () { return Promise.resolve(null); };
/**
 * `ngModel` forces an
additional change detection run when its inputs change:
 * E.g.:
 *
<div>{{ myModel.valid }}</div>
 * <input [(ngModel)]="myValue" #myModel="ngModel">
 *
 * I.e. `ngModel` can export itself on the element and then be used in the template.
 * Normally, this would result
in expressions before the `input` that use the exported directive
 * to have an old value as they have been
 * dirty checked before. As this is a very common case for `ngModel`, we added this second change
 * detection
run.
 * Notes:
 * - this is just one extra run no matter how many `ngModel`s have been changed.
 * - this is a general problem when using `exportAs` for directives!
 * /
var resolvedPromise$1 = ($1)();
/**
 * @description
 * Creates a `FormControl` instance from a domain model and binds it
 * to a form
control element.
 * The `FormControl` instance tracks the value, user interaction, and
 * validation
status of the control and keeps the view synced with the model. If used
 * within a parent form, the directive also
registers itself with the form as a child
 * control.
 * This directive is used by itself or as part of a
larger form. Use the
 * `ngModel` selector to activate it.
 * It accepts a domain model as an optional
`Input`. If you have a one-way binding
 * to `ngModel` with `[]` syntax, changing the domain model's value in

```

the component class sets the value in the view. If you have a two-way binding with `[()]` syntax (also known as 'banana-in-a-box syntax'), the value in the UI always syncs back to the domain model in your class.

To inspect the properties of the associated `FormControl` (like the validity state), export the directive into a local template variable using `ngModel` as the key (ex: `#myVar="ngModel"`). You can then access the control using the directive's `control` property. However, the most commonly used properties (like `valid` and `dirty`) also exist on the control for direct access. See a full list of properties directly available in `AbstractControlDirective`.

@@see `RadioControlValueAccessor` @see `SelectControlValueAccessor` @usageNotes

Using ngModel on a standalone control

The following examples show a simple standalone control using `ngModel`:

```

{@example
forms/ts/simpleNgModel/simple_ng_model_example.ts region='Component'}

```

When using the `ngModel` within `<form>` tags, you'll also need to supply a `name` attribute so that the control can be registered with the parent form under that name. In the context of a parent form, it's often unnecessary to include one-way or two-way binding, as the parent form syncs the value for you. You access its properties by exporting it into a local template variable using `ngForm` such as `(#f="ngForm")`. Use the variable where needed on form submission. If you do need to populate initial values into your form, using a one-way binding for `ngModel` tends to be sufficient as long as you use the exported form's value rather than the domain model's value on submit.

Using ngModel within a form

The following example shows controls using `ngModel` within a form:

```

{@example
forms/ts/simpleForm/simple_form_example.ts region='Component'}

```

Using a standalone ngModel within a group

The following example shows you how to use a standalone `ngModel` control within a form. This controls the display of the form, but doesn't contain form data.

```

html
<form>
  <input name="login" ngModel placeholder="Login">
  <input type="checkbox" ngModel [ngModelOptions]="{standalone: true}"> Show more options?
</form>
<!-- form value: {login: } -->

```

Setting the ngModel name attribute through options

The following example shows you an alternate way to set the name attribute. Here, an attribute identified as `name` is used within a custom form control component. To still be able to specify the `NgModel`'s name, you must specify it using the `ngModelOptions` input instead.

```

html
<form>
  <my-custom-form-control name="Nancy" ngModel [ngModelOptions]="{name: 'user'}">
</my-custom-form-control>
</form>
<!-- form value: {user: } -->

```

```

@ngModule FormsModule
@publicApi
var NgModel = /** @class */ (function (_super) {
  __extends(NgModel, _super);
  function NgModel(parent, validators, asyncValidators, valueAccessors) {
    var _this = _super.call(this) || this;
    _this.control = new FormControl();
    /** @internal */
    _this._registered = false;
    /**
     * @description
     * Event emitter for producing the `ngModelChange` event after the view model updates.
     */
    _this.update = new core.EventEmitter();
    _this._parent = parent;
    _this._setValidators(validators);
    _this._setAsyncValidators(asyncValidators);
    _this.valueAccessor = selectValueAccessor(_this, valueAccessors);
    return _this;
  }
  /** @nodoc */
  NgModel.prototype.ngOnChanges = function (changes) {
    this._checkForErrors();
    if (!this._registered)
      this._setUpControl();
    if ('isDisabled' in changes) {
      this._updateDisabled(changes);
    }
    if (isPropertyUpdated(changes, this.viewModel)) {
      this._updateValue(this.model);
      this.viewModel = this.model;
    }
  };
  /** @nodoc */
  NgModel.prototype.ngOnDestroy = function () {
    this.formDirective &&
    this.formDirective.removeControl(this);
  };
  Object.defineProperty(NgModel.prototype, 'path', {
    /**
     * @description
     * Returns an array that represents the path from the top-level form to this control.
     * Each index is the string name of the control on that level.
     */
    get: function () {
      return this._parent ? controlPath(this.name, this._parent) : [this.name];
    },
    enumerable: false,
    configurable: true
  });
  Object.defineProperty(NgModel.prototype, 'formDirective', {
    /**
     * @description
     * The top-level directive for this control if present, otherwise null.
     */
    get: function () {
      return this._parent ? this._parent.formDirective : null;
    }
  });
}

```

```

enumerable: false,\n      configurable: true\n    });\n    /**\n     * @description\n     * Sets the new value\n     * for the view model and emits an `ngModelChange` event.\n     * @param newValue The new value\n     * emitted by `ngModelChange`.\n     */\n    NgModel.prototype.viewToModelUpdate = function (newValue) {\n      this.viewModel = newValue;\n      this.update.emit(newValue);\n    };\n\n    NgModel.prototype._setUpControl = function () {\n      this._setUpUpdateStrategy();\n      this._isStandalone() ?\n      this._setUpStandalone() : this.formDirective.addControl(this);\n      this._registered = true;\n    };\n\n    NgModel.prototype._setUpUpdateStrategy = function () {\n      if (this.options && this.options.updateOn !== null)\n      {\n        this.control._updateOn = this.options.updateOn;\n      }\n    };\n\n    NgModel.prototype._isStandalone = function () {\n      return !this._parent || !(this.options &&\n      this.options.standalone);\n    };\n\n    NgModel.prototype._setUpStandalone = function () {\n      setUpControl(this.control, this);\n      this.control.updateValueAndValidity({ emitEvent: false });\n    };\n\n    NgModel.prototype._checkForErrors = function () {\n      if (!this._isStandalone()) {\n        this._checkParentType();\n      }\n      this._checkName();\n    };\n\n    NgModel.prototype._checkParentType = function () {\n      if (typeof ngDevMode === 'undefined' ||\n      ngDevMode) {\n        if (!(this._parent instanceof NgModelGroup) &&\n        this._parent instanceof\n        AbstractFormGroupDirective) {\n          TemplateDrivenErrors.formGroupNameException();\n        }\n        else if (!(this._parent instanceof NgModelGroup) && !(this._parent instanceof NgForm)) {\n          TemplateDrivenErrors.modelParentException();\n        }\n      }\n    };\n\n    NgModel.prototype._checkName = function () {\n      if (this.options && this.options.name)\n      this.name = this.options.name;\n      if (!this._isStandalone() && !this.name && (typeof ngDevMode ===\n      'undefined' || ngDevMode)) {\n        TemplateDrivenErrors.missingNameException();\n      }\n    };\n\n    NgModel.prototype._updateValue = function (value) {\n      var _this = this;\n      resolvedPromise$1.then(function () {\n        _this.control.setValue(value, { emitViewToModelChange: false\n      });\n    });\n\n    NgModel.prototype._updateDisabled = function (changes) {\n      var _this =\n      this;\n      var disabledValue = changes['isDisabled'].currentValue;\n      var isDisabled = disabledValue ===\n      " || (disabledValue && disabledValue !== 'false');\n      resolvedPromise$1.then(function () {\n        if\n      (isDisabled && !_this.control.disabled) {\n          _this.control.disable();\n        }\n        else if\n      (!isDisabled && _this.control.disabled) {\n          _this.control.enable();\n        }\n      });\n    };\n\n    return NgModel;\n  })(NgControl));\n  NgModel.decorators = [\n    { type: core.Directive, args: [{\n      selector: '[ngModel]:not([formControlName]):not([formControl])',\n      providers: [formControlBinding],\n      exportAs: 'ngModel'\n    }, ] }\n  ];\n  NgModel.ctorParameters = function () { return [\n    {\n      type: ControlContainer, decorators: [{ type: core.Optional }, { type: core.Host } ] },\n    {\n      type: Array, decorators:\n      [{ type: core.Optional }, { type: core.Self }, { type: core.Inject, args: [NG_VALIDATORS,] } ] },\n    {\n      type:\n      Array, decorators: [{ type: core.Optional }, { type: core.Self }, { type: core.Inject, args:\n      [NG_ASYNC_VALIDATORS,] } ] },\n    {\n      type: Array, decorators: [{ type: core.Optional }, { type: core.Self }, {\n      type: core.Inject, args: [NG_VALUE_ACCESSOR,] } ] }\n  ];\n  }; NgModel.propDecorators = {\n    name: [{\n      type: core.Input } ],\n    isDisabled: [{\n      type: core.Input, args: ['disabled,'] } ],\n    model: [{\n      type: core.Input,\n      args: ['ngModel,'] } ],\n    options: [{\n      type: core.Input, args: ['ngModelOptions,'] } ],\n    update: [{\n      type:\n      core.Output, args: ['ngModelChange,'] } ] }\n  ];\n\n  /**\n   * @license\n   * Copyright Google LLC All Rights\n   * Reserved.\n   * Use of this source code is governed by an MIT-style license that can be\n   * found in the\n   * LICENSE file at https://angular.io/license\n   */\n  /**\n   * @description\n   * Adds `novalidate`\n   * attribute to all forms by default.\n   * `novalidate` is used to disable browser's native form validation.\n   * If you want to use native validation with Angular forms, just add `ngNativeValidate` attribute:\n   * ```\n   * <form ngNativeValidate></form>\n   * ```\n   * @publicApi\n   * @ngModule\n   ReactiveFormsModule\n   * @ngModule FormsModule\n   */\n  var NgNoValidate = /** @class */ (function ()\n  {\n    function NgNoValidate() {\n    }\n\n    return NgNoValidate;\n  })();\n  NgNoValidate.decorators = [\n    {\n      type: core.Directive, args: [{\n      selector: 'form:not([ngNoForm]):not([ngNativeValidate])',\n      host: { 'novalidate': '' },\n    }, ] }\n  ];\n\n  /**\n   * Token to provide to turn off the ngModel warning

```

```

on FormControl and FormControlName.\n    */\n    var NG_MODEL_WITH_FORM_CONTROL_WARNING =
new core.InjectionToken('NgModelWithFormControlWarning');\n    var FormControlBinding$1 = {\n    provide:
NgControl,\n    useExisting: core.forwardRef(function () { return FormControlDirective; })\n    };\n    /**\n    *
    @description\n    * Synchronizes a standalone `FormControl` instance to a form control element.\n    */\n    * Note
that support for using the `ngModel` input property and `ngModelChange` event with reactive\n    * form directives
was deprecated in Angular v6 and is scheduled for removal in\n    * a future version of Angular.\n    * For details,
see [Deprecated features](guide/deprecations#ngmodel-with-reactive-forms).\n    */\n    * @see [Reactive Forms
Guide](guide/reactive-forms)\n    * @see `FormControl`\n    * @see `AbstractControl`\n    */\n    *
    @usageNotes\n    */\n    * The following example shows how to register a standalone control and set its value.\n
    */\n    * {@example forms/ts/simpleFormControl/simple_form_control_example.ts region='Component'}\n    */\n    *
    @NgModule\n    * @publicApi\n    */\n    var FormControlDirective = /** @class */
(function (_super) {\n    __extends(FormControlDirective, _super);\n    function
    FormControlDirective(validators, asyncValidators, valueAccessors, _ngModelWarningConfig) {\n    var _this
    = _super.call(this) || this;\n    _this._ngModelWarningConfig = _ngModelWarningConfig;\n    /**
    @deprecated as of v6 */\n    _this.update = new core.EventEmitter();\n    /**\n    * @description\n
    * Instance property used to track whether an ngModel warning has been sent out for this\n    * particular
    `FormControlDirective` instance. Used to support warning config of `\"always\"`.\n    */\n    * @internal\n
    */\n    _this._ngModelWarningSent = false;\n    _this._setValidators(validators);\n
    _this._setAsyncValidators(asyncValidators);\n    _this.valueAccessor = selectValueAccessor(_this,
    valueAccessors);\n    return _this;\n    }\n    Object.defineProperty(FormControlDirective.prototype,
    \"isDisabled\", {\n    /**\n    * @description\n    * Triggers a warning in dev mode that this input
    should not be used with reactive forms.\n    */\n    set: function (isDisabled) {\n    if (typeof
    ngDevMode === 'undefined' || ngDevMode) {\n    ReactiveErrors.disabledAttrWarning();\n    }\n
    },\n    enumerable: false,\n    configurable: true\n    });\n    /** @nodoc */\n
    FormControlDirective.prototype.ngOnChanges = function (changes) {\n    if
    (this._isControlChanged(changes)) {\n    setUpControl(this.form, this);\n    if (this.control.disabled
    && this.valueAccessor.setDisabledState) {\n    this.valueAccessor.setDisabledState(true);\n    }\n
    this.form.updateValueAndValidity({ emitEvent: false });\n    }\n    if (isPropertyUpdated(changes,
    this.viewModel)) {\n    _ngModelWarning('formControl', FormControlDirective, this,
    this._ngModelWarningConfig);\n    this.form.setValue(this.model);\n    this.viewModel =
    this.model;\n    }\n    }; \n    Object.defineProperty(FormControlDirective.prototype, \"path\", {\n
    /**\n    * @description\n    * Returns an array that represents the path from the top-level form to this
    control.\n    * Each index is the string name of the control on that level.\n    */\n    get: function ()
    {\n    return [];\n    },\n    enumerable: false,\n    configurable: true\n    });\n
    Object.defineProperty(FormControlDirective.prototype, \"control\", {\n    /**\n    * @description\n
    * The `FormControl` bound to this directive.\n    */\n    get: function () {\n    return this.form;\n
    },\n    enumerable: false,\n    configurable: true\n    });\n    /**\n    * @description\n
    * Sets the new value for the view model and emits an `ngModelChange` event.\n    */\n    * @param newValue The
    new value for the view model.\n    */\n    FormControlDirective.prototype.viewToModelUpdate = function
    (newValue) {\n    this.viewModel = newValue;\n    this.update.emit(newValue);\n    };\n
    FormControlDirective.prototype._isControlChanged = function (changes) {\n    return
    changes.hasOwnProperty('form');\n    }; \n    return FormControlDirective;\n    })(NgControl);\n    /**\n
    * @description\n    * Static property used to track whether any ngModel warnings have been sent across\n
    * all instances of FormControlDirective. Used to support warning config of `\"once\"`.\n    */\n    * @internal\n
    */\n    FormControlDirective._ngModelWarningSentOnce = false;\n    FormControlDirective.decorators = [\n    { type:
    core.Directive, args: [{ selector: '[formControl]', providers: [FormControlBinding$1], exportAs: 'ngForm' }, ] }\n
    ];\n    FormControlDirective.ctorParameters = function () { return [\n    { type: Array, decorators: [{ type:
    core.Optional }, { type: core.Self }, { type: core.Inject, args: [NG_VALIDATORS, ] } ] },\n    { type: Array,

```

```

decorators: [{ type: core.Optional }, { type: core.Self }, { type: core.Inject, args: [NG_ASYNC_VALIDATORS,] }
],\n    { type: Array, decorators: [{ type: core.Optional }, { type: core.Self }, { type: core.Inject, args:
[NG_VALUE_ACCESSOR,] ] }},\n    { type: String, decorators: [{ type: core.Optional }, { type: core.Inject,
args: [NG_MODEL_WITH_FORM_CONTROL_WARNING,] ] }\n  ];\n\nFormControlDirective.propDecorators = {\n    form: [{ type: core.Input, args: ['formControl',] }],\n  },\n  isDisabled: [{ type: core.Input, args: ['disabled',] }],\n  model: [{ type: core.Input, args: ['ngModel',] }],\n  update: [{ type: core.Output, args: ['ngModelChange',] }]\n  ];\n\n  var formDirectiveProvider$1 = {\n    provide: ControlContainer,\n    useExisting: core.forwardRef(function () { return FormGroupDirective; })\n  };\n\n  /**\n   * @description\n   * Binds an existing `FormGroup` to a DOM element.\n   * This directive
accepts an existing `FormGroup` instance. It will then use this\n   * `FormGroup` instance to match any child
`FormControl`, `FormGroup`,\n   * and `FormArray` instances to child `FormControlName`, `FormGroupName`,\n   * and `FormArrayName` directives.\n   * @see [Reactive Forms Guide](guide/reactive-forms)\n   * @see
`AbstractControl`\n   * ### Register Form Group\n   * The following example registers a
`FormGroup` with first name and last name controls,\n   * and listens for the `ngSubmit` event when the button is
clicked.\n   * @example forms/ts/simpleFormGroup/simple_form_group_example.ts
region='Component'\n   * @ngModule ReactiveFormsModule\n   * @publicApi\n   */\n  var
FormGroupDirective = /** @class */ (function (_super) {\n    __extends(FormGroupDirective, _super);\n    function FormGroupDirective(validators, asyncValidators) {\n      var _this = _super.call(this) || this;\n      _this.validators = validators;\n      _this.asyncValidators = asyncValidators;\n      /**\n       *
@description\n       * Reports whether the form submission has been triggered.\n       */\n      _this.submitted = false;\n      /**\n       * @description\n       * Tracks the list of added
`FormControlName` instances\n       */\n      _this.directives = [];\n      /**\n       * @description\n       * Tracks the `FormGroup` bound to this directive.\n       */\n      _this.form = null;\n      /**\n       *
@description\n       * Emits an event when the form submission has been triggered.\n       */\n      _this.ngSubmit = new core.EventEmitter();\n      _this._setValidators(validators);\n      _this._setAsyncValidators(asyncValidators);\n      return _this;\n    } \n    /** @nodoc */\n    FormGroupDirective.prototype.ngOnChanges = function (changes) {\n      this._checkFormPresent();\n      if
(changes.hasOwnProperty('form')) {\n        this._updateValidators();\n        this._updateDomValue();\n        this._updateRegistrations();\n        this._oldForm = this.form;\n      }\n    };\n\n    Object.defineProperty(FormGroupDirective.prototype, 'formDirective', {\n      /**\n       * @description\n       * Returns this directive's instance.\n       */\n      get: function () {\n        return this;\n      },\n      enumerable: false,\n      configurable: true\n    });\n\n    Object.defineProperty(FormGroupDirective.prototype, 'control', {\n      /**\n       * @description\n       * Returns the `FormGroup` bound to this directive.\n       */\n      get: function () {\n        return
this.form;\n      },\n      enumerable: false,\n      configurable: true\n    });\n\n    Object.defineProperty(FormGroupDirective.prototype, 'path', {\n      /**\n       * @description\n       * Returns an array representing the path to this group. Because this directive\n       * always lives at the top level of
a form, it always an empty array.\n       */\n      get: function () {\n        return [];\n      },\n      enumerable: false,\n      configurable: true\n    });\n\n    /**\n     * @description\n     * Method that sets
up the control directive in this group, re-calculates its value\n     * and validity, and adds the instance to the
internal list of directives.\n     * @param dir The `FormControlName` directive instance.\n     */\n    FormGroupDirective.prototype.addControl = function (dir) {\n      var ctrl = this.form.get(dir.path);\n      setUpControl(ctrl, dir);\n      ctrl.updateValueAndValidity({ emitEvent: false });\n      this.directives.push(dir);\n      return ctrl;\n    };\n\n    /**\n     * @description\n     * Retrieves the
`FormControl` instance from the provided `FormControlName` directive\n     * @param dir The
`FormControlName` directive instance.\n     */\n    FormGroupDirective.prototype.getControl = function (dir)
{\n      return this.form.get(dir.path);\n    };\n\n    /**\n     * @description\n     * Removes the
`FormControlName` instance from the internal list of directives\n     * @param dir The

```



```

`FormControlName` directive instance.\n      *\n      FormGroupDirective.prototype.removeControl = function
(dir) {\n      removeListItem(this.directives, dir);\n      };\n      /**\n      * Adds a new `FormGroupName`
directive instance to the form.\n      *\n      * @param dir The `FormGroupName` directive instance.\n      *\n
FormGroupDirective.prototype.addFormGroup = function (dir) {\n      var ctrl = this.form.get(dir.path);\n
setUpFormContainer(ctrl, dir);\n      ctrl.updateValueAndValidity({ emitEvent: false });\n      };\n      /**\n
* No-op method to remove the form group.\n      *\n      * @param dir The `FormGroupName` directive
instance.\n      *\n      FormGroupDirective.prototype.removeFormGroup = function (dir) {;\n      /**\n
* @description\n      * Retrieves the `FormGroup` for a provided `FormGroupName` directive instance\n
*\n      * @param dir The `FormGroupName` directive instance.\n      *\n
FormGroupDirective.prototype.getFormGroup = function (dir) {\n      return this.form.get(dir.path);\n      };\n
/**\n      * Adds a new `FormArrayName` directive instance to the form.\n      *\n      * @param dir The
`FormArrayName` directive instance.\n      *\n      FormGroupDirective.prototype.addFormArray = function
(dir) {\n      var ctrl = this.form.get(dir.path);\n      setUpFormContainer(ctrl, dir);\n
ctrl.updateValueAndValidity({ emitEvent: false });\n      };\n      /**\n      * No-op method to remove the form
array.\n      *\n      * @param dir The `FormArrayName` directive instance.\n      *\n
FormGroupDirective.prototype.removeFormArray = function (dir) {;\n      /**\n      * @description\n      *
Retrieves the `FormArray` for a provided `FormArrayName` directive instance.\n      *\n      * @param dir The
`FormArrayName` directive instance.\n      *\n      FormGroupDirective.prototype.getFormArray = function (dir)
{\n      return this.form.get(dir.path);\n      };\n      /**\n      * Sets the new value for the provided
`FormControlName` directive.\n      *\n      * @param dir The `FormControlName` directive instance.\n      *
@param value The new value for the directive's control.\n      *\n
FormGroupDirective.prototype.updateModel = function (dir, value) {\n      var ctrl = this.form.get(dir.path);\n
ctrl.setValue(value);\n      };\n      /**\n      * @description\n      * Method called with the `submit` event
is triggered on the form.\n      * Triggers the `ngSubmit` emitter to emit the `submit` event as its payload.\n
*\n      * @param $event The `submit` event object\n      *\n      FormGroupDirective.prototype.onSubmit =
function ($event) {\n      this.submitted = true;\n      syncPendingControls(this.form, this.directives);\n
this.ngSubmit.emit($event);\n      return false;\n      };\n      /**\n      * @description\n      * Method called
when the `reset` event is triggered on the form.\n      *\n      FormGroupDirective.prototype.onReset = function
() {\n      this.resetForm();\n      };\n      /**\n      * @description\n      * Resets the form to an initial value
and resets its submitted status.\n      *\n      * @param value The new value for the form.\n      *\n
FormGroupDirective.prototype.resetForm = function (value) {\n      if (value === void 0) { value = undefined;\n
}\n      this.form.reset(value);\n      this.submitted = false;\n      };\n      /** @internal *\n
FormGroupDirective.prototype._updateDomValue = function () {\n      var _this = this;\n
this.directives.forEach(function (dir) {\n      var newCtrl = _this.form.get(dir.path);\n      if (dir.control
!== newCtrl) {\n      // Note: the value of the `dir.control` may not be defined, for example when it's a first\n
// `FormControl` that is added to a `FormGroup` instance (via `addControl` call).\n
cleanUpControl(dir.control || null, dir);\n      if (newCtrl)\n      setUpControl(newCtrl, dir);\n
dir.control = newCtrl;\n      };\n      });\n      this.form._updateTreeValidity({ emitEvent: false
});\n      };\n      FormGroupDirective.prototype._updateRegistrations = function () {\n      var _this = this;\n
this.form._registerOnCollectionChange(function () { return _this._updateDomValue(); });\n      if
(this._oldForm)\n      this._oldForm._registerOnCollectionChange(function () { });\n      };\n      };\n
FormGroupDirective.prototype._updateValidators = function () {\n      setUpValidators(this.form, this, /*
handleOnValidatorChange */ false);\n      if (this._oldForm)\n      cleanUpValidators(this._oldForm, this,
/* handleOnValidatorChange */ false);\n      };\n      };\n
FormGroupDirective.prototype._checkFormPresent = function () {\n      if (!this.form && (typeof ngDevMode
=== 'undefined' || ngDevMode)) {\n      ReactiveErrors.missingFormException();\n      };\n      };\n
return FormGroupDirective;\n      }(ControlContainer));\n      FormGroupDirective.decorators = [\n      { type:
core.Directive, args: [{\n      selector: '[formGroup]',\n      providers: [formDirectiveProvider$1],\n

```

```

    host: { (submit): 'onSubmit($event)', (reset): 'onReset()' },\n      exportAs: 'ngForm'\n  },\n  ],\n  ];\n  FormGroupDirective.ctorParameters = function () { return [\n    { type: Array, decorators: [{ type: core.Optional }, { type: core.Self }, { type: core.Inject, args: [NG_VALIDATORS,] } ] },\n    { type: Array, decorators: [{ type: core.Optional }, { type: core.Self }, { type: core.Inject, args: [NG_ASYNC_VALIDATORS,] } ] },\n    { type: core.Optional }, { type: core.Self }, { type: core.Inject, args: [NG_ASYNC_VALIDATORS,] } ]\n  ];\n  FormGroupDirective.propDecorators = {\n    form: [{ type: core.Input, args: ['formGroup',] }],\n    ngSubmit: [{ type: core.Output }]\n  };;\n  var FormGroupNameProvider = {\n    provide: ControlContainer,\n    useExisting: core.forwardRef(function () { return FormGroupName; })\n  };;\n  /**\n   * @description\n   *\n   * Syncs a nested `FormGroup` to a DOM element.\n   *\n   * This directive can only be used with a parent `FormGroupDirective`.\n   *\n   * It accepts the string name of the nested `FormGroup` to link, and\n   * looks for a `FormGroup` registered with that name in the parent\n   * `FormGroup` instance you passed into `FormGroupDirective`.\n   *\n   * Use nested form groups to validate a sub-group of a\n   * form separately from the rest or to group the values of certain\n   * controls into their own nested object.\n   *\n   * @see [Reactive Forms Guide](guide/reactive-forms)\n   *\n   * @usageNotes\n   *\n   * ### Access the group by name\n   *\n   * The following example uses the {@link AbstractControl#get get} method to access the\n   * associated `FormGroup`\n   *\n   * ```ts\n   * this.form.get('name');\n   * ```\n   *\n   * ### Access individual controls in the group\n   *\n   * The following example uses the {@link AbstractControl#get get} method to access\n   * individual controls within the group using dot syntax.\n   *\n   * ```ts\n   * this.form.get('name.first');\n   * ```\n   *\n   * ### Register a nested `FormGroup`\n   *\n   * The following example registers a nested *name*\n   * `FormGroup` within an existing `FormGroup`,\n   * and provides methods to retrieve the nested `FormGroup` and individual controls.\n   *\n   * @example forms/ts/nestedFormGroup/nested_form_group_example.ts\n   * region='Component'\n   *\n   * @ngModule ReactiveFormsModule\n   * @publicApi\n   *\n   * var FormGroupName = /** @class */ (function (_super) {\n   *   __extends(FormGroupName, _super);\n   *   function FormGroupName(parent, validators, asyncValidators) {\n   *     var _this = _super.call(this) || this;\n   *     _this._parent = parent;\n   *     _this._setValidators(validators);\n   *     _this._setAsyncValidators(asyncValidators);\n   *     return _this;\n   *   }\n   *   /** @internal *\n   *   FormGroupName.prototype._checkParentType = function () {\n   *     if (_hasInvalidParent(this._parent) && (typeof ngDevMode === 'undefined' || ngDevMode)) {\n   *       ReactiveErrors.groupParentException();\n   *     }\n   *   };\n   *   return FormGroupName;\n   * })(AbstractFormGroupDirective);\n   * FormGroupName.decorators = [\n   *   { type: core.Directive, args: [{ selector: '[formGroupName]', providers: [FormGroupNameProvider] },] }\n   * ];\n   * FormGroupName.ctorParameters = function () { return [\n   *   { type: ControlContainer, decorators: [{ type: core.Optional }, { type: core.Host }, { type: core.SkipSelf } ] },\n   *   { type: Array, decorators: [{ type: core.Optional }, { type: core.Self }, { type: core.Inject, args: [NG_VALIDATORS,] } ] },\n   *   { type: Array, decorators: [{ type: core.Optional }, { type: core.Self }, { type: core.Inject, args: [NG_ASYNC_VALIDATORS,] } ] }\n   * ];\n   * FormGroupName.propDecorators = {\n   *   name: [{ type: core.Input, args: ['formGroupName',] }]\n   * };;\n   * var FormGroupNameProvider = {\n   *   provide: ControlContainer,\n   *   useExisting: core.forwardRef(function () { return FormGroupName; })\n   * };;\n   * /**\n   * @description\n   *\n   * Syncs a nested `FormArray` to a DOM element.\n   *\n   * This directive is designed to be used with a parent `FormGroupDirective` (selector:\n   * `[formGroup]`).\n   *\n   * It accepts the string name of the nested `FormArray` you want to link, and\n   * will look for a `FormArray` registered with that name in the parent\n   * `FormGroup` instance you passed into `FormGroupDirective`.\n   *\n   * @see [Reactive Forms Guide](guide/reactive-forms)\n   *\n   * @see `AbstractControl`\n   *\n   * @usageNotes\n   *\n   * ### Example\n   *\n   * @example forms/ts/nestedFormArray/nested_form_array_example.ts\n   * region='Component'\n   *\n   * @ngModule ReactiveFormsModule\n   * @publicApi\n   *\n   * var FormGroupName = /** @class */ (function (_super) {\n   *   __extends(FormArrayName, _super);\n   *   function FormGroupName(parent, validators, asyncValidators) {\n   *     var _this = _super.call(this) || this;\n   *     _this._parent = parent;\n   *     _this._setValidators(validators);\n   *     _this._setAsyncValidators(asyncValidators);\n   *     return _this;\n   *   }\n   *   /**\n   *    * A lifecycle method called when the directive's inputs are initialized. For internal use only.\n   *    * @throws If the directive does not have a valid parent.\n   *    * @nodoc\n   *    * @\n   */

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FormArrayName.prototype.ngOnInit = function () {\n      this._checkParentType();\n      this.formDirective.addFormArray(this);\n    }; \n    /**\n     * A lifecycle method called before the directive's\n     instance is destroyed. For internal use only.\n     * @nodoc\n     */\n    FormArrayName.prototype.ngOnDestroy = function () {\n      if (this.formDirective) {\n        this.formDirective.removeFormArray(this);\n      }\n    }; \n    Object.defineProperty(FormArrayName.prototype, "control", {\n      /**\n       * @description\n       *\n       The `FormArray` bound to this directive.\n       */\n      get: function () {\n        return\n          this.formDirective.getFormArray(this);\n      },\n      enumerable: false,\n      configurable: true\n    });\n    Object.defineProperty(FormArrayName.prototype, "formDirective", {\n      /**\n       * @description\n       *\n       The top-level directive for this group if present, otherwise null.\n       */\n      get:\n        function () {\n          return this._parent ? this._parent.formDirective : null;\n        },\n      enumerable:\n        false,\n      configurable: true\n    });\n    Object.defineProperty(FormArrayName.prototype, "path", {\n      /**\n       * @description\n       *\n       Returns an array that represents the path from the top-level form to this\n       control.\n       * Each index is the string name of the control on that level.\n       */\n      get: function ()\n        {\n          return controlPath(this.name == null ? this.name : this.name.toString(), this._parent);\n        },\n      enumerable: false,\n      configurable: true\n    });\n    FormArrayName.prototype._checkParentType =\n    function () {\n      if (_hasInvalidParent(this._parent) && (typeof ngDevMode === 'undefined' || ngDevMode))\n        {\n          ReactiveErrors.arrayParentException();\n        }\n      return FormArrayName;\n    }(ControlContainer);\n    FormArrayName.decorators = [\n      { type: core.Directive, args: [{ selector:\n        'formArrayName', providers: [formArrayNameProvider] },] }\n    ];\n    FormArrayName.ctorParameters =\n    function () { return [\n      { type: ControlContainer, decorators: [{ type: core.Optional }, { type: core.Host }, { type: core.SkipSelf } ] },\n      { type: Array, decorators: [{ type: core.Optional }, { type: core.Self }, { type: core.Inject, args: [NG_VALIDATORS,] } ] },\n      { type: Array, decorators: [{ type: core.Optional }, { type: core.Self }, { type: core.Inject, args: [NG_ASYNC_VALIDATORS,] } ] }\n    ];\n    FormArrayName.propDecorators = {\n      name: [{ type: core.Input, args: ['formArrayName',] } ]\n    }; \n    function _hasInvalidParent(parent) {\n      return !(parent instanceof FormGroupName) && !(parent instanceof\n        FormGroupDirective) && !(parent instanceof FormArrayName);\n    }\n    var FormControlNameBinding = {\n      provide: NgControl,\n      useExisting: core.forwardRef(function () { return FormControlName; })\n    }; \n    /**\n     * @description\n     * Syncs a `FormControl` in an existing `FormGroup` to a form control\n     element by name.\n     * @see [Reactive Forms Guide](guide/reactive-forms)\n     * @see `FormControl`\n     * @see `AbstractControl`\n     * @usageNotes\n     * ### Register `FormControl` within a group\n     * The following example shows how to register multiple form controls within a form group\n     and set their value.\n     * @example forms/ts/simpleFormGroup/simple_form_group_example.ts region='Component'\n     * To see `formControlName` examples with different form control types, see:\n     * * Radio buttons: `RadioControlValueAccessor`\n     * * Selects: `SelectControlValueAccessor`\n     * * ### Use with ngModel\n     is deprecated\n     * Support for using the `ngModel` input property and `ngModelChange` event with reactive\n     form directives has been deprecated in Angular v6 and is scheduled for removal in\n     a future version of Angular.\n     * For details, see [Deprecated features](guide/deprecations#ngmodel-with-reactive-forms).\n     * @ngModule ReactiveFormsModule\n     * @publicApi\n     */\n    var FormControlName = /** @class */\n    (function (_super) {\n      __extends(FormControlName, _super);\n      function FormControlName(parent, validators, asyncValidators, valueAccessors, _ngModelWarningConfig) {\n        var _this = _super.call(this) || this;\n        _this._ngModelWarningConfig = _ngModelWarningConfig;\n        _this._added = false;\n        /** @deprecated as of v6 */\n        _this.update = new core.EventEmitter();\n        /**\n         * @description\n         * Instance property used to track whether an ngModel warning has been sent out for this\n         particular FormControlName instance. Used to support warning config of "always".\n         */\n        @internal\n        _this._ngModelWarningSent = false;\n        _this._parent = parent;\n        _this._setValidators(validators);\n        _this._setAsyncValidators(asyncValidators);\n        _this.valueAccessor = selectValueAccessor(_this, valueAccessors);\n        return _this;\n      }\n    })\n
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Object.defineProperty(FormControlName.prototype, 'isDisabled', {\n      /**\n      * @description\n      * Triggers a warning in dev mode that this input should not be used with reactive forms.\n      */\n      set:\n      function (isDisabled) {\n        if (typeof ngDevMode === 'undefined' || ngDevMode) {\n          ReactiveErrors.disabledAttrWarning();\n        }\n        },\n        enumerable: false,\n        configurable:\n        true\n      });\n      /** @nodoc */\n      FormControlName.prototype.ngOnChanges = function (changes) {\n        if (!this._added)\n          this._setUpControl();\n        if (isPropertyUpdated(changes, this.viewModel)) {\n          _ngModelWarning('formControlName', FormControlName, this, this._ngModelWarningConfig);\n          this.viewModel = this.model;\n          this.formDirective.updateModel(this, this.model);\n        }\n      };\n      /** @nodoc */\n      FormControlName.prototype.ngOnDestroy = function () {\n        if (this.formDirective) {\n          this.formDirective.removeControl(this);\n        }\n      };\n      /**\n      * @description\n      * Sets the new value for the view model and emits an `ngModelChange` event.\n      * @param newValue The new value for the view model.\n      */\n      FormControlName.prototype.viewToModelUpdate = function (newValue) {\n        this.viewModel = newValue;\n        this.update.emit(newValue);\n      };\n      Object.defineProperty(FormControlName.prototype, 'path', {\n        /**\n        * @description\n        * Returns an array that represents the path from the top-level form to this control.\n        * Each index is the string name of the control on that level.\n        */\n        get: function () {\n          return controlPath(this.name === null ? this.name : this.name.toString(), this._parent);\n        },\n        enumerable: false,\n        configurable:\n        true\n      });\n      Object.defineProperty(FormControlName.prototype, 'formDirective', {\n        /**\n        * @description\n        * The top-level directive for this group if present, otherwise null.\n        */\n        get:\n        function () {\n          return this._parent ? this._parent.formDirective : null;\n        },\n        enumerable:\n        false,\n        configurable: true\n      });\n      FormControlName.prototype._checkParentType = function () {\n        if (typeof ngDevMode === 'undefined' || ngDevMode) {\n          if (!(this._parent instanceof FormGroupName) &&\n            this._parent instanceof AbstractFormGroupDirective) {\n            ReactiveErrors.ngModelGroupException();\n          }\n          else if (!(this._parent instanceof FormGroupName) &&\n            !(this._parent instanceof FormGroupDirective) &&\n            !(this._parent instanceof FormArrayName)) {\n            ReactiveErrors.controlParentException();\n          }\n        }\n      };\n      FormControlName.prototype._setUpControl = function () {\n        this._checkParentType();\n        this.control = this.formDirective.addControl(this);\n        if (this.control.disabled &&\n          this.valueAccessor.setDisabledState) {\n          this.valueAccessor.setDisabledState(true);\n        }\n        this._added = true;\n      };\n      return FormControlName;\n    } (NgControl));\n    /**\n    * @description\n    * Static property used to track whether any ngModel warnings have been sent across\n    * all instances of FormControlName. Used to support warning config of "once".\n    * @internal\n    */\n    FormControlName._ngModelWarningSentOnce = false;\n    FormControlName.decorators = [\n      { type:\n      core.Directive, args: [\n        { selector: '[formControlName]', providers: [controlNameBinding] }\n      ] }\n    ];\n    FormControlName.ctorParameters = function () { return [\n      { type: ControlContainer, decorators: [\n        { type:\n        core.Optional }, { type: core.Host }, { type: core.SkipSelf }\n      ] },\n      { type: Array, decorators: [\n        { type:\n        core.Optional }, { type: core.Self }, { type: core.Inject, args: [NG_VALIDATORS,] }\n      ] },\n      { type: Array, decorators: [\n        { type: core.Optional }, { type: core.Self }, { type: core.Inject, args: [NG_ASYNC_VALIDATORS,] }\n      ] },\n      { type: Array, decorators: [\n        { type: core.Optional }, { type: core.Self }, { type: core.Inject, args:\n        [NG_VALUE_ACCESSOR,] }\n      ] },\n      { type: String, decorators: [\n        { type: core.Optional }, { type: core.Inject, args:\n        [NG_MODEL_WITH_FORM_CONTROL_WARNING,] }\n      ] }\n    ];\n    FormControlName.propDecorators = {\n      name: [\n        { type: core.Input, args: ['formControlName,'] }\n      ],\n      isDisabled: [\n        { type: core.Input, args: ['disabled,'] }\n      ],\n      model: [\n        { type: core.Input, args: ['ngModel,'] }\n      ],\n      update: [\n        { type: core.Output, args: ['ngModelChange,'] }\n      ]\n    };\n    /**\n    * @description\n    * Provider which adds `RequiredValidator` to the `NG_VALIDATORS` multi-provider list.\n    * @internal\n    var REQUIRED_VALIDATOR = {\n      provide:\n      NG_VALIDATORS,\n      useExisting: core.forwardRef(function () { return RequiredValidator; }),\n      multi:\n      true\n    };\n    /**\n    * @description\n    * Provider which adds `CheckboxRequiredValidator` to the `NG_VALIDATORS` multi-provider list.\n    * @internal\n    var CHECKBOX_REQUIRED_VALIDATOR = {\n
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provide: NG_VALIDATORS,\n    useExisting: core.forwardRef(function () { return CheckboxRequiredValidator;
}),\n    multi: true\n  });\n  /**\n   * @description\n   * A directive that adds the `required` validator to any
controls marked with the\n   * `required` attribute. The directive is provided with the `NG_VALIDATORS` multi-
provider list.\n   * @see [Form Validation](guide/form-validation)\n   * @usageNotes\n   * ### Adding a required validator using template-driven forms\n   * <input name="fullName"
ngModel required>\n   * @ngModule FormsModule\n   * @ngModule ReactiveFormsModule\n
* @publicApi\n   * \n   * var RequiredValidator = /** @class */ (function () {\n   *   function RequiredValidator()\n   *   {\n   *     this._required = false;\n   *   }\n   *   Object.defineProperty(RequiredValidator.prototype, "required", {\n
   *     /**\n   *      * @description\n   *      * Tracks changes to the required attribute bound to this directive.\n
   *      *\n   *      * get: function () {\n   *        return this._required;\n   *      },\n   *      set: function (value) {\n
   *        this._required = value !== null && value !== false && "\"" + value !== 'false';\n   *        if (this._onChange)\n
   *          this._onChange();\n   *      },\n   *      enumerable: false,\n   *      configurable: true\n   *    });\n   *   /**\n   *    * Method that validates whether the control is empty.\n   *    * Returns the validation result if enabled, otherwise
null.\n   *    * @nodoc\n   *    *\n   *    RequiredValidator.prototype.validate = function (control) {\n   *      return
this.required ? Validators.required(control) : null;\n   *    });\n   *   /**\n   *    * Registers a callback function to call
when the validator inputs change.\n   *    * @nodoc\n   *    *\n   *    RequiredValidator.prototype.registerOnChange = function (fn) {\n   *      this._onChange = fn;\n   *    });\n
   *    return RequiredValidator;\n   *  }());\n   *  RequiredValidator.decorators = [\n   *    {\n   *      type: core.Directive, args: [{\n
   *        selector:
'not([type=checkbox])[required][formControlName],:not([type=checkbox])[required][formControl],:not([type=checkbox]
[required][ngModel]'),\n   *        providers: [REQUIRED_VALIDATOR],\n   *        host: {\n
   *          [attr.required]: 'required ? \\'\' : null' }\n   *        },]\n   *      },\n   *    ],\n   *    RequiredValidator.propDecorators = {\n
   *      required: [{ type: core.Input }]\n   *    });\n   *   /**\n   *    * A Directive that adds the `required` validator to checkbox
controls marked with the\n   *    * `required` attribute. The directive is provided with the `NG_VALIDATORS` multi-
provider list.\n   *    * @see [Form Validation](guide/form-validation)\n   *    * @usageNotes\n   *    * ### Adding a required checkbox validator using template-driven forms\n   *    * The following example shows
how to add a checkbox required validator to an input attached to an\n   *    * ngModel binding.\n   *    * <input type="checkbox" name="active" ngModel required>\n   *    * @publicApi\n   *    *\n
   *    @ngModule FormsModule\n   *    @ngModule ReactiveFormsModule\n   *    *\n   *    var CheckboxRequiredValidator =
   *    /** @class */ (function (_super) {\n   *      __extends(CheckboxRequiredValidator, _super);\n   *      function
   *      CheckboxRequiredValidator()\n   *      {\n   *        return _super !== null && _super.apply(this, arguments) || this;\n   *      }\n   *      /**\n   *       * Method that validates whether or not the checkbox has been checked.\n   *       * Returns the validation
result if enabled, otherwise null.\n   *       * @nodoc\n   *       *\n   *       CheckboxRequiredValidator.prototype.validate =
   *       function (control) {\n   *         return this.required ? Validators.requiredTrue(control) : null;\n   *       });\n   *       return
   *       CheckboxRequiredValidator;\n   *     })(RequiredValidator);\n   *     CheckboxRequiredValidator.decorators = [\n   *       {\n
   *         type: core.Directive, args: [{\n   *           selector:
'input[type=checkbox][required][formControlName],input[type=checkbox][required][formControl],input[type=checkbox]
[required][ngModel]'),\n   *           providers: [CHECKBOX_REQUIRED_VALIDATOR],\n
   *           host: {\n   *             [attr.required]: 'required ? \\'\' : null' }\n   *           },]\n   *         },\n   *       ],\n   *       /**\n   *        * @description\n   *        * Provider
which adds `EmailValidator` to the `NG_VALIDATORS` multi-provider list.\n   *        *\n   *        var EMAIL_VALIDATOR
= {\n   *          provide: NG_VALIDATORS,\n   *          useExisting: core.forwardRef(function () { return EmailValidator;
}),\n   *          multi: true\n   *        });\n   *       /**\n   *        * A directive that adds the `email` validator to controls marked with the\n
   *        * `email` attribute. The directive is provided with the `NG_VALIDATORS` multi-provider list.\n   *        * @see
   *        [Form Validation](guide/form-validation)\n   *        * @usageNotes\n   *        * ### Adding an email validator\n
   *        *\n   *        * The following example shows how to add an email validator to an input attached to an ngModel\n   *        * binding.\n   *        * <input type="email" name="email" ngModel email>\n   *        * <input type="email"
name="email" ngModel email="true">\n   *        * <input type="email" name="email" ngModel [email]="true">\n
   *        * @publicApi\n   *        *\n   *        @ngModule FormsModule\n   *        @ngModule ReactiveFormsModule\n

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*\n  var EmailValidator = /** @class */ (function () {\n    function EmailValidator() {\n      this._enabled =
false;\n    }\n    Object.defineProperty(EmailValidator.prototype, 'email', {\n      /**\n      *
      * @description\n      * Tracks changes to the email attribute bound to this directive.\n      */\n      set:
function (value) {\n        this._enabled = value === '' || value === true || value === 'true';\n        if
(this._onChange)\n          this._onChange();\n        },\n        enumerable: false,\n        configurable:
true\n      });\n      /**\n      * Method that validates whether an email address is valid.\n      * Returns the
validation result if enabled, otherwise null.\n      * @nodoc\n      */\n      EmailValidator.prototype.validate =
function (control) {\n        return this._enabled ? Validators.email(control) : null;\n      };
      /**\n      *
      * Registers a callback function to call when the validator inputs change.\n      * @nodoc\n      */\n
      EmailValidator.prototype.registerOnValidatorChange = function (fn) {\n        this._onChange = fn;\n      };
      return EmailValidator;\n    }());\n    EmailValidator.decorators = [\n      { type: core.Directive, args: [{\n
selector: '[email][formControlName],[email][formControl],[email][ngModel]',\n        providers:
[EMAIL_VALIDATOR]\n      },] }\n    ];\n    EmailValidator.propDecorators = {\n      email: [{ type:
core.Input }]\n    };
    /**\n    * @description\n    * Provider which adds `MinLengthValidator` to the
`NG_VALIDATORS` multi-provider list.\n    */\n    var MIN_LENGTH_VALIDATOR = {\n      provide:
NG_VALIDATORS,\n      useExisting: core.forwardRef(function () { return MinLengthValidator; }),\n      multi:
true\n    };
    /**\n    * A directive that adds minimum length validation to controls marked with the `
minlength` attribute. The directive is provided with the `NG_VALIDATORS` multi-provider list.\n    */\n    *
@see [Form Validation](guide/form-validation)\n    * @usageNotes\n    * ### Adding a minimum
length validator\n    * The following example shows how to add a minimum length validator to an input
attached to an\n    * ngModel binding.\n    * ```html\n    * <input name="firstName" ngModel
minlength="4">\n    * ```\n    * @ngModule ReactiveFormsModule\n    * @ngModule FormsModule\n
    * @publicApi\n    */\n    var MinLengthValidator = /** @class */ (function () {\n      function
MinLengthValidator() {\n        this._validator = Validators.nullValidator;\n      }\n      /** @nodoc */\n
      MinLengthValidator.prototype.ngOnChanges = function (changes) {\n        if ('minlength' in changes) {\n
this._createValidator();\n        if (this._onChange)\n          this._onChange();\n        }\n      };
      /**\n      * Method that validates whether the value meets a minimum length requirement.\n      * Returns the
validation result if enabled, otherwise null.\n      * @nodoc\n      */\n      MinLengthValidator.prototype.validate
= function (control) {\n        return this.minlength === null ? null : this._validator(control);\n      };
      /**\n      *
      * Registers a callback function to call when the validator inputs change.\n      * @nodoc\n      */\n
      MinLengthValidator.prototype.registerOnValidatorChange = function (fn) {\n        this._onChange = fn;\n
      };
      MinLengthValidator.prototype._createValidator = function () {\n        this._validator =
Validators.minLength(typeof this.minlength === 'number' ? this.minlength : parseInt(this.minlength, 10));\n
      };
      return MinLengthValidator;\n    }());\n    MinLengthValidator.decorators = [\n      { type: core.Directive,
args: [{\n        selector: '[minlength][formControlName],[minlength][formControl],[minlength][ngModel]',\n
        providers: [MIN_LENGTH_VALIDATOR],\n        host: { '[attr.minlength]': 'minlength ?
minlength : null' }\n      },] }\n    ];\n    MinLengthValidator.propDecorators = {\n      minlength: [{ type:
core.Input }]\n    };
    /**\n    * @description\n    * Provider which adds `MaxLengthValidator` to the
`NG_VALIDATORS` multi-provider list.\n    */\n    var MAX_LENGTH_VALIDATOR = {\n      provide:
NG_VALIDATORS,\n      useExisting: core.forwardRef(function () { return MaxLengthValidator; }),\n      multi:
true\n    };
    /**\n    * A directive that adds max length validation to controls marked with the `
maxlength` attribute. The directive is provided with the `NG_VALIDATORS` multi-provider list.\n    */\n    *
@see [Form Validation](guide/form-validation)\n    * @usageNotes\n    * ### Adding a maximum length
validator\n    * The following example shows how to add a maximum length validator to an input attached to
an\n    * ngModel binding.\n    * ```html\n    * <input name="firstName" ngModel maxlength="25">\n
    * ```\n    * @ngModule ReactiveFormsModule\n    * @ngModule FormsModule\n    * @publicApi\n    */\n
    var MaxLengthValidator = /** @class */ (function () {\n      function MaxLengthValidator() {\n
        this._validator = Validators.nullValidator;\n      }\n      /** @nodoc */\n

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MaxLengthValidator.prototype.ngOnChanges = function (changes) {
  if ('maxlength' in changes) {
    this._createValidator();
    if (this._onChange) this._onChange();
  }
};
/**
 * Method that validates whether the value exceeds the maximum length requirement.
 */
MaxLengthValidator.prototype.validate = function (control) {
  return this.maxlength != null ?
  this._validator(control) : null;
};
/**
 * Registers a callback function to call when the validator
  inputs change.
 */
MaxLengthValidator.prototype.registerOnValidatorChange =
function (fn) {
  this._onChange = fn;
};
MaxLengthValidator.prototype._createValidator =
function () {
  this._validator = Validators.maxLength(typeof this.maxlength === 'number' ? this.maxlength :
  parseInt(this.maxlength, 10));
  return MaxLengthValidator();
};
MaxLengthValidator.decorators = [
  { type: core.Directive, args: [selector:
  '[maxlength][formControlName],[maxlength][formControl],[maxlength][ngModel]',
  providers:
  [MAX_LENGTH_VALIDATOR],
  host: { '[attr.maxlength]': 'maxlength ? maxlength : null' }
  ] }
];
MaxLengthValidator.propDecorators = {
  maxlength: [
    { type: core.Input }
  ]
};
/**
 * Provider which adds `PatternValidator` to the `NG_VALIDATORS` multi-provider list.
 */
var PATTERN_VALIDATOR = {
  provide: NG_VALIDATORS,
  useExisting:
  core.forwardRef(function () { return PatternValidator; }),
  multi: true
};
/**
 * @description
 * A directive that adds regex pattern validation to controls marked with the
  `pattern` attribute. The regex must
  match the entire control value.
  The directive is provided with the `NG_VALIDATORS` multi-provider list.
  @see [Form Validation](guide/form-validation)
  @usageNotes
  ### Adding a
  pattern validator
  The following example shows how to add a pattern validator to an input attached to
  an ngModel binding.
  ```html
 <input name="firstName" ngModel pattern="[a-zA-Z
]*">
  ```
  @ngModule ReactiveFormsModule
  @ngModule FormsModule
  @publicApi
  var PatternValidator = /** @class */ (function () {
    function PatternValidator() {
      this._validator = Validators.nullValidator;
    }
    /** @nodoc */
    PatternValidator.prototype.ngOnChanges = function (changes) {
      if ('pattern' in changes) {
        this._createValidator();
        if (this._onChange) this._onChange();
      }
    };
    /**
     * Method that validates whether the value matches the the pattern requirement.
     */
    PatternValidator.prototype.validate = function (control) {
      return this._validator(control);
    };
    /**
     * Registers a callback function to call when the validator inputs change.
     */
    PatternValidator.prototype.registerOnValidatorChange = function (fn) {
      this._onChange = fn;
    };
    PatternValidator.prototype._createValidator = function () {
      this._validator =
      Validators.pattern(this.pattern);
      return PatternValidator();
    };
    PatternValidator.decorators = [
      { type: core.Directive, args: [
        selector:
        '[pattern][formControlName],[pattern][formControl],[pattern][ngModel]',
        providers:
        [PATTERN_VALIDATOR],
        host: { '[attr.pattern]': 'pattern ? pattern : null' }
      ] }
    ];
    PatternValidator.propDecorators = {
      pattern: [
        { type: core.Input }
      ]
    };
    /**
     * @license
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     license that can be
     found in the LICENSE file at https://angular.io/license
     */
    var
    SHARED_FORM_DIRECTIVES = [
      NgNoValidate,
      NgSelectOption,
      NgSelectMultipleOption,
      DefaultValueAccessor,
      NumberValueAccessor,
      RangeValueAccessor,
      CheckboxControlValueAccessor,
      SelectControlValueAccessor,
      SelectMultipleControlValueAccessor,
      RadioControlValueAccessor,
      NgControlStatus,
      NgControlStatusGroup,
      RequiredValidator,
      MinLengthValidator,
      MaxLengthValidator,
      PatternValidator,
      CheckboxRequiredValidator,
      EmailValidator
    ];
    var
    TEMPLATE_DRIVEN_DIRECTIVES = [NgModel, NgModelGroup, NgForm];
    var
    REACTIVE_DRIVEN_DIRECTIVES = [FormControlDirective, FormGroupDirective, FormControlName,
    FormGroupName, FormArrayName];
    /**
     * Internal module used for sharing directives between
     FormsModule and ReactiveFormsModule
     */
    var InternalFormsSharedModule = /** @class */ (function ()

```

```

{\n    function InternalFormsSharedModule() {\n    }\n    return InternalFormsSharedModule;\n  });\n
InternalFormsSharedModule.decorators = [\n    { type: core.NgModule, args: [{\n        declarations:\n        SHARED_FORM_DIRECTIVES,\n        exports: SHARED_FORM_DIRECTIVES,\n        },] }\n
];\n\n /**\n * @license\n * Copyright Google LLC All Rights Reserved.\n * Use of this source code\n
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*\n * function isAbstractControlOptions(options) {\n    return options.asyncValidators !== undefined ||\n
options.validators !== undefined ||\n    options.updateOn !== undefined;\n  }\n  /**\n * @description\n
* Creates an `AbstractControl` from a user-specified configuration.\n * The `FormBuilder` provides\n
syntactic sugar that shortens creating instances of a `FormControl`,\n * `FormGroup`, or `FormArray`. It reduces\n
the amount of boilerplate needed to build complex\n * forms.\n * @see [Reactive Forms\n
Guide](/guide/reactive-forms)\n * @publicApi\n *\n var FormBuilder = /** @class */ (function () {\n
    function FormBuilder() {\n    }\n    /**\n * @description\n * Construct a new `FormGroup`\n
instance.\n * @param controlsConfig A collection of child controls. The key for each child is the\n
name\n * under which it is registered.\n * @param options Configuration options object for the\n
`FormGroup`. The object can\n * have two shapes:\n * 1) `AbstractControlOptions` object\n
(preferred), which consists of:\n * * `validators`: A synchronous validator function, or an array of validator\n
functions\n * * `asyncValidators`: A single async validator or array of async validator functions\n * *  

`updateOn`: The event upon which the control should be updated (options: 'change' | 'blur' | \n * submit')\n
*\n * 2) Legacy configuration object, which consists of:\n * * `validator`: A synchronous validator\n
function, or an array of validator functions\n * * `asyncValidator`: A single async validator or array of async\n
validator functions\n * \n * \n FormBuilder.prototype.group = function (controlsConfig, options) {\n
    if (options === void 0) { options = null; }\n    var controls = this._reduceControls(controlsConfig);\n
var validators = null;\n    var asyncValidators = null;\n    var updateOn = undefined;\n    if (options !=  

null) {\n        if (isAbstractControlOptions(options)) {\n            // `options` are `AbstractControlOptions`\n
validators = options.validators != null ? options.validators : null;\n            asyncValidators =  

options.asyncValidators != null ? options.asyncValidators : null;\n            updateOn = options.updateOn != null  

? options.updateOn : undefined;\n        }\n        else {\n            // `options` are legacy form group  

options\n            validators = options['validator'] != null ? options['validator'] : null;\n
asyncValidators = options['asyncValidator'] != null ? options['asyncValidator'] : null;\n        }\n    }\n
    return new FormGroup(controls, { asyncValidators: asyncValidators, updateOn: updateOn, validators: validators  

});\n  };\n  /**\n * @description\n * Construct a new `FormControl` with the given state, validators  

and options.\n * @param formState Initializes the control with an initial state value, or\n * with  

an object that contains both a value and a disabled status.\n * @param validatorOrOpts A synchronous  

validator function, or an array of\n * such functions, or an `AbstractControlOptions` object that contains\n
* validation functions and a validation trigger.\n * @param asyncValidator A single async validator or  

array of async validator\n * functions.\n * @usageNotes\n * ### Initialize a control  

as disabled\n * The following example returns a control with an initial value in a disabled state.\n
*\n * <code-example path="forms/ts/formBuilder/form_builder_example.ts" region="disabled-control">\n
* </code-example>\n * \n FormBuilder.prototype.control = function (formState, validatorOrOpts,  

asyncValidator) {\n    return new FormControl(formState, validatorOrOpts, asyncValidator);\n  };\n
  /**\n * Constructs a new `FormArray` from the given array of configurations,\n * validators and  

options.\n * @param controlsConfig An array of child controls or control configs. Each\n * child  

control is given an index when it is registered.\n * @param validatorOrOpts A synchronous validator  

function, or an array of\n * such functions, or an `AbstractControlOptions` object that contains\n
* validation functions and a validation trigger.\n * @param asyncValidator A single async validator or  

array of async validator\n * functions.\n * \n FormBuilder.prototype.array = function (controlsConfig,  

validatorOrOpts, asyncValidator) {\n    var _this = this;\n    var controls = controlsConfig.map(function (c)  

{ return _this._createControl(c); });\n    return new FormArray(controls, validatorOrOpts, asyncValidator);\n
  }\n

```



```

};\n      /** @internal */\n      FormBuilder.prototype._reduceControls = function (controlsConfig) {\n        var\n        _this = this;\n        var controls = {};\n        Object.keys(controlsConfig).forEach(function (controlName) {\n          controls[controlName] = _this._createControl(controlsConfig[controlName]);\n        });\n        return\n        controls;\n      });\n      /** @internal */\n      FormBuilder.prototype._createControl = function (controlConfig)\n      {\n        if (controlConfig instanceof FormControl || controlConfig instanceof FormGroup ||\n        controlConfig instanceof FormArray) {\n          return controlConfig;\n        } else if\n        (Array.isArray(controlConfig)) {\n          var value = controlConfig[0];\n          var validator =\n          controlConfig.length > 1 ? controlConfig[1] : null;\n          var asyncValidator = controlConfig.length > 2 ?\n          controlConfig[2] : null;\n          return this.control(value, validator, asyncValidator);\n        } else {\n          return this.control(controlConfig);\n        }\n      });\n      return FormBuilder;\n    }());\n    FormBuilder.decorators = [\n      { type: core.Injectable }\n    ];\n\n    /**\n     * @license\n     * Copyright Google\n     * LLC All Rights Reserved.\n     * Use of this source code is governed by an MIT-style license that can be\n     * found in the LICENSE file at https://angular.io/license\n     */\n\n    /**\n     * @publicApi\n     */\n    var VERSION\n    = new core.Version('11.0.2');\n\n    /**\n     * @license\n     * Copyright Google LLC All Rights Reserved.\n     * Use of this source code is governed by an MIT-style license that can be\n     * found in the LICENSE file at\n     * https://angular.io/license\n     */\n\n    /**\n     * Exports the required providers and directives for template-driven\n     * forms,\n     * making them available for import by NgModules that import this module.\n     * @see [Forms\n     * Overview](/guide/forms-overview)\n     * @see [Template-driven Forms Guide](/guide/forms)\n     */\n\n    /**\n     * @publicApi\n     */\n    var FormsModule = /** @class */ (function () {\n      function FormsModule() {\n      }\n\n      return FormsModule;\n    }());\n    FormsModule.decorators = [\n      { type: core.NgModule, args: [{\n        declarations: TEMPLATE_DRIVEN_DIRECTIVES,\n        providers: [RadioControlRegistry],\n        exports: [InternalFormsSharedModule, TEMPLATE_DRIVEN_DIRECTIVES]\n      }]}]\n    ];\n\n    /**\n     * Exports the required infrastructure and directives for reactive forms,\n     * making them available for import by\n     * NgModules that import this module.\n     * @see [Forms Overview](guide/forms-overview)\n     * @see\n     * [Reactive Forms Guide](guide/reactive-forms)\n     */\n\n    /**\n     * @publicApi\n     */\n    var ReactiveFormsModule = /**\n     * @class */ (function () {\n      function ReactiveFormsModule() {\n      }\n\n      /**\n       * @description\n       * Provides options for configuring the reactive forms module.\n       * @param opts An object of\n       * configuration options\n       * * * `warnOnNgModelWithFormControl` Configures when to emit a warning when an\n       * `ngModel`\n       * binding is used with reactive form directives.\n       */\n      ReactiveFormsModule.withConfig\n      = function (opts) {\n        return {\n          ngModule: ReactiveFormsModule,\n          providers: [\n            {\n              provide: NG_MODEL_WITH_FORM_CONTROL_WARNING, useValue:\n              opts.warnOnNgModelWithFormControl\n            }\n          ]\n        };\n      }\n\n      return ReactiveFormsModule;\n    }());\n    ReactiveFormsModule.decorators = [\n      { type: core.NgModule, args: [{\n        declarations:\n        [REACTIVE_DRIVEN_DIRECTIVES],\n        providers: [FormBuilder, RadioControlRegistry],\n        exports: [InternalFormsSharedModule, REACTIVE_DRIVEN_DIRECTIVES]\n      }]}]\n    ];\n\n    /**\n     * @license\n     * Copyright Google LLC All Rights Reserved.\n     * Use of this source code is governed by\n     * an MIT-style license that can be\n     * found in the LICENSE file at https://angular.io/license\n     */\n\n    /**\n     * @license\n     * Copyright Google LLC All Rights Reserved.\n     * Use of this source code is governed by an\n     * MIT-style license that can be\n     * found in the LICENSE file at https://angular.io/license\n     */\n\n    /**\n     * @license\n     * Copyright Google LLC\n     * All Rights Reserved.\n     * Use of this source code is governed by an MIT-style license that can be\n     * found in the LICENSE file at https://angular.io/license\n     */\n\n    /**\n     * @license\n     * Copyright Google LLC\n     * All Rights Reserved.\n     * Use of this source code is governed by an MIT-style license that can be\n     * found in the LICENSE file at https://angular.io/license\n     */\n\n    /**\n     * Generated bundle index. Do not\n     * edit.\n     */\n\n    exports.AbstractControl = AbstractControl;\n    exports.AbstractControlDirective =\n    AbstractControlDirective;\n    exports.AbstractFormGroupDirective = AbstractFormGroupDirective;\n    exports.COMPOSITION_BUFFER_MODE = COMPOSITION_BUFFER_MODE;\n    exports.CheckboxControlValueAccessor = CheckboxControlValueAccessor;\n    exports.CheckboxRequiredValidator = CheckboxRequiredValidator;\n    exports.ControlContainer =\n    ControlContainer;\n    exports.DefaultValueAccessor = DefaultValueAccessor;\n    exports.EmailValidator =

```

```

EmailValidator;\n exports.FormArray = FormArray;\n exports.FormArrayName = FormArrayName;\n
exports FormBuilder = FormBuilder;\n exports FormControl = FormControl;\n exports FormControlDirective =
FormControlDirective;\n exports FormControlName = FormControlName;\n exports FormGroup =
FormGroup;\n exports FormGroupDirective = FormGroupDirective;\n exports FormGroupName =
FormGroupName;\n exports FormsModule = FormsModule;\n exports MaxLengthValidator =
MaxLengthValidator;\n exports MinLengthValidator = MinLengthValidator;\n
exports NG_ASYNC_VALIDATORS = NG_ASYNC_VALIDATORS;\n exports NG_VALIDATORS =
NG_VALIDATORS;\n exports NG_VALUE_ACCESSOR = NG_VALUE_ACCESSOR;\n exports NgControl
= NgControl;\n exports NgControlStatus = NgControlStatus;\n exports NgControlStatusGroup =
NgControlStatusGroup;\n exports NgForm = NgForm;\n exports NgModel = NgModel;\n
exports NgModelGroup = NgModelGroup;\n exports NgSelectOption = NgSelectOption;\n
exports.NumberValueAccessor = NumberValueAccessor;\n exports.PatternValidator = PatternValidator;\n
exports.RadioControlValueAccessor = RadioControlValueAccessor;\n exports.RangeValueAccessor =
RangeValueAccessor;\n exports.ReactiveFormsModule = ReactiveFormsModule;\n exports.RequiredValidator =
RequiredValidator;\n exports.SelectControlValueAccessor = SelectControlValueAccessor;\n
exports.SelectMultipleControlValueAccessor = SelectMultipleControlValueAccessor;\n exports.VERSION =
VERSION;\n exports.Validators = Validators;\n exports.InternalFormsSharedModule =
InternalFormsSharedModule;\n exports.NgNoValidate = NgNoValidate;\n exports.NgSelectMultipleOption =
NgSelectMultipleOption;\n exports.angular_packages_forms_forms_a = SHARED_FORM_DIRECTIVES;\n
exports.angular_packages_forms_forms_b = TEMPLATE_DRIVEN_DIRECTIVES;\n
exports.angular_packages_forms_forms_ba = CHECKBOX_REQUIRED_VALIDATOR;\n
exports.angular_packages_forms_forms_bb = EMAIL_VALIDATOR;\n
exports.angular_packages_forms_forms_bc = MIN_LENGTH_VALIDATOR;\n
exports.angular_packages_forms_forms_bd = MAX_LENGTH_VALIDATOR;\n
exports.angular_packages_forms_forms_be = PATTERN_VALIDATOR;\n
exports.angular_packages_forms_forms_c = REACTIVE_DRIVEN_DIRECTIVES;\n
exports.angular_packages_forms_forms_d = InternalFormsSharedModule;\n
exports.angular_packages_forms_forms_e = CHECKBOX_VALUE_ACCESSOR;\n
exports.angular_packages_forms_forms_f = DEFAULT_VALUE_ACCESSOR;\n
exports.angular_packages_forms_forms_g = AbstractControlStatus;\n exports.angular_packages_forms_forms_h
= ngControlStatusHost;\n exports.angular_packages_forms_forms_i = formDirectiveProvider;\n
exports.angular_packages_forms_forms_j = formControlBinding;\n exports.angular_packages_forms_forms_k =
modelGroupProvider;\n exports.angular_packages_forms_forms_l = NUMBER_VALUE_ACCESSOR;\n
exports.angular_packages_forms_forms_m = RADIO_VALUE_ACCESSOR;\n
exports.angular_packages_forms_forms_n = RadioControlRegistry;\n exports.angular_packages_forms_forms_o
= RANGE_VALUE_ACCESSOR;\n exports.angular_packages_forms_forms_p =
NG_MODEL_WITH_FORM_CONTROL_WARNING;\n exports.angular_packages_forms_forms_q =
formControlBinding$1;\n exports.angular_packages_forms_forms_r = controlNameBinding;\n
exports.angular_packages_forms_forms_s = formDirectiveProvider$1;\n
exports.angular_packages_forms_forms_t = formGroupNameProvider;\n
exports.angular_packages_forms_forms_u = formArrayNameProvider;\n
exports.angular_packages_forms_forms_v = SELECT_VALUE_ACCESSOR;\n
exports.angular_packages_forms_forms_w = SELECT_MULTIPLE_VALUE_ACCESSOR;\n
exports.angular_packages_forms_forms_x = NgSelectMultipleOption;\n
exports.angular_packages_forms_forms_y = NgNoValidate;\n exports.angular_packages_forms_forms_z =
REQUIRED_VALIDATOR;\n\n Object.defineProperty(exports, '__esModule', { value: true });\n\n\n));\n\n//#
 sourceMappingURL=forms.umd.js.map\n"}]

```

Found in path(s):

* /opt/cola/permits/1358260431_1657134847.3311746/0/forms-11-0-2-tgz/package/bundles/forms.umd.min.js.map

1.433 json2csv 4.5.3

1.433.1 Available under license :

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1.434 libpython 3.6.9-1~18.04ubuntu1.7

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=====

A. HISTORY OF THE SOFTWARE

=====

Python was created in the early 1990s by Guido van Rossum at Stichting Mathematisch Centrum (CWI, see <http://www.cwi.nl>) in the Netherlands as a successor of a language called ABC. Guido remains Python's principal author, although it includes many contributions from others.

In 1995, Guido continued his work on Python at the Corporation for National Research Initiatives (CNRI, see <http://www.cnri.reston.va.us>) in Reston, Virginia where he released several versions of the software.

In May 2000, Guido and the Python core development team moved to BeOpen.com to form the BeOpen PythonLabs team. In October of the same year, the PythonLabs team moved to Digital Creations (now Zope Corporation, see <http://www.zope.com>). In 2001, the Python Software Foundation (PSF, see <http://www.python.org/psf/>) was formed, a non-profit organization created specifically to own Python-related Intellectual Property. Zope Corporation is a sponsoring member of the PSF.

All Python releases are Open Source (see <http://www.opensource.org> for the Open Source Definition). Historically, most, but not all, Python releases have also been GPL-compatible; the table below summarizes the various releases.

| Release | Derived from | Year | Owner | GPL-compatible? (1) |
|----------------|--------------|-----------|------------|---------------------|
| 0.9.0 thru 1.2 | | 1991-1995 | CWI | yes |
| 1.3 thru 1.5.2 | 1.2 | 1995-1999 | CNRI | yes |
| 1.6 | 1.5.2 | 2000 | CNRI | no |
| 2.0 | 1.6 | 2000 | BeOpen.com | no |
| 1.6.1 | 1.6 | 2001 | CNRI | yes (2) |
| 2.1 | 2.0+1.6.1 | 2001 | PSF | no |
| 2.0.1 | 2.0+1.6.1 | 2001 | PSF | yes |
| 2.1.1 | 2.1+2.0.1 | 2001 | PSF | yes |
| 2.2 | 2.1.1 | 2001 | PSF | yes |
| 2.1.2 | 2.1.1 | 2002 | PSF | yes |
| 2.1.3 | 2.1.2 | 2002 | PSF | yes |
| 2.2 and above | 2.1.1 | 2001-now | PSF | yes |

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(1) GPL-compatible doesn't mean that we're distributing Python under the GPL. All Python licenses, unlike the GPL, let you distribute a modified version without making your changes open source. The GPL-compatible licenses make it possible to combine Python with other software that is released under the GPL; the others don't.

(2) According to Richard Stallman, 1.6.1 is not GPL-compatible, because its license has a choice of law clause. According to CNRI, however, Stallman's lawyer has told CNRI's lawyer that 1.6.1 is "not incompatible" with the GPL.

Thanks to the many outside volunteers who have worked under Guido's direction to make these releases possible.

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Mersenne Twister

The ``_random'` module includes code based on a download from
``http://www.math.keio.ac.jp/~matumoto/MT2002/emt19937ar.html'`. The
following are the verbatim comments from the original code:

A C-program for MT19937, with initialization improved 2002/1/26.
Coded by Takuji Nishimura and Makoto Matsumoto.

Before using, initialize the state by using `init_genrand(seed)`
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Any feedback is very welcome.

<http://www.math.keio.ac.jp/matumoto/emt.html>

email: matumoto@math.keio.ac.jp

Sockets

The `socket' module uses the functions, `getaddrinfo', and `getnameinfo', which are coded in separate source files from the WIDE Project, <http://www.wide.ad.jp/about/index.html>.

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Modified by Jack Jansen, CWI, July 1995:

- Use binascii module to do the actual line-by-line conversion between ascii and binary. This results in a 1000-fold speedup. The C

- version is still 5 times faster, though.
- Arguments more compliant with python standard

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/* Win9X Beep and platform identification added by Uncle Timmy */

Files: Tools/pybench/*

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1.435 libpython3-6-stdlib 3.6.9-

1~18.04ubuntu1.7

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A. HISTORY OF THE SOFTWARE

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Python was created in the early 1990s by Guido van Rossum at Stichting Mathematisch Centrum (CWI, see <http://www.cwi.nl>) in the Netherlands as a successor of a language called ABC. Guido remains Python's principal author, although it includes many contributions from others.

In 1995, Guido continued his work on Python at the Corporation for National Research Initiatives (CNRI, see <http://www.cnri.reston.va.us>) in Reston, Virginia where he released several versions of the software.

In May 2000, Guido and the Python core development team moved to BeOpen.com to form the BeOpen PythonLabs team. In October of the same year, the PythonLabs team moved to Digital Creations (now Zope Corporation, see <http://www.zope.com>). In 2001, the Python Software Foundation (PSF, see <http://www.python.org/psf/>) was formed, a non-profit organization created specifically to own Python-related Intellectual Property. Zope Corporation is a sponsoring member of the PSF.

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|----------------|--------------|-----------|------------|---------------------|
| 0.9.0 thru 1.2 | | 1991-1995 | CWI | yes |
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| 1.6 | 1.5.2 | 2000 | CNRI | no |
| 2.0 | 1.6 | 2000 | BeOpen.com | no |
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| 2.1.1 | 2.1+2.0.1 | 2001 | PSF | yes |
| 2.2 | 2.1.1 | 2001 | PSF | yes |
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Mersenne Twister

The ``_random'` module includes code based on a download from ``http://www.math.keio.ac.jp/~matumoto/MT2002/emt19937ar.html'`. The following are the verbatim comments from the original code:

A C-program for MT19937, with initialization improved 2002/1/26.
Coded by Takuji Nishimura and Makoto Matsumoto.

Before using, initialize the state by using `init_genrand(seed)`
or `init_by_array(init_key, key_length)`.

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Any feedback is very welcome.

<http://www.math.keio.ac.jp/matumoto/emt.html>

email: matumoto@math.keio.ac.jp

Sockets

The ``socket'` module uses the functions, ``getaddrinfo'`, and ``getnameinfo'`, which are coded in separate source files from the WIDE Project, <http://www.wide.ad.jp/about/index.html>.

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Modified by Jack Jansen, CWI, July 1995:

- Use binascii module to do the actual line-by-line conversion between ascii and binary. This results in a 1000-fold speedup. The C version is still 5 times faster, though.
- Arguments more compliant with python standard

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-- \$Id: COPYING,v 1.6 2018/01/01 12:00:00 tom Exp \$

Upstream source <https://invisible-island.net/ncurses/ncurses.html>

This package is used for testing builds of ncurses.

Current ncurses maintainer: Thomas Dickey <dickey@invisible-island.net>

Files: *

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Files: aclocal.m4 package

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1.439 jboss-logging 3.4.3.Final

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1.440 gobject-introspection 1.56.1-1

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1.444 icu 60.2 3ubuntu3.2

1.444.1 Available under license :

This package was debianized by Jay Berkenbilt <qjb@debian.org> on August 5, 2005.

The packaging was taken over by Laszlo Boszormenyi (GCS) <gcs@debian.org> on Tue, 17 Mar 2015.

The original source was downloaded from http://icu-project.org/download/latest_milestone.html

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```
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```

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```
## Commands to generate dependency files
```

```
GEN_DEPS.c= $(CC) -E -MM $(DEFS) $(CPPFLAGS)
```

```
GEN_DEPS.cc= $(CXX) -E -MM $(DEFS) $(CPPFLAGS)
```

```
## Flags for position independent code
```

```
SHAREDLIBCFLAGS = -fPIC
```

```
SHAREDLIBCXXFLAGS = -fPIC
```

```
SHAREDLIBCPPFLAGS = -DPIC
```

```
## Additional flags when building libraries and with threads
```

```

THREADSCPPFLAGS = -D_REENTRANT
LIBCPPFLAGS =

## Compiler switch to embed a runtime search path
LD_RPATH=
LD_RPATH_PRE= -Wl,-rpath,

## Compiler switch to embed a library name
LD_SONAME = -Wl,-soname -Wl,$(notdir $(MIDDLE_SO_TARGET))

## Shared library options
LD_SOOPTIONS= -Wl,-Bsymbolic

## Shared object suffix
SO = so
## Non-shared intermediate object suffix
STATIC_O = ao

## Compilation rules
%.${STATIC_O}: $(srcdir)/%.c
$(COMPILE.c) $(STATICCPPFLAGS) $(STATICCFLAGS) -o $@ $<
%.o: $(srcdir)/%.c
$(COMPILE.c) $(DYNAMICCPPFLAGS) $(DYNAMICCFLAGS) -o $@ $<

%.${STATIC_O}: $(srcdir)/%.cpp
$(COMPILE.cc) $(STATICCPPFLAGS) $(STATICCXXFLAGS) -o $@ $<
%.o: $(srcdir)/%.cpp
$(COMPILE.cc) $(DYNAMICCPPFLAGS) $(DYNAMICCXXFLAGS) -o $@ $<

## Dependency rules
%.d: $(srcdir)/%.c
@echo "generating dependency information for $<"
@$(SHELL) -ec '$(GEN_DEPS.c) $< \
| sed "s^\($*\)\.o[ :]*^1.o $@ : /g\" > $@; \
[ -s $@ ] || rm -f $@'

%.d: $(srcdir)/%.cpp
@echo "generating dependency information for $<"
@$(SHELL) -ec '$(GEN_DEPS.cc) $< \
| sed "s^\($*\)\.o[ :]*^1.o $@ : /g\" > $@; \
[ -s $@ ] || rm -f $@'

## Versioned libraries rules

%.${SO}.${SO_TARGET_VERSION_MAJOR}: %.${SO}.${SO_TARGET_VERSION}
$(RM) $@ && ln -s ${<F} $@
%.${SO}: %.${SO}.${SO_TARGET_VERSION_MAJOR}

```

\$(RM) \$@ && ln -s \${*F}.\$(SO).\$(SO_TARGET_VERSION) \$@

Bind internal references

LDflags that pkgdata will use

BIR_LDFLAGS= -Wl,-Bsymbolic

Dependencies [i.e. map files] for the final library

BIR_DEPS=

Remove shared library 's'

STATIC_PREFIX_WHEN_USED =

STATIC_PREFIX =

End BSD-specific setup

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1.446 adduser 3.116ubuntu1

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1.447 python-certifi 2019.09.11

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@(#) \$RCSfile: certdata.txt,v \$ \$Revision: 1.80 \$ \$Date: 2011/11/03 15:11:58 \$

1.448 ncurses 6.1 1ubuntu1.18.04

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1.449 jasmine-core 3.6.0

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1.450 spring-framework 5.3.18

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1.452 commons-cli 1.3.1

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* /opt/cola/permits/1141636852_1615091522.3/0/jmespath-java-1-11-553-sources-jar/com/amazonaws/jmespath/JmesPathFilter.java
* /opt/cola/permits/1141636852_1615091522.3/0/jmespath-java-1-11-553-sources-jar/com/amazonaws/jmespath/ObjectMapperSingleton.java
* /opt/cola/permits/1141636852_1615091522.3/0/jmespath-java-1-11-553-sources-jar/com/amazonaws/jmespath/JmesPathFlatten.java
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* /opt/cola/permits/1141636852_1615091522.3/0/jmespath-java-1-11-553-sources-jar/com/amazonaws/jmespath/NumericComparator.java
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* /opt/cola/permits/1141636852_1615091522.3/0/jmespath-java-1-11-553-sources-

jar/com/amazonaws/jmespath/JmesPathContainsFunction.java
* /opt/cola/permits/1141636852_1615091522.3/0/jmespath-java-1-11-553-sources-jar/com/amazonaws/jmespath/CamelCaseUtils.java
* /opt/cola/permits/1141636852_1615091522.3/0/jmespath-java-1-11-553-sources-jar/com/amazonaws/jmespath/OpGreaterThan.java
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1.455 cpp 8.4.0 1ubuntu1~18.04

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1.456 json-path 2.6.0

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1.459 jackson-databind 2.13.2.2

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1.460 config 1.3.3

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1.461 activation 1.2.2

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 */
```

Found in path(s):

```
* /opt/cola/permits/1141637187_1615091544.16/0/smoothie-map-2-0-2-sources-
jar/io/timeandspace/smoothie/EquivalenceBasedHashFunction.java
* /opt/cola/permits/1141637187_1615091544.16/0/smoothie-map-2-0-2-sources-
jar/io/timeandspace/collect/package-info.java
* /opt/cola/permits/1141637187_1615091544.16/0/smoothie-map-2-0-2-sources-
jar/io/timeandspace/smoothie/ComparableClassValue.java
* /opt/cola/permits/1141637187_1615091544.16/0/smoothie-map-2-0-2-sources-
jar/io/timeandspace/collect/Equivalence.java
* /opt/cola/permits/1141637187_1615091544.16/0/smoothie-map-2-0-2-sources-
```

jar/io/timeandspace/collect/StatelessEquivalence.java
* /opt/cola/permits/1141637187_1615091544.16/0/smoothie-map-2-0-2-sources-
jar/io/timeandspace/smoothie/Utils.java
* /opt/cola/permits/1141637187_1615091544.16/0/smoothie-map-2-0-2-sources-
jar/io/timeandspace/smoothie/ContinuousSegments.java
* /opt/cola/permits/1141637187_1615091544.16/0/smoothie-map-2-0-2-sources-
jar/io/timeandspace/smoothie/FilteringIterator.java
* /opt/cola/permits/1141637187_1615091544.16/0/smoothie-map-2-0-2-sources-
jar/io/timeandspace/collect/ObjSet.java
* /opt/cola/permits/1141637187_1615091544.16/0/smoothie-map-2-0-2-sources-
jar/io/timeandspace/smoothie/KeySearchStats.java
* /opt/cola/permits/1141637187_1615091544.16/0/smoothie-map-2-0-2-sources-
jar/io/timeandspace/smoothie/OptimizationObjective.java
* /opt/cola/permits/1141637187_1615091544.16/0/smoothie-map-2-0-2-sources-
jar/io/timeandspace/smoothie/LongMath.java
* /opt/cola/permits/1141637187_1615091544.16/0/smoothie-map-2-0-2-sources-
jar/io/timeandspace/collect/ObjCollection.java
* /opt/cola/permits/1141637187_1615091544.16/0/smoothie-map-2-0-2-sources-
jar/io/timeandspace/smoothie/CompileTimeConstant.java
* /opt/cola/permits/1141637187_1615091544.16/0/smoothie-map-2-0-2-sources-
jar/io/timeandspace/smoothie/DefaultHashFunction.java
* /opt/cola/permits/1141637187_1615091544.16/0/smoothie-map-2-0-2-sources-
jar/io/timeandspace/collect/map/KeyValue.java
* /opt/cola/permits/1141637187_1615091544.16/0/smoothie-map-2-0-2-sources-
jar/io/timeandspace/smoothie/package-info.java
* /opt/cola/permits/1141637187_1615091544.16/0/smoothie-map-2-0-2-sources-
jar/io/timeandspace/smoothie/AmortizedPerSegment.java
* /opt/cola/permits/1141637187_1615091544.16/0/smoothie-map-2-0-2-sources-
jar/io/timeandspace/smoothie/SmoothieMapWithCustomKeyAndValueEquivalences.java
* /opt/cola/permits/1141637187_1615091544.16/0/smoothie-map-2-0-2-sources-
jar/io/timeandspace/smoothie/AmortizedPerOrder.java
* /opt/cola/permits/1141637187_1615091544.16/0/smoothie-map-2-0-2-sources-
jar/io/timeandspace/smoothie/ObjectSize.java
* /opt/cola/permits/1141637187_1615091544.16/0/smoothie-map-2-0-2-sources-
jar/io/timeandspace/smoothie/VisibleForTesting.java
* /opt/cola/permits/1141637187_1615091544.16/0/smoothie-map-2-0-2-sources-
jar/io/timeandspace/smoothie/Segments.java
* /opt/cola/permits/1141637187_1615091544.16/0/smoothie-map-2-0-2-sources-
jar/io/timeandspace/smoothie/HashCodeDistribution.java
* /opt/cola/permits/1141637187_1615091544.16/0/smoothie-map-2-0-2-sources-
jar/io/timeandspace/collect/map/package-info.java
* /opt/cola/permits/1141637187_1615091544.16/0/smoothie-map-2-0-2-sources-
jar/io/timeandspace/smoothie/AbstractSegment.java
* /opt/cola/permits/1141637187_1615091544.16/0/smoothie-map-2-0-2-sources-
jar/io/timeandspace/collect/map/ObjObjMap.java
* /opt/cola/permits/1141637187_1615091544.16/0/smoothie-map-2-0-2-sources-
jar/io/timeandspace/smoothie/IntMath.java
* /opt/cola/permits/1141637187_1615091544.16/0/smoothie-map-2-0-2-sources-

jar/io/timeandspace/smoothie/ColdPath.java
* /opt/cola/permits/1141637187_1615091544.16/0/smoothie-map-2-0-2-sources-
jar/io/timeandspace/smoothie/PoorHashCodeDistributionOccasion.java
* /opt/cola/permits/1141637187_1615091544.16/0/smoothie-map-2-0-2-sources-
jar/io/timeandspace/smoothie/BitSetAndState.java
* /opt/cola/permits/1141637187_1615091544.16/0/smoothie-map-2-0-2-sources-
jar/io/timeandspace/smoothie/InterleavedSegment_BitSetAndStateArea.java
* /opt/cola/permits/1141637187_1615091544.16/0/smoothie-map-2-0-2-sources-
jar/io/timeandspace/smoothie/SmoothieMapStats.java
* /opt/cola/permits/1141637187_1615091544.16/0/smoothie-map-2-0-2-sources-
jar/io/timeandspace/smoothie/InflatedSegmentQueryContext.java
* /opt/cola/permits/1141637187_1615091544.16/0/smoothie-map-2-0-2-sources-
jar/io/timeandspace/smoothie/SmoothieMapWithCustomKeyEquivalence.java
* /opt/cola/permits/1141637187_1615091544.16/0/smoothie-map-2-0-2-sources-
jar/io/timeandspace/smoothie/BinomialDistributionInverseCdfApproximation.java
* /opt/cola/permits/1141637187_1615091544.16/0/smoothie-map-2-0-2-sources-
jar/io/timeandspace/smoothie/OrdinarySegmentStats.java
* /opt/cola/permits/1141637187_1615091544.16/0/smoothie-map-2-0-2-sources-
jar/io/timeandspace/smoothie/IsFullCapacitySegmentBitSet.java
* /opt/cola/permits/1141637187_1615091544.16/0/smoothie-map-2-0-2-sources-
jar/io/timeandspace/smoothie/OutboundOverflowCounts.java
* /opt/cola/permits/1141637187_1615091544.16/0/smoothie-map-2-0-2-sources-
jar/io/timeandspace/smoothie/RarelyCalledAmortizedPerSegment.java
* /opt/cola/permits/1141637187_1615091544.16/0/smoothie-map-2-0-2-sources-
jar/io/timeandspace/smoothie/SmoothieMapBuilder.java
* /opt/cola/permits/1141637187_1615091544.16/0/smoothie-map-2-0-2-sources-
jar/io/timeandspace/smoothie/Statistics.java
* /opt/cola/permits/1141637187_1615091544.16/0/smoothie-map-2-0-2-sources-
jar/io/timeandspace/smoothie/SmoothieMapWithCustomValueEquivalence.java
* /opt/cola/permits/1141637187_1615091544.16/0/smoothie-map-2-0-2-sources-
jar/io/timeandspace/smoothie/AbstractEntry.java
* /opt/cola/permits/1141637187_1615091544.16/0/smoothie-map-2-0-2-sources-
jar/io/timeandspace/smoothie/SmoothieMapWithCustomKeyHashFunction.java
* /opt/cola/permits/1141637187_1615091544.16/0/smoothie-map-2-0-2-sources-
jar/io/timeandspace/smoothie/InterleavedSegments.java
* /opt/cola/permits/1141637187_1615091544.16/0/smoothie-map-2-0-2-sources-
jar/io/timeandspace/smoothie/SwissTable.java
* /opt/cola/permits/1141637187_1615091544.16/0/smoothie-map-2-0-2-sources-
jar/io/timeandspace/smoothie/SmoothieMap.java
* /opt/cola/permits/1141637187_1615091544.16/0/smoothie-map-2-0-2-sources-
jar/io/timeandspace/smoothie/UnsafeUtils.java
* /opt/cola/permits/1141637187_1615091544.16/0/smoothie-map-2-0-2-sources-
jar/io/timeandspace/smoothie/HashTable.java
* /opt/cola/permits/1141637187_1615091544.16/0/smoothie-map-2-0-2-sources-
jar/io/timeandspace/smoothie/SimpleMutableEntry.java
* /opt/cola/permits/1141637187_1615091544.16/0/smoothie-map-2-0-2-sources-
jar/io/timeandspace/smoothie/ContinuousSegment_BitSetAndStateArea.java
* /opt/cola/permits/1141637187_1615091544.16/0/smoothie-map-2-0-2-sources-

```
jar/io/timeandspace/smoothie/BarelyCalled.java
* /opt/cola/permits/1141637187_1615091544.16/0/smoothie-map-2-0-2-sources-
jar/io/timeandspace/smoothie/HotPath.java
* /opt/cola/permits/1141637187_1615091544.16/0/smoothie-map-2-0-2-sources-
jar/io/timeandspace/smoothie/PrecomputedBinomialCdfValues.java
* /opt/cola/permits/1141637187_1615091544.16/0/smoothie-map-2-0-2-sources-
jar/io/timeandspace/smoothie/SuppressForbidden.java
```

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1.466 python 3.6.7 1~18.04

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.. highlightlang:: none

.. _history-and-license:

History and License

History of the software

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Python was created in the early 1990s by Guido van Rossum at Stichting Mathematisch Centrum (CWI, see <https://www.cwi.nl/>) in the Netherlands as a successor of a language called ABC. Guido remains Python's principal author, although it includes many contributions from others.

In 1995, Guido continued his work on Python at the Corporation for National Research Initiatives (CNRI, see <https://www.cnri.reston.va.us/>) in Reston, Virginia where he released several versions of the software.

In May 2000, Guido and the Python core development team moved to BeOpen.com to form the BeOpen PythonLabs team. In October of the same year, the PythonLabs team moved to Digital Creations (now Zope Corporation; see <http://www.zope.com/>). In 2001, the Python Software Foundation (PSF, see <https://www.python.org/psf/>) was formed, a non-profit organization created specifically to own Python-related Intellectual Property. Zope Corporation is a sponsoring member of the PSF.

All Python releases are Open Source (see <https://opensource.org/> for the Open Source Definition). Historically, most, but not all, Python releases have also been GPL-compatible; the table below summarizes the various releases.

| Release | Derived from | Year | Owner | GPL compatible? |
|----------------|--------------|-----------|------------|-----------------|
| 0.9.0 thru 1.2 | n/a | 1991-1995 | CWI | yes |
| 1.3 thru 1.5.2 | 1.2 | 1995-1999 | CNRI | yes |
| 1.6 | 1.5.2 | 2000 | CNRI | no |
| 2.0 | 1.6 | 2000 | BeOpen.com | no |
| 1.6.1 | 1.6 | 2001 | CNRI | no |
| 2.1 | 2.0+1.6.1 | 2001 | PSF | no |
| 2.0.1 | 2.0+1.6.1 | 2001 | PSF | yes |
| 2.1.1 | 2.1+2.0.1 | 2001 | PSF | yes |
| 2.1.2 | 2.1.1 | 2002 | PSF | yes |
| 2.1.3 | 2.1.2 | 2002 | PSF | yes |

```
+-----+-----+-----+-----+-----+
| 2.2 and above | 2.1.1   | 2001-now | PSF   | yes     |
+-----+-----+-----+-----+-----+
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Mersenne Twister

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A C-program for MT19937, with initialization improved 2002/1/26.
Coded by Takuji Nishimura and Makoto Matsumoto.

Before using, initialize the state by using `init_genrand(seed)`
or `init_by_array(init_key, key_length)`.

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<http://www.math.sci.hiroshima-u.ac.jp/~m-mat/MT/emt.html>

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Sockets

The `:mod:`socket`` module uses the functions, `:func:`getaddrinfo``, and `:func:`getnameinfo``, which are coded in separate source files from the WIDE Project, <http://www.wide.ad.jp/>. ::

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Modified by Jack Jansen, CWI, July 1995:

- Use `binascii` module to do the actual line-by-line conversion between `ascii` and `binary`. This results in a 1000-fold speedup. The C version is still 5 times faster, though.
- Arguments more compliant with Python standard

XML Remote Procedure Calls

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The file :file:`Python/pyhash.c` contains Marek Majkowski's implementation of
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Original location:

<https://github.com/majek/csiphash/>

Solution inspired by code from:

Samuel Neves ([supercop/crypto_auth/siphash24/little](https://github.com/supercop/crypto_auth/siphash24/little))

djb ([supercop/crypto_auth/siphash24/little2](https://github.com/supercop/crypto_auth/siphash24/little2))

Jean-Philippe Aumasson (<https://131002.net/siphash/siphash24.c>)

strtod and dtoa

The file `:file:`Python/dtoa.c``, which supplies C functions `dtoa` and `strtod` for conversion of C doubles to and from strings, is derived from the file of the same name by David M. Gay, currently available from <http://www.netlib.org/fp/>. The original file, as retrieved on March 16, 2009, contains the following copyright and licensing notice::

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OpenSSL

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cfuhash

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Python was created in the early 1990s by Guido van Rossum at Stichting Mathematisch Centrum (CWI, see <http://www.cwi.nl>) in the Netherlands as a successor of a language called ABC. Guido remains Python's principal author, although it includes many contributions from others.

In 1995, Guido continued his work on Python at the Corporation for National Research Initiatives (CNRI, see <http://www.cnri.reston.va.us>)

in Reston, Virginia where he released several versions of the software.

In May 2000, Guido and the Python core development team moved to BeOpen.com to form the BeOpen PythonLabs team. In October of the same year, the PythonLabs team moved to Digital Creations, which became Zope Corporation. In 2001, the Python Software Foundation (PSF, see <https://www.python.org/psf/>) was formed, a non-profit organization created specifically to own Python-related Intellectual Property. Zope Corporation was a sponsoring member of the PSF.

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| 1.6 | 1.5.2 | 2000 | CNRI | no |
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| 1.6.1 | 1.6 | 2001 | CNRI | yes (2) |
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GSS-API mechglue layer.

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@item GSS-API CFX, SPNEGO, naming extensions, API extensions.

@item KCM credential cache.

@item HDB LDAP backend.

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@heading Vincent Rijmen, Antoon Bosselaers, Paulo Barreto

AES in libcrypto

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rijndael-alg-fst.c

@version 3.0 (December 2000)

Optimised ANSI C code for the Rijndael cipher (now AES)

@author Vincent Rijmen <vincent.rijmen@esat.kuleuven.ac.be>

@author Antoon Bosselaers <antoon.bosselaers@esat.kuleuven.ac.be>

@author Paulo Barreto <paulo.barreto@terra.com.br>

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kdc/announce.c

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DES core in libcrypto

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D3DES (V5.09) -

A portable, public domain, version of the Data Encryption Standard.

Written with Symantec's THINK (Lightspeed) C by Richard Outerbridge.

Thanks to: Dan Hoey for his excellent Initial and Inverse permutation code; Jim Gillogly & Phil Karn for the DES key schedule code; Dennis Ferguson, Eric Young and Dana How for comparing notes; and Ray Lau, for humouring me on.

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Windows support

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lib/hcrypto/test_dh.c

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arch-tag: d4250e44-a0e0-4ee0-adb9-2bd74f6eeb27

1.477 pam 1.1.8-3.6ubuntu2.18.04.3

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Patch for Ubuntu bug #399071

Display the contents of /etc/legal as part of the MOTD, the first time the user logs in, and set a flag in the user's homedir if possible to prevent repeat displays.

Authors: Dustin Kirkland <kirkland@canonical.com>

Upstream status: Ubuntu-specific, maybe submit to Debian

Index: pam.ubuntu/modules/pam_motd/pam_motd.c

```
-----  
--- pam.ubuntu.orig/modules/pam_motd/pam_motd.c  
+++ pam.ubuntu/modules/pam_motd/pam_motd.c  
@@ -73,6 +73,61 @@  
close(fd);  
}  
  
+int display_legal(pam_handle_t *pamh)  
+{  
+ int retval = PAM_IGNORE, rc;  
+ char *user = NULL;  
+ char *dir = NULL;  
+ char *flag = NULL;  
+ struct passwd *pwd = NULL;  
+ struct stat s;  
+ int f;  
+ /* Get the user name to determine if we need to print the disclaimer */  
+ rc = pam_get_item(pamh, PAM_USER, &user);  
+ if (rc == PAM_SUCCESS && user != NULL && *(const char *)user != '\0')  
+ {  
+ PAM_MODUTIL_DEF_PRIVS(privs);  
+  
+
```

```

+ /* Get the password entry */
+ pwd = pam_modutil_getpwnam (pamh, user);
+ if (pwd != NULL)
+ {
+     if (pam_modutil_drop_priv(pamh, &privs, pwd)) {
+         pam_syslog(pamh, LOG_ERR,
+             "Unable to change UID to %d temporarily\n",
+             pwd->pw_uid);
+         retval = PAM_SESSION_ERR;
+         goto finished;
+     }
+
+     if (asprintf(&dir, "%s/.cache", pwd->pw_dir) == -1 || !dir)
+         goto finished;
+     if (asprintf(&flag, "%s/motd.legal-displayed", dir) == -1 || !flag)
+         goto finished;
+
+     if (stat(flag, &s) != 0)
+     {
+         display_file(pamh, "/etc/legal");
+         mkdir(dir, 0700);
+         f = open(flag, O_WRONLY|O_CREAT|O_EXCL,
+             S_IRUSR|S_IWUSR|S_IRGRP|S_IROTH);
+         if (f>=0) close(f);
+     }
+
+finished:
+     if (pam_modutil_regain_priv(pamh, &privs)) {
+         pam_syslog(pamh, LOG_ERR,
+             "Unable to change UID back to %d\n", privs.old_uid);
+         retval = PAM_SESSION_ERR;
+     }
+
+     _pam_drop(flag);
+     _pam_drop(dir);
+ }
+ }
+ return retval;
+ }
+
PAM_EXTERN
int pam_sm_open_session(pam_handle_t *pamh, int flags,
    int argc, const char **argv)
@@ -116,6 +171,9 @@
    /* Display the updated motd */
    display_file(pamh, motd_path);

+ /* Display the legal disclaimer only if necessary */

```

```
+ retval = display_legal(pamh);
+
+   return retval;
}
```

This package was debianized by J.H.M. Dassen (Ray) jdassen@debian.org on
Wed, 23 Sep 1998 20:29:32 +0200.

It was downloaded from <ftp://ftp.kernel.org/pub/linux/libs/pam/pre/>

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1.478 log4j-jul 2.17.2

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1.479 types-angular 1.5.23

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1.480 bzip2 1.0.6 8.1 ubuntu0.2

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Julian Seward, jseward@acm.org
bzip2/libbzip2 version 1.0.8 of 13 July 2019

1.481 reflectasm 1.09

1.482 @types/node 12.11.1

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1.484 jpsg-core 1.4

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- * /opt/cola/permits/1141636886_1615091511.3/0/jpsg-core-1-4-sources-jar/io/timeandspace/jpsg/IntermediateOption.java
- * /opt/cola/permits/1141636886_1615091511.3/0/jpsg-core-1-4-sources-jar/io/timeandspace/jpsg/MalformedTemplateException.kt
- * /opt/cola/permits/1141636886_1615091511.3/0/jpsg-core-1-4-sources-jar/io/timeandspace/jpsg/concurrent/ForkJoinTasks.kt
- * /opt/cola/permits/1141636886_1615091511.3/0/jpsg-core-1-4-sources-jar/io/timeandspace/jpsg/GenericsProcessor.java
- * /opt/cola/permits/1141636886_1615091511.3/0/jpsg-core-1-4-sources-jar/io/timeandspace/jpsg/StringLengthComparator.java
- * /opt/cola/permits/1141636886_1615091511.3/0/jpsg-core-1-4-sources-jar/io/timeandspace/jpsg/OptionProcessor.java
- * /opt/cola/permits/1141636886_1615091511.3/0/jpsg-core-1-4-sources-jar/io/timeandspace/jpsg/StringUtils.java
- * /opt/cola/permits/1141636886_1615091511.3/0/jpsg-core-1-4-sources-jar/io/timeandspace/jpsg/CheckingPattern.java
- * /opt/cola/permits/1141636886_1615091511.3/0/jpsg-core-1-4-sources-jar/io/timeandspace/jpsg/SimpleOption.java
- * /opt/cola/permits/1141636886_1615091511.3/0/jpsg-core-1-4-sources-jar/io/timeandspace/jpsg/BitsModifierPreProcessor.kt
- * /opt/cola/permits/1141636886_1615091511.3/0/jpsg-core-1-4-sources-jar/io/timeandspace/jpsg/concurrent/ForkJoinTaskShim.kt
- * /opt/cola/permits/1141636886_1615091511.3/0/jpsg-core-1-4-sources-jar/io/timeandspace/jpsg/function/Predicate.java
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- * /opt/cola/permits/1141636886_1615091511.3/0/jpsg-core-1-4-sources-jar/io/timeandspace/jpsg/PrimitiveTypeModifierPreProcessor.kt
- * /opt/cola/permits/1141636886_1615091511.3/0/jpsg-core-1-4-sources-jar/io/timeandspace/jpsg/CheckingMatcher.kt
- * /opt/cola/permits/1141636886_1615091511.3/0/jpsg-core-1-4-sources-jar/io/timeandspace/jpsg/Jdk8FunctionReplacer.java
- * /opt/cola/permits/1141636886_1615091511.3/0/jpsg-core-1-4-sources-jar/io/timeandspace/jpsg/AAnProcessor.java
- * /opt/cola/permits/1141636886_1615091511.3/0/jpsg-core-1-4-sources-jar/io/timeandspace/jpsg/concurrent/RealForkJoinTasks.kt
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* /opt/cola/permits/1141636886_1615091511.3/0/jpsg-core-1-4-sources-jar/io/timeandspace/jpsg/Dimensions.kt
* /opt/cola/permits/1141636886_1615091511.3/0/jpsg-core-1-4-sources-jar/io/timeandspace/jpsg/NonexistentDimensionException.java
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* /opt/cola/permits/1141636886_1615091511.3/0/jpsg-core-1-4-sources-jar/io/timeandspace/jpsg/TemplateProcessor.java
* /opt/cola/permits/1141636886_1615091511.3/0/jpsg-core-1-4-sources-jar/io/timeandspace/jpsg/function/UnaryOperator.java
* /opt/cola/permits/1141636886_1615091511.3/0/jpsg-core-1-4-sources-jar/io/timeandspace/jpsg/FloatingWrappingProcessor.java
* /opt/cola/permits/1141636886_1615091511.3/0/jpsg-core-1-4-sources-jar/io/timeandspace/jpsg/PrimitiveType.java
* /opt/cola/permits/1141636886_1615091511.3/0/jpsg-core-1-4-sources-jar/io/timeandspace/jpsg/DefinitionProcessor.java
* /opt/cola/permits/1141636886_1615091511.3/0/jpsg-core-1-4-sources-jar/io/timeandspace/jpsg/PrimitiveTypeModifierPostProcessor.kt
* /opt/cola/permits/1141636886_1615091511.3/0/jpsg-core-1-4-sources-jar/io/timeandspace/jpsg/Context.java
* /opt/cola/permits/1141636886_1615091511.3/0/jpsg-core-1-4-sources-jar/io/timeandspace/jpsg/BitsModifierPostProcessor.kt
* /opt/cola/permits/1141636886_1615091511.3/0/jpsg-core-1-4-sources-jar/io/timeandspace/jpsg/concurrent/NoForkJoinTasks.kt

1.485 servlet-api 4.0.0

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* /opt/cola/permits/1320304756_1651519748.12/0/servlet-api-4-0-0-sources-4-jar/org/xipki/http/servlet/AbstractHttpServlet.java
* /opt/cola/permits/1320304756_1651519748.12/0/servlet-api-4-0-0-sources-4-jar/org/xipki/http/servlet/SimpleLruCache.java
* /opt/cola/permits/1320304756_1651519748.12/0/servlet-api-4-0-0-sources-4-jar/org/xipki/http/servlet/ServletURIPool.java
* /opt/cola/permits/1320304756_1651519748.12/0/servlet-api-4-0-0-sources-4-jar/org/xipki/http/servlet/TlsHelper.java
* /opt/cola/permits/1320304756_1651519748.12/0/servlet-api-4-0-0-sources-4-jar/org/xipki/http/servlet/ServletURI.java
* /opt/cola/permits/1320304756_1651519748.12/0/servlet-api-4-0-0-sources-4-jar/org/xipki/http/servlet/SslReverseProxyMode.java
* /opt/cola/permits/1320304756_1651519748.12/0/servlet-api-4-0-0-sources-4-jar/org/xipki/http/servlet/package-info.java

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1.486 karma-jasmine 4.0.0

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* @version 3.0 (December 2000)

*

* Optimised ANSI C code for the Rijndael cipher (now AES)

*

* @author Vincent Rijmen <vincent.rijmen@esat.kuleuven.ac.be>

* @author Antoon Bosselaers <antoon.bosselaers@esat.kuleuven.ac.be>

* @author Paulo Barreto <paulo.barreto@terra.com.br>

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1.488 libpsl 0.19.1-5build1

1.488.1 Available under license :

Format: <https://www.debian.org/doc/packaging-manuals/copyright-format/1.0/>

Upstream-Name: libpsl

Source: <https://github.com/rockdaboot/libpsl>

Files: *

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Files: debian/*

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Files: src/psl-make-dafsa src/lookup_string_in_fixed_set.c

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